CLUTCH

1998 Mitsubishi Montero

1997-98 CLUTCHES
Mitsubishi RWD

Montero, Montero Sport

DESCRIPTION

Clutch system uses diaphragm spring, single-disc type clutches. Clutch is hydraulically operated.

ADJUSTMENTS

CLUTCH PEDAL FREE PLAY

1) Depress clutch pedal by hand until resistance is felt. Measure clutch pedal free play. See CLUTCH PEDAL SPECIFICATIONS table. See Fig. 1.
2) If pedal free play needs to be adjusted, loosen lock nut on clutch master cylinder push rod and rotate push rod to obtain correct free play. Tighten lock nut. See Fig. 1. If depressed free play cannot be adjusted, bleed system and inspect hydraulic and clutch components.

CLUTCH PEDAL HEIGHT

1) Measure distance between face of clutch pedal and floor board. See CLUTCH PEDAL SPECIFICATIONS table. See Fig. 1. To adjust pedal height, disconnect clutch switch connector (if equipped).
2) Loosen master cylinder push rod lock nut. Rotate stopper, clutch switch or clutch master cylinder push rod until correct pedal height is obtained.

CLUTCH PEDAL SPECIFICATIONS

Application	In. (mm)
Montero	
Free Play	.24-.51 (6-13)
Pedal Height	
Pedal Depressed (1)	1.4 (35)
Pedal Released	7.3-7.5 (185-190)
Montero Sport	
Free Play	.24-.51 (6-13)
Pedal Height	
Pedal Depressed (1)	2.2 (56)
Pedal Released	7.0 (178)

(1) - Specification given is minimum distance.

