DAIHATSU

G200

Service manual

DAIHATSU MOTOR CO., LTD.

No. 9186 -

IMPORTANT SAFETY NOTICE

The vehicle is a machine comprising a great number of parts. Basically speaking, the vehicle is potentially hazard. However, one can handle it safely if he has the required knowledge.

Correct service methods and repair procedures are very vital for assuring not only the safety and reliability of a vehicle, but also the safety of service personnel concerned.

The methods and procedures contained in this manual describe in a general way the techniques which the manufacturer has recommended. Thus, they will contribute to ensuring the reliability of the products. The contents of the servicing operations come in a wide variety of ways. Moreover, techniques, tools and parts necessary for each operation are different widely from each other.

This manual does not cover all details of techniques, procedures, parts, tools and handling instructions which are necessary for these operations, for such coverage is impossible. Hence, any one who obtains this manual is expected first to make his responsible selection as to techniques, tools and parts which are necessary for servicing the vehicle concerned properly. Furthermore, he must assume responsibility for his actions in connection with his own safety.

Therefore, one should not perform any service if he is not capable of making responsible selection and/or if he can not understand the contents herein described, for this manual has been prepared for experienced service personnel.

WARNINGS, CAUTIONS AND NOTES

All these symbols have their specific purposes, respectively.

WARNING:
- This symbol means that there is the possibility of personal injury of the operator himself or the nearby workers if the operator fails to follow the operating procedure prescribed in this manual.

CAUTION:
- This symbol means that there is the possibility of damage to the component being repaired if the operator fails to follow the operating procedure prescribed in this manual.

NOTE:
- To accomplish the operation in an efficient manner, additional instructions concerning the operation are given in this section.

The following list describes general WARNINGS:

- Always wear safety glasses for eye protection.
- Use safety stands whenever a procedure requires you to be under the vehicle.
- Be sure that the ignition switch is always in the OFF position, unless otherwise required by the procedure.
- Set the parking brake when working on the vehicle.
- Operate the engine only in a well-ventilated area to avoid the danger of carbon monoxide.
- Keep yourself and your clothing away from moving parts, when the engine is running, especially from the fan and belts.
- To prevent serious burns, avoid contact with hot metal parts such as the radiator, exhaust manifold, tail pipe, catalytic converter and muffler.
- Do not smoke while working on a vehicle.
- To avoid injury, always remove rings, watches, loose hanging jewelry, and loose clothing before beginning to work on a vehicle.
- Keep hands and other objects clear of the radiator fan blades! The electric cooling fan is mounted on the radiator and can start to operate at anytime by a rise in coolant temperature or turning ON of the air conditioner switch in the case of vehicles equipped with an air conditioner. The electric cooling fan is also mounted on the condenser for air conditioner and starts to operate anytime when the air conditioner switch is turned "ON". For this reason care should be taken to ensure that the electric cooling fan motor is completely disconnected when working under the hood.

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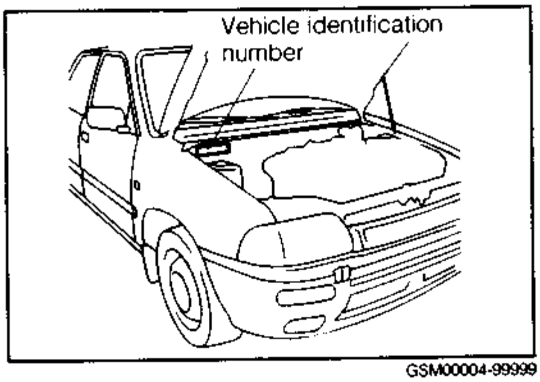
CHASSIS SERIAL NUMBER STAMPED POSITION

The chassis number is stamped on the cowl panel at the right side in the engine compartment.



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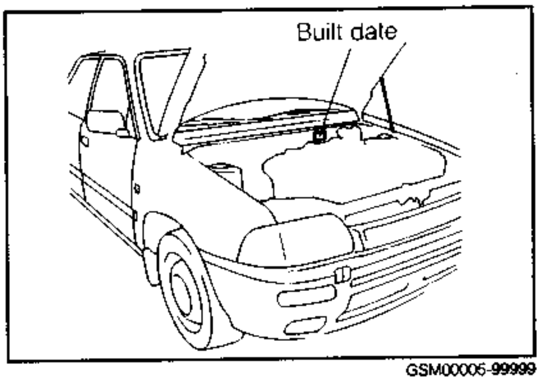
MANUFACTURE'S PLATE POSITION

The manufacturer's plate is attached on the cowl panel.



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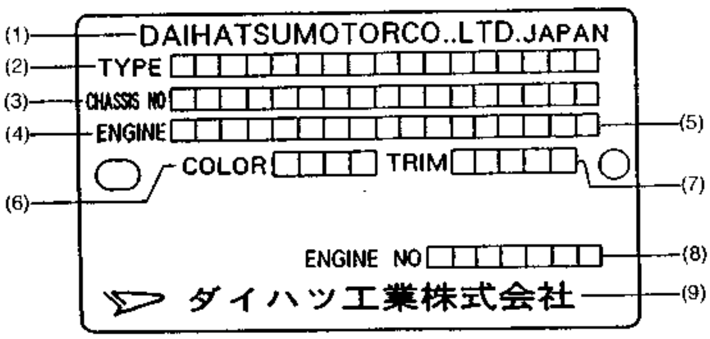
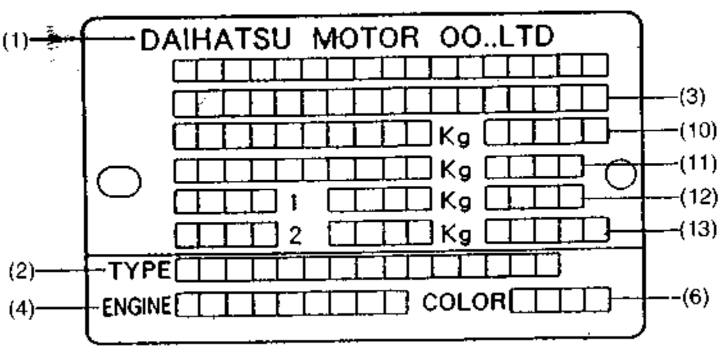
CONTENTS OF MANUFACTURER'S PLATE

(1) General, Australian, Norwegian and Finnish specifications



(2) European Specification (except for Norway and Finland)



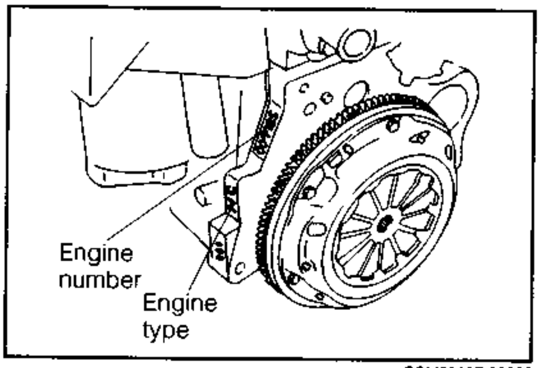
① Manufacturer's name, Country
② Vehicle model
③ Chassis No.
④ Engine type
⑤ Engine displacement
⑥ Body colors
⑦ Trim code
⑧ Engine number
⑨ Manufacturer's name in Japanese
⑩ Gross vehicle weight
⑪ Gross combination weight
⑫ Maximum permissible front axle weight
⑬ Maximum permissible rear axle weight
⑭ Production moth-year (Only for AUS spec.)

GSM00006-99999

ENGINE NUMBER AND ENGINE TYPE STAMPED POSITIONS

[HC, HD engine]

- The engine number is stamped on the cylinder block.
- The engine type is indicated by embossed letters on the cylinder block.



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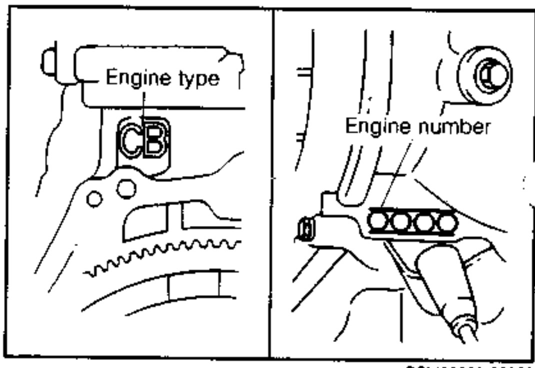
[CB engine]

- The engine number is stamped on the cylinder head.
- The engine type is indicated by embossed letters on the cylinder block.



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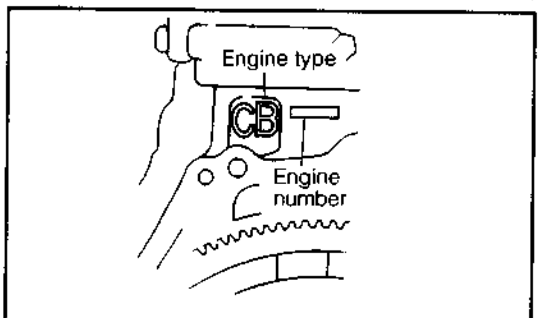
[CB engine for Australian specifications]

- The engine number is stamped on the cylinder block.
- The engine type is indicated by embossed letters on the cylinder block.



for Australian specifications

GSM00009-99999

BODY COLOR INFORMATION

Color name	Code
White	W09
Greenish gray mica	*S14
Pure red	*R19
Dark blue mica	*B23
Light turquoise metallic	*G16
Black metallic	6A5

The asterisk "*" mark indicates the employment of new color.

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COLOR CODE IN THE WORLD

Color name	Color code					
	DAIHATSU	AKZO	DUPONT	ICI	SPIES HECKER	STANDOX
White	W09	DAHW09	K9344	XM48	16461	W09
Greenish gray mica	S14	DAHS14	H9925	5GK9B	60439	S14
Pure red	R19	DAHR19	H9924	5GL1	30423	R19
Dark blue mica	B23	DAHB23	H9853	2RM2B	50330	B23
Light turquoise metallic	G16	DAHG16	H9923	5GK8B	60440	G16
Black metallic	6A5	DAH6A5	L7902	A403B or B929B	96326	6A5

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TRIM CODE

F **R** **S20**

- S20 — Trim color code
  S: Grey
- R — Serial code
  A code that has been set in alphabetical order.
- F — Seat main material
  F.Y: Fabric
  L: Vinyl chloride leather

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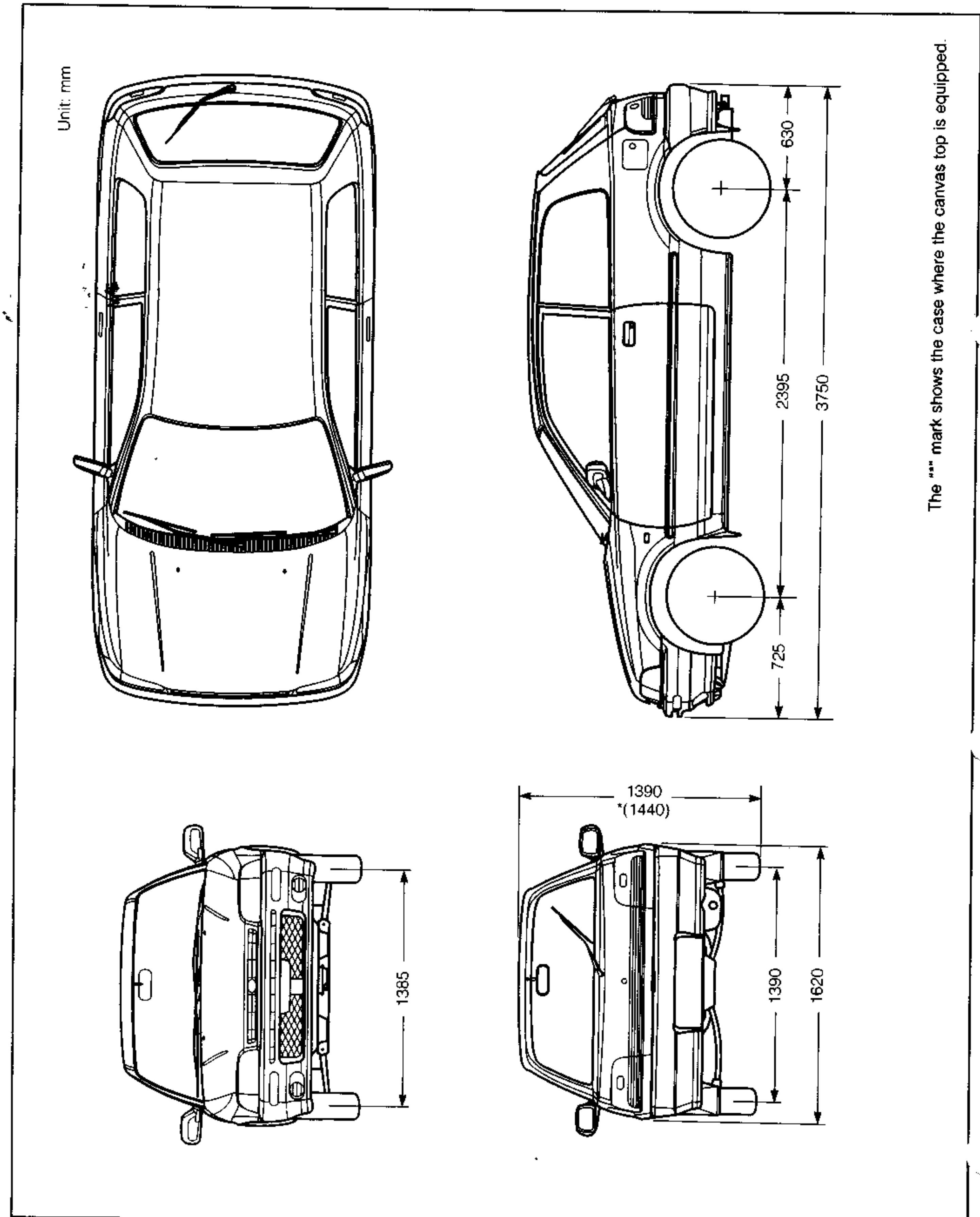
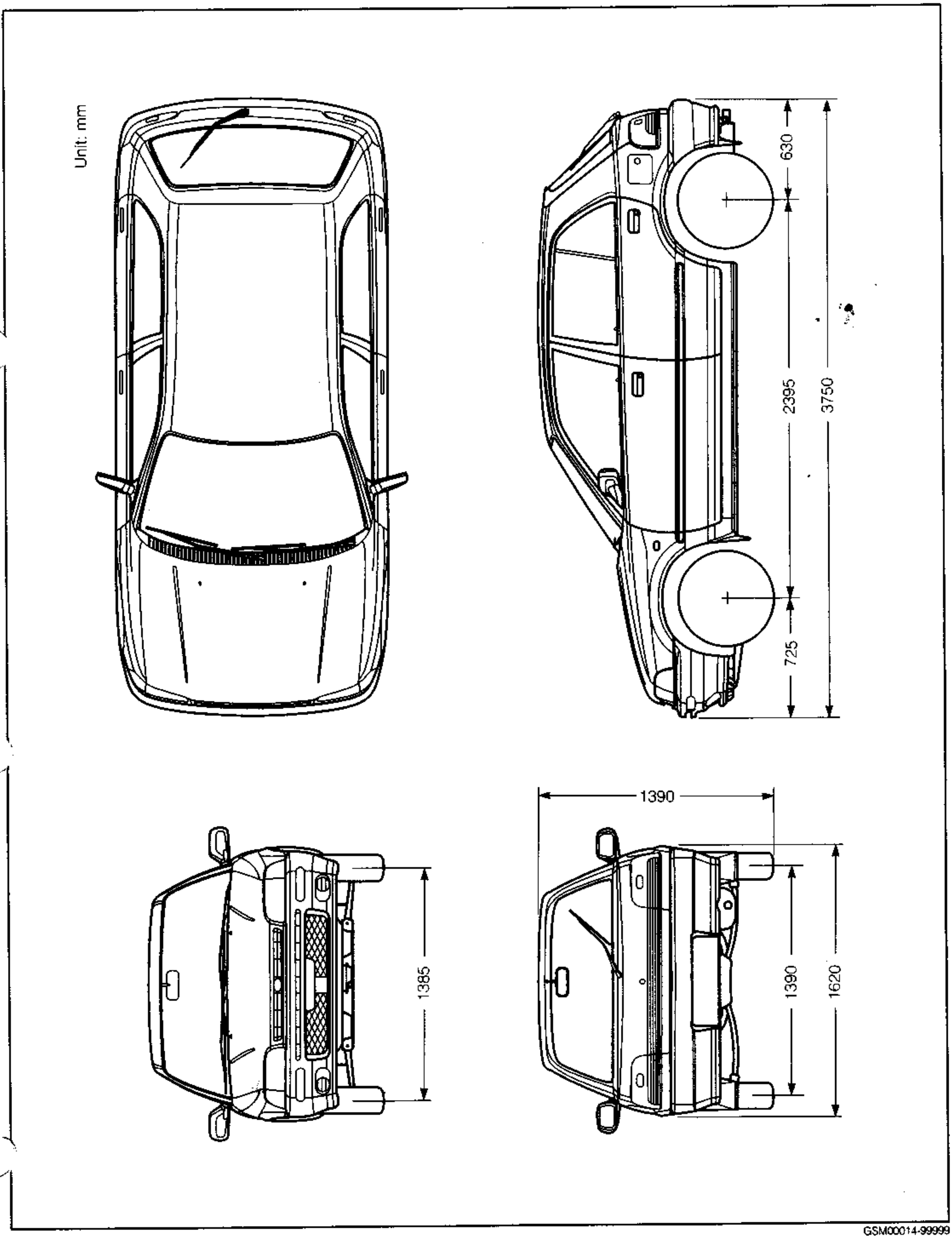
VEHICLE 4-PLAN DIAGRAMS

4-Plane diagram of 3-door model



4-Plane diagram of 5-door model



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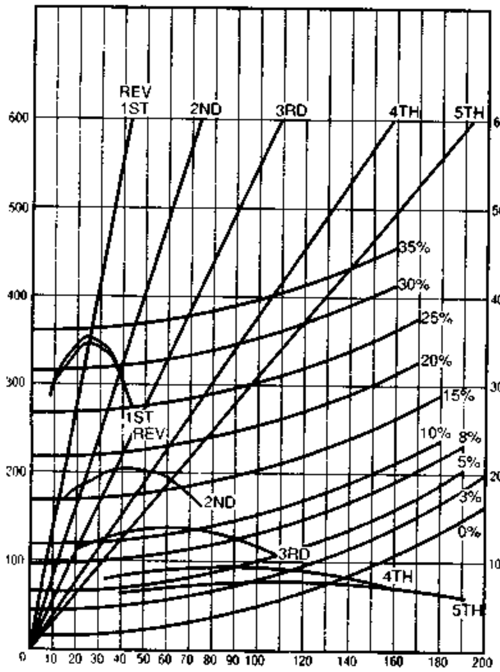
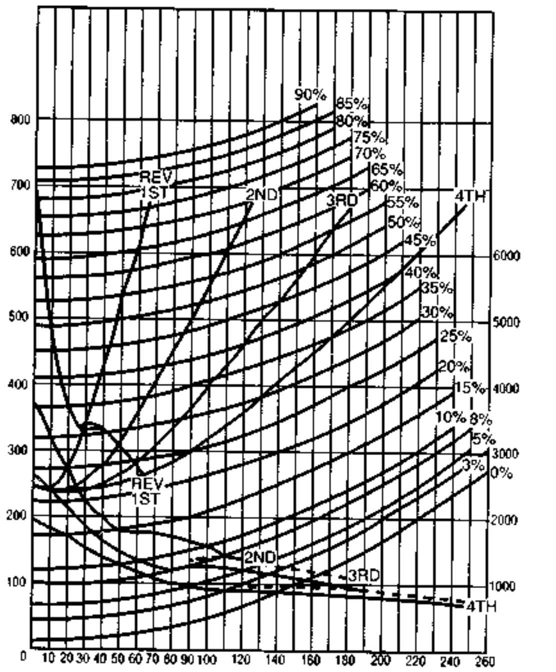
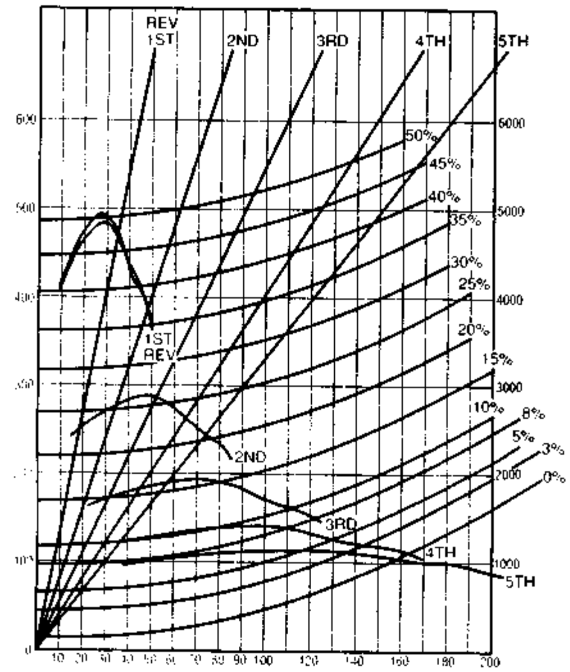
PERFORMANCE DIAGRAMS



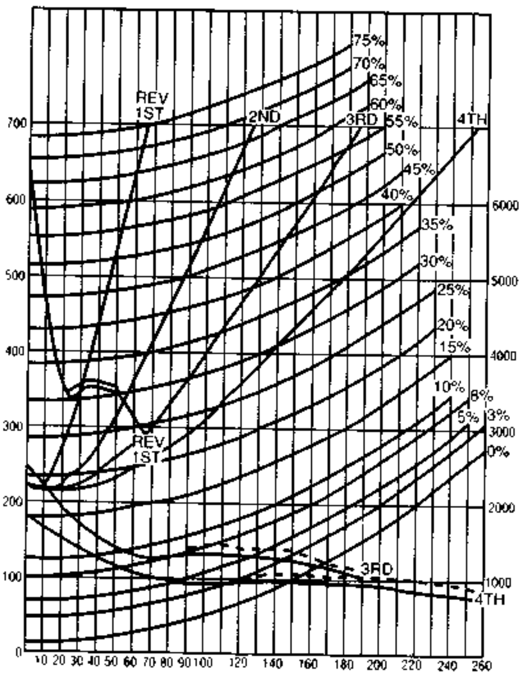
CB engine with 5-speed manual transmission



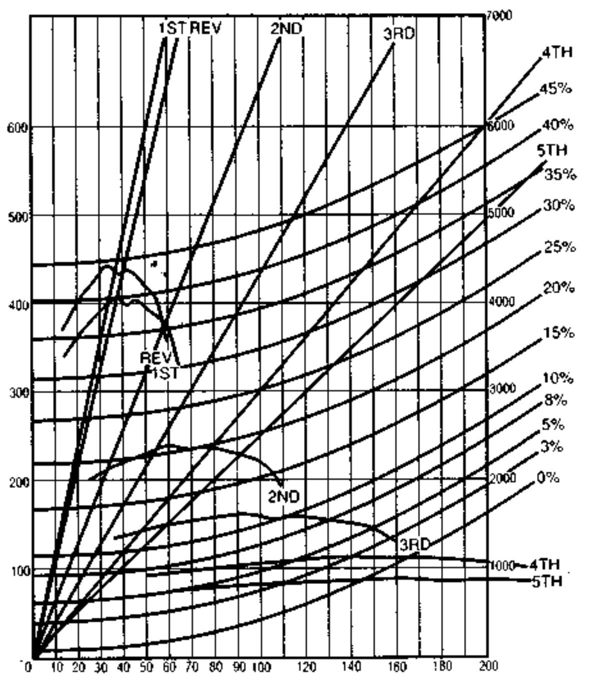
HC-C engine with 4-speed automatic transmission



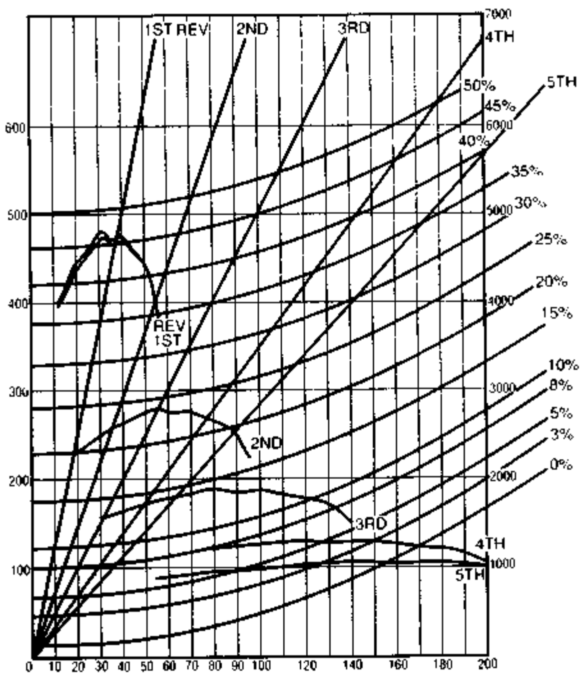
HC-C engine 5-speed manual transmission



HC-E engine with 4-speed automatic

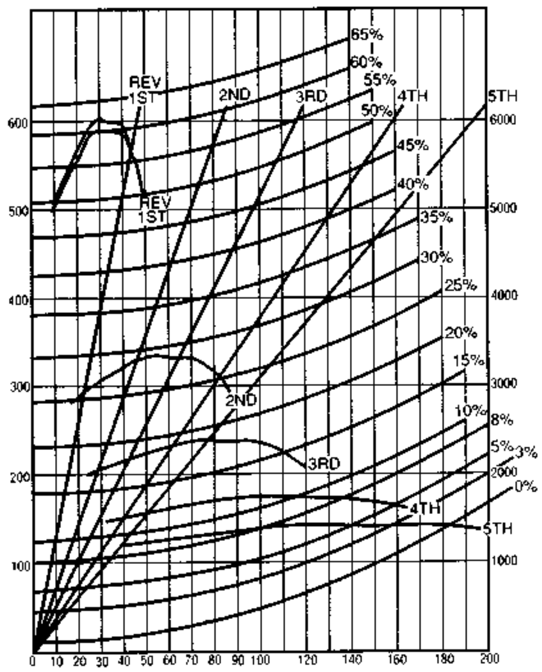


(Final reduction gear ratio: 3.647)



(Final reduction gear ratio: 4.226)

HC-E engine with 5-speed manual transmission



HD-E engine with 5-speed manual transmission

ENGINE SPECIFICATION

Item				CB	HC-C	HC-E	HD-E
Engine proper	Type			Petrol, 4-cycle	Petrol, 4-cycle	Petrol, 4-cycle	Petrol, 4-cycle
	Mounting location			Front	Front	Front	Front
	Cylinder No. and arrangement			3-cylinder-in-line, mounted transversely	4-cylinder-in-line, mounted transversely	4-cylinder-in-line, mounted transversely	4-cylinder-in-line, mounted transversely
	Combustion chamber type			Multi-sphere type	Pent roof type	Pent roof type	Pent roof type
	valve mechanism			Belt-driven, SOHC	Belt-driven, SOHC	Belt-driven, SOHC	Belt-driven, SOHC
	Bore × stroke mm (inch)			76 × 73 (2.99 × 2.87)	76 × 71.4 (2.99 × 2.81)	76 × 71.4 (2.99 × 2.81)	76 × 87.6 (2.99 × 3.45)
	Compression ratio			9.5	9.5	9.5	9.5
	Compression pressure kPa (kgf/cm^2-rpm, psi-rpm)			1225.8 (12.5 - 350, 1778 - 350)	1372.9 (14 - 350, 199.1 - 350)	1372.9 (14 - 350, 199.1 - 350)	1372.9 (14 - 300, 199.1 - 300)
	Maximum output	SAE net kW/rpm	General specifications	38/5600	56/6500	62/6500	77/6000
		European kW/rpm	Australian specifications	38/5600	56/6500	62/6500	77/6000
		DIN kW/rpm	European specifications	38/5600	56/6500	62/6500	77/6000
	Maximum torque	SAE net Nm/rpm	General specifications	75.5/3200	102/3900	105/5000	134/4000
		European Nm/rpm	Australian specifications	75.5/3200	102/3900	105/5000	134/4000
		DIN Nm/rpm	European specifications	75.5/3200	102/3900	105/5000	134/4000
	Engine dimensions [Length × width × height] mm (inch)			566 × 530 × 636 (22.28 × 20.87 × 25.04)	635 × 511 × 652 (25.00 × 20.12 × 25.67)	630 × 510 × 645 (24.81 × 20.08 × 25.40)	658 × 524 × 653 (25.91 × 20.63 × 25.71)
	Number of piston rings	Compression ring		2	2	2	2
		Oil ring		1	1	1	1
	Valve timing	Intake	Open	BTDC 19°	BTDC 10°	BTDC 1°	BTDC 8°
			Close	ABDC 51°	ABDC 40°	ABDC 39°	ABDC 52°
		Exhaust	Open	BBDC 51°	BBDC 56°	BBDC 42°	BBDC 52°
			Close	ATDC 19°	BTDC 6°	ATDC 2°	ATDC 8°
	Valve clearance mm (inch)		Intake	[HOT] 0.20 (0.0079)	[HOT] 0.25 (0.0098)	[HOT] 0.25 (0.0098)	[HOT] 0.25 (0.0098)
			Exhaust	[HOT] 0.20 (0.0079)	[HOT] 0.33 (0.0130)	[HOT] 0.33 (0.0130)	[HOT] 0.33 (0.0130)
	Idling speed rpm		Manual transmission	850 ± 50	850 ± 50	*800 ± 50	*800 ± 50
			Automatic transmission	—	800 ± 50	850 ± 50	—
	Blow-by gas recirculating system			Closed type	Closed type	Closed type	Closed type
Lubricating system	Lubricating method			Fully-forced feed method	Fully-forced feed method	Fully-forced feed method	Fully-forced feed method
	Oil pump type			Trochoid type	Trochoid type	Trochoid type	Trochoid type
	Oil filter type			Fully-flow filter type, filter paper type	Fully-flow filter type, filter paper type	Fully-flow filter type, filter paper type	Fully-flow filter type, filter paper type
	*1 Lubrication oil capacity liter	Whole		3.2	3.6 (3.7 for oil cooler equipped model)	3.6 (3.7 for oil cooler equipped model)	3.6 (3.7 for oil cooler equipped model)
		When only oil is changed		2.7	3.0	3.0	3.0
		When oil and oil filter are changed		3.0	3.2 (3.3 for oil cooler equipped model)	3.2 (3.3 for oil cooler equipped model)	3.2 (3.3 for oil cooler equipped model)
	Oil cooler type			—	Water-cooled type	Water-cooled type	Water-cooled type

NOTE:
* European with tropical spec. and Australian spec: 850 ± 50
*1 The lubrication oil capacity are under reconsideration. Refer to the service manual for the correct amount.

Item			Engine type	CB	HC-C	HC-E	HD-E
Cooling system	Cooling method			Water-cooled electromotor type	Water-cooled electromotor type	Water-cooled electromotor type	Water-cooled electromotor type
	Radiator type			Corrugation type forced circulation	Corrugation type forced circulation	Corrugation type forced circulation	Corrugation type forced circulation
	Coolant capacity liter [Including 0.434 liter for reserve tank]	Manual transmission	European	4.7	4.7	4.7	4.7
			General, Australian	4.7	5.5	5.1	4.7
			Tropical spec.	4.7	5.5	5.5	—
		Automatic transmission	European	—	4.6	4.6	—
			General, Australian	—	5.4	5.4	—
			Tropical spec.	—	5.4	5.4	—
	Electromotor capacity W			45, 80	80, 120	80, 120	80, 120
	Water pump type			Centrifugal type belt-driven type	Centrifugal type belt-driven type	Centrifugal type belt-driven type	Centrifugal type belt-driven type
	Thermostat type			Wax pellet type	Wax pellet type bottom by-pass type	Wax pellet type bottom by-pass type	Wax pellet type bottom by-pass type
Air cleaner	Type			Filter paper type	Filter unwoven fabric type	Filter unwoven fabric type	Filter unwoven fabric type
	Number			1	1	1	1
Fuel system	Fuel tank	Capacity liter		45	45	50	50
		Location		Underneath rear seat floor	Underneath rear seat floor	Underneath rear seat floor	Underneath rear seat floor
	Fuel pipe material			Rubber and steel tube	Rubber and steel tube	Rubber and steel tube	Rubber and steel tube
	Fuel pump type			Diaphragm type	Diaphragm type	Electromotor type	Electromotor type
	Fuel filter type			Filter paper type	Filter paper type	Filter paper type (Voltex type)	Filter paper type (Voltex type)
	Carburetor	Manufacturer		Aisan industry	Aisan industry	—	—
		Type		Downdraft, 2-barrel, single carburetor	Downdraft, 2-barrel, single carburetor	—	—
		Throttle bore diameter mm (inch)		28 (1.10), 32 (1.26)	28 (1.10), 32 (1.26)	—	—
		Venturi diameter mm (inch)		18 (0.71), 25 (0.98) 7 (0.28) 8 (0.31)	21 (0.83), 25 (0.98) 9 (0.35), 8 (0.31)	—	—
	Fuel injection device			—	—	Electronic type	Electronic type
	Injector	Type of nozzle retainer		—	—	With cushion rubber type	With cushion rubber type
		Nozzle type		—	—	Electronic controlled throttle type	Electronic controlled throttle type
		Injection pressure kPa (kgf/cm², psi)		—	—	250 (2.55, 18.4)	250 (2.55, 18.4)

Item				Engine type	CB	HC-C	HC-E	HD-E
Engine electrical system	Ignition system	Voltage V			12 [Negative ground]	12 [Negative ground]	12 [Negative ground]	12 [Negative ground]
		Type			Full-transistorized type battery ignition type	Full-transistorized type battery ignition type	Full-transistorized type (ESA) battery ignition type	Full-transistorized type (ESA) battery ignition type
		Ignition timing			BTDC 5° ± 2°/ Stable revolution below 1000 rpm	BTDC 5° ± 2°/ Stable revolution below 1000 rpm	TDC 0° ± 2° with the check connector connected with ground terminal	TDC 0° ± 2° with the check connector connected with ground terminal
		Firing order			1-2-3	1-3-4-2	1-3-4-2	1-3-4-2
		Distributor	Distributor type		Full-transistorized type battery ignition type	Full-transistorized type battery ignition type	Full-transistorized type battery ignition type	Full-transistorized type battery ignition type
			Performance of timing advancing mechanism	Centrifugal type M/T	0°/750 rpm, 10.5°/2800 rpm	0°/800 rpm, 14.5°/2800 rpm	ESA	ESA
				Centrifugal type A/T	—	0°/800 rpm, 14.5°/2800 rpm	ESA	—
				Vacuum type M/T	0°/–100 mmHg, 11°/–330 mmHg	0°/–100 mmHg, 15°/–410 mmHg	ESA	ESA
				Vacuum type A/T	—	0°/–100 mmHg, 10°/–300 mmHg	ESA	—
		Spark plug	Manufacturer & Type	NIPPONDENSO	W16EX-U/W16EXR-U	K20PR-U11	K20PR-U11	K20PR-U11
				NGK	BP5EAL/BP5EY	BKR6E-11	BKR6E-11	BKR6E-11
				BOSCH	—	—	FR7DCX	FR7DCX
				CHAMPION	—	RC9YC4	RC9YC4	—
			Spark plug gap mm (inch)	NIPPONDENSO	0.7 - 0.8 (0.028 - 0.031)	1.0 - 1.1 (0.039 - 0.043)	1.0 - 1.1 (0.039 - 0.043)	1.0 - 1.1 (0.039 - 0.043)
				NGK	0.7 - 0.8 (0.028 - 0.031)/ 0.8 - 0.9 (0.031 - 0.036)	1.0 - 1.1 (0.039 - 0.043)	1.0 - 1.1 (0.039 - 0.043)	1.0 - 1.1 (0.039 - 0.043)
				BOSCH	—	—	1.0 - 1.1 (0.039 - 0.043)	1.0 - 1.1 (0.039 - 0.043)
				CHAMPION	—	1.0 - 1.1 (0.039 - 0.043)	1.0 - 1.1 (0.039 - 0.043)	—
			Thread		M14 × 1.25			
	Battery	Type	General specifications		34B17L/55B24L	34B17L/36B20L/Delco	34B17L/36B20L/Delco	36B20L/Delco
			European specifications		Delco	Delco	Delco	Delco
			Australian specifications		34B17L	—	34B17L/36B20L	36B20L
		Capacity AH	General specifications		27 Ah, 36 Ah	27 Ah, 28 Ah, 36 Ah	27 Ah, 28 Ah, 36 Ah	28 Ah, 36 Ah
			European specifications		36 Ah	36 Ah	36 Ah	36 Ah
			Australian specifications		27 Ah	—	27 Ah, 28 Ah	28 Ah
	Alternator	Type			Three-phase alternating current commuting type	Three-phase alternating current commuting type	Three-phase alternating current commuting type	Three-phase alternating current commuting type
		Output V-A	MT	General specifications	12 - 50	12 - 60	12 - 60	12 - 60
				European specifications	12 - 50	12 - 60	12 - 60	12 - 60
				Australian specifications	12 - 50	12 - 60	12 - 60	12 - 60
			AT	General specifications	—	12 - 70	12 - 70	—
				European specifications	—	12 - 70	12 - 70	—
				Australian specifications	—	12 - 70	12 - 70	—
		Regulator type			Contact pointless type (IC regulator type)	Contact pointless type (IC regulator type)	Contact pointless type (IC regulator type)	Contact pointless type (IC regulator type)
	Starter	Type			Magnet engaging type	Magnet engaging type	Magnet engaging type	Magnet engaging type
		Output V-kW			*1 12 - 0.7, *2 12 - 0.8	*1 12 - 0.8, *2 12 - 1.0	*1 12 - 0.8, *2 12 - 1.0	*1 12 - 0.8, *2 12 - 1.0
	Radio noise suppressing device				Resistive cord	Resistive cord	Resistive cord	Resistive cord

NOTE:
* Cold specifications
*1 Other than European and General with cold specifications
*2 European and General with cold specifications

POWER TRAIN SPECIFICATIONS (1)

Item		Vehicle model	3-Door									
			G202		G200				G201	G200		
			FMDS	YMDS	FMDS	FMDE	FMGE	YMDE	FMSE	FPDS	FPDE	FPGE
Clutch	Mechanism from engine to transmission		Engine-clutch-transmission							Engine-fluid coupling-transmission		
	Reduction ratio from engine to transmission		1.000							2.00 (Stall torque ratio)		
	Type		Dry, single disc diaphragm							Three-element, single-stage, 2-phase		
	Operation method		Mechanically-operated type							Hydraulically-operated type		
	Facing	Dimensions mm (inch) [outer dia. × inner dia.]	170 × 110 (6.69 × 4.33)		190 × 132 (7.48 × 5.2)					—		
		Material	Woven molded (asbestos-free)							—		
Trans-mission	Type	Forward	Constant-mesh type							Six-position in-line (with over drive switch)		
		Reverse	Selective sliding type									
	Operation method		Floor shift type									
	Gear ratio (tooth No.)	1st gear	3.090		3.090	3.181 [3.416]			3.090	2.807		
		2nd gear	1.842		1.842	1.842			1.750	1.479		
		3rd gear	1.250		1.250	1.250			1.250	1.000		
		4th gear	0.864		0.916	0.864			0.916	0.735		
		5th gear	0.707		0.750	0.707			0.750	—		
		Reverse	3.142		3.142	3.142			3.142	2.769		
Final reduction gear	Type		Conventional type									
	Gear type		Helical gear									
	Reduction ratio		4.933 <4.642>		4.642	4.266 *3.647			4.266	3.853		
Differen-tial gear	Housing type		Integral with transmission case									
	Gear type and number		Straight bevel gear, 2-large, 2-small									

[ ] : Australian specifications
< > : Australian and General specifications with those for cold area
* : Option for except Australian specifications and European specifications with G200LS-FMGE and G200RV-YMDE.

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(2)

Item			5-Door G202 GMDS	G200 GMDS	G200 GMGS	G200 GMDE	G200 GMGE	G200 GPDS	G200 GPGS	G200 GPDE	G200 GPGE
Clutch	Mechanism from engine to transmission		Engine-clutch-transmission					Engine-fluid coupling-transmission			
Clutch	Reduction ratio from engine to transmission		1.000					2.00 (Stall torque ratio)			
Clutch	Type		Dry single disc diaphragm					Three-element, single-stage, 2-phase			
Clutch	Operation method		Mechanically-operated type					Hydraulically-operated type			
Clutch	Facing	Dimensions mm (inch) [outer dia. × inner dia.]	170 × 110 (6.69 × 4.33)	190 × 132 (7.48 × 5.2)				—			
Clutch	Facing	Material	Woven molded (asbestos-free)					—			
Trans-mission	Type	Forward	Constant-mesh type					Six-position in-line (with over drive switch)			
Trans-mission	Type	Reverse	Selective sliding type								
Trans-mission	Operation method		Floor shift type								
Trans-mission	Gear ratio (tooth No.)	1st gear	3.090	3.090		3.181 [3.416]		2.807			
Trans-mission	Gear ratio (tooth No.)	2nd gear	1.842	1.842		1.842		1.479			
Trans-mission	Gear ratio (tooth No.)	3rd gear	1.250	1.250		1.250		1.000			
Trans-mission	Gear ratio (tooth No.)	4th gear	0.864	0.916		0.864		0.735			
Trans-mission	Gear ratio (tooth No.)	5th gear	0.707	0.750		0.707		—			
Trans-mission	Gear ratio (tooth No.)	Reverse	3.142	3.142		3.142		2.769			
Final reduction gear	Type		Conventional type								
Final reduction gear	Gear type		Helical gear								
Final reduction gear	Reduction ratio		4.933 <4.642>	4.642		4.266 *3.647		3.853			
Differen-tial gear	Housing type		Integral with transmission case								
Differen-tial gear	Gear type and number		Straight bevel gear, 2-large, 2-small								

[ ] : Australian specifications
< > : Australian and General specifications with those for cold area
* : Option for except Australian specifications and European specifications with G200RS-GMGE and G200LS-GMGE.

GSM00019-00000

(3)

Item			Vehicle model	3-Door										
				G202		G200				G201	G200		
				FMDS	YMDS	FMDS	FMDE	FMGE	YMDE	FMSE	FPDS	FPDE	FPGE
Running system	Front axle	Type		Ball joint type									
		Toe-in mm (inch)		1 (0.039)									
		Camber		0° 20′									
		Caster		1° 55′									
		King-pin inclination angle		12°									
		Trail mm (inch)		9.0 (0.35)									
	Rear axle	Toe-in mm (inch)		1 (0.039)									
		Camber		−40′									
	Tire	Type	Front wheel	*6.15 - 13 145/80R13 155/80R13		155/80R13 175/60R14		165/65R14 165/70R13		175/60R14	145/80R13 155/80R13 165/70R13		
			Rear wheel										
		Rim	Front wheel	13 × 4.5J [13 × 5J]		13 × 4.5J [13 × 5J, 14 × 5J]				14 × 5J	13 × 4.5J [13 × 5J]		
			Rear wheel										

* General specifications
[ ]: Option for G200 and G201

GSM00020-00000

(4)

Item			Vehicle model	5-Door									
				G202	G200								
				GMDS	GMDS	GMGS	GMDE	GMGE	GPDS	GPGS	GPDE	GPGE
Running system	Front axle	Type		Ball joint type								
		Toe-in mm (inch)		1 (0.039)								
		Camber		0° 20′								
		Caster		1° 55′								
		King-pin inclination angle		12° 0′								
		Trail mm (inch)		9.0 (0.35)								
	Rear axle	Toe-in mm (inch)		4 (0.157)								
		Camber		−40′								
	Tire	Type	Front wheel	6.15 - 13 145/80R13 155/80R13	155/80R13 175/60R14		165/65R14 165/70R13		145/80R13 155/80R13 165/70R13			
			Rear wheel									
		Rim	Front wheel	13 × 4.5J [13 × 5J]	13 × 4.5J [13 × 5J, 14 × 5J]							
			Rear wheel									

GSM00021-00000

LAMP SPECIFICATIONS

Lamp \ Item			Wattage	Remarks
Headlamp	Bulb specifications	Halogen	55/60	
Front		Clearance lamp	5	
		Turn signal lamp	21	
Side turn signal lamp			5	
Rear combination lamp		Stop/tail lamp	21/5	
		Tail lamp (only vehicles equipped with rear fog lamp)	5	
		Turn signal lamp	21	
		Back-up lamp	21	
		Rear fog lamp	21	
License plate lamp			5	
Room lamp (Interior light)			10	
Spot lights (Inside mirror)			3.6	
Luggage lamp			5	
High-mount stop lamp			21	

GSM00022-00000

MAIN SERVICE SPECIFICATIONS (1)

Vehicle model / Item		3-Door									
		G202		G200				G201	G200		
Item		FMDS	YMDS	FMDS	FMDE	FMGE	YMDE	FMSE	FPDS	FPDE	FPGE
Tire inflation pressure kPa (kgf/cm², psi)	Tire size	6.15 - 13		145/80R13		155/80R13	175/60R14		165/65R14	165/70R13	
	Front	180 (1.8, 26)		180 (1.8, 26) 200 (2.0, 29) AUS		180 (1.8, 26)	180 (1.8, 26)		180 (1.8, 26)	180 (1.8, 26)	
	Rear	180 (1.8, 26)		180 (1.8, 26) 200 (2.0, 29) AUS		180 (1.8, 26)	180 (1.8, 26)		180 (1.8, 26)	180 (1.8, 26)	
Spare tire inflation pressure kPa (kgf/cm², psi)		420 (4.2, 60)									
Wheel nuts tightening torque N·m (kgf-m)		88.2 - 117.6 (9 -12)									
Accelerator pedal free play mm		3 - 8									
Engine idle speed rpm	Type of engine	CB		HC-C		HC-E		HC-E	HC-C	HC-E	
	M/T	850 ± 50		850 ± 50		800 ± 50		800 ± 50	—	—	
	A/T	—		—		—		—	800 ± 50	850 ± 50	
Engine oil capacity liter	Engine type	CB		HC-C		HC-E		HD-E	HC-C	HC-E	
	F level	2.7		3.3							
	L level	1.7		2.3							
	Oil capacity when oil filter is replaced	3.0		3.5 (3.6 for oil cooler equipped model)							
	Full capacity	3.2		3.8 (3.9 for oil cooler equipped model)							
Manual transmission oil capacity	Capacity liter	2.10 - 2.25							—		
	Grade	API GL-3 or GL-4							—		
	Viscosity	SAE 75W-85 or 75W-90							—		
Automatic transmission oil capacity	Capacity liter	—							6.0		
	Drain and refill	—							2.8		
	Fluid type	—							ATF DEXRON® II		
Brake fluid	Grade	FMVSS116 DOT3 or SAE J1703									
Brake pedal (while engine is running)	Free travel mm	0.5 - 2.0									
	Reserve travel mm — Without A.B.S	151									
	Reserve travel mm — With A.B.S	—		151							
Clutch pedal free travel mm		15 - 30									
Parking brake operating travel (when pulled by a force of 196.1 N (20 kgf))	Drum brake	4 - 7 notches									
	Disc brake	4 - 7 notches									
Exhaust emissionat tail pipe (Manufacturer's standard)	Idle CO Vol %	1.0 ± 0.5		1.5 ± 0.5	0.5 (Max)				1.5 ± 0.5	0.5 (Max)	
	Idle HC max. ppm	1000		1000	100				1000	100	
	Idle CO_2 min. %	—		12.1	14.0				12.1	14.0	

GSM00023-00000

(2)

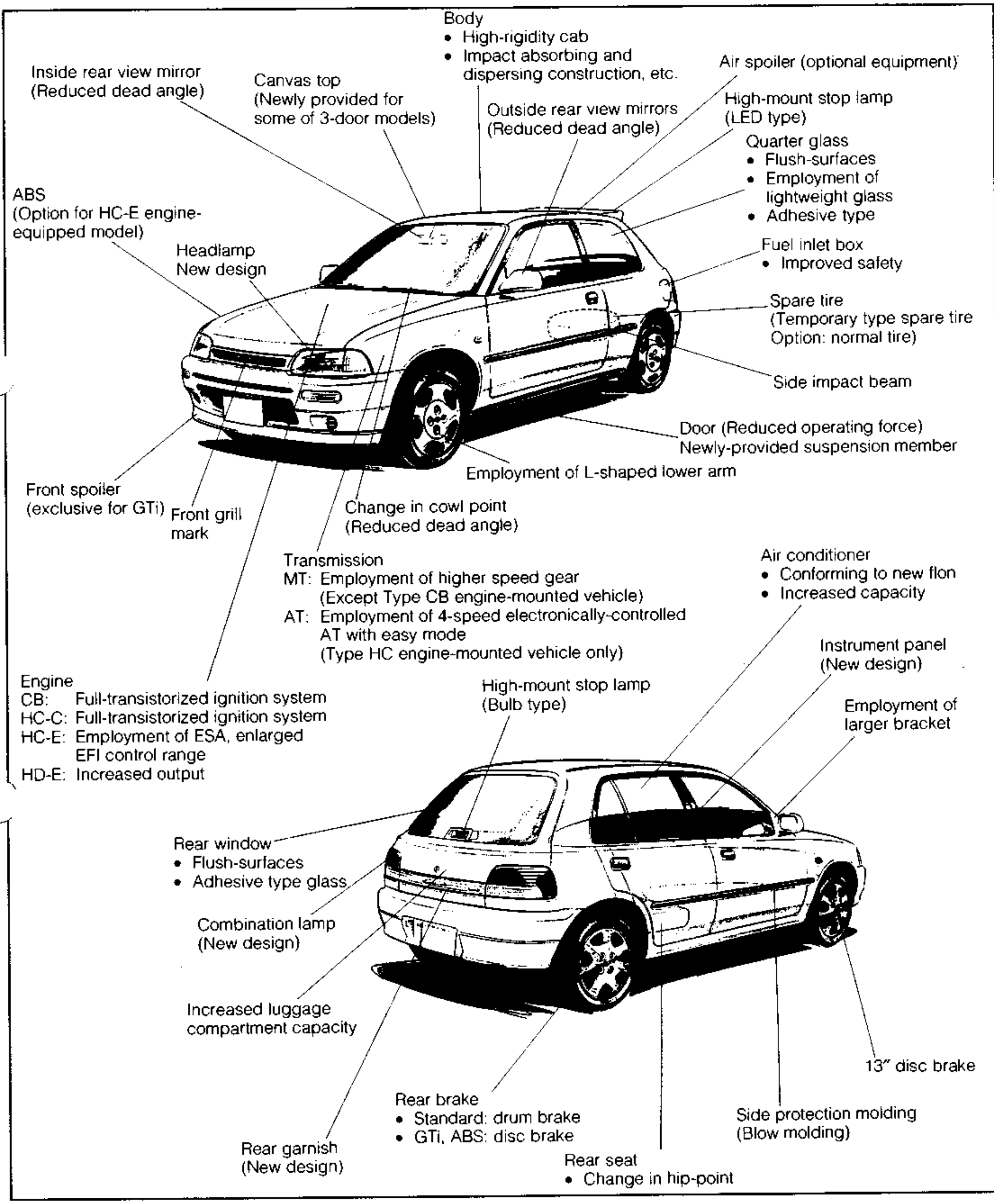
Item			Vehicle model: 5-Door								
			G202	G200							
			GMDS	GMDS	GMGS	GMDE	GMGE	GPDS	GPGS	GPDE	GPGE

Item		6.15 - 13	145/80R13	155/80R13	175/60R14	165/65R14	165/70R13
Tire inflation pressure kPa (kgf/cm², psi)	Front	180 (1.8, 26)	180 (1.8, 26) 200 (2.0, 29) AUS	180 (1.8, 26)	180 (1.8, 26)	180 (1.8, 26)	180 (1.8, 26)
	Rear	180 (1.8, 26)	180 (1.8, 26) 200 (2.0, 29) AUS	180 (1.8, 26)	180 (1.8, 26)	180 (1.8, 26)	180 (1.8, 26)

Item			GMDS (G202)	GMDS	GMGS	GMDE	GMGE	GPDS	GPGS	GPDE	GPGE
Spare tire inflation pressure kPa (kgf/cm², psi)			420 (4.2, 60)								
Wheel nuts tightening torque N·m (kgf-m)			88.2 - 117.6 (9 - 12)								
Accelerator pedal free play mm			3 - 8								
Engine idle speed rpm	Type of engine		CB	HC-C		HC-E		HC-C		HC-E	
	M/T		850 ± 50	850 ± 50		800 ± 50		—		—	
	A/T		—	—		—		800 ± 50		850 ± 50	
Engine oil capacity liter	Engine type		CB	HC-C		HC-E		HC-C		HC-E	
	F level		2.7	3.3							
	L level		1.7	2.3							
	Oil capacity when oil filter is replaced		3.0	3.5 (3.6 for oil cooler equipped model)							
	Full capacity		3.2	3.8 (3.9 for oil cooler equipped model)						—	
Manual transmission oil capacity	Capacity liter		2.10 - 2.25							—	
	Grade		API GL-3 or GL-4							—	
	Viscosity		SAE 75W-85 or 75W-90							—	
Automatic transmission oil capacity	Capacity liter		—							6.0	
	Drain and refill		—							2.8	
	Fluid type		—							ATF DEXRON® II	
Brake fluid	Grade		FMVSS116 DOT3 or SAE J1703								
Brake pedal (while engine is running)	Free travel mm		0.5 - 2.0								
	Reserve travel mm	Without A.B.S	151								
		With A.B.S	—	151							
Clutch pedal free travel mm			15 ~ 30								
Parking brake operating travel (when pulled by a force of 196.1 N (20 kgf))	Drum brake		4 - 7 notches								
	Disc brake		4 - 7 notches								
Exhaust emissionat tail pipe (Manufacturer's standard)	Idle CO Vol %		1 ± 0.5	1.5 ± 0.5		0.5 (Max)					
	Idle HC max. ppm		1000	1000		100					
	Idle CO_2 min. %		—	12.1		14.0					

GSM00024-00000

MAIN MODIFICATION POINTS COMPARED WITH FORMER MODEL



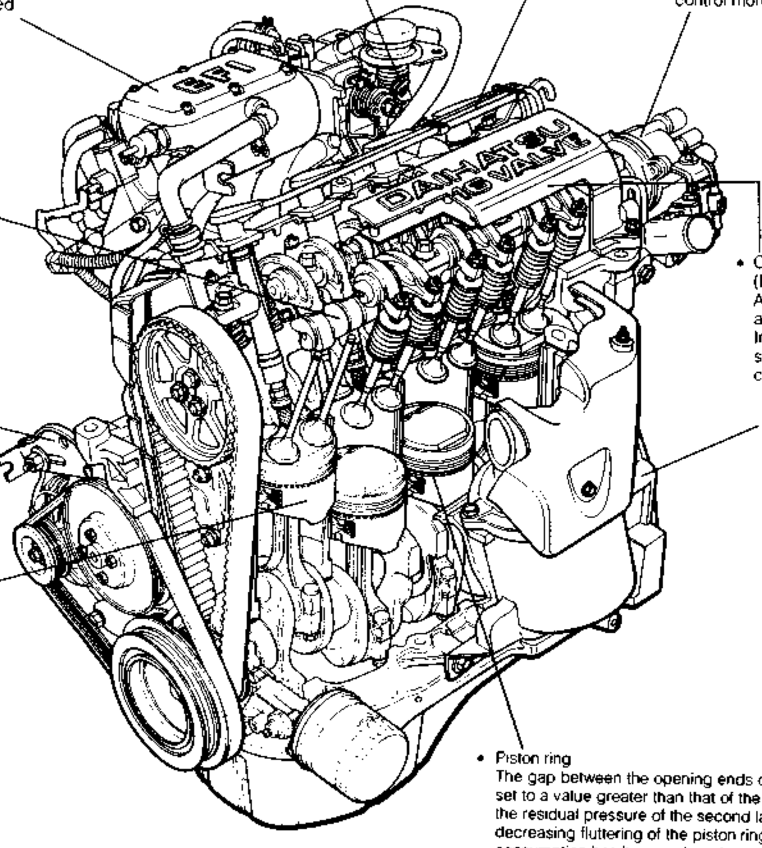
NOTE:

- This chart describes the main modification points only.
- For details, refer to the data at the end of each section of the service manual.

GSM00025-99999

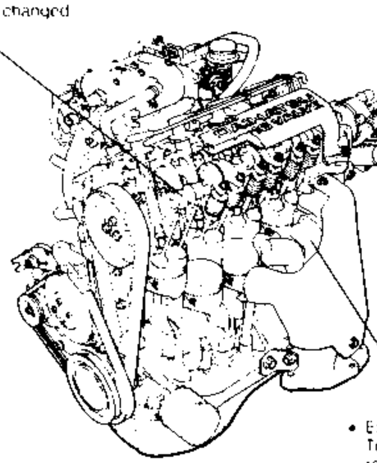
ENGINE

- Intake manifold
  To improve the axial torque output characteristics at a normal range, the distance from the air cleaner to the throttle body has been shortened, thus preventing intake air surging during the inertia supercharging. Consequently, the output characteristics of the axial torque have been improved to have a wider flat range. As a result of these modifications, the intake manifold, throttle body and air cleaner have been changed.
- Throttle lever
  For improved operation feeling, a nonlinear link has been employed.
- A 5 mm-dia. coil type resistive cord for high-frequency noise protection has been employed.
- Distributor
  The distributor has been changed from a full-transistorized type to an ESA type so as to perform the ignition timing control more ideally.
- Camshaft
  For enhanced output characteristics during the normal rotation range, the profile of the camshaft has been changed to a low-speed torque type.
- Adjusting bar
  The adjusting bar has been changed to a belt tension adjustable type by means of an SST.
- Cylinder head cover
  (EFI-equipped engine only)
  A PCV valve has been adopted at the blow-by gas hose side. In line with this modification, the shape of the cylinder head cover has been changed.
- Cylinder block
  For improved rigidity, the arrangement of ribs has been changed. Moreover, for improved joint rigidity relative to the transmission case, the number of the bolts connecting the transmission case has been increased from four to five. Furthermore, the number of the knock pins has been increased so as to prevent the center of the engine from being deviated from that of the transmission.
- Piston
  To reduce piston slap noise, the piston-to-cylinder clearance has been decreased and also piston profile has been changed.

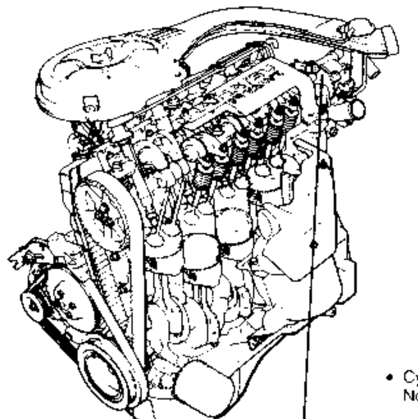


- Piston ring
  The gap between the opening ends of the piston ring No. 1 has been set to a value greater than that of the piston ring No. 2. Consequently, the residual pressure of the second land has been reduced, thus decreasing fluttering of the piston rings. As a result, the oil consumption has been reduced.
- Second ring
  For reduced oil consumption, a cutout section has been added, thus improving the oil scraping characteristics.
- Oil ring
  For deduced oil consumption thin width type oil ring has been employed. Moreover, for reducing the mechanical loss of the engine, expansion rate of oil ring has been reduced.

- Camshaft
  For a higher output, the profile of the camshaft has been changed.



- Exhaust manifold
  To reduce the exhaust resistance, a pipe type exhaust manifold has been adopted.



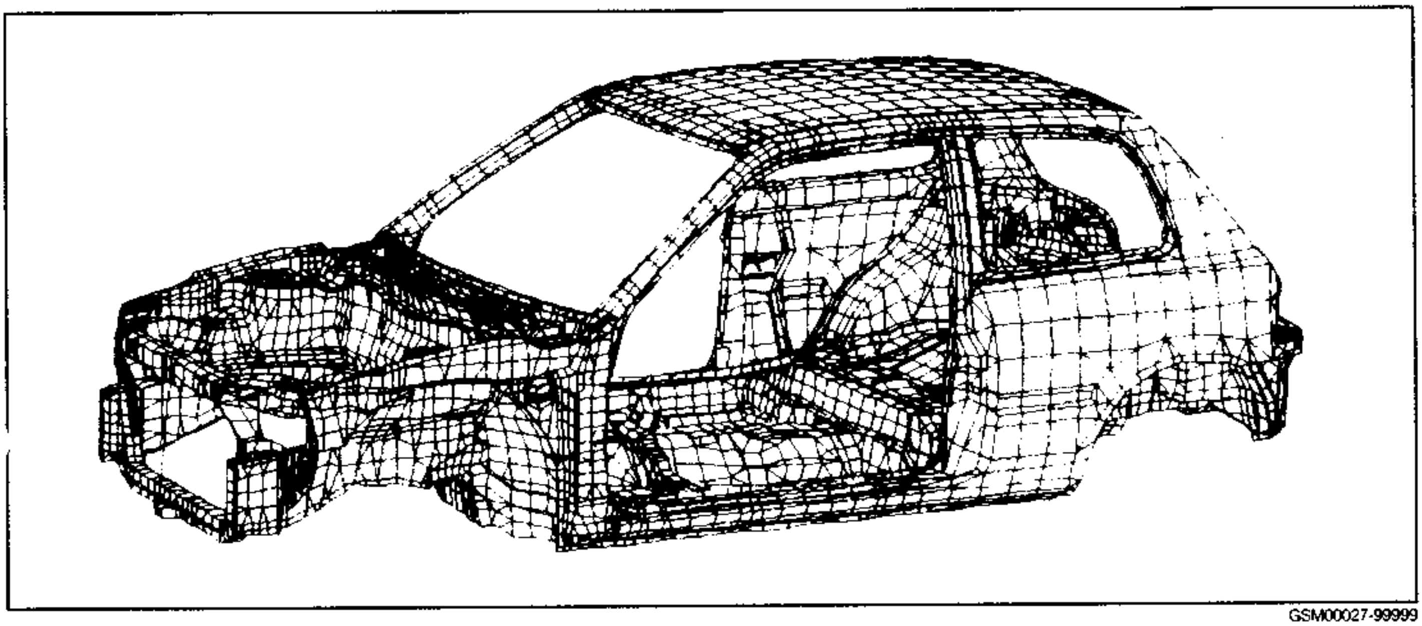
- Cylinder head cover
  No change has been made.
- Distributor
  To make the distributor maintenance-free, a full transistorized type distributor has been adopted.
  (Including Type CB engine)

GSM00026-99999

BODY

1. Safety

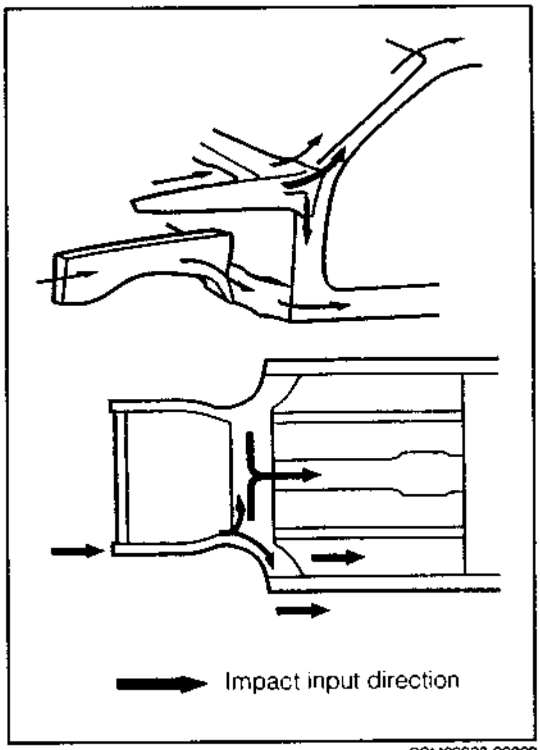
(1) Collision safety



GSM00027-99999

The impact absorbing and dispersing body construction, which consists of a high-rigidity cab and a crushable body, has improved the impact absorbing characteristics against the frontal collision by 30%, compared with the former type. This body has complied with the Federal Motor Vehicle Safety Standards (occupant injury scale) which is the most stringent standard in the world.

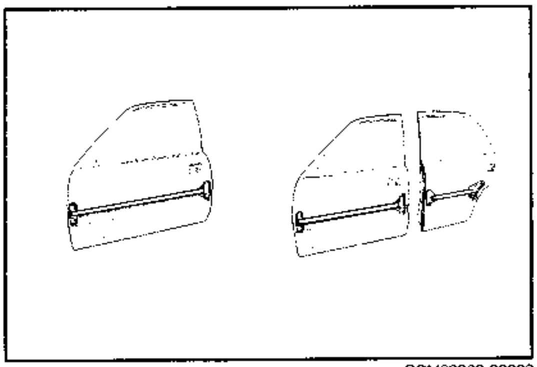
The impact absorbing and dispersing body means a body whereby the impact input by collision can be effectively dispersed to the high-rigidity cab by proper arrangement of body members. In this way, the degree of the deformation of the cab (vehicle compartment) has been reduced.



GSM00028-99999

(2) Transverse collision safety

For enhanced transverse collision safety, the steel pipe side impact beam having a tension of 1471N (150 kgf) has been employed.



GSM00029-99999

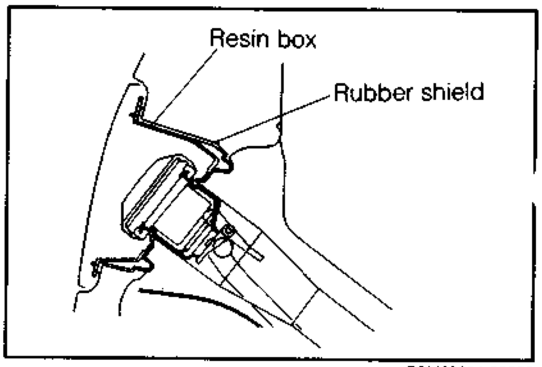
(3) Employment of lock reinforcement

To increase the retention strength of the lock, the door lock section has been reinforced.

GSM00030-00000

(4) Fuel inlet box

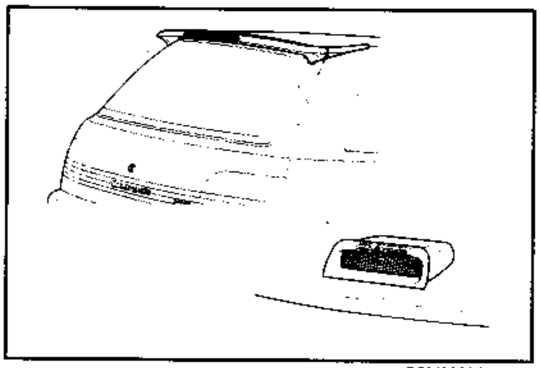
For enhanced safety, a rubber shield has been provided around the resin box so that the fuel system may be separated from the vehicle interior in the event of collision breakage.



GSM00031-99999

(5) High-mount stop lamp (Except European specifications)

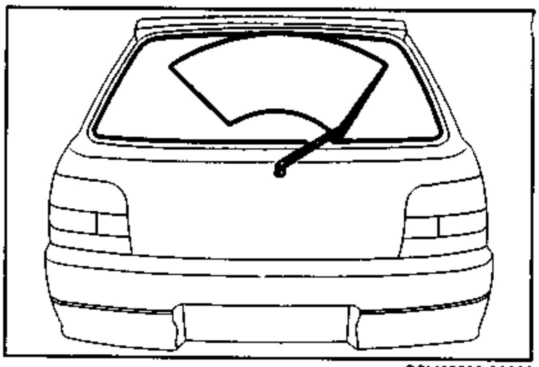
The high-mount stop lamp comes in two kinds: In one type, the stop lamp is placed in the back window. The other is a roof end spoiler built-in type. On vehicles with the general specifications, the high-mount stop lamp is optional equipment. On vehicles with the Australian specifications, the type in which the stop lamp is placed in the back window is standard equipment, whereas the roof end spoiler built-in type is optional equipment.



GSM00032-99999

(6) Rear wiper

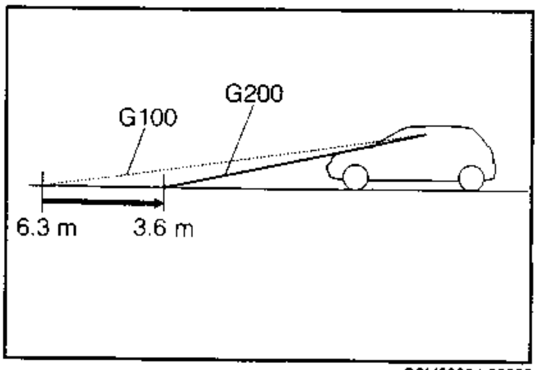
For wider rear field of vision on a rainy day, the wiping area of the wiper has been increased.



GSM00033-99999

(7) Engine hood

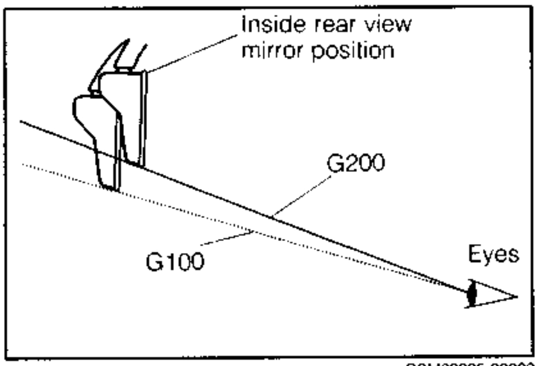
To reduce the front/lower dead angle, the engine hood hinge height has been lowered.



GSM00034-99999

(8) Inside rear view mirror

To reduce the dead angle by the inside rear view mirror, the installation height of the inside rear view mirror has been raised.



GSM00035-99999

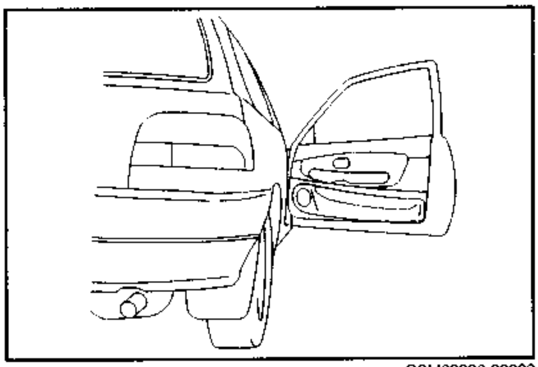
2. Easy Operation

(1) Improvement of door closing

For reduced operating force, inclined type hinges have been employed at the door hinge.

Specifications:

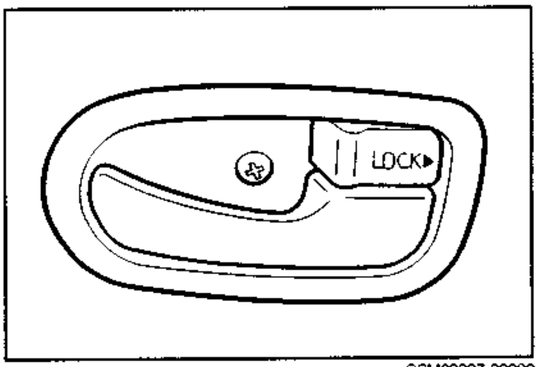
Inclination angle of front door	2.5°
Inclination angle of rear door	2.0°



GSM00036-99999

(2) Lock button integral type inside handle (3-door model only)

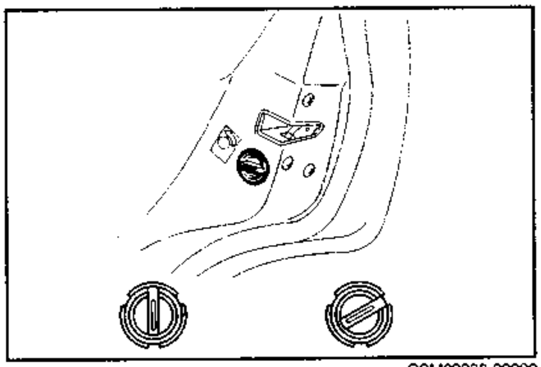
For easier operation, the locking knob has been built in the inner handle.



GSM00037-99999

(3) Rotary knob type child safety (5-door model only)

For easier operation, the child proof has been changed from the hitherto-employed lever type to a rotary knob type.

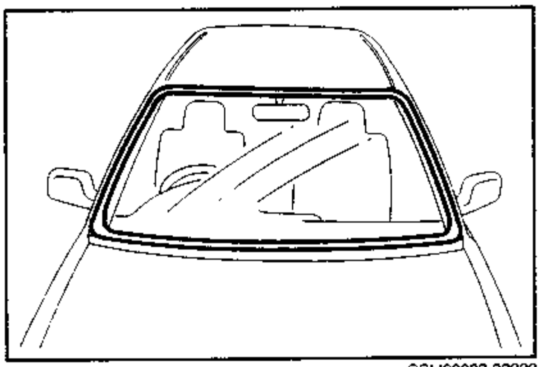


GSM00038-99999

3. Weight Reduction

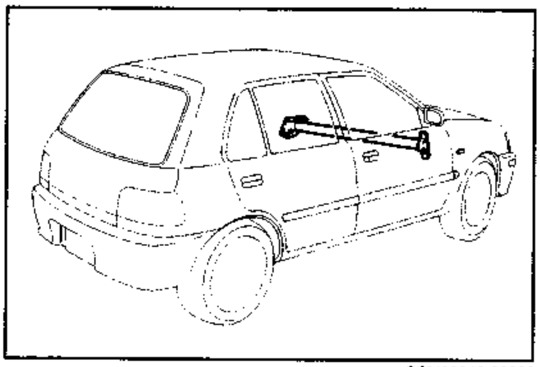
(1) Front door window glass

For reduced mass, lightweight glass has been employed.



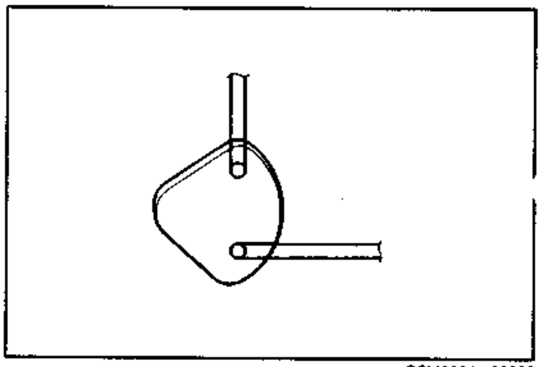
GSM00039-99999

(2) Quarter window glass (3-door model only)
For reduced mass, lightweight glass has been employed.



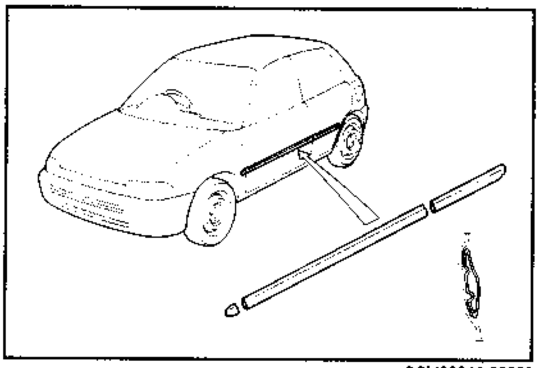
GSM00040-99999

(3) Bell crank for rear door
A resin-made one-piece type bell crank has been adopted.



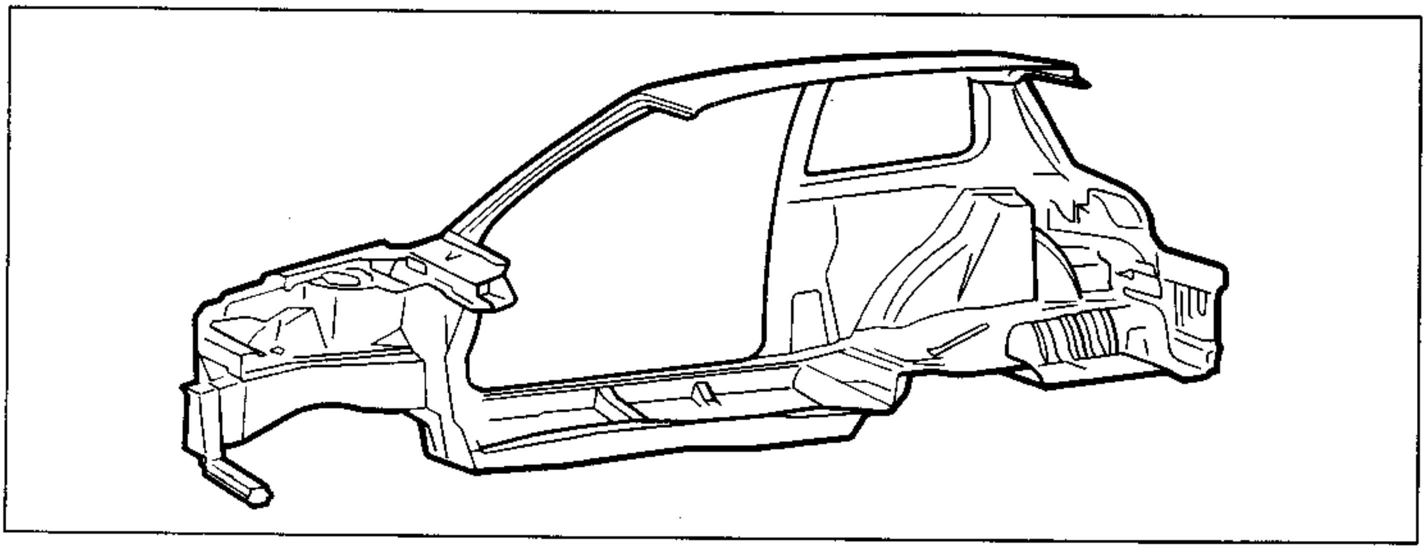
GSM00041-99999

(4) Blow-molding protection molding
For reduced mass, blow-molding protection molding has been employed.
Employment of blow molding also has made it possible to affix color film to the material adhesive protection molding simultaneously. Hence, it has become easier to respond to the color selection.



GSM00042-99999

4. Quietness

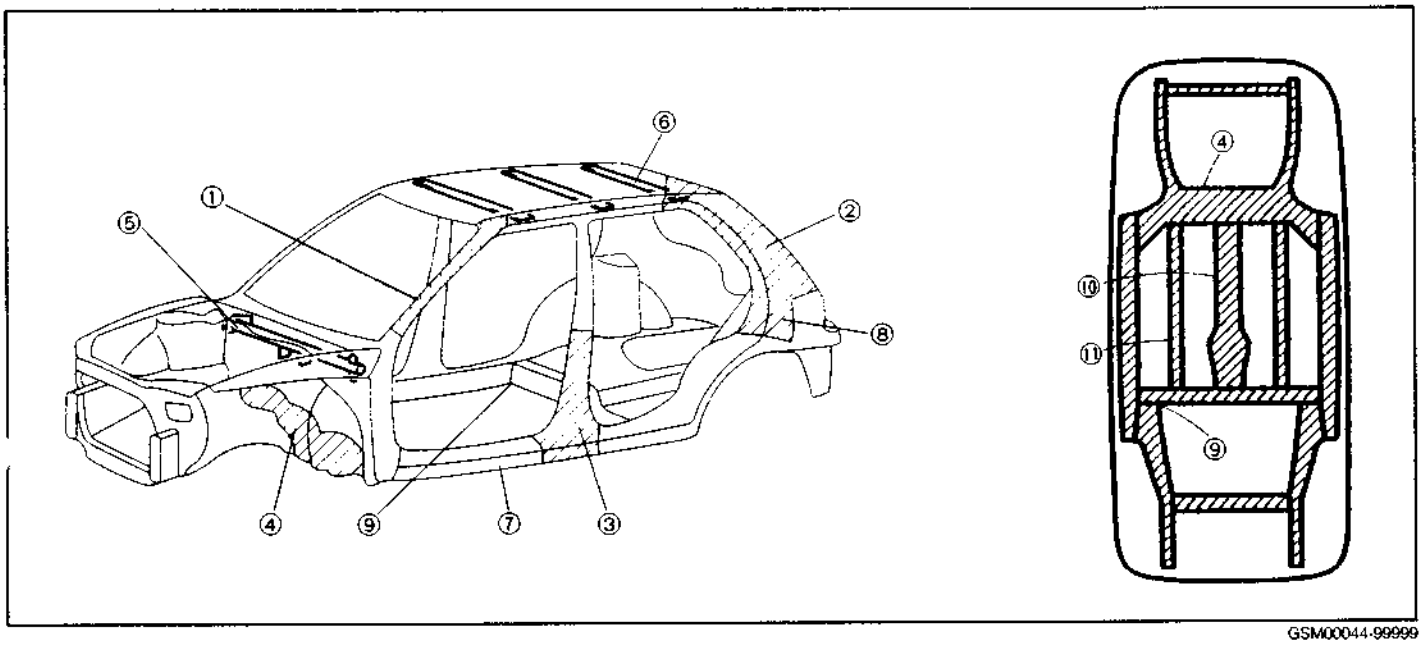


For reduced vibration, a high-rigidity cab, front suspension arms and principal axes of inertia type engine mountings have been employed. Furthermore, for reduced noise in the vehicle interior, sound-insulating materials have been used effectively.

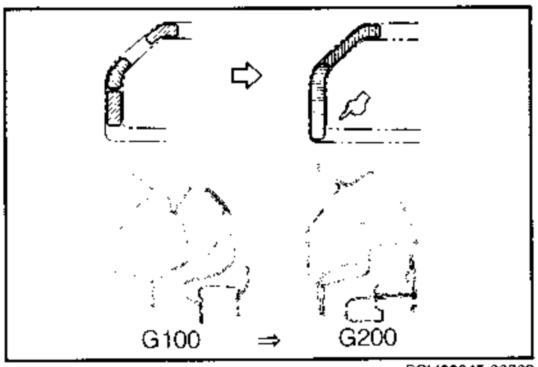
GSM00043-99999

(1) HIGH-RIGIDITY CAB

For improved rigidity of the cab, reinforcements have been added or the construction has been changed at the following sections constituting the cab.



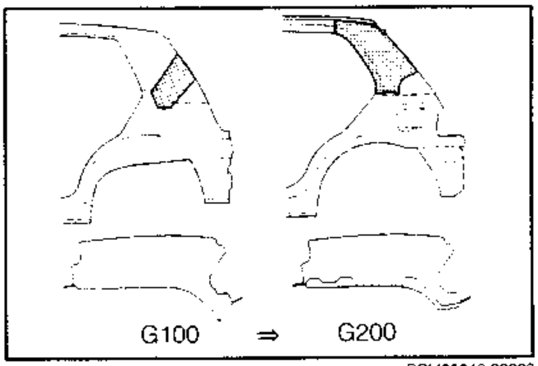
GSM00044-99999



GSM00045-99999

① **Front pillar**

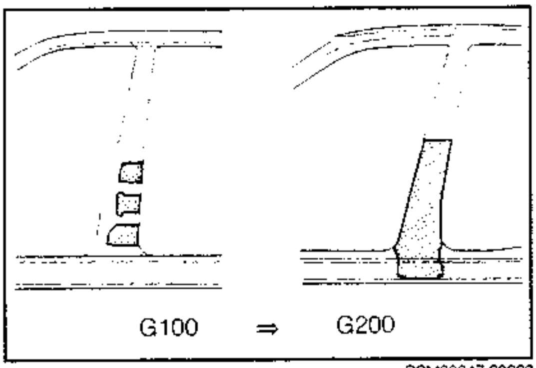
To increase the bending and twisting rigidity at the joint section, the reinforcements at the front pillar section have been modified to such a construction that they are vertically inserted into the rocker section.



GSM00046-99999

② **Rear pillar**

To increase the rigidity, a roof side inner reinforcement has been added at the rear pillar.

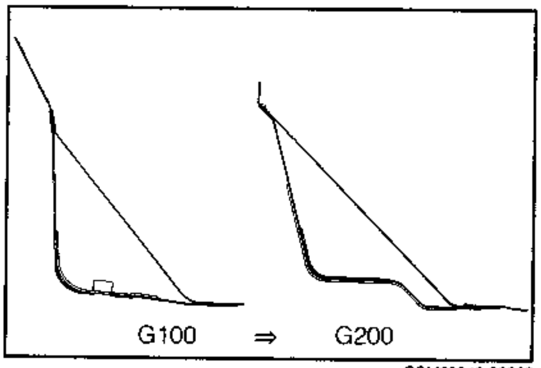


GSM00047-99999

③ **Center pillar**

To increase the bending and twisting rigidity at the joint section, the reinforcement at the center pillar section has been changed to such a construction that it is vertically inserted into the rocker section.

④ Dash crossmember
For enhanced rigidity, the sectional construction of the dash crossmember has been changed.



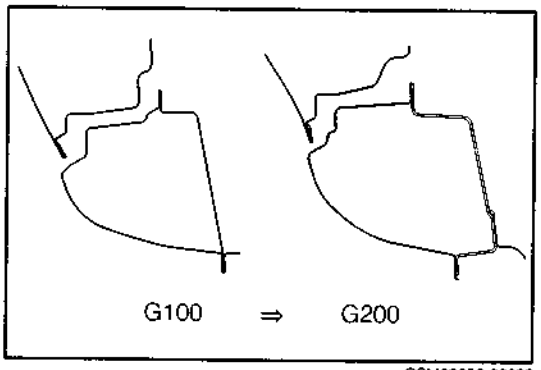
GSM00048-99999

⑤ Instrument panel reinforcement
A steel pipe type instrument panel reinforcement is provided as standard equipment on all models.

⑥ For enhanced rigidity, the number of the roof reinforcements has been changed from two to three, thus preventing the roof from drumming.

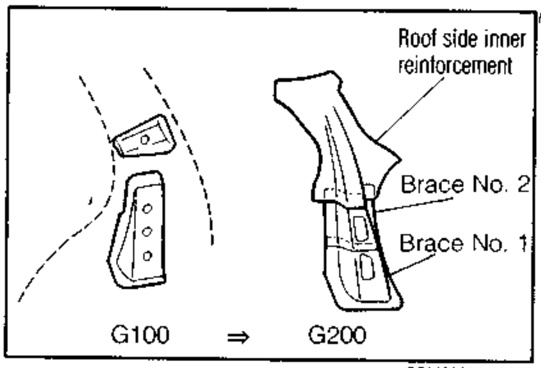
GSM00049-00000

⑦ Rocker panel
For enhanced rigidity, the sectional construction has been changed and the thickness of the plate has been increased.



GSM00050-99999

⑧ Wheel house brace
The joint of the wheel house outer brace and roof side inner reinforcement has been strengthened. Thus, the construction has been changed so that the whole rear pillar may sustain impacts from the suspension.



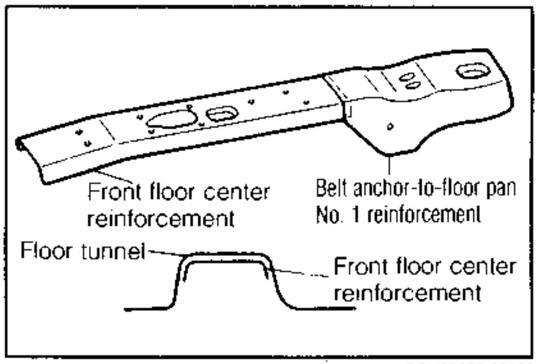
GSM00051-99999

⑨ Rear crossmember
The joint rigidity of the rear floor crossmember with the rocker panel has been increased.

GSM00052-00000

⑩ Floor tunnel reinforcement

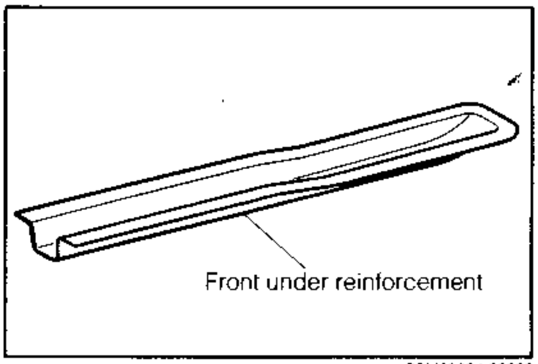
For increased rigidity, the floor tunnel reinforcement has employed a two-division type. Furthermore, for increased rigidity at the tunnel section, the front floor center reinforcement has been extended to the longitudinal wall of the tunnel.



GSM00053-99999

⑪ Floor under reinforcement

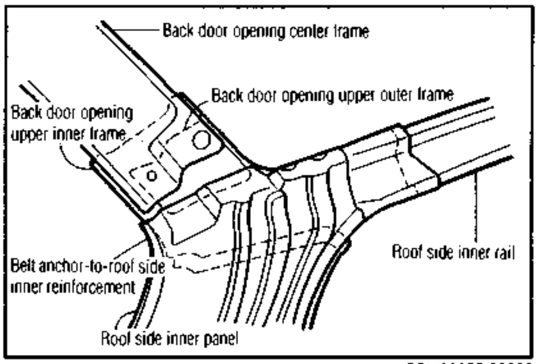
For enhanced strength and rigidity, the floor under reinforcement, which was formerly divided into the front reinforcement and rear reinforcement, has been made an integral type.



GSM00054-99999

⑫ Top of rear pillar

The roof side inner reinforcement has been provided as standard equipment. Moreover, for enhanced rigidity, a larger back door opening upper inner frame has been employed and the thickness of the steel sheet has been increased.

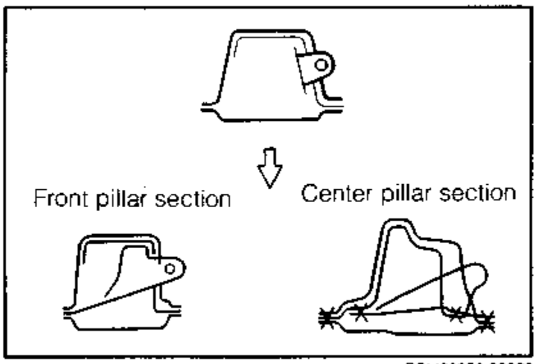


GSM00055-99999

Others

IMPROVEMENT OF INSTALLATION RIGIDITY OF CHECKER BRACKET

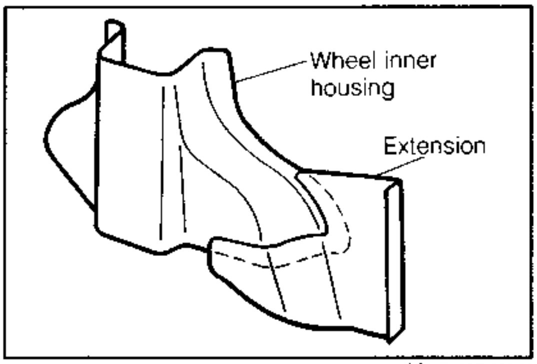
For enhanced installation rigidity, the configuration and construction of the checker bracket have been changed.



GSM00056-99999

STRENGTHENING OF JOINT BETWEEN REAR FLOOR PAN-TO- QUARTER PANEL EXTENSION AND WHEEL INNER HOUSING

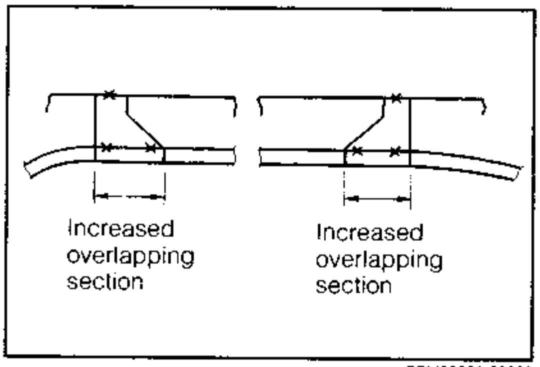
For enhanced joint and rigidity, the rear floor pan- to-quarter panel extension has been extended to the side of the wheel inner housing.



GSM00057-99999

SIDE MEMBER

The spot working hole at the side member inner joint section has been abolished. Instead, for assured rigidity, the overlapping section of the inner member has been increased.

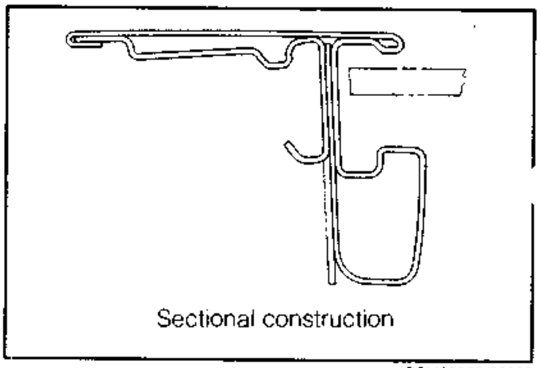


GSM00058-99999

(2) INCREASED RIGIDITY OF DOOR FRAME

① Employment of door sash having large section

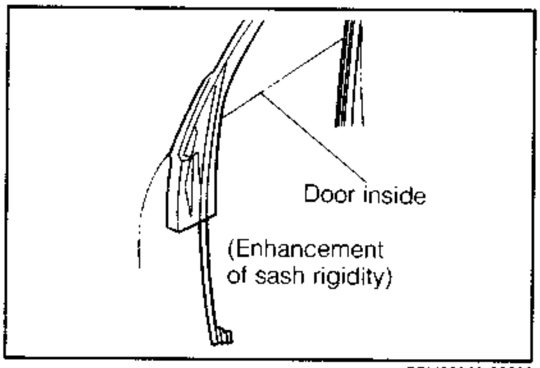
For improved rigidity at the sash section, a door sash having a large sectional construction area has been employed.



GSM00059-99999

② Employment of large triangle bracket

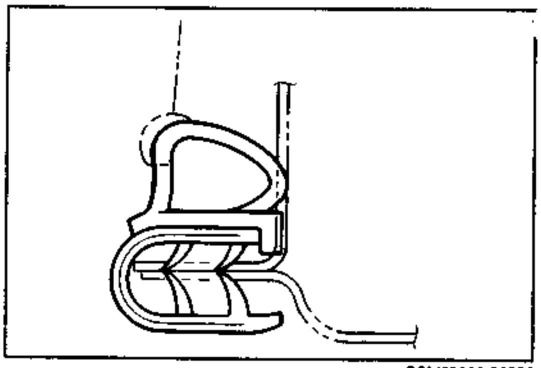
For assured assistance of sash rigidity, a large-sized triangle bracket of the front door has been adopted.



GSM00060-99999

③ Employment of three-ply seal (European specifications with HD engine equipped model only)

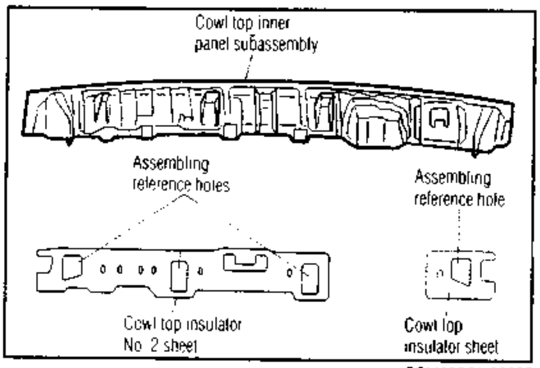
For enhanced sealing characteristics, opening weatherstrips have been provided at the front door and rear door.



GSM00000-99999

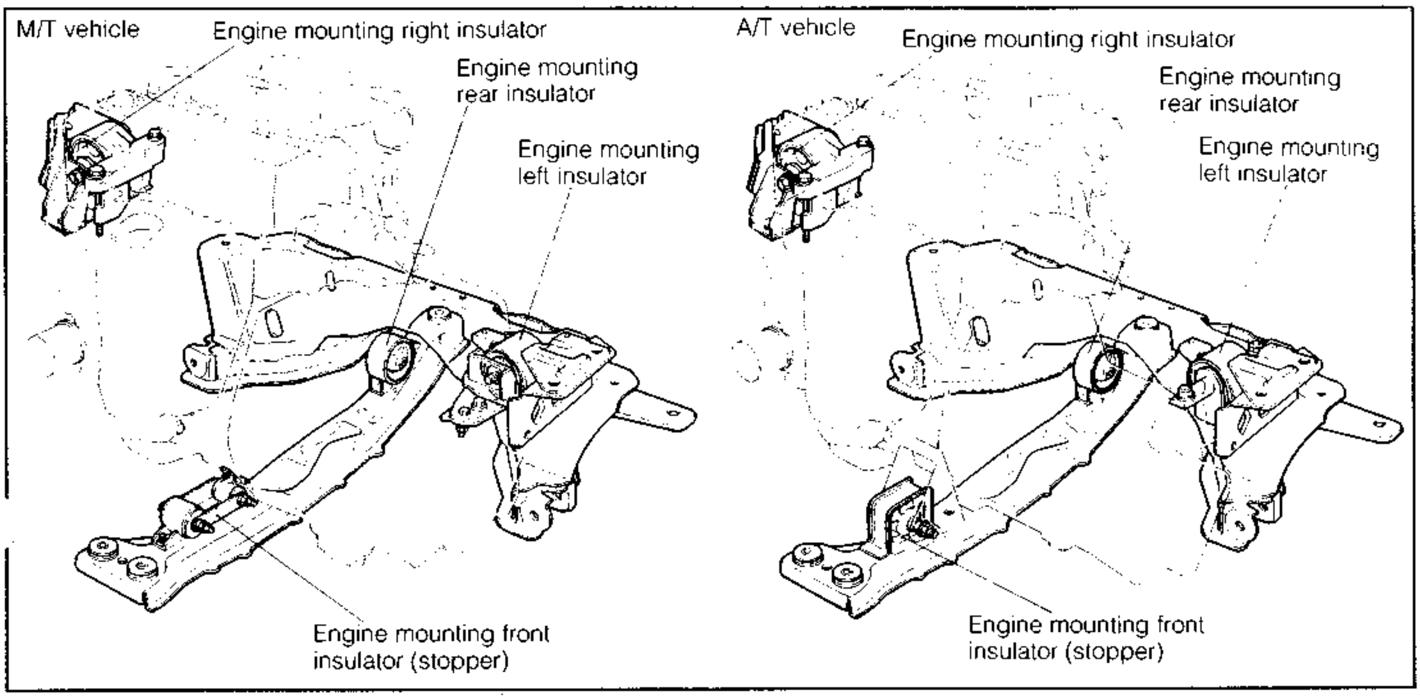
④ Addition of asphalt sheet to cowl top inner panel

To increase sound-proof effect, a cowl top insulator sheet (asphalt sheet) has been added to the cowl top inner panel subassembly.



GSM00061-99999

(3) ENGINE MOUNTINGS



The engine mounting method has been changed from a combined three-point mounting type to such a type where the engine is supported on the principal axes of inertia. This construction makes it possible to reduce vibration during the engine idling and restrict the movement in a roll direction by means of the front stopper.

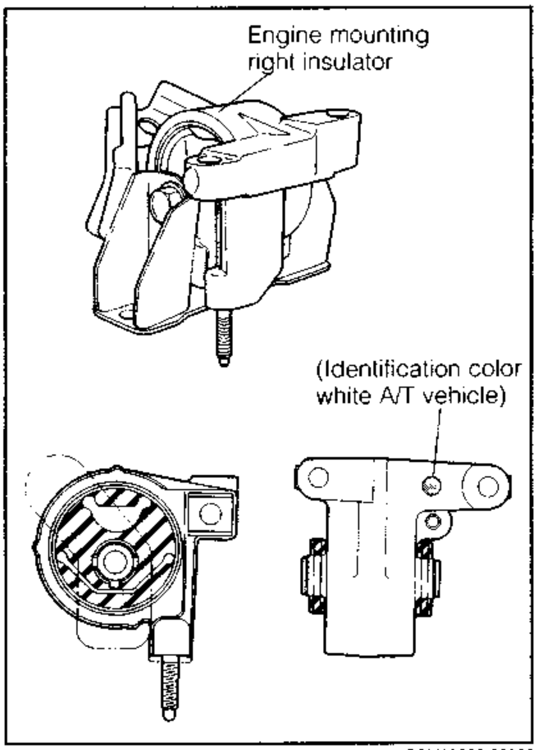
The engine rear mount and front stopper are installed to the engine support member which is installed with the bushes interposed. Thus, the engine vibration is not directly transmitted to the dash panel because of the following two vibration-proof effects; that of each part of the engine rear mount and front stopper and that of the bushes at the installation section of the engine support member. Therefore, the engine vibration is dispersed to the body through the engine support member and suspension member. Consequently, the transmitting noise to the dash panel has been reduced.

GSM00062-99999

1) **Engine mounting right insulator**

To reduce the weight, the bracket has been changed from sheet metal to aluminum casting. This has reduced the weight at the tip end of the bracket, thus increasing the rigidity.

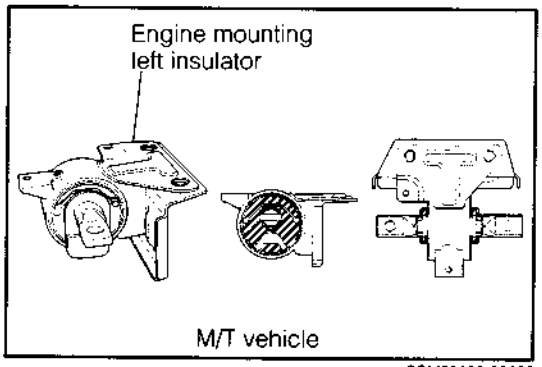
The external shape of the engine mounting right insulator is the same on both manual transmission vehicle and automatic transmission vehicle. However, rubber characteristics are different.



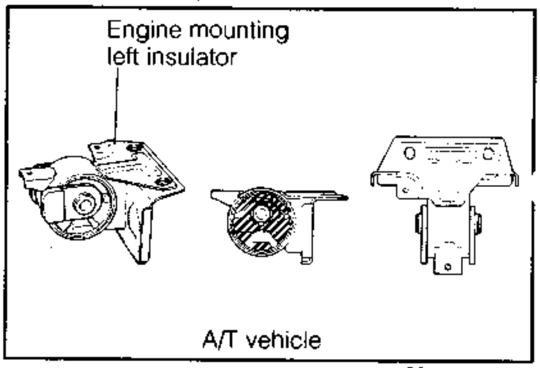
GSM00063-99999

② **Engine mounting left insulator**

This insulator differs in shape between the manual transmission vehicle and the automatic transmission vehicle owing to difference of the transmission holding section. The rubber characteristics are different, too.



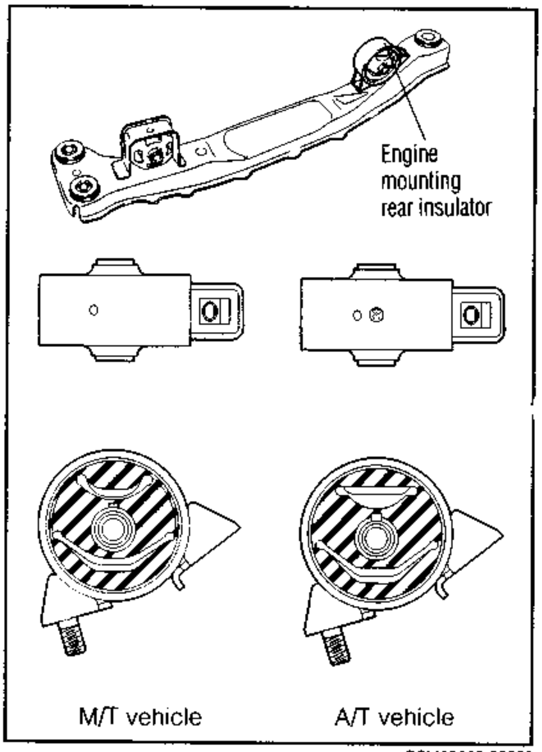
GSM00000-99999



GSM00064-99999

③ **Engine mounting rear insulator**

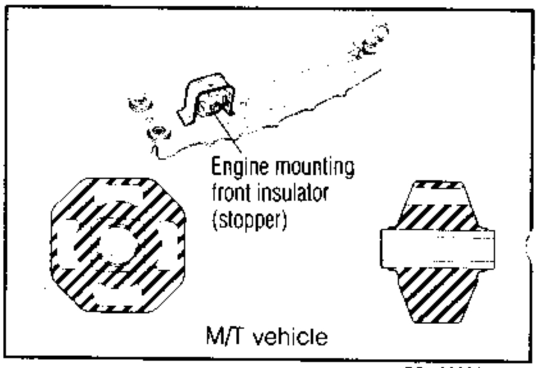
This insulator hardly differs in external shape between the manual transmission vehicle and the automatic transmission vehicle. However, the rubber characteristics are different.



GSM00065-99999

④ **Engine mounting front insulator (Stopper) (Manual transmission vehicle only)**

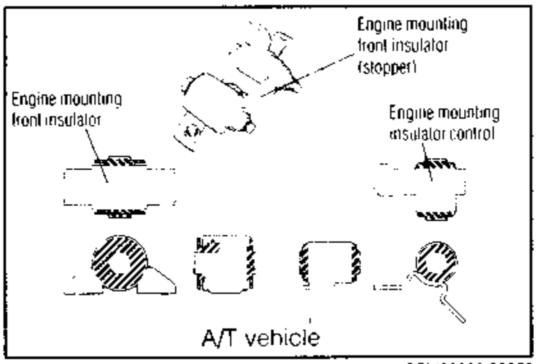
For reduced engine vibration, the engine vibration is restricted at this stopper section.



GSM00066-99999

⑤ Engine mounting front insulator (Stopper) (Automatic transmission vehicle only)

On automatic transmission vehicles, a locator has been provided at the front stopper section. The locator rod converts the engine idling vibration in an up-&- down direction during D range to the vibration in a fore-&-aft direction, which is then transmitted to the high-rigidity body. Consequently, the vibration in an up-&-down direction has been reduced at the floor and steering.



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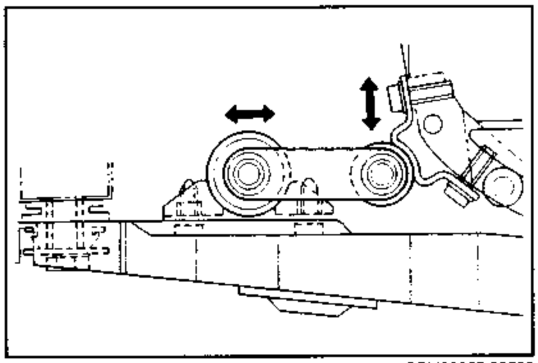
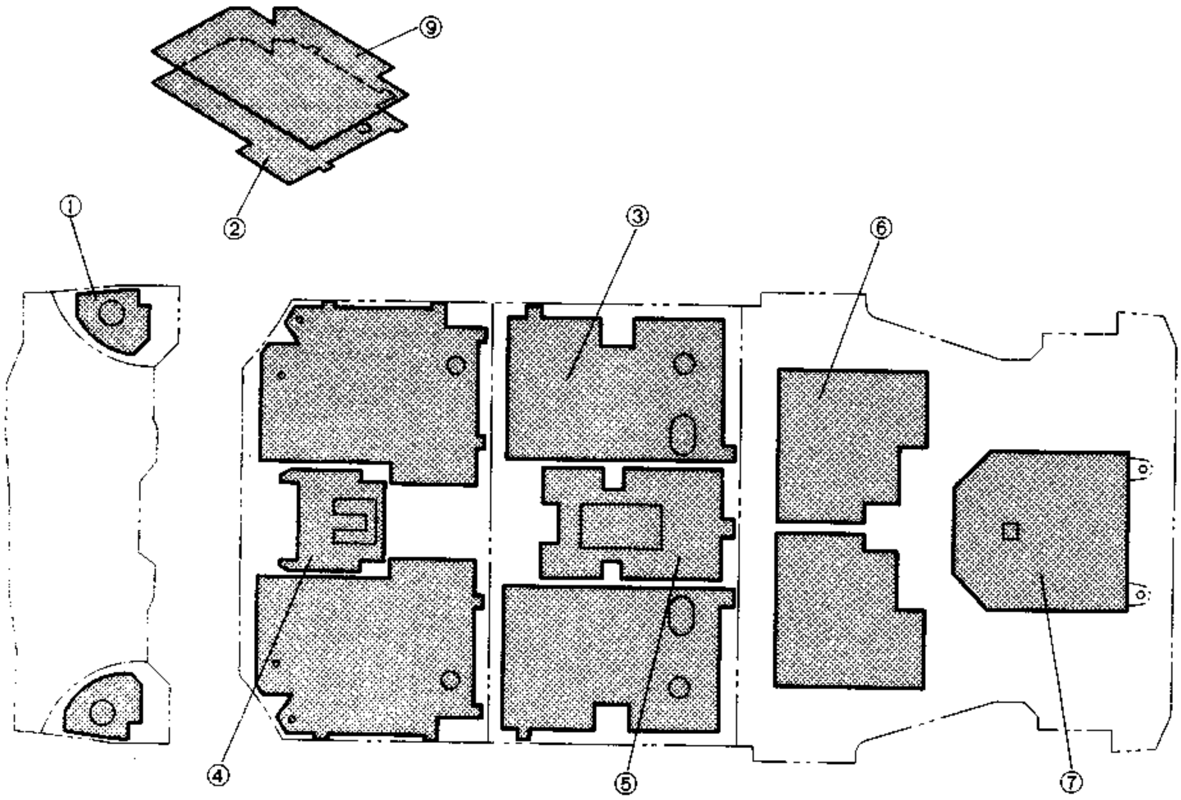


GSM00067-99999

(4) SILENCER

For reduction of vibration and noise level, insulators and silencers are affixed to the front and rear floors.



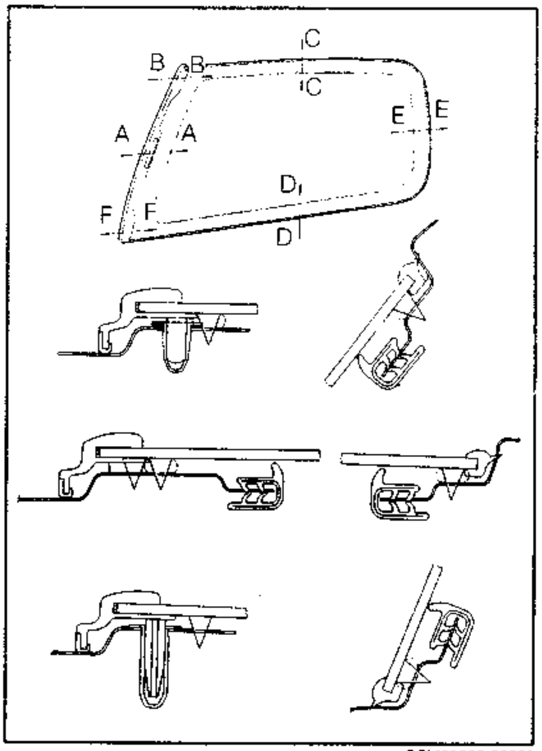
No.	Part name	
①	Asphalt sheet	Dash panel insulator No. 2 sheet
②		Front floor silencer side sheet
③		Center floor silencer side sheet
④		Front floor silencer center sheet (HD engine equipped vehicle only)
⑤		Center floor silencer center sheet (HD engine equipped vehicle only)
⑥		Rear floor silencer No. 1 sheet (HD engine equipped vehicle only)
⑦		Rear floor silencer No. 2 sheet
⑨	Felt	Front floor silencer side pad

GSM00068-99999

5. Improvement of Appearance Quality

(1) Quarter Window Glass (3-door vehicle)

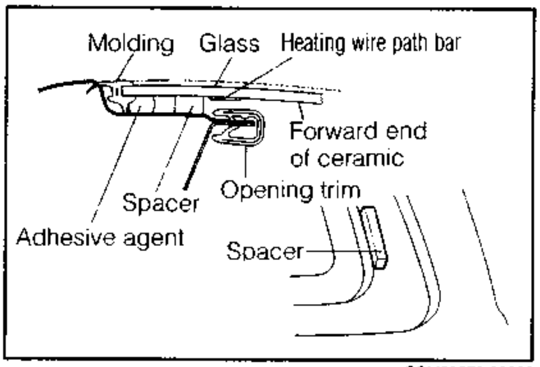
In order to provide flush vehicle surface, the quarter window glass has adopted an adhesive type using urethane adhesive agent. In addition, for improved sealing performance, a molding with a reference pin for assembling use has been newly installed at the outer periphery of the glass. To conceal the adhesive sections, ceramic treatment has been performed to the outer periphery of the window glass. An opening trim is provided at the opening flange section at the body side so as to prevent personal injuries, such as a cut at hand, by the edge section.



GSM00069-99999

(2) Back door glass

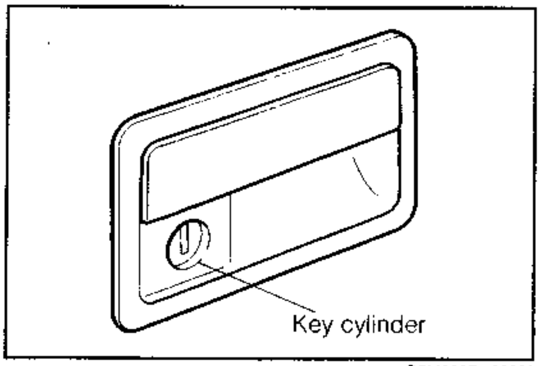
In order to provide flush vehicle surface, an adhesive type window has been employed.
Therefore, a spacer used as a reference during glass positioning has been newly installed.
To conceal the adhesive sections, ceramic treatment has been performed to the outer periphery of the window glass. An opening trim is provided at the opening flange section at the back door side.



GSM00070-99999

(3) Door outside panel

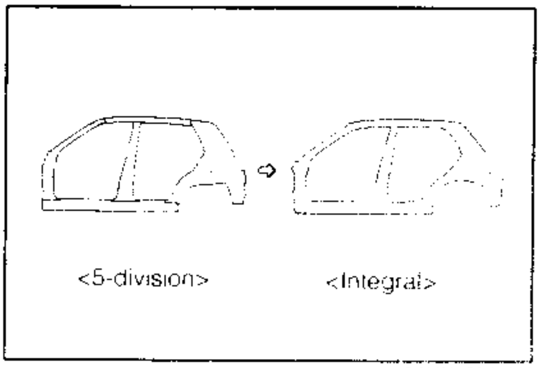
For improved appearance, the door outside handle employs a built-in type key cylinder (at the front side only).



GSM00071-99999

(4) Side outer panel

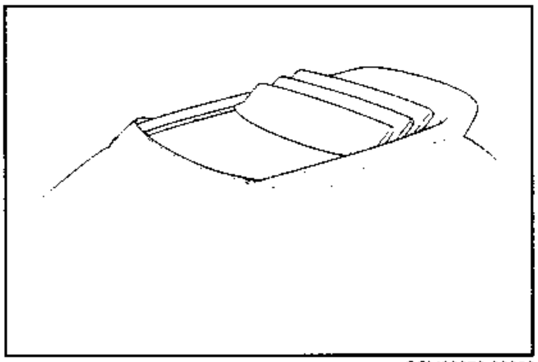
An integral type side outer panel has been employed, thereby abolishing the sealer at the joint section. As a result, the accuracy of the door opening has been improved.



6. Others

(1) Canvas top
(Optional equipment on some of 3-door vehicles)

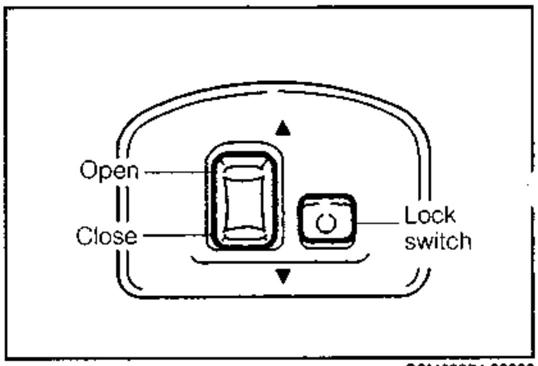
To create a sporty image, the canvas top has been made integral with a roof deflector which reduce catching- in of wind.



GSM00073-99999

① OPENING/CLOSING OF CANVAS TOP

To open the canvas top, keep pushing the "Open" side of the sliding roof switch. As for the Close side, a lock-release button is provided to prevent mis operation. To close the canvas top, push the "Close" side of the sliding roof switch, while pushing the lock-release button.



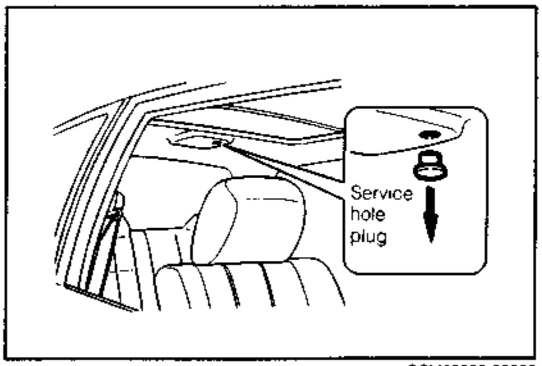
GSM00074-99993

CAUTION:
- If you continue pushing the switch even after the canvas top has been opened or closed fully, it might cause canvas top failure.
  Upon completion of the operation, make sure to immediately release your hand from the switch.
- Do not sit on the canvas top or lean on it.
- When you go away from the vehicle, make sure that the canvas top is fully-closed.
- Be careful in opening/closing of the cambas top after rain or washing the vehicle, the water droplets collected on the canvas top may drop into the vehicle interior.
- Do not open or close the canvas top during high-speed driving, for this practice may damage the canvas top.
- Do not perform the opening/closing of the canvas top during freezing period, snowfall or when the ambient temperature is below 0°C (32°F).
- Before you open the canvas top, make sure that no water or snow is present on the canvas top.

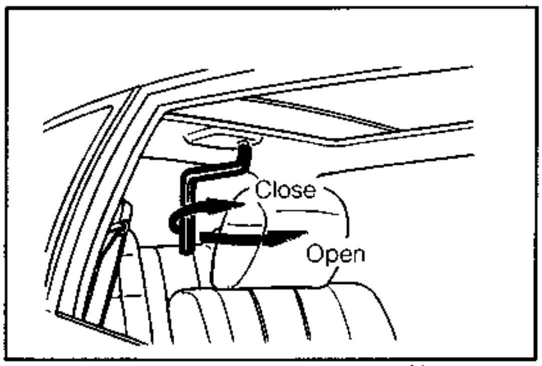
WARNING:
- When operating the switch, utmost care must be exercised to ensure that hands etc. will not be caught by the closing or opening canvas top.
- Never protrude hands or face above the opening section of the canvas top while the vehicle is moving.
- Also, do not put a long object that sticks out from the vehicle.
  It may lead to an accident.

NOTE:
- For important information on cleaning and caring for your canvas top, refer to "Canvas Top Care" in Section 12.

② OPENING/CLOSING IN EVENT OF SWITCH FAILURE
Set the ignition switch to the lock position. Remove the service hole plug.
Now, you can get access to the hexagonal hole at the lower end of the drive shaft at the roof side where the service hole plug has been removed. Insert the exclusive-use handle (hexagonal wrench) furnished with the vehicle into the hexagonal hole. The canvas top is closed when you turn the handle clockwise. Conversely, the canvas top is opened when the handle is turned counterclockwise.

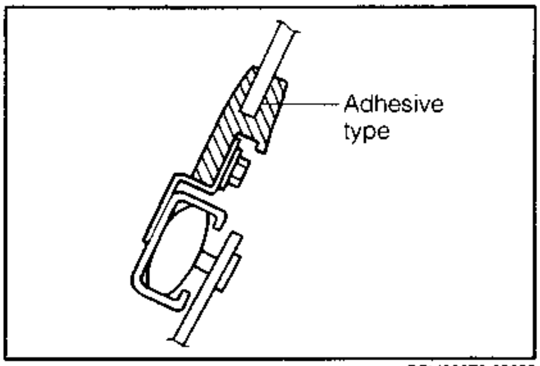


GSM00000-99999



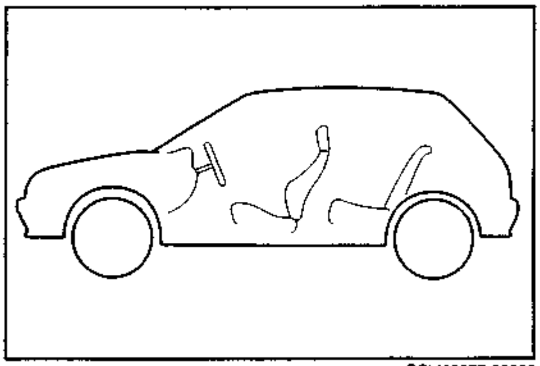
GSM00075-99999

(2) Front door glass holder
For improved reliability of the holder, the front door glass holder has been switched from the rubber caught-in type to the adhesive type.



GSM00076-99999

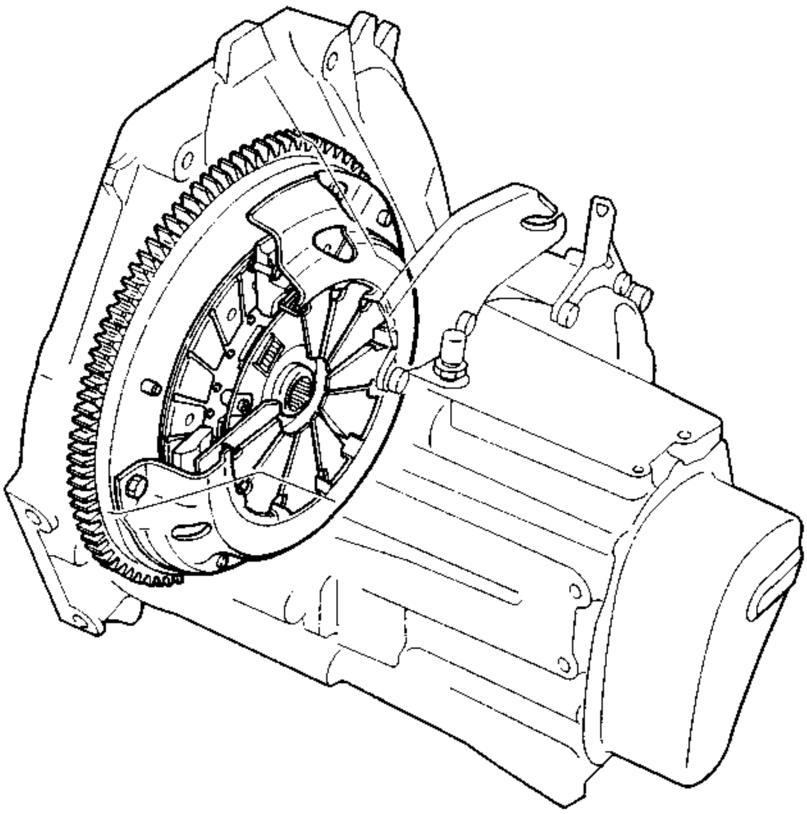
(3) Rear seat hip-point
The hip-point of the rear seat has been raised 20 mm (0.78 inch). This has improved roomy feeling of the vehicle interior in combination of the reduced engine hood hinge height.


GSM00077-99999

POWER TRAIN

CLUTCH

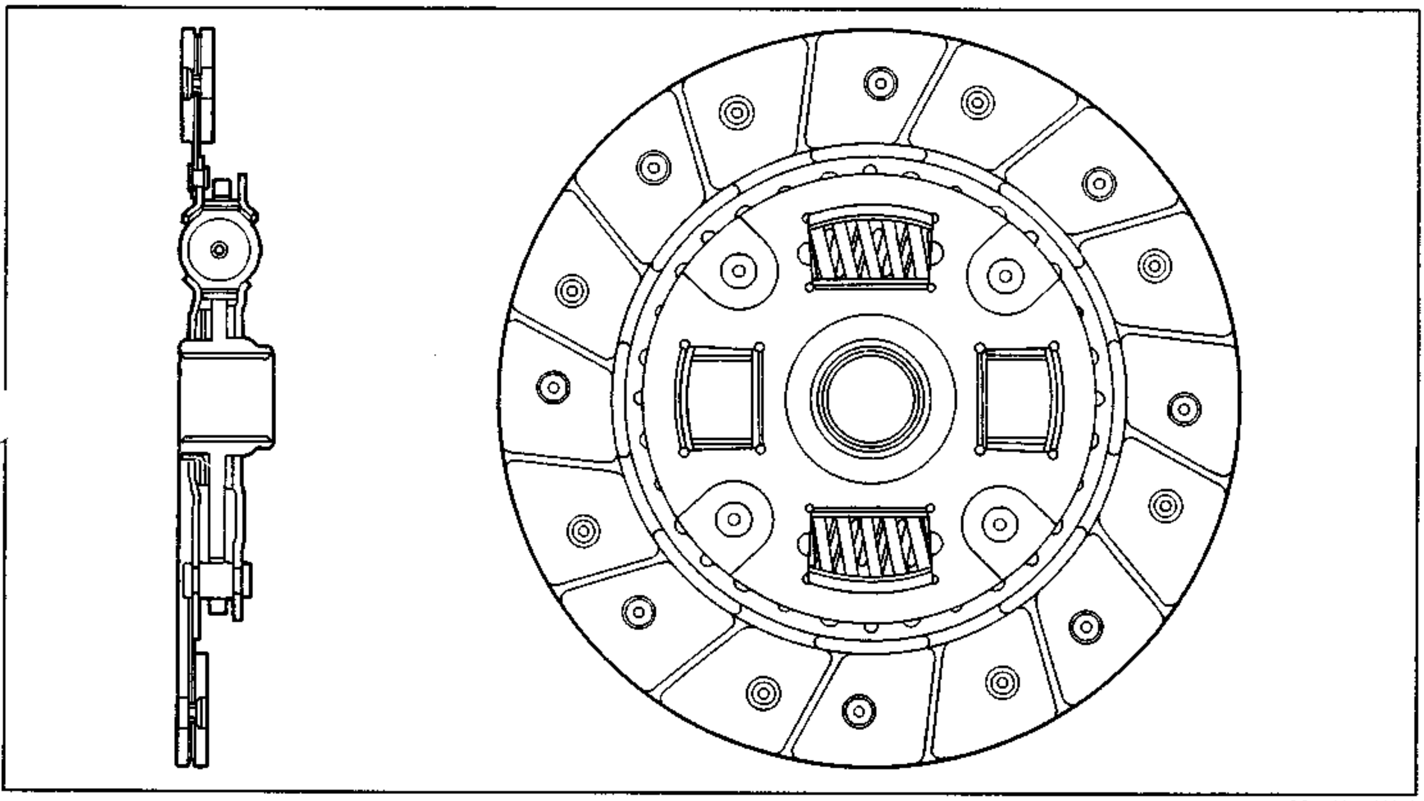
The clutch is a dry single-disc type, as is the case with the hitherto-employed one. However, the clutch capacity has been increased about 10 percent, compared with the former type, thus improving the wear-resistance of the clutch facing as well as feeling at the time of engagement. (HC series engine equipped vehicle)



GSM00078-99999

Clutch disc

For reduced engine transmitting noise, the maximum twisting angle and twisting rigidity of the clutch disc have been increased. Moreover, JD-8 (asbestos-free type) has been employed for the facing material so as to improve anti- juddering performance.



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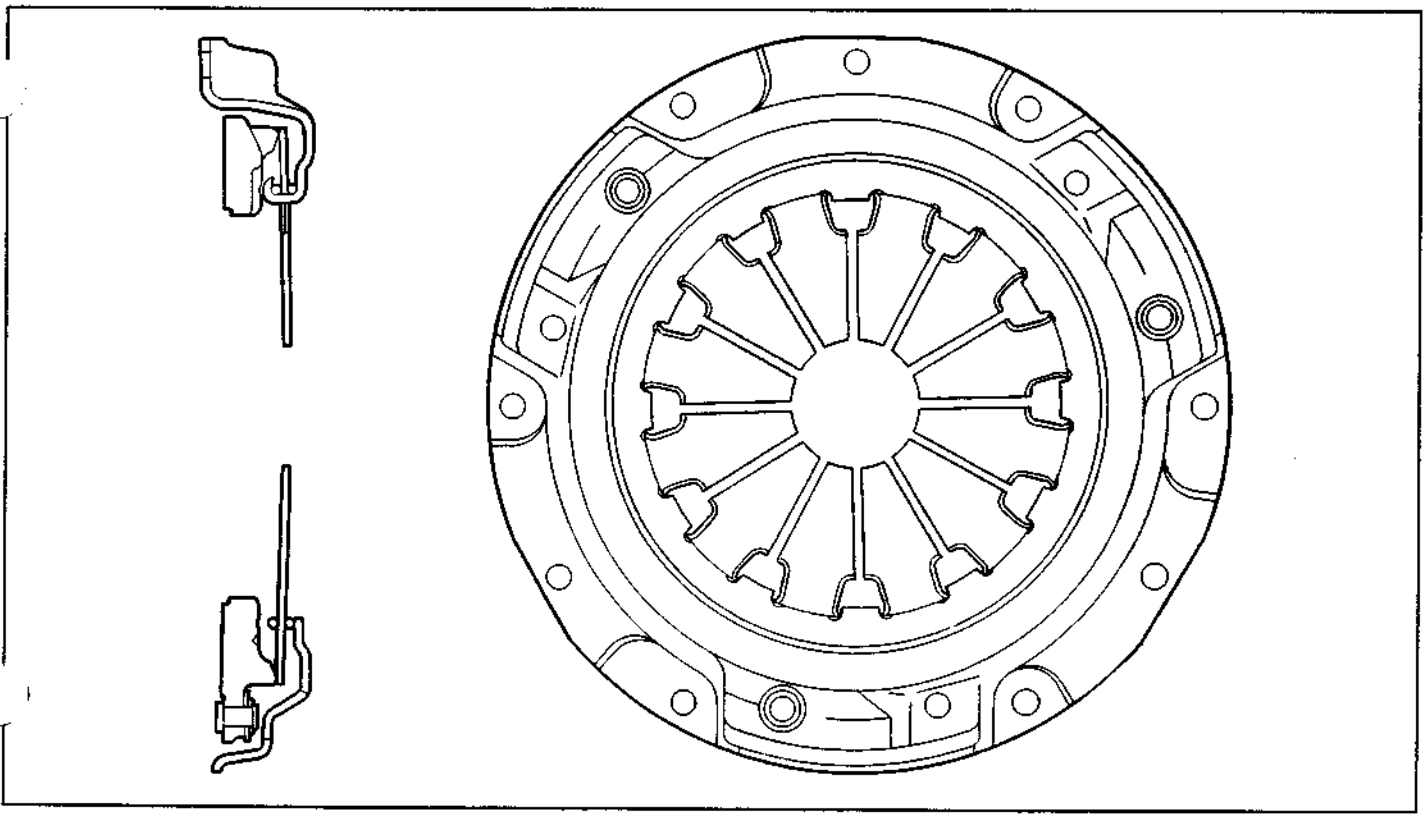
Clutch cover

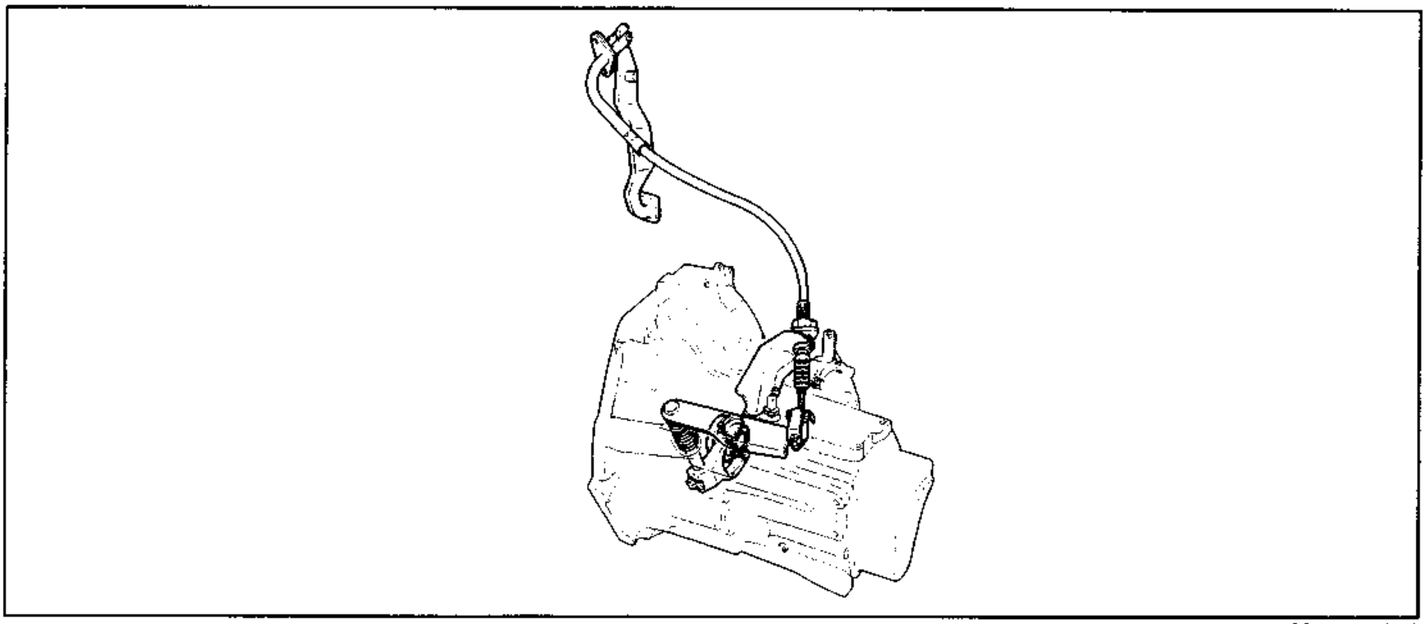
The clutch cover comes in two kinds; one for HC and the other for HD. Each clutch cover has different assembling load.



GSM00080-99999

CONTROL MECHANISM

The operation mechanism employs a cable type which features high reliability, as is the case with the conventional ones.



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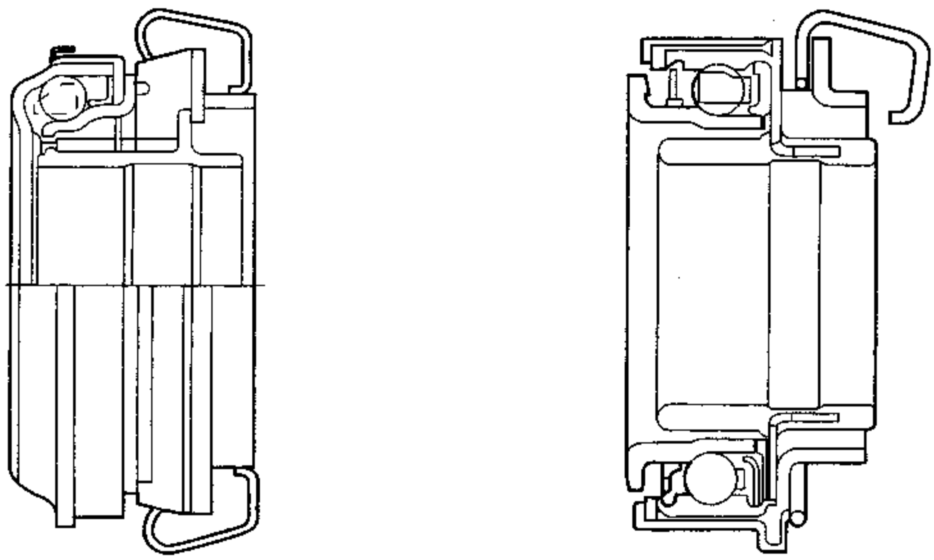
Clutch release bearing

The clutch release bearing has adopted an automatic self- aligning type bearing, thus improving the durability of the diaphragm spring and reducing clutch juddering.

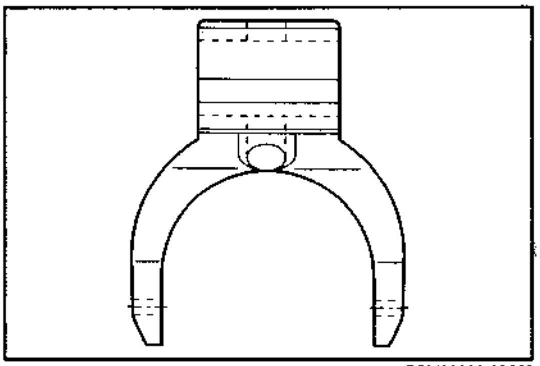


Koyo Seiko　　Nippon Seiko

GSM00082-99999

Clutch Release Fork

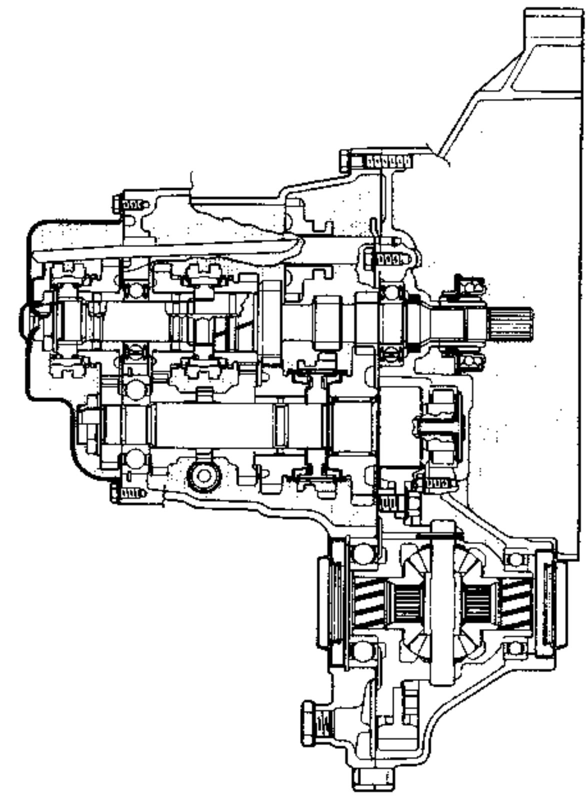
The clutch release fork is made of sintering alloy. It is installed to the clutch release lever by means of a bolt.



GSM00083-99999

MANUAL TRANSMISSION

The manual transmission has employed a 5-speed transmission.
As for the 5-speed transmission of the HC-E engine, the 5th gear (top gear) has been set to a higher speed so as to improve fuel consumption. Weight reduction of each part has been further promoted. Moreover, shifting into the reverse gear has been made easier and shift feeling has been improved. For reduced engine transmitting noise, the joint rigidity relative to the engine has been increased.

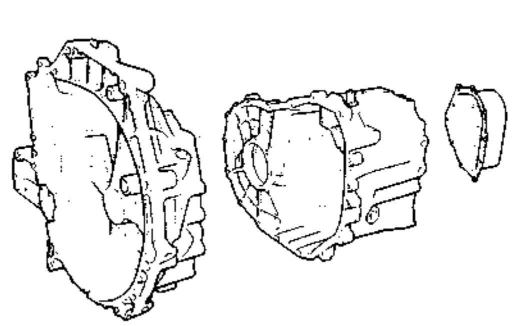


GSM00084-99999

RANSMISSION CASE

To improve the joint rigidity of the transmission case, the number of the connecting bolts with the engine has been increased from four to five. Furthermore, ribs have been added at the engine mating surface so as to increase the strength.

In line with the change in engine rear mounting, positions of bracket installing boss have been changed and added. Moreover, a boss for the air cleaner installing bracket has been newly provided.



GSM00085-99999

4-SPEED ELECTRICALLY-CONTROLLED TRANSMISSION

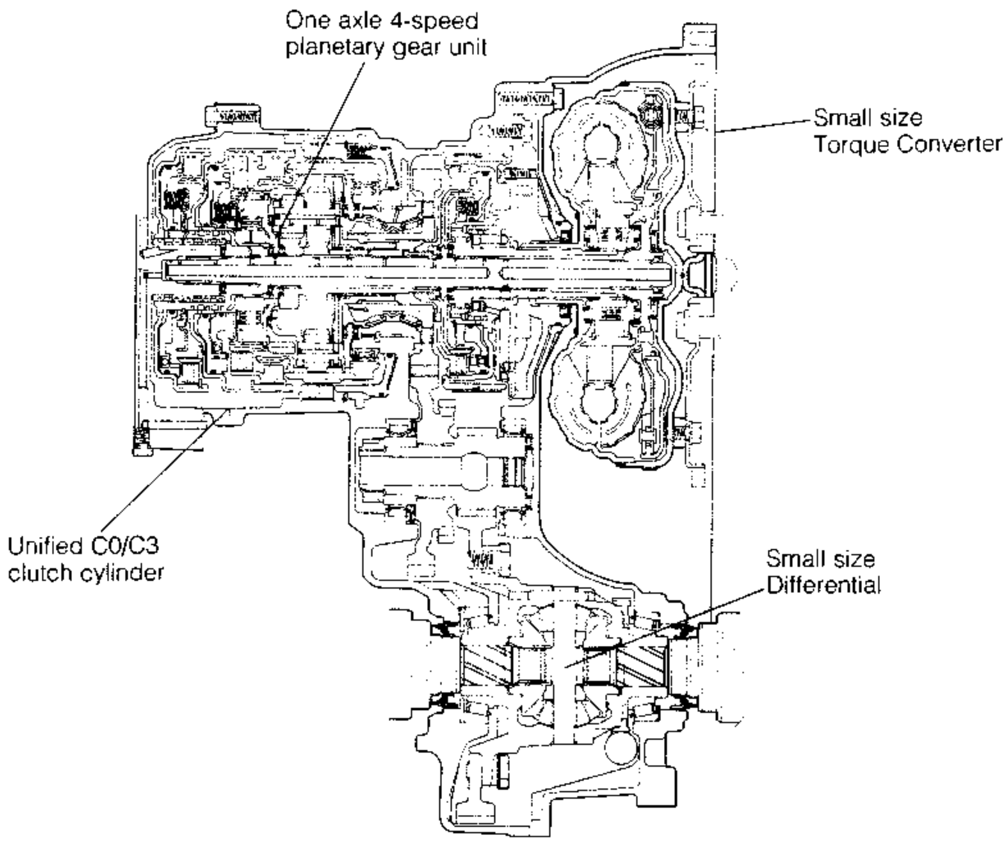
The 4-speed electrically-controlled automatic transmission with lock-up mechanism has been newly employed.
This automatic transmission is mainly composed of a torque converter with lock-up clutch, a 4-speed planetary gear unit, a hydraulic control system and an electric control system.
This automatic transmission has the following features.

- The automatic transmission ECU controls the clutches and brakes in the automatic transmission, based on the shift pattern pre-memorized in the ECU for each driving mode (Auto, Power and Easy).
- When shifting the transmission, the hydraulic line pressure in the transmission is controlled by the ECU in order to reduce transmission shift shocks.
  Furthermore, when shifting the transmission, the automatic transmission ECU (A/T ECU) demands the EFi ECU to reduce the engine output for a predetermined duration of time in order to reduce transmission shift shocks.
  On vehicles equipped with EFi engines, the EFi ECU retards the ignition timing according to the A/T ECU demand to reduce the engine output for predetermined length of time memorized in the EFi ECU.
- Even if the shift lever is placed to the reverse range when the vehicle speed is in excess of a certai level, no reverse shift will take place so that the transmission may not be damaged.
- The A/T ECU monitors the operating conditions of sensors, such as the throttle sensor and vehicle speed sensor as well as the operating conditions of electrical parts, such as the shift position switches and solenoid valves. In cases where any malfunction should take place in these electrical parts, the A/T ECU memorize the malfunction as applicable diagnosis code and if malfunction occured in the important operating systems, the A/T ECU makes the warning lamp go on, thus telling the driver of the occurrence of malfunctions. In addition, the diagnosis function is provided that tells the operator of memorized malfunction contents as malfunction codes during the check service.

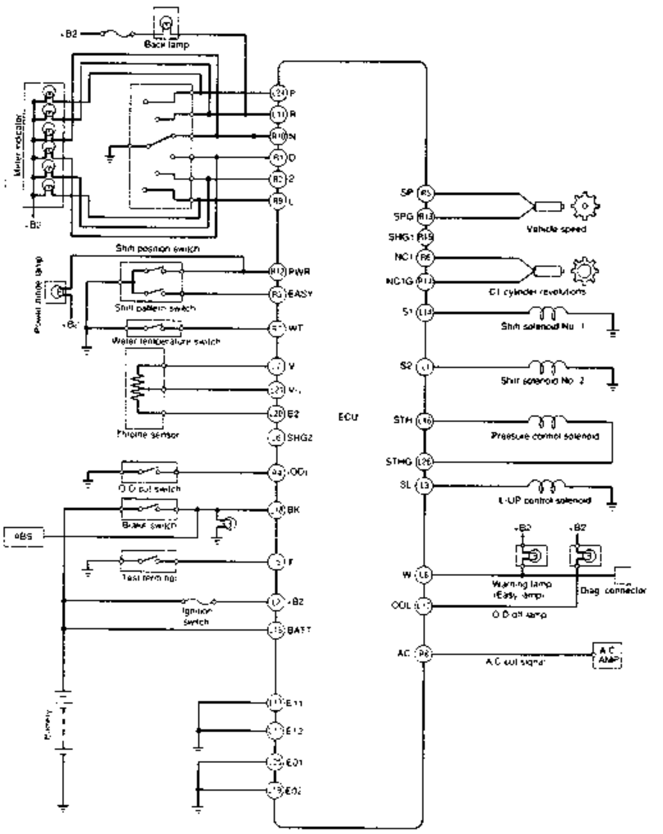
* For details, see the AT section.

GSM00086-00000

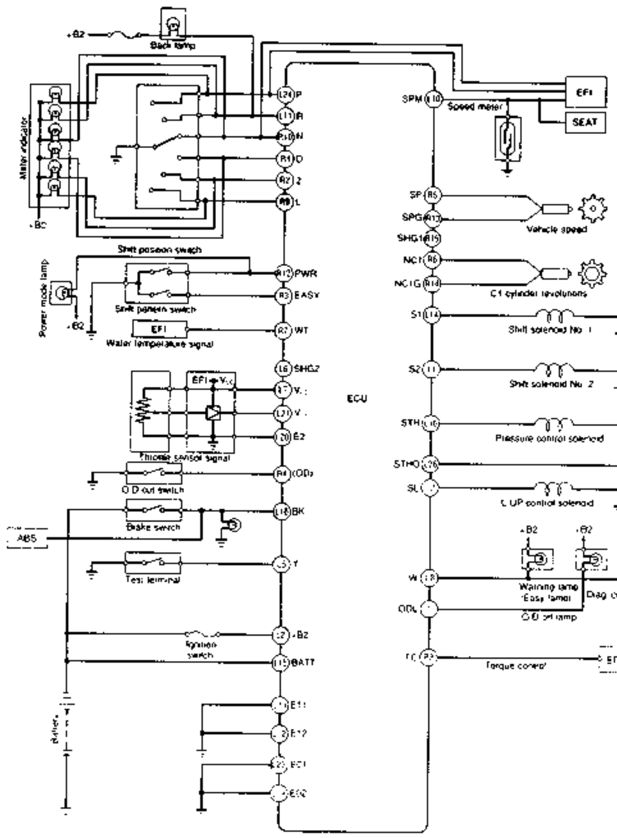
CONSTRUCTION



Cross section view

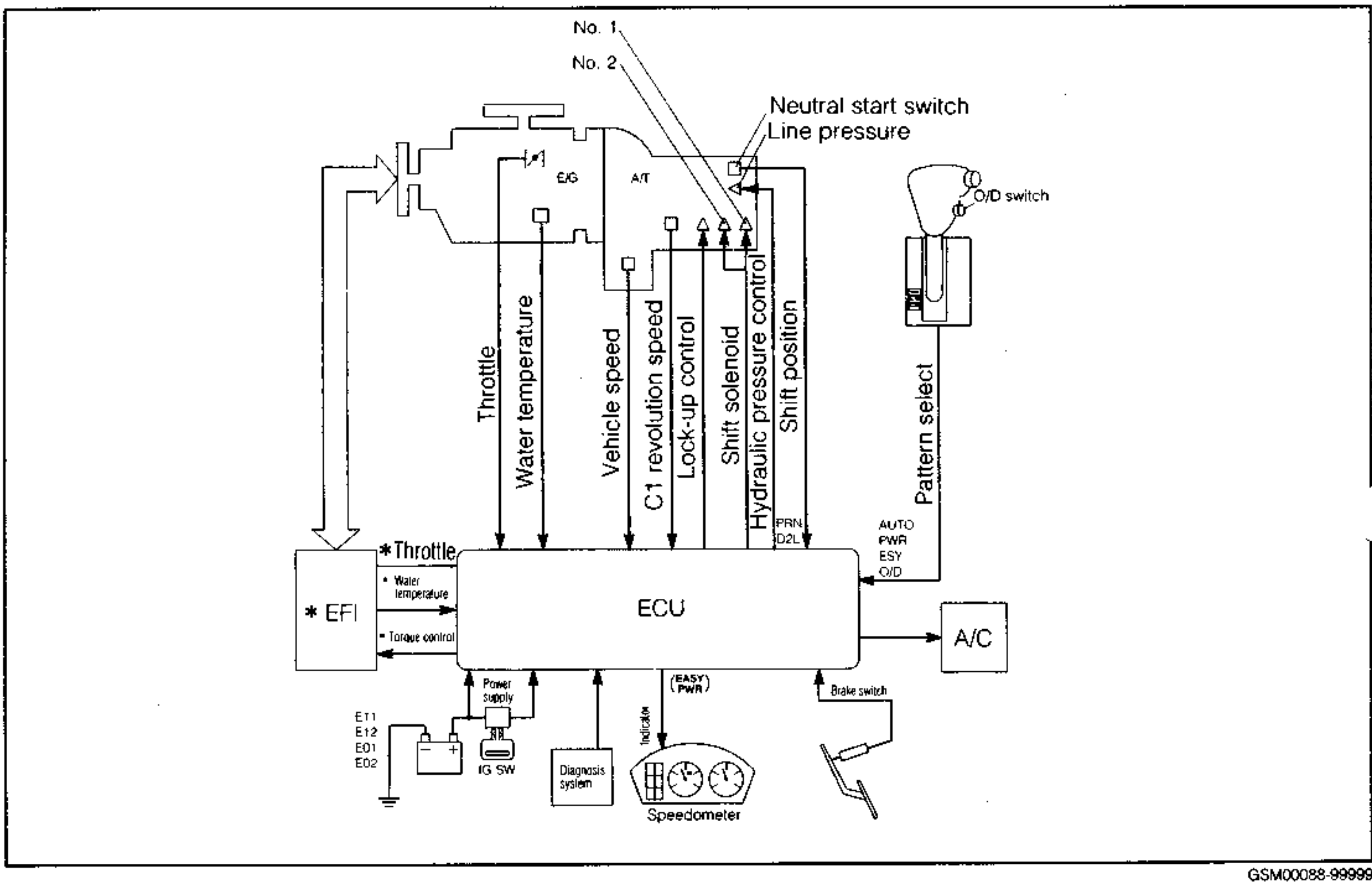


Carburetor spec.



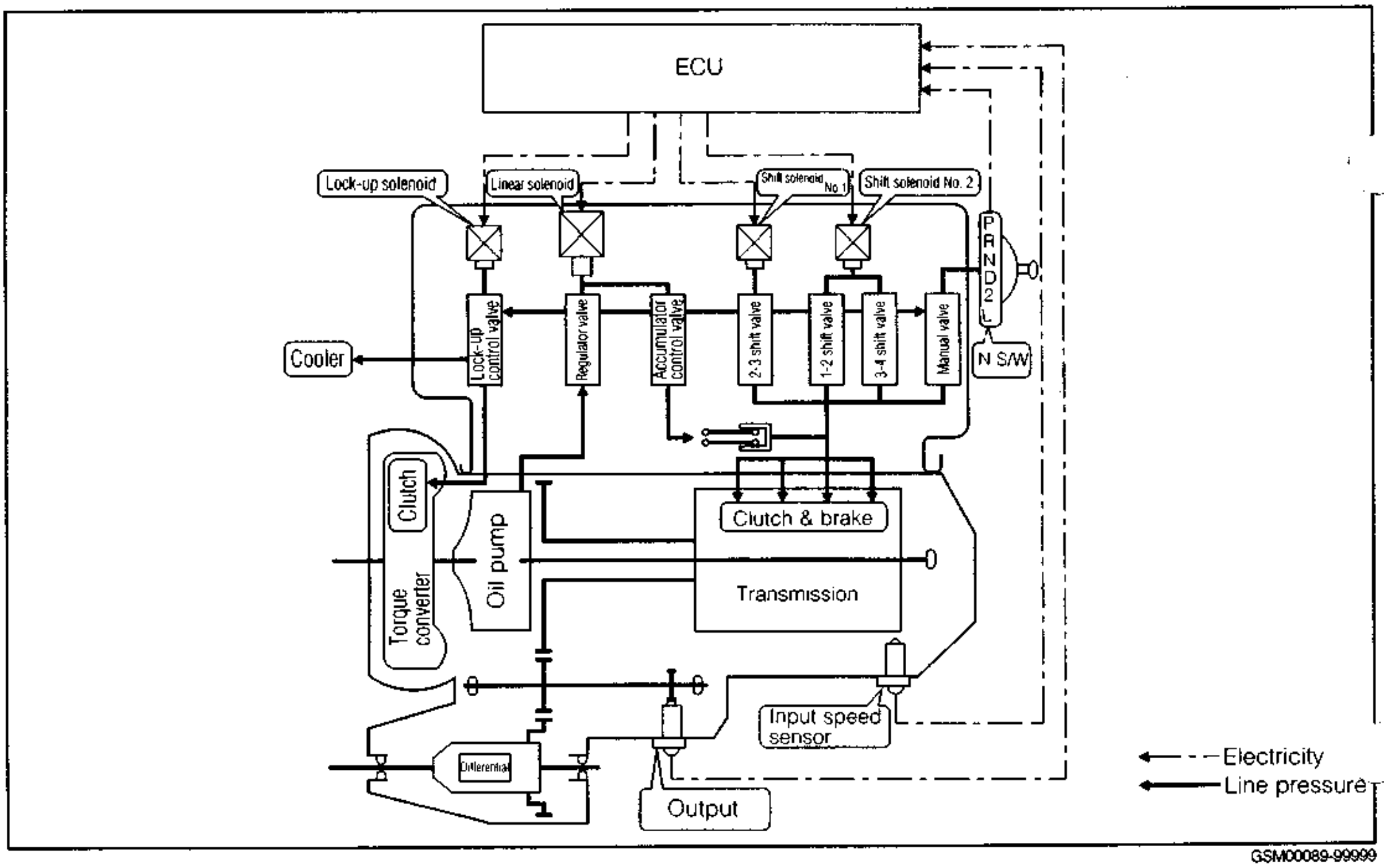
EFI spec.

System Diagram



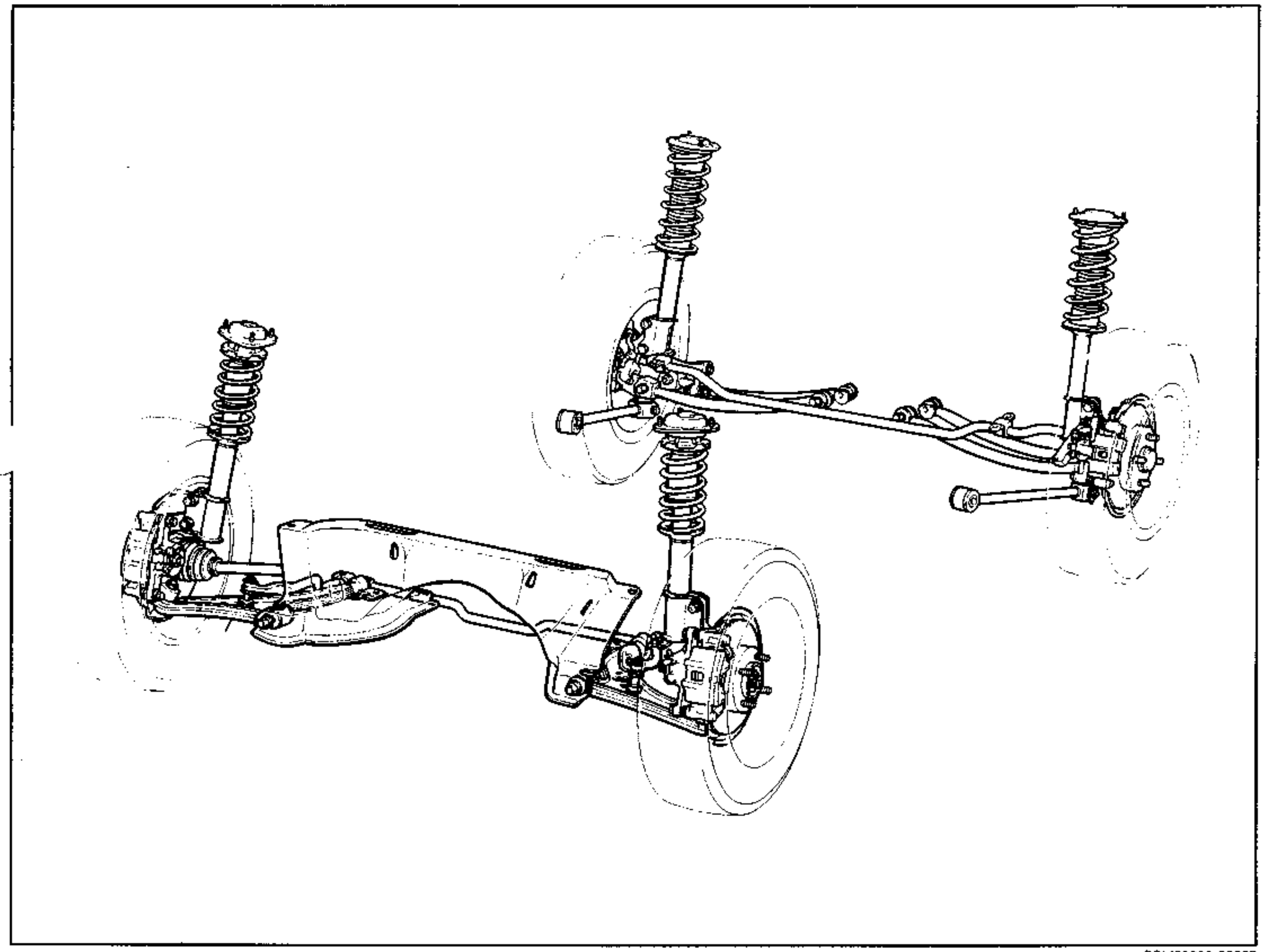
GSM00088-99999

Hydraulic System



GSM00089-99999

SUSPENSIONS



GSM00090-99999

he suspensions basically inherit the hitherto-employed strut 4- wheel independent type.
The suspensions have the following remarkable features.

1. For improved rolling attitude and yawing response, the roll center height has been set to an optimum value by extending each suspension arm of the front and rear suspensions.
2. Front suspension
   The front suspension has employed a front suspension member structure. This has enhanced the whole suspension rigidity and has contributed to the improved controllability.
   On GTi vehicles, a suspension member (brace) has been added to the lower side of the front suspension member, thus further increasing the suspension member rigidity.

   The adoption of an L-shaped arm at the lower arm has made it possible for the front bush position to be arranged in an optimum way. Consequently, the compliance steering (deflection steering) which will take place by external forces (lateral force, longitudinal force) applied to the earth-contact section of tires has been reduced. Furthermore, the anti-dive and anti-lift characteristics have been further improved.

   The front axle has been set to the Vorlauf arrangement in which the wheel center is located ahead of the kingpin's center line (employment of short trail and middle caster). (The Vorlauf arrangement equals to negative Nachlauf arrangement. (Here, Nachlauf refers to an arrangement in which the wheel center is located behind the kingpin's center line.)) As a result, the forces required for turning and retaining the steering wheel have been reduced and the steering feeling has been improved.

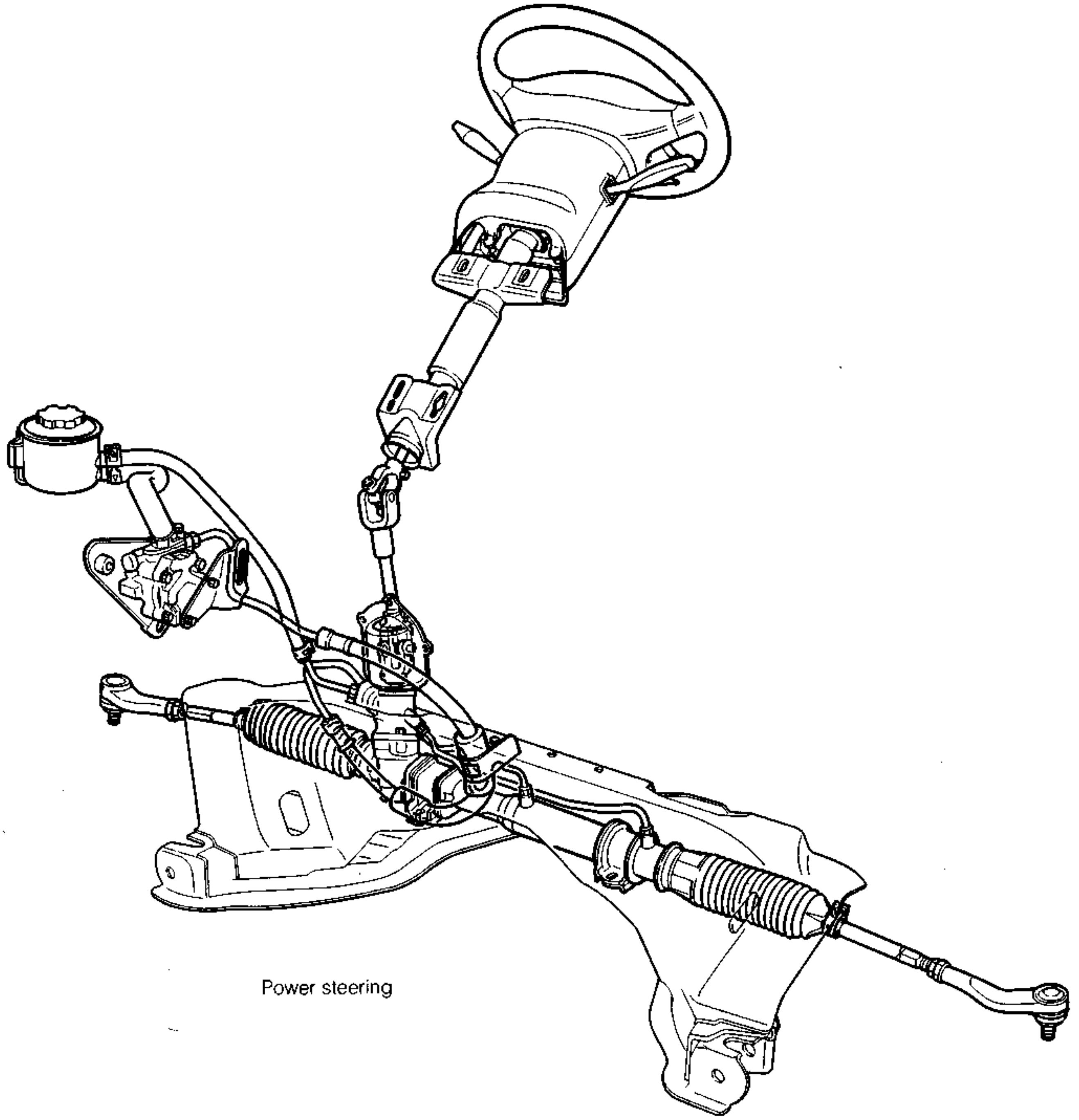
Moreover, the kingpin offset amount has been set to an optimum value so as to reduce occurrence of flattening.
For improved riding comfort and controllability, the front suspension member upper support has been changed from a rubber compression type to a rubber shearing type.

Furthermore, the spring constant has been changed and the number of the installed bolts has been increased from two to three.

3. Rear suspension
For assured riding comfort and straightahead running stability over rough terrains, the rear suspension arm has been extended so as to reduce the change in tread. Furthermore, the camber changing amount has been set to an optimum value in order that the cornering limit and controllability during cornering as well as the yawing convergence may be improved.

GSM00091-00000

STEERING SYSTEM

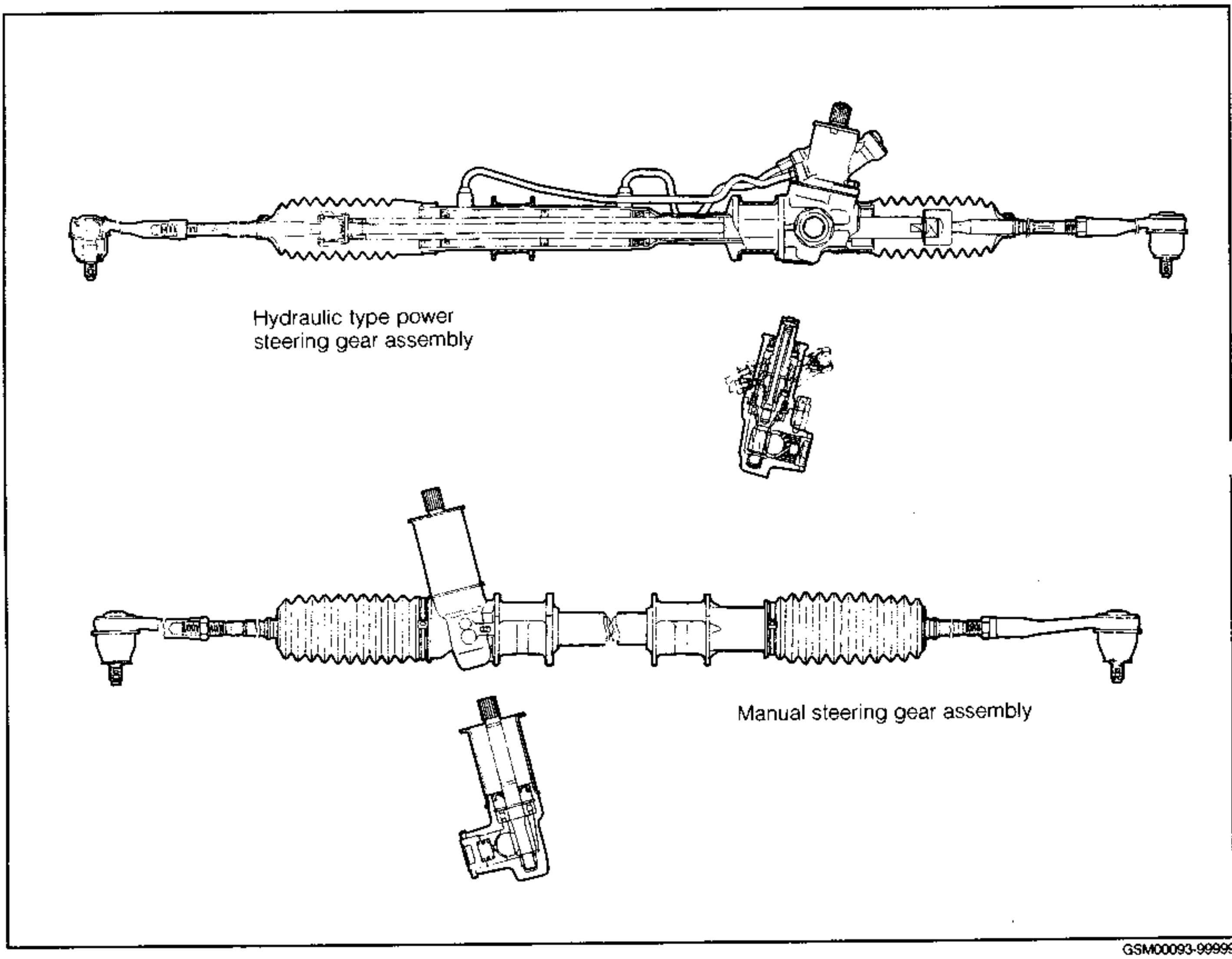


(RHD vehicle)

ıe steering system has adopted the rack and pinion type steering gear, as is basically the same with the conventional steering system. However, detailed specifications have been reviewed so that the safety may be further assured and the steering feeling, stability and steering vibration may be improved.

GSM00092-99999

STEERING GEAR ASSEMBLY



GSM00093-99999

MANUAL STEERING GEAR ASSEMBLY

The basic construction of the manual gear assembly is the hitherto-employed rack and pinion type.
For reduced turning effort of the steering wheel under the vehicle stationary state or during running at an extremely low speed, the rack stroke per pinion turn has been shortened.

POWER STEERING GEAR ASSEMBLY

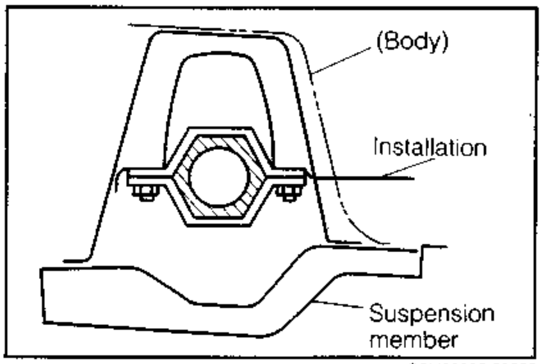
The basic construction of the power steering gear assembly is the hitherto-employed rack and pinion type. To reduce the number of turns of the steering wheel, the rack stroke per pinion turn has been increased, thus reducing the number of the lock-to-lock turns. Moreover, for reduced turning effort, the operating characteristics of the control valve have been modified.

Specifications

Items		Former manual steering	New manual steering	Former power steering	New power steering
Total rack stroke	mm	148.5	150.0	148.5	150.0
Inner turning angle	degree	39.85	39.78	39.85	39.78
Outer turning angle	degree	34.95	34.54	34.95	34.54
Ackerman steering angle	degree	29.19	29.33	29.19	29.33
Number of pinion teeth		6	5	6	7
Rack stroke/pinion turn	mm	35.81	34.56	39.90	46.68
Number of lock-to-lock turns		4.01	4.27	3.63	3.21
Ackerman rate	%	46	50	46	50

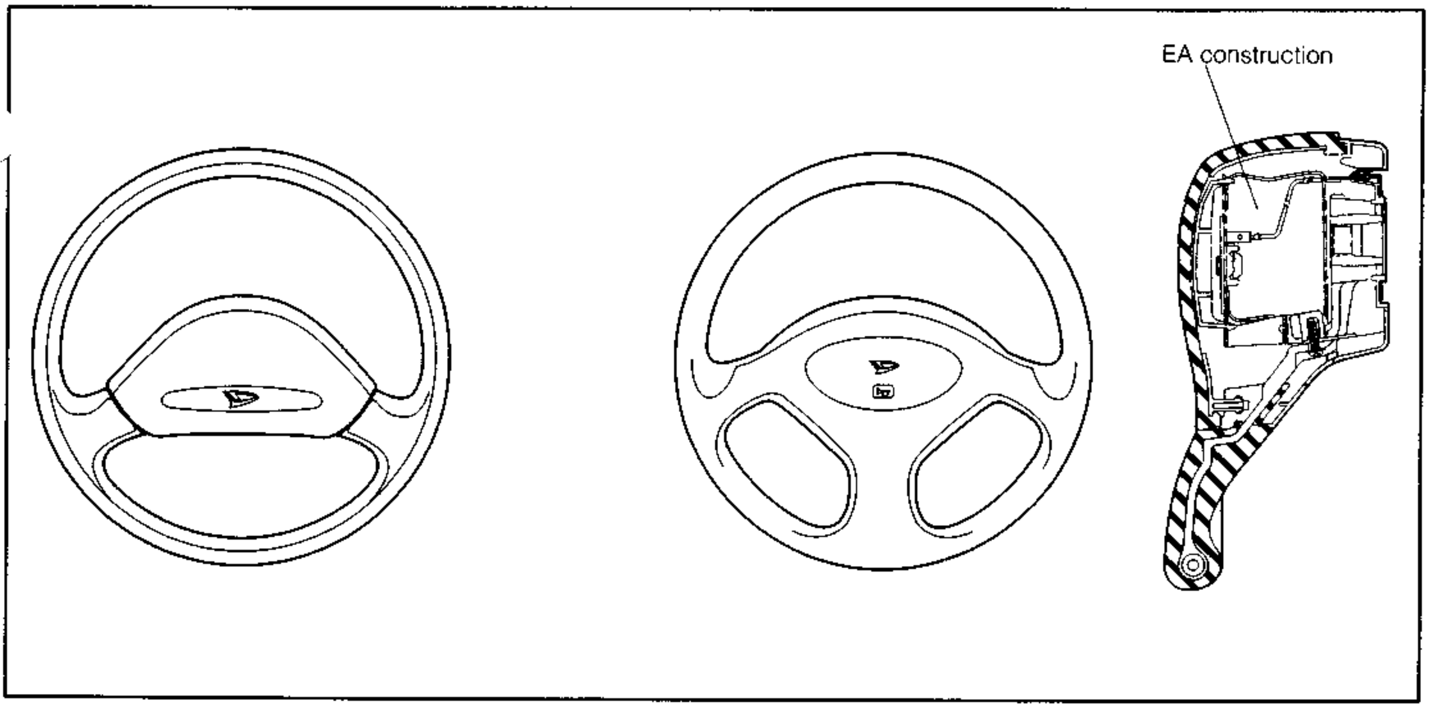
GSM00094-00000

For enhanced accuracy of the front wheel alignment, the mounting section of the steering gear assembly has been switched from the dash panel crossmember section to the suspension member.
Furthermore, for improved steering feeling, the mounting rigidity of the steering gear assembly has been increased by reducing the offset between the installation point and the center of the steering gear.



GSM00095-99999

STEERING WHEEL



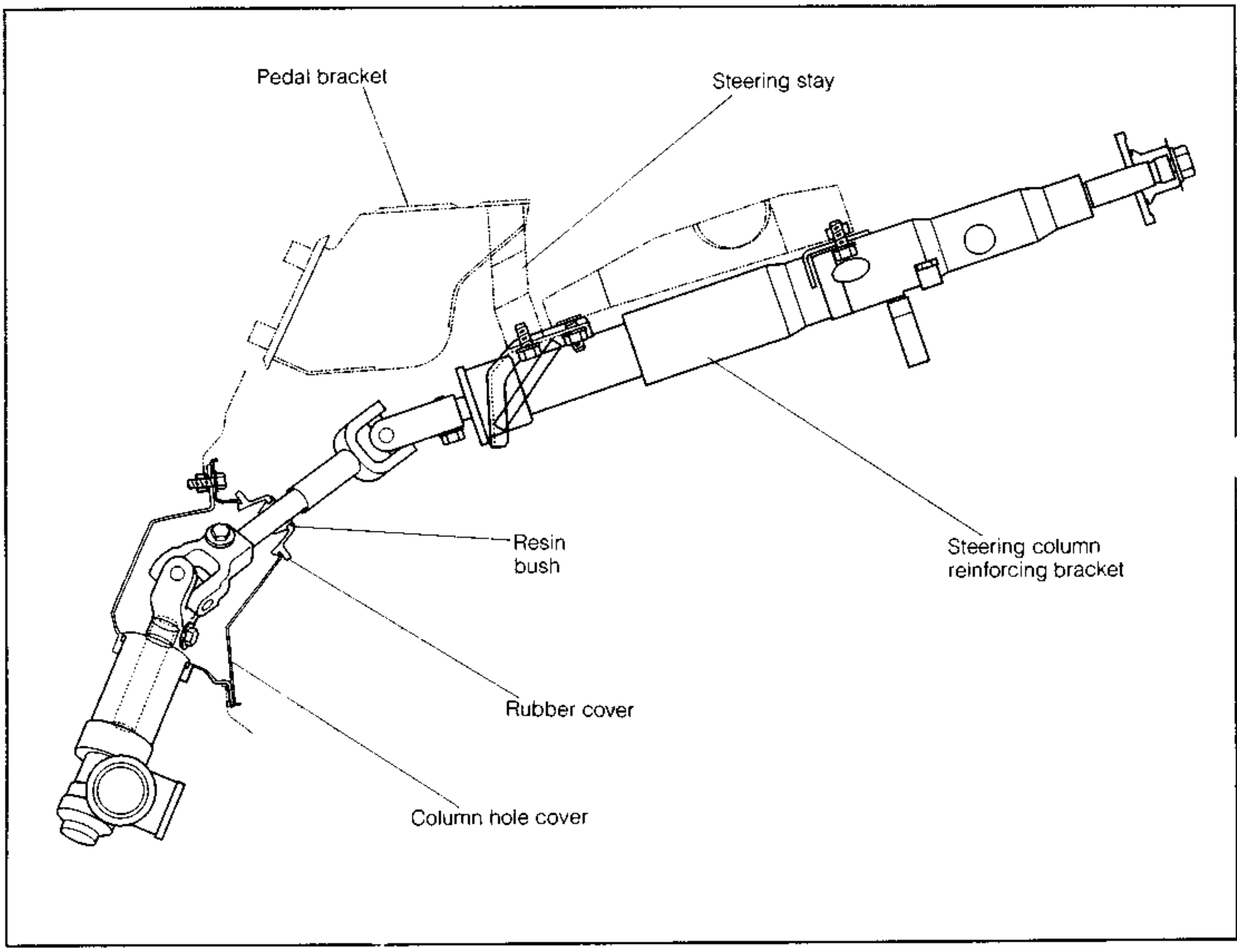
he steering wheel comes in two kinds: One is made of resin. The other is made of foamed urethane.

Resin-made steering wheel
For improved crash characteristics and improved safety, the resin-made steering wheel has been provided with two 15 mm dia. holes at the spoke sections.
Moreover, for enhanced vibration-proof characteristics, the steering wheel has employed a hollow core type, thus reducing the weight.

Foamed urethane-made steering wheel
For improved safety, the foamed urethane-made steering wheel has employed an energy absorbing pad at the steering wheel pad section.
Furthermore, for reduced weight and enhanced durability, an aluminum alloy-made core has been adopted.
Moreover, flon gas used for foaming urethane has been changed to substance (HcFC123) that does not contain a chloric group.

GSM00096-99999

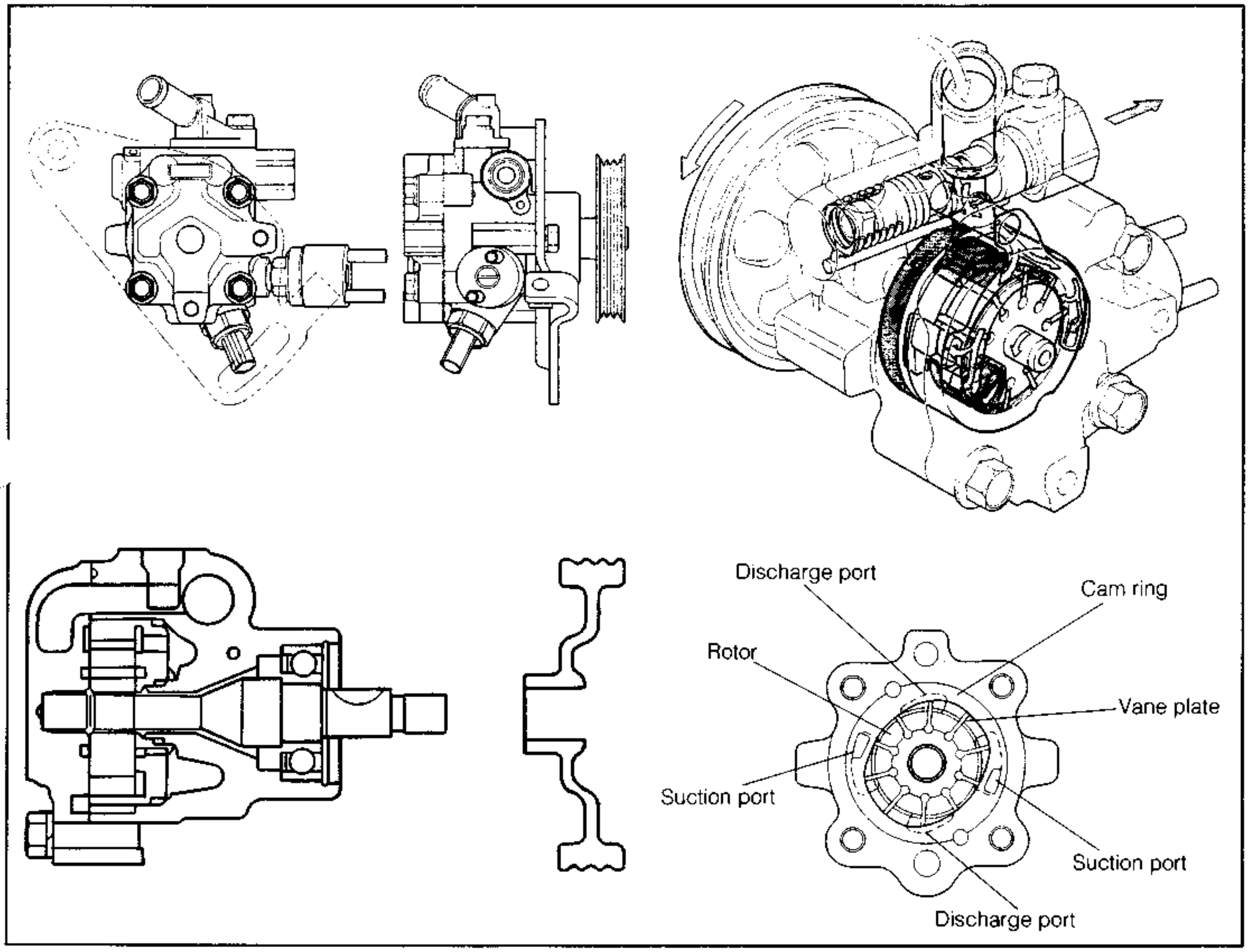
STEERING COLUMN



For reduced vibration during the engine idling, a reinforcing bracket has been added to the steering columr
Furthermore, the offset relative to the steering wheel center has been decreased by downsizing the upper bearing and arranging it at the center of the multi-use lever switch.
Moreover, a steering stay has been newly provided in order to increase the steering supporting rigidity.
For reduced transmitting noise from the engine compartment, a resin bush has been provided between the intermediate shaft and the rubber cover.

GSM00097-99999

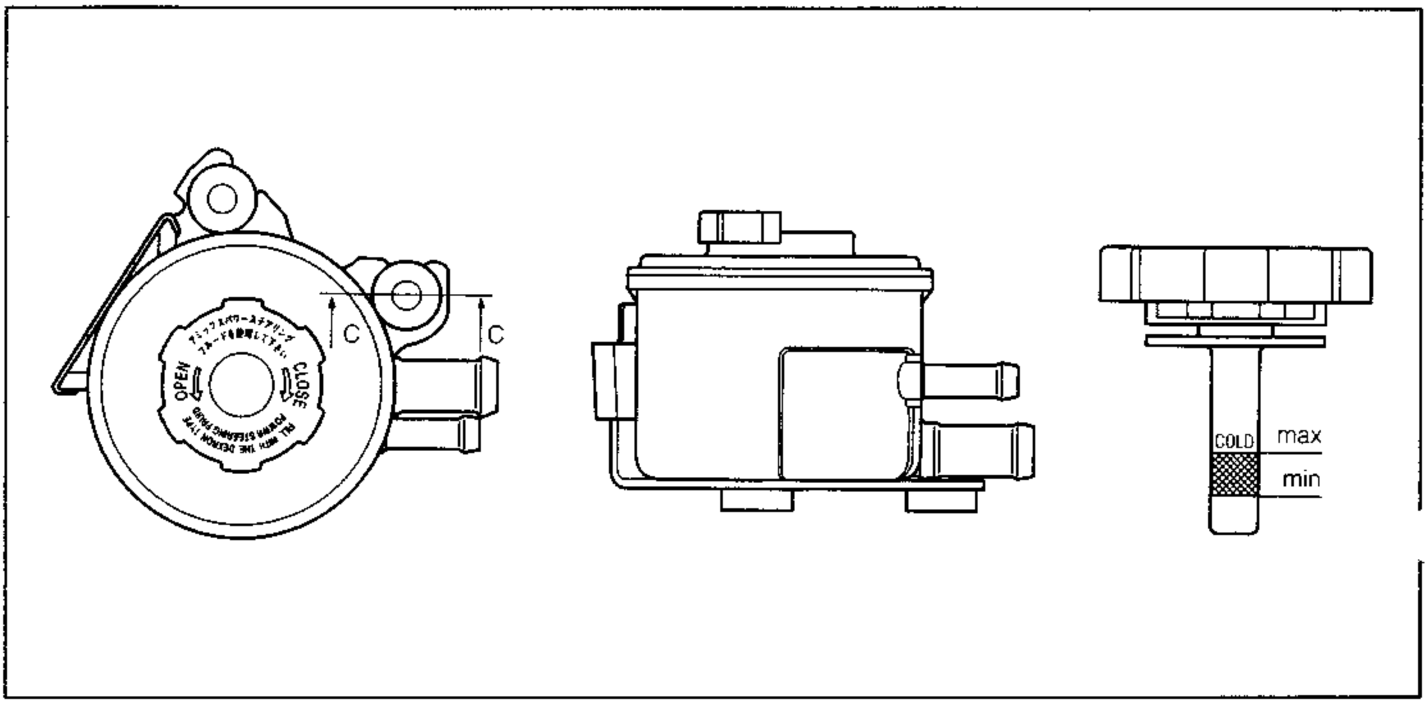
POWER STEERING VANE PUMP



ʰe vane pump is a newly-developed aluminum alloy-made pump featuring compact design and lightweight.
–ın this vane pump, the supporting construction of the drive shaft (main shaft) has been switched from a cantilever construction to a both-end supporting construction. Moreover, the front side bearing has employed a ball bearing. This modification has improved the stability of rotating center of the rotor and has reduced the hydraulic pulsation. Consequently, this change has made it possible to use a high- load belt.
To prevent fretting, this front bearing has been installed by press-fitting to the pump body.
For improved oil discharging performance during a cold period, the diameter of the suction port for the vane pump working fluid has been increased. Also, the oil sump at the working fluid suction passage of the end cover has been abolished.
As a result of this abolishment of the oil sump, cavitation no longer occurs, thus reducing noise.
Moreover, for reduced noise, the cam profile has been changed from a linear profile to a curved profile, thus preventing a sudden change in speed of the vane plate. Consequently, the impact at which the vane plate hits the cam has been reduced. Furthermore, the return hole of the working fluid has been changed from a single drain construction to a double drain construction. Therefore, the volume at the oil sump section has been reduced and the probability of cavity breakage has been reduced.
The flow rate of oil for oil seal lubrication has been reduced by narrowing down the opening area (clearance between the body and the shaft) at the leak oil passage. As a result, the working fluid suction effect has ʰeen improved.
.ne pulley for the vane pump has employed a pulley-and-boss integral type.

GSM00098-99999

RESERVOIR TANK



The reservoir tank has employed a newly-designed lightweight resin-made tank.
The reservoir tank has been installed to the body by means of brackets with a sheared rubber interposed. Consequently, this has prevented vibration and noise from being transmitted to the body side.

GSM00099-99999

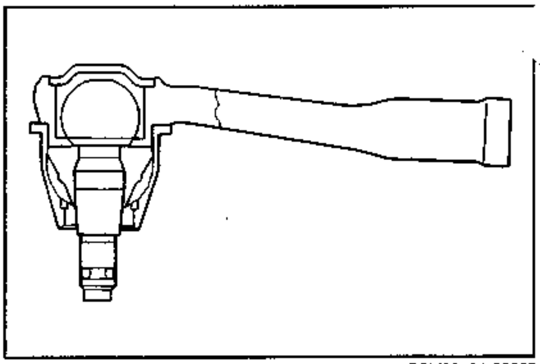
Reservoir tank specifications

Oil capacity (ℓ)	Max.	0.26
	Min.	0.21

GSM00100-00000

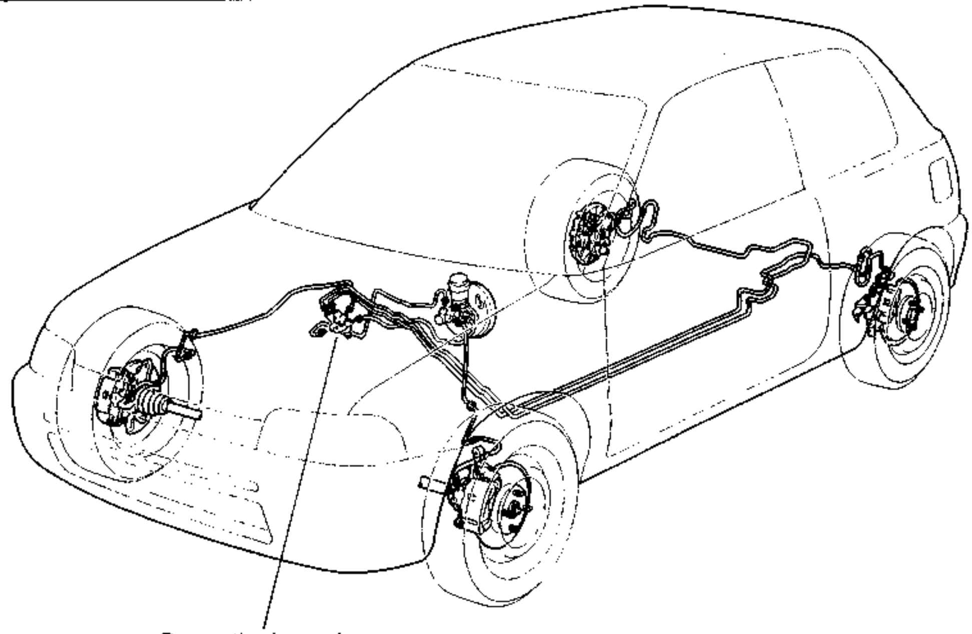
TIE ROD ENDS

The ball seat material of the tie rod end ball joint has been altered to decrease the rotating torque at the ball joint section, thus reducing the sliding resistance. This has reduced vibration that is transmitted from the tire side to the steering wheel side caused by fluttering.



GSM00101-99999

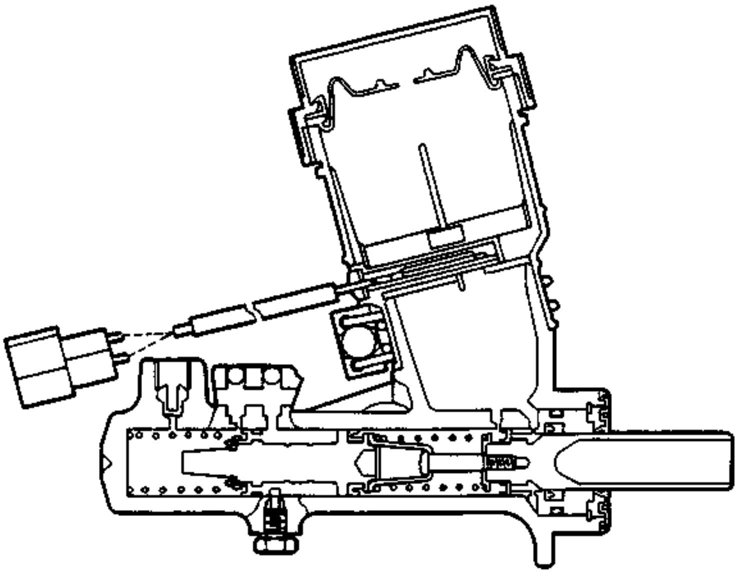
BRAKES



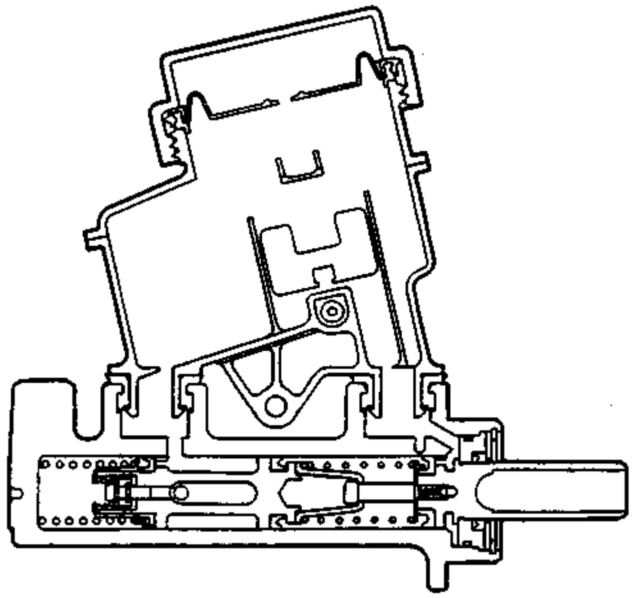
Basically, the brake piping is a two-separate line type employing a diagonal (cross) piping. Even if either system should fail, the loss of braking forces may be kept to a minimum level.
The number of parts has been reduced so that the service may be carried out easily.
For improved braking performance, the brake master cylinder has adopted a type with a 7-inch booster on all models except for Type HD engine-mounted vehicles and ABS-equipped vehicles. Furthermore, the inner diameter of the master cylinder is set to 19.05 mm.
Moreover, for reduced initial depressing force, the jumping amount has been increased at the booster side.
On Type HD engine-mounted vehicles and ABS-equipped vehicles, the brake master cylinder has employed a center valve type with an 8-inch booster. The inner diameter of the master cylinder is 20.64 mm.
As for the front brakes, a 13-inch dia. disc brake has been employed on all models. For improved braking feeling, the brakes have been made to have such characteristics that a natural braking force can be obtained according to the brake pedal depressing force.
On Type HD engine-mounted vehicles and ABS-equipped vehicles, a ventilated disc has been employed.
The front brake calipers are the same as the hitherto-employed floating caliper type. For easier service of the calipers, the calipers are installed by means of mounting brackets.
The material of the brake pad has employed non-asbestos material. Furthermore, the hitherto-employed sound detecting type wear indicator has been provided at the inner side of the pad.
As for the rear brakes, the hitherto-employed 180 mm-dia. drum brakes are used except for Type HD engine-mounted vehicles and ABS-equipped vehicles.
On Type HD engine-mounted vehicles and ABS-equipped vehicles, the hitherto-employed floating caliper type disc brakes have been adopted. The mounting position of the calipers has been switched to front side so that the routing of the parking brake cable may be performed easily. Furthermore, the adjusting method of the pad clearance has been changed from a micro adjusting type to a one-shot type.
As for the proportioning valve, a proportioning and bypass valve for cross piping use has been employed on all models.

GSM00102-99999

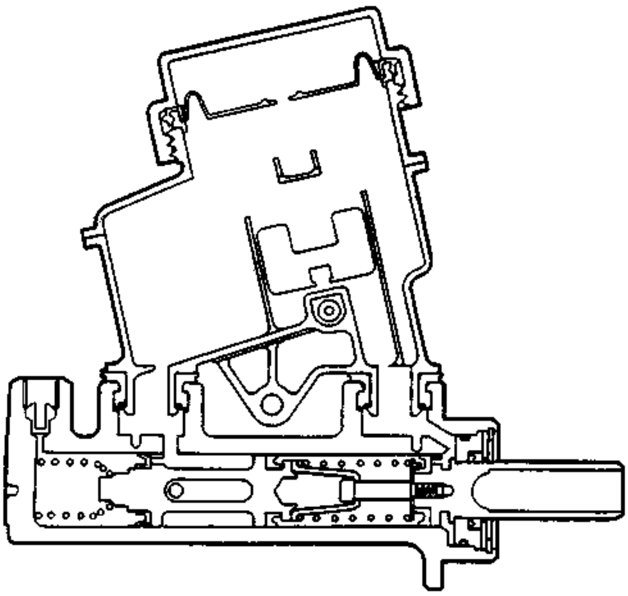
BRAKE MASTER CYLINDER



For G200 standard vehicle



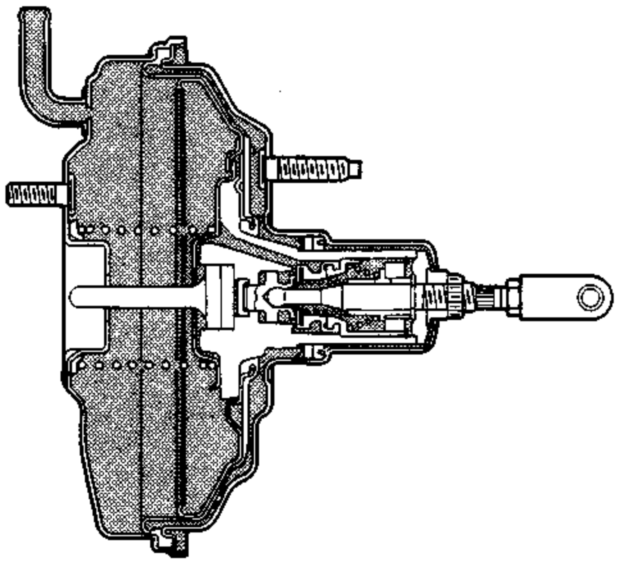
For ABS-equipped vehicle



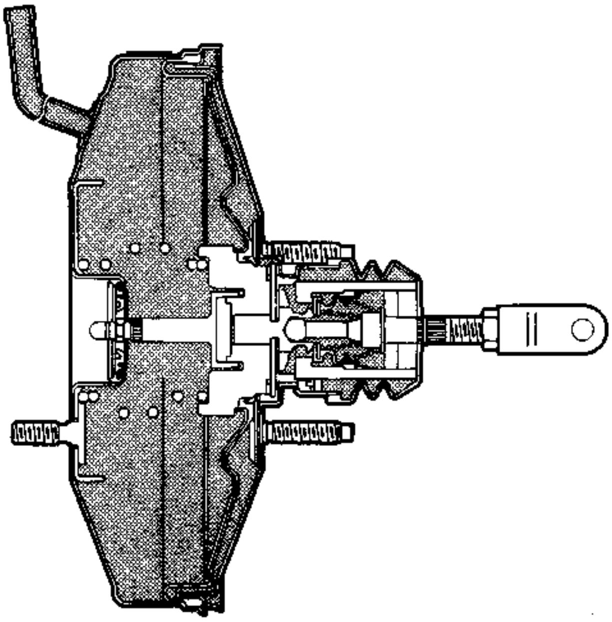
For G201 standard vehicle

The brake master cylinder has employed a tandem type made of aluminum alloy.
The brake master cylinder comes in three kinds: One is for G200 standard vehicles. Another is for G201 standard vehicles. The other is for ABS-equipped vehicles. On G200 standard vehicles, the master cylinder has employed a side valve type having a cylinder inner diameter of 19.05 mm (0.75 inch); on G201 standard vehicles, a side valve type having a cylinder inner diameter of 20.64 mm (0.813 inch); on ABS-equipped vehicles, a center valve type having a cylinder inner diameter of 20.64 mm (0.813 inch).
The G201 standard vehicles and ABS-equipped vehicles share the brake master cylinder of the same external shape. However, a center valve is provided at the secondary piston for the ABS- equipped vehicle. Therefore, care must be exercised so as not to mistake one for the other master cylinder.

BRAKE BOOSTER



7-inch booster

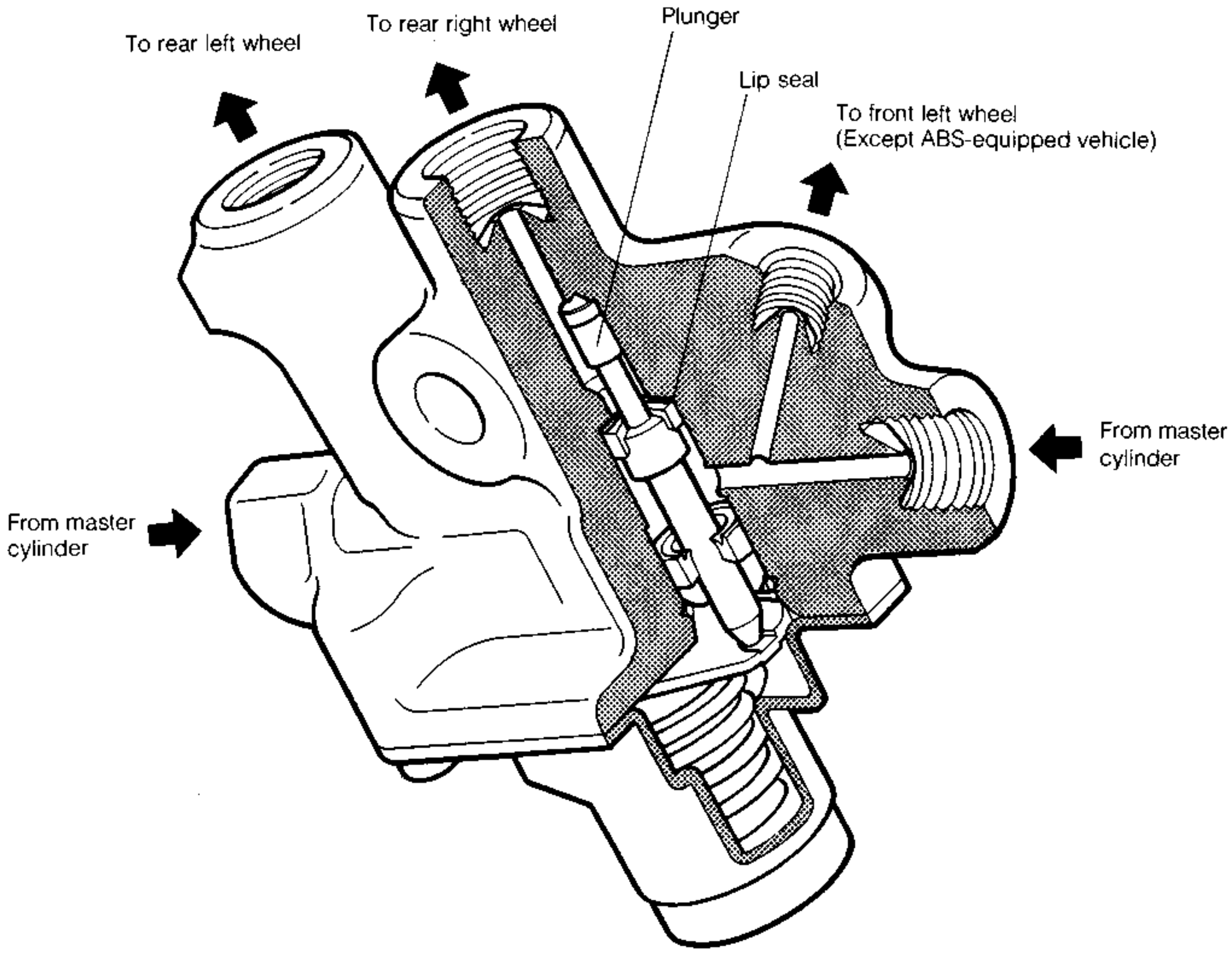


8-inch booster

'he brake booster means a device whereby the brake pedal depressing force is doubled by utilizing difference in pressure between the negative pressure inside the intake manifold and the atmospheric pressure.
The brake booster has employed a 7-inch single type for G200 standard vehicles; an 8-inch single type for G201 standard vehicles and ABS-equipped vehicles.

GSM00104-99999

PROPORTIONING VALVE

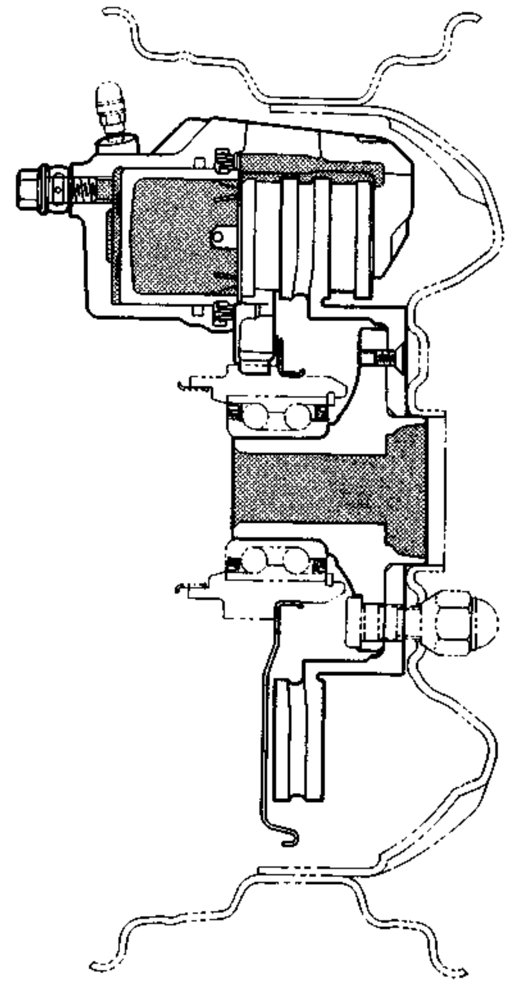


The braking force control device means a device which prevents the rear wheels from being locked caused by the shift of loads from the rear wheels to the front wheels during the braking. The twin proportioning valve (twin P valve) is employed and installed at the center of the dash panel. The proportioning valve comes in two kinds for standard vehicles and for ABS- equipped vehicles.

In the twin P valve, the two valves are arranged in parallel. When the input fluid pressure (master cylinder fluid pressure) exceeds the set value, the output fluid pressure (rear wheel cylinder pressure) is controlled. Consequently, the braking forces are ideally distributed between the front and rear wheels.

GSM00105-99999

FRONT BRAKE

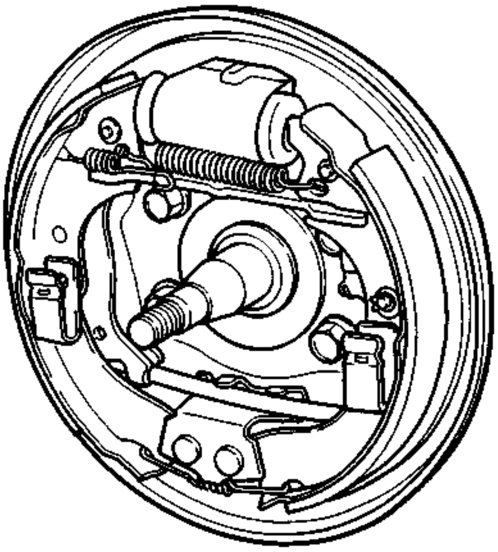


<Ventilated disc brake>

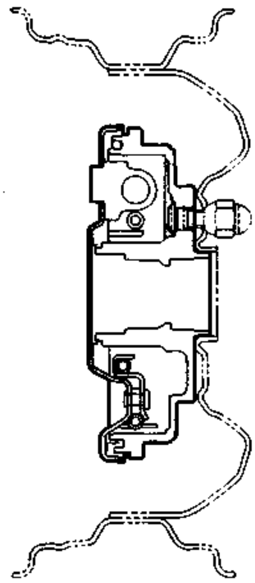
'he front disc brake uses a 13-inch disc brake on all models. A solid disc brake has been adopted on G200 models, whereas a ventilated type disc brake has been adopted on G201 models and ABS-equipped vehicles.
The front disc brake has employed a caliper floating type. The calipers come in two kinds: One is for the solid disc. The other is for the ventilated disc.
For easier removal and installation of the calipers, a caliper mounting bracket has been added.
The disc pad has employed a non-asbestos pad. Furthermore, for easier service, a sound detecting type wear indicator has been installed.

GSM00106-99999

REAR BRAKE

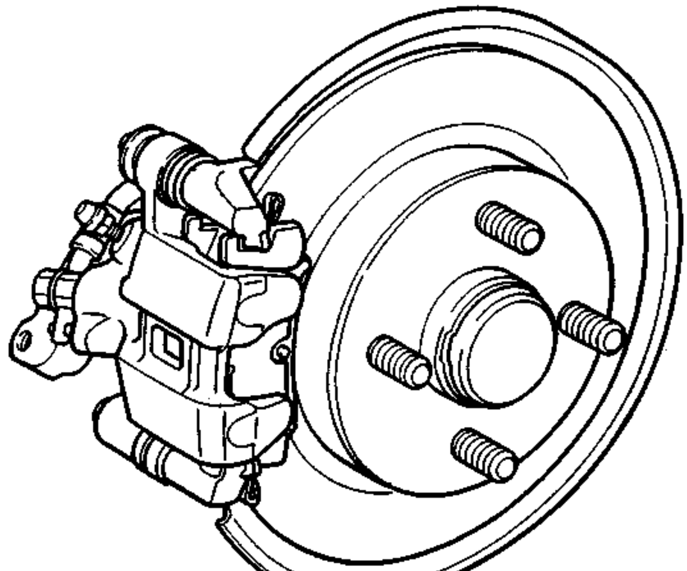


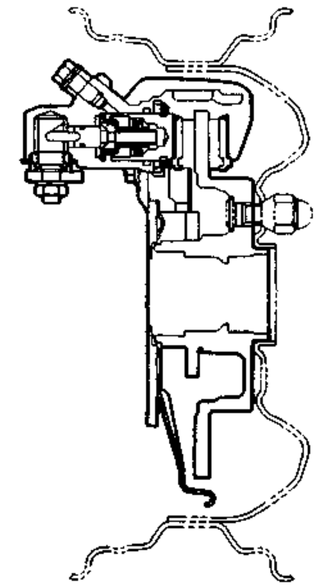
External view



Sectional view

Drum brake





Sectional view

External view

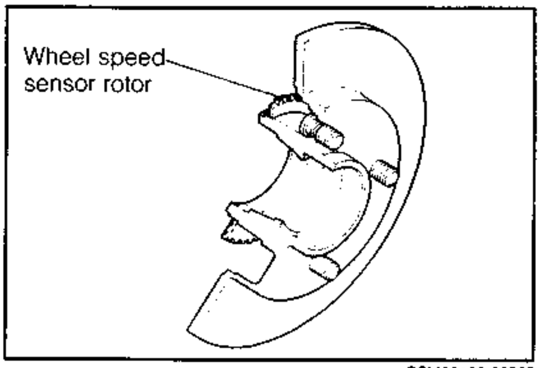
Disc brake

The rear brakes have adopted drum brakes for G200 models; disc brakes for G201 models and ABS-equipped vehicles.

GSM00107-99999

DISC ROTOR (ABS-equipped vehicle)

On ABS-equipped vehicles, a sensor rotor has been press-fitted for wheel speed detection.



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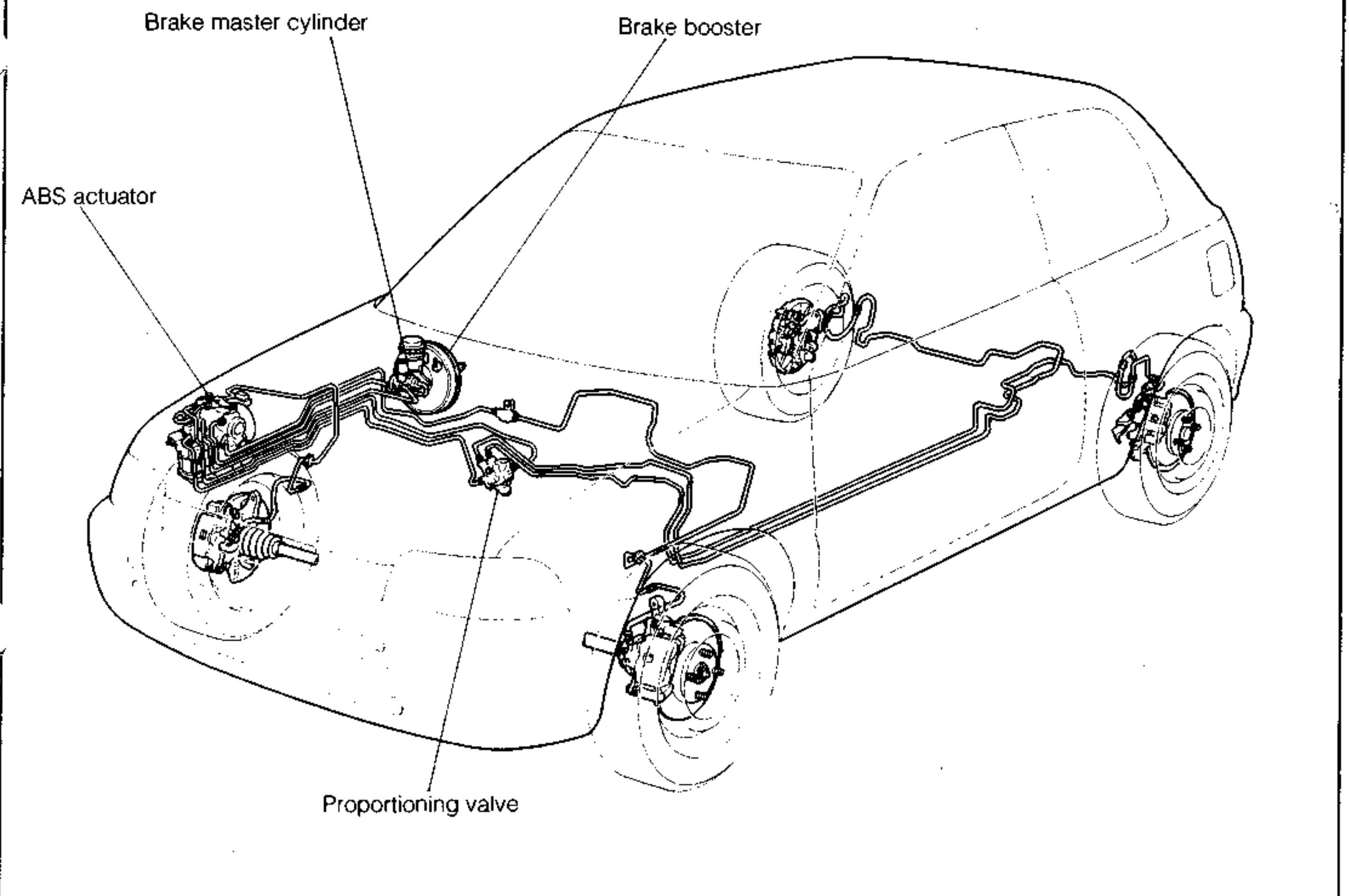
ABS

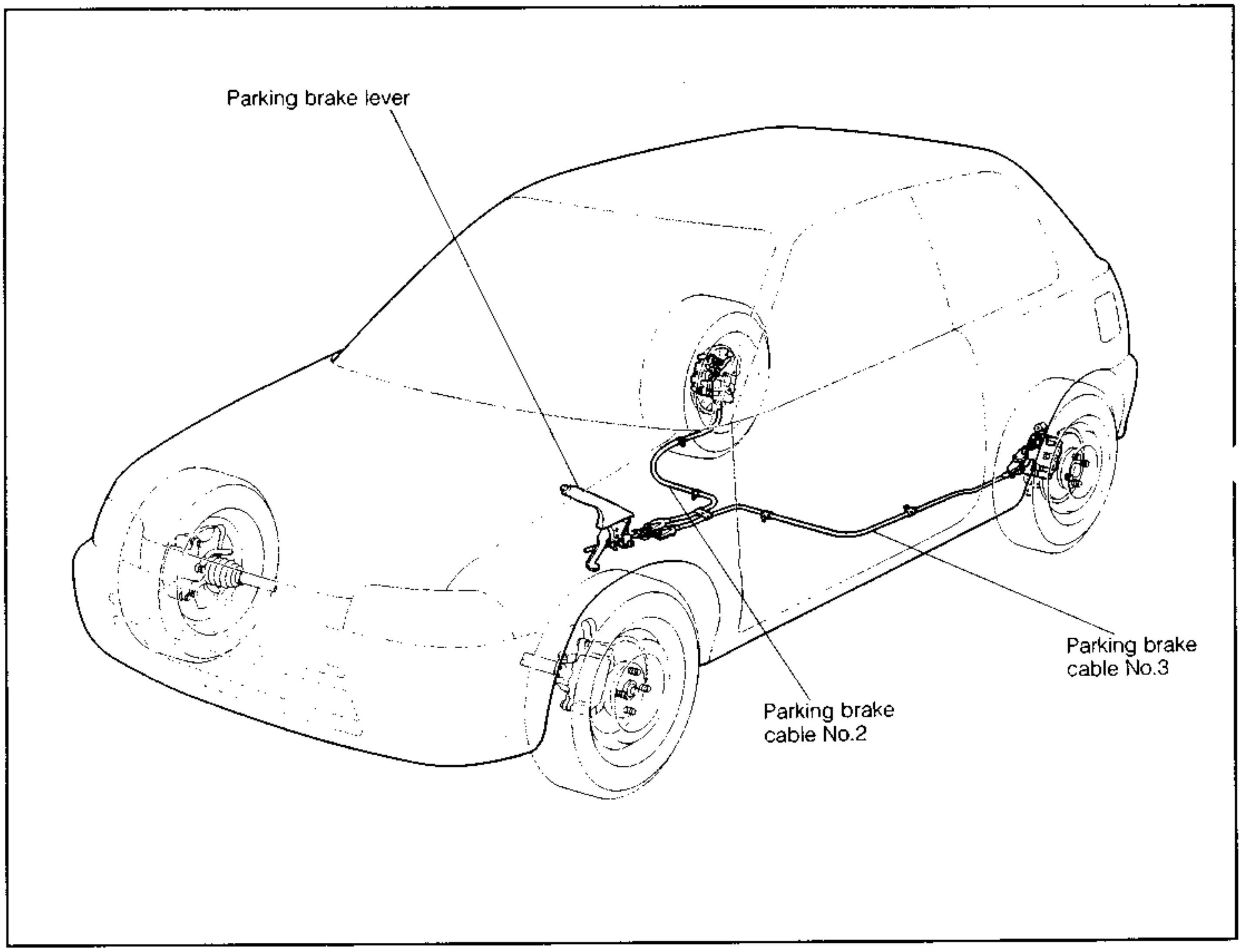


<RHD with rear disc brake-equipped vehicle>

On some models mounted with Type HC-E engine with the European specifications, the 4-sensor and 4-channel type ABS manufactured by NIPPONDENSO is available as optional equipment.
This ABS system features small size, lightweight, a less number of actuator components and a less number of accessory parts.
(For details, refer to the ABS service manual.)

