INTRODUCTION

How To Use This Manual

This supplement contains information for the 1985 PRELUDE 2DR COUPE.
Refer to the base Shop Manual (No. 62SB000) for service procedures and data not included in this supplement. The first page of each section is marked with a black tab that lines up with one of the thumb index tabs on this page. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Special Information

WARNING Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE: Gives helpful information.

CAUTION: Detailed descriptions of *standard* workshops procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause PERSONAL INJURY, or could damage a vehicle or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by Honda motor might be done, or of the possible hazardous consequences of each conceivable way, nor could Honda motor inverstigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda motor, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized.

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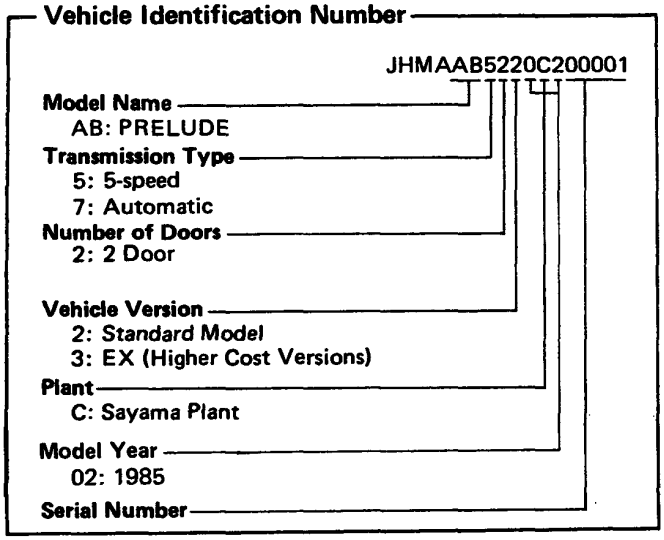
Service Publication Office

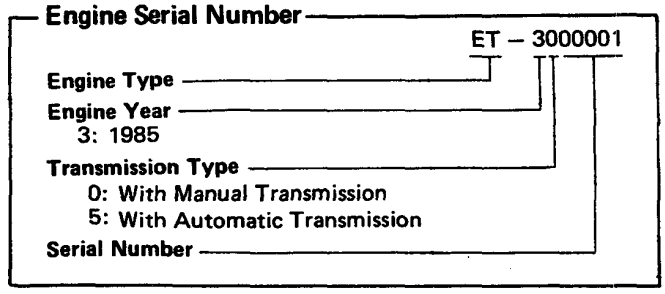
General Information

Chassis and Engine Codes

Vehicle Identification Number



Engine Serial Number



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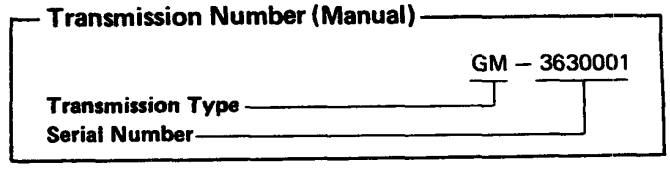

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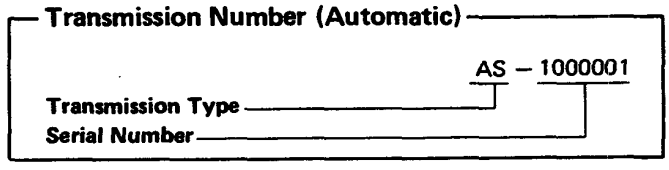
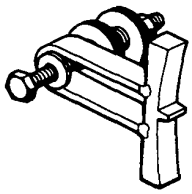


Special Tools

Special Tools

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks	Section
①	07924–PD20001	Ring Gear Holder	1		7 and 13
②	07948–SB00101	Driver Attachment	1	Crankshaft Oil Seal (Clutch side)	7
③	07998–SA50000	Accelerator Pedal Weight Set	1		15
④	07746–0030400	Attachment 35 mm	1		16
⑤	07923–PB80001	Pulley Holder	1		24
⑥	07934–PB80001	Clutch Remover	1		24
⑦	07934–SB20000	Shaft Seal Remover	1		24
⑧	07703–0010200	Torx Driver Bit (T-30)	1		24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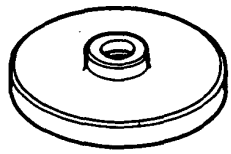
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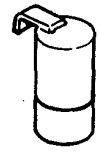
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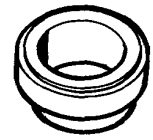
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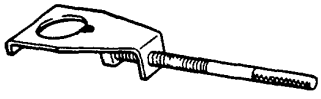
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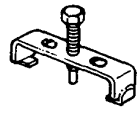
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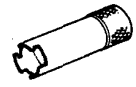
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Specifications

(Items revised or added are indicated by black solid bars on the right ends of the applicable lines)

Standards and Service Limits

Engine

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Compression	300 min^{-1} (rpm) and wide-open throttle	Nominal Minimum Maximum variation	1,323 kPa (13.5 kg/cm^2, 192 psi) 1,127 kPa (11.5 kg/cm^2, 164 psi) 196 kPa (2 kg/cm^2, 28 psi)
Ignition Timing	At idling KX–M/T KT, KS, KQ, KX–A/T EC, KY	22 ± 2° BTDC 12 ± 2° BTDC 18 ± 2° BTDC	
Valve Timing		MT / AT	
	IN open	10° ATDC / 10° ATDC	
	IN close	35° ABDC / 30° ABDC	
	EX open	40° BBDC / 35° BBDC	
	EX close	10° BTDC / 10° BTDC	

6. Cylinder Head/Valve Train

	MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Cylinder head	Warpage			–	0.05 (0.002)
	Height			90 (3.54)	89.8 (3.54)
Camshaft	End play			0.05–0.15 (0.002–0.006)	0.5 (0.02)
	Oil clearance	No. 1, 3 and 5 Journal		0.050–0.089 (0.002–0.004)	0.15 (0.006)
		No. 2 and 4 Journal		0.130–0.169 (0.005–0.007)	0.23 (0.009)
	Runout			0.03 (0.001) max.	0.06 (0.002)
	Cam lobe height	Manual	IN	38.353 (1.5100)	–
			EX	38.796 (1.5274)	–
		Automatic	IN	38.668 (1.5224)	–
			EX	38.480 (1.5150)	–
Valve	Valve clearance		IN	0.12–0.17 (0.005–0.007)	–
			EX	0.25–0.30 (0.010–0.012)	–
	Valve stem O.D.		IN	6.58–6.59 (0.2591–0.2594)	6.55 (0.258)
			EX	6.94–6.95 (0.2732–0.2736)	6.91 (0.272)
	Steam-to-guide clearance		IN	0.02–0.05 (0.001–0.002)	0.08 (0.003)
			EX	0.06–0.09 (0.002–0.004)	0.12 (0.005)
	Stem installed hight		IN	48.59 (1.913)	49.34 (1.943)
			EX	47.66 (1.876)	48.41 (1.906)
Valve seat	Width		IN	1.25–1.55 (0.049–0.061)	2.0 (0.08)
Valve spring				Nippon spring / Chuo spring	Nippon spring / Chuo spring
	Free length	Inner	EX	46.59 (1.834) / 46.6 (1.835)	–
		Outer	IN	48.34 (1.903) / 48.3 (1.902)	–
			EX	55.9 (2.20)	–
	Squareness Inner and Outer			–	1.75 (0.069)
Valve guide	I.D.		IN	6.61–6.63 (0.260–0.261)	6.65 (0.0262)
			EX	7.01–7.03 (0.276–0.277)	7.05 (0.278)
Rocker arm	Arm-to-shaft clearance				0.08 (0.003)

Unit: mm (in.)

7. Engine Block

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface		0.08 (0.003) max.	0.10 (0.004)
	Bore diameter	A	80.01–80.02 (3.1500–3.1504)	80.05 (3.1516)
		B	80.00–80.01 (3.1496–3.1500)	80.04 (3.1512)
	Bore taper		0.007–0.012 (0.0003–0.0005)	0.05 (0.002)
	Reboring limit		–	0.5 (0.02)
Piston	Skirt O.D. (At 21 mm (0.83 in) from bottom of skirt)	A	79.98–79.99 (3.1488–3.1492)	79.97 (3.1484)
		B	79.97–79.98 (3.1484–3.1488)	79.96 (3.1480)
	Clearance in cylinder		0.02–0.04 (0.0005–0.0014)	0.08 (0.003)
	Piston-to-ring clearance (top and second)		0.020–0.045 (0.0008–0.0018)	0.13 (0.005)
Piston ring	Ring end gap (top and second)		0.20–0.35 (0.008–0.014)	0.6 (0.024)
	Ring end gap (oil)		0.20–0.70 (0.008–0.030)	1.1 (0.043)
Connecting rod	Pin-to-rod interference		0.016–0.032 (0.0006–0.0013)	0.013 (0.0005)
	Large end bore diameter		Nominal 48 (1.89)	–
	End play installed on crankshaft		0.15–0.30 (0.006–0.012)	0.40 (0.016)
Crankshaft	Main journal diameter		49.970–49.994 (1.9673–1.9683)	–
	Taper/out-of-round, main journal		0.005 (0.0002) max.	0.010 (0.0004)
	Rod journal diameter		44.976–45.000 (1.7706–1.7717)	–
	Taper/out-of-round, rod journal		0.005 (0.0002) max.	0.010 (0.0004)
	End play		0.10–0.35 (0.004–0.014)	0.45 (0.018)
	Runout		0.03 (0.0012) max.	0.06 (0.0024)
Bearings	Main bearing-to-journal oil clearance		0.020–0.049 (0.0008–0.0019)	0.07 (0.003)
	Rod bearing-to-journal oil clearance		0.020–0.038 (0.0008–0.0015)	0.07 (0.003)

8. Engine Lubrication

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (US. qt. Imp. qt.)	3.9 (4.1, 3.4) Means designed value 3.5 (3.7, 3.1) Adding replace oil filter 3.0 (3.2, 2.6) Exclude oil filter	
Oil pump	Displacement	40.3 ℓ (10.6 US gal., 8.9 Imp gal.) 5,500 min^{-1} (rpm)	
	Inner-to-outer rotor radial clearance	0.15 (0.006) max.	0.2 (0.008)
	Pump body-to-rotor radial clearance	0.10–0.18 (0.004–0.007)	0.2 (0.008)
	Pump body-to-rotor side clearance	0.03–0.108 (0.001–0.004)	0.15 (0.006)
Relief valve	Pressure setting 80°C idle	98 kPa (1.0 kg/cm^2, 14 psi)	
	Pressure setting 80°C 3,000 min^{-1} (rpm)	373–451 kPa (3.8–4.6 kg/cm^2, 54–65 psi)	

10. Cooling

	MEASUREMENT	STANDARD (NEW)	
Cooling fan belt	Deflection midway between pulleys/load	7–10 (0.3–0.4)/98N (10 kg, 22 lb) 5–7 (0.2–0.3)/98N (10 kg, 22 lb) for replacement of belt	
Radiator	Capacity (incld. heater) ℓ (US. Gal., Imp. Gal.)	6.8 (1.8, 1.5) (Include reservoir tank 0.8 (0.21, 0.18)	
	Pressure cap opening pressure	74–103 kPa (0.75–1.05 kg/cm^2, 11–15 psi)	
Thermostat	Starts to open	80–84°C (176–183°F)	86–90°C (187–194°F)
	Full open	90°C (203°F)	100°C (212°F) OPTIONAL
	Valve lift at full open	8 (0.31) max.	8 (0.31) max.
Water pump	Gear ratio (crankshaft)	1.29	
	Capacity (ℓ min/min^{-1})	124/5,000 (32.7 US. gal/5,000 rpm)	
Cooling fan	Fan-to-core clearance	23.0 (0.90)	
	Thermoswitch "ON" temperature	87°–93°C (188°–199°F)	
	Thermoswitch "OFF" temperature	83°C (181°F) or more (hysteresis 2°C (35°F) or more)	

(cont'd)

Standards and Service Limits (cont'd)

11. Fuel

	MEASUREMENT	STANDARD (NEW)
Fuel pump	Delivery pressure Displacement	14.7–19.6 kPa (0.15–0.20 kg/cm², 2.1–2.8 psi) 620 cm³/min. at 10V (38 cu. in./10V) 680 cm³/min. at 12V (41 cu. in./12V)
Fuel Tank	Capacity	60 ℓ (15.8 US. Gal., 13.2 Imp. Gal.)

12. Carburetor

	MEASUREMENT		STANDARD (NEW)
Carburetor	Choke fast idle	MT AT	2,000 min⁻¹ (rpm) 1,800 min⁻¹ (rpm)
	Idle Speed with headlights and cooling fan off		750 ± 50 min⁻¹ (rpm)
	Idle Co	KC, KS, KX Other types	0.5–2.0 3.0
	Float level (from gasket)		22.5–24.5 (0.885–0.965)

13. Clutch

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height Stroke Pedal play Disengagement height	176 (6.9) to floor 137 (5.4) to carpet 133 (5.2) 23–28 (0.9–1.1) 86 (3.4) min. to floor 47 (1.9) min. to carpet	– – – – – –
Clutch arm	Release arm adjustment	5.2–6.4 (0.20–0.25)	–
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. 0.7–2.1 (0.028–0.083) 8.1–8.8 (0.32–0.35)	0.2 (0.008) 1.0 (0.04) 4.0 (0.16) 5.7 (0.22)
Clutch release bearing holder	I.D. *Holder-to-guide sleeve clearance.*	31.00–31.059 (1.220–1.223) 0.05–0.15 (0.0020–0.0059)	31.09 (1.224) 0.22 (0.0087)
Clutch cover	Uneveness of diaphragm spring	0.8 (0.03) max.	1.0 (0.04)

Unit: mm (in.)

14. Manual Transmissions

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US. qt., Imp. qt)	2.5 (2.6, 2.2) at assembly 2.4 (2.5, 2.1) at change	
Mainshaft	End play	0.10–0.35 (0.004–0.014)	0.5 (0.02)
	Diameter of needle bearing contact area	28.002–28.015 (1.1024–1.1035)	27.95 (1.100)
	Diameter of third gear contact area	31.984–32.000 (1.2592–1.2598)	31.93 (1.2571)
	Diameter of ball bearing contact area	24.980–24.993 (0.9835–0.9840)	24.93 (0.981)
	Runout	0.04 (0.0016) max.	0.10 (0.04)
Mainshaft third and fourth gears	I.D.	37.009–37.025 (1.4570–1.4577)	37.07 (1.459)
	End play	0.03–0.18 (0.0012–0.0071)	0.3 (0.012)
	Thickness	30.42–30.47 (1.1780–1.1799)	30.3 (1.193)
Mainshaft fifth gear	I.D.	37.009–37.025 (1.4570–1.4577)	37.07 (1.459)
	End play	0.03–0.13 (0.0012–0.0051)	0.3 (0.012)
	Thickness	29.92–29.97 (1.1776–1.1799)	29.8 (1.173)
Countershaft	End play	0.10–0.35 (0.004–0.014)	0.5 (0.02)
	Diameter of needle bearing contact area	33.000–33.015 (1.2992–1.2998)	32.95 (1.297)
	Diameter of ball bearing contact area	24.980–24.993 (0.9835–0.9840)	24.93 (0.981)
	Diameter of low gear contact area	33.984–34.000 (1.3380–1.3386)	33.93 (1.336)
	Runout	0.04 (0.0016)	0.10 (0.004)
Countershaft low gear	I.D.	39.008–39.025 (1.5357–1.5364)	39.07 (1.538)
	End play	0.03–0.08 (0.0012–0.0031)	0.18 (0.007)
Countershaft second gear	I.D.	43.008–43.025 (1.6932–1.6939)	43.07 (1.696)
	End play	0.03–0.10 (0.0012–0.0039)	0.18 (0.007)
	Thickness	30.42–30.47 (1.1976–1.1996)	30.3 (1.193)
Spacer collar (Countershaft second gear)	I.D.	30.98–30.99 (1.2197–1.2201)	31.4 (1.236)
	O.D.	37.989–38.00 (1.4956–1.4961)	37.93 (1.493)
	Length	30.53–30.55 (1.2020–1.2028)	30.51 (1.201)
Spacer collar (Mainshaft fourth and fifth gears)	I.D.	25.002–25.012 (0.9843–0.9847)	25.06 (0.987)
	O.D.	31.989–32.00 (1.2594–1.2598)	31.93 (1.257)
	Length	27.03–27.08 (1.0642–1.0661)	27.01 (1.063)
Reverse idler gear	I.D.	17.016–17.043 (0.6699–0.6710)	17.09 (0.673)
	Gear-to-reverse gear shaft clearance	0.032–0.077 (0.0013–0.0030)	0.15 (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	6.75–6.85 (0.266–0.270)	–
	Fork-to-synchronizer sleeve clearance	0.35–0.65 (0.014–0.026)	1.0 (0.039)
Reverse shift fork	End gap	11.8–12.0 (0.46–0.47)	–
	Fork-to-reverse idler gear clearance	0.2–1.0 (0.008–0.04)	1.7 (0.07)
	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	Width of groove in shift rod guide	11.8–12.0 (0.46–0.47)	–
	Shift arm-to-shift rod guide clearance	0.05–0.35 (0.0020–0.014)	0.8 (0.031)
	Width in shift guide	7.9–8.0 (0.311–0.315)	–
	Shift arm-to-shift guide clearance	0.1–0.3 (0.004–0.012)	0.6 (0.024)
Shift rod guide	I.D.	14.000–14.068 (0.5512–0.5539)	–
	Guide-to-shaft clearance	0.011–0.092 (0.0004–0.0036)	0.15 (0.006)
	O.D.	11.9–12.0 (0.469–0.472)	–
	Guide-to-fifth/reverse shift shaft clearance	0.2–0.5 (0.008–0.020)	0.8 (0.03)
Selector arm	Width	11.9–12.0 (0.469–0.472)	–
	Arm-to-shift rod guide clearance	0.05–0.25 (0.002–0.010)	0.5 (0.020)
	End gap	10.05–10.15 (0.396–0.400)	–
	Arm-to-interlock clearance	0.05–0.25 (0.002–0.010)	0.7 (0.028)
	Arm-to-holder clearance	0.01–0.20 (0.0004–0.0079)	Selection with 5 types of shims

(cont'd)

Standards and Service Limits (cont'd)

15. Automatic Transmission

	MEAUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US. qt., Imp. qt)		2.8 (3.0, 2.5) at oil change 5.6 (5.9, 4.9) at assembly	
Hydraulic pressure	Line pressure at 2,000 min^{-1} (rpm)		784–833 kPa (8.0–8.5 kg/cm^2, 114–121 psi)	735 kPa (7.5 kg/cm^2, 107 psi)
	4th clutch pressure at 2,000 min^{-1} (rpm) 3rd clutch pressure at 2,000 min^{-1} (rpm) 2nd clutch pressure at 2,000 min^{-1} (rpm)		539–833 kPa (5.5–8.5 kg/cm^2, 64–121 psi)	498 kPa (5.0 kg/cm^2, 71 psi) with lever released. 735 kPa (7.5 kg/cm^2, 107 psi) with lever in full throttle.
	1st clutch pressure at 2,000 min^{-1} (rpm)		784–833 kPa (8.0–8.5 kg/cm^2, 114–121 psi)	735 kPa (7.5 kg/cm^2, 107 psi)
	Governor pressure at 60 km/h		216–225 kPa (2.2–2.3 kg/cm^2, 31–33 psi)	211 kPa (2.15 kg/cm^2, 29 psi)
	Throttle pressure A		505–519 kPa (5.15–5.3 kg/cm^2, 73–75 psi)	499 kPa (5.1 kg/cm^2, 73 psi)
	Throttle pressure B		784–833 kPa (8.0–8.5 kg/cm^2, 114–121 psi)	735 kPa (7.5 kg/cm^2, 107 psi)
Stall speed	Check with car on level ground		2,400 min^{-1} (rpm)	2,100–2,700 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, 4th	0.4–0.6 (0.016–0.024)	–
	Clutch return spring free length	2nd, 3rd, 4th	30.5 (1.20)	28.5 (1.12)
		1st	32.0 (1.26)	30.0 (1.18)
	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 (0.090–0.094)	
		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		19.980–19.983 (0.7866–0.7867)	Wear or damage
	Diameter of needle bearing contact area on mainshaft 2nd gear		35.975–35.991 (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		29.980–29.993 (1.1803–1.1808)	
	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 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		13.994–14.000 (0.5509–0.5512)	
	Reverse idler shaft holder diameter		14.016–14.034 (0.5518–0.5525)	
	Mainshaft 2nd gear I.D.		41.000–41.016 (1.6141–1.6148)	
	Mainshaft 1st gear I.D.		36.000–36.016 (1.4173–1.4179)	
	Countershaft 4th gear I.D.		33.000–33.016 (1.2992–1.2998)	
	Countershaft 3rd gear I.D.		38.000–38.016 (1.4966–1.4966)	
	Countershaft 2nd gear I.D.		31.000–31.016 (1.2204–1.2210)	
	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 4th gear end play		0.07–0.12 (0.003–0.005)	–
	Mainshaft 2nd gear end play		0.07–0.12 (0.003–0.005)	–
	Mainshaft 1st gear end play		0.08–0.24 (0.003–0.009)	–
	Countershaft 3rd gear end play		0.07–0.12 (0.003–0.005)	–
	Countershaft 2nd gear end play		0.07–0.12 (0.003–0.005)	–
	Reverse idler gear end play		0.05–0.18 (0.002–0.007)	–
	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	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 (0.153–0.154)	–
	Mainshaft R side bearing		2.95–3.05 (0.1161–0.1200)	Wear or damage
	Mainshaft 1st gear		2.43–2.50 (0.0957–0.0984)	Wear or damage
	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)	–
	Countershaft 4th gear thickness	A	38.97–39.00 (1.5342–1.5354)	–
		B	39.02–39.05 (1.5362–1.5374)	–
		C	39.07–39.10 (1.5382–1.5394)	–
		D	39.12–39.15 (1.5402–1.5413)	–
		E	39.17–39.20 (1.5421–1.5433)	
		F	39.22–39.25 (1.5441–1.5453)	
		G	39.27–39.30 (1.5461–1.5472)	
	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		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
	Countershaft 1st gear collar length		11.0–11.1 (0.433–0.437)	–
	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 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)	1.8 (0.071)
	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 (0.728–0.732)	–

(cont'd)

Standard and Service Limit (cont'd)

15. Automatic Transmission (Cont'd)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
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)	0.08 (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)	Damage or dent
	Stator camshaft needle bearing contact and O.D.		26.000–26.013 (1.0236–1.0241)	Damage or dent
	Oil pump driven gear I.D.		14.016–14.034 (0.5518–0.5525)	Damage or dent
	Oil pump shaft O.D.		13.98–13.99 (0.5504–0.5508)	Damage or dent

16. Differential

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Ring gear	Backlash		0.14–0.20 (0.006–0.008)	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 diameter	MT	26.000–26.021 (1.0236–1.0244)	–
		AT	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)	0.2 (0.008)
	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)

17. Drive shaft

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Driveshaft	Right boot	As installed	514.0–518.5 (20.2 -20.4)	–
	Left boot	As installed	809.0–813.5 (31.9–32.0)	–

18. Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10.0 (0.39) Max.	–
	Pinion-starting torque N-m (kg-m, lb-ft)	0.5–1.7 (0.05–0.17, 0.36–1.20)	–

Unit: mm (in.)

19. Power Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play Pinion starting torque N·m (kg-m, lb-ft)	10 (0.39) Max. 1.2 (0.12, 0.87)	–
Power steering	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) Fluid capacity Reservoir At change	7845–8826 (80–90, 1138–1280) 0.5ℓ (0.13 US gal., 0.11 Imp gal.) approx. 1.5ℓ (0.40 US gal., 0.33 Imp gal.)	

20. Suspention

	MEASUREMENT			STANDARD (NEW)		SERVICE LIMIT
Wheel alignment	Camber Caster Toe-in Kingpin inclination			Front 0°±1° 0°±30′ 0±3 (0±0.118) 6°51′	Rear 0° – 2±2 (0.078±0.078) –	
	Steering angle	R/L	Inside Outside	38°30′ ± 2° 30°00′ ± 2°		
	Side slip		Front Rear	0 ± 3 2 ± 2		
Wheel	Rim runout	Steel	Axial Radial	0–1.3 (0–0.051) 0–1.0 (0–0.039)		– –
		Aluminum	Axial Radial	0–1.0 (0–0.039) 0–0.7 (0–0.028)		– –

21. Brake

	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 Free play		176 (6.93) to floor 1–5 (0.04–0.20)	– 5 (0.20)
Master cylinder	Piston-to-push rod clearance		0–0.4 (0–0.016) 0.2–0.6 (0.008–0.024)	– –
Disc brake	Disc thickness	Front Rear	19.0 (0.75) 10.0 (0.39)	17.0 (0.67) 8.0 (0.31)
	Disc runout		–	0.10 (0.004)
	Disc parallelism		–	0.015 (0.0006)
	Pad thickness	Front Rear	9.5 (0.37) 8.0 (0.31)	3.0 (0.12) 1.6 (0.06)

		Vacuum (mmHg)	Pedal Pressure kg (lbs)	Line Pressure kg/cm² (psi)
Brake Booster	Characteristics	0 300 500	20 (44) 20 (44) 20 (44)	13 (185) min 53 (754) min 65 (924) min

(cont'd)

Standard and Service Limit (cont'd)

Unit: mm (in.)

26. Ignition

MEASUREMENT			STANDARD (NEW)		
Ignition coil	Rated voltage Insulation resistance		12 Volts 10,000 ohms min.		
	Performance: Make sure strong sparks jump across electrodes (3-point tester)				
	Voltage	Camshaft	Secondary Voltage	3-point gap	Condition
	6V 12V	75 min^{-1} (rpm) 3,000 min^{-1} (rpm)	26 ± 4 kV 17 ± 4 kV	11–17 mm(0.43–0.67) 9–13 mm(0.35–0.51)	At 80°C(176°F)
Ignition wire	Resistance		25,000 ohms max.		
Spark plug	Type Standard	KF, KG, KB, KE, KW KY KS, KX KQ, KT	NGK: BPR6ES, BPR6EY ND: W20EXR-U, W20EPR-U NGK: BP6ES, BP6EY ND: W20EX-U, W20EP-U NGK: BPR6EY, BPR6ES ND: W20EXR-U, W20EPR-U NGK: BP6EY, BP6ES ND: W20EX-U, W20EP-U		
	Gap		BPR6EY, BP6EY: 0.8–0.9 (0.031–0.035) Other types : 0.7–0.8 (0.028–0.031)		
Ignition timing	At Idling	KQ, KS, KX–A/T, KT EC, KY KX–M/T	12° BTDC 18° BTDC 22° BTDC		

27. Charging

MEASUREMENT		STANDARD (NEW)	
Battery	Lighting capacity (20-hour ratio) Starting capacity (5-second ratio)	40, 45 or 47 Ampere Hours 8V minimum at 150 Ampere draw	
Alternator	Output at no-load Output	14V at 850 min^{-1} (rpm) max. 14V/60A at 3,500 min^{-1} (rpm) max.	
	Coil resistance (rotor) Slip ring O.D. Brush length Brush spring tension	2.8–3.0 ohms 32.5 (1.28) 15.5 (0.61) 300–500 g (10.6–17.6 oz)	±0.1 ohms 32.1 (1.26) 5.3 (0.21) –
Voltage relay	Rated voltage Relay point gap Contact spring deflection (pulled in)	4.5–5.8V 0.4–1.2 (0.02–0.05) 0.2–0.6 (0.01–0.02)	– – –
Voltage regulator	Regulated voltage Armature gap Point gap Contact spring deflection Angle gap	13.5–14.5V 0.5 (0.02) max. 0.4–1.2 (0.02–0.05) 0.2–0.6 (0.01–0.02) 0.5 (0.02) max.	– – – – –

28. Starting

Starting motor		1.0 KW		1.4 KW	
	MEASUREMENT	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)
	Commutator runout	0–0.02 (0.0008)	0.05 (0.020)	0–0.02 (0.0008)	0.05 (0.020)
	Commutator O.D.	30.0 (1.18)	29.0 (1.14)	30.0 (1.18)	29.0 (1.14)
	Brush length	13.0 (0.51)	8.5 (0.33)	15.0 (0.59)	10.0 (0.39)
	Spring pressure (new)	(1.7 kg, 3.7 lb)	–	(21 kg, 46 lb)	–

Design Specifications

European Model

	ITEMS		METRIC	ENGLISH	NOTE
DIMENSIONS	Overall Length		4,295 mm	169.1 in.	
			4,320 mm	170.1 in.	KW
	Overall Width		1,690 mm	66.5 in.	
	Overall Height		1,295 mm	51.0 in.	
	Wheelbase		2,450 mm	96.5 in	
	Tread Front/Rear		1,470/1,470 mm	57.9/57.9 in.	
	Ground Clearance		153 mm	6.0 in.	
	Seating Capacity		Total 4		
			2		KS
	Overhang Front/Rear		890/955 mm	35.0/37.6 in.	Include bumper
			915/955 mm	36.0/37.6 in.	KW
WEIGHTS	Curb Weight				
	4—AT	STD	980 kg	2,161 lb.	KE
			990 kg	2,183 lb.	KS & FINLAND
			985 kg	2,172 lb.	Other types
		EX	995 kg	2,194 lb.	KE & KX
			1,000 kg	2,205 lb.	KS
			1,010 kg	2,227 lb.	FINLAND
			1,005 kg	2,216 lb.	Other types
	5—MT	STD	970 kg	2,139 lb.	KE
			980 kg	2,161 lb.	KS & FINLAND
			975 kg	2,150 lb.	Other types
		EX	985 kg	2,172 lb.	KE & KX
			990 kg	2,183 lb.	KS
			1,000 kg	2,205 lb.	FINLAND
			995 kg	2,194 lb.	Other types
	Weight Distribution Front/Rear				
	4—AT	STD	595/385 kg	1,312/849 lb.	KE
			605/385 kg	1,334/849 lb.	KS & FINLAND
			595/390 kg	1,312/860 lb.	Other types
		EX	600/395 kg	1,323/871 lb.	KE & KX
			605/395 kg	1,334/871 lb.	KS
			610/400 kg	1,345/882 lb.	FINLAND
			605/400 kg	1,334/882 lb.	Other types
	5—MT	STD	585/385 kg	1,290/849 lb.	KE
			595/385 kg	1,312/849 lb.	KS & FINLAND
			585/390 kg	1,290/860 lb.	Other types
		EX	590/395 kg	1,301/871 lb.	KE & KX
			595/395 kg	1,312/871 lb.	KS
			600/400 kg	1,323/882 lb.	FINLAND
			595/400 kg	1,312/882 lb.	Other types
			For power steering types 12.4 kg (27 lb.) anti-lock braking device 11.5 kg (25 lb.) has to be added if installed		

(cont'd)

Design Specifications (cont'd)

European Model (cont'd)

	ITEMS		METRIC	ENGLISH	NOTE
WEIGHTS	Gross Weight				
	4–AT	STD	1,280 kg	2,822 lb.	KE
			1,140 kg	2,514 lb.	KS
			1,290 kg	2,844 lb.	FINLAND
			1,285 kg	2,833 lb.	Other types
		EX	1,295 kg	2,855 lb.	KE & KX
			1,150 kg	2,536 lb.	KS
			1,310 kg	2,889 lb.	FINLAND
			1,305 kg	2,878 lb.	Other types
	5–MT	STD	1,270 kg	2,800 lb.	KE
			1,130 kg	2,492 lb.	KS
			1,280 kg	2,822 lb.	FINLAND
			1,275 kg	2,811 lb.	Other types
		EX	1,285 kg	2,833 lb.	KE & KX
			1,140 kg	2,514 lb.	KS
			1,300 kg	2,867 lb.	FINLAND
			1,295 kg	2,855 lb.	Other types
	Max. Permissible Weight (EC)		1,490 kg	3,285 lb.	
	Carrying (loading) Weight Capacity		45 kg	100 lb.	
ENGINE	Type		Water cooled, 4-cycle O.H.C.		
	Cylinder Arrangement		4-cylinder in line, transverse		
	Bore and Stroke		80x91 mm	3.15x3.58 in.	
	Displacement		1,829 cm³	112 cu. in.	
	Compression Ratio		9.5 : 1		
			9.1 : 1		KS, KX, KT
	Carburetor Type		Side draft		
	Carburetor, Throttle Bore Dia.		34 mm	1.34 in.	
	Valve Train		Timing belt driven, single overhead camshaft		
	Lubrication System		Trochoid pump		
	Fuel Required		Super or premium grade gasoline with 97 research octane number or higher.		
			Low-lead or regular grade gasoline with 91 research octane number or higher.		KS, KX, KT
	Engine Weight		108 kg	238 lb.	Include oil and coolant
TRANSMISSION	Clutch	4–AT	Torque Converter		
		5–MT	Single plate dry, diaphragm spring		
	Transmission	4–AT	Torque convertor with lock up clutch.		
		5–MT	5 speed forward, 1 speed reverse, constant mesh.		
			5–MT	4–AT	
	Primary Reduction		1.000	1.000	
	Gear Ratio	*I*	3.181	2.380	
		II	1.944	1.560	
		III	1.250	1.032	
		IV	0.933	0.777	
		V	0.757	–	
		Reverse	3.000	1.954	
	Final Reduction	4–AT	Single helical gear, 3.875		
		5–MT	Single helical gear, 4.071		
	Clutch Facing Area		160 cm²	24.8 sq. in.	
STEERING SYSTEM	Type		Rack and Pinion		
		Power Steering	Integral		
	Overall Ratio		17.1 : 1		
		Power Steering	14.9 : 1		
	Turns, lock-to-lock		3.25		
		Power Steering	2.84		
	Steering Wheel Dia.		370 mm	14.6 in.	
	Power Steering	Tank Capacity	1.5 lit.	1.6 US.qt. 1.3 Imp.qt.	
	Power Steering	Fluid	HONDA Genuine Power Steering Fluid		

European Model (cont'd)

	ITEMS		METRIC	ENGLISH	NOTE
SUSPENSION SYSTEM	Type, Front		Independent by double wishbones, coil spring.		
	Type, Rear		Independent, Mac'Pherson strut, coil spring.		
	Shock Absorber Front/Rear		Telescopic hydraulic		
WHEEL ALIGNMENT	Wheel Alignment				
	Camber	Front	0°		
		Rear	0°		
	Caster	Front	0°		
	Toe—in	Front	0 mm	0 in.	
		Rear	in 2 mm	0.008 in.	
	Kingpin Inclination		6°51′		
BRAKE SYSTEM	Type		Front ventilated and rear non-ventilated disc brake with or without anti-lock braking device, hydraulic, four-wheel brake, servo assisted		
	Lining Surface Area	Front/Rear	35.8/20.9 cm²	5.5/3.2 sq. in.	
	Effective Disc Dia.	Front/Rear	190/208 mm	7.5/8.2 in.	
	Parking Brake Kind and Type		Mechanically pressing the disk with pads, rear two wheel brakes.		
TIRES	Tire Size	Front and Rear	185/70 HR13 / 185/70R 1386H		
ELECTRICAL SYSTEM	Battery		12 V—47 AH		
			12 V—45 AH		KE
	Starting Motor		12 V—1.0 KW		
	Generator		12 V—60 A		
	Main Fuse		65 A x 1, 35 A x 2		
	Fuses		20 A x 4.15 A x 12, 10 A x 8		
	Headlights		12 V—60/55 W		
	Day Time Running Lamp		12 V—21 W		NORWAY, FINLAND
	Passing Lights		12 V—55 W		Austrian model
	Turn Signal Lights	Front	12 V—21 W		
		Rear	12 V—21 W		
		Side	12 V—5 W		
	Licence Plate Lights		12 V—5 W		
	Position Light		12 V—5 W		
	Back-up Lights		12 V—21 W		
	Stop/Tail Lights		12 V—21/5 W		
	Rear Fog Light		12 V—21 W		
	Interior Light		12 V—8 W		
	Trunk Light		12 V—3.4 W		
	Other dash Lights (heater, radio, cigarette lighter, ashtray)		12 V—3.4/1.4 W		
	Gauge Lights		12 V—3.4/1.2 W		

(cont'd)

Design Specifications (cont'd)

KQ Model

NOTE: Only the design specifications for next three models different from those of the European model are listed. For the other items not given here, refer to the European model design specifications.

	ITEMS		METRIC	ENGLISH	NOTE
WEIGHTS	Curb Weight 4–AT	STD	970 kg	2,139 lb.	
		EX	985 kg	2,172 lb.	
	5–MT	STD	960 kg	2,117 lb.	
		EX	975 kg	2,150 lb.	
	Weight Distribution Front/Rear				
	4–AT	STD	600/370 kg	1,323/816 lb.	
		EX	605/380 kg	1,334/838 lb.	
	5–MT	STD	590/370 kg	1,301/816 lb.	
		EX	595/380 kg	1,312/838 lb.	
	Maximum Loaded Vehicle Weight				
	4–AT	STD	1,320 kg	2,911 lb.	
		EX	1,360 kg	2,999 lb.	
	5–MT	STD	1,310 kg	2,889 lb.	
		EX	1,350 kg	2,977 lb.	
ENGINE	Compression Ratio		9.1 : 1		
	Fuel Required		Low-lead or regular grade gasoline with 89 research octane number or higher.		
ELECTRICAL SYSTEM	Battery		12 V–40 A		

General Export

NOTE: Only the design specifications for next three models different from those of the European model are listed. For the other items not given here, refer to the European model design specification.

	ITEMS		METRIC	ENGLISH	NOTE
DIMENSION	Curb Weight 4–AT	STD	980 kg	2,161 lb.	
		EX	1,005 kg	2,216 lb.	
	5–MT	STD	970 kg	2,139 lb.	
		EX	995 kg	2,194 lb.	
	Weight Distribution				
	4–AT	STD	590/390 kg	1,301/860 lb.	
		EX	605/400 kg	1,334/882 lb.	
	5–MT	STD	580/390 kg	1,279/860 lb.	
		EX	595/400 kg	1,312/882 lb.	
	Gross Weight 4–AT	STD	1,280 kg	2,822 lb.	
		EX	1,305 kg	2,878 lb.	
	5–MT	STD	1,270 kg	2,800 lb.	
		EX	1,295 kg	2,855 lb.	
ENGINE	Compression Ratio		9.1 : 1		
	Fuel Required		Low-lead or regular grade gasoline with 91 research octane number or higher.		
ELECTRICAL SYSTEM	Battery		12 V–40 A		

KY Model

NOTE: Only the design specifications for models below different from those of the European model are listed. For the other items not given here, refer to the European Model design specification.

	ITEMS	METRIC	ENGLISH	NOTE
WEIGHTS	Curb Weight 4—AT	1,040 kg	2,293 lb.	
	5—MT	1,030 kg	2,271 lb.	
	Weight Distribution Front/Rear			
	4—AT	635/405 kg	1,400/893 lb.	
	5—MT	625/405 kg	1,378/893 lb.	
	Gross Weight 4—AT	1,340 kg	2,955 lb.	
	5—MT	1,330 kg	2,933 lb.	
	Carrying (loading) Weight Capacity	45 kg	100 lb.	
ENGINE	Compression Ratio	9.5 : 1		
	Fuel Required	Super or premium grade gasoline with 97 research octane number or higher.		
STEERING SYSTEM	Overall Ratio	14.9 : 1		
	Turns, lock-to-lock	2.84		
BRAKE SYSTEM	Type	Front ventilated and rear non-ventilated disc brake, hydraulic, four-wheel brake, servo assisted.		
TIRES	Tire Size Front and Rear	185/70 HR13, 185/70R 1386H		
ELECTRICAL SYSTEM	Battery	12 V—40 A		
	Main Fuse	65 A x 1, 35 A x 1		
	Fuses	20 A x 4, 15 A x 11, 10 A x 8		

MEMO

Maintenance

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	MANUAL		R		R	
■	TRANSMISSION OIL	HONDAMATIC-4AT	R		R		R
■	RADIATOR COOLANT					R*1	
	COOLING SYSTEM, HOSES AND CONNECTIONS			I		I	
	AIR CLEANER ELEMENT		R	R	R	R	R
	FUEL FILTER (Inc. aux filter)			R		R	
	INTAKE AIR TEMP. CONTROL SYSTEM						I
	TANK, FUEL LINE AND CONNECTIONS			I		I	
	THROTTLE CONTROL SYSTEM*2			I		I	
	CHOKE MECHANISM			I		I	
	CHARCOAL CANISTER*3						I
	TWO-WAY VALVE*3						I
	IGNITION TIMING AND CONTROL SYSTEM			I		I	
	SPARK PLUGS		R	R	R	R	R
	DISTRIBUTOR CAP AND ROTOR			I		I	
	IGNITION WIRING			I		I	
	PCV VALVE			R		R	
	BLOW-BY FILTER			R		R	
	BRAKE HOSES, LINES (Includes ALB hoses and pipes for ALB models)		I	I	I	I	I
	BRAKE FLUID (Includes ALB fluid for ALB models)			R		R	
	REAR BRAKES			I		I	
	FRONT BRAKE DISCS AND CALIPERS		I	I	I	I	I
	FRONT BRAKE PADS		Inspect every 10,000 km (6,000 miles) or 6 months				
	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	
	REAR WHEEL BEARING GREASE						R
	ALB HIGH PRESSURE HOSES			R		R	
	ALB OPERATION		I	I		I	
	POWER STEERING PUMP BELT			I		I	
	POWER STEERING SYSTEM		I	I	I	I	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 Only for manual transmission on KW, KS and KQ types
*3 Only for KQ and KY types

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.

