

CLUTCH

1993 Mitsubishi Montero

1993 Clutch

Dodge Ram-50, Mitsubishi Montero, Pickup

DESCRIPTION

All models use diaphragm spring, single-disc type clutches. Clutch is cable-operated on RWD models, and hydraulically operated on 4WD models.

ADJUSTMENTS

CLUTCH PEDAL HEIGHT & FREE PLAY

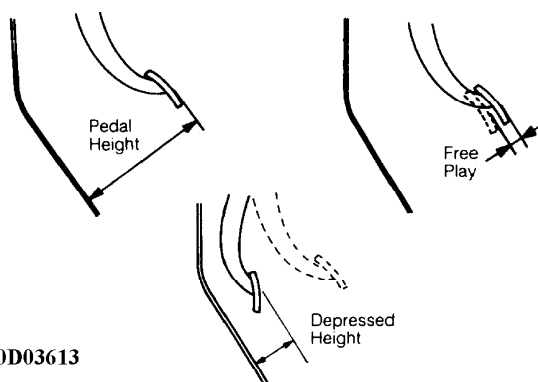
Pedal Adjustment (RWD)

1) To adjust pedal height, loosen stopper bolt lock nut or clutch switch at top of pedal, and rotate stopper or switch until correct pedal height is obtained. Measure distance between face of clutch pedal and floor board. See CLUTCH PEDAL SPECIFICATIONS TABLE. See Figs. 1-4.

CLUTCH PEDAL SPECIFICATIONS TABLE

Application	In. (mm)
Montero	
Free Play24-.51 (6-13)
Pedal Height	
Pedal Depressed (1)	1.4 (35)
Pedal Released	7.3-7.5 (185-190)
Pickup & Ram-50	
2.4L Free Play8-1.4 (20-35)
Pedal Height	
Pedal Depressed (1)	2.4 (60)
Pedal Released	6.5-6.7 (166-171)
3.0L Free Play31-.67 (8-17)
Pedal Height	
Pedal Depressed (1)	2.4 (60)
Pedal Released	6.5-6.7 (166-171)

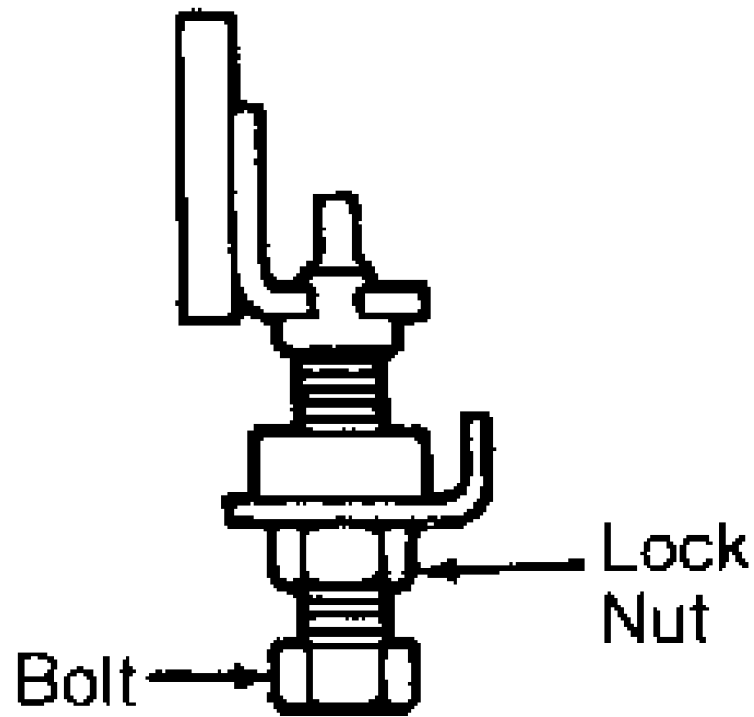
(1) - Specification given is minimum distance.



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Fig. 1: Measuring Pedal Free Play & Height
Courtesy of Mitsubishi Motor Sales of America.

