

1994 Mazda MX-5 Miata

CLUTCH 1994 Clutch

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DESCRIPTION

Miata uses a hydraulically operated clutch.

HYDRAULIC SYSTEM BLEEDING

1. Remove bleeder screw cap, located at clutch release cylinder. Install vinyl hose onto bleeder screw. Submerge other end of hose in container of brake fluid.
2. Fill reservoir with DOT 3 brake fluid. Have assistant press and release clutch pedal several times, then hold pedal down. With pedal pressed, loosen bleeder screw to let air and fluid escape.
3. Repeat step 2) until no more air bubbles emerge from hose. Tighten bleeder screw. Fill reservoir. Operate clutch while inspecting for leaks. Check clutch and brake operation.

ADJUSTMENTS

CLUTCH PEDAL FREE PLAY

Measure clutch pedal free play. See **Fig. 1** . See **CLUTCH PEDAL FREE PLAY** . If free play is not within specification, inspect hydraulic and mechanical system components. If adjustment is required, loosen lock nut and rotate master cylinder push rod to obtain specified free play. Tighten lock nut.

CLUTCH PEDAL FREE PLAY⁽¹⁾

Application	In. (mm)
Miata	0.2-0.5 (5-13)

(1) See **Fig. 1** .

CLUTCH PEDAL HEIGHT

Measure clutch pedal height from bulkhead to front side of pedal pad. See **Fig. 1** . See **CLUTCH PEDAL HEIGHT** .

CLUTCH PEDAL HEIGHT⁽¹⁾

Application	In. (mm)
Miata	6.89-7.28 (175-185)

(1) Measure to carpet on bulkhead. See **Fig. 1** .