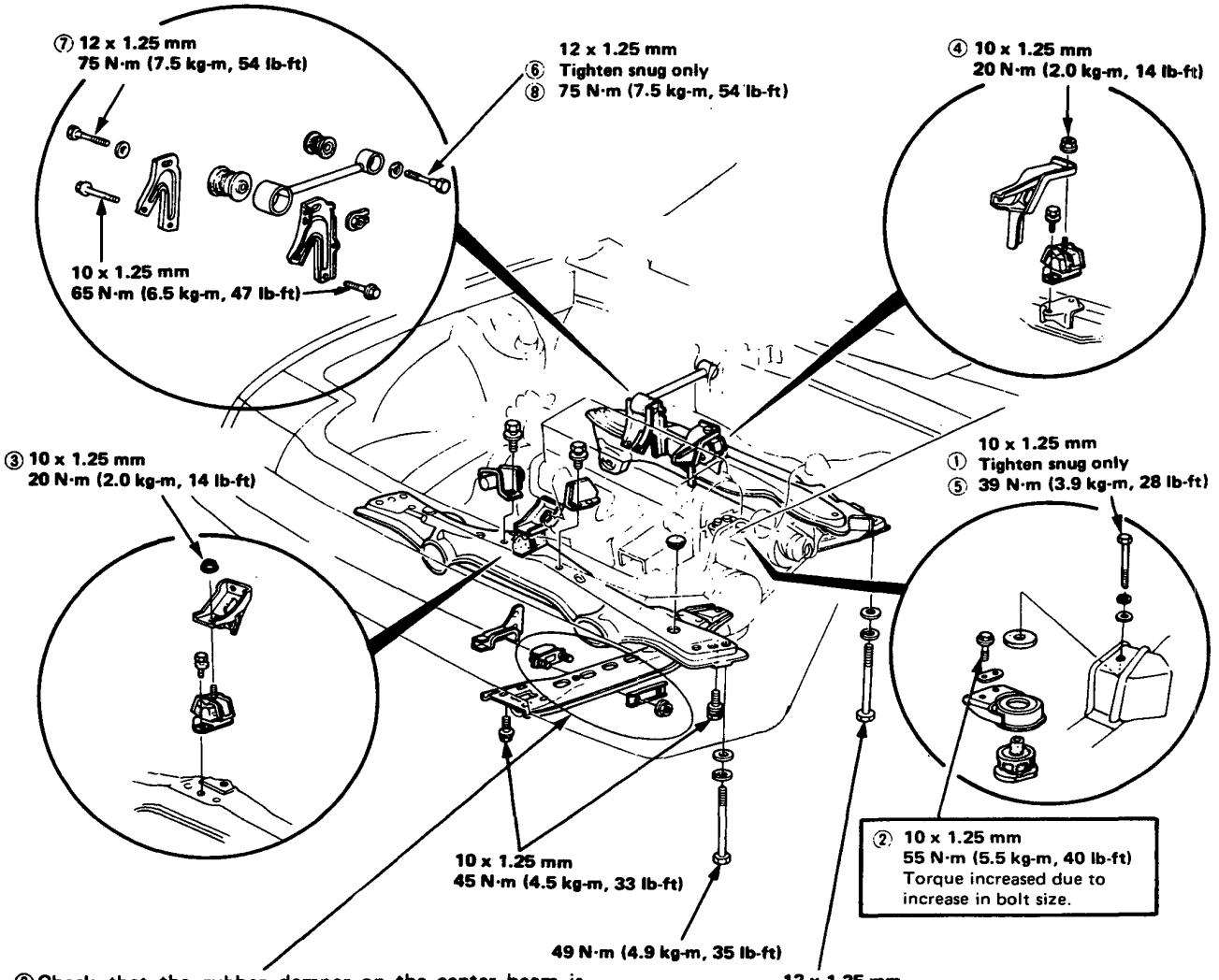
Condition	Maintenance item	Maintenance operation	Interval
A, B, F	Engine oil and oil filter	R	Every 5,000 km (3,000 miles) or 3 months
A, B, D, E, F	Front brake discs and calipers	I	Every 10,000 km (6,000 miles) or 6 months
A, B, D, E, F	Rear brakes (Only for disc-type brakes)	I	Every 20,000 km (12,000 miles) or 12 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

Engine Removal/Installation

Engine Removal/Installation

NOTES:

- For proper suppression of noise and vibration, and maximum bushing life, tighten the bolts in the sequence shown with the bushings centered in their mounts.
- From step 5 on, the car must be sitting level; make sure that the engine hoist is not holding up the engine and car.

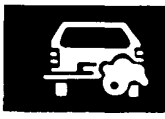


② 10 x 1.25 mm
55 N·m (5.5 kg-m, 40 lb-ft)
Torque increased due to increase in bolt size.

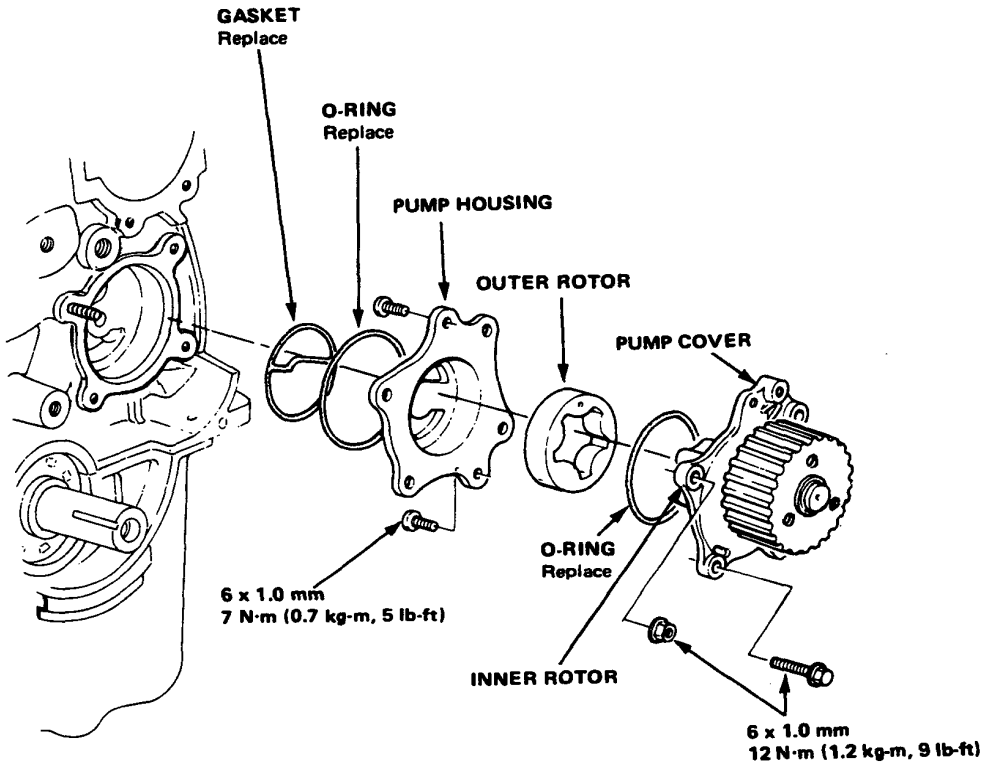
⑨ Check that the rubber damper on the center beam is centered in its mount on the transmission. If not, loosen the bolts for the center beam and insulator and adjust as necessary.

10 x 1.25 mm
20 N·m (2.0 kg-m, 14 lb-ft)

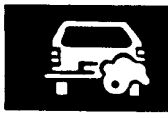
Engine Lubrication



NOTE: The oil pump drive pulley changes to solide type, and the inner rotor, pump cover and seal can not be disassembled.


GASKET
Replace
O-RING
Replace
PUMP HOUSING
OUTER ROTOR
PUMP COVER
O-RING
Replace
6 x 1.0 mm
7 N·m (0.7 kg-m, 5 lb-ft)
INNER ROTOR
6 x 1.0 mm
12 N·m (1.2 kg-m, 9 lb-ft)

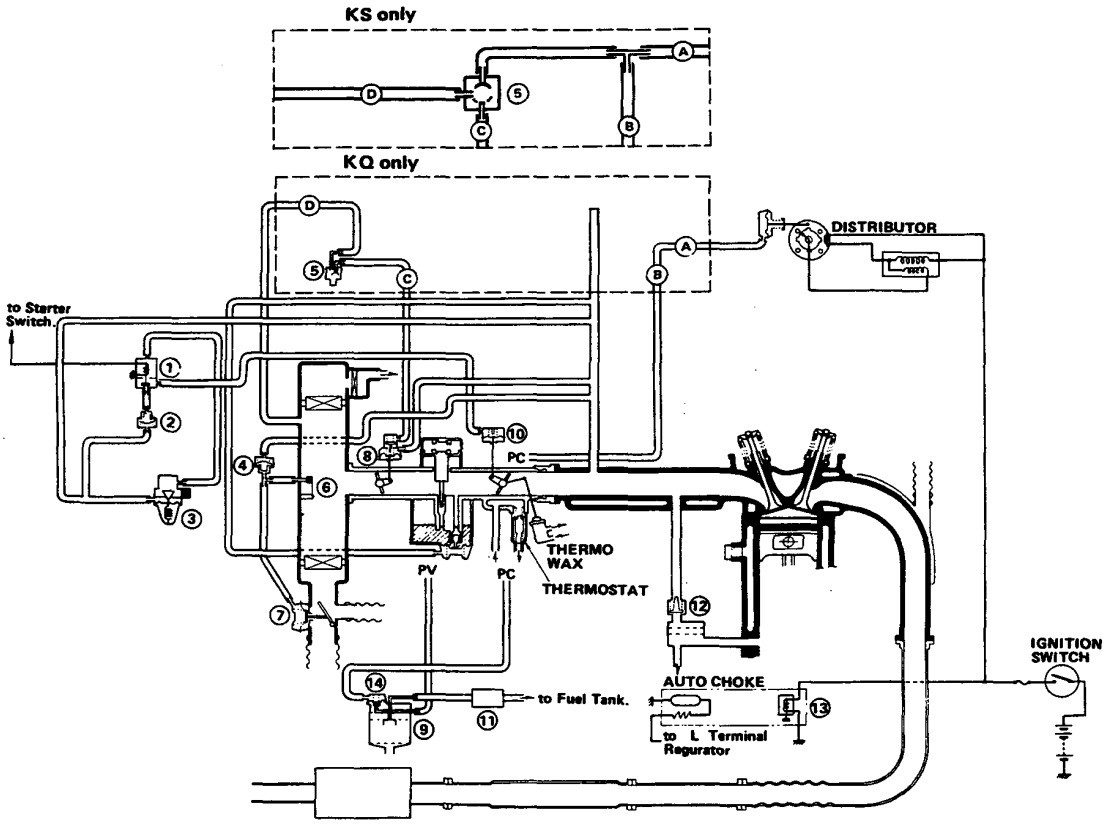
Emission Controls



Emission Controls

Vacuum and Electrical Connections

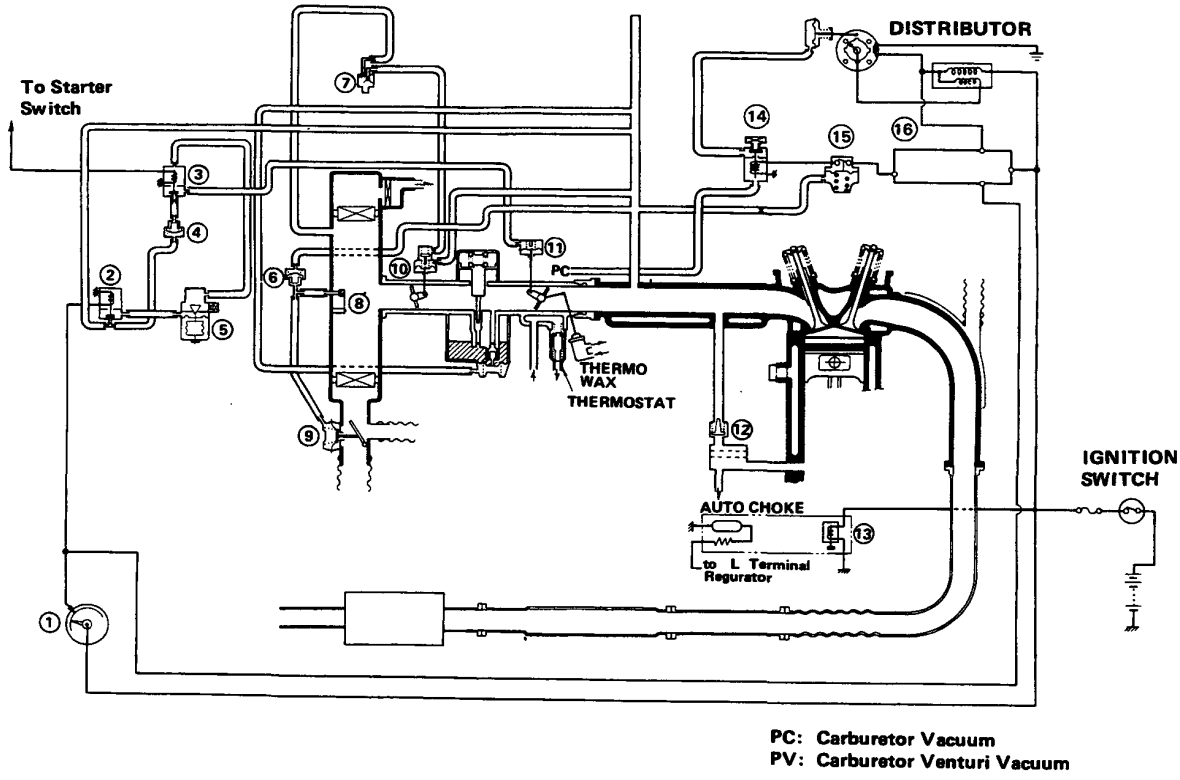
KQ, KS models Manual Transmission



PC: Carburetor Vacuum
PV: Carburetor Venturi Vacuum

① CRANKING SOLENOID VALVE
② CHECK VALVE (FOR THROTTLE CONTROL)
③ CONTROL VALVE
④ CHECK VALVE (FOR INTAKE AIR TEMP. CONTROL SYSTEM)
⑤ THERMO VALVE
⑥ AIR BLEED VALVE
⑦ AIR CONTROL DIAPHRAGM
⑧ CHOKE OPENER
⑨ CANISTER (KQ ONLY)
⑩ THROTTLE CONTROLLER
⑪ TWO-WAY VALVE
⑫ PCV VALVE
⑬ PRIMARY SLOW FUEL CUT-OFF SOLENOID VALVE
⑭ PURGE CONTROL DIAPHRAGM

KX model Manual Transmission



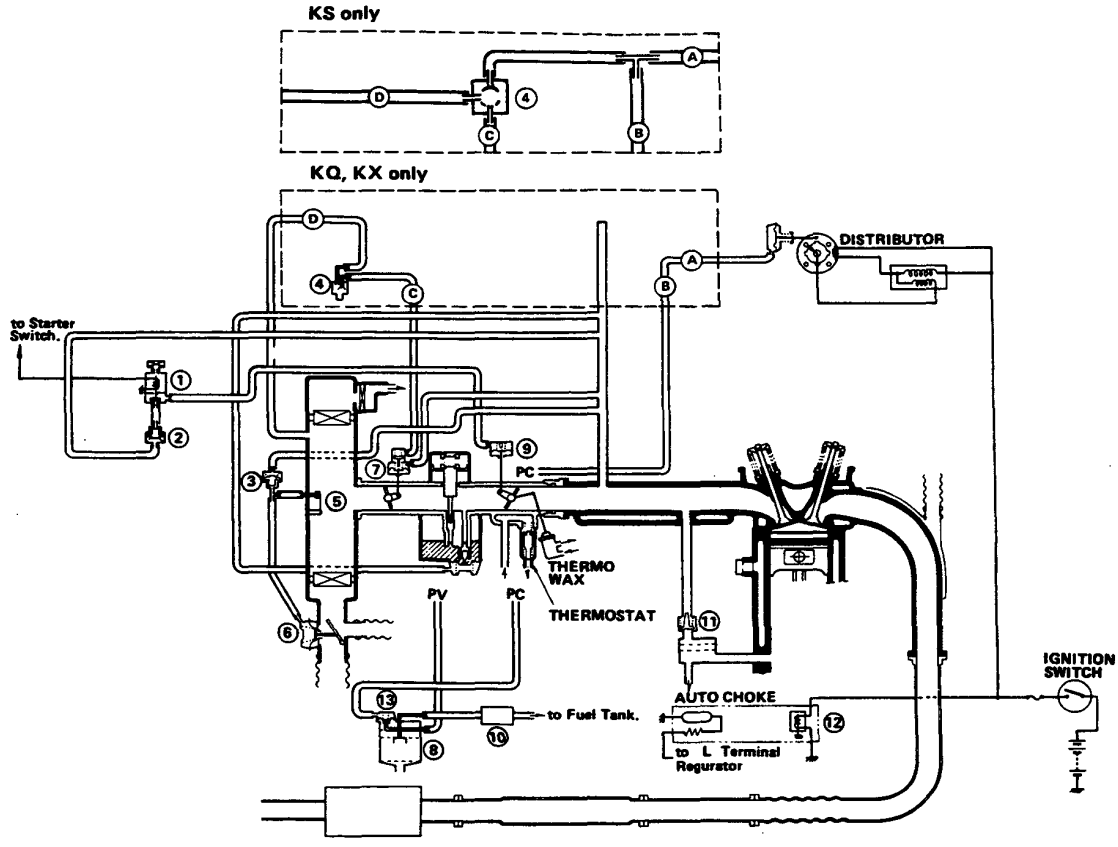
PC: Carburetor Vacuum
PV: Carburetor Venturi Vacuum

① SPEED SENSOR
② THROTTLE POSITIONER SOLENOID VALVE
③ CRANKING SOLENOID VALVE
④ CHECK VALVE (FOR THROTTLE CONTROL)
⑤ CONTROL VALVE
⑥ CHECK VALVE (FOR INTAKE AIR TEMP. CONTROL SYSTEM)
⑦ THERMO VALVE
⑧ AIR BLEED VALVE
⑨ AIR CONTROL DIAPHRAGM
⑩ CHOKE OPENER
⑪ THROTTLE CONTROLLER
⑫ PCV VALVE
⑬ PRIMARY SLOW FUEL CUT-OFF SOLENOID VALVE
⑭ VC SOLENOID VALVE
⑮ VACUUM SWITCH
⑯ NE SENSOR

Emission Controls

Vacuum and Electrical Connections

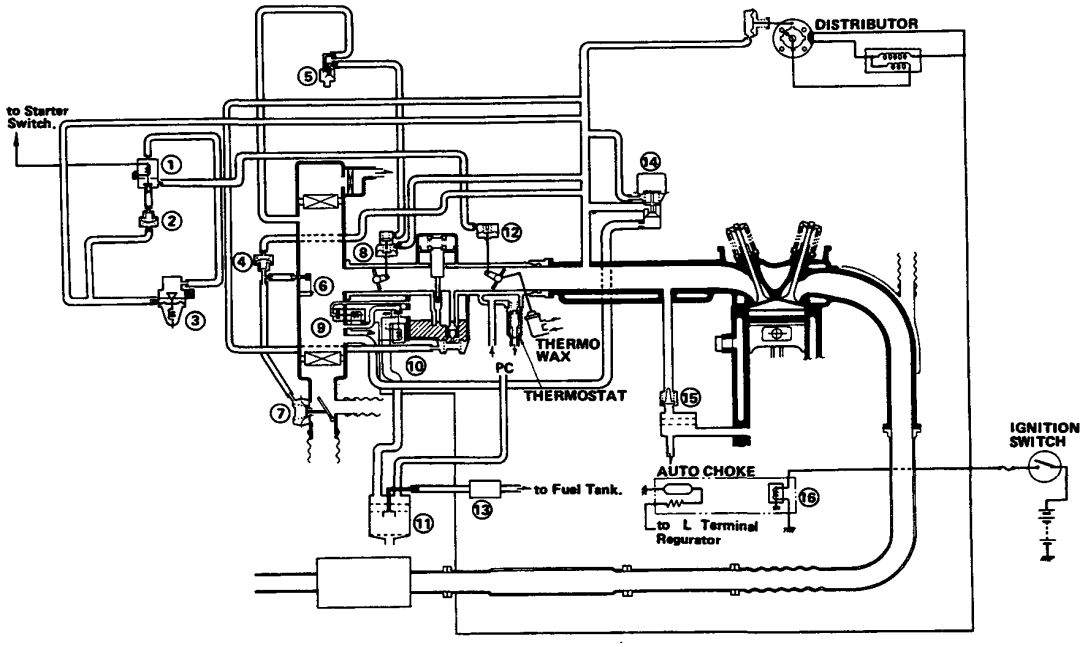
KS, KQ, KX models Automatic Transmission



PC: Carburetor Vacuum
PV: Carburetor Venturi Vacuum

① CRANKING SOLENOID VALVE
② CHECK VALVE (FOR THROTTLE CONTROL)
③ CHECK VALVE (FOR INTAKE AIR TEMP. CONTROL SYSTEM)
④ THERMO VALVE
⑤ AIR BLEED VALVE
⑥ AIR CONTROL DIAPHRAGM
⑦ CHOKE OPENER
⑧ CANISTER (KQ ONLY)
⑨ THROTTLE CONTROLLER
⑩ TWO-WAY VALVE
⑪ PCV VALVE
⑫ PRIMARY SLOW FUEL CUT-OFF SOLENOID VALVE
⑬ PURGE CONTROL DIAPHRAGM

KF, KG, KB, KW, KE, KY models Manual Transmission



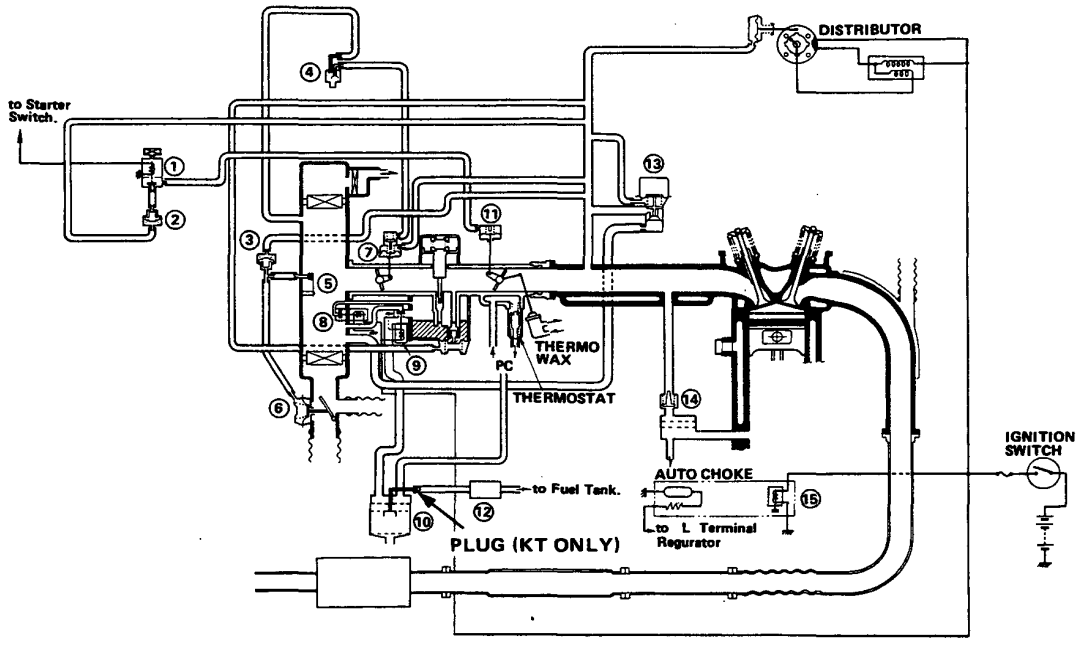
PC: Carburetor Vacuum
PV: Carburetor Venturi Vacuum

① CRANKING SOLENOID VALVE
② CHECK VALVE (FOR THROTTLE CONTROL)
③ CONTROL VALVE
④ CHECK VALVE (FOR INTAKE AIR TEMP. CONTROL SYSTEM)
⑤ THERMO VALVE
⑥ AIR BLEED VALVE
⑦ AIR CONTROL DIAPHRAGM
⑧ CHOKE OPENER
⑨ INNER VENT SOLENOID VALVE (KY ONLY)
⑩ VENT SOLENOID VALVE (KY ONLY)
⑪ CANISTER (KY ONLY)
⑫ THROTTLE CONTROLLER
⑬ TWO-WAY VALVE
⑭ ANTI-AFTERBURN VALVE (KY ONLY)
⑮ PCV VALVE
⑯ PRIMARY SLOW FUEL CUT-OFF SOLENOID VALVE

Emission Controls

Vacuum and Electrical Connections

KF, KG, KB, KW, KE, KY, KT models Automatic Transmission
KT model Manual Transmission



PC: Carburetor Vacuum
PV: Carburetor Venturi Vacuum

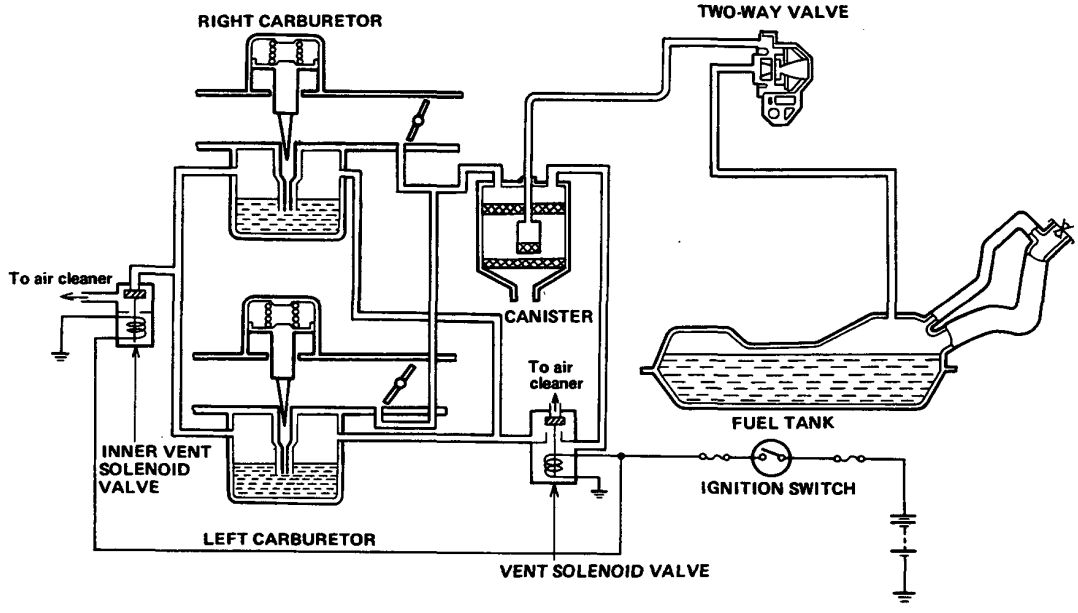
① CRANKING SOLENOID VALVE
② CHECK VALVE (FOR THROTTLE CONTROL)
③ CHECK VALVE (FOR INTAKE AIR TEMP. CONTROL SYSTEM)
④ THERMO VALVE
⑤ AIR BLEED VALVE
⑥ AIR CONTROL DIAPHRAGM
⑦ CHOKE OPENER
⑧ INNER VENT SOLENOID VALVE (KY, KT ONLY)
⑨ VENT SOLENOID VALVE (KY, KT ONLY)
⑩ CANISTER (KY, KT ONLY)
⑪ THROTTLE CONTROLLER
⑫ TWO-WAY VALVE
⑬ ANTI-AFTERBURN VALVE (KY, KT ONLY)
⑭ PCV VALVE
⑮ PRIMARY SLOW FUEL CUT-OFF SOLENOID VALVE

Carburetor Air Vent Cut-Off System

Description

[On, KT and KY cars only]

This system is designed to prevent fuel vapor in the float bowls from escaping into the atmosphere, and to prevent an over-rich condition from developing when the engine is hot started.
When the engine is not running, air vent passages are closed by the vent solenoid valve and inner vent solenoid valve, so that fuel vapor in the float bowls can be vented into the canister.
When the engine is running, the vent solenoid valve and inner vent solenoid valve open air vent passages, so that fuel vapor in the float bowls can be vented into the carburetors through the air cleaner.

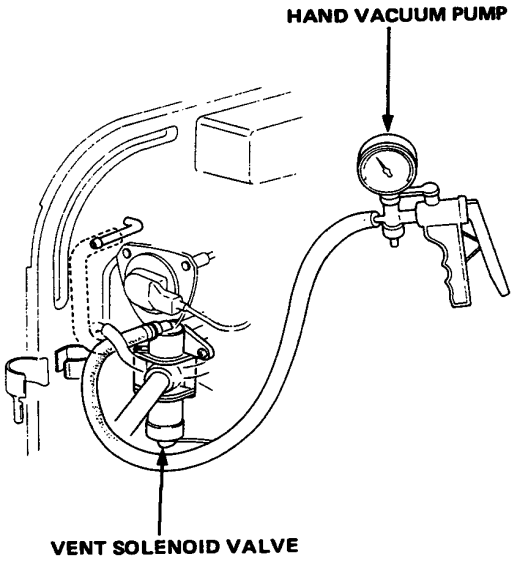


Carburetor Air Vent Cut-Off System

Inspection

Vent Solenoid Valve <KT, KY only>

1. Disconnect the upper hose from the vent solenoid valve and connect a hand vacuum pump to the solenoid valve as shown, and draw between 100–125 mmHg (4–5 in.Hg) vacuum.



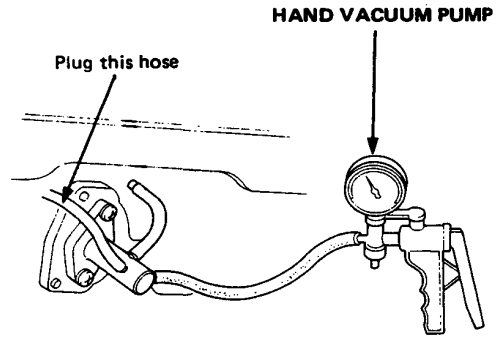
2. Turn the ignition switch on.

   Vacuum should drop to zero.

   - If vacuum drops to zero, the vent solenoid valve is OK.
   - If vacuum does not drop to zero, check for voltage at the vent solenoid valve.
     - If there is voltage, replace the solenoid valve and re-test.
     - If no voltage, check fuse and wiring.

Inner Vent Solenoid Valve <KT, KY only>

1. Remove the air cleaner cover and filter element.
2. Disconnect the three hoses from the inner vent solenoid valve, plug two of fittings and install a hand vacuum pump to the inner vent solenoid valve as shown, and draw vacuum (less than 250 mmHg, 10 in.Hg).



3. Turn the ignition switch on.

   Vacuum should drop to zero.

   - If vacuum drops to zero, the inner vent solenoid valve is OK.
   - If vacuum does not drop to zero, check for voltage at inner vent solenoid valve.
     - If there is voltage, replace the solenoid valve and re-test.
     - If no voltage, check fuse and wiring.

Ignition Timing Controls

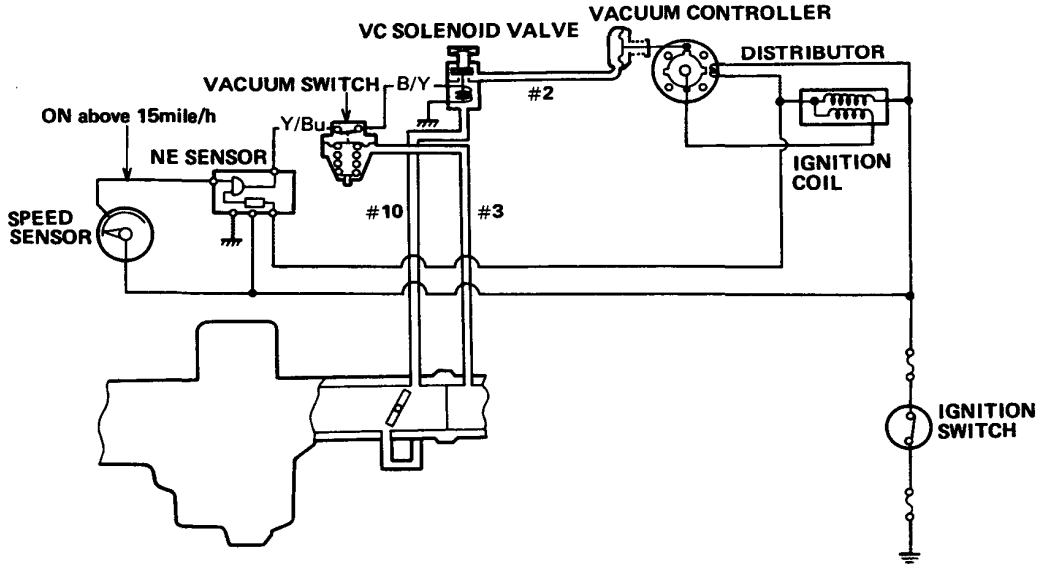
Description

[On KX Model Manual Transmission only]

During normal cruising speed and idling, the VC solenoid valve is deactivated allowing manifold vacuum to enter the vacuum controller so that ignition timing is advanced.
During deceleration above 15 mile/h, the VC solenoid valve is activated and vacuum to the vacuum controller is cut off. Atmospher is then led to the vacuum controller and ignition timing is retarded.

Operation of VC Solenoid Valve

Vehicle condition	Vacuum SW	NE sensor	Speed sensor	VC solenoid valve	Vacuum controller
Idling	ON	OFF	OFF	OFF	Vacuum
Cruise & Acceleration	OFF	ON	above 15 mph ON	OFF	Vacuum
			below 15 mph OFF		
Deceleration	ON	ON	above 15 mph ON	ON	Atmosphere
			below 15 mph OFF	OFF	Vacuum



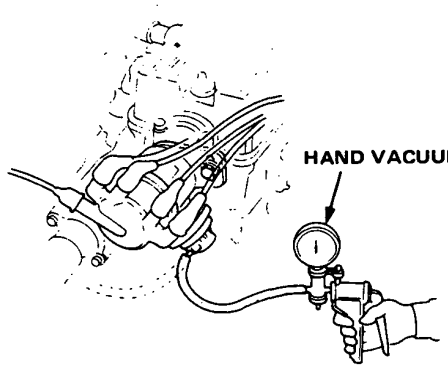
Inspection

Vacuum Controller

1. Warm up the engine to normal operating temperature.
2. Connect a tachometer, attach a hand vacuum pump to the vacuum controller on the distributor and plug the end of the controller hose.

   Start the engine and pull 400 mmHg (16 in.Hg) vacuum.

   Timing should advance and remain steady.

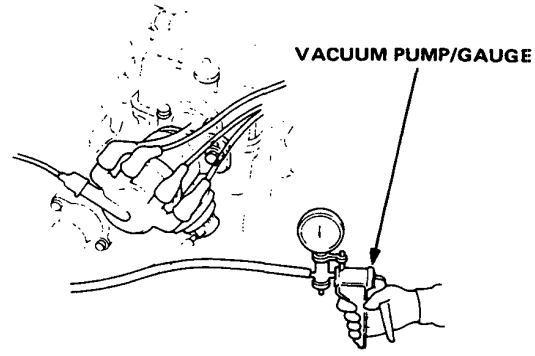


- If timing advances, go on to step 3.
- If timing will not stay advanced (diaphragm leaks), replace the vacuum controller and re-test.
- If timing does not advance, stop the engine and remove distributor cap. Turn breaker plate right and left to check for freedom of movement. If there is no evidence of binding, replace the vacuum controller and re-test.

VC Solenoid Valve

3. Disconnect the hose #2 from the vacuum controller and connect a vacuum gauge to the hose.
4. Start the engine, allow it to idle and check for vacuum.

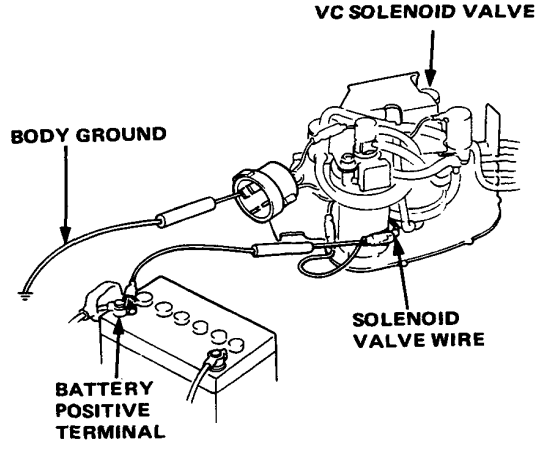
   There should be vacuum.



- If vacuum does not appear on the gauge, go on to step 5.
- If there is vacuum, go on to step 6.

5. Remove the control box from the fire wall and remove the control box cover.
   Apply battery voltage to the VC solenoid valve. (Black/yellow wire)

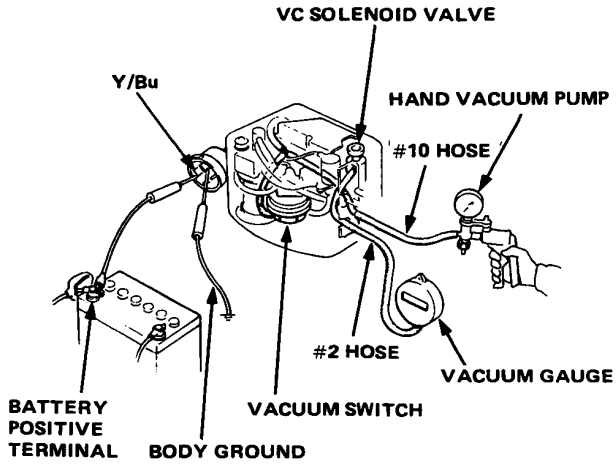
   There should be no vacuum.



- If there is vacuum, replace the VC solenoid valve and re-test.
- If there is no vacuum, go on to step 6.

Vacuum Switch

6. Disconnect the hose #10 to the control box at the install pipe A and connect a hand vacuum pump to the hose. Plug the end of the install pipe A.



7. Apply battery voltage to the yellow/blue wire terminal of the control box connector.

   There should be vacuum at the hose #2 from the vacuum controller when vacuum above 510 mmHg (20 in.Hg) is applied to the hose #10, and there should be no vacuum when vacuum is released.

