

# TRANSMISSION REMOVAL & INSTALLATION - A/T

## 1991 Mazda Miata

1991 TRANSMISSION SERVICING  
Automatic Transmission Removal & Installation

B2200, B2600i, Miata, MPV, MX-6, Navajo,  
Protege, RX7, 323, 626, 929

### B2200 & B2600i REMOVAL & INSTALLATION

NOTE: For manual transmission removal and replacement procedures, see appropriate FWD or RWD article in the CLUTCHES Section.

#### REMOVAL

1) On 4WD models, remove selector knob, console box, insulator plate, shift boot and transfer case shift lever. On all models, raise and support vehicle. Drain transmission fluid.

2) Remove undercover (if equipped). Remove front and rear drive shafts (if equipped). Insert plug in rear of transmission to prevent fluid leakage. Disconnect speedometer cable, shift cable and vacuum hose from transmission.

3) Remove crossmembers or front transmission supports from converter housing. Remove flexplate-to-converter bolts. Disconnect kickdown solenoid and cooler lines from transmission. Remove starter. Disconnect remaining wiring connectors from transmission.

4) Support transmission using jack. Remove rear transmission crossmember and transmission-to-engine bolts. Lower transmission from vehicle.

#### INSTALLATION

1) To install transmission, reverse removal procedure. Adjust shift linkage. Ensure converter is fully seated before installing transmission.

2) Tighten flexplate-to-converter bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Fill transmission with required amount of fluid, and check for external leaks.

### MIATA REMOVAL & INSTALLATION

#### REMOVAL

1) Disconnect negative battery cable. Raise and support vehicle. Drain ATF. Remove shift rod and undercover. Remove front exhaust pipe and drive shaft. Insert plug in end of transmission to prevent fluid leakage.

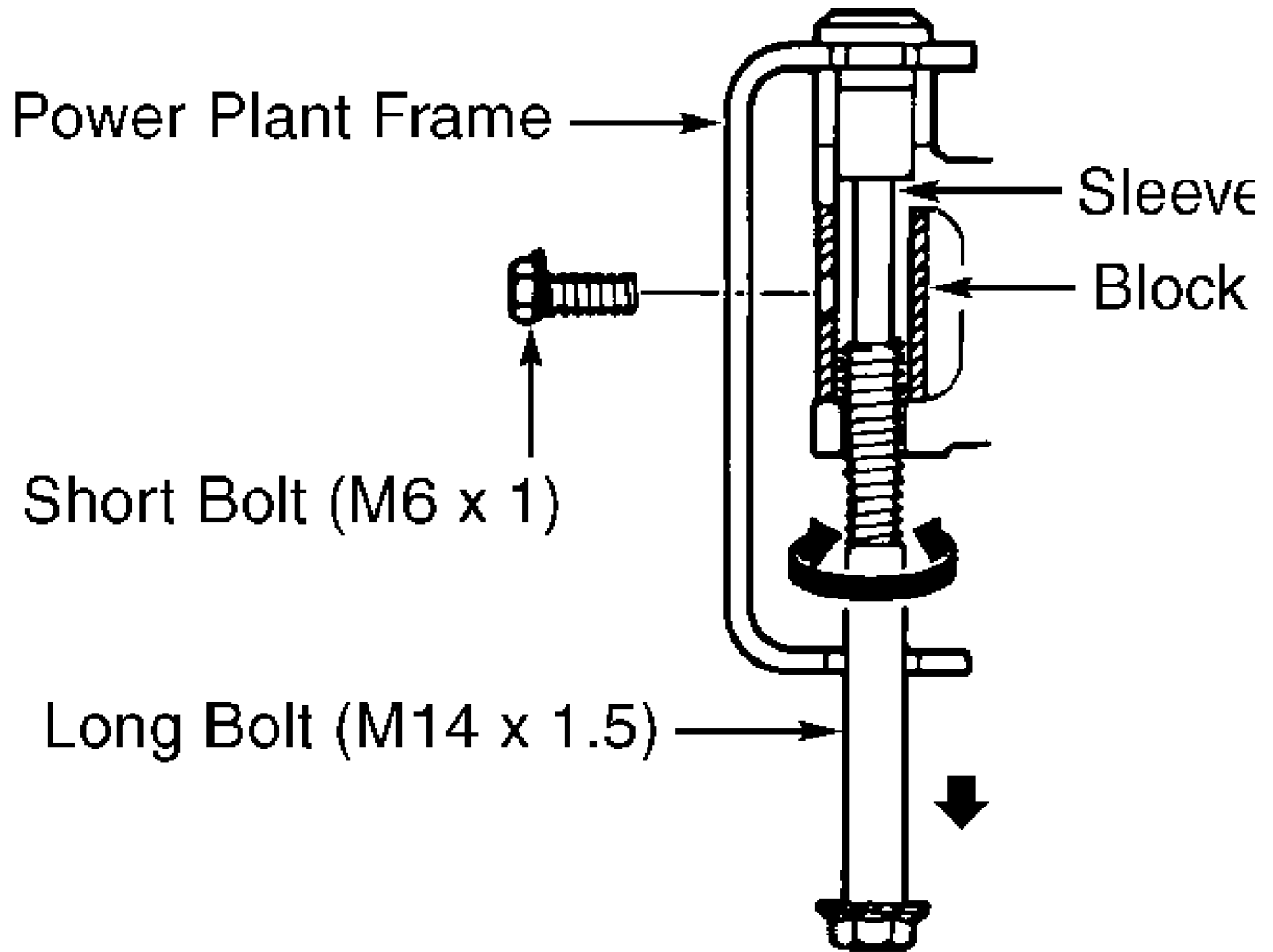
2) Disconnect speedometer cable, vacuum hose and electrical connectors from transmission. Remove dipstick tube. Disconnect oil cooler pipes from transmission. Disconnect wire harness from power plant frame (beam connecting transmission to differential).