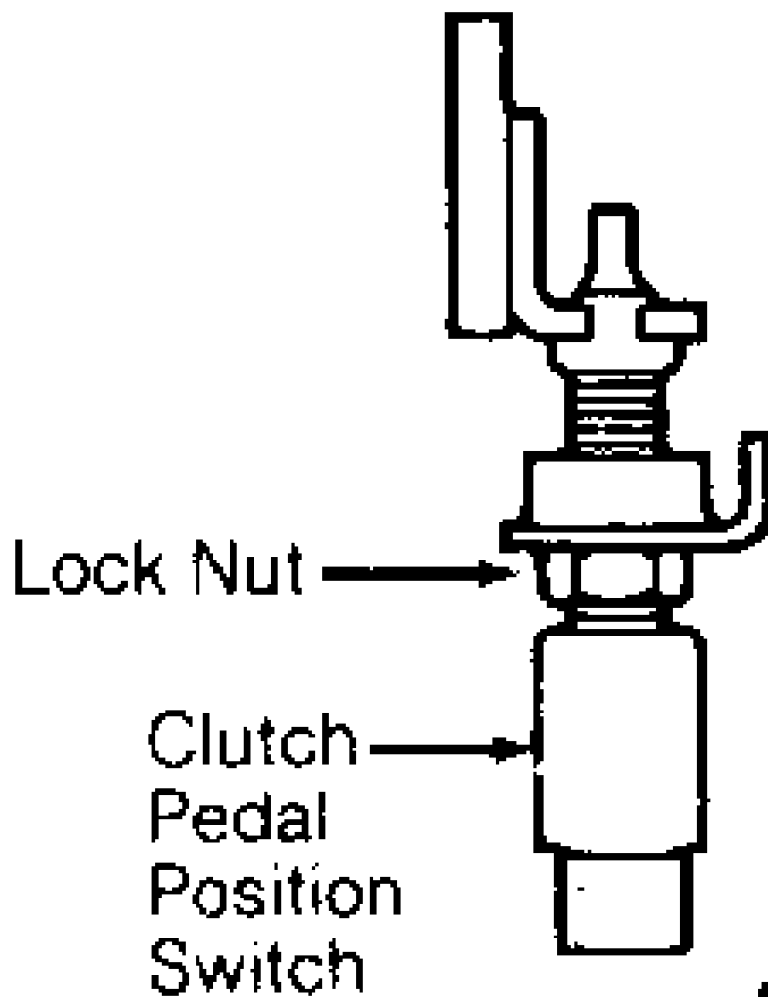
VEHICLES WITHOUT CRUISE CONTROL



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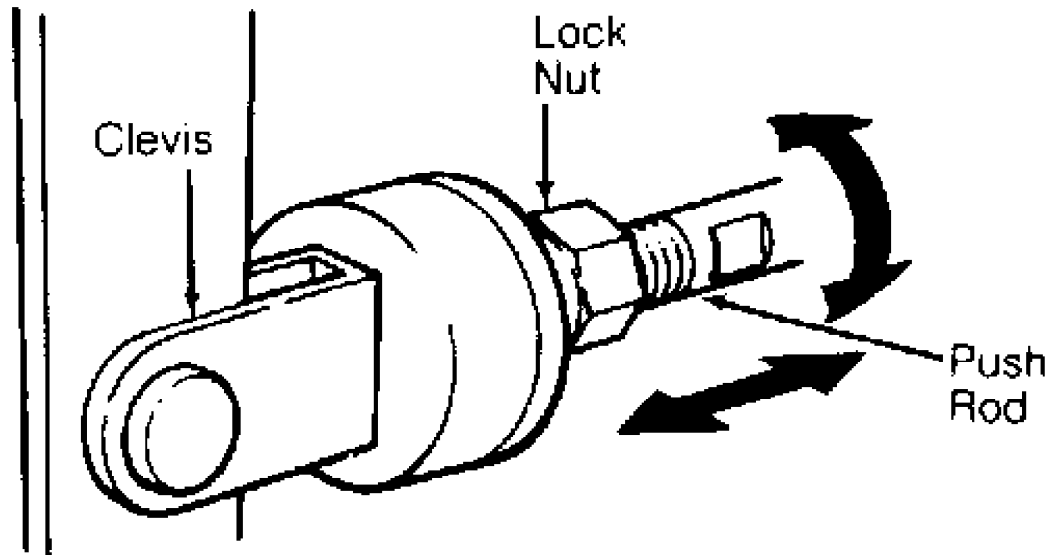
Fig. 2: Adjusting Lock Nut (Without Cruise Control)
Courtesy of Mitsubishi Motor Sales of America.

VEHICLES WITH CRUISE CONTROL



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Fig. 3: Adjusting Lock Nut (With Cruise Control)
Courtesy of Mitsubishi Motor Sales of America.



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Fig. 4: Adjusting Push Rod
 Courtesy of Mitsubishi Motor Sales of America.

2) Measure clutch pedal free play. See CLUTCH PEDAL SPECIFICATIONS TABLE. See Figs. 1-4. If pedal free play adjustment is necessary, pull clutch cable housing toward engine compartment. Rotate cable adjusting nut until .12-.16" (3.0-4.0 mm) clearance is obtained between adjusting nut and insulator holder. See Fig. 5.

3) After making adjustments, depress pedal several times and hold down. Measure distance between face of clutch pedal and floor board. If depressed pedal height is less than specification, check clutch components for damage and deformation. See CLUTCH PEDAL SPECIFICATIONS TABLE.

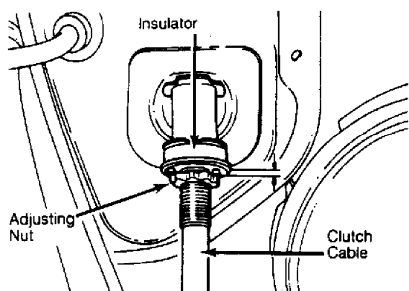


Fig. 5: Adjusting Clutch Pedal Free Play (RWD)
 Courtesy of Mitsubishi Motor Sales of America.

Pedal Adjustment (4WD)

1) To adjust pedal height, loosen lock nut and rotate pedal

stop bolt or switch at top of pedal assembly until correct pedal height is obtained. Measure distance between face of clutch pedal and floor board. See CLUTCH PEDAL SPECIFICATIONS TABLE. See Figs. 1 to 4.