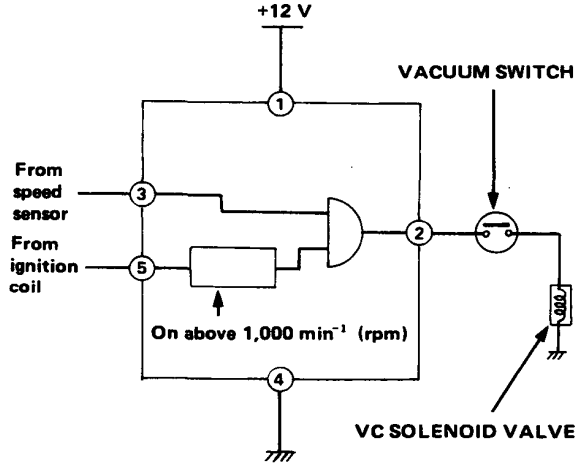
   - Replace the vacuum switch if vacuum is not as specified.

NE Sensor

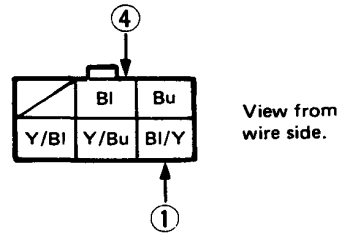
CAUTION: Whenever test is performed, connect test probes of the circuit tester to terminals of the connector from wire side.

NOTE: The NE sensor is installed in the rear left cowl side lining.

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



1. Disconnect the 6P connector from the NE sensor. Measure voltage between ① (B/Y: positive) and ④ (Bl: negative) terminals at 6P connector with ignition switch ON.



   There should be battery voltage.

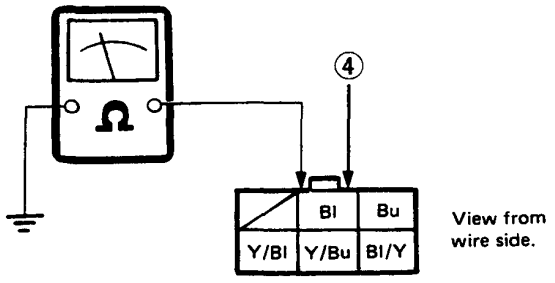
   - If there is battery voltage, go on to step 2.
   - If there is no battery voltage, check fuse and wire harness.

(cont'd)

Ignition Timing Controls

Inspection (cont'd)

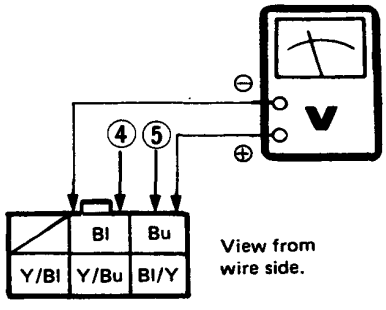
2. Disconnect the 6P connector from the NE sensor. Check for continuity between ④ (Bl) terminal and body ground.



There should be continuity.

- If there is continuity, go on to step 3.
- If there is no continuity, check wire harness and ground.

3. Disconnect the 6P connector from the NE sensor. Measure voltage between ⑤ (Bu: positive) and ④ (Bl: negative) terminals at 6P connector when the engine is idling.



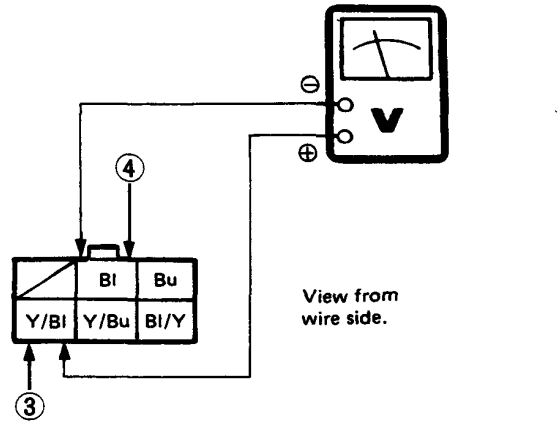
There should be battery voltage.

- If there is battery voltage, go on to step 4.
- If there is no battery voltage, check blue wire circuit between connector and ignition coil negative terminal.

WARNING **Block rear wheels before jacking up front of car.**

4. Jack up front of car and place jack stands in proper locations. Set the parking brake.

5. Disconnect the 6P connector from the NE sensor. Connect voltmeter positive probe to ③ (Y/Bl) terminal at 6P connector and negative probe to ④ (Bl) terminal.



6. Start the engine. Place the shift lever in second gear and accelerate slowly, while observing the voltmeter.

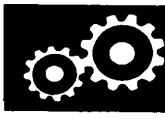
   The voltmeter should show approximately 10 V above 25 km/h, and no voltage below 15 km/h.

   - If there is no voltage below approximately 15 km/h, and there is battery voltage above approximately 25 km/h, the speed sensor is OK. Go on to step 8.
   - If the voltmeter readings do not correspond to the above km/h range, replace the speed sensor and re-test.
   - If there is no voltage during speed sensor test, go on to step 7.

7. Check for loose or improper wire connections, faulty fuse or speed sensor. Replace or repair as necessary and re-test.

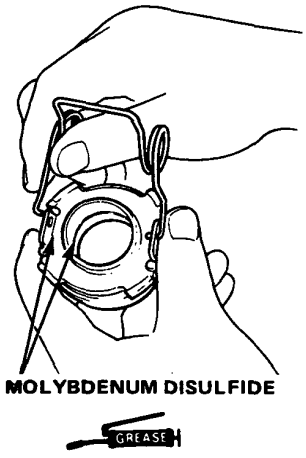
8. Stop the engine, lower the car to the ground, and disconnect the voltmeter.

Clutch



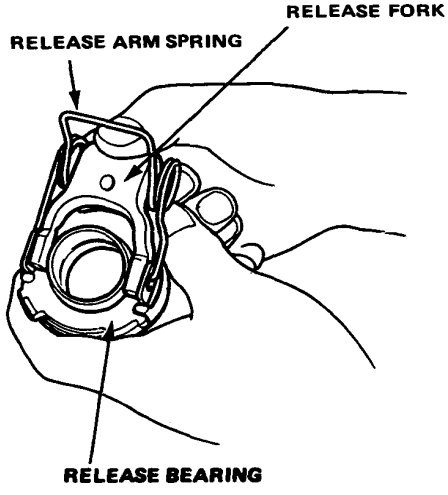
Release Bearing Installation

1. Apply grease to the grooves inside of the bearing and to the bearing contact surface with the release fork.



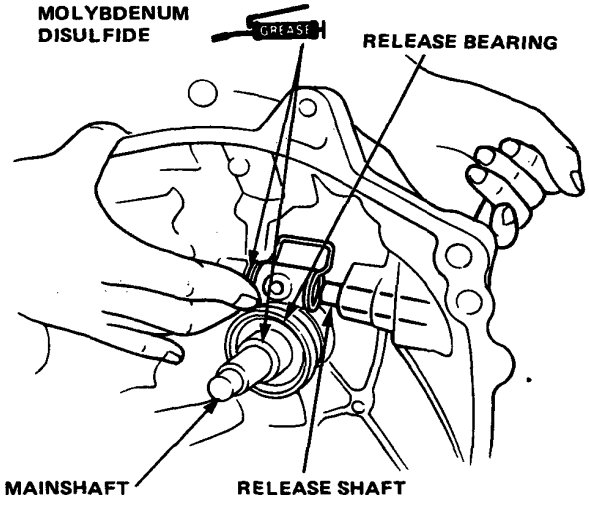
2. Install the release arm spring into the release fork tabs as shown.

3. Install the release fork onto the release bearing with its arms aligned with the tabs.

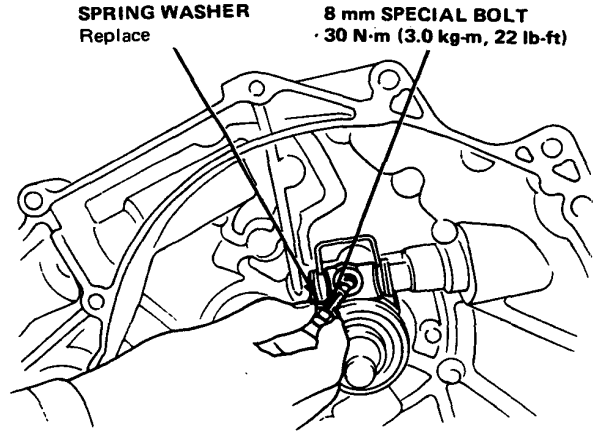


4. Slip the release bearing over the mainshaft, while holding the release arm spring as shown, then install the release shaft.

   NOTE: Apply molybdenum disulfide grease to the sliding surfaces of the mainshaft and release shaft.



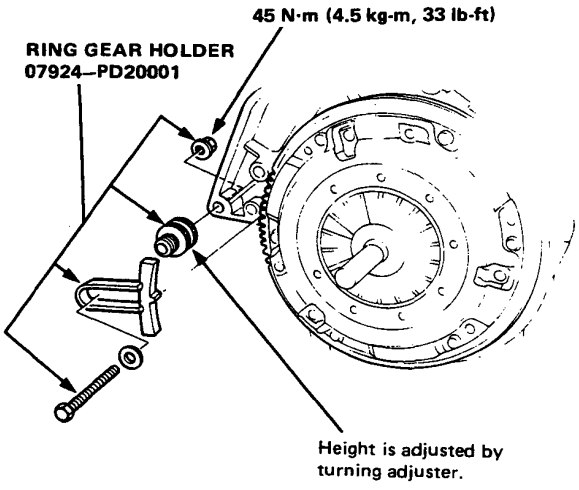
5. Align the hole on the release shaft with the one on the release fork then install the 8 mm special bolt and new spring washer.

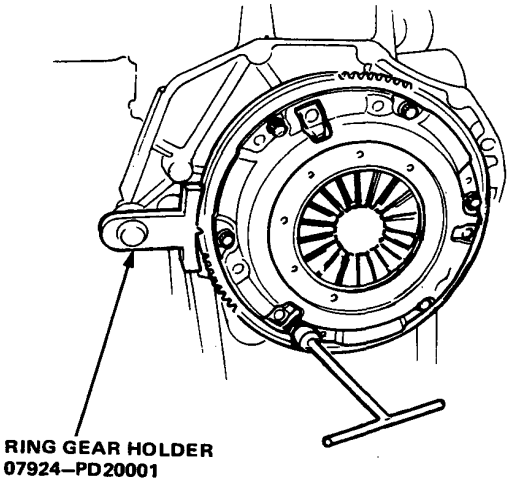


6. After installation, pull release arm up, then let it down, to be sure fork fits against bearing holder properly, and holder slides freely on sleeve.

Ring Gear Holder Installation

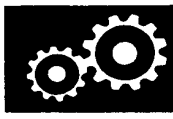
1. Adjust the height of the ring gear holder by turning the height adjuster.
2. Install the ring gear holder to hold the ring gear.





MEMO

Manual Transmission



Manual Transmission

Mainshaft/Countershaft Reassembly and Measurement

1. Remove both mainshaft and countershaft bearings from transmission housing.
2. Assemble mainshaft and countershaft including bearings and fifth gear components, as shown below.

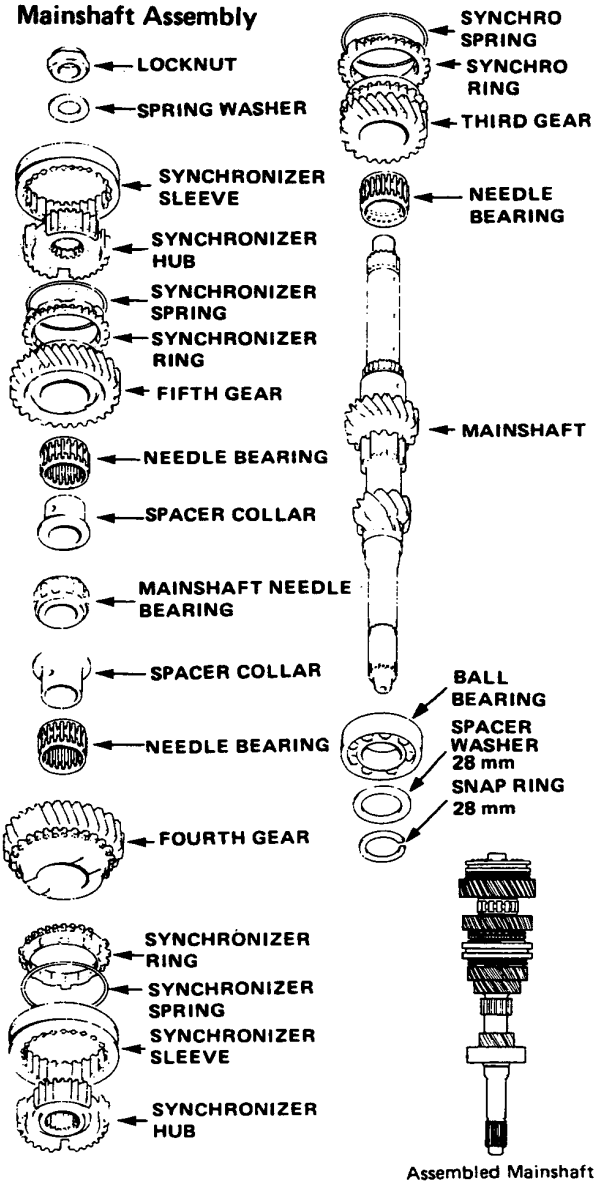
Lubricate all parts with oil before final reassembly.

3. Install mainshaft/countershaft assembly into clutch housing.
4. Install the mainshaft holder to prevent shafts from turning, and shift transmission into gear.
5. Torque the countershaft and mainshaft locknuts to 90 N·m (9.0 kg-m, 65 lb-ft) before checking clearances.

CAUTION: Incorrect gear clearances can be caused by overtorquing the countershaft or mainshaft locknuts. Whenever locknuts are installed, use an accurately calibrated torque wrench.

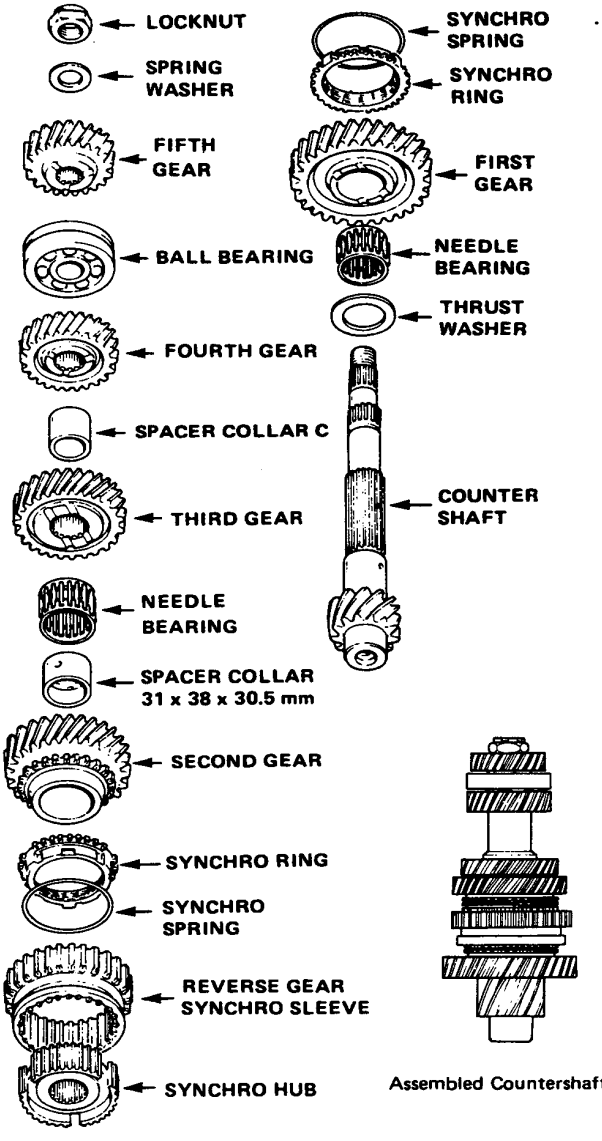
6. Remove transmission shafts from clutch housing and measure clearances.

Mainshaft Assembly



Assembled Mainshaft

Countershaft Assembly

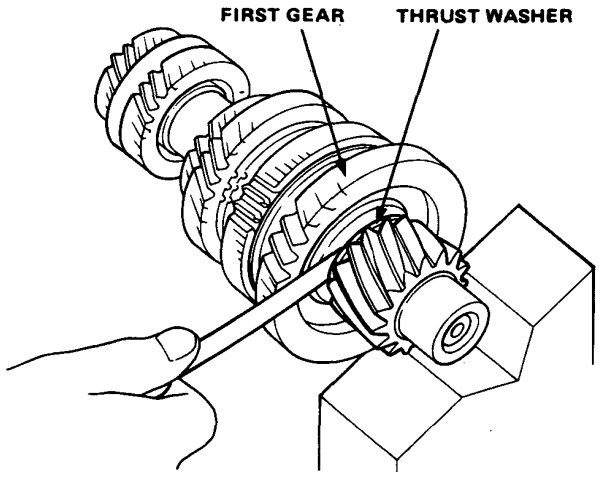


Assembled Countershaft

Countershaft Measurements

1. Measure clearance between first gear thrust washer and shoulder on first gear.

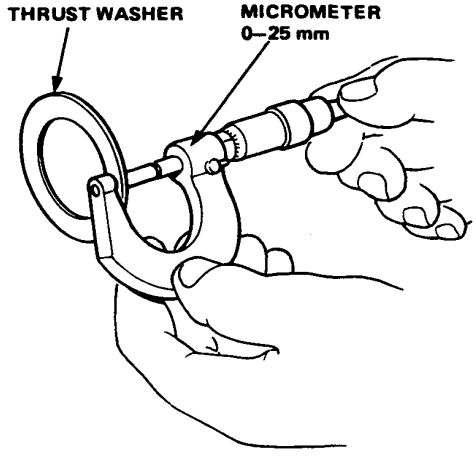
FIRST GEAR CLEARANCE
Standard (New): 0.03–0.08 mm (0.001–0.003 in.)



If out of tolerance, change thickness of first gear thrust washer after measuring all other clearances.

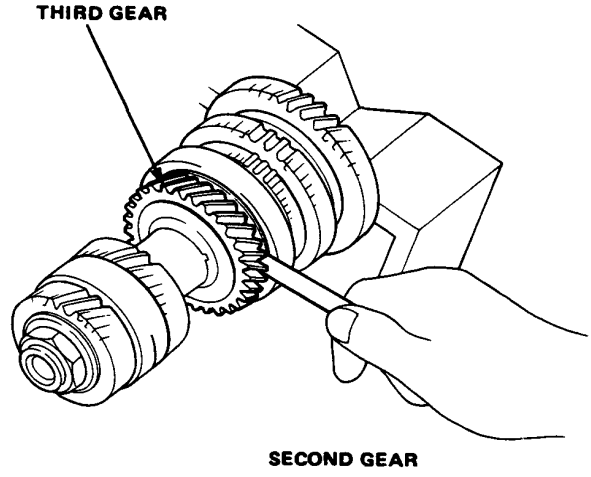
REPLACEMENT THRUST WASHERS

IDENTIFICATION	THICKNESS
A	2.02–2.04 mm (0.080–0.081 in.)
B	2.00–2.02 mm (0.079–0.080 in.)
C	1.98–2.00 mm (0.078–0.079 in.)
D	1.96–1.98 mm (0.077–0.078 in.)



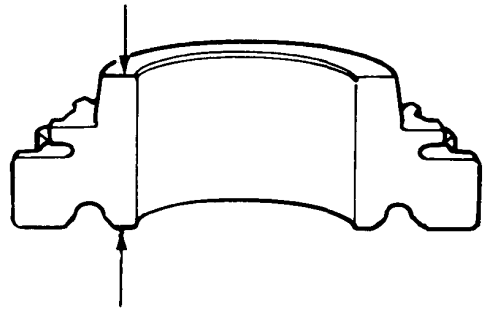
2. Measure clearance between shoulder on third gear and shoulder on second gear.

SECOND GEAR CLEARANCE
Standard (New): 0.03–0.1 mm (0.0012–0.004 in.)
Service Limit: 0.18 mm (0.007 in.)



3. If out of tolerance, measure thickness of second gear.

SECOND GEAR THICKNESS
Standard (New): 30.42–30.47 mm (1.198–1.200 in.)
Service Limit: 30.3 mm (1.192 in.)

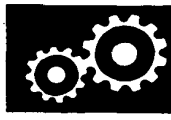


If out of limit, replace second gear.

4. After all clearances have all been checked, and those out of limits corrected, reassemble transmission mainshaft and countershaft and recheck all clearances. If they are correct, disassemble fifth gear components and reinstall bearings in transmission housing.

MEMO

Automatic Transmission



Automatic Transmission

Troubleshooting

PROBLEM	REFER TO:
Engine runs but car does not move:	1, 2, 3, 6, 7, 8, 41
Car does not move in [D3] or [D4] but does move in [2] (No low gear)	7, 9, 10, 11, 56
Car does not move in [2] (OK in [D3] and [D4])	7, 12, 13
Car does not move in [R] (OK in [D3], [D4] and [2])	4, 7, 14, 23, 36
Poor acceleration, Engine races when starting off in [D3] and [D4]:	
– Stall rpm high in [D3], [D4] and [2]	1, 2, 3, 7, 46, 49
– Stall rpm high in [D3] and [D4]	7, 9, 11
– Stall rpm high in [2]	7, 13
– Stall rpm OK	16
– Stall rpm low	17, 18, 37
Engine vibrates at idle	2, 37, 41
Up-shift speed too high	15, 19, 20, 48
Jumps from first to third in [D3]	23
Jumps from first to fourth in [D4]	23, 24
Up-shift point too early or too late	
– 1st to 2nd, 2nd to 3rd, and 3rd to 4th	15, 19, 20, 48
– 1st to 2nd only	15, 22
– 2nd to 3rd only	15, 23
– 3rd to 4th only	15, 24
Harsh shift from 1st to 2nd	13, 21, 25
Harsh shift from 2nd to 3rd	21, 26, 28, 35
Harsh shift from 3rd to 4th	21, 27, 36, 37
Harsh shift from 2nd to 1st	21, 25, 28, 42
Harsh shift from 3rd to 2nd	21, 26, 32, 43
Harsh shift from 4th to 3rd	21, 27, 44
Engine races when shifting up from 2nd to 3rd	21, 26, 28, 29, 33, 35
Engine races when shifting up from 3rd to 4th (Shift timing OK)	21, 27, 32, 36
Engine Vibrates when shifting up from 2nd to 3rd	13, 21, 26, 31, 43, 50
Engine Vibrates when shifting up from 3rd to 4th (Shift timing OK)	21, 32, 44, 50
Car creeps foward in [N] (Shift cable adjusted correctly)	11, 13, 16, 35, 36, 38, 39, 40
Excessive time lag from [N] to [D3], [D4] (Shift cable adjusted correctly)	11, 30
Excessive time lag from [N] to [R] (Shift cable adjusted correctly)	4, 23, 36
Malfunctions after reassembly:	
– Loud noise in all gears, neutral and park	2, 5, 45
– Car will only accelerate to 50 km/h	17
– Vibration in all gears	41
– Shift lever requires excessive force	7, 47
– Car has only 4th gear	15
– Transmission has no park	7, 47
– Stall rpm is high, but clutch pressure is OK in all positions	49
Lock-up clutch engage or disengages abnormally.	19, 21, 51, 52, 53
Engine vibrates when lock-up clutch is engaged	52, 53, 54, 55, 57
Lock-up clutch slips.	3, 49, 53, 57

POSSIBLE CAUSE

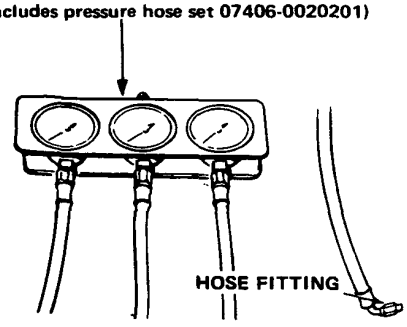
1. *ATF level too low*
2. *Faulty ATF pump*
3. *Stuck regulator valve or damaged spring*
4. *Stuck servo shaft*
5. *Damaged 3rd gear*
6. *Damaged mainshaft*
7. *Manual shift out of adjustment (broken cable, loose end pin)*
8. *Damaged final gear*
9. *Worn or damaged one-way clutch*
10. *Damaged low gear*
11. *Faulty first clutch*
    a. *Stuck clutch piston*
    b. *Damaged clutch O-ring*
    c. *Damaged clutch feed pipe or O-ring*
    d. *Foreign matter stuck in check valve*
    e. *Worn or burnt clutch disc*
12. *Damaged 2nd gear*
13. *Faulty 2nd clutch*
    a. *Stuck clutch piston*
    b. *Damaged clutch O-ring*
    c. *Foreign matter stuck in clutch check valve*
    d. *Worn or damaged sealing rings.*
    e. *Worn or burnt clutch disc.*
14. *Damaged reverse gear*
15. *Faulty governor valve*
16. *ATF level too high*
17. *Burnt or seized torque convertor one-way clutch*
18. *Improperly adjusted throttle cable at carburetor*
19. *Improperly adjusted throttle control cable at automatic transmission*
20. *Defective throttle valve A*
21. *Defective throttle valve B*
22. *Defective 1–2 shift valve*
23. *Defective 2–3 shift valve*
24. *Defective 3–4 shift valve*
25. *Defective second accumulator*
26. *Defective third accumulator*
27. *Defective fourth accumulator*
28. *Defective second orifice control valve*
29. *Foreign matter stuck in main orifice*
30. *Foreign matter stuck in first orifice*
31. *Foreign matter stuck in second orifice*
32. *Defective third orifice control valve*
33. *Foreign matter stuck in third orifice*
34. *Foreign matter stuck in fourth orifice*
35. *Defective third clutch*
    a. *Stuck clutch piston*
    b. *Damaged clutch O-ring*
    c. *Foreign matter stuck in clutch check valve*
    d. *Damaged clutch feed pipe or O-ring*
    e. *Worn or burnt clutch disc.*
36. *Defective fourth clutch*
    a. *Stuck clutch piston*
    b. *Damaged clutch O-ring*
    c. *Foreign matter stuck in clutch check valve*
    d. *Worn or damaged sealing rings*
    e. *Worn or burnt clutch disc.*
37. *Lack of engine power*
38. *Burnt needle bearing*
39. *Burnt thrust washer*
40. *Improper clutch clearance*
41. *Torque convertor not fully seated, causing flex plate to deform*
42. *No 2nd ball check valve*
43. *No 3rd ball check valve*
44. *No 4th ball check valve*
45. *Damaged mainshaft ball bearing and/or countershaft ball bearing.*
46. *Oil filter clogged*
47. *Cable housing damaged*
48. *Defective modulator valve*
49. *Faulty torque convertor check valve*
50. *Foreign matter stuck in separator port orifice*
51. *Defective pressure control timing valve*
52. *Defective governer cut valve*
53. *Defective pressure control shift valve*
54. *Defective lock-up piston*
55. *Defective lock-up piston damper spring*
56. *Defective CPC valve*
57. *Defective pressure control valve*

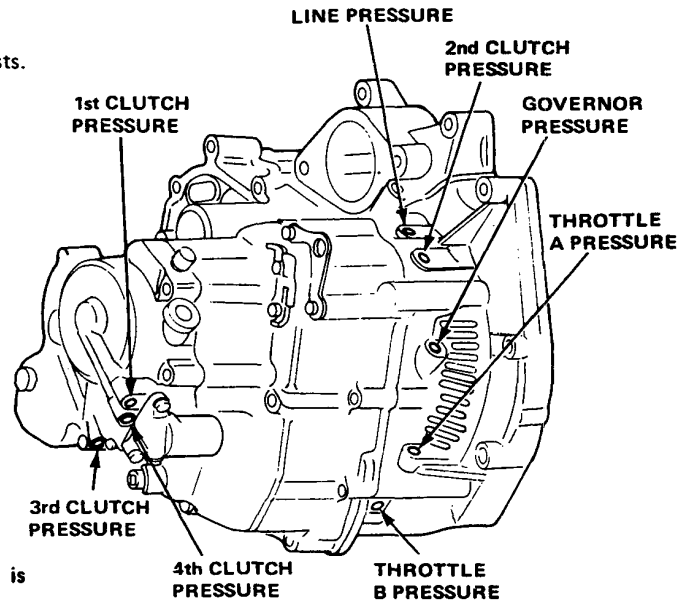
Pressure Test

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.

GAUGE SET 07406-0020002
(includes pressure hose set 07406-0020201)





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

PRESSURE	SELECTOR POSITION	MEASUREMENT	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
					SPECIFICATION	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 converter check valve.	784–833 kPa (8.0–8.5 kg/cm^2, 114–121 psi)	735 kPa (7.5 kg/cm^2, 107 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	784–833 kPa (8.0–8.5 kg/cm^2, 114–121 psi)	735 kPa (7.5 kg/cm^2, 107 psi)
2nd	[2]		No (or low) SECOND pressure	2nd clutch	539–833 kPa (5.5–8.5 kg/cm^2, 64–121 psi) Varies with throttle openings.	498 kPa (5.0 kg/cm^2, 71 psi) with lever released. 735 kPa (7.5 kg/cm^2, 107 psi) with lever in full throttle.
3rd	[D3]		No (or low) THIRD pressure	3rd clutch		
4th	[D4]		No (or low) FORTH 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 released. 505–519 kPa (5.15–5.3 kg/cm^2, 73–75 psi) with lever in full throttle position.	500 kPa (5.1 kg/cm^2, 72 psi)
				Throttle valve B.	0 kPa (0 kg/cm^2, 0 psi) with lever released. 784–833 kPa (8.0–8.5 kg/cm^2, 114–121 psi) with lever in full throttle position	735 kPa (7.5 kg/cm^2, 107 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 (38 mph).	No (or low) Governor pressure.	Governor valve	216–225 kPa (2.2–2.3 kg/cm^2, 31–33 psi)	211 kPa (2.15 kg/cm^2, 29 psi)

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 accelerator for 6 to 8 seconds, and note engine speed.
5. Allow 2 minutes for cooling, then repeat same test in [D4], [2] and Reverse.

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

Stall Speed RPM:
Specification: 2,400 min^{-1} (rpm)
Service Limit: 2,100–2,700 min^{-1} (rpm)

KY type only:
Specification: 2650 min^{-1} (rpm)
Service Limit: 2,100–2,700 rpm

CAUTION: Do not test stall speed for more than 10 seconds at a time.

TROUBLE	PROBABLE CAUSE
Stall rpm high in [2], [D3], [D4] & R.	Low fluid level or oil pump output, clogged oil strainer, pressure regulator, slipping one-way clutch in torque convertor. 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 mis-adjusted at carburetor. · Oil pump seized, torque convertor thrust washer seized.

Maintenance

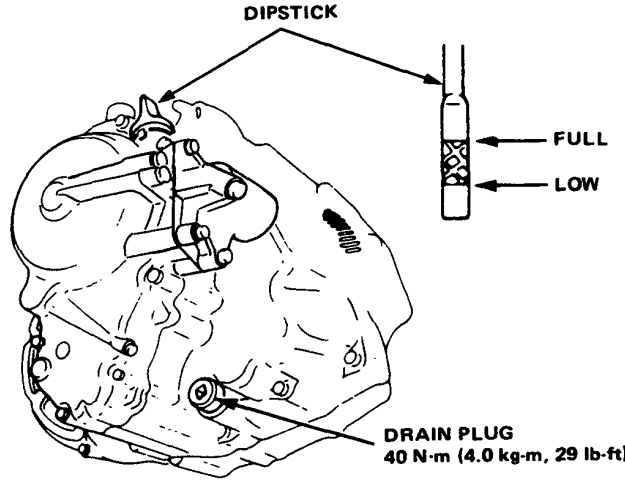
Checking

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 full and low marks. If the level is at, or below, the low mark, add DEXRON-type automatic transmission fluid. Do not screw dipstick in to check the fluid level.

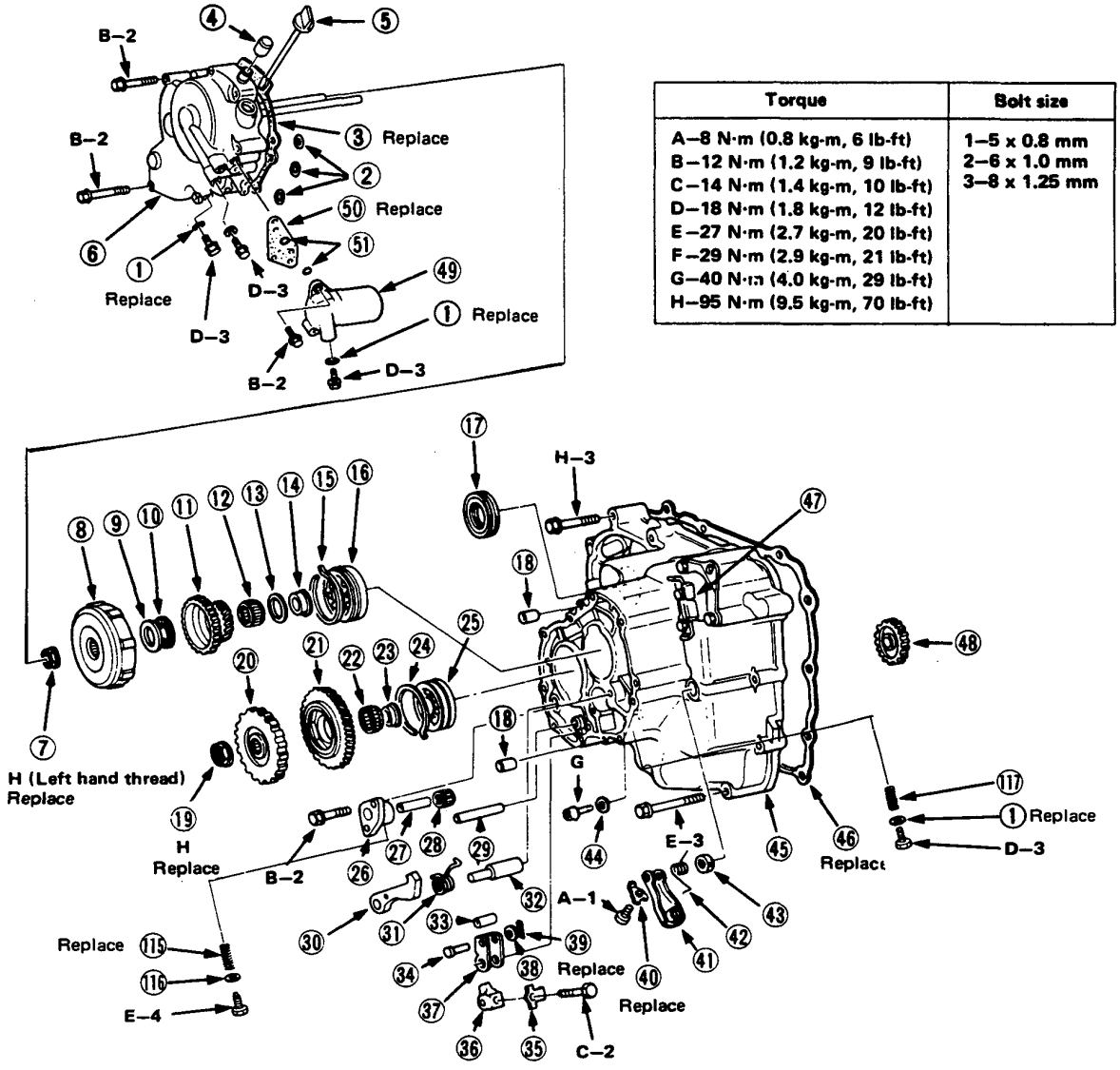
Changing

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:
2.8 ℓ (3.0 U.S. qts., 2.5 Imp. qt) at change
5.6 ℓ (5.9 U.S. qts., 4.9 Imp. qt) after overhaul



Illustrated Index



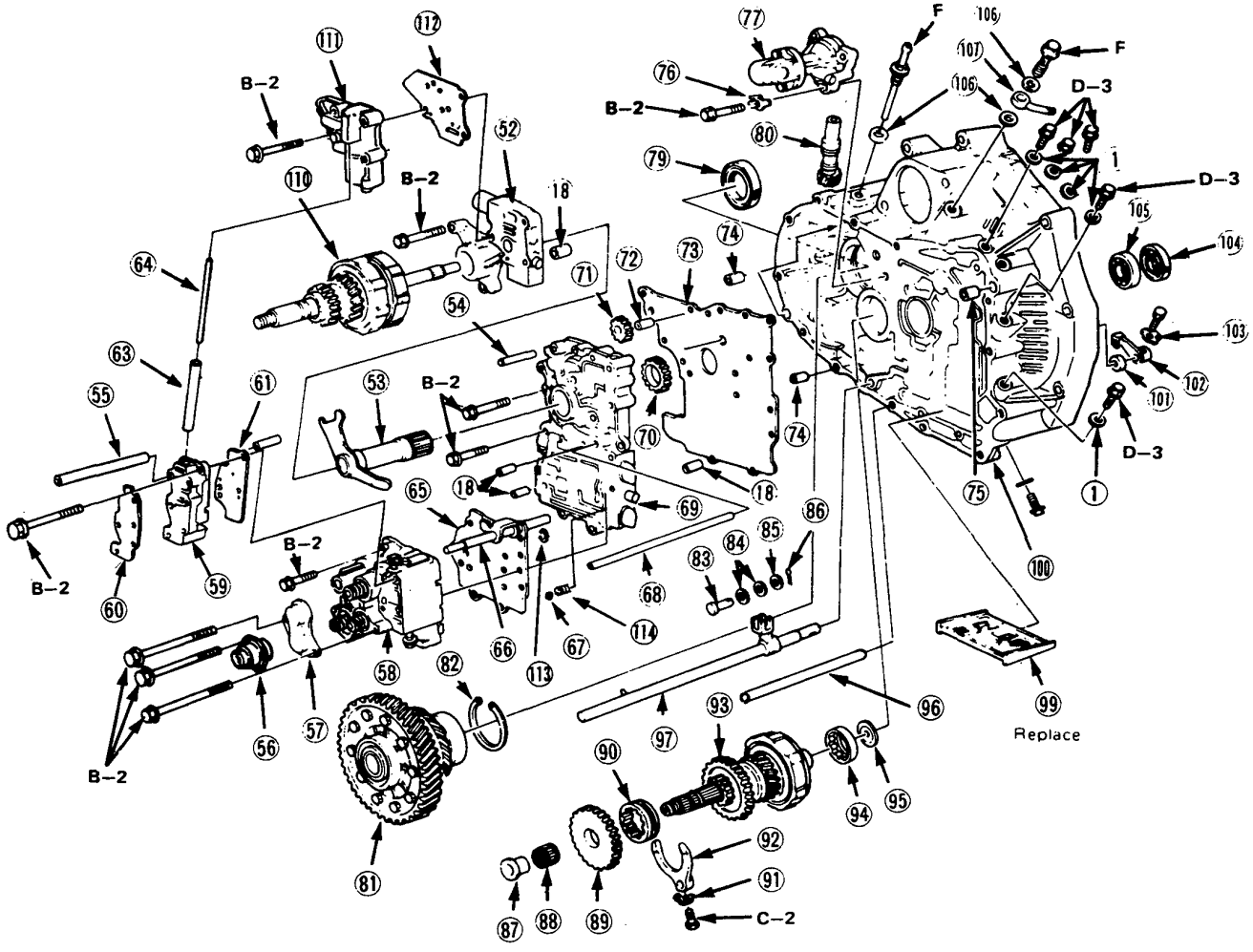
Torque	Bolt size
A–8 N·m (0.8 kg-m, 6 lb-ft) B–12 N·m (1.2 kg-m, 9 lb-ft) C–14 N·m (1.4 kg-m, 10 lb-ft) D–18 N·m (1.8 kg-m, 12 lb-ft) E–27 N·m (2.7 kg-m, 20 lb-ft) F–29 N·m (2.9 kg-m, 21 lb-ft) G–40 N·m (4.0 kg-m, 29 lb-ft) H–95 N·m (9.5 kg-m, 70 lb-ft)	1–5 x 0.8 mm 2–6 x 1.0 mm 3–8 x 1.25 mm

