SERVICE MANUAL

CLUTCH

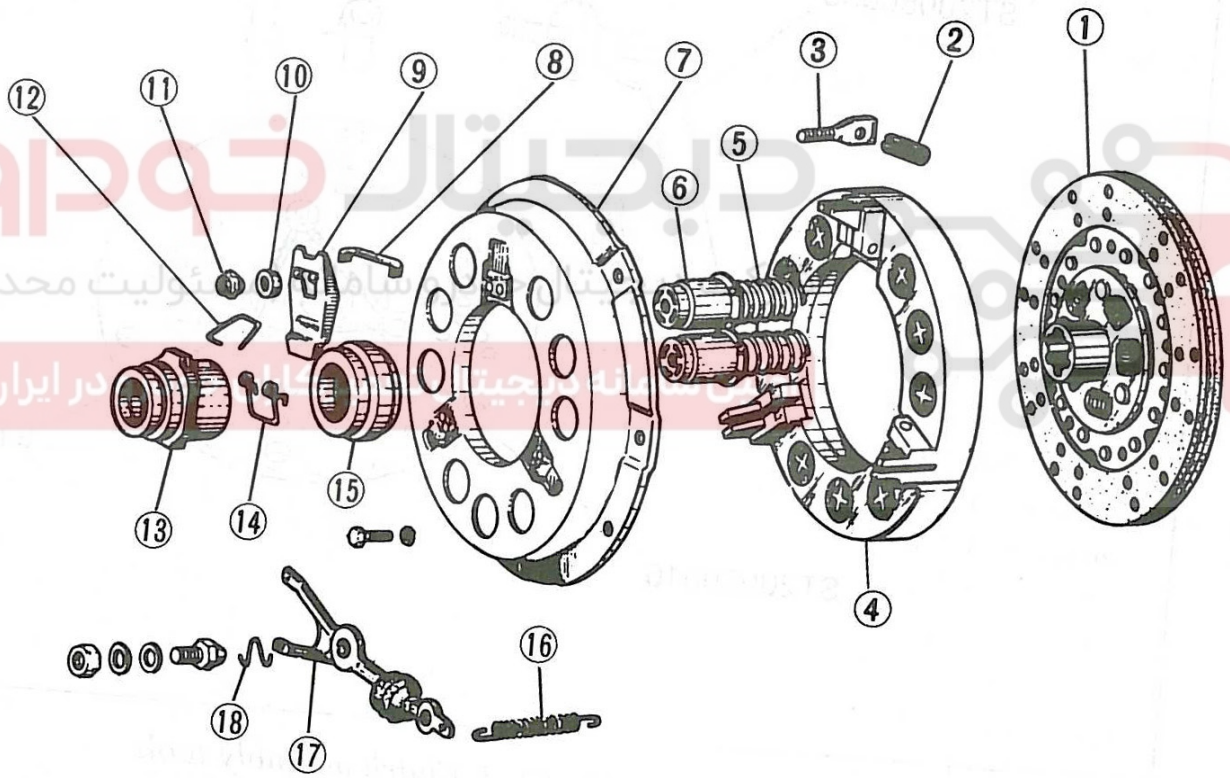
Technical and Engineering Management

MODEL 140 SERIES CHASSIS &BODY SERVICE MANUAL
SECTION CL

CLUTCH (COIL-PRESSURE-SPRING TYPE)
DESCRIPTION

The clutch employed in the 140 Model Series of a dry, single disc, coil-pressure-spring type. This clutch control system is classified as either hydraulic or mechanical control type.
The hydraulic control system is used on the left-hand control vehicle, while the mechanical control system is on the right-hand control vehicle.
The clutch is especially designed to provide large friction area which contributes much to increased torque transmission as well as to Improved heat dissipation per unit area. As a result, prolonged service life of clutch facings is assured.
The clutch pedal is used in conjunction with an assist spring which helps reduce driver's effort required for pedal pressure to a minimum.
The clutch of this type is employed in almost all the Nissan truck series and is proven as a combined unit of maximum performance and durability.

Clutch cover assembly Figure



1. Clutch disc assembly
2. Eye bolt pin
3. Eye bolt
4. Pressure plate
5. Pressure spring
6. Pressure spring retainer
7. Clutch cover assembly
8. Release lever stopper
9. Release lever
10. Release lever seat
11. Eye bolt nut
12. Holder spring
13. Release bearing sleeve
14. Retracting lever spring
15. Release bearing
16. Withdrawal lever return spring
17. Withdrawal lever
18. Withdrawal lever snap spring

Removal

1. Dismount transmission from vehicle. Refer to the topic, “Removal” under “TRANSMISSION”.
2. Remove clutch disc assembly. This can be accomplished by removing clutch cover mounting bolts, not in a circle, but in a criss-cross fashion.

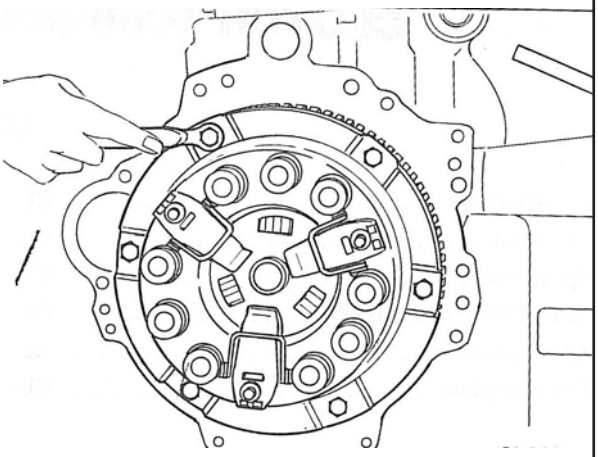


Figure-Removing clutch assembly

Note:

a. Before removing clutch disc assembly fully insert special tool “Aligning Bar KV30100100” into the clutch disc hub to prevent disc assembly from dropping.
b. Exercise care in removing clutch disc assembly not to allow oil or grease to come into contact with clutch facings.

Disassembly

To disassemble clutch assembly, use clutch assembly special Tools and proceed as follows:

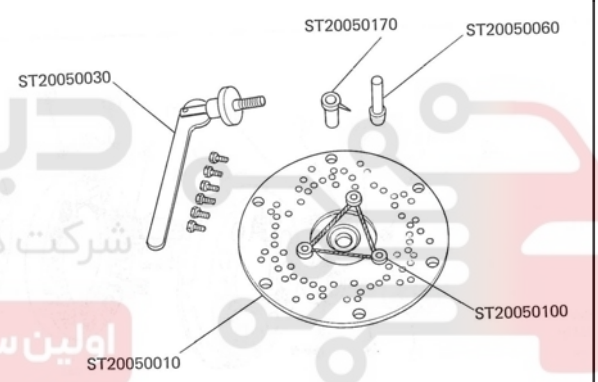


Figure-Clutch assembly tools

1. Attach clutch assembly to special tool “Base Plate ST20050010”
thick special tool “Distance Pieces ST20050100” in their positions on plate.
Place clutch assembly on plate by aligning clutch cover mounting bolt holes with those six holes in plate. Install and tighten bolts securely. These bolts should be tightened in a criss-cross fashion.

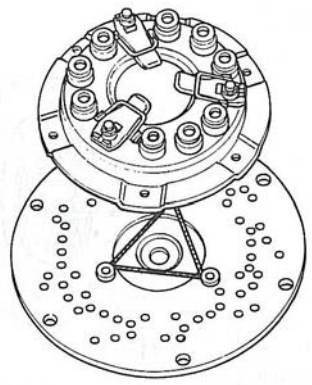


Figure-Installing clutch cover to plate

2.It is a good practice to mark match-marks on clutch cover, pressure plate, and release lever, before dis-assembling operation. Such match-marks will be found useful when locating these parts in their original positions at re-assembly.

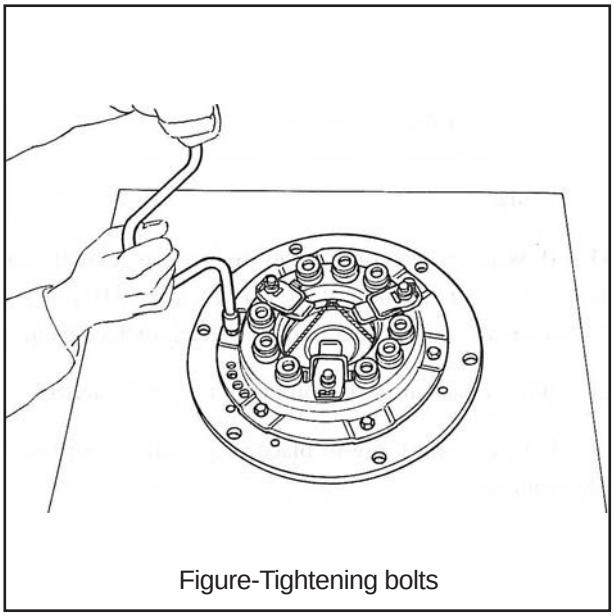


Figure-Tightening bolts

3.Straighten locks on adjusting nuts (used with eye bolts). Remove these nuts, and detach lever seats, release lever, and retracting springs.

4.Remove clutch cover mounting bolts evenly, not in a circle, but in a criss-cross fashion.Detach clutch cover, spring retainers, and pressure springs in the order shown. Remove eye bolts after driving out pins securing eye bolts in place on pressure plate.

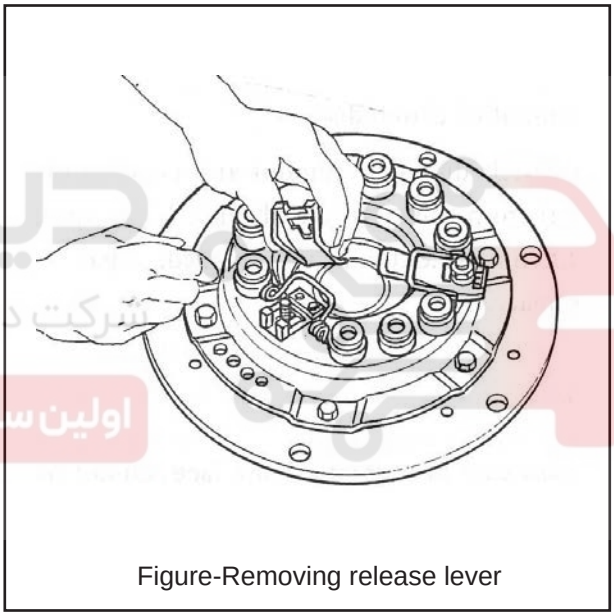
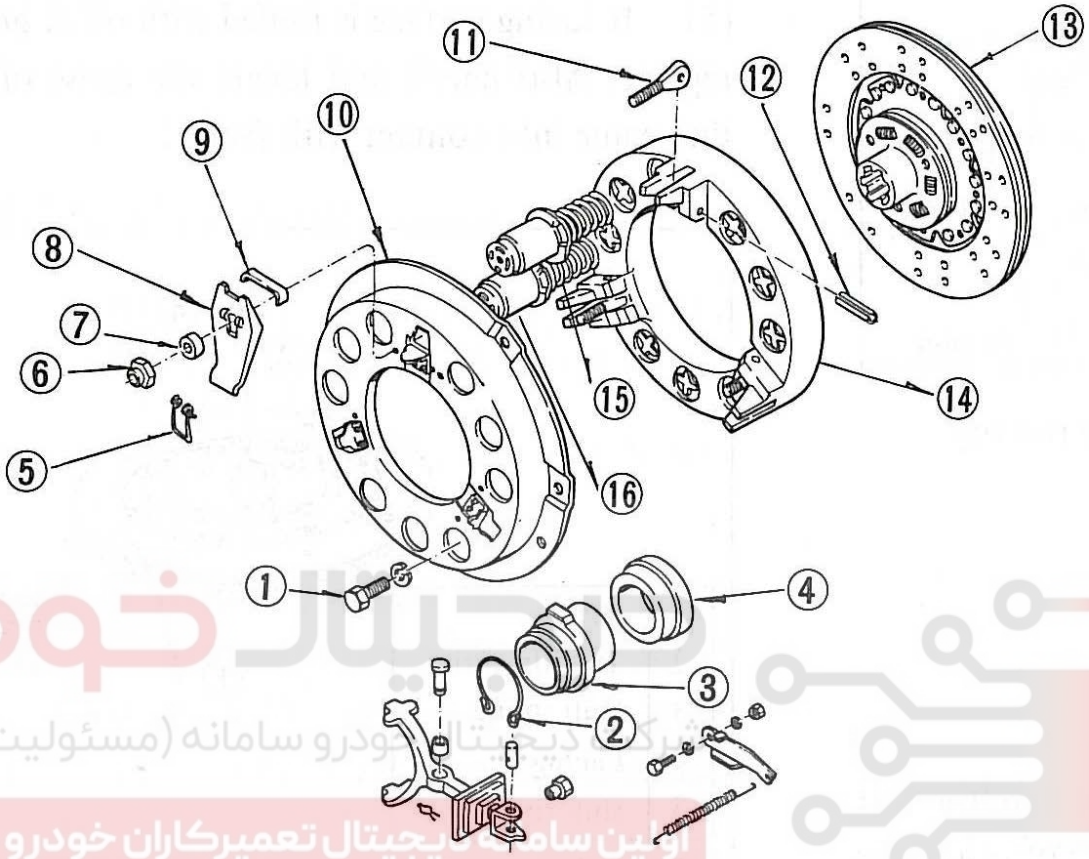


