

# TRANSMISSION SERVICING - A/T

## 1991 Mazda Miata

1990-94 TRANSMISSION SERVICING  
Mazda Automatic Transmission

Miata

**NOTE:** On models with anti-theft radio system, obtain code number from customer to deactivate radio anti-theft system BEFORE disconnecting negative battery cable. To deactivate radio anti-theft system, turn ignition switch to ACC position. Press FF and REW buttons simultaneously until "cod e" is displayed. Press FF and REW buttons again until 4 bars are displayed. Use preset button No. 1 to enter first number. Use preset buttons No. 2, 3 and 4 to set other numbers. Press FF and REW buttons for about 2 seconds until a beep is heard. After 5 seconds, flashing "cod e" will go away and radio will operate.

### IDENTIFICATION

#### AUTOMATIC TRANSMISSION APPLICATIONS TABLE

Model	Transmission
Miata .....	N4A-HL

### LUBRICATION

#### SERVICE INTERVALS

Transmission Fluid  
Check fluid level every 7500 miles or 6 months.

#### CHECKING FLUID LEVEL

Transmission  
Park vehicle on level ground. Apply parking brake. Warm engine to normal operating temperature. Briefly place selector lever in all gears and return it to "P" position. Clean dipstick and insert it in tube. Remove dipstick. Level should be between "L" and "F" marks. Check fluid for discoloration and unusual smell. If necessary, add fluid. DO NOT overfill.

#### RECOMMENDED FLUID

Transmission  
Use Dexron-II or M-III ATF.

### FLUID CAPACITIES

#### TRANSMISSION REFILL CAPACITIES TABLE

Application	Refill Qts. (L)	Dry Fill Qts. (L)
Miata .....	4.2 (4.0)	7.1 Qts. (6.7L)

### DRAINING & REFILLING

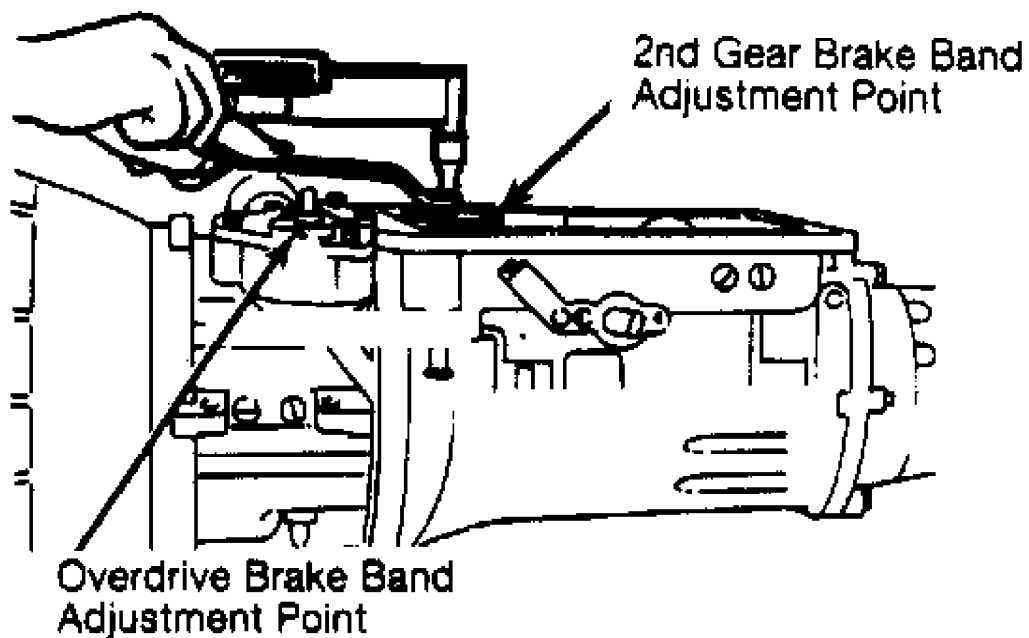
Disconnect negative battery cable. Loosen oil pan bolts to drain fluid. Remove oil pan, and discard old gasket. Clean oil pan, and install it using NEW gasket. Tighten oil pan bolts to specification. See the TORQUE SPECIFICATIONS table at end of article. Connect negative battery cable. Add fluid, and check level. DO NOT overfill.