① WASHER 8 mm
② O-RING 6 x 2.3 mm
③ GASKET
④ BREATHER CAP
⑤ DIPSTICK
⑥ END COVER
⑦ LOCKNUT
⑧ 1st CLUTCH
⑨ THRUST WASHER 26 mm
⑩ THRUST NEEDLE BEARING 31 x 47 x 2 mm
⑪ MAINSHAFT 1st GEAR
⑫ NEEDLE BEARING 31 x 36 x 18.5 mm
⑬ THRUST WASHER
⑭ COLLAR 26 mm
⑮ SNAP RING 68 mm
⑯ MAINSHAFT BEARING
⑰ DIFFERENTIAL OIL SEAL
⑱ DOWEL PIN 8 x 14 mm
⑲ LOCKNUT
⑳ PARKING GEAR
㉑ COUNTERSHAFT 1st GEAR
㉒ NEEDLE BEARING 30 x 35 x 11 mm
㉓ 1st GEAR COLLAR
㉔ SNAP RING 62 mm
㉕ COUNTERSHAFT BEARING
㉖ REVERSE IDLER BEARING HOLDER
㉗ REVERSE IDLER SHAFT
㉘ NEEDLE BEARING
㉙ STOP PIN
㉚ PARKING PAWL
㉛ PARKING PAWL SPRING
㉜ PARKING PAWL SHAFT
㉝ PARKING PAWL ROLLER
㉞ ROLLER PIN
㉟ LOCK PLATE
㊱ PARKING LEVER
㊲ PARKING SHIFT ARM
㊳ WASHER 5 mm
㊴ COTTER PIN
㊵ LOCK PLATE
㊶ THROTTLE CONTROL LEVER
㊷ THROTTLE CONTROL SHAFT SPRING
㊸ THROTTLE CONTROL SHAFT SEAL
㊹ DRAIN PLUG WASHER
㊺ TRANSMISSION HOUSING
㊻ GASKET
㊼ THROTTLE CONTROL CABLE BRACKET
㊽ REVERSE IDLER GEAR
㊾ 1st ACCUMULATOR
㊿ GASKET
(51) O-RING 6 x 2.3 mm

(cont'd)

Automatic Transmission

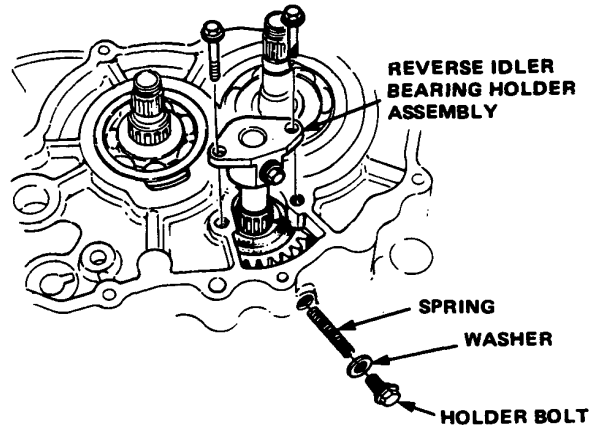
Index (cont'd)



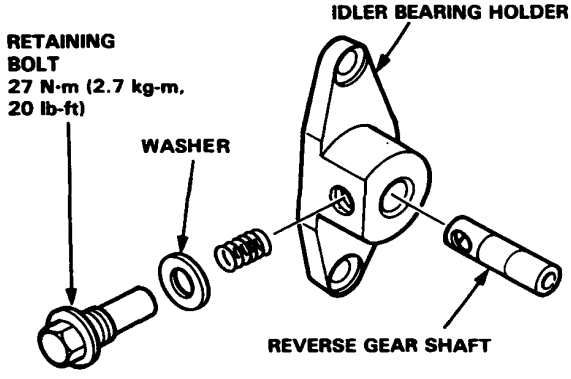
(52) REGULATOR ASSY
(53) STATOR SHAFT
(54) 3rd CLUTCH PIPE
(55) 4th CLUTCH PIPE
(56) 4th ACCUMULATOR COVER
(57) 2nd/3rd ACCUMULATOR COVER
(58) SERVO VALVE ASSY
(59) CLUTCH PRESSURE CONTROL VALVE
(60) COVER
(61) PLATE
(63) 8 x 136 mm PIPE
(64) 5 x 168 mm PIPE
(65) SERVO SEPARATOR PLATE
(66) THROTTLE CONTROL SHAFT
(67) STEEL BALLS NO. 6
(68) 1st CLUTCH PIPE
(69) MAIN VALVE BODY
(70) PUMP DRIVE GEAR
(71) PUMP DRIVEN GEAR
(72) PUMP SHAFT
(73) MAIN VALVE SEPARATOR PLATE
(74) DOWEL PIN 14 x 25 mm
(75) DOWEL PIN 14 x 20 mm
(76) LOCK PLATE
(77) GOVERNOR ASSY
(79) DIFFERENTIAL OIL SEAL
(80) SPEEDOMETER DRIVE GEAR
(81) DIFFERENTIAL
(82) SNAP RING 72 mm
(83) MANUAL VALVE PIN
(84) ROLLERS
(85) WASHER 5 mm
(86) COTTER PIN
(87) REVERSE GEAR COLLAR
(88) NEEDLE BEARING
(89) COUNTERSHAFT REVERSE GEAR
(90) SELECTOR HUB
(91) LOCK PLATE
(92) REVERSE SHIFT FORK
(93) COUNTERSHAFT ASSY
(94) COUNTERSHAFT NEEDLE BEARING
(95) OIL GUIDE PLATE
(96) SUCTION PIPE
(97) CONTROL SHAFT
(99) FILTER SCREEN
(100) TORQUE CONVERTOR HOUSING
(101) CONTROL SHAFT OIL SEAL
(102) SHIFT LEVER
(103) LOCK PLATE
(104) MAINSHAFT OIL SEAL
(105) MAINSHAFT BEARING
(106) WASHER 12 mm
(107) HOSE JOINT
(108) 8 x 29.5 mm PIPE
(109) 8 x 50 mm PIPE
(110) MAINSHAFT/ASSY
(111) PRESSURE VALVE
(112) CONTROL VALVE SEPARATOR PLATE
(113) E-CLIP
(114) SPRING
(115) SPRING
(116) WASHER 8 mm
(117) SPRING

Reverae Idler Bearing Holder Removal

1. Remove the holder bolt, washer and spring.
2. Remove the two bolts and then remove the idle gear bearing holder and needle bearing.



3. Remove the shaft holder bolt, washer and spring then pull out idle gear shaft.

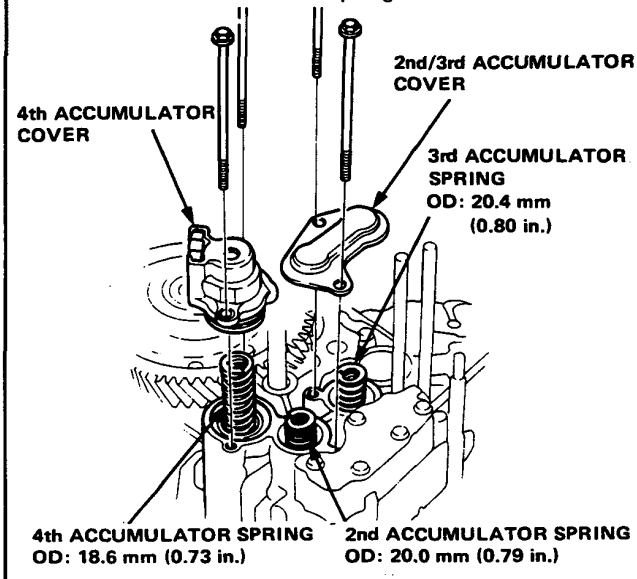


Servo Valve Body Removal

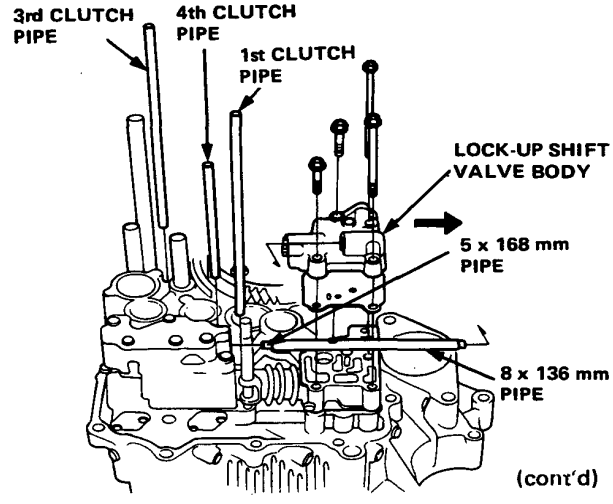
1. Remove the accumulator covers.

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

2. Remove the accumulator springs.



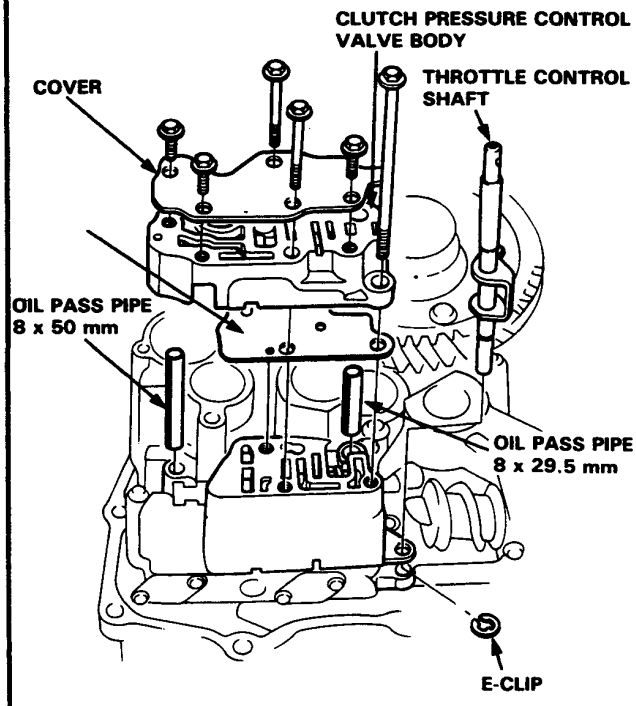
3. Remove the three bolts attaching the lock-up shift valve body.
4. Remove the oil pipes (5 x 168 mm and 8 x 136 mm) by removing the lock-up shift valve body in the direction of arrow.
5. Remove the 1st, 3rd and 4th clutch pipes.



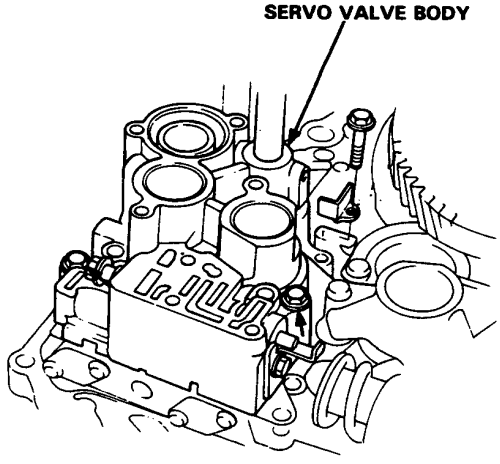
(cont'd)

Servo Valve Body Removal (cont'd)

6. Remove the clutch pressure control valve body.
7. Remove the oil pass pipes (8 x 29.5 mm and 8 x 50 mm).
8. Remove the E-clip from the throttle control shaft, then remove the throttle control shaft.

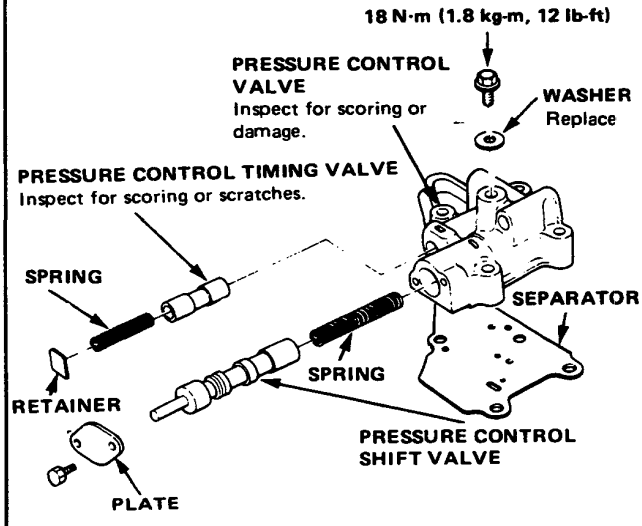


9. Remove the servo valve body (3 bolts) and stopper cap for check valve.



Pressure control valve Disassembly/ Inspection

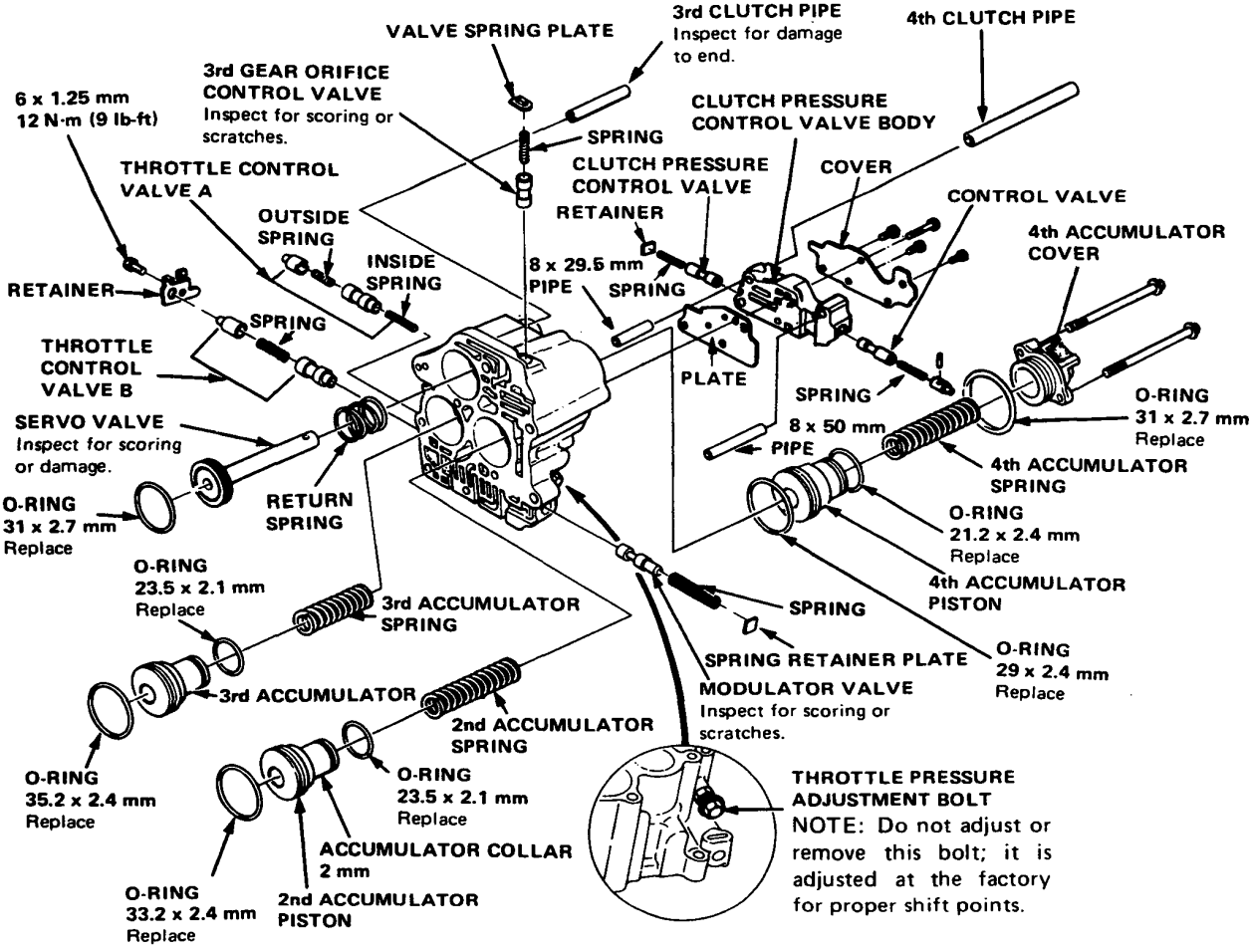
- Clean all parts thoroughly in carburetor cleaner, and dry with compressed air. Blow out all passages.



Servo Disassembly/Inspection/Reassembly

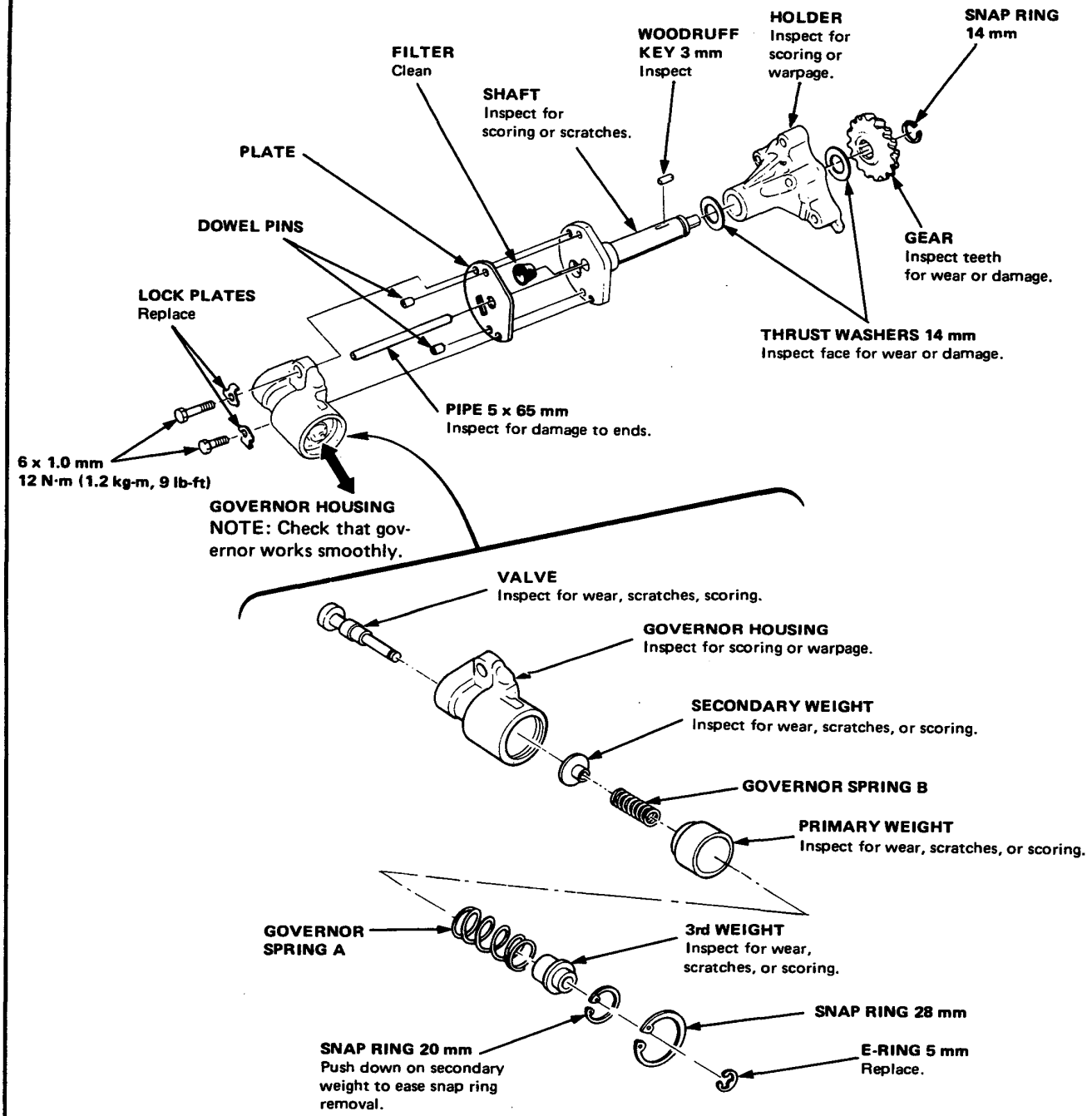
- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check all valves for free movement.
- See page 3-8 for any spring specifications which are not listed below.

Servo valve return spring.
Standard: 40.3 mm (1.59 in.)
Service Limit: 36.7 mm (1.44 in.)
2nd Accumulator spring.
Standard: 81.2 mm (3.20 in.)
Service Limit: 80.0 mm (3.15 in.)
3rd Accumulator spring.
Standard: 88.1 mm (3.47 in.)
Service Limit: 86.5 mm (3.41 in.)
4th Accumulator spring.
Standard: 96.4 mm (3.80 in.)
Service Limit: 94.4 mm (3.72 in.)



Governor Disassembly/Inspection/Ressembly

- 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.

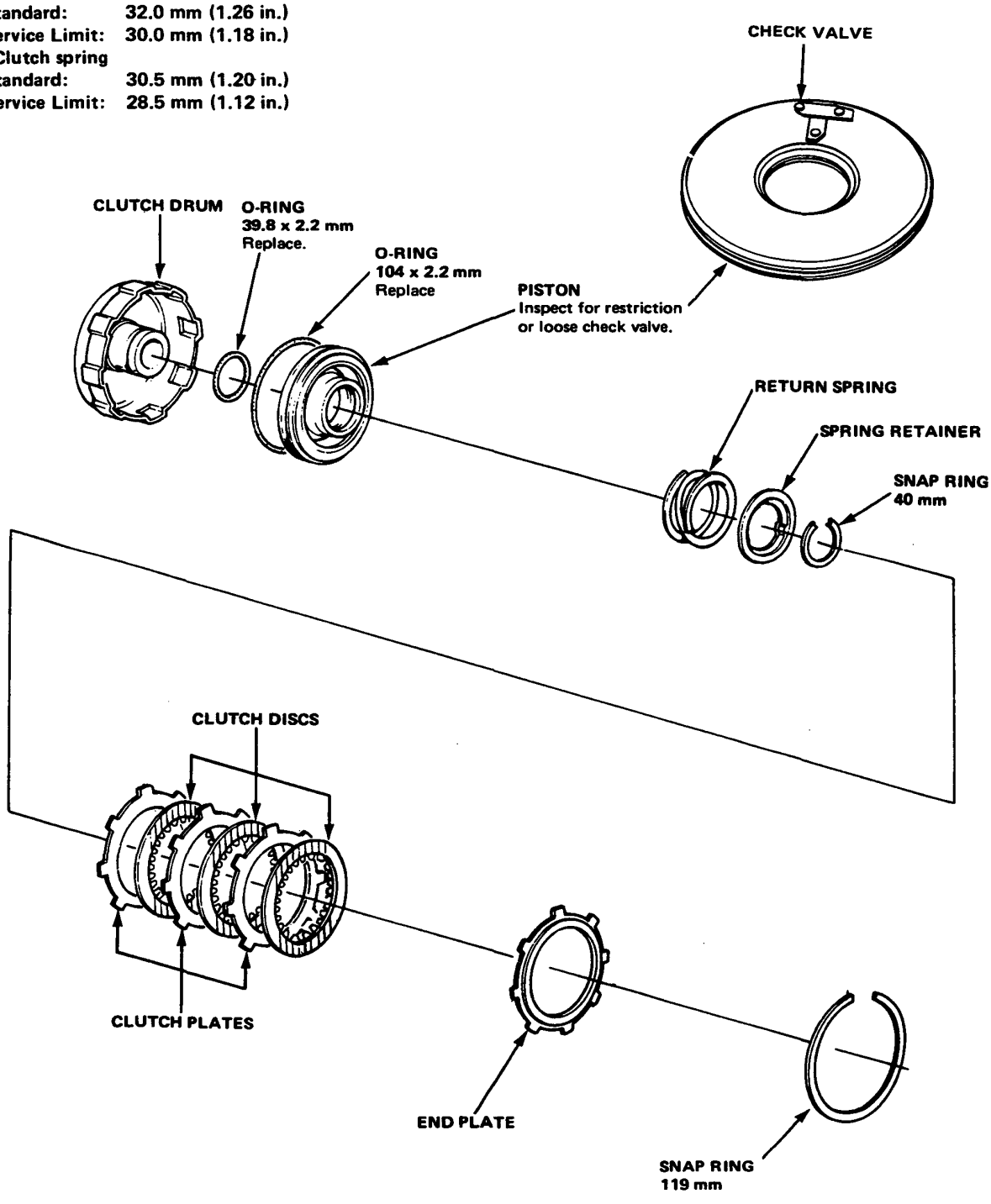


Clutch Disassembly/Inspection

1st and 3rd Clutches

1st Clutch spring
- **Standard:** 32.0 mm (1.26 in.)
- **Service Limit:** 30.0 mm (1.18 in.)

3rd Clutch spring
- **Standard:** 30.5 mm (1.20 in.)
- **Service Limit:** 28.5 mm (1.12 in.)

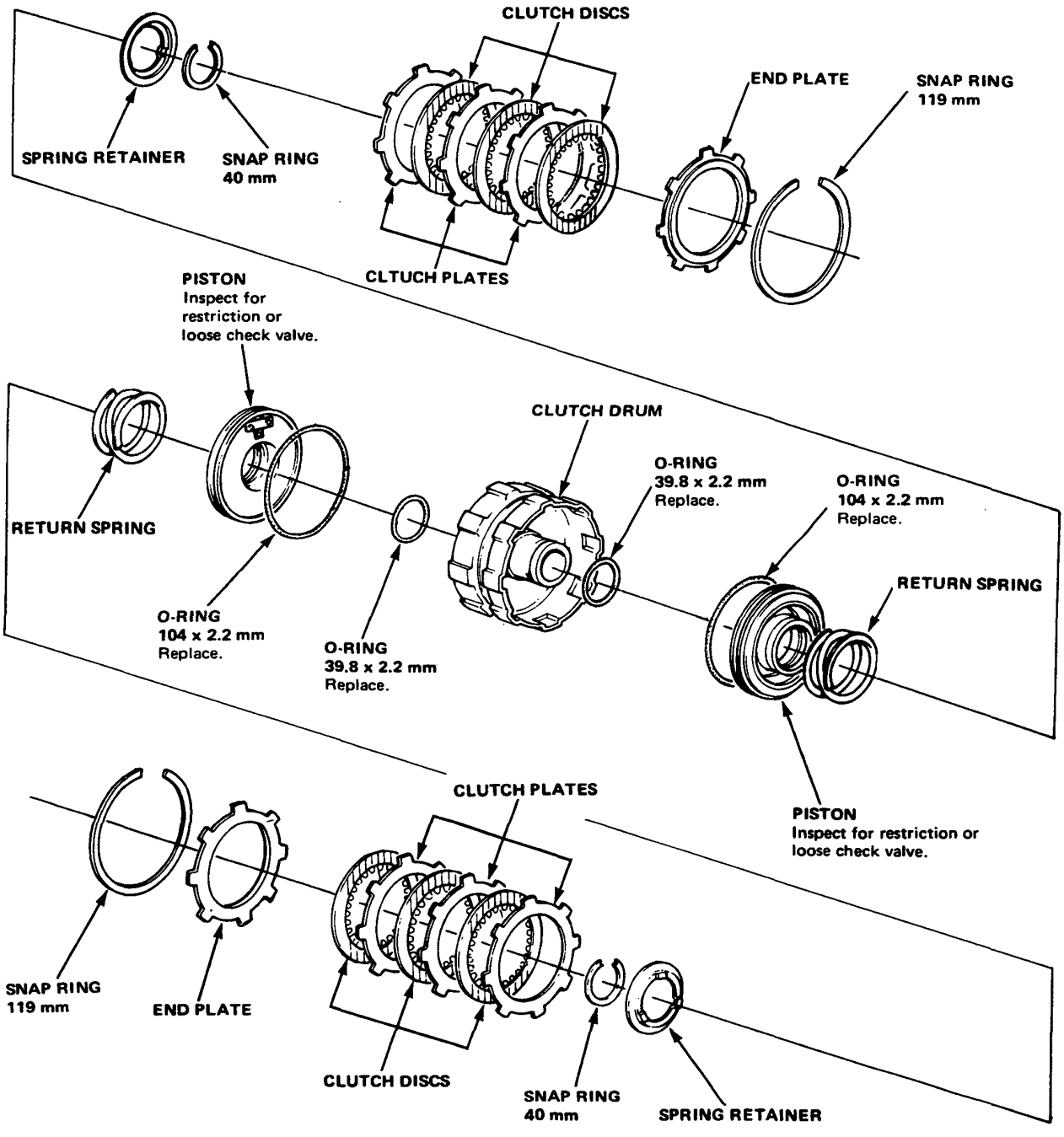


(cont'd)

Clutch Disassembly/Inspection (cont'd)

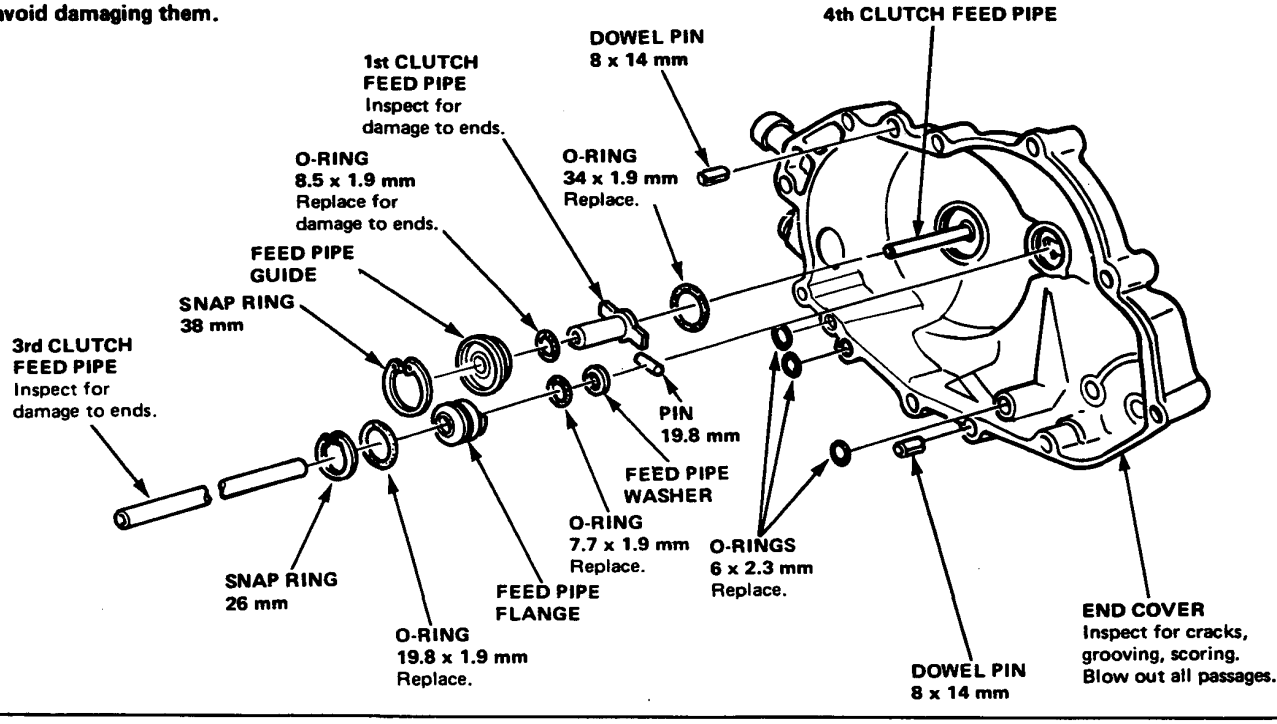
2nd/4th Clutch

2nd and 4th Clutch springs
Standard: 30.5 mm (1.20 in.)
Service Limit: 28.5 mm (1.12 in.)



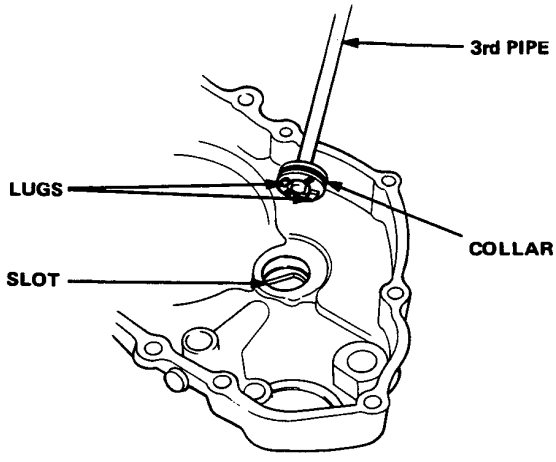
End Cover Disassembly/Inspection

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



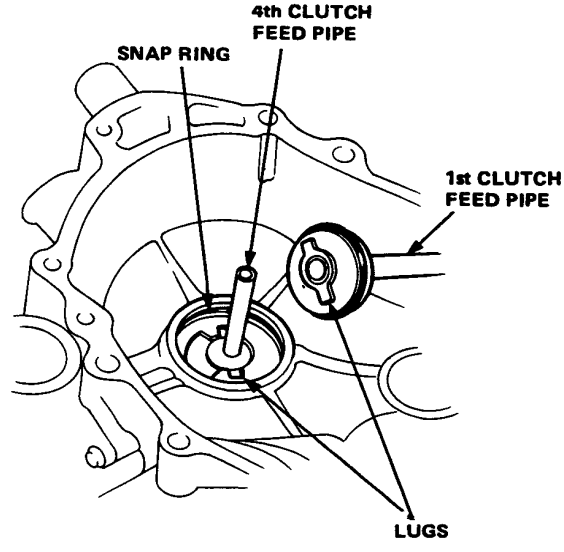
End Cover Reassembly

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



2. Install the snap ring.

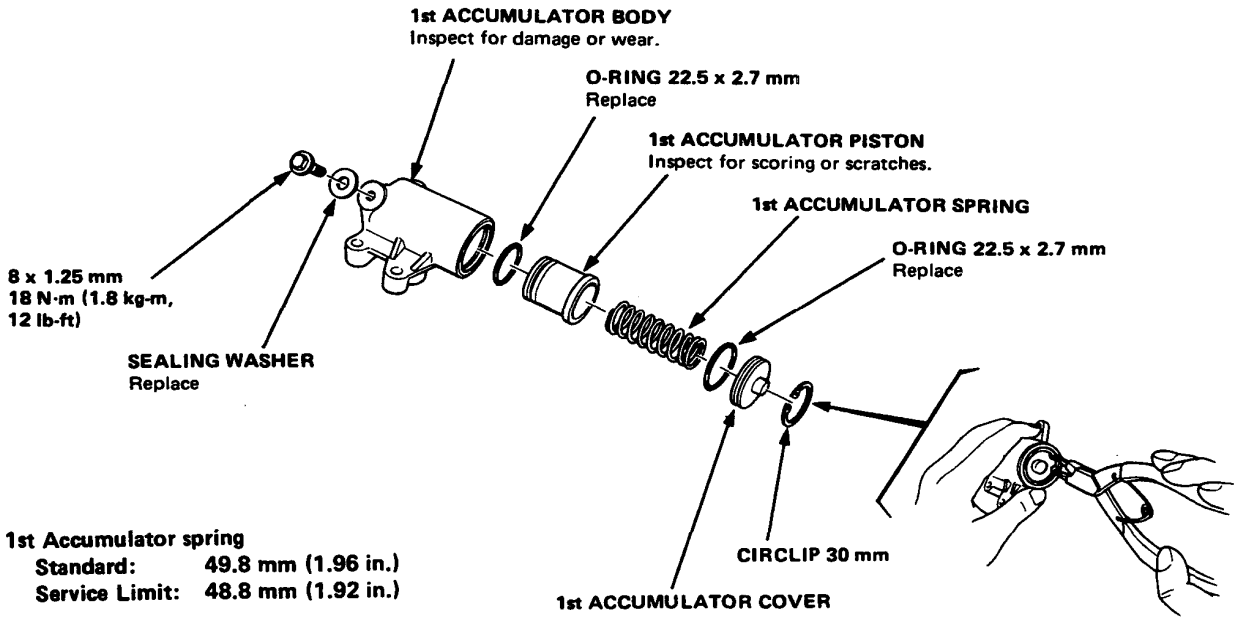
3. Install the feed pipes in the end cover, aligning the lugs of the 1st clutch feed pipe with the grooves of the end cover.



4. Install the snap ring.

1st Accumulator Disassembly/Inspection

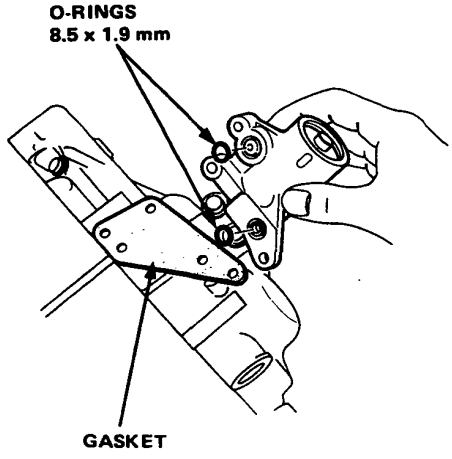
NOTE: 1st accumulator assembly can be removed with the engine installed.



1st Accumulator spring
Standard: 49.8 mm (1.96 in.)
Service Limit: 48.8 mm (1.92 in.)

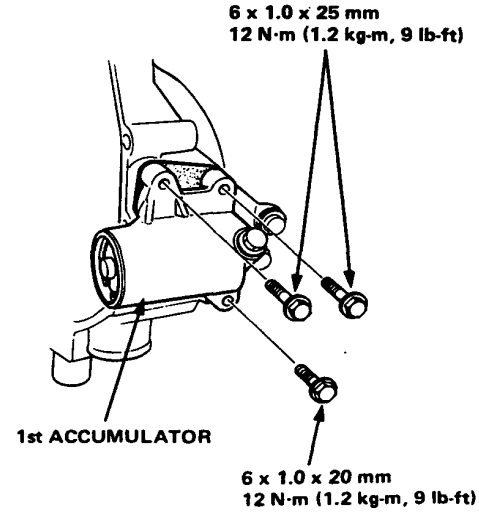
1st Accumlator Installation

1. Place a new gasket onto the end cover.
2. Set new O-rings (8.5 x 1.9 mm) onto the 1st accumulator body.



3. Install the 1st accumulator onto the end cover, then tighten the 6 mm bolts.

NOTE: Make sure that the gasket and O-rings are in place.



Countershaft/Mainshaft Clearance Measurements

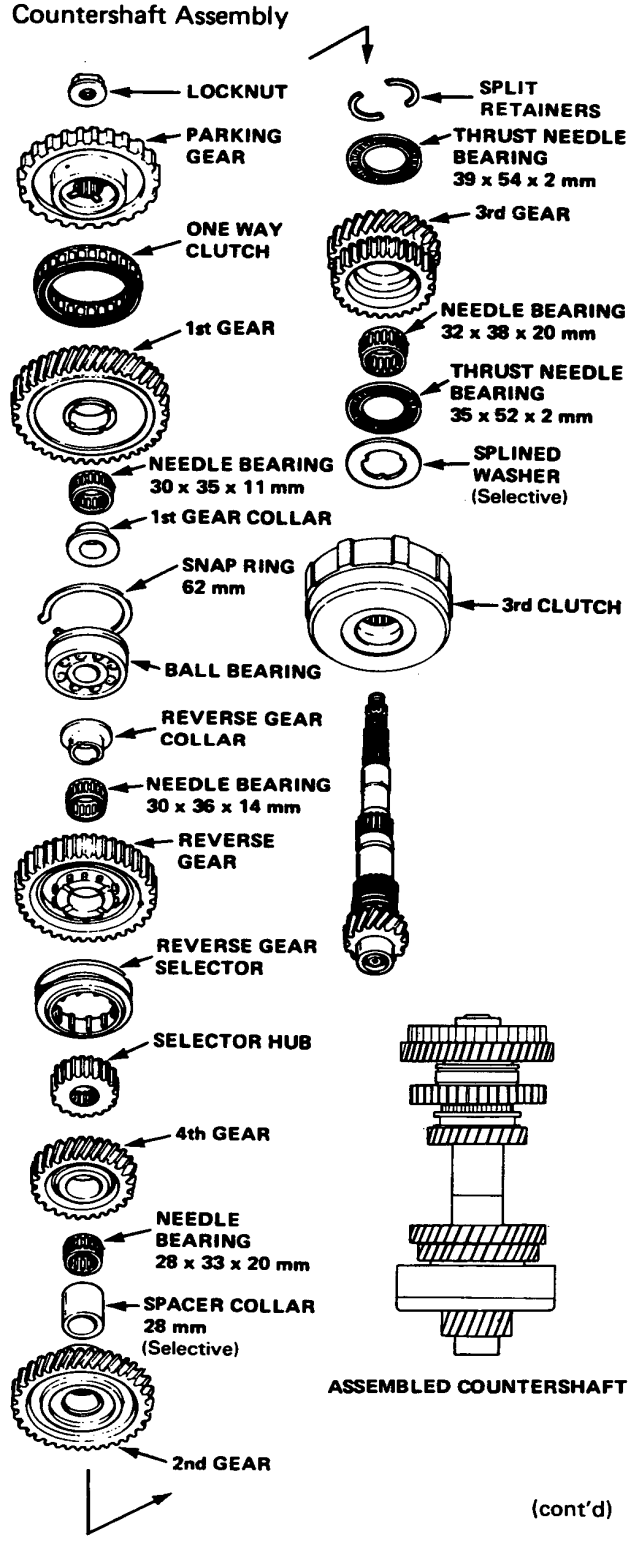
1. Remove both the mainshaft and countershaft bearings from the transmission housing.
2. Assemble the mainshaft and the countershaft including bearings and all parts shown below.