3) Support transmission using jack. Remove front and rear bolts from power plant frame, and pry out rear bolt spacer. Remove differential mounting spacer bolts, but leave spacers in place.

CAUTION: DO NOT remove spacers from top rear of power plant frame. If spacers are removed, replace entire power plant frame as an assembly.

4) Screw a long bolt (M14x1.5) into rear sleeve (forward bolt hole). See Fig. 1. Twist and pull bolt downward to position sleeve in block. Install a second bolt (M6x1) in hole on side of power plant frame block to hold sleeve in place. Remove long bolt. Remove short bolt. Remove power plant frame.

5) Remove torque converter bolts and starter. Remove transmission mount bolts, and lower transmission. DO NOT shake transmission to remove or damage to crank angle sensor may result.



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Fig. 1: Resetting Power Plant Frame Sleeve Position (Miata)  
Courtesy of Mazda Motors Corp.

## INSTALLATION

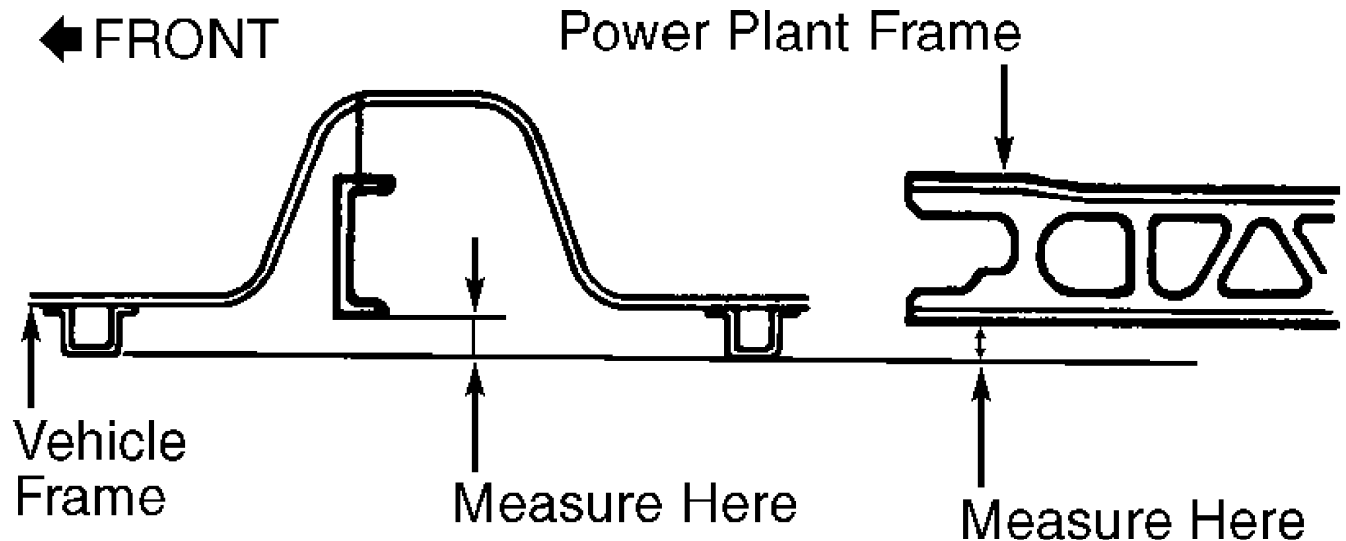
1) Install transmission, transmission mount and starter. Install torque converter bolts. Install power plant frame rear differential mounting spacer.

