

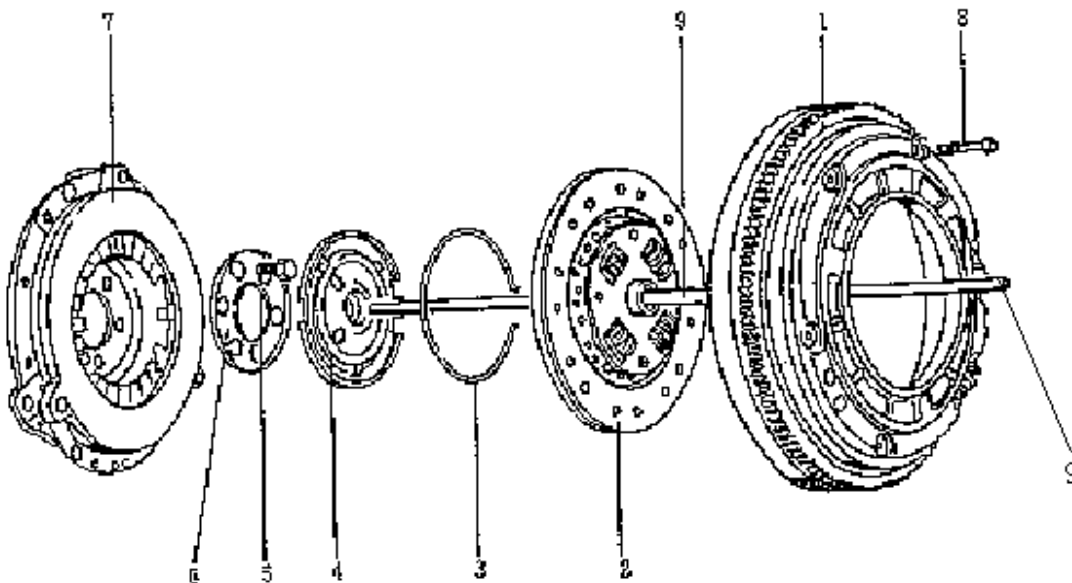
# CLUTCH

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## CLUTCH INTRODUCTION

### CLUTCH STRUCTURE

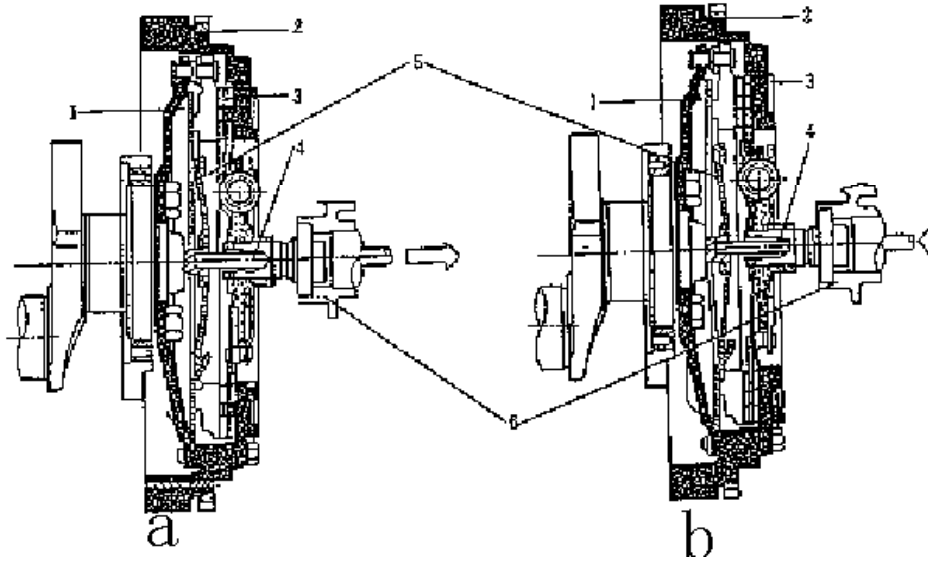
- As picture below, the clutch is dry diaphragm with single leaf. It consists of clutch driven disk (2), release disk (4), intermediate disk (6), pressure plate (7) and flywheel (1).
- There are diaphragm springs in the pressure plate (7), which are fixed in the crankshaft by intermediate disk (6) and bolt (5). Driven disk (2) is pressed on the flywheel (1) by pressure plate (7), and bolt (8) is used to fix pressure plate (7) and flywheel (1) together; the clutch pusher (9) is used to push separator disk (4) and then the separator disk (4) to push the small end of diaphragm springs on pressure plate (7).