CLUTCH DISENGAGEMENT HEIGHT

1994 Mazda MX-5 Miata

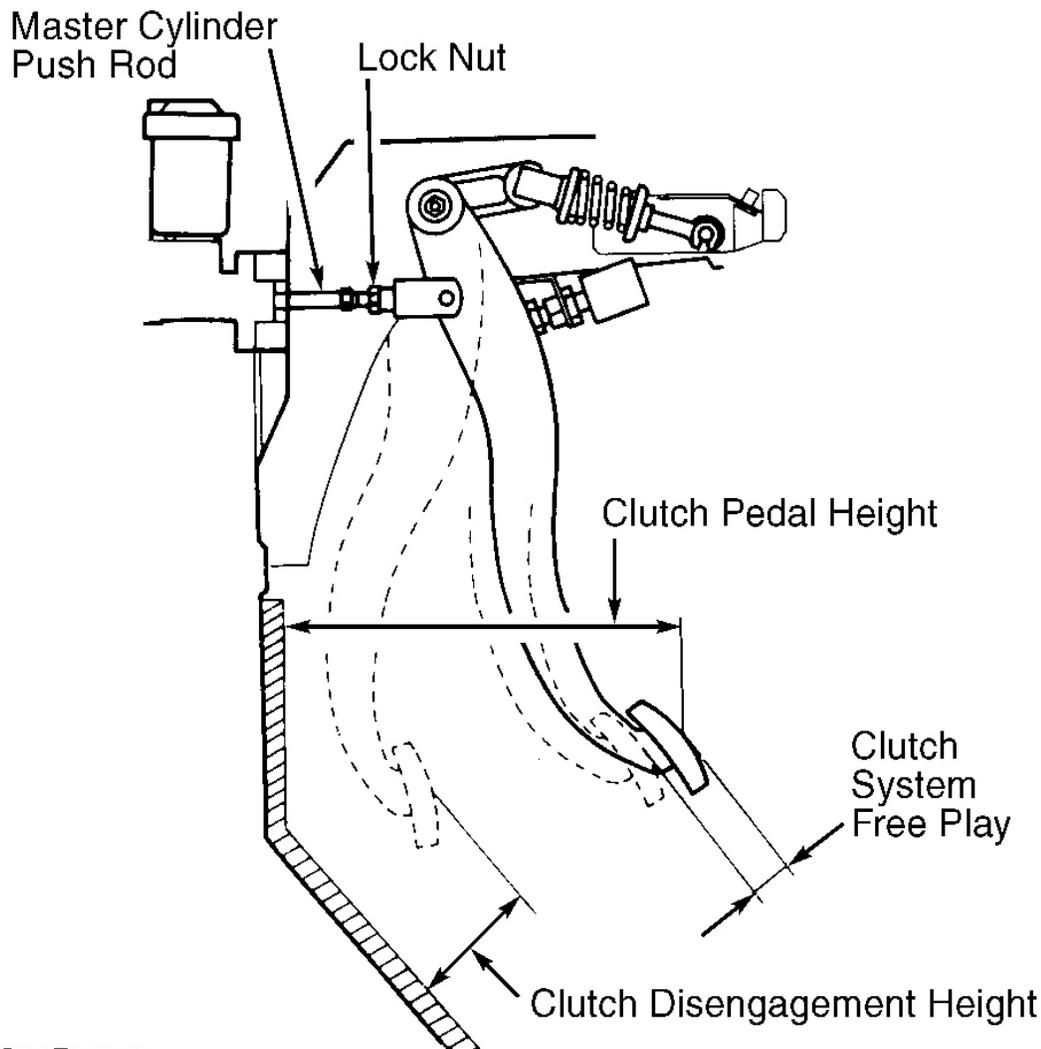
CLUTCH 1994 Clutch

Measure clutch disengagement height, where clutch disengages, from pedal pad to bulkhead. See **Fig. 1** . See **CLUTCH DISENGAGEMENT HEIGHT (MINIMUM)** .

CLUTCH DISENGAGEMENT HEIGHT (MINIMUM) (1)

Application	In. (mm)
Miata	2.68 (68)

(1) Measure to carpet on bulkhead. See **Fig. 1** .



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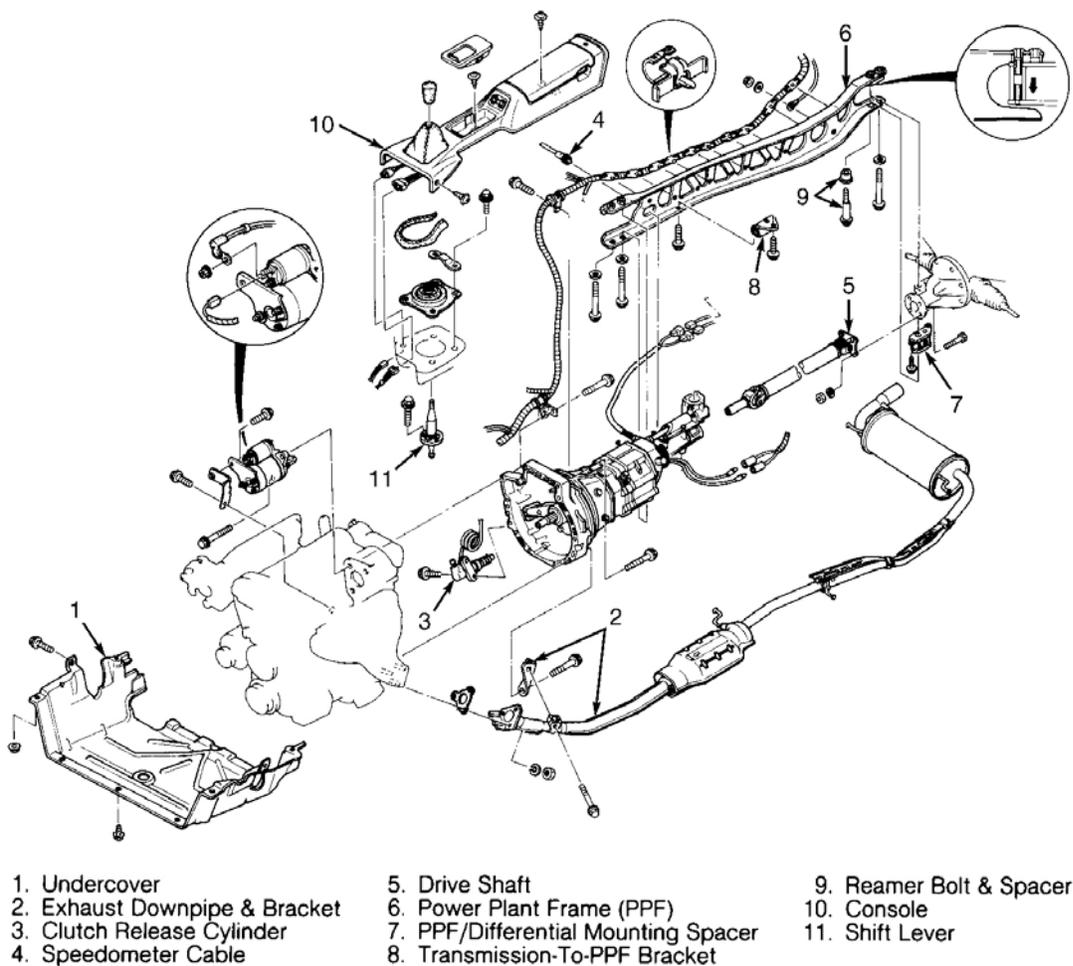
Fig. 1: Adjusting Clutch Pedal
Courtesy of MAZDA MOTORS CORP.