   NOTE: On all thrust needle bearings, the unrolled edge of the bearing cage faces the thrust washer.

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.

   Lubricate all parts with ATF before final re-assembly.

Countershaft Assembly

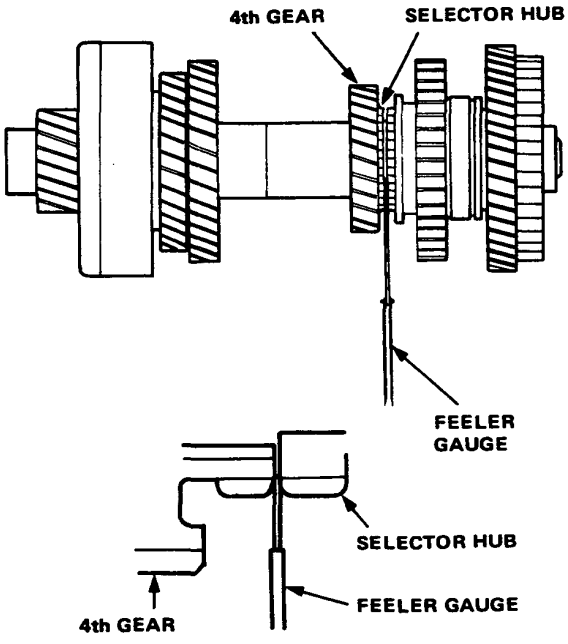


(cont'd)

Countershaft/Mainshaft Clearance Measurements (cont'd)

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.)



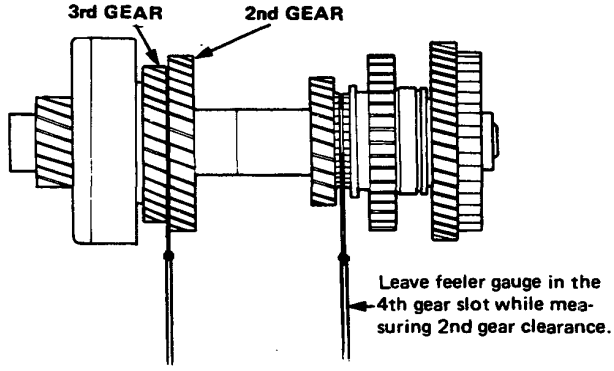
If clearance exceeds the service limit, measure the thickness of the spacer collar and select one which gives correct clearance.
Replacement spacer collars:

CLASS	P/N	THICKNESS
A	90503–PC9–000	38.97–39.00 mm (1.534–1.535 in.)
B	90508–PC9–000	39.02–39.05 mm (1.536–1.537 in.)
C	90504–PC9–000	39.07–39.10 mm (1.538–1.539 in.)
D	90509–PC9–000	39.12–39.15 mm (1.540–1.541 in.)
E	90505–PC9–000	39.17–39.20 mm (1.542–1.543 in.)
F	90510–PC9–000	39.22–39.25 mm (1.544–1.545 in.)
G	90507–PC9–000	39.27–39.30 mm (1.546–1.547 in.)

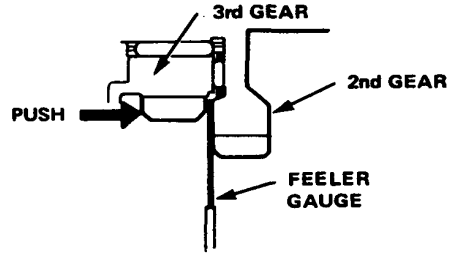
NOTE: Leave feeler gauge in place (4th gear) while measuring 2nd gear clearance.

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.



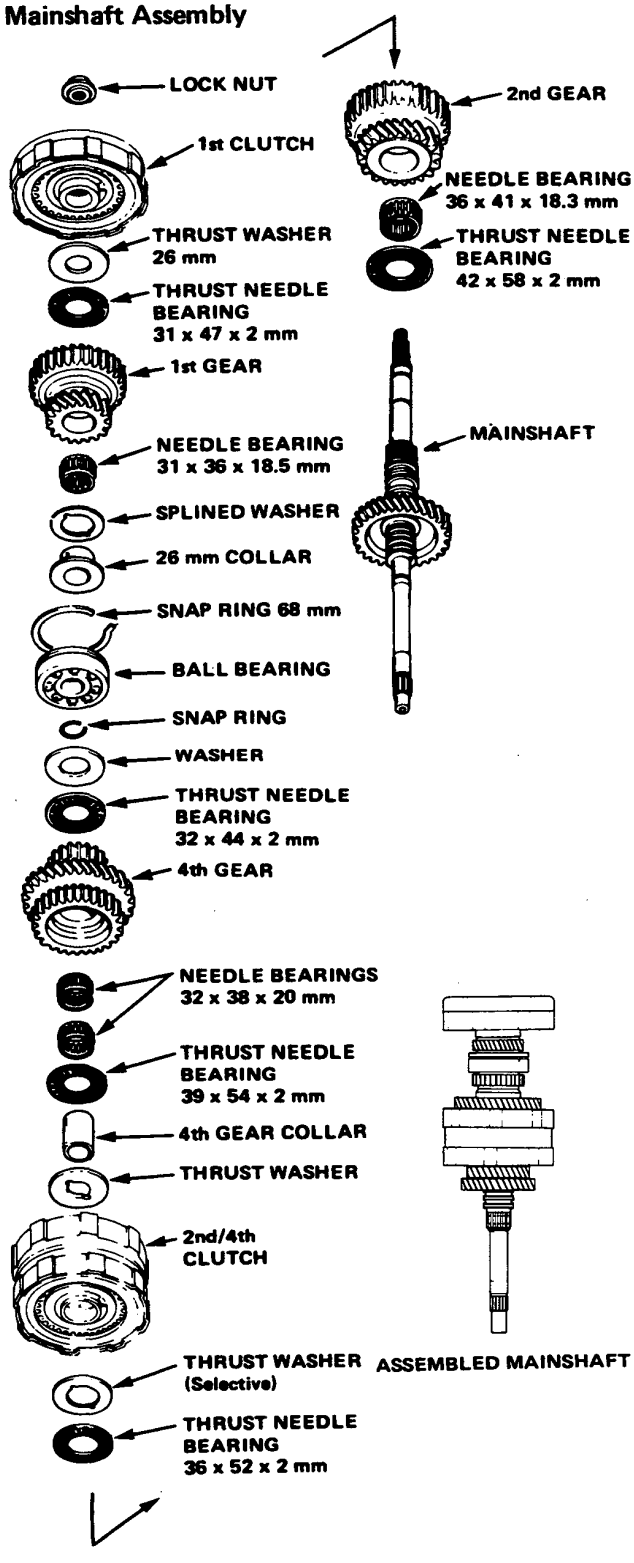
- Slide the 3rd gear in fully and again measure the clearance between the 2nd and 3rd gears with another feeler gauge.
- Calculate the difference between the two readings to determine the actual clearance between the two gears.



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–PA9–010	2.97–3.00 mm (0.117–0.118 in.)
B	90412–PA9–010	3.02–3.05 mm (0.119–0.120 in.)
C	90413–PA9–010	3.07–3.10 mm (0.121–0.122 in.)
D	90414–PA9–010	3.12–3.15 mm (0.123–0.124 in.)
E	90415–PA9–010	3.17–3.20 mm (0.125–0.126 in.)
F	90418–PA9–000	3.22–3.25 mm (0.127–0.128 in.)
G	90419–PA9–000	3.27–3.30 mm (0.129–0.130 in.)
H	90420–PA9–000	3.32–3.35 mm (0.131–0.132 in.)
I	90421–PA9–000	3.37–3.40 mm (0.133–0.134 in.)

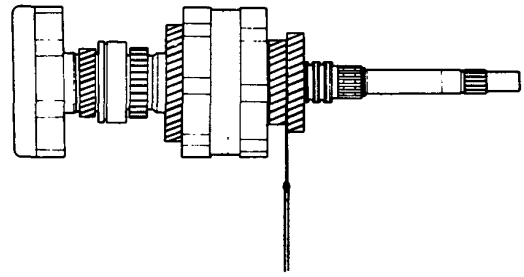
Mainshaft Assembly



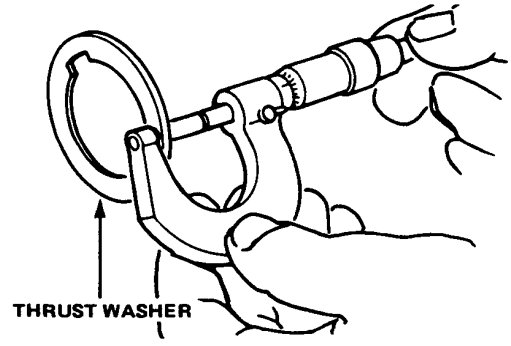
NOTE: Make all measurements before changing the thrust washers. Recheck after making the adjustments.

10. On the mainshaft measure the clearance between the shoulder of 2nd gear and main 3rd gear.

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.)

Reverse Idler Gear Installation

1. Assemble the idler bearing holder.

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

2. Install the reverse idler gear.

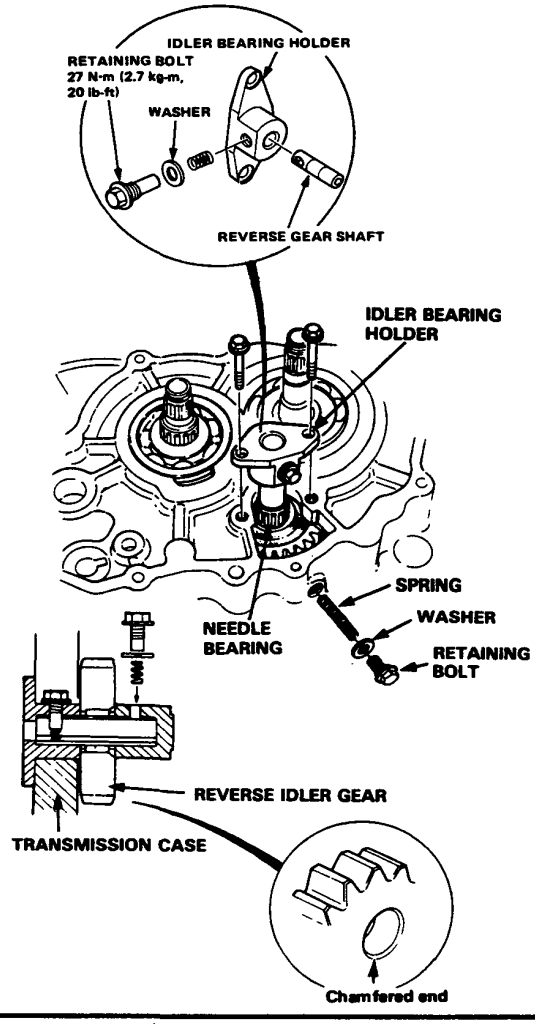
   NOTE: Install the reverse idler gear so that the larger chamfer on the shaft bore faces the torque converter housing.

3. Install the needle bearing into the idler gear.

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

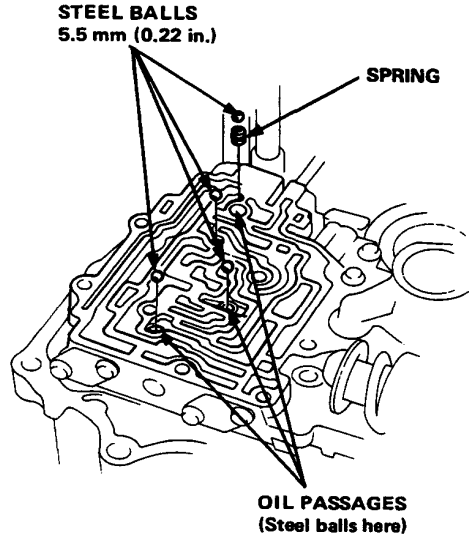
5. Tighten the reverse idler bearing holder bolts.

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



Main Valve Body Installation

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

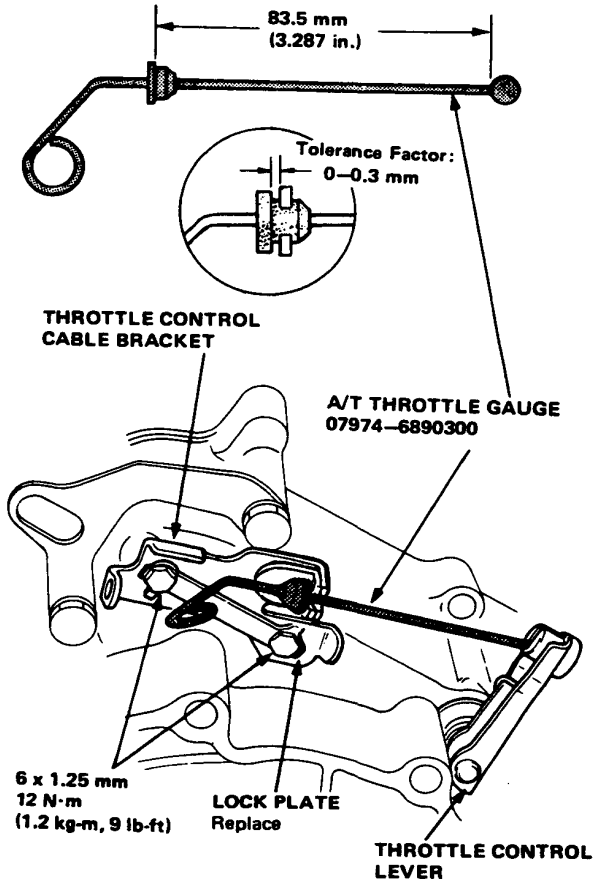


Throttle Control Cable Bracket Adjustment

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.



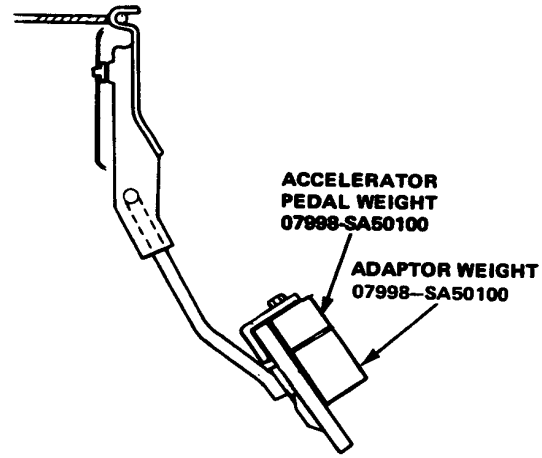
Throttle Control Cable Adjustment/Inspection

NOTE: Perform the following inspections before adjusting the throttle control 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.**
  750 ± 50 rpm
- **The distance between the throttle control lever and the throttle control bracket is correct.**
  See page 15-13.

1. With the engine off, disconnect the throttle control cable from the throttle control lever.
2. Attach a weight of about 1.5 kg (3 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.



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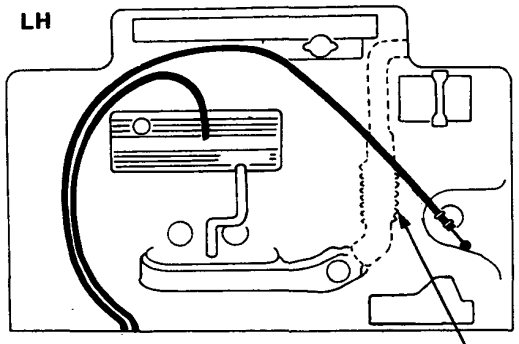
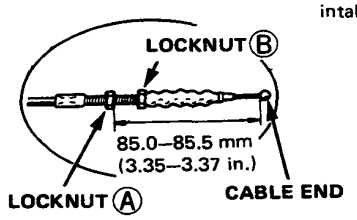
Throttle Control Cable Adjustment/Inspection (cont'd)

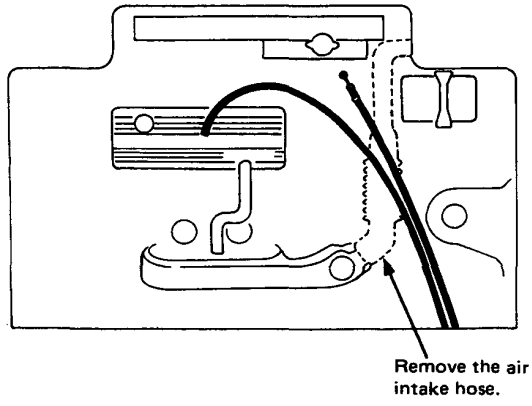
3. Secure the throttle control cable with clamps as shown.

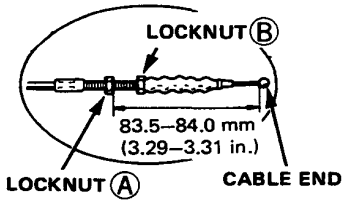
LH





R/H

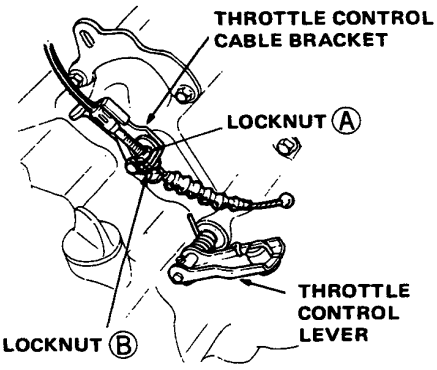




4. L/H: Lay the end of the throttle control cable to the dash board.
   R/H: Lay end of the throttle control cable to the radiator cap.

5. Adjust the distance between the throttle control cable end and nut (A) to specified length see above.

6. Insert the end of throttle control cable in the groove of the throttle control lever.

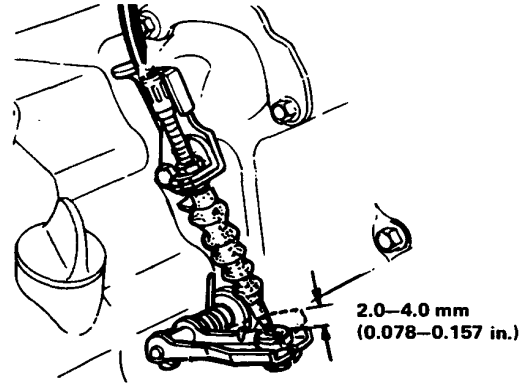


7. Insert the throttle control cable in the bracket and secure with locknut (B).

   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 locknut A counter clockwise and tighten locknut B.
    - If the throttle control lever moves after engine speed increases, turn locknut A clockwise and tighten the locknut B.

Road Test

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 throttle lever is fully opened.
- Release accelerator pedal and check both inner control cables to be sure they have slight play.

Warm up 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 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	58–65	96–103	148–156	149–155
	Mil/h	35–40	59–65	92–98	93–98
Half-throttle Acceleration from a stop	Km/h	27–33	56–63	79–89	83–90
	Mil/h	18–22	38–44	57–64	59–65
Closed-throttle Coasting down-hill from a stop	Km/h	19–23	35–40	41–48	49–54
	Mil/h	11–14	22–25	25–31	31–34

- **Downshift**

		4th → 3rd	3rd → 2nd	2nd → 1st
Full-throttle When car is slowed by increased grade, wind, etc.	Km/h	133–142	85–94	37–45
	Mil/h	83–89	53–58	23–28
Closed-throttle Coasting or braking to a stop	Km/h	—	28–34	8–13
	Mil/h		18–21	5–8

3. Accelerate to about 35 mph so 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.

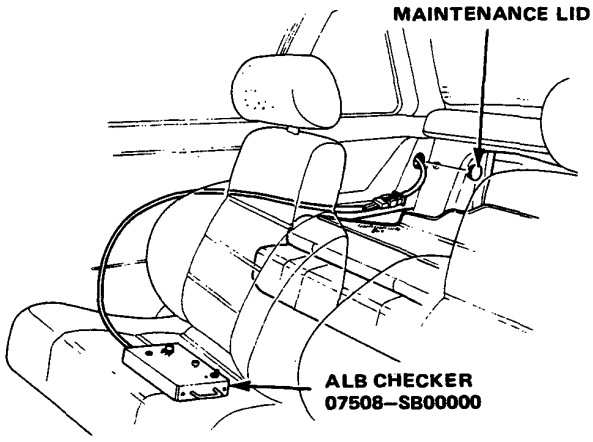
MEMO

Brakes

Functional Test

NOTE:
- Perform the following inspections. The procedures described below are to test each individual function of the system by simulating actual operating conditions.

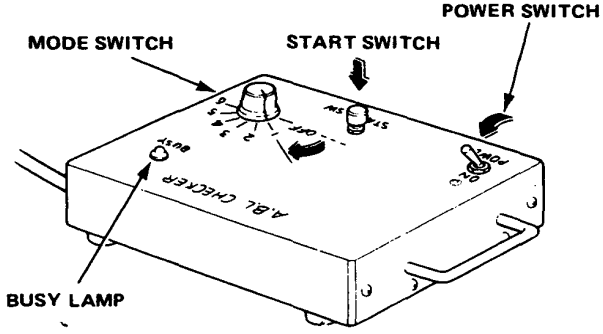
1. Lean the rear seat back forward and remove the maintenance lid on the side garnish. Connect the ALB checker coupler to the 6-P coupler in the side garnish.



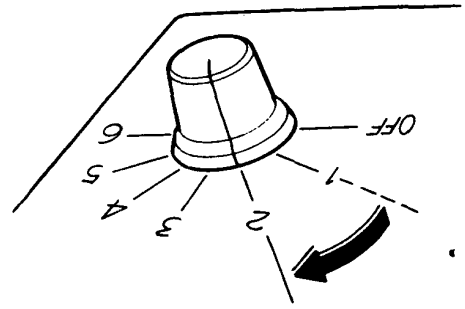
2. Start the engine, depress and release the brake pedal, and release the parking brake lever.

   NOTE: Place the vehicle upright on level ground with the wheels blocked. Put the transmission in neutral for manual transmission models, and in P for automatic transmission models.

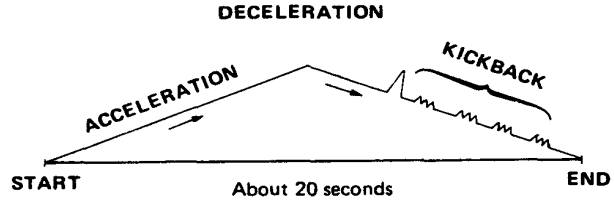
3. Operate the ALB CHECKER as follows:
   1) Turn the power switch ON.



   2) Turn the mode switch to "1".
   3) Press the start switch.
      - The [ALB], [(!)] or [BRAKE] Lamp should not go on while the BUSY Lamp is ON.
      - If the [ALB], [(!)] or [BRAKE] Lamp should go on, follow the steps described in TROUBLESHOOTING (page 21-4).
   4) Lightly pull up parking brake lever to first knotch until parking brake warning lamp is ON.
   5) Turn the mode switch further to "2".



   6) Press the brake pedal down.
   7) Press the start switch.
      - MODE SWITCH POSITIONS 2, 3 and 6.



      - The [ALB] Lamp should not light while the BUSY Lamp is on. There should be kickback on the brake pedal.
      - If otherwise, follow the instructions described in TROUBLESHOOTING (page 21-4).
   8) Rotate the mode switch to "3" and perform the Steps (6) thru (7).
   9) Turn the mode switch to "4".
   10) Press the brake pedal.
   11) Press the start switch
      - The [ALB] Lamp should not light while the BUSY Lamp is on. There should be no kickback on the brake pedal (slight kickback is normal).
   12) Rotate the mode switch to "5" and perform the Steps (10) thru (11).
   13) Turn the mode switch to "6" and perform the Steps (6) thru (7).

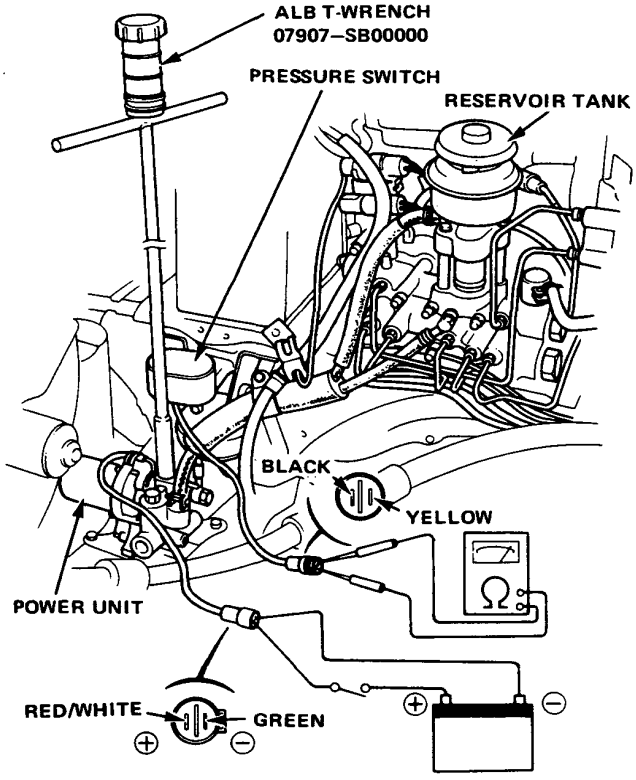
Power Unit Accumulator

Fluid Delivery

NOTE: Perform the following checks should the ALB Light go on due to faults in the high pressure circuits.

Pump delivery

1. Remove the red cap from the bleeder on the pump body.
2. Apply the ALB T-wrench to the bleeder and turn out the bleeder slowly about 90° to let the high pressure brake fluid go up into the wrench reservoir. Turn out the bleeder further one complete turn to aid in complete fluid recovery into the wrench reservoir.
3. Retighten the bleeder screw. Discard the brake fluid in the reservoir.
4. Check that the brake fluid reservoir tank is filled to the proper level.



5. Connect the probes of an ohmmeter to the Black and Yellow terminals of the accumulator pressure switch coupler (pink).
6. Attach the positive (+) lead of a fully charged 12 V battery to the Red/White terminal of the power unit motor wire coupler (yellow), and negative (–) lead to the Green terminal. Hook up a battery switch between the battery positive terminal and Red/White terminal as shown.

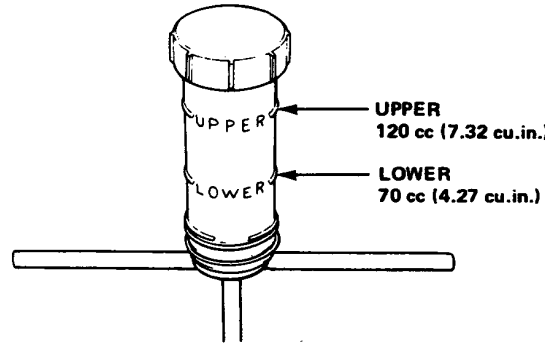
   NOTE: Use only a fully charged 12 V battery.

7. Turn the battery switch on and measure time before the tester shows continuity.

30–60 seconds approx.:	Normal
Less than 30 seconds:	Abnormal Replace pressure switch.
Over 60 seconds:	Abnormal (See Page 21-9)

Accumulator delivery

1. If the pump is normal, operate it further for 4 seconds.
2. Using the ALB T-wrench, again loosen the bleeder.

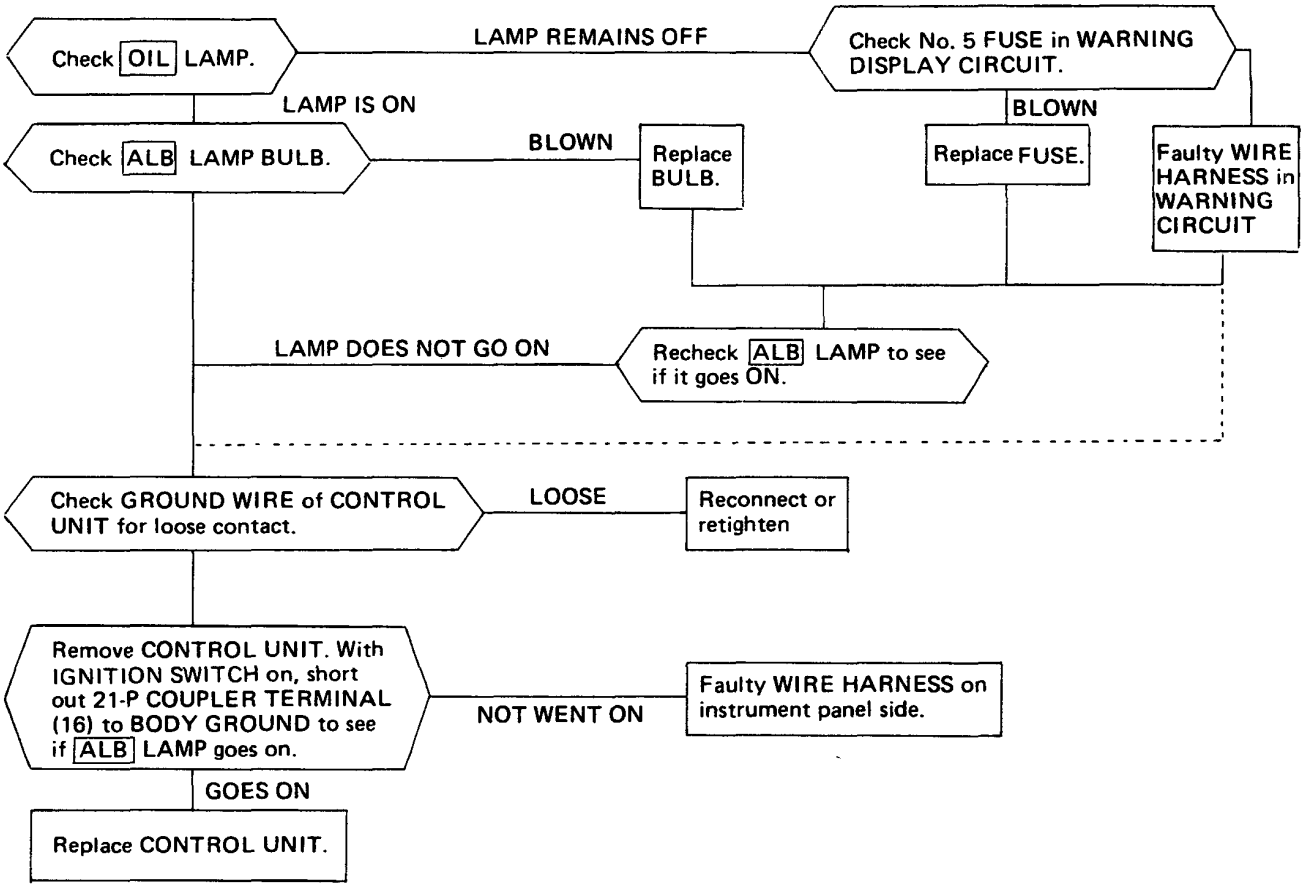


Between UPPER (120 cc, 7.32 cu.in.) and LOWER (70 cc, 4,27 cu.in.):	Normal
Over UPPER level:	Abnormal Replace accumulator.
Below LOWER level:	Abnormal (See Page 21-9)

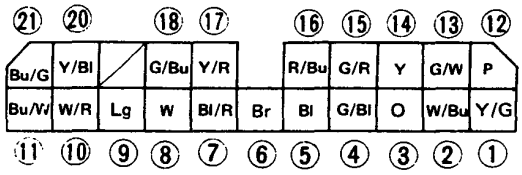
Troubleshooting

AT ENGINE STARTING

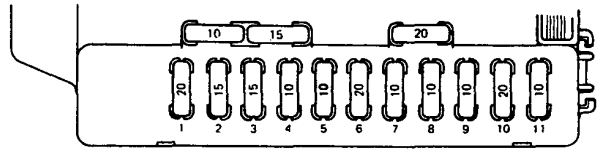
(1) [ALB] lamp won't light (Lamp should go on when the ignition switch is turned on).



CONTROL UNIT 21-P COUPLER

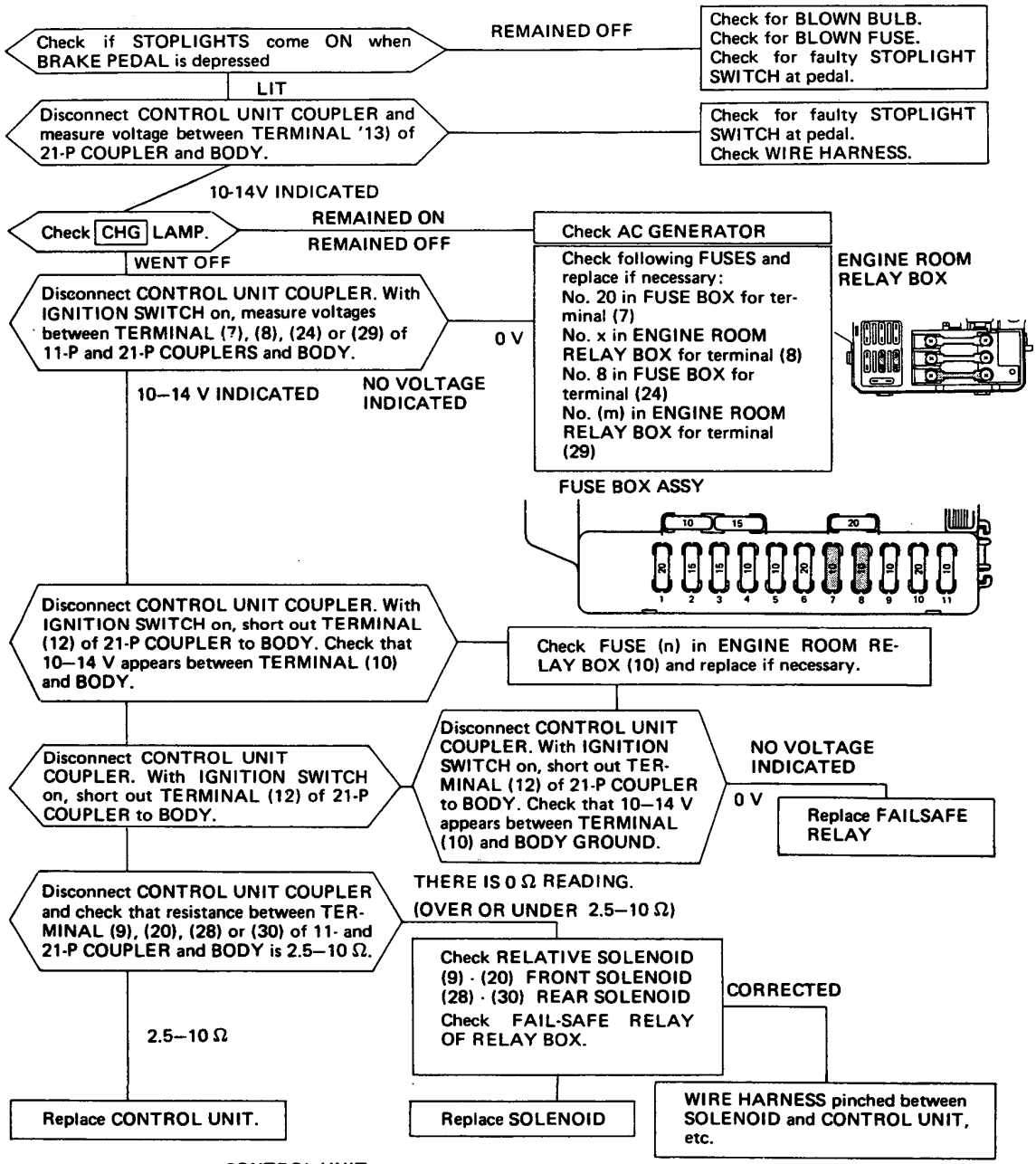


FUSE BOX ASSY



* View from wire side.