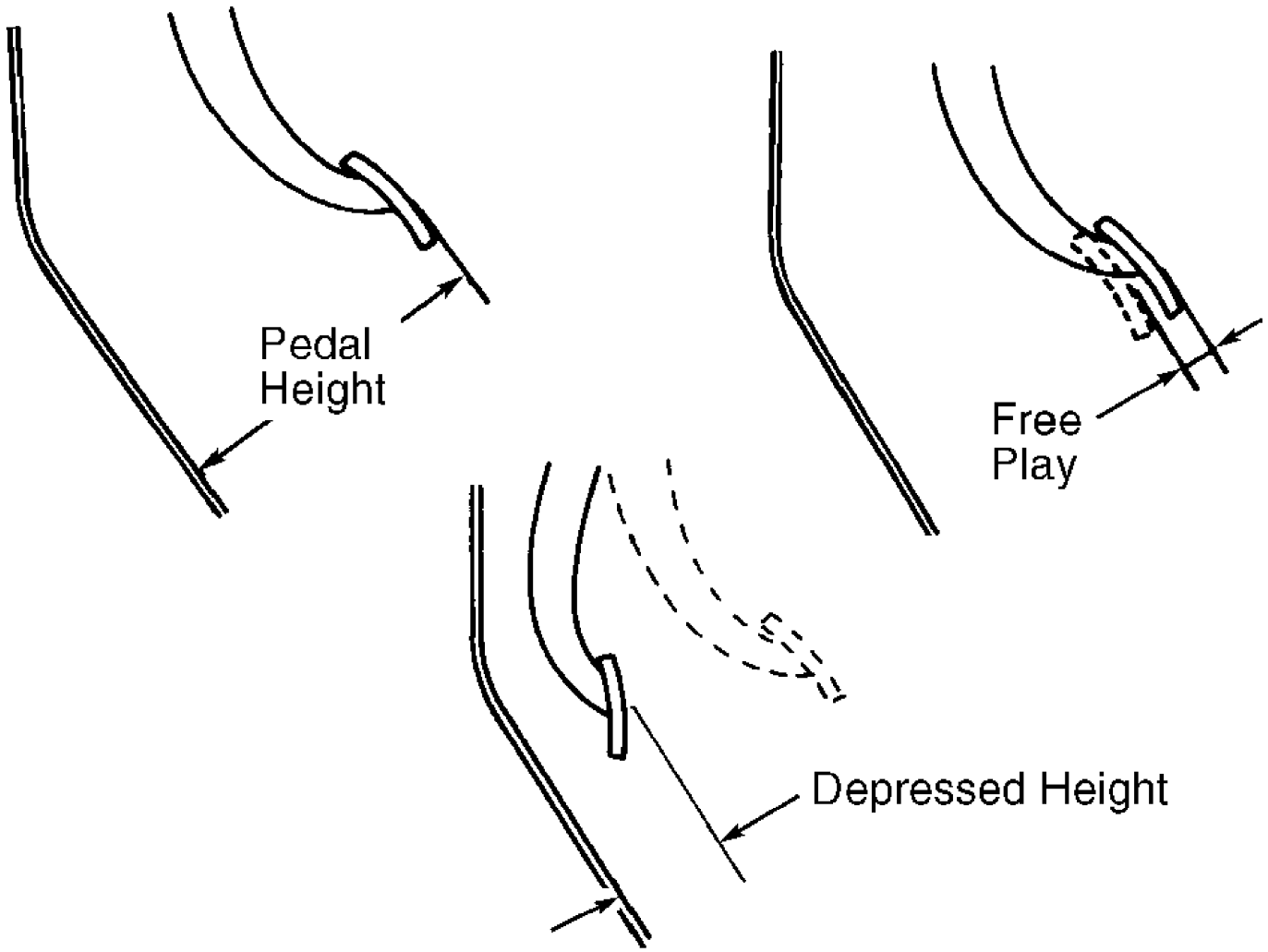

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Fig. 1: Measuring Pedal Free Play & Height (Typical)
Courtesy of Mitsubishi Motor Sales of America.

CLUTCH PEDAL INTERLOCK SWITCH

1) Check and adjust pedal height and free play. See CLUTCH PEDAL HEIGHT and CLUTCH PEDAL FREE PLAY. See Fig. 1. Measure clutch pedal full stroke. Full stroke should be 5.72" (145 mm). If full stroke is out of tolerance, adjust stroke by turning clutch master cylinder push rod. See Fig. 2.

2) Measure clearance "A" with clutch pedal fully depressed (full stroke). See Fig. 2. 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.