GSM00109-99999

PARKING BRAKE MECHANISM

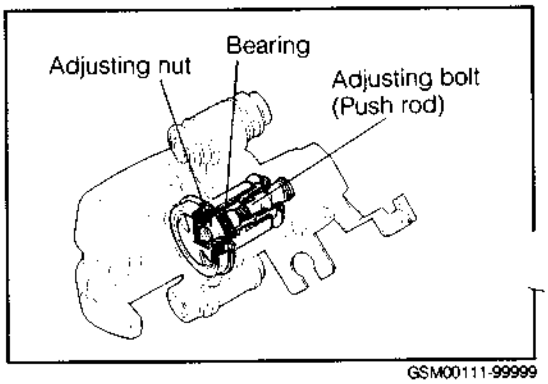


The parking brake employs a center lever method rear-wheel control type, as has been hitherto employed. The lever ratio of the parking brake lever has been reviewed this time so as to reduce the operating load on the lever and improve the brake effectiveness.
On disc-brake vehicles, the automatic adjusting mechanism (one- shot mechanism) has been employed that keeps the reserve travel (a gap between the piston and the push rod) of the parking brake lever at a constant value.

GSM00110-99999

One-shot mechanism

(1) Construction
The one-shot mechanism consists of a push rod (adjusting bolt), a sleeve nut built-in the piston assembly, a bearing, a washer, a wave washer and a snap ring. This mechanism is operated when the service brake pedal is depressed.



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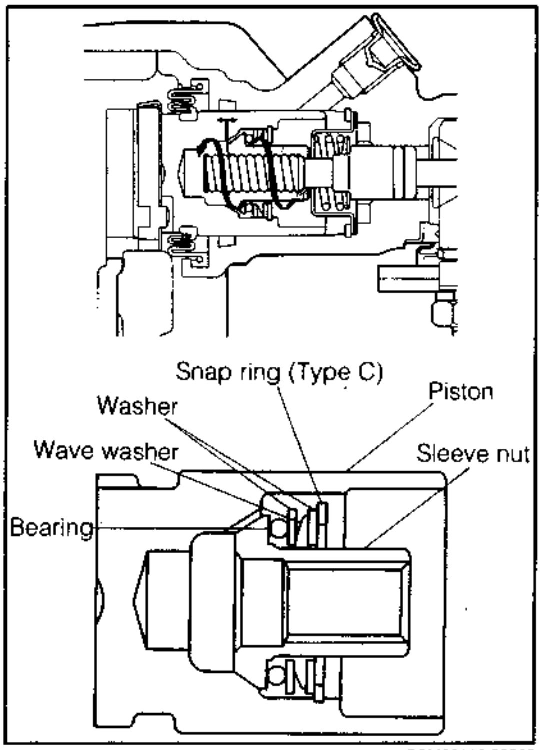
(2) Operation

When the service brake pedal is depressed, the piston moves forward by a distance corresponding to the pad wear by the hydraulic pressure of the master cylinder.

At this time, the sleeve nut and adjusting nut section will not move, for the sleeve nut and adjusting bolt (push rod) are connected by the screw section.

However, the sleeve nut, bearing, washers and wave washer move in the forward direction of the piston, contracting the wave washer, for they are incorporated inside the piston by the snap ring.

Because of a reaction force generated at the wave washer this time, the sleeve nut which is in a floated state from the piston by the bearing is turned by a distance of the gap between the piston and the sleeve nut (corresponding to the pad wear). Consequently, the gap between the piston and the sleeve nut (push rod) can be kept at a proper value.



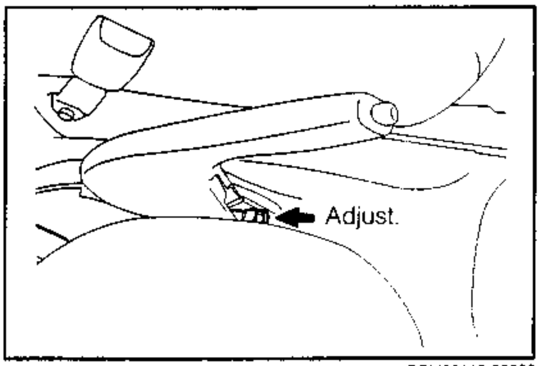
GSM00112-99999

NOTE:

- **When replacing the pad, make sure to return the piston into the cylinder by turning the piston clockwise.**
- **After the pad has been replaced or the caliper has been disassembled, be sure to depress the service brake pedal two or three times and adjust the reserve travel of the parking brake lever.**

arking brake

The parking brake comes in two kinds according to the difference in shape of the center console.



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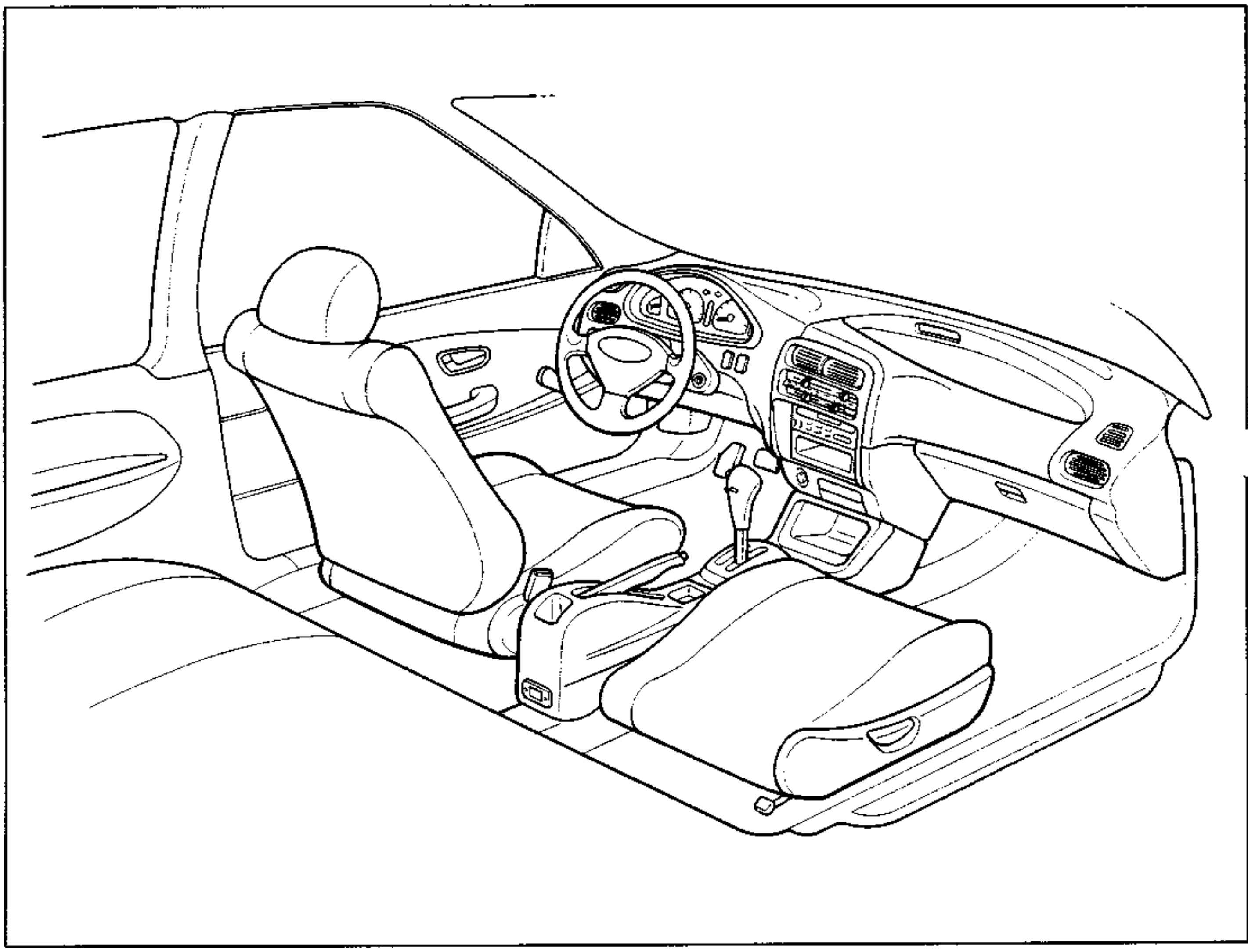
VEHICLE INTERIOR



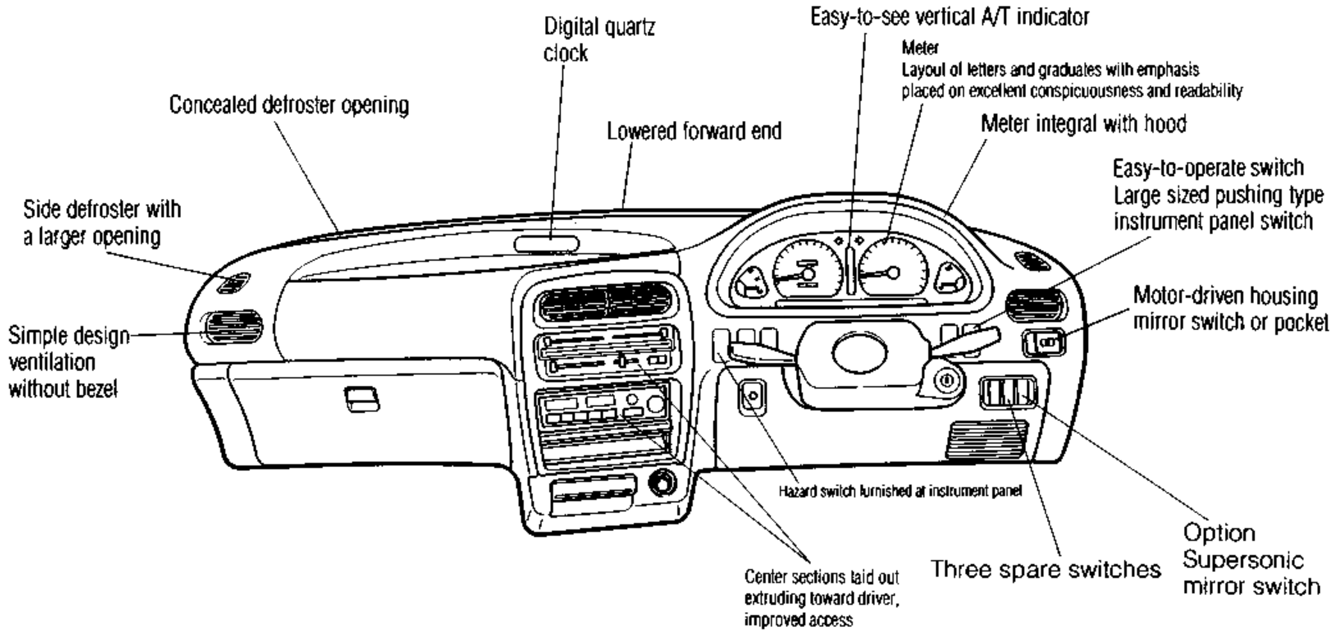
With a view to creating a vehicle the users will desire to use for a long time with friendly feeling and affectioı the vehicle interior has been so designed that the vehicle may have an ideal physical space with streameɑ lines. A quality feeling that is one class higher has been provided through the realization of balanced seat positions, comfortable seats, well-balanced and comfortable arrangement of the interior components, instrument panels facing slightly toward the driver and slightly-larger sized switches that feature good conspicuousness.

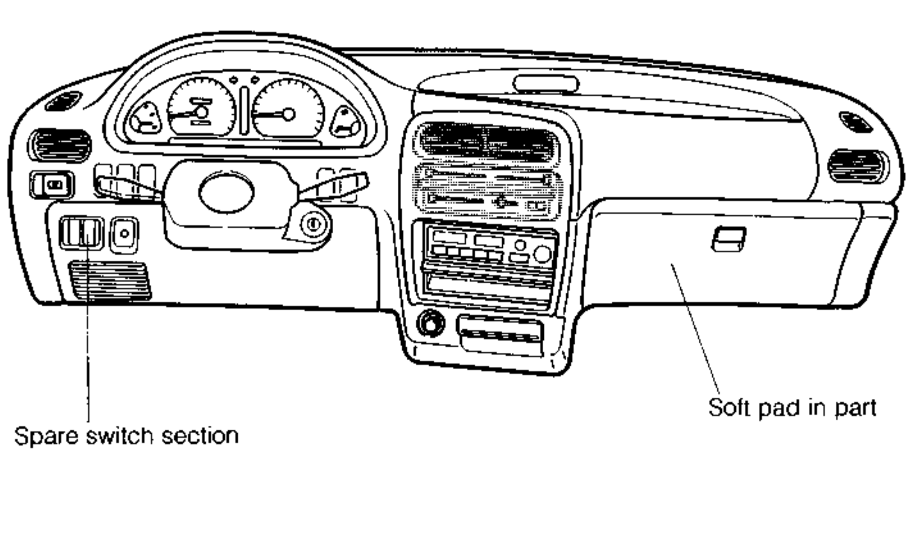
GSM00114-99999

INSTRUMENT PANEL

To provide an improved quality feeling, the instrument panel has been designed to consist of simple and streamed lines. For easier operation, frequently-used heat control switches and radio are arranged at relatively-high positions. Moreover, the center clusters have been arranged so that they face toward the driver's seat.

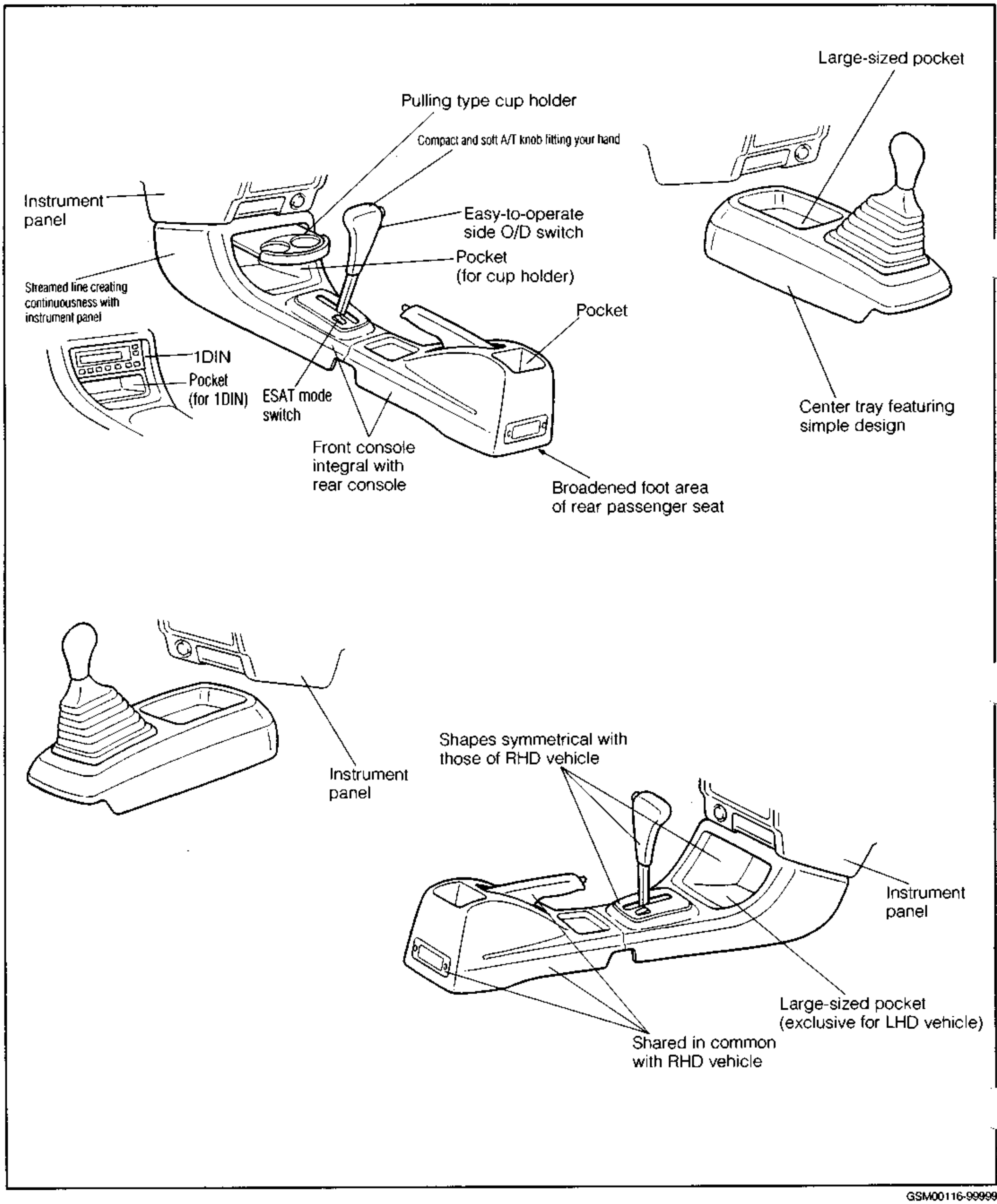
In addition, the distance between switches and the driver's seat has been shortened and the switches have been enlarged for easier operation.



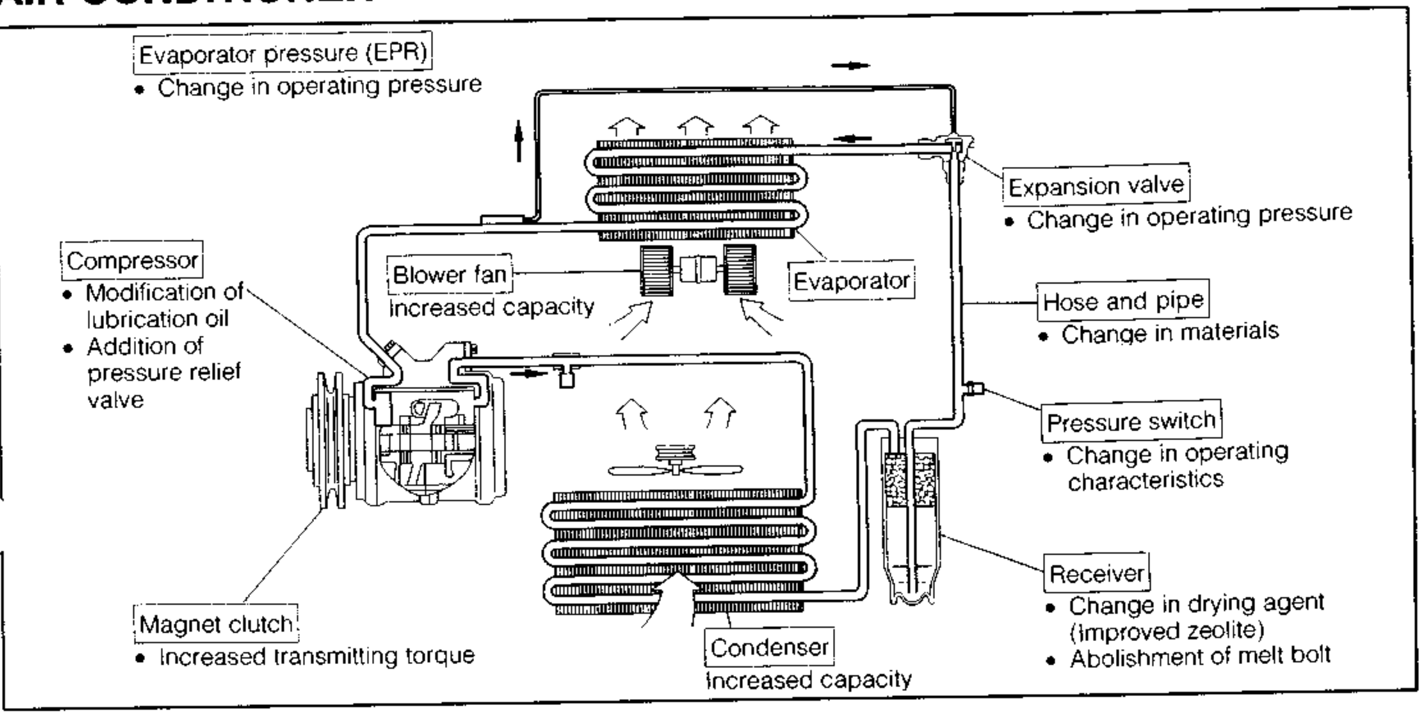


CONSOLE BOX

On all models, the full-console box is optional equipment. This console box has been so designed that it provides a continuous-feeling from the center cluster section of the instrument panel.
On high-grade models of AT and MT vehicles, the center tray is standard equipment. No basic model is equipped with the center tray.



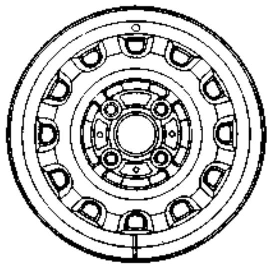
AIR CONDITIONER



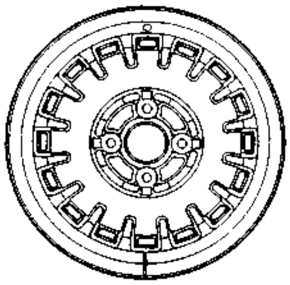
It has been agreed on the world level that the use of this substance of CFC12 (R12), because of its properties to destroy the ozone layers, be abolished totally by the end of this century.
The air conditioner has adopted one compatible with alternate flon HFC 134a (R134a) that has an extremely small coefficient of ozone layer destruction. In addition, the air conditioning capacity has been increased.
The R134a, which is expressed by a chemical formula of CH_2FCF_3, does not contain Cl group (chlorine group) which constitutes a principal cause of the ozone layer destruction. Therefore, the R134a is the most expected substance as an alternate flon which has an extremely low coefficient of ozone layer destruction and stable physical property.
Furthermore, R134a also meets the requirements that the coefficient of global warming effect must be low and that the characteristics are similar to those of hitherto-employed CFC12 (R12).
However, R134a can not be used in the air conditioners for hitherto-employed R12 use owing to the following characteristics: Poor solubility with the compressor oil (mineral oil), a greater water solubility (easy-to-take-in water) and a greater degree of swelling against sealing materials and hose materials.
To realize an air conditioner compatible with R134a, the following modifications have been enforced: Change in each sealing material and sealing construction, change in the dying agent, increased capacities of the magnet clutch and condenser, etc., change in the pressure switch and expansion valve and development/employment of new lubricating oil.
Moreover, taking into consideration the fact that even R134a has not a zero coefficient of ozone layer destruction, the hitherto-employed melt bolt has been abolished and the pressure relief valve is provided at the compressor side. This relief valve is opened to a required degree, in the event that the high-pressure rises abnormally, so as to lower the pressure. In this way, the releasing of the refrigerant (R134a) to the atmosphere may be kept to a minimum level.
From the viewpoint of the service, as a precautionary measure to prevent wrong use of the former refrigerant (R12) onto the new air conditioner, the piping joint sections, charging valve and service tools have been altered. Moreover, an identification of R134-use has been made conspicuously on each unit.

GSM00117-99999

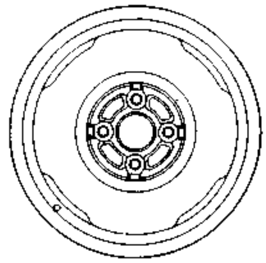
WHEEL



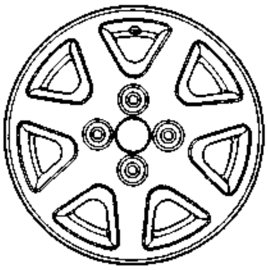
13-inch steel wheel



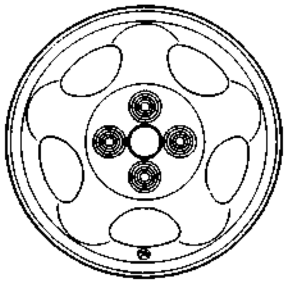
14-inch steel wheel



Spare-wheel
(for temporary tire)



13-inch aluminum wheel



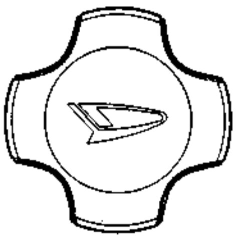
14-inch aluminum wheel

The wheel basically comes in five kinds.
On the 13-inch wheel, the thickness of the steel material has been changed so that the weight may be reduced.
The aluminum wheel comes in two kinds; 13-inch and 14-inch wheels. The 13-inch aluminum wheel has employed 7-spoke type which gives a stable and tensed appearance. The 14-inch aluminum wheel is a 5-spoke type featuring sporty image.
For compact design, the wheel offset of the temporary tire has been shortened.

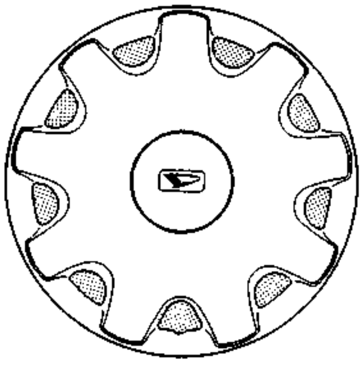
GSM00118-99999

WHEEL CAP

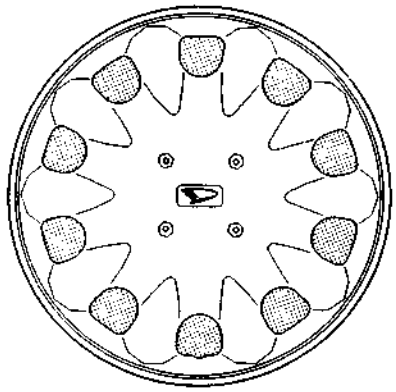
The following kinds of wheel caps have been provided.



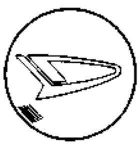
Center cap for
steel wheel
(standard)



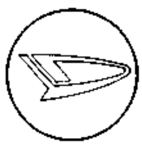
13-inch full-wheel
cap (option)



14-inch full-wheel
cap (option)0



Center cap for
aluminum wheel
with stripes 13-inch



Center cap for aluminum
wheel without stripes
14-inch

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DAIHATSU

G200,G201

CHASSIS

MAINTENANCE

GMA00001-00000

NO. 9186-GE

MAINTENANCE SCHEDULE

SECTION DESCRIPTION

Maintenance operation:

NOTE 1. Check the odometer and the period the vehicle has been operated whichever comes first.
2. Continue periodic maintenance after 100,000 km (60,000 miles), following this schedule.

O ... Check or inspect ● ... Change or replace

Section	Inspection		× 1000 km	1	10	20	30	40	50	60	70	80	90	100	See page
			× 1000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
			Years	—	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Brake system	Brake booster	• Function						O				O			MA-24
		• Rubber parts (7 inches), booster assembly (8 inches) and vacuum hose replacement		Every 4 years											MA-24
	Brake fluid	• Level		O	O	O	O	O	O	O	O	O	O	O	MA-6
		• Change		Every 1 years											MA-6
	Brake hose & tube	• Leakage Loose clamps Damage		O	O	O	O	O	O	O	O	O	O	O	MA-7
		• Hose change		Every 4 year											MA-7
	Brake drum / disk	• Wear Damage						O				O			MA-10
	Brake lining	• Drum-to-lining clearance Wear				O		O		O		O		O	MA-14
	Brake pad (disk brake)	• Wear Damage Disk-to-pad clearance				O		O		O		O		O	MA-10
	Brake pedal	• Free play Reserve travel		O	O	O	O	O	O	O	O	O	O	O	MA-5
		• Effectiveness			O	O	O	O	O	O	O	O	O	O	MA-6
	Master cylinder, wheel cylinder and disc caliper	• Fluid leakage				O		O		O		O		O	MA-10
		• Function Damage Wear						O				O			MA-10
		• Cup and dust seal replacement		Every 2 years											MA-10
	Parking brake lever	• Working travel		O	O	O	O	O	O	O	O	O	O	O	MA-8
		• Effectiveness				O		O		O		O		O	MA-8
	Parking brake rod & cable	• Tightness Rattle Damage						O				O			MA-9
	Proportioning valve	• Replacement		Every 4 years											MA-36

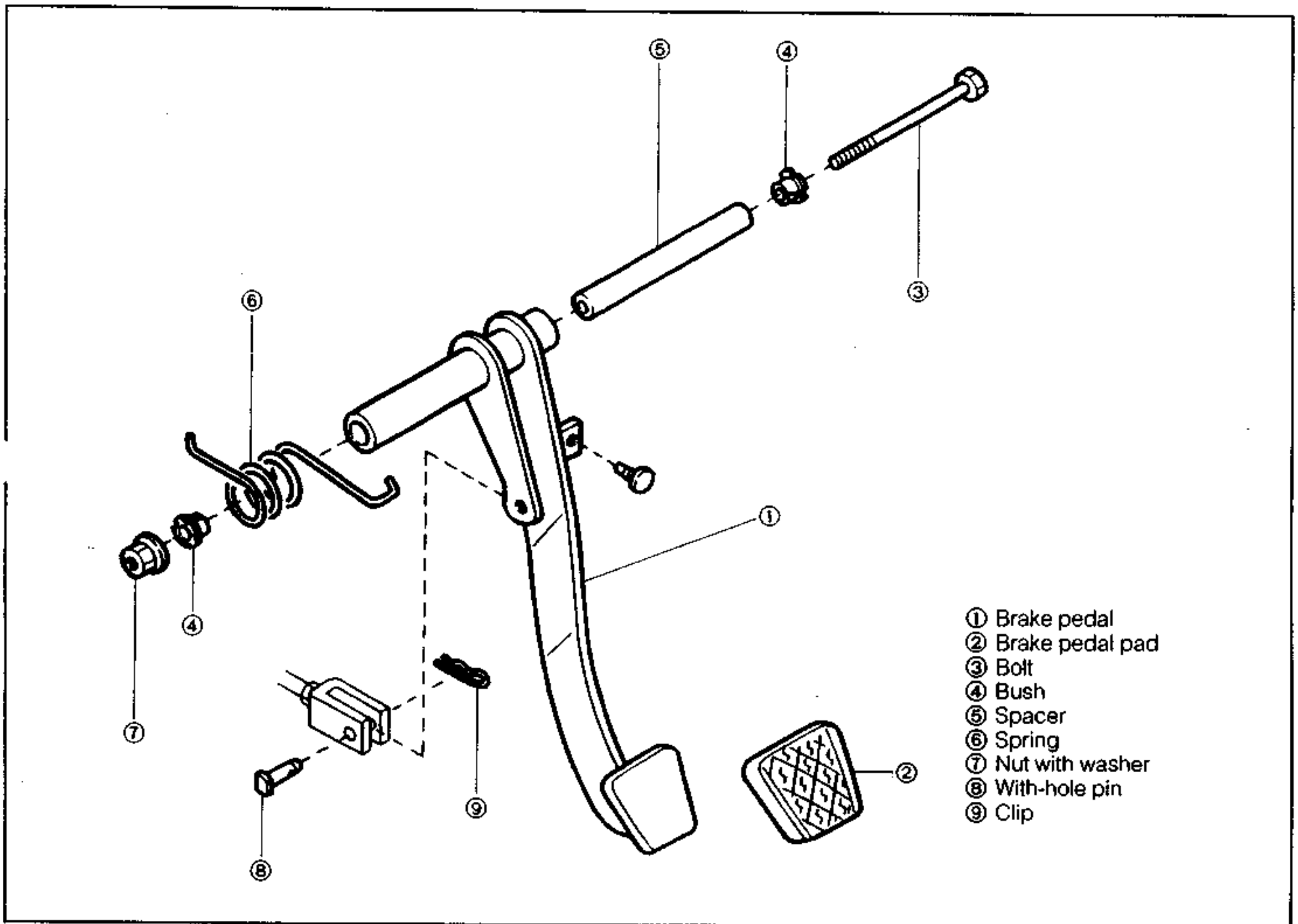
GMA00002-00000

Section	Inspection			1	10	20	30	40	50	60	70	80	90	100	See page
			× 1000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
			Years	—	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Chassis and Body	Chassis grease & Oil	• Condition				○		○		○		○		○	MA-40
	Door & hood	• Lock operation Tightness Damage						○				○			MA-40
	Muffler and exhaust pipe	• Damage Tightness				○		○		○		○		○	MA-40
		• Function of muffler						○				○			MA-40
	Seat belt	• Operation Tightness						○				○			MA-41
Electrical system	Battery	• Connection of terminal section Specific gravity				○		○		○		○		○	MA-41
		• Electrolyte level			○	○	○	○	○	○	○	○	○	○	MA-41
	Horn, wiper, washer & defroster	• Function				○		○		○		○		○	MA-42
	Lighting system	• Function		○	○	○	○	○	○	○	○	○	○	○	MA-42
	Meter & gauges	• Function				○		○		○		○		○	MA-44
	Wire harness	• Tightness of clamp Damage						○				○			MA-44
Power transmission system	Automatic transmission	• Fluid level Fluid leakage Fluid change		○		○		○		○		●		○	MA-45
		• Rattle of operating mechanism						○				○			MA-45
		• Oil cooler hose		Every 4 years											MA-45
	Clutch	• Free play Reserve travel			○	○	○	○	○	○	○	○	○	○	MA-46
		• Operation				○		○		○		○		○	MA-46
	Manual transmission	• Oil level Oil leakage Oil change		○		○		●		○		●		○	MA-47
		• Rattle of operating mechanism						○				○			MA-47
	Drive shaft	• Crack and damage of joint dust boot Tightness of connecting section				○		○		○		○		○	MA-48
		• Rattle of spline and joint section						○				○			MA-48
Running system	Tire	• Clacks and damage Objects caught in the tire pattern Pressure Wear		○	○	○	○	○	○	○	○	○	○	○	MA-49
		• Rotation			○	○	○	○	○	○	○	○	○	○	MA-49
	Wheel	• Damage of wheel disk						○				○			MA-50
		• Looseness of wheel hub nut				○		○		○		○		○	MA-50
	Wheel bearing	• Rattle						○				○			MA-50

Section	Inspection		×1000 km	1	10	20	30	40	50	60	70	80	90	100	See page
			×1000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
			Years	—	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Steering system	Ball joint dust boot	• Damage				○		○		○		○		○	MA-51
	Gear box	• Leakage		○				○				○			MA-51
		• Tightness						○				○			MA-51
	Knuckle	• Rattle of linkage						○				○			MA-51
	Power steering belt	• Damage Tightness			○	○	○	○	○	○	○	○	○	○	MA-51
	Power steering fluid	• Fluid hose change		Every 4 years											MA-52
		• Level Leakage		○	○	○	○	○	○	○	○	○	○	○	MA-52
	Rod and arm	• Damage Rattle Tightness				○		○		○		○		○	MA-54
	Steering wheel	• Free play Operation Rattle Tightness				○		○		○		○		○	MA-55
	Wheel alignment	• Side slip test Turning angle						○				○			MA-55
Suspension system	Attaching portion & linkage	• Damage Rattle Tightness						○				○			MA-56
	Shock absorber	• Damage Function Oil leakage Rattle						○				○			MA-56
	Spring	• Damage						○				○			MA-56
	Suspension arm, control arm & dust cover	• Damage Rattle Tightness						○				○			MA-56
Engine	Fuel line & connection	• Fuel hose replacement		Every 4 years											MA-37
Exhaust emission control system	Check valve	• Function						○				○			MA-37

MAINTENANCE OPERATIONS

BRAKE PEDAL

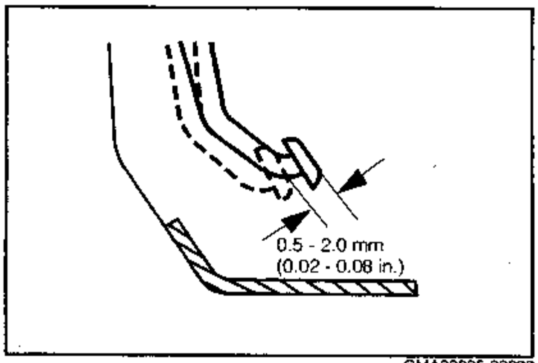


GMA00004-99999

FREE PRAY

With the engine stopped, first reduce the vacuum in the booster by depressing the brake pedal more than five times. Then lightly and slowly depress the pedal by hand until you feel resistance and measure the free play.

Specified Value: 0.5 - 2.0 mm

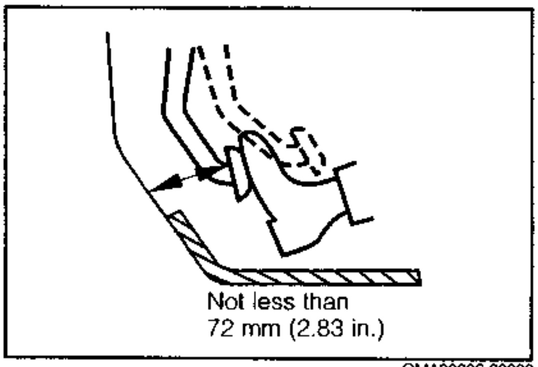


GMA00005-99999

RESERVE TRAVEL

1. Place chocks at the wheels. Place the transmission in neutral state. With the engine running at the idle speed and with the parking brake lever released, depress the brake pedal with applying force of 300 N.
2. Measure the distance between the position where the depressed pedal stops and the floor panel.

   Specified Value: 72 mm



GMA00006-99999

EFFECTIVENESS

1. Check that the brakes are functioning effectively, either by using the brake tester or by conducting road tests on a level road.
2. Ensure that the brakes are functioning normally without any side pull.

GMA00007-99999

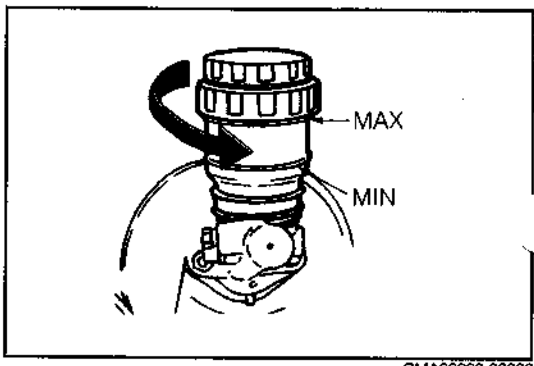
BRAKE FLUID

LEVEL

Check the brake fluid level and replenish the brake fluid to the "MAX" line of the reservoir tank, if required.

NOTE:

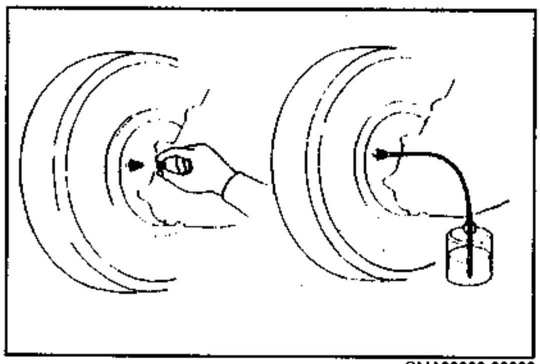
- **If the brake fluid is spilled in advertently over the paint-finish surface of the vehicle, quickly wipe off the brake fluid.**



GMA00008-99999

CHANGE

1. Submerge one end of a hose in a container filled with the brake fluid. Connect the other end of the hose to the wheel cylinder bleeder plug of the vehicle. Loose the bleeder plug.
2. Release the brake fluid completely from each wheel cylinder.
3. Tighten the bleeder plug and fill the brake fluid to the "MAX" line of the tank.



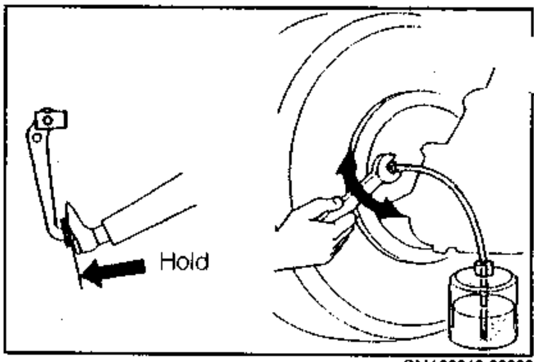
GMA00009-99999

AIR BLEEDING

1. Perform the operation by two persons. One person should depress the brake pedal slowly and hold it in a depressed state.
2. The other person slackens the bleeder plug 1/3 through 1/2 turn at a time. Be sure to tighten the bleeder plug before the hydraulic pressure ceases to exist in the cylinder.
3. Repeat the step 4 and 5 above, until you no longer observe bubbles in the fluid.
4. Depress the brake pedal and check fluid leakage.

NOTE:

- For the vehicle equipped with A.B.S., air bleeding takes more time than that without A.B.S..



GMA00010-99999

GMA00011-99999

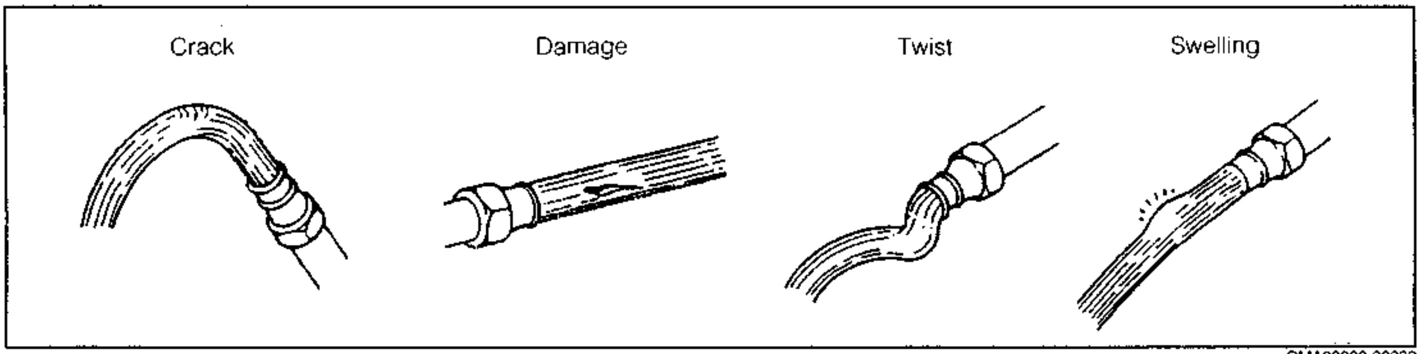
BRAKE HOSE & TUBE

LEAKAGE, LOOSE CLAMP AND DAMAGE

Inspect the hose for following points.

(1) Hoses and tubes for damage, cracks
(2) Hoses for deformation or swelling
(3) Tubes for corrosion or rust
(4) Tube clamps and related parts for tightness, rattle or damage
(5) Connection for fluid leakage
(6) Hoses for extreme bending, twisting or pulling

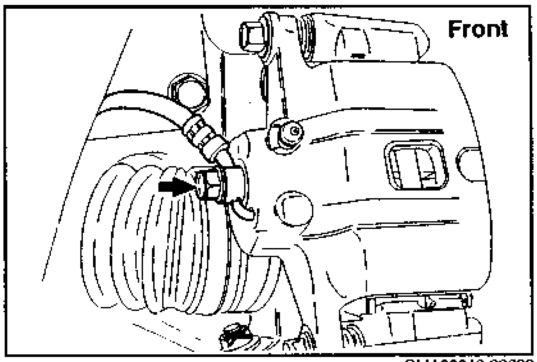
GMA00012-00000



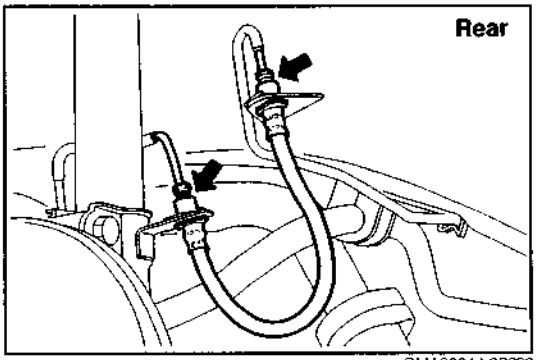
GMA00000-99999

HOSE CHANGE

1. Release the brake fluid from the reservoir tank.
2. Separate the hose from the brake tube, using a brake pipe wrench.
3. Detach the clip.
4. Disconnect the hose from the shock absorber bracket.
5. Disconnect the hose from wheel cylinder (or disc brake caliper).
6. Install in the reverse order of disconnecting.



GMA00013-99999



GMA00014-99999

NOTE:

- **When install the hose to the wheel cylinder, tighten the specified torque, new gasket interposed. (Front brake)**

  Tightening Torque: 27 - 34 N·m
  (2.7 - 3.5 kgf-m, 19.5 - 25.3 ft-lb)

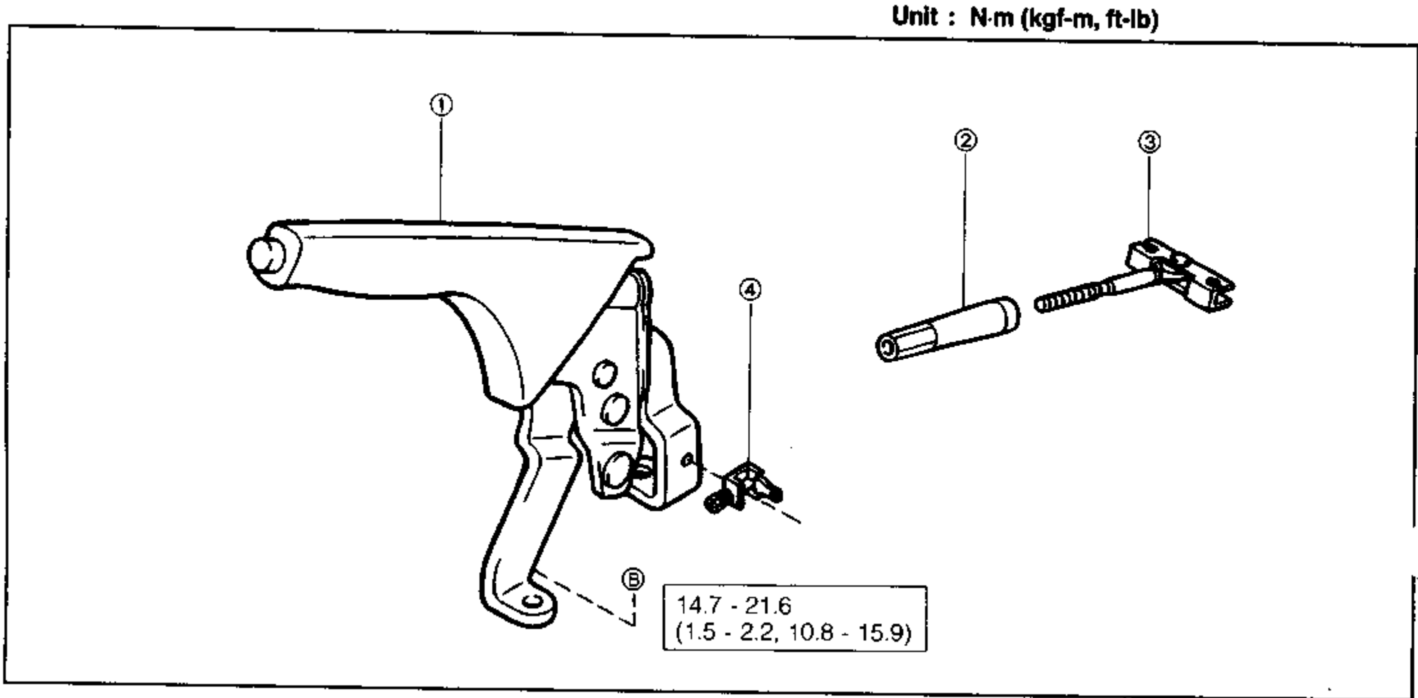
- **When install the brake hose to the brake ture, tighten the specified torque. (Rear brake)**

  Tightening Torque: 13 - 17 (1.3 - 1.8 kgf-m)

7. Perform the operation of air bleeding for the brake piping line. (See brake fluid change.)

PARKING BRAKE LEVER

□ : Tightening torque
Unit : N·m (kgf-m, ft-lb)



GMA00015-99999

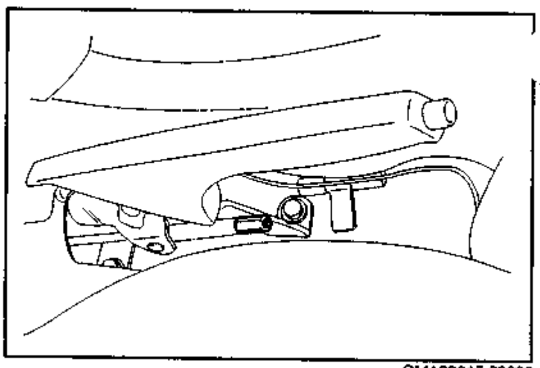
① Parking brake handle
② Adjusting nut
③ Parking brake pull rod
④ Switch

GMA00016-00000

WORKING TRAVEL

1. Pull the lever with 200 N by hand.
   Specified Value: 4 - 7 notches

   NOTE:
   - **If not specified value, adjust the adjusting nut.**
2. Check the brake warning lamp for proper operation.



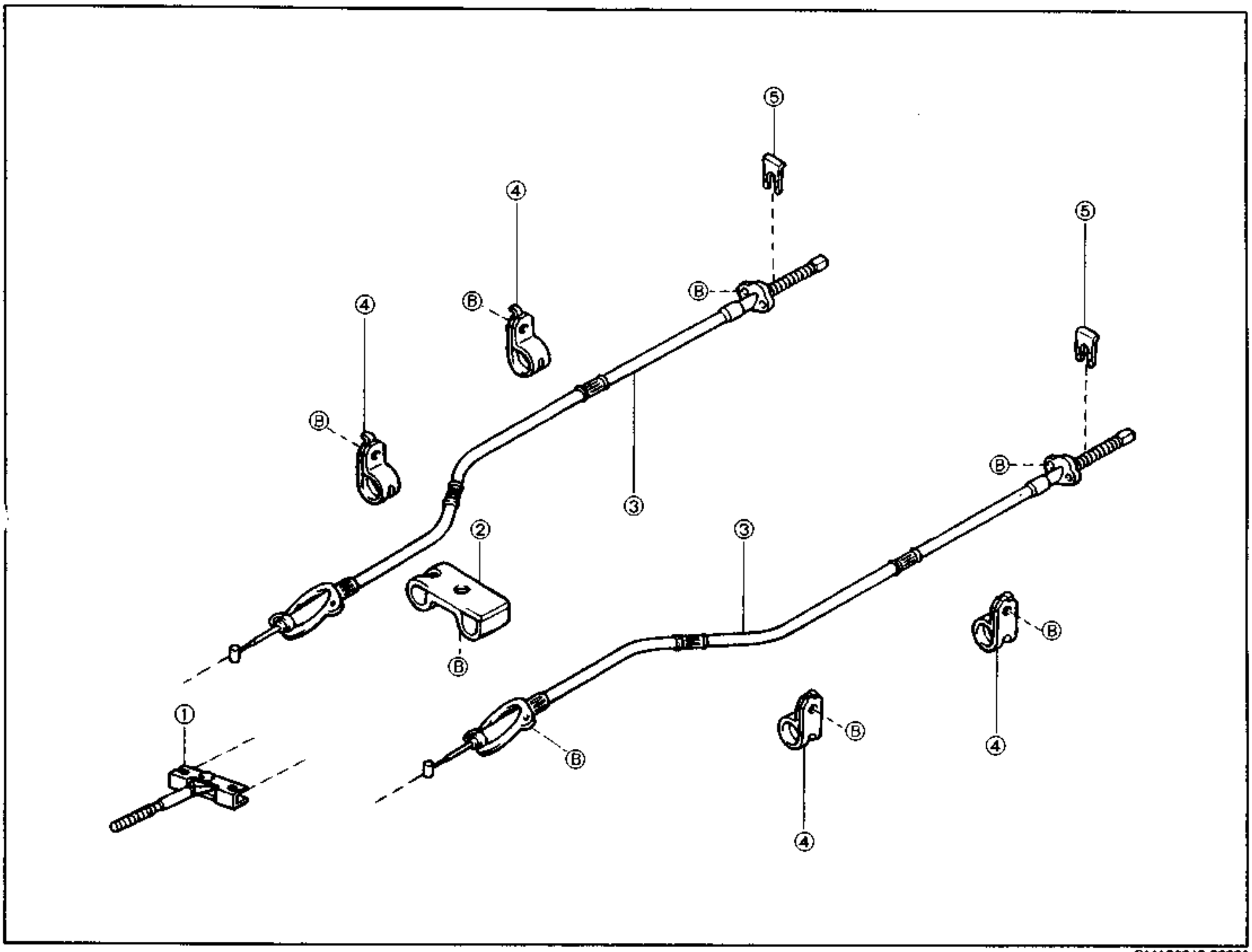
GMA00017-99999

EFFECTIVENESS

1. Check to see if the vehicle can be retained in a stationary state on a dry slope with grade of 1:5 when the parking brake is applied.
2. Check that the ratchet of parking brake lever is functioning properly. Also, check the tooth shape of the ratchet for any abnormality.

GMA00018-0000'

PARKING BRAKE ROD & CABLE



GMA00019-99999

① Parking brake pull rod
② Clamp
③ Parking brake cable assembly
④ Clamp
⑤ Clip

GMA00020-00000

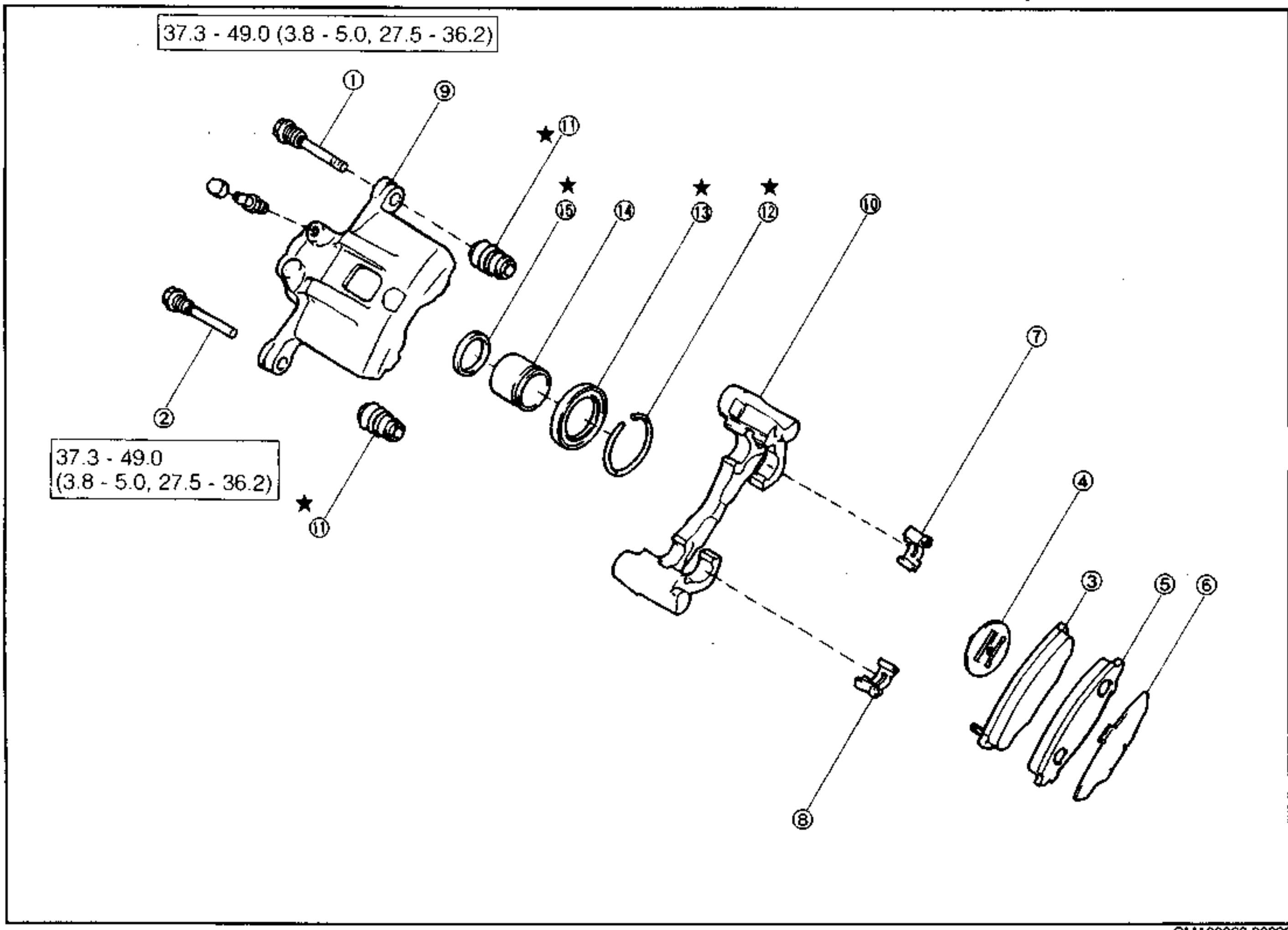
TIGHTNESS, RATTLE OR DAMAGE

1. Inspect the clamp-related parts for tightness, rattle or damage.
   Tightening Torque: 4 - 7 N·m
   (0.4 - 0.7 kgf-m, 2.9 - 5.2 ft-lb)
   for all bolts
2. Inspect the rod and cable for damage.

GMA00021-00000

FRONT BRAKE (Disc brake)

☐ : Tightening torque
Unit : N·m (kgf-m, ft-lb)
★ : Non-reusable parts



GMA00022-99999

1. Main cylinder slide pin
2. Sub cylinder slide pin
3. Disc brake W/indicator pad No. 1
4. Anti-squal shim No. 1
5. Disc brake pad No. 2
6. Anti-squal shim No. 2
7. Disc brake pad guide plate No. 1
8. Disc brake pad guide plate No. 2
9. Disc brake cylinder
10. Disc brake cylinder mounting
11. Pin boot
12. Set ring
13. Cylinder boot
14. Disc brake piston
15. Piston seal

GMA00023-00000

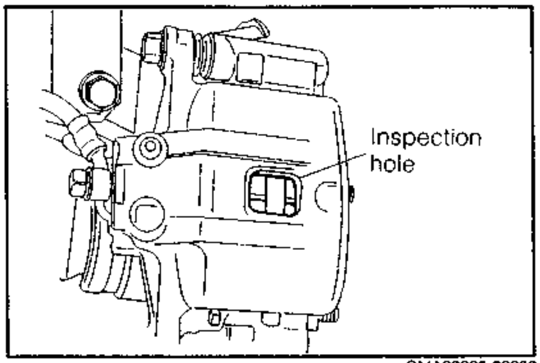
INSPECTION

1. Jack up the vehicle with safety stands. Remove the wheel.
2. Inspect the pad for damage and uneven wear.
3. Inspect the disk caliper for damage and malfunction.
   NOTE:
   - Any defective parts must be replaced.

GMA00024-00000

DISC BRAKE PAD WEAR

1. Inspect the brake pad thickness through the inspection hole provided in the caliper.
   Specified Thickness: 10 mm
   Minimum Limit : 1 mm



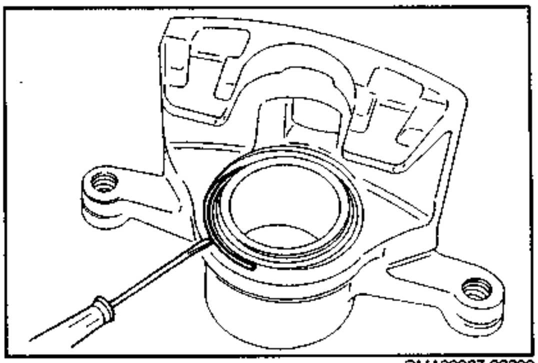
GMA00025-99999

CUP AND DUST SEAL REPLACEMENT

1. Disconnect the flexible hose from the disc brake caliper.
2. Remove the disc brake cylinder by removing the two attaching bolts.
3. Detach the disc brake pad.
   NOTE:
   - **Cut off the brake fluid leakage at the point of flexible hose end by means of suitable stopper.**

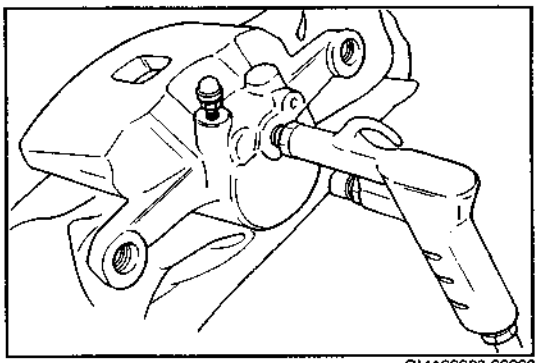
GMA00026-00000

4. Detach the cylinder boot set ring and cylinder boot, using a screwdriver.



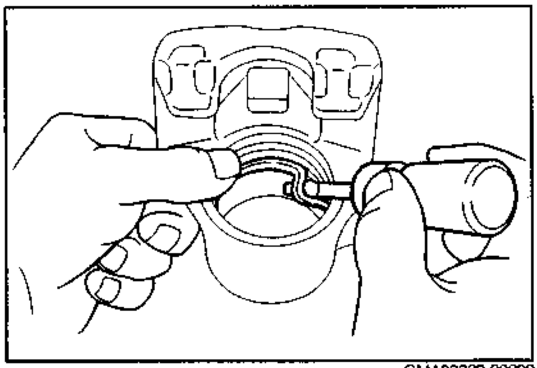
GMA00027-99999

5. With a wooden piece or a cloth placed at the end of the disc cylinder, as indicated in the illustration. Drive out the piston by applying compressed air.
   CAUTION:
   - **Special caution must be exercised so that no brake fluid may be splashed. Also, be very careful not to allow your finger be pinched.**



GMA00028-99999

6. Detach the piston seal, using a screwdriver.

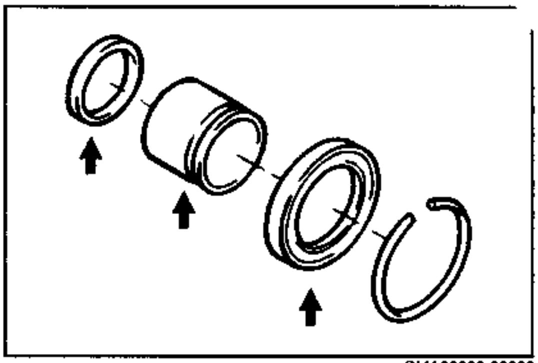


GMA00029-99999

7. Prepare the following new parts.
   - Piston seal
   - Cylinder boot
   - Set ring
   - Bush dust boot

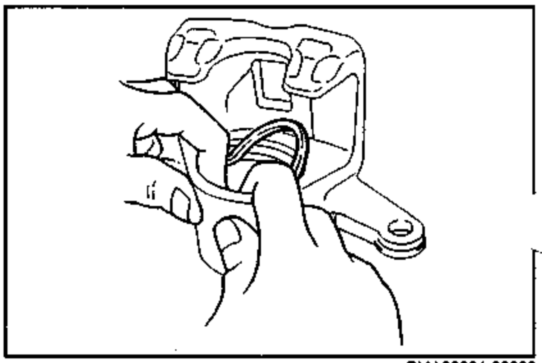
   NOTE:
   - Also, replace any defective parts.
   - Apply grease to those points indicated in the illustration.

   Specified Grease: Brake rubber grease.



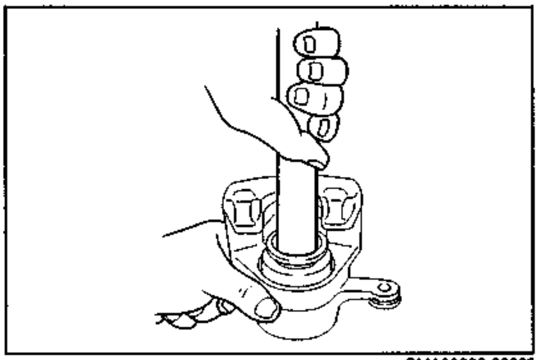
GMA00030-99999

8. Assemble the piston seal in the disk brake caliper.



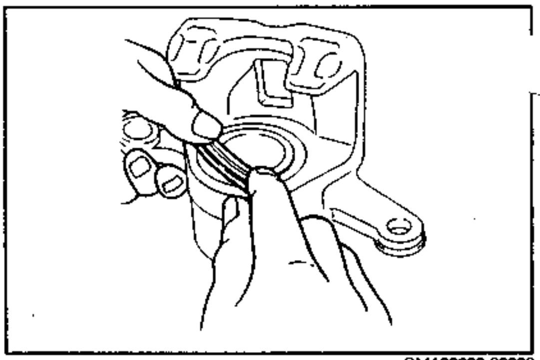
GMA00031-99999

9. Insert the piston into the caliper, making sure that the piston is not tilted during the installation.



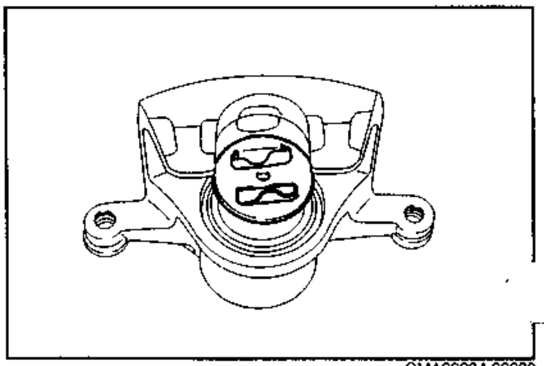
GMA00032-99999

10. Assemble the cylinder boot in the caliper.
    NOTE:
    - Make sure that the boot is fitted securely in the groove.
11. Assemble the cylinder boot set ring, making sure not to scratch the boot.



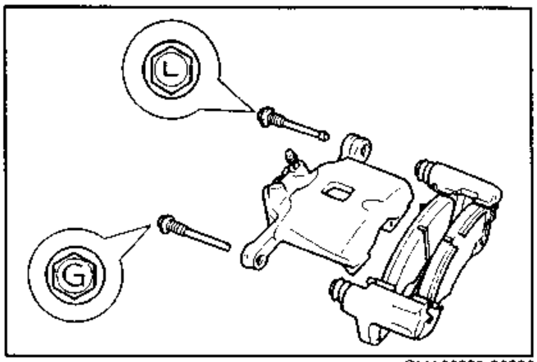
GMA00033-99999

12. Install the anti-squall shim No. 1 to the disc cylinder.



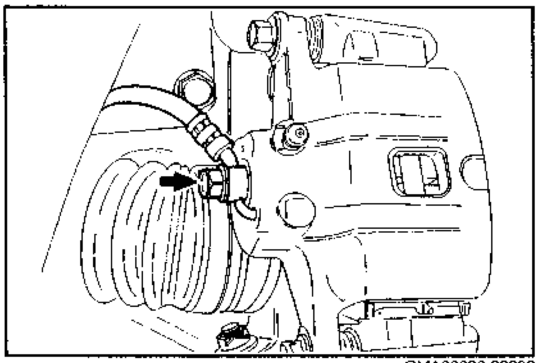
GMA00034-99999

13. Install the disc brake pad guide plate on the knuckle.
    Install the brake pad in the caliper, with anti-squeal shims.
    Install the disc brake pad to the disc brake cylinder mounting. Then, install the disc brake cylinder to the disc brake cylinder mounting.
    Tightening Torque: 38 - 49 N·m
    (3.8 - 5.0 kgf-m, 27.5 - 36.2 ft-lb)



GMA00035-99999

14. Install the flexible hose.
    Tightening Torque: 27 - 34 N·m
    (2.7 - 3.5 kgf-m, 19.5 - 25.3 ft-lb)
15. Perform air bleeding for the brake system.



GMA00036-99999

DISC TO PAD CLEARANCE

1. Depress the brake pedal more than 20 times.
2. Check to see if the brake disc can be rotated smoothly.
3. Ensure that no abnormal sound is emitted when the wheel is rotated.

GMA00037-00000

FLUID LEAKAGE

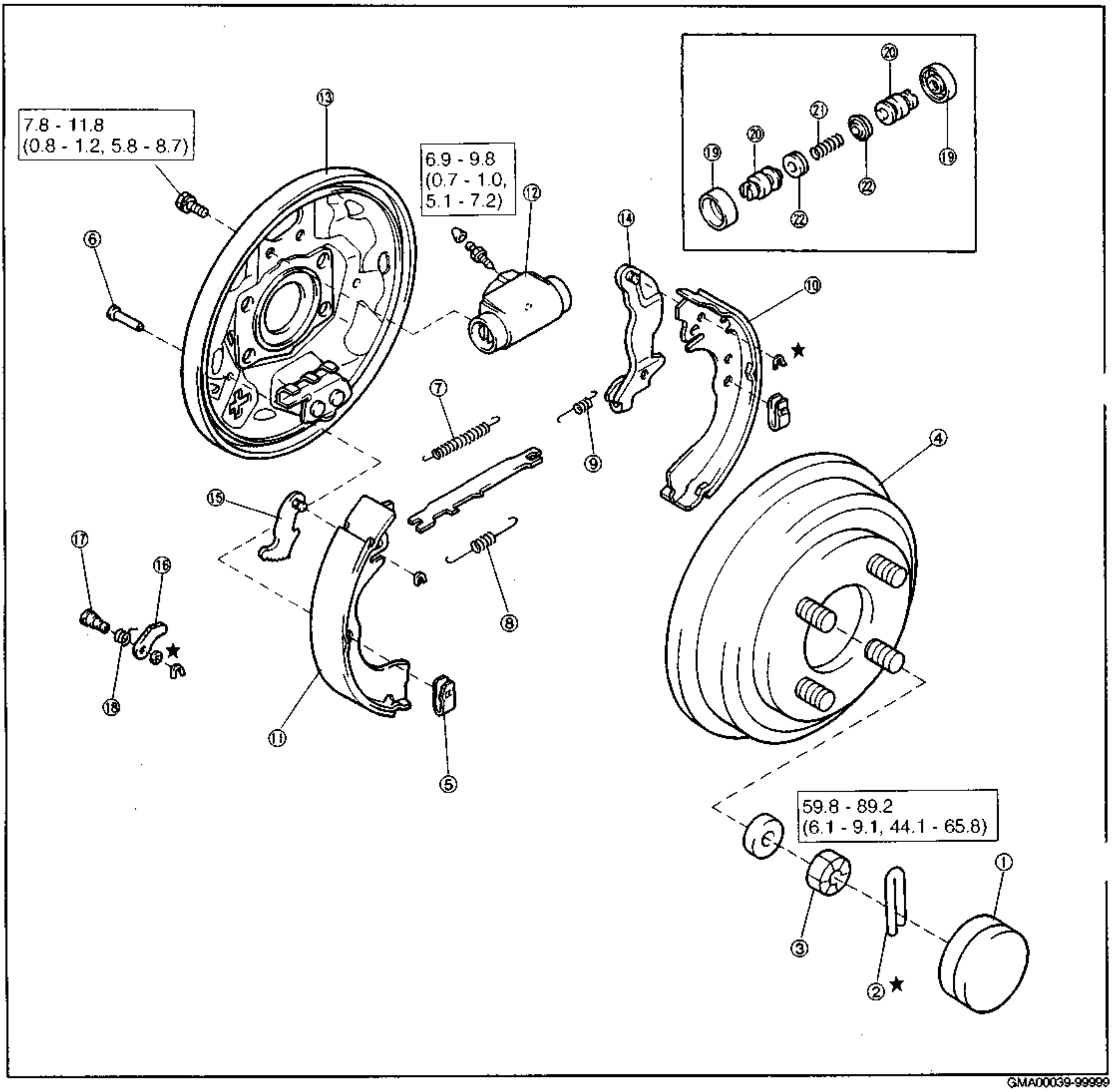
1. Inspect the fluid leakage from the disk brake cylinder portion.
2. Inspect the fluid leakage from the brake hose connecting portion between the cylinder and hose.

GMA00038-00000

REAR DRUM BRAKE

COMPONENTS

☐ : Tightening torque
Unit : N·m (kgf-m, ft-lb)
★ : Non-reusable parts



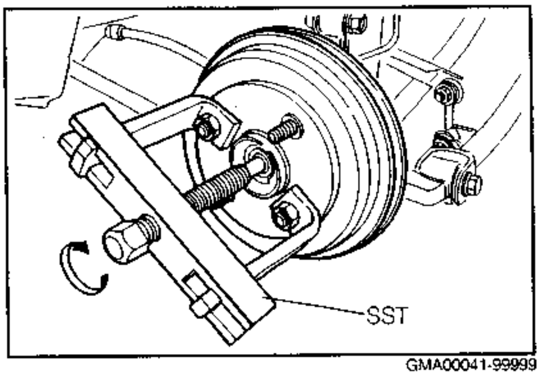
GMA00039-99999

① Rear hub grease cap
② Cotter pin
③ Castle nut
④ Brake drum subassembly
⑤ Shoe hold down spring
⑥ Shoe hold down pin
⑦ Tension No. 4 spring
⑧ Tension No. 3 spring
⑨ Tension spring
⑩ Brake shoe assembly
⑪ Brake shoe assembly
⑫ Brake wheel cylinder assembly
⑬ Brake backing plate
⑭ Parking brake shoe lever subassembly
⑮ Automatic adjust latch
⑯ Automatic adjust lever
⑰ Automatic adjust pin
⑱ Torsion spring
⑲ Wheel cylinder boot
⑳ Wheel brake cylinder piston
㉑ Compression spring
㉒ Cylinder cup

GMA00040-00000

INSPECTION

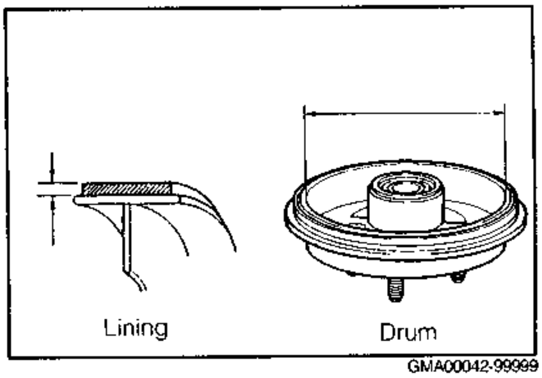
1. Jack up the vehicle with safety stands. Remove the wheel.
2. Remove the grease cap, cotter pin, lock nut and plate washer.
3. Remove the brake drum, using the SST.
   SST: 09510-87301-000
4. Inspect the backing plate, brake drum and brake shoe for damage, uneven wear or scores.



GMA00041-99999

BRAKE DRUM AND LINING WEAR

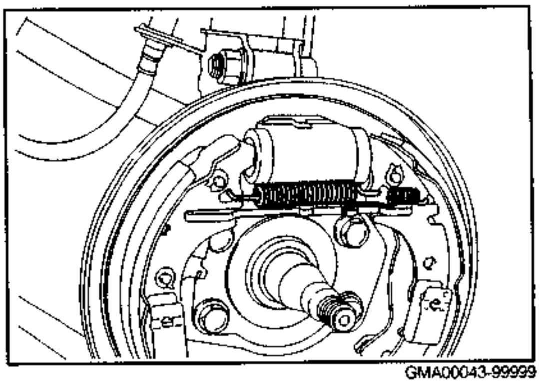
1. Inspect the brake drum diameter.
   Specified Diameter: 180 mm
   Allowable Limit : 181 mm
2. Inspect the brake lining thickness.
   Specified Thickness: 4.0 mm
   Allowable Limit : 1 mm



GMA00042-99999

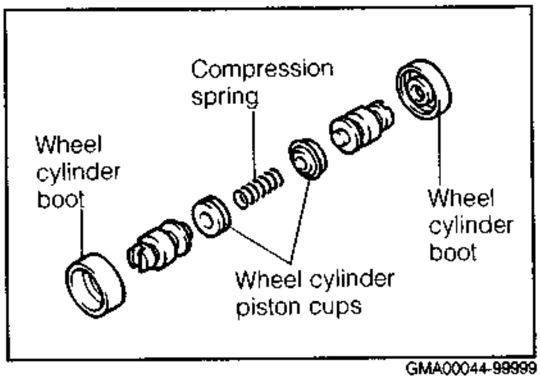
WHEEL CYLINDER REPLACEMENT

1. Remove the tension springs, using the SST.
   SST: 09703-30010-000
2. Disconnect the brake tube from the wheel cylinder, using the brake pipe wrench.



GMA00043-99999

3. Remove the attaching bolts of the wheel cylinder. Proceed to remove the wheel cylinder from the backing plate.
4. Replace the following parts.
   (1) Wheel cylinder boot
   (2) Wheel cylinder piston cups
   (3) Compression spring

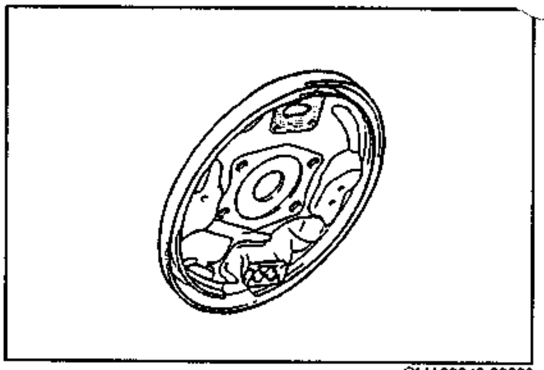


GMA00044-99999

5. Assemble the cup on the wheel cylinder piston.
   NOTE:
   - **Be sure to install the cup in the correct direction.**
   - **Apply brake rubber grease to the piston cup.**
6. Install the two pistons and compression spring to the wheel cylinder.
7. Assemble the two wheel cylinder boots.

GMA00045-00000

8. Install the wheel cylinder to the backing plate.
   Tightening Torque: 8 - 11 N·m
   (0.8 - 1.2 kgf-m, 5.8 - 8.7 ft-lb)

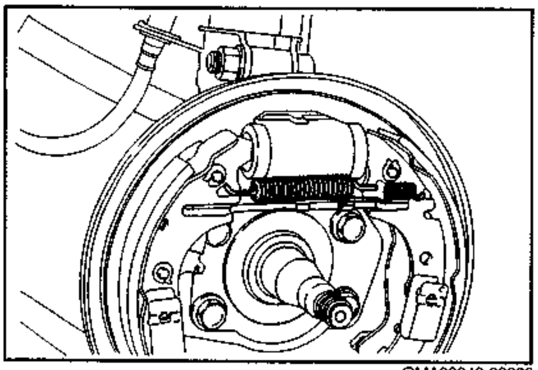


GMA00046-99999

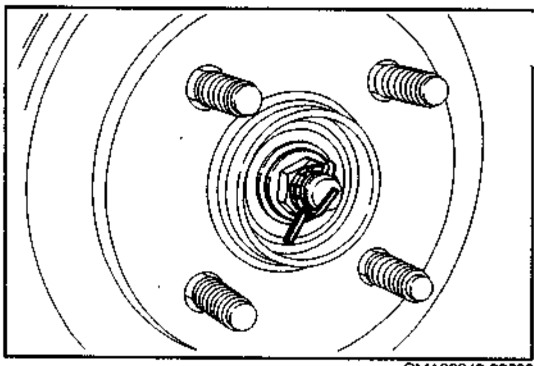
9. Install the brake pipe to the wheel cylinder temporarily by hand. Then, tighten the nut of brake pipe, using the brake pipe wrench.
   Tightening Torque: 13 - 17 N·m
   (1.3 - 1.8 kgf-m, 9.6 - 13.3 ft-lb)

GMA00047-000

10. Install the tension spring.
    NOTE:
    - Be careful no to damage the wheel cylinder boot during the installation.



GMA00048-99999



GMA00049-99999

11. Install the brake drum subassaembly, then tighten the lock nut.
    Tightening Torque: 60 - 89 N·m
    (6.1 - 9.1 kgf-m, 44.1 - 65.8 ft-lb)
12. Install the new cotter pin and the grease cap.
13. Perform air bleeding for the brakes.
14. Depress the brake pedal. Ensure that the automatic adjusting mechanism emit operating sound. Continue this operation, until you no longer hear any operating sound.
15. Adjust the working travel of the parking brake lever.

GMA00050-00000

DRUM TO LINING CLEARANCE

1. Depress the brake pedal and ensure that the automatic adjusting mechanism emits operating sound. Repeat this operation until you no longer hear the operating sound.
2. Ensure that the brake drum turns lightly.

GMA00051-00000

FLUID LEAKAGE

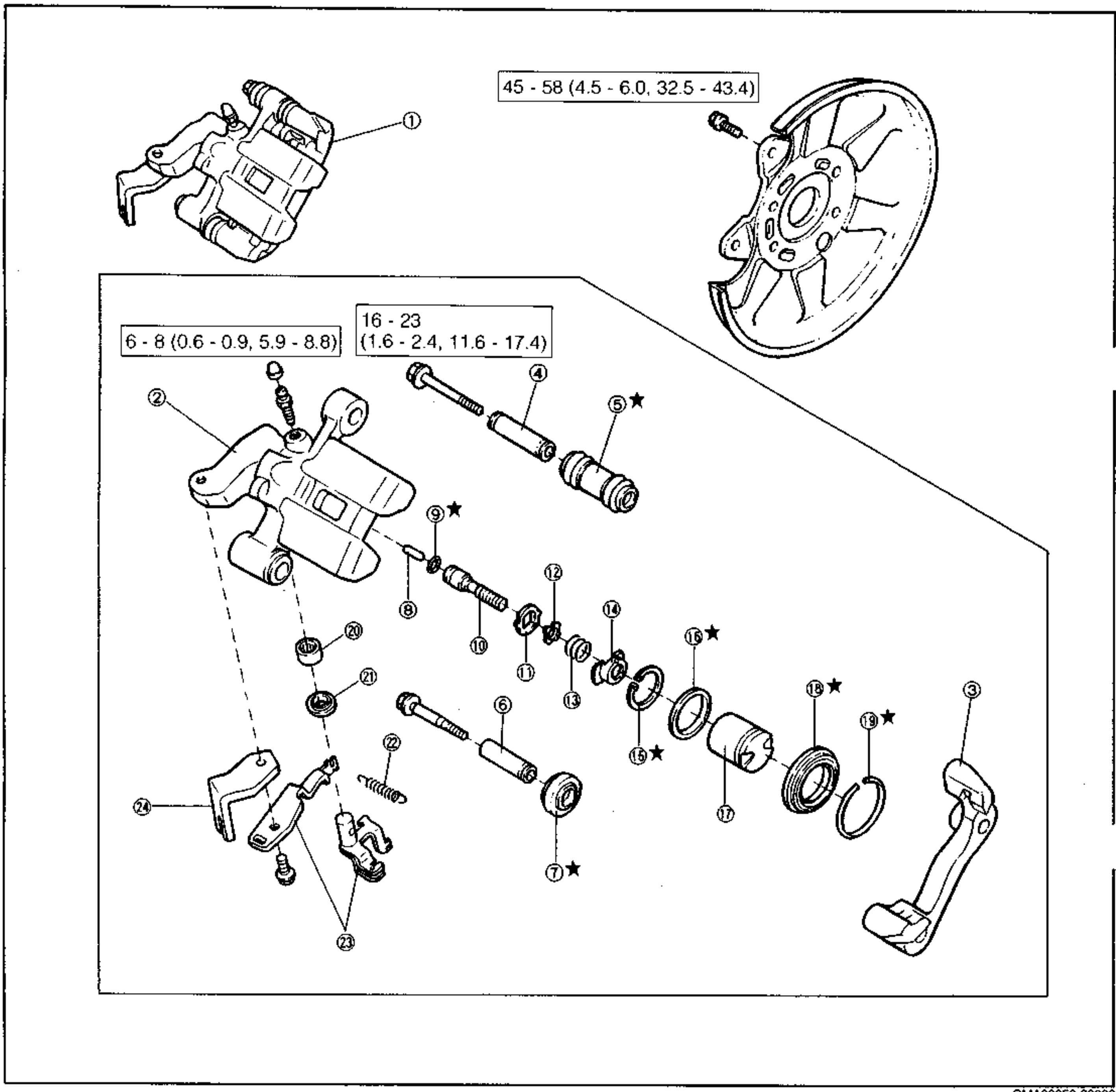
Inspect the fluid leakage from the brake system.

GMA00052-00000

REAR DISC BRAKE

COMPONENTS

☐ : Tightening torque
Unit : N·m (kgf-m, ft-lb)
★ : Non-reusable parts



GMA00053-99999

① Disc brake caliper assembly
② Disc brake cylinder assembly
③ Disc brake mounting
④ Spacer No. 1
⑤ Bush dust boot No. 1
⑥ Spacer No. 2
⑦ Bush dust boot No. 2
⑧ Parking brake strut
⑨ O-ring
⑩ Disc brake piston adjuster
⑪ Dust seal retainer
⑫ Pad adjust ring
⑬ Compression spring
⑭ Spring retainer
⑮ Hole snap ring
⑯ Piston seal
⑰ Disk brake piston assembly
⑱ Cylinder boot
⑲ Set ring
⑳ Needle roller bearing
㉑ Oil seal
㉒ Tension spring
㉓ Parking brake crank subassembly
㉔ Cable support bracket

GMA00054-00000

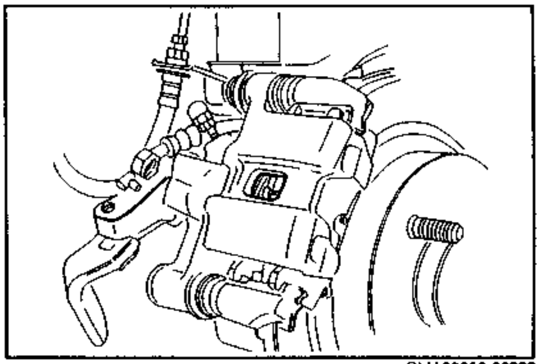
INSPECTION

1. Jack up the vehicle with safety stands. Remove the wheel.
2. Inspect the pad for damage and uneven wear.
3. Inspect the caliper for damage and malfunction.
   NOTE:
   - **Any defective parts must be replaced.**

GMA00055-00000

DISC BRAKE PAD WEAR

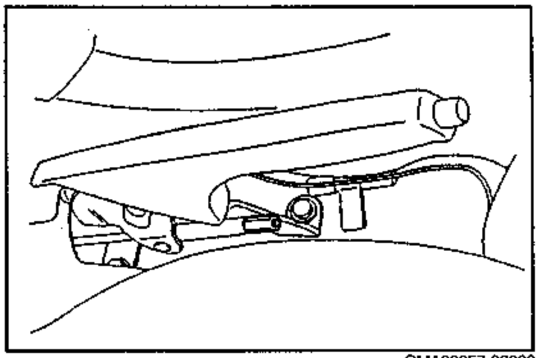
1. Inspect the brake pad thickness through the inspection hole provided in the caliper.
   - Specified Thickness: 7 mm
   - Minimum Limit : 1 mm



GMA00056-99999

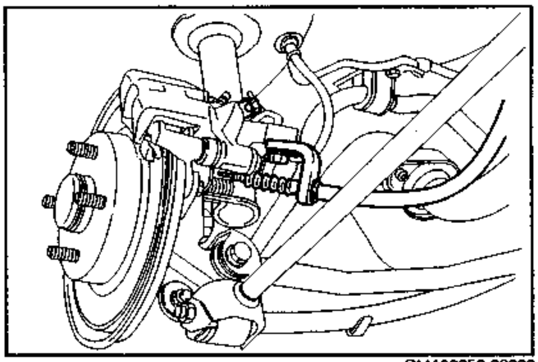
CUP AND DUST SEAL REPLACEMENT

1. Loosen the parking brake adjusting nut.



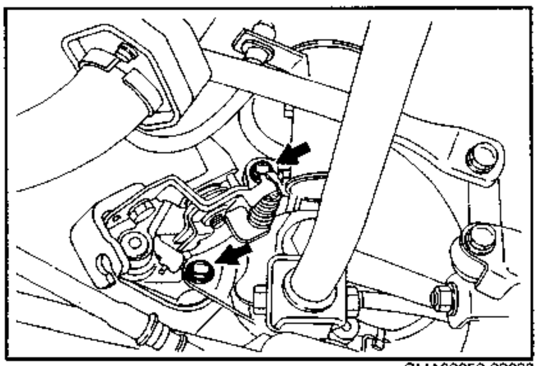
GMA00057-99999

2. Disconnect the brake tube from the caliper.
   NOTE:
   - **Cut off the brake fluid leakage at the brake tube end by means of suitable stopper.**
3. Disconnect the parking brake cable from the caliper.



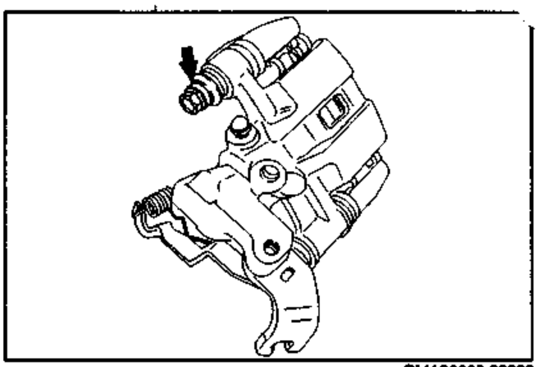
GMA00058-99999

4. Remove the rear disc brake caliper assembly by removing the adjusting bolts.



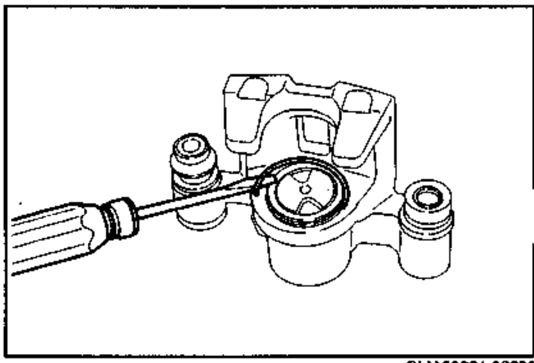
GMA00059-99999

5. Detach the disc brake cylinder assembly from the disc brake mounting by removing the attaching bolt.



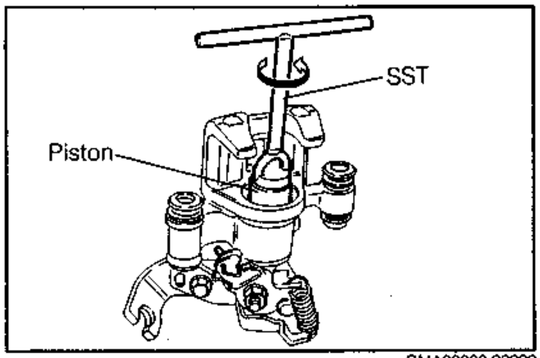
GMA00060-99999

6. Detach the cylinder boot set ring and cylinder boot, using a screwdriver.



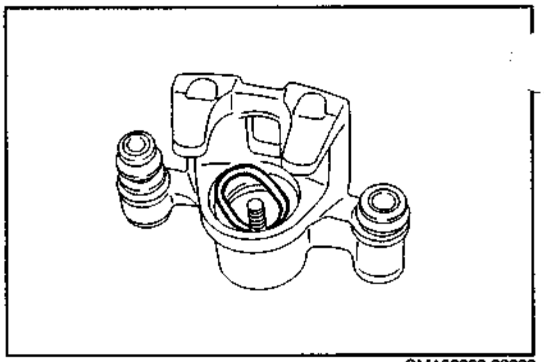
GMA00061-99999

7. Remove the disc brake piston assembly, using the SST.
   SST: 09719-00020-000



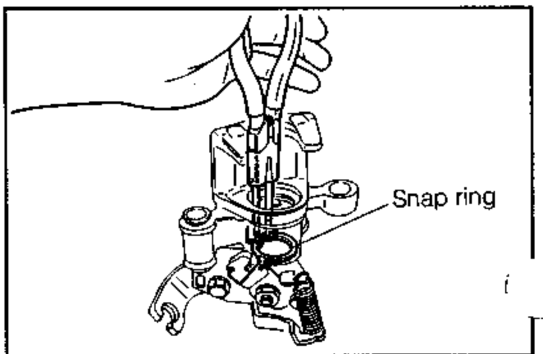
GMA00062-99999

8. Remove the piston seal.



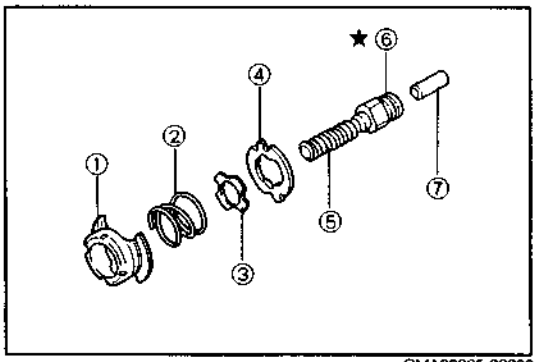
GMA00063-99999

9. Remove the hole snap ring.



GMA00064-99999

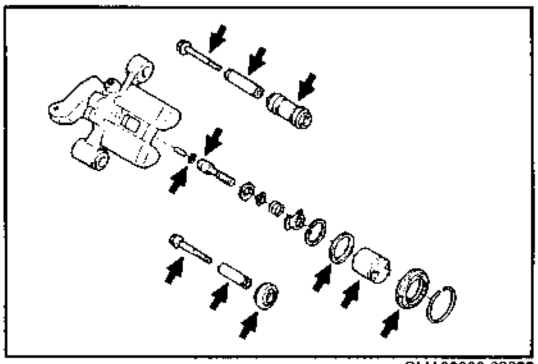
10. Remove the following parts.
    1. Spring retainer
    2. Compression spring
    3. Pad adjusting ring
    4. Dust seal retainer
    5. Disc brake adjusting piston
    6. O-ring
    7. Parking brake strut



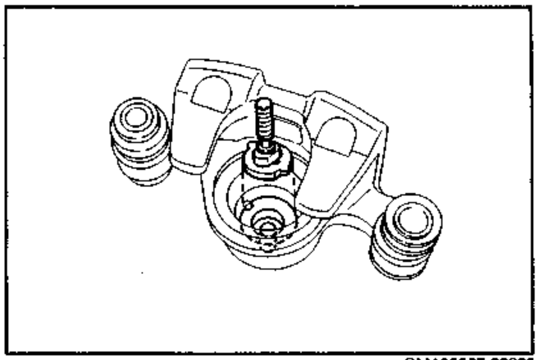
GMA00065-99999

11. Prepare the following new parts.
    - Bush dust boots
    - Cylinder boot
    - O-ring
    - Piston seal
    - Set ring

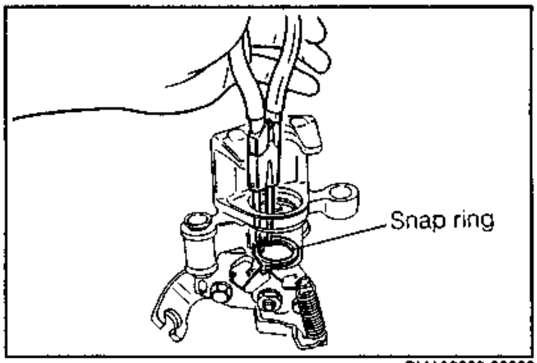
    NOTE:
    - Also, replace any defective parts.
    - Apply grease to those points indicated in the illustration.
      Specified Grease: Brake rubber grease


GMA00066-99999

12. Apply brake rubber grease to the disc brake cylinder. Install the parking brake strut.
13. Install the disk brake adjusting piston with a new O-ring and the dust seal retainer.
    NOTE:
    - Be sure to align the protruding section of the dust seal retainer with the cut-out section of the brake disc cylinder when installing the disc brake adjusting piston.


GMA00067-99999

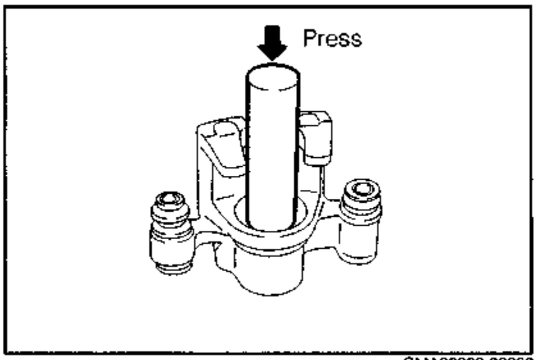
14. Install the pad adjusting ring, compression ring and spring retainer in this order. Then, temporarily install the hole snap ring.
    NOTE:
    - When installing the hole snap ring, make sure that it comes incontact with the spring retainer straight.



GMA00068-99999

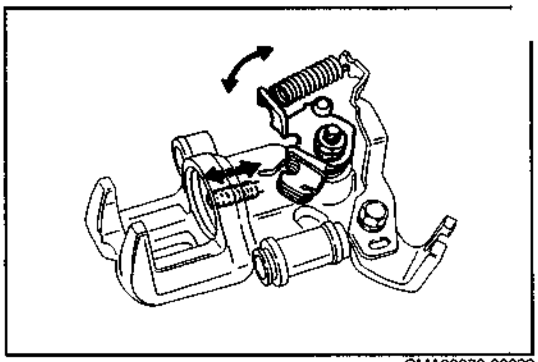
15. Install the hole snap ring to the brake disc cylinder, using the SST.
    SST: 09506-87501-000

    CAUTION:
    - Be very careful not to scratch the brake disc cylinder during the illustration.

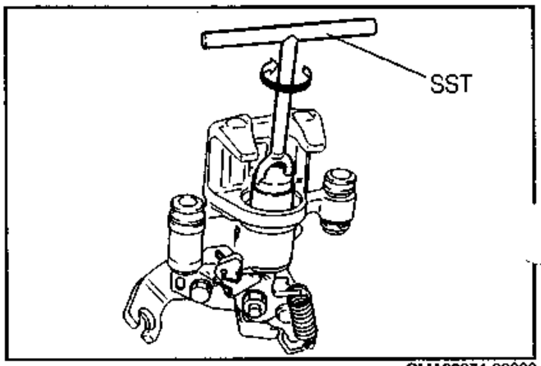


GMA00069-99999

16. Ensure that the adjuster moves by moving the parking brake crank.

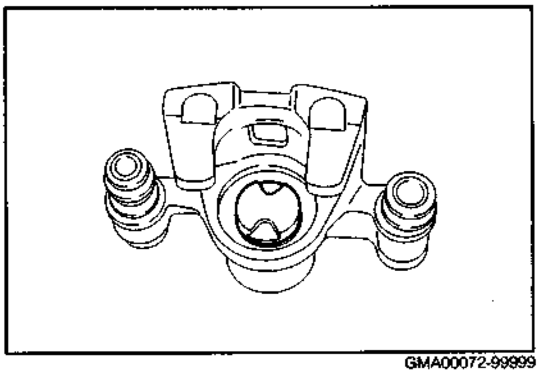

GMA00070-99999

17. Install the piston seal.
18. Install the piston to the disc brake cylinder, using the SST.
    SST: 09719-00020-000

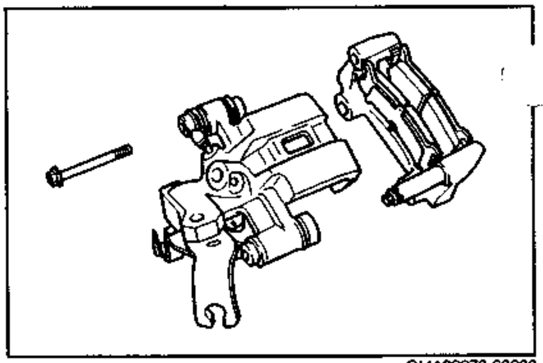


GMA00071-99999

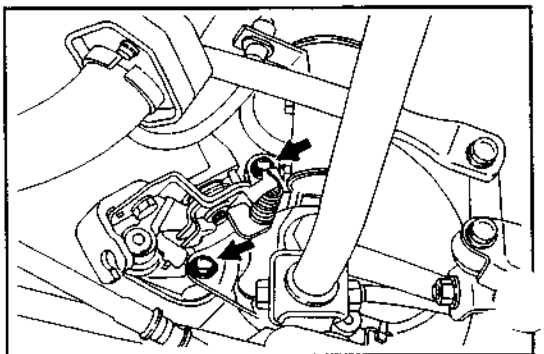
19. Assemble the piston assembly so that it may come at the position indicated in the right figure.
20. Assemble the cylinder boot in the caliper.
    NOTE:
    - **Make sure that the boot is fitted securely.**
21. Assemble the cylinder boot set ring, making sure not to scratch the boot.


GMA00072-99999

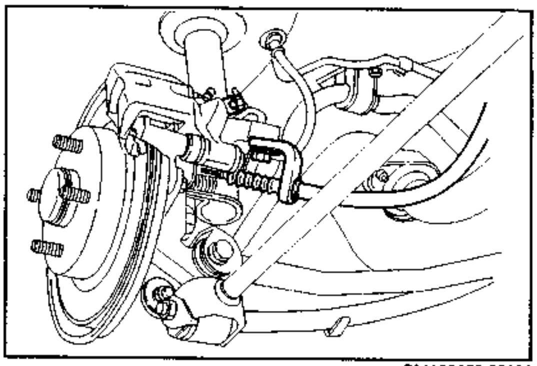
22. Install the disc brake cylinder to the disc brake cylinder mounting.
    Tightening Torque: **16 - 23 N·m (1.6 - 2.4 kgf-m, 11.6 - 17.4 ft-lb)**


GMA00073-99999

23. Install the rear disc brake caliper assembly on the knuckle.
    Tightening Torque: **45 - 58 N·m (4.5 - 6.0 kgf-m, 32.5 - 43.4 ft-lb)**


GMA00074-99999

24. Connect the parking brake cable to the rear caliper. Install the parking cable support bracket.
25. Connect the brake hose to the disc brake cylinder with new gasket interposed.
    Tightening Torque: 27 - 34 N·m
    (2.7 - 3.5 kgf-m, 19.5 - 25.3 ft-lb)
26. Perform air bleeding for the brake system.
    (See change of brake fluid.)



GMA00075-99999

DISC TO PAD CLEARANCE

1. Depress the brake pedal about 2 ~ 3 times. (This operation makes it possible to adjust the clearance between the disc brake pad and disc.)
2. Adjust the working travel of the parking brake lever. (See parking brake.)
3. Check to see if the brake disc can be rotated smoothly.
4. Ensure that no abnormal sound is emitted when the wheel is rotated.

GMA00076-00000

FLUID LEAKAGE

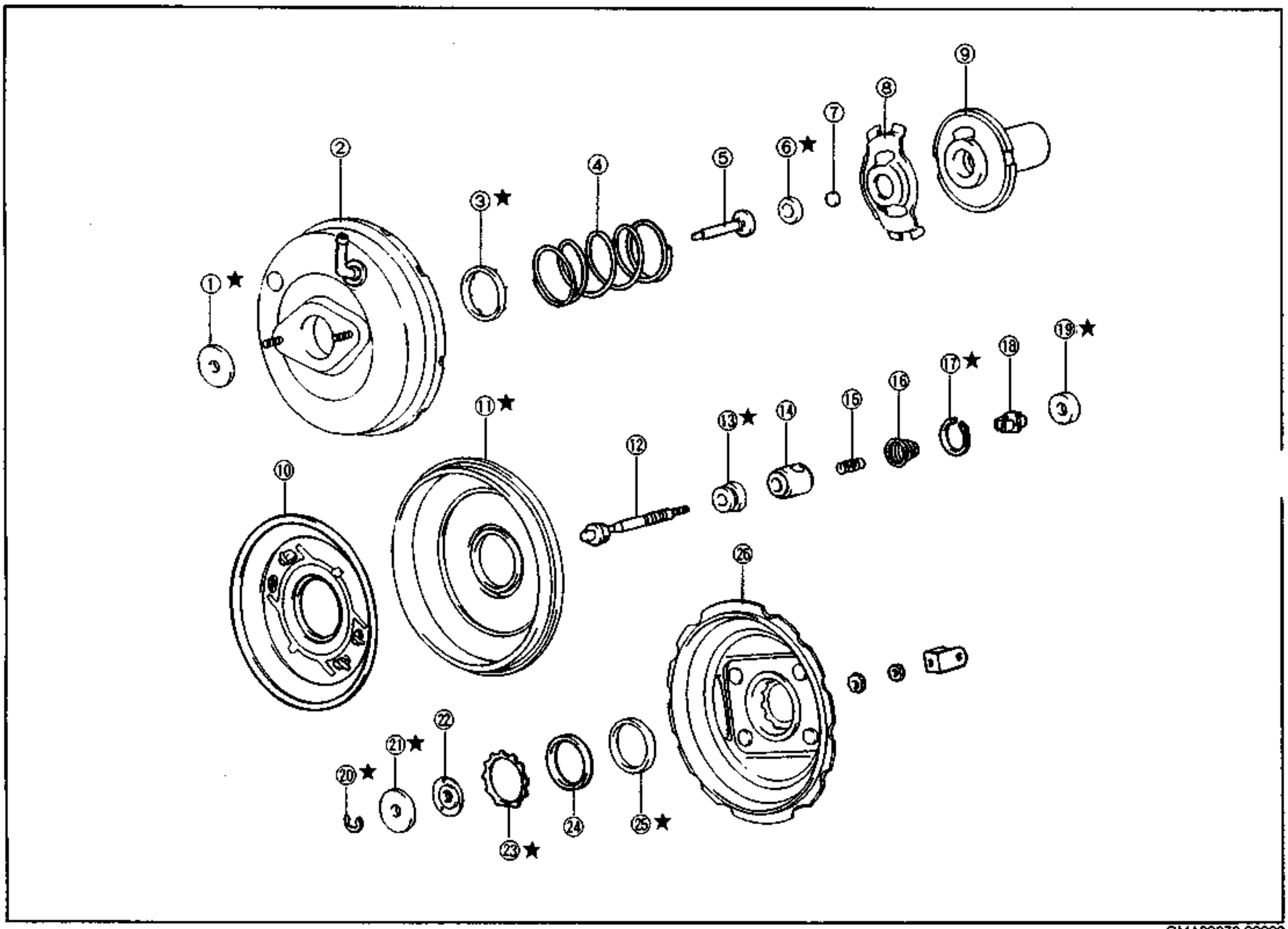
1. Inspect the fluid leakage from the disk brake cylinder portion.
2. Inspect the fluid leakage from the brake hose connecting portion between the cylinder and hose.

GMA00077-00000

BRAKE BOOSTER

★ : Non-reusable parts

COMPONENTS



GMA00078-99999

① Master cylinder piston seal
② Booster body
③ Spring retainer
④ Booster spring
⑤ Booster piston rod
⑥ Reaction disc
⑦ Air valve seal
⑧ Set cover
⑨ Valve body
⑩ Booster plate
⑪ Diaphragm
⑫ Booster with rod, valve subassembly
⑬ Poppet valve
⑭ Air valve spring retainer
⑮ Control valve spring
⑯ Valve spring
⑰ Piston return spring retainer
⑱ Control valve spring retainer
⑲ Element A
⑳ E-ring
㉑ Element B
㉒ Adjustment nut
㉓ Booster push rod seal retainer
㉔ Valve ring
㉕ Piston seal

GMA00079-00000

NOTE:

- The replacement of the rubber parts inside the brake booster should be conducted for the 7-inches booster only.
  As for the 8-inches booster, the brake booster assembly should be replaced.

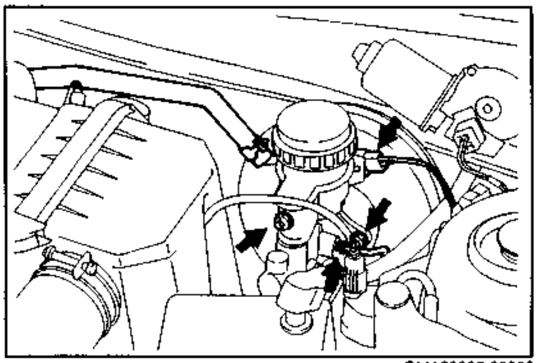
GMA00080-00000

'NCTION CHECK

With the engine stopped, depress the brake pedal several times, applying the same force at each brake application. Ensure that the brake pedal height will not vary at each brake application. Then, start the engine while depressing the brake pedal. If the bark pedal moves in slightly, it indicates that the booster is functioning properly.

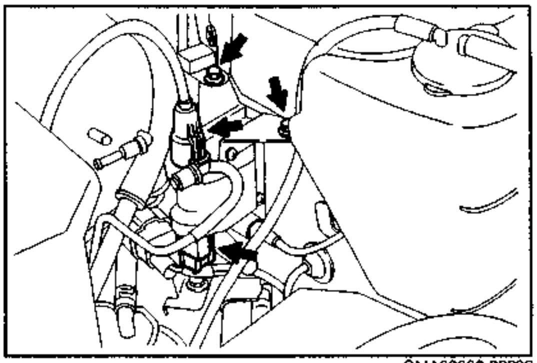
GMA00081-00000

BRAKE BOOSTER REMOVAL

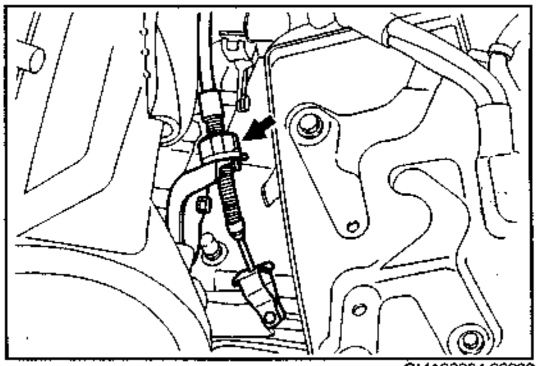

GMA00082-99999

1. Disconnect the connector of the brake fluid level switch.
2. Drain the brake fluid.
3. Disconnect the brake pipes from the master cylinder.
4. Remove the master cylinder and gasket.
5. Disconnect the vacuum hose.

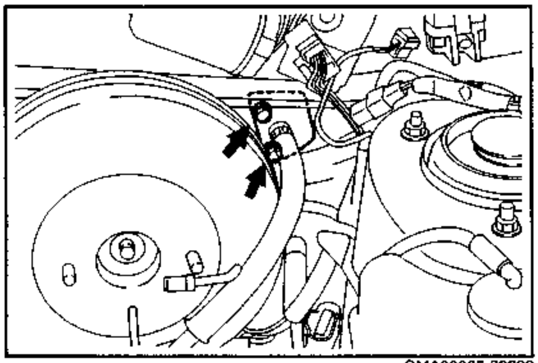
   NOTE:
   - **If the brake fluid is spilled inadvertently over the paint-finish surface of the vehicle, quickly wipe off the brake fluid.**


GMA00083-99999

6. Remove the ignition coil. (For LHD vehicle)
7. Remove the air cleaner. (For LHD vehicle)

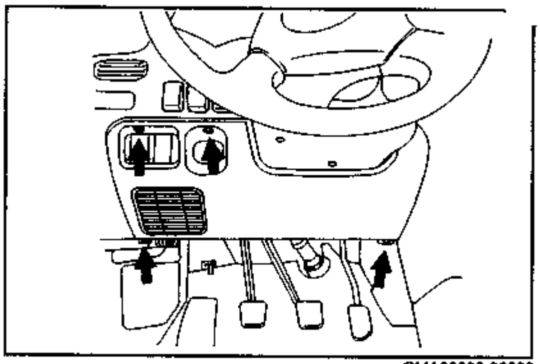

GMA00084-99999

8. Removal the clutch cable support bracket. (For LHD vehicle)
   (1) Remove the battery and the engine coolant reservoir tank.
   (2) Disconnect the clutch cable from the transmission side and the clutch pedal.


GMA00085-99999

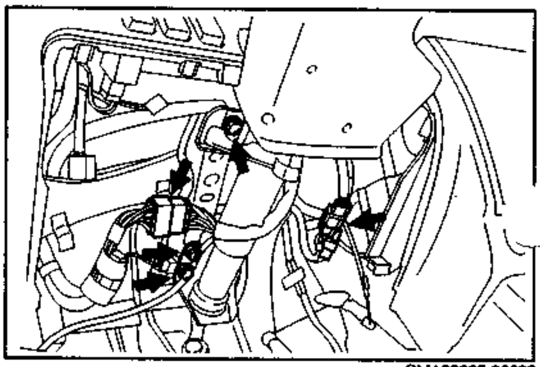
   (3) Remove the clutch cable support bracket.

9. Remove the instrument finish lower panel.



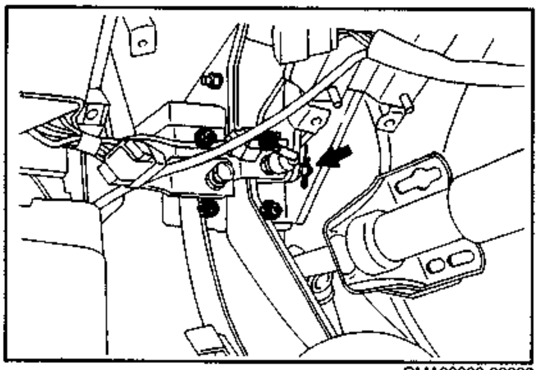
GMA00086-99999

10. Disconnect the connector for the multi-use lever switch and key switch.
11. Remove the steering column assembly from the reinforcement, by removing the two nuts and four bolts.



GMA00087-99999

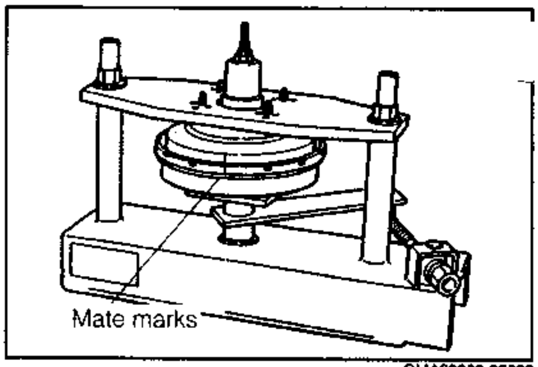
12. Remove the clip and the with-hole pin at the brake pedal. Separate the master cylinder push rod clevis and from the brake pedal.
13. Remove the brake booster assembly and gasket from the vehicle, by removing the four nuts.



GMA00088-99999

REPLACEMENT OF RUBBER PARTS (Only 7 inches booster)

1. Remove the booster push rod clevis and lock nut.
2. Separate the booster housing from the booster body as follows:
   (1) Put mate marks on the booster body and booster housing.

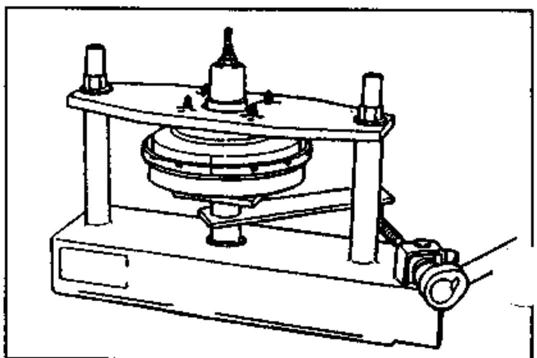


GMA00089-99999

   (2) Secure the brake booster on the following SST.
   SST: 09753-87701-000

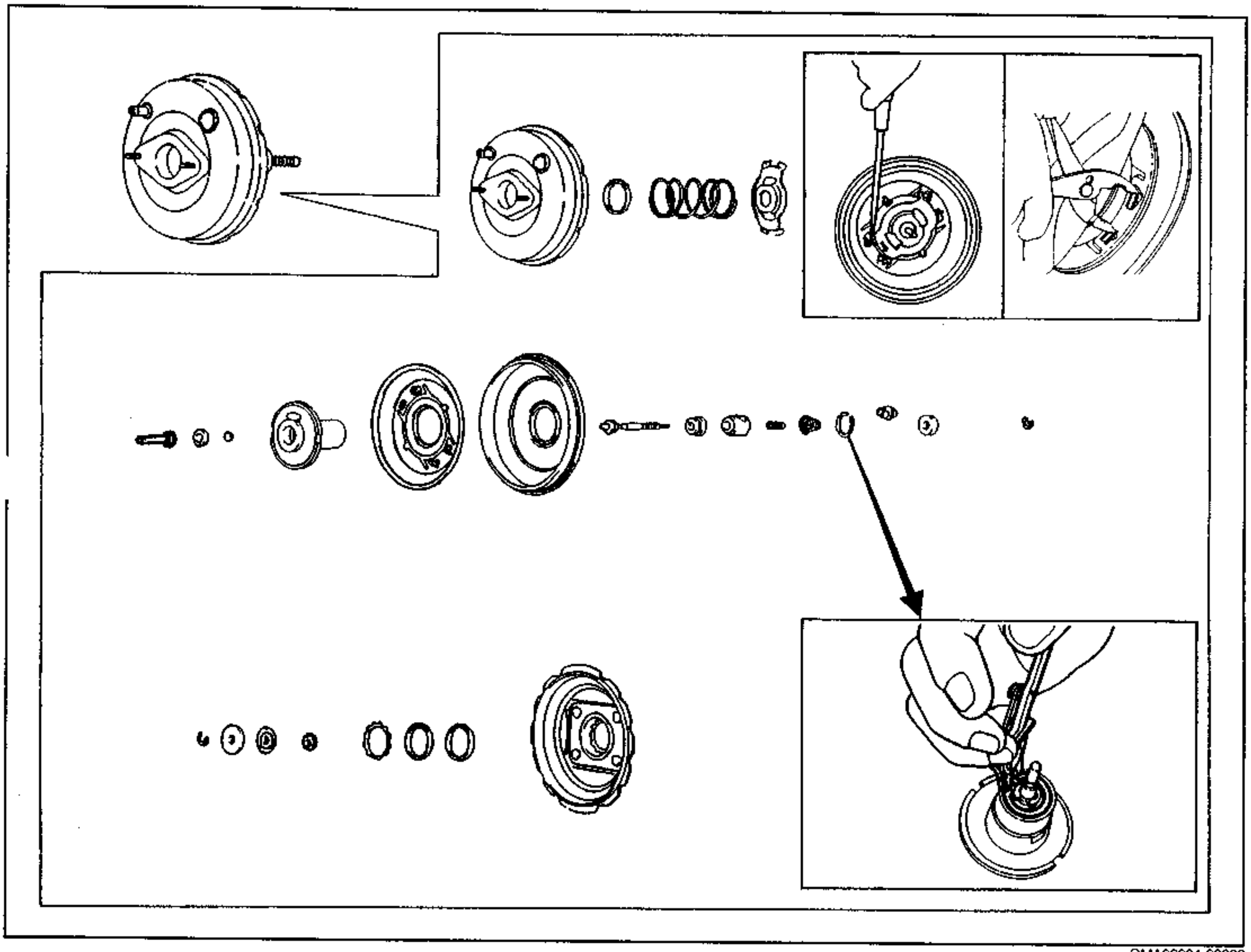
   NOTE:
   - Be certain to evenly tighten the SST nuts at the right and left sides. Also, be very careful not to tighten the SST nuts excessively.

   (3) Turn the SST screw clockwise so as to disengage the booster housing from the booster body.
   (4) Remove the brake booster from the SST.



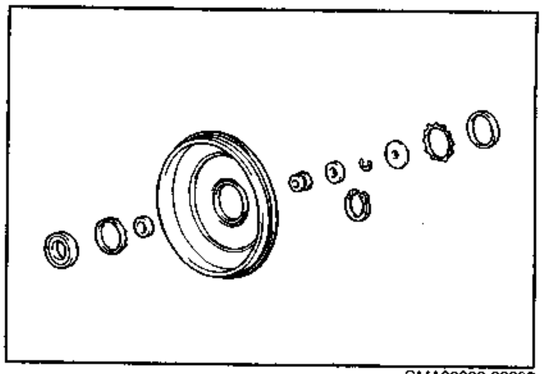
GMA00090-99999

3. Disassemble the brake booster.



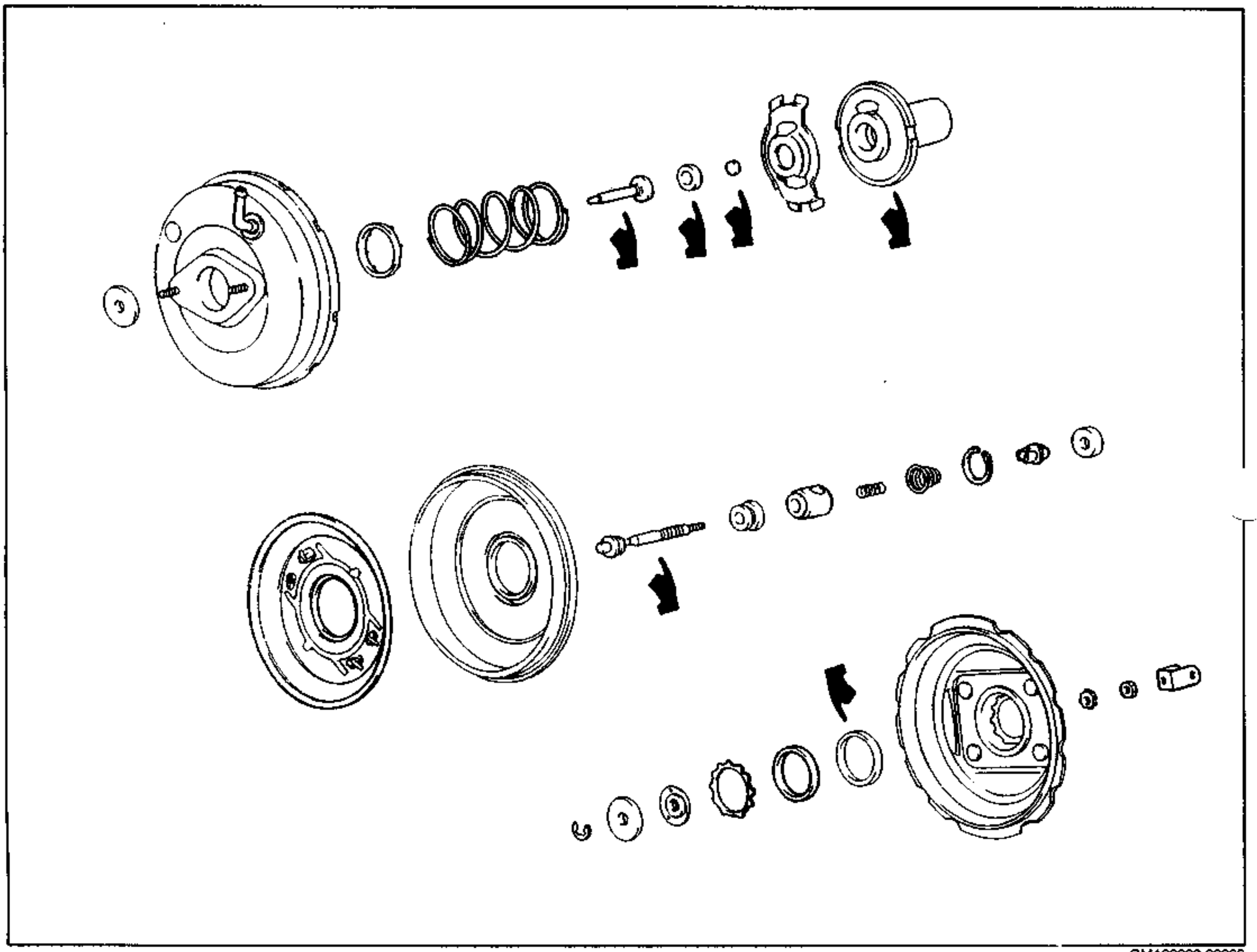
GMA00091-99999

4. Prepare following new parts.
   - Master cylinder piston seal
   - Spring retainer
   - Reaction disc
   - Diaphragm
   - Poppet valve
   - Element A
   - Piston return spring retainer
   - E-ring
   - Element B
   - Booster push rod seal retainer
   - Piston seal



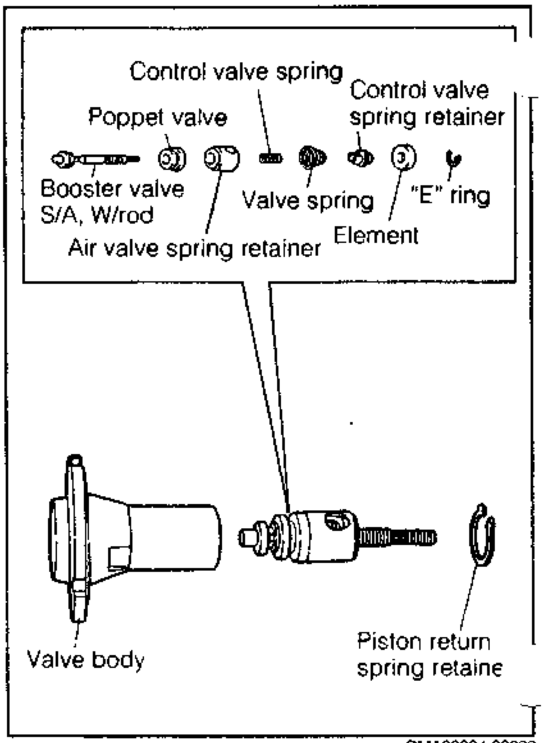
GMA00092-99999

5. Apply silicon grease to those points indicated in the figure below.



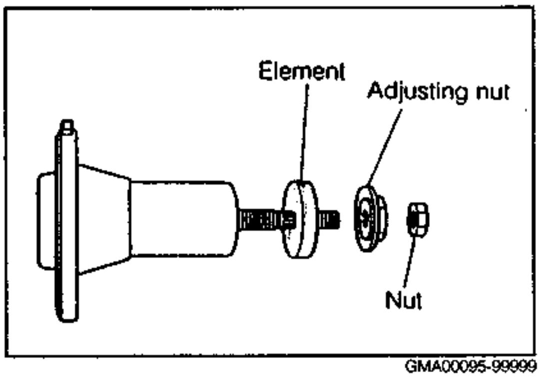
GMA00093-99999

6. Assemble the following parts in the booster valve subassembly with rod.
   (1) Install the poppet valve in the air valve spring retainer. Install them in the booster valve subassembly with rod.
   (2) Install the control valve spring, valve spring, control valve spring retainer, element and E ring.
7. Install the booster valve subassembly with rod and the piston return spring retainer in the valve body.



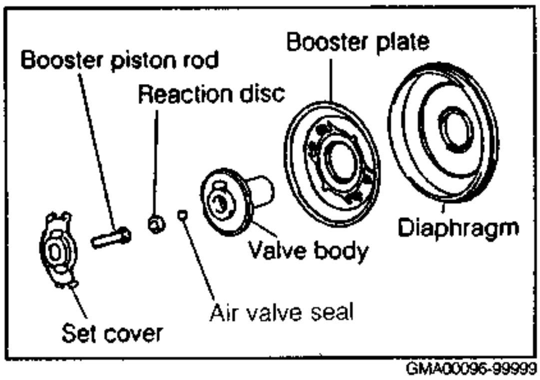
GMA00094-99999

8. Install the element, adjusting nut and nut in place.



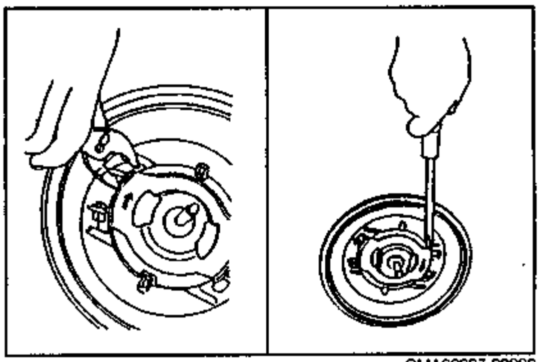
GMA00095-99999

9. Assemble the following parts in the booster plate.
   (1) Install the diaphragm
   (2) Install the valve body, air valve seal reaction disc and booster piston rod.

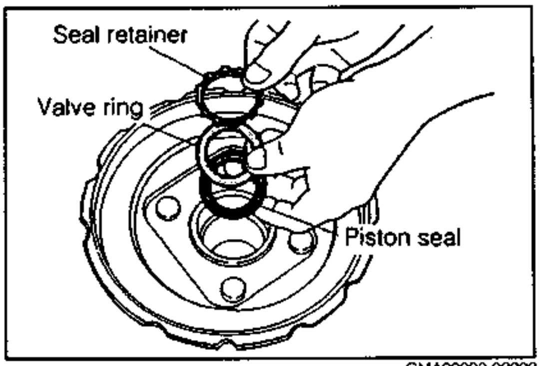


GMA00096-99999

   (3) Install the set cover as follows:
   - Temporarily install the set cover on the booster plate.
   - Assemble the set cover by pinching the joint section of the booster plate with the claw section of the set cover, using pliers.
   - Slide the claw section of the set cover using a screwdriver, until it no longer moves.

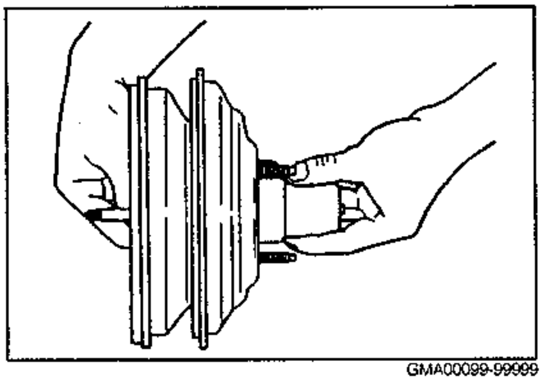

GMA00097-99999

10. Install the piston seal, valve ring and booster push rod seal retainer in the booster housing.

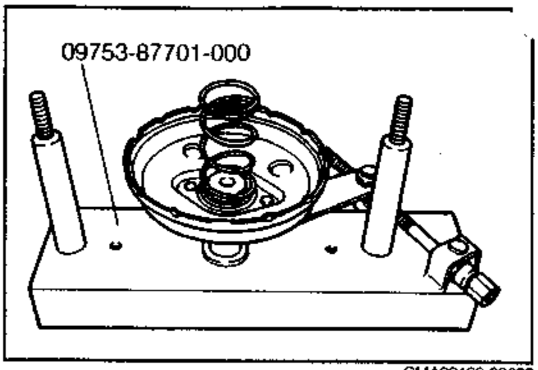


GMA00098-99999

11. Assemble the booster housing and booster plate.

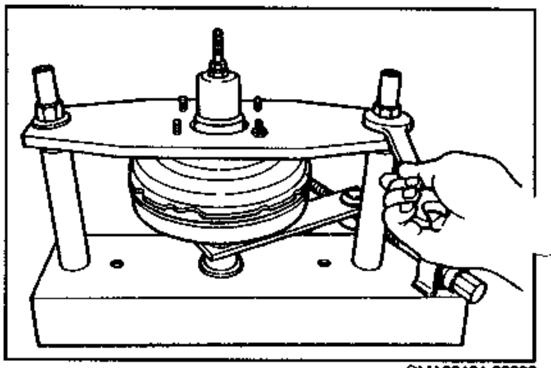

GMA00099-99999

12. Assemble the booster body and booster housing as follows:
    (1) Place the booster body, spring retainer and booster piston return spring in the following SST.
    SST: 09753-87701-000

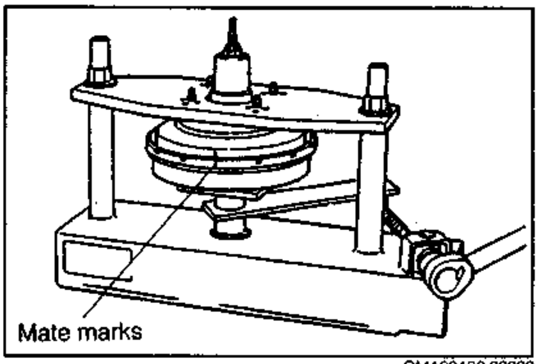


GMA00100-99999

    (2) Place the booster housing in the SST.
    NOTE:
    - Be certain to evenly tighten the SST nuts at the right and left sides. Also, be very careful not to tighten the SST nuts excessively.
    - Furthermore, care must be exercised to ensure that the diaphragm will not be pinched.


GMA00101-99999

    (3) Turn the SST screw counterclockwise so that the mating marks may be lined up.
    If the force required for turning is great, apply a small amount of silicon grease to the portion where the booster body is making contact with the booster housing.
    (4) Remove the brake booster from the SST.



GMA00102-99999

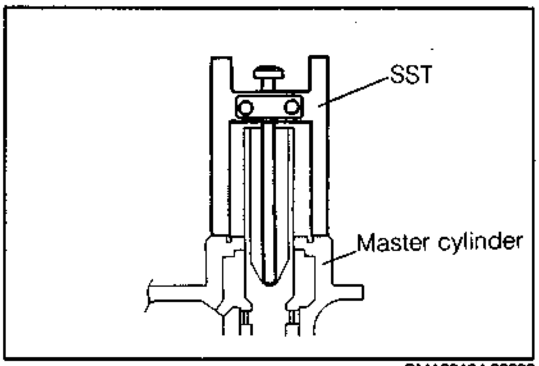
13. Install the master cylinder piston seal in the brake booster.
14. Temporarily install the master cylinder push rod clevis and nut.

GMA00103-00000

BRAKE BOOSTER PUSH ROD CLEARANCE ADJUSTMENT

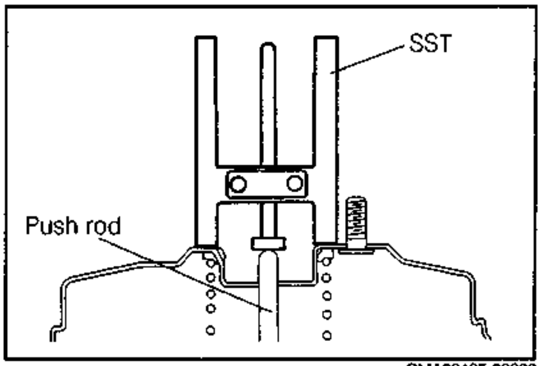
1. Set the SST in such a way that the SST rod makes a light contact with the piston of the master cylinder, as indicated in right figure.
   SST: 09737-87001-000

   NOTE:
   - Be sure to carry out this adjustment with the gasket attached in position.



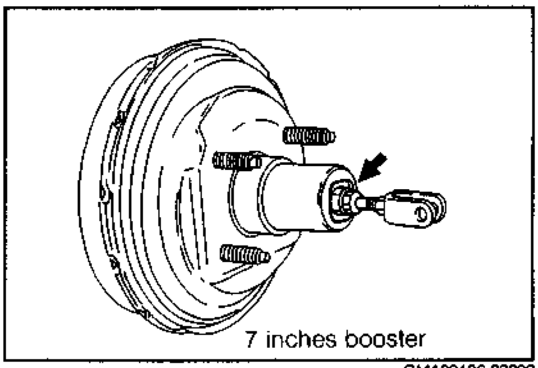
GMA00104-99999

2. Set the SST as indicated in the illustration. Adjust the push rod so that the push rod clearance may become zero.



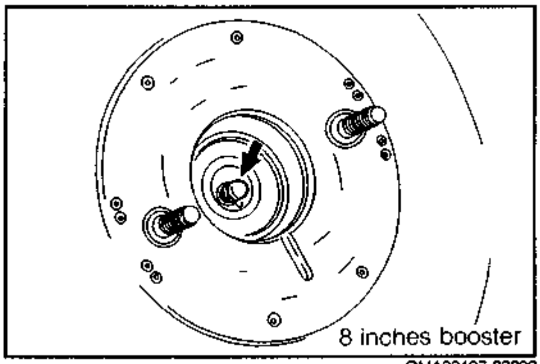
GMA00105-99999

3. Perform the adjustment of the push rod clearance by turning the nut provided at the end of the push rod.
   NOTE:
   - The master cylinder and booster have been assembled as an assembly at a specialized factory in advance. Therefore, the push rod clearance has been already adjusted.



GMA00106-99999

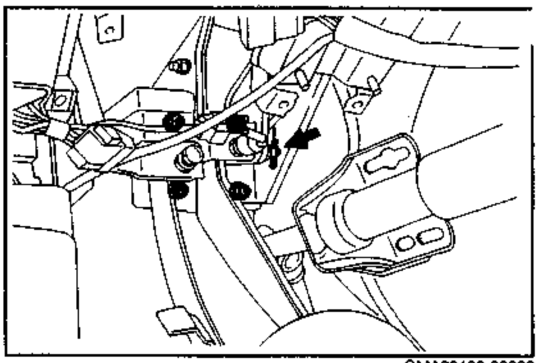
   - In cases where the booster only is replaced in this maintenance procedure, be sure to measure the push rod height of the booster before the replacement, using the SST. After installing the new booster, adjust the push rod height to the same height as that before the replacement.



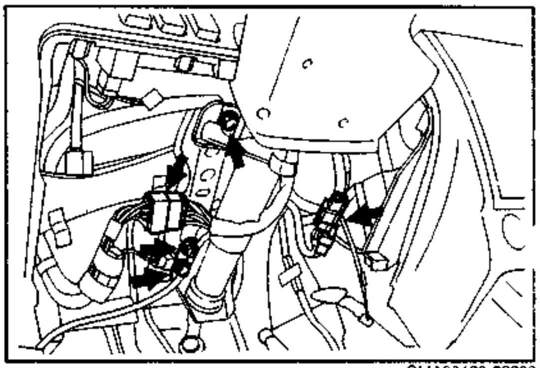
GMA00107-99999

BRAKE BOOSTER INSTALLATION

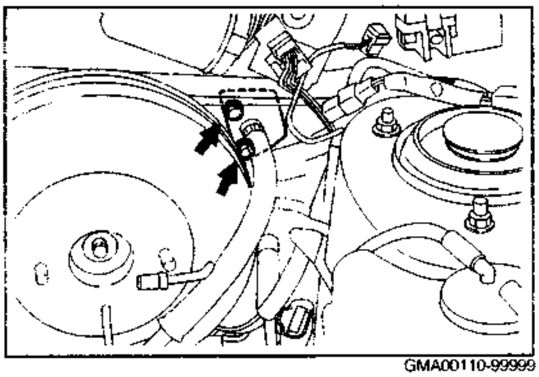
1. Install the brake booster in the engine compartment with a new gasket interposed between booster and the vehicle body, using the four nuts.
   Tightening Torque: 10 - 15 N·m
   (1.0 - 1.6 kgf-m, 7.2 - 11.6 ft-lb)
2. Install the clip and the with-hole pin at the brake pedal.


GMA00108-99999

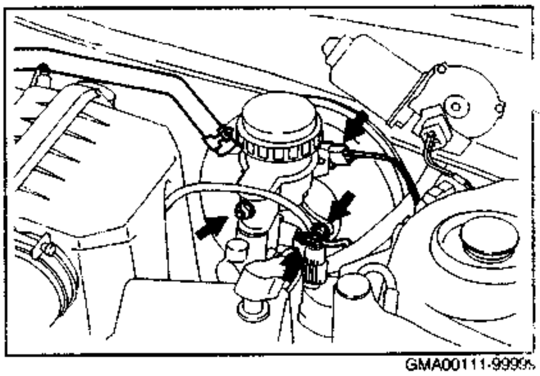
3. Install the steering column assembly to the reinforcement.
   Tightening Torque
   Bolt: 15 - 21 N·m
   (1.5 - 2.2 kgf-m, 10.8 - 15.9 ft-lb)
   Nut: 10 - 15 N·m
   (1.0 - 1.6 kgf-m, 7.2 - 11.6 ft-lb)
4. Connect the connector for the multi-use lever switch and key switch.
5. Install the instrument finish lower panel.


GMA00109-99999

6. Install the clutch cable. (For LHD vehicle)
   Adjust the clutch pedal free play and reserve travel.
7. Install the air cleaner and the ignition coil. (For LHD vehicle)
8. Connect the new vacuum hose.


GMA00110-99999

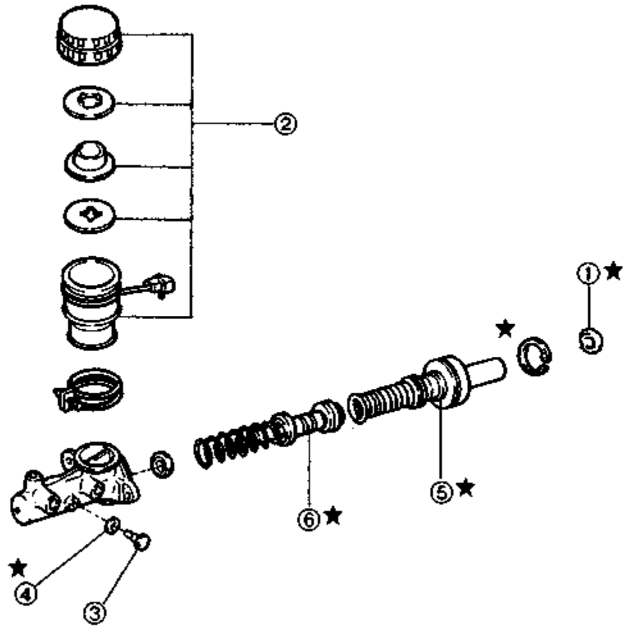
9. Install the master cylinder with a new gasket interposed.
   Tightening Torque: 12.7 N·m (1.3 kgf-m, 9.4 ft-lb)
10. Connect the brake pipes to the master cylinder.
    Tightening Torque: 13 -17 N·m
    (1.3 - 1.8 kgf-m, 9.6 - 13.3 ft-lb)
11. Connect the terminal of the brake fluid level switch.
12. Perform the air bleeding for the brake system.


GMA00111-99999

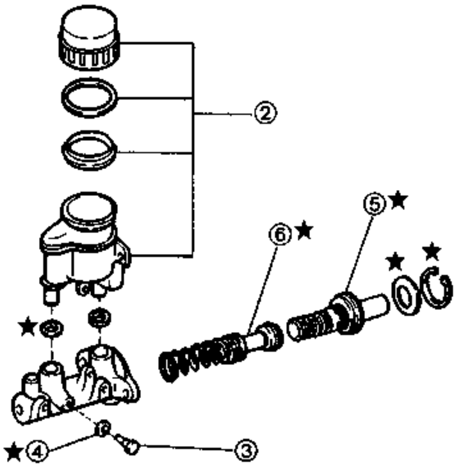
BRAKE MASTER CYLINDER

★ : Non-reusable parts

COMPONENTS



7 inches booster



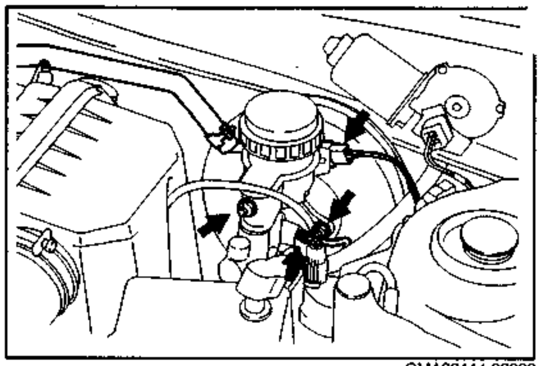
8 inches booster

GMA00112-99999

① Brake master cylinder piston seal
② Brake master cylinder reserve tank
③ Set bolt
④ Gasket
⑤ Brake master cylinder piston assembly No. 1
⑥ Brake master cylinder piston assembly No. 2

GMA00113-00000

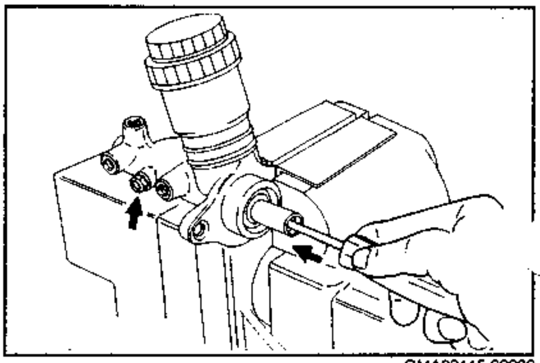
REMOVAL OF BRAKE MASTER CYLINDER


GMA00114-99999

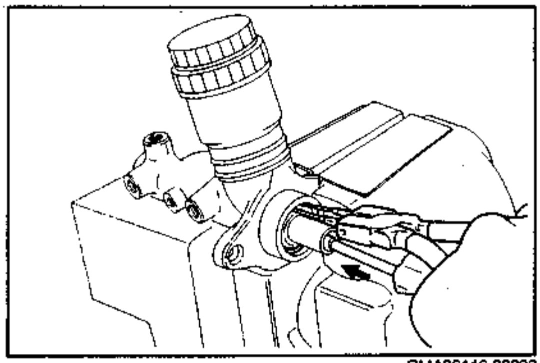
1. Disconnect the connector of the brake fluid level switch.
2. Drain the brake fluid.
3. Disconnect the brake pipes from the master cylinder.
4. Remove the master cylinder and gasket.
   NOTE:
   - **If the brake fluid is spilled inadvertently over the paint-finish surface of the vehicle, quickly wipe off the brake fluid.**
5. Remove the cylinder piston seal. (For the 7 inches booster)

Inner parts replacement

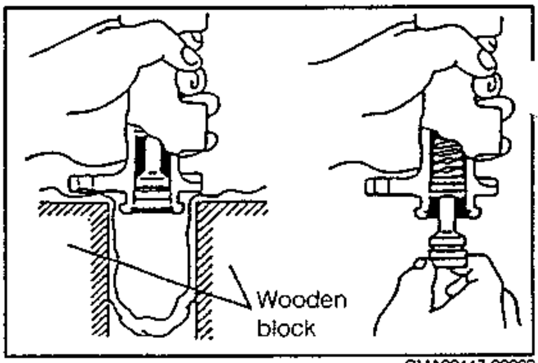
1. Remove the set bolt and gasket while the pistons are being pushed fully by means of a suitable bar.
   NOTE:
   - **During the removal, be sure to push the piston slowly so as to prevent the brake fluid from splashing.**


GMA00115-99999

2. Using a snap ring pliers, detach the snap ring while the pistons are being pushed by means of a suitable bar.
3. Remove the piston No. 1 from the master cylinder.
   NOTE:
   - **Remove the piston straight, being very careful not to scratch the cylinder bore.**


GMA00116-99999

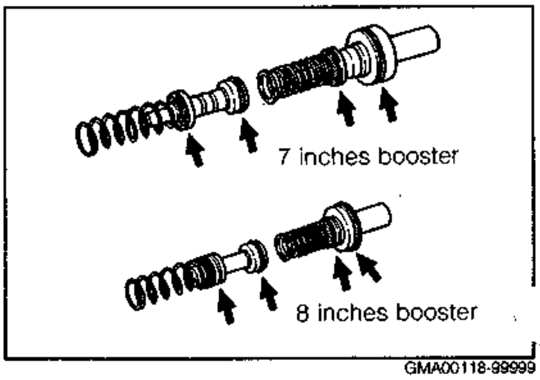
4. Remove the piston No. 2 by lightly tappping the flange surface.
   NOTE:
   - **Remove the piston straight, being very careful not to scratch the cylinder bore.**



GMA00117-99999

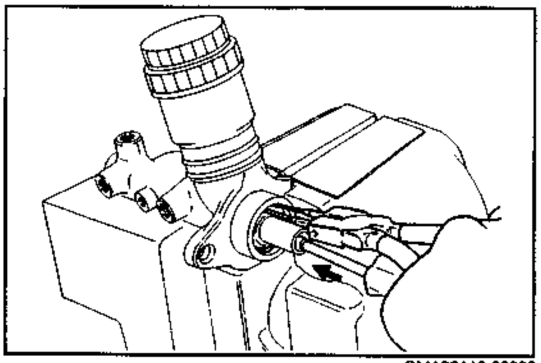
5. Prepare the following parts.
   - Brake master cylinder piston seal
   - Gasket
   - Brake master cylinder piston assembly No. 1
   - Brake master cylinder piston No. 2

   NOTE:
   - **Apply rubber grease to those points indicated in the illustration.**



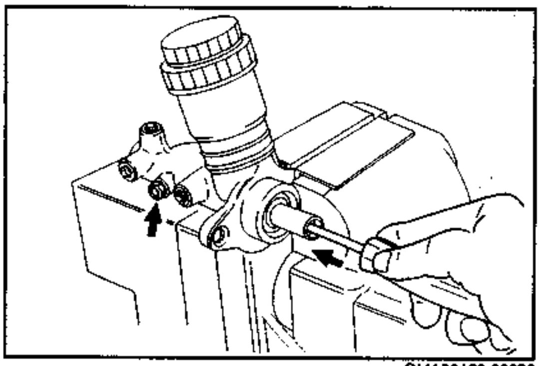
GMA00118-99999

6. With the pistons in their fully pushed in state, install a new snap ring.



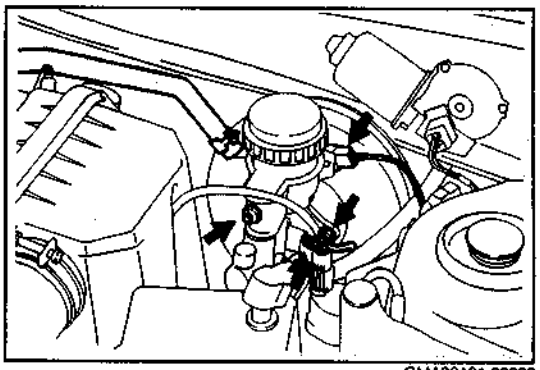
GMA00119-99999

7. While pushing the pistons fully with a screwdriver, assemble the set bolt with a new gasket.



GMA00120-99999

8. Install the master cylinder piston seal. (For the 7 inches booster)
9. Check and adjust the brake booster push rod clearance.
10. Install the master cylinder to the brake booster with a new gasket.



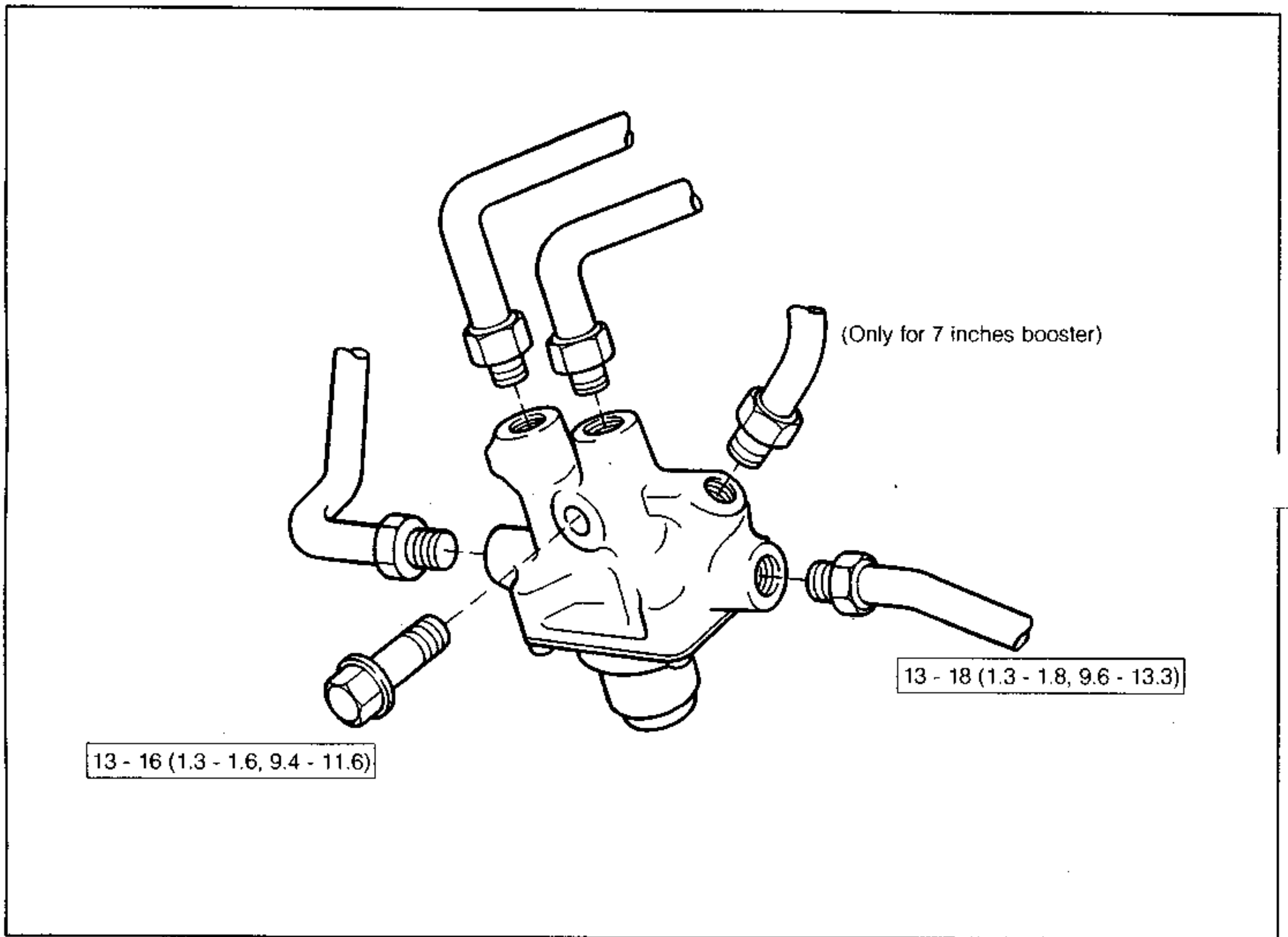
GMA00121-99999

11. Connect the brake pipes to the master cylinder.
    Tightening Torque: 13 -17 N·m (1.3 - 1.8 kgf-m, 9.6 - 13.3 ft-lb)
12. Connect the terminal of the brake fluid level switch.
13. Perform the air bleeding for the brake system.

GMA00122-00000

PROPORTIONING VALVE

☐ : Tightening torque
Unit : N·m (kgf-m, ft-lb)



GMA00123-99999

Replacement

1. Disconnect the brake pipes from the proportioning valve.
   NOTE:

2. Remove the bolt from the body.

GMA00124-00000

Installation

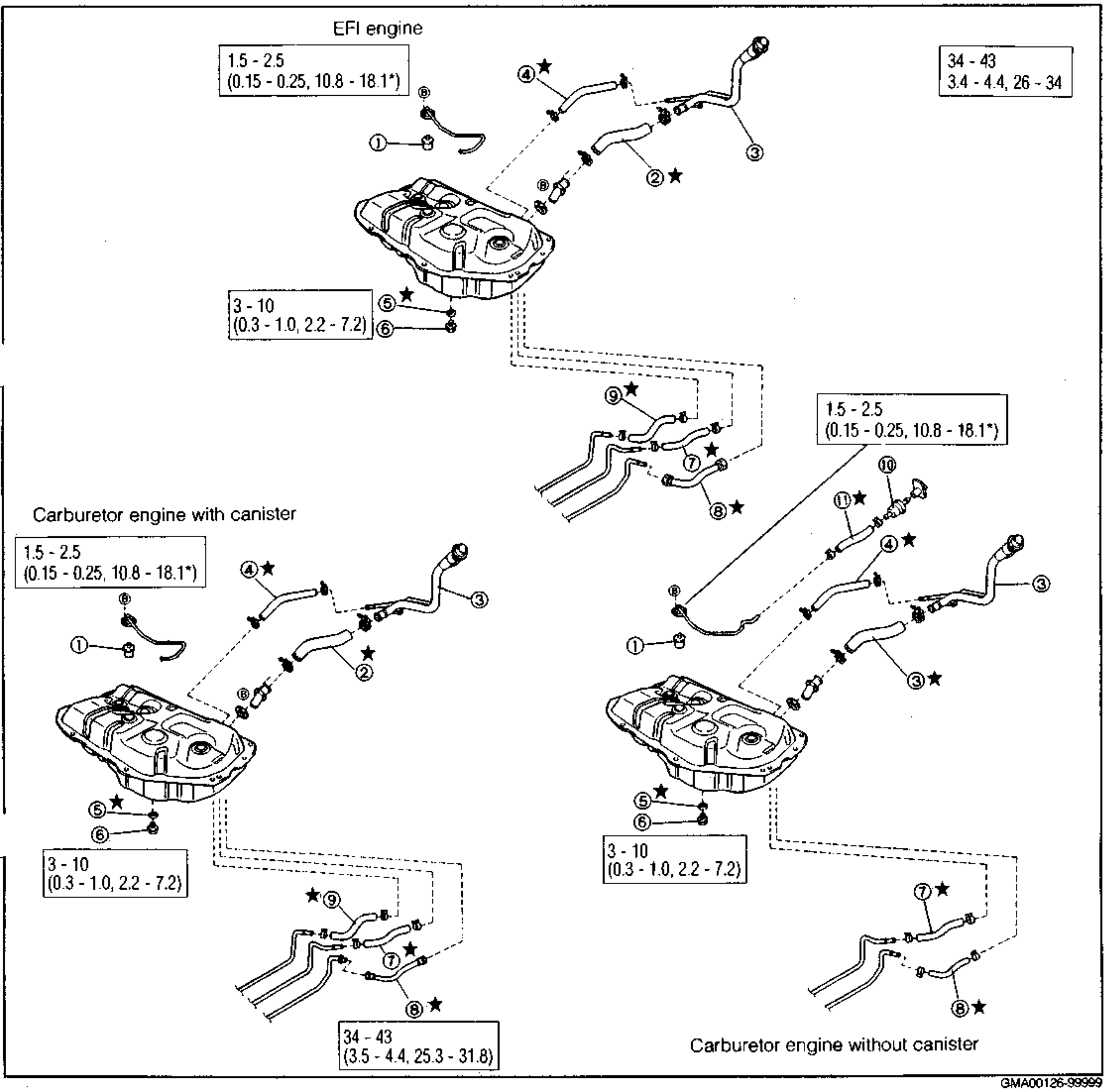
1. Install new proportioning valve with the bolt.
   Tightening Torque: 13 - 15 N·m
   (1.3 - 1.6 kgf-m, 9.4 - 11.6 ft-lb)
2. Install the brake pipes to the proportioning valve.
   Tightening Torque: 13 - 17 N·m
   (1.3 - 1.8 kgf-m, 9.6 - 13.3 ft-lb)
3. Perform the air bleeding for the brake system.

GMA00125-00000

FUEL HOSE AND CHECK VALVE

COMPONENTS

☐ : Tightening torque
Unit : N·m (kgf-m, ft-lb, in-lb*)
★ : Non-reusable parts



① Fuel cut off valve assembly
② Fuel tank sub inlet hose
③ Fuel tank inlet pipe subassembly
④ Breather hose
⑤ Gasket
⑥ Drain plug
⑦ Fuel return hose
⑧ Fuel hose (For fuel filler)
⑨ Fuel hose (For charcoal canister)
⑩ Check valve
⑪ Fuel hose (For check valve)

GMA00127-00000

FUEL TANK REMOVAL

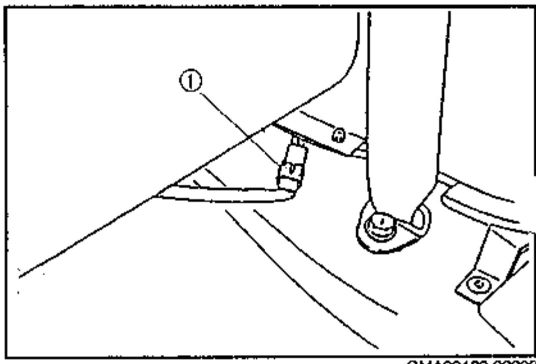
1. Jack up the vehicle and support it with safety stand.
2. Drain the fuel from the tank by removing the drain plug. After the fuel has been drained, install the drain plug with a new gasket.

   Tightening Torque: 3 - 10 N·m
   (0.3 - 1.0 kgf-m, 2.2 - 7.2 ft-lb)

3. Disconnect the negative terminal from the battery.

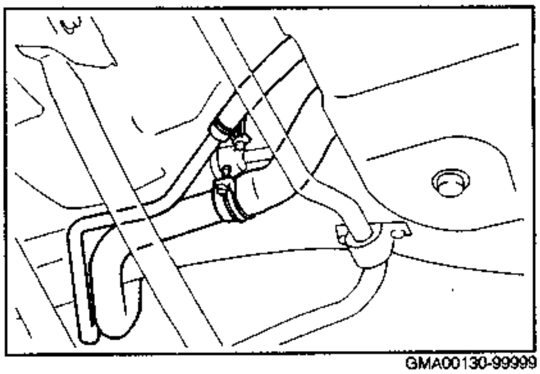
GMA00128-00000

4. Disconnect the fuel sender gauge and fuel pump connector under the rear seat cushion.



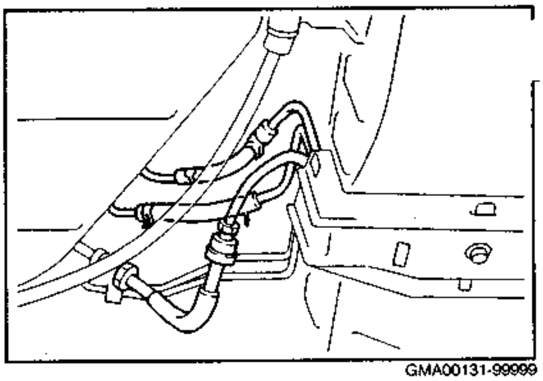
GMA00129-99999

5. Remove the fuel tank inlet pipe and the breather hose.
6. Remove the check valve.
   (For carburetor engine without canister)
   WARNING:
   - **Never allow any fire to be brought near the working site.**



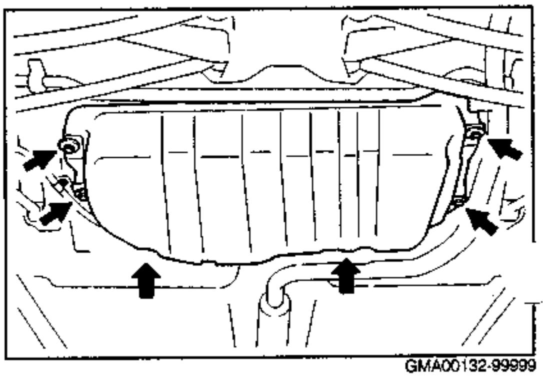
GMA00130-99999

7. Remove the fuel hose for fuel filter.
   (For carburetor engine)
8. Disconnect the fuel hose for fuel filter.
   (For E.F.I. engine)
9. Remove the fuel return hose.
10. Remove the fuel hose for canister.



GMA00131-99999

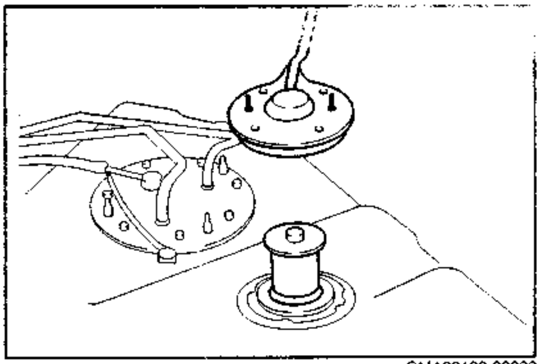
11. Remove the fuel tank by removing the attaching bolts.



GMA00132-99999

FUNCTION CHECK OF CHECK VALVE

1. Remove the fuel cut off valve, by removing the fuel tank breather pipe subassembly.

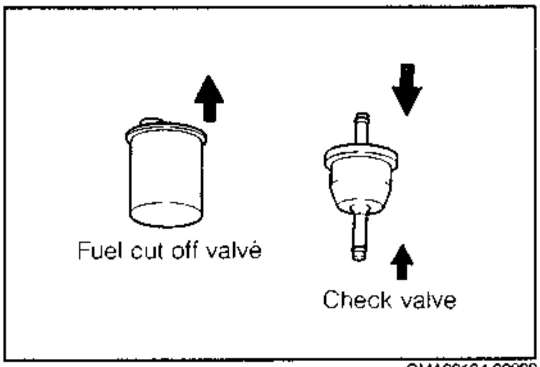


GMA00133-99999

2. Ensure that the air continuity is present, as indicated in the illustration.

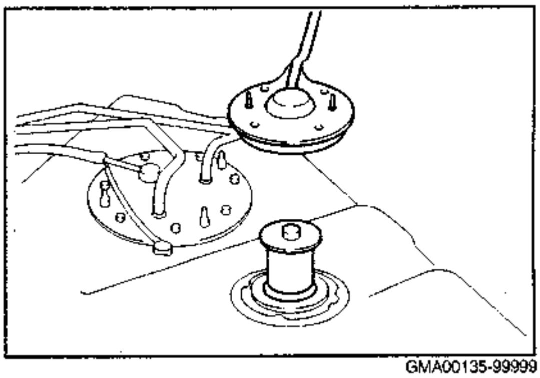
   Tightening Torque:

   1.2 - 1.5 N·m (0.15 - 0.25 kgf-m, 10.8 - 18.1 in-lb)



GMA00134-99999

3. Install the fuel cut off valve, a new gasket and fuel tank breather tube subassembly.



GMA00135-99999

FUEL TANK INSTALLATION

Reverse the removal procedure to install the fuel tank assembly.

GMA00136-00000

CHASSIS GREASE & OIL

CONDOTION

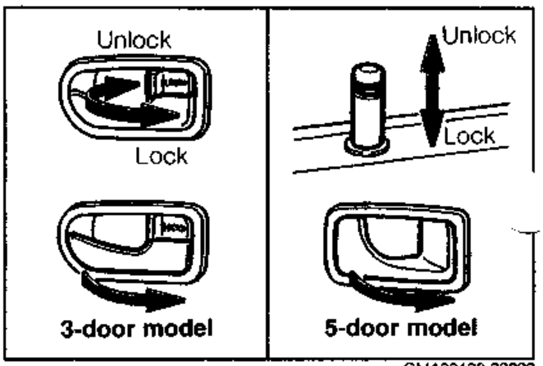
Visually check that the grease and oil condition is adequate on the following chassis various parts.

- Steering related parts
- Knuckle, king pin related parts
- Suspension related parts
- Door related parts
- Hood lock related parts

GMA00137-00000

DOOR & HOOD

LOCK OPERATION



GMA00138-99999

1. Check that the door lock operates properly.
2. Check that the key lock and inner lock (including child safety) operate properly.
3. Check the doors for opening/closing, alignment and tightness.

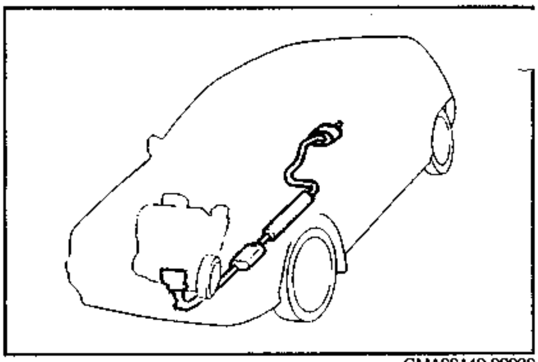
DAMAGE & TIGHTNESS

1. Check each hinge provided on the side doors and back door for looseness, moving by hand.
2. Check the hinge of the engine hood for looseness, moving by hands. Also, visually check the hinges for damage.

GMA00139-00000

MUFFLER AND EXHAUST PIPE

DAMAGE & TIGHTNESS


GMA00140-99999

1. Check that the attaching section of the exhaust pipe and muffler as well as their connecting section for looseness, using a spanner or moving them by hand.
2. Visually check the exhaust pipes and mufflers for damage and leak of exhaust gas. Also ensure that there is no possibility of interference with any other parts.

WARNING:

- **Never perform this check when the exhaust system is hot. Be careful not to burn yourself.**

FUNCTION OF MUFFLER

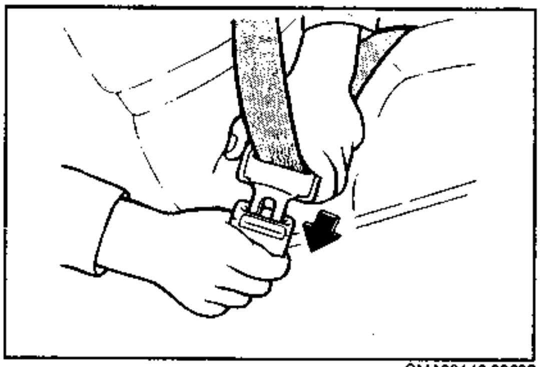
Ensure that the muffler functions properly by changing the engine revolution speed.

GMA00141-00000

SEAT BELTS

OPERATION

Visually check the seat belts for damage. Also, check that the tongue plate can be buckled properly.

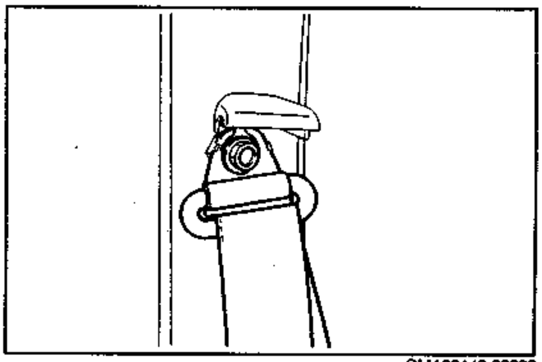


GMA00142-99999

TIGHTNESS

Check the seat belt attaching bolts for tightness.

Tightening Torque: 29 - 53 N·m (2.9 - 5.4 kgf-m, 21.0 - 39.0 ft-lb)

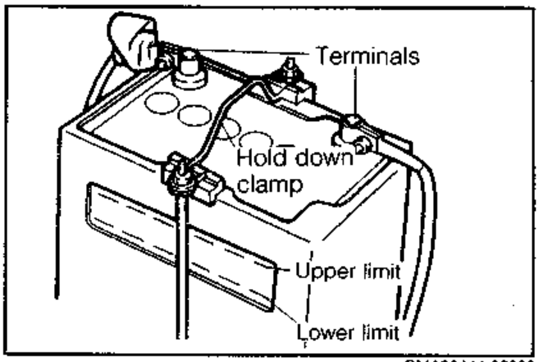


GMA00143-99999

BATTERY

CONNECTION OF TERMINAL SECTION

Check the terminal connections for cracks, corrosion or looseness. Check the hold-down clamps for looseness.



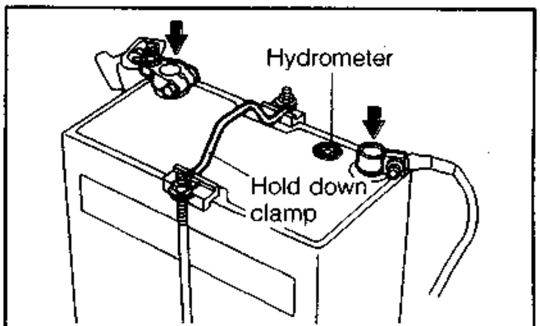
GMA00144-99999

SPECIFIC GRAVITY (Except for Delco Freedom battery)

Check that the gravity should be more than 1.25 (20 °C)

ELECTROLYTE LEVEL (Except for Delco Freedom battery)

Check the electrolyte level, if it is between the upper and lower limits.



Delco Freedom battery

GMA00145-99999

NOTE:
For Delco Freedom battery
1. It is impossible to add the electrolyte, for it is permanently sealed.
2. It is possible to check the battery condition on the Hydrometer provided in the battery.
- Green dot is visible:
  The battery is adequately charged.
- Dark (The green dot is invisible):
  The battery must be charged.
- Clear or light yellow:
  Replace the battery.

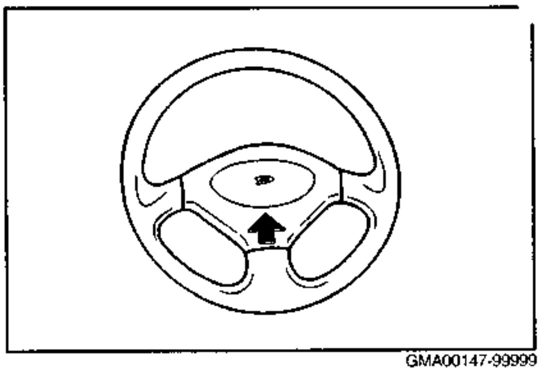
GMA00146-00000

HORN, WIPER, WINDSHIELD WASHER & DEFROSTER

FUNCTION

Horn

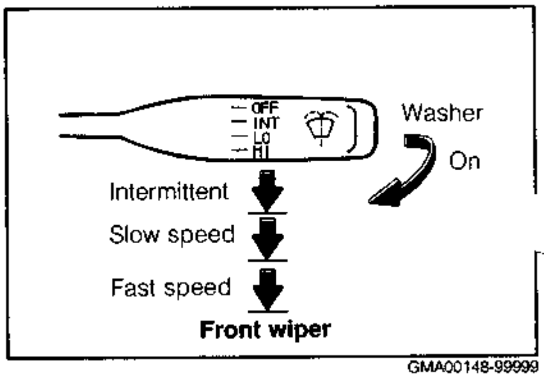
1. Ensure that the horn functions properly when any position of the horn button are pushed while turning the steering wheel.
2. Check horn volume and tone.



GMA00147-99999

Wiper switch

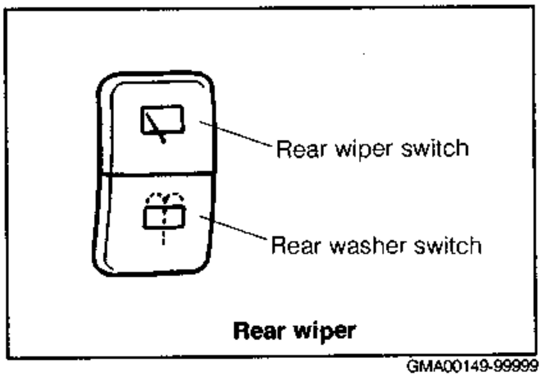
1. When the wiper switch is operated with the engine switch turned to the "ON" position, ensure that the wiper operates properly at each position of "INT", "LO" and "Hi" positions.
2. When the wiper is operated, check that the wiping condition is good.
3. When the wiper switch is turned to the "OFF" position, ensure that the wiper is returned to the original position automatically.



GMA00148-99999

Windshield washer

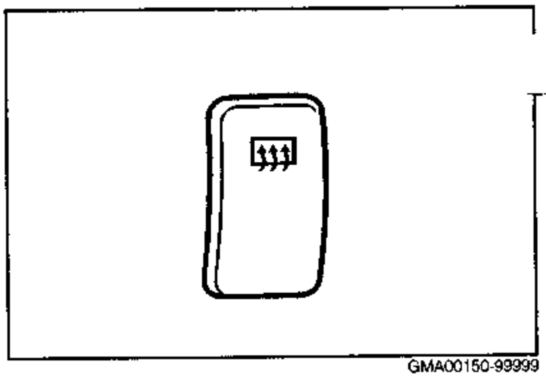
Squirt the washer, then check its direction and height.



GMA00149-99999

Defroster

1. When the blower fan switch is "ON" and the air outlet control lever is moved to the position with the engine switch turned to the "ON" position, ensure that the air is directed from the defroster outlet ports.
2. Check that the air amount is changed in accordance with the operation of the blower fan switch.



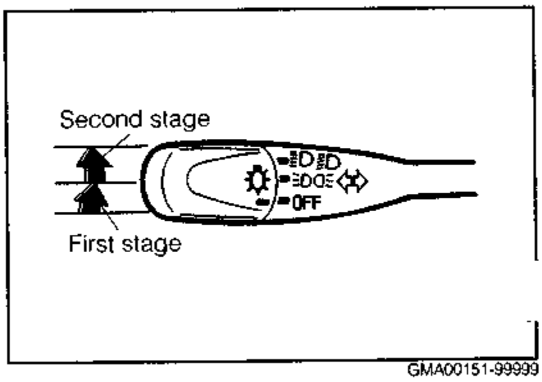
GMA00150-99999

LIGHTING SYSTEM

FUNCTION

Light control switch

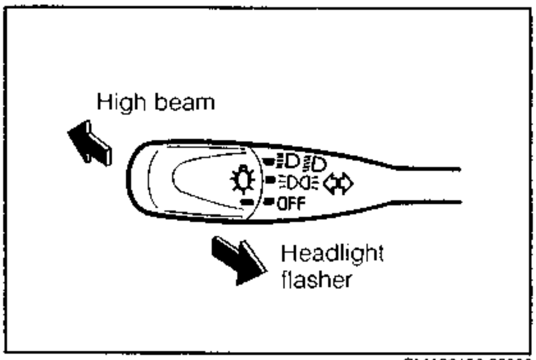
1. Ensure that each lamp goes on when the lever is operated.
2. Check lightness of the headlamps and the headlamp aiming.



GMA00151-99999

Dimmer switch and passing light

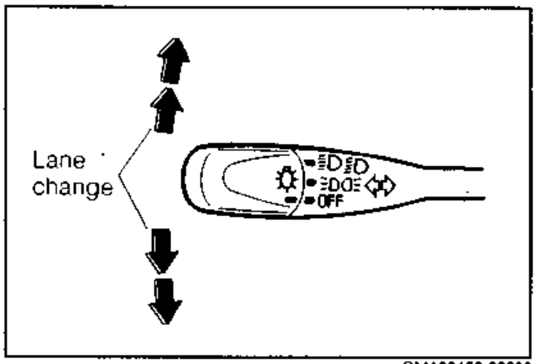
1. Check the dimmer switch and passing light for operation.
2. Ensure that the indicator lamp glows when the headlamps are upper beam.



GMA00152-99999

Turn signal switch

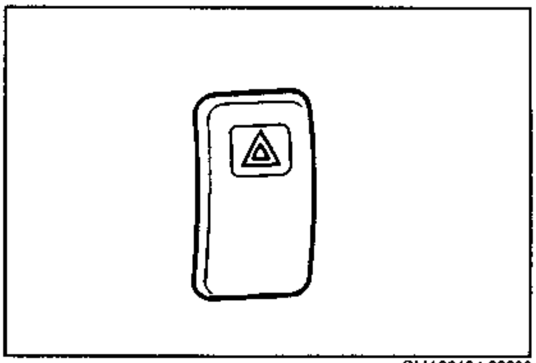
1. Ensure that the following lamps at the side where the switch is operated flash.
   The front, rear, side turn signal lamps and the indicator lamp.
2. Ensure that the self cancel mechanism operates properly.



GMA00153-99999

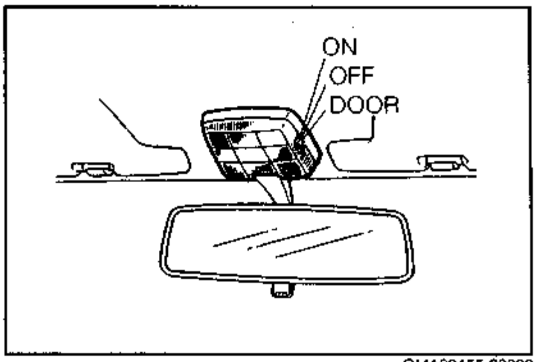
Hazard warning signal switch

Ensure that the turn signal lamps and the signal indicator lamps flash when the switch is operated.


GMA00154-99999

Room lamp

1. Ensure that the room lamp always glows when the switch is at the "ON" position.
2. Move the switch to the "DOOR" position, then ensure that the room lamp glows only when the side door is opened.



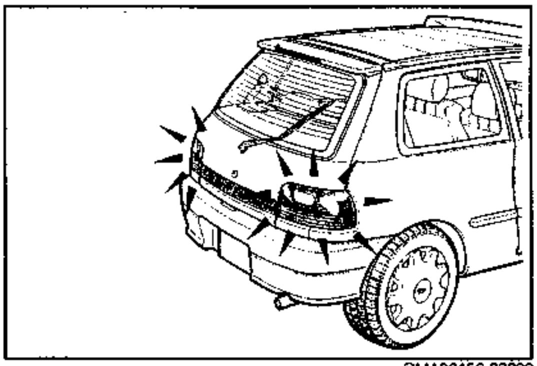
GMA00155-99999

Stop lamp

When the brake pedal is depressed, ensure that the stop lamp goes on. Also check that the stop lamp goes out when the brake pedal is released.

Back-up lamp

When the shift lever is shifted into the reverse position with the engine switch turned to the "ON" position, ensure that the back-up lamp goes on.


GMA00156-99999

METER & GAUGE

FUNCTION

Speedometer

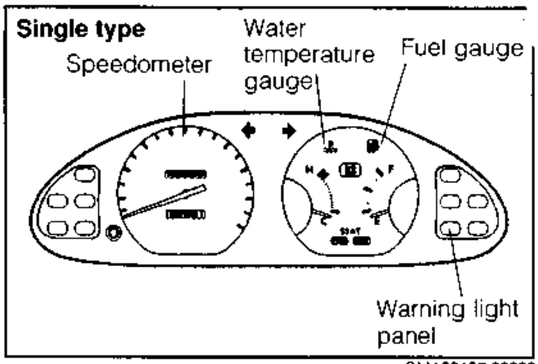
1. Check that the pointer complies smoothly in accordance with the vehicle speed.
2. Check that the pointer does not fluctuate remarkably.

Tachometer

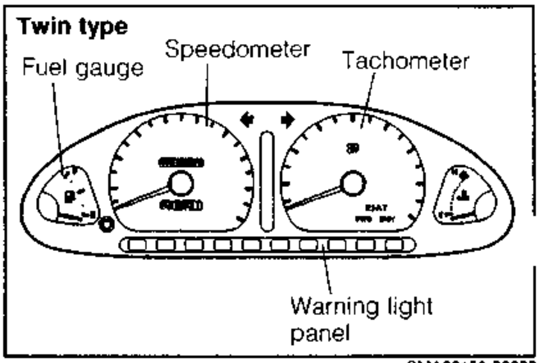
Check that the pointer complies smoothly in accordance with the engine revolution speed.

Water temperature gauge

Check that the pointer is at the starting point when the engine is cold and it is moved in accordance with warming-up the engine.



GMA00157-99999



GMA00158-99999

Fuel gauge

Ensure that the pointer always indicates the fuel amount even when the engine switch is turned to the "OFF" position.

Warning light

Ensure that the warning lights glow with the engine switch turned to the "ON" position. And go out when the engine has been started and the parking brake lever is released.

GMA00159-00000

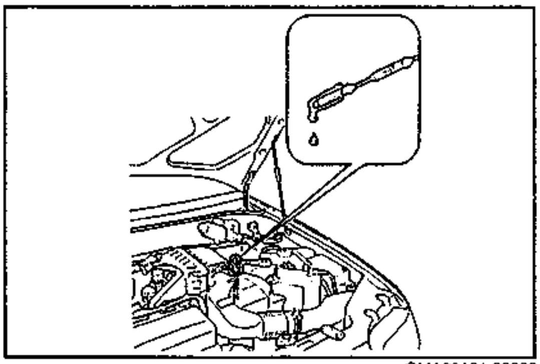
WIRE HARNESS

Check the wire harness and clamps for damage.

GMA00160-000

AUTOMATIC TRANSMISSION

FLUID LEVEL



GMA00161-99999

1. Park the vehicle on a level road and apply the parking brake.
2. With the engine idling, move the shift lever from P range to L range smoothly, and return to P range.
3. Pull out the dipstick and wipe it clean. Then Insert the dipstick and take it again. Check to see if the fluid level is in the limits.

NOTE:

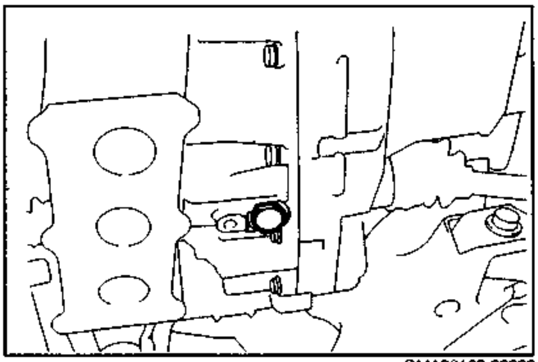
- **Perform the check when the fluid temperature is 70 - 80 °C, which is normal operating temperature.**

FLUID LEAKAGE

1. If the oil level is lower than that limit, check for fluid leakage.
2. Check to see if the leakage exists from the oil pan gasket or the drain plug.

GMA00162-00000

FLUID CHANGE



GMA00163-99999

1. Drain the transmission fluid by removing the drain plug.
2. Install the drain plug and new gasket.
   Tightening Torque: **24 - 54 N·m**
   (2.4 - 5.6 kgf-m, 17.4 - 40.5 ft-lb)

NOTE:

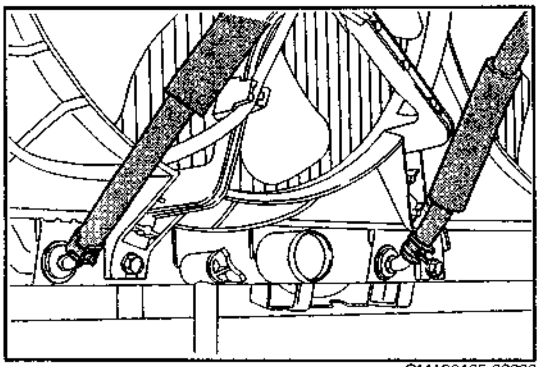
- **Case where drain and fill the automatic transmission fluid. ... 3.2 litter**
- **Case where no fluid remains at all in the transmission nor in the torque converter. ... 5.7 litter**

RATTLE OF OPERATION MECHANISM

1. Check the shift control cable for rattle or damage.
2. Ensure that the shift lever can be moved to each range with a proper detent feeling.

GMA00164-00000

CHANGE OF OIL COOLER HOSE



GMA00165-99999

1. Remove the engine under cover.
2. Disconnect the radiator outlet and inlet hose of the radiator and a automatic transmission.
3. Replace the oil cooler hoses.
4. If necessary, add the transmission fluid.

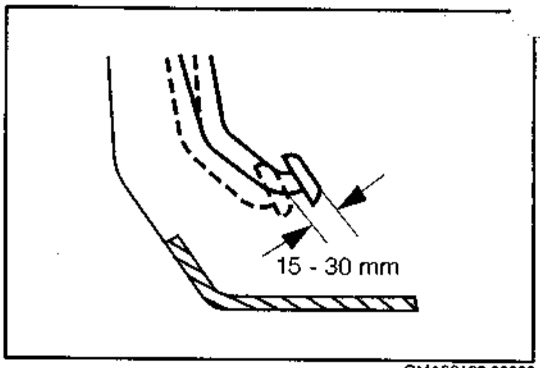
CAUTION:

- **Be sure to completely wipe off the oil remaining at the outside of the inlet/outlet pipe. Then, connect a new hose.**

CLUTCH

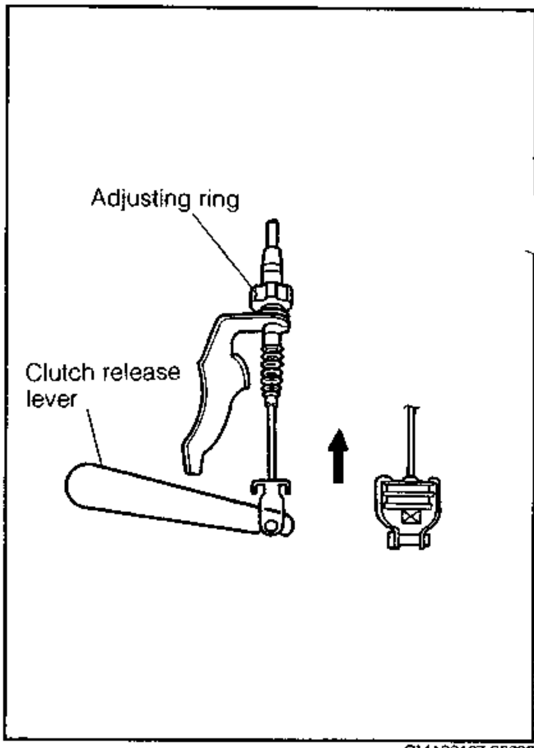
FREE PLAY

1. Lightly depress the clutch pedal by hand, until you feel resistance. Then, measure the free travel.
   Specified Clutch Pedal Free Travel: 15 - 30 mm



GMA00166-99999

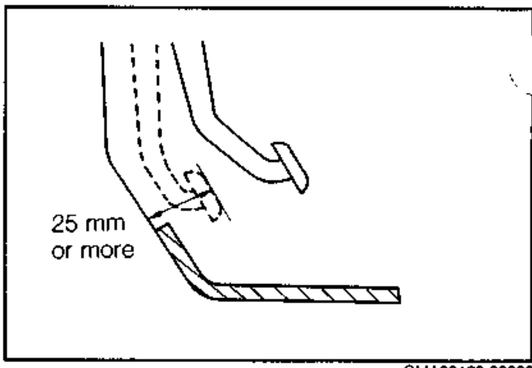
2. If the free travel does not conform to the specification, turn the adjusting ring of the clutch cable so as to conform to the specification.



GMA00167-99999

RESERVE TRAVEL

1. Start the engine.
2. When the clutch is completely disengaged, ensure that the clearance between the clutch pedal and the dash panel conforms to the specification.
   Specified Reserve Travel: 25 mm or more



GMA00168-99999

OPERATION

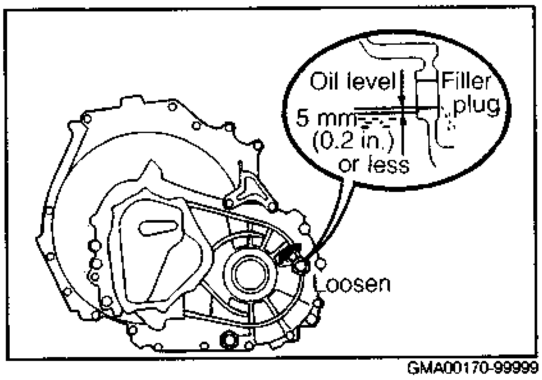
1. While the engine is running at idle speed, depress the clutch pedal. Ensure that no abnormal noise is emitted and the gear shift can be made smoothly into the first gear or the reverse position.
2. Move off the vehicle while releasing the clutch pedal gradually. Ensure that the vehicle exhibits no slippage and that the clutch engagement is smooth.

GMA00169-00000

ANUAL TRANSMISSION

OIL LEVEL

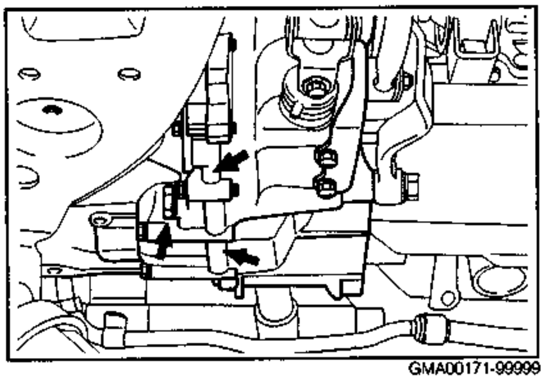
1. Park the vehicle on a level road and apply the parking brake.
2. Turn the ignition switch OFF.
3. Remove the filler plug and check to see if the transmission oil level is in the limits.
4. Reinstall the filler plug with new gasket after checking.
   Tightening Torque: 30 - 49 N·m
   (3.0 - 5.0 kgf-m, 21.7 - 36.2 ft-lb)



GMA00170-99999

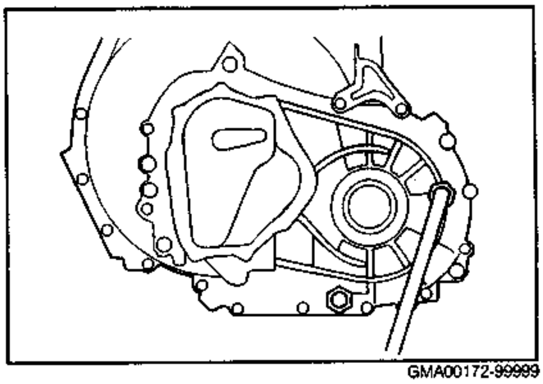
OIL LEAKAGE

Inspect the transmission for oil leakage.


GMA00171-99999

OIL CHANGE

1. Remove the drain plug and filler plug.
   Drain the transmission oil.
2. Reinstall the drain plug with new gasket.
   Tightening Torque: 30 - 49 N·m (3.0 - 5.0 kgf-m)
3. Replenish the transmission oil, until it begins to overflow from the filler hole.
   Manual Transmission Oil
   Grade: API GL-3
   Viscosity: SAE 75W-85 or 75W-90
   Capacity: 2.25 liters
4. Reinstall the filler plug with new gasket.
   Tightening Torque: 30 - 49 N·m
   (3.0 - 5.0 kgf-m, 21.7 - 36.2 ft-lb)


GMA00172-99999

GMA00173-00000

RATTLE OF OPERATION MECHANISM

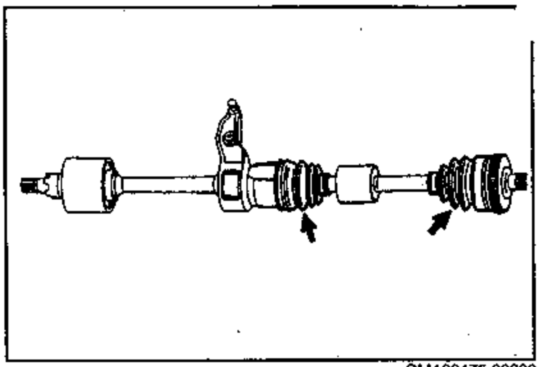
1. Move the shift lever to the neutral position as well as to each gear position.
2. Check that the shift lever has a proper play and the gear engagement takes place smoothly when shifted. Also, check that shift lever moves smoothly.

GMA00174-00000

DRIVE SHAFT

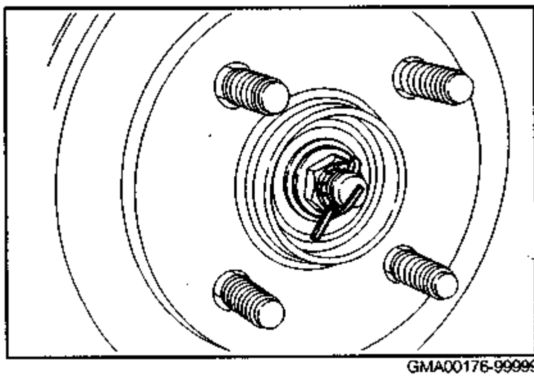
JOINT DUST BOOT

1. Inspect that the dust boot is free from damage or cracks.
2. Inspect that the dust boot band is secured in position.


GMA00175-99999

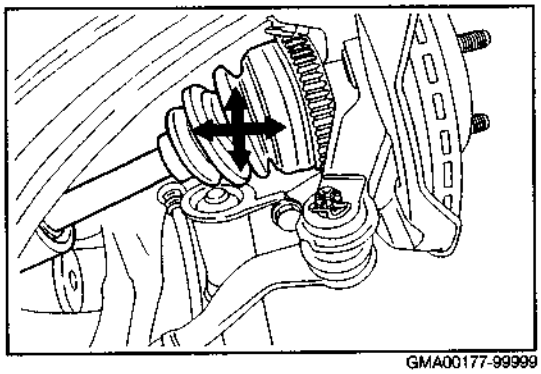
CONNECTING SECTION

1. Check to see if any looseness is present at the attaching nut of the drive shaft at the knuckle side.
2. Check that the cotter pin is not missing.


GMA00176-99999

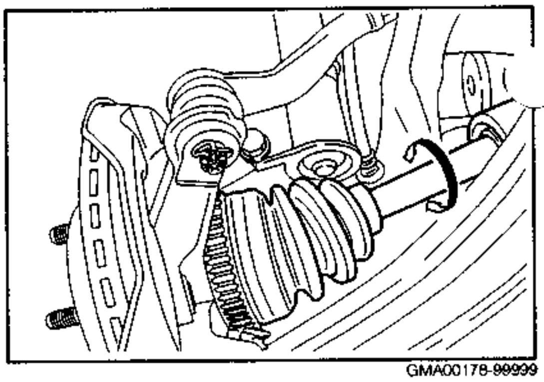
JOINT SECTIONS

1. Move the drive shaft by hand in an up-and-down direction as well as in a right-and-left direction.
2. Inspect that the joint section exhibits no excessive rattle.


GMA00177-99999

SPLINE SECTION

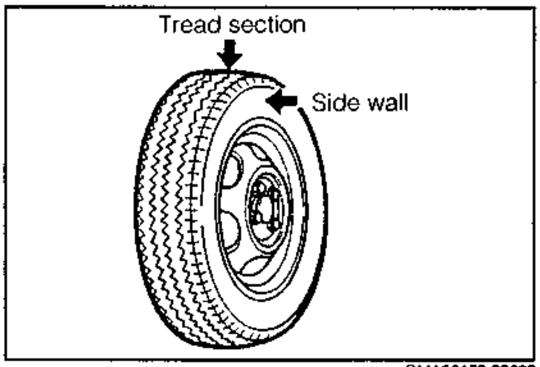
1. Check the spline section for excessive play by turning the drive shaft by hand.


GMA00178-99999

IRE

CLACKS AND DAMAGE

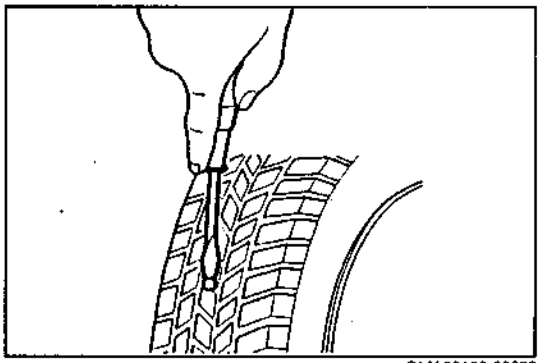
Inspect the tread section and side wall section for cracks and damage.



GMA00179-99999

OBJECTS CAUGHT IN THE TIRE PATTERN

Ensure that no nail, metal chip, gravel or other foreign matters lodge at the grooves of each tire, or none of them sticks into the tire.



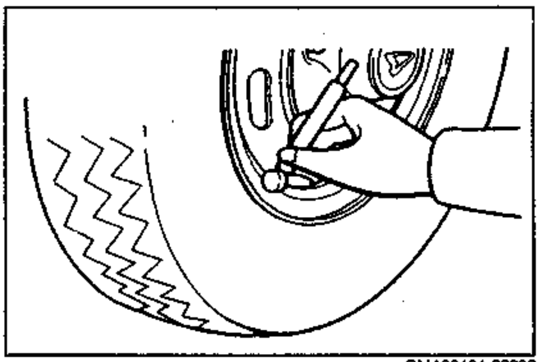
GMA00180-99999

PRESSURE

1. Check to see if the tire air pressure conforms to the specification, using a tire gauge.
2. Ensure that no air leaks from the tire valve and that the valve cap is attached.

NOTE:

- **For the specified air inflation pressure, see the caution plate attached to the vehicle. Be very careful not to over inflate the tires excessively.**



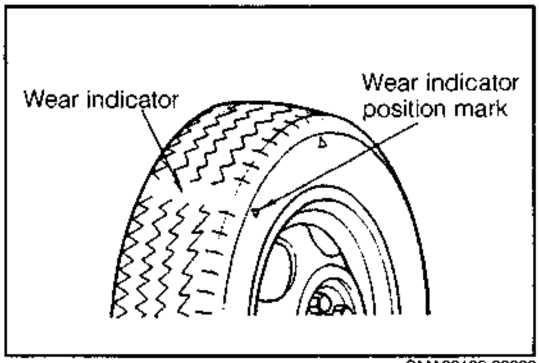
GMA00181-99999

WEAR

Inspect the tread section for wear. Ensure that the groove depth is at least 1.6 mm.

NOTE:

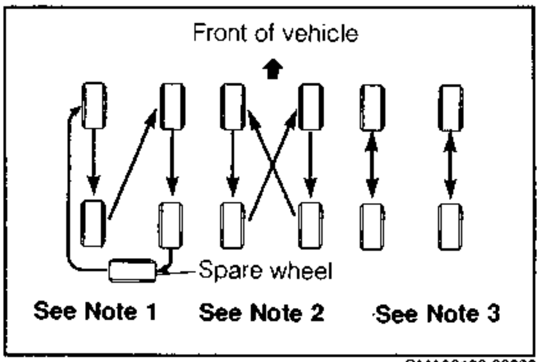
- **Care must be exercised as to the wear indicator mark. (When the remaining groove depth is reduced to less than 1.6 mm, the wear indicator mark will become visible.)**
- **Inspect the tire for uneven wear, ridge and other abnormal wear.**
- **If the tires exhibit an uneven wear pattern, check the wheel balancing and front wheel alignment.**



GMA00182-99999

ROTATION

1. Rotate the tires in the order shown in the illustration.
   Note 1 Vehicle with 4 steel wheels and one steel spare wheel or 4 aluminum wheels and one aluminum spare wheel.
   Note 2 Vehicle with compact spare wheel or 4 aluminum wheels and one steel spare wheel.
   Note 3 Vehicle with 175/60 R14 tires.
   (Original factory-installed tires)
   Tire Rotation Interval: every 10,000 km (6000 miles)
2. Adjust the tire air pressure after rotation.



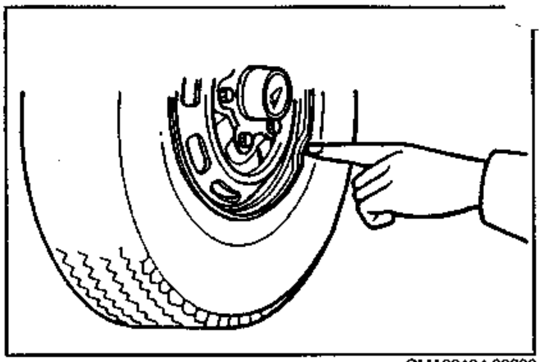
GMA00183-99999

WHEEL

WHEEL DISC

Rim and wheel disc
Inspection of damage
Inspect that the rim and wheel disc exhibit no corrosion, deformation, cracks nor runout.

Reference
Runout Limit: **Not to exceed 3 mm (Measured at outer peripheral section of wheel)**

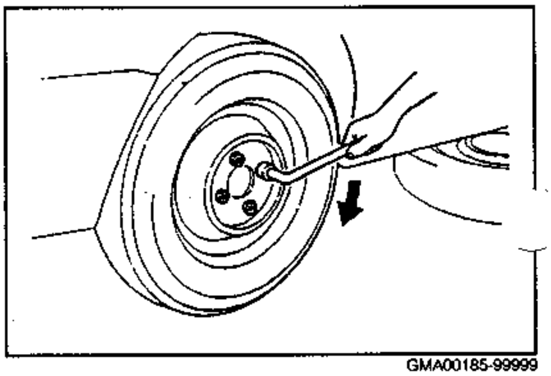


GMA00184-99999

WHEEL HUB NUTS

Inspection of looseness
Inspect the wheel hub nuts and bolts for looseness, using a wheel nut wrench.

Tightening Torque: 90 - 120 N·m
(9.0 - 12.0 kgf-m, 65 - 87 ft-lb)

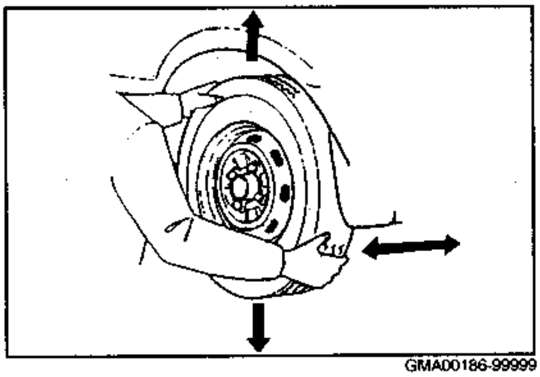


GMA00185-99999

WHEEL BEARING

RATTLE

1. Move the tire up and down while holding it at the top and bottom sections by your hands. Ensure that the rear wheel bearing exhibits no excessive play.
2. Ensure that no abnormal sound is emitted when the wheel is rotated.
3. Remove the rear wheel bearing and inspect the bearing, etc. for wear and damage, as required.



GMA00186-99999

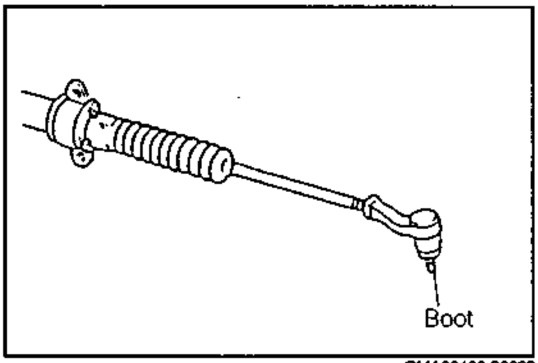
4. If excessive rattle is found, perform the check while the brake pedal is being depressed.
   If the rattle disappears, it indicates that the wheel bearing is loose. If the rattle persists, it indicates that the knuckle section or other suspension parts are loose.

GMA00187-00000

STEERING BALL JOINT DUST BOOT

DAMAGE

Inspect the dust boot of tie rod end ball joint for crack or damage.

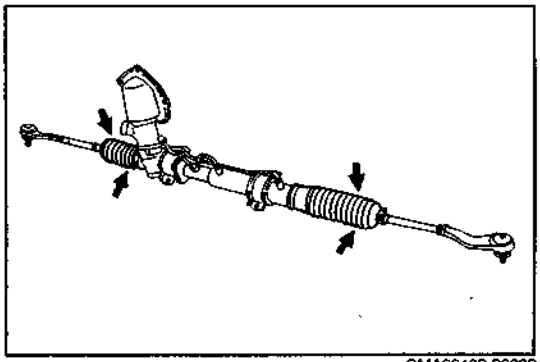


GMA00188-99999

GEAR BOX

LEAKAGE

1. Inspect the power steering device for fluid leakage.
2. Inspect the tightness of power steering device.

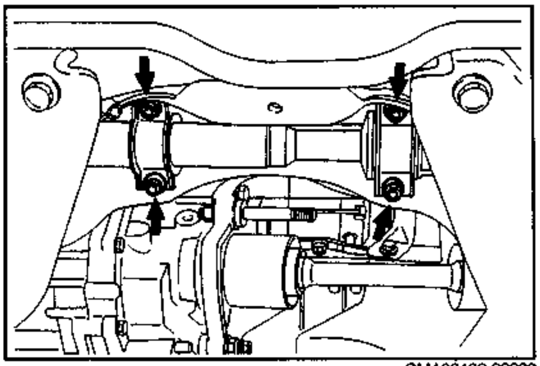


GMA00189-99999

TIGHTNESS

Inspect the bolts of the gear box for looseness.

Tightening Torque: 32 - 47 N·m (3.2 - 4.8 kgf-m, 23.1 - 34.7 ft-lb)

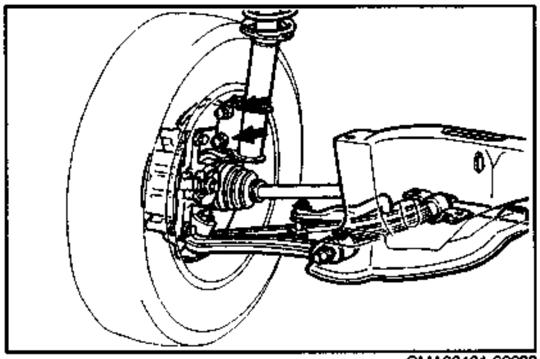


GMA00190-99999

KNUCKLE

RATTLE OF LINKAGE

Inspect the linkage of the knuckle for rattle.

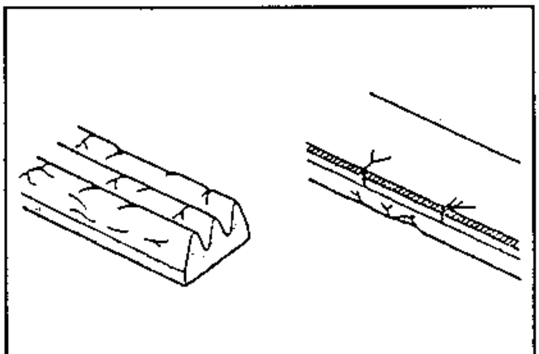


GMA00191-99999

POWER STEERING BELT

DAMAGE

Inspect the drive belt for damage.



GMA00192-99999

TIGHTNESS

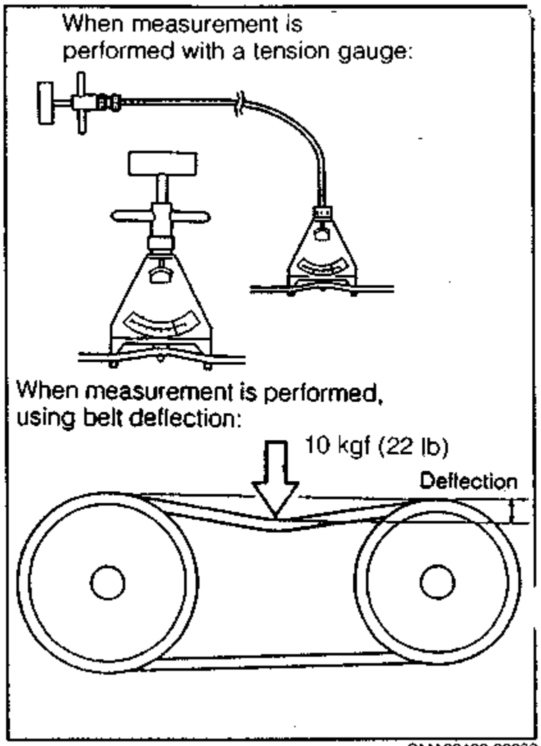
Inspect the drive belt for tension or deflection.

Specified Value:

Condition	Tension N	Belt deflection mm [when pushed with a force of 98 N (10 kgf)]
When a new belt is installed:	250 - 400	8 - 10
When belt is reused:	150 - 250	10 - 14

NOTE:

- **If a new belt is operated in its installed condition for more than 5 minutes, this belt should be regarded as a used part.**

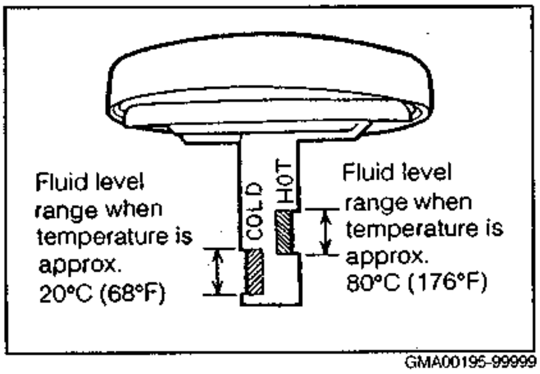


GMA00193-99999

POWER STEERING FLUID

LEVEL

1. Park the vehicle on a level floor.
2. Stop the engine. Using the dipstick of the reservoir tank, check the fluid level when the temperature of the power steering fluid is approximately 20°C or 80°C.



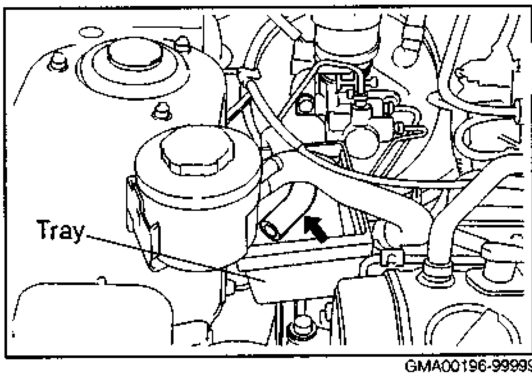
GMA00195-99999

FLUID HOSE CHANGE

1. Disconnect the return hose from the reservoir tank so as to allow the fluid to flow out.
2. While the engine is cranking, flow out the remaining fluid from the reservoir tank.

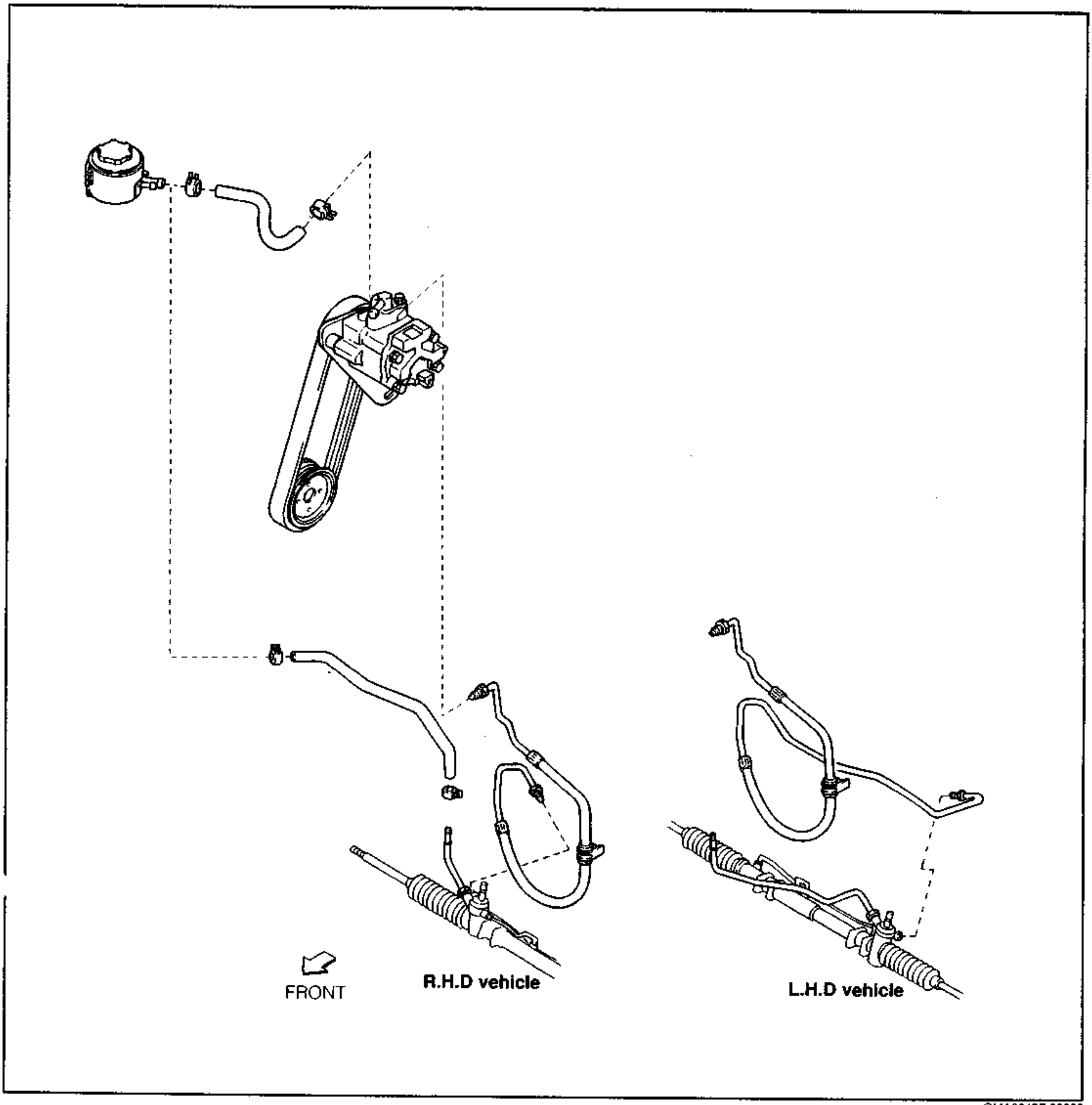
CAUTION:

- **To prevent vane pump seizure, be sure to drain quickly the fluid without idling of the engine.**



GMA00196-99999

3. Stop the engine. Repair the hose as indicated in the illustrations.



GMA00197-99999

NOTE:
- When installing the flare nuts of tubes to the steering gear, be sure to install the O-rings positively.
- Be very careful not to install the hoses in the twisted or forcibly bent state.
- Be sure disconnect the return hose at the reservoir tank.