2) Measure clutch pedal free play. See Figs. 1-4. See CLUTCH PEDAL SPECIFICATIONS TABLE. If pedal free play needs to be adjusted, loosen lock nut on master cylinder push rod and rotate push rod to obtain correct free play. See CLUTCH PEDAL SPECIFICATIONS TABLE. Tighten lock nut. See Figs. 1-4.

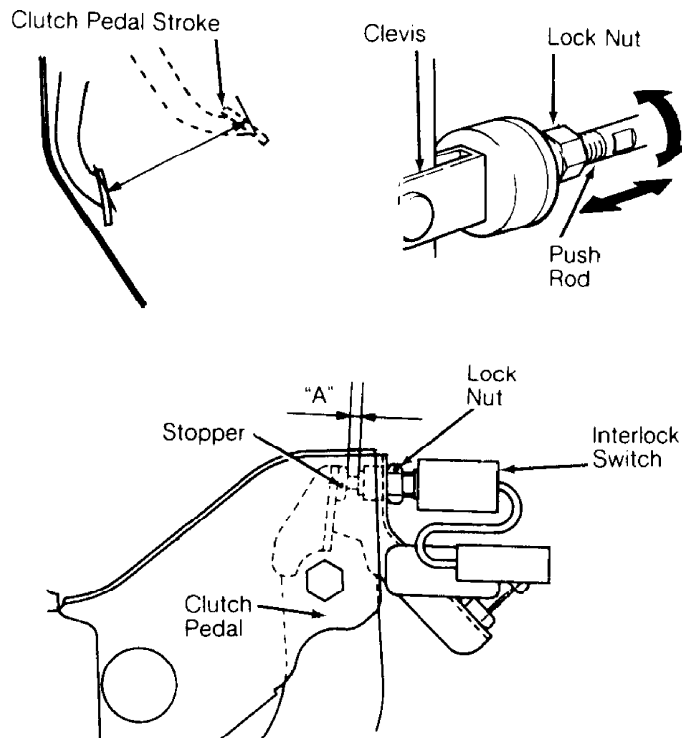
3) After making adjustments, depress pedal several times and hold down. Measure distance between face of clutch pedal and floor board. If depressed pedal height is not as specified, bleed system and inspect hydraulic and clutch components. See CLUTCH PEDAL SPECIFICATIONS TABLE.

INTERLOCK SWITCH

Interlock Switch Adjustment

1) Check and adjust pedal height and free play. See CLUTCH PEDAL HEIGHT & FREE PLAY. See Figs. 1-4. Measure clutch pedal full stroke. Full stroke should be 5.72" (145 mm). If full stroke is out of tolerance, adjust by turning push rod. See Fig. 6.

2) Measure clearance "A" with clutch pedal fully depressed (full stroke). See Fig. 6. Clearance "A" should be .177-.217" (4.5-5.5 mm). If clearance is out of tolerance, adjust by loosening interlock switch lock nut and turning interlock switch in appropriate direction. When clearance "A" is correct, tighten lock nut to 115 INCH lbs. (13 N.m).



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Fig. 6: Adjusting Interlock Switch
Courtesy of Mitsubishi Motor Sales of America.

REMOVAL & INSTALLATION

CLUTCH ASSEMBLY

Removal (4WD)

1) Remove switch panel from rear console. Remove suspension control switch or hole cover. Disconnect rear console harness connector. Remove side panel. Remove rear console assembly. Remove shift lever knob(s). Remove floor console harness connector. Remove front console assembly.

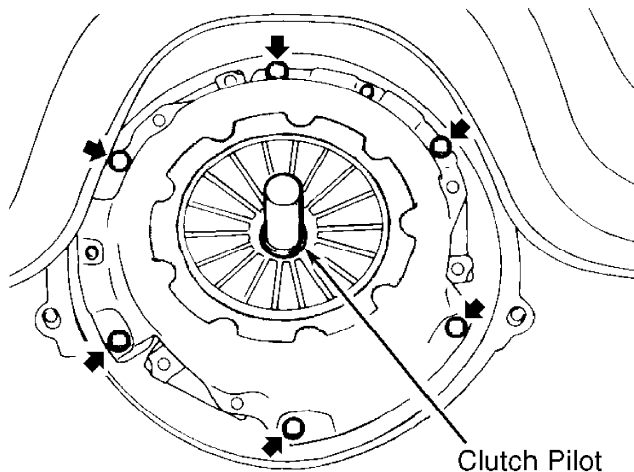
2) Move transmission lever to neutral position and transfer lever to 4H (4WD high range) position on Montero or 2H (RWD high range) on Pickup and Ram-50. Remove control lever boot retainer and boot. Remove transmission and transfer control lever assemblies. Remove control lever bushing (transmission), gaskets and stopper plates.

3) Raise and support vehicle. Remove skid plate and front exhaust pipe. Drain transmission and transfer case fluid. Index mark front and rear drive shaft flanges. Remove front and rear drive shafts.

4) Remove drive shaft dust seals. Disconnect HI/LO and 2WD/4WD detection switch connectors. Disconnect back-up light switch connector. Disconnect center differential lock detection switch connector. Disconnect center differential lock operation switch connector. Disconnect 4WD operation detection switch. Disconnect speedometer cable. Remove clutch slave cylinder heat shield. Remove clutch slave cylinder (without disconnecting hydraulic line) and wire aside. Remove starter and starter cover. Remove heat shield and both transmission stays and then bellhousing lower cover.