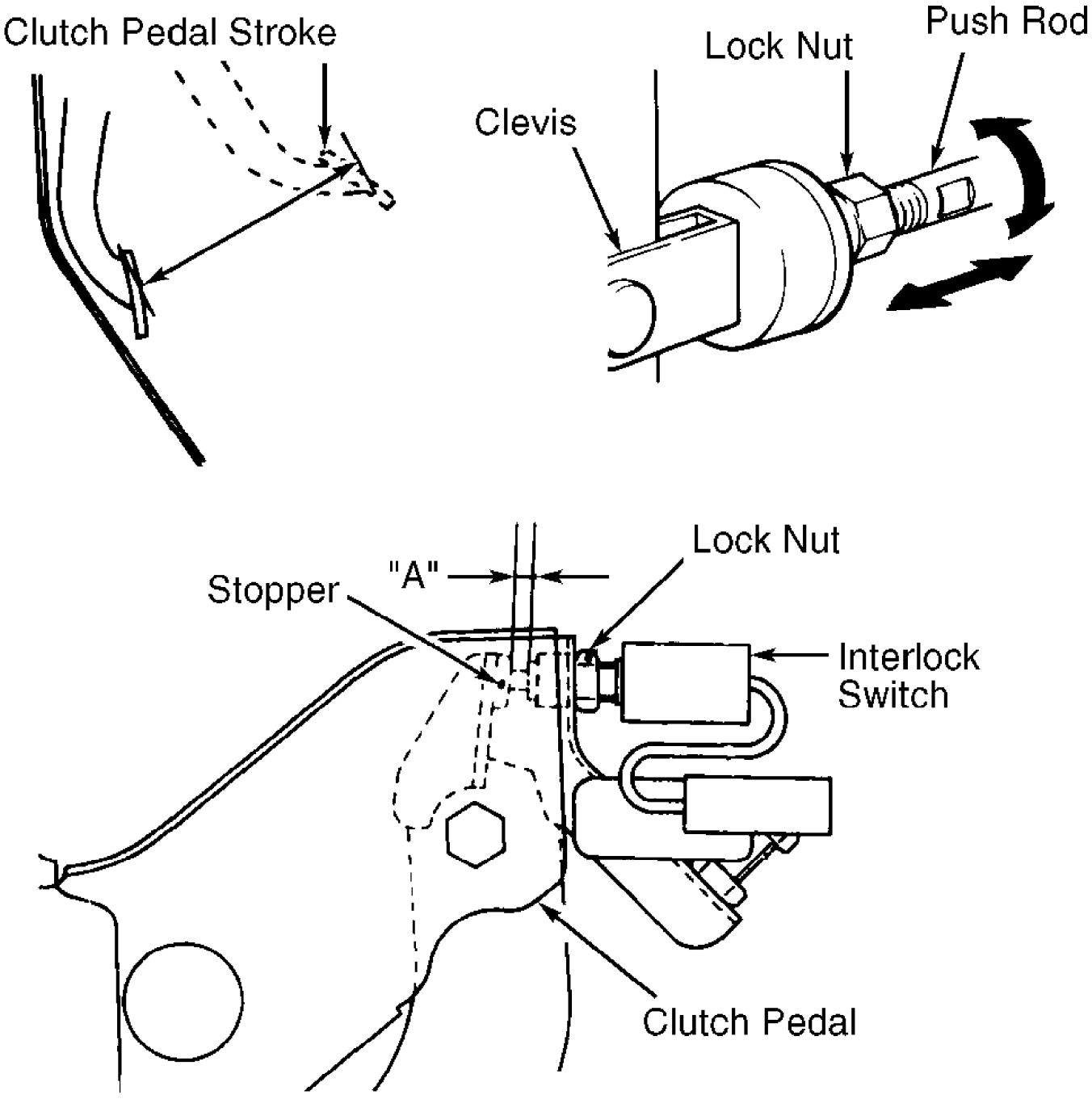

Fig. 2: Adjusting Interlock Switch (Montero Shown)
Courtesy of Mitsubishi Motor Sales of America.

TESTING

CLUTCH PEDAL DEPRESSED HEIGHT

Depress clutch pedal to floor. 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.

CLUTCH PEDAL INTERLOCK SWITCH

1) Place transmission in Neutral and apply parking brake. Turn ignition switch to START position with clutch pedal not depressed. Engine should not crank. If engine cranks, adjust or replace interlock switch.

2) Disconnect interlock switch connector. Interlock switch connector is located at clutch pedal. Depress and release interlock switch. Using ohmmeter, check continuity between interlock switch terminals. If continuity exists with interlock switch depressed and does not exist with switch released, switch is okay. Adjust or replace as necessary.

REMOVAL & INSTALLATION

CLUTCH ASSEMBLY

Removal (2WD Models)

1) Disconnect negative battery 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 fluid. 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 bellhousing 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) If reusing pressure plate, index mark pressure plate to flywheel for installation reference. Install a clutch alignment tool to prevent pressure plate and clutch disc from dropping. Loosen pressure plate bolts gradually in a crisscross pattern to avoid warping pressure plate flange during removal. Remove pressure plate and clutch disc. See Fig. 3.

Inspection

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

2) Inspect pressure plate surface for wear, cracks, and/or discoloration. 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. 4.

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

Installation

1) Using a clutch alignment tool, 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. See Fig. 3.

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 and CLUTCH PEDAL FREE PLAY under ADJUSTMENTS. See Fig. 1.

Removal (4WD Models)

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. 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.

5) 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, both transmission stays and bellhousing lower cover.

6) 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 bellhousing bolts. Pull toward rear of vehicle to free transmission input shaft from clutch. Lower transmission/transfer assembly from vehicle.

7) If reusing pressure plate, mark pressure plate to flywheel for installation reference. Insert a clutch alignment tool to prevent pressure plate and clutch disc from dropping. Loosen pressure plate bolts gradually in a crisscross pattern to avoid warping pressure plate flange during removal. Remove pressure plate and clutch disc. See Fig. 3.