2) Support transmission until level. Position power plant frame, and hand-tighten transmission side bolts. Ensure sleeve is installed in block. See Fig. 1. Install spacer, and hand-tighten bolts. Ensure reamer bolt goes in forward hole.

3) Tighten front and then rear power plant frame bolts. See

TORQUE SPECIFICATIONS TABLE at end of article. Remove jack. Ensure clearance between bottom of power plant frame and lowest point of body frame is 2.0-2.4" (51-61 mm). See Fig. 2.

4) Reverse removal procedure for remaining components. Tighten fasteners to specification. See TORQUE SPECIFICATIONS TABLE. Fill transmission with required amount of fluid, and check for external leaks.



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Fig. 2: Measuring Power Plant Frame Clearance (Miata)  
Courtesy of Mazda Motors Corp.

## MPV REMOVAL & INSTALLATION

### REMOVAL

1) Disconnect negative battery cable. Raise and support vehicle. Drain ATF. Disconnect speedometer cable and electrical connections. Remove front exhaust pipe and heat shield. Remove front and rear drive shafts (if equipped).

2) Remove shift linkage. Remove transmission filler tube. Remove torque converter undercover and torque converter mounting bolts. Remove starter and bracket.

3) Remove exhaust pipe bracket and engine-to-transmission gusset plates (if equipped). Disconnect transmission fluid cooler lines. Remove vacuum pipe (if equipped). Support transmission using jack. Remove transmission mounting bolts, and slowly remove transmission.

### INSTALLATION

1) To install transmission, reverse removal procedure. Torque converter is correctly seated when distance between engine mating surface of converter housing and edge of converter is 2.13" (54 mm) on 2.6L and 1.16" (30 mm) on 3.0L.

2) Tighten bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Fill transmission with required amount of fluid, and check for external leaks.

## MX-6 & 626 REMOVAL & INSTALLATION

## REMOVAL

1) Remove battery and battery carrier. Disconnect main fuse block and distributor lead. Disconnect airflow meter connector, and remove air cleaner assembly.

2) On turbo models, remove intercooler-to-throttle body hose and air cleaner-to-turbocharger hose. On non-turbo models, remove air cleaner hose, resonance chamber and bracket. On all models, disconnect speedometer cable.

3) Disconnect inhibitor switch, solenoid valve, pulse generator and fluid temperature switches from transaxle. Disconnect all ground cable connections from transaxle. Disconnect selector cable and throttle cable from transaxle.

4) Raise and support vehicle. Remove front wheels, engine undercover and splash shields. Drain fluid, and disconnect oil cooler outlet and inlet hoses. Disconnect tie rod ends from knuckles, and remove stabilizer bar control links.

5) Remove bolts and nuts at left and right lower control arm ball joints. Pull lower arms downward to separate from knuckles. DO NOT damage ball joint dust boots. Separate left axle shaft from transaxle by prying a bar inserted between shaft and case. DO NOT damage oil seal.

6) Remove joint shaft bracket, and separate right axle together with joint shaft in same manner. Install Differential Side Gear Holder (49-G030-455) into differential side gear opening (to prevent side gears from becoming misaligned).

7) Remove exhaust pipe hanger and stiffener plates from front of transaxle. Remove torque converter access cover, and remove torque converter nuts. Remove manifold bracket, and remove starter motor. Support engine from above using proper engine support assembly, and take up weight of engine.

8) Disconnect and remove both engine mounts. Disconnect and remove crossmember and left lower control arm as an assembly. Lower engine assembly with above engine support. Support transaxle using transmission jack from below. Remove transaxle-to-engine mounting bolts, and remove transaxle from vehicle.