REMOVAL & INSTALLATION

CLUTCH ASSEMBLY

Removal

1. Disconnect negative battery cable. Remove gearshift knob, console, and shift lever. See **Fig. 2** . Raise and support vehicle. Remove engine undercover. Disconnect exhaust pipe from manifold. Mark drive shaft flanges for installation reference. Remove drive shaft.



- | | | |
|-------------------------------|-------------------------------------|-------------------------|
| 1. Undercover | 5. Drive Shaft | 9. Reamer Bolt & Spacer |
| 2. Exhaust Downpipe & Bracket | 6. Power Plant Frame (PPF) | 10. Console |
| 3. Clutch Release Cylinder | 7. PPF/Differential Mounting Spacer | 11. Shift Lever |
| 4. Speedometer Cable | 8. Transmission-To-PPF Bracket | |

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Fig. 2: Exploded View Of Drive Line
Courtesy of MAZDA MOTORS CORP.

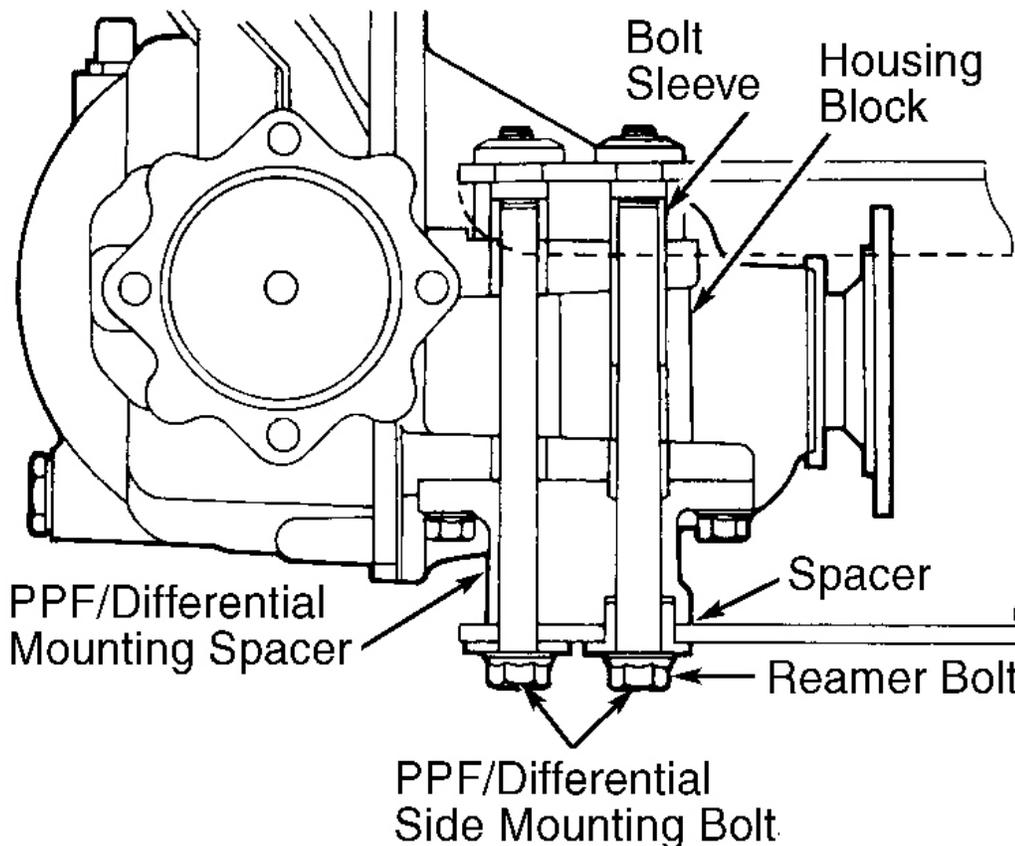
2. Remove clutch release cylinder. Remove starter. Disconnect speedometer cable from transmission. Note locations, and disconnect wiring harness from Power Plant Frame (PPF).
3. Remove PPF bracket from rear transmission extension housing. Remove PPF-to-differential side bolts.