GMA00198-00000

4. Fill the reservoir tank with fluid.
   Power Steering Fluid: DEXRON II
5. Start the engine and run it idly. When the fluid starts to flow out from the return hose side, immediately stop the engine.
6. Repeat the steps 4. and 5. above, until air no longer injects from the return side.
7. Connect the return hose to the reservoir tank.

GMA00199-00000

8. Run the engine at a speed below the fast idle speed. Turn the steering wheel quickly up to the lock position in either the right or left direction. Hold this locked state for about two to three seconds. Next, turn the steering wheel up to the opposite lock position. Hold this lock state for about two to three seconds.
   Repeat this operation two to three times.

NOTE:
- **Check the fluid level during the bleeding operation, and added the fluid as required.**

GMA00200-00000

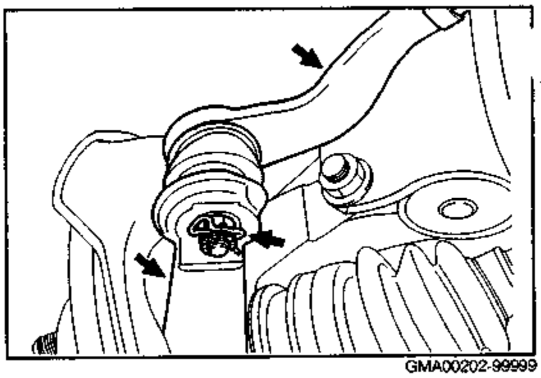
LEAKAGE
Inspect the power steering device for fluid leakage.

GMA00201-00000

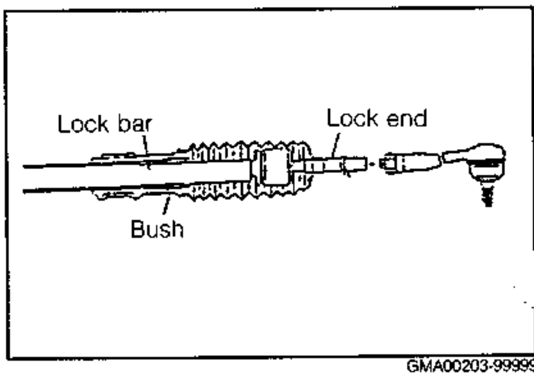
TIE ROD AND ARM

DAMAGE
Inspect the tie rod end, lock nuts and arm for damage.

TIGHTNESS
Inspect the nuts of the tie rod for looseness.
Tightening Torque: 26 - 38 N·m (2.7 - 3.9 kgf-m, 19.5 - 28.2 ft-lb)


GMA00202-99999

RATTLE
Inspect the tie rod end, lock nuts and arm for rattle.

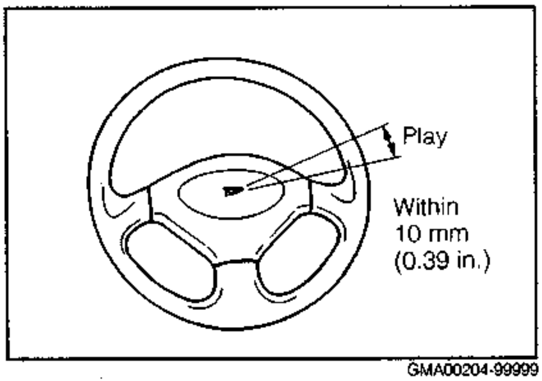


GMA00203-99999

STEERING WHEEL

FREE PLAY

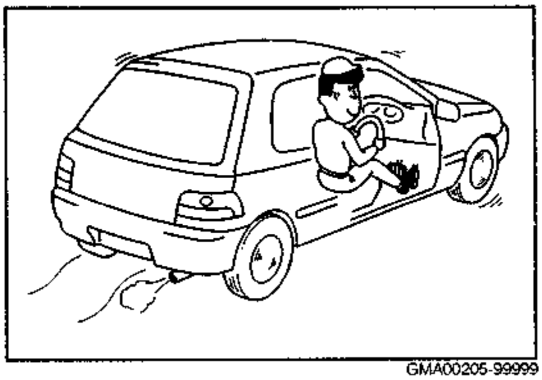
1. Set the vehicle in a straight-ahead condition.
2. Inspect the steering wheel play by turning it lightly with your fingers.
   Specified Value: 10 mm Max.



GMA00204-99999

OPERATION

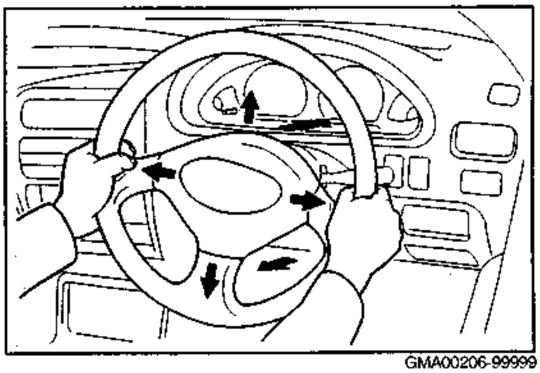
Take road test. Ensure that the steering wheel exhibits no excessive shimmy motion.



GMA00205-99999

RATTLE

Hold the steering wheel by your hands. Ensure that the steering wheel exhibits no excessive looseness or play by moving it in an up-&-down direction, a right-&-left direction as well as in a fore-&-aft direction.



GMA00206-99999

TIGHTNESS

Inspect the attaching sections for tightness or damage.
Tightening Torque
Steering Wheel / Steering Main Shaft:
28 - 41 N·m (2.8 - 4.2 kgf-m, 20.3 - 30.4 ft-lb)
Steering Main Shaft / Universal Joint:
25 - 34 N·m (2.5 - 3.5 kgf-m, 18.1 - 25.3 ft-lb)
Universal Joint / Steering Pinion:
25 - 34 N·m (2.5 - 3.5 kgf-m, 18.1 - 25.3 ft-lb)

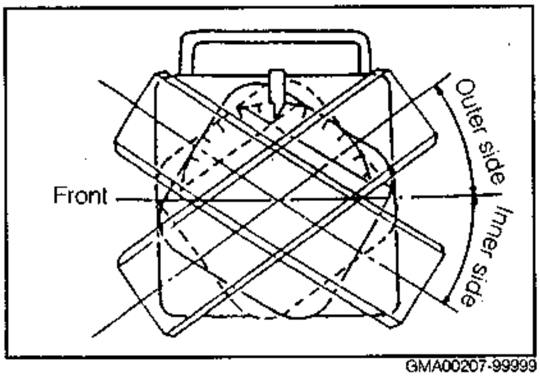
WHEEL ALIGNMENT

SIDE SLIP TEST

Check the sideslip, using a sideslip tester.
Specified Value: 0 ± 3 mm per 1 m

TURNING ANGLE

1. Measure the wheel turning angle, using a turning radius gauge.
   Specified Value: Inner side: 39° 45′ ± 2°
   Outer side: 34° 30′ ± 2°
2. If the wheel turning angle differs between the right and left sides, correct the turning angle.



GMA00207-99999

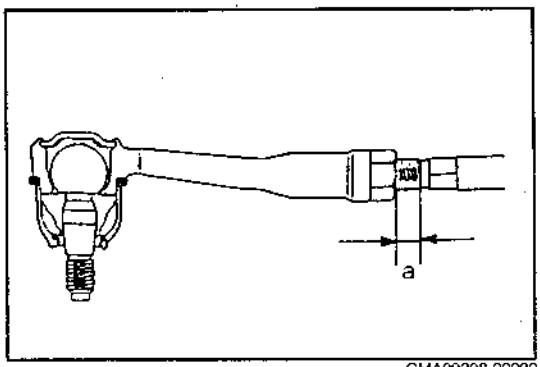
CORRECTION OF WHEEL TURNING ANGLE

(1) Loosen the lock nuts of the tie rod ends.
(2) Make the length (a) indicated in the illustration, equal between the right and left sides length.

NOTE:

- Make sure that the boot is not twisted during this correction.
- Make sure that the tie rods at the right and left sides are turned by the same amount.

Tightening Torque: 38 - 56 N·m
(3.9 - 5.7 kgf-m, 28.2 - 41.2 ft-lb)

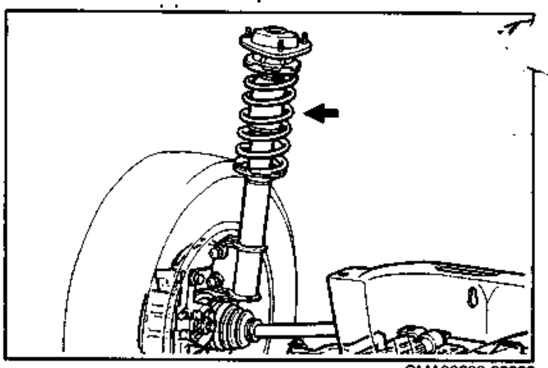


GMA00208-99999

SUSPENSION & LINKAGE

DAMAGE

Visually inspect each coil spring for breakage and cracks.



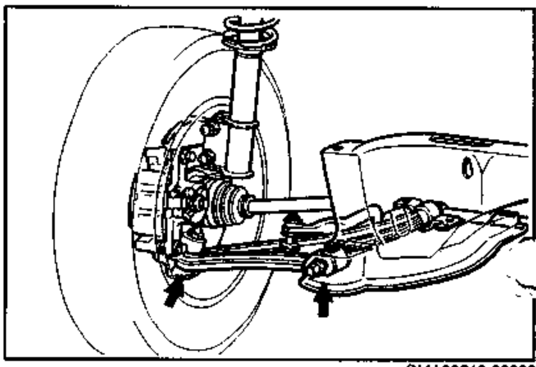
GMA00209-99999

RATTLE

Check the arm connecting section for rattle by rocking it by hand.

TIGHTNESS

Inspect the attaching sections for tightness.

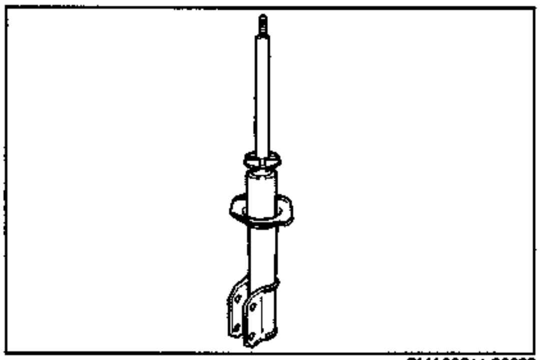


GMA00210-99999

SHOCK ABSORBER

DAMAGE AND OIL LEAKAGE

Visually inspect each shock absorber for damage and oil leakage.



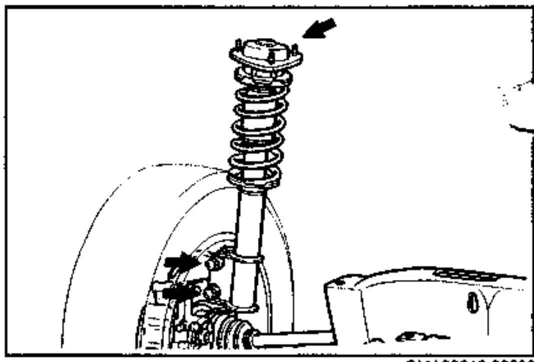
GMA00211-99999

RATTLE

Check each shock absorber installation section for excessive play by rocking it by hand.
Check the installation section for looseness with a spanner.

FUNCTION

Rock the vehicle in up-&-down direction. Ensure that the vehicle emits no abnormal noise.

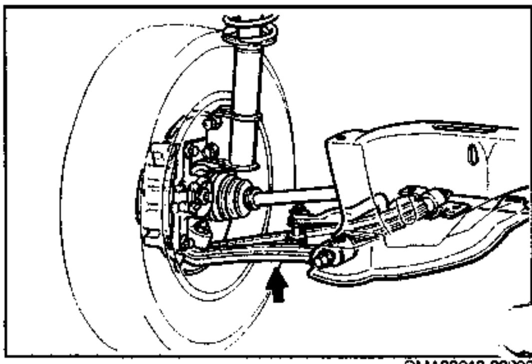


GMA00212-99999

SUSPENSION ARM, CONTROL ARM & DUST COVER

DAMAGE

Visually inspect the suspension arms and strut rod for damage.



GMA00213-99999

DAIHATSU

G200, G201

HC, HD-Engine

MAINTENANCE

MA-2

Publication in April,1993

DAIHATSU MOTOR CO.,LTD

GMA00001-00000

MAINTENANCE REQUIREMENTS

The scheduled maintenance service is important to ensure trouble-free, safe and economical driving. Failure to perform the scheduled maintenance may cause an accident or serious damage.
If you conduct the periodical maintenance, Daihatsu car owners may reduce the chance of accidents or car problems. Furthermore, it becomes possible for you to find at an earlier stage malfunctions which may lead to serious damages. Consequently, potential vehicle damage can be prevented or the degree of the damage can be minimized.
Therefore, all of the persons who are concerned with servicing the Daihatsu vehicles should offer the periodical maintenance service to Daihatsu car owners in order that they may be protected from accidents or unexpected problems.
To prevent malfunctions in advance, however, conducting the periodical maintenance service only is insufficient. It is essential that owners themselves perform maintenance, such as the pre-starting check described in the owner's manual, so that the vehicle exhibits no abnormal change or phenomenon. Hence, please explain to owners about the necessity of maintenance performed by them.
However, malfunction may occur on those vehicles which are always checked by their owners. For instance, if a part instructed to be replaced periodically should be used beyond the replacement intervals and the life of the part has expired, there are cases where malfunction occurs suddenly despite the fact that no malfunction has taken place until yesterday. To prevent such malfunction in advance, be sure to replace parts recommended to be replaced periodically at the specified replacement intervals.
This section describes those items of the scheduled maintenance service recommended by the Daihatsu and their intervals. Be sure to observe the check schedule.

GMA00002-00000

MAINTENANCE SCHEDULE

NOTE:
1. Perform the periodic maintenance when the odometer reading or duration from last periodic maintenance whichever comes first, if not specified.
2. Continue to perform the periodic maintenance after 100,000 km (60,000 miles) by same interval with before 100,000 km.

○ ... Check or inspect ● ... Change or replace

Section	Items	What to check	× 1,000 km	1	10	20	30	40	50	60	70	80	90	100	See page
			× 1,000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
			Years	–	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Engine	Engine proper	• Condition of engine starting and abnormal noise				○		○		○		○		○	
		• Idling and acceleration		○		○		○		○		○		○	
		• Exhaust gas				○		○		○		○		○	
	Air cleaner element	• Cleaning			○	○	○	○	○	○	○	○	○	○	
		• Replacement		Every 40,000 km (24,000 miles)											
	Valve clearance	• Clearance						○				○			
	Engine oil	• Level		○	○	○	○	○	○	○	○	○	○	○	
		• Leakage		○		○		○		○		○		○	
		• Change			●	●	●	●	●	●	●	●	●	●	
	Oil filter	• Replacement		Every 10,000 km (6,000 miles)											
	Fuel line & connection	• Damage • Leakage • Crack • Tightness		○		○		○		○		○		○	
		• Fuel hoses replacement		Every 4 years											
	Fuel filter	• Replacement	HC-C engine	Every 60,000 km (36,000 miles)											
			HC-E and HD-E engine	Every 100,000 km (60,000 miles)											
	Carburetor (For HC-C)	Linkage	• Operation					○				○			
		Throttle valve	• Operation					○				○			
		Choke valve	• Operation					○				○			
	Coolant	• Level		○	○	○	○	○	○	○	○	○	○	○	
		• Leakage		○		○		○		○		○		○	
		• Change		Every 2 years											
	Radiator cap	• Function						○				○			
	Drive belt	• Tension • Crack • Damage		○	○	○	○	○	○	○	○	○	○	○	
	Timing belt	• Replacement		Every 100,000 km (60,000 miles)											

○ ... Check or inspect ● ... Change or replace

Section	Items	What to check		1	10	20	30	40	50	60	70	80	90	100	See page
			× 1,000 km	1	10	20	30	40	50	60	70	80	90	100	
			× 1,000 miles	0.6	6	12	18	24	30	36	42	48	54	60	
			Years	–	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Exhaust emission control system	Brow-by gas recirculation device	• Connection • Damage						○				○			
	Fuel evaporative emission control device	Piping	• Damage					○				○			
		Charcoal canister	• Clogging • Damage					○				○			
		Check valve	• Function					○				○			Refer to the chassis section of the service manual
	Emission control device	• Tightness • Damage				○		○		○		○		○	
	Dash pot or throttle positioner	• Operation				○		○		○		○		○	
	VTV for spark control (HC-C engine)	• Clogging				○		○		○		○		○	
	Piping	• Damage • Attaching condition				○		○		○		○		○	
	Heat preventive device	• Tightness • Damage				○		○		○		○		○	
Engine electrical system	Battery	• Electrolyte level			○	○	○	○	○	○	○	○	○	○	
		• Specific gravity • Connection of terminal section				○		○		○		○		○	
	Ignition timing	Spark plug	• Condition			○		○		○		○		○	
		Ignition system	• Timing			○		○		○		○		○	
		Distributor cap and rotor	• Condition			○		○		○		○		○	
		Ignition timing	Timing advance Device (HC-C engine)			○		○		○		○		○	

NOTE:
- If the vehicle should be operated under severe driving conditions, vehicle operated occasionally or vehicle operated dusty area, more frequent maintenance are required.

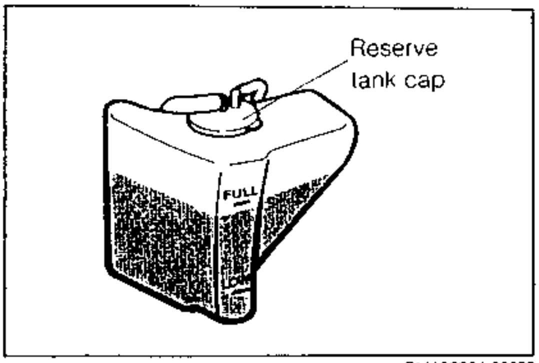
GMA00003-00000

COLD ENGINE OPERATION

1. Inspection of engine coolant level

Check to see if coolant level is between the LOW and FULL lines of the reserve tank.
If coolant level is near the LOW level or bellow the LOW level, add the coolant up to the full level.

WARNING:
- Never open the radiator cap when the engine is still hot. Failure to observe this caution will cause you to get scalded.

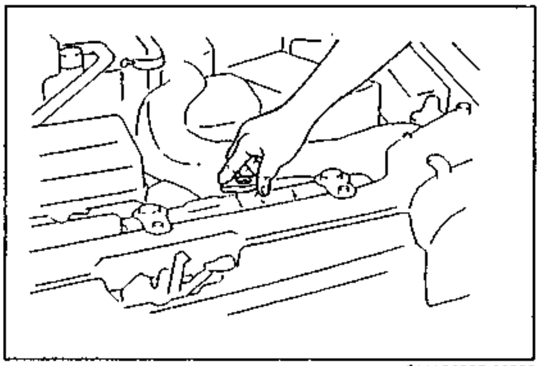


GMA00004-99999

NOTE:
- If no coolant is present in the reserve tank or the coolant level is very low, check for water leakage, using a radiator cap tester.
- Here, the coolant refers to the coolant having an adequate freezing protection rating.

2. Inspection of radiator cap and radiator filling port

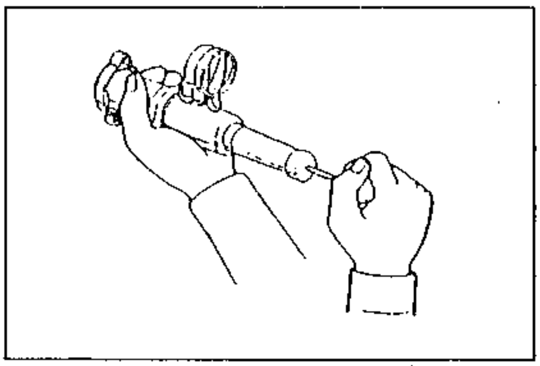
WARNING:
- Never open the radiator cap when the engine is still hot. Failure to observe this caution will cause you to get scalded.



GMA00005-99999

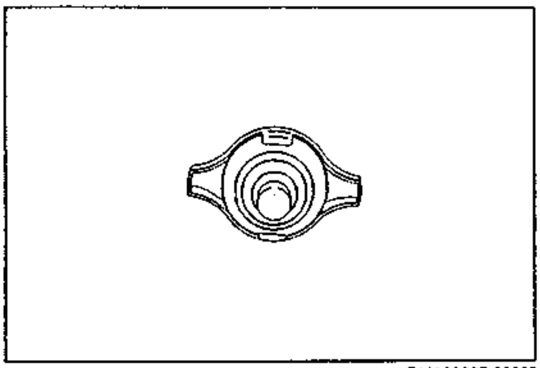
(1) Ensure that the engine coolant temperature is nearly atmosphere temperature.
(2) Turn the radiator cap to opening direction (counterclockwise) for one step (until the first detention will be feels).
(3) Lightly depress the radiator cap one to two times to release the inner pressure of radiator.
(4) Open the radiator cap by turn it to counterclockwise while depressing the radiator cap.
(5) Remove the radiator cap.

(6) Install the radiator cap to the radiator cap tester.
(7) Check the radiator cap by means of a radiator cap tester to see if the relief valve opens at a pressure of 58.84 - 102.97 kPa (0.6 - 1.05 kgf/cm^2, 8.53 - 14.9 psi). If the radiator cap fails to confirm to the specification, replace the radiator cap.
(8) Remove the radiator cap from the radiator cap tester.



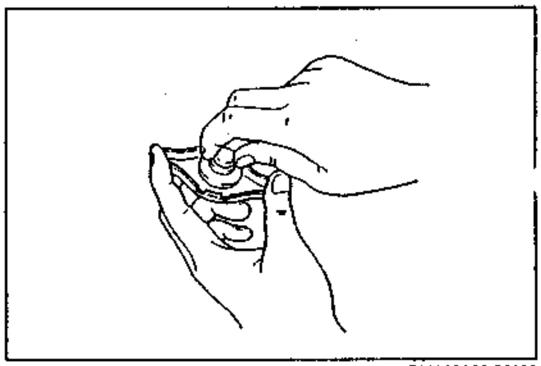
GMA00006-99999

(9) Check the seal packing of the radiator cap for damage. Replace the radiator cap with a new one, if any damage is exists.



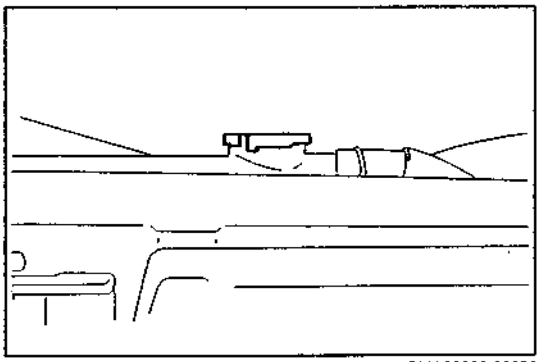
GMA00007-99999

(10) Lift the valve at the vacuum side with your fingers. Ensure that the valve is functioning properly.
Replace the radiator cap with a new one, if the valve fails to function.



GMA00008-99999

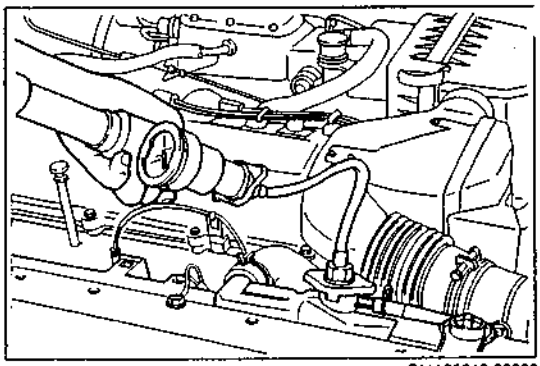
(11) Check the radiator filling port
① Ensure that the upper part of the radiator filling port has no crack, distortion or dented.
② Ensure that the radiator cap locked section of the radiator filling port has no crack, distortion or dented.
Replace the radiator, if any crack, distortion or dent are existing.
(12) Install the radiator cap to the radiator securely.



GMA00009-99999

3. Inspection of engine coolant leakage

WARNING:
- Never open the radiator cap or drain plug when the coolant is still hot. Failure to observe this caution will cause you to get scalded.



GMA00010-99999

(1) Ensure that the engine coolant temperature is nearly atmosphere temperature.
(2) Turn the radiator cap to opening direction (counterclockwise) for one step (until the first detention will be feels).
(3) Lightly depress the radiator cap one to two times to release the inner pressure of the radiator.
(4) Open the radiator cap by turn it to counterclockwise while depressing the radiator cap.
(5) Remove the radiator cap.
(6) Fill the radiator with coolant, if necessary.

(7) Attach a radiator cap tester.
(8) Apply a pressure of 117 kPa (1.2 kgf/cm², 17 psi) to the cooling system by means of a radiator cap tester.
If the pressure drops, check the hoses, radiator, water pump and heater for evidence of leakage.
If no external leakage is found, check the heater core, cylinder block, cylinder head, oil cooler and throttle body for evidence of leakage.
Check the hoses for deterioration, cracks, bulge or damage.
Replace the damaged part (s) if necessary.
(9) Remove the radiator cap tester from the radiator.
(10) Secure the radiator cap to the radiator.

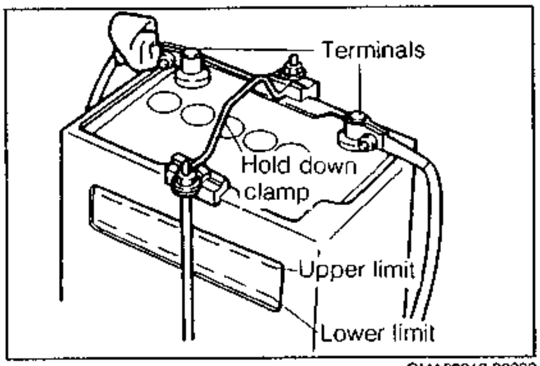
GMA00011-00000

4. Inspection of the battery

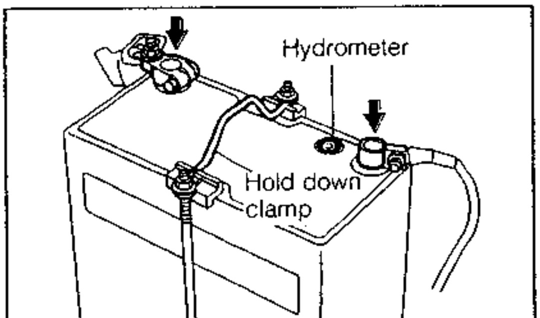
WARNING:
- Never touch at the battery terminals immediately after the engine is stopped.
- Be certain to turn OFF the ignition key switch during the inspection.

(1) Check the battery terminal case for proper installing condition and cracks.
If battery case exhibits improper installing condition or cracks, replace or repair the battery, as required.
(2) Check to see if the battery terminals exhibit corrosion and loose connection.
If the battery terminal exhibit corrosion and loose condition, disconnect the battery cable terminal which connected to the battery terminals.
Remove the any rust, using a wire brush or a fine abrasive paper.
After the battery cable terminals have been connected, coat these terminal with a thin film of lithium grease.

CAUTION:
- After the battery terminals have been cleaned, make sure that no rust particle remains on the terminals.
- Do not shorten the terminals of the battery with tools of metal objects. If the battery terminals are shorted, it will cause the battery to overheat and can cause damage or explosion.



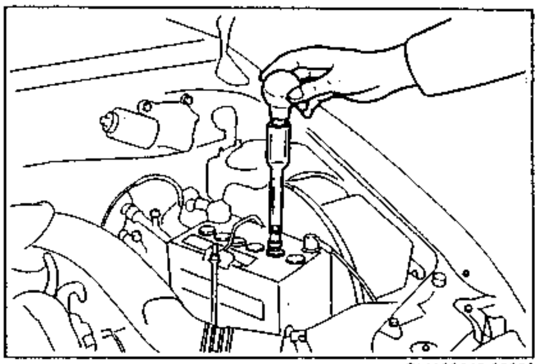
GMA00012-99999



Delco Freedom battery

GMA00000-99999

(3) Check of specific gravity of battery electrolyte
(Except Delco Freedom Battery)
Measure the specific gravity of the electrolyte of each cell, using a hydrometer. Ensure that the specific gravity is within the specified value.
Standard Specific Gravity: 1.25 or more
When fully charged at
20°C (68°F)



GMA00013-99999

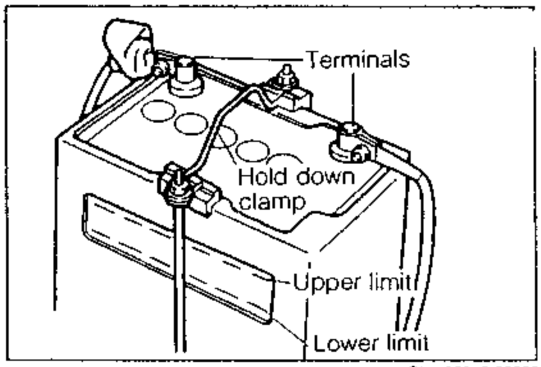
If the specific gravity is not within the specified value, check the electrolyte level and replenish distilled water. Then, charge the battery until the specific gravity reaches the specified value.
<Reference>

$$\boxed{\text{Specific gravity at standard temperature}} = \boxed{\text{Measured specific gravity}} + 0.0007 \times \left(\boxed{\text{Electrolyte temperature at time of measurement °C}} - 20 \right)$$

CAUTION:
- Utmost care must be exercised as to the handling of electrolyte. Be careful not to allow the electrolyte to touch to your skin, clothes or any parts of the vehicle.

GMA00014-00000

(4) Inspection of battery electrolyte level
(Except Delco Freedom Battery)
Ensure that the battery electrolyte level is in the upper limit level.
If the battery electrolyte level of any cell is not at the upper limit level, replenish distilled water to the upper limit level.



GMA00015-99999

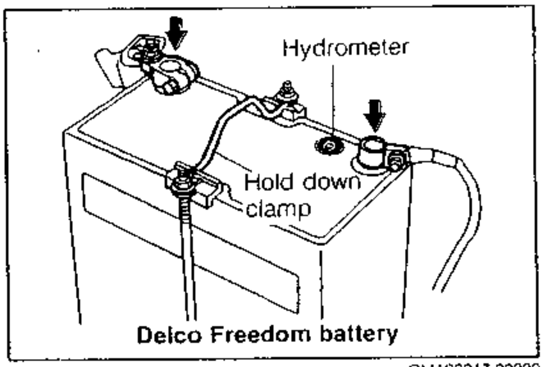
WARNING:
- Tighten the battery vent caps securely after adding distilled water. Otherwise the battery electrolyte may be splashed out and damage your vehicle or even cause serious bodily injury.
- Battery contains sulfuric acid which is poisonous and corrosive.
  Therefore, be careful not to splash battery fluid on yourself or clothes and wash the part immediately if it happen. Furthermore, wear protective safety glasses to protect the eyes.
- If you have swallowed battery fluid, drink as much water or milk as possible and immediately see a doctor.
- Keep fire away from the battery. It could cause battery explosion.
- Keep children away from the battery.

CAUTION:
- Wash splashed battery fluid away from paint finish immediately.

NOTE:
- Never add city tap water or sulfuric acid, etc. instead of distilled water.
- If the electrolyte level of each battery cell differs greatly, it is advisable to inspect to see if any electrolyte leakage is present.

GMA00016-00000

(5) Check battery specific gravity and electrolyte level. (For Delco Freedom Battery)
Check battery specific gravity and electrolyte level by the color of the hydrometer.
Green Dot is Visible:
The battery is adequately charged.
Dark (The Green Dot is Invisible.):
The battery must be charged.
Clear of Light Yellow:
Replace the battery.

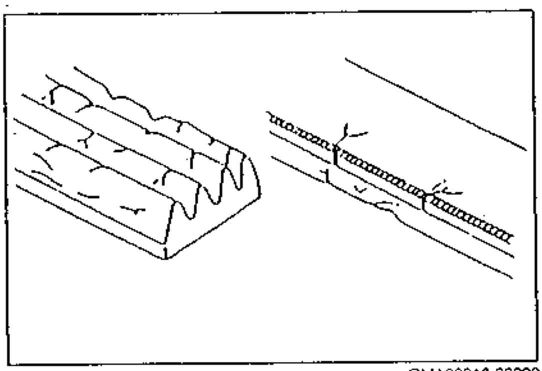


GMA00017-99999

NOTE:
- On the Delco Freedom Battery, it is impossible to add the electrolyte, for it is permanently sealed.
- If the battery is required the charging, be sure to consult with the agent of Delco Freedom Battery for correct charging procedure.

Inspection of drive belt

(1) Visual inspection of the drive belt
Visually check the belt for separation of the adhesive rubber above and below the core, core separation from the belt side, severed core, separation of the rib from the adhesive rubber, cracks or separation of the ribs, torn or ribs or cracks in the inner ridges of the ribs. Replace the drive belt, if necessary.


GMA00018-99999

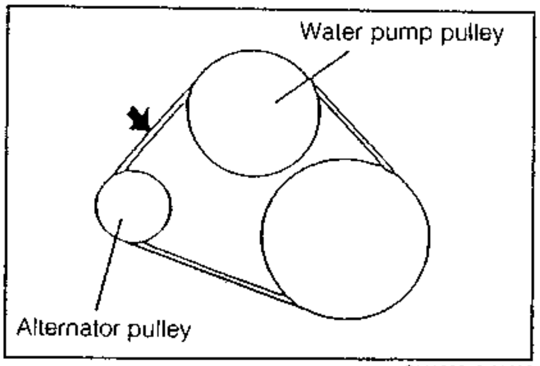
(2) Inspection of the drive belt tension

Measure the amount of the drive belt deflection when the midpoint of the drive belt between the alternator and the water pump pulley is pushed with a force of 98 N (10 kgf, 22 lb).

Specified Belt Deflection

New Belt: 4 - 5 mm (0.16 - 0.19 inch) [with a force of 10 kg (22 lb) applied at the point shown in the figure.]

Used Belt: 5 - 6 mm (0.21 - 0.23 inch) [with a force of 10 kg (22 lb) applied at the point shown in the figure.]



GMA00019-99999

If necessary, adjust the drive belt tension.

NOTE:

- "New belt" refers to a belt which has been used on a running engine for less than five minutes.
- "Used belt" refers to a belt which has been used on a running engine for more than five minutes or more.
- After replacing the drive belt, check that it fits properly in the ribbed grooves, especially in the places difficult to see.
- After installing a new belt, run the engine for about five minutes and then recheck the tension.

(3) Adjustment of drive belt tension

① Ensure that the ignition switch turned OFF.

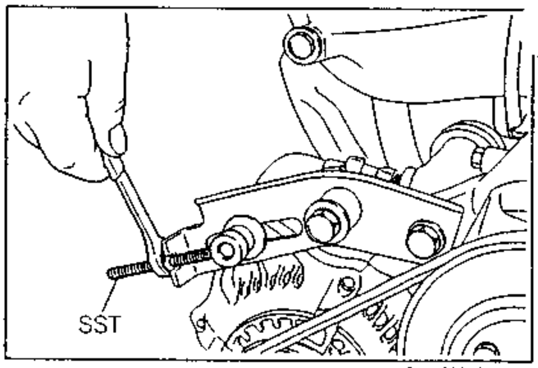
② Slacken the alternator attaching bolts.

NOTE:

- Slacken the attaching bolts only for alternator moves.

③ Install the following SST to the alternator and adjusting bar as shown in the right figure.

SST: 09286-87701-000



GMA00020-99999

④ Adjust the drive belt tension to the specified value by adjusting nut of the SST.

NOTE:

- As for the specification refer to the step (2).

⑤ Tighten the alternator attaching bolts to the specified torque.

Tightening Torque: 34.3 - 53.9 N·m (3.5 - 5.5 kgf-m, 25.3 - 39.8 ft-lb)

⑥ Remove the SST from alternator and adjusting bar.

Inspection air filter element

(1) Removal of air filter element

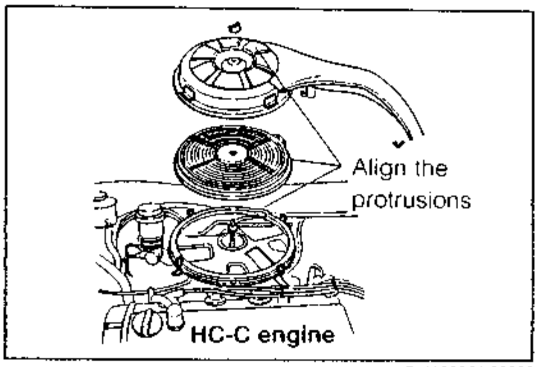
(HC-C engine)

① Unlock the four clips and remove the wing nut.

② Gradually lift up the air filter upper case.

NOTE:

- Be very careful not to allow the vacuum hoses of the vacuum motor and ITC valve to be disconnected.



GMA00021-99999

③ Remove the air filter element.

(HC-E and HD-E engine)

① Remove the tube from air filter case.

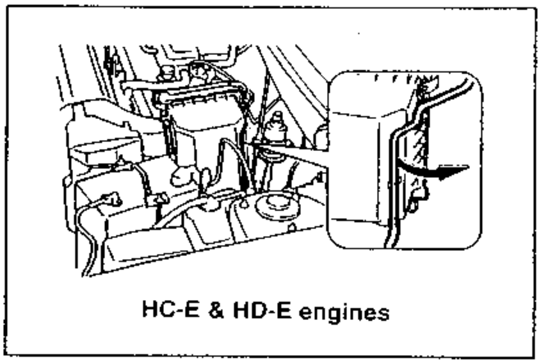
② Disconnect the hook under the air duct at resonator attached section by pulling up.

③ Unlock the four clips.

④ Gradually open the air filter case cover.

NOTE:

- Do not open the air filter case cover more than that necessary to remove the air filter element.



GMA00022-99999

⑤ Remove the air filter element.

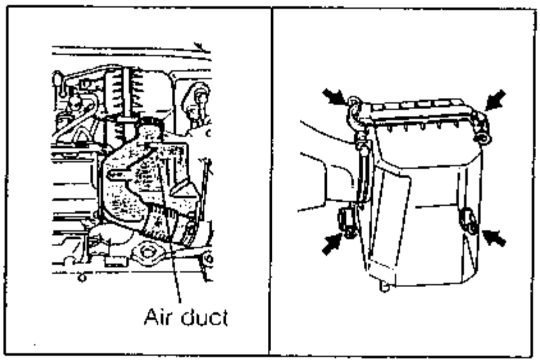
(2) Replacement of air filter element

Replace the air filter element when the replacement time arrives.

(3) Inspection of air filter element

Visually inspect the air filter element for being excessively dirty, damage or oily.

Replace the air filter element if necessary.



GMA00023-99999

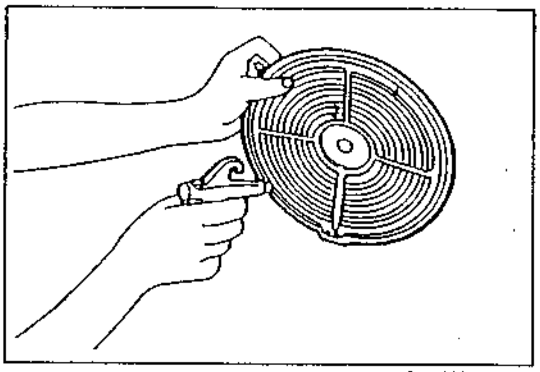
(4) Cleaning of air filter element

Clean the air filter element with compressed air.

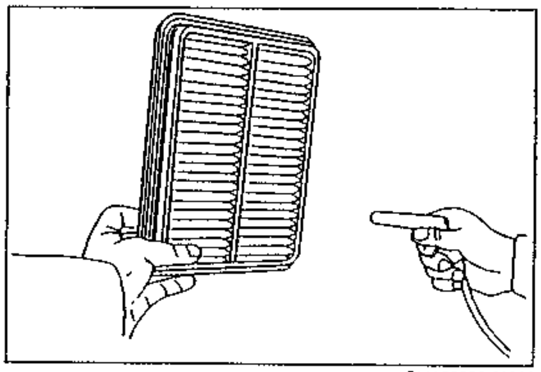
First, blow compressed air from the back side of the element thoroughly. Then, blow off the upper side of the element.

CAUTION:

- The air pressure to be used for this cleaning operation should not exceed 392.3 kPa (4.0 kgf/cm^2, 56.9 psi).
- Protect your eyes with safety goggles during the cleaning operation.


GMA00024-99999

Replace the air filter element, if necessary.


GMA00000-99999

(5) Installation of the air filter element
(HC-C engine)
① Install the air filter element with align the protrusions sections of air filter lower case and air filter element.
② Place the air filter upper case.

NOTE:
- Ensure that the vacuum hose of the vacuum motor and ITC valve connected properly.

③ Align protrusions of the lower cover and upper cover.
④ Latch the four clips and tighten the wing nut.

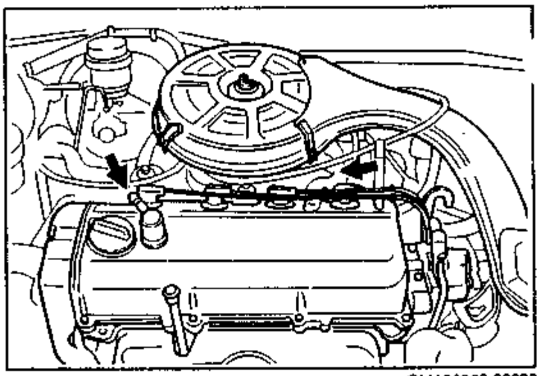
(HC-E and HD-E engine)
① Install the air filter element.

NOTE:
- Ensure that the direction of the air filter element in such direction wider protrusion side come to the air filter cover side.

② Close the air filter case cover.
③ Latch the four clips.
④ Connect the hook under the air duct at resonator attached section by pushing it doun.
⑤ Connect the disconnected tube to the air filter case cover.

GMA00025-00000

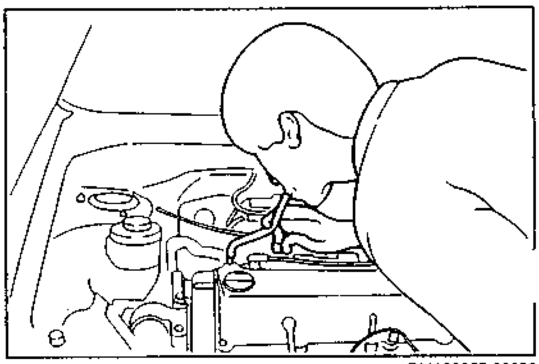
7. Inspection of blow-by gas recirculation device
(HC-C engine)
Visually inspect the hoses for improper connections, cracks, leak or damage.
Replace or repair any part which exhibit defects.


GMA00026-99999

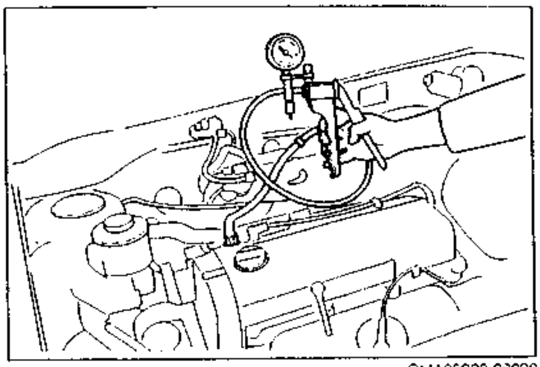
(HC-E and HD-E engine)
(1) Visually inspect the hoses for improper connections, cracks, leak or damage.

NOTE:
- Replace or repair any part which exhibit defects.

(2) Disconnect the blow-by gas hose from the surge tank side.
(3) Ensure that the no air continuity exists when blow your breath from the disconnected hose.
If air continuity is exist replace the check valve.


GMA00027-99999

(4) Connect the Mity Vac to the disconnected hose.
(5) Ensure that the air continuity is exists when air suck in by the Mity Vac.
If no air continuity is exists, replace the check valve.
(6) Install the check valve to the cylinder head.
(7) Disconnect the Mity Vac from the blow by gas hose.
(8) Connect the blow-by gas hose to the surge tank side.

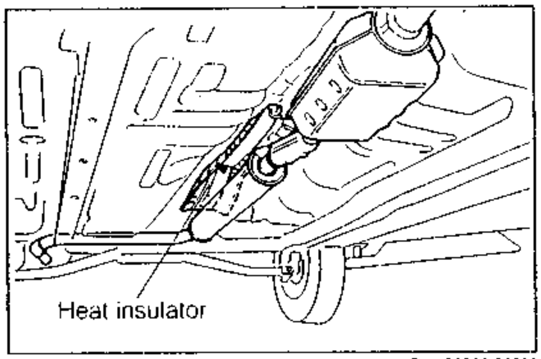


GMA00028-99999

8. Inspection of heat preventive device

(HC-C engine)
(1) Check the heat insulator for damage.
(2) Check for adequate clearance between the exhaust manifold and heat insulator.
(3) Ensure that the attaching bolts are tightened properly.

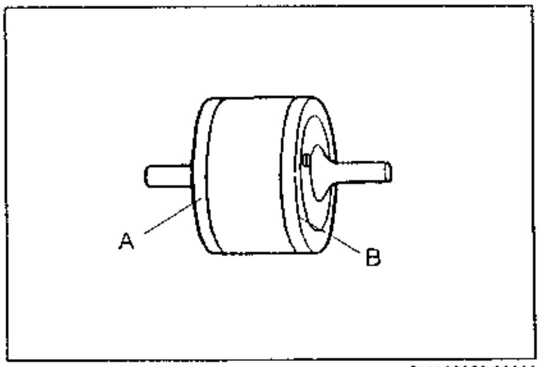
(HC-E, HD-E engine)
(1) Check the heat insulator for damage.
(2) Check for adequate clearance between the three-way catalyst and heat insulator.
(3) Ensure that the attaching bolts are tightened properly.



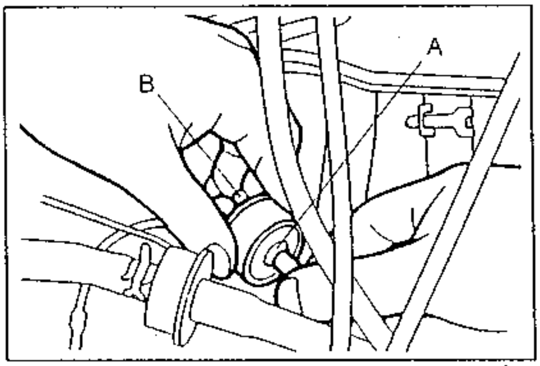
GMA00029-99999

9. Inspection of the spark control system

(HC-C with manual transmission engine)
(1) Disconnect the VTV hoses from VTV.
(2) Ensure that the air passes through with out restriction, when blow your breath into the VTV carburetor side (side B).
If significant restriction exist, replace the VTV.
(3) Ensure that the there is restriction in the VTV, when blow your breath into the VTV distributor side (side A).
If no restriction exist, replace the VTV.
(4) Remove the VTV hoses from carburetor and distributor.
(5) Ensure that the there is no restriction in the hose, when blow your breath into the each hoses.
If there is restriction, replace the hoses.
(6) Connect the VTV to the original position.
NOTE:
- Do not connect the VTV for opposite direction.



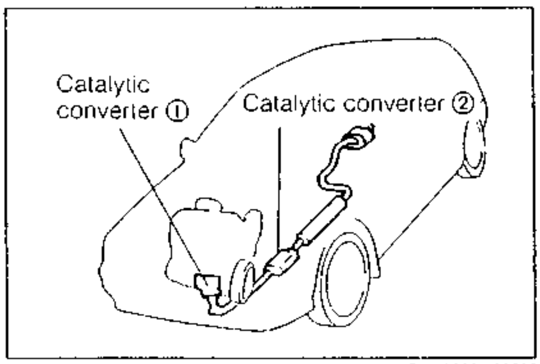
GMA00030-99999



GMA00000-99999

10. Check of exhaust emission control device tightness and damage

(1) Ensure that the no looseness are existing on attaching bolts.
If looseness is existing retighten the attaching bolts of the catalytic converter.
① HC-E engine with Australian specifications.
② HC-E engine except for Australian specifications and HD-E engine.



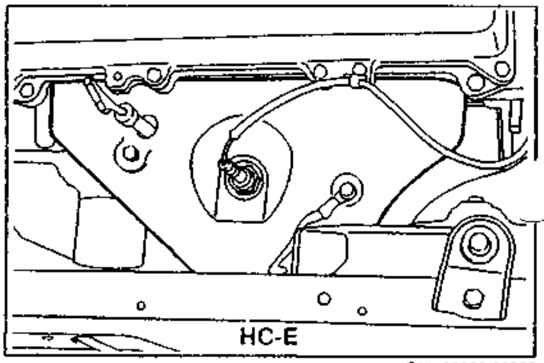
GMA00031-99999

NOTE:
- Be sure to confirm that the no exhaust gas leakage is present at the connecting sections of catalytic converter, after retighten the attaching bolts.
- If gas leakage is present, replace the gasket with new one.
(Refer to the EM section or BO section of service manual.)

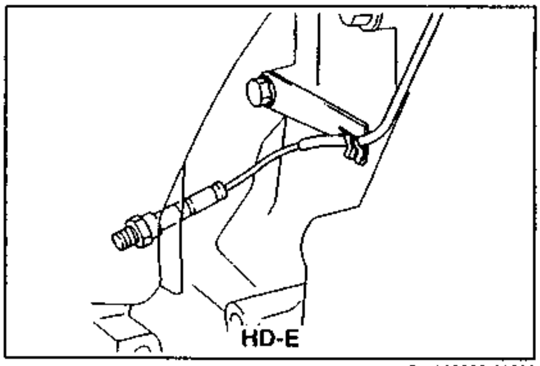
GMA00032-00000

(2) Ensure that the no looseness is existing on the oxygen sensor attaching condition.
If looseness is existing retighten the oxygen sensor.
Tightening Torque: 29.4 - 39.2 N·m
(3.0 - 4.0 kgf-m, 21.7 - 28.9 ft-lb)

NOTE:
- Be sure to confirm that the no gas leakage is present at the oxygen sensor attaching section.

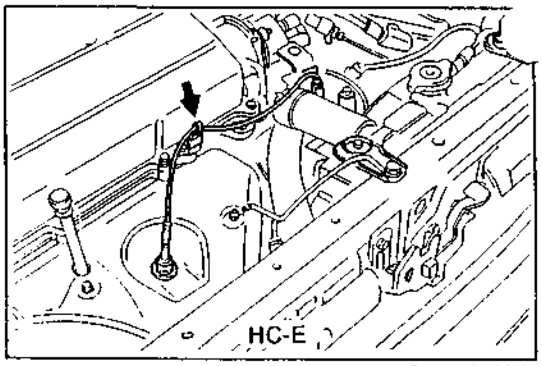


GMA00033-99999

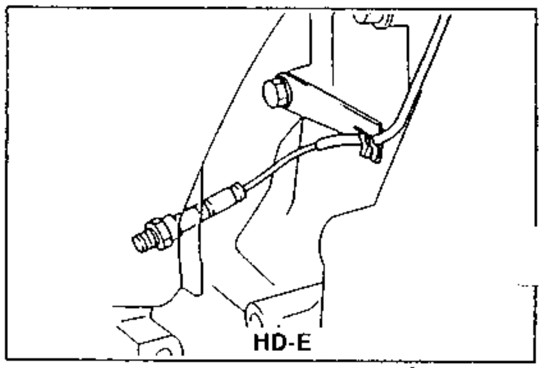


GMA00000-99999

(3) Ensure that the no crack or no any other damage is present on the oxygen sensor cord section.
If any damage is present replace the oxygen sensor with new one.
(4) Ensure that the connector of the oxygen sensor connected securely and clamped to connector clamp properly.
If not, securely connect and clamp the connectors.

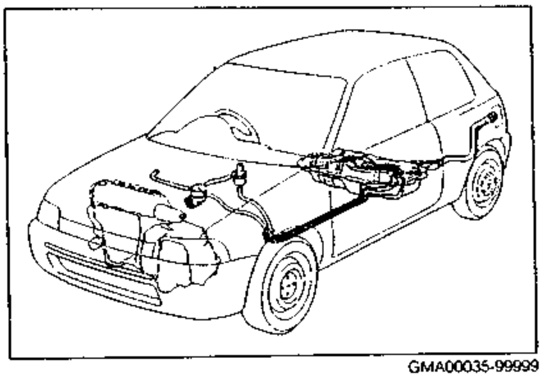


GMA00034-99999



GMA00000-99999

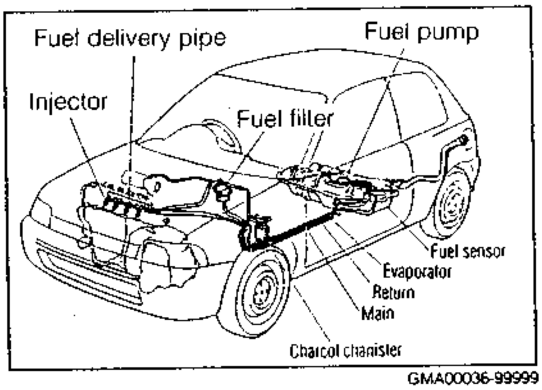
11. Inspection of the fuel line and connection


GMA00035-99999

(HC-C engine)

(1) Visually inspect the fuel line for damage, leakage and crack.
If damage, leakage or crack is existing, repair or replace the part as necessary.

(2) Ensure that the no looseness are existing on the connected sections of the fuel line.



GMA00036-99999

(HC-E, HD-E engine)

(1) Visually inspect the fuel line for damage or crack.
If damage or crack is existing, repair or replace the part as necessary.

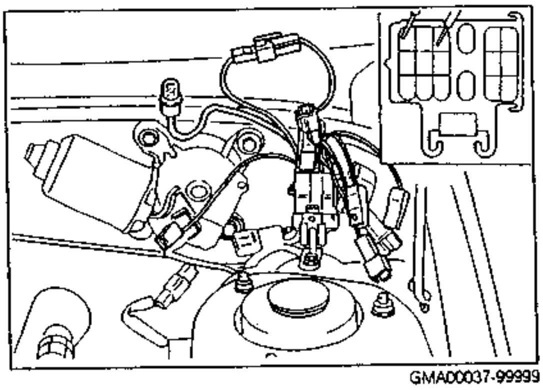
(2) Ensure that the no looseness are existing on the connected sections of the fuel line.

(3) Turn OFF the ignition switch.

(4) Open the diagnosis connector cover.

NOTE:

- Be sure to prevent the entering of dust or water etc. into the diagnosis connector.
- Entering of dust, water or contamination of terminals in the diagnosis connector may cause serious malfunction, due to lowering the insulation of each terminals.


GMA00037-99999

(5) Connect the Fp terminal with GND terminal in the diagnosis connector with the following SST.
SST: 09991-87705-000

NOTE:

- Care must be exercised to ensure that no connection made on terminal except for those specified.
- Even slight contact of the other terminal caused serious malfunction.

(6) Turn ON the ignition switch.

(7) Ensure that the no fuel leakage is existing on the fuel line.
If fuel leakage is present, repair or replace the part as necessary.

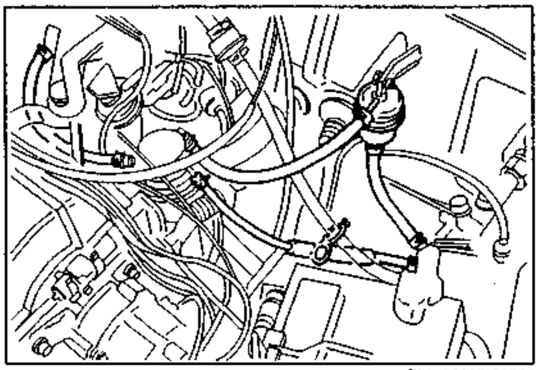
(8) Turn OFF the ignition switch.

(9) Remove the SST from the diagnosis connector.
NOTE:
- Care must be exercised to ensure that no connection made on terminal except for those specified.
- Even slight contact of the other terminal caused serious malfunction.

(10) Close the diagnosis connector terminal cover.
NOTE:
- Be sure to prevent the entering of dust or water etc. into the diagnosis connector.
- Entering of dust, water or contamination of terminals in the diagnosis connector caused serious malfunction, due to lowering the insulation of each terminals.

GMA00038-00000

12. Replacement of fuel filter


GMA00039-99999

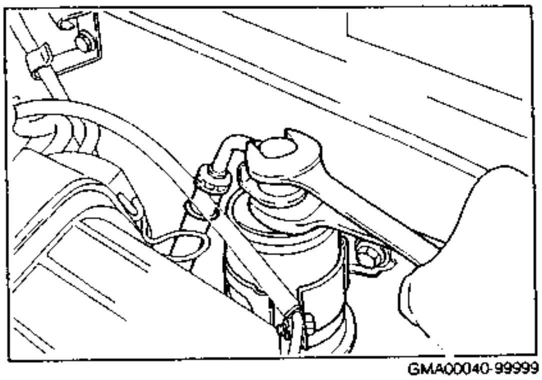
WARNING:
- Do not work near the open frame.
  Failure to observe this caution will cause fire.

(HC-C engine)
(1) Ensure that the ignition switch turned OFF.
(2) Open the fuel filler cap.
(3) Remove the attaching bolt of fuel filter.
(4) Detach the hose clips from fuel filter side.
(5) Place the suitable container or cloth under the fuel filter.
(6) Disconnect the fuel hoses from fuel filter.
(7) Remove the clips from the fuel hoses.
(8) Insert the new clips to fuel hoses.
(9) Install the new fuel filter to the fuel hoses.
(10) Attach the new clips to the correct position.
(11) Install the fuel filter by attaching bolt.
(12) Secure the fuel filler cap.
(13) Remove the placed container or cloth.

(HC-E and HD-E engine)

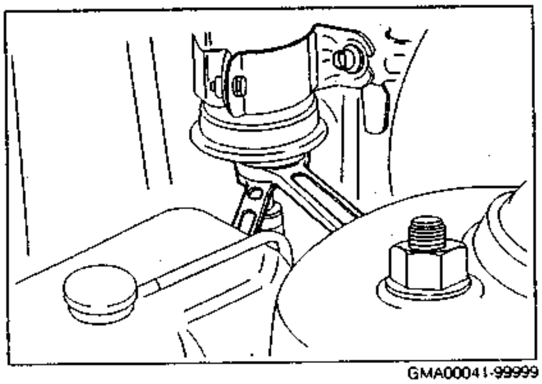
(1) Ensure that the ignition switch turned OFF.
(2) Open the fuel filler cap.
(3) Place the suitable container or cloth to under the fuel filter.
(4) Slowly slacken the union bolt of upper side of the fuel filter.
While preventing the fuel from splashing.

NOTE:
- Be sure to hold the fuel filter side by spanner or the like to prevent from the fuel filter turning.
- Be sure to prevent the fuel from splashing to body or rubber part etc., because quite large amount of fuel will flow out.


GMA00040-99999

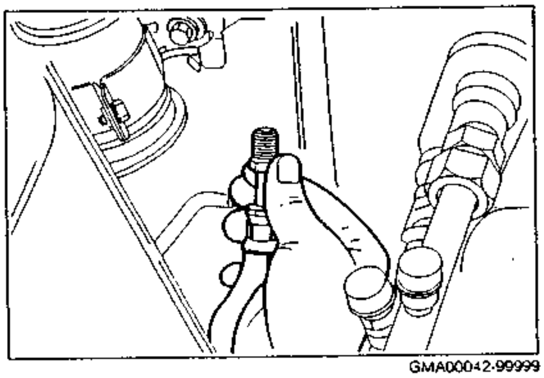
(5) Disconnect the flare nut under the fuel filter.

NOTE:
- Hold the fuel filter side by spanner or the like to prevent from the turning.
- Prevent the fuel from splashing to body or rubber part etc., because quite large amount of fuel will flow out.


GMA00041-99999

(6) Remove the fuel filter by removing the two attaching bolts.
(7) Install the new fuel filter with two attaching bolts.
Tightening Torque: 5.9 - 8.8 N·m
(0.6 - 0.9 kgf-m, 4.3 - 6.5 ft-lb)

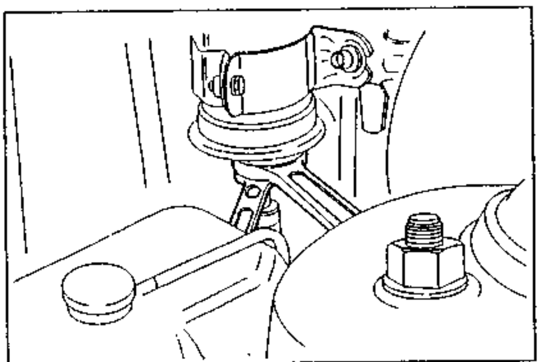
(8) Apply the engine oil to the threaded portion of the flare nut.
(9) Fully tighten the flare nut to the fuel filter by hand.
(10) Tighten the flare nut to specified torque.
Tightening Torque: 34.3 - 43.1 N·m
(3.5 - 4.4 kgf-m, 25.3 - 31.8 ft-lb)


GMA00042-99999

NOTE:
- Prevent the fuel filter from turning by spanner or the like.

(11) Connect the fuel hose to the fuel filter by union bolt with new gaskets interposed.

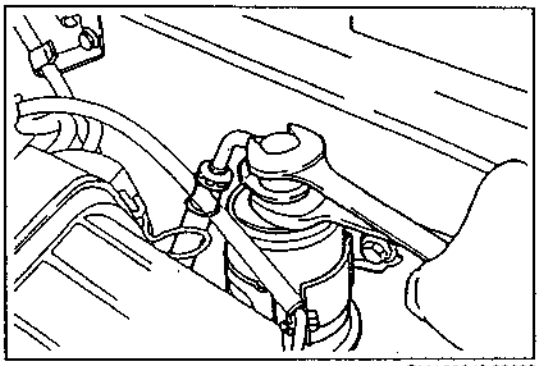
WARNING:
- Do not reuse the gaskets. Failure to observe this caution may cause fire by fuel leakage.


GMA00000-99999

(12) Fully tighten the union bolt to the fuel filter by hand.
(13) Tighten the union bolt to specified torque.
Tightening Torque: 34.3 - 44.1 N·m
(3.5 - 4.5 kgf-m, 25.3 - 32.5 ft-lb)

NOTE:
- Prevent the fuel filter from turning by spanner or the like.

(14) Close the fuel filler cap.
(15) Remove the placed container or the cloth.
(16) Repeate the ignition switch turn ON/OFF for four to five time with interval of three seconds.

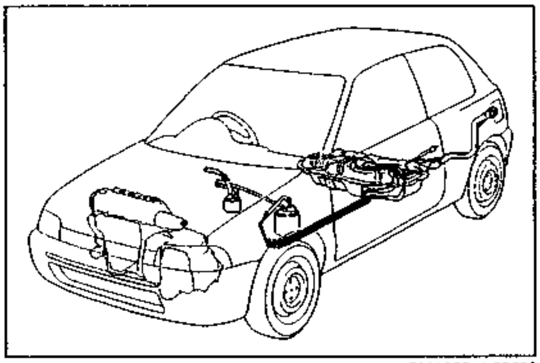


GMA00043-99999

13. Inspection of fuel evaporative emission control device

(HC-C engine with GCC specifications)
(1) Visual inspection of fuel vapor line and connections.
Check the line and connections for loose connections, kinks or damage.
(2) Visual inspection of fuel tank.
Check the fuel tank for deformation, cracks or fuel leakage.
Replace the fuel tank, if necessary.

NOTE:
- Ensure that the no restriction existing in the hose to the charcoal canister and no malfunction on the fuel filler cap.

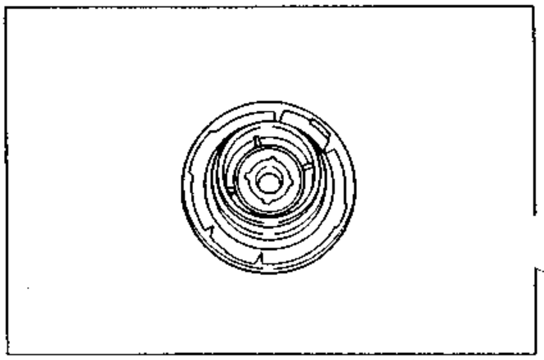


GMA00044-99999

(3) Inspection of the fuel filler cap Check the fuel filler cap and gasket for damage or deformation.
Also check the safety valve in the fuel filler cap is operating properly. Replace the cap, if necessary.

NOTE:
- If fuel tank deformed by negative pressure, be sure to replace the fuel filler cap with new one.

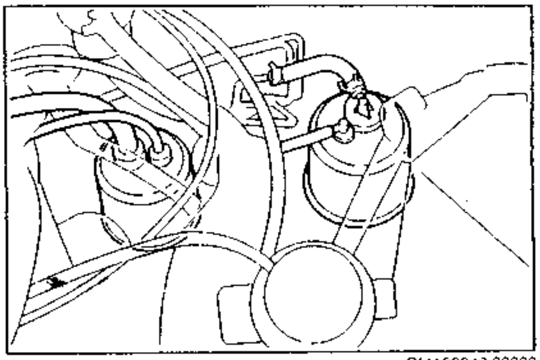
WARNING:
- Do not inhale the air during the checking.
Inhalation of air, you may inhale the gas remain in the fuel filler cap.



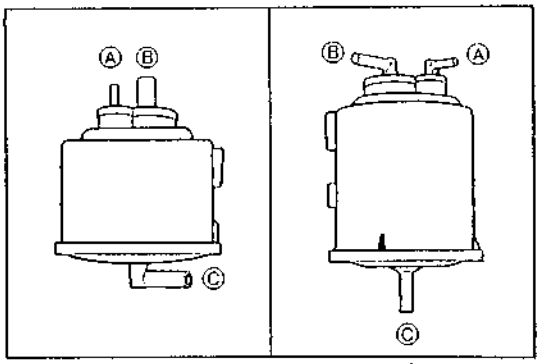
GMA00045-99999

(4) Inspection of the charcoal canister
① Detach the hose band from charcoal canister.
② Disconnect the rubber hoses and remove the charcoal canister.

NOTE:
- Prior to disconnection of the rubber hose, put a tag on each of the rubber hoses so that they may be reconnected correctly to the original position.



GMA00046-99999



GMA00047-99999

③ Visual inspection of charcoal canister
Visually inspect the charcoal canister case for cracks or damage.
If any damage is found, replace the charcoal canister with new one.
④ Ensure that no air leakage is present when applying compressed air of 29.4 kPa (10.3 kgf-cm^2) into thefuel tank side Ⓑ or BVSV side pipe Ⓑ while plugging the purge side Ⓐ and atmosphere side Ⓒ pipes.
If air leakage is present, replace the charcoal canister with new one.
⑤ Ensure that the no air continuity is exist when blowing your breath into purge side Ⓐ pipe of the charcoal canister.
If air continuity is exist, replace the charcoal canister with new one.
⑥ Check of charcoal canister for restriction
a. Ensure that the air continuity is existing to the atmosphere side Ⓒ pipes, when blow your breath into the fuel tank side Ⓑ and BVSV side Ⓑ While the purge side Ⓐ pipe is plugged.
If no air continuity is exist, replace the charcoal canister with new one.
b. Ensure that the air continuity is existing when applying a negative pressure to the purge side pipe Ⓐ by Mity Vac.
If no air continuity is exist, replace the charcoal canister with new one.
⑦ Cleaning of charcoal canister
Clean the charcoal canister by blowing compressed air of 294.2 kPa (3.0 kg/cm^2) into the fuel tank side pipe Ⓑ or BVSV side pipe Ⓑ while holding the purge side of canister pipe Ⓐ closed.

NOTE:
- Do not attempt to wash the charcoal canister.
- No activated carbon should come out during the test.

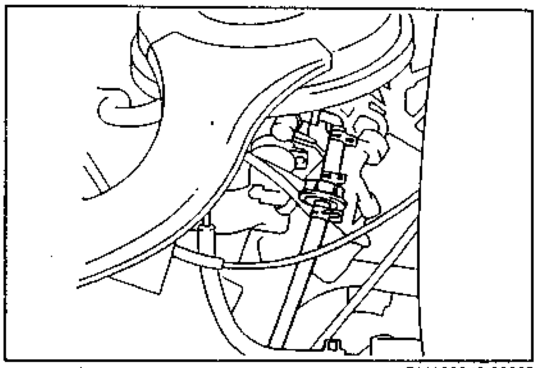
⑧ Install the charcoal canister to the vehicle, then reconnect the rubber hoses and attach the new hose bands.
⑨ Install the charcoal canister to vehicle.
⑩ Reconnect the rubber hoses and attach the new hose band.

(5) Inspection of Outer Vent Valve

① Disconnect the rubber hose at the BVSV side.
② Connect the suitable hose to the outer vent valve.
③ Ensure that air continuity exists.
If no air continuity exists, check to see if any abnormality is present in the electric circuit of the outer vent valve. Then replace the outer vent valve, as required.

WARNING:

- **Never inhale the air during the continuity inspection.**

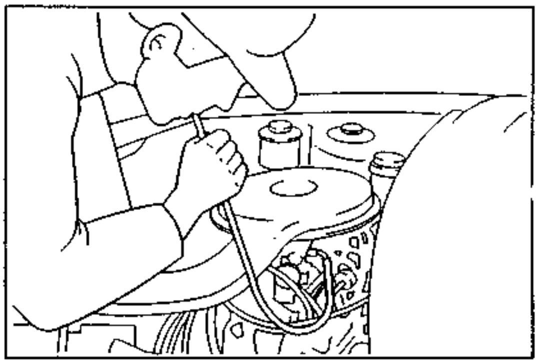


GMA00048-99999

④ Turn ON the ignition switch.
⑤ Ensure that the no air continuity exists.
If air continuity exists, check to see if any abnormality is present in the electric circuit of the outer vent valve. Then replace the outer vent valve, as required.

WARNING:

- Never inhale the air during the continuity inspection.



GMA00049-99999

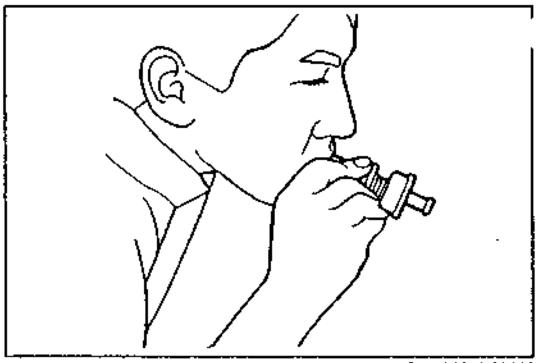
⑥ Turn OFF the ignition switch.
⑦ Disconnect the connected hose from the outer vent valve.
⑧ Connect the rubber hose from the BVSV. Attach the new hose band.

(6) Inspection of the BVSV

① Remove the rubber hose bands from BVSV side.
② Disconnect the rubber hoses from BVSV.
③ Check the air continuity of the BVSV under the following ambient temperature condition.
Below 50°C (122°F): No air continuity exists.
Above 65°C (149°F): Air continuity exists.

Replace the BVSV, as required.

④ Install the BVSV to the BVSV hoses.
⑤ Place the new hose bands.



GMA00050-99999

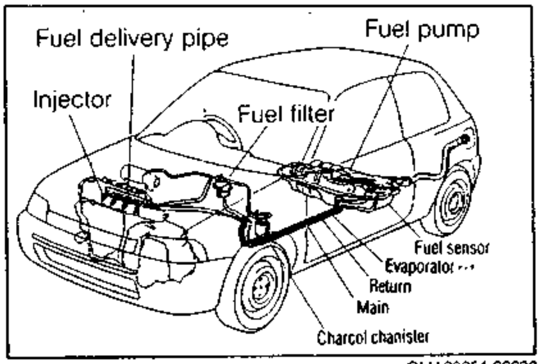
(HC-E and HD-E engine)

(1) Visual inspection of fuel vapor line and connections.
Check the line and connections for loose connections, kinks or damage.

(2) Visual inspection of fuel tank.
Check the fuel tank for deformation, cracks or fuel leakage.
Replace the fuel tank, if necessary.

NOTE:

- Ensure that the no restriction existing in the hose to the charcoal canister and no malfunction on the fuel filler cap.

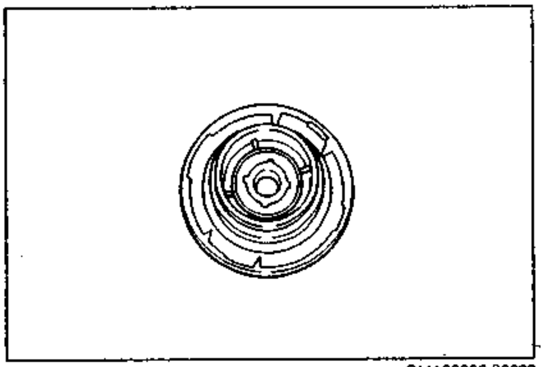


GMA00051-99999

(3) Inspection of the fuel filler cap
Check the fuel filler cap and gasket for damage or deformation.
Also check the air continuity with some resistance is existing on the fuel filler cap.
Replace the cap, if necessary.

NOTE:

- If fuel tank deformed by negative pressure, be sure to replace the fuel filler cap with new one after replacing the fuel tank.

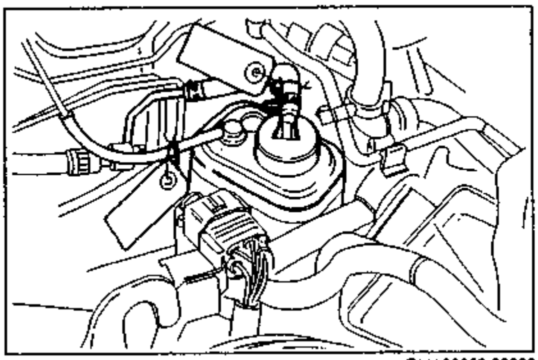

GMA00052-99999

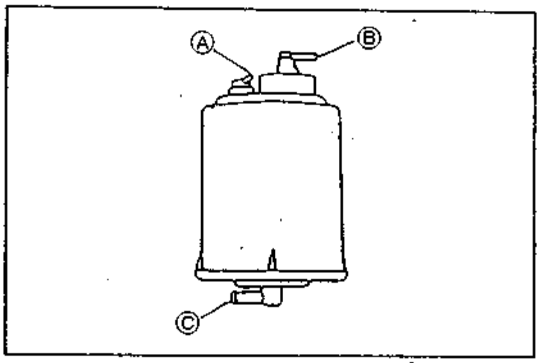
(4) Inspection of the charcoal canister
① Detach the hose band from charcoal canister.
② Disconnect the rubber hoses from charcoal canister.

NOTE:

- Prior to disconnection of the rubber hose, put a tag on each of the rubber hoses so that they may be reconnected correctly to the original position.

③ Remove the charcoal canister from vehicle by pull up the charcoal canister case.


GMA00053-99999



GMA00054-99999

④ Visually inspect the charcoal canister case for cracks or damage.
If any damage is found, replace the charcoal canister with new one.

⑤ Check of charcoal canister for air leakage Ensure that no air leakage is present when applyingcompressed air of 29.4 kPa (10.3 kgf-cm^2) into the fuel tank side pipe Ⓑ with carburetor side Ⓐ and atmosphere side Ⓒ pipes plugged.
If air leakage is present, replace the charcoal canister with new one.

⑥ Ensure that the no air continuity is exist when blowing your breath into purge side Ⓐ pipe of the charcoal canister.
If air continuity is exist, replace the charcoal canister with new one.

⑦ Check of charcoal canister for restriction.
  a. Ensure that the air continuity is existing to the atmosphere side Ⓒ pipe, when blow your breath into the fuel tank side pipe Ⓑ while the purge side Ⓐ pipe is plugged.
  If no air continuity is exist, replace the charcoal canister with new one.
  b. Ensure that the air continuity is existing when applying a negative pressure to the purge side pipe Ⓐ by the Mity Vac.
  If no air continuity is exist, replace the charcoal canister with new one.

⑧ Cleaning of charcoal canister Clean the charcoal canister by blowing compressed air of 294.2 kPa (3.0 kg/cm^2) into the fuel tank side pipe Ⓑ while holding the purge side of canister pipes Ⓐ closed.

NOTE:
- Do not attempt to wash the charcoal canister.
- No activated carbon should come out during the test.
  If activated carbon comes out replace the charcoal canister.

⑨ Install the charcoal canister to vehicle.

⑩ Reconnect the rubber hoses and attach the new hose,band.

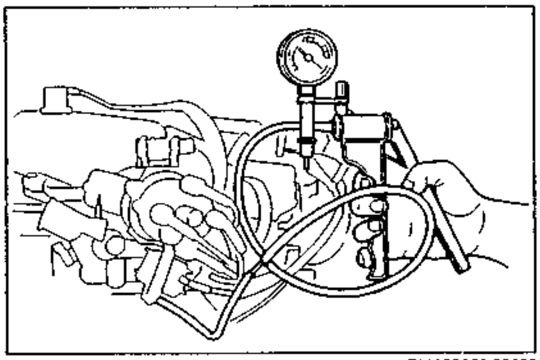
Inspection of the ignition timing advance device. (HC-C engine)

(1) Connection of the tachometer and timing light.
(See procedure of inspection and adjustment of ignition timing.)
(2) Warm up the engine thoroughly.
(3) Stop the engine.
(4) Disconnect the vacuum hose from the vacuum advancer.
(5) Plug the disconnected hoses with following SST.
SST: 09258-00030-000

(6) Start the engine.
(7) Ensure that the ignition timing will be advanced according with engine revolution when the engine is raced.
If not repair the mechanical governor.
(Refer to the IG section of the service manual.)
(8) Set the engine revolution at about 2000 rpm.
(9) Connect the Mity Vac to the main side vacuum advancer of the distributor.

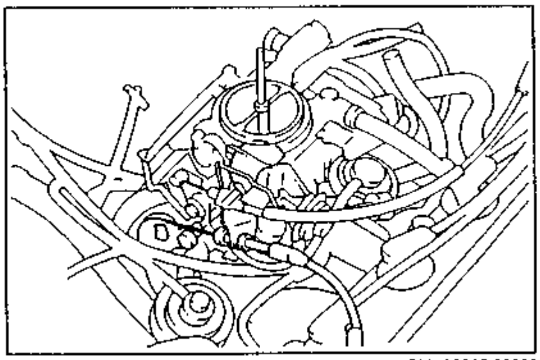
GMA00055-00000

(10) When the vacuum pressure is applied with the Mity Vac, ensure that the ignition timing will advanced according with a applied vacuum pressure by Mity Vac.
(11) Remove the Mity Vac from the vacuum advancer.
(12) Connect the main side vacuum hose to the main side vacuum advancer of the distributor.
(13) Ensure that the ignition timing will be advanced when the engine is raced.
(14) Connect the Mity Vac to the sub side vacuum advancer of the distributor.
(15) Connect the Mity Vac to the sub side vacuum advancer of the distributor.
(16) When the vacuum pressure by Mity Vac.
(17) Remove the Mity Vac from the vacuum advancer.
(18) Connect the main side vacuum hose to the main side vacuum advancer of the distributor.
(19) Ensure that the ignition timing will be advanced when the engine is raced.
If not, check and repair the vacuum hose piping.
(20) Stop the engine.


GMA00056-99999

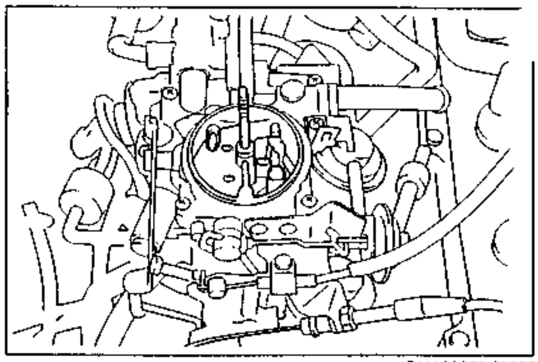
15. Inspection of throttle valve

(1) Remove the air cleaner element.
(Refer to the inspection of the air cleaner element.)
(2) Ensure that the throttle valve operates smoothly with out rattle, when accelerator pedal is depressed gradually.
If not, check and repair the accelerator pedal, linkage or throttle valve.
(3) Reinstall the air cleaner element.
(Refer to the inspection of the air cleaner element.)


GMA00057-99999

16. Inspection of choke valve

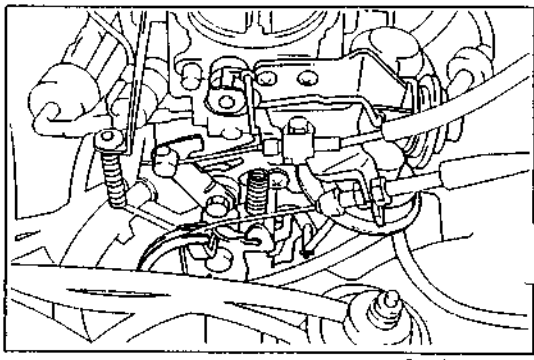
(1) Remove the air cleaner element.
(Refer to the inspection of the air cleaner element.)
(2) Pull the choke knob fully.
(3) Depress the accelerator pedal once.
(4) Ensure that the choke valve closed fully.
(5) Push back the choke knob fully.
(6) Ensure that the choke valve opened fully.
If not, repair or replace the defective part.
(7) Reinstall the air cleaner element.
(Refer to the inspection of the air cleaner element.)



GMA00058-99999

17. Inspection of carburetor linkage

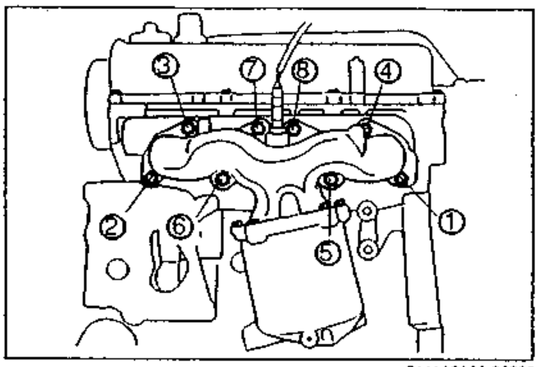
(1) Ensure that the carburetor linkage connected properly and operate smoothly with out any rattled.



GMA00059-99999

18. Inspection of exhaust emission control device tightness and damage

(1) Ensure that the no looseness are existing on attaching bolts.
If looseness is existing retighten the attaching bolts of the catalytic converter.
Tightening Torque
HC-E Engine:
Exhaust manifold No. 1 × Exhaust manifold No. 2
Exhaust manifold No. 2 × Exhaust front pipe
HD-E Engine:

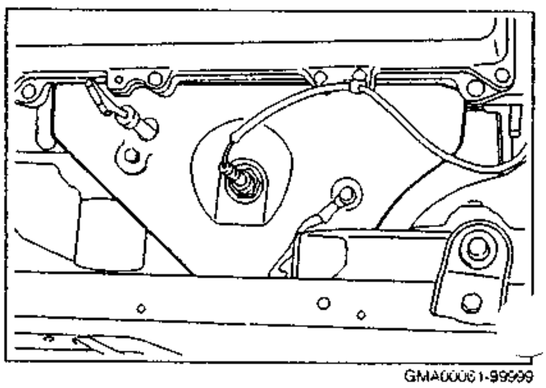


GMA00060-99999

NOTE:
- Be sure to confirm that the no exhaust gas leakage is present at the connecting sections of catalytic converter, after retighten the attaching bolts.
- If gas leakage is present, replace the gasket with new one.
(Refer to the EM section or BO section of service manual.)

(2) Ensure that the no looseness is existing on the oxygen sensor attaching condition.
If looseness is existing retighten the oxygen sensor.
Tightening Torque: 29.4 - 39.2 N·m
(3.0 - 4.0 kgf-m, 21.7 - 28.9 ft-lb)

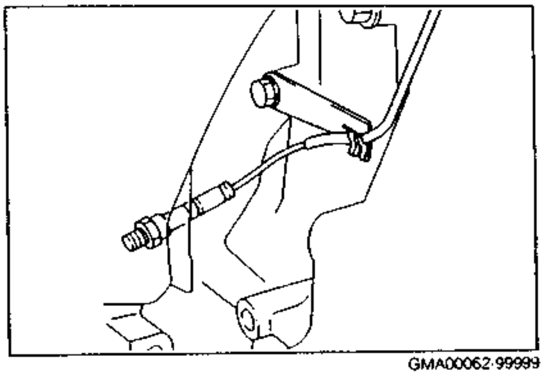
NOTE:
- Be sure to confirm that the no gas leakage is present at the oxygen sensor attaching section.



GMA00061-99999

(3) Ensure that the no crack or no any other damage is present on the oxygen sensor cord section.
If any damage is present replace the oxygen sensor with new one.

(4) Ensure that the connector of the oxygen sensor connected securely and clamped to connector clamp properly.
If not, securely connect and clamp the connectors.



GMA00062-99999

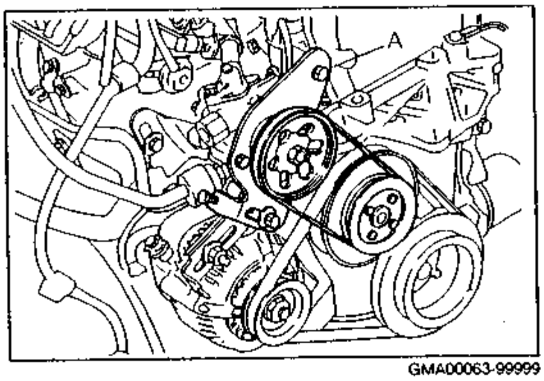
19. Replacement of timing belt

(1) Ensure that the ignition switch turned OFF.

(2) Disconnect the ground cable terminal from the negative terminal of the battery.

(3) Disconnect the bonding wire from the engine.

(4) Remove the power steering drive belt.
(Refer to the SR section of the service manual.)



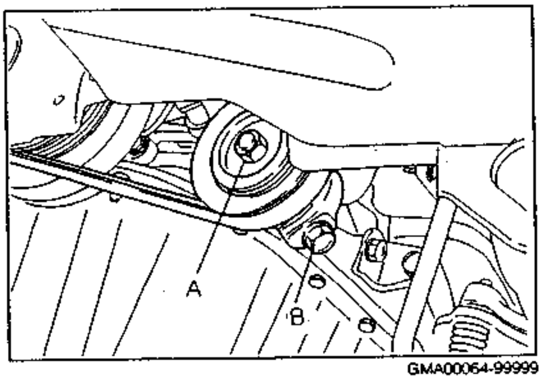
GMA00063-99999

(5) Removal of air conditioner drive belt

① Remove the engine right side under cover by removing the three attaching bolts and two grommet.

② Loosen the tensioner attaching bolt and release the adjusting bolt.

③ Remove the air conditioner drive belt.

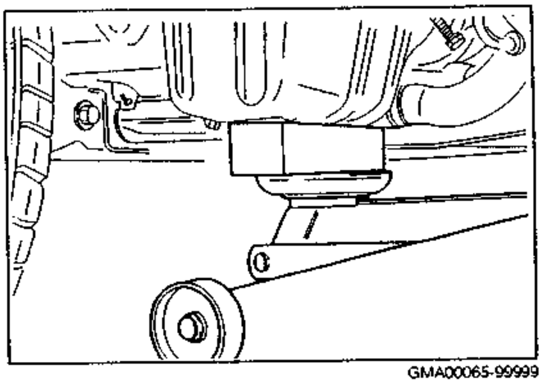


GMA00064-99999

(6) Slightly jack up the engine with the supporting pad of a garage jack placed underneath the oil pan.

NOTE:

- Place a suitable object, such as a wooden piece, between the oil pan and the supporting pad of the garage jack so as not to deform the oil pan.
- Care must be exercised to ensure that the interposed object is not interfering with the oil drain plug. Failure to observe this note may incur a damaged drain plug.

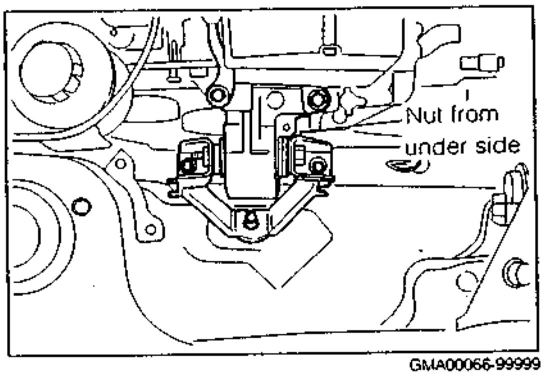


GMA00065-99999

(7) Remove the engine mounting front insulator with engine mounting right bracket by removing the five bolts and one nut with resistance stay (EFI engine only).

CAUTION:

- Ensure that the engine is supported by the garage jack and no load are applied to the attaching bolt of the engine mounting front insulator and engine mounting right bracket.
Failure to observe this caution will cause to damage the other part hitting by engine.

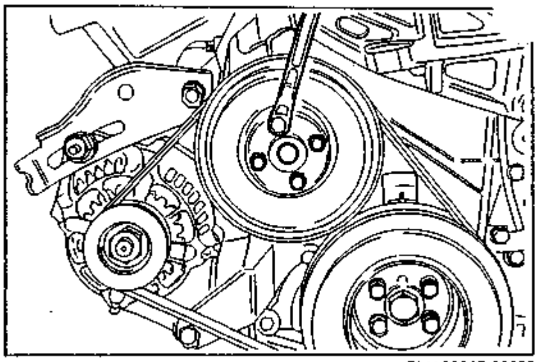


GMA00066-99999

(8) Loosen the all attaching bolt of the water pump pulley, utilizing the tension of the V-ribbed belt.

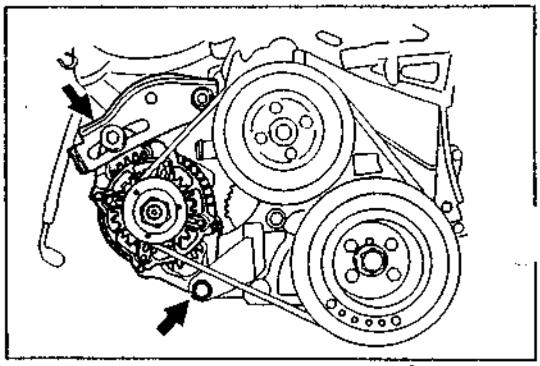
NOTE:

- On the power steering-equipped vehicles, the drive pulley of the power steering vane pump is attached with the water pump pulley.
- On the automatic transmission vehicles, it is necessary to jack up the engine unit slightly to loosen the water pump pulley.



GMA00067-99999

(9) Remove the alternator attaching bolts.
(10) Remove the alternator drive belt.
(11) Remove the water pump pulley and power steering vane pump drive pulley (Power steering equipped vehicles only).

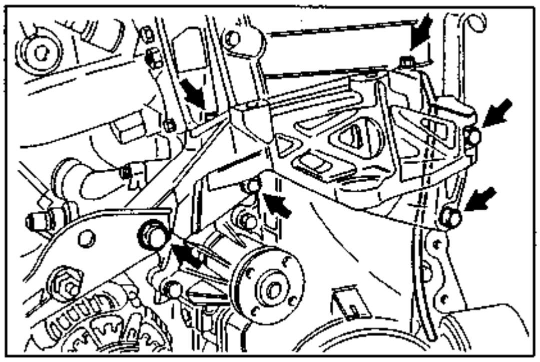


GMA00068-99999

(12) Remove the clamp bolts of the oil pressure switch wire.
(13) Remove the attaching bolts of the air conditioner compressor, and sling it to the body shell side with suitable wire.
(14) Remove the attaching bolts of the engine RH front mounting No. 2 with alternator bracket.

NOTE:

- Remove the alternator drive belt adjusting bar, in case vehicle equipped with the power steering.

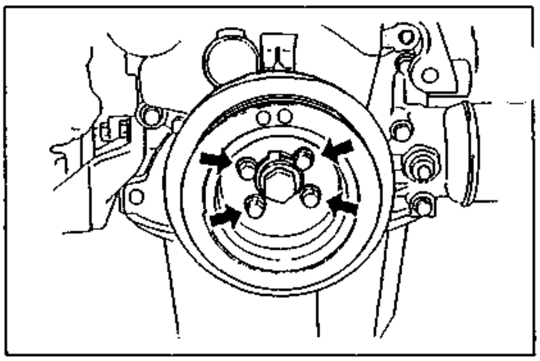


GMA00069-99999

(15) Remove the attaching bolt of the crankshaft pulley.

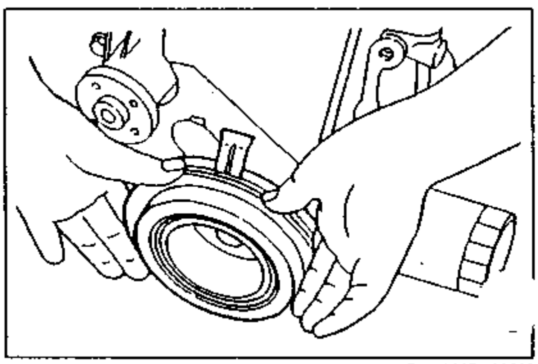
NOTE:

- Place the gear shift lever in the 4th gear position so as to prevent the rotation of the crankshaft in case of manual transmission equipped model.
- On the automatic transmission vehicle, prevent the crankshaft from being rotated by inserting a screwdriver or the like into the like into the ring gear at the rear end section of the cylinder block.



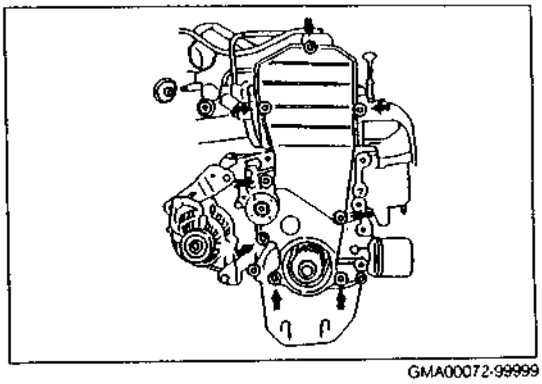
GMA00070-99999

(16) Remove the crankshaft pulley.



GMA00071-99999

(17) Remove the attaching bolts of the timing belt cover.
(18) Remove the timing belt upper cover.
(19) Remove the timing belt lower cover.

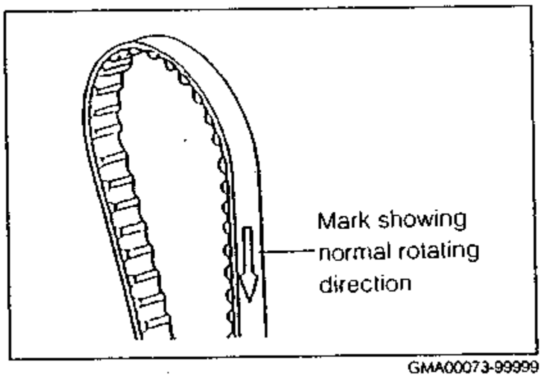


GMA00072-99999

(20) Removal of the timing belt.

NOTE:

- Prior to removal of the timing belt, put an arrow mark indicating the normal rotating direction on the belt, using a chalk or the like. However, do not use the oily paint.

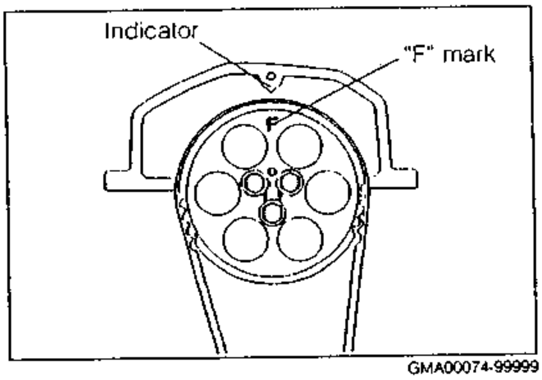


GMA00073-99999

CAUTION:

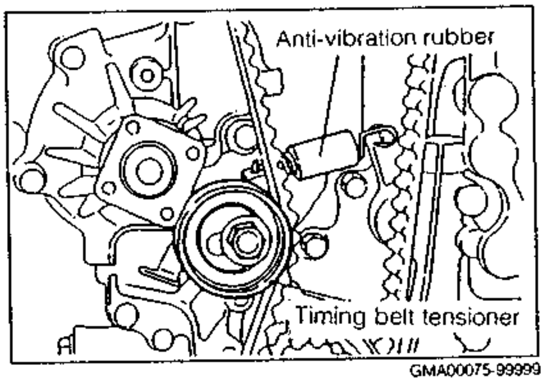
- Do not try to pry the timing belt with a screwdriver or the like during the removal or installation.
- Do not allow the belt to come into contact with oil, water or dust.
- Do not bend the belt at a sharp angle or turn the belt inside out, as it is very vulnerable to bending.
- Do not utilize the tension of the timing belt when loosening the set bolt of the camshaft timing belt pulley.
- Do not turn the crankshaft and camshaft alone.
- Failure to observe this caution will cause break off the timing belt.

① Rotate the crankshaft until the "F" mark of the crankshaft timing belt pulley is aligned with the indicator of the cylinder head cover.



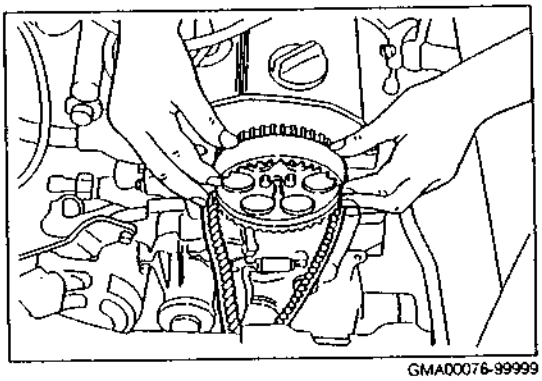
GMA00074-99999

② Loosen the attaching bolt of the timing belt tensioner.
③ Move the tensioner to the left as far as it will go and tighten the tensioner attaching bolt temporarily.
④ Remove the timing belt.



GMA00075-99999

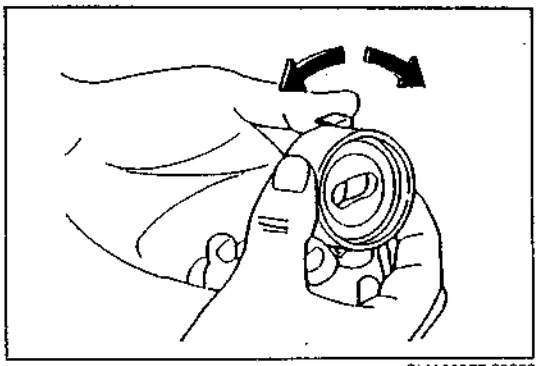
(21) Removal of the timing belt tensioner.
① Loosen the attaching bolt of the timing belt tensioner.
② Remove the tension spring.
③ Remove the timing belt tensioner by removing the its attaching bolt.



GMA00076-99999

(22) Inspection of the timing belt.
(Refer to the timing belt section of the service manual.)

(23) Inspection of the timing belt tensioner
① Check the timing belt tensioner for smooth turning.
② Check the timing belt attaching surface for damage.
If any malfunction or damage is present, replace the timing belt tensioner with new one.

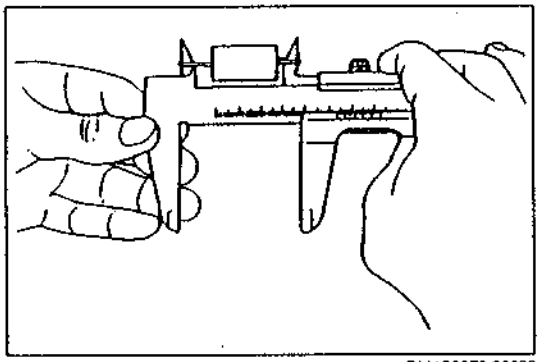


GMA00077-99999

(24) Inspection of timing belt tensioner spring
① Check the free length of the spring.
Free Length: HC engine 53.65 mm (2.11 inches)
HD engine 46.5 mm (1.83 inches)

② Check the tension of the spring at the specified installation length.
Tension as Installed
HC Engine: 19.6 ± 2.0 N at 57.25 mm
(2.0 ± 0.2 kgf at 57.25 mm,
4.4 ± 0.4 lb at 2.3 inch)
HD Engine: 29.4 ± 2.9 N at 50.9 mm
(3.0 ± 0.3 kgf at 50.9 mm,
6.6 ± 0.7 lb at 2.0 inch)

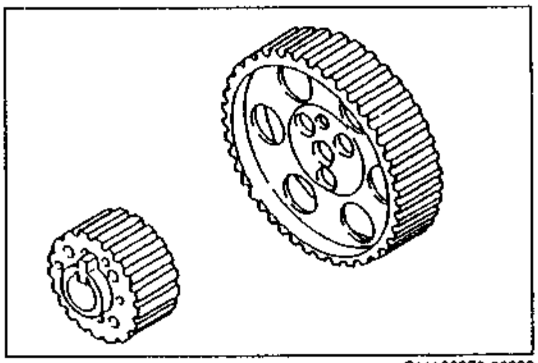
If the tension dose not conform to the specification, replace the tensioner spring.



GMA00078-99999

(25) Visually inspect the timing belt pulleys for damages.
If the any damage is present, replace the timing belt pulley.
(For detail of removal and installation of timing belt pulleys, refer to the EM section of the service manual.)

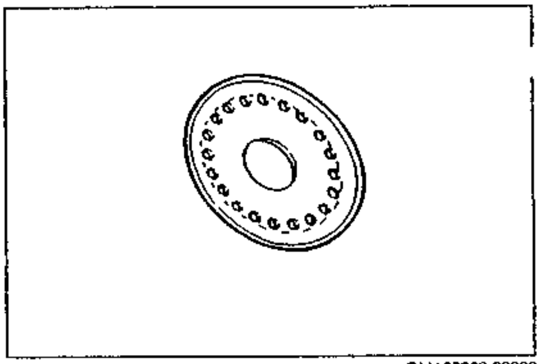
NOTE:
- Do not allow the timing belt pulleys to come into contact with oil, water or dust.



GMA00079-99999

(26) Inspection of timing belt pulley flange
Visually inspect the crankshaft timing belt pulley flange for bend, damage and wear.
If the any damage is present, replace the crankshaft timing belt pulley flange with new one.
(For details of removal and installation of timing belt pulley flange, refer to the EM section of the service manual.)

NOTE:
- Do not allow the timing belt pulley flange to come into contact with oil, water or dust.



GMA00080-99999

(27) Inspection of water pump leakage
Visually inspect the water pump for leakage.
Repair it if any water leakage is presented.

(28) Inspection of the oil leakage
Ensure the no water leakage is presented.
Repair it if any water leakage is presented.

(29) Installation of timing belt

CAUTION:

- Do not try to pry the timing belt with a screwdriver or the like during the removal or installation.
- Do not allow the belt to come into contact with oil, water or dust.
- Do not bend the belt at a sharp angle or turn the belt inside out.
- Do not utilize the tension of the timing belt when tightening the set bolts of the camshaft timing belt pulley and crankshaft.
- The adjustment of the belt tension should be made when the cylinder block and its ambient temperatures are in between 5 - 50°C (41 - 122°F).
- Perform the engine turning operation at the crankshaft side.
- Do not turn the crankshaft or camshaft alone.
- Failure to observe this caution will cause break off the timing belt.
- When the timing belt is reused, install the timing belt in such way that the direction of the arrow mark put during the removal may much with the engine rotation direction.

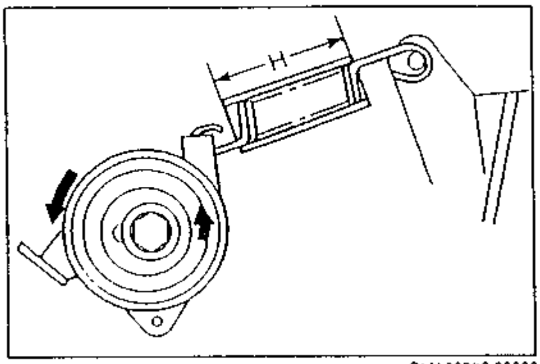
GMA00081-00000

① Attach the tension spring to the timing belt tensioner.

<Reference>

Identification of Tension Spring

Engine	Rubber length mm (inch)
HC	30 (1.181)
HQ	20 (0.787)



GMA00082-99999

② Hang the tension spring to the tension spring hook on the pin.

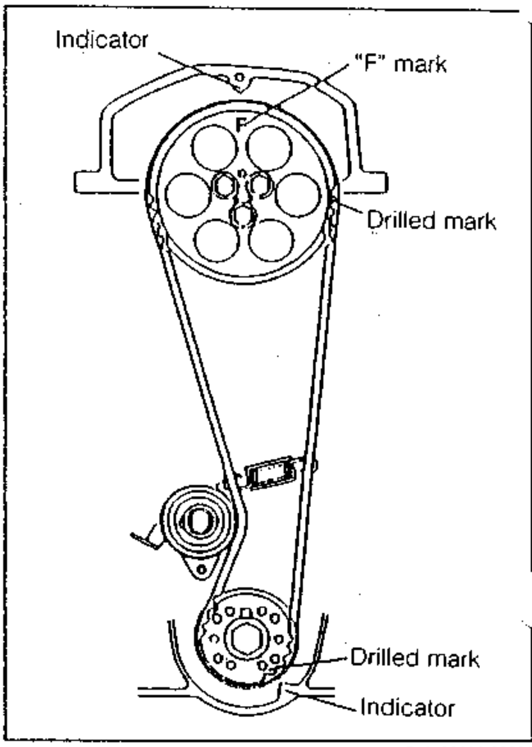
③ Assemble the timing belt tensioner in place and install the bolt.

CAUTION:

- Hang the spring hook securely on the pin groove.
- Ensure that the pin at the oil pump is fitted into the pin hole of the timing belt tensioner.

④ While pulling the timing belt tensioner fully toward the water pump side, temporarily tighten the attaching bolt of the timing belt tensioner.

⑤ Aline the "F" mark of the camshaft timing belt pulley with the indicator on the cylinder head cover.



GMA00083-99999

NOTE:
- It should be noted that the piston may interfere with the valves, if the camshaft is turned independently.

⑥ Aline the drilled mark of the crankshaft timing belt pulley with the indicator on the oil pump.

NOTE:
- It should be noted that the piston may interfere with the valves, if the crankshaft is turned independently.

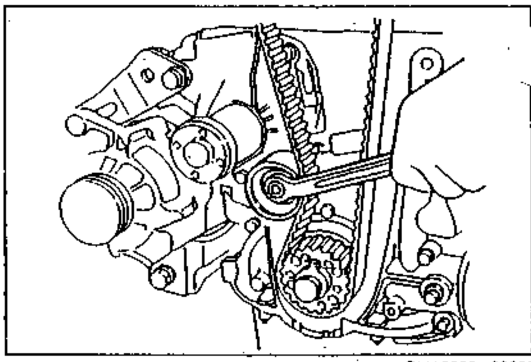
⑦ Assemble the timing belt in such a way that the two mating marks on the timing belt may be aligned with the corresponding drilled marks on the crankshaft timing belt pulley and camshaft timing belt pulley.

NOTE:
- When the timing belt is reused, install the timing belt in such way that there exist 34 teeth in case of HC engine, 35 teeth in case of HD engine of the belt between the drilled marks of crankshaft timing belt pulley and camshaft timing belt pulley.
- When the timing belt is reused, install the timing belt in such way that the direction of the arrow mark put during the removal may much with the engine rotation direction.
  <Reference>
  Identification of Timing Belt

Engine	Teeth NBR between timing mark
HC	34
HD	35

⑧ Loosen the attaching bolt of the timing belt tensioner. Apply the tension to the timing belt.

⑨ Temporarily tighten the attaching bolt.

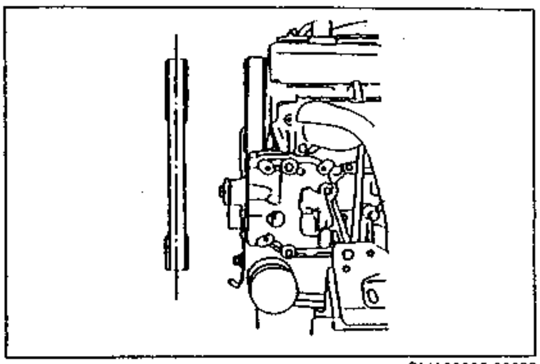

GMA00084-99999

NOTE:
- Ensure that the belt exhibits no slack at the tension side of the belt (the side opposite to the tensioner).

⑩ Rotate the crankshaft 1.9 turns in the normal direction (to the clockwise as viewed from the timing belt side of the engine) so that the "F" mark of the camshaft timing belt pulley comes at a point three teeth in the camshaft timing belt pulley before the indicator of the cylinder head cover.

CAUTION:

- At this time, never turn the crankshaft reversely.
- Make sure that the belt is not tilted between the crankshaft timing belt pulley and the camshaft timing belt pulley.

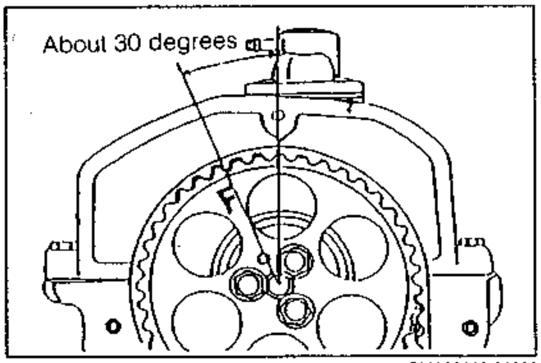


GMA00085-99999

If crankshaft be reversed or the timing belt should be tilted, turn the crankshaft two more turns.

⑪ Make the tensioner free by loosening the attaching bolt of the timing belt tensioner.

⑫ Turn the crank shaft further in the normal direction until the "F" mark of the camshaft timing belt pulley is aligned with the cylinder head cover.



GMA00086-99999

CAUTION:

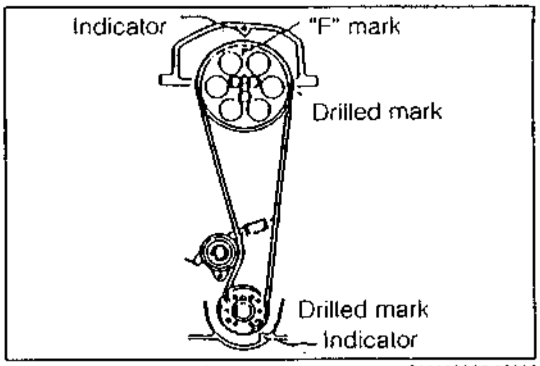
- Never turn the crankshaft reversely.
- Never turn the crankshaft beyond the point where the "F" mark of the camshaft timing belt pulley is aligned with the indicator.

If the crankshaft should be reversed or turned beyond that point, temporarily tighten the tensioner attaching bolt and repeat the operation from the step ⑩ onward.

⑬ Tighten the attaching bolt of the timing belt tensioner to the specified torque.

Tightening Torque: 29.4 - 44.1 N·m
(3.0 - 4.5 kgf-m,
21.7 - 32.5 ft-lb)

⑭ Ensure that the drilled marks of the crankshaft timing belt pulley and camshaft timing belt pulley are aligned with the corresponding indicators.
If the drilled mark is not aligned with the indicator, repeat the operations from the step ⑩ onward.

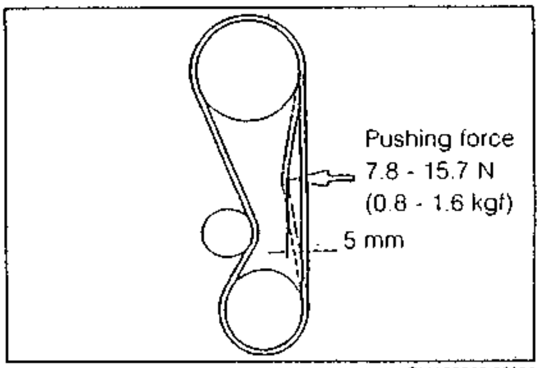


GMA00087-99999

⑮ Checking of timing belt tension
When the midpoint of the belt at the tension side is pushed 5 mm (0.20 inch), ensure that the pushing force is with in the specified value.

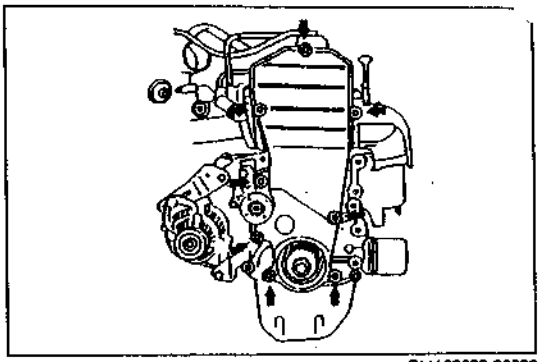
Specified Pushing Force: 7.9 - 15.6 N
(0.8 - 1.6 kgf,
1.77 - 3.52 lb)
When belt deflected 5 mm (0.20 inch)

If the belt deflection dose not conform to the specification, repeat the operations from the step ⑩ onward.



GMA00088-99999

(30) Installation of timing belt cover
<Reference>
Identification of Timing Belt Cover


GMA00089-99999

Engine	Identification of timing belt cove
HC	01
HD	102

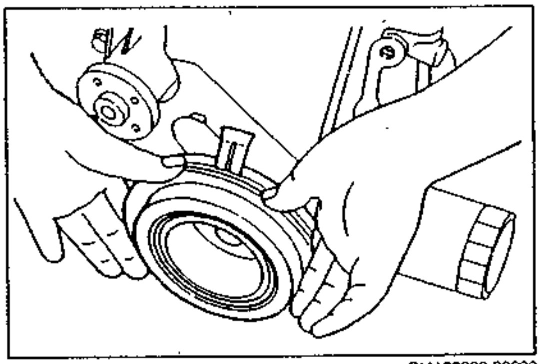
① Install the timing belt lower cover.
Tightening Torque: 2.0 - 3.9 N·m
(0.2 - 0.4 kgf-m, 1.4 - 2.9 ft-lb)

NOTE:
- Care must be exercised as to the length of each bolt.

② Install the timing belt upper cover.
Tightening Torque: 2.0 - 3.9 N·m
(0.2 - 0.4 kgf-m, 1.4 - 2.9 ft-lb)

NOTE:
- Care must be exercised as to the length of each bolt.

(31) Installation of crankshaft pulley
<Reference>
Identification of Crank Shaft Pulley


GMA00090-99999

Engine	Identification of timing belt cover
HC-C	Ignition timing mark 5° ± 30′ Air conditioner pulley diameter 111 mm (4.37 inch)
HC-E	Ignition timing mark 0° ± 30′ Air conditioner pulley diameter 111 mm (4.37 inch)
HD-E	Ignition timing mark 0° ± 30′ Air conditioner pulley diameter 119 mm (4.685 inch)

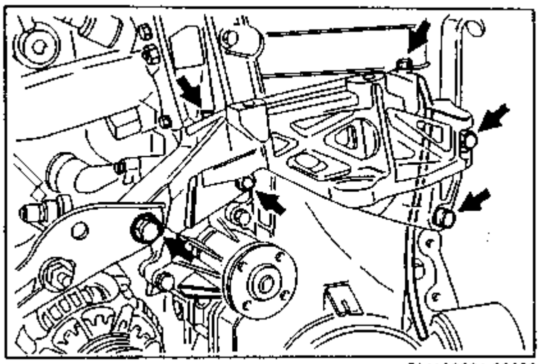
① Install the crankshaft pulley with four attaching bolts.
② Tighten the crankshaft pulley bolts to the specified torque.
Tightening Torque: 19.6 - 29.4 N·m
(2.0 - 3.0 kgf-m, 14.5 - 21.6 ft-lb)

NOTE:
- On the manual transmission transmission vehicle, prevent the crankshaft from turning by placing the gear shift lever in the 4th gear position.
- On the automatic transmission vehicle, prevent the crankshaft from being rotated by inserting a screwdriver or the like into the ring gear section of the cylinder block.

(32) Installation of engine RH front mounting No. 2 with alternator bracket.

NOTE:

- Install the alternator drive belt adjusting bar, in case vehicle equipped with the power steering.
  Tightening Torque: 44.1 - 53.9 N·m
  (4.5 - 5.5 kgf-m, 28.9 - 39.8 ft-lb)



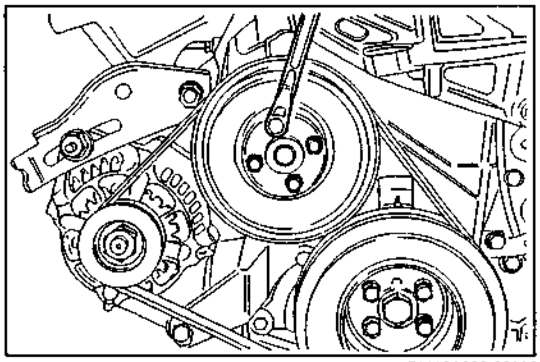
GMA00091-99999

(33) Install the air conditioner compressor with attaching bolts.

(34) Install the oil pressure switch wire clamps to the engine mounting with the attaching bolts.

(35) Install the water pump pulley to the water pump pulley temporarily tighten the attaching bolt by hand.
<Reference>
Identification of Water Pump Pulley

Engine	Identification color
HC	Nil
HD	Orange



GMA00092-99999

NOTE:

- Install the power steering vane pump drive pulley with the water pump pulley, if vehicle equipped with the power steering.

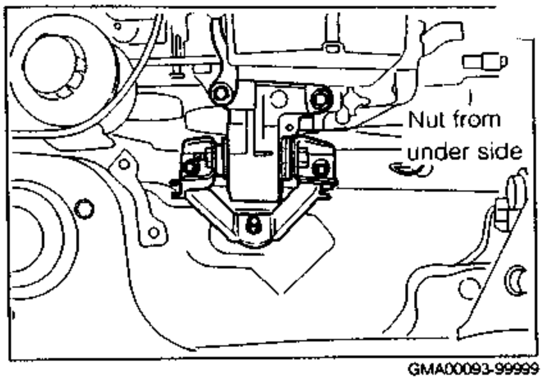
(36) Install the alternator drive belt (V-rebbed belt).

NOTE:

- Make sure that the drive belt (V-rebbed belt) is fitted properly in the groove of each pulley.

(37) Adjustment of alternator drive belt tension.
(Refer to the inspection of drive belt step 4.)

(38) Tighten the attaching bolts of the water pump pulley by utilizing the tension of V-ribbed belt.
Tightening Torque: 5.9 - 8.8 N·m
(0.6 - 0.9 kgf-m, 4.3 - 6.5 ft-lb)



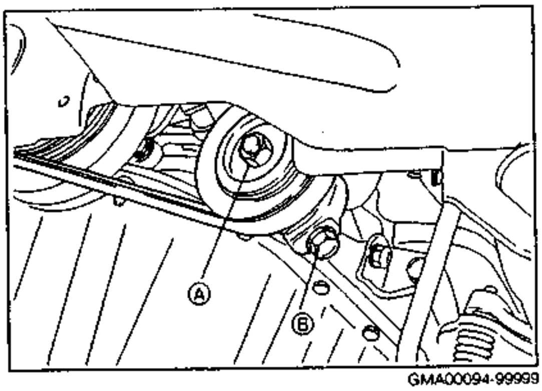
GMA00093-99999

(39) Ensure that the drive belt deflection meets with the specified value when the midpoint between the water pump pulley and the alternator drive pulley is pushed with a force of 98.1 N·m (10 kgf, 22 lb).
(See the step 4)
If the deflection dose not confirm to the specification, perform the adjustment so that the specification may be satisfied.

(40) Install the engine mounting front insulator with the engine mounting right bracket by five attaching bolts and one nut.
Tightening Torque:
Nut: 14.7 - 22.6 N·m
(1.5 - 2.3 kgf-m, 10.8 - 16.6 ft-lb)
Bolt: 39.2 - 39.8 N·m
(4.0 - 5.5 kgf-m, 28.9 - 39.8 ft-lb)

(41) Remove the garage jack from under the oil pan.

(42) Installation and adjustment of air conditioner compressor drive belt.
① Install the air conditioner compressor drive belt.
② Adjust the belt tension by idler pulley adjusting bolt.
③ Tighten the idler pulley attaching nut.
Tightening Torque: 39.2 N·m (4.0 kgf-m, 28.9 ft-lb)



GMA00094-99999

(43) Install and adjust the power steering drive belt and its tension (See the SR section of the service manual.)

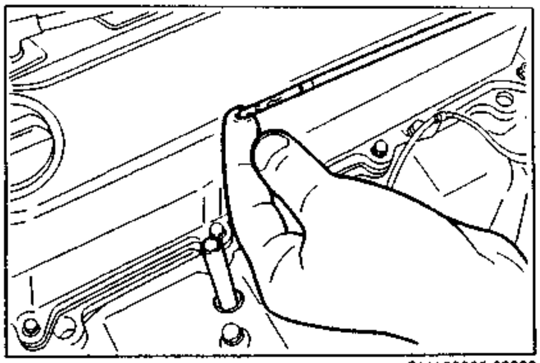
(44) Connect the bonding wire to the engine mounting bracket.

(45) Connect the engine ground cable terminal to the negative terminal of the battery.

(46) Start the engine and no abnormal noise emitted.

HOT ENGINE OPERATION

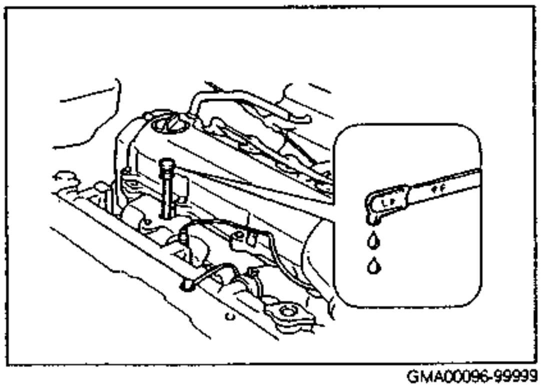
1. **Inspection of engine oil**
   (1) Oil quality check
   ① Park the vehicle on a level surface.
   ② Pull out the dipstick out and wipe off the engine oil.
   ③ Reinsert the dipstick as far as it will go.
   ④ Pull out the dipstick again and check the oil level if it is between "F" and "L" marks.
   ⑤ Ensure that the engine oil level should be between the "L" and "F" level on the dipstick.
   If engine oil level is less than the "L" level check the oil leakage.
   If engine oil level is less than the "L" level, replenish the specified engine oil to the "F" level after the checking of the oil leakage.


GMA00095-99999

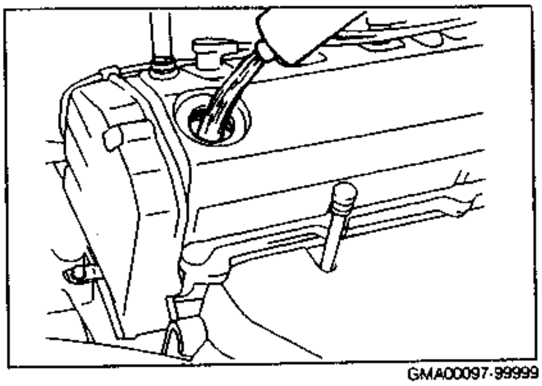
NOTE:
- The amount of oil between the "L" level and the "F" level equals to one liter.

   ⑥ Check the engine oil for deterioration, ingress of water, discoloring or dilution.
   If oil quality is poor, change the engine oil.
   (See procedure of change of engine oil and oil filter section.)
   ⑦ Reinsert the dipstick as far as it will go.

   (2) Oil level check
   ① Park the vehicle on a level surface.
   ② Pull out the dipstick out and wipe off the engine oil.
   ③ Reinsert the dipstick as far as it will go.
   ④ Pull out the dipstick again.
   ⑤ Ensure that the engine oil level should be between the "L" and "F" level on the dipstick.
   If engine oil level is less than the "L" level check the oil leakage.
   If engine oil level is less than the "L" level, replenish the specified engine oil to the "F" level after the checking of the oil leakage.


GMA00096-99999

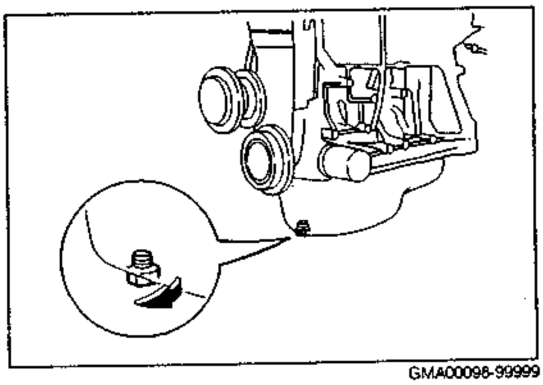
NOTE:
- Use API grade SE or higher multigrade viscosity, fuel-efficient oil. (See the procedure of change of engine oil and oil filter section.)
- The amount of oil between the "L" level and the "F" level equals to one liter.


GMA00097-99999

⑥ Warm up the engine to normal operating temperature.
⑦ Stop the engine.
⑧ After few minutes, slowly pull out the dipstick out and wipe off the engine oil.
⑨ Reinsert the dipstick as far as it will go.
⑩ Pull out the dipstick again and check the oil level if it is between "F" and "L" marks.
If the engine oil level is low, replenish the specified engine oil to the "F" level of the dipstick.
(See procedure under pour engine oil to the engine.)
⑪ Reinsert the dipstick as far as it will go.

(3) Inspection of engine oil leakage
① Check the oil level.
(See the inspection of the oil level.)
② Start the engine.
③ Ensure that the no oil leakage is present.
Repair or replace the defective part, if oil leakage is present.

2. Change of engine oil and oil filter

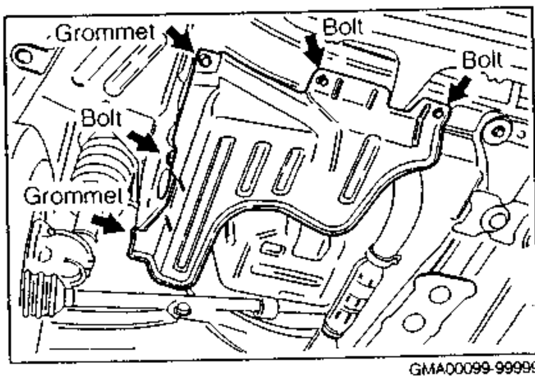

GMA00098-99999

WARNING:
- Protect your eyes by wearing the safety grasses.
- Be very careful not to burn yourself with hot engine oil or hot engine components.

(1) Park the vehicle on a level surface.
(2) Check the oil level. (See the inspection of the oil level.)
(3) Start the engine.
(4) Warm up the engine to normal operating temperature.
(5) Place a suitable container under the oil drain plug.
(6) Remove the drain plug and gasket, and drain the engine oil into the placed container completely.
(7) Remove the oil filler cap.

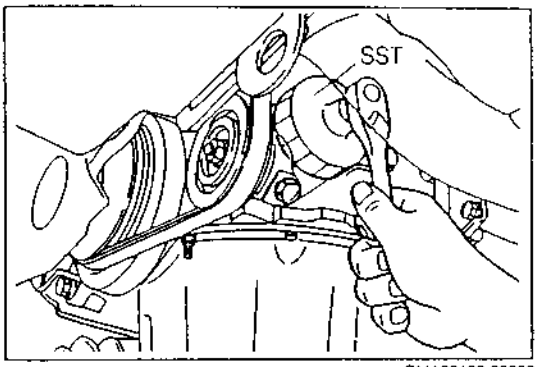
(8) Remove the right side engine under cover by removing three bolts and one screw, if vehicle equipped air conditioner.
(9) Place a suitable container under the oil filter.
(10) Slacken the oil filter with an oil filter wrench.
CAUTION:
- Be careful, at this time oil may flow out.

(11) Remove the oil filter by hand.
(12) Wipe off the engine oil from the oil filter attaching part of the engine.
(13) Thinly apply engine oil to the O-ring of the new oil filter.
(14) Screw in the oil filter by hand, until the O-ring of the oil filter contacts the oil filter installing surface.



GMA00099-99999

(15) Tighten the oil filter three fourths to one complete turn, using the following SST or by hand.
SST: 09228-87201-000

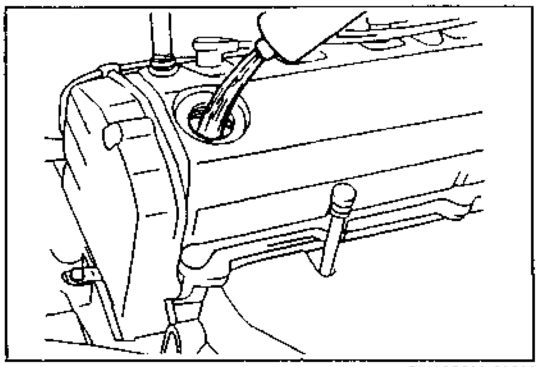


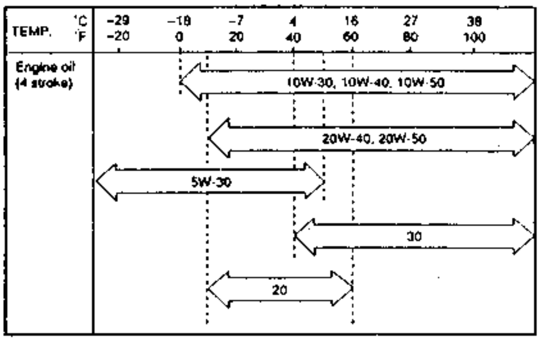
GMA00100-99999

CAUTION:
- Do not overtighten the oil filter. Failure to observe this caution will cause oil leakage or damage of oil pump or oil filter.

(16) Tighten the drain plug to the specified torque with new gasket interposed.
Tightening Torque: 19.6 - 29.4 N·m
(2.0 - 3.0 kgf-m, 14.5 - 21.7 ft-lb)

(17) Pour engine oil to the engine.
NOTE:
- Use API grade SE or higher multigrade viscosity, fuel-efficient oil.
- The amount of oil between the "L" level and the "F" level equals to one liter.


GMA00000-99999



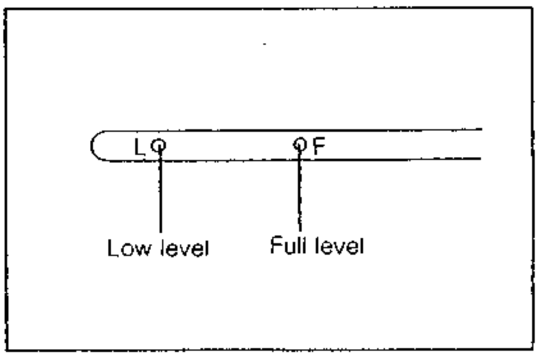
GMA00101-99999

Unit: Liter

	HC-C		HC-E		HD-E	
	With oil cooler	Without oil cooler	With oil cooler	Without oil cooler	With oil cooler	Without oil cooler
F level	3.3	3.3	3.3	3.3	3.3	3.3
L level	2.3	2.3	2.3	2.3	2.3	2.3
Oil capacity When oil filter replaced	3.6	3.5	3.6	3.5	3.6	3.5
Full capacity	3.9	3.8	3.9	3.8	3.9	3.8

NOTE:
- If vehicle equipped with the oil-cooler, the oil capacity is 79 cc grater than the amount specified above.

(18) Pull out the dipstick out and wipe off the engine oil.
(19) Reinsert the dipstick as far as it will go.
(20) Pull out the dipstick again.
(21) Ensure that the engine oil level should be between the "L" and "F" level on the dipstick.
If engine oil level is less than the "L" level, replenish the specified engine oil to the "F" level.

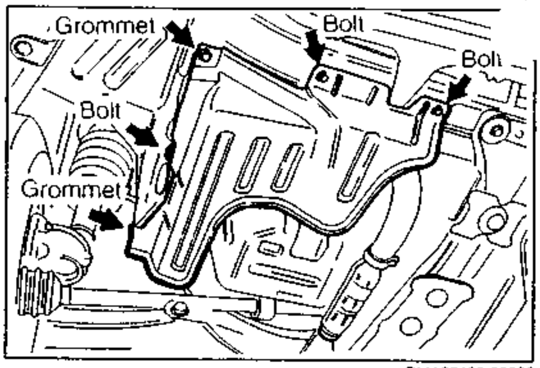


GMA00102-99999

(22) Close the oil filler cap.
WARNING:
- Securely install the oil filler cap. Failure to observe this warning will cause a fire.

(23) Start the engine.
(24) Warm up the engine to normal operating temperature.
(25) Stop the engine.

(26) After few minutes, slowly pull out the dipstick out and wipe off the engine oil.
(27) Reinsert the dipstick as far as it will go.
(28) Pull out the dipstick again and check the oil level if it is between "F" and "L" marks.
If the engine oil level is low, replenish the specified engine oil to the "F" level of the dipstick.
(29) Reinsert the dipstick as far as it will go.
(30) Install the right side engine under cover, if it is removed.



GMA00103-99999

3. Inspection of engine starting and abnormal noise.

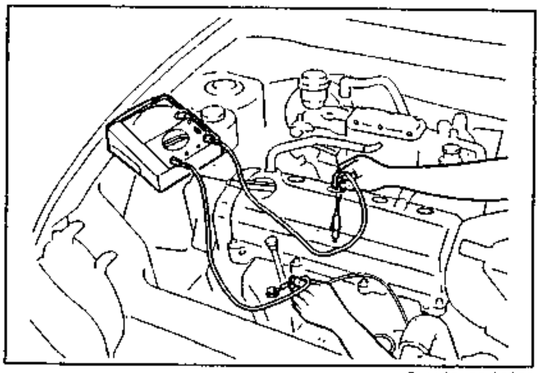
(1) Ensure that the engine can starts smoothly with out any abnormal noise.
(2) Ensure that the engine can not starts with shift lever placed other than the Neutral or Parking range if vehicles equipped with the automatic transmission.

GMA00104-0*

4. Inspection of spark plug

(1) Inspection of electrode
When megger (insulation resistance meter) is used:
① Carefully disconnect the resistive cords from the spark plugs by holding their rubber boot section.

NOTE:
- Do not disconnect the resistive cords by holding the code section of the resistive codes.


GMA00105-99999

② Measure the insulation resistance of the spark plug.
Minimum Insulation Resistance: 15 MΩ

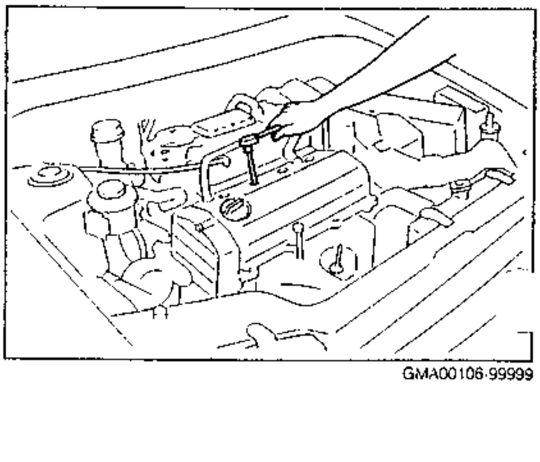
WARNING:
- Since the spark plugs are hot, care must be exercised to avoid getting scalded.

If the measured insulation resistance is less than specified, proceed to the step (2).

When a megger is not available:
① Start the engine. Warm up the engine completely.
② Race the engine at 4000 rpm for five seconds.
③ Remove the spark plug, using the following SST.
SST: 09268-87703-000

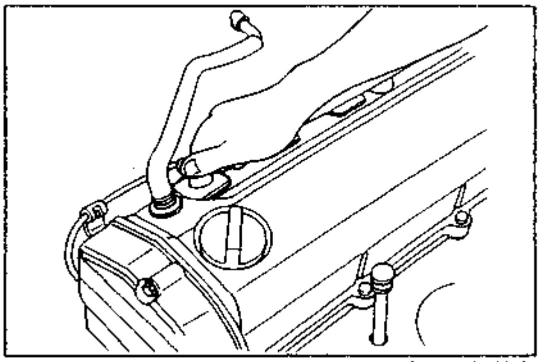
WARNING:
- Since the spark plugs are hot, care must be exercised to avoid getting scalded.

- Visually inspect the spark plug.
If the electrode is dry: Satisfactory
If the electrode is wet: Proceed to the step (4).

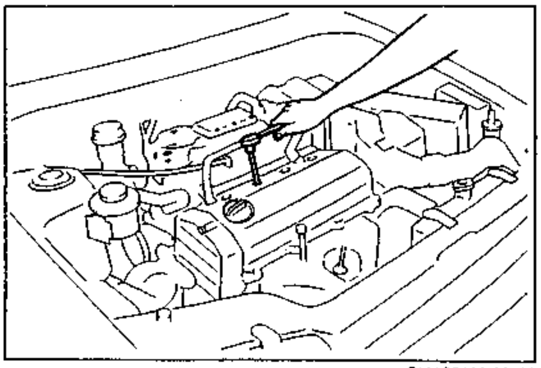

GMA00106-99999

(2) Removal of the spark plug
① Carefully remove the resistive cords from the spark plugs by holding their rubber boot section.

NOTE:
- Do not disconnect the resistive cords by holding the code section of the resistive codes.


GMA00107-99999

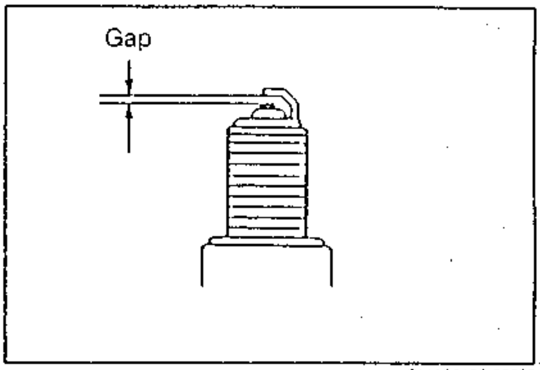
② Remove the spark plug, using the following SST.
SST: 09268-87703-000


GMA00108-99999

(3) Visual inspection of spark plug
Visually inspect the spark plug for electrode wear, thread or insulator damage.
Replace the spark plug if it exhibits damage.
Recommended Spark Plug

	CHAMPION	NIPPONDENSO	NGK
HC-C HC-E	RC9YC4	K20PR-U11	BKR6E-11
HD-E	—		

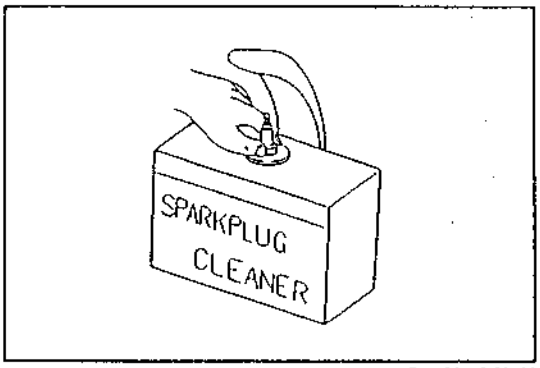
NOTE:
- All four spark plugs should have the same heat range and be ones manufactured by the same manufacturer.



GMA00109-99999

(4) Inspection of electrode gap
Measure the electrode gap, using the plug gap gauge.
Electrode Gap: 1.0 - 1.1 mm
(0.040 - 0.043 inch)

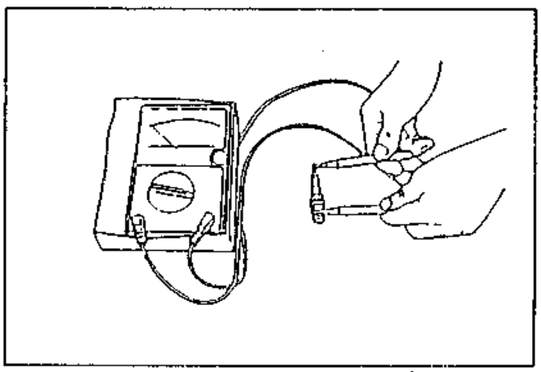
If the electrode gap of a used spark plug is not within the specification, replace the spark plug with new one. If the electrode gap of a new spark plug is not within the specification, adjust the gap by bending the base of the ground electrode, being careful not to touch the tip.



GMA00110-99999

(5) Cleaning the spark plug
If the electrode has traces of wet carbon, dry the electrode and clean it with a spark plug cleaner.
Air Pressure: Not to exceed 588.4 kPa
($6\ kgf/cm^2$, 85 psi)
Duration: Less than 20 seconds

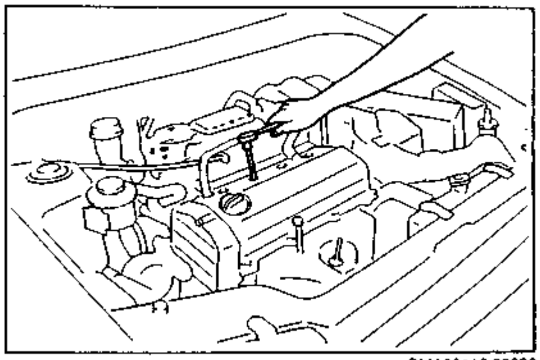
NOTE:
- If there are trace of oil, remove it with gasoline before the spark plug is cleaned by the spark plug cleaner.


GMA00111-99999

(6) Inspection of spark plug insulation resistance
More Than: 20 MΩ

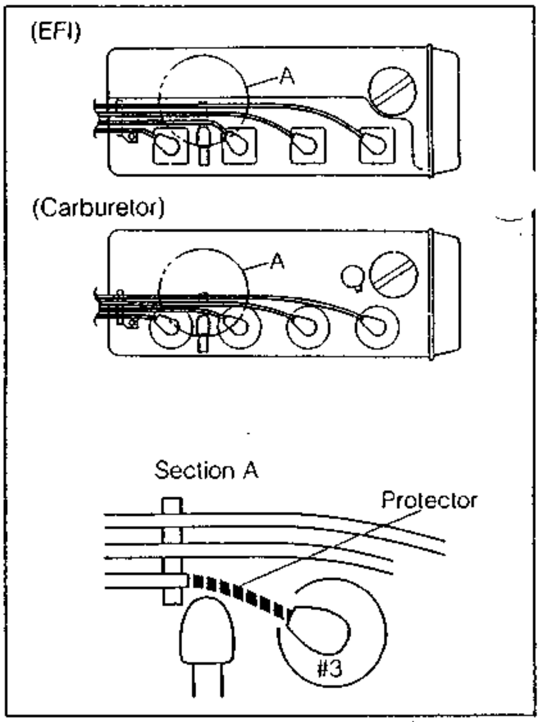
If the insulation resistance is less than the specified value, replace the spark plug with the new one.

(7) Installation of spark plug
Install the spark plugs. Tighten them to the specified torque, using the following SST.
SST: 09268-87703-000
Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m, 10.8 - 15.9 ft-lb)


GMA00112-99999

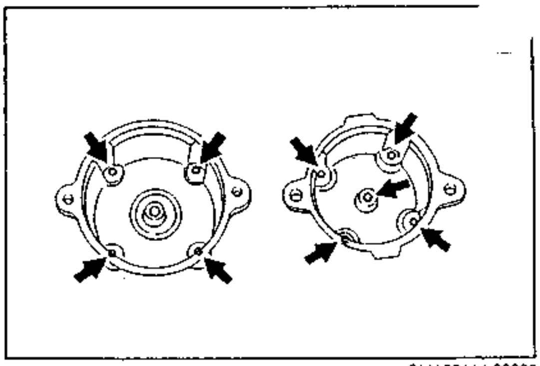
NOTE:
- Since the insulator strength of a small spark plug is comparatively smaller than that of regular spark plugs, when tightening, be sure to use the tool exclusively used for this application. Also, when tightening, never use the wrench in a crooked way.

(8) Connect the resistive cords to the spark plug.
NOTE:
- Care must be exercised to ensure that the spark plug side connector of the resistive cord grommet part should be matched with recessed part of the cylinder head cover.
- Clamp the No. 3 resistive cord in such way that the protector end should be come to the plug side of the resistive cord clamp as indicated in the right figure.



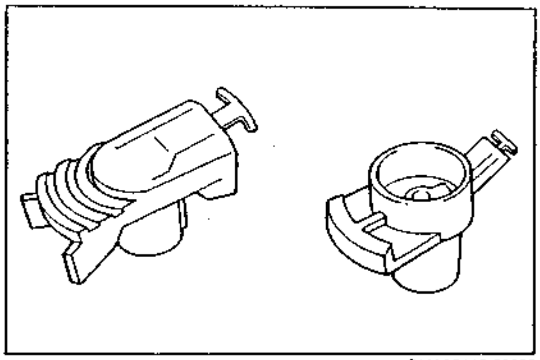
GMA00113-99999

5. **Inspection of distributor cap and rotor**
(1) Ensure that the ignition switch is turned OFF.
(2) Disconnect the resistive cords from the distributor cap.
NOTE:
- Do not hold the wire section of the resistive cord during the disconnection, be sure to disconnect the resistive cord by holding the grommet section of the resistive cord.


GMA00114-99999

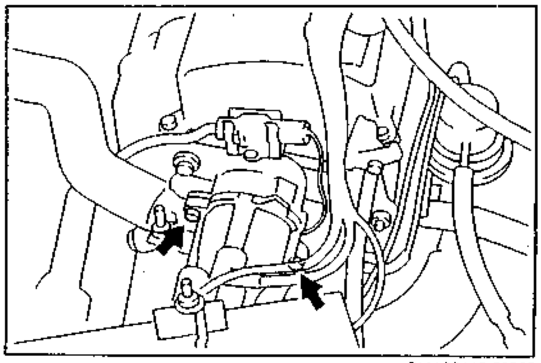
(3) Remove the distributor cap by removing the attaching bolts of the distributor cap.
(4) Ensure that the distributor cap have no cracks or any other damage.
(5) Ensure that the center carbon has no noticeably wear. If the excessive wear is found replace the center carbon.
NOTE:
- Replacement should be performed with rotor and center carbon as a set.

(6) Ensure that the electrode has no excessive electrical corrosion
If excessive electrical corrosion is found remove it by the baking soda water. Do not remove it by screw driver or the like.



GMA00115-99999

(7) Remove the distributor rotor by pull it out.
(8) Ensure that the distributor rotor has no cracks or other damage.
If damage is found replace the rotor with new one.
NOTE:
- Replacement should be performed with rotor and center carbon as a set.



GMA00116-99999

(9) Ensure that the electrode has no corrosion.
If corrosion is found remove the electrical corrosion by baking soda water.
NOTE:
- Do not remove the electrical corrosion by file or hard material made tools.

(10) Install the distributor rotor to the distributor securely.
(11) Replace the distributor cap gasket with new one.
(12) Install the distributor cap to the distributor.
(13) Install the distributor cap attaching bolts and tighten them evenly.
(14) Connect the resistive cords to the distributor cap by following the manner described on the GI section of the service manual.

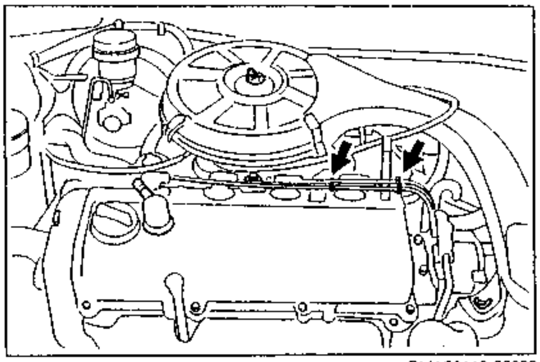
6. Inspection and adjustment of valve clearances

The measurement and adjustment of valve clearance are carried out when each of the piston of the No. 1 and No. 4 cylinders is set to the top dead center at the end of compression stroke.
NOTE:
- The valve clearance adjustment is performed normally when the engine is in a hot condition.
"Hot engine condition" denotes a condition in which the cooling water temperature is 75 - 85°C (167 - 185°F) and the engine oil temperature is above 65°C (149°F).
However, when the engine has been overhauled, it is necessary to adjust the valve clearances while the engine is cold and to readjust the valve clearance in a hot condition after warming up the engine.

GMA00117-00000

(1) Removal of the cylinder head cover

① Detach the resistive cords from the clamps.



GMA00118-99999

NOTE:

- On the left hand drive unit, disconnect the accelerator cable at the throttle body side. Proceed to remove the cable from the cable clamp.

② Detach the resistive cords at the cylinder head side.

NOTE:

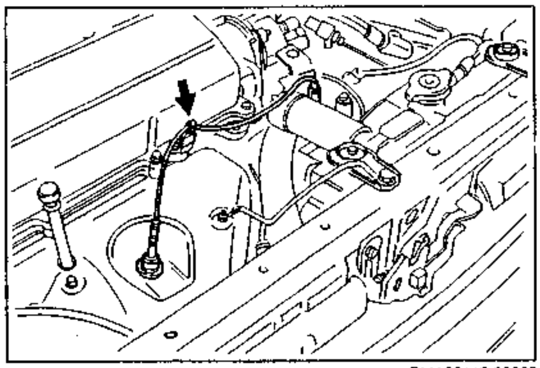
- Be sure to hold the rubber boot during the resistive cord disconnection. Never remove the resistive cord, holding the cord portion.

③ Disconnect the blow-by gas hoses from the cylinder head cover.

NOTE:

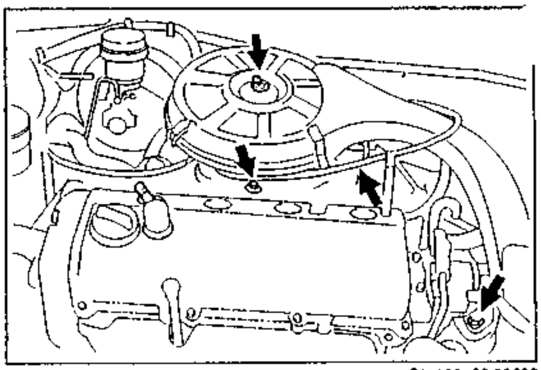
- Do not disconnect the accelerator cable clamp. (only for right hand drive vehicle only)

④ Detach the oxygen sensor harness from the clamp. (HC-E engine only)



GMA00119-99999

⑤ Disconnection of air cleaner case from the cylinder head.
(HC-C engine only)



GMA00120-99999

1) Remove the attaching bolt of air cleaner to the cylinder head cover.
2) Remove the wing nuts.
3) Disconnect the following hoses.
ITC vacuum hose to carburetor.
Vacuum hose to BVSV.

NOTE:

- This procedure may not required if air cleaner is not removed.

4) Gradually lift up the air cleaner case.

CAUTION:

- Be very careful not to disconnect the ITC valve and BVSV hoses, if those hoses are disconnected, be sure to reconnect the those hoses.

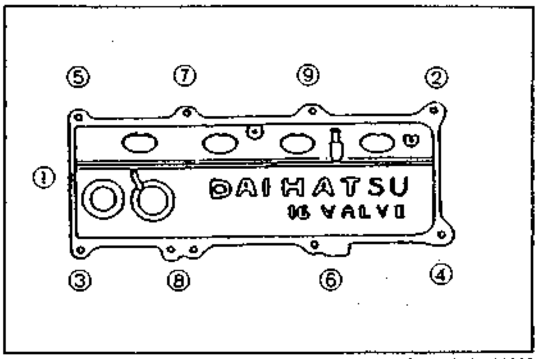
5) Disconnect the accelerator cable or choke cable from the clamp of the cylinder head cover.
(HC-C engine only)

⑥ Loosen the nine bolts (10 mm) over tow or three stages in the sequence shown in the right figure.

NOTE:
- Be sure to loosen the bolts progressively and uniformly over two or three stages.

⑦ Remove the attaching bolts.
⑧ Remove the cylinder head cover.

NOTE:
- Be very careful not damage the grommets of the spark plug tubes.

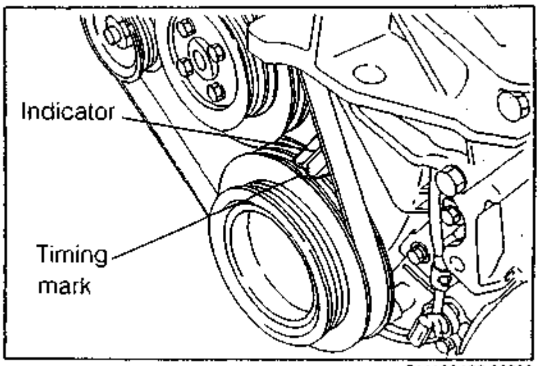


GMA00121-99999

(2) Inspection and adjustment of valve clearances

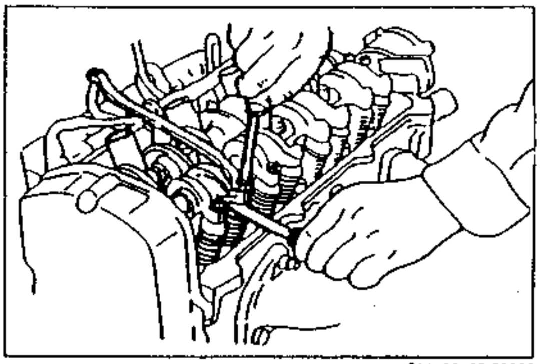
NOTE:
- Before the adjusting bolts are tightening with the lock nuts apply engine oil to the between lock nut and valve rocker arm.

① Turn the crank shaft until the recessed mark on the crankshaft pulley is aligned with the indicator mark on the timing belt cover.



GMA00122-99999

② Check to see if valve rocker arms of the No. 1 cylinder are free or are being pushed up. According to the table below, check and adjust the valve clearances, using a thickness gauge.



GMA00123-99999

NOTE:
- The "O" mark denotes those valves that can be adjusted under that setting.

Valve Clearances (Hot)
Intake: 0.25 ± 0.05 mm (0.0098 ± 0.002 inch)
Exhaust: 0.33 ± 0.05 mm (0.01 ± 0.002 inch)
(Reference)
Valve Clearances (Cold)
Intake: 0.18 mm (0.0071 inch)
Exhaust: 0.25 mm (0.098 inch)

Tightening Torque (Lock nut): 16.7 - 22.6 N·m (1.7 - 2.3 kgf-m, 12.3 - 16.6 ft-lb)

Piston position		1	2	3	4
When valve rocker arms of No. 1 cylinder are free: (Piston of No. 1 cylinder is at top dead center under compression stork)	Intake	O	O		
	Exhaust	O		O	
When valve rocker arms of No. 4 cylinder are free: (Piston of No. 4 cylinder is at top dead center under compression stork)	Intake			O	O
	Exhaust		O		O

③ Turn the crankshaft 360 degrees.
④ Proceed to check and adjust the remaining valve clearances.

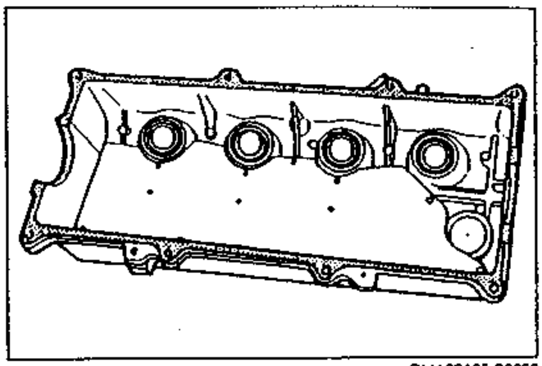
GMA00124-00000

(3) Installation of cylinder head cover

① Wipe off the oil from the gasket attaching surface of the cylinder head.

② Check the cylinder head cover gasket for evidence of damage.
Replace the gasket, as required.

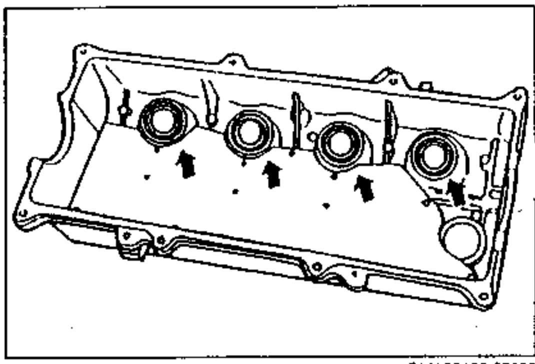
NOTE:
- Install the cylinder head cover gasket in such a direction that the identification mark may come at the intake side.


GMA00125-99999

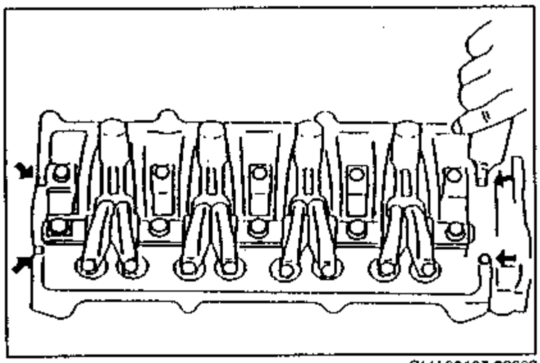
③ Check the rubber grommets of the spark plug tubes for evidence of damage.
Replace the rubber grommet, as required.
(For replacement of the rubber grommet refer to the EM section of the service manual.)

④ Install the cylinder head cover gasket on the cylinder head.

NOTE:
- Install the cylinder head cover gasket in such direction that the identification mark may come at the intake side.

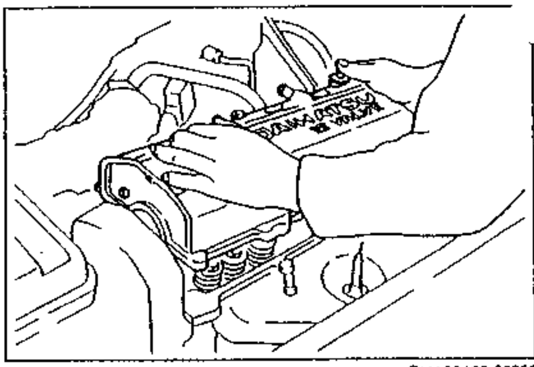

GMA00126-99999

⑤ Apply the Three Bond 1104 to the four points on the cylinder head, as indicated in the figure.


GMA00127-99999

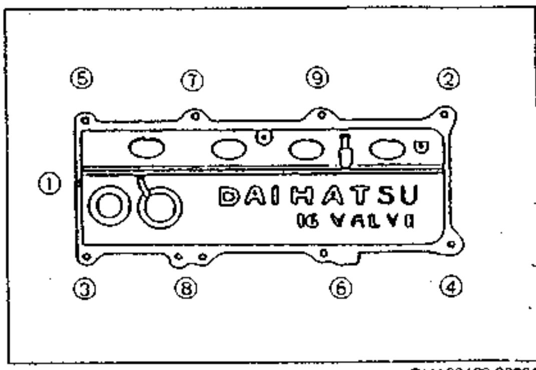
⑥ Install the cylinder head cover on the cylinder head.

NOTE:
- Be very careful not to damage the rubber grommets for spark plug tubes during the cylinder head cover installation.
- Make sure that the rubber grommet is fitted over the spark plug tube.

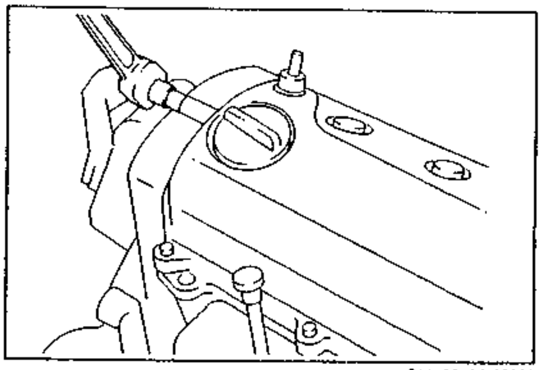

GMA00128-99999

⑦ Tighten the cylinder head cover bolts over two or three stages in the sequence shown in the right figure, until they are tightened to the specified torque.

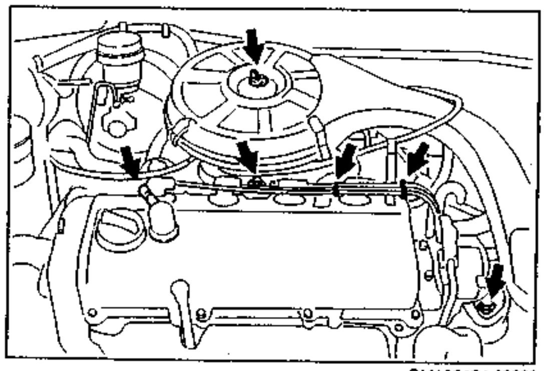
Tightening Torque: 2.9 - 4.9 N·m
(0.3 - 0.5 kgf-m,
2.2 - 3.6 ft-lb)



GMA00129-99999


GMA00130-99999

⑧ Tighten the timing belt cover attaching bolts.
Tightening Torque: 2.0 - 3.9 N·m
(0.4 - 0.4 kgf-m,
1.4 - 2.9 ft-lb)


GMA00131-99999

⑨ Installation of air cleaner assembly
(HC-C engine only)
1) Place the air cleaner on the engine.
2) Connect the vacuum hoses to the BVSV.
3) Tighten the attaching bolt and wing nuts.

⑩ Connect the accelerator cable or choke cable to the cable clamp provided on the cylinder head.

⑪ Install the oxygen sensor harness to the clamp. (Only for HC-E engine)

⑫ Connect the PCV hoses to the cylinder head cover.

⑬ Install the resistive cords to the cylinder head.

NOTE:
- Be sure that the resistive cord is connected securely to each spark plug.
- Care should be exercised not to damage the resistive cord with the spark plug tube.

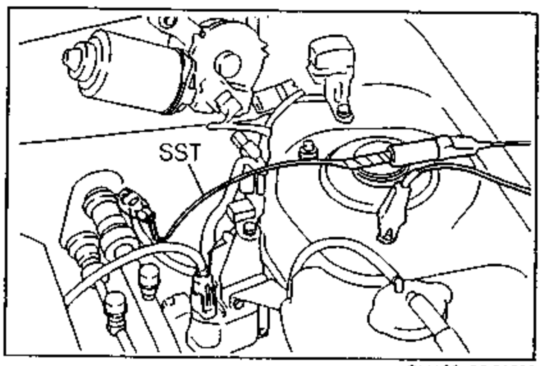
⑭ Install the resistive cords to clamp.
(See the GI section of the service manual)

⑮ Start the engine.

⑯ Ensure that the engine exhibits no oil leakage.

NOTE:
- If the engine exhibits any troubles, repair them depending on the situation.

Inspection and adjustment of ignition timing



GMA00132-99999

NOTE:
- The ignition timing inspection or adjustment is performed normally when the engine is in a Hot condition.
  "Hot engine condition" denotes a condition in which the cooling water temperature is 75 - 85°C (167 - 185°F) and the engine oil temperature is above 65°C (149°F).

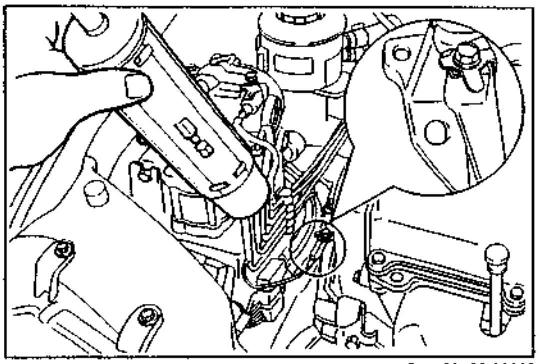
[HC-C engine]
(1) Start the engine.
(2) Warm up the engine.
(3) Stop the engine.
(4) Connection of tachometer.
① Disconnect the connector of the distributor.
② Connect the following SST between distributor and vehicle side of distributor connector. (If your tachometer is clamp on type this operation is unnecessary.)

SST: 09991-87604-000

③ Connect the tachometer to the engine.

CAUTION:

- Never allow the tachometer terminal to touch ground. It could result in damage of the ignition system.
- As some tachometers are not compatible with this ignition system, it is recommended to confirm the compatibility with your unit before its use.

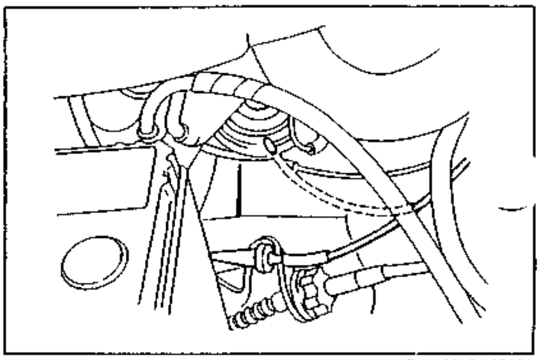

GMA00133-99999

(5) Connect a timing light to the resistive cord of the No. 1 cylinder (at the timing belt side.).

(6) Disconnect the vacuum hose at the sub-side of the vacuum advancer of distributor.

(7) Plug the disconnected vacuum hose, using the following SST.

SST: 09258-00030-000


GMA00134-99999

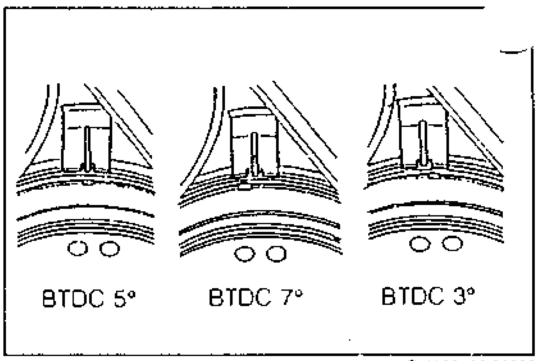
(8) Start the engine.

(9) Ensure that the engine revolution speed is bellow 1000 rpm and stable.

If the engine revolution exceeds 1000 rpm or it is unstable, adjust the engine revolution speed to the idle speed. (See procedure of Inspection and adjustment of idle speed.)

(10) Check to see if the ignition timing mark of the crankshaft pulley is aligned with the indicator of the timing belt cover, using the timing light.

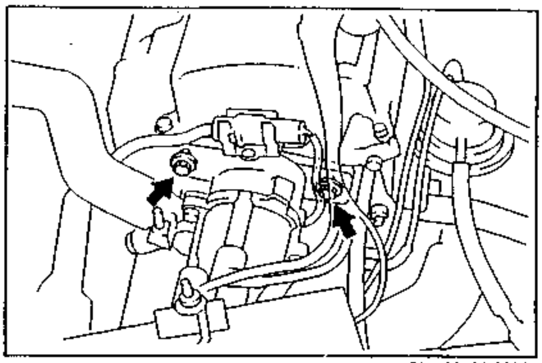
Adjust the ignition timing by turning the distributor, if the ignition timing mark is not aligned with timing belt cover.



GMA00135-99999

(11) Adjustment of ignition timing
① Loosen the distributor attaching bolts.
② Adjust the distributor installation angle by turning the distributor, until the ignition timing mark of the crankshaft pulley is aligned with the indicator of the timing belt cover.

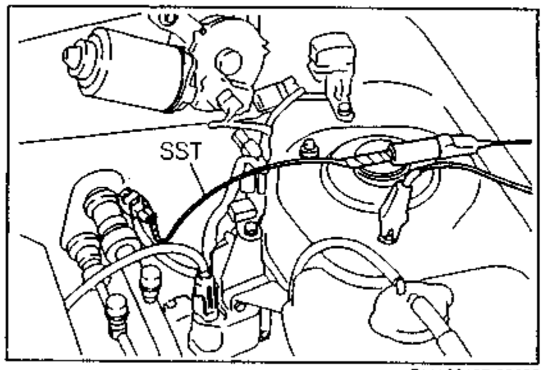
REFERENCE:
- If the distributor is turned clockwise, the timing will be advanced. Conversely, if the distributor is turned counterclockwise, the ignition timing will be retarded.


GMA00136-99999

③ Tighten the distributor attaching bolts to the specified torque, making sure that the ignition timing is not disturbed.
Tightening Torque: 14.7 - 21.6 N·m
(1.5 - 2.2 kgf-m,
10.8 - 15.9 ft-lb)

(12) Stop the engine.
(13) Remove the tachometer.
(14) Remove the SST from distributor connectors.
(15) Reconnect the distributor connector.
(16) Remove the SST from vacuum hose end.
(17) Connect the vacuum hose at the sub-side of the vacuum advancer of distributor.
(18) Adjust the idle speed. (See procedure of Inspection and adjustment of idle speed.)

[HC-E and HD-E engine]
(1) Start the engine.
(2) Warm up the engine.
(3) Stop the engine.
(4) Connection of tachometer.
① Disconnect the connector of the distributor.
② Connect the following SST between ignition coil and vehicle side of ignition coil connector.
(If your tachometer is clamp on type this operation is unnecessary.)
SST: 099991-87604-000

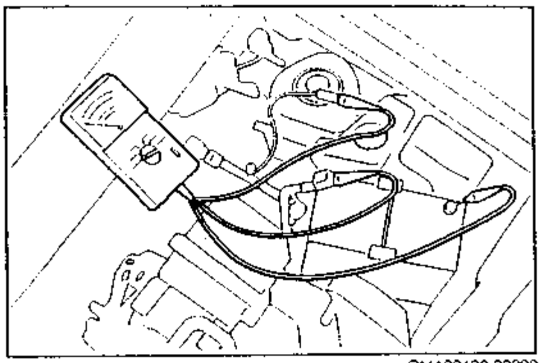


GMA00137-99999

③ Connect the tachometer to the engine.

CAUTION:
- Never allow the tachometer terminal to touch ground. It could result in damage of the ignition system.
- As some tachometers are not compatible with this ignition system, it is recommended to confirm the compatibility with your unit before its use.

(5) Connect a timing light to the resistive cord of the No. 1 cylinder (at the timing belt side.).



GMA00138-99999

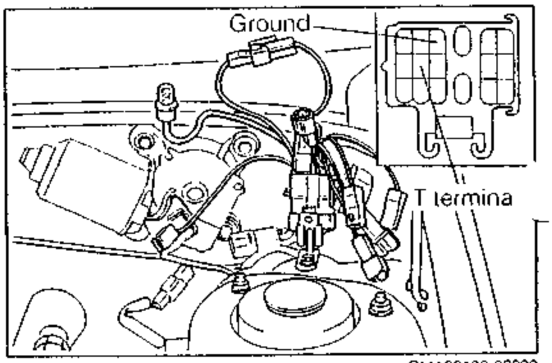
(6) Open the diagnosis connector cover.

NOTE:

- Be sure to prevent the entering of dust or water etc. into the diagnosis connector.

(7) Connect the T terminal with ground terminal in the diagnosis connector by following SST.

SST: 09991-87203-000



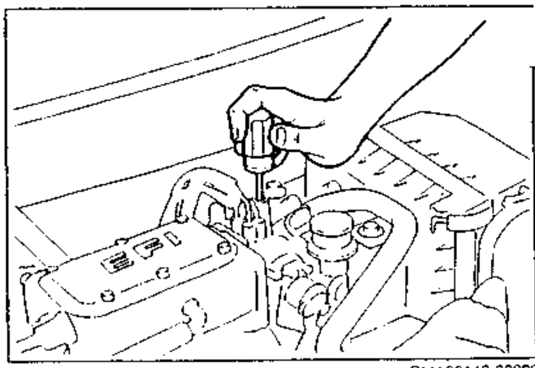
GMA00139-99999

NOTE:

- Care must be exercised to ensure that no connection is made on terminals except for those specified.
  Even slight contact of the other terminal caused serious malfunction.

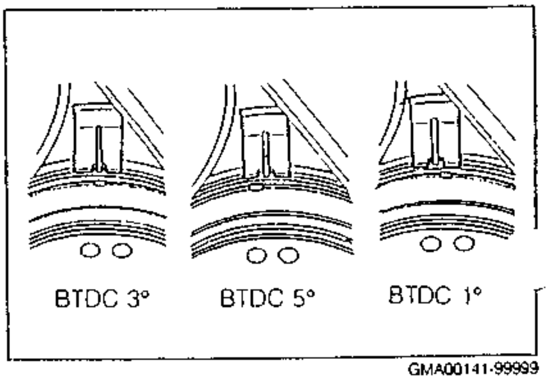
(8) Start the engine.

(9) Ensure that the engine revolution speed is bellow 1000 rpm and stable.
If the engine revolution exceeds 1000 rpm or it is unstable, adjust the engine revolution speed to the idle speed.
(See procedure of idle speed adjustment.)

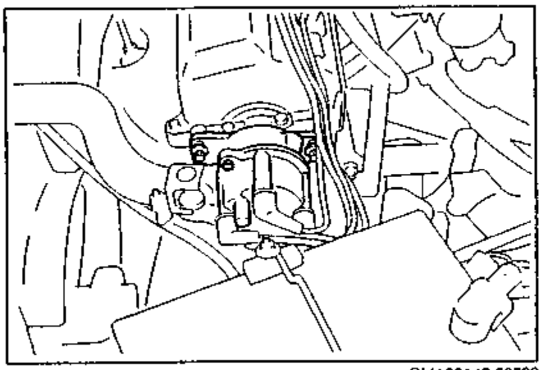


GMA00140-99999

(10) Check to see if the ignition timing mark of the crankshaft pulley is aligned with the indicator of the timing belt cover, using the timing light.
Adjust the ignition timing by turning the distributor, if the ignition timing mark is not aligned with timing belt cover.



GMA00141-99999

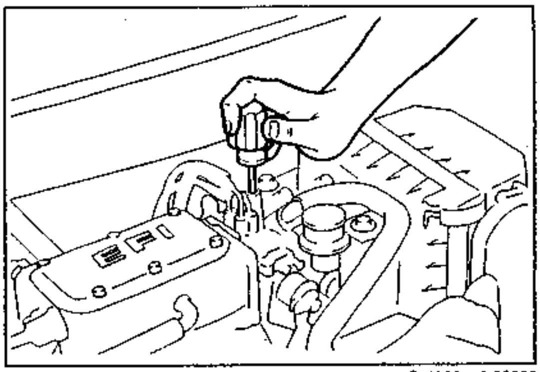

GMA00142-99999

(11) Adjustment of ignition timing
① Loosen the distributor attaching bolts.
② Adjust the distributor installation angle by turning the distributor, until the ignition timing mark of the crankshaft pulley is aligned with the indicator of the timing belt cover.

REFERENCE:
- If the distributor is turned clockwise, the timing will be advanced. Conversely, if the distributor is turned counterclockwise, the ignition timing will be retarded.

③ Tighten the distributor attaching bolts to the specified torque, making sure that the ignition timing is not disturbed.
Tightening Torque: 14.7 - 21.6 N·m
(1.5 - 2.2 kgf-m,
10.8 - 15.9 ft-lb)

(12) Stop the engine.
(13) Remove the tachometer.
(14) Remove the SST from distributor connectors.
(15) Reconnect the distributor connector.
(16) Remove the SST from the diagnosis connector.



GMA00143-99999

NOTE:
- Care must be exercised to ensure that no connection is made on terminals except for those specified.
  Even slight contact of the other terminal caused serious malfunction.

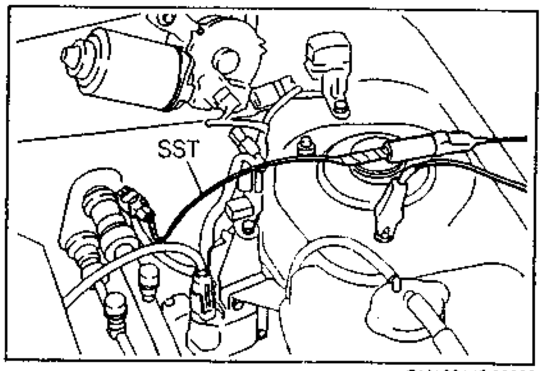
(17) Close the diagnosis connector cover.
NOTE:
- Be sure to prevent the entering of dust or water etc. into the diagnosis connector.
  Entering of dust, water or contamination of terminals in the diagnosis connector caused serious malfunction, due to lowering the insulation of each terminals.

(18) Adjust the idle speed.
(See procedure of idle speed adjustment.)

8. **Inspection and adjustment of idle speed**
Preparation to be made prior to idle speed adjustment.
- Check and adjust the ignition timing.
- Apply the parking brake fully.
- Warm up the engine thoroughly. (continue engine warm-up for another 10 minutes after the the fan motor has started its operation.)
- All accessory switches are turned OFF.
  On those vehicles equipped with a day-lamp system, set the lamp control switch to the first stage.
- The air cleaner element is installed.
- All vacuum hose are connected.
- Ensure that the intake system exhibits no air leakage.
- Ensure that the exhaust system exhibits no air leakage.
- On the automatic transmission vehicle, the shift lever is placed in the [N] or [P] range.
- On the manual transmission vehicle, the shift lever is placed in the neutral range.
- The choke valve is open fully. (HC-C engine only)
- Position the steering wheel to straight a head direction. (Only for power steering equipped model.)

NOTE:
- Do not perform the engine idle speed adjustment while the fan motor is functioning.
- On those vehicle equipped with a day-lamp system, set the lamp control switch to the first stage with the head lamps turned OFF.
- Use the SST (09243-00020-000) to adjust the idle mixture adjusting screw. (HC-C engine only)

GMA00144-00000



GMA00145-99999

[HC-C engine]
(1) Connection of tachometer
① Connect the following SST between distributor and vehicle side of distributor connector.
SST: 09991-87604-000

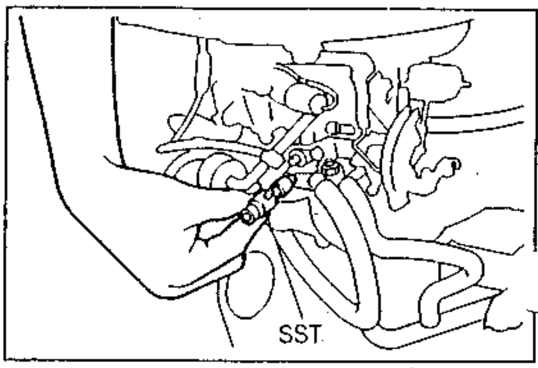
(If your tachometer is clamp on type this operation is unnecessary.)

CAUTION:
- Never allow the tachometer terminal to touch ground. It could result in damage of the ignition system.
- As some tachometers are not compatible with this ignition system, it is recommended to confirm the compatibility with your unit before its use.

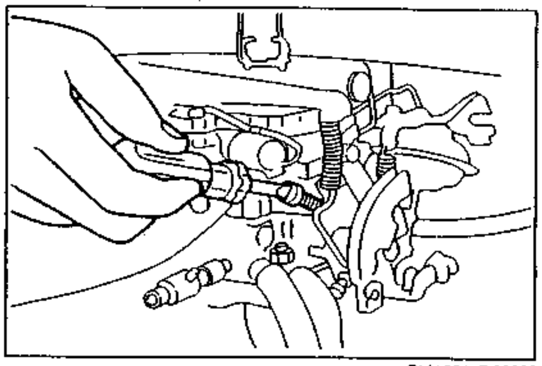
② Connect the tachometer to the engine, following by instruction of the manufacturer of tachometer.

(2) Back off the idle mixture adjusting screw four turns from the fully closed state.

NOTE:
- For this adjustment, it is necessary to prepare the following SST.
  SST: 09243-00020-000
- Do not adjust the idle mixture adjusting screw, if HC/CO meter is not available.
- Be sure to inspect the HC/CO concentrations, when idle mixture adjusting screw is adjusted. (HC-C engine only, for inspection of HC/CO concentrations, refer to EC section of the service manual.)



GMA00146-99999

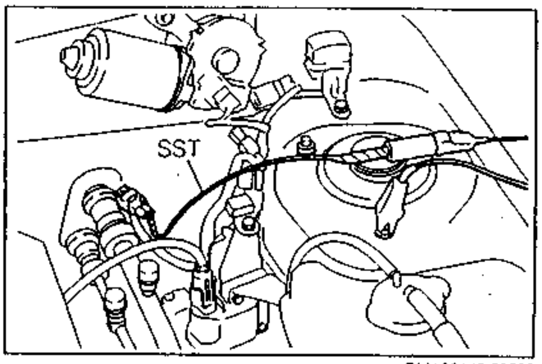


GMA00147-99999

(3) Start the engine.
(4) Adjust the throttle adjusting screw so that the engine idle speed may become the specified value.

Specified Idle Speed
MT: 800 ± 50 rpm
AT: 850 ± 50 rpm

(5) Stop the engine.
(6) Remove the tachometer.
(7) Remove the SST.
(8) Connect the distributor.



GMA00148-99999

[HC-E, HD-E engine]

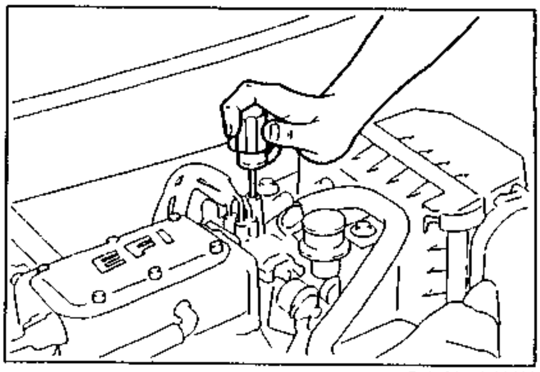
(1) Connection of tachometer
① Connect the following SST between ignition coil and vehicle side of ignition coil connector.
(If your tachometer is clamp on type this operation is unnecessary.)
SST: 09991-87604-000

CAUTION:
- Never allow the tachometer terminal to touch ground. It could result in damage of the ignition system.
- As some tachometers are not compatible with this ignition system, it is recommended to confirm the compatibility with your unit before its use.

② Connect the tachometer to the engine by follow the instruction of the manufacturer of tachometer.

(2) Start the engine.
(3) Race the engine to 2000 to 3000 rpm for two or three times.
(4) Remove the idle adjusting screw cap from the throttle body.
(5) Adjust the idle adjusting screw so that the engine idle speed may become the specified value.

Specified Idle Speed
MT: 800 ± 50 rpm
AT: 850 ± 50 rpm



GMA00149-99999

NOTE:
- When the idle adjusting screw is turned clockwise idle speed will be decrease, whereas when the idle adjusting screw is turned counterclockwise idle speed will be increase.

(6) Install the idle speed adjusting screw cap to the throttle valve.
(7) Stop the engine.
(8) Remove the tachometer.
(9) Remove the SST from distributor and vehicle side of distributor connector. (If it connected.)
(10) Connect the distributor connector.

9. **Inspection and adjustment of throttle positioner or dashpot**

Preparation to be made prior to throttle positioner check.

- Check and adjust the ignition timing.
- Check and adjust the idle speed.
- Apply the parking brake fully.
- Warm up the engine thoroughly. (continue engine warm-up for another 10 minutes after the fan motor has started its operation.)
- All accessory switches are turned OFF.
- On those vehicles equipped with a day-lamp system, set the lamp control switch to the first stage.
- The air cleaner element is installed.
- All vacuum hose are connected.
- Ensure that the intake system exhibits no air leakage.
- Ensure that the exhaust system exhibits no air leakage.
- On the automatic transmission vehicle, the shift lever is placed in the [N] or [P] range.
- On the manual transmission vehicle, the shift lever is placed in the neutral position.
- The choke valve is open fully. (HC-C engine only)
- Position the steering wheel to straight a head direction. (Only for power steering system equipped vehicles.)

NOTE:

- Do not perform the throttle positioner adjustment while the fan motor is functioning.
- On those vehicle equipped with a day-lamp system, set the lamp control switch to the first stage with the head lamps turned OFF.
- Use the SST (09243-00020-000) to adjust the idle mixture adjusting screw.
(HC-C engine only)

GMA00150-00000

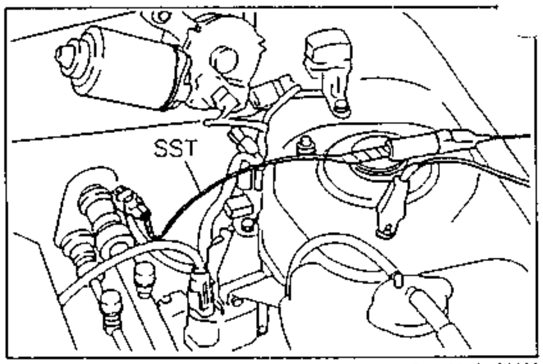
[HC-C engine]

(1) Connection of tachometer

① Connect the following SST between distributor and vehicle side of distributor connector.

SST: 09991-87604-000

(If your tachometer is clamp on type this operation is unnecessary.)



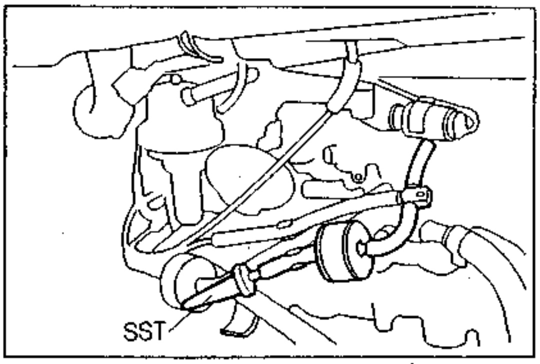
GMA00151-99999

CAUTION:

- Never allow the tachometer terminal to touch ground. It could result in damage of the ignition system.
- As some tachometers are not compatible with this ignition system, it is recommended to confirm the compatibility with your unit before its use.

② Connect the tachometer to the engine, following by instruction of the manufacturer of tachometer.

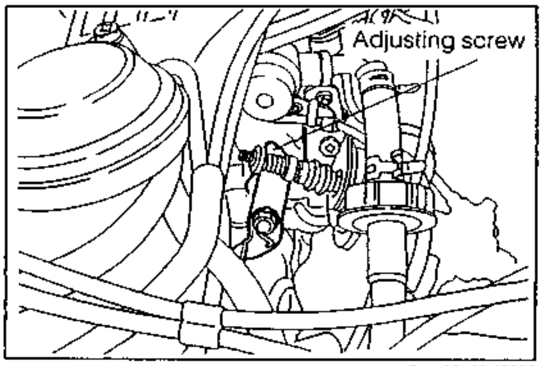
(2) Disconnect the vacuum hose from the throttle positioner.
(3) Plug the disconnected hose, using the following SST.
SST: 09258-00030-000



GMA00152-99999

(4) Ensure that the throttle positioner shaft is stretched fully.
(5) Start the engine.

(6) Check of touch revolution speed of throttle positioner
The touch revolution speed of the throttle positioner means the engine revolution speed at the time when the adjusting screw of the throttle lever makes contact with the dashpot shaft.
Touch Revolution: 1800 ± 50 rpm

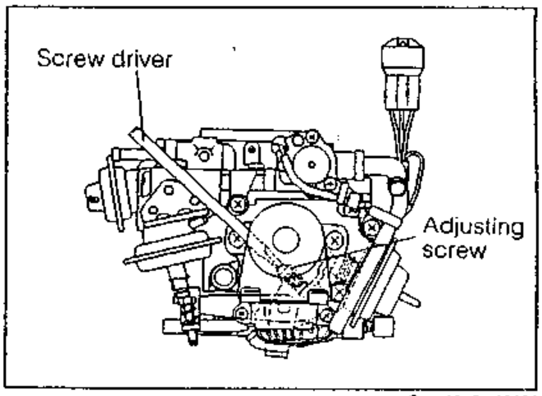


GMA00153-99999

If the touch revolution speed dose not conform to the specification, turn the adjusting screw so that the touch revolution speed may become the specified engine speed.

NOTE:
- On the automatic transmission vehicle, the adjustment should be performed with the air cleaner assembly removed. However, be sure to plug the vacuum hose connected to the ITC valve.

(7) Remove the SST, which plug the vacuum hose.
(8) Connect the vacuum hose to the throttle positioner.
(9) Hold the engine revolution speed at 3000 rpm for five seconds.
(10) Close the throttle valve quickly.
(11) Measure the time required for the engine revolution speed to drop from 2000 rpm to 1000 rpm.
Specified Time: 1.0 - 3.0 seconds



GMA00154-99999

(12) If the time dose not conform to the specification, check/replace the following point.
① VTV for restriction or malfunction.
② Related vacuum hoses and vacuum pipe for restriction or damage.
Replace the defective part, if any malfunction is existing.
Replace the throttle positioner, if above point has no trouble.
(For details of throttle positioner replacement, refer to the FU section of the service manual.)
(13) Remove the tachometer.
(14) Remove the SST from ignition coil and vehicle side ignition coil connectors.
(15) Reconnect the vehicle side ignition coil connector to the ignition coil.

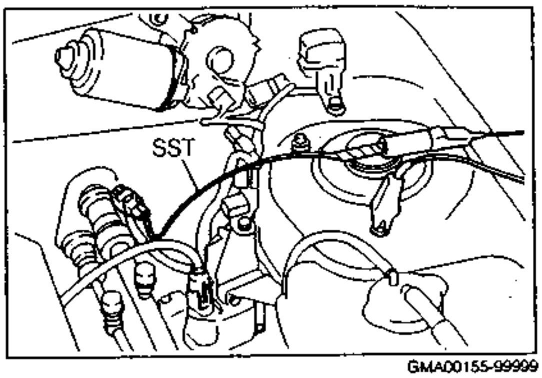
[HC-E and HD-E engine]

(1) Connection of tachometer

① Connect the following SST between distributor and vehicle side of distributor connector.

SST: 09991-87604-000

(If your tachometer is clamp on type this operation is unnecessary.)



GMA00155-99999

CAUTION:

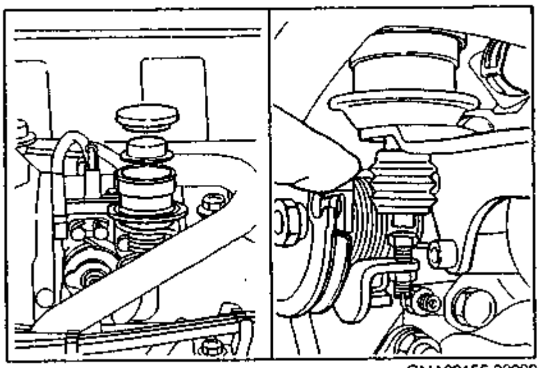
- **Never allow the tachometer terminal to touch ground. It could result in damage of the ignition system.**
- **As some tachometers are not compatible with this ignition system, it is recommended to confirm the compatibility with your unit before its use.**

② Connect the tachometer to the engine, following by instruction of the manufacturer of tachometer.

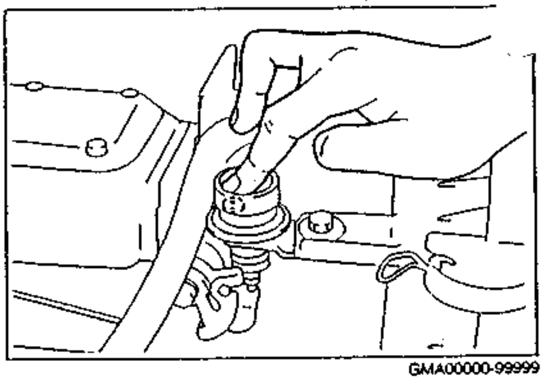
(2) Remove the dashpot cap.
(3) Remove the dashpot filter.

NOTE:

- Be sure to prevent the dust or foreign substances from entering of dashpot.


GMA00156-99999

(4) Start and warm-up the engine.
(5) Ensure that the adjusting screw of the dashpot is not contact with dashpot shaft when the engine revolution speed at 3500 rpm.
If adjusting screw of the dashpot is contact with the dashpot shaft, adjust the adjusting bolt height.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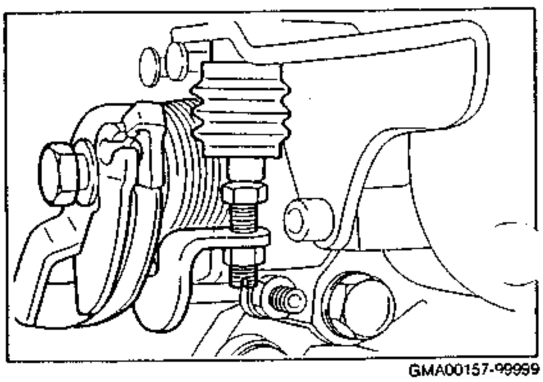
(6) Plug the air passage of the dashpot with your finger under condition describe in step (5).
(7) Slowly release the throttle lever.
(8) Ensure that the engine revolution with in the specified range.

Specified Engine Revolution
MT: 1300 ± 100 rpm
AT: 2100 ± 100 rpm

If not adjust the engine revolution speed by adjusting screw and repeat the step (5) to (8) again.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(9) Stop the engine.
(10) Install the dashpot filter.
(11) Install the dashpot cap.
(12) Remove the tachometer.
(13) Remove the SST from the distributor connectors.
(14) Connect the distributor connector.

10. Inspection and adjustment of CO/HC concentrations [HC-C engine]

Preparation to be made prior to check and adjustment of CO/HC concentrations.

- Apply the parking brake fully.
- Check and adjust the ignition timing.
- Check and adjust the idle speed.
- Warm up the engine thoroughly. (continue engine warm-up for another 10 minutes after the fan motor has started its operation.)
- All accessory switches are turned OFF.
- The air cleaner element is installed.
- All vacuum hose are connected.
- Ensure that the intake system exhibits no air leakage.
- Ensure that the exhaust system exhibits no air leakage.
- On the automatic transmission vehicle, the shift lever is placed in the [N] or [P] range.
- On the manual transmission vehicle, the shift lever is placed in the neutral position.
- The choke valve is open fully.
- Position the steering wheel to straight a head direction. (Only for power steering equipped model.)

NOTE:

- Use the SST (09243-00020-000) to adjust the idle mixture adjusting screw.
- Be sure to prepare the CO/HC meter by following with the instruction of its manufacturer, before put into use.

GMA00158-00000

(CO adjustment)

(1) Start and warm-up the engine.

(2) Ensure that the engine revolution with in the specification.
(See the check and adjustment of idle speed.)

GMA00159-00000

(3) Race the engine until its speed reaches 2000 rpm.

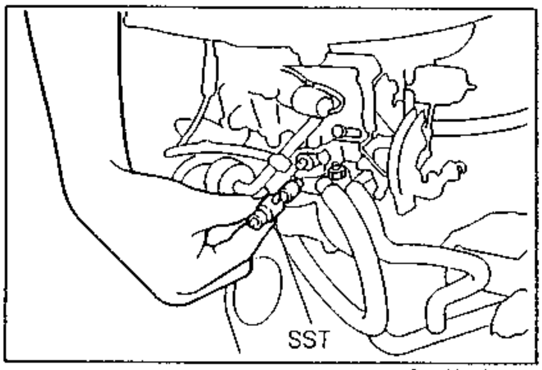
(4) Measurement of CO concentration at the idle speed
Check too see if the CO concentration conform to the specification.

Specified CO Concentration: 1.5 ± 0.5 %

If the measured concentration fail to conform to the specification, perform the adjustments described in the step (5) onward.

(5) Gradually turn the idle mixture adjusting screw, using the following SST, so that the CO concentration may conform to the specification.

SST: 09243-00020-000



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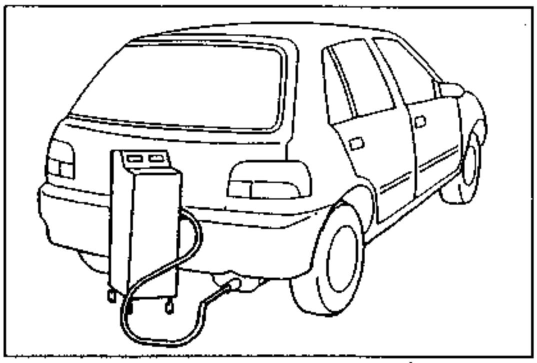
NOTE:

- If the CO concentration is greatly deviated from the specification, set the mixture condition to initial setting. The initial setting can be achieved first by setting the idle mixture adjusting to the fully-closed position and then by backing off the screw four turns.

(6) Turn the throttle adjusting screw so that the idle speed may become the specified speed.
Engine Idle Speed
MT: 800 ± 50 rpm
AT: 850 ± 50 rpm

(7) Measurement of CO concentration
Check to see if the CO concentration conform to the specification.
Specified CO Concentration: 1.5 ± 0.5 %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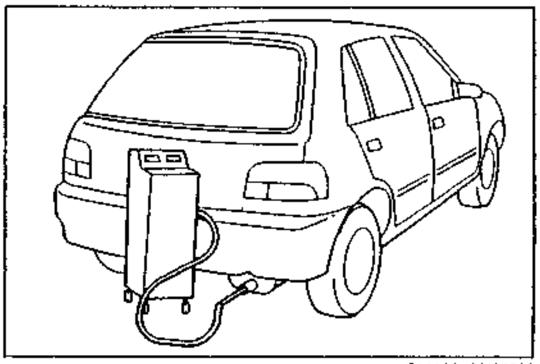
If the CO concentration fails to conform to the specification, perform the operation described in the step (3) onward.
However, if the repeated adjustment will not get the conformity to the specification, carry out the trouble shooting in accordance with the table mentioned bellow.

(HC adjustment)
(1) Start and warm-up the engine.
(2) Ensure that the engine revolution with in the specification.
(See the check and adjustment of idle speed.)
(3) Race the engine until its speed reaches 2000 rpm.
(4) Measurement of HC concentration at the idle speed
Check too see if the HC concentration conform to the specification.
Specified HC Concentration: Not exceed 1000 PPM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If the measured concentration fail to conform to the specification, carry out the trouble shooting in accordance with the table mentioned bellow.

Possible Causes for Improper CO/HC Concentrations

Item / Possible	CO concentration	HC concentration	Remarks
Ignition timing		○	
Valve clearances		○	
Improper valve seating		○	Compression pressure
Ignition system problems Spark plugs Resistive cord Distributor Ignition coil	○	○	
Air leakage in intake system	○		
ITC valve malfunctioning	○		
Grate mechanical loss of engine inner parts	○		

GMA00163-00000

11. Checking of CO/HC concentrations [HC-E and HD-E engines]

Preparation to be made prior to check of CO/HC concentrations.

- Apply the parking brake fully.
- Check and adjust the ignition timing.
- Check and adjust the idle speed.
- Warm up the engine thoroughly. (continue engine warm-up for another 10 minutes after the fan motor has started its operation.)
- All accessory switches are turned OFF.
  (On those vehicles equipped with a day-lamp system, set the lamp control switch to the first stage.)
- The air cleaner element is installed.
- All pipes and vacuum hose are connected.
- Ensure that the intake system exhibits no air leakage.
- Ensure that the exhaust system exhibits no gas leakage.
- On the automatic transmission vehicle, the shift lever is placed in the [N] or [P] range.
- On the manual transmission vehicle, the shift lever is placed in the neutral position.
- Position the steering wheel to straight a head direction. (Only for power steering equipped model.)
- Be sure to prepare the CO/HC meter by following with the instruction of its manufacturer, before put into use.

NOTE:

- This check is used only to determine whether or not the idle HC/CO emission comply with the regulations.

(1) Insert the HC/CO testing probe into the tailpipe at least 400 mm (15.7 inches).

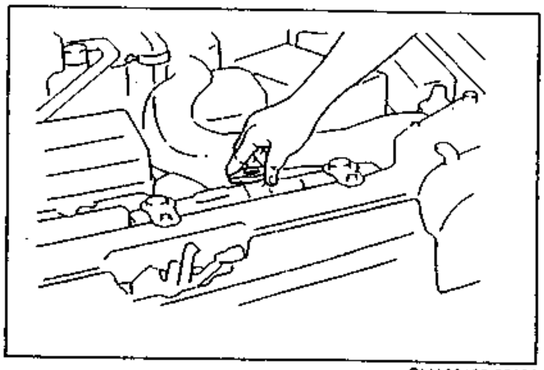
(2) Measurement of HC/CO concentrations at idle speed
Wait at least one minute before the measurement so as to allow the concentrations to stabilize.
Complete the measurement within three minutes.
If the HC/CO concentrations do not conform to the regulations, see the following table for possible causes.
Trouble Shooting List

HC	CO	Problems	Possible causes
High	Normal	Rough idle	1. Faulty ignition • Incorrect ignition timing • Fouled,shorted or improperly gapped spark plugs • Open or crossed high tension cords • Cracked distributor cap 2. Incorrect valve clearance 3. Leaky exhaust valves 4. Leaky cylinder
High	Low	Rough idle (Fluctuation HC reading)	1. Lean mixture causing misfire
High	High	Rough idle (Black smoke from exhaust)	1. Restricted air filter 2. Faulty EFI system • Faulty pressure regulator • Clogged fuel return line • Defective water temp. sensor • Defective air temp. sensor • Faulty throttle position sensor • Faulty pressure sensor • Faulty ECU • Faulty oxygen sensor

12. Change of coolant

WARNING:
- Never open the radiator cap when the engine is still hot.

CAUTION:
- As regards water to be used cooling water, use soft water which dose not contain salts of minerals, calcium, magnesium and so forth.
- If the coolant gets to the vehicle body, immediately flush away the coolant, using fresh water.



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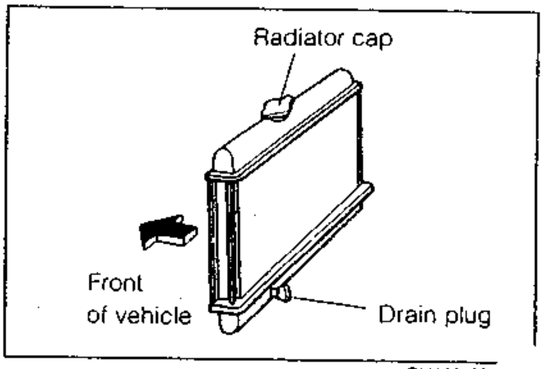
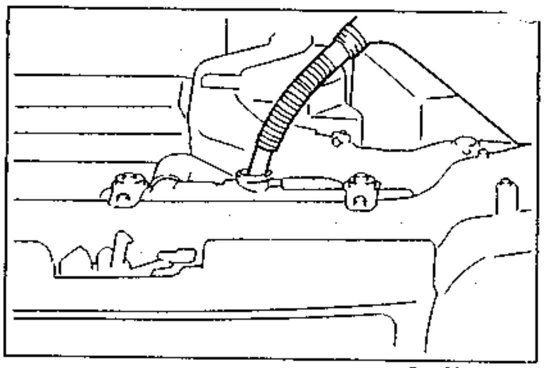
(1) Ensure that the coolant temperature is nearly the ambient temperature.
(2) Turn the radiator cap one step in an opening direction (counterclockwise direction) until you feel the first resistance.
(3) Lightly press the radiator cap for two three times to release the inner pressure of the radiator.
(4) Close the radiator cap.
(5) Remove the two attaching bolts of the left side engine under cover.
(6) Place an adequate container under the drain plug.
(7) Drain the coolant by loosen the drain plug.
(8) Remove the radiator cap.
(9) Drain the coolant in the reserve tank.
(10) Close the drain plug, after draining the coolant.
(11) Fill the water to the radiator and reserve tank.
(12) Start the engine.

NOTE:
- If the water level in the radiator drops, replenish the water to full level.



GMA00166-

(13) Close the radiator cap.
(14) Warm up the engine.
(15) Stop the engine.
(16) Cool down the water temperature to the ambient temperature.
(17) Repeat the steps (1) through (16) two or three times.
(18) Ensure that the coolant temperature is nearly the ambient temperature.
(19) Turn the radiator cap one step in an opening direction (clockwise direction) until you feel the first resistance.
(20) Lightly press the radiator cap for two three times to release the inner pressure of the radiator.



GMA00167-99999

(21) Close the radiator cap.
(22) Place an adequate container under the drain plug.
(23) Drain the water by loosen the drain plug.
(24) Remove the radiator cap.
(25) Drain the water in the reserve tank.
(26) Replace the O-ring of the radiator drain plug with new one, after draining the water.
(27) Install the radiator drain plug to the radiator securely.
(28) Slowly pour a proper amount of antifreeze solution into the radiator in accordance with the instruction of the manufacturer of antifreeze solution.

CAUTION:
- Use a good brand of ethylene-glycol base antifreeze solution.

Coolant Capacity:

Unit: Liter

	HC-C engine		HC-E engine		HD-E engine
	Manual T/M	Automatic T/M	Manual T/M	Automatic T/M	Manual T/M
General specification	4.7	4.6	5.1	5.4	—
Tropical specification	5.5	5.4	—	—	—
European specification	—	—	4.7	4.6	4.7
European with tropical specification	—	—	5.5	5.4	—
Australian specification	—	—	5.1	5.4	—

NOTE:
- The amount above includes 0.6 liter for the reserve tank.

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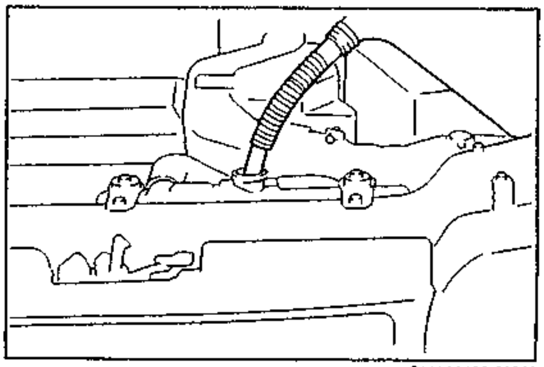
(29) Fill the water to the radiator and reserve tank.
(30) Start the engine.
NOTE:
- If the water level in the radiator drops, replenish the water to full level.



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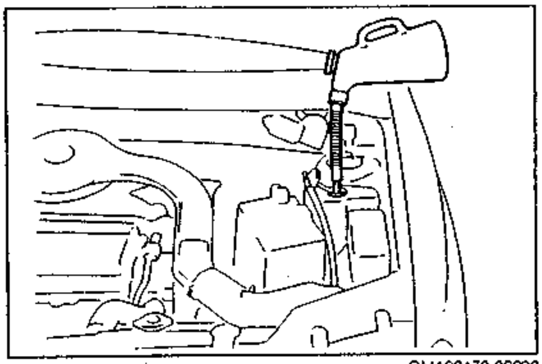
(31) Close the radiator cap.
(32) Ensure that no water leakage is present.
If water leakage is present, repair the water leakage.
(33) Warm up the engine, until the radiator fan motor starts to rotate.
(34) Stop the engine.
(35) Cool down the coolant temperature to the ambient temperature.
(36) Ensure that the coolant level in the reserve tank is not decrease.
If the coolant level in the reserve tank is decreased excessively or no coolant remain in the reserve tank. Check the coolant level in the radiator whether coolant in the radiator is in full or not. If not replenish the water to the radiator, and repeat the steps (29) through (36) again.

(37) Turn the radiator cap one step in an opening direction (clockwise direction) until you feel the first resistance.
(38) Lightly press the radiator cap for two three times to release the inner pressure of the radiator.
(39) Remove the radiator cap.
(40) Ensure that the concentration of antifreeze solution in the radiator is meets to the instruction of the manufacturer of antifreeze solution by the densitometer.
Adjust the concentration of the antifreeze solution in the radiator to the instruction of the manufacturer of antifreeze solution, if concentration dose not meets to the instruction of the manufacturer of antifreeze solution.



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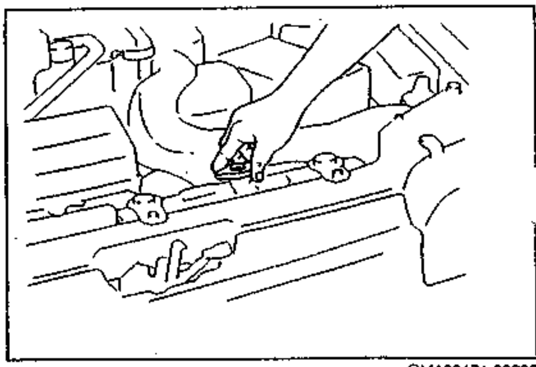
(41) Secure the radiator cap.
(42) Drain the water in the reserve tank.
(43) Pour the coolant as mixed with antifreeze solution and water in accordance with the instruction of the manufacturer of antifreeze solution to the full level of the reserve tank.
(44) Secure the reserve tank cap.
(45) Install the left side engine under cover to the vehicle with two attaching bolts.
Check the coolant in reserve tank.



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SERVICE MANUAL

DAIHATSU

G200, G201

EFI System

FOREWORD

This service manual describes servicing procedures for the EFI and the outline of EFI, which is equipped on some models of the G200 and G201 with European specification.

This service manual omits the General Information section. Therefore, please refer to the general information section of the engine service manual of the G200 and G201 before reading this manual.

All information used in this manual was in effect at the time when the manual was printed. However, the specifications and procedure may be revised due to continuing improvements in the design without advance notice and without incurring any obligation to us.

EFI

Published in April, 1993

DAIHATSU MOTOR CO., LTD.

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DAIHATSU

G200, G201

CONTENTS

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INTRODUCTION

The EFI system consists of the following three systems given below:
① Fuel system
② Intake system
③ Control system
The electronic control unit (ECU) incorporating a microcomputer controls the EFI system, based on signals inputted from various sensors.

Fuel system
The fuel system is a system which supplies the injectors with the fuel necessary for combustion.
Fuel sucked up from the fuel tank by means of the fuel pump is sent to the delivery pipe under a pressurized state.
The pressure regulator mounted at the delivery pipe keeps the fuel pressure higher than the surge tank inner pressure. In this way, the fuel injection amount for each injector energizing time is kept at a constant level.

Intake system
The intake system is a system which supplies each cylinder with air necessary for combustion.
Air sucked from the air cleaner passes through the throttle body to the surge tank. Then, the air is sucked to each cylinder through the intake manifold.

Control system
The control system is a system which controls the fuel amount, using the ECU, by detecting the engine and vehicle running conditions, based on signals inputted from various sensors to the ECU.
(1) EFI control system
Upon receiving those signals concerned with the intake air amount, engine speed and water temperature, the EFI control system controls the amount of fuel injection in such a way that an optimum air-to-fuel ratio for the engine may be attained.
(2) ESA (Electronic spark advance) control system
The ESA control system provides an optimum ignition timing, based on the engine speed and its load conditions.
(3) VSV control system
The VSV control system controls a VSV for controlling the idling speed.

Self diagnosis function
If any abnormality should occur in each input signal (e.g. each sensor, wire harness and connectors), the ECU memorizes this abnormality. Later, this abnormality is indicated during the trouble diagnosis period by codes through the blinking of check engine lamp.
As regards important items, this system turns ON the relevant check engine lamp, thus warning the driver of the abnormality.

Fail-safe function
In the event that any abnormality takes place in the signals inputted from the important sensors to the ECU and the control can no longer be continued based on the inputted data, an evacuation running is made possible using the data memorized in the ECU in advance. This function is called "fail-safe function."

Back-up function
In the event that the ECU encounters abnormality, this function makes it possible to perform evacuation running in accordance with the fuel injection amount and ignition timing that have been predetermined by the back-up data.

GEF00002-00000

PRECAUTION

1. The engine control system has self diagnosis function. The ECU memorizes all malfunction codes which have occurred in the past and/or are occurring at present.
   The memorized malfunction codes are erased when the battery ground cable is disconnected from the battery terminal. Hence, prior to starting any repairs, be sure to check to see if any malfunction code has been memorized.
2. When performing operations on the fuel system or its related operation, never smoke and keep away any fire.
3. Before disconnecting the fuel line, be sure to disconnect the battery ground cable from the negative terminal of the battery.
4. The fuel line is pressurized to a pressure about 250 kPa (2.55 kgf/cm^2) higher than the pressure inside the surge tank. Therefore, when disconnecting the fuel line, be sure to loose the fuel line slowly and prevent the fuel from splashing with a cloth or the like.
5. Do not allow gasoline to get to any parts made of rubber, leather and resin and/or to the electric parts.
6. When cleaning the engine compartment with water, make sure that no water gets to the electrical system.
7. Ensure that the battery voltage should be 11 volts or more, before performing the inspection.

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INSPECTION PRECAUTIONS

MAINTENANCE PRECAUTIONS

1. Ensure that the engine is correctly tuned up.

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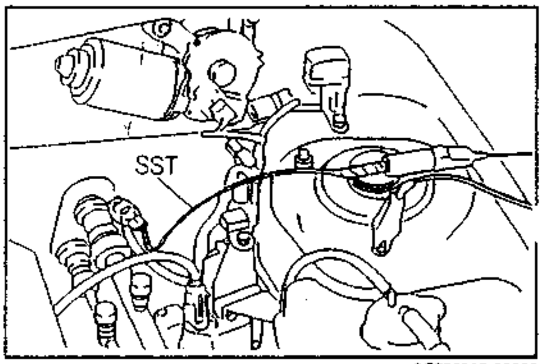


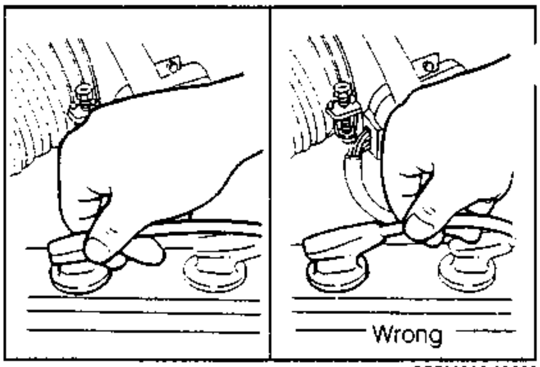
GEF00005-99999

2. Precautions during gauge connection
   (1) Connecting the tachometer, connect the following SST between the ignition coil and the ignition coil connector of the engine wire.
   SST: 09991-87604-000

   NOTE:
   - **This does not apply if your tachometer is a pick-up type.**

   (2) Connect the measuring terminal of the tachometer to the measuring terminal of the SST.
   NOTE:
   - **This does not apply if your tachometer is a pick-up type.**

   (3) Use the battery as power source for a timing light, tachometer and so forth.
   (4) Never allow the tachometer terminal to touch the ground, for it could result in damage to the igniter and/or ignition coil.
   (5) Some kinds of tachometers may not be suited for the ignition system of the vehicle. Therefore, ensure that your tachometer is compatible with the ignition system of the vehicle.



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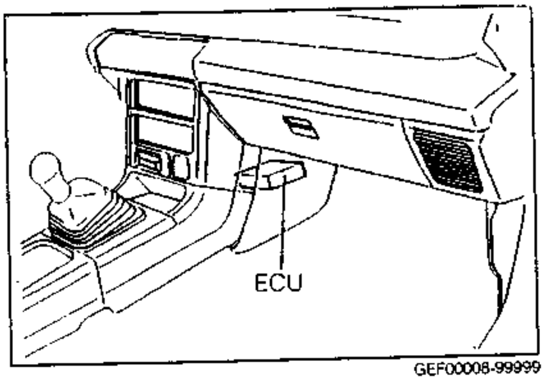
3. If engine misfire takes place, the following measures should be taken.
   (1) Ensure that the battery terminals and so forth are connected properly.
   (2) Handle the spark plug wires carefully.
   (3) After completion of repairs, ensure that the ignition coil terminals and other ignition system wire are reconnected securely.
4. Precautions during oxygen sensor handling
   (1) Do not drop the oxygen sensor or hit it to other objects.
   (2) Do not immerse the sensor in water or do not cool it by water.
5. Do not open the cover of the ECU proper.
   (Failure to observe this caution could cause ECU malfunction.)
6. Do not touch the screws of the bracket installed on the ECU proper.
   (Failure to observe this caution could cause ECU malfunction.)

GEF00007-00000

When the vehicle is equipped with wireless installation (HAM, CB, etc.)

The ECU has been so designed that it is resistant to external influence.
However, if a vehicle is equipped with a CB wireless installation and so forth (even if its output is only 10 W), it may affect the ECU adversely. Therefore, observe the following precautions.



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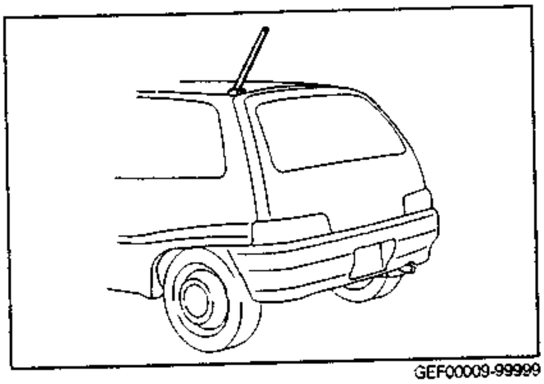
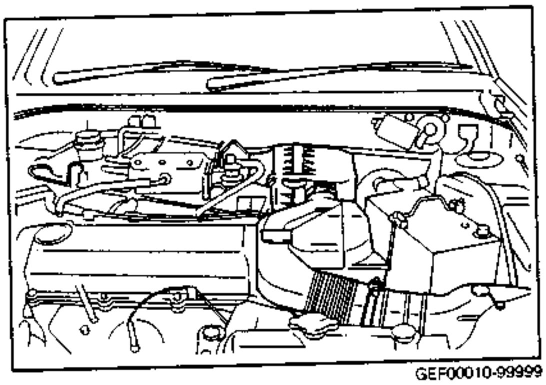
1. Install an antenna at a place as far away as possible from the ECU.
   The ECU is installed at the lower side of heater assembly. Therefore, the antenna should be installed at the rear of the vehicle.
2. The antenna cord should be kept at least 20 cm away form the engine wire. Never wind the antenna with the engine wire with tapes.
3. Adjust the antenna output correctly.
4. Never install a wireless installation with a high output on the vehicle.