## INSTALLATION

1) Reverse removal procedure to install transaxle. Torque converter is correctly seated when distance between engine mating surface of converter housing and edge of converter is .81" (21 mm).

2) Tighten bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Replace axle joint clips before installation. Fill transaxle with required amount of fluid.

## NAVAJO REMOVAL & INSTALLATION

### REMOVAL

1) Disconnect negative battery cable. Raise and support vehicle. Drain ATF. Remove starter. Remove flexplate-to-converter bolts. Mark drive shaft for reassembly reference, and remove drive shaft. Install plug in rear of transmission to prevent fluid leakage.

2) Disconnect speedometer cable, shift rod and kickdown cable from transmission. Depress tab on cable downshift retainer, and remove cable from bracket. Disconnect electrical connectors, vacuum hose and oil cooler lines.

3) Support transmission using jack. Remove crossmember. Lower transmission slightly. Using another jack, slightly raise front of engine to access upper engine-to-transmission bolts, but DO NOT remove

bolts yet.

4) Remove lower converter housing-to-engine bolts. Remove dipstick tube. Remove upper converter housing-to-engine bolts. Slowly lower transmission.

## **INSTALLATION**

1) To install transmission, reverse removal procedure. Adjust shift linkage. Ensure converter is fully seated before installing transmission. Torque converter is correctly seated when distance between engine mating surface of converter housing and edge of converter drive lug is .43-.56" (10.9-14.2 mm).

2) Tighten flexplate-to-converter bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Fill transmission with required amount of fluid, and check for external leaks.

## **PROTEGE & 323 REMOVAL & INSTALLATION**

### **REMOVAL**

1) Raise and support vehicle. Drain transaxle. Remove wheels and splash shields. Disconnect air hose, and remove air cleaner or resonance chamber. Remove battery and battery tray.

2) Disconnect speedometer cable and throttle cable assemblies from transaxle. Disconnect inhibitor switch and solenoid valve connectors. Disconnect and remove selector cable.

3) On 4WD models, disconnect differential lock motor and lock sensor switch connectors. Remove undercover and drive shaft. Remove stiffener, crossmember and exhaust pipe.

4) On 2WD models, support engine from above using engine support assembly. Remove engine mounts, front exhaust pipe and oil pan. On all models, disconnect tie rod ends from knuckles. Remove stabilizer bar.

5) Separate left axle shaft from transaxle by prying a bar inserted between shaft and case. DO NOT damage oil seal. Install Differential Side Gear Holder (49-G030-455) into differential side gear opening (to prevent side gears from becoming misaligned).

6) Separate right axle shaft or intermediate shaft from transaxle, and remove starter motor. On 4WD models, remove center differential lock motor and engine mounts. On all models, disconnect and plug oil cooler hoses. Support transaxle from below using transmission jack.

7) Remove crossmember. Remove front torque converter housing access plates and cover. Index mark converter to drive plate, and remove torque converter bolts. Slightly lower engine using engine support from above. Remove transaxle securing bolts, and lower transaxle assembly from vehicle.

### **INSTALLATION**

1) To install, reverse removal procedure. Torque converter is correctly seated when distance between engine mating surface of converter housing and converter drive lug is .54" (14 mm).

2) Tighten bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Install new clips on axle ends before installing axle shafts. Fill transaxle with required amount of ATF.

## **RX7 REMOVAL & INSTALLATION**

### **REMOVAL**

1) Disconnect negative battery cable. Raise and support vehicle. Drain transmission fluid. Remove pipe and heat insulator. Remove drive shaft. Disconnect vacuum hose, shift rod and speedometer cable from transmission. On convertible models, remove crossmember.

2) On all models, disconnect oil cooler pipes from transmission. Remove starter and dipstick tube. Unplug wire harness coupler on right side of transmission. Remove lower cover on converter housing. Remove flexplate-to-converter bolts.

3) Support transmission using jack. Remove transmission-to-engine bolts and rear crossmember. Slowly lower transmission out of vehicle.

## INSTALLATION

1) Reverse removal procedure to install transmission. Torque converter is correctly seated when distance between engine mating surface of converter housing and edge of converter is at least 1.34" (34 mm).

2) Tighten bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Fill transmission with proper amount of fluid.

## 929 REMOVAL & INSTALLATION

### REMOVAL

1) Disconnect negative battery cable. Raise and support vehicle. Drain transmission fluid. Remove filler tube assembly, and disconnect shift rod. Remove front exhaust pipe assembly from manifold flange to rear of muffler assembly.

