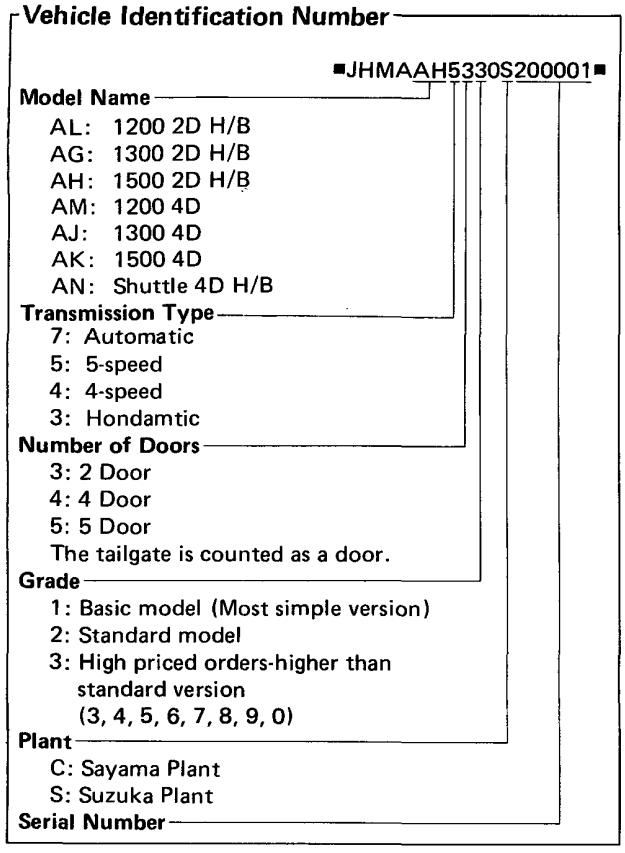
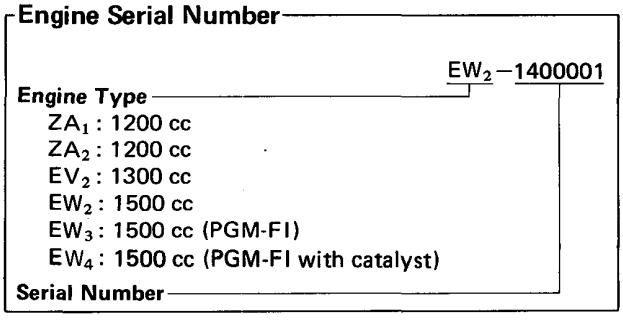
Chassis and Engine Codes

Vehicle Identification Number



Engine Serial Number



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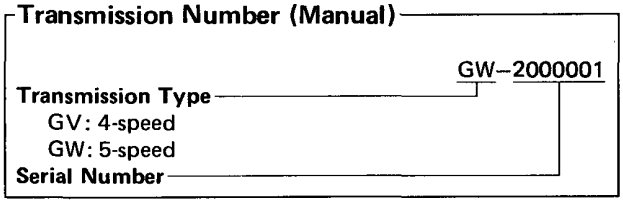

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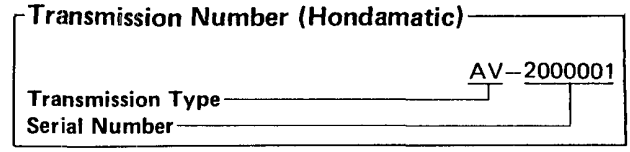

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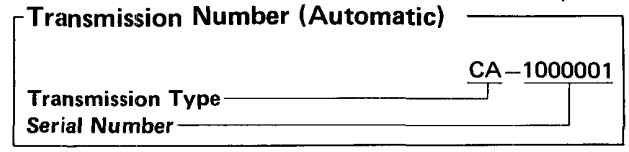


Abbreviations:

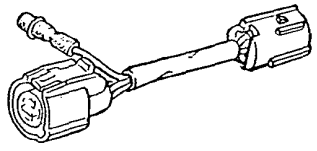
2 D H/B . . . . . 2 Door Hatchback
4 D . . . . . 4 Door Sedan
4 D H/B . . . . . Wagon (Australia model)
Shuttle (Except Australia model)

Automatic . . . . 4 Speed Automatic transmission
Hondamatic . . . . 2 Speed + OD Hondamatic transmission
MT . . . . . 5 Speed and 4 Speed Manual transmission
HM . . . . . Automatic and Hondamatic transmission

Special Tools

Newly Provided Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks	Section
①	02GAZ-SE30300	R.P.M. Connecting Adaptor	1		11
②	07GAC-PF40100	Transmission Housing Puller	1		16
③	07GAC-PF40210	Bearing Remover Attachment	1	Use changed to 07936-6340000 attachment	16
④	07406-0070000	Low Pressure Gauge	1		16
⑤	07GAZ-SE30400	Torsion Bar Assembly Tool	1	4D Trunk Lid	22



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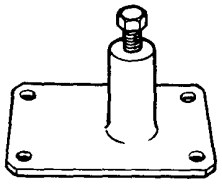

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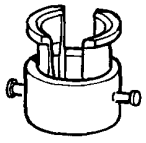

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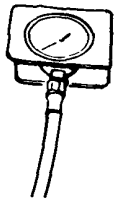

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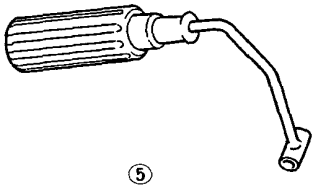

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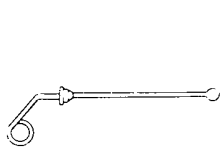
Special Tools (Common with Other Models)

16. Automatic Transmission (AV)

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07974–6890300	Throttle Cable Adjustment Gauge	1	
②	07923–6890202	Mainshaft Holder	1	
③	07907-PD10000	Socket Wrench 30 mm	1	07907–6890100 may also be used.
* ④	07GAC-PF40100	Transmission Housing Puller	1	
⑤	07960–6890000	Clutch Spring Compressor	1	
⑤ -1	07960–6890100	Clutch Spring Compressor Attachment	1	Use changed to 07960–6120000 attachment
⑥	07749–0010000	Driver	1	07949–6110000 may also be used.
⑦	07947–6340500	Driver Attachment E	1	
⑧	07947–6110500	Oil Seal Driver Attachment	1	
⑨	07936–6340000	Bearing Remover Set	1	
* ⑩	07GAC-PF40210	Bearing Remover Attachment	1	Use changed to 07936–6340000 attachment
⑪	07746–0010500	Driver Attachment 62 x 68 mm	1	
⑫	07406–0020003	Oil Pressure Gauge Set	1	
⑫ -1	07406–0020201	Oil Pressure Gauge Hose	(3)	Component Tool
⑬	07998-SB20000	Accelerator Pedal Weight Set	1	
⑬ -1	07998-SA50100	Main Accelerator Pedal Weight (1.0 kg)	(1)	Component Tool
⑬ -2	07998-SB20200	Sub Accelerator Pedal Weight (0.3 kg)	(1)	Component Tool
⑭	07947–6340201	Oil Seal Driver	1	
* ⑮	07406–0070000	Low Pressure Gauge	4	

*Newly Provided Tools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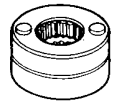
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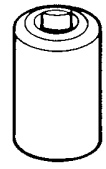
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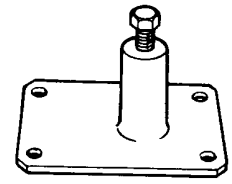
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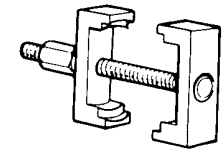
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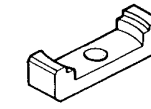
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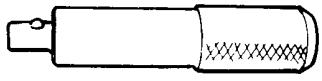
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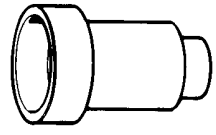
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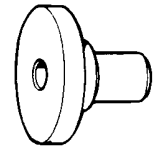
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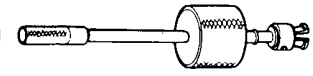
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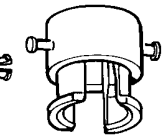
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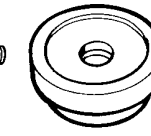
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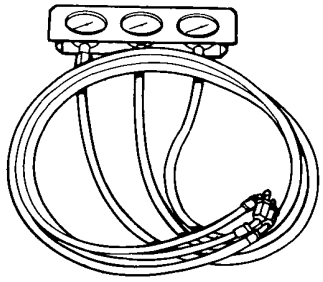
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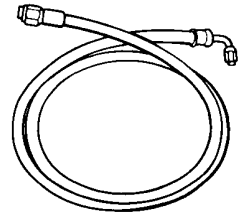
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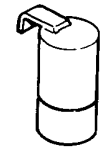
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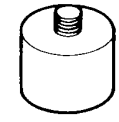
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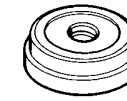
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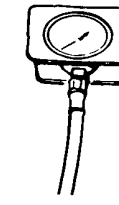
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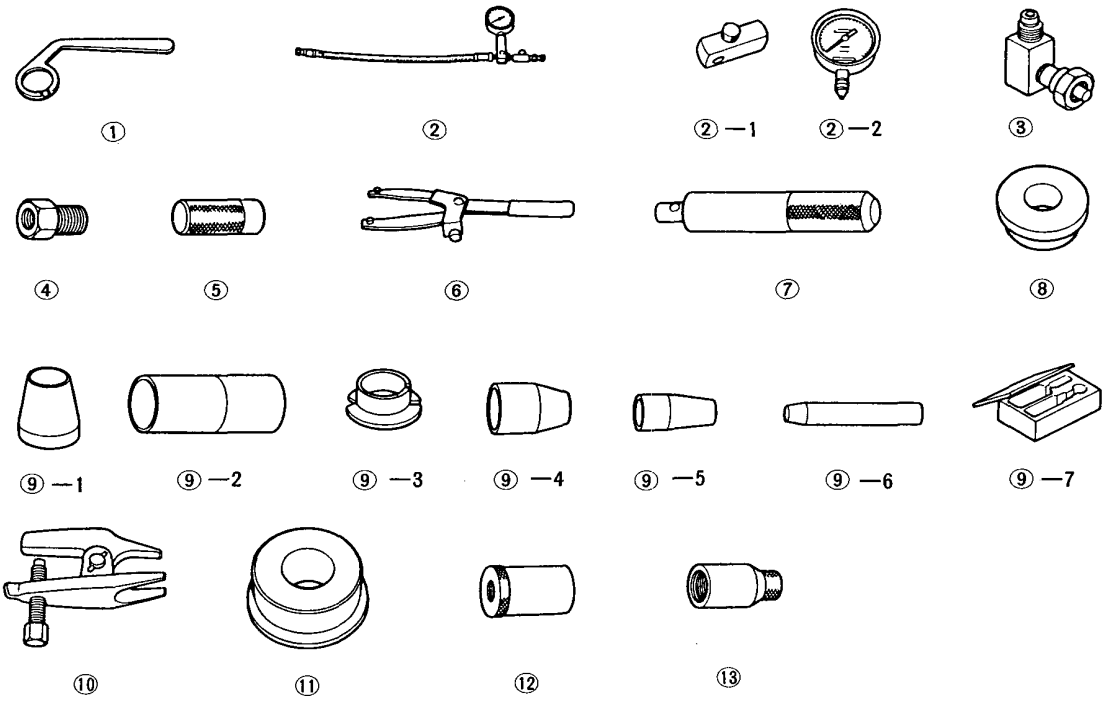
Special Tools (cont'd)

Special Tools (Common with Other Models)

19. Power Steering

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07916–6920000	Steering Gear Box Wrench	1	R/H
	or			
	07916–6920100	Steering Gear Box Wrench	1	L/H
②	07406–0010200	Power Steering Pressure Gauge	1	
②-1	07406–0010300	Pressure Control Valve	(1)	Component Tools
②-2	07406–0010400	Oil Pressure Gauge	(1)	Component Tools
③	07406–0010800	Pump Joint Adapter	1	
④	07406–0010900	Hose Joint Adapter	1	
⑤	07953–7190000	Collar Driver	1	
⑥	07725–0030000	Universal Holder	1	07725–0010101 may also be used
⑦	07749–0010000	Driver	1	07949–6110000 may also be used
⑧	07947–6340300	Driver Attachment	1	
⑨	07900–SA50000	Power Steering Tool Kit	1	
⑨-1	07974–SA50100	Piston Seal Ring Guide	(1)	Component Tools
⑨-2	07974–SA50200	Sizing Tool	(1)	Component Tools
⑨-3	07974–SA50300	Cylinder End Seal Slider	(1)	Component Tools
⑨-4	07974–SA50400	End Seal Guide	(1)	Component Tools
⑨-5	07974–SA50500	End Cover Seal Guide	(1)	Component Tools
⑨-6	07974–SA50600	Dust Seal Guide	(1)	Component Tools
⑨-7	07974–SA50900	Tool Kit Case	(1)	Component Tools
⑩	07941–6920002	Ball Joint Remover	1	
⑪	07746–0010300	Attachment 42x47 mm	1	
⑫	07973–6920001	Adjustment Guide	1	
⑬	07974–SB40100	Thread Adapter	1	



Standards and Service Limits

Cylinder Head/Valve Train – Section 6

*1300 and 1200

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	300 min^{-1} (rpm) and wide-open throttle		Nominal PGM-FI Carburetor Minimum PGM-FI Carburetor Maximum variation	1,274 kPa (13.0 kg/cm², 185 psi) 1,176 kPa (12.0 kg/cm², 171 psi) 1,078 kPa (11.0 kg/cm², 156 psi) 980 kPa (10.0 kg/cm², 142 psi) 196 kPa (2 kg/cm², 28 psi)
Cylinder head	Warpage Height		– 90 (3.54)	0.05 (0.002) 89.8 (3.53)
Camshaft	End play Oil clearance Runout Cam lobe height	PGM-FI IN EX 1500 IN EX 1300 IN EX 1200 IN EX	0.05–0.15 (0.002–0.006) 0.050–0.093 (0.002–0.004) 0.03 (0.001) max. 40.865 (1.6089) 40.884 (1.6096) 40.370 (1.5894) 40.391 (1.5902) 40.056 (1.5770) 40.078 (1.5779) 39.095 (1.5392) 39.120 (1.5402)	0.5 (0.02) 0.15 (0.006) 0.06 (0.002) – – – – – – – –
Valve	Valve clearance Valve stem O.D. Stem-to-guide clearance Stem installed height	IN EX IN EX IN EX IN EX	0.17–0.22 (0.007–0.009) 0.22–0.27 (0.009–0.011) 6.58–6.59 (0.2591–0.2594) 6.55–6.56 (0.2579–0.2583) 0.02–0.05 (0.001–0.002) 0.05–0.08 (0.002–0.003) 48.16 (1.896) 48.16 (1.896)	– – 6.55 (0.258) 6.52 (0.257) 0.08 (0.003) 0.11 (0.004) 48.95 (1.927) 48.95 (1.927)
Valve seat	Width	IN and EX	1.25–1.55 (0.049–0.061)	2.0 (0.08)
Valve spring	Free length Squareness Inner and Outer	IN and EX	47.6 (1.87) –	46.6 (1.83) 1.75 (0.068)
Valve guide	I.D	IN EX	6.61–6.63 (0.260–0.261) 6.61–6.63 (0.260–0.261)	6.65 (0.262) 6.65 (0.262)
Rocker arm	Arm-to-shaft clearance		0.018–0.054 (0.0007–0.0021)	0.08 (0.003)

Engine Block – Section 7

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface Bore diameter Bore taper Reboring limit	0.07 (0.003) max. 74.00–74.02 (2.9133–2.9142) 0.07–0.012 (0.0003–0.0005) –	0.10 (0.004) 74.10 (2.9173) 0.05 (0.002) 0.5 (0.02)
Piston	Skirt O.D. At 16 mm (0.63 in) from bottom of skirt Clearance in cylinder Piston-to-ring clearance (Top) (Second)	73.97–73.99 (2.9122–2.9133) **0.01–0.05 (0.0004–0.0020)** 0.03–0.06 (0.0012–0.0024) 0.030–0.055 (0.0012–0.0022)	73.96 (2.912) 0.07 (0.003) 0.13 (0.005) 0.13 (0.005)
Piston ring	Ring end gap (Top and second) Ring end gap (Oil)	0.15–0.35 (0.006–0.014) **0.30–0.90 (0.012–0.035)**	0.6 (0.024) **1.1 (0.043)**
Connecting rod	Pin-to-rod interference Large end bore diameter End play installed on crankshaft	0.02–0.04 (0.0008–0.0016) Nominal 45 (1.77) ***43 (1.69)** 0.15–0.30 (0.006–0.012)	0.02 (0.0008) – 0.40 (0.016)
Crankshaft	Main journal diameter Taper/out-of-round, main journal Rod journal diameter Taper/out-of-round, rod journal End play Runout	49.976–50.000 (1.9676–1.9685) 0.005 (0.0002) max. 41.976–42.000 (1.6526–1.6535) ***39.976–40.000 (1.5739–1.5748)** 0.005 (0.0002) max. 0.10–0.35 (0.004–0.014) 0.03 (0.0012) max.	– 0.010 (0.0004) – – 0.010 (0.0004) 0.45 (0.018) 0.06 (0.0024)
Bearings	Main bearing-to-journal oil clearance Rod bearing-to-journal oil clearance	0.024–0.042 (0.0009–0.0017) 0.020–0.038 (0.0008–0.0015)	0.07 (0.003) 0.07 (0.003)

Engine Lubrication – Section 8

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (US. qt., Imp. qt.)	4.0 (4.2, 3.4) After engine disassembly 3.5 (3.7, 3.1) After oil change, including oil filter 3.0 (3.2, 2.6) After oil change, without oil filter	
Oil pump	Displacement	35ℓ (9.2 US gal., 7.7 Imp gal.) 3,000 min^{-1} (rpm)	
	Inner-to-outer rotor radial clearance	0.14 (0.006) max.	0.2 (0.008)
	Pump body-to-rotor radial clearance	0.10–0.175 (0.004–0.007)	0.2 (0.008)
	Pump body-to-rotor side clearance	0.03–0.08 (0.001–0.003)	0.15 (0.006)
Relief valve	Pressure setting	333–340 kPa (3.4–4.2 kg/cm^2, 48–60 psi)	

Cooling – Section 10

HM: Automatic or Hondamatic

	MEASUREMENT	STANDARD (NEW)
Radiator	Capacity (incl. heater) ℓ (US. Gal., Imp. Gal.) Includes reservoir tank 0.4 (0.11, 0.09)	PGM-FI 5.1 (1.3, 1.1) 1200 4MT 4.4 (1.4, 1.2) KG, KW only 4MT 5.2 (1.4, 1.1) Other models HM 4.9 (1.3, 1.1) 1300 4MT 5.2 (1.4, 1.1) 5MT 4.9 (1.3, 1.1) KT only 5MT 4.4 (1.2, 1.0) Other models HM 4.9 (1.3, 1.1) EC models HM 5.2 (1.4, 1.1) Other models 1500 5.2 (1.4, 1.1) EC models 5.5 (1.5, 1.2) Other models Subtract 1ℓ (0.26 US Gal., 0.22 Imp. Gal.) from capacities at replacement
	Pressure cap opening pressure	74–103 kPa (0.75–1.05 kg/cm^2, 11–15 psi)
Thermostat	Starts to open Full open Valve lift at full open	76–78°C (169–173°F) 91°C (196°F) 8 (0.31) max.
Cooling fan	Fan-to-core clearance Thermoswitch "ON" temperature Thermoswitch "OFF" temperature	ND 22 mm (0.87 in.) TOYO 17.5 mm (0.69 in.) 88.5–91.5°C (191–197°F) 85.5–86.5°C (186–188°F)

Carburetor – Section 11

HM: Automatic or Hondamatic

	MEASUREMENT	STANDARD (NEW)
Carburetor	Choke fast idle	1,500–2,500 min^{-1} (rpm)
	Idle speed with headlights and cooling fan off (On swedish model: on)	Manual 700–800 min^{-1} (rpm) HM 650–750 min^{-1} (rpm)
	Idle CO	KS and KQ below 2.0% KX 0.5–2.0% Other models below 3.0%
	Float level	35.4–37.4 (13.9–14.7 in.)
PGM-FI	Choke fast idle	1,200–2,000 min^{-1} (rpm)
	Idle speed with headlights and cooling fan off (on swedish model: on)	700–800 min^{-1} (rpm)
	Idle CO	KS below 1.5% KX 0.5–2%

(cont'd)

Standards and Service Limits(cont'd)

Fuel – Section 12

	MEASUREMENT		STANDARD (NEW)
Fuel pump	Delivery pressure Displacement		17.7–26.5 kPa (0.18–0.27 kg/cm², 27–38 psi) 170 cc/min at camshaft rpm 300 min^{-1} (rpm)
Fuel pump (PGM-FI)	Delivery pressure Displacement		230–270 kPa (2.35–2.75 kg/cm², 33–39 psi) 230 cc/min in 10 seconds
Fuel tank	Capacity	2D H/B 4D, 4D H/B	45 ℓ (11.9 US. Gal., 9.9 Imp. Gal.) 46 ℓ (12.1 US. Gal., 10.1 Imp. Gal.)

Clutch – Section 13

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height Stroke Pedal play Disengagement height	 2D H/B, 4D 4D H/B	179 (7.05) to floor 135–140 (5.3–5.5) 10–30 (0.39–1.18) 83 (3.3) min. to floor 53 (2.1) min. to carpet 78 (3.1) min. to floor 48 (1.9) min. to carpet	– – –
Clutch arm	Release arm adjustment		4.0–5.0 (0.16–0.20)	–
Flywheel	Clutch surface runout		0.05 (0.002) max.	0.15 (0.006)
Clutch plate	Rivet head depth Surface runout Radial play in splines Thickness		1.3 (0.05) min. 0.8 (0.03) max. 0.036–0.112 (0.0014–0.0044) 8.1–8.8 (0.32–0.35)	0.2 (0.008) 1.0 (0.04) 0.5 (0.02) 5.7 (0.22)
Clutch release bearing holder	I.D. Holder-to-guide sleeve clearance		29.000–29.059 (1.142–1.144) 0.040–0.132 (0.0016–0.0052)	29.20 (1.150) 0.2 (0.008)
Clutch cover	Uneveness of diaphragm spring		0.8 (0.03) max.	1.0 (0.04)

Unit: mm (in.)

Manual Transmission – Section 14 and 15

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US. qt., Imp. qt)		2.5 (2.6, 2.2) at assembly 2.3 (2.4, 2.0) at oil change	
Mainshaft	End play		0.11–0.25 (0.004–0.010)	–
	Diameter of needle bearing contact area		27.997–28.010 (1.1022–1.1028)	27.94 (1.100)
	Diameter of fifth gear contact area		24.987–25.000 (0.9837–0.9843)	24.93 (0.981)
	Diameter of 62/22 ball bearing contact area		21.987–22.000 (0.8656–0.8661)	21.93 (0.863)
	Diameter of 6304 ball bearing contact area		19.983–19.996 (0.7867–0.7872)	19.93 (0.7846)
	Runout		0.02 (0.0008) max.	0.05 (0.0019)
Mainshaft fifth gear	I.D.		30.007–30.020 (1.1814–1.1819)	30.07 (1.184)
	End play		0.05–0.35 (0.0020–0.0138)	–
Countershaft	End play		0.35 (0.0138)	0.65 (0.026)
	Diameter of needle bearing contact area		30.004–30.017 (1.1813–1.1818)	29.94 (1.179)
	Diameter of ball bearing contact area		24.9935–25.0065 (0.9840–0.9845)	24.94 (0.982)
	Diameter of low gear contact area		31.984–32.000 (1.2592–1.2598)	31.93 (1.257)
	Runout		0.04 (0.0016)	0.10 (0.004)
Countershaft low gear	I.D.		37.009–37.025 (1.4570–1.4577)	37.08 (1.460)
	End play		0.03–0.08 (0.0012–0.0031)	0.18 (0.007)
Countershaft second, third/fourth gear	I.D.		37.009–37.025 (1.4570–1.4577)	37.08 (1.460)
	End play		0.05–0.12 (0.0020–0.0047)	0.18 (0.007)
Spacer collar	Second, Third	I.D.	25.980–25.991 (1.0228–1.0233)	26.04 (1.025)
		O.D.	31.989–32.000 (1.2594–1.2598)	31.93 (1.257)
		Length	28.01–28.13 (1.1028–1.1074)	–
	Fourth	I.D.	25.007–25.037 (0.9845–0.9857)	25.08 (0.987)
		O.D.	31.989–32.000 (1.2594–1.2598)	31.93 (1.257)
		Length	28.01–28.13 (1.1028–1.1074)	
Reverse idler gear	I.D.		15.016–15.043 (0.5912–0.5922)	15.08 (0.594)
	Gear-to-reverse gear shaft clearance		0.032–0.077 (0.0013–0.0030)	0.14 (0.006)
Synchronizer ring	Ring-to-gear clearance (ring pushed against gear)		0.85–1.10 (0.033–0.043)	0.4 (0.016)
Shift fork	Synchronizer sleeve gear		6.95–7.05 (0.2736–0.2776)	–
	Fork-to-synchronizer sleeve clearance		0.45–0.65 (0.018-0.026)	1.0 (0.039)
Reverse shift fork	End gap		6.9–7.0 (0.27–0.28)	–
	Fork-to-reverse idler gear clearance		0.1–0.3 (0.004–0.012)	0.7 (0.028)
	Groove width		7.05–7.25 (0.278–0.285)	–
	Fork-to-fifth/reverse shift shaft clearance		0.05–0.35 (0.002–0.014)	0.5 (0.020)
Shift arm B	I.D.		14.016–14.043 (0.5518–0.5529)	–
	Shift arm-to-shift guide clearance		0.022–0.067 (0.0009–0.0026)	0.15 (0.006)

(cont'd)

Standards and Service Limits(cont'd)

Hondamatic Transmission (AV) – Section 16

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US. qt., Imp. qt)	2.4 (2.5, 2.1) at oil change 5.0 (5.3, 4.4) at assembly	
Hydraulic pressure	Line pressure at 2,000 min^{-1} (rpm) 1500	735–784 kPa (7.5–8.0 kg/cm^2, 107–114 psi)	686 kPa (7.0 kg/cm^2, 100 psi)
	1200, 1300	637–686 kPa (6.5–7.0 kg/cm^2, 92–100 psi)	588 kPa (6.0 kg/cm^2, 85 psi)
	OD clutch pressure at 2,000 min^{-1} (rpm) 1500	686–784 kPa (7.0–8.0 kg/cm^2, 100–114 psi)	637 kPa (6.5 kg/cm^2, 92 psi)
	1200, 1300	588–686 kPa (6.0–7.0 kg/cm^2, 85–100 psi)	539 kPa (5.5 kg/cm^2, 78 psi)
	☆clutch pressure at 2,000 min^{-1} (rpm) 1500	686–784 kPa (7.0–8.0 kg/cm^2, 100–114 psi)	637 kPa (6.5 kg/cm^2, 92 psi)
	1200, 1300	588–686 kPa (6.0–7.0 kg/cm^2, 85–100 psi)	539 kPa (5.5 kg/cm^2, 78 psi)
	1st clutch pressure at 2,000 min^{-1} (rpm) 1500	686–784 kPa (7.0–8.0 kg/cm^2, 100–114 psi)	637 kPa (6.5 kg/cm^2, 92 psi)
	1200, 1300	588–686 kPa (6.0–7.0 kg/cm^2, 85–100 psi)	539 kPa (5.5 kg/cm^2, 78 psi)
	Governor pressure at 60 km/h	221–230 kPa (2.25–2.35 kg/cm^2, 32–33 psi)	216 kPa (2.2 kg/cm^2, 31 psi)
	Throttle pressure 1500	735–784 kPa (7.5–8.0 kg/cm^2, 107–114 psi)	686 kPa (7.0 kg/cm^2, 100 psi)
	1200, 1300	637–686 kPa (6.5–7.0 kg/cm^2, 92–100 psi)	588 kPa (6.0 kg/cm^2, 85 psi)
Stall speed	Check with car on level ground	2,700 min^{-1} (rpm)	2,300–2,900 min^{-1} (rpm)
Clutch	Clutch initial clearance 1st	0.4–0.7 (0.016–0.028)	–
	2nd	0.65–0.80 (0.026–0.031)	–
	3rd	0.4–0.6 (0.016–0.024)	–
	Clutch return spring free length	30.5 (1.20)	28.5 (1.12)
	Clutch disc thickness	1.88–2.0 (0.074–0.079)	Until grooves worn out
	Clutch plate thickness	1.95–2.05 (0.077–0.079)	Discoloration
	Clutch end plate thickness Mark 1	2.3–2.4 (0.091–0.094)	
	Mark 2	2.4–2.5 (0.094–0.098)	
	Mark 3	2.5–2.6 (0.098–0.102)	
	Mark 4	2.6–2.7 (0.102–0.106)	
	Mark 5	2.7–2.8 (0.106–0.110)	
	Mark 6	2.8–2.9 (0.110–0.114)	
	Mark 7	2.9–3.0 (0.114–0.118)	
	Mark 8	3.0–3.1 (0.118–0.122)	
	Mark 9	3.1–3.2 (0.122–0.126)	
	Mark 10	3.2–3.3 (0.126–0.130)	Discoloration
Transmission	Diameter of needle bearing contact area on main and stator shaft	19.980–19.993 (0.7866–0.7871)	Wear or damage
	Diameter of needle bearing contact area on main 2nd gear collar	31.975–31.991 (1.2588–1.2594)	
	Diameter of needle bearing contact area on mainshaft 1st gear collar	30 975–30.991 (1.2195–1.2201)	
	Diameter of needle bearing contact area on countershaft (L side)	32.984–33.000 (1.2986–1.2993)	
	Diameter of needle bearing contact area on countershaft 3rd gear	31.975–31.991 (1.2589–1.2595)	
	Diameter of needle bearing contact area on countershaft 2nd gear	27.980–27.993 (1.1016–1.1021)	
	Diameter of needle bearing contact area on countershaft reverse gear collar	29.980–29.993 (1.1803–1.1808)	
	Diameter of needle bearing contact area on reverse idle gear	13.994–14.000 (0.5509–0.5512)	
	Reverse idler shaft holder diameter	14.016–14.034 (0.5518–0.5525)	
	Mainshaft 2nd gear I.D.	38.000–38.016 (1.4961–1.4967)	
	Mainshaft 1st gear I.D.	36.000–36.016 (1.4173–1.4179)	
	Countershaft 3rd gear I.D.	38.000–38.016 (1.4966–1.4966)	
	Countershaft 2nd gear I.D.	33.000–33.016 (1.4173–1.4179)	
	Countershaft 1st gear I.D.	35.000–35.016 (1.3779–1.3785)	
	Countershaft reverse gear I.D.	36.000–36.016 (1.4173–1.4179)	
	Reverse idler gear I.D.	18.007–18.020 (0.7086–0.7094)	Wear or damage

Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Mainshaft 2nd gear end play		0.07–0.15 (0.003–0.006)	–
	Mainshaft 1st gear end play		0.08–0.20 (0.003–0.008)	–
	Countershaft 3rd gear end play		0.07–0.15 (0.003–0.006)	–
	Countershaft 2nd gear end play		0.07–0.15 (0.003–0.006)	–
	Reverse idle gear end play		0.05–0.18 (0.0020–0.0071)	–
	Countershaft reverse gear end play		0.10–0.20 (0.004–0.008)	–
	Reverse gear hub O.D.		51.87–51.90 (2.0421–2.0433)	Wear or damage
	Thrust washer thickness			
	Mainshaft 2nd gear, Countershaft 3rd gear	A	2.97–3.00 (0.1169–0.1181)	–
		B	3.02–3.05 (0.1189–0.1201)	–
		C	3.07–3.10 (0.1209–0.1220)	–
		D	3.12–3.15 (0.1228–0.1240)	–
		E	3.17–3.20 (0.1248–0.1260)	–
		F	3.22–3.25 (0.1268–0.1280)	–
		G	3.27–3.30 (0.1287–0.1299)	–
		H	3.32–3.35 (0.1307–0.1319)	–
		I	3.37–3.40 (0.1327–0.1339)	–
	Mainshaft R side bearing		3.95–4.05 (0.1555–0.1594)	Wear or damage
	Mainshaft 1st gear		2.43–2.50 (0.0957–0.0984)	Wear or damage
	Countershaft 2nd gear thickness	A	2.27–2.30 (0.0894–0.0906)	–
		B	2.32–2.35 (0.0913–0.0925)	–
		C	2.37–2.40 (0.0933–0.0945)	–
		D	2.42–2.45 (0.0953–0.0965)	–
		E	2.47–2.50 (0.0972–0.0984)	–
		F	2.50–2.55 (0.0972–0.1004)	–
		G	2.52–2.60 (0.0992–0.1024)	–
	Mainshaft 1st gear collar length		22.50–22.55 (0.8858–0.8878)	–
	Mainshaft 1st gear collar flange thickness		2.5–2.6 (0.098–0.102)	Wear or damage
	Countershaft reverse gear collar length		14.0–14.1 (0.551–0.555)	–
	Countershaft reverse gear collar flange thickness		2.45–2.50 (0.096–0.098)	Wear or damage
	Mainshaft and countershaft feed pipe O.D. (at 20 mm from end)		7.97–7.98 (0.3138–0.3142)	7.95 (0.31)
	Mainshaft sealing ring 32 mm thickness		1.980–1.995 (0.0780–0.0785)	–
	Mainshaft bushing I.D.		8.000–8.015 (0.3150–0.3156)	8.03 (0.316)
	Countershaft bushing I.D.		8.000–8.015 (0.3150–0.3156)	8.03 (0.316)
	Mainshaft sealing ring groove width		2.025–2.060 (0.0797–0.0811)	2.08 (0.082)
Regulator valve body	Sealing ring contact area diameter		32.000–32.025 (1.2598-1.2608)	32.05 (1.26)
Shifting device and parking brake control	Reverse shift fork thickness		5.9–6.0 (0.232–0.236)	5.4 (0.21)
	Parking brake ratchet pawl		–	Wear or other defect
	Parking gear		–	Wear or other defect
	Throttle cam stopper		18.5–18.6 (0.7283–0.7323)	–
Servo body	Shift fork shaft bore I.D.	A	14.000–14.005 (0.5512–0.5514)	–
		B	14.006–14.010 (0.5514–0.5516)	–
		C	14.011–14.015 (0.5516–0.5518)	–
	Shift fork shaft valve bore I.D.		37.000–37.039 (1.4567–1.4582)	37.045 (1.4583)
Valve body	Oil pump gear side clearance		0.03–0.05 (0.0012–0.0020)	0.07 (0.003)
	Oil pump gear-to-body clearance		Drive: 0.21–0.27 (0.0083–0.0106)	–
			Driven: 0.05–0.09 (0.0020–0.0035)	–
	Stator camshaft needle bearing bore I.D.		24.000–24.021 (0.9449–0.9457)	Wear or damage
	Stator camshaft needle bearing contact and O.D.		26.000–26.013 (1.0236–1.0241)	Wear or damage
	Oil pump driven gear I.D.		14.016–14.034 (0.5518–0.5525)	Wear or damage
	Oil pump shaft O.D.		13.980–13.990 (0.5503–0.5507)	Wear or damage

(cont'd)

Standards and Service Limits (cont'd)

Automatic Transmission (CA) – Section 16

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity (US. qt., Imp. qt.)	2.4 (2.5, 2.1) at oil change 5.4 (5.2, 4.7) at assembly	
Hydraulic pressure	Line pressure at 2,000 min^{-1} (rpm)	784–833 kPa (8.0–8.5 kg/cm^2, 114–126 psi)	735 kPa (7.5 kg/cm^2, 105 psi)
	4th, 3rd, 2nd clutch pressure at 2,000 min^{-1} (rpm)	441–833 kPa (4.5–8.5 kg/cm^2, 64–125 psi)	735 kPa (7.5 kg/cm^2, 105 psi) with throttle more than 3/8 OPEN
	1st clutch pressure at 2,000 min^{-1} (rpm)	784–833 kPa (8.0–8.5 kg/cm^2, 114–126 psi)	735 kPa (7.5 kg/cm^2, 105 psi)
	Governor pressure at 60 km/h	208–218 kPa (2.12–2.22 kg/cm^2, 30–31 psi)	208 kPa (2.12 kg/cm^2, 30 psi)
	Throttle pressure A	510–524 kPa (5.2–5.35 kg/cm^2, 73–75 psi)	495 kPa (5.05 kg/cm^2, 71 psi)
	Throttle pressure B	784–833 kPa (8.0–8.5 kg/cm^2, 114–126 psi)	735 kPa (7.5 kg/cm^2, 105 psi)
Stall speed	Check with car on level ground	2,300–2,900 min^{-1} (rpm)	—
Clutch	Clutch initial clearance 1st	0.4–0.6 (0.016–0.024)	—
	2nd	0.65–0.80 (0.026–0.031)	—
	3rd and 4th	0.4–0.6 (0.016–0.024)	—
	Clutch return spring free length 1st	31.0–(1.22)	29.0 (1.14)
	Except 1st	30.5 (1.20)	29.0 (1.14)
	Clutch disc thickness	1.88–2.0 (0.074–0.079)	Until grooves worn out
	Clutch plate thickness	1.55–1.45 (0.061–0.065)	Discoloration
	Clutch end plate thickness Mark 1	2.3–2.4 (0.091–0.094)	↑
	Mark 2	2.4–2.5 (0.094–0.098)	↑
	Mark 3	2.5–2.6 (0.098–0.102)	↑
	Mark 4	2.6–2.7 (0.102–0.106)	↑
	Mark 5	2.7–2.8 (0.106–0.110)	↑
	Mark 6	2.8–2.9 (0.110–0.114)	↑
	Mark 7	2.9–3.0 (0.114–0.118)	↑
	Mark 8	3.0–3.1 (0.118–0.122)	↑
	Mark 9	3.1–3.2 (0.122–0.126)	↑
	Mark 10	3.2–3.3 (0.126–0.130)	Discoloration
Transmission	Diameter of needle bearing contact area on main and stator shaft	19.980–19.993 (0.7866–0.7871)	Wear or damage
	Diameter of needle bearing contact area on main shaft 2nd gear collar	35.957–35.991 (1.4163–1.4169)	↑
	Diameter of needle bearing contact area on main 4th gear collar	31.975–31.991 (1.2588–1.2594)	↑
	Diameter of needle bearing contact area on mainshaft 1st gear collar	30.975–30.991 (1.2195–1.2201)	↑
	Diameter of needle bearing contact area on countershaft (L side)	36.004–36.017 (1.4175–1.4180)	↑
	Diameter of needle bearing contact area on countershaft 3rd gear	31.975–31.991 (1.2589–1.2595)	↑
	Diameter of needle bearing contact area on countershaft 4th gear	27.980–27.993 (1.1016–1.1021)	↑
	Diameter of needle bearing contact area on countershaft reverse gear collar	29.980–29.993 (1.1803–1.1808)	↑
	Diameter of needle bearing contact area on countershaft L gear collar	29.980–29.993 (1.1803–1.1808)	↑
	Diameter of needle bearing contact area on reverse idle gear	13.990–14.000 (0.5508–0.5512)	↑
	Mainshaft 2nd gear I.D.	41.000–41.016 (1.6141–1.6148)	↑
	Mainshaft 1st gear I.D.	36.000–36.016 (1.4173–1.4179)	↑
	Countershaft 3rd gear I.D.	38.000–38.016 (1.4966–1.4966)	↑
	Countershaft 4th gear I.D.	33.000–33.016 (1.4173–1.4179)	↑
	Countershaft reverse gear I.D.	36.000–36.016 (1.4173–1.4179)	↑
	Reverse idle gear I.D.	18.007–18.020 (0.7086–0.7094)	Wear or damage
	Mainshaft 4th gear end play	0.10–0.22 (0.004–0.009)	—
	Mainshaft 2nd gear end play	0.07–0.15 (0.003–0.006)	—
	Mainshaft 1st gear end play	0.08–0.24 (0.0031–0.0094)	—
	Countershaft 3rd gear end play	0.08–0.40 (0.003–0.016)	—
	Countershaft 2nd gear end play	0.05–0.18 (0.002–0.007)	—
	Reverse idle gear and play	0.05–0.18 (0.0020–0.0071)	—
	Countershaft reverse gear end play	0.05–0.20 (0.002–0.008)	—
	Reverse gear hub O.D.	51.87–51.90 (2.0421–2.0433)	Wear or damage
	Thrust washer thickness Mainshaft 2nd gear A	3.47–3.50 (0.137–0.138)	—
	B	3.52–3.55 (0.139–0.140)	—
	C	3.57–3.60 (0.141–0.142)	—
	D	3.62–3.65 (0.143–0.144)	—
	E	3.67–3.70 (0.145–0.146)	—
	F	3.72–3.75 (0.147–0.148)	—
	G	3.77–3.80 (0.149–0.150)	—
	H	3.82–3.85 (0.151–0.152)	—
	I	3.87–3.90 (0.151–0.152)	—
	Thrust washer thickness Countershaft 3rd gear A	2.97–3.00 (0.1169–0.1181)	—
	B	3.02–3.05 (0.1189–0.1201)	—
	C	3.07–3.10 (0.1209–0.1220)	—
	D	3.12–3.15 (0.1228–0.1240)	—
	E	3.17–3.20 (0.1248–0.1260)	—
	F	3.22–3.25 (0.1268–0.1280)	—
	G	3.27–3.30 (0.1287–0.1299)	—
	H	3.32–3.35 (0.1307–0.1319)	—
	I	3.37–3.40 (0.1327–0.1339)	—

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Countershaft 4th gear thickness A	33.97–34.00 (1.337–1.339)	—
	B	34.02–34.05 (1.339–1.341)	—
	C	34.07–34.10 (1.341–1.343)	—
	D	34.12–34.15 (1.343–1.344)	—
	E	34.17–34.20 (1.345–1.346)	—
	F	34.72–34.25 (1.347–1.348)	—
	G	34.27–34.30 (1.349–1.350)	—
	Mainshaft R side bearing	3.95–4.05 (0.1555–0.1594)	Wear or damage
	Mainshaft 1st gear	2.43–2.50 (0.0957–0.0984)	Wear or damage
	Thrust washer thickness (mainshaft 1st gear L side)	1.45–1.50 (0.057–0.059)	1.4 (0.055)
	Mainshaft 1st gear collar length	25.0–25.15 (0.984–0.990)	—
	Mainshaft 1st gear collar flange thickness	2.5–2.6 (0.098–0.102)	Wear or damage
	Countershaft reverse gear collar length	14.50–14.55 (0.531–0.535)	—
	Countershaft reverse gear collar flange thickness	2.45–2.55 (0.096–0.100)	Wear or damage
	Countershaft 1st gear collar length	13.5–13.6 (0.0020–0.0035)	—
	Countershaft 1st gear collar flange thickness	2.4–2.6 (0.095–0.102)	Wear or damage
	Diameter of countershaft one-way clutch contact area	74.414–74.440 (2.9297–2.9307)	Wear or damage
	Diameter of parking gear one-way clutch contact area	57.755–57.768 (2.2738–2.2743)	Wear or damage
	Mainshaft feed pipe: A O.D. (at 15 mm from end)	8.970–8.980 (0.353–0.354)	8.95 (0.352)
	Mainshaft feed pipe B: O.D. (at 12 mm from end)	5.97–5.98 (0.2350–0.2354)	5.95 (0.234)
	Countershaft feed pipe O.D. (at 20 mm from end)	5.97–5.98 (0.2350–0.2354)	5.95 (0.234)
	Mainshaft sealing ring 32 mm thickness	1.980–1.995 (0.0780–0.0785)	—
	Mainshaft bushing I.D.	6.018–6.030 (0.2369–0.2374)	6.045 (0.238)
	Mainshaft bushing I.D.	9.000–9.015 (0.3543–0.3549)	9.03 (0.356)
	Countershaft bushing I.D.	8.000–8.015 (0.3150–0.3156)	8.03 (0.316)
	Mainshaft sealing ring groove width	2.025–2.060 (0.0797–0.0811)	2.08 (0.082)
Regulator valve body	Sealing ring contact area diameter	32.000–32.025 (1.2598–1.2608)	32.05 (1.26)
Shifting device and parking brake control	Reverse shift fork thickness	5.9–6.0 (0.232–0.236)	5.4 (0.21)
	Parking brake ratchet pawl	—	Wear or other defect
	Parking gear	—	Wear or other defect
	Throttle cam stopper	18.5–18.6 (0.7283–0.7323)	—
Servo body	Shift fork shaft bore I.D. A	14.000–14.005 (0.5512–0.5514)	—
	B	14.006–14.010 (0.5514–0.5516)	—
	C	14.011–14.015 (0.5516–0.5518)	—
	Shift fork shaft valve bore I.D.	37.000–37.039 (1.4567–1.4582)	37.045 (1.4585)
Valve body	Oil pump gear side clearance	0.03–0.05 (0.0012–0.0020)	0.07 (0.003)
	Oil pump gear-to-body clearance	Drive: 0.105–0.133 (0.0041–0.0052)	—
		Driven: 0.050–0.088 (0.0020–0.0035)	—
	Stator camshaft needle bearing bore I.D. (R. side)	26.000–26.013 (1.0236–1.0241)	Wear or damage
	Stator camshaft needle bearing contact and I.D. (Stator side)	24.000–24.021 (0.9449–0.9457)	Wear or damage
	Oil pump driven gear I.D.	14.016–14.034 (0.5518–0.5525)	Wear or damage
	Oil pump shaft O.D.	13.980–13.990 (0.5504–0.5508)	Wear or damage

Differential – Section 17

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Ring gear	Backlash	0.073–0.132 (0.0029–0.0052)	0.25 (0.010)
Differential carrier	Pinion shaft bore diameter	18.000–18.018 (0.7087–0.7094)	18.1 (0.71)
	Carrier-to-pinion shaft clearance	0.016–0.052 (0.0006–0.0020)	0.1 (0.004)
	Driveshaft bore diamettter Manual.	26.005–26.025 (1.0238–1.0246)	–
	HM	28.000–28.021 (1.1024–1.1032)	–
	Carrier-to-driveshaft clearance	0.025–0.066 (0.0010–0.0026)	0.12 (0.005)
	Side clearance	0.10–0.20 (0.004–0.008)	0.15 (0.006)
Differential pinion gear	Backlash	0.05–0.15 (0.002–0.006)	
	Pinion gear bore diameter	18.041–18.061 (0.7103–0.7111)	–
	Pinion gear-to-pinion shaft clearance	0.057–0.095 (0.0022–0.0037)	0.15 (0.006)

Driveshaft – Section 18

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Driveshaft	Right boot As installed	471–476 (18.5–18.7)	–
	Left boot As installed	771–776 (30.4–30.6)	–

(cont'd)

Standards and Service Limits(cont'd)

Steering – Section 19

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10.0 (0.39) Max.	–
	Pinion-starting torque N·m (kg-m, lb-ft) Without P/S	0.5–1.3 (0.05–0.13, 0.36–0.94)	–
	With P/S	1.2 (0.12, 0.87) Max.	–
	Pump pressure with valve closed (Oil temp./speed: 40°C (104°F) min/idle. Do not run for more than 5 seconds) kPa (kg/cm², Psi)	6,370–7,056 (65–72, 924–1,014)	–
	Fluid capacity Reservoir	0.3 ℓ (0.32 U.S. qt., 0.26 Imp.qt)	–
	At change	1.0 ℓ (1.1 U.S. qt., 0.9 Imp. qt.)	–
Power Steering pump belt	Deflection midway between pulleys/load	18–22 (0.7–0.9)/98N (10kg, 22lb) four used belt	–
		18–20 (0.7–0.8)/98N (10kg, 22lb) after replacement of belt	–

Suspension – Section 20

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Wheel alignment	Front camber	2D H/B	-0°10'±1°	*with P/S
		4D	-0°10'±1° KY: 0°20'±1°	
		4D H/B	0°20'±1° EC: 0°16'±1°	
	Rear camber		-0°45'±15'	
	Caster	2D H/B	2°20'±1° KY: 2°10'±1°	
			*2°55'±1° KY: *2°55'±1°	
		4D	2°25'±1° *3°55'±1°	
		4D H/B	2°00'±1° EC: 1°49'±1°	
			*2°35'±1° EC: *2°25'±1°	
	Front toe		0±3mm (0±0.118 in.)	
	Rear toe		IN 2±2mm (0.079±0.079 in.)	
	Kingpin inclination	2D H/B	12°55'±30' KY: 12°30'±30'	
		4D	12°45'±30' KY: 12°15'±30'	
		4D H/B	12°00'±30' EC: 11°54'±30'	
	Steering angle R/L	Inside	41°30' ± 2°	
		Outside	34°30' ± 2°	
Wheel	Rim runout Steel	Axial	0–1.0 (0–0.039)	–
		Radial	0–1.0 (0–0.039)	–
	Aluminum	Axial	0–0.7 (0–0.028)	–
		Radial	0–0.7 (0–0.028)	–

Brake – Section 21

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Parking brake lever	Play in stroke 200N (20 kg, 44 lbs)		To be locked when pulled 4–8 notches	
Foot brake pedal	Pedal height		174 (6.8) 4D H/B:168 (6.6) to floor	–
	Free play		1–5 (0.04–0.20)	5 (0.20)
Master cylinder	Piston-to-push rod clearance		0–0.4 (0–0.016)	–
Brake drum	I.D.		180 (7.09)	181 (7.13)
		4D H/B	200 (7.87)	201 (7.91)
Lining	Thickness		4.5 (0.18)	2.0 (0.08)
Disc brake	Disc thickness	Ventilated	17.0 (0.67)	15.0 (0.59)
		Solid	12.0 (0.47)	10.0 (0.39)
	Disc runout		–	0.10 (0.004)
	Disc parallelism		0.007 (0.0003)	0.015 (0.0006)
	Pad thickness	4D H/B EC and KX	10.0 (0.39)	3.0 (0.12)
		Other models	9.5 (0.37)	3.0 (0.12)

		Vacuum (mmHg)	Pedal Pressure kg (lbs)	Line Pressure kg/cm² (psi)
Brake Booster	Characteristic	0	20 (44)	16 (227) min
		300	20 (44)	46 (654) min
		500	20 (44)	66 (939) min

Engine Electrical — Section 25, 26 and 27

Unit: mm (in.)

	MEASUREMENT			STANDARD (NEW)		
Ignition coil	Rated voltage			12 Volts		
	Insulation resistance			10,000 ohms min.		
	Performance: Make sure strong sparks jump across electrodes (3-point tester)					
	Voltage	Camshaft		Secondary Voltage	3-point gap	Condition
	12V	3,000 min^{-1} (rpm)		17 ± 4 kV	13–19 (0.51–0.75)	At 80°C (176°F)
Ignition wire	Resistance			25,000 ohms max.		
Spark plug	Type	Standard	EC	NGK: BPR6EY-11, ND: W20EXR-U11		
			Other models	NGK: BP6EY-11, ND: W20EX-U11		
	Gap			1.0–1.1 (0.039–0.043)		
Ignition timing	At idling	1200		17±2° BTDC		
		1300		12±2° BTDC		
		1500	European model	14±2° BTDC		
			PGM-FI model	16°±2° BTDC		
			General export model	16°±2° BTDC		
Battery	Lighting capacity (20-hour ratio)			40, 45, 47 Ampere Hours		
	Starting capacity (5-second ratio)			8.4V minimum at 300 Ampere draw		

Alternator		ND		MITSUBISHI	
		STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Output at no-load Output	14V at 1,090 min^{-1} (rpm) 14V/55A at 6,000 min^{-1} (rpm)	14V at 1,400 min^{-1} (rpm) 50A at 5,000 min^{-1} (rpm)	14V at 1,100 min^{-1} (rpm) 14V/55A at 6,000 min^{-1} (rpm)	14V at 1,400 min^{-1} (rpm) 50A at 5,000 min^{-1} (rpm)
	Coil resistance (rotor)	2.9 ohm	2.8–3.0 ohms	3 ohm	
	Slip ring O.D.	14.4 (0.57)	13.5 (0.53)	23.0 (0.91)	22.5 (0.89)
	Brush length	13.5 (0.53)	5.0 (0.20)	18.0 (0.71)	8.0 (0.31)
	Brush spring tension	330g (11.6 oz)	200g (7.05 oz)	370g (13.05 oz)	210g (7.41 oz)
Alternator belt	Deflection midway between pulleys/load		7–10 (0.28–0.39)/98 (10 kg, 22 lb) for used belt 4–6.5 (0.16–0.26)/98 (10 kg, 22 lb) after replacement of belt		

Starting motor		ND 0.8kW		HITACHI 0.8kW		ND 1.0kW, 1.4kW		MITSUBA 1.0kW,1.4kW	
	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Mica depth	0.5–0.8 (0.020–0.031)	0.2 (0.008)	0.5–0.8 (0.020–0.031)	0.2 (0.008)	0.5–0.8 (0.020–0.031)	0.2 (0.008)	0.4–0.5 (0.016–0.020)	0.15 (0.006)
	Commutator runout	0–0.5 (0.020)	0.3 (0.012)	0–0.1 (0.004)	0.4 (0.016)	0–0.02 (0.0008)	0.05 (0.020)	0–0.02 (0.008)	0.05 (0.020)
	Commutator O.D.	28.0 (1.10)	27.0 (1.06)		39.0 (1.54)	30.0 (1.18)	29.0 (1.14)	28.0 (1.10)	27.5 (1.08)
	Brush length	15.5–16.5 (0.61–0.65)	10.0 (0.39)	14.5–15.5 (0.61–0.65)	12.0 (0.47)	12.5–13.5 (0.49–0.53)	8.5 (0.33)	14.3–14.7 (0.56–0.58)	9.3 (0.37)
	Spring pressure (new)	1.2 kg (2.6 lb)	–	1.6 kg (3.5 lb)	–	1.75 kg (3.8 lb)	–	2.1 kg (4.6 lb)	–

Design Specifications

2D H/B

	ITEMS		METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length		3,845 mm 3,865 mm	151.4 in. 152.2 in.	With bumper guard
	Overall Width		1,635 mm	64.4 in.	
	Overall Height		1,340 mm	52.8 in.	
	Wheelbase		2,380 mm	93.7 in.	
	Tread Front/Rear		1,400/1,415 mm	55.1/55.7 in.	
	Ground Clearance		165 mm 175 mm (KY)	6.5 in. 6.9 in.	
	Seating Capacity		5		
WEIGHTS	Engine Weight	PGM-FI	94 kg	207 lb.	
		Others	90 kg	198 lb.	
	Curb Weight				
	PGM-FI		860 kg	1,896 lb.	
			865 kg (KW-SF, KS)	1,907 lb.	KW-SF: Spain and Finland
			870 kg (KX)	1,918 lb.	
			870 kg (with catalyst)	1,918 lb.	
	1500	5-speed	840 kg	1,852 lb.	
			845 kg (KW-SF, KS)	1,863 lb.	
			850 kg (KX)	1,874 lb.	
			840 kg (KY)	1,852 lb.	
		Automatic	860 kg	1,896 lb.	
			865 kg (KW-SF, KS)	1,907 lb.	
			870 kg (KX)	1,918 lb.	
	1300	5-speed	820 kg	1,808 lb.	
			825 kg (KW-SF, KS)	1,819 lb.	
			835 kg (KX)	1,841 lb.	
		Automatic	840 kg (KE)	1,852 lb.	
		Hondamatic	835 kg	1,841 lb.	
			840 kg (KW-SF, KS)	1,852 lb.	
			850 kg (KX)	1,874 lb.	
	1200	4-speed	790 kg (KP, KT, KU)	1,742 lb.	
			795 kg (KG)	1,753 lb.	
		Hondamatic	805 kg (KP, KT, KU)	1,775 lb.	
	Weight Distribution (F/R)				
	PGM-FI		515/345 kg	1,135/761 lb.	
			520/345 kg (KW-SF, KS)	1,146/761 lb.	
			525/345 kg (KX)	1,157/761 lb.	
			520/350 kg (with catalyst)	1,146/772 lb.	
	1500	5-speed	500/340 kg	1,102/750 lb.	
			505/340 kg (KW-SF, KS)	1,113/750 lb.	
			510/340 kg (KX)	1,124/750 lb.	
			505/335 kg (KY)	1,113/739 lb.	
		Automatic	520/340 kg	1,146/750 lb.	
			525/340 kg (KW-SF, KS)	1,157/750 lb.	
			530/340 kg (KX)	1,168/750 lb.	
	1300	5-speed	485/335 kg	1,069/739 lb.	
			490/335 kg (KW-SF, KS)	1,080/739 lb.	
			500/335 kg (KX)	1,102/739 lb.	
		Automatic	505/335 kg (KE)	1,113/739 lb.	
		Hondamatic	500/335 kg	1,102/739 lb.	
			505/335 kg (KW-SF, KS)	1,113/739 lb.	
			515/335 kg (KY)	1,135/739 lb.	
	1200	4-speed	470/320 kg (KP, KT, KU)	1,036/705 lb.	
			475/320 kg (KG)	1,047/705 lb.	
		Hondamatic	485/320 kg	1,069/705 lb.	
	Max. Permissible Weight (EC)		1,270 kg	2,800 lb.	
			1,230 kg (KS-PGM-FI with Sunroof)	2,712 lb.	
			1,220 kg (KS-PGM-FI)	2,690 lb.	
			1,220 kg (KS-1500HM)	2,690 lb.	Curb weight
			1,210 kg (KS-1500MT)	2,668 lb.	+ A/C—22 kg (49 lb.)
			1,210 kg (KS-1300HM)	2,618 lb.	+ Cargo—45 kg (99 lb.)
			1,190 kg (KS-1300MT)	2,623 lb.	+ Passengers—68 kg x 5 (150 lb. x 5)
	Gross Vehicle Weight Rating (MVSS)		1,290 kg (1500 engine) 1,240 kg (1300 engine)	2,850 lb. 2,740 lb.	+ Tolerance
	Carrying (loading) Weight Capacity		45 kg	99 lb.	= G.V.W.R.

	ITEM	METRIC	ENGLISH	NOTES
CAPACITIES	Engine Oil:			
	drain and refill (with filter)	3.5 ℓ	3.7 US qt,3.1 Imp qt	
	initial fill	4.0 ℓ	4.2 US qt,3.5 Imp qt	
	Transmission Oil:			
	drain and refill	2.3 ℓ	2.4 US qt,2.0 Imp qt	
	initial fill	2.5 ℓ	2.6 US qt,2.2 Imp qt	
	Automatic Fluid:			
	Automtic drain and refill	2.4 ℓ	2.5 US qt,2.1 Imp qt	
	initial fill	5.4 ℓ	5.7 US qt,4.8 Imp qt	
	Hondamatic drain and refill	2.4 ℓ	2.5 US qt,2.1 Imp qt	
	initial fill	5.0 ℓ	5.3 US qt,4.4 Imp qt	
CAPACITIES	Fuel Tank	45 ℓ	11.9 US gal,9.9 Imp gal	
	Cooling System/ PGM-FI	5.1/4.1 ℓ	5.4/4.3 US qt,4.5/3.6 Imp qt	
	Drain and Refill 1500	5.2/4.2 ℓ (EC-MT)	5.5/4.4 US qt,4.6/3.7 Imp qt	
	Radiator	5.5/4.5 ℓ (EC-HM,Other type)	5.8/4.8 US qt,4.8/4.0 Imp qt	
	1300			
	5-speed	4.4/3.4 ℓ (EC)	4.7/3.6 US qt,3.9/3.0 Imp qt	
		4.9/3.9 ℓ (Other types)	5.2/4.1 US qt,4.3/3.4 Imp qt	
	4-speed	5.2/4.2 ℓ	5.5/4.4 US qt,4.6/3.7 Imp qt	
	HM	4.9/3.9 ℓ (EC)	5.2/4.1 US qt,4.3/3.4 Imp qt	
		5.2/4.2 ℓ (Other types)	5.5/4.2 US qt,4.6/3.7 Imp qt	
	1200			
	4-speed	4.4/3.4 ℓ (KG)	4.7/3.6 US qt,3.9/3.0 Imp qt	
		5.2/4.2 ℓ (KP,KT,KU)	5.5/4.4 US qt,4.6/3.7 Imp qt	
	Hondamatic	4.9/3.9 ℓ (KP,KT,KU)	5.2/4.1 US qt,4.3/3.4 Imp qt	
ENGINE	Type	Water cooled,4-cycle O.H.C.		
	Cylinder Arrangement	4-cylinder in-line, transverse		
	Bore and Stroke PGM-FI, 1500	74 x 86.5 mm	2.91 x 3.41 in.	
	1300	74 x 78 mm	2.91 x 3.07 in.	
	1200	74 x 69 mm	2.91 x 2.72 in.	
	Compression Ratio PGM-FI	8.7 : 1		
	1500	8.7 : 1		
	1300	8.7 : 1 8.7 : 1 (KX)		
	1200	8.2 : 1		
	Displacement PGM-FI, 1500	1.488 cm^3	91 cu.in.	
	1300	1,342 cm^3	82 cu.in.	
	1200	1.187 cm^3	72 cu.in.	
	Valve Train	Timing belt driven,single overhead camshaft		
	Lubrication System	Trochoid pump		
	Fuel Required	CARB Engine: Leaded or unleaded gasoline with 91 Research Octane number or higher		Expect KX,KQ
		PGM-FI Engine: Leaded gasoline with 97 Research Octane number or higher		Expect KX
		Unleaded gasolin with 91 Research Octane number or higher		KX,KQ

Valve Timing		PGM-FI	1500		1300	1200	
Intake	OPEN	10° ATDC	10° ATDC *1	10° ATDC	15° ATDC	15° ATDC	OPEN measurement begins
	CLOSE	40° ABDC	20° ABDC	20° ABDC	15° ABDC	15° ABDC	CLOSE measurement ends at point where valve reaches 1 mm lift.
Exhaust	OPEN	40° BBDC	25° BBDC	25° BBDC	20° BBDC	15° BBDC	
	CLOSE	10° BTDC	10° BTDC	5° BTDC	15° BTDC	15° BTDC	

TRANS-MISSION	Clutch	4/5-speed	Single plate dry,diaphragm spring			
		HM	Torque converter			
	Transmission	5-speed	Synchronized 5 forward 1 reverse			
		4-speed	Synchronized 4 forward 1 reverse			
		Automatic	4 forward speeds 1 reverse with torque converter			
		Hondamatic	3 forward speeds 1 reverse with torque converter			
	Primary Reduction		Direct 1 : 1			

Gear Ratio	PGM-FI, 1500	5- speed	Automatic	
	1st	2.916	2.500	
	2nd	1.764	1.500	
	3rd	1.192	0.969	
	4th	0.866	0.729	
	5th	0.718	—	
	Reverse	2.916	1.954	
	Final Reduction	4.250 *4.400	3.933	*KB-GT and KG With catalyst

	1300	5-speed		4-speed	Hondamatic
		KS,KX	Others		
	1st	2.916	3.272	2.916	1.782
	2nd	1.764	1.666	1.764	1.206
	3rd	1.192	1.037	1.192	0.828
	4th	0.866	0.774	0.866	—
	5th	0.718	0.647	—	—
	Reverse	2.916	2.916	2.916	1.954
	Final Reduction	4.250	4.250	4.400	3.588

*1 : KQ, KS, KX model with Automatic

(cont'd)

2D H/B

	ITEMS	METRIC	ENGLISH	NOTES
TRANS-MISSION (cont'd)	Gear Ratio 1200	4-speed	Hondamatic	
	1st	2.916	1.782	
	2nd	1.764	1.206	
	3rd	1.192	0.828	
	4th	0.866	—	
	Reverse	2.916	1.954	
	Final Reduction	4.400 KG 4.666	3.588	
	Clutch Lining Area	147 cm^2	22.9 sq. in.	
STEERING	Gear Type	Rack and Pinion		
	Overall Ratio	19.0 (18.0) : 1		( ) with P/S
	Turns, lock-to-lock	4.1		
	Steering Wheel Diameter	370 x 360 mm	14.6 x 14.2 in.	
		377 mm	14.8 in.	EC-GL, GT
SUSPENSION	Type, Front	Independent, Strut, Torsion bar spring		
	Type, Rear	Rigid axle, Trailing arm, Coil spring		
WHEEL ALIGNMENT	Camber Front/Rear	-0°10'/-0°45'		*with P/S
	Caster	2°20', *2°55'		
		2°10', *2°55' (KY)		
	Toe Front	0 mm	0 in.	
	Rear	IN 2 mm	IN 0.08 in.	
	Steering Axis Inclination	12°55'		
		12°30'		
BRAKES	Type, Front	Self-adjusting power-disc brake		
		Power assisted ventilated disc (EC-GT, KX-GL)		
	Type, Rear	Power assisted drum		
	Lining Surface Area Front/Rear	36/50.2 cm^2	5.6/7.9 sq. in.	
	Effective Disc Diameter	190 mm	7.5 in.	
	Brake Drum I.D.	180 mm	7.1 in.	
	Parking Brake Type	Mechanical expanding, rear two wheel brakes		
TIRES	Size	175/70 HR 13 (EC-GT)		
		155SR13 (EC-DX, STD, KW, KS-GL)		
		165/70SR13 (EC-GL, Except KW, KS)		
		165SR13 (KY)		
		165/70SR13 (KQ)		
		6.15-13-4PR (KP, KD, KT, KU Except Greece)		
		155SR13 (Greece only)		
ELECTRICAL	Battery	12 V – 47 AH		
		12 V – 45 AH (KF, KE)		
		12 V – 40 AH (KQ, KT, KU, KP, KY)		
	Starter	12 V – 1.0 kW, 12 V – 1.4 kW (1500 HM expect KE, KF) 12 V – 0.8 kW (KE, KF)		
	Alternator	12 V – 55 amps		
	Fuses	20 A x 2, 15 A x 4, 10 A x 9		
	Main Fuse	55 A x 1, 45 A x 2		
	Headlights	12 V – 60/55W		
		12 V – 65/55 W (KT, KU, KP, KY, KQ)		
	Front Turn Signal Lights	12 V – 21 W		
	Position Lights	12 V – 5 W		
	Front Side Marker Lights	12 V – 5 W		
	Warning Indicator Lights	12 V – 14 W		
	Interior Light	12 V – 5 W		
	Rear Turn Signal Lights	12 V – 21 W		
	Stop/Taillights	12 V – 21/5 W		
	Turn Signal Indicator Lights	12 V – 1.4 W		
	Luggage area Light	12 V – 3.4 W		
	Back-up Lights	12 V – 21 W		
	License Lights	12 V – 5 W		
	Rear Fog Lights	12 V – 21 W (EC)		
	Heater Panel Light	12 V – 1.4 W		

4D

	ITEMS		METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length		4,145 mm 4.165 mm	163.2 in. 164.0 in.	
	Overall Width	1500	1,630 mm 1,625 mm (KQ only)	64.2 in. 64.0 in.	
		1200/1300	1,625 mm	64.0 in.	
	Overall Height		1,385 mm	54.5 in.	
	Wheelbase		2,450 mm	96.5 in.	
	Tread F/R		1,400/1,415 mm	55.1/55.7 in.	
	Ground Clearance		165/175 mm (KY only)	6.3/6.9 in.	
	Seating Capacity		5		
WEIGHTS	Engine Weight (Wet)		90 kg	198 lb.	Except transmission and radiator
	Curb Weight	1500			
		5-speed	885 kg (KS, KW-SF) 895 kg (KX) 880 kg (KW) 900 kg (KY)	1,951 lb. 1,973 lb. 1,940 lb. 1,984 lb.	
		Automatic	905 kg (KS, KW-SF) 915 kg (KX) 900 kg (KW)	1,995 lb. 2,017 lb. 1,984 lb.	
		Hondamatic	915 kg (KY)	2,017 lb.	
		1300			
		5-speed	855 kg (KS, KW-SF) 865 kg (KX) 850 kg (KW)	1,885 lb. 1,907 lb. 1,874 lb.	
		Hondamatic	870 kg (KS, KW-SF) 880 kg (KX) 865 kg (KW)	1,918 lb. 1,940 lb. 1,907 lb.	
		1200			
		5-speed	855 kg (KW)	1,885 lb.	
		4-speed	845 kg (KP, KT, KU)	1,863 lb.	
		Hondamatic	865 kg (KP, KT, KU)	1,907 lb.	
	Weight Distribution (F/R)	1500			
		5-speed	520/365 kg (KS, KW-SF) 530/365 kg (KX) 515/365 kg (KW) 525/375 kg (KY)	1,146/805 lb. 1,168/805 lb. 1,135/805 lb. 1,157/827 lb.	
		Automatic	540/365 kg (KS, KW-SF) 550/365 kg (KX) 535/365 kg (KW)	1,190/805 lb. 1,213/805 lb. 1,179/805 lb.	
		Hondamatic	540/375 kg (KY)	1,190/827 lb.	
		1300			
		5-speed	500/355 kg (KS, KW-SF) 510/335 kg (KX) 495/355 kg (KW)	1,102/783 lb. 1,124/783 lb. 1,091/783 lb.	Curb weight + A/C—22 kg (49 lb.) + Cargo—45 kg (99 lb.) + Passengers—70 kg x 5 (154 lb. x 5) + Tolerance = G.V.W.R.
		Hondamatic	515/355 kg 525/355 kg (KX) 510/355 kg (KW)	1,135/783 lb. 1,157/783 lb. 1,124/783 lb.	
		1200			
		5-speed	500/355 kg (KW)	1,102/783 lb.	
		4-speed	490/355 kg (KP, KT, KU)	1,080/783 lb.	
		Hondamatic	510/355 kg (KP, KT, KU)	1,124/783 lb.	
	Max. permissible weight (EC)		1,300 kg 1,240 kg (KS-1300) 1,290 kg (KS-1500)	2,866 lb. 2,734 lb. 2,744 lb.	
	Gross Vehicle Weight Rating (MVSS)		1,320 kg	2,910 lb.	
	Carrying (loading) Weight Capacity		45 kg	99 lb.	
CAPACITIES	Engine Oil:				
	drain and refill (with filter)		3.5 ℓ	3.7 US qt, 3.1 Imp qt	
	initial fill		4.0 ℓ	4.2 US qt, 3.5 Imp qt	
	Transmission Oil:				
	drain and refill		2.3 ℓ	2.4 US qt, 2.0 Imp qt	
	initial fill		2.5 ℓ	2.6 US qt, 2.2 Imp qt	
	Automatic Fluid:				
	Automatic, drain and refill		2.4 ℓ	2.5 US qt, 2.1 Imp qt	
	initial fill		5.4 ℓ	5.7 US qt, 4.8 Imp qt	
	Hondamatic, drain and refill		2.4 ℓ	2.5 US qt, 2.1 Imp qt	
	initial fill		5.0 ℓ	5.3 US qt, 4.4 Imp qt	
	Fuel Tank		46 ℓ	12.1 US gal, 10.1 Imp gal	
	Cooling System Drain and Refill Radiator	1500	5.2/4.2 ℓ (EC-MT) 5.5/4.5 ℓ (Other models)	5.5/4.4 US qt, 4.6/3.7 Imp qt 5.8/4.8 US qt, 4.8/4.0 Imp qt	
		1300			
		5-speed	4.9/3.9 ℓ (KT) 4.4/3.4 ℓ (Except KT)	5.2/4.1 US qt, 4.3/3.4 Imp qt 4.7/3.6 US qt, 3.9/3.0 Imp qt	
		4-speed	5.2/4.2 ℓ	5.5/4.4 US qt, 4.6/3.7 Imp qt	
		HM	4.9/3.9 ℓ (EC) 5.2/4.2 ℓ (Other models)	5.2/4.1 US qt, 4.3/3.4 Imp qt 5.5/4.4 US qt, 4.6/3.7 Imp qt	
		1200			
		5-speed	4.4/3.4 ℓ (KW)	4.7/3.6 US qt, 3.9/3.0 Imp qt	
		4-speed	5.2/4.2 ℓ	5.5/4.4 US qt, 4.6/3.7 Imp qt	
		Hondamatic	4.9/3.9 ℓ	5.2/4.1 US qt, 4.3/3.4 Imp qt	

(cont'd)

Design Specifications (cont'd)

4D

	ITEMS		METRIC	ENGLISH	NOTES
ENGINE	Type		Water cooled, 4-cycle O.H.C.		
	Cylinder Arrangement		4-cylinder in-line, transverse		
	Bore and Stroke	1500	74 x 86.5 mm	2.91 x 3.41 in.	
		1300	74 x 78 mm	2.91 x 3.07 in.	
		1200	74 x 69 mm	2.91 x 2.72 in.	
	Compression Ratio	1500	8.7 : 1		
		1300	8.7 : 1	8.6 : 1 (KX only)	
		1200	8.2 : 1		
	Displacement	1500	1,488 cm³	91 cu. in.	
		1300	1,342 cm³	82 cu. in.	
		1200	1,187 cm³	72 cu. in.	
	Valve Train		Timing belt driven, single overhead camshaft		
	Lubrication System		Trochoid pump		
	Fuel Required		Leaded or unleaded gasoline with 91 Research Octane number or higher. Unleaded gasoline with 91 Research Octane Number or higher		Expect KX, KQ
	Valve Timing		1500	1300 / 1200	KX, KQ
	Intake	OPEN	10° ATDC *1 10° ATDC	15° ATDC / 15° ATDC	OPEN measurement begins
		CLOSE	20° ABDC 20° ABDC	15° ABDC / 15° ABDC	CLOSE measurement ends at point where valve reaches 1 mm lift.
	Exhaust	OPEN	25° BBDC 25° BBDC	20° BBDC / 15° BBDC	
		CLOSE	10° BTDC 5° BTDC	15° BTDC / 15° BTDC	
TRANS-MISSION	Clutch	4/5-speed	Single plate dry, diaphragm spring		
		HM	Torque converter		HM: Automatic or Hondamatic
	Transmission	5-speed	Synchronized 5 forward 1 reverse		
		4-speed	Synchronized 4 forward 1 reverse		
		Automatic	4 forward speeds 1 reverse with torque converter		
		Hondamatic	3 forward speeds 1 reverse with torque converter		
	Primary Reduction		Direct 1 : 1		
	Gear Ratio	1500	5-speed / Automatic / Hondamatic		
		1st	2.916 / 2.500 / 1.782		
		2nd	1.764 / 1.500 / 1.133		
		3rd	1.192 / 0.969 / 0.777		
		4th	0.866 / 0.729 / —		
		5th	0.718 / — / —		
		Reverse	2.916 / 1.954 / 1.954		
		Final Reduction	4.250 / 3.933 / 3.588		
		1300	5-speed ( ) KF / 4-speed / Hondamtic / Automatic		
		1st	2.916 (3.272) / 2.916 / 1.782 / 2.500		
		2nd	1.764 (1.666) / 1.764 / 1.206 / 1.500		
		3rd	1.192 (1.037) / 1.192 / 0.828 / 0.969		
		4th	0.866 (0.774) / 0.866 / — / 0.729		
		5th	0.718 (0.647) / — / — / —		
		Reverse	2.916 (2.916) / 2.916 / 1.954 / 1.954		
		Final Reduction	4.400 (4.250) / 4.400 / 3.588 / 3.933		
		1200	5-speed / 4-speed / Hondamatic		
		1st	2.916 / 2.916 / 1.782		
		2nd	1.764 / 1.764 / 1.206		
		3rd	1.192 / 1.192 / 0.828		
		4th	0.866 / 0.866 / 0.718		
		5th	0.718 / 0.718 / —		
		Reverse	2.916 / 2.916 / 1.954		
		Final Reduction	4.400 / 4.666 / 3.588		
	Clutch Lining Area		147 cm²	22.9 sq. in.	
STEERING	Gear Type		Rack and Pinion		
	Overall Ratio		19.1 (17.9) : 1		( ) with P/S
	Turns, lock-to-lock		4.1		
	Steering Wheel Diameter		377 mm	14.8 in.	
SUSPENSION	Type, Front		Independent, Strut, Torsion bar spring		
	Type, Rear		Rigid axle, Trailing arm, Coil spring		
WHEEL ALIGNMENT	Camber	Front/Rear	-0°10'/-0°45'		
			0°20'/-0°45' (KY)		
	Caster		2°25' *3°00'		* with P/S
	Toe	Front	0 mm	0 in.	
		Rear	IN 2 mm	IN 0.08 in.	
	Steering Axis Inclination		12°45'		
			12°15' (KY)		

*1 : KQ, KS, KX model with Automatic

	ITEMS	METRIC	ENGLISH	NOTES
BRAKES	Type, Front	Self-adjusting power-disc brake Power assisted ventilated disc (KX-GL)		
	Type, Rear	Power assisted drum		
	Lining Surface Area Front/Rear	36/50.2 cm^2	5.6/7.9 sq. in.	
	Effective Disc Diameter	190 mm	7.5 in.	
	Brake Drum I.D.	180 mm	7.1 in.	
	Parking Brake Type	Mechanical expanding, rear two wheel brakes		
TIRES	Size	165/70SR13 (KF, KX, KE-GL) 155SR 13 (EC-DX and KW, KS-GL) 165SR 13 (KY) 165/70SR 13 (KQ) 6.15-13-4PR (KP, KT, KU Except Greece) 155SR 13 (Greece only)		
ELECTRICAL	Battery	12 V – 47 AH 12 V – 45 AH (KF, KE) 12 V – 40 AH (KQ, KT, KU, KP, KY)		
	Starter	12 V – 1.4 KW, 12 V – 1.0 KW, 12 V – 0.8 KW		
	Alternator	12 V – 55 amps		
	Fuses	20 A x 2, 15 A x 4, 10 A x 9		
	Main Fuse	55 A x 1, 45 A x 2		
	Headlights	12 V – 60/55 W 12 V – 65/55 W (KT, KU, KP, KY)		
	Front Turn Signal Lights	12 V – 21 W		
	Position Lights	12 V – 5 W		
	Front Side Marker Lights	12 V – 5 W		
	Interior Light	12 V – 5 W		
	Rear Turn Signal Lights	12 V – 21 W		
	Stop/Taillights	12 V – 21/5 W		
	Trunk Light	12 V – 3.4 W		
	Back-up Lights	12 V – 21 W		
	Rear Fog Lights	12 V – 21 W (EC)		
	License Lights	12 V – 5 W		

Design Specifications (cont'd)

4D H/B

	ITEMS		METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length		3,990 mm 4,000 mm	157.1 in. 157.5 in.	With bumper guard
	Overall Width		1,650 mm 1,625 mm (KQ only)	65.0 in. 63.9 in.	
	Overall Height		1,490 mm	58.7 in.	
	Wheelbase		2,450 mm	96.5 in.	
	Tread F/R		1,400/1,415 mm	55.1/55.7 in.	
	Ground Clearance		165 mm 175 mm (KY only)	6.5 in. 6.9 in.	
	Seating Capacity		5		
WEIGHTS	Engine Weight (Wet)		90 kg	198 lb.	Except transmission and radiator
	Curb Weight	5-speed	890 kg (KF, KG, KB) 895 kg (KW, KE) 905 kg (KS) 920 kg (KX) 915 kg (KY) 875 kg (KP, KT, KU) 905 kg (KQ)	1,962 lb. 1,973 lb. 1,995 lb. 2,028 lb. 2,017 lb. 1,929 lb. 1,995 lb.	
		Automatic	910 kg (KF, KG, KB) 915 kg (KW, KE) 930 kg (KY) 920 kg (KQ) 925 kg (KS) 940 kg (KX)	2,006 lb. 2,017 lb. 2,050 lb. 2,028 lb. 2,039 lb. 2,072 lb.	
		Hondamatic	890 kg (KP, KT, KU)	1,962 lb.	
	Weight Distribution (F/R)	5-speed	510/380 kg (KF, KG, KB) 515/380 kg (KW, KE) 525/380 kg 530/385 kg (KY) 520/385 kg (KQ) 505/370 kg (KP, KT, KU)	1,113/838 lb. 1,124/838 lb. 1,157/838 lb. 1,168/849 lb. 1,146/849 lb. 1,113/816 lb.	
		Automatic	530/380 kg (KF, KG, KB) 535/380 kg (KW, KE) 545/385 kg (KY) 535/385 kg (KQ) 545/380 kg (KS) 555/385 kg (KX)	1,168/838 lb. 1,179/838 lb. 1,202/849 lb. 1,179/849 lb. 1,202/838 lb. 1,224/849 lb.	Curb weight + A/C—22 kg (49 lb.) + Cargo—45 kg (99 lb.) + Passengers—70 kg x 5 (154 lb.) x 5 + Tolerance = G.V.W.R.
		Hondamatic	520/370 kg (KP, KT, KU)	1,146/816 lb.	
	Max. permissible weight (EC)		1,365 kg 1,320 kg (KS)	3,009 lb. 2,910 lb.	
	Gross Vehicle Weight Rating (MVSS)		1,365 kg	3,010 lb.	
	Carrying (loading) Weight Capacity		1,380 kg (KY) 45 kg	3,042 lb. 99 lb.	
CAPACITIES	Engine Oil: drain and refill (with filter) intial fill		3.5 ℓ 4.0 ℓ	3.7 US qt,3.1 Imp qt 4.2 US qt,3.5 Imp qt	
	Transmission Oil: drain and refill intial fill		2.3 ℓ 2.5 ℓ	2.4 US qt,2.0 Imp qt 2.6 US 2.2 Imp qt	
	Automatic Fluid: Automatic, drain and refill initial fill		2.4 ℓ 5.4 ℓ	2.5 US qt,2.1 Imp qt. 5.7 US qt,4.8 Imp qt.	HM: Automatic or Hondamatic
	Hondamatic, drain and refill initial fill		2.4 ℓ 5.0 ℓ	2.5 US qt,2.1 Imp qt. 5.3 US qt,4.4 Imp qt	
	Fuel Tank		46 ℓ	12.1 US gal,10.1 Imp gal	
	Cooling System/Drain and Refill Radiator	5-speed	5.6/4.6 (EC)	5.9/4.7 US qt, 4.9/4.1 Imp qt	
		HM	5.9/4.9 (EC)	6.2/5.2 US qt, 5.1/4.3 Imp qt	
			5.5/4.5 ℓ (Other types)	5.8/4.8 US qt,4.8/ 4.0 Imp qt	
ENGINE	Type		Water cooled, 4-cycle O.H.C.		
	Cylinder Arrangement		4-cylinder in-line, transverse		
	Bore and Stroke		74 x 86.5 mm	2.91 x 3.4 in.	
	Compression Ratio		8.7 : 1		
	Displacement		1,488 cm³	91 cu in.	
	Valve Train		Timing belt driven, single overhead camshaft		
	Lubrication System		Trochoid pump		
	Fuel Required		Leaded or unleaded gasoline with 91 Research Octane number or higher.		
	Valve Timing		Unleaded gasoline with 91 Research Octane number or higher		
	Intake	OPEN	10° ATDC	*1 10° ATDC	OPEN measurement beings CLOSE measurement ends at point where valve reaches 1 mm lift.
		CLOSE	20° ABDC	20° ABDC	
	Exhaust	OPEN	25° BBDC	25° BBDC	
		CLOSE	10° BTDC	5° BTDC	

*1: KQ, KS, KX model with Automatic

	ITEMS	METRIC	ENGLISH	NOTES
TRANSMISSION	Clutch 5-speed, HM	Single plate dry, diaphragm spring		HM: Automatic or Hondamatic
	Transmission 5-speed	Torque converter		
	Hondamatic	Synchronized 5 forward 1 reverse		
	Automatic	3 forward speeds 1 reverse with torque converter		
		4 forward speeds 1 reverse with torque converter		
	Primary Reduction	Direct 1 : 1		
	Gear Ratio	5-speed / Automatic / Hondamatic		
	1st	3.181 / 2.500 / 1.782		
	2nd	1.823 / 1.500 / 1.133		
	3rd	1.192 / 0.969 / 0.777		
	4th	0.866 / 0.729 / —		
	5th	0.718 / — / —		
	Reverse	2.916 / 1.954 / 1.954		
	Final Reduction	4.250 / 3.933 / 3.588		
	Clutch Lining Area	147 cm^2	22.9 sq. in.	
STEERING	Gear Type	Rack and Pinion		( ) with P/S
	Overall Ratio	19.1 (17.9) : 1		
	Turns, lock-to-lock	4.1		
	Steering Wheel Diameter	377 mm	14.8 in.	
SUSPENSION	Type, Front	Independent, Strut, Torsion bar spring		
	Type, Rear	Rigid axle, Trailing arm, Coil spring		
WHEEL ALIGNMENT		European	Others	
	Camber Front/Rear	0°16'/-0°45'	0°20'/-0°45'	
	Caster	1°49' *2°25'	2°00' *2°35'	* with P/S
	Toe Front	0 mm (0 in.)		
	Rear	IN 2 mm (0.08 in.)		
	Steering Axis Inclination	11°54'	12°00'	
BRAKES	Type, Front	Self-adjusting power-disc brake		
	Type, Rear	Power assisted ventilated disc (KX, KY)		
	Lining Surface Area Front/Rear	Power assisted drum		
		35.3/57.6 cm^2	5.5/8.9 sq. in.	
		36.0/57.6 cm^2 (KX, KY)	5.6/8.9 sq. in.	
	Effective Disc Diameter	190 mm	7.5 in.	
	Brake Drum I.D.	200 mm	7.9 in.	
	Parking Brake Type	Mechanical expanding, rear two wheel brakes		
TIRES	Size	155SR13 (KF, KG, KB, KX, KS, KW, KE)		
		165SR13 (KY)		
		175/70SR13 (KQ)		
		6.15-13-4PR (KP, KT, KU)		
ELECTRICAL	Battery	12 V – 47 AH		
		12 V – 45 AH (KF, KE)		
		12 V – 40 AH (KQ, KT, KU, KP, KY)		
	Starter	12 V – 1.4 KW, 12 V – 1.0 KW, 12 V – 0.8 KW		
	Alternator	12 V – 55 amps		
	Main Fuse	55 A x 1, 45 A x 2		
	Headlights	12V – 60/55 W		
	Front Turn Signal Lights	12 V – 21 W		
	Position Lights	12 V – 5 W		
	Interior Light	12 V – 5 W		
	Rear Turn Signal Lights	12 V – 21 W		
	Stop/Taillights	12 V – 21/5 W		
	Trunk Light	12 V – 3.4 W		
	Back-up Lights	12 V – 21 W		
	License Lights	12 V – 5 W		
	Rear Fog Lights	12 V – 21 W (EC)		

Required Maintenance Schedule

SERVICE AT THE INTERVAL OF LISTED KM (MILES) OR MONTHS, WHICHEVER OCCURS FIRST.							
	ITEMS	x 1,000 km	20	40	60	80	100
		x 1,000 miles	12	24	36	48	60
		months	12	24	36	48	60
	IDLE SPEED AND IDLE CO		I	I	I	I	I
	VALVE CLEARANCE		I	I	I	I	I
	ALTERNATOR DRIVE BELT			I		I	
■	ENGINE OIL AND OIL FILTER		Replace every 10,000 km (6,000 miles) or 6 months				
■	TRANSMISSION OIL			R		R	
■	RADIATOR COOLANT					R*1	
	COOLING SYSTEM HOSES AND CONNECTIONS			I		I	
	SECONDARY AIR SUPPLY SYSTEM *4 (For cars using unleaded gasoline)						I
	AIR CLEANER ELEMENT		R*3	R	R*3	R	R*3
	FUEL FILTER			R		R	
	INTAKE AIR TEMP. CONTROL SYSTEM*4						I
	TANK, FUEL LINE AND CONNECTIONS			I		I	
	THROTTLE CONTROL SYSTEM*2*4			I		I	
	CHOKE MECHANISM*4			I		I	
	EVAPORATIVE EMISSION CONTROL SYSTEM						I
	IGNITION TIMING AND CONTROL SYSTEM			I		I	
	SPARK PLUGS (For cars using leaded gasoline)		R	R	R	R	R
	SPARK PLUGS (For cars using unleaded gasoline)			R		R	
	DISTRIBUTOR CAP AND ROTOR			I		I	
	IGNITION WIRING			I		I	
	CRANKCASE EMISSION CONTROL SYSTEM			I		I	
	BRAKE HOSES, LINES		I	I	I	I	I
	BRAKE FLUID			R		R	
	FRONT BRAKE DISCS AND CALIPERS		I	I	I	I	I
	FRONT BRAKE PADS		Inspect every 10,000 km (6,000 miles) or 6 months				
	REAR BRAKES			I		I	
	PARKING BRAKE		I	I		I	
	CLUTCH RELEASE ARM TRAVEL		I	I	I	I	I
	ENGINE EXHAUST SILENCER, SUSPENSION MOUNTING BOLTS		I	I	I	I	I
	FRONT WHEEL ALIGNMENT		I	I	I	I	I
	STEERING OPERATION, TIE ROD ENDS, STEERING GEAR BOX AND BOOTS		I	I		I	
	POWER STEERING SYSTEM*5		I	I	I	I	I
	POWER STEERING PUMP BELT*5			I		I	
	CATALYTIC CONVERTER HEAT SHIELD						I

R—Replace I—Inspect. After inspection, clean, adjust, repair or replace if necessary

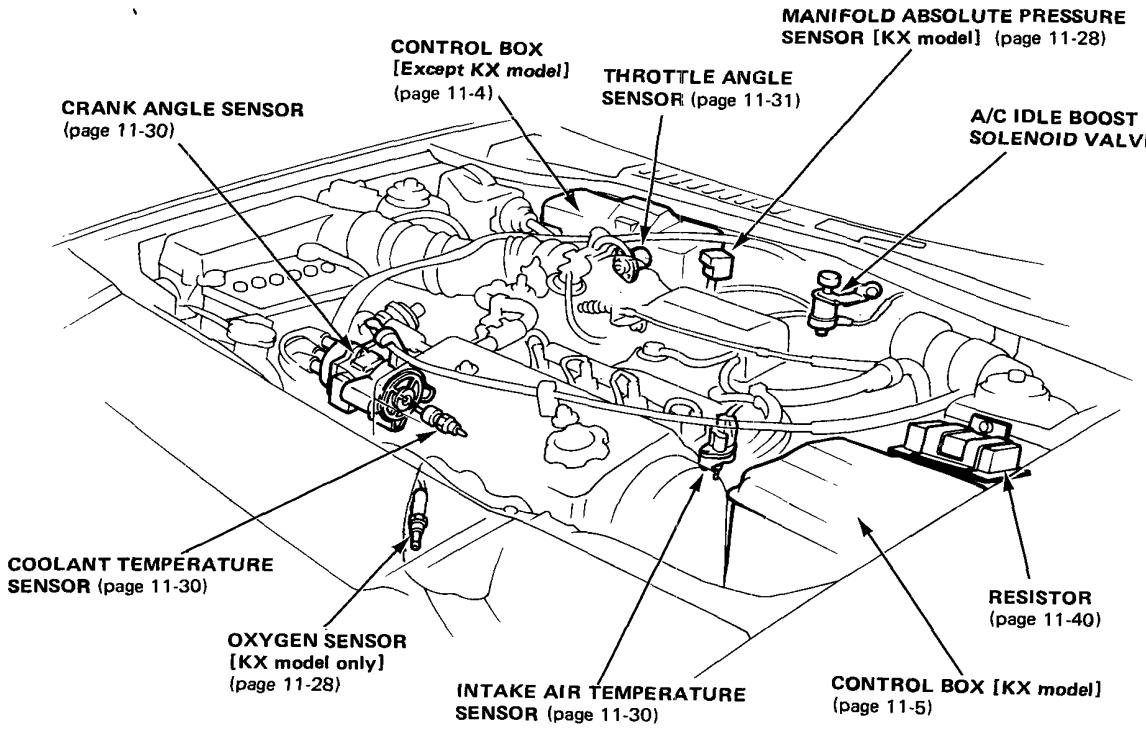
■ REMARK: Day to day care (such as oil, coolant check and replenishment) should be done practically according to the Owner's Manual.

*1 Thereafter, replace every 2 years or 48,000 km (30,000 miles), whichever comes first.
*2 Except for KX type.
*3 Except for carbretor types of Europedn and KQ. types.
*4 Except for cars equipped with Fuel Injection Engine.
*5 Cars equipped with power steering.

CAUTION: The following items must be serviced more frequently on cars normally used under severe driving conditions. Refer to the chart below for the appropriate maintenance intervals.
"Severe driving conditions" include:
A: Repeated short-distance driving
B: Driving in dusty conditions
C: Driving in severe, cold weather
D: Driving in areas using road salt or other corrosive materials
E: Driving on rough and/or muddy roads
F: Towing a trailer

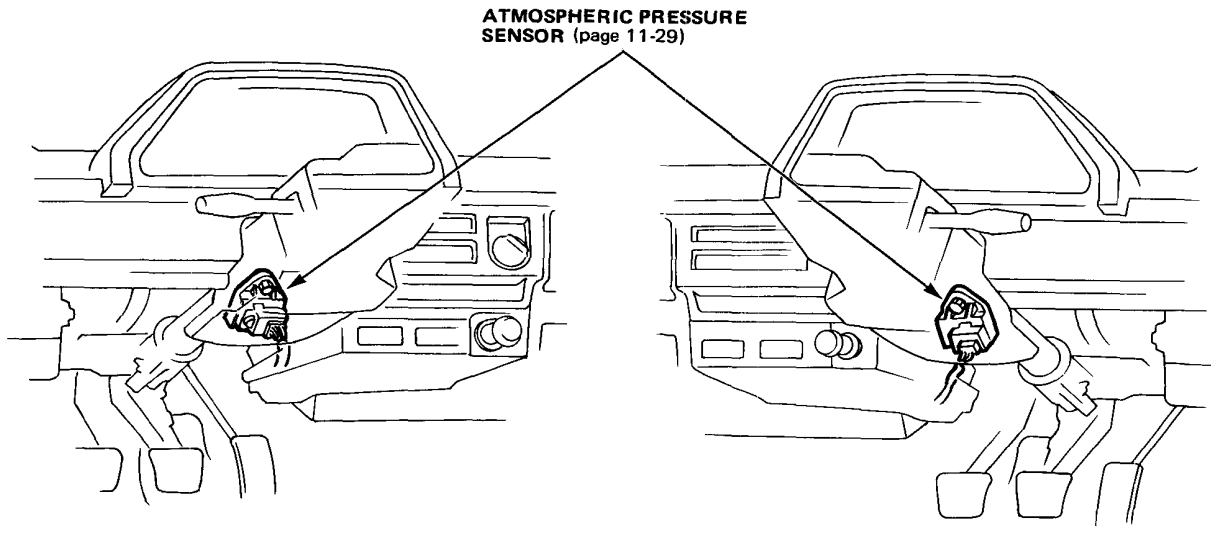
R—Replace
I—Inspect. After inspection, clean, adjust, repair or replace if necessary.

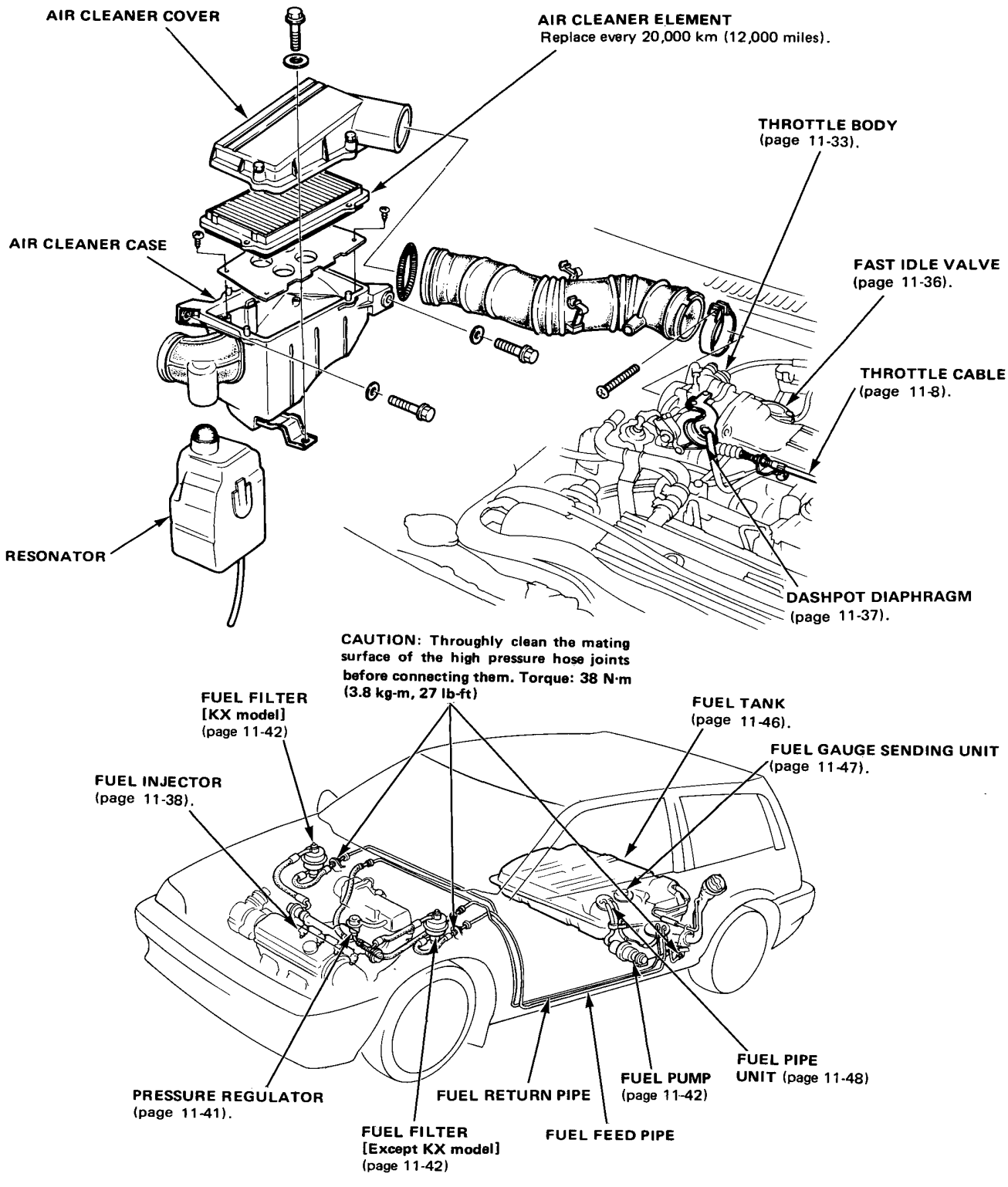
Condition	Maintenance item	Maintenance operation	Interval
A, B, F	Engine oil and oil filter	R	Every 5,000 km (3,000 miles) or 3 months
A, B, D, E, F	Front brake discs and calipers	I	Every 10,000 km (6,000 miles) or 6 months
A, B, C, E, F	Clutch release arm travel	I	Every 10,000 km (6,000 miles) or 6 months
B, C, E	Power steering system	I	Every 10,000 km (6,000 miles) or 6 months



[Except KE model]

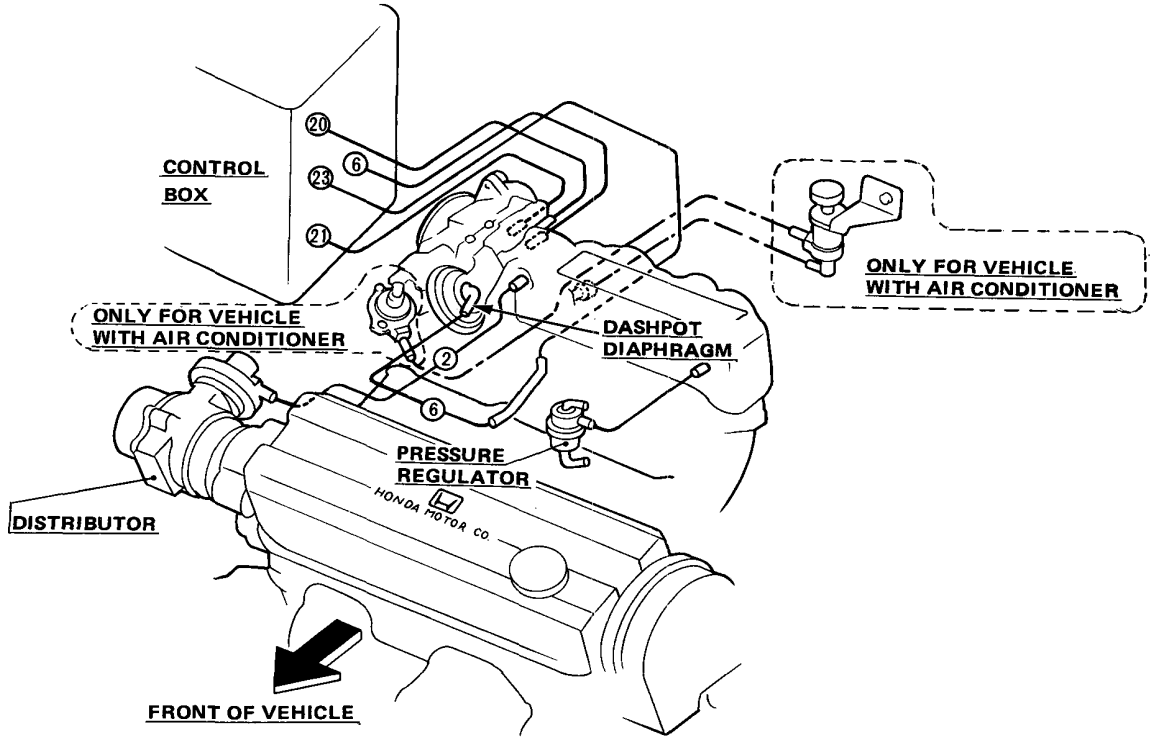
[KE model]



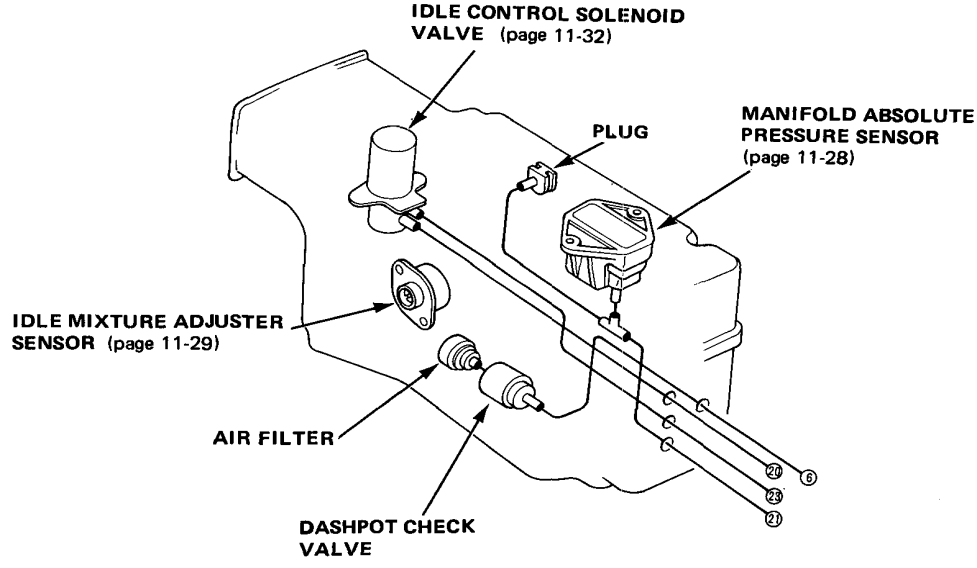

AIR CLEANER COVER
AIR CLEANER ELEMENT
Replace every 20,000 km (12,000 miles).
THROTTLE BODY
(page 11-33).
AIR CLEANER CASE
FAST IDLE VALVE
(page 11-36).
THROTTLE CABLE
(page 11-8).
RESONATOR
DASHPOT DIAPHRAGM
(page 11-37).
CAUTION: Throughly clean the mating surface of the high pressure hose joints before connecting them. Torque: 38 N·m (3.8 kg-m, 27 lb-ft)
FUEL FILTER
[KX model]
(page 11-42)
FUEL TANK
(page 11-46).
FUEL GAUGE SENDING UNIT
(page 11-47).
FUEL INJECTOR
(page 11-38).
FUEL PIPE
UNIT (page 11-48)
FUEL PUMP
(page 11-42)
PRESSURE REGULATOR
(page 11-41).
FUEL RETURN PIPE
FUEL FEED PIPE
FUEL FILTER
[Except KX model]
(page 11-42)

Interconnect Diagram

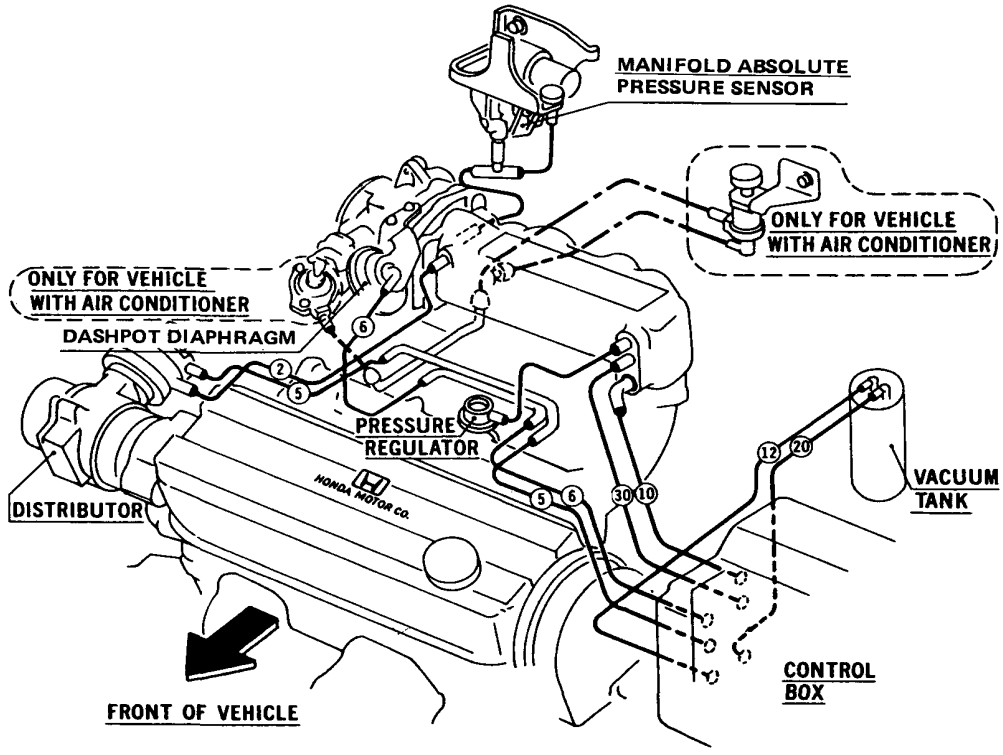
[Except KX model]



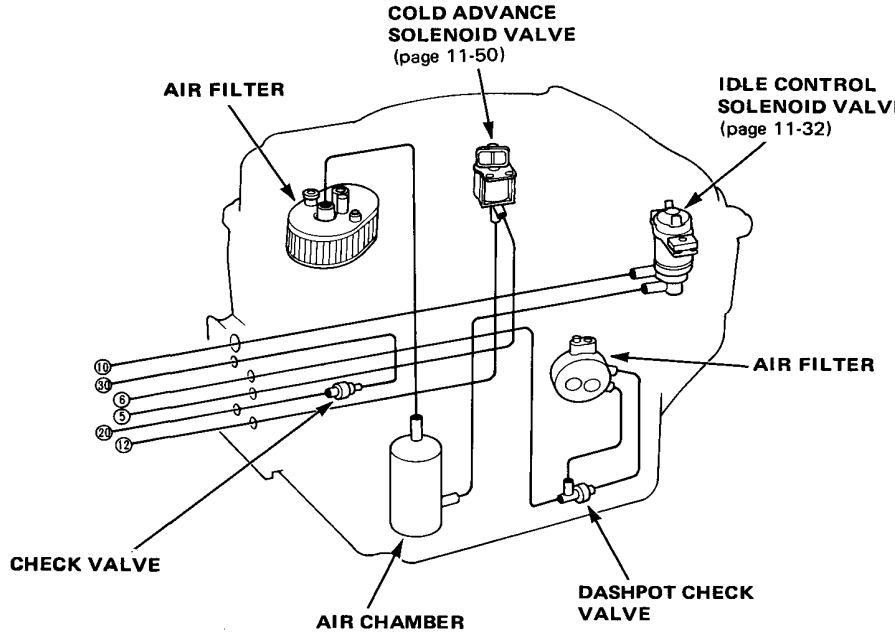
Control Box



[KX model]

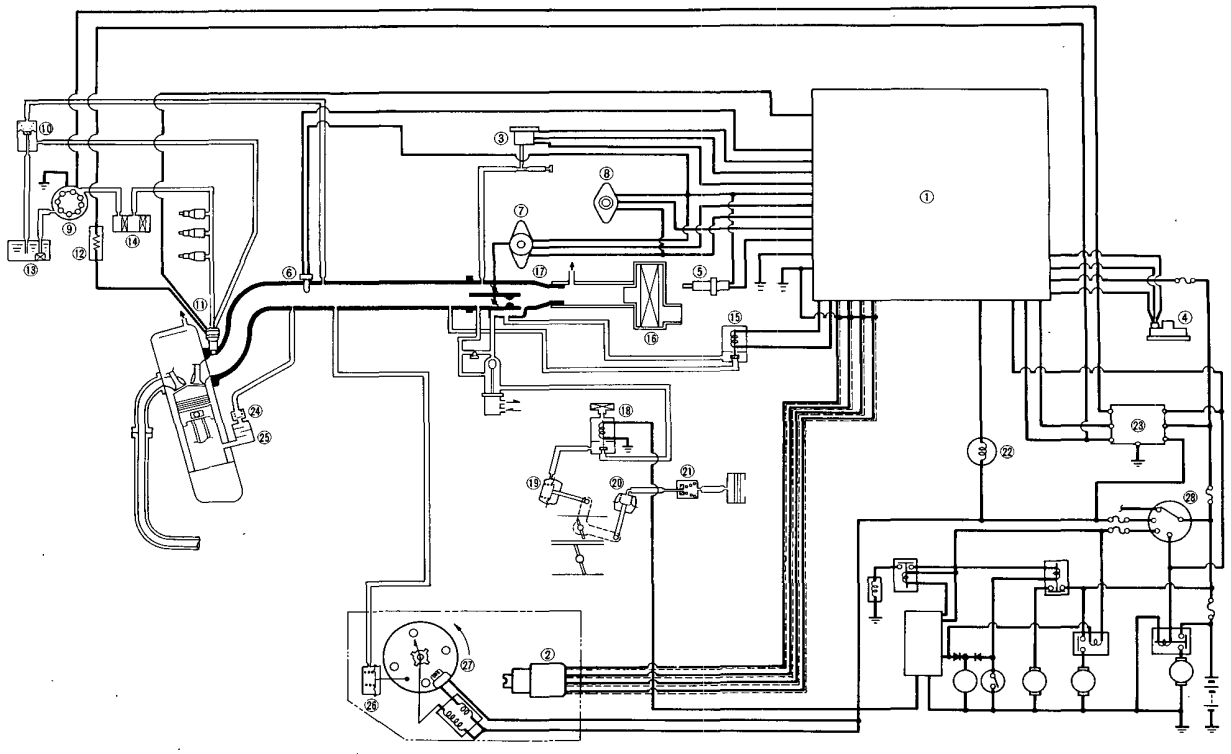


Control Box



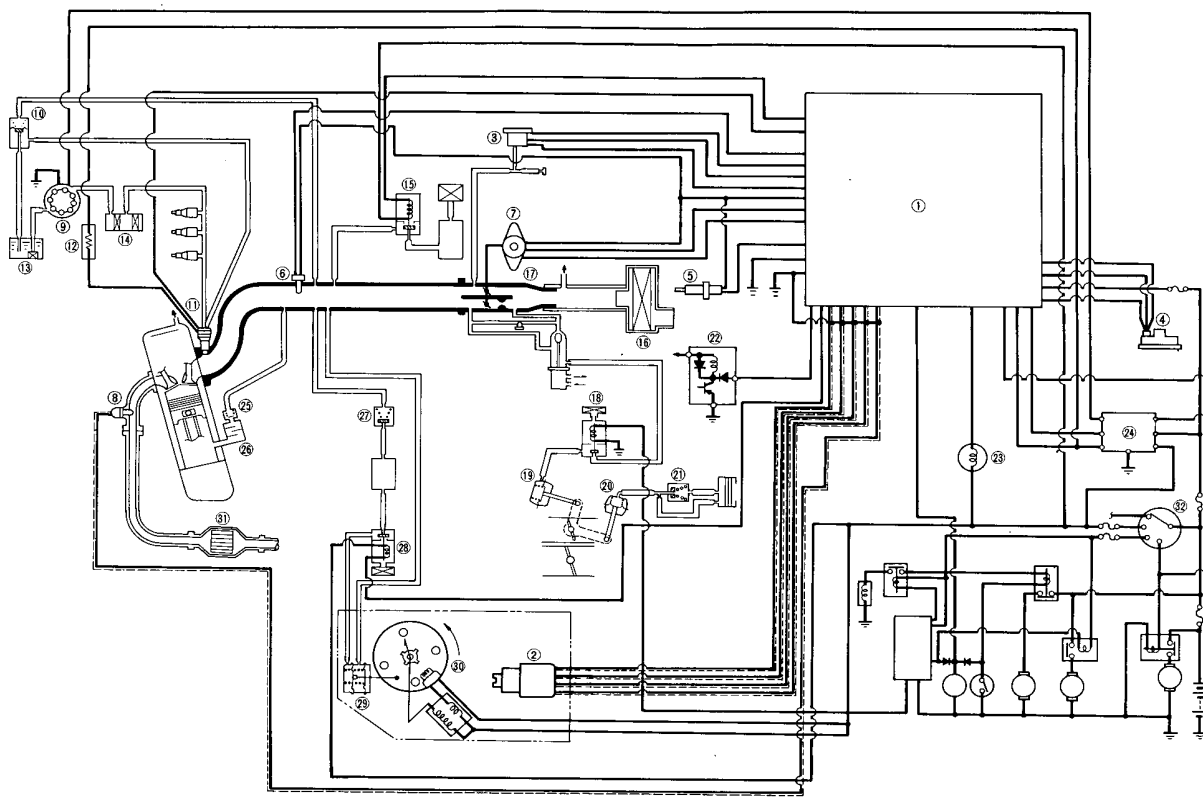
Vacuum and Electrical Connections

[Except KX model]



① ELECTRONIC CONTROL UNIT (ECU)
② CRANK ANGLE SENSOR
③ MANIFOLD ABSOLUTE PRESSURE SENSOR
④ ATMOSPHERIC PRESSURE SENSOR
⑤ COOLANT TEMPERATURE SENSOR
⑥ INTAKE AIR TEMPERATURE SENSOR
⑦ THROTTLE ANGLE SENSOR
⑧ IDLE MIXTURE ADJUSTER SENSOR
⑨ FUEL PUMP
⑩ PRESSURE REGULATOR
⑪ INJECTOR
⑫ RESISTOR
⑬ FUEL TANK
⑭ FUEL FILTER
⑮ IDLE CONTROL SOLENOID VALVE
⑯ AIR CLANER
⑰ THROTTLE BODY
⑱ A/C IDLE BOOST SOLENOID VALVE
⑲ A/C IDLE BOOST DIAPHRAGM
⑳ DASHPOT DIAPHRAGM
㉑ DASHPOT CHECK VALVE
㉒ PGM-FI WARNING LIGHT
㉓ MAIN RELAY
㉔ PCV VALVE
㉕ BREATHER CHAMBER
㉖ VACUUM ADVANCE DIAPHRAGM
㉗ DISTRIBUTOR
㉘ IGNITION SWITCH

[KX model]

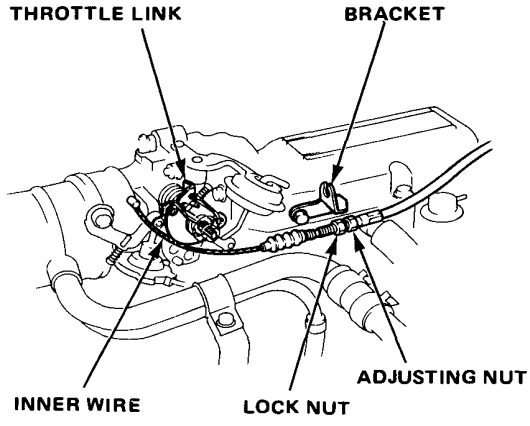


① ELECTRONIC CONTROL UNIT (ECU)
② CRANK ANGLE SENSOR
③ MANIFOLD ABSOLUTE PRESSURE SENSOR
④ ATMOSPHERIC PRESSURE SENSOR
⑤ COOLANT TEMPERATURE SENSOR
⑥ INTAKE AIR TEMPERATURE SENSOR
⑦ THROTTLE ANGLE SENSOR
⑧ OXYGEN SENSOR
⑨ FUEL PUMP
⑩ PRESSURE REGULATOR
⑪ INJECTOR
⑫ RESISTOR
⑬ FUEL TANK
⑭ FUEL FILTER
⑮ IDLE CONTROL SOLENOID VALVE
⑯ AIR CLEANER
⑰ THROTTLE BODY
⑱ A/C IDLE BOOST SOLENOID VALVE
⑲ A/C IDLE BOOST DIAPHRAGM
⑳ DASHPOT DIAPHRAGM
㉑ DASHPOT CHECK VALVE
㉒ ALTERNATOR
㉓ PGM-FI WARNING LIGHT
㉔ MAIN RELAY
㉕ PCV VALVE
㉖ BREATHER CHAMBER
㉗ CHECK VALVE
㉘ COLD ADVANCE SOLENOID VALVE
㉙ VACUUM ADVANCE DIAPHRAGM
㉚ DISTRIBUTOR
㉛ CATALYTIC CONVERTER
㉜ IGNITION SWITCH

Throttle Cable

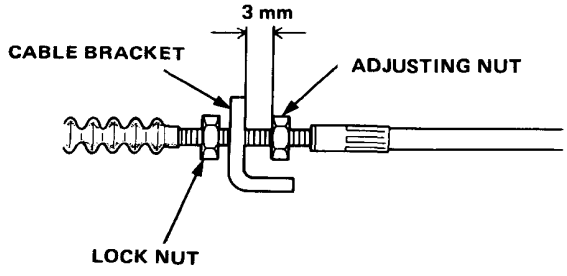
Replacement

1. Loosen the lock nut and remove the throttle cable from the bracket.
2. Remove the cable from the throttle linkage.



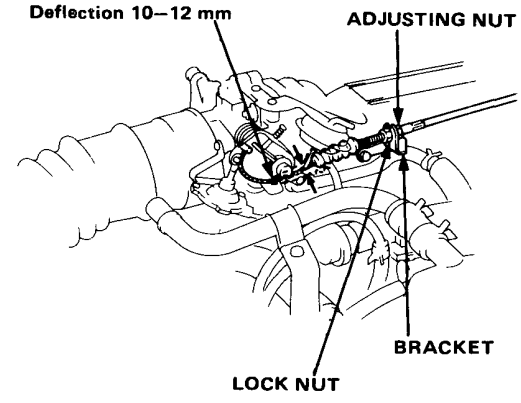
Installation

1. Hold the cable sheath, removing all slack from the cable.
2. Turn the adjusting nut until it is 3 mm away from the cable bracket.
3. Tighten the lock nut. The cable deflection should now be 10–12 mm. If not, see Inspection/Adjustment.