Figure-Removing release lever

Exploded view of clutch assembly



1. Set bolt
2. Retainer spring
3. Bearing sleeve
4. Release bearing
5. Lever retracting spring
6. Eye bolt nut
7. Lever seat
8. Release lever
9. Stopper
10. Clutch cover
11. Eye bolt
12. Eye pin
13. Clutch
14. Pressure plate
15. Pressure spring
16. Spring retainer

INSPEECTION AND REPAIR
Clutch disc

1. Splines
Measure the lash between disc hub and drive shaft spline in rotational direction, and if exceeding 0.4 mm(0.016 in), replace splined hub with a new one.
2. Face run-out of clutch disc
Measure clutch disc face run-out at a position of 100 mm (3.94 in) from center of clutch disc. If the specified value of 0.5 mm (0.020 in) is exceeded, replace it.

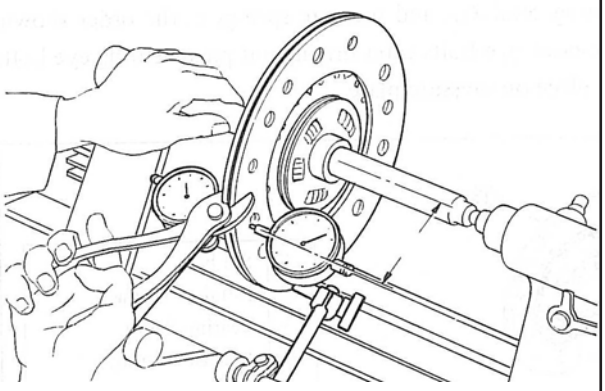


Figure-Checking clutch disc for face runout with a dial gauge

Note:
Exercise care in correcting disc face runout not to break facings.

3. Check torsion springs and hub rivets for condition.
If torsion spring show any evidence of fatigue or otherwise damage, or if hub rivets are loose in place disc assembly.

1	Hub Rivet
2	Torsion Spring

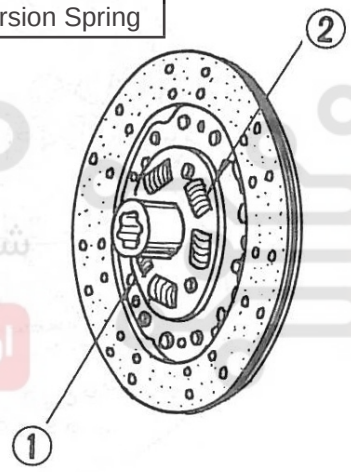


Figure-disc assembly

4. Facings
(1) If wear occurs on facings to such an extent that there exists the specified depth of 0.3 mm (0.012 in) or less between facing surface and rivet head, replace facings.
(2) If uneven wear occurs on facings, replace facings.
(3) If facings are loose in place as a result of worn rivet holes, replace.
(4) If facings are hardened to such a degree that they can not be corrected by sand-paper, replace with new ones.
(5) If facing surface is fouled with oil or grease, clean or replace. Also check and locate the cause of oil or grease that came into contact with facing.

1	Rivet
2	Torsion Spring
3	Hube Spline
4	Facing
5	Hub Rivert

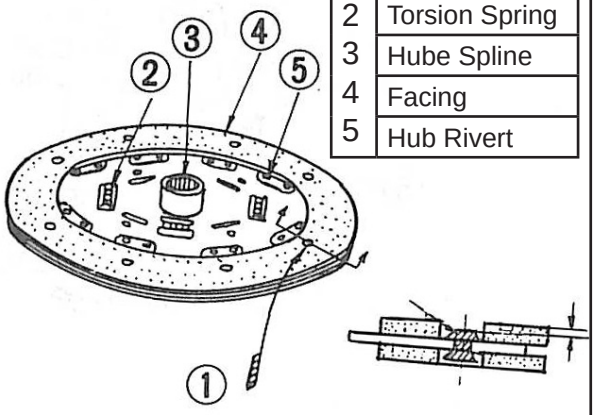


Figure-Measuring depth of rivet head from facing surface

Pressure plate

Check pressure plate for evidence of uneven wear or scores. If the surface has uneven wear or scores, repair it by refacing or, if necessary, replace.

The refacing limits is 1.0 mm (0.0394 in) from specified standard dimension

Note:

a. If it need to be cut more than 1.0 mm (0.0394 in) the unit must be replaced. After refacing, the out of flatness should be less that 0.1 mm (0.0039 in)

b. A pressure plate that has been repaired by refacing, requires further adjustment for spring tension. Correct spring tension is obtained by inserting spacer under springs.

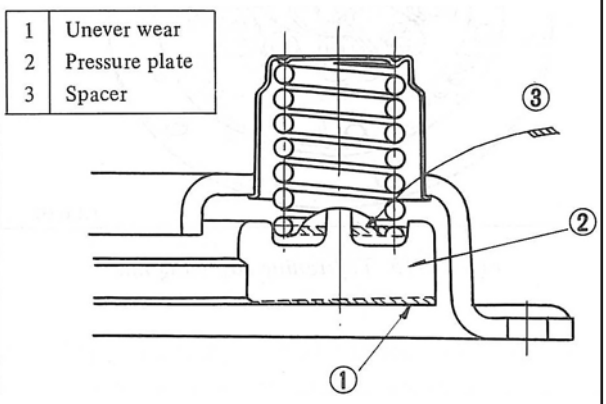


Figure-Warpage on pressure plate

Pressure springs

If pressure spring show one of the following conditions, replace with new ones.

1.Deformed, fatigued, or damaged spring.

2.Spring worn down to less than 10 mm (0.394 in) (free length) or 4 mm (0.1575 in) (as-installed length).

3.Spring that show eccentricity by more than 5 mm (0.1969 in).

Note:

a. When determining eccentricity (or squareness) of springs, take two measurements with one the of spring placed on a flat surface and the eith another end next time. After two measurements are made, take the reading that is larger.

b. Be sure to replace all springs with new once to obtain equal spring tension.

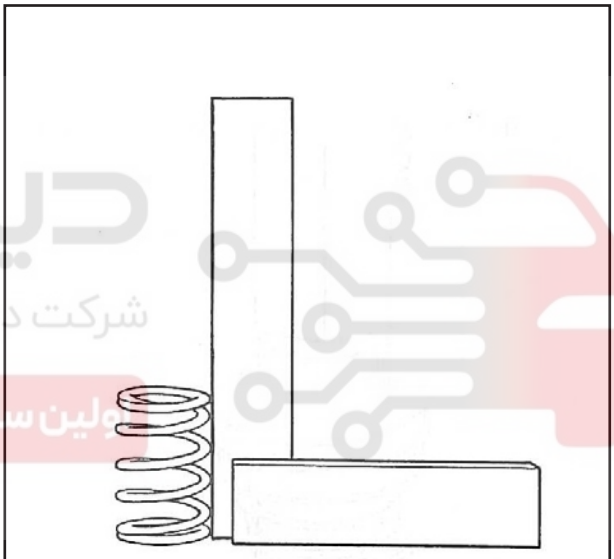


Figure-Measuring squareness of clutch springs

Release lever

If release lever shows evidence of wear on surface contacting release bearing, replace with a new one. Also replace release lever that is deformed or cracked.

Release bearing

1. Rotation

Check release bearing for free movement while keeping it pressed in its thrust direction. If it runs roughly or if there is lackof smooth rotation, replace with a new one.

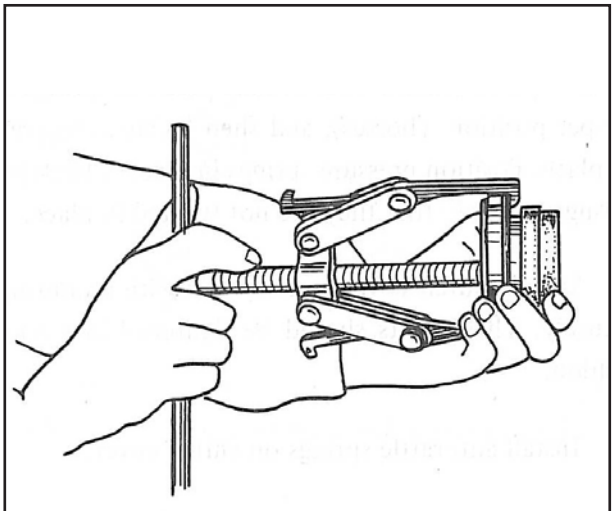


Figure-Removing release bearing using suitable tool

2. Wear
Check for wear on bearing surface contacting release lever. Replace bearing that is worn excessively.

Note:
Be sure to use a suitable pressing tool or puller when release bearing is to be removed from hub.

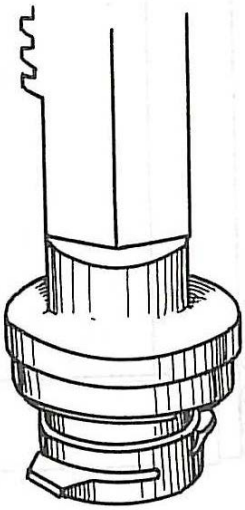


Figure-Removing release bearing

REASSEMBLY AND ADJUSTMENT
Reassemble clutch assembly in reverse sequence of disassembly, closely adhering to the following instructions. Use tool plate (service tool).
Apply a coating of brake grease to sliding surfaces of parts. Under no circumstances should grease be applied to facings.

To reassemble clutch assembly, proceed as follows:
1. Locate distance pieces in place on tool plate.
2. Place pressure plate (together with eye bolts) in place on tool plate. Place a total of nine pressure springs in their proper position pressure springs in place. Check pressure springs to insure that they are not twisted in place.
3.Install clutch cover, and tighten with mounting bolts securely. These bolts should be tightened in a criss-cross fashion.
4.Install anti-rattle springs on clutch cover.
5.Install release lever, release lever seat, and eye bolt nuts in place on eye bolts, and temporarily tighten eye bolt nuts evenly.
6.Measure release lever height in the following manner.
(1) Locate special tool "Center Pole ST20050060" in place on base plate, and insert special tool "Height Gauge ST20050170" (equipped with a reed) securely.

