



SECTION 5 COMMON TROUBLES AND THEIR REMOVAL OF THE CLUTCH

I Clutch slipping

In starting a vehicle, when the clutch pedal is released, the start is slow or the vehicle fails to start. While the vehicle is running, the vehicle speed fails to increase when the engine is accelerated. Especially, if the vehicle is climbing a slope, its speed decreases rapidly, accompanied by odor of clutch wear and burn. When the slipping is serious, smoke can be seen around the clutch.



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| Ser. No. | Failure causes | Remedy |
|----------|--|--|
| 1 | The clutch is incorrectly assembled, and the pressure applied by the pressure plate on the driven disk is low. | Reassemble the clutch carefully according to the requirements. |
| 2 | The pressure plate coil spring and diaphragm spring are broken or become weak. | Replace the spring or check and make sure that the springs of different color are located at the correct position. |
| 3 | The friction disk of the driven disk is excessively worn, causing the pressure plate to move forward, and the spring force is reduced. | Replace the friction disk or the driven disk assy. |
| 4 | The friction disk of the driven disk is contaminated by grease. | Check if there is too much grease at the fore and aft bearings and the spline of the clutch, there is any grease leaked or throw-out of the release bearing, or the release sleeve is over-greased. Clean and blow dry the grease contaminated friction disk thoroughly. |
| 5 | The clutch is too hot, or the pressure plate or the friction disk is burnt. | Lap the clutch pressure plate or replace the friction disk. |
| 6 | The clutch is incorrectly assembled, and the pressure plate or the clutch cover become warped. | Reassemble the clutch, and if necessary, align or lap the warped pressure plate or the clutch cover. |
| 7 | The pressure plate is ground too much and its working face becomes too thin. | Check the lapped pressure plate. |
| 8 | The master pump has no clearance or its boost cylinder can't return to its original position. | Readjust. |
| 9 | The control valve or the inlet valve of the boost cylinder can't close tightly. | Check, repair or replace. |
| 10 | The discharge port of the boost cylinder or the discharge port of the control valve is blocked. | Repair. |
| 11 | The steel cable is poorly lubricated, and the valve stem can't return to its original position. | Lubricate and repair. |
| 12 | The pedal has no or too short free travel. | Readjust. |



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- **II Clutch chattering**
- When starting the vehicle, even if you release the clutch pedal and slowly step on the accelerator, a smooth start cannot be guaranteed and abrupt chattering can be felt.





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| Ser. No. | Failure causes | Remedy |
|----------|--|--|
| 1 | The driven disk or the pressure plate is seriously warped. | Adjust the driven disk if its warping exceeds 0.5mm; and lap the pressure plate if its warping exceeds 0.4mm. |
| 2 | The release lever is uneven or the release ring fixing spring is damaged, making the release ring tilted. | Check and adjust all the six release levers to the same horizontal plane. Replace the damaged release ring fixing spring. |
| 3 | The guide bearing before the clutch shaft of the flywheel is not installed during the assembly. | Install the guide bearing, and insert the clutch shaft into the bearing to check it for proper operating status. |
| 4 | The fixtures of the engine and transmission are damaged or become loose. | Check the fixtures of the engine and transmission, and repair or replace the fixtures if necessary. |
| 5 | The clutch control linkage is displaced. | Check the control linkage of the clutch, lubricate various moving parts, replace the damaged parts, and then adjust the position of various pull rods. |
| 6 | The dynamic balance of the clutch assy. is disrupted. | Readjust the balance of the clutch assy., and its degree of unbalance must not exceed 40g·cm at 600 rpm engine speed. |
| 7 | The release sleeve is seized at the guide of the clutch shaft bearing cap. | Replace the release sleeve or the guide of the clutch shaft bearing cap if necessary. |
| 8 | The driven disk is seized on the clutch shaft spline and is difficult to slide. | Check the driven disk hub and the clutch shaft spline, remove any burrs and intrusions, and apply small amount of grease. |
| 9 | The fit clearance between the driven disk hub and the clutch spline is too big. | Check the wear of the clutch shaft spline and the driven disk hub, and replace the part worn more seriously. |
| 10 | The working pistons of the master pump or the boost cylinder can't return to their original position smoothly. | Check, repair or replace the master pump or the boost cylinder. |



- **III Incomplete disengagement of the clutch**
- When starting the vehicle, it is difficult to engage a gear with the clutch pedal stepped (or it is difficult to shift gears while the vehicle is running), and after the gear is reluctantly engaged, the vehicle has the tendency to move before the clutch pedal is released, or the engine flames out after the neutral gear is engaged.