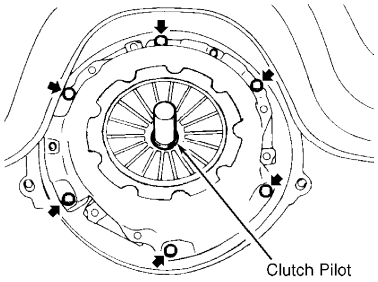

Fig. 3: Removing & Installing Clutch On Flywheel (Typical)
Courtesy of Mitsubishi Motor Sales of America.

Inspection

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

DO NOT clean release 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. 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. 4. Replace worn or defective components as necessary.

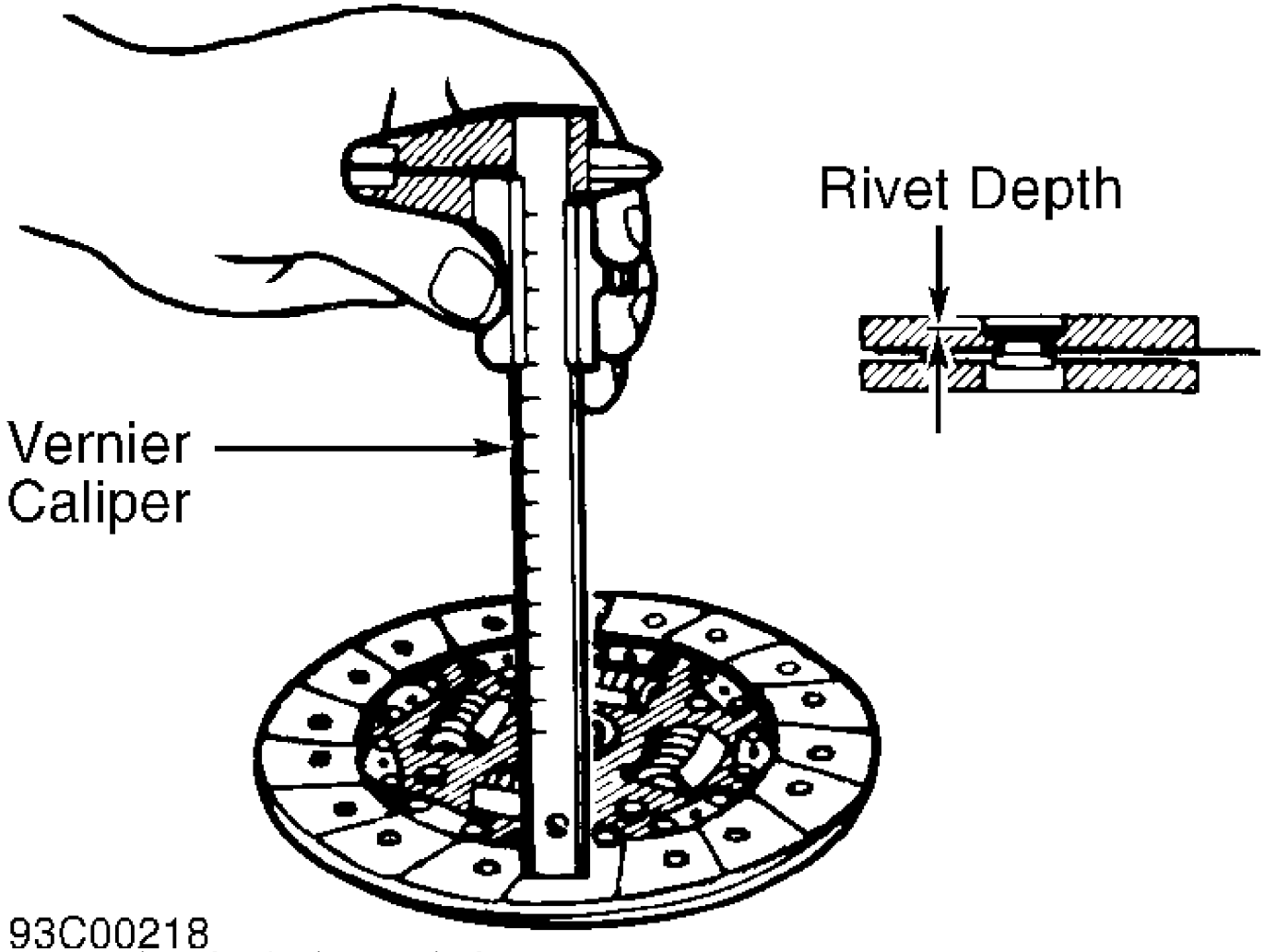

Fig. 4: Measuring Clutch Disc (Typical)
Courtesy of Mitsubishi Motor Sales of America.

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

Installation

1) Using a clutch alignment tool, install pressure plate and clutch disc. Tighten bolts evenly in a crisscross pattern to specification. See TORQUE SPECIFICATIONS.

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 and CLUTCH PEDAL FREE PLAY under ADJUSTMENTS. See Fig. 1.

CLUTCH RELEASE BEARING & RELEASE FORK

Removal (2WD Models)

1) Remove transmission. See CLUTCH ASSEMBLY. 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. 5.

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

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 and CLUTCH PEDAL FREE PLAY under ADJUSTMENTS.

Removal (4WD Models)

1) Remove transmission. See CLUTCH ASSEMBLY. 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

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. 5.