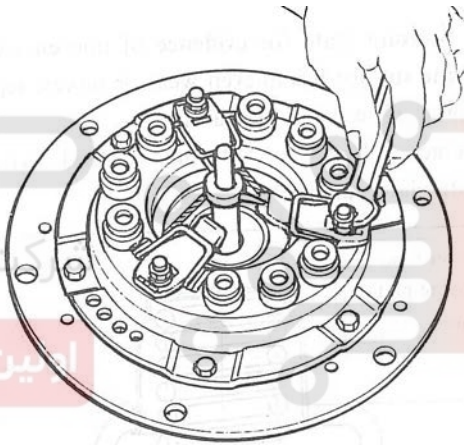


Figure-Tightening adjusting nut

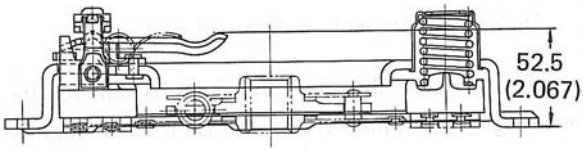


Figure-Measuring height of release lever.

(2) place a thickness gauge in the clearance between reed of height gauge and tip of release lever. Height of release lever is correct if it is 51.7 to 53.3 mm (2.036 to 2.095 in)

(3) Apply a coating of brake grease to sliding contact surface of release lever. Manipulate release lever with the use of special tool “Operating Lever ST20050030” approx.30 times so that working parts may be properly broken in. Maximum stroke of travel is 12 mm (0.472 in).

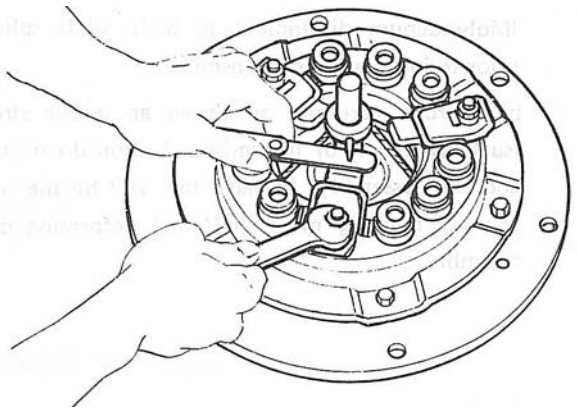


Figure-Measuring height of release lever.

Then, measure height of release lever, readjusting as required by means of eye bolt. After correct adjustment is made, lock eye bolt nut at two places with a lock plate.
7.Dismount clutch assembly from tool plate. This can be accomplished by loosening off mounting bolts evenly, not in a circle, but in a criss-cross pattern.
8.Check entire clutch assembly to insure that it functions properly without any sign of binding.

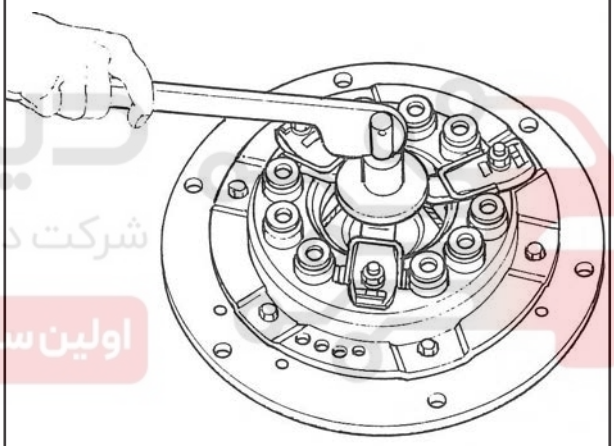


Figure-Manipulating operating lever to properly break in working parts

REINSTALLATION

1.Extreme care should be taken in installing clutch disc assembly on flywheel. Be sure to position it in place with its long splined hub toward the transmission side
2. Aligning clutch disc assembly to flywheel
It is necessary to correctly align clutch disc assembly with flywheel so that engine power may be transmitted through power train components to rear wheels. Use of main drive gear is suggested as a means of supporting disc assembly during installation.

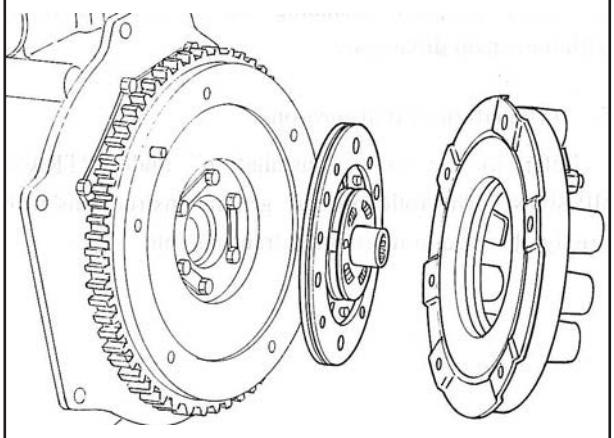


Figure-Installing clutch disc assembly to flywheel

3. When installing clutch cover in place on flywheel, be sure to align by means of two location pins properly.

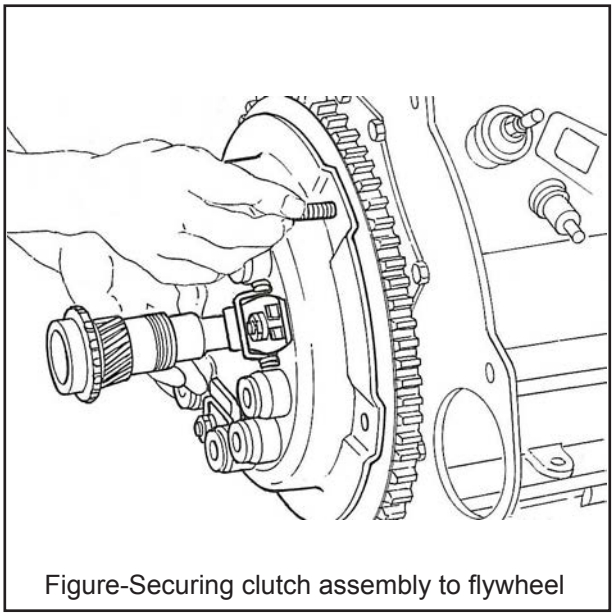


Figure-Securing clutch assembly to flywheel

Clutch cover mounting bolts should be tightened evenly, not in a circle, but in a criss-cross pattern. Tightening torque of these bolts is specified to be 2.4 to 2.6 kg-m (17.4 to 18.8 ft-lb).

4. After properly installing clutch cover assembly, withdraw main drive gear.

5. Installation of transmission.

Refer to the topic “Installing” under “TRANSMISSION”.The following are general instructions to be closely observed in reinstalling transmission.

Note:

a. Apply a coating of recommended lubricant (MOIYBDENUM disulphide) to main shaft splines prior to installation of transmission.

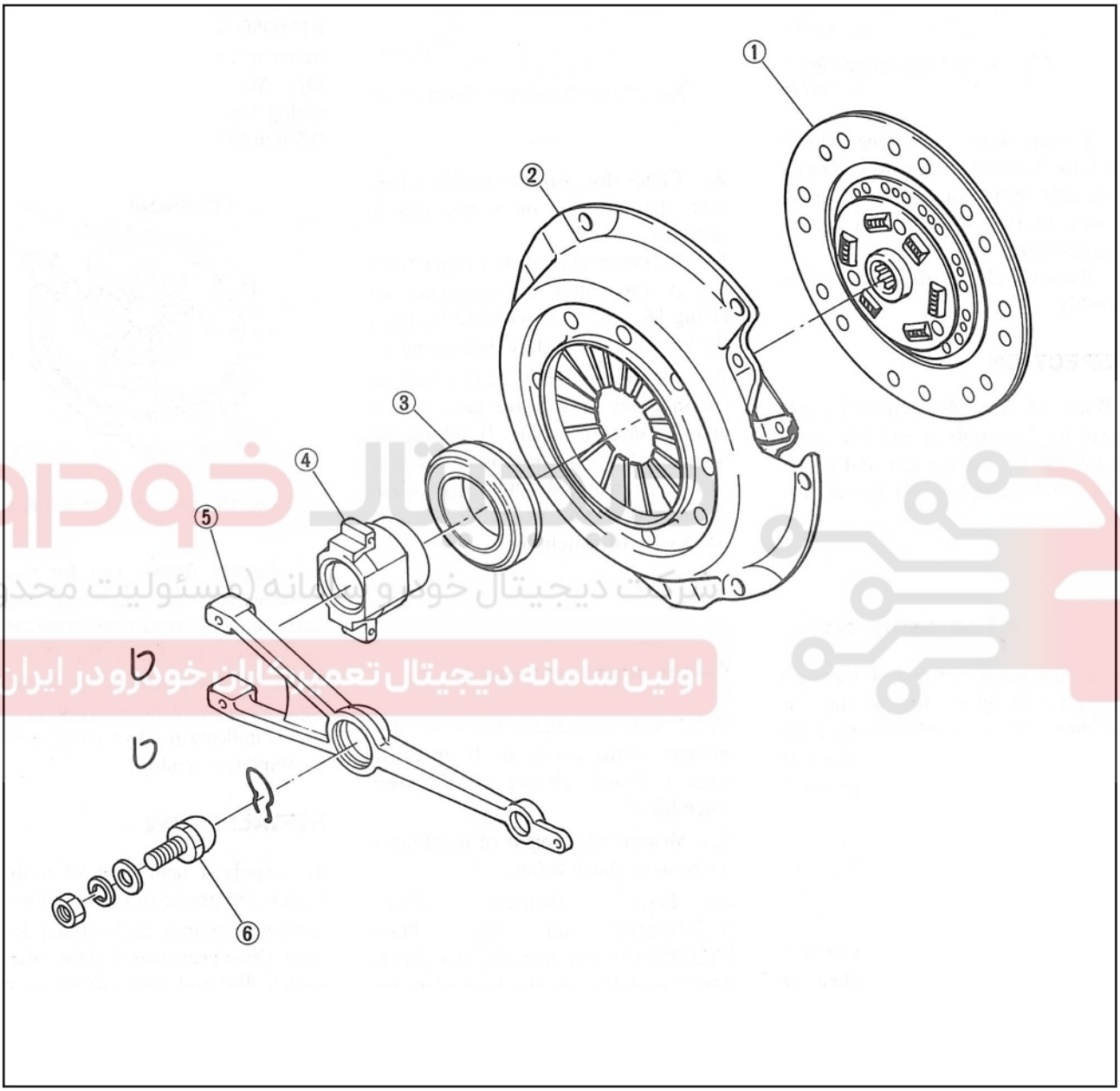
b. Exercise care not to throw an undue stress (such as weight of transmission) upon drive shaft and disc assembly, because this will be the sure way of bending main shaft and deforming disc assembly

CLUTCH (Diaphragm spring type)

DESCRIPTION

The clutch is a single dry disc type using a diaphragm spring. It consists of a clutch disc, a pressure plate, a diaphragm spring, a clutch cover and a clutch release bearing.

Exploded view of clutch assembly



1. Clutch disc assembly
2. Clutch cover assembly
3. Release bearing
4. Release sleeve
5. Withdrawal lever
6. Clutch yoke pivot

From December
140-005889
L140 – 011858
NL140 – 000223
QL 140 - 002273

CLUTCH DISC

REMOVAL

1.Remove transmission from engine. For details of transmission removal, refer to the section under “Transmission”.