## ADJUSTMENTS

### BRAKE BAND (2ND GEAR)

1) Disconnect negative battery cable. Loosen oil pan, and drain fluid. Remove bracket, oil pan and gasket. Disconnect vacuum hose at vacuum diaphragm (modulator), and remove vacuum diaphragm.

2) Disconnect solenoid valve connector, and remove harness from bracket (if equipped). Remove valve body bolts and valve body assembly. Loosen lock nut on 2nd gear brake band while holding piston stem stationary. See Fig. 1.



Courtesy of Mazda Motors Corp.

Fig. 1: Adjusting 2nd Gear Brake Band  
Courtesy of Mazda Motors Corp.

3) Tighten piston stem to 106-130 INCH lbs. (12-15 N.m). Loosen piston stem 3 turns. Tighten lock nut to 11-29 ft. lbs. (15-39 N.m) while holding stem stationary. Install valve body assembly. Tighten bolts to specification. See the TORQUE SPECIFICATIONS table at end of article.

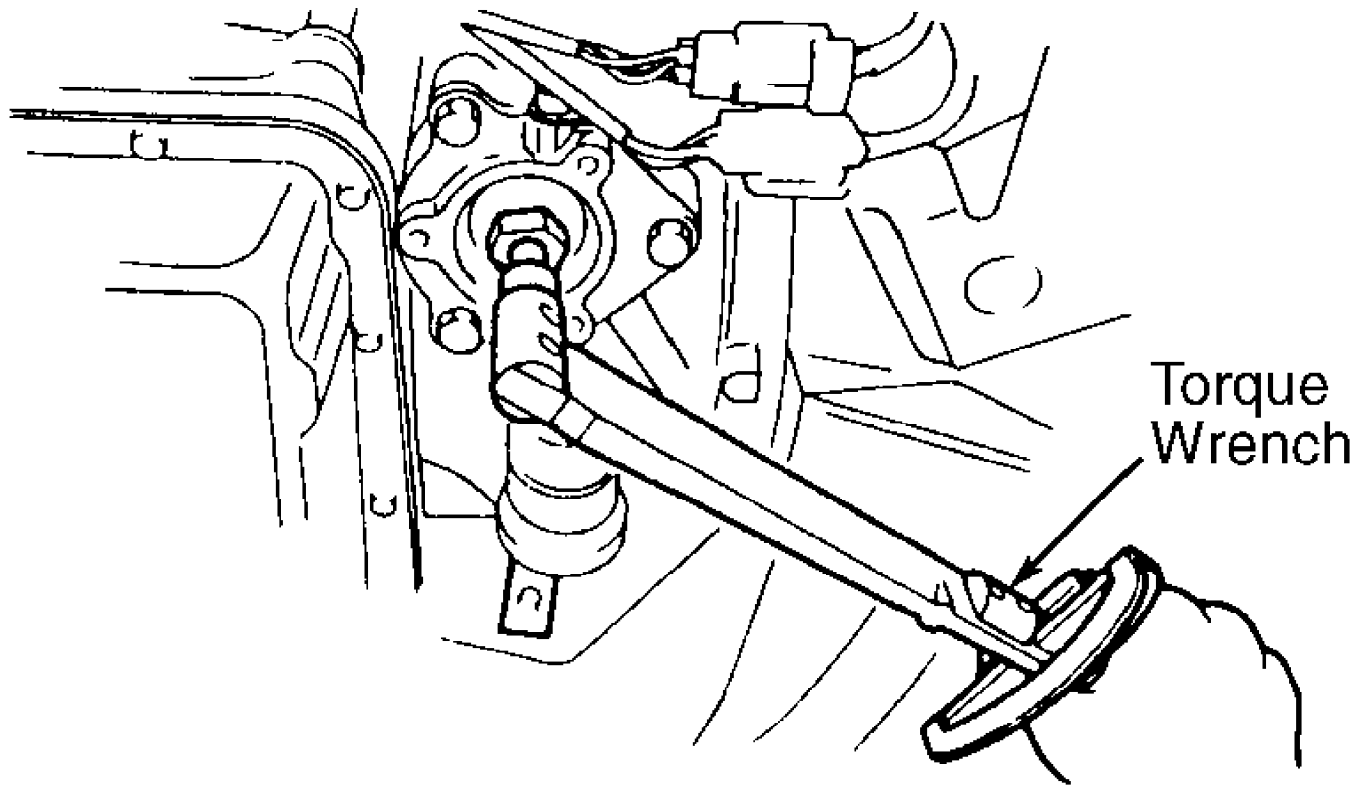
4) Connect solenoid valve connector, and install harness. Clean oil pan, and install it using NEW pan gasket. Tighten pan bolts to specification. See TORQUE SPECIFICATIONS table.