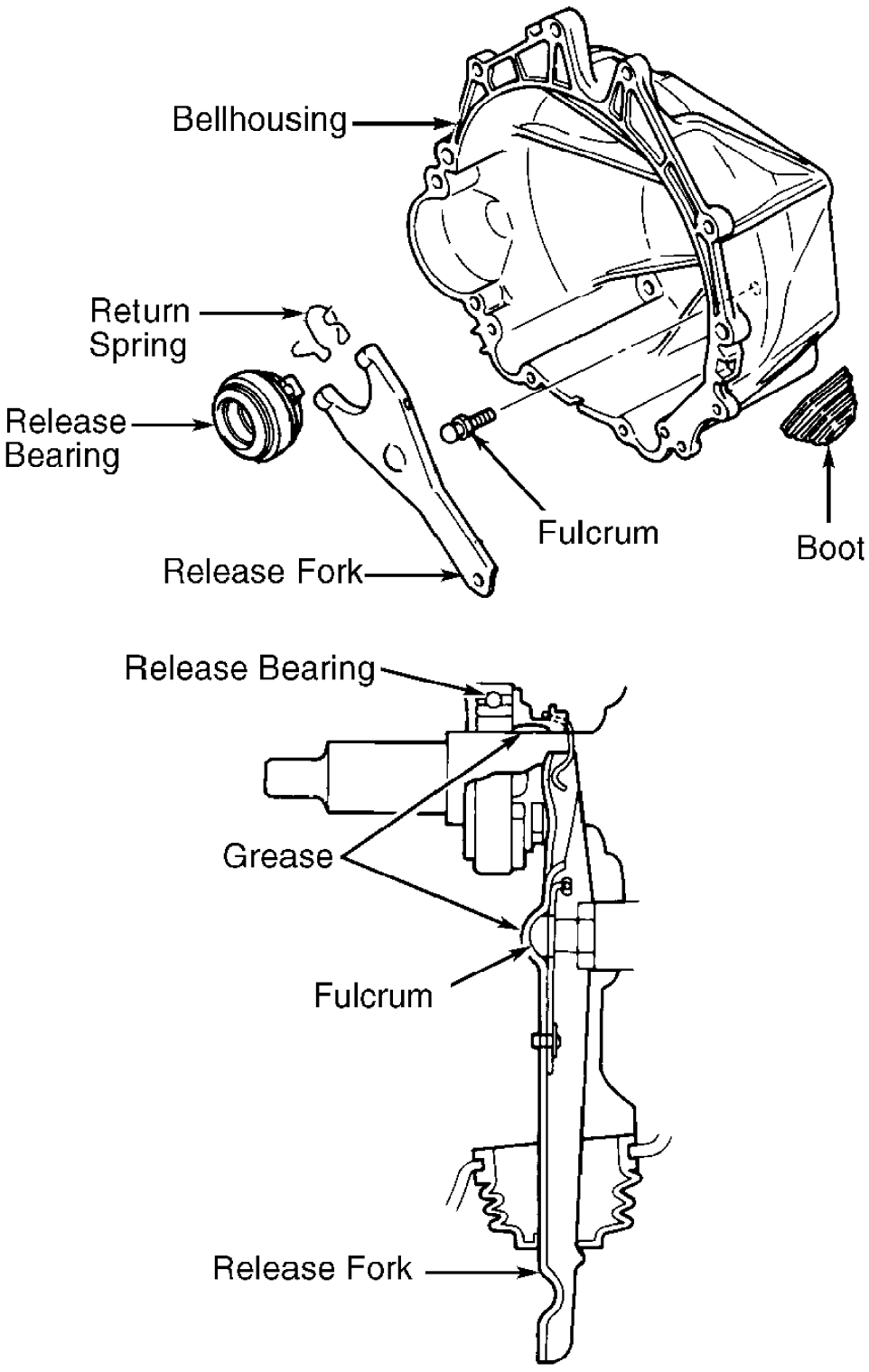

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Fig. 5: Exploded View Of Clutch Release Bearing & Shift Arm Assembly
Courtesy of Mitsubishi Motor Sales of America.

CLUTCH MASTER CYLINDER

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. See BLEEDING CLUTCH HYDRAULIC SYSTEM.

CLUTCH RELEASE CYLINDER

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. See BLEEDING CLUTCH HYDRAULIC SYSTEM.

BLEEDING CLUTCH HYDRAULIC SYSTEM

Attach hose to bleeder fitting located on clutch release cylinder, next to hydraulic line. Submerge other end of hose in container half full of clean brake fluid. Fill reservoir with brake fluid. Open bleeder fitting. Have assistant press clutch pedal to full release position. Close bleeder fitting. Release clutch pedal. Repeat until air bubbles no longer emerge from hose. Refill reservoir.

OVERHAUL

CLUTCH MASTER CYLINDER

NOTE: DO NOT disassemble piston assembly.