- 1.Flywheel    2.Driven Disk    3.Snap Ring    4.Release Disk    5.Bolt (M10) (110±5N.m)  
6.Intermediate Disk    7.Pressure Plate    8.Bolt (23~25N.m)    9.Clutch Pusher

### OPERATING PRINCIPLE OF CLUTCH

- As picture below, Picture **a** presents the connection status of clutch. When clutch pedal is not treaded, the driven disk (3) is pressed on flywheel (2) by diaphragm spring (1). Driven disk (3) and flywheel (2) are revolving synchronously, and the torque is transmitted to the transmission-axle (6) by Separator disk (5) through driven disk (3).
- Picture **b** presents the disconnection state of clutch. When the clutch is treaded, pusher (4) pushes separator disk (5) which presses the small end of diaphragm spring (1) to move the big end of diaphragm spring (1) away from driven disk (3), so the pressure is disengaged between driven disk (3) and flywheel (2) and the clearance is generated to cut off the motive power of engine and pass the transmission.

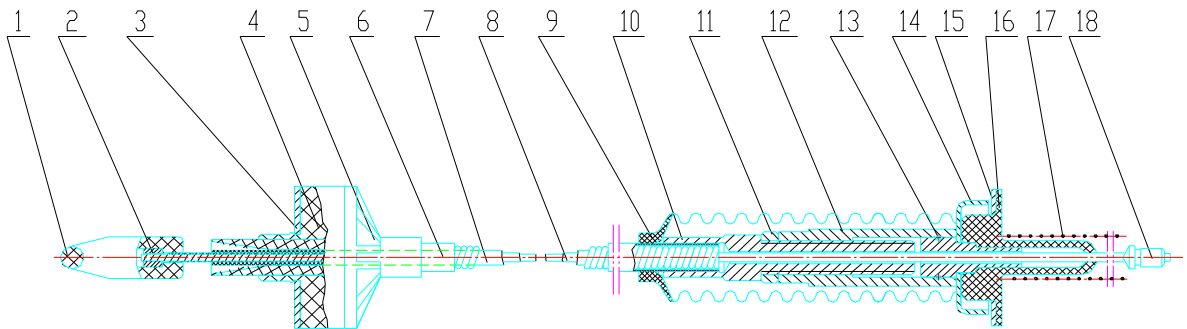


a. Clutch Connection State

b. Clutch Disconnection State

- 1.Diaphragm Spring    2.Flywheel    3.Driven Disk    4.Pusher  
 5.Seperator Disk    6.Transmission Axle