5) Install vacuum diaphragm, and connect vacuum hose. Connect negative battery cable. Add fluid, and check level. DO NOT overfill.

## OVERDRIVE BRAKE BAND

1) Remove overdrive band servo cover and gasket. See Fig. 2. Loosen overdrive adjustment screw lock nut while holding piston stem stationary. Tighten piston stem to 61-87 INCH lbs. (7-10 N.m).

2) Back off piston stem 2 turns. While holding stem in this position, tighten lock nut to 11-30 ft. lbs. (15-40 N.m). Install overdrive band servo cover with NEW gasket. Tighten cover bolts to 44-62 INCH lbs. (5-7 N.m).



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Fig. 2: Adjusting Overdrive Band  
Courtesy of Mazda Motors Corp.

## KICKDOWN & 4-3 SWITCH

1) Kickdown and 4-3 switch is located on upper part of accelerator pedal. To adjust kickdown section of switch, use steps 2) and 3). To adjust 4-3 section of switch, use steps 4) and 5).

2) Connect voltmeter between terminal "C" and ground. See Fig. 3. Turn ignition on. Depress accelerator pedal fully. Voltmeter should read less than 1.5 volts until pedal is at least 7/8 depressed. Battery voltage should be present at or after 7/8 pedal travel.

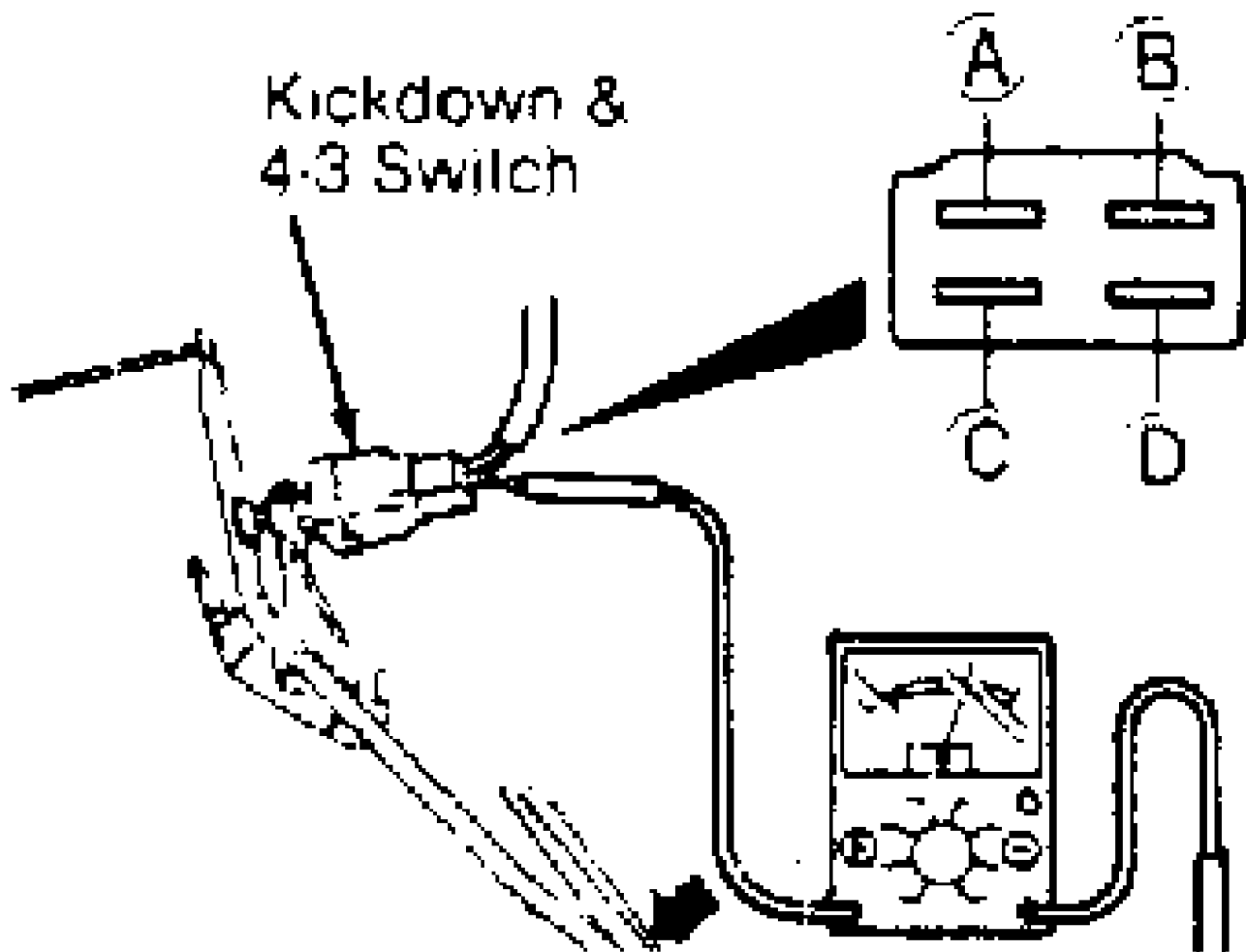


Fig. 3: Testing Kickdown & 4-3 Switch  
Courtesy of Mazda Motors Corp.

3) If voltage is not correct, disconnect switch and check continuity between terminals "C" and "D" when tip of switch is depressed .24-.26" (6.0-6.5 mm). If continuity is not present, replace switch. If continuity is present, adjust switch until battery voltage is present at 7/8 of pedal travel.

4) Connect voltmeter between terminal "A" and ground. See Fig. 3. Turn ignition on. Depress accelerator pedal to limit. Voltmeter should read less than 1.5 volts until pedal is at least 3/4 depressed. Battery voltage should be present at or after 3/4 of pedal travel.

5) If voltage is not correct, disconnect switch and check continuity between terminals "A" and "B" when tip of switch is depressed .14-.18" (3.5-4.5 mm). If continuity is not present, replace switch. If continuity is present, adjust switch until battery voltage is present at 3/4 of pedal travel.

## GEARSHIFT LINKAGE

1) Disconnect negative battery cable. Remove upper panel, selector sleeve and indicator panel. Remove boot plate. Place gearshift lever in "P" position. Loosen lock nut on side of gearshift lever. See Fig. 4. Move adjustment lever forward to set transmission in "P" position.