GEF00009-99999

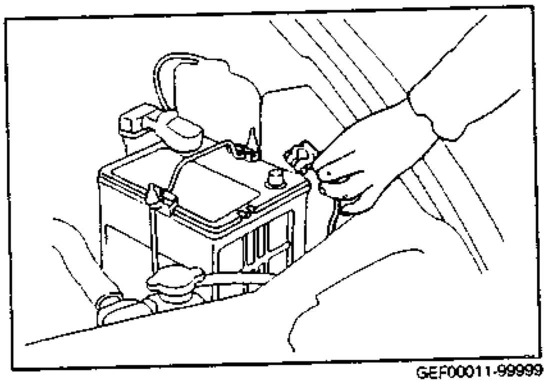
Air induction system

1. Unless all of the oil level gauge, oil filler cap, PCV hose and so forth are installed securely, the engine tune-up can not be performed properly.
2. If air leakage (air admission) is present between the throttle body and the cylinder head, the engine revolution speed can not be adjusted.


GEF00010-99999

Electronic control system

1. Before disconnecting or reconnecting the connector of the sensor system of the EFI system, be sure to turn OFF the ignition switch and all accessory switches. Also, disconnect the battery ground cable from the battery negative terminal. Failure to observe this caution could cause ECU malfunction.


GEF00011-99999

2. Before disconnecting or reconnecting the connector of the ECU proper of the EFI system, be sure to turn OFF the ignition switch and all accessory switches. Also, disconnect the battery ground cable from the battery negative terminal.
   Failure to observe this caution could cause ECU malfunction.
3. Be sure to keep the number of disconnection/reconnection of the connector of the EFI system at a minimum level.
4. When installing the battery, care must be exercised not to mistake the battery polarity.
5. Never apply strong impacts to the EFI parts. Pay utmost attention during the installation/removal. Especially, special caution must be exercised as to the handling of the ECU.

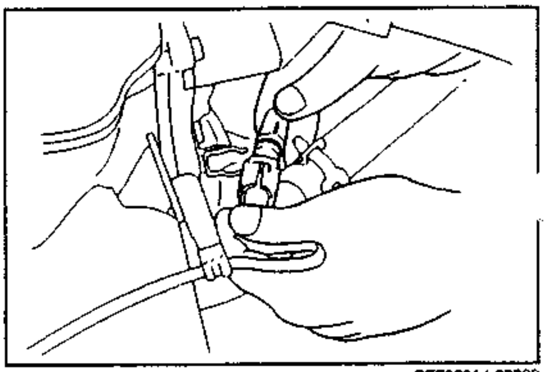
GEF00012-00000

6. When the voltage or resistance of the ECU is measured during the check, never touch terminals other than the specified terminals. Failure to observe this caution could cause ECU malfunction.
7. Never open the cover of the ECU proper.
8. When the system is checked on a rainy day, be very careful not to allow water to get into connectors and/or terminals.
   Also, when the engine compartment is washed, prevent water from being splashed to the EFI-related parts and wiring connectors.
9. Every EFI parts should be replaced as an assembly.

GEF00013-00000

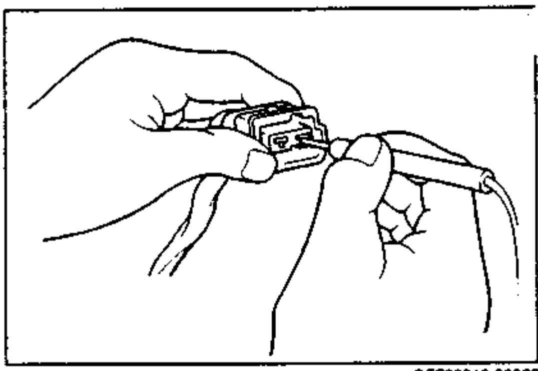
10. When disconnecting or reconnecting the wiring connector, care must be exercised as to the following points.
    (1) Carefully observe the shape of the lock prior to the disconnecting/connection.
    (2) Release the lock. Disconnect the connector.
    NOTE:
    - **When disconnecting the connector, be sure to hold the connector holder, not to pull the wire.**

    (3) Insert the connector, until the lock is engaged completely.
    (4) Be sure to keep the number of disconnection/reconnection of the connector at a minimum level.



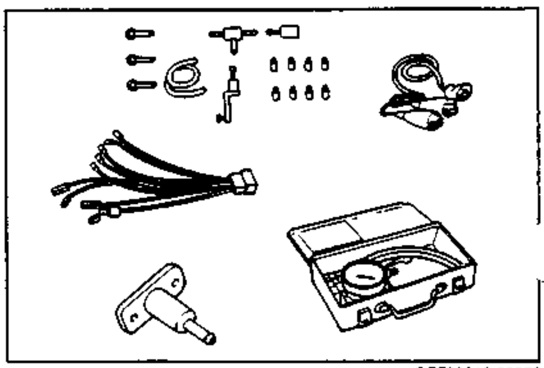
GEF00014-99999

11. When checks are performed at the connector-side terminals, using a circuit tester, care must be exercised as to the following point.
    Never apply such a force to the connector terminal that can deform the terminal.



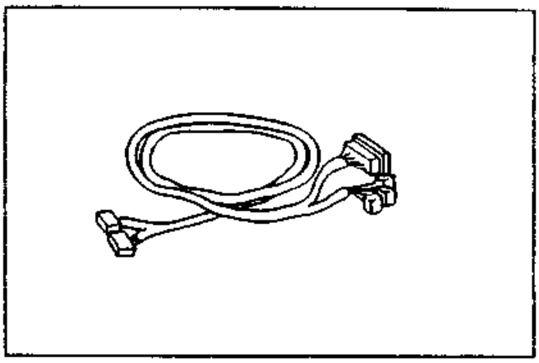
GEF00015-99999

12. When checking the fuel system, such as the injectors, pressure regulator and fuel pressures, use the following SSTs.
    SSTs: 09268-87702-000
    09283-87703-000
    09991-87703-000
    09268-87701-000
    09842-30070-000



GEF00016-99999

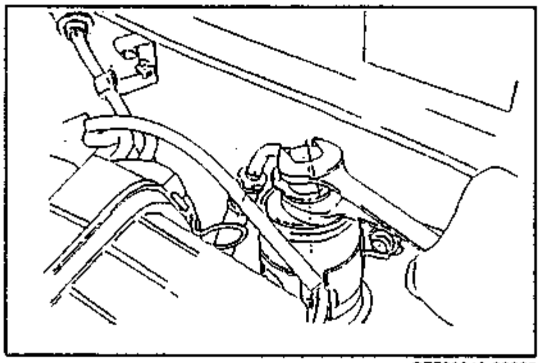
13. When measuring the voltage or resistance of each system, use the following SST.
    SST: 09842-87706-000


GEF00017-99999

Fuel system

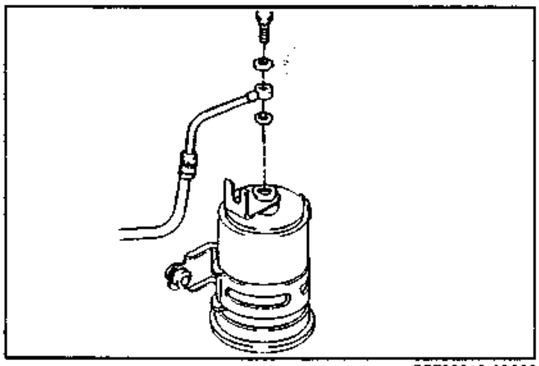
1. The fuel line at the high-pressure side is pressurized to a fuel pressure of about 250 kPa (2.55 kgf/cm^2). Therefore, a large amount of gasoline flows out when parts of the fuel line is disconnected. Hence, take the following countermeasures.
   CAUTION:
   - **Release the inner pressure of the fuel tank by removing the fuel filler cap in advance.**

   (1) Place a suitable container, close or the like under the disconnecting connection.
   (2) Loosen the connection slowly, while preventing the fuel from splashing, using a suitable cloth or the like.
   (3) Disconnect the connection.
   (4) Plug the disconnected connection with a rubber plug or the like so that no dust may enter into the fuel line.

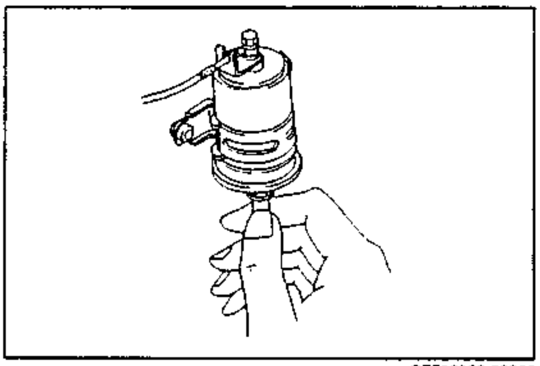

GEF00018-99999

2. When connecting the flare nut or union bolt of the high-pressure pipe, observe the following instructions.

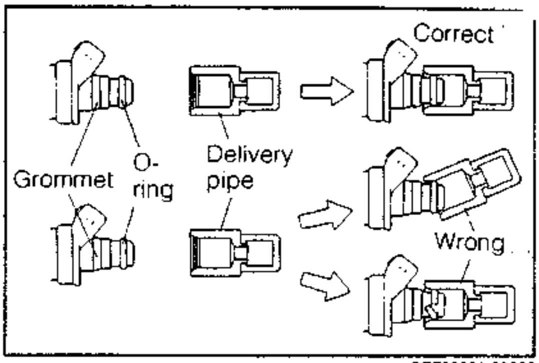
   [Union bolt type]
   (1) Always use new gaskets.
   (2) First, tighten the union bolt with your fingers.
   (3) Next, tighten the union bolt to the specified torque.
   Tightening Torque: 34.3 - 44.1 N·m (3.5 - 4.5 kgf-m)


GEF00019-99999

   [Flare nut type]
   (1) Coat the flare nut with a thin film of engine oil. Tighten the flare nut fully with your fingers.
   (2) Tighten the flare nut to the specified torque.
   Tightening Torque: 34.3 - 43.1 N·m (3.5 - 4.4 kgf-m)

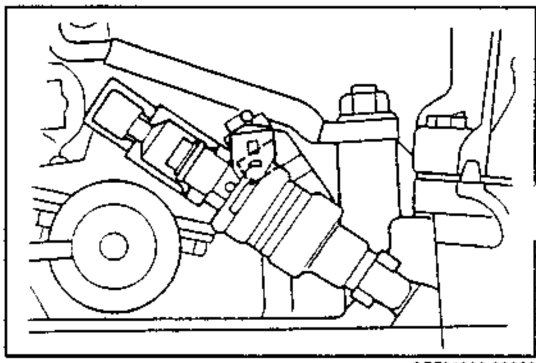

GEF00020-99999

3. When removing/installing the injector, observe the following instructions.
   (1) Do not reuse the O-ring.
   (2) When installing the O-ring to the injector, be careful not to damage the O-ring.
   (3) When connecting the injector to the delivery pipe, apply silicon oil to the O-ring of the injector in advance. (Never use engine oil, gear oil and so forth.)
   (4) When connecting the injector to the delivery pipe, be very careful not to damage the O-ring of the injector.



GEF00021-99999

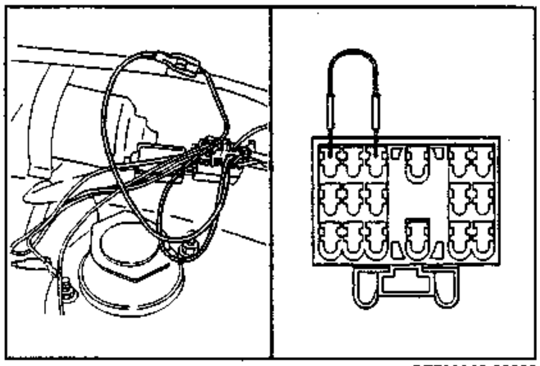
4. Install the injector to the delivery pipe and cylinder head, as shown in the figure.


GEF00022-99999

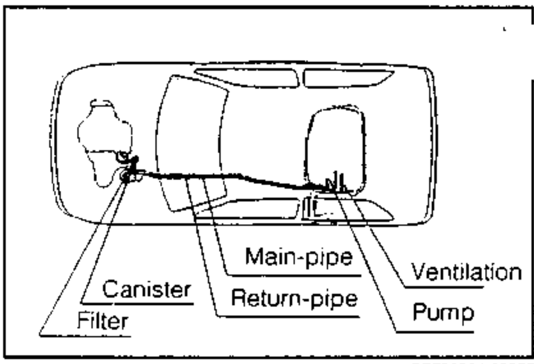
5. After completion of checks or repairs of the fuel system, be sure to ensure that no fuel leakage is present in the fuel system, following the procedure given below.
   (1) Detach the diagnosis terminal cap.
   (2) Short the fuel pump terminal with the ground terminal of the diagnosis connector, using the following SST.
   SST: 09991-87703-000

CAUTION:
- As for the terminals other than those specified, never allow them to be connected or shorted.

NOTE:
- The diagnosis connector is located at the fender apron section on the left side of the engine compartment.


GEF00023-99999

   (3) Turn ON the ignition switch. (with the engine in a stopped state)
   At this time, a fuel pressure of 250 kPa (2.55 kgf/cm^2) is being applied to the fuel line.
   Under this conditions, check the fuel line system for evidence of leakage.
   If any leakage is present at the fuel line system, repair leaky points. Recheck the system for leakage.



GEF00024-99999

   (4) Stop the engine.
   (5) Remove the SST from the diagnosis terminal.
   (6) Connect the diagnosis terminal cap to the diagnosis terminal.

GEF00025-00000

TROUBLE SHOOTING

TROUBLE SHOOTING HINTS

1. In most cases, engine troubles are attributable to systems other than the EFI system. Prior to starting the trouble shooting for the EFI system, check other systems.
   (1) Power supply
   - Battery voltage
   - Fuse blown
   - Fusible link blown

   (2) Body ground
   (3) Fuel supply
   - Fuel leakage
   - Fuel filter clogged
   - Fuel pump malfunctioning

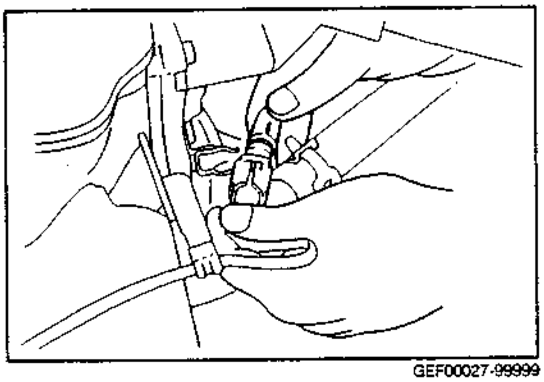
   (4) Ignition system
   - Spark plugs faulty
   - Spark plug wires faulty
   - Distributor and igniter faulty
   - Ignition coil faulty

   (5) Air induction system
   - Admission of air

   (6) Others
   - Ignition timing adjusted improperly
   - Idle speed adjusted improperly
   - Idle up control VSV malfunctioning
   - etc.

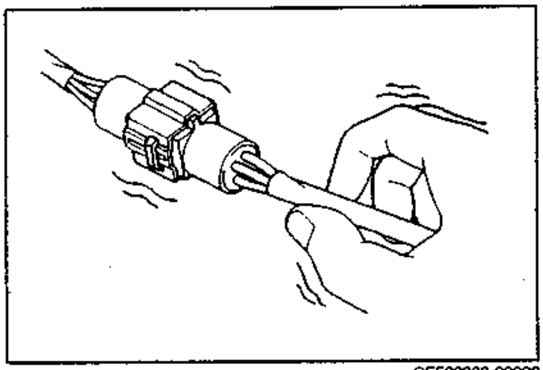
GEF00026-00000

2. Most of troubles related to the EFI system are merely caused by poor wire connections.
   Ensure that connectors are connected securely.
   Check connectors, being careful as to the following points.
   (1) Visually inspect that terminals are not bent.
   (2) Ensure that connectors are securely connected and locked.



GEF00027-99999

   (3) Check to see if the malfunction phenomenon takes place when applying light vibration to the connector or the wire connected to the connector.

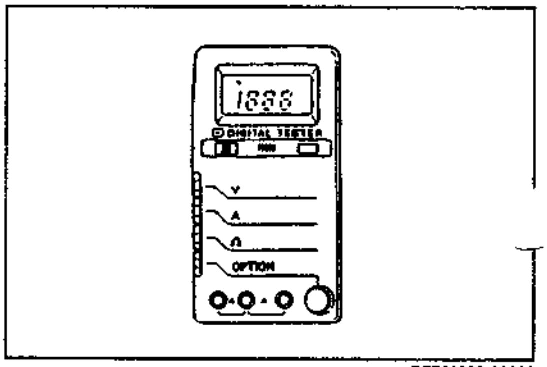


GEF00028-99999

3. Prior to replacing the ECU, thoroughly perform the trouble shooting for possible items other than the ECU.
   The ECU is a reliable, but an expensive part.
   Even when the ECU has been replaced according to the check results of the trouble shooting and the relevant malfunction has been remedied, be sure to reinstall the old ECU so as to confirm that the malfunction was obviously caused by the faulty ECU.

GEF00029-00000

4. For the trouble shooting, use a volt/ohmmeter whose internal resistance is 10 kΩ/V or more.
   Use of a volt/ohmmeter whose internal resistance is less than 10 kΩ/V may cause an ECU malfunction or wrong diagnosis.
   Furthermore, be sure to employ a meter whose resolution is 0.1 V or more, 0.5 Ω or more and whose accuracy is ±2 % or more.

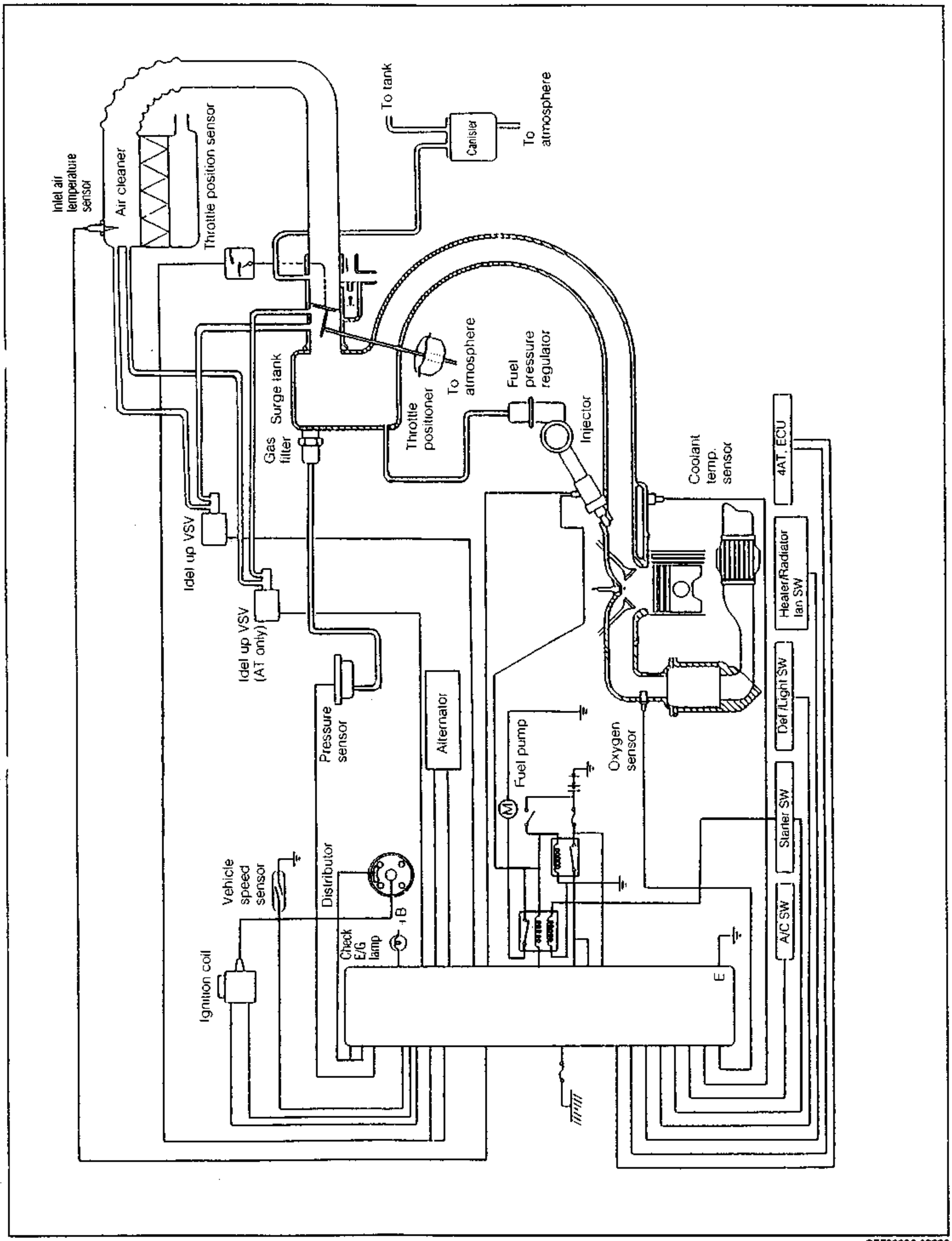


GEF00030-99999

5. In this trouble shooting, no consideration has been made to any displacement of timing belt teeth. Hence, if the trouble persists even after the trouble shooting has been carried out, check to see if the timing belt exhibits any tooth skipping.

GEF00031-00000

SYSTEM DESCRIPTION



GEF00032-99999

TROUBLE SHOOTING PROCEDURE

1 Engine will not crank or cranks slowly

Check indicator lamps in the combination meter is glows when ignition switch is turn on

- NO →
  1. Battery
     (1) Connection
     (2) Terminal voltage
  2. Fusible links or fuses
  3. Ignition switch
- OK ↓

Check circuit opening relay sound when ignition switch is turn START

- NO →
  1. Battery
     (1) Connection
     (2) Terminal voltage
  2. Fusible links or fuses
  3. Ignition switch
  4. Circuit opening relay
  5. Shift position switch (A/T only)
  6. Starting system wiring harness/connection
- OK ↓

Check starter motor

- NO GOOD → Starter motor replace
- OK ↓

Check engine damage

GEF00033-00000

2 Engine will not start (Engine cranks normally)

Check fuel gauge

- Lower position → Fuel is present in the tank
- OK ↓

Check fuel pump operating

- NO GOOD →
  1. Fusible links or fuses
  2. Wiring/connections
  3. Circuit opening relay
  4. Fuel pump
  5. ECU.
- OK ↓

Check if no water stands in the bottom of fuel tank → Fuel drain

- OK ↓

Check diagnosis system output code → Perform trouble shooting according to diagnosis codes

- OK ↓

Continued

GEF00034-00000

Check	Action if not OK
Check injector operating sound during cranking	1. Wiring/connections for injector 2. Injector 3. Fuel pressure
OK ↓	
Check ignition spark	1. Fusible links or fuses 2. Wiring/connections 3. Spark plugs/gap 4. Spark plug wires 5. Distributor 6. Ignition coil/igniter
OK ↓	
Check ignition timing	1. Timing 0° BTDC at cranking (Short the test terminal) 2. ECU
OK ↓	
Check compression	1. Pressure Approx. 103 kPa (10.5 kgf/cm^2) at cranking or more 2. Valve clearances
OK ↓	
Check throttle body	1. Air valve 2. Throttle positioner 3. Throttle adjusting screw 4. Throttle sensor
OK ↓	
Check PCV system	1. PCV valve/hoses
OK ↓	
Check ECU.	

GEF00035-00000

3 Engine stalls while idling

Check	Action if not OK
Check fuel gauge	Fuel is present in the tank
OK ↓	
Check if no water stands in the bottom of fuel tank	Fuel drain
OK ↓	
Check diagnosis system output code	Perform trouble shooting according to diagnosis codes
OK ↓	
Check idle speed	1. VSV for idle up control 2. Wiring/connections 3. Water temperature sensor circuit
OK ↓	
Check throttle body	1. Air valve 2. Throttle positioner 3. Throttle adjusting screw 4. Throttle position sensor
OK ↓	
Check ECU.	

GEF00036-00000

4 Engine idle speed will not drop

- Check diagnosis system output code → Perform trouble shooting according to diagnosis codes
  - OK
- Check throttle body →
  1. Air valve
  2. Throttle positioner
  3. Throttle valve
  4. Throttle position sensor
  - OK
- Check idle speed control →
  1. Idle up control VSV
  2. Wiring/connections
  3. Water temperature sensor
  4. Headlight switch circuit
  5. Heater fan switch circuit
  6. Defogger switch circuit
  7. Radiator fan motor circuit
  8. Air conditioner switch circuit
  - OK
- Check ECU.

GEF00038-00000

5 Rough idling

- Check diagnosis system output code → Perform trouble shooting according to diagnosis codes
  - OK
- Check throttle body → Throttle position sensor
  - OK
- Check idle speed control →
  1. Idle speed control circuit
  2. Idle up control VSV
  - OK
- Check ECU.

GEF00039-00000

6 Poor driveability

- Check diagnosis system output code → Perform trouble shooting according to diagnosis codes
  - OK
- Check air cleaner element → Air cleaner element
  - OK
- Check throttle body →
  1. Throttle position sensor
  2. Wiring/connections

Continued

GEF00040-00000

Check fuel pressure	1. Fuel pump 2. Fuel filter 3. Fuel pressure regulator
OK ↓	
Check injector fuel flow rate	Injector-Injection condition/leakage
OK ↓	
Check spark at plugs	1. Spark plugs 2. Spark timing 3. Battery terminal voltage (Spark voltage)
OK ↓	
Check compression	1. Compression pressure 2. Gasket blown out 3. Valve clearance
OK ↓	
Check ECU.	

GEF00041-00000

DIAGNOSIS SYSTEM

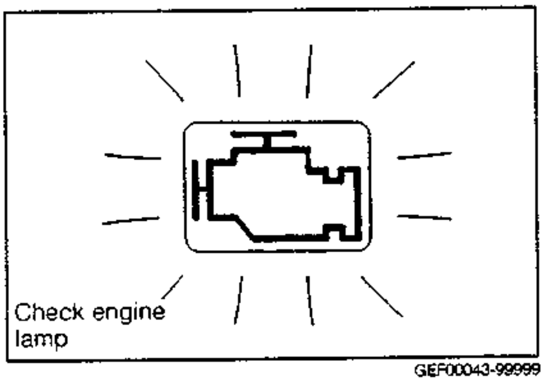
DESCRIPTION

A self-diagnosis system is built in the ECU. If any abnormality should occur in the signal systems of various sensors, the self-diagnosis system memorizes the malfunction code number in the ECU. In respect to important abnormalities, the check engine lamp at the instrument panel goes on, thus warning the driver of the abnormality.
When the abnormality is cleared, the check engine lamp goes out.
When the Test terminal of the diagnosis connector is shorted with the ground terminal, the malfunction code number that has been memorized in the ECU will be indicated in a form of blinking of the check engine lamp in the instrument panel.
This memorized malfunction code number is erased when the battery ground cable is disconnected from the negative (–) terminal of the battery, or when the back-up fuse in the relay block assembly is disconnected with the ignition key switch turned OFF.

GEF00042-00000

Check of "Check Engine" warning light

1. When the ignition switch is turned ON, the check engine lamp goes on.
   (Engine is under a stopped state.)
2. When the engine starts, the check engine lamp goes off.
   If the check engine lamp remains illuminated, it indicates that the diagnosis system has detected system malfunctions.



GEF00043-99999

Output of diagnosis codes

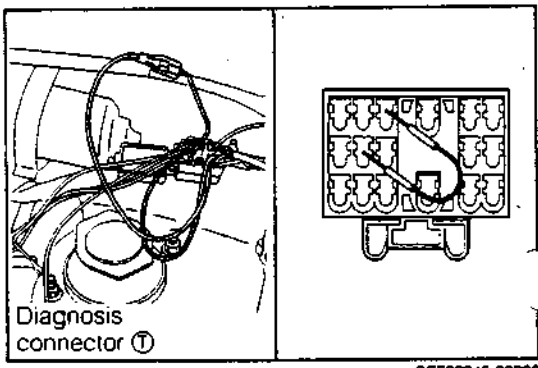
1. Initial conditions
   (1) Battery voltage of 11 volts or more
   (2) Throttle valve fully closed
   (3) All accessory switches turned OFF

GEF00044-00000

2. Short the Test terminal of the diagnosis connector with the ground terminal, using the following SST.
   SST: 09991-87703-000

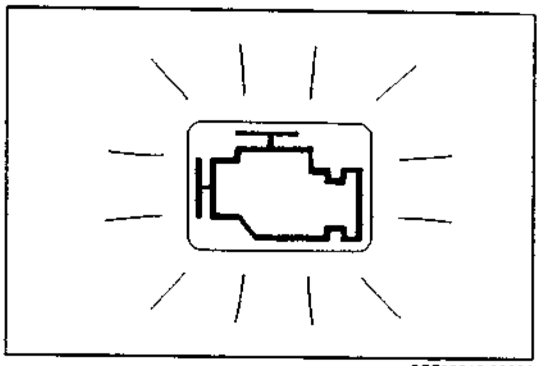
   NOTE:
   - The diagnosis connector is located at the fender apron section on the left side of the engine compartment.

   CAUTION:
   - Care must be exercised to ensure that no connection is made on terminals except for those specified.



GEF00045-99999

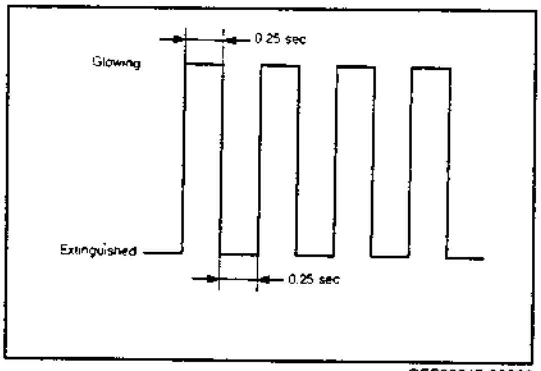
3. Set the ignition switch to the ON position.
   At this time, be careful not to start the engine.
4. Read the diagnosis code by observing the blinking number of the check engine lamp.
   NOTE:
   - If the check engine lamp fails to blink, it is likely that the ECU is malfunctioning. Hence, proceed to the inspection of the diagnosis system circuit.



GEF00046-99999

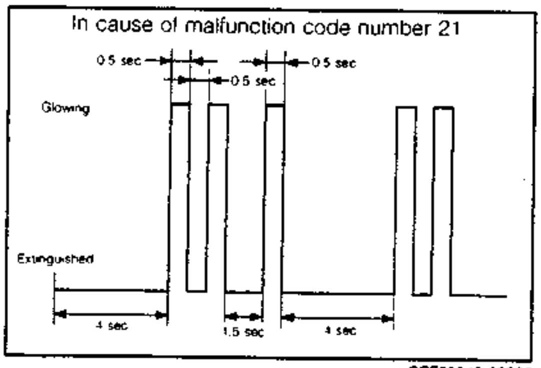
Output of diagnosis code

(1) Indication of normal code
The engine check lamp glows for 0.25 second, 0.25 second later after the ignition switch has been turned ON. After a lapse of 0.25 second, the engine check lamp again glows for 0.25 second.
Then, this pattern will be repeated.



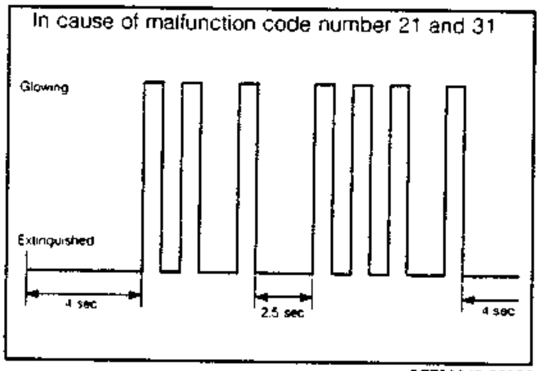
GEF00047-99999

(2) Indication of malfunction code
- When a single malfunction code is indicated:
  The diagnosis code is composed of two digits. These two numbers are indicated by blinking of the check engine lamp. Four seconds later after the ignition switch has been turned ON, the check lamp indicates first the number of the tens digit of the diagnosis code by glowing the same times as the number. The lamp glows for 0.5 second each time and then it is extinguished for 0.5 second. After a pause of 1.5 seconds, the check lamp indicates the number of the units digit of the diagnosis code by glowing the same times as the number. The lamp glows for 0.5 second each time and then it is extinguished for 0.5 second. Then, this pattern will be repeated after a pause of 4 seconds.



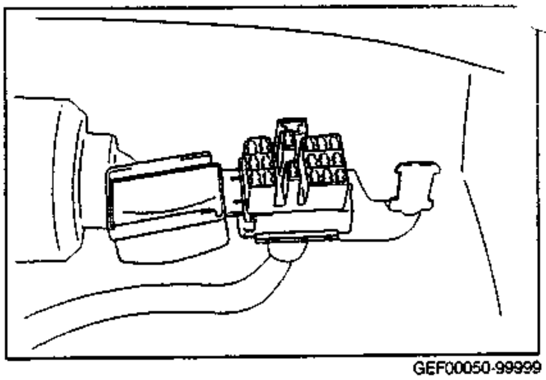
GEF00048-99999

- When plural malfunction codes are indicated:
  In cases where plural malfunction codes have been detected, the two-digit diagnosis codes are indicated in the sequence of the code number, starting from a smaller number. Each diagnosis code is indicated in the above described pattern. A pause of 2.5 seconds occurs between the outputs of respective diagnosis codes, thus separating one from the others. After all of the plural diagnosis codes that have been detected are indicated, the check engine lamp is extinguished for four seconds. Then, the detected plural diagnosis codes will be indicated again.



GEF00049-99999

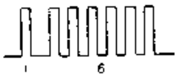
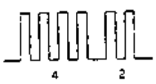
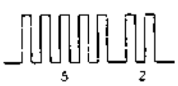
5. After the diagnosis codes have been read, remove the SST at the diagnosis connector.



GEF00050-99999

IAGNOSIS CODE

When the diagnosis system detects malfunctions, the check engine lamp will go on without the diagnosis connector test terminal shorted.

Code NO.	Number of glowing of check engine lamp	Diagnosis item	Diagnosis contents	Trouble area	See page
13		Revolution signal	When Ne and/or G signal is not inputted within a few seconds after engine starts cranking.	1. Distributor circuit 2. Distributor 3. ECU	EF–67 EF–70
16		Ignition signal	No ignition confirmation signal is inputted.	1. Ignition circuit (+B, IGf) 2. Igniter 3. ECU	EF–67
21		Oxygen sensor signal and/or fuel system	When the oxygen sensor signal circuit becomes open or shorted.	1. Oxygen sensor circuit 2. Oxygen sensor 3. ECU 4. Fuel system	EF–62
31		Pressure sensor	When the signal from pressure sensor becomes open or shorted.	1. Pressure sensor circuit 2. Pressure sensor 3. ECU	EF–52
41		Throttle position sensor signal	When the throttle position sensor signal circuit becomes open or shorted.	1. Throttle position sensor circuit 2. Throttle position sensor 3. ECU	EF–44 EF–48
42		Water temperature sensor	When the signal from the water temperature sensor circuit becomes open or shorted.	1. Water temperature sensor circuit 2. Water temperature sensor 3. ECU	EF–39
43		Intake air temperature sensor signal	When the intake air sensor signal circuit becomes open or shorted.	1. Air temperature sensor circuit 2. Air temperature sensor 3. ECU	EF–42
51		Switch signal	When the air conditioner is turned ON, the idle switch is turned OFF or the power switch is turned OFF with the diagnosis connector terminal T shorted. However, no memorizing will take place.	1. Air conditioner switch circuit 2. Air conditioner switch 3. Idle switch circuit 4. Power switch circuit 5. Throttle position sensor 6. ECU	EF–44 EF–48 EF–79
52		Vehicle speed sensor signal	When the vehicle speed sensor signal circuit becomes open or shorted.	1. Vehicle speed sensor circuit 2. Vehicle speed sensor 3. ECU	EF–71
54		Starter signal	When the starter signal becomes open or shorted. However, this cord may be memorized when the vehicle is started by being pushed.	1. Starter signal circuit 2. ECU	EF–72

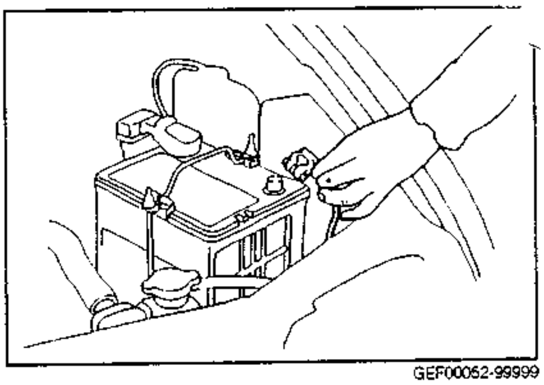
GEF00051-99999

Canceling Diagnosis Code

To erase the diagnosis codes memorized in the ECU after malfunctions have been repaired, disconnect the battery ground cable from the negative (–) terminal of the battery for at least 10 seconds with the ignition switch turned OFF. [When ambient temperature is about 20°C.]

CAUTION:

- Disconnection of the battery (–) terminal erases not only the diagnosis codes of the ECU for the EFI, but also the diagnosis codes of the AT and ABS systems. Therefore, be sure to confirm whether or not diagnosis codes of the AT and ABS systems are present before the diagnosis code for the EFI is erased.



GEF00052-99999

AIL-SAFE FUNCTION

The fail-safe function has been set for the following five items. The fail-safe function operates when the following failure occurs in these items or when any diagnosis code is detected. Thus, the fail-safe function is a function whereby the engine is operated, based on a control program that has been pre-inputted to the ECU.

Item	Evaluation condition	Fail-safe function
Pressure sensor signal	• When input voltage from pressure sensor of 4.8V or more or 0.6V or less is detected	(At time of first detection) • Data will not be renewed. Engine is controlled according to data before detection. (When this signal is detected consecutively two times or more) • Engine is controlled with negative pressure of intake manifold set to –54.7 kPa (–410 mmHg).
	• When failure is memorized into ECU as diagnosis code	• Engine is controlled, based on backup data that have been programmed in advance.
Ignition signal	• When no ignition confirmation signal is detected consecutively four times or more	• Fuel injection will be stopped.
Throttle position sensor signal (AT vehicle only)	• When input voltage from throttle position sensor of 4.8V or more or 0.2V or less is detected	(At time of first detection) • Data will not be renewed. Engine is controlled according to data before detection. (When this signal is detected consecutively two times or more) • Engine is controlled with throttle opening angle set to 25°.
Water temperature sensor signal	• When input value from water temperature sensor indicates that temperature is –50°C or less or 139°C or more	(At time of first detection) • Data will not be renewed. Engine is controlled according to data before detection. (When this signal is detected consecutively two times or more) • Engine is controlled, based on backup data that have been programmed in advance.
Intake air temperature sensor signal	• When input value from intake air temperature sensor indicates that temperature is –50°C or less or 139°C or more	(At time of first detection) • Data will not be renewed. Engine is controlled according to data before detection. (When this signal is detected consecutively two times or more) • Engine is controlled with data of intake air temperature set to 20°C.

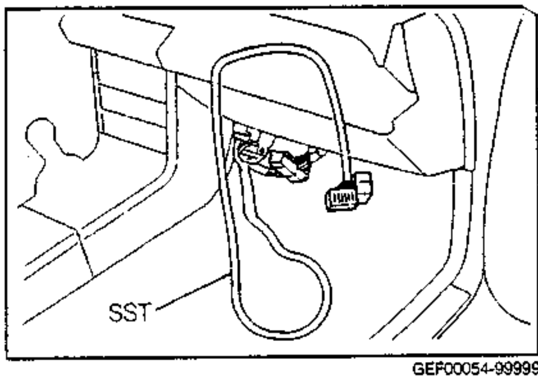
The fail-safe function operates for the aforesaid items and under the evaluation conditions described above. Even when no diagnosis code is memorized in the ECU, there is the possibility that open wire or short circuit is taking place at the sensor, connector or wiring. When conducting the check, pay utmost attention as to open wire, short circuit and so forth.

GEF00053-00000

TROUBLE SHOOTING WITH VOLT/OHMMETER

PREPARATION OF TROUBLE SHOOTING

1. Disconnect the battery ground cable from the negative (–) terminal of the battery.
2. Remove the front floor side cover.
3. Disconnect the engine harness from ECU.
4. Connect the following SST between the engine wire and the ECU.
   SST: 09842-87706-000



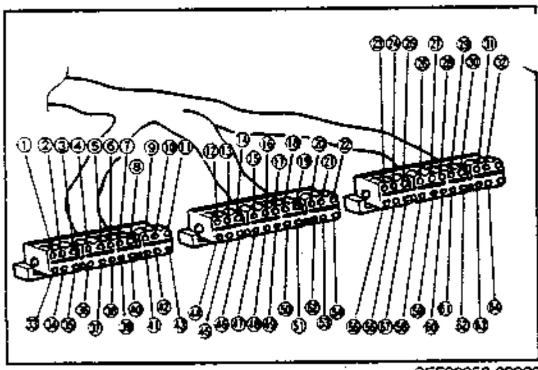
GEF00054-99999

5. Reconnect the battery ground cable to the negative (–) terminal of the battery.
   CAUTION:
   - After completion of the inspection, before the SST is removed, be sure to disconnect the battery ground cable from the negative (–) terminal of the battery.
   - After the engine harness has been connected to the ECU, reconnect the battery ground cable to the negative (–) terminal of the battery.
   - Before using the SST, be sure to check to see if short or open wire exists between the terminals.

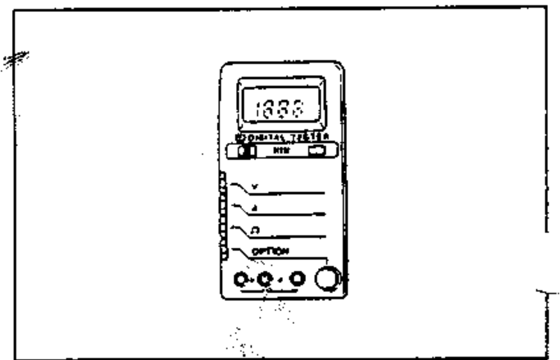
GEF00055-00000

CHECK PROCEDURE FOR EFI SYSTEM

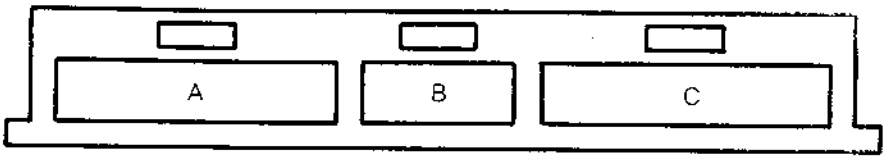
NOTE:
1. The EFI circuit can be checked by measuring the resistance and voltage at the SST terminals.
2. The voltage check should be conducted under a condition where all connectors are connected.
3. Prior to the check, ensure that the battery voltage is 11V or more when the ignition switch is turned ON.
4. If any problem is encountered during this check, see the section under "Trouble Shooting for EFI Electronic Circuit with Volt/Ohmmeter."


GEF00056-99999

CAUTION:
- For the trouble shooting, use a volt/ohmmeter whose internal impedance is more than 10 kΩ/V.
  Use of a volt/ohmmeter whose internal resistance is 10 kΩ/V or less may cause ECU malfunction and/or misjudgment.
- No terminal except for the specified terminal should be connected. Failure to observe this caution may cause ECU malfunction.


GEF00057-99999

Arrangement of input/output terminals



(ECU side)

11	10	9		7	6	5	4	3	2	1	C
43	42				38		36	35	34	33	

		17	16	15	14	13	12	B
			48	47	46	45	44	

32	31		29	28		26	25	24	23	22	21	20	A
64						58	57	56		54		52	

(Connector side)

C	1	2	3	4	5	6	7		9	10	11
	33	34	35	36	37	38				42	43

B	12	13	14	15	16	17		
	44	45	46	47	48			

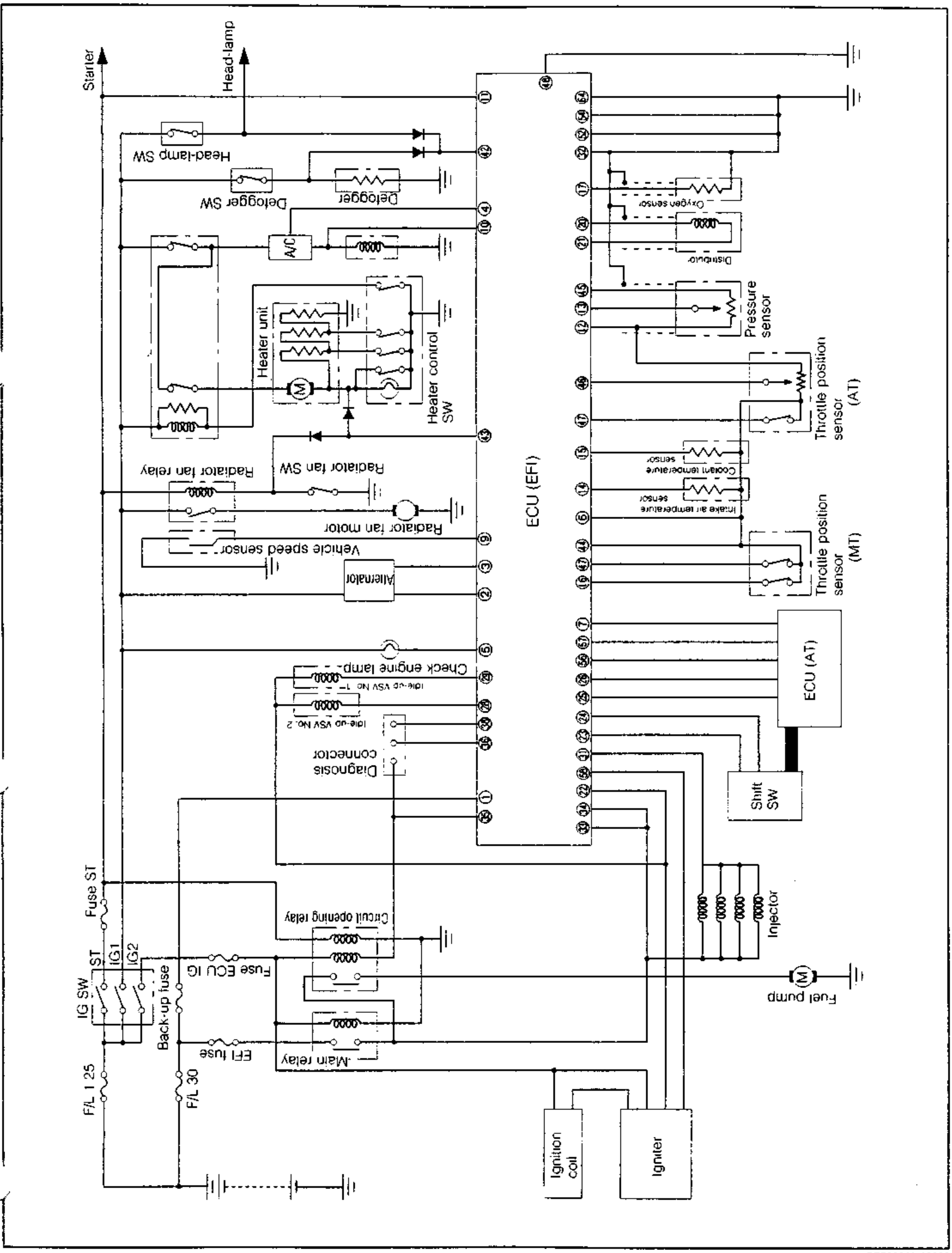
A	20	21	22	23	24	25	26		28	29		31	32
	52		54		56	57	58						64

GEF00058-99999

No.	Contents of connection	No.	Contents of connection
1	Battery (Back-up power supply)	33	Power supply
2	Charging system cut-off relay	34	Power supply
3	Charging system control signal	35	Circuit opening relay (fuel pump)
4	Air conditioner cut-off signal	36	VF monitor terminal
5	Check engine lamp	37	—
6	A/T·M/T detecting terminal	38	Test terminal
7	Torque reduction control signal	39	—
8	—	40	—
9	Speed sensor	41	—
10	Air conditioner switch	42	Electrical load signal No. 2
11	Starter switch	43	Electrical load signal No. 1
12	Sensor system power supply	44	Sensor system ground
13	Pressure sensor	45	Sensor system ground
14	Intake air temperature sensor	46	Throttle position sensor
15	Coolant temperature sensor	47	Throttle position switch (Idle)
16	Throttle position switch (Power)	48	ECU case ground
17	Oxygen sensor	49	—
18	—	50	—
19	—	51	—
20	Crank angle sensor	52	Power system ground
21	Crank angle sensor ground	53	—
22	Ignition monitor	54	Power system ground
23	Parking signal	55	—
24	Neutral signal	56	Sensor system ground
25	Coolant temperature sensor signal	57	Throttle position sensor signal
26	Throttle position sensor power supply	58	Ignition signal
27	—	59	—
28	Idle-up control VSV No. 2	60	—
29	Idle-up control VSV No. 1	61	—
30	—	62	—
31	Injector	63	—
32	Power system ground	64	Power system ground

GEF00059-00000

WIRING DIAGRAM



GEF00060-99999

ECU (Electronic Control Unit)

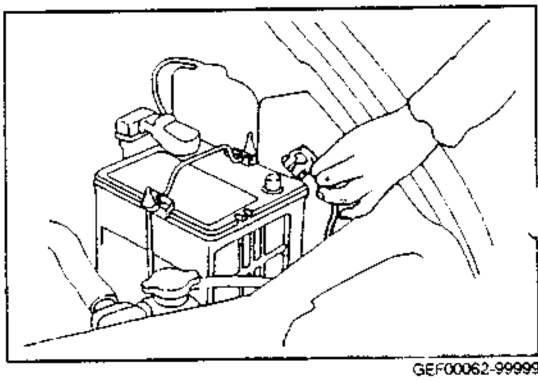
NOTE:
- Even when the replacement of the ECU is required in each check, make sure that the ECU malfunction has not been caused by factors other than the ECU by carrying out the following checks. Then, proceed to replace the ECU.

GEF00061-00000

1. Measurement of ECU input/output voltage
   NOTE:
   - The wiring circuit of the EFI can be checked by measuring the voltage or resistance at ECU terminals.
   - The measurement of voltage should be conducted while all of the connectors are connected.
   - Make sure that the battery voltage is 11 volt or more when the ignition switch is turned ON.

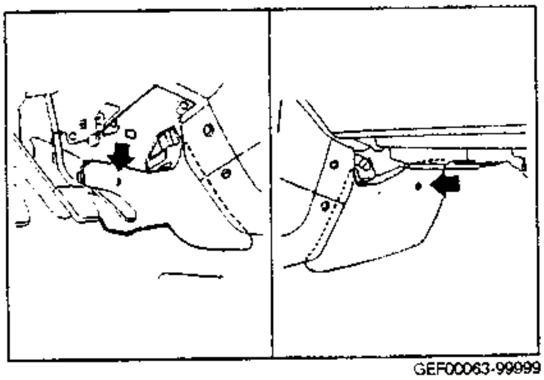
(1) Preparation of measurement

① Disconnect the ground cable terminal from the negative terminal (–) of the battery.



GEF00062-99999

② Remove the front floor side cover under the heater unit.

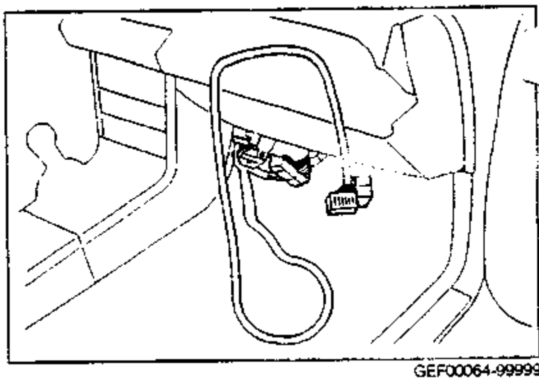


GEF00063-99999

③ Connect the SST between the ECU and the engine wire.

SST: 09842-87706-000

NOTE:
- Before the SST is installed, be sure to perform continuity test and short test between the SST terminals.



GEF00064-99999

④ Connect the ground cable terminal to the negative (–) terminal of the battery.

GEF00065-00000

(2) Measure the voltage or resistance between each specified terminal. Then, check that the measured voltage and resistance conform to the specifications. Perform the check and repair in accordance with the flow chart given below.

Step 1
Measure the voltage or resistance between the specified terminals in page EF–29.

BAD → Repair according to trouble causes.

OK ↓

Step 2
1. Disconnect ground cable terminal from negative (–) terminal of the battery
2. Disconnect the ECU side connector of the SST.
3. Pull out main relay from relay box.

↓

Check that there is continuity and no excessive resistance between relay box main relay terminal and SST terminal ㉝ and between relay box main relay terminal and SST terminal ㉞.

BAD → Replace engine wire.

OK ↓

Check that there is continuity and no excessive resistance between the engine ground and each of the SST terminals ㉝, ㉞ and ㉜.

BAD → Replace engine wire.

OK ↓

1. Install the main relay to the relay box.
2. Remove the SST from the engine wire.
3. Connect the engine wire to ECU.
4. Connect the ground wire terminal to the negative terminal of the battery.

OK ↓

Replace ECU.

NOTE:
- Even when the trouble has been solved by replacing the ECU, be sure to install the old ECU again. Thus, confirm that the trouble was attributable to the old ECU.

GEF00066-00000

Inspection of terminal voltage and resistance of ECU.

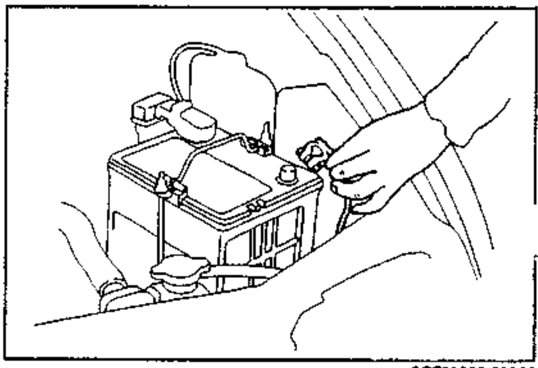
1. Measurement of ECU voltage

NOTE:

- The wiring circuit of the EFI can be checked by measuring the voltage and resistance at the ECU terminals.
- The measurement of voltage should be conducted while all of the connectors are connected.
- Make sure that the battery voltage is 11 volts or more when the ignition switch is turned ON.

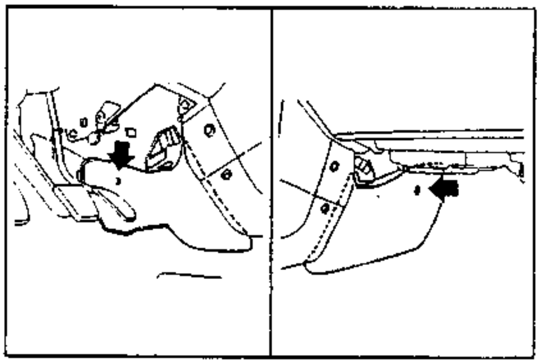
GEF00067-00000

(1) Disconnect the battery ground cable from the negative terminal (–) of the battery.



GEF00068-99999

(2) Remove the front floor side cover under the heater unit.



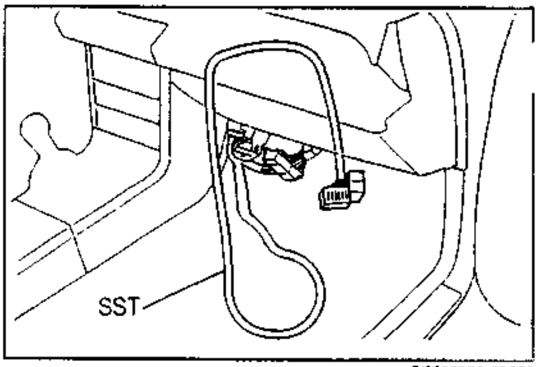
GEF00069-99999

(3) Connect the SST between the ECU and the engine wire.
SST: 09842-87706-000

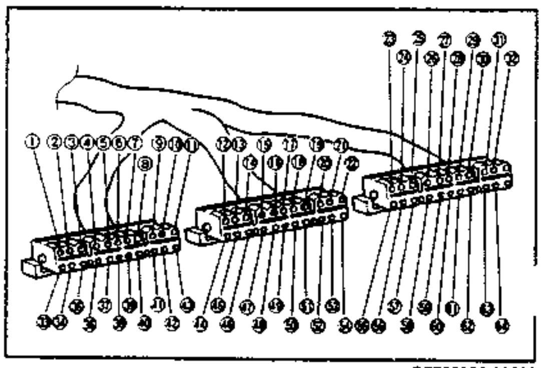
(4) Connect the battery ground cable to the negative terminal (–) of the battery.

NOTE:

- After completion of the inspection, before the SST is removed, be sure to disconnect the battery ground cable from the negative (–) battery terminal.
After the ECU and engine wire have been connected, reconnect the battery ground cable to the negative (–) battery terminal.



GEF00070-99999



GEF00000-99999

oltage at ECU connector

Terminal	STD voltage	Condition	
1 - 32	Approx. Battery voltage	All time.	
2 - 32	Approx. Battery voltage	When engine is running with ignition switch is turned ON.	
3 - 32	Approx. Battery voltage	When engine is running with ignition switch is turned ON.	
4 - 32	4.5 - 5.5V	Ignition switch turned ON	When air conditioner switch is turned ON
	Less than 2.5V	When quick acceleration is made with air conditioner switch turned ON (During full throttle operation).	
5 - 32	Less than 3.5V	Ignition switch turned ON	
	Approx. Battery voltage	When engine is running with ignition switch turned ON and diagnosis code is normal during diagnosis code check.	
6 - 32	Less than 3V	Ignition switch turned ON	In case of AT vehicle
	Approx. Battery voltage	Ignition switch turned ON	In case of MT vehicle
7 - 32	More than 4V	Ignition switch turned ON	
9 - 32	Change in voltage between 0 to 4.5 - 5.5V	Ignition switch turned ON	When vehicle is moving.
10 - 32	Approx. Battery voltage	When air conditioner switch is turned ON while engine is running.	
11 - 32	Less than 0.5V	All time.	
	9 - 15.5V	When ignition switch is set to ST position.	
12 - 45	4.5 - 5.5V	Ignition switch turned ON	
13 - 45	3.2 - 4.0V	Ignition switch turned ON	When atmospheric pressure is 101 kPa (760 mmHg)
14 - 44	0.9 - 3.0V	Ignition switch turned ON	Temperature of air in air cleaner is 20°C
15 - 44	0.1 - 0.7V	Ignition switch turned ON	Coolant temperature is 80°C
16 - 44	Approx. Battery voltage	Ignition switch turned ON (MT vehicle only)	Throttle valve is fully closed.
	Less than 3V		Throttle valve is fully opened.
17 - 32	Change in output voltage	When engine speed is held at 3000 rpm for two minutes after engine has fully warmed up.	
20 - 32	About 0.6V	Ignition switch turned ON	
21 - 32	About 0.6V	Ignition switch turned ON	
22 - 32	0.5 - 1.4V	Ignition switch turned ON	
23 - 32	Less than 3V	Ignition switch turned ON	When shift lever is in P-range
	Approx. Battery voltage		When shift lever is in a range other than P-range
24 - 32	Less than 3V	Ignition switch turned ON	When shift lever is in N-range
	Approx. Battery voltage		When shift lever is in a range other than N-range
25 - 32	Less than 1.5V	Ignition switch turned ON	Coolant temperature is below 32°C
	4.5 - 5.5V		Coolant temperature is above 45°C
26 - 56	4.5 - 5.5V	Ignition switch turned ON	
28 - 32	Approx. Battery voltage	Ignition switch turned ON	
	Less than 3.5V	When heater fan switch, headlamp switch, defogger switch and radiator fan switch is turned ON while engine is running	

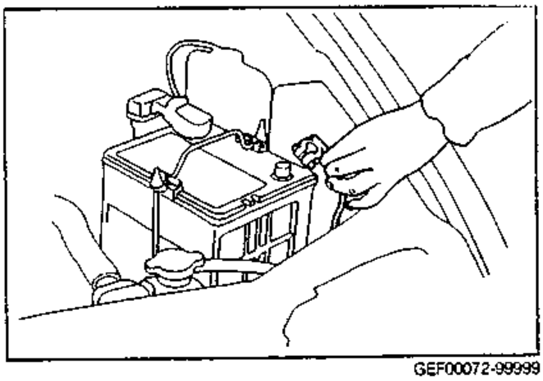
Terminal	STD voltage	Condition	
㉙ – ㉜	Approx. Battery voltage	Ignition switch turned ON	
	Less than 3.5V	After a lapse of at least 30 seconds after engine starting.	
㉛ – ㉜	Approx. Battery voltage	Ignition switch turned ON	
㉝ – ㉜	Approx. Battery voltage	Ignition switch turned ON	
㉞ – ㉜	Approx. Battery voltage	Ignition switch turned ON	
㉟ – ㉜	Approx. Battery voltage	Ignition switch turned ON	When engine is stopped.
	Less than 3.0V		When engine is running.
㊴ – ㊾	Approx. Battery voltage	Ignition switch turned ON	Test terminal OFF
㊷ – ㊾	Less than 3.0V	Ignition switch turned ON	When heater control switch is turned ON
㊸ – ㊾	Approx. Battery voltage	Ignition switch turned ON	When head-lamp and/or defogger switch is turned ON
㊻ – ㊹	0.3 - 0.9V	Ignition switch turned ON (AT vehicle only)	Throttle valve is fully closed.
	3.4 - 4.0V		Throttle valve is fully opened.
㊼ – ㊹	Less than 3.0V	Ignition switch turned ON	Throttle valve is fully closed.
	Approx. Battery voltage		Throttle valve is fully opened.
57 – 56	0.3 - 0.9V	Ignition switch turned ON (AT vehicle only)	Throttle valve is fully closed.
	3.4 - 4.0V		Throttle valve is fully opened.
58 – ㉜	0V	Ignition switch turned ON	
	AC 0.3 - 2.0V	When engine is running	

GEF00071-00000

Measurement of resistance of ECU

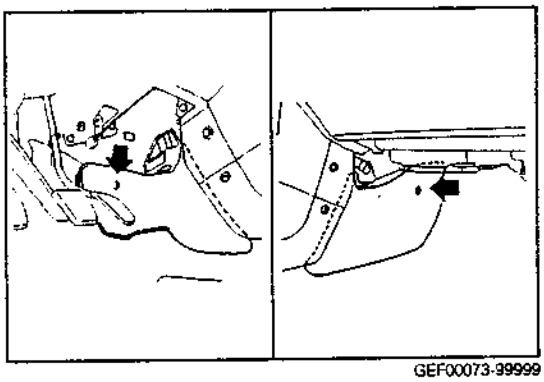
CAUTION:

- Be sure to conduct the resistance measurement at the SST terminals.



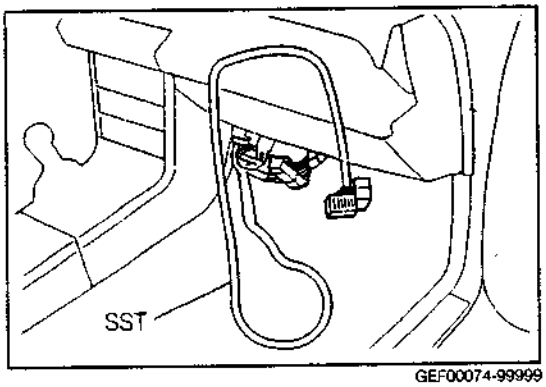
GEF00072-99999

(1) Disconnect the battery ground cable from the negative (–) terminal of the battery.
(2) Remove the front floor side cover under the heater unit.



GEF00073-99999

(3) Disconnect the engine wire from the ECU.
(4) Connect the SST to the engine wire side.
(Never connect the SST to the ECU side.)
SST: 09842-87706-000



GEF00074-99999

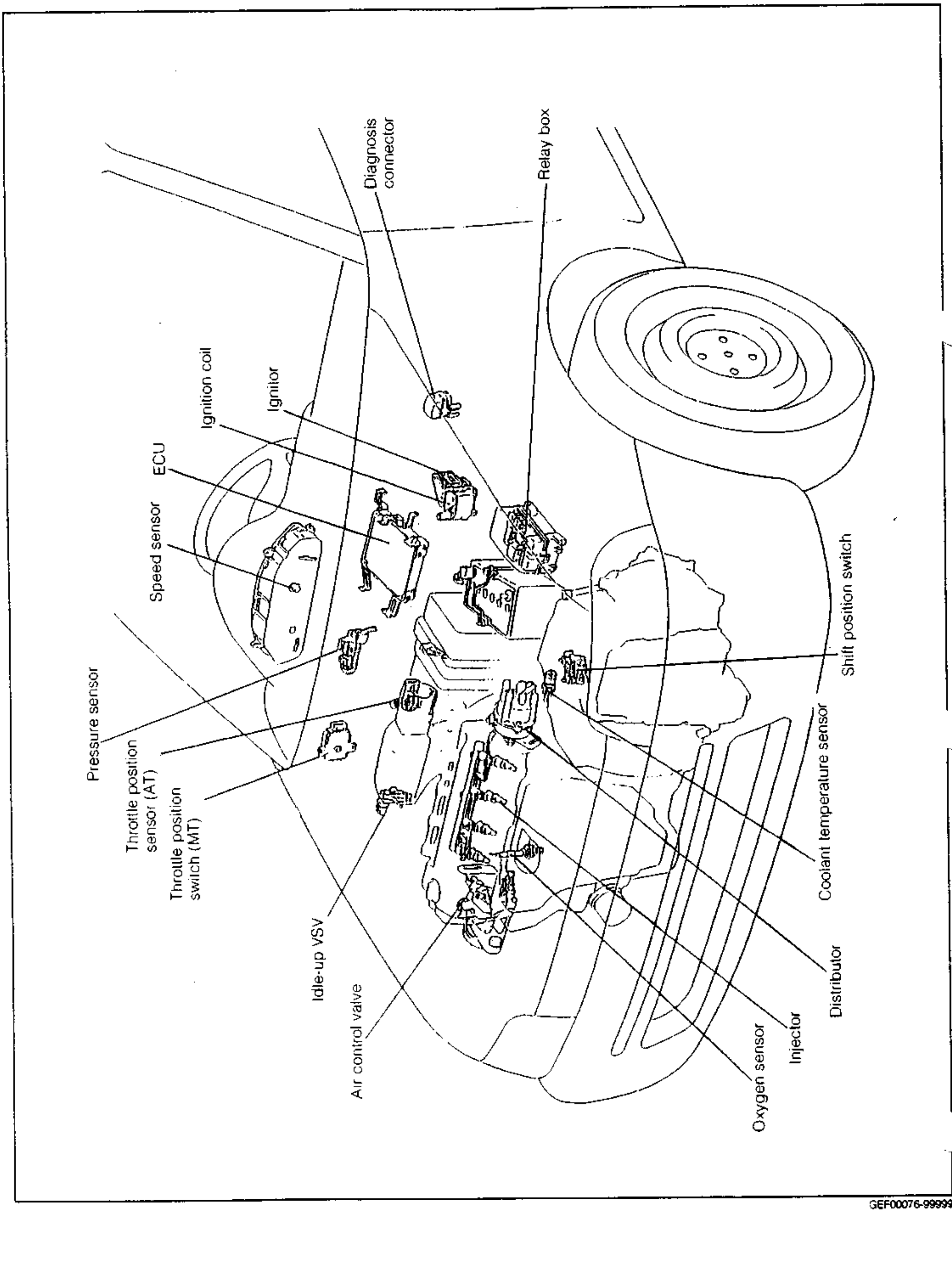
Resistance at ECU terminal

Terminal	Resistance	Condition
⑯ – ㊹	100 kΩ or more	Throttle valve is fully closed.
	2.5 kΩ or less	Throttle valve is fully opened.
⑯ – ㊹	About 0.32 kΩ	Coolant temperature is 80°C
⑭ – ㊹	About 2.45 kΩ	Temperature of air in air cleaner is 20°C
㊼ – ㊹	2.5 kΩ or less	Throttle valve is fully closed.
	100 kΩ or more	Throttle valve is fully opened.
㊻ – ㊹	About 0.4 kΩ	Throttle valve is fully closed.
	About 3.1 kΩ	Throttle valve is fully opened.

GEF00075-00000

ELECTRONIC CONTROL SYSTEM

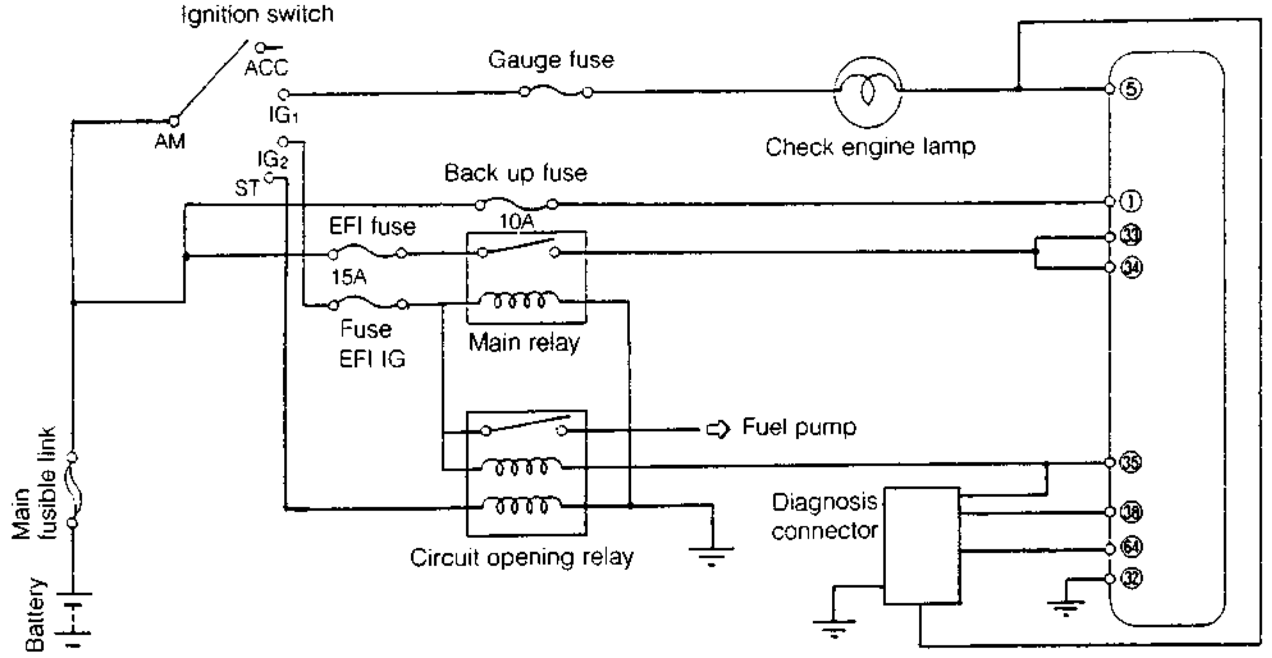
LOCATION OF ELECTRONIC CONTROL PARTS



GEF00076-99999

INSPECTION OF ECU CIRCUIT

Inspection of diagnosis system circuit



(For the terminal number, refer to page EF–24.)

GEF00077-99999

1st step

Check that check engine lamp goes on when ignition switch is turned ON.

- **YES** → System is normal.
- **NO** ↓

Check that check engine lamp goes on when terminal (38) of diagnosis connector is shorted with ground terminal using the following SST.

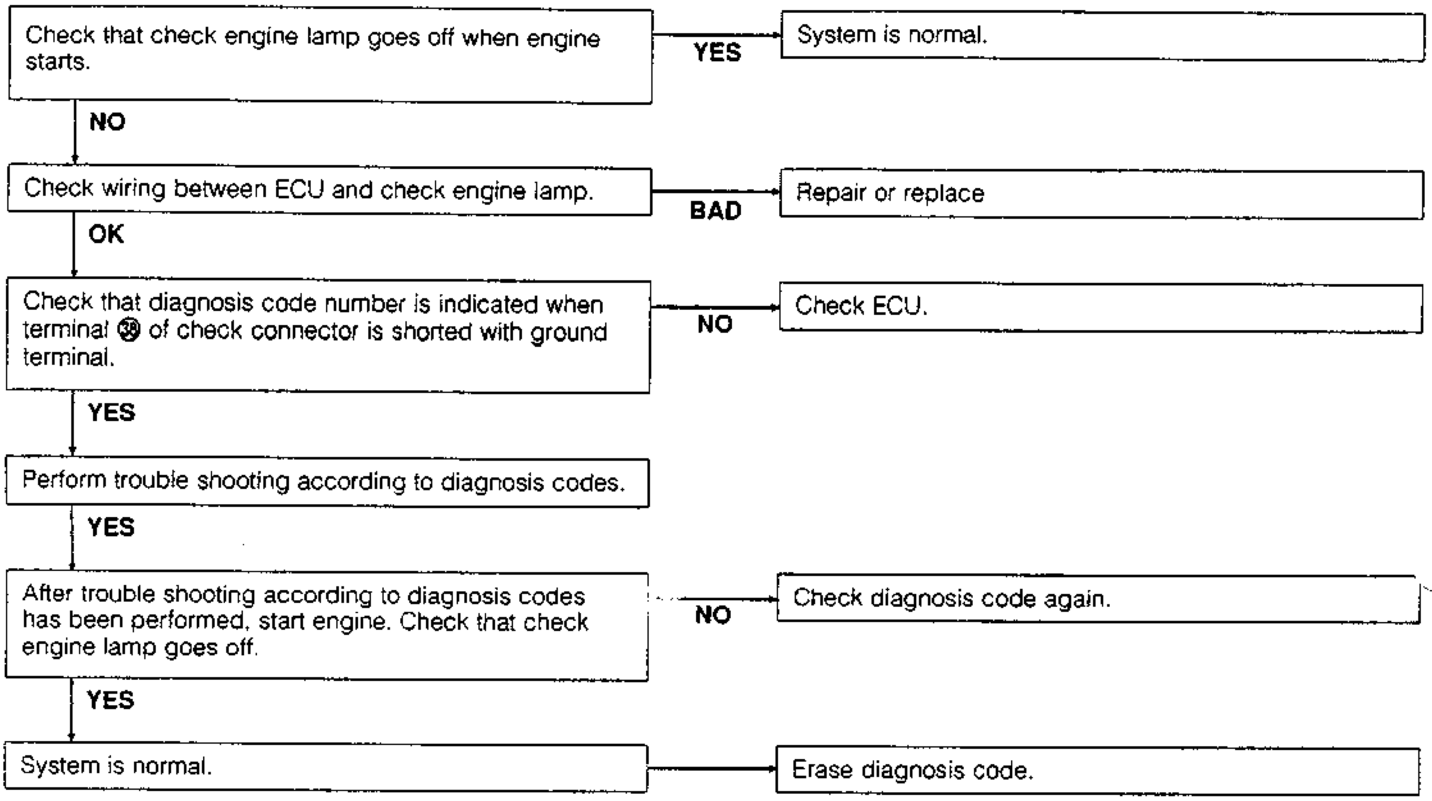
- **YES** → Check that there is continuity between ECU terminal (32) and body ground and between ECU terminal (64) and body ground.
  - **OK** → Check ECU.
  - **BAD** → Repair or replace
- **OK** ↓

Check bulb, fuse and wiring between ECU and ignition switch

- **BAD** → Repair or replace.

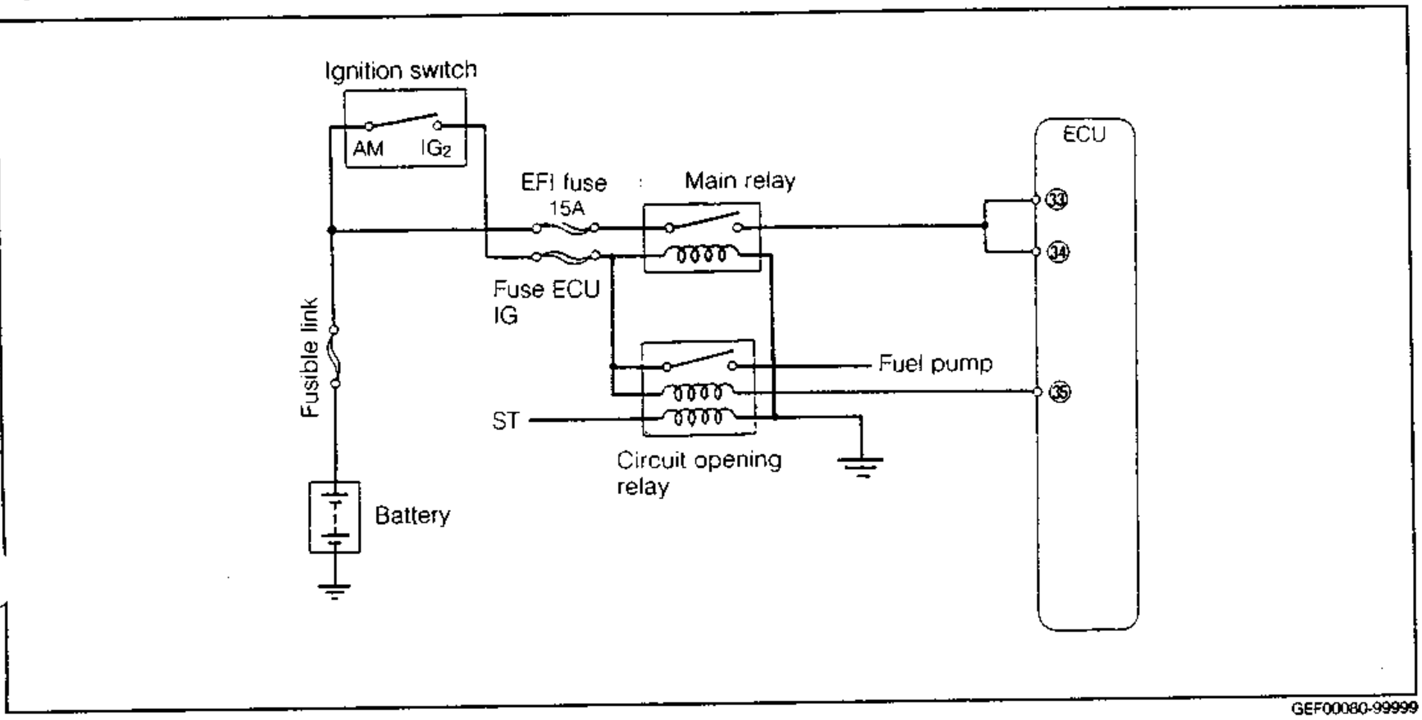
GEF00078-00000

2nd step



GEF00079-00000

MAIN RELAY



GEF00080-99999

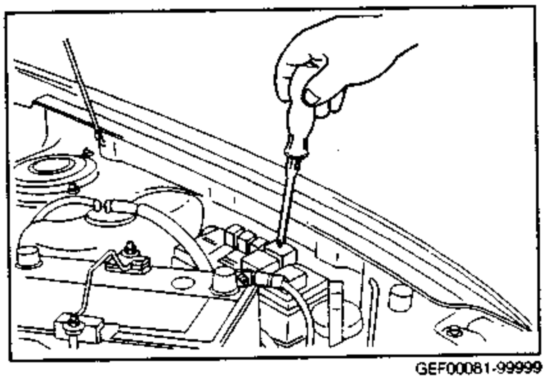
Inspection of EFI main relay

1. Check of main relay operation

   When the ignition switch is turned ON, check to see if the relay emits an operating sound. Or check to see if you will feel an operating vibration with a screwdriver or the like placed on the relay.

   CAUTION:

   - **The relay may become very hot during the operation. Hence, do not touch the relay with your hand.**



GEF00081-99999

2. Inspection of relay continuity

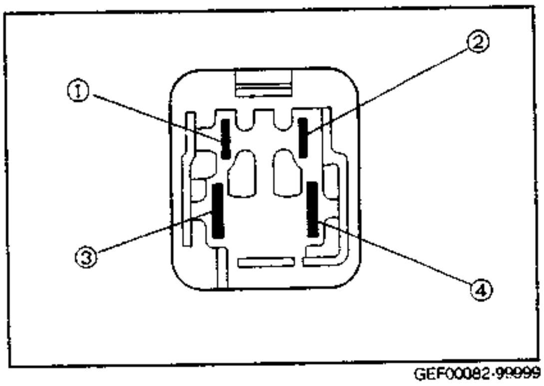
   (1) Check that there is the specified resistance between the terminals ① and ②.
   Resistance: 40 - 100 Ω

   (2) Check that there is no continuity between the terminals ③ and ④.

   (3) Check that there is no continuity between the terminals ① and ③ and also between the terminals ① and ④.

   (4) Check that there is no continuity between the terminals ② and ③ and also between the terminals ② and ④.

   If the continuity test results do not conform to specifications, replace the relay.



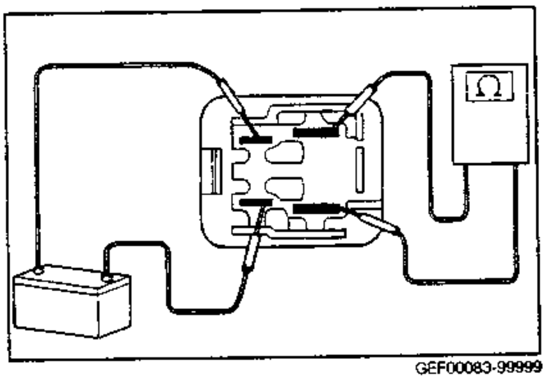
GEF00082-99999

3. Inspection of relay operation

   (1) Apply the battery voltage across the terminals ① and ②.

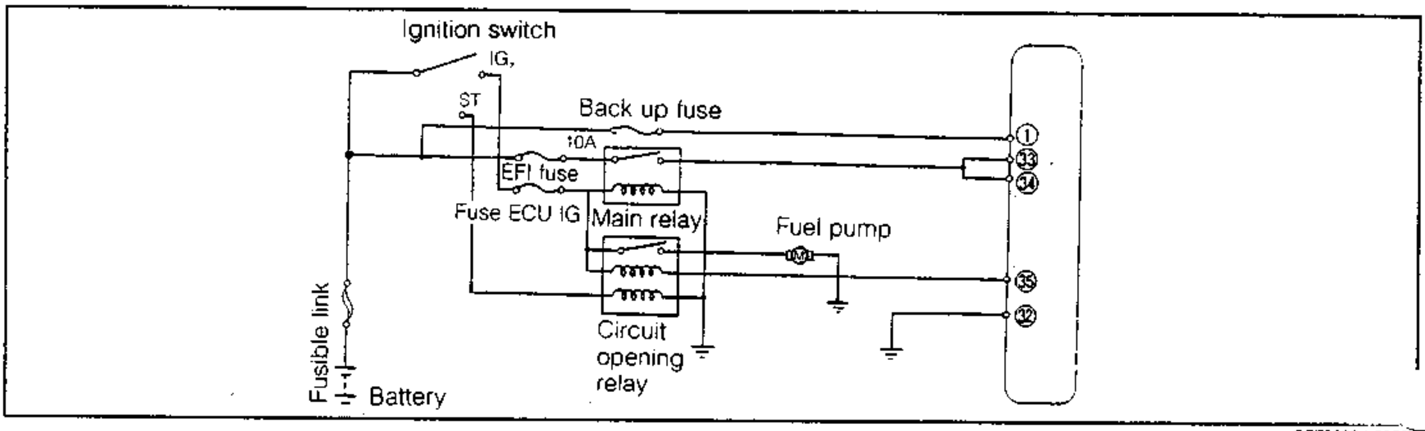
   (2) Check that there is continuity between the terminals ③ and ④.

   If the operation test results do not conform to specifications, replace the relay.



GEF00083-99999

Terminals	Trouble	Conditions	STD voltage
① - ㉜	No voltage	At all time	10 - 15.5
㉝ ㉞ - ㉜	No voltage	Ignition switch ON	10 - 15.5



GEF00084-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

- ① – ㉜

There is no voltage between SST terminals ① and ㉜.

Check that there is voltage between SST terminal ① and body ground.

NO / **OK**

(OK) Check wiring between SST terminal ㉜ and body ground.

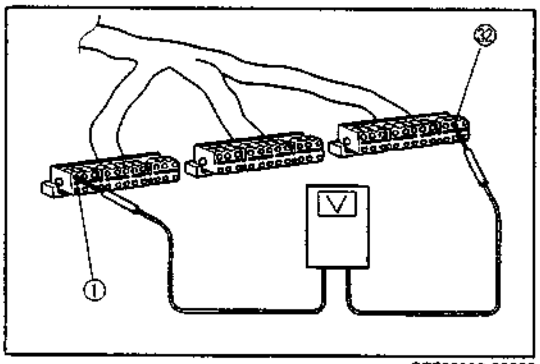
BAD

Repair or replace.

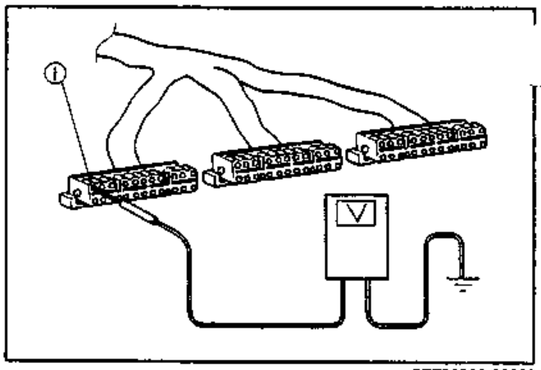
(NO) Check fuses, fusible links and wiring harness.

BAD

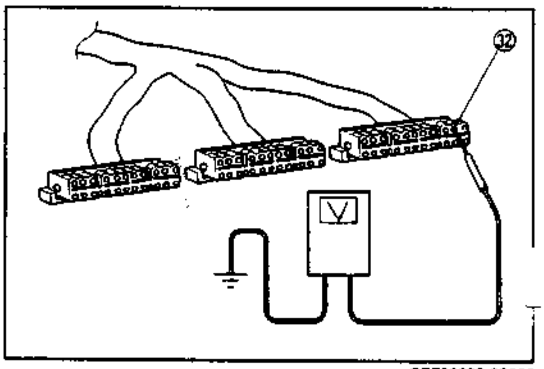
Repair or replace.



GEF00000-99999



GEF00000-99999



GEF00085-99999

㉝ or ㉞ – ㉜

There is no voltage between SST terminal ㉝ or ㉞ and ㉜.

OK

Check that there is voltage between SST terminal ㉝ or ㉞ and body ground when ignition switch is turned ON.

ON

Check wiring between ECU terminal ㉜ and body ground.

BAD

Repair or replace.

Check fuses, fusible links and wiring harness.

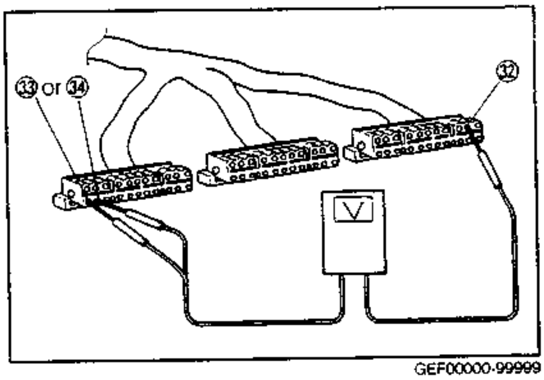
OK **BAD**

Repair or replace.

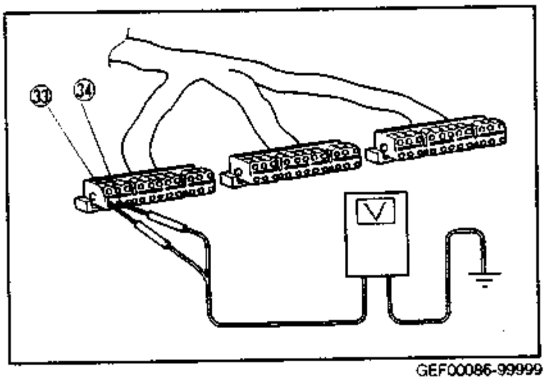
Check EFI main relay

BAD

Replace.

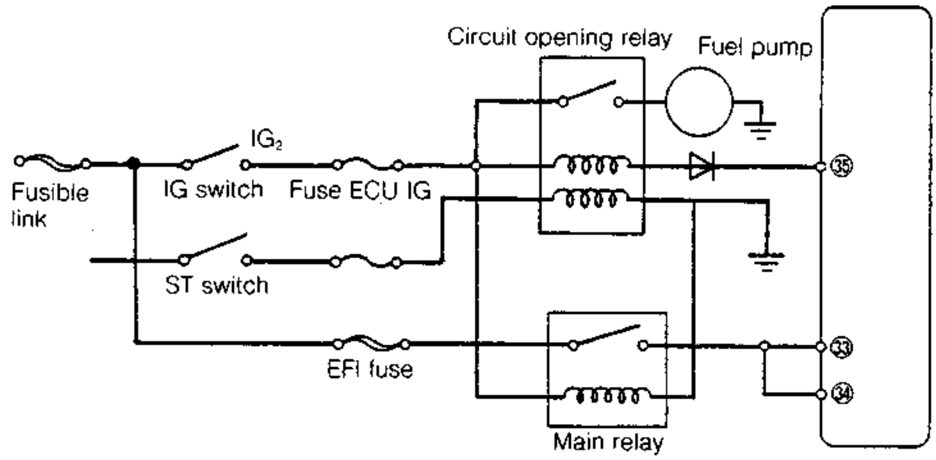


GEF00000-99999



GEF00086-99999

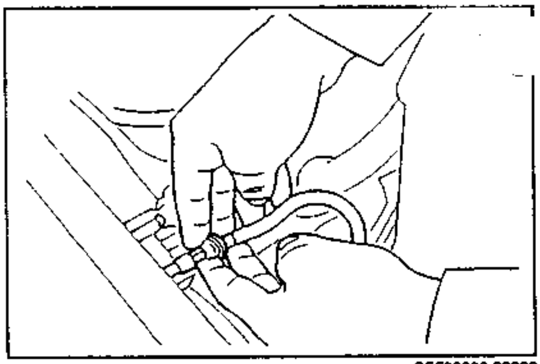
CIRCUIT OPENING RELAY



GEF00087-99999

Inspection of circuit opening relay

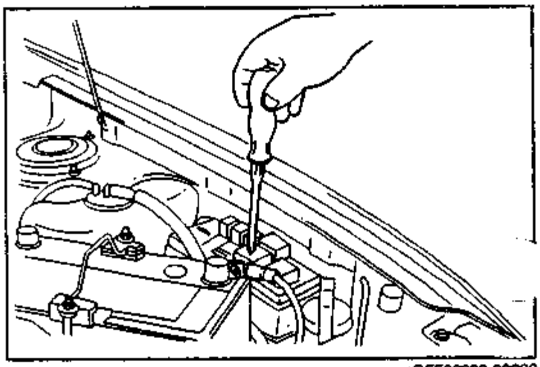
1. Check of fuel pump operation
   (1) Disconnect the terminal ST of the starter.
   CAUTION:
   - Care must be exercised to ensure that the disconnected terminal is not grounded.



GEF00088-99999

   (2) When the ignition switch is set to the ST position, check to see if the relay emits an operating sound. Or check to see if you will feel an operating vibration with a screwdriver or the like placed on the relay.
   NOTE:
   - Upon completion of the inspection, be sure to reconnect the terminal ST of the starter.

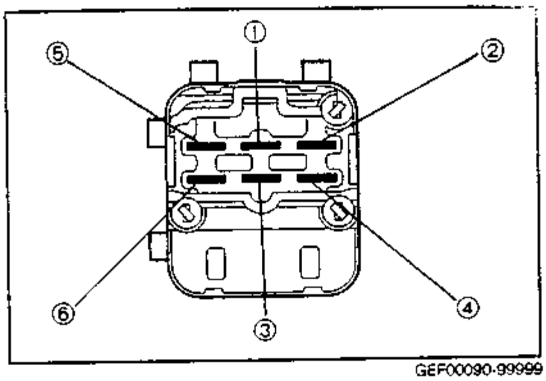
   CAUTION:
   - The relay may become very hot during the operation. Hence, do not touch the relay with your hand.



GEF00089-99999

2. Inspection of relay continuity
   (1) Check that there is the specified resistance between respective terminals.

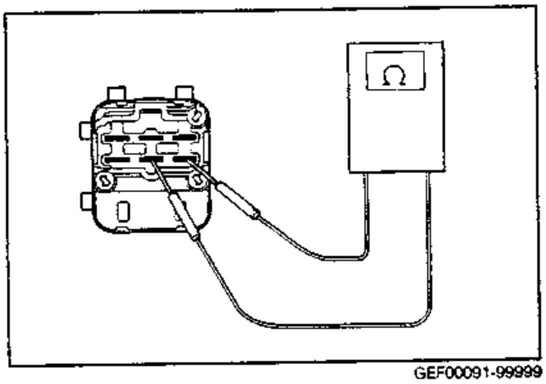
Terminals	Specified resistance
① - ②	More than 10 MΩ
③ - ④	120 - 150 Ω
⑤ - ⑥	20 - 30 Ω



GEF00090-99999

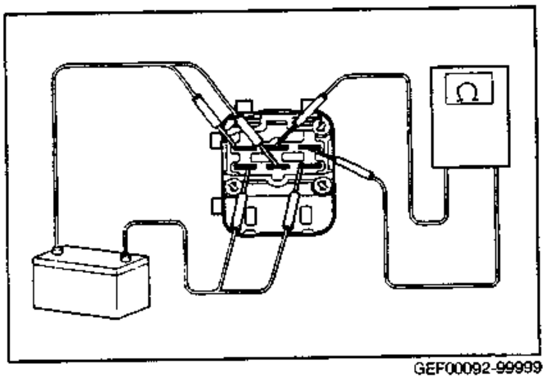
   (2) Confirmation of continuity between terminals
   Ensure that no continuity exists between terminals, except for between terminals ③ and ④ as well as terminals ⑤ and ⑥.

   If the continuity test revealed that continuity exists between terminals other than the specified ones, replace the circuit opening relay.



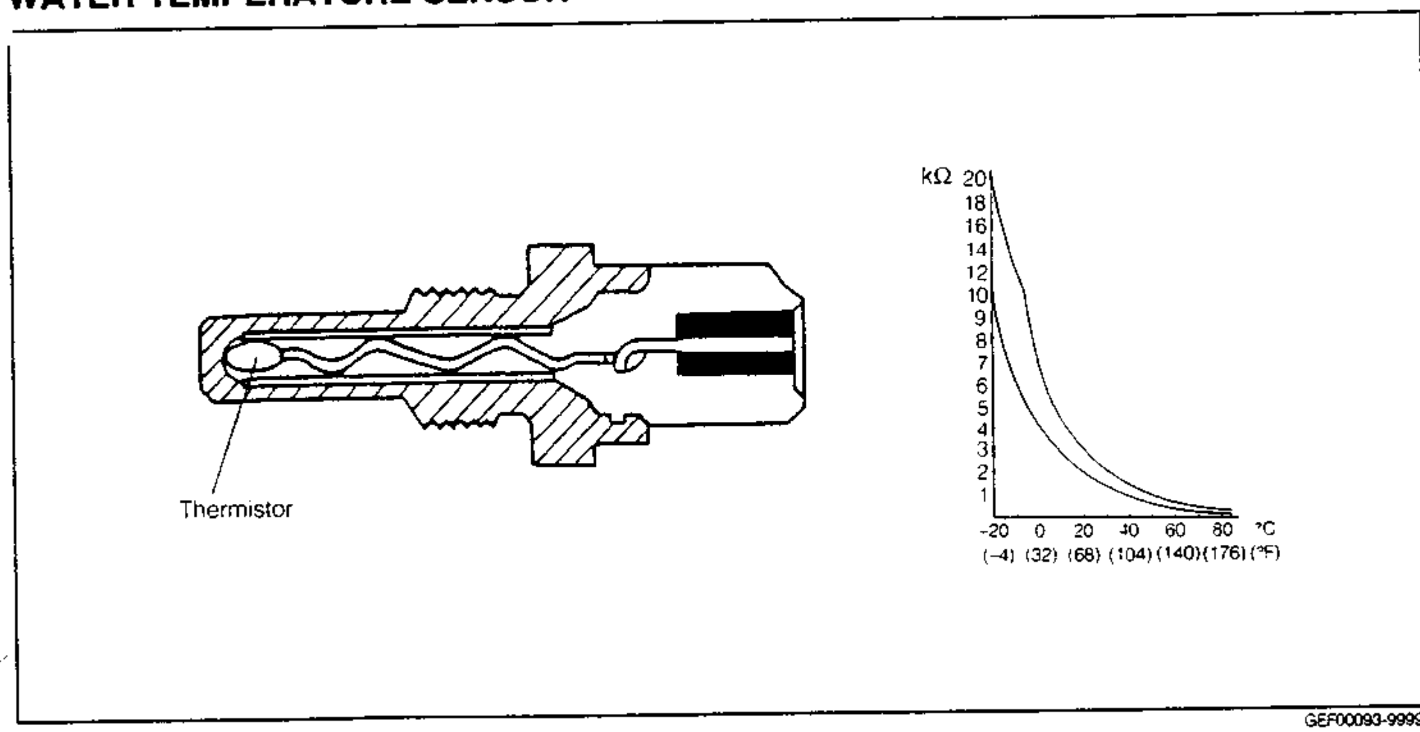
GEF00091-99999

3. Inspection of relay operation
   (1) Apply the battery voltage across the terminals ③ and ④ as well as the terminals ⑤ and ⑥.
   (2) Ensure that continuity exists between the terminals ① and ②.



GEF00092-99999

WATER TEMPERATURE SENSOR

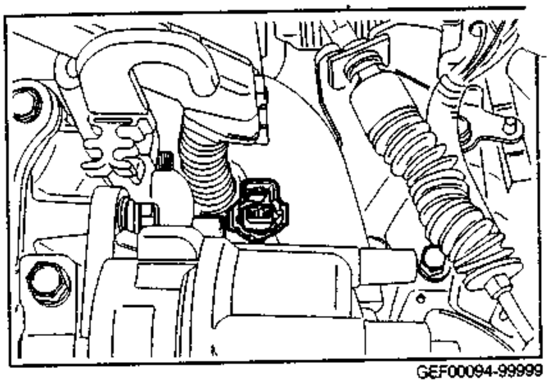


GEF00093-99999

Inspection of water temperature sensor

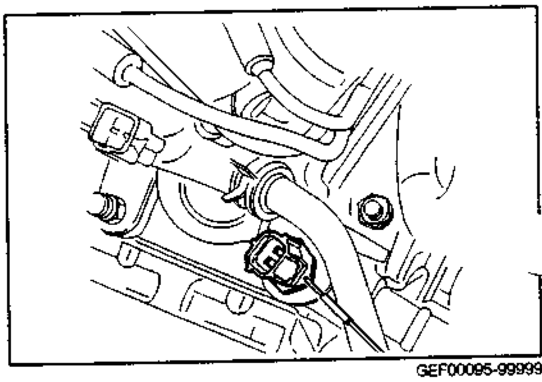
Measurement of resistance of water temperature sensor.

1. Disconnect the connector.



GEF00094-99999

2. Measure the temperature of the water temperature sensor body.

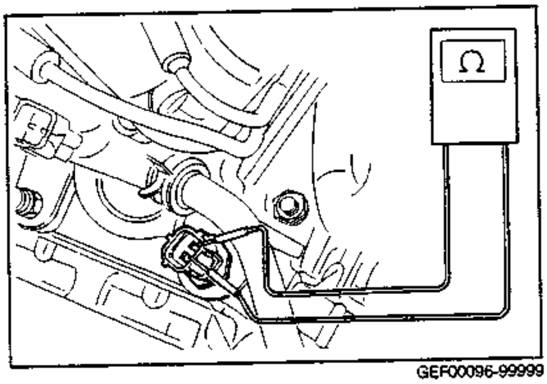


GEF00095-99999

3. Measure the resistance between the terminals of the water temperature sensor.

   Resistance: About 0.32 kΩ (at 80°C)

   If the measured resistance does not conform to the specification, replace the water temperature sensor.



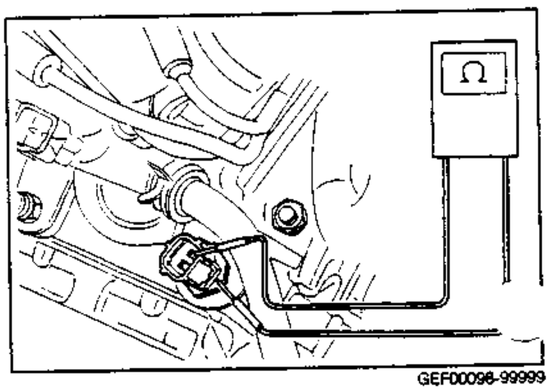
GEF00096-99999

NOTE:

- **Before the water temperature sensor is removed, drain the coolant.**
- **After completion of the sensor replacement, refill the coolant.**

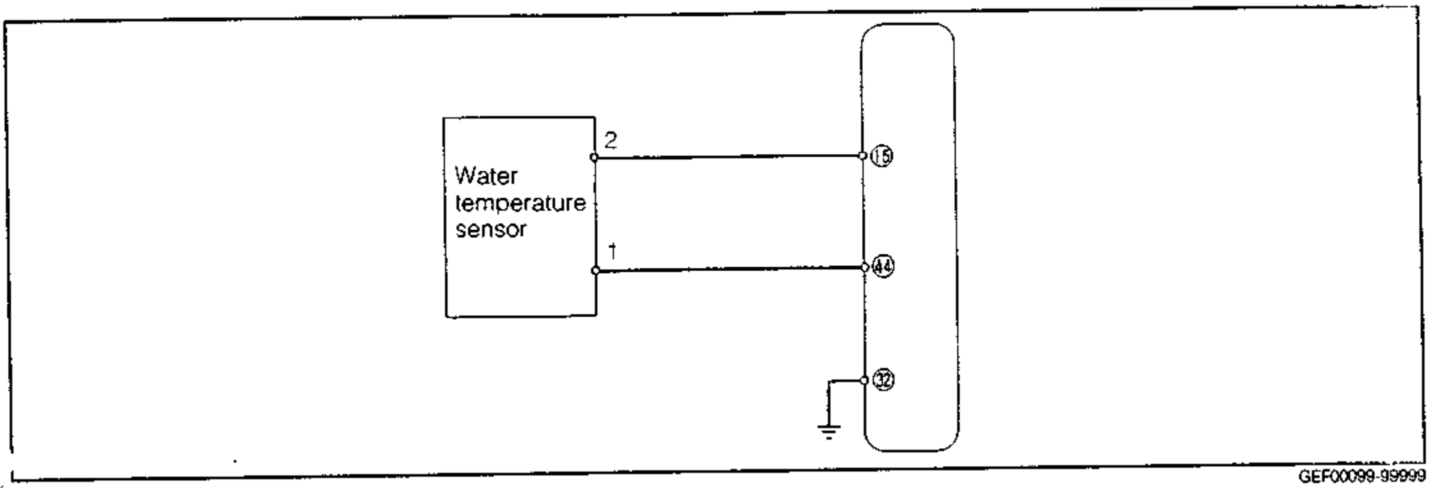
GEF00097-00000

4. Check that there is no continuity between each terminal of the water temperature sensor and the body.
   If there is continuity, replace the water temperature sensor.
   NOTE:
   - **Before the water temperature sensor is removed, drain the coolant.**
   - **After completion of the sensor replacement, refill the coolant.**



GEF00098-99999

Terminals	Trouble	Conditions		STD voltage
⑮ - ㊹	No voltage	Ignition switch ON	Coolant temperature 80°C	0.1 - 0.7



GEF00099-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

[1] There is no specified voltage between SST terminals ⑮ and ㊹ when ignition switch is turned ON.

↓

[2] Check that there is voltage between SST terminals ㉝ or ㉞ and body ground when ignition switch is turned ON.

- **BAD** → Refer to ㉝ - ㉜ trouble section No. 1.
- **OK** ↓

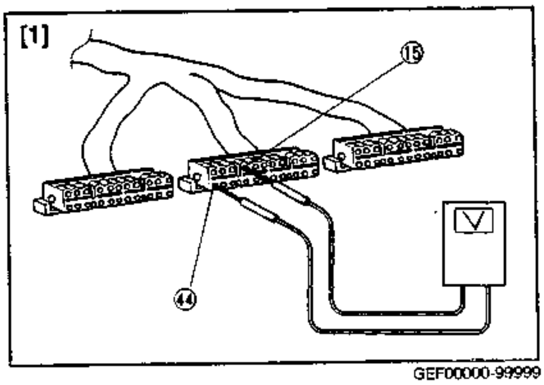
Check water temperature sensor.

- **BAD** → Replace water temperature sensor.
- **OK** ↓

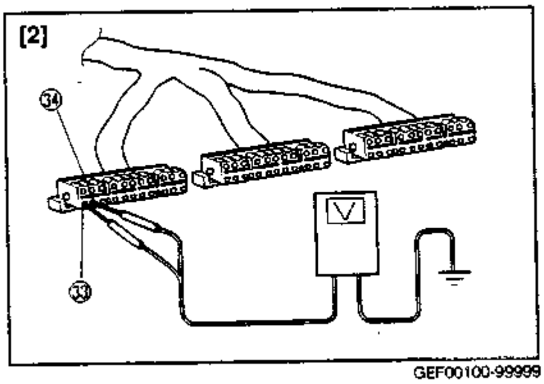
Check wiring between ECU and water temperature sensor.

- **BAD** → Repair or replace.
- **OK** ↓

Check ECU.

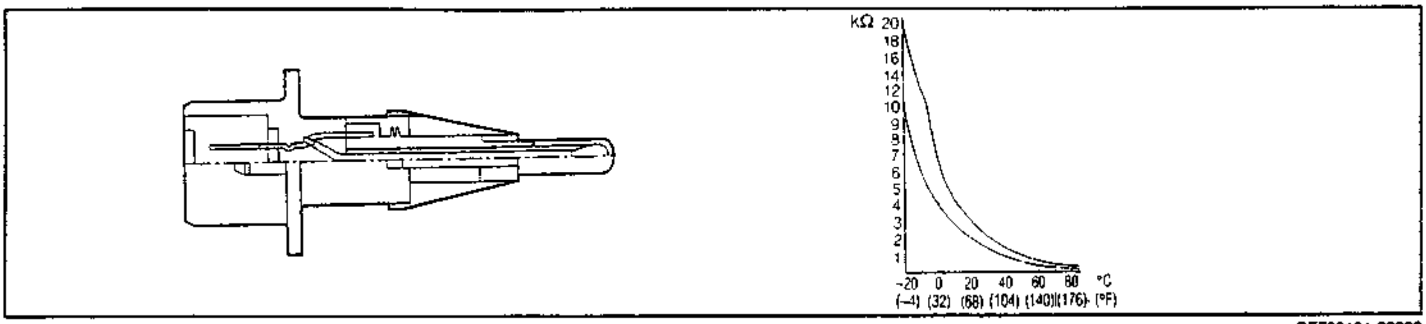


GEF00000-99999



GEF00100-99999

INTAKE AIR TEMPERATURE SENSOR

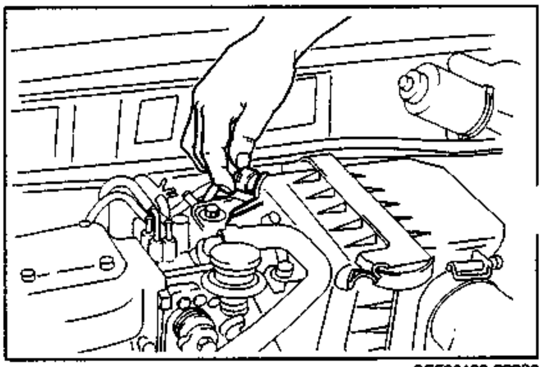


GEF00101-99999

Inspection of intake air temperature sensor

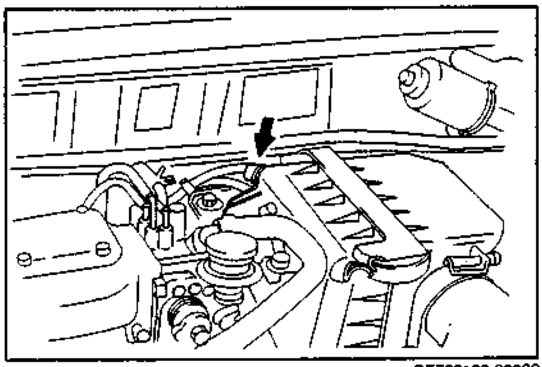
Measurement of resistance of intake air temperature sensor

1. Disconnect the connector.



GEF00102-99999

2. Remove the intake air temperature sensor from the air cleaner case.
3. Submerge the heating sensing section of the intake air temperature sensor into water whose temperature is at 20°C.

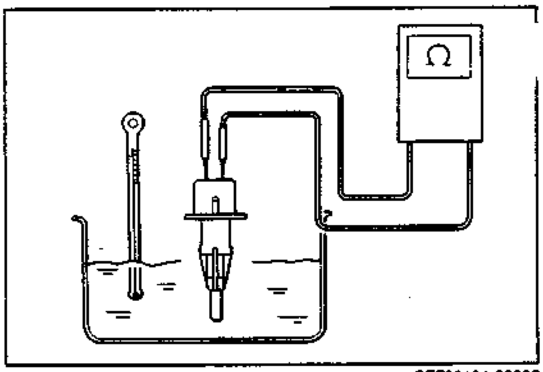


GEF00103-99999

4. Measure the resistance between the terminals of the intake air temperature sensor.

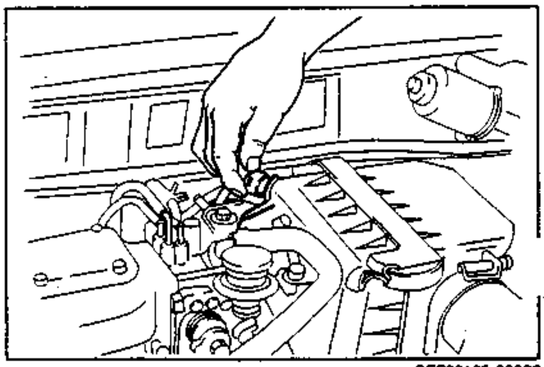
   Resistance: About 2.45 kΩ (at 20°C)

   If the measured resistance does not conform to the specification, replace the intake air temperature sensor.



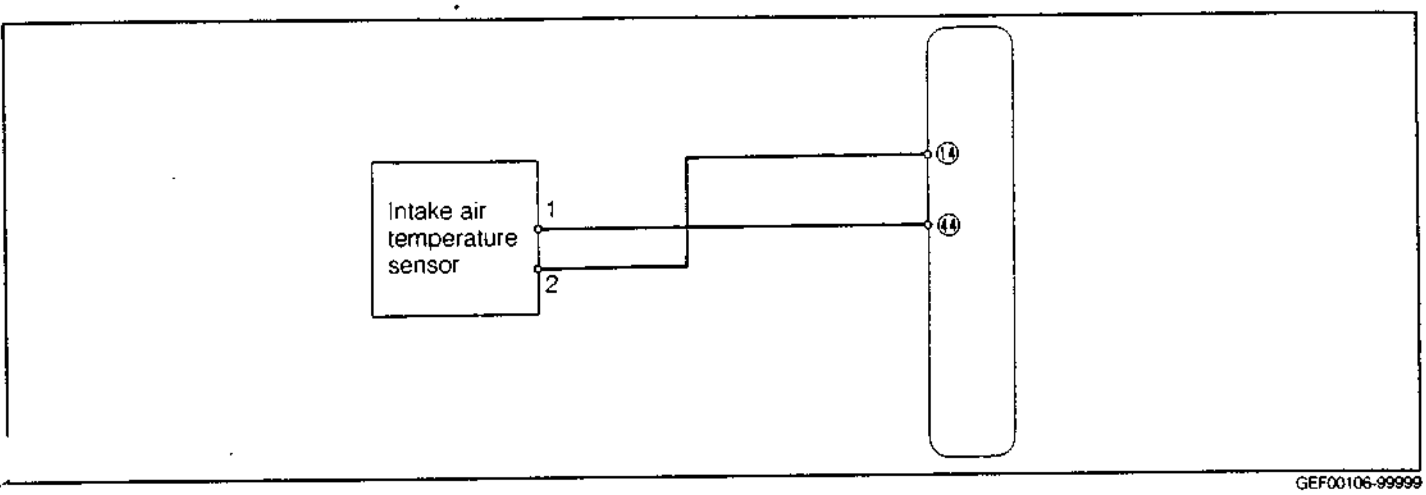
GEF00104-99999

5. Install the intake air temperature sensor into the air cleaner case.
6. Connect the intake air temperature sensor connector.



GEF00105-99999

Terminal	Trouble	Conditions		STD voltage
⑭ - ㊹	No voltage	Ignition switch ON	Intake air temperature 20°C	About 0.9 - 3.0



GEF00106-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

[1] There is no specified voltage between SST terminals ⑭ and ㊹ when ignition switch is turned ON.

↓

[2] Check that there is voltage between SST terminals ㉝ or ㉞ and ㉜.

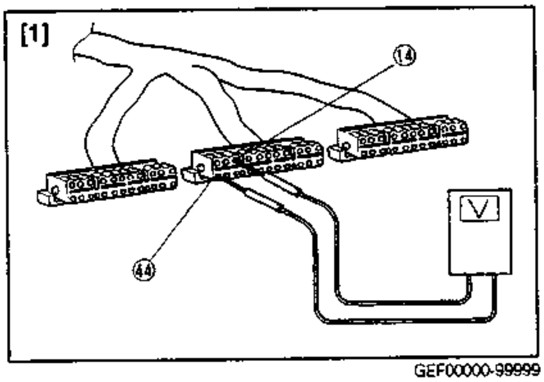
- **OK** → Check intake air temperature sensor.
- **NO** → Refer to ㉝ – ㉜ trouble section No. 1.

Check intake air temperature sensor.

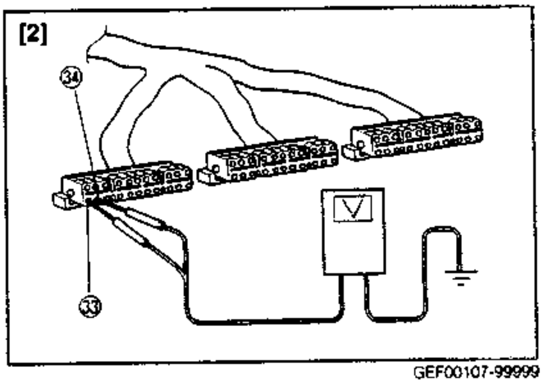
- **OK** → Check wiring between ECU and intake air temperature sensor.
- **BAD** → Replace intake air temperature sensor.

Check wiring between ECU and intake air temperature sensor.

- **OK** → Check ECU.
- **BAD** → Repair or replace.

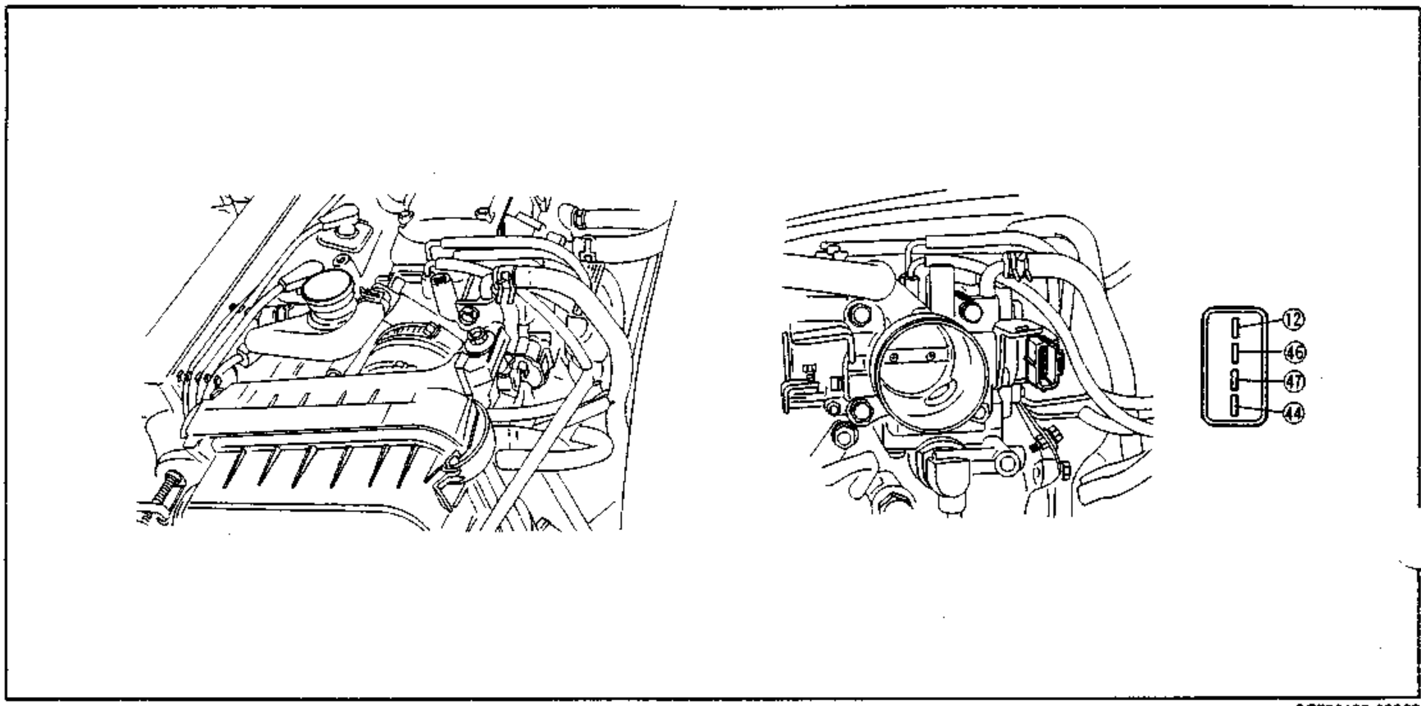


GEF00000-99999



GEF00107-99999

THROTTLE POSITION SENSOR (AT Vehicle)

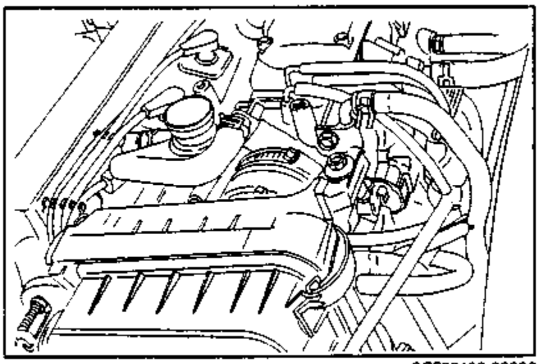


GEF00108-99999

Inspection of throttle position sensor

Measurement of resistance of throttle position sensor

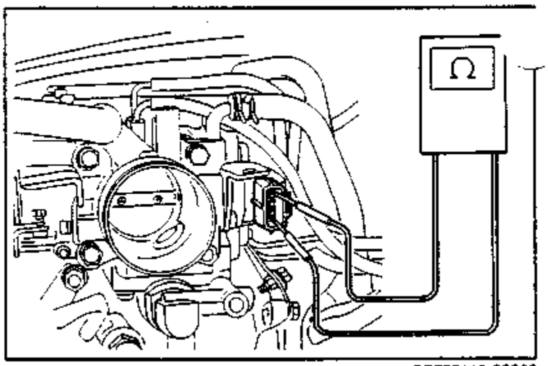
1. Disconnect the connector.



GEF00109-99999

2. Measurement of resistance between the terminals of throttle position sensor.
   (1) Measure the resistance between 12 and 44.
   Resistance: 5 kΩ or less (at 25°C)

   If the measured resistance does not conform to the specification, replace the throttle body.

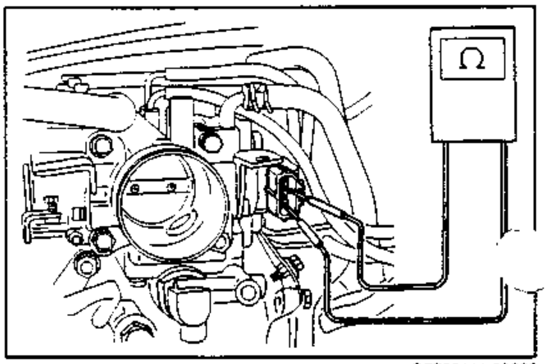


GEF00110-99999

   (2) Measure the resistance between 46 and 44 under the following conditions.

Throttle valve closed fully	About 4.5 kΩ (at 25°C)
Throttle valve opened fully	About 1.1 kΩ (at 25°C)
Resistance value should change smoothly from full closing to full opening of throttle valve.	

   If the measured resistance does not conform to the specification, replace the throttle body.

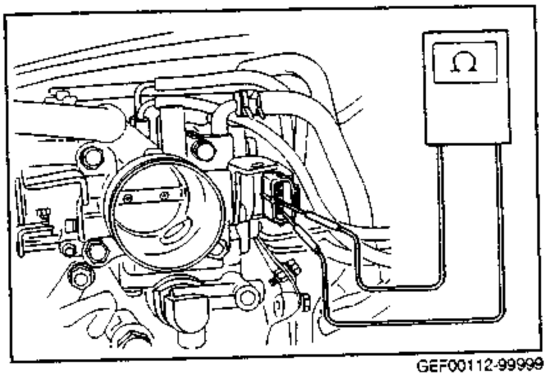


GEF00111-99999

(3) Measure the resistance between ㊹ and ㊼ under the following conditions.

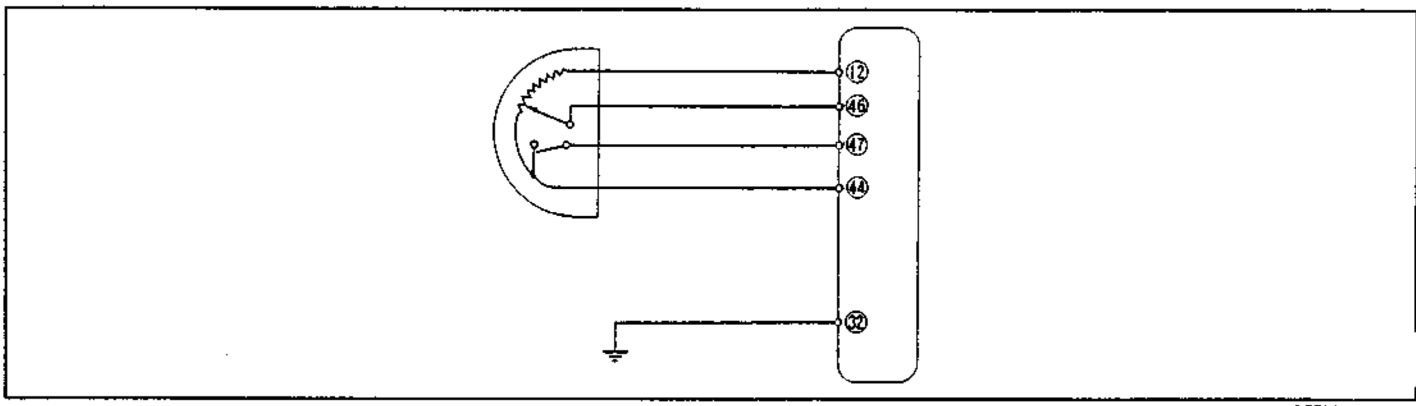
Throttle valve closed fully	2.3 kΩ or less (25°C)
Throttle valve opened more than 1.5°	1000 kΩ or more

If the measured resistance does not conform to the specification, replace the throttle body.



GEF00112-99999

Terminal	Trouble	Conditions		STD voltage
12 - 44	No voltage	Ignition switch ON		4.5 - 5.5
44 - 46		Ignition switch ON	Throttle valve closed	0.3 - 0.9
			Throttle valve fully opened	3.6 - 4.2



GEF00113-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

- 12 – 44

[1] There is no voltage between SST terminals 12 and 44 when ignition switch is turned ON.

↓

[2] Check that there is voltage between SST terminal 33 or 34 and body ground when ignition switch is turned ON.

OK ↓ / **ON** → Refer to 33 – 32 trouble section No. 1.

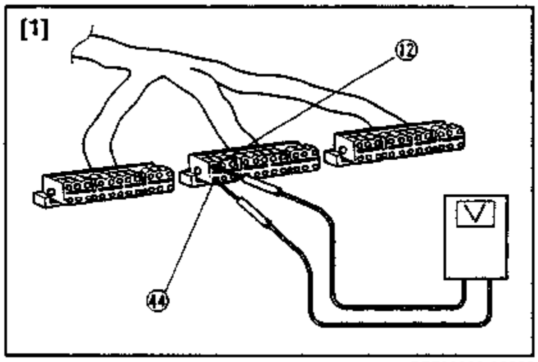
Check throttle position sensor.

OK ↓ / **BAD** → Repair or replace.

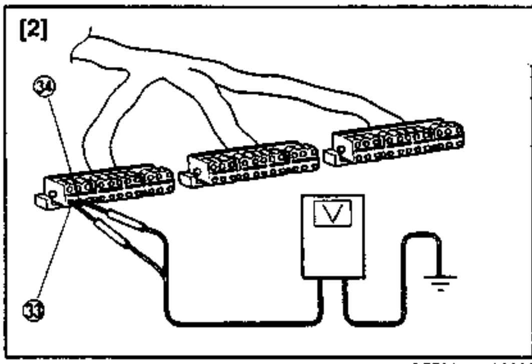
Check wiring between ECU and throttle position sensor.

OK ↓ / **BAD** → Repair or replace wiring.

Check ECU.



GEF00000-99999



GEF00114-99999

- ㊹ – ㊻

[1] There is no specified voltage between SST terminals ㊹ and ㊻ when ignition switch is turned ON.

↓

[2] Check that there is voltage between SST terminals ㉝ or ㉞ and body ground when ignition switch is turned ON.

- **NO** → Refer to ㉝ – ㉜ trouble section No. 1.
- **OK** → Repair or replace.

Refer to ㉝ – ㉜ trouble section No. 1.

- **OK** → Check throttle position sensor.

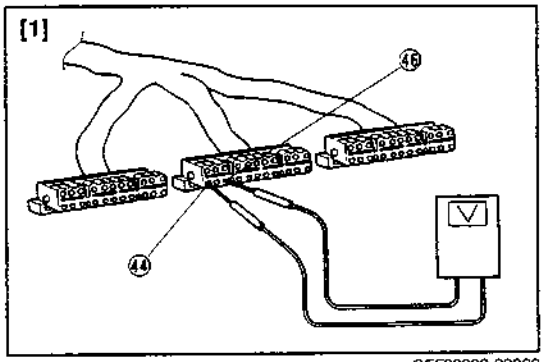
Check throttle position sensor.

- **OK** → Check wiring between ECU and throttle position sensor.
- **BAD** → Repair or replace.

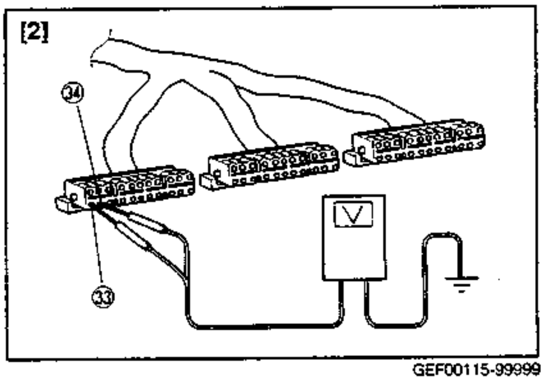
Check wiring between ECU and throttle position sensor.

- **OK** → Check ECU.
- **BAD** → Repair or replace.

Check ECU.

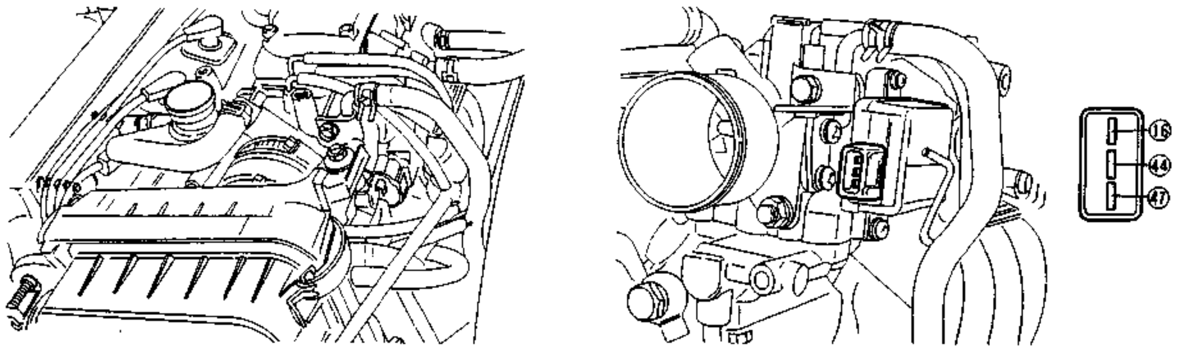


GEF00000-99999



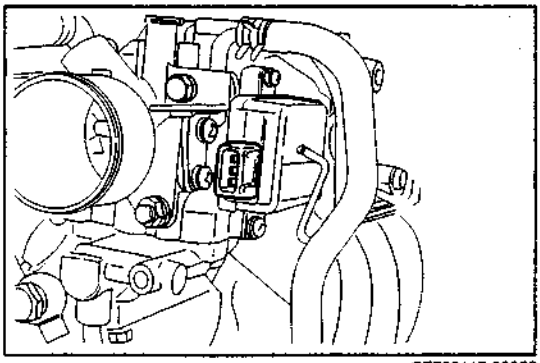
GEF00115-99999

THROTTLE POSITION SENSOR (MT Vehicle)



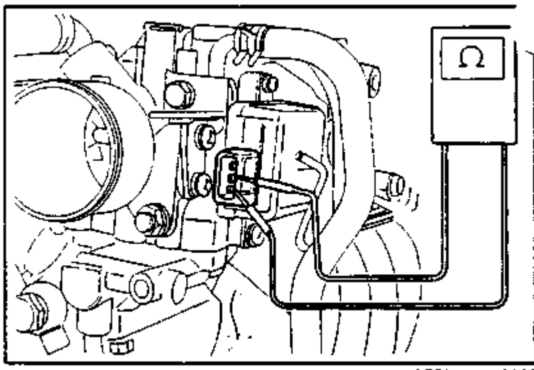
GEF00116-99999

Inspection of throttle position sensor



GEF00117-99999

1. Unlock the throttle position sensor connector and disconnect it.
   CAUTION:
   - When disconnecting the connector, care must be exercised to ensure that no excessive load is applied to the throttle position sensor.



GEF00118-99999

2. Measure the resistance between the terminals of the throttle position sensor.
   (1) Measure the resistance between ㊼ and ㊹ under the following condition.

Throttle valve closed fully	2.3 kΩ or less (at 20°C)
Throttle valve opened fully	1000 kΩ or more

   If measured resistance does not conform to the specification, replace the throttle body.
   CAUTION:
   - Be very careful not to damage the terminal.

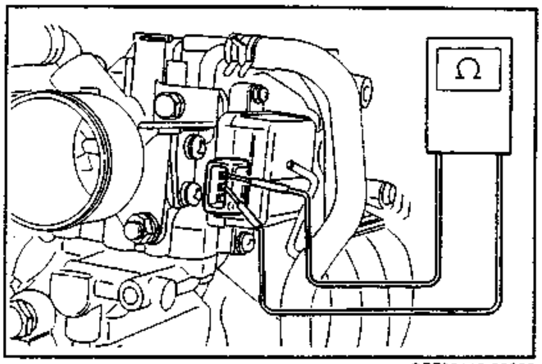
(2) Measure the resistance between ⑯ and ㊹ under the following condition.

Throttle valve closed fully	1000 kΩ or more
Throttle valve opened fully	2.3 kΩ or less (at 20°C)

If measured resistance does not conform to the specification, replace the throttle body.

CAUTION:

- **Be very careful not to damage the terminal.**

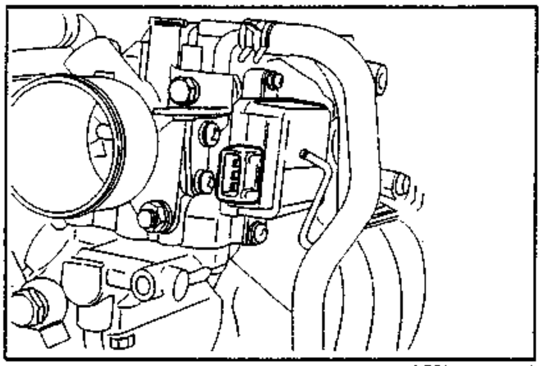


GEF00119-99999

3. Connect the throttle position sensor connector.

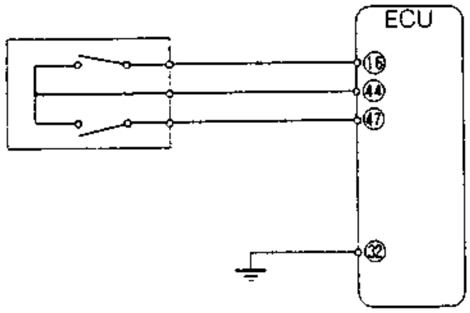
CAUTION:

- **When connecting the connector, care must be exercised to ensure that no excessive load is applied to the throttle position sensor.**



GEF00120-99999

Terminal	Trouble	Condition		STD voltage
㊼ - ㊹	More than 5V	Ignition switch ON	Throttle valve fully closed	Less than 3.0V
	No voltage		Throttle valve fully opened	Approx. battery voltage
⑯ - ㊹	No voltage	Ignition switch ON	Throttle valve fully closed	Approx. battery voltage
	More than 5V		Throttle valve fully opened	Less than 3.0V



GEF00121-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section number "Preparation of Trouble-shooting" at page EF–22.

- ㊼ - ㊹

[1] There is no specified voltage between SST terminals ㊼ and ㊹.

↓

[2] Check that there is voltage between SST terminals ㉝ or ㉞ and ㉜ when ignition switch is turned ON.

OK ↓ / **BAD** → Refer to ㉝ or ㉞ and ㉜ trouble section No. 1. (See page EF–37.)

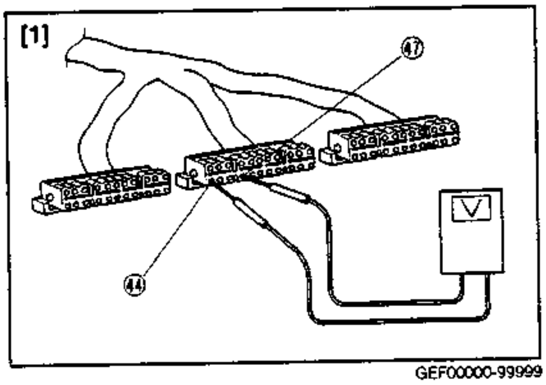
Check throttle position sensor.

OK ↓ / **BAD** → Replace.

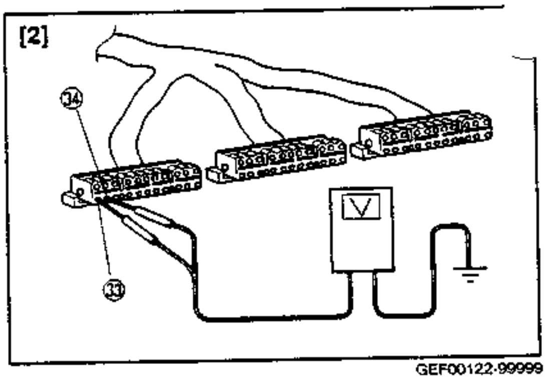
Check wiring between ECU and throttle position sensor.

OK ↓ / **BAD** → Repair or replace.

Check ECU.



GEF00000-99999



GEF00122-99999

- ⑯ – ㊹

[1] There is no specified voltage between SST terminals ⑯ and ㊹.

↓

[2] Check that there is voltage between SST terminals ㉝ or ㉞ and ㉜ when ignition switch is turned ON.

- **OK** → Check throttle position sensor.
- **BAD** → Refer to ㉝ or ㉞ and ㉜ trouble section No. 1. (See page EF-37.)

Check throttle position sensor.

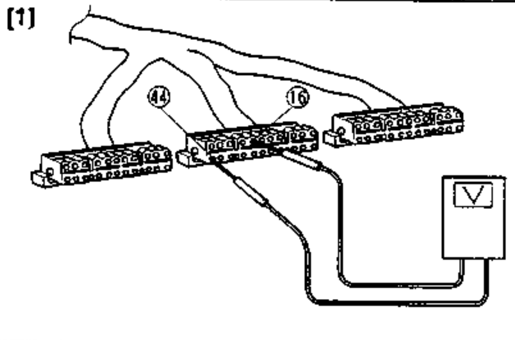
- **OK** → Check wiring between ECU and throttle position sensor.
- **BAD** → Replace.

Check wiring between ECU and throttle position sensor.

- **OK** → Check ECU.
- **BAD** → Repair or replace.

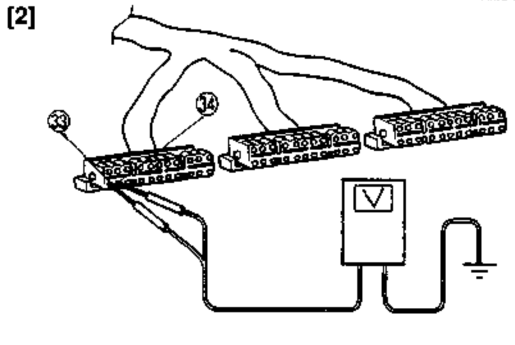
Check ECU.

[1]



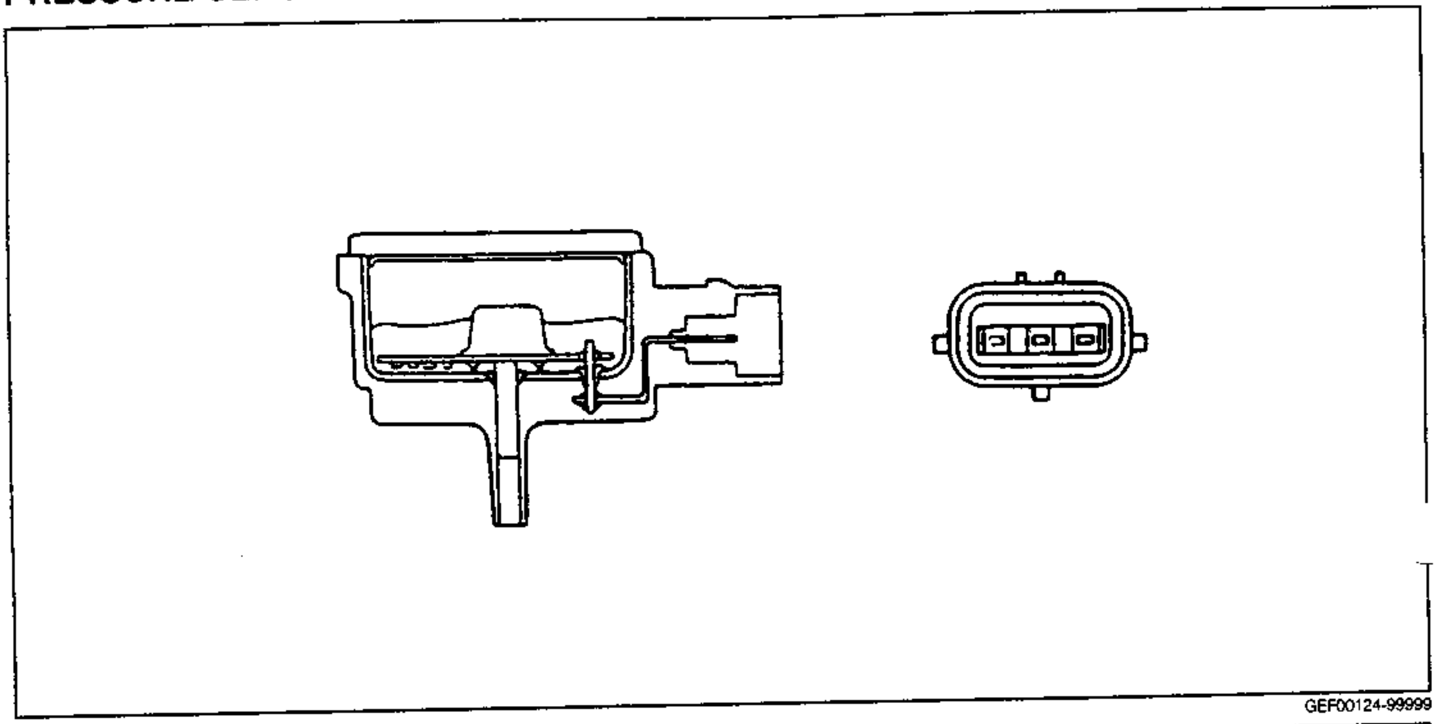
GEF00000-99999

[2]



GEF00123-99999

PRESSURE SENSOR

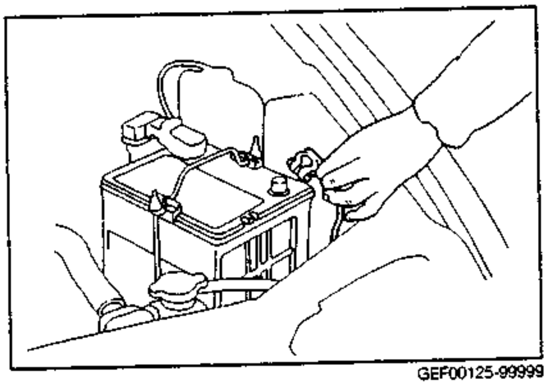


GEF00124-99999

Inspection of pressure sensor

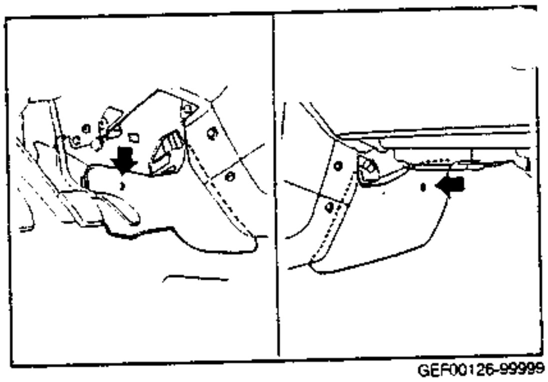
Measurement of output voltage of pressure sensor

1. Connection of SST
   (1) Disconnect the battery ground cable from the negative (–) terminal of the battery.



GEF00125-99999

   (2) Remove the front floor side cover under the heater unit.

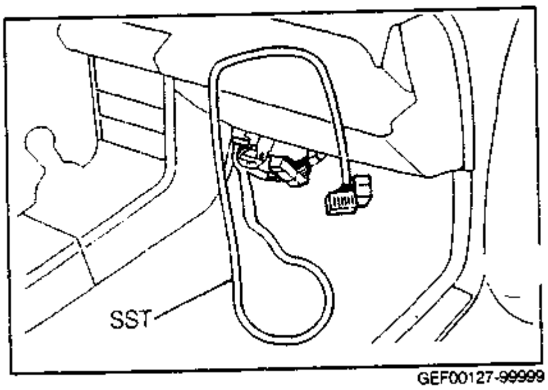


GEF00126-99999

   (3) Connect the following SST between the ECU and the engine wire.
   SST: 09842-87706-000

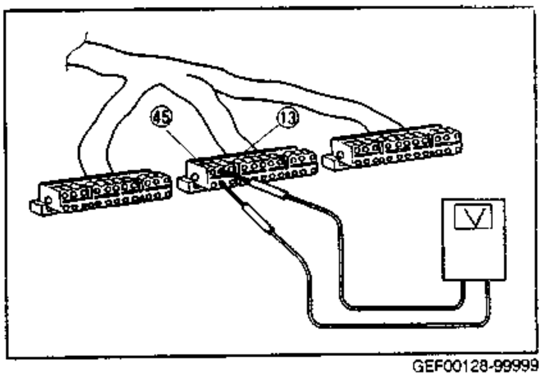
NOTE:
- Before the SST is installed, be sure to perform continuity and short tests between SST terminals.

   (4) Reconnect the battery ground cable to the negative terminal of the battery.



GEF00127-99999

2. Check of output of pressure sensor
   (1) Measure the voltage between the SST terminals ⑬ and ㊺ when the ignition switch is turned ON.



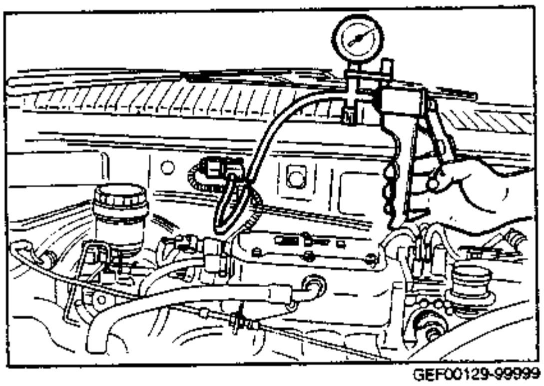
GEF00128-99999

Specified value

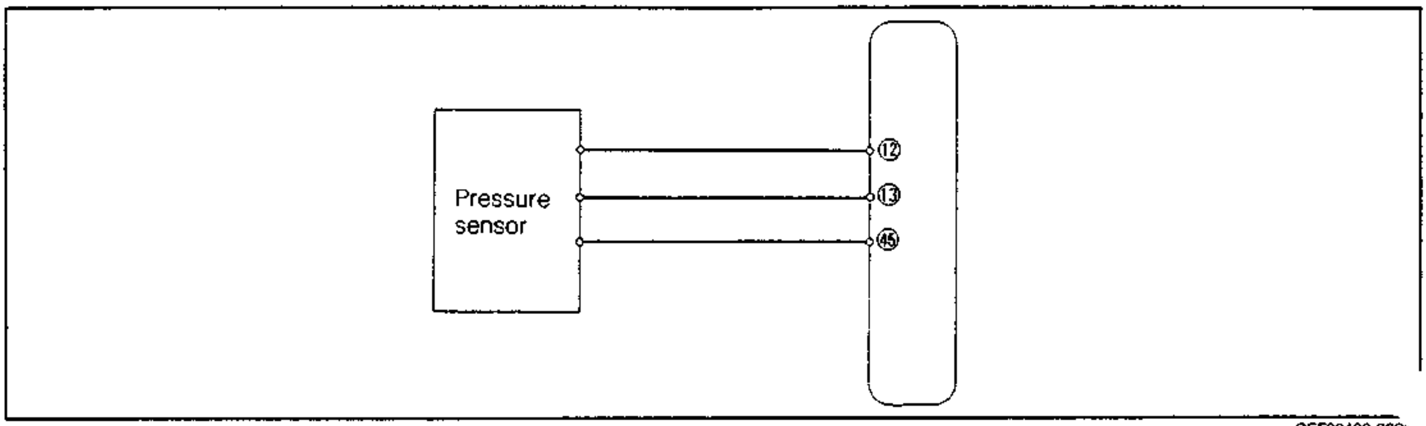
Measuring point / Altitude (height above sea level) m	Atmospheric pressure kPa (mmHg)	Voltage V
0	101.3 (760)	3.2 - 4.0
500	95.5 (716)	3.1 - 3.8
1,000	89.9 (674)	3.0 - 3.6

If the measured voltage does not conform to the specification, measure the voltage between the SST terminals ⑫ and ㊺. Ensure that the measured voltage is within a range of 4.5 to 5.5 volts. Then, proceed to replace the pressure sensor.
When the pressure sensor is replaced, it is necessary to replace the gas filter and air filter, too.
If the measured voltage between the SST terminals ⑫ and ㊺ does not conform to the specification, check the wiring between the ECU and the pressure sensor.

(2) Disconnect the rubber hose connected to the pressure sensor. Apply a negative pressure of 26.7 kPa (200 mmHg) to the disconnected hose, using a Mity-Vac. Check that the measured voltage between the SST terminals ⑬ and ㊺ drops by 0.65 to 0.95 volt.
If the measured voltage fails to drop by the specified value, replace the pressure sensor.
When the pressure sensor is replaced, it is necessary to replace the gas filter and air filter, too.


GEF00129-99999

Terminals	Trouble	Conditions	STD voltage
⑫ - ㊺	No voltage	Ignition switch ON	4.5 - 5.5
⑬ - ㊺		Ignition switch ON At time of atmospheric pressure of 101.3 kPa (760 mmHg)	3.2 - 4.0



GEF00130-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF-22.

- ⑫ – ㊺

[1] There is no voltage between SST terminals ⑫ and ㊺.

↓

[2] Check that there is voltage between SST terminal ㉝ or ㉞ and body ground when ignition switch is turned ON.

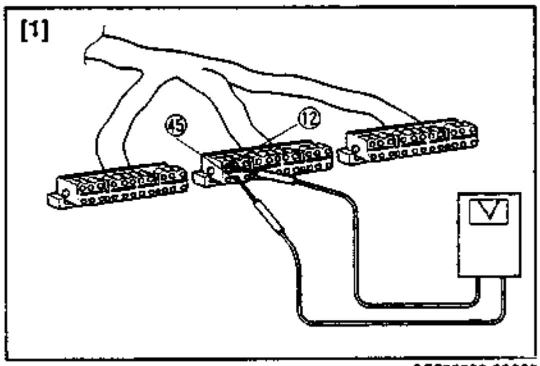
- **NO** → Refer to ㉝ – ㉜ trouble section No. 1.
- **OK** → Check wiring between SST terminal ㉜ and body ground.
  - **BAD** → Repair or replace.

Refer to ㉝ – ㉜ trouble section No. 1.

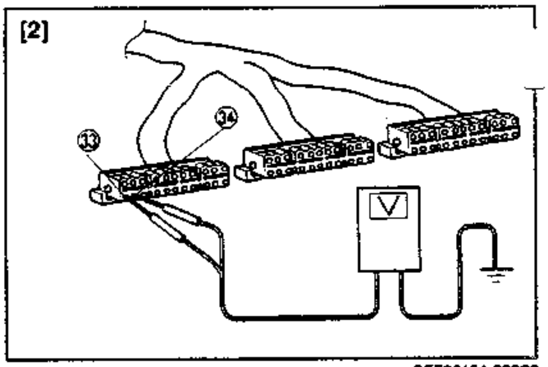
- **BAD** → Repair or replace.
- **OK** → Check wiring between ECU and pressure sensor and/or throttle position sensor.

Check wiring between ECU and pressure sensor and/or throttle position sensor.

- **BAD** → Repair or replace.
- **OK** → Check pressure sensor.
  - **BAD** → Replace.
  - **OK** → Check ECU.



GEF00000-99999



GEF00131-99999

• ⑬ – ㊺

[1] There is no voltage between SST terminals ⑬ – ㊺.

[2] Check that there is voltage between SST terminals ⑫ – ㊺.

OK → Check wiring between ECU and pressure sensor.

BAD → Refer to ⑫ – ㊺ trouble section (No. 2).

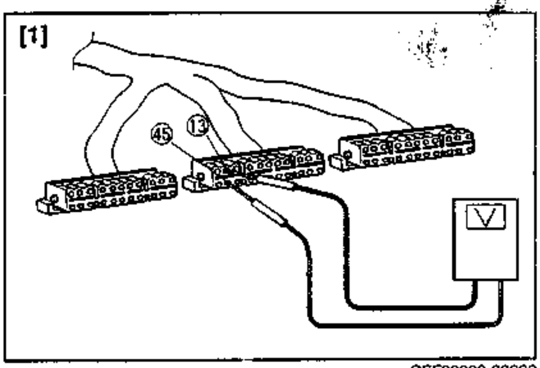
BAD → Repair.

Check wiring between ECU and pressure sensor.

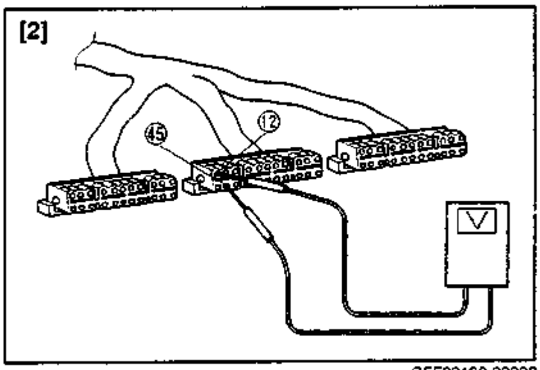
OK → Check pressure sensor.

BAD → Repair or replace.

Check pressure sensor.

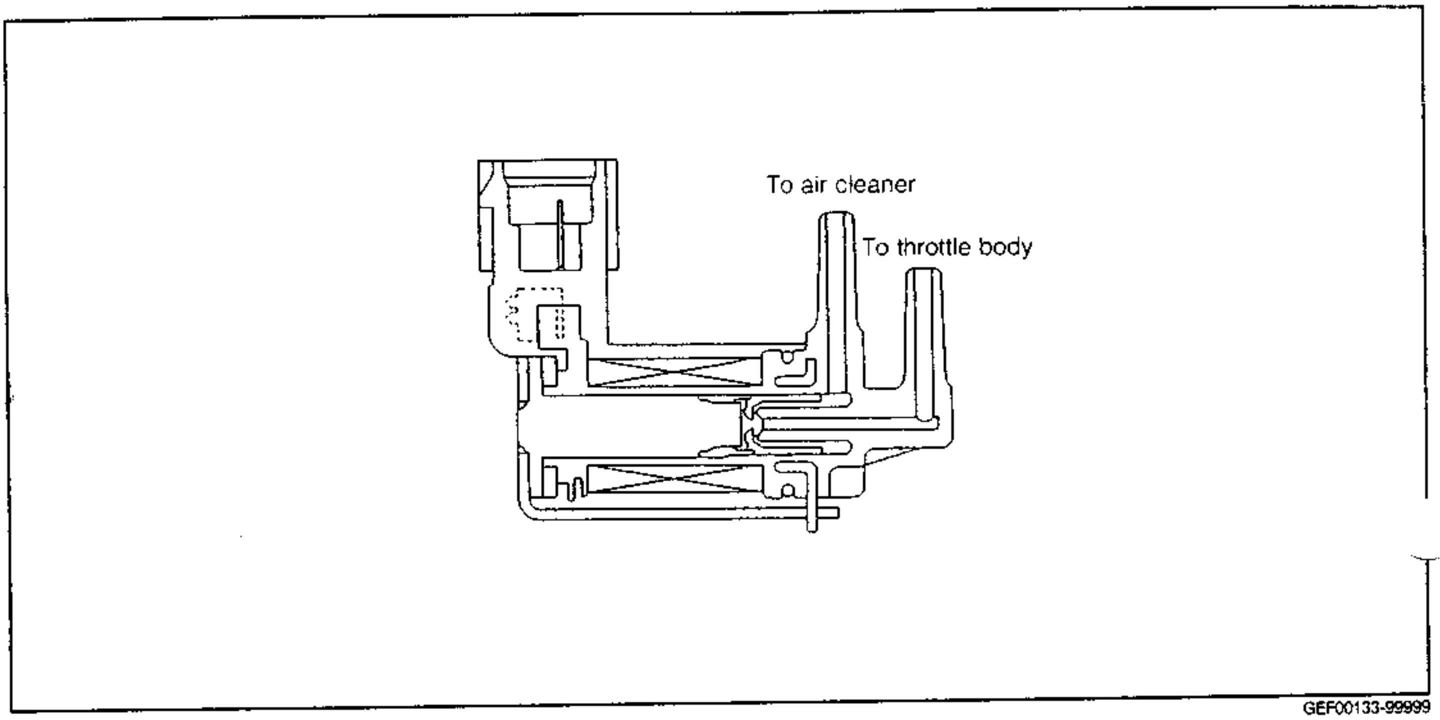


GEF00000-99999



GEF00132-99999

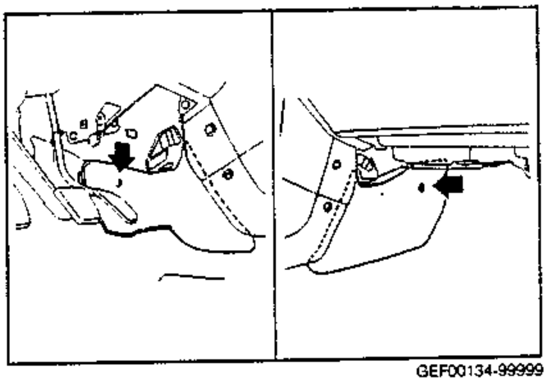
IDLE-UP VSV No. 1



GEF00133-99999

Inspection of idle-up VSV No. 1

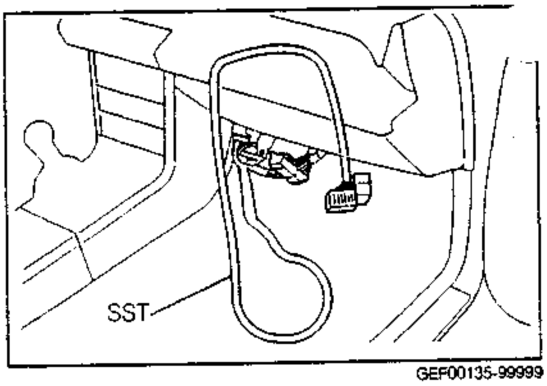
1. Disconnect the battery ground cable from the negative (–) terminal of the battery.
2. Remove the front floor side cover under the heater unit.



GEF00134-99999

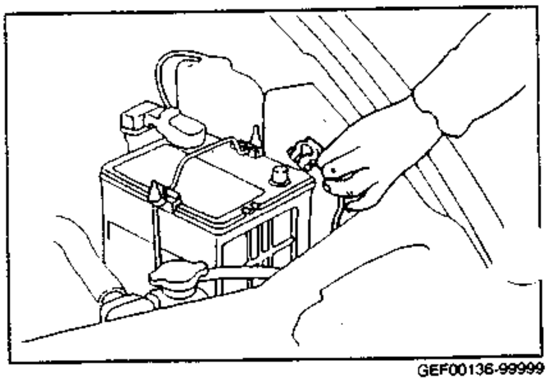
3. Connect the following SST between the ECU and the engine wire.
   SST: 09842-87706-000

   NOTE:
   - **Before the SST is installed, be sure to perform continuity and short tests between SST terminals.**



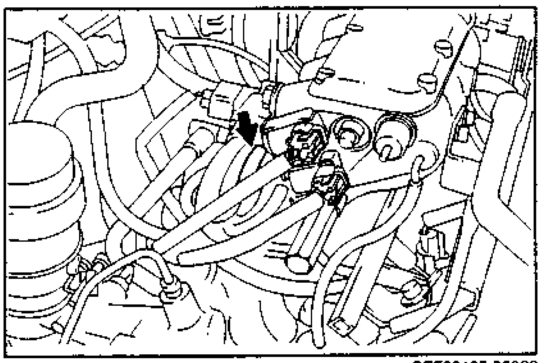
GEF00135-99999

4. Reconnect the battery ground cable to the negative (–) terminal of the battery.

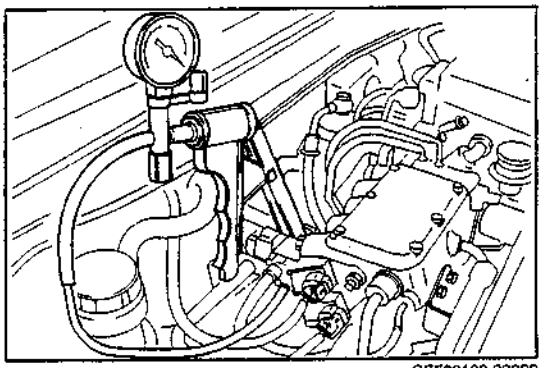


GEF00136-99999

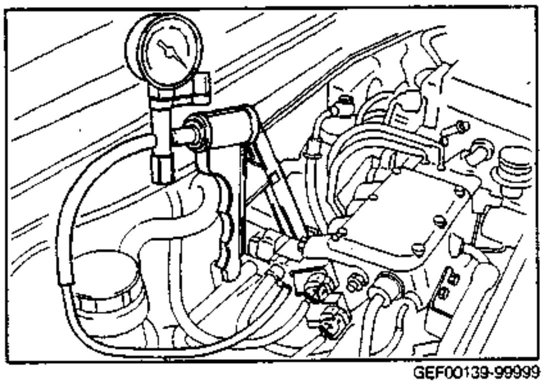
5. Disconnect the rubber hose connected to the idle-up VSV No. 1.


GEF00137-99999

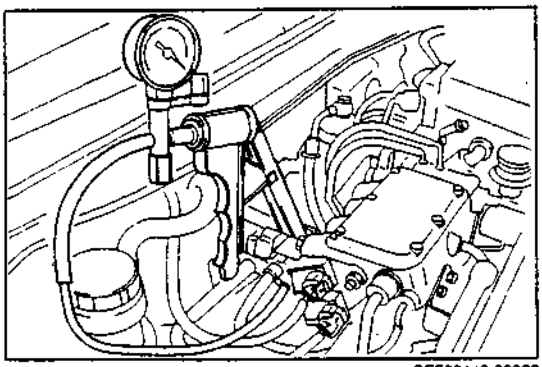
6. Connect a MityVac to the idle-up VSV. Apply a negative pressure of 13.3 kPa (100 mmHg).
   If no negative pressure is applied, replace the idle-up VSV.


GEF00138-99999

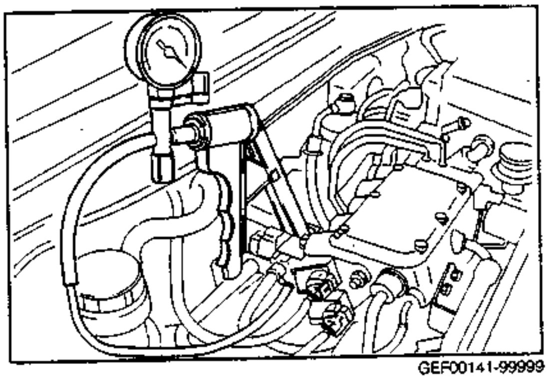
7. Turn OFF all accessory switches.
8. Start the engine.
   Ensure that the negative pressure being applied in the step (6) becomes zero.
   If the negative pressure fails to become zero, check that there is voltage between the SST terminals ㉙ and ㉜.
   If there is no voltage, check that the resistance between the terminals of the VSV is within a range of 30 to 50 ohms. (If the resistance fails to conform to the specification, replace the VSV.)
   If the resistance between the terminals of the VSV conforms to the specification, check the wiring between the ECU and the main relay. Repair the wiring, as required.


GEF00139-99999

9. After the engine has warmed up completely, connect a MityVac to the VSV and apply a negative pressure of 13.3 kPa (100 mmHg).
   If no negative pressure is applied, check the wiring between the VSV and the ECU. Repair the wiring, as required.
   If the wiring is normal, check the voltage across the SST terminals ㉙ and ㉜, using the SST.
   If a voltage is present across the terminals ㉙ and ㉜, check the wirings between the ECU and each of the headlamp switch, defogger switch, heater switch and radiator fan switch. Ensure that no voltage is applied across each switch and the ECU.


GEF00140-99999

0. Turn ON the headlamp switch or the heater fan switch. Ensure that the negative pressure being applied in the step (10) becomes zero.
If the negative pressure fails to become zero, check that there is voltage between the SST terminal ㊷-㊸ and ㉜.
When there is no voltage, check the wiring between the headlamp switch or the heater fan switch and the ECU. Repair the wiring, as required.
If there is voltage, check the ECU.



GEF00141-99999

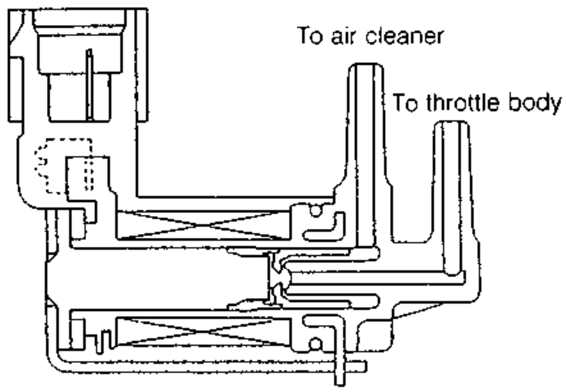
11. Turn OFF the headlamp switch or the heater fan switch.

CAUTION:

- After completion of the inspection, before the SST is removed, be sure to disconnect the battery ground cable from the negative (–) battery terminal.
After the ECU and engine wire have been connected, reconnect the battery ground cable to the negative (–) battery terminal.

GEF00142-00000

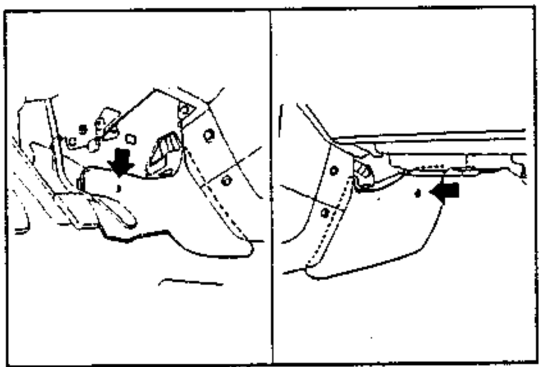
IDLE-UP VSV No. 2 (Only A/T Vehicle)



GEF00143-99999

Inspection of idle-up VSV No. 2

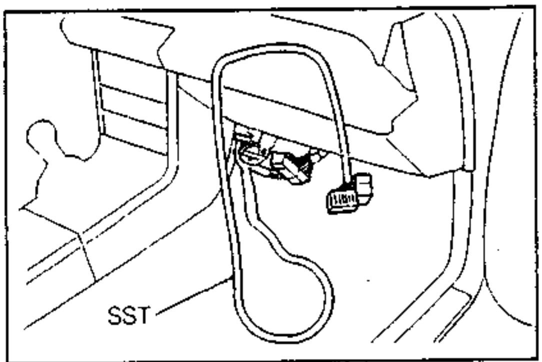
1. Disconnect the battery ground cable from the negative (–) terminal of the battery.
2. Remove the front floor side cover under the heater unit.



GEF00144-99999

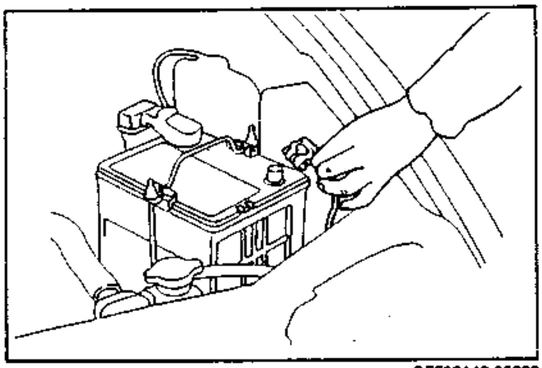
3. Connect the following SST between the ECU and the engine wire.
   SST: 09842-87706-000

   NOTE:
   - Before the SST is installed, be sure to perform continuity and short tests between SST terminals.



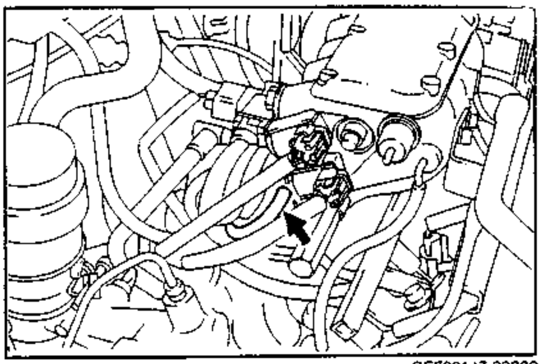
GEF00145-99999

4. Reconnect the battery ground cable to the negative (–) terminal of the battery.

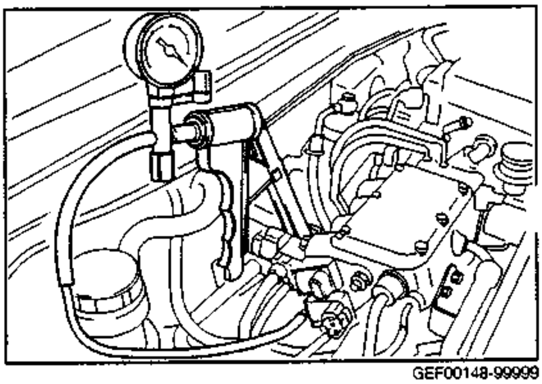


GEF00146-99999

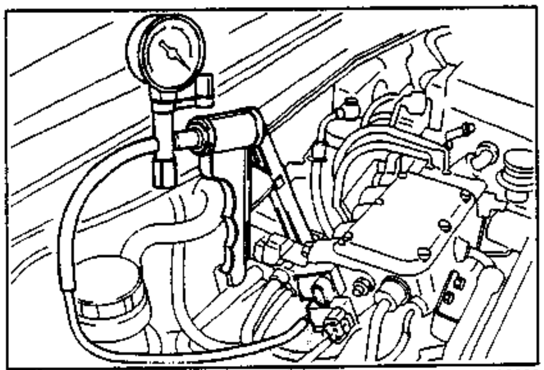
5. Disconnect the rubber hose connected to the idle-up VSV No. 2.


GEF00147-99999

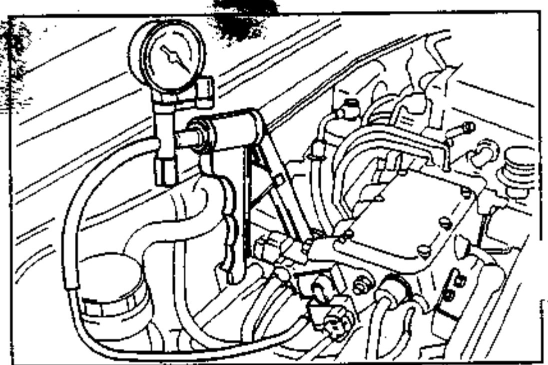
6. Connect a MityVac to the idle-up VSV No. 2. Apply a negative pressure of 13.3 kPa (100 mmHg).
   If no negative pressure is applied, replace the idle-up VSV No. 2.


GEF00148-99999

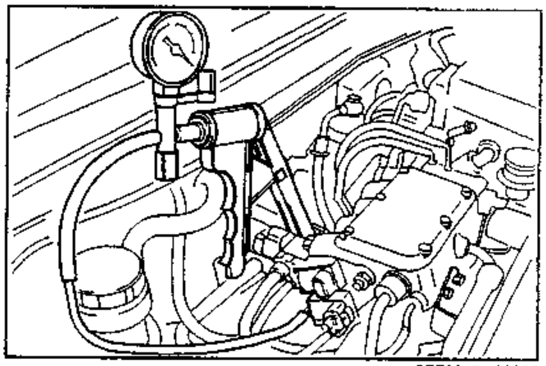
7. Turn OFF all accessory switches.
8. Start the engine.
   Ensure that the negative pressure being applied in the step (6) becomes zero.
   If the negative pressure fails to become zero, check that there is voltage between the SST terminals ㉘ and ㉜.
   If there is no voltage, check that the resistance between the terminals of the VSV is within a range of 30 to 50 ohms. (If the resistance fails to conform to the specification, replace the VSV.)
   If the resistance between the terminals of the VSV conforms to the specification, check the wiring between the ECU and the main relay. Repair the wiring, as required.


GEF00149-99999

9. After the engine has warmed up completely, connect a MityVac to the VSV No. 2 and apply a negative pressure of 13.3 kPa (100 mmHg).
   If no negative pressure is applied, check the wiring between the VSV No. 2 and the ECU. Repair the wiring, as required. If the wiring is normal, check to see if a voltage is applied across the SST terminals ㉘ and ㉜.
   If a voltage is applied across the terminals, check to see if a voltage is applied across the ECU and both or one of the headlamp switch and defogger switch. Also, check to see if a voltage is applied across the ECU and both or one of the heater fan switch and radiator fan switch.

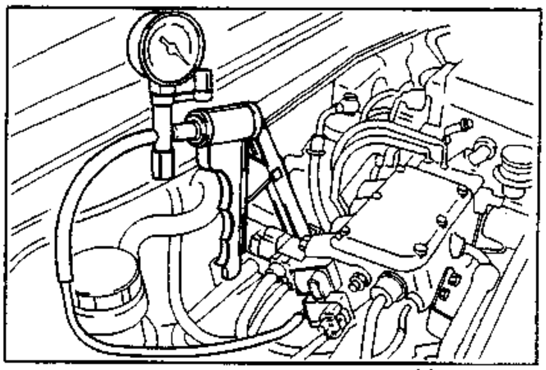

GEF00150-99999

10. Turn ON the headlamp switch and the heater fan switch. Ensure that the negative pressure being applied in the step (9) becomes zero.
    If the negative pressure fails to become zero, check that there is voltage between the SST terminal ㉘ and ㉜.
    When there is no voltage, check the wiring between the headlamp switch and the heater fan switch and the ECU. Repair the wiring, as required.
    If there is voltage, check the ECU.
11. Turn OFF the headlamp switch and/or the defogger switch.



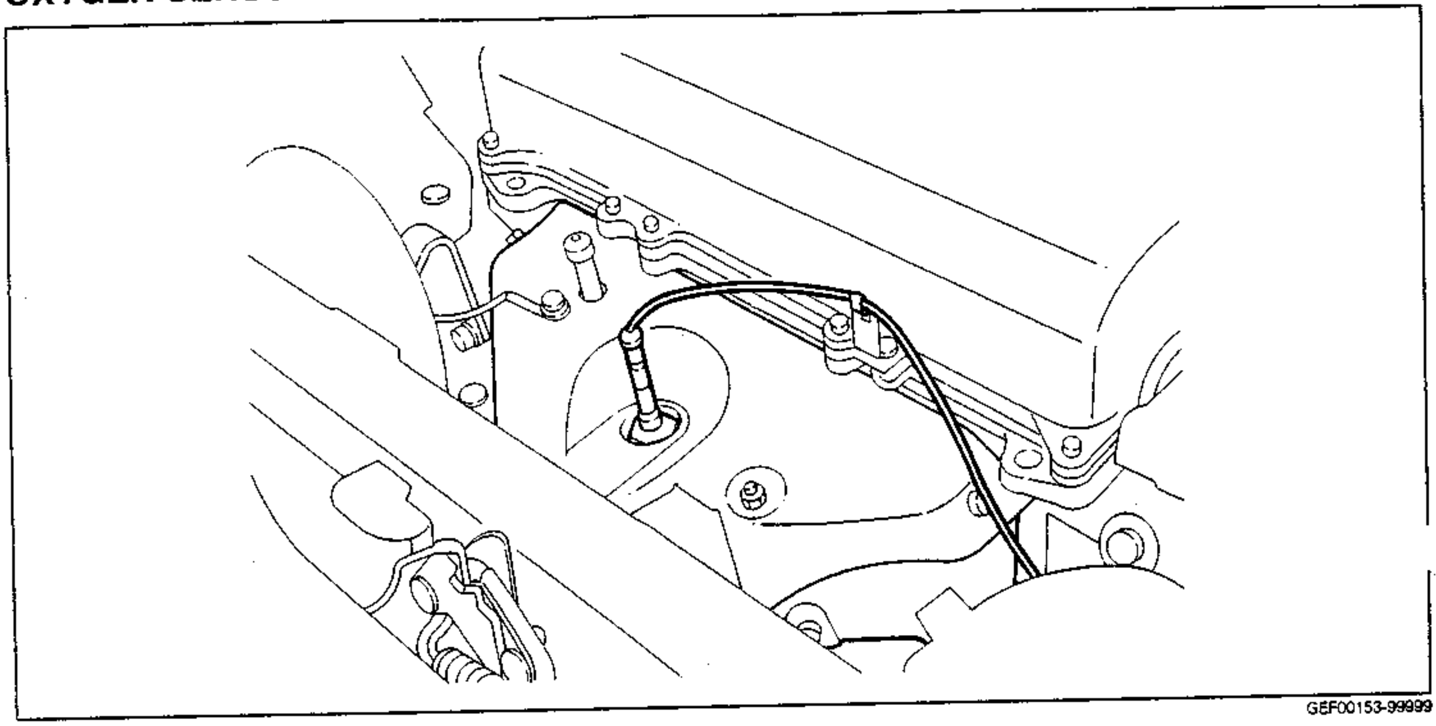
GEF00151-99999

12. Apply a negative pressure of 13.3 kPa (100 mmHg) to the VSV No. 2, using a MityVac.
13. Turn ON the blower fan switch. Check that the negative pressure being applied in the step (12) becomes zero.
    If the negative pressure fails to become zero, check there is voltage between the SST terminal ㉘ and ㉜.
    When there is no voltage, check the wiring between the headlamp switch and the heater fan switch and ECU. Repair the wiring, as required.
    CAUTION:
    - **After completion of the inspection, before the SST is removed, be sure to disconnect the battery ground cable from the negative (–) battery terminal.**
      After the ECU and engine wire have been connected, reconnect the battery ground cable to the negative (–) battery terminal.



GEF00152-99999

OXYGEN SENSOR



GEF00153-99999

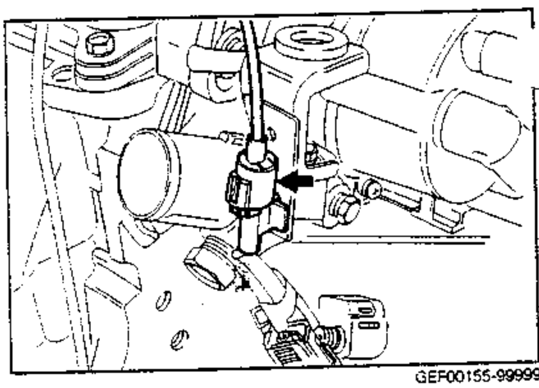
Inspection of oxygen sensor

1. Unit inspection of oxygen sensor

   CAUTION:
   - The inspection procedure should be employed only when the engine idle speed and acceleration performance are normal.
   - When unstable engine idling or poor acceleration is taking place, it is impossible to determine whether the oxygen sensor is normal or not, using this procedure. In this case, perform the system inspection.

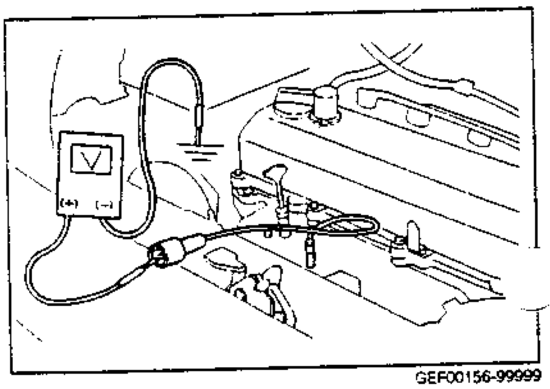
GEF00154-00000

(1) Disconnect the oxygen sensor connector.



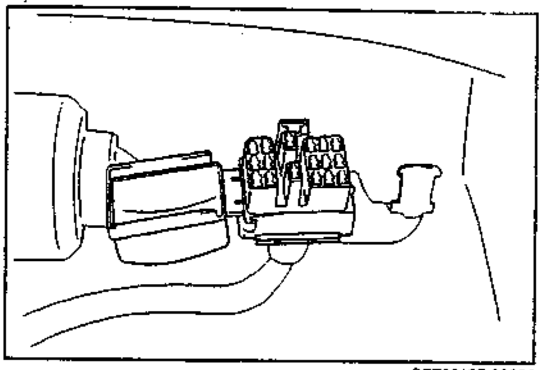
GEF00155-99999

(2) Start and warm up the engine completely.
(3) Connect a voltmeter to the connector terminal of the oxygen sensor.
(4) Depress the accelerator pedal and hold the engine revolution at about 3000 rpm. At this time, ensure that the reading of the voltmeter registers 0.45 V or more. Replace the oxygen sensor with a new part if the reading will not register 0.45 V or more.
(5) Remove the voltmeter from the oxygen sensor connector terminal.
(6) Reconnect the oxygen sensor connector.
(7) Connect the connector to the connector clamp.



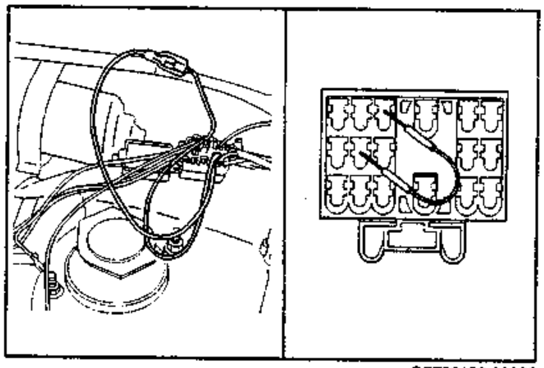
GEF00156-99999

2. Inspection of oxygen sensor system
   (1) Remove the cap of the check connector. Connect the following SST to the diagnosis connector.
   SST: 09991-87703-000



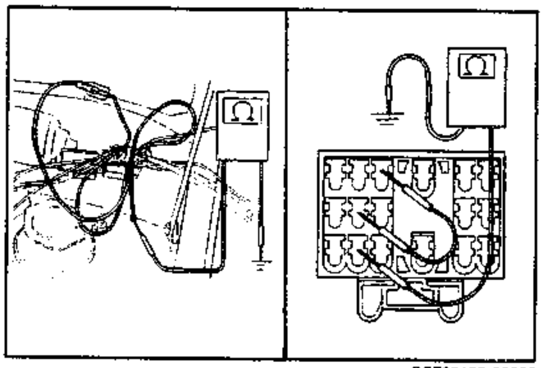
GEF00157-99999

   (2) Start and warm up the engine completely.
   (3) Connect the test terminal and ground terminal of the SST.



GEF00158-99999

   (4) Connect a voltmeter to the SST VF monitor terminal.
   (Reference)
   Output Voltage: 0 - 0.5 V



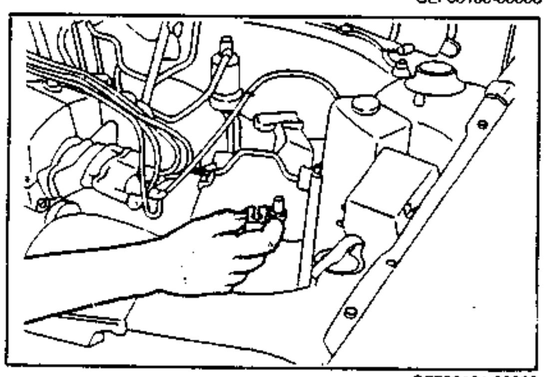
GEF00159-99999

   (5) Keep the engine revolution speed at 3000 rpm for about one minute to stabilize the output form of the SST VF monitor terminal.
   (6) While keeping the engine revolution speed at 3000 rpm, count how many times the pointer of the voltmeter swings within 10 seconds.
   8 times or more: Normal — Proceed to step (18)
   0 - 7 times: Proceed to step (7)

NOTE:
- There are cases where the measurement can not be conducted with a tester having a low reaction speed.
- Therefore, use a tester having a high reaction speed.

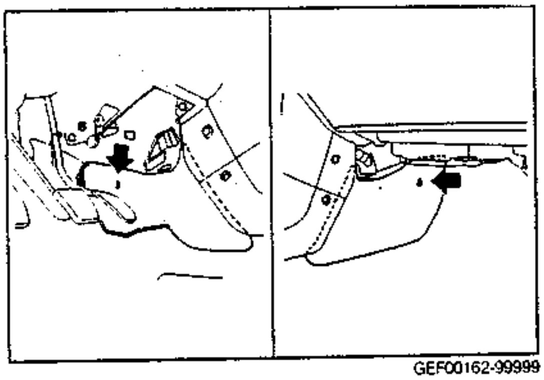
GEF00160-00000

   (7) Installation of SST
   ① Disconnect the ground cable terminal from the negative terminal of the battery.



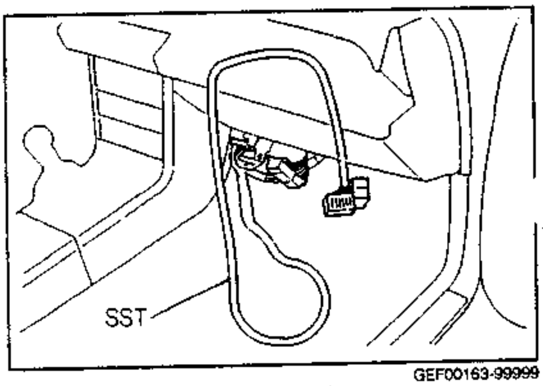
GEF00161-99999

② Remove the front floor side cover. (under the heater unit.)



GEF00162-99999

③ Connect the following SST between the ECU and the engine wire.
SST: 09842-87706-000



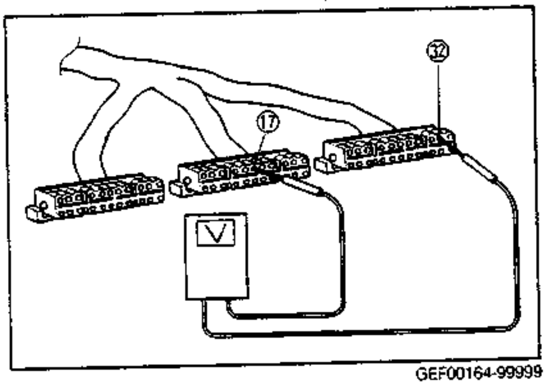
GEF00163-99999

NOTE:
- Before the SST is installed, be sure to perform continuity test and short between the SST terminals.

④ Reconnect the ground cable terminal to the negative (–) terminal of the battery.

(8) Start and warm up the engine completely.

(9) Connect the voltmeter across the SST terminals ⑰ and ㉜.
(Reference)
Measuring Voltage: 0 - 1.0 V



GEF00164-99999

(10) Keep the engine revolution speed at 3000 rpm for about one minute to stabilize the output form of the voltmeter.

(11) While keeping the engine revolution speed at 3000 rpm, measure the output voltage.

(12) Perform the inspection and repair, following the procedure given in the table below, according to the measurement results.

GEF00165-00000

Measured voltage	Remedy
• 0 V	1) Check oxygen sensor circuit for open wire or short circuit. —BAD→ Repair or replace. ↓ OK 2) Remedy causes of too-lean fuel mixture. • Pressure sensor • Pressure regulator • Fuel line • Fuel filter • Fuel pump • Injector —BAD→ Repair or replace. ↓ OK Replace oxygen sensor.
• The measured voltage varies mainly within a range under 0.45 V.	Remedy causes of too-lean fuel mixture. • Pressure sensor • Pressure regulator • Fuel line • Fuel filter • Fuel pump • Injector
• The measured voltage varies within a range of 0 - 1.0 V, centering around 0.45 V. However, the reaction speed is low. (The pointer of voltmeter swings less than 8 times within 10 seconds.)	Check ECU —BAD→ Repair/replace ECU. ↓ OK Replace oxygen sensor.
• The measured voltage varies mainly within a range above 0.45 V.	Remedy causes of too-rich fuel mixture. • Pressure sensor • Fuel line • Pressure regulator • Injector
• 1.0 V	Remedy causes of too-rich fuel mixture. • Pressure sensor • Fuel line • Pressure regulator • Injector —BAD→ Repair or replace.
• More than 1.0 V	Check oxygen sensor circuit for short circuit with other positive line. ↓ Repair or replace.

GEF00166-00000

(13) Stop the engine.

(14) Removal of SST for ECU

① Disconnect the ground cable terminal from the negative (–) terminal of the battery.

② Remove the SST by disconnecting its connectors from the ECU and engine wire connectors.

③ Connect the engine wire connectors to the ECU.

④ Install the front side cover.

⑤ Reconnect the ground cable terminal to the negative (–) terminal of the battery.

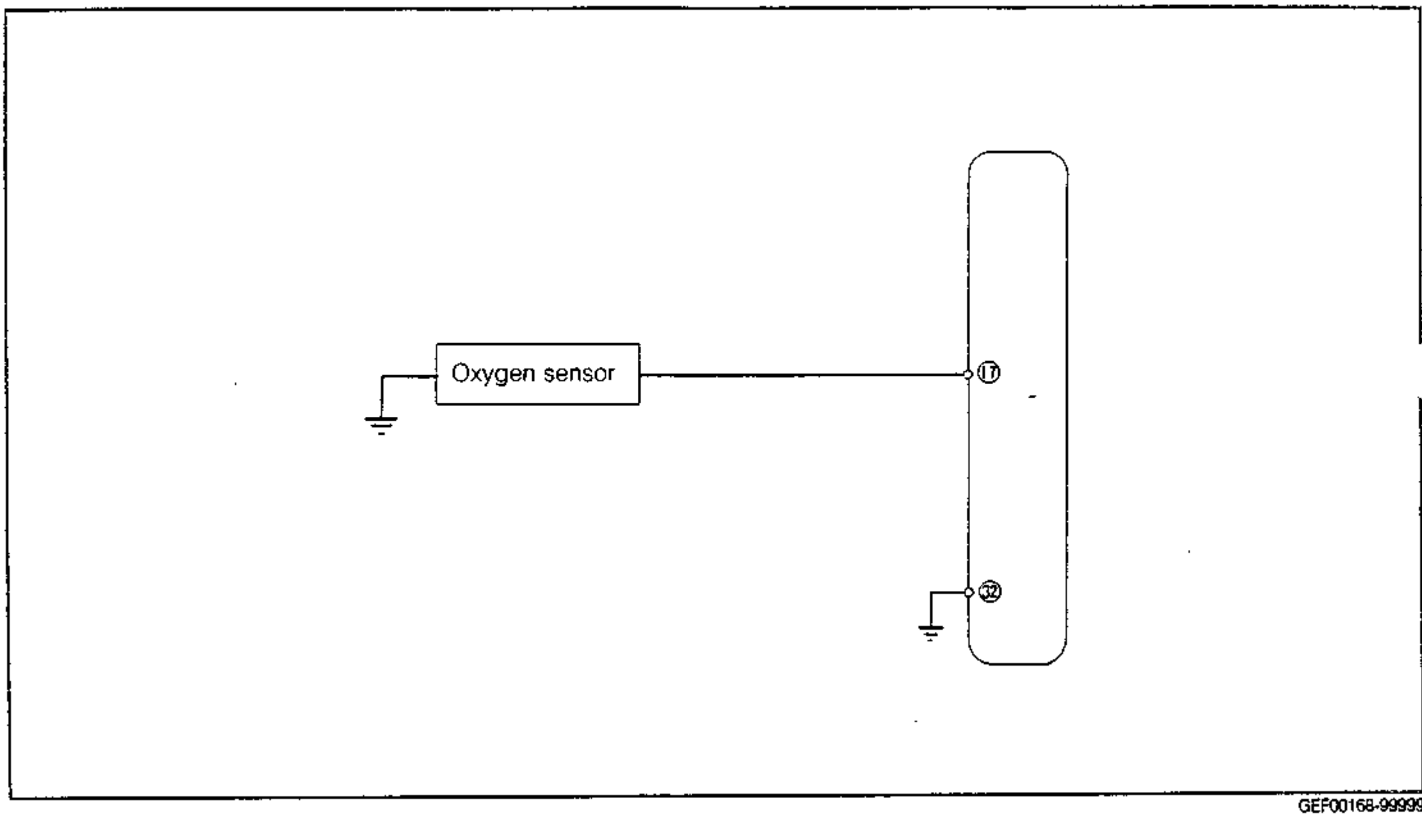
(15) Removal of SST for diagnosis connector

① Remove the SST from the diagnosis connector.

② Install the cap to the diagnosis connector.

GEF00167-00000

Terminals	Trouble	Conditions		STD voltage
⑰ – ㉜	No voltage changes	Ignition switch ON	When engine speed is held at 3000 rpm for two minutes after engine has been fully warmed up:	Voltage changes more than 8 times with in 10 seconds



GEF00168-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

There is no change in voltage between SST terminals ⑰ and ㉜ when engine speed is held at 3000 rpm for two minutes after engine has been fully warmed up:

↓

Check wiring between ECU and oxygen sensor.

OK → Check oxygen sensor.

BAD → Repair or replace.

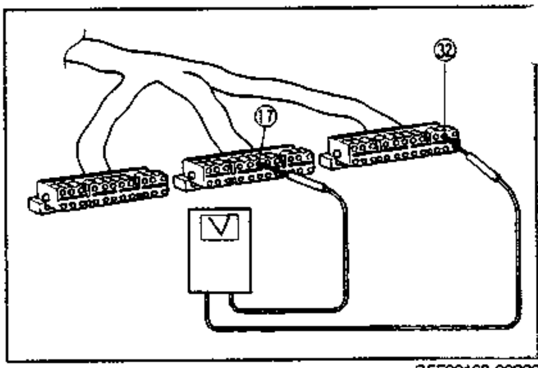
Repair or replace.

BAD → Check oxygen sensor.

Check oxygen sensor.

OK → Check ECU.

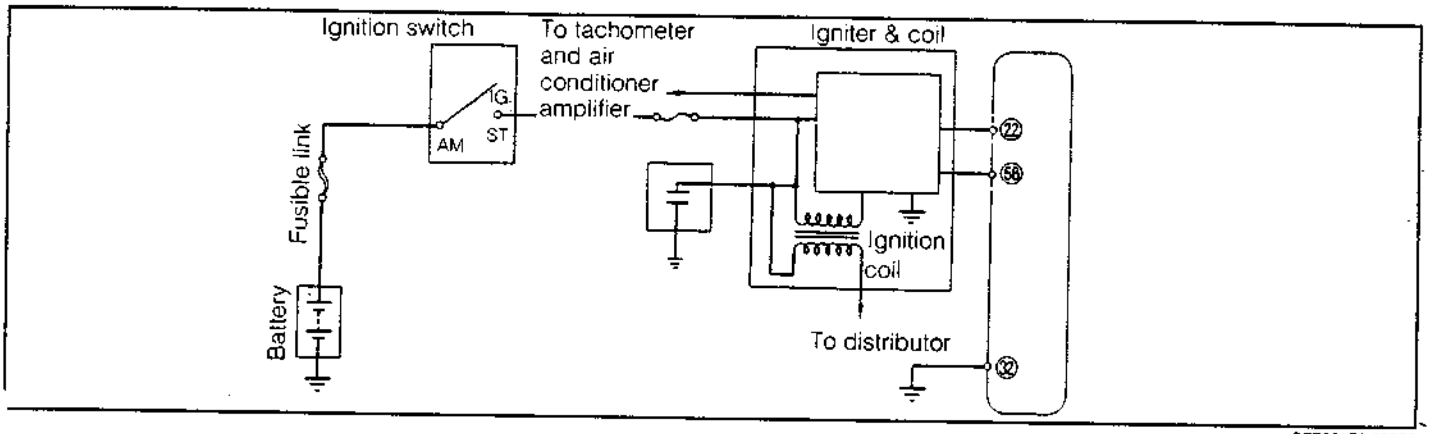
Check ECU.



GEF00169-99999

IGNITION MONITOR

Terminals	Trouble	Conditions	STD voltage
㉒ - ㉜	4.5 - 5.5 or 0	Ignition switch ON	0.5 - 1.5 (While engine is stopped)



GEF00170-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

- **㉒ – ㉜ 4.5 - 5.5 V**

Check that there is a voltage of 4.5 to 5.5 volts between SST terminals ㉒ and ㉜ when ignition switch is turned ON.

↓

Check wiring between SST terminal (58) and igniter.

OK / **BAD** → Repair or replace.

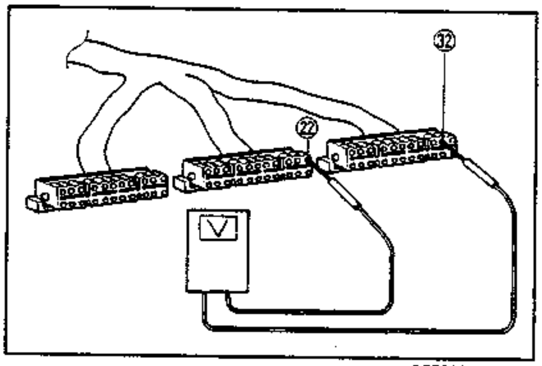
Check that voltage is applied to ignition coil.

OK / **BAD** → Repair or replace.

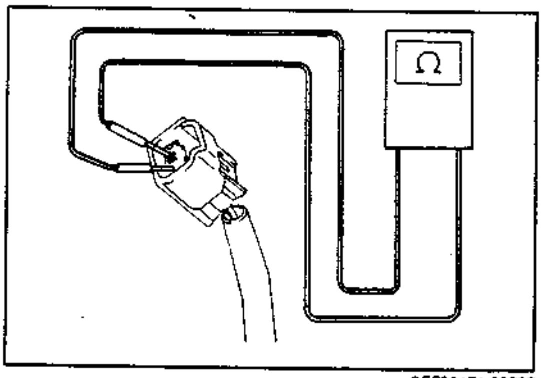
Check that there is continuity between igniter body and body ground.

OK / **BAD** → Repair.

Replace igniter.



GEF00000-99999



GEF00171-99999

• ㉒ – ㉜ 0 V

There is no voltage between SST terminals ㉒ and ㉜ when ignition key switch is turned ON.

↓

Check wiring between ECU terminal ㊿58 and igniter.

- **OK** ↓
- **BAD** → Repair or replace.

Check insulation between igniter terminal 56 and body ground.

- **OK** ↓
- **BAD** → Replace igniter.

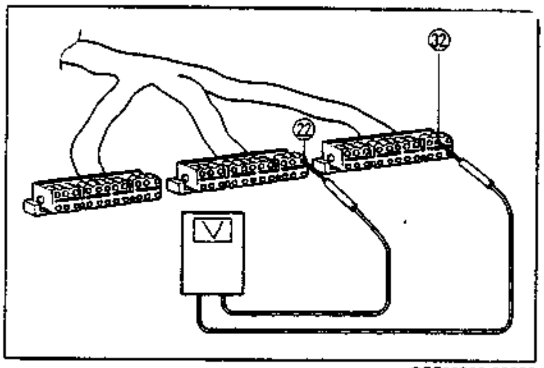
Check insulation between igniter terminal ㉒ and body ground.

- ↓
- **BAD** → Replace igniter.

Refer to ㉝ – ㉜ trouble section No. 1.

- **BAD** → Repair or replace.
- **OK** ↓

Check ECU.



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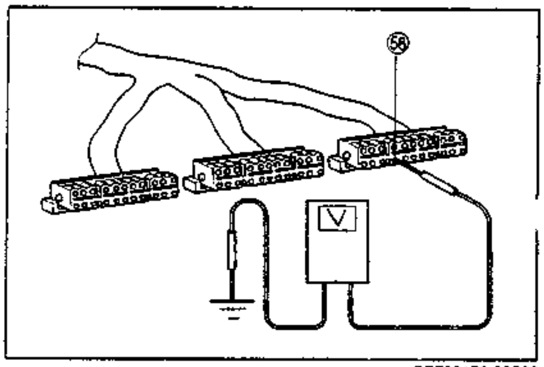


GEF00172-99999

㊿58 – ㉜

Check that there is no AC voltage between SST terminals (58) and ㉜ while engine is being cranked or engine is running.

↓

Check wiring between terminal ㉒ and igniter.

- **OK** ↓
- **BAD** → Repair or replace.

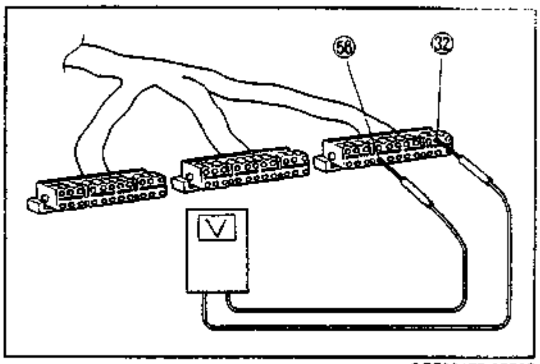
Check insulation between igniter terminal ㉒ and body ground.

- **OK** ↓
- **BAD** → Replace igniter.

Refer to ㉝ – ㉜ trouble section No. 1.

- **BAD** → Repair or replace.
- **OK** ↓

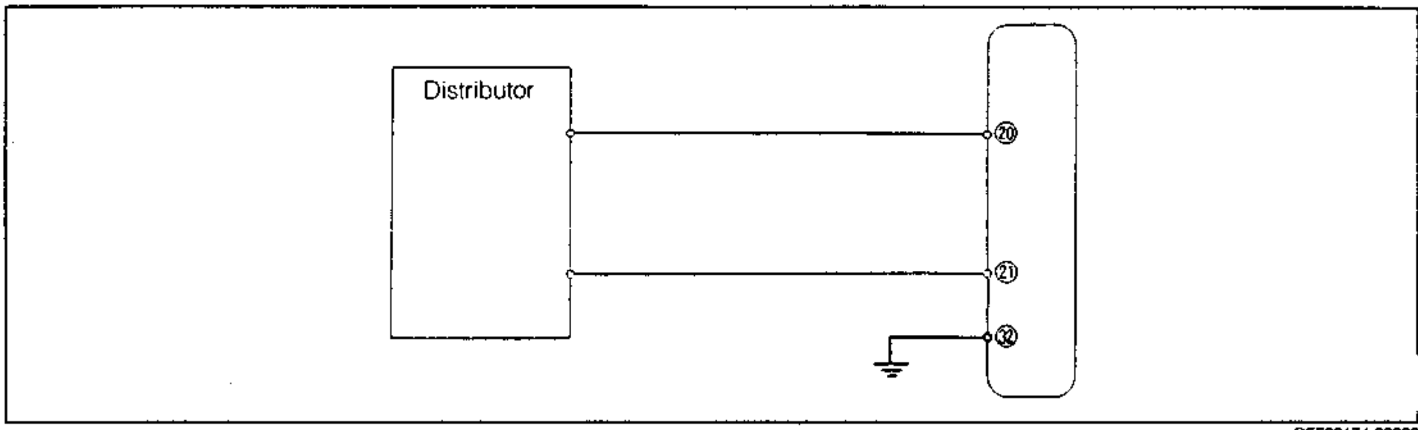
Check ECU.



GEF00173-99999

DISTRIBUTOR

Terminal	Trouble	Conditions	STD voltage
⑳ - ㉜	No voltage	Ignition switch ON	0.5 - 1.5
㉑ - ㉜	No voltage	Ignition switch ON	0.5 - 1.5



GEF00174-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

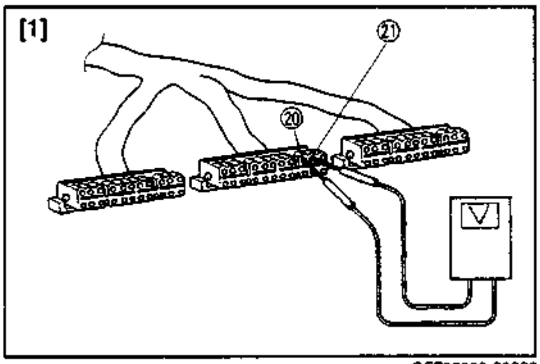
- ⑳ – ㉑

[1] There is no AC voltage between SST terminals ⑳ and ㉑ when ignition key switch is turned ON.

[2] Check that there is a voltage of about 0.5 - 1.5 Volt between the following terminals of SST terminal when ignition switch is turned ON.: Namely between ⑳ and ㉜, and between ㉑ and ㉜, respectively.

OK → Check distributor.
- BAD → Replace distributor.

BAD → Check wiring between ECU and distributor.
- BAD → Repair or replace.
- OK → Check distributor.
  - OK → Refer to ㉝ – ㉜ trouble section No. 1
    - BAD → Repair or replace.
    - OK → Check ECU.



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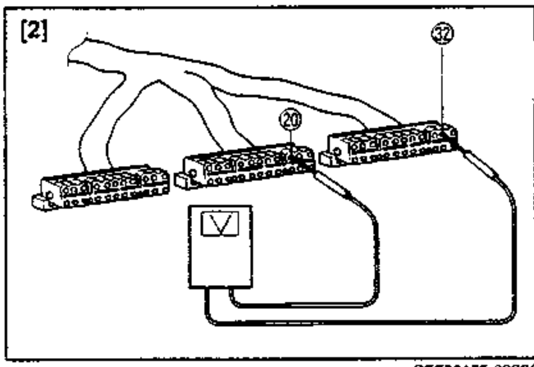
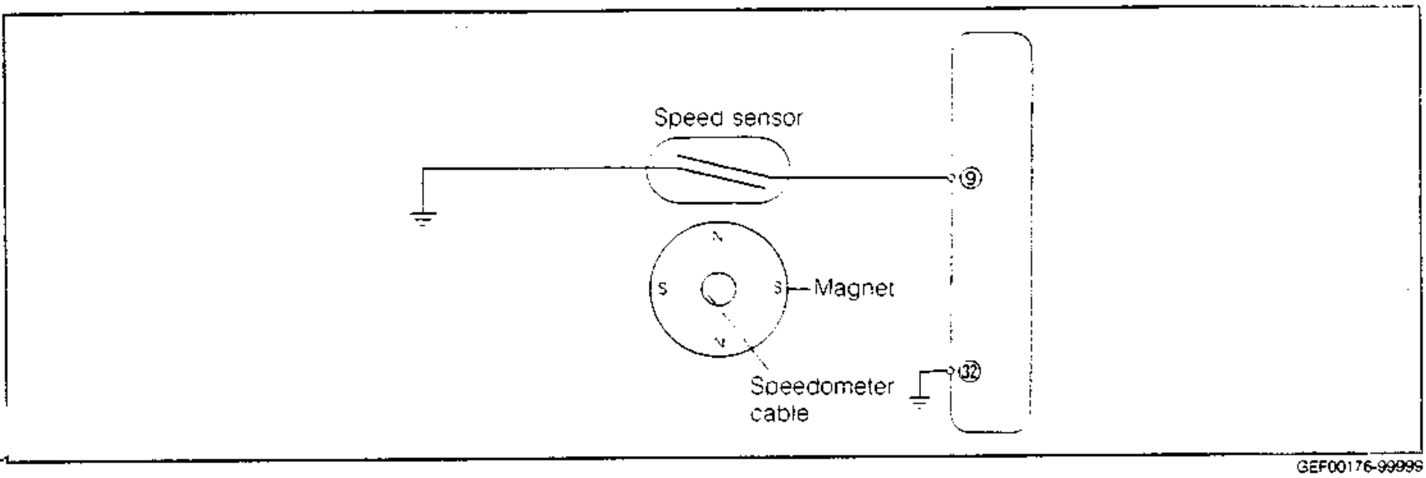


GEF00175-99999

SPEED SENSOR

Terminal	Trouble	Conditions		STD voltage
⑨ - ㉜	No voltage changes	Ignition switch ON	When vehicle is moved slowly:	0 to 4.5 - 5.5



GEF00176-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

No change in voltage occurs between SST terminals ⑨ and ㉜ when vehicle is moved slowly with ignition switch turned ON.

↓

Check that there is voltage between SST terminal ㉝ or ㉞ and ㉜

OK ↓ / **NO** → Refer to ㉝ – ㉜ trouble section No. 1.

Check speed sensor.

OK ↓ / **BAD** → Replace speed sensor.

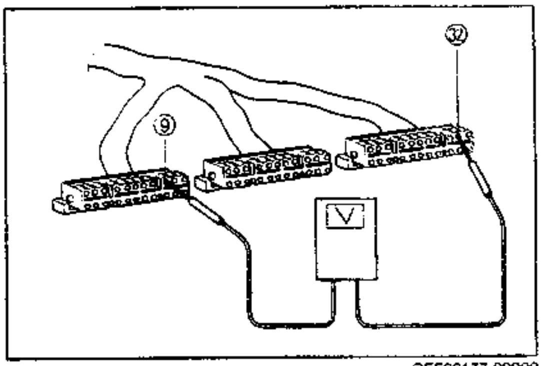
Check wiring between ECU and speed sensor.

OK ↓ / **BAD** → Repair or replace.

Check wiring between speed sensor and body ground.

OK → Check ECU.

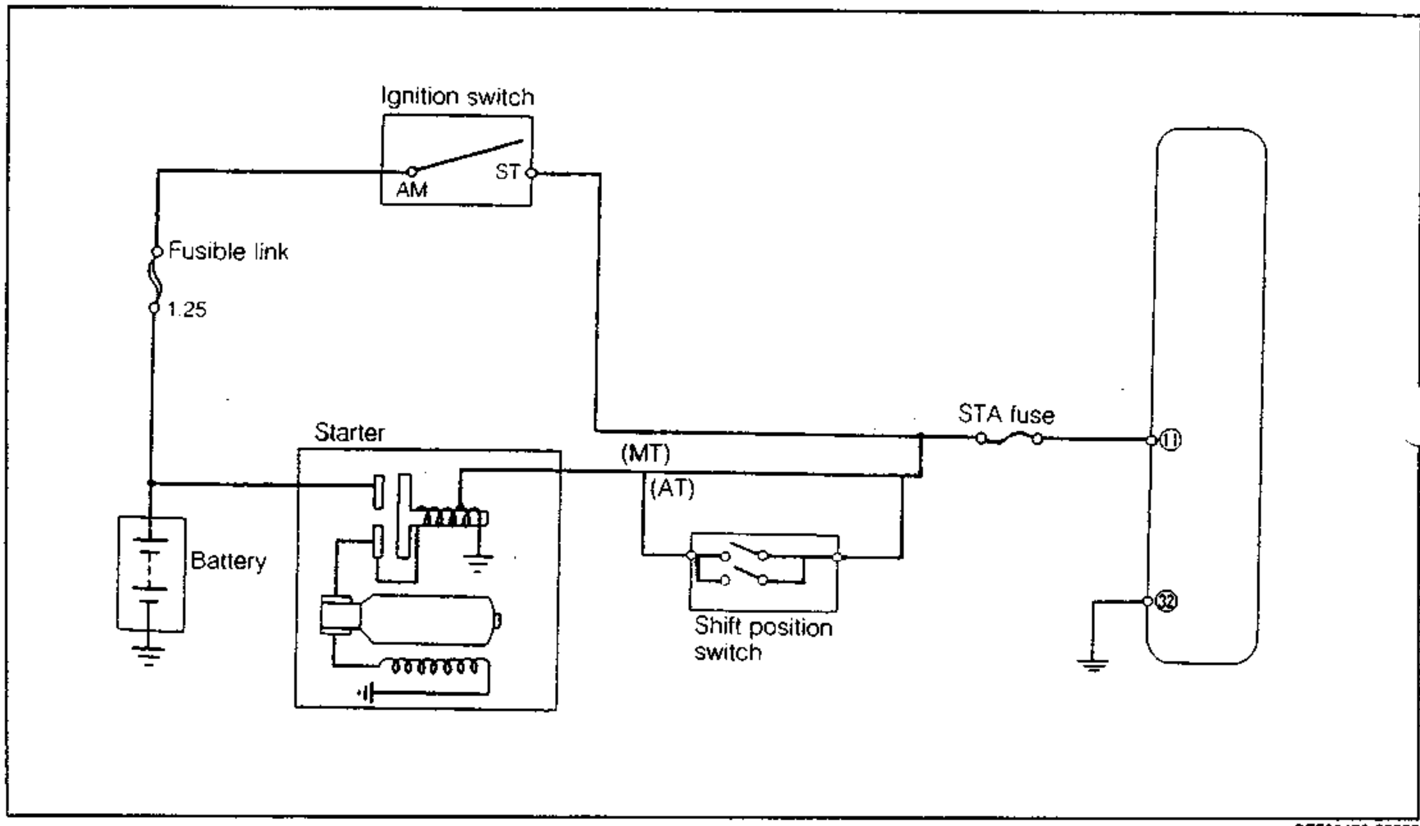
BAD → Repair or replace.



GEF00177-99999

STARTER SWITCH

Terminal	Trouble	Conditions	STD voltage
⑪ - ㉜	No voltage	Ignition switch ST position	6 - 15.5



GEF00178-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

There is no voltage between SST terminals ⑪ and ㉜ when ignition switch is set to ST position.

Check starter operation

BAD / **OK**

(OK) Check wiring between ECU and starter terminal.

OK / **BAD**

(BAD) Repair or replace.

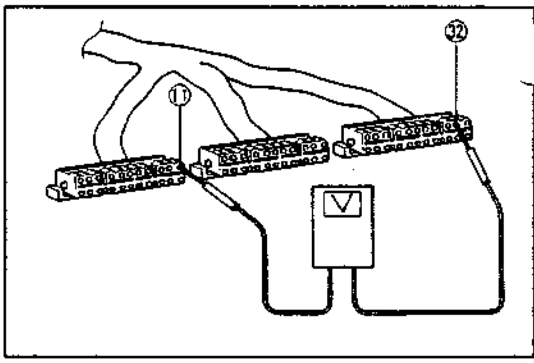
(OK) Check and repair wiring between ECU terminal ㉜ and body ground.

(BAD) Check battery, fusible link, ignition switch, shift position switch and starter.

OK / **BAD**

(BAD) Repair or replace

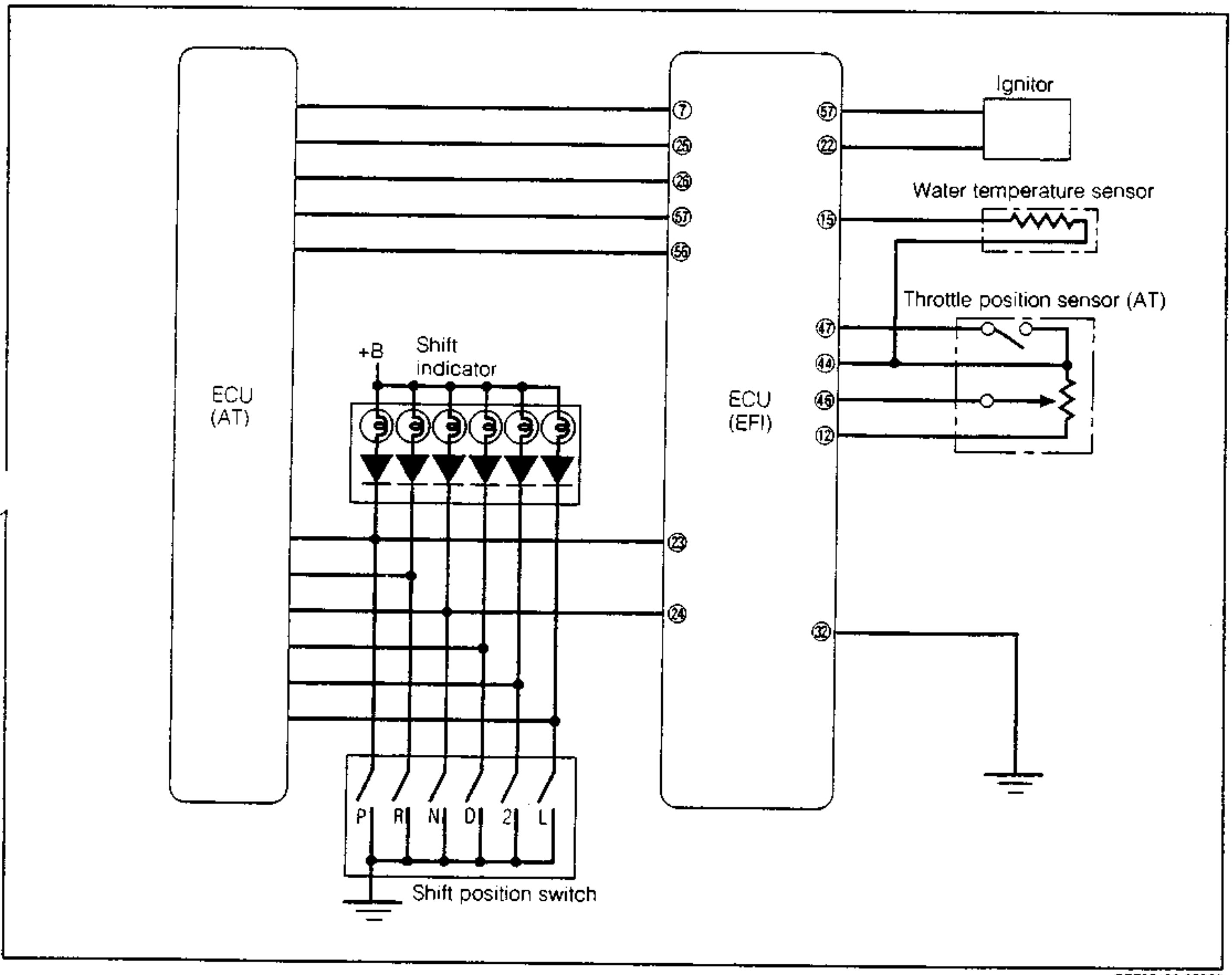
(OK) Check and repair wiring between battery and ECU terminal ㉜.