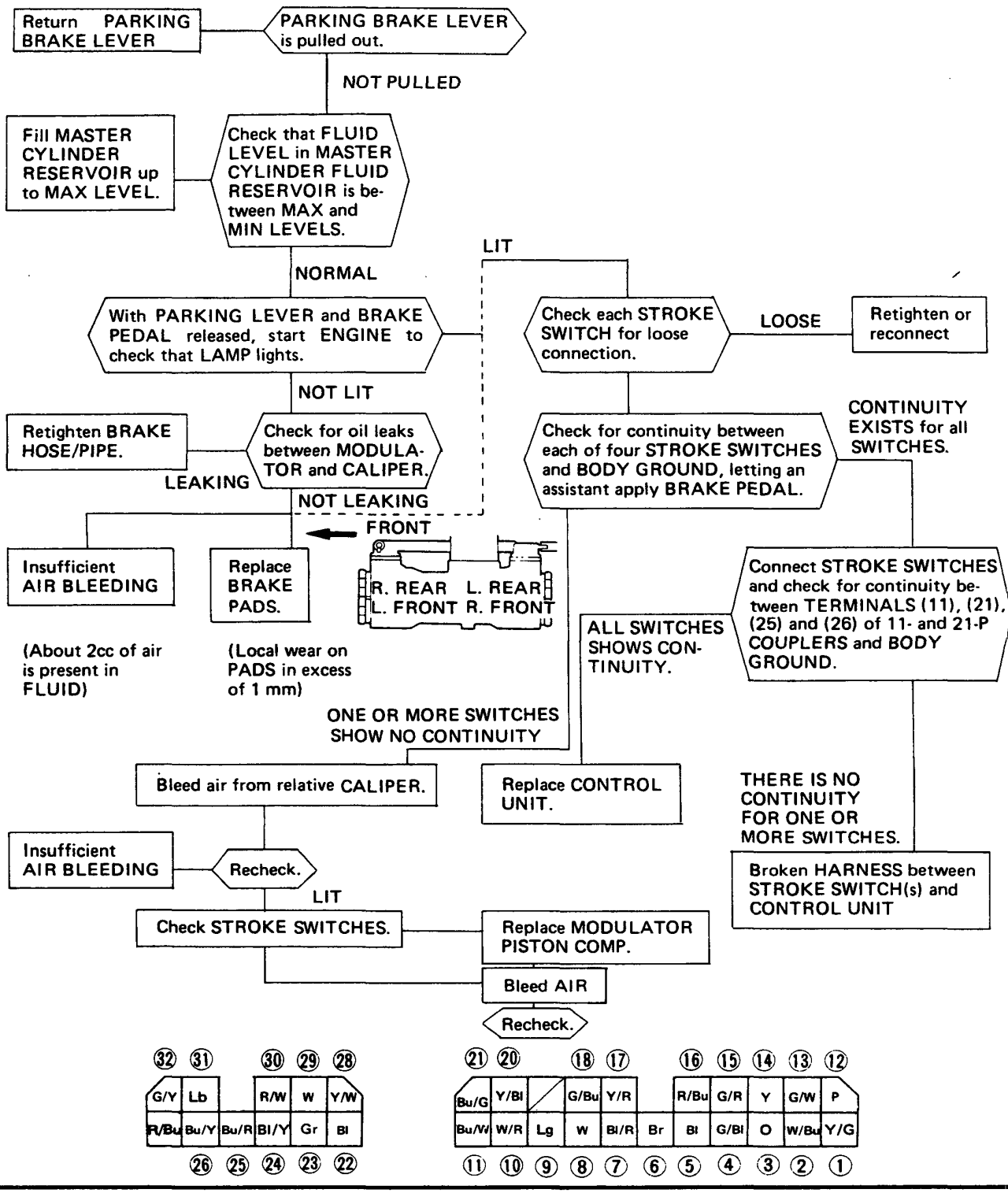
(2) [ALB] lamp remains ON when brake pedal is depressed after engine is started



(cont'd)

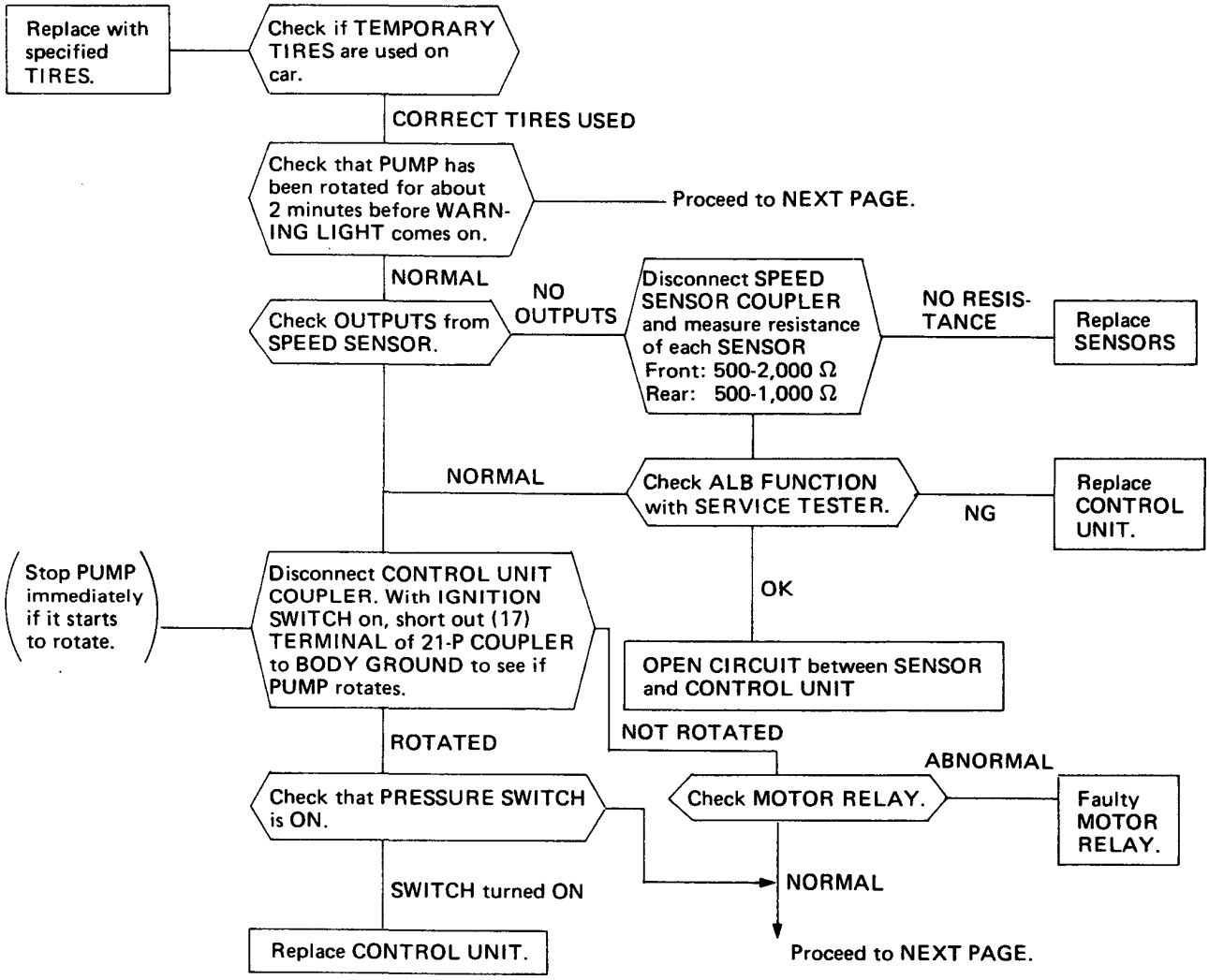
Troubleshooting (cont'd)

(3) (!) OR BRAKE LAMP won't go OFF (LAMP should be reset after engine has been restarted).



DURING RUNNING

(1) ALB lamp comes on or remains on. (Remains on or comes on frequently ..... ABNORMAL)



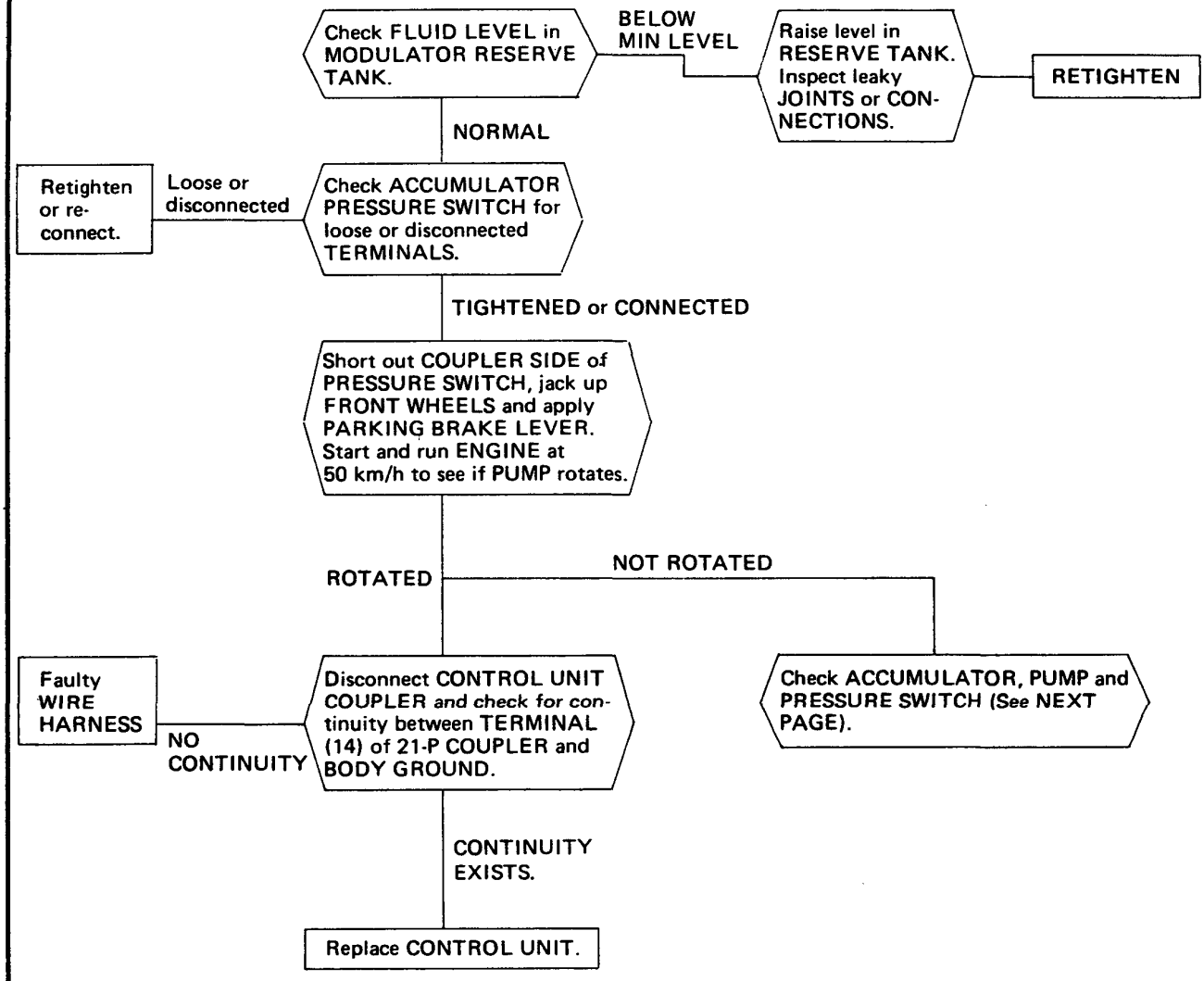
CONTROL UNIT 21-P COUPLER

㉑	⑳		⑱	⑰		⑯	⑮	⑭	⑬	⑫
Bu/G	Y/Bl		G/Bu	Y/R		R/Bu	G/R	Y	G/W	P
Bu/W	W/R	Lg	W	Bl/R	Br	Bl	G/Bl	O	W/Bu	Y/G
⑪	⑩	⑨	⑧	⑦	⑥	⑤	④	③	②	①

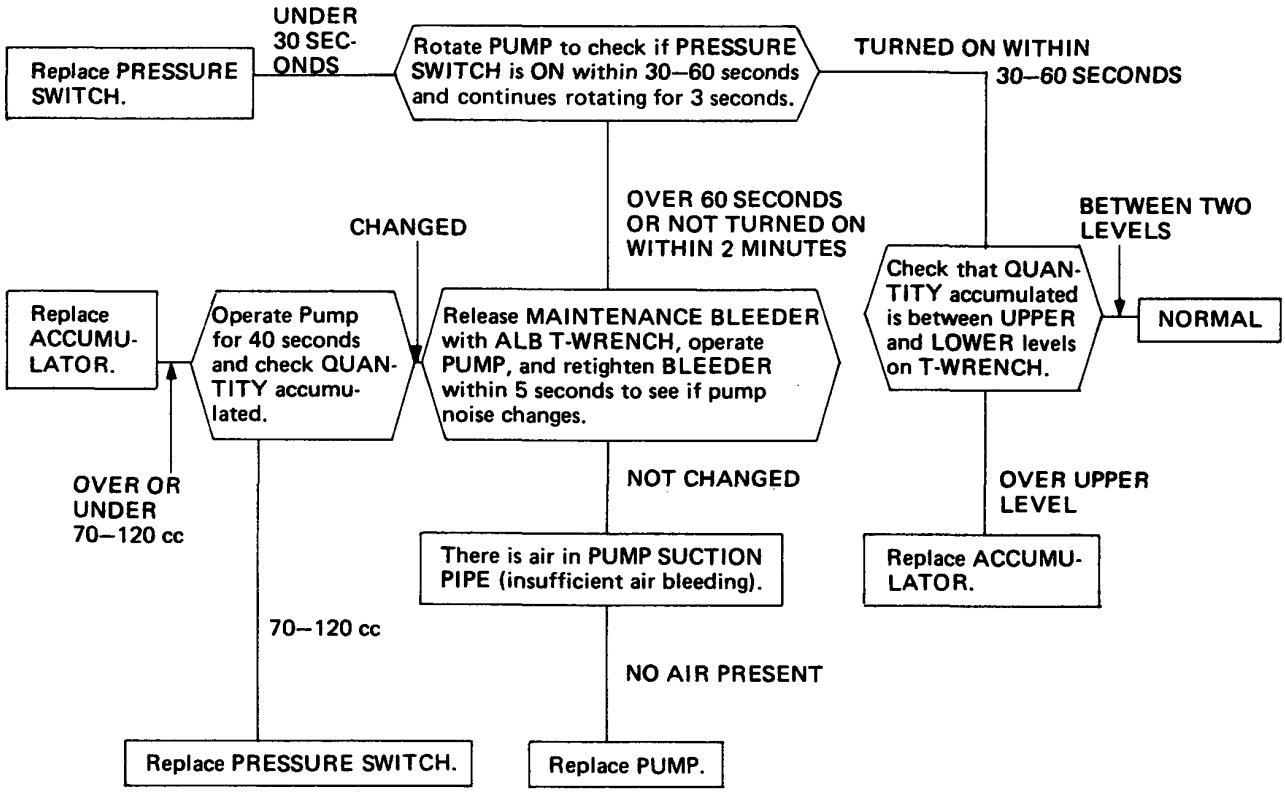
(cont'd)

Troubleshooting (cont'd)

(2) Too frequent pump rotation; ALB lamp also comes ON (Pump may rotate when ALB SYSTEM is operated. System is normal if pump is rotated for about 15 seconds, 1–2 times/day when car is used every day).



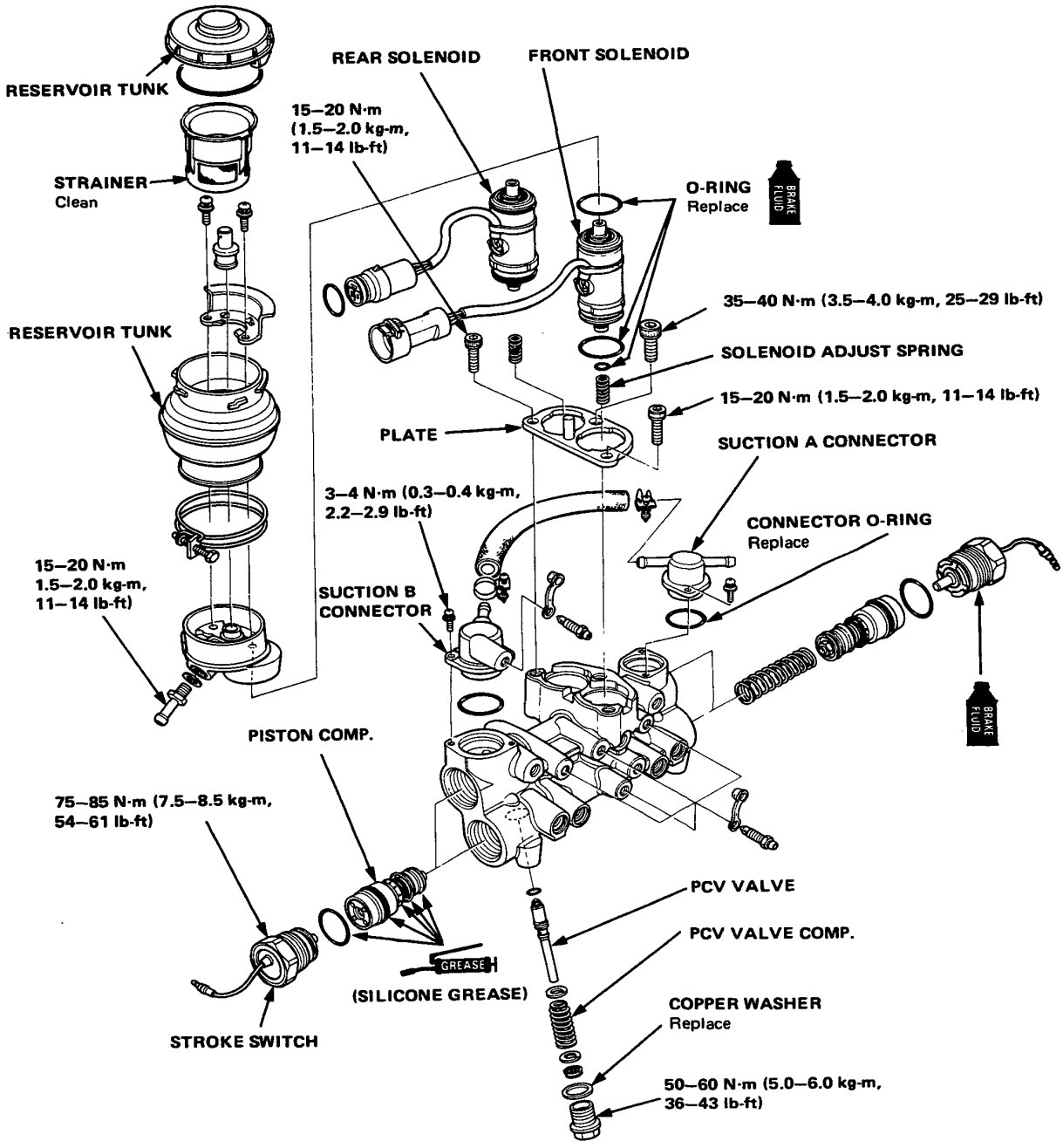
INSPECTION OF ACCUMULATOR, PUMP AND PRESSURE SWITCH



Modulator Assy

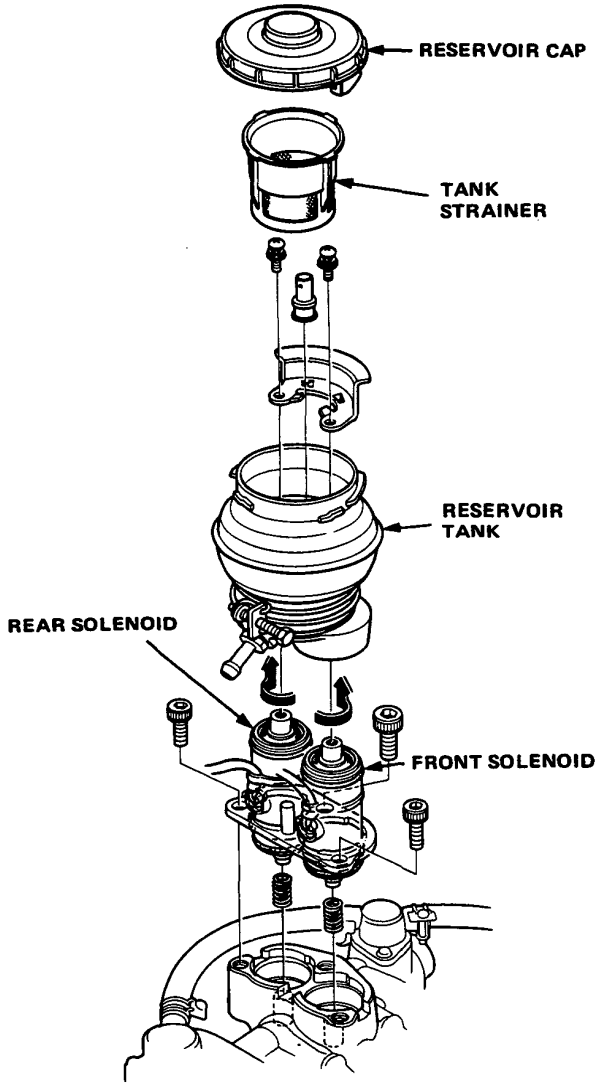
Index/Inspection

CAUTION: Do not spill brake fluid on painted surfaces as severe damage can result. Wipe up spilled fluid at once and rinse well with clean water.



Removal

1. Drain the brake fluid from the modulator tank.
2. Drain high pressure brake fluid.
3. Remove the tank strainer, 5 mm screws and pump hose remove the solenoid with the solenoids as a unit.



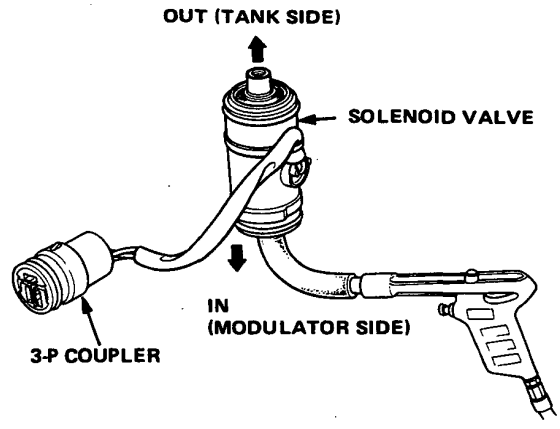
4. Rotate the solenoid 1/2 turn in the arrow directions as shown and then remove it while aligning its projection with the cutout is the plate.

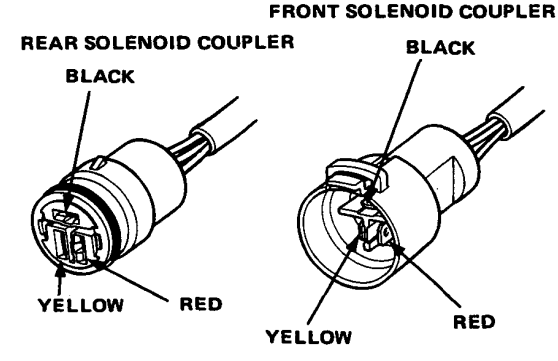
   NOTE: Handle the solenoid valve with care as it may be damaged if dropped.

Inspection

1. Connect a tube to the inlet of the solenoid valve. Apply compressed air to the solenoid valve through the tube.
2. Check the solenoid valve for proper operation by connecting a 12 V fully charged battery to the 3-P coupler terminals:

   Voltage not applied: • There should be no air flow.
   Black – Red: • There should be air flow through IN and OUT.
   Black – Red: • There should be air flow
   Black – Yellow: through IN.





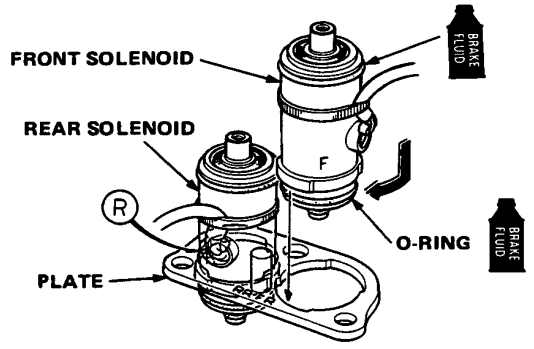
NOTE: Handle the solenoid valve with care as it may be damaged if dropped.

Reassembly

1. Dip the O-rings in clean brake fluid and install on the solenoid valves.

2. Insert the holes of the solenoid plate; install the solenoid valves with the markings "F" and "R" on the solenoids aligned with the markings "F" and "R" on the solenoid plate.

   WARNING: Do not interchange the front and rear solenoids in the head or the system will not work properly.

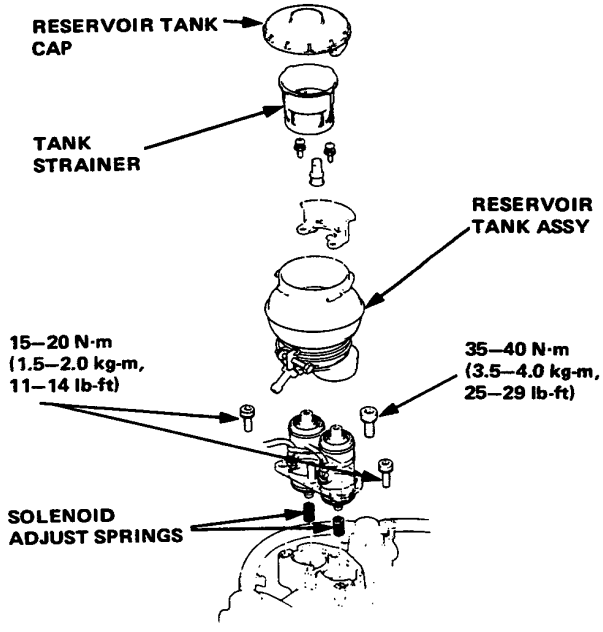


3. Install the solenoid adjust springs on the modulator.

4. Install the solenoid valve assembly.

5. Install the reservoir tunk assy.

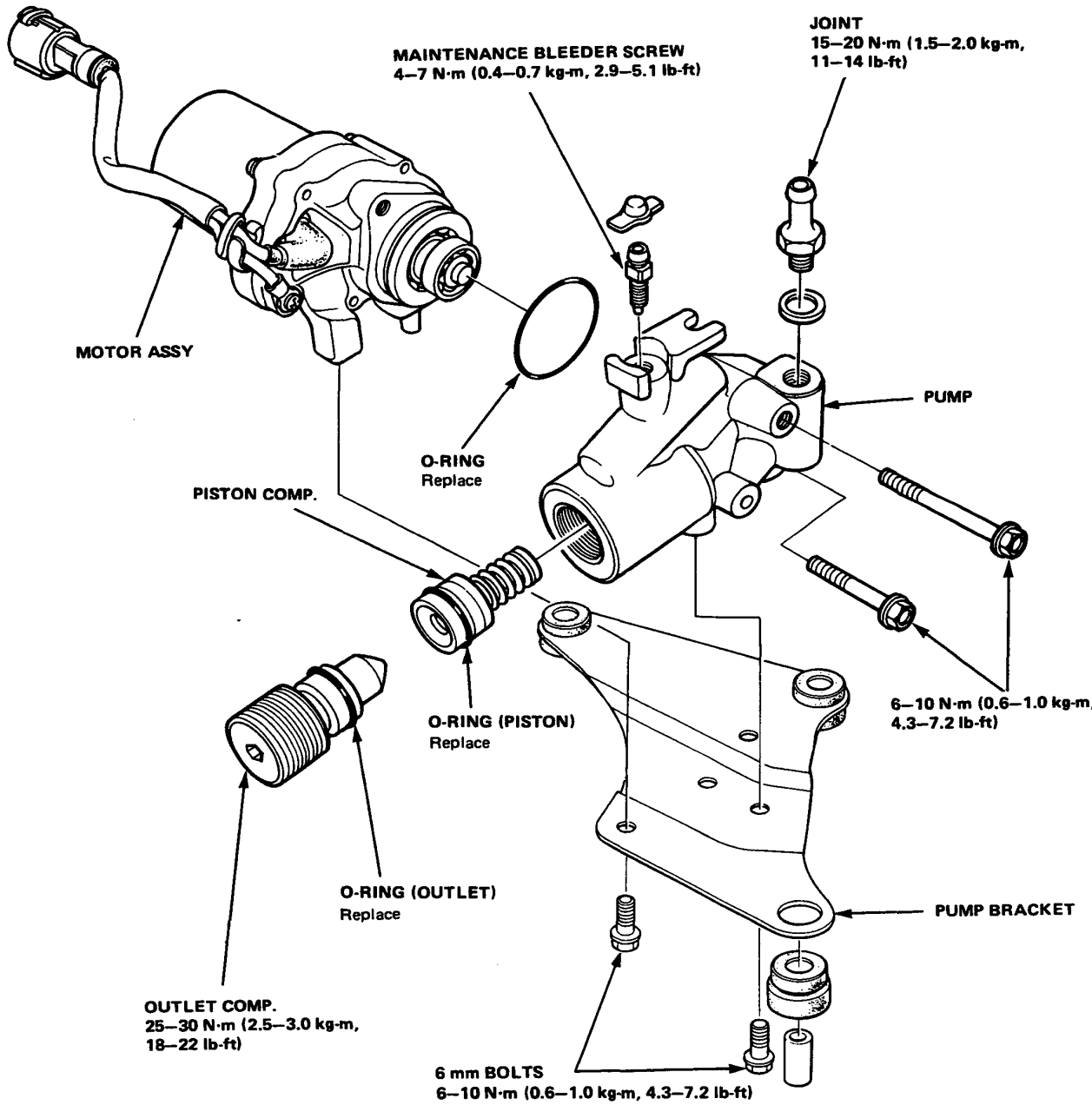
6. Install the pump hose.



ALB Pump Assy

Index/Inspection

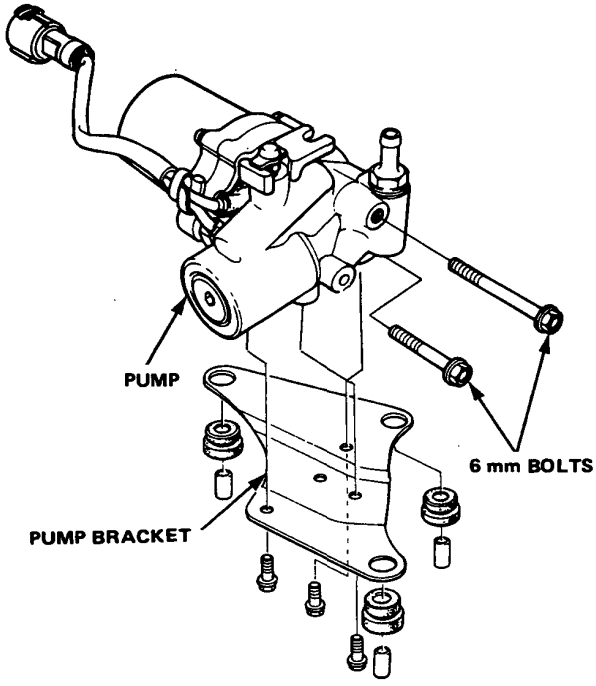
CAUTION: Do not attempt to disassemble the pump parts except for those shown exploded in this illustration.



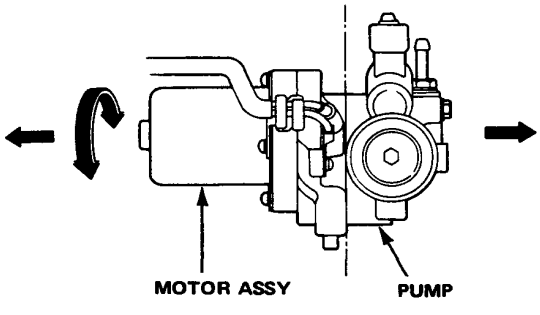
ALB Pump Assy

Disassembly

1. Remove the pump bracket.
2. Remove the 6 mm bolts attaching the pump to the pump motor.



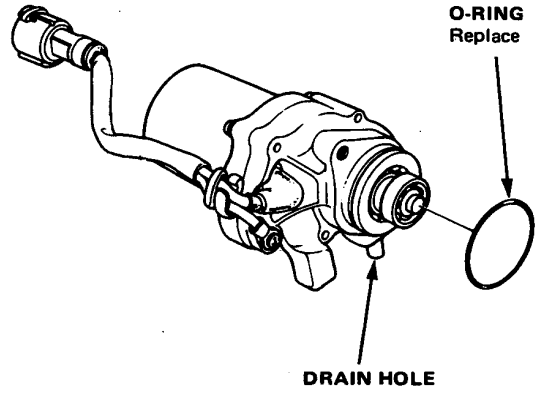
3. Separate the motor from the pump while rotating the pump right and left.



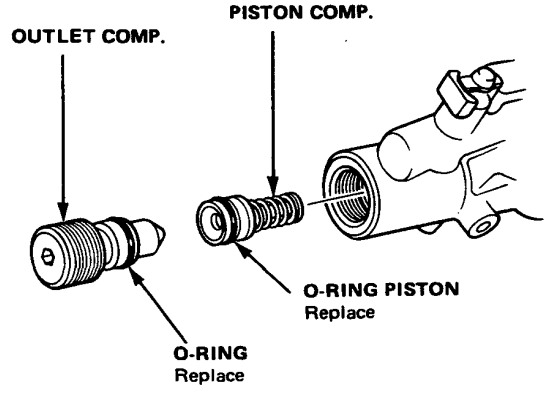
NOTE: An about 10 cc (0.6 cu-in) of brake fluid will flow out when the motor is removed from the pump.

4. Wash the motor with clean brake fluid only on the exposed end and blow dry with compressed air.

NOTE: Do not wash or dip the motor in brake fluid. Also be careful not to allow oil or water to enter the inside through the water drain hole.

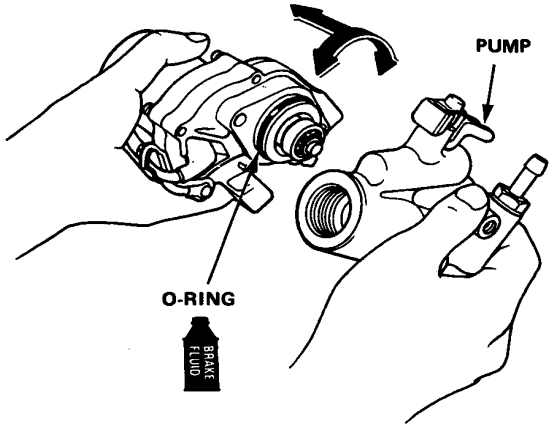


5. Remove the outlet comp. from the pump using a hex wrench.
6. Push the piston comp. from inside of the pump body and remove the piston comp.

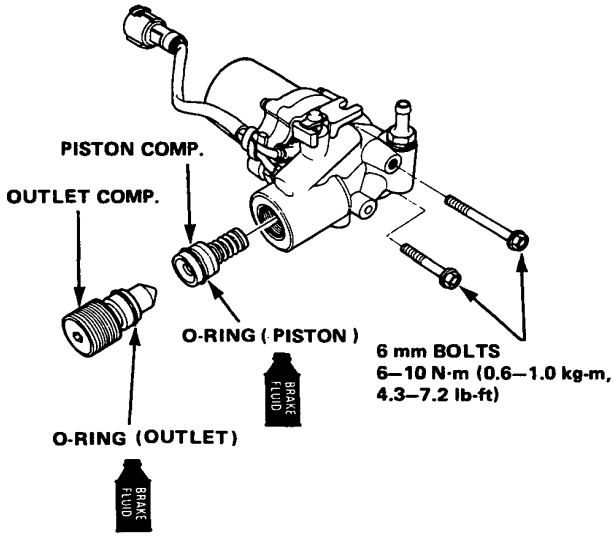


Reassembly

1. Install the O-ring on the pump motor.
2. Coat the O-ring with clean brake fluid and install the pump on the motor while rotating it right and left by hand.

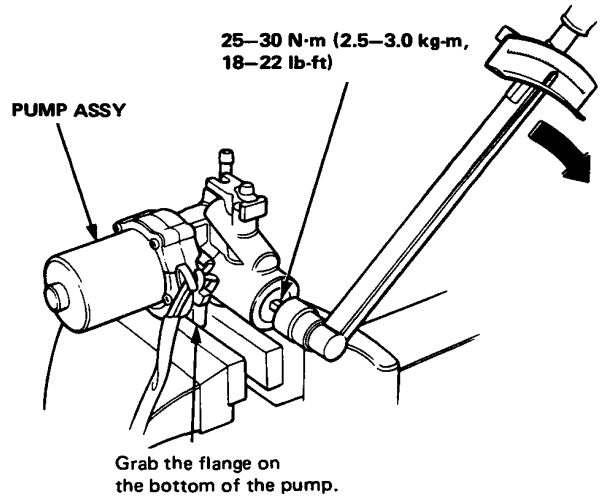


3. Install the 6 mm bolts and tighten.
4. Coat the piston comp. O-ring with the brake fluid and insert the piston comp. into the pump.
5. Coat the outlet comp. O-ring with the brake fluid and temporality install the outlet comp. on the pump.

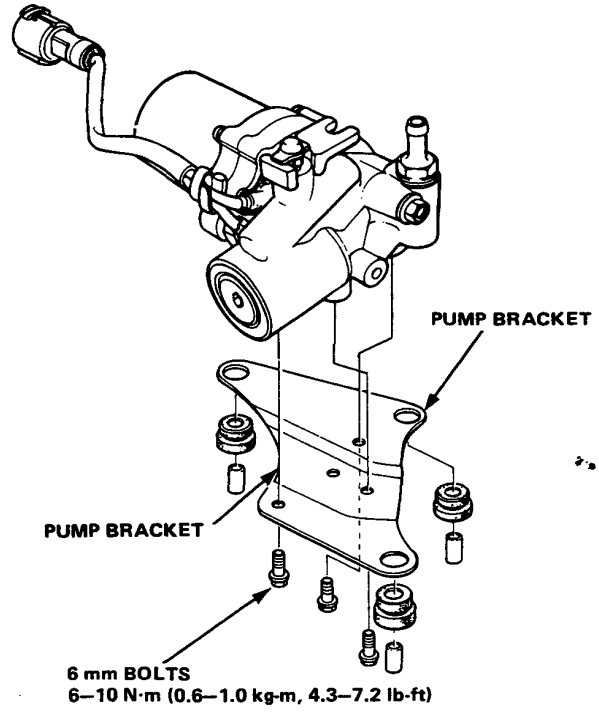


6. Place the motor in a vise as shown and tighten the piston plug.

NOTE: Do not place the pump in a vise at locations other than shown above.



7. Install the pump bracket.



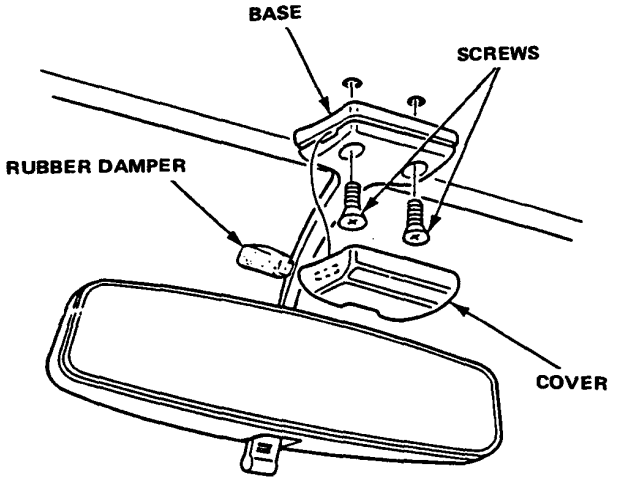
MEMO

Body

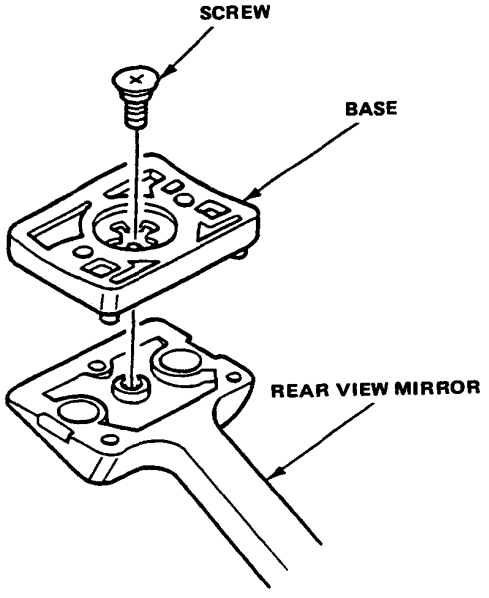
Rear View Mirror

Replacement

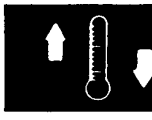
1. Remove the rubber damper.
2. Pry the cover off using the end of a slot-head screwdriver.



3. Remove the two base mounting screws and remove the room mirror from the roof with the base as an assembly.
4. Remove the base from the bracket by removing the screw.



Air Conditioner



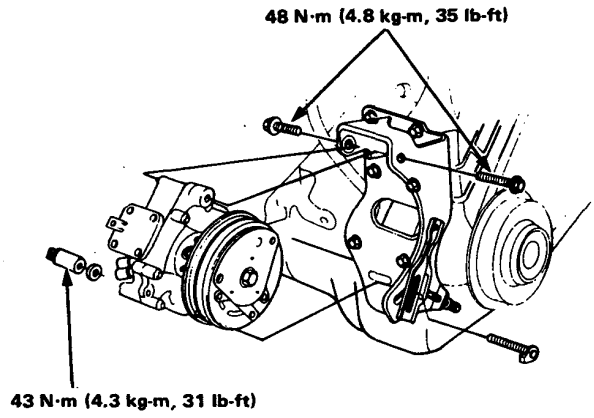
Compressor

Replacement

1. Run the engine at idle speed and turn on the air conditioner for a few minutes.
2. Disconnect the battery negative terminal.
3. Disconnect the compressor clutch lead.
4. Discharge the refrigerant very slowly from the system.
5. On a car with power steering, loosen the oil pump adjusting and mounting bolts.
6. Lift the power steering belt off the pulley.
7. Remove the power steering oil pump.
8. Disconnect the suction and discharge hoses from the compressor.

   CAUTION: Cap the open fittings immediately to keep moisture and dirt out of the system.

9. Loosen the compressor adjusting/mounting bolts and nut, then lift the belt off the pulley.
10. Remove the air conditioner cooling fan motor with the motor mounting frame.
11. Remove the mounting bolts and compressor and put on the engine support beam.
12. Remove the compressor bracket.
13. Remove the compressor from the engine compartment.



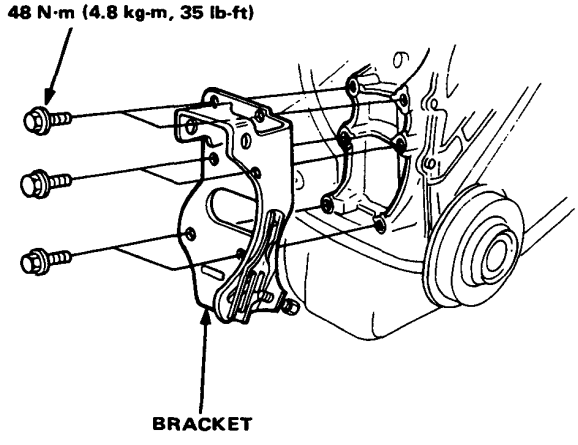
Install the compressor in the reverse order of removal, and:

- If a new compressor is installed, drain 30 cm^3 (1 fl oz) of refrigerant oil through the suction fitting on the compressor.
- Adjust the belt.