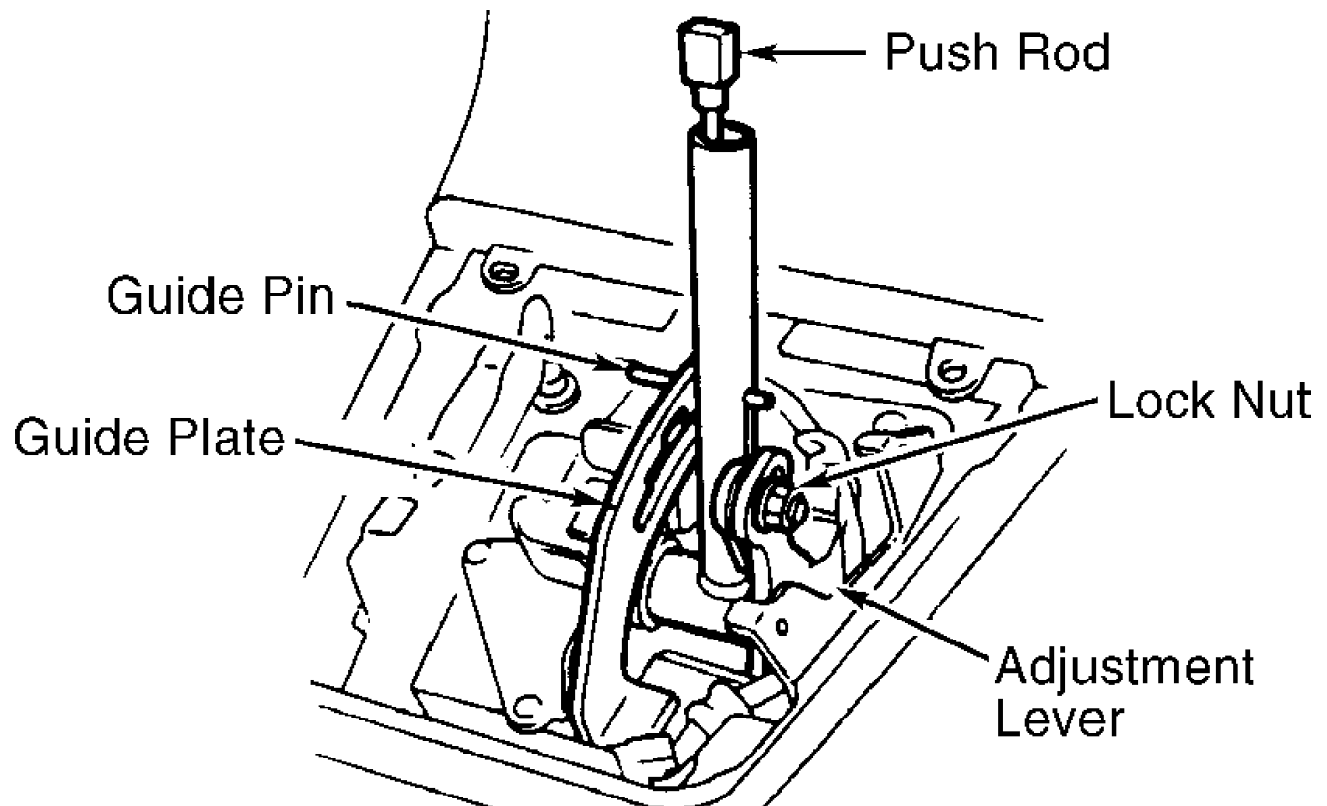
2) Adjust the lever so clearance between the guide plate and the guide pin with the lever in position "P" is as specified. Refer to specifications in the GEARSHIFT LEVER ADJUSTMENT SPECIFICATIONS table. See Fig. 5. Tighten rear lock nut to 14-21 ft. lbs. (19-28 N.m).

3) Place gearshift lever in "N" and "D" positions to ensure clearances are correct. See GEARSHIFT LEVER ADJUSTMENT SPECIFICATIONS table. See Fig. 5. Adjust lever if necessary. Install boot plate, center console, indicator panel, selector sleeve, selector knob and upper panel. Connect negative battery cable.