Inspection/ Adjustment

1. Check that the throttle cable operates smoothly with no binding or sticking. Repair as necessary.
2. Check cable free play at the throttle linkage. Cable deflection should be 10–12 mm (0.39–0.47 in.).



3. If deflection is not within specs, loosen the lock nut and turn the adjusting nut until the deflection is as specified.
4. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator.

Troubleshooting

Before starting troubleshooting on the PGM-FI system, check that other items that affect engine performance are within specification. Check the valve clearance, air cleaner, and PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed on pages 11-10 and 11-11.

(cont'd)

Troubleshooting (cont'd)

SYMPTOM \ CAUSAL PART		ELECTRONIC POWER SOURCE	ECU	INJECTOR	FUEL PUMP	FUEL LINE	FAST IDLE MECHANISM	THROTTLE BODY	CRANK ANGLE SENSOR	MANIFOLD ABSOLUTE PRESSURE SENSOR
ENGINE WON'T START	WHEN COLD	· BLOWN FUSE · FAULTY MAIN RELAY	FAULTY ECU	· OPEN/SHORT CIRCUIT · DAMAGED INJECTORS	· FAULTY PUMP/MAIN RELAY · POOR GROUNDING	· FROZEN FUEL LINE · BLOCKED FILTER			· OPEN/SHORT CIRCUIT · FAULTY SENSOR	
	AT RESTARTING WHEN HOT	↑	↑	↑	↑				↑	
DIFFICULT TO START ENGINE	WHEN COLD		↑	· OPEN/SHORT CIRCUIT · FAULTY INJECTOR	↑	· ICE IN FUEL LINE · CLOGGED FILTER	· STUCK AIR BYPASS VALVE		↑	
	AT RESTARTING WHEN HOT		↑	↑ VAPOR LOCK	↑	VAPOR LOCK			↑	
IRREGULAR IDLING	WHEN COLD		↑	· OPEN/SHORT CIRCUIT · STUCK INJECTOR			STUCK AIR BYPASS VALVE		↑	· OPEN/SHORT CIRCUIT · BROKEN/DISCONNECTED HOSE · FAULTY SENSOR
	AFTER WARMING UP		↑	↑			↑		↑	↑
	AFTER RESTARTING WHEN HOT		↑	↑ VAPOR LOCK		VAPOR LOCK	IDLE ADJUSTING SCREW OUT OF ADJUSTMENT		↑	↑
	RPM TOO HIGH						STUCK AIR BYPASS VALVE	THROTTLE VALVE STUCK OPEN		↑
	RPM TOO LOW						IDLE ADJUSTING SCREW OUT OF ADJUSTMENT			
FREQUENT STALLING	WHILE WARMING UP			· OPEN/SHORT CIRCUIT · STUCK INJECTOR	· FAULTY PUMP/MAIN RELAY · POOR GROUNDING	· IMPROPER LINE PRESSURE · CLOGGED FILTER	STUCK AIR BYPASS VALVE			· OPEN/SHORT CIRCUIT · BROKEN/DISCONNECTED HOSE · FAULTY SENSOR
	AFTER WARMING UP		↑	↑	↑	↑	IDLE ADJUSTING SCREW OUT OF ADJUSTMENT		· OPEN/SHORT CIRCUIT · FAULTY SENSOR	↑
POOR PERFORMANCE	POOR DRIVEABILITY HIGH FUEL CONSUMPTION		↑	↑	↑	↑	STUCK AIR BYPASS VALVE		↑	↑
	AFTERBURN		↑	↑						↑
	BACKFIRE		↑	↑	· FAULTY PUMP/MAIN RELAY · POOR GROUNDING	· IMPROPER LINE PRESSURE · CLOGGED FILTER				↑
	KNOCKING		↑	↑	↑	↑				
	LACK OF POWER AT LOW RPM		↑	↑	↑	↑				
	LACK OF POWER AT MID RPM		↑	↑	↑	↑				· OPEN/SHORT CIRCUIT · BROKEN/DISCONNECTED HOSE · FAULTY SENSOR
	LACK OF POWER AT HIGH SPEED		↑		↑	↑		SECONDARY VALVE NOT OPENED FULLY		↑
WARNING/ INDICATOR LIGHT TURNS ON	PGM-FI WARNING LIGHT		↑							
	SELF-DIAGNOSIS INDICATORS		↑						· OPEN/SHORT CIRCUIT · FAULTY SENSOR	· **OPEN/SHORT CIRCUIT** · **BROKEN/DISCONNECTED HOSE** · **FAULTY SENSOR**

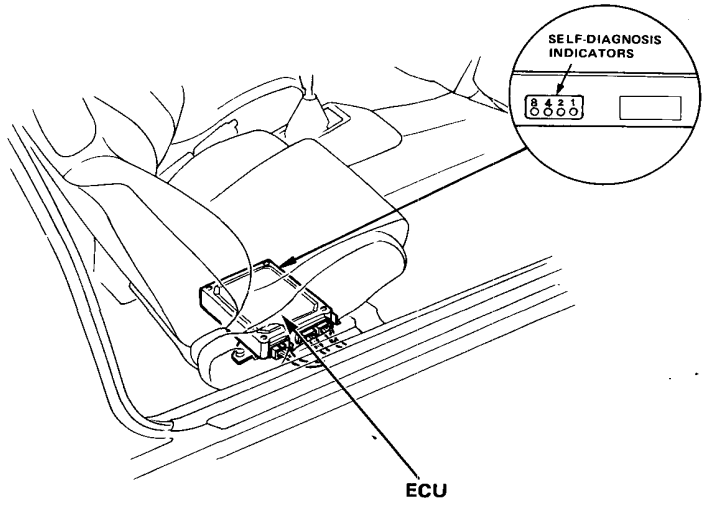
ATMOSPHERIC AIR PRESSURE SENSOR	OXYGEN SENSOR [KX model only]	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERATURE SENSOR	IDLE MIXTURE ADJUSTER SENSOR [except KX model]	IDLE CONTROL SYSTEM [KX model only]	IMPORTANT POINTS
							· CHECK FUEL PUMP/INJECTOR
							↑
(AT HIGH ALTITUDE) · OPEN/SHORT CIRCUIT · FAULTY SENSOR		· OPEN/SHORT CIRCUIT · FAULTY SENSOR					· CHECK FUEL PUMP/INJECTOR · POSSIBLE TO START BY OPERATING THROTTLE? (STUCK AIR BYPASS VALVE)
							· CHECK FOR VAPOR LOCK IN INJECTOR · POSSIBLE TO START BY OPERATING THROTTLE? (VAPOR LOCK IN INJECTOR)
(AT HIGH ALTITUDE) · OPEN/SHORT CIRCUIT · FAULTY SENSOR		· OPEN/SHORT CIRCUIT · FAULTY SENSOR					· CHECK IGNITION SYSTEM (SPARKS) AND EACH INJECTOR. POSSIBLE TO START BY OPERATING THROTTLE (STUCK AIR BYPASS VALVE)
						FAULTY SOLENOID VALVE	↑
							· CHECK FOR VAPOR LOCK IN FUEL LINE · CHECK PCV VALVE FOR CLOGGING BY OPERATING THROTTLE
							· DISCONNECTED OR LEAKY VACUUM LINES · CHECK AIR BYPASS VALVE · CHECK SELF DIAGNOSIS INDICATORS
			SENSOR OUT OF ADJUSTMENT				
		· OPEN/SHORT CIRCUIT · FAULTY SENSOR		· OPEN/SHORT CIRCUIT · FAULTY SENSOR			· CHECK AIR BYPASS VALVE · CHECK COOLANT TEMPERATURE SENSOR
						FAULTY SOLENOID VALVE (RPM DOWN)	· CHECK IDLE SPEED · CHECK FOR FUEL CUT-OFF OPERATION
	· OPEN/SHORT CIRCUIT · FAULTY SENSOR	· OPEN/SHORT CIRCUIT · FAULTY SENSOR	· OPEN/SHORT CIRCUIT · FAULTY SENSOR	· OPEN/SHORT CIRCUIT · FAULTY SENSOR		FAULTY SOLENOID VALVE (STUCK OPEN)	· CHECK IGNITION TIMING · CHECK FOR FUEL CUT-OFF OPERATION
		↑	↑				↑
		↑	↑				· CHECK IGNITION TIMING · CHECK MANIFOLD AIR PRESSURE SENSOR/ INJECTORS
		↑	↑				· CHECK IGNITION TIMING
	· OPEN/SHORT CIRCUIT · FAULTY SENSOR	↑	↑				· CHECK IGNITION TIMING (DISCONNECTED OR BROKEN LINES) · CHECK INJECTORS
	↑	↑	↑				· CHECK IGNITION TIMING
							· IS SECONDARY THROTTLE VALVE OPEN FULLY? · *CHECK MANIFOLD AIR PRESSURE SENSOR* · CHECK IGNITION TIMING
[except KX model] · OPEN/SHORT CIRCUIT · FAULTY SENSOR	· OPEN/SHORT CIRCUIT · FAULTY SENSOR			· OPEN/SHORT CIRCUIT · FAULTY SENSOR	· OPEN/SHORT CIRCUIT · FAULTY SENSOR		· CONSULT TROUBLESHOOTING CHART ON PAGE 13 or 15
· OPEN/SHORT CIRCUIT · FAULTY SENSOR	↑	· OPEN/SHORT CIRCUIT · FAULTY SENSOR	· OPEN/SHORT CIRCUIT · FAULTY SENSOR	↑	↑		↑

Self-Diagnosis Indicator

Troubleshooting

[Except KX model]

The PGM-FI system's ECU is equipped with a self-diagnosis function. When an abnormality is detected, the PGM-FI dash warning light and/or the LED display on the ECU come on. The location of the PGM-FI control system's trouble can be diagnosed from the LED display pattern. There are four LED displays. They are part of the ECU, which is located under the passenger's seat (KE model: driver's seat). They are numbered 1, 2, 4 and 8, as counted from right to left.

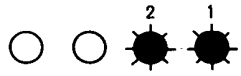
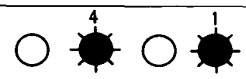
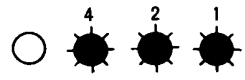
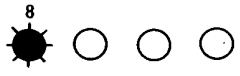
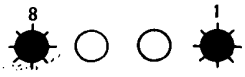
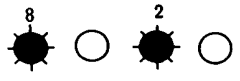
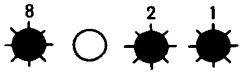


The quick reference chart on the next page covers the failure modes and possible causes for the PGM-FI. If you run through all the possible causes listed and the problem is still unsolved, go on to the more detailed troubleshooting on the following pages.

Sometimes the PGM-FI dash warning light and/or ECU LED display will come on, indicating a system problem, when, in fact, there is a bad or intermittent electrical connection. To troubleshoot bad connections, note the ECU LED display pattern, refer to the diagnosis chart on page 11-13 and check the connectors associated with the items mentioned in the "Possible Cause" column. Clear or repiar connections if necessary.

NOTE:

- The memory for the"PGM-FI" dash warning light will be erased when the ignition switch is turned off; however, the memory for the LED display will not be cancelled. Thus, the warning light will not come on when the ignition is again turned on unless the trouble is once more detected. Troubleshooting should be done according to the LED display even if the warning light is OFF.
  If the LED display fails to come on when the ignition switch is turned on again, check for:
  – Blown No. 10 fuse
  – Open circuit in White/Green wire between ECU A17 terminal and No. 10 fuse.
  Then, if there is no problem, substitute a known-good ECU and re-check.
- Turn the ignition switch ON. The PGM-FI dash warning light should come on for about 2 seconds.If the warning light won't come on, check for:
  – Blown No. 3 fuse (also the fuse for the back-up lights).
  – Open circuit in Yellow wire between No. 3 fuse and combination meter.
  – Open circuit in Green/Orange wire between combination meter and ECU B6 terminal.
  – Open circuit in Black wires between ECU A2, A4 and ground.
  – Blown warning light bulb
  Then, if there is no problem, substitute a known-good ECU and recheck.
- After making repairs, disconnect the No. 10 fuse for at least 10 seconds and reset the ECU memory. After reconnecting the cable, check that the LED display is turned OFF.

LED Display	PGM-FI dash warning light	Symptom	Possible causes
		• Engine will not start.	• Loose or poorly connected power line to ECU • Disconnected control unit ground wire • Faulty ECU
		• Engine will not start • No particular symptom shown	• Disconnected control unit ground wire • Short circuit in combination meter or warning light wire • Faulty ECU
		• Fuel fouled plug • Frequent engine stalling • Hesitation	• Disconnected manifold absolute pressure sensor coupler • Short or open circuit in manifold absolute pressure sensor wire • Faulty manifold absolute pressure sensor
		• Hesitation • Fuel fouled plug • Frequent engine stalling	• Disconnected manifold absolute pressure sensor piping
		• High idle speed during warm-up • High idle speed • Hard starting at low temp	• Disconnected coolant temperature senosor coupler • Open circuit in coolant temperature sensor wire • Faulty coolant temperature sensor (thermostat housing)
		• Poor engine response to opening throttle rapidly • High idle speed • Engine does not rev up when cold	• Disconnected throttle angle sensor coupler • Open or short circuit in throttle angle sensor wire • Faulty throttle angle sensor
		• Engine does not rev up • High idle speed • Erratic idling	• Short or open circuit in crank angle sensor wire • Crank angle sensor wire interfering with spark plug wires • Faulty crank angle sensor
		Same as above	Same as above
		• High idle speed • Erratic idling when very cold	• Disconnected intake air temperature sensor • Open circuit in intake air temperature sensor wire • Faulty intake air temperature sensor
		• No particular symptom shown • High idle speed	• Disconnected idle mixture adjuster sensor coupler • Open or short circuit in idle mixture adjuster sensor wire • Faulty idle mixture adjuster sensor
		• Poor acceleration at high altitude • Hard starting at high altitude when cold	• Disconnected atmospheric pressure sensor coupler • Open or short circuit in atmospheric pressure sensor wire • Faulty atmospheric pressure sensor

NOTE:

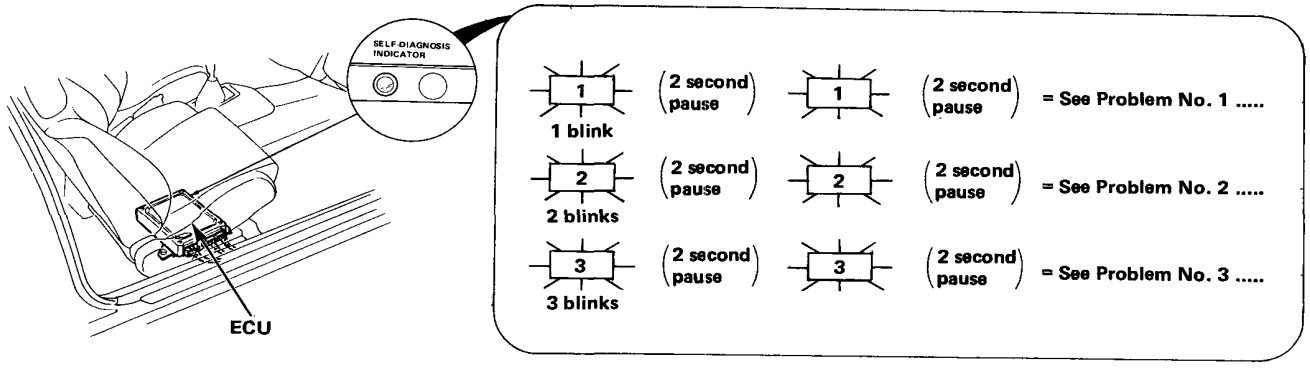
- If the LED display is out of above patterns, substitute a known-good ECU and re-check. If symtom/indication goes away, replace the ECU.
- Some failure indicators require the full test procedures to confirm that the failure has or has not been eliminated.

Self-Diagnosis Indicator

Troubleshooting

[KX model]

The PGM-FI system's ECU is equipped with a self-diagnosis function. When an abnormality is detected, the PGM-FI dash warning light comes on, and the LED display on the ECU blinks. The location of the PGM-FI control system's trouble can be diagnosed from the frequency of the LED display blinks.



The quick reference chart on the next page covers the failure modes and possible causes for PGM-FI. If you run through all the possible causes listed and the problem is still unsolved, go on to the more detailed troubleshooting on the following pages.

Sometimes the PGM-FI dash warning light and/or ECU LED display will come on, indicating a system problem, when, in fact, there is a bad or intermittent electrical connection. To troubleshoot bad connections, note the ECU LED display blink frequency, refer to the diagnosis chart on page 11-15 and check the connectors associated with the items mentioned in the "Possible Cause" column. Clean or repair connections if necessary.

NOTE:

- The memory for the "PGM-FI" dash warning light will be erased when the ignition switch is turned off; however, the memory for the LED display will not be cancelled. Thus, the warning light will not come on when the ignition is again turned on unless the trouble is once more detected. Troubleshooting should be done according to the LED display even if the warning light is OFF.
  If the LED display fails to come on when the ignition switch is turned on again, check for:
  – Blown No. 10 fuse.
  – Open circuit in White/Green wire between ECU A17 terminal and No. 10 fuse.
  Then, if there is no problem, substitute a known-good ECU and re-check.
- Turn the ignition switch ON. The PGM-FI dash warning light should come on for about 2 seconds. If the warning light won't come on, check for:
  – Blown No. 3 fuse (also the fuse for the back up lights.)
  – Open circuit in Yellow wire between No. 3 fuse and combination meter.
  – Open circuit in Green/Orange wire between combination meter and ECU B6 terminal.
  – Open circuit in Black wires between ECU A2, A4 and ground.
  – Blown warning light bulb.
  Then, if there is no problem, substitute a known-good ECU and re-check.
- After making repairs, disconnect the No. 10 fuse for at least 10 seconds to reset the ECU memory. After reconnecting the fuse, check that the LED display is turned off.

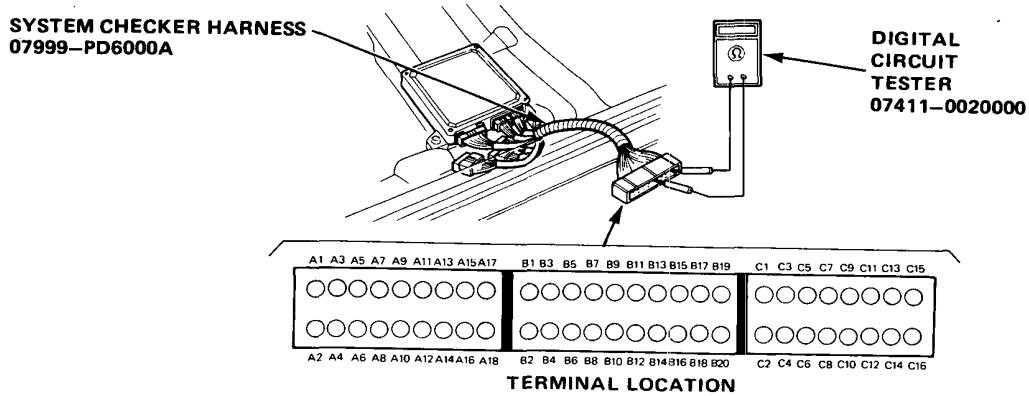
No. of LED Blinks between 2 second pauses	PGM-FI dash warning light	Symptom	Possible causes
0		• Engine will not start	• Loose or poorly connected power line to ECU • Disconnected control unit ground wire • Faulty ECU
		• Engine will not start • No particular symptom shown	• Disconnected control unit ground wire • Short circuit in combination meter or warning light wire • Faulty ECU
1		• No particular symptom shown • Erratic idling (Erratic injector, coupler and wiring/Insufficient fuel)	• Disconnected oxygen sensor coupler • Spark plug mis-fire • Short or open circuit in oxygen sensor circuit • Faulty oxygen sensor • Faulty fuel system
3		• Fuel fouled plug • Frequent engine stalling • Hesitation	• Disconnected manifold absolute pressure sensor coupler • Short or open circuit in manifold absolute pressure sensor wire • Faulty manifold absolute pressure sensor
5		• Hesitation • Fuel fouled plug • Frequent engine stalling	• Disconnected manifold absolute pressure sensor piping
6		• High idle speed during warm-up • High idle speed • Hard starting at low temp	• Disconnected coolant temperature senosor coupler • Open circuit in coolant temperature sensor wire • Faulty coolant temperature sensor (thermostat housing)
7		• Poor engine response to opening throttle rapidly • High idle speed • Engine does not rev up when cold	• Disconnected throttle angle sensor coupler • Open circuit in intake air temperature sensor wire • Faulty throttle angle sensor
8		• Engine does not rev up • High idle speed • Erratic idling	• Short or open circuit in crank angle sensor wire • Crank angle sensor wire interfering with spark plug wires • Crank angle sensor at fault
9		Same as above	Same as above
10		• High idle speed • Erratic idling when very cold	• Disconnected intake air temperature sensor • Open circuit in intake air temperature sensor wire • Faulty intake air temperature sensor
13		• Poor acceleration at high altitude • Hard starting at high altitude when cold	• Disconnected atmospheric pressure sensor coupler • Open or short circuit in atmospheric pressure sensor wire • Faulty atmospheric pressure sensor

NOTE:

- If the number of blinks between 2 second pauses is out of above numbers or if the LED indicator stays on, substitute a known-good ECU and re-check. If symptom/indication goes away, replace the ECU.
- Some failure indicators (such as, one blink) require the full test procedures on the following pages to confirm that the failure has or has not been eliminated.

Troubleshooting (cont'd)

Use the system checker harness and digital circuit tester to check the system.

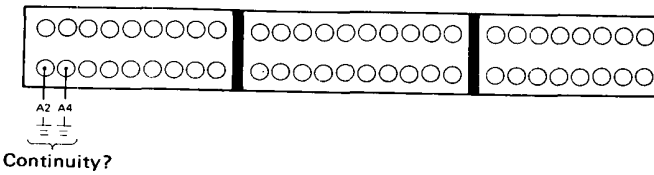


TERMINAL LOCATION

Self-diagnosis indicator(s) remain(s) off — The dash warning light is not lit.

Connect the system checker harness between the ECU and connector.

Check for continuity between the A2 (Black) and the A4 (Black) terminals, and body ground.



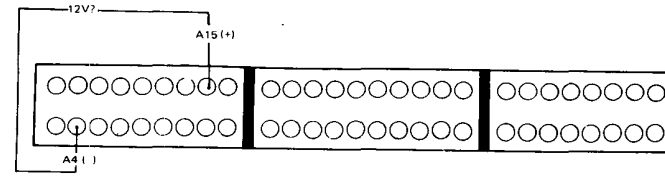
Does continuity exist?

NO — Faulty ground circuit

YES

Turn the ignition switch ON.

Measure voltage between A15 (Yellow/Black (+)) terminal and the A4 terminal (Black (–)).



Is 12 V available?

NO
- PGM-FI (ECU) fuse blown
- Open circuit in Yellow/White wire between PGM-FI (ECU) fuse and main relay
- Faulty main relay
- Open circuit in Yellow/Black wire between main relay and ECU
- No. 4 fuse (10A) blown (fuel pump is not working).
- Open circuit in Black/Yellow wire between No. 4 fuse and main relay
- Open circuit in main relay ground wire (Black)
- Faulty ECU

NOTE: No voltage available.

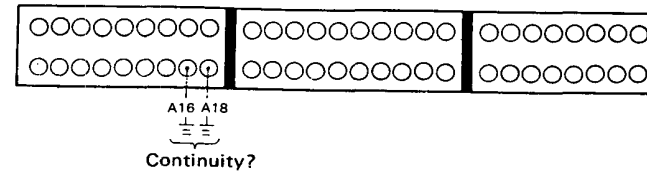
YES

Substitute a known-good ECU and re-check. If symptom goes away, replace the original ECU. If symptom does not go away, check to see if the dash warning light is on and the LED indicator now displays a pattern or blinks, and troubleshoot the true cause.

Self-diagnosis indicator(s) remain(s) off — The dash warning light is not lit.

Connect the system checker harness between the ECU and connector.

Check for continuity between the A16 (Brown/Black) and the A18 (Black/Red) terminals, and body ground.



(To page 11-17)

(From page 11-16)

Does continuity exist? NO — Faulty ground circuit

YES

Check for short circuits in the Green/Orange wire between the combination meter and B6 terminal (Green/Orange), as well as in the combination meter printed circuit board.

Are wires normal? NO — Faulty circuit or combination meter.

YES

Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original circuit board.

1 — **Self-diagnosis indicator blinks once.**

NOTE: First, check the spark plugs.
Plug mis-fire can be another source of this trouble.

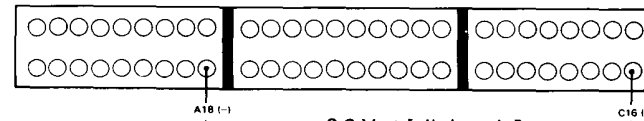
Warm up engine to operating temperature.

Rev up and slow down engine between idle and 4,000 rpm quickly.

Stop engine.

Connect system checker harness between ECU and connector.

Attach positive probe of voltmeter to C16 terminal (White) of checker, and negative probe to A18 (Black/Red) terminal.



0.6 V at full throttle?
0.4 V at full close?

Restart the engine, then open the throttle wide open and close it.

Check that voltage rises over 0.6 V at wide open throttle, and falls below 0.4 V at full close.

Is votlage above 0.6 V ... below 0.4 V? NO

YES

Stop engine.

Disconnect engine wire harness from oxygen sensor.

Check oxygen sensor (page 11-28).

Is oxygen sensor normal? NO — Faulty oxygen sensor

YES

Check for open or short circuit in White wire between oxygen sensor and ECU.

(To page 11-18)

(To page 11-18)

(cont'd)

Troubleshooting (cont'd)

(From page 11-17)

(From page 11-17)

Is wire normal? NO → Faulty wire

YES

Disconnect system checker harness and reconnect ECU and connector.

Remove No. 10 fuse for at least 10 seconds.

Warm up engine to operating temperature.

Hold engine rpm at 1,500–2,000 for 10 minutes.

Does the PGM-FI dash warning light come on? NO → Check for fuel system pages 11-37 thru 45.

YES

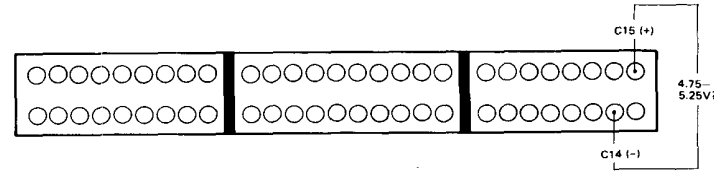
Substitute a known-good ECU and recheck, repeating the above five steps. If symptom/indication goes away, replace the original ECU.

No. 1 and No. 2 indicators are lit. (○ ○ ✸ ✸) / 3 — Self-diagnosis indicator blinks three times.

Connect system checker harness between the ECU and coupler.

Turn ignition switch ON.

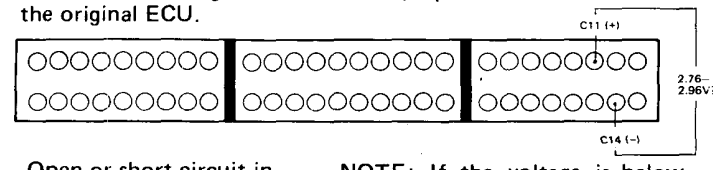
Measure voltage between C15 terminal (Red/White (+)) of system checker harness and C14 terminal (Blue/White (−)).



Is voltage between 4.75 and 5.25 V? NO → Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

YES

Measure voltage between C11 terminal (White/Blue (+)) of system checker harness and C14 terminal (Blue/White (−)).



Is voltage between 2.76 and 2.96 V? NO → Open or short circuit in White wire or Brown/White wire between manifold absolute pressure sensor and ECU. Faulty manifold absolute pressure sensor.

YES

Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

NOTE: If the voltage is below the specified range, there are open or poorly connected wires. If the wires are normal, the manifold absolute pressure sensor is at fault.

No. 1 and No. 4 indicators are lit (○ ✹ ○ ✹) / [5] — Self-diagnosis indicator blinks five times.

Check that the manifold absolute pressure sensor pipe is connected securely.

NOTE: Also check hose routing inside control box.

Is routing normal? — NO — Reconnect routing

YES

Disconnect pipe from manifold absolute pressure sensor and plug open end.

Disconnect vacuum hose (between the manifold absolute pressure sensor and throttle body) from throttle body.

Connect hand vacuum pump to vacuum hose (between the manifold absolute pressure sensor and throttle body) and check for leak.

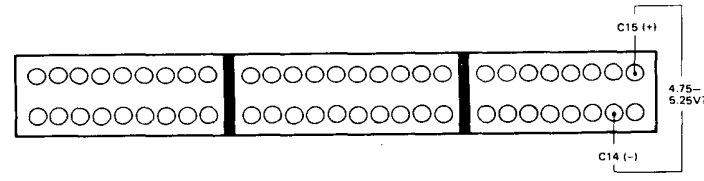
Is vacuum maintained? — NO — Replace vacuum hose.

YES

Connect system checker harness between the ECU and coupler.

Turn ignition switch ON.

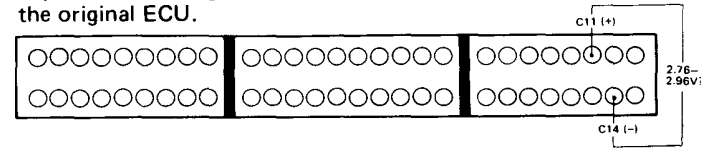
Measure voltage between C15 terminal (Red/White (+)) of system checker harness and C14 terminal (Blue/White (–)).



Is voltage between 4.75 and 5.25 V? — NO — Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

YES

Measure voltage between C11 terminal (White/Blue (+)) of system checker harness and C14 terminal (Blue/White (–)).



Is voltage between 2.76 and 2.96 V? — NO — Open or short circuit in White or Brown/White wire between manifold absolute pressure sensor and ECU. Faulty manifold absolute pressure sensor.

NOTE: If there is no voltage, or if voltage is low, the possibility is a shorted wire. If voltage is high, wire may be open or poorly connected. If wire is normal, manifold absolute pressure sensor is at fault.

YES

Connect hand vacuum pump to manifold absolute pressure sensor.

Check that voltage changes as vacuum is applied.

Has voltage changed? — NO — Faulty manifold absolute pressure sensor

YES

Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

(cont'd)

Self-Diagnosis Indicator

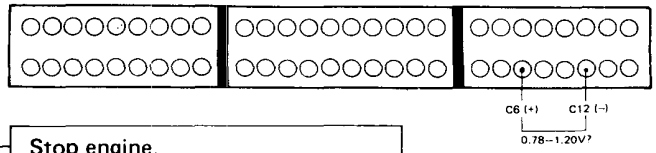
Troubleshooting (cont'd)

No. 2 and No. 4 indicators are lit (○ ✹ ✹ ○) / 6 — Self-diagnosis indicator blinks six times.

Connect system checker harness between the ECU and coupler.

Warm up engine until radiator fan comes on twice.

Measure voltage between C6 terminal (Yellow/Green (+)) of system harness checker and C12 terminal (Green/White (−)).



Is voltage between 0.50 and 0.90 V?

NO → Stop engine.

Check for open or short circuit in Red/White and Brown/Black wires between coolant temperature sensor and the ECU.

NOTE: If there is no voltage or if voltage is low, check for shorted wire. If voltage is high, wire may be open or poorly contacted.

Are wires normal?

NO → Faulty wires

YES

Check coolant temperature sensor (page 11-30).

Is sensor normal?

NO → Faulty coolant temperature sensor

YES

Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

YES

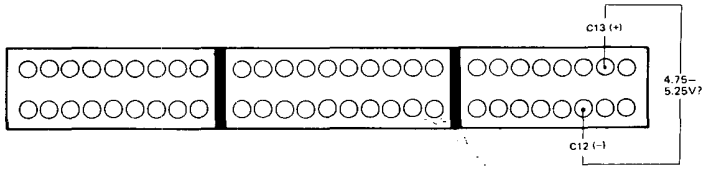
Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

No. 1, No. 2 and No. 4 indicators are lit (○ ✹ ✹ ✹) / 7 — Self-diagnosis indicator blinks seven times.

Connect system checker harness between ECU and coupler.

Turn ignition switch ON.

Measure voltage between C13 terminal (Yellow/White (+)) of system checker harness and C12 terminal (Green/White (−)).

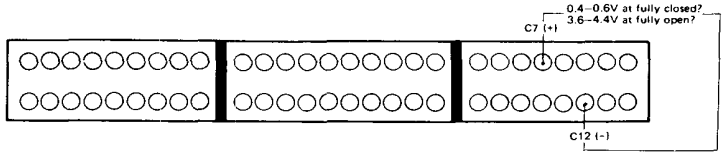


Is 4.75–5.25 V attained?

NO → Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

YES

Connect voltmeter positive probe to C7 terminal (Red/Yellow (+)), and negative probe to C12 terminal (Green/White (−)) of system checker harness.



(To page 11-21)

(From page 11-20)

Operate accelerator pedal from fully closed to fully open.

Check that 0.4–0.6 V is available at fully closed, and 3.6–4.4 V at fully open.

Are voltages within above ranges?

NO → Check for short or open circuit in Red/Blue and Brown/Black wires between the ECU and throttle angle sensor.

Are wires normal?

NO → Replace wires

YES → Adjust or replace throttle angle sensor (page 11-31).

YES → Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

No. 8 indicator is lit (● ○ ○ ○) / 8 — Self-diagnosis indicator blinks eight times.

Check for open or short circuit in Orange/Blue and White/Blue wires between the ECU and crank angle sensor.

NOTE: Check that crank angle sensor harness is not interferring with the spark plug wires.

Are wires normal?

NO → Replace wires

YES → Check crank angle sensor (page 11-30).

Does crank angle sensor operate properly?

NO → Faulty crank angle sensor

YES → Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

No. 1 and No. 8 indicators are lit (● ○ ○ ●) / 9 — Self-diagnosis indicator blinks nine times.

Check for open or short circuit in Orange and White wires between the ECU and crank angle sensor.

NOTE: Check that sensor harness is not interferring with the spark plug wires.

Are wires normal?

NO → Replace wires

YES → Check crank angle sensor (page 11-30).

Is sensor normal?

NO → Faulty crank angle sensor

YES → Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

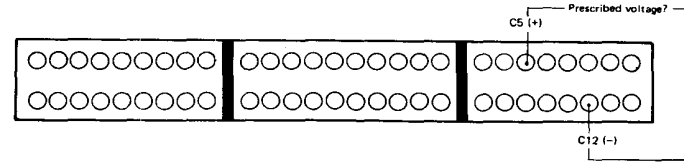
(cont'd)

Troubleshooting (cont'd)

No. 2 and No. 8 indicators are lit (● ○ ● ○) / 10 Self-diagnosis indicator blinks ten times.

Connect system checker harness between the ECU and harness coupler.

Attach voltmeter positive probe to C5 terminal (White/Red (+)), and negative probe to C12 terminal (Green/White (–)) of system checker harness.



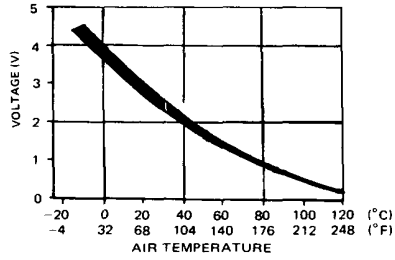
Turn ignition switch ON.

Check that voltage is correct for the intake air temperature.

Is voltage correct? NO

YES

Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.



Turn ignition switch OFF.

Check for open or short circuit in Red/Yellow and Brown/Black wires between intake air temperature sensor and the ECU.

NOTE: If voltage is low, or there is no voltage, check wires for short circuit. If voltage is high, probability is open or poorly contacted wire.

Are wires normal? NO Faulty wires

YES

Check intake air temperature sensor (page 11-30).

Is sensor normal? NO Faulty intake air temperature sensor

YES

Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

No. 1, No. 2 and No. 8 indicators are lit (● ○ ● ●)

Connect system checker harness between the ECU and harness coupler.

Turn ignition switch ON.

Measure voltage between C13 terminal (Yellow/White (+)) of system checker harness and C12 terminal (Green/White (–)).

Is 4.75–5.25V available? NO Replace ECU

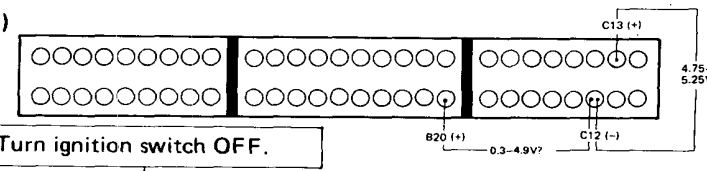
YES

Measure voltage between B20 terminal (Brown (+)) of system checker harness and C12 terminal (Green/White (–)).

Is 0.3–4.9 V available? NO

YES

Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.



Turn ignition switch OFF.

Check for open or short circuit in White/Yellow and Brown/Black wires between idle mixture adjuster sensor and the ECU.

NOTE: If there is no voltage, check for short circuit in the wires. If voltage is high, probability is open or poorly connected wire.

Are wires normal? NO Faulty wires

YES

Check idle mixture adjuster sensor (page 11-29).

Does sensor operate properly? NO Faulty idle mixture adjuster sensor.

YES

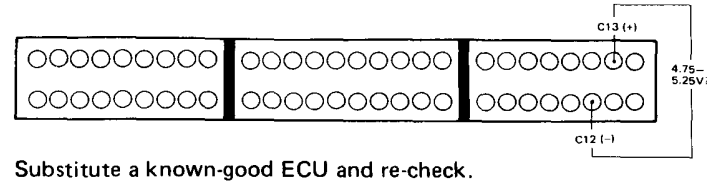
Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

No. 1, No. 4 and No. 8 indicators are lit (● ● ○ ●) / 13 — Self-diagnosis indicator blinks thriteen times.

Connect system checker harness between the ECU and harness coupler.

Turn ignition switch ON.

Measure voltage between C13 terminal (Yellow/White (+)) of system checker harness and C12 terminal (Green/White (–)).

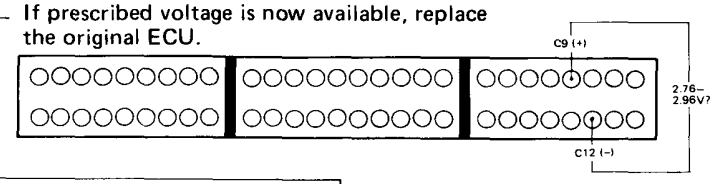


Is 4.75–5.25 V available?

NO — Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

YES

Measure voltage between C9 terminal (Red (+)) of system checker harness and C12 terminal (Green/White (–)).



Is 2.76–2.96 V available?

NO — Turn Ignition switch OFF.

YES

Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

Check for open or short circuit in Red and Brown/Black wires between atmospheric pressure sensor and the ECU.

NOTE: If there is no voltage, check for a short circuit. If voltage is high, wires may be open or poorly contacted.

Are wires normal?

NO — Faulty wires.

YES

Check atmospheric pressure sensor (page 11-29).

Does sensor operate properly?

NO — Faulty atmospheric pressure sensor.

YES

Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

NOTE:
- First, confirm that the idle speed is normal by pinching the No. 20 (KX model: No. 10) vacuum hose slightly. Then inspect the air cleaner element, ignition timing, spark plug and valve clearance.
- Before going through the Electrical Troubleshooting Charts, make sure that the vacuum hoses are not loose and securely tightened, and that the solenoid valves, throttle body and fast idle mechanism are in good order.

Part / Symptom	Idle control solenoid valve	A/C idle boost solenoid valve	Throttle body	Fast idle mechanism	Starter switch signal	Alternator FR terminal signal [KX model only]	A/C switch signal	ECU	Remarks
Idle speed does not increase after initial start-up.	Valve failure/pinched hose			Adjust screw out of adjustment	Open circuit			Failure in ECU	Is signal available at ECU?
Idle speed too high in neutral	Leaky solenoid valve		Valve stuck open	Adjust screw out of adjustment. Leaky fast idle valve.				Failure (signal not stopped)	Pinch idle control solenoid valve hose and re-adjust.
Idle speed changes under electrical load. [KX model only]	Valve failure/pinched vacuum hose		Throttle angle sensor out of adjustment. Valve stuck open.	Adjust screw out of adjustment				Failure (signal not available)	• Is idle control solenoid valve working? • Is fast idle adjust screw adjustment correct?
Idle speed drops when blipping throttle with electrical load. [KX model only]						Open circuit		Failure in ECU [KX model only]	Is there big difference between no-load and loaded conditions?
Idle speed drops when A/C switch is turned ON.		Valve failure Pinched vacuum hose		Opener opening out of adjustment			Open circuit	Failure in ECU	• Is vacuum applied to opener? • Is opener opening adjusted properly?
Idle speed fluctuates when idle control comes into operation. [KX model only]	Valve failure							Failure in ECU	• Is condition improved when solenoid valve is replaced?

Starter Switch Signal Inspection

Connect system checker harness between ECU and wire harness coupler.

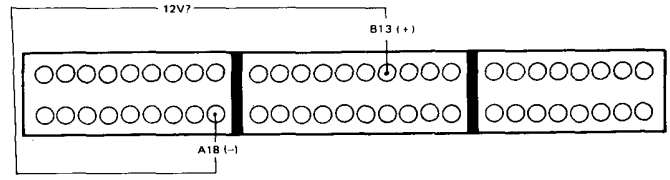
Turn ignition switch to START.

Measure voltage between B13 terminal (Blue/Red (+)) and A18 terminal (Black/Red (−)) of system checker harness.

Is battery voltage available?

NO — Blown starter signal fuse

NO — Open circuit in Blue/White wire between starter signal fuse and ECU



Alternator FR Terminal Signal Inspection [KX model only]

Before inspection, check operation of alternator as follows:
With the engine running, and the vacuum hose #10 pinched (to cut off the idle control system), turn the headlight on and off.
Engine speed should be changed. If engine speed remains steady, re-charge battery and re-test.

Connect system checker harness between ECU and wire harness coupler.

Attach positive probe of voltmeter to B14 terminal (White/Red (+)), and negative probe to A18 terminal (Black/Red (−)) of system checker harness.

Start engine.

Turn headlights ON and OFF.

Check that voltage drops when headlights are ON, and rises when headlights are OFF, within 0 and 5 V.

Is voltage changed?

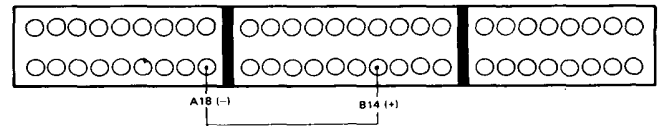
NO — Stop engine.

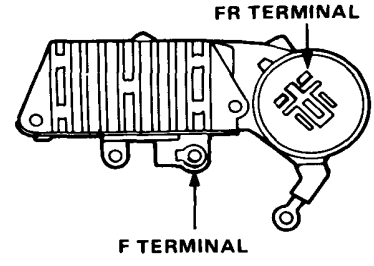
Check for continuity in White/Red wire between alternator and ECU.

Is there continuity?

NO — Open circuit in harness

YES — Faulty voltage regulator or alternator





NOTE: FR terminal diode is faulty if continuity or no continuity exists in both directions between F and FR terminals of voltage regulator.

(cont'd)

Troubleshooting (cont'd)

Air Conditioner Switch Signal Inspection [KX model only]

Connect system checker harness between ECU and wire harness coupler.

↓

Start engine.

↓

Blower switch ON.

↓

A/C switch ON.

↓

Check that compressor and condenser cooling fan work.

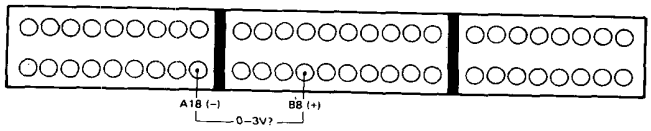
↓

Measure voltage between B8 terminal (Blue/Red (+)) and A18 terminal (Black/Red (−)) of system checker harness.

↓

Is 0–3 V available?

NO — Open circuit in Blue/Red wire between A/C, diode coupler and ECU.



NOTE: Voltage will be over 9 V if compressor or condenser cooling fan stops when power is cut off by pressure switch or thermostat.

Idle Control Solenoid Valve Inspection

[KX model]

Connect system checker harness between ECU and wire harness coupler.

↓

Attach positive probe of voltmeter to A11 terminal (Green/Black (+)) and negative probe to A18 terminal (Black/Red (−)) of system checker harness.

↓

Start engine.

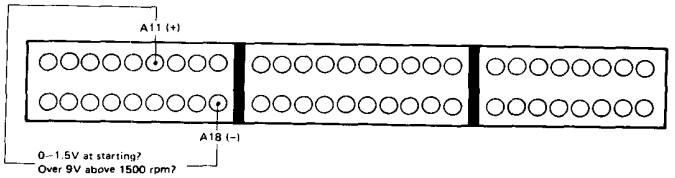
NOTE: Measure within 10 seconds.

↓

Is 0–1.5 V available?

NO —
- Open circuit in Black/Yellow wire between No. 4 fuse and idle control solenoid valve.
- Open circuit in Green/White wire between idle control solenoid valve and ECU.
- Open circuit in idle control solenoid valve.
- Faulty ECU. NOTE: Voltage should be above 9 V.

} NOTE: No voltage available.



↓

Raise engine speed over 1,500 rpm.

↓

Is more than 9 V available?

NO — Faulty ECU.

[Except KX model]

Connect system checker harness between ECU and wire harness coupler.

Attach positive probe of voltmeter to A8 terminal (Blue/Green (+)) and negative probe to A18 terminal (Black/Red (–)) of system checker harness.

Start engine.

NOTE: Measure within 30 seconds.

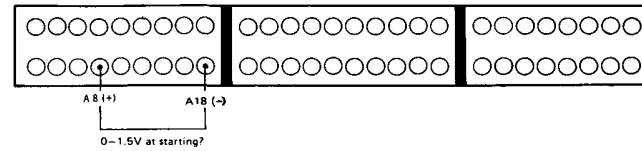
Is 0–1.5 V available?

NO

- Open circuit in Yellow/Black wire between main relay and idle control solenoid valve.
- Open circuit in Green/Black wire between idle control solenoid valve and ECU.
- Open circuit in idle control solenoid valve.

NOTE: No voltage available.

- Faulty ECU. NOTE: Voltage should be above 9 V.



Oxygen Sensor [KX model only]

1. Disconnect the connector of the oxygen sensor.
2. Start the engine and warm up for 2 minutes at 3,000 rpm under no load. Raise the engine speed to 4,000 rpm and release the throttle suddenly at least 5 times.
3. Within one minute after the engine has been warmed up, measure the voltage between the connector terminal and body ground as described in steps 4 and 5.

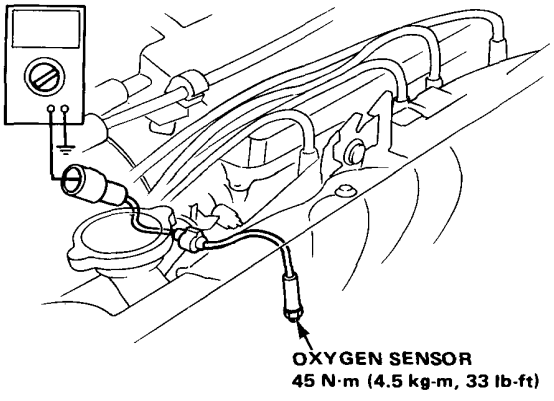
   NOTE: If it takes more than one minute to complete the checks, warm up the engine as in step 2 before continuing.

4. Raise the engine speed to 5,000 rpm, then lower to 2,000 rpm by operating the accelerator pedal.

   Voltage should be below 0.4 V.

5. Disconnect the vacuum hose (between the MAP sensor and the throttle body) from the throttle body; plug the opening in the throttle body. Connect a hand vacuum pump to open the end of the vacuum hose and apply 300 mmHg, and raise the engine speed to 4,000 rpm.

   Voltage should be above 0.6 V.

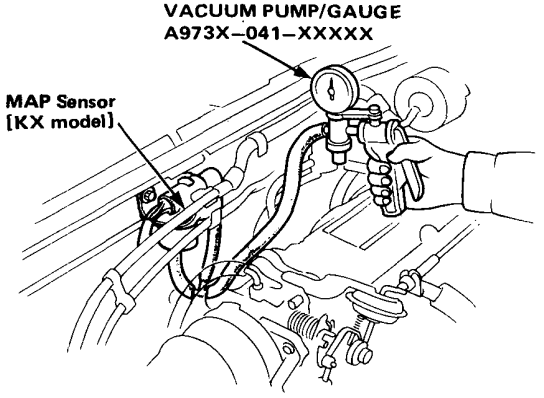


- Replace the oxygen sensor if the voltages are out of the above ranges.

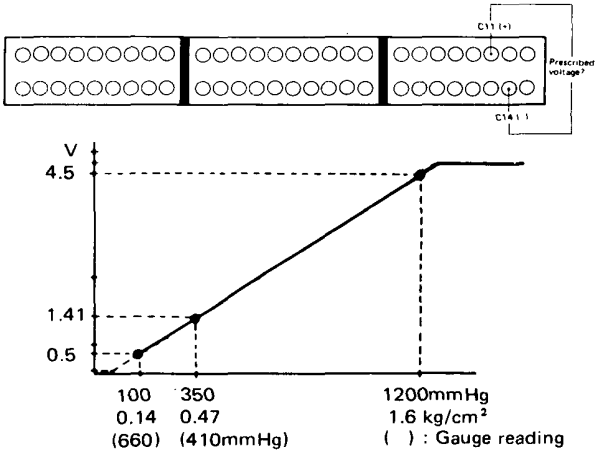
NOTE:
- Avoid damaging the wire harness.
- To prevent cross-threading, first tighten finger tight, then tighten to the specified torque with a torque wrench.
- Oxygen sensor does not operate when its intake is clogged.
- Be extremely careful not to spray anything over the oxygen sensor.

Manifold Absolute Pressure (MAP) Sensor

1. Disconnect the hose #21 from the throttle body to the MAP sensor in the control box (on KX model, disconnect the vacuum hose between the MAP sensor and the throttle body) from the throttle body; plug the opening in the throttle body. Connect a vacuum hand pump to the open end of the vacuum hose.



2. Disconnect the connector from the control unit. Connect the system checker harness between the control unit and wire harness connector (No. 07999–PD6000A).
3. Turn the ignition switch ON. Connect a digital voltmeter positive probe to the C11 terminal of the system checker harness and negative probe to the C14 terminal. Measure the voltage between the two terminals.



Voltmeter should indicate voltage along with the chart above.

- If the voltage is incorrect, check the vacuum hose for leakage, and wires between the control unit and sensor for open or short circuit.
  Replace the sensor if the wires are normal.

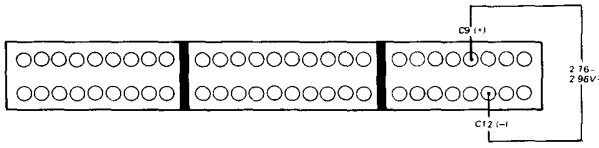
Atmospheric Pressure (PA) Sensor

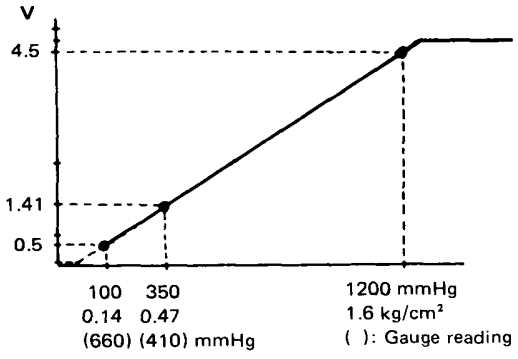
NOTE: Check the sensor at the ECU connector.

1. Disconnect the wire harness connector from the control unit and connect the system checker harness (No. 07999–PD6000A) to the control unit and wire harness connector.

2. Turn the ignition switch ON. Connect a digital voltmeter positive probe to the C9 terminal of the system checker harness and negative probe to the C12 terminal.

   There should be: 2.76–2.96 V





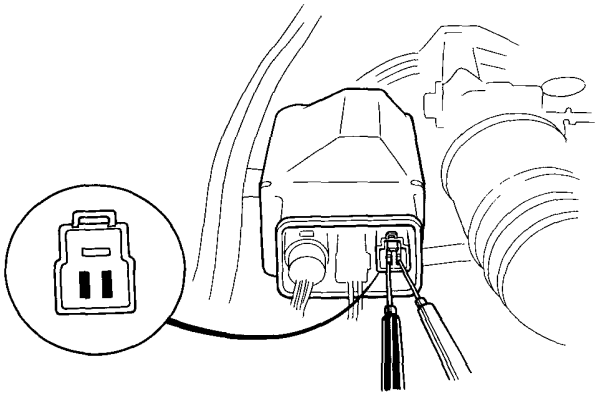
- If voltage is outside ranges, check for open or short circuit between the ECU and PA sensor. Replace the PA sensor with a new one if the wires are in good condition.

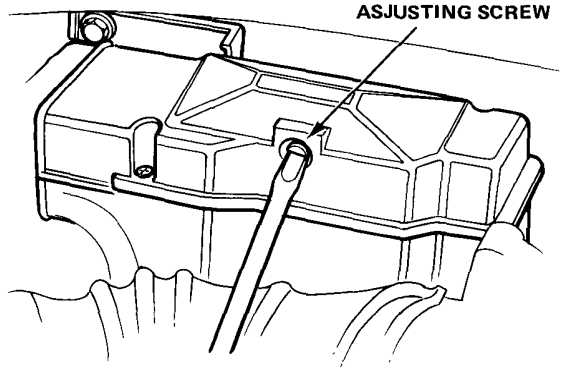
Idle Mixture Adjuster (IMA) Sensor

[Except KX model]

1. Disconnect the connector of the IMA sensor at the control box.
2. Turning the idle adjusting screw fully, measure resistance between the brown terminal and the green terminal at the sensor.

   Resistance should be: 0.25 – 6.2 kΩ





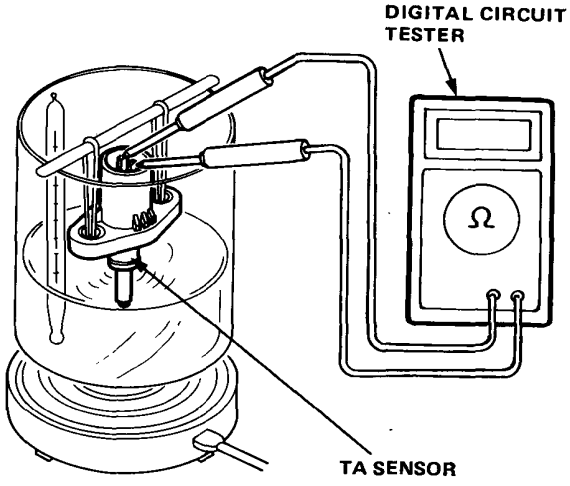
- If resistance is outside above ranges, replace IMA sensor.

NOTE: Whenever the inspection or the replacement of IMA sensor is performed, check specification for CO (page 11-35).

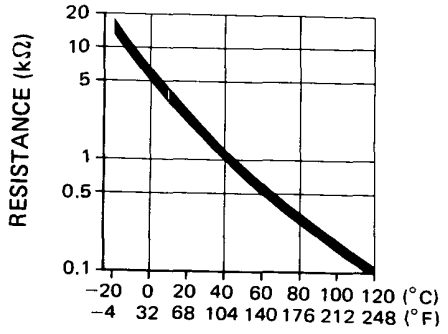
Intake Air Temperature (TA)/ Coolant Temperature (TW) Sensor

1. Disconnect the connector, then remove the TA/TW sensor from the intake manifold/cylinder head.
2. To test a sensor, suspend it in cold water and heat the water slowly. Make sure more than half of the connector is submerged. Measure the resistance between the terminals.

   STANDARDS: 0.98–1.34 kΩ at 40°C (95°F)
   0.22–0.35 kΩ at 80°C (176°F)



3. The chart below shows the change in resistance over a range of intake air/coolant temperature.



INTAKE AIR/COOLANT TEMPERATURE

- Replace the sensor if resistance is outside the range.
- When installing the TW sensor, torque to: 28 N·m (2.8 lg-m, 20 lb-ft)

NOTE:
- Don't let the sensor touch the bottom of the container.
- During the test, stir the water in the container to ensure even temperature.

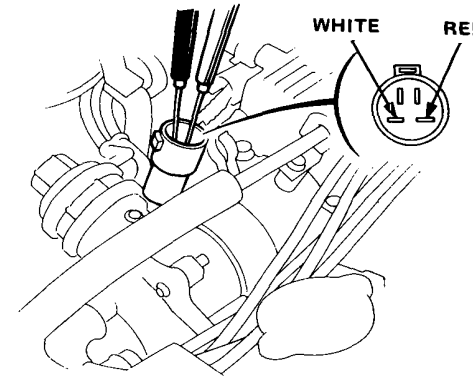
Crank Angle Sensor

NOTE: If either the CYL or TDC sensor tests bad, replace the distributor assembly.

CYL Sensor Inspection

1. Disconnect the connector of the CYL sensor.
2. Measure the resistance between the white terminal and red terminal at the sensor.

   Resistance should be: 0.65–0.85 kΩ



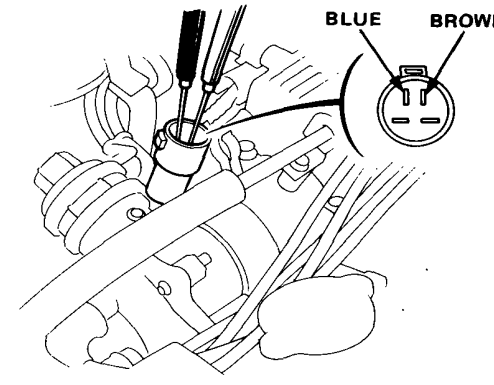
3. Measure the resistance between the White and Red terminals and crank angle sensor housing.

   Resistance should be: 100 kΩ or more

TDC Sensor Inspection

1. Disconnect the connector of the crank angle sensor.
2. Measure the resistance between the brown terminal and blue terminal at the sensor.

   Resistance should be: 0.65–0.85 kΩ



3. Measure the resistance between the Brown and Blue terminals and crank angle sensor housing.

   Resistance should be: 100 kΩ or more

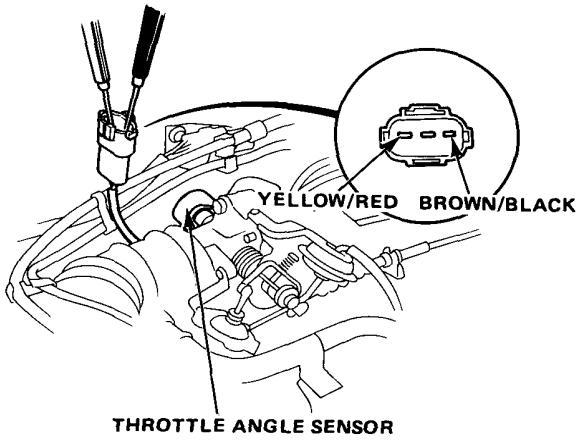
Throttle Angle Sensor

Testing/Removal:

CAUTION: The throttle stop screw is non-adjustable.

1. Disconnect the connector of the throttle angle sensor.
2. Measure the resistance between the Brown/Black terminal and Yellow/Red terminal at the sensor.

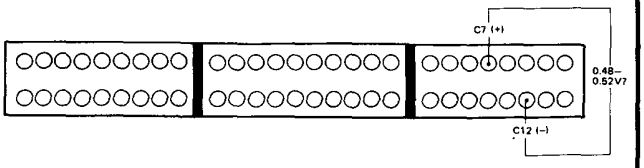
   Resistance should be: 3.2–7.2 kΩ



- If the resistance is outside the above range, adjust the installation position of the sensor and re-test. Replace if necessary. To remove the sensor, first remove the 2 shear screws from the throttle body.

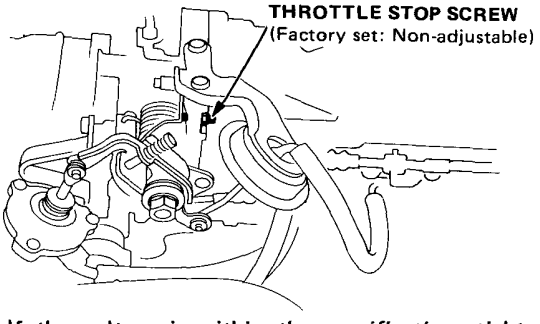
Installation:

1. Align the pin of the sensor with the throttle valve shaft groove and tighten temporarily.
2. Disconnect the control unit connectors and connect the "System Checker Harness" between the control unit and wire harness connector (P/N 07999–PD6000A).
3. Connect a digital voltmeter positive probe to C7 terminal of the system checker harness and negative probe to C12 terminal.

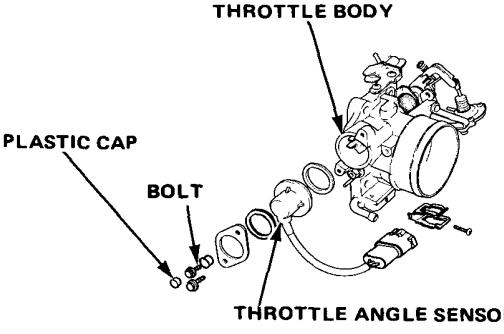


4. With the ignition switch turned ON, adjust the sensor to a position in which the throttle stopper lever just touches between the stop screw. Then measure the voltage between two terminals.

   There should be: 0.48–0.52 V



5. If the voltage is within the specification, tighten the sensor bolts and put the plastic cap on.



6. After reassembling the sensor, test the deceleration fuel cut-off device (page 11-45).

   - If the deceleration fuel cut-off device does not work, repeat steps 1 through 5 and check the voltage.

Solenoid Valves

Idle Control Solenoid Valve

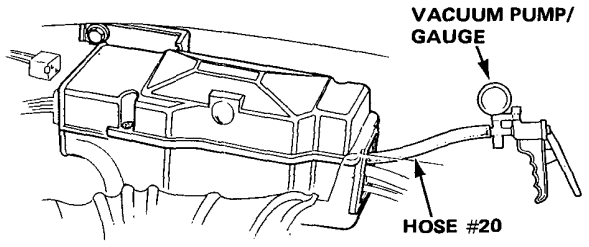
[Except KX model]

The idle control solenoid valve is activated by commands from the ECU. When the solenoid valve opens, this causes vacuum in the vacuum hose #23 (between the throttle body and the solenoid valve) and increase idle speed approximately 150 min^{-1} (rpm) under the following conditions:

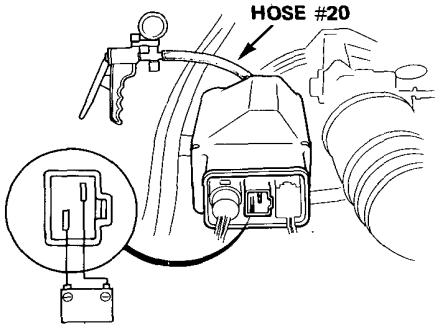
- For a short period after starting the engine.
- Altitude higher than 800 m.
- Cooland temperature lower than 70°C (158°F).
- For 0.5 seconds when quick deceleration is detected at 1,000 min^{-1} (rpm)

While the solenoid valve is energized, 9V or higher should be available between the Yellow/Black terminal (+) and Green/Black terminal (−) of the main harness at the control box.

1. Disconnect the 4 cavity rectangular connector from the control box.
2. Disconnect the vacuum hose #20 from the throttle body.
3. Apply vacuum to the hose #20.
   It should hold vacuum.



   - If it does not hold vacuum, replace the valve.
4. Connect the battery positive terminal and negative terminal to the terminals of the control box connector.
5. Apply vacuum to hose #20.
   It should not hold vacuum.



   - If it holds vacuum, replace the valve.

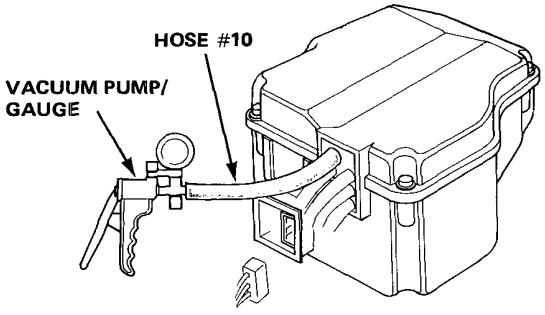
[KX model]

The idle control solenoid valve is activated by commands from the ECU. When the solenoid valve opens, this causes vacuum in the vacuum hose (between the air filter and the solenoid valve) and increase idle speed under the following conditions:

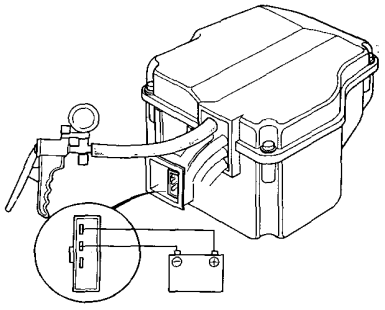
- For a short period after starting the engine.
- Whenever electrical loads are turned ON (vacuum will disappear when engine speed is raised over 1,700 min^{-1} (rpm) by operating the throttle).

While the solenoid valve is being activated, 9V or higher should be available between the Green/White terminal (+) and Black/Yellow terminal (−) of the main harness at the control box.

1. Disconnect the 8 cavity rectangular connector from the control box.
2. Disconnect the vacuum hose #10 from the intake manifold.
3. Apply vacuum to the hose #10.
   It should hold vacuum.

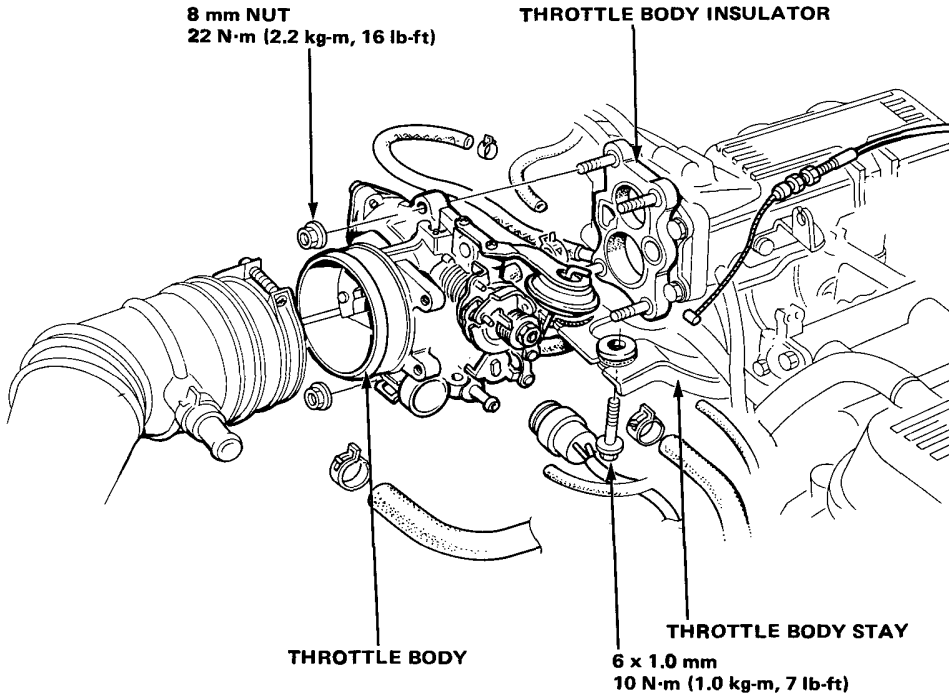


   - If it does not hold vacuum, replace the valve.
4. Connect the battery positive terminal and negative terminal to the terminals of the control box connector.
5. Apply vacuum to hose #10.
   It should not hold vacuum.

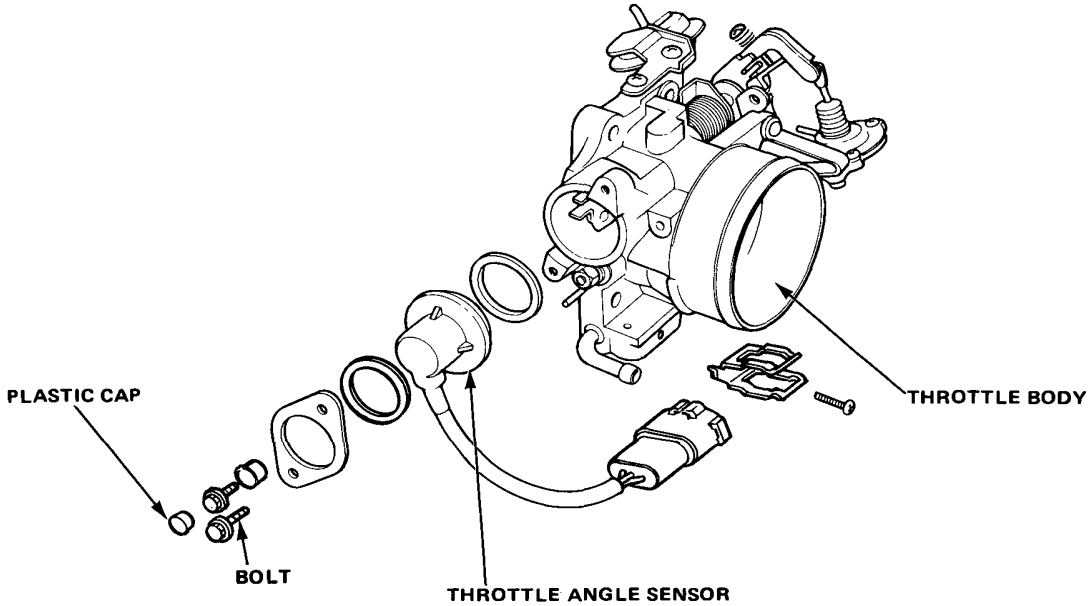


   - If it holds vacuum, replace the valve.

Throttle Body Disassembly



CAUTION: The throttle stop screw is non-adjustable.

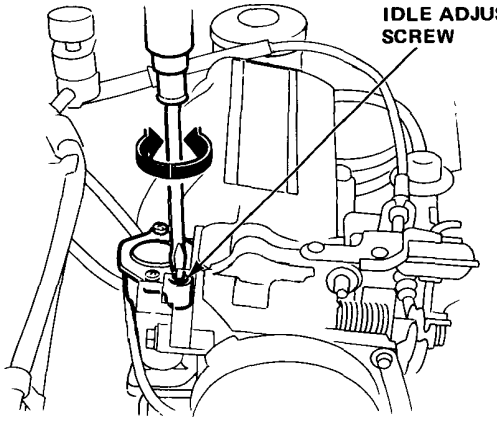


Idle Speed Inspection

[Except KX model]

1. Start engine and warm-up to normal operating temperature; the cooling fan will come on.
2. Connect a tachometer.
3. Check idle speed with the headlights, heater blower, rear window defroster, cooling fan, and air conditioner off.

   Idle speed should be: 850 ± 50 min^{-1} (rpm)

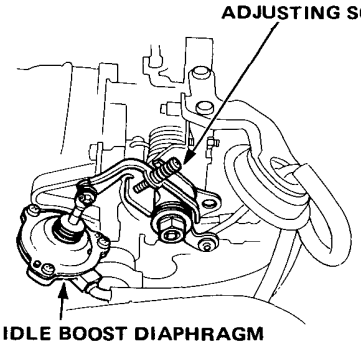


   Adjust the idle speed, if necessary, by turning the idle adjusting screw.

   - If idle speed cannot be adjusted by turning the idle adjusting screw, check the fast idle valve (page 11-36).

4. Check the idle controller boosted speed with the A/C on.

   Idle speed should be: 750 ± 50 min^{-1} (rpm)

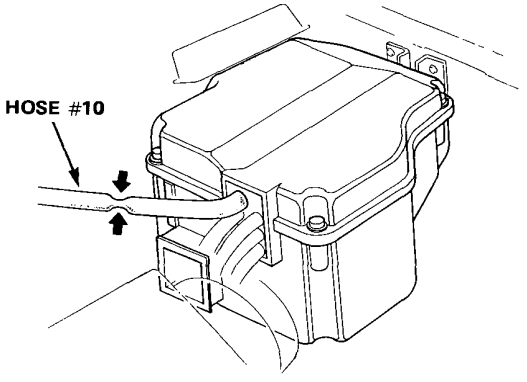


   Adjust the idle speed, if necessary, by turning adjusting screw B.

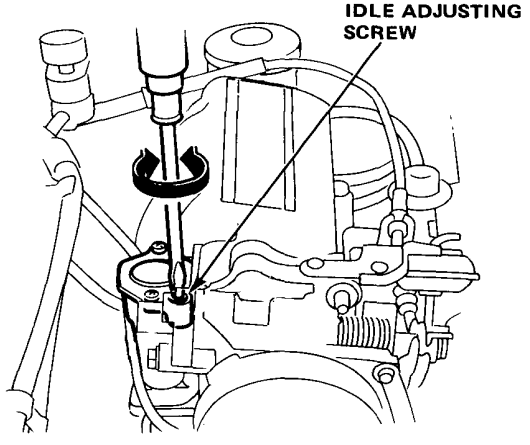
[KX model]

1. Start engine and warm-up to normal operating temperature; the cooling fan will come on.
2. Connect tachometer.
3. Check idle speed with the headlights, heater blower, rear window defroster, cooling fan, and air conditioner off.

   NOTE: To prevent the idle control system from operating pinch the vacuum hose #10.



   Idle speed should be: 750 ± 50 rpm min^{-1} (rpm)

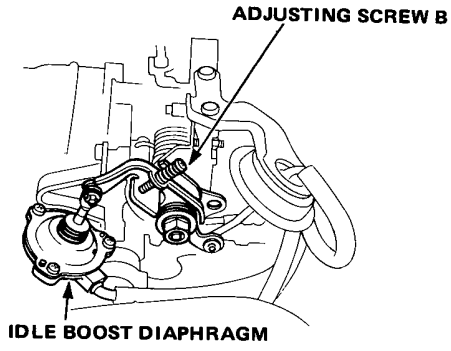


   Adjust the idle speed, if necessary, by turning the idle adjusting screw.

   - If idle speed cannot be adjusted by turning the idle adjusting screw, check the fast idle valve (page 11-36).

4. Check the idle controller boosted speed with the A/C on.

   Idle speed should be: 750 ± 50 min^{-1} (rpm)



   Adjust the idle speed, if necessary, by turning adjusting screw B.

5. Check the idle speed with headlights, heater blower, rear window defroster, and cooling fan on but air conditioner off.

   It should be the same as normal idle speed.

   NOTE: If the idle speed is not within specifications, see Troubleshooting on page 11-24.

Idle Mixture Inspection

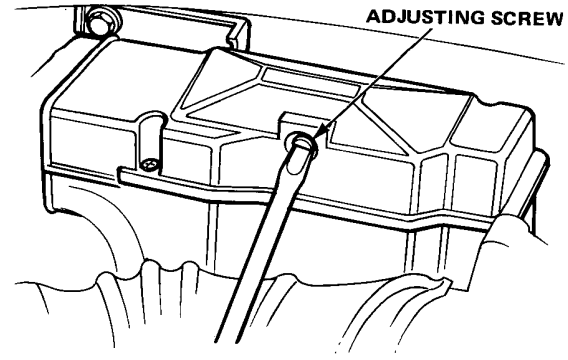
NOTE:
- Perform the measurement in a place with good ventilation and with no direct exposure to the wind and rain.
- Perform the measurement while the engine is idling. (under no load).
- Use a precise tachometer to check engine speed.
- Use the NDIR CO meter in accordance with the manufactures' recommended procedures.
- The following inspections and adjustments should be completed before the measurement.

  Air cleaner element
  Ignition timing and control system
  Spark plugs
  Idling speed
  Valve clearance
  PCV valve

1. Start the engine, and, after the radiator cooling fan works two times, further warm up the engine at 3,000 min^{-1} (rpm) for two minutes or more.
2. Insert exhaust gas sampling probe into the tail pipe at least 40 cm (16 in.)
3. Check specification for idle speed and CO with the headlights off (On Swedish model: on) and cooling fan off.

   Specified CO %:
   KX model: 0.5% maximum
   Other models: 1.5% maximum

4. On except KX model, if unable to obtain this reading, remove the rubber cap on the control box and remove the hole plug on the IMA sensor. Adjust by turning adjusting screw of the IMA sensor.



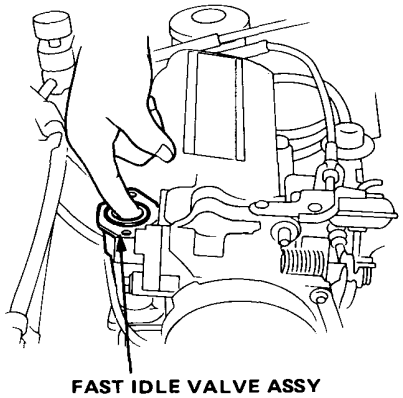
   - If unable to obtain a CO reading of specified % by this procedure, check the engine tuen-up condition.
     Be sure to put the rubber cap and hole plug on when the adjustment is completed.

Fast Idle Valve

NOTE:
- The fast idle valve is factory adjusted, it should not be disassembled.
- Check the PCV (engine breather) circuit hoses for proper connection and condition.
- Check that the throttle valves are fully closed.

Idle speed too high after engine is warmed up.

1. Check whether the idling control function is normal (page 11-24).
2. Remove the cover of the fast idle valve.
3. Check that the valve is completely closed. If not, air is being sucked from the valve seat area. It can be detected by putting your finger on the valve seat area.

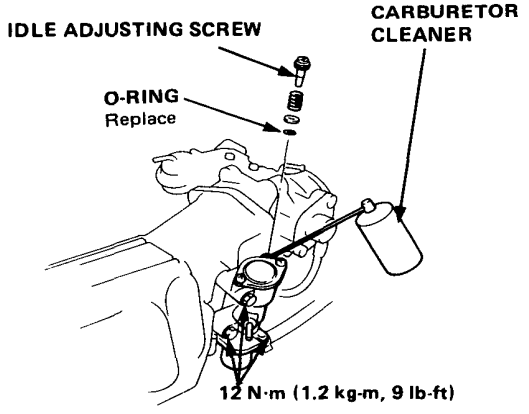


FAST IDLE VALVE ASSY

- If any sucking is felt, the valve is leaking. Replace the fast idle valve and adjust idle speed (page 11-34).

Idle speed is too low after engine is warmed up.

1. Remove the idle adjusting screw.

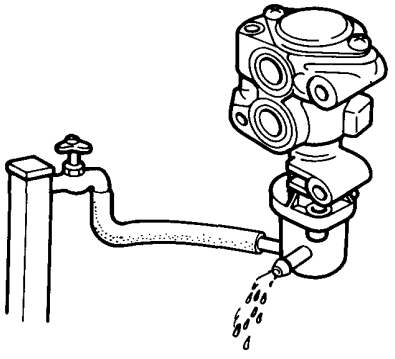


2. Wash the idle adjusting screw and the air bypass channel with carburetor cleaner.
3. Readjust idle speed after cleaning.

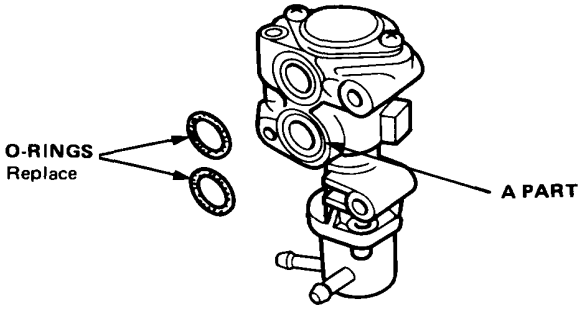
Fast idle speed is low when engine is cold (coolant temperature below 60°C (140°F). (Fast idle valve may be stuck closed.)

Fast idle speed should be: 1,250–2,250 rpm

1. Remove the fast idle valve assy from the throttle body.
2. Apply cold water and cool down the wax part of the fast idle valve to 5–30°C (41–86°F).



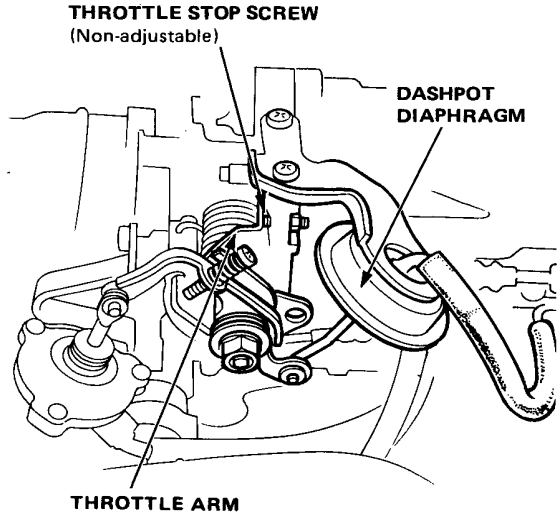
3. Blow through port A of the fast idle valve, and check that a fairly large amount of air flows without resistance.



- If air does not flow or the resistance is large, replace the fast idle valve and adjust idle speed.

Dashpot System

1. With the engine shut off, slowly open the throttle arm until the dashpot rod is raised up as far as it will go.



2. Release the throttle arm and measure the time until the throttle arm contacts the stop screw.

   Time should be: less than 2 seconds

   - If the time is over 2.0 seconds, replace the dashpot check valve and re-test.
   - If the rod does not operate, check for bound linkage, or for clogged check valve or vacuum line.
     - If they are OK, replace the dashpot with a new one.

Fuel Pressure Relieving

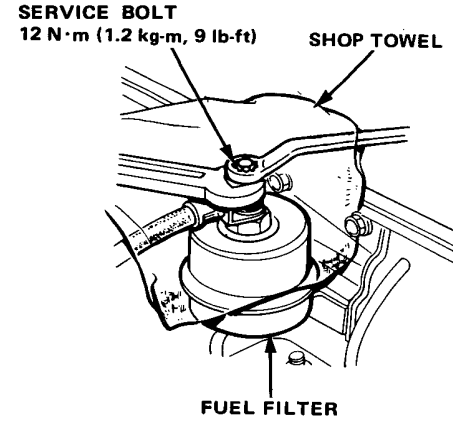
WARNING

- **Do not smoke while working on the fuel system. Keep open flames or sparks from the work area.**
- **Be sure to relieve fuel pressure while the engine is off.**

NOTE: Before disconnecting fuel pipes or hoses, release pressure from the system by loosening the 6 mm service bolt at top of the fuel filter.

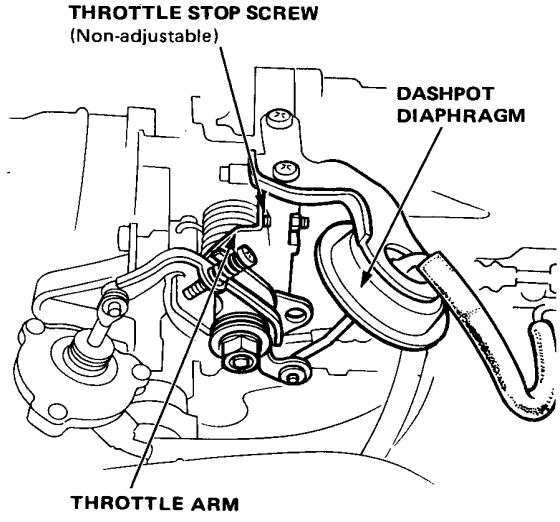
1. Disconnect the battery negative cable from the battery negative terminal.
2. Use a box end wrench on the 6 mm service bolt at top of the fuel filter, while holding the special banjo bolt with another wrench.
3. Place a rag or shop towel over the 6 mm service bolt.
4. Slowly loosen the 6 mm service bolt one complete turn.

   NOTE:
   - A fuel pressure gauge can be attached at the 6 mm service bolt hole.
   - Always replace the washer between the service bolt and the Special Banjo Bolt, whenever the service bolt is loosened to relieve fuel pressure. Replace all washers whenever the bolts are removed to disassemble parts.



Dashpot System

1. With the engine shut off, slowly open the throttle arm until the dashpot rod is raised up as far as it will go.



2. Release the throttle arm and measure the time until the throttle arm contacts the stop screw.

   Time should be: less than 2 seconds

   - If the time is over 2.0 seconds, replace the dashpot check valve and re-test.
   - If the rod does not operate, check for bound linkage, or for clogged check valve or vacuum line.
     - If they are OK, replace the dashpot with a new one.

Fuel Pressure Relieving

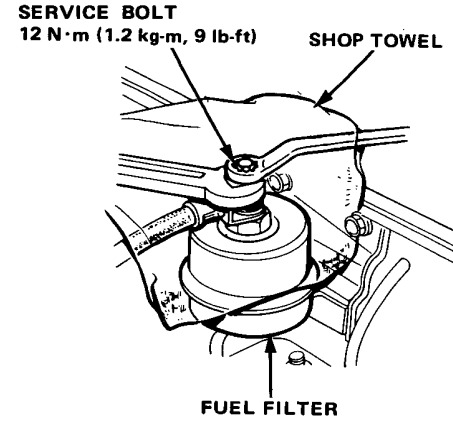
WARNING

- **Do not smoke while working on the fuel system. Keep open flames or sparks from the work area.**
- **Be sure to relieve fuel pressure while the engine is off.**

NOTE: Before disconnecting fuel pipes or hoses, release pressure from the system by loosening the 6 mm service bolt at top of the fuel filter.

1. Disconnect the battery negative cable from the battery negative terminal.
2. Use a box end wrench on the 6 mm service bolt at top of the fuel filter, while holding the special banjo bolt with another wrench.
3. Place a rag or shop towel over the 6 mm service bolt.
4. Slowly loosen the 6 mm service bolt one complete turn.

   NOTE:
   - A fuel pressure gauge can be attached at the 6 mm service bolt hole.
   - Always replace the washer between the service bolt and the Special Banjo Bolt, whenever the service bolt is loosened to relieve fuel pressure. Replace all washers whenever the bolts are removed to disassemble parts.



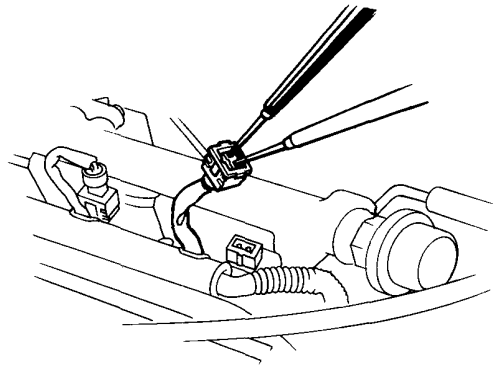
Injector Testing

NOTE: Check the following items before testing idle speed, ignition timing, valve clearance and idle CO %.

If the engine will run.

1. With the engine idling, disconnect injector couplers, and inspect the change in the idling speed.

- If the idle speed drop is almost the same for each cylinder, the injectors are normal.
- If the idle speed or quality remains the same when you disconnect a particular injector, check for voltage at that coupler.

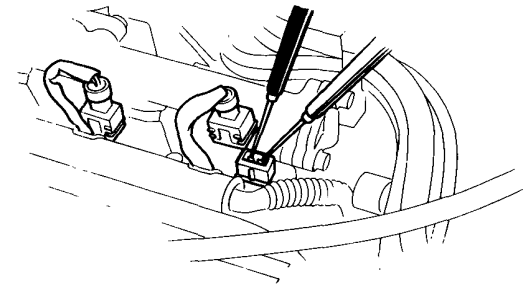


– If voltage is fluctuates between 0 and 2 volts, replace the injector.
– If there is no voltage, check the following:
  - Whether there is any short-circuiting, wire breakage, or poor connection in the wiring between the resistor and the injector.
  - Whether the resistor is normal.
  - Whether there is any short-circuiting, wire breakage, or poor connection in the wire between the resistor and control unit.

If the engine cannot be started.

1. Remove the coupler of the injector, and measure the resistance between the terminals of the injector.

Resistance should be: 1.5–2.5 Ω



- If resistance is not as specified, replace the injector.

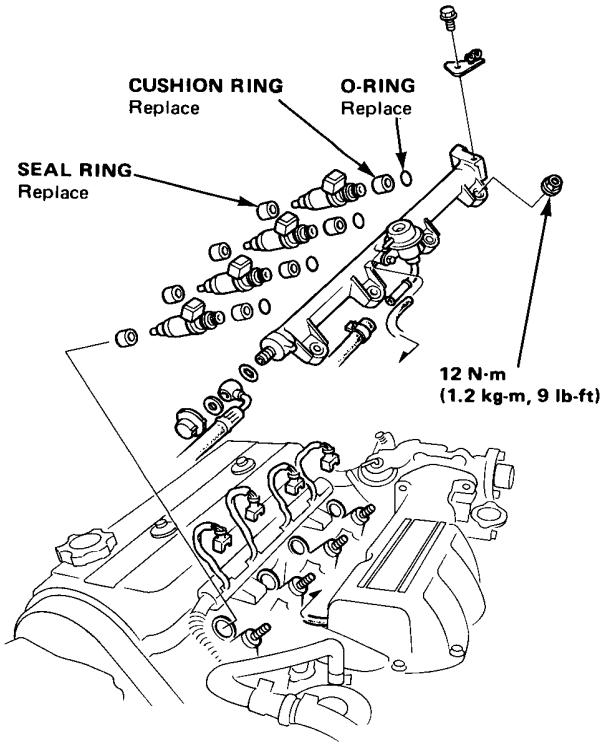
- If the resistance is normal, check the following:
  - Whether there is any short-circuiting, wire breakage, or poor connection in the wiring between the resistor and the injector.
  - Whether the resistor is normal.
  - Whether there is any short-circuiting, wire breakage, or poor connection in the wire between the resistor and control unit.

Injector Replacement

WARNING **Do not smoke during the work. Keep open flames away from your work area.**

1. Disconnect the battery negative cable from the battery negative terminal.
2. Relieve fuel pressure (page 11-37).
3. Disconnect the coupler of the injector.
4. Disconnect the vacuum hose and fuel return hose from the pressure regulator.

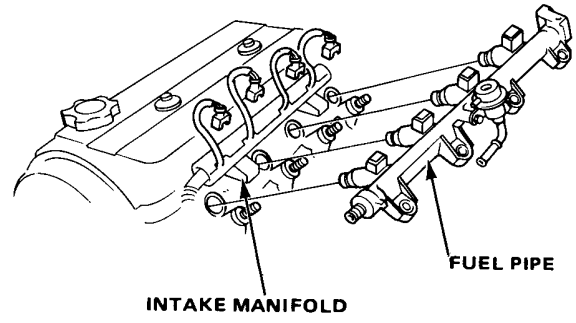
   NOTE: Place a rag or shop towel over the hose and tube before disconnecting them.
5. Loosen the retainer nuts on the fuel pipe.
6. Disconnect the fuel pipe.
7. Remove the injector from the intake manifold.



8. Slide new cushion rings onto the injector.
9. Coat new O-rings with clean engine oil and put them on the injectors.
10. Insert the injectors into the fuel pipe first.

    CAUTION: To prevent damage to the O-ring, insert the injector into the fuel pipe squarely and carefully.
11. Coat new seal rings with clean engine oil and press them into the intake manifold.
12. Install the injector and fuel pipe assembly in the manifold.

    CAUTION: To prevent damage to the O-ring, install the injectors in the fuel pipe first, then install them in the intake manifold.

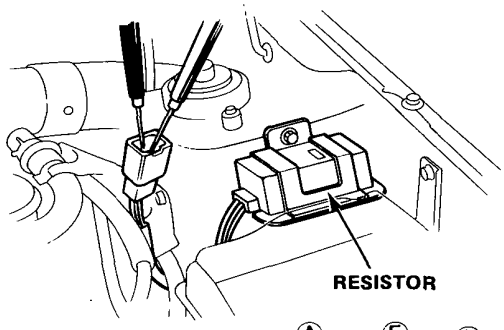


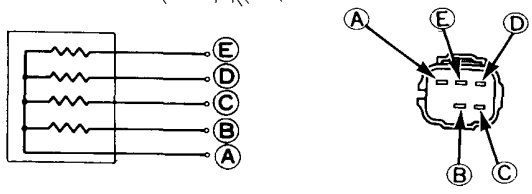
13. Tighten the retainer nuts.
14. Connect the vacuum hose and fuel return hose to the pressure regulator.
15. Install the couplers on the injectors.
16. Turn the ignition switch ON but do not operate the starter. After the fuel pump runs for approximately two seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check whether there is any fuel leakage.

Fuel System Resistor

1. Disconnect the resistor connector.
2. Check for resistance between each of the resistor terminals (E, D, C and B) and the power terminal (A).

Resistance should be: 5–7 Ω



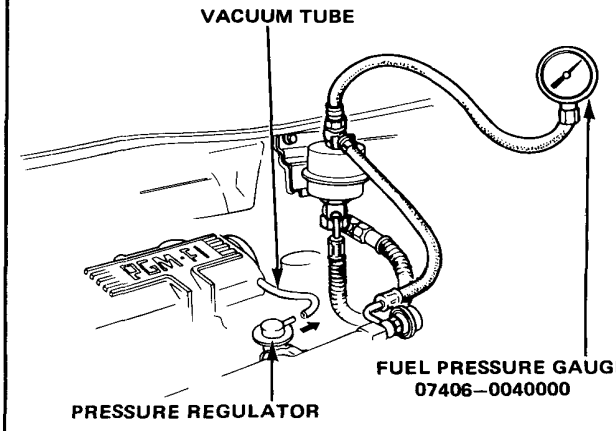


- Replace the resistor with a new one if any of the resistances are outside of the specification.

Fuel Pressure Testing

1. Relieve fuel pressure (page 11-37).
2. Remove the service bolt on the top of the fuel filter while holding the banjo bolt with another wrench and attach the fuel pressure gauge.
3. Start the engine. Measure the fuel pressure with the engine idling and the vacuum hose of the pressure regulator disconnected.

Pressure should be:
255 ± 20 kPa (2.55 ± 0.2 kg/cm², 36 ± 3 psi)



- If the fuel pressure is not as specified, first check the fuel pump (page 11-42). If the pump is OK, check the following:
  - If the pressure is higher than specified, inspect for:
    - Pinched or clogged fuel return hose or piping.
    - Faulty pressure regulator.
  - If the pressure is lower than specified, inspect for:
    - Clogged fuel filter
    - Pinched or clogged fuel hose from the fuel tank to the fuel pump
    - Pressure regulator failure
    - Leakage, in the fuel line
    - Pinched, broken or disconnected regulator vacuum hose

Pressure Regulator

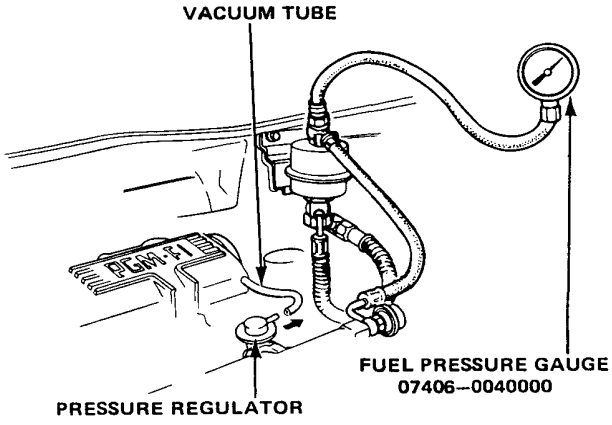
Testing:

WARNING **Do not smoke during the test. Keep open flames away from your work area.**

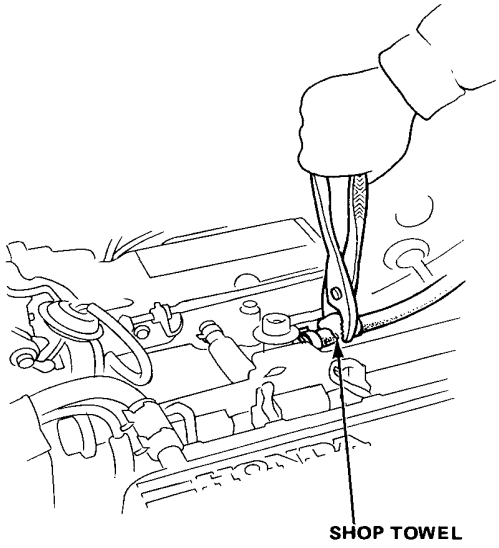
If the fuel pressure is not as specified, check the fuel pump first, then check the regulator.

1. Check for pinched or broken vacuum hoses.
2. Check that the fuel pressure rises by disconnecting the vacuum hose from the regulator.

Pressure should be: 255 ± 20 kPa (2.55 ± 0.2 kg/cm², 36 ± 3 psi)



- If the fuel pressure does not rise, pinch the return hose 2 or 3 times lightly.



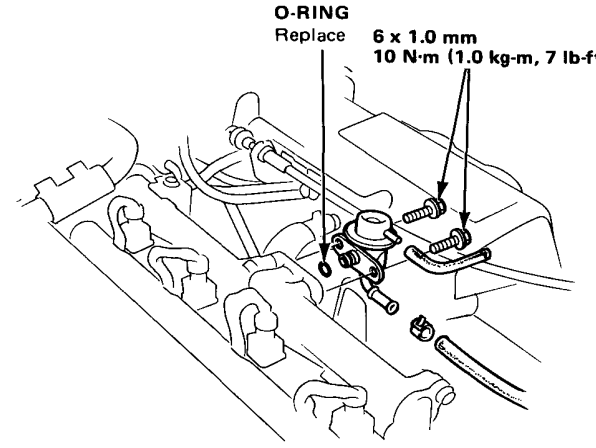
— If the fuel pressure is not as specified, replace the pressure regulator.

Replacement:

WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

1. Disconnect the negative terminal of the battery.
2. Place a shop towel under the pressure regulator, then relieve fuel pressure (page 11-37).
3. Disconnect the vacuum tube and fuel return hose.
4. Remove the two 6 mm retainer bolts.

NOTE:
- Replace the O-rings.
- When assembling the regulator, apply clean engine oil to the O-ring and assemble it into its proper position, taking care not to damage the O-ring.

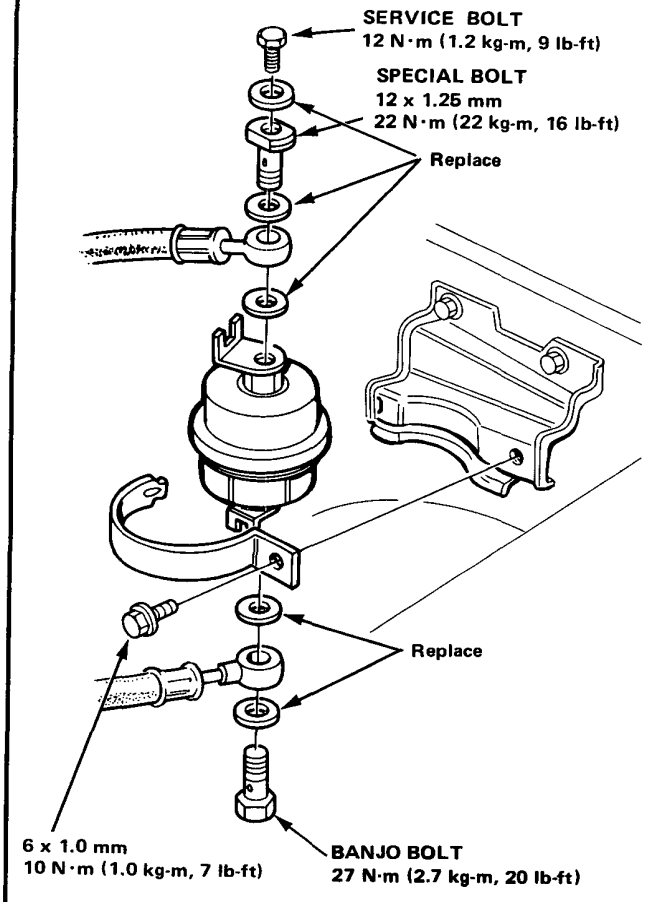


Fuel Filter Replacement

WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

The filter should be replaced: every 40,000 km (24,000 miles), or whenever the fuel pressure drops below the specified value (255 ± 20 kPa, 2.55 ± 0.2 kg/cm^2, 36 ± 3 psi with the vacuum pressure hose disconnected) after making sure that the fuel pump and the pressure regulator are OK.

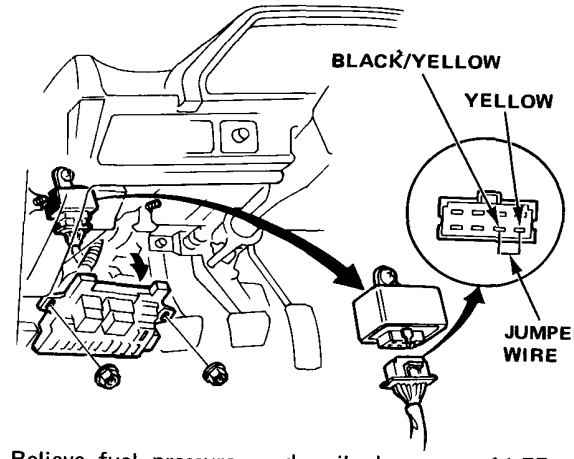
1. Disconnect the battery cable from the negative terminal.
2. Place a shop towel under and around the fuel filter.
3. Relieve fuel pressure (page 11-37).
4. Remove the two 12 mm sealing bolts from the filter.
5. Remove the fuel filter clamp and fuel filter.
6. When assembling, use new washers, as shown.



Fuel Pump Inspection

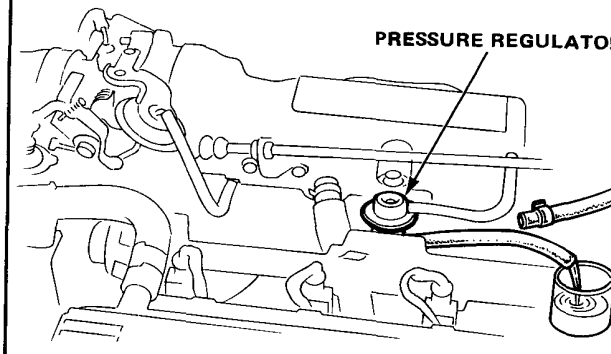
WARNING **Do not smoke during the test. Keep open flame away from your work area.**

1. With the ignition switch OFF, disconnect the coupler from the main relay behind the fuse box.
2. Connect the Yellow wire and Black/Yellow wire with a jumper wire.



3. Relieve fuel pressure as described on page 11-75, then tighten the service bolt.
4. Disconnect the fuel return pipe from the regulator.
5. Turn the ignition switch ON, measure the amount of fuel flow for 10 seconds, then turn the ignition switch OFF.

   Amount should be:
   230 cc (7.8 oz) min. in 10 seconds at 12 V



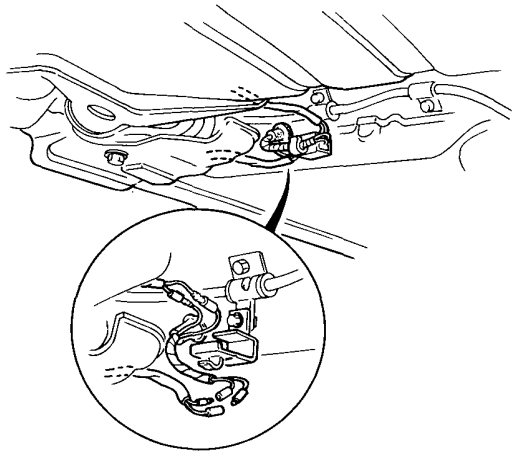
- If fuel flow is less than 230 cc (7.8 oz), or there is no fuel flow, check for:
  - Fuel pump failure
  - Clogged fuel filter
  - Clogged fuel line
  - Pressure regulator failure

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; it should make noise when it is ON. If the pump does not make noise, check as follows.

1. Jack up car and place jack stands in proper locations.
2. Remove left rear wheel.
3. Remove the fuel pump cover and disconnect Yellow and Black wires.

   CAUTION: Be sure to turn the ignition switch OFF before disconnecting the wires.

4. Check that battery voltage is available at the fuel pump wire couplers when the ignition switch is turned ON. (Positive probe to the Yellow wire, negative probe to the Black wire)

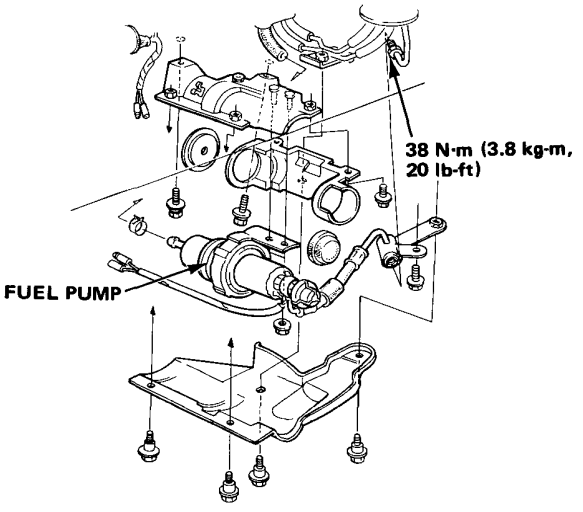


- If battery voltage is available, replace the fuel pump.
- If there is no voltage, check the main relay and wire harness.

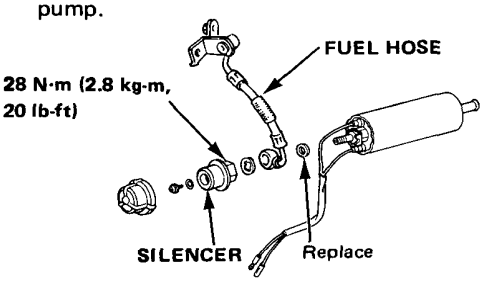
Fuel Pump Replacement

WARNING ***Do not smoke while working on fuel system. Keep open flames away from your work area.***

1. Jack up car and place jack stands in proper locations.
2. Remove left rear wheel.
3. Remove the fuel pump cover.
4. Remove the three bolts, then remove the fuel pump with its mount.
5. Disconnect the fuel lines and electrical wires at the connectors.



6. Remove the clamp and then remove the fuel pump.
7. Remove the fuel line and the silencer from the pump.



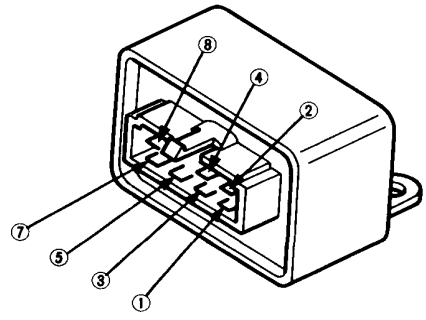
CAUTION: Do not disassemble the pump

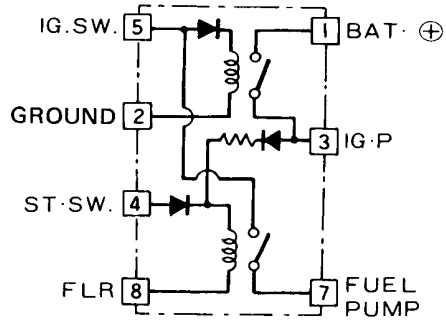
8. Install the new fuel pump on its mount.
9. Carefully clean the sealing surface of the flared fuel line, then install it on the fuel pump and tighten the flare nut. Reinstall the fuel hose and silencer on the front of the fuel pump.
10. Reconnect the electrical wires and reinstall the fuel pump.
11. Have someone turn the ignition switch to ON while you watch the fuel pump connections for leaks. Repeat this check two or three times to be sure that there are no fuel leaks.

Main Relay Testing

1. Remove the main relay, near the under-dash fuse box.
2. Connect the battery positive terminal to the No. 4 terminal and the battery negative terminal to the No. 8 terminal of the main relay. Then check for continuity between the No. 5 terminal and No. 7 terminal of the main relay.

- If there is continuity, go on to step 3.
- If there is no continuity, replace the relay.





3. Connect the battery positive terminal to the No. 5 terminal and the battery negative terminal to the No. 2 terminal of the main relay. Then check that there is continuity between the No. 1 terminal and No. 3 terminal of the main relay.

- If there is continuity, go on to step 4.
- If there is no continuity, replace the relay.

4. Connect the battery positive terminal to the No. 3 terminal and battery negative terminal to the No. 8 terminal of the main relay. Then check that there is continuity between the No. 5 terminal and No. 7 terminal of the main relay.

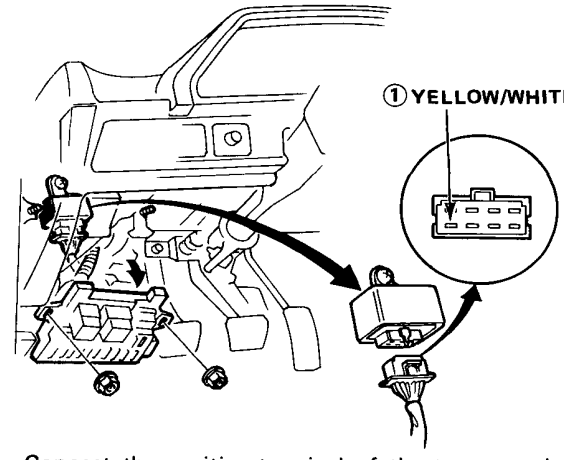
- If there is continuity, the relay is OK. If the fuel pump still does not work, go to Harness Testing in the next column.
- If there is no continuity, replace the relay.

Harness Testing

1. Keep the ignition switch in the OFF position.
2. Disconnect the main relay coupler.
3. Connect the positive probe of the circuit tester to the Yellow/White wire ① in the coupler and ground the negative probe of the tester to body ground.

   - Battery voltage should be available.

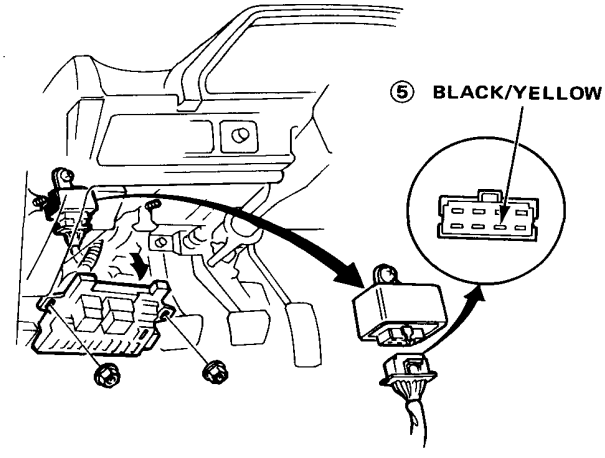
   – If there is no voltage, check the wiring between the battery and the main relay as well as the ECU fuse in the engine compartment.



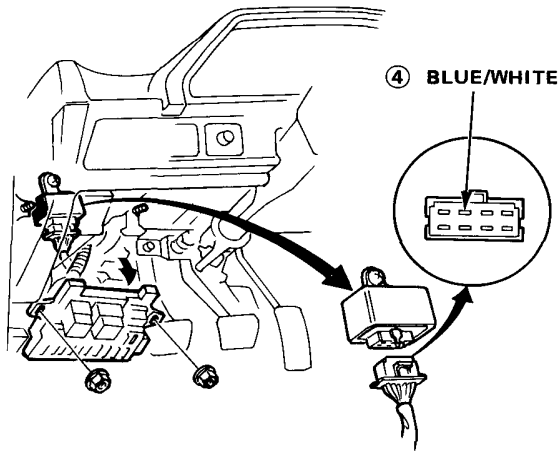
4. Connect the positive terminal of the tester to the Black/Yellow wire ⑤ of the coupler and ground the negative terminal of the tester to body ground.
5. Turn the ignition switch ON.

   - The tester should indicate battery voltage.

   – If there is no voltage, check the wiring from the ignition switch and the main relay as well as fuse No. 4.

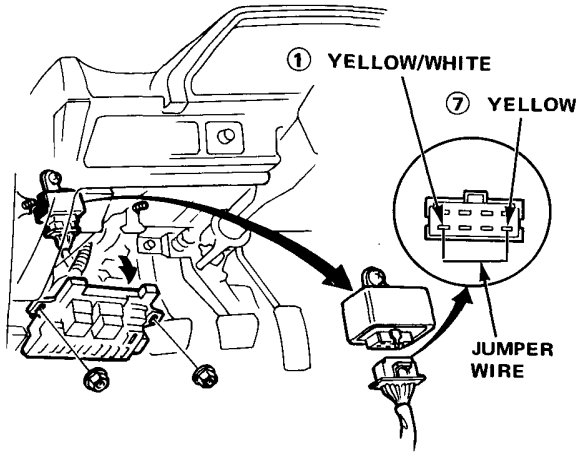


6. Connect the positive terminal of the tester to the Blue/White wire ④ in the coupler and ground the negative terminal to the body.



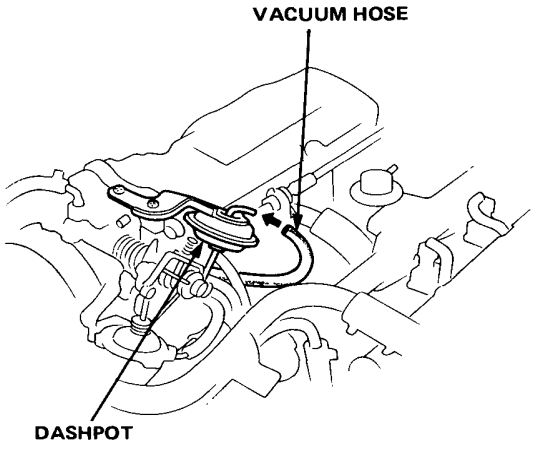
7. Turn the ignition switch to START position.
   - The tester should indicate battery voltage.
   - – If there is no voltage, check the wiring between the ignition switch and main relay as well as the starter fuse No. 1.

8. Connect a jumper wire between the Yellow/White wire ① and Yellow wire ⑦ in the coupler.
   - The fuel pump should work.
   - – If the fuel pump does not work, check the wiring between the battery and fuel pump and the wiring from the fuel pump to the ground (Black wire).