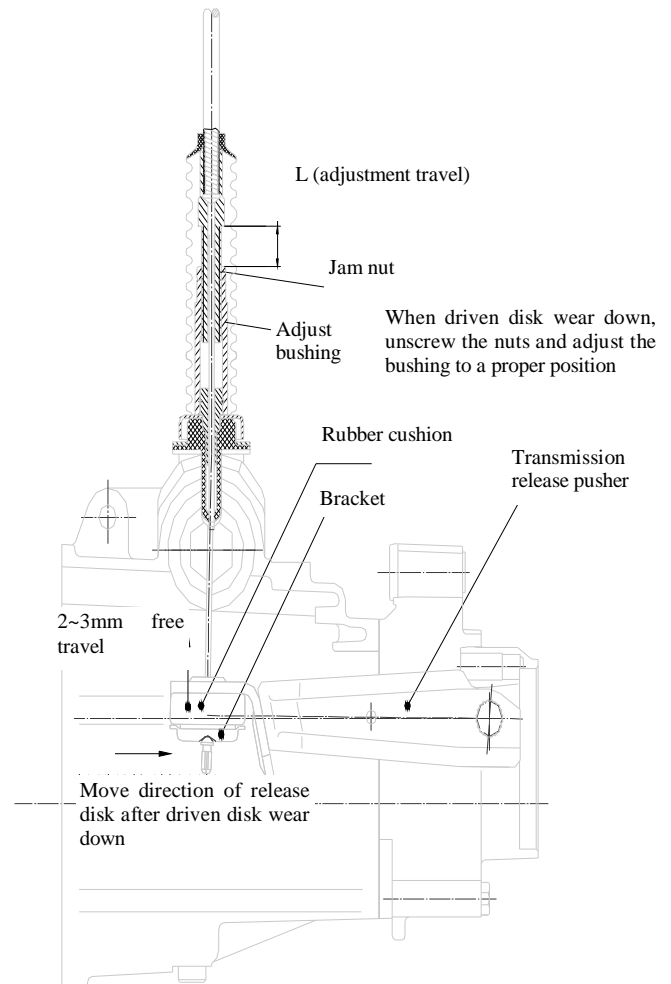
### CLUTCH CABLE ASSEMBLY STRUCTURE



- 1.Clip    2.Cable Latch    3.Washer    4.Cable Cushion    5.Jacket Tie-in    6.Jacket  
 7.Inner Pipe    8.Cable    9.Dust Cover    10.Adjust Rod    11.Jam Nut    12.Adjust Bushing  
 13.Clip Ring    14.Retainer    15.Washer    16.Rubber Cushion    17.Gasket    18. Butt End

## ASSEMBLY AND ADJUSTMENT OF CLUTCH CABLE

- Put dust cap up and screw jam nut (11) and adjustment bushing (12) to the upper end (make the adjustment travel L minimum) so as to facilitate the assembly of clutch cable.
- Coat a little lubricant on the assembly fitting surface of clutch cable.
- Put clip (1) across the guiding cylinder of clutch pedal on the front brattice to connect the clutch pedal. Make sure that washer (3) and end face of guiding cylinder of clutch pedal are spliced.
- Make butt end (18) fixed by bracket after across the slot in release arm of transmission and rubber cushion through the upper face of transmission.
- After the assembly, uplift the segregation arm of transmission by hand and adjust the adjustment bushing (12) down at the same time, so the 2~3mm clearance for segregation arm of transmission is available; then tread the clutch pedal for 10 times to ensure the fitness of assembly and readjust the adjustment bushing to guarantee that the 2~3mm clearance for segregation arm of transmission is available (Remarks: For new clutch, the adjustment travel L of driven disk cable shall not be less than 18mm. See Pic.2).
- Carry out the driving examination for the whole automobile. Clutch and gear shifting operation shall be normal.
- Screw jam nut (11) down to close with adjustment bushing (12), and then put down dust cover (9).



**Picture 2 Sketch Map of Western Clutch Adjustment**

## CLUTCH DISASSEMBLY

- Disassemble the transmission.
- Unscrew 9 fixed bolts in flywheel cornerwise and dismount the flywheel.



- Remove clutch plate.



- Pry out snap ring of release disk by screwdriver and remove the release disk.



- Unscrew 6 connection bolts in clutch pressure plate and output end of crankshaft, and remove the clutch pressure plate.



## CLUTCH OVERHAUL

- **Clutch friction disk:** measure the dent depth of rivet head, i.e. the distance between the rivet head and the friction disk surface. In case it is found that the depth reaches the using limit for any hole, the friction disk shall be changed.

Rivet head	Standard value	Maintenance
Dent depth	1.5mm	0.5mm
	0.06in	0.02in

- Measure the clutch disc runout using a dial indicator. If the runout is excessive, replace the clutch disc.

**Runout        0.8mm    max**

### Clutch pressure plate:

- Examine whether the diaphragm spring has abnormal wear or damage.
- Examine whether the pressure plate has wear or hot point.
- In case of any abnormality, the pressure plate shall be changed. The pressure plate shall not be disassembled into two parts: diaphragm spring and pressure plate.
- Measure the clutch pressure plate runout using a dial indicator. If the runout is excessive, replace the clutch disc.