#### GEARSHIFT LEVER ADJUSTMENT SPECIFICATIONS TABLE

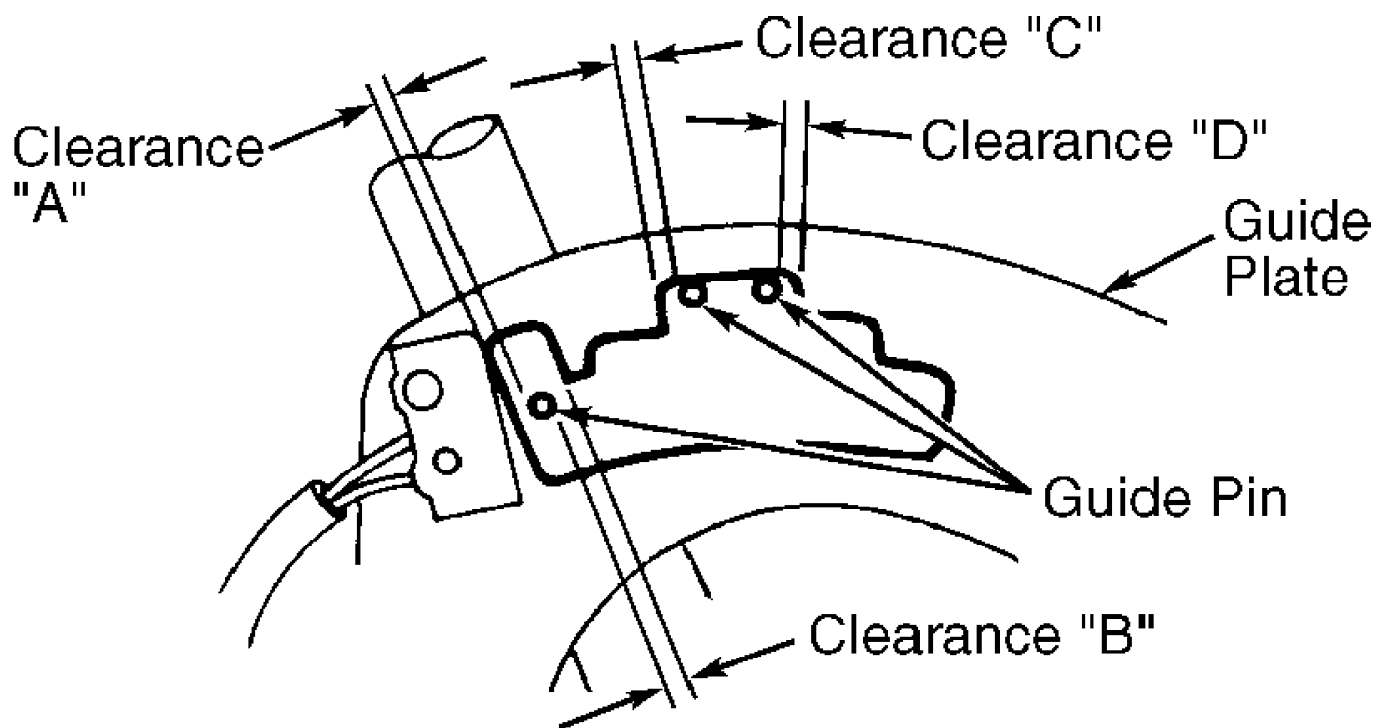
Application	(1) In. (mm)
Gearshift In Position "P"	
Clearance "A" .....	.035-.039 (.89-.99)
Clearance "B" .....	.020-.024 (.51-.61)
Gearshift In Position "N" Or "D"	
Clearance "C" .....	.024-.028 (.61-.71)
Clearance "D" .....	.059-.063 (1.50-1.60)

(1) - Clearance between guide plate and guide pin. See Fig. 5.



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Fig. 4: Identifying Gearshift Lever Components  
Courtesy of Mazda Motors Corp.



## 92B01651

Fig. 5: Checking Gearshift Lever Adjustment Clearances  
Courtesy of Mazda Motors Corp.