Disassembly

Remove piston stop ring, damper and push rod assembly. See Fig. 6. Remove piston assembly. Note position of reservoir band for reassembly reference. Remove reservoir.

Inspection & Reassembly

Inspect components for corrosion, scoring or damage. Replace if necessary. Apply brake fluid to components during reassembly. On Montero, adjust clutch master cylinder push rod to 5.90" (150 mm). On Montero Sport, push rod adjustment is correct after adjusting clutch pedal free play and pedal height. See CLUTCH PEDAL FREE PLAY and CLUTCH PEDAL HEIGHT under ADJUSTMENTS. To reassemble, reverse disassembly procedure. Ensure piston moves freely in bore.

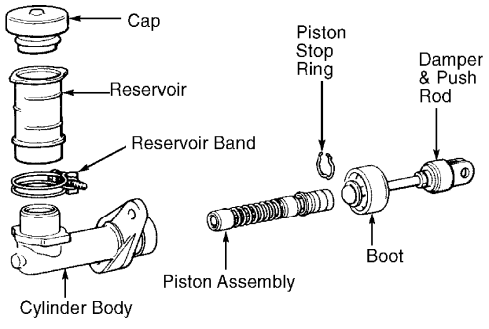

Fig. 6: Exploded View Of Clutch Master Cylinder (Typical)
Courtesy of Mitsubishi Motor Sales of America.

CLUTCH RELEASE CYLINDER

Disassembly

Remove valve plate and spring. See Fig. 7. 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.