2.Insert Clutch Aligning Bar KV30100100into clutch disc hub until it will no longer go. It is important to support weight of clutch disc in the steps that follow.

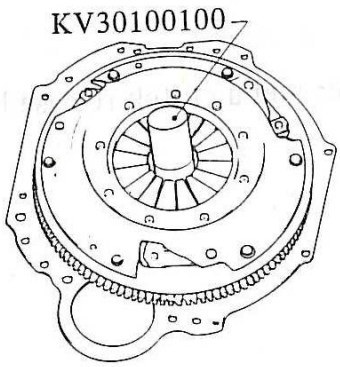


Figure- Supporting clutch assembly

3.Loosen bolts attaching clutch cover to flywheel, one turn each at a time, until spring pressure is released.

Be sure to turn them out in a criss-cross fashion.

4. Remove clutch disc and cover assembly.

INSPECTION

Wash all the disassembled parts except disc assembly in suitable cleaning solvent to remove dirt and grease before making inspection and adjustment.

Flywheel and pressure plate

Check friction surface of flywheel and pressure plate for scoring or roughness. Slight roughness may be smoothed

by using fine emery cloth. If surface is deeply scored or grooved, the part should be replaced.

Clutch disc assembly

Inspect clutch disc for worn or oily facings, loose rivets and broken or loose torsional springs.

1.If facings are oily, disc should be replaced. In this case, inspect transmission front cover oil seal, pilot bushing, engine rear oil seal and other points for oil leakage.

2.The disc should also be replaced when facings are worn locally or worn down less that 0.3 mm (0.012 in) at rivet.

3.Check disc plate for runout when-ever the old disc or a new one is installed.

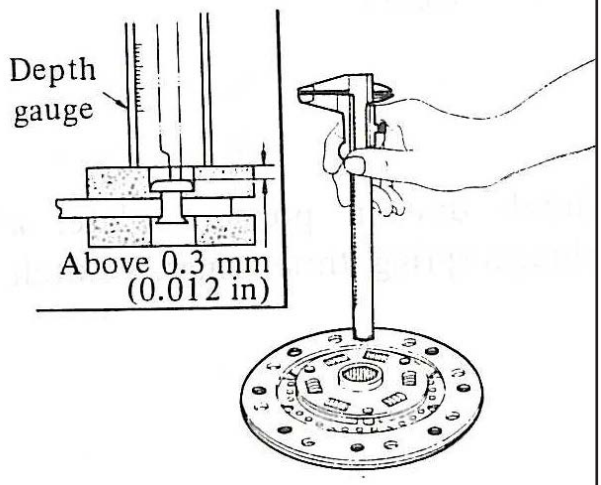


Figure- Measuring clutch lining

4.If runout exceeds 0.5 mm (0.020 in) at the outer
circumference of facing {R=107.5 mm (4.232 in) from the hub center}, replace disc assembly.
5. Check for the fit disc hub on transmission main drive gear splines and for smooth sliding. If splines are worn, clutch disc or main drive gear should be replaced: that is, backlash exceeds 0.4 mm (0.016 in) at the outer edge of clutch disc.

Clutch cover assembly

1.Check the end surface of diaphragm spring for wear. If excessive wear is found, replace clutch cover assembly.
2.Measure the height of diaphragm spring as outlined below:
(1) Place Distance Piece ST20050100 and then tighten clutch cover assembly on the base plate by using set bolts.
(2) Measure the height “A” at several points with a vernier caliper depth gauge. See Figure CL-24. If the height “A” of spring end is not held between 33 and 35 mm (1.30 to 1.38 in), adjust the spring height with Diaphragm Spring Adjusting Wrench ST20050240. See Figure CL-25. If necessary, replace clutch cover assembly. Also, unevenness of diaphragm spring toe height should be less that 0.5 mm (0.020 in).
3.Inspect thrust rings for wear or damage. As these parts are invisible from outside, shake cover assembly up and down to listen for chattering noise, or lightly hammer on rivets for a slightly cracked noise. Any of these noises indicate need of replacement as a complete assembly.

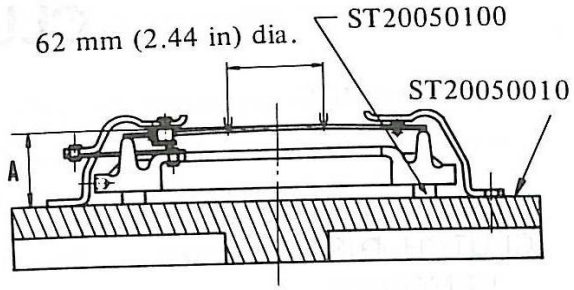


Figure- Measuring the height of Diaphragm spring

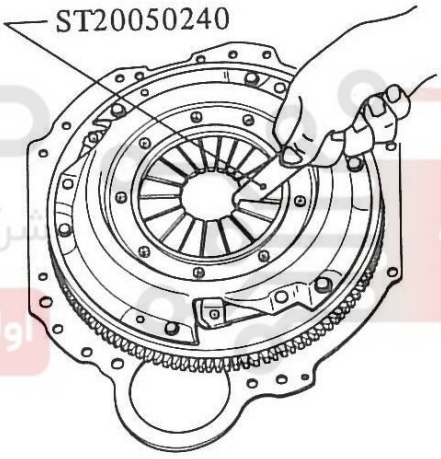


Figure- Adjusting spring height

INSTALLATION

1. Apply a light coat of molybdenum-based grease to transmission main drive gear splines. Slide clutch disc on main drive gear several times. Remove clutch disc and wipe off excess lubricant pushed off by disc hub.

Note:

Take special care to prevent grease or oil from getting on clutch linings.

2. Reinstall clutch disc and clutch cover assembly. Support clutch disc and cover assemblies with Clutch Aligning Bar KV30100100.

Note:
Be sure to keep disc facings, flywheel and pressure plate clean and dry.

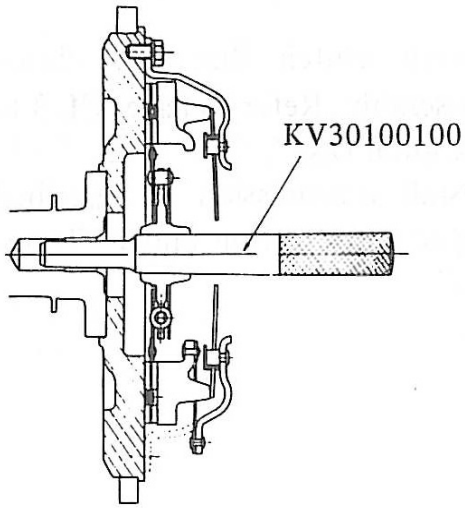


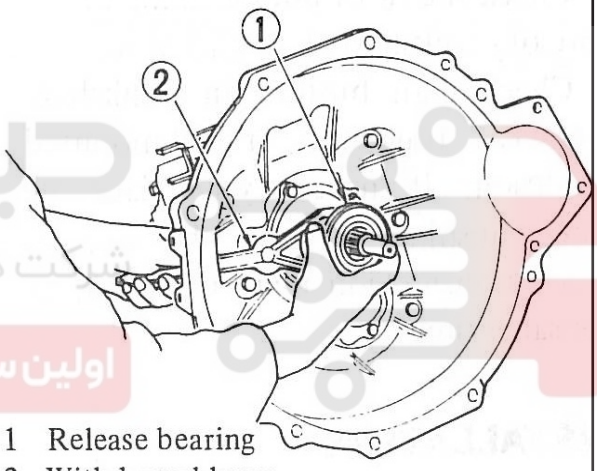
Figure- Installing clutch cover assembly

3.Install bolts to tighten clutch cover assembly to flywheel squarely. Each bolt should be tightened one turn at a time in a criss-cross fashion to the specified torque, 1.6 to 2.1 kg-m (12 to 15 ft-lb).

Note:
Dowels are used to locate clutch cover on flywheel properly.

4.Remove Clutch Aligning Bar.

5.Reinstall transmission as described in the pertinent section under “Transmission”.



1 Release bearing
2 Withdrawal lever
Figure- Removing clutch release Mechanism

RELEASE BEARING REMOVAL

1.Remove transmission from engine. For details of transmission removal, refer to the section under “Transmission”.

2.Remove dust cover.

3.Disconnect holder spring.

4.Disconnect clutch withdrawal lever from bearing sleeve.

5.Remove release bearing and sleeve as an assembly from main shaft.

6.Take out clutch release bearing from bearing sleeve, using a universal puller.

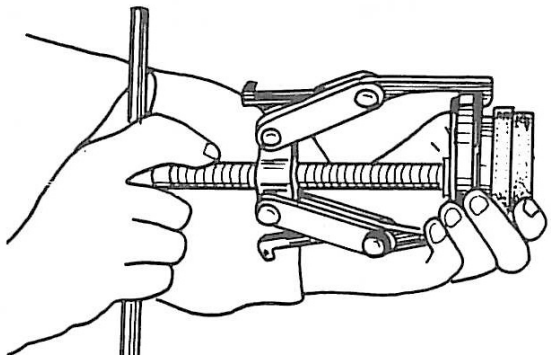


Figure- Disassembling release bearing

INSPECTION

Check for abnormal wear on contact surface of withdrawal lever,clutch yoke pivot and bearing sleeve.Hold bearing inner race and rotate outer race while applying pressure to it. if the bearing rotation of rough or noisy, replace bearing.

INSTALLATION

1.Assemble release bearing on sleeve. Use a press.

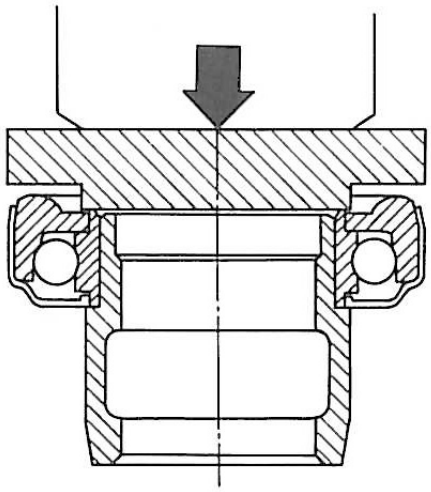


Figure-Installing release bearing

2. Before or during assembling, lubricate the following points with a light coat of multi-purpose grease.

(1) Inner groove of release bearing sleeve.

(2) Contact surfaces of withdrawal lever, clutch yoke pivot and bearing sleeve.

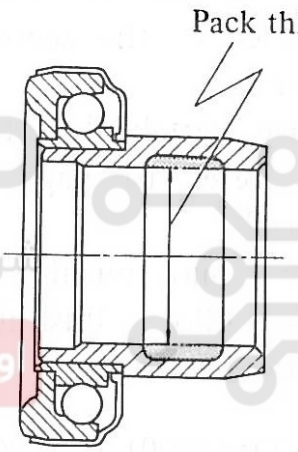


Figure-Lubricating recess of bearing sleeve

3.Reinstall transmission as described in the pertinent section under “Transmission”

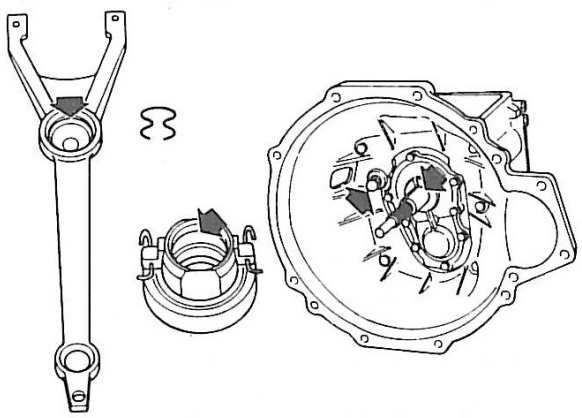


Figure-Lubricating points of withdrawal lever and front cover

PILOT BUSHING
REMOVAL

1.Remove transmission from engine. For details of transmission removal, refer to the section under “Transmission”.
2.Remove clutch disc and cover assembly. Refer to section “Clutch Disc”
3.Remove pilot bushing in crankshaft by pilot Bushing Puller ST16610001.