Pry out spacer. Remove PPF/differential mounting spacer. See **Fig. 3**.

4. Thread M14 X 1.5 bolt into sleeve. See **Fig. 4**. Twist bolt side to side while pulling it downward. Thread M6 X 1 bolt into hole in housing block to hold sleeve. Remove long bolt. Remove short bolt.

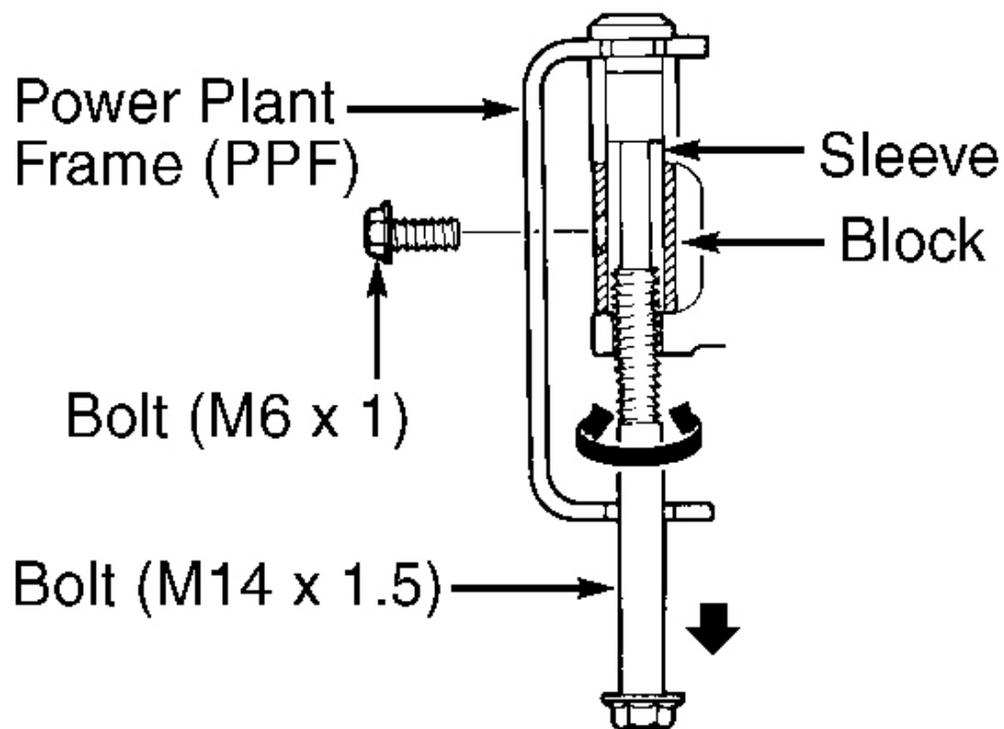
NOTE: Do not remove spacers attached to top of Power Plant Frame (PPF). If they are removed, replace PPF.

5. Remove PPF side bolts. Remove PPF. Remove clutch housing bolts. Remove transmission. Remove clutch cover bolts evenly in crisscross pattern. Remove clutch cover and disc. See **Fig. 5**.



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Fig. 3: Installing & Removing Power Plant Frame
 Courtesy of MAZDA MOTORS CORP.



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Fig. 4: Removing Reamer Bolt Sleeve
Courtesy of MAZDA MOTORS CORP.