  BELT TENSION: 10–12 mm (3/8–1/2 in.) deflection when 98 N (10 kg, 22 lbs) force is applied between pulleys.

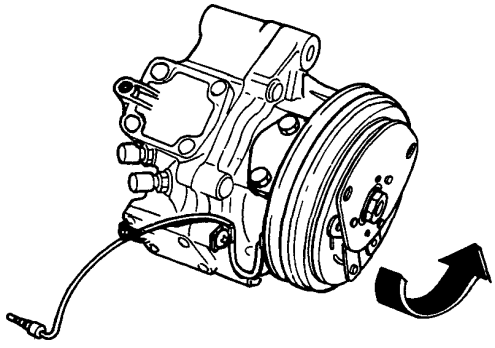
- Charge the system.
- Test the performance.

  CAUTION: Don't loosen the cylinder cover bolts of the compressor.



Clutch Inspection

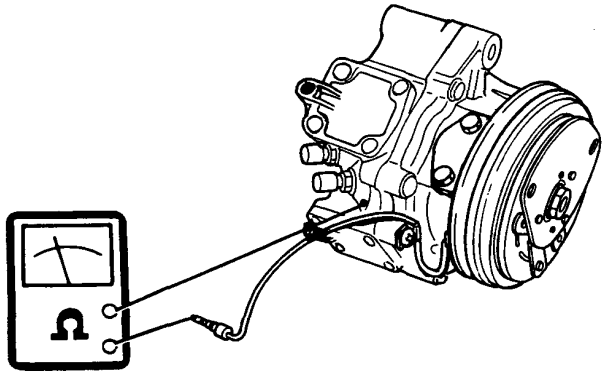
Check pulley bearing play and drag by rotating the pulley by hand. Replace the pulley with a new one if it is noisy or has excessive play and drag.



Check the resistance of coil.

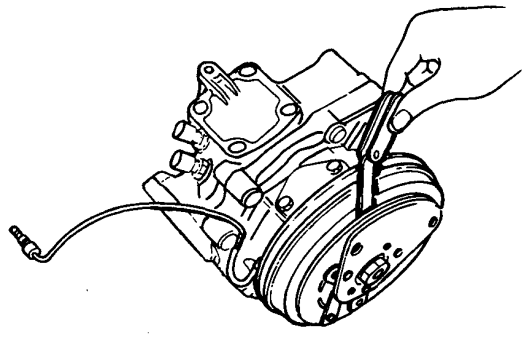
Coil Resistance:
3.0 ± 0.3Ω at 20°C (68°F)

If the resistance is not within specifications, replace the clutch coil with a new one.

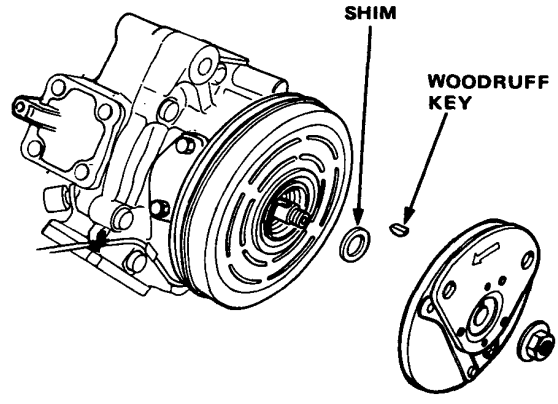


Measure the clearance between the pulley and pressure plate all the way around. If the clearance is not within specified limits, the pressure plate must be removed and shims added or removed as required.

Pulley-to-Pressure Plate Clearance:
0.3–0.6 mm (0.012–0.024 in.)



NOTE: The shims are available in six sizes: 0.1 mm, 1.0 mm, 1.25 mm, 1.5 mm, 1.75 mm and 2.0 mm of thickness. 0.1 mm shim is used for minor adjustment.



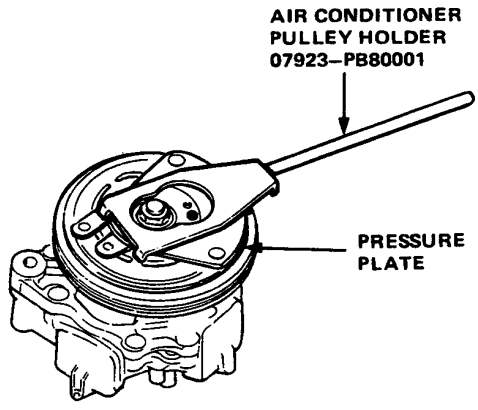
Compressor

Clutch Overhaul

1. Remove the nut while holding the pressure plate with the tool shown.

   CAUTION: Be careful not to compress the spring excessively.

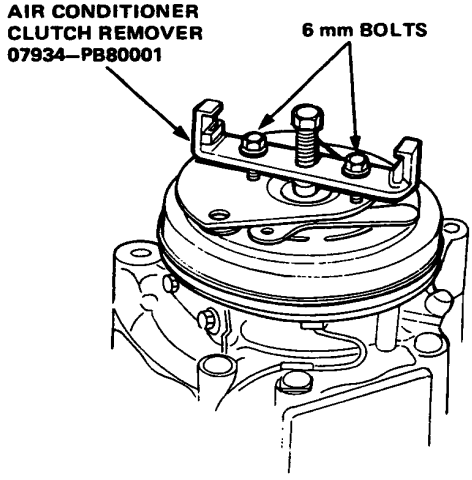
   Use the tool to hold the pressure plate.



2. Install the clutch remover tool and two 6 mm bolts on the pressure plate, and remove it by screwing the center bolt.

   CAUTION: Use only special tool to remove the pressure plate. If it is not used the clutch damage may result.

   NOTE: Tighten the 6 mm bolts equally, so the tool is installed parallel to the pressure plate.

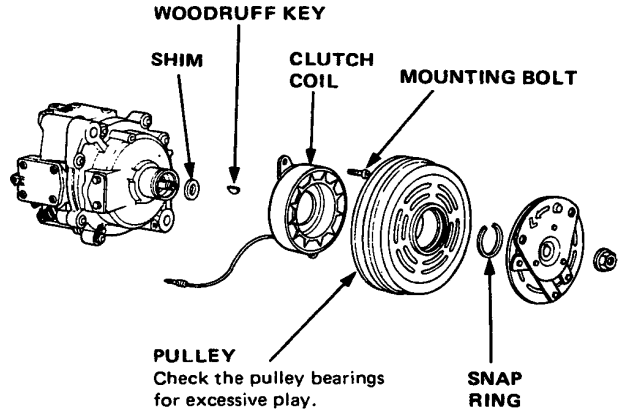


3. Use snap ring pliers to take off the snap ring, then remove the pulley from the shaft with a 2 or 3 jaw puller.

   CAUTION: When removing the snap ring, be careful not to damage the aluminum compressor snout.

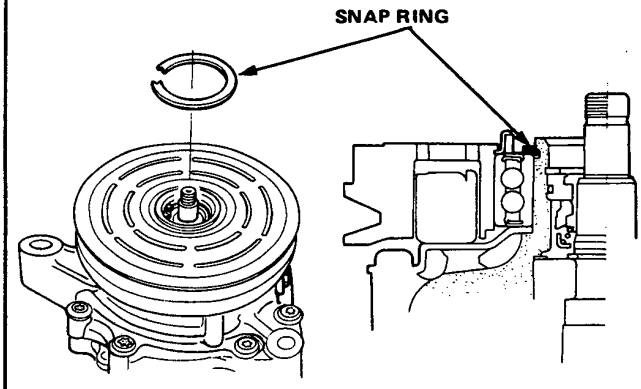
4. Unscrew the clutch coil mounting bolt by using a TORX DRIVER BIT (07703–0010200), then remove the clutch coil.

   NOTE: It's not necessary to remove the clutch wire clamp; just pry it up enough to remove the wire.



Assemble the clutch in the reverse order of disassembly, and also:

- Install the sanp ring with its chamfered side facing out.
- When installing the snap ring, be careful not to damage the alminum compressor snout.



- Tighten the hub nut to specified torque.

  TORQUE: 4.0–4.5 kg-m (32–35 ft-lb)

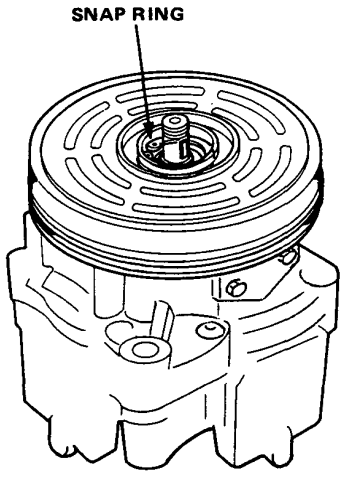
- Recheck the pulley-to-pressure plate clearance and adjust if necessary.

Shaft Seal Assembly Removal

NOTE: Make sure that the suction and discharge joints are plugged with the caps.

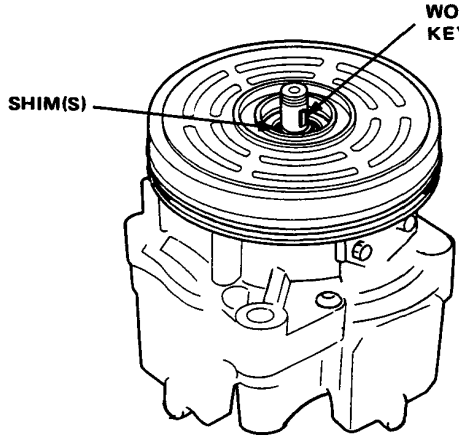
1. Remove the pressure plate.
   NOTE: Removal of the clutch pulley and coil is not necessary.

2. Remvoe the 32 mm snap ring.



3. Remove the woodruff key from the key way.
   NOTE: If the woodruff key is reused, be careful not to damage the key.

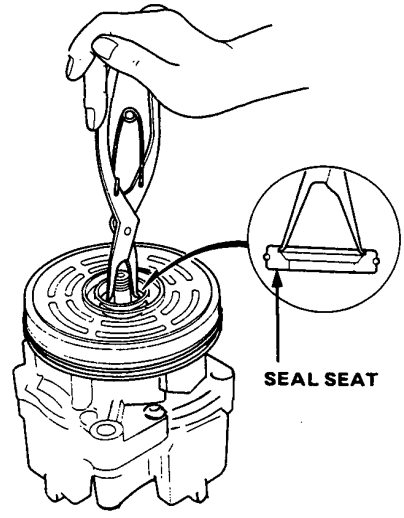
4. Remove the shim(s).
   NOTE: After removing the shim(s), place it in a parts rack so it not scattered and lost.



5. Hook the tip of the special tool (modified snap ring pliers) on the slot of the seal seat.

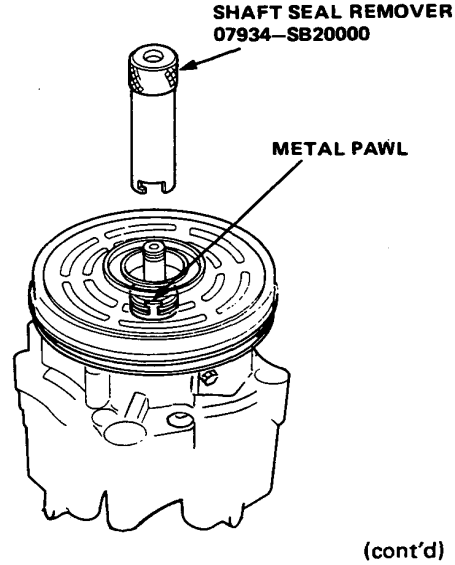
6. Pull out the seal seat.

   CAUTION: Move the tool in parallel with the compressor shaft. Do not damage the compressor.



7. Insert the sahft seal remover into the compressor aligning the cutout of the remover with the metal pawl of the seal case.

8. Rotate the remover clockwise or counterclockwise to make sure that the cutout is engaged with the metal pawl.



(cont'd)

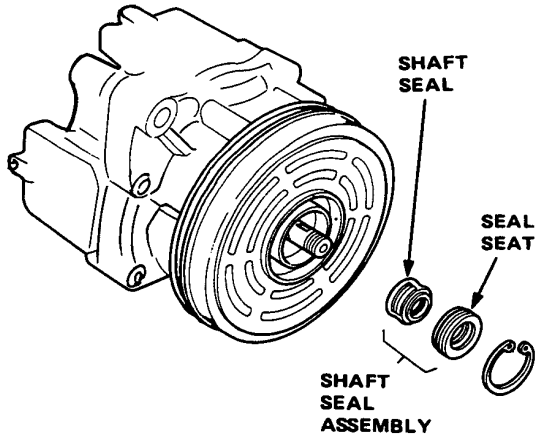
Compressor

Shaft Seal Assembly Removal (cont'd)

9. Press the remover until bottoms, then turn it counterclockwise as far as it will go.
10. Withdraw the remover.
11. Lay down the compressor and clean the shaft seal contacting face of the compressor with cleaning solvent.

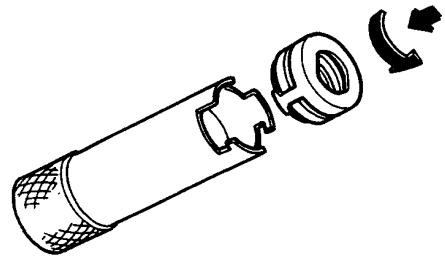
CAUTION:
- **Keep the cleaning solvent and dirt out of the compressor.**
- **Do not use the lint free cloth for cleaning.**
- **Do not use a compressed air for cleaning.**
- **Do not spill the refrigerator oil from the compressor. Refill the same amount of the oil if the oil is spilled out.**

NOTE: Install the shaft seal assembly after the cleaning solvent is dried out.

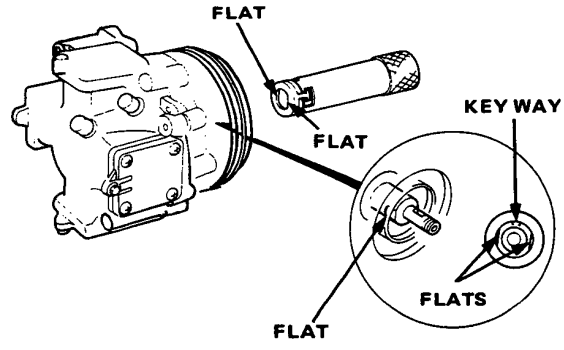


Shaft Seal Assembly Installation

1. Clean the new shaft seal with cleaning solvent thoroughly.
2. Lublicate the shaft seal with refrigerator oil (SUNISO 5GS) and install it on the shaft seal remover.
   NOTE:
   - Use only clean refrigerator oil.
   - Do not touch the sealing surfaces of the shaft seal after lubricated.



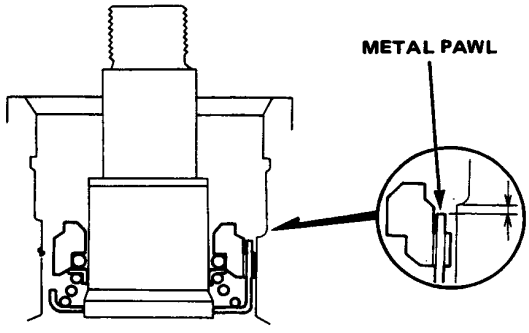
3. Liberally lubricate the compressor shaft with refrigerator oil.
4. Install the shaft seal onto the compressor shaft aligning the seal case flats with the shaft flats.



5. Press the remover until bottoms, then turn it counterclockwise as far as it will go.
   NOTE: The remover will be lowered when the falts are aligned.

6. Turn the remover clockwise, then pull out.

7. Make sure that the metal pawl of the seal case is approx. 0.5 mm below the compressor shoulder at least as shown.



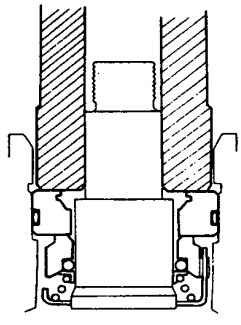
8. Check the inside diameter of the compressor for freedom of score marks or foreign particles.

9. Clean the seal seat with cleaning solvent, then lubricate the seal seat with refrigerator oil (SUNISO 5GS).
   NOTE:
   - Use only clean refrigerator oil.
   - Do not touch the sealing surface of the seal seat after lubricated.

10. First slide the seal seat into the compressor by hand as far as possible.

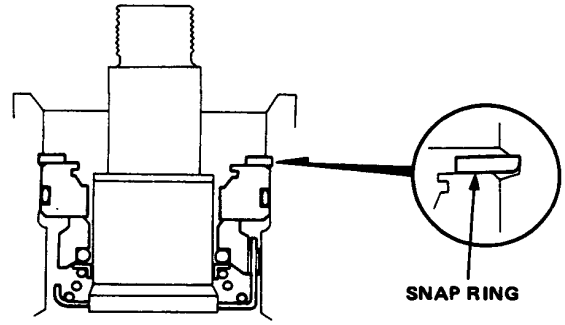
11. Press the seal seat with the grip side of the remover.

    CAUTION: Be careful not to damage the compressor.

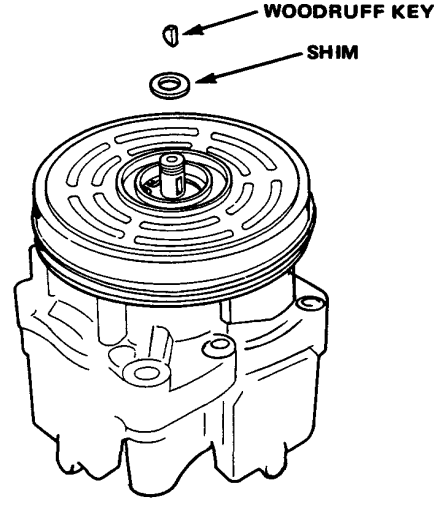


12. Install the snap ring with the chamfered side inside.

13. Press the snap ring with the grip side of the remover.



14. Install the shim and woodruff key.



15. Evacuate and charge the compressor, then perform the leak test.

16. Install the pressure plate. Measure the clearance between the pulley and pressure plate all the way around. If the clearance is not within the specified limits, the shim(s) must be added or removed as required.

MEMO

Body Electrical

Combination Switch

Test

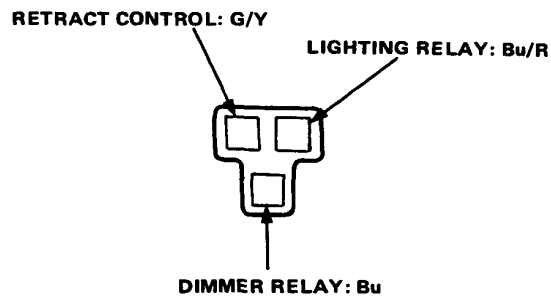
Check for continuity between the terminals according to table below.

NOTE: For other connectors and table, refer to the base shop manual.

Over-Taking Switch (Except Austrian model)

TER-MINAL / POSI-TION	LIGHT-ING RELAY	GND	RE-TRACT CON-TROL	DIODE	DIMMER RELAY
OFF			○	▶|	○
ON	○	○	○	▶|	○
WIRE COLOR	Bu/R	Bl	G/Y		Bu

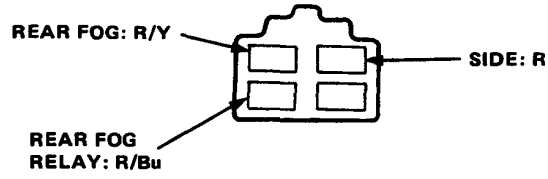
View from wire side



Dimmer Switch (French and Swiss models)

TER-MINAL / POSI-TION	GND	DIMMER RELAY	REAR FOG
HIGH	○	○	
LOW	○		○
WIRE COLOR	Bl	Bu	R/Y

View from wire side

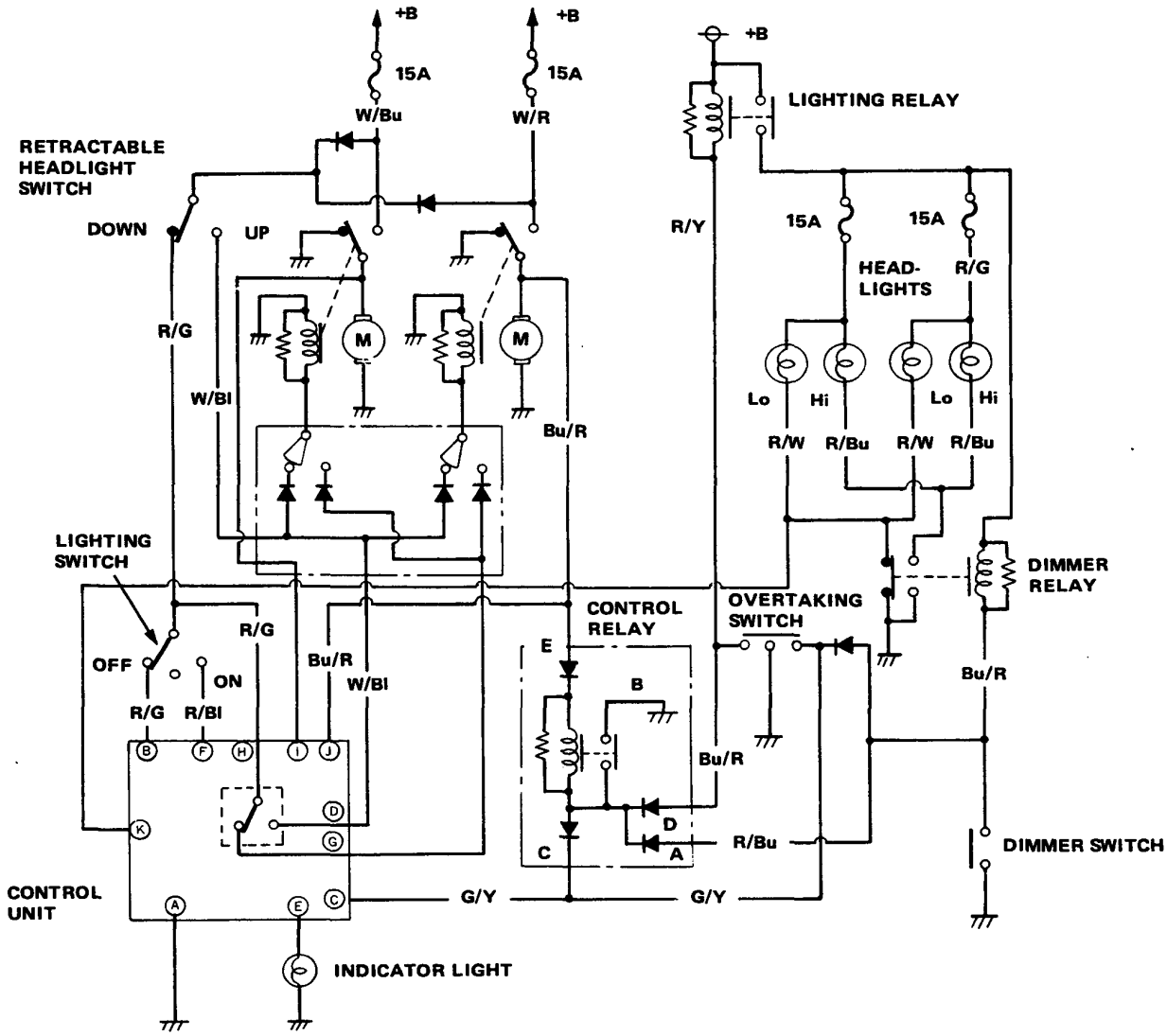


Front Wiper Switch (Except KQ, KT, KE models)

TER-MINAL / POSI-TION	IG1	INT	INT Ⓐ	Lo	Hi	GND	MIST SWITCH
OFF			○	○			OFF
					○	○	ON
INT	○	○	○	○			OFF
	○	○			○	○	ON
Lo				○		○	OFF
					○	○	ON
Hi					○	○	OFF
					○	○	ON
WIRE COLOR	G/Bl	G	Bu/W	Bu	Bu/Y	Bl	

Retractable Headlight

When the overtaking switch is turned ON, the C terminal of the control unit jumps to ground, the headlight up circuit in the control unit operates, and the headlights acend to UP position.
By the holding circuit of the control unit, the headlights are stayed in UP position for a few seconds, then the headlights automalially descend to the DOWN position, therefore, if the overtaking switch is operated with the headlight UP position, the headlights go on.
When the overtaking switch is turned ON and the retracter motors start, the relay in the control relay is hold and the headlights stay on until the motors stop. When the motors stop, the current to the relay stops flowing, the relay turns off therfore the headlights do not come on while they are descending.



Retractable Headlight

Troubleshooting

1. Headlight doesn't rise when retractable headlight switch is turned on.

Check fuse.

Is it normal? NO — Replace and recheck.

YES

Check for a stuck retractor caused by foreign matter or iced-up mechanism.

Is it normal? NO — Remove fuse.

Clean or repair mechanism, insert fuse, and recheck.

YES

Measure voltage between A (positive) and B (negative) terminals at retractor relay.

Is 12 volts available? NO — Open circuit between fuse and retractor relay

YES

Measure voltage between C (positive) and B (negative) terminals at retractor relay.

Is 12 volts available? NO — Measure voltage between E (positive) and F (negative) terminals at retractor relay.

YES

(cont'd – A)

Is 12 volts available? NO — Disconnect wire harness from retractor motor.

YES

(cont'd–B)

Measure voltage between W/Bl (positive) and Bl (negative) leads at wire harness.

Is 12 volts available? NO — Check for continuity between Bl lead and body ground at wire harness.

YES

(cont'd–C)

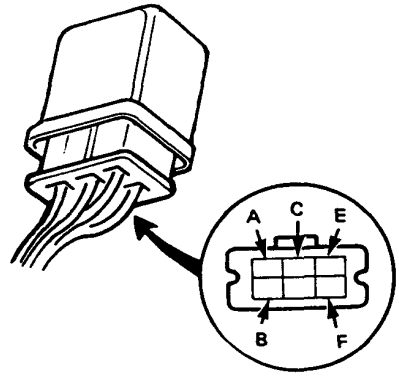
Is there continuity? NO — Poor ground

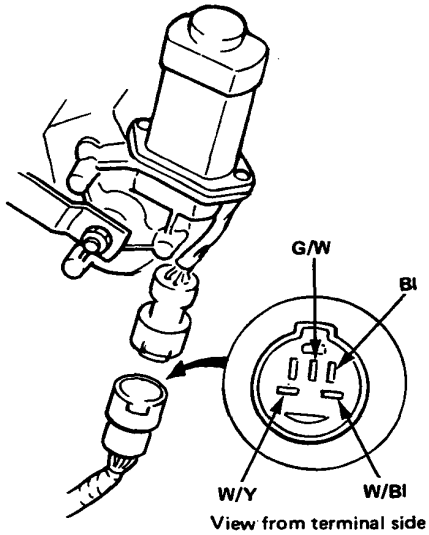
YES

Remove retractable headlight switch.

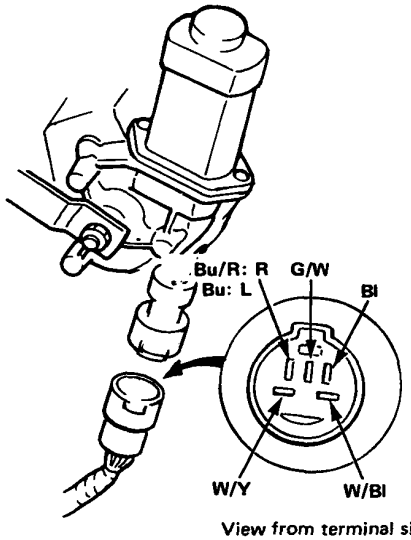
Check retractable headlight switch.

(cont'd–D)





View from terminal side



View from terminal side

(cont'd—D)

Faulty retractable headlight switch ← NO ← Is it normal?

YES

NOTE: W/R is for right motor. Left motor is connected to W/Bu.

Measure voltage between W/R (positive) and Bl (negative) leads at wire harness.

Open circuit between fuse and retractable headlight switch ← NO ← Is 12 volts available?

YES

Check W/Bl lead for continuity between retractable headlight switch and motor.

Is there continuity. NO → Open circuit

(cont'd—C)

Check G/W lead for continuity between retractor motor and relay.

Is there continuity. NO → Open circuit

YES

Connect W/Bl lead to G/W lead with jumper wire at wire harness connector.

CAUTION: Avoid contact to other terminals and erroneous connection.

Measure voltage between C (positive) and B (negative) terminals at retractor relay.

Is 12 volts available? NO → Check for continuity between B terminal and body ground at retractor relay.

YES

Faulty retractor motor

Is there continuity? NO

YES

Faulty retractor relay

Poor ground

(cont'd—A)

Disconnect wire harness from retractor motor.

Check Bu/R lead for continuity between retractor motor and relay.

Is there continuity? NO → Open circuit

YES

Check for continuity between Bl lead and body ground at wire harness.

Is there continuity? NO → Poor ground

YES

Faulty retractor motor

(cont'd—B)

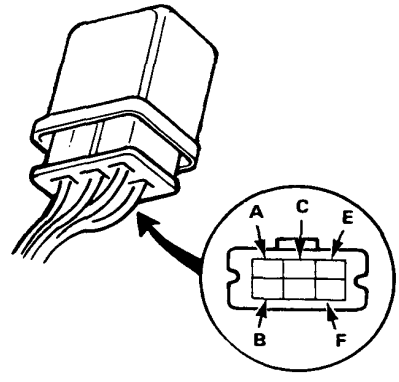
Check for continuity between F terminal and body ground at retractor relay.

Is there continuity? NO → Poor ground

YES

Faulty retractor relay

NOTE: Bu/R is for right motor. Left motor is connected to Bu.



(cont'd)

Retractable Headlights

Troubleshooting (cont'd)

2. Headlight doesn't rise when headlight is turned on with lighting switch.

Test with retractable headlight switch.

Does light rise? NO — See No. 1 Troubleshooting.

YES

Remove combination lighting switch.

Check lighting switch.

Is it normal? NO — Faulty lighting switch

YES

Reconnect combination lighting switch.

Turn lighting switch 2 clicks.

Check for continuity between A terminal (Bl) and body ground at control unit.

Is there continuity? NO — Poor ground

YES

Measure voltage between H (R/G: positive) and A (Bl: negative) terminals at control unit.

Is 12 volts available? NO — Open circuit between retractable headlight switch and control unit

YES

Measure voltage between F (R/Bl: positive) and A (Bl: negative) terminals at control unit.

Is 12 volts available? NO — Open circuit between retractable headlight switch and fuse box or Open circuit between fuse box and control unit

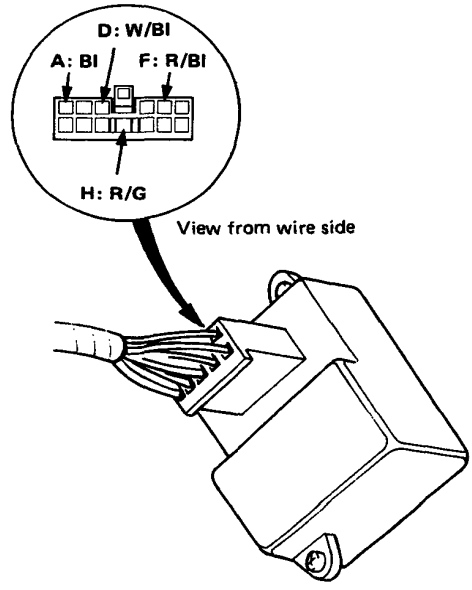
YES

Measure voltage between D (W/Bl: positive) and A (Bl: negative) terminals at control unit.

Is 12 volts available? NO — Faulty control unit

YES

Open circuit in W/Bl lead between control unit and main wire harness



3. Headlight doesn't retract when retractable headlight switch and lighting switch are turned off.

Check fuse.

Is it normal? NO — Replace and recheck.

YES

Check for a stuck retractor caused by foreign matter or iced-up mechanism.

Is it normal? NO — Remove fuse. → Clean or repair mechanism, insert fuse, and recheck.

YES

Remove combination switch.

Check lighting switch.

Is it normal? NO — Faulty lighting switch

YES

Remove retractable headlight switch.

Check retractable headlight switch.

Is it normal? NO — Faulty retractable headlight switch

YES

Measure voltage between W/R lead (positive) and body ground.

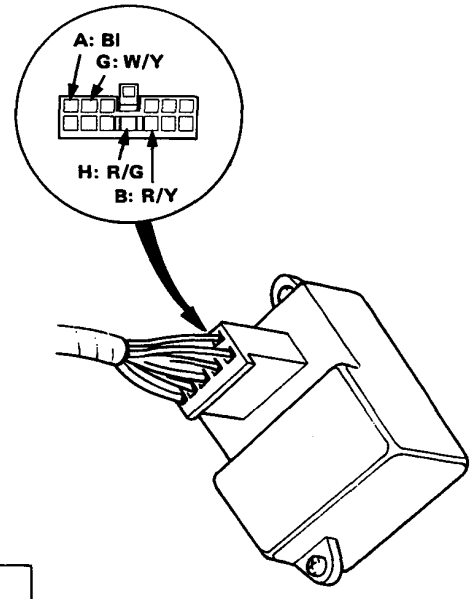
NOTE: W/R is for right motor. Left retractor relay is connected to W/Bu.

Is 12 volts available? NO — Open circuit between fuse and retractable headlight switch

YES

Reconnect switches.

Make sure all switches are in off position.



Check for continuity between A(BI) terminal and body ground at control unit.

Is there continuity? NO — Poor ground

YES

Measure voltage between B(R/Y: positive) and A (BI: negative) terminals at control unit.

Is 12 volts available? NO — Open circuit between retractable headlight switch and fuse box; Open circuit between fuse box and control unit

Measure voltage between H (R/G: positive) and A (BI: negative) terminals at control unit.

Is 12 volts available? NO — Open circuit between retractable headlight switch and control unit

YES

Measure voltage between G (W/Y: positive) and A (BI: negative) terminals at control unit.

YES

Is 12 volts available? NO — Faulty control unit

YES

(See page 25-8.)

(cont'd)

Retractable Headlight

Troubleshooting (cont'd)

(From page 25-7)

Measure voltage between A (positive) and B (negative) terminals at retractor relay.

Is 12 volts available?
- NO → Check for continuity between B terminal and body ground at retractor relay.
  - Is there continuity?
    - NO → Poor ground
    - YES → Open circuit between fuse and retractor relay
- YES

Measure voltage between C (positive) and B (negative) terminals at retractor relay.

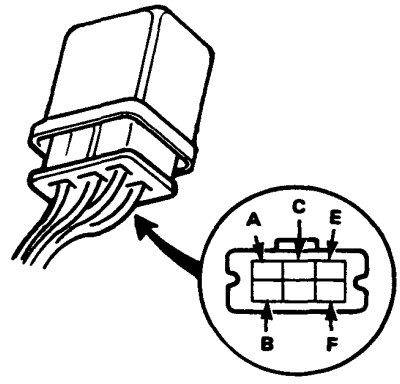
Is 12 volts available?
- NO → Measure voltage between E (positive) and F (negative) terminals at retractor relay.
  - Is 12 volts available?
    - NO → Check for continuity between F terminal and body ground at retractor relay.
      - Is there continuity?
        - NO → Poor ground
        - YES → Disconnect wire harness from retractor motor.
          - Measure voltage between W/Y (positive) and Bl (negative) leads at wire harness.
            - Is 12 volts available?
              - NO → Check for continuity between Bl lead and body ground at wire harness.
                - Is there continuity?
                  - NO → Poor ground
                  - YES → Open circuit between control unit and retractor motor
              - YES → Check G/W lead for continuity between retractor motor and relay.
                - Is there continuity?
                  - NO → Open circuit
                  - YES → Connect W/Y lead to G/W lead with jumper wire at wire harness.

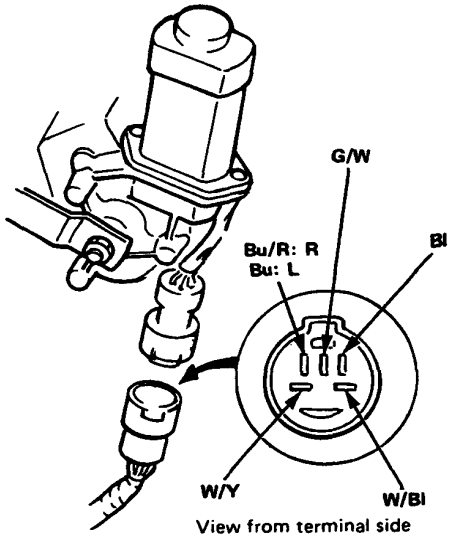
CAUTION: Avoid contact to other terminals and erroneous connection.

(cont'd—F)

(Cont'd—G)

(cont'd—H)





View from terminal side

(cont'd—F)

Disconnect wire harness from retractor motor.

Check Bu/R lead for continuity between retractor motor and relay.

NOTE: Bu/R is for right motor. Left motor is connected to Bu.

Is there continuity? NO — Open circuit

YES

Check for continuity between Bl lead and body ground at wire harness.

Is there continuity? NO — Poor ground

YES

Faulty retractor motor

(cont'd—G)

Check for continuity between F terminal and body ground at retractor relay.

Is there continuity? NO — Poor ground

YES

Faulty retractor relay

(cont'd—H)

Measure voltage between C (positive) and B (negative) terminals at retractor relay.

Is 12 volts available? NO — Check for continuity between B terminal and body ground at retractor relay.

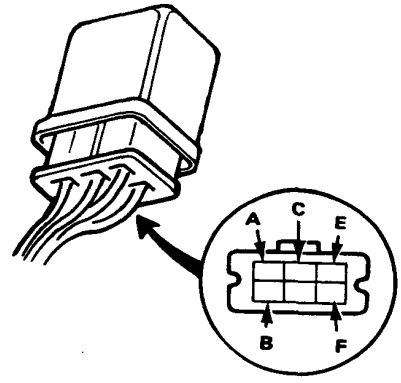
YES

Faulty retractor motor

Is there continuity? NO — Poor ground

OK

Faulty retractor relay



4. Headlight doesn't rise when over-taking switch is turned on.

Check fuse.

Is it normal? NO — Replace and recheck.

YES

Check for continuity between A terminal (Bl) and body ground at control unit.

Is there continuity? NO — Poor ground

YES

(See page 25-10.)

(cont'd)

Retractable Headlight

Troubleshooting (cont'd)

(From page 25-9)

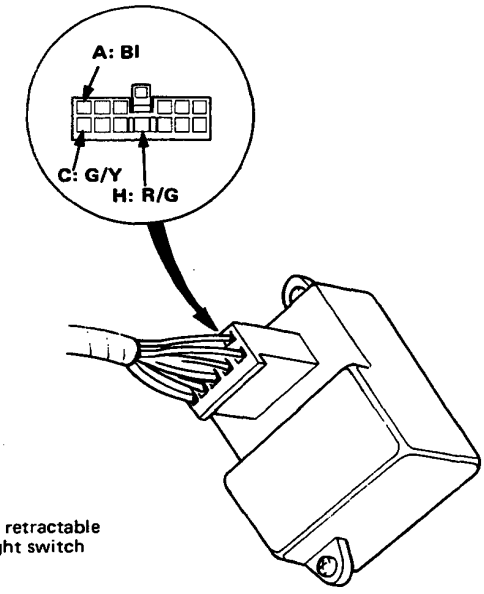
Check for continuity between C (G/Y) and A (Bl) terminals at control unit, with over-taking switch turned on.

Is there continuity?
- NO → Faulty over-taking switch.
- NO → Open circuit between over-taking switch and control unit
- YES

Measure voltage between H (R/G: positive) and A (Bl: negative) terminals at control unit.

Is 12 volts available?
- NO → Check retractable headlight switch.
- YES → Faulty control unit

Does switch work properly?
- NO → Faulty retractable headlight switch
- YES → Open circuit between retractable headlight switch and control unit



5. Headlight high beam turns off before headlight rises fully.

Check for continuity between B terminal (Bl) and body ground at control relay.