5) Support transmission with transmission jack. Remove transfer case roll stopper and bracket. Remove crossmember and engine mounting rear insulator. Remove transfer case protector bracket and mass damper. Remove remaining bell housing bolts. Pull toward rear of vehicle to free transmission input shaft from clutch. Lower transmission/transfer case from vehicle.

6) Insert a clutch pilot to prevent pressure plate and clutch disc from dropping. Diagonally loosen pressure plate bolts to avoid warping pressure plate flange during removal. Remove pressure plate and clutch disc. See Fig. 7.



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Fig. 7: Removing & Installing Clutch On Flywheel
Courtesy of Mitsubishi Motor Sales of America.

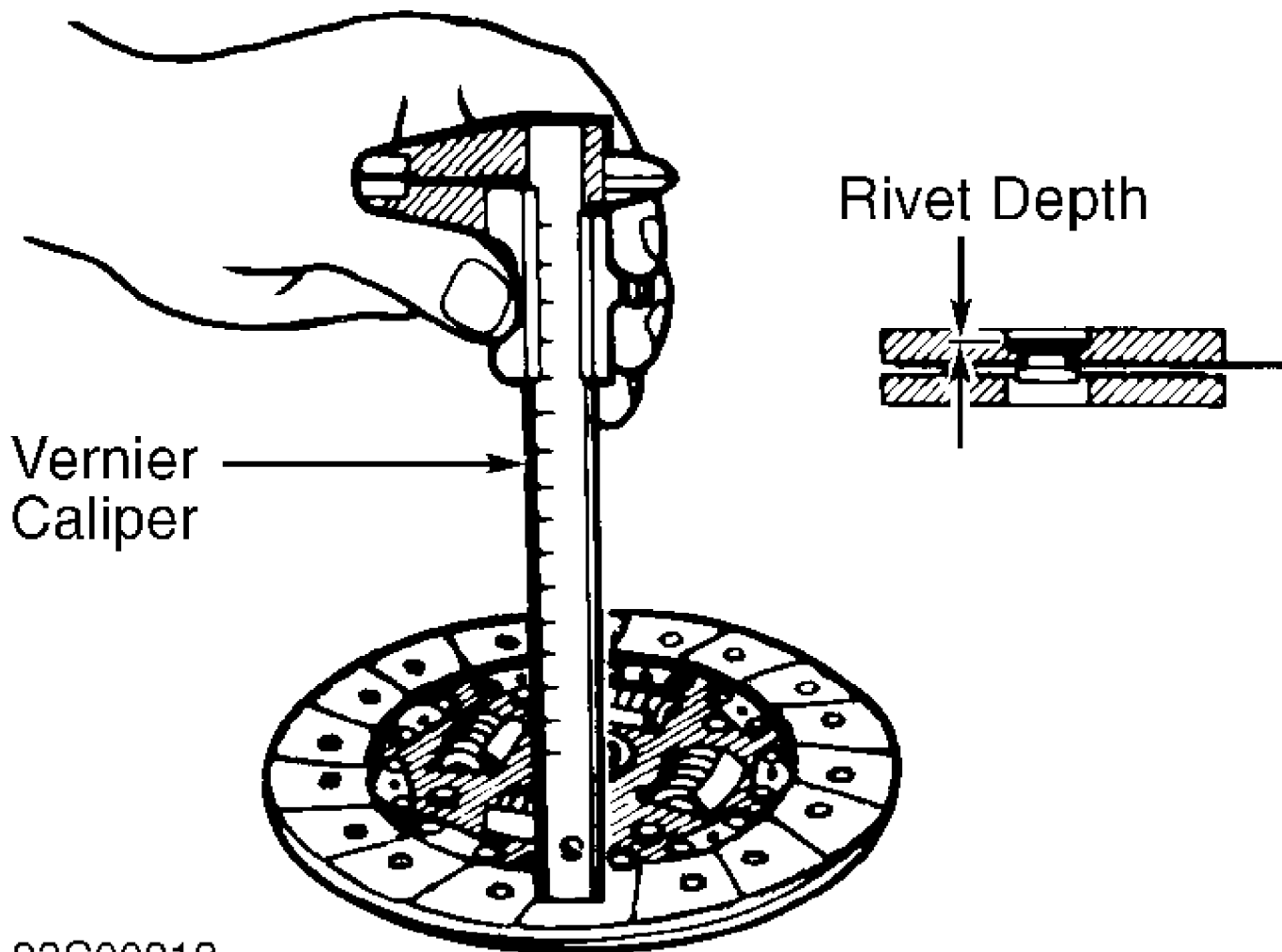
Inspection (4WD)

1) Check release bearing and release fork for damage or wear.

DO NOT clean bearing assembly in solvent. Inspect hydraulic system components for fluid leakage. Inspect cylinder dust boot for cracks or deterioration.

2) Inspect pressure plate surface for wear, cracks, and/or discoloration. Check clutch disc rivets and replace assembly if loose. Measure diaphragm spring ends for wear and uneven height. Replace assembly if height difference between fingers exceeds .02" (.5 mm).