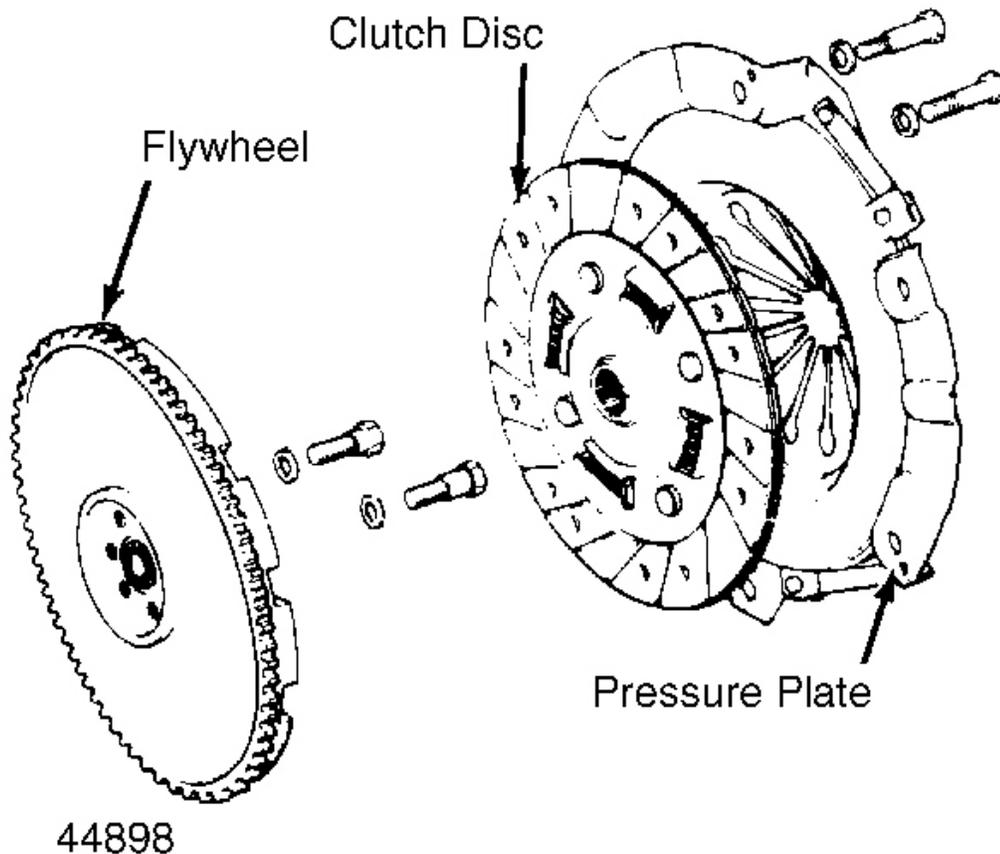


Fig. 5: Exploded View Of Clutch Assembly (Typical)
Courtesy of MAZDA MOTORS CORP.

Inspection

1. Inspect disc for loose rivets, worn springs, excessive wear, or oil contamination. Inspect flywheel and clutch cover for burns, scoring, or grooves.
2. Measure flywheel and clutch cover runout. Resurface or replace flywheel and clutch cover if beyond specification. See **CLUTCH RUNOUT (MAXIMUM)** . If flywheel ring gear is replaced, ensure chamfer on flywheel teeth faces engine.
3. Measure clutch disc runout. Replace disc if it is not to specification. See **CLUTCH RUNOUT (MAXIMUM)** . Inspect disc hub and input shaft splines for excessive wear. Hub must slide smoothly on input shaft splines.
4. Inspect pilot bearing. Apply inward pressure while rotating pilot bearing. If bearing sticks or has excessive resistance, replace bearing. Check for tight fit in crankshaft. Replace as necessary. Inspect release bearing for smooth operation, and inspect it for wear, damage, or looseness. Replace bearing as

1994 Mazda MX-5 Miata

CLUTCH 1994 Clutch

necessary.

CLUTCH RUNOUT (MAXIMUM)

Application	In. (mm)
Disc	0.028 (0.7)
Flywheel	0.008 (0.20)

Installation

1. Lightly coat input shaft splines, release bearing, and fork contact areas with molybdenum disulfide grease. Align clutch cover dowel holes with flywheel dowels. Tighten clutch cover bolts evenly in a crisscross pattern to specification. See **TORQUE SPECIFICATIONS**.
2. Place a wooden block on jack, and position jack under front of oil pan. Raise front of engine to ease transmission installation. Install transmission. Tighten clutch housing bolts to specification. Place jack (from front of engine) under transmission.
3. Raise transmission until it is level with engine. Position Power Plant Frame (PPF) in place. Install PPF/differential mounting spacer, and tighten bolts to 27-38 ft. lbs. (37-52 N.m). Install and tighten PPF side mounting bolts.