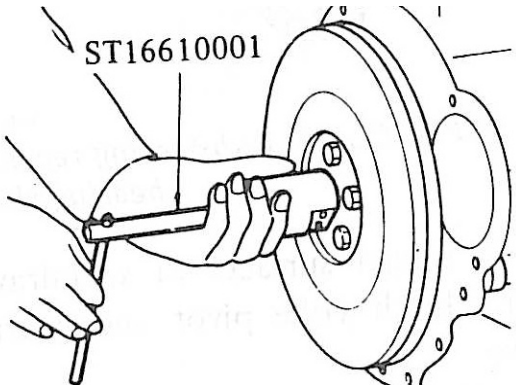


Figure-Removing pilot bushing

INSPECTION

Check the fit of pilot bushing in the bore of crankshaft.
Check pilot bushing in crankshaft for wear, roughness or bell-mounted condition. If necessary, replace it.When bushing is worn, be sure to check transmission main drive gear at the same time

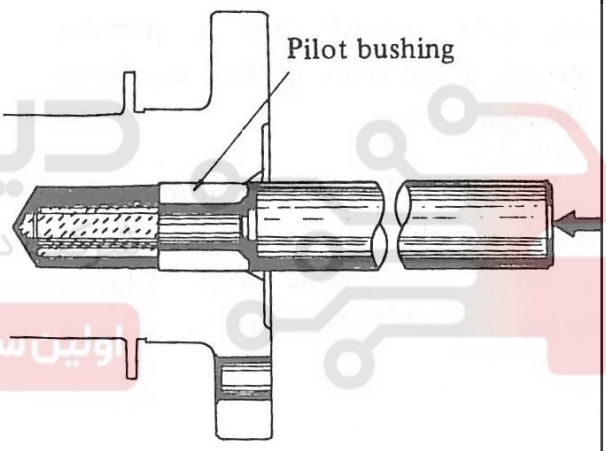


Figure-Installing pilot bushing

INSTALLTION

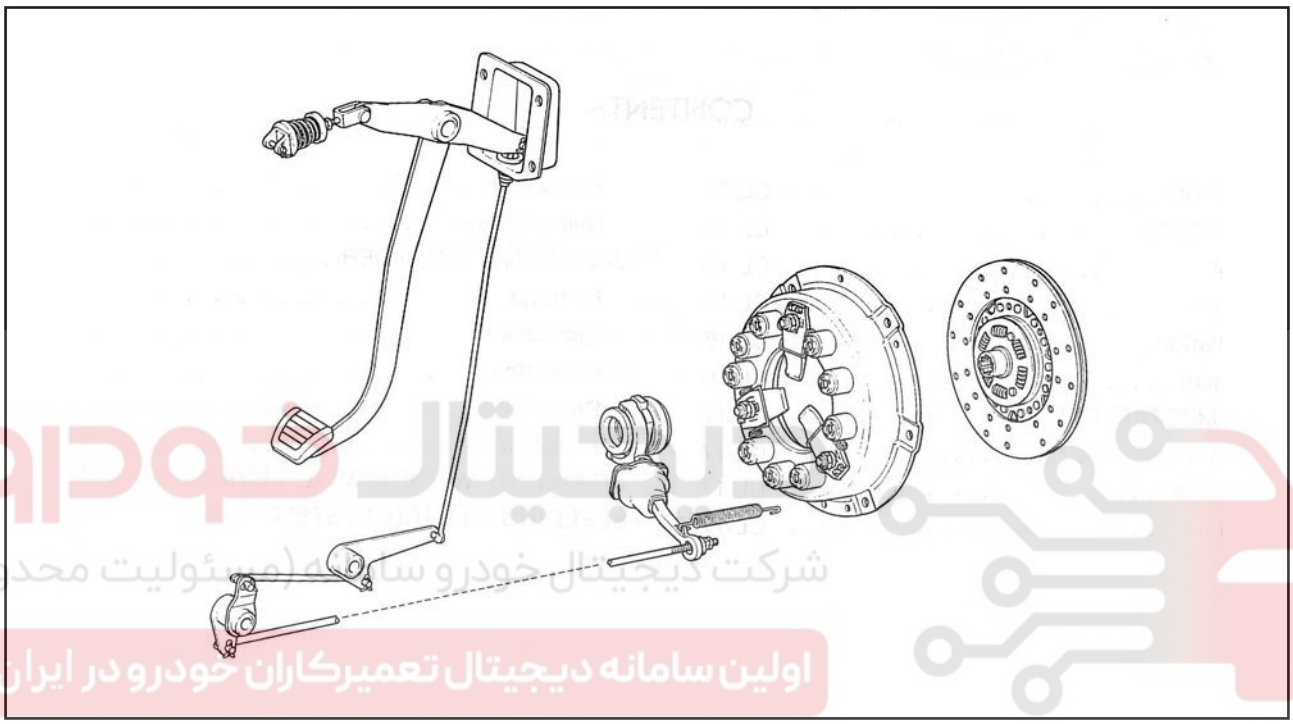
1.Before installing a new bushing, thoroughly clean bushing hole. Install bushing in crankshaft using a soft hammer. Bushing need not be oiled.
2.Install clutch disc and clutch cover assembly. Refer section to “Clutch Disc”
3.Install transmission as described in the pertinent section under “Transmission”.

CLUTCH CONTROL

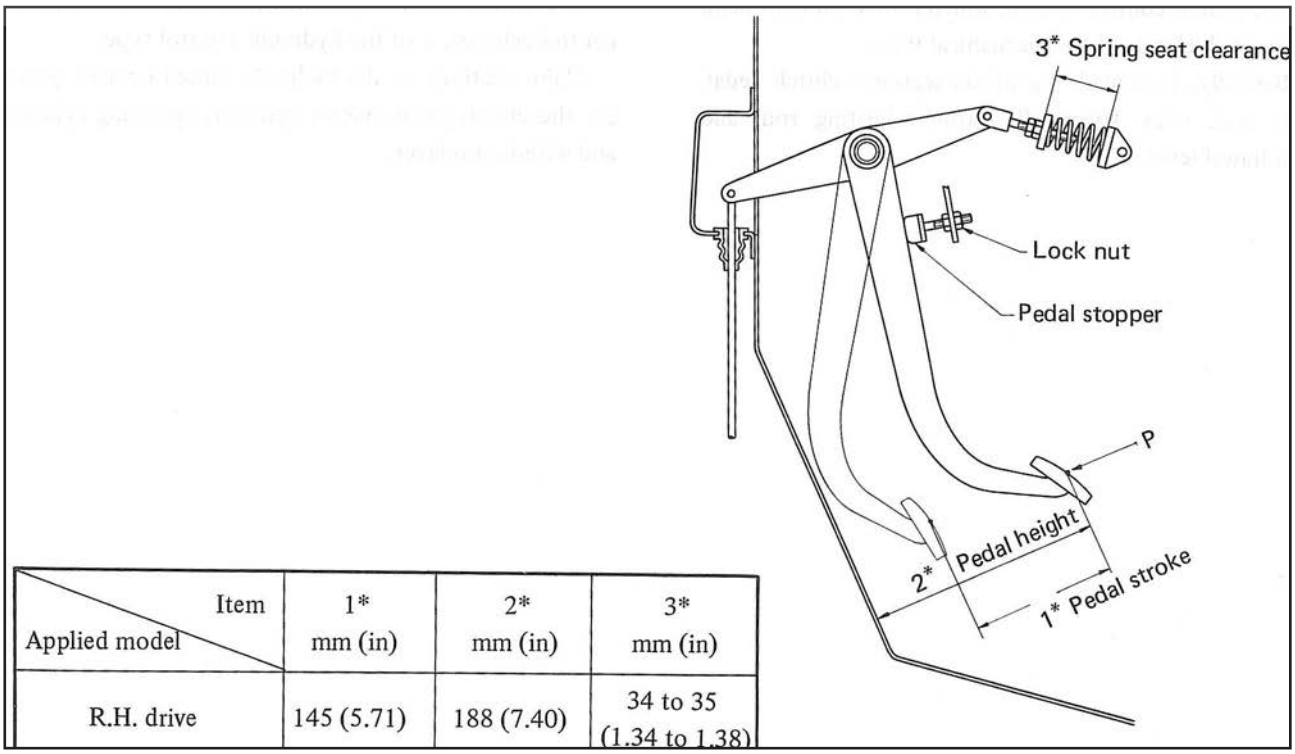
DESCRIPTION

The clutch control system, which is used on right-hand control vehicles, is of the mechanical type.Basically, it is made up of six sections-clutch pedal, relay rod, relay lever, idler arm, adjusting rod, and withdrawal lever.The clutch control system, which is used on left-hand control vehicles, is of the hydraulic control type.Major sections of the hydraulic clutch control system are the clutch pedal, master cylinder, operating cylinder, and withdrawal lever.