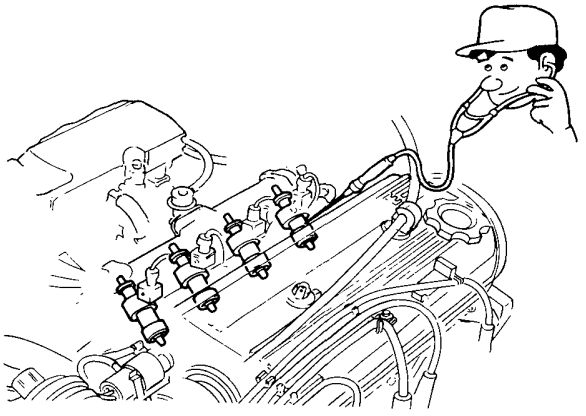


Fuel Cut-Off System

1. Start the engine and warm it up to operating temperature. Check that the engine idles smoothly.
2. On cars equipped with manual transmission: disconnect the vacuum hose from the dashpot of the throttle body.



3. Use a stethoscope to confirm that the injectors are working; they should make a clicking sound.



4. While listening to an injector, raise the engine speed to 3,000 rpm then release the throttle; the clicking of the injectors should cease momentarily when releasing the throttle.
   - If the clicking does not cease, check the ECU, throttle angle sensor, or wiring between the injector and ECU. Consult the Troubleshooting Chart according to the pattern of the self-diagnosis lamps on the ECU (page 11-13 or 15).

Fuel Tank Replacement

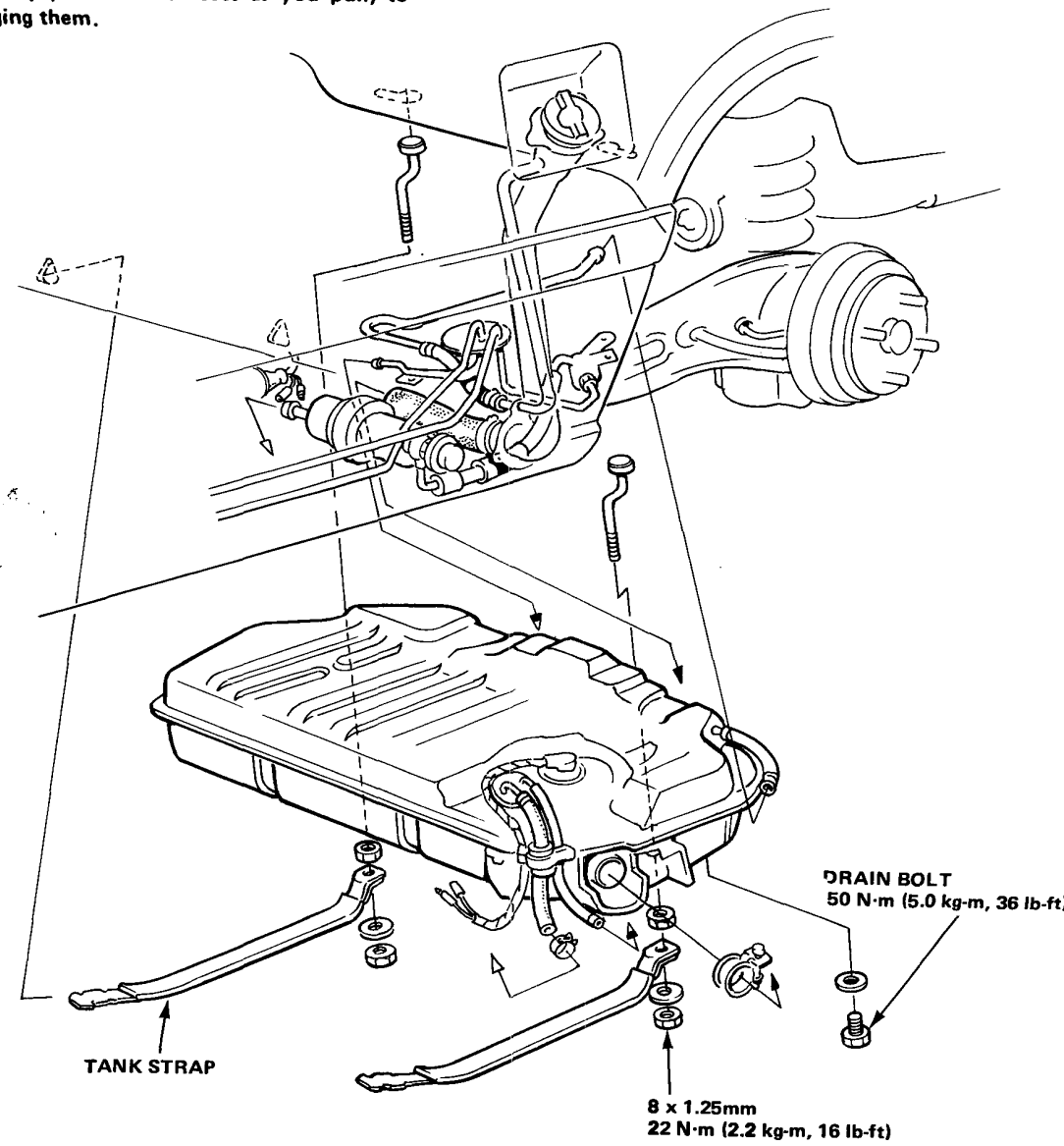
WARNING

- **Do not smoke while working on fuel system. Keep open flame away from work area.**
- **Block front wheels before jacking up rear of car.**

1. Raise rear of the car and place jack stands in the proper locations.
2. Remove the drain bolt and drain the fuel into an approved container.
3. Disconnect the sending unit connectors.
4. Disconnect the hoses.

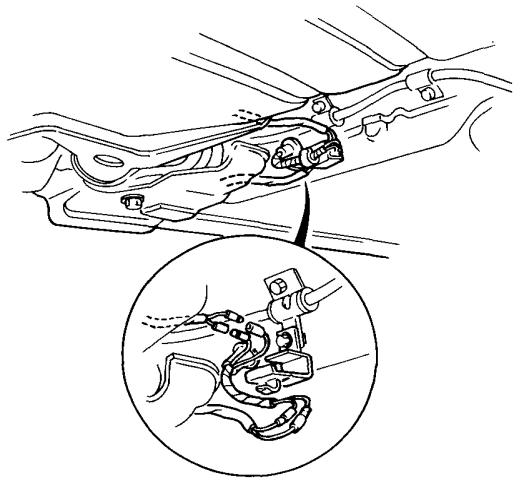
   CAUTION: When disconnecting the hoses, slide back the clamps, then twist hoses as you pull, to avoid damaging them.

5. Place a jack, or other support, under the tank.
6. Remove the strap nuts and let the straps fall free.
7. Remove the fuel tank.
8. Install in the reverse order of removal.



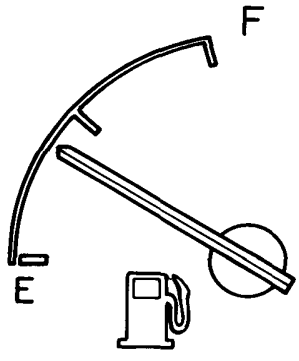
Fuel Gauge Testing

1. Disconnect the fuel tank wire harness connectors. Connect the Yellow/White wire to the Black wire.



2. Turn the ignition switch ON.
   Check that the pointer of the fuel gauge starts moving toward F.

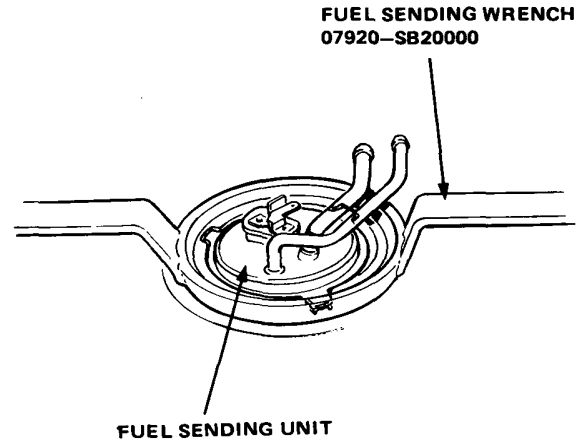
   CAUTION: Turn the ignition switch OFF within 5 seconds, before the pointer reaches "F" mark on the gauge dial. Failure to turn the ignition switch OFF before the pointer reaches the "F" mark may cause damage to the fuel gauge.



- If the pointer of the fuel gauge does not swing at all, check the fuse, wire harness and coupler. Replace the fuel gauge if they are normal.
- Inspect the fuel gauge sending unit if the fuel gauge is OK.

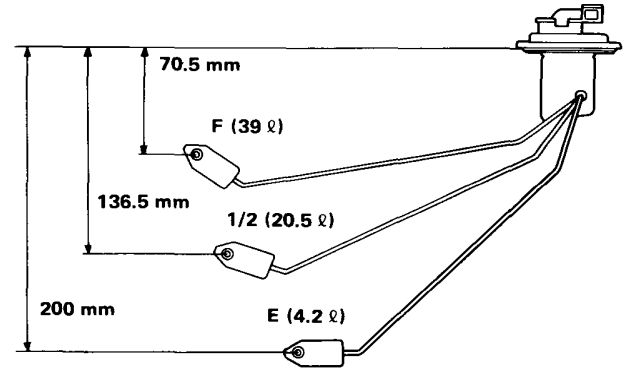
Fuel Sending Unit Testing

1. Remove the fuel tank (page 11-46)
2. Remove the fuel gauge sending unit.



3. Measure the resistance between the terminals at E (EMPTY), 1/2 (HALF FULL) and F (FULL) by moving the float.

Float Position	E (4.2 ℓ)	1/2 (20.5 ℓ)	F (39 ℓ)
Resistance (Ω)	105–110	25.5–39.5	2–5

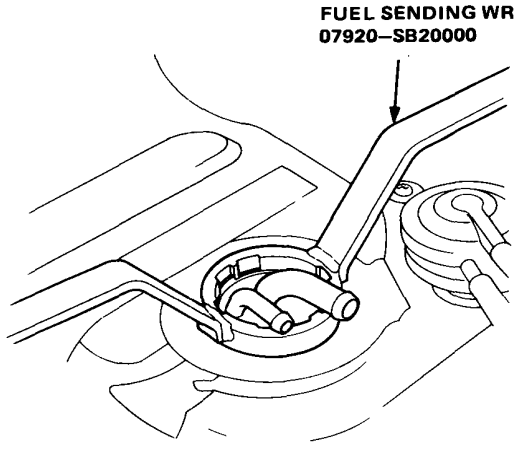


- If unable to obtain the above readings, replace the fuel unit with a new one.

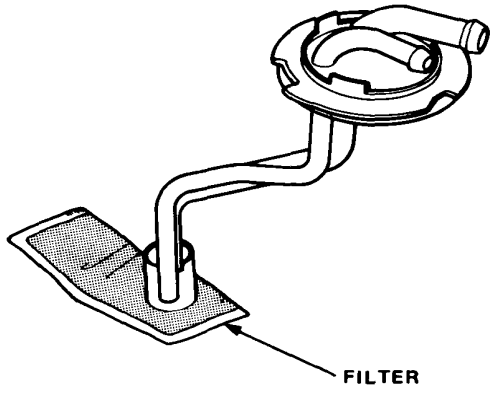
Fuel System

Fuel Pipe Unit Replacement

1. Remove the fuel tank (page 11-46).
2. Remove the fuel pipe unit.



3. Clean the filter at the end of the pipe unit.

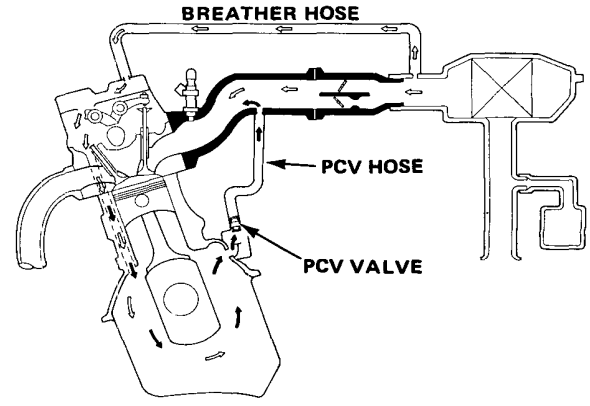


Emission Controls

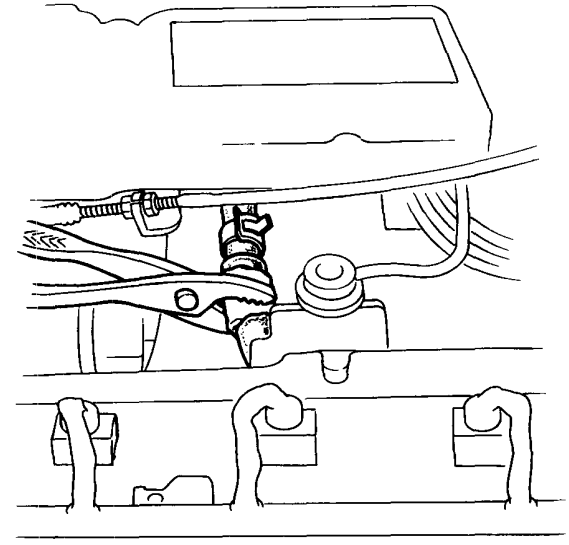
Crankcase Control

PCV Valve

1. Check the crankcase ventilation hoses and connections for leaks and clogging.



2. At idling, make sure there is a clicking sound from the PCV valve when the hose between PCV valve and intake manifold is lightly pinched with your fingers or pliers.

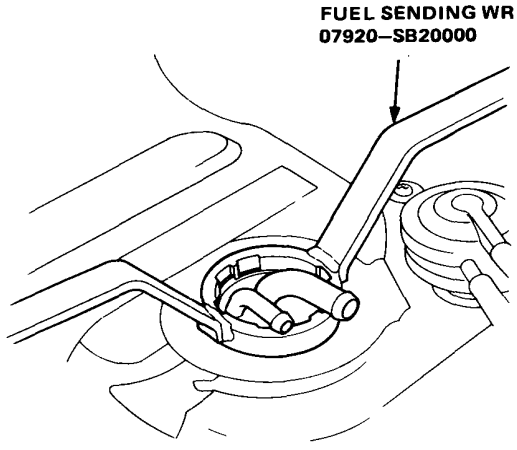


- If there is no clicking sound, check the PCV valve grommet for cracks or damage.
- If the grommet is OK, replace the PCV valve and recheck.

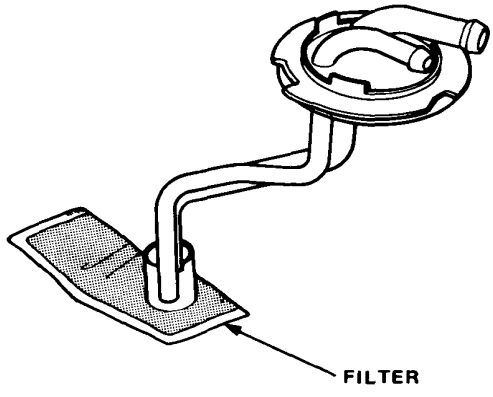
Fuel System

Fuel Pipe Unit Replacement

1. Remove the fuel tank (page 11-46).
2. Remove the fuel pipe unit.



3. Clean the filter at the end of the pipe unit.

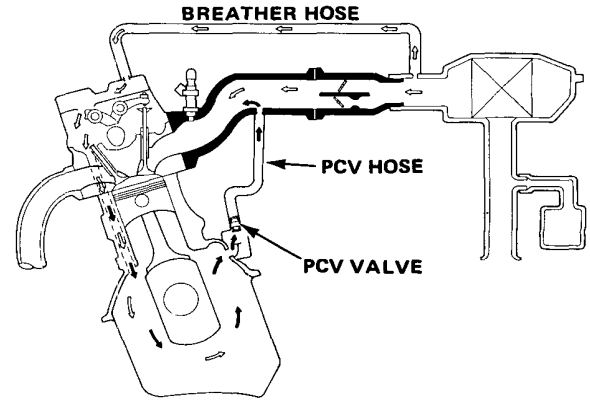


Emission Controls

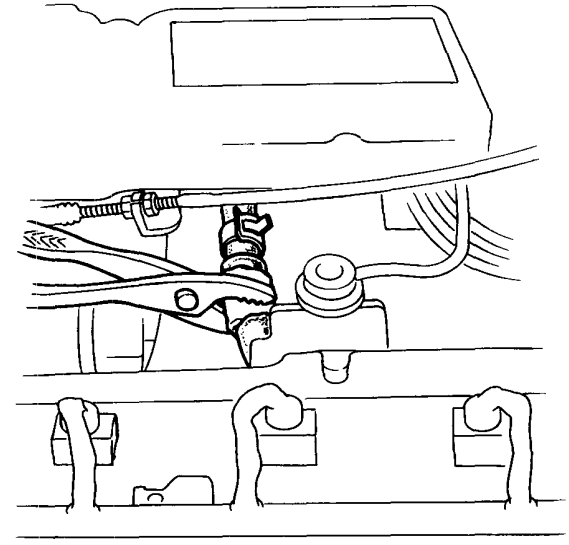
Crankcase Control

PCV Valve

1. Check the crankcase ventilation hoses and connections for leaks and clogging.



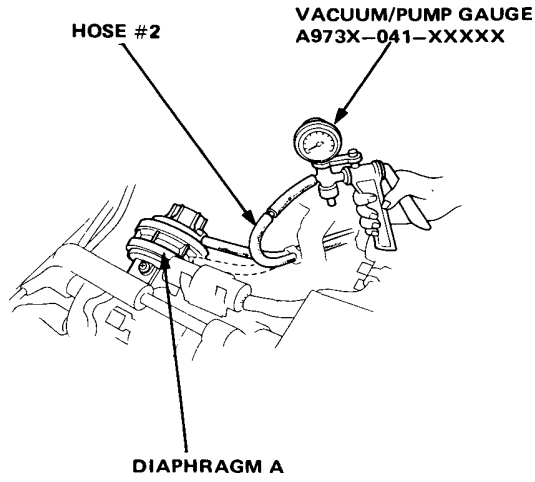
2. At idling, make sure there is a clicking sound from the PCV valve when the hose between PCV valve and intake manifold is lightly pinched with your fingers or pliers.



- If there is no clicking sound, check the PCV valve grommet for cracks or damage.
- If the grommet is OK, replace the PCV valve and recheck.

Ignition Timing Control [KX model only]

1. Disconnect vacuum hose #2 from the vacuum advance diaphragm A on the distributor and connect a vacuum pump/gauge to the hose.



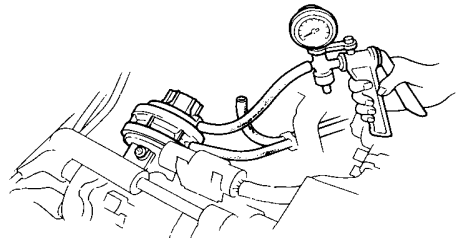
2. Start the engine, allow it to idle and check for vacuum.

   There should be vacuum.

   - If there is no vacuum, check the vacuum line for leaks, blockage or a disconnected hose and re-test.

3. Apply 500 mmHg (20 in.Hg) vacuum to the diaphragm A.

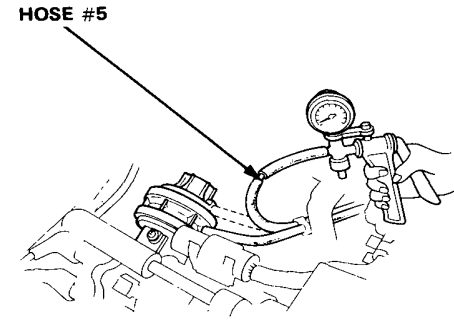
   Timing should advance and remain steady.



   - If timing does not advance, stop the engine and remove distributor cap. Turn breaker plate right and left to check for freedom of movement. If there is no evidence of binding, replace advance diaphragm and re-test.

4. Warm-up the engine until the cooling fan comes on.

5. Disconnect vacuum hose #5 from the vacuum advance diaphragm B on the distributor and connect a vacuum pump/gauge to the hose.



6. Allow the engine to idle and check for vacuum.

   There should be no vacuum.

   - If there is vacuum, check for voltage at the cold advance solenoid valve.

     – If there is voltage, replace the ECU and re-test.

     – If there is no voltage, replace the cold advance solenoid valve.

7. *Raise engine speed to 1,700 rpm and check for* vacuum.

   There should be vacuum.

   - If there is no vacuum, check for voltage at the cold advance solenoid valve after checking the vacuum line for leaks, blockage or a disconnected hose.

     – If there is voltage, replace the cold advance solenoid valve and re-test.

     – If there is no voltage, replace the ECU and re-test.

(cont'd)

Ignition Timing Control [KX model only]

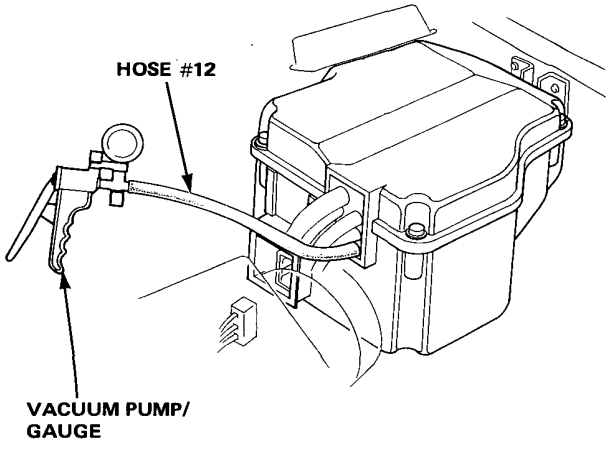
Cold Advance Solenoid Valve

The cold advance solenoid valve is activated by commands from the ECU. When the solenoid valve opens, this causes vacuum in the #5 vacuum hose and sends vacuum to Diaphragm B to improve cold engine performance under the following conditions:

- Whenever the coolant temperature is below 60°C (160°F).
- When the coolant temperature is 60–100°C (160–212°F), it is operated by the control unit which receives signals from the engine speed and manifold vacuum.

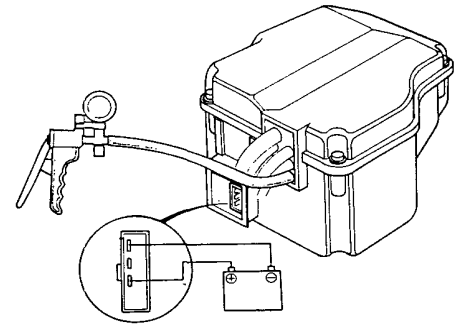
When the valve is open, 9V or more should be available between the Green/Black terminal (+) and White terminal (–) of the main harness at the control box.

1. Disconnect the 8 cavity rectangular connector from the control box.
2. Disconnect the vacuum hose #12 from the vacuum tank.
3. Apply vacuum to the hose #12.
   It should hold vacuum.



- If it does not hold vacuum, replace the valve.

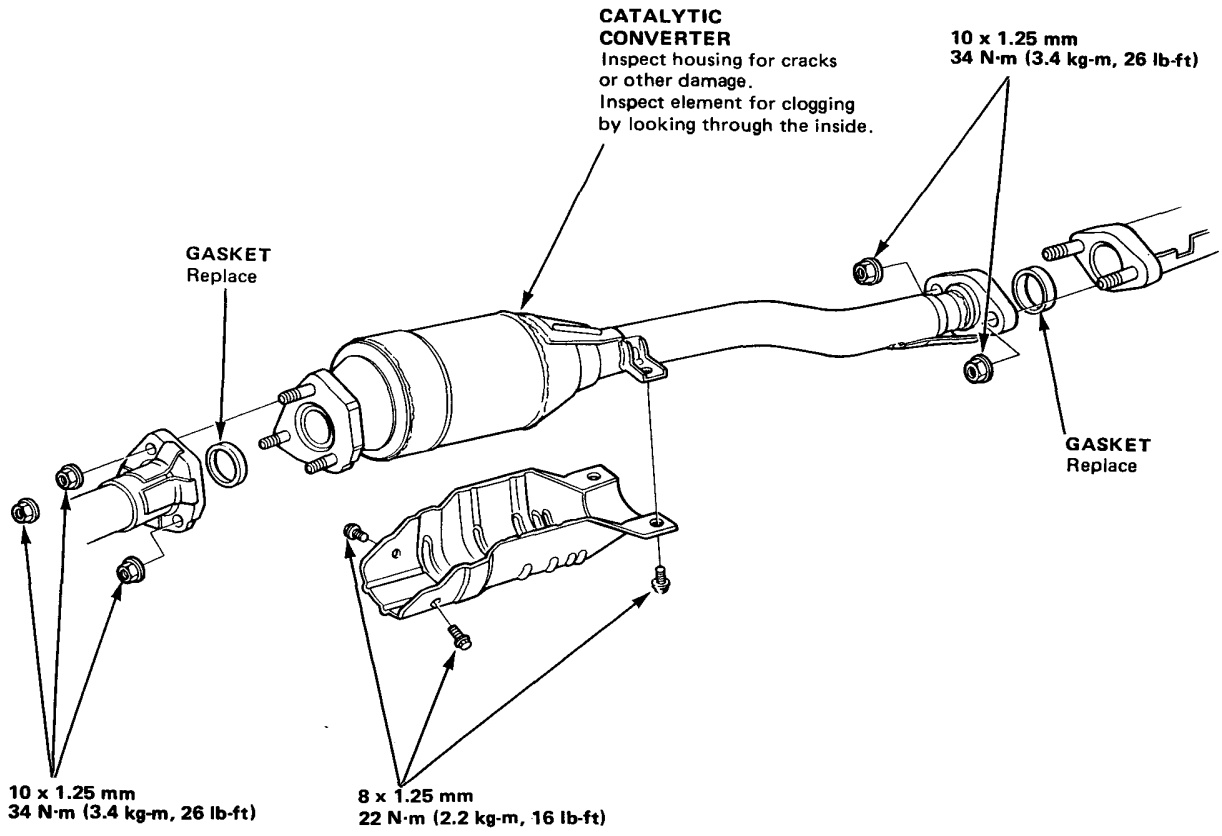
4. Connect the battery positive and negative terminals to the control box connector.
5. Apply vacuum to the hose #12.
   It should not hold vacuum.



- If it holds vacuum, replace the valve.

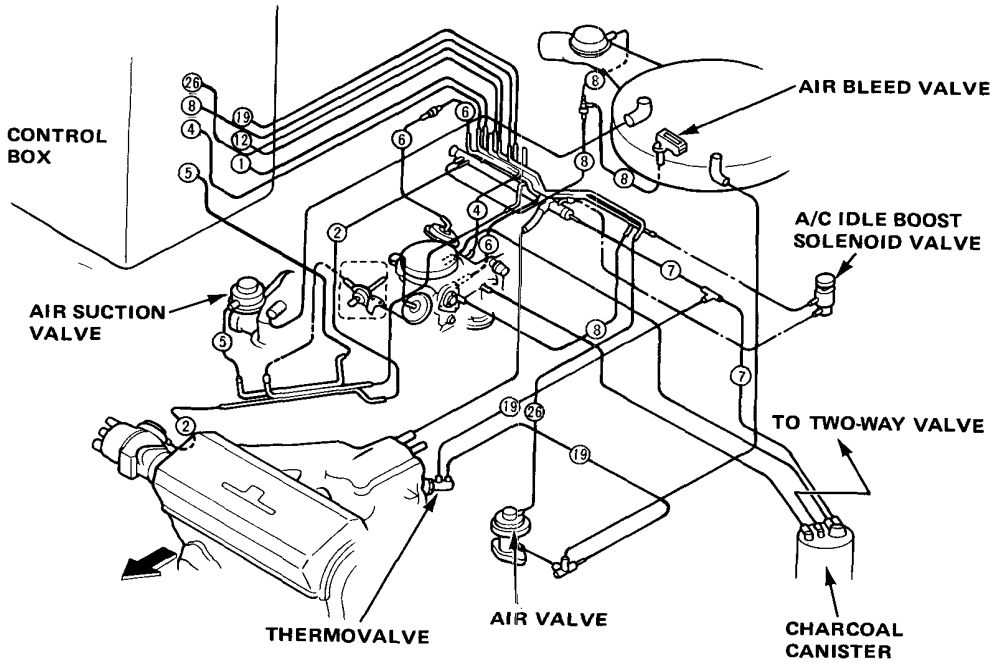
Catalytic Converter [KX model only]

If excessive exhaust system back-pressure is suspected, remove the catalytic converter from the car and make a visual check for plugging, melting or cracking of the catalyst. Replace the catalytic converter if more than 50% of the visible area is damaged or plugged.

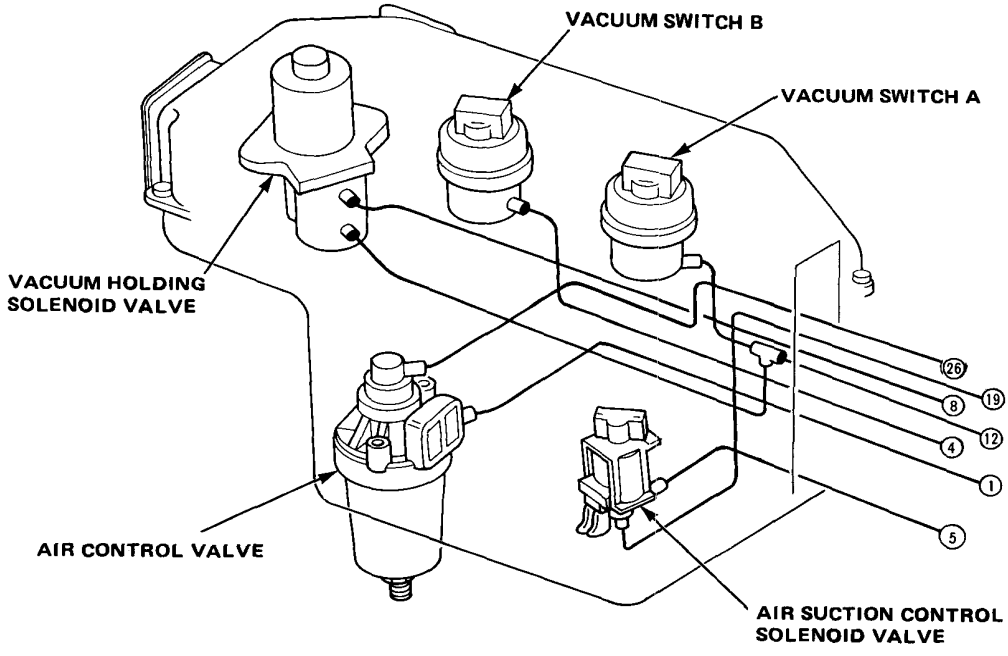


Interconnect Diagram

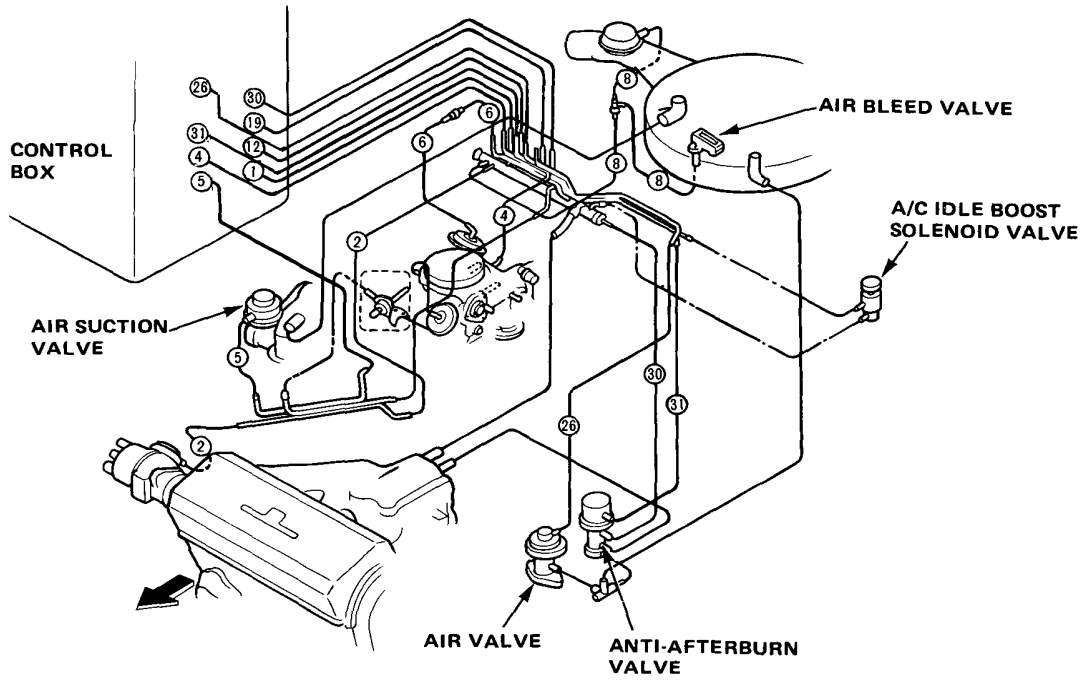
[Australian Model]



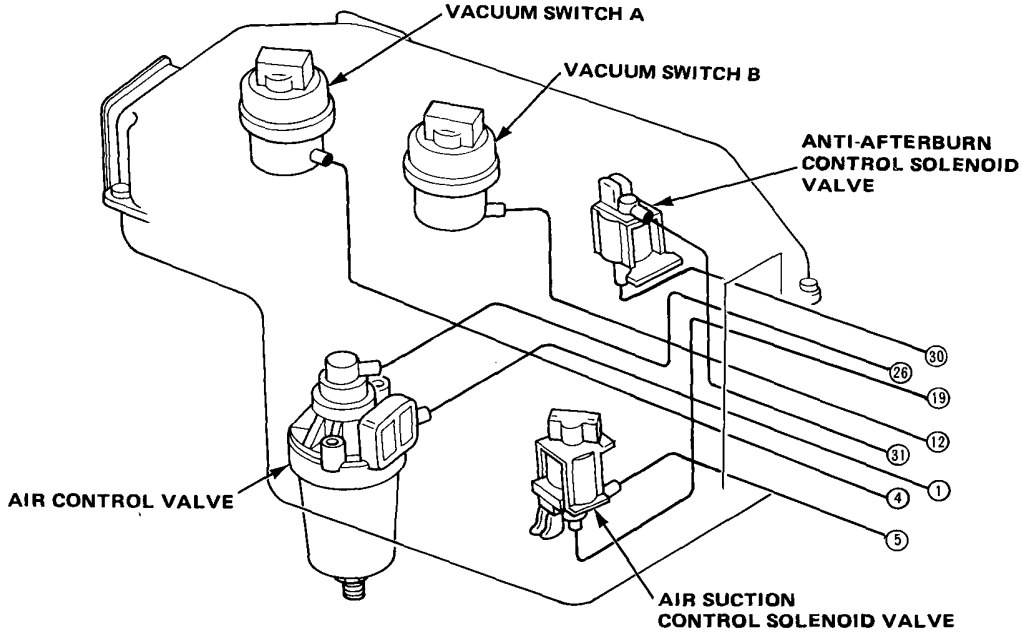
Control Box



[Swiss Model]

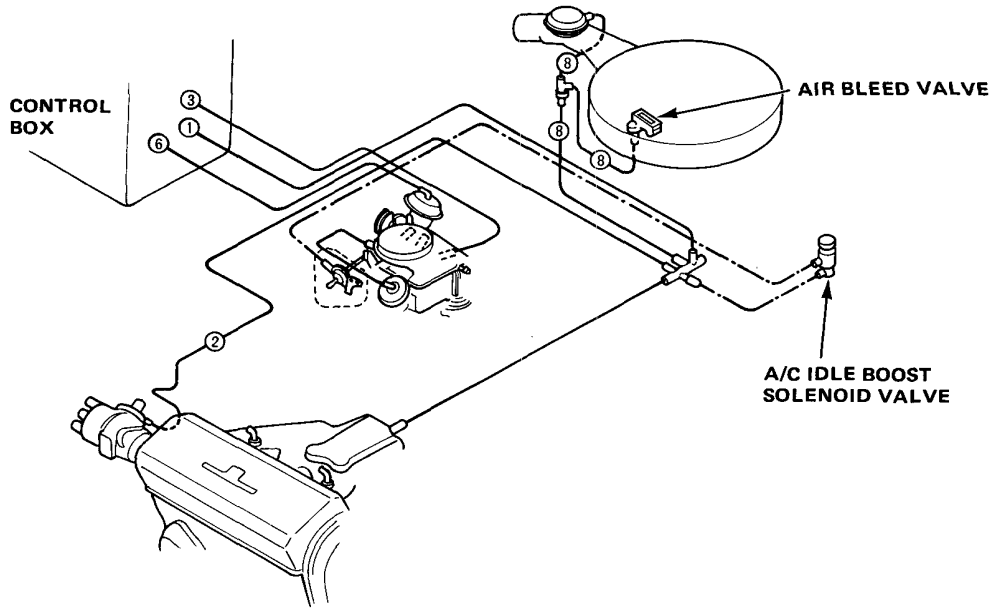


Control Box

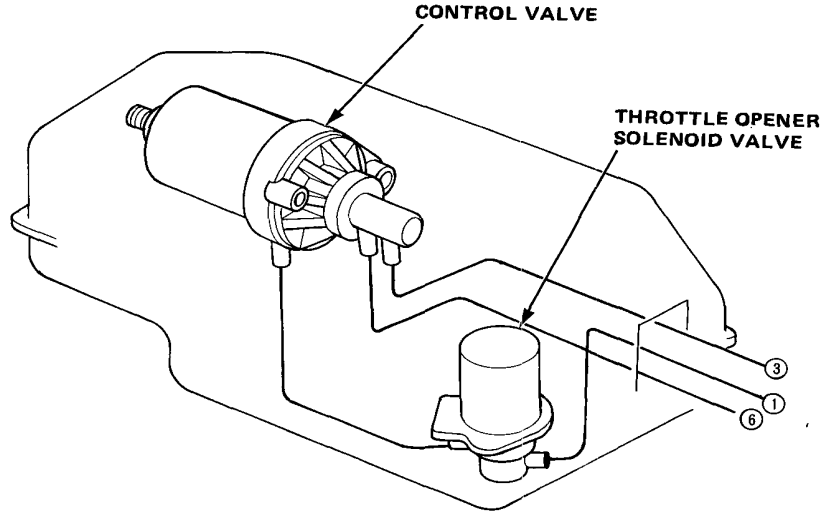


Interconnect Diagram

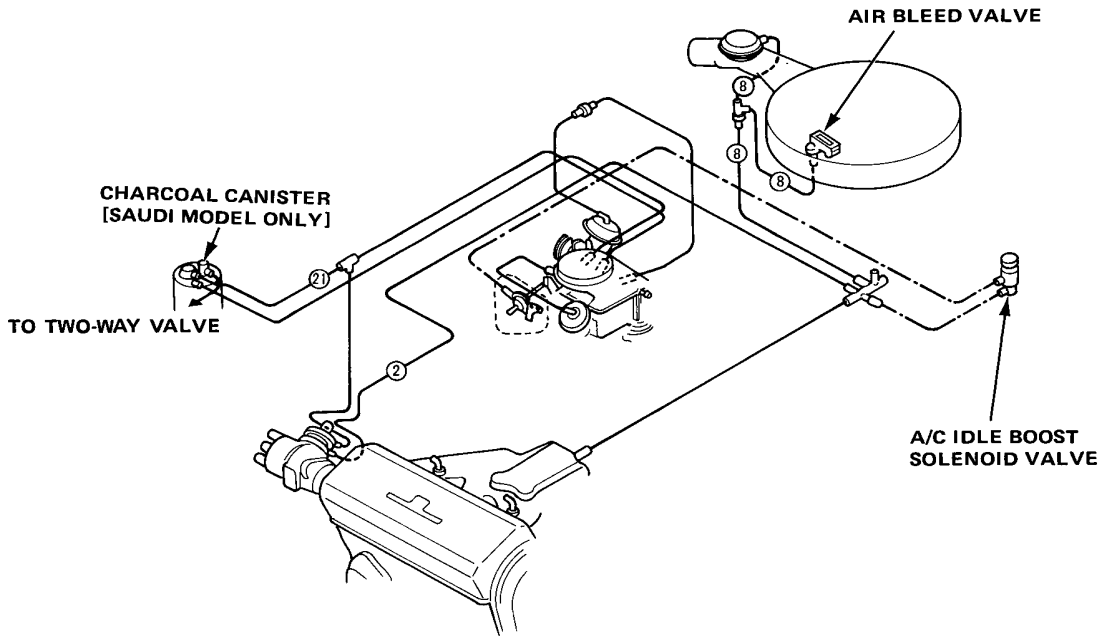
[Swedish Model with Manual Transmission]



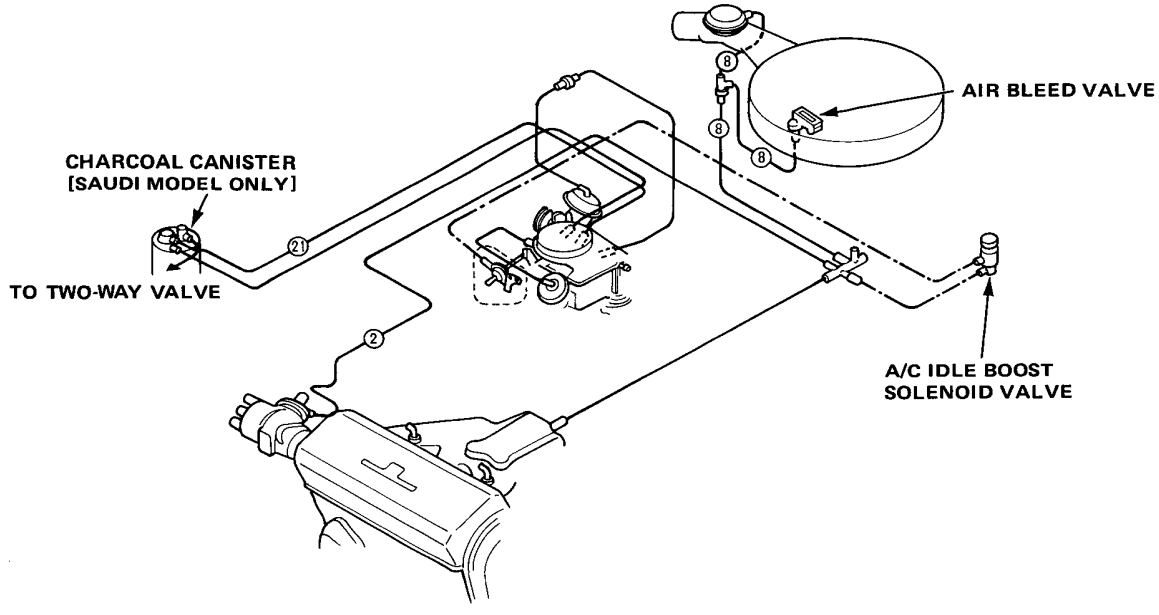
Control Box



[Swedish Model with Hondamatic Transmission and Other Models with Manual Transmission]

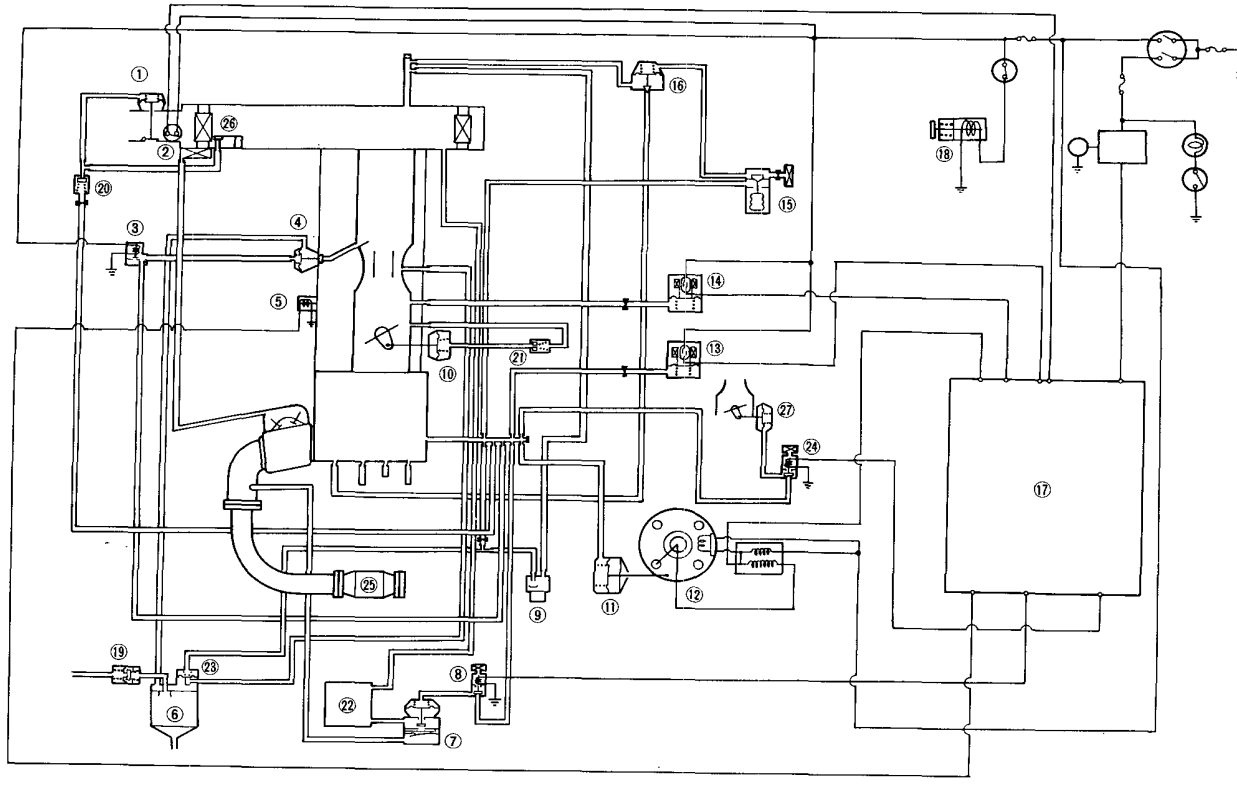


[Other Models with Hondamatic Transmission]



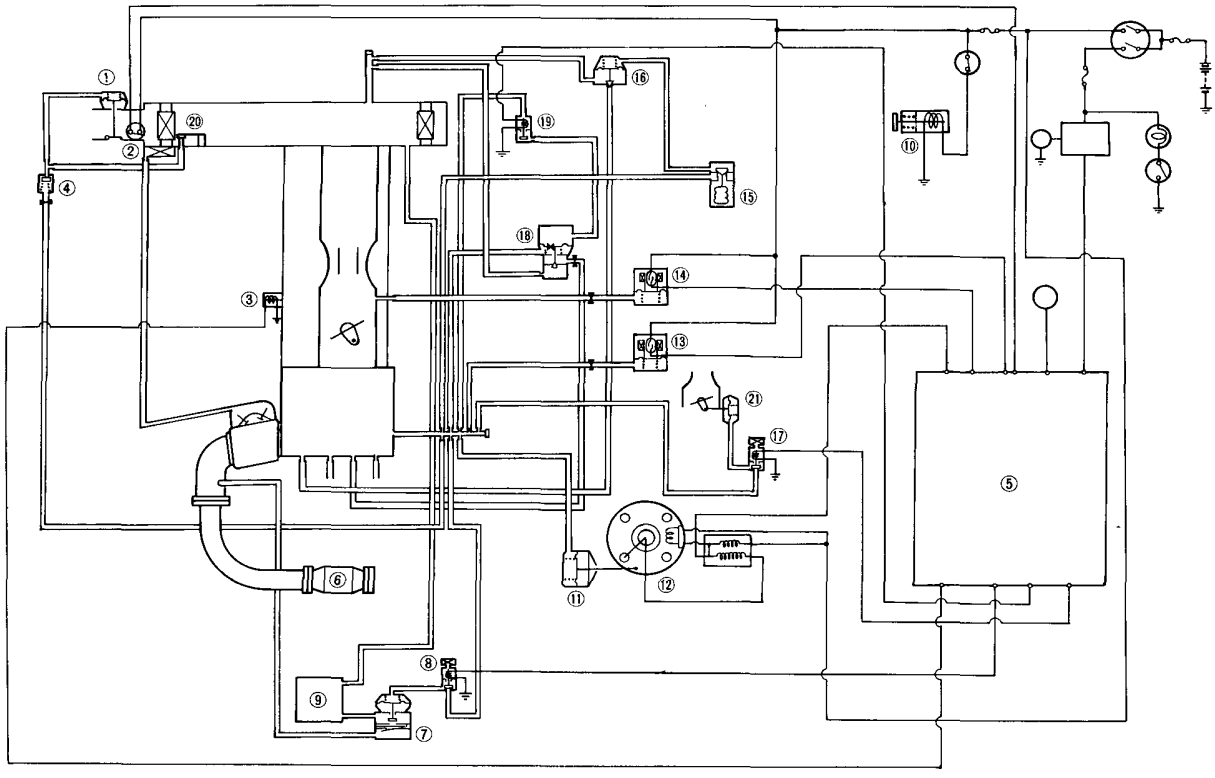
Vacuum and Electrical Connections

[Australian Model]



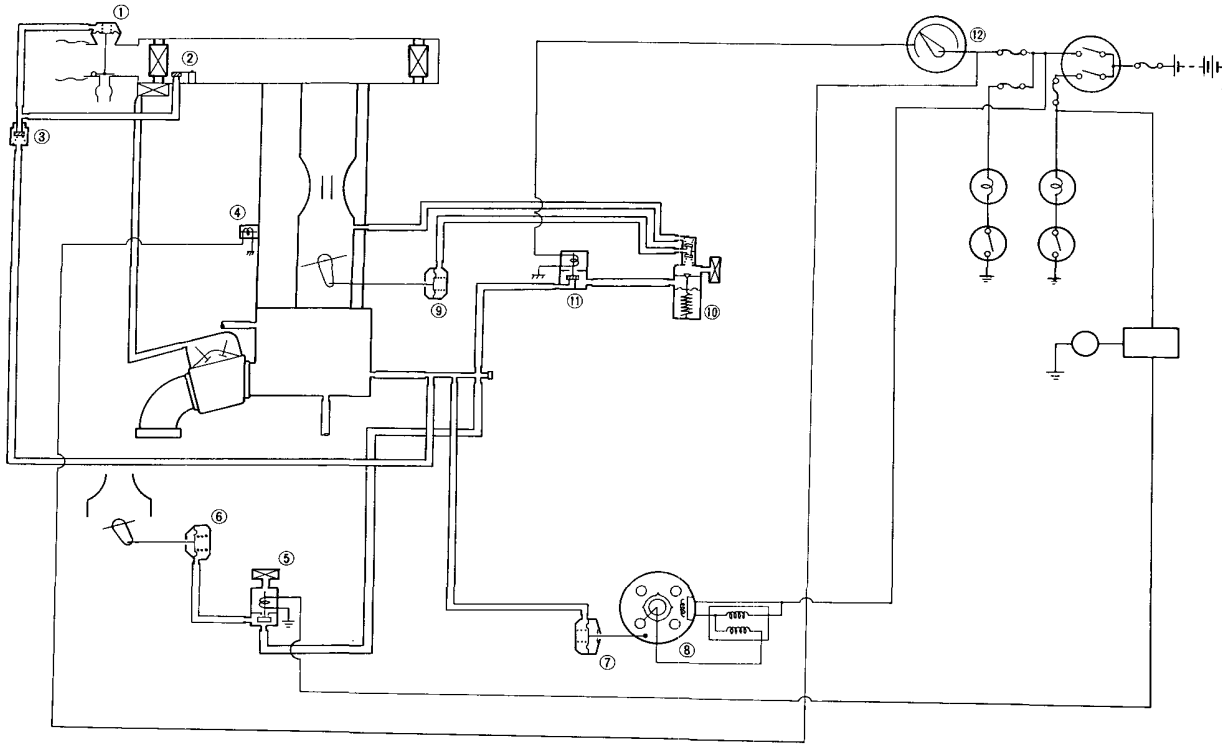
① AIR CONTROL DIAPHRAGM
② INTAKE AIR TEMP. SWITCH
③ VACUUM HOLDING SOLENOID VALVE
④ AIR VENT CUT-OFF DIAPHRAGM
⑤ FUEL CUT-OFF SOLENOID VALVE
⑥ CHARCOAL CANISTER
⑦ AIR SUCTION VALVE
⑧ AIR SUCTION CONTROL SOLENOID VALVE
⑨ THERMOVALVE
⑩ THROTTLE OPENER
⑪ VACUUM ADVANCE DAPHRAGM
⑫ DISTRIBUTOR
⑬ VACUUM SWITCH A
⑭ VACUUM SWITCH B
⑮ AIR CONTROL VALVE
⑯ AIR VALVE
⑰ DEVICE CONTROL UNIT
⑱ CHOKE KNOB HOLDING SOLENOID VALVE
⑲ TWO-WAY VALVE
⑳ CHECK VALVE A
㉑ CHECK VALVE B
㉒ VACUUM TANK
㉓ PURGE CONTROL DIAPHRAGM
㉔ A/C IDLE BOOST SOLENOID VALVE
㉕ CATALYTIC CONVERTER
㉖ AIR BLEED VALVE
㉗ A/C IDLE BOOST DIAPHRAGM

[Swiss Model]



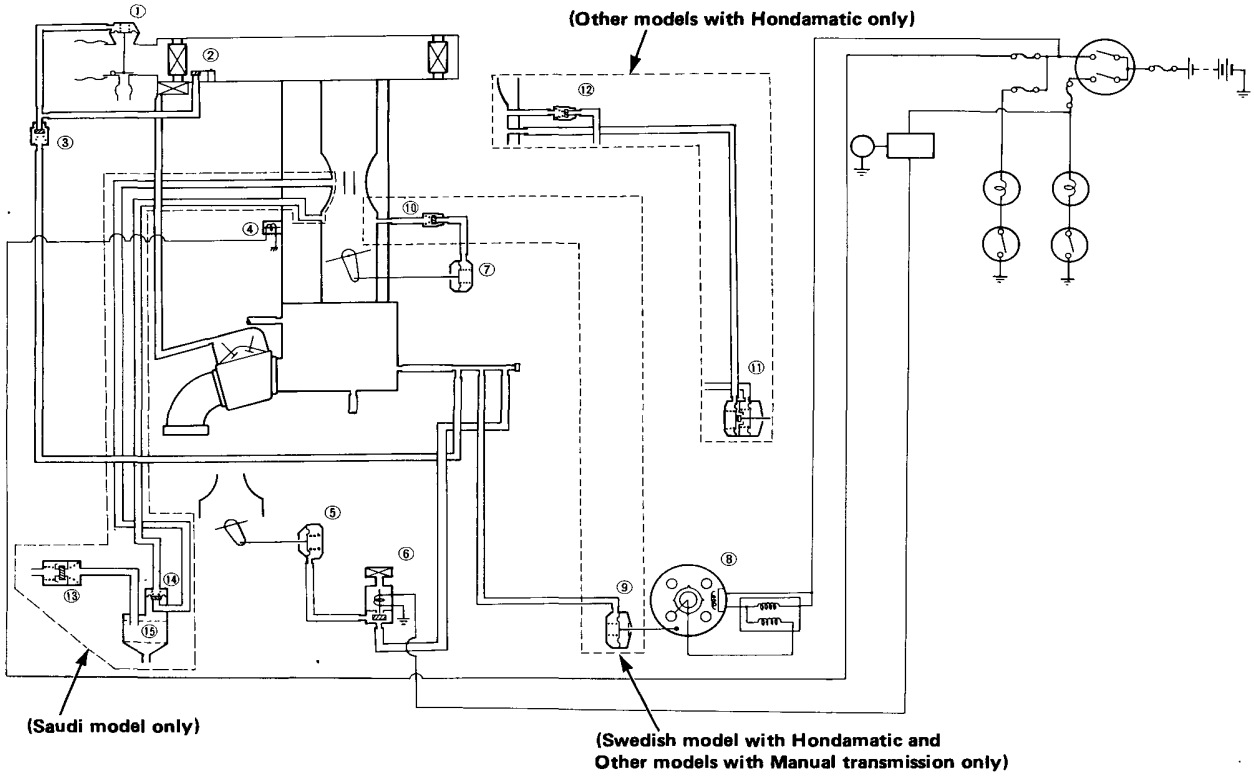
①AIR CONTROL DIAPHRAGM
②INTAKE AIR TEMP. SWITCH
③FUEL CUT-OFF SOLENOID VALVE
④CHECK VALVE
⑤DEVICE CONTROL UNIT
⑥CATALYTIC CONVERTER
⑦AIR SUCTION VALVE
⑧AIR SUCTION CONTROL SOLENOID VALVE
⑨VACUUM TANK
⑩CHOKE KNOB HOLDING SOLENOID VALVE
⑪VACUUM ADVANCE DIAPHRAGM
⑫DISTRIBUTOR
⑬VACUUM SWITCH A
⑭VACUUM SWITCH B
⑮AIR CONTROL VALVE
⑯AIR VALVE
⑰A/C IDLE BOOST SOLENOID VALVE
⑱ANTI-AFTERBURN VALVE
⑲ANTI-AFTERBURN CONTROL SOLENOID VALVE
⑳AIR BLEED VALVE
㉑A/C IDLE BOOST DIAPHRAGM

[Swedish Model with Manual Transmission]



①AIR CONTROL DIAPHRAGM
②AIR BLEED VALVE
③CHECK VALVE
④FUEL CUT-OFF SOLENOID VALVE
⑤A/C IDLE BOOST SOLENOID VALVE
⑥A/C IDLE BOOST DIAPHRAGM
⑦VACUUM ADVANCE DAPHRAGM
⑧DISTRIBUTOR
⑨THROTTLE OPENER
⑩CONTROL VALVE
⑪THROTTLE OPENER SOLENOID VALVE
⑫SPEED SENSOR

[Swedish Model with Hondamatic Transmission and Other Models]



① AIR CONTROL DIAPHRAGM
② AIR BLEED VALVE
③ CHECK VALVE A
④ FUEL CUT-OFF SOLENOID VALVE
⑤ A/C IDLE BOOST DIAPHRAGM
⑥ A/C IDLE BOOST SOLENOID VALVE
⑦ THROTTLE OPENER
⑧ DISTRIBUTOR
⑨ VACUUM ADVANCE DIAPHRAGM
⑩ CHECK VALVE B
⑪ VACUUM ADVANCE DIAPHRAGM
⑫ CHECK VALVE B
⑬ TWO-WAY VALVE
⑭ PURGE CONTROL DIAPHRAGM
⑮ CHARCOAL CANISTER

Adjustment

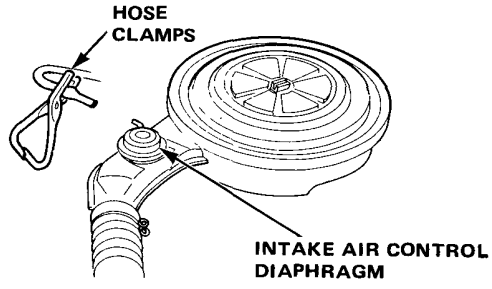
[Australian and Swiss Models]

Propane Enrichment Method

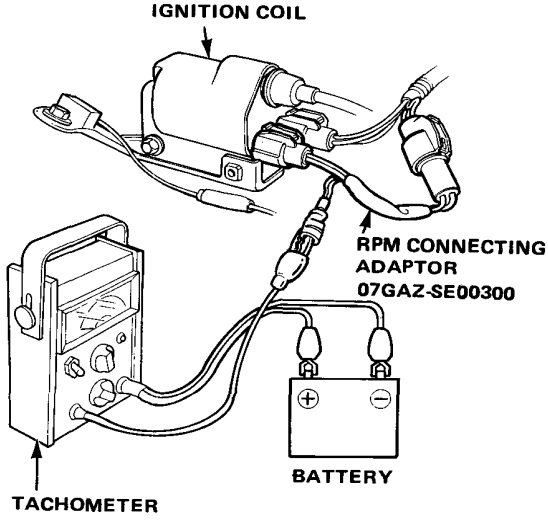
WARNING ***Do not smoke during this procedure. Keep any open flame away from your work area.***

NOTE: This procedure requires a propane enrichment kit.

1. Start engine and warm up to normal operating temperature; the cooling fan will come on.
2. Remove the vacuum hose from the intake air control diaphragm and clamp the hose end.



3. Connect a tachometer.

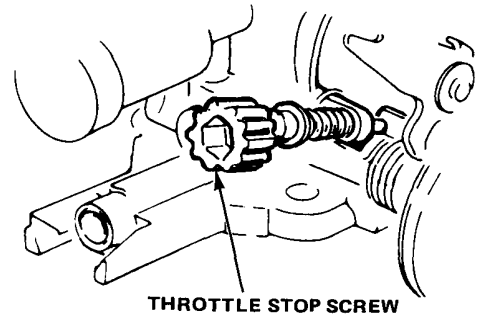


4. Check idle speed with the headlights, heater blower, rear window defroster, cooling fan and air conditioner off.

Transmission	Idle Speed
Manual (in neutral)	750±50 min^{-1} (rpm)
with P/S	800±50 min^{-1} (rpm)
Hondamatic (in gear)	700±50 min^{-1} (rpm)
with P/S	750±50 min^{-1} (rpm)

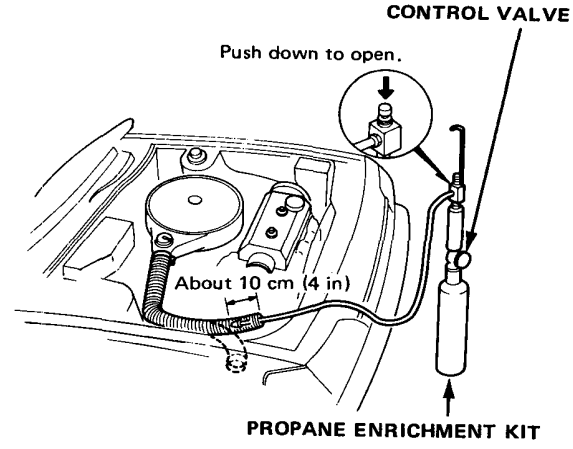
P/S: Power Steering

Adjust the idle speed, if necessary, by turning the throttle stop screw.



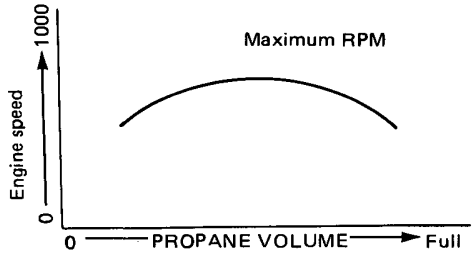
5. Disconnect air cleaner intake tube from air duct.
6. Insert the hose of the propane enrichment kit into the intake tube about 10 cm (4 in).

NOTE: Check that propane bottle has adequate gas before beginning test.



7. With engine idling, depress push button on top of propane device, then slowly open the propane control valve to obtain maximum engine speed.
Engine speed should increase as percentage of propane injected goes up.

NOTE: Open the propane control valve slowly; a sudden burst of propane may stall the engine.



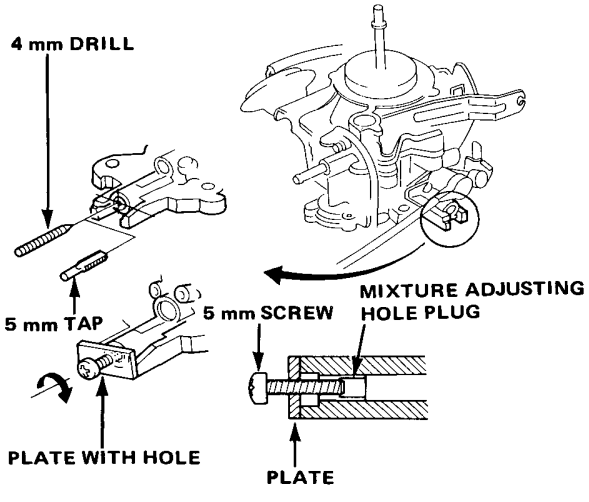
Propane Enriched Maximum Engine Speed

Engine speed increase should be:

Transmission	Engine speed
Manual	160±30 min^{-1} (rpm)
Hondamatic	70±25 min^{-1} (rpm)

- If engine speed does not increase per specification, mixture is improperly adjusted. Go to step 8.
- If engine speed increases per specification, go to step 17.

8. Close the propane control valve and remove the air cleaner.
9. Disconnect vacuum tubes, fuel line, throttle cable and choke cable from carburetor.
10. Remove carburetor.
11. To remove the mixture adjusting screw hole plug;



12. Reinstall the carburetor, vacuum hoses, fuel line, throttle cable and choke cable.
13. Install air cleaner.
14. Start engine and warm up to normal operating temperature; the cooling fan will come on.
15. Remove the vacuum hose from intake air control diaphragm and clamp the hose end.
16. Reinstall the propane enrichment kit and recheck maximum propane enriched engine speed.

- If the propane enriched speed is too low, mixture is too rich: turn the mixture screw 1/4-turn clockwise and recheck.
- If the propane enriched speed is too high, mixture is too lean: turn the mixture screw 1/4-turn counterclockwise and recheck.

17. Close the propane control valve and recheck idle speed.

NOTE: Raise the engine speed to 2,500 min^{-1} (rpm) 2 or 3 times, and after 10 seconds of that, check the idle speed.

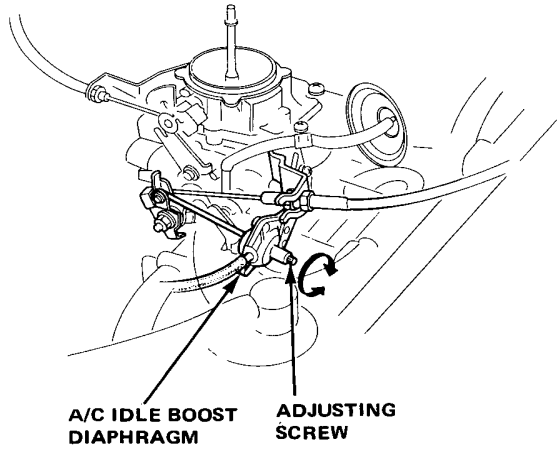
- If idle speed is as specified (step 4), go to step 18.
- If idle speed is not as specified (step 4), go to step 16.

18. Recheck idle speed and, if necessary, adjust by turning throttle stop screw, then repeat steps 16 and 17.
19. Remove the propane enrichment kit and reconnect air cleaner intake tube.
20. Reinstall the mixture adjusting screw hole cap.

(cont'd)

21. If equipped with air conditioner, check the idle speed with the A/C on: speed should still be within specification.

    Adjust the idle speed, if necessary, by turning the adjusting screw B.



Tailpipe Emission Inspection

NOTE: It is not possible to use a CO meter to adjust the idle mixture; the effect of the catalytic converter prevents accurate tracking of such small changes in air-fuel ratio.

WARNING Do not smoke during this procedure. Keep any open flame away from your work area.

1. Follow steps 1, 3, 4, and 5 of the propane enrichment.
2. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
3. Check the CO with the headlights, heater blower, rear window defroster, cooling fan, and air conditioner off.

   CO meter should indicate 0.1% maximum.

[Other Models]

NOTE: The following inspections and adjustments should be completed before measurement.

Air cleaner element
Ignition timing and control system
Spark plugs
Idle speed
Valve clearance
Intake air control system
PCV valve

WARNING Do not smoke during this procedure. Keep any open flame away from your work area.

CO Meter Method

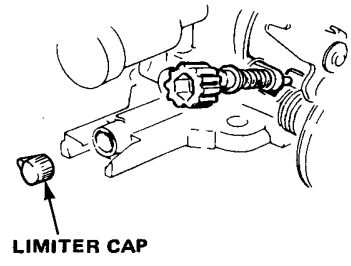
1. Warm-up and calibrate the NDIR CO Meter in accordance with the manufacturer's recommended procedures.
2. Insert exhaust gas sampling probe into the tail pipe at least 40 cm (16-inches).
3. Check specification for idle speed and CO with the headlights OFF (on Swedish model: on) and cooling fan OFF.

Transmission	Idle Speed
Manual (in neutral) with P/S	750±50 min^{-1} (rpm) 800±50 min^{-1} (rpm)
Hondamatic (in gear) with P/S	700±50 min^{-1} (rpm) 750±50 min^{-1} (rpm)

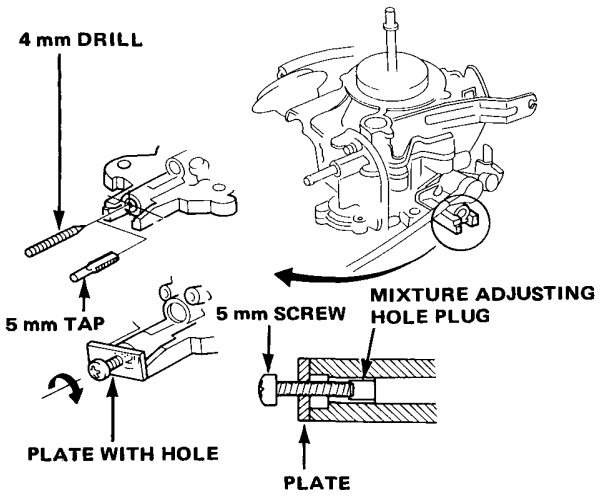
	Specified CO %
Swedish Model	0.2–1.0%
Other Models	0.2–1.0%

- If idle speed and specified CO% do not increase per specification:

  – Limiter equipped car: Adjust idle CO with the limiter cap. If still out of spec, remove the carburetor and limiter cap, then reinstall the carburetor.

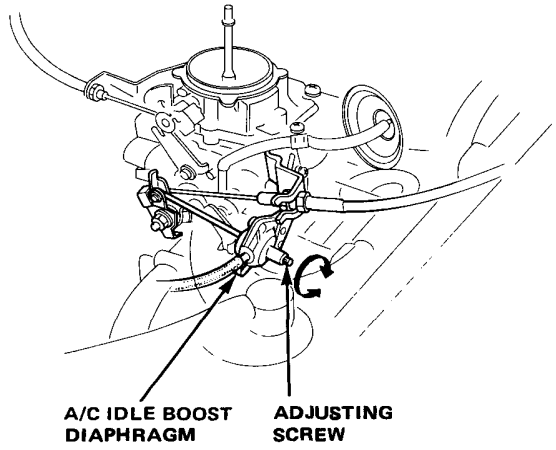


– Hole cap equipped car: Remove the carburetor and hole cap, then install the carburetor.



5. Adjust the mixture adjusting screw to obtain specified CO%, recheck the engine idle speed and reset if necessary. Finally recheck the CO reading and replace the hole cap. If unable to obtain a CO reading of specified % by this procedure, check the engine turn-up condition.

   If car is equipped with air conditioner, recheck idle speed with A/C on. Speed should still be within specification.
   If the speed is outside the spec, remove the rubber cap on the idle boost diaphragm and adjust by turning adjusting screw.



- If the idle boost diaphragm does not operate, go on to idle boost control system inspection (page 12-15).

Idle-Drop Method

1. Start the engine and warm up to the normal operating temperature (cooling fan comes on).
2. Remove the limiter cap or hole plug.
3. With the headlights OFF (on swedish model; on) and the cooling fan OFF, adjust the engine speed and mixture to proper idle as below.

Displacement	Transmission	Idle Speed
1300	Manual with P/S	800 min^{-1} (rpm) 900 min^{-1} (rpm)
	Hondamatic with P/S	730 min^{-1} (rpm) 780 min^{-1} (rpm)
1500	Manual with P/S	820 min^{-1} (rpm) 870 min^{-1} (rpm)
	Hondamatic with P/S	750 min^{-1} (rpm) 800 min^{-1} (rpm)

4. Turn the mixture adjusting screw clockwise until engine speed drops as below:

Displacement	Transmission	Idle Speed
1300	Manual with P/S	750 min^{-1} (rpm) 850 min^{-1} (rpm)
	Hondamatic with P/S	700 min^{-1} (rpm) 750 min^{-1} (rpm)
1500	Manual with P/S	750 min^{-1} (rpm) 800 min^{-1} (rpm)
	Hondamatic with P/S	700 min^{-1} (rpm) 750 min^{-1} (rpm)

5. Replace the limiter cap or hole plug.

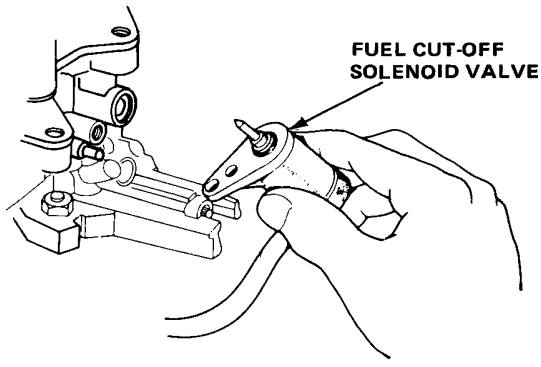
Fuel Cut-off Solenoid Valve

Inspection

1. Place a clean shop towel around the solenoid valve, to soak up any gasoline, then loosen the screws and remove the solenoid valve.

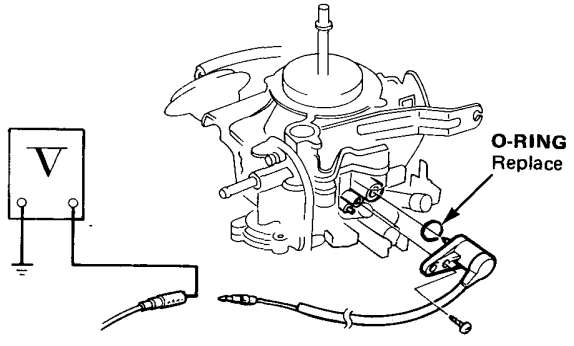
WARNING

- **Wipe up any spilled gasoline before testing.**
- **If cut-off valve is removed for testing, be sure you ground it to prevent sparking or fire when the key is turned on.**



2. Ground the valve as far from the carburetor as possible and turn on the ignition while you watch the valve needle.

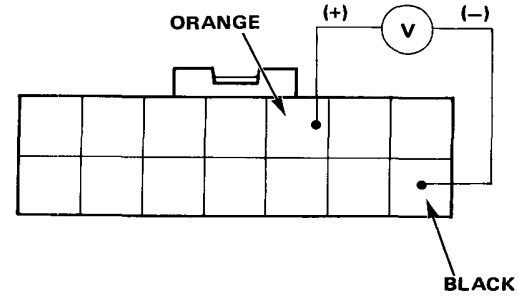
   - If the needle retracts, go on to step 3.
   - If the needle does not retracts, check the voltage at connector.



   - If voltage is present, replace the solenoid valve and re-test.
   - If voltage is not present, check the wiring and fuse. If no problem, go on to troubleshooting (page 12-23) (Australian and Swiss models).

3. Reinstall the solenoid valve. Go on to step 4 (Australian and Swiss models) or test is complete (other models).

4. Attach the voltmeter probes to the device control unit connector as shown.



5. Start the engine and accelerate, then suddenly release the throttle and check for voltage during deceleration above 1,800 min^{-1} (rpm).

   There should be no voltage.

   - If voltage is not present, test is complete.
   - If voltage is present, go on to troubleshooting (page 12-23).

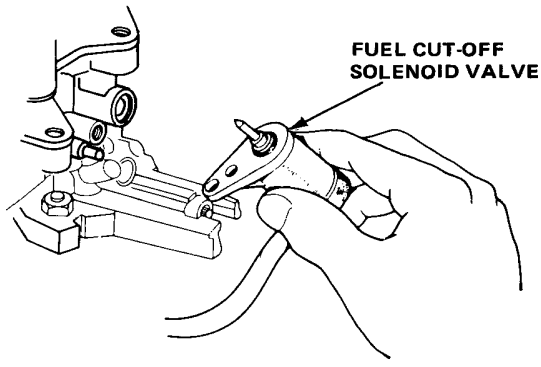
Fuel Cut-off Solenoid Valve

Inspection

1. Place a clean shop towel around the solenoid valve, to soak up any gasoline, then loosen the screws and remove the solenoid valve.

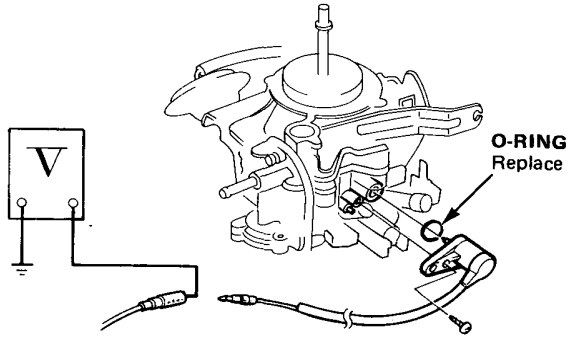
WARNING

- **Wipe up any spilled gasoline before testing.**
- **If cut-off valve is removed for testing, be sure you ground it to prevent sparking or fire when the key is turned on.**



2. Ground the valve as far from the carburetor as possible and turn on the ignition while you watch the valve needle.

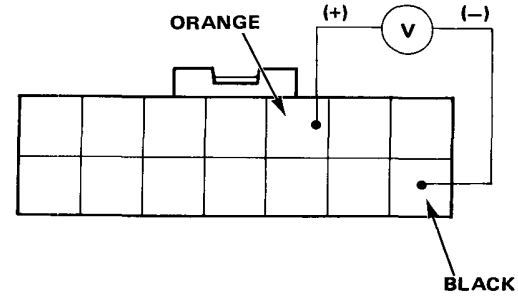
   - If the needle retracts, go on to step 3.
   - If the needle does not retracts, check the voltage at connector.



   - If voltage is present, replace the solenoid valve and re-test.
   - If voltage is not present, check the wiring and fuse. If no problem, go on to troubleshooting (page 12-23) (Australian and Swiss models).

3. Reinstall the solenoid valve. Go on to step 4 (Australian and Swiss models) or test is complete (other models).

4. Attach the voltmeter probes to the device control unit connector as shown.



5. Start the engine and accelerate, then suddenly release the throttle and check for voltage during deceleration above 1,800 min^{-1} (rpm).

   There should be no voltage.

   - If voltage is not present, test is complete.
   - If voltage is present, go on to troubleshooting (page 12-23).

A/C Idel Boost Control System

Inspection

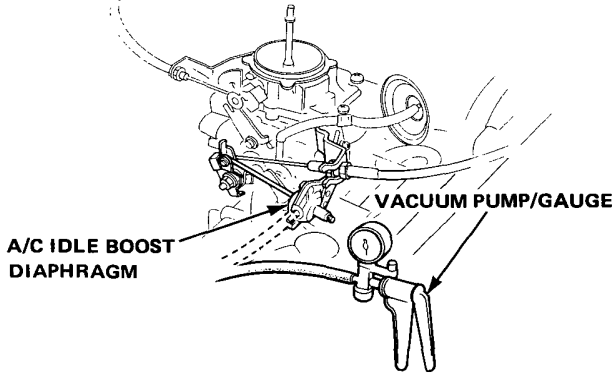
1. Start the engine to warm up (cooling fan comes on).

2. Turn A/C switch ON (with the compressor and condenser cooling fan runing).

   Idle speed should rise.

   - If idle speed rises, the test is complete (except Australian and Swiss models) or go on to step 4.
   - If idle does not rise, disconnect vacuum hose from the A/C idle boost diaphragm and check for vacuum at vacuum hose.

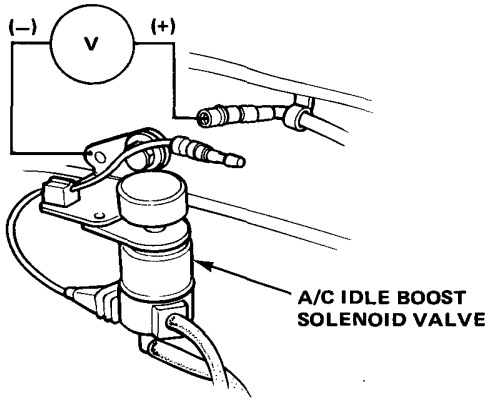
   There should be vacuum.



   – If there is no vacuum, go on to step 3.
   – If there is vacuum, replace the throttle controller and re-test.

3. Check for voltage at A/C idle boost solenoid valve (with the compressor and condenser cooling fan running).

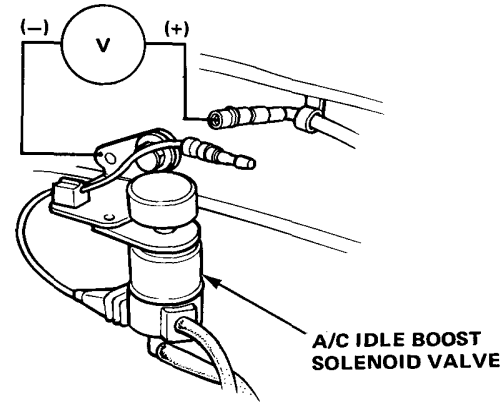
   There should be voltage.



   - If there is no voltage, check the wiring and A/C circuit (except Australian and Swiss models or go on to troubleshooting (page 12-23)).
   - If there is voltage, check the vacuum line for leaks, blockage or disconnected hose, then replace the solenoid valve and re-test.

4. Raise engine speed to approximately 3,000 min^{-1} (rpm), then suddenly release the throttle and check for voltage at the A/C idle boost solenoid valve during deceleration above 1,800 min^{-1} (rpm).

   There should be no voltage.



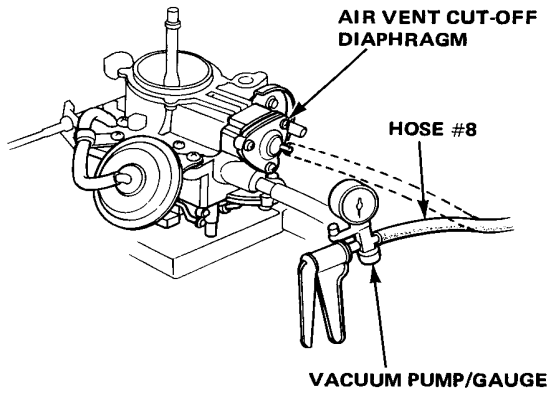
   - If there is voltage, go on to troubleshooting (page 12-23).
   - If no voltage, test is complete.

Evaporative Emission Control System

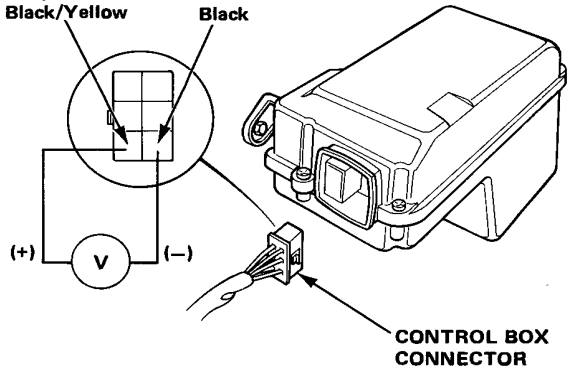
Air Vent Cut-off Diaphragm

[Australian Model]

1. Disconnect the hose at the air vent cut-off diaphragm and install a vacuum pump to hose #8.

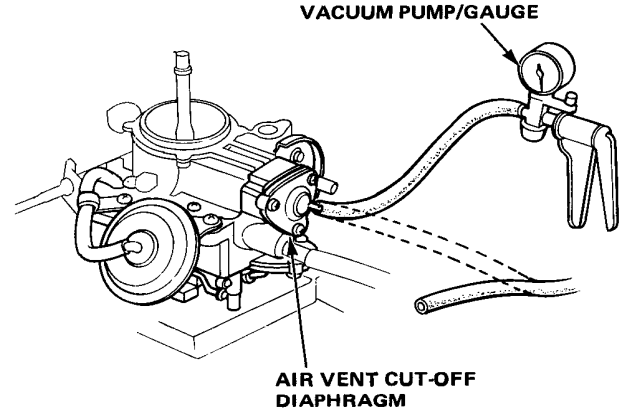


2. Apply vacuum. Vacuum should not be available.
3. Turn ignition switch ON.
4. Apply vacuum. Vacuum should remain steady.
   - If vacuum is available, go on to step 5.
   - If vacuum is not available, check for leaks in hose connections. If vacuum is still not available, check for voltage at the control box connector.



   – If there is voltage, replace vacuum holding solenoid valve and re-test.
   – If no voltage, check the fuse and wiring (Black/Yellow).

5. Start engine and allow to idle. Vacuum should be available.
   – If vacuum is available, go on to step 6.
   – If vacuum is not available, check for blockage in hose. If vacuum is still not available, replace vacuum holding solenoid valve and re-test.
6. Turn ignition off. Vacuum should drop to zero.
7. Disconnect the vauum pump from hose #8 and connect to air vent cut-off diaphragm. Apply a vacuum.



   Vacuum should remain steady.
   - If vacuum remains steady, diaphragm is OK.
   - If vacuum decreases, replace diaphragm and re-test.

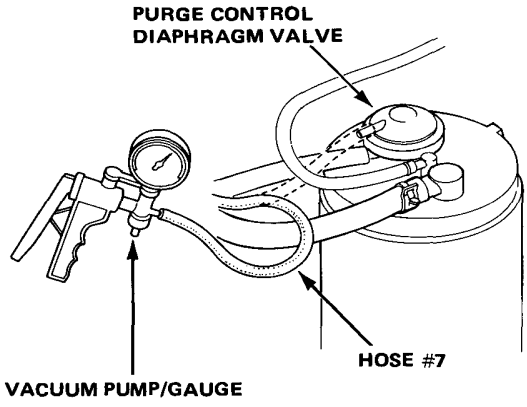
8. Remove the vacuum pump and re-connect hose #8 between air vent cut-off diaphragm and vacuum holding solenoid valve.

Thermovalve

[Australian Model]

NOTE: Engine coolant temperature must be below *thermovalve B set temperature* (45°C, 113°F).

1. Disconnect the upper hose #7 at purge control diaphragm valve and connect a vacuum pump/gauge to the hose #7.



2. Start the engine and allow to idle.

   Vacuum should not be available.

   - If there is no vacuum, go on to step 3.
   - If there is vacuum, replace thermovalve and re-test.

3. Wait for the engine to warm up (cooling fan comes on).

   There should be vacuum at idle, once engine is warm.

   - If vacuum is available, go on to step 4.
   - If no vacuum, disconnect vacuum hose #19 at the thermovalve and check for vacuum at the hose #19.
     - If there is no vacuum, check the routing for the vacuum hose #19 and repair or replace as necessary.
     - If there is vacuum, replace the thermovalve and re-test.

4. Disconnect the vacuum pump/gauge and reconnect hose.

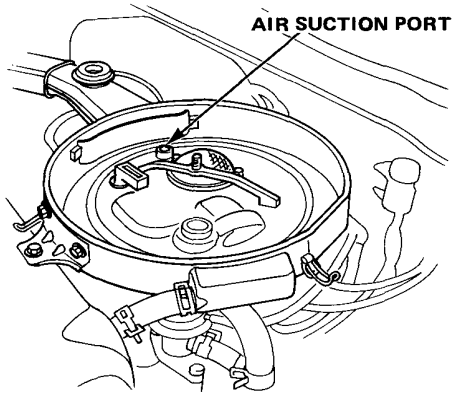
Air Injection System

Air Suction Valve

[Australian and Swiss Models]:

1. Remove the air cleaner cover and filter.
2. Start the engine and check for air suction noise (bubbling noise) from the air suction port at idle.

   Bubbling noise should be heard.

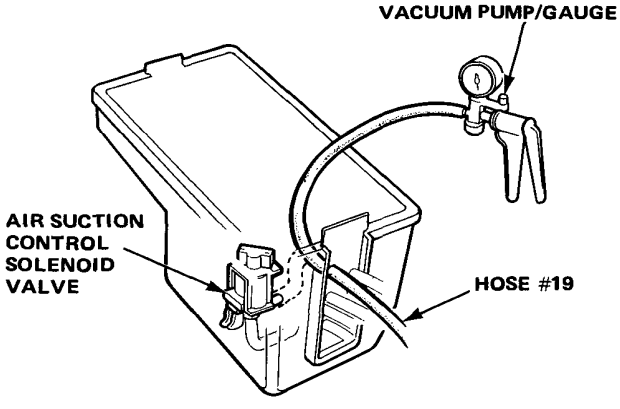


- If bubbling noise is heard, go on to step 4.
- If bubbling noise is not heard, disconnect hose #5 from the air suction valve and check for vacuum.

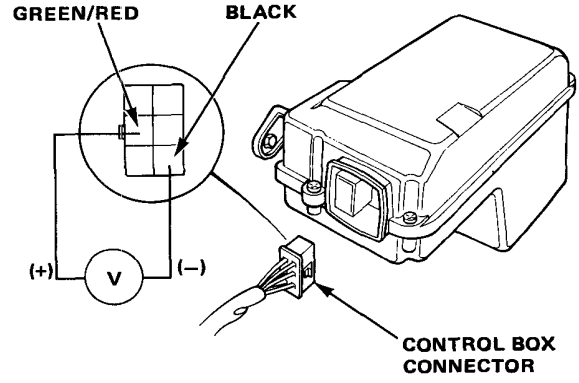
– If there is vacuum, replace the air suction valve and re-test.
– If there is no vacuum, reconnect hose #5 and go on to step 3.

3. Remove the control box from the fire wall, then remove the control box cover.

   Diconnect hose #19 from air suction control solenoid valve and check for vacuum at the hose #19.



- If there is no vacuum, check the vacuum line #19.
- If there is vacuum, check for voltage at the control box connector.



– If there is voltage, replace the air suction control solenoid valve and re-test.
– If there is no voltage, go to troubleshooting (page 12-23).

4. Raise engine speed to 1,200 min^{-1} (rpm).

   There should be no bubbling noise.

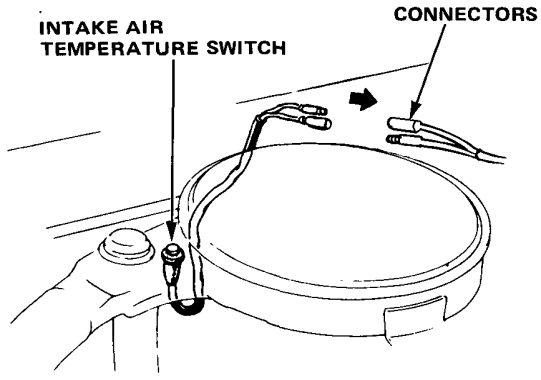
- If there is no bubbling noise, go on to step 7.
- If bubbling noise is heard, disconnect hose #5 from the air section valve and check for vacuum.

– If there is vacuum, go on to step 6.
– If there is no vacuum, replace the air suction valve and re-test.

6. Raise engine speed to 1,200 min^{-1} (rpm) and check for voltage at the air suction control solenoid valve.

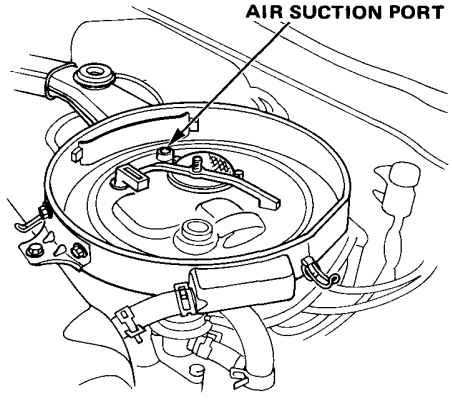
- If there is voltage, go to troubleshooting (page 12-23).
- If no voltage, replace the air suction control solenoid valve and re-test.

7. Wait for the engine to warm up (cooling fan comes on) and disconnect intake air temperature switch connectors.



8. Raise engine speed to approximately 3,000 min^{-1} (rpm), then suddenly release the throttle and check for air suction noise (bubbling noise) from the air suction port.

   Bubbling noise should be heard.



- If bubbling noise is heard, go on to step 9.
- If bubbling noise is not heard, go on to trouble-shooting (page 12-23).

NOTE: Intake air temperature must be below intake air temperature switch set temperature (2°C, 35.6°F).

9. Reconnect intake air temperature switch connectors, then repeart inspection step 8.

   Bubbling noise should not be heard.

- If bubbling noise is heard, go on to trouble-shooting (page 12-23).
- If no bubbling noise, test is complete.

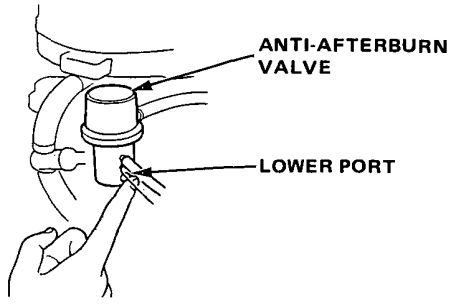
Anti-afterburn Valve

[Swiss Model]

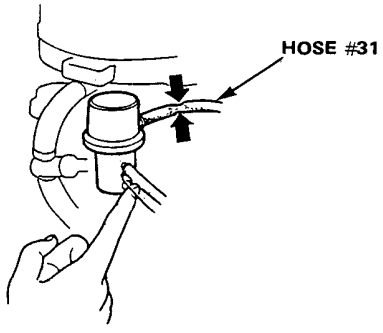
1. Disconnect the air suction lower hose at the anti-afterburn valve.

2. Start the engine and check for vacuum at idle.

   There should be no vacuum.



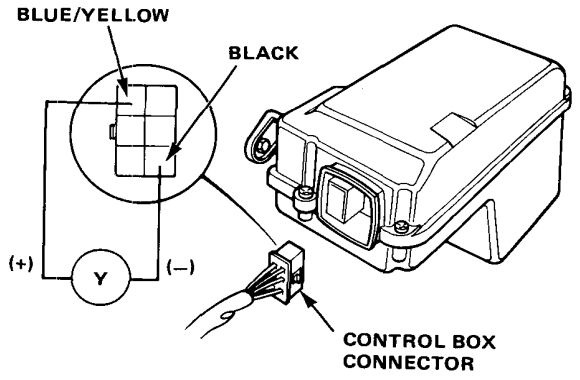
- If there is no vacuum, go on to step 3.
- If there is vacuum, pinch the hose #31 and check for vacuum at idle.



– If there is no vacuum, check hose #31 for leaks or disconnected hose.
– If there is vacuum, replace the anti-afterburn valve and re-test.

3. Check for voltage at the control box connector with the ignition switch turned to III (start).

   There should be voltage after 4 seconds.

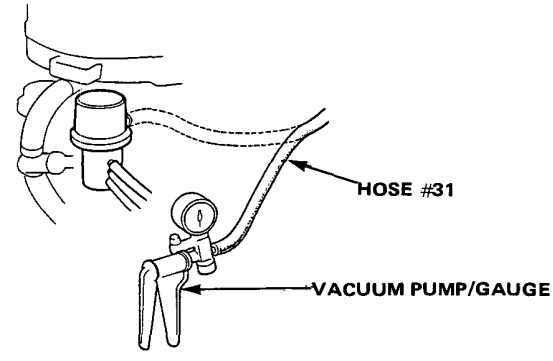


- If there is no voltage, go on to troubleshooting (page 12-23).
- If there is voltage, reconnect control box connector and go on to step 4.

4. Quickly raise engine speed to 3,500 min^{-1} (rpm) and close the throttle suddenly.

   There should be vacuum at lower port.

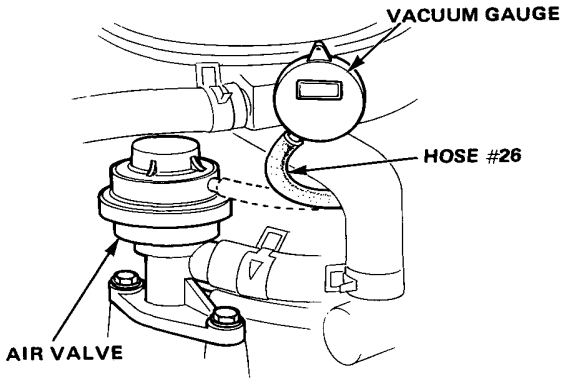
- If there is vacuum, test is complete.
- If no vacuum, check for vacuum at hose #31.



– If there is vacuum, replace the anti-afterburn control solenoid valve and re-test.
– If there is no vacuum, replace the anti-afterburn valve and re-test.

[Australian and Swiss Models]

1. Disconnect hose #26 at air valve and connect a vacuum gauge to hose #26.



2. Start the engine, raise engine speed to 3,500 min^{-1} (rpm), close the throttle suddenly and watch the gague.

   Vacuum should stabilize at:

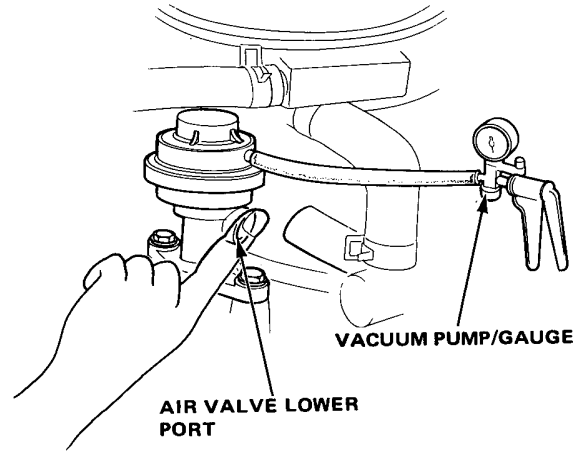
Transmission	Vacuum
Manual	600±30 mmHg
Hondamatic	580±30 mmHg

- If vacuum stabilizes above range, go on to step 3.
- If vacuum does not stabilize above range, check vacuum lines #26 and #1. If no problem, replace the air valve control solenoid valve and re-test.

3. Disconnect the air suction lower hose at the air valve.

4. Connect a vacuum pump/gauge to the air valve and apply 600 mmHg (23.6 in.Hg).

   Vacuum should remain steady and there should be vacuum at air valve lower port.



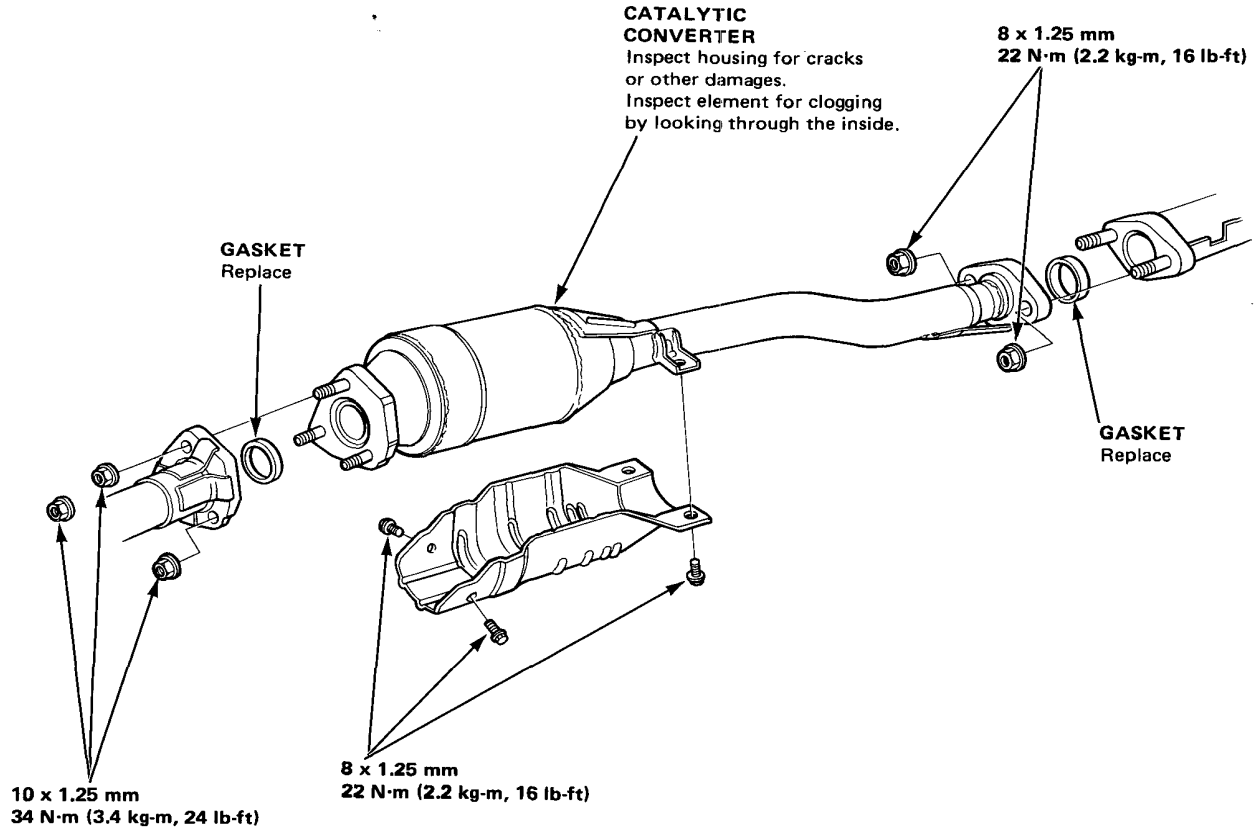
- If vacuum remains steady and there is vacuum, air valve is working properly. Remove the vacuum pump/gauge and reconnect hose #26 and lower hose; test is complete.
- If vacuum does not remain steady and no vacuum, replace the air valve and re-test.
- If vacuum remains steady but no vacuum at lower pot: remove air valve; check air valve and manifold for blockage, clean or replace as necessary and re-test.

Catalytic Converter

Inspection

[Australian and Swiss Models]

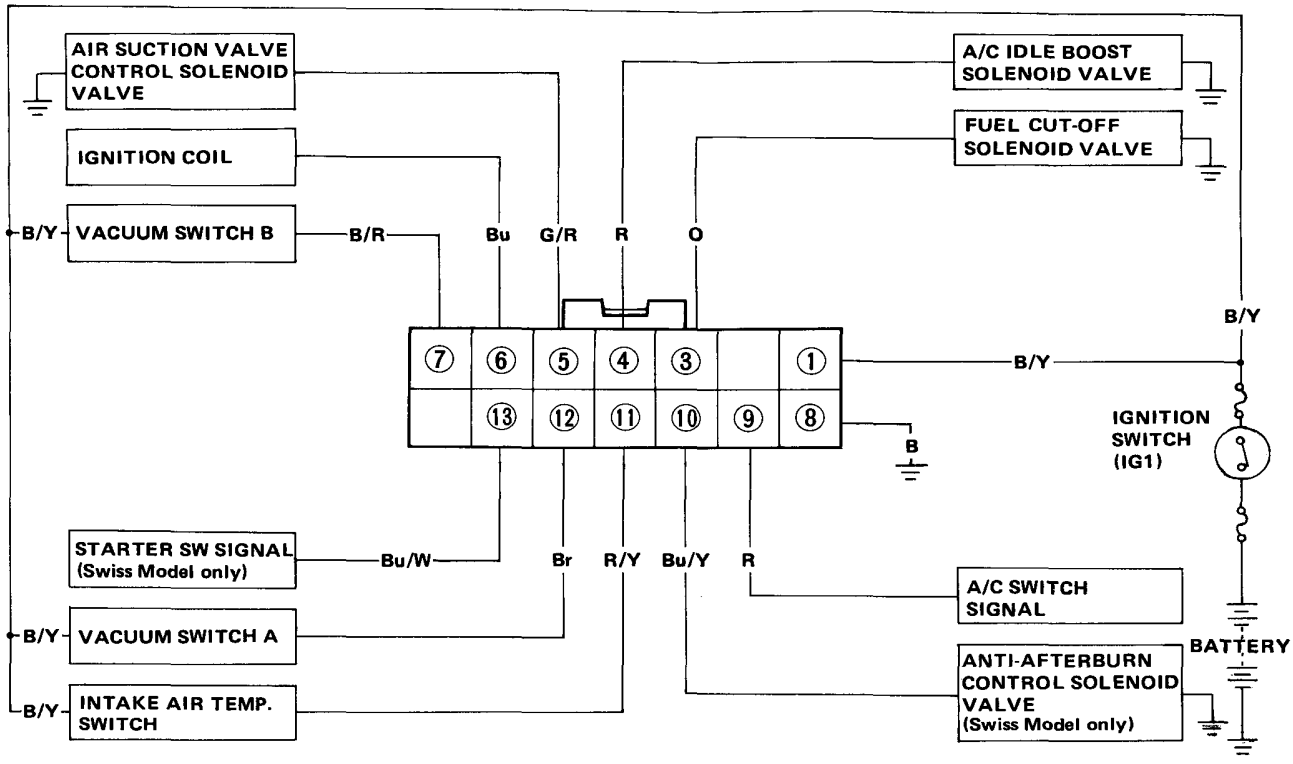
If excessive exhaust system back-pressure is suspected, remove the catalytic converter from the car and make a visual check for plugging, melting or cracking of the catalyst. Replace the catalytic converter if more than 50% of the visible area is damaged or plugged.



Device Control Unit

Electrical Connections

[Australian and Swiss Model]



Troubleshooting

If there is no voltage from the control unit when there should be voltage or if there is voltage from the unit when there shouldn't be voltage, inspect as follows. If no defects can be found, replace the control unit and re-test.

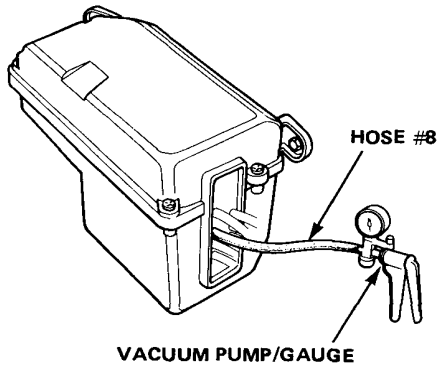
PROBLEMATIC CIRCUIT	REFER TO:	CHECK
To fuel cut-off solenoid valve (③ Orange)	1, 2, 3, 6.	1. Check for voltage at the control unit connectors ① and ⑧ with the ignition switch ON. There should be voltage. • If no voltage, check the wiring and fuse. 2. Check the ⑧ wire for continuity between the control unit and a suitable *ground*. There should be continuity. 3. Check for voltage at the control unit connectors ⑥ and ⑧ with ignition switch ON. There should be voltage. • If no voltage, check the wiring and ignition coil (26-2). 4. Check for voltage at the control unit connectors ⑬ and ⑧ with the ignition switch turn to III (start). There should be voltage. • If no voltage, check the wiring and ignition switch. 5. Inspect vacuum switch A (12-24). 6. Inspect vacuum switch B (12-24). 7. Inspect intake air temperature switch (12-25). 8. Inspect the air conditioner switch signal (12-25).
To air suction control solenoid valve (⑤ Green/Red)	1, 2, 5, 6, 7.	
To A/C idle boost solenoid valve (④ Red)	1, 2, 3, 6, 8.	
To anti-afterburn control solenoid valve (Swiss Model only) (⑩ Blue/Yellow)	1, 2, 4.	

Device Control Unit

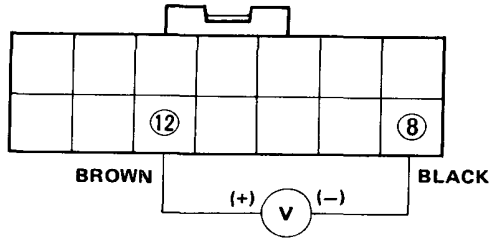
Vacuum Switchs

Vacuum Switch A

1. Disconnect hose #8 from vacuum hose manifold and connect a vacuum pump/gauge to the hose #8.



2. Attach the positive probe of a voltmeter or test light to ⑫ terminal (Brown) and the negative probe to ⑧ terminal (Black) of device control unit connector.

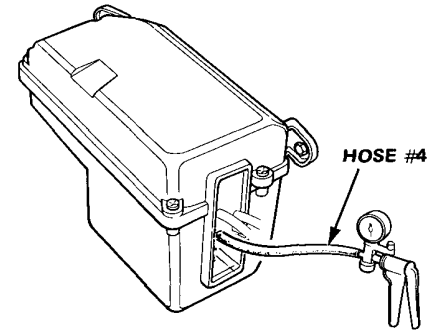


3. Turn the ignition switch ON and check for voltage. Voltage should be available under the following conditions:

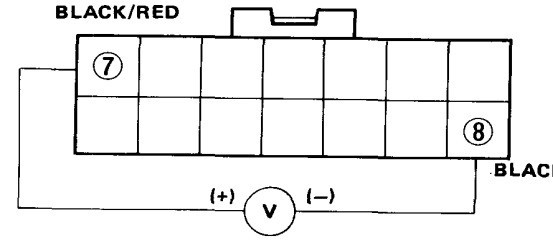
Transmission		Condition
Manual	Australian Model	above 400mmHg (15.7 in.Hg)
	Swiss Model	above 350mmHg (13.8 in.Hg)
Hondamatic		above 350mmHg (13.8 in.Hg)

Vacuum Switch B

1. Disconnect hose #4 *from* vacuum hose manifold and connect a vacuum pump/gauge to the hose #4.



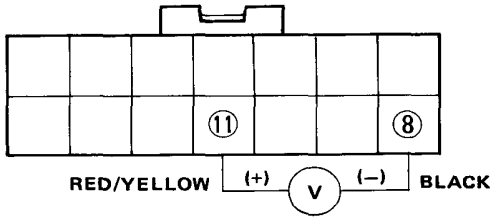
2. Attach the positive probe of a voltmeter or test light to ⑦ terminal (Black/Red) and the negative probe to ⑧ terminal (Black) of device control unit connector.



3. Turn the ignition switch ON and check for voltage. There should be no voltage when vacuum above 50 mmHg (2.0 in.Hg) is applied, and voltage should be available when vacuum is released.

Intake Air Temperature Switch

1. Attach the positive probe of a voltmeter or test light to ⑪ terminal (Red/Yellow), and the negative probe to ⑧ terminal (Black) of the device control unit connector.



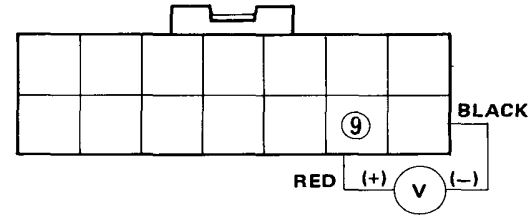
2. Measure the voltage with the ignition switch ON. The voltmeter should show battery voltage below 2°C (35.6°F), and no voltage above 20°C (68°F).

   - If there is voltage below 2°C (35.6°F), and there is no voltage above 20°C (68°F), the temperature switch is OK.
   - If the voltmeter readings do not correspond to the above temperature range, replace the temperature switch and re-test.
   - If there is no voltage during intake air temperature switch test, go on to step 4.

4. Check for loose or improper wire (Red/Yellow) connections and faulty temperature switch. Replace or repair as necessary.

Air Conditioner Switch Signal

1. Attach the positive probe of a voltmeter or test light to ⑨ terminal (Red), and negative probe to ⑧ terminal (Black) of the device control unit connector.



2. Start the engine and make sure that the compressor and cooling fan operate with the blower and air conditioner switch ON. Check the voltage.

   There should be voltage.

   - If no voltage, check the wiring (Red) and A/C circuit.

5-Speed Transmission

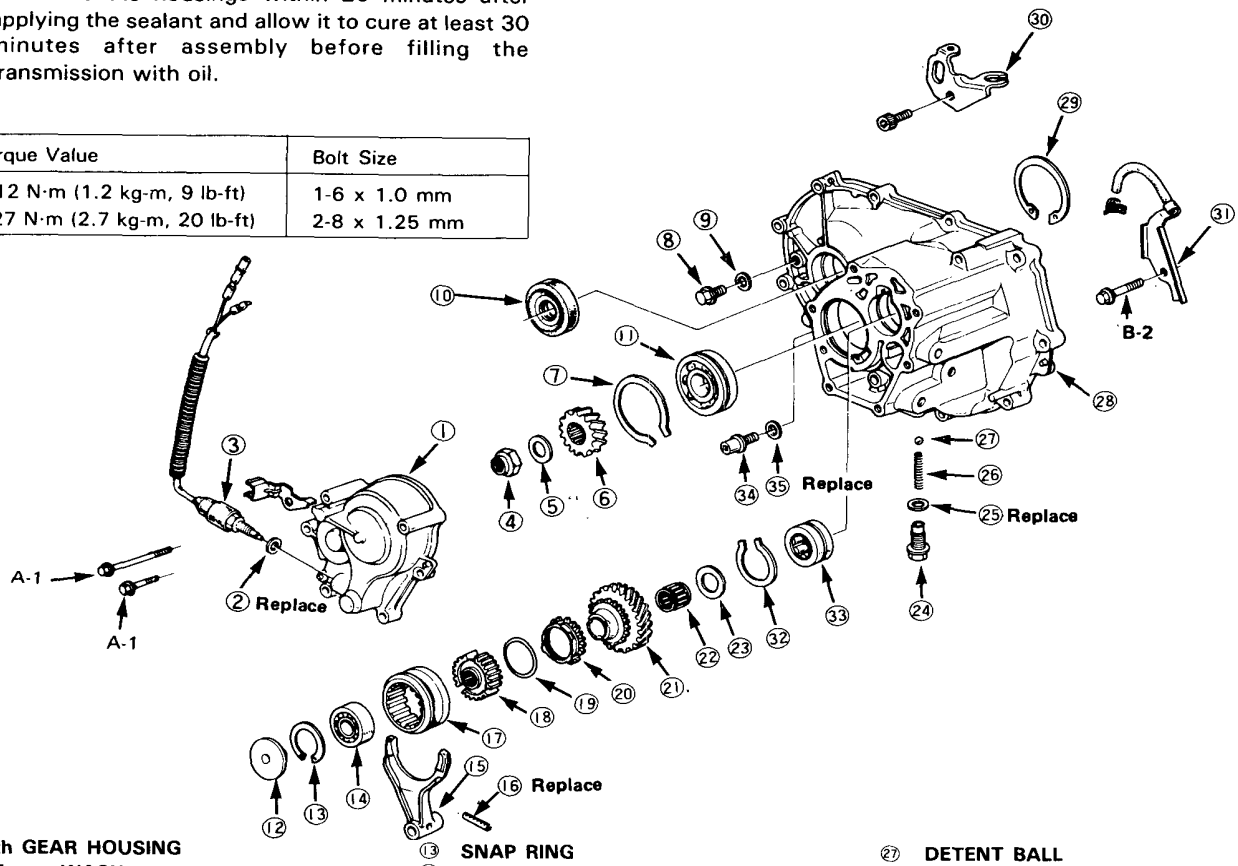
Index

Clean all parts thoroughly in solvent and dry with compressed air.

Lubricate all parts with oil before reassembly.

NOTE: This transmission uses no gaskets between the major housings; use Honda P/N 08740-99986 sealant.
Assemble the housings within 20 minutes after applying the sealant and allow it to cure at least 30 minutes after assembly before filling the transmission with oil.