3) Check facing of clutch disc for loose rivets, uneven contact, deterioration, seizure or oil saturation. Measure depth from clutch disc surface to head of rivet. Replace clutch disc if measurement is less than .012" (.30 mm). See Fig. 8. Replace worn or defective components as necessary.



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Fig. 8: Measuring Clutch Disc
Courtesy of Mitsubishi Motor Sales of America.

CAUTION: Install clutch disc with manufacturer's stamp mark (located near hub of clutch disc) toward pressure plate.

Installation (4WD)

1) Using clutch pilot, install pressure plate and clutch disc. Tighten bolts evenly in a crisscross pattern to specification. See TORQUE SPECIFICATIONS TABLE at the end of this article.

2) Clean release bearing sliding surface. Apply a light coating of multipurpose grease to release bearing sliding surface.

Apply a very light coating of grease to input shaft splines. DO NOT allow grease or dirt on clutch disc or pressure plate surfaces.

3) To install remaining components, reverse removal procedure. Refill all fluids to proper levels. Adjust all control cables, clutch pedal height and free play. See CLUTCH PEDAL HEIGHT & FREE PLAY under ADJUSTMENTS. See Figs. 1-4.

Removal (RWD)

1) Disconnect battery negative cable. Remove shift knob, dust cover retaining plate, gaskets, stopper plate and control lever assembly. Raise and support vehicle.

2) Remove front exhaust pipe. Drain transmission oil. Index mark drive shaft flange and remove drive shaft.

3) Disconnect back-up light switch connector, speedometer cable connection and exhaust pipe mounting bracket. Remove lower bell housing cover. Disconnect clutch cable from clutch lever.

4) Support transmission with jack. Remove rear engine mount nuts and bolts from transmission. Remove crossmember with rear engine mount. Remove remaining bellhousing bolts, move transmission toward rear and lower from vehicle.

5) Index mark pressure plate to flywheel for installation reference. Install a clutch pilot to prevent pressure plate and clutch disc from dropping. Diagonally loosen pressure plate bolts gradually to avoid warping pressure plate flange during removal. Remove pressure plate and clutch disc. See Fig. 7.

Inspection (RWD)

1) Check release bearing and release fork for damage or wear. DO NOT clean bearing assembly in solvent.

2) Inspect pressure plate surface for wear, cracks, and/or discoloration. Check clutch disc rivets and replace assembly if loose. Measure diaphragm spring ends for wear and uneven height. Replace assembly if height difference between fingers exceeds .02" (.5 mm).

3) Check facing of clutch disc for loose rivets, uneven contact, deterioration, seizure or oil saturation. Measure distance from clutch disc surface to head of rivet. Replace clutch disc if distance is less than .012" (.30 mm). Replace worn or defective components as necessary. See Fig. 8.

CAUTION: Install clutch disc with manufacturer's stamp mark (located near hub of clutch disc) toward pressure plate.

Installation (RWD)

1) Using clutch pilot, install pressure plate and clutch disc. If reusing pressure plate, ensure index marks are aligned. Tighten bolts evenly in a crisscross pattern to specification. See TORQUE SPECIFICATIONS TABLE at the end of this article. See Fig. 7.

2) Clean release bearing sliding surface. DO NOT clean release bearing with solvent. Apply a light coat of multipurpose grease to release bearing sliding surface. Apply a very light coating of grease to input shaft splines. DO NOT allow grease or dirt on clutch disc or pressure plate surfaces.

3) To install remaining components, reverse removal procedure. Refill all fluids to proper levels. Adjust all control cables, clutch pedal height and free play. See CLUTCH PEDAL HEIGHT & FREE PLAY under ADJUSTMENTS. See Figs. 1-4.

CLUTCH CABLE (RWD)

Removal

Pull lightly on clutch cable while loosening cable adjusting wheel from inside engine compartment. Remove cable end from control lever on transmission housing. Remove cable end from pedal lever.

Disconnect insulator from cable and remove cable.

Installation

Apply grease to contact areas between clutch pedal lever and cable end, and release lever and cable end. Install insulator onto cable end. Reverse removal procedure to complete installation. Adjust clutch pedal free play. See CLUTCH PEDAL HEIGHT & FREE PLAY under ADJUSTMENTS. See Figs. 1 and 2.

CLUTCH RELEASE BEARING & SHIFT ARM OR RELEASE FORK

Removal (RWD)

1) Remove transmission. See CLUTCH ASSEMBLY under REMOVAL & INSTALLATION. Remove return clips, release bearing and carrier. Use a punch to remove shift arm spring pin and release lever assembly. Remove shift arm, felt packing and 2 return springs. See Fig. 9.

2) Ensure release bearing turns freely and smoothly under light load. Replace bearing if noise, roughness or dryness is present. DO NOT clean bearing in solvent. Use shop towel or compressed air only.

Installation (RWD)

1) Insert lever and shaft into left side of transmission case. Place shift arm, felt packing and return springs on shaft assembly. Apply grease to inside of bushing and oil seal lips. Apply oil to felt packing.

2) Align shift arm pin and control shaft pin holes. Drive spring pins into position, with slit area upward. Reverse removal procedure to complete installation. Check pedal height and free play. Adjust if necessary. See CLUTCH PEDAL HEIGHT & FREE PLAY under ADJUSTMENTS.