Clutch mechanical control

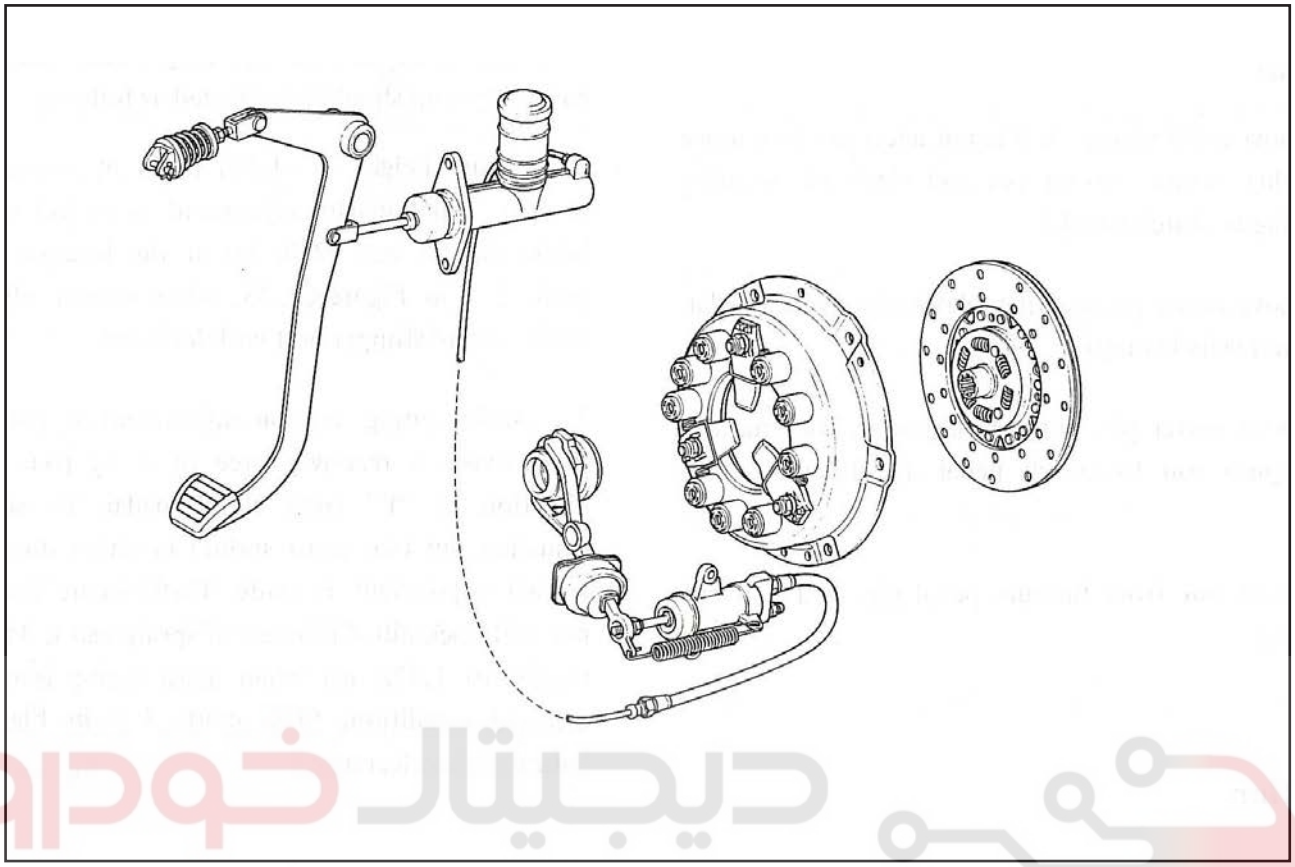


Pedal height adjustment

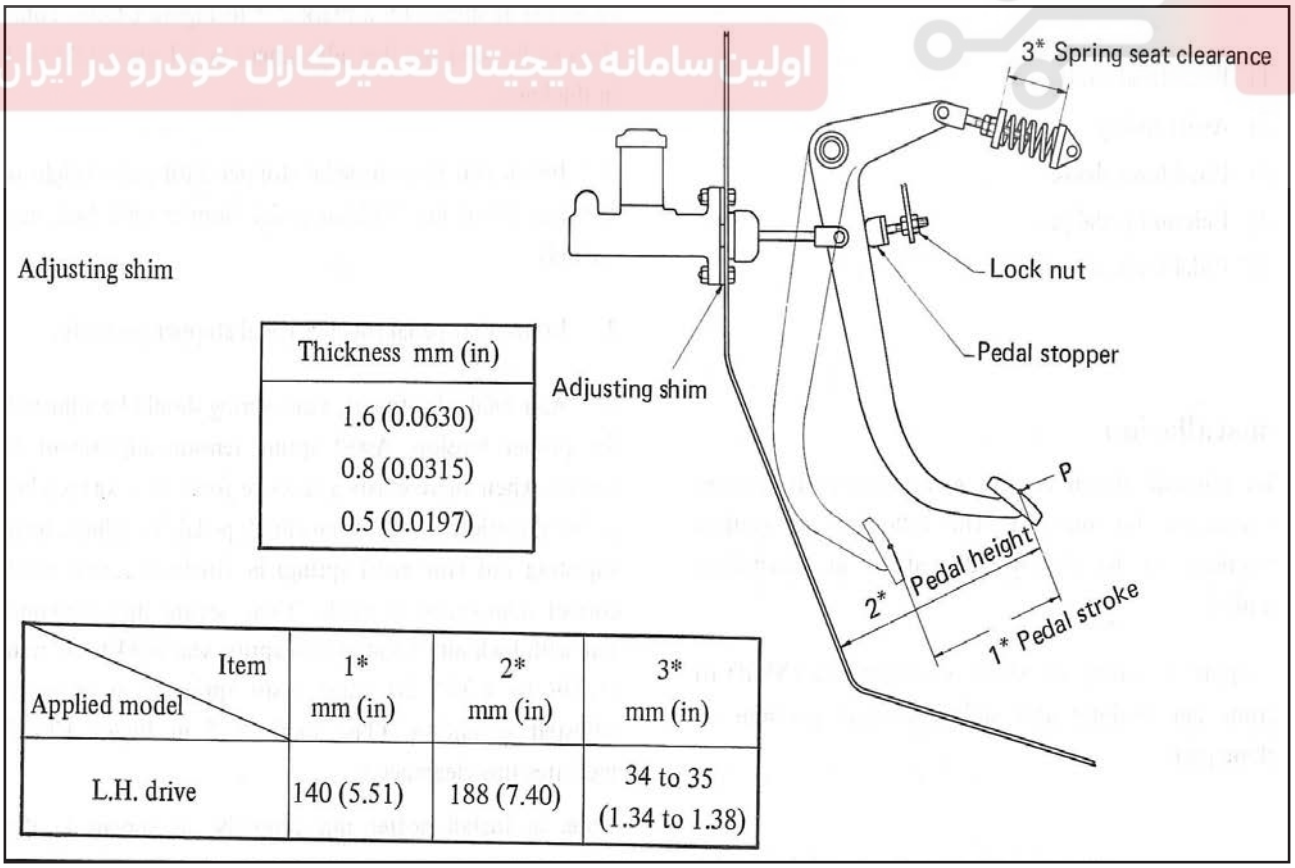


Item / Applied model	1* mm (in)	2* mm (in)	3* mm (in)
R.H. drive	145 (5.71)	188 (7.40)	34 to 35 (1.34 to 1.38)

Clutch hydraulic control



Pedal height adjustment



Thickness mm (in)
1.6 (0.0630)
0.8 (0.0315)
0.5 (0.0197)

Item / Applied model	1* mm (in)	2* mm (in)	3* mm (in)
L.H. drive	140 (5.51)	188 (7.40)	34 to 35 (1.34 to 1.38)

CLUTCH PEDAL

Removal

1.Remove assist spring. (If it is not necessary to remove assist spring, remove cotter pin and clevis pin securing assist spring to clutch pedal.)
2.Remove cotter pin securing relay rod to clutch pedal. (Right-hand vehicle only)
3.Remove cotter pin from clevis pin securing master, cylinder push rod to clutch pedal. (left-hand vehicle only)
4.Remove nut from fulcrum pedal pin, and pull out fulcrum pin.

Inspection

Thoroughly clean all parts (shown below) that have been removed in an approved solvent.Visually inspect these parts for any evidence of wear, deformation, or otherwise damage.
(1) Pedal head rubber
(2) Assist spring
(3) Pedal lever sleeve
(4) Fulcrum pedal pin
(5) Pedal lever, etc.

Reinstallation

1.To reinstall clutch control component-parts, reverse the sequence for removal. The following are general instructions to be closely adhered to in reinstalling operation.
2.Apply a coating of wheel bearing grease (NWB) to fulcrum pin pushing and sliding contact portions of working parts.
3.Tighten fulcrum pedal pin to a torque of 3.6 to 4.1 kg-m (26.0 to 29.6 ft-lb).

Adjustment

In case of mechanical type (Right-hand vehicle), clutch control system should be adjusted as follows:
1. Adjust height of clutch pedal by means of pedal stopper. Pedal height adjustment is correct when pedal is 188 mm (7.40 in). After correct adjustment is made, secure stopper bolt with lock nut.
2.Assist spring tension adjustment is correct when there exists a reactive force of 3 kg (6.6 lb) in the direction of foot on clutch

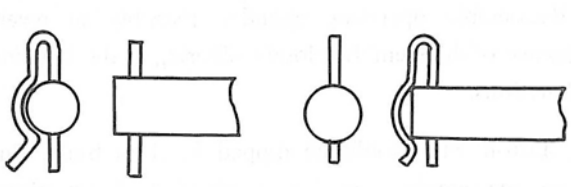


Figure-Installing cotter pin

pedal. To adjust, turn adjusting nut (for assist spring) in either direction until correct adjustment is made.
Then, secure this adjusting nut with lock nut. Clearance of spring seat is 34 to 35 mm (1.339 to 1.378 in) when assist spring is in properly adjusted condition. (The mark 3*in pedal hight adjustment Figure indicates this clearance.)

Note:
a. Install cotter pin properly, as shown in the accompanying sketch, paying particular attention to its direction.
b. Upon completion of reinstallation and adjustment of clutch control system, check the entire configuration to insure that:
1. All connections are made properly as per the instructions.
2.Every possible part is not loose in its place.

CLUTCH MASTER CYLINDER

Removal

1.Disconnect push rod at clutch pedal.
2.Disconnect hydraulic fluid line at master cylinder, and drain fluid.
3.Remove bolts securing master cylinder in place, and detaches master cylinder assembly from vehicle.

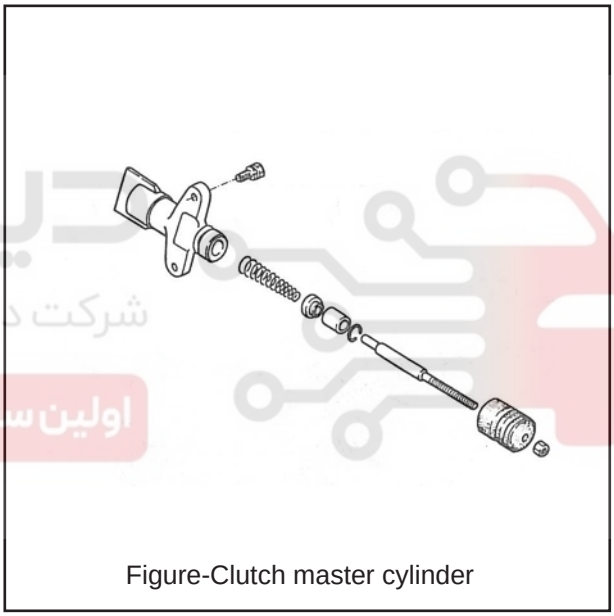


Figure-Clutch master cylinder

Disassembly

1. Remove filler cap, and drain fluid.
2.Remove dust cover, and pry off snap ring. Stopper, push rod, piston assembly, primary piston cup, and return spring assembly can now be removed.

Inspection

Thoroughly clean all parts with brake fluid for inspection.
1.Check master cylinder and piston for evidence of uneven wear or otherwise damage.Replace defective parts with new ones.
2. Always discard primary piston cup when master cylinder is disassembled for reconditioning or repair.
Install a new primary piston cup when master cylinder is assembled.

3. Check dust cover, oil reservoir, filler cap, and hydraulic fluid line for evidence of deformation or otherwise damage. Replace defective parts with new ones.

Reassembly

Reassemble master cylinder assembly in reverse sequence of disassembly, closely adhering to the following instructions.

1.Piston cup should be dipped in brake fluid before assembly. Install it in place, paying particular attention to its direction.

2.Fill master cylinder and piston with clean brake fluid, and assemble carefully.

Reinstallation

Reinstall master cylinder assembly in reverse sequence of removal, and adjust as follows:

1.Adjust length of push rod until correct height of clutch pedal us obtained.

2.Completely bleed air out of hydraulic system.

OPERATING CYLINDER

Removal

1.Remove return spring.

2.Disconnect hydraulic fluid line at operating cylinder.

3. Disconnect push rod at withdrawal lever.

4.Remove two bolts securing operating cylinder to clutch housing. And detach operating cylinder assembly.

Disassembly

1.Remove dust cover.

2.Pry off snap ring. All other parts can now be disassembled.

Inspection

Check all parts (particulary piston cup) for evidence of wear or otherwise damage. Replace any defective parts with new ones.

Reassembly

Reassemble operating cylinder assembly in reverse sequence of disassembly, closely adhering to the following instructions.