GEF00179-99999

AUTOMATIC TRANSMISSION CONTROL SYSTEM

Terminal	Trouble	Condition		STD voltage
7 - 32	No voltage	Ignition switch is turned ON		4.5 - 5.5
23 - 32	No specified voltage	Ignition switch is turned ON	When the shift position is P range	Less than 3
			When the shift position is other range	Approx. Battery voltage
24 - 32	No specified voltage	Ignition switch is turned ON	When the shift position is N range	Less than 3
			When the shift position is other range	Approx. Battery voltage
25 - 32	No specified voltage	Ignition switch is turned ON	Coolant temperature below 32°C	Less than 1.5
			Coolant temperature above 45°C	4.5 - 5.5
26 - 56	No voltage	Ignition switch is turned ON		4.5 - 5.5
57 - 56	No specified voltage	Ignition switch is turned ON	Throttle valve is fully closed	0.3 - 0.9
			Throttle valve is fully opened	2.9 - 3.5



GEF00180-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-Shooting" at page EF-22.

- 23 – 32

[1] There is no specified voltage between SST terminal 23 – 32 when ignition switch is turned on at P range shifted.

↓

[2] Check that there is voltage between SST terminal 33 or 34 and body ground when ignition switch is turned on.

OK ↓ / **BAD** → Refer to 33 or 34 and 32 trouble section

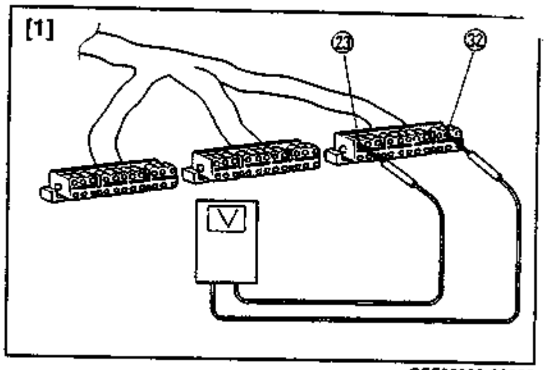
Check shift position switch (Refer to the 4AT section).

OK ↓

Check wiring between ECU and shift position switch.

OK ↓

Check ECU.



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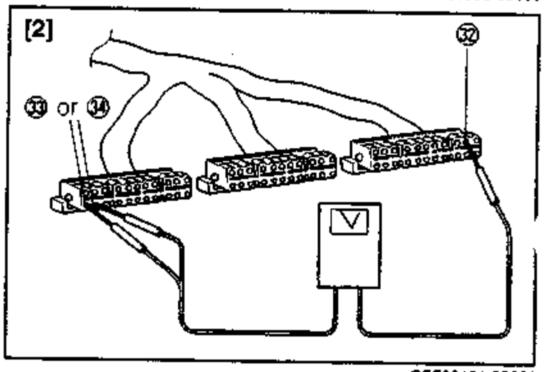


GEF00181-99999

- 24 – 32

[1] There is no specified voltage between SST terminal 24 – 32 when ignition switch is turned on at N range shifted.

↓

[2] Check that there is voltage between SST terminal 33 or 34 and body ground when ignition switch is turned on.

OK ↓ / **BAD** → Refer to the 33 or 34 and 32 trouble shooting.

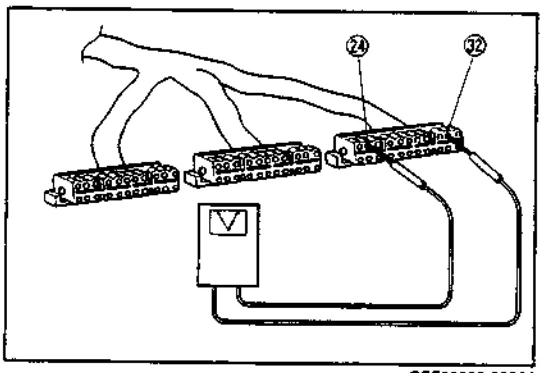
Check shift position switch (Refer to the 4AT section).

OK ↓

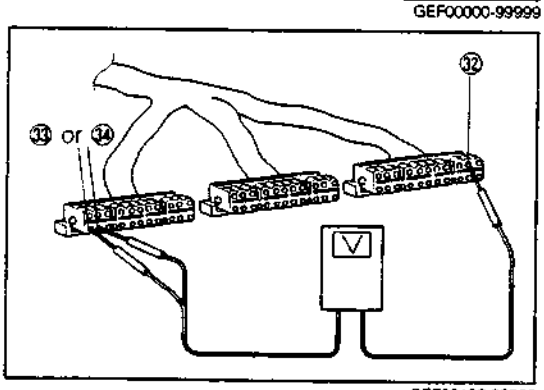
Check wiring between ECU and shift position switch.

OK ↓

Check ECU.



GEF00000-99999



GEF00182-99999

⑦ – ㉜

[1] There is no voltage between SST terminal ⑦ – ㉜ when the vehicle is moving at constant speed.

↓

[2] Check that there is voltage between SST terminal ㉝ or ㉞ and body ground when ignition switch is turned on.

OK / **BAD**

BAD → Refer to ㉝ – ㉜ trouble section.

OK ↓

Check the wiring and connection between EFI ECU terminal ⑦ and 4AT ECU terminal ㉒.

OK / **BAD**

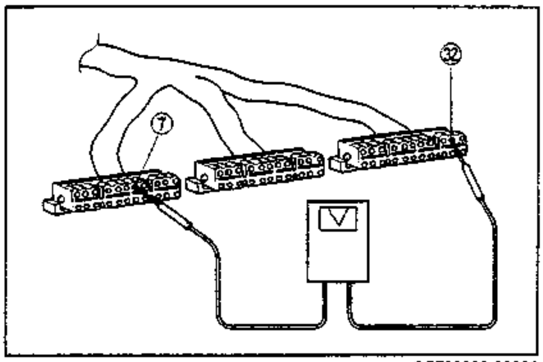
BAD → Repair or replace.

OK ↓

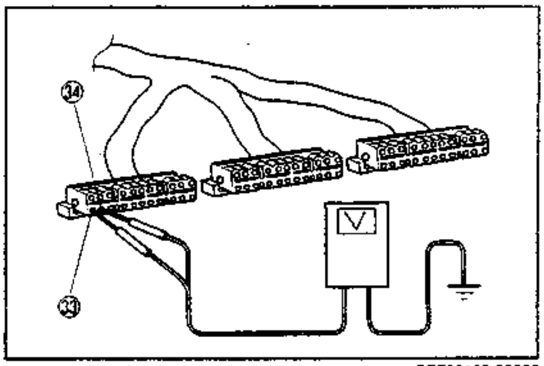
Check EFI ECU. — **BAD** → Replace EFI ECU.

OK ↓

Check 4AT ECU (Refer to the 4AT section).



GEF00000-99999



GEF00183-99999

• ㉕ – ㉜

[1] There is no specified voltage between SST terminal ⑦ – ㉜ when the ignition switch is turned ON.

↓

[2] Check there is voltage between SST terminal ㉝ or ㉞ and body ground.

- **OK** ↓
- **BAD** → Refer to ㉝ – ㉜ trouble section.

Check there is voltage between SST terminal ⑮ – ㊹ when the ignition switch is turned ON.

- **OK** ↓
- **BAD** → Refer to ⑮ – ㊹ trouble section.

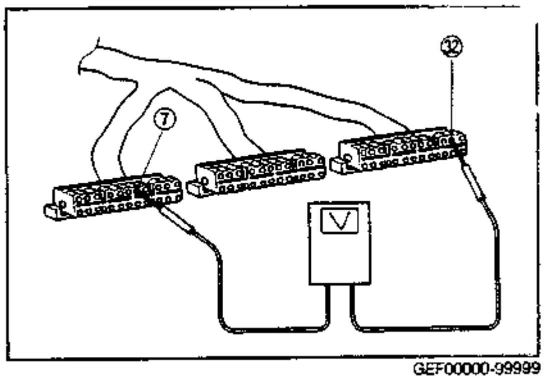
Check wiring between EFI ECU terminal ㉕ and 4AT ECU terminal.

- **OK** ↓
- **BAD** → Repair or replace.

Check EFI ECU.

- **BAD** → Replace EFI ECU.
- **OK** ↓

Check 4AT ECU (Refer to the 4AT section).



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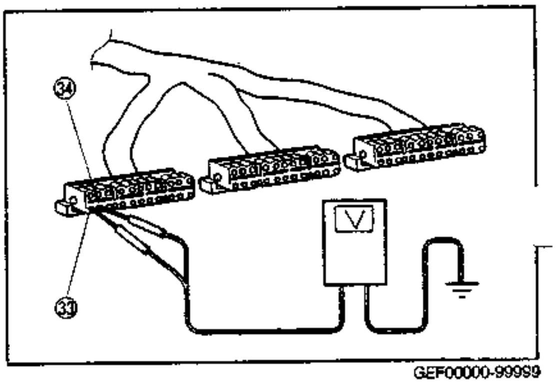

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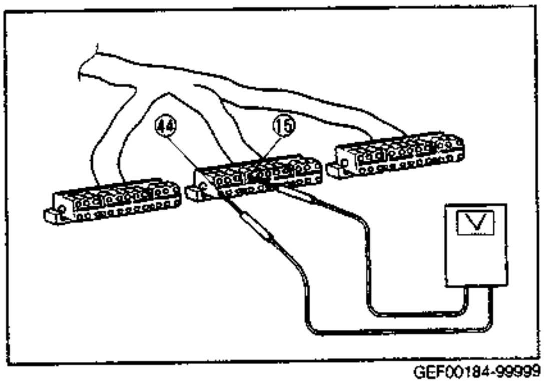


GEF00184-99999

- ㉖ – ㊻

[1] There is no voltage between SST terminal ㉖ – ㊻ when the ignition switch is turned ON.

[2] Check there is voltage between SST terminal ㉝ or ㉞ and body ground when the ignition switch is turned ON.

OK / BAD

BAD: Refer to ㉝ – ㉜ trouble section.

Check throttle position sensor. (See page EF–44.)

OK / BAD

BAD: Repair or replace.

OK: Check wiring between ECU and throttle position sensor.

OK / BAD

BAD: Repair or replace.

OK: Check wiring between EFI ECU terminal and 4AT ECU terminal.

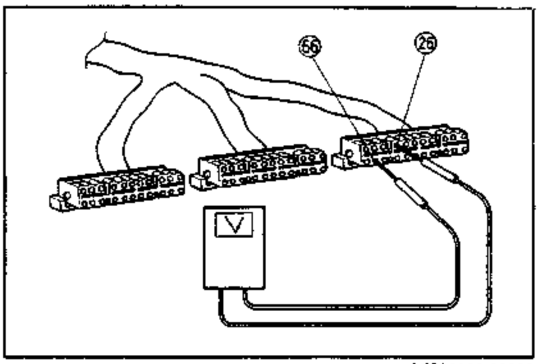
OK / BAD

BAD: Repair or replace.

OK: Check EFI ECU.

BAD: Replace EFI ECU.

OK: Check 4AT ECU.



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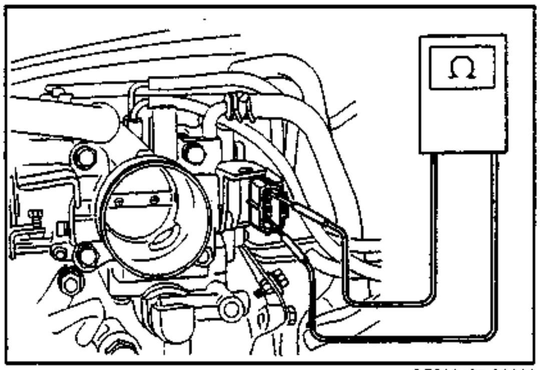


GEF00185-99999

- 57 – 56

[1] There is no specified voltage between terminals 57 – 56 when the ignition switch is turned ON.

↓

[2] Check there is voltage between SST terminals 33 or 34 and body ground when the ignition switch is turned ON.

- **BAD** → Refer to 33 – 32 trouble section.
- **OK** ↓

Check throttle position sensor. (See page EF-44.)

- **BAD** → Repair or replace.
- **OK** ↓

Check wiring between ECU and throttle position sensor.

- **BAD** → Repair or replace.
- **OK** ↓

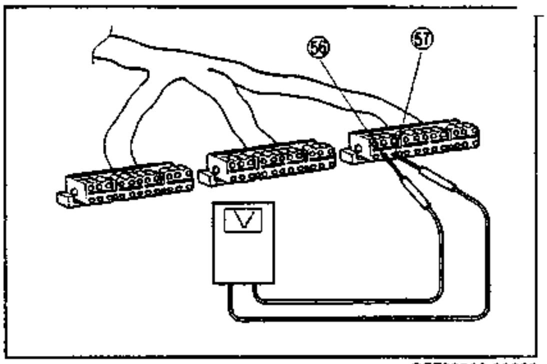
Check wiring between EFI ECU terminal and 4AT ECU terminal.

- **BAD** → Repair or replace.
- **OK** ↓

Check EFI ECU.

- **BAD** → Replace EFI ECU.
- **OK** ↓

Check 4AT ECU.



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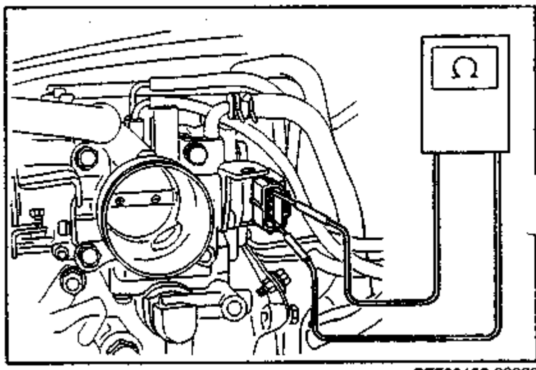
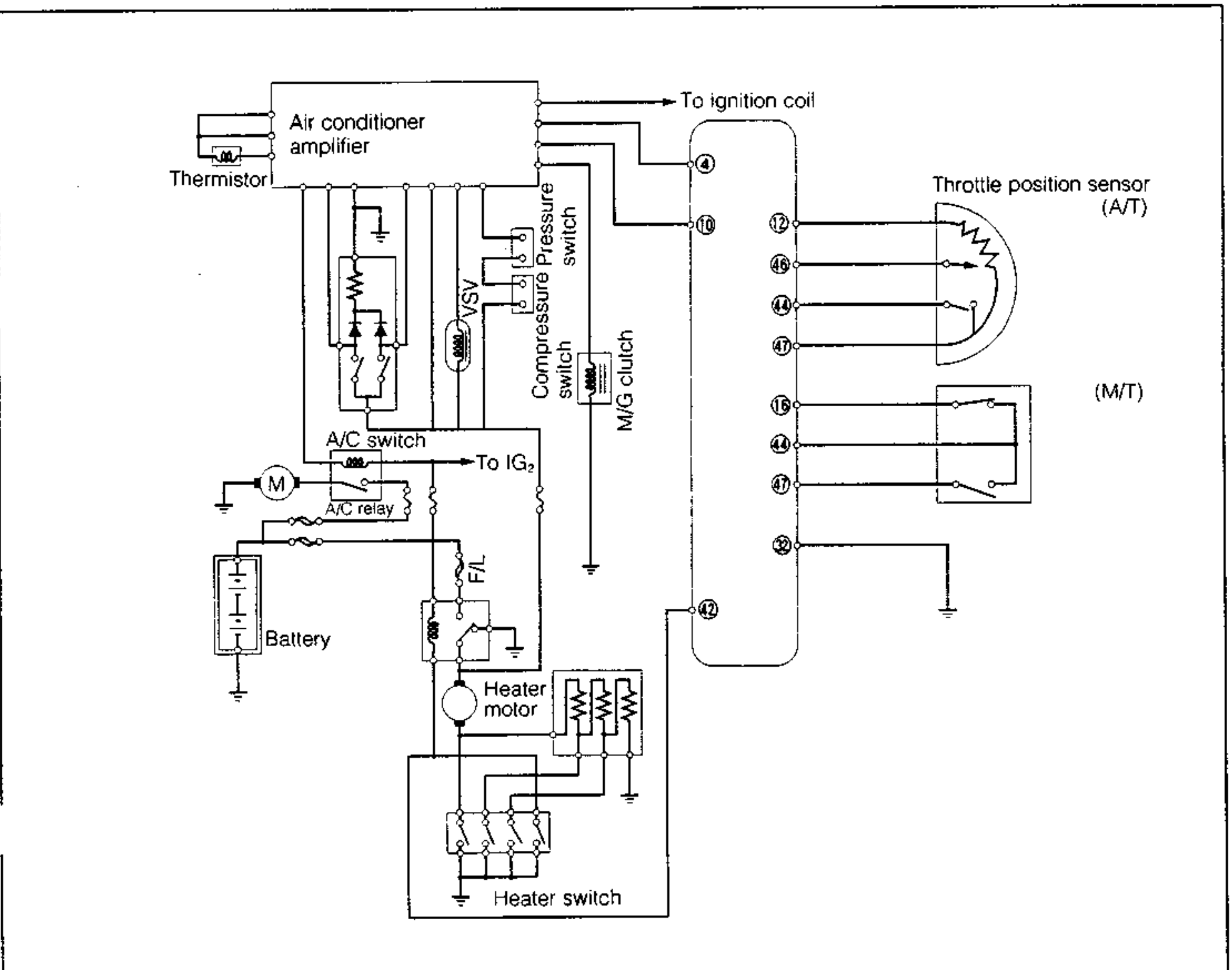


GEF00186-99999

IR CONDITIONER SWITCH

Terminals	Trouble	Conditions		STD voltage
⑩ - ㉜	No voltage	When engine is idling	Air conditioner switch ON	10 - 15.5
㊹ - ㊼	No specified voltage	Ignition switch ON	Throttle valve fully closed	0
			Throttle valve opened	4.5 - 5.5



GEF00187-99999

If the SST (09842-87706-000) has not been installed yet, install the SST, referring to the section under "Preparation of Trouble-shooting" at page EF–22.

- ⑩ – ㉜

[1] There is no voltage at SST terminals ⑩ and ㉜ when air conditioner is operated.

↓

[2] Check that there is voltage between SST terminal ⑩ and body ground.

- **NO** → Check compressor clutch operation.
- **OK** → Check wiring between ECU terminal ㉜ and body ground.

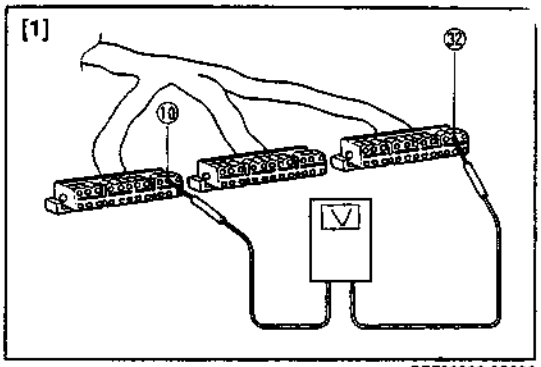
Check compressor clutch operation.

- **BAD** → Check that there is voltage between magnet clutch terminal of the amplifier terminal and body ground.
- **OK** → Check and repair wiring between ECU terminal ⑩ and amplifier.

Check that there is voltage between magnet clutch terminal of the amplifier terminal and body ground.

- **OK** → Check and repair wiring between magnet clutch terminal of the amplifier and ECU terminal ㉜.
- **NO** → Check fusible link, fuse, air conditioner switch, pressure switch, thermistor, acceleration cut switch and water temperature switch.
  - **OK** → Check wiring between battery and air conditioner amplifier.
    - **OK** → Replace air conditioner amplifier.
    - **BAD** → Repair or replace.

Check and repair wiring between magnet clutch terminal of the amplifier and ECU terminal ㉜.



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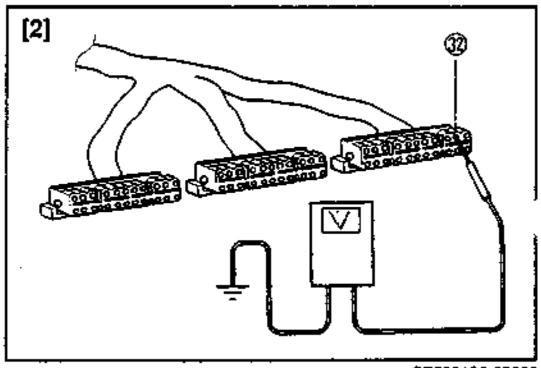


GEF00188-99999

• ㊹ – ㊼

[1] There is no voltage between SST terminals ㊹ and ㊼ when ignition switch is turned ON. (Throttle valve opened)

↓

[2] Check that there is voltage between SST terminal ㉝ or ㉞ and ㉜.

OK — **NO**

NO → Refer to ㉝ – ㉜ trouble section No. 1.

OK ↓

Check throttle position sensor.

OK — **BAD**

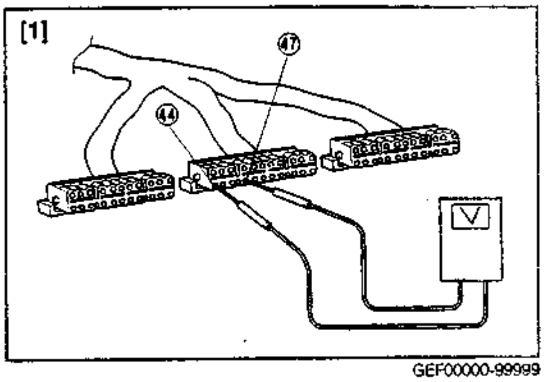
BAD → Replace throttle position sensor.

OK ↓

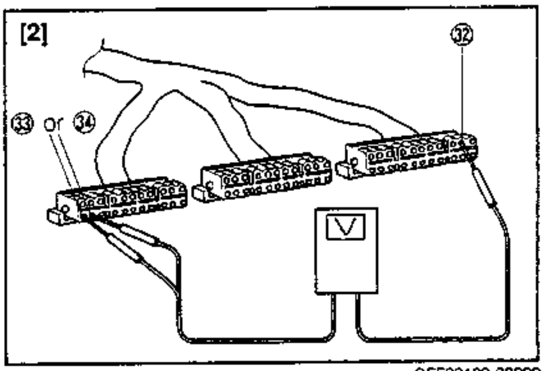
Check wiring between ECU and throttle position sensor.

OK ↓

Check ECU.



GEF00000-99999



GEF00189-99999

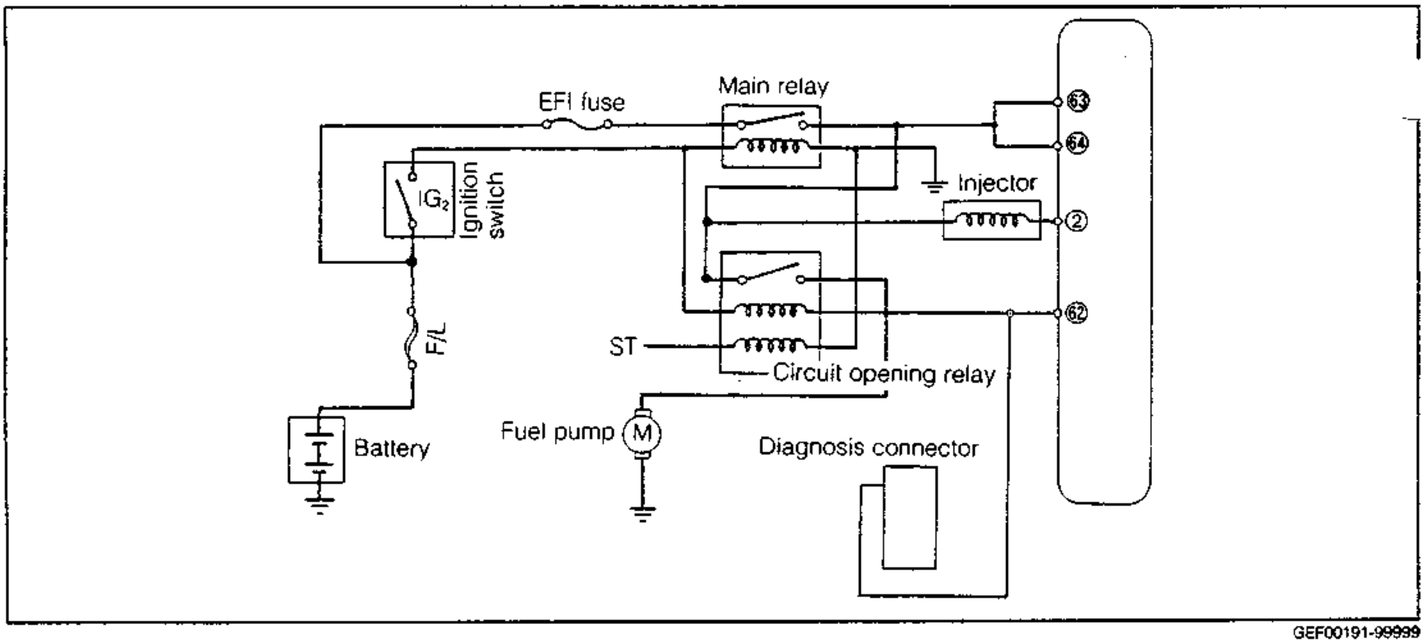
FUEL SYSTEM

The fuel system consists of the following components given below:
(1) Fuel tank
(2) Fuel pump
(3) Fuel line
(4) Fuel filter
(5) Injectors
(6) Pressure regulator

WARNING:
- When working on the fuel system, never smoke nor allow any open flame to be brought near the working site.

GEF00190-00000

Fuel system wiring diagram

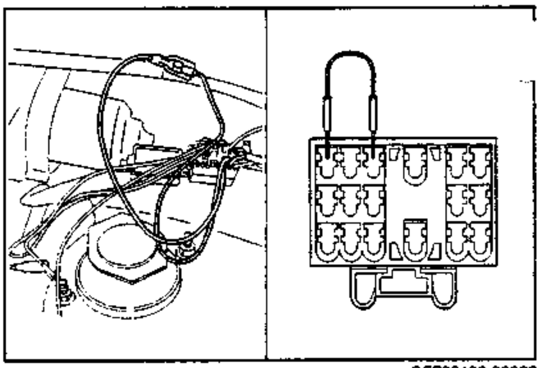


GEF00191-99999

IN-VEHICLE INSPECTION

Check of fuel pump operation

1. Connect the SST to the diagnosis connector.
2. Connect the SST fuel pump terminal to the ground terminal.
   SST: 09991-87703-000

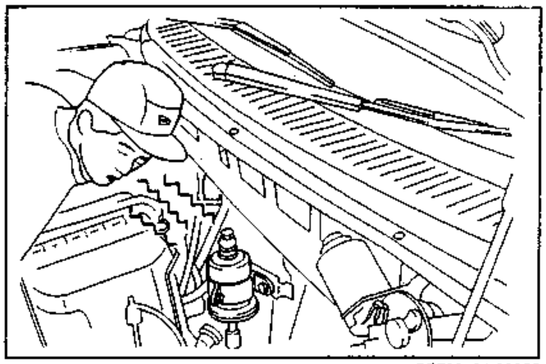


GEF00192-99999

3. Check of fuel flowing sound.
   (1) Turn on the ignition switch.

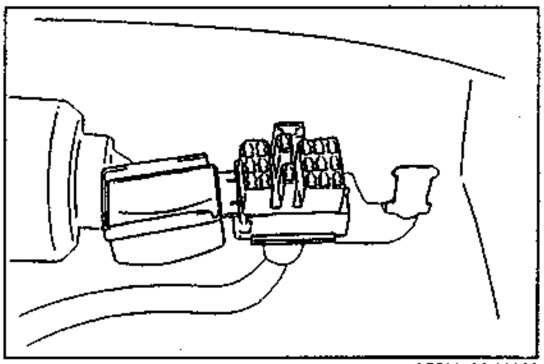
GEF00193-00000

(2) Check to see if you can hear fuel flowing sound around the pressure regulator.
(3) If you can hear no fuel flowing sound, check the following parts. Repair them, as required.
- Fusible links
- Fuses
- Main relay
- Circuit opening relay
- Fuel pump
- Wiring and wiring connections



GEF00194-99999

4. Removal of SST
   (1) Turn OFF the ignition switch.
   (2) Remove the SST from the diagnosis connector.
   (3) Attach the cap on the diagnosis connector.



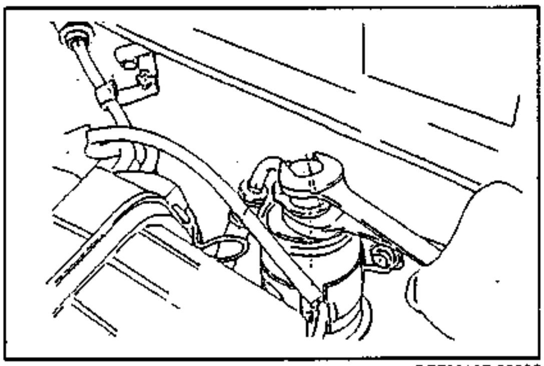
GEF00195-99999

Check of fuel pressure

1. Ensure that the battery voltage is 12 volts or more.
2. Disconnect the ground cable terminal from the negative (–) terminal of the battery.
3. Place a suitable container or cloth, etc. under the fuel filter.

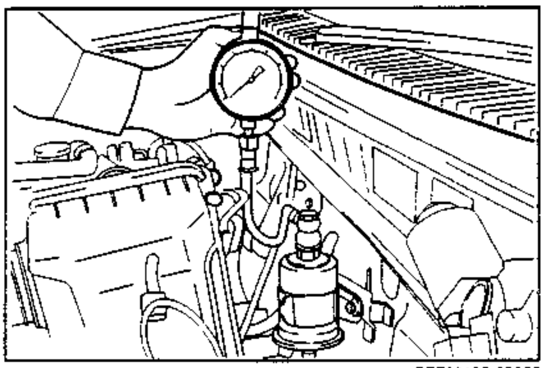
GEF00196-00000

4. Loosen the union bolt gradually.
   CAUTION:
   - Release the inner pressure of the fuel tank by removing the fuel filler cap in advance.
   - The fuel pressure at the inside of the fuel line is approximately 250 kPa (2.55 kgf/cm^2) higher than the atmospheric pressure. Hence, be sure to gradually loosen the union bolt so as to prevent fuel from splashing.
   - Since the fuel will flow out, be certain to place a suitable container or cloth, etc. under the fuel filter so that no fuel may get to the resin or rubber parts of the vehicle.



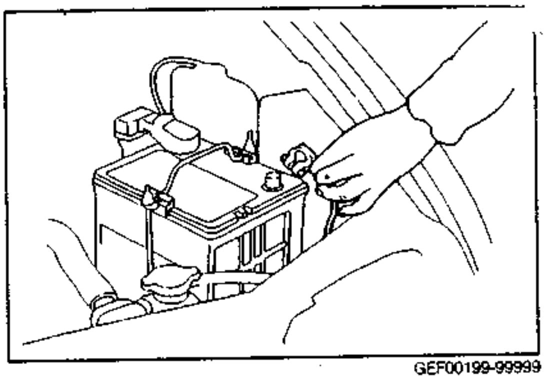
GEF00197-99999

5. Install the SST (fuel pressure gauge) between the fuel hose No. 1 and the fuel filter by means of the union bolt with a new gasket interposed.
   SST: 09268-87701-000



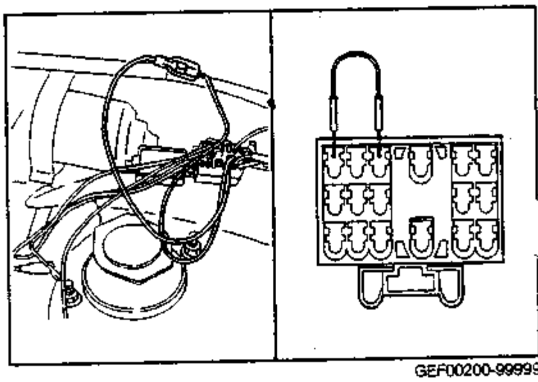
GEF00198-99999

6. Reconnect the ground cable terminal to the negative (–) terminal of the battery.



GEF00199-99999

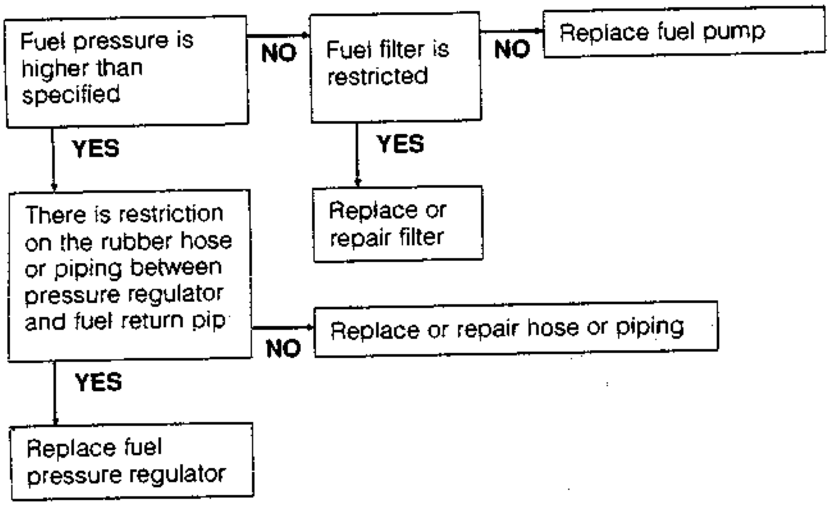
7. Connection of SST
   (1) Remove the cap on the diagnosis connector.
   (2) Connect the SST to the diagnosis connector.
   (3) Connect the SST fuel pump terminal to the ground terminal.
   SST: 09991-87703-000

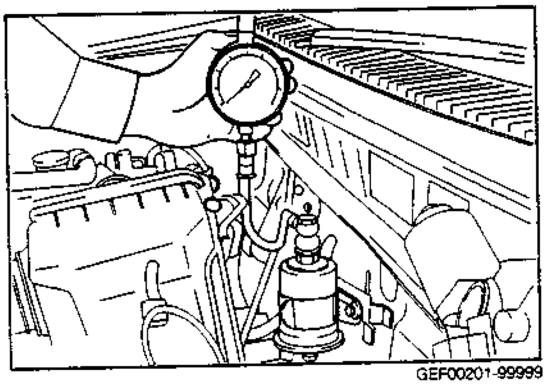


GEF00200-99999

8. Turn ON the ignition switch.

9. Check to see if the fuel pressure conforms to the specified pressure.
   Specified Fuel Pressure:
   245 - 255 kPa (2.50 - 2.60 kgf/cm²)

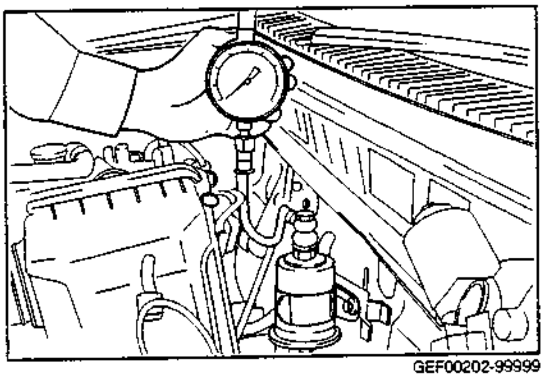




GEF00201-99999

Turn OFF the ignition switch. After three minutes, check to see if the fuel pressure is the following specified.

Specified Fuel Pressure: 177 kPa (1.8 kgf/cm^2)

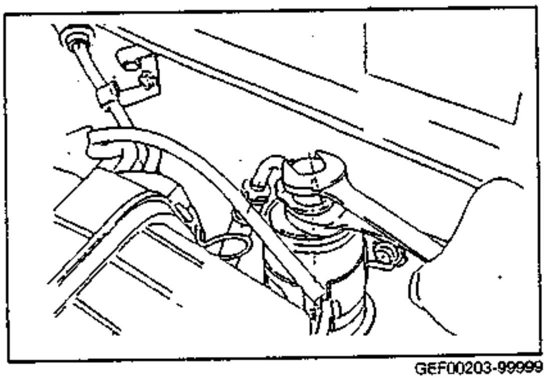


GEF00202-99999

Fuel pressure is lower than specified
- NO → Check fuel flow rate
- YES ↓

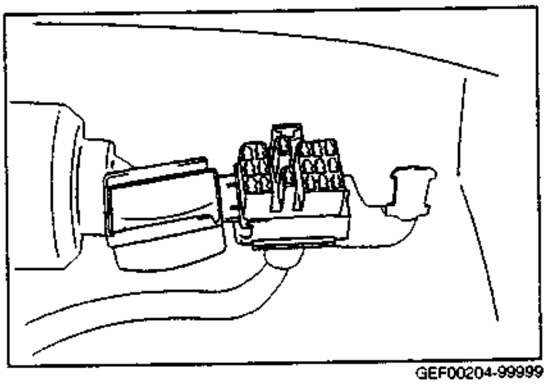
Turn ON the ignition switch again(But do not start the engine)
After three minutes, turn OFF the switch and restrict the rubber hose by hand between fuel filter and delivery pipe. Then, if fuel pressure decreases below specified.
- YES → • Check fuel line for leakage • Check fuel pump
- NO → Disconnect the rubber hose from fuel return of pressure regulator. Then, connect the mityvac and apply vacuum pressure 53.3 kPa (400 mmHg). If the pressure decreases gradually
  - YES → Replace pressure regulator
  - NO → Replace injector

11. Removal of SST
    (1) Turn OFF the ignition key switch.
    (2) Disconnect the ground cable terminal from the negative terminal (–) of the battery.
    (3) Loosen the fuel filter union bolt gradually.
    (4) Remove the SST (fuel pressure gauge).
    (5) Install the fuel hose No. 1 to the fuel filter by means of the union bolt with a new gasket interposed.
    Tightening Torque: 34.3 - 44.1 N·m (3.5 - 4.5 kgf-m)



GEF00203-99999

    (6) Remove the SST from the diagnosis connector.
    SST: 09991-87703-000
    (7) Attach the cap on the diagnosis connector.
    (8) Reconnect the ground cable terminal to the negative (–) terminal of the battery.



GEF00204-99999

12. Check of fuel leakage
    Start the engine. Check to see if any fuel leakage is present. Repair any defective part if the fuel leakage exists.

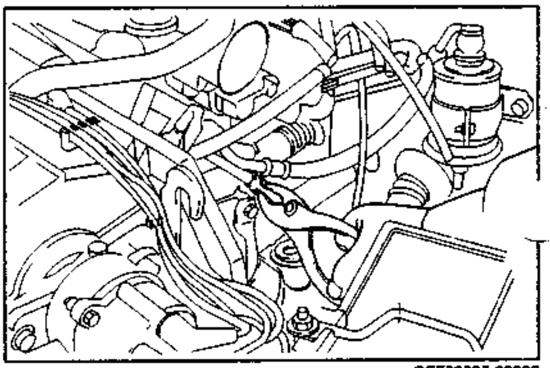
GEF00205-00000

Check of fuel flow rate

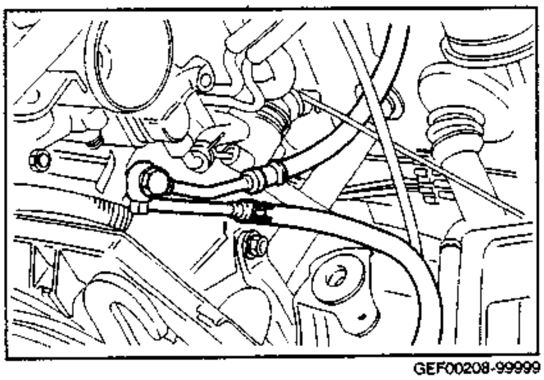
1. Ensure that the battery voltage is 12 volts or more.
2. Disconnect the ground cable terminal from the negative (–) terminal of the battery.
3. Place a suitable container or cloth, etc. under the pressure regulator.

GEF00206-00000

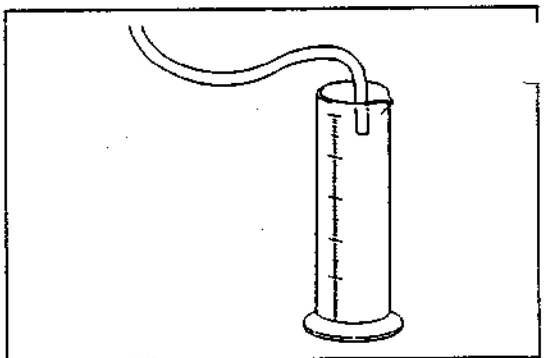
4. Disconnect the fuel return hose connected to the pressure regulator.
   CAUTION:
   - **Since the fuel will flow out, be certain to place a suitable container or cloth, etc. under the pressure regulator so that no fuel may get to the alternator.**
   - **Release the inner pressure of the fuel tank by removing the fuel filler cap in advance.**


GEF00207-99999

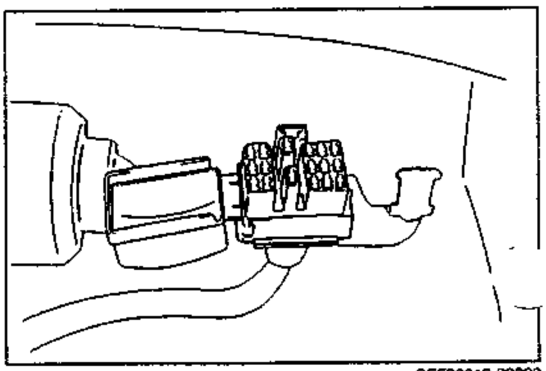
5. Connect a suitable fuel hose (about 2 meter long) to the pressure regulator.
   REFERENCE:
   - This fuel hose is included in the SST (09268-87702-000).


GEF00208-99999

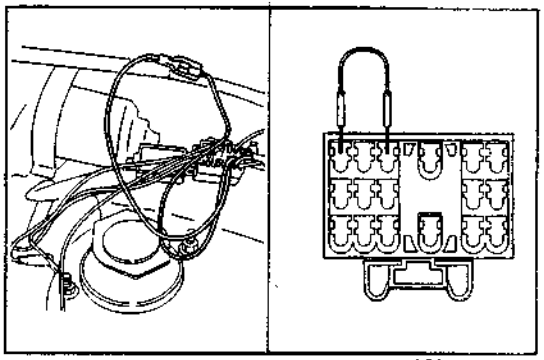
6. Insert one end of the fuel hose in a measuring cylinder.


GEF00209-99999

7. Detach the diagnosis connector cap.


GEF00210-99999

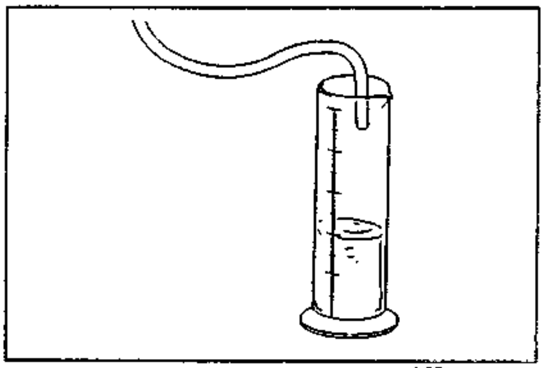
8. Connect the SST to the diagnosis connector. Connect the SST fuel pump terminal to the ground terminal.
   SST: 09991-87703-000
9. Connect the ground cable terminal to the negative (–) terminal of the battery.
10. Turn ON the ignition switch for 10 seconds. Then, turn OFF the switch.



GEF00211-99999

11. Measure the amount of fuel collected in the measuring cylinder.
   Specified Amount of Fuel: 220 cc or more

   If the fuel amount is less than the specified amount, check the fuel filter.
12. Disconnect the ground cable terminal from the negative (–) terminal of the battery.



GEF00212-99999

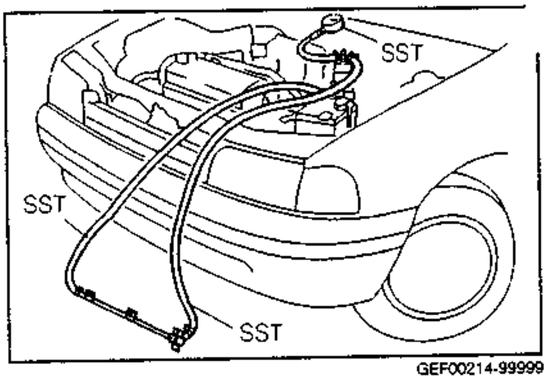
13. Remove the SST from the diagnosis connector.
14. Attach the cap on the diagnosis connector.

GEF00213-00000

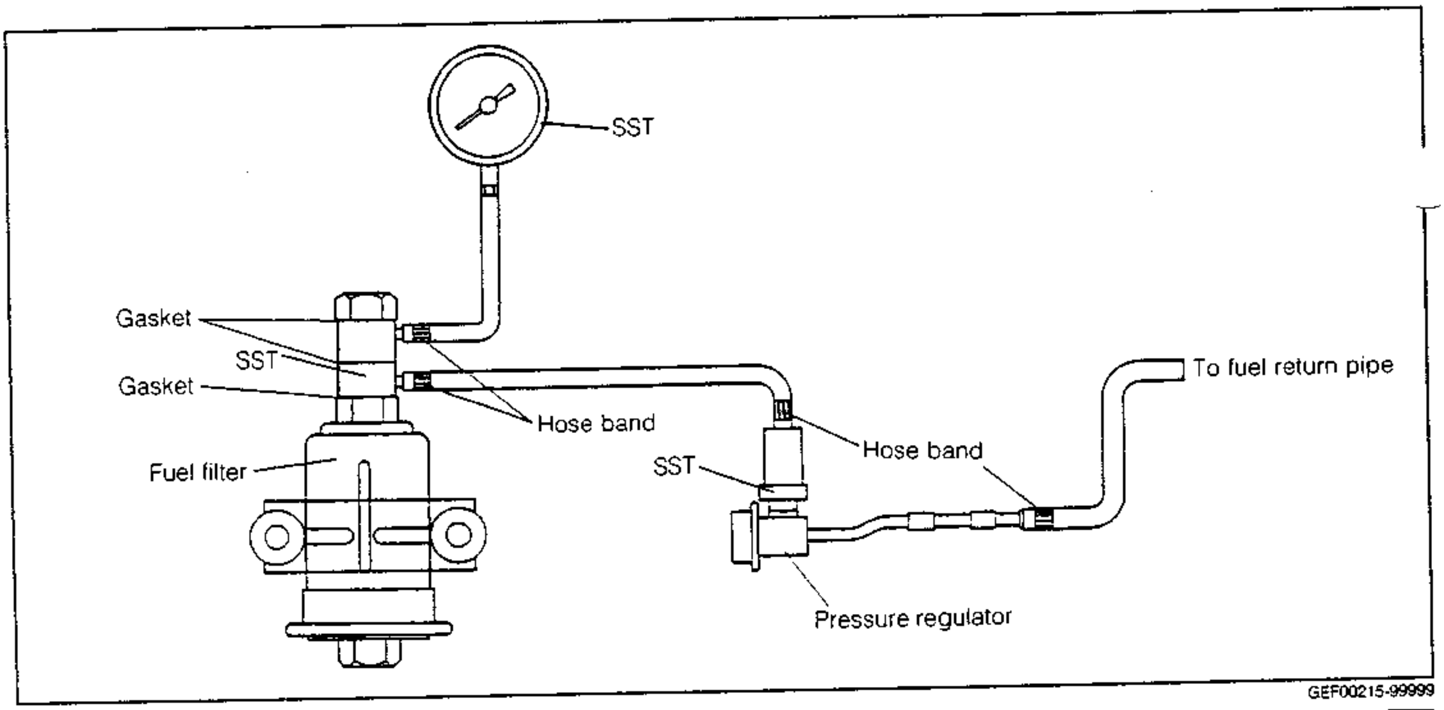
Inspection of pressure regulator

1. Using the following SSTs, connect the pressure regulator, as indicated in the figure.
   SSTs: 09268-87701-000
   09268-87702-000
   09283-87703-000

   NOTE:
   - When connecting the pressure regulator, install a new gasket to the union bolt connection and a new O-ring to the O-ring seal section. Also, attach hose bands to the hose connections.

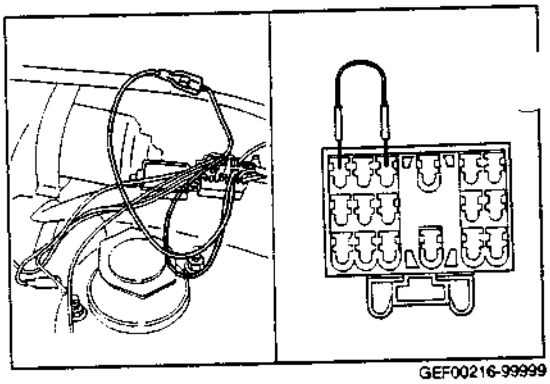


GEF00214-99999



GEF00215-99999

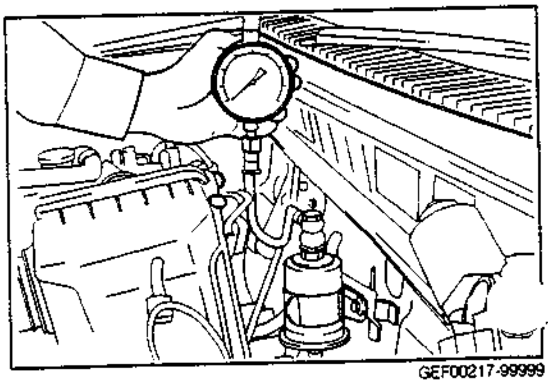
2. Connect the ground cable terminal to the negative (–) terminal of the battery.
3. Connection of SST
   (1) Detach the cap from the diagnosis connector.
   (2) Connect the SST to the diagnosis connector.
   (3) Connect the fuel pump terminal with the ground terminal.
   SST: 09991-87703-000



GEF00216-99999

4. Turn ON the ignition switch.
5. Check to see if the fuel pressure conforms to the specification.
   Specified Fuel Pressure:
   245 - 255 kPa (2.50 - 2.60 kgf/cm^2)

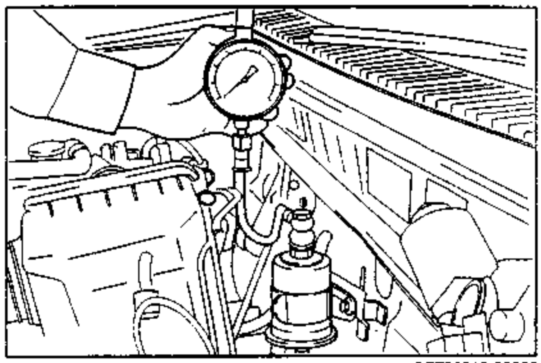
   If the fuel pressure fails to conform to the specification, replace the pressure regulator.
   NOTE:
   - At this stage, ensure that the fuel pump complies with the fuel flow rate requirements.



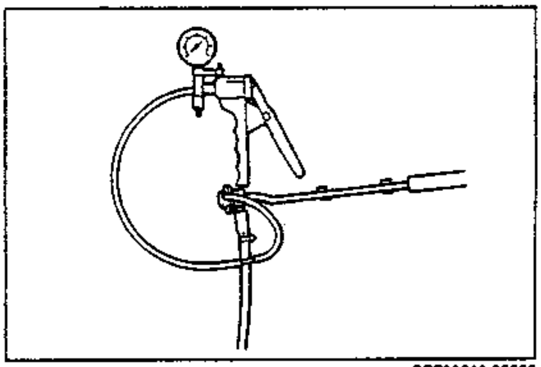
GEF00217-99999

6. Turn OFF the ignition switch. After a lapse of three minutes, check to see if the fuel pressure is the specified pressure or more.
   Specified Fuel Pressure:
   177 kPa (1.8 kgf/cm^2) or more

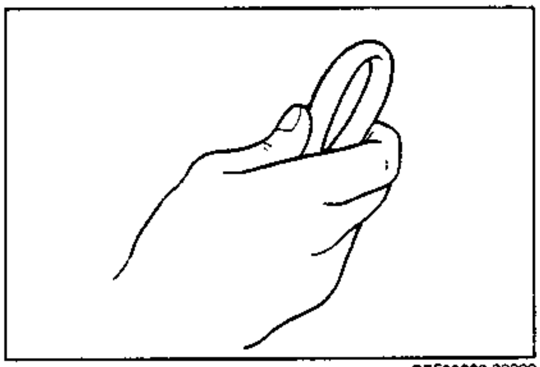
   If the fuel pressure fails to conform to the specification, again perform the operations described in the step 13 afterward.


GEF00218-99999

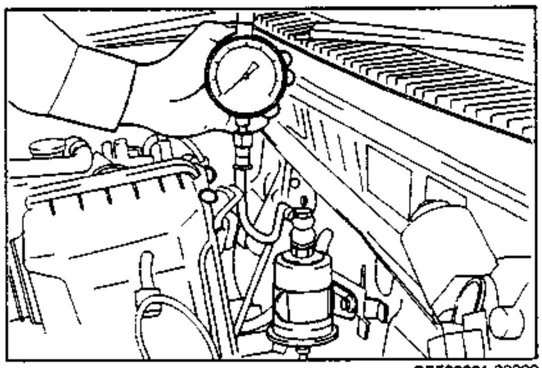
7. Connect a suitable hose to the vacuum hose pipe of the pressure regulator. Connect a MityVac to the other end of the hose.
8. Turn ON the ignition switch.
9. While observing the fuel pressure, apply a negative pressure, using the MityVac. At this time, ensure that the fuel pressure drops corresponding to the applied negative pressure.
   Replace the pressure regulator if the fuel pressure will not decrease.


GEF00219-99999

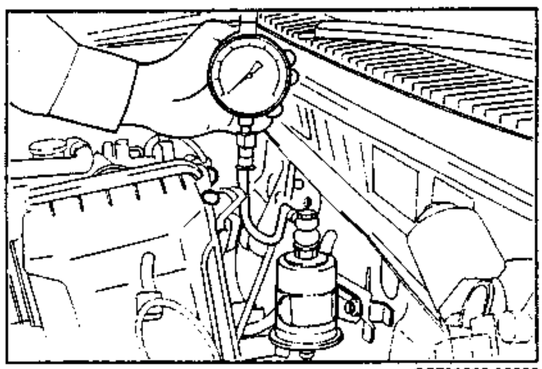
10. Turn OFF the ignition switch.
11. Remove the MityVac and hose from the pressure regulator.
12. Disconnect the ground cable terminal to the negative (–) terminal of the battery.
13. Remove the SSTs from the respective parts.
14. Install the cap to the check connector.
    Proceed to assembly of the pressure regulator.


GEF00220-99999

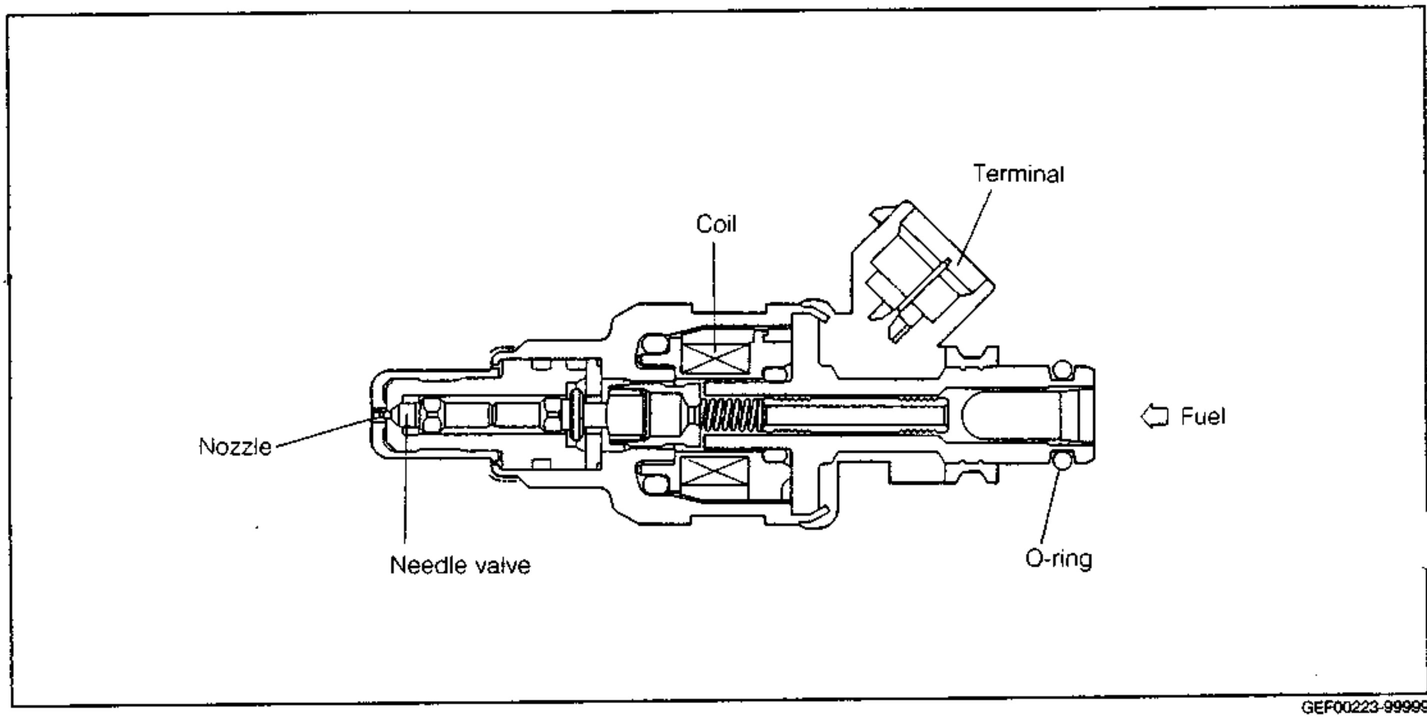
15. Turn OFF the ignition switch after turning ON the ignition switch temporarily.
16. Immediately after the operation described in the step 13, stop the flowing of the fuel by bending the fuel hose between the fuel filter and the pressure regulator. Read the fuel pressure under this condition.


GEF00221-99999

17. After holding the fuel hose in a bent state for 3 minutes, check that the pressure has dropped compared with that measured in the step 14.
    Replace the fuel pump if the pressure has dropped.
    Replace the pressure regulator if the pressure will not drop.

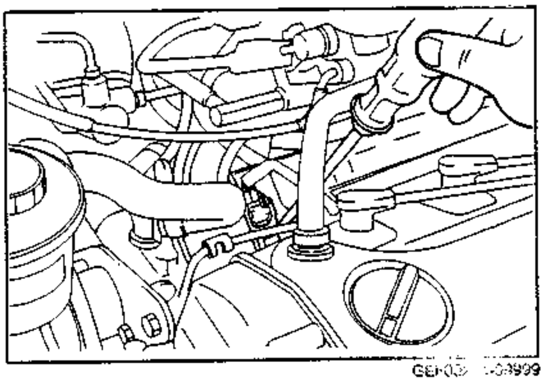

GEF00222-99999

INJECTORS



GEF00223-99999

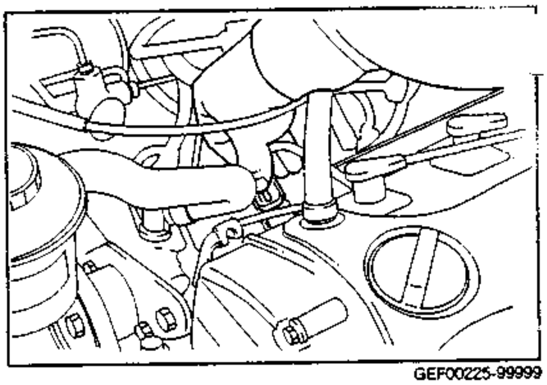
Check of injector operation



GEF0[illegible]-99999

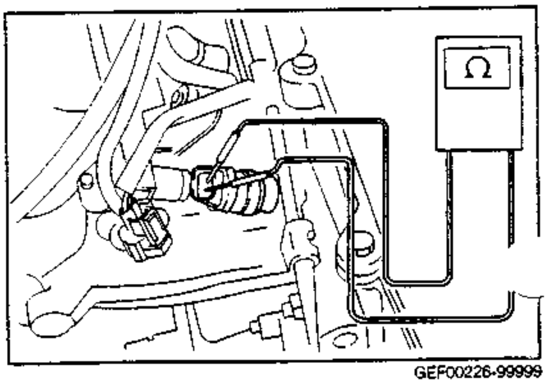
1. Using a sound scope, check to see if each injector emits an operating sound when the engine is being started or cranked.
2. If a sound scope is not available, apply a screwdriver or the like to the injector and check to see if you can feel an operating vibration.
   If the injector emits no operating sound or emits an abnormal sound, check the wiring, wiring connector or injector.

Measurement of resistance of injector



GEF00225-99999

1. Disconnect the injector connector of the engine wire.



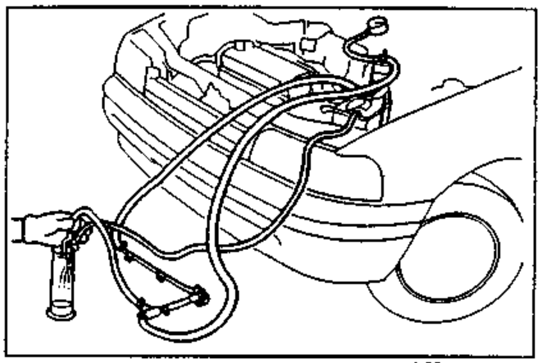
GEF00226-99999

2. Measure the resistance between the terminals of each injector.
   Specified Resistance: 11 - 17 Ω

   If the resistance between the terminals is not within the specification, replace the injector.
3. Connect the injector connector of the engine wire to the injector.

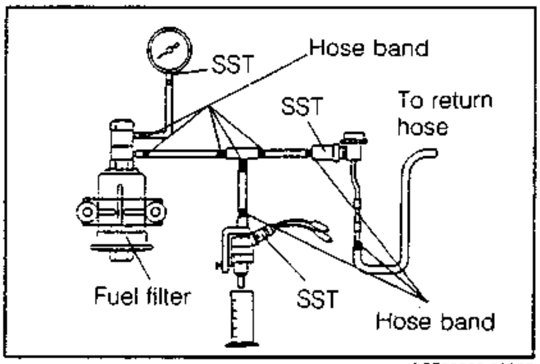
Inspection of injector

1. Using the following SSTs, connect the injector, as indicated in the figure. Insert the injector in the measuring cylinder.
   SST: (1) 09268-87701-000
   (2) 09283-87703-000
   (3) 09268-87702-000
   (4) 09842-30070-000



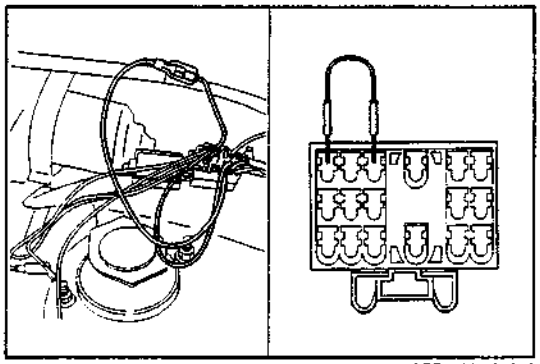
GEF00227-99999

NOTE:
- Install a new gasket to the union bolt connection.
- Install a new O-ring to the O-ring seal section.
- Attach the hose bands to the rubber hose connections.
- Attach a suitable vinyl hose to the tip-end of the injector so as to prevent fuel from splashing.
- Remove the injector grommet. Check to see if the injector grommet exhibits any damage.



GEF00228-99999

2. Remove the diagnosis connector cap.
3. Connect the SST to the diagnosis connector.
   SST: 09991-87703-000
4. Connect the fuel pump terminal of the check connector to the ground terminal.



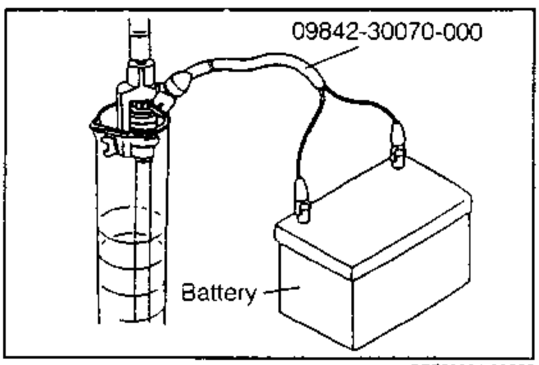
GEF00229-99999

Connect the ground cable terminal to the negative (–) terminal of the battery.

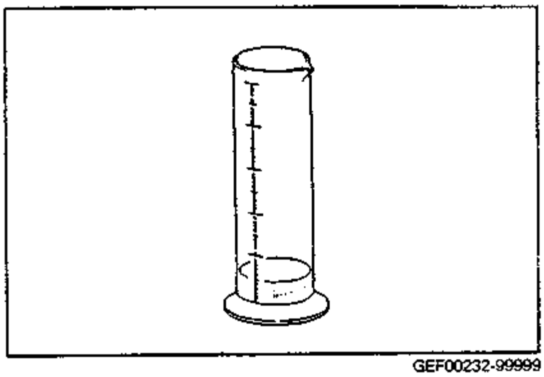
6. Turn ON the ignition switch.

GEF00230-00000

7. Perform energizing for 15 seconds by means of the SST (09842-30070-000).
8. Measure the amount of fuel collected in the measuring cylinder.
   Specified Amount of Fuel: Approx. 40 cc (HC E/G)
   Approx. 46 cc (HD E/G)
   Variation between Each Injector: 5 cc or less



GEF00231-99999

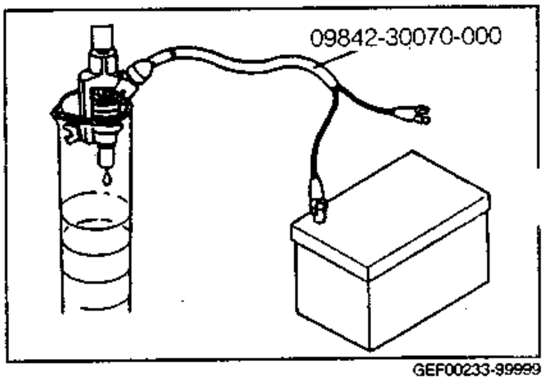


GEF00232-99999

NOTE:

- Conduct the measurement two or three times for each injector.
- Before the injector is pulled out, make certain to turn OFF the ignition key.
- When removing the injector, use a suitable cloth or the like so as to prevent fuel from splashing.
- Prior to the test, perform air bleeding for the fuel hose.

If the amount of fuel fails to conform to the specification, replace the injector.



GEF00233-99999

9. Leakage check
   With the SST (09842-30070-000) in not energized state, turn ON the ignition key switch. Check any fuel leakage from the injector nozzle.
   Fuel Leakage: Less than one drop of fuel per minute

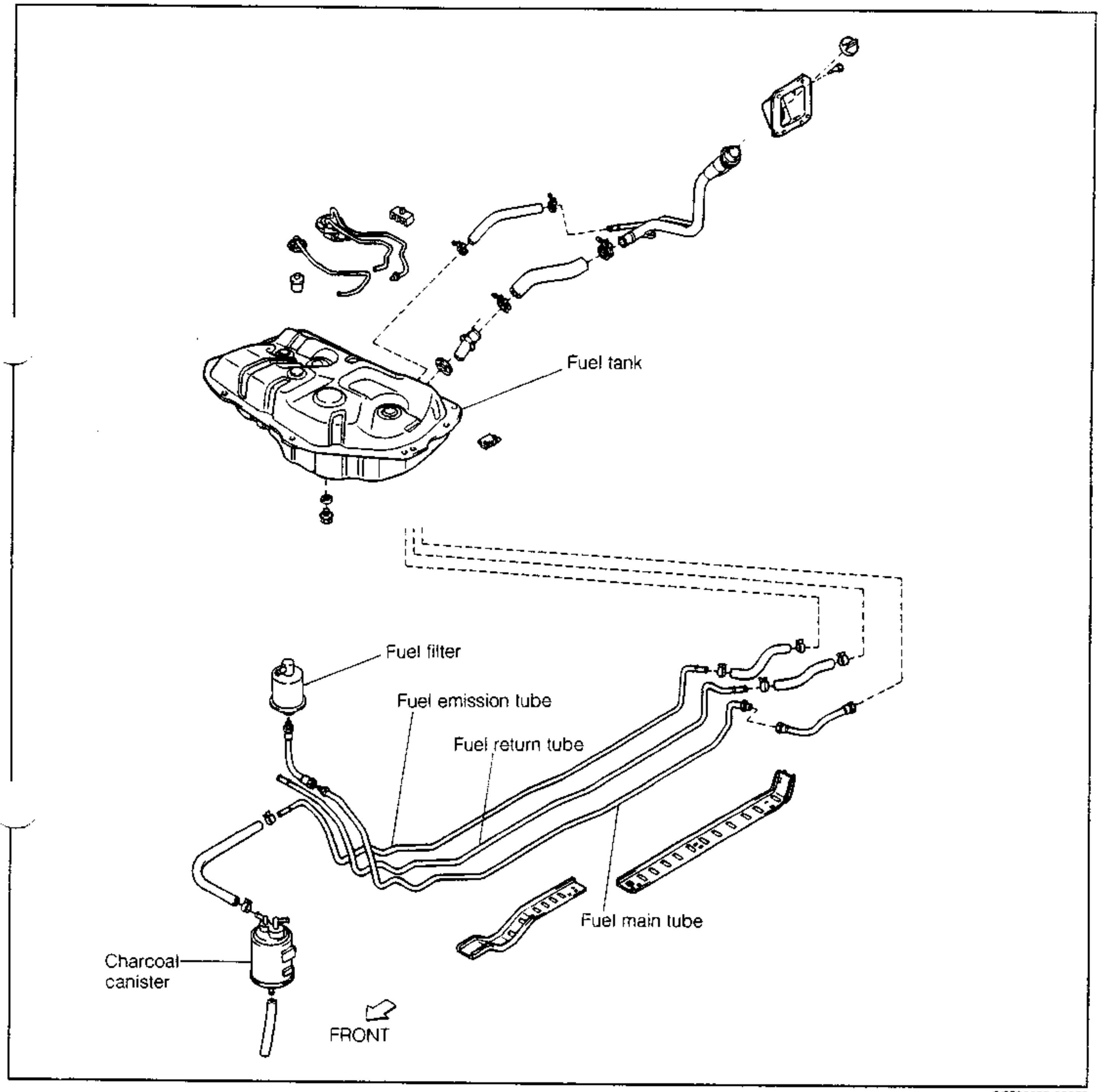
   If the leakage exceeds the specified value, replace the injector.
   NOTE:
   - Prior to the test, remove the vinyl hose that was attached on the injector.

10. Turn OFF the ignition key.
11. Disconnect the ground cable terminal from the negative (–) terminal of the battery.
12. Disconnect the SST.
    NOTE:
    - Care must be exercised as to fuel splashing and fuel flowing.

GEF00234-00000

FUEL TANK AND LINE

COMPONENTS



GEF00235-99999

PRECAUTIONS

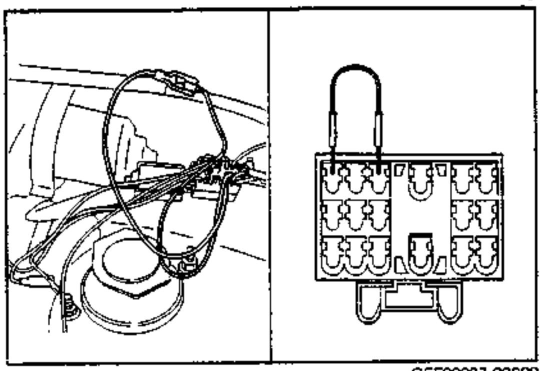
1. Always use a new gasket and hose band (clip) when replacing the fuel tank or components.
2. Each part should be tightened securely to the specified torque.

WARNING:
Always keep fire away from the working site.

GEF00236-00000

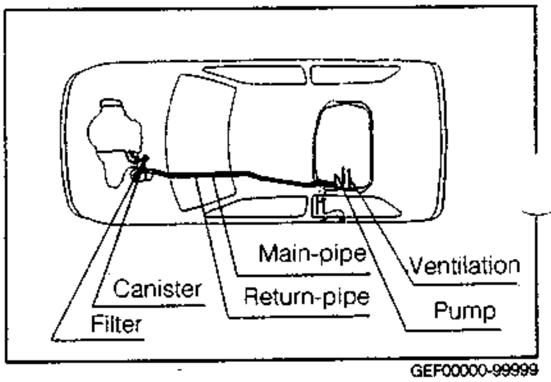
INSPECTION OF FUEL LINES AND CONNECTIONS

1. Connect the following SST to the diagnosis connector. Short the fuel pump terminal to the ground terminal.
   SST: 09991-87703-000



GEF00237-99999

2. Turn ON the ignition switch.
3. Check the fuel lines and connections for cracks, leakage or deformation.
   If any crack, leakage or deformation is present, replace or repair the part concerned.
4. Turn OFF the ignition switch. Remove the SST from the diagnosis terminal. Attach the cap to the diagnosis terminal.
5. Check the fuel tank for deformation, cracks or fuel leakage.
   If the fuel tank exhibits any defect, repair or replace the fuel tank.
6. Check the filler neck for damage or fuel leakage.
   If the filler neck exhibits any defect, repair or replace the filler neck.
7. Check to see if the hose and tube connections are installed as shown in the right figure.
   If any problem is found, repair or replace the parts, as required.



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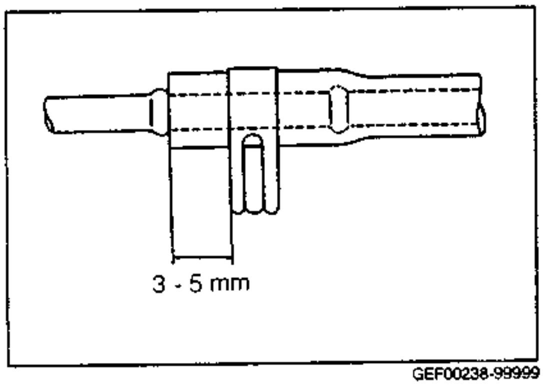

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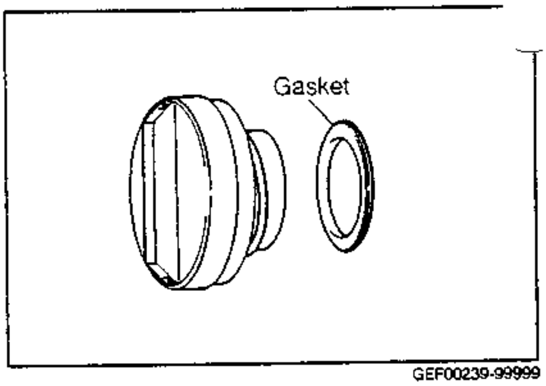
8. Check to see if the fuel tank cap and gasket exhibits damage.
   Replace the gasket if it is damaged. Also, replace the fuel tank cap if it exhibits damage.



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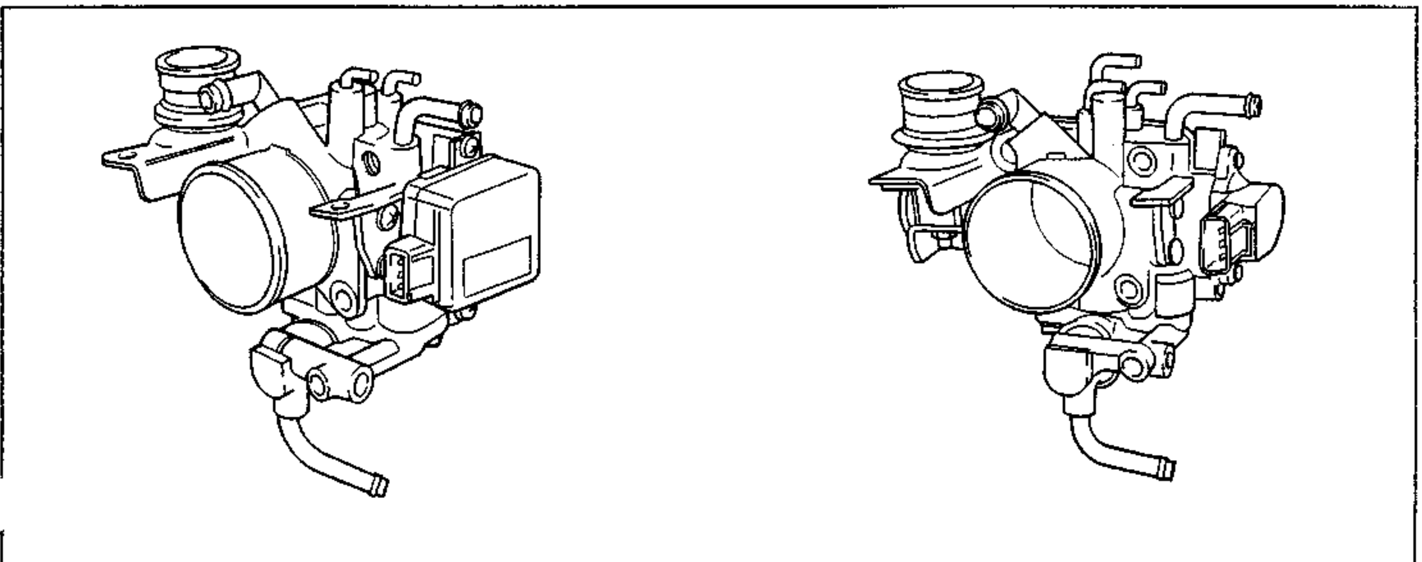
AIR INDUCTION SYSTEM

THROTTLE BODY



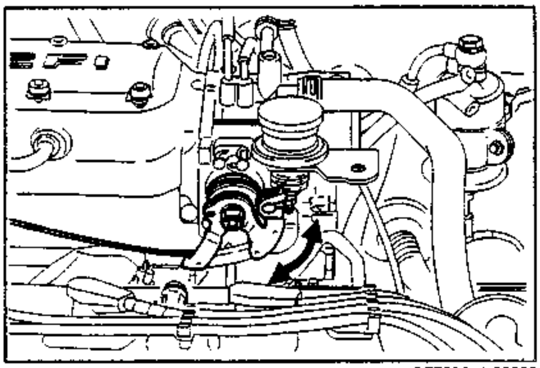
(M/T) (A/T)

GEF00240-99999

IN-VEHICLE INSPECTION

Check of throttle body

1. Ensure that the throttle linkage operates smoothly.
   Replace the throttle body if the throttle lever fails to operate smoothly.
2. Check the throttle position sensor.
3. Check the throttle positioner.



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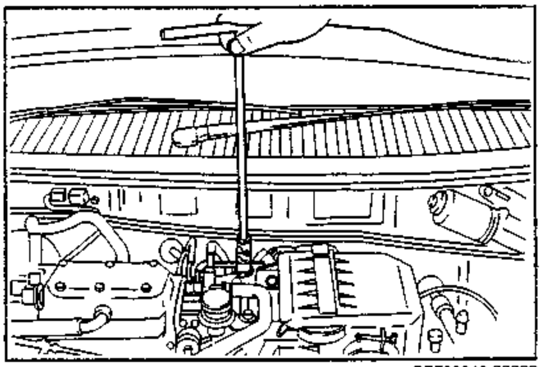
Check of auxiliary air valve

. Disconnect the air cleaner hose from the throttle body.



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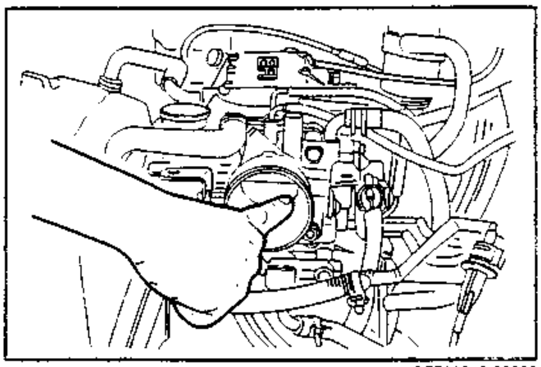
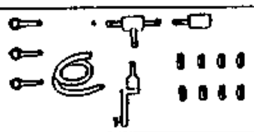
2. Start the engine. Check that there is air continuity at the auxiliary air valve port under the following conditions. Perform the check, following the procedures given below.
   When the cooling water temperature is below 40°C, apply your finger to the auxiliary air valve port. Ensure that the engine speed drops.
   When the cooling water temperature is above 70°C, apply your finger to the auxiliary air valve port. Ensure that the engine speed does not change.
   If the auxiliary air valve exhibits any malfunction, replace the throttle body.



GEF00243-99999

SST (Special Service Tools)

Shape	Part No. and name	Purpose	Remarks
	09283-87703-000 Pressure regulator adopter	• Inspection of injectors • Inspection of pressure regulator • Inspection of fuel pressure	Used in combination with 09268-87702-000
	09268-87702-000 Injection measuring tool set	• Inspection of injectors • Inspection of pressure regulator • Inspection of fuel pressure	Used in combination with 09283-87703-000
	09268-87701-000 EFI fuel pressure gauge	Inspection of fuel pressure	
	09842-30070-000 EFI inspection wire	Inspection of fuel injectors	
	09842-87706-000 EFC-II computer check sub harness	Inspection of computer input/output voltage	
	09991-87703-000 Engine control system inspection sub harness	• Shorting terminal T • Actuating fuel pump	
	09991-87604-000 Tacho pulse pulse pick-up wire	Measurement of engine speed	

GEF00244-99999

[Reference]

Liquid Gasket

Nomenclature	Application	Part number
Three Bond 1104	Camshaft bearing cap and cylinder head cover gasket section (arched section), etc.	999-04808-U9-005
Three Bond 1377B	Spark plug tube, heater outlet pipe and heater union	999-04808-U9-004
Three Bond 1207C	Oil pan, rear oil seal retainer and oil pump	999-6313-6323-00
Three Bond 1324	Flywheel bolt	999-04808-U9-006

GEF00245-00000

DAIHATSU G200

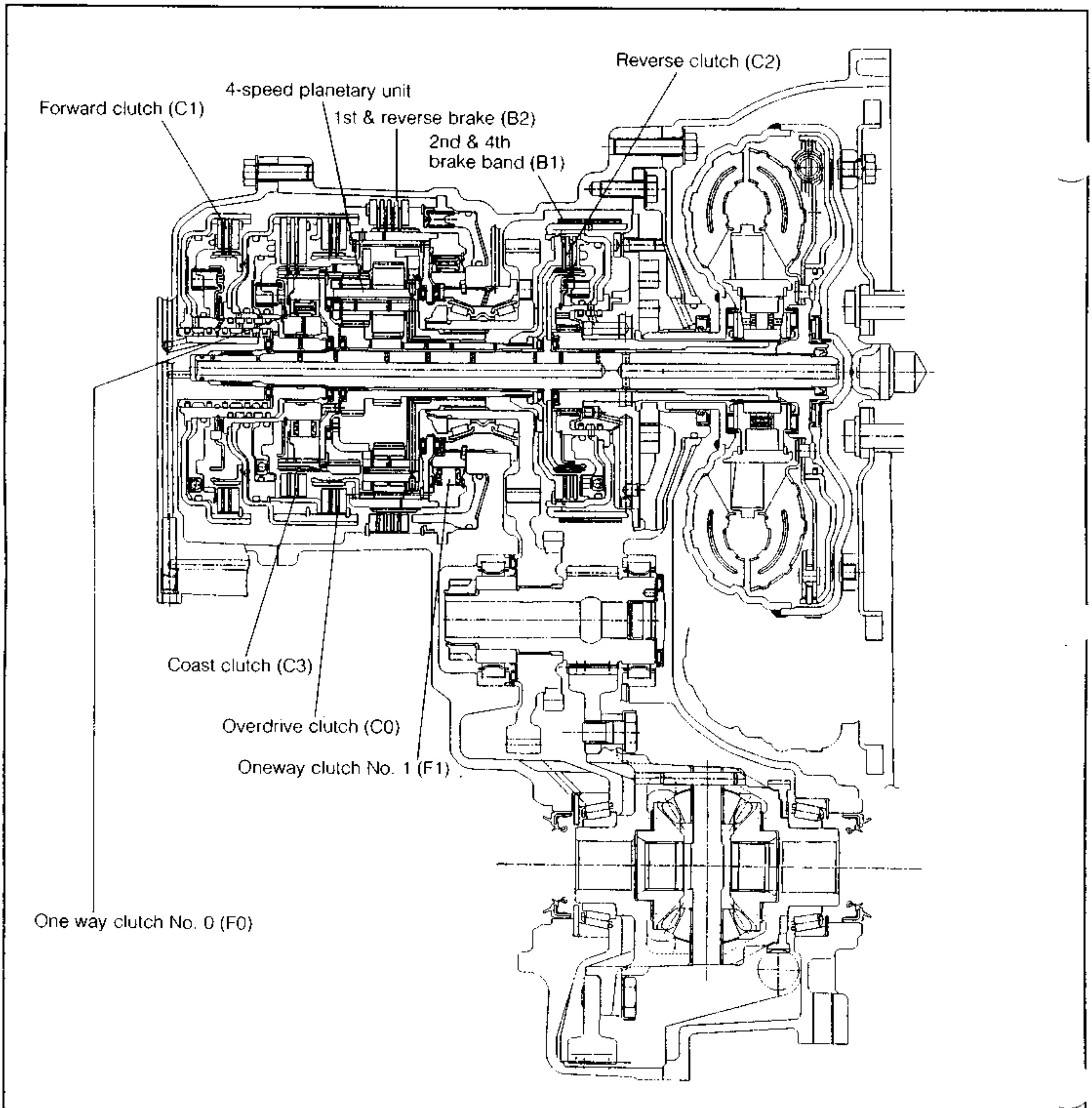
Automatic Transmission

GAT00001-00000

AT

The Automatic Transmission is a 4-speed electrical controlled transmission with lock-up mechanism ar mainly composed of the torque converter with lock-up clutch, newly developed 4-speed planetary gear unit, the hydraulic control system and the electric control system.
The 4-speed automatic Transmission has following features;

- The E.C.U controls the operation of the clutches and brakes based on the shift pattern for each driving mode such as AUTO, POWER and EASY.
- When shifting the transmission, the engine torque is controlled and the hydraulic pressure in the transmission is controlled to reduce transmission shift shock
- The E.C.U constantly monitors each electronic parts when malfunction in the system has occurred, the E.C.U warns it and display the section of malfunction by trouble code through easy lamp.
- When shifting to R-range with exceeding certain vehicle speed, the E.C.U sends signal to the shift solenoid to inhibit reverse.



GAT00002-99999

ˉPECIFICATIONS

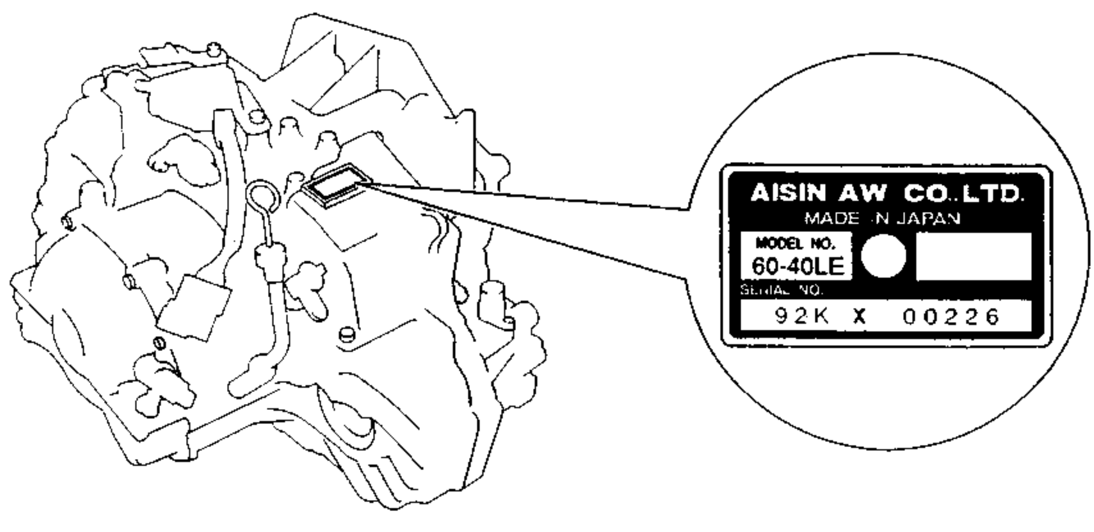
Item			Specifications	
Torque converter	Type		Three-element, one-stage, two-phase type (with lock-up mechanism)	
	Stall torque ratio/Stall revolution speed		2.1/2500 r.p.m (for HC-E), 2.1/2400 r.p.m (for HC-C)	
	One-way clutch		Sprag type	
Transmission type	Type		Four forward speeds, one reverse gear, planetary gear type	
	Control element		Wet type multiple clutch	4 sets
			Band type brake	1 set
			Wet type multiple brake	1 set
			One-way clutch	2 pieces
	Gear ratio		1st: 2.807, 2nd: 1.479, 3rd: 1.000, 4th (O/D): 0.735, Reverse: 2.769	
	Reduction gear ratio		Counter gear: 1.019 (54/53), Differential gear: 3.782 (87/23)	
	Speedometer		Number of drive gear teeth: 27, Number of driven gear teeth: 24	
	Oil pump		Internal gear type	
	Fluid to be used		ATF DEXRON® II	
	Fluid capacity (L): Full, (Drain and Refill)		APPROX: Transaxle 5.7 (3.2)	
	Cooling method		Water-cooled (radiator built-in type)	
Control system	Gear shift control method		Electronic hydraulic pressure control method	
	Automatic gear shift		Four forward speeds, full automatic shift	
	Manual control pattern	Vehicle side	In line six position: P - R - N - D - 2 - L (with overdrive)	

GAT00400-00000

- A lavel identifying 4-speed A.T is affixed on the upper surface of the transaxle case. Also, alphanumeric letters which indicate the manufacturing date and year are stamped on the plate.

  Manufacturing date and year

  E.g: 92AX-12345 or 92MX-12501



FUNCTION OF E.C.U

1. SHIFT SCHEDULE

In accordance with the vehicle speed and the throttle opening degrees, the E.C.U sends signal to the shift solenoid No. 1 and No. 2 which operate the shift valves.
The E.C.U programmed different shift pattern for each driving mode such as AUTO-ECONOMY, POWER and EASY.

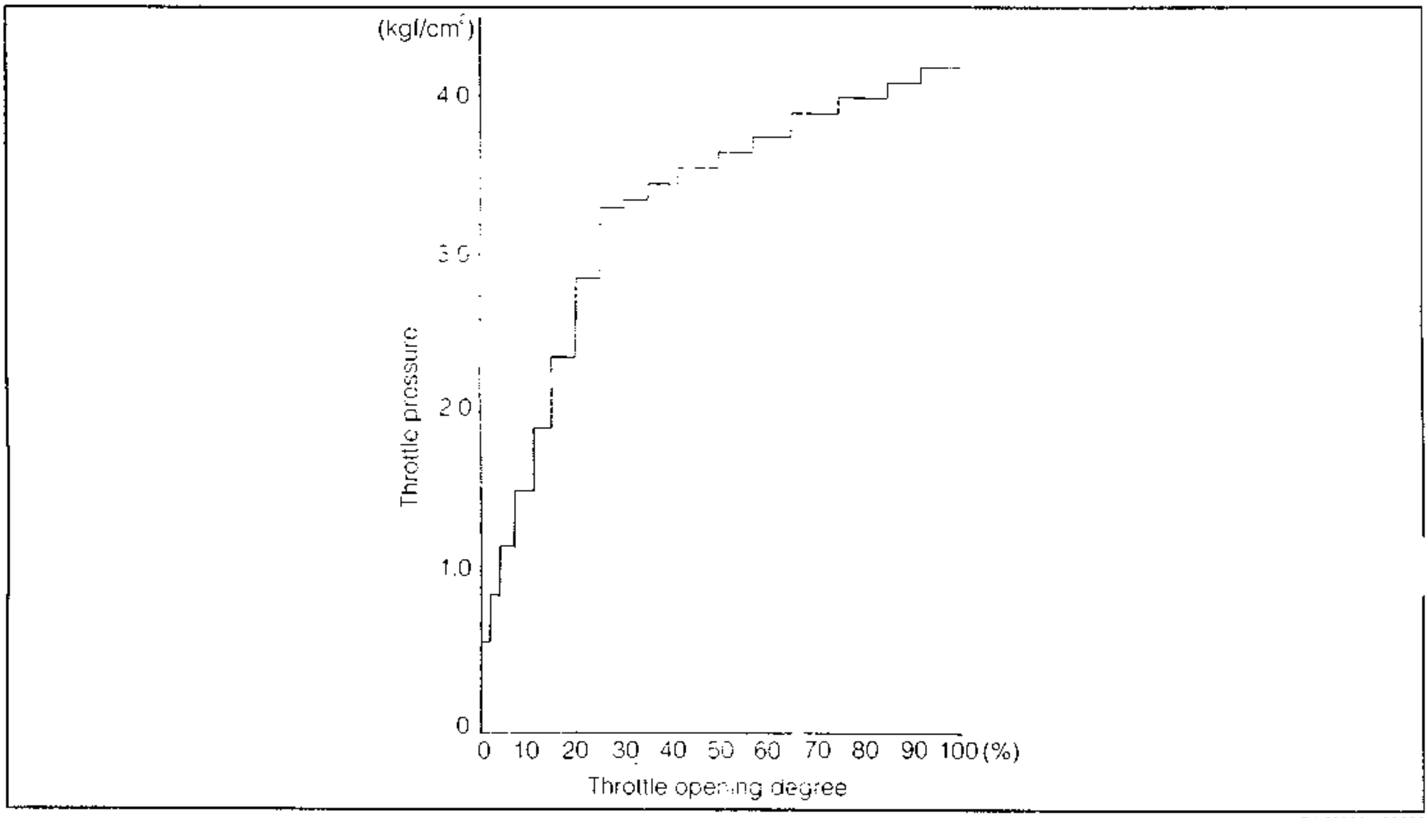
2. LOCK-UP SCHEDULE

Lock-up schedule is also controlled by electric signal from the E.C.U in accordance with the vehicle speed and the throttle opening degrees. The lock-up control solenoid modulates the on and off of the lock-up pressure.
Under the following condition, the operation of lock-up clutch will be cease.

- Driving in Faile safe program.
- When the water temperature is below specification and brake light switch on.
- When the idle switch on (ie: Accelerator pedal is free).

3. THROTTLE PRESSURE CONTROL

In accordance with the throttle opening degree and shift gear, the throttle pressure is controlled by E.C.U



GAT00004-00000

4. NEUTRAL TO REVERSE LINE PRESSURE CONTROL

The E.C.U sends signal to pressure control solenoid to reduce line pressure for reduction of shift shock when R-range is selected.

GAT00005-00000

5. N-D SQUAT CONTROL

When the transmission is shifted from N to D, the squat control which temporarily shifts to second gear operate to reduce shifting shock and squatting of the vehicle.
The squat control operates only when following conditions exist;

- Brake light switch on (ie: Depress the brake pedal)
- 0% throttle opening (ie: Release the accelerator pedal)
- Transmission is shifted from N to D, 2 and L range
- Vehicle speed is under 7 km/h

6. N-D, N-R E/G TORQUE REDUCTION (Only for equipped with HC-E engine)

GAT00006-00000

When the transmission is shifted to D (or 2, L) from N (or P, R) or to R from other range, the E.C.U sends signal to engine E.C.U to reduce its torque to prevent harsh engagement.

7. REVERSE INHIBIT

In R range and exceeding certain vehicle speed more than 7 km/h, the E.C.U sends signal to shift solenoid No. 2 (it will be turn on) and inhibits reverse.
When following condition exist, the reverse inhibit system will be released.

- Under 5 km/h vehicle speed
- Other shift position is detected

8. AIR CONDITIONING CUT OPERATION (Only for equipped with HC-C engine)

GAT00007-00000

To reduce of engine load during the vehicle running (ie: A/C switch ON), AC system temporarily (3 sec) turn off in accordance with the throttle opening degree.

9. OVER DRIVE (OD) CUT OPERATION

When one of following conditions exist, OD gear does not engage.

- Water temperature is below specification when the engine E.C.U sends signal
- OD cut switch off

10. DRIVING MODE SELECTION

GAT00008-00000

The shift schedule of transmission is programmed following three different pattern;

AUTO	:	Automatically switch over between Power and Economy
POWER	:	Sporty driving
EASY	:	To make easily take off on slippery road
(Economy)	:	Economical driving

10-1. AUTO MODE

In accordance with throttle opening and its a time, Power pattern or Economy pattern is automatically selected.
(a) The Power pattern is selected when the changing speed of throttle opening is greater than preset value.
(b) The Economy pattern is selected when following condition exist;

- The period of throttle opening which is below specification is longer than preset value.
- Turning off of ignition switch.
- Shifting to P or N range.

10-2. POWER MODE/ECONOMY MODE

These modes can be selected by actuating the pattern select mode switch.
It can be switched off by actuating the pattern select mode switch again.

10-3. EASY MODE

This special driving mode is used on slippery surface road to make moving-off easily. (In the 2nd range, the transmission constantly shift from the 2nd gear in the 2nd range.)
ɜ EASY select mode can be switched off by selecting the EASY or Power select mode switch again.

GAT00009-00000

11. EMERGENCY MODE

When the E.C.U detects that a malfunction has occurred in one of the following sensors or signals, all of the following four (4) solenoids will be turned off.
However, the vehicle can be driven by manual shifting to the nearest workshop. (The 3rd and 4th lockup can not take place in the D range.)

- Shift solenoids No. 1 and No. 2
- Pressure control solenoid
- Vehicle speed sensor*
- Throttle signal

*NOTE:

- **In this case, the pressure control solenoid will not be turned off.**
  Table of gear availability at each selector position with emergency mode

Selector lever position	R-range	D-range	2-range	1-range
Gear	Reverse	4th	3rd	1st

GAT00010-00000

12. SHIFT POSITION SWITCH (P, R, N, D, 2, L)

When the E.C.U detects that a malfunction has occurred in the switches, the E.C.U controls the operation of the following patterns.

Patterns

(A): The vehicle can be moved in the D range only if all switches are turned OFF.

(B): The E.C.U decides the control of the following shift range patterns if more than two switches are turned ON.

N > R > L > 2 > D

13. INHIBITION OF SHIFTING TO LOW-SPEED GEAR DURING HIGH-SPEED RUNNING

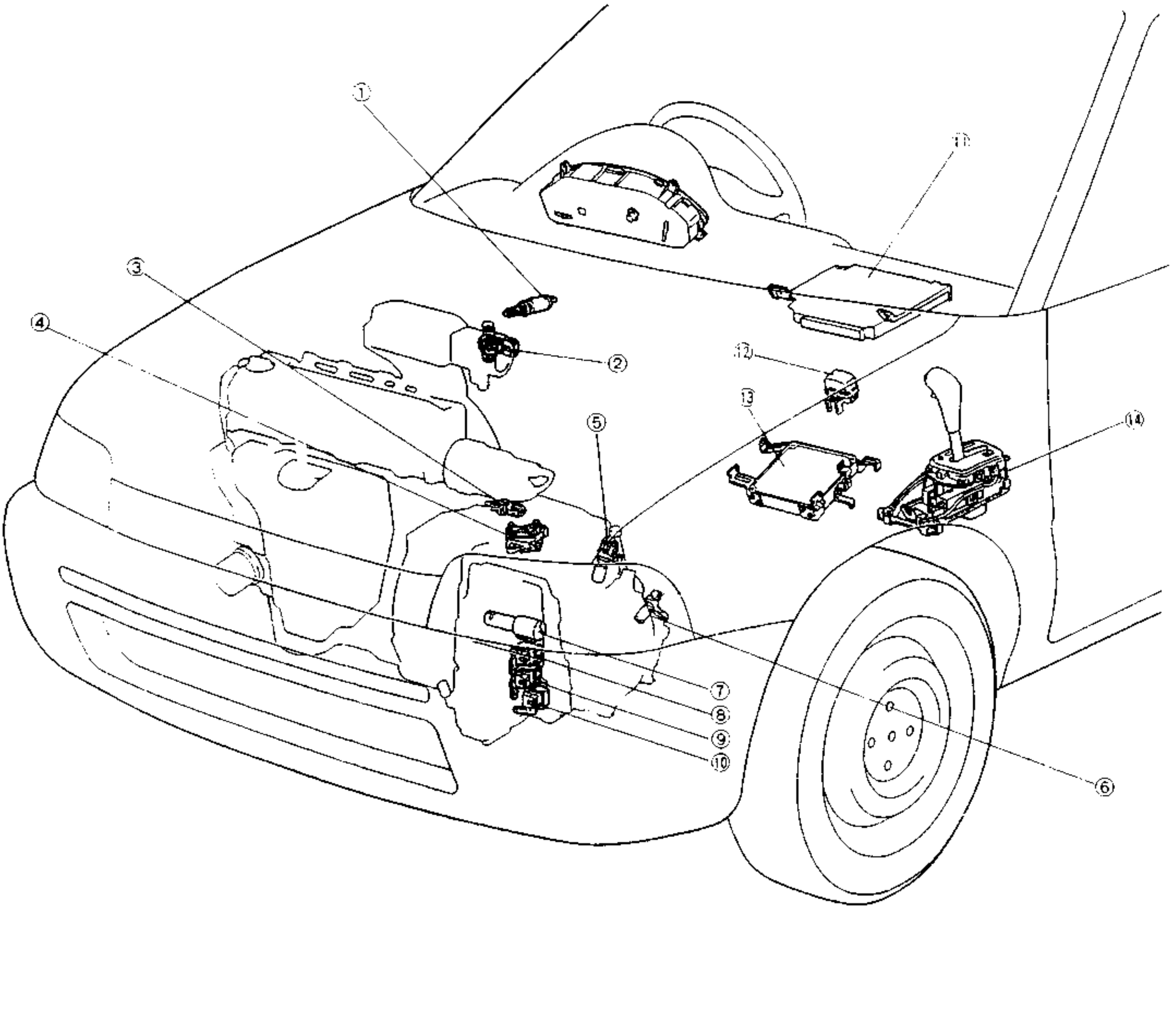
To prevent the engine from over-revolving, if downshifting is manually made from the D range or the 2nd range to the L range, the vehicle will continue to run in the second gear, until the vehicle speed drops below 54 km/h (i.e. the shift solenoids No. 1 and No. 2 are ON.).

14. INHIBITION OF SHIFTING FROM D RANGE TO 2 RANGE

To prevent the engine from over-revolving, if downshifting is manually made to the 2nd range during running at a high speed in the D range, the vehicle will continue to run in the third gear, until the vehicle speed drops below 97 km/h (i.e. the shift solenoid No. 2 is ON.).

GAT00011-00000

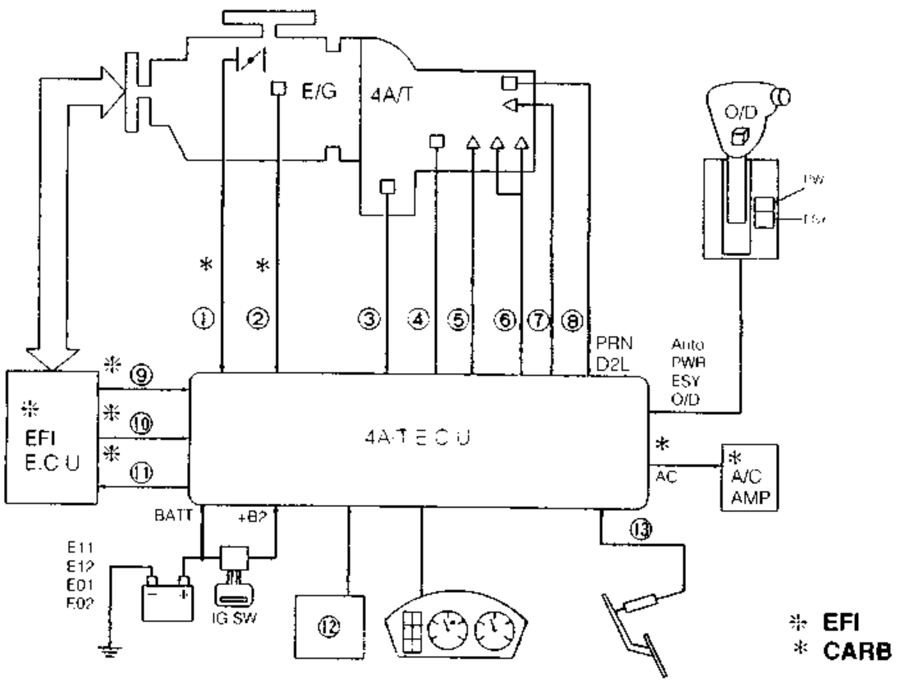
'. LOCATION OF ELECTRONIC PARTS WHERE ARE USED



① Brake switch
② Throttle
③ Water temperature sensor
④ Neutral start switch
⑤ Vehicle speed sensor
⑥ C1 cylinder revolution sensor
⑦ Pressure control solenoid
⑧ Shift solenoid No. 1
⑨ Shift solenoid No. 2
⑩ Lock-up solenoid
⑪ A/T E.C.U
⑫ Diagnosis terminal
⑬ E.C.U for HC-E engine
⑭ Shift lever position switch

2. SYSTEM COMPONENTS

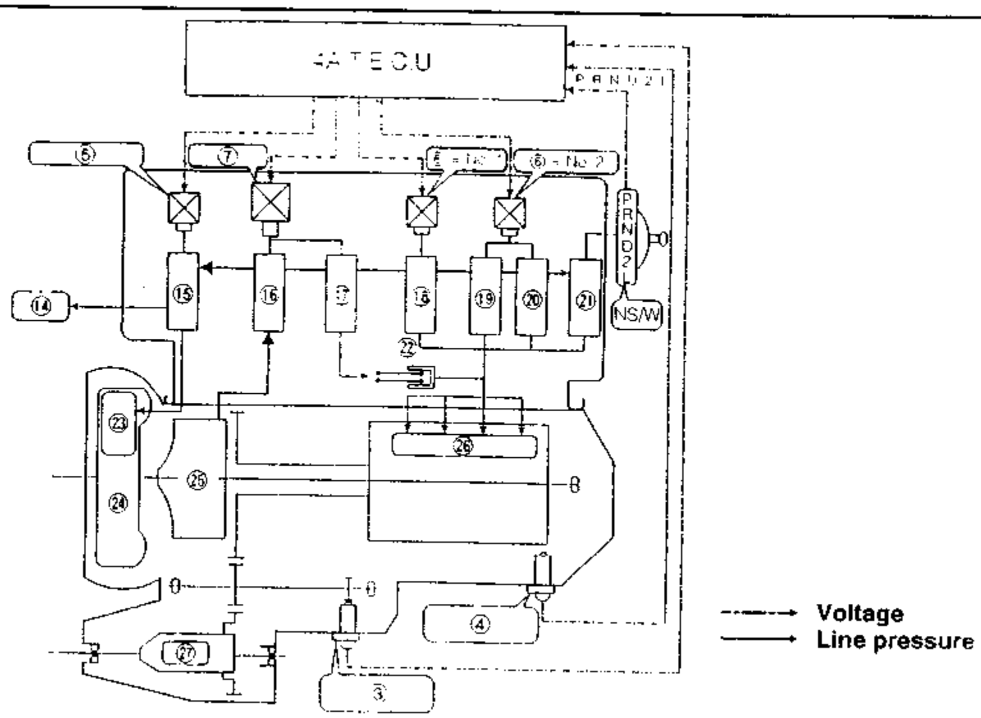
B



① Throttle sensor
② Water temperature switch
③ Vehicle speed sensor
④ C1 cylinder revolution sensor
⑤ Lock-up solenoid switch
⑥ Shift solenoids No. 1 and No. 2
⑦ Pressure control solenoid
⑧ Shift position
⑨ Throttle sensor
⑩ Water temperature switch
⑪ Torque control
⑫ Diagnosis
⑬ Brake switch

GAT00013-09999

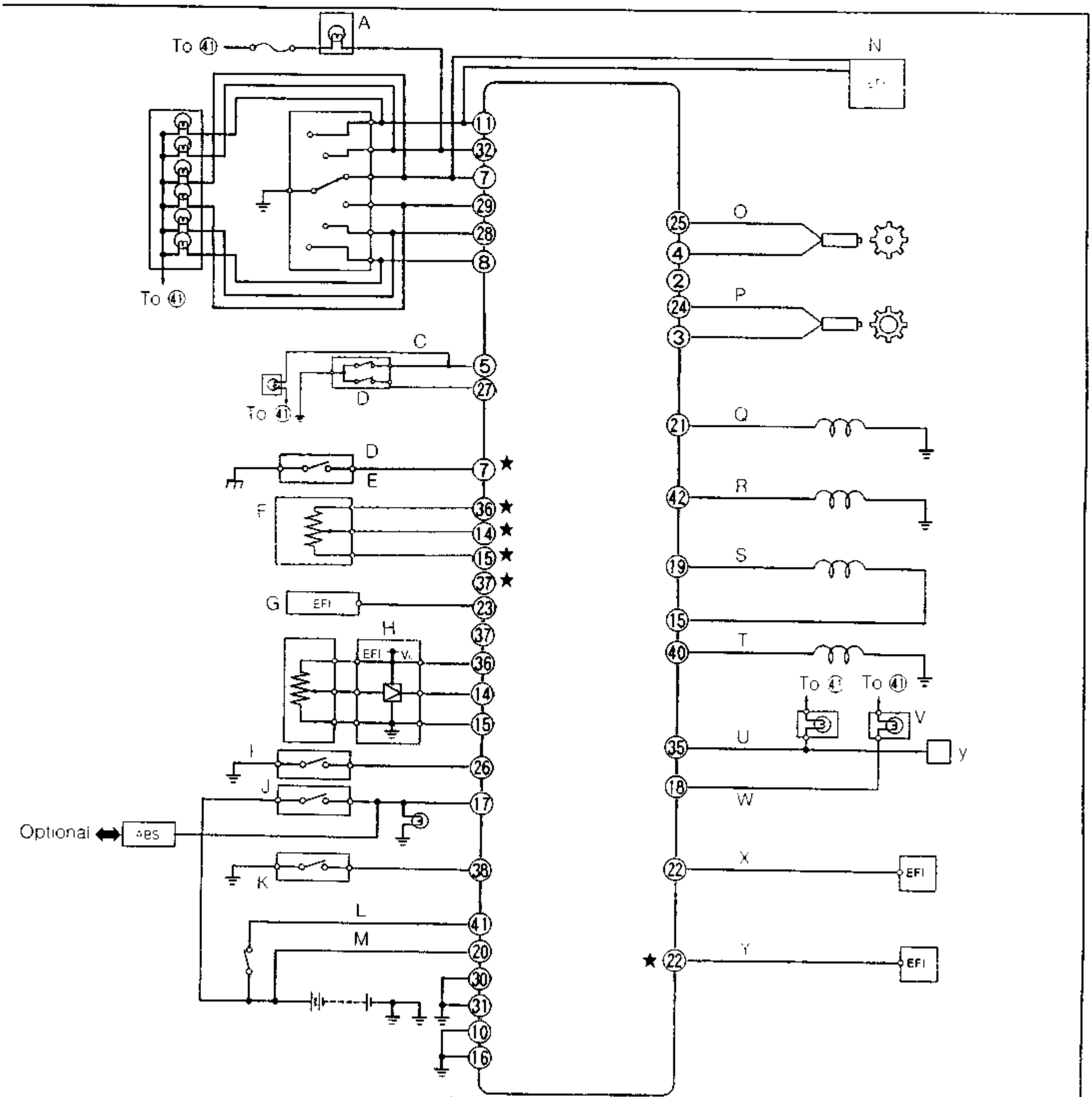
3. FLOW OF HYDRAULIC CONTROL AND ELECTRICAL SYSTEM



⑭ To oil cooler
⑮ Lock-up control valve
⑯ Regulator valve
⑰ Accumulator control valve
⑱ 2-3 shift valve
⑲ 1-2 shift valve
⑳ 3-4 shift valve
㉑ Manual valve
㉒ Accumulator
㉓ Lock-up clutch
㉔ Torque converter assembly
㉕ Oil pump assembly
㉖ Clutches and brakes
㉗ Differential assembly

GAT00014-99999

WIRING DIAGRAM



★ marked are equipped with only HC-C engine

A : Back-up lamp
B : Meter indicator
C : Shift position switch
D : Shift pattern switch
E : Water temperature switch
F : Throttle sensor
G : Water temperature signal
H : Throttle sensor signal
I : Overdrive cut switch
J : Brake switch
K : Test terminal
L : Back-up current
M : Battery

N : EFI E.C.U
O : Vehicle speed sensor
P : C1 cylinder revolution sensor
Q : Shift solenoid No. 1
R : Shift solenoid No. 2
S : Pressure control solenoid
T : Lock-up control solenoid
U : Warning (Easy) lamp
V : Diagnosis connector
W : Overdrive off lamp
X : Torque control signal
Y : Air-con cut signal

GAT00015-99999

5. TEST RUNNING BY MANUAL SHIFT

Perform the running test by manual shifting with the subharness (SST/No.: 09842-87501-000) disconnected so as to check to see if the trouble phenomenon has been caused by the hydraulic system or electronic parts. Check that the shift lever position and gear correspond with the table below.

Selected position	P-range	R-range	N-range	D-range	2nd range	L-range
Gear position	Pawl lock	Reverse	Neutral	4th gear hold	3rd gear hold	1st gear hold

NOTE:
- The vehicle will not move off in the Neutral range.
- The parking pawl locks in the Parking range.
- If the results do not conform to the specifications, proceed to perform the check as follows:

Preliminary check — See page AT-11

↓

Diagnosis output — See page AT-15

↓

Electronic parts inspection through SST (09842-87501-000) — See page AT-20

- Using a circuit tester or the like

↓

Testing — See page AT-30

- Stall, time lag and hydraulic system

↓

Road test — See page AT-35

- Upshift and downshift points
- Shock, noise, kick-down, engine brake and lock-up

↓

On-vehicle repair — See page AT-44

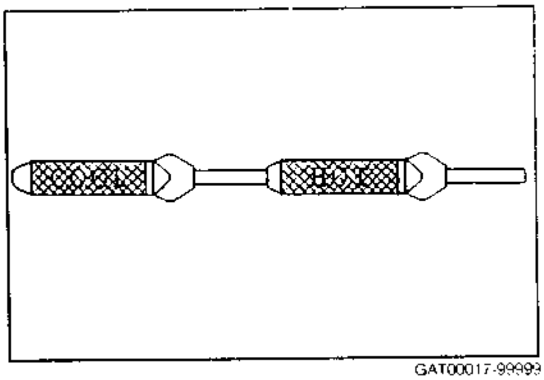
↓

Overhaul of A/T — See page AT-49

'RELIMINARY CHECK

1. Check of transaxle fluid level

   NOTE:
   - **Prior to the fluid level check, be sure to run the vehicle until the engine and transaxle have reached their normal operating temperature.**
     (Fluid temperature: 70 - 80°C or 158 - 176°F)



GAT00017-99999

2. Check of engine idling speed (ie: All electrical switched off)

   Specified Value: **850 ± 50 rpm for HC-E**
   800 ± 50 rpm for HC-C

   (1) Park the vehicle on a level surface. Apply the parking brake.
   (2) With the engine idling, smoothly move the shift lever all through the ranges from P to L. Finally, return the shift lever to the P range.
   (3) Pull out the transaxle fluid level gauge and wipe it clean.
   (4) Push it back fully into the tube.
   (5) Pull it out and check that the fluid level is in the HOT range.

   If the fluid level is too low, add the fluid.

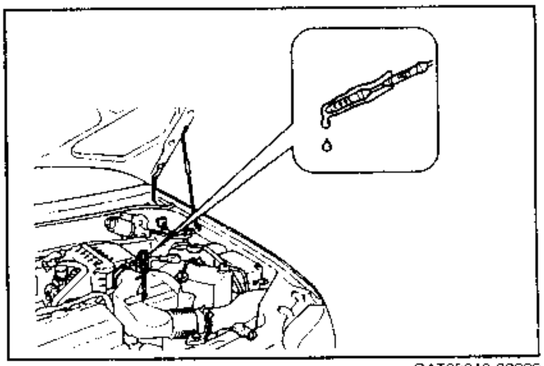
   Fluid To Be Used: DEXRON® II
   Full Capacity: Approx. 5.7ℓ
   Drain and Refill: Approx. 3.2ℓ

   CAUTION:
   - Do not overfill the fluid.

- **Transaxle warming-up method**

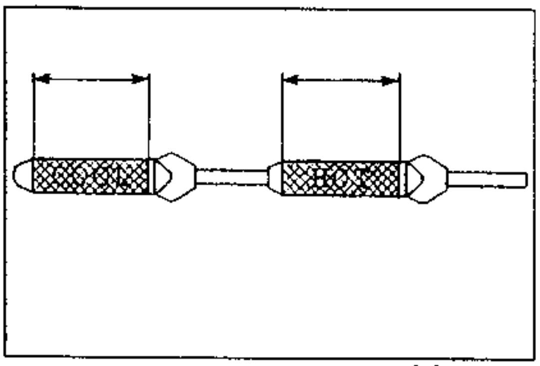
1. Warm up the engine.
2. If the vehicle runs for about 15 minutes at a speed of 60 km/h or for about 30 minutes at a speed of 40 km/h, the temperature of the fluid inside the transaxle becomes about 80 ± 10°C or 176 ± 50°F.

   REFERENCE:
   - **When the engine is cold, if the engine is operated for about 35 minutes at the idling speed after the engine has started, the temperature of the fluid inside the transaxle will rise to about 60 ± 10°C or 140 ± 50°F.**
   - **Change of fluid level as a result of rise in fluid temperature**



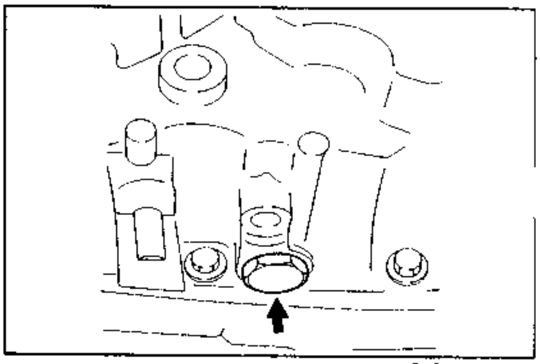
GAT00018-99999

NOTE:
- If it is necessary to check the fluid level at a low temperature (20 - 30°C or 68 - 86°F), e.g. at the time of fluid change, first adjust the fluid level so that it may become within the COOL level. Then, recheck the fluid level under the hot conditions.
- If the fluid level fails to reach the cool level on the fluid level gauge, be sure to check the transaxle for fluid leakage. Also, pull out the fluid level gauge and check the fluid for contamination or smell of fluid burning.



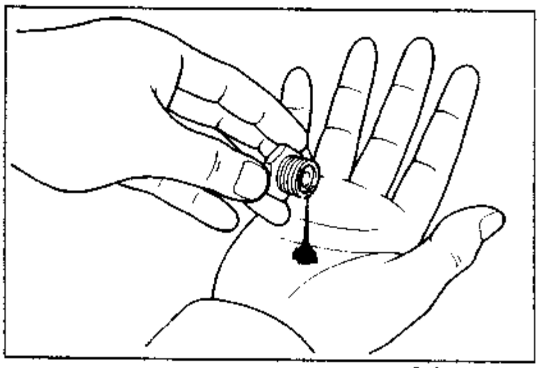
GAT00019-99999

3. Check of fluid condition
If the fluid smells burning or it presents a black appearance, change the fluid.
4. Change of transaxle fluid
(1) Remove the drain plug with the gasket. Drain the fluid.
NOTE:
- Never reuse the removed gasket.



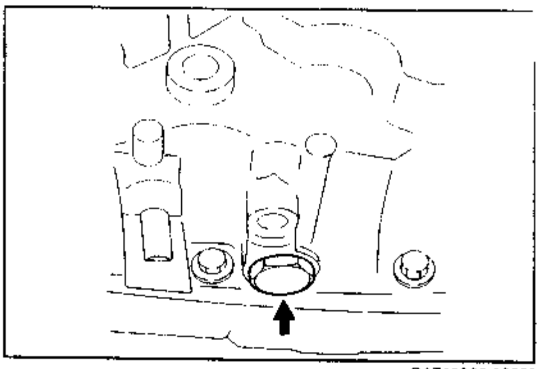
GAT00020-99999

(2) Examination of particles
Inspect the magnets and use them to collect any steel chips. Lock carefully at the chips and particles on the magnet to anticipate what type of wear you will find in the transmission:
Steel (magnetic) ... bearing, gear and plate wear
Brass (non-magnetic) ... bushing wear



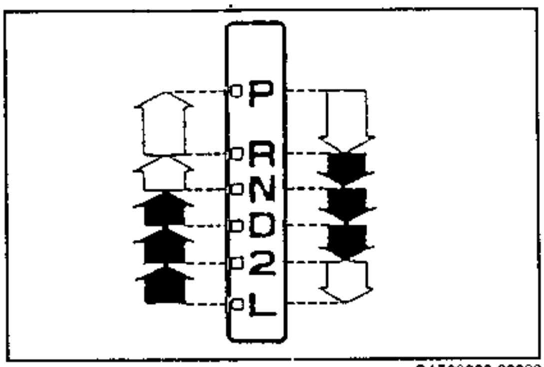
GAT00021-99999

(3) With a new gasket interposed, tighten the drain plug securely.
Tightening Torque:
23.5 - 54.9 N·m (2.4 - 5.6 kgf-m, 17.4 - 40.5 ft-lb)



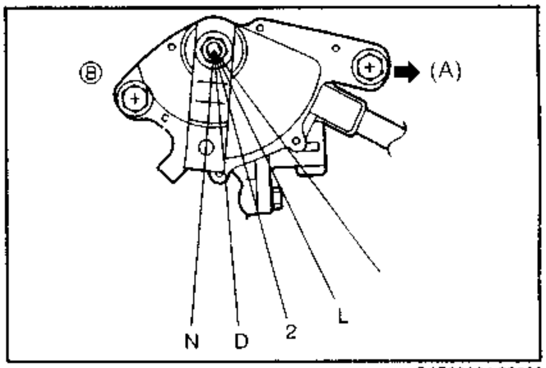
GAT00022-99999

5. Check of shift lever position
   (1) Perform the shift lock check.
   (2) Move the shift lever from the N range to each range. Ensure that the shift lever button and shift lever can be operated smoothly with a positive detent feeling at each range. Check that the position indicator functions properly.
   (3) Start the engine. Ensure that the vehicle moves forward when you move the shift lever from the N range to the D, 2 and L ranges, respectively. Make sure that the vehicle moves backward when you move the shift lever to the R range.
   (4) Perform the operation check for the shift lock release button.
   (5) With the ignition switch set to the ON position, move the shift lever from the P to R range and from the N to R range while depressing the brake pedal.
      ⇨ mark: Shift can be made only while shift lever button is being pushed
      ➡ mark: Shift can be made without pushing shift ever button



GAT00023-99999

6. Adjustment of control cable
   (1) Loosen the adjusting bolt of the manual shift lever.
   (2) Pull the manual shift lever fully toward the right side A (i.e. the engine) of the vehicle.
   (3) Back off the lever four notches to the Neutral position. Tighten the adjusting bolt.
      Tightening Torque:
      15.7 - 24.0 N·m (1.6 - 2.45 kgf-m, 11.6 - 17.6 ft-lb)

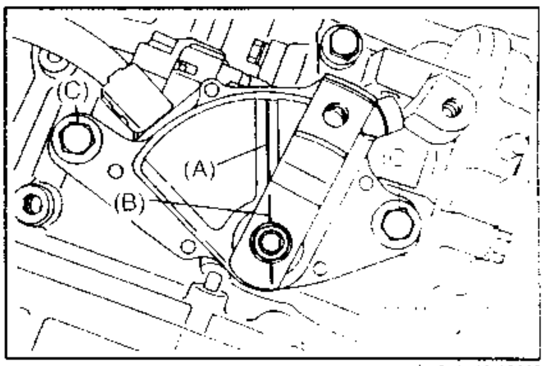


GAT00024-99999

CAUTION:

- **If the adjusting bolt is tightened with the control cable pulled toward the shift outer lever side (front side of the vehicle), the positional relationship may be disturbed slightly between the shift lever side and the shift outer lever. This may cause poor engine starting, the failure of backup lamp illuminating, sudden vehicle starting or faulty gear shifting during running. Hence, make sure to conduct the adjustment, strictly following the procedure given above.**

7. Adjustment of neutral start switch
   (1) Align the scrible lines between neutral start basic (A) and control cable bracket (B) by loosing the two bolts (C).
   (2) Hold in position and tighten the two bolts (C)
      Tightening Torque:
      9.8 - 15.7 N·m (1.0 - 1.6 kgf-m, 7.2 - 11.6 ft-lb)
   (3) Check the continuity of the terminals in the neutral start switch (see step on 9).

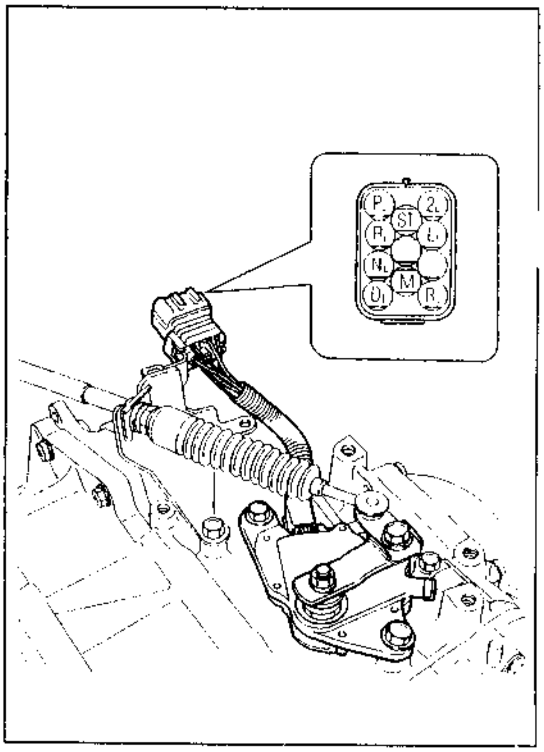


8. Check the shift lever position (see page AT-13).

9. Inspection of neutral start switch
   Using an ohmmeter, check the continuity of the terminals for each switch position shown in the table below.

Range \ Terminal	PL	RL	NL	DL	2L	LL	RB	M	ST
P	○	—	—	—	—	—	○		
R		○	—	—	—	—	○		
N			○	—	—	—	○		
D				○	—	—	○		
2					○	—	○		
L						○	○		
P, N (starter circuit)								○	○

If the continuity does not conform to the specifications, replace the switch.



DRIVING PATTERN

		Power mode	Auto mode		Easy mode
		Power pattern	Power pattern	Economy pattern	Easy pattern
P		Parking	←	←	←
R		Reverse	←	←	←
N		Neutral	←	←	←
D	O/D ON	1 ⇄ 2 ⇄ 3 ⇄ [4]	←	1 ⇄ 2 ⇄ [3] ⇄ [4]	2 ⇄ 3 ⇄ [4]
	O/D OFF	1 ⇄ 2 ⇄ [3]	←	←	2 ⇄ 3
2		1 ⇄ 2 (← 3)	←	←	2 (← 3)
L		1 (← 2)	←	←	←
Remarks		• [ ] Lock-up operation is possible. • ( ): Only when low-speed gear prohibition control is taking place during high-speed running. • Even when the Auto mode is selected, the power pattern is selected forcibly when the water-temperature sensor signal is ON (low temperature).			

A/T E.C.U UNIT CHECK

1. INSTRUCTIONS PRIOR TO WORK

(1) The electrical control system of the automatic transmission has a diagnosis function. Hence, if it is believed that causes for the problem lie in this electrical system, first be sure to read the diagnosis output.
Furthermore, after all problems of the electrical system have been repaired, disconnect the ground cable from the negative (–) terminal of the battery or backup fuse (B) at least for ten seconds at 20°C or 68°F so as to erase the memory of diagnosis results.

(2) If the problem can not be reproduced when the unit concerned is tested even if the diagnosis output indicated abnormality, it is believed that a temporary problem has occurred once in the unit concerned. Under such circumstance, it is advisable to conduct the reproduction test.

(3) Before the E.C.U connector is connected or disconnected, be certain to turn OFF the ignition key switch and disconnect the ground cable from the negative (–) terminal of the battery.

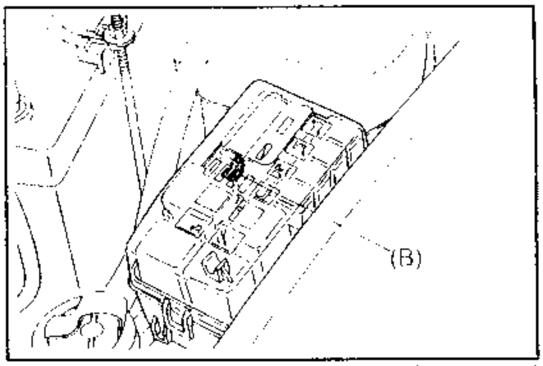
(4) When performing continuity tests or voltage measurements, connections should be made correctly to the specified terminals.

CAUTION:

- **Wrong connections may damage the E.C.U or other electrical parts.**
- **Never drop the E.C.U or other electrical parts, nor allow any impact to be applied to them. It is not permissible to reuse those parts having subjected to impacts.**

GAT00029-00000

2. DIAGNOSIS FUNCTION



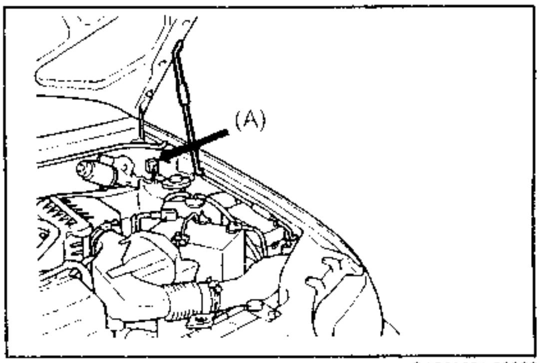
GAT00030-99999

The automatic transmission has a function whereby the self-diagnosis can be conducted for a part of the electrical system.

(1) When abnormality occurs in those diagnosis applicable units (e.g. sensors or signals), the E.C.U memorizes the unit concerned in the form of a code number.

NOTE:

- **When abnormality is taking place in any sensor or signal, it will be no longer possible for the vehicle to continue its normal running. Hence, most likely the driver will notice such abnormality.**

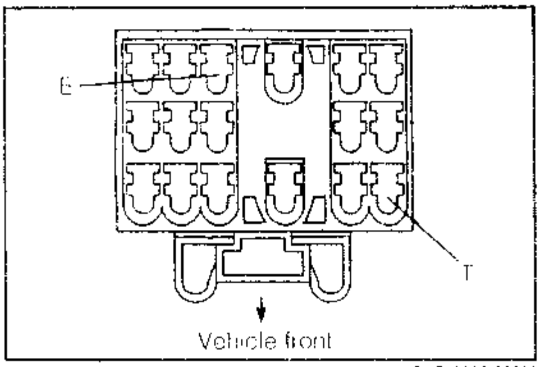


GAT00031-99999

(2) Connect the SST (09991-87705-000) to the diagnosis connector (A).

NOTE:

- **The SST (09991-87705-000) above can be used for the inspection of EFI engines and ABS-equipped vehicles.**



GAT00032-99999

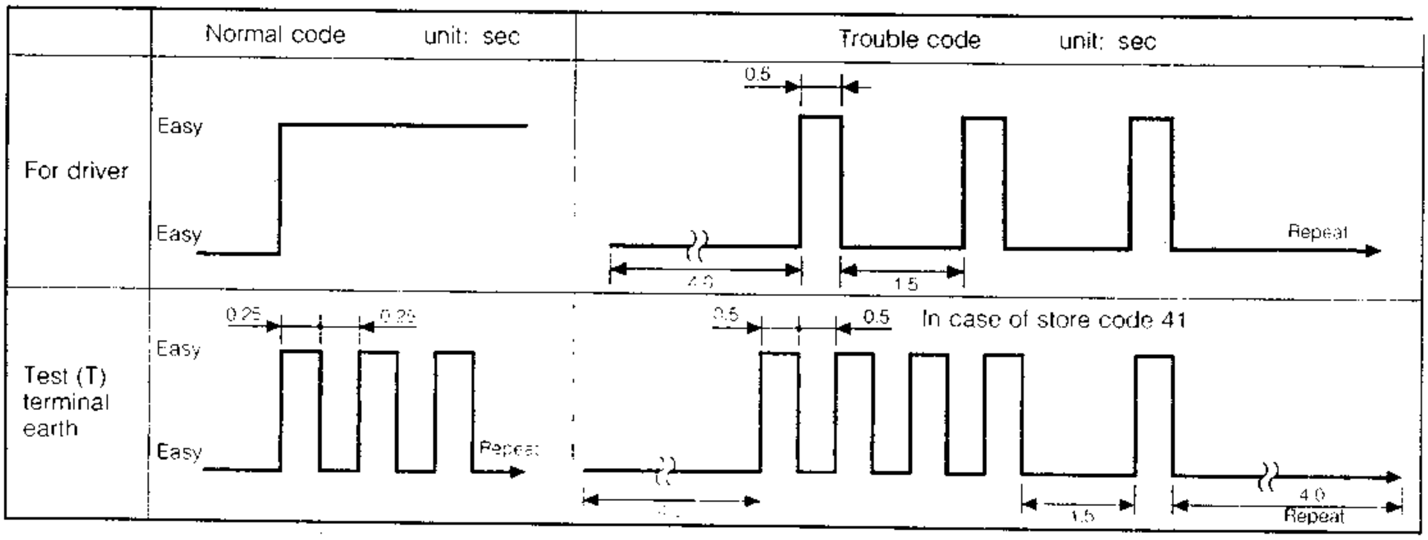
(3) Turn ON the ignition switch.

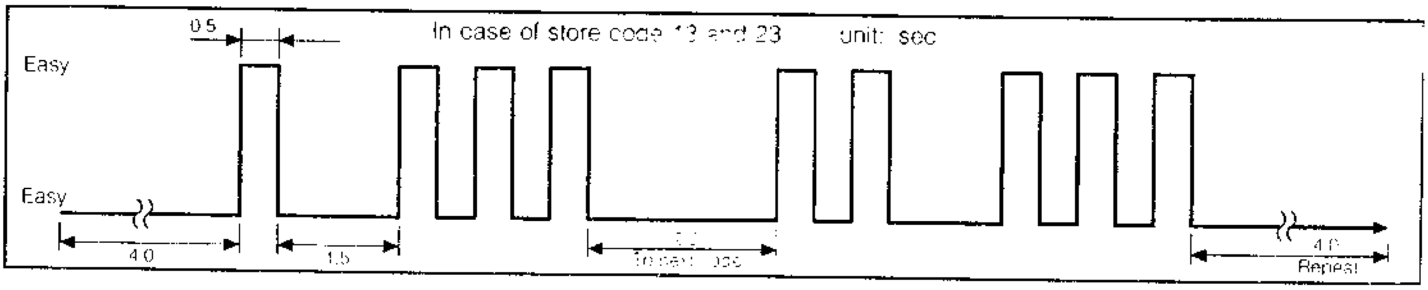
(4) Confirm the code number of the EASY lamp flashing cycle at the combination meter side.

NOTE:

- As for the code number of the 4A/T, see page AT–16.

3. DIAGNOSIS SIGNAL TABLE





NOTE:
- In cases where two or more abnormal items exist, the warning (EASY) lamp indicates the code numbers through flashing in the sequence of code number, starting from a smaller one.

GAT00033-99000

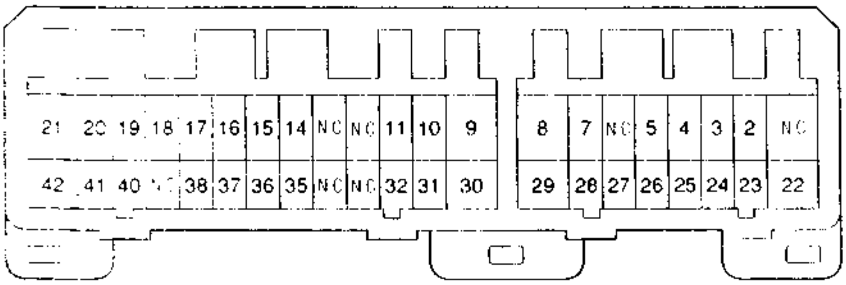
Trouble code table

Code	Trouble mode	Code	Trouble mode
13	C1 cylinder revolution sensor malfunctioning	28	L-up Ctrl. Sol. open circuit
21	Shift sol. No. 1 open circuit	29	L-up Ctrl. Sol. short circuit
22	Shift sol. No. 1 short circuit	41	Throttle sensor malfunctioning
23	Shift sol. No. 2 open circuit	42	Water temp. switch malfunctioning
24	Shift sol. No. 2 short circuit	52	Vehicle speed sensor malfunctioning
25	Press. Ctrl. Sol. open circuit	55	Shift position s/w malfunctioning
26	Press. Ctrl. Sol. short circuit	81	Torque control signal malfunctioning

GAT00034-00000

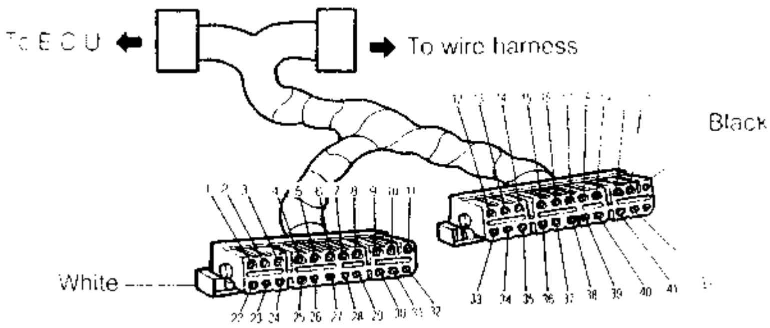
4. TERMINAL DISTRIBUTION TABLE

(1) A/T E.C.U side



GAT00035-99999

(2) Subharness (SST No.: 09842-87501-000) side



GAT00036-99999

N.C: Connected to ground (earth) inside the E.C.U.

SST terminal No.		SST terminal No.	
1	N.C	22	Air conditioner amplifier for HC-C
2	Speed sensor shield	23	Water temperature switch for HC-E
3	C1 cylinder revolution sensor (-)	23	Water temperature switch signal for HC-C
4	Vehicle speed sensor (–)	24	C1 cylinder revolution sensor (+)
5	Power switch	25	Vehicle speed sensor (+)
6	N.C	26	Overdrive switch
7	Neutral range	27	Easy switch
8	L range	28	2nd range
9	Pressure control solenoid (–)	29	D range
10	Output circuit for electric power earth	30	Sensors and signals earth
11	Parking range	31	Auxiliary earth for No. 30
12	N.C	32	R range
13	N.C	33	N.C
14	Throttle position sensor	34	N.C
15	Sensor system ground	35	Easy (warning) lamp
16	Auxiliary earth for No. 10	36	Sensor system power supply
17	Brake switch	37	Throttle sensor shield
18	Overdrive ON/OFF lamp	38	Test terminal
19	Pressure control solenoid (+)	39	N.C
20	Voltage for backup	40	Lock-up control solenoid
21	Shift solenoid No. 1	41	IG key switch
22	Torque control for HC-E	42	Shift solenoid No. 2

GAT00037-00000

PRE-INSPECTION FOR A/T E.C.U

If any difficulty is encountered in judging whether a problem is occurring at the engine side or at the A/T side, check the following electrical system.

1. Check the battery voltage (12V).
2. Check the fusible link and fuses for blown-out.
3. Ensure that the earth cable is securely connected.
4. Preliminary check (See pages AT-11 through AT-14).
5. Connect the subharness (SST/No.: 09842-87501-000) between the A/T E.C.U and the wiring harness.
6. Measure the voltage of the following terminals.
   (1) I.G switch OFF .... 20 to 10 (-) Battery voltage for backup
   (2) I.G switch ON .... 41 to 10 (-) Battery voltage
7. When the IG switch is turned ON, measure the voltage of the throttle position sensor.
   Specified Value for HC-E and HC-C:

A: Throttle opening degree

SST terminal No.	A	
	0%	100%
14 to 15 (-)	0.3 to 0.9V	More than 3.2V
36 to 30 (-)	Less than 5V	

8. Measure the voltage of the water temperature under the following conditions.
   Specified Value:

SST terminal/No.	Function	Condition	Voltage	Water temperature (°C)
23 to 30 (-)	ON	When IG switch is turned ON.	Less than 1.5	Below 35 for HC-C
				Below 32 for HC-E
	OFF	During engine warming-up period	4.5 to 5.5	Above 45 for HC-C
				Above 48 for HC-E

9. Torque control output signal (only for HC-E)
   (1) Lift up the vehicle.
   (2) Set the timing light (for movement of the timing mark on the crank pulley).
   (3) Provide an oscilloscope.
   (4) After the engine has warmed up, measure the voltage of the torque control between the following terminals.

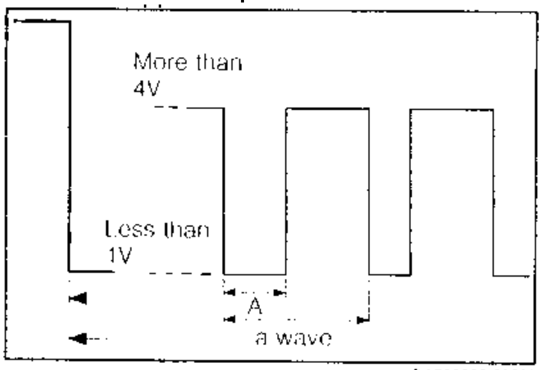
SST terminal/No.	Specified voltage		
22 to 30 (-)	More than 5V	NO →	Check the wiring harness for short circuit or erratic earth if the actually-measured value is less than the specification.

   (5) Insert the input pulse code of the oscilloscope to the SST terminal/No. 22.
   (6) Depress the brake pedal and select the shift lever to the D range.
   (7) Release your foot from the accelerator pedal and brake pedal.

(8) Depress the accelerator pedal slightly.

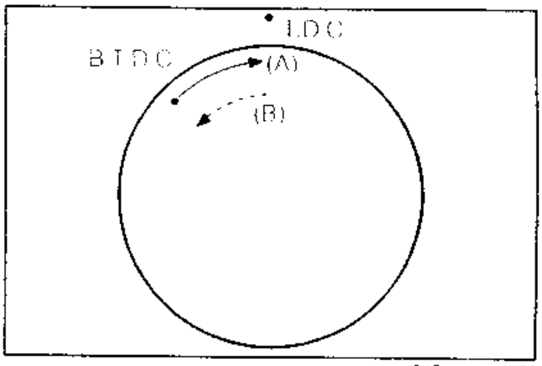
(9) Ensure that the wave characteristics of the torque control signal momentarily appear as shown in the right illustration. Also, ensure that the shift shock should be felt instantly after the wave characteristics of the torque control signal disappear.

NOTE:
- The A section varies in accordance with the throttle opening degree.



GAT00039-99999

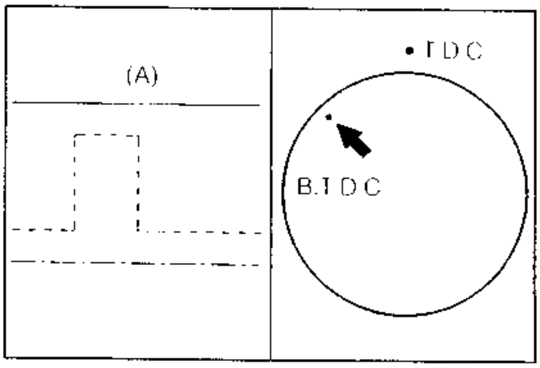
(10) Be sure to confirm that the timing mark on the crankshaft pulley will quickly retard to around the T.D.C. from the B.T.D.C. (A) when the wave characteristics of the torque control signal are indicated on the oscilloscope.



GAT00040-99999

(11) The timing mark moves in an advance direction over several stages (B) when the accelerator pedal is released.

NOTE:
- When the short circuit or erratic earth has occurred on the wiring harness, the wave characteristics of the torque control signal are displayed on the oscilloscope as shown in the right figure (i.e. like ripples A).
- If the malfunction has occurred in the A/T E.C.U itself, the timing mark will be held at the advance position when the accelerator pedal is depressed or released and the voltage varies in accordance with the throttle opening angle.



GAT00041-99999

Air conditioner switch (only for vehicles equipped with HC-C engine)

(1) Measure the voltage between the SST terminal No. 22 and the earth while idling.
Specified Value: More than 11V

(2) When the air conditioner switch is turned ON, measure the voltage between the SST terminals No. 22 and No. 30 (–).
Specified Value: Less than 2.5V

(3) Measure the voltage between the SST terminals No. 22 and No. 30 (–). Also, measure the time required for the air conditioner to be switched from ON to OFF in accordance with the throttle opening degree, using a stopwatch.
Specified Values:
Time: 3 sec.
A/C ON: When voltage is more than 11V
A/C OFF: When voltage is less than 2.5V

NOTE:
- While the air conditioner cut signal is being outputted, if an air conditioner cut output signal is newly detected from the A/T E.C.U, the cut signal will be retained for three seconds.

ELECTRONIC PARTS INSPECTION THROUGH SST (09842-87501-000)

T = Trouble code, A = Approximately

1. T = 13 (C1 cylinder revolution sensor):
Detecting the transmission input revolution from the forward clutch drum and send it to A/T E.C.U.

	Condition	SST terminal/No.	Specified value	No	Cause
(1)	I.G ON	3 to 30 (−)	A: 2.5V	No (Less than 2.5V)	• A/T E.C.U malfunction
			↓ Yes		
(2)	I.G ON	24 to 30 (−)	A: 2.5V	No (Less than 2.5V)	• Poor connection of sensor connector • Short circuit on the wiring harness or sensor
			↓		
(3)	Vehicle running in D range more than 1st: 7 km/h, 2nd: 13 km/h 3rd: 18 km/h, 4th: 26 km/h		A: 2.5V	No (No voltage)	• Sensor malfunction
				No (Voltage changes variously)	• A/T E.C.U malfunction
			↓		
			NORMAL (Steady A. 2.5V)		

GAT00401-0000C

2. T = 21 (Shift solenoid No. 1): Short circuit or Battery irregularly earth

	Condition	SST terminal/No.	Specified value	No	Cause
(1)	I.G OFF	21 to 30 (−)	13 ± 2Ω	No (More than 13 ± 2Ω)	• Poor connection of solenoid connector • Short circuit on the wiring harness or solenoid
			↓ Yes		
(2)	I.G ON	21 to 30 (−)	10V	No (More than 10V)	• Short circuit on the wiring harness between battery and solenoid
			↓ Yes		
(3)	While idling	21 to 30 (−)	0V	No (More than 0V)	• A/T E.C.U malfunction
			↓ Yes		
			NORMAL		

GAT00402-00000

T = 22 (Shift solenoid No. 1): Irregularly earth

		SST terminal/No.	Specified value		
(1)	I.G OFF	21 to 30 (-)	13 ± 2Ω	No (More than 13 ± 2Ω) →	• Solenoid malfunction • Wiring harness irregularly earth
			↓ Yes		
(2)	While vehicle running with 1st or 2nd gear	21 to 10 (-)	More than 10V	No (Less than 10V) →	• A/T E.C.U malfunction
			↓ Yes		
			NORMAL		

GAT00403-00000

4. T = 23 (Shift solenoid No. 2): Short circuit or Battery irregularly earth

		SST terminal/No.	Specified value		
(1)	I.G OFF	42 to 10 (-)	13 ± 2Ω	No (More than 13 ± 2Ω) →	• Poor connection of solenoid connector • Short circuit on the wiring harness
			↓ Yes		
(2)	While idling	42 to 10 (-)	More than 10V	No (Less than 10V) →	• Short circuit on the wiring harness between battery and solenoid
			↓ Yes		
(3)	In the 4th gear of D-range, depress the accelerator pedal slightly (Approx. 40 km/h when O/D ON)		0V	No (More than 0V) →	• A/T E.C.U malfunction
			↓ Yes		
			NORMAL		

GAT00404-00000

5. T = 24 (Shift solenoid No. 2): Irregularly earth

		SST terminal/No.	Specified value		
(1)	I.G OFF	42 to 10 (-)	13 ± 2Ω	No (More than 13 ± 2Ω) →	• Solenoid No. 2 malfunction • Irregularly earth on the wiring harness
			↓ Yes		
(2)	Vehicle running in D or 2nd range	42 to 10 (-)	More than 10V	No (Less than 10V) →	• A/T E.C.U malfunction
			↓ Yes		
			NORMAL		

GAT00405-00000

6. T = 25 (Pressure control solenoid): Short circuit or Irregularly earth

		SST terminal/No.	Specified value		
(1)	I.G OFF	19 to 9 (−)	3.5Ω	No (More than 3.5Ω) →	• Poor connection of connector • Short circuit on the wiring harness • Pressure control solenoid malfunction
			↓ Yes		
(2)	I.G OFF	9 to 16 (−)	0Ω	No (More than 0Ω) →	• Irregularly earth on the wiring harness
			↓ Yes		
(3)	In P or N range (I.G ON or idling)	19 to 16 (−)	6V	No (More than 6V) →	• A/T E.C.U malfunction
			↓ Yes		
(4)	When engine warmed-up	9 to 16 (−)	1.6V	No (More than 1.6V) →	• A/T E.C.U malfunction
			↓ Yes		
			NORMAL		

GAT00406-00000

7. T = 26 (Pressure control solenoid): Battery short

		SST terminal/No.	Specified value		
(1)	I.G OFF	19 to 20 (−)	0Ω	No (More than 0Ω) →	• Battery short on the wiring harness
			↓ Yes		
(2)	I.G ON	9 to 16 (−)	More than 1.4V	No (Less than 1.4V) →	• A/T E.C.U malfunction
			↓ Yes		
			NORMAL		

GAT00407-00000

8. T = 28 (Lock-up solenoid): Short circuit or Battery short

		SST terminal/No.	Specified value		
(1)	I.G OFF	40 to 16 (−)	13 ± 2Ω	No (More than 13 ± 2Ω) →	• Poor connection of solenoid connector • Short circuit on the wiring harness or solenoid
			↓ Yes		
(2)	While idling	40 to 16 (−)	Less than 10V	No (More than 10V) →	• Short circuit on the wiring harness between battery and solenoid
			↓ Yes		
(3)	While idle	40 to 16 (−)	0V	No (More than 0V) →	• A/T E.C.U malfunction
			↓ Yes (Steady)		
			NORMAL		

GAT00408-00000

T = 29 (Lock-up solenoid): Irregularly earth

		SST terminal/No.	Specified value	No	Possible cause
(1)	I.G OFF	40 to 10 (–)	0Ω	(More than 0Ω)	• Irregularly earth on the wiring harness • Solenoid malfunction
			↓ Yes		
(2)	While vehicle running with lock-up (3L or 4L)	40 to 10 (–)	More than 10V	(Less than 10V)	• A/T E.C.U malfunction
			↓ Yes		
			NORMAL		

GAT00409-00000

10. T = 52 (Vehicle speed sensor): Detecting the revolution of counter driven gear and send it to A/T E.C.U

		SST terminal/No.	Specified value	No	Possible cause
(1)	I.G OFF	4 to 25 (–)	387 to 473Ω	(More)	• Irregularly earth or short circuit on the wiring harness • Poor connection of sensor connector • Sensor malfunction
			↓ Yes		
(2)	I.G ON	4 to 10 (–)	2.5V	(Less than 2.5V)	• A/T E.C.U malfunction
			↓ Yes		
(3)	I.G ON	25 to 10 (–)	2.5V	(Less than 2.5V)	• Poor connection of sensor connector • Short circuit on the wiring harness
			↓ Yes		
(4)	While running in D, 2 and L range more than 10 km/h	25 to 10 (–)	2.5V	No voltage	• Sensor malfunction
			Yes → (Voltage changes variously)		• A/T E.C.U malfunction
			↓		
			NORMAL (Steady voltage)		

GAT00410-00000

11. T = 55 (Shift position switch)
While the engine is idling, measure the voltage at the shift position switch from P to L range at each selecting position.

	SST terminal/No.	Specified value	No
(1)	11 to 30 (-) (P range)	Less than 3V	No →
	• When shifted to R range	More than 10V	No →
(2)	32 to 30 (-) (R range)	Less than 0.8V	No →
	• When shifted to N range	More than 10V	No →
(3)	7 to 30 (-) (N range)	Less than 3V	No →
	• When shifted to D range	More than 10V	
(4)	29 to 30 (-) (D range)	0V	No →
	• When downshifted to 2nd range	More than 10V	
(5)	28 to 30 (-) (2nd range)	0V	No →
	• When downshifted to L range	More than 10V	
(6)	8 to 30 (-) (L range)	0V	No →
	• When upshifted to 2nd range	More than 10V	No → A/T E.C.U malfunction

Yes ↓

NORMAL

Erratic earth or short circuit on the wiring harness or switch

NOTE:

- **If the measured voltage is 0V or more in the P range, the engine idling speed drops slightly. NORMAL**
- **After the erratic earth or short circuit has been repaired on the wiring harness, if the measured value exceeds the specified value described in the left, be sure to replace the shift position switch assembly.**

GAT00411-00000

12. Driving pattern selection switch

		SST terminal/No.	Specified value	No	Yes
(1)	Power I.G ON	5 to 10 (–)	More than 10V	• Short circuit or Irregularly earth on the wiring harness	↓
	I.G ON When power switch ON	5 to 10 (–)	0V	• Switch malfunction	NORMAL
(2)	Easy I.G ON	27 to 10 (–)	Less than 5V	• Short circuit or Irregularly earth on the wiring harness	↓
	I.G ON When easy switch ON	27 to 10 (–)	0V	• Switch malfunction	NORMAL

GAT00412-00000

13. Over drive Lock-out switch

		SST terminal/No.	Specified value	No	Yes
(1)	I.G ON	26 to ground (Input voltage)	Less than 5V	• Short circuit or Irregularly earth on the wiring harness	↓
(2)	I.G ON When O/D switch ON and OFF	26 to 30 (–)	Less than 5V	• Switch malfunction (If the measure value is greater than 0.5V against the input voltage)	NORMAL

GAT00413-00000

14. Brake switch

		SST terminal/No.	Specified value	No	Yes
(1)	I.G ON	17 to ground (Input voltage)	More than 10V	• Short circuit or Irregularly earth on the wiring harness	↓
(2)	I.G ON When brake pedal depressed	17 to 10 (–)	More than 10V	• Switch malfunction (If the measure value is greater than 0.2V against the input voltage)	NORMAL

GAT00414-00000

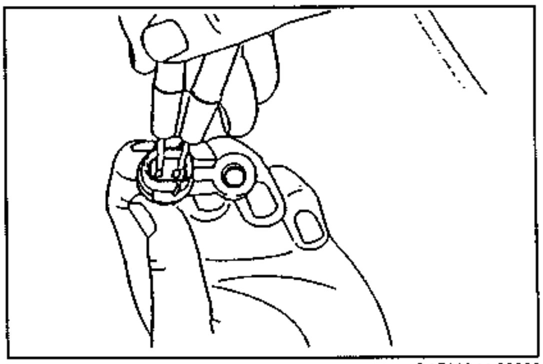
15. Test terminal

		SST terminal/No.	Specified value		
(1)	I.G ON	38 to ground (Input voltage)	Less than 5V	No →	• Short circuit or Irregularly earth on the wiring harness
			↓ Yes		
(2)	I.G ON	38 to 30 (-)	4V	No →	• Switch malfunction (If the measure value is less than 1.0V against the input voltage)
			↓ Yes		
			NORMAL		

GAT00043-00000

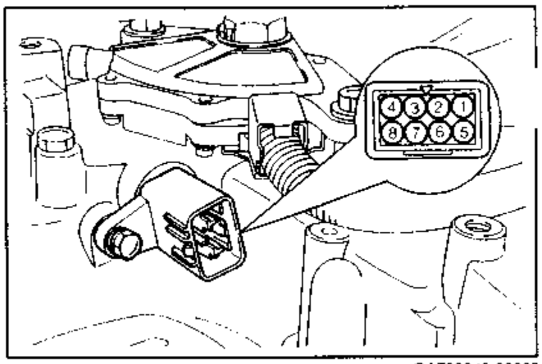
UNIT INSPECTION

1. Measure the coil resistance of the vehicle speed sensor (A) and C1 cylinder revolution sensor (B), using an ohmmeter.
   Specified Value:
   (A) 648 to 792Ω at 20°C or 68°F
   (B) 387 to 473Ω at 20°C or 68°F



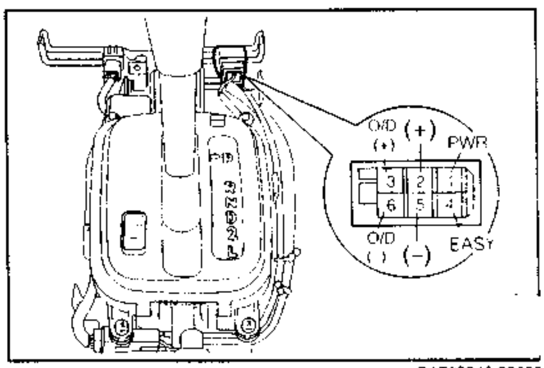
GAT00044-99999

2. Measure the coil resistance of the following parts, using an ohmmeter.
   (1) Shift solenoid No. 1 (4) and No. 2 (8) to body ground
   (2) Lock-up control solenoid (3) to body ground
   (3) Pressure control solenoid (2, 6)
   Specified Value:
   (1) and (2) 13 ± 2Ω at 20°C or 68°F
   (3) 3.5 ± 0.2Ω at 20°C or 68°F



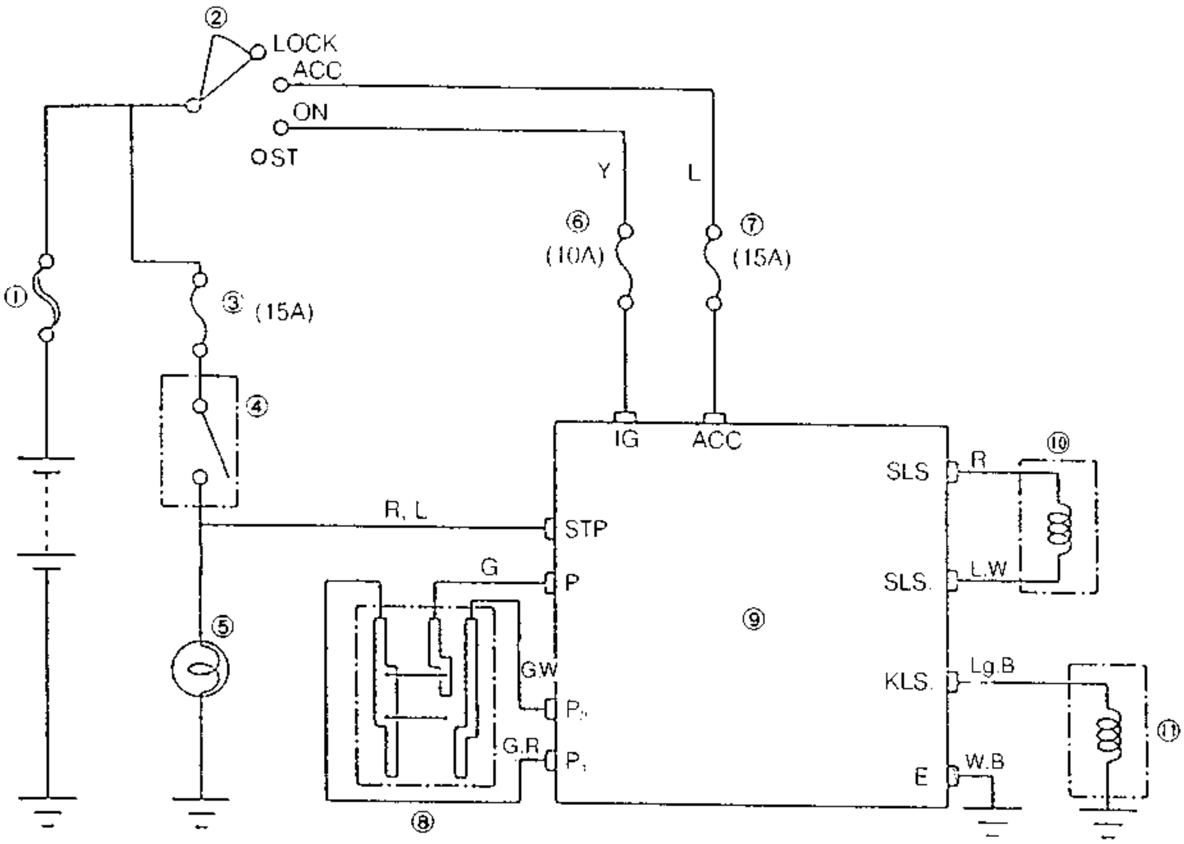
GAT00045-99999

3. Measure the continuity of the brake switch, when depressing the brake pedal.
4. Measure the continuity of the pattern select switch, using an ohmmeter.
   Power: Continuity exist between the terminal of 1-5.
   Easy : Continuity exist between the terminal of 4-5.
5. Measure the continuity of the overdrive switch while O/D switch ON between the terminal of 3-6.
6. Ensure that the illumination lamp should be goes-ON when connecting the battery voltage between the terminal of 2-5.



GAT00046-99999

KEY INTERLOCK WITH SHIFT LOCK WIRING DIAGRAM (ONLY FOR AUSTRALIAN SPECIFICATION)



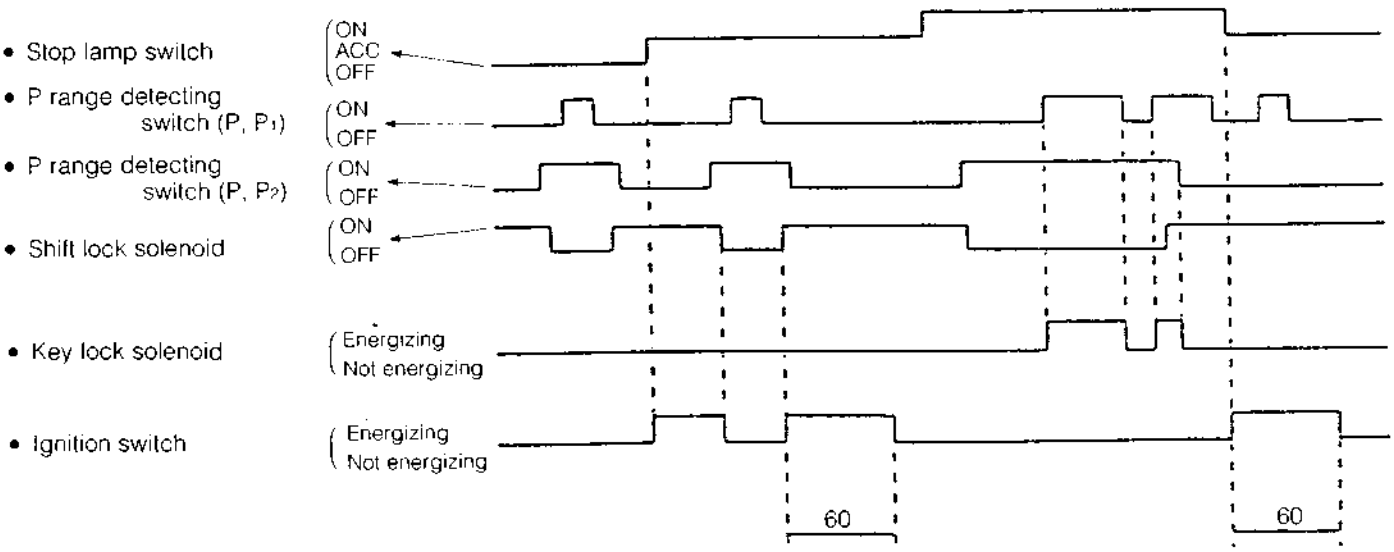
① Fusible link
② Ignition switch
③ Stop (15A)
④ Stop lamp switch
⑤ Stop lamp
⑥ Gauge (10A)
⑦ Cigarette lighter (15A)
⑧ P range detecting switch (Bullet in the shift lever assembly)
⑨ Shift lock E.C.U
⑩ Shift lock solenoid (Bullet in the shift assembly)
⑪ Key inter lock solenoid (Located in the upper bracket of steering column)

1. SHIFT LOCK ELECTRIC CONTROL UNIT

Upon receiving the "ACC" and "ON" signals from the ignition switch, P range detecting switch signal and stop lamp switch signal, this E.C.U controls the energizing of the key interlock solenoid and shift lock solenoid as shown in the figure below.

NOTE:

- To prevent the battery from being discharged, when the IG key switch is at the "ACC" position, the energizing to the key interlock solenoid will be shut off about 60 minutes after electric continuity is formed.



Energizing conditions ... Each solenoid will be energized only when all conditions given below are satisfied.

	Key interlock solenoid	Shift lock solenoid
Ignition switch	ACC	ON
Shift position	Shift lever is placed in P range and shift lever button is being pushed, or shift lever is placed in ranges other than P. P range detecting switch P-P_2 ON	P range P range detecting switch P-P_1 ON
Stop lamp switch	—	ON

GAT00049-99999

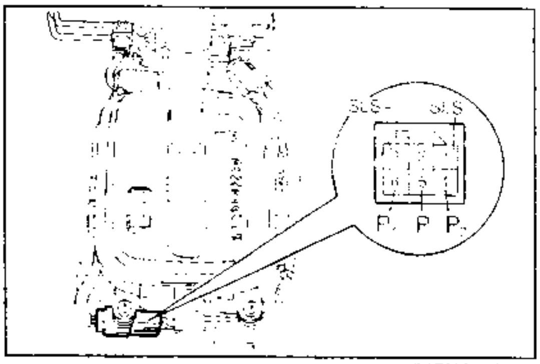
2. SHIFT LOCK E.C.U INPUT/OUTPUT SPECIFICATION

Terminal	Condition	Specified value
I.G to earth	I.G switch ON	Battery voltage
STP to earth	Depress the brake pedal	
	Release the brake pedal	0V
KLS (+) to earth	I.G switch ACC and P range	0V
	Shift lever button is pushed when P range or other than P range	7.5 to 11.5V (Approx: 1 sec) 6 to 9V (After that)
ACC to earth	I.G switch ACC	Battery voltage
SLS (−) to earth	—	Continuity exist
SLS (+) to earth	I.G switch ON, Depress the brake pedal with P range	8.5 to 13.5V (Approx: 20 sec) 5.5 to 9.5V (After that)
	I.G switch ON, Release the brake pedal with P range or other than P range	0V
P_2 to earth	I.G switch ACC with P range	Battery voltage
	Shift lever button is pushed with P range or other than P range	0V
P to earth	—	Continuity exist
P_1 to earth	I.G switch ON with P range	0V
	Shift lever button is pushed with P range or other than P range	

GAT00050-00...

1. Disconnect the connector of the solenoid. Ensure that the clicking sound emits from the solenoid when connecting the battery voltage between the terminal of SLS (+) to SLS (–) for shift solenoid and KLS (+) to KLS (–) for key interlock.
2. Measure the continuity of following terminal of the P range detecting switch.
3. Shift lock and key interlock solenoids inspection.

Shift lever	Shift lever button	Terminals		
		P	P_1	P_2
P range	Release	○	○	
	Push	○	○	
		○		○
Other than P range	—	○		○



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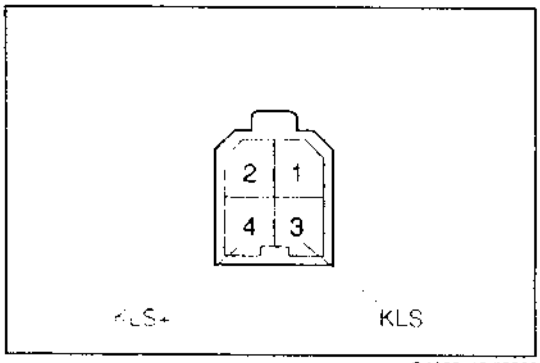
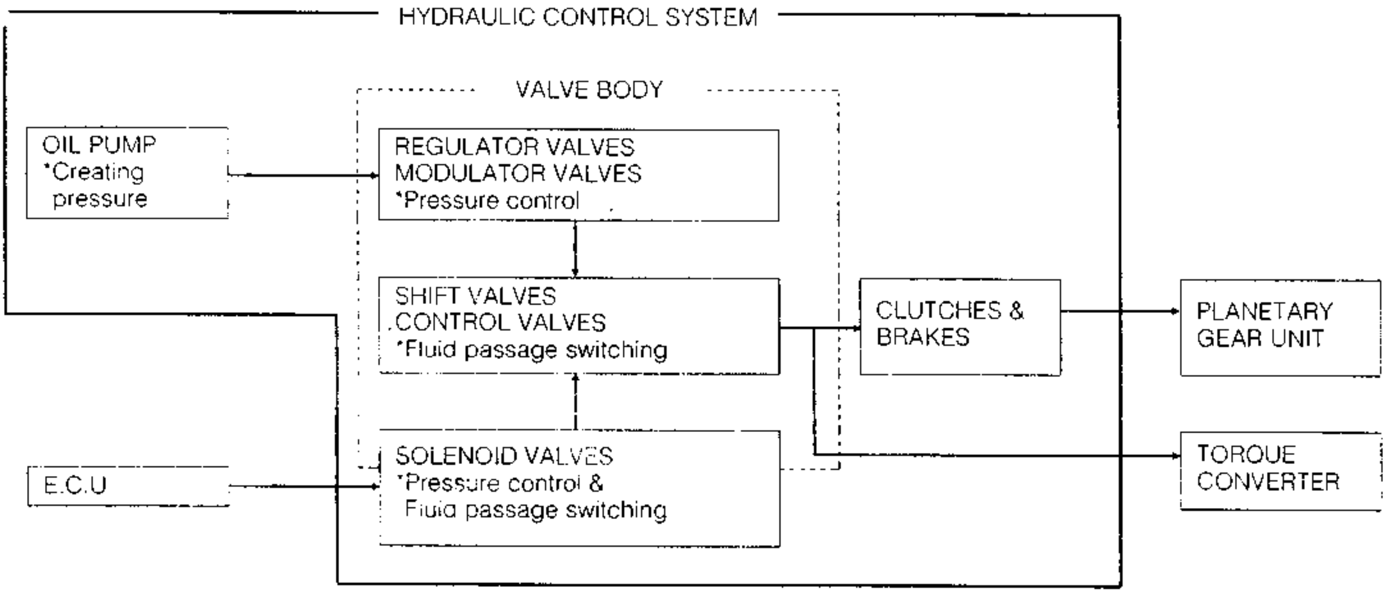


GA100415-99999

HYDRAULIC CONTROL SYSTEM

Based on the hydraulic pressure created by the oil pump, the hydraulic control system governs the hydraulic pressure acting on the torque converter, clutches and brakes in accordance with the vehicle condition. There are four solenoid valves on the valve body.

- The No. 1 and No. 2 shift solenoid valves are turned on and off by signals from the E.C.U to operate the shift valves, and change the gear shift position.
- The pressure control solenoid valve is operated by signals from the E.C.U to control the hydraulic pressure for clutches and brakes to reduce shift shock.
- The lock-up control solenoid valve is operated by signals from the E.C.U to engage or disengage the lock-up clutch of the torque converter, and also control the hydraulic pressure for the lock-up clutch engagement.



GAT0005?-00000

TESTING

1. STALL TEST

The purpose of this test is to check the overall performance of the automatic transmission and engine by measuring the maximum engine speeds in the D and R ranges.

CAUTION: (Failure to observe this caution may cause the stall speed figure not to be corrected.)
(1) Perform the stall test at the normal fluid operating temperature (70 - 80°C or 158 - 176°F).
(2) Do not conduct this test continuously for more than five seconds.
(3) Wait at least one minute before the switching is made from the D range to the R range.
(4) Be sure to turn OFF the air conditioner and over drive during the test.

Measurement of stall speed

(1) Place chocks at the four wheels.
(2) Install an engine tachometer.
(3) Fully apply the parking brake.
(4) Keep depressing the brake pedal firmly by your left foot during the test.
(5) Start the engine and check the idle speed (850 ± 50 rpm for HC-E, 800 ± 50 rpm for HC-C).
(6) Move the shift lever to the D or R range. Depress the accelerator pedal fully by your right foot. Quickly read the highest engine rpm at this time.
Stall Speed: 2180 ± 150 rpm for HC-E, 2500 ± 150 rpm for HC-C

(7) Perform the same test in the R range.

CAUTION
- **Never move the shift lever to the D or R range while the engine is rotating at a high speed in the N range. (Failure to observe this caution may cause the discs to be burnt.)**

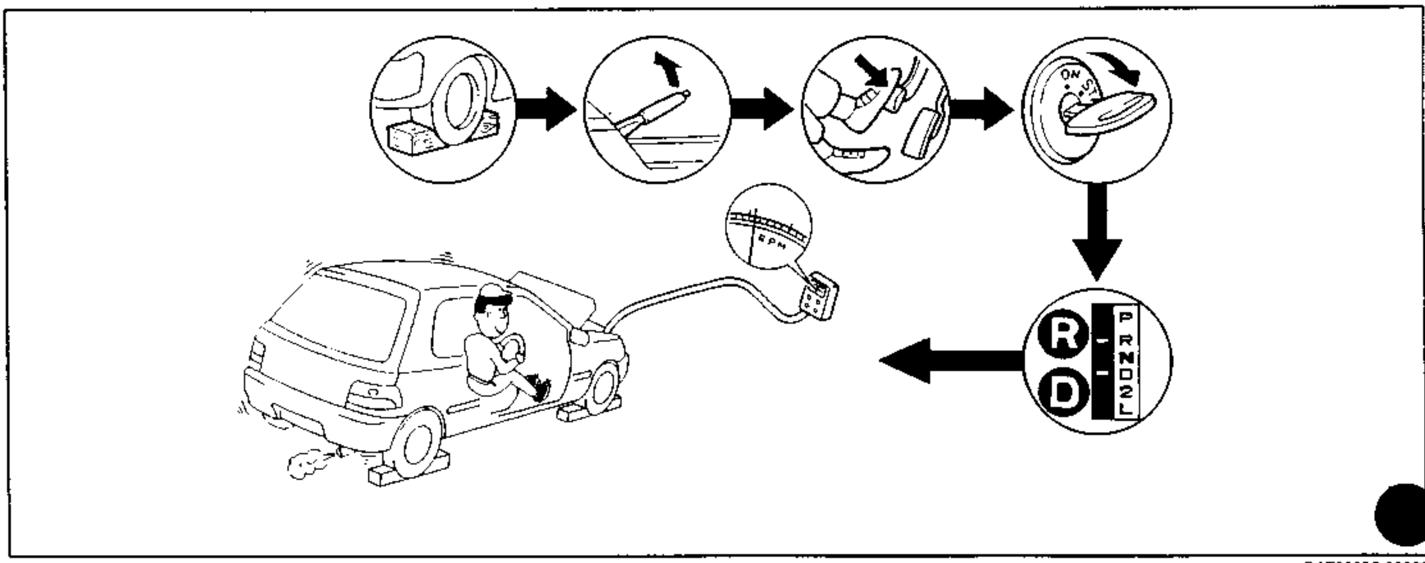
Evaluation

(1) If the engine speed is the same for both ranges but lower than specified value:
- Engine output probably insufficient
- Stator one-way clutch malfunctioning

(2) If the stall speed at the D range is higher than specified value:
- Line pressure too low
- Forward clutch slipping

(3) If the stall speed in the R range is higher than specified value:
- Line pressure too low
- Reverse clutch slipping
- First & reverse brake slipping

(4) If the stall speed in the R and D ranges is higher than specified value:
- Line pressure too low



GAT00052-99999

2. TIME LAG TEST

/hen the shift lever is shifted while the engine is idling, there will be a certain time lapse or lag before you can feel a shock. This time lag can be used for checking those conditions of the forward clutch, the reverse clutch, coast clutch and the first & reverse brake.

CAUTION: (Failure to observe this caution may cause the time lag figure not to be corrected.)

(1) Perform the time lag test at the normal fluid operating temperature (70 - 80°C or 158 - 176°F).

(2) Be sure to allow one minute intervals between tests.

(3) Conduct the measurement three times and take the average value.

Measurement of time lag

(1) Place chocks at the four wheels.

(2) Fully apply the parking brake.

(3) Start the engine and check the idle speed (850 ± 50 rpm for HC-E, 800 ± 50 rpm for HC-C).

(4) Move the shift lever from the N to the D range. Using a stopwatch, measure the time required from the lever shifting to the time when you feel a shock.

Time Lag for A: Not to Exceed 0.7 second

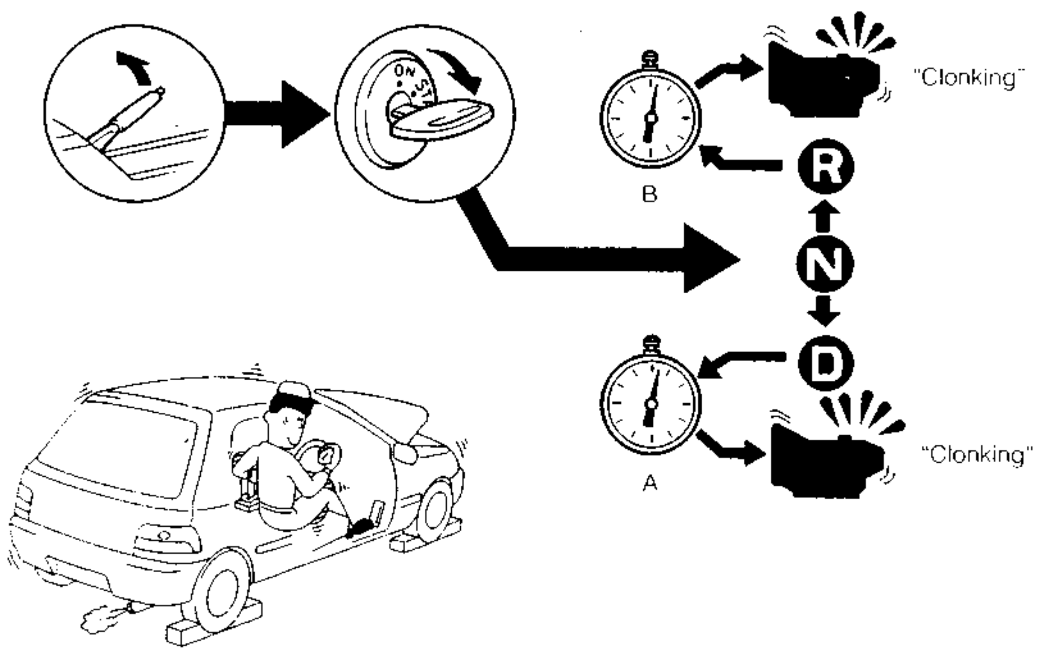
(5) In the same manner, measure the time lag when shifting is made from the N to the R range.

Time Lag for B: Not to Exceed 1.2 seconds

Evaluation

(1) If the N-to-D time lag is longer than the specified value:
- Line pressure too low
- Forward clutch slipping
- Coast clutch and one way clutch No. 0 and No. 1 malfunctioning

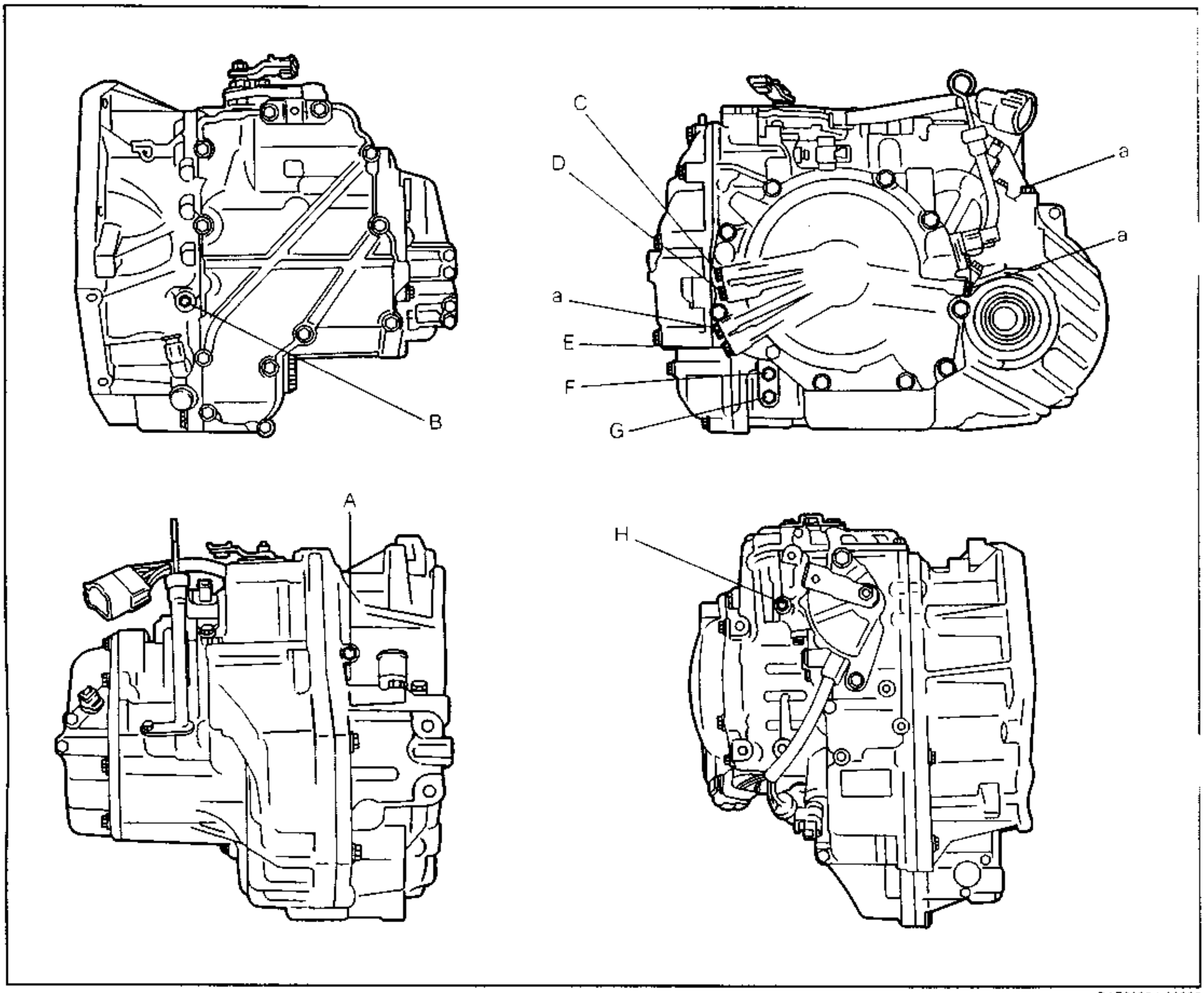
(2) If the N-to-R time lag is longer than the specified value:
- Line pressure too low
- Reverse clutch slipping
- First & reverse brake slipping



GAT00053-99999

3. LOCATION OF TEST PLUGS

A, a (P_{LUB}) : Lubrication pressure
B (P_L) : Line pressure
C (P_{C3}) : Coast clutch pressure
D (P_{C1}) : Forward clutch pressure
E (P_{C0}) : Overdrive clutch pressure
F ($P_{B1'}$) : 2nd & 4th brake releasing pressure
G (P_{B1}) : 2nd & 4th brake applying pressure
H (P_{TH}) : Throttle pressure



GAT00054-99999

HYDRAULIC TEST

1. Measurement of pressures.
   (1) Warm up the transmission fluid.
   (2) Remove the test plugs and install the oil pressure gauge (SST).
   SST: **09992-00094-000**

   CAUTION:
   - **Perform the test at the normal fluid operating temperature (70 - 80°C or 158 - 176°F).**

   (3) Fully apply the parking brake and place chocks at the four wheels.
   (4) Start the engine and check the idle speed (850 ± 50 rpm for HC-E, 800 ± 50 rpm for HC-C).
   (5) Move the shift lever to the D range. Depress the brake pedal firmly by your left foot. While manipulating the accelerator pedal by your right foot, measure the line pressure at the engine speeds specified in the table.
   (6) Perform the test in the R range in the same way.

kPa (kgf/cm², psi)

	D range		R range	
	Idling	Stall	Idling	Stall
Line	372 - 421 (3.8 - 4.3, 54 - 61)	1019 - 1196 (10.4 - 12.2, 148 - 173)	539 - 627 (5.5 - 6.4, 78 - 91)	1343 - 1618 (13.7 - 16.5, 194 - 234)
Forward clutch	343 - 421 (3.5 - 4.3, 49 - 61)	1029 - 1196 (10.5 - 12.2, 149 - 173)	—	—
Coast clutch	343 - 421 (3.5 - 4.3, 49 - 61)	382 - 431 (3.9 - 4.4, 55 - 62)	382 - 431 (3.9 - 4.4, 55 - 62)	382 - 431 (3.9 - 4.4, 55 - 62)
Throttle	39 - 63 (0.4 - 0.65, 5.6 - 9.2)	402 - 451 (4.1 - 4.6, 58 - 65)	39 - 63 (0.4 - 0.65, 5.6 - 9.2)	402 - 451 (4.1 - 4.6, 58 - 65)

   (7) If the measured pressure does not comply with the specified values, perform the test again.

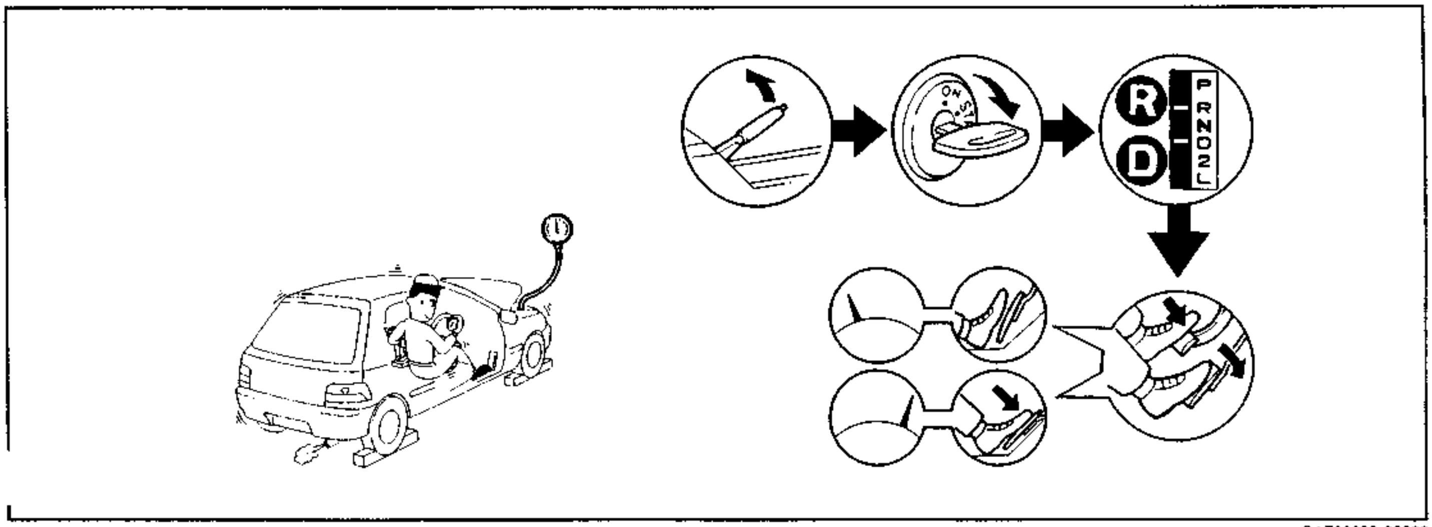
Evaluation

(1) If the measured values in the D and R ranges are higher than specified value:
- Pressure control solenoid malfunctioning
- Primary regulator valve malfunctioning

(2) If the measured values in the D and R ranges are lower than the specified value:
- Pressure control solenoid malfunctioning
- Primary regulator valve malfunctioning
- Oil pump malfunctioning

(3) If the pressure is low in the D range only:
- Fluid leakage at the D range circuit

(4) If the pressure is low in the R range only:
- Fluid leakage at the R range circuit



GAT00055-99999

5. MEASUREMENT OF 2ND AND 4TH BRAKE APPLYING (P_{B1}) PRESSURE

(1) Warm up the transmission fluid
(2) Remove the test plug with O-ring installed and install the oil pressure gauge.
CAUTION:
- Perform the test at the normal **fluid temperature** (70 - 80°C or 158 - 176°F).

(3) Fully apply the parking brake and place chocks at the four wheels.
(4) Start the engine and check the idle speed (850 ± 50 rpm for HC-E, 800 ± 50 rpm for HC-C).
(5) Move the shift lever to D or 2 range. Depress the brake pedal firmly by your left foot.
While manipulating and depressing the accelerator pedal slightly by your right foot until you can feel the 2nd gear in D or 2nd range.
(6) Measure the brake applying pressure after releasing the accelerator pedal.

kPa (kgf/cm², psi)

D range (2nd)	2nd range (2nd)
343 - 421 (3.5 - 4.3, 49 - 61)	More than 343 (3.5, 49)

In the same manner (ie: 3rd gear in D range), measure the overdrive clutch (P_{C0}) and 2nd and 4th brake releasing ($P_{B1'}$) pressures.

kPa (kgf/cm², psi)

	D range (3rd)
Overdrive clutch (P_{C0})	343 - 421 (3.5 - 4.3, 49 - 61)
2nd and 4th releasing	343 - 421 (3.5 - 4.3, 49 - 61)

(7) Measure the lubrication pressure at idling condition
Specified Value: More than 78 kPa (0.8 kgf/cm², 11 psi) at D range

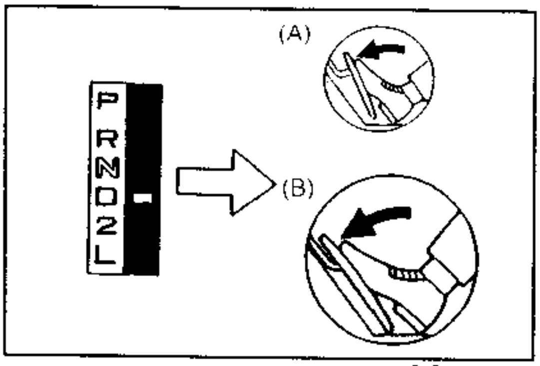
- If the line pressure is higher than specified value
  - Line pressure control solenoid malfunction
  - Primary regulator valve malfunction
- If the line pressure is lower than specified value
  - Line pressure control solenoid malfunction
  - Primary regulator valve malfunction
  - Oil pump malfunction
  - Fluid leakage at the oil pressure circuit

GAT00056-00000

6. ROAD TEST

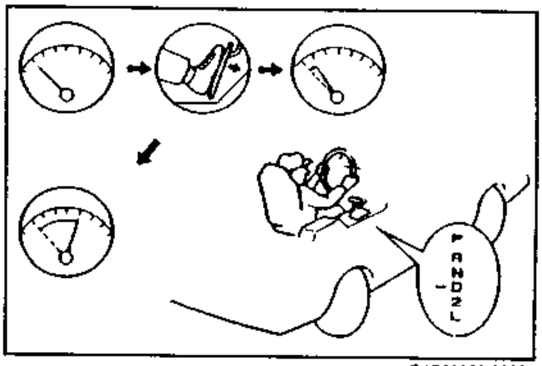
CAUTION:
- **Perform this test at the normal fluid operating temperature (70 - 80°C or 158 - 176°F).**

(1) D range test in Auto or Power pattern.
Shift into D range and hold accelerator pedal constant at 50% (A) and 100% (B) throttle opening positions.
(a) Upshift operation
1-2, 2-3 and 3-4 upshifts should take place, and shift points should be conformed to the shift program (See page AT-37).



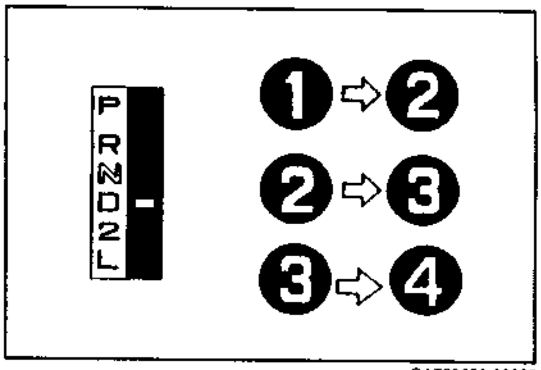
GAT00057-99999

(2) Inspection of lockup mechanism
(a) Drive the vehicle in the D range at a STEADY SPEED (lockup ON) of about 85 km/h (53 mph). (The lock-up can be off, if the accelerator pedal is being depressed while vehicle steady speed.)
(b) Lightly depress the accelerator pedal and check that the engine speed does not change abruptly.
If there is a sharp rise in the engine rpm, it indicates that there is no lockup.


GAT00058-99999

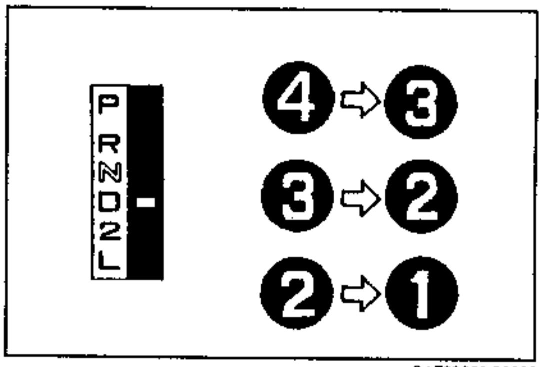
(3) Shock and slip
In the same manner, check the shock and the slippage at 1-2, 2-3 and 3-4 upshiftings.
(4) Noise and vibration
Check for abnormal noise and vibration with normal driving condition.

NOTE:
- **Extreme care must be exercised during check for cause of abnormal noise and vibration. These symptoms are caused often by imbalance in the drive shaft, differential, tires, torque converter and so forth.**



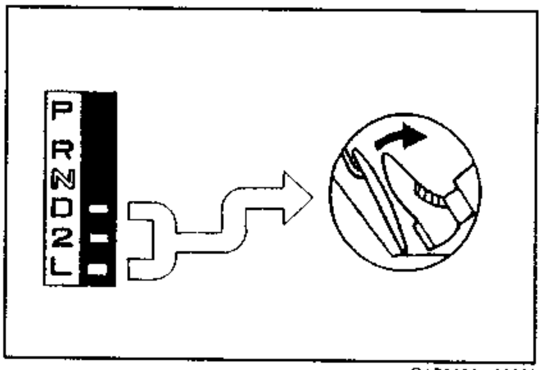
GAT00059-99999

(5) While running in the 2nd, 3rd and 4th gear of the D range, ensure that the down shift points vehicle speed limits for the 2-1, 3-2 and 4-3 conform to those indicated in the gear shift points table. (See page AT-37.)
(6) Check for abnormal shocks and slippage during down shift period.



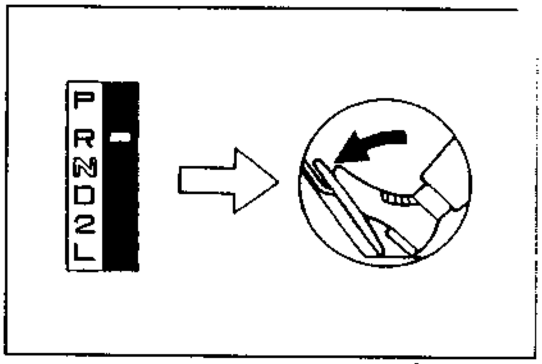
GAT00060-99999

(7) While running in the D, 2nd and L ranges, release the accelerator pedal and check the engine braking effect.



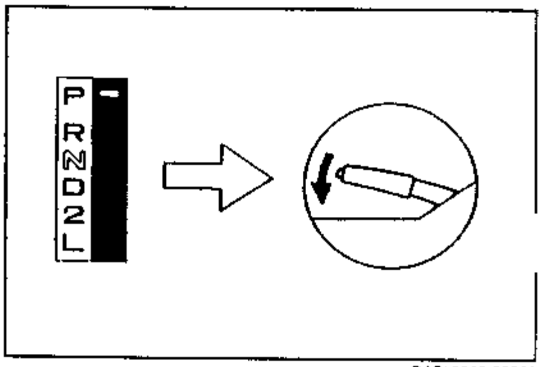
GAT00061-99999

(8) R range test
Move the shift lever to the R range. While running at the full throttle, check to see if slippage is taking place.



GAT00062-99999

(9) P range test
Stop the vehicle on a gradient (more than 5%). After moving the shift lever to the P range, release the parking brake. Then, check that the parking lock pawl prevents the vehicle from moving.



GAT00063-99999

(10) 2nd range
While running in the D range (3rd gear), check the engine brake effective when down shift to 2nd gear (2nd range) from the 3rd gear in D range.

GAT00416-99999

(11) Low range test
While running in the 2nd gear of the D or 2nd range, Check the engine brake effective when down shift to 1st gear (low range) from the 2nd gear (D or 2nd range).

GAT00417-99999

GEAR SHIFT POINTS TABLE

E_C: Economy, P: Power, E_S: Easy patterns, E: E.F.I, C: Carburetor

(A)			100%						0%		
			1 → 2	2 → 3	3 → 4	4 → 3	3 → 2	2 → 1	4 → 3	3 → 2	2 → 1
D	E_C	E	46 - 54	93 - 101	144 - 152	116 - 124	79 - 87	36 - 44	16 - 24	3 - 11	
		C	51 - 59	101 - 109	156 - 164	126 - 134	81 - 89	36 - 44	16 - 24	3 - 11	
	P	E	52 - 60	106 - 114	156 - 164	141 - 149	91 - 99	39 - 47	16 - 24	3 - 11	
		C	56 - 64	108 - 116	164 - 174	136 - 144	91 - 99	41 - 49	16 - 24	3 - 11	
	E_S	E	—	76 - 84	116 - 124	96 - 104	64 - 72	—	3 - 11		—
		C		76 - 84	116 - 124	96 - 104	64 - 72		3 - 11		—
2		E	52 - 60	—	—	—	93 - 101	—	—	93 - 101	3 - 11
	E_C P	C	56 - 64				93 - 101	41 - 49		93 - 101	
	E_S		—					—			—
L		E	—	—	—	—	—	51 - 57	—	—	51 - 57
		C	—	—	—	—	99 - 107	50 - 58		99 - 107	50 - 58

Lock up speed throttle opening: 2 - 7%

Lock up		ON		OFF	
Gear		3rd	4th (O/D)	3rd	4th (O/D)
E_C	E	46 - 54	46 - 54	42 - 50	42 - 50
	C	56 - 64	56 - 64	51 - 59	51 - 59
P	E	66 - 74	66 - 74	61 - 69	61 - 69
	C	66 - 74	66 - 74	61 - 69	61 - 69
E_S	E	—	66 - 74	—	56 - 64
	C	—	66 - 74	—	66 - 74

GAT00072-00000

TABLE OF FAIL-SAFE FUNCTIONS

Code	Parts name	Contents of control	Releasing condition
13	C1 cylinder revolution sensor	• Emergency mode	After normal operation has been resumed, release is made when vehicle speed becomes 0 km/h. (Flashing of Easy lamp ceases when normal operation is resumed.)
21, 22 23, 24	Shift solenoids	• Emergency mode	After normal operation has been resumed, release is made once IG is set to OFF.
25, 26	Pressure control	• Emergency mode	After normal operation has been resumed, release is made once IG is set to OFF.
28, 29	Lock-up control	• No lock-up	• After normal operation has been resumed, release is made when gear shifting is made. • After normal operation has been resumed, release is made once IG is set to OFF.
41	Throttle position sensor signal	• Emergency mode	After normal operation has been resumed, release is made when vehicle speed becomes 0 km/h. (Flashing of Easy lamp ceases when normal operation is resumed.)
42	Water temperature sensor signal	• When water temperature sensor signal from the engine is judged as OFF, switching to 4th lock-up takes place.	After normal operation has been resumed, release is made once IG is set to OFF.
52	Vehicle speed sensor	• Emergency mode	After normal operation has been resumed, release is made when vehicle speed becomes 0 km/h. (Flashing of Easy lamp ceases when normal operation is resumed.)
55	Neutral start switch	• When all switches are OFF ... Judged as D range • When two or more of switches are ON ... Judgment is made with priority given in the following order; N > R > L > 2 > D • All other controls are executed.	Release is made when normal operation is resumed.
81	Torque control signal	• Control of engine torque reduction is prohibited during gear shifting. • Control of torque reduction is prohibited during N-to-D or N-to-R	Release is made when normal operation is resumed.

GAT00418-00000

FUNCTIONS OF GEAR CHARACTERISTIC TABLE

Shift position		C1	C2	C3	C0	B1	B2	F1	F0
P	Parking			○					
R	Reverse		○	○			○		
N	Neutral			○					
D	1st	○		○				○	○
	2nd	○		○		○			○
	3rd	○		○	○				○
	4th (OD)	○			○	○			
2	1st	○		○				○	○
	2nd	○		○		○			○
L	1st	○		○			○	○	○

GAT00419-00000

FUNCTIONS OF EACH GEAR SHIFT CONTROL ELEMENT

Gear shift control element	Function
Forward clutch (C1)	This clutch connects the input shaft with the rear planetary ring gear during the operation of C3 or F0. This clutch connects the input shaft with the front planetary ring gear during the operation of C0.
Reverse clutch (C2)	This clutch connects the input shaft with the planetary sun gear.
Coast clutch (C3)	This clutch connects the input shaft with the rear planetary ring gear during the operation of C1.
Overdrive clutch (C0)	This clutch connects the input shaft with the front planetary ring gear during the operation of C1.
2nd & 4th brake (B1)	This brake locks the rotation of the planetary sun gear.
1st & reverse brake (B2)	This brake locks the rotation of the front planetary ring gear.
One-way clutch No. 1 (F1)	This brake locks the counterclockwise rotation of the front planetary ring gear.
One-way clutch No. 0 (F0)	This clutch connects the input shaft with the rear planetary ring gear while power is transmitted from the engine to the transmission during the operation of C1.

GAT00420-00000

TROUBLE SHOOTING TABLE

Malfunctioning phenomena / Possible causes		Vehicle will not run			Abnormal driving						Gear shifting faulty								Shifting shocks		
		Engine will not start in P or N range.	Vehicle will not move forward in D, 2 or L range.	Vehicle will not move backward in R range.	Poor acceleration	Clutch slips during forward running.	Clutch slips during backward running.	Engine brake will not work in 1st gear (L range).	Engine brake will not work in 2nd gear.	Engine brake will not work in 3rd gear.	No upshifting from 1st to 2nd will take place.	No upshifting from 2nd to 3rd will take place.	No upshifting from 3rd to 4th (O/D) will take place.	No downshifting from 4th (O/D) to 3rd will take place.	No downshifting from 3rd to 2nd will take place.	No downshifting from 2nd to 1st will take place.	No lock-up will take place.	Deviated shifting point	Large shifting shock	Large shock when shifting from N to D range	Large shock when shifting from N to R range
Engine system		○			○																
Torque converter			○	○													○				
Power train mechanism	Forward clutch faulty		○			○														○	
	Reverse clutch faulty			○			○														○
	Coast clutch faulty					○				○											
	Overdrive clutch faulty											○									
	2nd & 4th brake faulty								○		○	○	○	○							
	1st & reverse brake faulty			○			○	○													○
	One-way clutch No. 1		○			○										○				○	
	One-way clutch No. 0		○			○								○							
Hydraulic pressure control system	Low oil level		○	○		○	○														
	Improper hydraulic pressure		○	○		○	○	○	○	○							○	○	○	○	○
	Oil pump faulty		○	○		○	○														
	Valve body faulty		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Electronic control system	Vehicle speed sensor			○														○	○		
	C1 cylinder revolution sensor																		○		
	Neutral start switch	○																			
	Pattern select switch																	○			
	O/D switch												○	○							
	Stop lamp switch																○			○	○
	Throttle position sensor signal																	○		○	○
	Water temperature sensor signal												○				○				
	Shift solenoid No.1			○	○				○			○			○						
	Shift solenoid No.2				○			○		○	○		○	○		○					
	Lock-up control solenoid				○												○				
	Line pressure control solenoid		○	○		○	○										○		○		
	Torque control signal																		○		

GAT00073-00000

HYDRAULIC TROUBLE SHOOTING

ON-VEHICLE REPAIR

Condition	Parts name	Inspection
Impossible to shift or Improper shift point	Input/output speed sensor	• Check the continuity between terminals with an ohmmeter.
No engine start or erratic shift	Neutral start switch	• Adjust shift linkage. • Align switch groove with neutral basic line. • Check the continuity (exist or no) between the terminal pairs with an ohmmeter when the shift lever is positioned to each range.

GAT00428-00000

TROUBLESHOOTING FOR MECHANICAL AND HYDRAULIC FAULTS

Condition	Cause of failure	Direction for remedy
Engine can not be started (or engine stall)	Selector lever linkage incorrectly adjusted	• Adjust selector lever linkage.
	Neutral start switch incorrectly installed or malfunction (include wire harness)	• Adjust Neutral start switch • Check Neutral start switch and replace.
	Valve body assembly malfunction (especially lock-up control valve)	• Check the movement of lock-up control valve or valve body assembly and replace.
Will not move off in positions D, 2 and L (or slippage)	Transmission fluid level is too low	• Check and correct transmission fluid level.
	Torque converter malfunction	• Check the operation of one-way clutch and replace Torque converter.
	Oil pump malfunction (No main pressure)	• Check oil pump and replace.
	Valve body assembly malfunction (especially Primary regulator valve)	• Replace the front valve body assembly.
	Oil strainer blocked	• Clean or replace oil strainer.
	Forward clutch (C1) malfunction	• Check clutch plates, seal rings, piston O-rings, gasket and replace.
	Coast clutch (C3) and O.W.C. No. 0 (F0) malfunction	• Check the operation of O.W.C. (C3) clutch plates, seal rings piston O-rings, gasket and replace.
	O.W.C. No. 1 (F1) malfunction	• Check the operation of the O.W.C. (F1) and replace.
Will not move off in position "R"	Transmission fluid is too low	• Check and correct Transmission fluid level.
	Torque converter defective	• Check the operation of O.W.C. and replace T/C.
	Oil pump malfunction	• Check oil pump and replace.
	Valve body assembly malfunction (especially Primary regulator valve, 1-2 shift valve)	• Replace the front valve body assembly.
	Reverse clutch (C2) malfunction	• Check clutch plates seal rings, piston O-rings, and gasket, and replace.
	1st & reverse brake (B2) malfunction	• Check plates, piston O-rings, gasket and replace.
	Shift solenoid No. 1 malfunction	• Check solenoid No. 1 and O-ring, and replace.
No upshift 1-2 gear in position "D" "2"	2nd & 4th brake (B1) malfunction	• Check band, piston O-rings and replace.
	Valve body assembly malfunction (especially 1-2 shift valve)	• Replace the front valve body assembly.
	Shift solenoid No. 2 malfunction	• Check shift solenoid No. 2 and replace.
No upshift 2-3 gear in position "D"	Overdrive clutch (C0) malfunction	• Check clutch plates, seal rings, piston O-rings and replace.
	Valve body assembly malfunction (especially 2-3 shift valve)	• Replace the front valve body assembly.
	Shift solenoid No. 1 malfunction	• Check shift solenoid No. 1 and replace.

Condition	Cause of failure	Direction for remedy
No upshift 3-4 gear in position "D"	2nd & 4th brake (B1) malfunction	• Check band, piston O-rings and replace.
	Valve body assembly malfunction (especially 3-4 shift valve)	• Replace the front valve body assembly.
	Shift solenoid No. 2 malfunction	• Check shift solenoid No. 2 and replace.
No down shift 4-3	2nd & 4th brake (B1) malfunction	• Check band, piston O-rings and replace it.
	O.W.C. No. 0 (F0) malfunction	• Check the operation of the O.W.C. (F0) and replace.
	Valve body assembly malfunction (especially 3-4 shift valve)	• Replace the front valve body assembly.
	Shift solenoid No. 2 malfunction	• Check shift solenoid No. 2 and replace.
No down shift 3-2	2nd & 4th brake (B1) malfunction	• Check band, piston O-rings and replace.
	Valve body assembly malfunction (especially 2-3 shift valve)	• Replace the front valve body assembly.
	Shift solenoid No. 1 malfunction	• Check shift solenoid No. 1 and replace.
No down shift 2-1	O.W.C. No. 1 (F1) malfunction	• Check the operation of the O.W.C. (F1) and replace.
	Valve body assembly malfunction (especially 1-2 shift valve)	• Replace the front valve body assembly.
	Shift solenoid No. 2 malfunction	• Check shift solenoid No. 2 and replace.
No engine braking effect in position "L"	1st & reverse brake (B2) malfunction	• Check plates, piston O-rings, gasket and replace.
	Valve body assembly malfunction (especially 1-2 shift valve)	• Replace the front valve body assembly.
	Shift solenoid No. 1 malfunction	• Check shift solenoid No. 1 and replace.
No engine braking effect in position "2" 2nd gear	2nd & 4th brake (B1) malfunction	• Check band, piston O-rings and replace.
	Valve body assembly malfunction (especially 2-3 shift valve, B1 modulator valve)	• Replace the front valve body assembly.
	Shift solenoid No. 1 malfunction	• Check shift solenoid No. 1 and replace.
No engine braking effect in position 3nd gear (O/D OFF)	Coast clutch (C3) malfunction	• Check plates, piston O-rings, seal ring and replace.
	Valve body assembly malfunction (especially 3-4 shift valve, C3 modulator valve)	• Replace the front valve body assembly.
	Shift solenoid No. 2 malfunction	• Check shift solenoid No. 2 and replace.
Harsh engagement "N" – "D"	Valve body assembly malfunction (especially press. ctrl. solenoid, primary regulator valve, C1 check ball)	• Check valve body assembly and replace (especially press. ctrl. solenoid, front valve body assembly C1 check ball).
	C1 accumulator malfunction	• Check C1 accumulator O-ring, spring and replace.
	Forward clutch (C1) malfunction	• Check plates, piston O-rings, seal ring and replace.
	O.W.C. No. 1 (F1) malfunction	• Check the operation of the O.W.C. (F1) and replace.
Harsh engagement "N" – "R"	Valve body assembly malfunction (especially press. ctrl. solenoid, Primary regulator valve, C2 check ball)	• Check valve body assembly and replace (especially press. ctrl. solenoid, front valve body assembly C2 check ball).
	C2 accumulator malfunction	• Check C2 accumulator O-rings, spring and replace.
	Reverse clutch (C2) malfunction	• Check plates, piston O-ring, and replace.
	1st & reverse brake (B2) malfunction	• Check plates, piston O-rings, gasket and replace.
Harsh engagement in any gear	Valve body assembly malfunction (especially press. ctrl. solenoid, primary regulator valve)	• Check valve body assembly and replace (especially press. ctrl. solenoid, front valve body assembly).

Condition	Cause of failure	Direction for remedy
No lock-up	Lock-up control solenoid malfunction	• Check lock-up control solenoid and replace.
	Valve body assembly malfunction (especially lock-up control solenoid, 1-2 shift valve, lock-up control valve, lock-up modulator valve and secondary regulator valve)	• Check valve body assembly and replace (especially lock-up control solenoid, front valve body assembly, lock-up control valve, and secondary regulator valve).
	Torque converter malfunction	• Check Torque converter and replace.
Poor acceleration	Some solenoid malfunction	• Check solenoids and replace (shift solenoid lock-up control solenoid).
	Some shift valve malfunction (especially, 1-2, 2-3 and 3-4 shift valves)	• Replace the front valve body assembly.

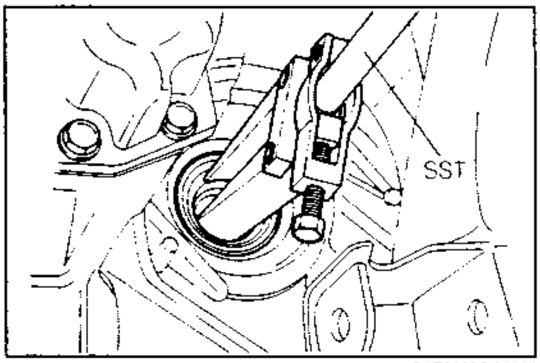
GAT00074-0000C

ON VEHICLE REPAIR

1. Replacement of oil seal at differential side

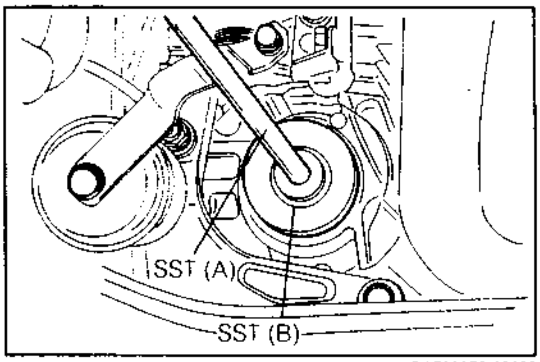
(1) Remove the oil seal, using the following SST.
SST: 09308-00010-000

NOTE:
- Never reuse the removed oil seal.



GAT00075-99999

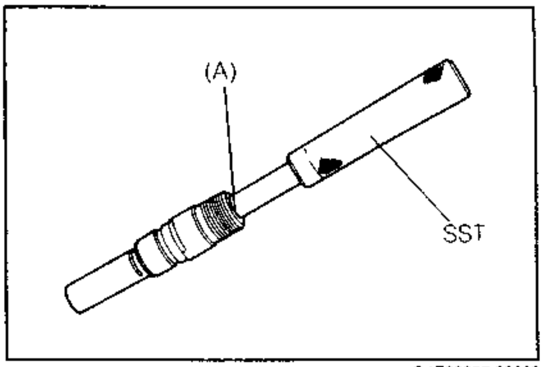
(2) Apply lithium base multi purpose grease to the lip section of new oil seal.
(3) Install the new oil seal, using the following SST.
SST (A): 09518-87202-000
SST (B): 09518-87701-000 (Use the set of SST/No.: 09350-87704-000)



GAT00076-99999

2. Replacement of oil seal at the gear speedometer driven

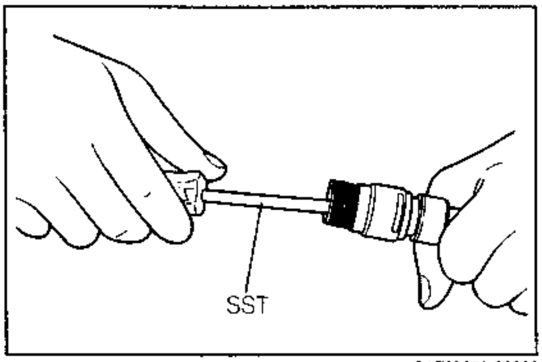
(1) Remove the speedometer cable assembly by removing a bolt.
(2) Insert the following SST to the sleeve subassembly speedometer shaft.
(3) Mark on the SST (A) as the reference of installation.
SST: 09201-60011-000



GAT00077-99999

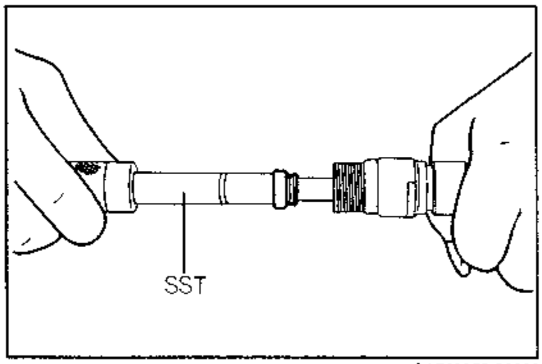
(4) Remove the oil seal from the sleeve subassembly speedometer shaft, using the following SST.
SST: 09921-00010-000

NOTE:
- Never reuse the removed oil seal.