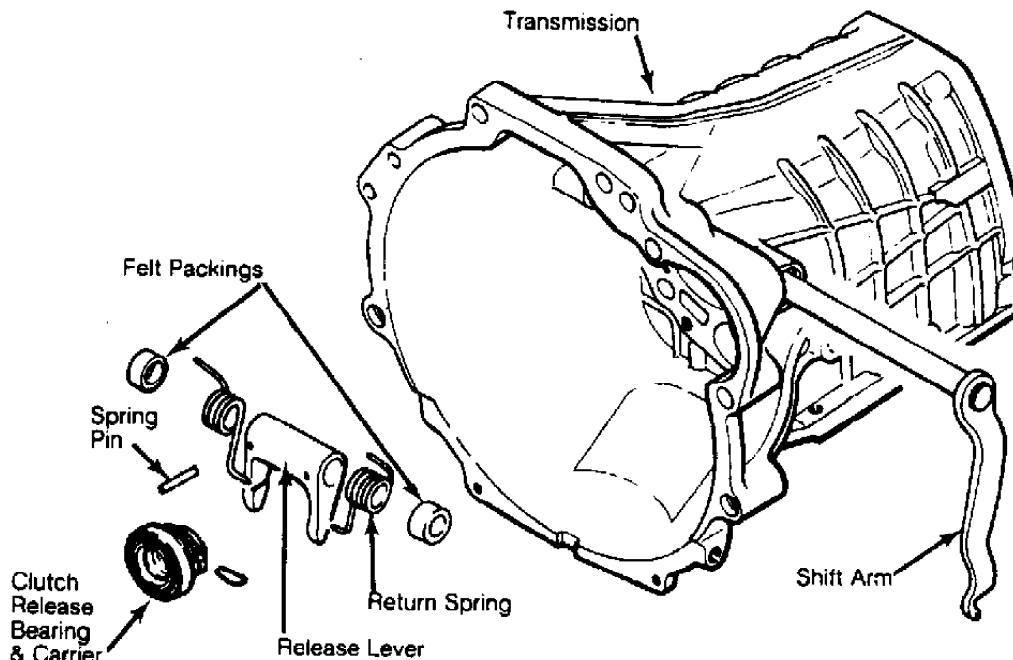


Fig. 9: View Of Clutch Release Bearing & Shift Arm Assembly (RWD)
Courtesy of Mitsubishi Motor Sales of America.

Removal (4WD)

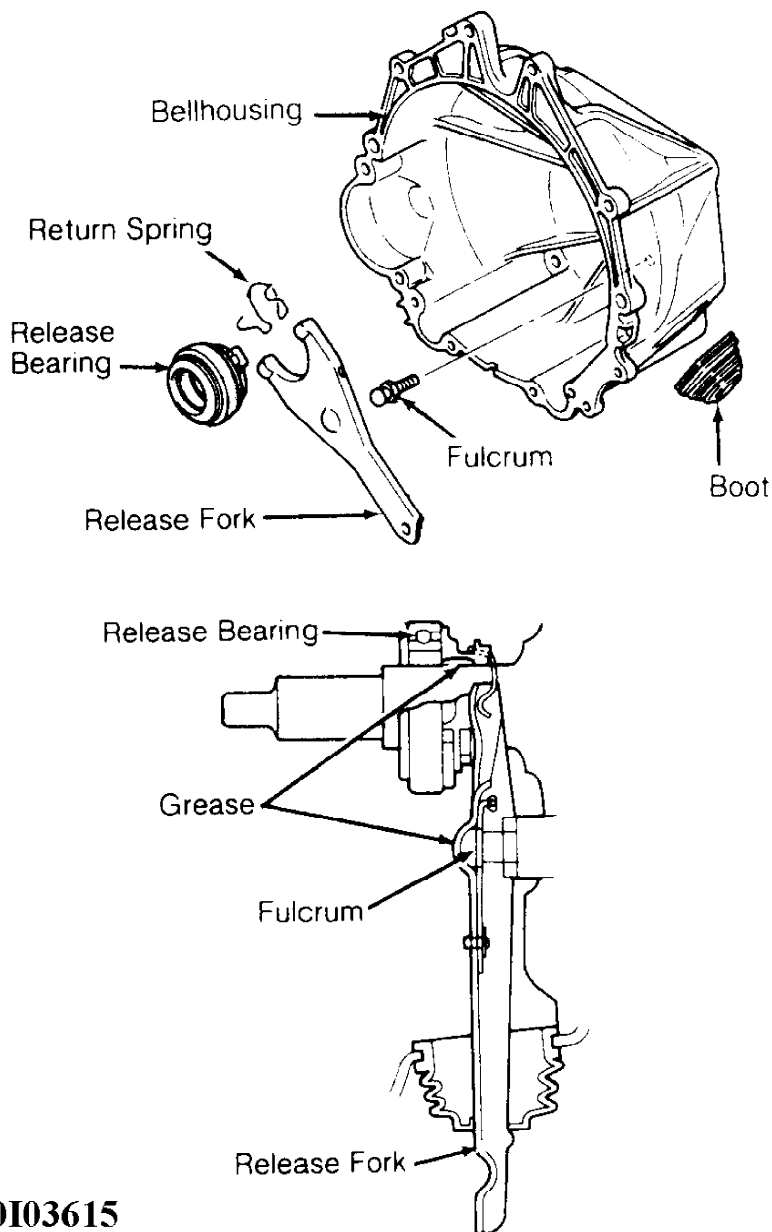
1) Remove transmission. See CLUTCH ASSEMBLY under REMOVAL & INSTALLATION. Remove return spring or clips, and remove release

bearing.