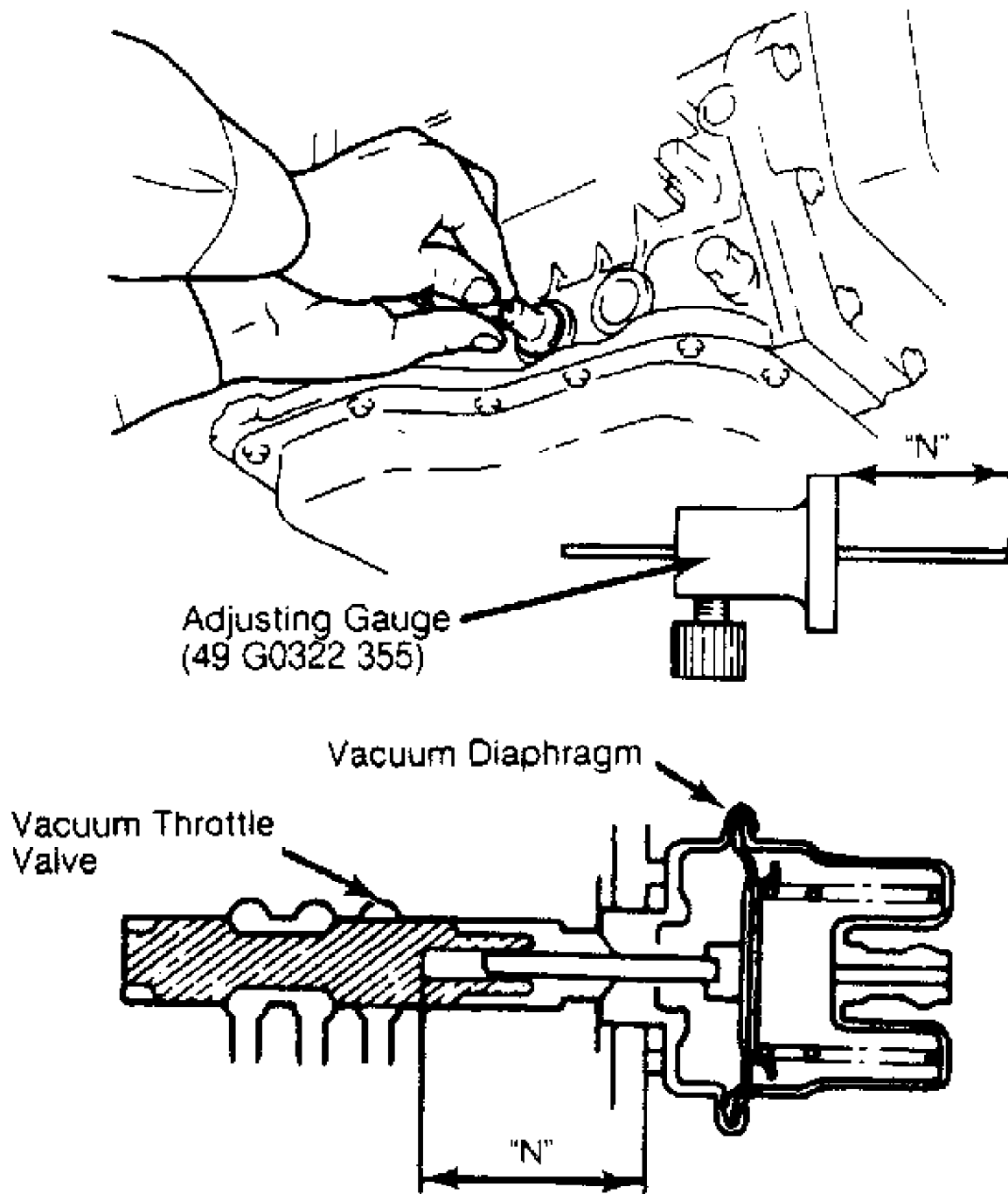
### VACUUM DIAPHRAGM ROD

1) If vacuum diaphragm (modulator) is replaced, vacuum diaphragm rod length (depth) must be checked for new rod length. Proper length rod should be installed after measurement.

2) Unscrew vacuum diaphragm from case. Remove diaphragm, diaphragm rod and rubber "O" ring. Measure dimension "N" using Adjusting Gauge (49-G032-355). Use VACUUM DIAPHRAGM ROD SELECTION table to select proper length rod. Also, see Fig. 6.

#### VACUUM DIAPHRAGM ROD SELECTION TABLE

Dimension "N" In. (mm)	Rod Length In. (mm)
1.0099 (25.650) Or Less	1.14 (29.0)
1.0099-1.0197 (25.650-25.900)	1.16 (29.5)
1.0197-1.0394 (25.900-26.400)	1.17 (29.7)
1.0394-1.0492 (26.400-26.650)	1.18 (30.0)
1.0492-1.0689 (26.650-27.150)	1.20 (30.5)
1.0689 (27.150) Or More	1.22 (31.0)



Courtesy of Mazda Motors Corp.

Fig. 6: Checking Vacuum Diaphragm Rod Length  
 Courtesy of Mazda Motors Corp.

## NEUTRAL SAFETY SWITCH

1) Place gearshift lever in "N" position. Ensure gearshift linkage is adjusted correctly. See GEARSHIFT LINKAGE under ADJUSTMENTS. Loosen neutral safety switch mounting bolts at transmission. Remove screw from alignment pin hole at bottom of switch (if equipped).

2) Insert a 5/64" (2.0 mm) alignment pin (or drill bit) through alignment holes.

3) On all models, tighten mounting bolts to specification. See the TORQUE SPECIFICATIONS table. Remove alignment pin. Install alignment pin hole screw (if equipped), and check switch operation. Vehicle should start only with gearshift in "P" or "N" position.

## TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	INCH Lbs. (N.m)
Neutral Safety Switch Mounting Bolt .....	43-61 (5.0-7.0)
Oil Pan Bolt .....	52-69 (6.0-8.0)
Valve Body Bolt .....	43-61 (5.0-7.0)