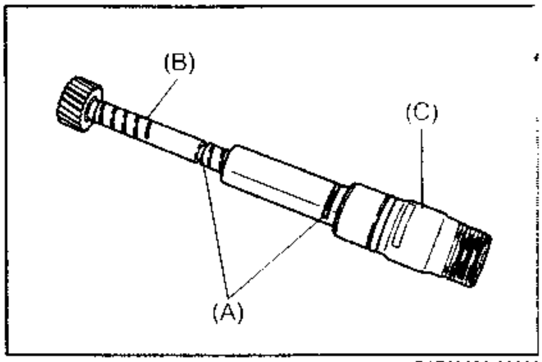
GAT00078-99999

(5) With the following SST used, install the new oil seal (A) to the sleeve subassembly speedometer shaft.
SST: 09921-00010-000



GAT00079-99999

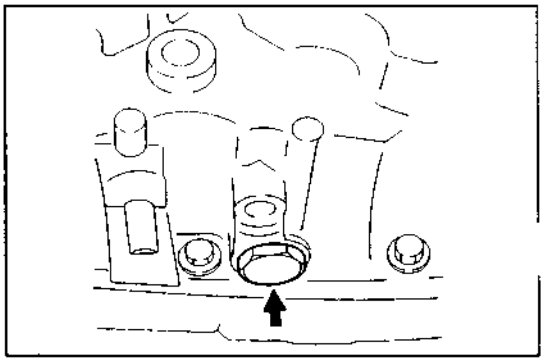
(6) Align the groove section (A) of gear speedometer driven (B) and sleeve subassembly speedometer shaft (C).
(7) Insert the gear speedometer driven to the sleeve subassembly speedometer.
(8) Lock the groove section (A) with the clip.



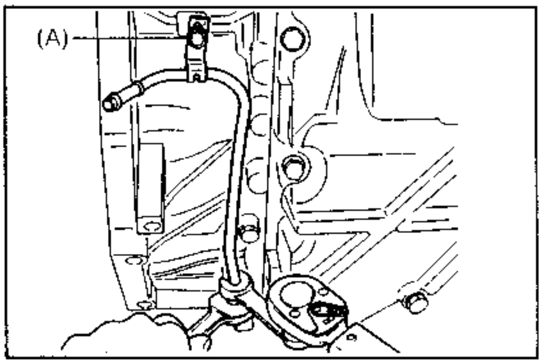
GAT00080-99999

3. **Replacement of hose and tube oil cooler inlet / outlet**
(1) Drain the ATF by removing the plug w/head straight screw with gasket.
NOTE:
- **Never reuse the removed gasket.**

(2) Remove the hose and tube for oil cooler inlet and outlet by removing the clips.


GAT00081-99999

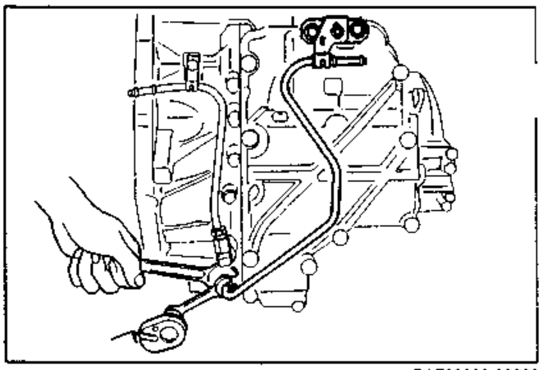
(3) Connect the flare nut to the union with new O-ring in place and tighten them.
Tightening Torque: 29.4 - 39.2 N·m
(3.0 - 4.0 kgf-m, 21.7 - 28.9 ft-lb)



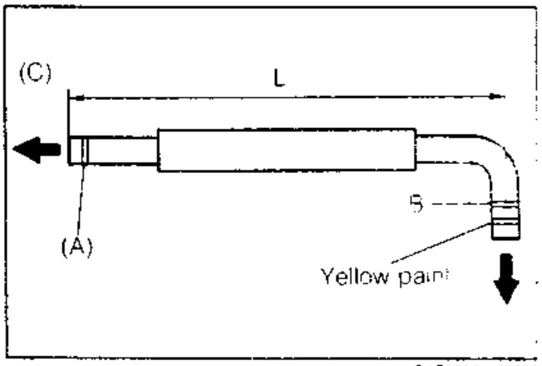
GAT00082-99999

CAUTION:
- **Be sure to secure the union when tightening the flare nut. Failure to observe this caution may result in breakage of the threaded portion of the transaxle case cracks.**

(4) Tighten the clamp with a bolt (A).
Tightening Torque: 6.9 - 9.8 N·m
(0.7 - 1.0 kgf-m, 6.9 - 7.2 ft-lb)

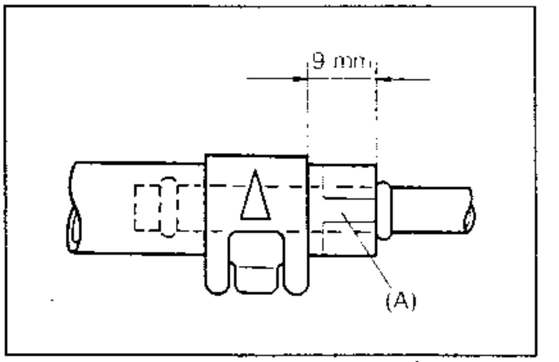

GAT00083-99999

(5) Insert the hoses (oil cooler inlet and outlet) to the 2nd spool of radiator pipe.
NOTE:
- Ensure that the painted with white (A) section faces toward the radiator side.
- The identification mark is available only for inlet hose (B).
- The over-length (C) is 200 mm for outlet and 238 mm for inlet hoses.



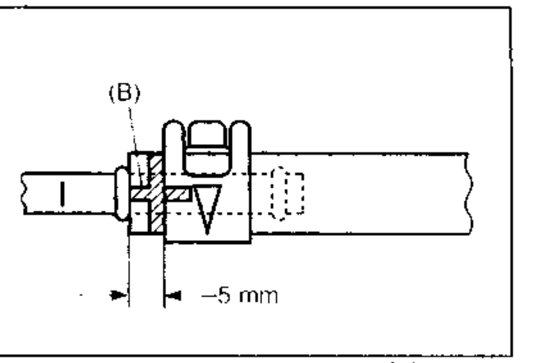
GAT00084-99999

- When inserting the oil cooler hoses at the transaxle side, ensure that the clip should be installed in line with the end of yellow paint (A) on the hose.
- Ensure that the protrusion paint section of the (A) position faces toward the upper side.



GAT00085-99999

- When inserting the oil cooler hose at radiator side, ensure that the clip should be installed in line with the end of white (B) on the hose.
- Ensure that the protrusion white section of the (B) position faces toward the upper side.



GA100086-99999

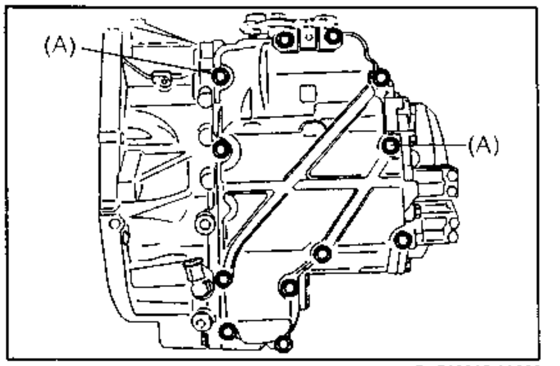
4. Solenoid for shift No. 1, No. 2 and pressure control

(1) Pull out the breather hose subassembly front axle.

(2) Remove the 12 bolts of the transaxle side cover.

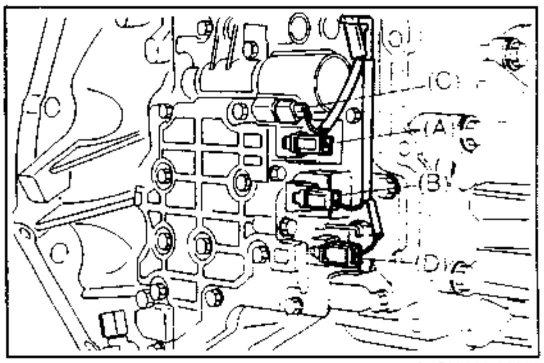
NOTE:

- Never reuse the removed two bolts (A).



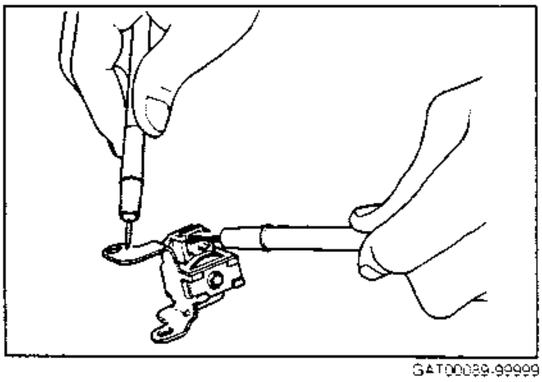
(3) Disconnect the coupler of the following solenoids.

- Shift solenoid No. 1 (A) and No. 2 (B)
- Pressure control (C)
- Lock up control (D)



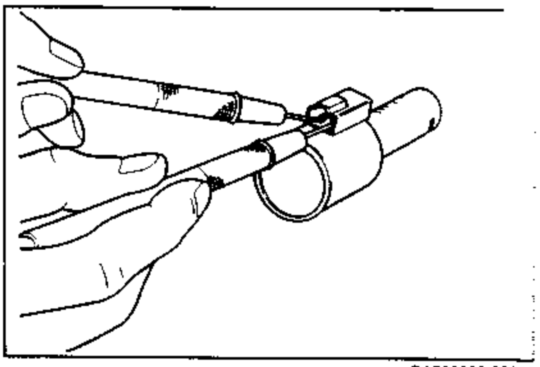
Inspection

(a) Measure the coil resistance of the shift solenoid No. 1, No. 2 and lock up control between terminal and body earth.
Specified Value: 11 - 15Ω (at 20°C)



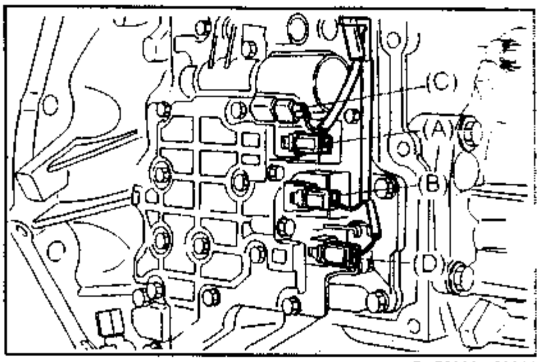
GAT00089-99999

(b) Measure the coil resistance of the pressure control solenoid between each terminals.
Specified Value: 3.3 - 3.7Ω (at 20°C)


GAT00090-99999

(4) Connect the couplers of the following solenoids.
- Shift solenoid No. 1 (A) and No. 2 (B)
- Pressure control (C)
- Lock up control (D)

NOTE:
- **Ensure that the each connector should be connected correctly. (A)—White, (B)—Blue, and (C)—Yellow**
- **There is an interchargeability between the shift solenoid No. 1 and No. 2 for installation.**

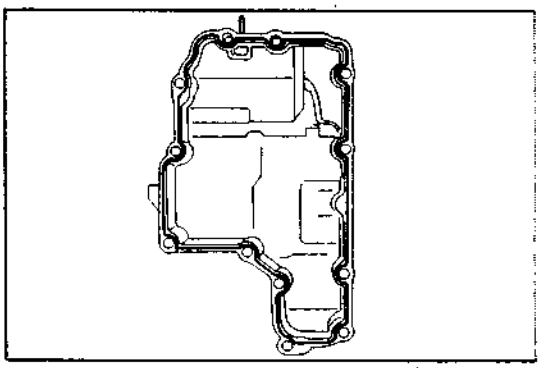


GAT00091-99999

(5) Remove any sealer gasket and clean the contacting surface between transaxle side cover and transaxle case.

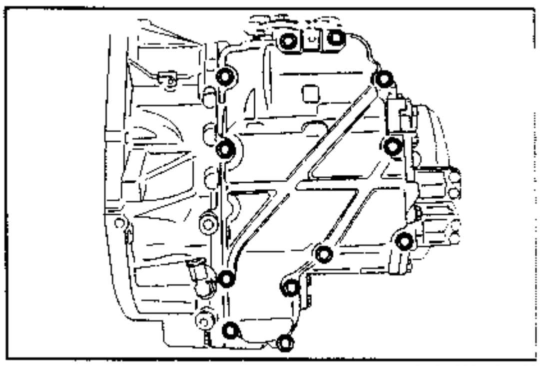
NOTE:
- **No oil get to contact surface.**

(6) Apply sealer gasket to the transaxle side cover.
Sealer gasket.
Three Bond 1281 (Three Bond made)


GAT00092-99999

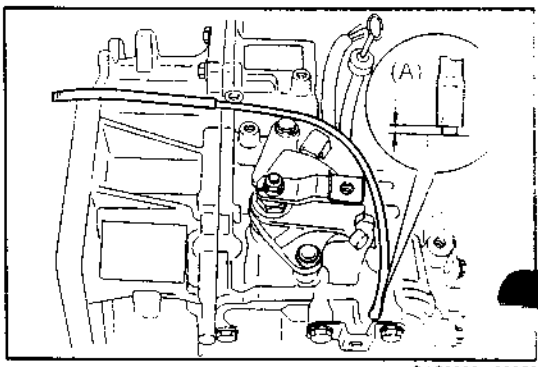
(7) Tighten the transaxle side cover with the 12 bolts.
Tightening Torque: 13.7 - 20.6 N·m
(1.4 - 2.1 kgf-m, 10.1 - 15.2 ft-lb)

NOTE:
- **Be sure to use the new two bolts (A) as right figure illustration.**


GAT00093-99999

(8) Insert the breather hose subassembly front axle to the transaxle side cover.

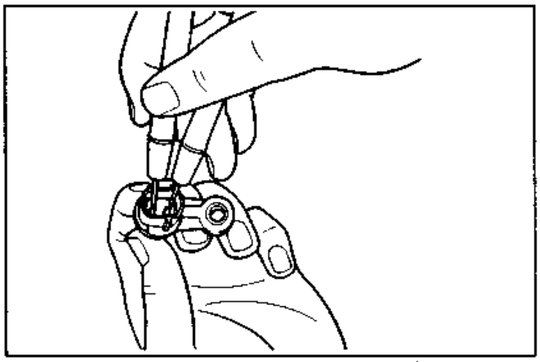
CAUTION:
- Ensure that the breather hose should be inserted to the side cover less than 2 mm (A).
  Failure to observe this caution may result the breathing out of ATF.



GAT00094-99999

Sensors

(1) Remove the battery carrier and battery.
(2) Remove the vehicle speed sensor and C1 cylinder revolution sensor by removing a bolt.
(3) Measure the coil resistance of the sensor between each terminals.
Specified Sensor Valve
Vehicle Speed: 648 - 792Ω (at 20°C)
C1 Cylinder Revolution: 387 - 473Ω (at 20°C)



GAT00095-99999

6. Valve body assembly (see page AT–104 through AT–108.)
7. Neutral start switch assembly
8. Vehicle speed and C1 cylinder revolution sensors

FUNCTION OF SOLENOID

		Solenoids			Remarks (See page)
		Shift No. 1	Shift No. 2	Lock-up control	
P		○	×	×	
R	V L 7 km/h	○	×	×	
	V > 7 km/h	×	○	×	Reverse inhibit (AT–5)
	Reverse	×	×	×	Fail safe (AT–38)
N		○	×	×	
D	1st	○	×	×	
	2nd	○	○	×	
	3rd	×	○	◎	
	4th (O/D)	×	×	◎	O/D Cut (AT–5)
2	1st	○	×	×	
	2nd	○	○	×	
	3rd	×	○	×	AT–6 step 13 and 14
	(3rd)	×	×	×	Fail safe (AT–38)
L	1st	○	×	×	
	2nd	○	○	×	AT–6 step 13 and 14
	3rd	×	○	×	AT–6 step 13 and 14
	(1st)	×	×	×	Fail safe (AT–38)

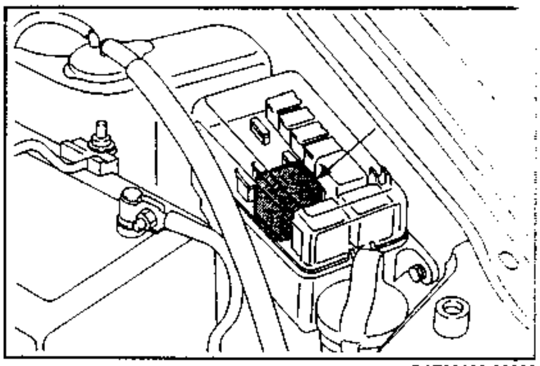
○ : ON (Energizing) When functioning, × : OFF (Not energizing) When not functioning
◎ : ON (Energizing) When lock-up functioning, OFF (Not energizing) When lock-up not functioning

GAT00421-00000

REMOVAL AND INSTALLATION OF AUTOMATIC TRANSMISSION

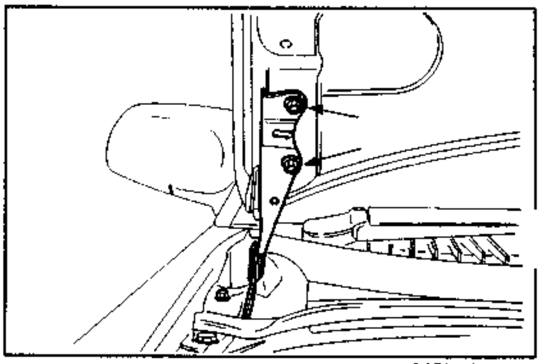
Prior to work of removal

1. Drain the fuel pressure in the following manner.
   (1) Removal of circuit opening relay.
   (2) Start the engine and keep the idling condition until engine has stopped.
   (3) Installation of circuit opening relay.

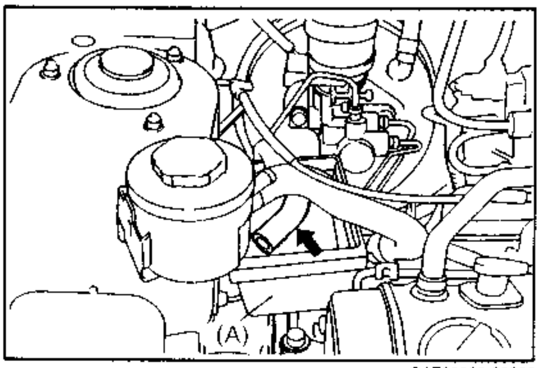

GAT00096-99999

REMOVAL

1. Remove the hood assembly by removing the two bolts on both left and right sides.
2. Install the front fender covers to the front fender so that the surface of fender is free from the scratch or damage.
3. Disconnect the couplers, pipe and tubes.
4. Remove the radiator cap.
   NOTE:
   - **Do not remove the radiator cap, if the water temperature is in the hot condition.**

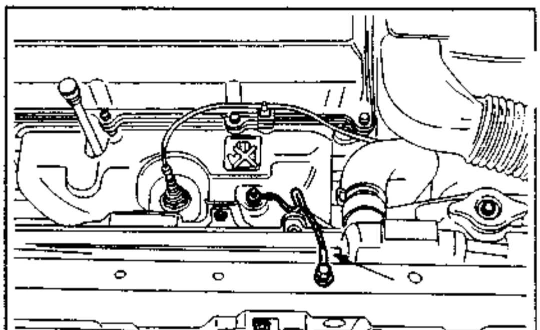

GAT00097-99999

5. Jack up the vehicle.
6. Disconnect the power steering hose.
7. Receive the power steering fluid with the suitable container (A) in advance or the like by cranking the engine.
   CAUTION:
   - **Never cranking the engine more than 10 sec, failure to observe this caution may causes seizure of vane pump.**

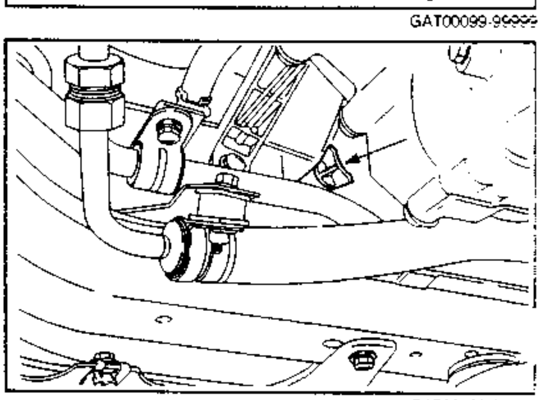


GAT00098-99999

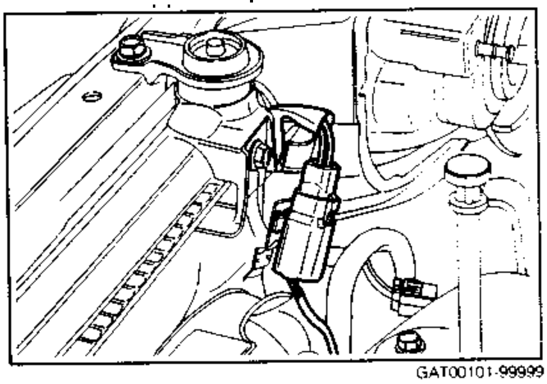
8. Remove the power steering pressure hose.
9. Disconnect the ground cable from the negative terminal of the battery.
10. Remove the battery and battery carrier.
11. Remove the air cleaner assembly.
12. Remove the front bumper assembly.
13. Remove the engine under cover left and right.
14. Remove the ground cable.


GAT00099-99999

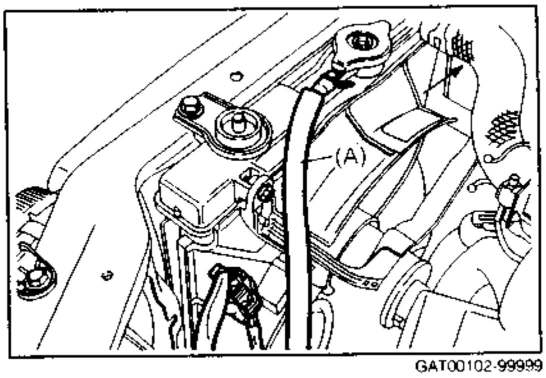
15. Drain the coolant (ethylene gricoal based on anti freeze solution) by removing the drain plug.


GAT00100-99999

Disconnect the coupler of the air conditioner (if equipped so on).

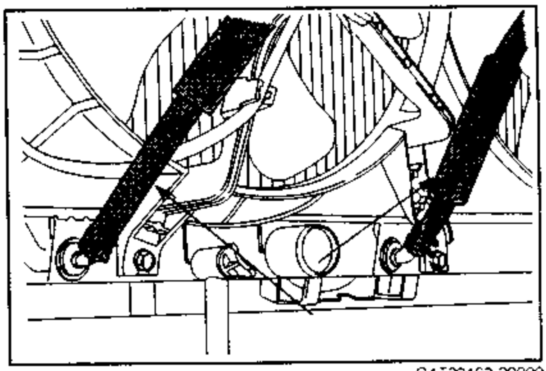

GAT00101-99999

17. Disconnect the connector of the radiator fan.
18. Remove the radiator reserver hose (A).
19. Remove the radiator inlet and outlet hose.

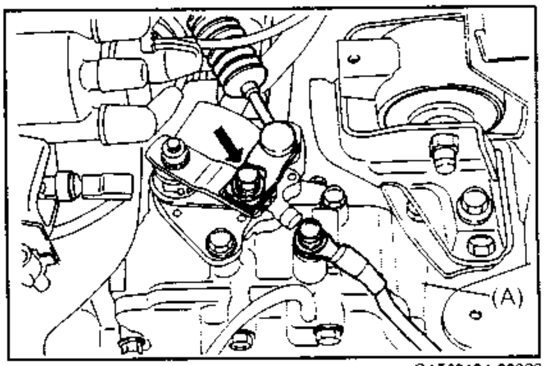


GAT00102-99999

20. Remove the inlet and outlet hose for automatic transmission.
    NOTE:
    - **Never reuse the removed inlet and outlet hose.**

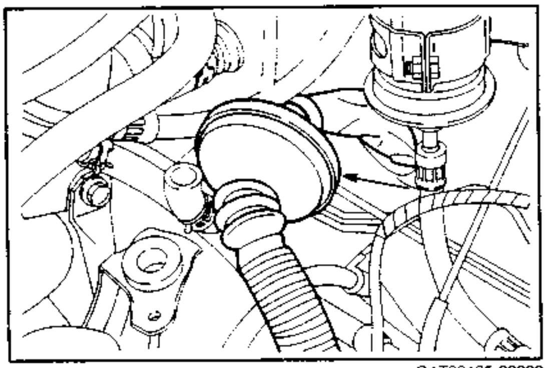

GAT00103-99999

21. Remove the control cable assembly by removing a bolt on the lever transmission control shaft.

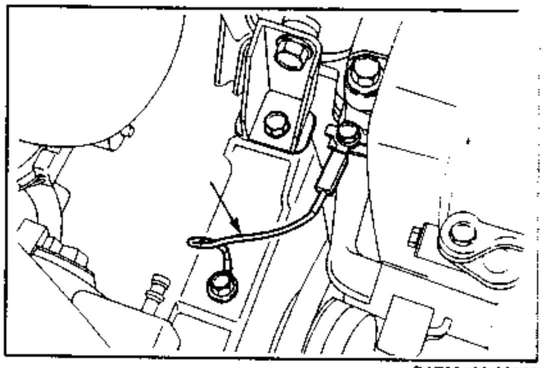


GAT00104-99999

22. Disconnect the engine harness at the vehicle interior side and pull out them to the engine compartment room.
23. Remove the clamp and connectors.

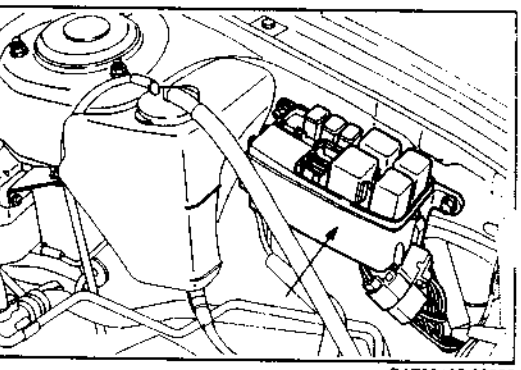

GAT00105-99999

24. Disconnect the coupler of the ground cable.



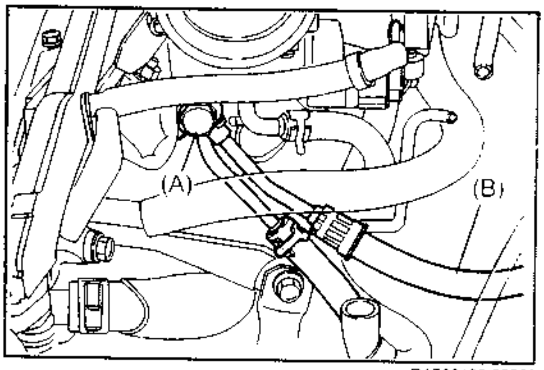
GAT00106-99999

25. Remove the fuse block assembly from the body and disconnect the connector.
26. Remove the speedometer cable.
27. Remove the two heater hose.



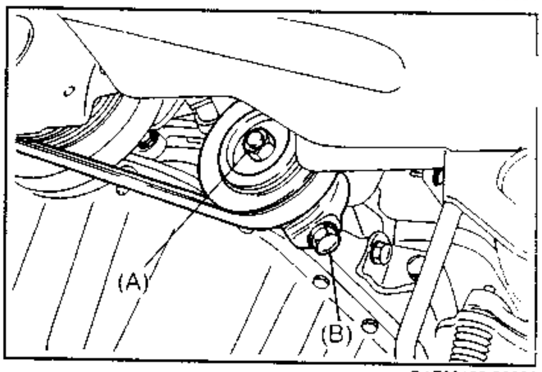
GAT00107-99999

28. Remove the fuel pipe air hose No. 1 (A) and fuel hose (B).



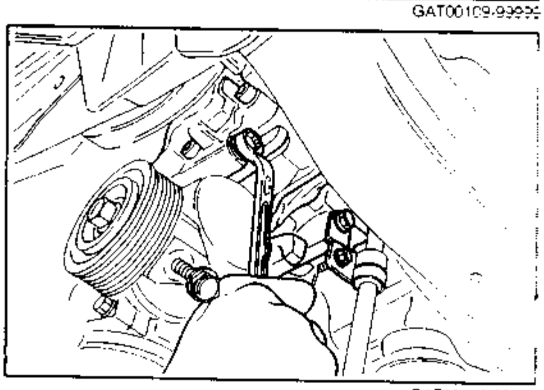
GAT00108-99999

29. Slacken the lock nut (A) of the air conditioner idle pulley.
30. Remove the drive belt by loosing the adjusting bolt (B) for counterclockwise. (if equipped with air-conditioner)



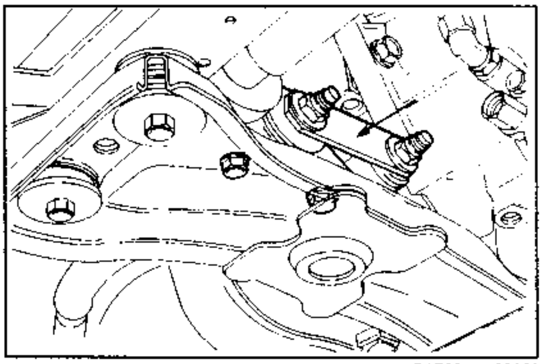
GAT00109-99999

31. Suspend the compressor assembly with magnet switch using the small rope or the like.
NOTE:
   - Do not separate the pipe from the engine assembly.



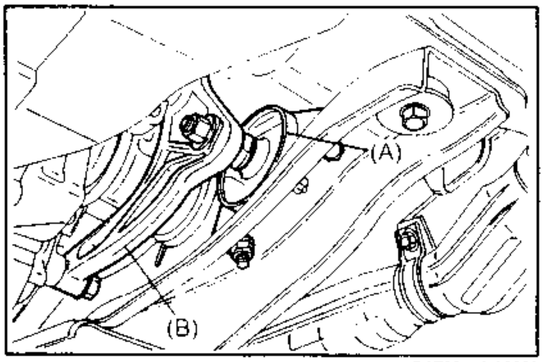
GAT00110-99999

Remove the engine oil filter.
33. Remove the pulley and accessary assembly.
34. Support the engine with automatic transmission, using the chain block or the like.
35. Remove the engine front mounting from the engine lower member assembly.



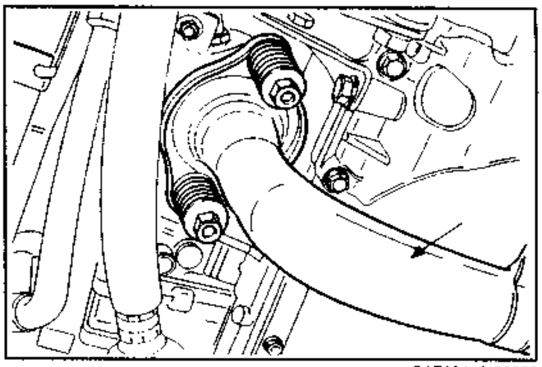
GAT00111-99999

36. Remove the engine mounting rear stay.
37. Remove the engine mounting rear insulator (A).
38. Remove the engine mounting rear No. 1 bracket (B).
39. Lower the front stabilizer by removing the bolts and nuts.
    NOTE:
    - **Never reuse the removed nuts.**



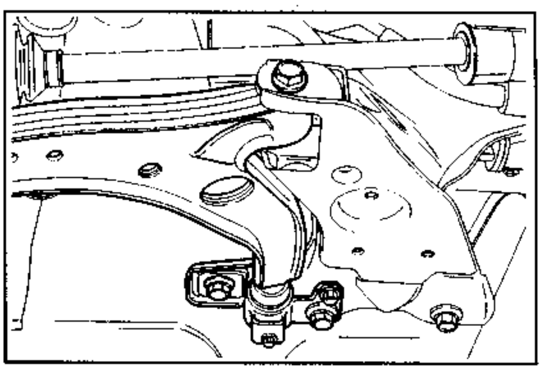
GAT00112-99999

40. Remove the exhaust front pipe assembly by removing the lower arm bracket connecting.
    NOTE:
    - **Never reuse the removed exhaust front pipe gasket.**



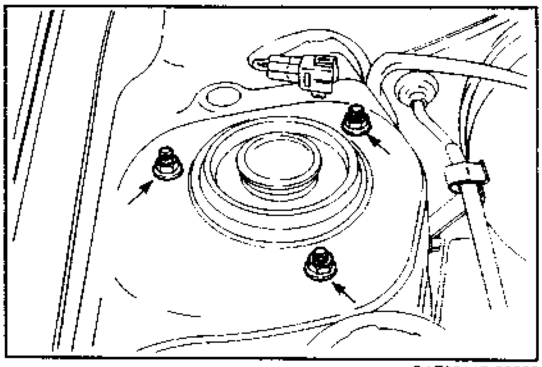
GAT00113-99999

41. Remove the suspension lower arm subassembly on bolt left and right sides.
    NOTE:
    - **Never reuse the removed bolts.**



GAT00114-99999

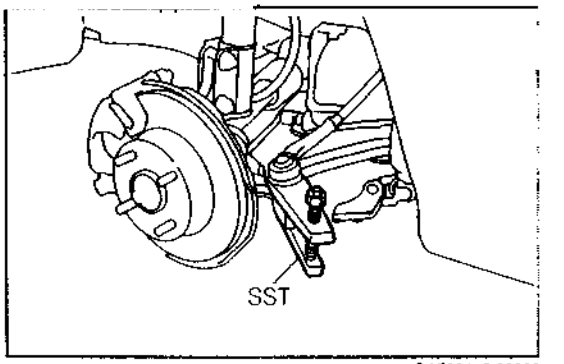
42. Slacken the three nuts of the shock absorber in front support.



GAT00115-99999

43. Remove the clip and nut.
44. Separate the tie rod end, using the following SST.
    SST: 09611-87701-000

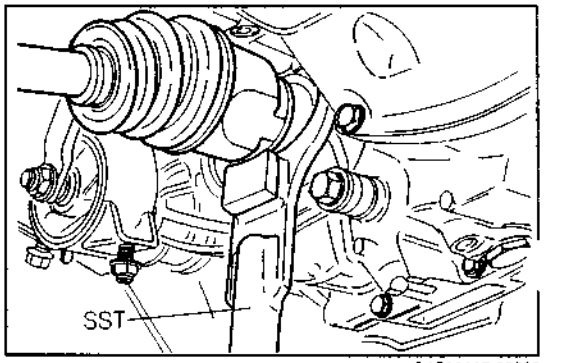
    NOTE:
    - Never reuse the removed clip.



GAT00116-99999

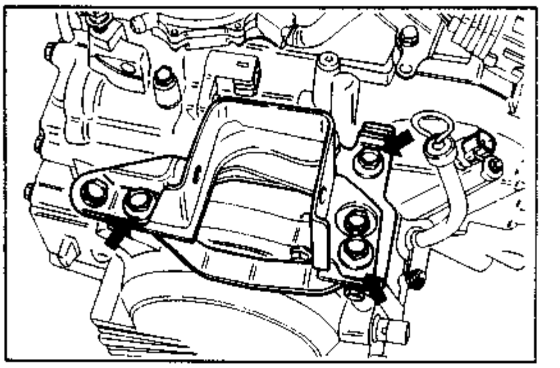
45. Remove the right side drive shaft, using the following SST.
    SST: 09648-87201-000

    NOTE:
    - **As for the removal of left side drive shaft, it is recommended to use suitable bar.**

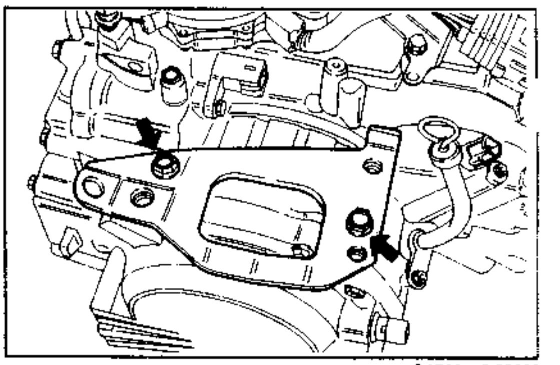


GAT00117-99999

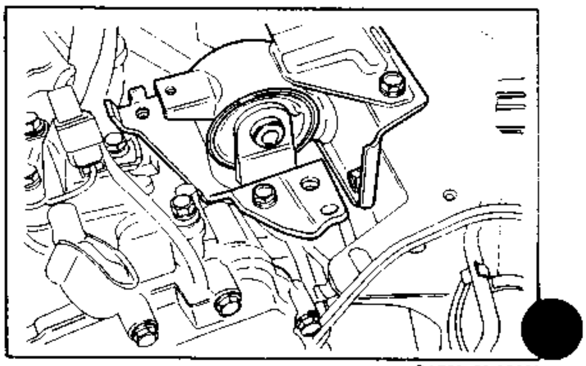
46. Remove the engine mounting left bracket by removing the three bolts.


GAT00118-99999

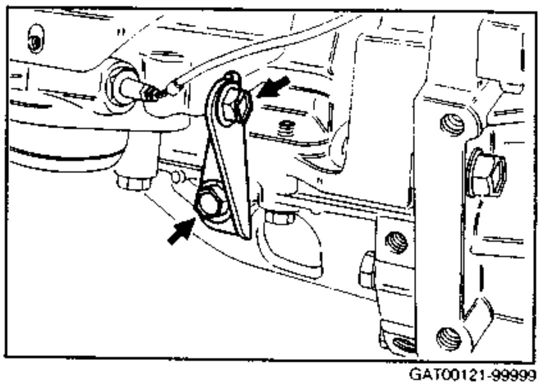
47. Remove the engine mounting upper left bracket by removing the two bolts.
48. Remove the engine mounting left insulator.


GAT00119-99999

49. Remove the engine mounting right insulator subassembly.
50. Suspend the engine with automatic transmission, using the chain block or the like.
51. Remove them from the vehicle.

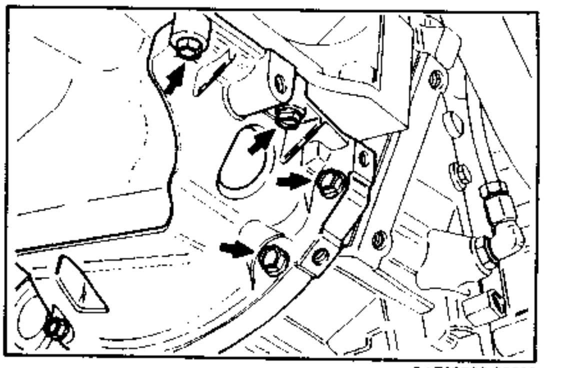

GAT00120-99999

Remove the exhaust manifold stay by removing the two bolts.

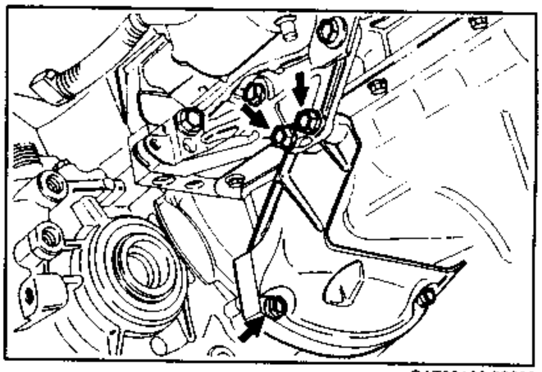


GAT00121-99999

53. Remove the stiffener power train with the cover clutch under installed by removing the seven bolts.

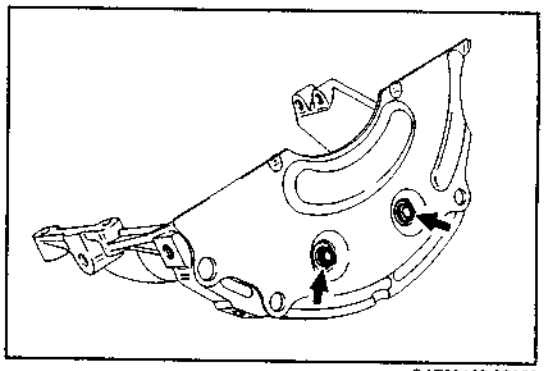


GAT00000-99999



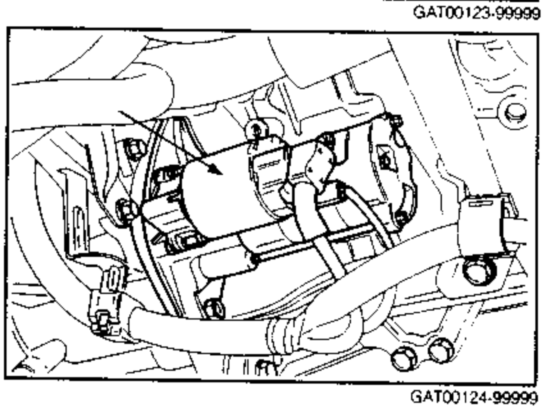
GAT00122-99999

54. Remove the cover clutch under from the stiffener power train by removing the two bolts.



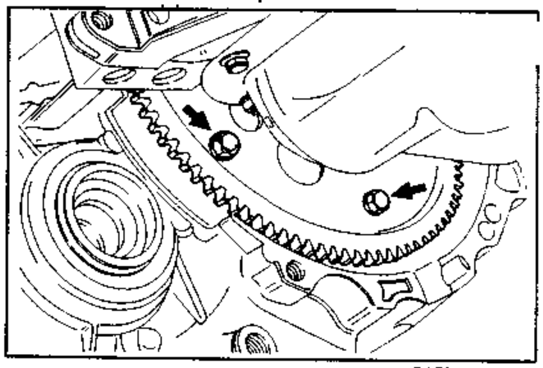
GAT00123-99999

55. Remove the starter assembly by removing the two bolts.



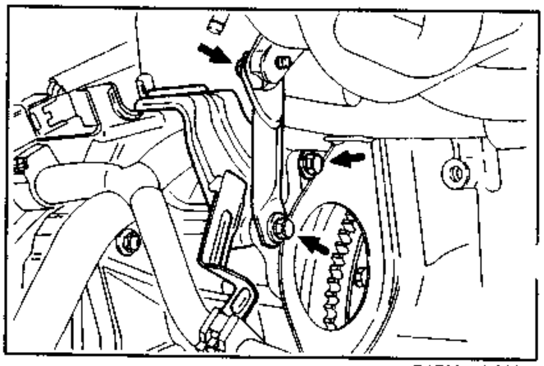
GAT00124-99999

56. Remove the six bolts of the gear subassembly drive plate & ring tightened with spacer front drive plate.



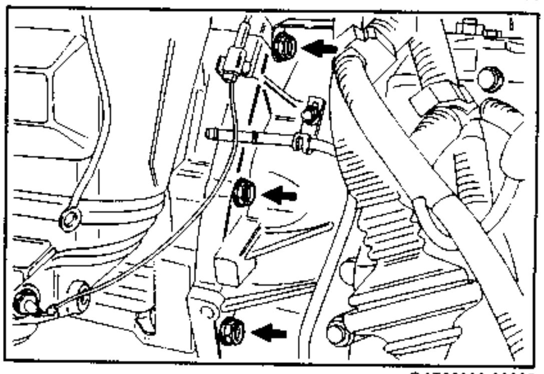
GAT00125-99999

57. Remove the air cleaner bracket with surge tank No. 3 by removing the three bolts.

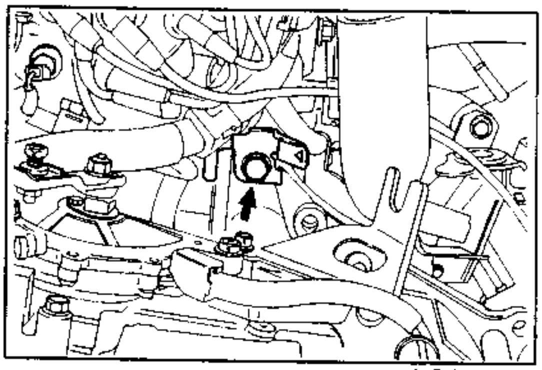


GAT00126-99999

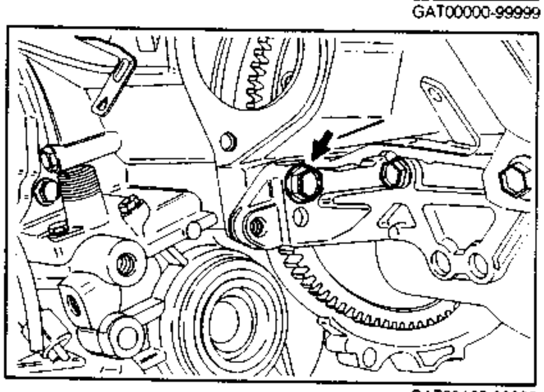
58. Remove the automatic transmission assembly by removing the five bolts.



GAT00000-99999



GAT00000-99999

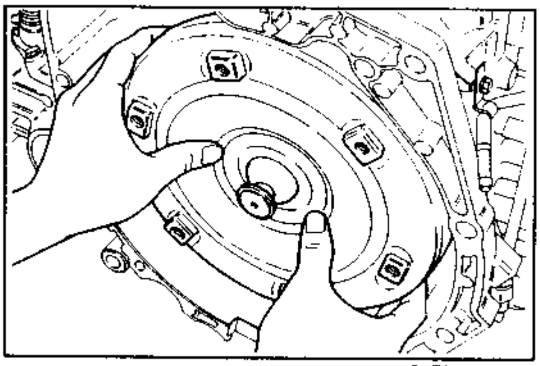


GAT00127-99999

Remove the assembly torque converter from the transaxle case.

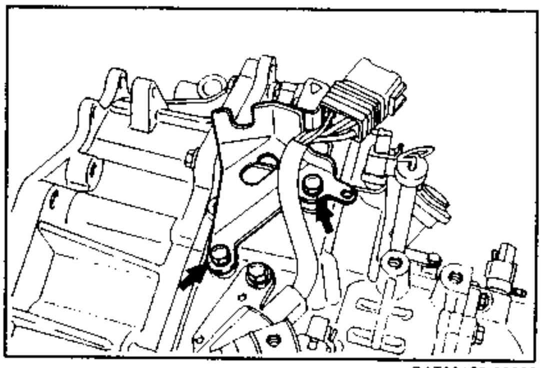
NOTE:

- **Since the automatic transmission fluid inside the torque converter flows out onto the floor when removing the torque converter, be sure to place a container in advance to receive the automatic transmission fluid.**



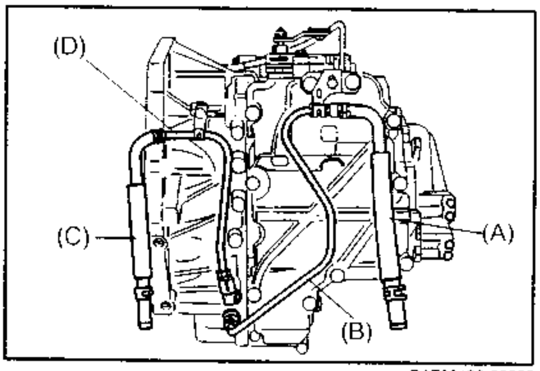
GAT00128-99999

60. Disconnect the clamp of the neutral start switch.
61. Remove the control cable bracket by removing the two bolts.



GAT00129-99999

62. Remove the following oil cooler tubes and hoses.
    (1) Inlet hose (A)
    (2) Inlet tube (B)
    (3) Outlet hose (C)
    (4) Outlet tube (D)



GAT00130-99999

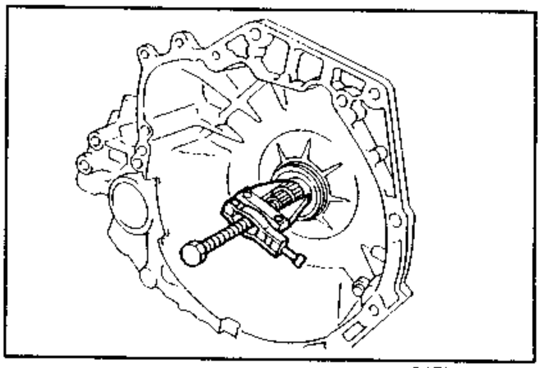
Replacement of oil seal

Remove the oil seal from the oil pump, using the following SST (A).

SST: 09308-10010-000

NOTE:

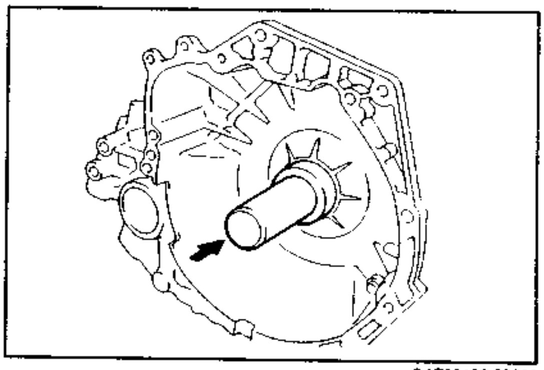
- **Never reuse the removed oil seal.**



GAT00131-99999

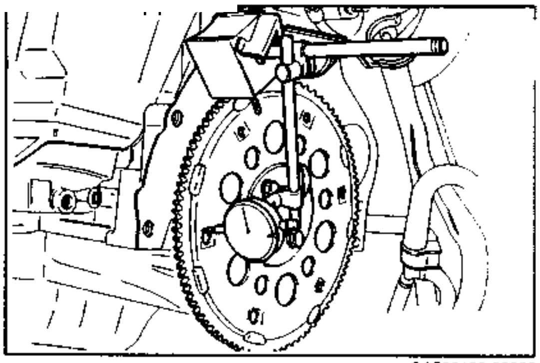
2. Apply lithium base multi purpose grease to the lip section.
3. Drive a new oil seal into the oil pump, using the following SST with a plastic hammer.

   SST: 09308-20010-000



GAT00132-99999

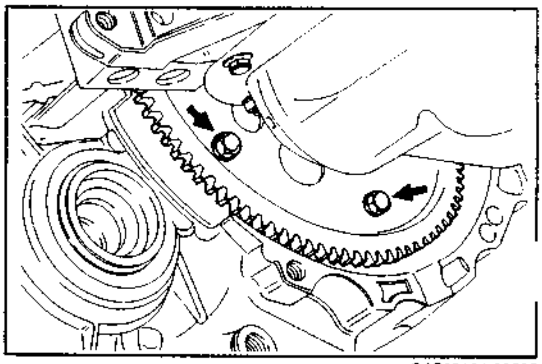
TORQUE CONVERTER



GAT00133-99999

1. Measure the gear subassembly drive plate & ring runout, using a dial indicator.
   Specified Value: 0.25 mm

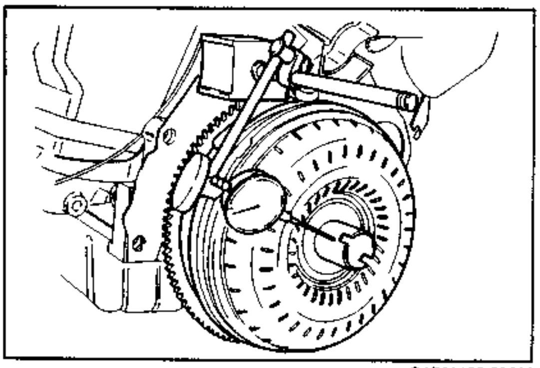
   NOTE:
   - If the runout exceeds than 0.25 mm or ring gear is damaged, replace the drive plate and tighten them.
     Tightening Torque: 78.4 - 98.0 N·m
     (8.0 - 10.0 kgf-m, 57.6 - 72.0 ft-lb)



GAT00134-99999

2. Assembly torque converter sleeve runout.
   (1) Tighten the assembly torque converter to the gear sub-assembly drive & ring gear with the six (a white bolt other five) bolts.
   Tightening Torque: 22.6 - 32.4 N·m
   (2.3 - 3.3 kgf-m, 16.6 - 23.9 ft-lb)

   NOTE:
   - Be sure to tighten the bolts over several stages.



GAT00135-99999

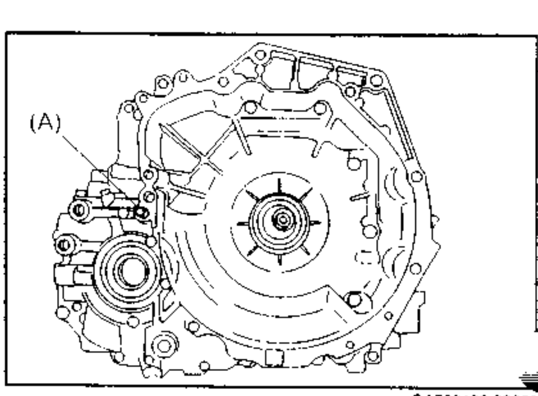
   (2) Measure the assembly torque converter sleeve runout, using a dial indicator.
   Specified Value: 0.30 mm

   NOTE:
   - If the runout exceed than 0.30 mm, correct it by charging the installation direction.
   - Prior to remove the torque converter, it is recommended to mark the position of them to ensure correct installation.

   (3) Measure the assembly torque converter sleeve runout again.
   NOTE:
   - If the sleeve runout exceeds than 0.30 mm, replace them as an assembly.

GAT00422-00000

INSTALLATION



GAT00136-99999

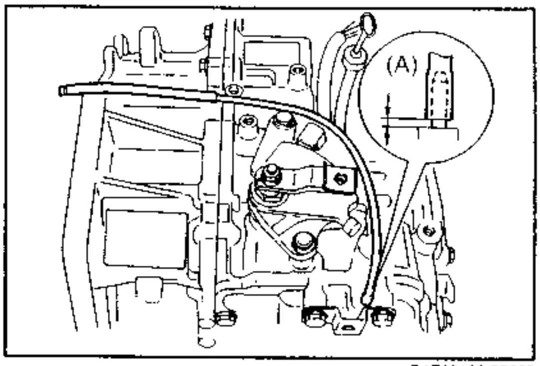
1. Make sure that the straight pin is inserted into the hole (A) in the illustration. Also, when replacing with a new transmission assembly, be sure to insert a straight pin positively.

CAUTION:

- If the A/T should be installed to the engine with the straight pin not fitted positively in place, it may result in problems, such as seizure of oil pump bush on the torque converter sleeve, abnormal noise, cracks of the oil pump drive gear and cracks of torque converter sleeve. Therefore, be sure to check the straight pin positively in the figure.

GAT00137-00000

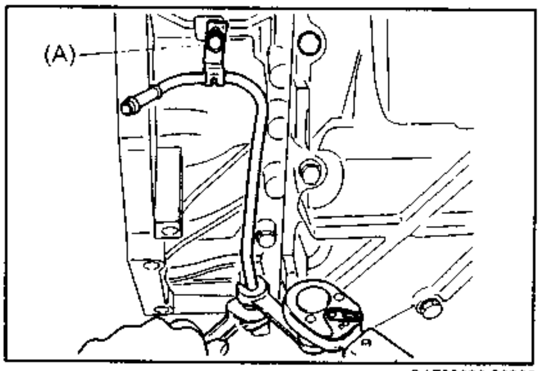
2. Insert the breather hose subassembly front axle.
   NOTE:
   - If the breather hose not inserted with correctly, it may result in breathing out of ATF. Therefore, be sure to check the (A) section (ie: less than 2 mm) in the right figure.



GAT00138-99999

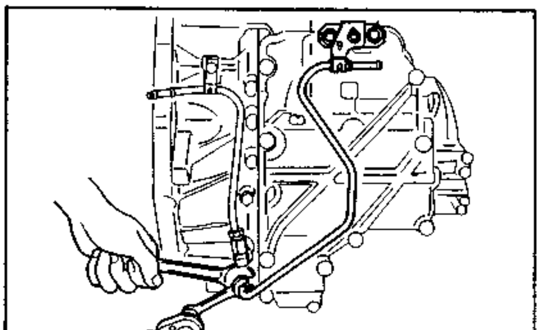
3. Connect the flare nut to the union with the new O-ring in place and tighten then.
   Tightening Torque: 29.4 - 39.2 N·m (3.0 - 4.0 kgf-m, 21.7 - 28.9 ft-lb)

   CAUTION:
   - Be sure to secure the union when tightening the flare nut. Failure to observe this caution may result in breakage of the threaded portion of the transaxle case cracks.



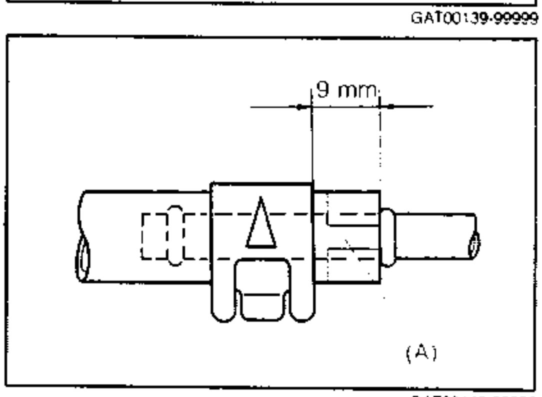
GAT00000-99999

4. Tighten the clamp with a bolt (A).
   Tightening Torque: 6.9 - 9.8 N·m (0.7 - 1.0 kgf-m, 6.9 - 7.2 ft-lb)



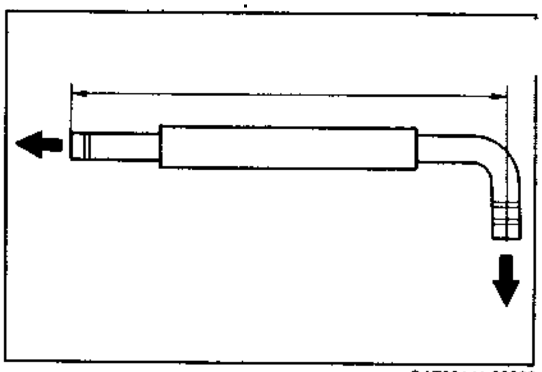
GAT00139-99999

5. Clean the installation section of the new oil cooler hose with the white gasoline.
6. Install the new oil cooler hoses to the tubes.
   NOTE:
   - When inserting the oil cooler hoses at the transaxle side, ensure that the clip should be installed in line with the end of yellow paint (A) on the hoses.
   - Ensure that the protrusion section of the yellow paint position faces toward the upper side.



GAT00140-99999

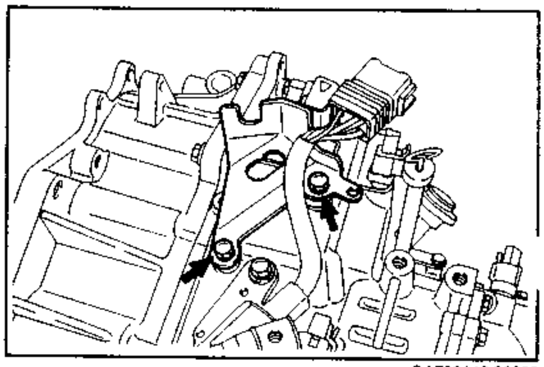
- Ensure that the hoses should be installed to the second spool of the radiator pipe.
  For easily identification, there are identification marks on both radiator and transaxle sides on the hoses.
  And also, overlength of the inlet hose is 38 mm longer than outlet hose.



GAT00141-99999

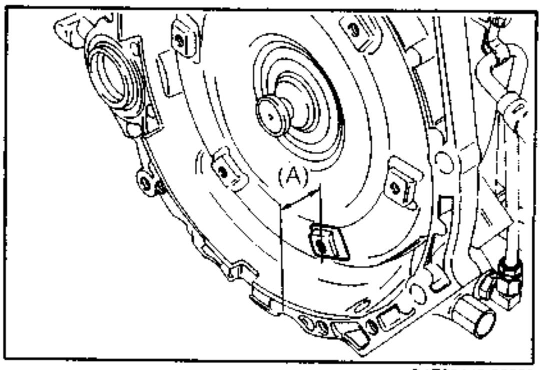
7. Tighten the control cable bracket with the two bolts.
   Tightening Torque: 14.7 - 21.5 N·m
   (1.5 - 2.2 kgf-m, 10.8 - 15.9 ft-lb)

8. Connect the clamp of the neutral start switch.



GAT00142-99999

9. Ensure that the assembly torque converter is fitted positively with the automatic transmission.
   Specified Dimension (A): More than 16.4 mm



GAT00143-99999

CAUTION:

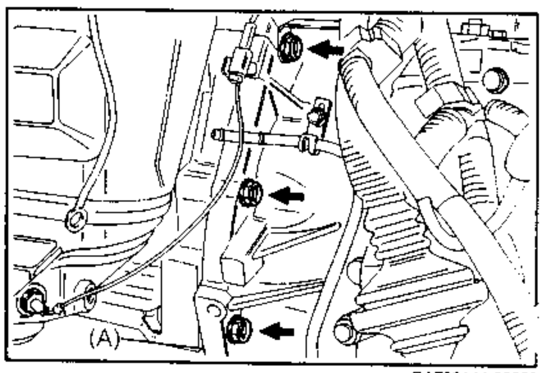
- If the A/T installed to the engine with the assembly torque converter is not fitted positively in place (ie: Dimension (A) is smaller than 16.4 mm), it may result in problems, such as seizure of the oil pump bush on the torque converter sleeve, abnormal noise, cracks of the oil pump drive gear and cracks of the torque converter sleeve.
  Therefore, be sure to measure the dimension (A) in the right figure.

GAT00423-00000

10. Tighten the automatic transmission to the engine with the five bolts.
    Tightening Torque: 49.0 - 68.6 N·m
    (5.0 - 7.0 kgf-m, 36.2 - 50.6 ft-lb)

NOTE:

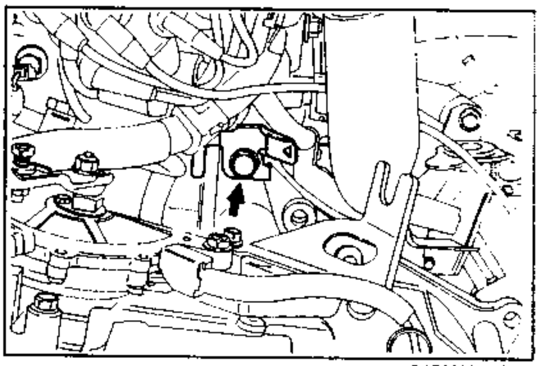
- Be very careful not to drop the assembly torque converter while jointing the automatic transmission with engine.

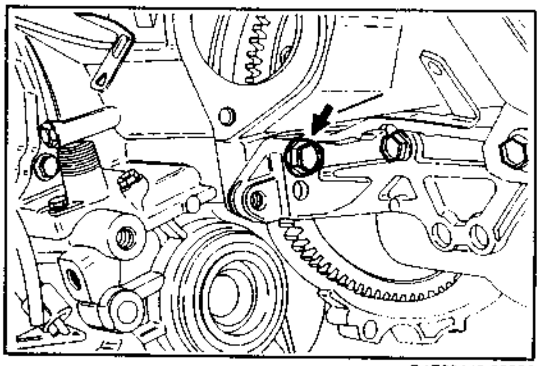


GAT00144-99999

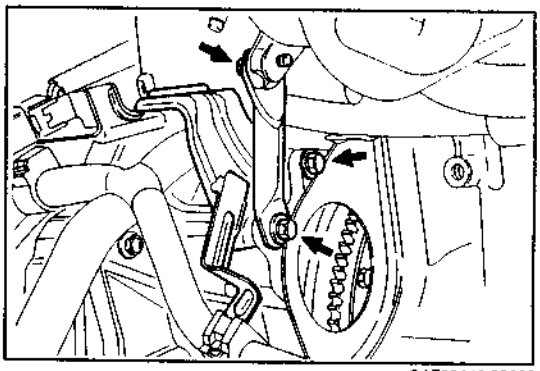
CAUTION:

- Never make a gap between transaxle and engine. Failure to observe this caution may result in problems, such as seizure of the oil pump bush on the torque converter sleeve, abnormal noise, cracks of the oil pump drive gear and cracks of the torque converter sleeve. Therefore, be sure to securely confirm the gap.


GAT00000-99999

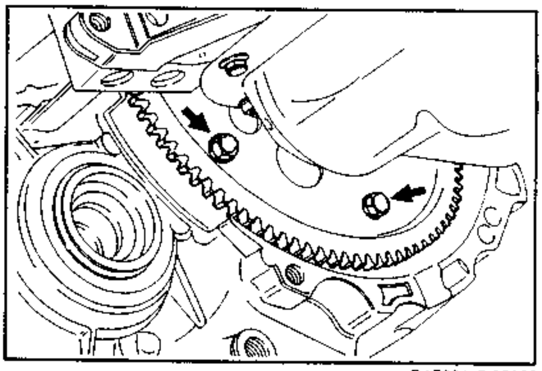

GAT00145-99999

11. Tighten the surge tank stay and air cleaner bracket with the three bolt.


GAT00146-99999

12. With a white bolt used, temporarily tighten the assembly torque converter with gear subassembly drive plate & ring and spacer drive plate front.
13. Tighten them over several stages with the other five bolts.

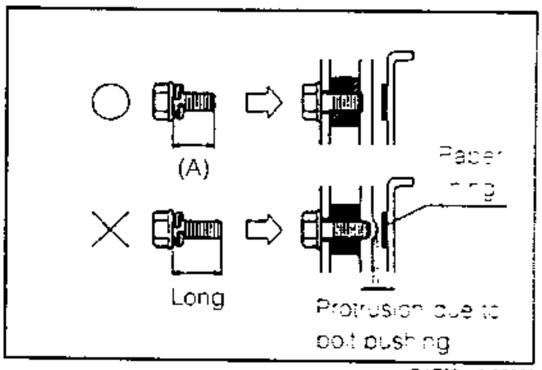
    Tightening Torque: 22.6 - 31.4 N·m
    (2.3 - 3.3 kgf-m, 16.6 - 23.9 ft-lb)


GAT00147-99999

CAUTION:

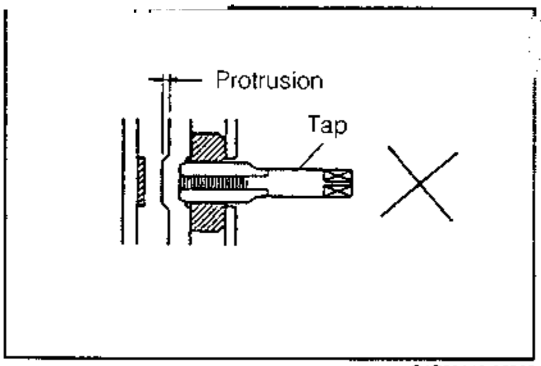
- If longer bolts other than the designated one are used, these bolts peel off the clutch lining inside the torque converter. Then, the peeled clutch lining (paper) may be lodged at the hydraulic passage, thus causing malfunctioning of the transaxle.
- If shorter bolts are used, these bolts can not withstand the rotating torque, leading to rupture at the threaded portion of the bolt.

  Nominal Length (A) of Specified Bolt: $10.5^{+0.5}_{+0}$ mm



GAT00148-99999

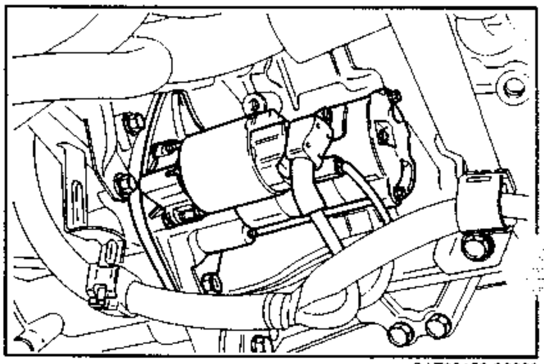
- If the specified bolt breaks off or it is inserted slantly, the threaded hole can not be corrected by means of a tap. Therefore, replace a new torque converter and a bolt (A) specified above as a set.



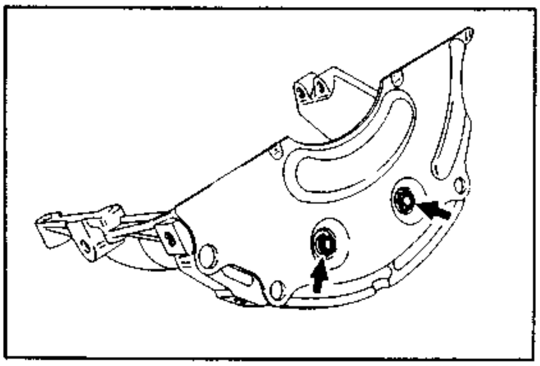
GAT00149-99999

NOTE:
- Prevent the ring gear from rotating by means of a screwdriver.

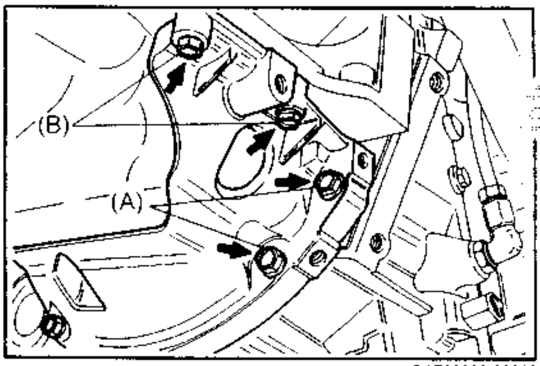
14. Tighten the startor assembly with the two bolts.
    Tightening Torque: 36.75 ± 7.35 N·m
    (3.75 ± 0.75 kgf-m, 27 ± 5.4 ft-lb)


GAT00150-99999

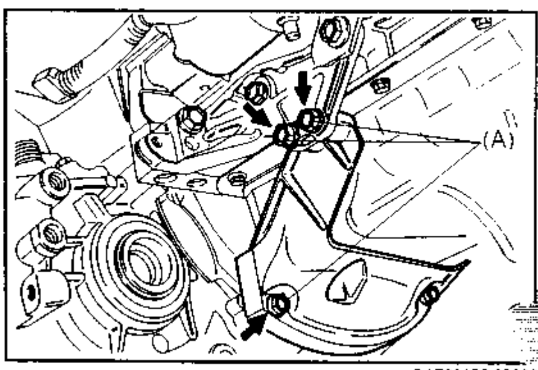
15. Tighten the cover clutch under to the stiffener power train with the two bolts.
    Tightening Torque: 6.9 - 9.8 N·m
    (0.7 - 1.0 kgf-m, 5.1 - 7.2 ft-lb)


GAT00151-99999

16. Tighten the stiffener power train with the seven bolts.
    Tightening Torque:
    (A): 29.4 - 44.1 N·m
    (3.0 - 4.5 kgf-m, 21.7 - 32.5 ft-lb)
    (B): 14.7 - 21.6 N·m
    (1.5 - 2.2 kgf-m, 10.8 - 15.9 ft-lb)

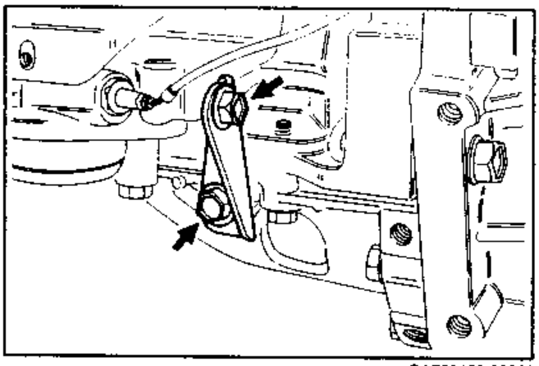


GAT00000-99999



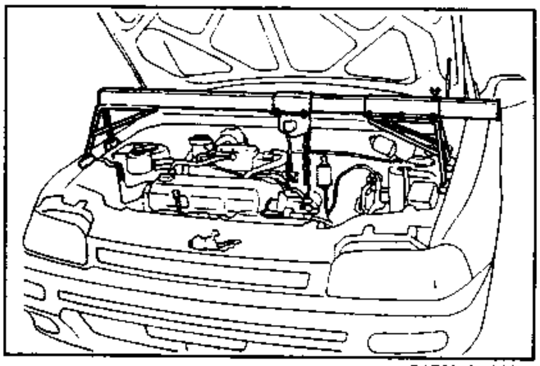
GAT00152-99999

Tighten the exhaust manifold stay with the two bolts.



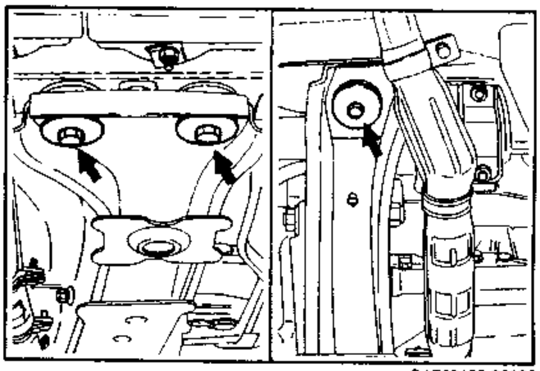
GAT00153-99999

18. While suspending the engine together with automatic transmission with the chain block or the like, install them to the engine compartment room.



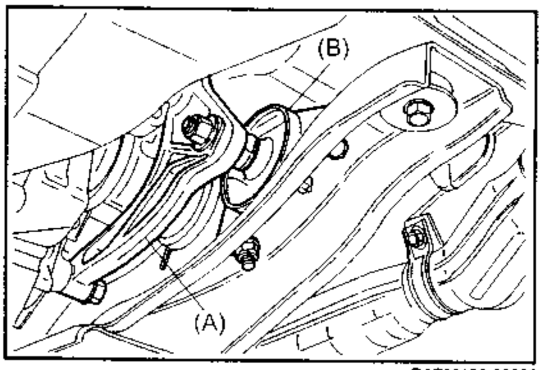
GAT00154-99999

19. Slacken the three bolts of the engine lower mounting member subassembly.



GAT00155-99999

20. Temporarily tighten the engine mounting rear No. 1 bracket (A) and engine mounting rear insulator.



GAT00156-99999

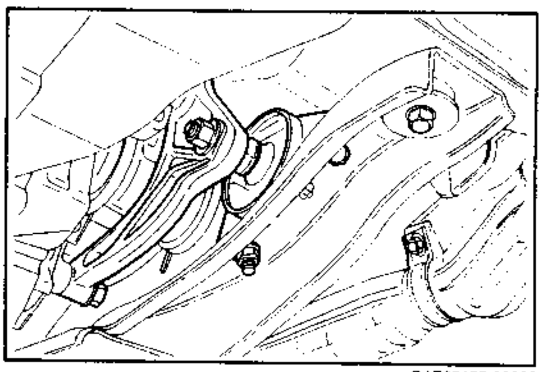
21. Tighten the engine mounting rear No. 1 bracket (A), rear insulator (B) and mounting rear stay (C).

    Tightening Torque:

    (A): 58.8 ± 9.8 N·m
    (6.0 ± 1.0 kgf-m, 43.4 ± 7.2 ft-lb)

    (B): 36.75 ± 7.35 N·m
    (3.75 ± 0.75 kgf-m, 27 ± 5.4 ft-lb)

    (C) × (A): 103.3 ± 11.27 N·m
    (10.55 ± 3.15 kgf-m,
    75.96 ± 22.68 ft-lb)



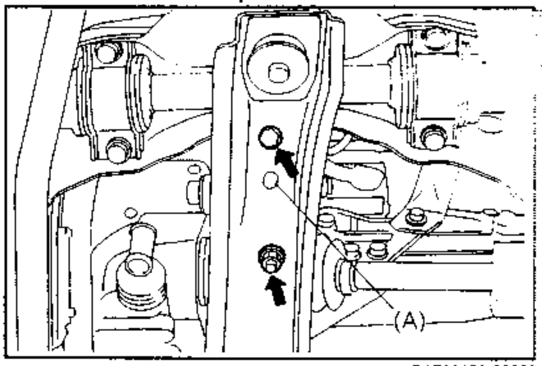
GAT00157-99999

22. Tighten the engine mounting rear insulator with the two bolts.

    Tightening Torque: 37.3 ± 11.27 N·m
    (3.8 ± 1.15 kgf-m,
    27.5 ± 8.28 ft-lb)

    NOTE:

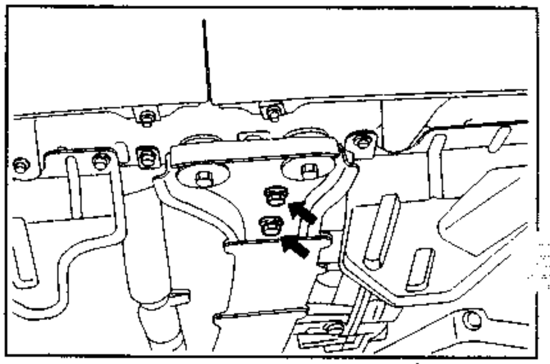
    - Ensure that the protrusion of the engine mounting rear insulator (A) should be inserted into the engine lower mounting member subassembly.



GAT00158-99999

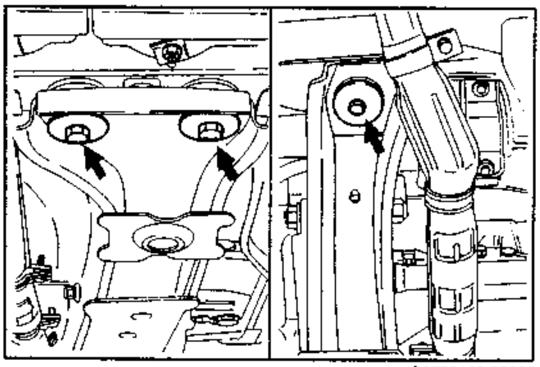
23. Tighten the engine mounting front insulator to the engine lower mounting member subassembly with the two bolts.

    Tightening Torque: 37.3 ± 11.27 N·m
    (3.8 ± 1.15 kgf-m,
    27.5 ± 8.28 ft-lb)


GAT00159-99999

24. Tighten the engine lower member subassembly with the three bolts.

    Tightening Torque: 68.6 ± 20.6 N·m
    (7.0 ± 2.1 kgf-m,
    50.6 ± 14.5 ft-lb)

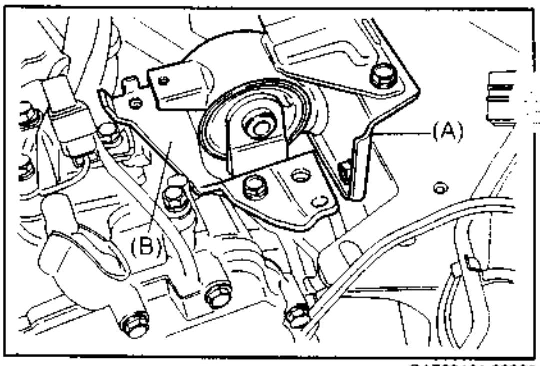

GAT00160-99999

25. Temporarily tighten the engine mounting right insulator subassembly.
26. Tighten the engine mounting left insulator (A) and engine mounting upper left bracket (B).

    Tightening Torque:

    (A): 36.8 ± 7.4 N·m
    (3.75 ± 0.75 kgf-m, 27 ± 5.4 ft-lb)

    (B): 46.8 ± 7.4 N·m
    (4.75 ± 0.75 kgf-m, 34.3 ± 5.4 ft-lb)



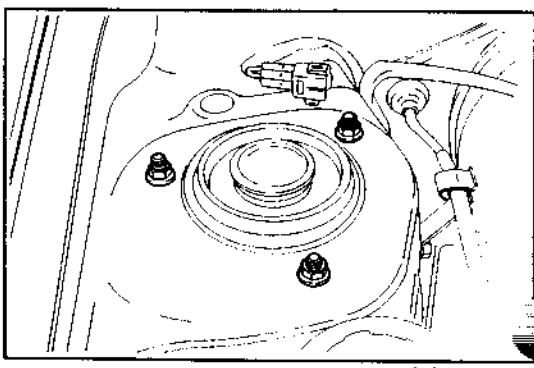
GAT00161-99999

27. Tighten the engine mounting left bracket with the four bolts.

    Tightening Torque: 36.8 ± 7.4 N·m
    (3.75 ± 0.75 kgf-m,
    27 ± 5.4 ft-lb)

28. Tighten the engine mounting rear insulator to the engine mounting left bracket.

    Tightening Torque: 103.0 ± 30.9 N·m
    (10.55 ± 3.15 kgf-m,
    75.96 ± 22.68 ft-lb)

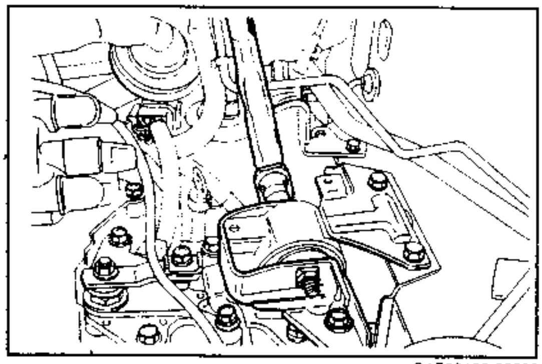

GAT00162-99999

Tighten the engine mounting right insulator subassembly with the bolt (A) and nut (B).

Tightening Torque:

(A): 36.8 ± 7.4 N·m
(3.75 ± 0.75 kgf-m, 27 ± 5.4 ft-lb)

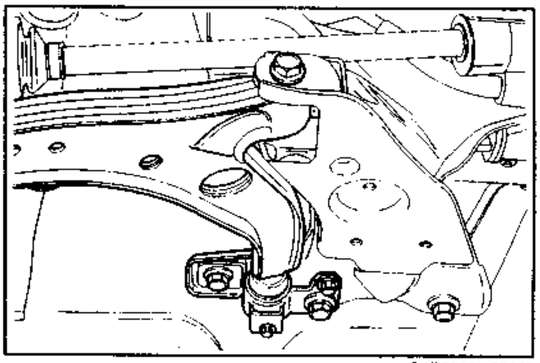
(B): 18.7 ± 4.0 N·m
(1.9 ± 0.4 kgf-m, 13.7 ± 2.9 ft-lb)



GAT00163-99999

30. With the new bolts used, tighten the suspension lower arm subassembly on both left and right sides.

Tightening Torque: 206.0 ± 39.3 N·m
(21.0 ± 4.0 kgf-m,
152 ± 28.9 ft-lb)



GAT00164-99999

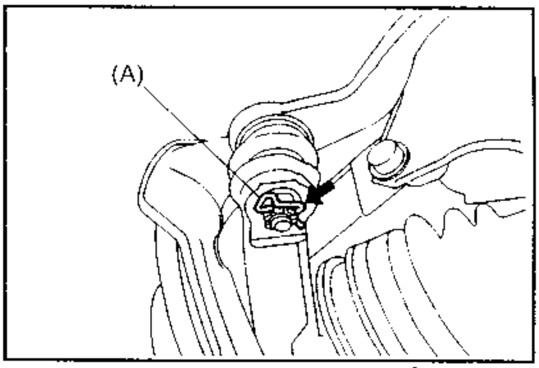
31. Install tie rod end to the steering knuckle.
32. Tighten the steering knuckle with the new castle nut.

Tightening Torque: 36.75 ± 7.4 N·m
(3.75 ± 0.75 kgf-m, 27 ± 5.4 ft-lb)

33. Install the new clip (A).

NOTE:

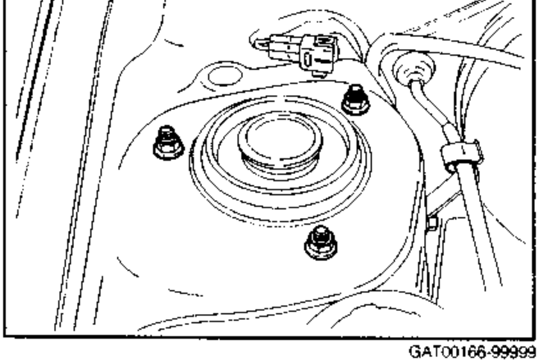
- When installing the new clip, be sure to align the hole section between castle nut and steering knuckle if the hole section is not in the same position, tighten the new castle nut within the 60 degree (ie: Minimum over tightening).



GAT00165-99999

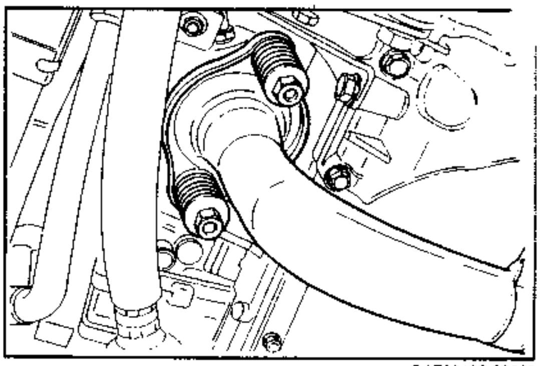
34. With the new nut used, tighten the suspension support on both left and right sides.

Tightening Torque: 35.3 ± 6.9 N·m
(3.6 ± 0.7 kgf-m, 26.0 ± 5.1 ft-lb)

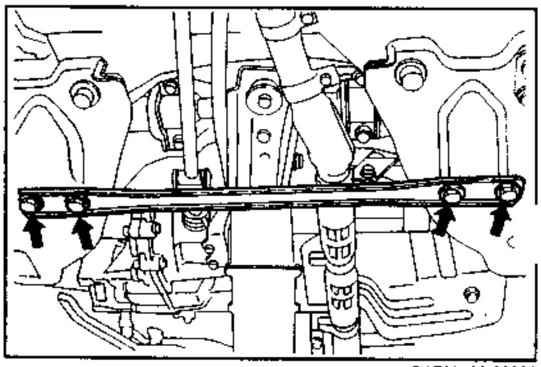


GAT00166-99999

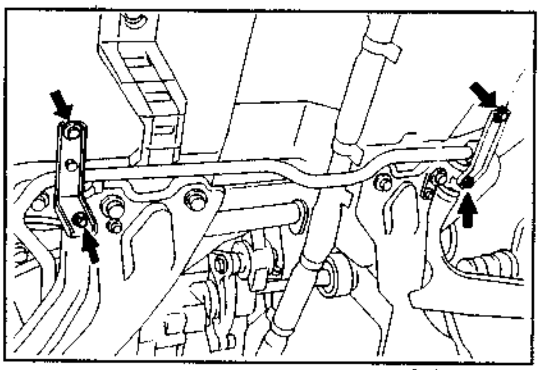
35. With the new gasket used, tighten the exhaust front pipe assembly.
    Tightening Torque: 52.0 ± 10.4 N·m
    (5.3 ± 1.06 kgf-m, 38.3 ± 7.6 ft-lb)


GAT00167-99999

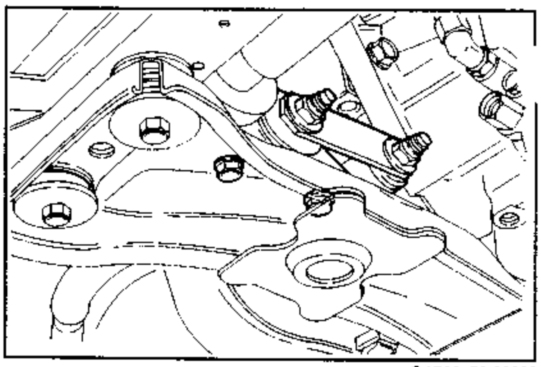
36. Tighten the lower arm bracket connecting rod with the four bolts.
    Tightening Torque: 65.7 ± 26.5 N·m
    (6.7 ± 2.7 kgf-m, 48.5 ± 19.5 ft-lb)
37. With the bolts and new nuts used, tighten the front stabilizer.
    Tightening Torque: 12.8 ± 3.0 N·m
    (1.3 ± 0.3 kgf-m, 9.4 ± 2.2 ft-lb)


GAT00168-99999

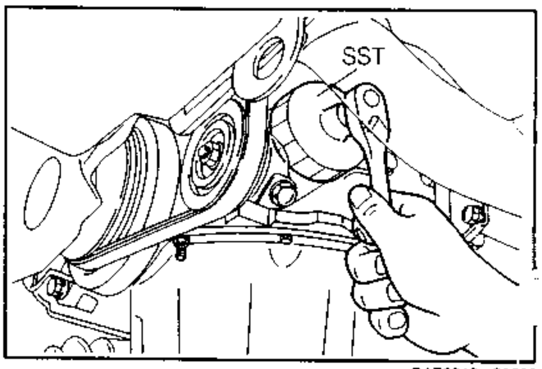
38. With the bolts and new nuts used, tighten the front stabilizer.
    Tightening Torque: 12.8 ± 3.0 N·m
    (1.3 ± 0.3 kgf-m, 9.4 ± 2.2 ft-lb)


GAT00169-99999

39. Tighten the engine mounting front to the engine lower member assembly.
    Tightening Torque: 103.0 ± 30.9 N·m
    (10.55 ± 3.15 kgf-m,
    75.9 ± 22.6 ft-lb)

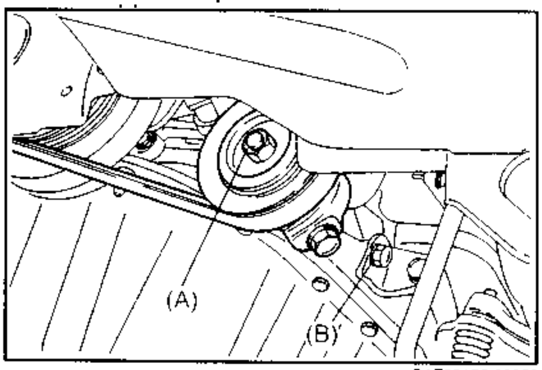

GAT00170-99999

40. Coat the engine oil around the new O-ring in the oil filter and tighten the new oil filter with your hand until it is stopped.
41. Tighten the new oil filter approximately 0.75 over, using the following SST.
    SST: 09228-87201-000



GAT00171-99999

42. Tighten the compressor assembly with magnet switch.
    Tightening Torque: 24.5 ± 4.9 N·m
    (2.5 ± 0.5 kgf-m, 18.1 ± 3.6 ft-lb)

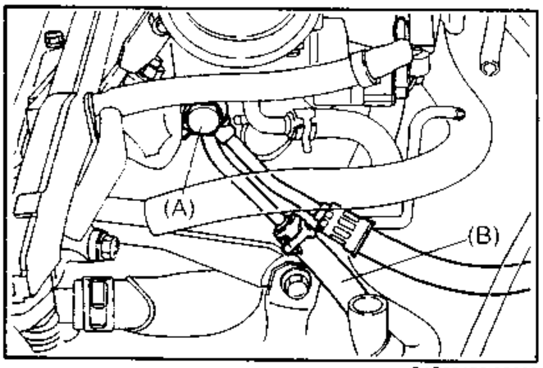


GAT00172-99999

43. Measure the deflection of the drive belt.
    Specified Value: 7 - 8 mm

44. Lower the drive belt with the tension of 9.8 N (10 kgf, 7.2 lb).
45. Tighten the lock nut of the idler pulley.

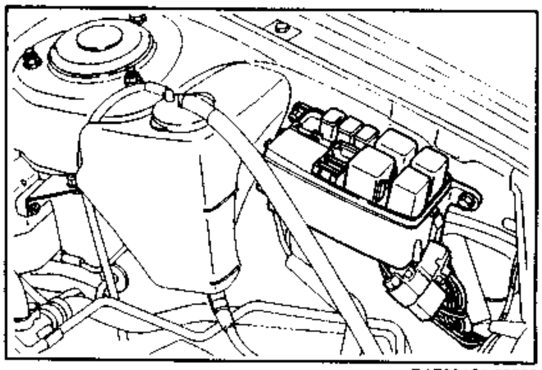
46. Ensure that the deflection of the drive plate within the specification above.
47. With the new gasket used, tighten the fuel hose No. 1 and pipe air hose.
    Tightening Torque: 39.2 ± 4.9 N·m
    (4.0 ± 0.5 kgf-m, 28.9 ± 3.6 ft-lb)



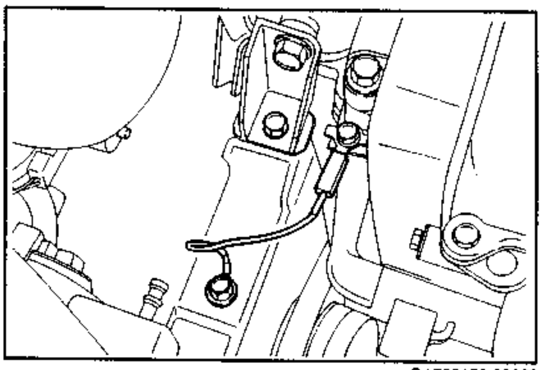
GAT00173-99999

48. Install the two heater hose.

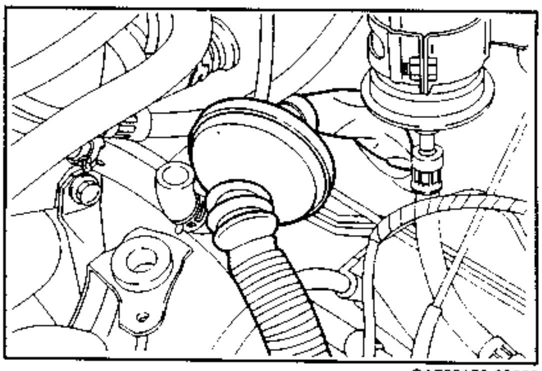
49. Connect the connector of the fuse block assembly.
50. Install them to the body.


GAT00174-99999

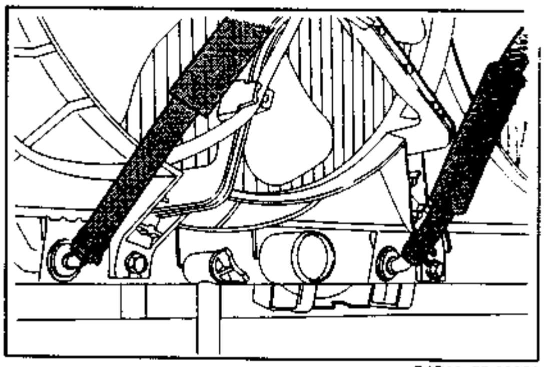
51. Connect the connector of the ground cable.


GAT00175-99999

52. Apply soap with water around the rubber section of the engine harness.
53. Install them to the vehicle interior side and connect the coupler.

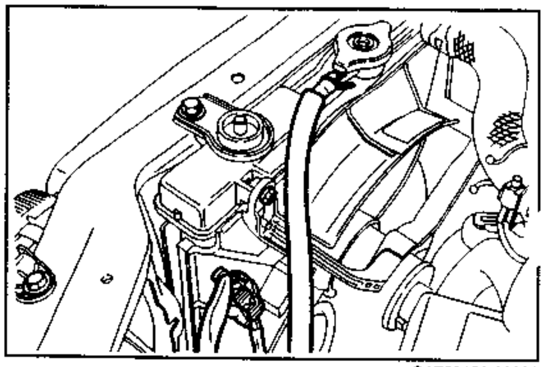

GAT00176-99999

54. With the new hoses used, install the inlet and outlet hoses of the oil cooler.



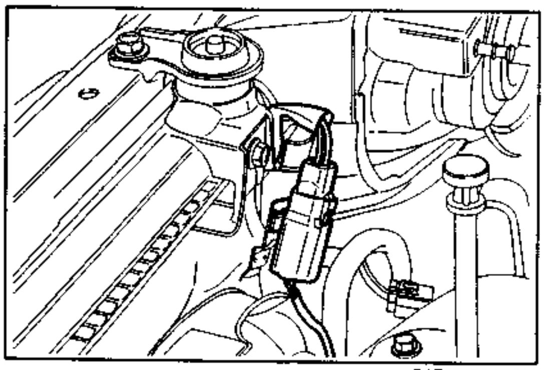
GAT00177-99999

55. Install the radiator reserver hose (A).
56. Connect the coupler of the radiator fan (B).



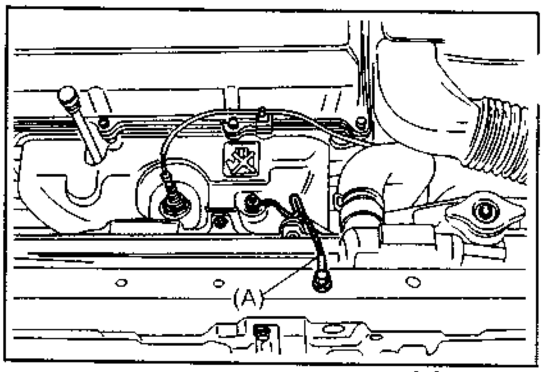
GAT00178-99999

57. Connect the coupler of the air conditioner (if equipped so on).



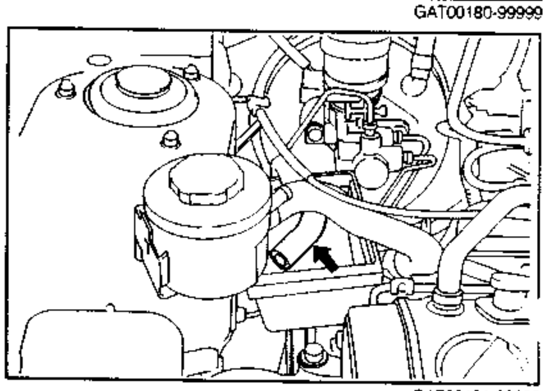
GAT00179-99999

58. Install the ground cable.



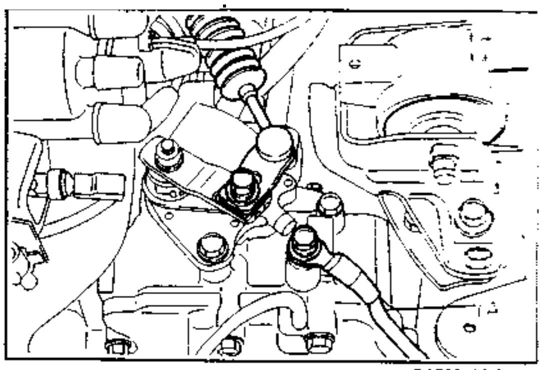
GAT00180-99999

59. Install the hoses (pressure and return) of the power steering.



GAT00181-99999

60. Tighten the ground cable (A)
61. Install the control cable assembly.
    (As for the adjustment of control cable, see page AT-13).


GAT00182-99999

62. Temporarily tighten the hood assembly with the two bolts on both left and right sides.
63. Align the food with the front fender by adjusting and moving the food lock.

    Specified Value

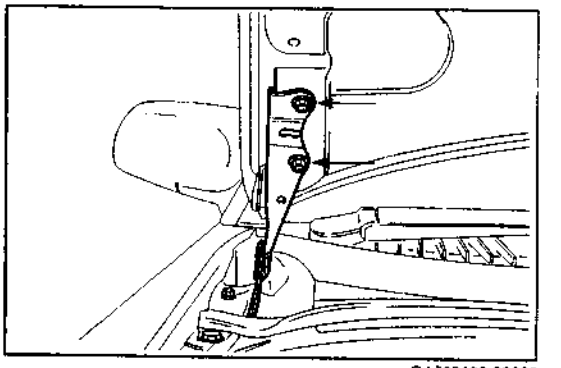
    Gap: 3.5 ± 1.5 mm

    Difference in Various Points:

    Not to exceed 1.5 mm

    Difference in Left and Right Sides:

    Not to exceed 1.5 mm

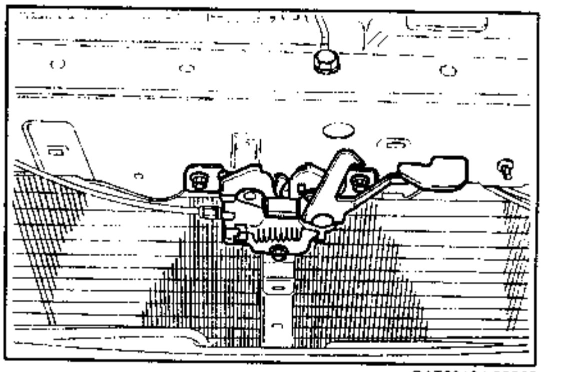

GAT00183-99999

64. Install the front bumper, air cleaner, battery carrier and battery.
65. Add new power steering fluid.
66. Connect the ground cable of negative terminal to the battery.
67. Inspect the side slip (Refer to FS section)
68. Add new ATF Fluid

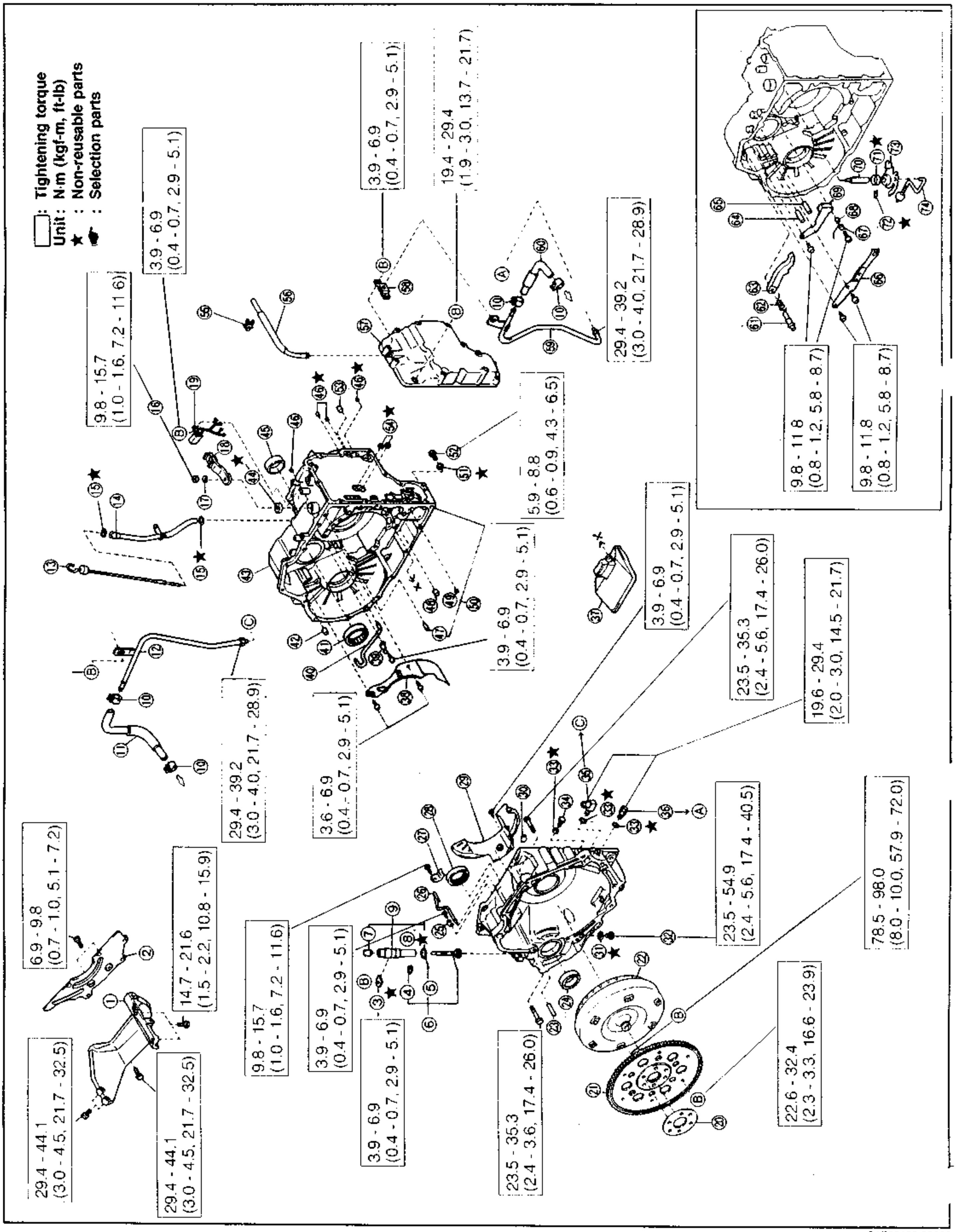
    Fluid To Be Used: DEXRON® II

    Capacity (ℓ):

    Full, (Drain and refill): 5.7 (3.2)

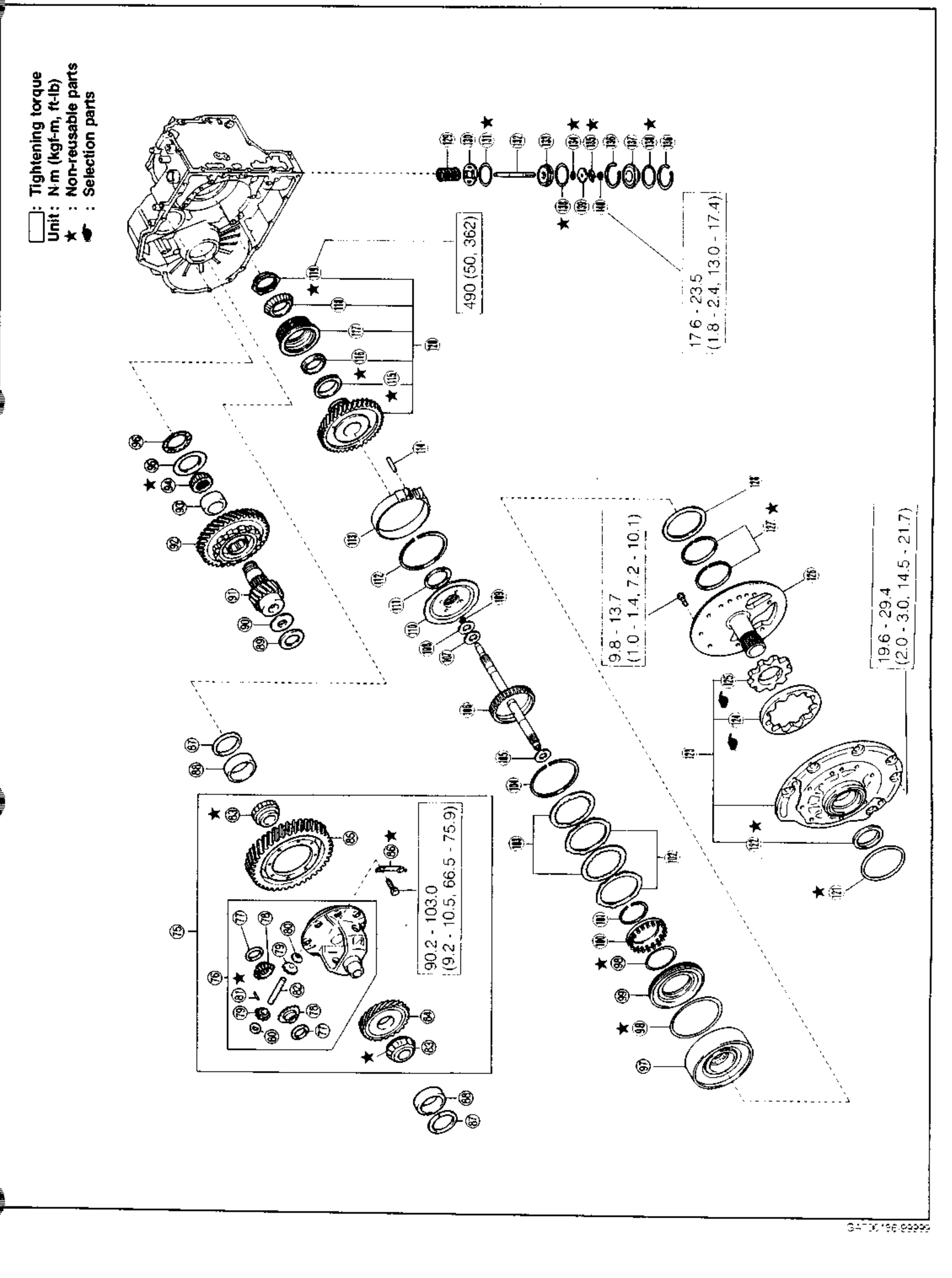

GAT00184-99999

COMPONENTS (PART 1)



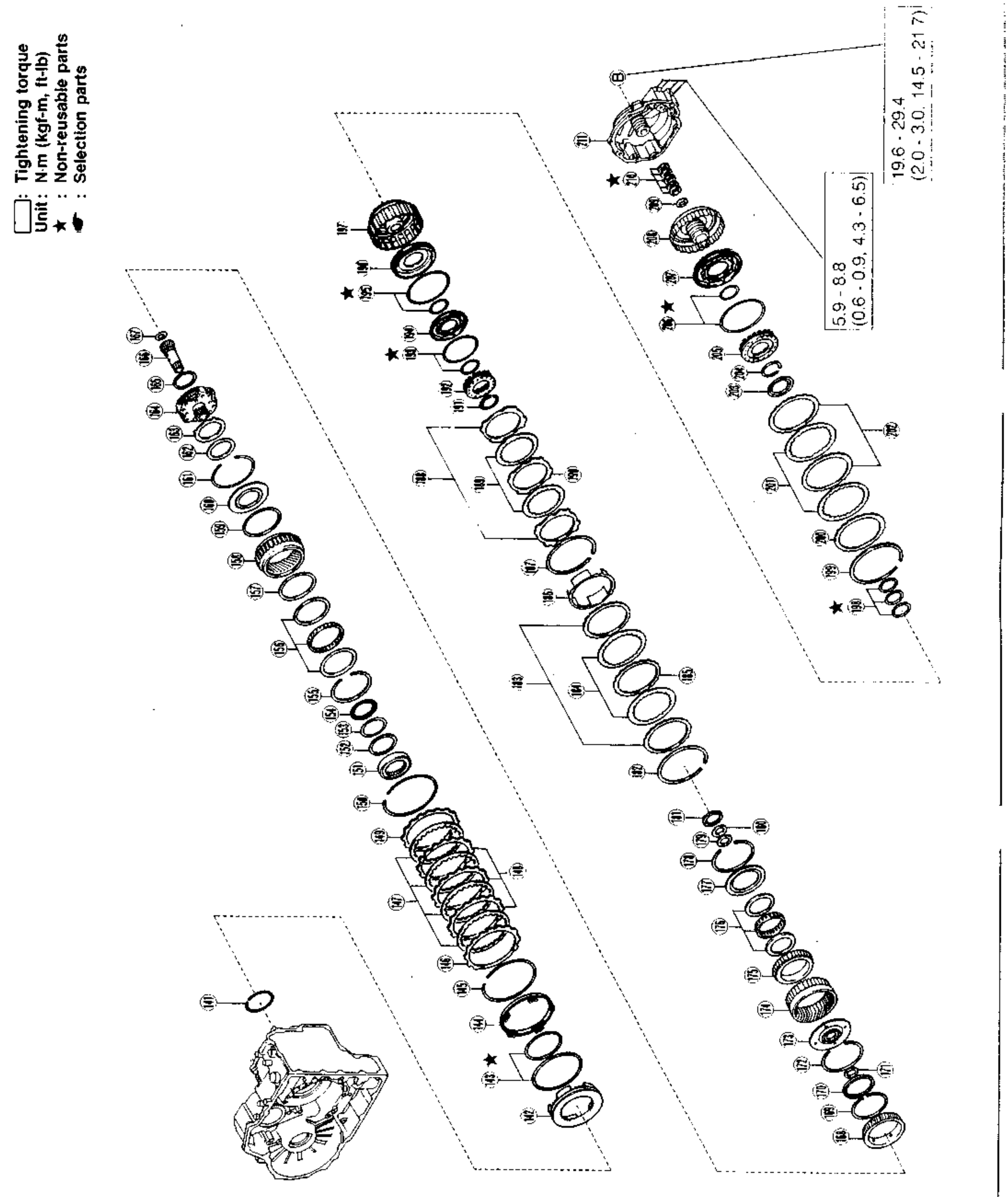
GAT00185-99939

COMPONENTS (PART 2)



GAT00196-99999

COMPONENTS (PART 3)



GAT00187-99999

(PART 1)

① Stiffener power train
② Cover clutch housing under
③ Plate speedometer sleeve lock
④ Clip
⑤ O-ring
⑥ Gear speedometer driven
⑦ Oil seal
⑧ O-ring
⑨ Sleeve subassembly speedometer shaft
⑩ Clip
⑪ Hose oil cooler outlet
⑫ Tube subassembly oil cooler outlet
⑬ Transmission oil level gauge
⑭ Gauge subassembly oil level
⑮ O-ring
⑯ Nut
⑰ Spring washer
⑱ Lever transmission control shaft
⑲ Transmission wire
⑳ Spacer drive plate front
㉑ Gear subassembly drive plate & ring
㉒ Assembly torque converter
㉓ Knock pin
㉔ Oil seal
㉕ Clamp tube
㉖ Tube differential gear lube apply
㉗ Retainer roller bearing
㉘ Bearing cylindrical roller
㉙ Plate oil reserver
㉚ Magnet (3 pieces) oil cleaner
㉛ Gasket
㉜ Plug w/head straight screw
㉝ O-rings
㉞ Plug
㉟ Elbow
㊱ Union
㊲ Strainer subassembly oil
㊳ Plate oil reserver
㊴ Clamp tube
㊵ Tube transaxle lub apply
㊶ Bearing cylindrical roller
㊷ Gasket governor apply
㊸ Transaxle case
㊹ Oil seal
㊺ Oil seal
㊻ Gasket 2nd brake apply
㊼ Knock pin
㊽ Gasket governor apply
㊾ Gasket 2nd brake apply
㊿ Case subassembly transmission
(51) O-ring
(52) Plug w/head straight screw
(53) Gasket governor apply
(54) Gasket
(55) Clamp
(56) Hose subassembly front axle
(57) Transaxle side cover
(58) Bracket
(59) Tube subassembly oil cooler inlet
(60) Hose oil cooler inlet
(61) Shaft parking lock pawl
(62) Spring torsion
(63) Pawl parking lock
(64) Roller
(65) Roller
(66) Spring manual detent
(67) Spring torsion
(68) Sleeve spring guide
(69) Bracket parking lock pawl
(70) Shaft subassembly manual valve lever
(71) Spacer
(72) Slotted spring pin
(73) Lever manual valve
(74) Rod parking lock

(PART 2)

(75) Gear assembly differential
(76) Case differential
(77) Washer differential side gear thrust
(78) Gear differential side
(79) Pinion differential
(80) Washer differential pinion thrust
(81) Pin straight
(82) Shaft differential pinion
(83) Bearing tappered roller
(84) Gear speedometer drive
(85) Gear differential ring
(86) Plate ring gear set bolt lock
(87) Washer plate
(88) Race bearing tapered roller outer
(89) Bearing thrust needle roller
(90) Race thrust bearing
(91) Pinion differential drive
(92) Gear subassembly counter driven
(93) Bearing cylindrical roller
(94) Nut
(95) Race thrust bearing
(96) Bearing thrust needle roller
(97) Drum subassembly reverse clutch w/bearing
(98) O-ring
(99) Piston subassembly reverse clutch
(100) Spring subassembly reverse clutch piston
(101) Ring hole snap
(102) Plate clutch
(103) Disc clutch No. 3
(104) Ring hole snap
(105) Bearing thrust needle roller
(106) Shaft subassembly input
(107) Bearing thrust needle roller
(108) Race thrust bearing
(109) Seal ring
(110) Flange sun gear input
(111) Washer thrust
(112) Retainer ring
(113) Band assembly 2nd & 4th brake
(114) Pin straight
(115) Bearing tapered roller
(116) Spacer counter bearing
(117) Bearing tappered roller
(118) Bearing tapered roller
(119) Lock nut
(120) Gear subassembly counter drive
(121) O-ring
(122) Oil seal
(123) Body oil pump
(124) Gear oil pump driven
(125) Gear oil pump drive
(126) Shaft subassembly stator
(127) Ring seal

128 Washer clutch drum thrust
129 Spring compression
130 Piston 2nd & 4th brake
131 O-ring
132 Rod 2nd & 4th brake piston
133 Cover brake piston
134 O-ring
135 Lock washer
136 Ring hole snap
137 Cover brake
138 O-ring
139 Lock plate
140 Lock nut

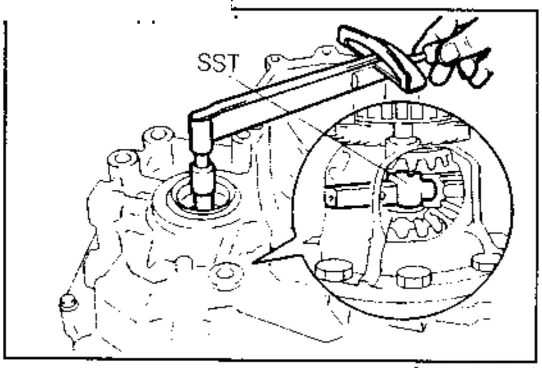
(PART 3)
141 Ring shaft snap
142 Piston 1st & reverse brake
143 O-ring
144 Spring subassembly brake piston return
145 Ring retainer
146 Brake flange
147 Disc, clutch & flange
148 Plate brake
149 Flange brake
150 Ring hole snap
151 Race 1 way clutch inner
152 Washer thrust
153 Race thrust bearing
154 Bearing thrust needle roller
155 Ring hole snap
156 Clutch 1 way
157 Washer thrust
158 Gear subassembly front planetary ring
159 O-ring
160 Flange front planetary ring gear
161 Ring hole snap
162 Bearing thrust needle roller
163 Race thrust bearing
164 Gear assembly front planetary
165 Race thrust bearing
166 Gear subassembly planetary sun
167 Bearing thrust needle roller
168 Hub overdrive clutch
169 Ring hole snap
170 Bearing thrust needle roller
171 Race thrust bearing
172 Ring hole snap
173 Flange rear planetary ring gear
174 Gear subassembly rear planetary ring
175 Race 1 way clutch outer
176 Clutch 1 way
177 Retainer 1 way clutch
178 Ring hole snap
179 Bearing thrust needle roller
180 Race thrust bearing
181 Washer thrust
182 Ring hole snap
183 Flange clutch
184 Disc clutch
185 Plate clutch
186 Flange clutch
187 Tube overdrive clutch apply
188 Ring hole snap
189 Flange clutch
190 Disc clutch
191 Plate clutch
192 Flange clutch
193 Ring shaft snap
194 Spring subassembly overdrive clutch return
195 O-ring
196 Piston subassembly coast clutch
197 O-ring
198 Piston overdrive clutch
199 Drum subassembly overdrive clutch
200 Ring clutch drum oil seal
201 Ring hole snap
202 Flange plate
203 Disc clutch
204 Plate clutch
205 Washer clutch drum thrust
206 Ring shaft snap
207 Spring subassembly forward clutch return
208 O-ring
209 Piston subassembly forward clutch
210 Drum subassembly clutch
211 Bearing thrust needle roller
212 Ring clutch drum oil seal
213 Transaxle rear case

GAT00188-0000C

REMOVAL

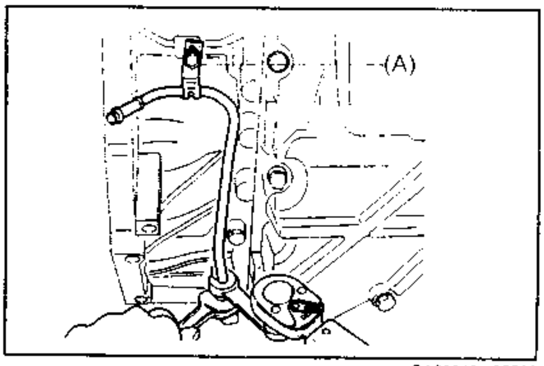
1. Remove the assembly torque converter.
2. Measure the starting torque of the gear assembly differential, using the following SST.
   SST: 09351-87711-000
   Specified Value: 0.78 - 1.37 N·m
   (8.0 - 14.0 kgf-cm, 0.57 - 1.0 ft-lb)

   NOTE:
   - Record the actual starting torque for reference of installation of the differential assembly.



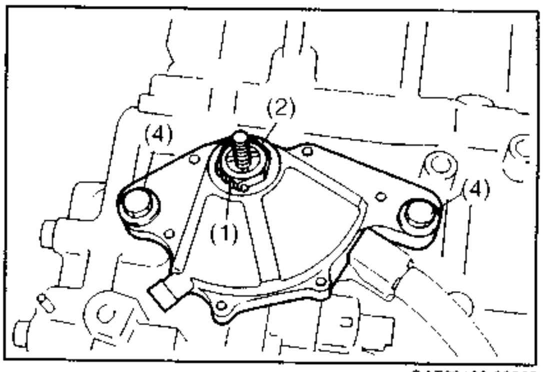
GAT00190-99999

3. Remove the bolt (A) of the clamp.
4. Remove the flare nut while securing the union by means of a standard spanner or the like.



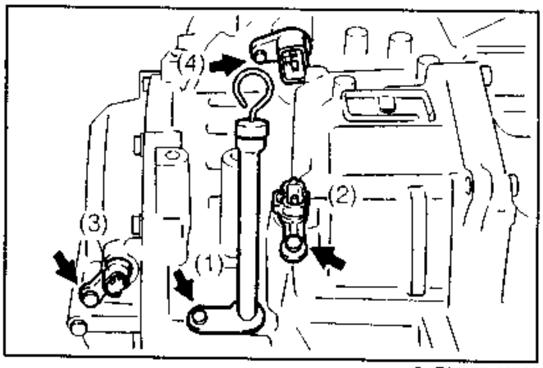
GAT00191-99999

5. Pull out the neutral start switch assembly by removing the following parts toward you.
   (1) Pry off the lock washer
   (Never reuse the removed lock washer)
   (2) Nut
   (3) Lock washer and rubber plate
   (4) Two bolts



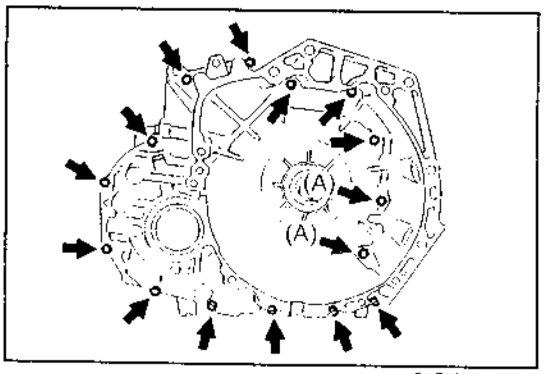
GAT00192-99999

6. Remove the following parts from the transaxle housing assembly.
   (1) Fluid level gauge with the O-ring installed.
   (2) Vehicle speed sensor with the O-ring installed.
   (3) C1 cylinder revolution sensor with the O-ring installed.
   (4) Bolt of the coupler solenoid.
   NOTE:
   - Never reuse the removed O-rings.



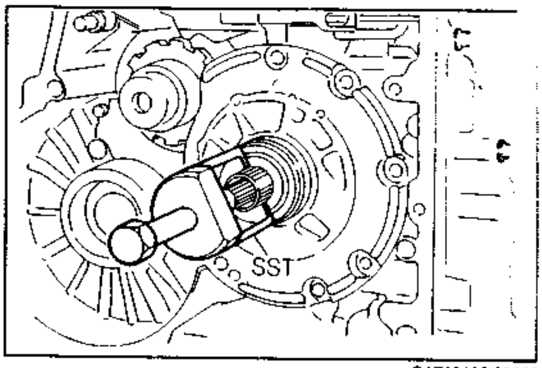
GAT00193-99999

7. Remove the gear speedometer driven and sleeve subassembly speedometer shaft by removing a bolt.
8. Remove the transaxle housing by removing the 15 bolts.
   NOTE:
   - Never reuse the removed two bolts (A).
9. Pull-out the gear assembly differential toward you.
10. Clean and wipe off the gasket sealer on the contacting surface between the transaxle housing and transaxle case.



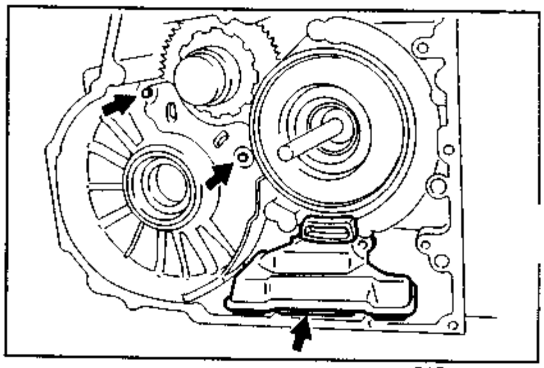
GAT00194-99999

11. Remove the six bolts of the body oil pump.
12. Remove three gaskets (for two governor apply and a 2nd brake apply) at the transaxle case side.
    NOTE:
    - **Never reuse the removed gaskets.**
13. Remove the body oil pump, using the following SST.
    SST: 09610-20012-000



GAT00195-99999

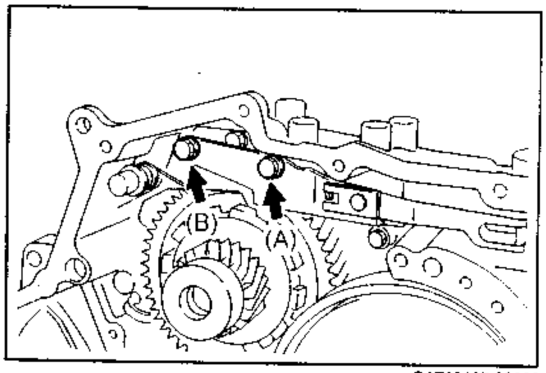
14. Remove the plate oil reserve by removing the two bolts.
15. Remove the strainer subassembly oil.



GAT00196-99999

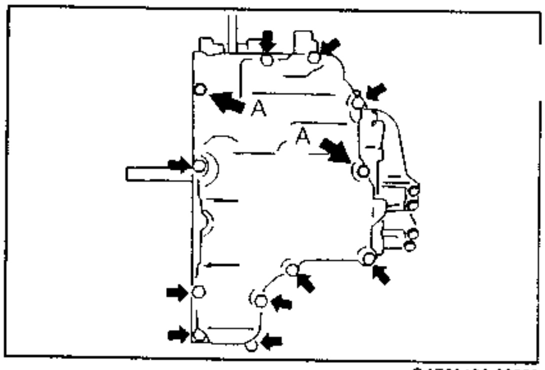
16. Remove the spring manual detent by removing the two bolts

    (Firstly remove the bolt (A) and bolt (B)).



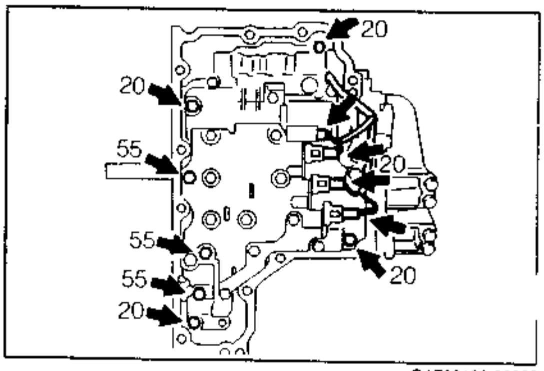
GAT00197-99999

17. Remove the transaxle side cover by removing the 12 bolts.
    NOTE:
    - **Never reuse the removed two bolts A.**



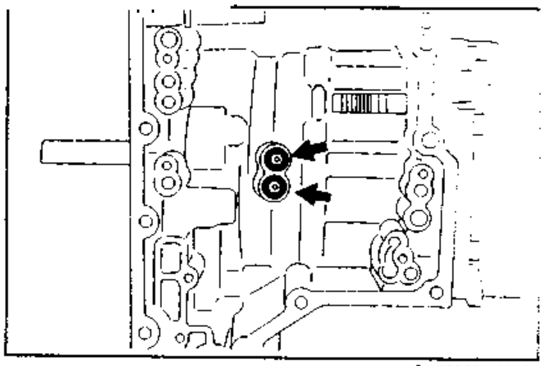
GAT00198-99999

18. Clamp off the solenoid wiring harness.
19. Disconnect the coupler of the solenoids for pressure control, shift No. 1, No. 2 and lock up control.
20. Remove the valve body assembly by removing the eight bolts.
    NOTE:
    - **The numerical length of the bolts is indicating in the right figure.**
21. Pull out the solenoid coupler.



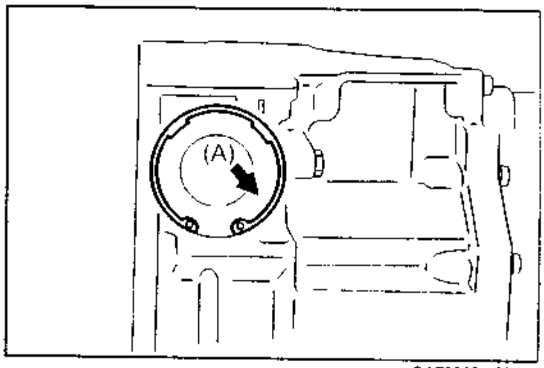
GAT00199-99999

22. Remove the two gaskets governor apply.
NOTE:
- **Never reuse the removed gaskets.**



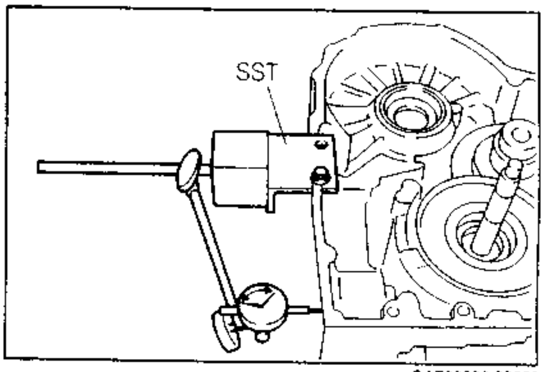
GAT00200-99999

23. Turn over the lower part of the transaxle housing faces toward you.
24. Remove the ring hole snap, using the snap ring plier.
25. Pull out the cover brake (A) toward you, using the adjusting plier or the like.



GAT00201-99999

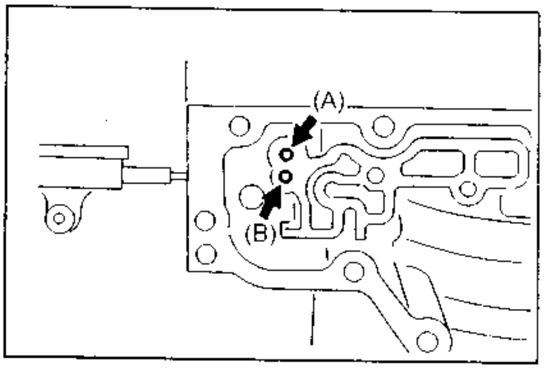
26. Inspection of 2nd & 4th brake piston stroke.
   (1) Install the following SST with a dial indicator to the transaxle housing.
   SST: 09351-87210-000



GAT00202-99999

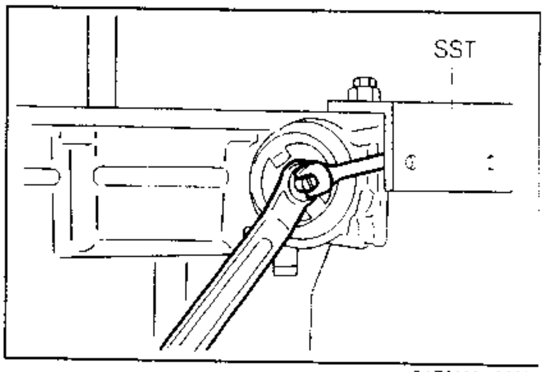
   (2) Chock the oil hole section (A) with your finger.
   (3) Measure the piston stroke while applying and releasing the compressed air 392 - 784 kPa (4 - 8 kgf/cm^2, 56 - 113 ft-lb) from the oil section (B).
   Specified Piston Stroke: 3.0 - 3.4 mm
   NOTE:
   - **If the piston stroke exceeds than specification above, Adjust the piston rod (see page AT–120) or inspect the band assembly 2nd & 4th brake for damage, wear or discoloration.**

   (4) Remove a dial indicator.

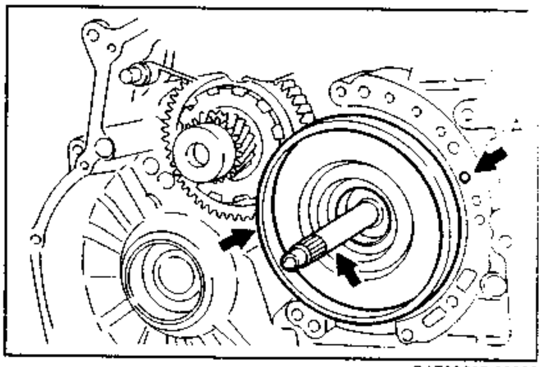


GAT00203-99999

27. Remove the ring hole snap, using the standard snap ring plier or the like.
28. Pry off the lock section of the lock plate.
29. Slacken the nut of the piston rod in conjunction with a spanner (9 mm), a ring wrench (17 mm) and the SST (09351-87210-000).
30. Remove the piston rod with the nut, washer, piston rod and lock washer installed.
NOTE:
- **Never reuse the removed lock washer.**

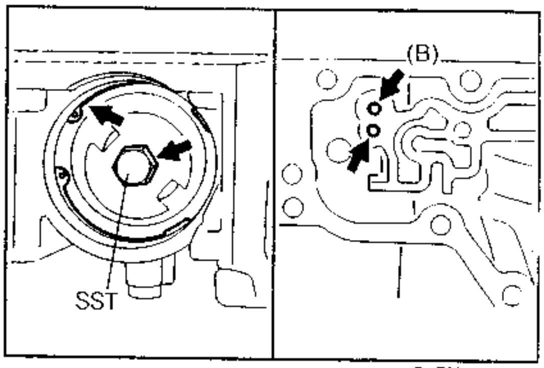


31. Remove the washer from the piston rod.
32. Pull out the reverse clutch assembly faces toward you.
33. Remove the band assembly 2nd & 4th brake.
34. Remove the pin straight (A).
    Reference Value of Straight Pin
    Length: 45 mm
    Outer Diameter: 8 mm



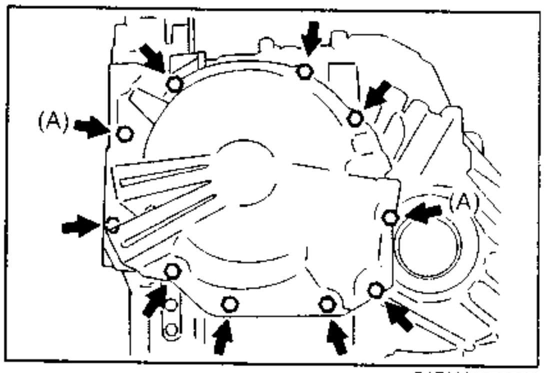
GAT00205-99999

35. Install the removed washer (step on 31) washer plate and lock nut to the SST (09351-87709-000) for avoiding the damage of the case during removal.
36. Insert the SST (Never use the air impact wrench for tightening the SST.) through piston rod hole.
37. Tighten the SST until hole snap ring is free.
38. Remove the ring hole snap .
39. Slacken the SST for 2 to 4 notches then apply the compressed air through oil hole (B).
40. Remove the cover brake piston, piston with the O-ring installed and compression spring.



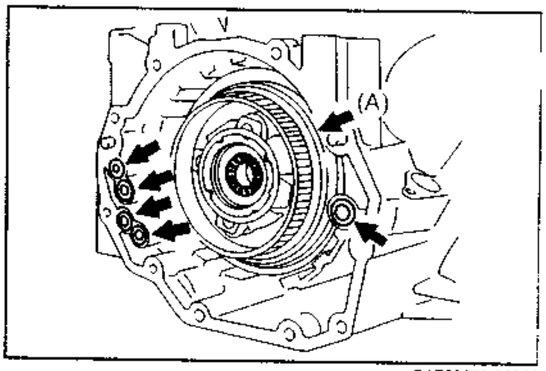
GAT00206-99999

41. Slacken the ten bolts of the transaxle rear cover.
42. Lightly and uniformly tap the two rib sections of the transaxle rear cover, using a plastic hammer.
43. Remove the ten bolts.
    NOTE:
    - **Never reuse the removed two bolts A.**
44. Pull out the transaxle rear cover toward you with the forward clutch, subassembly installed.



GAT00207-99999

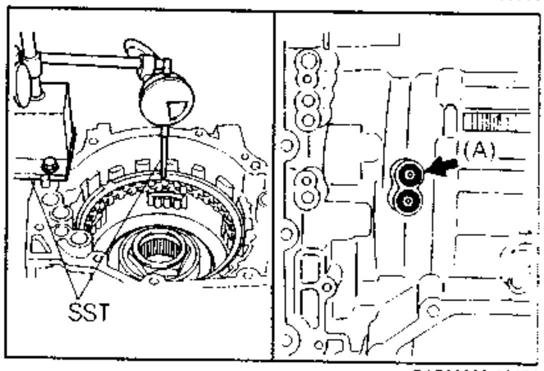
45. Remove the five gaskets (for governor apply and 2nd brake apply).
    NOTE:
    - **Never reuse the removed gaskets.**
46. Remove the planetary carrier for front/rear ring gear and gear assembly sun (A) with following integral bearing installed.
    Integral Bearing With Race
    Outer: 32.3 mm
    Inner: 19.0 mm
    Race Thickness: 2.7 mm



GAT00208-99999

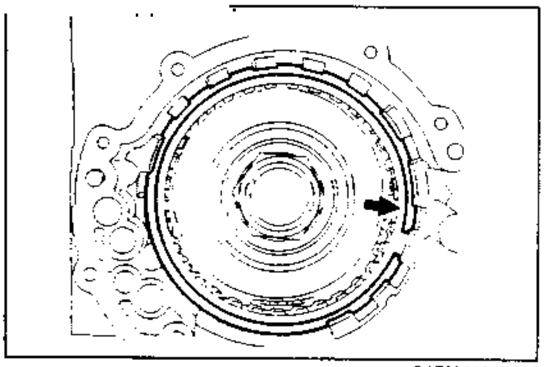
47. Pull out them (A) toward you.
48. Inspection of 1st & reverse brake piston stroke.
    (1) Measure the piston stroke while applying and releasing the compressed air 392 - 784 kPa (4 - 8 kgf/cm², 56 - 113 ft-lb) through oil hole section (A), using the following SST.
        SST: 09351-87210-000
        Specified Value: 1.4 - 2.2 mm

NOTE:
- If the piston stroke exceeds than specification above, inspect the flanges, discs or replace them.



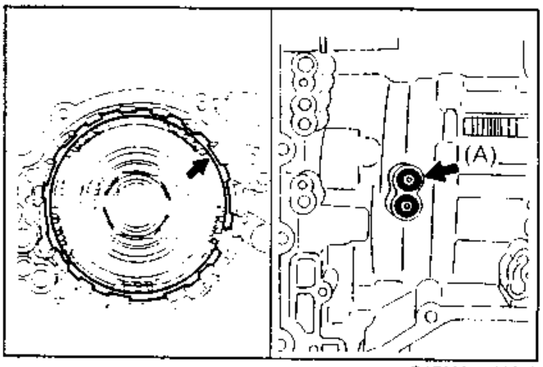
GAT00209-99999

49. Remove the ring hole snap, using the flat driver.
50. Remove the flange brakes (F), disc, clutch & flanges (D) and plate brakes (P) in the following order.
    F → D → P → D → P → D → P → D → F



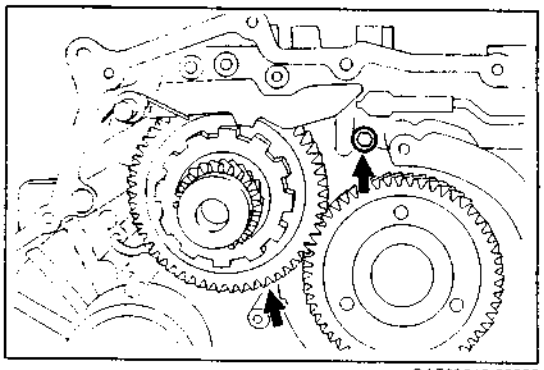
GAT00210-99999

51. Remove the ring retainer and return spring subassembly brake piston return.
52. Remove the piston 1st & reverse brake with O-ring installed while applying and releasing the compressed air 392 - 784 kPa (4 - 8 kgf/cm^2, 56 - 113 ft-lb) through oil hole section (A).
    NOTE:
    - **Never reuse the removed O-rings.**
    - **If the piston will not pop out, it is recommended to use needle nose pliers for removal.**



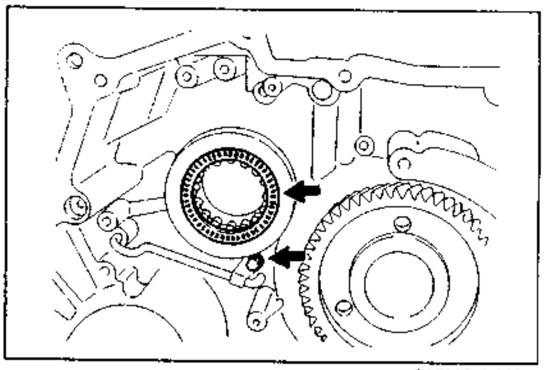
GAT00211-99999

53. Remove the pawl parking lock and bracket parking lock pawl by removing the tow bolts.
54. Pry off the spring torsion of pawl parking lock.
55. Remove the pawl parking lock by pulling out the shaft parking lock pawl with the spring torsion installed.
56. Pull out the gear subassembly counter driven toward you.



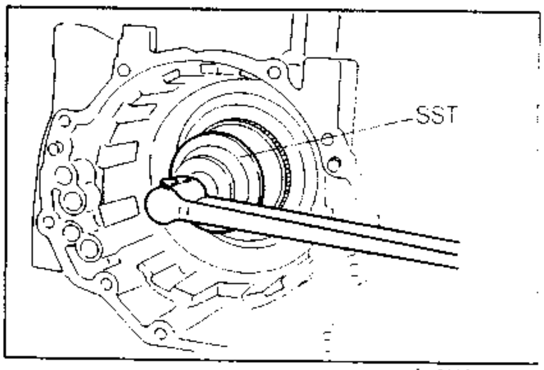
GAT00212-99999

57. Remove the integrated needle roller bearing with race.
    Race Dimension
    Outer Diameter: 65.7 mm
    Inner Diameter: 51.0 mm
    Thickness: 2.8 mm
58. Remove the tube transaxle lube apply by removing a bolt.

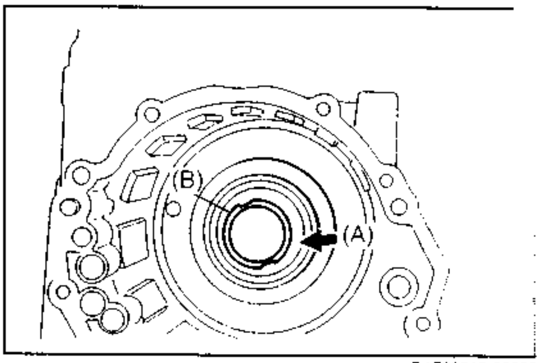


GAT00213-99999

59. Measure the starting torque of the gear subassembly counter drive, using the torque wrench and following SST.
    SST: 09351-87718-000
    Specified Value
    Torque Wrench: 0.49 - 3.9 N·m
    (0.5 - 4.0 kgf-cm, 0.36 - 3.9 ft-lb)
60. Unstake the lock sections of lock nut.
    NOTE:
    - Never reuse the removed lock nut.

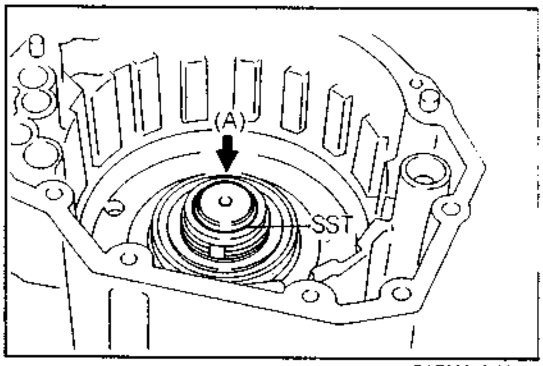


61. Clamp the SST (09351-87717-000) in a vice and place the transaxle housing onto the SST above.
62. Measure the transaxle housing rotational torque, using the push-pull gauge or the like.
    Specified Value: 1.27 - 10.3 N
    (0.13 - 1.05 kgf, 0.28 - 2.3 lb)
63. Remove the lock nut.
64. Remove the SST (09351-87717-000) from the vice.



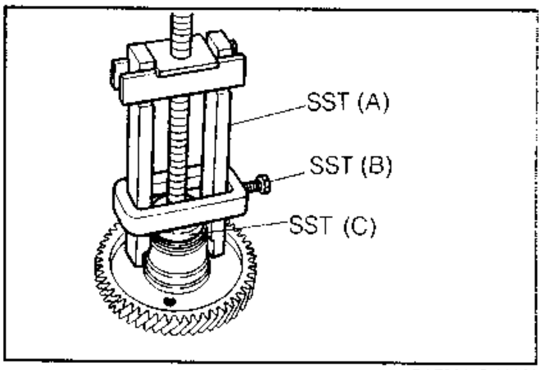
GAT00215-99999

65. Press the gear subassembly counter drive, using the following SST.
    SST: 09351-87715-000
66. Remove the spacer counter bearing.
    NOTE:
    - Never reuse the removed spacer counter bearing as it is for crushable type.



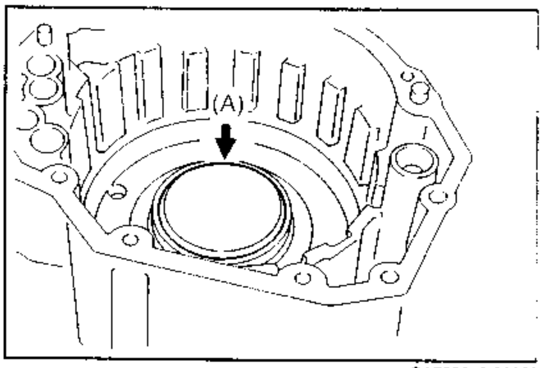
GAT00216-99999

67. Collapse the outer race of the bearing tapered roller of the gear subassembly counter drive.
68. Remove the inner race of the bearing tapered roller, using the following SST.
    SST (A): 09351-87703-000
    (B): 09351-87704-000
    (C): 09351-87715-000



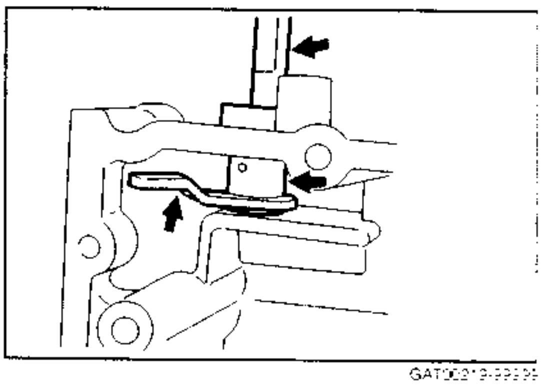
GAT00217-99999

69. Remove the ring shaft snap (A)
70. Press the outer race of the transaxle case, using the following SST.
    SST: 09351-87720-000

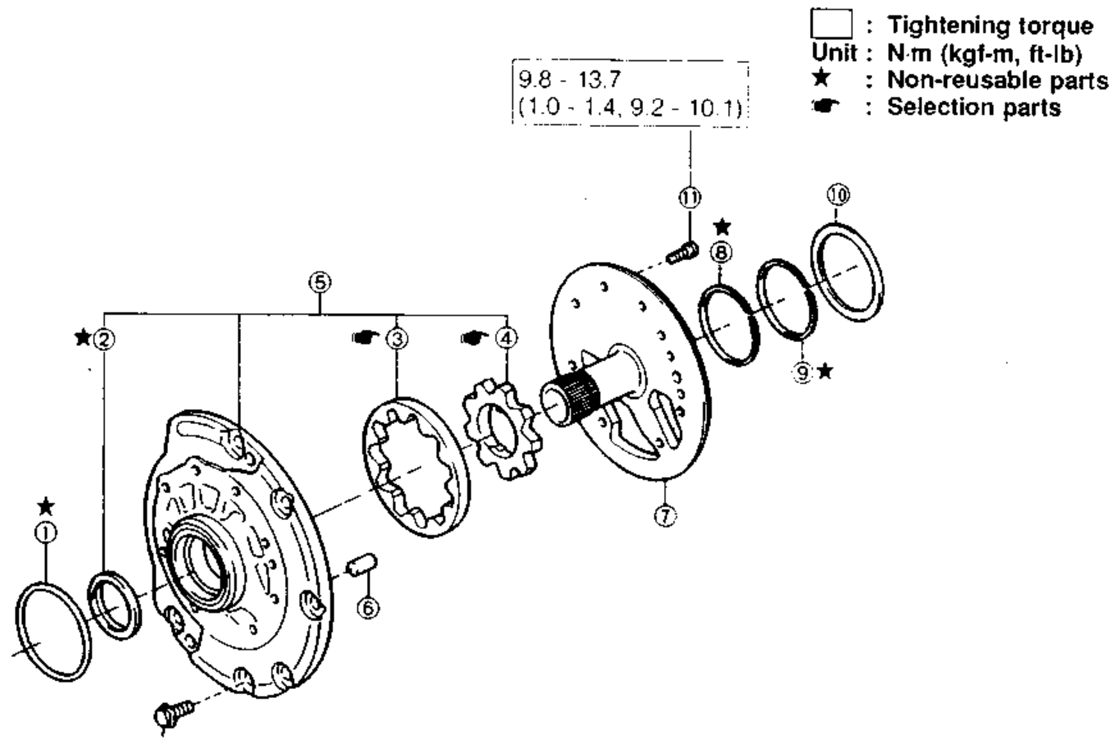


GAT00218-99999

71. Collapse the spacer, using the chiesel and hammer or the like.
72. Remove the slotted spring pin, using the pin punch or the like.
    NOTE:
    - Never reuse the removed spacer and slotted spring pin.
73. Remove the shaft subassembly manual valve lever, lever manual valve and oil seal.
    NOTE:
    - Never reuse the removed oil seal.


GAT00219-99999

OIL PUMP COMPONENT



① O-ring
② Oil seal
③ Gear oil pump driven
④ Gear oil pump drive
⑤ Body oil pump
⑥ Knock pin
⑦ Shaft subassembly stator
⑧ Seal ring
⑨ Seal ring
⑩ Washer clutch drum thrust
⑪ Torx bolt (8 pieces)

GAT00220-99999

DISASSEMBLY OF OIL PUMP

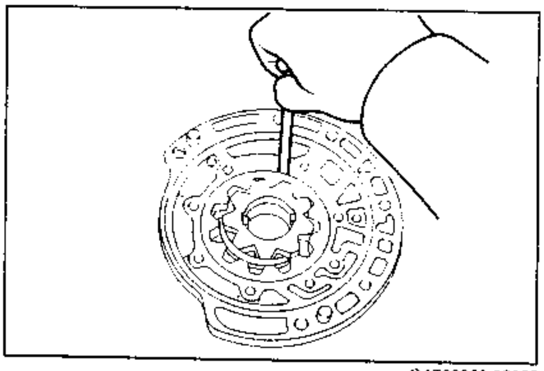
1. Remove the two seal rings and washer clutch drum thrust from the shaft subassembly stator back side.
   NOTE:
   - Never reuse the removed ring seals once removed.
2. Remove the shaft subassembly stator by removing the eight torx bolts, using the torx wrench.
3. Remove the oil seal.
   NOTE:
   - Never reuse the removed oil seal.

GAT00221-00000

INSPECTION OF OIL PUMP

1. Push the gear oil pump driven to one side of the body oil pump. Measure the body clearance of the oil pump driven gear, using a feeler gauge.
   Specified Body Clearance: 0.075 - 0.15 mm
   Maximum Body Clearance: 0.3 mm

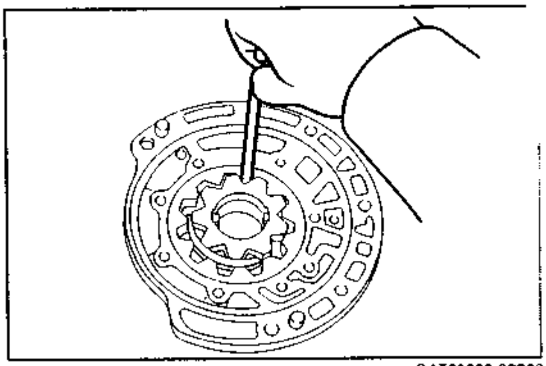
   If the body clearance is greater than the maximum, replace the body oil pump and shaft subassembly stator.



GAT00222-99999

2. Measure the tip clearance of gear oil pump driven between the gear oil pump drive teeth and the crescent-shaped part of the pump body.
   Specified Tip Clearance: 0.004 - 0.248 mm
   Maximum Tip Clearance: 0.3 mm

   If the tip clearance is greater than the maximum, replace the body oil pump and shaft subassembly stator.



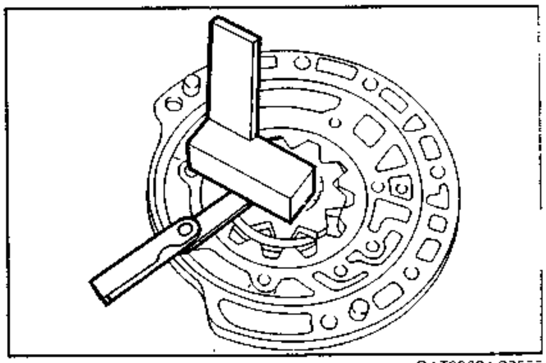
GAT00223-99999

3. Measure the side clearance of both gears, using a steel straightedge and a feeler gauge.
   Specified Side Clearance: 0.02 - 0.05 mm
   Maximum Side Clearance: 0.1 mm

   The drive and driven gears come in three different thicknesses.
   Drive=(A) and Driven Gear=(B) Thickness (Unit: mm)

(A)	(B)
9.440 - 9.449	9.440 - 9.449
9.450 - 9.459	9.450 - 9.459
9.460 - 9.470	9.460 - 9.470
9.471 - 9.480	9.471 - 9.480
9.481 - 9.490	9.481 - 9.490

   If the thickest gear can not make the side clearance within the specification, replace the assembly or body oil pump and shaft subassembly stator.



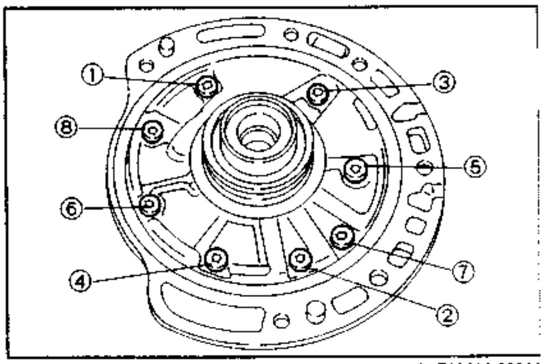
GAT00224-99999

ASSEMBLY OF OIL PUMP

1. Installation of oil seal
   Install a new oil seal, using the following SST in combination with a hammer. The seal end should be flush with the outer edge of the pump body. (see page AT–55)
   SST: 09351-32140-000

GAT00225-00000

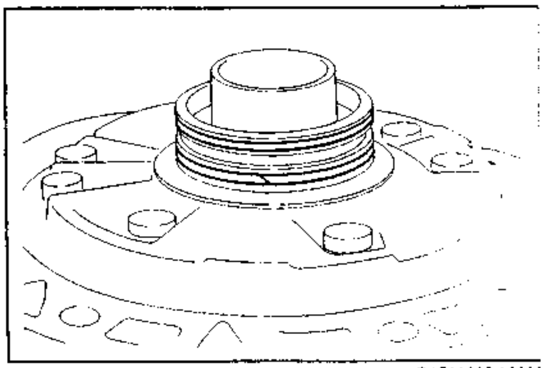
2. Install the gear oil pump driven and gear oil pump drive.
   Make sure that the top of the gears are facing upward.
3. Tighten the eight torques bolts.
   NOTE:
   - **Be sure to tighten the bolts alternately and uniformly. (The right figure indicates a typical example of the tightening sequence.)**
     Tightening Torque: 9.8 - 13.7 N·m
     (1.0 - 1.4 kgf-m, 7.2 - 10.1 ft-lb)



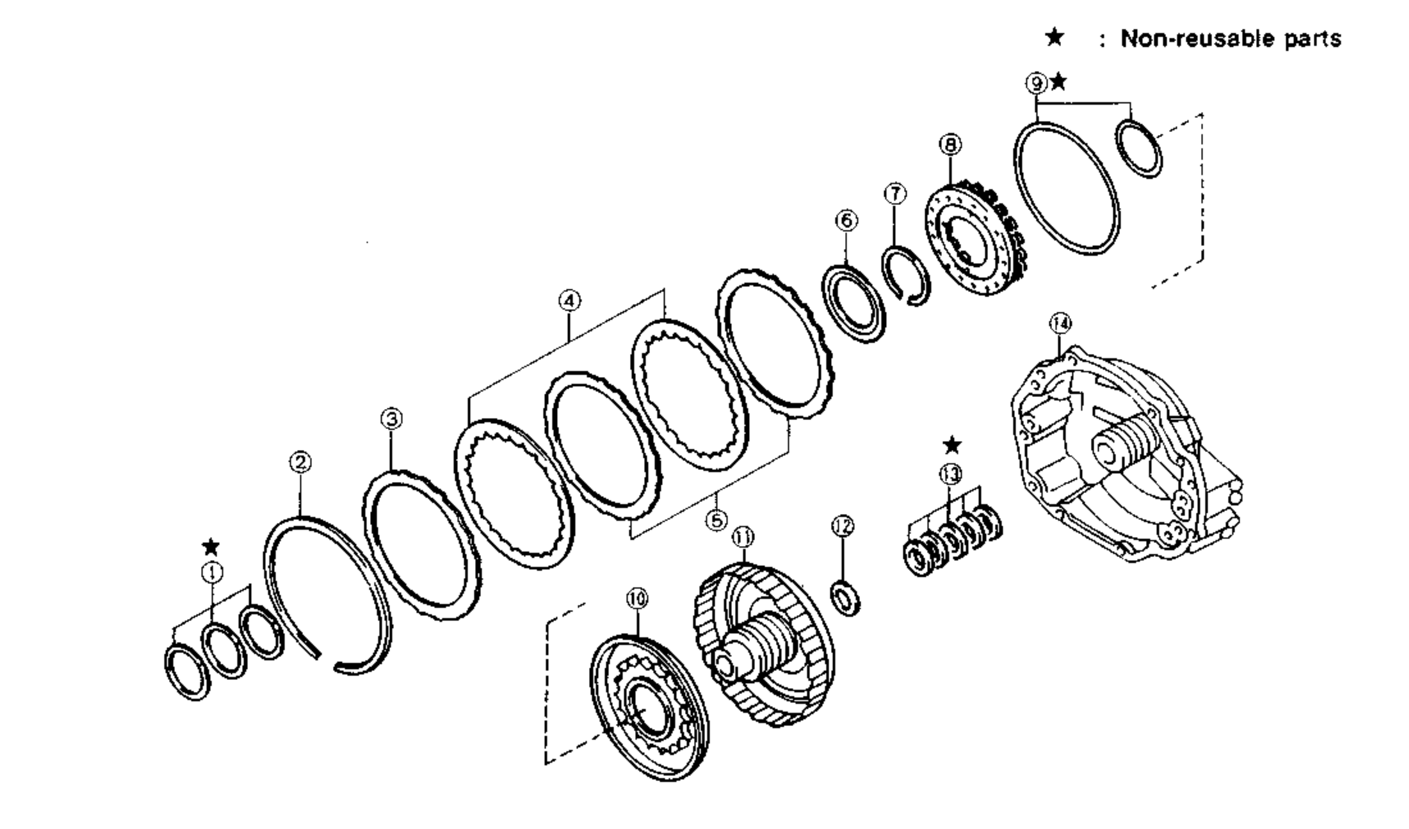
GAT00226-99999

4. Install the two new ring seals
   NOTE:
   - **Do not spread the ring end excessively.**

5. Coat the washer clutch drum thrust with vaseline and install them.
6. Check of gear oil pump drive and gear oil pump driven rotation
   Turn the gear oil pump drive with two screwdrivers and make sure it rotates smoothly.
   CAUTION:
   - **Be very careful not to damage the oil seal lip.**

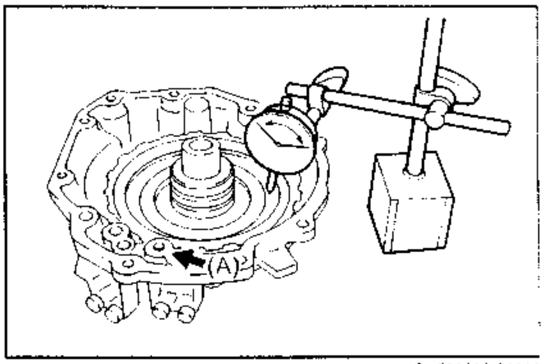


FORWARD CLUTCH (C1) COMPONENTS



① Ring clutch drum oil seal
② Ring hole snap
③ Flange clutch
④ Disc clutch
⑤ Plate clutch
⑥ Washer clutch drum thrust
⑦ Ring shaft snap
⑧ Spring subassembly forward clutch return
⑨ O-ring
⑩ Piston subassembly forward clutch
⑪ Drum subassembly clutch
⑫ Bearing thrust needle roller
⑬ Ring clutch drum oil seal
⑭ Transaxle rear cover

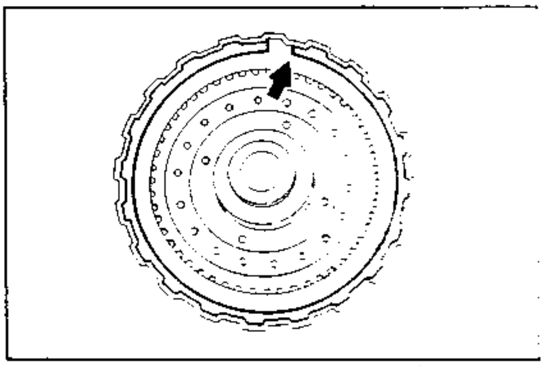
1. Measurement of piston stroke
   (1) Install the forward clutch (C1) assembly to the transaxle rear cover.
   (2) Measure the piston stroke while applying and releasing the compressed air 392 - 784 kPa (4 - 8 kgf/cm², 56 - 113 psi) through oil hole section (A), using a dial indicator.
   Specified Piston Stroke: 0.76 - 1.44 mm



NOTE:
- **The front end of a dial gauge should be contacted to the piston directly.**

DISASSEMBLY

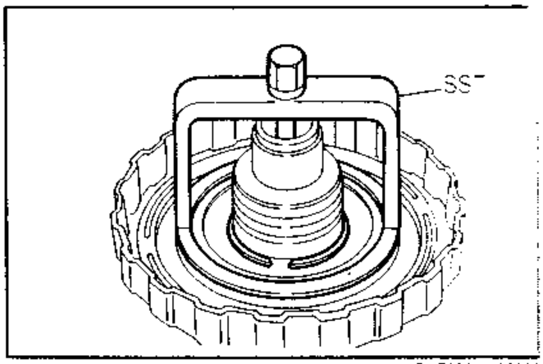
(3) If the piston stroke is greater than maximum, disassembly the inner parts.
(4) Remove the flange, discs and plates by removing the hole snap ring in the following order.
F = Flange Clutch
D = Disc Clutch
P = Plate Clutch
F → D → P → D → P



(5) Remove the washer thrust.

(6) Remove the spring subassembly forward clutch return by removing the ring shaft snap, using the following SST.

SST: 09351-87708-000



GAT00231-99999

NOTE:

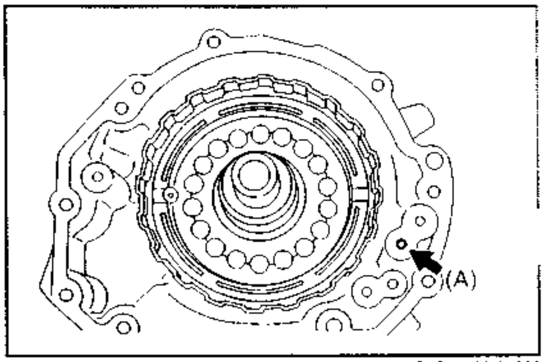
- Stop to tighten the SST when the ring shaft snap is free.

CAUTION:

- Never drop the protrusion section of the forward clutch drum, Failure to observe this caution way cause the malfunction of C1 cylinder revolution sensor.

(7) Install the piston subassembly forward clutch to the transaxle rear cover.

(8) Remove the piston subassembly forward clutch with the O-rings installed through oil hole (A), using the compressed air 392 - 784 kPa (4 - 8 kgf/cm^2, 56 - 113 psi).

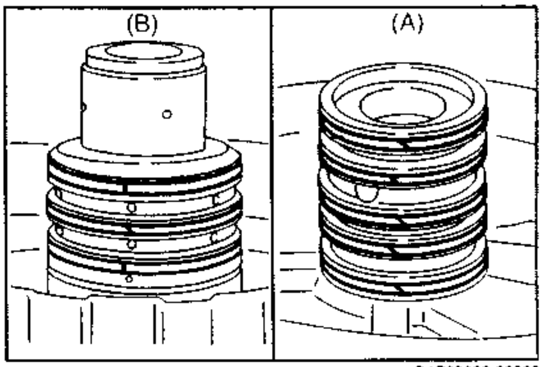


GAT00232-99999

NOTE:

- If the piston will not pop out, it is recommended to use needle-nose pliers for removal.
- Never reuse the removed O-rings.

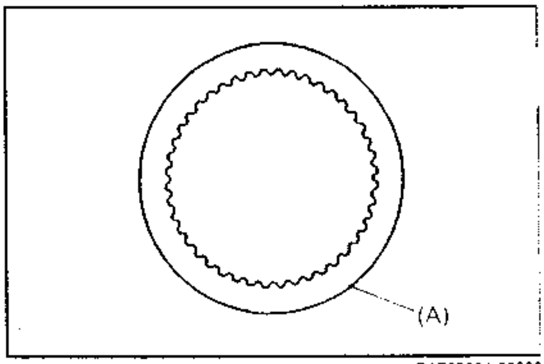
(9) Remove the ring clutch drum oil seals of the drum subassembly forward clutch (B) and transaxle rear cover (A).



GAT00233-99999

INSPECTION

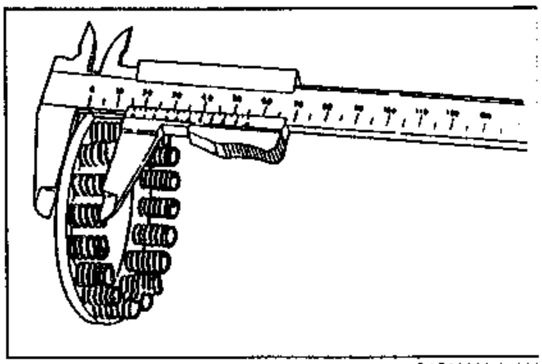
1. Check that the sliding surfaces of the discs, plates and flanges are not worn or burnt. If necessary, replace them.
   NOTE:
   - If the lining of the disc is exfoliated or discolored, or even a part of the printed numbers (A section AD506) is defaced, replace all discs.
   - Before assembling new discs, soak them in the ATF for at least two hours.



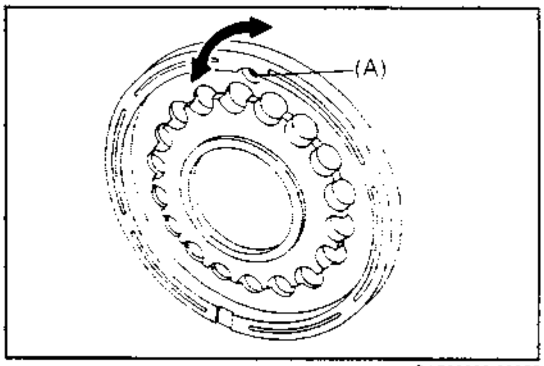
GAT00234-99999

2. Measure the height of the spring subassembly forward clutch return.
   Specified Value: 22 mm

   NOTE:
   - Do not apply excessive measuring force when measuring the height of the spring. Perform the measurement at several points.



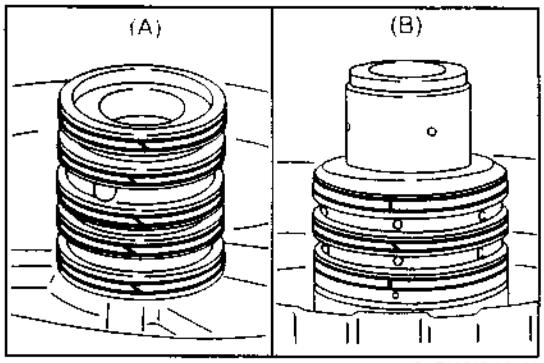
3. Ensure that creaking noise of the ball (A) is emitted when shaking the piston subassembly forward clutch clockwise and counterclockwise. (Namely, ensure that the ball is free.)
4. Check that the valve exhibits no leakage from the backside of oil hole (A) by applying the low-pressed air.



GAT00236-99999

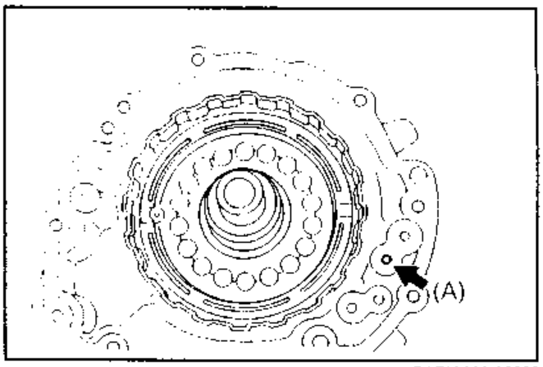
ASSEMBLY

1. Coat the new ring clutch drum oil seals with the ATF.
2. Install them to the transaxle rear case (A) and drum subassembly forward clutch (B).
   NOTE:
   - **Do not spread the ring ends excessively.**
   - **Make sure that the opening ends of the oil seal rings are not lined up so as to prevent fluid leakage.**



GAT00237-99999

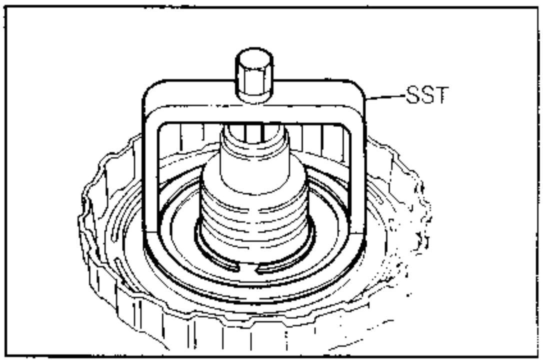
3. Coat the new O-rings with the ATF.
4. Install the new O-rings to the piston subassembly forward clutch.
5. Press the piston subassembly forward clutch to the drum subassembly clutch with your fingers.
   NOTE:
   - **Make sure that the O-ring is not to twisted or deviated from position during insertion of the piston.**



GAT00238-99999

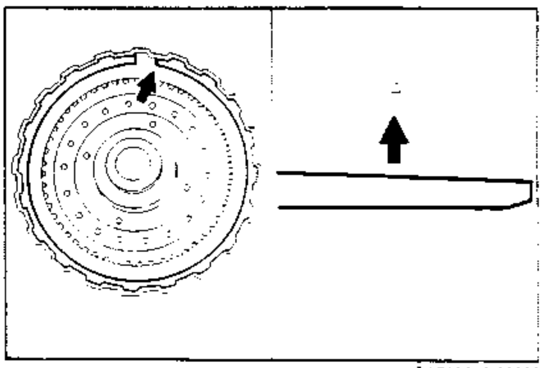
6. Place the spring subassembly forward clutch return.
7. Install the ring shaft snap, using the following SST and standard snap ring plier.
   SST: 09351-87708-000

   NOTE:
   - **Make sure that the ring end are not aligned with spring retaine claw.**



8. Remove the aforesaid SST.
9. Install the ring hole snap by installing the plates (P), disces (D) and flange in the following order.
   P → D → P → D → F

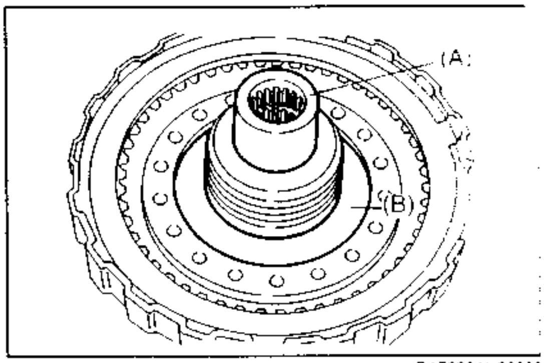
   NOTE:
   - **Ensure that the flat end of flange faces toward the upper side (A). Also, make sure that the opening end of ring is not aligned with the groove section.**



10. Coat the race (A) and washer clutch drum thrust (B) with the vaseline.

Race Dimension: Unit: mm

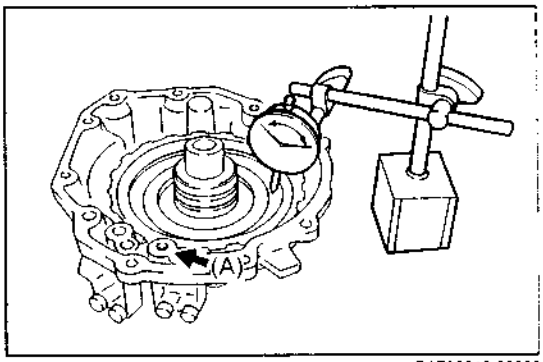
Outer diameter	30.3
Inner diameter	19.1
Thickness	2.7



GAT00241-99999

11. Install them to the drum subassembly clutch.

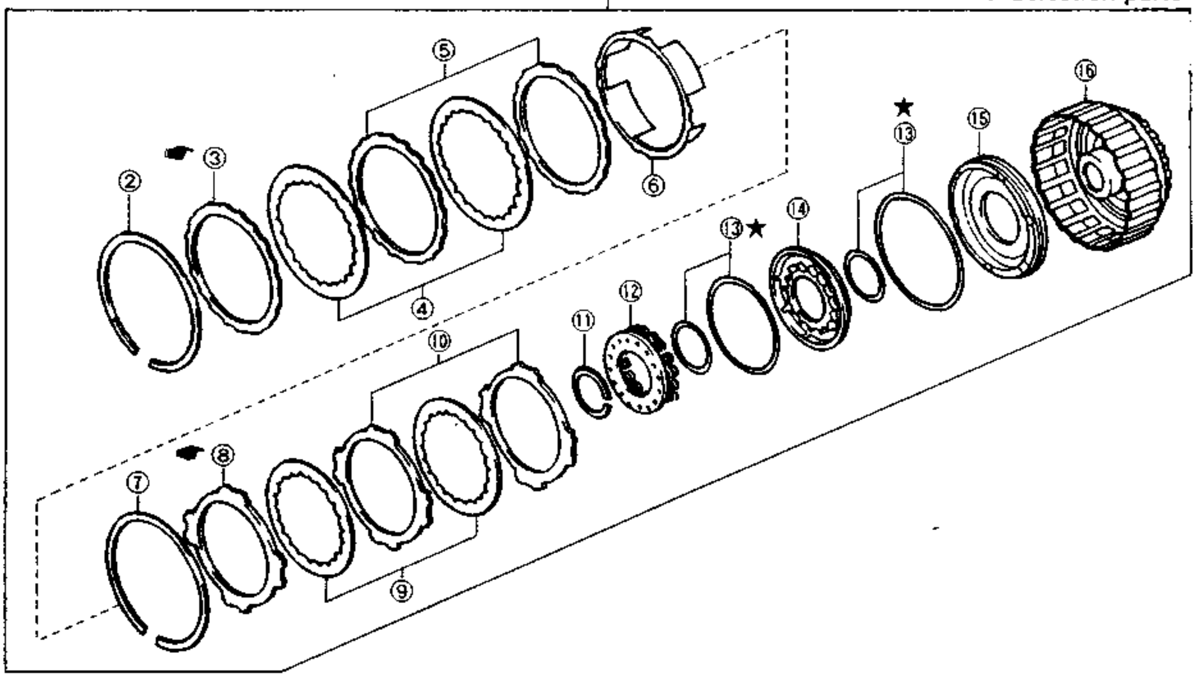
12. Measure the piston stroke of the piston subassembly forward clutch again.



GAT00242-99999

OVERDRIVE (CO) & COAST (C3) CLUTCHES

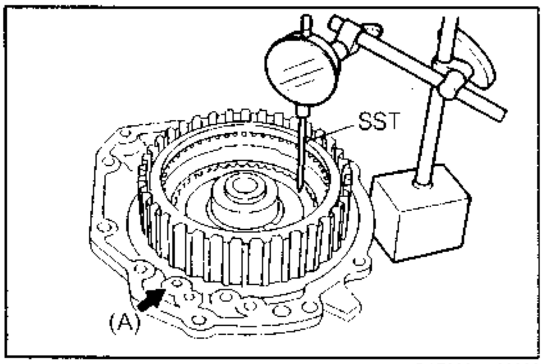
★ : Non-reusable parts
☛ : Selection parts



① Clutch assembly overdrive direct multiple D
② Ring hole snap
③ Flange clutch
④ Disc clutch
⑤ Plate clutch
⑥ Flange clutch
⑦ Tube overdrive clutch apply
⑧ Ring hole snap
⑨ Flange clutch
⑩ Disc clutch
⑪ Plate clutch
⑫ Flange clutch
⑬ Ring shaft snap
⑭ Spring subassembly overdrive clutch return
⑮ O-ring
⑯ Piston subassembly coast clutch
⑰ Piston overdrive clutch
⑱ Drum subassembly overdrive clutch

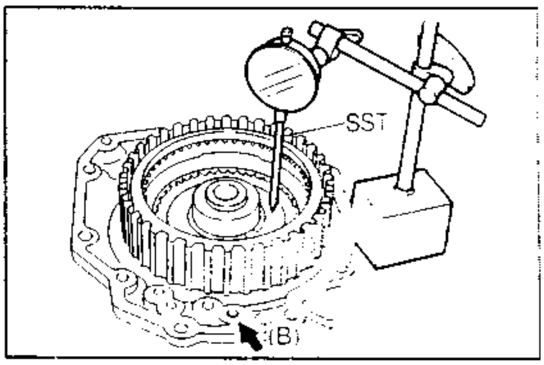
GAT00243-99999

1. Measurement of piston stroke for overdrive and coast clutches.
   (1) Install the piston subassembly forward clutch and overdrive/coast clutch assembly to the transaxle rear cover.
   (2) Measure the piston stroke while applying and releasing the compressed air 392 - 784 kPa (4 - 8 kgf/cm^2, 56 - 113 psi) through oil hole of (A) and (B) section, using a dial indicator and following SST.
   SST: 09351-87203-000



GAT00244-99999

Specified Piston Stroke:
(A) ..... Overdrive Clutch: 0.75 - 1.05 mm
(B) ..... Coast Clutch: 2.68 - 3.02 mm



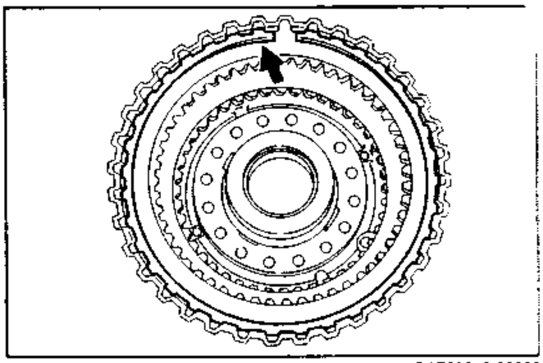
GAT00245-99999

NOTE:
- If the piston stroke is greater than maximum, select the flanges or disassembly the inner parts.

DISASSEMBLY

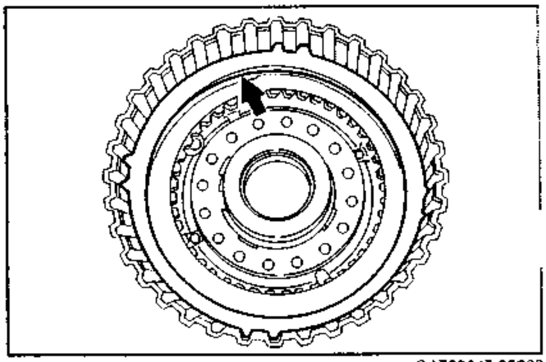
1. Remove the flanges (F), discs (D) and plate (P) of the overdrive clutch in the following order by removing the ring hole snap.
   F (A) → D → P → D → F

   NOTE:
   - **Measure the thickness of removed flange (A) and record it for the reference of piston stroke confirmation.**



GAT00246-99999

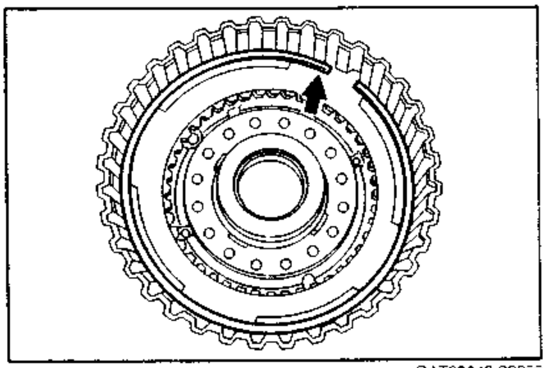
2. Remove the tube overdrive clutch apply.



GAT00247-99999

3. Remove flanges (F), discs (D) and plate of the piston subassembly coast clutch in the following order by removing the ring hole snap .
   F (A) → D → P → D → F

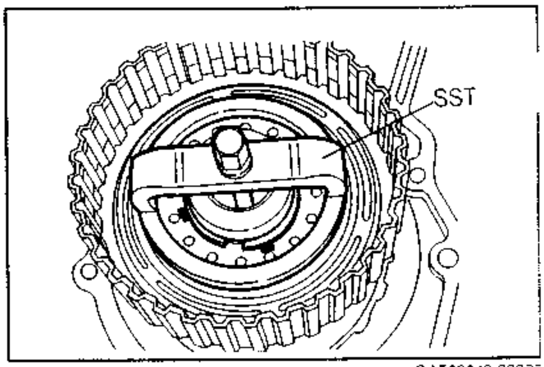
   NOTE:
   - **Measure the thickness of removed flange (A) and record it for the reference of piston stroke confirmation.**



GAT00248-99999

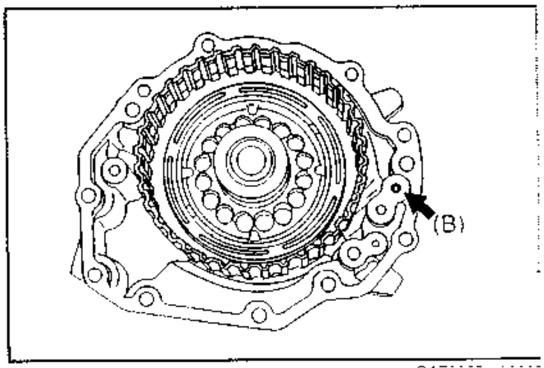
4. Remove the spring subassembly overdrive clutch return by removing the ring shaft snap, using the following SST.
   SST: 09351-87707-000

   NOTE:
   - **To prevent the spring seat deformation, be sure to keep a clearance of 1 - 2 mm between return spring seat subassembly and shaft snap ring.**



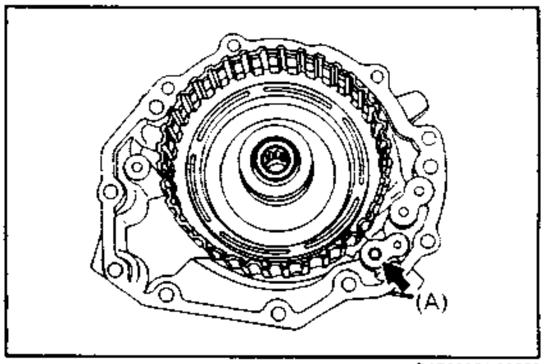
GAT00249-99999

5. Install the forward clutch assembly, piston subassembly coast clutch with the piston overdrive clutch installed.
6. Remove the piston subassembly coast clutch with the O-rings installed, using the compressed air 392 - 784 kPa (4 - 8 kgf/cm^2, 56 - 113 psi) through oil hole (B).
7. Remove O-rings from the piston.
   NOTE:
   - **Never reuse the removed O-rings.**



Remove the piston overdrive clutch with the compressed air 392 - 784 kPa (4 - 8 kgf/cm², 56 - 113 psi) through oil hole (A).

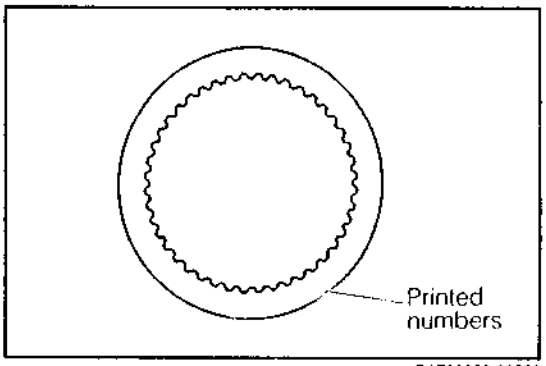
9. Remove the O-rings from the piston.
   NOTE:
   - Never reuse the removed O-rings.



GAT00251-99999

INSPECTION

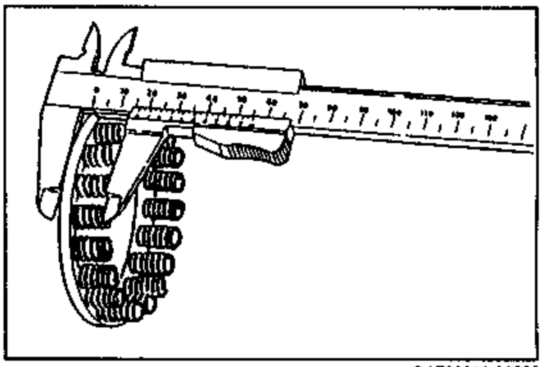
1. Check that the sliding surfaces of the discs, plates and flanges are not worn or burnt. If necessary, replace them.
   NOTE:
   - **If the lining of the disc is exfoliated or discolored, or even a part of the printed numbers is defaced, replace all discs.**
   - **Before assembling new discs, soak them in the ATF for at least two hours.**
     (A): O/drive 2A02
     (B): Coast AD50GA010



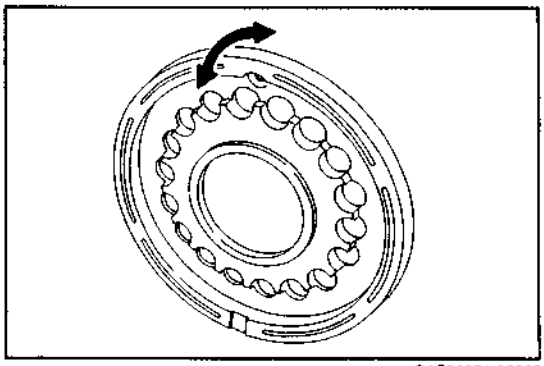
GAT00252-99999

2. Measure the height of the piston subassembly coast clutch.
   Specified Value: 18.9 mm

   NOTE:
   - **Do not apply excessive measuring force when measuring the height of the spring. Perform the measurement at several points.**

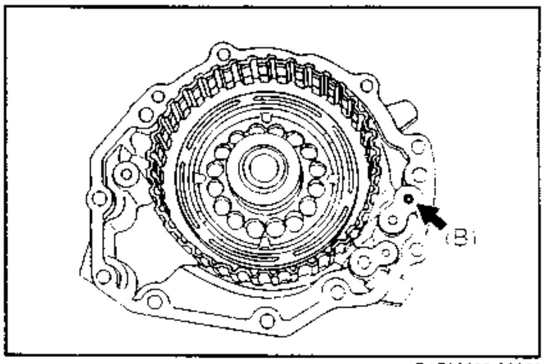

GAT00253-99999

3. Ensure that creaking noise of the ball is emitted when shaking the piston clockwise and counterclockwise. (Namely, ensure that the ball is free.)


GAT00254-99999

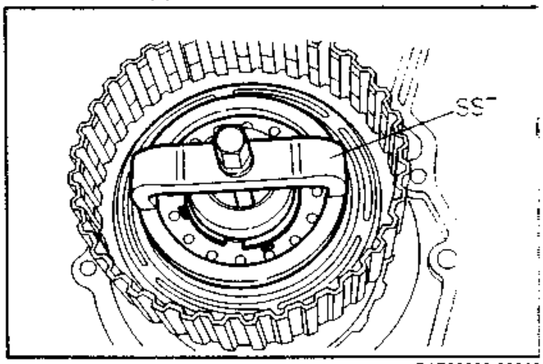
ASSEMBLY

1. Coat the new O-rings with the ATF.
2. Install them to the pistons.
3. Set the piston subassembly coast clutch to the piston overdrive clutch by pushing with your fingers.
4. Press the overdrive and coast clutch piston to the drum subassembly overdrive clutch.
   - **Make sure that the O-rings are not twisted or deviated from position during insertion of the piston.**



GAT00255-99999

5. Install the spring subassembly overdrive clutch return, using the following SST.
   SST: 09351-87707-000

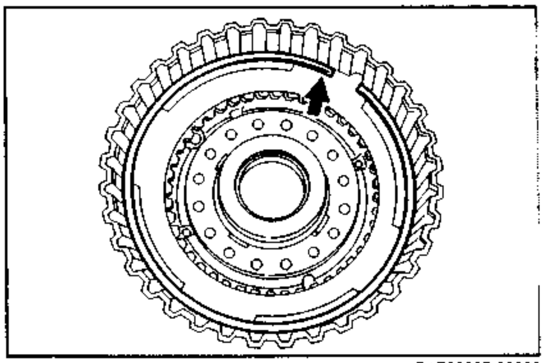


GAT00256-99999

6. Install the ring shaft snap.
   NOTE:
   - To prevent the spring seat deformation, be sure to keep a clearance of 1 - 2 mm between spring seat and ring.
   - Ensure that the opening end of ring are not aligned with the claw section of the return spring seat subassembly.

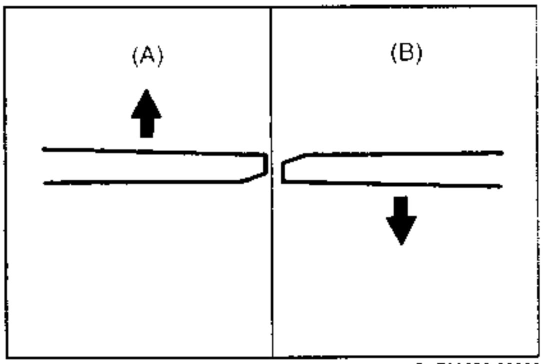
7. Select and measure the correct thickness of the coast clutch flange (B).
   Parts Availability Unit: mm

Thickness	Parts number
3.6	35635-87706
3.8	35635-87708
4.0	35635-87709


GAT00257-99999

8. Install the flange (F), discs (D) and plate (P) of the coast clutch in the following order.
   F (A) → D → P → D → F (B)

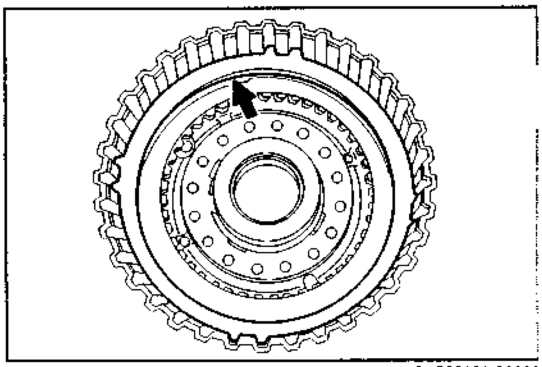
   NOTE:
   - Be sure to confirm the flat section of the flange (B) which is selected in the step 7 faces toward the piston side and also flange (A) faces toward the upper side.



GAT00258-99999

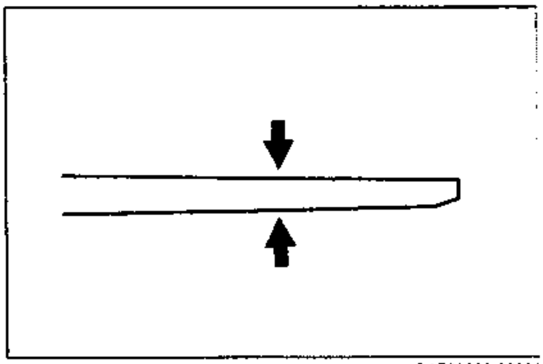
9. Install the ring hole snap.
   NOTE:
   - Ensure that the opening end of ring are not aligned with the groove section of the drum.

10. Install the tube overdrive clutch apply.


GAT00259-99999

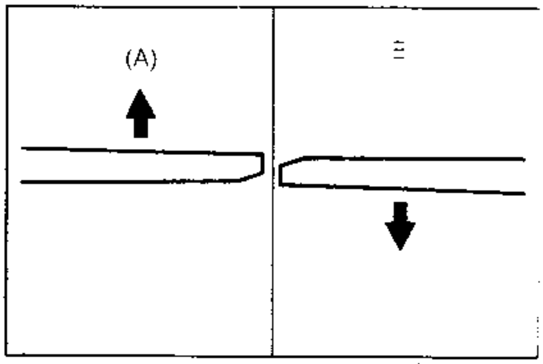
11. Select and measure the correct thickness of the flange clutch (B) for overdrive.
    Parts Availability Unit: mm

Thickness	Parts number
3.6	35635-87702
3.8	35635-87704
4.0	35635-87705


GAT00260-99999

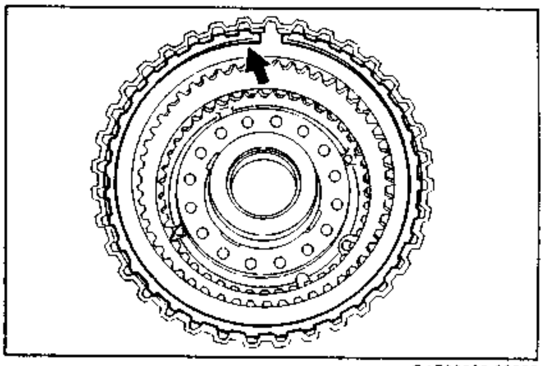
. Install the flanges (F), discs (D) and plate of the overdrive clutch in the following order.
F (A) → D → P → D → F (B)

NOTE:
- Be sure to confirm the flat section of the flange (B) which is selected in the step 11 faces toward the piston side and also flange (B) faces toward the upper side.

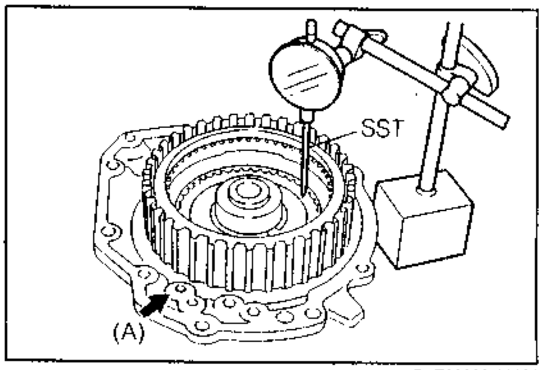


GAT00261-99999

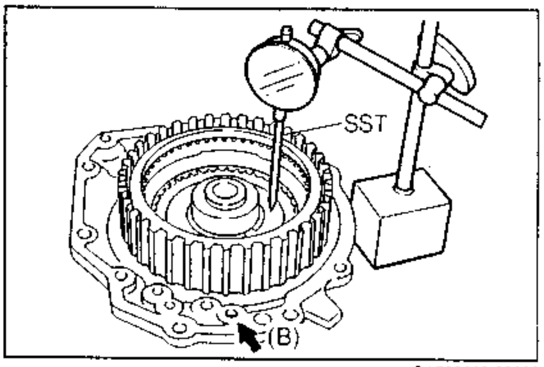
13. Install the ring hole snap.
NOTE:
- Ensure that the opening end of ring are not aligned with the groove section of the drum.


GAT00262-99999

14. Install the forward clutch assembly and clutch assembly overdrive direct multiple D to the transaxle rear cover.
15. Measure the piston stroke again, using a dial indicator and the following SST.
SST: 09351-87203-000
Specified Piston Stroke
(A) ..... Overdrive Clutch: 0.75 - 1.05 mm
(B) ..... Coast Clutch: 2.68 - 3.02 mm

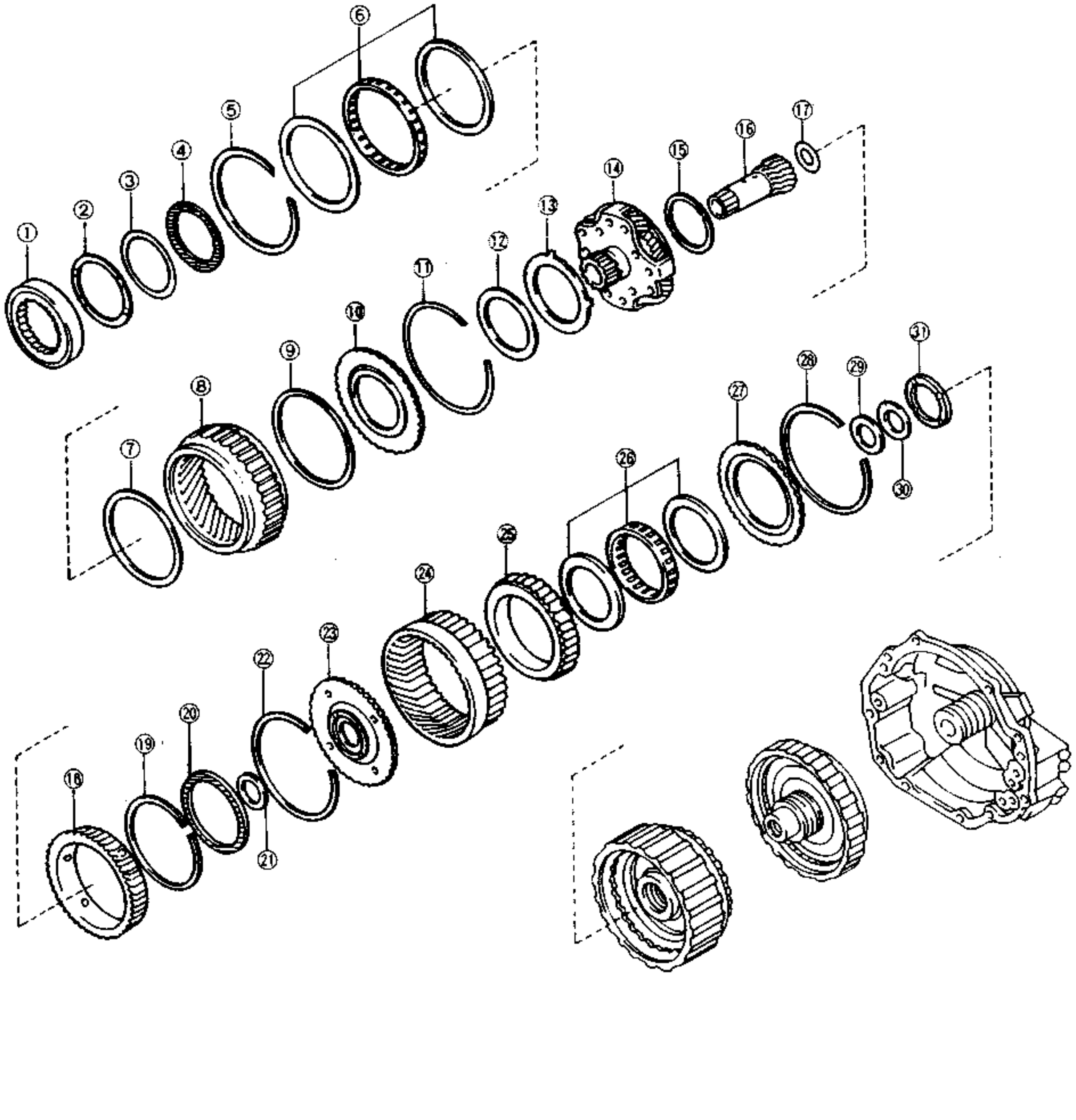


GAT00000-99999



GAT00263-99999

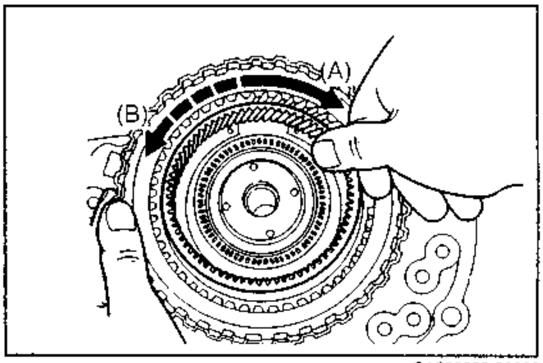
FRONT AND REAR PLANETARY RING GEAR



1. Race 1 way clutch inner
2. Washer thrust
3. Race thrust bearing
4. Bearing thrust needle roller
5. Ring hole snap
6. Clutch 1 way clutch
7. O-ring
8. Gear subassembly front planetary ring
9. O-ring
10. Flange front planetary ring gear
11. Ring hole snap
12. Bearing thrust needle roller
13. Race thrust bearing
14. Gear assembly planetary
15. Race thrust bearing
16. Gear subassembly planetary sun
17. Bearing thrust needle roller
18. Hub overdrive clutch
19. Ring hole snap
20. Bearing thrust needle roller
21. Race thrust bearing
22. Ring hole snap
23. Flange rear planetary ring gear
24. Gear subassembly rear planetary ring
25. Race 1 way clutch outer
26. Clutch 1 way
27. Retainer 1 way clutch
28. Ring hole snap
29. Bearing thrust needle roller
30. Race thrust bearing
31. Washer thrust

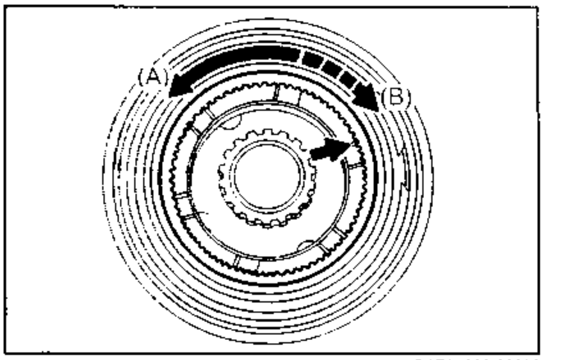
Operation check of 1 way clutches

1. Install the forward clutch assembly and overdrive/coast clutch assembly to the transaxle rear cover.
2. Install the planetary ring gear assembly to the forward clutch and install the 1 way clutch No. 0 (F0) to the planetary ring gear faces toward the front side.
   NOTE:
   - Ensure that the one-way clutch No. 0 (F0) turns freely when turned clockwise (A) and locked when turns counterclockwise (B).



GAT00265-99999

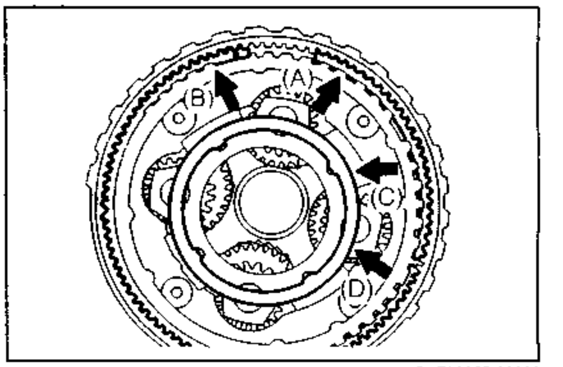
3. Remove the planetary ring gear assembly from the forward clutch assembly.
4. Turn over the planetary ring gear assembly.
5. Ensure that the one-way clutch No. 1 (F1) turns freely when turned counter clockwise (A) and locked when turns clockwise (B).



GAT00266-99999

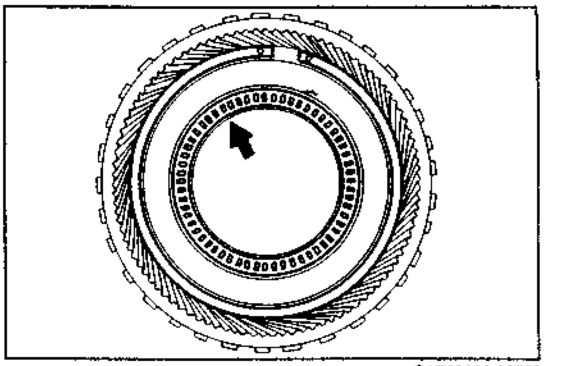
DISASSEMBLY — No.1 (F1)

1. Remove the following parts by removing the ring snap hole (A).
   — Hub overdrive clutch (B)
   — Gear assembly planetary (C)
   — Two race thrust bearings (D)



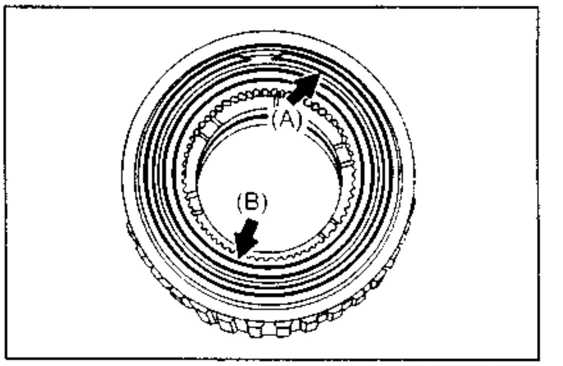
GAT00267-99999

2. Pull out the bearing thrust needle roller.
   Reference Valve for Bearing Unit: mm
   Outer Diameter ... Approx: 83.2 mm
   Inner Diameter .... Approx: 68.3 mm
   Thickness .... Approx: 2.6 mm


GAT00268-99999

3. Turn over them.

4. Remove the clutch 1 way No. 1 (F1) by removing the ring hole snap.

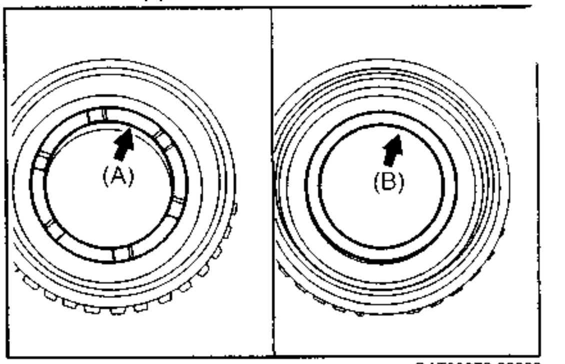


GAT00269-99999

5. Remove the washer thrust (A) and race thrust bearing (B).

Reference Value for (A) and (B) Unit: mm

	(A)	(B)
Outer diameter .... Approx	85.3	80.2
Inner diameter .... Approx	70.0	68.3
Thickness .... Approx	2.0	0.8

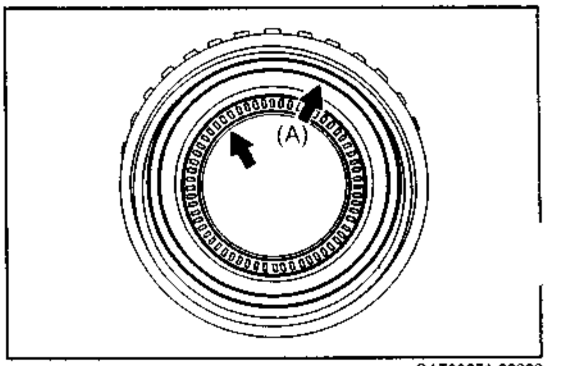


GAT00270-99999

6. Remove the bearing thrust needle roller.

Reference Value for Bearing

Outer Diameter ... Approx: 83.2 mm
Inner Diameter .... Approx: 64.9 mm
Thickness .... Approx: 2.7 mm



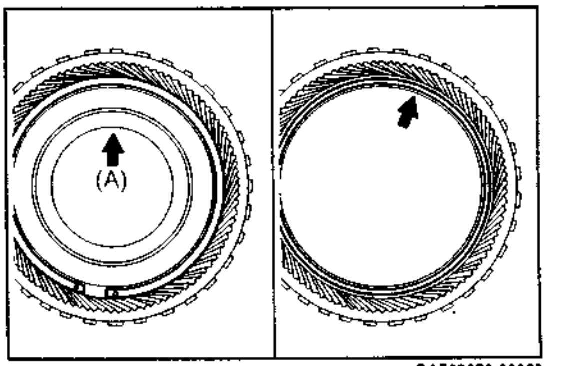
GAT00271-99999

7. Remove the O-ring.

NOTE:
- Never reuse the removed O-ring

8. Turn over them.
9. Remove the flange front planetary ring gear by removing the ring snap.
10. Remove the O-ring.

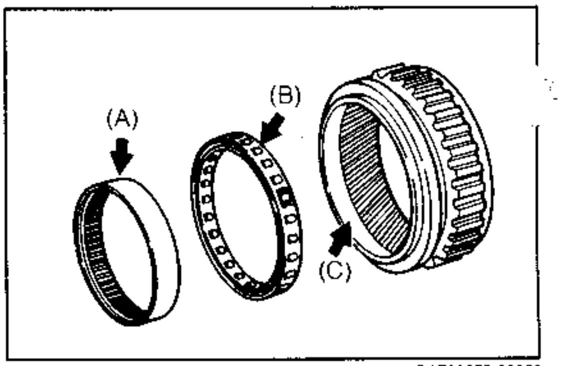
NOTE:
- Never reuse the removed O-ring



GAT00272-99999

INSPECTION

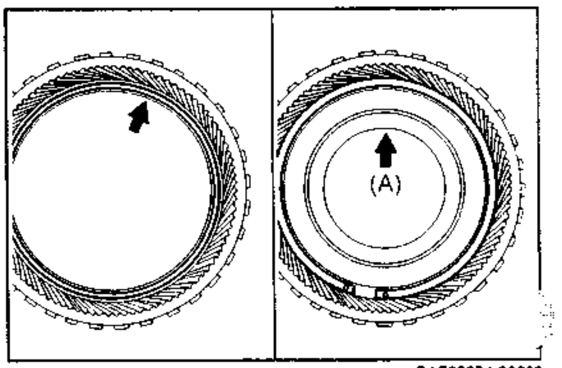
1. Visually check the discolored or scratch for the following parts.
   (A) Outer periphery of one-way clutch No. 1 inner race.
   (B) Outer periphery of roller.
   (C) Inner periphery of gear subassembly rear planetary ring.



GAT00273-99999

Assembly

1. Coat a new O-ring with ATF.
2. Place the O-ring.
3. Install the flange front planetary ring gear with the ring snap hole.



GAT00274-99999

Coat a new O-ring with ATF.

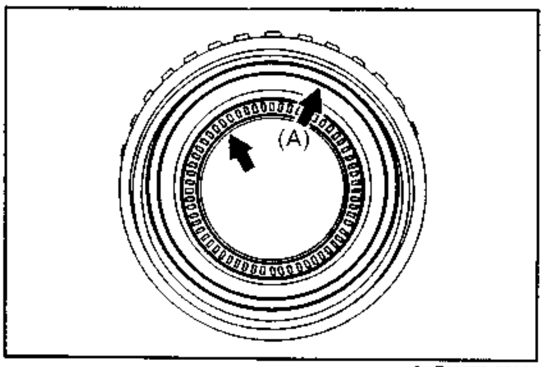
5. Install a new O-ring.
6. Place the bearing thrust needle roller.

    Reference Value for Bearing Unit: mm

    Outer Diameter ... Approx: 83.2

    Inner Diameter .... Approx: 68.4

    Thickness .... Approx: 2.7

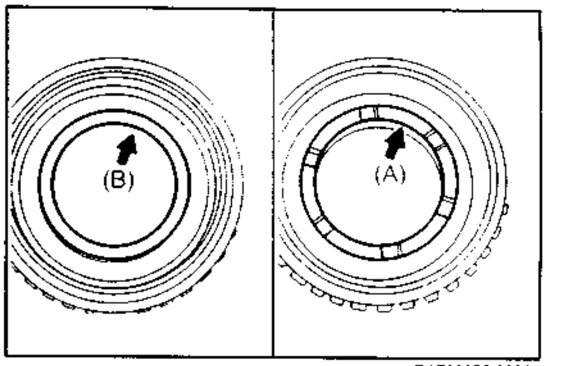


GAT00275-99999

7. Coat the race thrust bearing(A) and washer thrust(B) with ATF.
8. Install them.

    Reference Value for (A) and (B) Unit: mm

	(A)	(B)
Outer diameter .... Approx	80.2	85.3
Inner diameter .... Approx	68.3	70.0
Thickness .... Approx	0.8	2.0

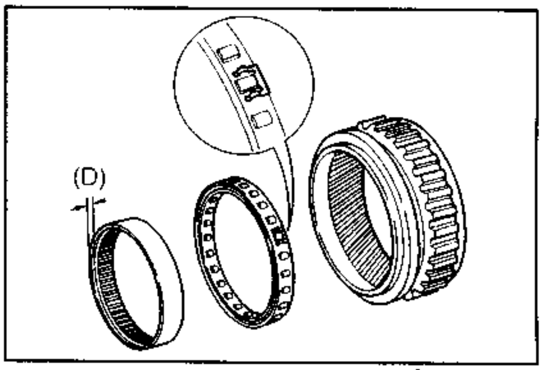


GAT00276-99999

9. Set the inner race and clutch 1 way.

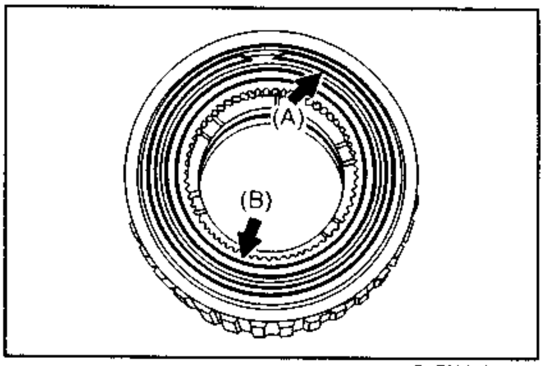
    NOTE:

    - **Ensure that the D section (shorter than rear) of the inner race faces toward the front side.**
    - **Ensure that the thinny section (E) of clutch 1 way faces toward the front side.**



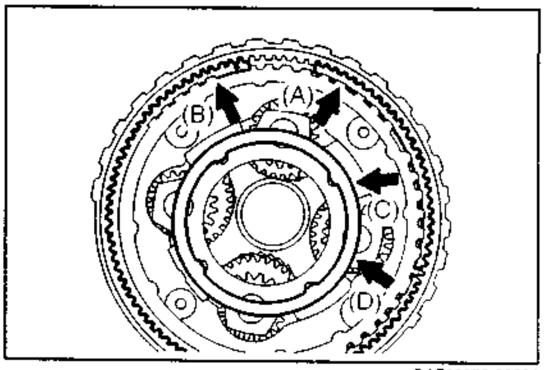
GAT00277-99999

10. Install the clutch 1 way No. 1 (F1) with the ring hole snap.
11. Turn over them.



GAT00278-99999

12. Coat the two race thrust bearings (D) with ATF.
13. Install the gear subassembly planetary (C), hub overdrive clutch (B) with the ring hole snap.
14. Install the two race thrust bearings (D).
15. Check the oreration of clutch 1 way.