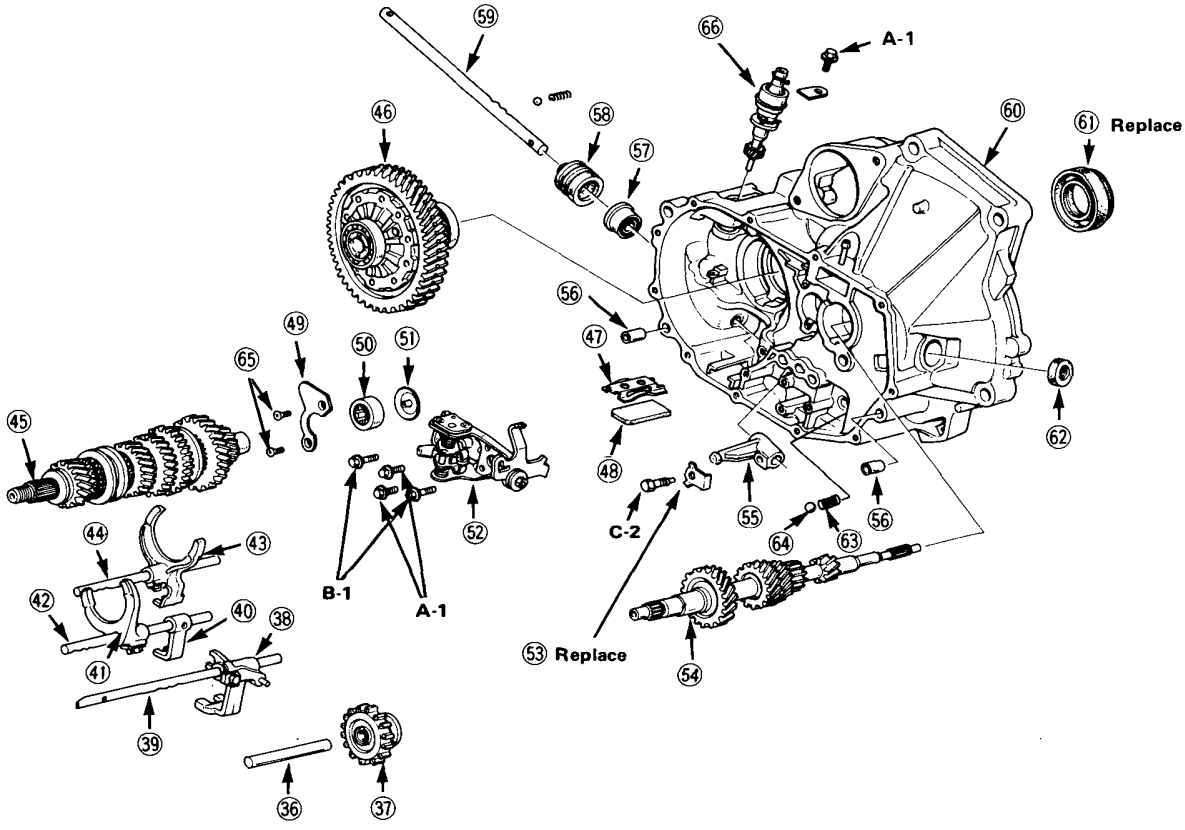
Torque Value	Bolt Size
A-12 N·m (1.2 kg-m, 9 lb-ft)	1-6 x 1.0 mm
B-27 N·m (2.7 kg-m, 20 lb-ft)	2-8 x 1.25 mm



① 5th GEAR HOUSING
② 14 mm WASHER
③ BACK-UP LIGHT SWITCH
25 N·m (2.5 kg-m, 18 lb-ft)
④ COUNTERSHAFT LOCKNUT
110 N·m (11.0 kg-m, 80 lb-ft)
⑤ SPRING WASHER
⑥ COUNTERSHAFT 5th GEAR
⑦ 65 mm SNAP RING
⑧ OIL FILLER BOLT
45 N·m (4.5 kg-m, 33 lb-ft)
⑨ SEALING WASHER
⑩ SEAL
⑪ COUNTERSHAFT BALL BEARING
⑫ OIL GUIDE PLATE
⑬ SNAP RING
⑭ MAINSHAFT BALL BEARING
⑮ 5th GEAR SHIFT FORK
⑯ SPRING PIN
⑰ 5th GEAR SYNCHRO SLEEVE
⑱ 5th GEAR SYNCHRO HUB
⑲ SYNCHRO SPRING
⑳ 5th GEAR SYNCHRO RING
㉑ 5th GEAR
㉒ NEEDLE BEARING
㉓ THRUST WASHER
㉔ DETENT BALL RETAINER SCREW
22 N·m (2.2 kg-m, 16 lb-ft)
㉕ SEALING WASHER
㉖ DETENT SPRING
㉗ DETENT BALL
㉘ TRANSMISSION HOUSING
㉙ 72 mm SNAP RING
㉚ CLUTCH CABLE BRACKET
㉛ BREATHER TUBE ASSEMBLY
㉜ 45 mm SNAP RING
㉝ NEEDLE BEARING
㉞ OIL DRAIN PLUG
40 N·m(4.0 kg-m, 29 lb-ft)
㉟ SEALING WASHER

NOTE: Always clean the magnet (48) whenever the transmission housing is disassembled.

Torque Value	Bolt Size
A-12 N·m (1.2 kg-m, 9 lb-ft) B-14 N·m (1.4 kg-m, 10 lb-ft) C-24 N·m (2.4 kg-m, 17 lb-ft)	1-6 x 1.0 mm 2-8 x 1.25 mm

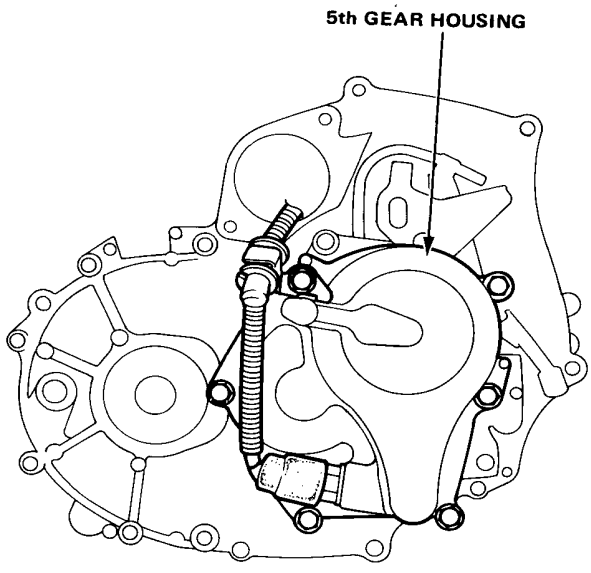


- (36) REVERSE IDLER GEAR SHAFT
- (37) REVERSE IDLER GEAR
- (38) REVERSE SHIFT GUIDE
- (39) REVERSE SHIFT SHAFT
- (40) 3rd GEAR SHAFT GUIDE
- (41) 3rd GEAR SHIFT FORK
- (42) 3rd GEAR FORK SHAFT
- (43) 1st GEAR SHIFT FORK
- (44) 1st GEAR FORK SHAFT
- (45) COUNTERSHAFT ASSEMBLY
- (46) DIFFERENTIAL
- (47) HOLD-DOWN PLATE
- (48) MAGNET
- (49) BEARING RETAINER PLATE
- (50) NEEDLE BEARING
- (51) OIL BARRIER PLATE
- (52) SHIFT ARM HOLDER
- (53) LOCK PLATE
- (54) MAINSHAFT
- (55) GEAR SHIFT ARM
- (56) DOWEL PIN
- (57) SEAL
- (58) BOOT
- (59) GEAR SHIFT ROD
- (60) CLUTCH HOUSING
- (61) SEAL
- (62) DUST SEAL
- (63) DETENT SPRING
- (64) DETENT BALL
- (65) DETENT FLAT SCREW
- (66) SPEEDOMETER DRIVEN GEAR

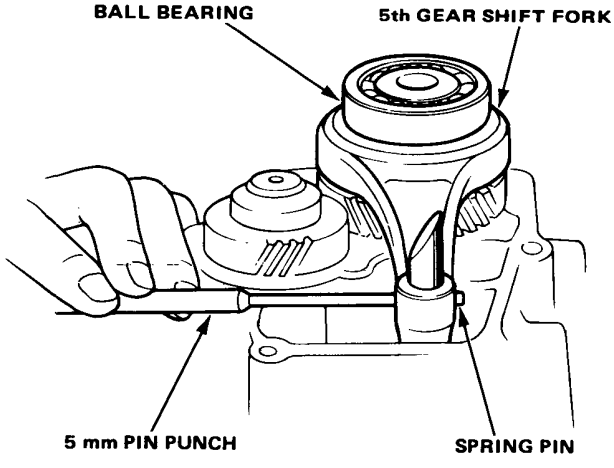
5th Gear Housing

Thrust Inspection

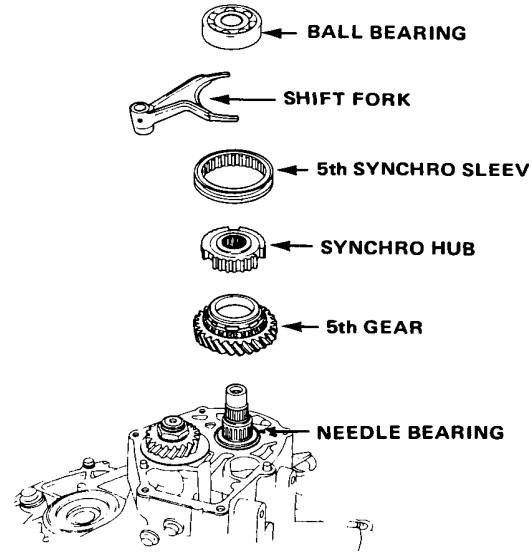
1. Remove the six 5th gear housing mounting bolts.



2. Remove the spring pin from the 5th gear shift fork.

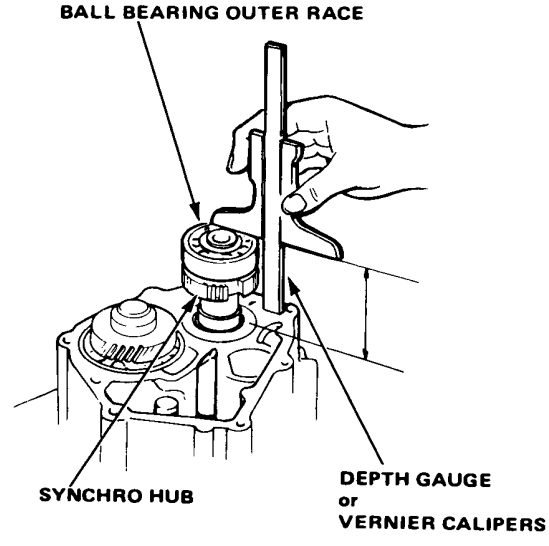


3. Remove the outside parts from the mainshaft.

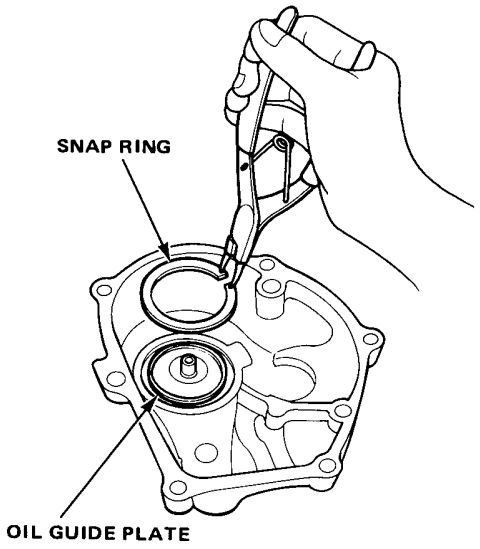


4. Reinstall the synchro hub and the ball bearing onto the mainshaft.

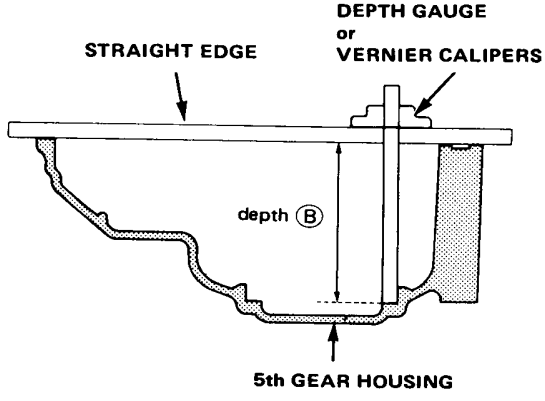
5. Clean all sealant residue from the transmission housing, then measure from the top of the ball bearing's outer race to the mounting flange for the 5th gear housing. Measure at two points and average the reading.



6. Remove the 52 mm snap ring and the oil guide plate from the 5th gear housing.



7. Place a straight edge on the 5th gear housing and measure the depth of the snap ring thrust shim installation hole. Measure at two points and average the readings. Subtract the thickness of the straight edge from the reading.



8. Select the correct thickness snap ring as follows:
   (a) Subtract the bearing height (step 5) from the depth of the end cover (step 7).
   (b) Substract the Standard Clearance 0.11 mm – 0.18 mm (0.004 – 0.007 in.) from the dimension determined in step 8a,

EXAMPLE:

Housing depth:	57.00 mm (2.244 in.)
Bearing height:	-54.50 mm (2.145 in.)
	2.50 mm (0.099 in.)
	2.50 mm (0.099 in.)
Snap ring height: (minimum)	-0.11 mm (0.004 in.)
	2.39 mm (0.095 in.)
	2.50 mm (0.099 in.)
Snap ring height: (maximum)	-0.18 mm (0.007 in.)
	2.32 mm (0.092 in.)

Select the Snap ring in the range between 2.39 mm (0.095 in.) and 2.32 mm (0.092 in.) from the parts list.

Parts Number	Thickness
23931-PE6-000	0.500 mm (0.0196 in.)
23932-PE6-000	1.100 mm (0.0433 in.)
23942-PE6-000	1.125 mm (0.0442 in.)
23933-PE6-000	1.150 mm (0.0452 in.)
23943-PE6-000	1.175 mm (0.0462 in.)
23934-PE6-000	1.200 mm (0.0472 in.)
23944-PE6-000	1.225 mm (0.0482 in.)
23935-PE6-000	1.250 mm (0.0492 in.)
23945-PE6-000	1.275 mm (0.0501 in.)
23936-PE6-000	1.300 mm (0.0511 in.)
23946-PE6-000	1.325 mm (0.0521 in.)
23937-PE6-000	1.350 mm (0.0531 in.)
23947-PE6-000	1.375 mm (0.0541 in.)
23938-PE6-000	1.400 mm (0.0551 in.)
23948-PE6-000	1.425 mm (0.0561 in.)
23939-PE6-000	1.450 mm (0.0570 in.)
23949-PE6-000	1.475 mm (0.0580 in.)
23940-PE6-000	1.500 mm (0.0590 in.)
23950-PE6-000	1.525 mm (0.0600 in.)
23941-PE6-000	1.550 mm (0.0610 in.)
23951-PE6-000	1.575 mm (0.0620 in.)

NOTE: If the measurements determined in 8b are greater than the thickest snap ring, you may use two snap rings (For the example above, you could use the 1,250 mm and the 1,100 mm rings for a total of 2,350).

CAUTION: Do not use more than two rings together.

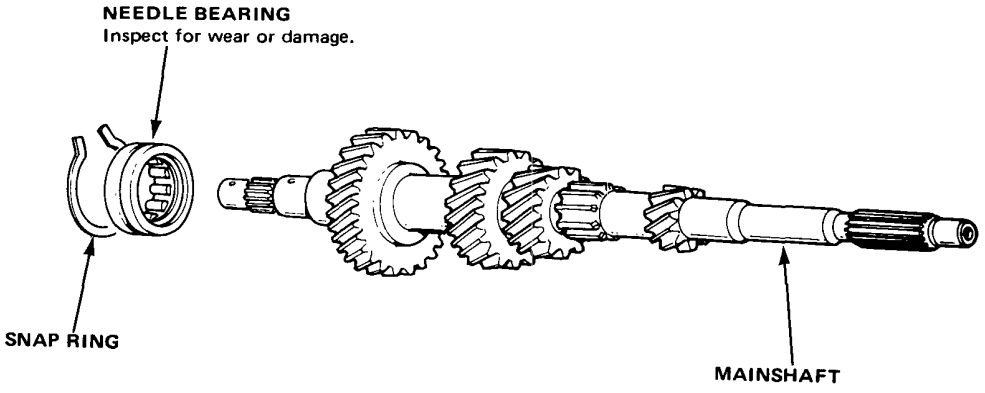
Mainshaft Assembly

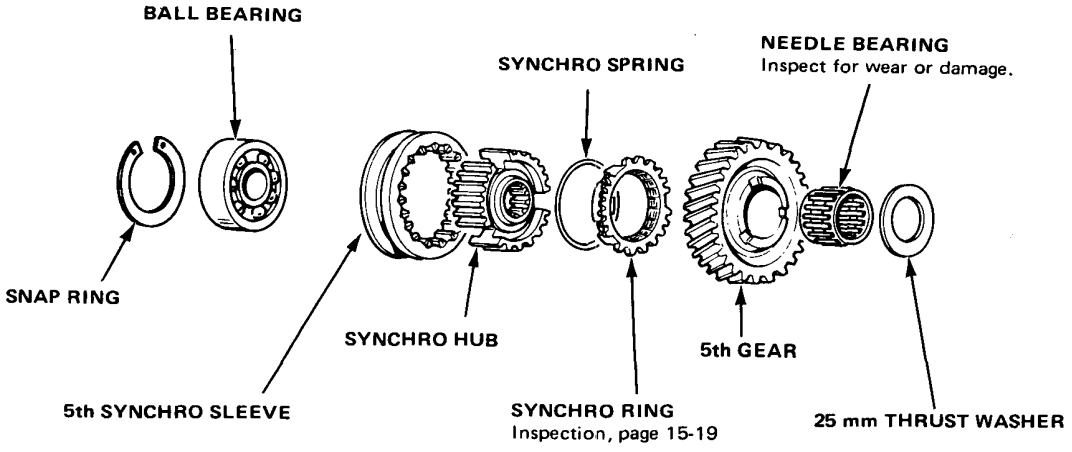
Index

NOTE:

- Clean all parts thoroughly in solvent and dry with compressed air.

Lubricate all parts with oil before reassembly.





4-Speed Transmission

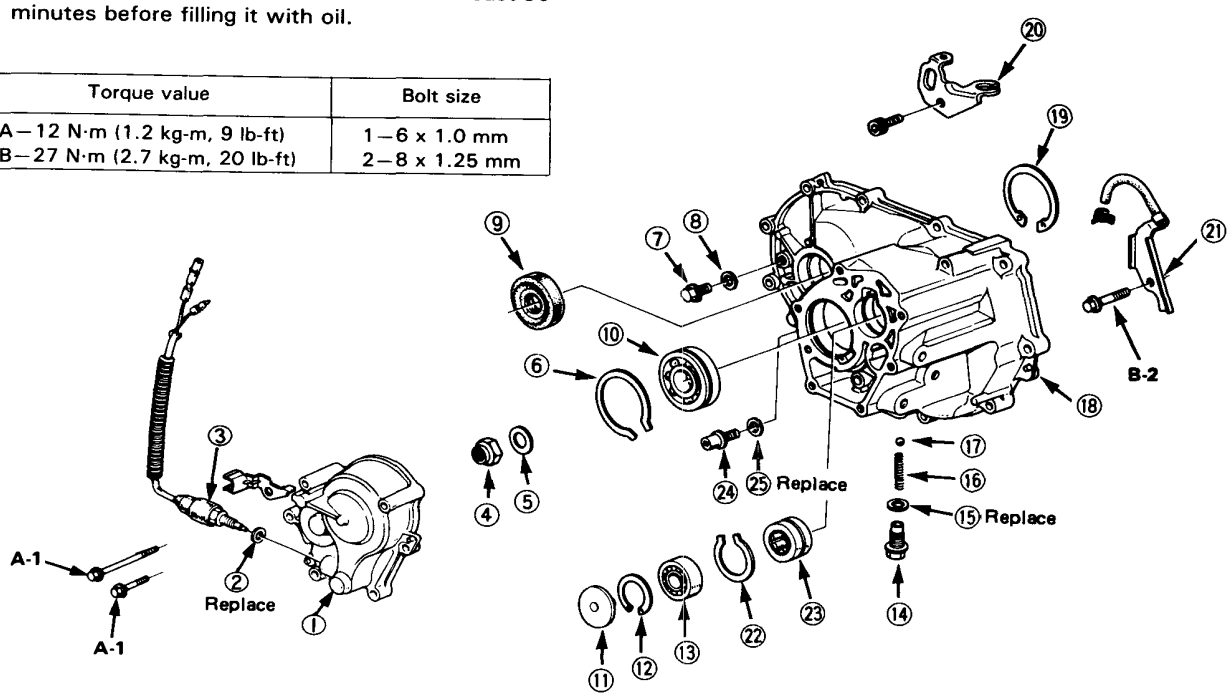
Index

Clean all parts thoroughly in solvent and dry with compressed air.

Lubricate all parts with oil before reassembly.

NOTE: This transmission uses no gaskets between the major housings; use Honda P/N 08740-99986 sealant.
Assemble the housings within 20 minutes after applying the sealant and allow it to cure at least 30 minutes before filling it with oil.

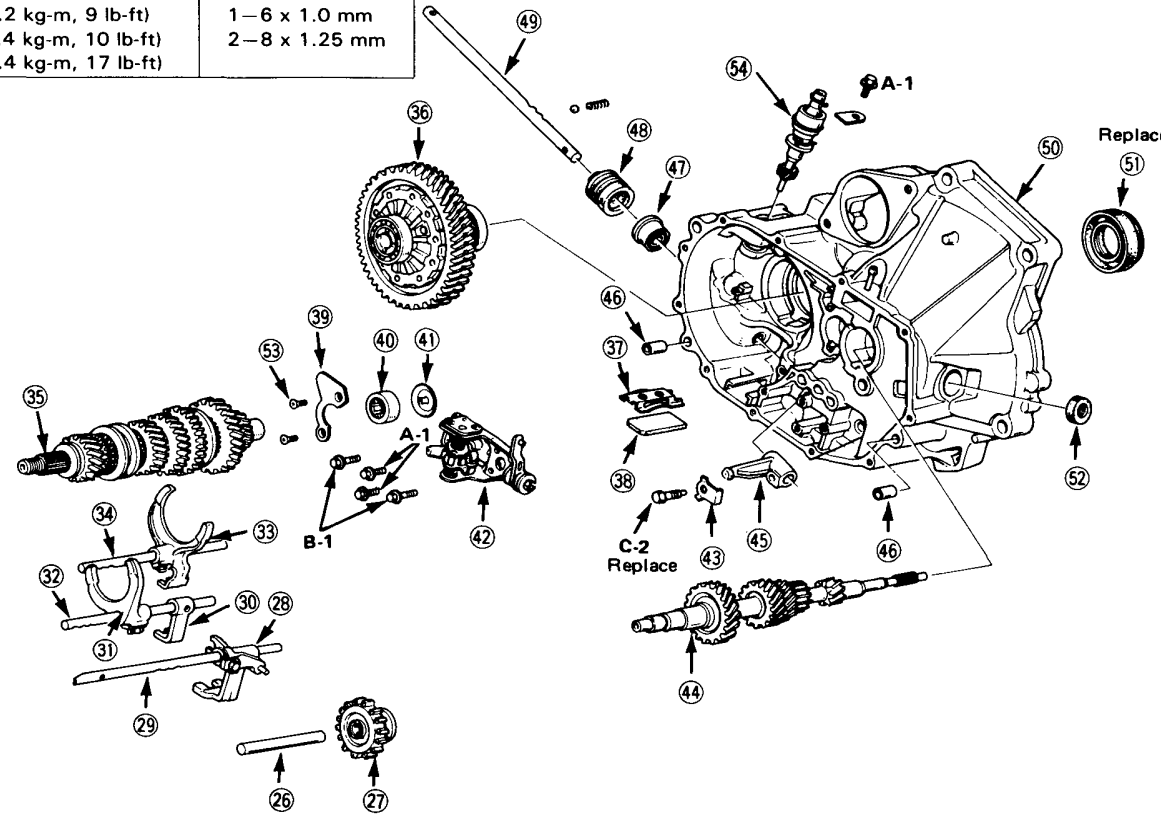
Torque value	Bolt size
A—12 N·m (1.2 kg-m, 9 lb-ft) B—27 N·m (2.7 kg-m, 20 lb-ft)	1—6 x 1.0 mm 2—8 x 1.25 mm



① END COVER
② 14 mm WASHER
③ BACK-UP LIGHT SWITCH
④ COUNTERSHAFT LOCKNUT
⑤ SPRING WASHER
⑥ SNAP RING 65 mm
⑦ OIL FILLER BOLT
⑧ WASHER
⑨ SEAL
⑩ BALL BEARING
⑪ OIL GUIDE PLATE
⑫ SNAP RING
⑬ BALL BEARING
⑭ DETENT BALL RETAINER SCREW
⑮ WASHER
⑯ DETENT SPRING
⑰ DETENT BALL
⑱ TRANSMISSION HOUSING
⑲ SNAP RING 72 mm
⑳ CLUTCH CABLE BRACKET
㉑ BREATHER TUBE ASSEMBLY
㉒ SNAP RING 45 mm
㉓ NEEDLE BEARING
㉔ OIL DRAIN PLUG
㉕ WASHER

NOTE: Always clean the magnet (38) whenever the transmission housing is disassembled.

Torque value	Bolt size
A—12 N·m (1.2 kg-m, 9 lb-ft) B—14 N·m (1.4 kg-m, 10 lb-ft) C—24 N·m (2.4 kg-m, 17 lb-ft)	1—6 x 1.0 mm 2—8 x 1.25 mm

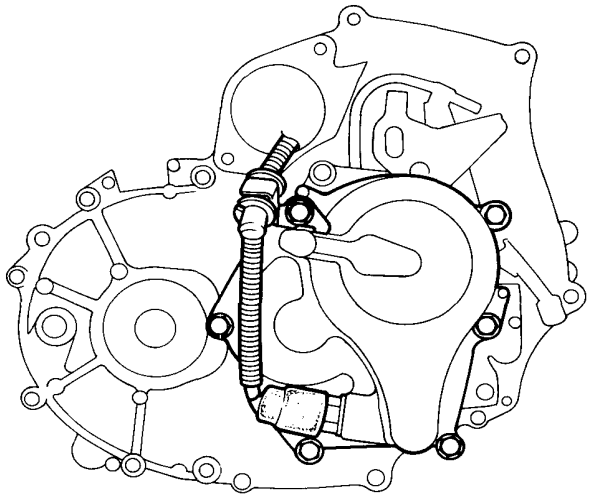


㉖ REVERSE IDLER GEAR SHAFT
㉗ REVERSE IDLER GEAR
㉘ REVERSE SHIFT GUIDE
㉙ REVERSE SHIFT SHAFT
㉚ 3rd SHIFT SHAFT GUIDE
㉛ 3rd/4th GEAR SHIFT FORK
㉜ 3rd/4th GEAR FORK SHAFT
㉝ 1st/2nd GEAR SHIFT FORK
㉞ 1st/2nd GEAR FORK SHAFT
㉟ COUNTERSHAFT ASSEMBLY
㊱ DIFFERENTIAL
㊲ HOLD-DOWN PLATE
㊳ MAGNET
㊴ BEARING RETAINER PLATE
㊵ NEEDLE BEARING
㊶ OIL BARRIER PLATE
㊷ SHIFT ARM HOLDER
㊸ LOCK PLATE
㊹ MAINSHAFT
㊺ GEAR SHIFT ARM
㊻ DOWEL PIN
㊼ SEAL
㊽ BOOT
㊾ GEAR SHIFT ROD
㊿ CLUTCH HOUSING
(51) SEAL
(52) DUST SEAL
(53) FLAT SCREW
(54) SPEEDOMETER DRIVEN GEAR

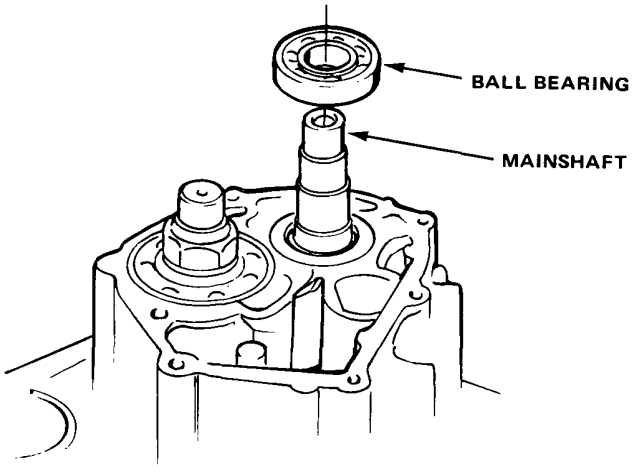
End Cover

Thust Inspection

1. Remove the bolts from the end cover, then remove it.

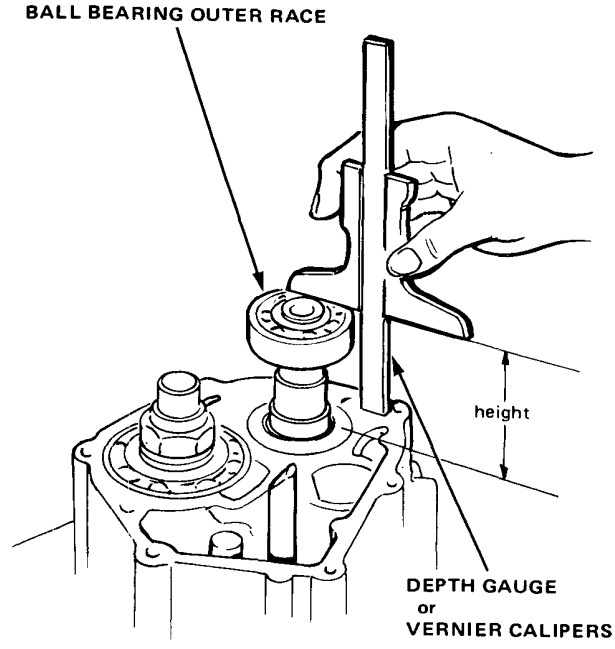


2. Remove the ball bearing from the mainshaft.

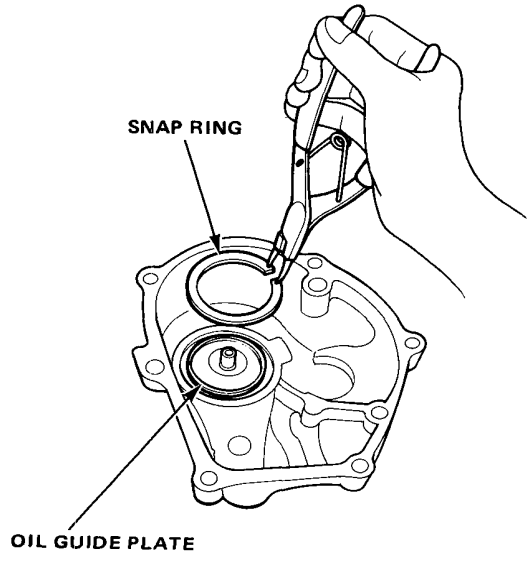


3. Leave the ball bearing on the mainshaft.

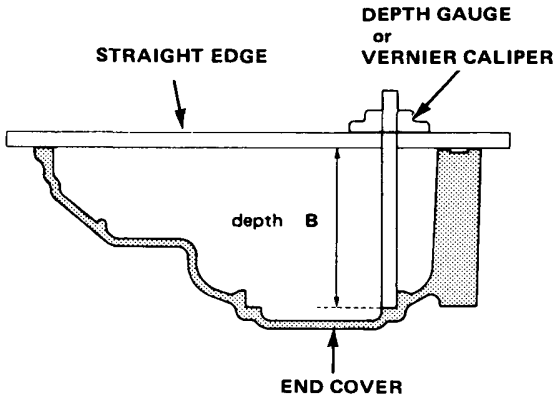
4. Clean all sealant residue from the transmission housing, then measure from the top of the ball bearing's outer race to the mounting flange for the end cover.
   Measure at two points and average the readings.



5. Remove the 52 mm snap ring and the oil guide plate from the end cover.



6. Place a straight edge on the end cover and measure the depth on the snap ring installation hole. Measure at two points and average the readings. Subtract the thickness of the straight edge from the reading.



7. Select the correct thickness snap ring as follows:
   (a) Subtract the bearing height (step 4) from the depth of the end cover (step 6).
   (b) Substract the Standard Clearance 0.11 mm – 0.18 mm (0.004 – 0.007 in.) from the dimension determined in step 7a,

EXAMPLE:

Housing depth:	57.00 mm (2.244 in.)
Bearing height:	-54.50 mm (2.145 in.)
	2.50 mm (0.099 in.)
	2.50 mm (0.099 in.)
Snap ring height: (minimum)	-0.11 mm (0.004 in.)
	2.39 mm (0.095 in.)
	2.50 mm (0.099 in.)
Snap ring height: (maximum)	-0.18 mm (0.007 in.)
	2.32 mm (0.092 in.)

Select the Snap ring in the range between 2.39 mm (0.095 in.) and 2.32 mm (0.092 in.) from the parts list.

Parts Number	Thickness
23931-PE6-000	0.500 mm (0.0196 in.)
23932-PE6-000	1.100 mm (0.0433 in.)
23942-PE6-000	1.125 mm (0.0442 in.)
23933-PE6-000	1.150 mm (0.0452 in.)
23943-PE6-000	1.175 mm (0.0462 in.)
23934-PE6-000	1.200 mm (0.0472 in.)
23944-PE6-000	1.225 mm (0.0482 in.)
23935-PE6-000	1.250 mm (0.0492 in.)
23945-PE6-000	1.275 mm (0.0501 in.)
23936-PE6-000	1.300 mm (0.0511 in.)
23946-PE6-000	1.325 mm (0.0521 in.)
23937-PE6-000	1.350 mm (0.0531 in.)
23947-PE6-000	1.375 mm (0.0541 in.)
23938-PE6-000	1.400 mm (0.0551 in.)
23948-PE6-000	1.425 mm (0.0561 in.)
23939-PE6-000	1.450 mm (0.0570 in.)
23949-PE6-000	1.475 mm (0.0580 in.)
23940-PE6-000	1.500 mm (0.0590 in.)
23950-PE6-000	1.525 mm (0.0600 in.)
23941-PE6-000	1.550 mm (0.0610 in.)
23951-PE6-000	1.575 mm (0.0620 in.)

NOTE: If the measurements determined in 7b are greater than the thickest snap ring, you may use two snap rings (For the example above, you could use the 1,250 mm and the 1,100 mm rings for a total of 2,350).

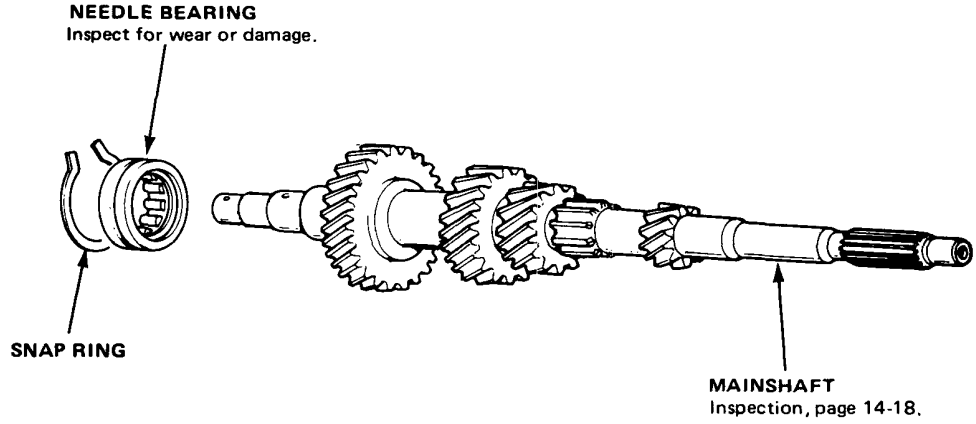
CAUTION: Do not use more than two rings together.

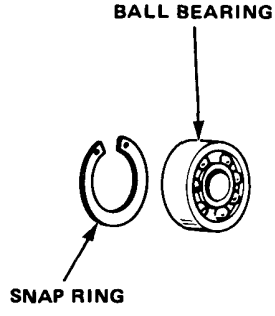
Mainshaft

Index

NOTE:
- Clean all parts thoroughly in solvent and dry with compressed air.

OIL Lubricate all parts with oil before assembly.





Description

The Honda Automatic Transmission is a combination of a 3-element torque converter and dual-shaft automatic transmission which provides 4 speeds forward and 1 speed reverse. The entire unit is positioned in line with engine.

TORQUE CONVERTER, GEARS, AND CLUTCHES

The torque converter consists of a pump, turbine and stator, assembled in a single unit.
They are connected to the engine crankshaft so they turn together as a unit as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter pinion when the engine is being started. The entire torque converter assembly serves as a flywheel while transmitting power to the transmission mainshaft.
The transmission has two parallel shafts, the mainshaft and countershaft. The mainshaft is in line with the engine crankshaft.
The mainshaft includes the clutches for 1st, and 2nd/4th, and gears for 3rd, 2nd, 4th, Reverse and 1st (3rd gear is integral with the mainshaft, while reverse gear is integral with 4th gear).
The countershaft includes 3rd clutch and gears for 3rd, and 4th, Reverse and 1st.
4th and reverse gears can be locked to the countershaft at its center, providing 4th gear or Reverse, depending on which way the selector is moved.
The gears on the mainshaft are in constant mesh with those on the countershaft. When certain combinations of gears in the transmission are engaged by the clutches, power is transmitted from the mainshaft to the countershaft to provide [D3], [D4], [2] or REVERSE.

HYDRAULIC CONTROL

The valve assembly includes the main valve body, secondary valve body, servo valve body, modulator valve body, regulator valve body and lock-up shift valve **body, through the respective separator plates.**
They are bolted to the torque converter case as an assembly.
The main valve body contains the manual valve, 1-2 shift valve, 2-3 shift valve, 3-4 shift valve, pressure relief valve, 2nd orifice control valve, and oil pump gear.
The secondary valve body includes the CPC valve, REV control valve, lock-up cut valve, kickdown valve, accumulator control valve and shift timing valves.

The servo valve body contains the accumulator pistons, 3rd orifice control valve, throttle A and B valves, and the modulator valve. The regulator valve body contains the lock-up timing valves, pressure regulator valve and lock-up control valve. Fluid from the regulator passes through the manual valve to the various control valves.

The lock-up shift valve body contains a lock-up timing valve and lock-up shift valve. The 1st, 3rd and 4th cluches receive oil from their respective feed pipes.

LOCK-UP MECHANISM

In D4, pressurized fluid is drained from the back of the torque converter through an oil passage, causing the lock-up piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft.

The lock-up shift valve body controls the range of lock-up according to vehicle speed and throttle pressure. The lock-up timing valve controls the flow of oil to the lock-up shift valve in 2nd, 3rd and 4th gears (in D4 range).

The lock-up cut valve is housed in the secondary valve body and prevents lock-up from taking place when the throttle is not opened sufficiently.

GEAR SELECTION

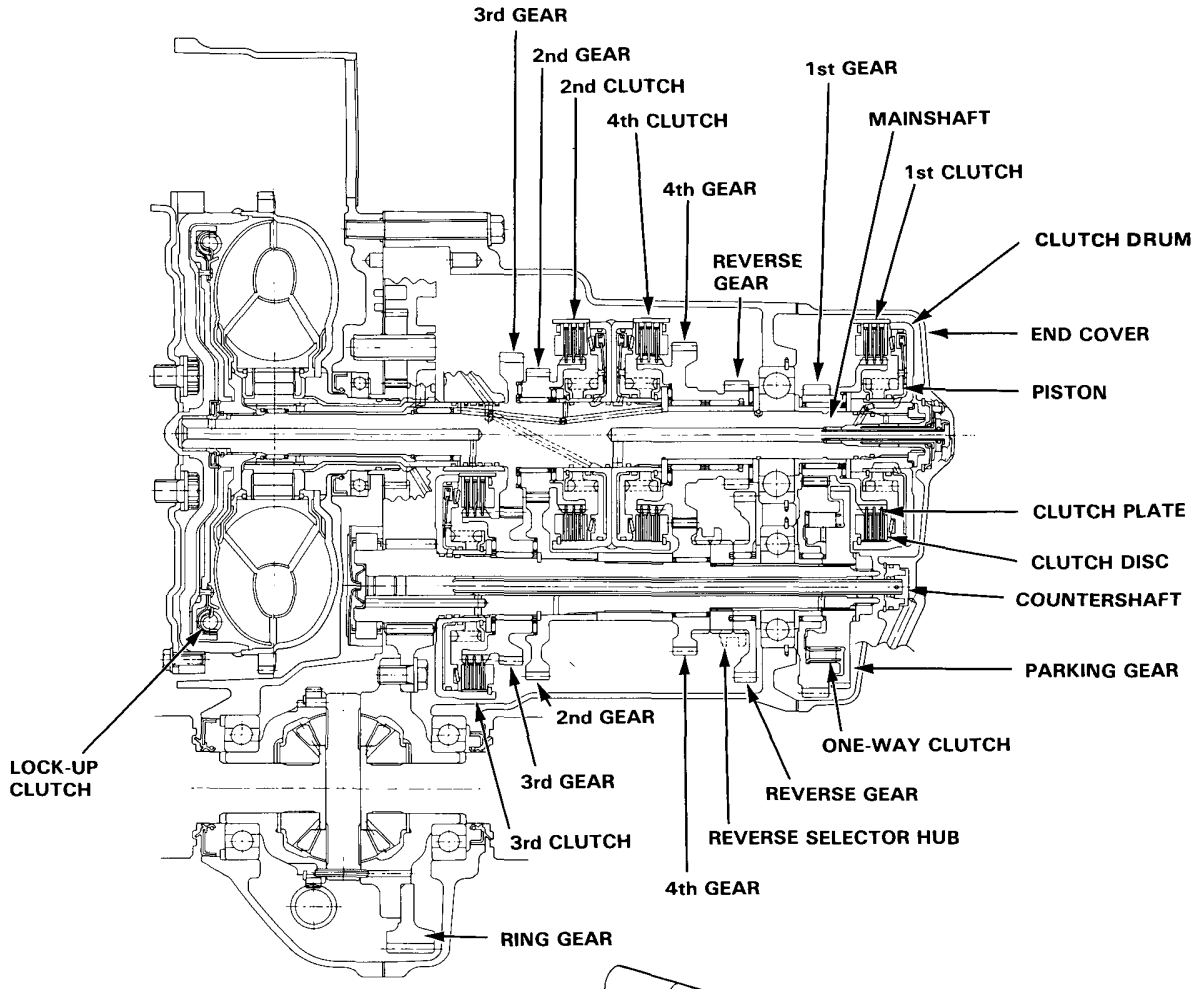
The selector lever has six positions: [P] PARK, [R] REVERSE, [N] NEUTRAL, [D4] 1st through 4th gear ranges, [D3] 1st through 3rd gear ranges, and [2] 2nd gear.

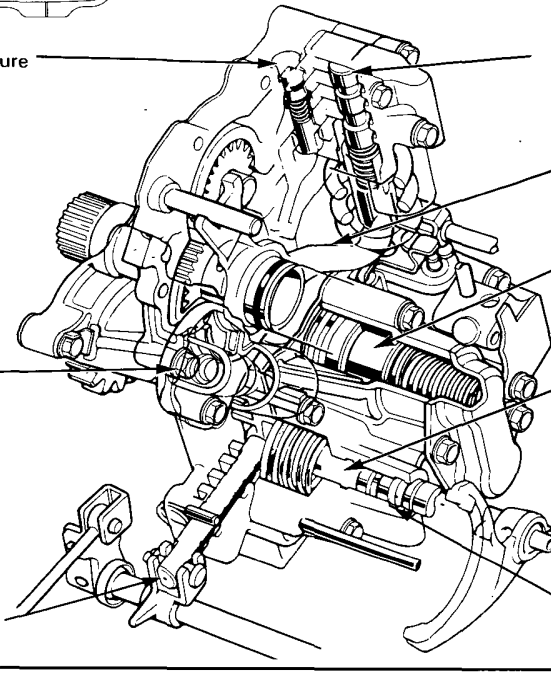
Position	Discription
[P] PARK	Front wheels locked; parking pawl engaged with parking gear on countershaft. All clutches released.
[R] REVERSE	Reverse; reverse selector engaged with countershaft reverse gear and 4th gear clutch locked.
[N] NEUTRAL	All clutches released.
[D4] DRIVE (1 through 4)	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, then 4th, depending on vehicle speed and throttle position. Downshifts through 3rd, 2nd and 1st on deceleration to stop. The lock-up mechanism comes into operation in D4.
[D3] DRIVE (1 through 3)	For rapid acceleration at highway speeds and general driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and throttle position. Downshifts through 2nd to 1st on deceleration to stop.
[2] SECOND	For engine braking or better traction starting off on loose or slippery surfaces; stays in 2nd gear, does not shift up or down.

Starting is possible only in [P] and [N] trough use of a slide-type, neutral-safety switch.

POSITION INDICATOR

A position indicator in the instrument panel shows what gear has been selected without having to look down at the console.





RELIEF VALVE
Keeps constant fluid pressure for lubrication.

REGULATOR VALVE
Regulates oil pressure.

STATOR SHAFT
Transmits torque converter reaction to the regulator valve.

ACCUMULATOR
Changes clutch pressure to absorb shock when the clutch engages.

GOVERNOR VALVE
Changes vehicle speed into hydraulic pressure and selects optimum gear.

SERVO VALVE
Shifts gear into reverse in [R].

MANUAL VALVE
Changes the passages according to the selector position.

SHIFT FORK SHAFT
Shifts forward to reverse and vice versa.

SYMPTOM	Check these items on PROBABLE CAUSE LIST	Check these items on NOTES PAGE
Engine runs, but car does not move in any gear.	1, 6, 7, 16	K, L, R. S
Car moves in R and 2, but not in D3 or D4.	8, 29, 44, 48	C, M, O
Car moves in D3, D4 and R, but not in 2.	9, 30, 49	C, L
Car moves in D3, D4 and 2, but not in R.	1, 11, 12, 22, 38, 39, 40	C, L, Q
Car moves in N.	1, 8, 9, 10, 11, 46, 47	C, D
Excessive idle vibration.	5, 17	B, K, L
Slips in all gears.	6, 7, 16	C, L, U
Slips in low gear.	8, 29, 44, 45, 48	C, N, O, U
Slips in 2nd gear.	9, 20, 23, 30, 45, 49	C, L, U
Slips in 3rd gear.	10, 21, 23, 31, 44, 45	C, L, U
Slips in 4th gear.	11, 23, 32, 45	C, L, U
Slips in reverse gear.	11, 32	C
Slips on 2–3 upshift.	3, 15, 24	E, L, V
Slips on 3–4 upshift.	3, 15, 25	E, L, V
No upshift; trans stays in low gear.	12, 13, 14, 19, 23	E, F, G, L
No downshift to low gear.	12, 19	G, L
Late upshift.	2, 12, 13, 14	E, F, L, V
Early upshift.	3, 13, 14	E, F, L, V
Erratic shifting.	2, 14, 26	E, F, V
Harsh shift (up & down shifts).	2, 4, 15, 23, 24, 25, 27, 47	A, E, H, I, L, V
Harsh **shift (1–2).**	2, 9	C, D, V
Harsh **shift (2–3).**	2, 10, 23, 24	C, D, H, L, V
Harsh **shift (3–4).**	2, 11, 23, 25	C, D, I, L, V
Harsh kickdown shifts.	2, 23, 27	L, V, Q
Harsh kickdown shift (2–1).	48	O
Harsh downshift (3–2) at closed throttle.	15	E, T
Axle(s) slips out of trans on turns.	43, 50	L, P, Q
Axle(s) stuck in trans.	43	L, Q
Ratcheting noise when shifting into R.	6, 7, 38, 39, 40	K, L, Q
Loud popping noise when taking off in R.	38, 39, 40	L, Q
Ratcheting noise when shifting from R to P, or from R to N.	38, 39, 40, 51	K, L, Q
Noise from trans in all selector lever positions.	6, 17	K, L, Q
Noise from trans only when wheels rolling.	39, 42	L, Q
Gear whine, rpm related (pitch changes with shifts).	6, 41	K, L, Q
Gear whine, speed related (pitch changes with speed).	39, 42	L, Q
Trans will not shift into 4th gear in D4.	1, 21, 28	L
Engine stalls on emergency stops (shift lever in D4 only).	2, 33	L, V
Lockup clutch does not lock up smoothly.	35, 37, 17	L
Lockup clutch does not operate properly.	2, 3, 12, 15, 18, 33, 34, 35, 36, 37	E, L, V
Transmission has multitude of problems shifting, at disassembly large deposits of metal found on magnet.	43	L, Q

The following symptoms can be caused by improper repair or assembly.	Check these items on PROBABLE CAUSE DUE TO IM-PROPER REPAIR	Check these ITEMS ON NOTES PAGE
Car creeps in N.	R1, R2	
Car does not move in D3 or D4.	R5	
Trans lock up in R.	R4	
Trans has no park.	R3	
Excessive drag in trans.	R8	RK
Excessive vibration, rpm related.	R9	
Noise with wheels moving only.	R7	
Main seal pops out.	R10	S
Various shifting problems.	R11, R12	
Harsh upshifts.	R13	
In D3 or D4 trans starts in 2nd gear.	R6	

	PROBABLE CAUSE
1.	Shift cable broken/out of adjustment
2.	Throttle cable too short
3.	Throttle cable too long
4.	Wrong type ATF
5.	Idle rpm too low/high
6.	Oil pump worn or seized
7.	Pressure regulator stuck
8.	Low clutch defective
9.	2nd clutch defective
10.	3rd clutch defective
11.	4th clutch defective
12.	Governor valve stuck
13.	Throttle A valve stuck
14.	Modulator valve stuck
15.	Throttle B valve stuck
16.	Oil screen clogged
17.	Torque convertor defective
18.	Torque governor check valve stuck
19.	1–2 shift valve stuck
20.	2–3 shift valve stuck
21.	3–4 shift valve stuck
22.	Reverse control valve stuck
23.	Clutch pressure control valve stuck
24.	2nd orifice control valve stuck
25.	3rd orifice control valve stuck
26.	3–2 timing valve stuck
27.	Kickdown valve stuck
28.	Shift timing valve/accur stuck
29.	Low clutch **accumulator defective**
30.	2nd clutch **accumulator defective**
31.	3rd clutch **accumulator defective**
32.	4th/reverse **accumulator defective**
33.	Lockup clutch cut valve stuck
34.	Lockup clutch timing valve A stuck
35.	Lockup clutch timing valve B stuck
36.	Lockup clutch shift valve stuck
37.	Lockup clutch control valve stuck
38.	Shift fork bent
39.	Reverse gears worn/damaged (3 gears)
40.	Reverse selector gear worn
41.	3rd gears worn/damaged (2 gears)
42.	Final gears worn/damaged (2 gears)
43.	Differential pinion shaft worn
44.	Feedpipe O-ring broken

PROBABLE CAUSE	
45.	Servo valve check valve loose
46.	Gear clearance incorrect
47.	Clutch clearance incorrect
48.	Sprag clutch defective
49.	Sealing rings/guide worn
50.	Axle-inboard joint clip missing
51.	4th gears worn/damaged (2 gears)

PROBABLE CAUSES DUE TO IMPROPER REPAIR	
R1	Improper clutch clearance
R2	Improper gear clearance
R3	Parking pawl installed upside down
R4	Parking shift arm installled upside down
R5	Sprag clutch installed upside down
R6	Feed pipe missing in governor shaft
R7	Reverse hub installed upside down
R8	Oil pump binding
R9	Torque converter not fully seated in oil pump
R10	Main seal improperly installed
R11	Springs improperly installed
R12	Valves improperly installed
R13	Ball check valves not installed
R14	Shift fork bolt not installed

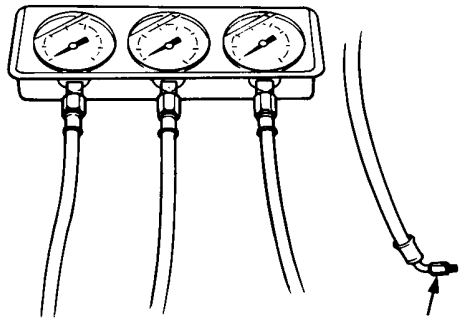
NOTES	
A	Flushing procedure (repeat 3 times): 1. Drain the trans. 2. Refill with 3 qts. of Dexron recommended type ATF. 3. Start engine and shift trans to D4. 4. Let trans shift through gears at least 5 times. 5. Shift to reverse and neutral at least 5 times. 6. Drain and refill.
B	Set idle rpm in gear to specified idle speed. If still no good, adjust the motor mounts as outlined in engine section of service manual.
C	If the large clutch piston O-ring is broken, inspect the piston groove for rough machining.
D	If the clutch pack is seized, or is excessively worn, inspect the other clutches for wear, and check the orifice control valves and throttle valves for free movement.
E	If throttle valve B is stuck, inspect the clutches for wear.
F	If the modulator valve is stuck open (does not modulate line pressure), the trans will shift normally with less than 5/8 throttle but will shift up very late over 5/8 throttle. If the modulator valve is stuck closed, throttle valve A pressure will be zero and result in early upshifts and no forced downshifts.
G	If the 1–2 valve is stuck closed, the transmission will not upshift. If stuck open, the transmission has no low gear.
H	If the 2nd orifice control valve is stuck, inspect the 2nd and 3rd clutch packs for wear.
I	If the 3rd orifice control valve is stuck, inspect the 3rd and 4th clutch packs for wear.
J	If the clutch pressure control valve is stuck closed, the transmission will not shift out of low gear.

NOTES	
K	Improper alignment of main valve body and torque converter case may cause oil pump seizure. The symptoms are mostly an rpm related–ticking noise high pitched squeak. In severe instances, it may stall the engine. Follow instruction procedure on **page 16–50.**
L	If the oil screen is clogged with particles of steel or aluminum, inspect the oil pump and differential pinion shaft. If both are OK, and no cause for the contamination is found, replace the torque converter.
M	If the low clutch feedpipe guide in the end cover is scored by the mainshaft, inspect the ball bearing for excessive movement in the *transmission housing. If OK, replace the end cover as it is dented.* The O-ring under the **guide is probably broken.**
N	Replace the mainshaft if the bushings for the low-and 4th feedpipe are loose or damaged. If the low feedpipe is damaged or out of round, replace it. If the 4th feedpipe is damaged or out of round, replace the end cover.
O	A worn or damaged sprag clutch is mostly a result of shifting the trans in D3 or D4 while the wheels rotate in reverse, such as rocking the car in snow.
P	Inspect the frame for collision damage.
Q	Inspect for damage or wear: 1. Governor shaft woodruff key 2. Reverse selector gear teeth chamfers 3. Engagement teeth chamfers of countershaft 4th & reverse gear 4. Shift fork, for scuff marks in center 5. Differential pinion shaft for wear under pinion gears 6. Bottom of 3rd clutch for swirl marks Replace items 1, 2, 3 and 4 if worn or damaged. If trans makes clicking, grinding or whirring noise, also replace mainshaft 4th gear and reverse idler gear and counter 4th gear in addition to 1, 2, 3, or 4. *If differential pinion shaft is worn, overhaul differential assy* and replace oil screen and thoroughly clean trans flush torque converter and cooler and lines. If bottom of 3rd clutch is swirled 6, and trans makes gear noise, replace countershaft and ring gear.
R	Be very careful not to damage the torque converter case when **replacing the main ball bearing. You may also damage the oil pump when you torque down the main valve body; this will result in oil pump seizure if not detected. Use proper tools.**
S	Install the main seal flush with the torque converter case. When pushing it into the torque converter case until it bottoms out, it will block the oil return passage and result in damage.
T	Harsh downshifts when coasting to a stop with zero throttle may be caused by a bent-in throttle valve retainer/cam stopper. If **throttle cable adjustment may clear this problem, *check this adjustment, too. See page 16–68.***
U	Check if servo valve check valve stopper cap is installed. If it was not installed, the check valve may have been pushed out by hydraulic pressure causing a leak (internal) affecting all forward gears.
V	*Throttle cable adjustment is essential* for proper operation of the transmission. Not only does it affect the shift points if misadjusted but also the shift quality and lockup clutch operation. A too long adjusted cable will result in throttle pressure being too low for the amount of engine torque input into the transmission, and may cause clutch slippage. A too short adjusted cable will *result in too high throttle pressures which may cause harsh shifts,* **erratic shifts and torque converter hunting.**

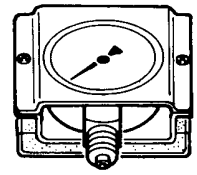
Pressure Test

NOTE:
- Stop engine when attaching hoses for pressure tests.
  Torque hose fitting to 18 N·m (1.8 kg-m, 12 lb-ft).
- Do not reuse aluminum washers.
- For throttle and governor test, use Low Pressure Gauge, 07406—0070000.

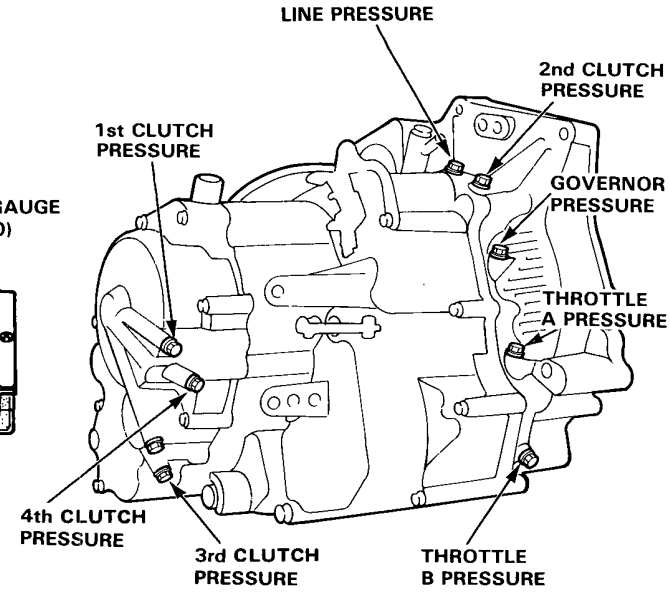
GAUGE SET 07406—00200002
(includes pressure hose set 07406—0020201)



LOW PRESSURE GAUGE
(07406—0070000)



HOSE FITTING



CAUTION: Before checking, be sure transmission is filled to proper level.

PRESSURE	SELECTOR POSITION	MEASUREMENT	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
					Standard	Service Limit
LINE	N or P	· With parking brake applied · Run engine at 2,000 min^{-1} (rpm)	No (or low) LINE pressure	Torque converter, oil pump pressure regulator, torque governor check valve, oil pump	784–833 kPa (8.0–8.5 kg/cm^2, 112–126 psi)	735 kPa (7.5 kg/cm^2, 105 psi)
1st	D3 or D4	MEASUREMENTS · With parking brake applied raise front wheels off ground and support with safety stands · Run engine at 2,000 min^{-1} (rpm)	No (or low) First pressure	1st clutch O-ring	784–833 kPa (8.0–8.5 kg/cm^2, 112–126 psi)	735 kPa (7.5 kg/cm^2, 105 psi)
2nd	2		No (or low) SECOND pressure	2nd clutch O-rings	441–833 kPa (4.5–8.5 kg/cm^2, 63–119 psi) varies with throttle open.	392 kPa (4.0 kg/cm^2, 57 psi) with lever released. 735 kPa (7.5 kg/cm^2, 105 psi) with lever in full throttle position
3rd	D3		No (or low) THIRD pressure	3rd clutch		
4th	D4		No (or low) FOURTH pressure	4th clutch		
	R			Servo valve		
THROTTLE	D3 or D4	· With parking brake applied raise front wheels off ground and support with safety stands. · Run engine at 1,000 min^{-1} (rpm) · Disconnect throttle control cable at throttle lever. · Read pressure with lever released. · Manually push lever up simulating full throttle. · Read pressure with lever in full throttle position.	No (or low) THROTTLE pressure	Throttle valve A Throttle modulator valve	0 kPa (0 kg/cm^2, 0 psi) with lever is released. 446–461 kPa (4.55–4.70 kg/cm^2, 65–67 psi) *515–530 kPa (5.25–5.40 kg/cm^2, 75–77 psi) with lever in full throttle position.	441 kPa (4.50 kg/cm^2, 64 psi) *510 kPa (5.20 kg/cm^2, 74 psi) With lever in full throttle position.
				Throttle valve B	0 kPa (0 kg/cm^2, 0 psi) with lever is released. 784–833 kPa (8.0–8.5 kg/cm^2, 112–119 psi) with lever in full throttle position.	735 kPa (7.5 kg/cm^2, 105 psi)
GOVERNOR	D3 or D4	· Place vehicle on chassis dynamometer, or jack up front of car, support with safety stands, block rear wheels, and set hand brake. · Run vehicle at 60 km/h	No (or low) GOVERNOR pressure	Governor valve	153–163 kPa (1.56–1.66 kg/cm^2, 22–24 psi) *208–218 kPa (2.12–2.22 kg/cm^2, 30–31 psi)	148 kPa (1.51 kg/cm^2, 21 psi) *203 kPa (2.07 kg/cm^2, 29 psi)

*KS and KX type

Stall Speed

Test

1. Engage parking brake and block front wheels.
2. Connect tachometer, and start engine.
3. After engine has warmed up to normal operating temperature, shift into [D3].
4. Fully depress brake pedal and acceleraror for 6 to 8 seconds, and note engine speed.

   CAUTION: To prevent transmission damage, do not test stall speed for more than 10 seconds at a time.
5. Allow 2 minutes for cooling, then repeat same test in [D4], [2] and [R]

   Stall speed in [D3], [D4], [2], and [R] must be the same, and must also be within limits:

Stall Speed RPM:

Specification:	2,750 rpm
Service Limit:	2,300 – 2,900 rpm

TROUBLE	PROBABLE CAUSE
Stall rpm high in [2], [D3], [D4] & [R].	Low fluid level or oil pump output, clogged oil strainer, pressure regulator valve stuck closed. Slipping clutch.
Stall rpm high in [D3], [D4] only.	Slippage of 1st clutch
Stall rpm low in [2], [D3], [D4] & [R].	• Engine output low, throttle cable misadjusted at carburetor. • Oil pump seized. • Torque Converter one-way clutch slipping.

Maintenance

Checking/Changing

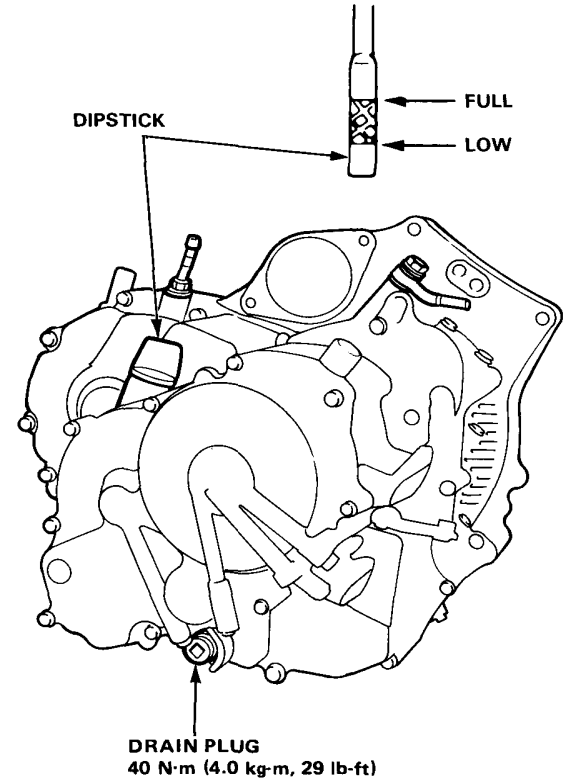
Checking

With the car on level ground, unscrew the transmission dipstick and check the level of fluid immediately after the engine is shut off (within one minute). The fluid level should be between the full and low marks. Do not screw dipstick in to check the fluid level. If the level is at, or below, the low mark, add DEXRON-type automatic transmission fluid.

Changing

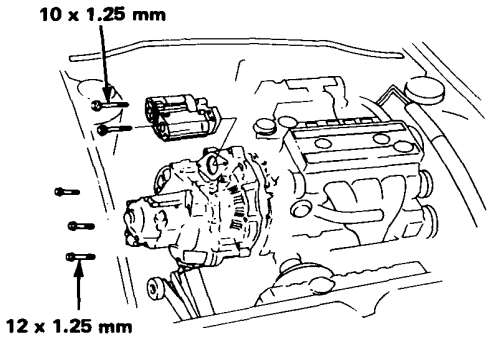
1. Bring the transmission up to operating temperature by driving the car. Park the car on level ground, turn the engine off, then remove drain plug.
2. Reinstall the drain plug with a new washer, then refill the transmission to the full mark on the dipstick.

Automatic transmission Capacity:
2.4 ℓ (2.5 U.S. qts., 2.1 Imp. qt) at change
5.4 ℓ (5.7 U.S. qts., 4.8 Imp. qt) after overhaul

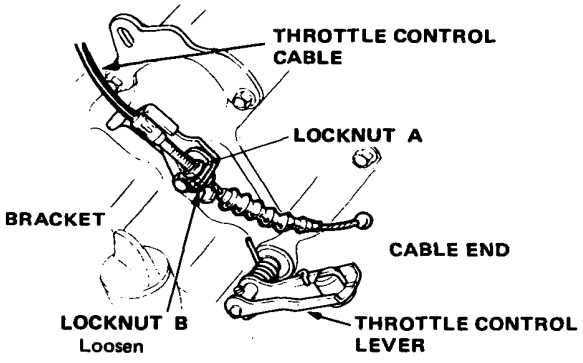


Removal

1. Disconnect the ground cable at battery and transmission.
2. Release the steering lock, and shift gear selector to N.
3. Disconnect the wiring:
   - Battery positive cable from starter.
   - Black/white wire from starter solenoid.
4. Disconnect the cooler hoses, and wire them up next to radiator so ATF won't drain out.
5. Remove the two starter mounting bolts, and top three transmission mounting bolts.



6. Loosen the front wheel nuts.
7. Apply the parking brake, block rear wheels, then raise the front end on jack stands and remove the front wheels.
8. Drain the transmission. Reinstall drain plug and washer.
9. Remove the throttle control cable.
   - Remove cable end.
   - Loosen lock nut B only.
   - Remove cable from bracket.



NOTE: For cable adjustment see page 16-68.

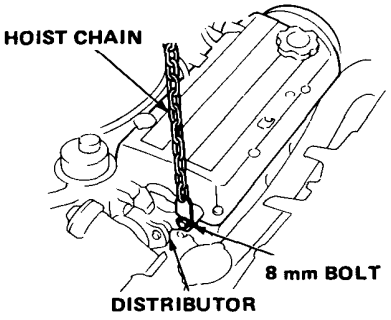
10. Remove the cable clip, then pull the speedometer cable out of holder.

CAUTION: Do not remove holder because speedometer gear may fall into transmission housing.

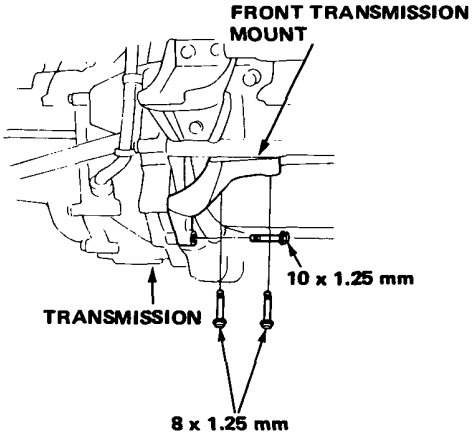
11. Remove the engine and wheelwell splash shields from the front end of the frame. (see section 5)
12. Remove the exhaust header pipe. (see section 5)
13. Disconnect the right and left lower arm ball joints and tie-rod end ball joints using the ball joint Remover.

CAUTION: Make sure the floor jack is positioned securely under the lower control arm, at the ball joint. Otherwise, torsion bar tension on the lower control arm may cause the arm to "jump" suddenly away from the steering knuckle as the ball joint is being removed.

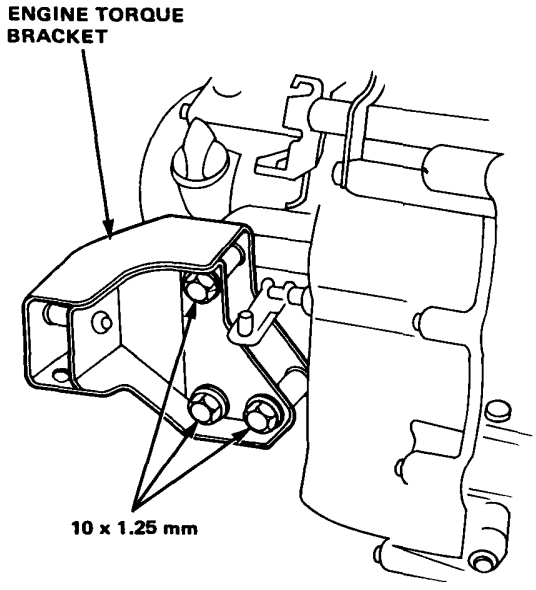
14. Turn right the steering knuckle outward as far as it will go. With screwdriver against the inboard CV joint, pry right axle out of transmission housing approximately 1/2 inch (to force its spring clip out of groove inside differential gear splines), then pull it out the rest of the way. Repeat on opposite side.
15. Attach a hoist chain to the 8 mm bolt near the distributor, then lift the engine slightly to unload the mounts.



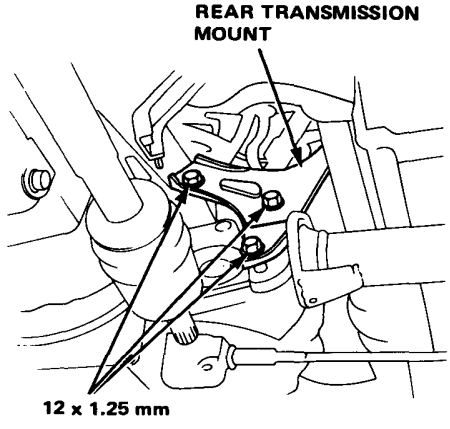
16. Raise transmission jack securely against transmission.
17. Remove the bolts from the front transmission mount.



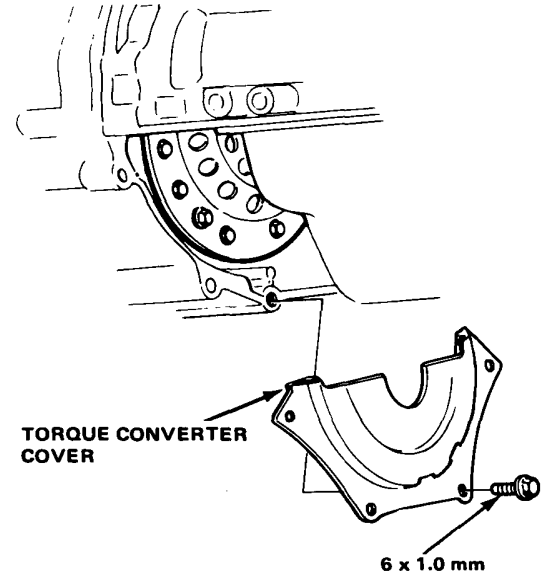
18. Remove the transmission housing bolts from the engine torque bracket.



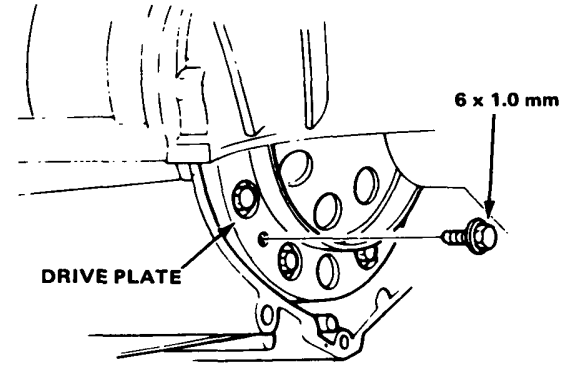
19. Remove the torque converter housing bolts from the rear transmission mount.



20. Remove the torque converter cover plate.



21. Remove the drive plate tightening bolts.



22. Remove the cotter pin from the shift cable control pin, then pull out the control pin.

23. Remove the cable holder and carefully remove the shift cable.

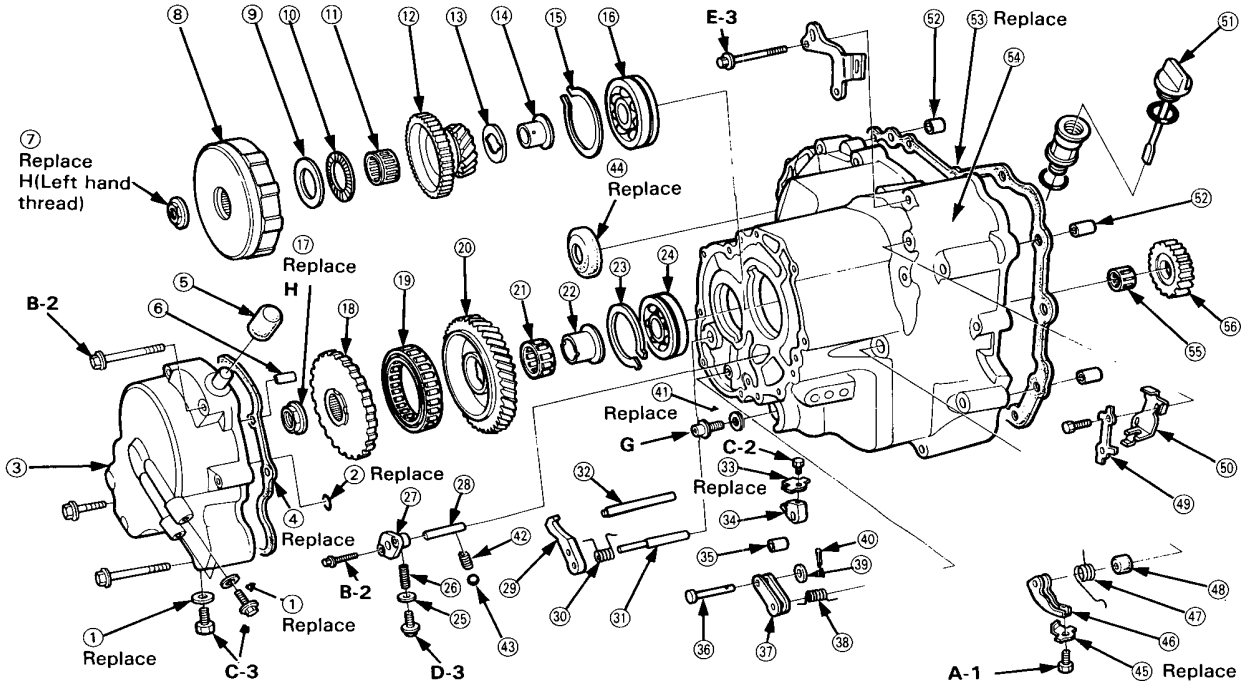
    CAUTION: Be careful not to lose the shift cable bushing.

24. Remove the one remaining transmission mounting bolt from the engine side.

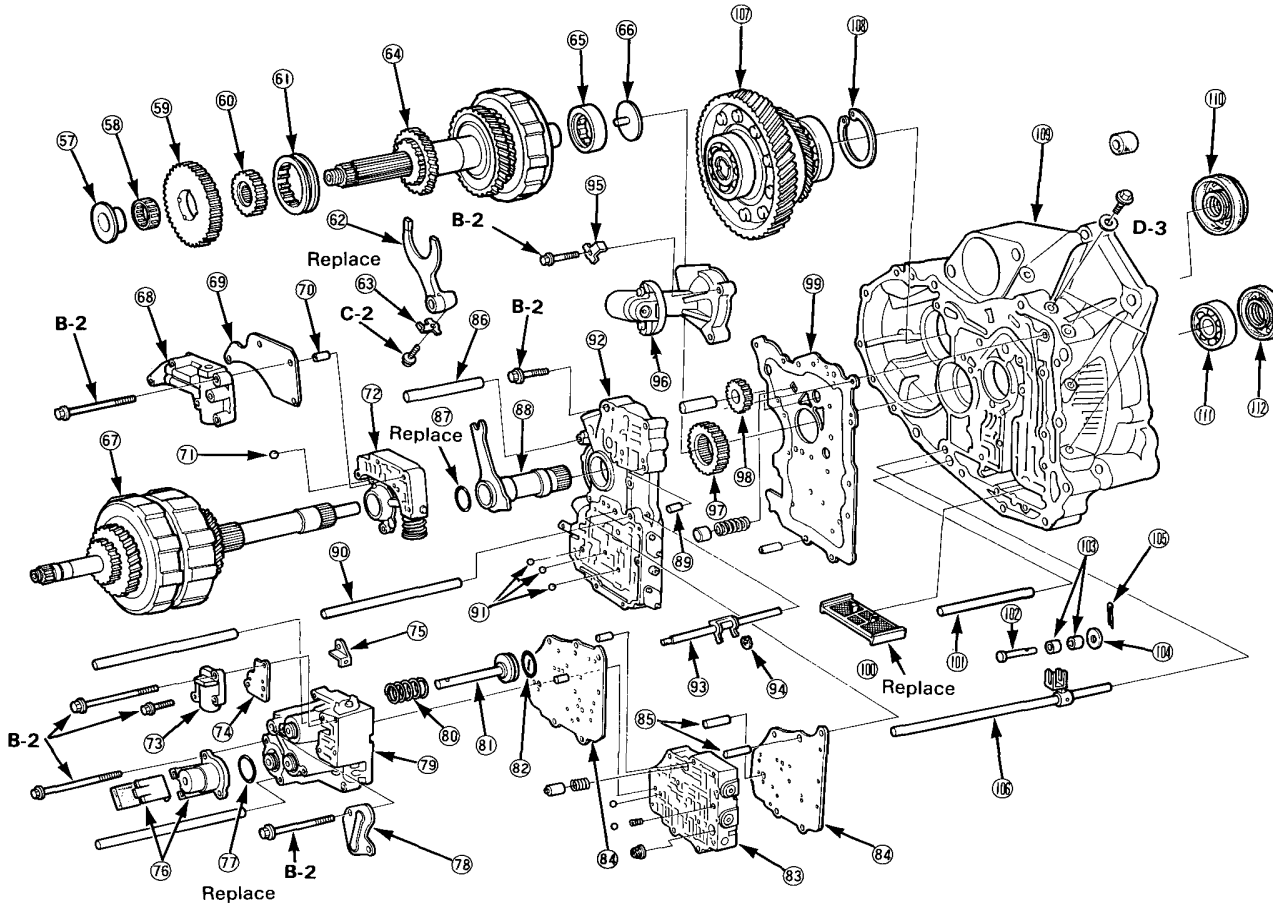
25. Pull transmission away from engine to clear the two 14 mm dowel pins, then lower the jack.

26. Remove torque converter from transmission.

Torque	Bolt size
A— 8 N·m (0.8 kg-m, 6 lb-ft)	1—5 x 0.8 mm
B—12 N·m (1.2 kg-m, 9 lb-ft)	2—6 x 1.0 mm
C—14 N·m (1.4 kg-m, 10 lb-ft)	3—8 x 1.25 mm
D—18 N·m (1.8 kg-m, 12 lb-ft)	
E—27 N·m (2.7 kg-m, 20 lb-ft)	
F—29 N·m (2.9 kg-m, 21 lb-ft)	
G—40 N·m (4.0 kg-m, 29 lb-ft)	
H—95 N·m (9.5 kg-m, 70 lb-ft)	



① **WASHER 8 mm**
② **O-RING 6 x 2.3 mm**
③ **END COVER**
Disassembly/Inspection, page 16-48
④ **GASKET**
⑤ **BREATHER CAP**
⑥ **DOWEL PIN 8 x 14 mm**
⑦ **LOCK NUT**
Removal, page 16-13
Installation, page 16-59
⑧ **1st CLUTCH**
Removal, page 16-13
Disassembly, page 16-37
Reassembly, page 16-41
⑨ **THRUST WASHER 26 mm**
⑩ **THRUST NEEDLE BEARING 31 x 47 x 2 mm**
⑪ **NEEDLE BEARING 31 x 36 x 18.5 mm**
⑫ **MAINSHAFT 1st GEAR**
⑬ **THRUST WASHER**
⑭ **COLLAR 26 mm**
⑮ **SNAP RING 68 mm**
⑯ **MAINSHAFT BEARING**
Replacement, page 16-45
⑰ **LOCK NUT**
Removal, page 16-13
Installation, page 16-59
⑱ **PARKING GEAR**
⑲ **ONE-WAY CLUTCH**
⑳ **COUNTERSHAFT 1st GEAR**
Disassembly/Inspection, page 16-22
㉑ **NEEDLE BEARING**
㉒ **1st GEAR COLLAR**
㉓ **SNAP RING 62 mm**
㉔ **COUNTERSHAFT BEARING**
㉕ **WASHER 8 mm**
㉖ **SPRING**
㉗ **REVERSE IDLER BEARING HOLDER**
Removal, page 16-15
㉘ **REVERSE GEAR SHAFT**
㉙ **PARKING PAWL**
㉚ **PARKING PAWL SPRING**
㉛ **PARKING PAWL SHAFT**
㉜ **STOP PIN**
㉝ **LOCK PLATE**
㉞ **PARKING LEVER**
㉟ **PARKING PAWL ROLLER**
㊱ **ROLLER PIN**
㊲ **PARKING SHIFT ARM**
㊳ **RETURN SPRING**
㊴ **WASHER 5 mm**
㊵ **COTTER PIN**
㊶ **WASHER 14 mm**
㊷ **SPRING**
㊸ **STEEL BALL**
㊹ **DIFFERENTIAL OIL SEAL**
Installation, page 16-45
㊺ **LOCK PLATE**
㊻ **THROTTLE CONTROL LEVER**
㊼ **THROTTLE CONTROL SHAFT SPRING**
Removal, page 16-15
Installation, page 16-57
㊽ **THROTTLE CONTROL SHAFT SEAL**
㊾ **LOCK PLATE**
㊿ **THROTTLE CONTROL CABLE BRACKET**
(51) **DIPSTICK**
(52) **DOWEL PIN 14 x 25 mm**
(53) **GASKET**
(54) **TRANSMISSION HOUSING**
(55) **NEEDLE BEARING**
(56) **REVERSE IDLER GEAR**
Replacement, page 16-56

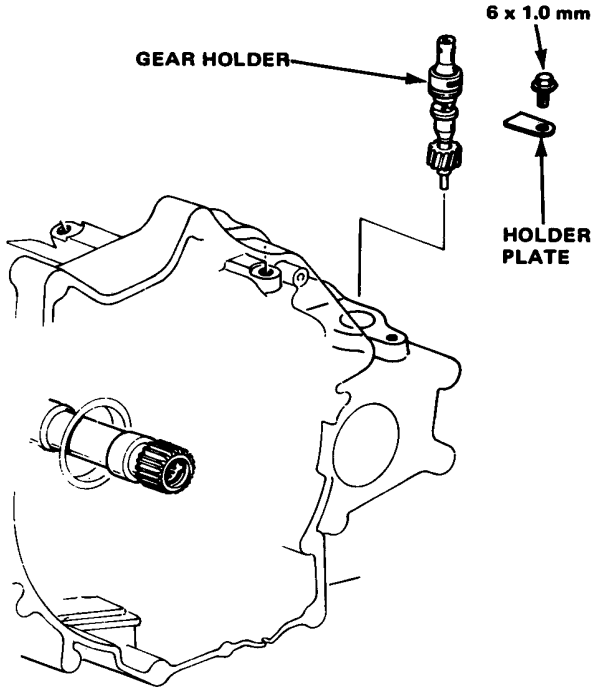


(57) **REVERSE GEAR COLLAR**
(58) **NEEDLE BEARING**
(59) **COUNTERSHAFT REVERSE GEAR**
(60) **SELECTOR HUB**
(61) **REVERSE GEAR SELECTOR**
(62) **REVERSE SHIFT FORK**
(63) **LOCK PLATE**
(64) **COUNTERSHAFT ASSY**
Disassembly/Inspection, page 16-33
(65) **COUNTERSHAFT NEEDLE BEARING**
(66) **OIL GUIDE PLATE**
(67) **MAINSHAFT ASSY**
Disassembly/Inspection page 16-32
(68) **LOCK UP SHIFT VALVE BODY**
Removal, page 16-19
Disassembly, page 16-29
(69) **SEPARATOR PLATE**
(70) **DOWEL PIN**
(71) **STEEL BALL**
(72) **REGULATOR VALVE BODY**
Removal, page 16-19
Repair, page 16-25
Disassembly, page 16-28
(73) **MODULATOR VALVE BODY**
Removal, page 16-18
(74) **SEPARATOR PLATE**
(75) **CHECK VALVE STOP PLATE**
(76) **4th ACCUMULATOR COVER**
(77) **O-RING**
(78) **2nd/3rd ACCUMULATOR COVER**
(79) **SERVO VALVE BODY ASSY**
Removal, 16-17
Disassembly, 16-30
(80) **RETURN SPRING**
(81) **SERVO VALVE**
(82) **O-RING 31 x 2.7 mm**
(83) **SECONDARY VALVE BODY ASSY**
Removal, 16-18
Disassembly/Inspect, 16-24
(84) **SEPARATOR PLATE**
(85) **DOWEL PIN**
(86) **STOP PIN**
(87) **O-RING**
(88) **STATOR SHAFT**
(89) **DOWEL PIN**
(90) **1st CLUTCH PIPE**
(91) **STEEL BALLS**
(92) **MAIN VALVE BODY ASSY**
Remove, 16-20
Disassembly, 16-23
(93) ***THROTTLE CONTROL SHAFT***
(94) **E-CLIP**
(95) **LOCK PLATE**
(96) **GOVERNOR VALVE**
Removal, 16-17
Disassembly/Inspection, 16-31
(97) **PUMP DRIVE GEAR**
(98) **PUMP DRIVEN GEAR**
(99) **MAIN VALVE SEPARATOR PLATE**
(100) **FILTER SCREEN**
(101) **SUCTION PIPE**
(102) **MANUAL VALVE PIN**
(103) **ROLLER**
(104) **WASHER 5 mm**
(105) **COTTER PIN**
(106) **CONTROL SHAFT**
(107) **DIFFERENTIAL**
(108) **SNAP RING 80 mm**
(109) **TORQUE CONVERTER HOUSING**
(110) **DIFFERENTIAL OIL SEAL**
(111) **MAINSHAFT BEARING**
(112) **MAINSHAFT OIL SEAL**

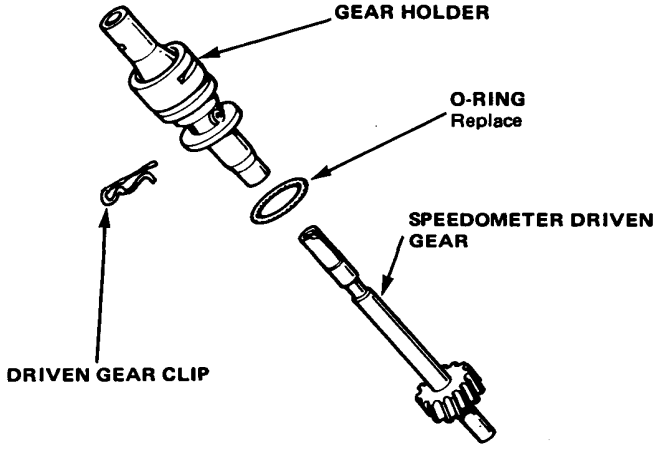
Speedometer Driven Gear

Replacement

1. Remove the 6 x 1.0 mm bolt, then pull speedometer gear holder out.



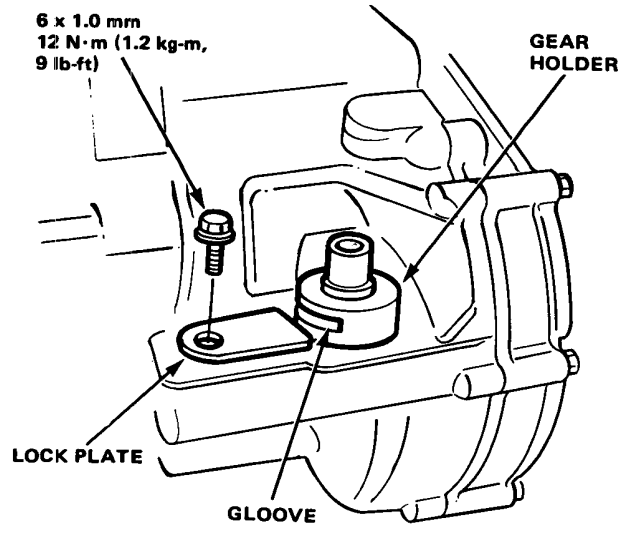
2. Remove the speedometer driven gear from the gear holder.



3. Remove the driven gear clip, then speedometer driven gear. Check the gear for wear, and if excessively worn replace it.

4. Assemble the gear holder and install the new speedometer driven gear.

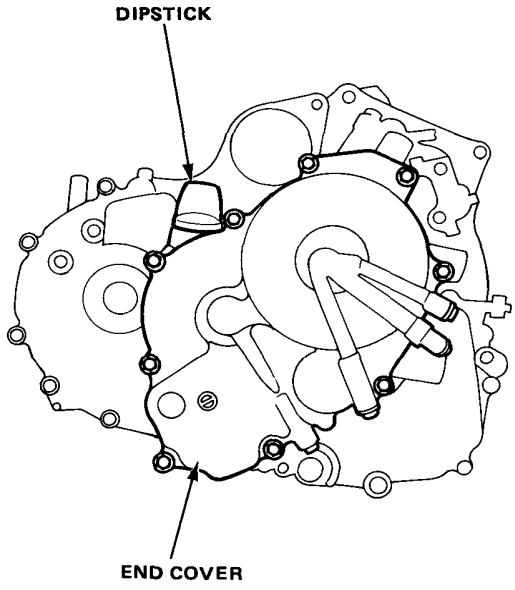
5. Align slot in the gear holder with the lock plate then set the holder in the clutch housing. Tighten the lock plate with the 6 x 10 mm bolt.



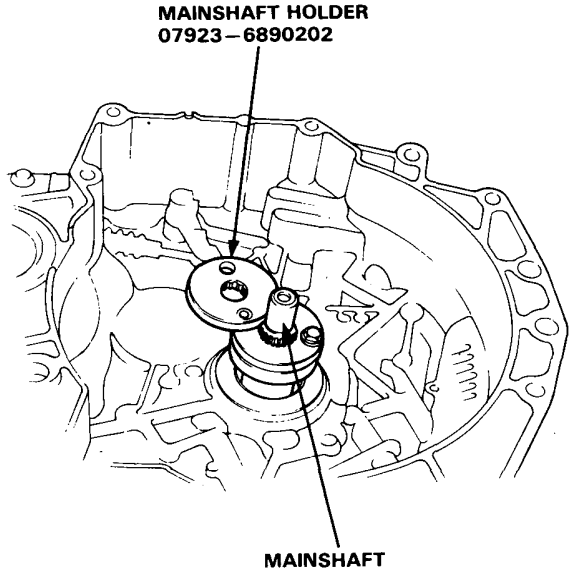
Transmission Housing

Removal

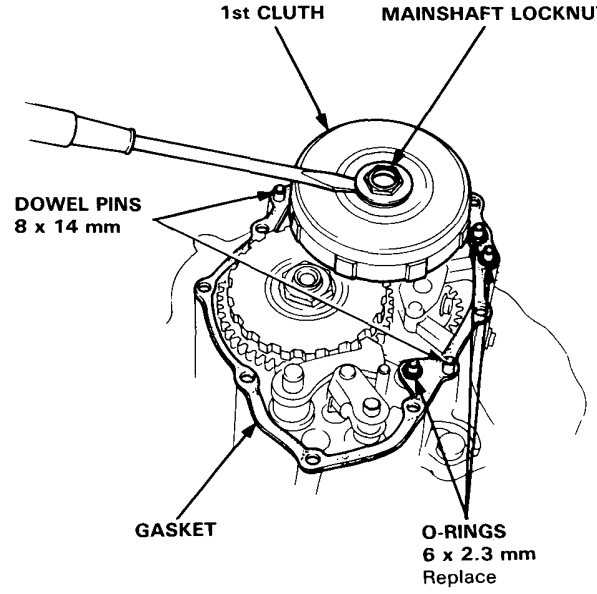
1. Remove the dipstick.
2. Remove the nine bolts from the end cover, then remove the cover.



3. Shift the transmission to PARK.
4. Lock the mainshaft using the mainshaft holder.

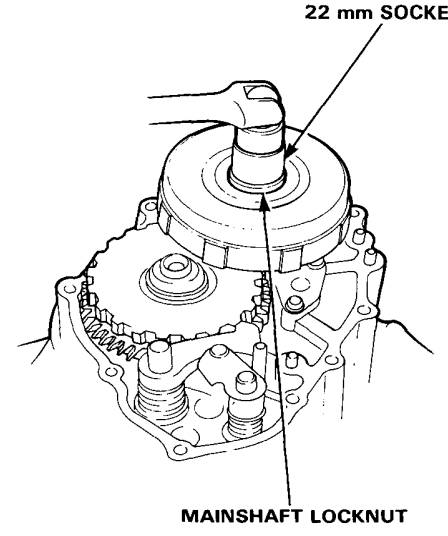


5. Remove the end cover gasket, dowel pins, and O-rings.
6. Pry the staked edge of the locknut flange out of the notch in the 1st clutch.



7. Remove the mainshaft locknut.

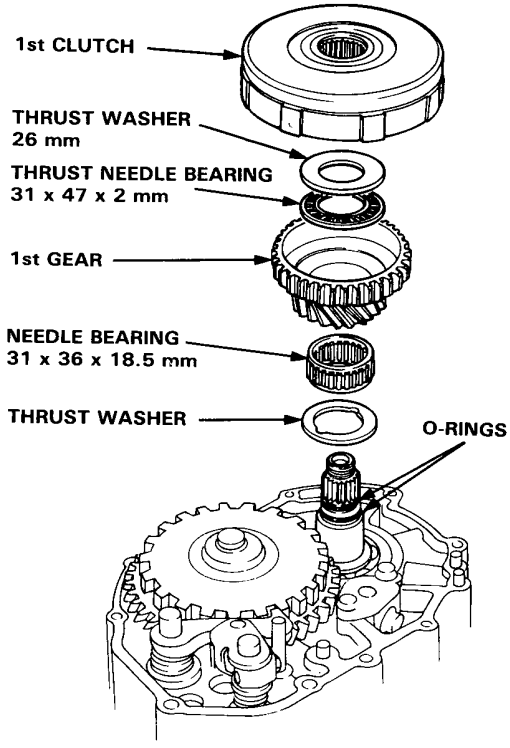
CAUTION: The mainshaft locknut has left-hand threads.



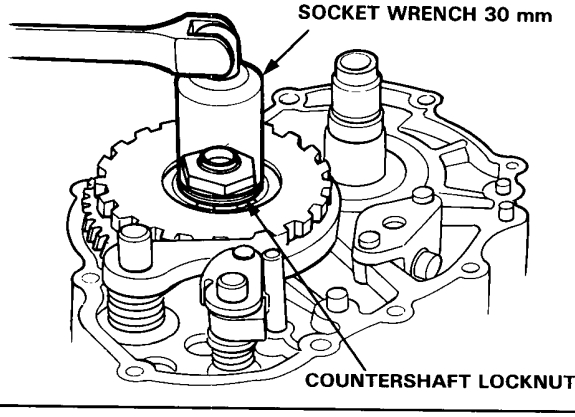
(cont'd)

Removal (cont'd)

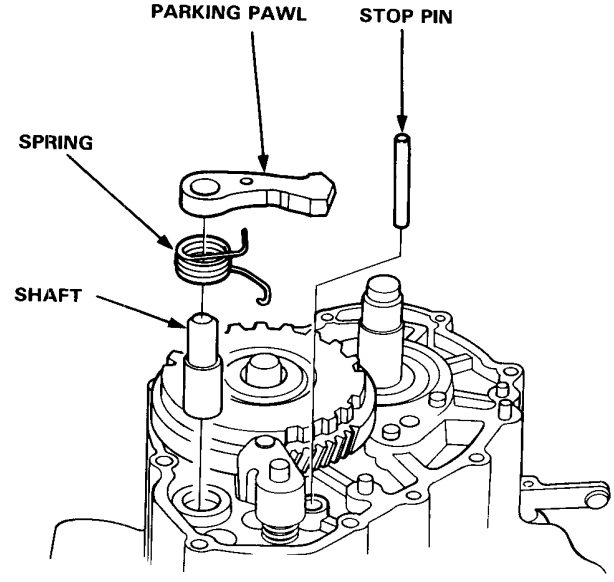
8. Remove the 1st clutch.
9. Remove the needle bearing and thrust washer from the mainshaft.
10. Remove the O-rings and first gear from the mainshaft.



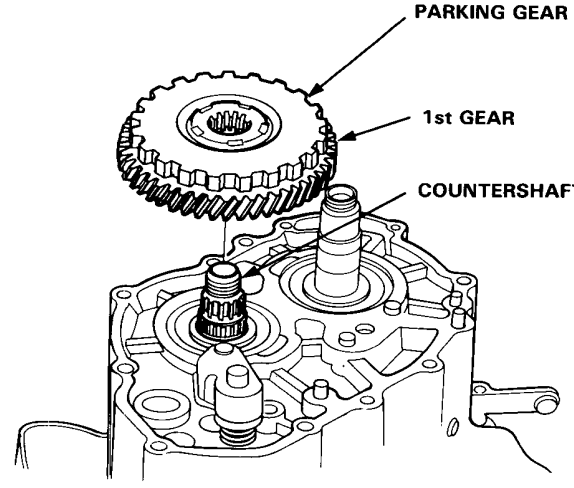
11. Pry the staked edge of the locknut out of the notch in the parking gear.
12. Remove the countershaft locknut.



13. Remove the parking pawl, shaft, stop pin and spring.

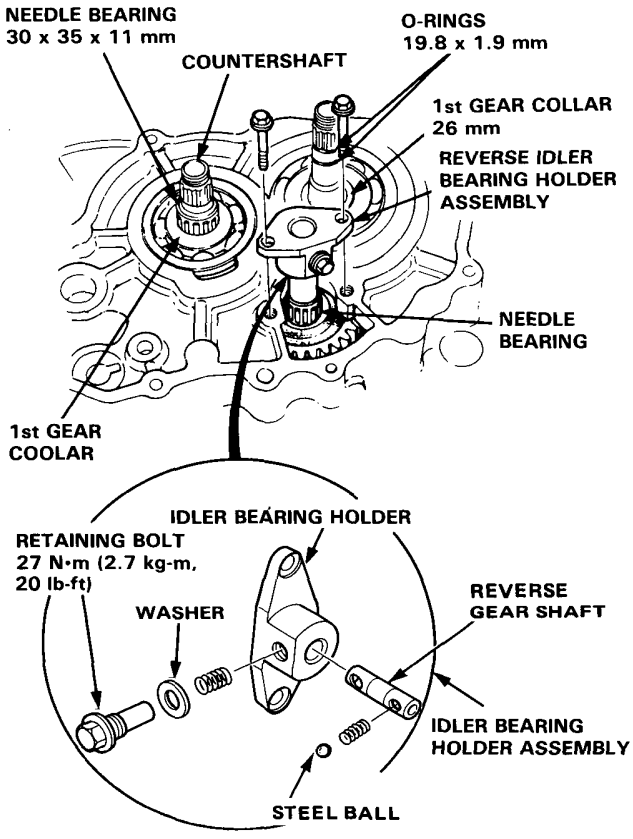


14. Remove the parking gear and countershaft 1st gear as a unit.



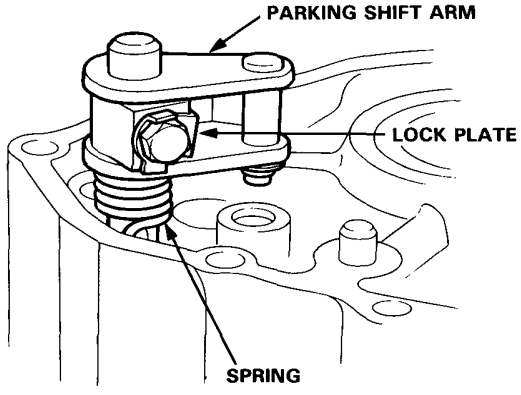
15. From the countershaft, remove the needle bearing and 1st gear collar. From the mainshaft, remove the 1st gear collar.

16. Remove the reverse idler bearing holder assembly.

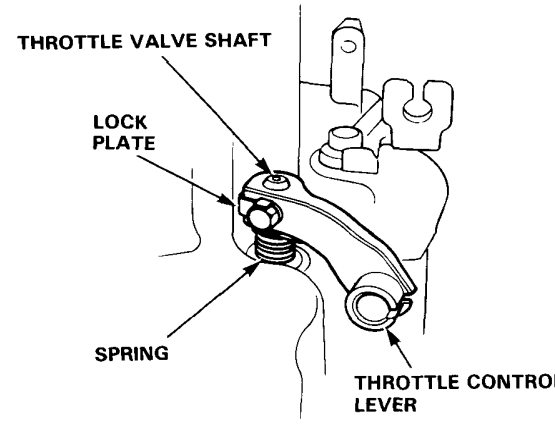


17. Bend down the tab on the lock plate under the parking shift arm bolt.

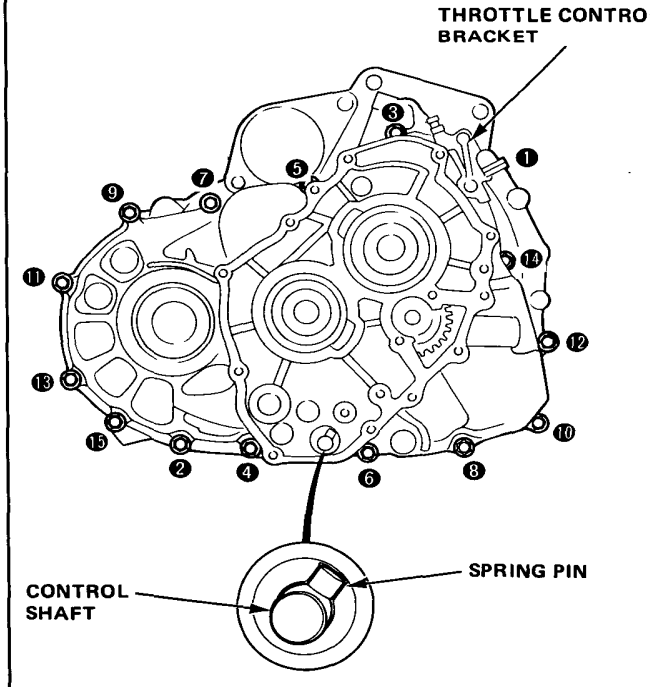
18. Remove the bolt, then remove the parking shift arm.



19. Bend down the tab on the throttle control lever bolt lock plate, then remove the bolt. Now, remove the throttle control lever and spring from the throttle valve shaft.



20. Remove the 8 x 1.25 mm bolts, (1) thru (15), in the sequence shown.



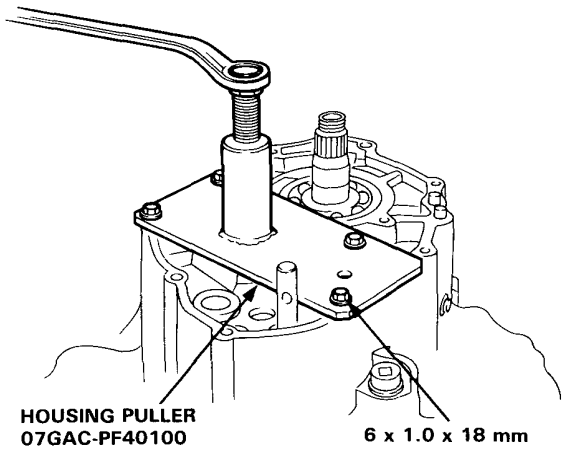
21. Align the control shaft spring pin with the cutout in the transmission housing.

(cont'd)

Transmission Housing

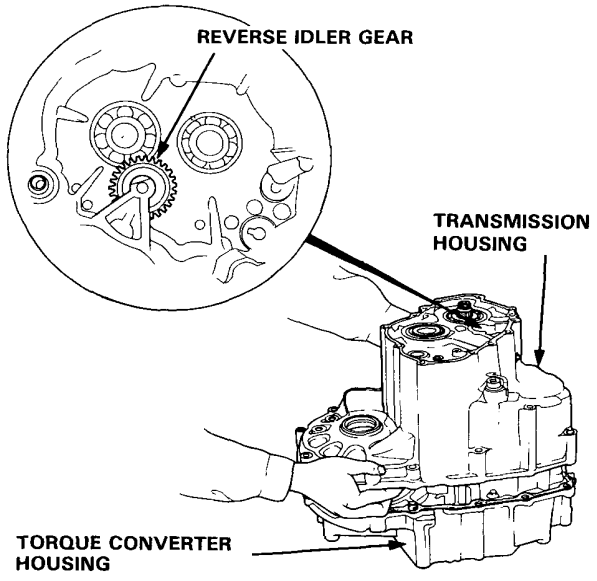
Removal (cont'd)

22. Install the transmission housing puller over the countershaft with four bolts and tighten securely. Then screw in the puller bolt against the end of the countershaft until the transmission housing comes loose.



23. Remove the puller and separate the housings. Remove the reverse idler gear and needle bearing from the transmission housing.

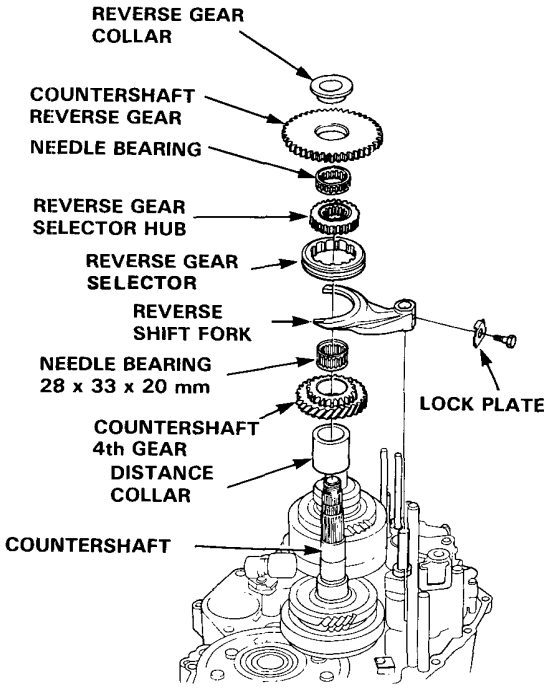
24. Remove the gasket and the dowel pins.



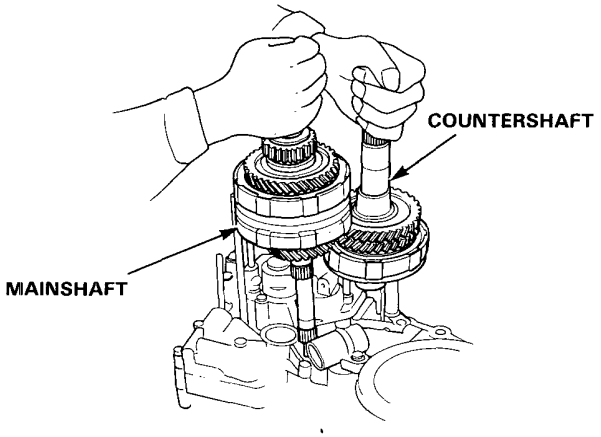
Mainshaft/ Countershaft

Removal

1. Remove the reverse gear collar, countershaft reverse gear and needle bearing.



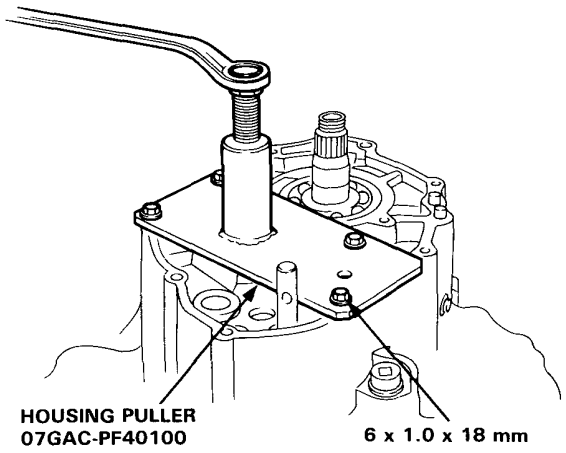
2. Bend down the tab on the lock plate and remove the bolt from the reverse shift fork.
3. Remove the reverse shift fork and reverse gear selector as a unit.
4. Remove the selector hub, countershaft 4th gear, needle bearing and distance collar.
5. Remove the mainshaft and countershaft together. NOTE: It will be necessary to pull up the countershaft at a slight angle to clear the governor.



Transmission Housing

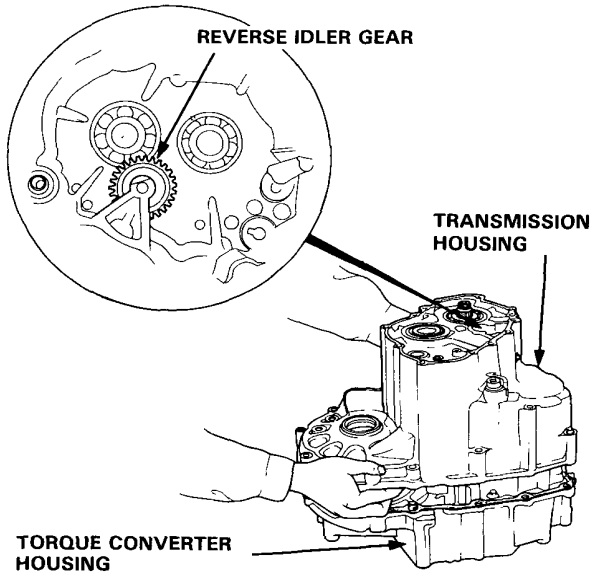
Removal (cont'd)

22. Install the transmission housing puller over the countershaft with four bolts and tighten securely. Then screw in the puller bolt against the end of the countershaft until the transmission housing comes loose.



23. Remove the puller and separate the housings. Remove the reverse idler gear and needle bearing from the transmission housing.

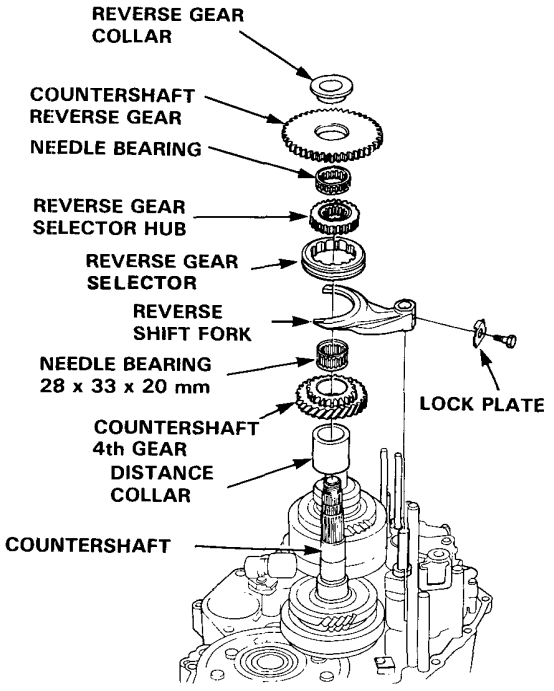
24. Remove the gasket and the dowel pins.



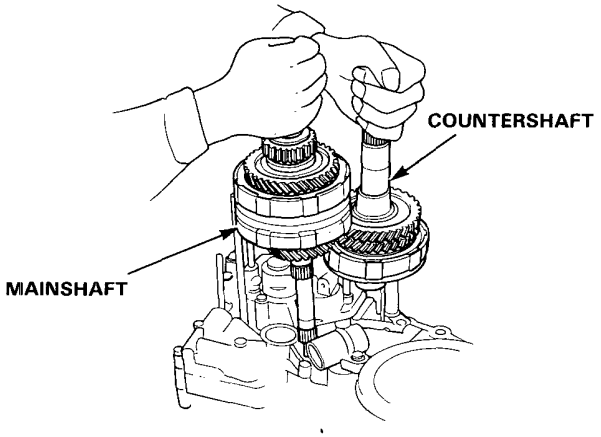
Mainshaft/ Countershaft

Removal

1. Remove the reverse gear collar, countershaft reverse gear and needle bearing.



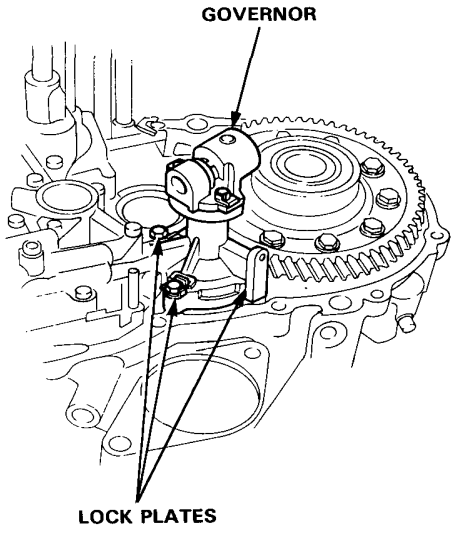
2. Bend down the tab on the lock plate and remove the bolt from the reverse shift fork.
3. Remove the reverse shift fork and reverse gear selector as a unit.
4. Remove the selector hub, countershaft 4th gear, needle bearing and distance collar.
5. Remove the mainshaft and countershaft together. NOTE: It will be necessary to pull up the countershaft at a slight angle to clear the governor.



Governor Valve

Removal

Bend down the tabs on the lock plates, remove the bolts holding the governor to the torque converter housing, and remove the governor.



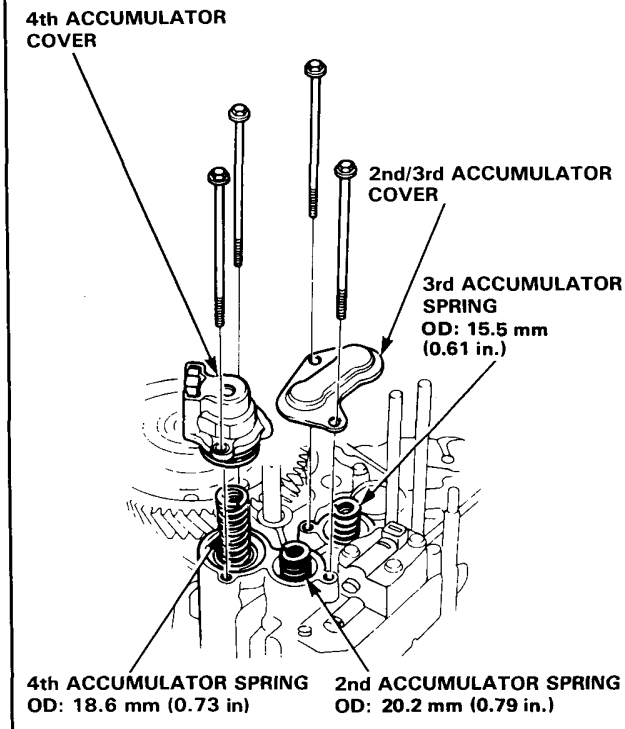
Main Valve Body

Removal

1. Remove the accumulator covers.

   CAUTION: Accumulator covers are spring loaded; to prevent stripping the threads in the torque converter housing, press down on the accumulator covers while unscrewing the bolts in a criss-cross pattern.

2. Remove the accumulator springs.

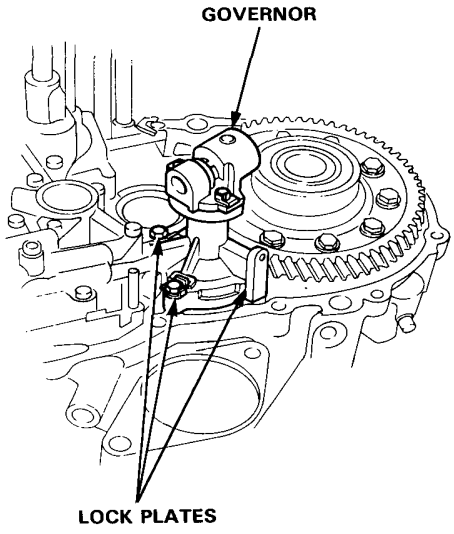


(cont'd)

Governor Valve

Removal

Bend down the tabs on the lock plates, remove the bolts holding the governor to the torque converter housing, and remove the governor.



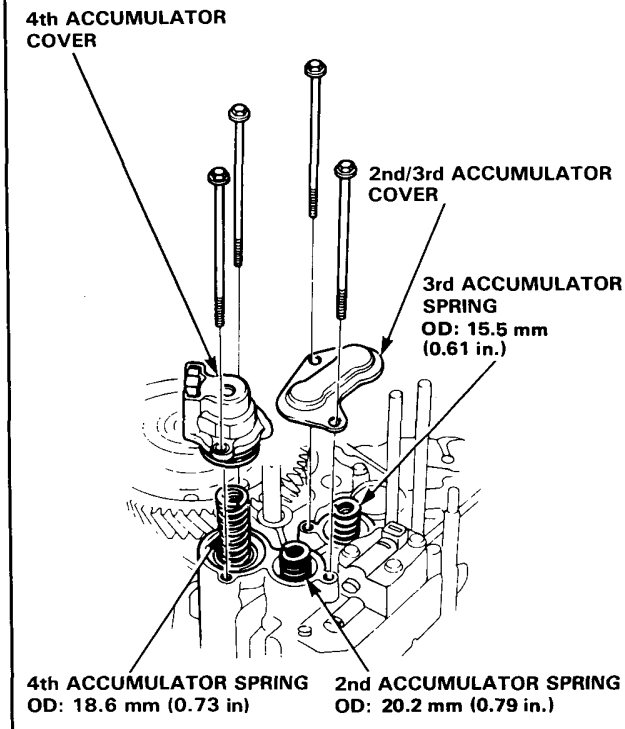
Main Valve Body

Removal

1. Remove the accumulator covers.

   CAUTION: Accumulator covers are spring loaded; to prevent stripping the threads in the torque converter housing, press down on the accumulator covers while unscrewing the bolts in a criss-cross pattern.