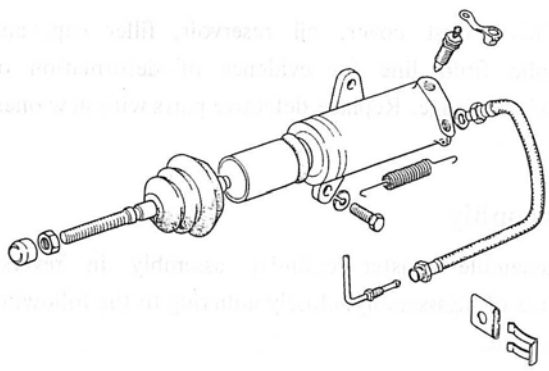


Figure-Operating cylinder

1.Piston cup should be dipped in clean brake fluid before reassembly. Install it in place, paying particular attention to its direction.
2.Fill operating cylinder and piston with clean brake fluid before reassembly.

Reinstallation
Reinstall operating cylinder assembly in reverse proceed as follows:

ADJUSTING WITHDRAWAL LEVER
After clutch pedal height has been properly adjusted, proceed as follows:
1.Turn in adjusting nut until there exists no free play at tip of withdrawal lever. Then, turn out adjusting nut approx.2 to 2.5 turns, and tighten lock nut securely. Now, withdrawal lever adjustment is done.

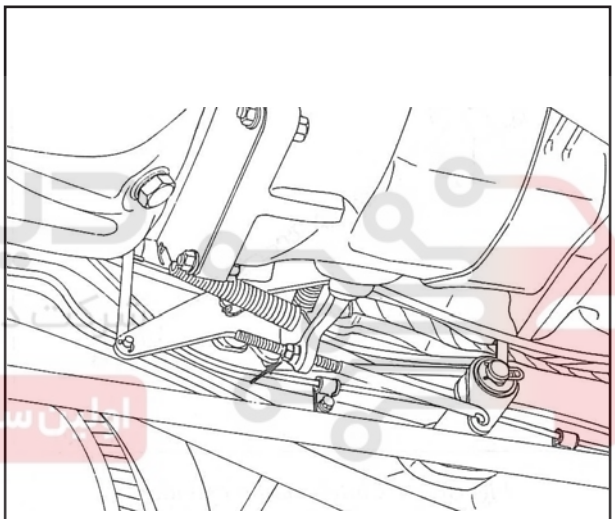


Figure-Withdrawal lever adjusting nut.

BLEEDING CLUTCH SYSTEM
1.Remove bleed screw dust cap from operating cylinder.
2. Open bleed screw by turning it approx. There quarters turn. Attach a bleeder tube to valve. Place other end of tube in a clean container (or jar) filled with a small amount of brake fluid.
3. Fill master cylinder reservoir with recommended brake fluid.
4. Press down on clutch pedal quickly and, keeping it down all the way, retighten bleed screw. Then, release clutch pedal slowly. This causes a whirling action in cylinder to help air expulsion. Repeat this process until fluid runs out of bleeder tube in a solid stream without air bubbles.
5. Tighten up bleed screw when clutch pedal reaches the extreme end of downward travel. Remove bleeder tube, and replace dust cup to its original position.

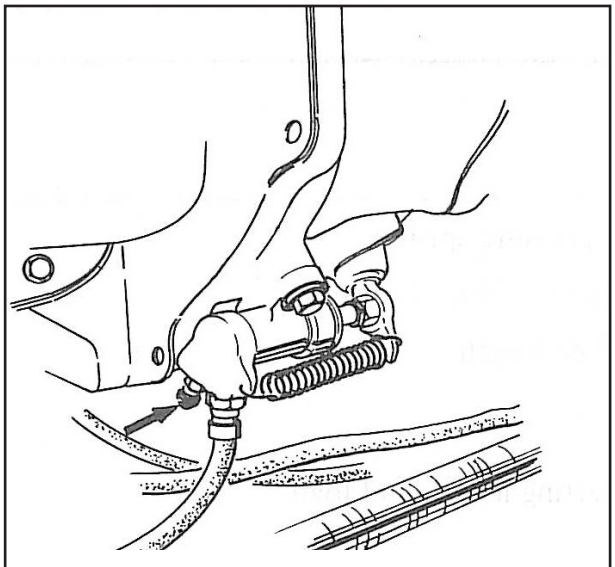


Figure-Fig.Bleed screw.

SERVICE DATA AND SPECIFICATIONS

	Coil-pressure-spring type (Up to Nov.,1974)		Diaphragm spring type (From Dec.1974)
Coil pressure spring: Type – no, of springs Free length Setting length and load	Coil spring – 9 55.5 mm (2.185 in) 56.6 mm (2.228 in), 1.5 ton (3,300 lb) pay load. 36.6mm/49kg(1.44in/108lb) 36.6mm/41kg(1.44in/90lb), 1.5 ton (3,300 lb) pay load.		---
Diaphragm spring Distance to flywheel Unevenness of spring height Installed load	mm(in) mm(in) kg(lb)	--- --- ---	33.0 to 35.0 (1.299 to 1.378) Less than 0.5 (0.020) 400 (882)
Clutch disc Facing size (Outerdia.×Inner dia.×Thickness) Thickness of disc assembly (Free) Allowable min.depth of rive head from surface Allowable facing run-out Allowable free play of spline	mm(in) mm(in) mm(in) mm(in) mm(in)	 225 × 150 × 3.5 (8.86 × 5.91 × 0.138) 8.4 to 9.2 (0.331 to 0.362) 0.3 (0.012) 0.5 (0.020) 0.4 (0.016)	 225 × 150 × 3.5 (8.86 × 5.91 × 0.138) 8.3to8.9(0.327t0.350) 0.3 (0.012) 0.5 (0.020) 0.4 (0.016)
Clutch pedal Free play “a” Free travel “b” Pedal height “c”	mm(in) mm(in) mm(in)	to 5 (0.04 to 0.20) 30 to 40 (1.18 to 1.57) 188 (7.40)	1 to 5 (0.04 to 0.20) 30 to 40 (1.18 to 1.57) 188 (7.40)
Clutch master cylinder Inner diameter	mm(in)	15.88 (5/8)	15.88 (5/8)
Clutch operating cylinder Inner diameter Withdrawal lever play at withdrawal lever at top face of clutch pedal	mm(in) mm(in) mm(in)	19.05 (3/4) 2 to 3 (0.08 to 0.12) 18.7 to 28.1 (0.736 to 1.106)	19.05 (3/4) 2 to 3 (0.08 to 0.12) 18.7 to 28.1 (0.736 to 1.106
Tightening torque Clutch assembly bolt Push rod adjusting nut Tube connector (flare nut) Operating cylinder to clutch housing bolt Master cylinder to body bracket securing bolt Bleeder screw	Kg-m(ft-lb) Kg-m(ft-lb) Kg-m(ft-lb) Kg-m(ft-lb) Kg-m(ft-lb) Kg-m(ft-lb)	2.4 to 2.6 (17 to19) 0.8 to 1.2 (5.8 to8.7) 1.5 to 1.8 (11 to13) 3.1 to 4.1 (22 to 30) 0.8 to 1.2 (5.8 to 8.7) 0.7 to 0.9 (5.1 to 6.5)	2.4 to 2.6 (17 to19) 0.8 to 1.2 (5.8 to8.7) 1.5 to 1.8 (11 to 13) 3.1 to 4.1 (22 to 30) 0.8 to 1.2 (5.8 to 8.7) 0.7 to 0.9 (5.1 to 6.5)

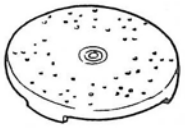
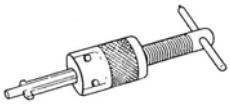
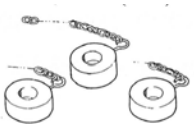
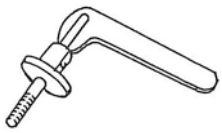
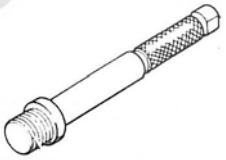
Condition	Probable cause	Corrective action
Slipping clutch	If any of the following symptoms is encountered, there is a reasonable possibility that the clutch is slipped. (1) Speed does not increase (2) The vehicle is not accelerated in proportion to the engine speed although the accelerator pedal is depressed rapidly during driving. (3) The power is reduced particularly when climbing a hill. If above symptoms are encountered, test the clutch for slippage in the following manner. Fully pull the hand brake to completely brake the vehicle, disengage the clutch, set the gear shift lever to the first position, and increasing the engine speed gradually, engage the clutch gradually. If the engine stops, the clutch slippage is not present. However, if the vehicle dose not move forward nor the engine stops, it may be judged that the clutch slippage exists. (4) Overheated engine. (5) Poor fuel economy.	
	Improper clutch pedal adjustment (not enough free play)	Readjust clutch pedal
	Improper withdrawal lever adjustment (not enough free play at tip of lever)	Readjust
	Weak or broken return spring	Replace
	Clogged oil line	Replace
	Worn clutch facings	Replace

Condition	Probable cause	Corrective action
Slipping clutch	Oil or grease on facings	Clean or replace
	Use of improper facings	Replace with specified facings
	Worn release bearing	Replace
	Fatigued pressure springs	Replace
	Warped or unevenly worn pressure plate against flywheel	Repair or, if necessary, replace
	Improper adjustment of release lever height	Readjust
Improper desengagement	When this trouble occurs, improperly intermeshing gear noise is generated while shifting gears, and gear shift lever operation becomes difficult. This symptom is remarkable particularly when shifting gear to the reverse or first position. If above symptoms are encountered, test the clutch for improper disengagement in the following manner. Disengage the clutch and operate the gear shift lever. Next, set the gear shift lever to the neutral position, increase the engine speed, and intermesh gears again after a while, if noise is still generated, it may be judged that the clutch disengagement is improper.	
	Improper clutch pedal adjustment (enough free play)	Readjust clutch pedal
	Oil leakage at cylinder cup	Repair
	Improper withdrawal lever adjustment (enough free play)	Readjust
	Dry, burnt, worn, or damaged release bearing bushing	Replace
	Rust on main drive shaft and disc hub splines	Remove rust and apply thin coating of oil

Condition	Probable cause	Corrective action
Improper desengagement	Worn clutch disc hub splines Clutch disc run-out or rust on disc Worn clutch sliding-contact parts Sticking pressure plate and/or flywheel Uneven height of release levers Air in oil line	Replace clutch assembly Repair or replace Repair or replace Detach. Check for sticking parts Readjust Bleed air
Vibration	When the clutch is engaged half and the vehicle starts, vibration is generated	
	Hardened clutch facings Loose rivets on facings Oil or grease on facings Fatigued disc torsion spring Worn parts of release mechanism Uneven height of release levers Warped flywheel and/or pressure plate Binding pressure plate Loose engine mounting Improper adjustment of engine idling	Repair with sand-paper or, if necessary, replace Repair or replace Clean or replace Replace disc assembly Repair or replace Readjust Repair or replace Repair or replace Tighten or, if necessary, replace Readjust
Noisy clutch	Clutch noise is usually heard when the clutch is disegaged	
	Worn or damaged release bearing, or lack of lubrication	Replace

Condition	Probable cause	Corrective action
Noisy clutch	Worn or damaged release bushing	Replace
	Fatigued, deformed, or damaged release lever return spring	Replace
	Clutch noise is also heard when the clutch is engaged	
	Loose clutch disc hub	Replace disc assembly
	Fatigued or damaged disc torsion spring	Replace disc assembly
	Cracked disc plate	Replace disc assembly
Judder	This condition usually experienced by a sudden standing start, and is due to improper engagement of the clutch which results in erratic acceleration of the vehicle	
	Oil or grease on facings	Clean or replace
	Worn clutch facings or loose or exposed rives	Replace facings
	Fatigued or damaged disc torsion spring	Replace disc assembly
	Slined hub and main drive shaft out of proper sliding contact.	Replace
	Warped flywheel sliding surface	Replace flywheel
	Loose power train components	Replace