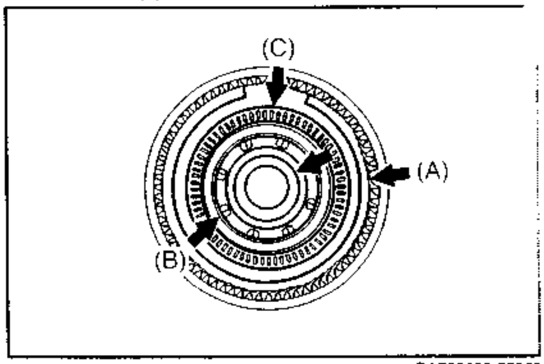
GAT00279-99999

Disassembly No. 0 (F0)

1. Remove the washer thrust, race thrust bearing (A) and bearing thrust needle roller (B).

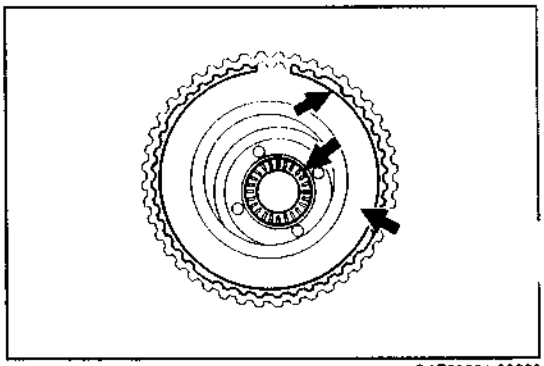
   Race (A) and Bearing (C) Dimension Unit: mm

	(A)	(B)
Outer diameter .... Approx	29.4	70.8
Inner diameter .... Approx	19.6	57.2
Thickness .... Approx	0.8	2.7



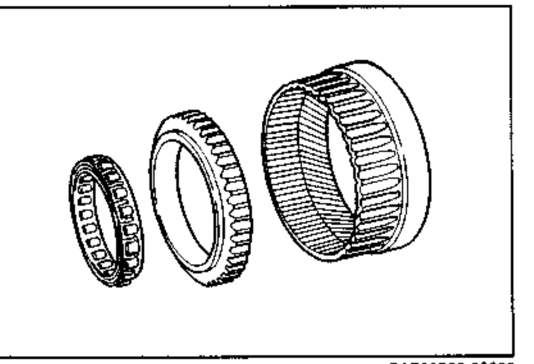
GAT00280-99999

2. Remove the retainer 1 way clutch with bearing thrust needle roller by removing the ring hole snap.


GAT00281-99999

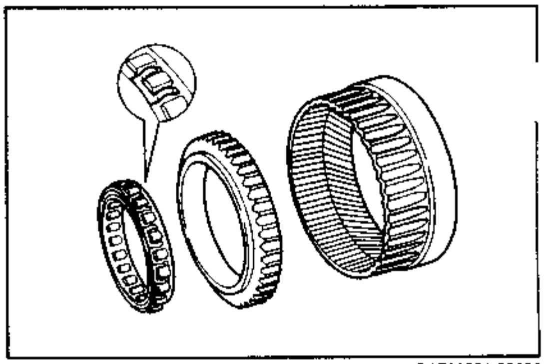
INSPECTION

1. Visually check the discolored or scratch of the following parts.
   (A) Outer periphery of clutch 1 way
   (B) Inner periphery of race clutch outer
   (C) Inner periphery of gear subassembly rear planetary ring


GAT00500-99999

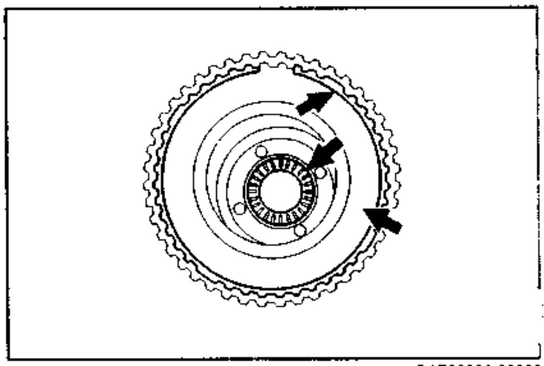
Assembly

1. Set the clutch 1 way to the race 1 way clutch outer and gear subassembly rear planetary ring.
   NOTE:
   - **Ensure that the thinny section (E) of clutch 1 way faces toward the front side.**


GAT00501-99999

2. Install the following parts aforesaid parts, flange rear planetary ring gear and bearing thrust needle rolled.
   Bearing Dimension: Unit: mm
   Outer Diameter ... Approx: 32.2
   Inner Diameter .... Approx: 19.0
   Thickness .... Approx: 2.6

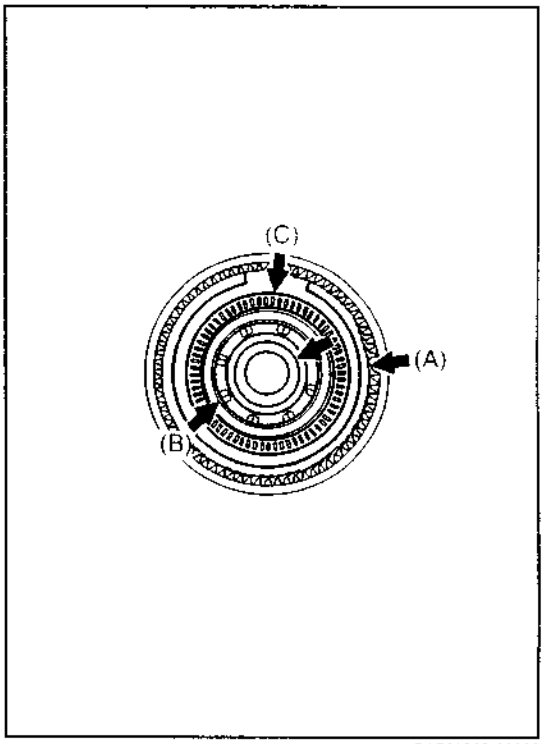
3. Install the hole snap ring.


GAT00502-99999

5. Turn over them.
5. Install the ring hole snap.
6. Coat the race thrust bearing (B), bearing thrust needle roller (C) and washer thrust with ATF.
7. Install them.

Race (A) and Bearing (C) Dimension Unit: mm

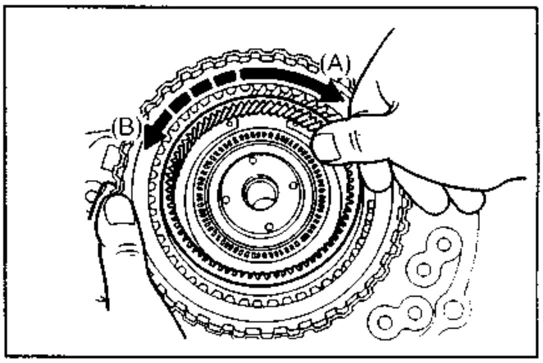
	(B)	(C)
Outer diameter .... Approx	29.4	70.8
Inner diameter .... Approx	19.6	57.2
Thickness .... Approx	0.8	2.7



GAT00503-99999

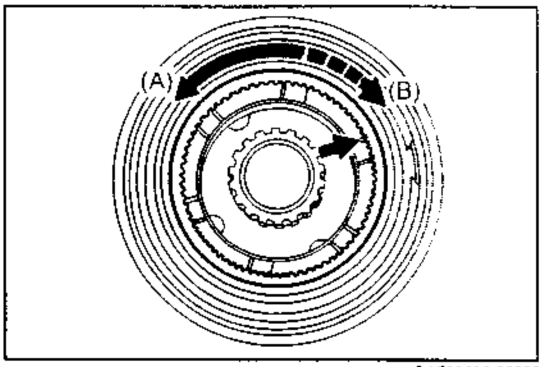
8. Operation check of one-way clutches
   (1) Install the forward clutch assembly and overdrive/coast clutch assembly to the transaxle rear cover.
   (2) Install the planetary ring gear assembly to the forward clutch and install the 1 way clutch No. 0 (F0) to the planetary ring gear faces toward the front side.

NOTE:
- **Ensure that the one-way clutch No. 0 (F0) turns freely when turned clockwise (A) and locked when turns counterclockwise (B).**



GAT00504-99999

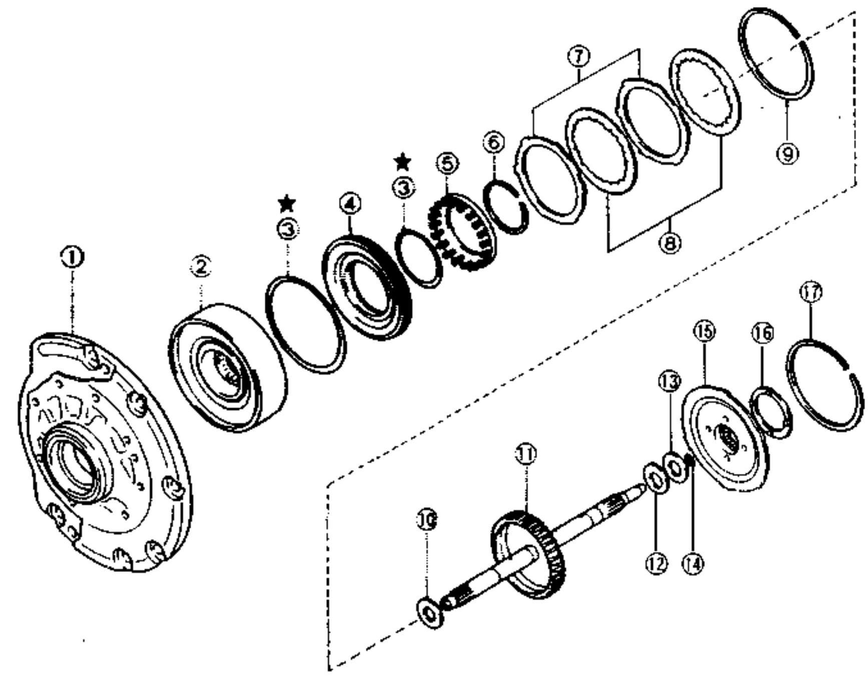
   (3) Remove the planetary ring gear assembly from the forward clutch assembly.
   (4) Turn over the planetary ring gear assembly.
   (5) Ensure that the one-way clutch No. 1 (F1) turns freely when turned counter clockwise (A) and locked when turns clockwise (B).



GAT00206-99999

REVERSE CLUTCH

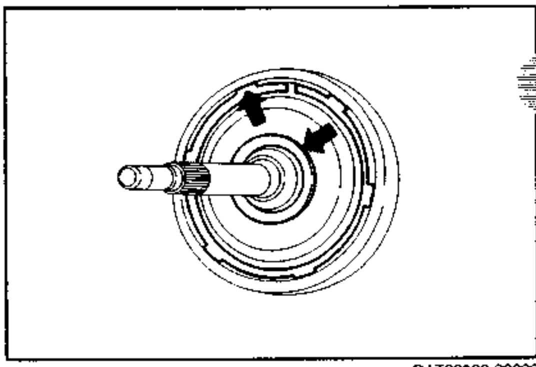
★ : Non-reusable parts



① Body oil pump
② Drum subassembly reverse clutch w/bearing
③ O-ring
④ Piston subassembly reverse clutch
⑤ Spring subassembly reverse clutch return
⑥ Ring snap
⑦ Plate clutch
⑧ Disc clutch No. 3
⑨ Ring hole snap
⑩ Bearing thrust needle roller
⑪ Shaft subassembly input
⑫ Bearing thrust needle roller
⑬ Race thrust bearing
⑭ Ring seal
⑮ Flange sun gear input
⑯ Washer thrust
⑰ Ring retainer

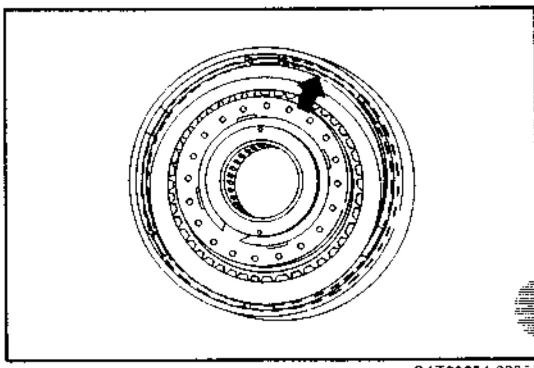
GAT00282-99999

1. Measurement of pack clearance
   (1) Remove the shaft subassembly input with the washer thrust installed by removing the ring retainer.



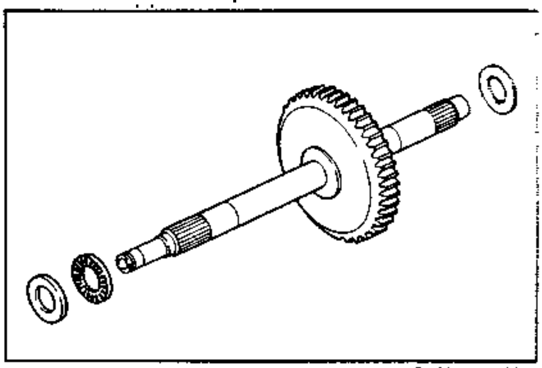
GAT00283-99999

   (2) Remove the ring hole snap of the drum subassembly reverse clutch w/bearing.



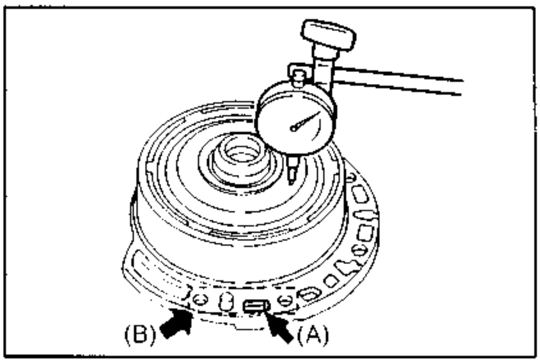
GAT00284-99999

(3) Remove the shaft assembly input with the race thrust bearing, bearing thrust needle roller and bearing thrust needle roller installed.



GAT00285-99999

(4) Install the flange sun gear input (washer thrust installed) with the ring retainer.
(5) Mount the drum subassembly reverse clutch w/bearing to the body oil pump.
(6) Measure the pack clearance with the compressed air 392 - 784 kPa (4 - 8 kgf/cm^2, 56 - 113 psi) through oil hole section (A), using a dial indicator.
Specified Value: 0.64 - 1.50 mm

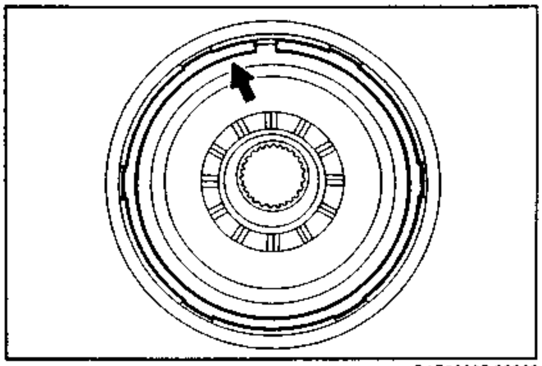


GAT00286-99999

NOTE:
- To prevent air leakage from the oil hole section (A) during the pack clearance measurement with the air nozzle gun, it is recommended to plug the oil hole section around the air nozzle gun with the clean cloth or the like because the pack clearance can not be measured.
- If it is difficult to obtain the correct specified value above, it is recommended to make the plate (Thickness: approximately 3mm) in line with the shape around the oil hole section (B = doting line as shown in the illustration above).

DISASSEMBLY

1. Remove the drum subassembly reverse clutch w/bearing from the body oil pump.
2. Remove the flange sun gear input with the washer thrust installed by removing the ring retainer.



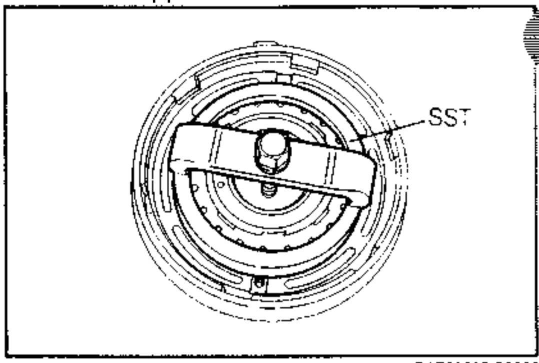
GAT00287-99999

3. Remove the disc clutches No. 3 (D) and plate clutches (P) in the following order.
   P → D → P → D

GAT00288-00000

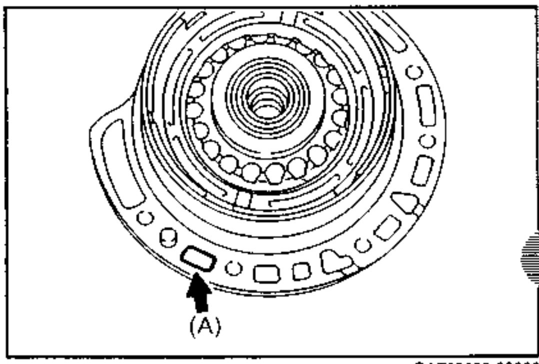
4. Remove the spring assembly reverse clutch return by removing the ring snap, using the following SST.
   SST: 09351-87707-000

   NOTE:
   - To prevent the deformation of seat spring, it is recommended to compress the seat spring until the claw section of the snap ring is free.



GAT00289-99999

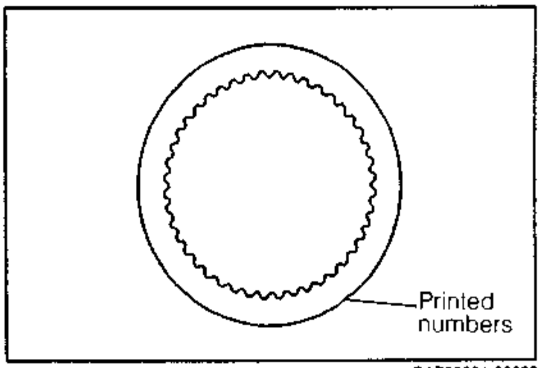
5. Mount the drum subassembly reverse clutch w/bearing to the body oil pump.
6. Remove the piston subassembly reverse clutch by blowing the compressed air 392 - 784 kPa (4 - 8 kgf/cm^2, 56 - 113 psi) through oil hole section (A).
7. Remove the two O-rings from the piston.
   NOTE:
   - Never reuse the removed O-rings.



GAT00290-99999

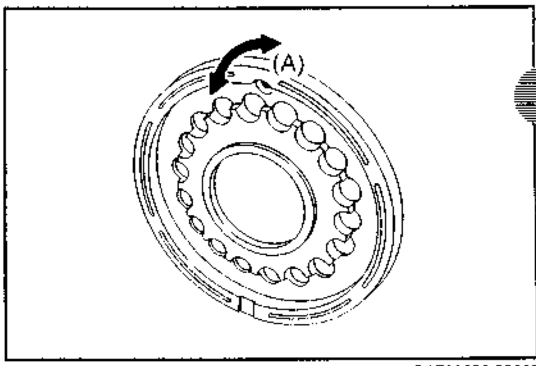
INSPECTION

1. Check that the sliding surfaces of the disc and plate are not worn or burnt. If necessary, replace them.
   NOTE:
   - If the lining of the disc is exfoliated or discolored, or even a part of the printed numbers (2A02) is defaced, replace all discs.
   - Before assembling new discs, soak them in the ATF for at least two hours.



GAT00291-99999

2. Ensure that creaking noise of the ball is emitted when shaking the piston subassembly reverse clutch clockwise and counterclockwise. (Namely, ensure that the ball is free.)
3. Check that the value exhibits no leakage by applying the low-pressed air onto the ball (A).

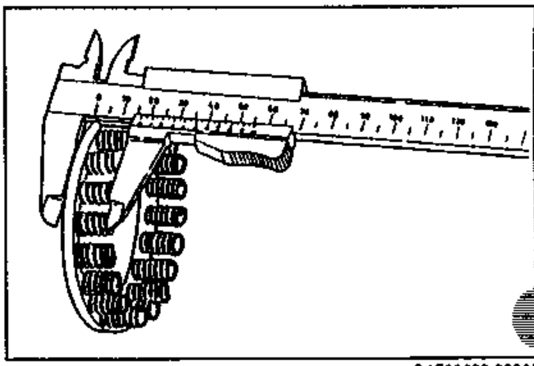


GAT00292-99999

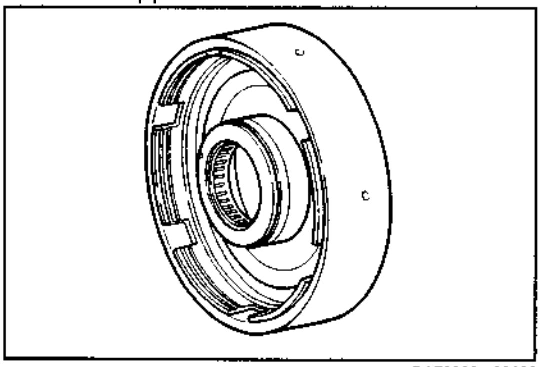
4. Measure the height of the spring subassembly reverse clutch return.

   Specified Value: 18.7 mm

   NOTE:
   - Do not apply excessive measuring force when measuring the height of the spring. Perform the measurement at several points.

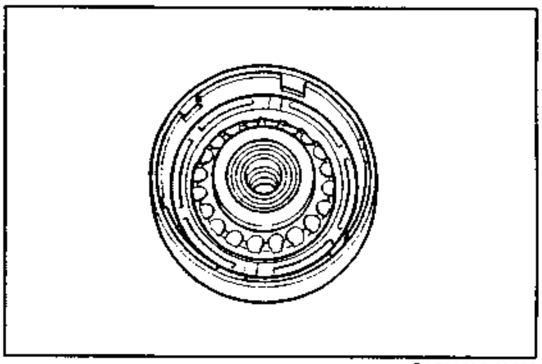

GAT00293-99999

Check that the outer periphery of the drum subassembly reverse clutch w/bearing are not worn or burnt. If necessary, replace them.


GAT00294-99999

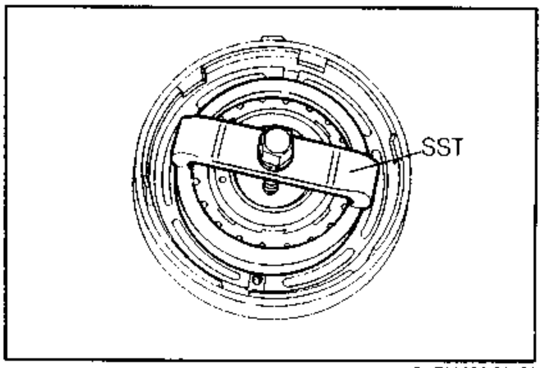
ASSEMBLY

1. Coat a new O-ring with the ATF.
2. Install them to the piston.
3. Press the spring subassembly reverse clutch return into the drum subassembly reverse clutch w/bearing with the cup side up.
   NOTE:
   - **Being careful not to twist or device the O-rings during installation.**


GAT00295-99999

4. Place the spring subassembly reverse clutch return onto the piston subassembly reverse clutch.
5. Install the ring snap, using the following SST.
   SST: 09351-87707-000

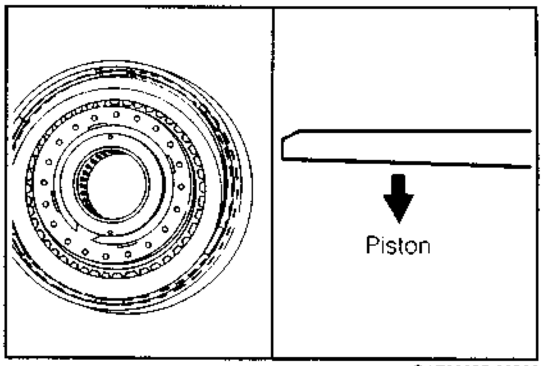
   NOTE:
   - **To prevent the spring seat deformation, be sure to keep a clearance of 1 - 2 mm between return spring seat and shaft snap ring.**



GAT00296-99999

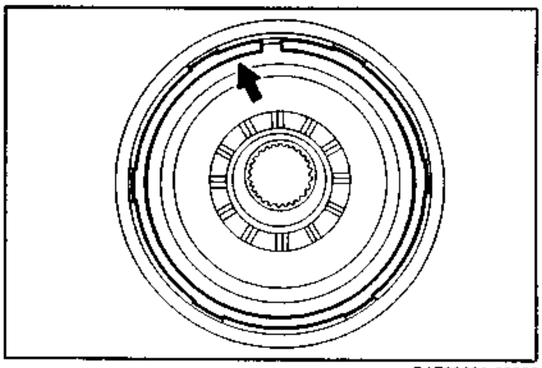
6. Install the plate clutches (P) and disc clutches No. 3 (D) in the following order with the hole snap ring.
   P → D → P → D

   NOTE:
   - **Ensure that flat end section of the plates faces toward the piston side.**



GAT00297-99999

7. Install the flange sun gear input with the ring retainer.


GAT00298-99999

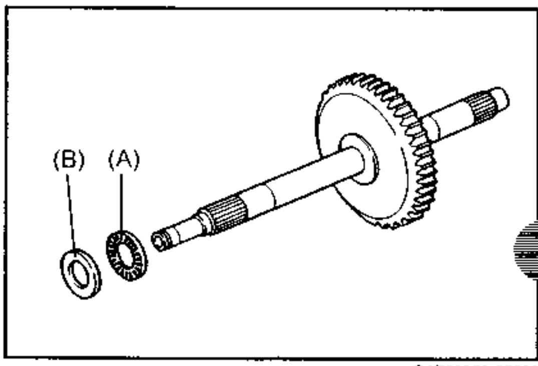
8. Measure the pack clearance (refer to step 1).
9. Remove the reverse clutch from the body oil pump.
10. Remove the flange sun gear input by removing the ring retainer.

GAT00299-00000

11. Coat a race with integrated needle roller bearing (A) with the vaseline.
12. Install them to the input gear.

    Race with Bearing Dimension

    Race Outer Diameter: 31.1 mm
    Inner Diameter: 18.7 mm
    Thickness: 2.6 mm



GAT00300-99999

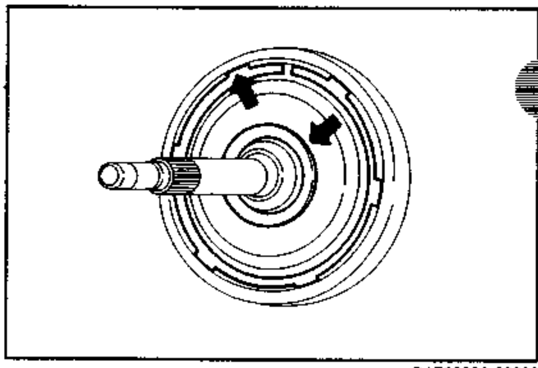
13. Coat a race (B) with the vaseline.
14. Install them to the input gear.

    Race Dimension

    Outer Diameter: 33.3 mm
    Inner Diameter: 21.7 mm
    Thickness: 2.0 mm

GAT00301-00000

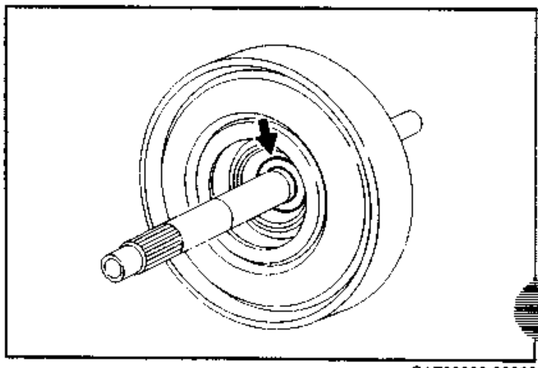
15. Coat the washer thrust with the vaseline.
16. Install them to the shaft assembly input.


GAT00302-99999

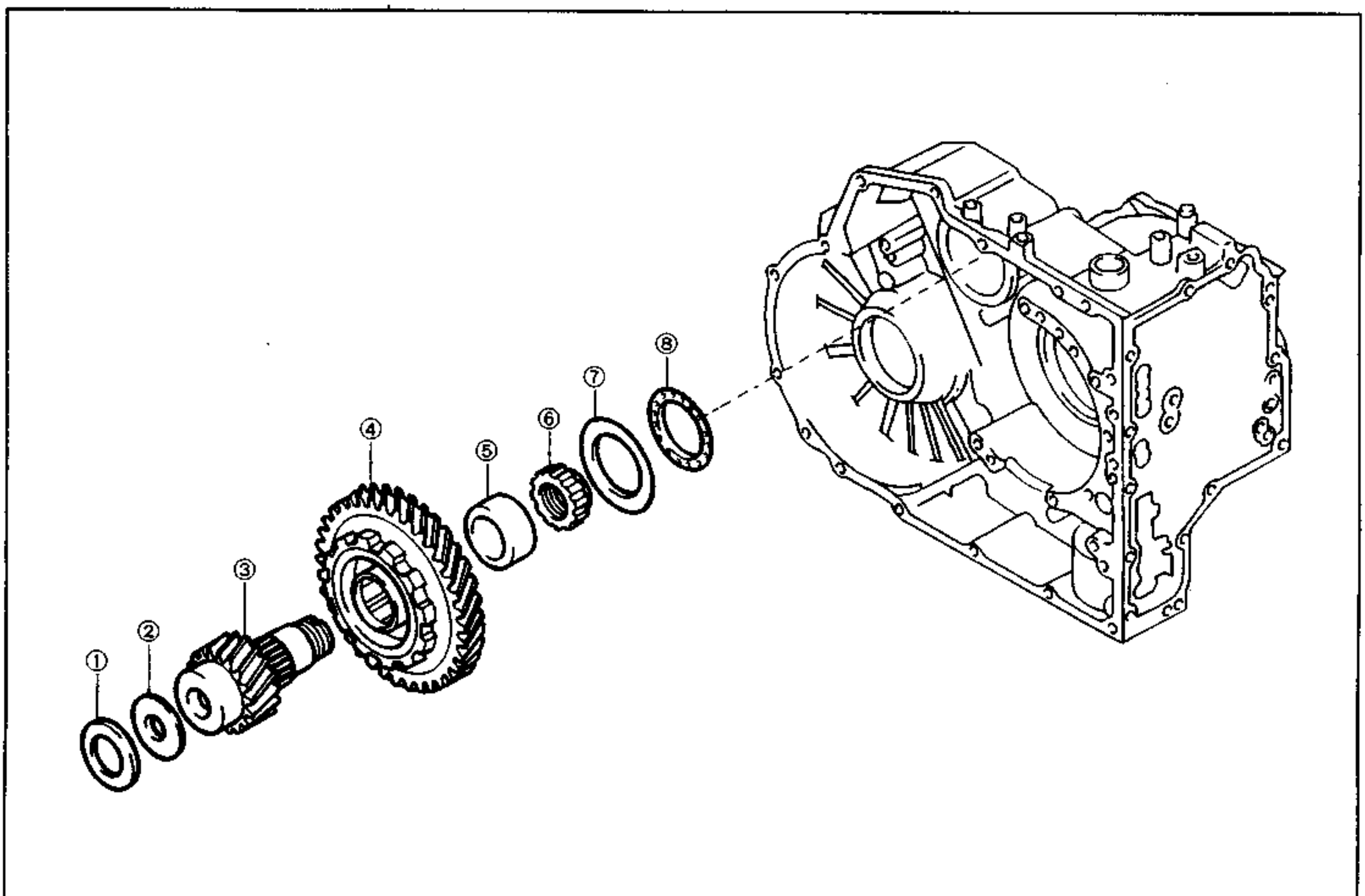
17. Coat a race with integrated needle roller bearing with the vaseline.
18. Install them to the shaft assembly input.

    Race with Bearing Dimension

    Race Outer Diameter: 32.9 mm
    Inner Diameter: 18.8 mm
    Thickness: 3.6 mm


GAT00303-99999

COUNTER DRIVEN GEAR

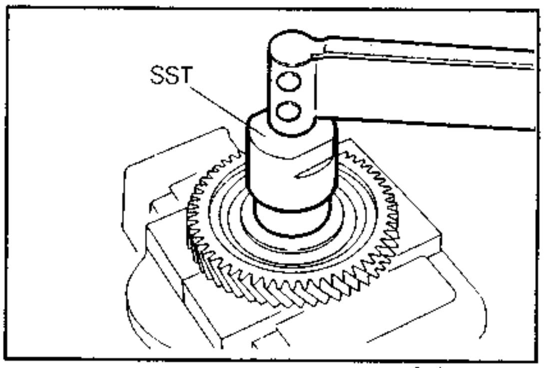


① Bearing thrust needle roller
② Race thrust bearing
③ Pinion differential drive
④ Gear subassembly counter driven
⑤ Bearing cylindrical roller
⑥ Lock nut (vehicle speed sensor)
⑦ Race thrust bearing
⑧ Bearing thrust needle roller

GAT00304-99999

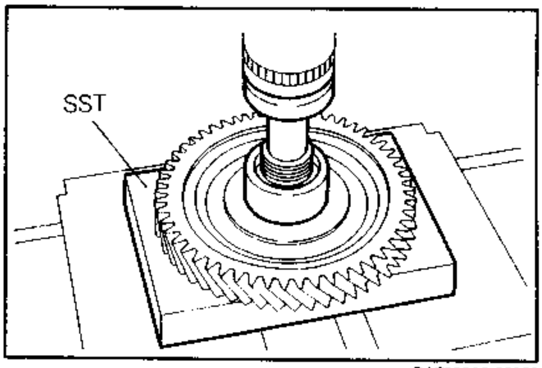
DISASSEMBLY

1. Remove the transaxle housing.
2. Clamp the SST (09351-87719-000) in a vice.
3. Unstake the lock section of the lock nut for vehicle speed sensor.
4. Remove the lock nut for vehicle speed sensor, using the following SST.
   SST (A): 09351-87716-000



GAT00305-99999

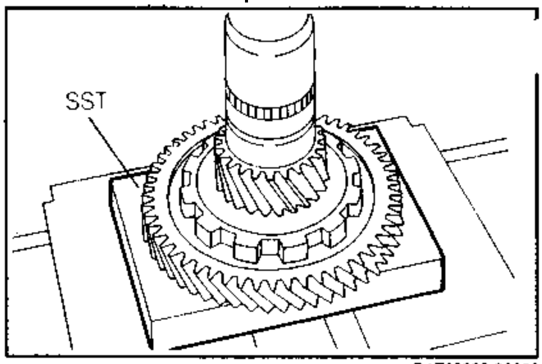
5. Remove the cylindrical roller bearing by pressing the pinion differential drive, using the following SST.
   SST: 09351-87719-000



GAT00306-99999

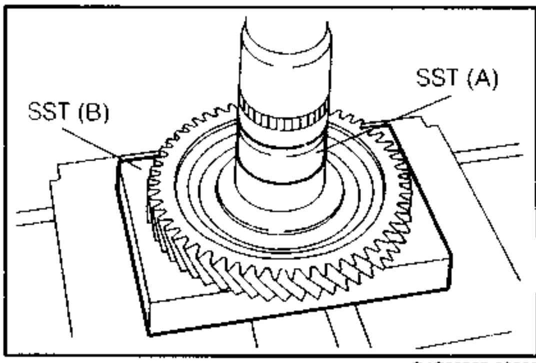
ASSEMBLY

1. Press the pinion differential drive to the gear subassembly counter driven, using the following SST.
   SST: 09351-87719-000



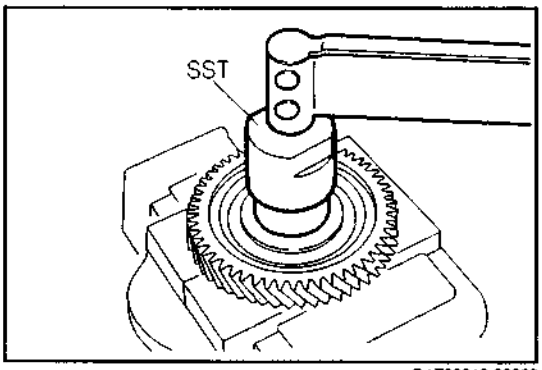
GAT00308-99999

2. Coat the inner periphery of the new bearing cylindrical roller with the ATF.
3. Press the bearing cylindrical roller, using the following SST.
   SST (A): 09351-87713-000
   SST (B):



GAT00309-99999

4. Tighten the new lock nut for vehicle speed sensor, using the following SST.
   SST: 09351-87716-000
   Tightening Torque:
   98.0 - 147.0 - N·m
   (10.0 - 15.0 kgf-m, 72.0 - 109.0 ft-lb)

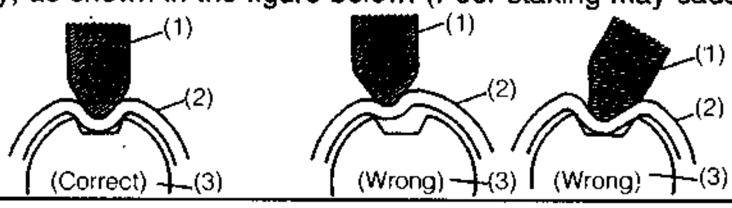


GAT00310-99999

5. Stake a new lock nut, using a standard punch in combination with a hammer.

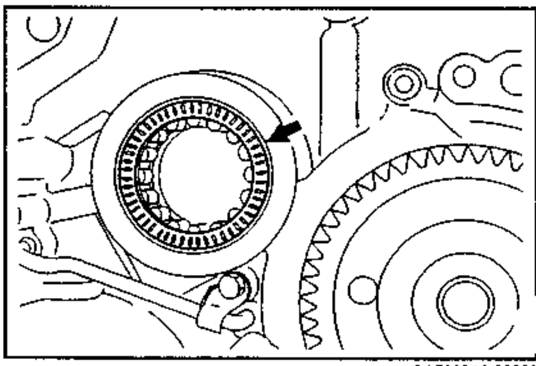
NOTE:
- When staking the lock nut, point a suitable staking tool toward the pinion differential shaft axis center and stake the lock nut securely, as shown in the figure below. (Poor staking may cause abnormal noise.)

(1) Suitable staking tool
(2) New nut
(3) Shaft



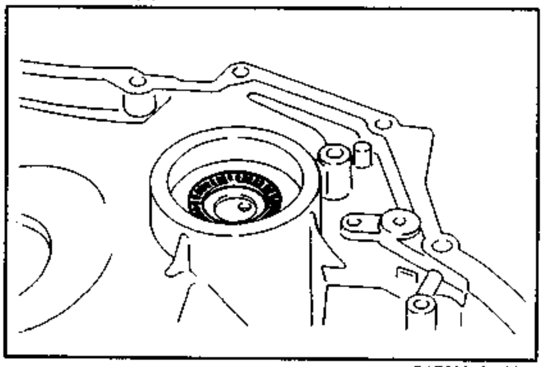
GAT00311-99999

6. Coat a race with integrated needle roller bearing with ATF.
7. Place them to the transaxle case.
   Race with Bearing Dimension: Approx.
   Race Outer Diameter: 65.8 mm
   Inner Diameter: 51.0 mm
   Thickness: 2.7 mm



GAT00312-99999

8. Coat a race with ATF.
9. Place them to the race with integrated needle roller bearing.
   Race Dimension: Approx.
      Outer Diameter: 45.7 mm
      Inner Diameter: 30.0 mm
      Thickness: 3.0 mm

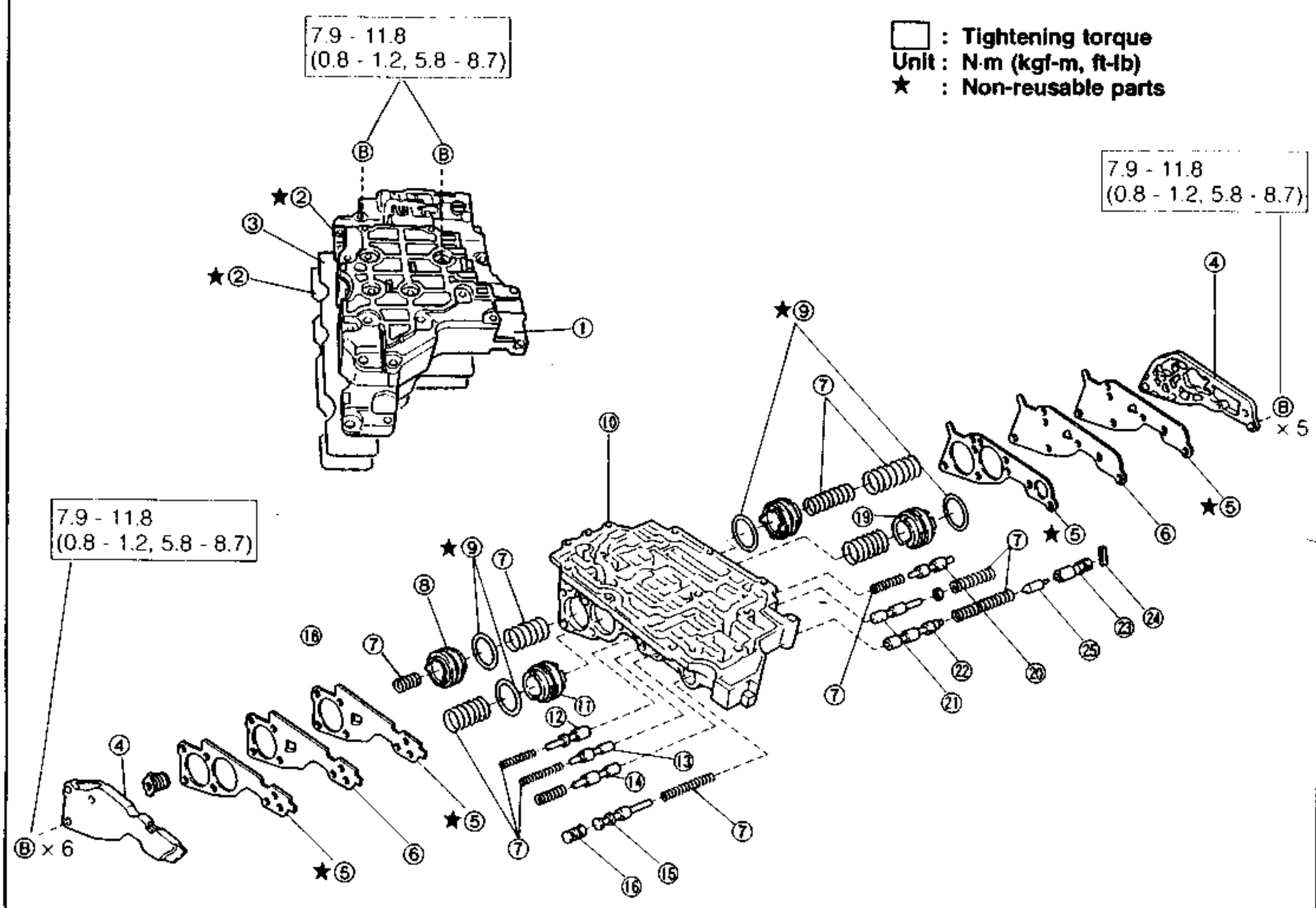


GAT00313-99999

10. Install the gear subassembly counter driven to the transaxle case. (see page AT-112 to AT-122).
11. Install the transaxle case assembly to the vehicle (see page AT-56 to AT-67).

GAT00314-00000

VALVE BODY

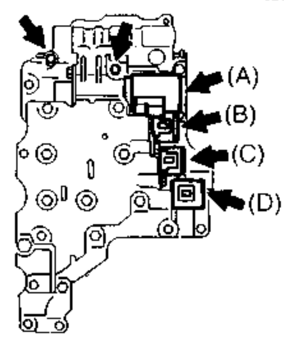


① Valve body assembly
② Gasket rear valve body
③ Plate separator
④ Cover rear valve body
⑤ Gasket rear valve body cover
⑥ Plate rear valve body cover
⑦ Compression spring
⑧ Piston accumulator
⑨ O-ring
⑩ Rear valve body assembly
⑪ Piston accumulator
⑫ Valve solenoid modulator
⑬ Valve low coast modulator
⑭ Valve clutch modulator
⑮ Valve secondary regulator
⑯ Plug
⑰ Key
⑱ Check ball
⑲ Piston accumulator
⑳ Valve 2-3 shift timing
㉑ Valve coast modulator
㉒ Valve lock up control
㉓ Sleeve lock up control plunger
㉔ Retainer 2-3 shift valve
㉕ Plunger lock up control

GAT00315-99999

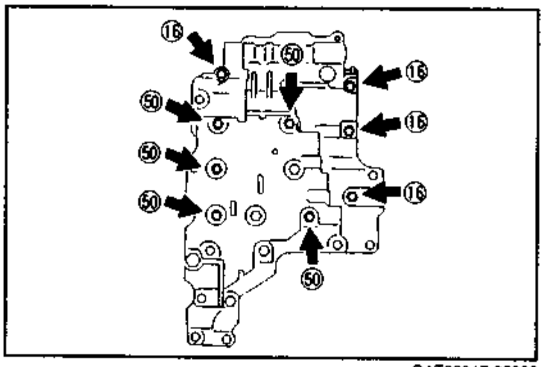
DISASSEMBLY

1. Remove the valve body from the transaxle case assembly.
2. Pull out the valve manual.
3. Remove the followings solenoid by removing the bolts.
   (A)...Pressure control (B)...Shift No. 1
   (C)...Shift No. 2 (D)...Lock up



GAT00316-99999

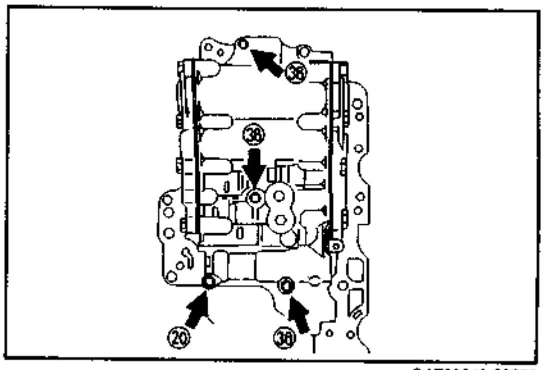
4. Remove the valve body assembly by removing the nine bolts.
5. Turn over the valve body assembly.



GAT00317-99999

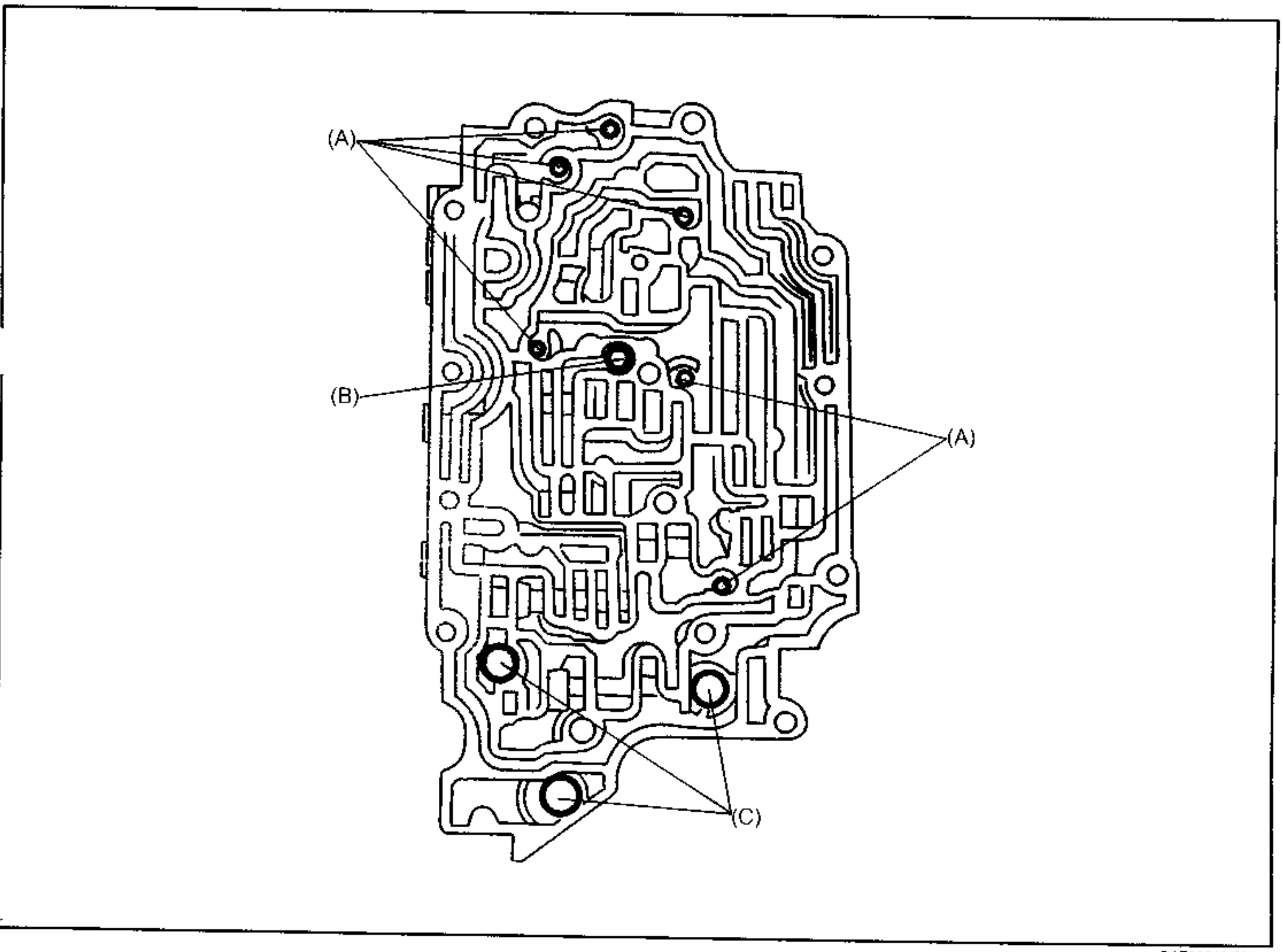
6. Remove the four bolts of the rear valve body assembly.
7. Remove the gaskets rear valve body and plate separator together with rear valve body assembly by holding them with your hands.

   NOTE:
   - **Never reuse the removed gasket.**



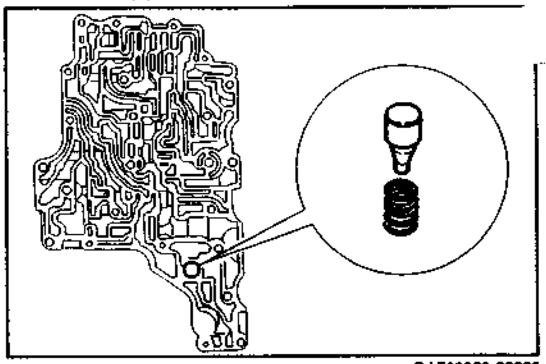
GAT00318-99999

8. Ensure that the six balls (A), strainer oil solenoid (B) and valve checks with compression spring (C) are located in place.

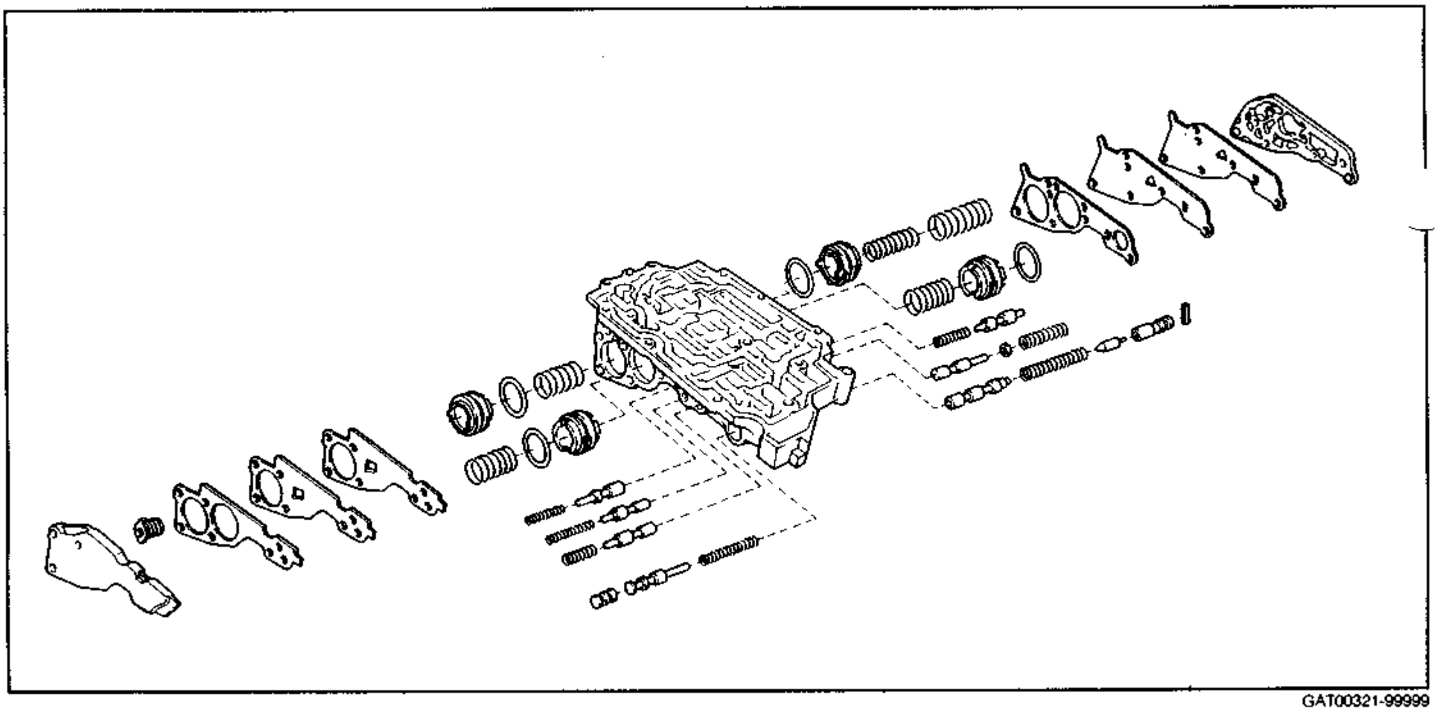


GAT00319-99999

9. Ensure that the valve check with compression spring of the front valve body are located in place.

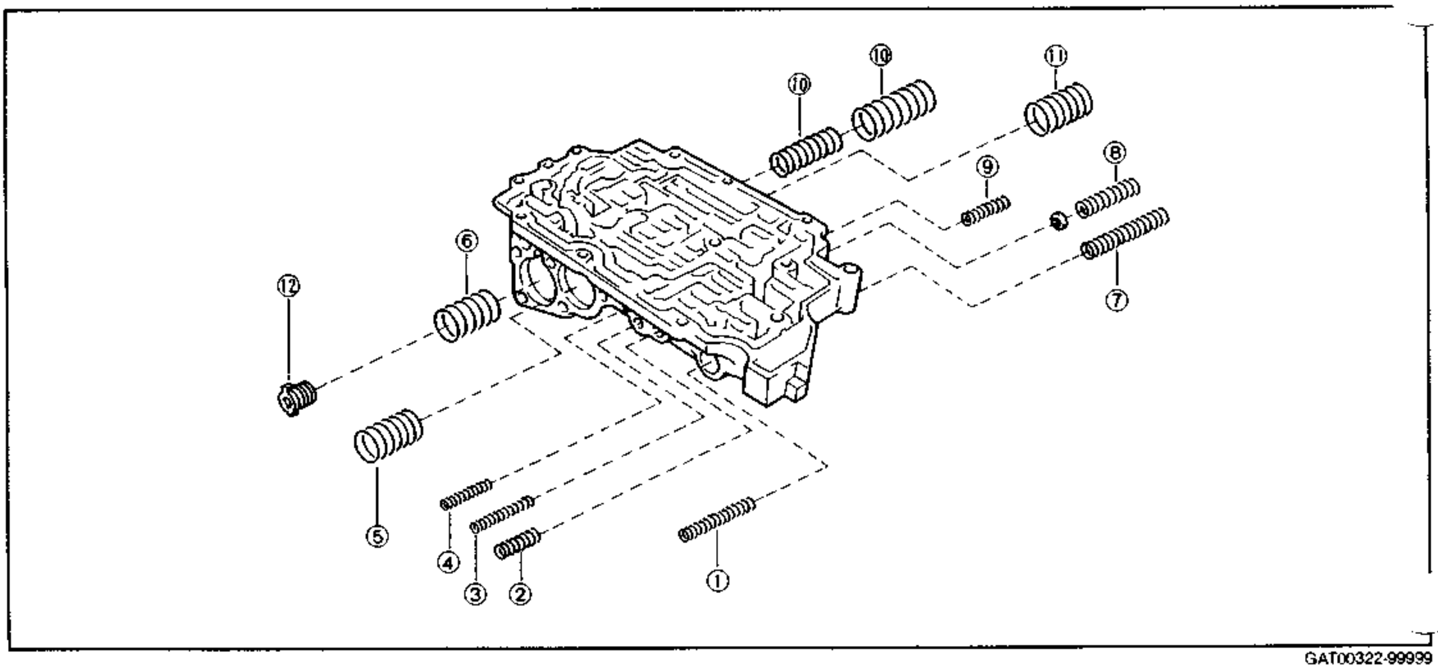

GAT00320-99999

10. Remove the following parts by removing the 11 bolts of the cover rear valve body.


GAT00321-99999

INSPECTION

Measure the free length and outer diameter of the compression springs.



GAT00322-99999

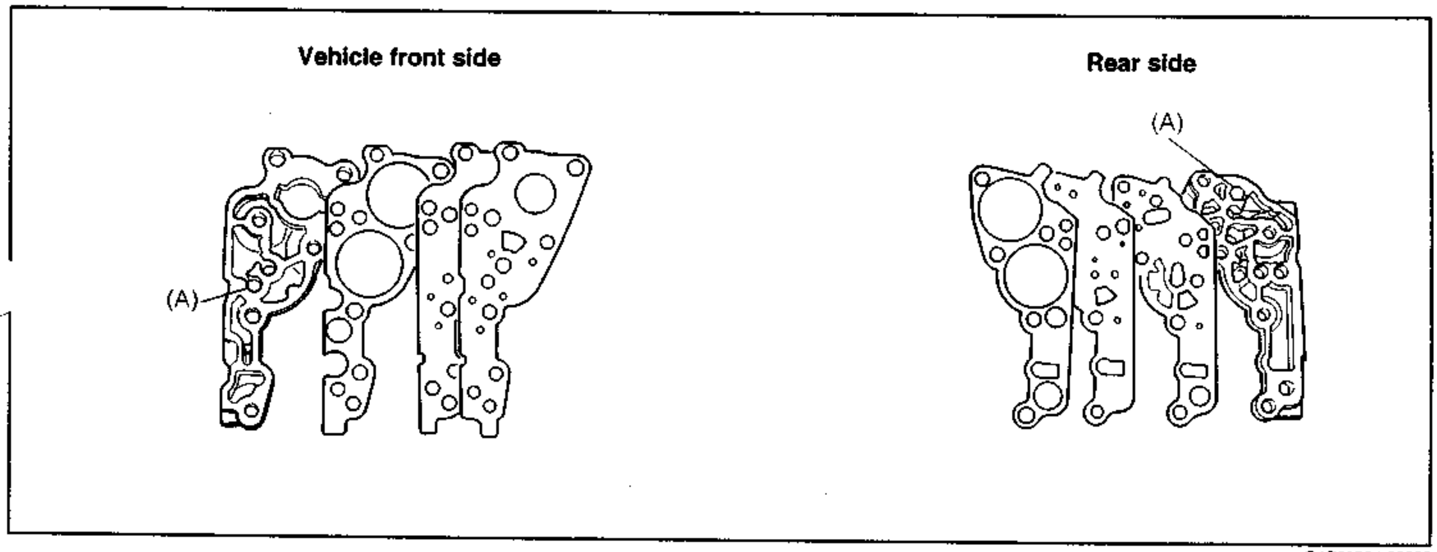
Unit: mm

	Parts name		Compression spring		
			Free length	Outer diameter	Identification mark
①	Valve secondary regulator		47.4	9.5	None
②	Valve B1 modulator control		23.9	7.7	Pink
③	Valve low coast modulator		32.8	7.6	Red
④	Valve solenoid modulator valve		28.5	8.0	Purple
⑤	Piston accumulator		42.0	20.9	Blue
⑥	Piston accumulator		29.5	21.0	White
⑦	Valve lock up control valve		64.9	9.6	None
⑧	Valve 2-3 shift timing		21.1	7.7	White
⑨	Valve C3 modulator		35.6	11.0	Light green
⑩	Piston accumulator	Outer	42.0	21.0	Red
		Inner	42.0	15.5	Red
⑪	Piston accumulator		45.1	21.1	Light green
⑫	Accumulator counter		23.8	16.5	Pink

GAT00323-00000

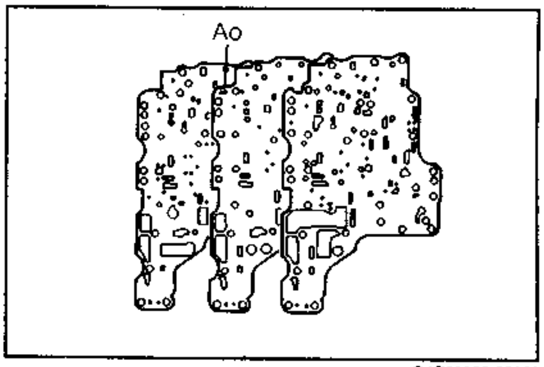
ASSEMBLY

1. Place the check ball (A) in the cover rear valve body.
2. With the new gaskets rear valve body interposed, tighten the cover rear valve body with the bolts.
   Tightening Torque: 7.9 - 11.8 N·m (0.8 - 1.2 kgf-m, 5.8 - 8.7 ft-lb)



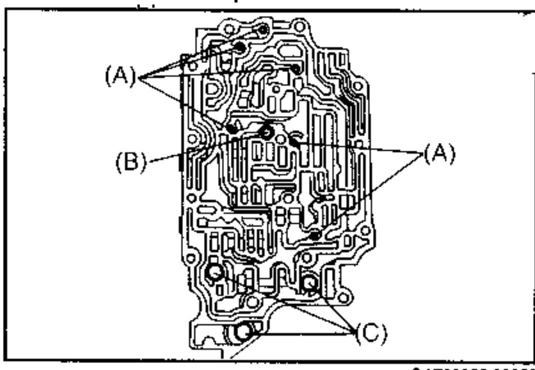
GAT00324-99999

3. Place the new gaskets with plate separator as shown in the right figure illustration.
   NOTE:
   - Ensure that the stamped mark of he plate separator of Ao faces toward the upper side.



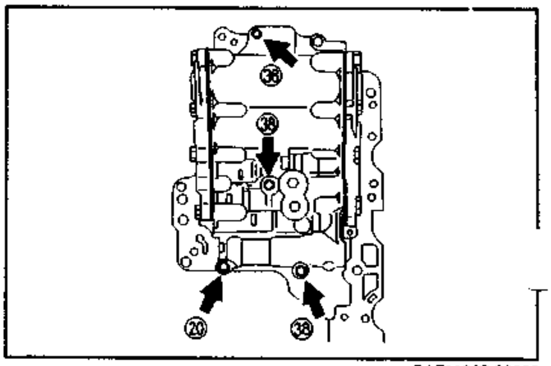
GAT00325-99999

4. Ensure that the check balls (A), strainer oil solenoid (B) and check valve with compression spring (C) of the front valve body are located in place.
5. Place the new gaskets, plate separator and rear valve body to the front valve body assembly.
6. Hold them with your hand and turn over.



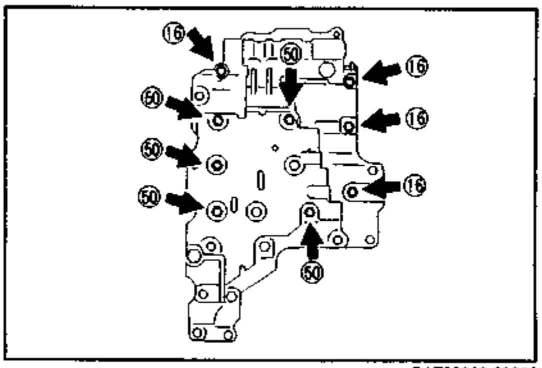
GAT00326-99999

7. Temporarily tighten the rear valve body with your fingers.
8. Turn over the valve body assembly.
9. Temporarily tighten the front valve body assembly with your fingers.
10. Turn over them again and tighten the rear valve body assembly with the four bolts.
    Tightening Torque: 5.9 - 7.3 N·m
    (0.6 - 0.75 kgf-m, 4.3 - 5.4 ft-lb)



GAT00327-99999

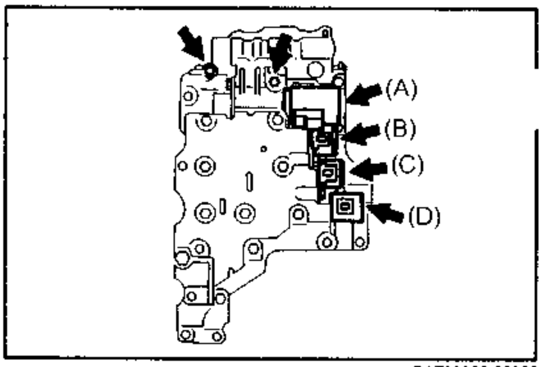
11. Turn over them and tighten the front valve body assembly with the nine bolts.
    Tightening Torque: 5.9 - 7.3 N·m
    (0.6 - 0.75 kgf-m, 4.3 - 5.4 ft-lb)



GAT00328-99999

12. Tighten the following solenoids with the bolts.
    Tightening Torque: 5.9 - 7.3 N·m
    (0.6 - 0.75 kgf-m, 4.3 - 5.4 ft-lb)
    (A)...Pressure control (B)...Shift No. 1
    (C)...Shift No. 2 (D)...Lock up control

NOTE:
- There is an interchangeability between the shift No. 1 and shift No. 2 for installation.

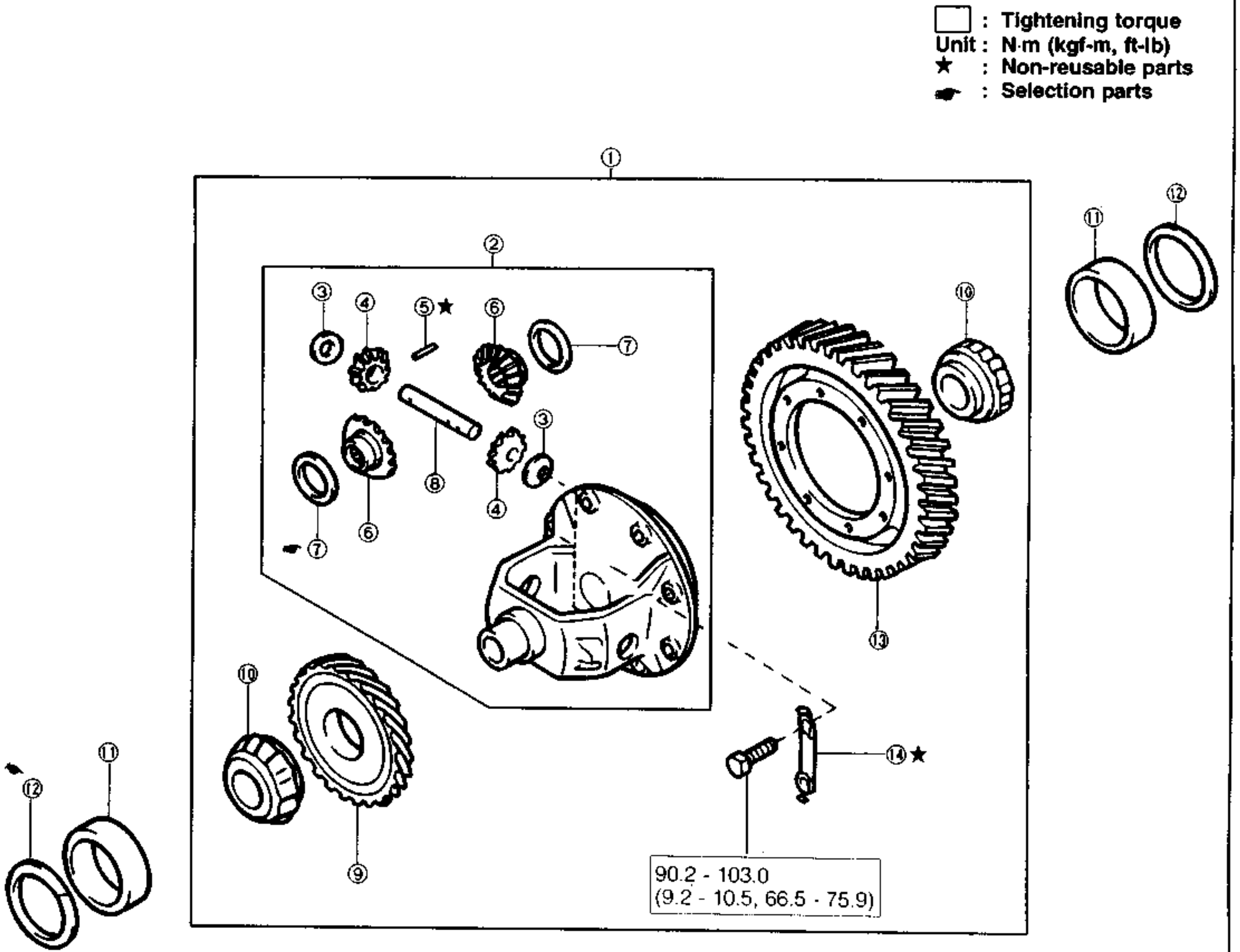


GAT00329-99999

13. Install the valve body assembly to the transaxle housing (see page AT–121).
14. Install the transaxle housing to the vehicle (see page AT–56 to AT–67).

GAT00330-00000

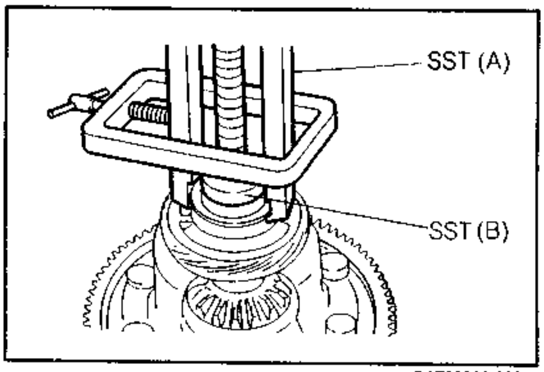
DIFFERENTIAL



① Gear assembly differential
② Case differential
③ Washer differential pinion thrust
④ Pinion differential
⑤ Straight pin
⑥ Gear differential side
⑦ Washer differential side gear thrust
⑧ Shaft differential pinion
⑨ Gear speedometer drive
⑩ Bearing tapered roller
⑪ Race tapered roller bearing outer
⑫ Washer plate
⑬ Gear differential ring
⑭ Plate ring gear set bolt lock

GAT00331-99999

DISASSEMBLY

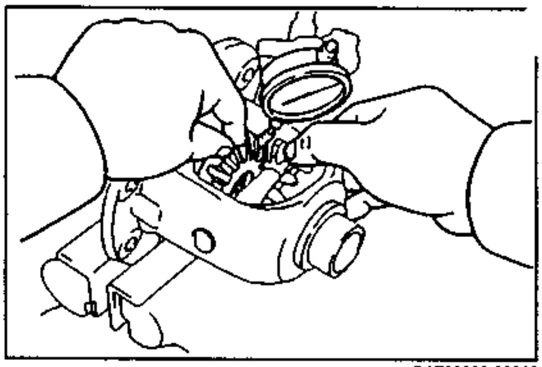


GAT00332-99999

1. Collaps the outer race of bearing tapered roller.
2. Remove the inner race of bearing tapered roller, using the following SST.
   SST: 09351-87703-000, 09351-87704-000, 09351-87705-000
3. Remove the gear speedometer drive.

4. Clamp the case differential in a vice.
5. Measure the gear differential side backlash while the pinion differential pushed against the case differential side.
   Specified Valve: 0.06 - 0.22 mm

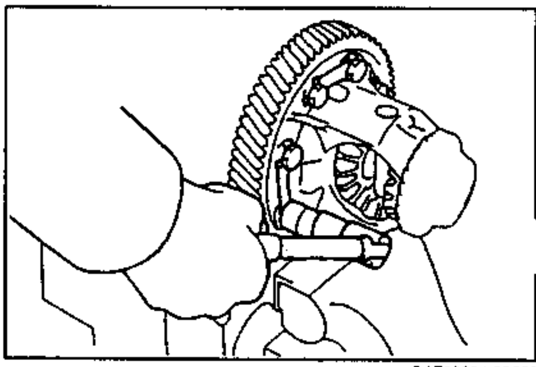
   NOTE:
   - If the gear differential side backlash exceed than specification above, proceed to remove the following inner parts.



GAT00333-99999

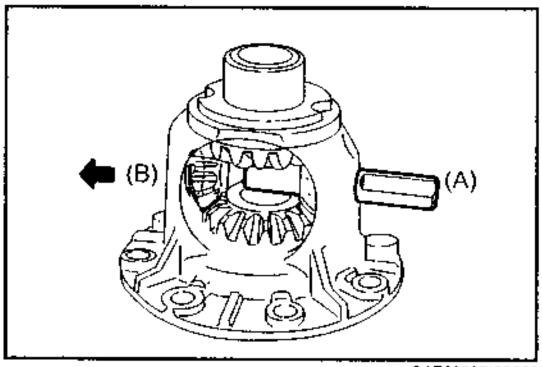
6. Unstake the part of the four plates ring gear set bolt lock, using a chiesel and hammer.
7. Remove the four plates ring gear set bolt lock and eight bolts of the ring gear.
   NOTE:
   - Never reuse the removed lock plates.

8. Drive off the straight pin from the gear differential ring side, using the standard hammer and punch.



GAT00334-99999

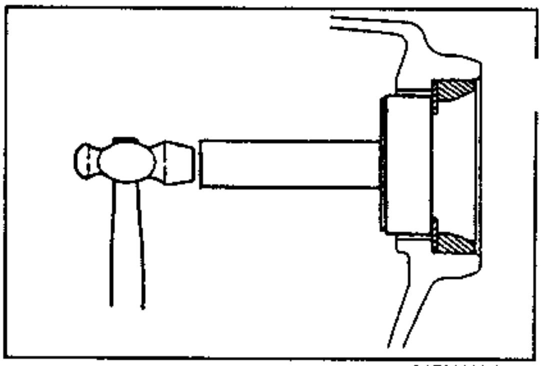
9. Pull out the shaft differential pinion until the shaft is stopped (A) to the case differential .
10. Remove a washer differential pinion thrust.
11. Pull out the shaft differential pinion toward the (B) and then remove the two pinion differentials / gear differential sides and washer differential pinion thrust.
    NOTE:
    - Measure the thickness of the removed washer differential side gear thrust for the reference of installation.



GAT00335-99999

12. Remove the oil seals of the transaxle housing and case.
    NOTE:
    - Never reuse the removed oil seals.

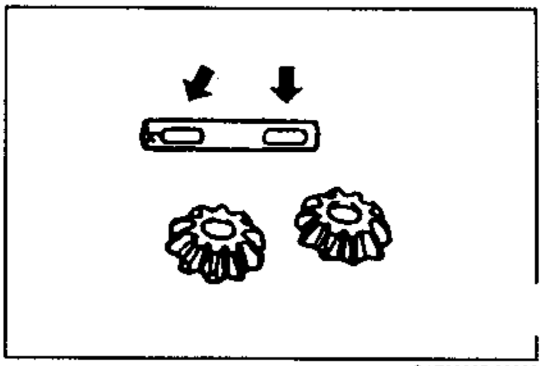
13. Drive out the race tapered roller bearing outer and washer plates, in combination with the hammer and brass bar or the like.
    NOTE:
    - Measure the thickness of the removed washer plates for the reference of installation.



GAT00336-99999

Inspection

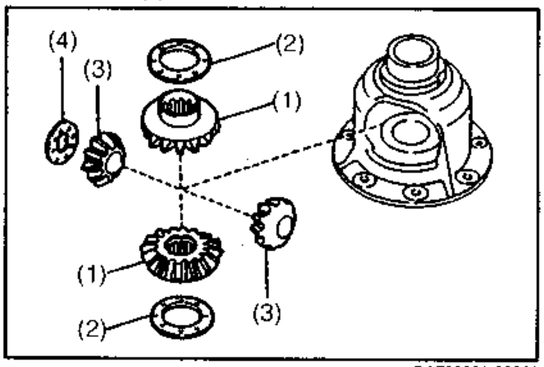
1. Visually inspect the rotational sliding section between the pinion differential and the shaft pinion differential for damage and wear.



GAT00337-99999

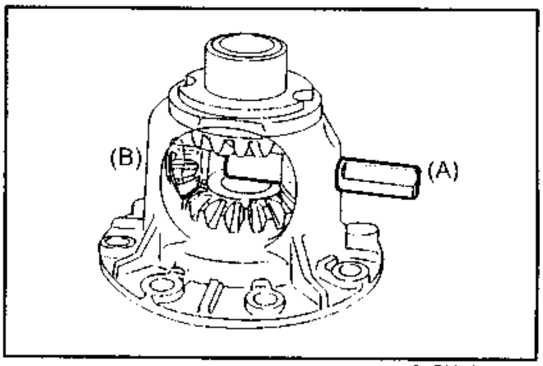
ASSEMBLY

1. Apply ATF to the sliding section of the gears and case.
2. Install the following parts to the differential case.
   (1) Two gears differential side
   (2) Same thickness of the washers differential side gear thrust
   (3) Two pinions differential
   (4) A washer differential pinion thrust



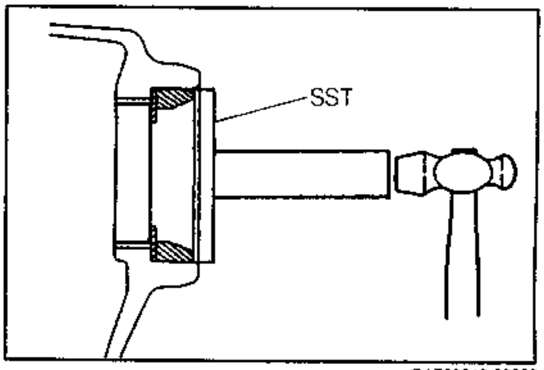
GAT00338-99999

3. Apply ATF to the outer periphery of the shaft differential pinion.
4. Insert the haft differential pinion into case differential from (B) to (A).
5. Insert a washer differential pinion thrust.



GAT00339-99999

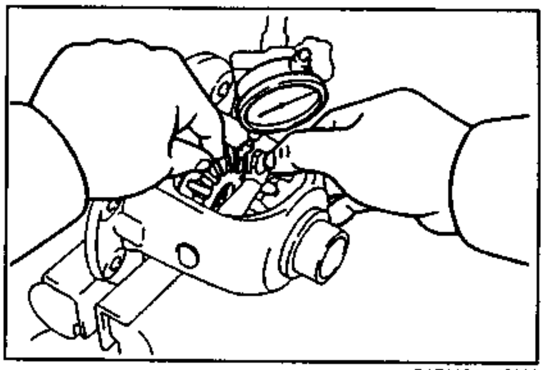
6. Place the adjusting washer plate (same thickness of removed washer plate) to the transaxle case and housing sides.
7. Drive a new race tapered roller bearing outer into the transaxle case and housing, using the following SST and hammer.
   SST: 09351-87712-000



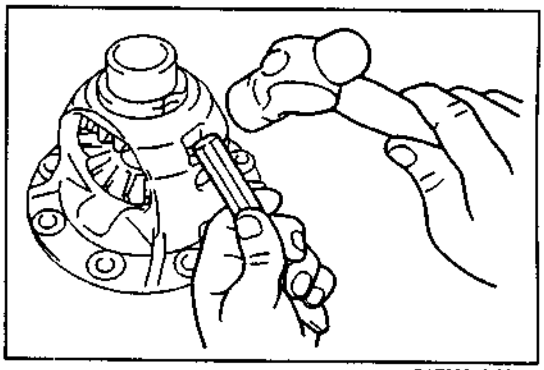
GAT00340-99999

8. Measure the gear differential side backlash while the pinion differential pushed against the case differential side.
   Specified Value: 0.06 - 0.22 mm
   Parts availability (thickness) ... Unit (mm)
   0.95, 1.00, 1.05, 1.10, 1.15 and 1.20

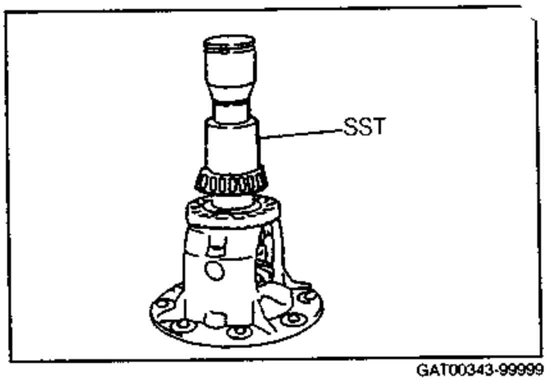
   NOTE:
   - **Ensure that the same size of washer differential side gear thrust should be used on both sides.**


GAT00341-99999

9. Drive the straight pin to the shaft differential pinion through case differential hole, using a pin punch and hammer.
10. Stake the case differential.

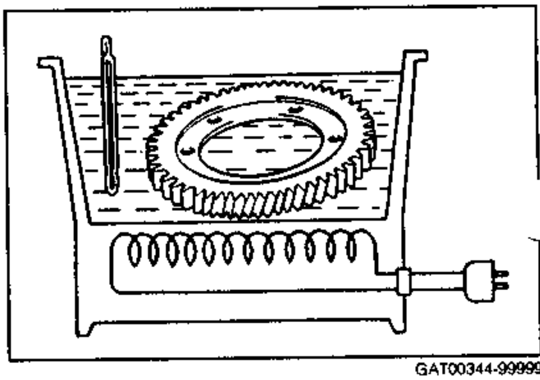

GAT00342-99999

11. Install the gear speedometer drive.
12. Press the new bearing tapered rollers into the case differential, using the following SST.
    SST: 09351-87713-000

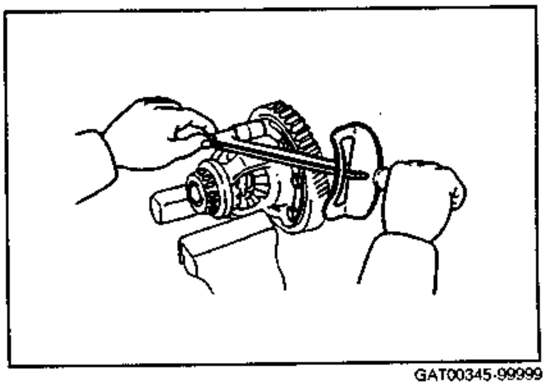


GAT00343-99999

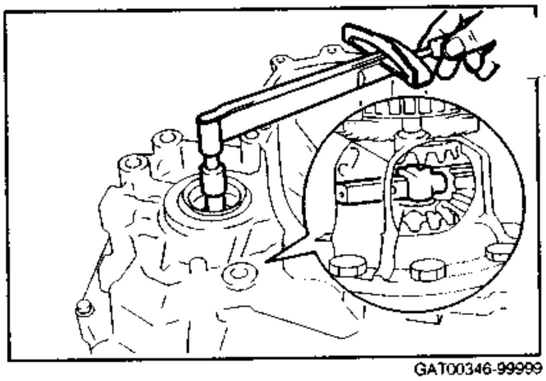
13. Clean the contact surface of the differential case.
14. Heat the ring gear to about 100°C (212°F) in an oil bath.
    CAUTION:
    - Do not heat the ring gear above 110°C (230°F).
15. Clean the contact surface of the ring gear with cleaning solvent.


GAT00344-99999

16. Quickly install the ring gear to the differential case.
17. Install a new four plate ring gear set bolt lock with the eight bolts and tighten them.
    Tightening Torque:
    90.2 - 103.0 N·m
    (9.2 - 10.5 kgf-m, 66.5 - 75.9 ft-lb)
18. Stake the new plate ring gear set bolt lock, using the hammer and drift punch or the like.
    NOTE:
    - Stake the plate ring gear set bolt locks securely.


GAT00345-99999

19. Install the differential assembly to the transaxle case.
20. Tighten the transaxle case (see page AT–118).
21. Measure the preload of the differential, using the following SST and a torque meter.
    SST: 09351-87711-000
    Specified Value Preload (at starting):
    0.8 - 1.4 N·m (8.0 - 14.0 kgf-cm)


GAT00346-99999

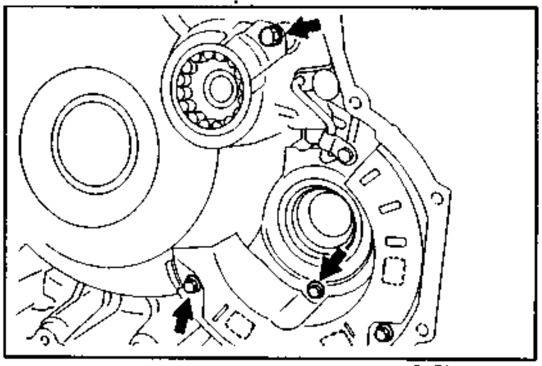
NOTE:
- If the preload exceeds the specified value above, reselect the washer plate on both transaxle case and housing sides
- The preload changes about 0.3 - 0.4 N·m (3.0 - 4.0 kgf-cm) with each plate washer thickness.
- Parts availability ... Unit: mm
  2.35 (A), 2.40 (B), 2.45 (C), 2.50 (D), 2.55 (E), 2.60 (F), 2.65 (G), 2.70 (H), 2.75 (J), 2.80 (K), 2.85 (L), 2.90 (M), 2.10 (Q), 2.15 (R), 2.20 (S), 2.25 (T), 2.30 (U)

GAT00347-00000

TRANSAXLE HOUSING

REMOVAL

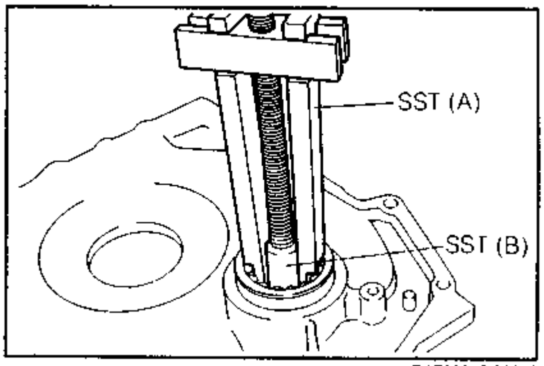
1. Remove the oil seal.
   NOTE:
   - Never reuse the removed oil seal.


GAT00348-99999

2. Remove the plate oil reserver with three magnets by removing the three bolts.
3. Remove the retainer roller bearing by removing a bolt.

4. Remove the bearing cylindrical roller, using the following SST.
   SST: 09351-87703-000, 09351-87706-000

   NOTE:
   - Never reuse the removed bearing.



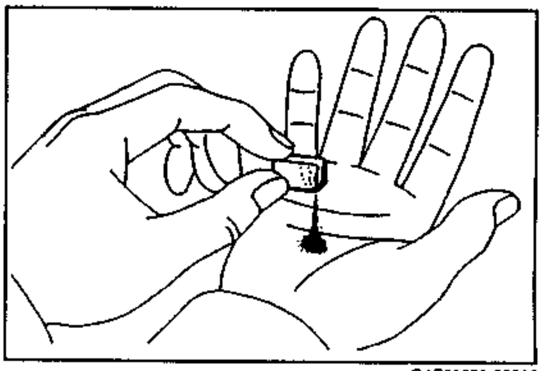
GAT00349-99999

. Remove the integrated needle roller bearing with race.

INSPECTION

Check of pan for particles
Remove the magnets and use them to collect any steel chips. Inspect the oil reserver plate for any chips and particles collected on the magnet. Inspect them carefully to find out the type of wear of the transmission.

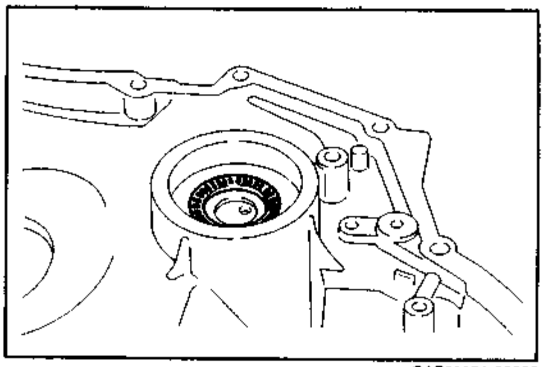
Steel (magnetic) ... Wear of bearing, gear and plate
Brass (nonmagnetic) ... Wear of bush


GAT00350-99999

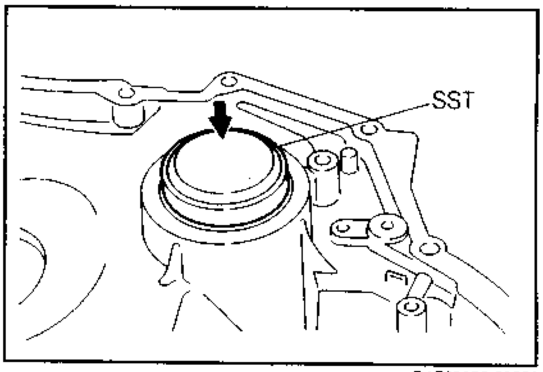
INSTALLATION

1. Apply ATF to the integrated needle roller bearing with race.
   Race Dimension
   Outer Diameter: 45.7 mm
   Inner Diameter: 30.0 mm
   Thickness: 3.0 mm

2. Place them to the transaxle housing.


GAT00351-99999

3. Apply ATF to the outer periphery of bearing cylindrical roller.
4. Tap the bearing, using the following SST.
   SST: 09351-87712-000

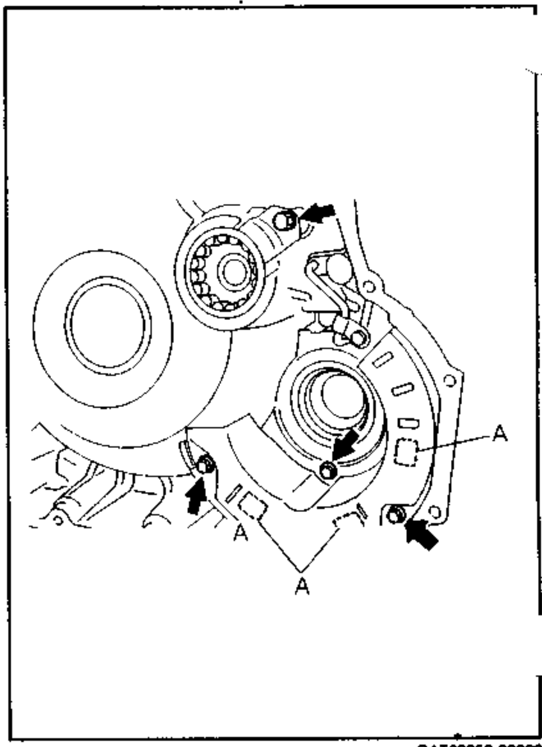


GAT00352-99999

5. Tighten the retainer roller bearing with a bolt.
   Tightening Torque: 9.8 - 15.7 N·m
   (1.0 - 1.6 kgf-m, 7.2 - 11.6 ft-lb)

6. Install the tube transaxle lub apply and clamp.
7. Tighten them with a bolt.
   Tightening Torque: 3.9 - 6.9 N·m
   (0.4 - 0.7 kgf-m, 2.9 - 5.1 ft-lb)

8. Tighten the plate oil reserver (with three magnets ... A installed) with the three bolts.
   Tightening Torque: 3.9 - 6.9 N·m
   (0.4 - 0.7 kgf-m, 2.9 - 5.1 ft-lb)



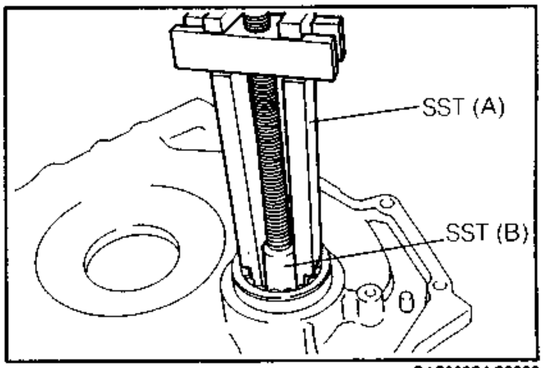
GAT00353-99999

TRANSAXLE CASE

Removal

1. Remove the bearing cylindrical roller, using the following SST.
   SST: 09351-87703-000, 09351-87706-000

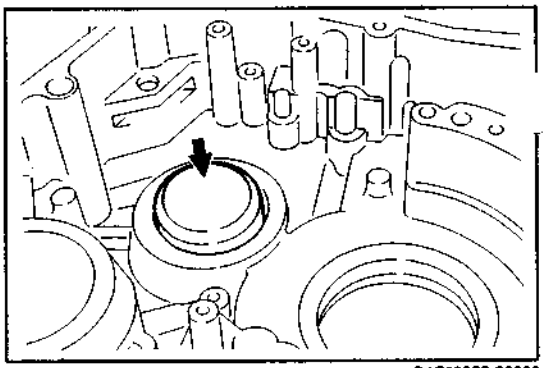
   NOTE:
   - **Never reuse the removed bearing.**



GAT00354-99999

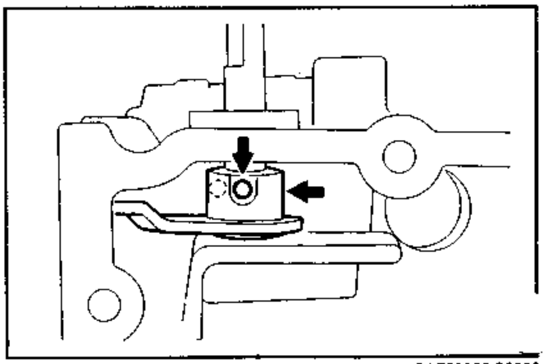
Installation

1. Apply AFT to the outer periphery of bearing cylindrical roller.
2. Tap the bearing, using the following SST.
   SST: 09351-87712-000

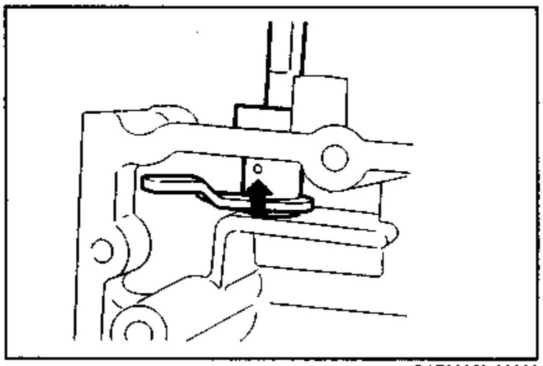

GAT00355-99999

INSTALLATION

1. Apply lithium base multi purpose grease to the new oil seal lip section.
2. Install the new oil seal.
3. Insert the shaft subassembly manual valve lever to the transaxle case.
4. Install the new spacer and lever manual valve to the shaft subassembly manual valve lever.
5. Install the new slotted spring pin.

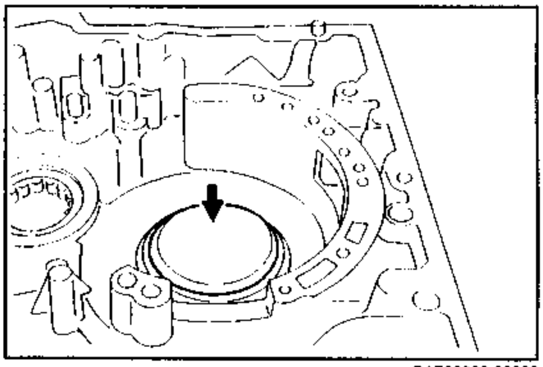

GAT00356-99999

Rotates the new spacer approximately 180 degree.
7. Stake the small hole of the new spacer.



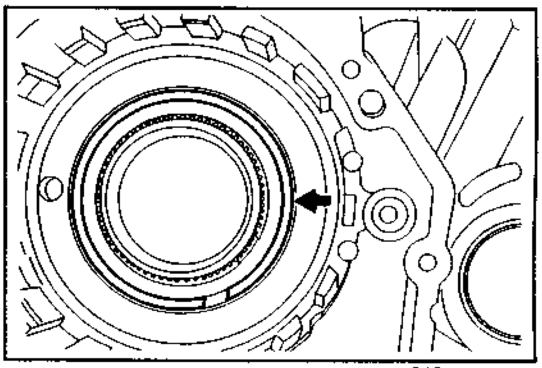
GAT00357-99999

8. Press the outer race, using the following SST.
   SST: 09351-87720-000



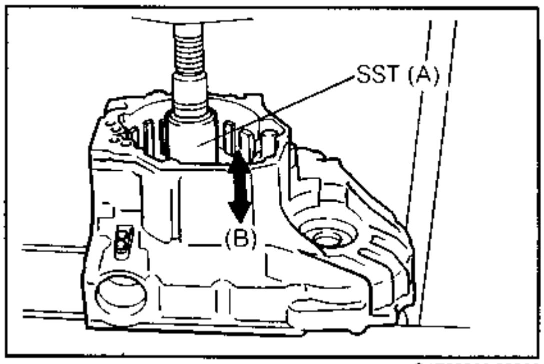
GAT00358-99999

9. Install the ring shaft snap to the bearing tapered roller.



GAT00359-99999

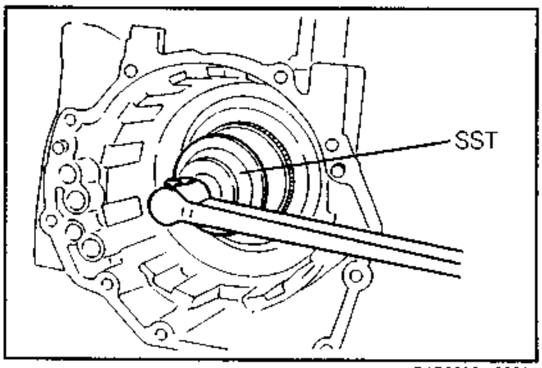
10. Measurement of starting torque
    (1) Install the new spacer counter bearing to the gear counter drive.
    (2) Apply ATF to the bearings tapered roller.
    (3) Install the gear counter drive to the transaxle case.
    (4) With used the following SST, press (1.9 ton) the bearing tapered roller.
        SST: 09351-87713-000 ... (A)
        09351-87717-000 ... (B)



GAT00360-99999

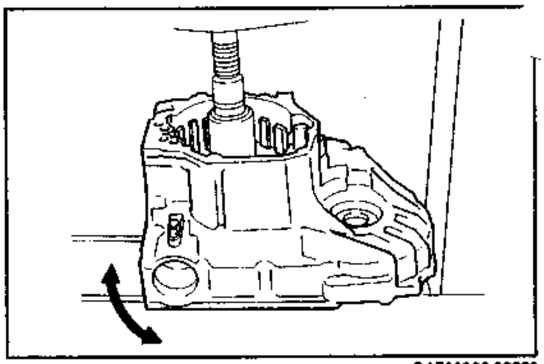
    (5) Stop the press and rotates the transaxle case several times so as to stabilize the tapered roller bearing.
    (6) Clamp the SST (09351-87717-000) in a vice.
    (7) With the new lock nut used, tighten them, using the following SST.
        SST: 09351-87718-000
        Tighting Torque: 490.0 N·m (50.0 kgf-m, 361 ft-lb)

NOTE:
- For easing tighten the lock nut, it is recommended to use the power torque wrench for tightening.

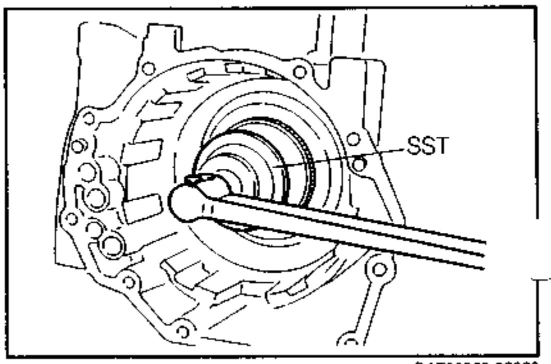


GAT00361-99999

(10) Hook the push-pull gauge or the like in the bolt hole section of the transaxle case.
(11) Measure the rotational torque of the transaxle case.
Specified Value:
0.078 - 0.21 N·m
(0.008 - 0.022 kgf-m, 0.057 - 0.15 ft-lb)


GAT00362-99999

(13) Remove the SST (09351-87713-000 and 09351-87717-000) from the vice.
(14) Measure the starting torque of the gear counter drive, using the following SST.
SST: 09351-87718-000
Specified Value:
0.049 - 0.39 N·m
(0.005 - 0.04 kgf-m, 0.036 - 0.28 ft-lb)

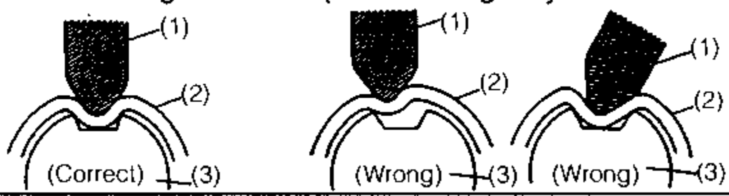


GAT00363-99999

(15) Stake a new lock nut, using a standard punch in combination with a hammer.

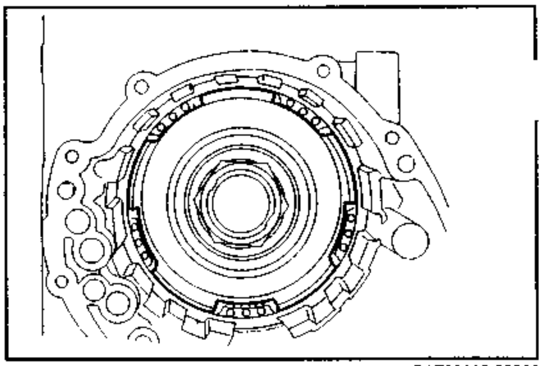
NOTE:
- When staking the lock nut, point a suitable staking tool toward the shaft axis center and stake the lock nut securely, as shown in the figure below. (Poor staking may cause abnormal noise.)

(1) Suitable staking tool
(2) New nut
(3) Shaft

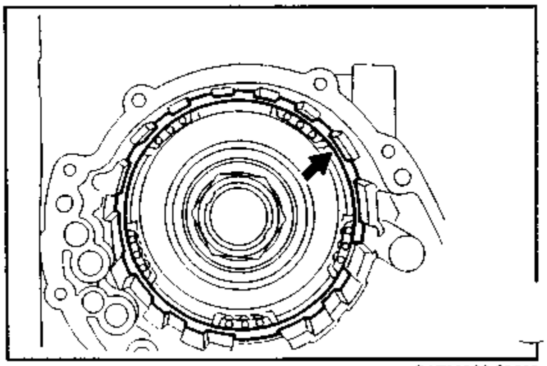


GAT00364-99999

11. Coat the new O-rings with ATF.
12. Place the piston 1st & reverse brake with the O-rings installed.
NOTE:
- Be careful not to twist or divide the O-rings during installation of piston.


GAT00365-99999

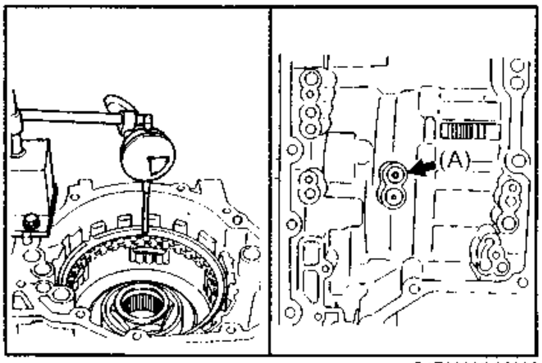
13. Place the spring subassembly brake piston return.
14. Install the ring retainer by compressing the spring subassembly brake piston return with the flat drivers or the like.


GAT00366-99999

Install the brake flange (A), disc/clutch & plate (P), plate brake (B) and flange brake (B) in the following order.

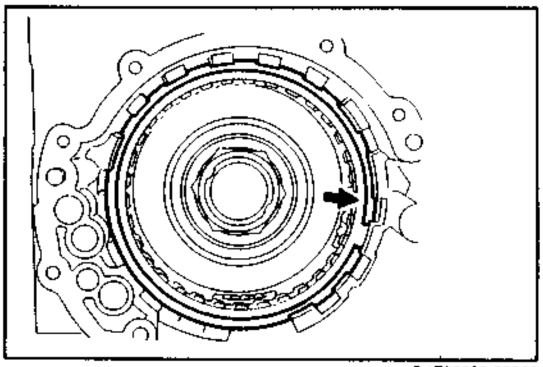
F (A) → D → P → D → P → D → P → D → F (B)

16. Install the ring hole snap.
    NOTE:
    - **Make sure that the opening end of snap ring should be aligned with the protrusion of the transaxle case.**



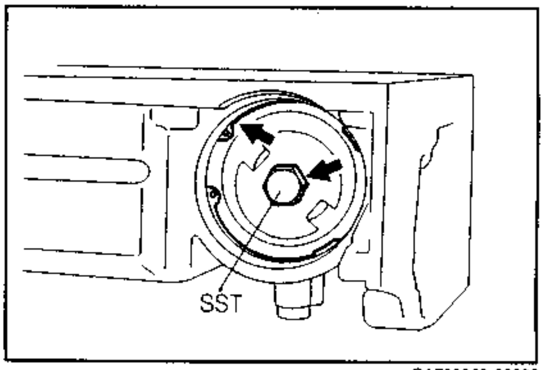
GAT00367-99999

17. Measure the piston 1st & reverse brake stroke by applying and releasing the compressed air 392 - 784 kPa (4 - 8 kgf/cm^2, 56 - 113 psi) through oil hose section (A), using the following SST.
    SST: 09351-87210-000
    Specified Value: 1.40 - 2.20 mm



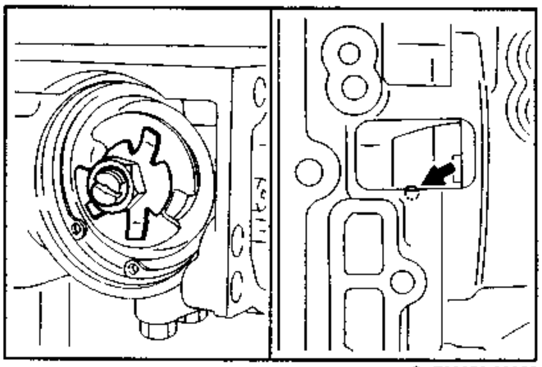
GAT00368-99999

18. Place the spring compression for 2nd & 4th brake into the transaxle case.
19. Apply ATF to the new O-rings.
20. Insert the removed lock plate with following SST to the piston 2nd & 4th brake, cover brake piston (new O-rings installed to the transaxle case).
21. Install the piston 2nd & 4th brake, cover brake piston with the ring hole snap by tightening the SST. (Never use the air impact wrench for tightening the SST)
    SST: 09351-87709-000, 09351-87710-000



GAT00369-99999

22. Temporarily install the piston rod with lock plate, new lock washer and lock nut to the transaxle case.
    NOTE:
    - **It is recommended to protrude (approx: 2 - 3 mm) the head section of piston rod at the inner side of transaxle case.**

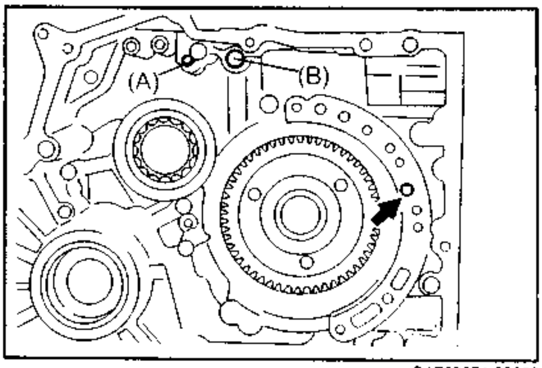


GAT00370-99999

23. Apply ATF to the outer periphery of the three rollers.
24. Insert the rollers to the transaxle case.
    Pin Dimension:

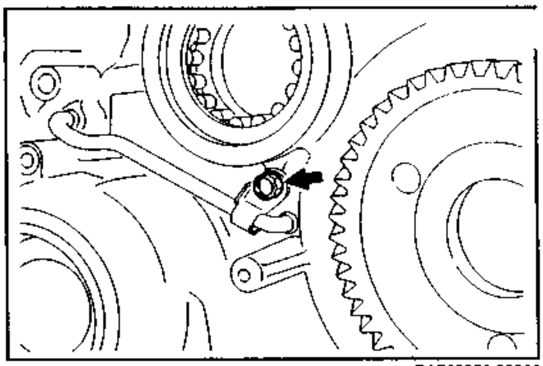
Unit: mm

	(A)	(B)
Outer diameter	10.0	12.0
Length	33.7	45.9

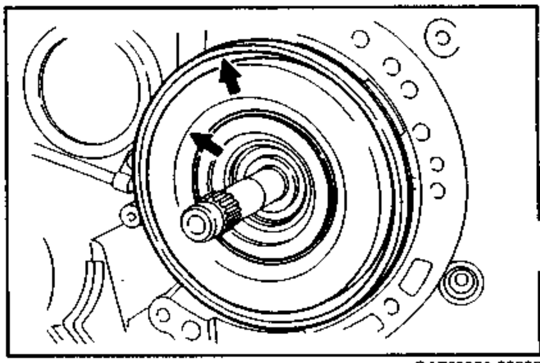


GAT00371-99999

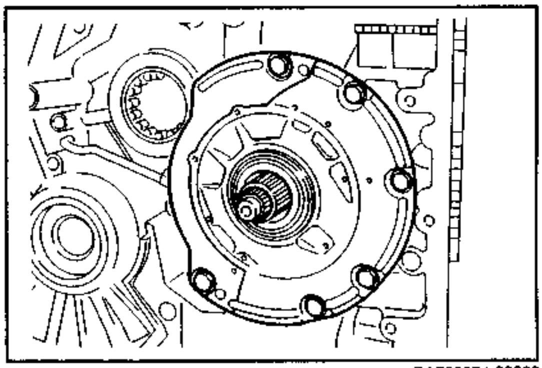
25. Apply ATF to the tube transaxle lub apply.
26. Install the tube transaxle lub apply.
27. Tighten the clamp with a bolt.
    Tightening Torque: 3.9 - 6.9 N·m
    (0.4 - 0.7 kgf-m, 2.9 - 5.1 ft-lb)


GAT00372-99999

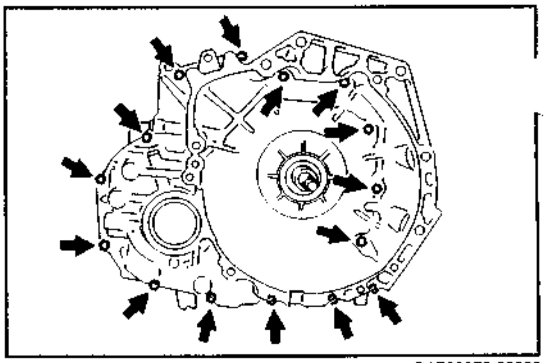
28. Install the band assembly 2nd & 4th brake.
29. Install the 1st & reverse clutch assembly.


GAT00373-99999

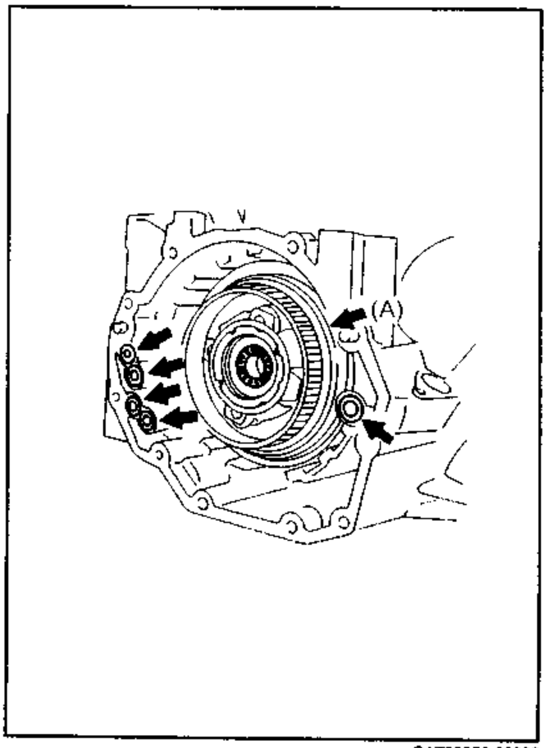
30. Temporarily tighten the six bolts of the body oil pump with your fingers.


GAT00374-99999

31. Temporarily tighten the transaxle housing to the transaxle case with the 5 to 6 bolts.

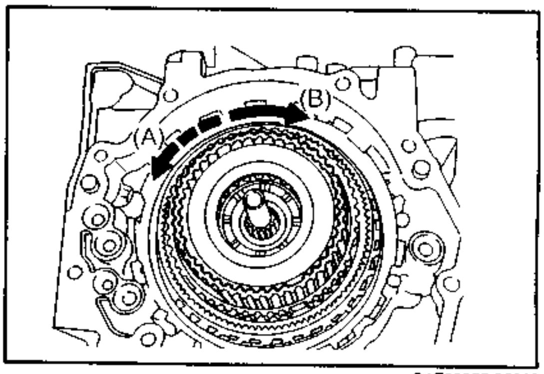

GAT00375-99999

12. Stand the transaxle (ie: transaxle housing faces toward the down side).
33. Install the front and rear planetary carrier while rotating counterclockwise and clockwise.
34. Install the sun gear with needle roller bearing.
    Bearing Race Dimension: Approx.
    Outer Diameter: 32.2 mm
    Inner Diameter: 18.9 mm
    Thickness: 2.6 mm
32. Coat a race with vaseline.
33. Install the race to the 1 way clutch.



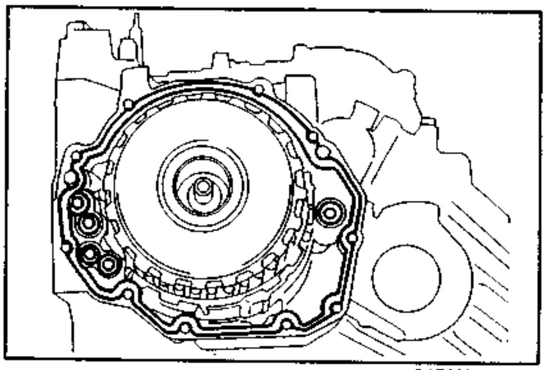
GAT00376-99999

34. Install the overdrive/coast clutch assembly while rotating counterclockwise and clockwise.
    NOTE:
    - Ensure that the overdrive/coast clutch locked when turns counterclockwise (A) and freely when turned clockwise (B).

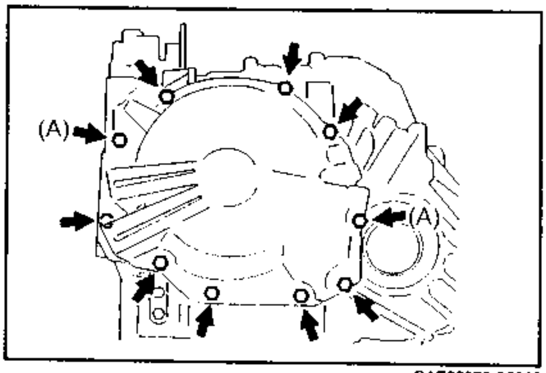


GAT00377-99999

35. Install the forward clutch assembly while rotating.
36. Apply following sealer gasket to the contacting surface of the transaxle case.
    Sealer Gasket: Three Bond 1281 (Three Bond made)
37. Install the new four gaskets 2nd brake apply and a gasket governor apply.
    NOTE:
    - There are no installation direction of new gaskets.

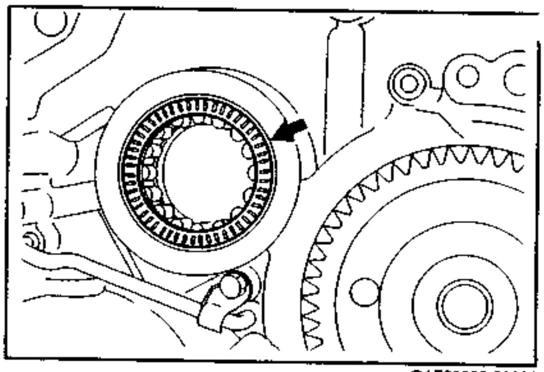

GAT00378-99999

38. Tighten the transaxle rear cover with the ten (two ... new bolts ... (A)) bolts.
    Tightening Torque: 19.6 - 29.4 N·m
    (2.0 - 3.0 kgf-m, 14.5 - 21.7 ft-lb)
39. Turn over the transaxle.
40. Remove the transaxle housing.
41. Remove the body oil pump, 1st & reverse clutch and band assembly 2nd & 4th brake from the transaxle case.



GAT00379-99999

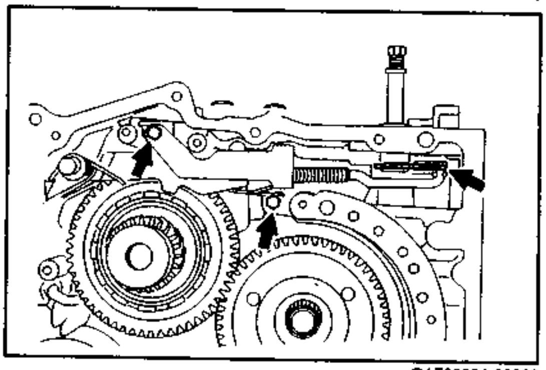
42. Apply ATF to the race with integrated needle roller bearing.
43. Install them to the transaxle case.
    Race Dimension: Approx.
    Outer Diameter: 65.8 mm
    Inner Diameter: 51.0 mm
    Thickness: 2.7 mm



GAT00380-99999

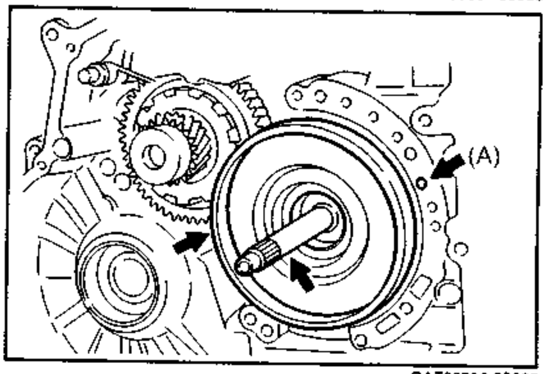
44. Install the gear assembly counter driven.
45. Install the rod parking lock with pawl parking lock, bracket parking lock pawl and spring torsion.
46. With the spacer and torsion spring installed a bolt, tighten the bracket parking lock pawl.
    Tightening Torque: 7.8 - 11.8 N·m
    (0.8 - 1.2 kgf-m, 5.8 - 8.7 ft-lb)

47. Insert the rod parking lock to the bracket parking lock pawl and connect the rod parking lock with lever manual valve.
48. Install the band assembly 2nd & 4th brake.



GAT00381-99999

49. Install the 1st & reverse clutch assembly while rotating counterclockwise and clockwise.

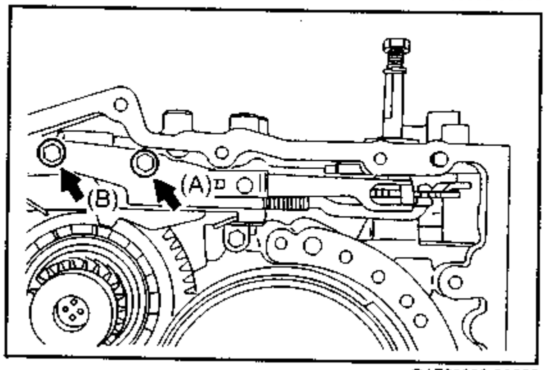


GAT00382-99999

50. Tighten the spring manual detent with the two bolts.
    Tightening Torque: 7.8 - 11.8 N·m
    (0.8 - 1.2 kgf-m, 5.8 - 8.7 ft-lb)

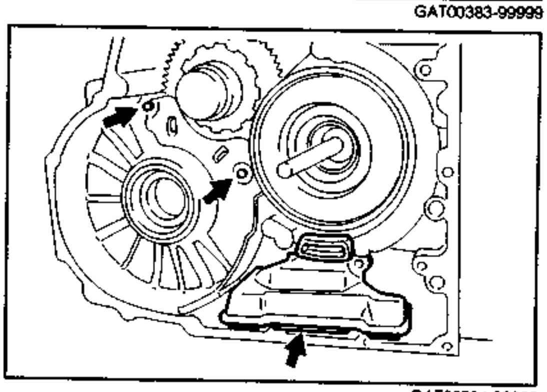
NOTE:

- It is recommended to set the neutral position between spring detent and lever manual valve and then firstly tighten the bolt (A) and (B).



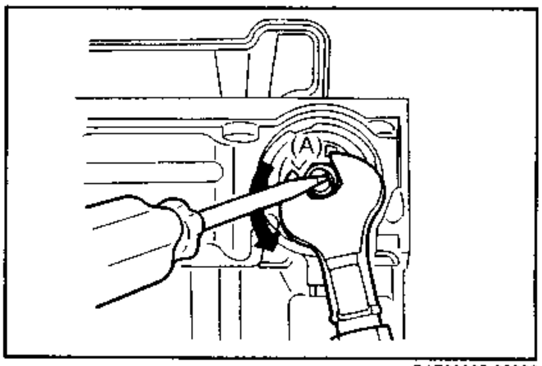
GAT00383-99999

51. Install the strainer subassembly oil.
52. Tighten the plate oil reserve with the two bolts.
    Tightening Torque: 3.9 - 6.9 N·m
    (0.4 - 0.7 kgf-m, 2.9 - 5.1 ft-lb)



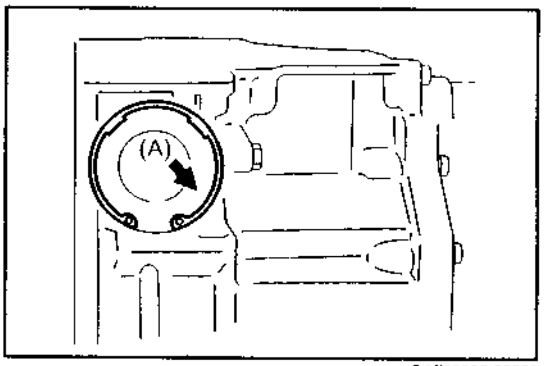
GAT00384-99999

3. Adjustment of rod 2nd & 4th brake piston
   (1) Fully tighten the rod piston with your hand.
   (2) Loosen the rod piston for counterclockwise 3 to 3.3 turns (A).
   (3) Tighten the lock nut.
   Tightening Torque: 17.6 - 23.5 N·m (1.8 - 2.4 kgf-m, 13.0 - 17.4 ft-lb)



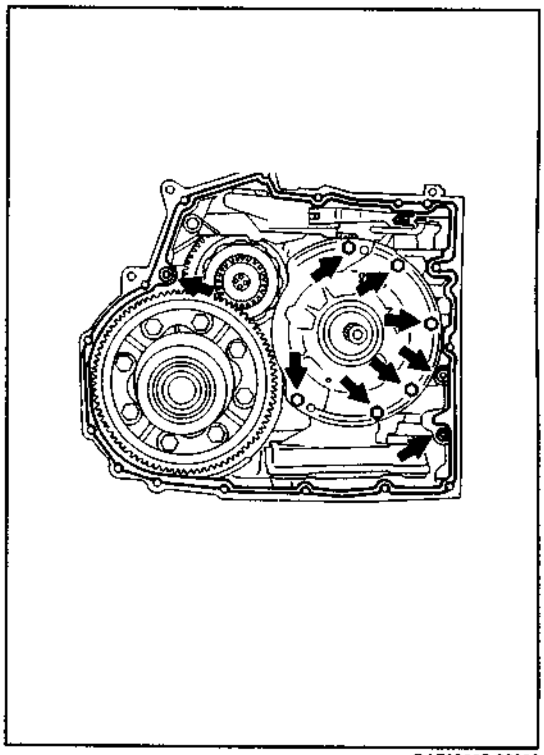
GAT00385-99999

   (4) Stake the new lock plate along with the nut.
   (5) Coat a new O-ring with ATF.
   (6) Install them to the cover brake.
   (7) Install the cover brake to the transaxle case with the ring hole snap, using the snap ring plier.



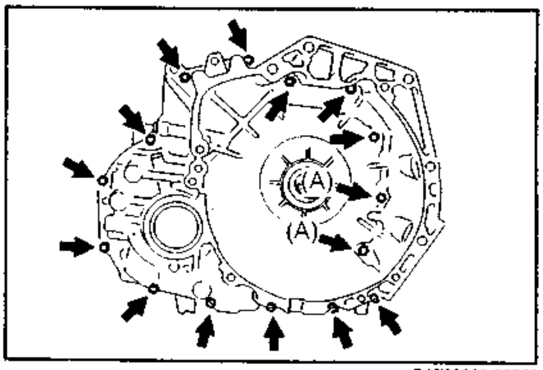
GAT00386-99999

54. Install the new two gaskets governor apply and a gasket governor apply.
55. Install the gear assembly differential.
56. Wipe off and clean the contacting surface between case and housing.
57. Tighten the body oil pump with the six bolts.
    Tightening Torque: 19.6 - 29.4 N·m (2.0 - 3.0 kgf-m, 14.5 - 21.7 ft-lb)
58. Apply following sealer gasket to the transaxle case as shown in the right figure illustration.
    Sealer Gasket: Three Bond 1281 (Three Bond made)


GAT00387-99999

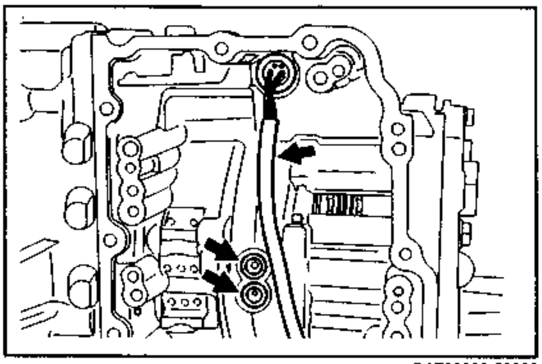
59. Tighten the transaxle housing to the transaxle case with 15 bolts.
    Tightening Torque: 23.5 - 35.3 N·m (2.4 - 3.6 kgf-m, 17.4 - 26.0 ft-lb)

NOTE:
- Ensure the (A) section of two bolts should be used with new one.



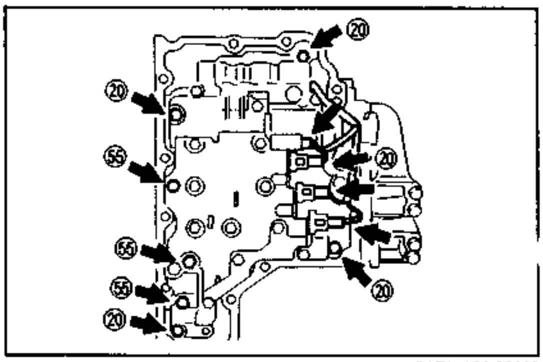
GAT00388-99999

60. Insert the wiring harness of the solenoid connectors.
61. Coat the two gaskets governor apply with ATF and place them as right figure illustration.



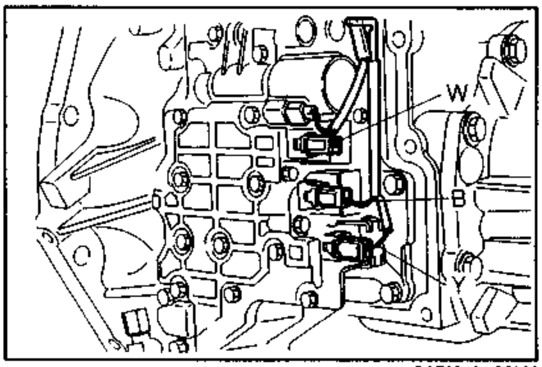
GAT00389-99999

62. While holding the valve body assembly, connect the valve manual to the rod parking lock.
63. Clamp the wiring harness of the solenoid.
64. Connect the couplers of the wiring harness to the solenoid.
65. Tighten the valve body assembly with the eight bolts.
    Tightening Torque: 7.9 - 11.8 N·m
    (0.8 - 1.2 kgf-m, 5.8 - 8.7 ft-lb)



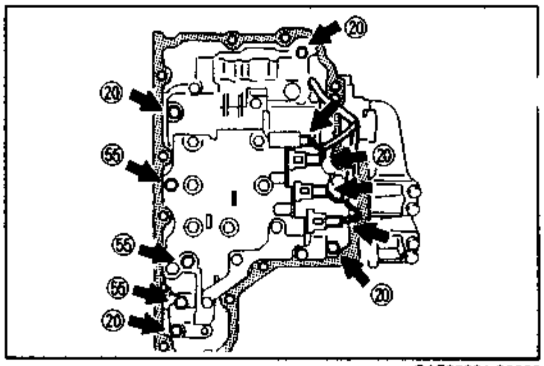
GAT00390-99999

66. Connect the couplers of the solenoid
    NOTE:
    - Ensure that the coupler should be connected correctly (Shift solenoid No. 1 — white, Shift solenoid No. 2 — blue and Lock-up control — yellow).
    - There is an interchangeability between shift solenoid No. 1 and No. 2 for installation.



GAT00424-99999

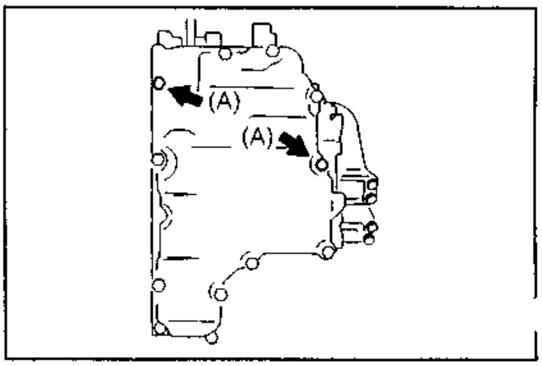
67. Wipe off and clean any sealer gasket between contacting surface of case and side cover.
68. Apply following sealer gasket.
    Sealer Gasket: Three Bond 1281 (Three Bond made)



GAT00391-99999

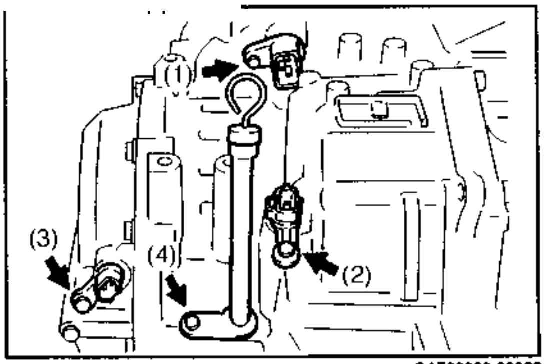
69. Tighten the transaxle side cover with the 12 bolts.
    Tightening Torque: 19.6 - 29.4 N·m
    (2.0 - 3.0 kgf-m, 14.5 - 21.7 ft-lb)

NOTE:
- Make sure that the (A) section of two bolts should be used with new.



GAT00392-99999

70. Coat the new O-rings with ATF.
Tighten the following parts (ie: new O-rings installed) with the bolts.
(1) Solenoid coupler
(2) Vehicle speed sensor
(3) C1 cylinder revolution sensor
(4) Transmission fluid level tube
Tightening Torque: 3.9 - 6.9 N·m
(0.4 - 0.7 kgf-m, 2.9 - 5.1 ft-lb)



GAT00393-99999

72. Place the sleeve lock plate.
73. Coat a new O-ring with ATF.
74. Tighten the gear speedometer driven (new O-ring installed) with a bolt.
Tightening Torque: 9.8 - 13.7 N·m
(1.0 - 1.4 kgf-m, 7.2 - 10.1 ft-lb)

Install the neutral start switch assembly.
76. Place the new gasket and new lock washer on the neutral start switch.
77. Tighten the lock nut.
Tightening Torque: 5.9 - 7.8 N·m
(0.6 - 0.8 kgf-m, 4.3 - 5.8 ft-lb)

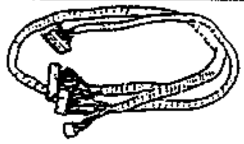
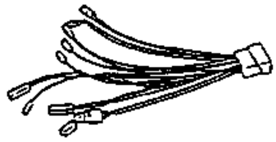
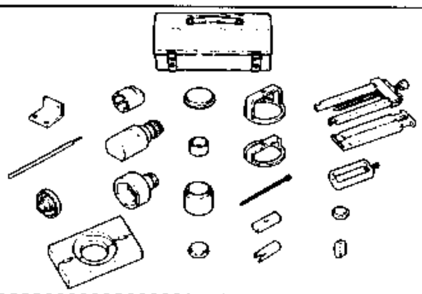
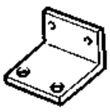
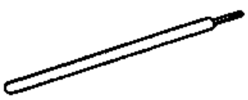
78. Adjust the neutral start switch assembly (see page AT–13).
79. Temporarily tighten the neutral start switch.

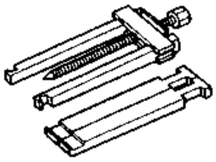
80. Tighten the control lever with a spring washer and nut.
Tightening Torque: 15.7 - 23.5 N·m
(1.6 - 2.4 kgf-m, 11.6 - 17.4 ft-lb)
81. Install the automatic transmission to the vehicle (see page AT–56 to AT–67).
82. Fill the new ATF.
Fluid To Be Used: DEXRON® II
Capacity: 5.7ℓ (Full), 3.2ℓ (Drain and refill)

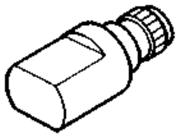
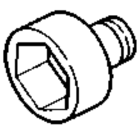
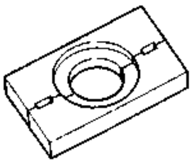
GAT00394-00000

SST

It should be noted that 09350-87704-000 contains SSTs other than those posted in this section.

Shape	Part No.	Part name
	09842-87501-000	Sub-harness, EFI E.C.U check
	09991-87705-000	Sub-harness, engine control system inspection
	09517-87202-000	Handle
	09648-87201-000	Puller, drive shaft
	09308-10010-000	Puller, oil seal
	09308-20010-000	Replacer, oil seal
	09992-00092-000	Oil pressure gauge for A/T
	09350-87704-000	Tool set, automatic
	09351-87210-000	Base, dial gauge stand
	09351-87203-000	Attachment, dial gauge

Shape	Part No.	Part name
	09518-87701-000	Replacer, oil seal No. 1
	09351-87703-000	Puller, transmission bearing
	09351-87704-000	Stopper, transmission bearing puller
	09351-87705-000	Plate, disc bearing
	09351-87706-000	Guide, bearing
	09351-87707-000	Compressor, piston spring No. 1
	09351-87708-000	Compressor, piston spring No. 2
	09351-87709-000	Rod, brake piston
	09351-87710-000	Plate, brake piston
	09351-87711-000	Adapter, differential preload
	09351-87712-000	Plate, disc
	09351-87713-000	Replacer, bearing No. 1

Shape	Part No.	Part name
	09351-87714-000	Replacer, bearing No. 2
	09351-87715-000	Plate, disc bearing
	09351-87716-000	Wrench, center lock nut
	09351-87717-000	Wrench, base lock nut
	09351-87718-000	Wrench, counter drive lock nut
	09351-87719-000	Plate, base
	09351-87720-000	Plate, disc

GAT00425-99999

SERVICE SPECIFICATION

Item (Unit: mm)		Specified value	Allowable limit
Run out of drive plate		0.25	—
Run out of torque converter at sleeve section		0.30	—
Oil pump clearance	Body	0.075 - 0.15	0.3
	Tip	0.004 - 0.248	0.3
	Side	0.02 - 0.05	0.1
Piston stroke	Forward	0.76 - 1.44	
	Overdrive	0.75 - 1.05	—
	Coast	2.68 - 3.02	—
	Reverse (Pack clearance)	0.64 - 1.50	—
	1st & reverse	1.40 - 2.20	—
	2nd & 4th brake	3.0 - 3.4	—
Return spring with seat free length	Forward	22.0	
	Coast	18.9	
	Reverse	18.7	
Counter drive gear starting torque	Lock nut side	0.49 - 3.9 N·m (0.5 - 4.0 kgf-cm, 0.36 - 0.39 ft-lb)	
	Case side	0.78 - 2.1 N·m (0.8 - 22.0 kgf-cm, 0.57 - 1.59 ft-lb)	
Differential	Side gear backlash	0.06 - 0.22	—
	Starting torque	0.78 - 1.01 N·m (0.8 - 1.4 kgf-cm, 0.57 - 1.01 ft-lb)	
Stall revolution speed (rpm)		2180 ± 150 for HC-E	
		2500 ± 150 for HC-C	
Time lag (second)	N to D	Less than 0.7	
	N to R	Less than 1.2	
Lubrication pressure (idling) ... D range: kPa (kgf/cm^2, psi)		More than 78 (0.8, 11)	
D range kPa (kgf/cm^2, psi)		Idling	Stall
	Line pressure	372 - 421 (3.8 - 4.3, 54 - 61)	1019 - 1196 (10.4 - 12.2, 147 - 173)
	Forward	343 - 421 (3.5 - 4.3, 49 - 61)	1029 - 1196 (10.5 - 12.2, 149 - 173)
	Coast	343 - 421 (3.5 - 4.3, 49 - 61)	1029 - 1196 (10.5 - 12.2, 149 - 173)
	Throttle	39 - 63 (0.4 - 0.65, 5.6 - 9.2)	402 - 451 (4.1 - 4.6, 58 - 65)
R range kPa (kgf/cm^2, psi)	Line pressure	539 - 627 (5.5 - 6.4, 78 - 91)	1343 - 1618 (13.7 - 16.5, 194 - 234)
	Coast	382 - 431 (3.9 - 4.4, 55 - 62)	382 - 431 (3.9 - 4.4, 55 - 62)
	Throttle	39 - 63 (0.4 - 0.65, 5.6 - 9.2)	402 - 451 (4.1 - 4.6, 58 - 65)
Applying pressure in 2nd gear kPa (kgf/cm^2, psi)	D range	343 - 421 (3.5 - 4.3, 49 - 61)	
	2nd range	More than 343 (3.5, 4.9)	
Releasing pressure 3rd gear in D range kPa (kgf/cm^2, psi)	Overdrive clutch	343 - 421 (3.5 - 4.3, 49 - 61)	
	2nd & 4th brake	343 - 421 (3.5 - 4.3, 49 - 61)	

GAT00426-00000

TIGHTENING TORQUE

Tightening components	Tightening torque		
	N·m	kgf-m	ft-lb
Transaxle housing × Transaxle case	23.5 - 35.3	2.4 - 3.6	17.4 - 26.0
Transaxle case × Transaxle side cover	19.4 - 29.4	1.99 - 3.0	13.7 - 21.7
Transaxle case × Rear cover	19.6 - 29.4	2.0 - 3.0	14.5 - 21.7
Oil pump body assembly × Transaxle case	19.6 - 29.4	2.0 - 3.0	14.5 - 21.7
Transaxle housing × Inspection plugs	5.9 - 8.8	0.6 - 0.9	4.3 - 6.5
Transaxle housing × Drain plug	23.5 - 54.9	2.4 - 5.6	17.4 - 40.5
Neutral start switch × Transaxle case	19.6 - 29.4	2.0 - 3.0	14.5 - 21.7
Control cable × Control shaft lever	19.6 - 41.2	2.0 - 4.2	14.5 - 30.4
Transmission floor shift assembly × Nut	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Oil reserver plate × Transaxle case	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
Parking lock pawl bracket × Transaxle case	7.8 - 11.8	0.8 - 1.2	5.8 - 8.7
Detent spring × Transaxle case	7.8 - 11.8	0.8 - 1.2	5.8 - 8.7
Bearing stopper × Transaxle housing	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Oil reserver plate × Transaxle housing	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
Tube clamp × Transaxle housing	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
Tube clamp × Transaxle case	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
Transaxle case × Inspection plugs	5.8 - 8.8	0.6 - 0.9	4.3 - 6.5
Oil pump cover × Oil pump body	9.8 - 13.7	1.0 - 1.4	7.2 - 10.1
Front valve body × Transaxle case	7.9 - 11.8	0.8 - 1.2	5.8 - 8.7
Suction cover × Front valve body	7.9 - 11.8	0.8 - 1.2	5.8 - 8.7
Lock up solenoid bracket × Front valve body	7.9 - 11.8	0.8 - 1.2	5.8 - 8.7
Rear valve body cover × Rear valve body	7.9 - 11.8	0.8 - 1.2	5.8 - 8.7
Valve body related other than above	5.9 - 7.4	0.6 - 0.75	4.3 - 5.4
Differential ring gear × Differential case (w/wet condition)	90.2 - 102.9	9.2 - 10.5	66.5 - 75.9
Rear cover × Inspection plugs	5.9 - 8.8	0.6 - 0.9	4.3 - 6.5
Counter drive gear × Lock nut	490	50	361
Counter driven gear × Lock nut (for sensor)	147.0 - 177.0	15.0 - 18.0	109.0 - 130.0

GAT00427-00000

DAIHATSU

G200, G201

CHASSIS

HARNESS & WIRING

GHW00001-00000

9186-HW

GENERAL INFORMATION

LOCK TYPE CONNECTOR

PRECAUTION:

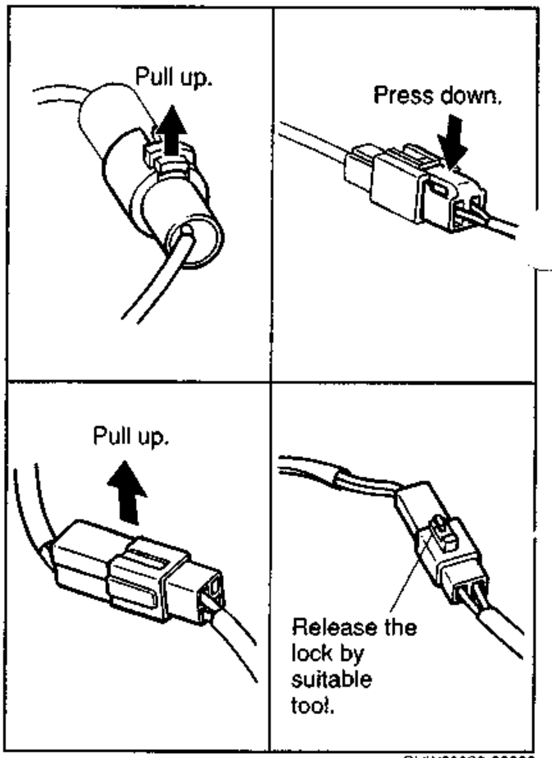
- Disconnection and connection of each connector should be kept at a minimum level. If unnecessary disconnection or connection is repeated, it may cause unexpected troubles such as poor continuity and chattering.

GHW00002-00000

DISCONNECTION

The lock type of the connector comes in a push release type, a pull release type, a spring lock type, an one-way lock type and so on.
After confirming the shape of the lock, unlock the lock.
Disconnect the connector while holding the connector by hand.
NOTE:

- Never pull the harness during the disconnection.
- Be sure to pull out the connector straight so as not to damage the terminal.

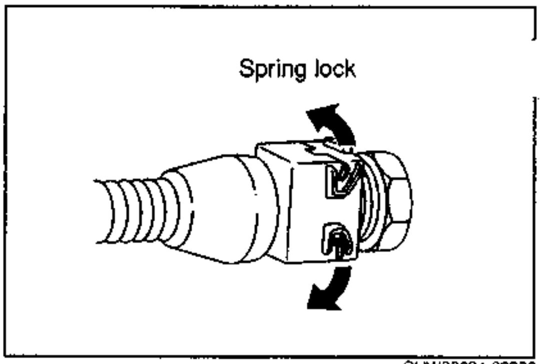


GHW00003-99999

CONNECTION

Perform the connection until the lock is completely engaged.
After the connection has been made, ensure that the lock is engaged positively.
NOTE:

- Be sure to connect the connector straight so as not to damage the terminal.

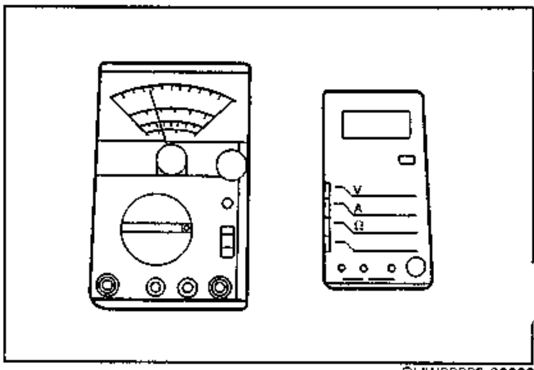


GHW00004-99999

INSPECTION

Tester (Volt/ohmmeter)

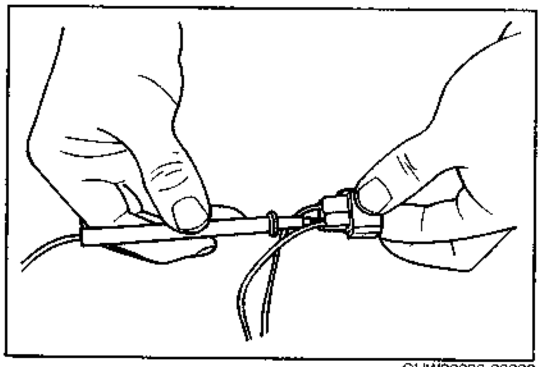
For the inspection, use a tester having an internal resistance of more than 10 kw/V.
Use of a tester with a low internal resistance may cause wrong measurement or secondary troubles.



GHW00005-99999

Conventional type connector

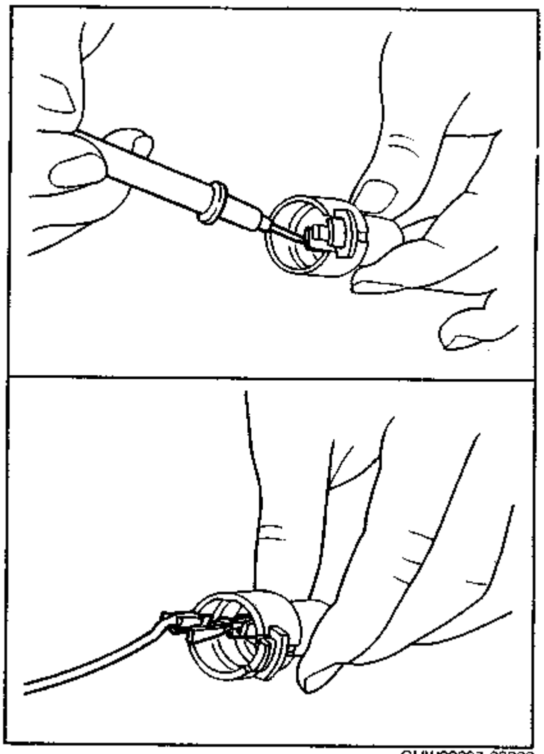
When resistance measurement and/or voltage measurement is conducted at the connector section, insert the measuring probe from the back of the connector, being very careful not to damage the harness-to-terminal connections.



GHW00006-99999

Water-proof type connector

When resistance measurement and/or voltage measurement is conducted at the connector section, bring the measuring probe into contact with the terminal at the connection side of the connector.
Be very careful not to apply excessive force to the terminal at the connector side. Failure to observe this caution may deform the terminal, causing poor continuity.
As an alternative method, insert a male or female terminal into the connector terminal or connect an adequate attachment. Then, connect the measuring probe.



GHW00007-99999

TERMINAL REMOVAL/INSTALLATION

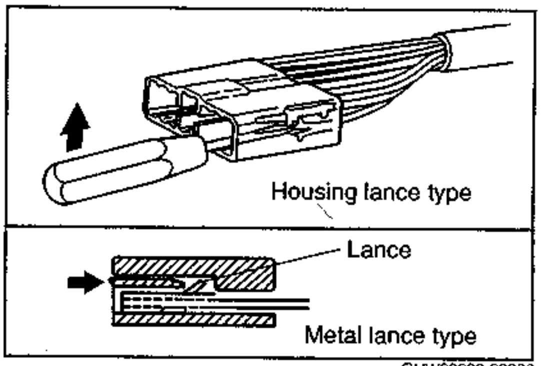
Removal of terminal

<Housing lance type>

Insert a miniature screwdriver through the opening section of the connector into between the locking lug and the terminal. While prying up the locking lug with the screwdriver, pull the terminal backward.

<Metal lance type>

While pushing the lance with the screwdriver, pull the terminal backward.

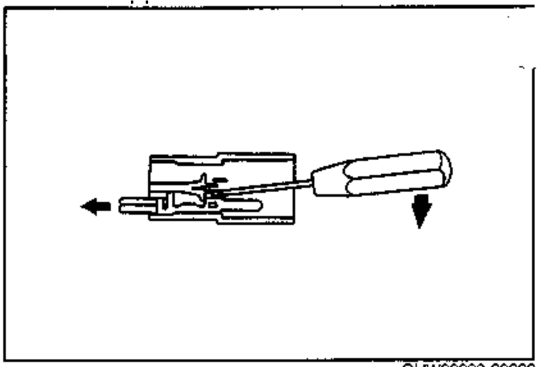


GHW00008-99999

Installation of terminal

<Housing lance type>

Push the terminal into the protruding section of the connector, until the lock is engaged completely.
Lightly pull the harness to assure that the locking has been made completely.



GHW00009-99999

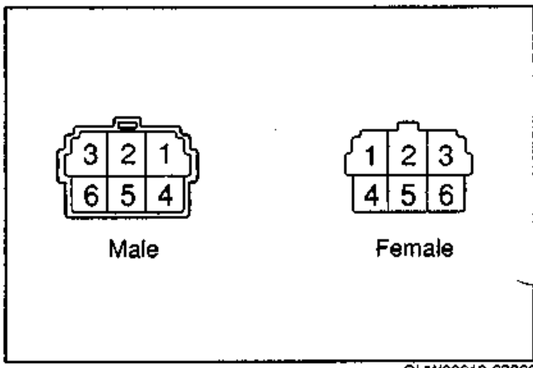
<Metal lance type>

Insert the terminal into the connector, until lance is locked completely.
Lightly pull the harness to assure that the locking has been made completely.

PIN NUMBER OF CONNECTOR

(1) Pin number of female connector
The numbering is made in sequence from the left/upper position to the right/under position.

(2) Pin number of male connector
The numbering is made in sequence from the right/upper position to the left/under position.



GHW00010-99999

OPERATION OF WIRE HARNESS

1. General instructions

(1) Never pull the connectors or step on them during the wire harness transport or assembly.
(Prevention of pulling-out of terminals, connector cracks, deformation and so forth)

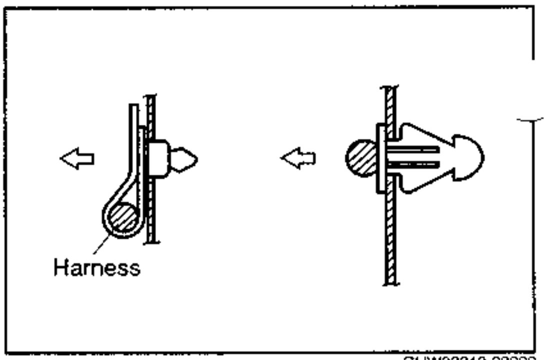
(2) Care must be exercised to ensure that no scratch is made to the wire harness by burrs or edges during the wire harness transport or assembly.
(Prevention of scratches to the outer trim, electrical insulators and so forth)

GHW00011-00000

(3) Clamping method
In the case of resin clamps, ensure that the clamp section is fitted in the body hole.

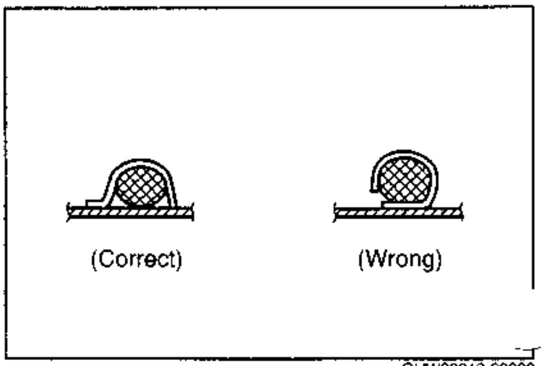
NOTE:

- Ensure that the clamp will not be detached when it is pulled lightly in the arrow-headed direction.
(Prevention of interference due to the detachment of the clamp)



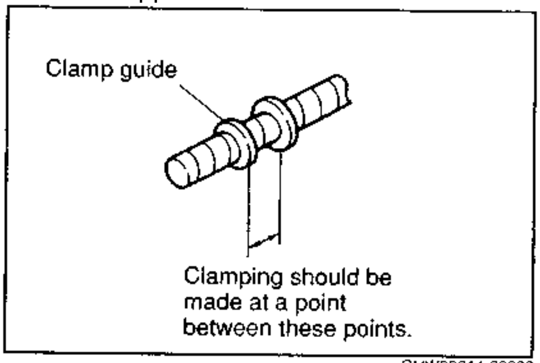
GHW00012-99999

- In the case of metal sheet welded clamps, be sure to assemble the harness in such a way that the harness will not come in contact with the welded surface.
(Prevention of wire harness damage due to welding burrs)



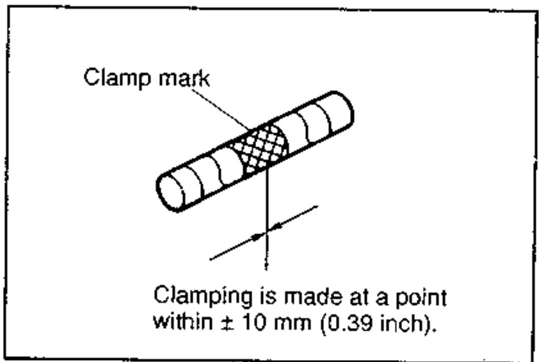
GHW00013-99999

- In case that the locating guide of the clamp position or the clamp mark is clamped, make sure that the clamp is located within the guide. As for the clamp at the clamp mark section, ensure that the clamping is made at a point within ± 10 mm (0.39 inch).



GHW00014-99999

(Prevention of slackness or interference)

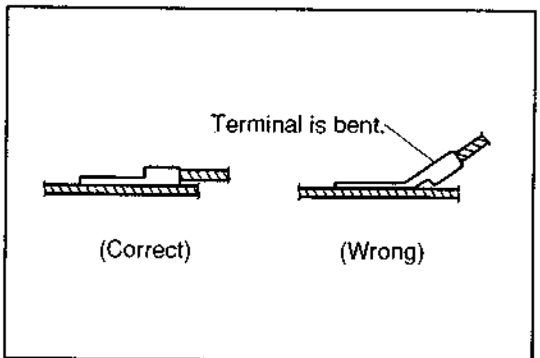


GHW00015-99999

(4) Terminals and connectors
Perform the connection of connectors positively.
- Connector with lock .... Ensure that the locking is made.
- Connector without lock ... Connect the connector positively until it stops.

GHW00016-00000

Retention by screws
- When the tightening torque is specified, be sure to observe the specification strictly. (The tightening torque is posted in the table separately.)
- Ensure that the staked section may not come on the assembling surface.
- After completion of the tightening operation, lightly pull out the terminal. Ensure that there is no slackness.



GHW00017-99999

- When performing other operations, care must be exercised to ensure that no connected connector is detached by pulling out the wire harness forcibly.

GHW00018-00000

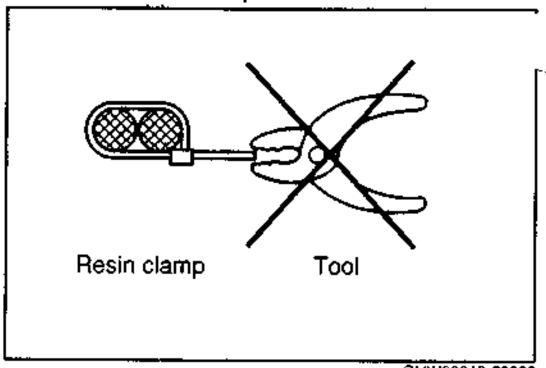
2. Work procedure for tightening-up type resin clamps

<Work procedure>

When the tightening-up type resin clamps are employed, do not use any pliers, cutting pliers or the like.

<Reason>

Prevention of clamps being cut or scratched



GHW00019-99999

WIRING HARNESSES

WARNING:

- The wire diameter and capacity of each harness have been determined to assure the normal operation of the electrical system.
- Hence, do not take power for accessories carelessly through the original wiring harness. Failure to observe this caution may cause system malfunction or fire.

GHW00020-00000

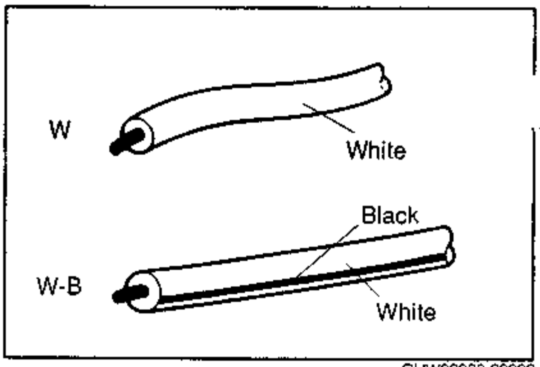
Wiring color code

- For identification purpose, each wire has its own color. Each color bears a code as described in the right table. These codes are used in the wiring diagram and will be helpful during trouble shooting.

Code	Gr	Br	B
Color	Gray	Brown	Black
Code	W	R	G
Color	White	Red	Green
Code	Y	L	O
Color	Yellow	Blue	Orange
Code	P	Lg	V
Color	Pink	Light green	Violet

GHW00021-00000

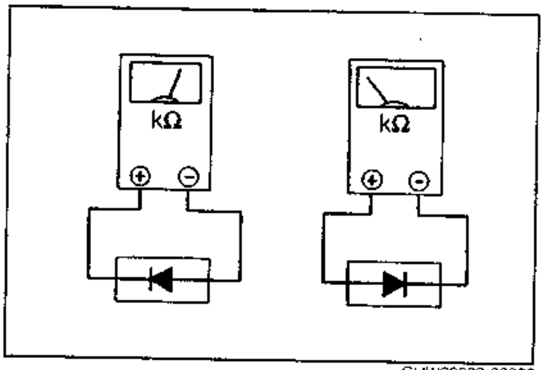
- The wire color comes in two kinds: single color and composite color. In the case of single color, the whole outer coat of the harness is of a single color.
  In the case of composite color, a fine line of the second color is drawn on the harness basic color.
  In this case, the code is composed of the basic color code which comes first and the second color code which comes after a hyphen.



GHW00022-99999

INSPECTION OF CIRCUIT WITH TESTER

If a diode is built in the circuit, perform continuity test by changing the polarities of the measuring terminals.
In case of a general type tester, ensure that continuity exists when the negative (–) lead of the tester is connected to the positive (+) side of the diode; the positive (+) lead of the tester to the negative (–) side of the diode. Also ensure that no continuity exists when the polarities are changed.



GHW00023-99999

Since some testers have different polarities, be sure to read the instruction manual of a tester to be used for the check before using it.

The inspection procedure for light emitting diodes (LED) is the same as normal diodes. However, there may be cases where the LED emits no light, unless a tester with LED check mode is used. If an adequate tester is not available, apply the battery voltage to the LED and ensure that the LED emits light.

GHW00024-00000

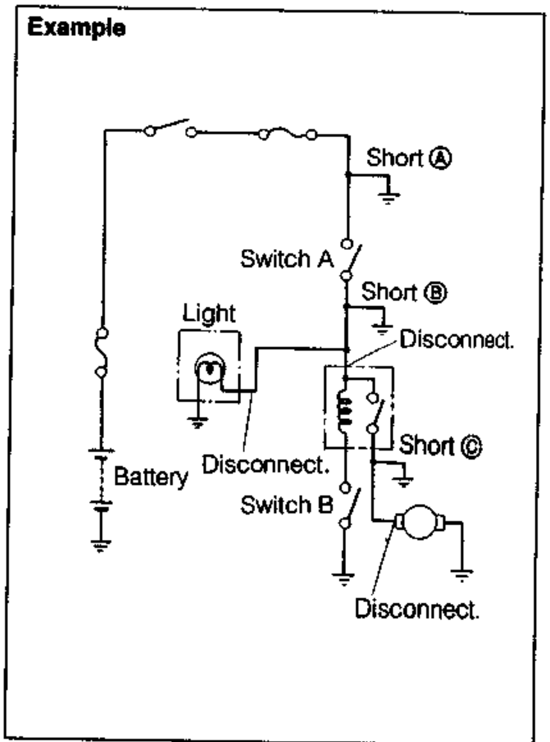
INSPECTION OF SHORT CIRCUIT

(1) Remove a melt fuse or fusible link.
(2) Disconnect all connectors for loads being applied to the melt fuse.
(3) Connect a test lamp at the position where the melt fuse or fusible link was installed.
(4) Search for the sort circuit by providing the minimum conditions which make the test lamp glow.

Example

Short section	Connecting conditions
Ⓐ	Ignition switch is turned ON.
Ⓑ	Ignition switch and switch Ⓐ are turned ON.
Ⓒ	Ignition switch, switch Ⓐ and Ⓑ are turned ON with relay energized.

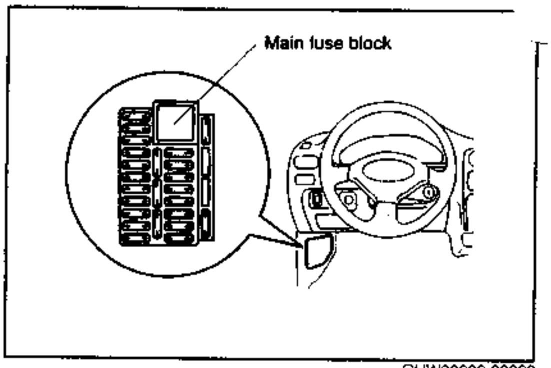
(5) Perform repairs or wiring harness replacement, as required.



GHW00025-99999

JUNCTION BLOCK (Main fuse block)

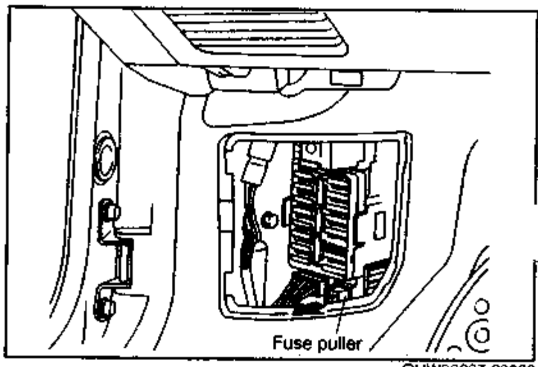
The junction block assembly is located underneath the instrument panel at the driver's foot side.



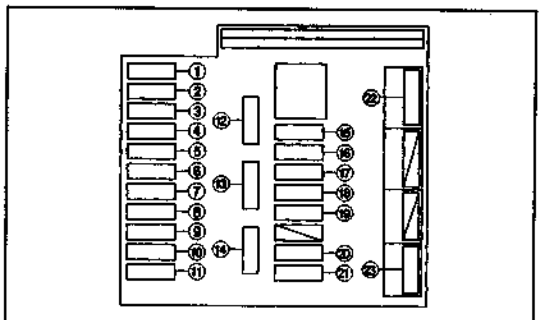
GHW00026-99999

Fuse check and replacement

1. Turn the ignition switch off and remove the fuse box lid.
2. Make sure that the switch of the malfunctioning component is off.
3. Attach the fuse puller and pull out the fuse.
4. When replacing a fuse with a new one, be sure to install a fuse having a capacity specified at the caution plate.
   NOTE:
   - The fuse puller is provided at the junction block.
   - The fuse position should be checked by holding the caution plate.
     1. Defogger
     2. Engine 20A
     3. Radio 15A
     4. Starter 10A (For HC-E & HD-E engine)
     5. Turn signal lamp 15A
     6. Horn Hazard 15A
     7. Wiper 15A
     8. Tail lamp (Left) 15A (For Germany)
        Fog 10A (For HC-E & HD-E engine)
     9. Gauge 10A
     10. Tail lamp (Right) 10A (For Germany)
         Tail lamp 15A (Except for Germany)
     11. Cigarette lighter 10A
     12. Spare 20A
     13. Spare 15A
     14. Spare 10A
     15. Headlamp (Left) 15A
     16. Headlamp (Right) 15A
     17. Ignition 1 20A
     18. Heater 30A
     19. Stop lamp 15A
     20. Dome 15A
     21. Ignition 2 15A
     22. Power No. 2 30A
     23. Power No. 1 20A

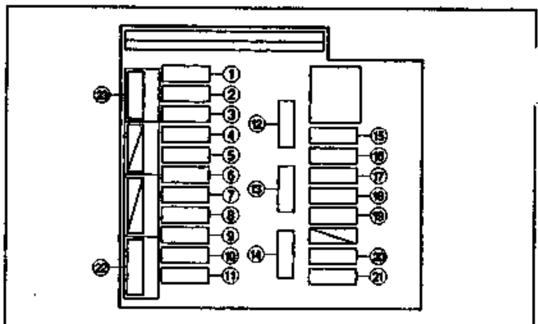


GHW00027-99999



Left-hand drive vehicle

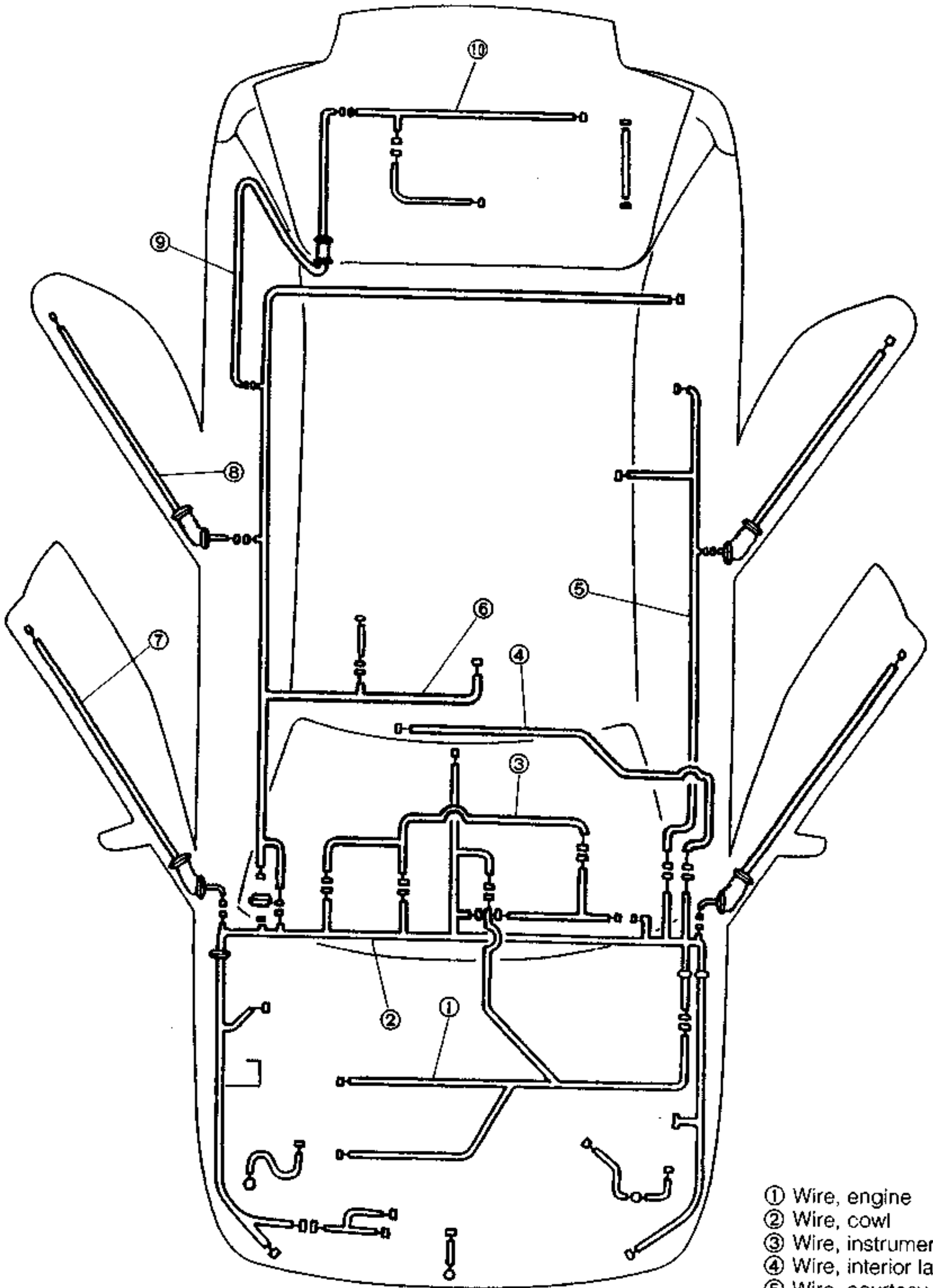
GHW00028-99999



Right-hand drive vehicle

GHW00029-99999

SCHEMATIC DIAGRAM OF WIRING HARNESSES

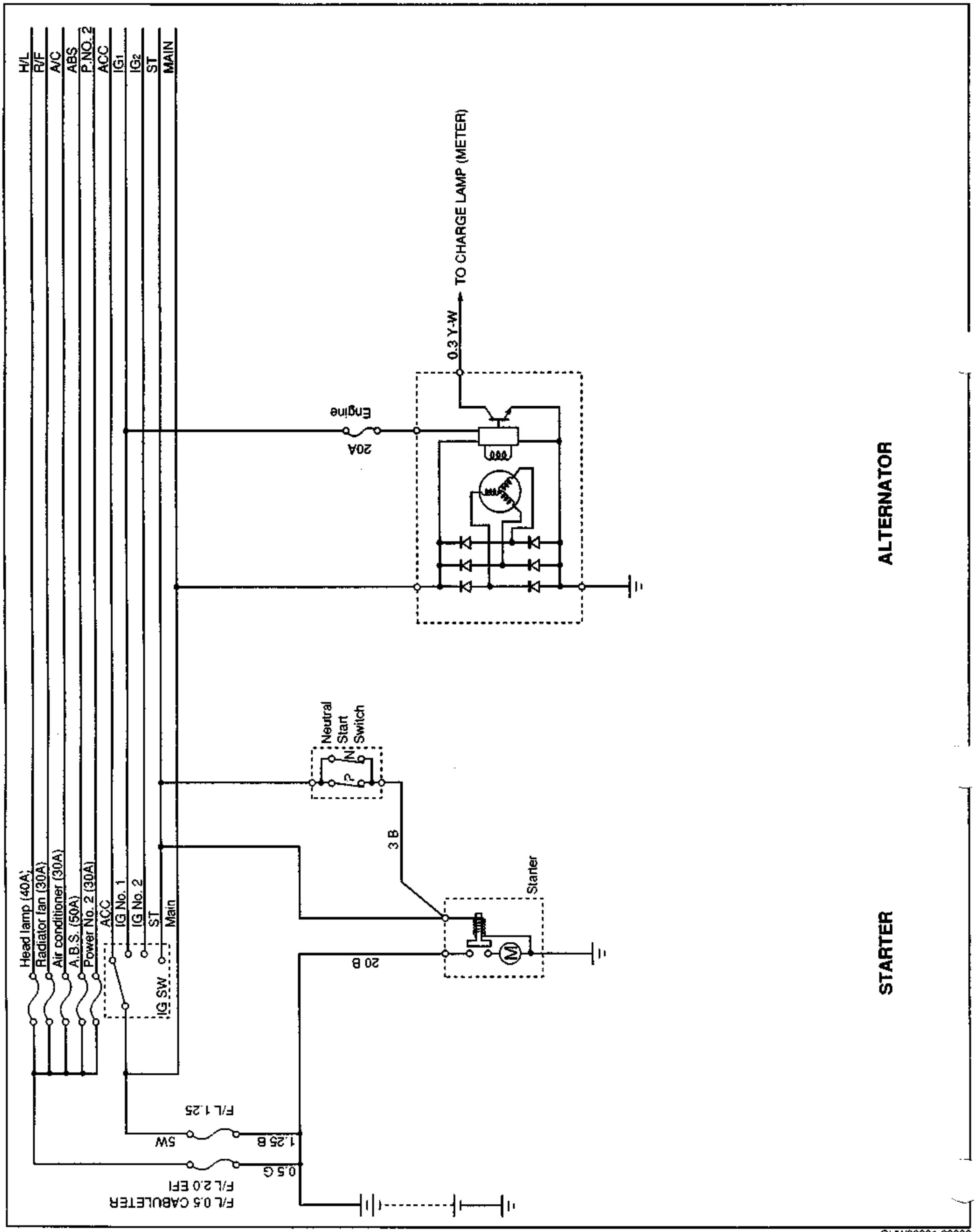


① Wire, engine
② Wire, cowl
③ Wire, instrument panel
④ Wire, interior lamp feed
⑤ Wire, courtesy lamp switch
⑥ Wire, floor
⑦ Wire, front door
⑧ Wire, rear door
⑨ Wire, back door No. 1
⑩ Wire, back door No. 3

GHW00030-99999

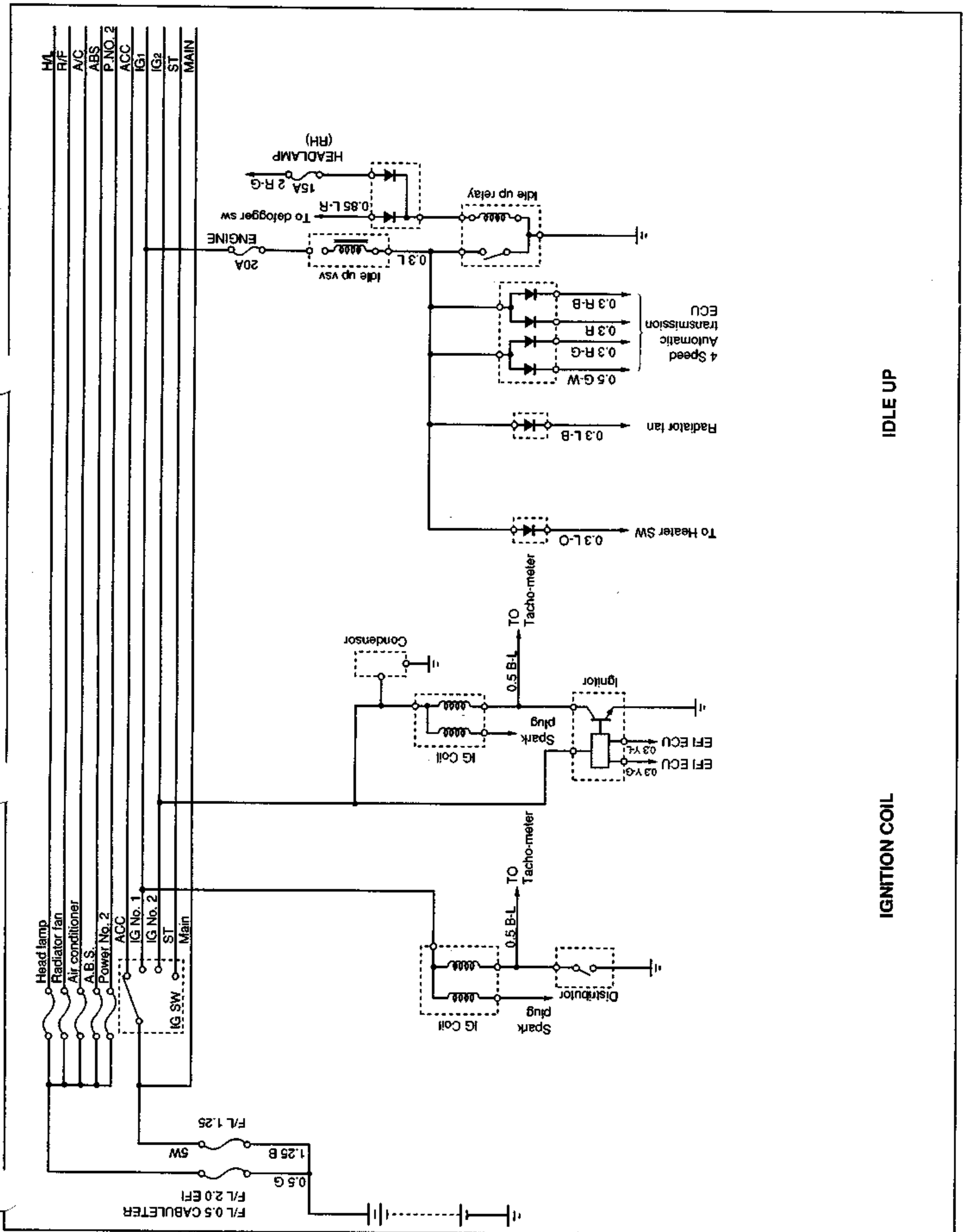
WIRING DIAGRAM

STARTER AND ALTERNATOR



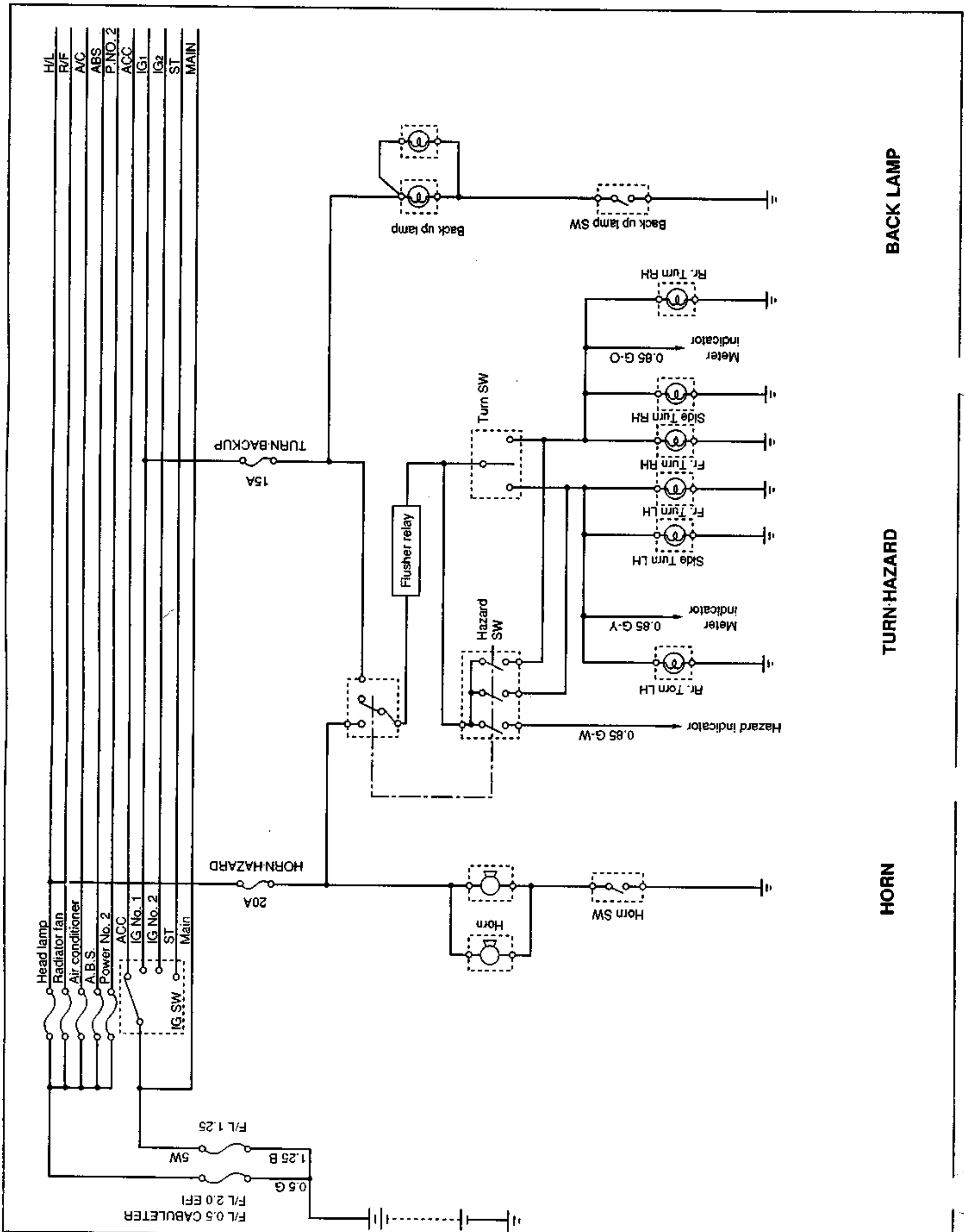
GHW00031-99999

GNITION COIL AND IDLE UP



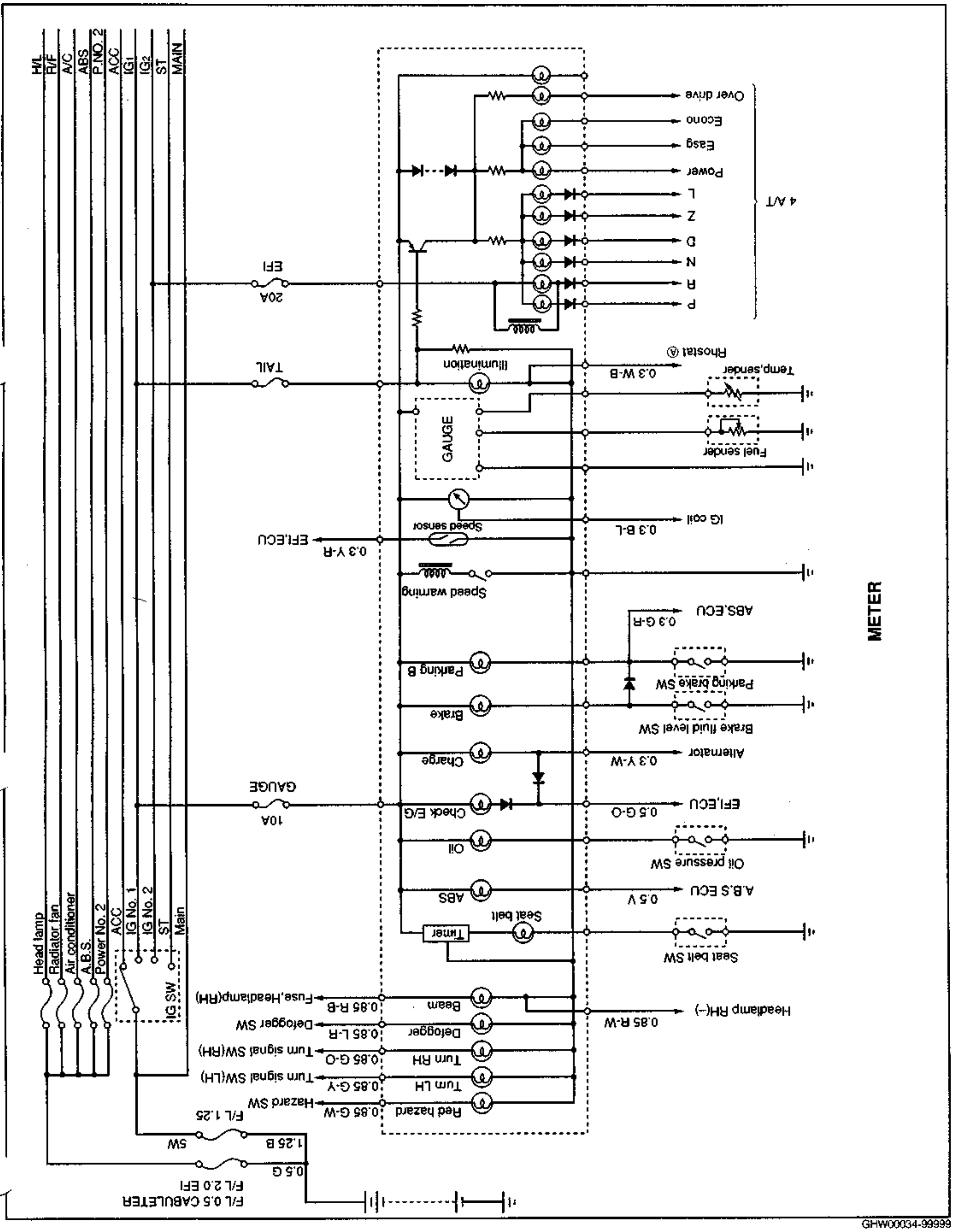
GHW00032-99999

HORN, TURN & HAZARD AND BACK UP LAMP



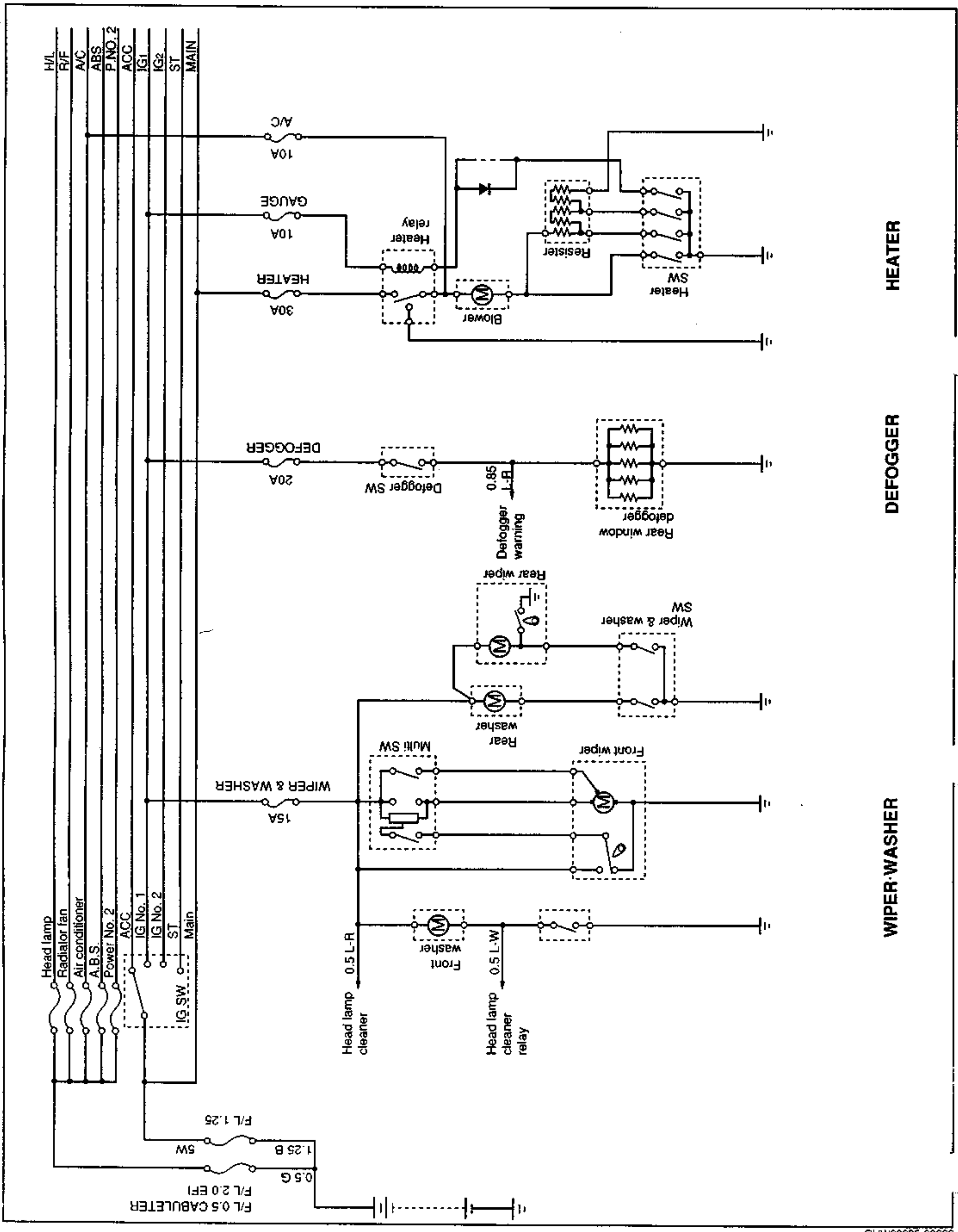
GHW00033-99999

METER



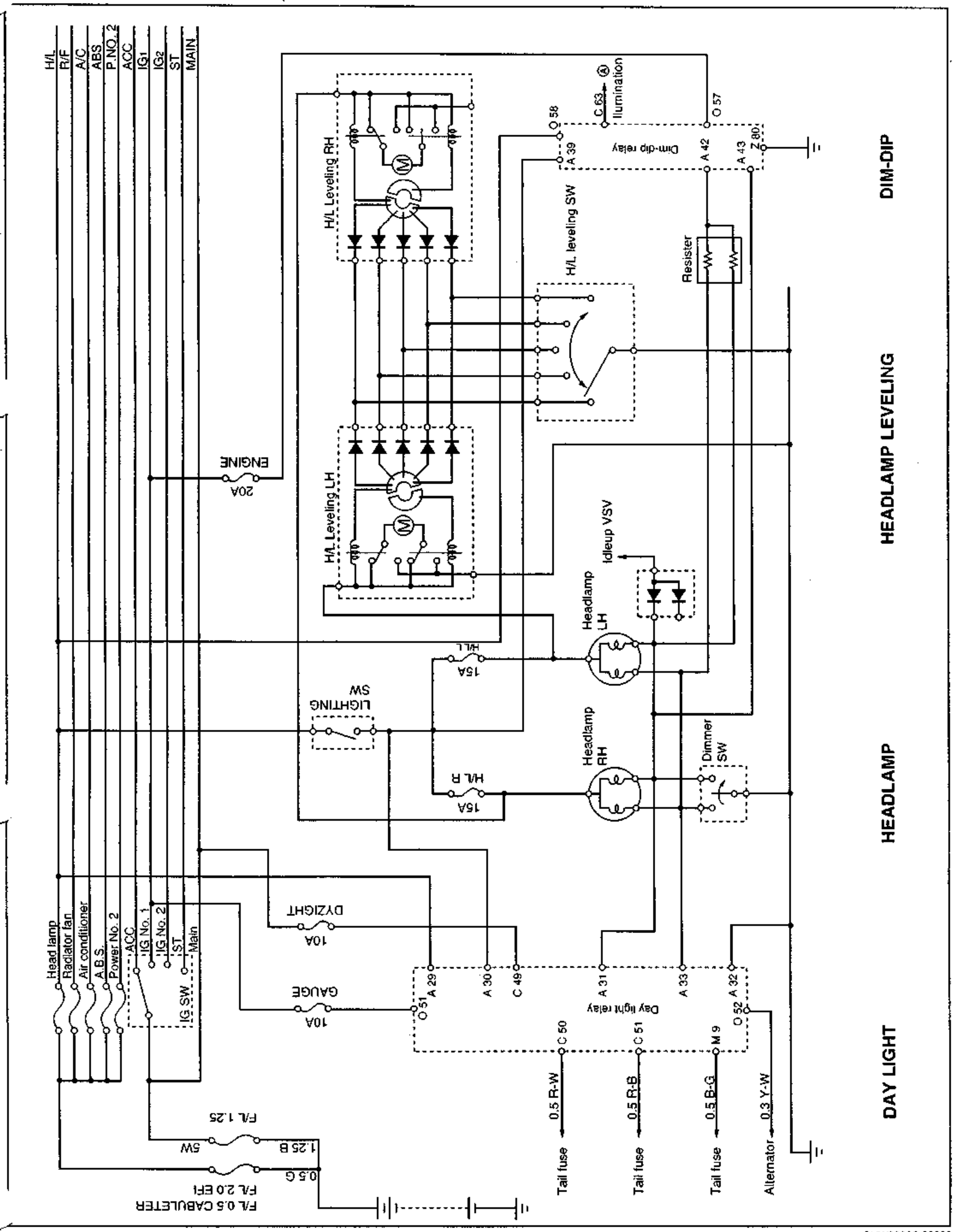
GHW00034-99999

WIPER & WASHER, DEFOGGER AND HEATER



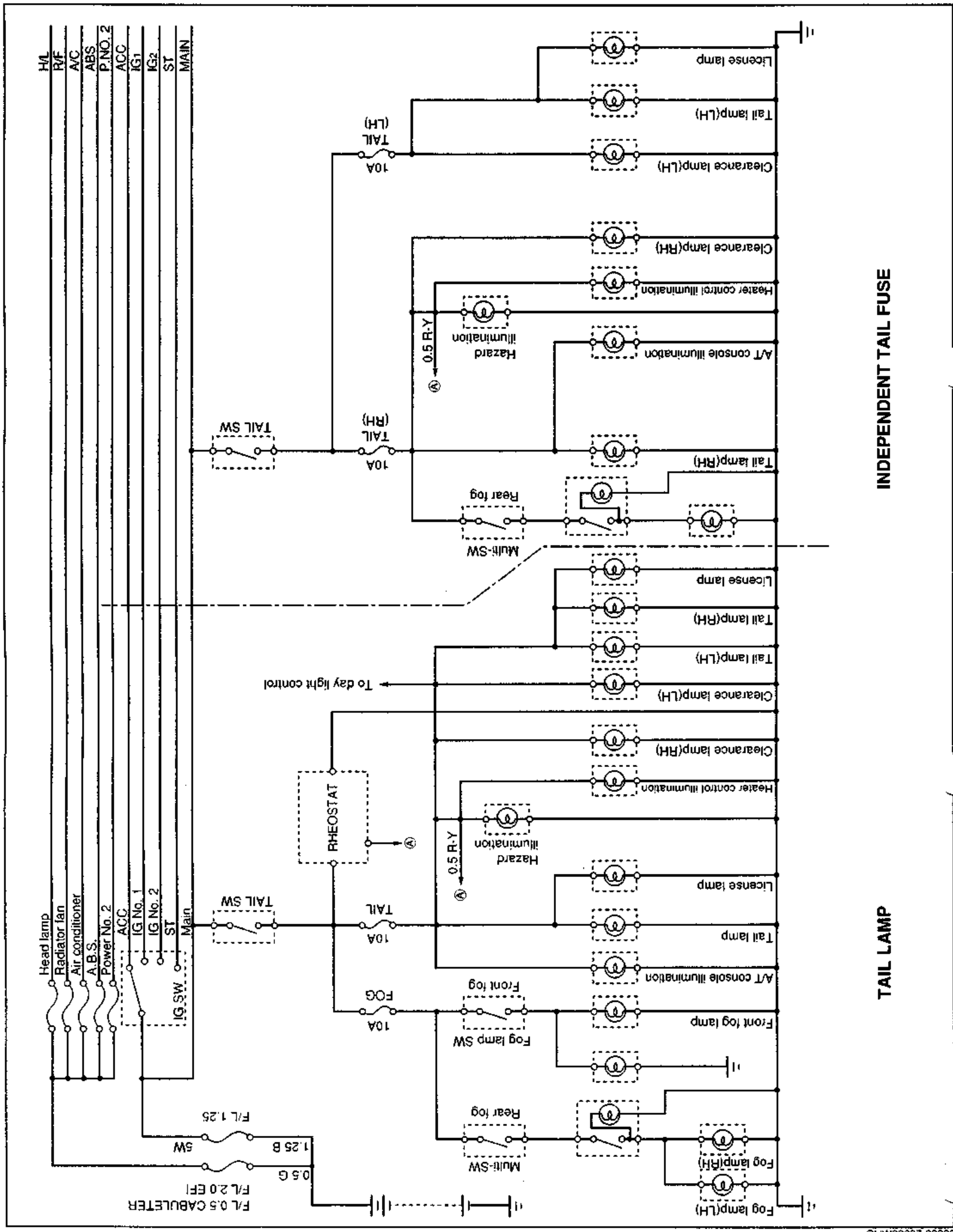
GHW00035-99999

DAY LIGHT, HEADLAMP, HEADLAMP LEVELING AND DIM-DIP



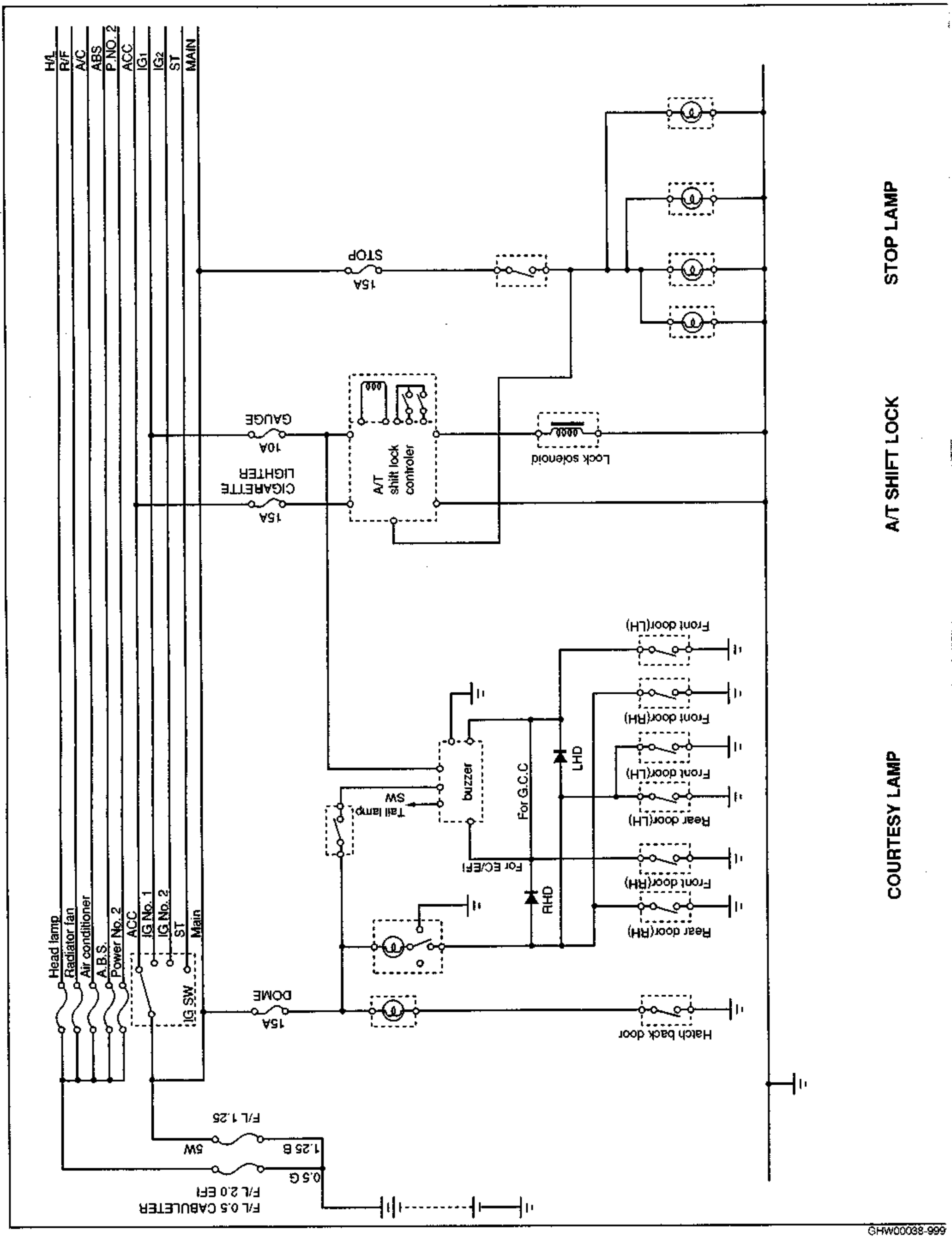
GHW00036-99999

TAIL LAMP AND INDEPENDENT TAIL FUSE



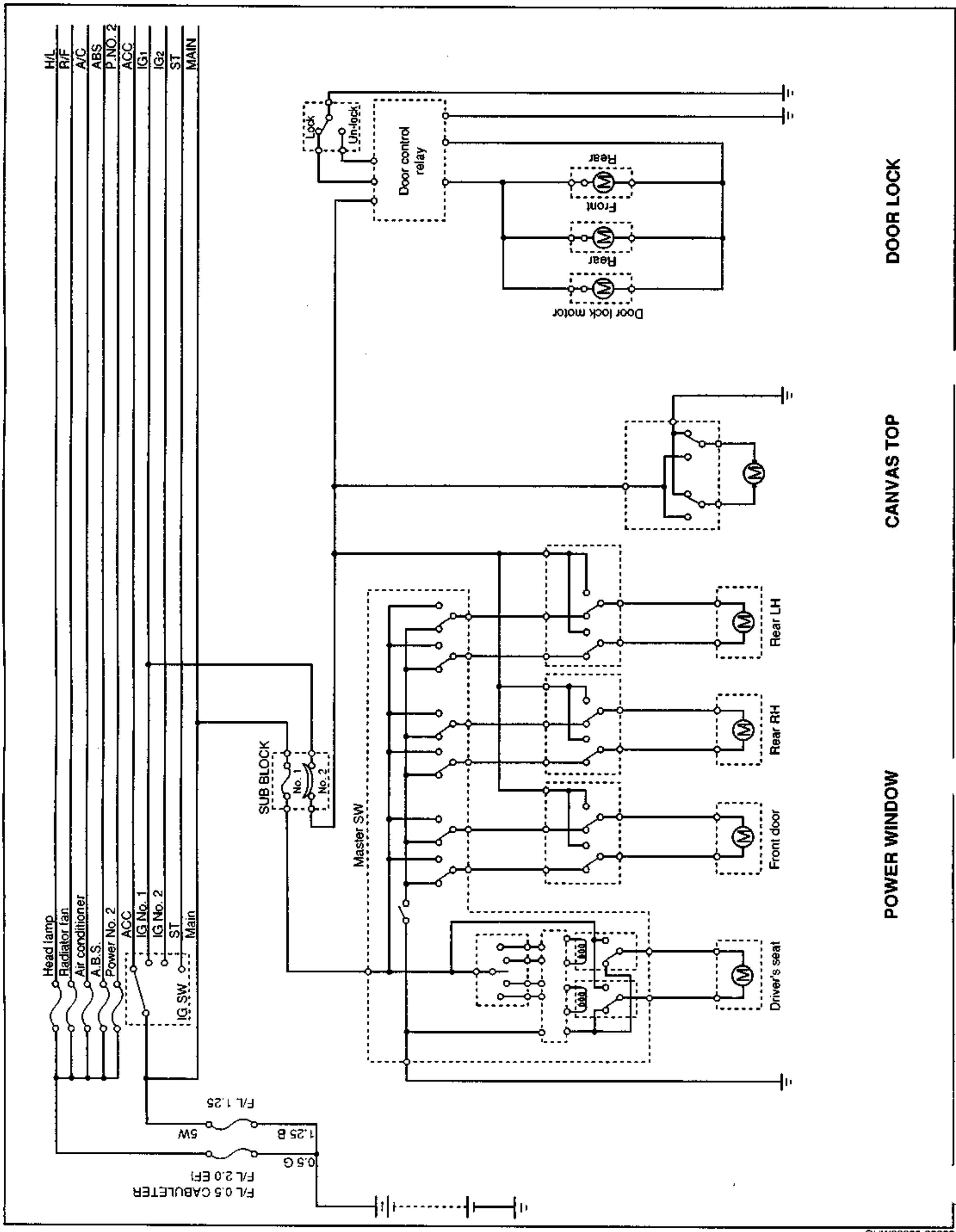
GHW00037-99999

COURTESY LAMP, A/T SHIFT LOCK AND STOP LAMP



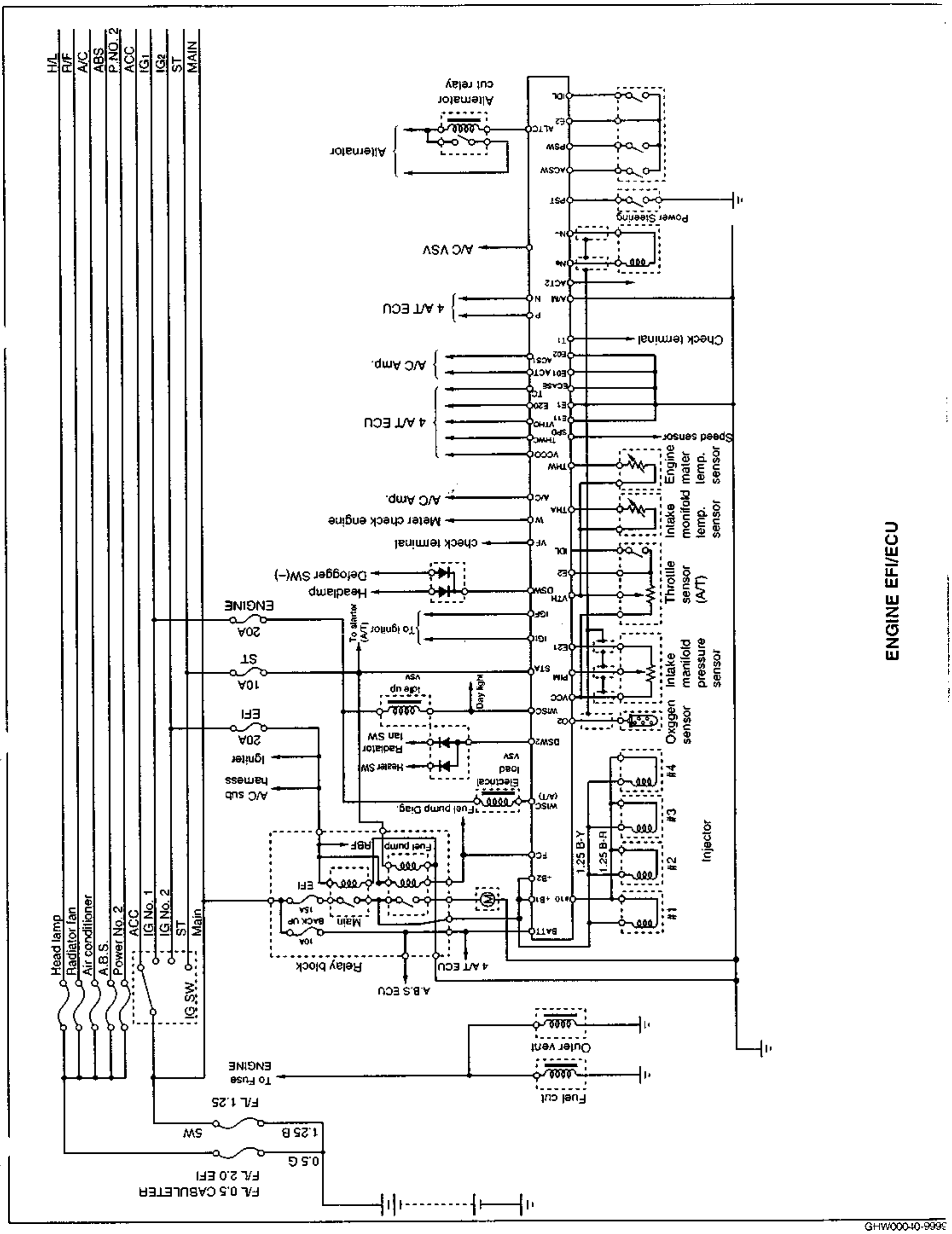
GHW00038-999

POWER WINDOW, CANVAS TOP AND DOOR LOCK



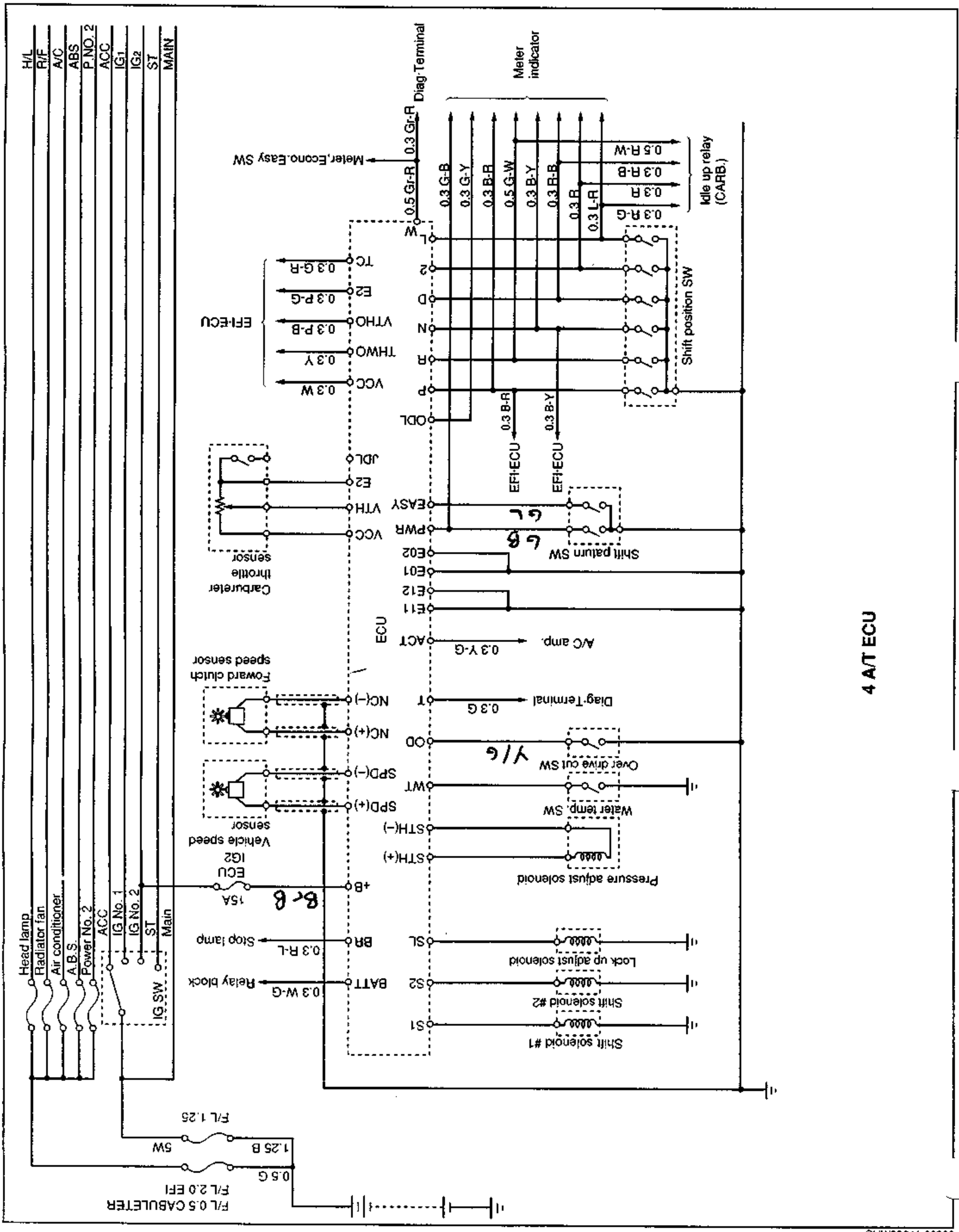
GHW00039-99999

ENGINE ECU



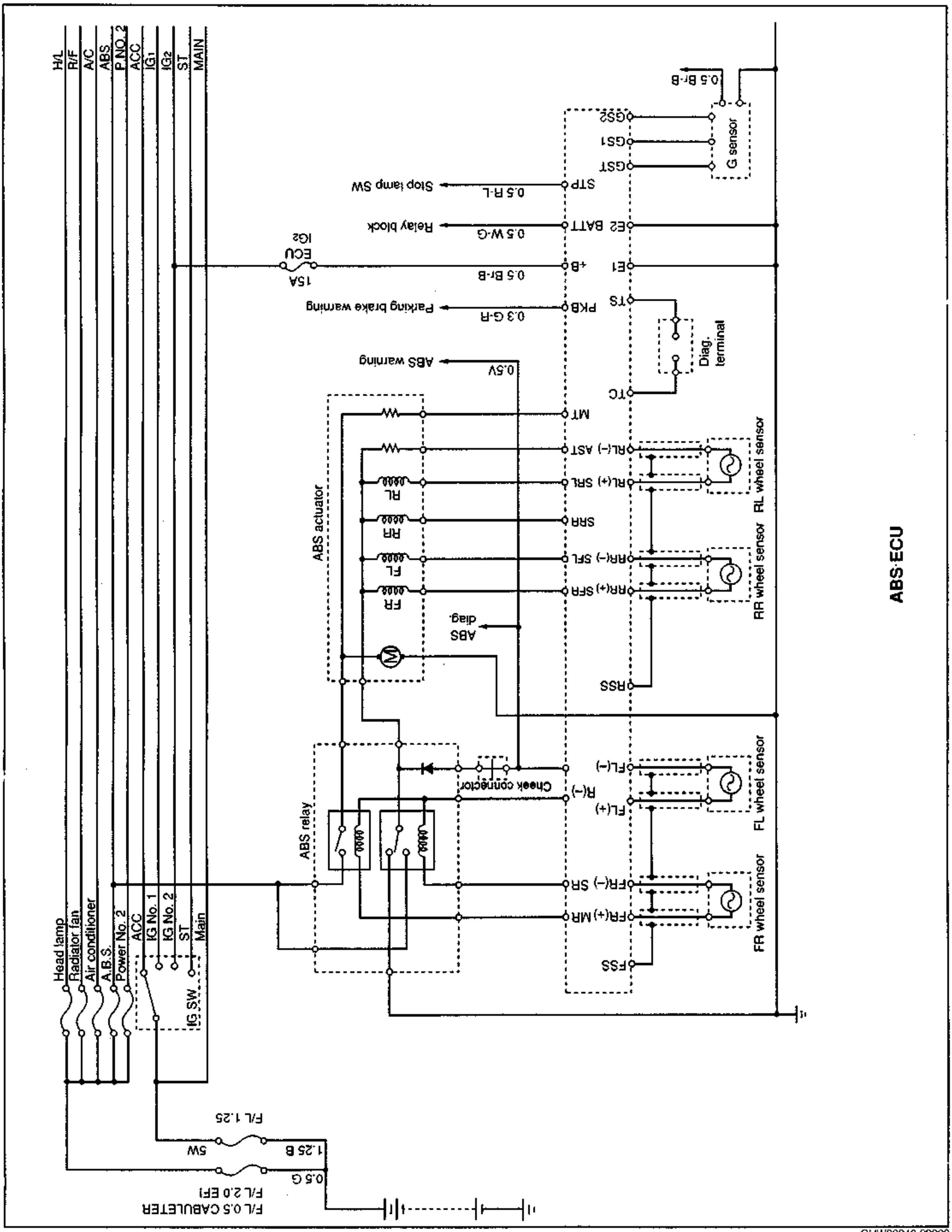
GHW00040-9999

4 A/T ECU



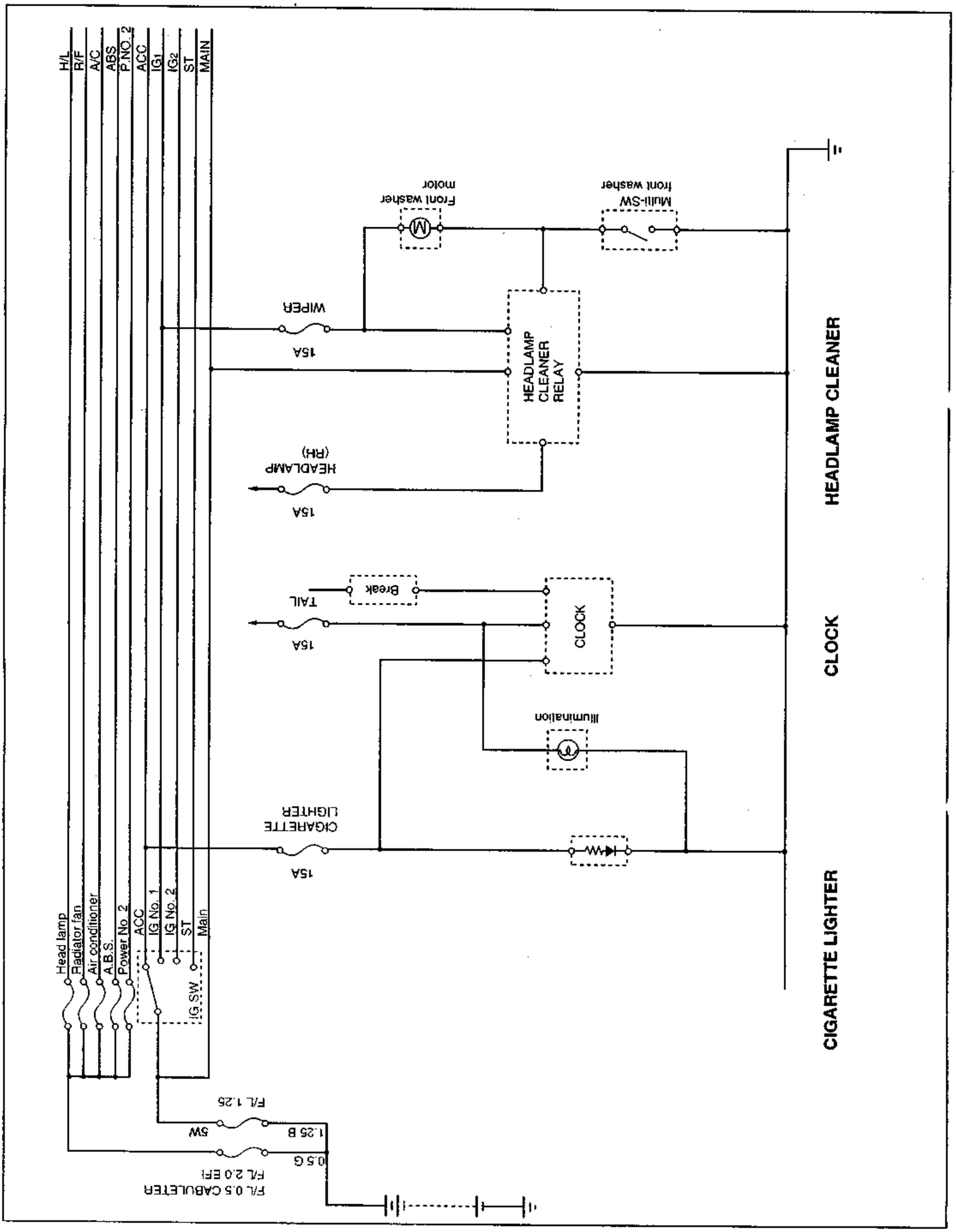
GHW00041-99999

ABS ECU



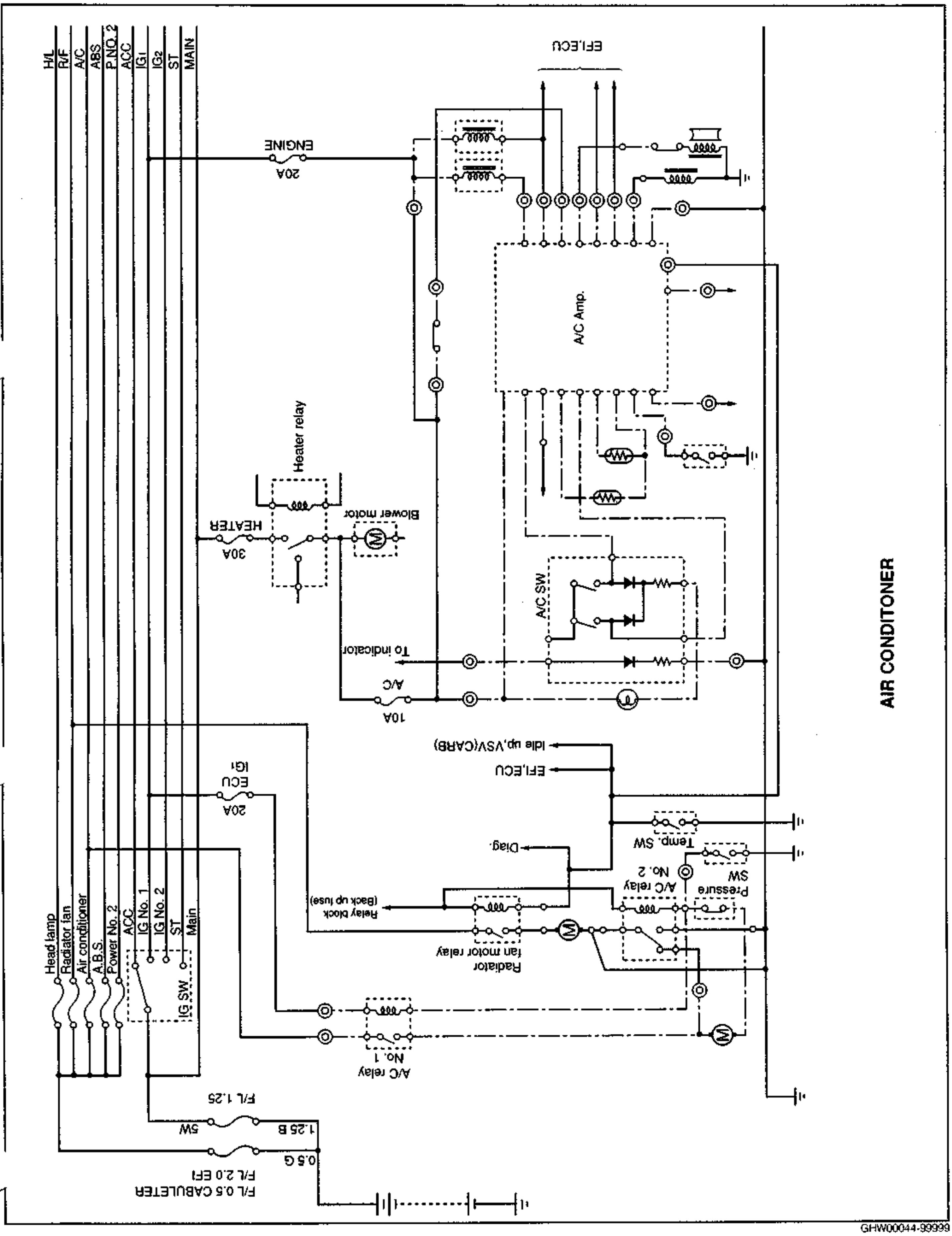
GHW00042-99999

CIGARETTE LIGHTER, CLOCK AND HEADLAMP CLEANER



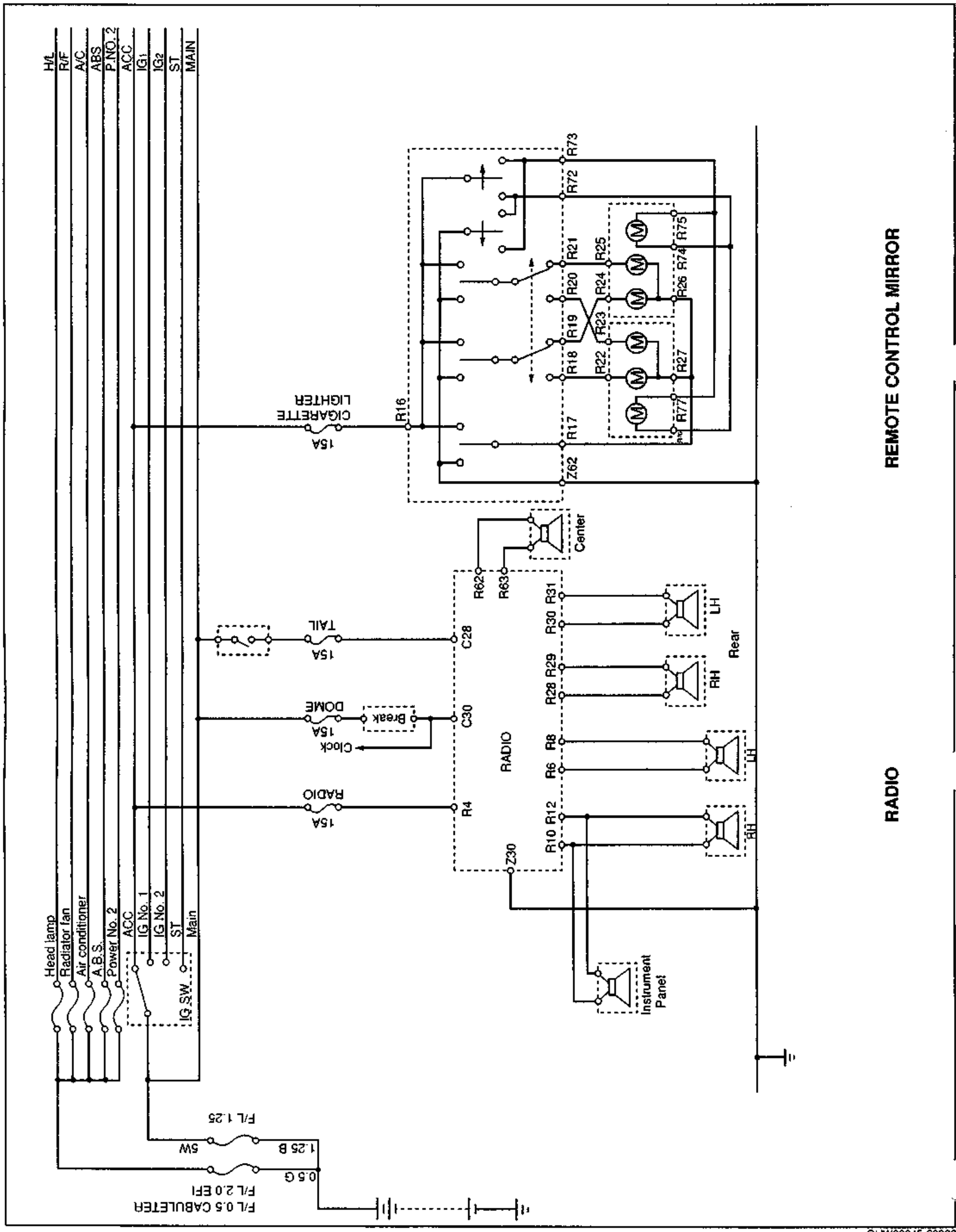
GHW00043-99999

AIR CONDITIONER



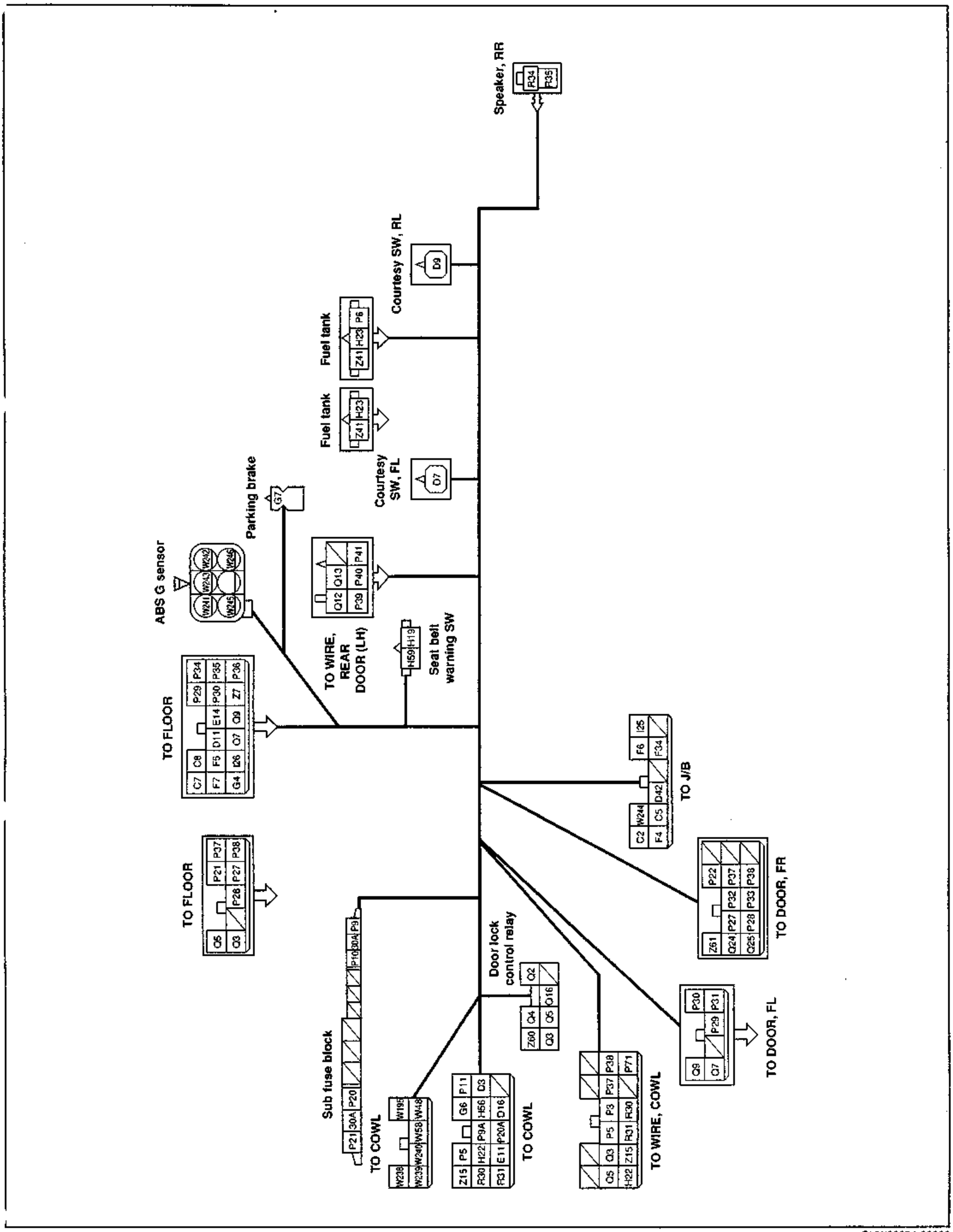
GHW00044-99999

RADIO AND REMOTE CONTROL MIRROR



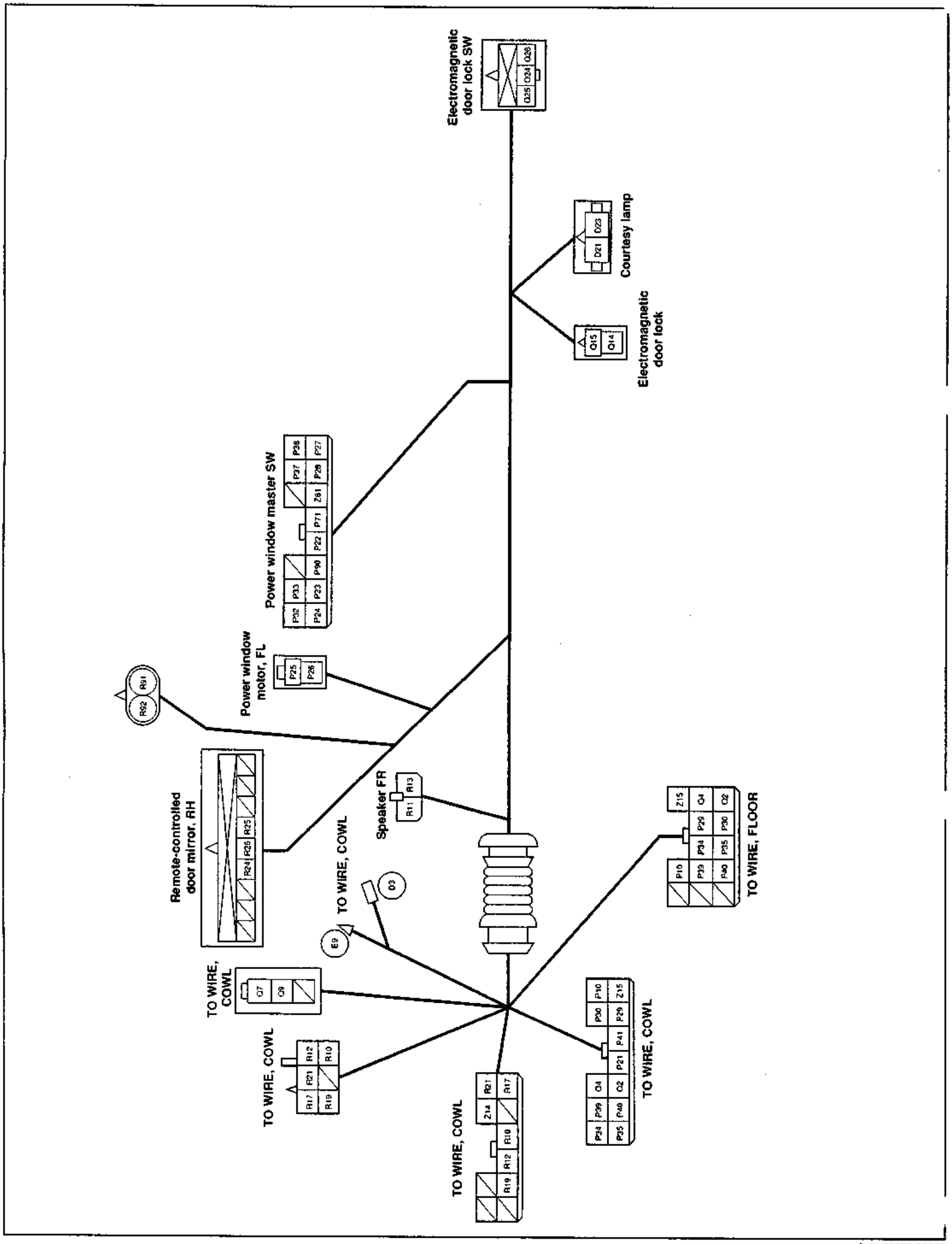
GHW00045-99999

WIRE, COURTESY LAMP FEED



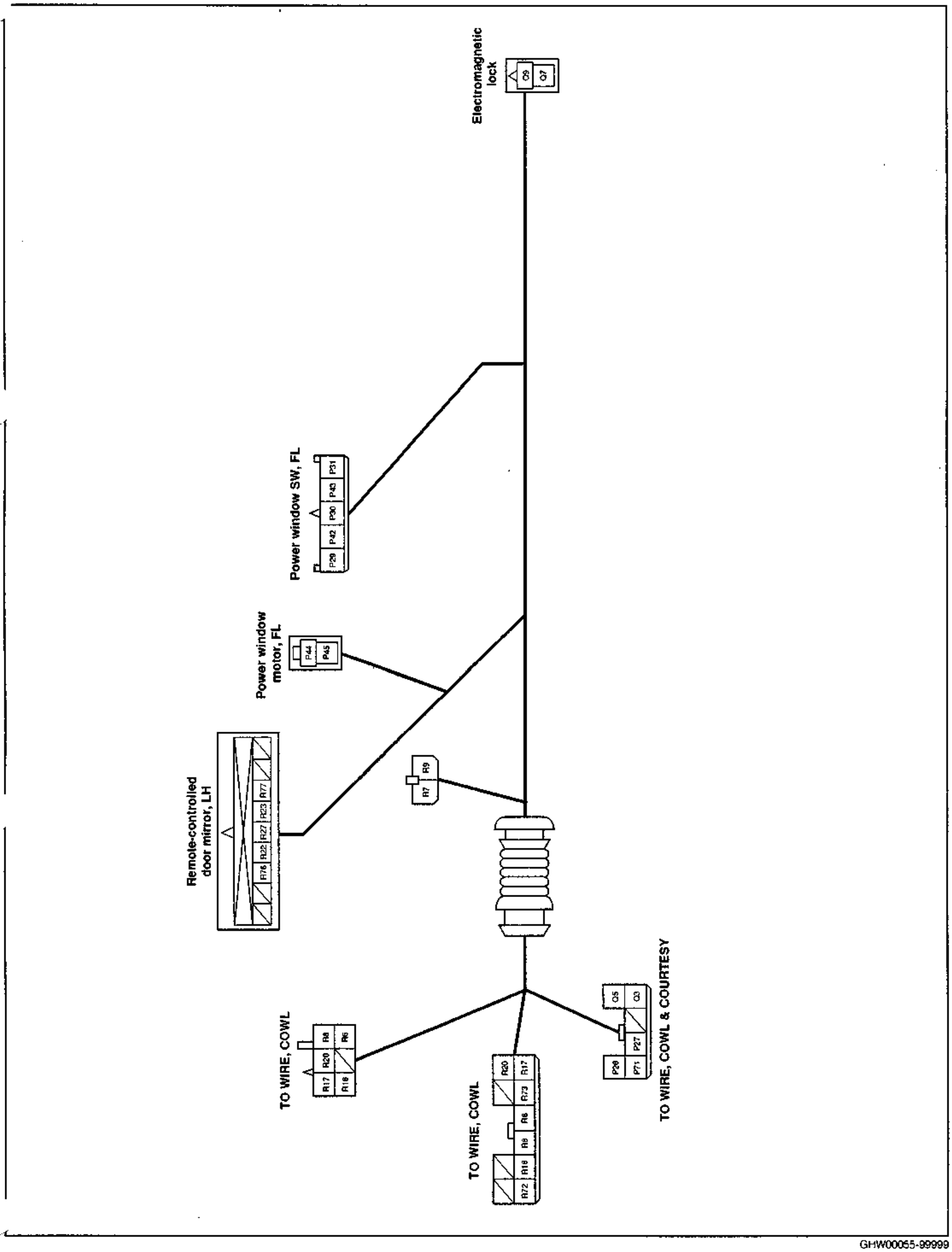
GHW00054-99999

WIRE, FRONT DOOR RH (Driver's side)