Inspection & Reassembly

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

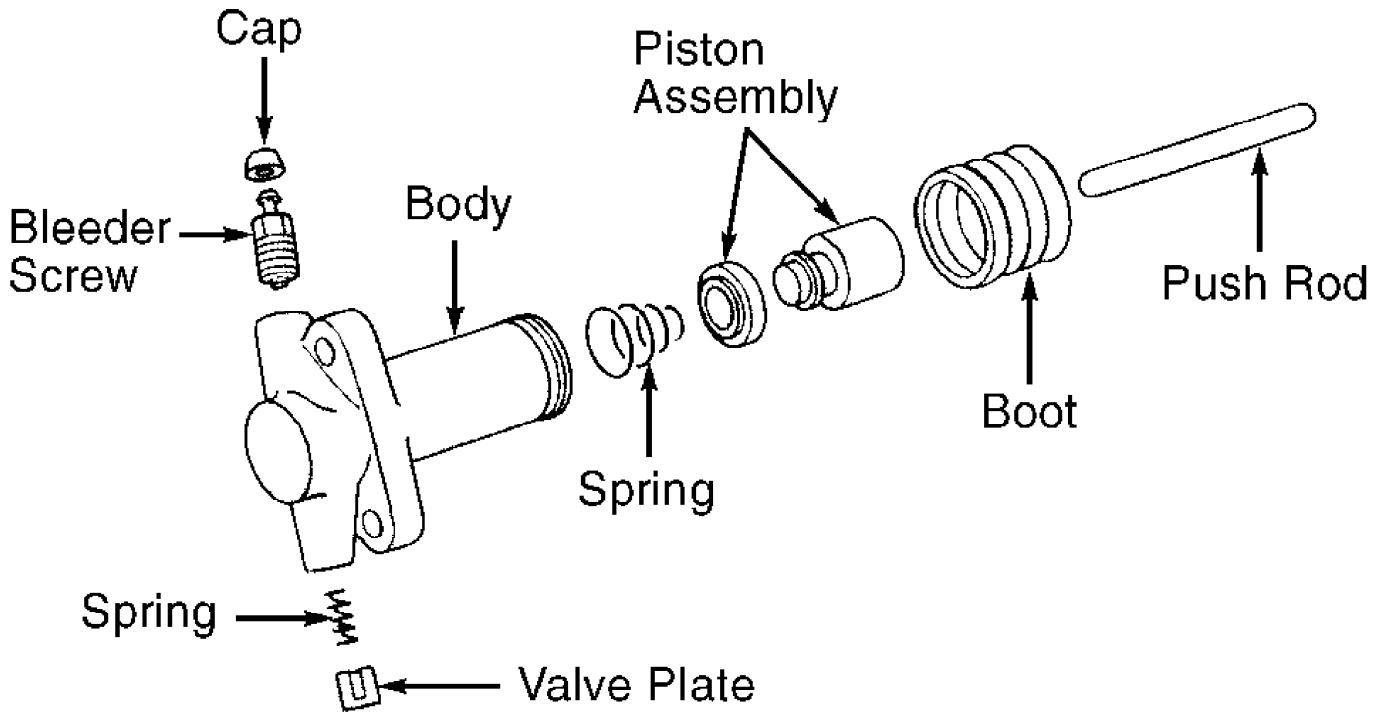

Fig. 7: Exploded View Of Clutch Release Cylinder (Typical)
Courtesy of Mitsubishi Motor Sales of America.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Clutch Pedal Position Switch Adjusting Nut Or Bolt	10 (13)
Bellhousing-To-Engine Mounting Bolt	
Montero	
10 x 40 mm	26 (36)
10 x 55 mm	22 (31)
12 x 40 mm	54 (75)
12 x 55 mm	65 (90)
Montero Sport	
2WD	19 (26)
4WD	55 (75)
Clutch Master Cylinder Mounting Nut	10 (13)

Clutch Pedal Mounting Nut	21 (29)
Flywheel Bolt	
Montero	54 (74)
Montero Sport	98 (132)
Fulcrum Ball	26 (35)
Hydraulic Line Flare Nut	11 (15)
Push Rod Jam Nut	10 (13)
Release Cylinder Mounting Bolt	27 (36)
Starter Mounting Bolt	23 (31)
Transfer Case Roll Stopper Bolt	33 (44)
Transmission Crossmember Mounting Bolt	47 (64)
Transmission Support Bolt	
Front (Crossmember)	29 (39)
Rear	26 (35)