NOTE: Front PPF-to-differential side mounting bolt is the reamer bolt, used to align frame.

4. Install sleeve into PPF housing block. Install spacer and bolts. Install reamer bolt into front hole, and tighten bolt. See **Fig. 3**.
5. Install transmission-to-PPF bracket. Install remaining PPF bolts, and tighten to specification. See **TORQUE SPECIFICATIONS**. To complete installation, reverse removal procedure.

RELEASE BEARING & FORK

Removal & Installation

1. Remove transmission. See **CLUTCH ASSEMBLY** under REMOVAL & INSTALLATION. Remove release bearing and fork. Turn release bearing in both directions. Replace bearing if rough or noisy.
2. Inspect release fork for wear and damage. Replace if necessary. Apply molybdenum disulfide grease to release bearing contact and sliding surfaces. To complete installation, reverse removal procedure.

CLUTCH MASTER CYLINDER

Removal & Installation

Disconnect hydraulic line and master cylinder mounting nuts. Disengage push rod from clutch pedal. Remove master cylinder. To install, reverse removal procedure and bleed hydraulic system.

CLUTCH RELEASE CYLINDER

1994 Mazda MX-5 Miata

CLUTCH 1994 Clutch

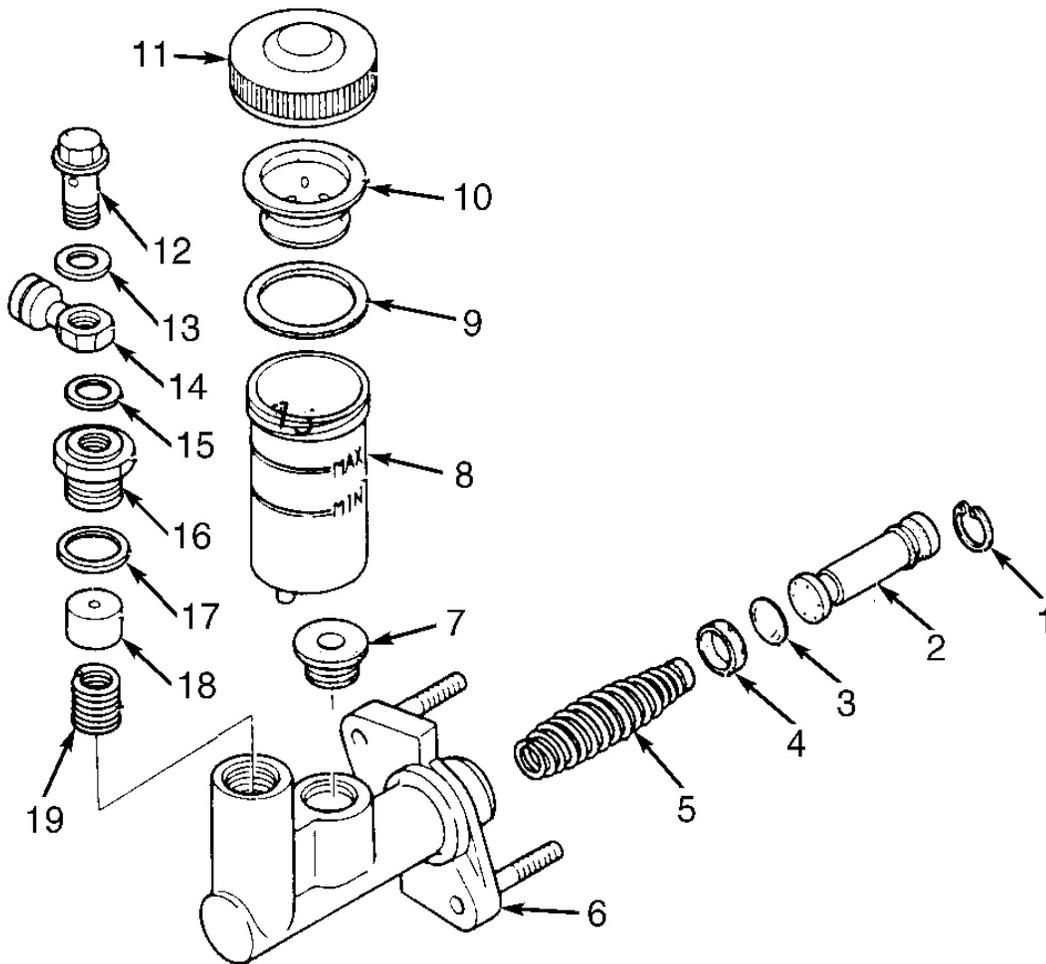
Removal & Installation

Raise and support vehicle. Disconnect and plug hydraulic line. Remove release cylinder. To install, reverse removal procedure. Bleed hydraulic system. See **HYDRAULIC SYSTEM BLEEDING** .

OVERHAUL

CLUTCH MASTER CYLINDER