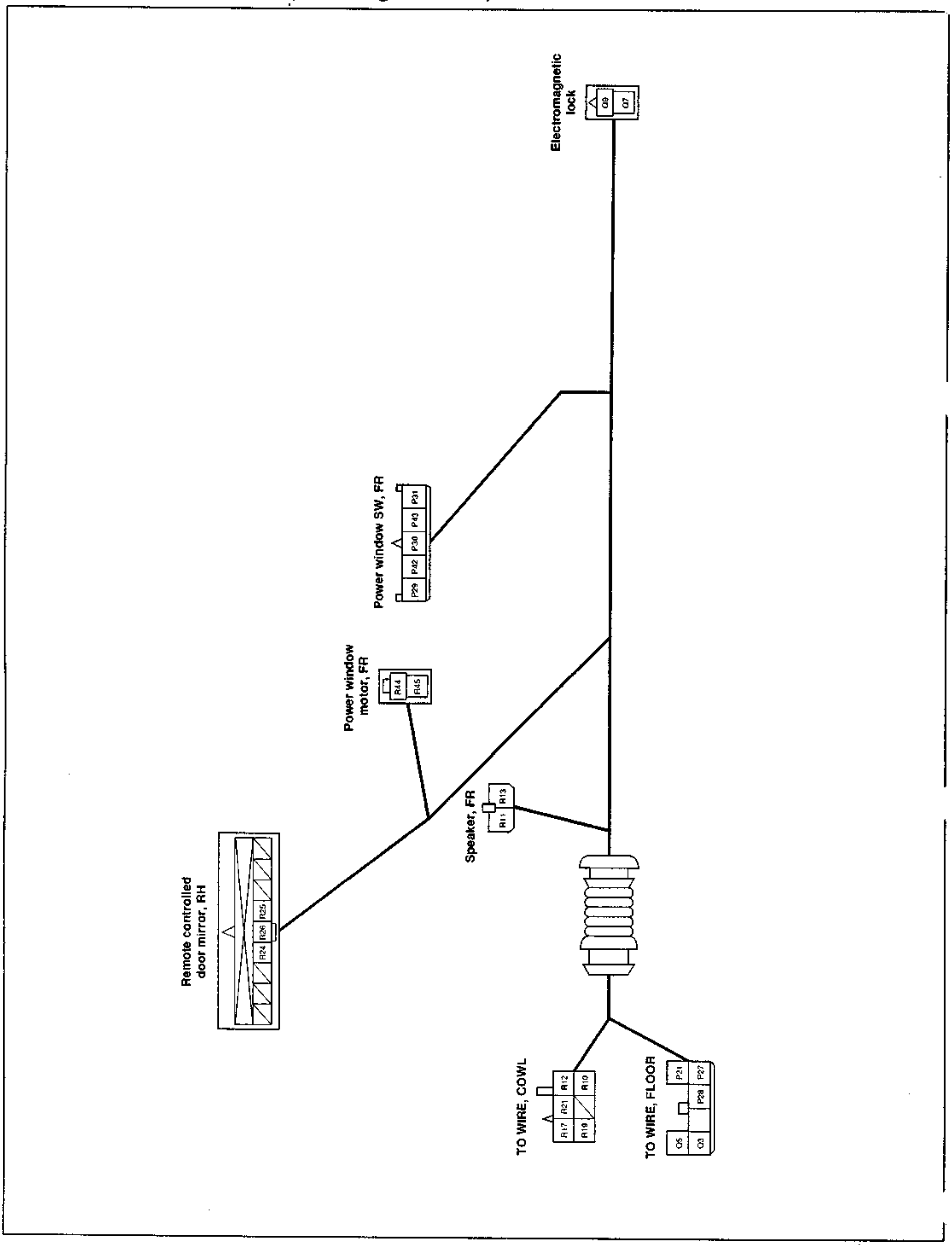
GHW00079-99999

WIRE, FRONT DOOR LH (Passenger's side)



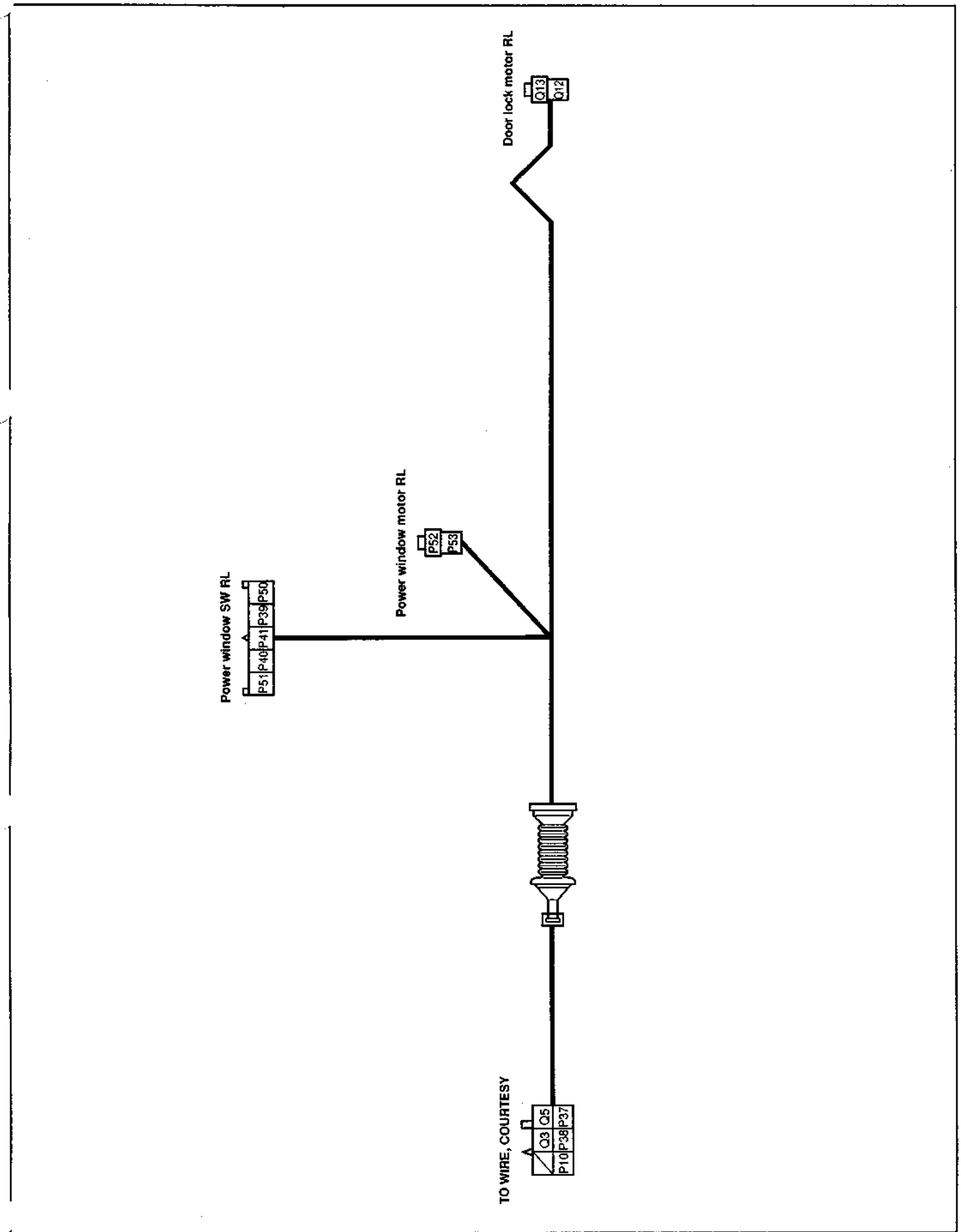
GHW00055-99999

WIRE, FRONT DOOR RH (Passenger's side)



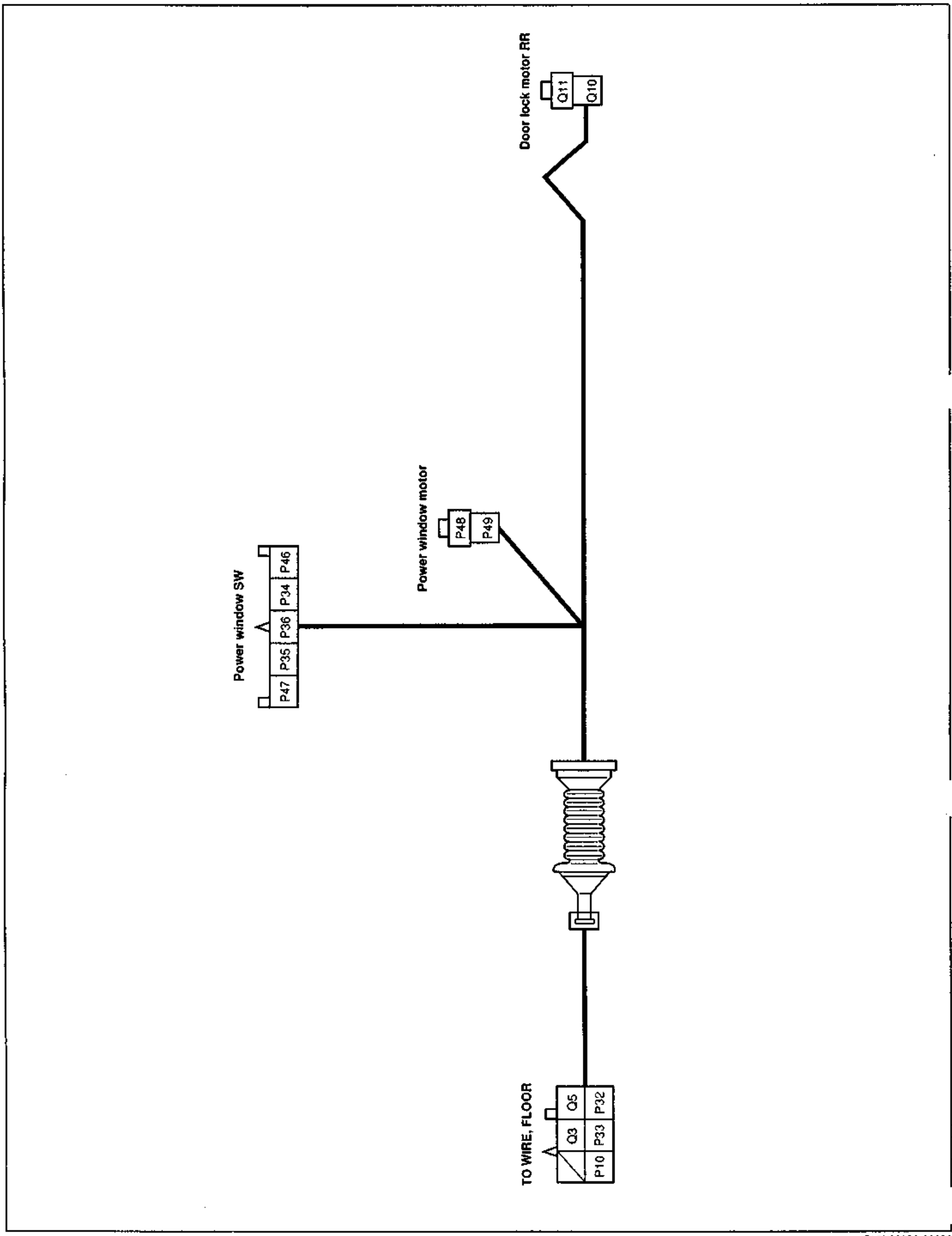
GHW00056-99999

WIRE, REAR DOOR LH



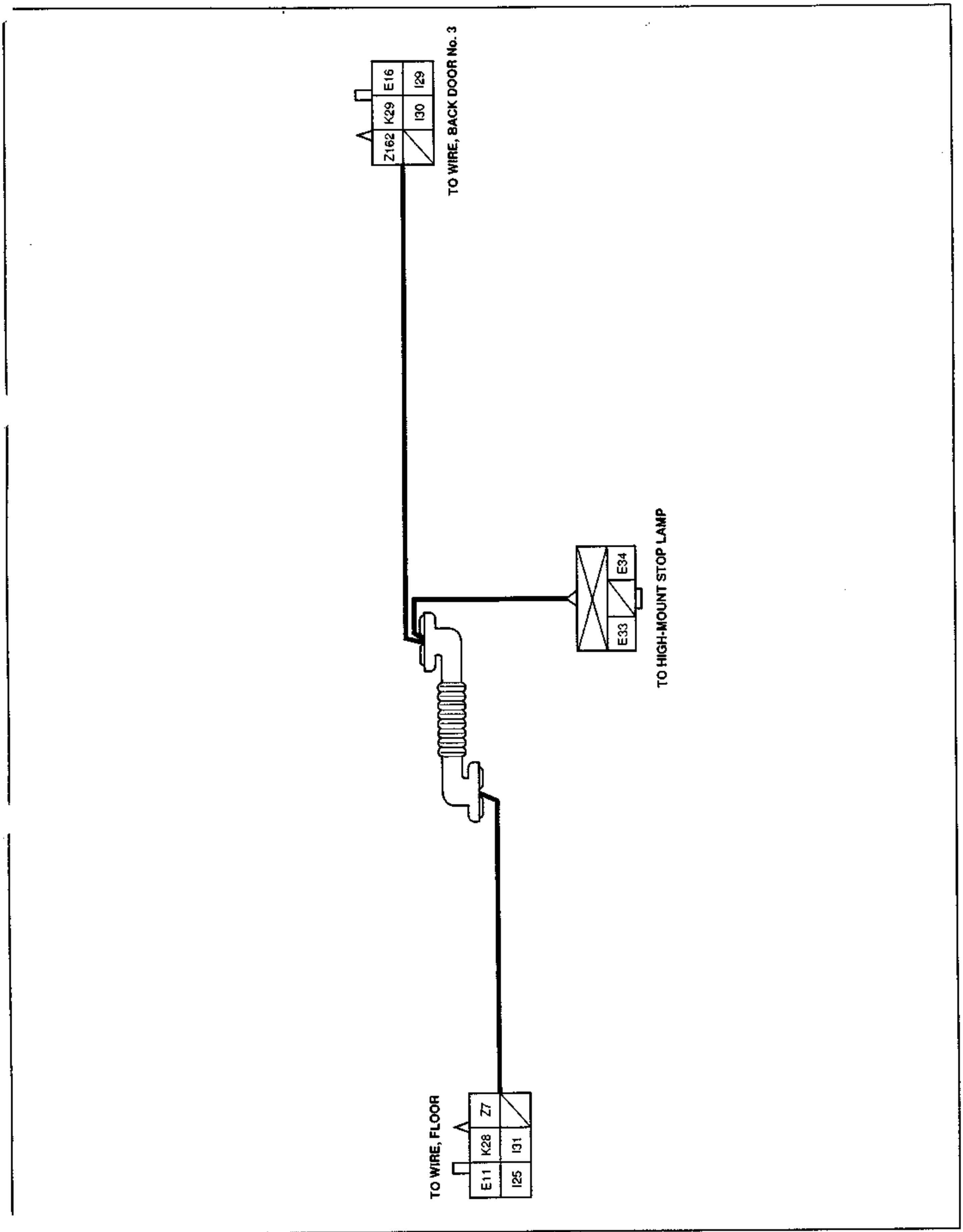
GHW00057-99999

WIRE, REAR DOOR RH



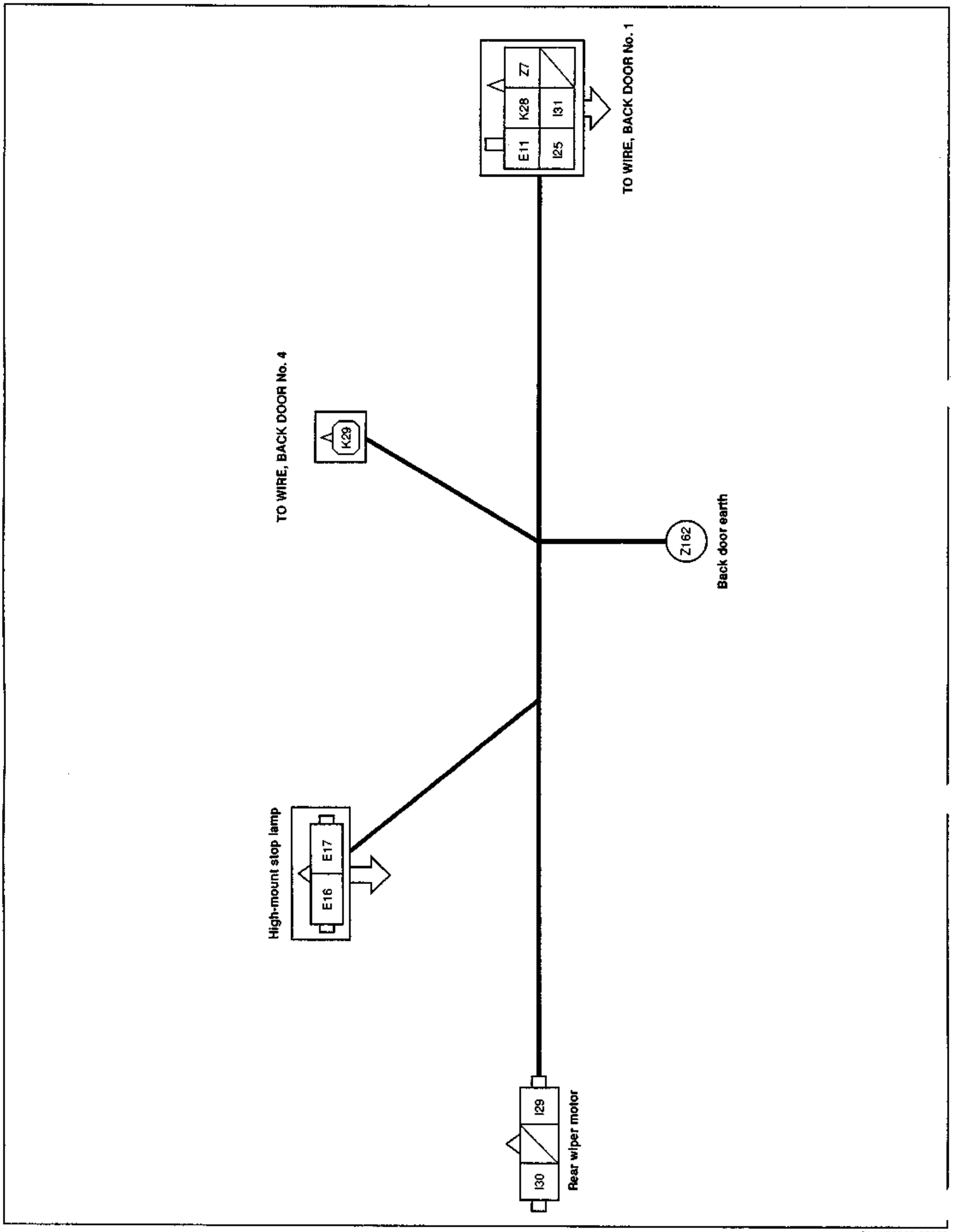
GHW00058-99999

WIRE, BACK-DOOR No. 1



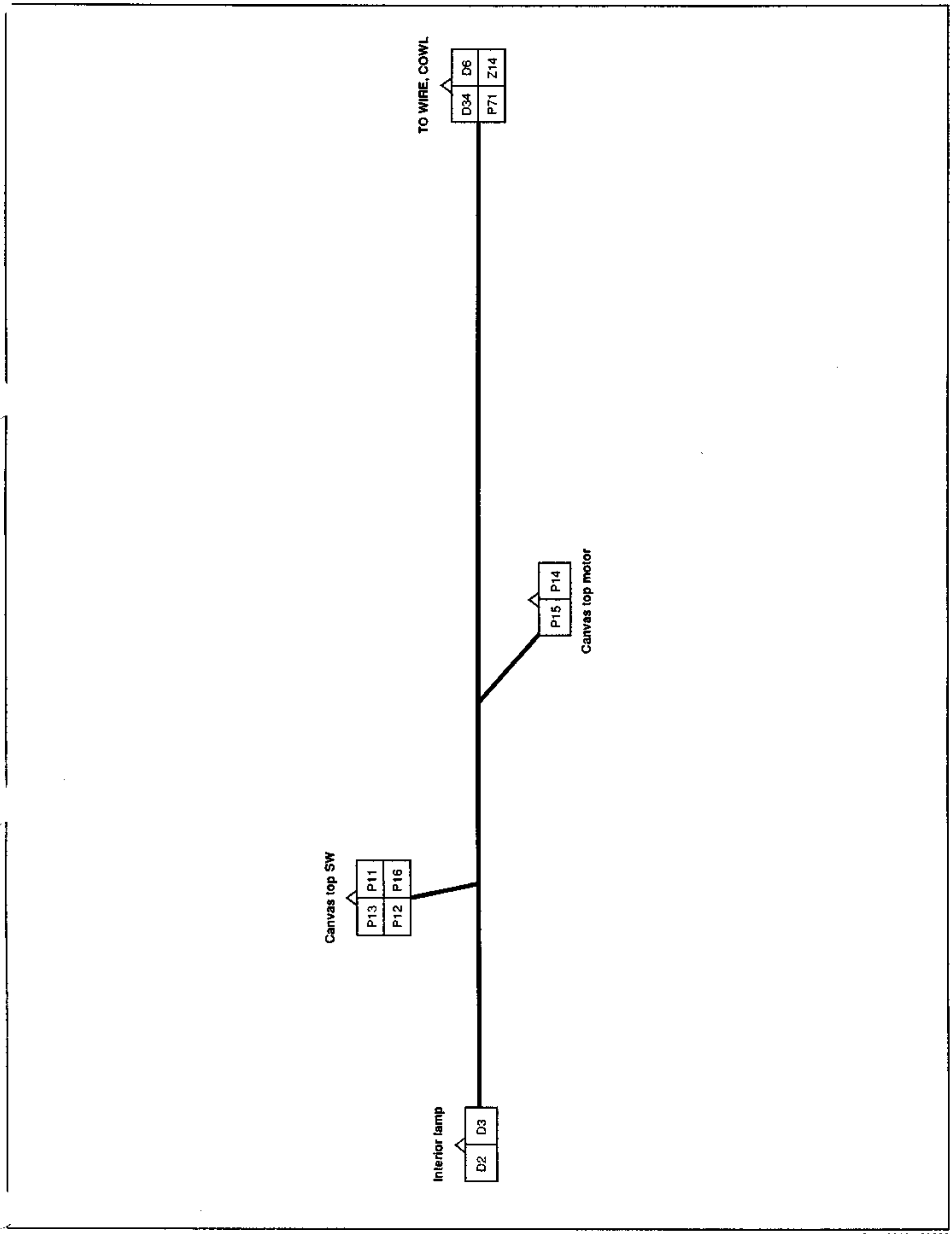
GHW00059-99999

WIRE, BACK-DOOR NO. 3



GHW00060-99999

WIRE, INTERIOR LAMP FEED



GHW00061-99999

WIRE CONNECTION, ENGINE, EFI

From		To	
Location	Terminal	Terminal	Location
A/T ECU (E01)	Z168		Connect to ~W226
Back-up lamp RH (–)	G15	G2	Back-up lamp SW (+)
Body earth	Z3	G3	Back-up lamp SW (–)
Meter (Oil pressure)	H5	H6	Oil pressure SW
Meter (Thermo. gauge)	H20	H21	Thermo. sender
Connect to N31~019	N31	K18	A/C VSV (+)
A/C relay No. 2 coil (–)	K156	K96	A/C coolant temp. SW
A/C amp.	K133	K188	A/C cut SW
Radiator fan relay coil (–)	L4	L2	Radiator fan SW
IG SW (ST)	M1	M2	Starter (ST)
Neutral start SW (–)	M4	M2	Starter (ST)
IG SW (ST)	M1	M3	Neutral start SW (+)
Battery (+)	M13	M12	Starter (+B)
Battery (+)	M13	M12	Starter (+B)
IG coil (IG –)	N17	N8	Ignitor (IG)
Ignitor (IGt)	N16	N17	EFI ECU (IGt)
Ignitor (IGf)	N18	N19	EFI ECU (IGf)
Distributor (Ne)	N25	N26	EFI ECU (Ne)
Fuse, IG2 (–)	N33	N37	Ignitor (Power source)
Connect to Z48~Z49	Z48	N46A	Ignitor shielded meshed wire
		N46B	Ignitor shielded meshed wire (Separation)
Distributor (N–)	N47	N48	EFI ECU (N–)
Alternator (+B)	013	012	IG SW (AM)
Fuse, engine (–)	N31	019	Alternator (IG)
Meter (Charge)	020	021	Alternator (L)
R/B (ECU +B)	039	040	EFI ECU (+B1)
Connect to 039~040	039	041	EFI ECU (+B2)
Alternator (+B)	013	062	F/L 1.25 (–)
F/L (Battery)	08	063	F/L 1.25 (+)
EFI ECU (ALT2)	X195	098	Alternator (C)
F/L 2.0 Battery	011	099	R/B power source 1
Connect to 011~099	011	0100	R/B power source 2
EFI ECU (PST)	X197	P3	P/S pressure SW
A/T indicator (L)	H24	W9	Shift position SW (L)
A/T indicator (2)	H25	W11	Shift position SW (2)
A/T indicator (D)	H26	W13	Shift position SW (D)
A/T indicator (N)	H27	W15	Shift position SW (N)
A/T indicator (P)	H29	W18	Shift position SW (P)
A/T ECU (S1)	W27	W28	Shift solenoid No. 1
A/T ECU (S2)	W29	W30	Shift solenoid No. 2
A/T ECU (SL)	W136	W202	L-UP control solenoid
A/T ECU (STH +)	W203	W204	Pressure control solenoid (+)
A/T ECU (STH –)	W205	W206	Pressure control solenoid (–)
A/T ECU (NC +)	W218	W220	Cylinder revolution sensor (NC +)

From		To	
Location	Terminal	Terminal	Location
A/T ECU (NC –)	W219	W221	Cylinder revolution sensor (NC –)
Connect to Z168~	Z168	W226	Vehicle speed sensor shielded meshed wire
Connect to Z168~	Z168	W228	Revolution speed sensor shielded meshed wire
A/T ECU (SPD +)	W230	W231	Vehicle speed sensor (SPD1 +)
A/T ECU (SPD –)	W217	W232	Vehicle speed sensor (SPD1 –)
EFI ECU (O2)	X27	X28	O_2 sensor
EFI ECU (THW)	X29	X30	Water temp. sensor (+)
Connect to X35~X39	X35	X31	Water temp. sensor (–)
EFI ECU (THA)	X32	X33	Intake air temp. sensor (+)
Connect to X35~X39	X35	X34	Intake air sensor (–)
EFI ECU (E2)	X35	X39	Throttle sensor (E2)
EFI ECU (IDL)	X36	X40	Throttle sensor (Idle)
EFI ECU (VTH)	X37	X41	Throttle sensor (VTH)
Connect to X38~X46	X38	X42	Throttle sensor (VCC)
EFI ECU (E21)	X99	X44	Pressure sensor (E21)
EFI ECU (PIM)	X43	X45	Pressure sensor (PIM)
EFI ECU (VCC)	X38	X46	Pressure sensor (VCC)
Connect to 039~040	039	X50	Injector No. 1 (+)
EFI ECU (#10)	X56	X51	Injector No. 1 (–)
Connect to ~X50	X50	X52	Injector No. 2 (+)
Connect to X56~X51	X56	X53	Injector No. 2 (–)
Connect to ~X50	X50	X54	Injector No. 3 (+)
Connect to X56~X51	X56	X55	Injector No. 3 (–)
Connect to Z48~Z49	Z48	X85A	O_2 sensor shielded meshed wire
		X85B	O_2 sensor shielded meshed wire (Separation)
Connect to ~X85	X85	X86A	Pressure sensor shielded meshed wire
		X86B	Pressure sensor shielded meshed wire (Separation)
Connect to N31~019	N31	X89	EGR VSV (+)
EGR VSV (–)	X90	X91	EFI ECU (EVSV)
Connect to ~X50	X50	X97	Injector No. 4 (+)
Connect to X56~X51	X56	X98	Injector No. 4 (–)
Connect to ~X85	X85	X101A	Distributor shielded meshed wire
		X101B	Distributor shielded meshed wire (Separation)
Connect to H29~W18	H29	X183	EFI ECU (P)
Connect to H27~W15	H27	X184	EFI ECU (N)
A/T ECU (VCCO)	W233	X190	EFI ECU (VCCO)
A/T ECU (WT)	W42	X191	EFI ECU (THWO)
A/T ECU (VTHO)	W235	X192	EFI ECU (VTHO)
A/T ECU (E20)	W236	X193	EFI ECU (E20)

From		To	
Location	Terminal	Terminal	Location
Connect to Z47~Z49	Z47	X196	EFI ECU (ECASE)
EFI ECU (PSW)	X203	X205	Throttle sensor (PSW)
Connect to O39~O40	O39	X227	Rotary ISC (+)
A/C VSV (–)	K19	X231	EFI ECU (A/C VSV)
EFI ECU (E01)	Z47	Z49	Engine earth
EFI ECU (E1)	Z48	Z49	Engine earth
Body earth	Z3	Z53	Shift position SW (–)
Connect to Z47~Z49	Z47	Z76	EFI ECU (E02)
Connect to Z47~Z49	Z47	Z170	A/T ECU (E02)
Connect to Z48~Z49	Z48	Z178	EFI ECU (E11)

WIRE CONNECTION, ENGINE, CARB.

From		To	
Location	Terminal	Terminal	Location
A/T ECU (E01)	Z168		Connect to ~W226
F/L 0.5 (H/L)	04	A22	Lighting SW (+)
Back-up lamp RH (–)	G15	G2	Back-up lamp SW (+)
Body earth	Z3	G3	Back-up lamp SW (–)
Meter (Oil pressure)	H5	H6	Oil pressure SW
Meter (Thermo gauge)	H20	H21	Themo sender
A/C relay No. 2 coil (–)	K156	K96	A/C coolant temp. SW
A/C amp.	K138	K188	A/C cut SW
Radiator fan relay coil (–)	L4	L2	Radiator fan SW
IG SW (ST)	M1	M2	Starter (ST)
Neutral start SW (–)	M4	M2	Starter (ST)
IG SW (ST)	M1	M3	Neutral start SW (+)
Battery (+)	M12	M13	Starter (+B)
IG coil (IG –)	N7	N8	Distributor (+)
Connect to N31~019	N31	N37	Ignitor (+)
F/L (+) Battery	0102	02	F/L 0.3 (+)
F/L (+) Battery	0102	03	F/L 0.5 (+)
Alternator (+B)	018	012	IG SW (AM)
F/L 0.3 (Rad)	0101	016	Radiator fan relay contact point (+)
Fuse, engine (–)	N31	019	Alternator (IG)
Meter (Charge)	020	021	Alternator (L)
F/L 0.3 (A/C)	083	032	A/C relay contact point (+)
Alternator (+B)	018	062	F/L 1.25 (–)
F/L (Battery)	08	063	F/L 1.25 (+)
F/L 0.3 (A/C) BATT	084	0103	F/L 0.3 (+)
A/T indicator (L)	H24	W9	Shift position SW (L)
A/T indicator (2)	H25	W11	Shift position SW (2)
A/T indicator (D)	H26	W13	Shift position SW (D)
A/T indicator (N)	H27	W15	Shift position SW (N)
A/T indicator (P)	H29	W18	Shift position SW (P)
A/T ECU (S1)	W27	W28	Shift solenoid No. 1
A/T ECU (S2)	W29	W30	Shift solenoid No. 2
A/T ECU (SL)	W136	W202	L-up control solenoid
A/T ECU (STH +)	W203	W204	Pressure control solenoid (+)
A/T ECU (STH –)	W205	W206	Pressure control solenoid (–)
A/T ECU (WT)	W42	W207	A/T coolant temp. SW
A/T ECU (NC +)	W218	W220	Cylinder revolution sensor (NC +)
A/T ECU (NC –)	W219	W221	Cylinder revolution sensor (NC –)
Connect to Z168~	Z168	W226	Vehicle speed sensor shielded meshed wire
Connect to Z168~	Z168	W228	Revolution sensor shielded meshed wire
A/T ECU (SPD1 +)	W230	W231	Vehicle speed sensor (SPD1 +)

From		To	
Location	Terminal	Terminal	Location
A/T ECU (SPD1 –)	W217	W232	Vehicle speed sensor (SPD1 –)
Connect to N31~019	N31	X8	Idle up VSV (+)
A/T ECU (E20)	W23	X39	Throttle sensor (E20)
A/T ECU (VTH)	W21	X41	Throttle sensor (VTH)
A/T ECU (VCC)	W19	X42	Throttle sensor (VCC)
Idle up VSV (–)	X9	X152	Idle up relay contact point (+)
Connect to N31~019	N31	Y5	Fuel cut
Connect to N31~019	N31	Y14	Outer vent
Body earth	Z3	Z53	Shift position SW (–)
Engine earth	Z49	Z170	A/T ECU (E02)

GHW00063-00

/IRE CONNECTION, COWL, EFI L.H.D. (EC Spec.)

From		To	
Location	Terminal	Terminal	Location
Batted with W199	W199	Ⓐ	Batted with Z116
Headlight LH (+)	A2	A1A	J/C 1
J/B 6 (Headlight fuse LH –)	A1	A2A	J/C 1
Connect to A7–A17	A7	A3	Headlight LH (Hi)
Connect to A8–A18	A8	A4	Headlight LH (Lo)
J/C 1	A12A	A10	Meter a (Beam +)
J/B 6 (Headlight fuse RH –)	A5	A10A	J/C 1
Connect to A7~A17	A7	A11	Meter A (Beam –)
Headlight RH (+)	A6	A11A	J/C 1
Headlight RH (Hi)	A7	A17	Multi-control SW (Dimmer Hi)
Headlight RH (Lo)	A8	A18	Multi-control SW (Dimmer Lo)
R/B 2 (FL main –)	04	A22	Multi-control SW (Lighting SW +)
Multi-control SW (Lighting SW –)	A23	A24	J/B 3 (Lighting SW)
Connect to 04~A22	04	A29	Day-light relay (Headlight +)
Connect to A23~A24	A23	A30	Day-light relay (Headlight –)
Connect to A8–A18	A8	A31	Day-light relay (Headlight Lo)
Body earth J/C RH (Earth)	Z14E	A32	Day-light relay (Earth)
Connect to A7~A17	A7	A33	Day-light relay (Headlight Hi)
J/C 1	A14A	A54	Levelling RH (+)
Body earth J/C RH (Earth)	Z145	A55	Levelling RH (Earth)
J/C 1	A3A	A61	Levelling LH (+)
J/B 6 (Earth)	Z186	A62	Levelling LH (Earth)
Levelling RH (0)	A56	A63	Levelling LH (0)
Levelling RH (1)	A57	A64	Levelling LH (1)
Levelling RH (2)	A58	A65	Levelling LH (2)
Levelling RH (3)	A59	A66	Levelling LH (3)
Levelling RH (4)	A60	A67	Levelling LH (4)
Connect to Z186~A62	Z186	A68	Levelling SW (Earth)
Connect to A56~A63	A56	A69	Levelling SW (0)
Connect to A57~A64	A57	A70	Levelling SW (1)
Connect to A58~A65	A58	A71	Levelling SW (2)
Connect to A59~A66	A59	A72	Levelling SW (3)
Connect to A60~A67	A60	A73	Levelling SW (4)
To engine 2 (VSV –)	X9	AX1	Day-light diode (+)
Connect to A7~A17	A7	AX2	Day-light diode (–1)
Connect to A8~A18	A8	AX3	Day-light diode (–2)
J/B 5 (Tail fuse –2)	C11	C1A	J/C 2
Meter 1 (Illumi. +)	C2	C2A	J/C 2
J/B 4 (Tail fuse – 1)	C9	C10	Clearance RH (+)
Connect to C6~C12	C6	C10	Clearance RH (+)

From		To	
Location	Terminal	Terminal	Location
J/B 4 (Tail fuse –)	C6	C12	Clearance LH (+)
J/C 2	C4A	C27	A/T console (Illumi. +)
Connect to 055~02A	055	C29	To instrument panel 1 (Clock +B)
Multi-control SW (Rear fog –)	C37	C38	To instrument panel 2 (Rear fog SW +)
Multi-control SW (Tail SW –)	C13	C45	J/B (Tail fuse +)
R/B 1 (Day-light fuse –)	C104	C49	Day-light relay (Day-light fuse)
J/B 6 (Tail 2)	C80	C50	Day-light relay (Tail)
J/B 4 (Tail 1)	C9	C51	Day-light relay (Tail)
To instrument panel 2 (Rear fog SW –)	C39	C71	To floor (Rear fog RH +)
Connect to C47~C115	C47	C80	J/B 6 (Tail LH power source)
Connect to C80~C115	C80	C102	J/B 5 (Tail fuse –)
J/B 6 (Fog fuse –)	C56	C103	Multi-control SW (Rear fog +)
J/B 5 (Tail fuse –)	C102	C103	Multi-control SW (Rear fog +)
Connect to C21~C2A	C2A	C112	Heater control (Illumi. +)
Connect to Z192~G3	Z192	C113	Heater control (Illumi. earth)
J/C 2	H5A	C114	Tail buzzer (IG +)
J/B 6 (Tail fuse LH –)	C47	C115	Tail buzzer (Tail)
J/B 6 (Tail LH power source)	C80	C115	Tail buzzer (Tail)
J/B (Tail fuse –)	C102	C115	Tail buzzer (Tail)
J/B 4 (Dome fuse –)	D34	D2	To interior lamp (Room lamp +)
Connect to D3~D9	D3	D8	To floor (Courtesy SW RR)
To interior lamp (Room lamp –)	D3	D9	To courtesy 1 (Courtesy SW RL)
Connect to D7~D31	D7	D16	Tail buzzer (Courtesy SW)
Connect to D3~D9	D3	D30	Tail buzzer diode (+)
To courtesy 1 (Courtesy SW FL)	D7	D31	Tail buzzer diode (–)
To courtesy 1 (Stop lamp)	E14	E1A	J/C 2
Stop lamp SW (–)	E11	E2A	J/C 2
Horn (–)	E26	E4	Multi-control SW (Horn SW)
J/B 5 (Stop fuse –)	E9	E10	Stop lamp SW (+)
J/B 5 (Horn fuse –)	E1	E25	Horn (+)
To instrument panel 1 (Hazard SW)	F42	F2	Meter 2 (Red hazard)
J/B 4 (Front turn LH)	F8	F9	Front turn LH (+)
Connect to Z4~Z15B	Z4	F10	Front turn (Earth)
J/B 4 (Side turn LH)	F44	F11	Side turn LH (+)
Connect to Z4~Z15B	Z4	F12	Side turn LH (Earth)

From		To	
Location	Terminal	Terminal	Location
J/B 4 (Front turn RH)	F13	F14	Front turn RH (+)
Connect to Z106-W87	Z106	F15	Front turn RH (Earth)
Body earth RH (Earth)	Z106	F15	Front turn RH (Earth)
Connect to Z106-Z32	Z106	F15	Front turn RH (Earth)
J/B 4 (Side turn RH)	F43	F16	Side turn RH (+)
Connect to Z3-Z14B	Z3	F17	Side turn RH (Earth)
J/B 5 (Indicator LH)	F18	F19	Meter 2 (Indicator LH +)
J/B 5 (Indicator RH)	F20	F21	Meter 2 (Indicator RH +)
To instrument panel 2 (Hazard SW –)	F38	F26	J/B 4 (Flasher relay B)
J/B 4 (Hazard fuse –)	F40	F35	To instrument panel 2 (Hazard SW TB)
J/B 4 (Pressure relay L)	F27	F41	To instrument panel 2 (Hazard SW +)
To instrument panel 2 (Hazard SW TR)	F36	F45	J/B 5 (Hazard RH)
To instrument panel 2 (Hazard SW TL)	F37	F46	J/B 5 (Hazard LH)
To floor (Back-up lamp RH –)	G15	G1A	J/C 2
To engine 2	G2	G2A	J/C 2
J/B 5 (Earth)	Z192	G3	To engine 2 (B/LP SW earth)
Meter 2 (Parking brake)	G9	G7	To courtesy 1 (Parking brake)
J/C 1	G13A	G7	To courtesy 1 (Parking brake)
Brake fluid level SW (+)	G8	G11A	J/C 1
Meter 2 (Brake)	G6	G12A	J/C 2
J/B 5 (Gauge fuse –)	H1	H1A	J/C 2
Meter 1 (IG)	H2	H2A	J/C 2
Meter 1 (Oil pressure)	H5	H6	To engine 2 (Oil pressure SW +)
Meter 2 (T gauge)	H20	H21	To engine 2 (Water temp. sender +)
Meter 1 (F gauge)	H22	H23	To courtesy 2 (Fuel sender +)
Meter 2 (O/D OFF)	H50	H51	A/T ECU 2 (O/D OFF)
Connect to W215-W213	W215	H53	Meter 2 (PWR)
Connect to K28-K29	K28	H55	Meter 2 (Defogger indicator)
Connect to I21-I22	I21	I2	Front washer motor (+)
Front washer motor (–)	I3	I4	Multi-control SW (Washer motor +)
Multi-control SW (Front wiper SW Lo)	I11	I18	Front wiper motor (Lo)
Multi-control SW (Front wiper SW Hi)	I12	I20	Front wiper motor (Hi)
J/B 6 (Wiper fuse –)	I21	I22	Front wiper motor (Cam SW +)
Multi-control SW (Front wiper SW OFF)	I13	I24	Front wiper motor (Cam SW common)
To floor (Washer motor –)	I27	I28	To instrument panel 1 (Rear washer SW +)

From		To	
Location	Terminal	Terminal	Location
To floor (Wiper motor –)	I30	I31	To instrument panel 1 (Rear wiper SW +)
Connect to O18-O12	O18	J19	Headlight washer sub (+)
J/C 1	A15A	J22	Headlight washer sub (Headlight)
Connect to I21-I22	I21	J23	Headlight washer sub (Power source)
Connect to I3-I4	I3	J25	Headlight washer sub (SW)
Heater relay (Contact point –)	K11	K2	Blower motor (+)
R/B 1 (2-way relay coil –)	K156	K2A	J/C 1
Connect to K30-K4	K30	K3	Blower resister (+)
To A/C 2 (Pressure SW)	K179	K3A	J/C 1
Blower motor (–)	K30	K4	Heater control (Hi)
Blower resistor (M1)	K5	K6	Heater control (M1)
Connect to Z3-Z14B	Z3	K7	Blower resister (Earth)
Diode 6 (–)	X248	K8	Heater control (Lo)
J/B 6 (Heater fuse –)	K1	K10	Heater relay (Contact point +)
J/C 2	H6A	K12	Heater relay (Coil +)
Connect to K11-K2	K11	K14	R/B 1 (A/C fuse +)
Connect to K129-K151	K129	K18	To engine 2 (VSV +)
To A/C 1 (Amp., Magnet clutch)	K50	K22	To A/C 2 (Magnet clutch)
J/B 6 (Defogger fuse –)	K26	K27	To instrument panel 2 (Defogger SW +)
To instrument panel 2 (Defogger SW –)	K28	K29	To floor (Defogger +)
Blower resistor (M2)	K41	K42	Heater control (M2)
J/C 2	K1A	K96	To engine 2 (2-way coolant temp. SW)
J/B (Earth)	Z189	K109	To A/C 1 (Amp. earth)
Connect to K129-K151	K129	K145	To A/C 2 (Dual pressure SW)
To A/C 2 (Dual pressure SW –)	K146	K150	To A/C 1 (Amp. contact point +)
To A/C a (Amp., Power source)	K129	K151	R/B 1 (A/C fuse –)
Radiator fan motor (–)	L1	K153	R/B 1 (A/C relay No.2 contact point +)
J/C 1	N10A	K155	To A/C 2 (A/C relay No.1 coil +)
J/C 1	N20A	K157	To A/C 1 (Tachometer pulse)
EFI ECU (ACS1)	X198	K174	To A/C 1 (ACS1)
To A/C 2 (CDS motor +)	K181	K180	R/B 1 (A/C No.2 contact point –)
R/B 1 (Radiator fan relay coil (–)	L24	K182	To A/C 1 (A/C amp. relay –)
To engine 2 (VSV –)	K19	K185	To A/C 1 (Amp. VSV No.1 –)
To A/C 1 (Amp., A/C cut)	K138	K188	To engine 2 (A/C coolant temp. cut)

From		To	
Location	Terminal	Terminal	Location
R/B 2 (Radiator fan relay coil –)	L4	L2	To engine 1 (Radiator fan SW +)
Connect to L14–L2	L4	L7	Diagnosis (Check radiator fan)
Connect to L4–L2	L4	L12	Diode 2 (Radiator fan SW)
IG SW (ST)	M1	M2	To engine 1 (Starter)
Connect to M11–X22	M11	M8	R/B 1 (ST source power)
Connect to M11–X22	M11	M9	Day-light relay (ST)
Connect to M1–M2		M10	J/B 3 (ST fuse)
IG SW 1 (IG1)	N1	N2	J/B 2 (IG fuse +)
J/B 6 (Engine fuse –)	N31	N2A	J/C 2
Connect to 014–N12A	014	N5	IG coil (IG)
Connect to N7–N21A	N7	N8	To engine 1 (Distributor IG pulse)
R/B 1 (Relay coil)	014	N12A	J/C 1
J/B 4 (IG1 fuse –)	N33	N13A	J/C 1
IG coil (Distributor)	N7	N21A	J/C 1
Meter 1 (Tachometer pulse)	N11	N22A	J/C 1
J/C 1	N11A	N37	To engine 2 (Ignitor +)
IG SW (IG2)	N30	N38	J/B 2 (IG2 fuse +)
J/C 2	H4A	N50	Diagnosis (IG +)
Connect to 014–N12A	014	N57	Condenser (+)
R/B 1 (ECU BATT)	055	02A	J/C 2
EFI ECU (BATT)	042	03A	J/C 2
Connect to 018–012	018	04	Multi-control SW (Tail SW +)
To engine 1 (Alternator +B)	018	012	IG SW 1 (AM)
Connect to 04–A22	04	013	J/B 3 (Horn hazard fuse –)
R/B 2 (Radiator fan relay contact point –)	017	015	Radiator fan motor (+)
J/C 2	N3A	019	To engine 2 (Alternator IG)
Alternator cut relay (Contact point –)	094	019	To engine 2 (Alternator IG)
Meter 2 (Charge lamp –)	020	021	To engine 2 (Alternator L)
R/B 1 (CDS FL –)	083	032	To A/C 2 (A/C relay No.1 contact point +)
To engine 2 (R/B ECU +B)	039A	040	EFI ECU (+B1)
To engine 2 (R/B ECU +B)	039B	041	EFI ECU (+B2)
J/C 2	13A	051	Day-light relay (IG +)
Connect to 020–021	020	052	Day-light relay (Alternator L)
Connect to N1A–093	N1A	091	Alternator cut relay (Coil +)
J/C 2	N1A	093	Alternator cut relay (Contact point +)
Connect to 018–012	018	095	J/B 1 (AM-related fuse +)
J/C 2	01A	097	A/T ECU 2 (BATT)

From		To	
Location	Terminal	Terminal	Location
R/B 1 (Fuel pump)	P5	P6	To courtesy 1 (Fuel pump +)
Connect to 018–012	018	P9	To courtesy 1 (Power No.1 30A +)
To courtesy (No.2 C/B 30A –)	P21A	P11	To interior lamp (Canvas motor +)
J/B 4 (Earth)	Z193	P12	To interior lamp (Canvas motor –)
R/B 1 (Fuel cut)	P17	P18	EFI ECU (FC)
Connect to N1–N2	N1	P20	To courtesy 1 (Power No.2 C/B 30A +)
Connect to P17–P18	P17	P68	Diagnosis (Fuel pump)
IG SW 2 (ACC)	R1	R2	J/B 3 (ACC-related fuse +)
To instrument panel 1 (Radio FL +)	R6	R7	To door LH (Speaker FL +)
To instrument panel 1 (Radio FL –)	R8	R9	To door LH (Speaker FL –)
To instrument panel 1 (Radio FR +)	R10	R11	To door RH (Speaker FR +)
To instrument panel 1 (Radio FR –)	R12	R13	To door RH (Speaker FR –)
To instrument panel 1 (R/M SW VL)	R18	R22	To door LH (R/M VL)
To instrument panel 1 (R/M SW HL)	R20	R23	To door LH (R/M HL)
To instrument panel 1 (R/M SW VR)	R19	R24	To door RH (R/M VR)
To instrument panel 1 (R/M SW HR)	R21	R25	To door RH (R/M HR)
To instrument panel 1 (R/M SW motor)	R17	R26	To door RH (R/M –)
Connect to R17–R26	R17	R27	To door LH (R/M –)
To instrument panel 1 (Radio RR +)	R28	R32	To floor (Speaker RR +)
To instrument panel 1 (Radio RR –)	R29	R33	To floor (Speaker RR –)
To instrument panel 1 (Radio RL +)	R30	R34	To courtesy 1 (Speaker RL +)
To instrument panel 1 (Radio RL –)	R31	R35	To courtesy 1 (Speaker RL –)
J/C 2	E3A	W3	A/T ECU 2 (BR)
Meter 2 (Easy)	H54	W4	A/T ECU 2 (Easy)
To engine 2 (L)	W9	W8	A/T ECU 1 (L)
To engine 2 (2)	W11	W10	A/T ECU 1 (2)
To engine 2 (D)	W13	W12	A/T ECU 1 (D)
To engine 2 (N)	W15	W14	A/T ECU 1 (N)
J/C 2	G3A	W16	A/T ECU 2 (R)
To engine 2 (P)	W18	W17	A/T ECU 2 (P)
To engine 2 (Shift solenoid No.1)	W28	W27	A/T ECU 2 (S1)
To engine 2 (Shift solenoid No.2)	W30	W29	A/T ECU 2 (S2)
Diagnosis (T)	W32	W31	A/T ECU 2 (T)
J/B 4 (Fuse ECU IG2 –)	W187	W34	A/T ECU 2 (+B)

From		To	
Location	Terminal	Terminal	Location
To engine 2 (EFI THWC)	X191	W42	A/T ECU 1 (WTH)
Connect to H54–W4	H54	W45	Diagnosis (A/T output)
Connect to Z15E–W159	Z15E	W47	ABS ECU 2 (Earth 1)
To courtesy 2 (ECU fuse IG2 –)	W244	W48	ABS ECU 2 (+B)
R/B 3 (ABS BATT)	W247	W49	ABS ECU 2 (BATT)
ABS relay 2 (Solenoid relay coil)	W97	W54	ABS ECU 2 (Solenoid relay)
ABS actuator 2 (AST)	W74	W57	ABS ECU 2 (AST)
To courtesy 2 (Stop)	E11A	W58	ABS ECU 1 (STP)
ABS actuator 2 (Fr LH)	W75	W60	ABS ECU 2 (Solenoid Fr LH)
ABS actuator 2 (Rr RH)	W79	W61	ABS ECU 2 (Solenoid Rr RH)
Meter 1 (ABS warming)	W110	W68	ABS ECU 1 (W)
ABS actuator 2 (Fr RH)	W77	W70	ABS ECU 2 (Solenoid Fr RH)
ABS actuator 2 (Rr LH)	W80	W71	ABS ECU 2 (Solenoid Rr LH)
ABS relay 1 (Relay –)	W96	W84	ABS ECU 2 (Relay coil –)
ABS relay 1 (Motor +)	W91	W86	ABS actuator 1 (Motor)
Body earth RH (Earth)	Z106	W87	ABS actuator 1 (Earth)
R/B 3 (ABS FL –)	073	W90	ABS relay 1 (Motor power source)
Connect to 073–W90	073	W92	ABS relay 2 (Solenoid power source)
ABS ECU 1 (RR +)	W64	W98	To floor (Wheel sensor RR +)
ABS ECU 1 (RR –)	W50	W99	To floor (Wheel sensor RR –)
ABS ECU 2 (FL +)	W65	W100	ABS sensor LH (FL +)
ABS ECU 2 (FL –)	W51	W101	ABS sensor LH (FL –)
ABS ECU 1 (RL +)	W66	W102	To floor (Wheel sensor RL +)
ABS ECU 1 (RL –)	W52	W103	To floor (Wheel sensor RL –)
ABS ECU 2 (FR +)	W67	W104	ABS sensor RH (FR +)
ABS ECU 2 (FR –)	W53	W105	ABS sensor RH (FR –)
ABS ECU 2 (TC)	W128	W126	Diagnosis (TC)
ABS ECU 1 (TS)	W196	W127	Diagnosis (TS)
Connect to W110–W68	W110	W134	Diagnosis (Diag. output)
To engine 2 (L-UP solenoid)	W202	W136	A/T ECU 2 (SL)
Body earth J/C LH (Earth)	Z15E	W159	ABS ECU 2 (Earth 2)
ABS relay 2 (Solenoid +)	W94	W192	ABS actuator 1 (Solenoid)
ABS actuator 2 (MT)	W191	W194	ABS ECU 2 (MT)
To courtesy 2 (PKB)	G7A	W195	ABS ECU 1 (Parking brake SW)
ABS relay 1 (Motor relay coil)	W95	W197	ABS ECU 2 (Motor relay)
Batted with Z113, Z114	Z113	W198	ABS ECU 2 (Fr shield earth)
Batted with Ⓐ	Ⓐ	W199	ABS ECU 1 (Rr shield earth)
Connect to W110–W68	W110	W200	ABS check 1 (1P female)
ABS relay 2 (W)	W193	W201	ABS check 2 (1P male)
To engine 2 (Pressure solenoid +)	W204	W203	A/T ECU 2 (STH +)
To engine 2 (Pressure solenoid –)	W206	W205	A/T ECU 2 (STH –)
A/T console (O/D SW)	V76	W208	A/T ECU 1 (O/D)
A/T console (PWR)	W215	W213	A/T ECU 1 (PWR)
A/T console (Easy)	W216	W214	A/T ECU 1 (Easy)
To engine 2 (T/M SPD –)	W232	W217	A/T ECU 1 (SPD1 –)
To engine 2 (Cylinder revolution +)	W220	W218	A/T ECU 1 (NC +)
To engine 2 (Cylinder revolution –)	W221	W219	A/T ECU 1 (NC –)
Connect to Z187–W227	Z187	W226	Shield earth (Separation)
Connect to Z187–W227	Z187	W228	Shield earth (Separation)
To engine 2 (T/M SPD +)	W231	W230	A/T ECU 1 (SPD1 +)
To engine 2 (EFI VCC)	X190	W233	A/T ECU 2 (VCC)
To engine 2 (EFI VTH)	X192	W235	A/T ECU 2 (VTH)
To engine 2 (EFI E20)	X193	W236	A/T ECU 2 (E2)
EFI ECU (TC)	X194	W237	A/T ECU 1 (TC)
ABS ECU 1 (GST)	W238	W241	To courtesy 2 (G sensor GST)
ABS ECU 1 (GS1)	W239	W242	To courtesy 2 (G sensor GS1)
ABS ECU 1 (GS2)	W240	W243	To courtesy 2 (G sensor GS2)
Meter 1 (Check engine)	X1	X2	EFI ECU (W)
Meter 1 (Vehicle speed sensor)	X3	X4	EFI ECU (Vehicle speed sensor)
Connect to K28–K29	K28	X15	Diode 1 (Defogger)
J/C 1	A13A	X16	Diode 2 (Headlight)
Diode 1 (OUT)	X17	X18	EFI ECU (Defogger SW)
To A/C 1 (Amp., ACS 2)	K175	X19	EFI ECU (A/C)
Diagnosis (VF)	X20	X21	EFI ECU (VF)
J/B 6 (Starter fuse)	M11	X22	EFI ECU (STA)
EFI ECU (T1)	Z46	X57	Diagnosis (Check terminal)
To engine 2 (Engine earth)	Z49	X78	EFI ECU (A/M)
Connect to X1–X2	X1	X109	Diagnosis (EFI output)
EFI ECU (DSW2)	X124	X150	Diode 2 (IN)
Connect to X248–K8	X248	X160	Diode 2 (Heater control SW)
EFI ECU (ACT)	X201	X176	To A/C 1 (ACT)
To engine 2 (Alternator C)	098	X195	EFI ECU (Alternator C)
Alternator cut relay (Coil –)	092	X226	EFI ECU (ALTC)
Heater relay (Coil –)	K13	X247	Diode 6 (+)
Connect to Z3–Z14B	Z3	Z7	To floor (Earth)

From		To	
Location	Terminal	Terminal	Location
J/B 5 (Earth)	Z181	Z8	Meter 2 (Power earth)
J/B 6 (Earth)	Z188	Z11	Brake fluid level SW (Earth)
Body earth RH (Earth)	Z3	Z14B	Body earth J/C RH (Earth)
Body earth J/C LH (Earth)	Z15C	Z14C	Body earth J/C RH (Earth)
Body earth LH (Earth)	Z4	Z15B	Body earth J/C LH (Earth)
Body earth J/C RH (Earth)	Z14E	Z16	Headlight washer sub (Earth)
Connect to Z15C~Z14C	Z15C	Z21	Heater control (Heater control SW earth)
J/B 5 (Earth)	Z179	Z26	A/T console (Illumi. –)
Body earth J/C RH (Earth)	Z14A	Z30	To instrument panel 1 (Radio earth)
Body earth RH (Earth)	Z106	Z32	To A/C 2 (CDS motor)
Connect to Z106~W87	Z106	Z32	To A/C 2 (CDS motor)
Connect to Z4~Z15B	Z4	Z41	To courtesy (Earth)
Body earth LH (Earth)	Z195	Z45	R/B 2 (R/B earth)
Body earth LH (Earth)	Z195	Z45	R/B 2 (R/B earth)
Connect to Z15C~Z14C	Z15C	Z63	J/B 6 (Earth)
Connect to Z15C~Z14C	Z15C	Z75	Multi-control SW (Earth)
Body earth J/C LH (Earth)	Z15D	Z85	Meter 2 (Gauge earth)
Connect to Z106~W87	Z106	Z105	ABS relay 2 (Earth)
Batted with W198	W198	Z113	Shield earth (Separation)
Batted with W198	W198	Z114	Shield earth (Separation)
Batted with Ⓐ	Ⓐ	Z116	To floor (Rr shield earth)
Connect to Z3~Z14B	Z3	Z145	Clearance RH (Earth)
Connect to Z4~Z15B	Z4	Z146	Clearance LH (Earth)
Body earth J/C LH (Earth)	Z15A	Z152	Heater relay (Stop earth)
Body earth J/C RH (Earth)	Z14D	Z168	A/T ECU 2 (E11)
Connect to Z14D~Z168	Z14D	Z169	A/T ECU 2 (E12)
Body earth J/C RH (Earth)	Z14D	Z170	A/T ECU 2 (E01)
Connect to Z14D~Z168	Z14D	Z175	A/T ECU 2 (E02)
Connect to Z179~Z26	Z179	Z183	A/T console (O/D SW earth)
Connect to Z15C~Z14C	Z15C	Z184	Diagnosis (Earth)
Radiator fan motor (–)	L1	Z195	Body earth LH (Earth)
Connect to Z3~Z14B	Z3	Z210	Tail buzzer (–)
J/B 6 (Earth)	Z187	Z227	To engine 2 (Engine sensor shield)

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WIRE CONNECTION, COWL, EFI R.H.D.

From		To	
Location	Terminal	Terminal	Location
Batted with W199	W199	Ⓐ	Batted with Z116
Headlight LH (+)	A2	A1A	J/C 1
J/B 6 (Headlight fuse LH –)	A1	A2A	J/C 1
Connect to A7~A20A	A7	A3	Headlight LH (Hi)
J/C 1	A33A	A4	Headlight LH (Lo)
J/C 1	A12A	A10	Meter 1 (Beam +)
Connect to A1'~A21A	A17	A11	Meter 1 (Beam –)
Headlight RH (+)	A6	A11A	J/C 1
J/B 6 (Headlight fuse RH –)	A5	A1CA	J/C 1
Multi-control SW (Dimmer Hi)	A17	A21A	J/C 1
R/B 2 (FL main –)	04	A22	Multi-control SW (Lighting SW +)
Multi-control SW (Lighting SW –)	A23	A24	J/B 3 (Lighting SW)
Headlight RH (Hi)	A7	A2CA	J/C 1
Multi-control SW (Dimmer Lo)	A18	A31A	J/C 1
Connect to A23–A24	A23	A39	Dim-dip relay (Coil +)
Headlight RH (Lo)	A8	A3CA	J/C 1
J/C 1	A22A	A43	Dim-dip relay (D coil –)
J/C 1	A32A	A44	Dim-dip resister (RH +)
Connect to A32A~A44	A32A	A45	Dim-dip resister (LH +)
Dim-dip relay (C +)	A42	A46	Dim-dip resister (–)
J/C 1	A14A	A54	Levelling RH (+)
Body earth RH (Earth)	Z196	A55	Levelling RH (Earth)
J/C 1	A3A	A61	Levelling LH (+)
Body earth LH (Earth)	Z195	A62	Levelling LH (Earth)
Levelling RH (0)	A56	A63	Levelling LH (0)
Levelling RH (1)	A57	A64	Levelling LH (1)
Levelling RH (2)	A58	A65	Levelling LH (2)
Levelling RH (3)	A59	A66	Levelling LH (3)
Levelling RH (4)	A60	A67	Levelling LH (4)
Body earth J/C RH (Earth)	Z145	A68	Levelling SW (Earth)
Connect to A56~A63		A69	Levelling SW (0)
Connect to A57~A64		A70	Levelling SW (1)
Connect to A58~A65		A71	Levelling SW (2)
Connect to A59~A66		A72	Levelling SW (3)
Connect to A60~A67		A73	Levelling SW (4)
J/B 5 (Tail fuse –2)	C11	C1A	J/C 2
Meter 1 (Illumi. +)	C21	C2A	J/C 2
Connect to 018~012	018	C4	Multi-control SW (Tail SW +)
J/B 4 (Tail fuse –1)	C9	C10	Clearance RH (+)
J/B 4 (Tail fuse –)	C6	C12	Clearance LH (+)
J/C 2	C4A	C27	A/T console (Illumi. +)
Connect to 055~02A	055	C29	To instrument panel (Clock +B)

From		To	
Location	Terminal	Terminal	Location
Multi-control SW (Rearfog –)	C37	C38	To instrument panel 2 (Rearfog SW)
Multi-control SW (Tail SW –)	C13	C45	J/B (Tail fuse +)
J/C 2	C6A	C63	Dim-dip relay (A +)
To instrument panel 1	Z166	C65	Meter 1 (Illumi. –)
To instrument panel 2 (Rearfog SW –)	C39	C71	To floor (Rearfog RH +)
J/B 6 (Tail fuse LH –)	C47	C80	J/B 7 (Tail LH Power supply)
J/B 6 (Tail LH Power supply)	C80	C102	J/B 5 (Tail fuse –)
J/B 6 (Fog fuse –)	C56	C103	Multi-control SW (Rearfog +)
J/B 5 (Tail fuse –)	C102	C103	Multi-control SW (Rear fog +)
J/C 2	C5A	C112	Heater control (Illumi. +)
Connect to Z166~C65	Z166	C113	Heater control (Illumi. earth)
J/C 2	H3A	C114	Tail buzzer (IG +)
Connect to C47~C80	C47	C115	Tail buzzer (Tail)
Connect to C80~C102	C80	C115	Tail buzzer (Tail)
J/B 4 (Dome fuse –)	D34	D2	To interior lamp (Room lamp +)
Connect to D3~D9	D3	D8	To floor (Courtesy SW RR)
To interior lamp (Room lamp –)	D3	D9	To courtesy (Courtesy SW RL)
To floor (Courtesy SW FR)	D7	D16	Tail buzzer (Courtesy SW)
To floor (Stop lamp +)	E14	E1A	J/C 2
Stop lamp SW (–)	E11	E2A	J/C 2
Horn (–)	E26	E4	Multi-control SW (Horn SW)
J/B 5 (Stop fuse –)	E9	E10	Stop lamp SW (+)
J/B 5 (Horn fuse –)	E1	E25	Horn (+)
To instrument panel (Hazard SW)	F42	F2	Meter 2 (Red hazard)
J/B 4 (Front turn LH)	F8	F9	Front turn LH (+)
Connect to Z4~Z15B	Z4	F10	Front turn LH (Earth)
J/B 4 (Side turn LH)	F44	F11	Side turn LH (+)
Connect to Z4~Z15B	Z4	F12	Side turn LH (Earth)
J/B 4 (Front turn RH)	F13	F14	Front turn RH (+)
Connect to Z3~Z14B	Z3	F15	Front turn RH (Earth)
J/B 4 (Side turn RH)	F43	F16	Side turn RH (+)
Connect to Z3~Z14B	Z3	F17	Side turn RH (Earth)
J/B 5 (Indicator LH)	F18	F19	Meter 2 (Indicator LH +)
J/B 5 (Indicator RH)	F20	F21	Meter 2 (Indicator RH +)
To instrument panel 2 (Hazard SW –)	F38	F26	J/B 4 (Flasher relay B)
J/B 4 (Hazard fuse –)	F40	F35	To instrument panel 2 (Hazard SW TB)

From		To	
Location	Terminal	Terminal	Location
J/B 4 (Flasher relay L)	F27	F41	To instrument panel 2 (Hazard SW +)
To instrument panel 2 (Hazard SW TR)	F36	F45	J/B 5 (Hazard RH)
To instrument panel 2 (Hazard SW TL)	F37	F46	J/B 5 (Hazard LH)
To floor (Back lamp RH –)	G15	G1A	J/C 2
To engine 2 (Back lamp SW)	G2	G2A	J/C 2
J/B 5 (Earth)	Z192	G3	To engine 2 (Back lamp SW earth)
Meter 2 (Parking brake)	G9	G7	To floor (Parking brake)
J/C 1	G13A	G7	To floor (Parking brake)
Brake fluid SW (+)	G8	G11A	J/C 1
Meter 2 (Brake)	G6	G12A	J/C 1
J/B 5 (Gauge fuse –)	H1	H1A	J/C 2
Connect to H2A–N50	H2A	H2	Meter 1 (IG)
Meter 1 (Oil pressure)	H5	H6	To engine 2 (Oil pressure SW +)
Meter 2 (T gauge)	H20	H21	To engine 2 (Coolant temp. sender +)
Meter 1 (F gauge)	H22	H23	To courtesy 2 (Fuel sender +)
Connect to P13A–W16		H28	Meter 2 (Shift indicator)
J/B 6 turn (–)	F51	H47	Meter 2 (+)
Meter 2 (O/D OFF)	H50	H51	A/T ECU 2 (O/D OFF)
Connect to W215–W213	W215	H53	Meter 2 (Power)
Connect to K28–K29	K28	H55	Meter 2 (Defogger indicator)
Connect to I21–I22	I21	I2	Front washer motor (+)
Front washer motor (–)	I3	I4	Multi-control SW (Washer motor +)
Multi-control SW (Front wiper SW Lo)	I11	I18	Front wiper motor (Lo)
Multi-control SW (Front wiper SW Hi)	I12	I20	Front wiper motor (Hi)
J/B 6 (Wiper fuse –)	I21	I22	Front wiper motor (Cam SW +)
Multi-control SW (Front wiper SW OFF)	I13	I24	Front wiper motor (Cam SW common)
To floor (Washer motor –)	I27	I28	To instrument panel 1 (Rear washer SW +)
To floor (Wiper motor –)	I30	I31	To instrument panel 1 (Rear wiper SW +)
Heater relay (Contact point –)	K11	K2	Blower motor (+)
R/B 1 (2-way relay coil –)	K156	K2A	J/C 1
Connect to K30–K4	K30	K3	Blower resister (+)
To A/C 2 (Pressure SW)	K179	K3A	J/C 1
Blower motor (–)	K30	K4	Heater control (Hi)
Blower resister (M1)	K5	K6	Heater control (M1)
Body earth J/C LH (Earth)	Z15A	K7	Blower resister (Earth)

From		To	
Location	Terminal	Terminal	Location
Diode 6 (–)	X248	K8	Heater control (Lo)
J/B 6 (Heater fuse –)	K1	K10	Heater relay (Contact point +)
J/C 2	H4A	K12	Heater relay (Coil +)
Connect to K11–K2	K11	K14	R/B 1 (A/C fuse +)
Connect to K129–K151	K129	K18	To engine 2 (VSV +)
To A/C 1 (Amp., Magnet clutch)	K50	K22	To A/C 2 (Magnet clutch)
J/B 6 (Defogger fuse –)	K26	K27	To instrument panel 2 (Defogger SW +)
To instrument panel 2 (Defogger SW –)	K28	K29	To floor (Defogger +)
Blower resister (M2)	K41	K42	Heater control (M2)
J/C 1	K1A	K96	To engine 2 (2-way coolant temp. SW)
J/B 5 (Earth)	Z189	K109	To A/C 1 (Amp. earth)
Connect to K129–K151	K129	K145	To A/C 2 (Dual pressure SW +)
To A/C 2 (Dual pressure SW –)	K146	K150	To A/C 1 (Amp. contact point +)
To A/C 1 (Amp. power supply)	K129	K151	R/B 1 (A/C fuse –)
Radiator fan motor (–)	L1	K153	R/B 1 (A/C relay No. 2 contact point +)
Connect to N33–014	N33	K155	To A/C 2 (A/C relay No. 1 coil +)
Connect to N7–N11	N7	K157	To A/C 1 (Tachometer pulse)
EFI ECU (ACS1)	X198	K174	To A/C 1 (ACS1)
EFI ECU (ACT)	X201	K176	To A/C 1 (Alternator)
To A/C 2 (CDS motor +)	K181	K180	R/B 1 (A/C No. 2 contact point –)
R/B 1 (Radiator fan relay coil –)	L24	K182	To A/C 1 (A/C amp. relay –)
To engine 2 (VSV –)	K19	K185	To A/C 1 (Amp. VSV No. 1 –)
To A/C 1 (Amp. A/C cut)	K138	K188	To engine 2 (A/C coolant temp. cut SW)
R/B 2 (Radiator fan relay coil –)	L4	L2	To engine 1 (Radiator fan SW +)
Connect to L4–L2	L4	L7	Diagnosis (Check radiator fan)
Connect to L4–L2	L4	L12	Diode 2 (Radiator fan SW)
IG SW 2 (ST)	M1	M2	To engine 1 (Starter)
Connect to M11–X22	M11	M8	R/B 1 (Starter power supply)
Connect to M1–M2	M1	M10	J/B 3 (Starter fuse)
IG SW 1 (IG 1)	N1	N2	J/B 2 (IG fuse +)
J/B 6 (Engine fuse –)	N31	N2A	J/C 2
Connect to N33–014	N33	N5	IG coil (IG)
Connect to N7–N11	N7	N8	To engine 1 (Distributor IG pulse)
IG coil (Distributor)	N7	N11	Meter 1 (Tachometer pulse)

From		To	
Location	Terminal	Terminal	Location
Connect to N33~014	N33	N37	To engine 2 (Ignitor +)
IG SW 2 (IG 2)	N30	N38	J/B 2 (IG fuse +)
J/C 2	H2A	N50	Diagnosis (IG +)
Connect to N33~014	N33	N57	Condenser (+)
Connect to H2A~N50	H2A	N145	A/T shift lock (IG)
R/B 1 (ECU BATT)	055	02A	J/C 2
EFI ECU (BATT)	042	03A	J/C 2
To engine 1 (Alternator +B)	018	012	IG SW 1 (AM)
Connect to 04~A22	04	013	J/B 3 (Horn hazard fuse –)
J/B 4 (IG 1 fuse –)	N33	014	R/B 1 (Relay coil +)
R/B 2 (Radiator fan relay contact point –)	017	015	Radiator fan motor (+)
J/C 2	N1A	019	To engine (Alternator IG)
Alternator cut relay (Contact point –)	094	019	To engine 2 (Alternator IG)
Meter 2 (Charge lamp –)	020	021	To engine 2 (Alternator L)
R/B 1 (CDS FL –)	083	032	To A/C 2 (A/C relay No. 1 contact point +)
To engine 2 (R/B ECU +B)	039A	040	EFI ECU (+B1)
To engine 2 (R/B ECU +B)	039B	041	EFI ECU (+B2)
J/C 2	N3A	057	Dim-dip relay (A coil +)
Connect to 04~A22	04	058	Dim-dip relay (B +)
Connect to N1A~093	N1A	091	Alternator cut relay (Coil +)
J/C 2	N1A	093	Alternator cut relay (Contact point +)
Connect to 018~012	018	095	J/B 1 (AM-related fuse +)
J/C 2	G1A	097	A/T ECU 2 (BATT)
R/B 1 (Fuel pump)	P5	P6	To courtesy 1 (Fuel pump +)
Connect to 018~012	018	P9	To floor (Power No. 1 30A +)
To floor (No. 2 C/B 30A –)	P21A	P11	To interior lamp (Canvas top motor +)
Connect to Z4~Z15B		P12	To interior lamp (Canvas top motor –)
R/B 1 (Fuel cut)	P17	P18	EFI ECU (FC)
Connect to N1~N2	N1	P20	To floor (Power No. 2 C/B 30A +)
Connect to P17~P18	P17	P68	Diagnosis (Fuel pump)
IG SW 2 (ACC)	R1	R2	J/B (ACC-related fuse +)
To instrument panel 1 (Radio FL +)	R6	R7	To door LH (Speaker FL +)
To instrument panel 1 (Radio FL –)	R8	R9	To door LH (Speaker FL –)
To instrument panel 1 (Radio FR +)	R10	R11	To door RH (Speaker FR +)
To instrument panel 1 (Radio FR –)	R12	R13	To door RH (Speaker FR –)

From		To	
Location	Terminal	Terminal	Location
To instrument panel 1 (Remote-controlled mirror SW VL)	R18	R22	To door LH (Remote-controlled mirror VL)
To instrument panel 1 (Remote-controlled mirror SW HL)	R20	R23	To door LH (Remote-controlled mirror HL)
To instrument panel 1 (Remote-controlled mirror SW VR)	R19	R24	To door RH (Remote-controlled mirror VR)
To instrument panel 1 (Remote-controlled mirror HR)	R21	R25	To door RH (Remote-controlled mirror HR)
To instrument panel 1 (Remote-controlled mirror SW motor –)	R17	R26	To door RH (Remote-controlled mirror –)
Connect to R17~R26	R17	R27	To door LH (Remote-controlled mirror –)
To instrument panel 1 (Radio RR +)	R28	R32	To floor (Speaker RR +)
To instrument panel 1 (Radio RR –)	R29	R33	To floor (Speaker RR –)
To instrument panel 1 (Radio RL +)	R30	R34	To courtesy 1 (Speaker RL +)
To instrument panel 1 (Radio RL –)	R31	R35	To courtesy 1 (Speaker RL –)
J/C 2	E3A	W3	A/T ECU 2 (BR)
Connect to E3A~W146	E3A	W3	A/T ECU 2 (RR)
Meter 2 (Easy)	H54	W4	A/T ECU 2 (Easy)
To engine 2 (L)	W9	W8	A/T ECU 1 (L)
To engine 2 (2)	W11	W10	A/T ECU 1 (2)
To engine 2 (D)	W13	W12	A/T ECU 1 (D)
To engine 2 (N)	W15	W14	A/T ECU 1 (N)
J/C 2	G3A	W16	A/T ECU 2 (R)
To engine 2 (P)	W18	W17	A/T ECU 2 (P)
To engine (Shift solenoid No. 1)	W28	W27	A/T ECU 2 (S1)
To engine (Shift solenoid No. 2)	W30	W29	A/T ECU 2 (S2)
Diagnosis (T)	W32	W31	A/T ECU 2 (T)
J/B 4 (Fuse ECU IG 2 –)	W187	W34	A/T ECU 2 (+B)
To engine 2 (EFI THWO)	X191	W42	A/T ECU 1 (WTH)
Connect to H54~W4	H54	W45	Diagnosis (A/T output)
Connect to Z145~W159	Z145	W47	ABS ECU 2 (Earth 1)
To floor (ECU fuse IG 2 –)	W244	W48	ABS ECU 2 (+B)
R/B 3 (ABS BATT)	W247	W49	ABS ECU 2 (BATT)
ABS relay 2 (Solenoid relay coil)	W97	W54	ABS ECU 2 (Solenoid relay)
ABS actuator 2 (AST)	W74	W57	ABS ECU 2 (AST)
To floor (Stop)	E11A	W58	ABS ECU 1 (STP)
ABS actuator 2 (Front LH)	W75	W60	ABS ECU 2 (Solenoid Front LH)
ABS actuator 2 (Front RH)	W79	W61	ABS ECU 2 (Solenoid Rear RH)
Meter 1 (ABS warning)	W110	W68	ABS ECU 1 (W)

From		To	
Location	Terminal	Terminal	Location
ABS actuator 2 (Front RH)	W77	W70	ABS ECU 2 (Solenoid Front RH)
ABS actuator 2 (Front LH)	W80	W71	ABS ECU 2 (Solenoid Rear LH)
ABS relay 1 (Relay –)	W96	W84	ABS 2 (Relay coil –)
ABS relay 1 (Motor +)	W91	W86	ABS actuator 1 (Motor)
Body earth RH (Earth)	Z106	W87	ABS actuator 1 (Earth)
R/B 3 (ABS F/L –)	073	W90	ABS relay 1 (Motor power supply)
Connect to 073–W90	073	W92	ABS relay 2 (Solenoid)
ABS ECU 1 (RR +)	W64	W98	To floor (Wheel sensor RR +)
ABS ECU 1 (RR –)	W50	W99	To floor (Wheel sensor RR –)
ABS ECU 2 (FL +)	W65	W100	ABS sensor LH (FL +)
ABS ECU 2 (FL –)	W51	W101	ABS sensor LH (FL –)
\BS ECU 1 (RL +)	W66	W102	To floor (Wheel sensor RL +)
ABS ECU 1 (RL –)	W52	W103	To floor (Wheel sensor RL –)
ABS ECU 2 (FR +)	W67	W104	ABS sensor RH (FR +)
ABS ECU 2 (FR –)	W53	W105	ABS sensor RH (FR –)
ABS ECU 2 (TC)	W128	W126	Diagnosis (TC)
ABS ECU 1 (TS)	W196	W127	Diagnosis (TS)
Connect to W110–W68	W110	W134	Diagnosis (Diagnosis output)
To engine 2 (L-UP solenoid)	W202	W136	A/T ECU 2 (SL)
A/T shift lock (Key lock solenoid)	W147	W143	Key SW (Key interlock solenoid +)
J/B 4	R38	W144	A/T shift lock (ACC)
J/C 2	E3A	W146	A/T shift lock (STOP)
Connect to Z179–Z26	Z179	W148	A/T shift lock (Earth)
Connect to Z179–Z26	Z179	W150	Key SW (Key interlock solenoid –)
ɔdy earth J/C RH (Earth)	Z14E	W159	ABS ECU 2 (Earth 2)
ABS relay 2 (Solenoid +)	W94	W192	ABS actuator 2 (Solenoid)
ABS actuator 2 (MT)	W191	W194	ABS ECU 2 (MT)
To floor (Parking brake)	G7A	W195	ABS ECU 1 (Parking brake SW)
ABS relay 1 (Motor relay coil)	W95	W197	ABS ECU 2 (Motor relay)
Batted with Z113, Z114	Z113	W198	ABS ECU 2 (Front shield earth)
Batted with Ⓐ		W199	ABS ECU 1 (Rear shield earth)
Connect to W110–W68	W110	W200	ABS check 1 (1P female)
ABS relay 2 (W)	W193	W201	ABS check 2 (1P male)
To engine 2 (Pressure solenoid +)	W204	W203	A/T ECU 2 (STH +)
To engine 2 (Pressure solenoid –)	W206	W205	A/T ECU 2 (STH –)
T console (O/D SW)	L76	W208	A/T ECU 1 (O/D)

From		To	
Location	Terminal	Terminal	Location
A/T console (Power)	W215	W213	A/T ECU 1 (Power)
A/T console (Easy)	W216	W214	A/T ECU 1 (Easy)
To engine 2 (T/M SPD –)	W232	W217	A/T ECU 1 (SPD1 –)
To engine 2 (Cylinder revolution +)	W220	W218	A/T ECU 1 (NC +)
To engine 2 (Cylinder revolution –)	W221	W219	A/T ECU 1 (NC –)
Connect to Z187–W227	Z187	W226	Shield earth (Separation)
J/B 6 (Earth)	Z187	W227	To engine 2 (Engine sensor shield)
Connect to Z187–W227	Z187	W228	Shield earth (Separation)
To engine 2 (T/M SPD +)	W231	W230	A/T ECU 1 (SPD1 +)
To engine 2 (EFI VCC)	X190	W233	A/T ECU 2 (VCC)
To engine 2 (EFI VTH)	X192	W235	A/T ECU 2 (VTH)
To engine 2 (EFI E20)	X193	W236	A/T ECU 2 (E2)
EFI ECU (TC)	X194	W237	A/T ECU 1 (TC)
Meter 1 (Check engine)	X1	X2	EFI ECU (W)
Meter (Vehicle speed sensor)	X3	X4	EFI ECU (Vehicle speed sensor)
Connect to K28–K29	K28	X15	Diode 1 (Defogger)
J/C 1	A13A	X16	Diode (Headlight)
Diode 1 (OUT)	X17	X18	EFI ECU (PSW)
To A/C 1 (Amp. ACS2)	K175	X19	EFI ECU (A/C)
Diagnosis (VF)	X20	X21	EFI ECU (VF)
J/B 6 (Starter fuse –)	M11	X22	EFI ECU (Starter)
EFI ECU (T1)	Z46	X57	Diagnosis (Check terminal)
To engine 2 (Engine earth)	Z49	X78	EFI ECU (A/M)
Connect to X1–X2	X1	X109	Diagnosis (EFI output)
EFI ECU (DSW 2)	X124	X150	Diode 2 (IN)
Connect to X240–K8	X240	X160	Diode 2 (Heater control SW)
To engine 2 (Alternator C)	098	X195	EFI ECU (Alternator C)
Alternator (Coil –)	092	X226	EFI ECU (ALTC)
Heater relay (Coil –)	K13	X247	Diode 6 (+)
Connect to Z3–Z14B	Z3	Z7	To floor (Earth)
J/B 5 (Earth)	Z181	Z8	Meter 2 (Power earth)
J/B 6 (Earth)	Z188	Z11	Brake fluid level SW (Earth)
Body earth RH (Earth)	Z3	Z14B	Body earth J/C RH (Earth)
Body earth J/C LH (Earth)	Z15C	Z14C	Body earth J/C RH (Earth)
Body earth LH (Earth)	Z4	Z15B	Body earth J/C LH (Earth)
Connect to Z15C–Z14C	Z15C	Z21	Heater control (Heater control SW earth)
J/B 5 (Earth)	Z179	Z26	A/T console (Illumi. –)
Body earth J/C RH (Earth)	Z14D	Z30	To instrument panel 1 (Radio earth)
Body earth RH (Earth)	Z106	Z32	To A/C 2 (CDS motor)

From		To	
Location	Terminal	Terminal	Location
Connect to Z106~W87	Z106	Z32	To A/C 2 (CDS motor)
Connect to Z4~Z15B	Z4	Z41	To courtesy (Earth)
Body earth LH (Earth)	Z195	Z45	R/B 2 (R/B earth)
Connect to Z15C~Z14C	Z15C	Z63	J/B 6 (Earth)
Connect to Z15C~Z14C	Z15C	Z75	Multi-courtesy SW (Earth)
J/B 6 (Earth)	Z186	Z80	Dim-dip relay (Earth)
Body earth J/C LH (Earth)	Z15E	Z85	Meter 2 (Gauge earth)
Connect to Z106~W87	Z106	Z105	ABS relay 2 (Earth)
Batted with W198	W198	Z114	Shield earth (Separation)
Batted with W198	W198	Z114	Shield earth (Separation)
Batted with Ⓐ		Z116	To floor (Shield earth)
Connect to Z3~Z14B	Z3	Z145	Clearance RH (Earth)
Connect to Z4~Z15B	Z4	Z146	Clearance LH (Earth)
Body earth J/C RH (Earth)	Z14A	Z152	Heater relay (Stop earth)
Body earth J/C LH (Earth)	Z15D	Z168	A/T ECU 2 (E11)
Connect to Z15D~Z168	Z15D	Z169	A/T ECU 2 (E12)
Body earth J/C LH (Earth)	Z15D	Z170	A/T ECU 2 (E01)
Connect to Z15D~Z168	Z15D	Z175	A/T ECU 2 (E02)
Connect to Z179~Z26	Z179	Z183	A/T console (O/D SW earth)
Connect to Z15A~K7	Z15A	Z184	Diagnosis (Earth)
Connect to Z3~Z14B	Z3	Z210	Buzzer (–)

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WIRE CONNECTION, COWL, CARB. L.H.D.

From		To	
Location	Terminal	Terminal	Location
J/B 6 (Headlight fuse LH –)	A1	A2	Headlight LH (+)
Connect to A7–A17	A7	A3	Headlight LH (Hi)
Connect to A8–A18	A8	A4	Headlight LH (Lo)
Connect to A6–A11A	A6	A10	Meter 1 (Beam +)
J/B 6 (Headlight fuse RH –)	A5	A10A	J/C 1
Connect to A7–A17	A7	A11	Meter 1 (Beam –)
Headlight RH (+)	A6	A11A	J/C 1
Headlight RH (Hi)	A7	A17	Multi-control SW (Dimmer Hi)
Headlight RH (Lo)	A8	A18	Multi-control SW (Dimmer Lo)
To engine 1 (FL main –)	04	A22	Multi-control SW (Lighting SW +)
Multi-control SW (Lighting SW –)	A23	A24	J/B 3 (Lighting SW)
J/B 5 (Tail fuse –2)	C11	C1A	J/C 2
Meter 1 (Illumi. +)	C21	C2A	J/C 2
Connect to 018–012	018	C4	Multi-control SW (Tail SW +)
J/B 4 (Tail fuse –1)	C9	C10	Clearance RH (+)
J/B 4 (Tail fuse –)	C6	C12	Clearance LH (+)
J/C 2	C4A	C27	A/T console (Illumi. +)
Connect to D3A–D2	D3A	C29	To instrument panel 1 (Clock +B)
Multi-control SW (Rear fog –)	C37	C38	To instrument panel (Rear fog SW)
Multi-control SW (Tail SW –)	C13	C45	J/B (Tail fuse +)
To instrument panel 2 (Rear fog SW –)	C39	C71	To floor (Rear fog RH +)
J/B 6 (Tail LH, power supply)	C80	C102	J/B 5 (Tail fuse –)
J/B 6 (Fog fuse –)	C56	C103	Multi-control SW (Rear fog +)
Connect to C21–C2A	C21	C112	Heater control (Illumi. +)
Connect to Z192–G3	Z192	C113	Heater control (Illumi. earth)
J/C 1	H5A	C114	Tail buzzer (IG +)
Connect to C80–C102	C80	C115	Tail buzzer (Tail)
J/B 4 (Dome fuse –)	D34	D2A	J/C 2
To interior lamp (Room lamp +)	D2	D3A	J/C 2
Connect to D3–D9	D3	D8	To floor (Courtesy SW, RR)
To interior lamp (Room lamp –)	D3	D9	To courtesy 1 (Courtesy SW, RL)
To courtesy 1 (Courtesy SW FL)	D7	D16	Tail buzzer (Courtesy SW)
Connect to D3–D9	D3	D30	Tail buzzer diode (+)
Connect to D7–D16	D7	D31	Tail buzzer diode (–)

From		To	
Location	Terminal	Terminal	Location
To courtesy 1 (Stop lamp)	E14	E1A	J/C 2
Stop lamp SW (–)	E11	E2A	J/C 2
Horn	E26	E4	Multi-control SW (Horn SW)
J/B 5 (Stop lamp fuse –)	E9	E10	Stop lamp SW (+)
J/B 5 (Horn fuse –)	E1	E25	Horn (+)
To instrument panel 1 (Hazard SW)	F42	F2	Meter 2 (Red hazard)
J/B 4 (Front turn LH)	F8	F9	Front turn LH (+)
Connect to Z4–Z15B	Z4	F10	Front turn LH (Earth)
J/B 4 (Side turn LH)	F44	F11	Side turn LH (+)
Connect to Z4–Z15B	Z4	F12	Side turn LH (Earth)
J/B 4 (Front turn RH)	F13	F14	Front turn RH (+)
Body earth RH (Earth)	Z106	F15	Front turn RH (Earth)
Connect to Z106–Z32	Z106	F15	Front turn RH (Earth)
J/B 4 (Side turn RH)	F43	F16	Side turn RH (+)
Connect to Z3–Z14B	Z3	F17	Side turn RH (Earth)
J/B 5 (Indicator LH)	F18	F19	Meter 2 (Indicator LH +)
J/B 5 (Indicator RH)	F20	F21	Meter 2 (Indicator RH +)
To instrument panel 2 (Hazard SW –)	F38	F26	J/B 4 (Flasher relay B)
J/B 4 (Hazard fuse –)	F40	F35	To instrument panel (Hazard SW TB)
J/B 4 (Flasher relay L)	F27	F41	To instrument panel 2 (Hazard SW +)
To instrument panel 2 (Hazard SW TR)	F36	F45	J/B 5 (Hazard RH)
To instrument panel 2 (Hazard SW TL)	F37	F46	J/B 5 (Hazard LH)
To floor (Back-up lamp RH –)	G15	G1A	J/C 2
To engine 2 (Back-up SW)	G2	G2A	J/C 2
J/B 5 (Earth)	Z192	G3	To engine 2 (Back lamp SW earth)
Meter 2 (Parking brake)	G9	G7	To courtesy (Parking brake)
J/C 1	G13A	G7	To courtesy 1 (Parking brake)
Brake fluid SW (+)	G8	G11A	J/C 1
Meter 2 (Brake)	G6	G12A	J/C 1
J/B 5 (Gauge fuse –)	H1	H1A	J/C 1
Meter 1 (IG)	H2	H2A	J/C 1
Meter (Oil pressure)	H5	H6	To engine (Oil pressure SW +)
Meter (T gauge)	H20	H21	To engine (Coolant temp. sender +)
Meter (F gauge)	H22	H23	To courtesy 1 (Fuel sender +)
Meter 2 (O/D OFF)	H50	H51	A/T ECU 2 (O/D OFF)
Connect to W215–W213	W215	H53	Meter 2 (PWR)

From		To	
Location	Terminal	Terminal	Location
Connect to K28-K10A	K28	H55	Meter (Defogger indicator)
To courtesy 1 (Sheet belt SW)	H19	H56	Meter 1 (Sheet belt indicator)
Connect to I21-I22	I21	I2	Front washer motor (+)
Front washer motor (–)	I3	I4	Multi-control SW (Washer motor +)
Multi-control SW (Front wiper SW Lo)	I11	I18	Front wiper motor (Lo)
Multi-control SW (Front wiper SW Hi)	I12	I20	Front wiper motor (Hi)
J/B 6 (Wiper fuse –)	I21	I22	Front wiper motor (Cam SW +)
Multi-control SW (Front wiper SW OFF)	I13	I24	Front wiper motor (Cam SW common)
To floor (Washer motor –)	I27	I28	To instrument panel 1 (Rear washer SW +)
To floor (Wiper motor –)	I30	I31	To instrument panel 1 (Rear wiper SW +)
Heater relay (Contact point –)	K11	K2	Blower motor (+)
Connect to K30-K4	K30	K3	Blower resister (+)
Blower motor (–)	K30	K4	Heater control (Hi)
Blower resistor (M1)	K5	K6	Heater control (M1)
Connect to Z3-Z14B	Z3	K7	Blower resister (Earth)
J/B 6 (Heater fuse –)	K1	K10	Heater relay (Contact point +)
To instrument panel 2 (Defogger SW –)	K28	K10A	J/C 1
To floor (Defogger +)	K29	K11A	J/C 1
J/C 1	H6A	K12	Heater relay (Coil +)
Connect to K11-K2	K11	K14	A/C fuse (+)
Connect to K129-K151	K129	K18	VSV (VSV +)
Diode 6 (–)	X249	K20A	J/C 2
Heater control (Lo)	K8	K21A	J/C 2
To A/C 1 (Amp. Magnet clutch)	K50	K22	To A/C 2 (Magnet clutch)
J/B 6 (Defogger fuse –)	K26	K27	To instrument panel 2 (Defogger SW +)
Blower resistor (M2)	K41	K42	Heater control (M2)
Connect to K156-K179	K156	K96	To engine 2 (2-way coolant temp. SW)
J/B 5 (Earth)	Z189	K109	To A/C 1 (Amp. earth)
Connect to K129-K151	K129	K145	To A/C 2 (Dual pressure SW +)
To A/C 2 (Dual pressure SW –)	K146	K150	To A/C 1 (Amp. contact point +)
To A/C 1 (Amp. power supply)	K129	K151	A/C fuse (–)
Radiator fan motor (–)	L1	K153	A/C relay No. 2 (Contact point +)
J/C 2	N4A	K155	To A/C 2 (A/C relay No. 1 coil +)
J/C 1	N20A	K157	To A/C 1 (Tachometer pulse)

From		To	
Location	Terminal	Terminal	Location
J/C 2	K22A	K160	Diode 5 (Heater)
A/C relay No. 2 (Coil –)	K156	K179	To A/C 2 (Pressure SW)
To A/C 2 (CDS motor +)	K181	K180	A/C relay No. 2 (Contact point –)
J/C 1	L4A	K182	To A/C 1 (A/C amp. relay –)
VSV (VSV –)	K19	K185	To A/C 1 (Amp. VSV No. 1 –)
To A/C 1 (Amp. A/C cut)	K138	K188	To engine 2 (A/C coolant temp. cut SW)
Radiator fan relay (Coil –)	L4	L1A	J/C 1
To engine 1 (Radiator fan SW +)	L2	L2A	J/C 1
Connect to N4A-K155	N4A	L3	A/C relay No. 2 (Coil +)
J/C 1	L3A	L12	Diode 2 (Radiator fan)
To engine 1 (Radiator fan FL –)	O101	L19	Radiator fan relay (Contact point +)
IG SW (ST)	M1	M2	To engine 1 (Starter)
To engine 2 (Alternator IG)	O19	N1A	J/C 2
IG SW (IG1)	N1	N2	J/B 2 (IG fuse +)
J/B 6 (Engine fuse –)	N31	N2A	J/C 2
J/C 2	N5A	N5	IG coil (IG)
Radiator fan relay	O14	N6A	J/C 2
Connect to N7-N21A	N7	N8	To engine 1 (Distributor IG pulse)
IG coil (Distributor)	N7	N21A	J/C 1
Meter 1 (Tachometer pulse)	N11	N22A	J/C 1
IG SW (IG2)	N30	N38	J/B 2 (IG2 fuse +)
J/C 1	H4A	N50	Diagnosis (IG +)
J/C 2	N7A	N57	Condenser (+)
To engine 1 (Alternator +B)	O18	O12	Confront wit O12X
Batted with -O12	O12	O12X	IG SW (AM)
Connect to O4-A22	O4	O13	J/B 3 (Horn hazard fuse –)
Radiator fan relay (Contact point –)	O17	O15	Radiator fan motor (+)
Meter (Charge lamp –)	O20	O21	To engine 2 (Alternator L)
To engine 2 (CDS FL –)	O83	O32	To A/C 2 (A/C relay No. 1 contact point +)
Connect to O18-O12	O18	O95	J/B 1 (AM-related fuse +)
J/C 2	O1A	O97	A/T ECU 2 (BATT)
Connect to O18-O12	O18	P9	To courtesy 1 (Power No. 1 30A +)
To courtesy 1 (No. 2 C/B 30A –)	P21A	P11	To interior lamp (Canvas top motor +)
J/B 4 (Earth)	Z193	P12	To interior lamp (Canvas top motor –)
Connect to N1-N2	N1	P20	To courtesy 1 (Power No. 2 C/B 30A +)
IG SW (ACC)	R1	R2	J/B (ACC-related fuse +)

From		To	
Location	Terminal	Terminal	Location
To instrument panel 1 (Radio FL +)	R6	R7	To door LH (Speaker FL +)
To instrument panel 1 (Radio FL –)	R8	R9	To door LH (Speaker FL –)
To instrument panel 1 (Radio FR +)	R10	R11	To door RH (Speaker FR +)
To instrument panel 1 (Radio FR –)	R12	R13	To door RH (Speaker FR –)
To instrument panel 1 (Remote-controlled mirror SW VL)	R18	R22	To door LH (Remote-controlled mirror VL)
To instrument panel 1 (Remote-controlled mirror SW HL)	R20	R23	To door LH (Remote-controlled mirror HL)
To instrument panel 1 (Remote-controlled mirror SW VR)	R19	R24	To door RH (Remote-controlled mirror VR)
To instrument panel 1 (Remote-controlled mirror SW HR)	R21	R25	To door RH (Remote-controlled mirror HR)
To instrument panel 1 (Remote-controlled mirror SW motor)	R17	R26	To door RH (Remote-controlled mirror –)
Connect to R17~R26	R17	R27	To door LH (Remote-controlled mirror –)
To instrument panel 1 (Radio RR +)	R28	R32	To floor (Speaker RR +)
To instrument panel 1 (Radio RR –)	R29	R33	To floor (Speaker RR –)
To instrument panel 1 (Radio RL +)	R30	R34	To courtesy 1 (Speaker RL +)
To instrument panel 1 (Radio RL –)	R31	R35	To courtesy 1 (Speaker RL –)
J/C 2	E3A	W3	A/T ECU 2 (BR)
Meter 2 (Easy)	H54	W4	A/T ECU 2 (Easy)
To engine 2 (L)	W9	W8	A/T ECU 1 (L)
To engine 2 (2)	W11	W10	A/T ECU 1 (2)
To engine 2 (D)	W13	W12	A/T ECU 1 (D)
To engine 2 (N)	W15	W14	A/T ECU 1 (N)
J/C 2	G3A	W16	A/T ECU 2 (R)
To engine 2 (P)	W18	W17	A/T ECU 2 (P)
To engine 2 (Throttle VCC)	X42	W19	A/T ECU 2 (VCC)
To engine 2 (Throttle VTH)	X41	W21	A/T ECU 2 (VTH)
To engine 2 (Throttle E2)	X39	W23	A/T ECU 2 (E2)
To engine 2 (Shift solenoid No. 1)	W28	W27	A/T ECU 2 S1
To engine 2 (Shift solenoid No. 2)	W30	W29	A/T ECU 2 S2
Diagnosis (T)	W32	W31	A/T ECU 2 (T)
J/B 4 (Fuse, ECU IG2 –)	W187	W34	A/T ECU 2 (+B)
To engine 2 (Coolant temp. SW +)	W207	W42	A/T ECU 1 (WTH)
Connect to H54~W4	H54	W45	Diagnosis (A/T output)

From		To	
Location	Terminal	Terminal	Location
Connect to W13~W12	W13	W117	Diode 3 (Shift D)
Connect to W11~W10	W11	W118	Diode 3 (Shift 2)
Connect to W9~W8	W9	W119	Diode 4 (Shift L)
Connect to G3A~W16	G3A	W120	Diode 4 (Shift R)
Connect to X9~X152	X9	W121	Diode 3 (IN)
Connect to X9~X152	X9	W122	Diode 4 (IN)
To engine 2 (L-up solenoid)	W202	W136	A/T ECU 2 (SL)
To engine 2 (Pressure solenoid +)	W204	W203	A/T ECU 2 (STH +)
To engine 2 (Pressure solenoid –)	W206	W205	A/T ECU 2 (STH –)
A/T console (O/D SW)	V76	W208	A/T ECU 1 (O/D)
A/T console (PWR)	W215	W213	A/T ECU 1 (PWR)
A/T console (Easy)	W216	W214	A/T ECU 1 (Easy)
To engine 2 (T/M SPD –)	W232	W217	A/T ECU 1 (SPD 2 +)
To engine 2 (Cylinder revolution +)	W220	W218	A/T ECU 1 (NC +)
To engine 2 (Cylinder revolution –)	W221	W219	A/T ECU 1 (NC –)
To engine 2 (Oil temp. sensor)	W224	W222	A/T ECU 2 (OT +)
To engine 2 (Oil temp. sensor)	W225	W223	A/T ECU 2 (OT –)
Connect to Z187~W227	Z187	W226	Shield earth (Separation)
J/B 6 (Earth)	Z187	W227	To engine 2 (Engine sensor shield)
Connect to Z187~W227	Z187	W228	Shield earth (Separation)
To engine 2 (T/M SPD +)	W231	W230	A/T ECU 1 (SPD 1 +)
J/C 1	K12A	X15	Diode 1 (DEF)
J/C 1	A12A	X16	Diode 1 (Headlight)
Connect to X9~X152	X9	X150	Diode 5 (+)
To engine 2 (VSV –)	X9	X152	Idle up relay (Contact point +)
Diode 1 (OUT)	X17	X153	Idle up relay (Coil +)
Connect to X9~X152	X9	X169	Diode 2 (+)
A/T ECU (ACT)	Z171	X181	To A/C 1 (ACT)
Heater relay (Coil –)	K13	X247	Diode 6 (+)
Connect to Z3~Z14B	Z3	Z7	To floor (Earth)
J/B 5 (Earth)	Z181	Z8	Meter 2 (Power earth)
J/B 6 (Earth)	Z188	Z11	Brake fluid level SW (Earth)
Body earth RH (Earth)	Z3	Z14B	Body earth J/C RH (Earth)
Body earth J/C LH (Earth)	Z15C	Z14C	Body earth J/C RH (Earth)
Body earth LH (Earth)	Z4	Z15B	Body earth J/C LH (Earth)
Connect to Z15C~Z14C	Z15C	Z21	Heater control (Heater control SW earth)
J/B 5 (Earth)	Z179	Z26	A/T console (Illumi. –)
Body earth J/C RH (Earth)	Z14A	Z30	To instrument panel 1 (Radio earth)

From		To	
Location	Terminal	Terminal	Location
Body earth RH (Earth)	Z106	Z32	To A/C 2 (CDS motor)
Connect to Z4–Z15B	Z4	Z41	To courtesy (Earth)
Body earth LH (Earth)	Z195	Z45	A/C relay No. 2 (Contact point –)
Connect to Z15C–Z14C	Z15C	Z63	J/B 6 (Earth)
Connect to Z15C–Z14C	Z15C	Z75	Multi-control SW (Earth)
Body earth J/C LH (Earth)	Z15D	Z85	Meter 2 (Gauge earth)
Connect to Z3–Z14B	Z3	Z145	Clearance RH (Earth)
Connect to Z4–Z15B	Z4	Z146	Clearance LH (Earth)
Body earth J/C LH (Earth)	Z15A	Z152	Heater relay (Stop earth)
Body earth J/C RH (Earth)	Z15E	Z167	Idle up relay (Earth)
Body earth J/C RH (Earth)	Z14D	Z168	A/T ECU 2 (E11)
Connect to Z14D–Z168	Z14D	Z169	A/T ECU 2 (E12)
Body earth J/C RH (Earth)	Z14D	Z170	A/T ECU 2 (E01)
Connect to Z14D–Z168	Z14D	Z175	A/T ECU 2 (E02)
Connect to Z179–Z26	Z179	Z183	A/T console (O/D SW earth)
Body earth J/C RH (Earth)	Z14E	Z184	Diagnosis (Earth)
Radiator fan motor (–)	L1	Z195	Body earth LH (Earth)
Connect to Z3–Z14B	Z3	Z210	Tail buzzer (–)

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WIRE CONNECTION, COWL, CARB. R.H.D.

From		To	
Location	Terminal	Terminal	Location
J/B 6 (Headlight fuse LH –)	A1	A2	Headlight LH (+)
Connect to A7~A17	A7	A3	Headlight LH (Hi)
Connect to A8~A18	A8	A4	Headlight LH (Lo)
Connect to A6~A11A	A6	A10	Meter 1 (Beam +)
J/B 6 (Headlight fuse RH –)	A5	A10A	J/C 1
Connect to A7~A17	A7	A11	Meter 1 (Beam –)
Headlight RH (+)	A6	A11A	J/C 1
Headlight RH (Hi)	A7	A17	Multi-control SW (Dimmer Hi)
Headlight RH (Lo)	A8	A18	Multi-control SW (Dimmer Lo)
To engine 1 (FL main –)	04	A22	Multi-control SW (Lighting SW +)
Multi-control SW (Lighting SW –)	A23	A24	J/B 3 (Lighting SW)
J/B 5 (Tail fuse –2)	C11	C1A	J/C 2
Meter 1 (Illumi. +)	C21	C2A	J/C 2
Connect to 018~012	018	C4	Multi-controlled SW (Tail SW +)
J/B 4 (Tail fuse –1)	C9	C10	Clearance RH (+)
J/B 4 (Tail fuse –)	C6	C12	Clearance LH (+)
J/C 2	C4A	C27	A/T console (Illumi. +)
Connect to D2~D3A	D2	C29	To instrument panel (Clock +B)
Multi-control SW (Tail SW –)	C13	C45	J/B (Tail fuse +)
To instrument panel 1	Z166	C65	Meter 1 (Illumi. –)
J/B 6 (Tail LH power supply)	C80	C102	J/B 5 (Tail fuse –)
Connect to C21~C2A	C21	C112	Heater control (Illumi. +)
Connect to Z166~C65	Z166	C113	Heater control (Illumi. earth)
Connect to H2~H2A	H2	C114	Tail buzzer (IG +)
Connect to C80~C102	C80	C115	Tail buzzer (Tail)
J/B 4 (Dome fuse –)	D34	D2A	J/C 2
To interior lamp (Room lamp +)	D2	D3A	J/C 2
Connect to D3~D9	D3	D8	To floor (Courtesy SW RR)
To interior lamp (Room lamp –)	D3	D9	To courtesy 1 (Courtesy SW RL)
To courtesy 1 (Courtesy SW FL)	D7	D16	Tail buzzer (Courtesy SW)
To floor (Stop lamp)	E14	E1A	J/C 2
Stop lamp SW (–)	E11	E2A	J/C 2
Horn (–)	E26	E4	Multi-control SW (Horn SW)
J/B 5 (Stop fuse –)	E9	E10	Stop lamp SW (+)
J/B 5 (Horn fuse –)	E1	E25	Horn (+)
To instrument panel (Hazard SW)	F42	F2	Meter 2 (Red hazard)

From		To	
Location	Terminal	Terminal	Location
J/B 4 (Front turn LH)	F8	F9	Front turn LH (+)
Connect to Z4~Z15B	Z4	F10	Front turn LH (Earth)
J/B 4 (Side turn LH)	F44	F11	Side turn LH (+)
Connect to Z4~Z15B	Z4	F12	Side turn LH (Earth)
J/B 4 (Front turn RH)	F13	F14	Front turn RH (+)
Connect to Z3~Z14B	Z3	F15	Front turn RH (Earth)
J/B 4 (Side turn RH)	F43	F16	Side turn RH (+)
Connect to Z3~Z14B	Z3	F17	Side turn RH (Earth)
J/B 5 (Indicator LH)	F18	F19	Meter 2 (Indicator LH +)
J/B 5 (Indicator RH)	F20	F21	Meter 2 (Indicator RH +)
To instrument panel 2 (Hazard SW –)	F38	F26	J/B 4 (Flasher relay B)
J/B 4 (Hazard fuse –)	F40	F35	To instrument panel 2 (Hazard SW +B)
J/B 4 (Flasher –L)	F27	F41	To instrument panel 2 (Hazard SW +)
To instrument panel 2 (Hazard SW TR)	F36	F45	J/B 5 (Hazard RH)
To instrument panel 2 (Hazard SW TL)	F37	F46	J/B 5 (Hazard LH)
To floor (Back lamp RH –)	G15	G1A	J/C 2
To engine 2 (Brake lamp SW)	G2	G2A	J/C 2
J/B 5 (Earth)	Z192	G3	To engine 2 (Back lamp SW earth)
Connect to G6~G8	G6	G7	To floor (Parking brake)
Meter 2 (Brake)	G6	G8	Brake fluid level SW (+)
J/B 5 (Gauge fuse –)	H1	H1A	J/C 1
Meter 1 (IG)	H2	H2A	J/C 1
Meter 1 (Oil pressure)	H5	H6	To engine 2 (Oil pressure SW +)
Meter 2 (Temp. gauge)	H20	H21	To engine 2 (Coolant temp. sender +)
Meter 1 (Fuel gauge)	H22	H23	To courtesy 1 (Fuel sender +)
Meter 2 (O/D OFF)	H50	H51	A/T ECU 2 (O/D OFF)
Connect to W215~W213	W215	H53	Meter 2 (PWR)
Connect to K28~K10A	K28	H55	Meter 2 (Defogger indicator)
Connect to I21~I22	I21	I2	Front washer motor (+)
Front washer motor (–)	I3	I4	Multi-control SW (Washer motor +)
Multi-control SW (Front wiper SW Lo)	I11	I18	Front wiper motor (Lo)
Multi-control SW (Front wiper SW Hi)	I12	I20	Front wiper motor (Hi)
J/B 6 (Wiper fuse –)	I21	I22	Front wiper motor (Cam SW +)
Multi-control SW (Front wiper SW OFF)	I13	I24	Front wiper motor (Cam SW common)
To floor (Washer motor)	I27	I28	To instrument panel 1 (Rear washer SW +)

From		To	
Location	Terminal	Terminal	Location
To floor (Wiper motor)	I30	I31	To instrument panel 1 (Rear wiper SW +)
Heater relay (Contact point –)	K11	K2	Blower motor (+)
Connect to K30~K4	K30	K3	Blower resister (+)
Blower motor (–)	K30	K4	Heater control (Hi)
Blower resister (M1)	K5	K6	Heater control (M1)
Body earth J/C LH (Earth)	Z15C	K7	Blower resister (Earth)
J/B 6 (Heater fuse –)	K1	K10	Heater relay (Contact point +)
To instrument panel 2 (Defogger SW –)	K28	K10A	J/C 1
To floor (Defogger +)	K29	K11A	J/C 1
Connect to H2~H2A	H2	K12	Heater relay (Coil +)
Connect to K11~K2	K11	K14	A/C fuse (+)
Connect to K129~K151	K129	K18	VSV (+)
Diode 6 (–)	018	K20A	J/C 2
Heater control (Lo)	K8	K21A	J/C 2
To A/C 1 (Amp., Magnet clutch)	K50	K22	To A/C 2 (Magnet clutch)
J/B 6 (Defogger fuse –)	K26	K27	To instrument panel 2 (Defogger SW +)
Blower resister (M2)	K41	K42	Heater control (M2)
Connect to K156~K179	K156	K96	To engine 2 (2-way coolant temp. SW)
J/B 5 (Earth)	Z189	K109	To A/C 1 (Amp. earth)
Connect to K129~K151	K129	K145	To A/C 2 (Dual pressure SW +)
To A/C 2 (Dual pressure SW –)	K146	K150	To A/C 1 (Amp. contact point +)
To A/C 1 (Amp. power supply)	K129	K151	A/C fuse (–)
Radiator fan motor (–)	L1	K153	A/C relay No. 2 (Contact point +)
J/C 2	N4A	K155	To A/C 2 (A/C relay No. 1 coil +)
Connect to N7~N11	N7	K157	To A/C 1 (Tachometer pulse)
A/C relay No. 2 (Coil –)	K156	K179	To A/C 2 (Pressure SW)
To A/C 2 (CDS motor +)	K181	K180	A/C relay No. 2 (Contact point –)
Connect to L4~L1A	L4	K182	To A/C 1 (A/C amp. relay –)
VSV (VSV –)	K19	K185	To A/C 1 (Amp. VSV No. 1 –)
To A/C 1 (AMP A/C cut)	K138	K188	To engine 2 (A/C coolant temp. cut SW)
Radiator fan relay (Coil –)	L4	L1A	J/C 1
To engine 2 (Radiator fan SW +)	L2	L2A	J/C 1
Connect to N4A~K155	N4A	L3	A/C relay No. 2 (Coil +)
J/C 1	L3A	L12	Diode 2 (Radiator fan)

From		To	
Location	Terminal	Terminal	Location
To engine 1 (Radiator fan FL –)	0101	L19	Radiator fan relay (Contact point +)
IG SW (Starter)	M1	M2	To engine 1 (Starter)
To engine 2 (Alternator IG)	019	N1A	J/C 2
IG SW (IG1)	N1	N2	J/B 2 (IG fuse +)
J/B 6 (Engine fuse –)	N31	N2A	J/C 1
J/C 2	N5A	N5	IG coil (IG)
Radiator fan relay	014	N6A	J/C 1
Connect to N7–N11	N7	N8	To engine 1 (Distributor IG pulse)
IG coil (Distributor)	N7	N11	Meter (tachometer pulse)
IG SW (IG2)	N30	N38	J/B 2 (IG2 fuse +)
J/C 1	H4A	N50	Diagnosis (IG +)
J/C 2	N7A	N57	Condenser (+)
To engine 1 (Alternator +B)	018	012	Batted with 012X
Batted with ~012	012	012X	IG SW (AM)
Connect to 04~A22	04	013	J/B 3 (Horn hazard fuse –)
Radiator fan relay (Contact point –)	017	015	Radiator fan motor (+)
Meter 2 (Change lamp –)	020	021	To engine 2 (Alternator L)
To engine 1 (CDS FL –)	083	032	To A/C 2 (A/C relay No. 1 contact point +)
Connect to 018~012	018	095	J/B 1 (AM–related fuse +)
J/C 2	D1A	097	A/T ECU 2 (BATT)
Connect to 018~012	018	P9	To floor (Power No. 1 30A +)
To floor (No. 2 C/B 30A –)	P21A	P11	To interior lamp (Canvas top motor)
Connect to Z4~Z15B	Z4	P12	To interior lamp (Canvas top motor)
Connect to N1~N2	N1	P20	To floor (Power No. 2 C/B 30A +)
IG SW (ACC)	R1	R2	J/B 3 (ACC-related fuse +)
To instrument panel 1 (Radio FL +)	R6	R7	To door LH (Speaker FL +)
To instrument panel 1 (Radio FL –)	R8	R9	To door LH (Speaker FL –)
To instrument panel 1 (Radio FR +)	R10	R11	To door RH (Speaker FR +)
To instrument panel 1 (Radio FR –)	R12	R13	To door RH (Speaker FR –)
To instrument panel 1 (Remote-controlled mirror SW VL)	R18	R22	To door LH (Remote-controlled mirror VL)
To instrument panel 1 (Remote-controlled mirror SW HL)	R20	R23	To door LH (Remote-controlled mirror HL)
To instrument panel 1 (Remote-controlled mirror SW VR)	R19	R24	To door RH (Remote-controlled mirror VR)

From		To	
Location	Terminal	Terminal	Location
To instrument panel 1 (Remote-controlled mirror SW HR)	R21	R25	To door RH (Remote-controlled mirror HR)
To instrument panel 1 (Remote-controlled mirror SW motor)	R17	R26	To door RH (Remote-controlled mirror –)
Connect to R17–R26	R17	R27	To door LH (Remote-controlled mirror –)
To instrument panel 1 (Radio RR +)	R28	R32	To floor (Speaker RR +)
To instrument panel 1 (Radio RR –)	R29	R33	To floor (Speaker RR –)
To instrument panel 1 (Radio RL +)	R30	R34	To courtesy 1 (Speaker RL +)
To instrument panel 1 (Radio RL –)	R31	R35	To courtesy 1 (Speaker RL –)
J/C 2	E3A	W3	A/T ECU 2 (BR)
Meter 2 (Easy)	H54	W4	A/T ECU 2 (Easy)
To engine 2 (L)	W9	W8	A/T ECU 1 (L)
To engine 2 (2)	W11	W10	A/T ECU 1 (2)
To engine 2 (D)	W13	W12	A/T ECU 1 (D)
To engine 2 (N)	W15	W14	A/T ECU 1 (N)
J/C 2	G3A	W16	A/T ECU 2 (R)
To engine 2 (P)	W18	W17	A/T ECU 2 (P)
To engine 2 (Throttle VCC)	X42	W19	A/T ECU 2 (VCC)
To engine 2 (Throttle VTH)	X41	W21	A/T ECU 2 (VTH)
To engine 2 (Throttle E2)	X39	W23	A/T ECU 2 (E2)
To engine 2 (Shift solenoid No. 1)	W28	W27	A/T ECU 2 (S1)
To engine 2 (Shift solenoid No. 2)	W30	W29	A/T ECU 2 (S2)
Diagnosis (T)	W32	W31	A/T ECU 2 (T)
J/B 4 (Fuse ECU IG2 –)	W187	W34	A/T ECU 2 (+B)
To engine 2 (Coolant temp. SW +)	W207	W42	A/T ECU 1 (WTH)
Connect to H54–W4	H54	W45	Diagnosis (A/T output)
Connect to W13–W12	W13	W117	Diode 3 (Shift D)
Connect to W11–W10	W11	W118	Diode 3 (Shift 2)
Connect to W9–W8	W9	W119	Diode 4 (Shift L)
Connect to G3A–W16	G3A	W120	Diode 4 (Shift R)
Connect to X9–X152	X9	W121	Diode 3 (IN)
Connect to X9–X152	X9	W122	Diode 4 (IN)
To engine 2 (L-UP solenoid)	W202	W136	A/T ECU 2 (SL)
To engine 2 (Pressure solenoid +)	W204	W203	A/T ECU 2 (STH +)
To engine 2 (Pressure solenoid –)	W206	W205	A/T ECU 2 (STH –)
A/T console (O/D SW)	V76	W208	A/T ECU 1 (OD)
A/T console (PWR)	W215	W213	A/T ECU 1 (PWR)
A/T console (Easy)	W216	W214	A/T ECU 1 (Easy)

From		To	
Location	Terminal	Terminal	Location
To engine 2 (T/M SPD –)	W232	W217	A/T ECU 1 (SPD1 –)
To engine 2 (Cylinder revolution +)	W220	W218	A/T ECU 1 (NC +)
To engine 2 (Cylinder revolution –)	W221	W219	A/T ECU 1 (NC –)
Connect to Z187–W227	Z187	W226	Shield earth (Separation)
J/B 6 (Earth)	Z187	W227	To engine 2 (Engine sensor shield)
Connect to Z187–W227	Z187	W228	Shield earth (Separation)
To engine 2 (T/M SPD +)	W231	W230	A/T ECU 1 (SPD1 +)
J/C 1	K12A	X15	Diode 1 (DEF)
J/C 1	A12A	X16	Diode 1 (Headlight)
Connect to X9–X152	X9	X150	Diode 5 (+)
To engine 2 (VSV –)	X9	X152	Idle up relay (Contact point +)
Diode 1 (OUT)	X17	X153	I/UP relay (Coil +)
J/C 2	K22A	X160	Diode 5 (Heater)
Connect to X9–X152	X9	X169	Diode 2 (+)
A/T ECU 1 (ACT)	Z171	X181	To A/C 1 (ACT)
Heater relay (Coil –)	K13	X247	Diode 6 (+)
Connect to Z3–Z14B	Z3	Z7	To floor (Earth)
J/B 5 (Earth)	Z181	Z8	Meter 2 (Power earth)
J/B 6 (Earth)	Z188	Z11	Brake fluid level SW (Earth)
Body earth RH (Earth)	Z3	Z14B	Body earth J/C RH (Earth)
Body earth J/C LH (Earth)	Z15C	Z14C	Body earth J/C RH (Earth)
Body earth LH (Earth)	Z4	Z15B	Body earth J/C LH (Earth)
Connect to Z15C–Z14C	Z15C	Z21	Heater control (Heater control SW earth)
J/B 5 (Earth)	Z179	Z26	A/T console (Illumi. –)
Body earth J/C RH (Earth)	Z14D	Z30	To instrument panel 1 (Radio earth)
Body earth RH (Earth)	Z106	Z32	To A/C 2 (CDS motor)
Connect to Z4–Z15B	Z4	Z41	To courtesy (Earth)
Body earth LH (Earth)	Z195	Z45	A/C relay No. 2 (Contact point –)
Connect to Z15C–Z14C	Z15C	Z63	J/B 6 (Earth)
Connect to Z15C–Z14C	Z15C	Z75	Multi-control SW (Earth)
Body earth J/C LH (Earth)	Z15E	Z85	Meter 2 (Gauge earth)
Connect to Z3–Z14B	Z3	Z145	Clearance RH (Earth)
Connect to Z4–Z15B	Z4	Z146	Clearance LH (Earth)
Body earth J/C LH (Earth)	Z14A	Z152	Heater relay (Stop earth)
Connect to Z179–Z26	Z179	Z167	I/UP relay (Earth)
Body earth J/C LH (Earth)	Z15D	Z168	A/T ECU 2 (E11)
Connect to Z15D–Z168	Z15D	Z169	A/T ECU 2 (E12)
Body earth J/C LH (Earth)	Z15D	Z170	A/T ECU 2 (E01)

From		To	
Location	Terminal	Terminal	Location
Connect to Z15D-Z168	Z15D	Z175	A/T ECU 2 (E02)
Connect to Z179~Z26	Z179	Z183	A/T console (O/D SW earth)
Body earth J/C RH (Earth)	Z14E	Z184	Diagnosis (Earth)
Connect to Z3~Z14B		Z210	Buzzer (–)

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WIRE CONNECTION, INSTRUMENT PANEL

From		To	
Location	Terminal	Terminal	Location
Roof antenna (Motor)	R109		Connect to R40~R55
Connect to C15~C106	C15	C20	Ashtray illumi. (+)
Connect to C15~C106	C15	C22	Clock (Dimmer +)
J/B (Fuse, fog)	C56	C23	Front fog SW (+)
Rear fog (RH +)	C25	C24	Front fog SW (–)
Connect to C15~C106	C15	C28	Radio (Illumi. +)
Connect to D43~C30	D43	C29	Clock (Back-up)
Connect to D43~C30	D43	C29	Clock (Back-up)
Connect to D51~C30	D51	C29	Clock, break
J/B (Fuse, dome)	D43	C30	Radio (Back-up)
Break terminal (–)	D51	C30	Radio, back-up
Multi-control SW (RF)	C37	C38	Rear fog lamp SW (+)
Rear fog lamp RH (+)	C71	C39	Rear fog lamp SW (–)
J/B (Fuse, tail)	C15	C43	Rheostat (T)
Connect to Z31~Z166	C107	C44	Rheostat (L)
J/B (Fuse, tail)	C15	C106	Hazard SW (Illumi. +)
Connect to Z31~Z166	Z31	C107	Hazard SW (Illumi. earth)
Connect to Z31~Z166	Z31	C113	Heater control illumi. (–)
J/B (Fuse, dome)	D43	D50	Break terminal (+)
Fuse, hazard	F40	F35	Hazard SW (Hazard +)
J/B (Hazard RH)	F45	F36	Hazard SW (TR)
J/B (Hazard LH)	F46	F37	Hazard SW (TL)
Flasher relay +	F26	F38	Hazard SW (Hazard L)
Flasher relay L	F27	F41	Hazard SW (TB)
Meter (Red hazard)	F2	F42	Hazard SW (Red hazard)
Fuse, turn	F47	F49	Hazard SW (Turn cancel)
Connect to K28~K29	K28	H55	Meter (Defogger indicator)
Rear washer motor (–)	I27	I28	Rear wiper SW (Rear washer)
Rear wiper motor (–)	I30	I31	Rear wiper SW (Rear wiper)
Fuse, defogger	K26	K27	Defogger SW (+)
Rear, defogger +	K29	K28	Defogger SW (–)
J/B (Fuse, radio)	R3	R4	Radio (ACC power source)
Connect to R14~R15	R14	R5	Clock (Indicator +)
Speaker Fr LH (FL +)	R7	R6	Radio (Speaker FL +)
Speaker Fr LH (FL –)	R9	R8	Radio (Speaker FL –)
Speaker Fr RH (FR +)	R11	R10	Radio (Speaker FR +)
Speaker Fr RH (FR –)	R13	R12	Radio (Speaker FR –)
J/B (Fuse, cigarette lighter)	R14	R15	Cigarette lighter (+)
Connect to R14~R15	R14	R16	Remote-controlled door mirror SW (+B)
Door mirror RH (C)	R26	R17	Remote-controlled door mirror SW (C)
Door mirror LH (VL)	R22	R18	Remote-controlled door mirror SW (VL)
Door mirror RH (VR)	R24	R19	Remote-controlled door mirror SW (VR)

From		To	
Location	Terminal	Terminal	Location
Door mirror LH (HL)	R23	R20	Remote-controlled door mirror SW (HL)
Door mirror RH (HR)	R25	R21	Remote-controlled door mirror SW (HR)
Speaker Rr RH (RR +)	R32	R28	Radio (Speaker RR +)
Speaker Rr RH (RR –)	R33	R29	Radio (Speaker RR –)
Speaker Rr LH (RL +)	R34	R30	Radio (Speaker RL +)
Speaker Rr LH (RL –)	R35	R31	Radio (Speaker RL –)
Electric-powered antenna (RX)	R40	R55	Radio (Electric-powered antenna RX)
Connect to R11~R10	R11	R56	Instrument panel, speaker (+)
Connect to R13~R12	R13	R57	Instrument panel, speaker (–)
Centre speaker (+)	R60	R62	DSP (Centre speaker +)
Centre speaker (–)	R61	R63	DSP (Centre speaker –)
Connect to Z31~Z166	Z31	Z18	Rear wiper SW (Earth)
Connect to Z31~Z166	Z31	Z24	Ashtray illumi. (Earth)
Connect to Z31~Z166	Z31	Z25	Clock (Earth)
Body earth (Cowl, Inner Right)	Z14	Z30	Radio (GND)
Connect to Z31~Z166	Z31	Z43	Rear fog lamp SW (ON indicator earth)
Connect to Z43		Z44	Rheostat (–)
Connect to Z31~Z166	Z31	Z62	Remote-controlled mirror SW (Earth)
Cigarette lighter (Earth)	Z31	Z166	J/B (Instrument panel earth)

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WIRE CONNECTION, FLOOR

From		To	
Location	Terminal	Terminal	Location
To cowl 2 (ABS ECU, shielded earth)	Z110		Connected with ~Z110
J/B (Tail fuse –, floor 1)	C2	C7	Rear combination lamp RH, Tail lamp (+)
J/B (Tail fuse –, floor 2)	C5	C8	Rear combination lamp LH, Tail lamp (+)
Connect to C2~C7	C2	C16	License plate lamp (+)
To cowl 1 (Key buzzer courtesy SW)	C116	D6	Courtesy SW FR
To cowl 1 (Room lamp, door –)	D3	D8	Courtesy SW FR
Courtesy SW, back door	D10	D12	Luggage room lamp (–)
Connect to D3~D8	D3	D30	Diode (+)
Connect to C115~D6	C116	D31	Diode (–)
Luggage room lamp (+)	D11	D42	J/B (Dome fuse –)
Connect to E11~E15	E11	E14	Rear combination lamp RH (STOP +)
To cowl 1 (Stop lamp SW (–))	E11	E15	Rear combination lamp LH (STOP +)
Connect to E11~E15	E11	E16	To back door (High-mount stop lamp +)
Earth (Body earth, Rr RH)	Z8	E17	To back door (Earth)
J/B (Rear turn LH)	F4	F5	Rear combination lamp LH (+)
J/B (Rear turn RH)	F6	F7	Rear combination lamp RH (+)
J/B (Back fuse)	F34	G4	Rear combination lamp RH (Back-up lamp +)
Connect to F34~G4	F34	G5	Rear combination lamp LH (Back-up lamp +)
To cowl 1 (Meter, brake warning)	G6	G7	Parking brake (Parking brake SW)
To cowl 1 (Shift position SW (Reverse))	G2	G15	Rear combination lamp RH (Back-up lamp –)
Connect to G2~G15	G2	G16	Rear combination lamp LH (Back-up lamp –)
To cowl 1 (Meter, sheet belt warning)	H56	H19	Sheet 1, 2
Connect to Z3~Z7	Z3	H59	Sheet 1, 2 (Earth)
J/B (Fuse, wiper)	I25	I26	Rear washer (Motor +)
To back door (Rear wiper motor +)	I29	I26	Rear washer (Motor +)
Rear washer (Motor –)	I27	I28	To cowl 1 (Rear washer SW +)
To back door (Rear wiper motor –)	I30	I31	To cowl 1 (Rear wiper motor SW +)
To cowl 1 (Defogger SW –)	K23	K29	To back door (Defogger +)
To cowl 1 (P/W master SW RR (UP))	P32	P34	To rear door RH (P/W SW (UP +))
To cowl 1 (P/W master SW RR (DOWN))	P33	P35	To rear door RH (P/W SW (DOWN +))
To cowl 1 (P/W master SW RR (+B))	P71	P36	To rear door RH (P/W SW (+))

From		To	
Location	Terminal	Terminal	Location
To cowl 1 (Door lock SW, Lock)	Q5	Q10	To rear door RH (Door lock motor, Lock)
To cowl 1 (Door lock SW, Unlock)	Q3	Q11	To rear door RH (Door lock motor, Unlock)
To cowl 1 (Radio speaker Rr RH (+))	R28	R32	RR speaker (+)
To cowl 1 (Radio speaker Rr RH (–))	R29	R33	RR speaker (–)
To cowl 1 (Radio RR)	R25	R40	Electric-powered antenna (SX)
J/B (Fuse, gauge)	H41	R41	Electric-powered antenna (IG)
J/B (Fuse, cigarette lighter)	R39	R42	Electric-powered antenna (ACC)
To cowl 1 (C/B (–))	R21	R52	Electric-powered antenna (+B)
Connect to D11~D42	D11	S44	Sheet 2 (BATT, back-up)
Connect to P21~P52	P21	S45	Sheet 2 (+B)
Connect to ~H59	Z3	S46	Sheet 2 (Earth)
To cowl 2 (Key SW –)	D14	S47	Sheet 2 (IG)
To cowl 2 (Shift position SW (P))	W18	S48	Sheet 2 (Parking)
To cowl 2 (Vehicle speed sensor)	X3	S49	Sheet 2 (Vehicle speed sensor)
Connect to E11~E15	E11	W58	To cowl 2 (STOP)
To cowl 2 (ABS ECU sensor RR (+))	W64	W98	ABS wheel sensor RR (+)
To cowl 2 (ABS ECU sensor RR (–))	W50	W99	ABS wheel sensor RR (–)
To cowl 2 (ABS ECU sensor RL (+))	W66	W102	ABS wheel sensor RL (+)
To cowl 2 (ABS ECU sensor RL (–))	W62	W103	ABS wheel sensor RL (–)
Connect to G6~G7	G6	W195	To cowl 2 (Parking brake SW)
To cowl 2 (ABS ECU GST)	W238	W241	G sensor (GST)
To cowl 2 (ABS ECU GS1)	W239	W242	G sensor (GS1)
To cowl 2 (ABS ECU GS2)	W240	W243	G sensor (GS2)
To cowl 2 (ABS ECU (+B))	W48	W244	J/B (Fuse IG2)
Connect to W48~W244	W48	W245	G sensor (IG2)
Connect to ~H59	Z3	W246	G sensor (Earth)
Connect to Z8~Z6	Z8	Z5	Rear combination lamp RH (Tail earth)
Earth (Body earth, Rr RH)	Z8	Z6	Rear combination lamp LH (Tail earth)
To cowl 1 (Body earth, cowl)	Z3	Z7	Earth (Body earth, Rr RH)
Connect to Z8~Z6	Z8	Z79	License lamp (Earth)
Connected with Z110~	Z110	Z116	Separation
Connect to Z3~Z7	Z3	Z196	Electric-powered antenna (Earth)

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WIRE CONNECTION, COURTESY LAMP FEED

From		To	
Location	Terminal	Terminal	Location
J/B (Tail fuse –, floor)	C2	C7	Rear combination lamp RH (Tail lamp +B)
Tail fuse (–)	C5	C8	Tail lamp LH
Buzzer (–)	D16	D7	Courtesy SW (Fr, LH)
Room lamp (–)	D3	D7	Courtesy SW (Fr, LH)
Room lamp (–)	D3	D9	Courtesy SW (Fr, LH)
Connect to D3–D7	D3	D9	Courtesy SW (Rr, LH)
Luggage room lamp (+)	D11	D42	Dome fuse (–)
To courtesy (Stop lamp SW (–))	E11	E14	Rear combination lamp (Stop lamp +)
J/B (Rear turn LH)	E4	F5	Rear turn RH
J/B (Rear turn RH)	F6	F7	Rear turn LH
Rear combination lamp RH (Back-up lamp +)	G4	F34	J/B Fuse, Turn
To cowl (Meter, brake)	G6	G7	Parking brake SW (+)
Meter, sheet belt warning	H56	H19	Sheet belt warning SW (Meter)
Meter (Fuel gauge)	H22	H23	Fuel sensor
Connect to Z15–Z41	Z15	H59	Sheet belt warning SW
J/B (Fuse, wiper)	I25	I26	Rear washer (Motor +)
Relay box (Fuel pump relay)	P5	P6	Fuel pump (+)
To cowl (IG SW (AH))	P9A	P9	Sub fuse block (30A (+))
Connect to P21–P36	P21	P11	To cowl (Canvas top +)
To cowl (IG SW (IG))	P22A	P20	Sub fuse block (Hollow fuse 30A (+))
Connect to P21–P31	P21	P22	To front door (P/W master SW, +B)
To floor, master SW (Passenger, UP)	P27	P29	P/W Passenger (UP)
To floor, master SW (Passenger, DOWN)	P28	P30	P/W SW (Passenger, DOWN)
P/W C/B (–)	P21	P31	P/W SW Passenger (+B)
To front door courtesy (Master SW, RR, UP)	P32	P34	To rear door RH (P/W SW, UP)
To front door courtesy (Master SW, DOWN)	P33	P35	To rear door RH (P/W SW, DOWN)
Hollow fuse 30A (–)	P21	P36	P/W SW, Passenger (P)
P/W master SW (RL, UP)	P37	P39	P/W SW, Rr LH (UP)
P/W master SW (RL, DOWN)	P38	P40	P/W SW, Rr LH (DOWN)
Connect to P21–P31	P21	P41	P/W SW, Rr LH (+B)
Fuse (Power No. 1)	P71	P41	P/W master SW (+)
To front door (Lock SW, Unlock)	Q25	Q1	Door lock control relay (Unlock)
Lock SW (Lock)	Q24	Q4	Door lock control relay (Lock)
Connect to Q5–Q12	Q5	Q7	Door lock FL (Lock)
Connect to Q3–Q13	Q3	Q9	Door lock FL (Unlock)
Door lock relay (Lock)	Q5	Q12	Door lock (Lock)
Door lock relay (Unlock)	Q3	Q13	Door lock (Unlock)

From		To	
Location	Terminal	Terminal	Location
Sub fuse block (30A (–))	P10	Q16	Door lock control relay (+B)
Radio speaker Rr LH (+)	R30	R34	Speaker Rr LH (+)
Radio speaker Rr LH (–)	R31	R35	Speaker Rr LH (–)
Connect to W244–W245	W244	W48	To cowl (ABS ECU, IG2)
Connect to E11–E14	E11	W58	To cowl (ABS ECU, Stop)
Connect to G6–G7	G6	W195	To cowl (ABS ECU, Parking brake)
To cowl (ABS ECU GST)	W238	W241	ABS G sensor (GST)
To cowl (ABS ECU GS1)	W239	W242	ABS G sensor (GS1)
To cowl (ABS ECU GS2)	W240	W243	ABS G sensor (GS2)
To cowl (J/B fuse IG2)	W244	W245	ABS G sensor (IG2)
Connect to Z3–Z7	Z3	W246	ABS G sensor (Earth)
Connect to Z15–Z41	Z60	Z7	Floor earth
Body earth (Cowl side LH)	Z15	Z41	Fuel tank (Earth)
Body earth (Cowl side LH)	Z15	Z41	Fuel tank (Earth)
Connect to Z15–Z41	Z15	Z60	Door lock control relay (Earth)
Connect to Z60–R7	Z60	Z61	To front door (P/W earth)

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WIRE CONNECTION, FRONT DOOR RH (Driver's side)

From		To	
Location	Terminal	Terminal	Location
Step lamp (–)	D23	D3	Courtesy SW
Fuse, stop (–)	E9	D21	Step lamp (–)
Circuit breaker (power No. 2 –)	P21	P22	P/W master SW, Front LH (+B)
P/W motor, Front RH (UP)	P25	P23	P/W SW, Front RH (UP)
P/W motor, Front RH (DOWN)	P26	P24	P/W SW, Front RH (DOWN)
P/W SW, Front LH (UP)	P29	P27	P/W master SW, Front LH (UP)
P/W SW, Front LH (DOWN)	P30	P28	P/W master SW, Front LH (DOWN)
P/W SW, Rear RH (UP)	P34	P32	P/W master SW, Rear RH (UP)
P/W SW, Rear RH (DOWN)	P35	P33	P/W master SW, Rear RH (DOWN)
P/W SW, Rear LH (UP)	P39	P37	P/W master SW, Rear LH (UP)
P/W SW, Rear LH (DOWN)	P40	P38	P/W master SW, Rear LH (DOWN)
P/W SW (Rear LH +)	P41	P71	Master SW (P/W +)
Fuse, Power No. 2	P10	P90	P/W master SW, Front LH (IG +)
Electromagnetic lock relay (1)	Q7	Q14	Electromagnetic lock (Lock)
Electromagnetic lock relay (7)	Q9	Q15	Electromagnetic lock (Unlock)
Door lock controller (Lock)	Q4	Q24	Electromagnetic lock (Lock +)
Door lock controller (Unlock)	Q2	Q25	Electromagnetic lock (Unlock +)
Connect to Z15~Z61	Z15	Q26	Electromagnetic lock (Earth)
Radio (Speaker FR +)	R10	R11	Speaker FR (+)
Radio (Speaker FR –)	R12	R13	Speaker FR (–)
Remote-controlled door mirror SW (VR)	R19	R24	Remote-controlled door mirror RH (VR)
Remote-controlled door mirror SW (HR)	R21	R25	Remote-controlled door mirror RH (HR)
Remote-controlled door mirror SW (C)	R17	R26	Remote-controlled door mirror RH (CR)
Connect to R10~R11	R10	R91	Tweeter (+)
Connect to R12~R13	R12	R92	Tweeter (–)
Body earth	Z15	Z61	P/W master SW, Front LH (Earth)

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WIRE CONNECTION, FRONT DOOR LH (Passenger's side)

From		To	
Location	Terminal	Terminal	Location
Power window SW (SU)	P29	P27	Power window master SW (FLU)
Power window SW (SD)	P30	P28	Power window master SW (FLD)
Master SW (P/W +)	P71	P31	Power window SW (+B)
Power window motor FL (UP)	P44	P42	Power window SW (UP)
Power window motor FL (DOWN)	P45	P43	Power window SW (DOWN)
Door lock controller (Lock)	Q5	Q7	Electromagnetic lock (Lock +)
Door lock controller (Unlock)	Q3	Q9	Electromagnetic lock (Unlock –)
Radio (Speaker FL +)	R6	R7	Speaker FL +
Radio (Speaker FL –)	R8	R9	Speaker FL –
Remote-controlled door mirror SW (VL)	R18	R22	Remote-controlled door mirror LH (VL)
Remote-controlled door mirror SW (HL)	R20	R23	Remote-controlled door mirror LH (HL)
Remote-controlled door mirror SW (C)	R17	R27	Remote-controlled door mirror LH (CL)
Remote-controlled door mirror SW (F)	R72	R76	Remote-controlled door mirror LH (FL)
Remote-controlled door mirror SW (R)	R73	R77	Remote-controlled door mirror LH (RL)

WIRE CONNECTION, FRONT DOOR RH (Passenger's side)

From		To	
Location	Terminal	Terminal	Location
P/W SW (SU)	P29	P27	P/W master SW (FLU)
P/W SW (SD)	P30	P28	P/W master SW (FLD)
Master SW (P/W +)	P21	P31	P/W SW (+B)
P/W motor FL (UP)	P44	P42	P/W SW (UP)
P/W motor FL (DOWN)	P45	P43	P/W SW (DOWN)
Door lock controller (Lock)	Q5	Q7	Electromagnetic lock (Lock +)
Door lock controller (Unlock)	Q3	Q9	Electromagnetic lock (Unlock +)
Radio (Speaker FR +)	R10	R11	Speaker FR +
Radio (Speaker FR –)	R12	R13	Speaker FR –
Remote-controlled door mirror SW (VR)	R19	R24	Remote-controlled door mirror RH (VR)
Remote-controlled door mirror SW (HR)	R21	R25	Remote-controlled door mirror RH (HR)
Remote-controlled door mirror SW (C)	R17	R26	Remote-controlled door mirror RH (CR)

VIRE CONNECTION, REAR DOOR LH

From		To	
Location	Terminal	Terminal	Location
P/W SW (+B)	P41	P10	Fuse (Power No. 1)
P/W SW (Master SW SU)	P39	P37	P/W master SW (RL UP +)
P/W SW (Master SW SD)	P40	P38	P/W master SW (RL DOWN +)
P/W SW (Motor UP +)	P50	P52	P/W motor (UP +)
P/W SW (Motor DOWN +)	P51	P53	P/W motor (DOWN +)
Door lock relay (Lock +)	Q5	Q12	Door lock motor RL (Lock +)
Door lock relay (Unlock +)	Q3	Q13	Door lock motor RL (Unlock +)

WIRE CONNECTION, REAR DOOR RH

From		To	
Location	Terminal	Terminal	Location
P/W SW (+B)	P36	P10	Fuse (Power No. 1)
P/W SW (Master SW SU)	P34	P32	P/W master SW (RR UP +)
P/W SW (Master SW SD)	P35	P33	P/W master SW (RR DOWN +)
P/W SW (Motor UP +)	P46	P48	P/W motor (UP +)
P/W SW (Motor DOWN +)	P47	P49	P/W motor (DOWN +)
Door lock relay (Lock +)	Q5	Q10	Door lock motor RR (Lock +)
Door lock relay (Unlock +)	Q3	Q11	Door lock motor RR (Unlock +)

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WIRE CONNECTION, BACK DOOR No. 1

From		To	
Location	Terminal	Terminal	Location
Stop lamp SW (–)	E11	E16	High-mount stop lamp (+)
Stop lamp SW (–)	E11	E33	Spoiler, High-mount stop lamp (+)
Connect to Z7~Z162	Z7	E34	Spoiler, High-mount stop lamp (–)
Fuse (Wiper, Washer)	I25	I29	Rear wiper motor (+)
Rear wiper SW (+)	I31	I30	Rear wiper motor (–)
Defogger SW (–)	K28	K29	Rear window defogger (+)
Body earth (Quarter RH)	Z7	Z162	Back door earth

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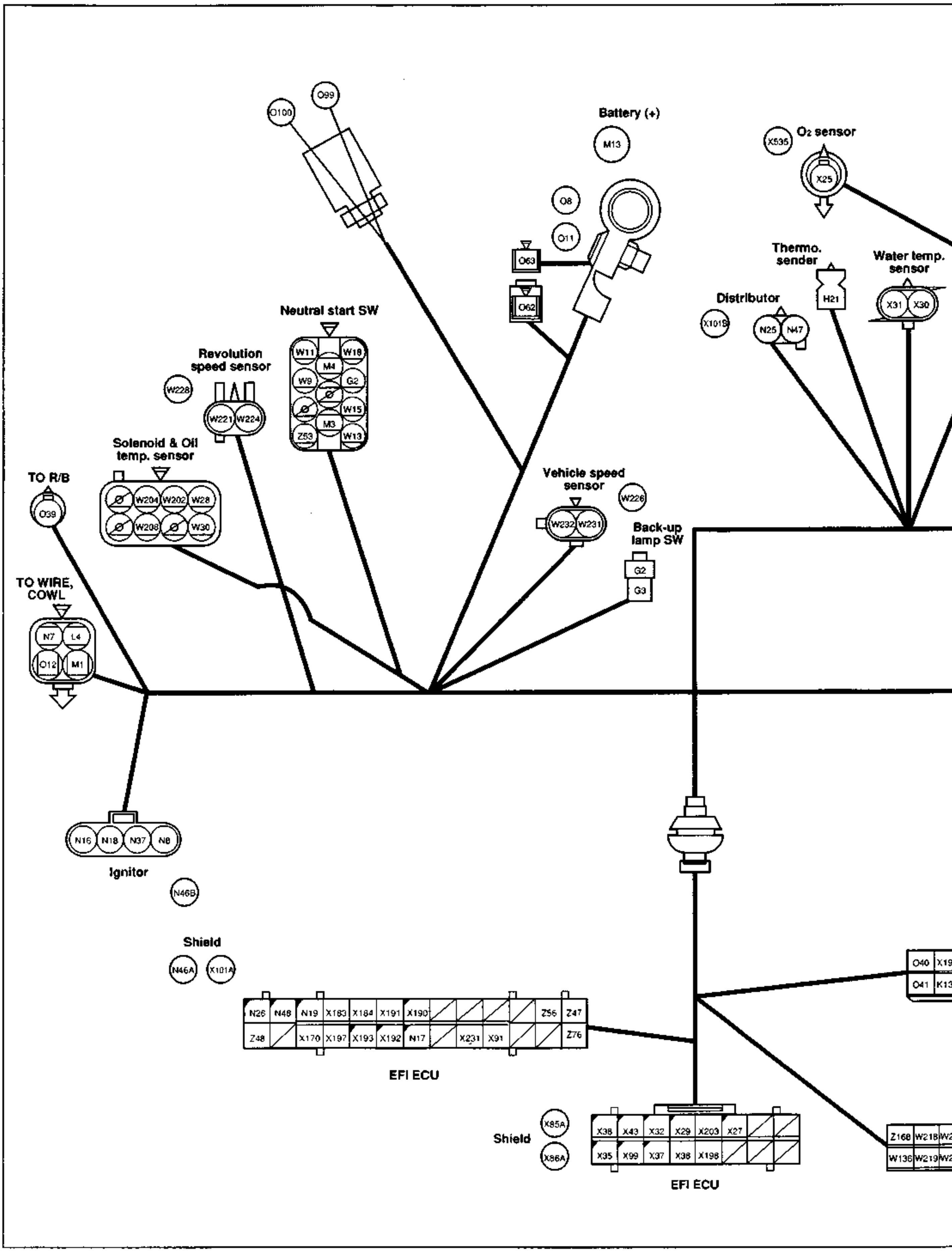
WIRE CONNECTION, BACK DOOR No. 3

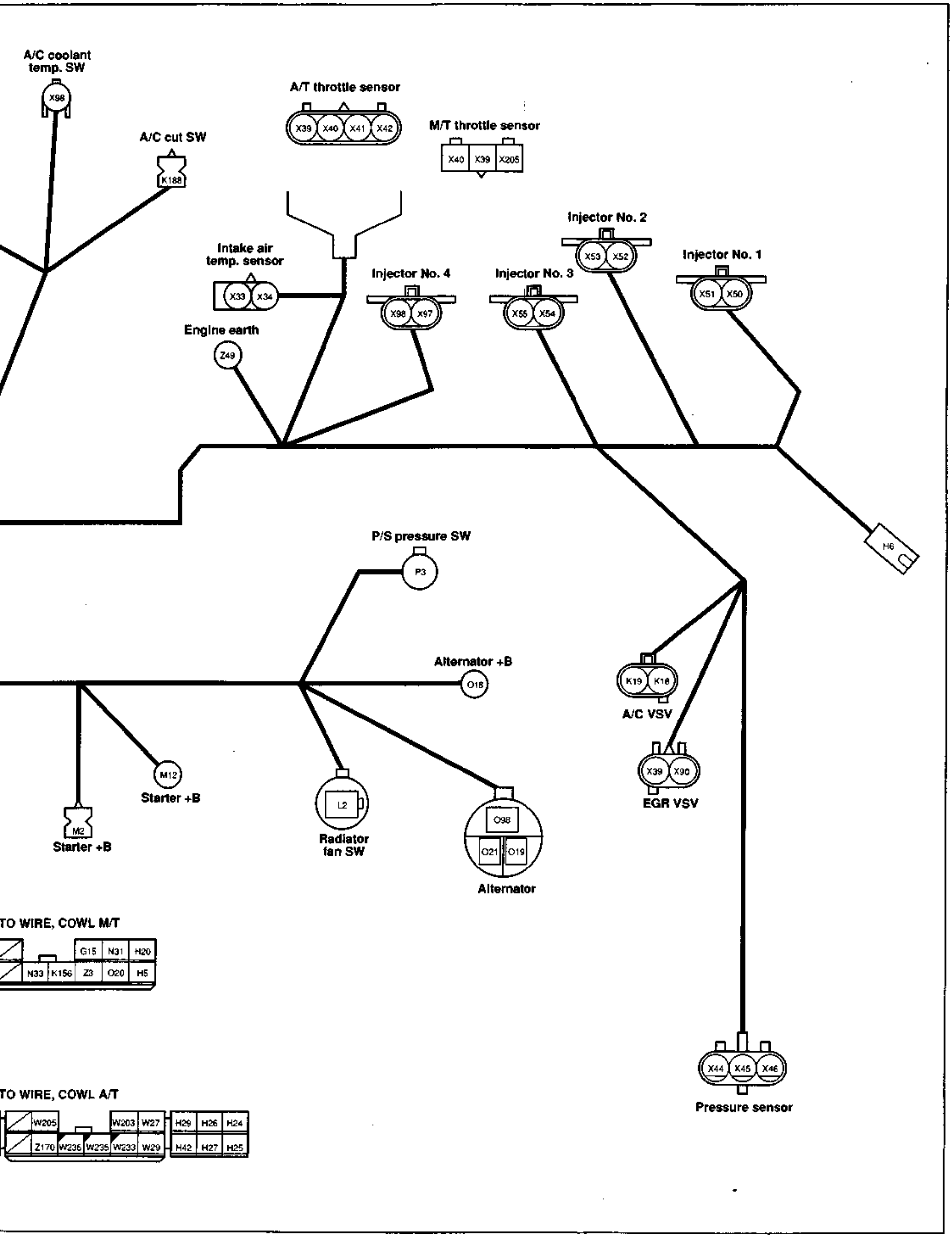
From		To	
Location	Terminal	Terminal	Location
Stop lamp SW (–)	E11	E16	High-mount stop lamp (+)
Connect to Z7–Z162	Z7	E17	High-mount stop lamp (–)
Fuse (Wiper, washer)	I25	I29	Rear wiper motor (+)
Rear wiper SW (+)	I31	I30	Rear wiper motor (–)
Defogger SW (–)	K28	K29	Rear defogger (+)
Body earth (Quarter RH)	Z7	Z162	Back door earth

VIRE CONNECTION, INTERIOR LAMP FEED

From		To	
Location	Terminal	Terminal	Location
Room lamp (–)	D3	D6	Courtesy SW (FR +)
Room lamp (+)	D2	D34	Fuse (Dome)
Canvas top SW (OPEN)	P13	P14	Canvas top (Motor +)
Canvas top SW (CLOSE)	P16	P15	Canvas top (Motor –)
Canvas top SW (+B)	P11	P71	P/W master SW (+)
Canvas top SW (E)	P12	Z14A	Body earth (J/C cowl side RH)

WIRE, ENGINE, EFI





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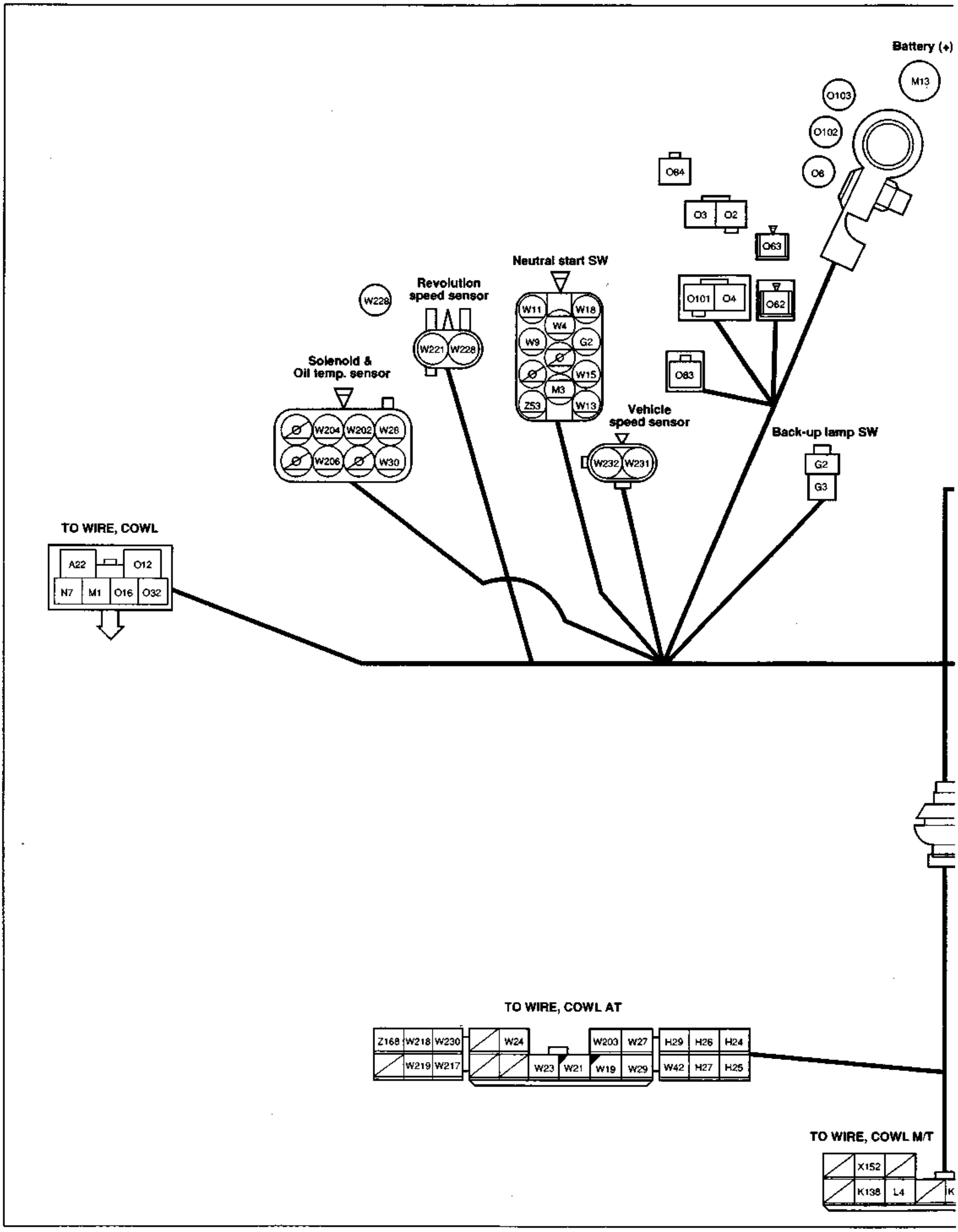
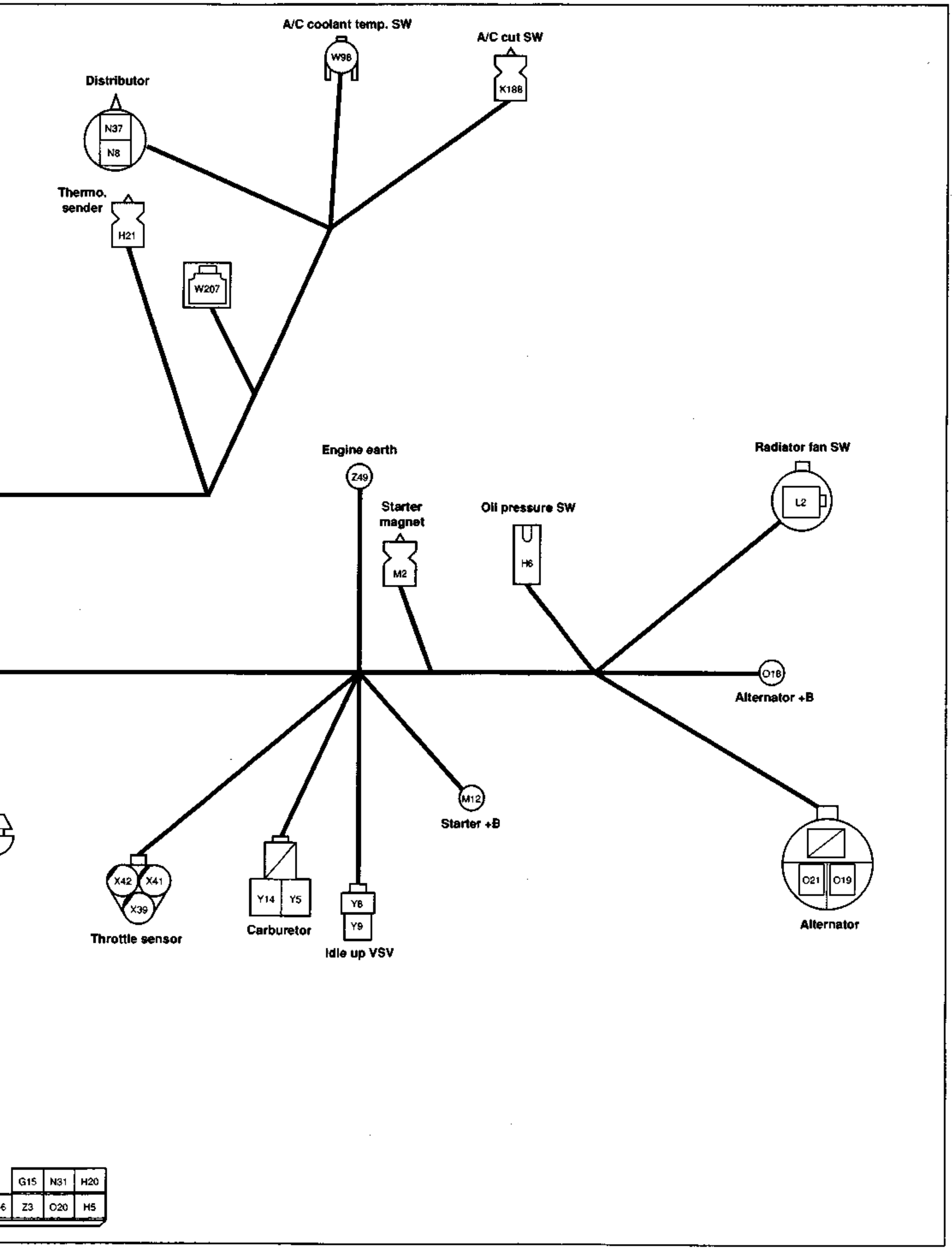
WIRE, ENGINE, CARB.





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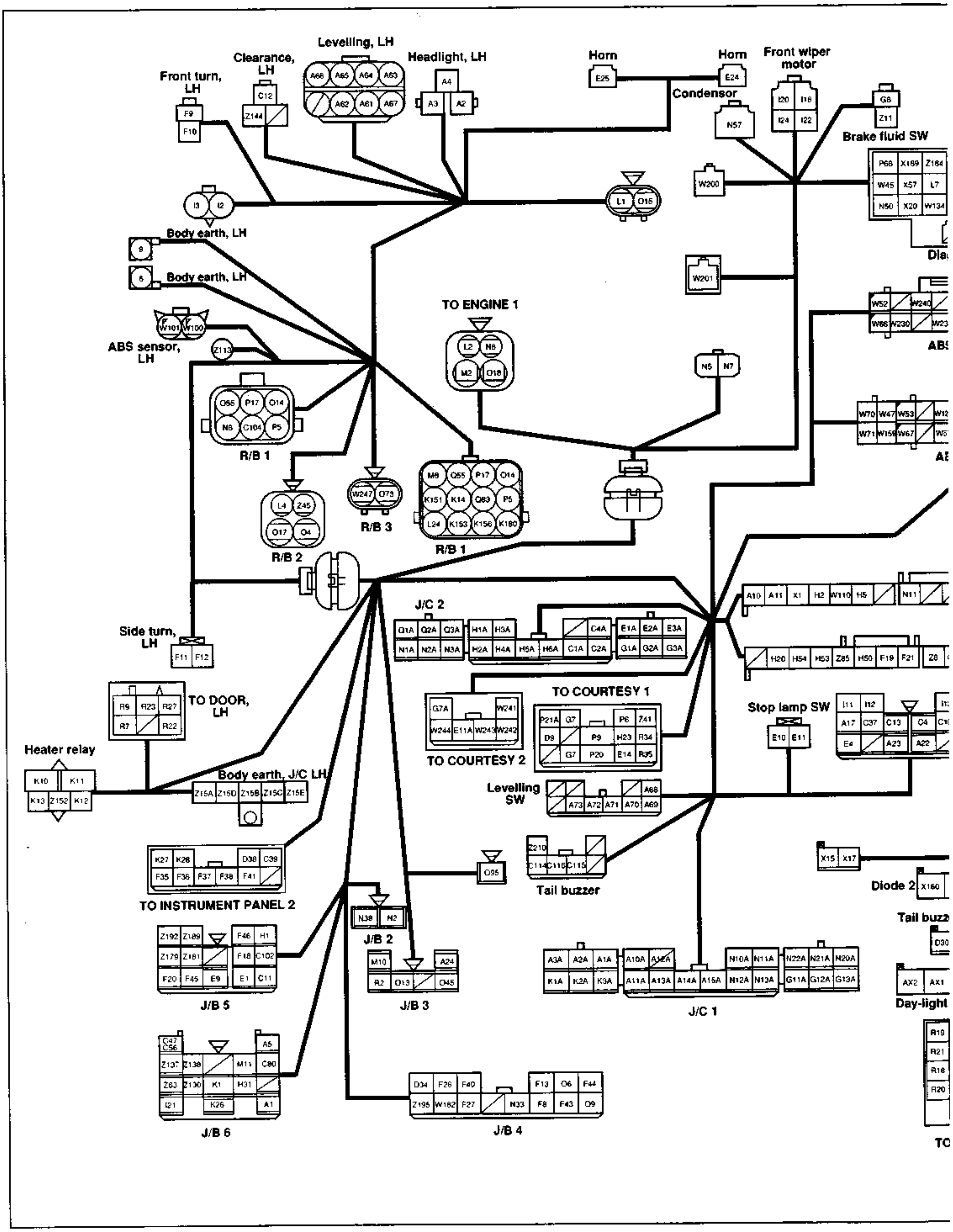
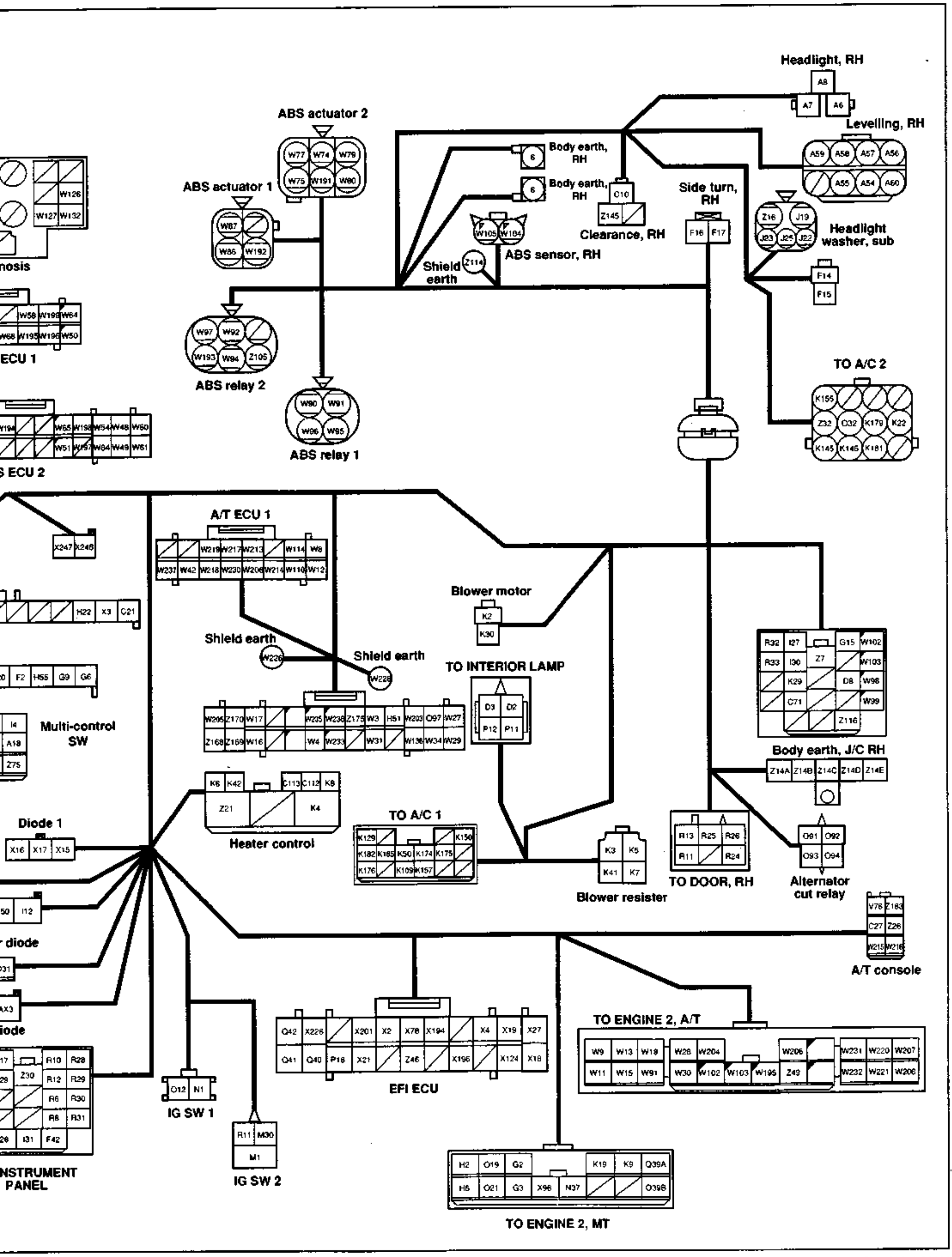
WIRE, COWL, EFI L.H.D. (EC Spec.)





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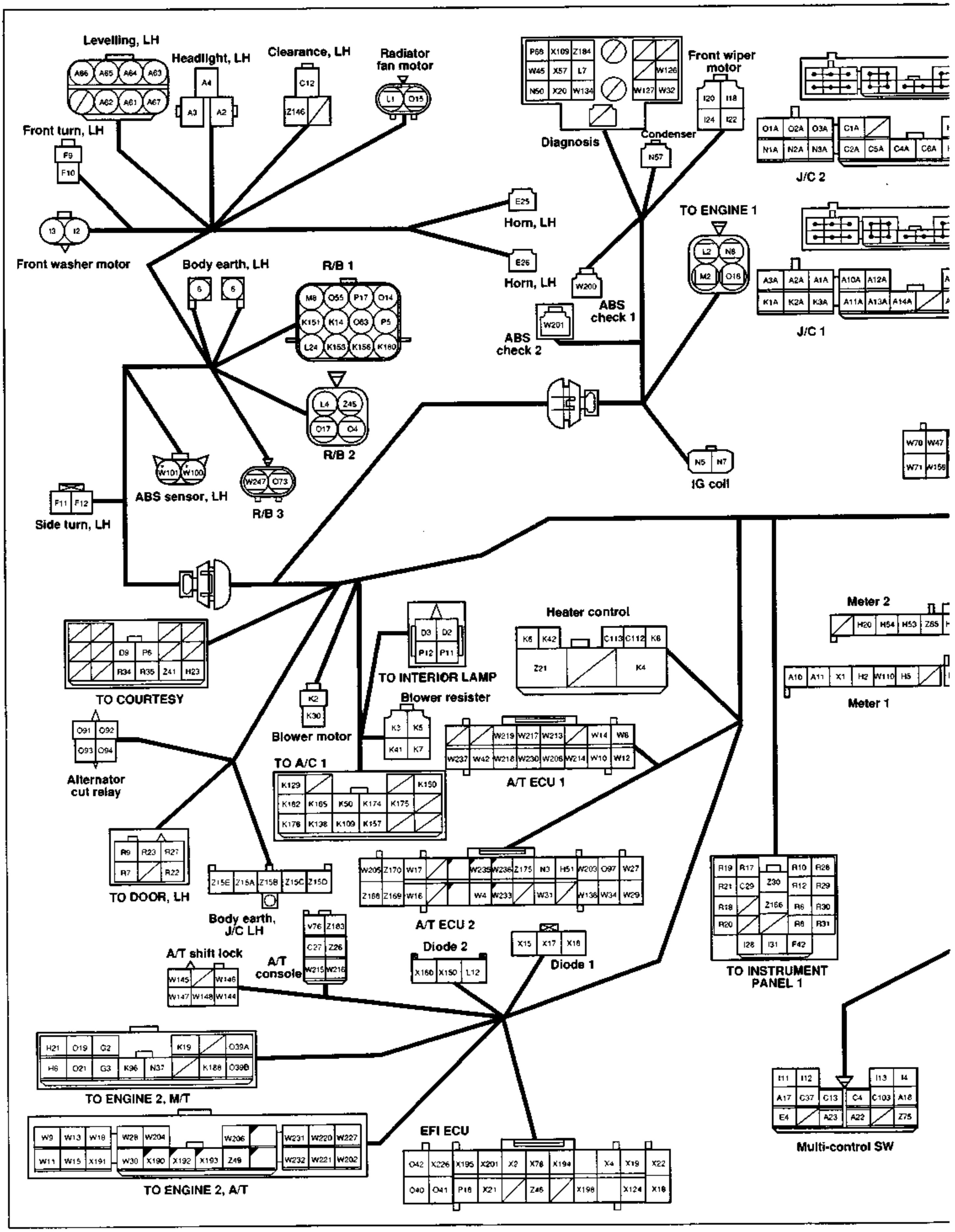
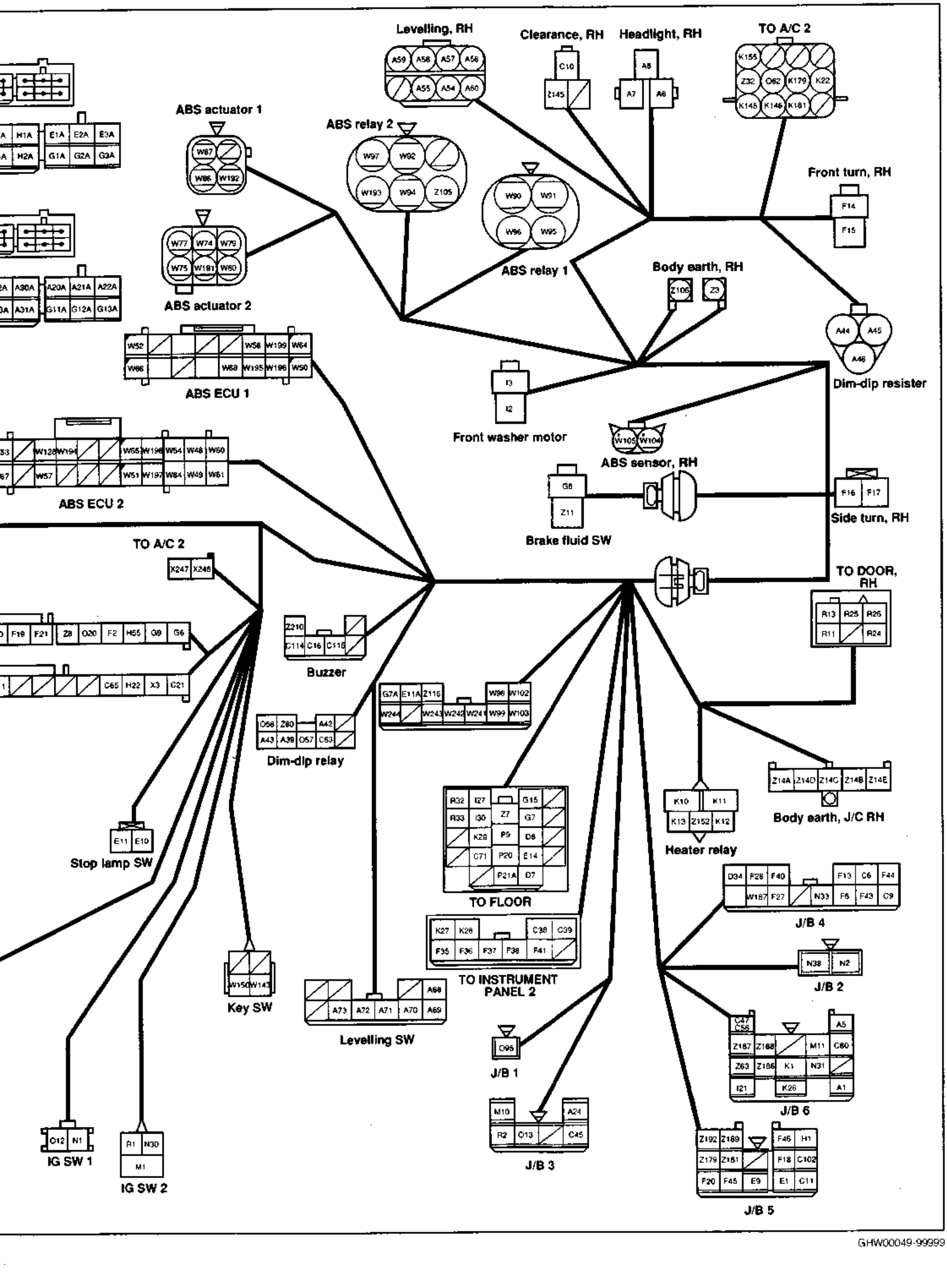
WIRE, COWL, EFI R.H.D.





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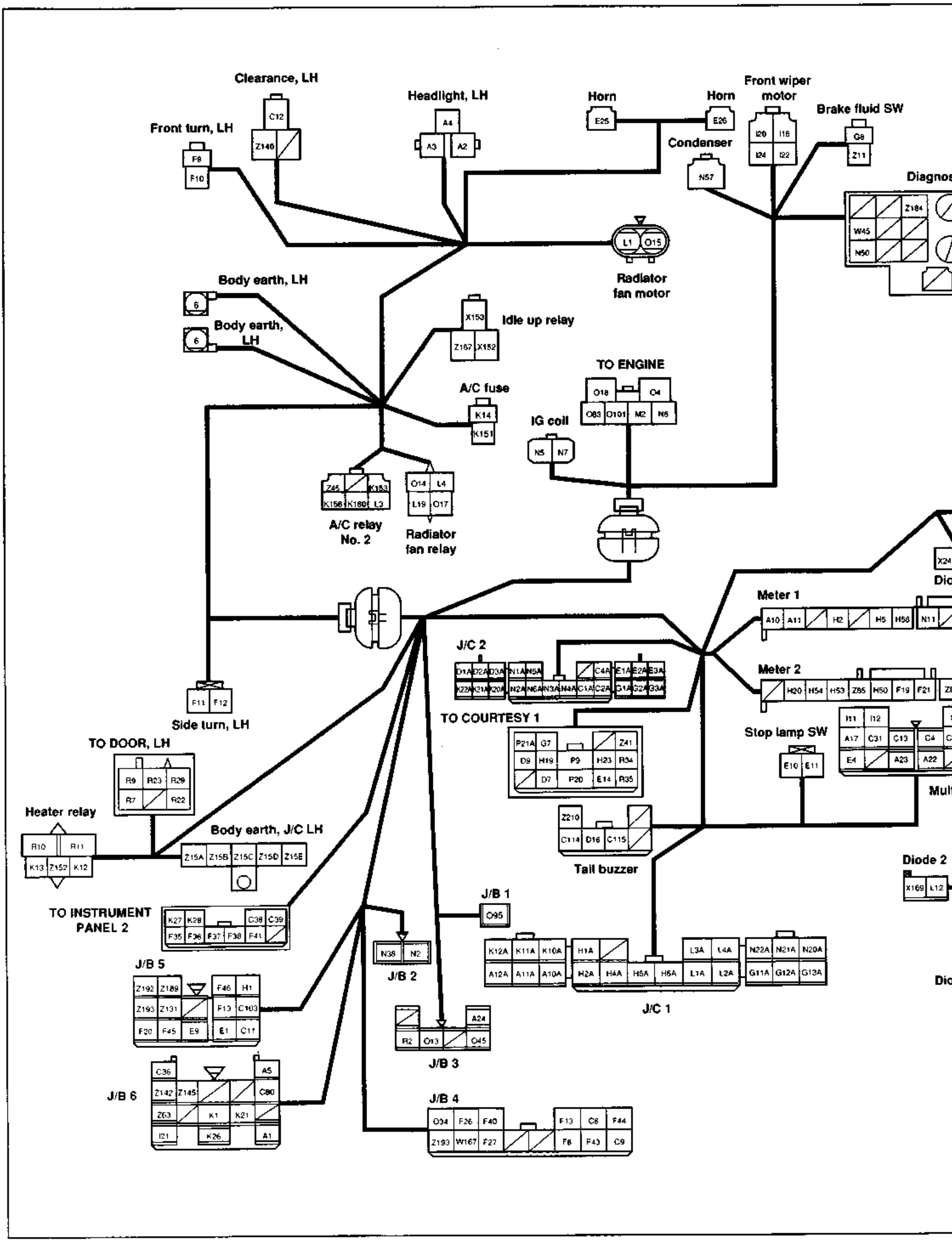
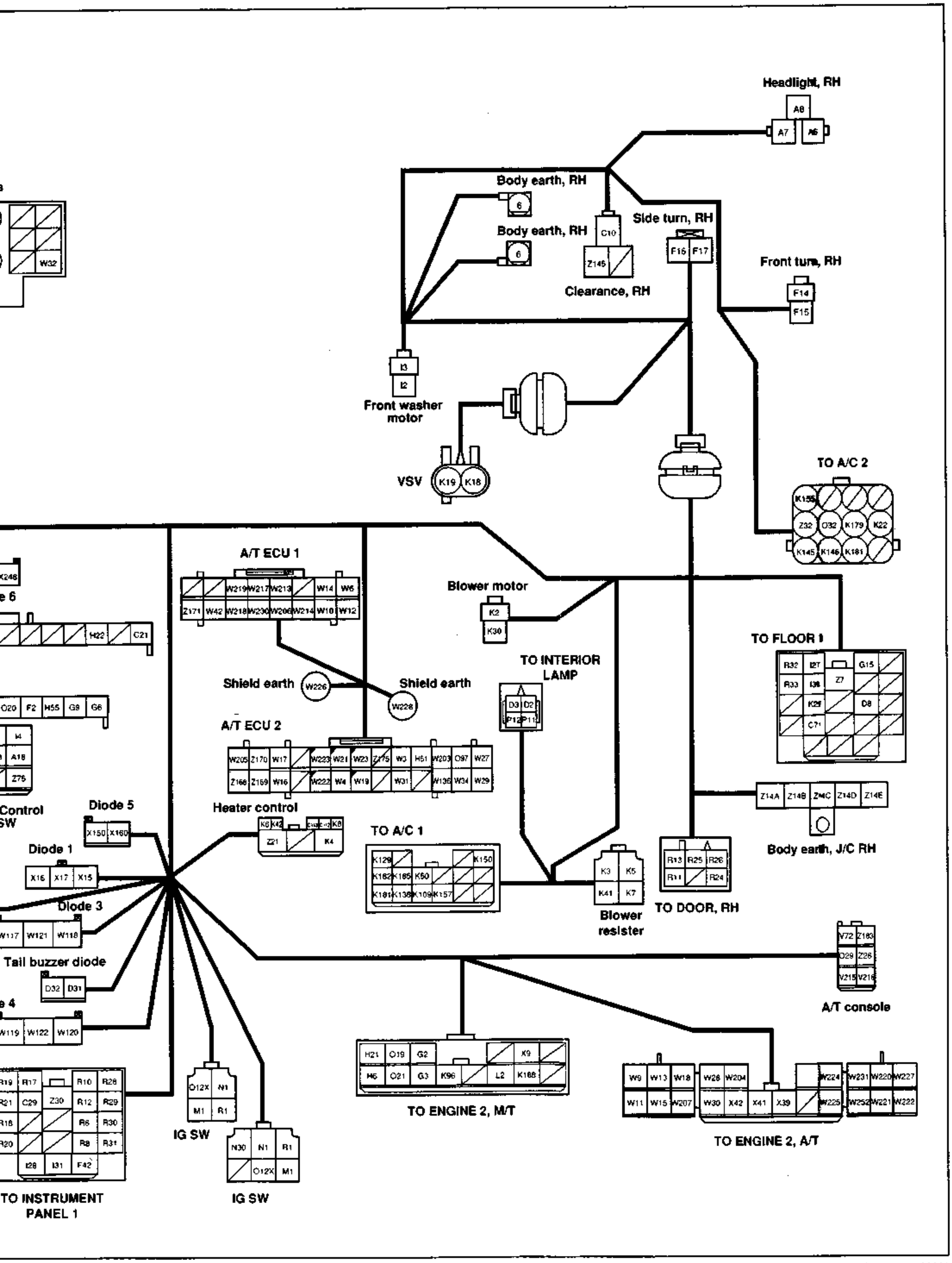
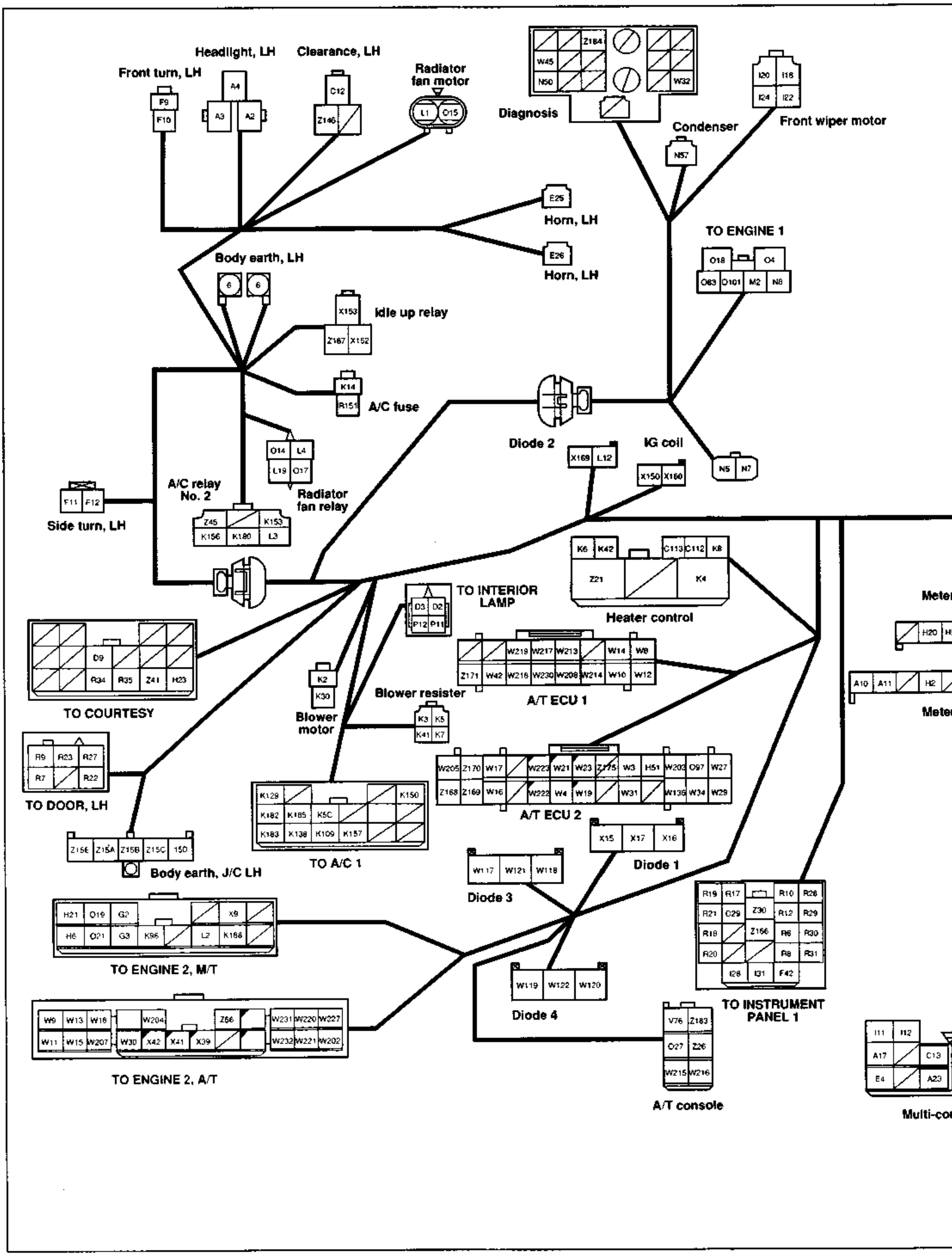
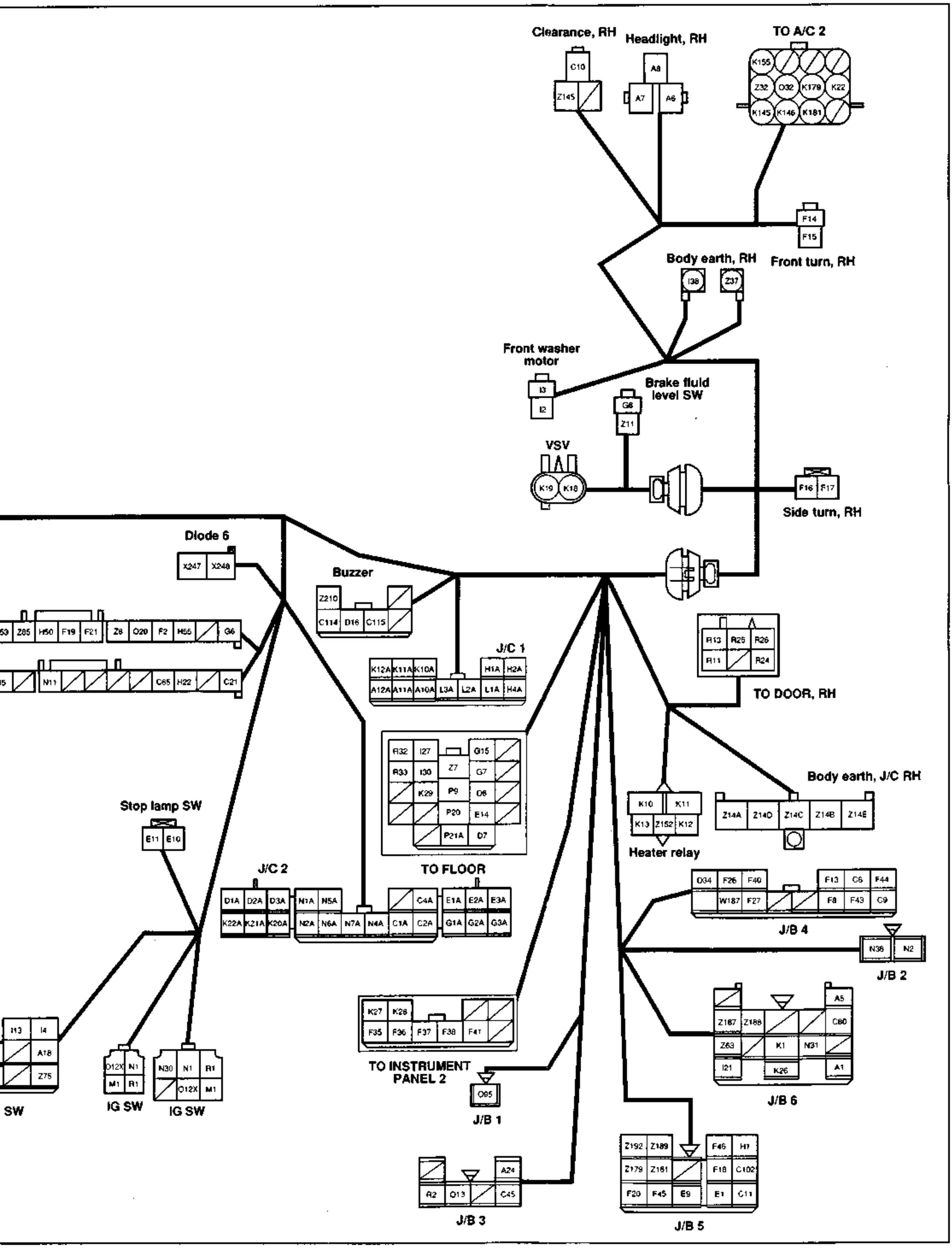
WIRE, COWL, CARB. L.H.D.




Headlight, RH
Body earth, RH
Body earth, RH
Side turn, RH
Clearance, RH
Front turn, RH
Front washer motor
VSV
TO A/C 2
A/T ECU 1
Blower motor
TO FLOOR 1
TO INTERIOR LAMP
Shield earth
Shield earth
A/T ECU 2
Control SW
Diode 5
Heater control
TO A/C 1
Diode 1
Diode 3
Blower resister
TO DOOR, RH
Body earth, J/C RH
Tail buzzer diode
A/T console
TO ENGINE 2, M/T
TO ENGINE 2, A/T
IG SW
IG SW
TO INSTRUMENT PANEL 1

WIRE, COWL, CARB. R.H.D.





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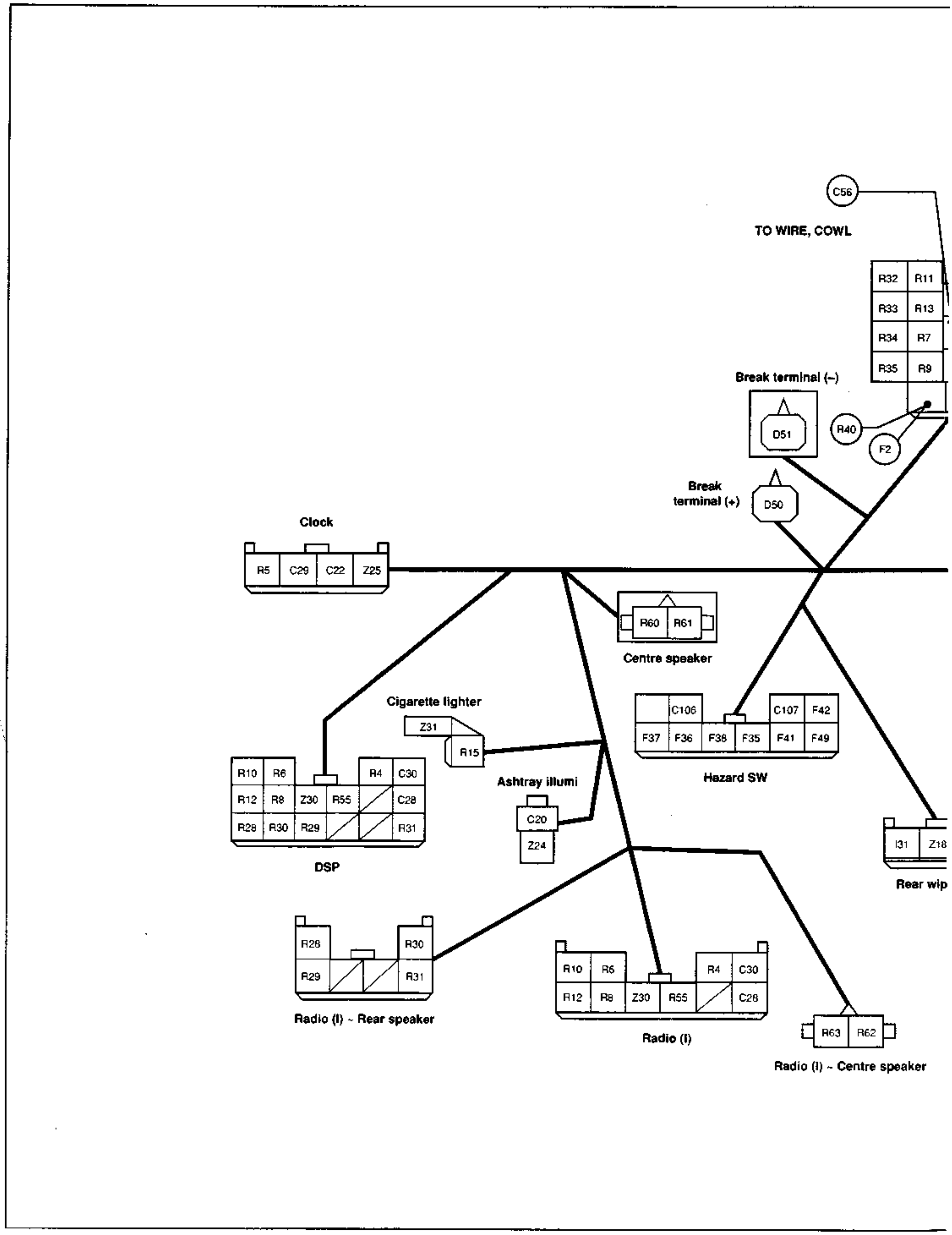
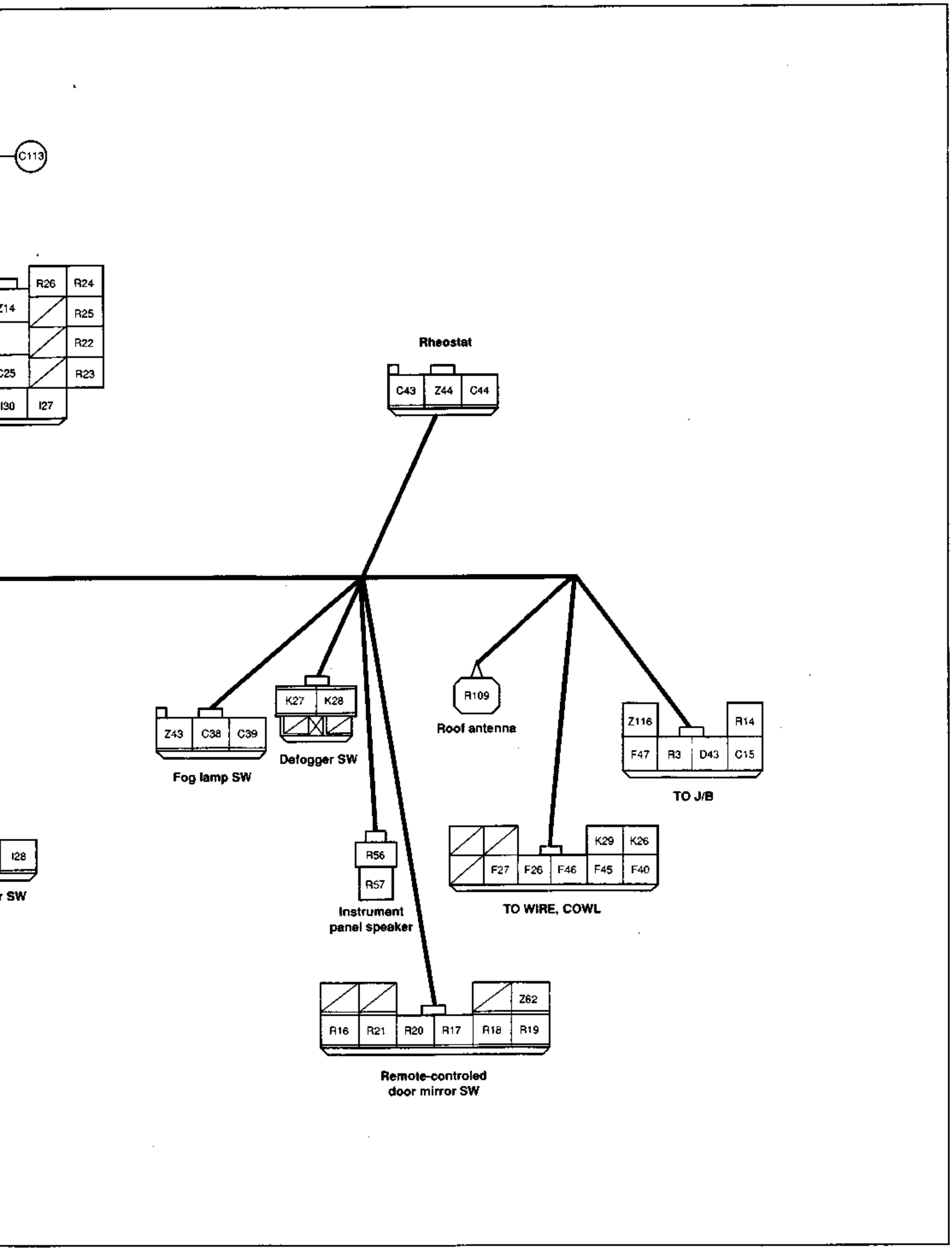
WIRE, INSTRUMENT PANEL





GHW00052-99999