2. Remove the accumulator springs.



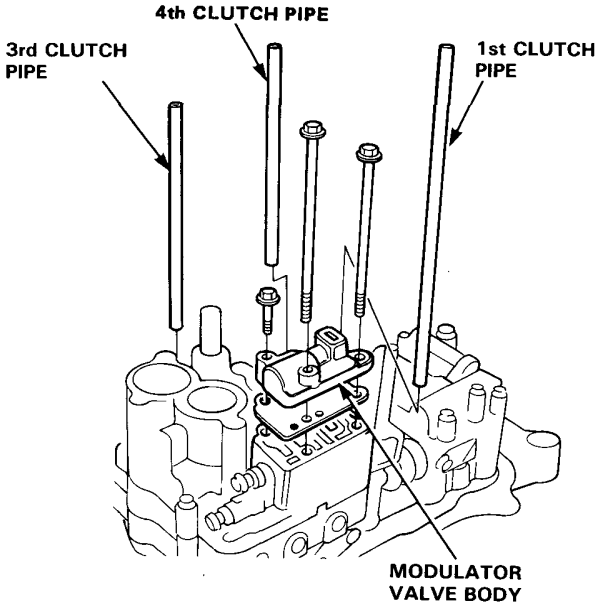
(cont'd)

Main Valve Body

Removal (cont'd)

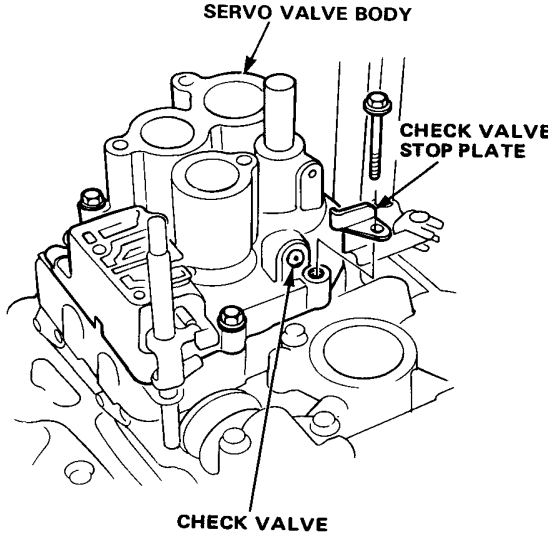
3. Remove the three bolts attaching the modulalor valve body.

4. Remove the 1st, 4th and 3rd clutch pipes.



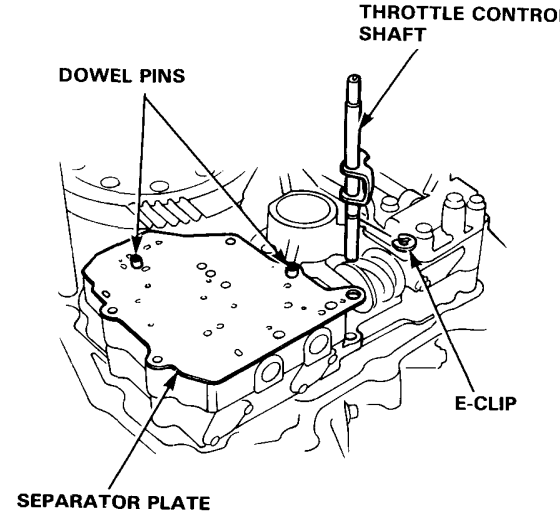
5. Remove the servo valve body (3 bolts).

6. Remove the check valve stop plate.



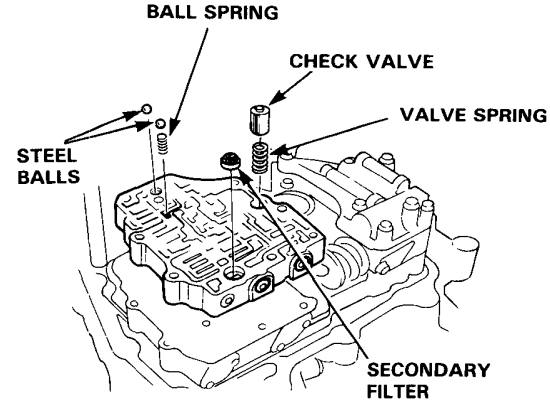
7. Remove the E-clip. Then remove the thottle control shaft from the separator plate.

8. Remove the separator plate and dowel pins.

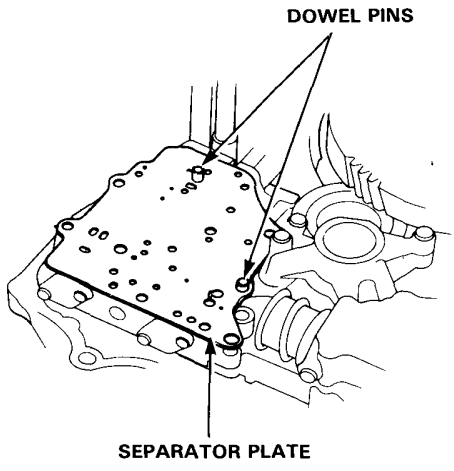


9. Remove the secondary valve body, being careful not to lose the 2 steel balls, ball spring, check valve and spring, secondary filter.

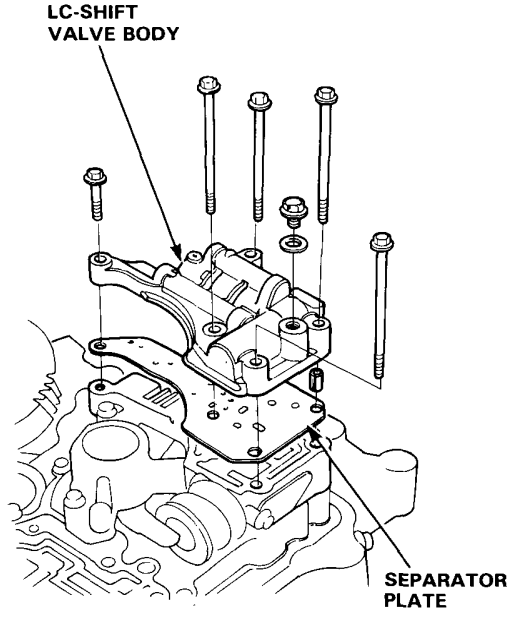
CAUTION: Do not use a magnet to remove the steel balls; it may magnetize the balls.



10. Remove the separator plate and dowel pins.

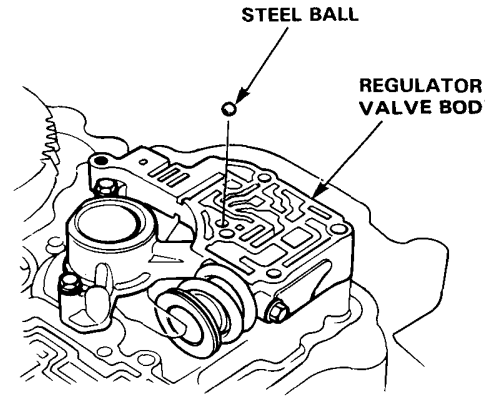


11. Remove the LC-Shift valve body and separator plate (5 bolts).

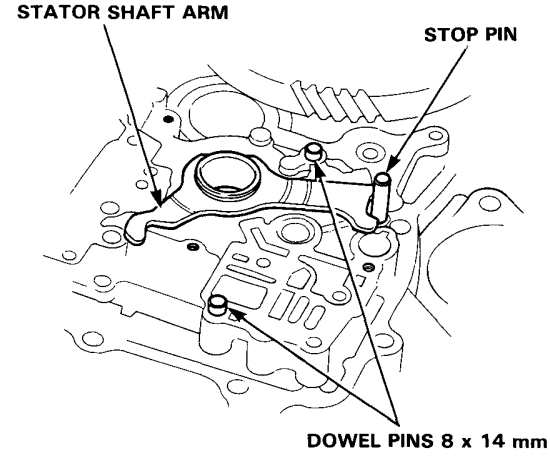


12. Remove the regulator valve body being careful not to lose the steel ball.

CAUTION: Do not use a magnet to remove the steel ball; it may magnetize the ball.



13. Remove the stator shaft arm, dowel pins and stop pin.

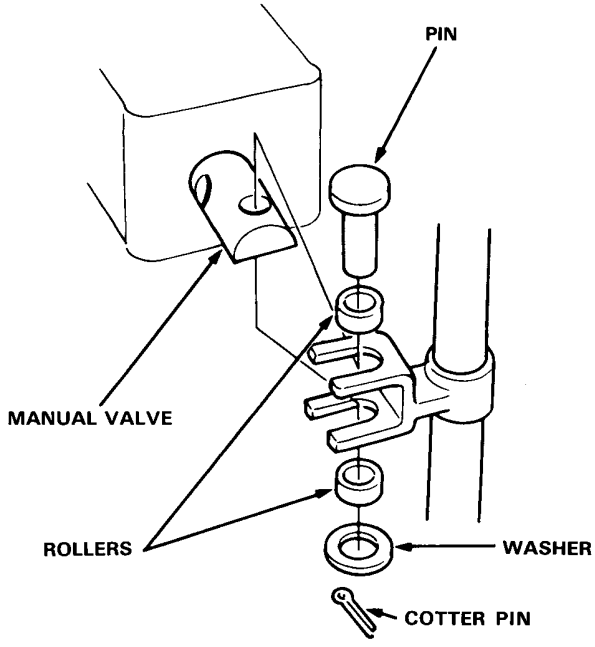


(cont'd)

Main Valve Body

Removal (cont'd)

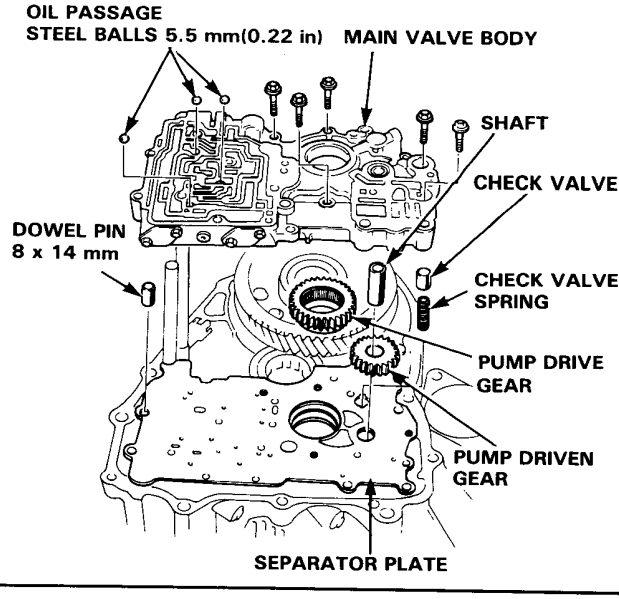
14. Remove the cotter pin , washer, rollers, and pin from the manual valve.



15. Remove the main valve body being careful not to lose the 3 steel balls, check ball spring, torque converter check valve and spring.

CAUTION: Do not use a magnet to remove the steel balls; it may magnetize the balls.

NOTE: Top oil passage steel ball in this drawing has a spring beneath it.

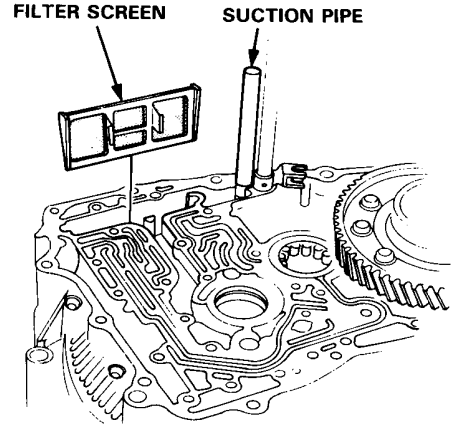


16. Remove the pump gears and shaft.

17. Remove the separator plate, dowel pins, check valve, and spring.

18. Remove the filter screen and suction pipe.

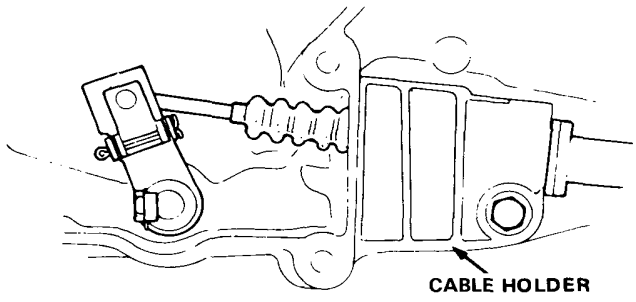
NOTE: Do not reuse filter screen; install a new one on reassembly.



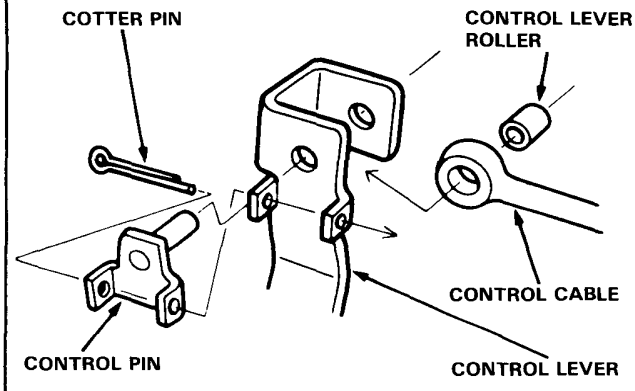
Control Shaft

Removal

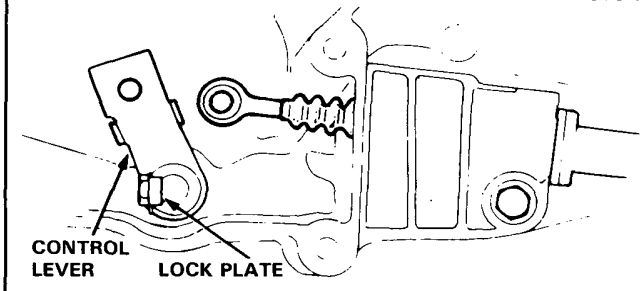
1. Remove the cable holder.



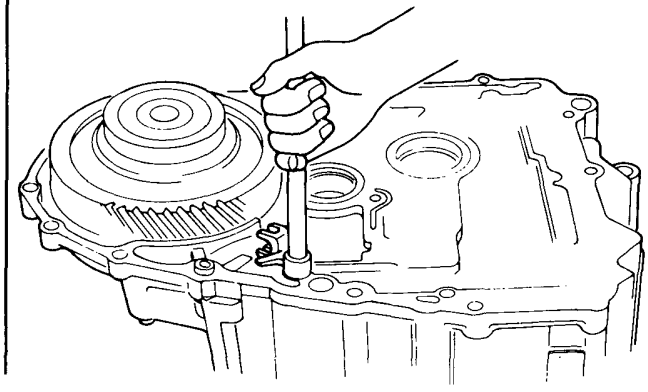
2. Remove the cotter pin, control pin, and control lever roller from the control lever.



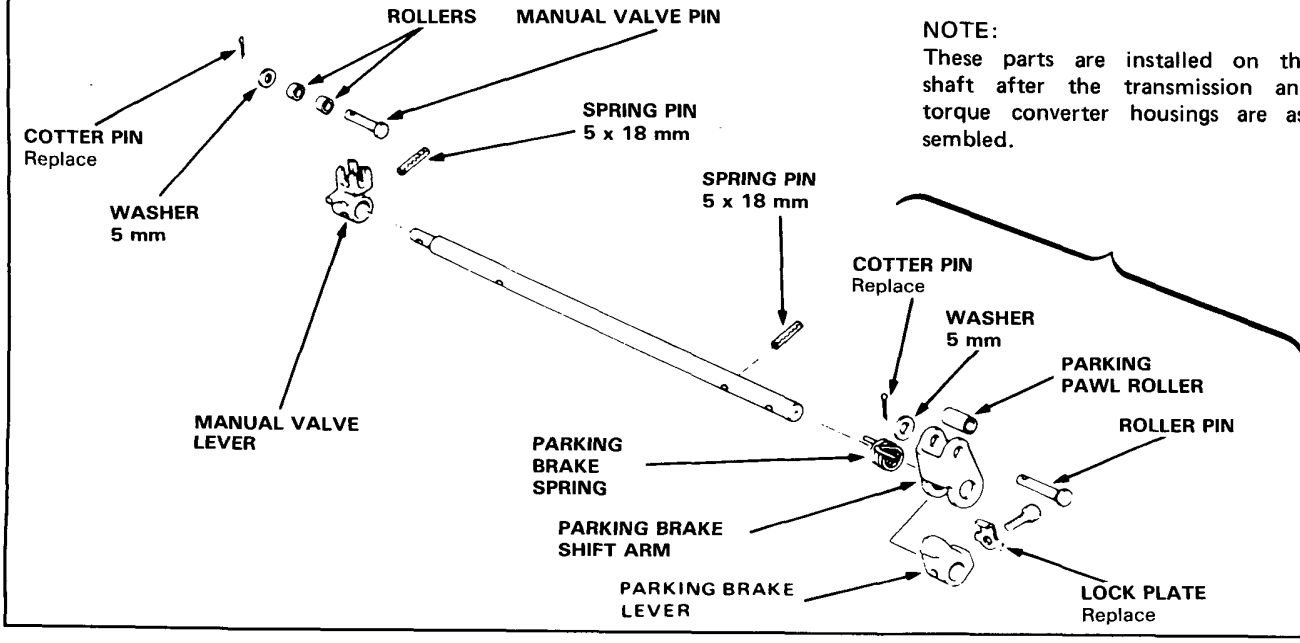
3. Bend down the tab on the lock plate under the bolt in the control lever. Then remove the bolt and lever.



4. Turn the torque converter housing over and remove the control shaft.



Disassembly/Reassembly

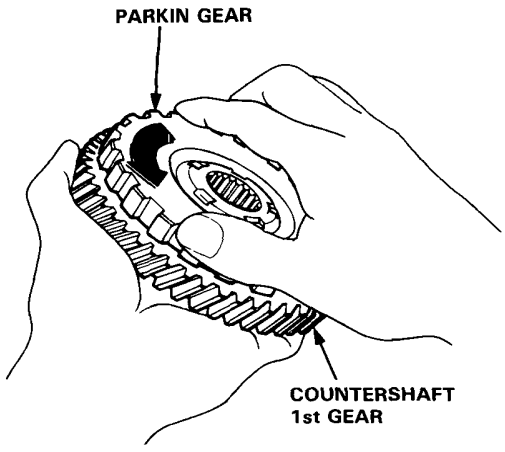


NOTE:
These parts are installed on the shaft after the transmission and torque converter housings are assembled.

One-Way Clutch/Parking Gear

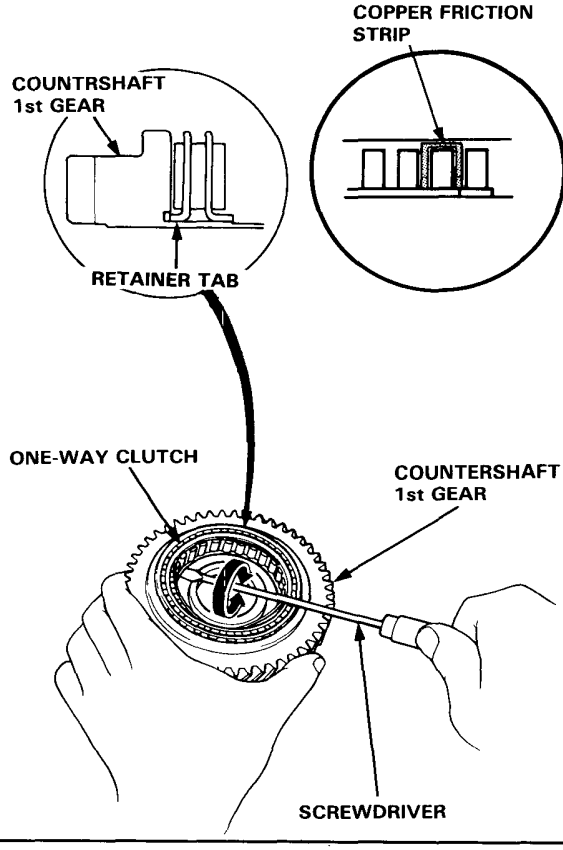
Disassembly and Inspection

1. Separate the countershaft 1st gear from the parking gear by turning the parking gear in the direction shown.



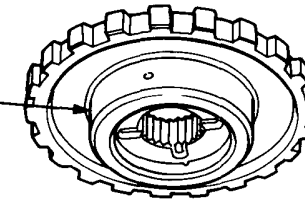
2. Remove the one-way clutch by prying it up with the end of a screwdriver.

CAUTION: Do not pry on the three copper friction strips; if you break a strip, the clutch will not work properly.

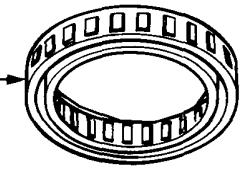


Inspect the parts as follows:

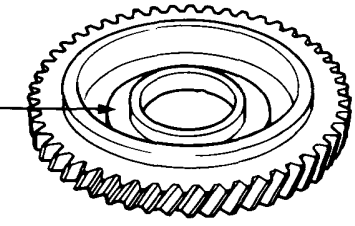
Inspect the parking gear for wear or scoring



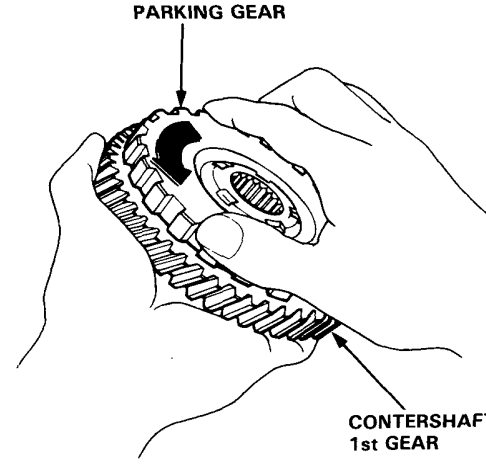
Inspect the one-way clutch for damage or faulty movement



Inspect the countershaft 1st gear for wear or scoring



After the parts are assembled, hold the countershaft 1st gear and turn the parking gear in direction shown to be sure it turns freely.

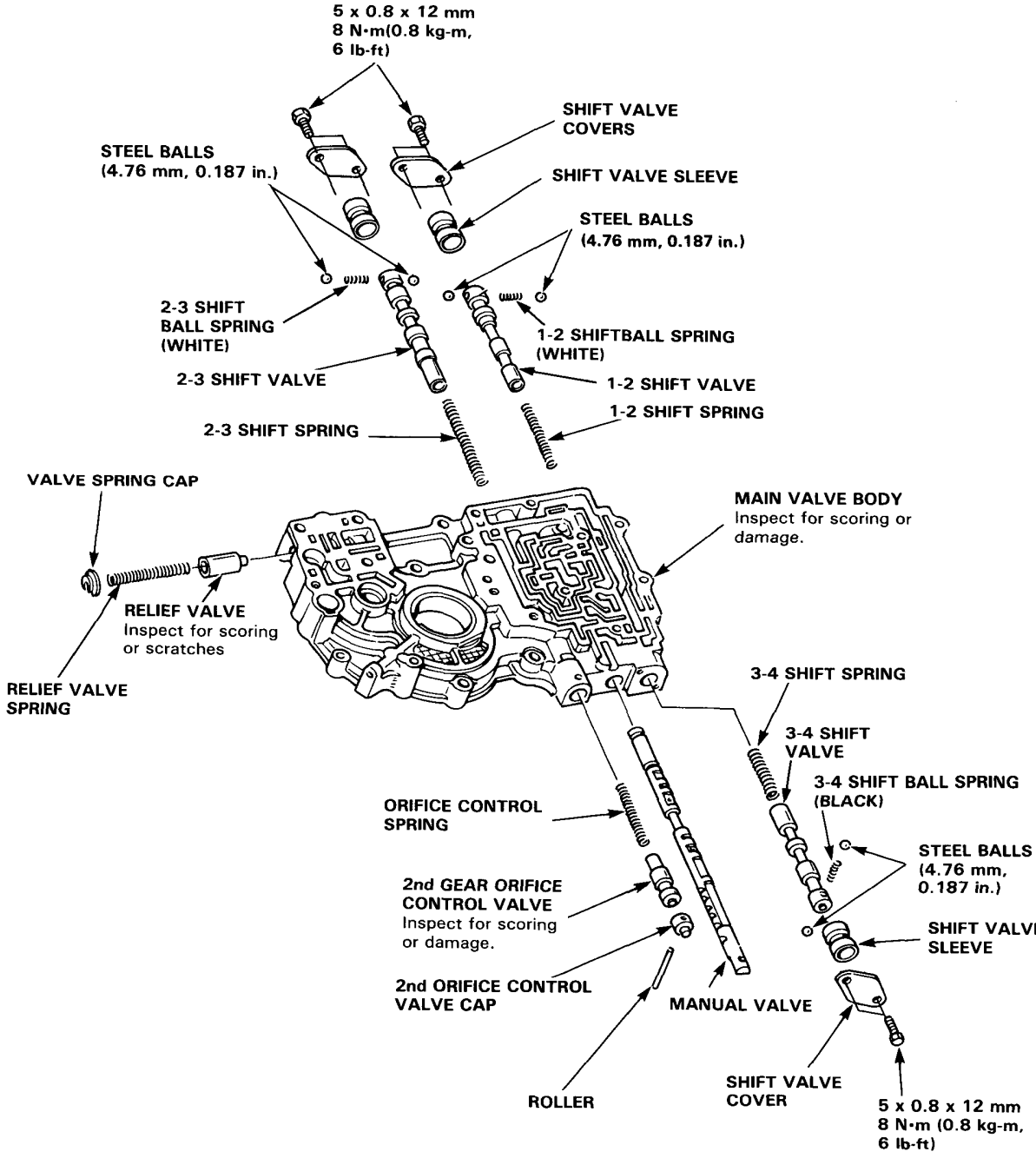


Main Valve Body

Disassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement. If any fail to slide freely, see valve Body Repair on page 16-25.
- See page 3-8 for spring specifications.
- Coat all parts with ATF before reassembly.

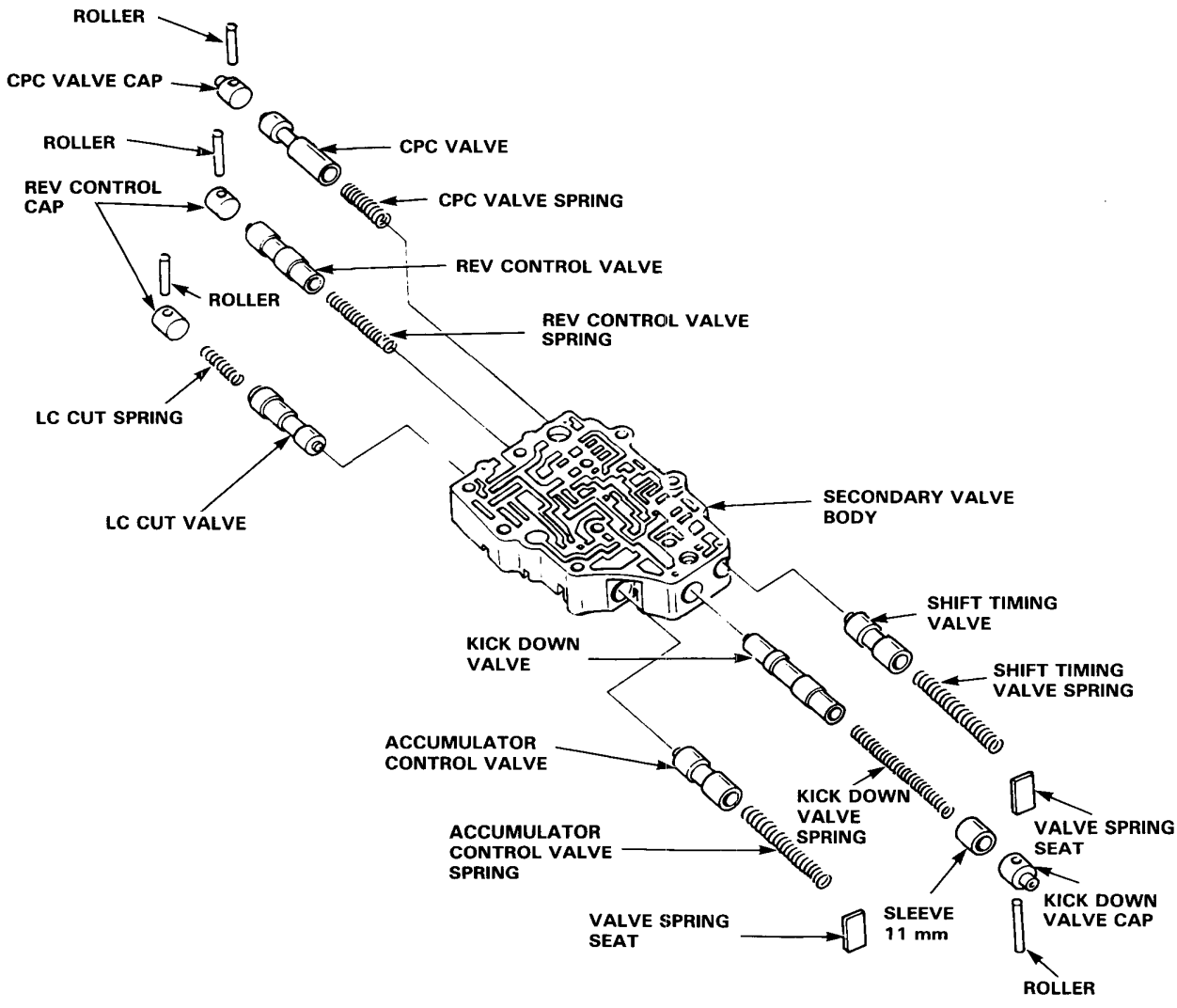


Secondary Valve

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly is solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check all valves for free movement. If any fail to slide freely, see valve Body Repair on page 16-25.
- See page 3-8 for spring specifications.



Repair

NOTE: This repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. You may use this procedure to free the valves in the main valve body, regulator valve body, lock-up shift valve body, and servo valve body. DO NOT use this procedure to free the valves in the governor; if any governor valves are stuck, the governor must be replaced as an assembly.

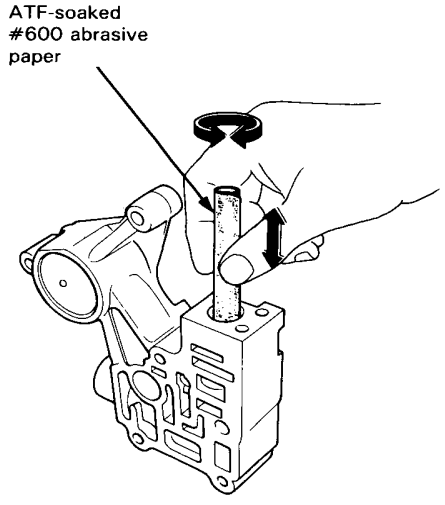
1. Soak a sheet of #600 abrasive paper in ATF for about 30-minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore.

CAUTION: It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.

3. Inspect the valve for any scuff marks. Use the ATF-soaked #600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.

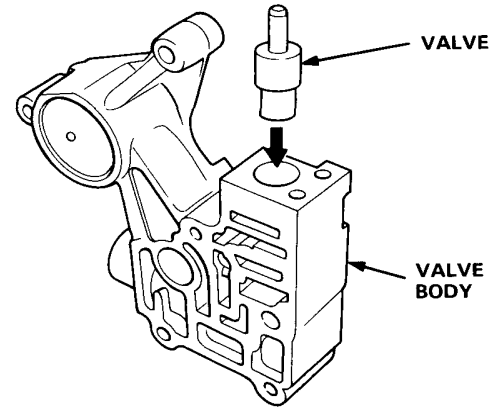
4. Roll up half a sheet of ATF-soaked paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

CAUTION: The valve body is aluminum and doesn't require much polishing to remove any burrs.



5. Remove the #600 paper and thoroughly wash the entire valve body in solvent, then dry with compressed air.

6. Coat the valve with ATF then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat step 4, then retest.



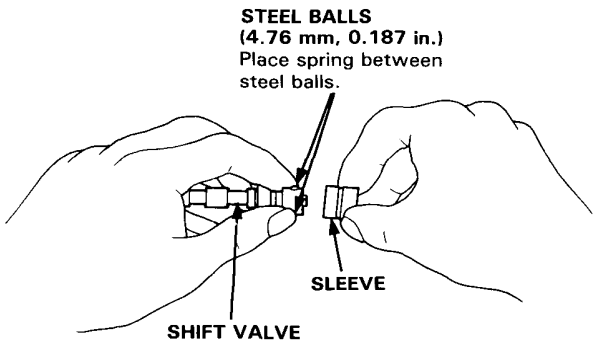
7. Remove the valve and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

Main Valve Body

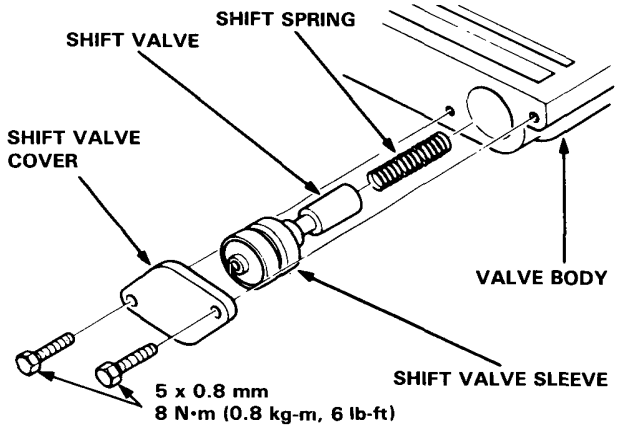
Reassembly

NOTE: Coat all parts with ATF before assembling.

1. Slide the spring into the hole in the big end of the shift valve.
   While holding the steel balls with the tips of your fingers, put the sleeve over valve.

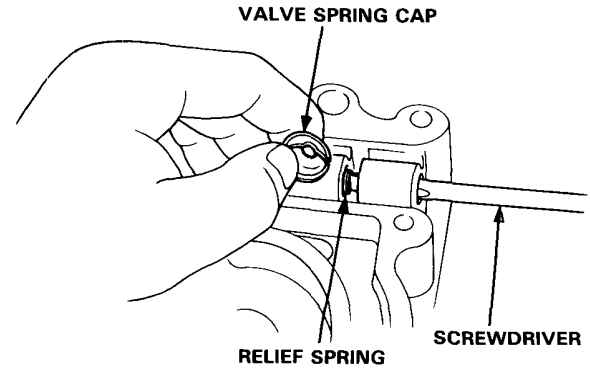


2. Place the shift spring in the valve, then slip it into the valve body and install the valve cover.

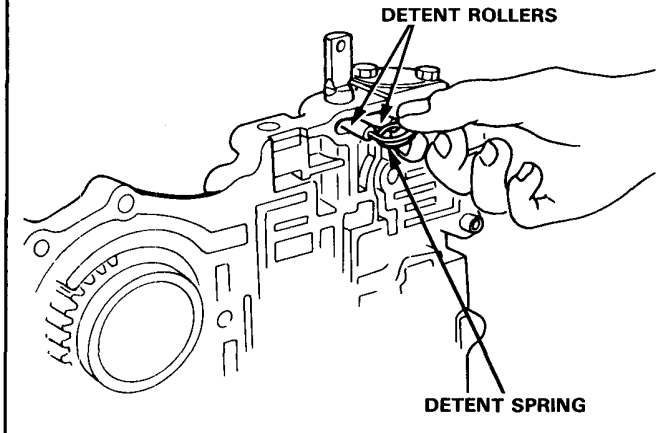


3. Set the relief spring in the relief valve and install it in the main valve body.

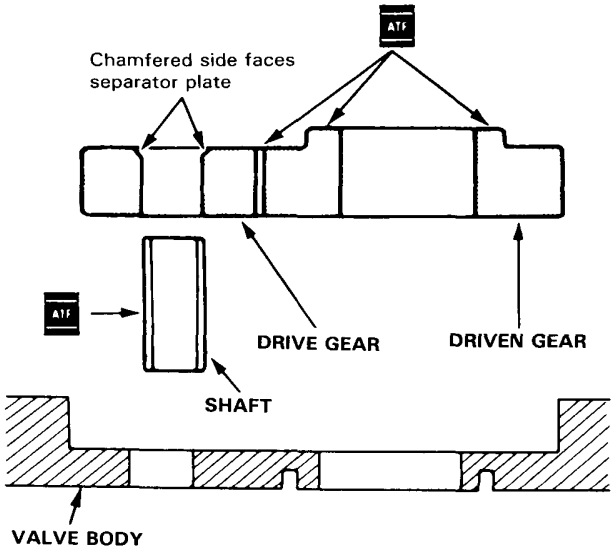
4. Install the spring with a screwdriver, then install the check valve cap with the cutout aligned with the screwdriver.



5. Install the manual valve, detent rollers and spring.

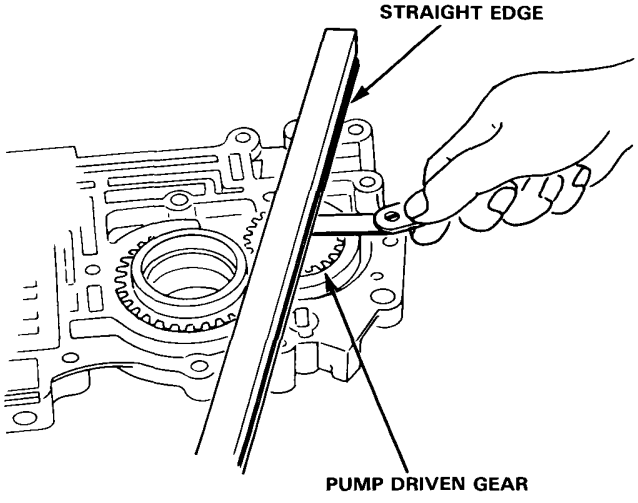


6. Install the pump gears and shaft in the main valve body.



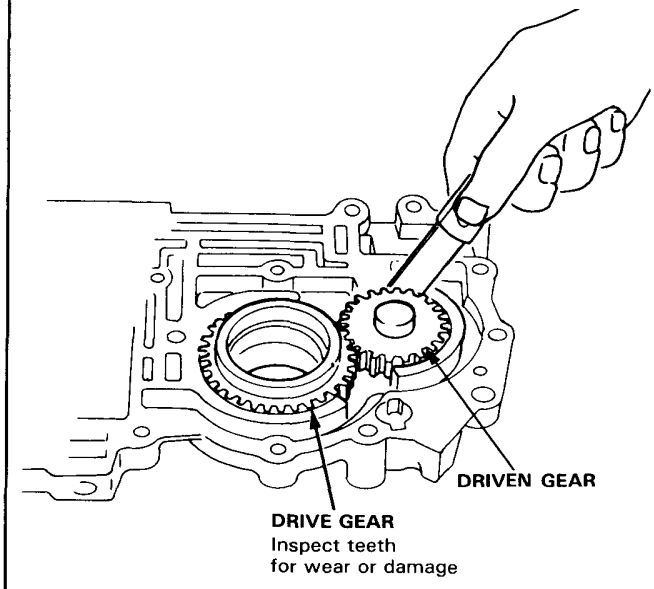
7. Measure the thrust clearance of the driven gear-to-valve body.

Drive/Driven Gear thrust (Axial) Clearance:
Standard (New): 0.03—0.05 mm
(0.001—0.002 in.)
Service Limit: 0.08 mm (0.003 in.)



8. Install the oil pump shaft and measure the side clearance of the drive and driven gears.

Pump Gears Side (Radial) Clearance:
Standard (New): Drive gear 0.21—0.27 mm
(0.008—0.010 in.)
Driven gear 0.05—0.09 mm
(0.002—0.004 in.)

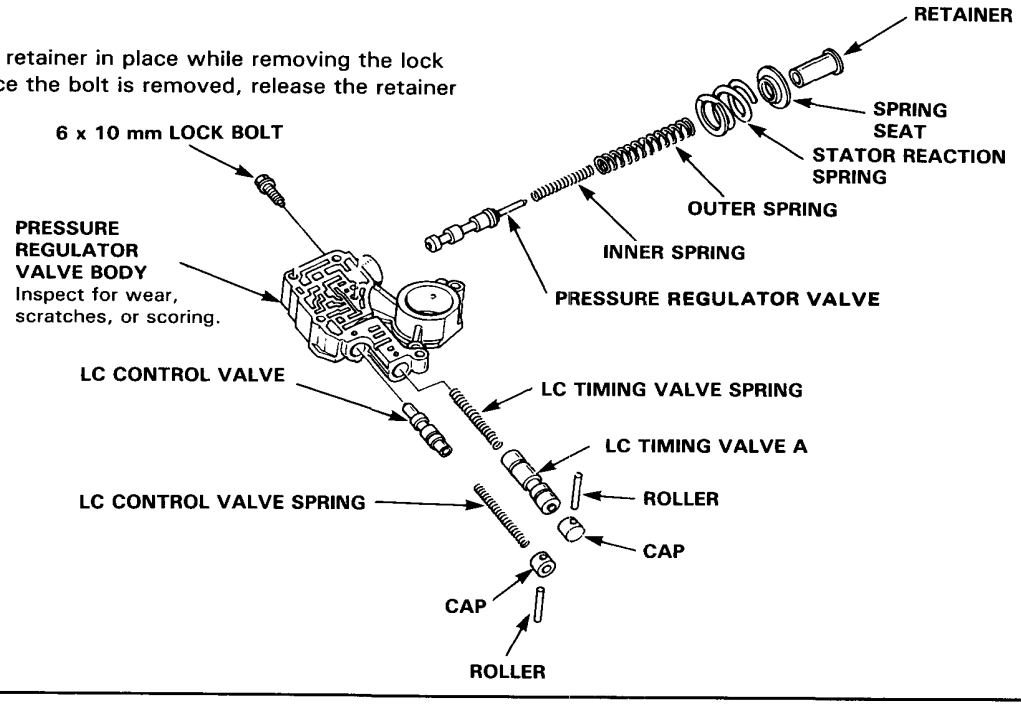


Regulator Valve Body

Disassembly/Inspection

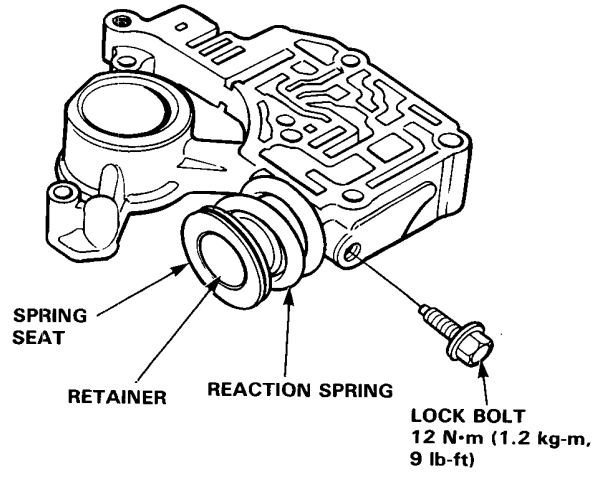
NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement, if any fail to slide freely, see Valve Body Repair on page 16-25.
- Coat all parts with ATF before reassembly.

1. Hold the retainer in place while removing the lock bolt. Once the bolt is removed, release the retainer slowly.



Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
2. Coat all valves with ATF.
3. Install the pressure regulator valve, and the inner and outer springs.
4. Install the reaction spring, spring seat, and retainer. Align the hole in the retainer with the hole in the valve body, then press the retainer into the valve body and tighten the lock bolt.

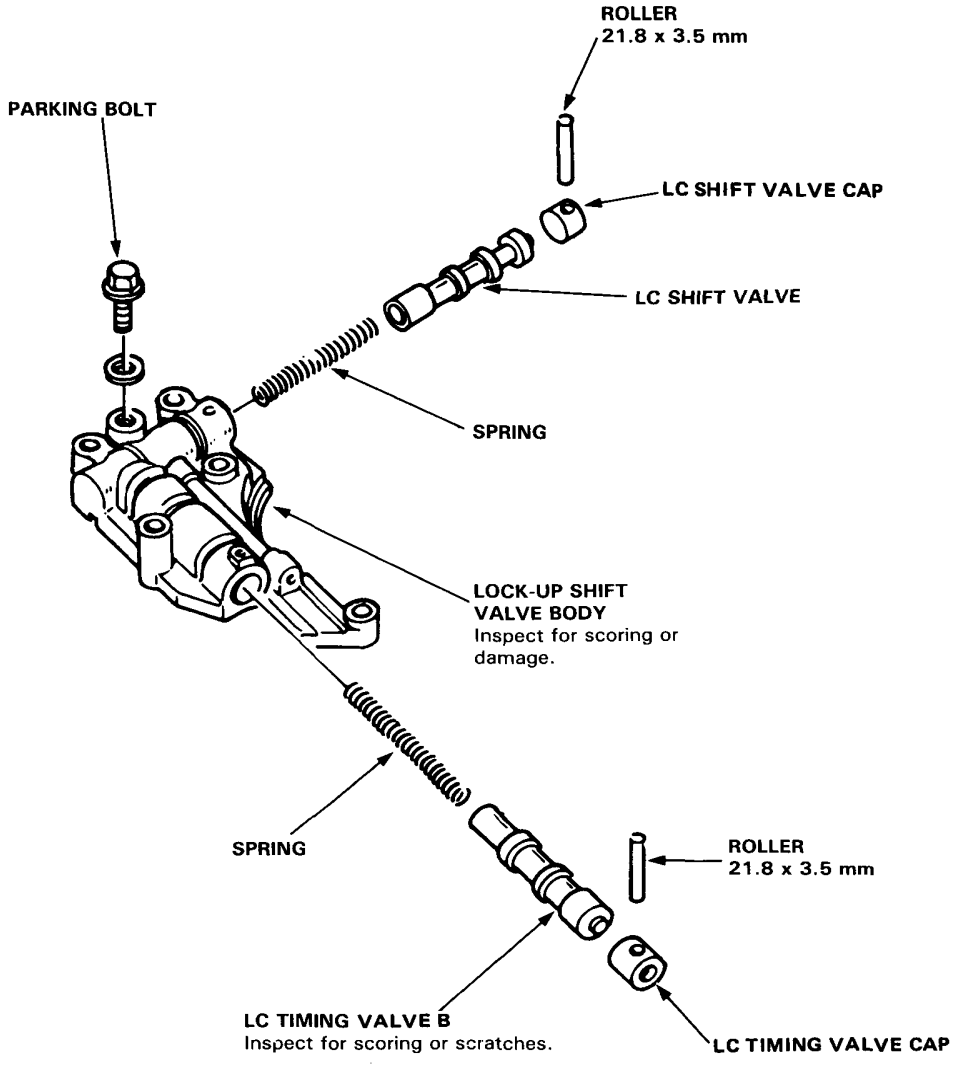


Lock-Up Shift Valve Body

Disassembly/Inspection

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement, if any fail to slide freely, see Valve Body Repair on page 16-25.
- Coat all parts with ATF before reassembly.

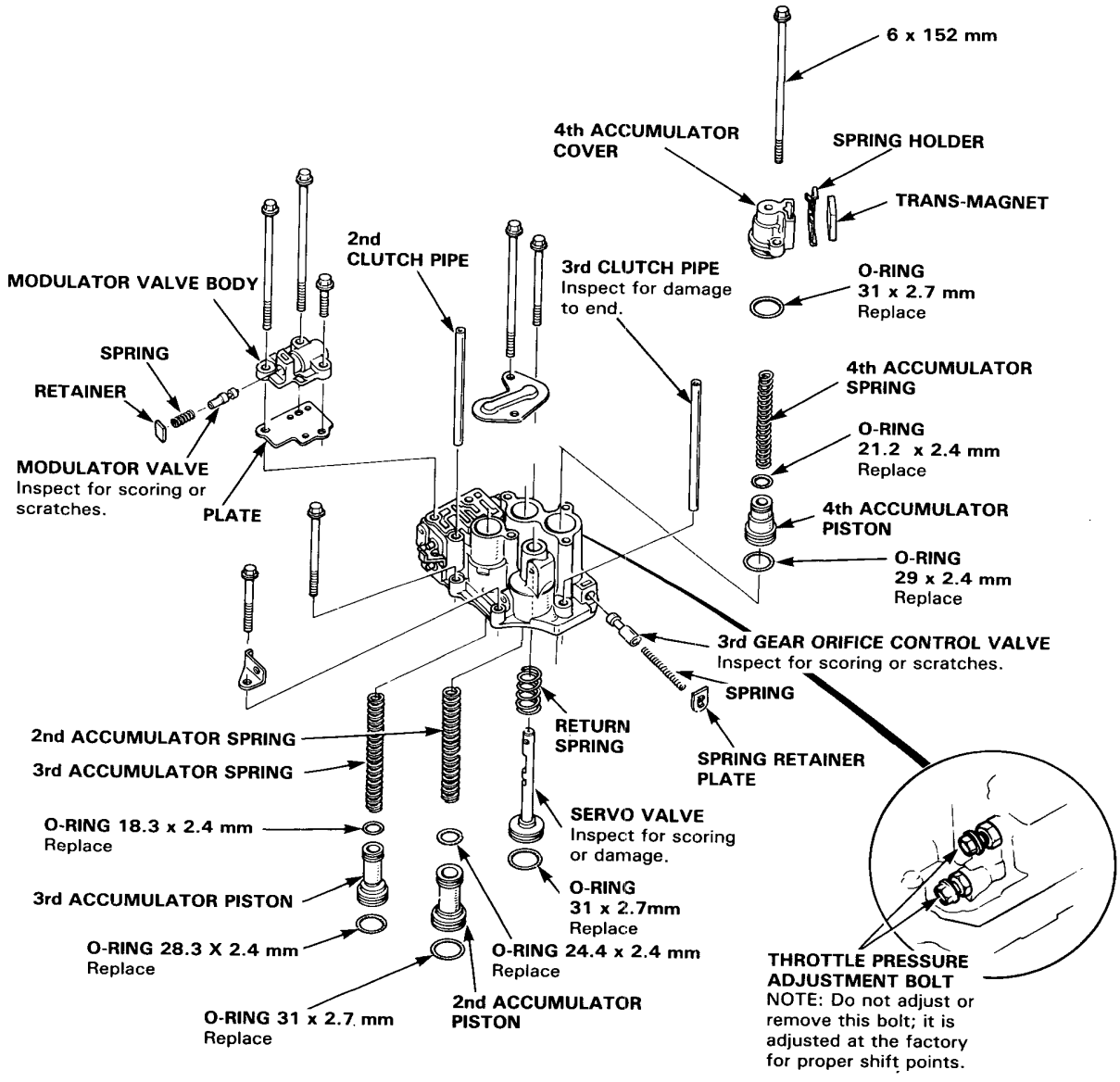


Servo Valve Body

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair on page 16-25.

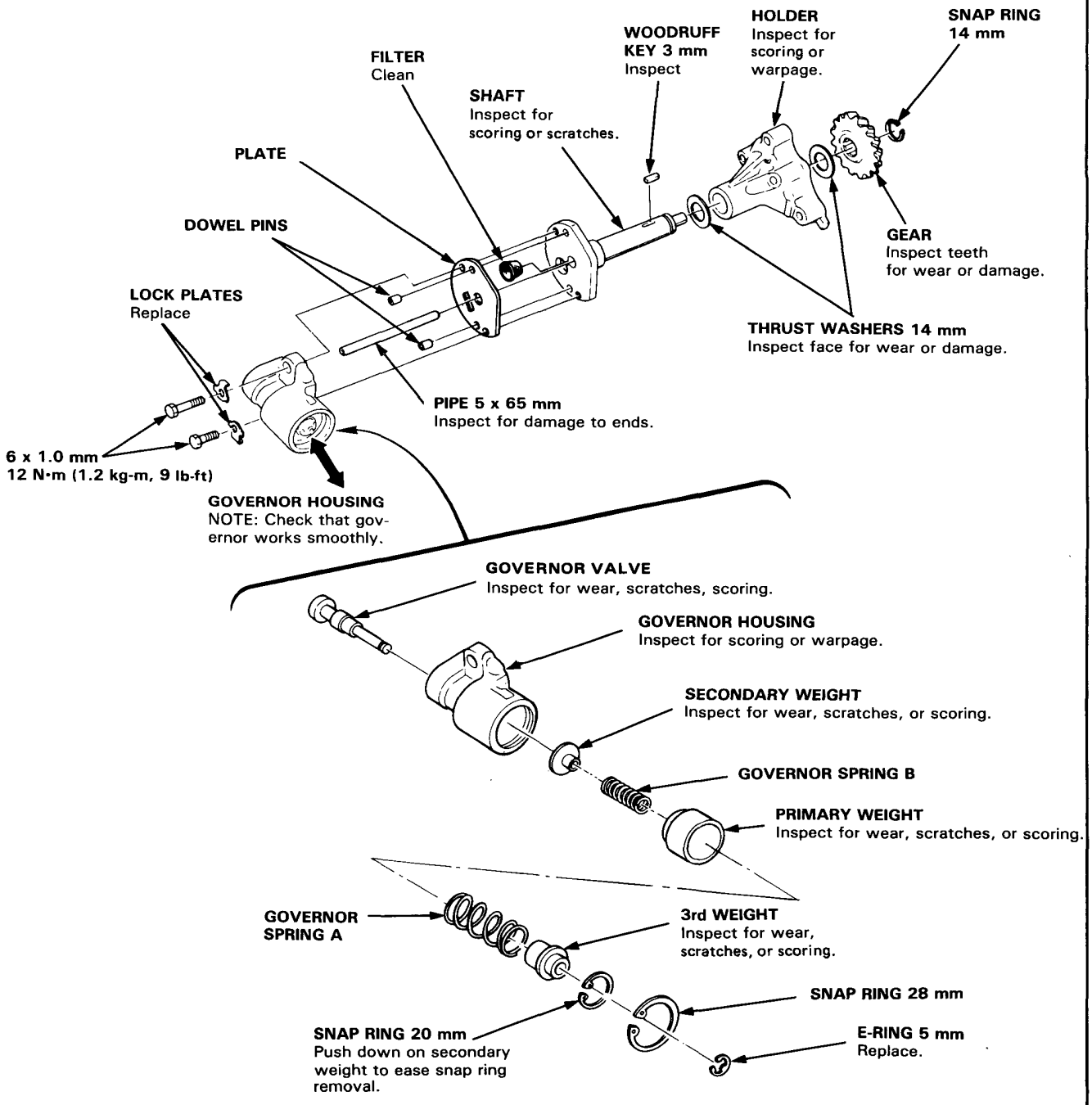


Governor Valve

Disassembly/Inspection/Reassembly

NOTE:

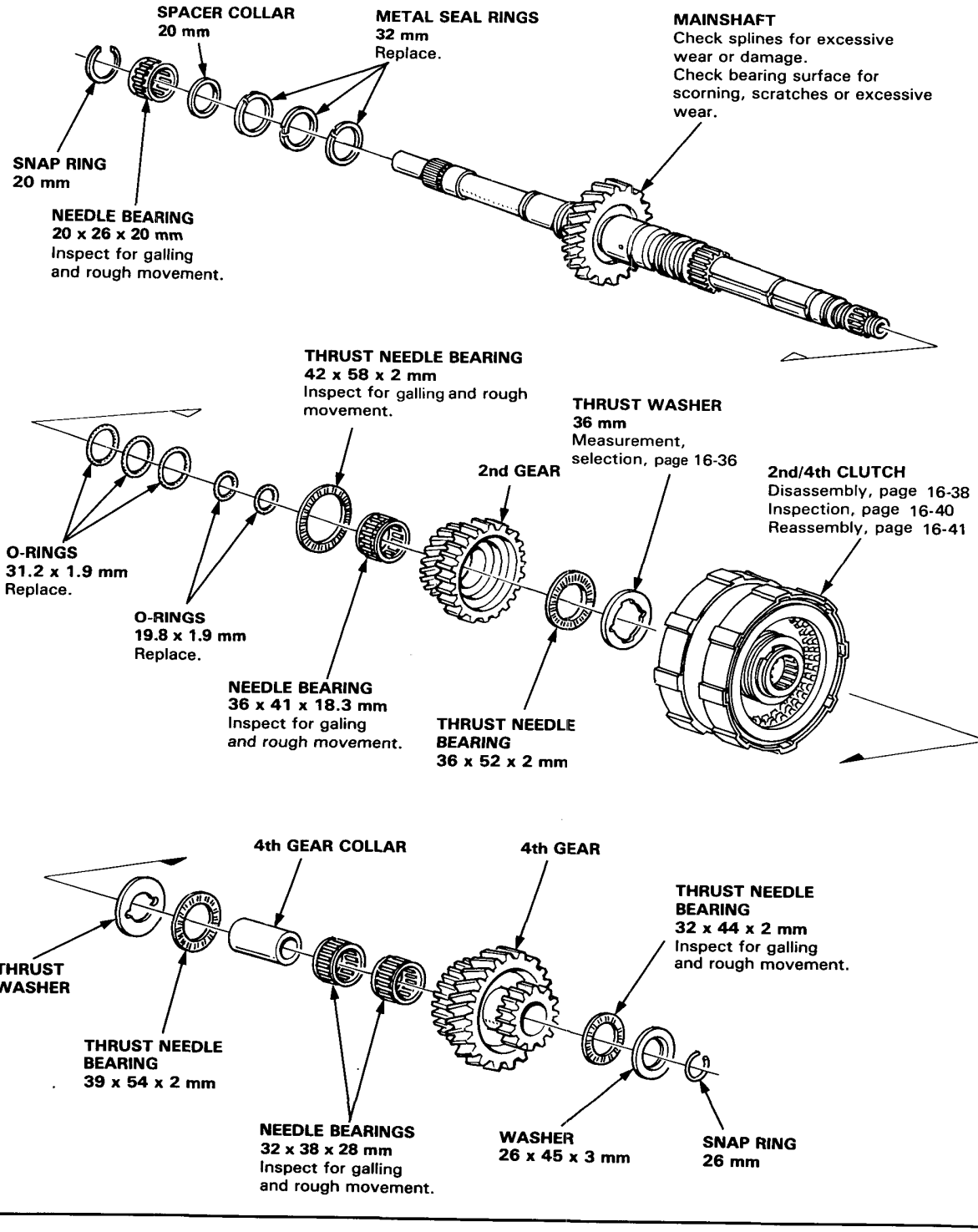
- Clean all parts thoroughly solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check that the governor works smoothly; replace it if it does not.
- Coat all parts with ATF before reassembly.



Mainshaft

Disassembly/Inspection/Reassembly

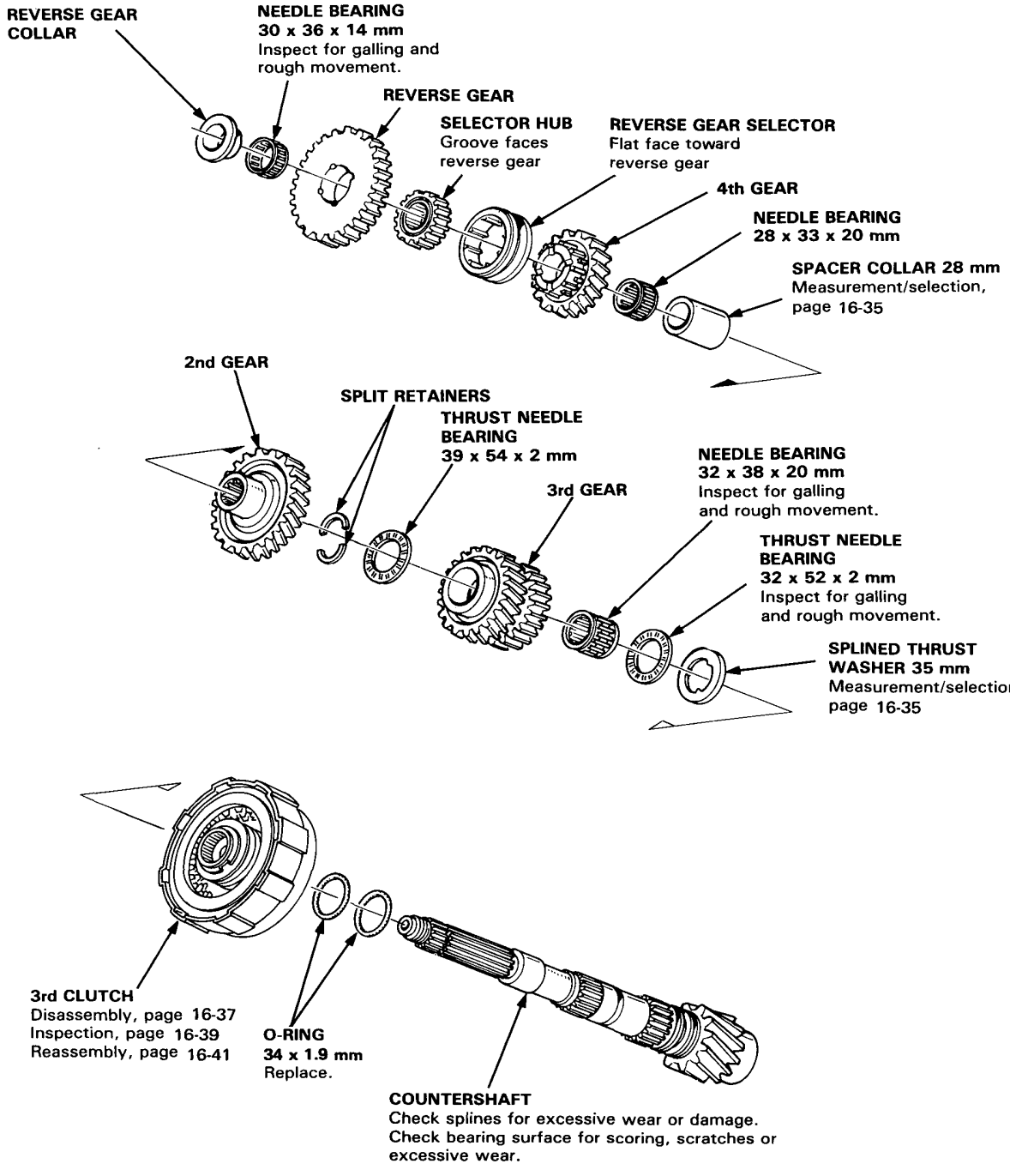
NOTE:
- Lubricate all parts with ATF during reassembly.
- Install thrust needle bearings with unrolled edge of bearing retainer facing washer.



Countershaft

Disassembly/Inspection/Reassembly

NOTE:
- Lubricate all parts with ATF during reassembly.
- Install thrust needle bearing with unrolled edge of bearing retainer facing washer.



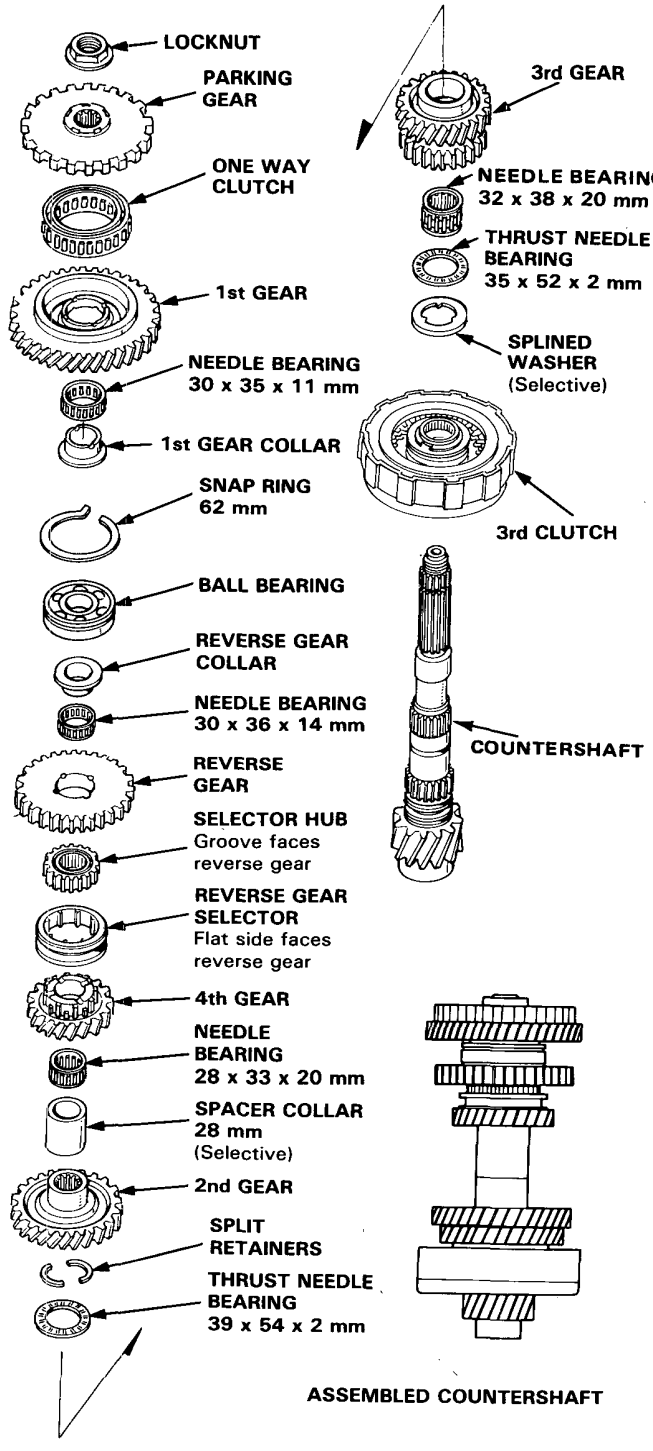
Countershaft/Mainshaft

Clearance Measurements

1. Remove both the mainshaft and countershaft bearings from the transmission housing.
2. Assemble the mainshaft and the countershaft including bearings and all parts shown below.
3. Install the mainshaft and countershaft assemblies into the torque converter housing.
4. Install the mainshaft holder to prevent the shafts from turning.
5. Torque the mainshaft locknut to 35 N·m (3.5 kg-m, 25 lb-ft). (Left-hand threads.)
6. Hold the parking gear on the countershaft with your hand and torque the countershaft locknut to 35 N·m (3.5 kg-m, 25 lb-ft).
7. Measure clearances as described on the next page.

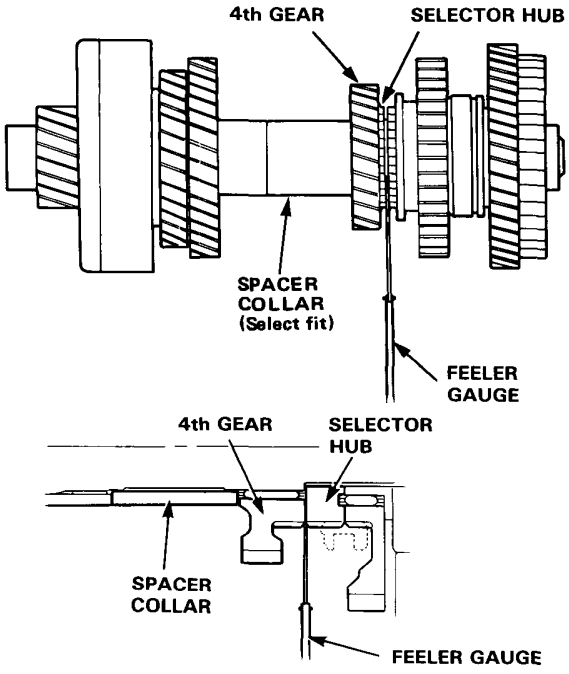
ATF Lubricate all parts with ATF before final reassembly.

Countershaft Assembly



8. On the countershaft, measure the clearance between the shoulder on the selector hub and the shoulder on 4th gear.

Countershaft 4th Gear Clearance:
Standard: 0.07—0.15 mm (0.003—0.006 in.)



If clearance exceeds the service limit, measure the thickness of the spacer collar and select one which gives correct clearance.

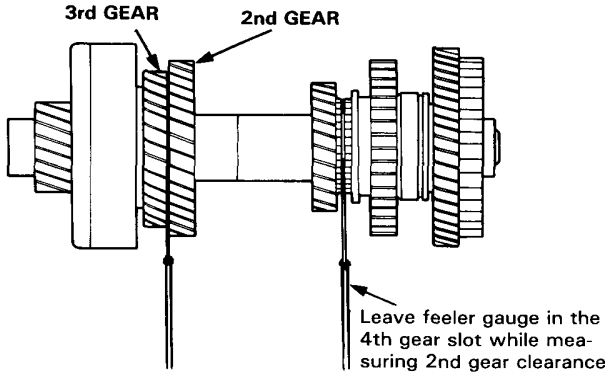
Replacement spacer collars:

CLASS	P/N	THICKNESS
1	90511-PH0-0000	34.00 mm (1.339 in.)
2	90512-PH0-0000	34.05 mm (1.341 in.)
3	90513-PH0-0000	34.10 mm (1.342 in.)
4	90514-PH0-0000	34.15 mm (1.344 in.)
5	90515-PH0-0000	34.20 mm (1.346 in.)
6	90516-PH0-0000	34.25 mm (1.348 in.)
7	90517-PH0-0000	34.30 mm (1.350 in.)

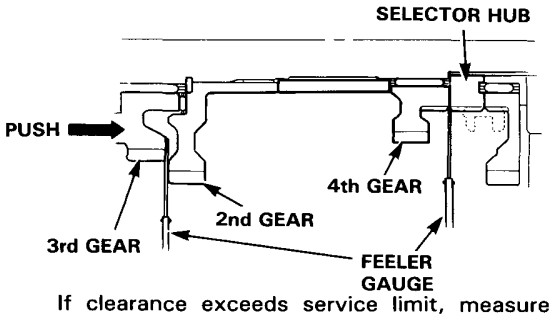
NOTE: Leave feeler gauge in place (4th gear) while measuring 2nd gear clearance.

Countershaft 2nd Gear Clearance:
Standard: 0.07—0.15 mm (0.003—0.006 in.)

9. Slide the 3rd gear out fully. Measure and record the clearance between the 2nd and 3rd gears with a feeler gauge.



- Slide the 3rd gear in fully and again measure the clearance between the 2nd and 3rd gears with another feeler gauge.
- Calculate the difference between the two readings to determine the actual clearance between the two gears.



If clearance exceeds service limit, measure the thickness of the splined thrust washer (35 mm I.D.) and select one which gives the proper clearance.

Replacement splined thrust washers:

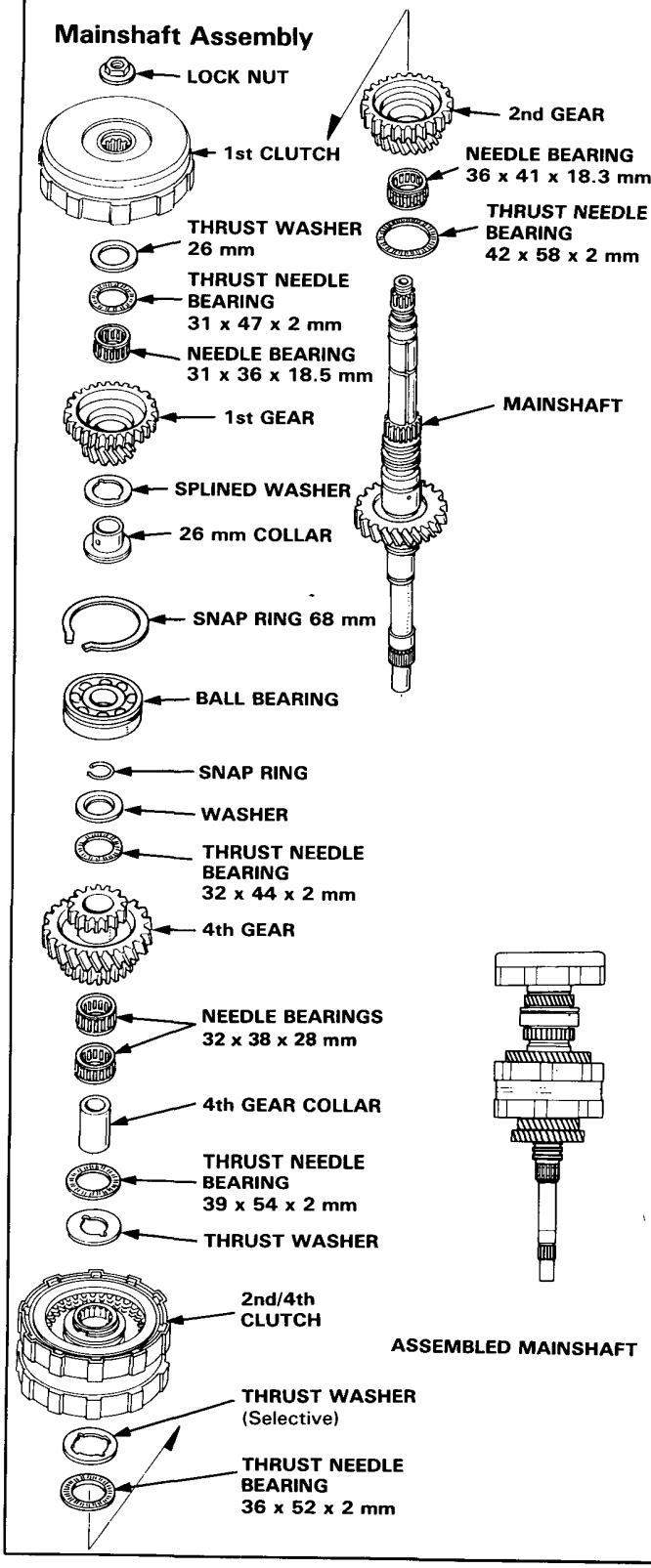
CLASS	P/N	THICKNESS
A	90411—PA9—0100	2.97—3.00 mm (0.117—0.118 in.)
B	90412—PA9—0100	3.02—3.05 mm (0.119—0.120 in.)
C	90413—PA9—0100	3.07—3.10 mm (0.121—0.122 in.)
D	90414—PA9—0100	3.12—3.15 mm (0.123—0.124 in.)
E	90415—PA9—0100	3.17—3.20 mm (0.125—0.126 in.)
F	90416—PA9—0100	3.22—3.25 mm (0.127—0.128 in.)
G	90417—PA9—0100	3.27—3.30 mm (0.129—0.130 in.)
H	90418—PA9—0100	3.32—3.35 mm (0.131—0.132 in.)
I	90419—PA9—0100	3.37—3.40 mm (0.133—0.134 in.)

(cont'd)

Countershaft/Mainshaft

Clearance Measurments (cont'd)

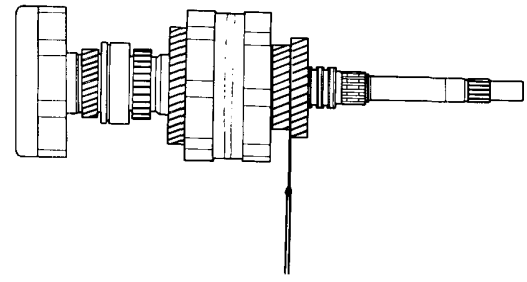
Mainshaft Assembly



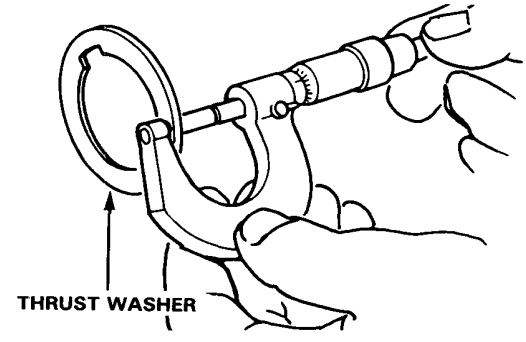
NOTE: Make all measurements before changing the thrust washers. Recheck after making the adjustments.

10. On the mainshaft measure the clearance between the shoulder of 2nd gear and main 3rd gear, the same way you did on the countershaft in step 9.

Mainshaft 2nd Gear Clearance:
Standard (New): 0.07–0.15 mm (0.003–0.006 in.)



If the clearance exceeds the service limit, measure the thickness of the 2nd clutch thrust washer (36 mm I.D.) and select one which gives the correct clearance.



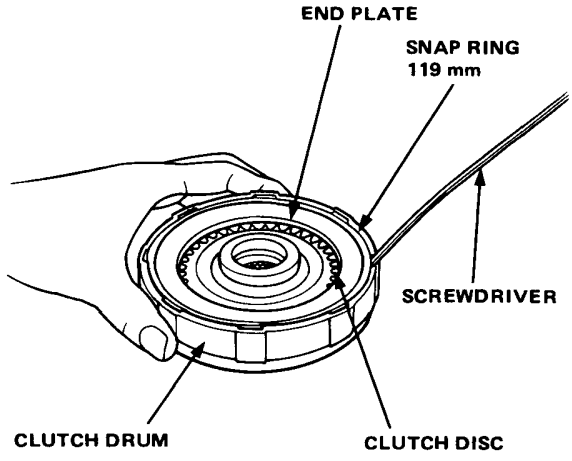
Replacement washer (36 mm I.D.)

CLASS	P/N	THICKNESS
A	90441–PC9–000	3.47–3.50 mm (0.137–0.138 in.)
B	90442–PC9–000	3.52–3.55 mm (0.139–0.140 in.)
C	90443–PC9–000	3.57–3.60 mm (0.141–0.142 in.)
D	90444–PC9–000	3.62–3.65 mm (0.143–0.144 in.)
E	90445–PC9–000	3.67–3.70 mm (0.145–0.146 in.)
F	90446–PC9–000	3.72–3.75 mm (0.147–0.148 in.)
G	90447–PC9–000	3.77–3.80 mm (0.149–0.150 in.)
H	90448–PC9–000	3.82–3.85 mm (0.151–0.152 in.)
I	90449–PC9–000	3.87–3.90 mm (0.153–0.154 in.)

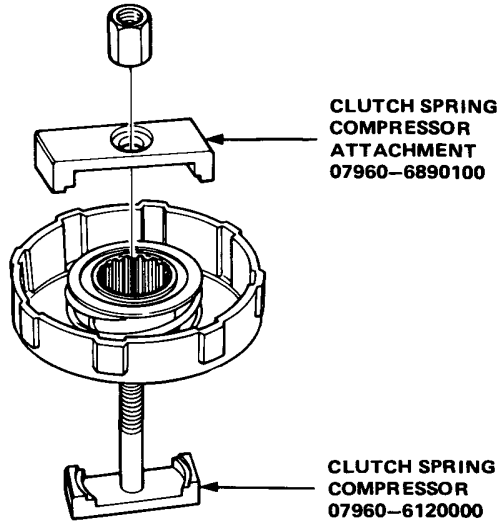
Disassembly

NOTE:
- The 1st and 3rd clutches are identical.
- To disassemble the 2nd/4th clutch, use the special tool in Step 3 in the same manner as for the 1st and 3rd clutches.

1. Remove the snap ring.

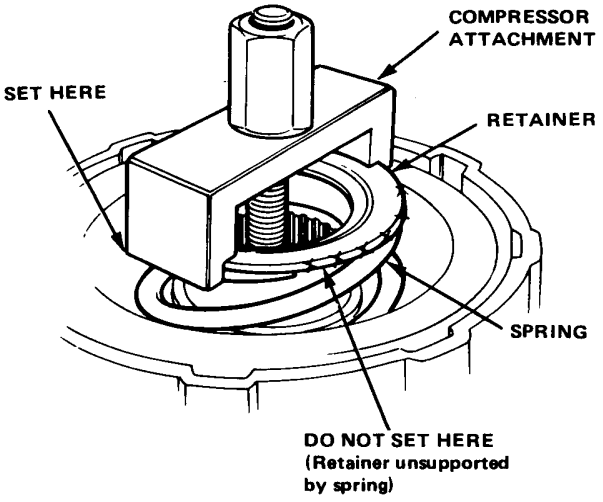


2. Remove the end plate, clutch discs and plates.
3. Install the clutch spring compressor as shown.

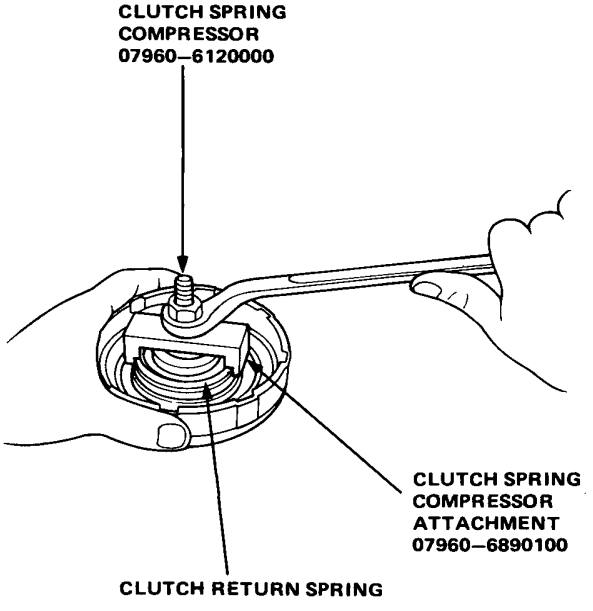


1st and 3rd Clutches

CAUTION: If either end of the compressor attachment is set over an area of the retainer which is unsupported by the spring, the retainer may be damaged.



- Compress the clutch return spring.

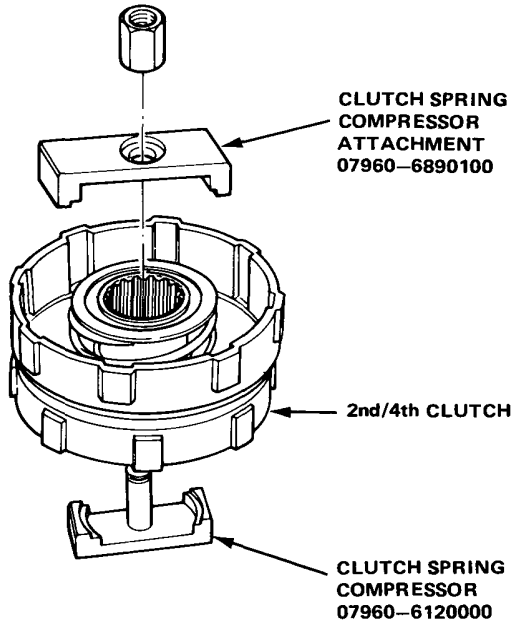


(cont'd)

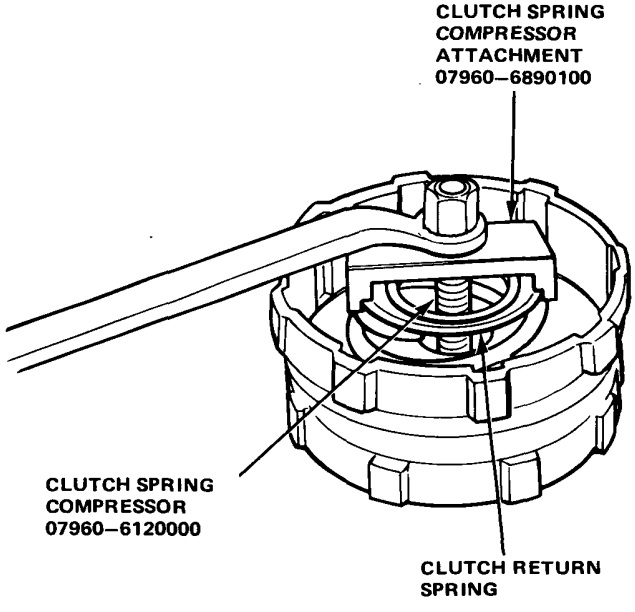
Disassembly (cont'd)

2nd/4th Clutch

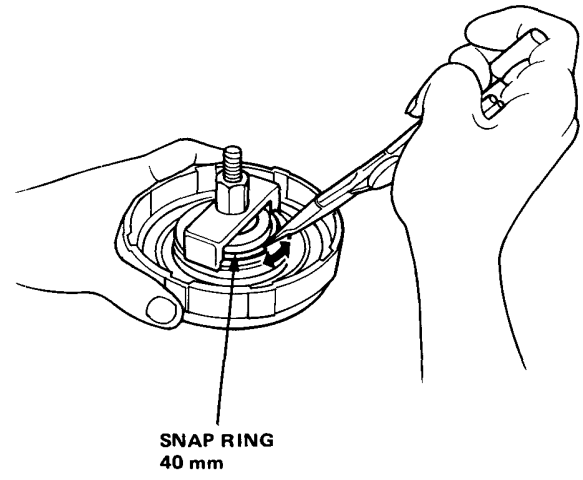
- *Assemble the spring compressor on the clutch drum.*



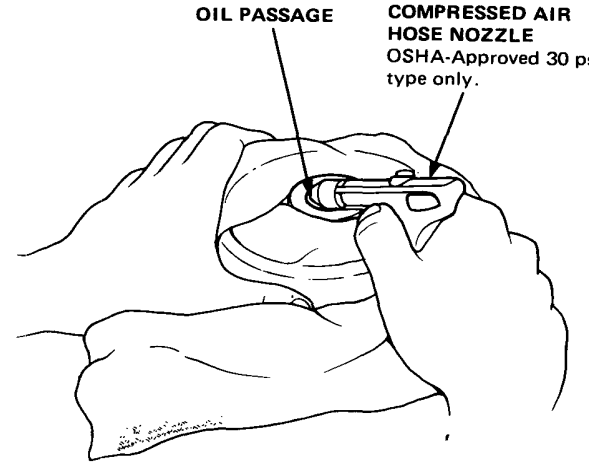
- Compress the clutch return spring.



4. Remove the snap ring. Then remove the clutch spring compressor, spring retainer and spring.

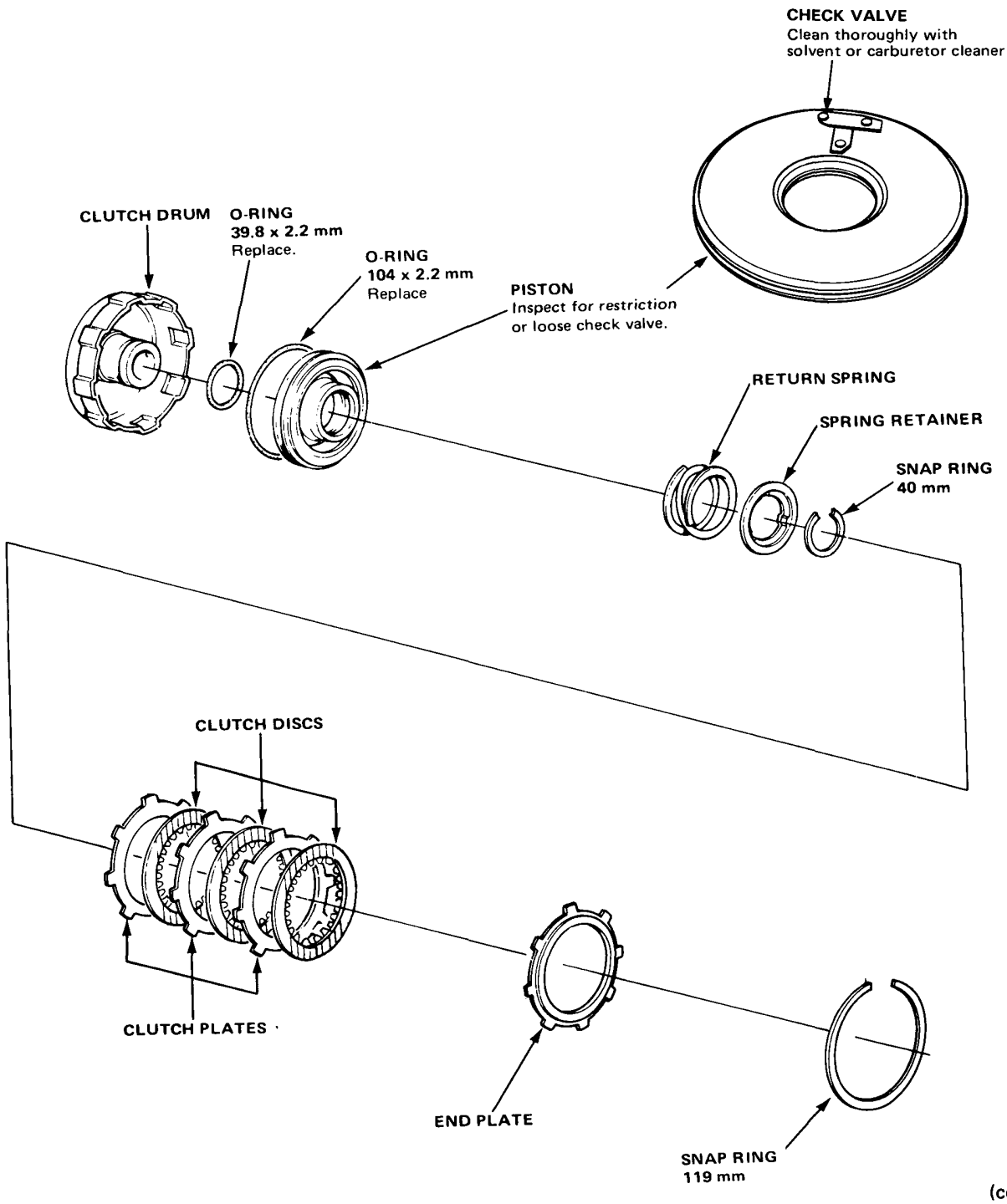


5. Wrap a shop rag around the clutch drum and apply air pressure to the oil passage to remove the piston. Place a finger tip on the other end while applying air pressure.



Disassembly/Inspection

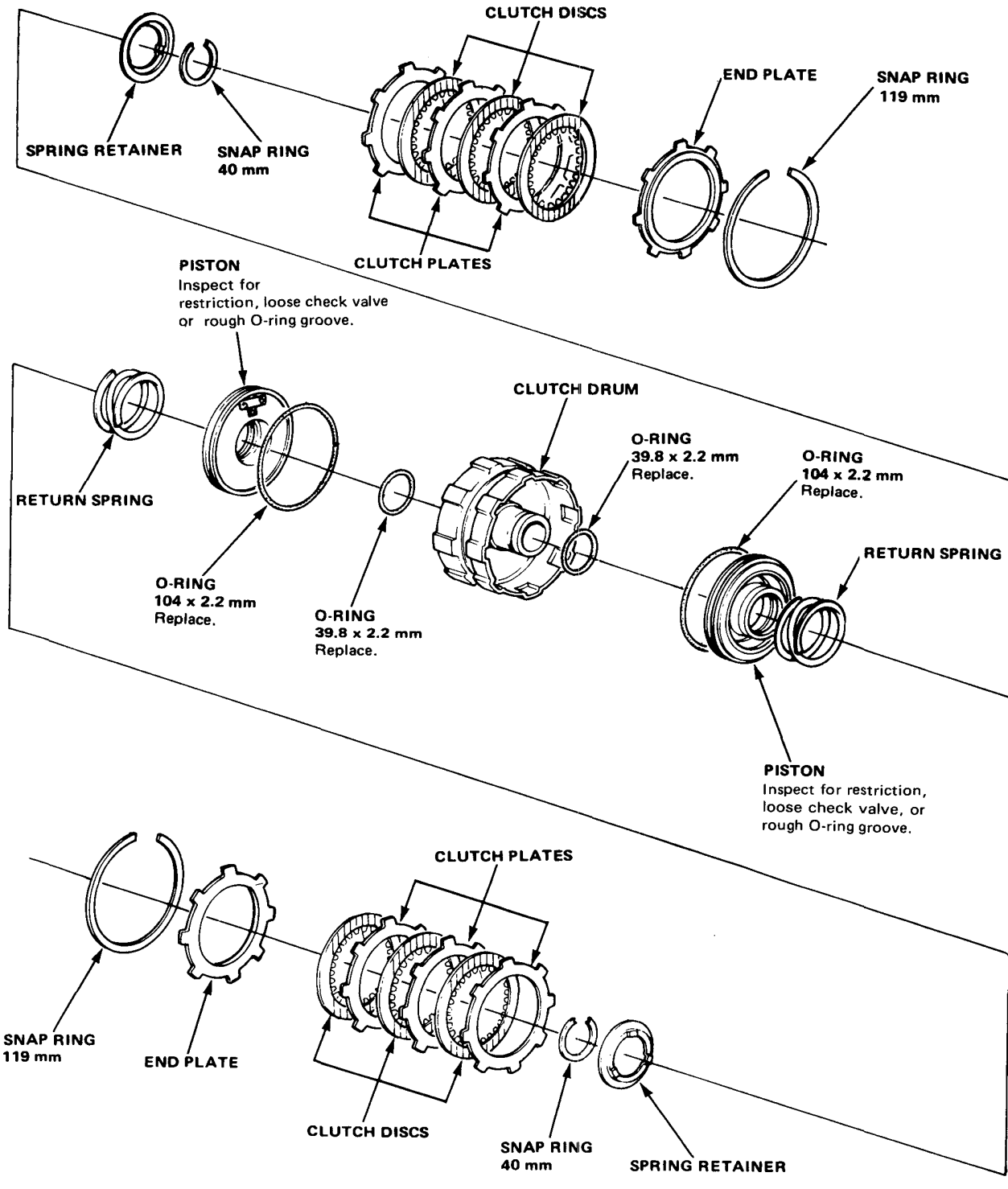
1st and 3rd Clutches



(cont'd)

Disassembly/Inspection (cont'd)

2nd/4th Clutch

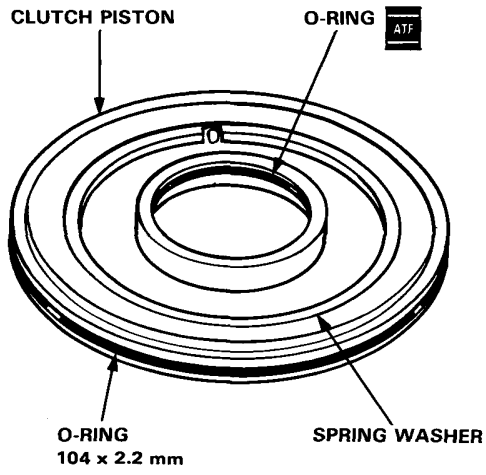


Reassembly

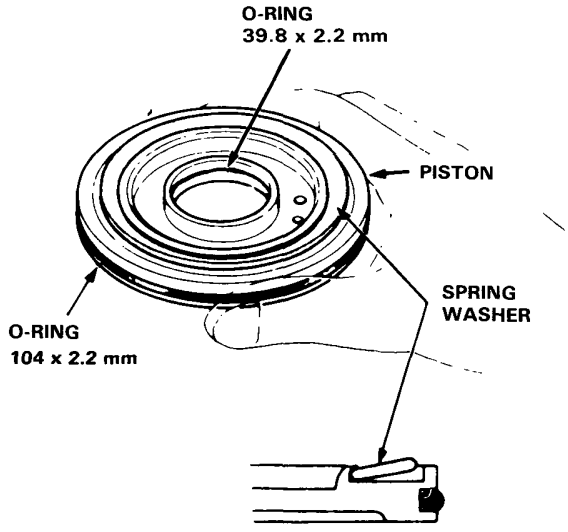
NOTE:
- The 1st and 3rd clutches are identical.
- To reassemble the 2nd/4th clutch, use the special tool in Step 7 in the same manner as for the 1st and 3rd clutches.

1. Clean all parts thoroughly in solvent, and dry with compressed air. Blow out all passages.

2. Lubricate all parts with ATF before reassembly.



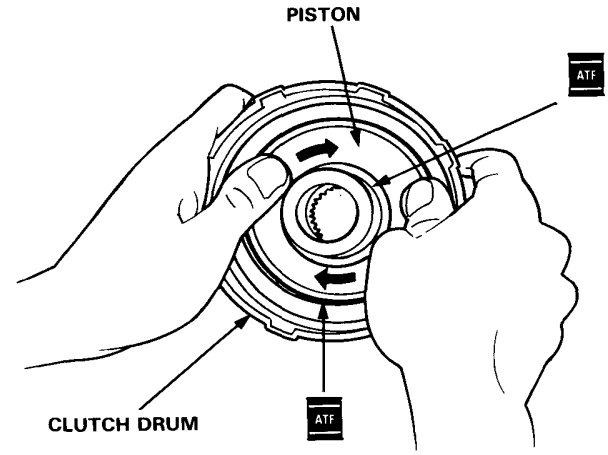
3. Install new O-ring on clutch piston.
Make sure the spring washer is properly positioned as shown.



4. Install the piston in the clutch drum. Apply pressure and rotate to ensure proper seating.

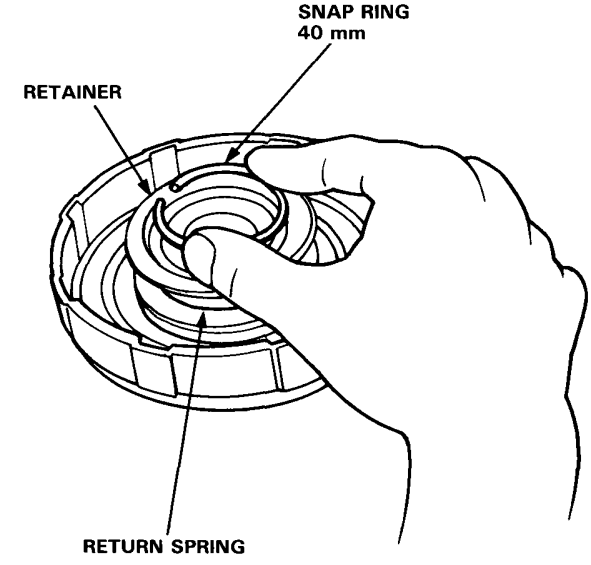
NOTE: Lubricate the piston O-ring with ATF before installing.

CAUTION: Do not pinch O-ring by forcing piston installation.



5. Install the return spring and retainer.

6. Position the 40 mm snap ring on the spring retainer.

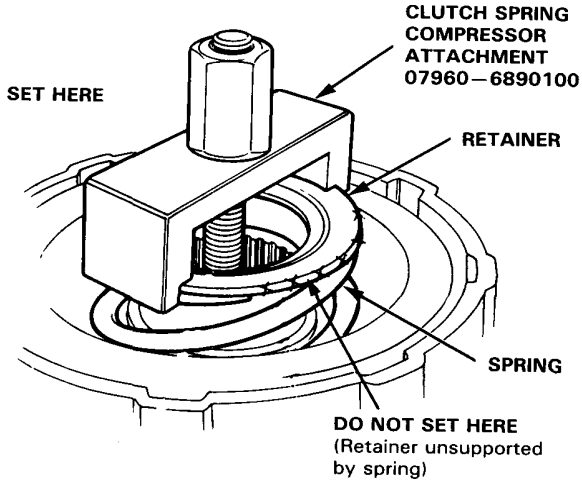


(cont'd)

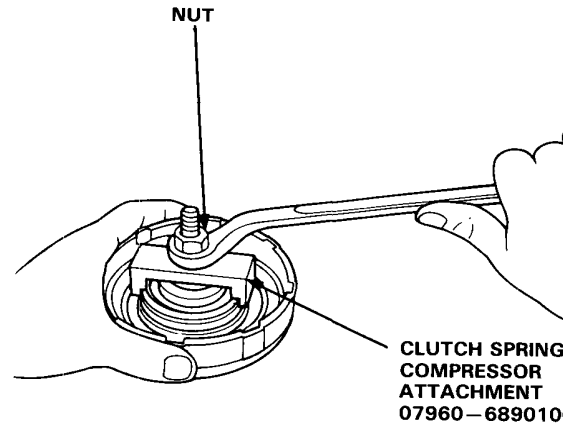
Reassembly (cont'd)

7. Assemble the spring compressor on the clutch drum.

CAUTION: If either end of the compressor attachment is set over an area of the retainer which is unsupported by the spring, the retainer may be damaged.

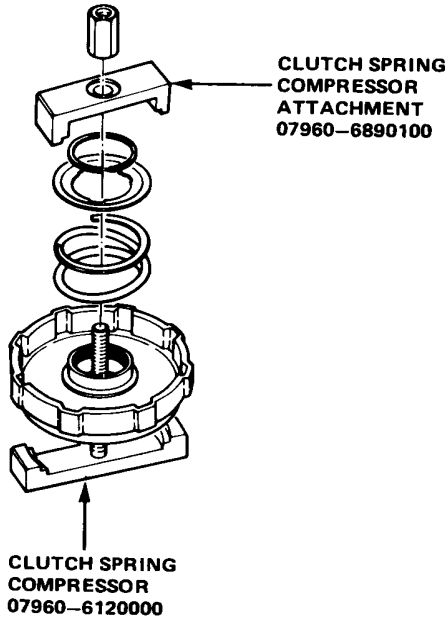


8. Compress the spring until the retainer is below the snap ring groove in the hub.



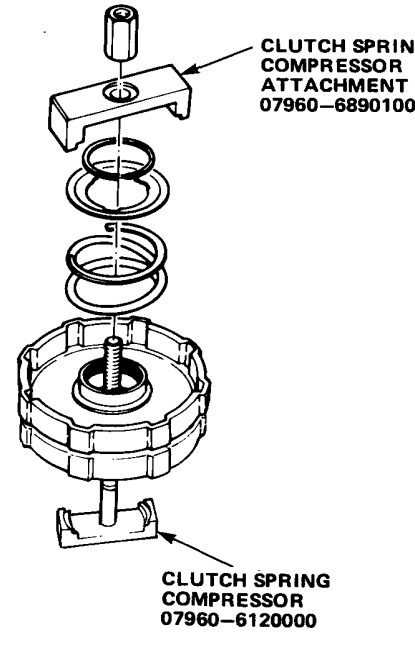
1st and 3rd clutches

- Assemble the spring compressor on the clutch drum.

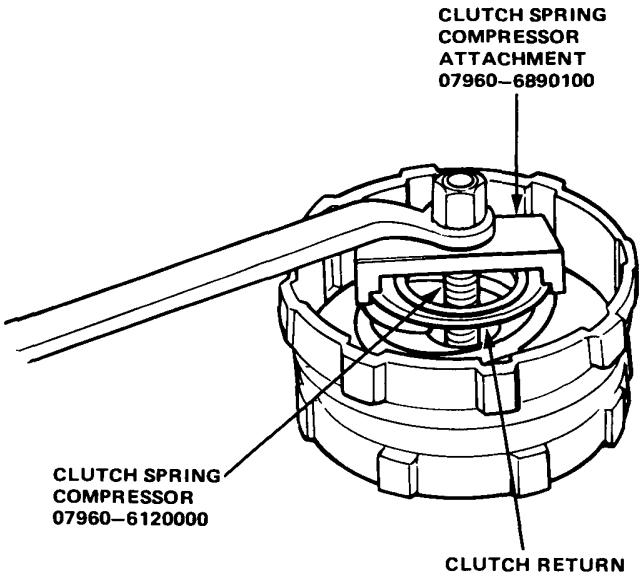


2nd/4th Clutch

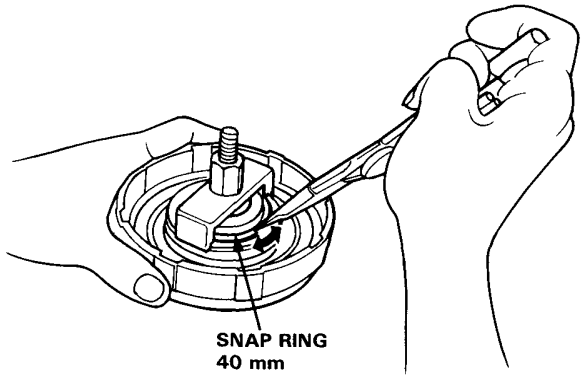
- Assemble the spring compressor on the clutch drum.



- Compress the clutch return spring.



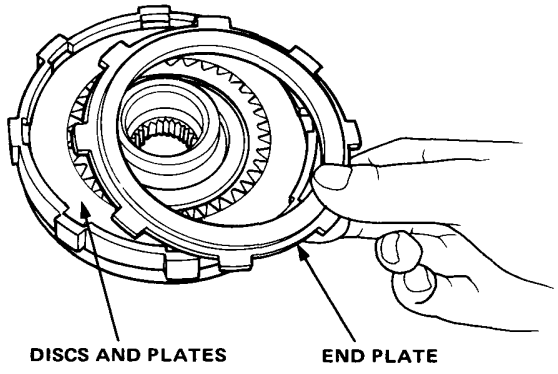
9. Then install the snap ring (with its rounded edge facing in) in the hub groove and remove the spring compressor.



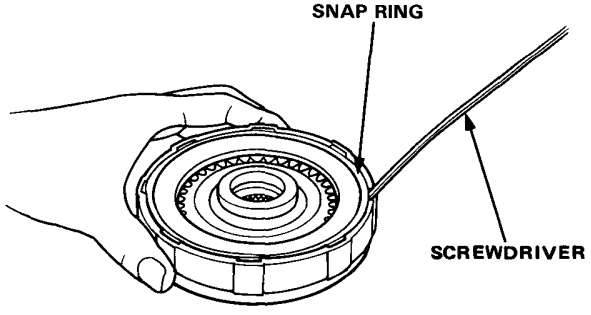
10. Soak the clutch discs thoroughly in automatic transmission fluid for a minimum of 30 minutes.

11. Starting with a clutch plate, alternately install the clutch plates and discs. Install the clutch end plate with flat side toward the disc.

    NOTE: Before installing the plates and discs, make sure the inside of the clutch drum is free of grit or other foreign matter.



12. Install the 119 mm snap ring.



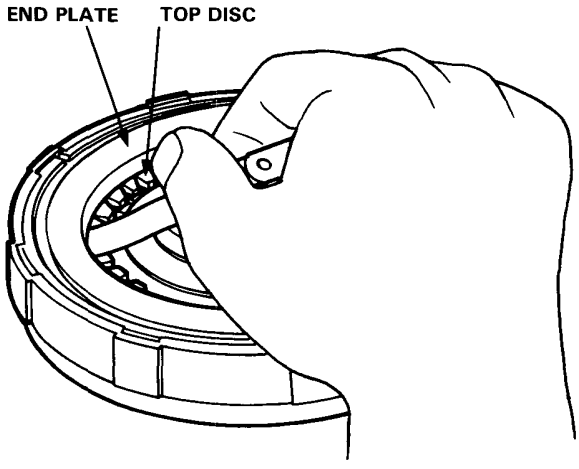
(cont'd)

Reassembly (cont'd)

13. Using bent feeler gauges, carefully measure the clearance between the clutch end plate and the top disc. Do not damage the disc.

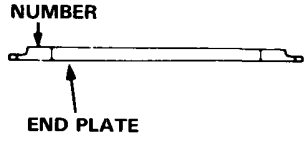
End Plate-to-Top Disc Clearance:

	Service Limit	
LOW	0.4—0.7 mm	(0.016—0.028 in.)
2ND	0.65—0.8 mm	(0.026—0.031 in.)
3RD	0.4—0.6 mm	(0.016—0.023 in.)
4TH	0.4—0.6 mm	(0.016—0.023 in.)

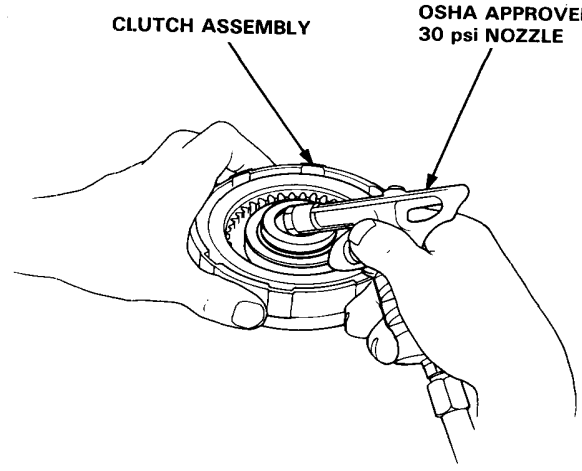


14. If not within service limit, select a new clutch end plate from following table.

P/N	PLATE NO.	THICKNESS
22551—PC9—000	1	2.4 mm (0.094 in.)
22552—PC9—000	2	2.5 mm (0.098 in.)
22553—PC9—000	3	2.6 mm (0.102 in.)
22554—PC9—000	4	2.7 mm (0.106 in.)
22555—PC9—000	5	2.8 mm (0.110 in.)
22556—PC9—000	6	2.9 mm (0.114 in.)
22557—PC9—000	7	3.0 mm (0.118 in.)
22558—PC9—000	8	3.1 mm (0.122 in.)
22559—PC9—000	9	3.2 mm (0.126 in.)
22560—PC9—000	10	3.3 mm (0.130 in.)

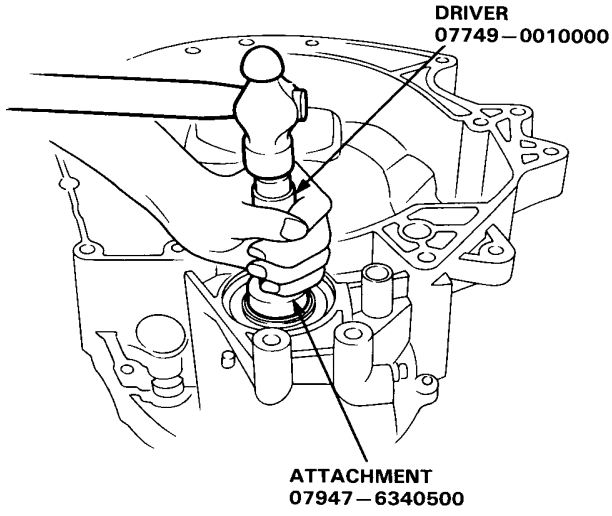


15. Check the clutch engagement by blowing air into the oil passage in the clutch drum hub. Remove the air pressure and check that the clutch releases.

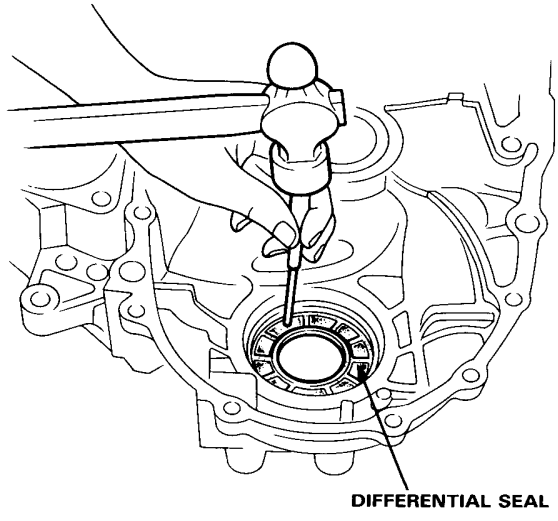


Replacement

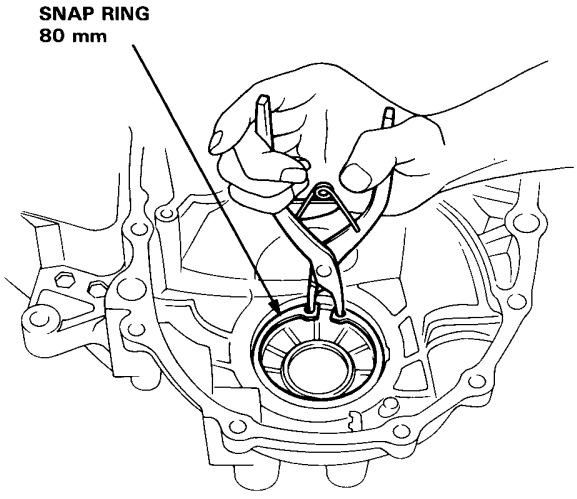
1. If seals are to be replaced, or if differential needs repair, remove the differential.



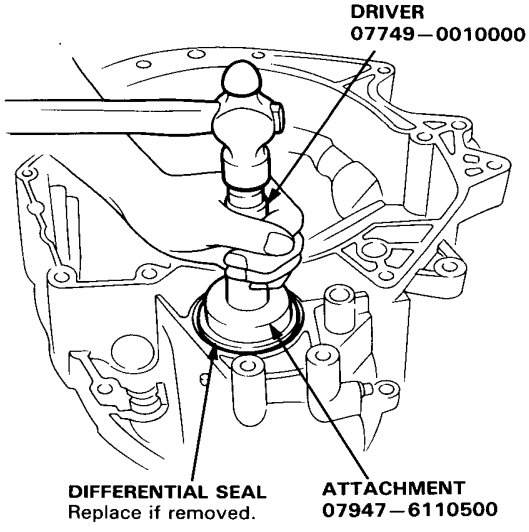
2. On the torque converter housing, remove the 80 mm snap ring, then drive out the seal as shown.
3. Remove the differential seal from the transmission housing in the same way.



4. On the torque converter housing, install the differential 80 mm snap ring if removed.



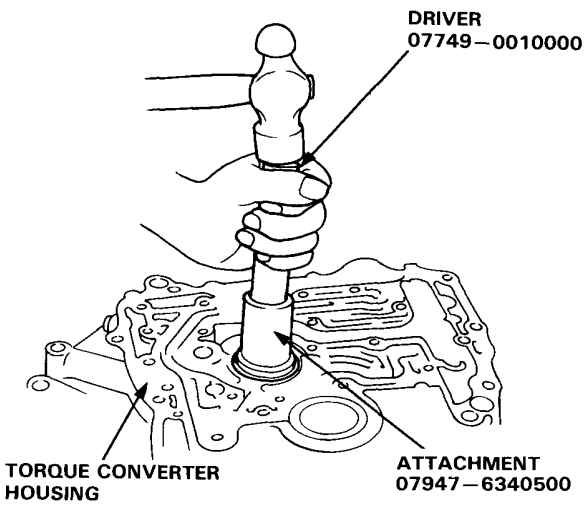
5. Install the differential seals into the torque converter housing and transmission housing.



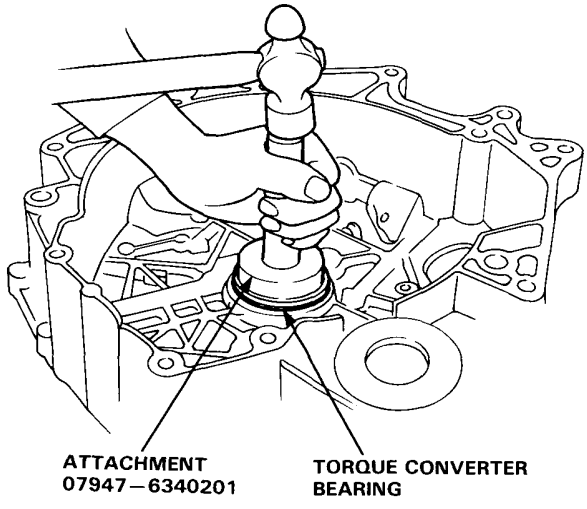
Replacement

Torque converter housing

1. Remove the mainshaft bearing and seal from the torque converter housing.

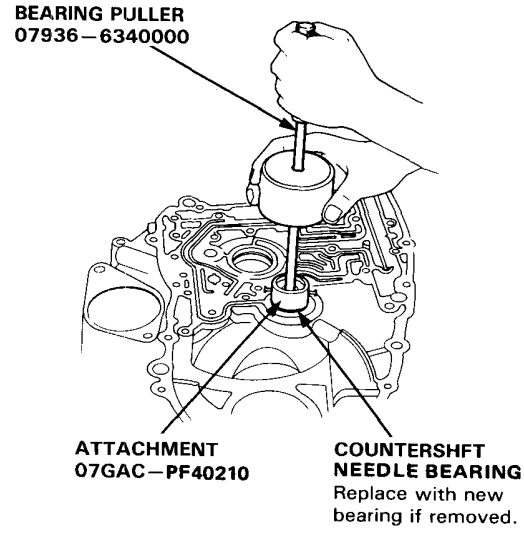


2. Drive in the new mainshaft bearing until it bottoms in housing.

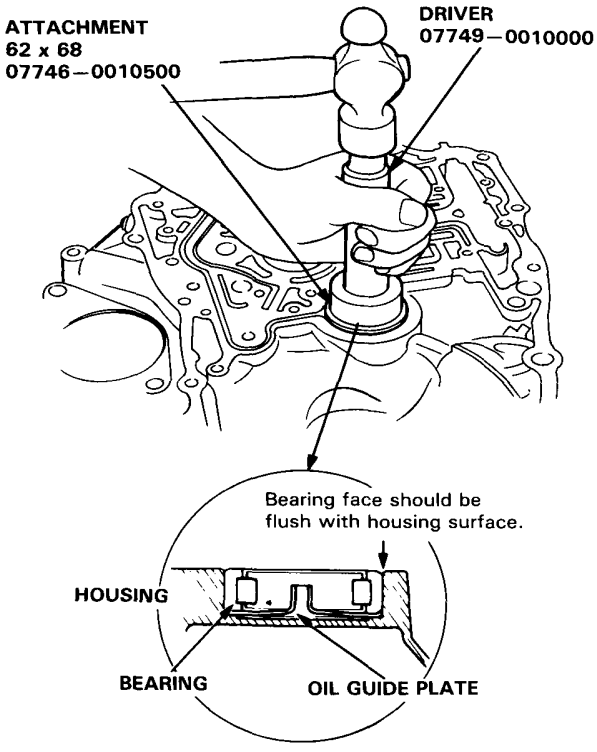


3. Then install the new mainshaft seal flush with the housing, using attachment 07947—6340201.

4. Turn the torque converter housing over and remove the countershaft bearing.



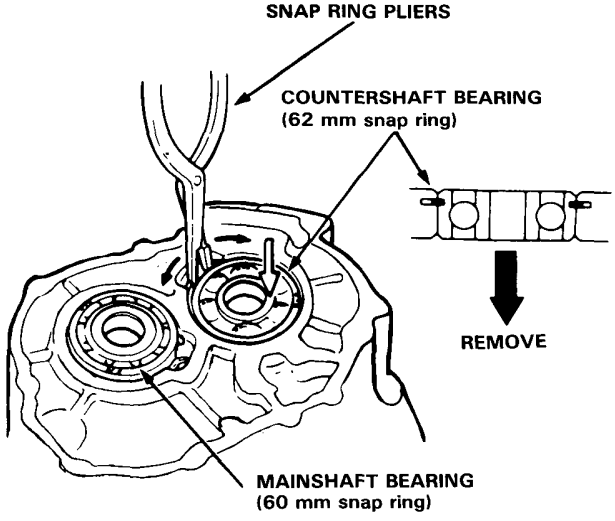
5. Make sure the oil guide plate is installed in the bearing hole, then install a new countershaft bearing flush with the housing.