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| Ser. No. | Failure causes | Remedy |
|----------|--|---|
| 1 | The new friction disk is too thick. | Replace it if its thickness exceeds 3.5mm. |
| 2 | The pressure plate or the driven disk is seriously warped. | See the Remedy for Clutch Chattering ①. |
| 3 | The driven disk hub is seized at on the clutch shaft. | See the Remedy for Clutch Chattering ①.. |
| 4 | After a vehicle has been parked for a long time, the driven disk of the clutch might get rusty or stuck to the flywheel or the pressure plate. | Check if the driven disk is rusty or stuck to the pressure plate or the flywheel, and replace the driven disk and its damaged parts if necessary. |
| 5 | The guide bearing before the clutch shaft of the flywheel is damaged | Replace the guide bearing. |
| 6 | The fit clearances between the bracket and the release lever pinhole and the pin and the pin roller are too big. | Replace the damaged or excessively worn parts. |
| 7 | The release lever is too low. | Adjust the distance from the arc surface of the inner end of the release lever to the arc shoulder at the outer edge of the rear end of the clutch cover. |
| 8 | The travel of the boost cylinder push rod is not enough. | Check and adjust the condition of discharge, and replace the defective parts. |



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- **IV Clutch sounds abnormally**
- When the engine is running at idle, the clutch generates abnormal sound while the clutch is disengaging, or engaging or the vehicle is starting.





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| Ser. No. | Cause | Remedy |
|----------|---|---|
| 1 | The dynamic balance of the clutch assy. is seriously disrupted. | See the remedy for Cluth Chattering. |
| 2 | The driving plate of the damping spring of the driven disk is damaged. | Replace the driving plate of the damping spring of the driven disk and the steel sheet. |
| 3 | The guide bearing before the clutch shaft is damaged or short-installed. | Replace if it is damaged or install if it is not installed. |
| 4 | The release bearing is poorly lubricated or damaged. | Lubricate properly, or replace it. |
| 5 | The release lever pinhole or pin is seriously worn. | Replace the release lever or other seriously worn parts. |
| 6 | The pressure plate lug and the recess of the clutch cover are seriously worn. | Replace the pressure plate or repair as necessary. |
| 7 | The driven disk hub and the clutch shaft spline are seriously worn, and the clearance between the two is too big. | See the Remedy for Clutch Chattering. . |





- **V Clutch pedal is too hard**
- Hard clutch pedal reflects that the boosting system of the clutch is in trouble. The result of the experiment shows that the pedal load is above 590N if there is no boosting device or the device fails completely. Besides, the failure of the boosting device may also result in problems such as clutch slipping, burning of the release bearing and failure of clutch disengagement.



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Failure causes

Remedy

| Ser. No. | Failure causes | Remedy |
|----------|--|------------------------------|
| 1 | Various connecting parts of the control mechanism are improperly lubricated and operate inflexibly. | Check, adjust and lubricate. |
| 2 | Air inlet pipeline leaks, or the discharge port of the boost cylinder seal ring leaks. | Check, repair or replace. |
| 3 | Inlet valve is blocked, or the piston of the master pump or the slave pump is seized. | Repair or replace. |
| 4 | There is no air from the air source. | Repair. |
| 5 | The discharge port is blocked, the piston or valve core is seized, or the discharge port is blocked. | Repair or replace. |

VI Common troubles of the Hydraulic Operation and air-assisted system



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| 1 | It is difficult to fill oil into the pipeline by means of an oil cup. | <ol style="list-style-type: none"> 1) Oil can't pass through the guide oil in the piston of the master pump. <ul style="list-style-type: none"> • The piston of the master pump has not returned to its position completely, and the guide hole is not opened. 1) The compensation hole in the bottom of the oil chamber casing is blocked. | <ol style="list-style-type: none"> 1) Clear the dirt in the guide hole and the compensation hole. 2) Check if the incomplete return of the piston is due to the interference of the pedal push rod or the obstruction at the bottom of the piston. 3) Clear. |
| 2 | The plunger of the slave pump booster can't return to its position completely. | The piston seal of the booster cylinder is bulged because of rolling. The booster piston and the casing are jammed due to eccentricity. | Replace the cylinder piston seal. Check the booster piston and the casing for concentricity. Refit and readjust. Check the booster for flexible movement. |
| 3 | Oil in the oil reservoir is reduced. | The master pump, the slave pump booster or the pipeline leaks oil. | Check the master pump and the slave pump booster. Disassemble the leaking parts and replace seals. Be careful not to damage (or scratch) the sealing surface. |
| 4 | There is air in the hydraulic section of the slave pump. | Air enters the system through the seal ring of the plunger, the air-operated section of the slave pump booster leaks air into the hydraulic section. | Replace the entire plunger or the seal on the plunger. Check the sealing of the air-operated section and replace if it is damaged. |
| 5 | The dustproof orifice leaks air uniformly when the booster is not operating. | The inlet valve seat is not well sealed or the valve is damaged | Check, clean or replace the valve. |
| 6 | The dustproof orifice leaks air when the booster is | <ol style="list-style-type: none"> 1) There is dirt between the valve and piston follower or the valve is defective. 2) The seal of piston follower leaks air. | <ol style="list-style-type: none"> 1) Clean or replace the valve. 2) Replace the damaged seal. |