SPECIAL SERVICE TOOLS

Tool number & tool name	Reference page or fig. no.	Tool number & tool name	Refer-ence page or fig. no.
ST20050010 Base plate (ST20051100) 	Page CL-2	ST16610001 Pilot bushing puller 	
ST20050100 Distance piece (ST20058001) 7.8 mm (0.31 in) 		ST20050030* Operating lever 	
ST20050240 Diaphragm spring Adjusting wrench 		ST20050170* Height gauge (ST20420000) 	
KV30100100 Clean aligning bar (ST20660000) 		ST20050060* Center pole 	

*: Used with coil-pressure-spring type clutch only
( ): Showing former old special tool number

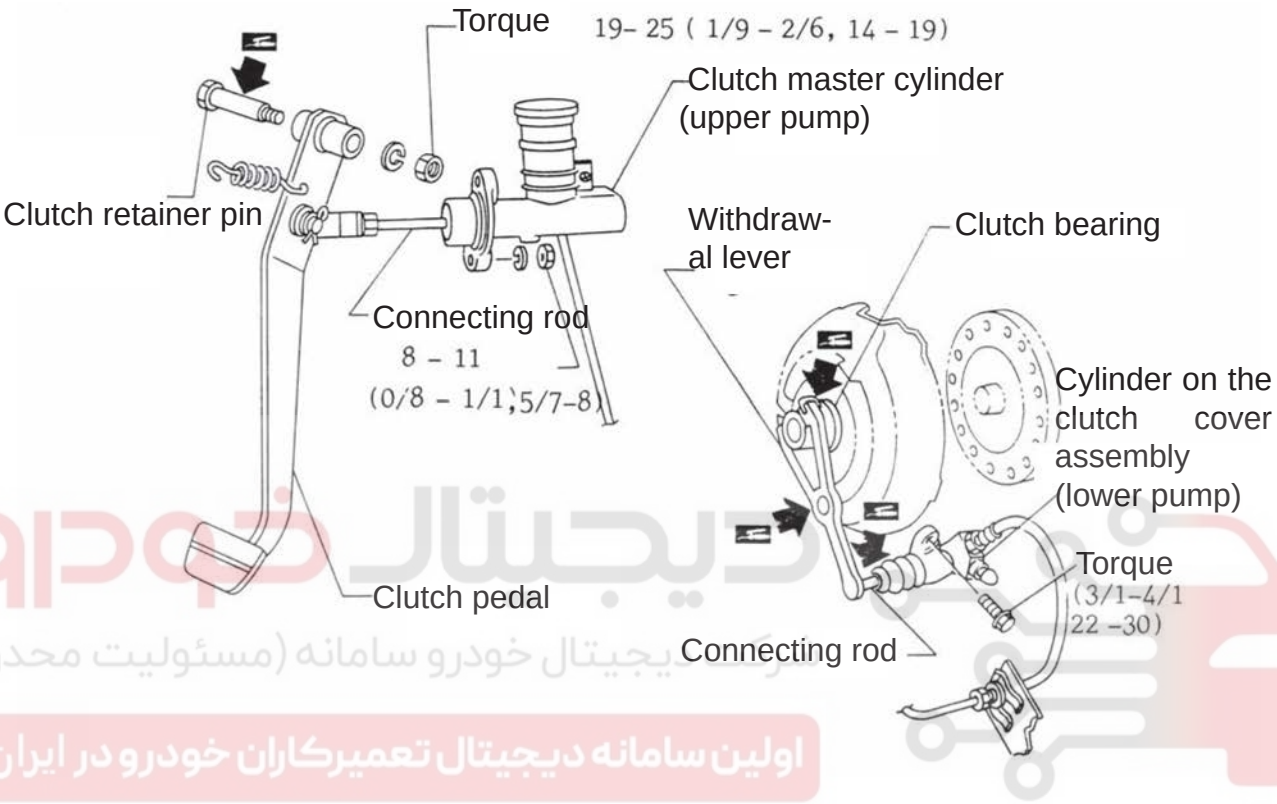
SERVICE MANUAL APPENDIX
NISSAN JUNIOR 2400

CLUTCH SYSTEM

Technical and Engineering Management

MODEL 140 SERIES CHASSIS & BODY SERVICE MANUAL APPENDIX
Clutch section

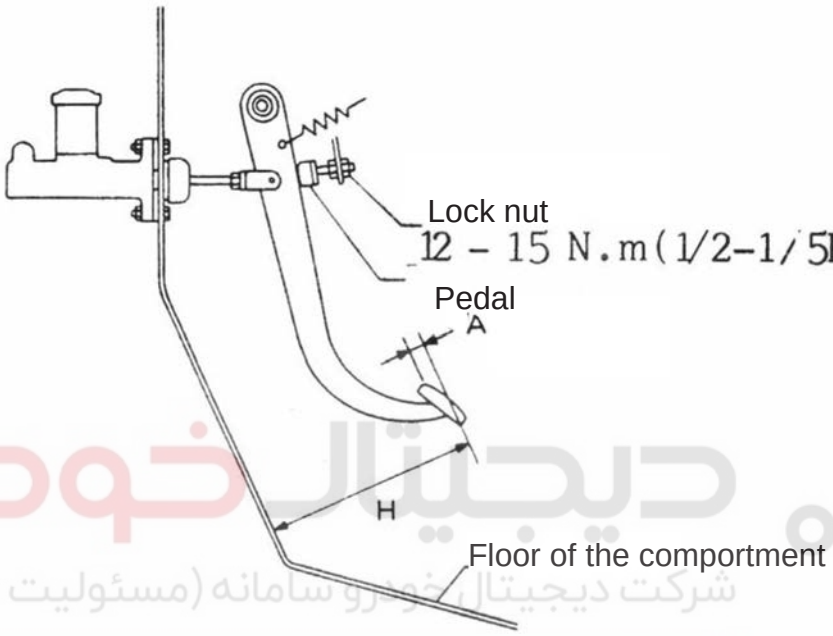
Inspection



Unit: N. m (kg-ft.lb)

Lubricating points are indicated by the sign of grease pop in the picture.

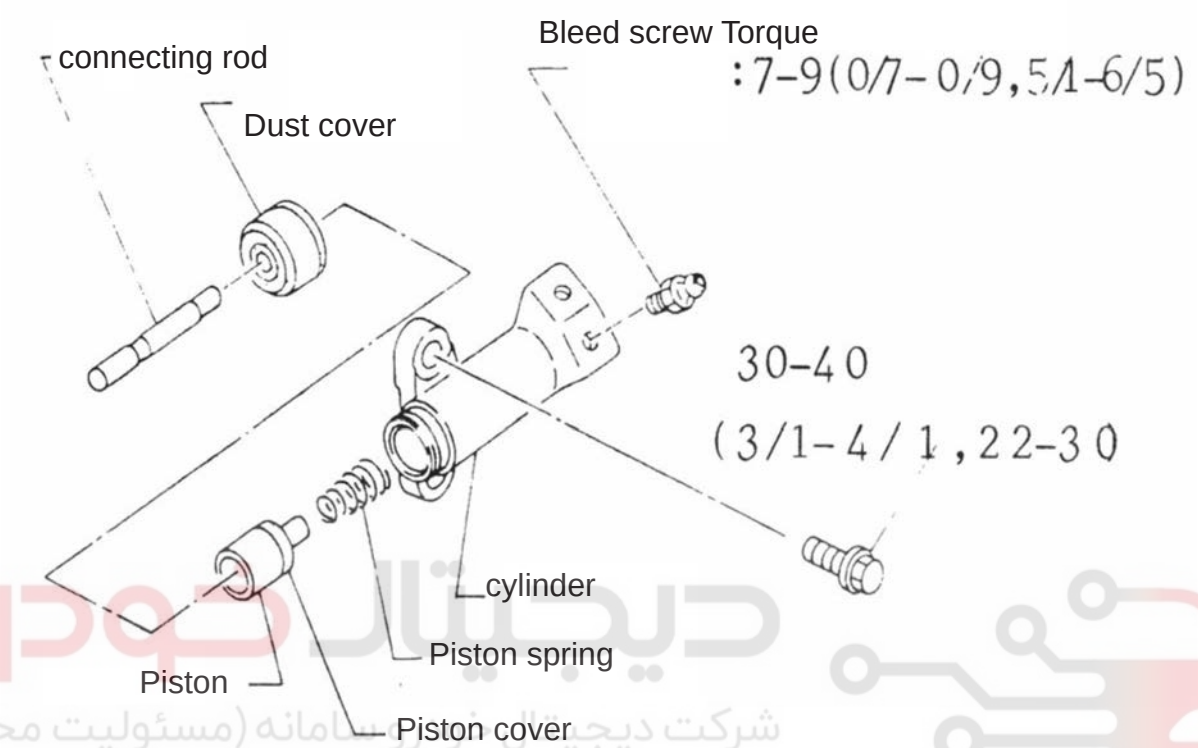
Pedal height adjustment



Pedal height “H” :
2.6 – 196 mm (8.11 – 7.72 in)
Pedal play “A” :
3 – 1 mm (0.12 , 0.04 in)

1. Adjust pedal play by pedal.
2. Adjust pedal play by connecting rod.

Operating cylinder (lower pump)



Never reusing opened dust cover and piston cover.

Service data and specifications of clutch system

General data

Inspection and adjustment of pressure plate mm(in)		
model	TBL	225
Facing wear limit (depth to the rivet head)	(0.012)	0.3
Runout limit	(0.039)	1.0
Distance of runout points from centre	(4.23)	107.5
Maximum allowable spline	(0.039)	1.0
backlash (at outer edge of disc)		
model	K 225 D	
Spring height springs height difference	33 – 35 (1.30 – 1.38) Less than0.5 (0.020)	

Required torque for tightening

part	N.m	kg-m	Ft-lb
Lever pin	19 - 25	1.9–2.6	14 - 19
Lock nut	12 - 15	1.2–1.5	9 - 11
Master cylinder connecting rod nut	8 – 12	0.8–1.2	5.8–8.7
Suppy valve stopper	1.5-2.9	0.15–0.3	1.1–2.2
Master cylinder nut	8 – 12	0.8–1.2	5.8–8.7
Clutch shaft nut	15 - 18	1.5–1.8	11 - 13
Bleed screw	7 – 9	0.7–0.9	5.1–6.5
Operating cylinder nut	30 - 40	3.1–4.1	22 - 30
Clutch pipe connecting nut to cylinder	17 - 20	1.7 - 2	12 – 14
Clutch disc screw	22 - 29	2.2 - 3	16 - 22

Clutch control system	
hydraulic	Clutch control type
Master cylinder (upper pump)	
15.88 (5.8) mm(in)	Inner diameter
Operating cylinder (lower pump)	
mm(in) 17.46 (11/16)	Inner diameter
19.05 (3/4)	SD25
Clutch disc	
225 TBL	model
225 ×150 ×3.5 8.3 – 8.9 (0.327 – 0.350)	Apparent dimension of metallic disc Inner diameter× outer diameter× thickness
mm (in) 7.6 – 8.2 (0.292 – 0.323)	Thickness of clutch disc with renleased feeing
mm (in) 7.6 – 8.2 (0.292 – 0.323)	Load with 3923 N (400 kg & 882 lb)
6	Number of springs
Clutch cover	
SD25 engine	Z24 engine
Model D225 K	Model 225 K
Max. load (N) 3923 (kg-lb) (882 , 400)	Max. load (N) 4413 (kg-lb) (992 , 450)

SAIPA YADAK

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