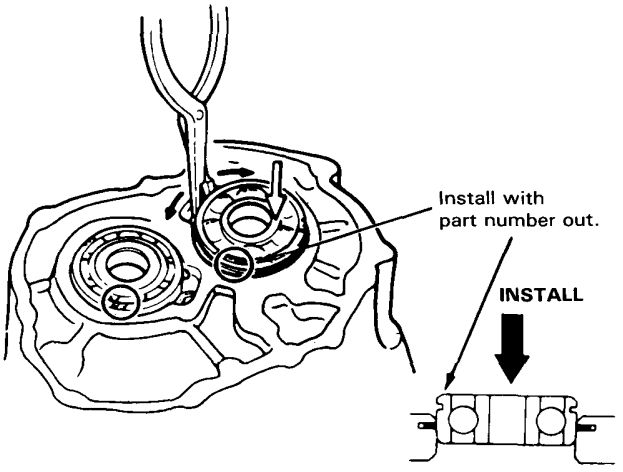
Transmission housing

1. To remove the mainshaft and countershaft bearings from the transmission housing, expand each snap ring with snap ring pliers, then push the bearing out by hand.

   NOTE: Do not remove the snap rings unless it's necessary to clean the grooves in the housing.



2. Expand each snap ring with snap ring pliers, insert *the new bearing part-way into it, then release the* pliers. Push the bearing down into the transmission until the ring snaps in place around it.

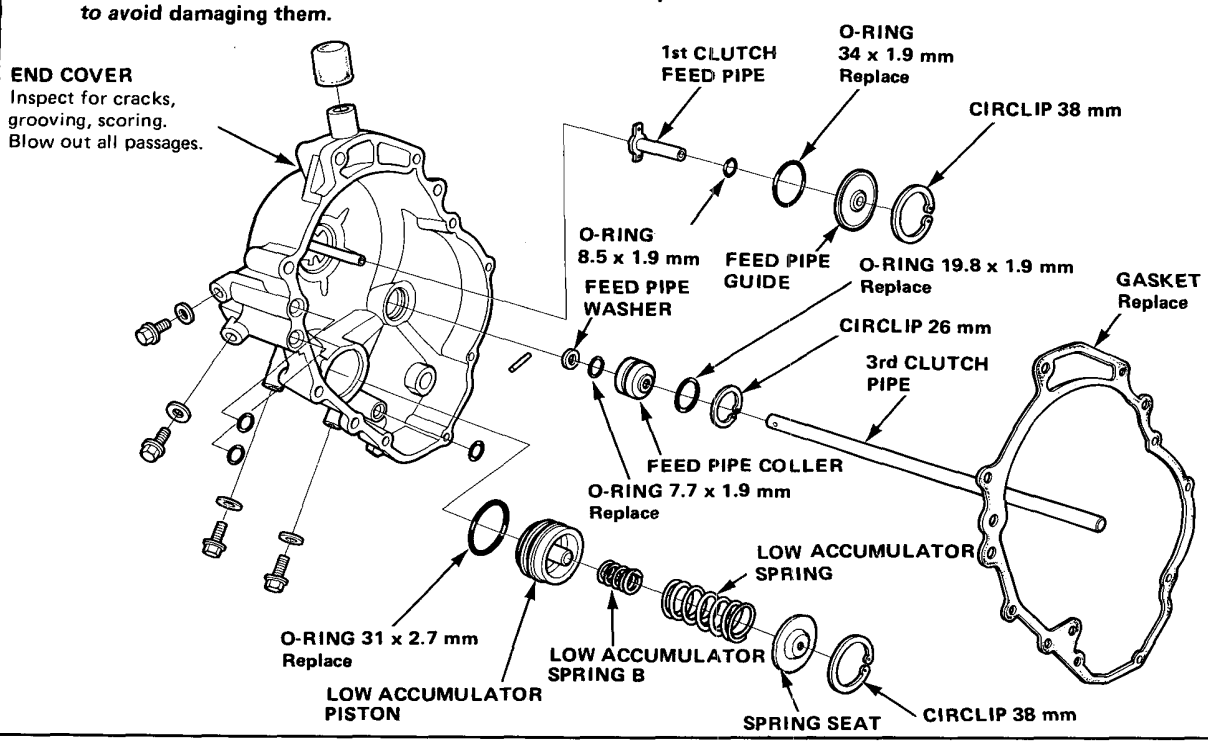


3. Make sure the snap rings are seated in the bearing and housing grooves.

End Cover

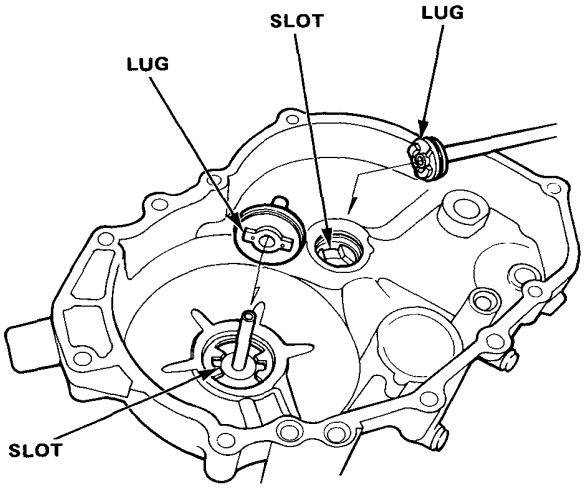
Disassembly/Inspection

CAUTION: Remove and install the parts carefully *to avoid* damaging them.

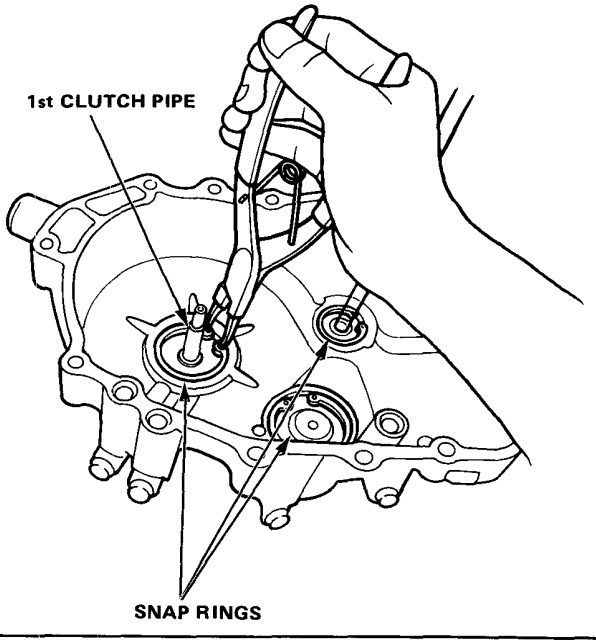


Reassembly

1. With feed pipes assembled, align the lugs on collars with the slots in end cover.

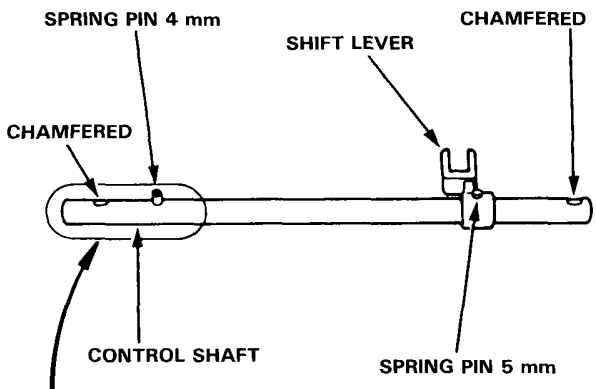


2. Install the feed pipes and low accumulator in the end cover with the snap rings.

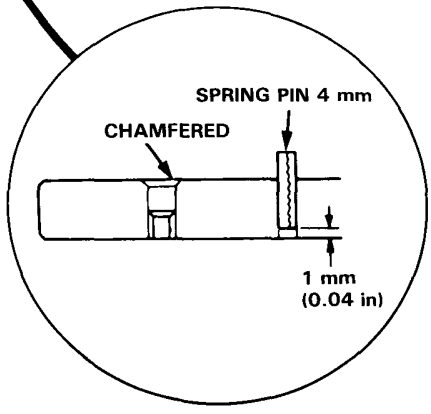


Throttle Control Shaft

Installation



Drive the 4 mm spring pin to a depth 1 mm in from the side that is opposite the chamfer in the threaded hole.



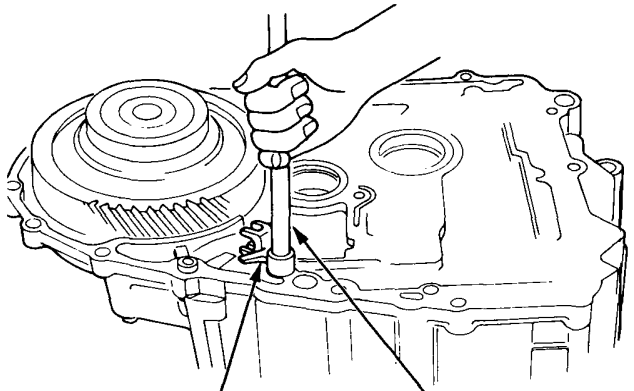
Transmission Assy

Reassembly

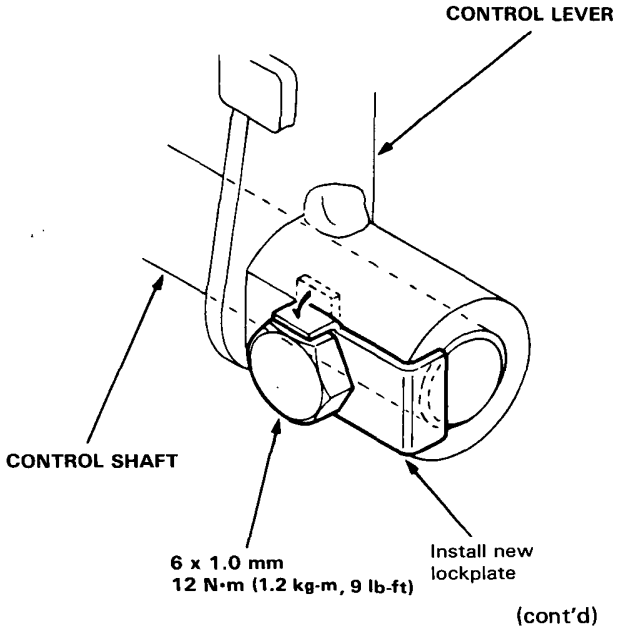
NOTE: Lubricate all parts with ATF during reassembly.

1. Install the differential assembly. If the torque converter housing, transmission housing and/or differential side bearings were replaced, the differential side clearance must be checked as shown in section 17.

2. Assemble the manual valve lever on the control shaft, then install in the torque converter housing as shown.



3. Install the control lever and new lock plate on the other end of the shaft. Tighten the bolt to the torque shown, then bend the tab over against the bolt head.



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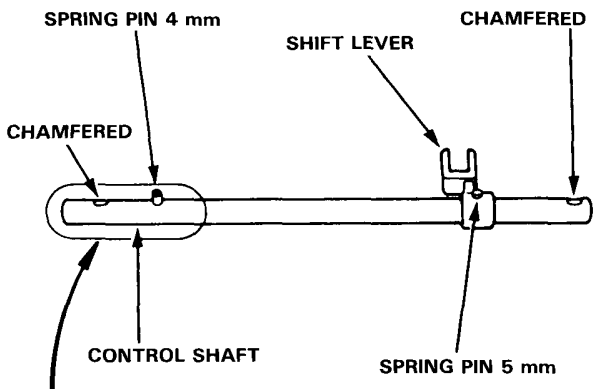
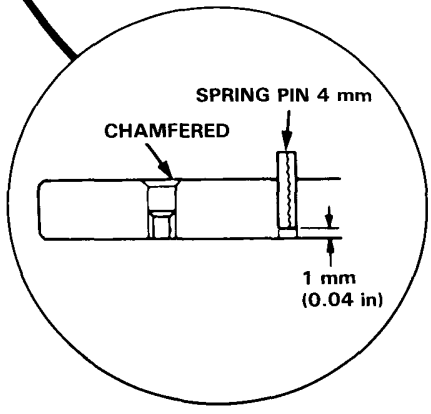
Throttle Control Shaft

Installation



Drive the 4 mm spring pin to a depth 1 mm in from the side that is opposite the chamfer in the threaded hole.



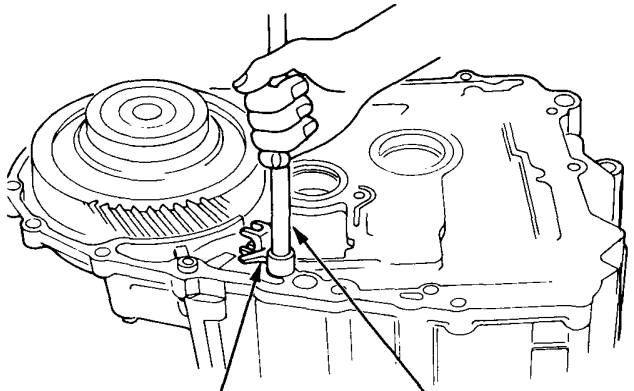
Transmission Assy

Reassembly

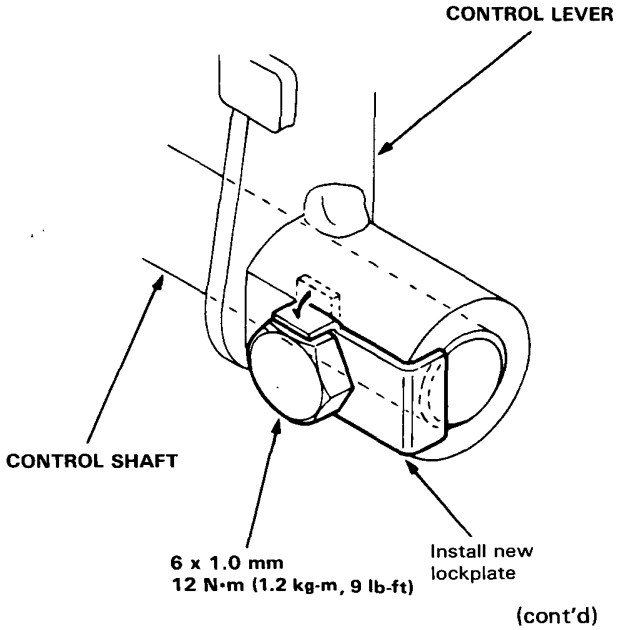
NOTE: Lubricate all parts with ATF during reassembly.

1. Install the differential assembly. If the torque converter housing, transmission housing and/or differential side bearings were replaced, the differential side clearance must be checked as shown in section 17.

2. Assemble the manual valve lever on the control shaft, then install in the torque converter housing as shown.



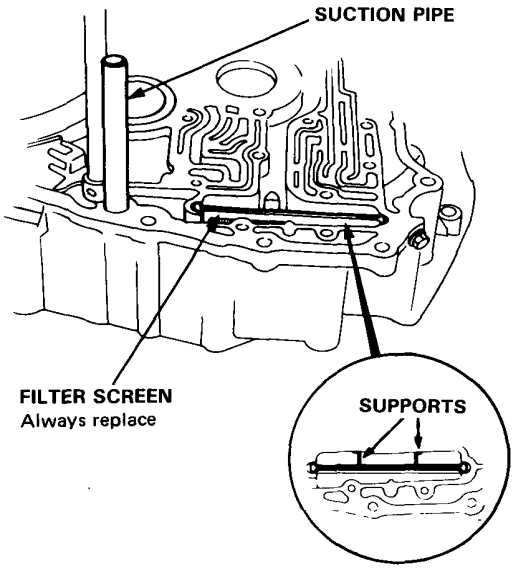
3. Install the control lever and new lock plate on the other end of the shaft. Tighten the bolt to the torque shown, then bend the tab over against the bolt head.



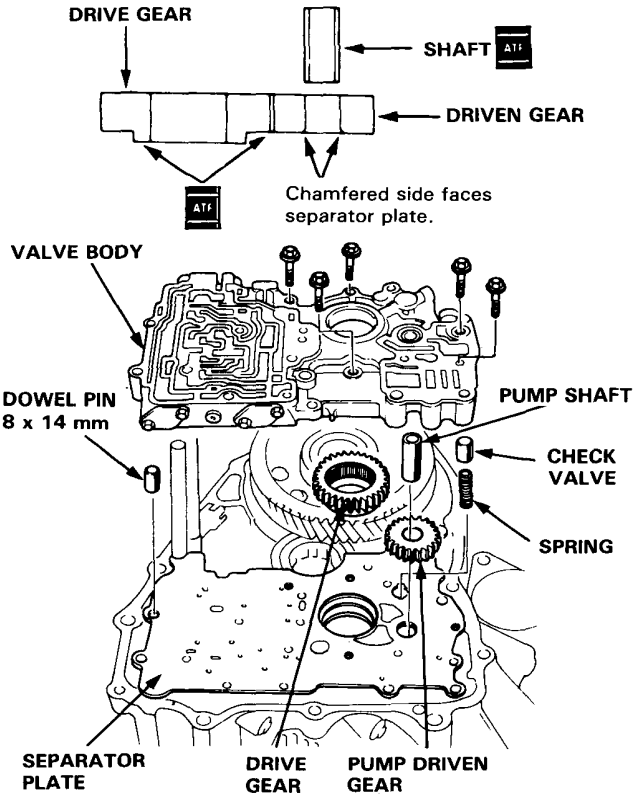
(cont'd)

Reassembly (cont'd)

4. Install the suction pipe and new filter screen.



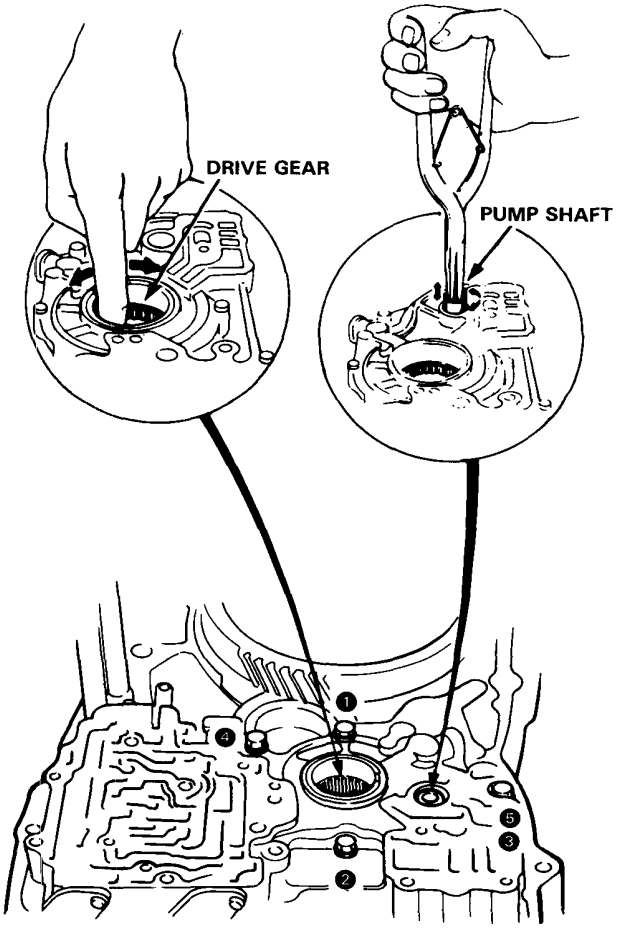
5. Install the separator plate, dowel pin, pump gears, and shaft.
6. Install the check valve and spring, then install the main valve body on the torque converter housing.



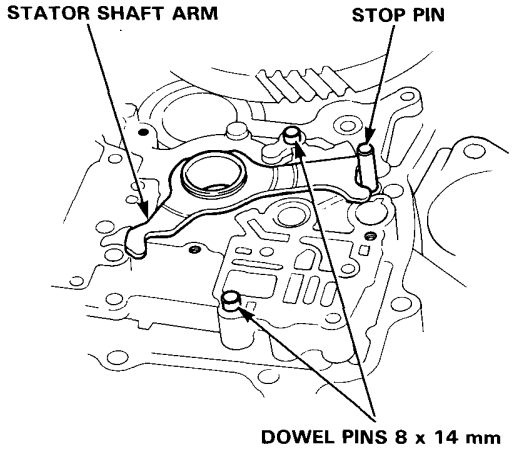
7. Tighten the 4 valve body bolts in the sequence shown. Make sure the pump drive gear rotates smoothly in the normal operating direction and the pump shaft moves smoothly in both the axial and normal operating directions.

8. Torque the valve body bolts to 12 N·m (1.2 kg-m, 9 lb-ft), and again check that the pump gear and pump shaft move freely.

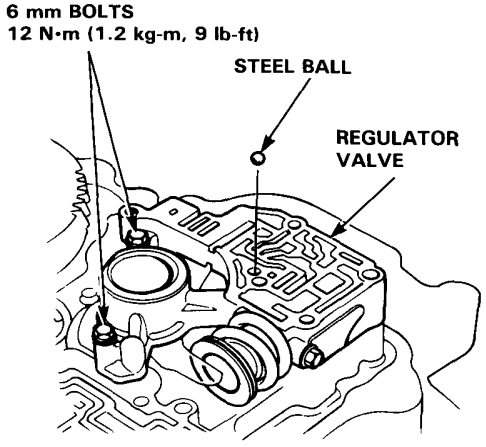
CAUTION: If the pump gear and pump shaft do not move freely, Loosen the valve body bolts, realign the shaft, and then retighten to the specified torque. Failure to align the pump shaft correctly will result in seized pump gear or pump shaft.



9. Install the stator shaft arm, stop pin and dowel pins.

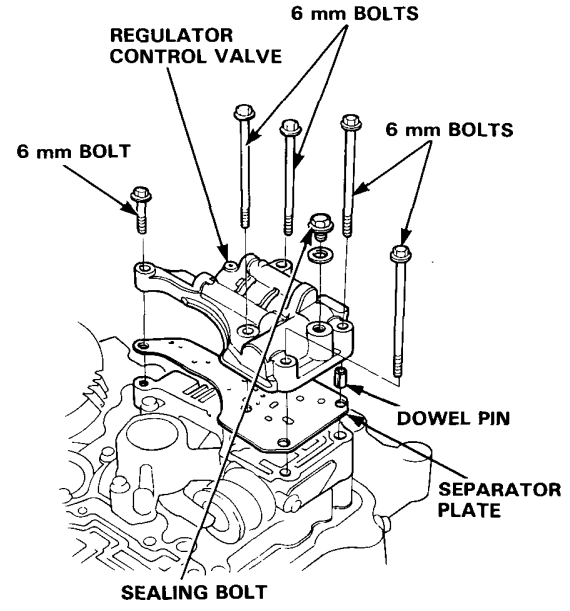


10. Install the regulator valve and torque its 2 bolts to 12 N·m (1.2 kg-m, 9 lb-ft), and install the steel ball.



11. Install the dowel pin, and separator plate.

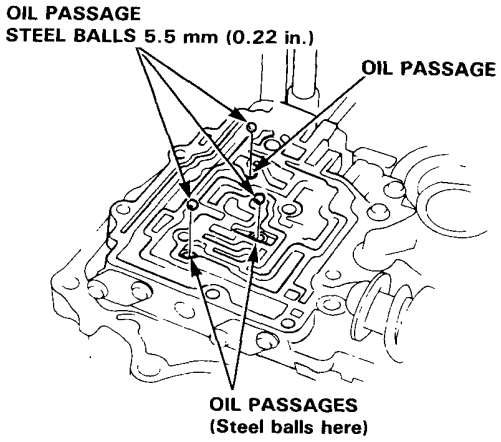
12. Install the regulator control valve body bolts as shown, and torque to 12 N·m (1.2 kg-m, 9 lb-ft).



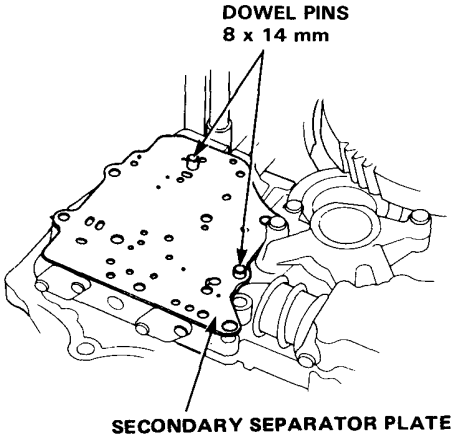
(cont'd)

Reassembly (cont'd)

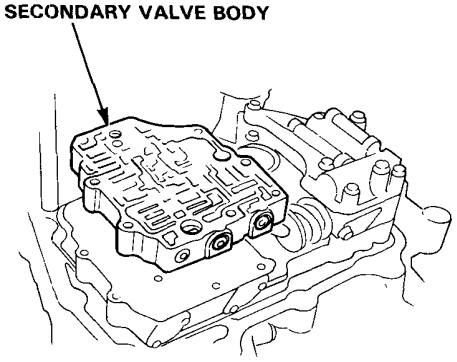
13. Install the 3 steel balls in main valve body oil passages.



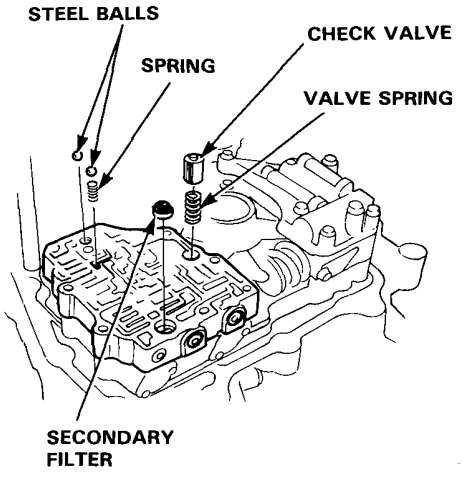
14. Install the separator plate and dowel pins.



15. Install the secondary valve body.

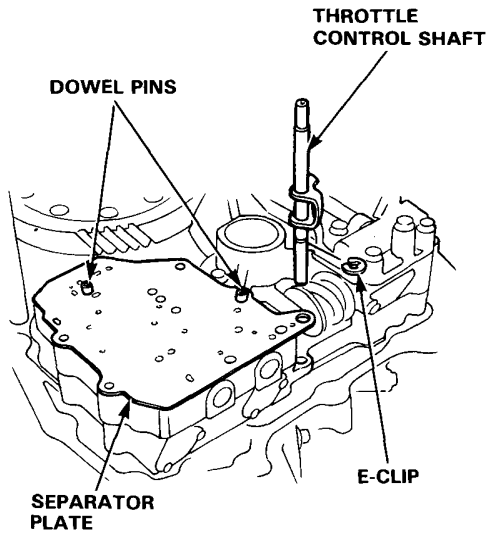


16. Install the steel balls, ball spring, check valve, valve spring and secondary filter in the secondary valve body.

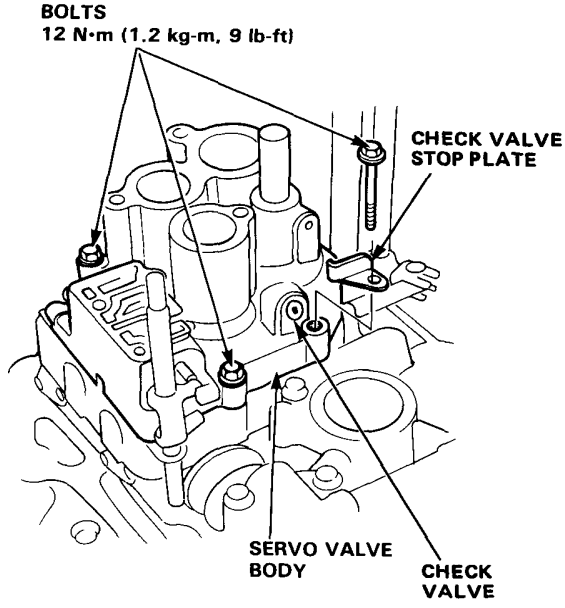


NOTE: The ball for the top oil passage has a spring to press the ball against the separator plate.

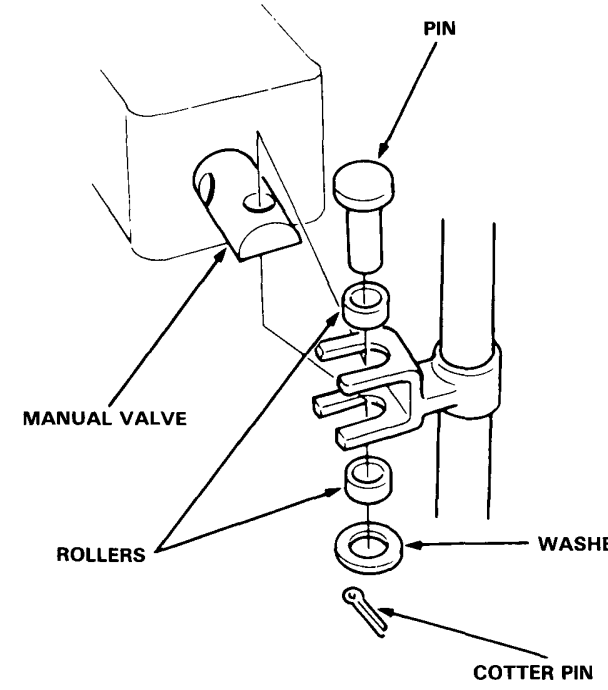
17. Install the separator plate and dowel pins, then install the throttle control shaft.



18. Install the servo valve body (2 bolts) and check valve stop plate (1 bolt) as shown.

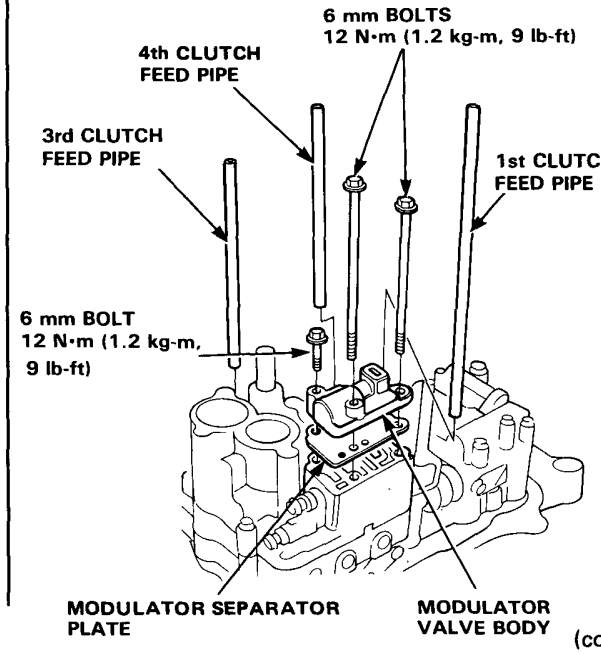


19. Put the rollers on each side of the manual valve stem, then attach the valve to the lever with the pin. Secure with the lock pin.



20. Install the separator plate.

21. Install the 1st, 3rd and 4th clutch feed pipes.



(cont'd)

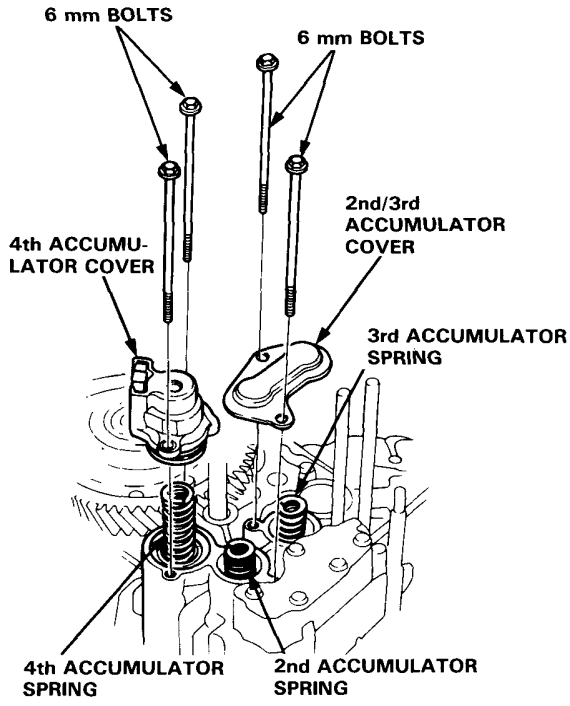
Reassembly (cont'd)

22. Install the accumulator springs.

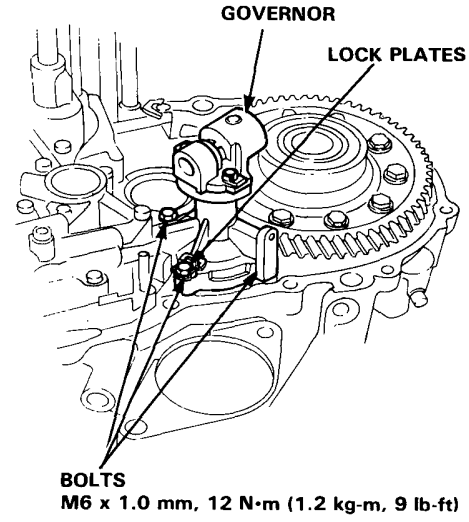
23. Install the 2nd/3rd accumulator cover, and torque the bolts to 12 N·m (1.2 kg-m, 9 lb-ft) in a criss-cross pattern.

24. Install the 4th accumulator cover, and torque the bolts to 12 N·m (1.2 kg-m, 9 lb-ft) in a criss-cross pattern.

    CAUTION: To prevent stripping the threads, press down on accumulator cover, then install the bolts.

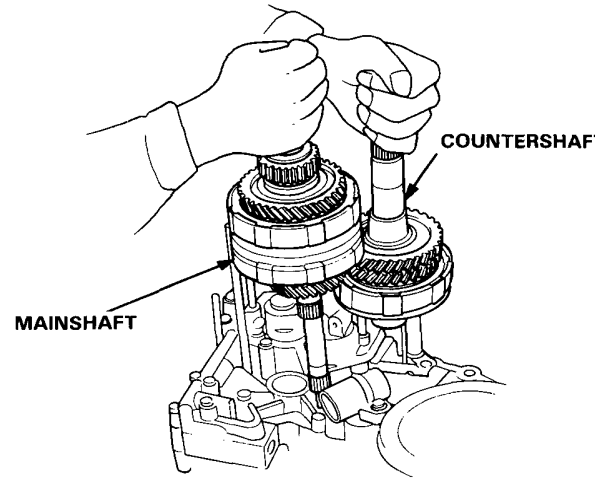


25. Install the governor valve using new lock plates, and the three 6 mm bolts.



26. Set the countershaft and mainshaft in place *as an* assembly.

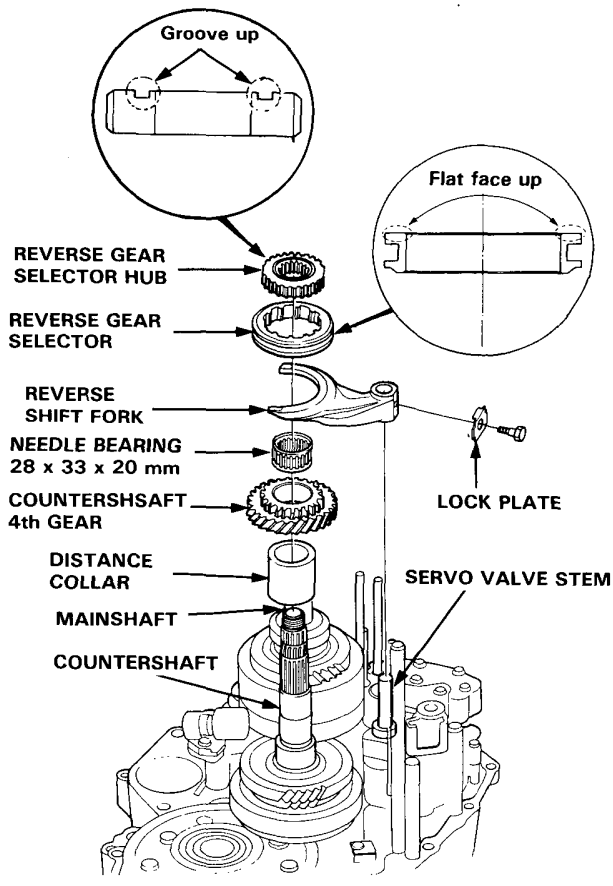
    NOTE: Do not tap on the shafts with a hammer to drive in.



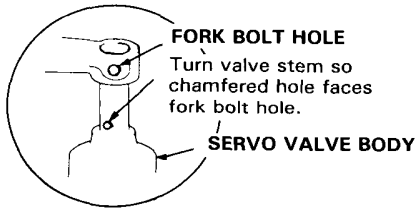
27. Install 4th gear and its needle bearing, and the countershaft 4th gear and its selector hub.

28. Assemble the reverse shift fork and selector sleeve, then install them as an assembly on the countershaft.

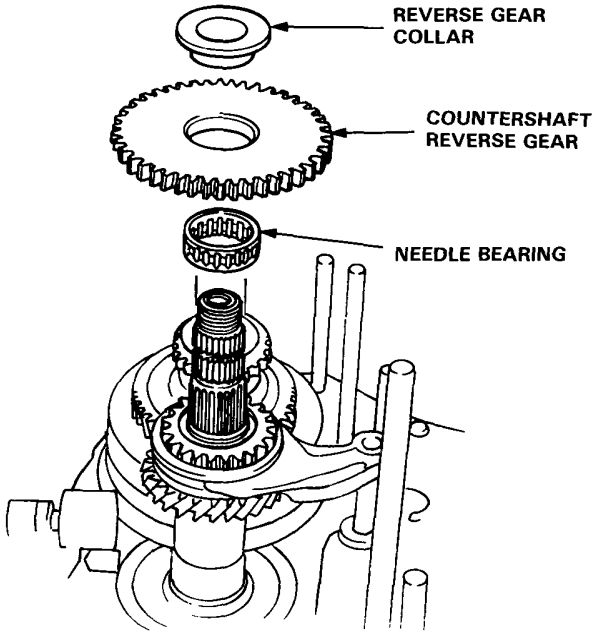
NOTE:
- Install the sleeve with its flat face up.
- Install the reverse gear selector hub with the groove facing up.



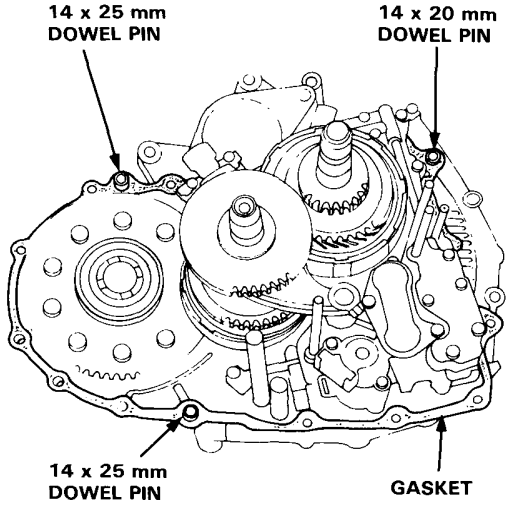
29. Install the reverse shift fork over the servo valve stem. Align the hole in the stem with hole in fork as shown, and install the bolt and new lock plate. Bend the lock tab against the bolt head.



30. Install the countershaft reverse gear, needle bearing, and reverse gear collar.



31. Install the new gasket and three dowel pins in the torque converter housing.

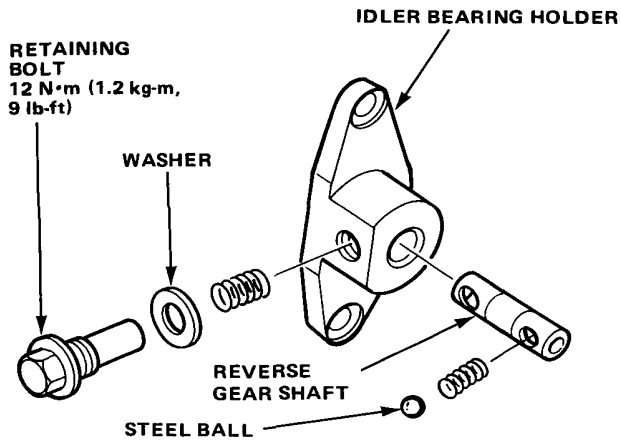


(cont'd)

Reassembly (cont'd)

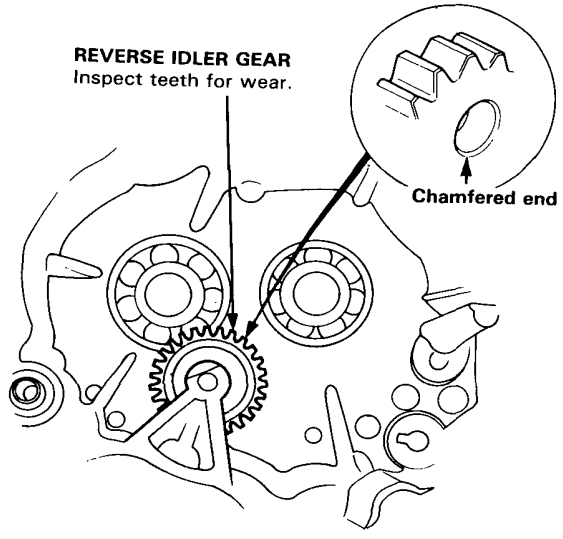
32. Assemble the idler bearing holder.

    NOTE: Align the hole in the shaft with the spring.



33. Install the reverse idler gear.

    NOTE: Install the reverse idler gear so that the larger chamfer on the shaft bore faces the torque converter housing.

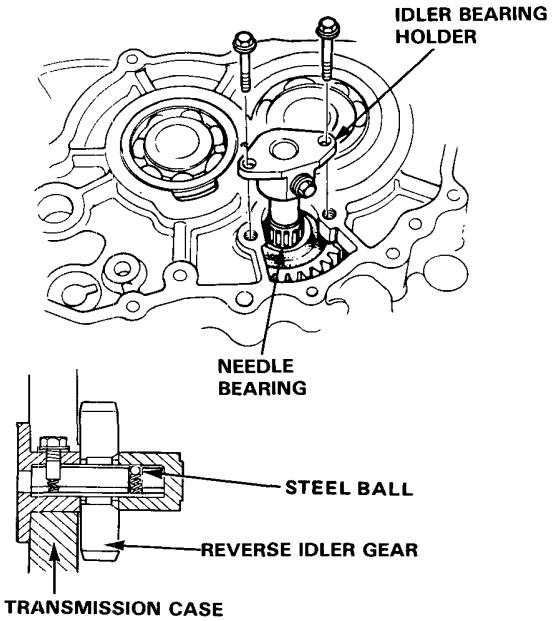


34. Install the needle bearing into the idler gear.

35. Install the idler bearing holder into the transmission housing.

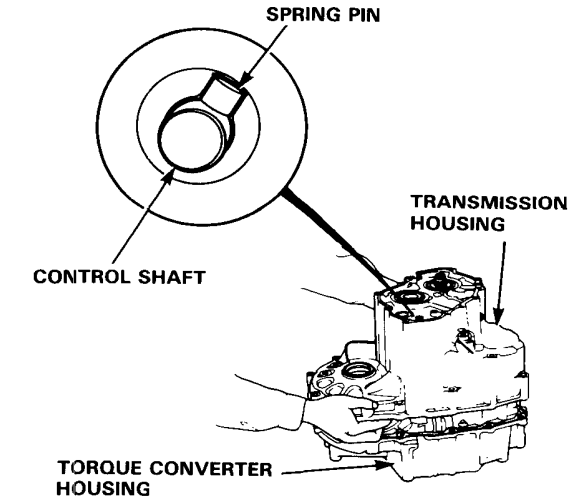
36. Tighten the reverse idler bearing holder bolts.

37. Install the spring and then tighten the retaining bolt with sealed washer.



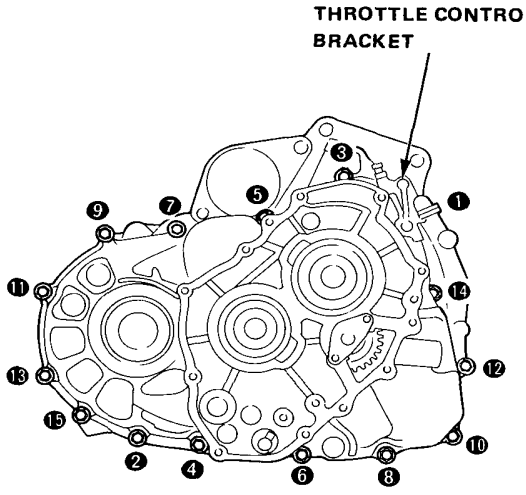
38. Place the transmission housing on the torque converter housing.

    NOTE: Be sure the main valve control shaft lines up with the hole in the housing and that the reverse idler gear meshes with the mainshaft and countershaft, or the housing will not go on.



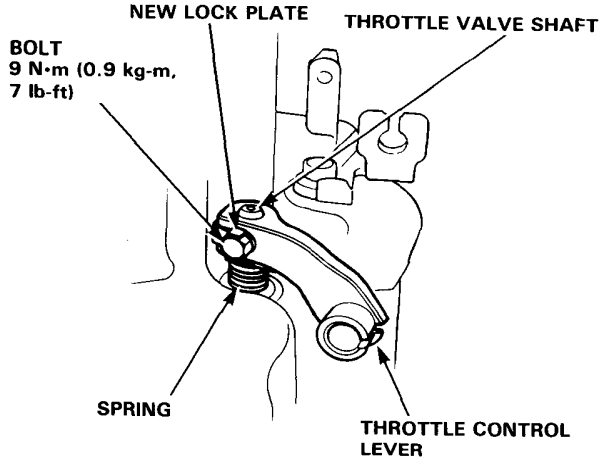
39. Install the bolts in the locations shown. Tighten the bolts in sequence shown; tighten in two or three steps to prevent distortion:

NOTE: When tightening the transmission housing bolts, take care that you do not distort or damage the throttle control bracket; distortion or damage to the bracket will change transmission shift points.



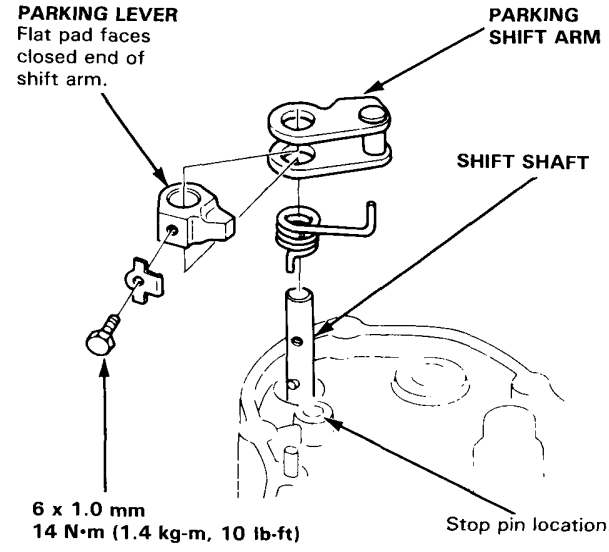
40. Install the throttle control lever and spring on the throttle control shaft.

41. Install the bolt and new lock plate. Bend the lock tab against the bolt head.



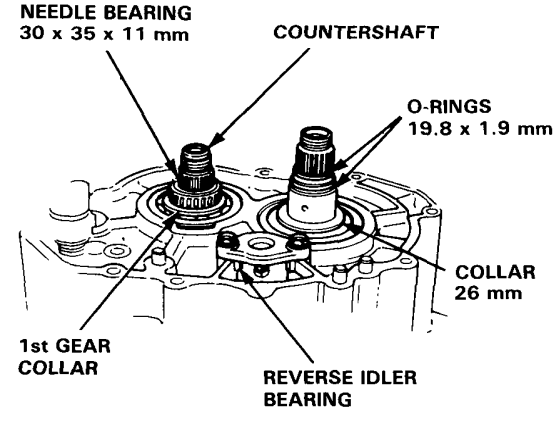
42. Install the parking shift arm and spring on the shift shaft with the bolt and a new lock plate. Bend the lock tab against the bolt head.

NOTE: The spring should put clockwise tension on the shift arm, forcing it against the stop pin.



43. Install the 1st gear collar and needle bearing on the countershaft. Install the 26 mm collar on the mainshaft.

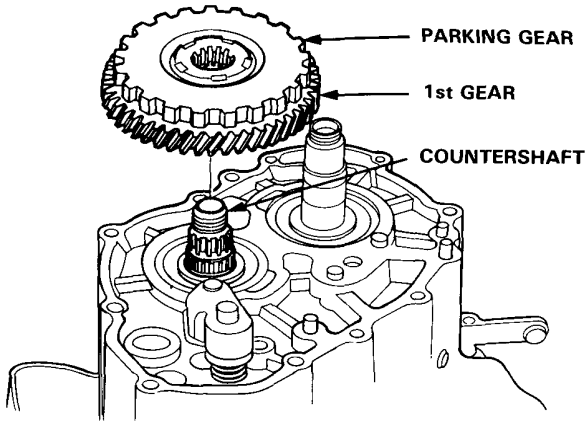
44. Install new 19.8 x 1.9 mm O-rings on the mainshaft.



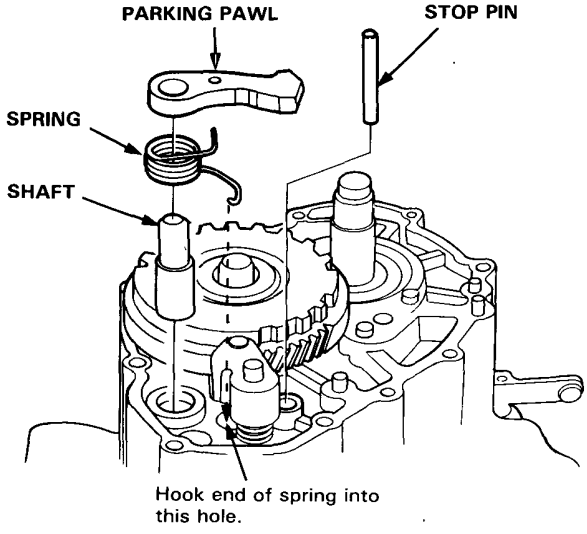
(cont'd)

Reassembly (cont'd)

45. Install the countershaft 1st gear and parking gear on the countershaft.



46. Install the stop pin, parking pawl shaft, parking pawl, and pawl release spring.

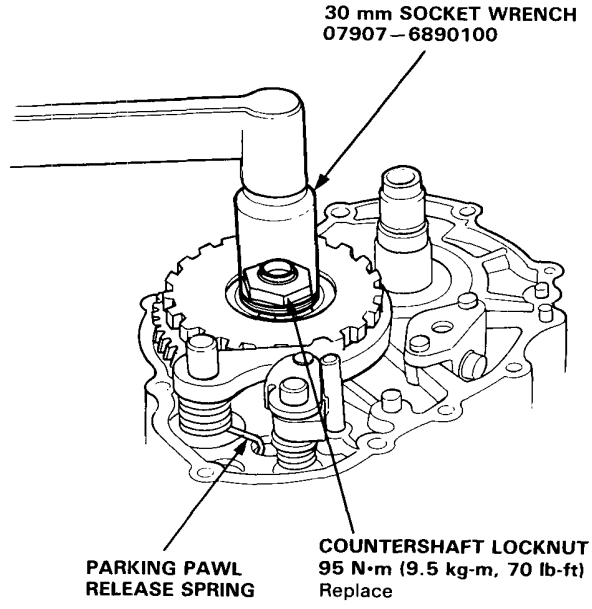


NOTE:

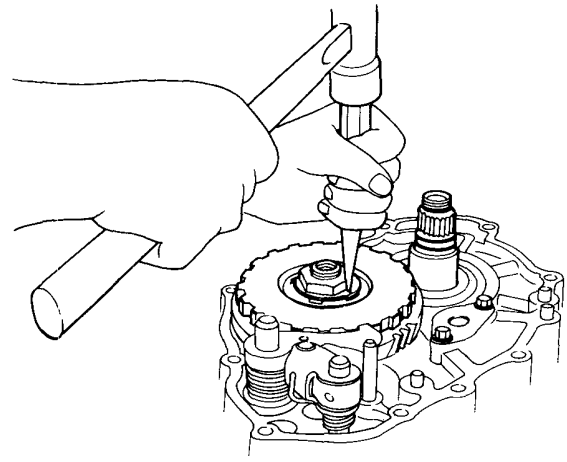
- One end of the parking pawl release spring fits into the hole in the parking pawl, the other end into the hole in the transmission housing as shown.
- The release spring should put clockwise tension on the pawl, forcing it away from the parking gear.

47. Shift to PARK and install the mainshaft holder.

48. Install and torque the new countershaft locknut.

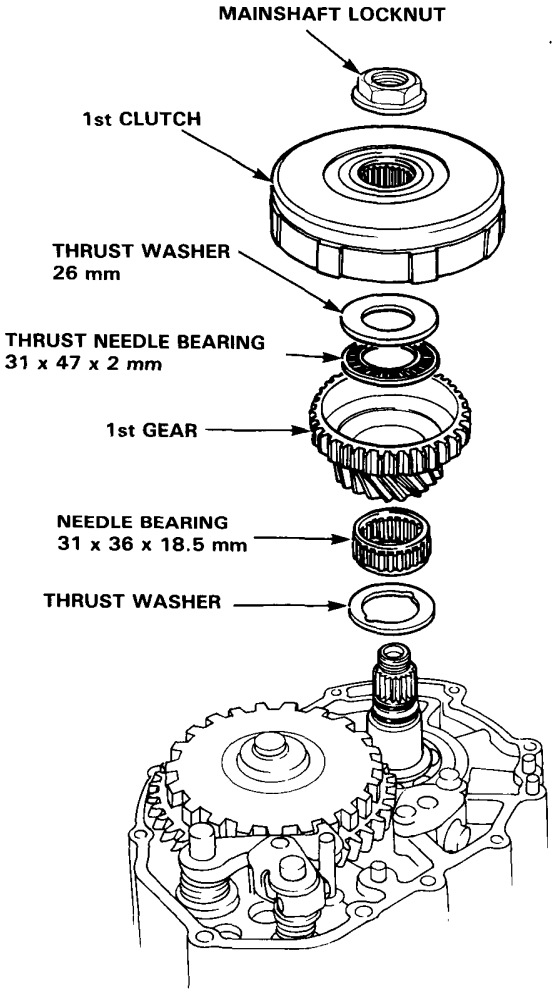


49. Stake the locknut flange into the gear groove.



50. Install 31 x 36 x 18.5 mm needle bearing and thrust washer on the mainshaft.

51. Install 1st gear, thrust needle bearing, and the thrust washer on the mainshaft.

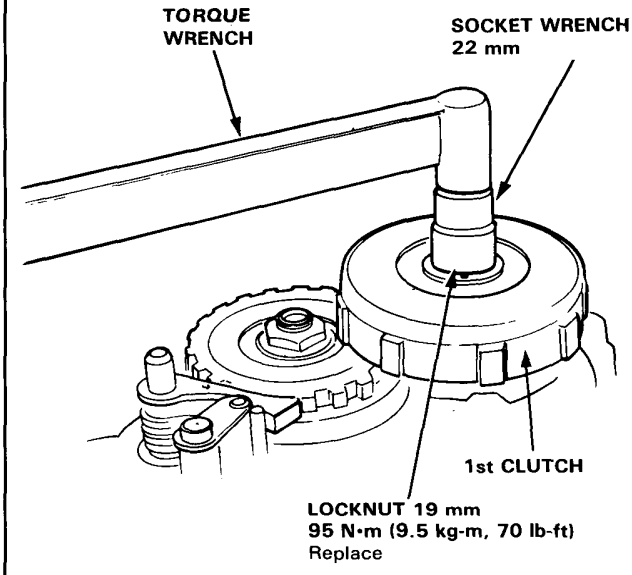


52. Install the 1st clutch on the mainshaft.

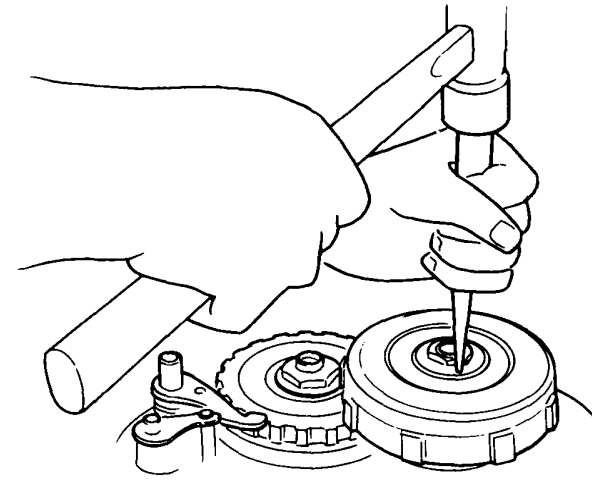
53. Attach the mainshaft holder 07932–6890202 from the underside of the torque converter case.

54. Install and torque the new mainshaft locknut.

CAUTION: Locknut has left-hand threads.



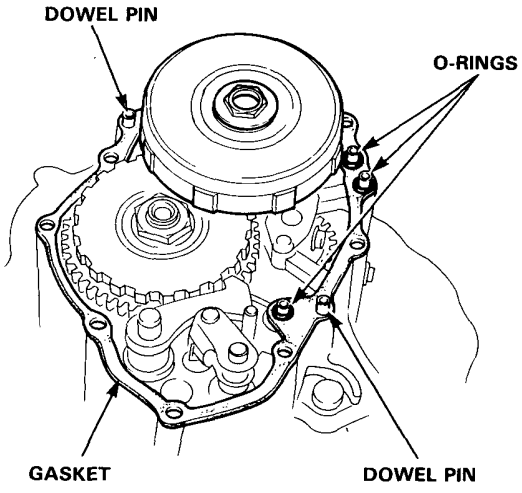
55. Stake the locknut flange into the groove in the 1st clutch.



(cont'd)

Reassembly (cont'd)

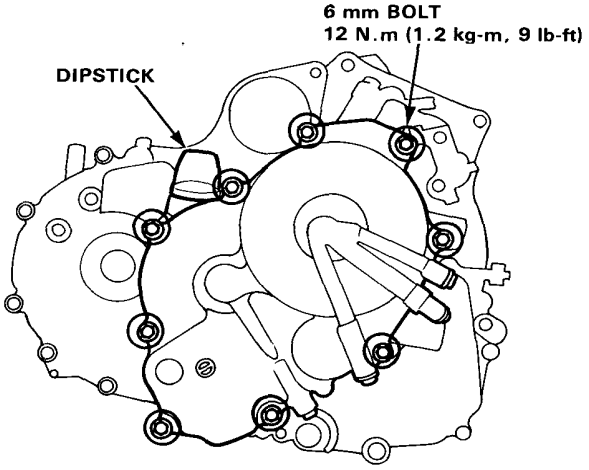
56. Install the gasket, dowel pins, and O-rings on the transmission housing.



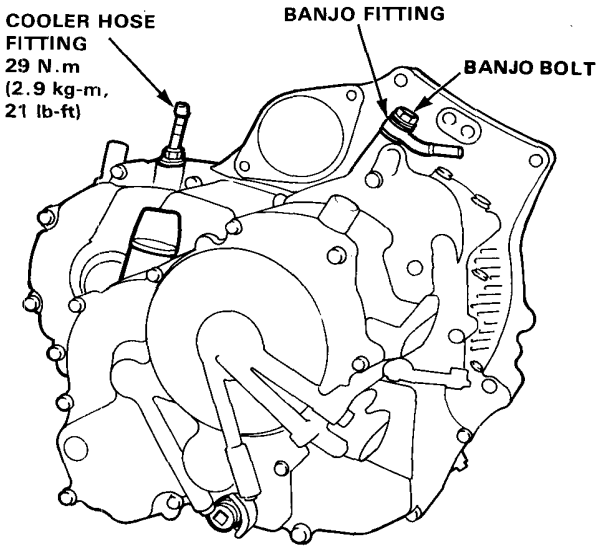
57. Install the end cover and torque all bolts (9) to 12 N•m (1.2 kg-m. 9 lb-ft).

58. Install the dipstick.

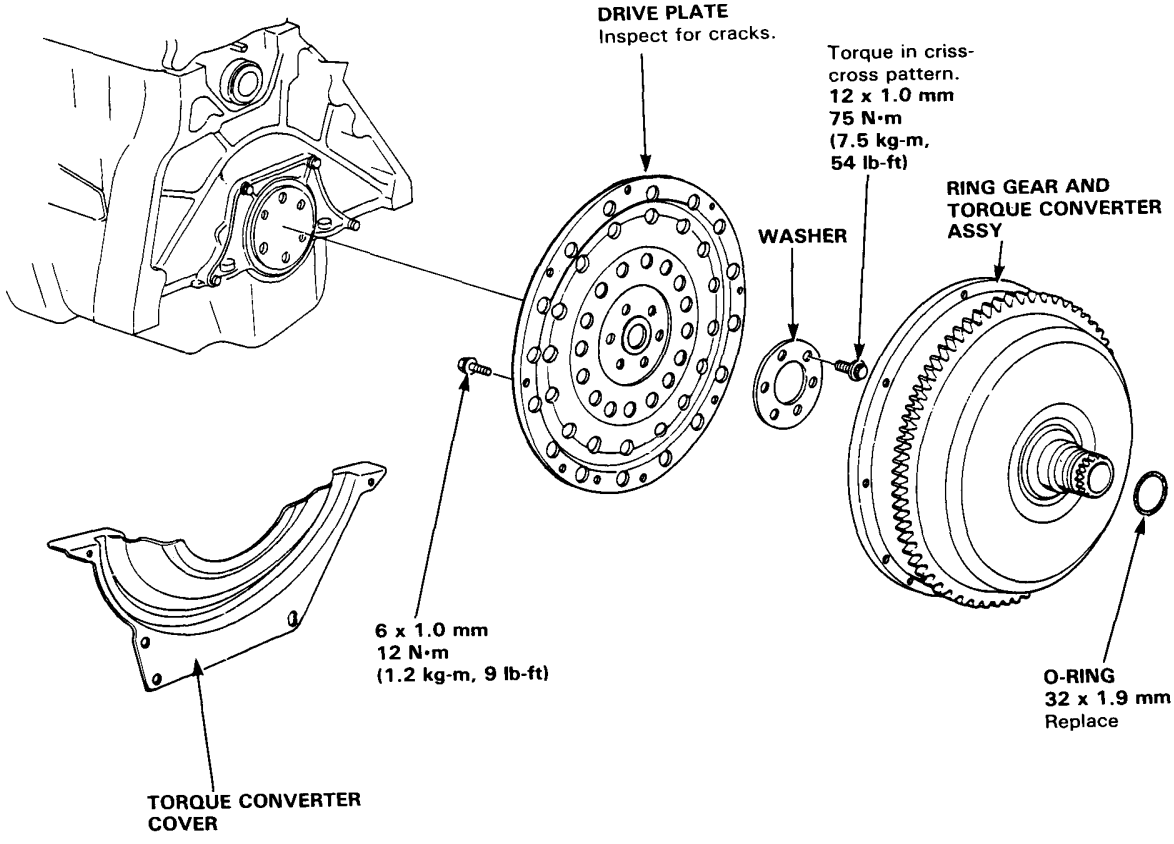
59. Install the transmission cooler banjo fitting, but do not tighten until the transmission is installed in the car and the hose is positioned properly.



60. Install the transmission cooler hose fitting and torque to 26 N•m (2.6 kg-m, 19 lb-ft).



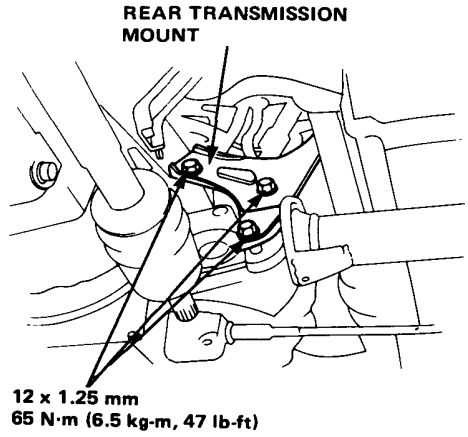
Disassembly



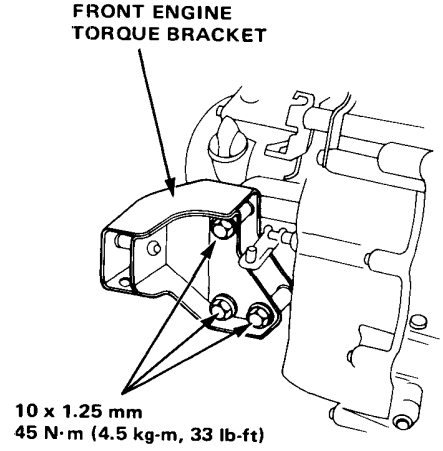
Installation

1. Slide the torque converter onto mainshaft.
2. Place the transmission on the transmission jack, and raise to the engine level.
3. Check that the two 14 mm dowel pins are installed in the torque converter housing.
4. Align the dowel pins with holes in block; align the torque converter bolt heads with holes in drive plate.
5. If you left the front end connected on driver's side, insert the left axle (with new spring clip on the end) into the differential as you roll the transmission up to the engine.

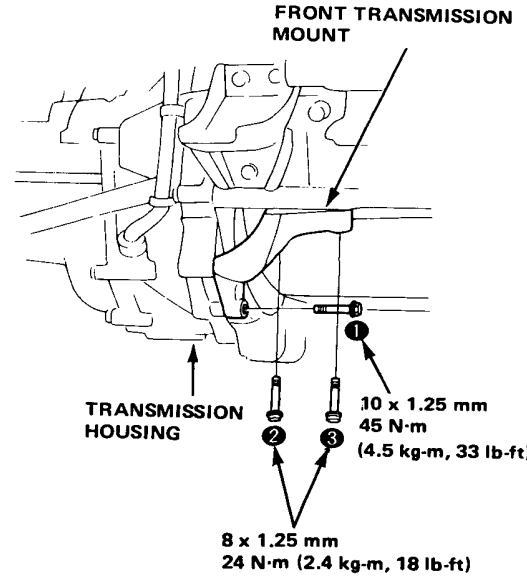
   NOTE: New 26 mm spring clips must be used on both axles.
6. Secure the transmission to engine with the engine side mounting bolt (12 x 1.25 x 70 mm) and torque to 68 N·m (6.8 kg-m, 50 lb-ft).
7. Attach the torque converter to the drive plate with eight (6 x 10 x 12 mm) bolts, and torque to 12 N·m (9 lb-ft). Rotate the crank as necessary to tighten bolts to 1/2 torque, then final torque, in a criss-cross pattern. Check for free rotation after tightening the last bolt.
8. Install the shift cable. (page 16-21)
9. Remove the transmission jack.
10. Install the torque converter cover plate.
11. Install the rear transmission mount and torque its bolts to 6.5 N·m (6.5 kg-m, 47 lb-ft).



12. Install the engine torque bracket and torque its bolts to 45 N·m (4.5 kg-m, 33 lb-ft).



13. Loosely install the front transmission mount bolts, then torque in the sequence shown.



14. Install the starter mounting bolts and torque to 45 N·m (4.5 kg-m, 33 lb-ft).

15. Install a new 26 mm spring clip on the end of each axle.

16. Turn the right steering knuckle fully outward, and slide axle into the differential until you feel its spring clip engage side gear. Repeat on the left side or, if the left axle is already in (step 5), check to be sure the spring clip has engaged side gear.

17. Reconnect the lower arm ball joints and torque to 45 N·m (4.5 kg-m, 33 lb-ft).

18. Reconnect the tie-rod end ball joints and torque to 45 N·m (4.5 kg-m, 33 lb-ft).

19. Install the splash shields and exhaust header pipe.

20. Install the front wheels, lower car to ground, and torque lug nuts to 110 N·m (11.0 kg-m, 80 lb-ft).

21. Remove the hoist chain from the 8 mm bolt on the cylinder head.

22. Insert the speedometer cable into gear holder, then secure the cable with clip and install the boot.

23. Install the top three transmission mounting bolts (12 x 1.25 x 60 mm) and torque to 58 N·m (5.8 kg-m, 42 lb-ft).

24. Connect the cooler hoses, and torque the banjo bolts to 29 N·m (2.9 kg-m, 21 lb-ft).

25. Attach the shift control cable to shaft lever with pin and clip, if removed. Check the cable adjustment (page 16-67)

26. Reinstall the center console.

27. Connecting wiring:

    - Battery positive cable to starter.
    - Black/white wire to starter solenoid.
    - Transmission ground cable.

28. With the ignition key OFF, connect the ground cable to the battery and transmission.

29. Unscrew the dipstick from the top of transmission end cover and add 2.9 quarts Dexron® ATF through the hole. Reinstall the disptick.

    NOTE: If the torque converter was replaced, the ATF fill quantity is 5.6 quarts.

30. Start the engine, set the parking brake, and shift the transmission through all gears three times. Check for proper control cable adjustment.

31. Let the engine reach operating temperature with the transmission in Neutral or Park, then turn it off and check the fluid level.

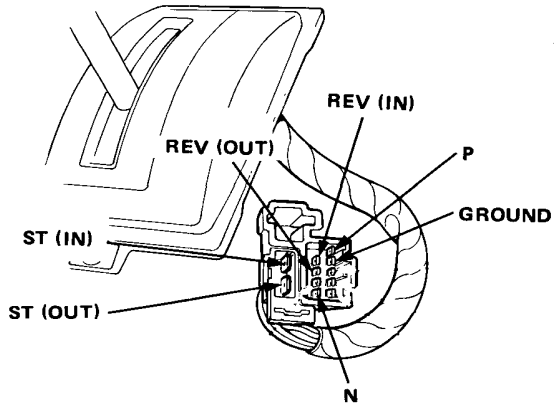
32. Install the throttle control cable and adjust (page 16-68).

33. Road test as described on page 16-71.

Neutral/Back-Up Light Switch

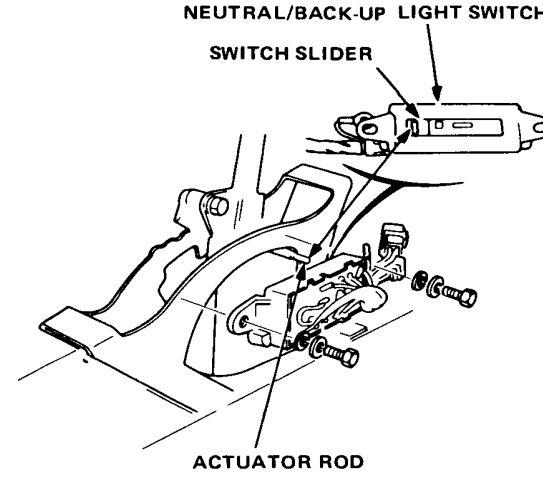
Testing / Installation

Move the selector lever to Park, Reverse, and Neutral to check continuity of combined neutral safety (inhibiter) and back-up light switch.
Replace the switch if there is no continuity between connector terminals shown on the chart.



	B/W	Y	B/W	G/B
N	○		○	
R		○		○
P	○		○	
	ST(IN)	REV(IN)	ST(OUT)	REV(OUT)

1. Position the switch slider to neutral, as shown.
2. Shift selector lever to neutral.
3. Align the switch lug with the actuator rod.

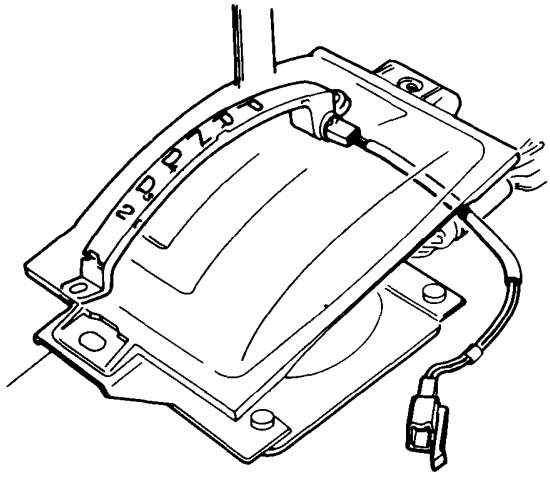


4. Tighten the bolts.

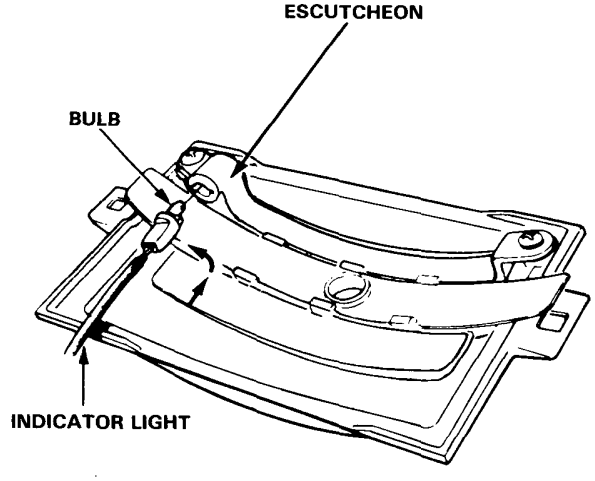
Shift Indicator Light

Check and Installation

Check for continuity between indicator light connector terminals as shown. If there is no continuity, check for burned out bulb or open circuit.



1. Install the indicator bulb in the bulb housing. Insert the bulb housing into slot in escutcheon, then turn 90° to bulb housing.

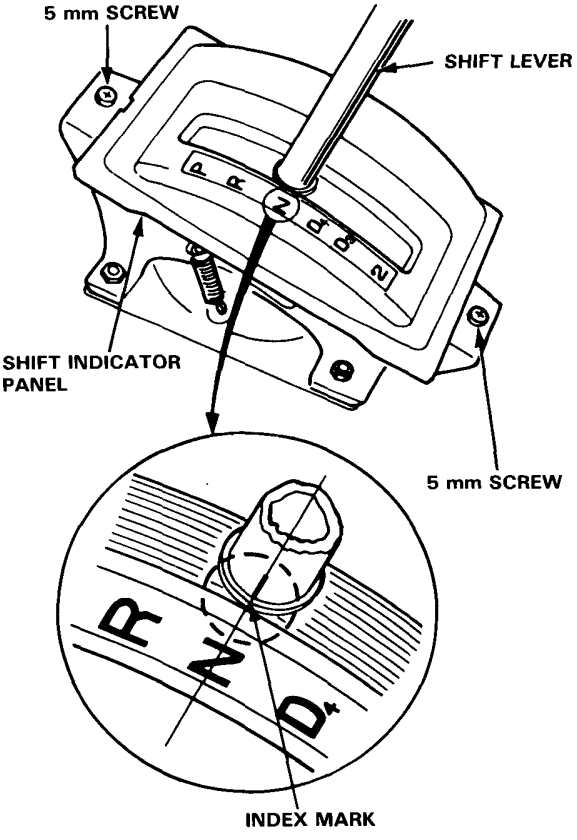


Shift Indicator Panel Position

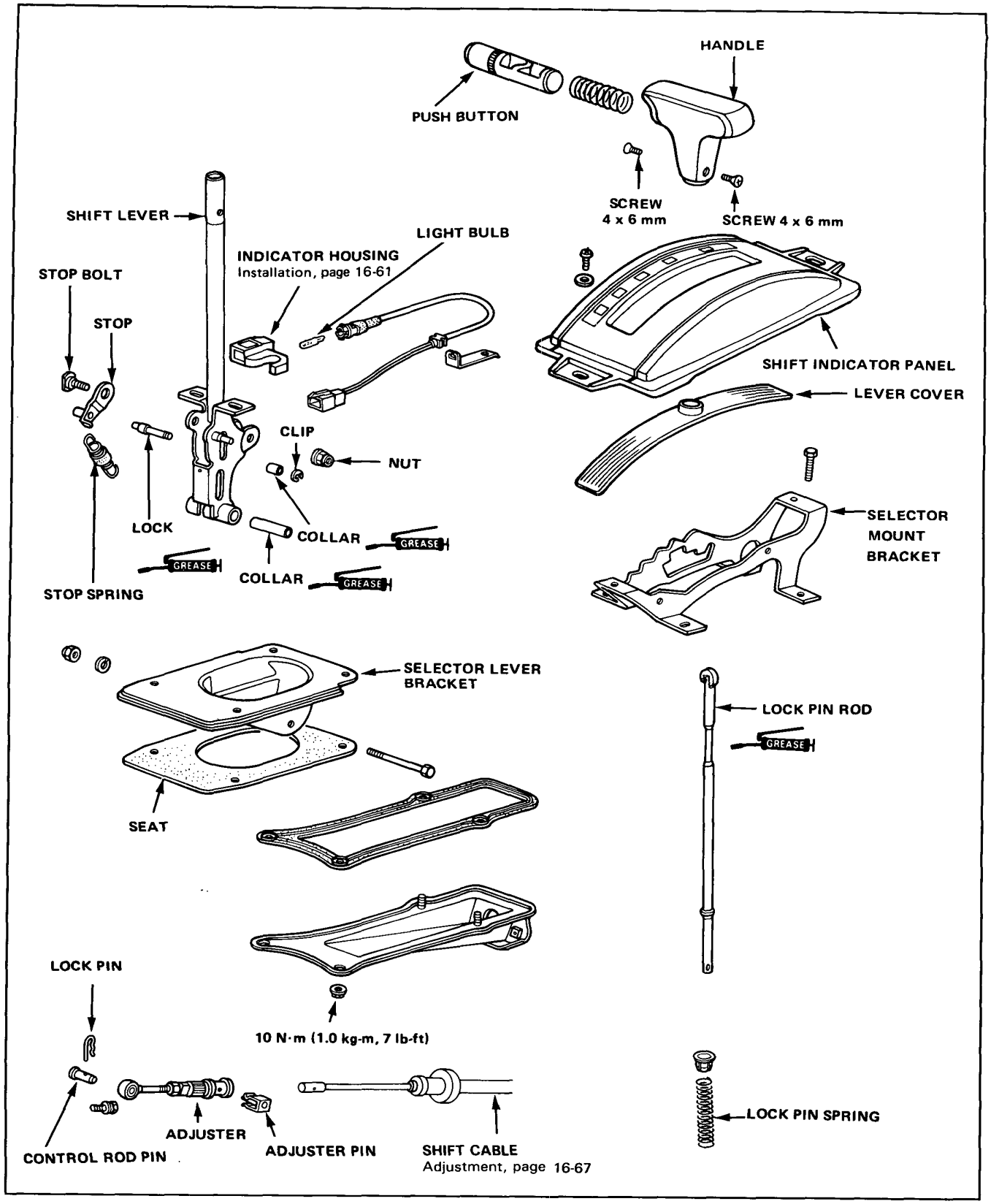
Adjustment

1. Check that the index mark of the indicator aligns with the N mark of the shift indicator panel with the transmission in NEUTRAL.
2. If not aligned, remove the panel mounting screws and adjust by moving panel.

   NOTE: Whenever escutcheon is removed for indicator bulb replacement etc., reinstall the panel as described above.



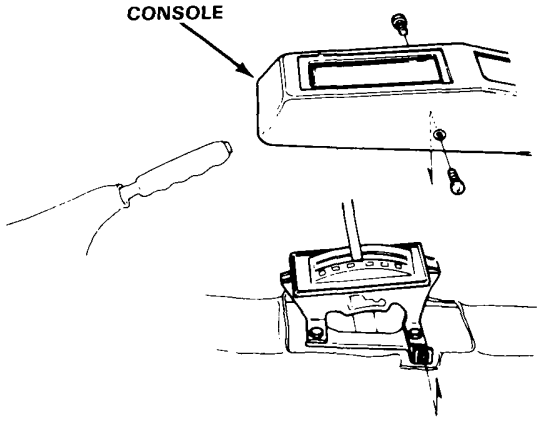
Gear Shift Selector



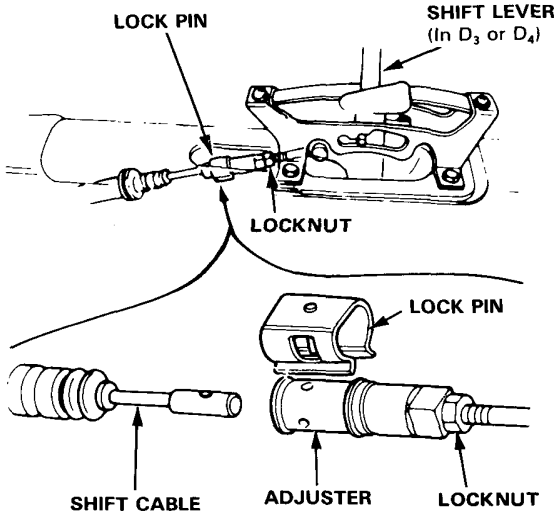
Shift Cable

Adjustment

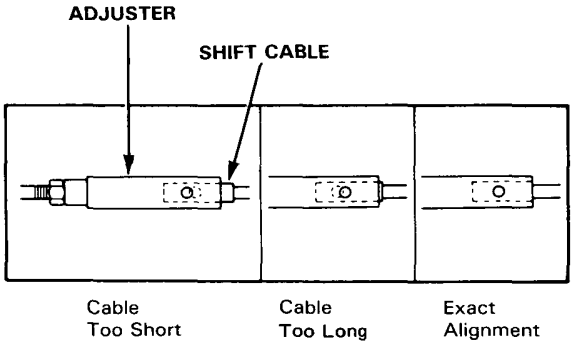
1. Start the engine. Shift to reverse to see if the reverse gear engages.If not, refer to troubleshooting on page 16-4.
2. With the engine off, remove the console.



3. Shift to Drive, then remove the lock pin from the cable adjuster.



4. Check that the hole in the adjuster is perfectly aligned with the hole in the shift cable.



NOTE: There are two holes in the end of the shift cable. They are positioned 90° apart to allow cable adjustments in 1/4 turn increments.

5. If not perfectly aligned, loosen the locknut on shift cable and adjust as required.
6. Tighten the locknut.
7. Install the lock pin on the adjuster.

NOTE: If you feel the lock pin binding as you reinstall it, the cable is still out of adjustment and must be readjusted again.

8. Start the engine and check the shift lever in all gears. If any gear does not work properly, refer to troubleshooting on page 16-4.

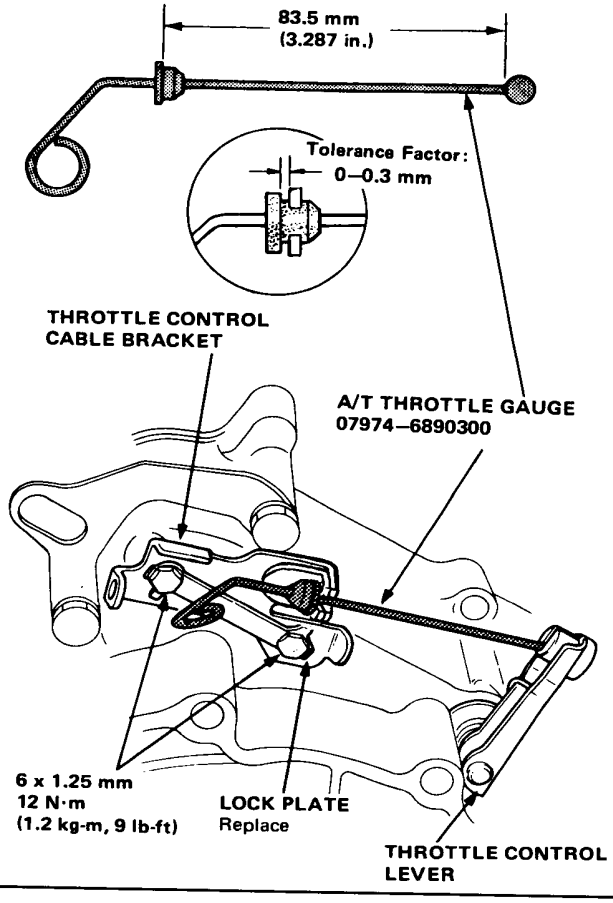
Throttle Control Cable Bracket

Adjustment

1. Disconnect the throttle control cable from the throttle control lever.
2. Bend down the lock tabs of the lock plate and remove the two 6 mm bolts to free the bracket.
3. Loosely install a new lock plate.
4. Position the special tool between the throttle control lever and the bracket as shown.

   NOTE: The special tool is designed so that the distance between the lever and the bracket is 83.5 mm (3.287 in.) when it is installed.
5. Position the bracket so that there is no binding between the bracket and the special tool (tolerance 0 to +0.3 mm).
   Then tighten the two 6 mm bolts, bend up the lock plate tabs against the bolts heads.

   CAUTION: Make sure the control lever doesn't get pulled toward the bracket side as you tighten the bolts.



Throttle Control Cable

Adjustment/Inspection

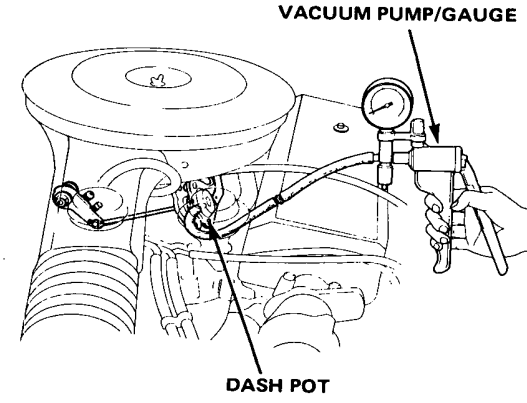
NOTE: Perform the following inspections before adjusting the throttle control cable.

- The carburetor throttle cable play is correct. See Fuel section.
- The engine is warmed-up to operating temperature.

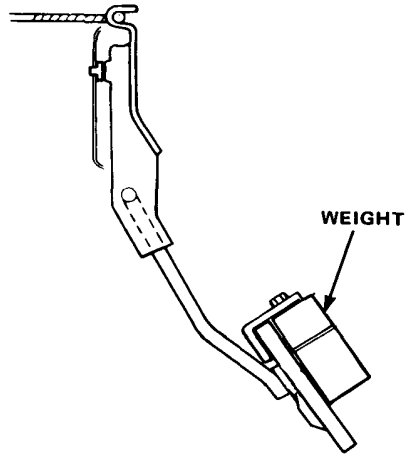
NOTE: The cooling fan should come on twice or more.

- The idle speed is correct. See Fuel section.
- The automatic choke operation is correct. See Fuel section.
- The distance between the throttle control lever and the throttle control bracket is correct as shown in left column.

1. With the engine off, disconnect the throttle control cable from the throttle control lever.
2. Disconnect the vacuum tube from the dash pot. connect the vacuum pump and keep vacuum applied.
   This simulates a normal operating amount of pull by the dash pot as if the engine were running.

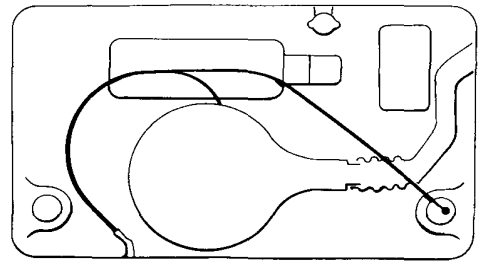


3. Attach a weight of about 1.3 kg (2.6 lbs) to the accelerator pedal. Raise the pedal, then release it, this will allow the weight to remove the normal free play from the throttle cable.

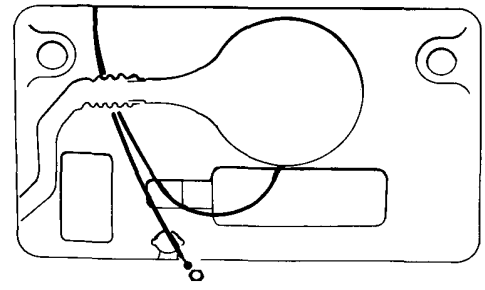


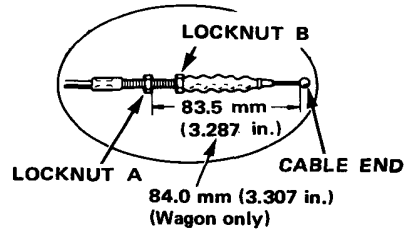
4. *Secure the throttle control cable with clamps as* shown.

L/H



R/H

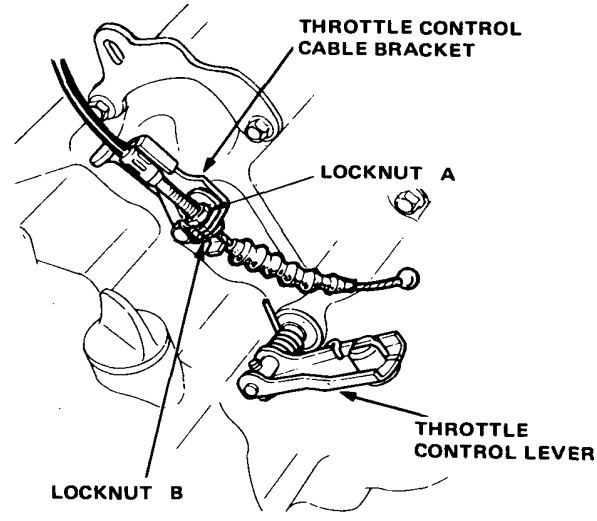




5. L/H: Lay the end of the throttle control cable on the R damper shock tower.
   R/H: Lay the end of the throttle control cable on the engine hood latch.

6. Adjust the distance between the throttle control cable end and nut (A).
   Hatchback and Sedan : 83.5 mm (3.287 in.)
   Wagon : 84.0 mm (3.307 in.)

7. Insert the end of throttle control cable in the groove of the throttle control lever.



8. Insert the throttle control cable in the bracket and secure with lock nut (B).

   NOTE: Make sure the cable is not kinked or twisted.

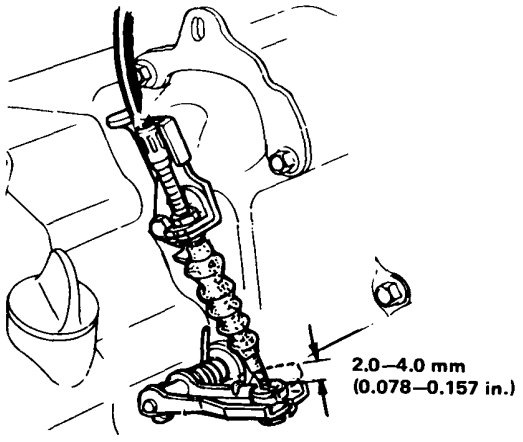
(cont'd)

Throttle Control Cable

Adjustment/Inspection (cont'd)

9. Check that the cable moves freely by depressing the accelerator.

10. Remove the weight on the accelerator pedal and push the pedal to make sure that there is the specified play at the throttle control lever.



11. Start the engine and check the synchronization between the carburetor and the throttle control cable.

    NOTE: The throttle control lever should start to move as engine speed increases.

    - If the throttle control lever moves before engine speed increases, turn the cable lock nut A counterclockwise and re-tighten lock nut B.
    - If the throttle control lever moves after engine speed increases, turn lock nut A clockwise and re-tighten the lock nut B.

NOTE: After transmission is installed;
- Make sure the floor mat does not interfere with accelerator pedal travel. Fully depress accelerator pedal and check carburetor to make sure the throttle lever is fully opened.
- Release the accelerator pedal and check both inner control cables to be sure they have slight play.

Warm up the engine to operating temperature.

D3 and D4 Range

1. Apply parking brake and block the wheels. Start the engine, then move the selector to D4 while depressing the brake pedal. Depress the accelerator pedal, and release it suddenly. Engine should not stall.
2. Check that shift points occur at approximate speeds shown. Also check for abnormal noise and clutch slippage.

- **Upshift**

		1st → 2nd	2nd → 3rd	3rd → 4th	LC. ON
Full-throttle Acceleration from a stop (km/h)	EC	56–61	92–101	145–152	131–140
	KS, KX	53–60	92–101	143–153	140–151
Half-throttle Acceleration from a stop (km/h)	EC	22–30	46–55	72–87	84–100
	KS, KX	31–35	58–68	81–93	90–106
Closed-throttle (km/h) Coasting down-hill from a stop	EC	12–13	18–20	34–39.5	63–70
	KS, KX	18–21	34–37	43–48	66–76

- **Downshift**

		4th → 3rd	3rd → 2nd	2nd → 1st
Full-throttle When car is slowed by increased grade, wind, etc. (km/h)	EC	132–140	88–97	39–44
	KS, KX	116–127	94–92	37–42

		4th → 2nd	2nd → 1st
Closed-throttle (km/h) Coasting or braking to a stop	EC	14–16	8–10
	KS, KX	24–27	10–11

3. Accelerate to about 35 mph so the transmission is in 4th, then shift from D4 to 2. The car should immediately begin slowing down from engine braking.

CAUTION: Do not shift from D4 or D3 to 2 at speeds over 60 mph; you may damage the transmission.

2 (2nd Gear)

1. Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage.
2. Upshifts and downshifts should not occur with the selector in this range.

R (Reverse)

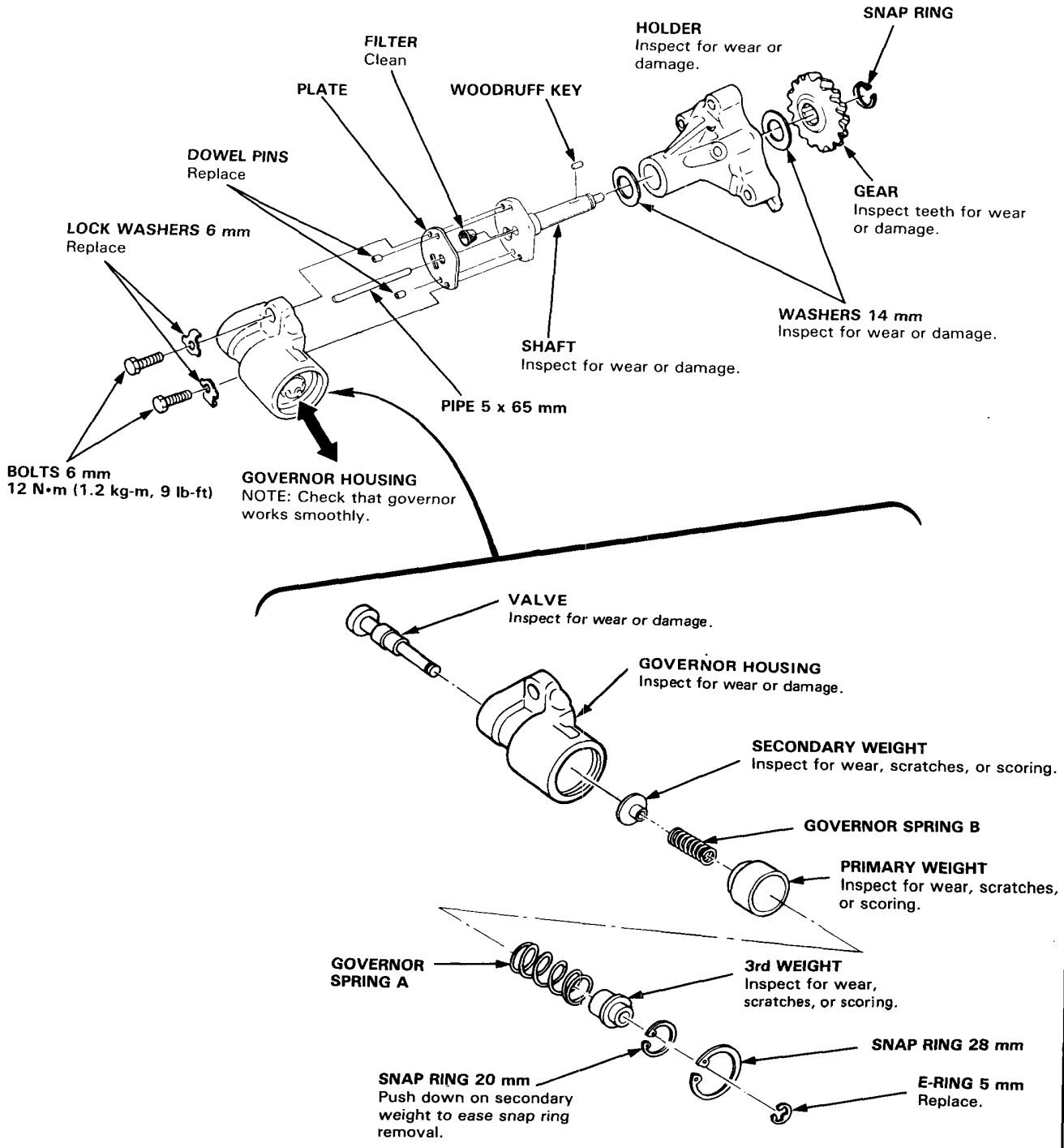
Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

P (Park)

Park car on a slope (approx. 16°), apply the parking brake, and shift into Park. Then release the brake; the car should not move.

Governor Disassembly/Inspection

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check that the governor works smoothly; replace it if it does not.



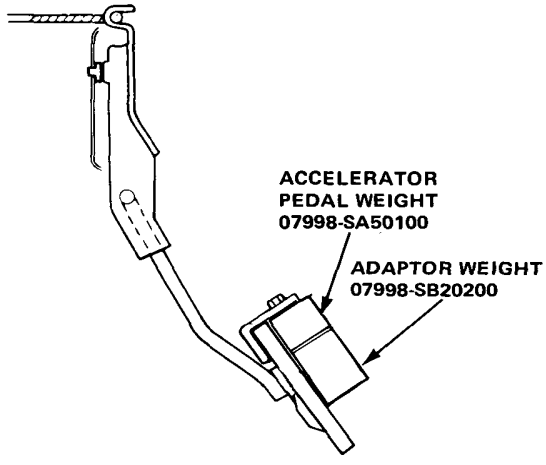
Throttle Control Cable Adjustment/Inspection

NOTE: Perform the following inspections before adjusting the throttle control calbe.

- The carburetor throttle cable play is correct
- The engine is warmed-up to operating temperature.

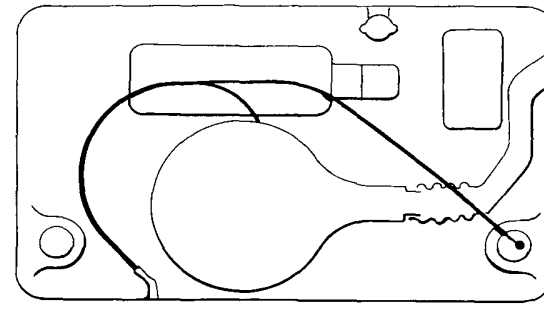
  NOTE: The cooling fan should come on twice or more.
- The idle speed is correct.
- The distance between the throttle control lever and the throttle control bracket is correct as shown in left column.

1. With the engine off, disconnect the throttle control cable from the throttle control lever.
2. Attach a weight of about 1.3 kg (2.6 lbs) to the accelerator pedal. Raise the pedal, then release it, this will allow the weight to remove the normal free play from the throttle cable.

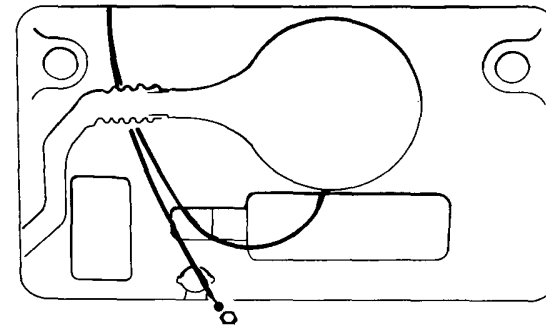


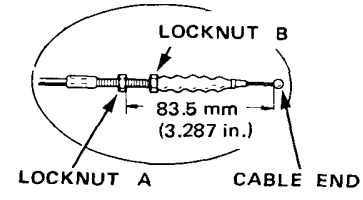
3. Secure the throttle control cable with clamps as shown.

L/H



R/H





4. L/H: Lay the end of the throttle control cable on the R damper shock tower.
   R/H: Lay the end of the throttle control cable on the engine hood latch.
5. Adjust the distance between the throttle control cable end and nut (A) to 83.5 mm (3.287 in.).
6. Insert the end of throttle control cable in the groove of the throttle control lever.

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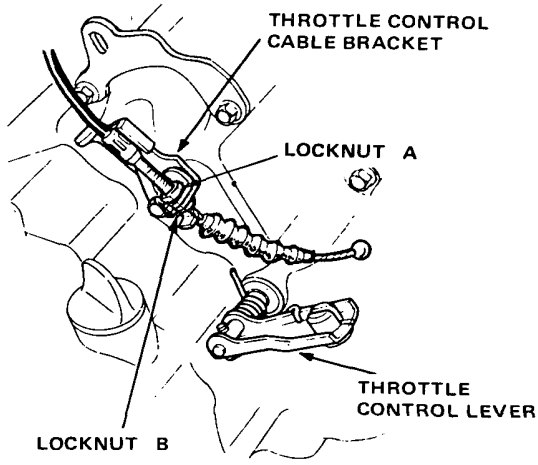
Throttle Control Cable Adjustment/ Inspection (Cont'd)

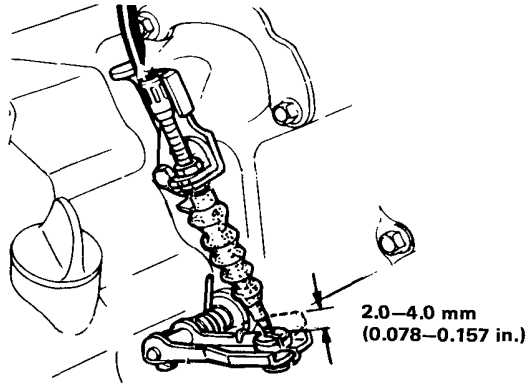


7. Insert the throttle control cable in the bracket and secure with lock nut (B).

   NOTE: Make sure the cable is not kinked or twisted.

8. Check that the cable moves freely by depressing the accelerator.

9. Remove the weight on the accelerator pedal and push the pedal to make sure that there is the specified play at the throttle control lever.



10. Start the engine and check the synchronization between the carburetor and the throttle control cable.

    NOTE: The throttle control lever should start to move as engine speed increases.

    - If the throttle control lever moves before engine speed increases, turn the cable lock nut A counter clockwise and re-tighten lock nut B.

    - If the throttle control lever moves after engine speed increases, turn lock nut A clockwise and re-tighten the lock nut B.

Driveshafts

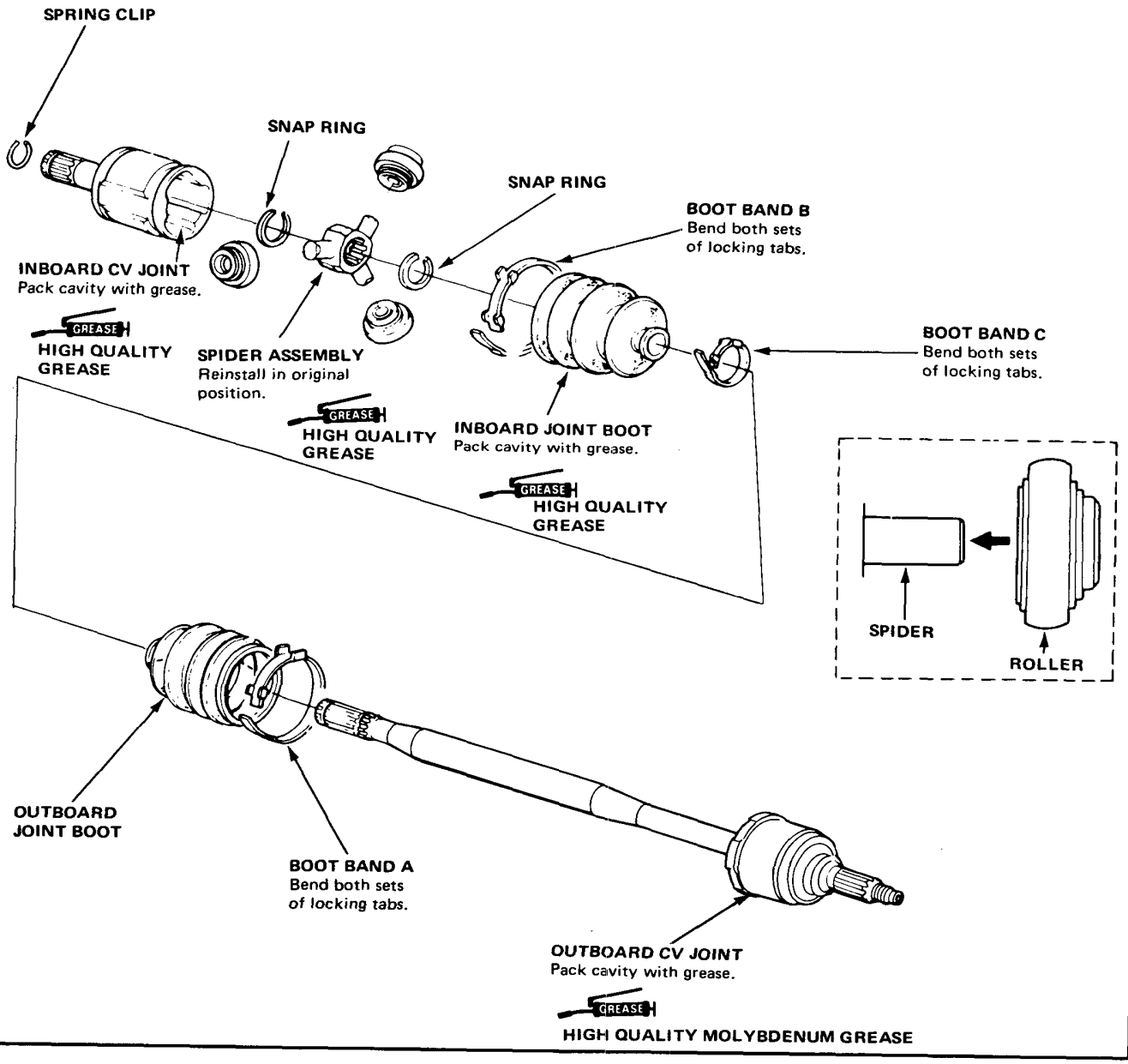
Reassembly : Roller type joint

1. Reassemble the driveshafts in reverse order of disassembly.

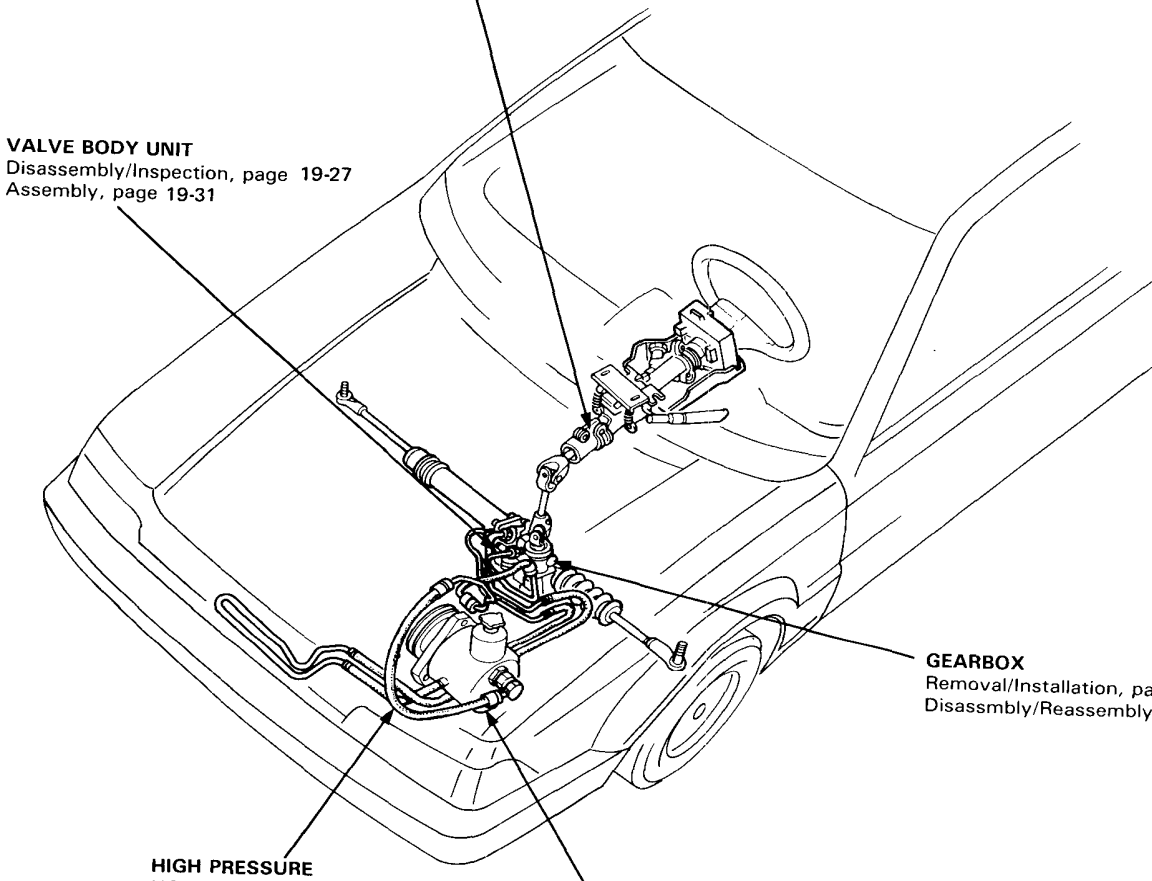
   GREASE : Thouroughly, pack the inboard CV joint with high quality grease and the outboard CV joint and bearings with high quality molybdenum grease when reassemblying the driveshaft.

2. Install the rollers and bearing races on the spider shafts, then slide the spider assembly into the inboard shaft joint.
   CAUTION: Avoid getting oil or grease on the rubber parts.

3. Slide the boots into place and install new boot bands C on the small ends.
   Position the bands so they are centered between the locating humps at each end of the driveshaft. Expand and compress the boots until they return to their normal shape and length.



Index



COLUMN
Disassembly/Inspection, page 19-8
Assembly, page 19-9
Installation/Adjustment, page 19-10

VALVE BODY UNIT
Disassembly/Inspection, page 19-27
Assembly, page 19-31

GEARBOX
Removal/Installation, page 19-25
Disassmbly/Reassembly, page 19-34

HIGH PRESSURE HOSE

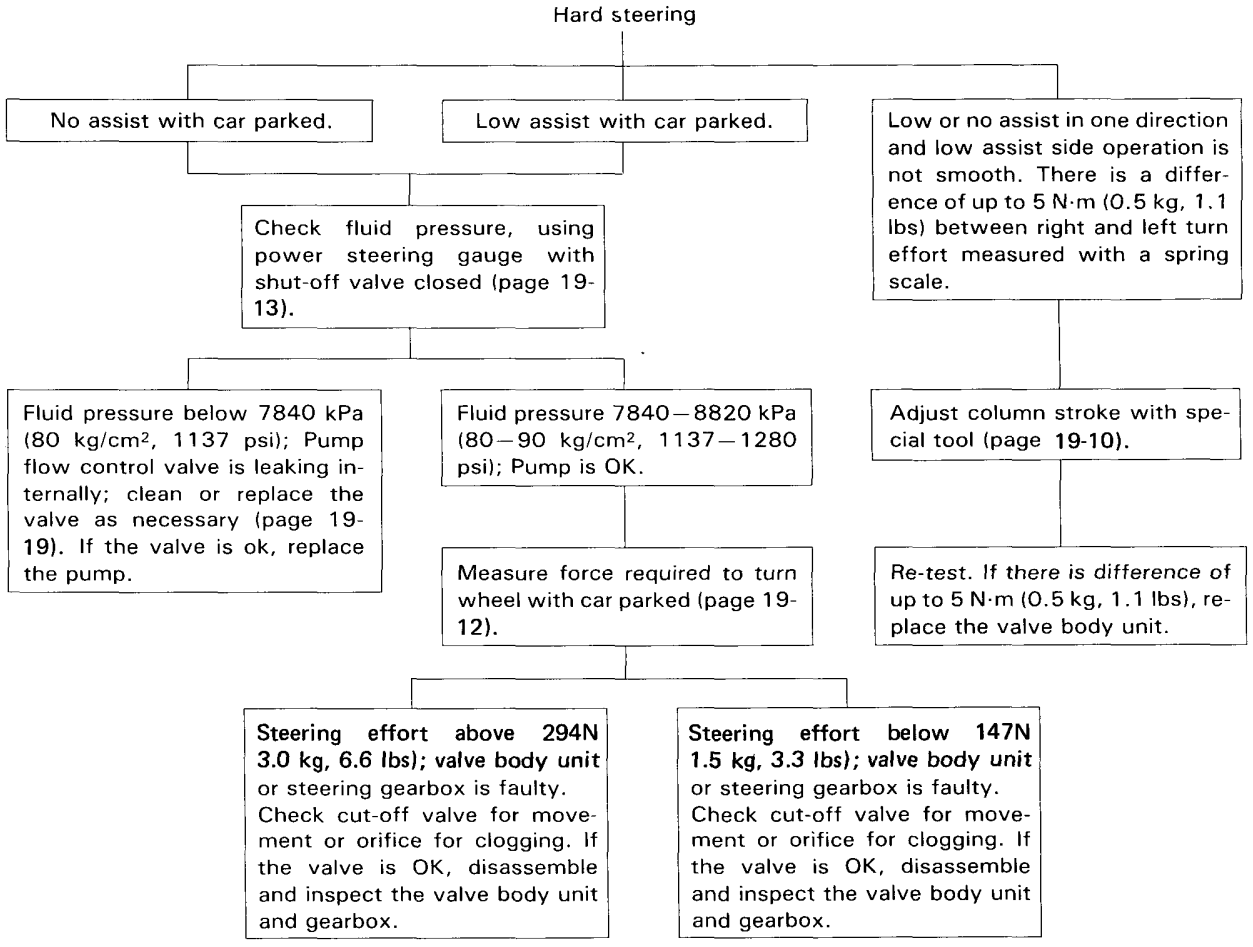
PUMP
Fluid Replacement, page 19-11
Belt Tension Adjustment, page 19-11
Pump Pressure Test, page 19-13
Removal/Installation, page 19-15
Reservoir Replacement, page 19-16
Flow Control Valve Inspection/Replacement, page 19-18
Disassembly, page 19-21
Reassembly, page 19-22

Troubleshooting

General

Check the following before you begin:

- Has the suspension been modified in away that might affect steering?
- Are tire sizes and air pressures correct.
- Is the steering wheel original equipment or equivalent?
- Is the power steering pump belt properly adjusted?
- Is steering fluid reservoir filled to proper level?
- Does the steering fluid contain bubbles?
- Is the engine idle speed correct and steady?