**Runout        0.25mm    max**

### Flywheel:

- Examine whether the connection surface of friction disk exists abnormal wear or hot point; the change or maintenance shall be conducted if necessary.
- Measure the flatness of the flywheel with a straight edge and a feeler gauge. If not as specified, replace the clutch cover.

**Maximum clearance    0.05mm**

**Service limit            0.15mm**



## CLUTCH INSTALLATION

Before the assembly, flywheel surfaces and pressure plate shall be clear and dry.

— Assemble the pressure plate on the crankshaft and screw up bolts in accordance with prescribed moment.



Pressure plate assembly bolt Torque	N•m	Kg-m	lb-ft
	57-65	5.7-6.5	41.5-47.0

— Assemble release disk and fit on snap ring.

— Assemble clutch disk.

— Assemble flywheel.

— Screw up flywheel bolt uniformly according to the diagonal line.

— Coat a thin layer of grease on the input axle and then assemble the transmission with engine.

Flywheel bolt Torque	N•m	Kg-m	lb-ft
	18-28	1.8-2.8	13.5-20.0



**Remarks:**

When put the input axle of transmission into the clutch friction disk, the flywheel shall be revolved until the input axle of transmission and spline meshed.

## TROUBLE DIAGNOSIS

Trouble symptom	Cause	Treatment method
Slip of clutch	<ul style="list-style-type: none"> <li>•Free travel (free play) of clutch pedal is wrong.</li> <li>•Abrasion or oil stain for clutch friction disk.</li> <li>•Distortion for friction disk 、 pressure plate or flywheel surface.</li> <li>•Diaphragm springs become weaker.</li> </ul>	Adjust free travel Change friction disk Change friction disk, pressure plate or flywheel Change clutch pressure plate
Uncompleted segregation of clutch	<ul style="list-style-type: none"> <li>•Free travel of clutch pedal is wrong.</li> <li>•Diaphragm springs become weaker or abrasion for stabber fingertip.</li> <li>•Rust for input axle spline.</li> <li>•Mutilation or abrasion for input axle spline of transmission.</li> <li>•Excessive nodding action for clutch friction disk assembly.</li> <li>•Abrasion or oil stain for clutch friction disk.</li> </ul>	Adjust free travel Change pressure plate Lubricate Change the input shaft Change friction disk Change friction disk
Vibration of clutch	<ul style="list-style-type: none"> <li>•Brighten of clutch friction disk (to become glassiness).</li> <li>•Oil stain for clutch friction disk.</li> <li>•Bad skid of segregation bearing on the bearing sleeve of transmission.</li> <li>•Shimmy of clutch friction disk assembly or bad connection of friction disk.</li> <li>•Vibration reduction torsion springs of clutch friction disk assembly become weaker.</li> <li>•Loose of rivet of clutch friction disk.</li> <li>•Distortion of pressure plate or flywheel surface.</li> <li>•Loose of the binding bolt of flywheel or loose of binding bolt of pressure plate assembly.</li> </ul>	Repair or change friction disk Change friction disk Lubricate Change friction disk Change friction disk Change friction disk Change pressure plate or flywheel Screw down
Clutch noise	<ul style="list-style-type: none"> <li>•Abrasion or mutilation for segregation bearing.</li> <li>•Abrasion for front bearing of input axle.</li> <li>•Abnormal noise for clutch friction disk.</li> <li>•Crack for clutch friction disk.</li> <li>•Abnormal noise for pressure plate and diaphragm spring.</li> </ul>	Change segregation bearing Change input shaft bearing Change friction disk Change friction disk Change pressure plate
Non-separation of clutch	<ul style="list-style-type: none"> <li>•Clutch friction disk has fat liquor.</li> <li>•Serious wear of clutch friction disk.</li> <li>•Rivet head is displayed in surface of disk.</li> <li>•Torsion springs become weaker</li> </ul>	Change friction disk Change friction disk Change friction disk Change friction disk