2) Remove heat insulator shield. Remove drive shaft assembly, and disconnect speedometer cable. Disconnect and remove starter motor assembly. Disconnect neutral safety switch connector, turbine sensor connector and solenoid valve connector.

3) Disconnect cooler lines at transmission. Disconnect vacuum hose, and remove torque converter access cover. Remove torque converter bolts. Support transmission using jack, and remove crossmember. Remove transmission mount, and lower transmission assembly.

### INSTALLATION

1) To install transmission, reverse removal procedure. Torque converter is correctly seated when distance between engine mating surface of converter housing and edge of converter is at least 1.26" (32 mm).

2) Tighten bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Fill transmission with required amount of fluid, and check for external leaks.

## TORQUE SPECIFICATIONS

### TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
B2200 & B2600i	
Drive Shaft Bushing Mount Nut .....	27-39 (37-53)
Drive Shaft Flange Nut .....	20-22 (27-30)
Flexplate-To-Converter Bolts .....	25-36 (34-49)
Starter Mounting Bolt .....	27-39 (37-53)

Transmission Center Support Bolts ...	23-34	(31-46)
Transmission Mount Bolts .....	27-39	(37-53)
Transmission-To-Engine Bolts .....	27-39	(37-53)
Miata		
Differential Mounting Spacer Bolt ...	27-38	(37-52)
Drive Shaft Flange Nuts .....	20-22	(27-30)
Front Exhaust Pipe Mounting Nuts ....	23-34	(31-46)
Power Plant Frame Bolts .....	77-91	(104-123)
Starter Motor Bolts .....	27-38	(37-52)
Torque Converter Bolts .....	27-40	(37-54)
Transmission Mounting Bolts .....	47-66	(64-89)
MPV		
Drive Shaft Center		
Support Bearing Bolts .....	27-39	(37-53)
Drive Shaft Flange Bolts .....	36-43	(49-58)
Front Exhaust Pipe Nuts .....	25-36	(34-49)
Starter Motor Mounting Bolts .....	27-38	(37-52)
Torque Converter Bolts .....	27-40	(37-54)
Transmission Mount Bolts .....	32-45	(43-61)
Transmission-To-Engine Bolts		
Small .....	27-38	(37-52)
Large .....	51-65	(69-88)
MX-6 & 626		
Starter Motor Bolts .....	27-40	(37-54)
Torque Converter Nuts .....	32-45	(43-61)
Transaxle Mounting Bolts .....	66-86	(89-117)
Navajo		
Companion Flange "U" Bolt Nuts ....	70-95	(95-129)
Crossmember Mounting Bolt .....	20-30	(27-41)
Dipstick Stub Tube Mounting Bolt ....	28-38	(38-52)
Engine Support-To-Crossmember Nut ..	60-80	(81-108)
Starter Motor Bolts .....	15-20	(20-27)
Torque Converter Bolts .....	20-34	(27-46)
Transmission Mounting Bolts .....	28-38	(38-52)
Protege & 323		
Lower Control Arm Ball		
Joint-To-Knuckle Bolt .....	32-40	(43-54)
Stabilizer Bar Control Link Bolts ...	23-34	(31-46)
Starter Motor Mounting Bolts .....	27-38	(37-52)
Torque Converter Bolts .....	25-36	(34-49)
Transaxle Mounting Bolts .....	41-59	(56-80)
RX7		
Crossmember Mount		
Bolts (Convertible) .....	27-40	(37-54)
Drive Shaft Flange Nuts .....	36-43	(49-58)
Front Exhaust Pipe Nuts .....	43-59	(59-80)
Torque Converter Bolts .....	25-36	(34-49)
Transmission Mount Bolts .....	23-34	(31-46)
Transmission Mounting Bolts		
Small Bolts .....	23-34	(31-46)
Large Bolts .....	27-38	(37-52)
929		
Drive Shaft Center		
Support Bearing Bolts .....	27-38	(37-52)
Drive Shaft Flange Bolts .....	36-43	(49-58)
Front Exhaust Pipe Nuts .....	23-34	(31-46)
Starter Motor Mounting Bolts .....	23-34	(31-46)
Torque Converter Bolts .....	25-36	(34-49)
Transmission Mount Bolts .....	29-42	(39-57)
Transmission Mounting Bolts .....	27-38	(37-52)

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