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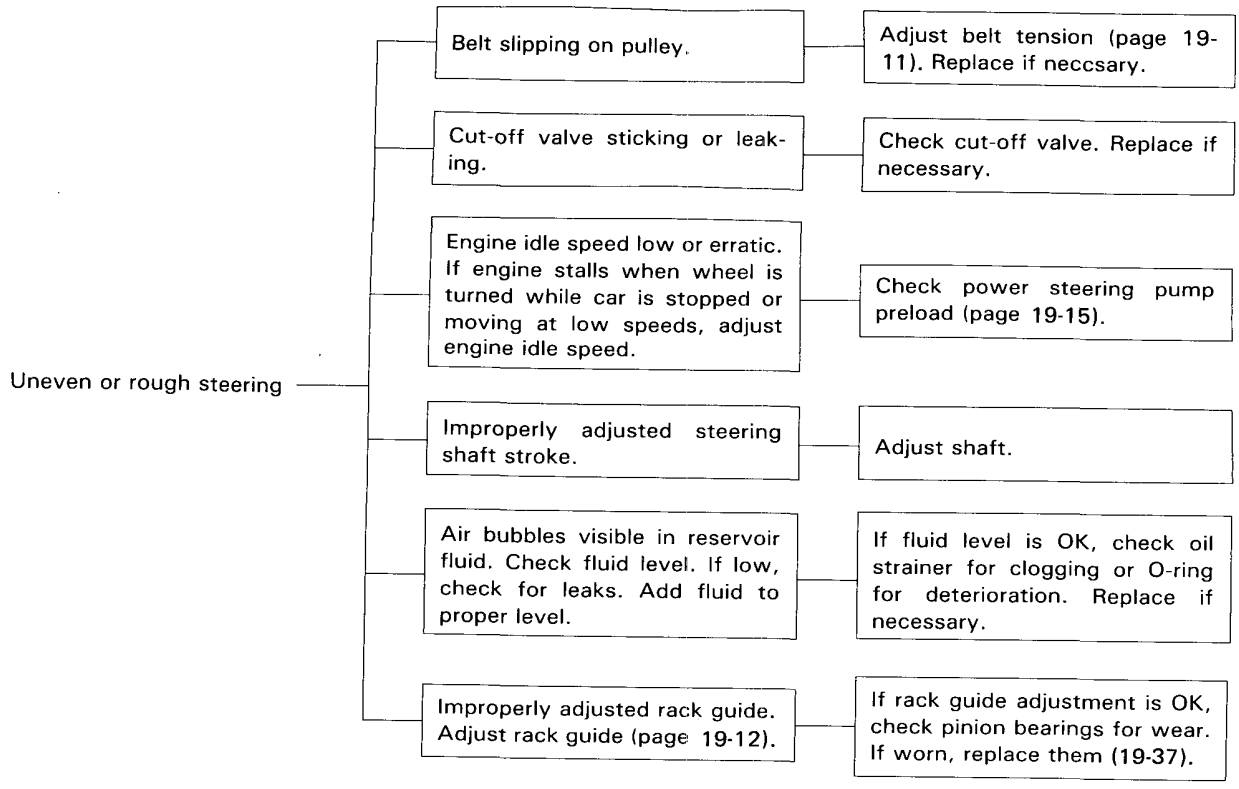
General (cont'd)



Shock or vibration when steering wheel is turned fully.	Belt slipping on pulley (pump stops momentarily).	Adjust belt tension or replace belt if necessary.
	Sticking relief valves; pulsation exceeds 980 kPa (10 kg/cm², 145 psi) during pump pressure test (page 19-13).	Check flow control valve. If OK, replace pump.
Excessively light steering at high speed.	Measure force, required to turn wheel with car parked on dry, paved surface.	If below 147N (1.5 kg, 3 lbs), check cut-off valve and valve body unit.
	Improperly adjusted tire air pressure.	Adjust.
	Improperly adjusted wheel alignment.	Adjust.
	Check rack guide adjustment.	Adjust if necessary.
Vehicle steers to one side.	Pump belt slipping on pulley.	Adjust belt tension or replace belt if necessary.
	Check cut-off valve for movement and valve body unit.	Replace if necessary.
	Rack guide adjusted too loose.	Adjust.
	Improperly adjusted wheel alignment.	Adjust.
	Improperly adjusted tire air pressure.	Adjust.
Wheel will not return smoothly.	Tire air pressure too low.	Inflate to correct pressure.
	Improperly adjusted wheel alignment.	Adjust.
	Improperly adjusted rack guide.	Adjust.
	Improperly adjusted column stroke.	Adjust.

Noise and Vibration

NOTE: Pump noise within 2–3 minutes after starting in cold weather (–20°F or colder) is normal.

Humming
- Humming, due to pulsation of fluid, is normal, particularly when wheel is turned with car stopped.
- Hum could be torque converter noise; confirm by temporarily removing pump belt.
- High pressure line touching the frame. Reposition the line.

Squeaking
- Belt slipping. Tighten or replace belt.
- Pinion shaft seal not lubricated. Grease it.
- Horn contact not lubricated, or under too much pressure. Grease the contact, or bend it to reduce the pressure.
- Burrs on the pinion gear. Remove pinion and file burrs smooth.

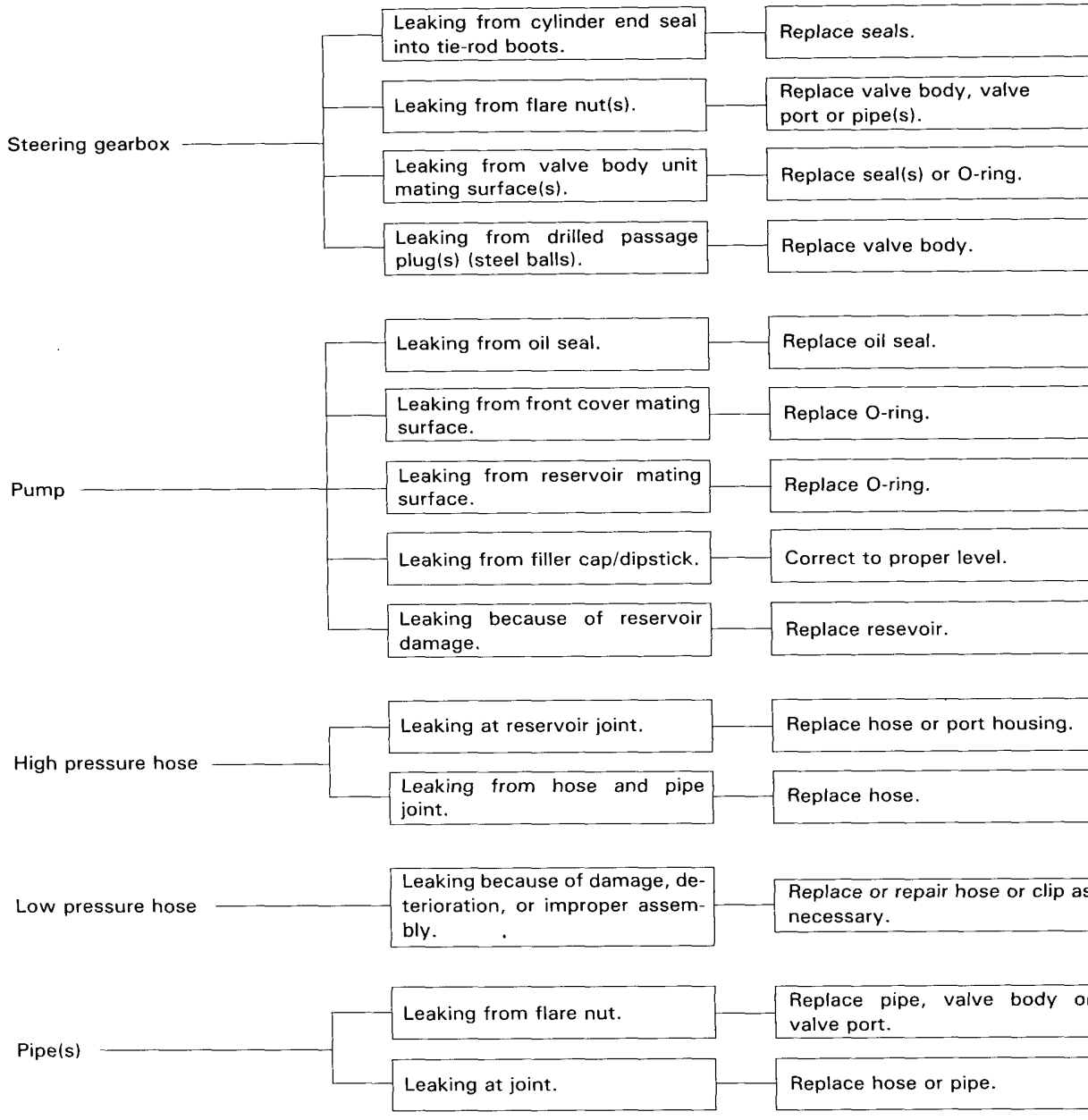
Rattling or chattering
- Normal "clunk" of linkage taking up clearance when wheel is turned with engine off.
- Loose pump pulley. Tighten or replace it. If shaft is loose, replace the pump.
- Loose steering shaft connector, tie-rod, or ball joint. Check and tighten, or replace parts.
- Lower column hanger bushing damaged. Replace bushing.

Hissing
- Lines or hoses from the valve body unit touching each other. Reposition lines so they don't touch.
- If the valve body unit lines are not touching, and noise is from valve body unit replace the valve body unit.

Pump gear noise
- Normal. Check pump noise on a car you know is OK, then compare.

Grating noise from pump (cavitation caused by air bubbles in fluid.)
- Check fluid level. If low, fill reservoir to proper level, and check for leaks. Tighten or replace parts.
- Check for crushed suction hose or loose hose clamp allowing air into the system. Tighten or replace parts.

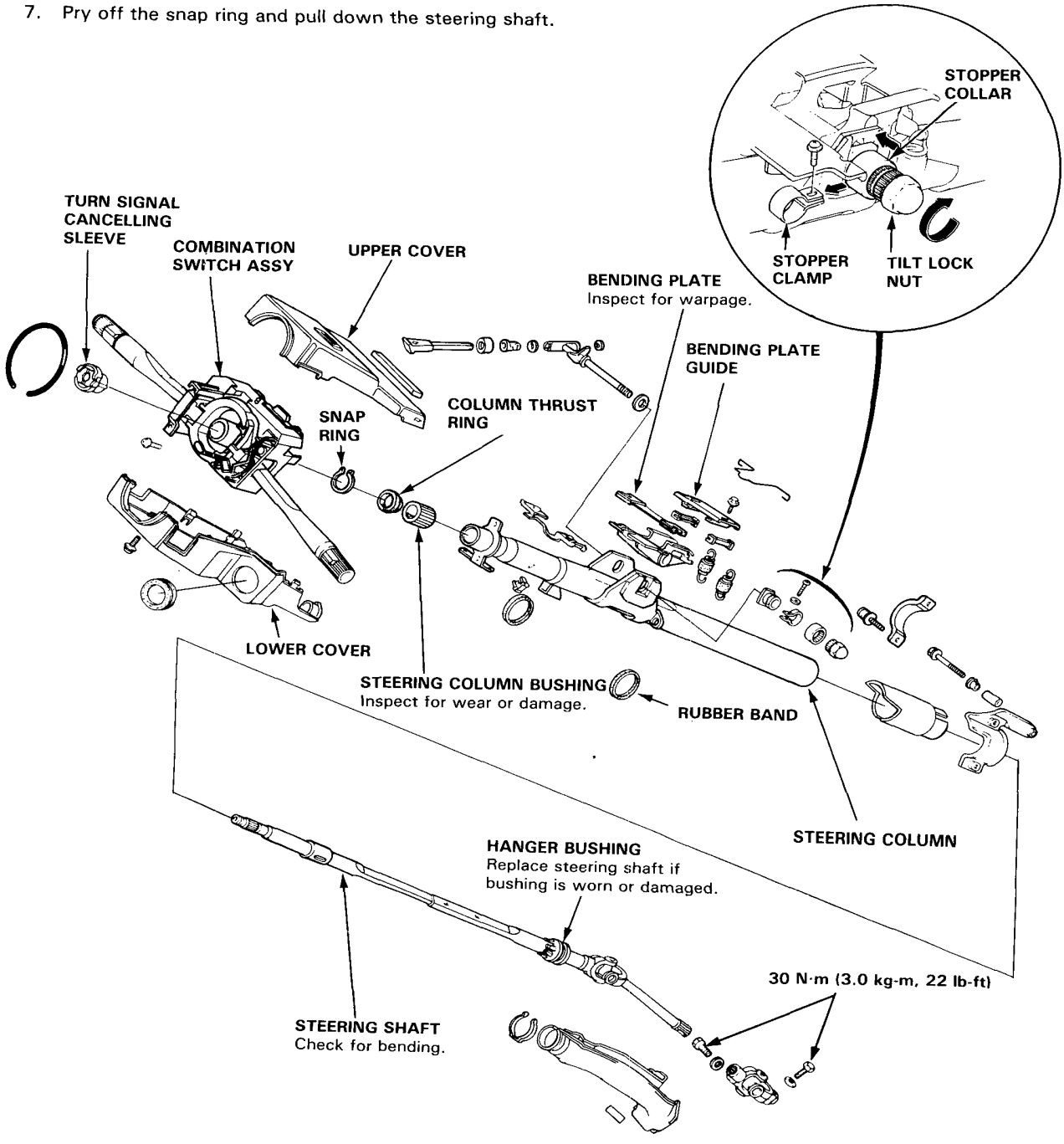
Fluid Leaks


Steering gearbox
Leaking from cylinder end seal into tie-rod boots.
Replace seals.
Leaking from flare nut(s).
Replace valve body, valve port or pipe(s).
Leaking from valve body unit mating surface(s).
Replace seal(s) or O-ring.
Leaking from drilled passage plug(s) (steel balls).
Replace valve body.
Pump
Leaking from oil seal.
Replace oil seal.
Leaking from front cover mating surface.
Replace O-ring.
Leaking from reservoir mating surface.
Replace O-ring.
Leaking from filler cap/dipstick.
Correct to proper level.
Leaking because of reservoir damage.
Replace resevoir.
High pressure hose
Leaking at reservoir joint.
Replace hose or port housing.
Leaking from hose and pipe joint.
Replace hose.
Low pressure hose
Leaking because of damage, deterioration, or improper assembly.
Replace or repair hose or clip as necessary.
Pipe(s)
Leaking from flare nut.
Replace pipe, valve body or valve port.
Leaking at joint.
Replace hose or pipe.

Column

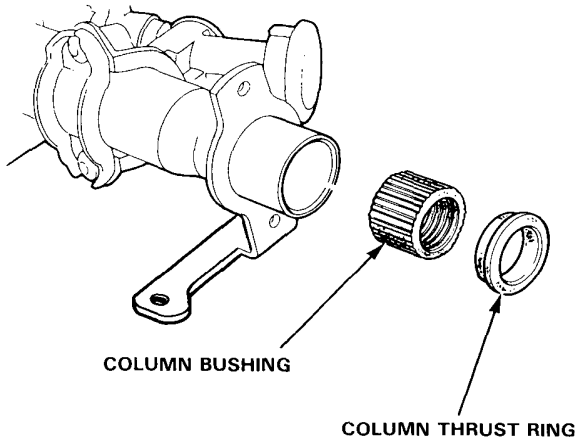
Disassembly/Inspection

1. Remove the turn signal cancelling sleeve.
2. Remove the rubber bands, then remove the upper column holder and bending plate.
3. Remove the bending plate guide.
4. Remove the combination switch.
5. Turn the ignition switch to the "I" position.
6. Remove the horn contact.
7. Pry off the snap ring and pull down the steering shaft.

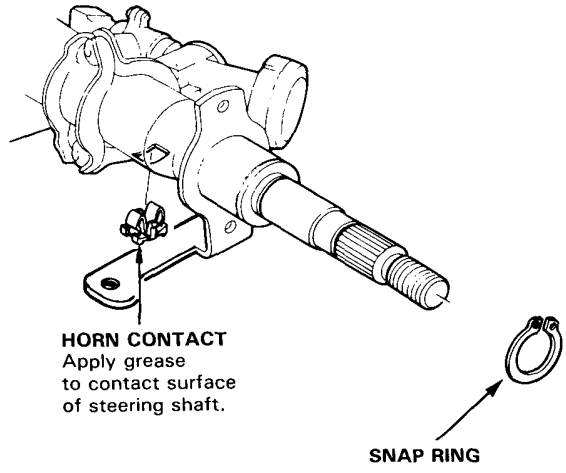


Assembly

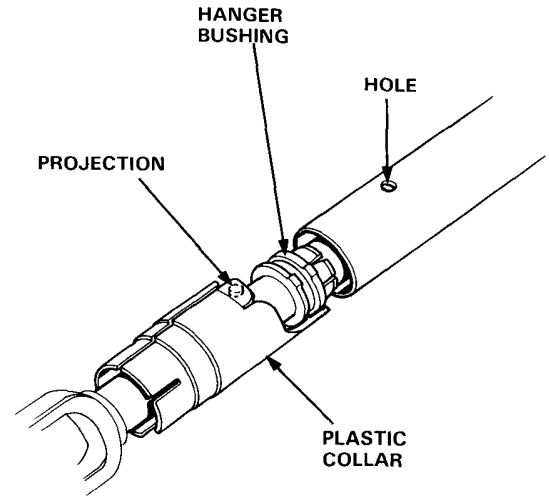
1. Insert the column bushing.
2. Set the column thrust ring in position.



3. Insert the steering shaft in the steering column from the bottom.
4. Install the snap ring on the steering shaft.
5. Insert the horn contact in the hole in the steering column.



6. Apply grease to the lower end of the steering shaft and inside the column.
7. Push the hanger bushing into the bottom end of the column as far as it will go.
8. Install the plastic collar over the bottom end of the steering column by aligning the round projection inside the collar with the hole in the column.



9. To install other parts, refer to the base manual.

Adjustment

NOTE: A special tool (adjustment guide) is required to position the steering column during installation.

1. Install the adjustment guide on the top end of the steering shaft and turn it as far as it will go.
2. Loosely install the upper bracket nuts and bending plate guide attaching bolts and pull the column down to be sure the bending plate is seated snugly against the hook.
3. Loosely install the lower bracket and pull the column down so that there is no clearance between the bending plate and hook.
4. Tighten the upper bracket nuts and bending plate guide bolts to the specified torque.

   TORQUE: 14 N·m (1.4 kg-m, 10 lb-ft)

5. Tighten the lower bracket bolts to the specified torque.
6. Pull the column joint down fully and tighten the top bolt.

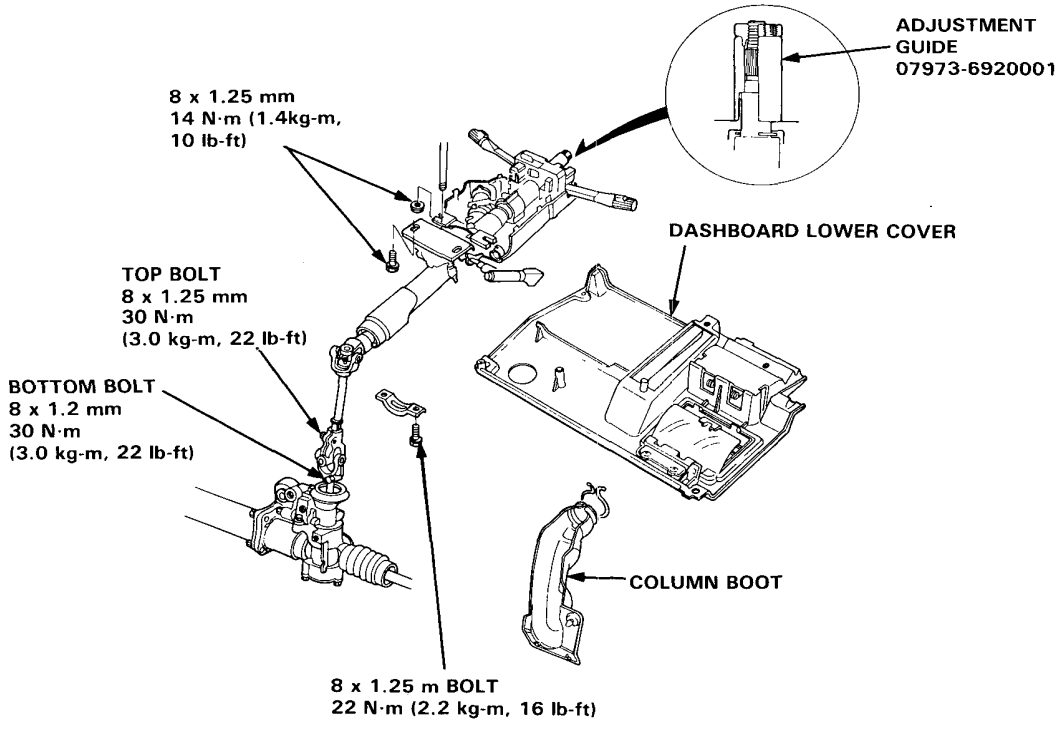
   TORQUE: 30 N·m (3.0 kg-m, 22 lb-ft)

7. Tighten the bottom bolt.

   TORQUE: 30 N·m (3.0 kg-m, 22 lb-ft)

   NOTE: Make sure the end of the adjustment guide bottoms against the turn signal switch as shown.

8. Install the column boot and the dashboard lower cover.



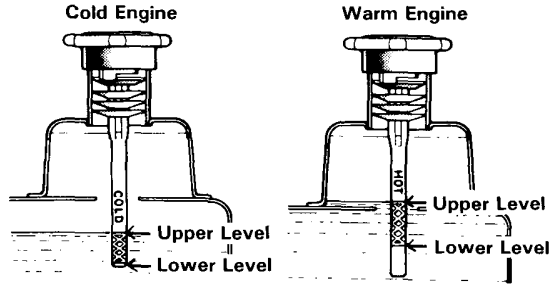
Power Steering Fluid

Replacement

Check the reservoir level at regular intervals, and add fluid as necessary.

CAUTION: Use only GENUINE HONDA Power Steering Fluid. Use of fluids such as ATF or other manufacturers' power steering fluid will damage the system.

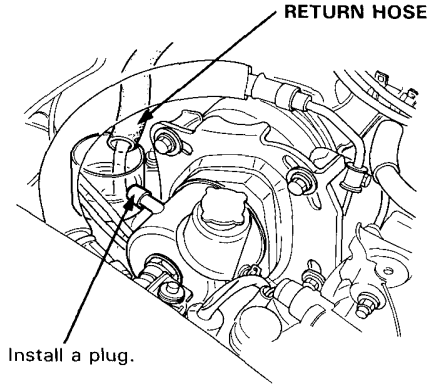
Fluid Level



Fluid Replacement

CAPACITY: 1.1 U.S. qt (1.0ℓ) at change

1. Raise the front end of the car and place safety stands in the proper locations.
2. Disconnect the return hose from the gearbox at the reservoir, and the put the end in a suitable container.
3. Start the engine and let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.



3. Refit the return hose to the reservoir.
4. Fill the reservoir to the upper level mark.
5. Start the engine and run it at idle, then turn the steering wheel from lock-to-lock several times to bleed the air from the system.
6. Recheck the fluid level and add fluid if necessary.

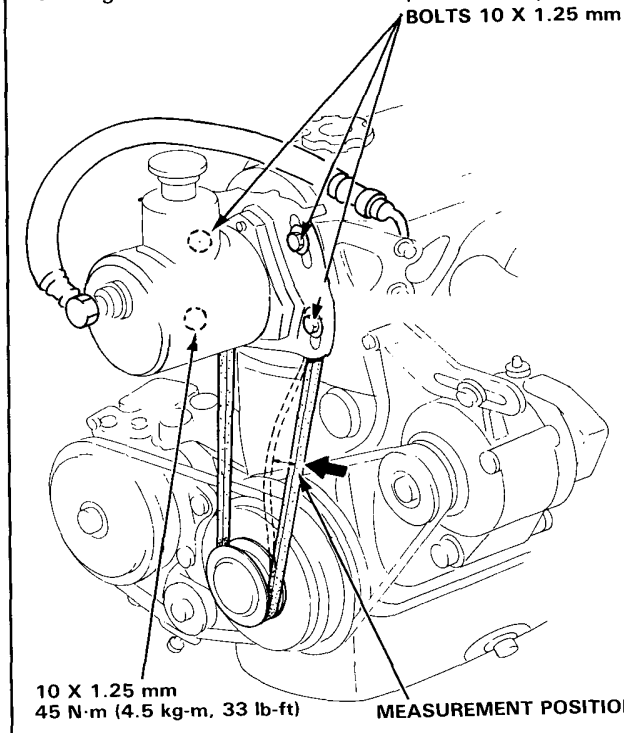
CAUTION: Do not fill the reservoir beyond the upper level mark.

On-Car Checks

Belt tension Adjustment

A properly adjusted belt should deflect about 18—22 mm (3/4—7/8 in.) when you push on it mid-way between the pulleys with a force of about 100N (10kg, 22 lbs).

1. Loosen the four bolts..
2. Slide the pump body.
3. Tighten the four bolts to the specified torque.



2. Start the engine and let it idle, and turn the steering wheel from lock-to-lock several times.
3. Stop the engine. Check and readjust belt deflection if necessary.

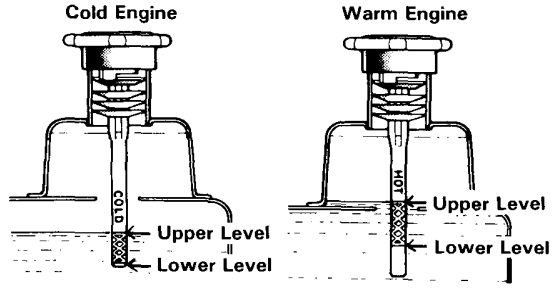
Power Steering Fluid

Replacement

Check the reservoir level at regular intervals, and add fluid as necessary.

CAUTION: Use only GENUINE HONDA Power Steering Fluid. Use of fluids such as ATF or other manufacturers' power steering fluid will damage the system.

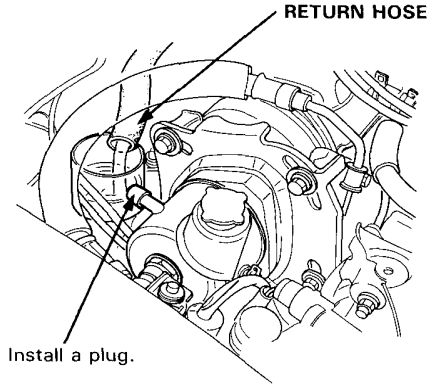
Fluid Level



Fluid Replacement

CAPACITY: 1.1 U.S. qt (1.0ℓ) at change

1. Raise the front end of the car and place safety stands in the proper locations.
2. Disconnect the return hose from the gearbox at the reservoir, and the put the end in a suitable container.
3. Start the engine and let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.



3. Refit the return hose to the reservoir.
4. Fill the reservoir to the upper level mark.
5. Start the engine and run it at idle, then turn the steering wheel from lock-to-lock several times to bleed the air from the system.
6. Recheck the fluid level and add fluid if necessary.

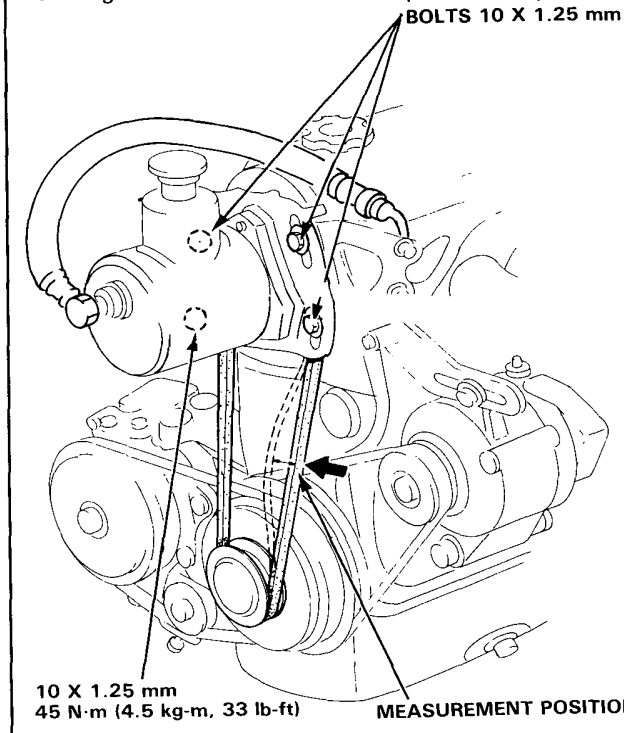
CAUTION: Do not fill the reservoir beyond the upper level mark.

On-Car Checks

Belt tension Adjustment

A properly adjusted belt should deflect about 18—22 mm (3/4—7/8 in.) when you push on it mid-way between the pulleys with a force of about 100N (10kg, 22 lbs).

1. Loosen the four bolts..
2. Slide the pump body.
3. Tighten the four bolts to the specified torque.



2. Start the engine and let it idle, and turn the steering wheel from lock-to-lock several times.
3. Stop the engine. Check and readjust belt deflection if necessary.

On-Car Checks

Assist Check With Car Parked

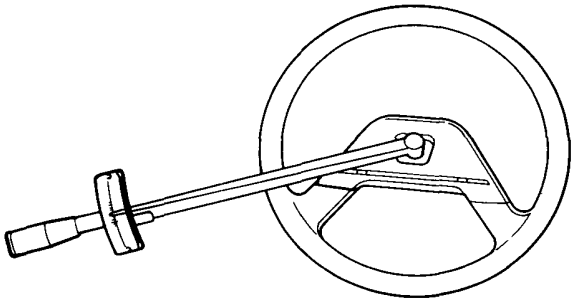
1. Check the power steering fluid level and pump belt tension.
2. Start the engine, allow to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.

Measuring Fluid Temperature: 40—50°C (104—122°F)

Check With Torque Wrench

Attach a torque wrench to the steering wheel nut. With the engine idling and the car on a clean, dry floor. Turn the wrench as shown and read the torque as soon as the tires begin to turn.

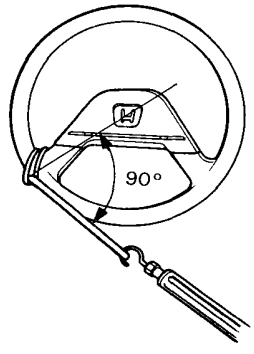
TORQUE: 5.6 N·m (56.5 kg-cm, 4.0 lb-ft) MAX.



Check With Spring Scale

Attach a spring scale to the steering wheel. With the engine idling and the car on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.

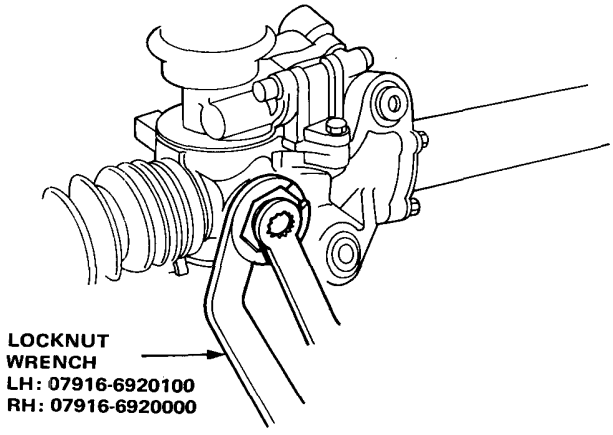
FORCE: 294N (3.0 kg, 6.6 lbs) MAX.



If values are not within the specification, inspect the valve body unit (see page 19-27).

Rack Guide Adjustment

1. Loosen the locknut on the rack guide screw with the special tool as shown.



2. Tighten the guide screw until it compresses the spring against the guide; then loosen it, and tighten it to about 4 N·m (0.4 kg-m, 3 lb-ft) and back it off about 25° (about 1/12 of a turn). Tighten the locknut to about 25 N·m(2.5 kg-m, 18 lb-ft) while preventing the guide screw from moving.

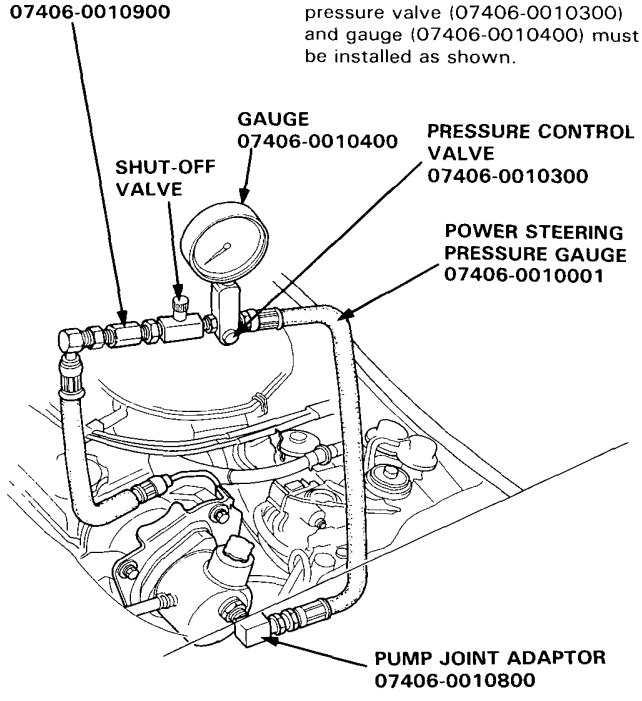
Pump Pressure Test

Check fluid pressure as follows to determine whether the trouble is in the pump or gearbox:

NOTE: First check the power steering fluid level and pump belt tension.

1. Disconnect the outlet hose from the pump outlet fitting, and install the pressure gauge and the adaptors between the hose and pump as shown.

NOTE: If Power Steering Gauge (07406-0010000) is used, the pressure valve (07406-0010300) and gauge (07406-0010400) must be installed as shown.



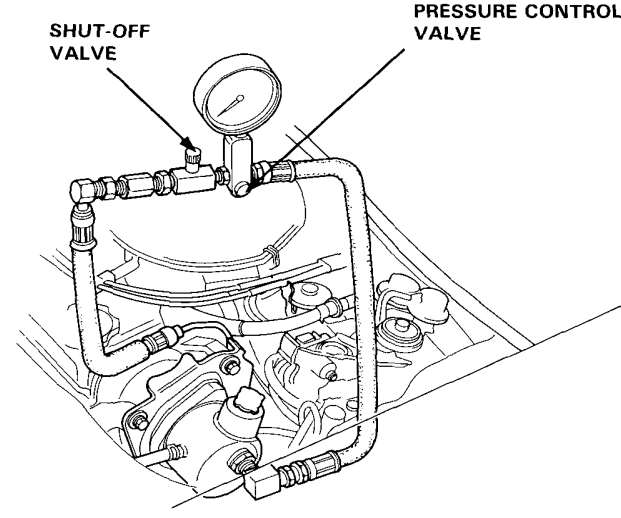
2. Open the shut-off valve fully.
3. Open the pressure control valve fully.
4. Start the engine and let it idle.
5. Turn the steering wheel from lock-to-lock several times to get the fluid up to operating temperature.

Measuring Fluid Temperature: 40—50°C (104—120°F)

6. Close the shut-off valve, then, close the pressure control valve gradually until the pressure gauge needle is stable, then read pressure.
7. Open the shut-off valve fully.

CAUTION: Do not keep the shut-off valve closed more then 5 seconds or the pump could be damaged by over-heating.

If the pump is OK, the gauge should read at least 7845 kPa (80 kg/cm² 1135 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.



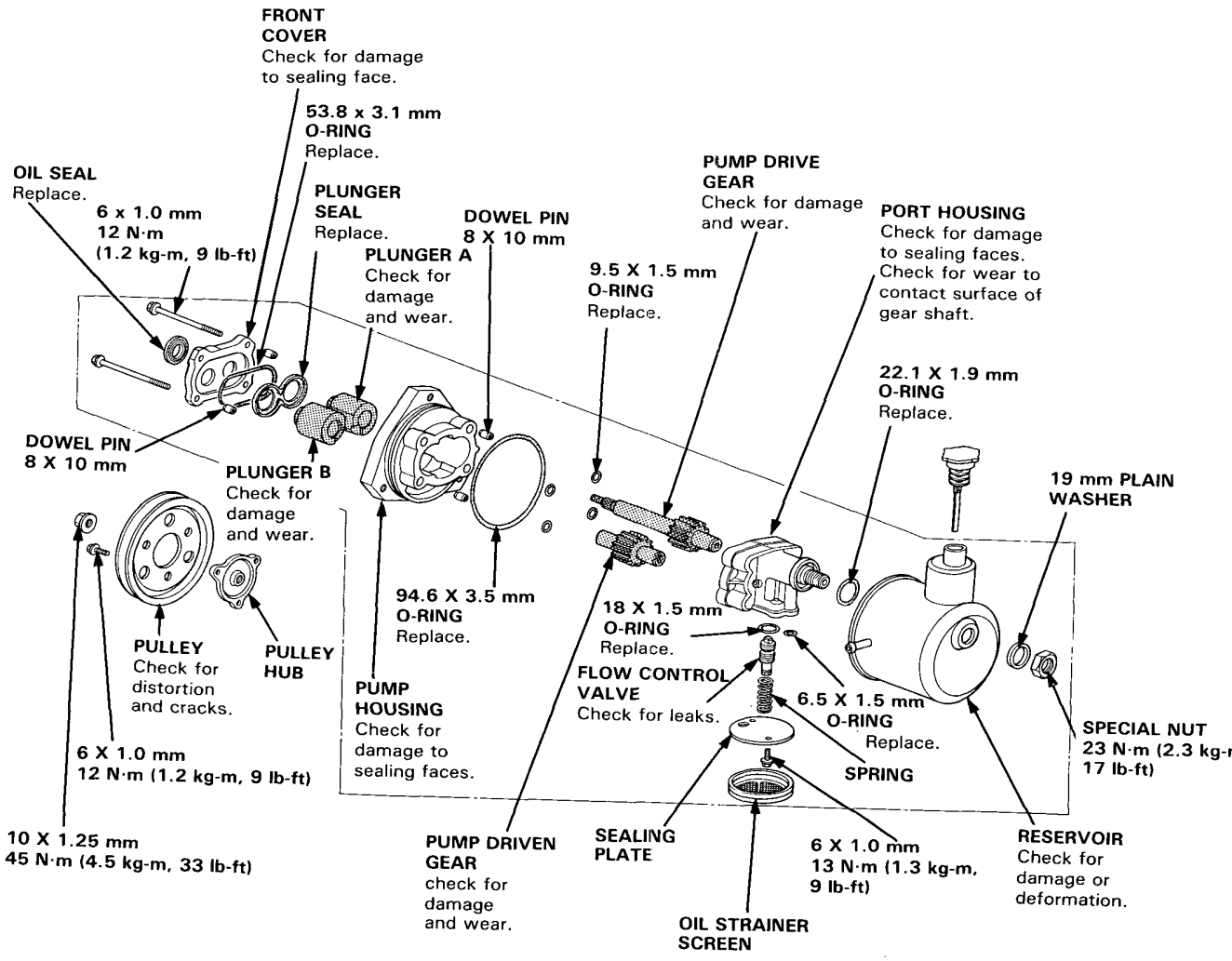
Pump

Index/Inspection

GREASE Use only STEERING GREASE ..... (Honda part number 08740—99969) on seals and O-rings.

CAUTION: Pump components are made of aluminum. Be careful not to damage them when servicing.

- Clean all the disassembled parts thoroughly.
- Replace all O-rings and seals. Do not dip new O-rings and seals in solvent; coat O-rings with steering grease before installation, and make sure they stay in place during reassembly.
- The shaded parts are selectively fitted, and should not be disassembled except to replace seals. If any one of them is faulty, replace the whole pump as an assembly.

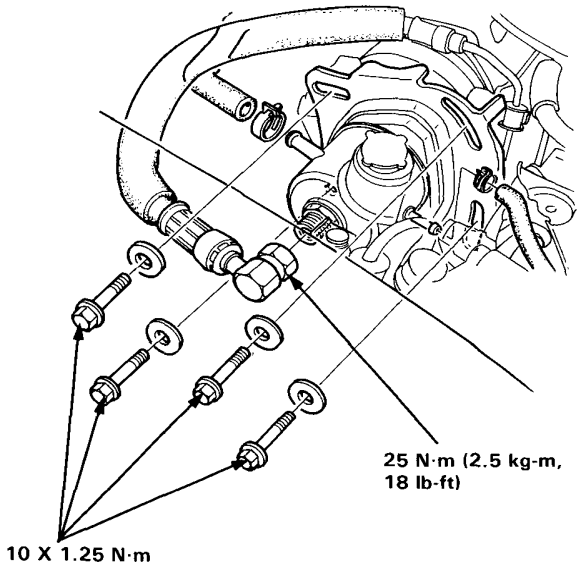


Removal/Installation

1. Disconnect the hoses from the reservoir.

   NOTE: Cap the open fitting to keep dirt out of the system.

2. Remove the four bolts and pump assembly.



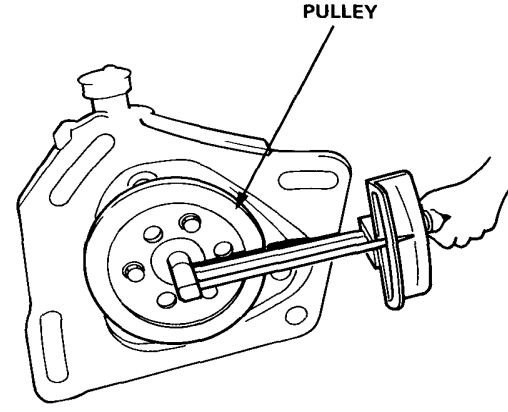
Install in reverse order, and:

- Connect hoses securely.
- Adjust the belt tension.
- Check fluid level and add if necessary.
- Bleed the air from the system.

Preload Check

Check pump preload with a torque wrench.

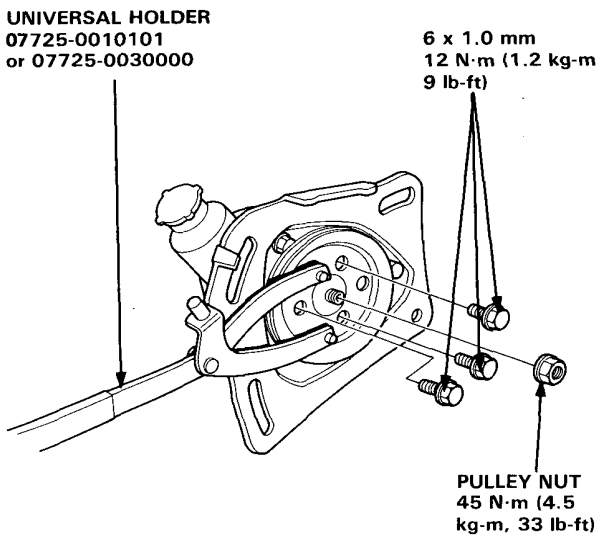
PRELOAD: 4 N·m (0.4 kg-m, 3 lb-ft) max.



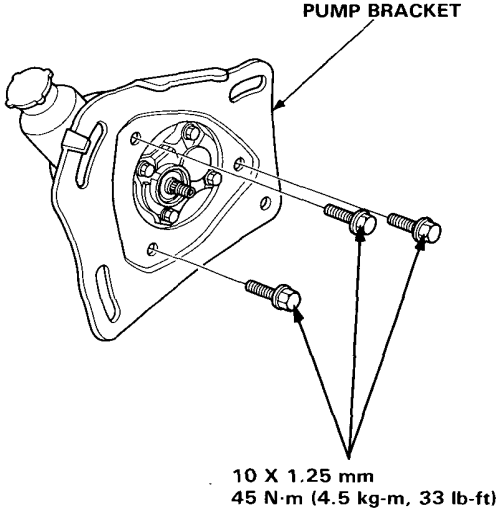
Pump

Pump Bracket Removal

1. Remove the pulley nut using the special tool, then remove the three 6 mm bolts.

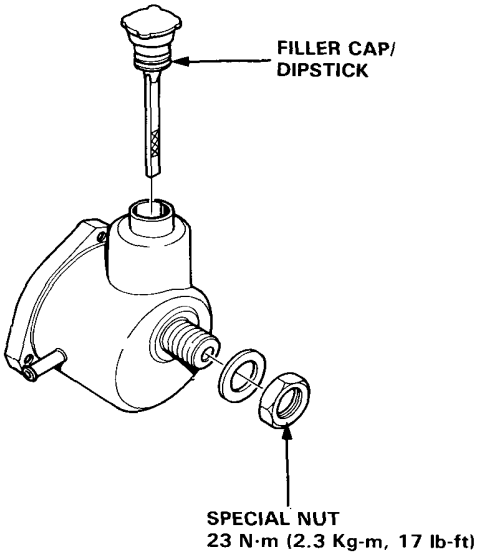


2. Remove the three 10 mm bolts and separate the pump from its bracket.

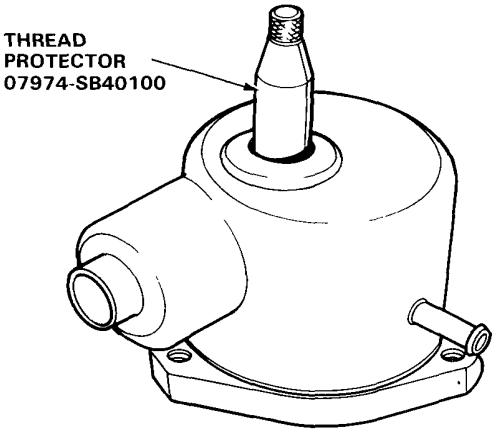


Reservoir Replacement

1. Remove the filler cap/dipstick.
2. Remove the special nut and 19 mm plain washer.

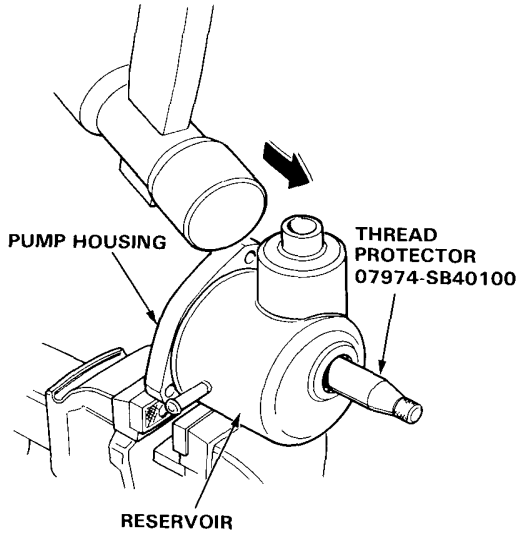


3. Attach the special tool on the high pressure fitting.

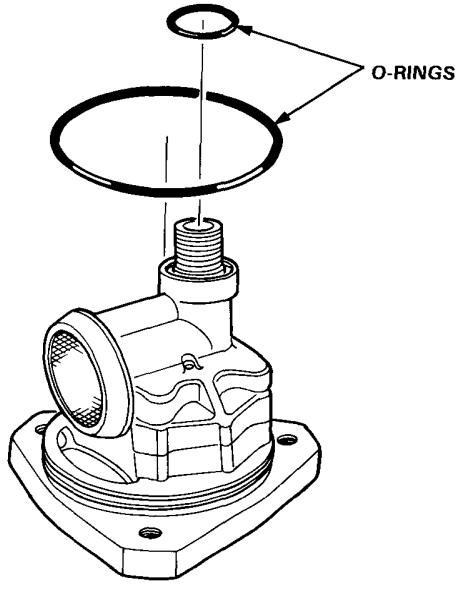


4. Tap the reservoir lightly with a plastic hammer to remove the reservoir from the pump housing.

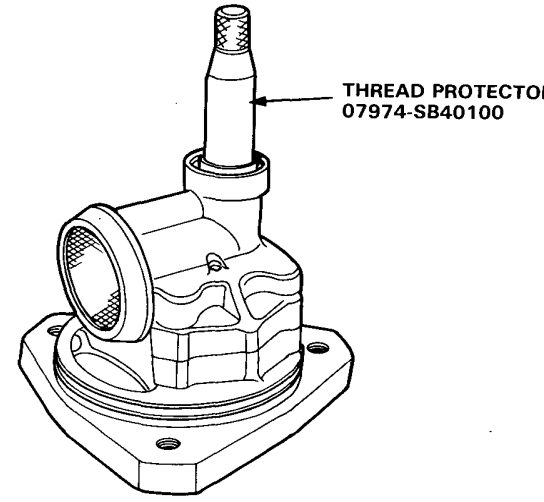
   CAUTION: Be careful not to damage the reservoir.



5. Replace 94.6 x 3.5 mm and 22.1 x 1.9 mm O-rings.



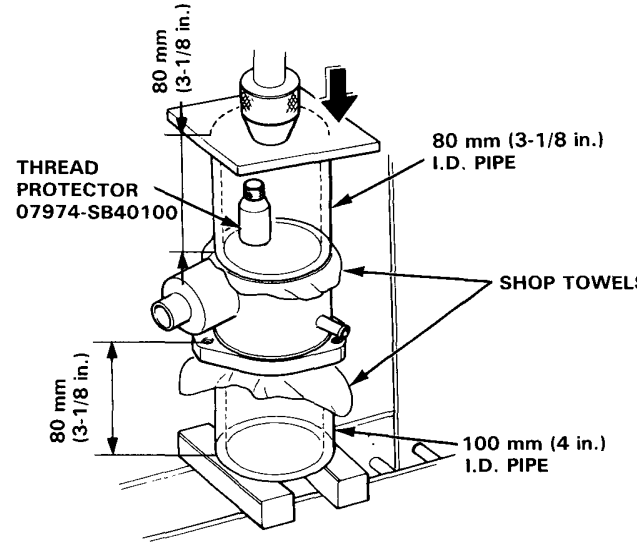
6. Install the thread adaptor as shown.



7. Press the reservoir into the pump housing using 80 mm (3-1/8 in.) and 100 mm (4 in.) diameter pipes until the end of the reservoir is seated on the flange of the pump housing.

   CAUTION: Use shop towels to prevent damage to the reservoir or pump housing.

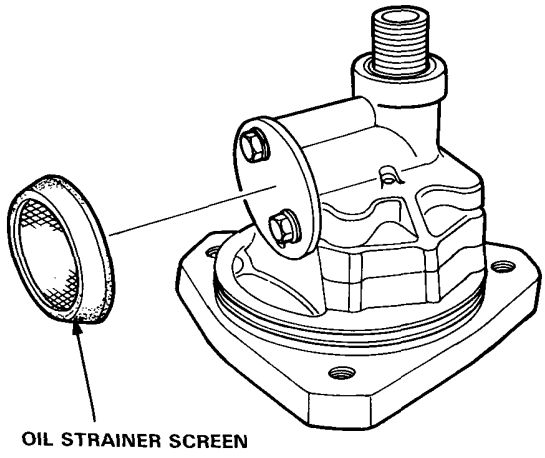
   NOTE: The shop towels function as "gaskets" to keep the pipe sections securely positioned on the pump housing. This is particularly important against the rounded edge of the pump case/reservoir.



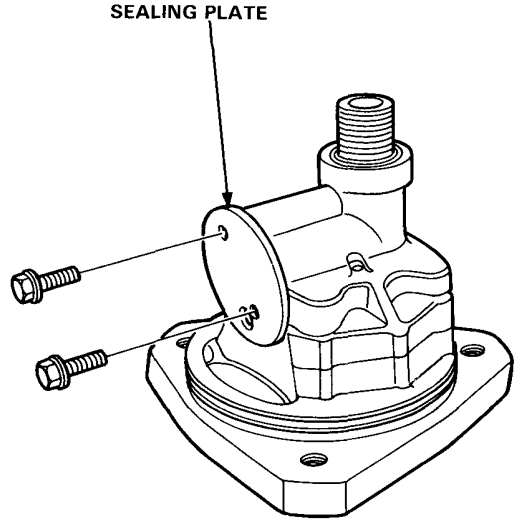
8. Install the 19 mm plain washer and special nut.

Flow Control Valve Inspection and Replacement

1. Remove and clean the oil strainer screen.

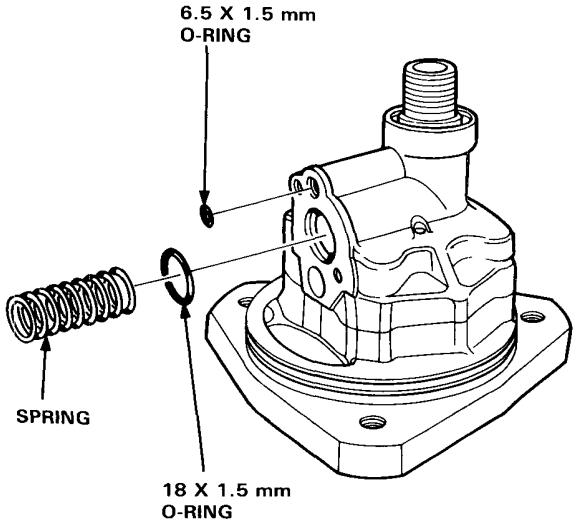


2. Remove the sealing plate.

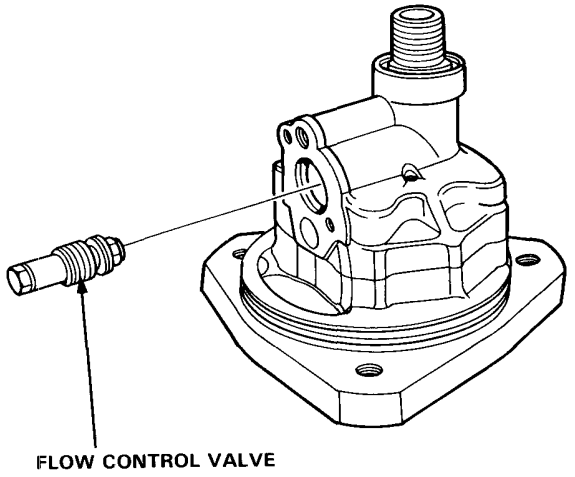


3. Remove the 18.5 × 1.5 mm and 6.5 × 1.5 mm O-rings.

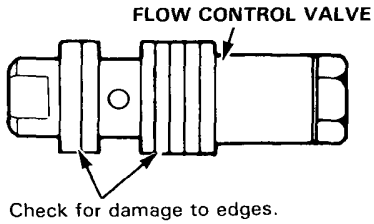
4. Remove the spring.



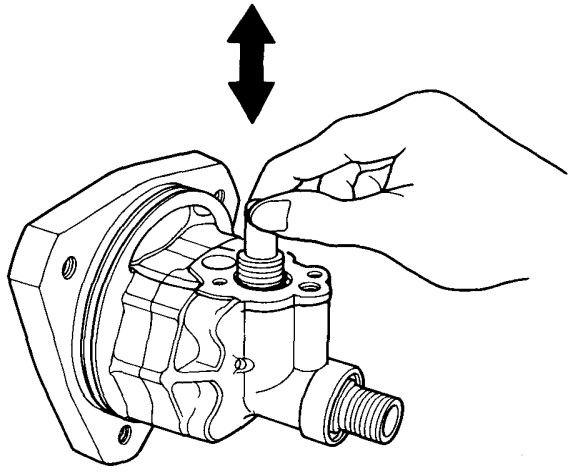
5. Remove the flow control valve.



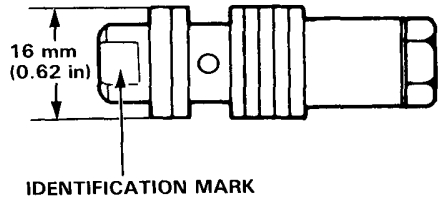
6. Check for wear, burrs, and other damage to the edges of the grooves in the valve.



7. Slip the valve back in the pump and check that it moves up and down smoothly.

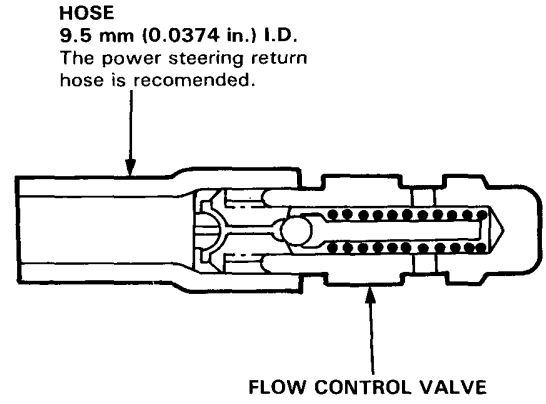


If OK, go to step 8. If not, replace the valve: The original valve was selected for a precise fit in the port housing bore; make sure the new one has the same identification mark.

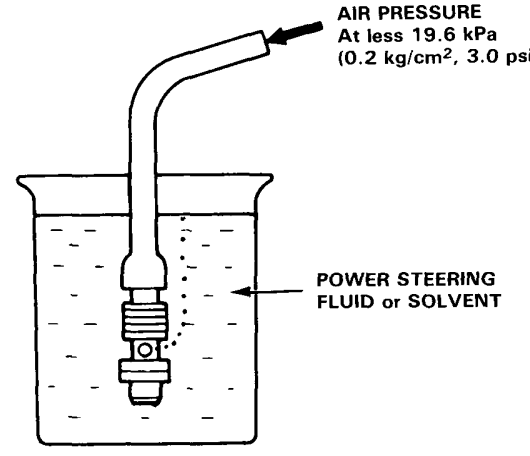


Mark	Part No.	Part Name	Size: mm
A	56350—PC1—000	Flow Control Valve Assembly A	16 less than 0 −0.005
Without mark	56360—PC1—000	Flow Control Valve Assembly B	16 +0.006 0

8. Attach a hose to the end of the valve.



9. Then submerge the valve in a container of power steering fluid or solvent, and blow on the hose. Replace the valve or repair it (next page) if you see air bubbles in the fluid.

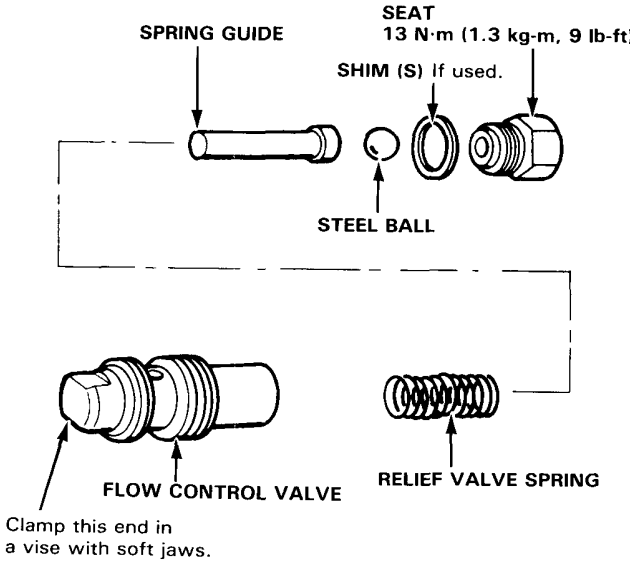


(cont'd)

Flow Control Valve Inspection and Adjustment (cont'd)

10. If the valve leaks, clamp the bottom end of it in a vise that has soft jaws.

11. Unscrew the seat in the top end of the valve, and remove any shims, the steel ball, the spring guide and its spring.



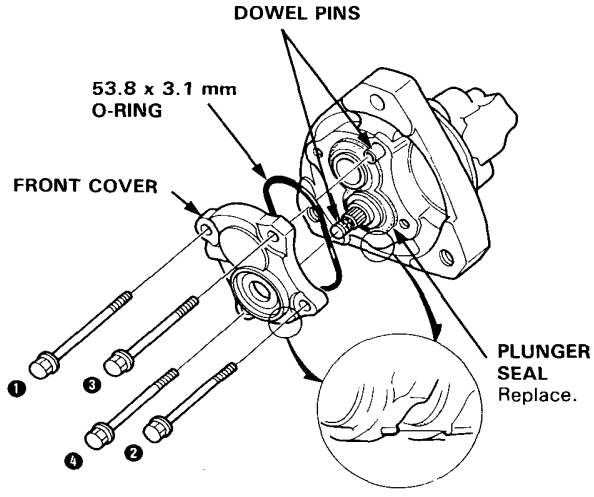
12. Clean all the parts in solvent, dry them off, then reassemble and re-test the valve.

    NOTE: If necessary, relief pressure is adjusted at the factory by adding shims under the check ball seat. if you found shims in your valve, be sure you reinstall as many as you took out.

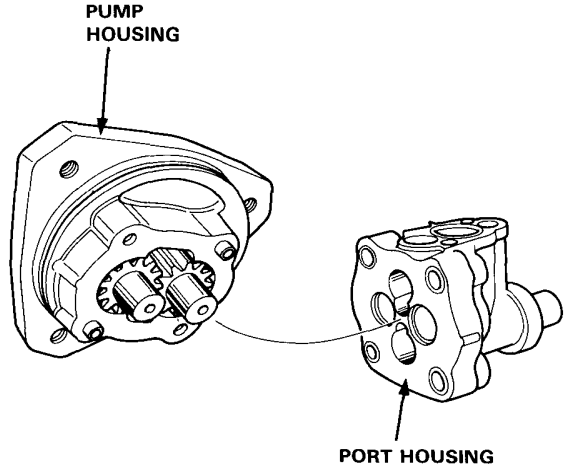
13. Install in reverse order of removal. Also:
    - Coat the new O-rings with steering grease to hold them.
    - Coat the flow control valve with power steering fluid.

Housing Disassembly

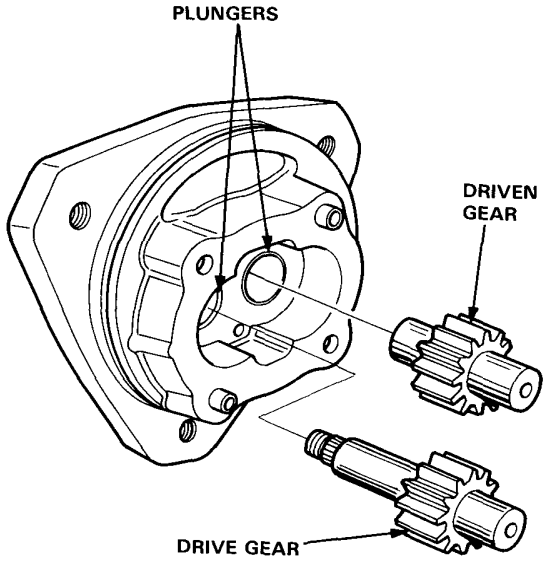
1. Separate the reservoir from the pump housing (page 19-17).
2. Remove the flow control valve if necessary (page 19-18).
3. Loosen the four 6 mm bolts in the sequence shown, then remove them and the front cover.
4. Remove the 53.8 x 3.1 mm O-ring from the front cover.
5. Remove the plunger seal.



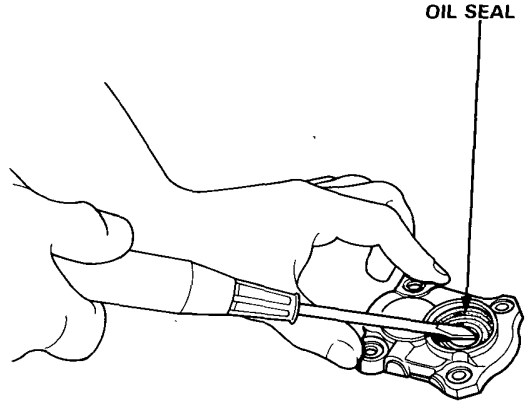
6. Separate the port housing from the pump housing.



7. Remove the drive and driven gears from the pump housing.



8. Remove the four O-rings.
9. Remove the plungers if necessary.
10. Pry the oil seal out from the front cover.

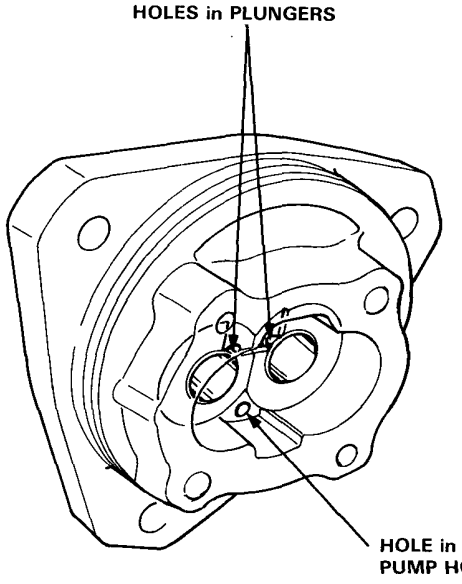


Pump

Housing Assembly

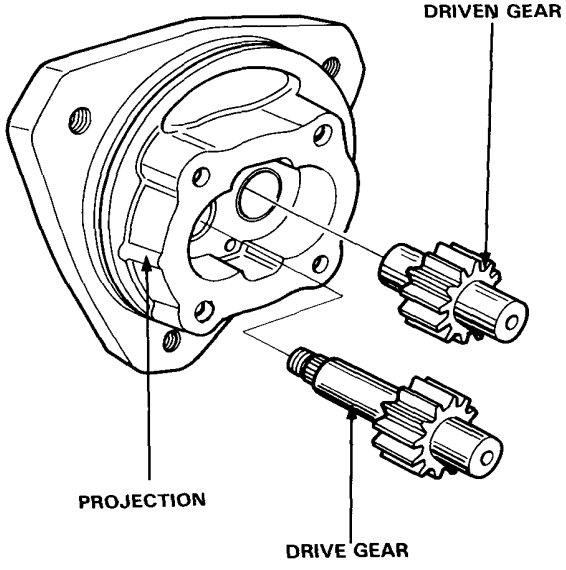
1. If the plungers are removed, be sure to position them correctly, as shown.

   NOTE: Lubricate the plunger housing with power steering fluid before installing the plungers.



2. Lubricate the inside surface of the plungers and gears with power steering fluid.

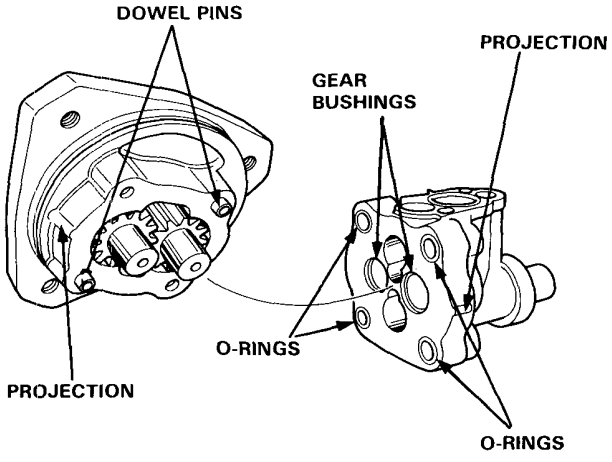
3. Install the gears in the pump housing with the drive gear toward the projection on the housing.



4. Lubricate the gear bushing of the port housing.

5. Install the two dowel pins and four O-rings.

6. Install the port housing on the pump housing with the projections on the housings aligned.



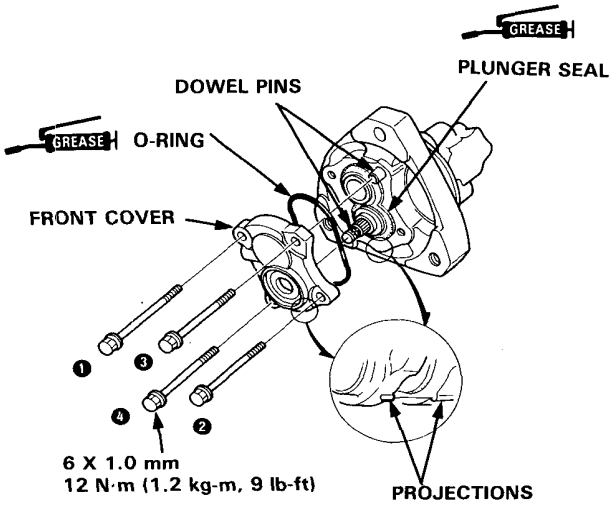
7. Grease the plunger seal, then install it over the plungers.

8. Install the dowel pins in the pump housing.

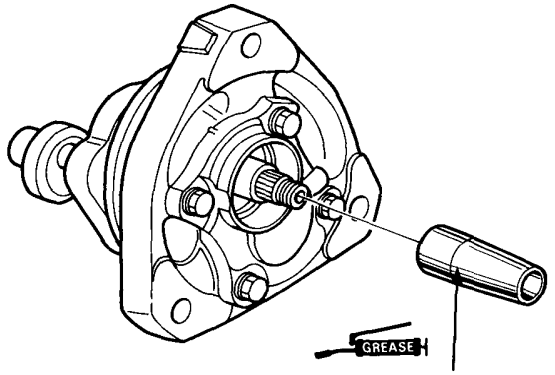
9. Put grease in the groove of the front cover first, then position a new O-ring on the cover.

10. Install the front cover on the pump housing with the projections aligned.

11. Install the four bolts. Torque them to the specified torque in the sequence shown.

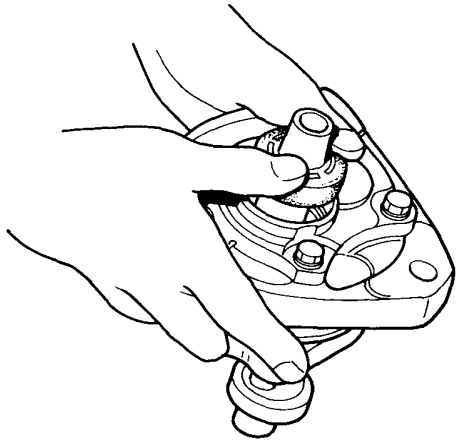


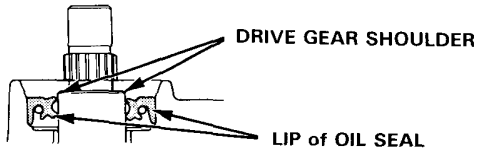
12. Grease the end cover seal guide then install it over the drive gear.



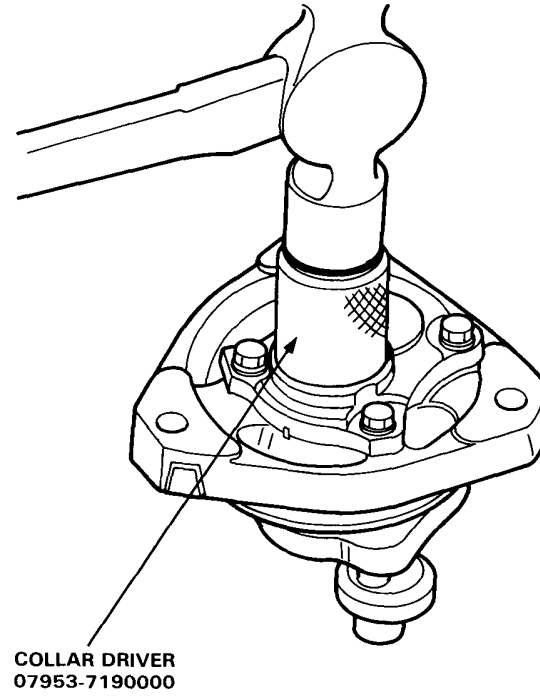
13. Install the oil seal by hand.

NOTE: Remove the special tool if the lip of the oil seal is over the drive gear shoulder.





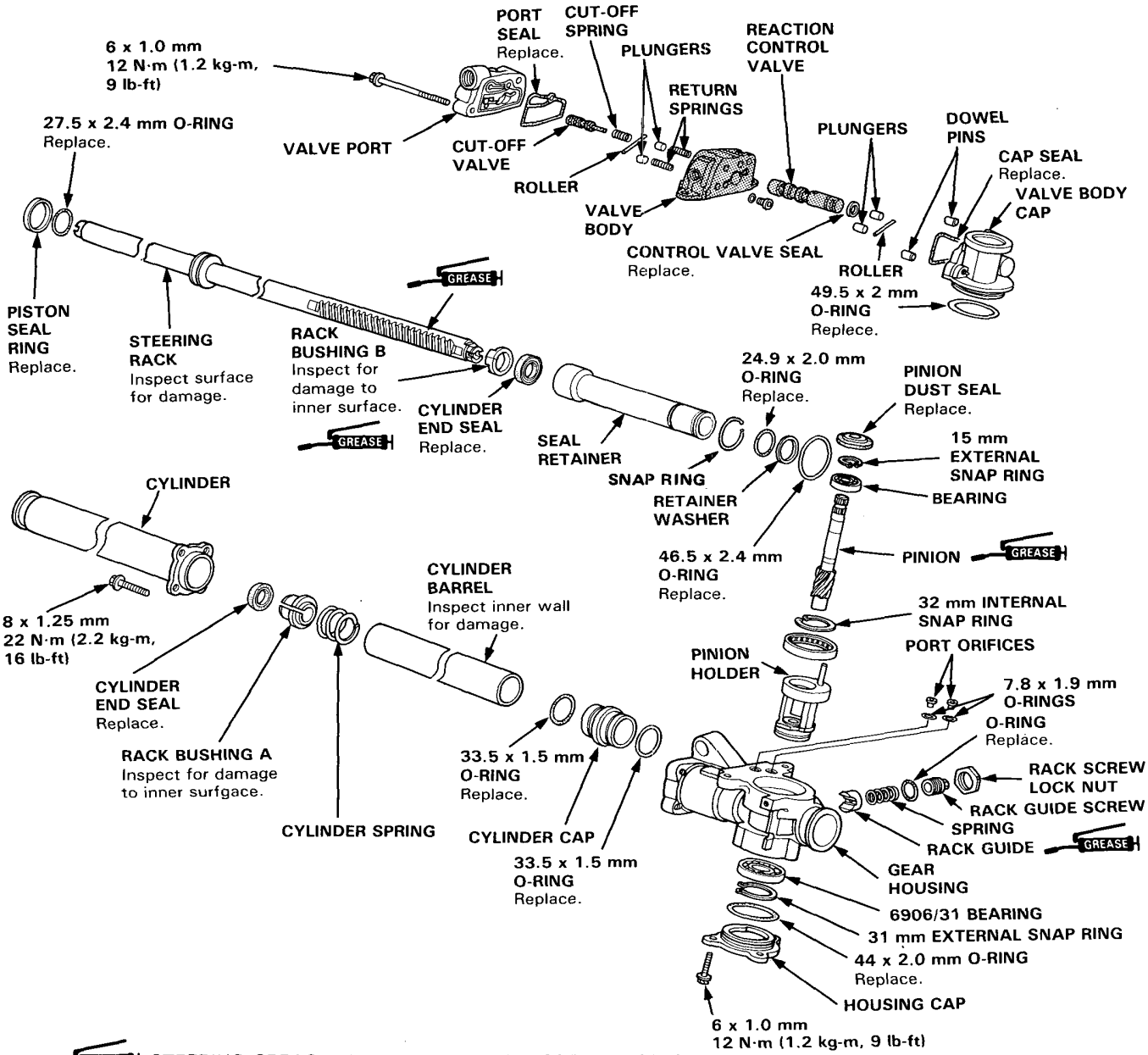
14. Drive in the oil seal with special tool.



Index

CAUTION:

- Before disassembling the gearbox, wash it off with solvent.
- Thoroughly clean all disassembled parts.
- Always replace O-rings and seals.
- Replace parts with damaged sliding surfaces.
- Do not dip seals and O-rings in solvent; coat O-rings with grease, and make sure they stay in position during reassembly.
- The shaded parts (valve body, reaction control valve, cut-off valve) are a matched set; if the valve body is faulty, replace the complete valve body unit.



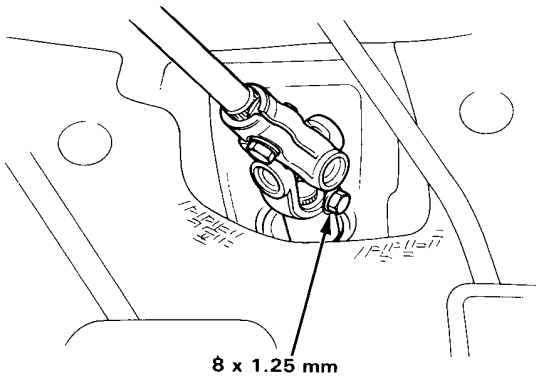
GREASE STEERING GREASE...Honda parts number 08740—99969

NOTE: L/H shown, R/H is symmetry.

Removal/Installation

1. Turn the steering wheel all the away to the left.

2. Remove the bottom bolt in the steering shaft connector, and pull the connector up off the pinion shaft.



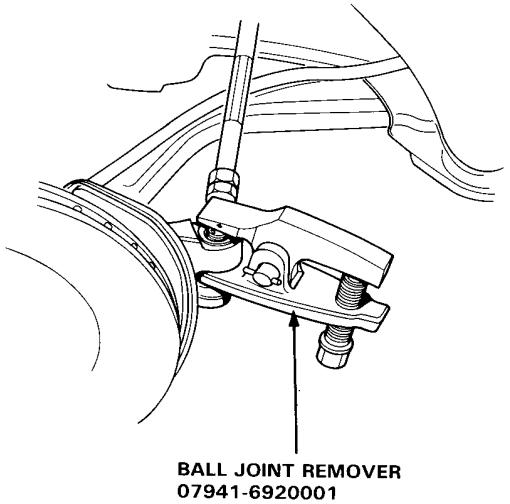
3. Drain the power steering fluid as described on 19-11.

4. Raise the front of car on jack stands and remove the front wheels.

5. Remove the cotter pins, and unscrew the tie-rod end ball joint nuts halfway.

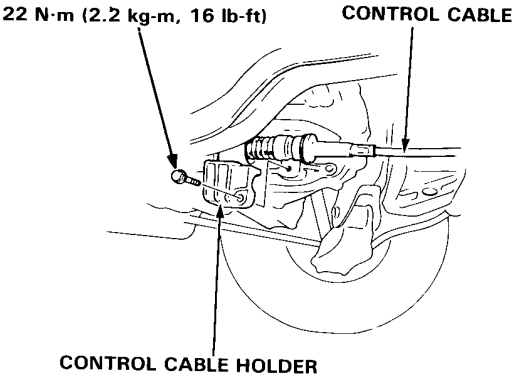
6. Break the ball joints loose using the Ball Joint Remover.

7. Then, remove the nuts, and lift the tie-rod ends out of steering knuckles.



8. Manual Transmission Only:
   - Disconnect the shift lever torque rod from the clutch housing.
   - Slide the pin retainer out of way, drive out the spring pin with pin punch, then disconnect the shift rod.

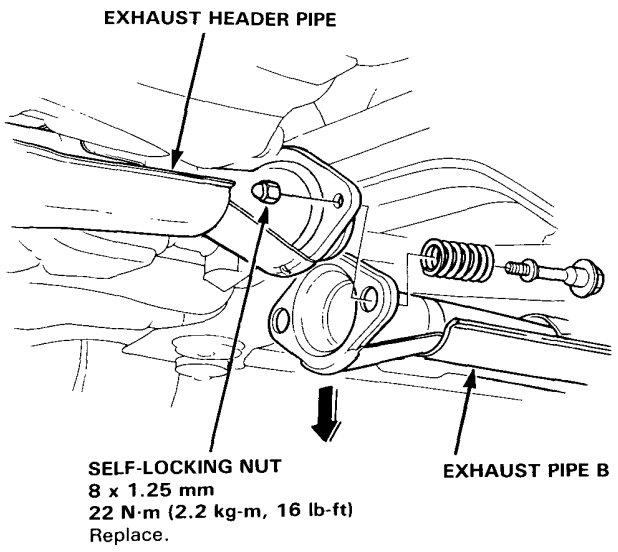
9. Honda matic Transmission Only:
   - Remove the shift cable holder and pull the shift cable down by hand.



(cont'd)

Removal/Installation (cont'd)

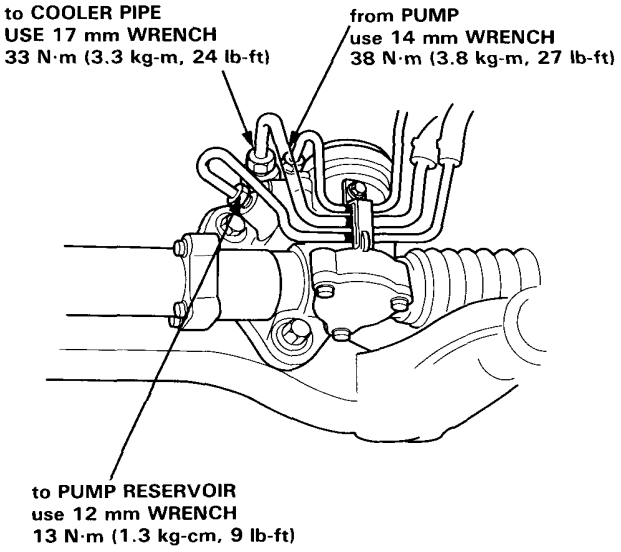
9. Remove the self-locking nuts connecting the exhaust header pipe to exhaust pipe B, then separate exhaust pipe B from the header pipe.



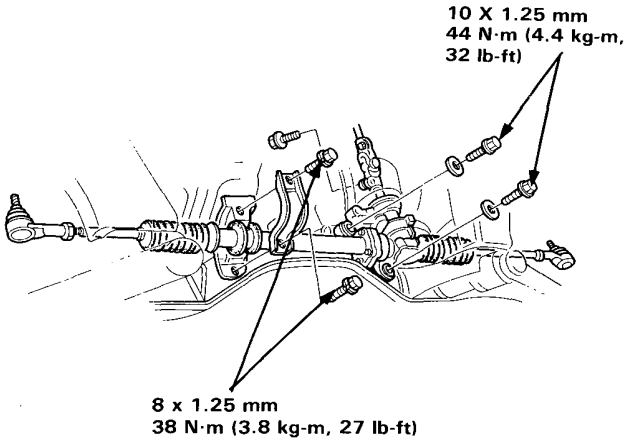
10. Remove exhaust pipe B.

11. Clean the gearbox and surrounding area thoroughly.

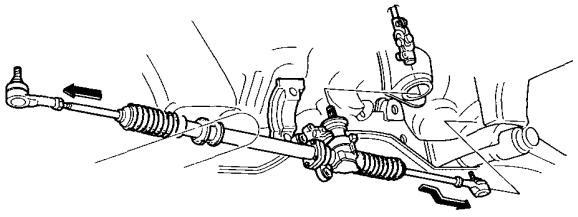
12. Disconnect fluid lines from the valve body unit.



13. Remove the gearbox mounting bolts.



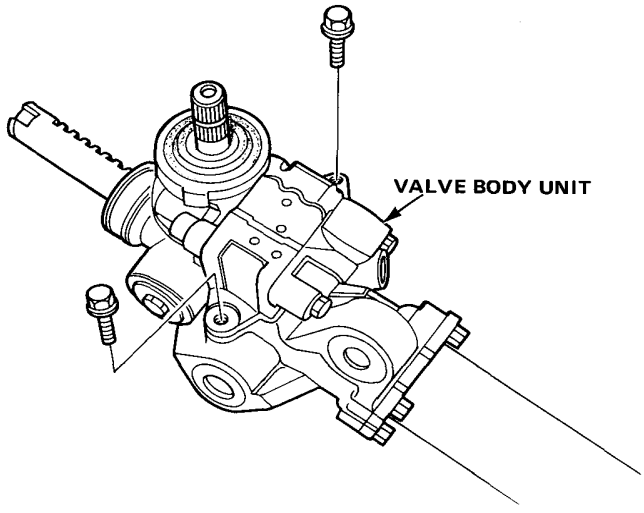
14. Drop the gearbox far enough so the end of the pinion shaft comes out of its hole in the frame channel, then rotate it forward until the shaft is pointing to the rear. Slide the gearbox to the right (L/H) or left (R/H) until the left (L/H) or right (R/H) tie rod clears the rear beam, then drop it down and out of the car to the left.



15. Gearbox installation is in the reverse order of removal.

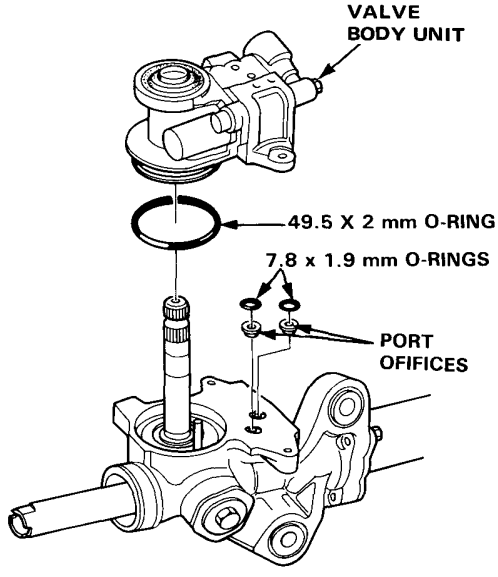
Valve Body Unit Disassembly

1. Remove the two 6 mm bolts holding the valve body unit to the gear housing.

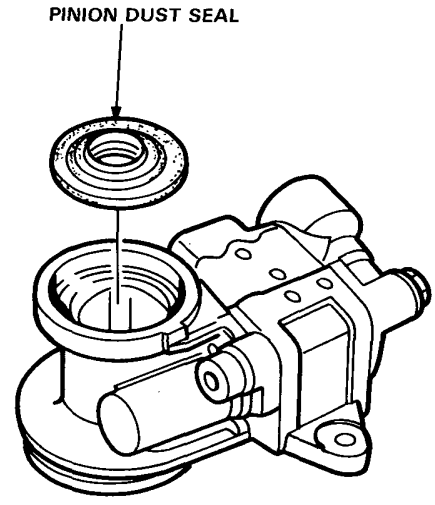


2. Remove the 7.8 x 1.9 mm O-rings and port orifices from the gear housing.

3. Remove the 49.5 x 2 mm O-ring from the valve body unit.

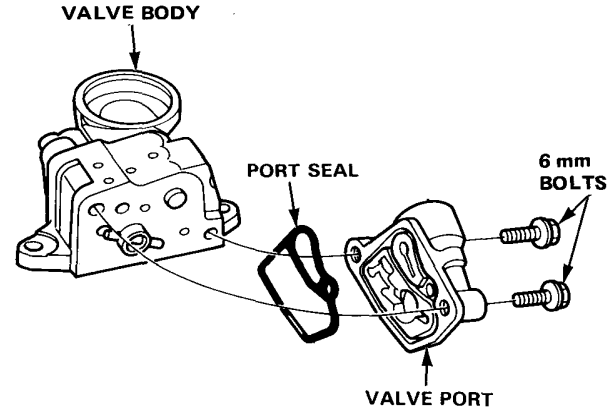


4. Remove the pinion dust seal from the valve body unit.



5. Remove the two 6 mm bolts and remove the valve port from the valve body.

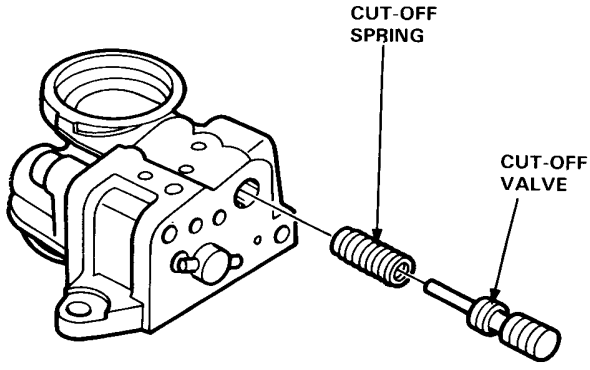
6. Remove the port seal.



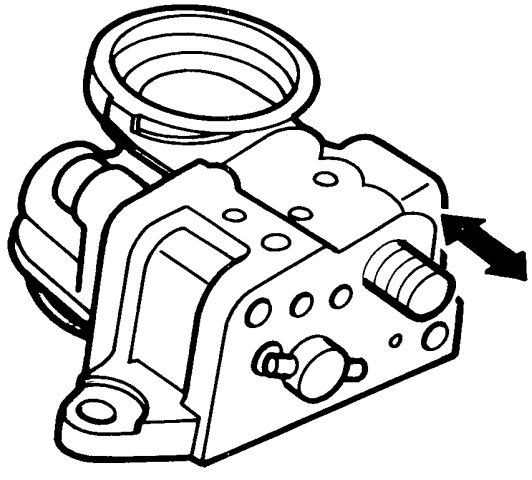
(cont'd)

Valve Body Unit Disassembly (cont'd)

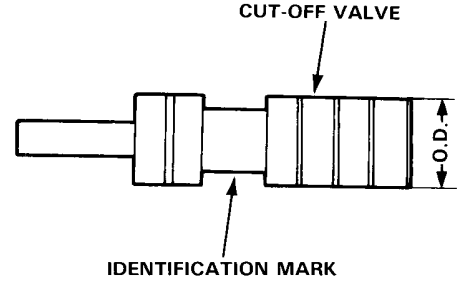
7. Remove the cut-off valve and spring from the valve body.



8. Check the cut-off valve:
   - Inspect its surface for scoring or scratches.
   - Slip it back into the valve body, and make sure it slides smoothly without drag and without side play.

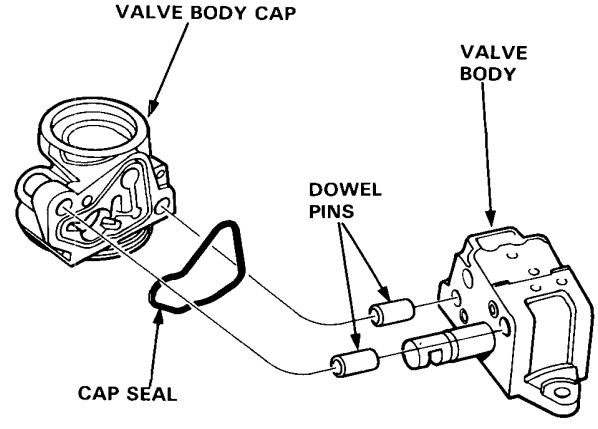


NOTE:
- The cut-off valve is sized to fit the valve body, so, if you replace it, make sure the new valve has the same identification mark on it.
- If the valve body is damaged, replace the valve body unit as a set.



Identification Mark	Outside Diameter	Part Number
A	10.000—10.005 mm (0.3937—0.3939 in.)	53650—SB4—950
B	9.995—10.000 mm (0.3935—0.3937 in.)	53651—SB4—950
C	9.990—9.995 mm (0.3933—0.3935 in.)	53652—SB4—950

9. Remove the valve body cap from the valve body.
10. Remove the cap seal.
11. Remove the dowel pins.

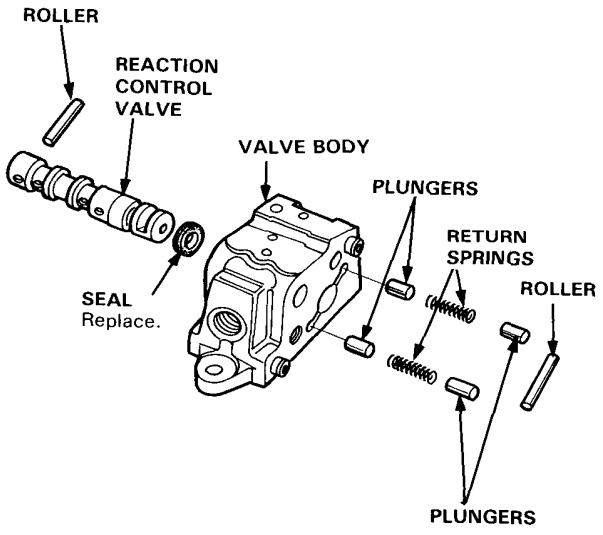


12. Remove the rollers from the valve body by pushing the valve out one side of the valve body, and then the other.

    NOTE: When removing the rollers, hold the plungers with your fingers to keep them from popping out.

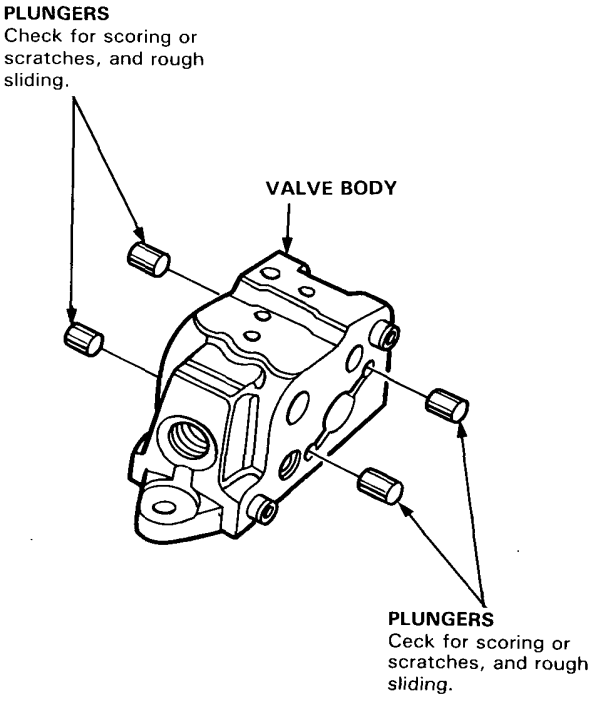
13. Remove the plungers, return springs and reaction control valve.

14. Remove the control valve seal from the reaction control valve.



15. Check the plungers.
    - Inspect their surface for scoring or scratches.
    - Slip each plunger into the valve body, and make sure it slides smoothly, without drag or side play. If any plunger is damaged, replace it.

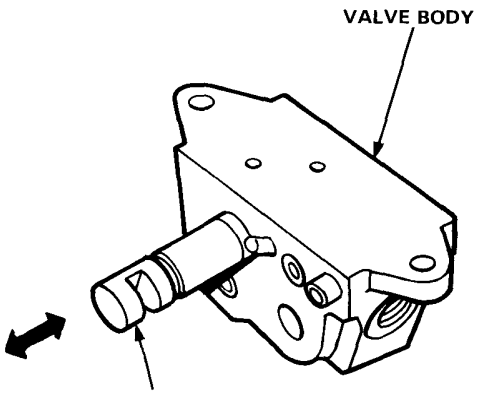
    NOTE: If the valve body is damaged, replace the valve body unit as a set.



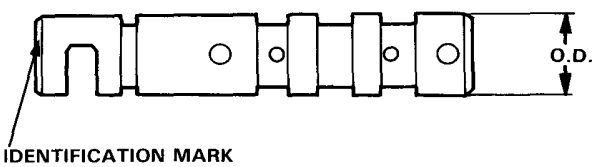
(cont'd)

Valve Body Unit Disassembly (cont'd)

16. Check the reaction control valve.
    - Inspect its surface for scoring or scratches.
    - Slip it into the valve body, and make sure it slides smoothly, without drag or side play.



NOTE:
- The reaction control valve is sized to fit the valve body, so, if you replace it, make sure the new valve has the same identification mark on it.
- If the valve body is damaged, replace the valve body unit as a set.



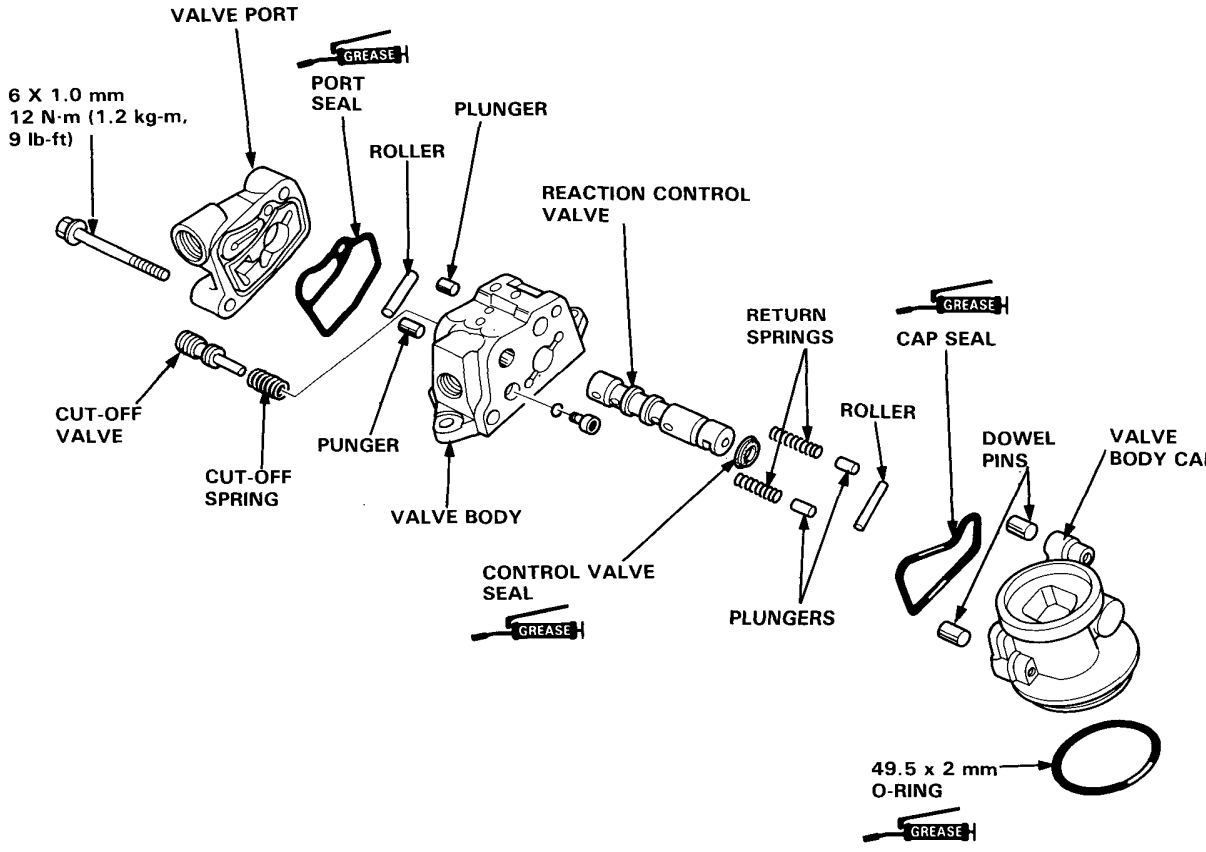
Identification Mark	Outside Diameter	Part Number
X	13.998–14.003 mm (0.5511–0.5513 in.)	53646–SB4–950
Y	13.993–13.998 mm (0.5509–0.5511 in.)	53647–SB4–950
Z	13.988–13.993 mm (0.5507–0.5509 in.)	53648–SB4–950

Valve Body Unit Assembly

1. Thoroughly clean the disassembled parts shown below.
2. Coat the plungers, cut-off valve and reaction control valve surfaces with power steering fluid.
3. Reassemble the parts in reverse order of disassembly.

CAUTION:
- **Replace the O-rings and seals with new ones.**
- **Do not dip the O-rings and seals in solvent.**
- **Apply grease in the cap seal and port seal grooves to keep the seals in place.**
- **Apply grease to the O-ring for valve body cap and reaction control valve seal to keep them in place.**

NOTE: L/H shown, R/H similar

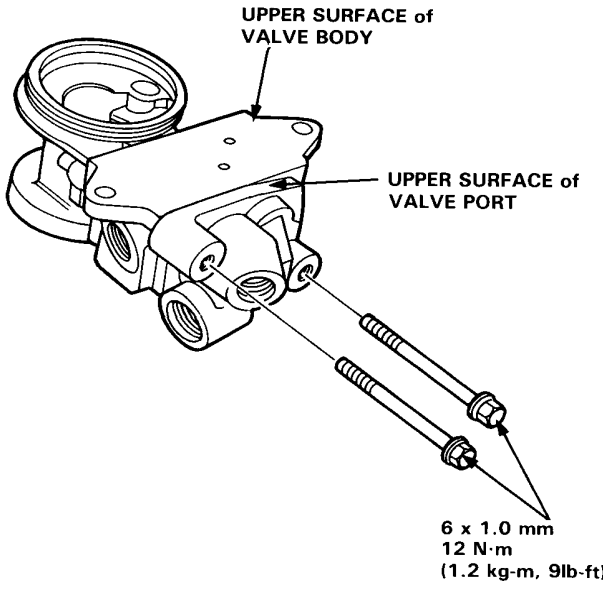


(cont'd)

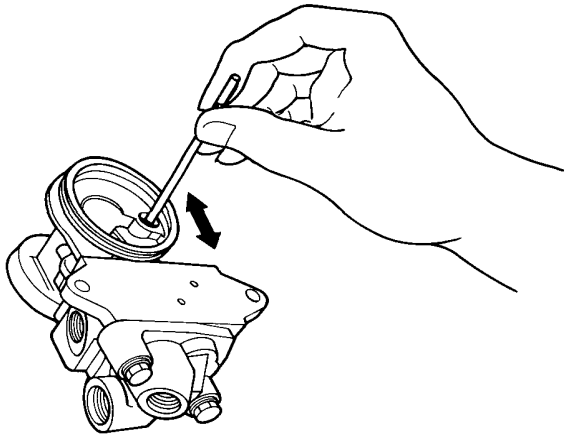
Valve Body Unit Assembly (cont'd)

4. Tighten the 6 mm bolts in the valve body unit.

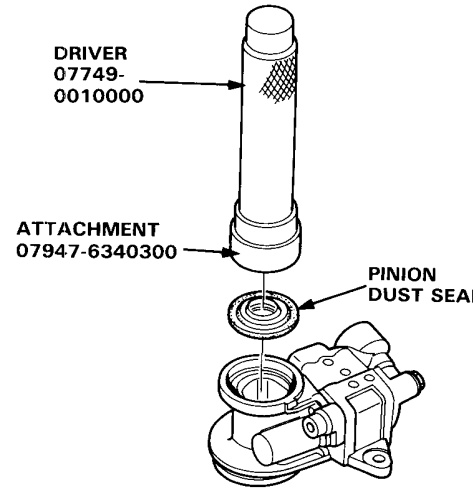
   CAUTION: Make sure that the upper surface of the valve port does not exceed the upper surface of the valve body.



5. Make sure the reaction control valve moves smoothly, and returns to a neutral position.



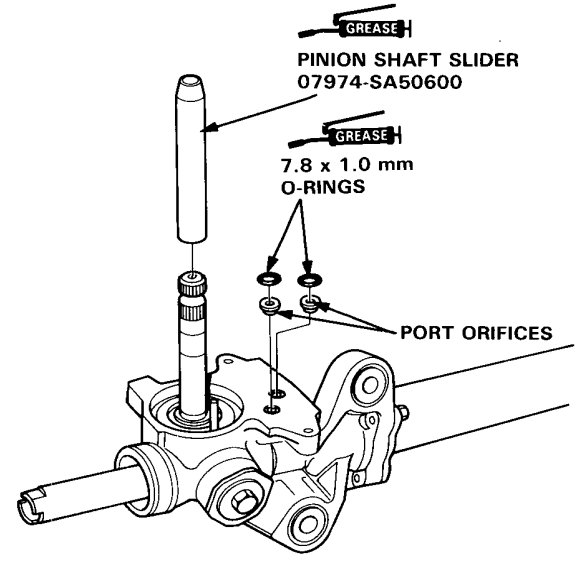
6. Install the pinion dust seal with the special tool.



7. Apply grease in the O-ring grooves of the gear housing.

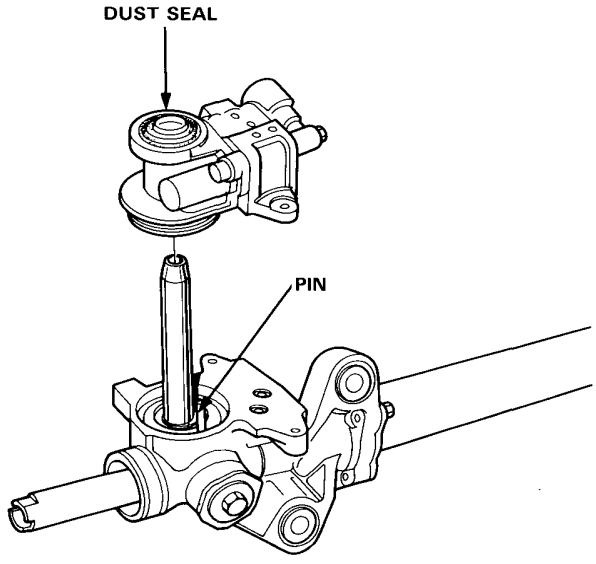
8. Install the port orifices and 7.8 x 1.0 mm O-rings.

9. Apply grease to surface of special tool and install the special tool on the pinion.

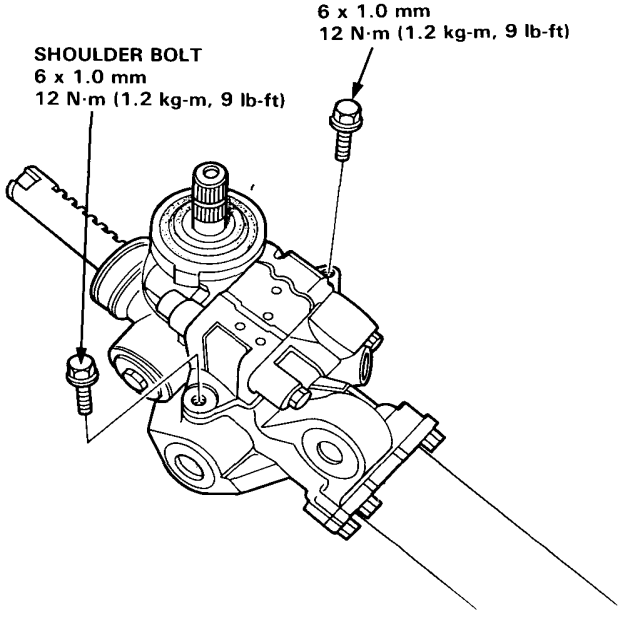


10. Install the valve body unit on the gearbox housing.

CAUTION:
- **Be careful not to damage or distort the lip of dust seal, or it may be dislodged.**
- **Install the valve body unit carefully to avoid damaging the pin in the pinion holder**
- **Make sure the 49.5 x 2.0 mm O-ring is positioned properly and is not pinched when installing the valve body unit.**



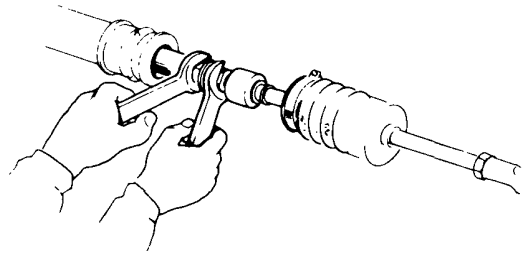
11. Tighten the 6 mm bolts.



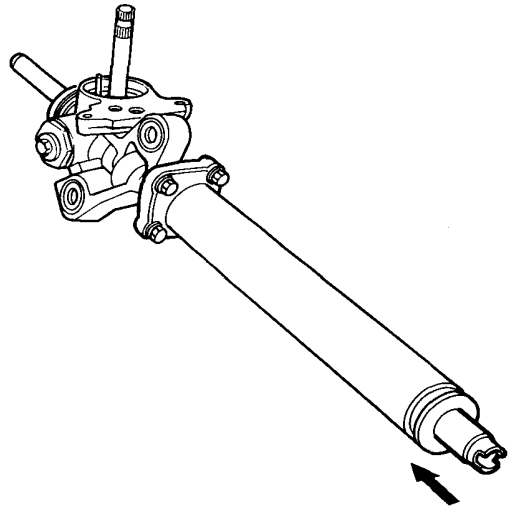
CAUTION: For proper assembly, the shoulder bolt must be installed in the rear hole; toward the rear of the car.

Gearbox Disassembly/Reassembly

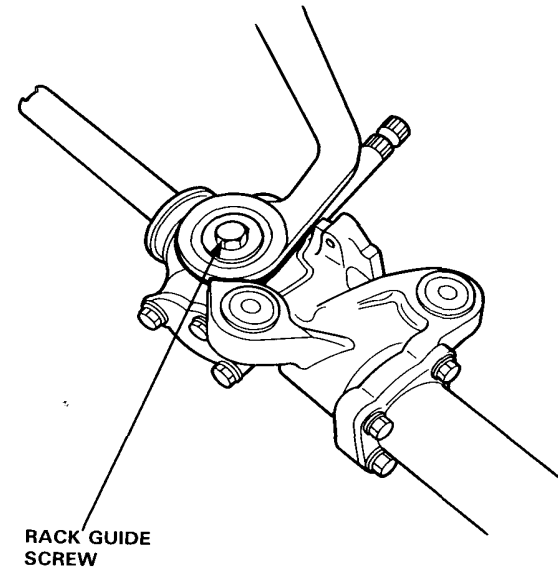
1. Remove the gearbox assembly from the rear beam (page 19-26).
2. Remove the valve body unit from the gearbox housing (page 19-27).
3. Bend back the tie-rod lock washers.
4. Hold the rack with a 19 mm wrench and unscrew the tie-rods with a 17 mm wrench.



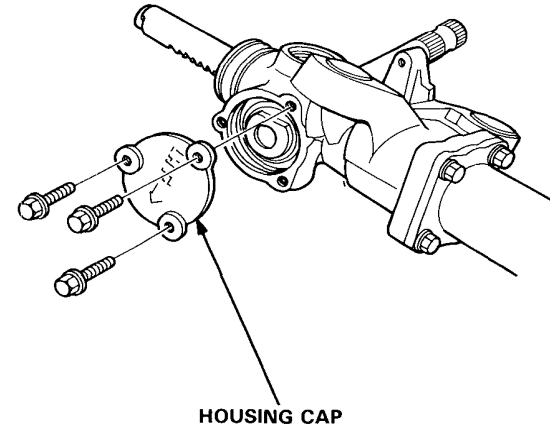
5. To prevent damage to the sealing surface of the steering rack, push the rack into its cylinder.



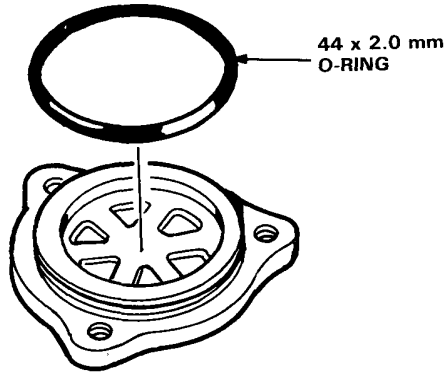
6. Loosen the rack screw locknut and remove the rack guide screw, spring and rack guide.



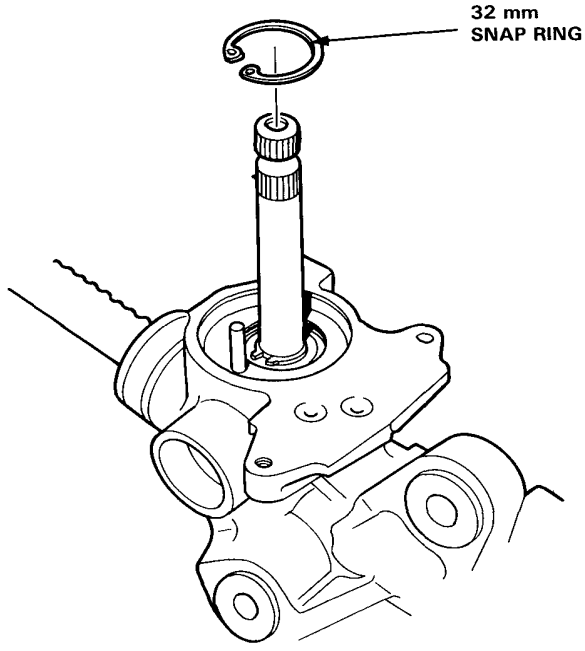
7. Remove the three 6 mm bolts and housing cap.



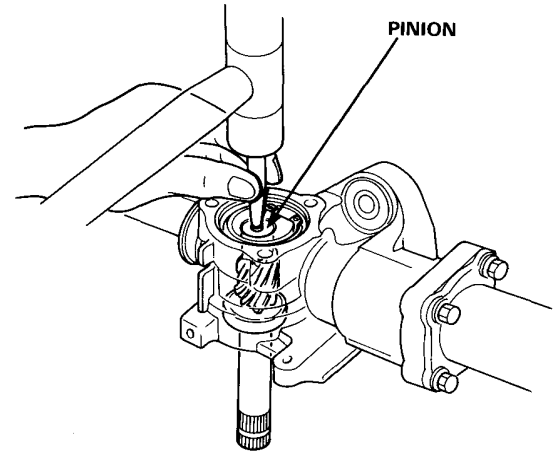
8. Remove the 44 x 2.0 mm O-ring from the housing cap.



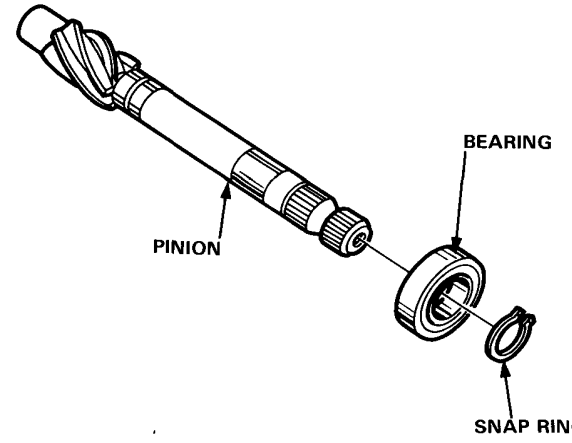
9. Remove the 32 mm snap ring.



10. Remove the pinion from the gear housing by tapping it lightly.



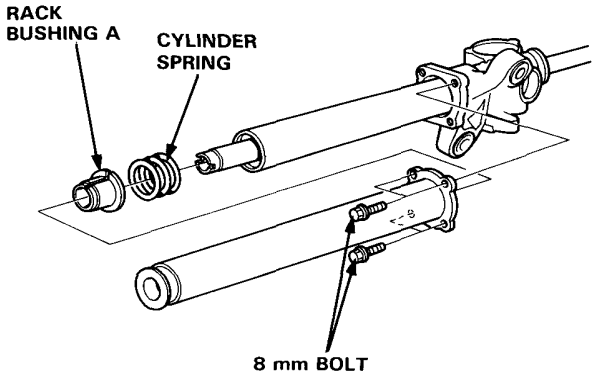
11. Remove the 15 mm snap ring and bearing if *necessary*.



(cont'd)

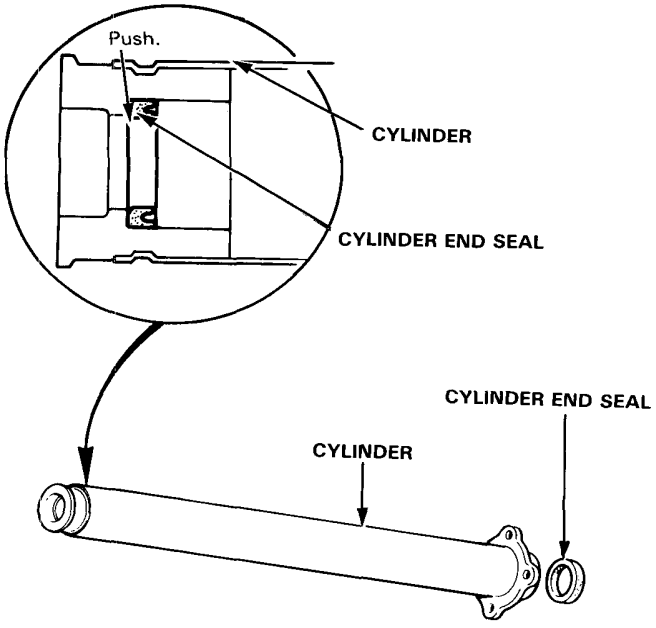
Gearbox Disassembly/Reassembly (cont'd)

12. Remove the four 8 mm bolts.
13. Remove the cylinder.
14. Remove the rack bushing A and cylinder spring.

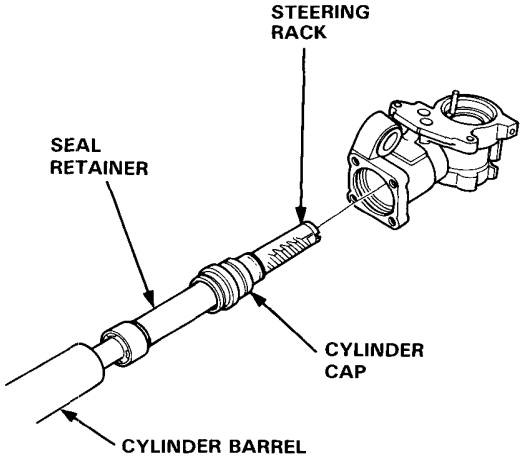


15. Remove the cylinder end seal from the cylinder.

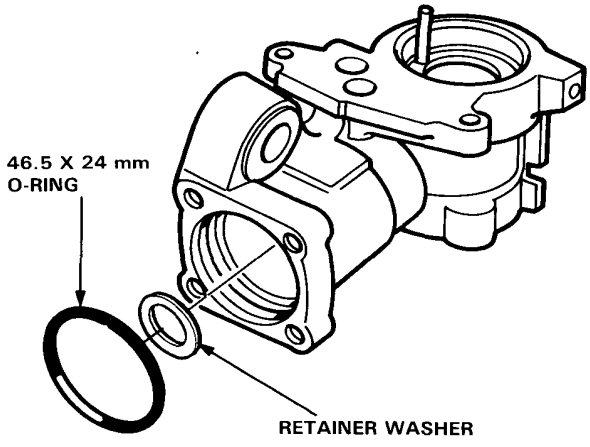
CAUTION: Do so by hand to aboid damaging the housing.