2) Slide release fork toward outside of transmission and disengage from fulcrum ball. DO NOT slide release fork toward inside of case, or damage to fulcrum ball clip will result. Remove release fork boot.

Installation (4WD)

To install, reverse removal procedure. Apply grease to fulcrum ball contact area of release fork before installing. Fill groove of release bearing inside diameter with grease before installing. See Fig. 10.



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Fig. 10: View Of Clutch Release Bearing & Shift Arm Assembly (4WD)
Courtesy of Mitsubishi Motor Sales of America.

CLUTCH MASTER CYLINDER (4WD)

Removal & Installation

1) Drain master cylinder. Remove cotter pin, washer and clevis pin. Disconnect push rod from clutch pedal. Remove and plug hydraulic line at clutch master cylinder.

2) Remove retaining nuts, clutch master cylinder and gasket. To install, reverse removal procedure. Apply grease to clevis pin before installing. Fill reservoir and bleed clutch system.

CLUTCH RELEASE CYLINDER (4WD)

Removal & Installation

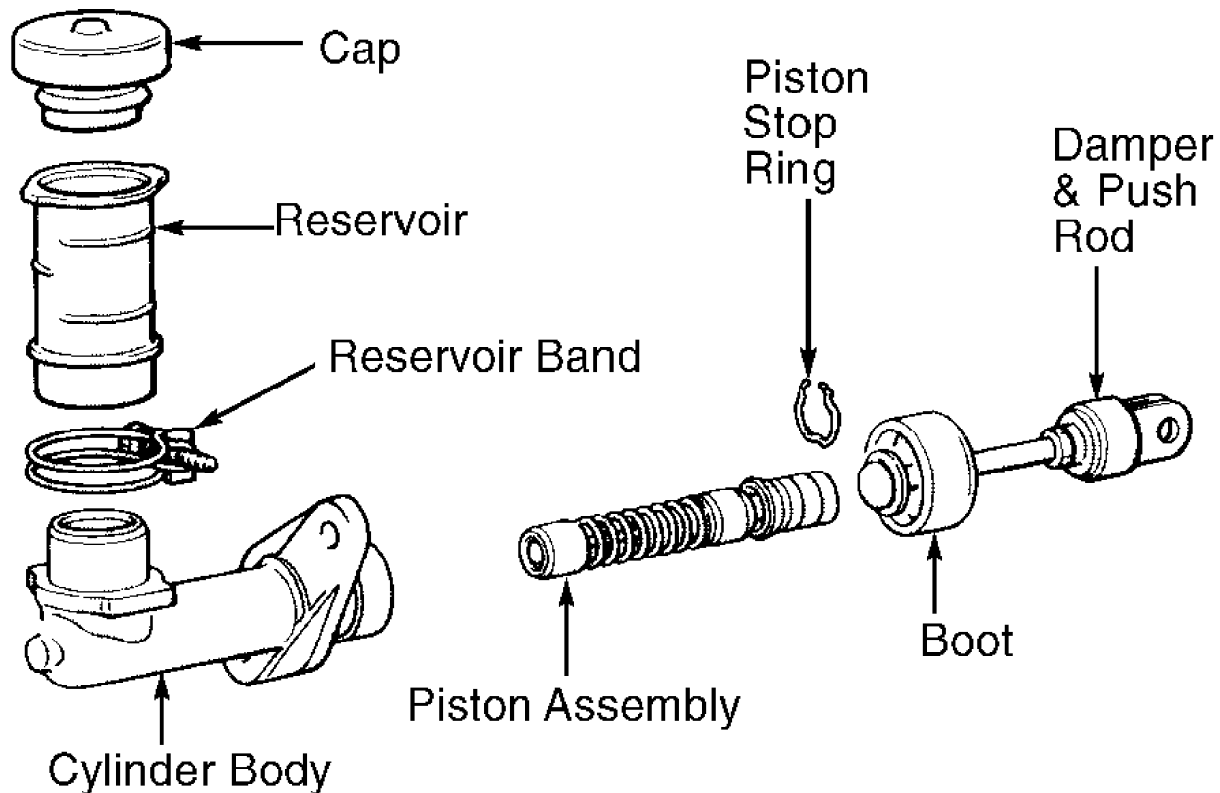
Remove and plug hydraulic line at release cylinder. Remove cylinder-to-transmission bolts. Remove clutch release cylinder. To install, reverse removal procedure. Apply grease to push rod-to-release fork contact area. Bleed clutch system.

OVERHAUL

CLUTCH MASTER CYLINDER (4WD)

Disassembly

Remove piston stop ring, damper and push rod assembly. See Fig. 11. Remove piston assembly. Note position of reservoir band for reassembly reference. Remove reservoir.



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Fig. 11: Exploded View Of Clutch Master Cylinder (Typical)
Courtesy of Mitsubishi Motor Sales of America.