NOTE: For exploded view of clutch master cylinder, see **Fig. 6** .



- | | | |
|------------------|-------------------|--------------------|
| 1. Snap Ring | 8. Reservoir | 15. Washer |
| 2. Piston | 9. Gasket | 16. Outlet Fitting |
| 3. Spacer | 10. Strainer | 17. Gasket/Washer |
| 4. Cup | 11. Cap | 18. One-Way Valve |
| 5. Return Spring | 12. Bolt | Piston |
| 6. Cylinder Body | 13. Washer | 19. Spring |
| 7. Bushing | 14. Banjo Fitting | |

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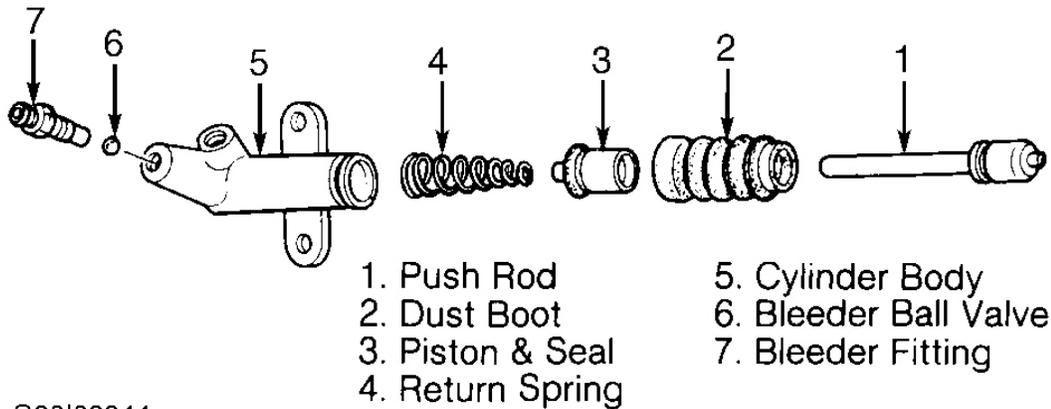
Fig. 6: Exploded View Of Clutch Master Cylinder
 Courtesy of MAZDA MOTORS CORP.

CLUTCH RELEASE CYLINDER

1994 Mazda MX-5 Miata

CLUTCH 1994 Clutch

NOTE: For exploded view of clutch release cylinder, see [Fig. 7](#) .



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Fig. 7: Exploded View Of Clutch Release Cylinder
Courtesy of MAZDA MOTORS CORP.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Clutch Cover Bolts ⁽¹⁾	13-20 (18-27)
Clutch Housing-To-Engine Block Bolts	47-66 (64-90)
Drive Shaft Bolts	20-22 (27-30)
Flywheel-To-Crankshaft Bolts	71-76 (96-103)
PPF-To-Differential Mounting Spacer Bolt (Short)	27-38 (37-52)
PPF-To-Differential Side Mounting Bolts (Long)	77-91 (104-123)
PPF-To-PPF Bracket Bolt	27-40 (37-54)
PPF-To-Transmission Side Mounting Bolts (Long)	77-91 (104-123)
Transmission-To-PPF Bracket Bolts	27-40 (37-54)
Starter Mounting Bolts	27-38 (37-52)

(1) Tighten in a crisscross pattern.