16. Remove the cylinder barrel, seal retainer, cylinder cap and steering rack from the gear housing.

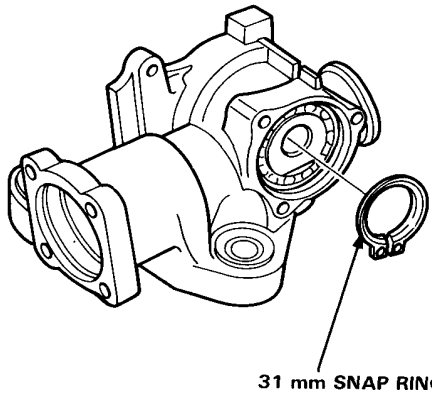


17. Remove 46.5 x 2.4 mm O-ring and retainer washer from the gear housing.

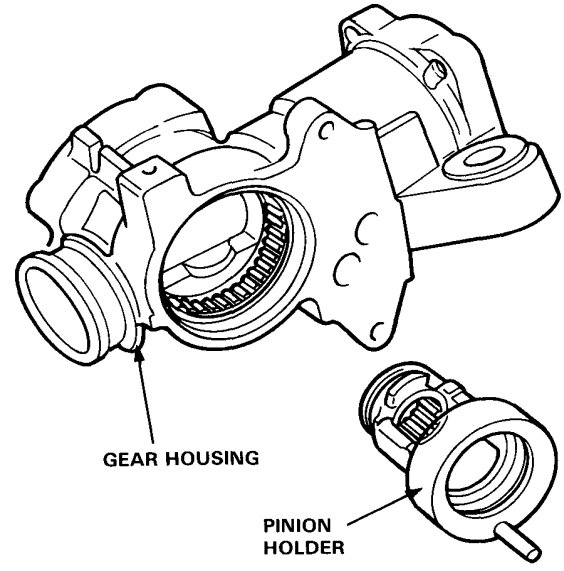


18. Check the bearing and pinion holder for faulty movement and excessive play. If they are OK and the grease in the bearing is clean, go on step 19. If they are damaged, or if there is dirt in the grease, proceed as follows:

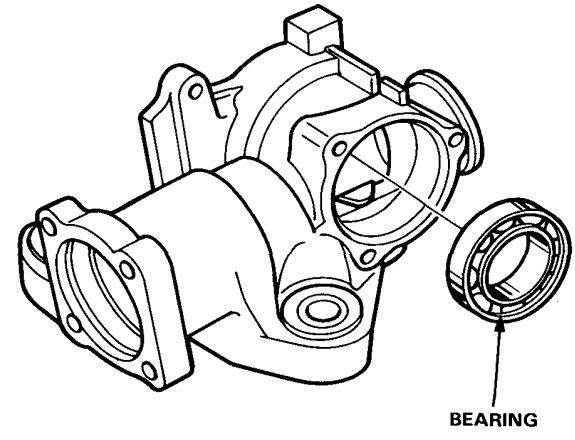
- Remove the 31 mm snap ring.



- Remove the pinion holder from the gear housing.



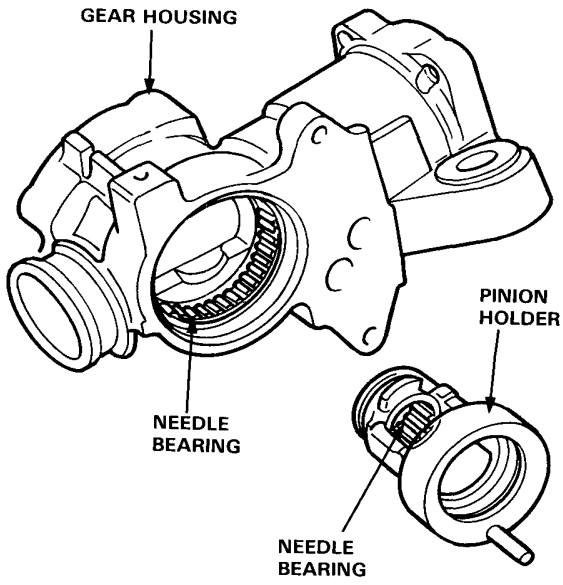
- Remove the bearing from the gear housing.



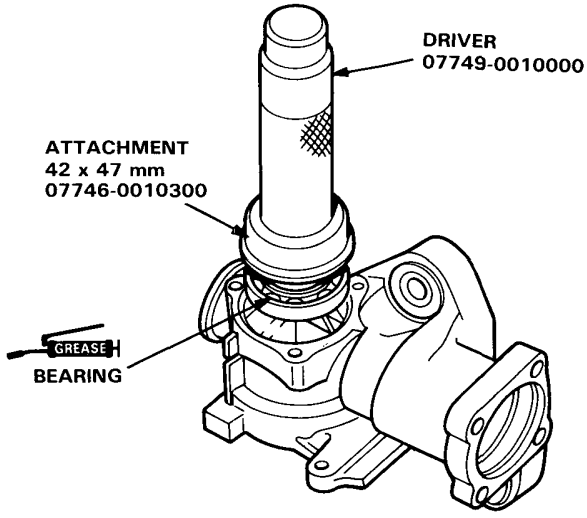
(cont'd)

Gearbox Disassembly/Reassembly (cont'd)

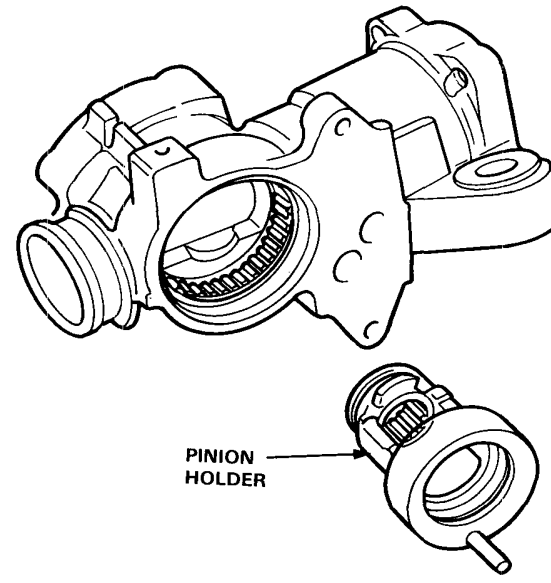
- Check the needle bearings in the pinion holder and in the gear housing for damage. If they are OK, pack with grease. If the bearings are damaged replace the gearbox assembly as a set.



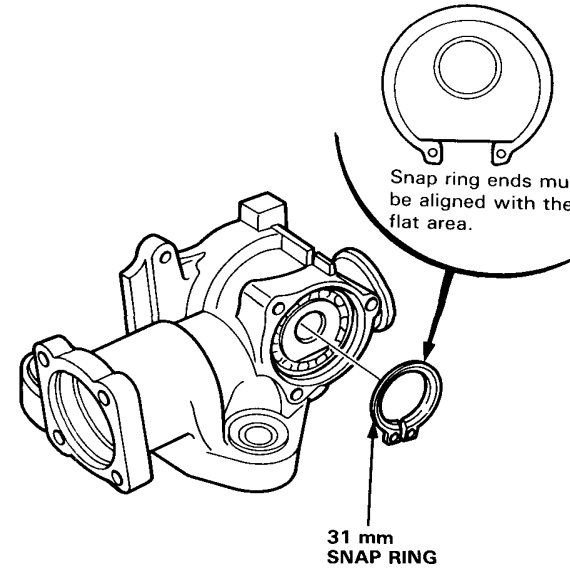
- Pack a new bearing with grease, then install with special tool, as shown.



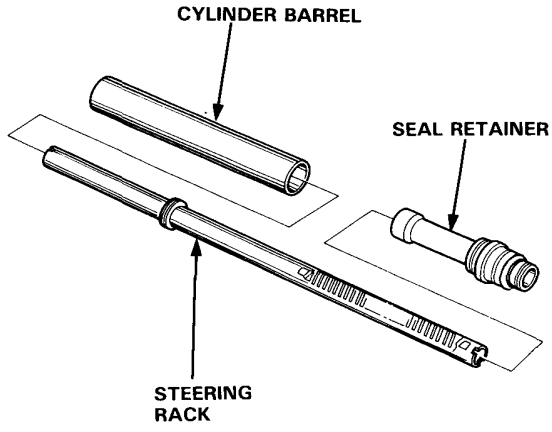
- Install the pinion holder in the gear housing.



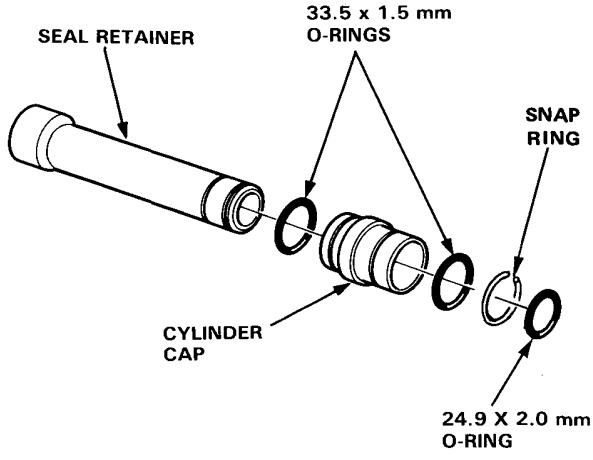
- Install the 31 mm snap ring with the taper side facing out.



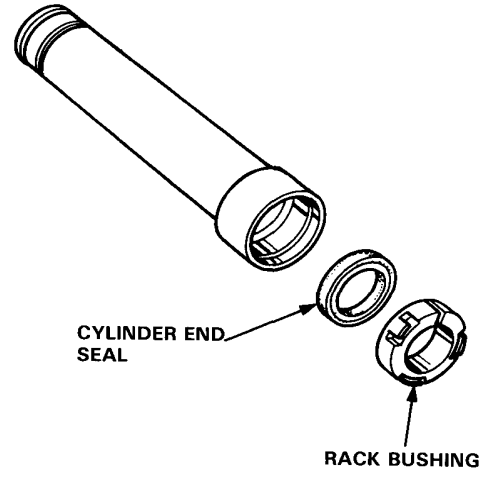
19. Remove the cylinder barrel and seal retainer from the steering rack.



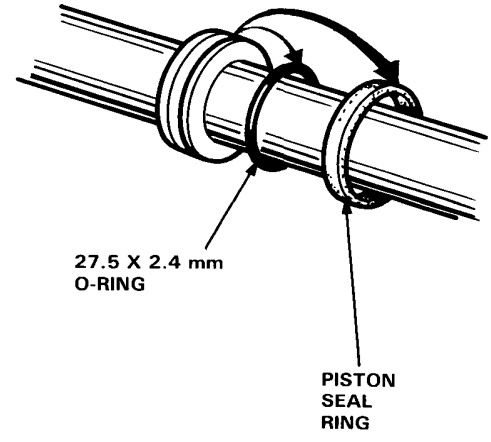
20. Remove the 24.9 x 2.0 mm O-ring, the snap ring and the cylinder cap from the seal retainer. Remove 33.5 x 1.5 mm O-rings from the cylinder cap.



21. Remove rack bushing B from the seal retainer. Then remove the cylinder end seal.



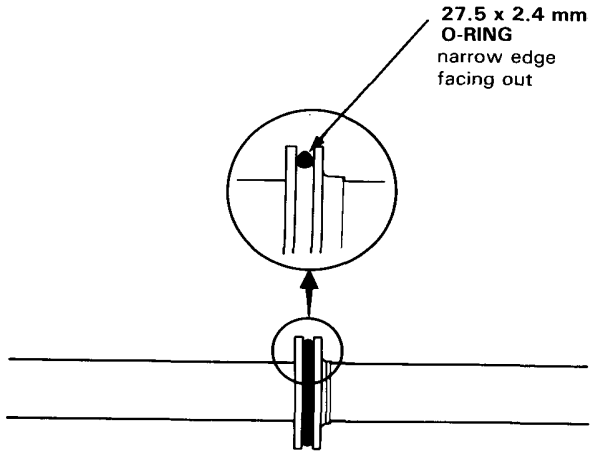
22. Carefully pry off the piston seal ring with a small screwdriver, then remove the 27.5 x 2.4 mm O-ring.



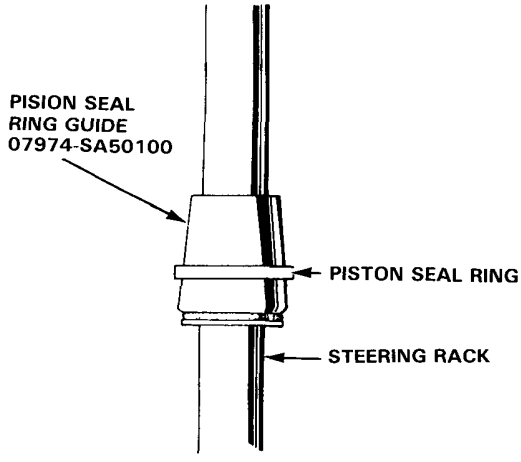
(cont'd)

Gearbox Disassembly/Reassembly (cont'd)

23. Install a new O-ring on the rack.

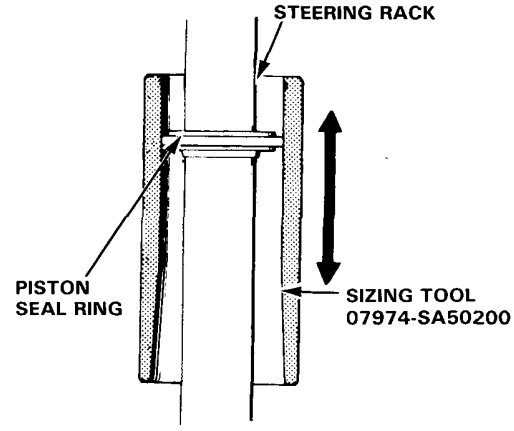


24. Install a new piston seal ring.
    - Coat the piston seal ring guide tool with power steering fluid, and slide it onto the rack, big end first.

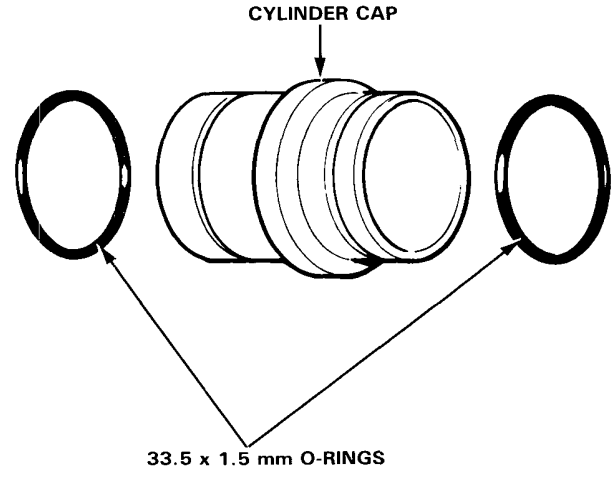


    - Slide the new piston seal ring onto the guide tool, work it down to the big end of the tool, and then pull it off into the piston groove, on top of the O-ring.

25. Coat the piston seal ring and the inside of the sizing tool with power steering fluid. Carefully slide the tool onto the rack and over the piston seal ring, then rotate the tool as you move it up and down to break-in the piston ring.



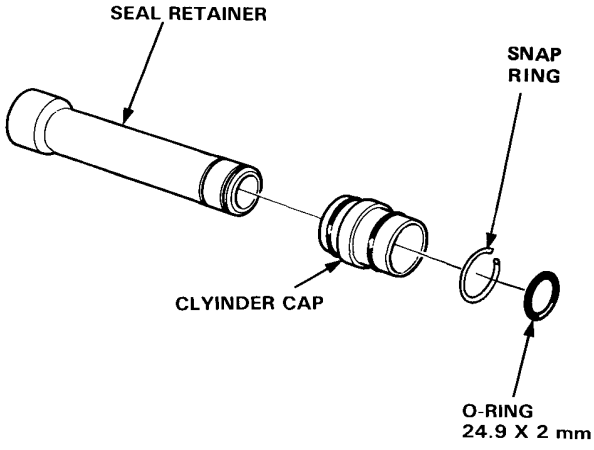
26. Coat new O-rings with grease and install them on the cylinder cap.



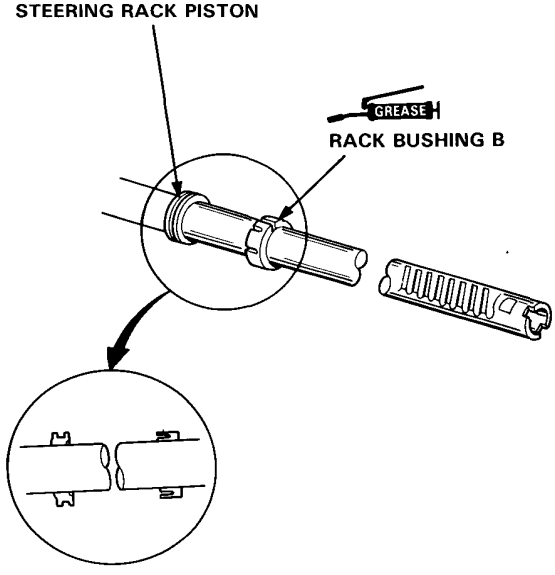
27. Slide the cylinder cap onto the seal retainer.

28. Install the snap ring on the seal retainer.

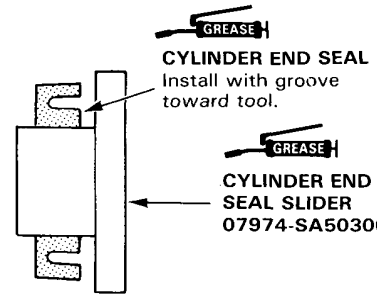
29. Install a new 24.9 x 2 mm O-ring on the seal retainer.



30. Install the rack bushing B with the groove toward the steering rack piston.

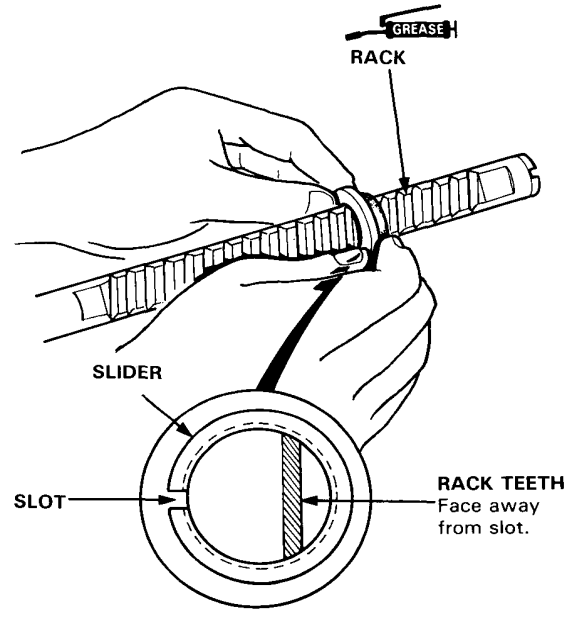


31. Coat the end seal slider tool and cylinder end seal with grease, and install the cylinder end seal on the seal slider tool with the groove toward the tool.



32. Coat the rack and fill its teeth with grease then slide the tool onto the steering rack.

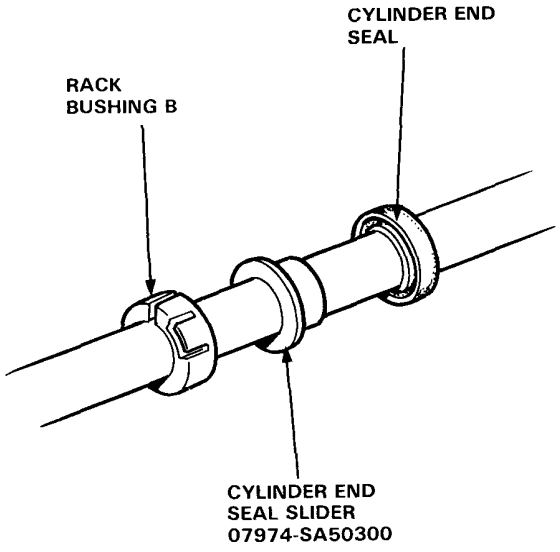
CAUTION: Make sure the rack teeth do not face the slot in the slider tool.



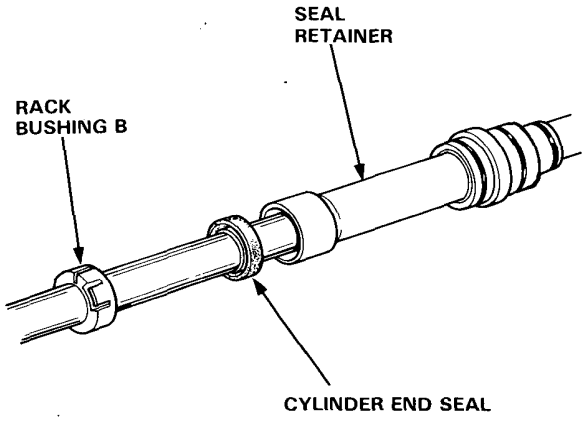
(cont'd)

Gearbox Disassembly/Reassembly (cont'd)

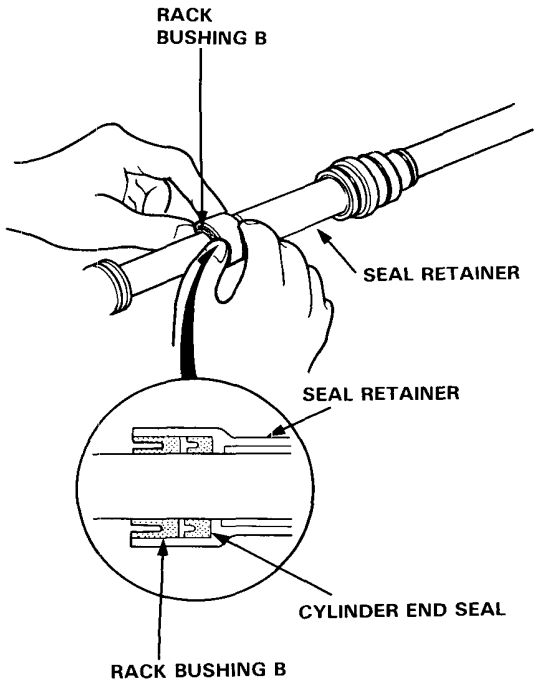
33. Remove the cylinder end seal slider from the steering rack.



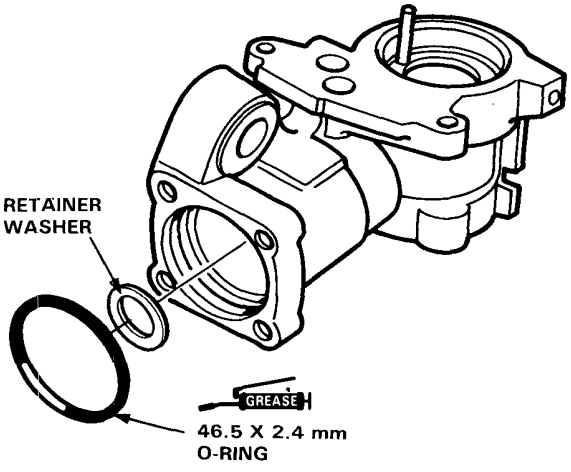
34. Slide the seal retainer onto the steering rack.



35. Push the rack bushing B into the seal retainer so as to contact the cylinder end seal with the seal retainer.

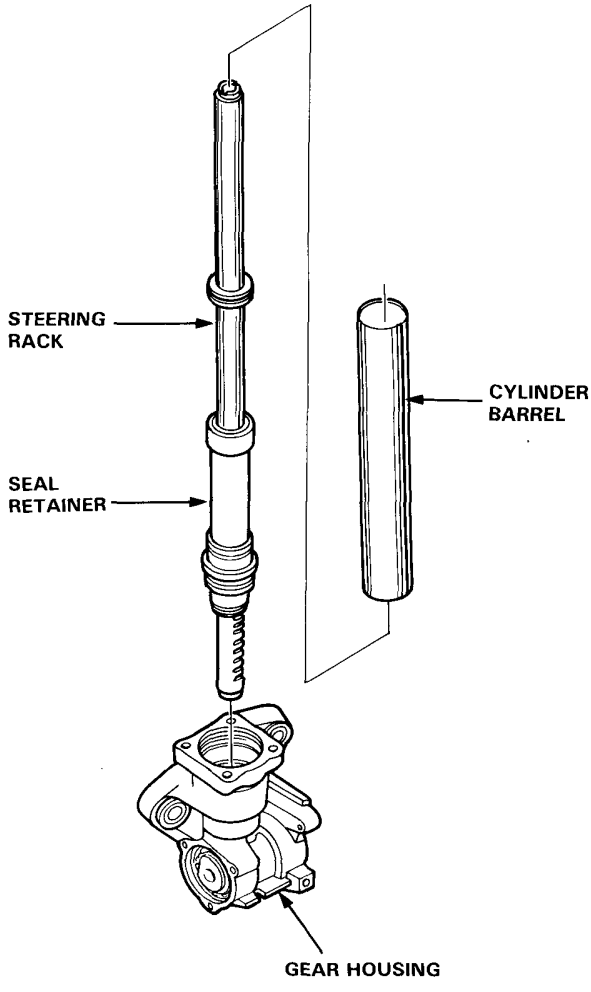


36. Install the 46.5 x 2.4 mm O-ring and retainer washer into the gear housing.



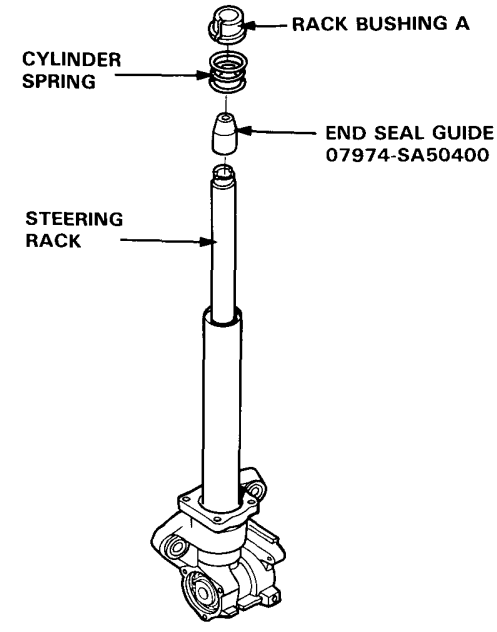
37. Stand the gear housing on the work bench and press the seal retainer and steering rack into the gear housing.

38. Coat the inside surface of the cylinder barrel with power steering fluid, slide it over the rack and into the gear housing; press it into the housing until it seats.

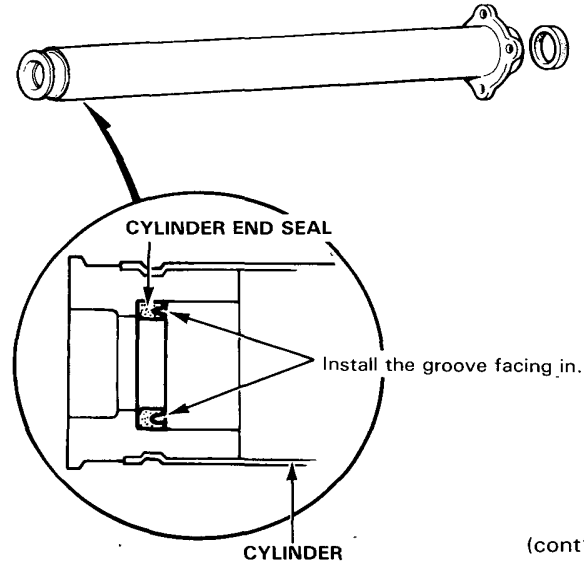


39. Install the end seal guide tool on the steering rack.

40. Install the cylinder spring over the rack, then coat the rack bushing A with power steering fluid, and install it on the spring.



41. Coat the inside surface of the cylinder with power steering fluid and install the cylinder end seal with the groove facing in.



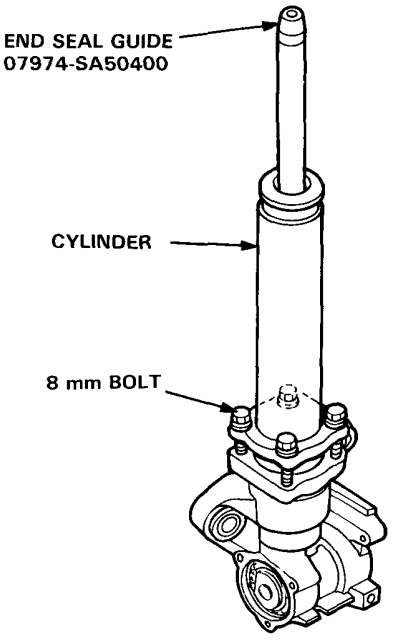
(cont'd)

Gearbox Disassembly/Reassembly (cont'd)

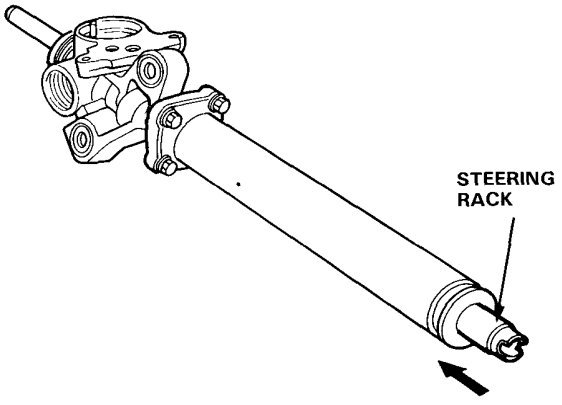
42. Coat the end seal guide tool with grease.

43. Carefully slide the cylinder over the rack and install it on the gear housing.

    CAUTION: Be carefull not to damage the cylinder end seal in the cylinder.

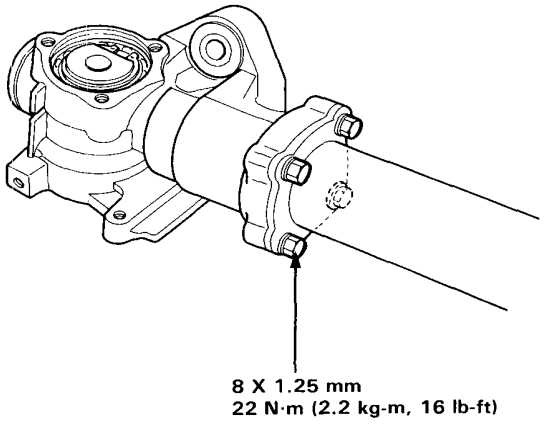


44. Push the steering rack until the rack is in the cylinder to prevent damage to the sliding surface of the steering rack.

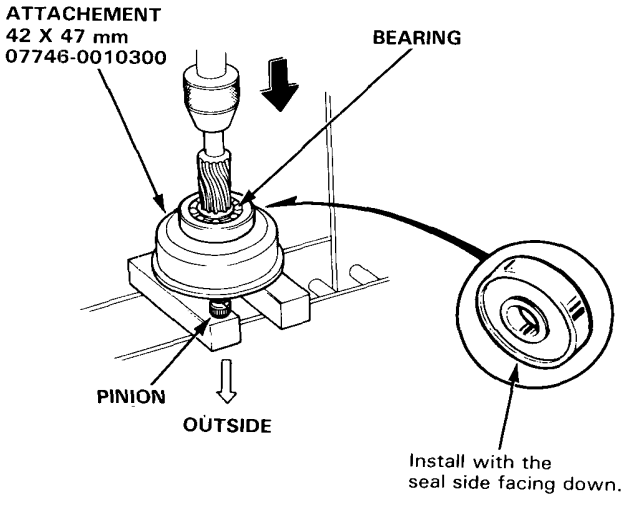


45. Secure the cylinder to the gear housing with the four 8 mm bolts.

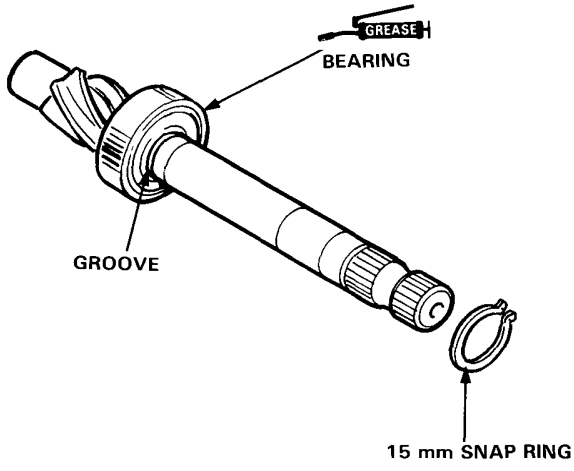
    NOTE: Before tightening, make sure the mating surface of the cylinder and gear housing fit properly. Push and hold them together while you tighten the bolts.



46. Using a press, install the bearing on the pinion, with its seal side facing down (out).

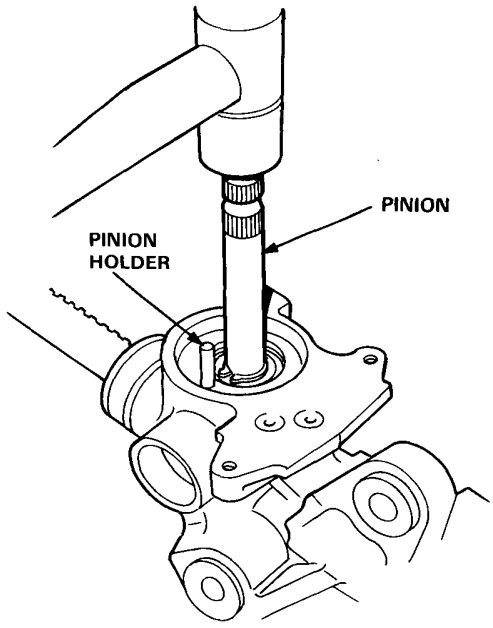


47. Install the 15 mm snap ring on the pinion.

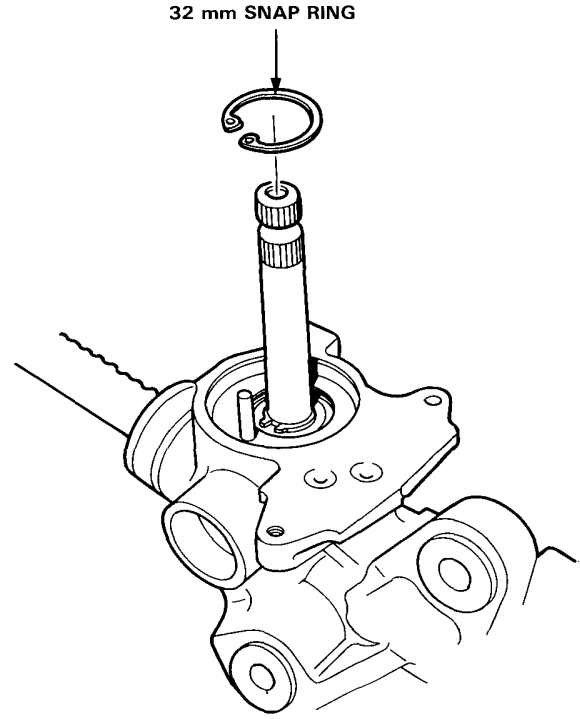


48. Grease the bearing and make sure that it turns smoothly.

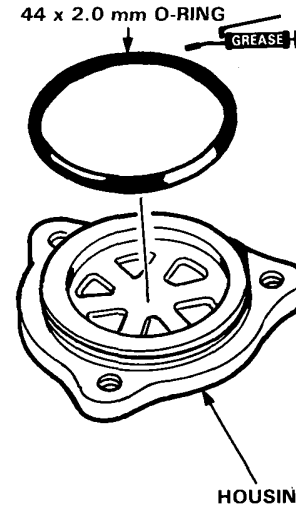
49. Insert the pinion into the pinion holder in the gear housing.



48. Install 32 mm snap ring in the groove in the pinion holder, with its taper side facing out.



49. Coat the 44 x 2.0 mm O-ring with grease and install it in the groove in the housing cap.

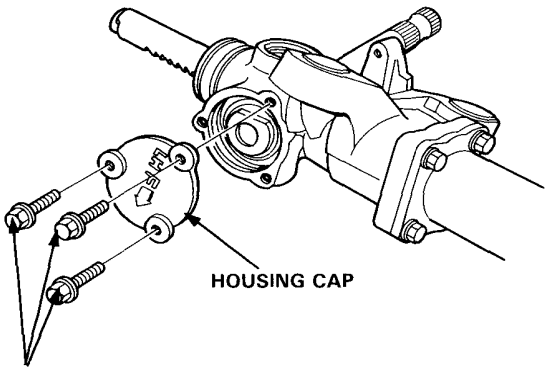


(cont'd)

Gearbox Disassembly/Reassembly (cont'd)

50. Tighten the three 6 mm bolts to secure the housing cap to the gear housing.

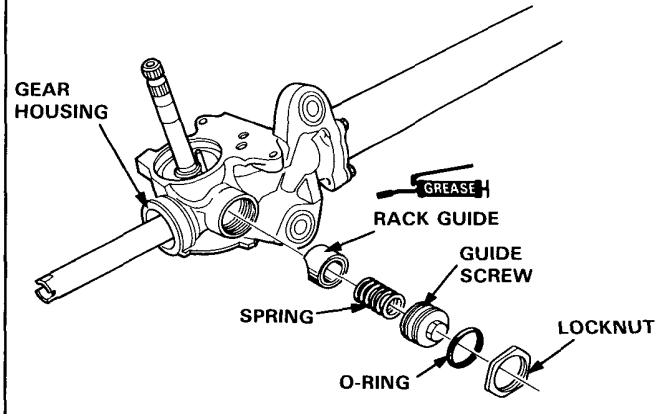
    NOTE: The arrow on the housing cap must face toward the front of the car when the gearbox is installed.



51. Coat the rack guide with grease.

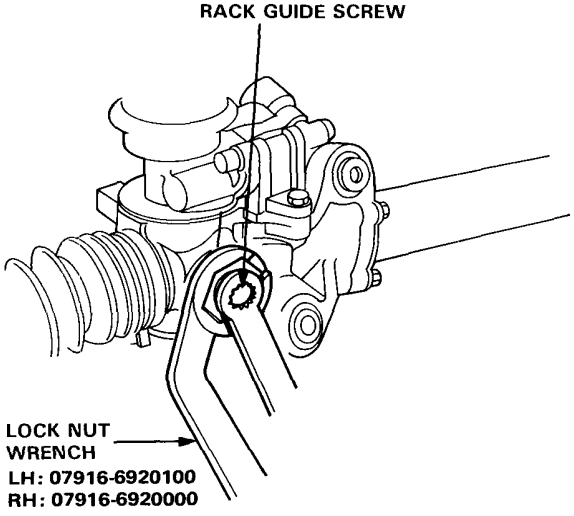
52. Install the rack guide, spring, O-ring and rack guide screw in the gear housing.

53. Install the locknut on the rack guide screw, finger tight.

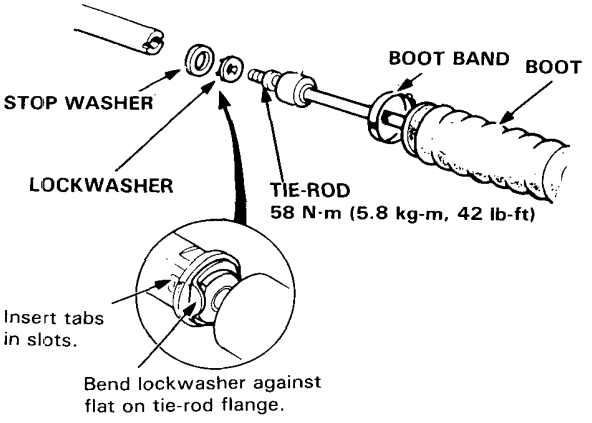


54. Tighten the guide screw until it compresses the spring and seats against the guide, then loosen it. Retighten it to 4 N·m (0.4 kg-m, 3 lb-ft) and back off about 35° (about 1/10 of a turn).

    While hoding the guide screw in its position, tighten the locknut to 25 N·m (2.5 kg-m, 18 lb-ft) with the locknut wrench.



55. Screw each tie-rod into the rack while holding the lockwasher so its tabs are in the slots in the rack end. Tighten the tie-rod securely, then bend the lockwasher back against the flat on the flange as shown. Install the boots and bands.

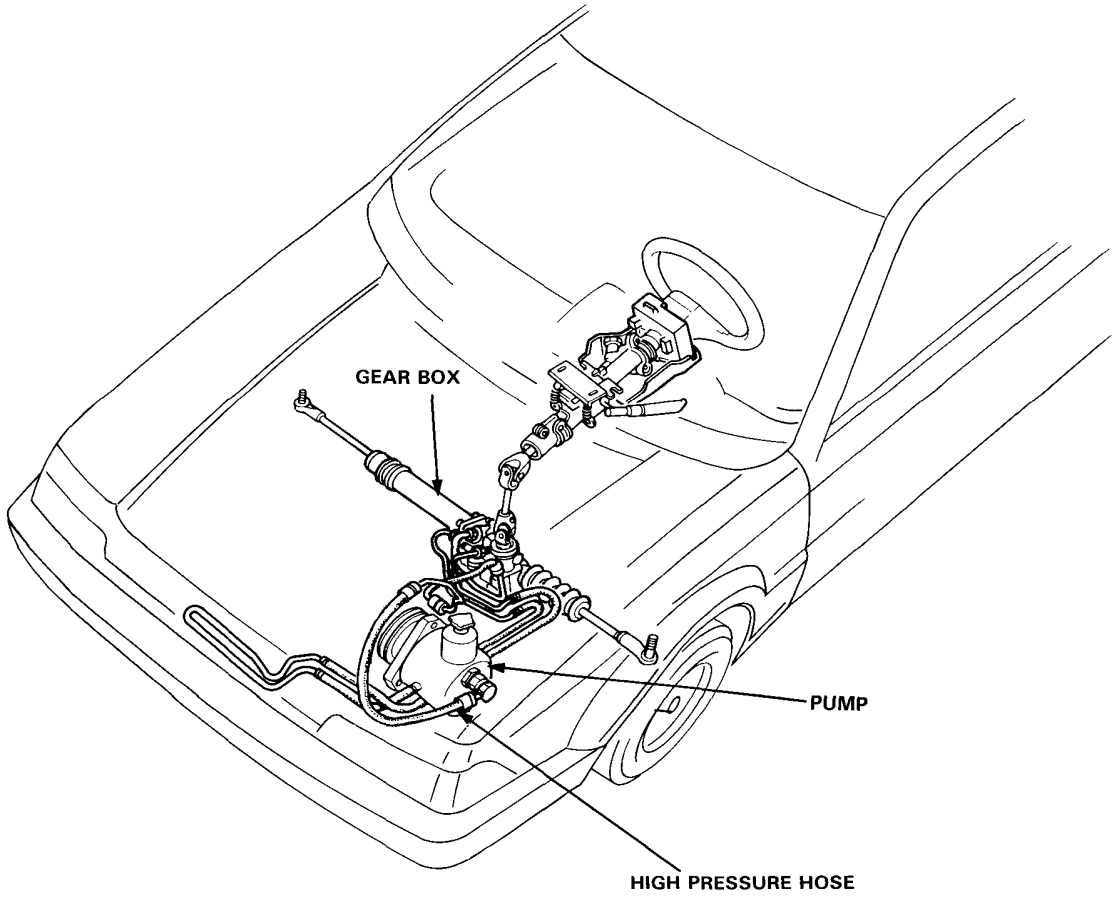


56. Make sure that the boots move smoothly while sliding the steering rack.

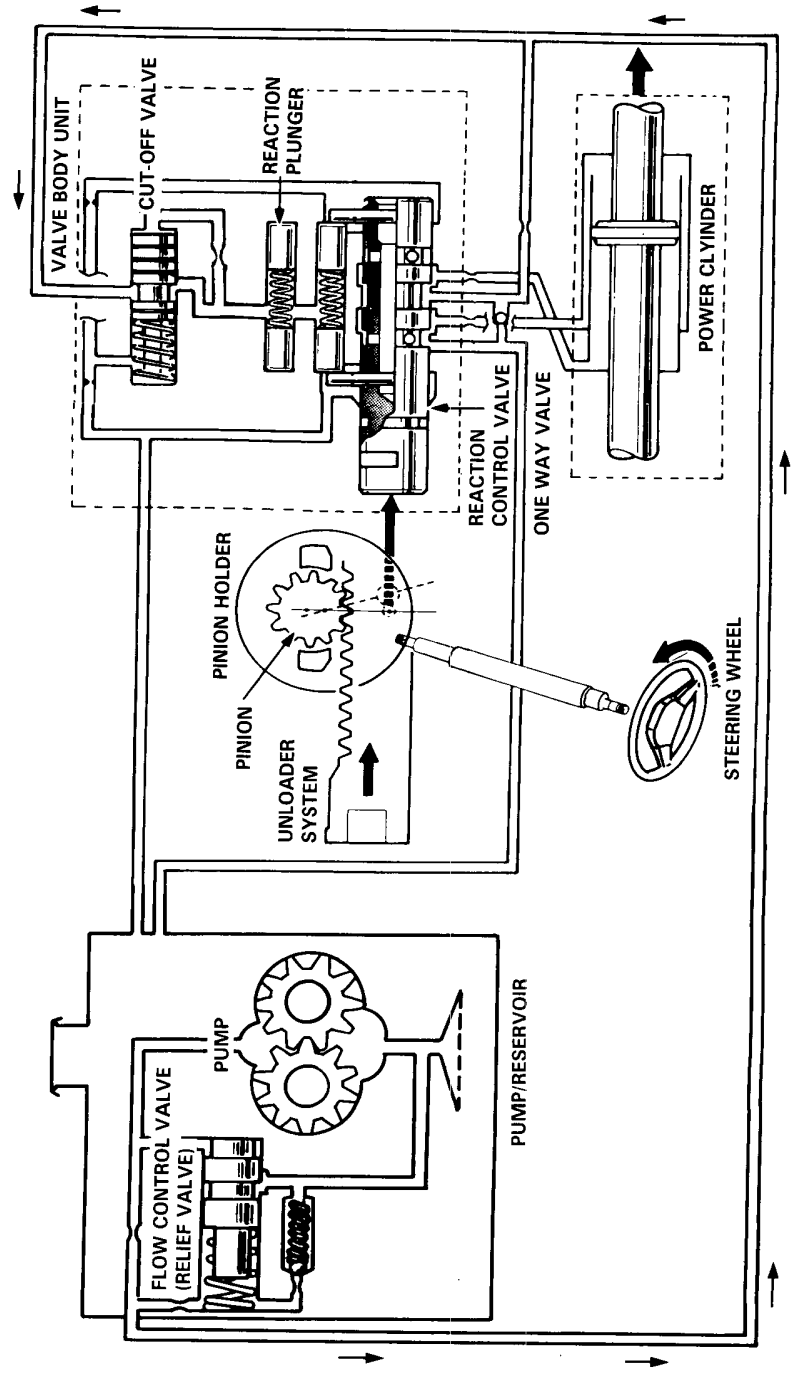
Operation

Description

The power steering is rack and pinion type. The power operating assembly is integral with the steering gear. Road feel is maintained throughout the entire speed range of the vehicle.
NOTE: L/H shown, R/H similar

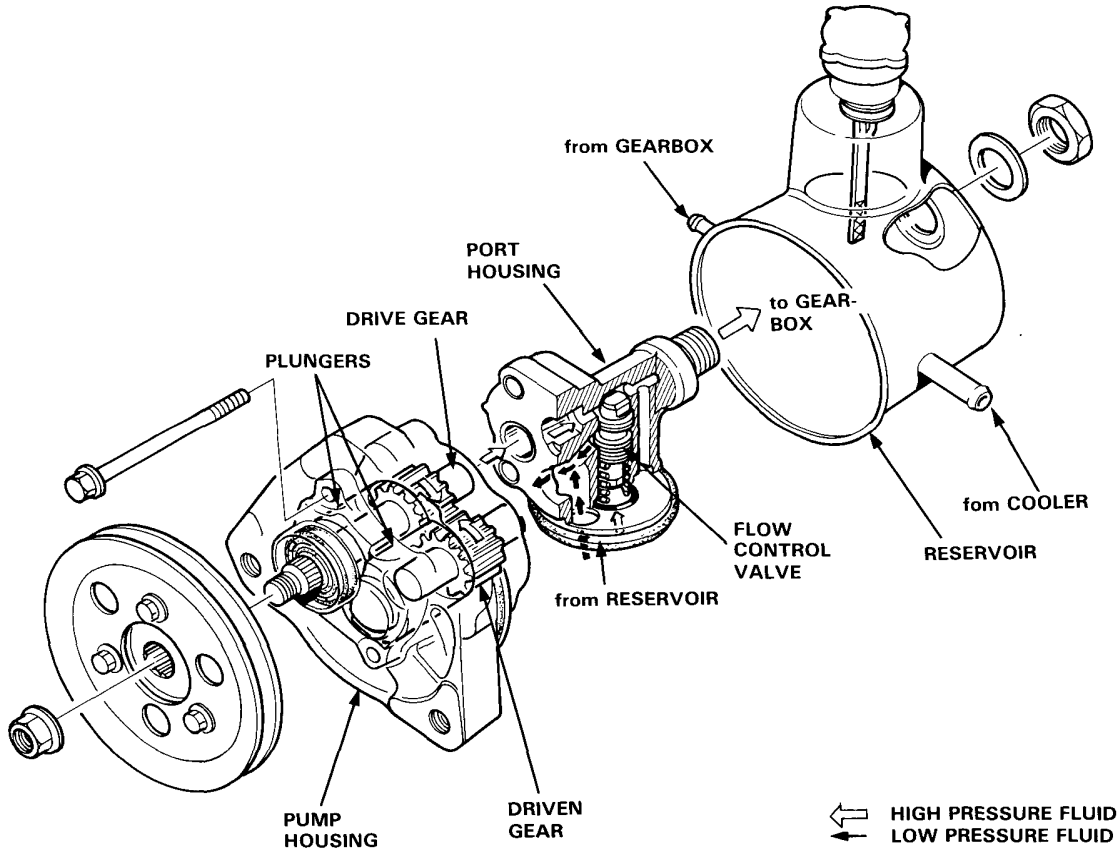


Flow Circuit

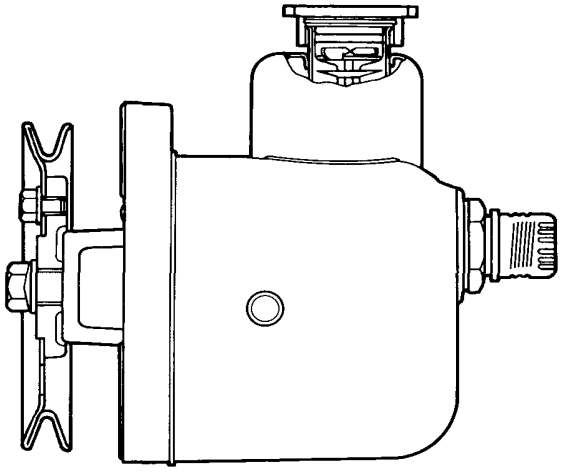


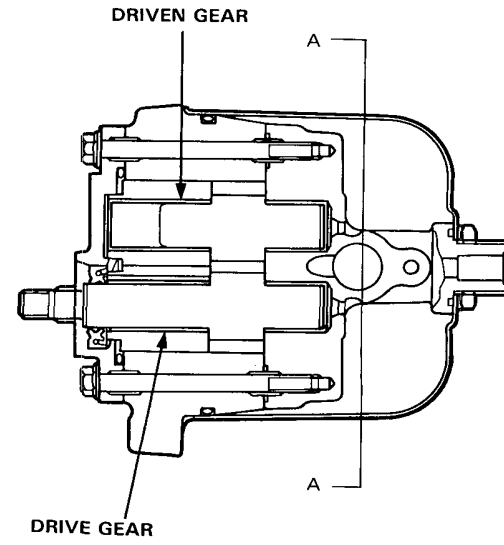
Pump

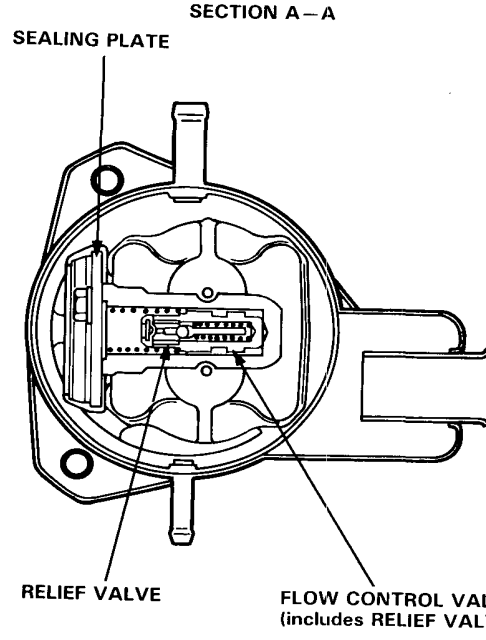
The pump is located at the left side of the engine cylinder head. It is a constant displacement spur gear type integral with the reservoir, and driven by the crankshaft through a V-belt. A relief valve in the pump housing returns excess fluid to the pump inlet. The pump housing and port housing are made of aluminum for light-weight construction.



Pump (cont'd)




DRIVEN GEAR
A
A
DRIVE GEAR


SECTION A—A
SEALING PLATE
RELIEF VALVE
FLOW CONTROL VALVE
(includes RELIEF VALVE)

Pump

Flow Control

Fluid from the pump runs through a metering orifice to the valve body. This creates a pressure differential between the pump and valve body sides of the orifice.

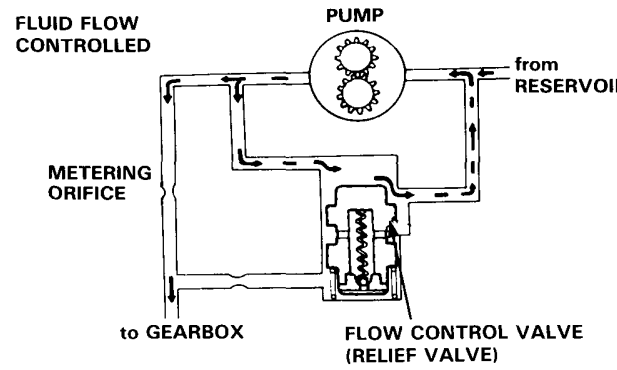
When pressure in the pump side is higher than the force of the spring holding the flow control valve closed, it pushes the valve down (open), and excess fluid returns to the pump inlet. The combined effect of the metering orifice and the flow control valve provides a relatively constant flow of fluid to the valve body.

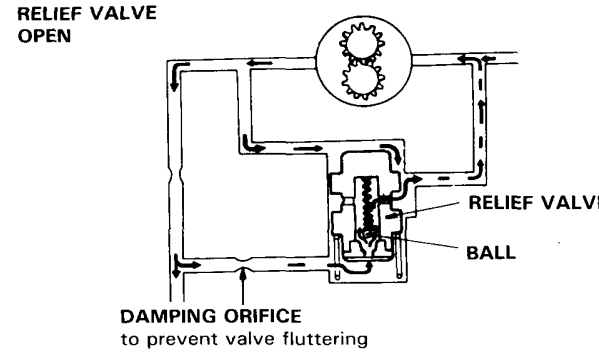
Pressure Relief

As pressure on the valve body side builds up, it pushes the relief valve ball (inside the flow control valve) up against its pring.

As the pressure under the flow control valve drops, the relief valve ball is closed by its spring, and the flow control valve is forced down again, allowing excess fluid from the pump side to return to the inlet.

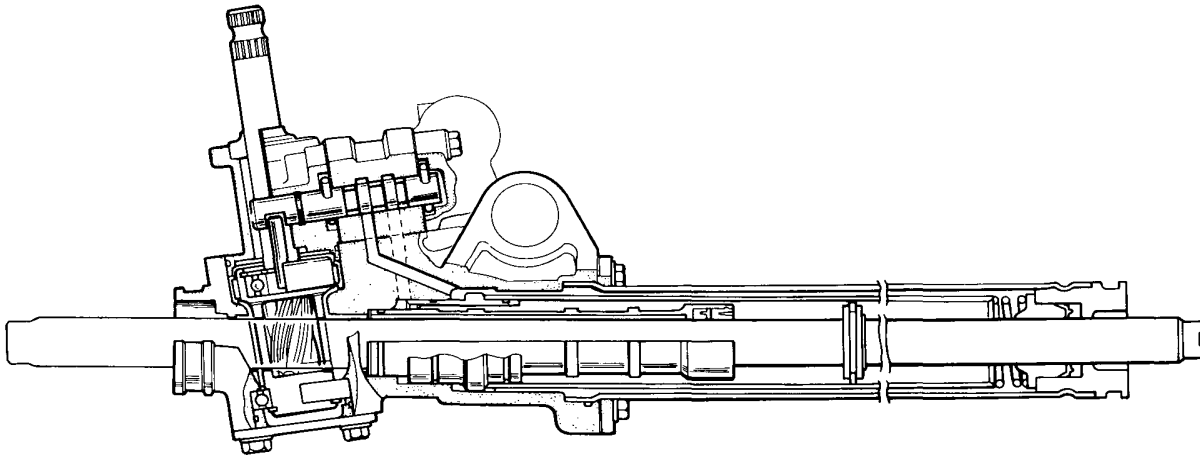
This flow control valve-relief valve cylinder keeps pump output pressure between 80—90 kg/cm².





Gearbox

The steering gear is a self-contained rack and pinion type with the power cylinder placed in line with the steering rack. The power cylinder has an outer wall which serves as a fluid passage to eliminate external piping. The control valve is located at the top of the steering gearbox.



(cont'd)

Operation

Gearbox (cont'd)

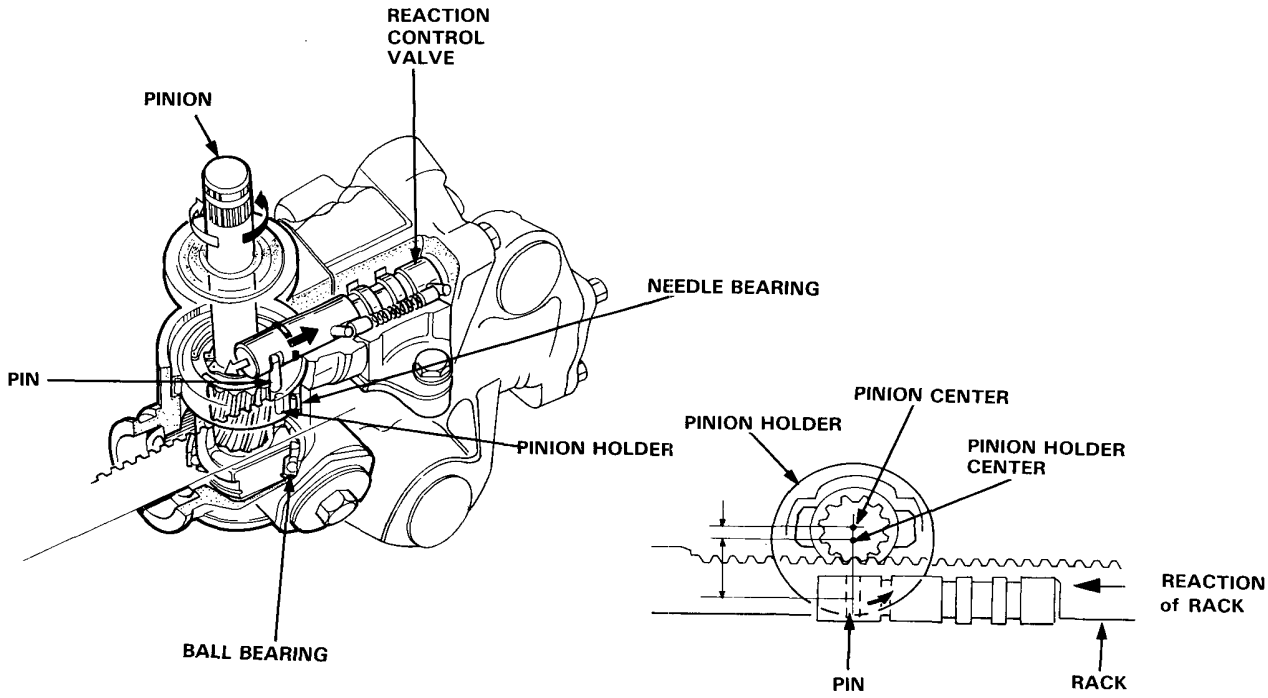
Valve Body Unit

In the power steering unit, the method used to direct a single source of fluid pressure in either of two directions (for left or right turns) involves the pinion gear transferring a "message" of direction to the fluid control valve.

The pinion is mounted slightly off-center in a pair of bearings, which are in turn mounted in a pinion holder cylinder that rotates, centered in its own outer bearings. At the bottom of the pinion holder is a pin, which fits in a slot in the control valve.

As the pinion is turned (to turn left or right), because it is off-centered it also moves slightly along the rack. This movement is transferred to the holder. The pin in the holder then moves the control valve, to direct fluid pressure to either side of the rack power cylinder.

The back edges of the pinion holder hit stops cast into both sides of the gear housing to avoid pushing the control valve too far in either direction. The front edge of the pinion holder cuts off assist at full lock.



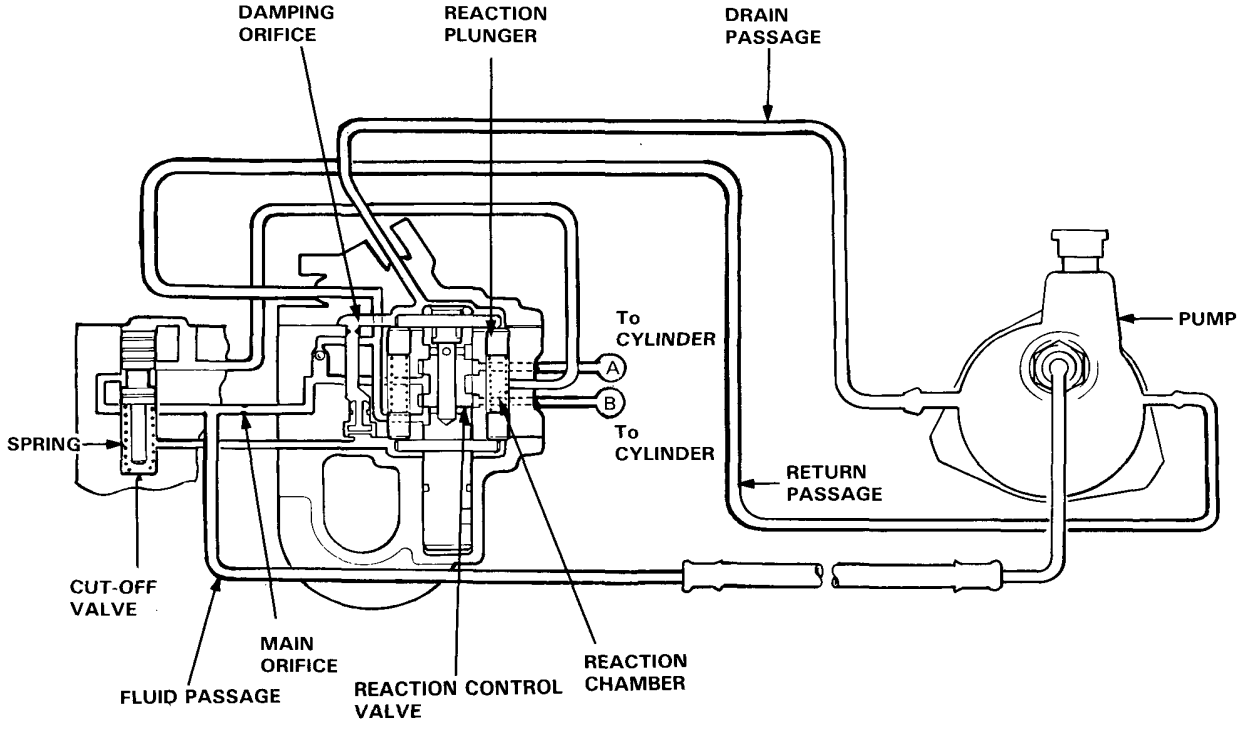
Hydraulic Reaction Sensing Mechanism

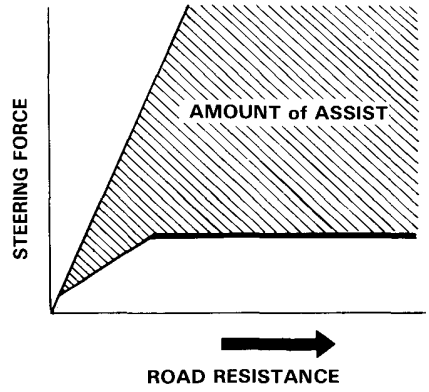
Turn at Parked or Slow Speed

A reaction chamber with a pair of plungers and springs is provided on each side of the reaction control valve. A hydraulic pressure sensing cut-off valve is located in the circuit leading to the reaction chambers.

When the steering wheel is turned while the car is parked or moving at low speed, fluid pressure increases. As the pressure reaches a prescribed value, it forces the cut-off valve down. When this happens, the fluid passage from the pump to the reaction chambers is closed off, keeping the fluid pressure in the reaction chambers from rising too high.

The damping orifice prevents "fluttering" of the reaction control valve during operation. The main orifice causes higher pressure on its left side than on the right side, ensuring stability in straight-ahead driving at high speeds.





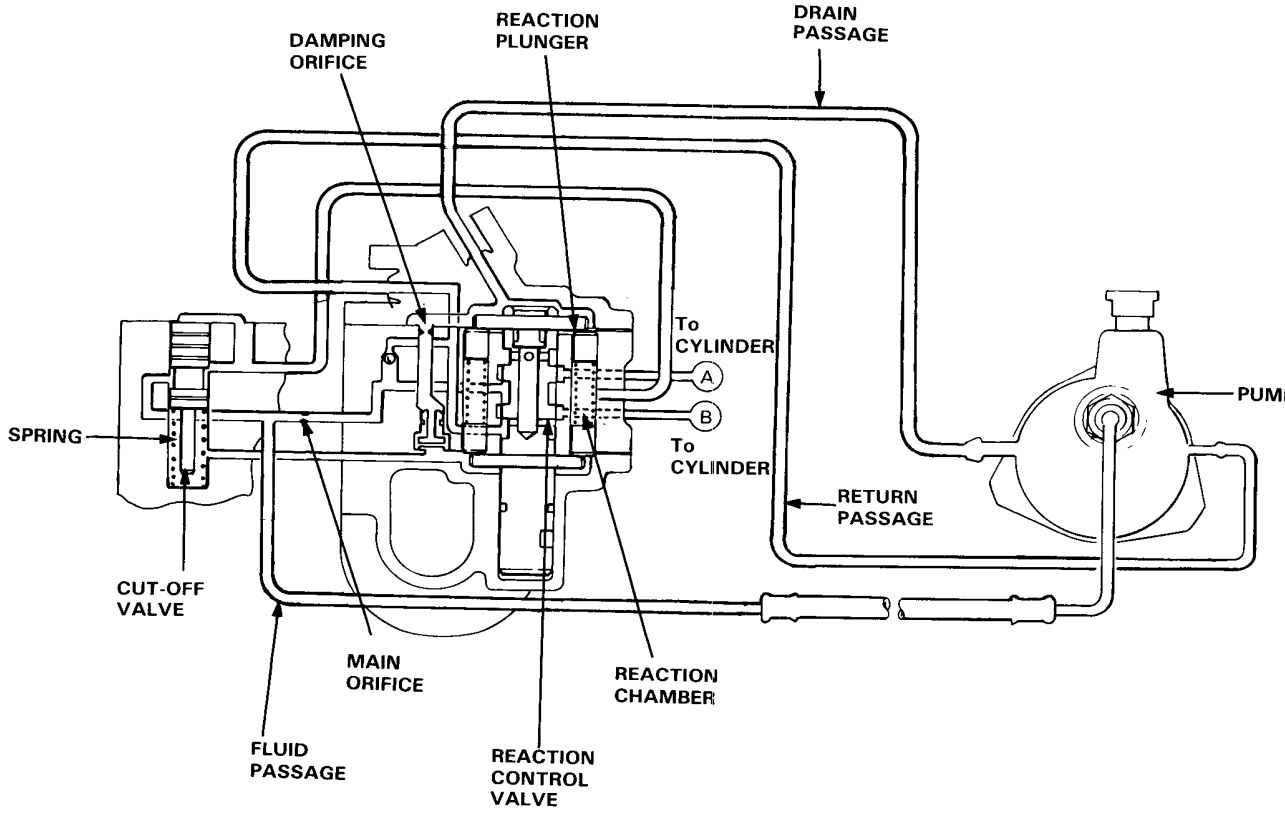
(cont'd)

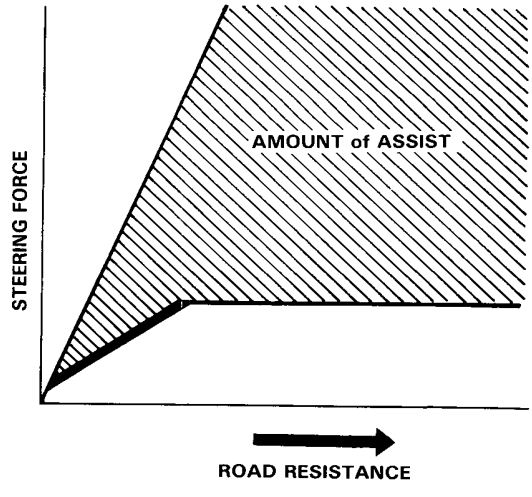
Operation

Gearbox (cont'd)

Turns at Medium or High Speed

At medium or high speed, pump pressure is not high enough to force the cut-off valve to rise. Fluid from the pump will then work its way around the cut-off valve and flow directly into the reaction chambers. This gives essential "road feel."





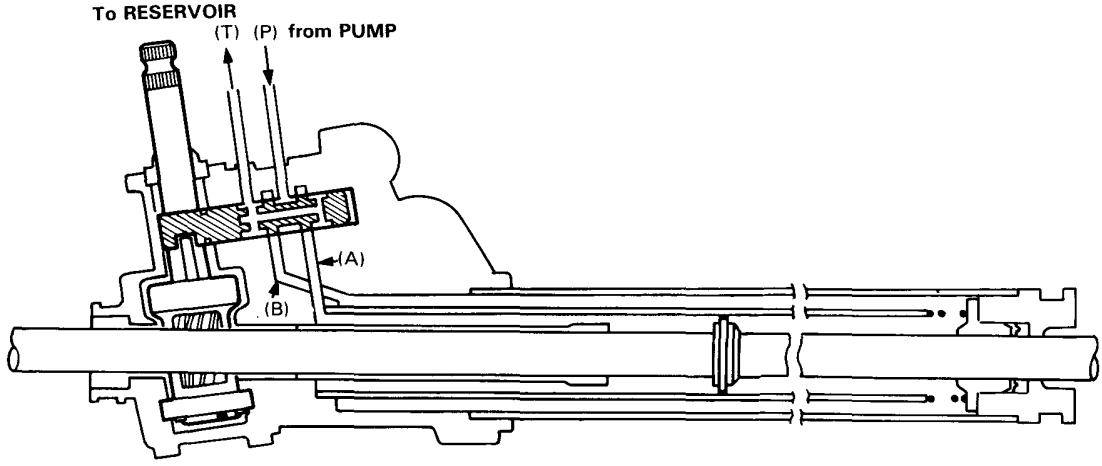
Power Cylinder

Straight Ahead (Steering Wheel not Turned)

When the car is stationary, or when it is moving straight ahead, fluid from the pump will expand the reaction plungers, assisted by the plunger springs, allowing the reaction control valve to remain in the neutral position.

When the reaction control valve is in neutral, it opens the ports, connecting the pump passage (P) to the reservoir through the right and left turn passages (A and B) of the power cylinder.

In this position, the only pressure built up in the pump passage is that produced by the main orifice.



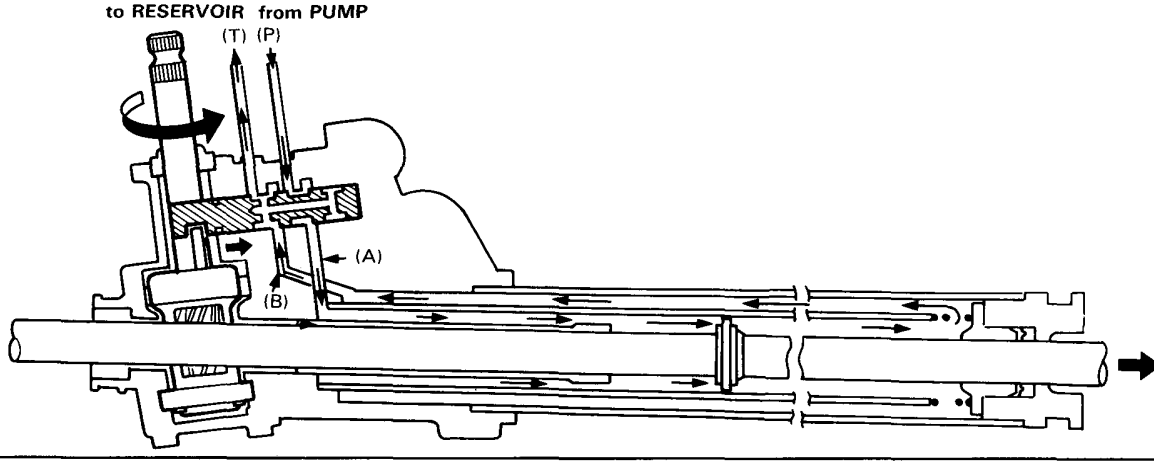
Left Turn

When the steering wheel is turned to the left, the reaction control valve is moved to the right, compressing the reaction plungers.

This connects the left turn passage (A) of the power cylinder to the pump passage (P), and connects the right turn passage (B) of the power cylinder to the reservoir passage (T).

Fluid now flows into the power cylinder. Thus, the fully hydraulic pressure developed by the pump is applied to the left turn side of the piston in the cylinder.

As the piston is moved to the right the fluid in the right side of the piston is returned to the reservoir.

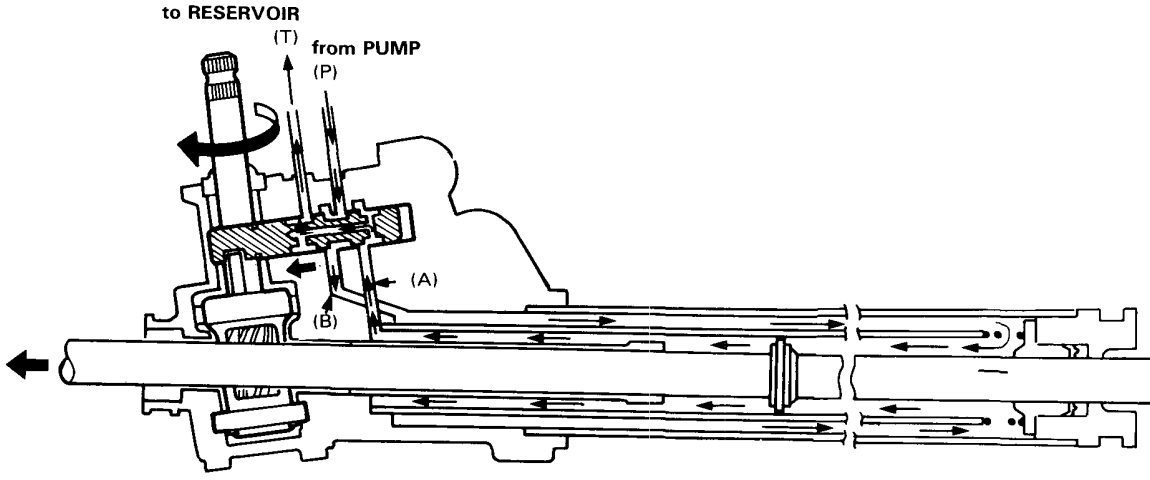


(cont'd)

Gearbox (cont'd)

Right Turn

A right turn will produce the same action using the right turn chamber of the power cylinder.



Return to Straight Ahead

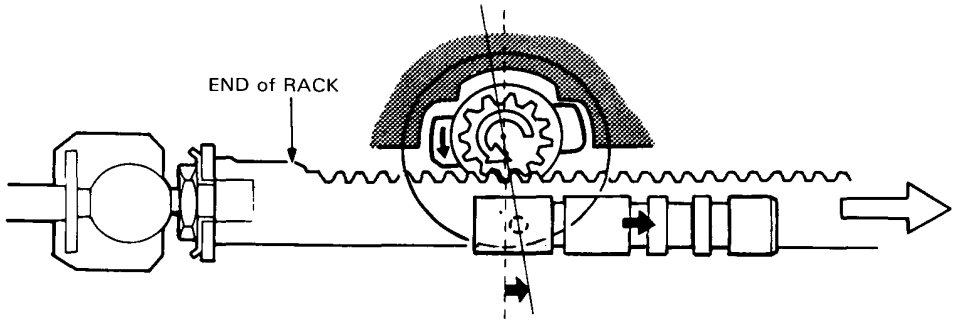
When the steering wheel is returned to the straight ahead position, the reaction control valve returns to its neutral position, and the reaction plungers are expanded by the power steering fluid and the tension of the plunger springs.

Unloader System

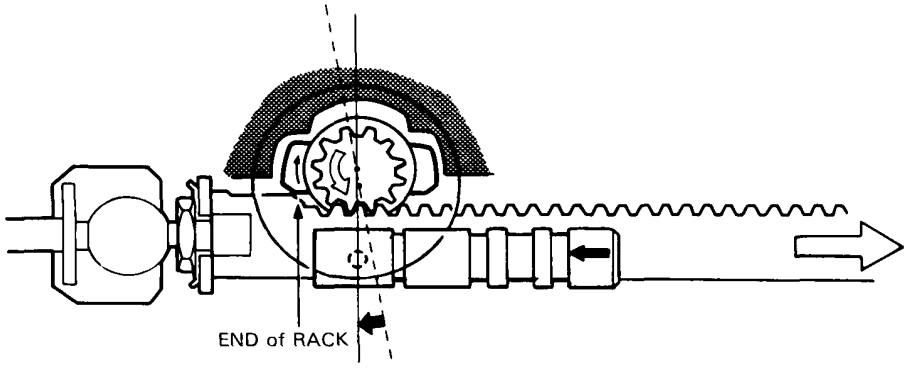
The control valve shifts the direction of fluid flow when the steering wheel is turned right or left.

However, when the wheel is turned to right or left lock at parking speed, the edge of the pinion holder rides up on the end of the rack, moving the pin in the opposite direction which pulls the control valve back to neutral.

This keeps pump pressure from building up (which could cause idle speed to drop), and improves steering feel by increasing resistance at left and right lock.



Steering rack moved to Right



Pin on pinion holder moved back to Neutral

(cont'd)

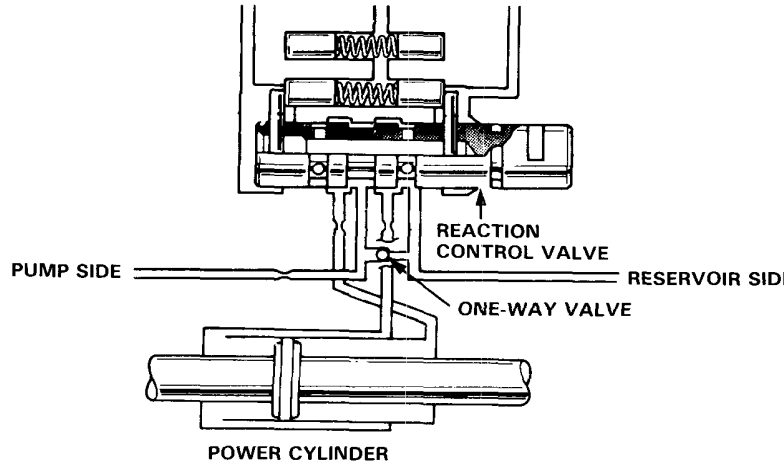
Gearbox (cont'd)

One-way Valve (Vacuum Check Valve)

When the wheel is turned with the pump stopped (engine not running), negative pressure develops in the pump circuit. To compensate for this, a one-way check valve is provided in the circuit between the pump and low pressure side of the control valve.

As the wheel is turned, the valve lets the oil recirculate through the control valve and power cylinder without returning to the reservoir.

This prevents fluid in the reservoir from rising and allows adequate steering effort.



Wheel Alignment

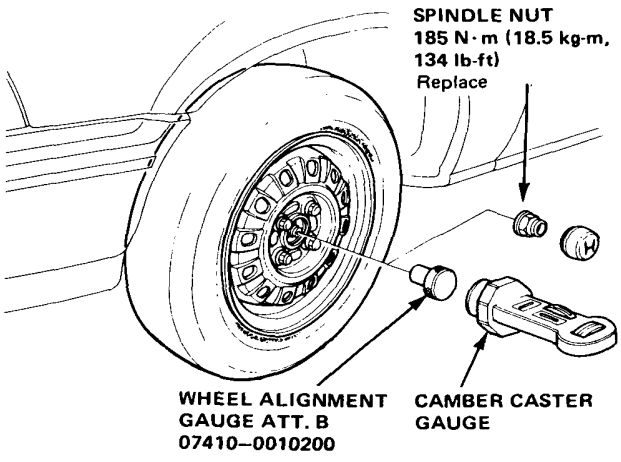
Camber Inspection

1. With the wheels in a straight ahead position, remove the spindle nut and install the special tool on the spindle as shown.
2. Set up the camber/caster gauge.
3. Read the camber on the gauge with the bubble at the center of the gauge.

Front Camber

	KB,KE,KF, KG,KS,KW, KX	KQ	KY	Others
Coupe	−0°10′±1°	←	←	←
2D H/B	−0°10′±1°	←	0°10′±1°	−0°10′±1°
4D	−0°10′±1°	←	0°20′±1°	−0°10′±1°
4D H/B	0°16′±1°	0°20′±1°	←	←

Rear Camber : -0°45′ ± 15′



NOTE:

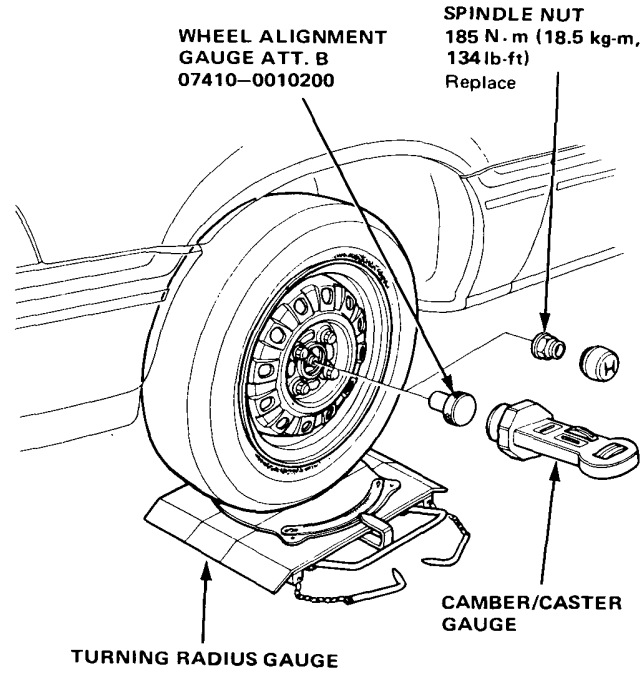
- If your alignment equipment must be mounted at axle centerline, use Honda front and rear wheel alignment attachments as shown.
- Camber is not adjustable. If out of specification, check suspension for damage and replace parts as necessary, then recheck alignment.

Caster Inspection

1. Jack up the front of the car and set the turning redius gauges beneath the front wheels, then lower the car.
2. Remove the spindle nut and install Wheel Alignment Gauge Attachment.
3. Install Camber/Caster Gauge on the Attachment and apply the front brake. Turn the wheel 20° inward.
4. Turn the adjust screw so that the bubble in the caster gauge is at 0°. Return the wheel to the straight ahead position.

Caster angle: * with P/S

	KB,KE,KF, KG,KS,KW, KX	KQ	KY	Others
Coupe	2°50′±1°	2°25′±1°	2°15′±1°	←
2D H/B	2°20′±1° *2°55′±1°	←	2°10′±1°	2°20′±1°
4D	2°25′±1° *3°00′±1°	←	2°10′±1° *2°45′±1	2°25′±1°
4D H/B	1°50′±1° *2°25′±1°	2°00′±1° *2°35±1°	←	←



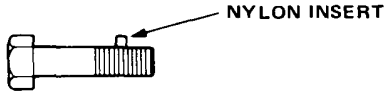
NOTE:

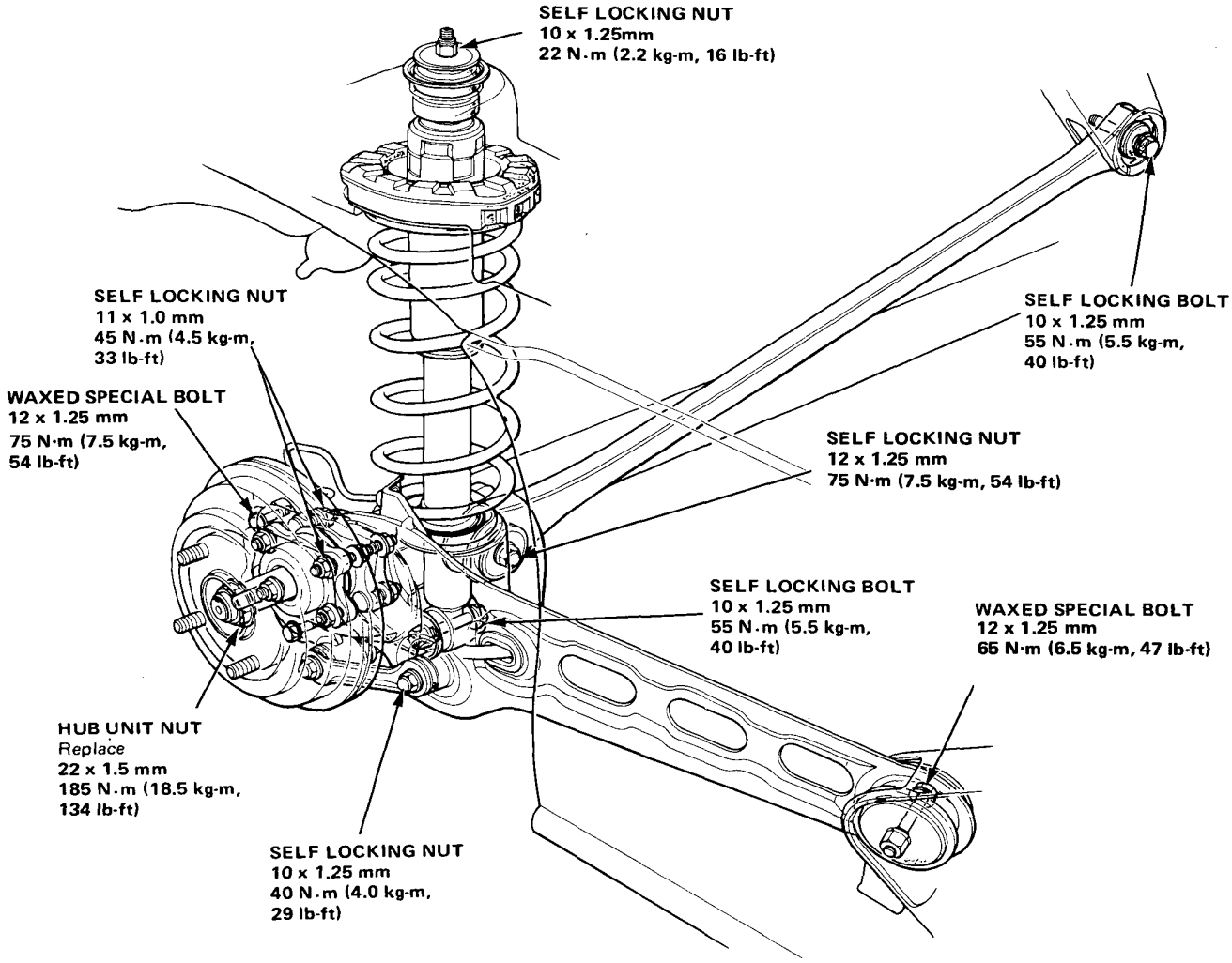
- If your alignment equipment must be mounted at axle centerline, use Honda front and rear wheel alignment attachments as shown.
- Caster is not adjustable. If out of specification, check suspension for damage and replace parts as necessary, then recheck alignment.

Rear Suspension

Index

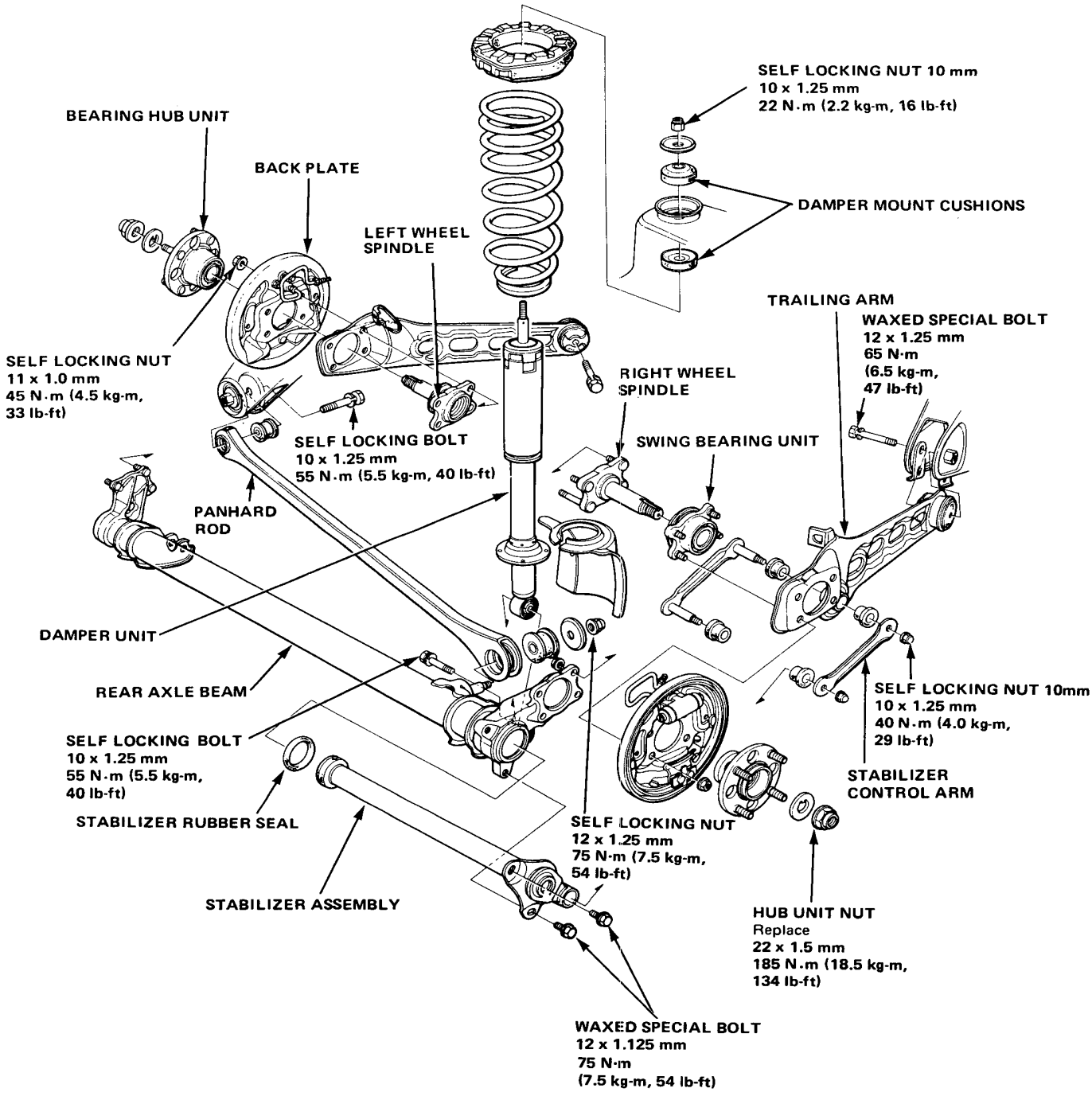
NOTE: Replace self-locking bolts if you can easily thread a nut past their nylon locking inserts.





Disassembly/Inspection

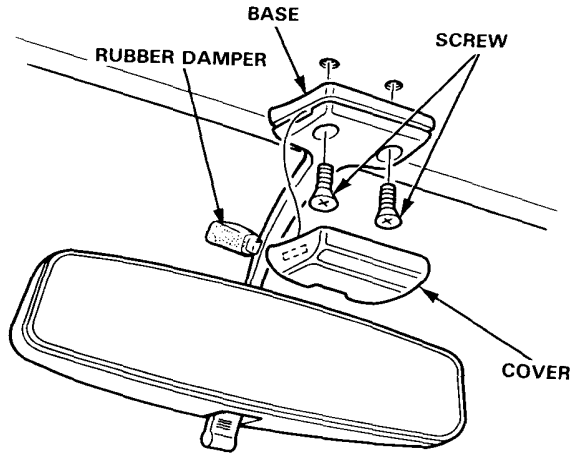
NOTE: Inspect all bushings and rubber parts for wear and damage.
Replace all self locking nuts after disassembly.
Replace all waked special bolt after disassembly.



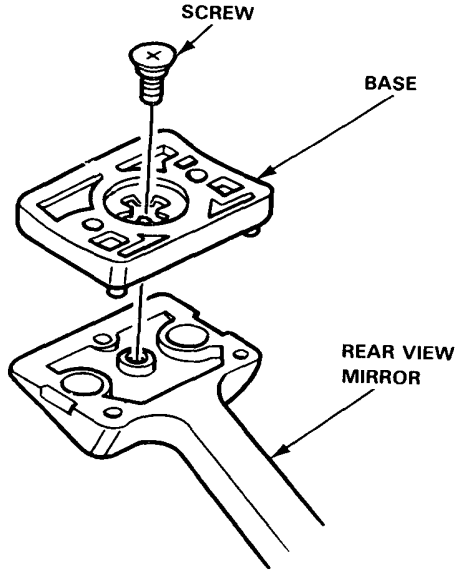
Rear View Mirror

Replacement

1. Remove the rubber damper.
2. Pry the cover off using the end of a slot-head screwdriver.



3. Remove both mounting screws from the mirror base, then remove the mirror assembly.
4. Remove the base from the rear view mirror.



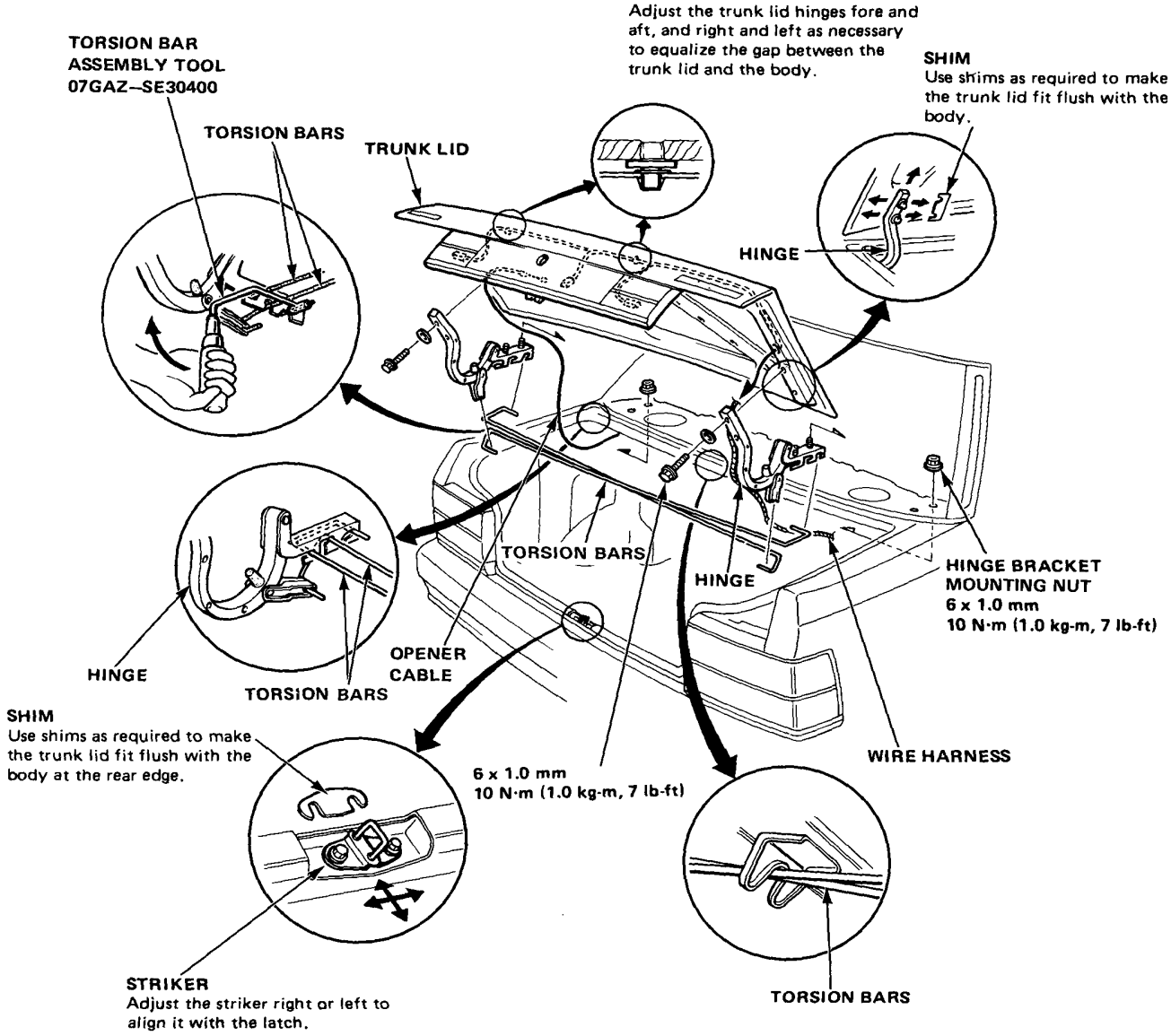
Trunk Lid

Replacement

Sedan:

1. Remove the trunk lid hinge bolts, then lift off the lid.
2. Remove the torsion bar by using a release tool.

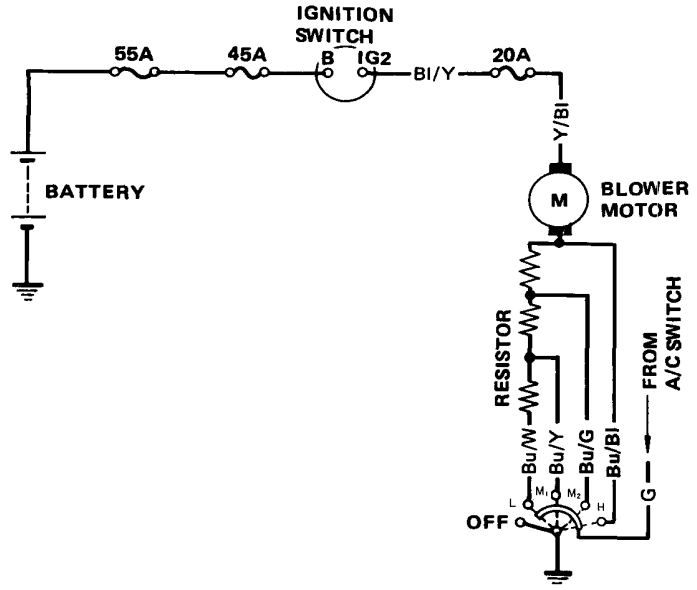
   CAUTION: The torsion bars are under spring tension.
3. Remove the rear shelf.
4. Remove the hinge bracket mounting nuts, then remove the hinges from the trunk.
5. Before tightening the hinge bolts, check the adjustments shown below:



Wiring Diagram, Heater Controller

Wiring Diagram

2DH/B, 4D, 4DH/B

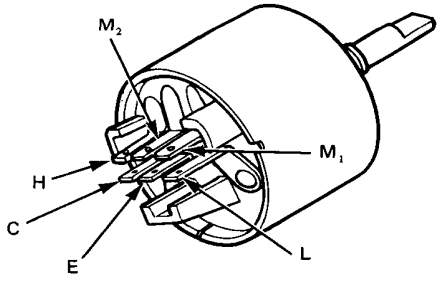


Fan Switch Testing

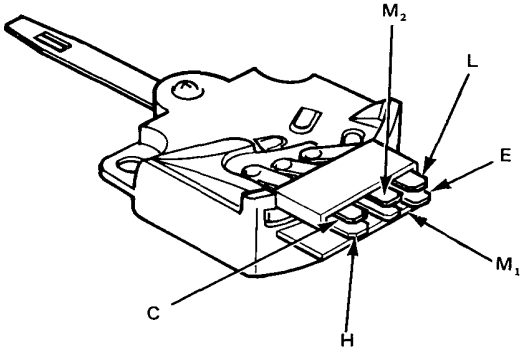
Check for continuity according to the table.

Position \ Terminal	E	L	M_1	M_2	H	C
OFF						○
I	○	○				○
II	○		○			○
III	○			○		○
MAX	○				○	○

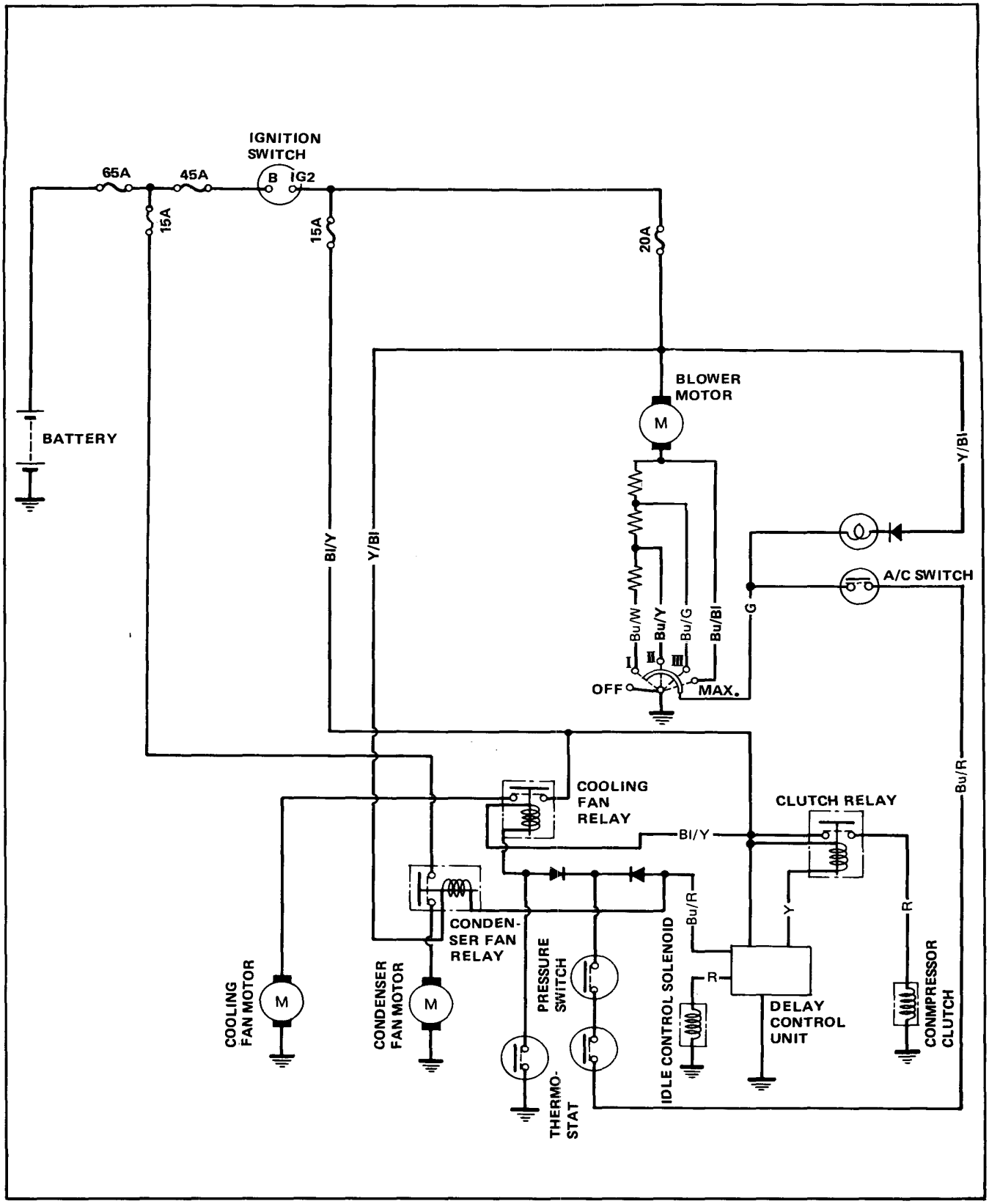
2DH/B, 4D



4DH/B

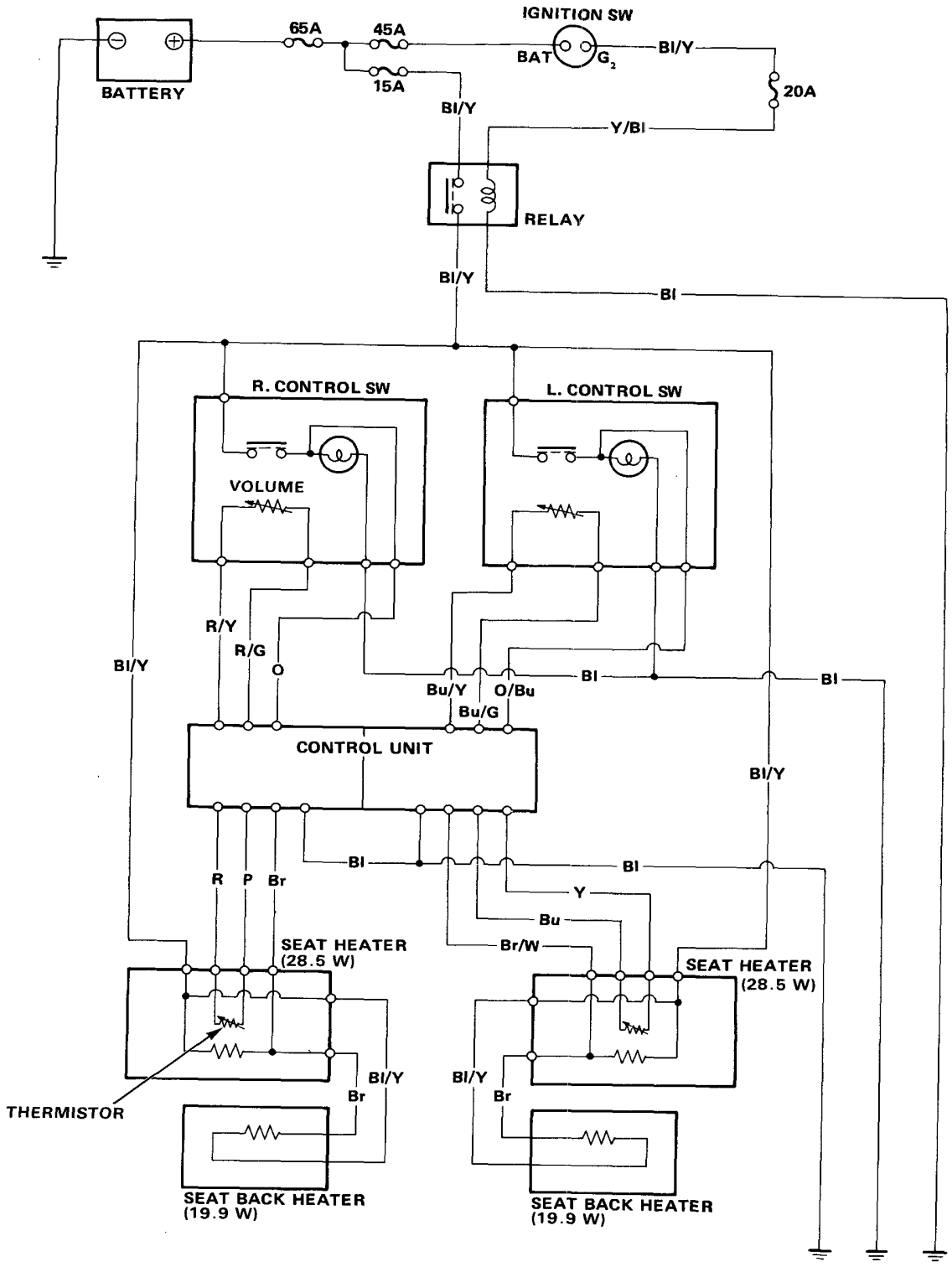


Wiring Diagram



Heated Seats

Wiring Diagram



Troubleshooting

- Heat temperature cannot be adjusted.

1. Check the control switch.
2. Check the heater unit.
3. Check the control unit.

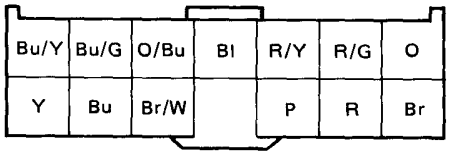
- Seat heater is not warmed.

1. Check the fuse (15A, 20A) for blown.
2. Check the relay.
3. Check the control switch.
4. Check the heater unit.
5. Check the control unit.

Control Unit Test

Disconnect the 13p coupler from the control unit.

Wire	Test condition	Test: desired result	Actual result: possible cause
Bl		Check for continuity: there should be continuity	· If there is resistance: the ground is bad. · If there is no continuity: there is an open in Bl.
O, O/Bu	Ignition switch ON and control switch ON	Check for voltage to ground: should have battery voltage	· If not, there is an open in Bl/Y (between control switch and relay), O and/or O/Bu. · Faulty relay. · Faulty control switch.
Br, Br/W	Ignition switch ON	Check for voltage to ground: should have voltage.	· If there is no voltage, there is an open in Bl/Y and/or Br, Br/W. · Faulty heater unit.
R/G and R/Y, Bu/G and Bu/Y	Turn the control switch	Check for resistance between R/G and R/Y or Bu/G and Bu/Y: should vary from 0 to 10Ω	· If not, there is an open in R/G, R/Y, Bu/G or Bu/Y. · Faulty control switch.
R and P, Bu and Y		Check for continuity: there should be continuity.	· If not, there is an open R, O, Bu or Y. · Faulty heater unit.

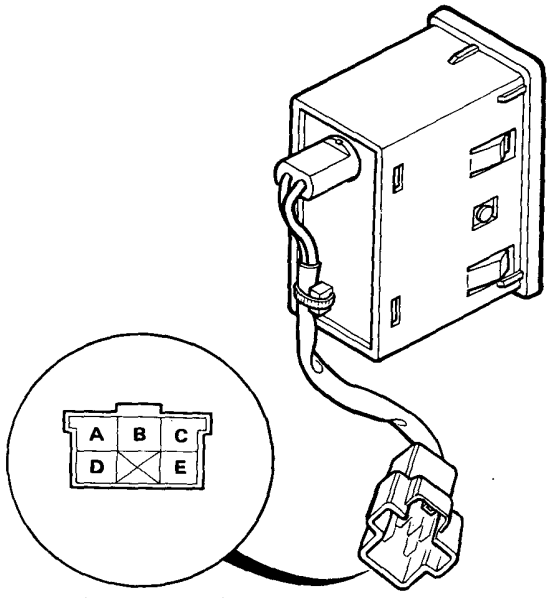


View from wire side

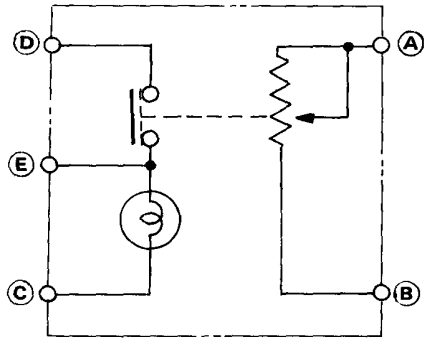
Heated Seats

Control Switch Test

1. Remove the switch.
2. Measure resistance between Ⓐ and Ⓑ terminals while rotating the adjusting dial.
   Resistance should vary from 0 to 10,000 ohms as dial is rotated.



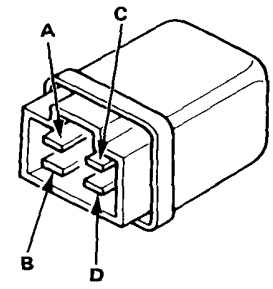
View from terminal side.



Relay Test

There should be continuity between A and B terminals, when the battery is connected to C (positive) and D (negative) terminals.

There should be no continuity when the battery is disconnected.



Ignition

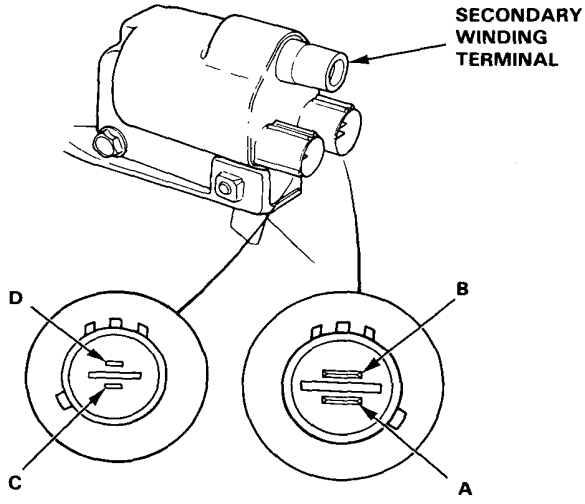
Ignition Coil Test

1. With the ignition switch OFF, disconnect the primary connectors and the coil wire.

2. Using an ohmmeter, check the resistance between the terminals. Replace the coil if the resistance is not within specifications.

   NOTE: Resistance will vary with the coil temperature. Resistances are for 20°C (70°F).

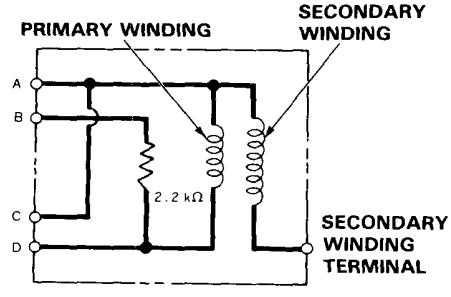
   Primary Winding Resistance (between the A and D terminals):
   1,215–1,485 ohms
   Secondary Winding Resistance (between the A and secondary winding terminals):
   11,074–11,526 ohms
   Resistance between the B and D terminals:
   Approx. 2,200 ohms



PRIMARY WINDING TERMINALS

3. Check for continuity between the A and C terminals. Replace the coil if there is no continuity.

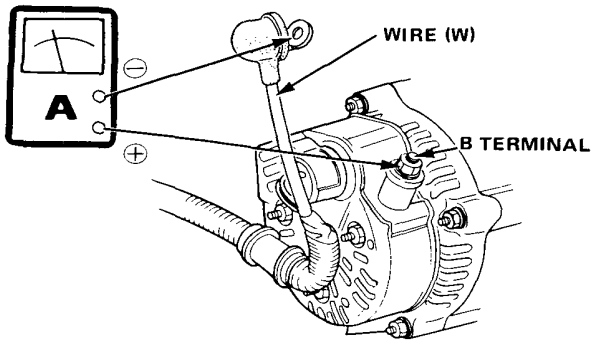
Circuit Diagram



Charging

Alternator Output Test

1. With engine off, disconnect the alternator terminal (W).
2. Hook up an ammeter as shown.



3. Start the engine.
4. Turn on:
   - Headlight switch (high beam).
   - Rear window defroster switch.
   - Heater fan switch (HI).
5. Check alternator output.
   If within the output curve shown, the alternator is good.
   If the alternator has no output or its output is not within specification, see the alternator checks starting.