Inspection & Reassembly

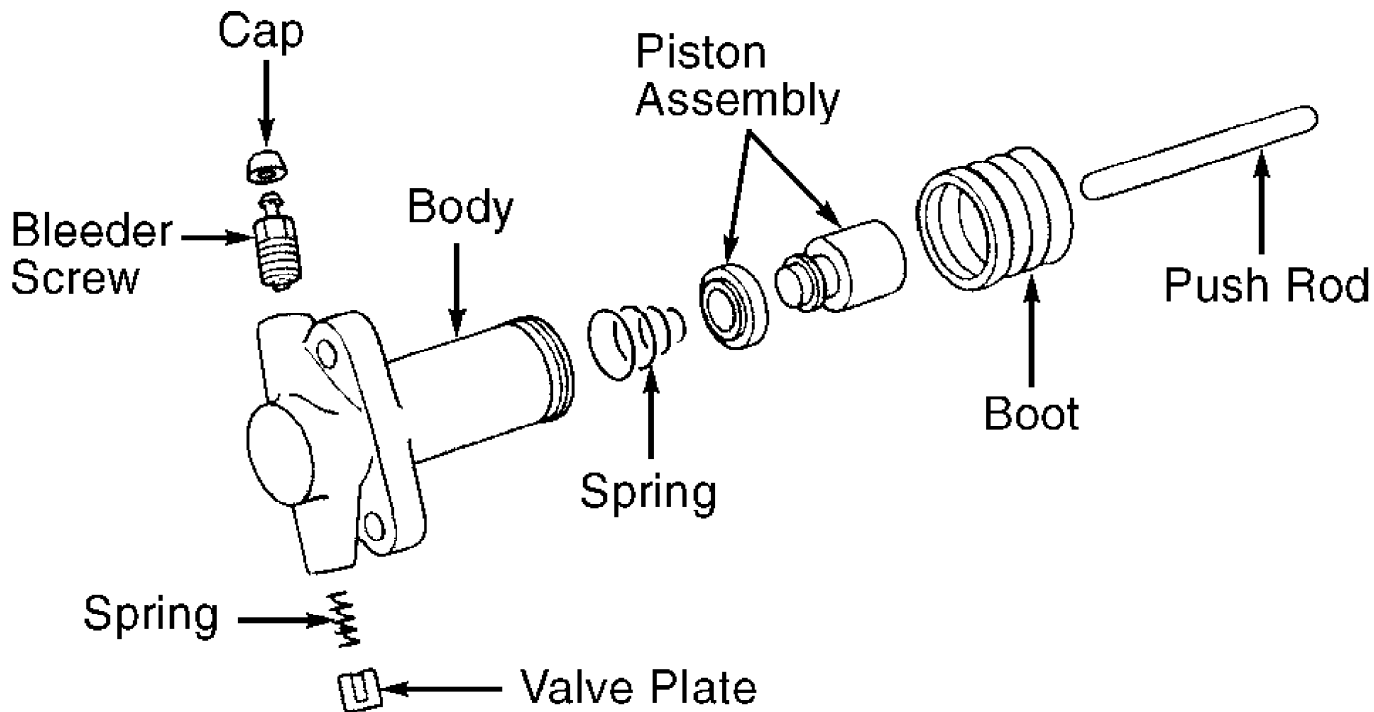
Inspect components for corrosion, scoring or damage. Replace

if necessary. Apply DOT 3 brake fluid to components during reassembly. To reassemble, reverse disassembly procedure. Ensure piston moves freely in bore.

CLUTCH RELEASE CYLINDER (4WD)

Disassembly

Remove valve plate and spring. See Fig. 12. Remove push rod and boot. Cover piston assembly opening with a rag. Slowly apply air pressure to hydraulic line opening to force piston from body.



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Fig. 12: Exploded View Of Clutch Release Cylinder (Typical)
 Courtesy of Mitsubishi Motor Sales of America.

Inspection & Reassembly

Inspect components for corrosion, scoring or damage. Replace if necessary. Apply DOT 3 brake fluid to components during reassembly. To reassemble, reverse disassembly procedure. Ensure piston moves freely in bore.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Flexhose-To-Release Cylinder Bolt	14-18 (19-24)
Flywheel Bolt	
2.4L Engines	94-101 (127-137)
3.0L Engines	53-55 (72-75)
Fulcrum Ball	22-30 (30-41)
Gearshift-To-Transfer Case Bolt	11-15 (15-20)
Hydraulic Line-To-Master Cylinder	10-12 (14-16)
Pressure Plate Bolt	11-15 (15-20)

Release Cylinder-To-Transmission Bolt	22-30	(30-41)
Transmission-To-Engine Bolt		
2.4L Engines		
8 x 25 mm & 8 x 55 mm	15-20	(20-27)
10 x 40 mm & 10 x 65 mm	31-40	(42-54)
10 x 60 mm	20-25	(27-34)
3.0L Engines		
10 x 35 mm	24-36	(33-49)
10 x 40 mm	22-30	(30-41)
10 x 55 mm	20-25	(27-34)
12 x 35 mm, 12 x 40 mm & 12 x 50 mm	47-61	(64-83)
12 x 55 mm	58-72	(79-98)