Is there continuity?
- NO → Poor ground
- YES

Check for continuity between C (G/Y) and B (Bl) terminals at control relay, with over-taking switch turned on.

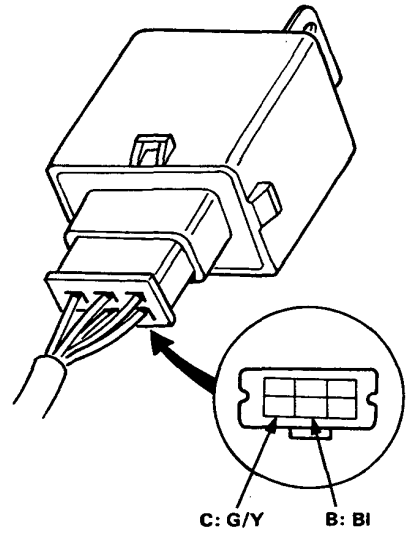
Is there continuity?
- NO → Faulty over-taking switch
- NO → Open circuit between over-taking switch and control relay
- YES

Check retractor motor for operation.

Does motor work properly?
- NO → See No. 4 troubleshooting.
- YES

Check control relay.

Does relay work propely?
- NO → Faulty control relay
- YES → Faulty dimmer relay or Faulty lighting relay



(cont'd)

Troubleshooting (cont'd)

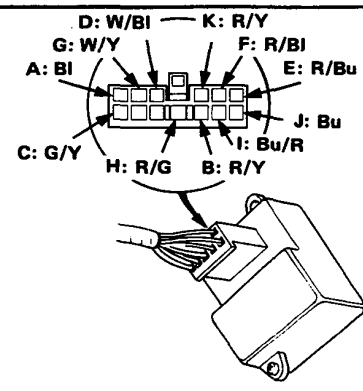
6. **Headlights lower when the lighting switch turn to ● from · position.**

   - Faulty control unit.

Control Unit Warning Output Test

1. Connect the battery positive cable to J terminal of the control unit, and negative cable to A terminal.
2. The right warning circuit is normal if there is voltage between E (positive) and A (negative) terminals at approximately 2.5 – 5.5 seconds after connecting the battery.

   NOTE: For left warning circuit check, connect the battery positive cable to I terminal and perform the same procedure as for the left circuit.



Control Relay Test

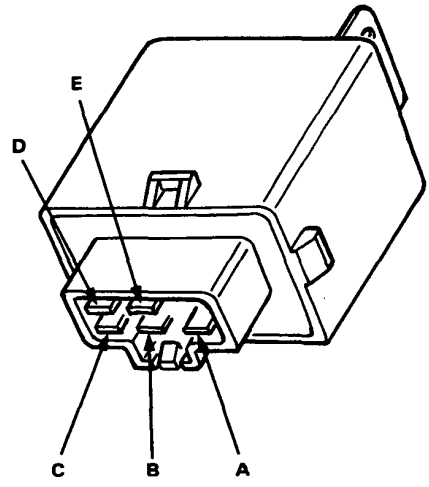
1. Connect the battery positive cable to E terminal of the control relay, and the negative cable to B and C terminals.
2. Check for continuity between A and B terminals. If there is no continuity, the control relay is faulty.

   NOTE: Connect the negative probe of the ohmmeter to A terminal, and the positive probe to B terminal.
3. Check for continuity between D and B terminals. If there is no continuity, the control relay is faulty.

   NOTE: Connect the negative probe of the ohmmeter to D terminal, and the negative probe to B terminal.
4. Disconnect the battery negative cable from C terminal.
5. Check for continuity between A and B terminals. If there is no continuity, the control relay is faulty.

   NOTE: Connect the negative probe of the ohmmeter to A terminal, and the positive probe to B terminal.
6. Check for continuity between D and B terminals. If there is no continuity, the control relay is faulty.

   NOTE: Connect the negative probe of the ohmmeter to D terminal, and the positive probe to B terminal.



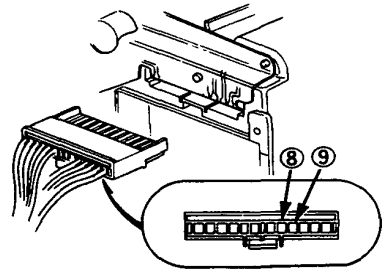
Digital Meter

Troubleshooting

1. Meter is not illuminated. Or meter is illuminated, however segments are not illuminated.

Disconnect 12P connector from combination meter.

CAUTION: Insulate the 12P connector from the body until the testing is completed.



View from wire side

Disconnect 14P connector from combination meter.

Check for continuity between ⑧ lead (Bl) and body ground at 12P connector.

Is there continuity? NO — Poor ground

YES

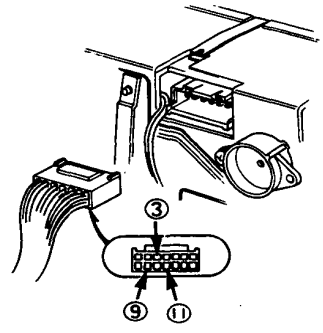
Check for continuity between ③ lead (Bl) and body ground at 14P connector.

Is there continuity? NO — Poor ground

YES

Turn ignition switch on.

Measure voltage between ⑨ (Y: positive) and ⑧ (Bl: negative) leads at 12P connector.



View from wire side

Is 12 volts available? NO — Check No. 5 fuse.

YES

It is normal? NO — Replace and recheck.

YES

Open circuit between No. 5 fuse and combination meter

Measure voltage between ⑨ (Y: positive) and ③ (Bl: negative) leads at 14P connector.

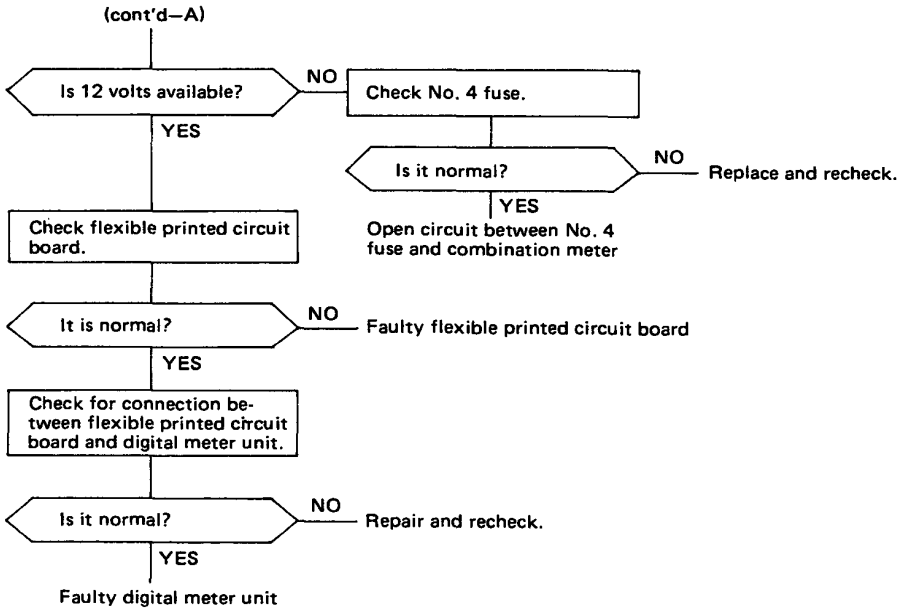
Is 12 volts available? NO — Open circuit between No. 5 fuse and combination meter

YES

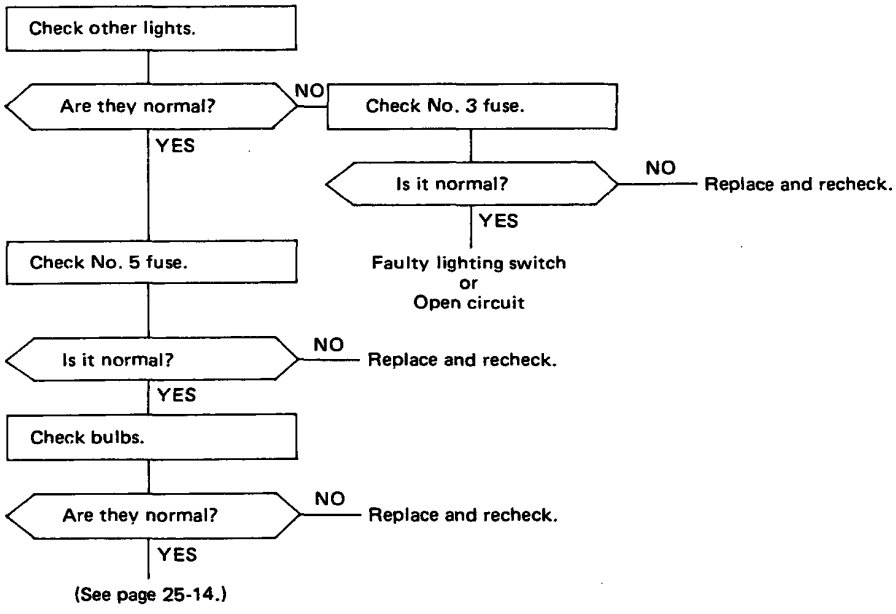
Turn ignition switch off.

Measure voltage between ⑪ (W/Y: positive) and ③ (Bl: negative) leads at 14P connector.

(cont'd—A)



2. *Segments are illuminated, however back-lighting is not illuminated.*



(cont'd)

Digital Meter

Troubleshooting (cont'd)

(From page 25-13)

Disconnect 12P connector from combination meter.

CAUTION: Insulate the 12P connector from the body until the testing is completed.

Check for continuity between ⑧ lead (Bl) and body ground at 12 P connector.

Is there continuity? NO — Poor ground

YES

Turn lighting switch on.

Measure voltage between ① (R/Bl: positive) and ⑧ (Bl: negative) leads at 12P connector.

Is 12 volts available? NO — Open circuit between lighting switch and gauge assembly.

YES

Turn lighting switch off.

Turn ignition switch on.

NOTE: The negative side of illumination is R lead. R lead is connected to the dash light brightness controller. Check R lead or brightness controller if necessary.

Measure voltage between ⑨ (Y: positive) and ⑧ (Bl: negative) leads at 12P connector.

Is 12 volts available? NO — Open circuit between No. 5 fuse and combination meter.

YES

Check flexible printed circuit board.

Is it normal? NO — Faulty flexible printed circuit board

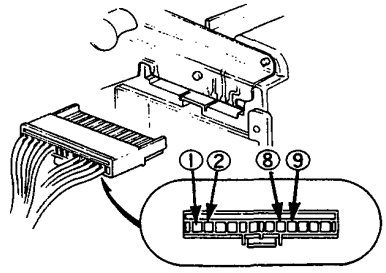
YES

Check for connection between flexible printed circuit board and digital meter unit.

Is it normal? NO — Repair and recheck.

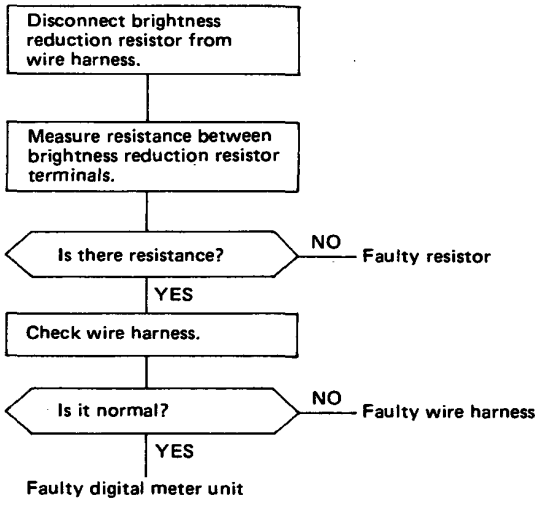
YES

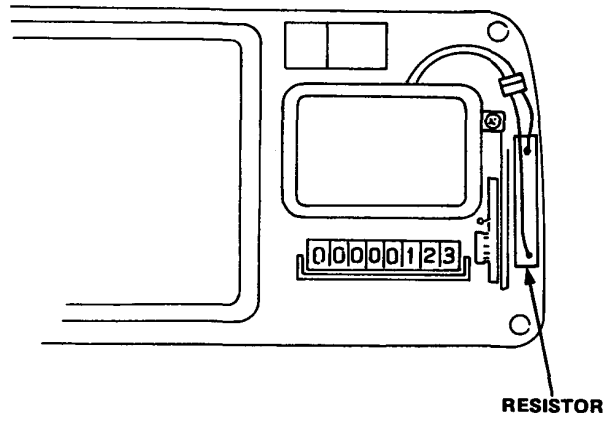
Faulty digital meter unit



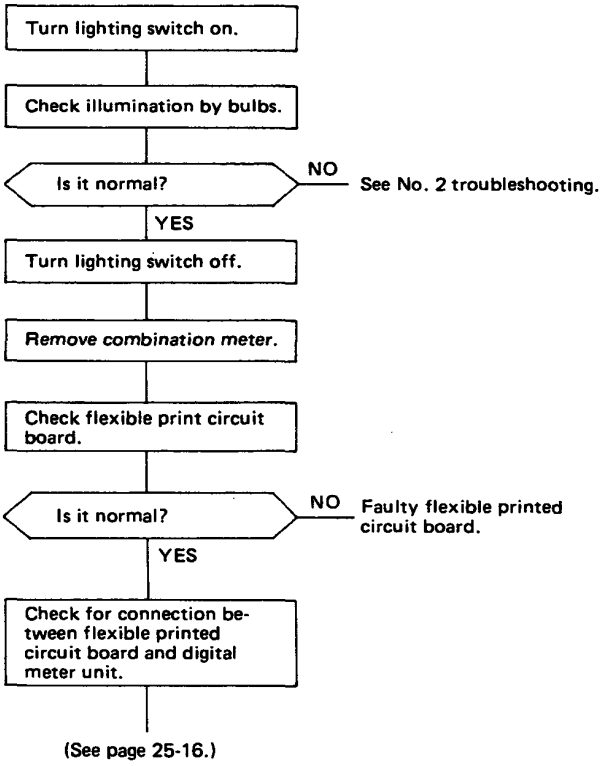
View from wire side

3. Back lighting is not illuminated, when lighting switch turned is on.





4. Brightness of gauge illumination is not reduced, when lighting switch is turned on.



Troubleshooting (cont'd)

(From page 25-15)

Is it normal? — NO → Repair and recheck.

YES

Faulty digital meter unit.

5. Some of segments are not illuminated, when ignition switch is turned on.

Faulty digital meter unit

6. Speedometer indicates abnormally.

Check odometer.

Does odometer work? — NO → Faulty speedometer cable

YES

Remove combination meter.

Remove lens of combination meter.

Reconnect 14P connector.

Check for continuity between Bl lead of 4P connector and ③ (Bl) lead of 14P connector.

Is there continuity? — NO → Faulty digital meter unit (ground circuit)

YES

Turn ignition switch on.

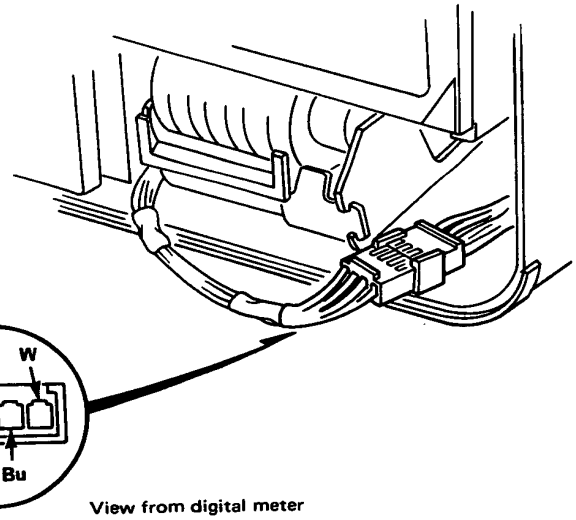
Measure voltage between R (positive) and Bl (negative) at 4P connector.

Is approxi. 10 volts available? — NO → Faulty digital meter unit

YES

Connect voltmeter positive probe to W lead and negative probe to Bl lead at 4P connector.

(cont'd—B)



View from digital meter

(cont'd—B)

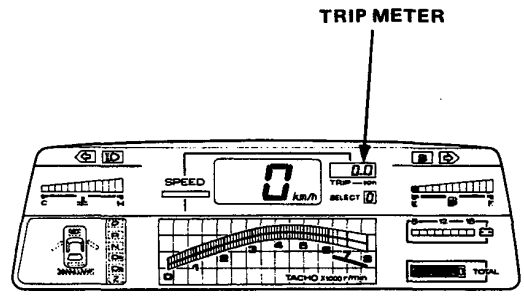
Rotate speedometer cable?

Make sure voltmeter will show 5 volts and 0 volt repeatedly.

Is it normal? NO — Faulty speed pulser

YES

Faulty degital meter unit



7. Tripmeter doesn't work.

Check speedometer.

Does speedometer work properly? NO — See No. 6 troubleshooting.

YES

Faulty digital meter unit

8. Tripmeter is not reset.

Turn ignition switch on.

NOTE: The steps presuppose that the buzzer is normal.

Press reset button.

Check that buzzer sounds for 2 seconds.

Does buzzer sound? NO — Turn ignition switch off.

YES

Faulty digital meter unit

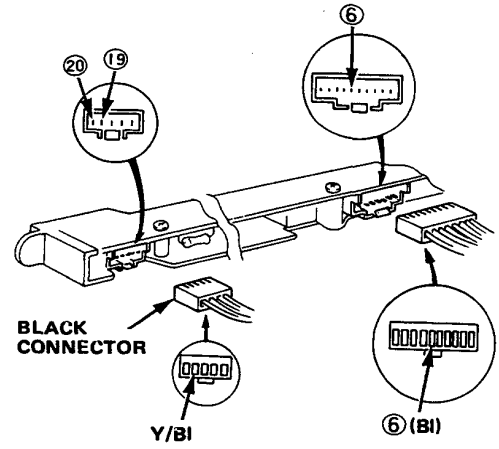
Remove combination meter and warning display unit.

Check reset switch.

Does switch work properly? NO — Faulty reset switch

YES

(See page 25-18.)



NOTE: *The reset switch is normal if there is continuity between the terminals ⑥ and ⑲ when it is depressed. There should be no continuity when the switch is released.*

(cont'd)

Digital Meter

Troubleshooting (cont'd)

(From page 25-17)

Check for continuity between ⑥ lead (Bl) and body ground at 10P connector.

Is there continuity? — NO → Poor ground

YES

Check Y/Bl lead for continuity between warning display unit and digital meter unit.

NOTE: The Y/Bl lead transmits actions of the reset switch to the digital meter unit.

Is there continuity? — NO → Open circuit

YES

Faulty digital meter unit

9. Tripmeter is not shifted.

Turn ignition switch on.

NOTE: The steps presuppose that the buzzer is normal.

Press select button.

Check that buzzer sounds momentary.

Does buzzer sound? — NO → Turn ignition switch off.

YES

Faulry digital meter unit.

Remove combination meter and warning display unit.

Check select switch.

NOTE: The select switch is correct if there is continuity between the terminals ⑥ and ⑳ when depressed. There should be no continuity when released.

Does switch work properly? — NO → Faulty select switch.

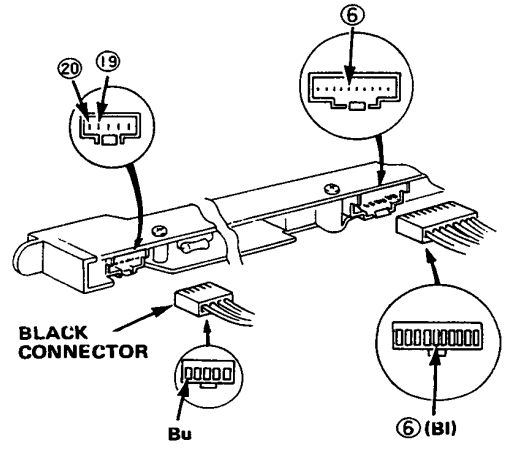
YES

Check for continuity between ⑥ lead (Bl) and body ground at 10P connector.

Is there continuity? — NO → Poor ground

YES

(cont'd—C)



(cont'd—C)

Check Bu lead for continuity between warning display unit and digital meter unit.

NOTE: The Bu lead transmits actions of the select switch to the digital meter unit.

Is there continuity? NO — Open circuit

YES

Faulty digital meter unit

10. Memory of tripmeter is changed or returned to 0.0 km when ignition switch is turned off.

Turn ignition switch on.

Check that buzzer remains silent for 2 seconds after self-checking of segments.

Is there no beeping? NO (beep) — Faulty reset switch (remains ON)

— Short circuit in Bu lead

YES (silent)

Turn ignition switch off.

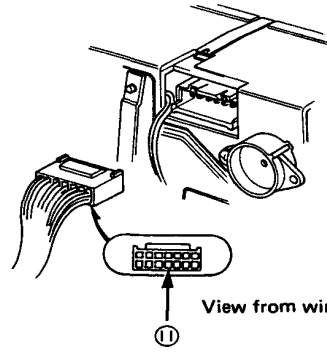
Disconnect 14P connector from combination meter.

Measure voltage between ⑪ (W/Y: positive) and ③ (Bl: negative) leads at 14P connector.

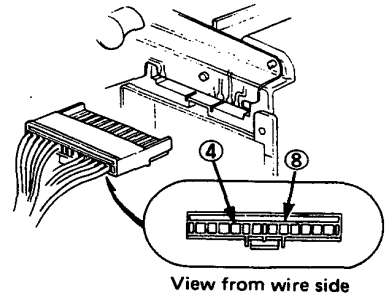
Is 12 volts available? NO — Open circuit between No. 4 fuse and combination meter

YES

Faulty digital meter unit



View from wire side



View from wire side

11. Tachometer doesn't indicate.

Disconnect 12P connector from combination meter.

CAUTION: Insulate the 12P connector from the body until the testing is completed.

Check for continuity between ⑧ lead (Bl) and body ground at 12P connector.

Is there continuity? NO — Poor ground

YES

See page 25-20.)

(cont'd)

Troubleshooting (cont'd)

(From page 25-19)

Run engine.

Measure voltage between ④ (Bu: positive) and ⑧ (Bl: negative) leads at 12P connector.

Is there voltage? NO — Open circuit between ignition coil and combination meter

YES

Stop engine.

Check flexible print circuit board.

Is it normal? NO — Faulty flexible printed circuit board

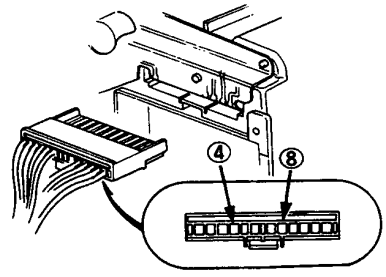
YES

Check for connection between flexible printed circuit board and digital meter unit.

Is it normal? NO — Repair and recheck.

YES

Faulty digital meter unit



View from wire side

12. Manual Transmission: Width of tachometer color bar is not reduced to half in 5th gear.

Check speedometer indication.

NOTE: The tachometer indicates 5th speed based on calculation by microcomputer (ratio between vehicle speed and engine rpm). Width of color bar, however, is not reduced to half for speeds below 23 km/h.

Is it normal? NO — See No. 6 troubleshooting.

YES

Check tachometer indication.

Is it normal? NO — See No. 11 troubleshooting.

YES

Faulty digital meter unit

13. Automatic transmission: Width of tachometer color bar is not reduced to half in D4 range.

Check AT position indicator for function.

Is it normal? NO — See chapter 15 of base shop manual.

YES

Remove combination meter.

Check for continuity between ⑧ lead (BI) and body ground at 12P connector.

Is there continuity? NO — Poor ground

YES

Disconnect G lead connecting safety indicator and combination meter.

Reconnect 12P connector.

Start engine.

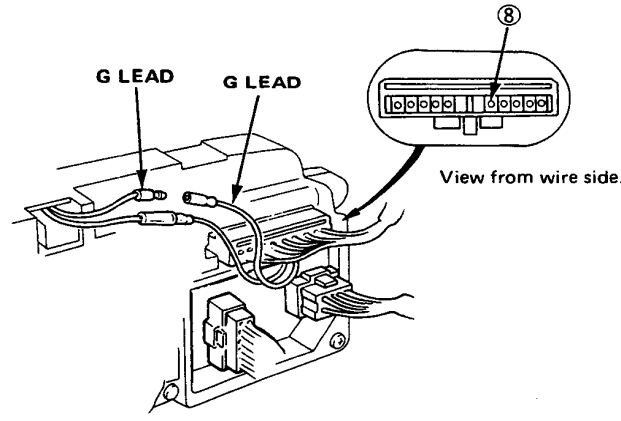
Connect meter side G lead to ⑧ lead (BI) of 12P connector by using jumper wire.

Check if width of color bar reduced to half.

Does color bar indicate properly? NO — Faulty digital meter unit

YES

Faulty safety indicator



14. Faulty fuel meter

Disconnect wire harness from fuel gauge sending unit.

Touch Y/W lead to BI lead.

(See page 25-22.)

NOTE: There is a considerable time lag between movement of float in tank and meter indication: about 50 seconds for a segment to light (about 10 minutes for segments to go from E through F back to E). To speed checking, turn the ignition switch OFF, then turn it ON immediately. This causes all the segments to light for about 2 seconds, then amount of fuel in tank is indicated without time lag.

(cont'd)

Digital Meter

Troubleshooting (cont'd)

(From page 25-21)

Turn ignition switch on.

Check meter indication.

CAUTION: Turn the ignition switch off just before segment F is lit.

Is segment F lit?

NO

YES

Turn ignition switch off.

Stop grounding Y/W lead to BI lead.

Turn ignition switch on.

Check fuel meter.

Is segment E lit?

YES

Faulty fuel gauge sending unit

Turn ignition switch off.

Reconnect wire harness to fuel gauge sending unit.

Remove combination meter.

CAUTION: Insulate the 12P connector from the body until the testing is completed.

Disconnect 12P connector from combination meter.

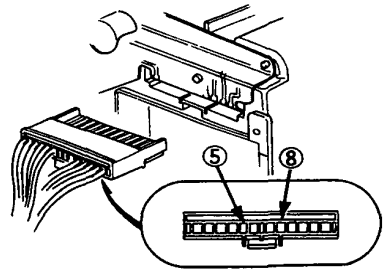
Check for continuity between ⑧ lead (BI) and body ground at 12P connector.

Is there continuity?

NO — Poor ground

YES

(cont'd—D)



View from wire side

(cont'd—D)

Check for resistance between ⑤ (Y/W) and ⑧ (Bl) leads.
Approx. 3 Ω at Full
Approx. 32.5 Ω at 1/2
Approx. 105 Ω at Empty

Does amount of fuel in tank agree with meter indication?
- NO → Faulty fuel gauge sending unit
- NO → Faulty wire harness between meter and sending unit
- YES

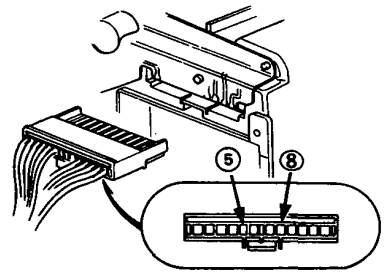
Check flexible printed circuit board.

Is it normal?
- NO → Faulty flexible printed circuit board
- YES

Check for connection between flexible printed circuit board and digital meter unit.

Is it normal?
- NO → Repair and recheck.
- YES

Faulty fuel meter



View from wire side.

15. Faulty temperature gauge.

Disconnect wire harness from temperature gauge sending unit.

Ground Y/G lead to engine.

Turn ignition switch on.

CAUTION: Turn the ignition switch off just before the segment H lit.

Check gauge indication.

Is segment H lit?
- NO → F (See page 25-24)
- YES

Turn ignition switch off.

E (See page 25-24)

(cont'd)

Troubleshooting (cont'd)

E
(From page 25-23)

Stop grounding Y/G lead to engine.

Turn ignition switch on.

Check gauge indication.

Is segment C lit?

YES

Faulty temperature gauge sending unit

F
(From page 25-23)

Turn ignition switch off.

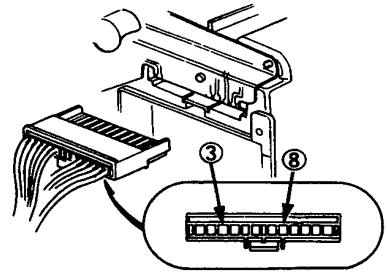
Reconnect wire harness to temperature gauge sending unit.

Remove combination meter.

CAUTION: Insulate the 12P connector from the body until the testing is completed.

Disconnect 12P connector from combination switch.

Check for continuity between ⑧ lead (Bl) and body ground at 12P connector.



View from wire side.

Is there continuity?

NO — Poor ground

YES

Check for resistance between ③ (Y/G) and ⑧ (Bl) leads.
Approx. 16.1 Ω at 120°C (H)
Approx. 51.9 Ω at 80°C
Approx. 153.9 Ω at 50°C (C)

Does coolant temperature agree with gauge indication?

NO — Faulty temperature gauge sending unit
NO — Faulty wire harness between gauge and sending unit

YES

Check flexible printed circuit board.

Is it normal?

NO — Faulty flexible printed circuit board

YES

(cont'd—G)

(cont'd–G)

Check for connection between flexible printed circuit and digital meter unit.

Is it normal? — NO — Repair and recheck.

YES

Faulty temperature gauge

16. Faulty volt meter.

Disconnect 12P connector from combination meter.

CAUTION: Insulate the 12P connector from the body until the testing is completed.

Check for continuity between ⑧ lead (Bl) and body ground at 12P connector.

Is there continuity? — NO — Poor ground

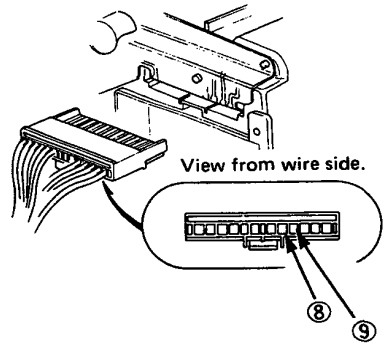
YES

Turn ignition switch on.

Measure voltage between ⑨ (Y: positive) and ⑧ (Bl: negative) leads at 12P connector.

Check for difference between measurement and indicated voltage.

Is difference held within ± 1 volt? — NO — Faulty voltmeter



NOTE: The meter will indicate 8 volts for voltage below 8 volts, and 16 volts for voltage above 16 volts.

Safety Indicator (Digital Meter Equipped Model)

Troubleshooting

1. No warning lights go on when bulb check switch is pushed.

Remove combination meter.

Check safety indicator bulbs.

Are they normal? — NO — Replace and recheck.

YES

Reconnect 14P connector to safety indicator.

Disconnect Bu lead connecting combination meter to safety indicator.

Connect indicator Bu lead to ⑨ lead (BI) of 14P connector by using jumper wire.

Turn ignition switch on.

Check bulbs.

Are bulbs lit? — NO — Faulty safety indicator

YES

Turn ignition switch off.

Check for continuity between meter Bu lead and ③ terminal of digital meter unit.

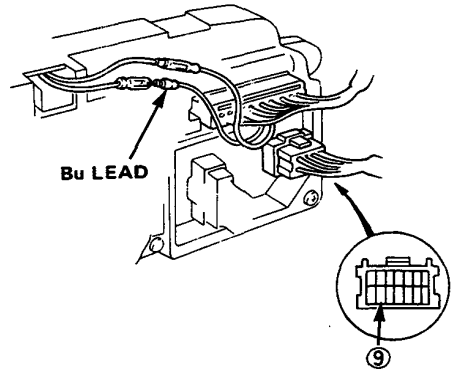
Is there continuity? — NO — Faulty digital meter unit

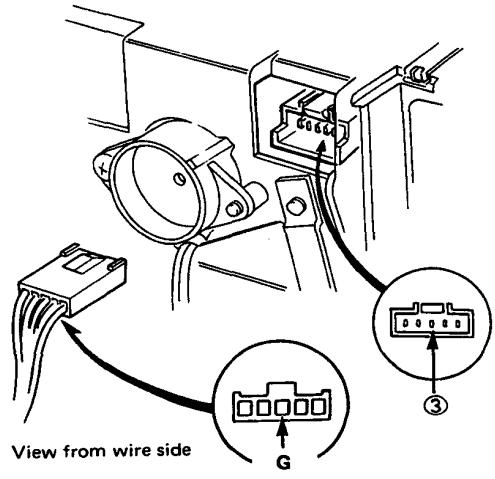
YES

Check bulb check switch.

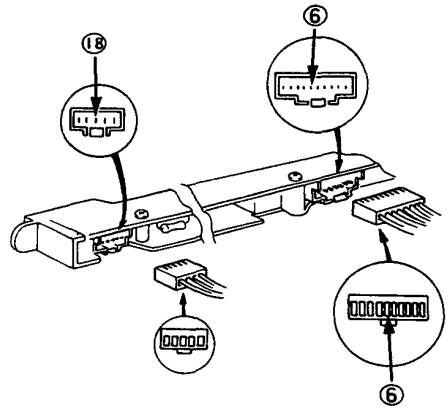
Check for continuity between ⑥ lead (BI) and body ground at 10P connector.

(cont'd—H)





View from wire side



NOTE: The check switch is normal if there is continuity between the terminals ⑱ and ⑥ when pressed. There should be no continuity when released.

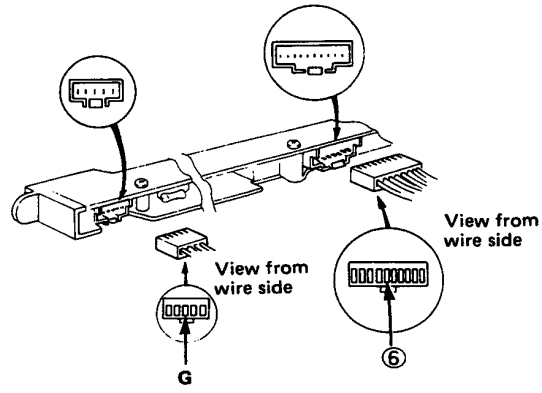
(cont'd—H)

Is there continuity? NO → Poor ground

YES

Check G lead for continuity between digital meter unit and warning display.

Is there continuity? NO → Open circuit

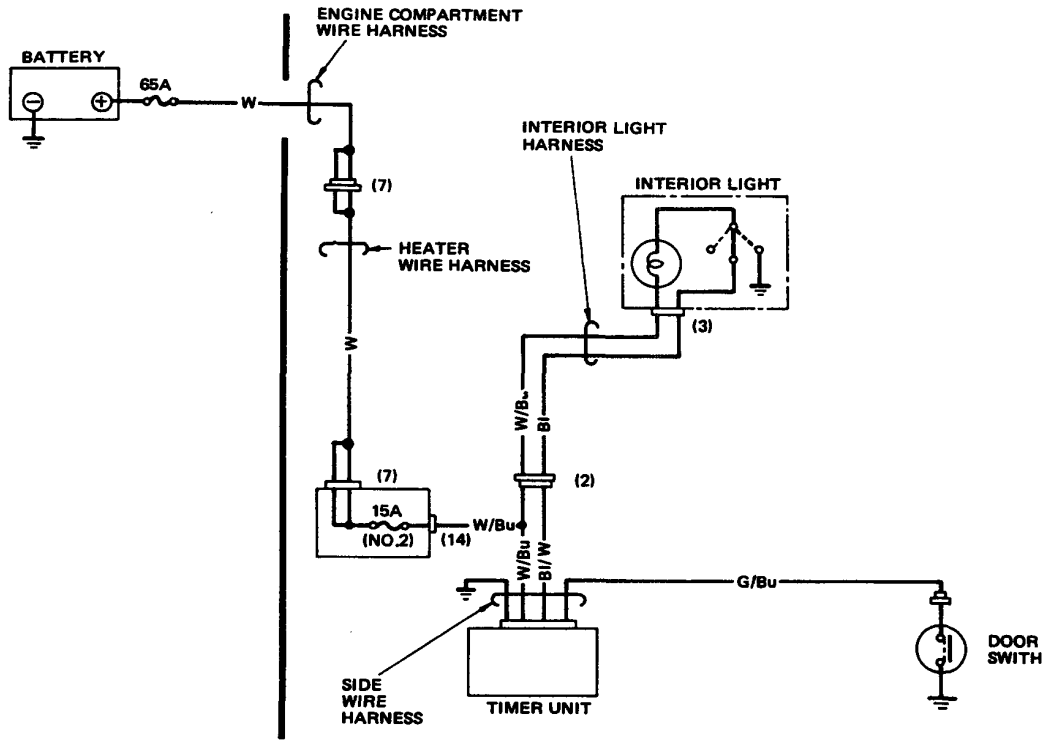


2. All warning lights go on with ignition switch on.

- Check bulb check switch.
- Check for no continuity between safety indicator and ground (G lead).
- If they are OK, safety indicator is faulty.

Interior Light Timer

Wiring Diagram

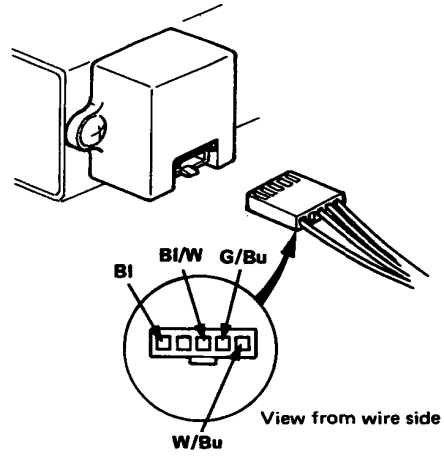


Troubleshooting

1. **Interior light doesn't stay on for a few seconds after closing door.**
   - Blown out 15 A fuse (No. 2).
   - Open circuit in W/Bu lead between 15 A fuse and timer unit.
   - Faulty timer unit.
2. **Interior light doesn't shut off a few seconds after closing door.**
   - Short circuit in Bl (Bl/W) lead between interior light and timer unit.

NOTE: Check door switch for correct operation, if necessary.

NOTE:
- There should be continuity between Bl lead and ground at the connector.
- There should be continuity between G/Bu and Bl lead at the connector with driver side door opened.
- There should be 12 volts between W/Bu (positive) and Bl (negative) leads at the connector.
- There should be 12 volts between Bl/W (positive) and Bl (negative) leads at connector when interior light switch is in mid position.



120km/h Speed Warning

Troubleshooting

Speed warning buzzer doesn't sound.

Drive car.

Check speedometer.

Does speedometer work properly? NO → Check odometer.

YES

Stop engine.

Remove combination meter.

Remove buzzer.

Connect battery to R lead (positive) and Y lead (negative) of buzzer.

Does buzzer sound. NO → Faulty buzzer

YES

Faulty speed sensor amplifier

Check odometer.

Does odometer work properly? NO → Faulty speedometer cable / Faulty odometer

YES

Stop engine.

Remove combination meter.

Remove buzzer.

Connect battery to R lead (positive) and Y lead (negative) of buzzer.

Does buzzer sound? NO → Faulty buzzer

YES

Connect 5P connector to speed sensor amplifier.

Check for continuity between ① lead of 4P connector and ① lead of 5P connector.

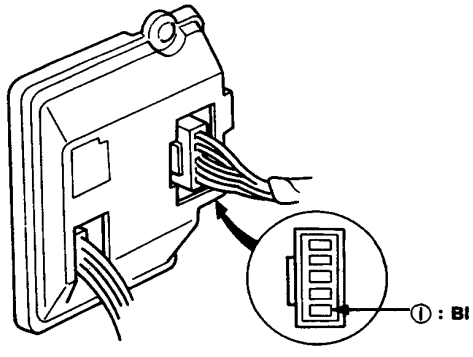
Is there continuity? NO → Faulty speed sensor amplifier (ground line)

YES

Turn ignition switch on.

Measure voltage between ④ (positive) and ① (negative) leads at 4P connector.

(See page 25-30.)



(cont'd)

Troubleshooting (cont'd)

(From page 25-29)

Is approx. 9 volts available?
- NO → Faulty speed sensor amplifier
- YES →

Measure voltage between ② (positive) and ① (negative) leads at 4P connector.

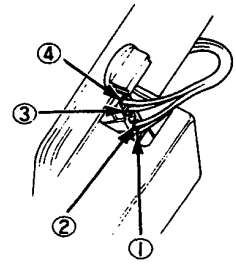
Is approx. 1 volt available?
- NO → Faulty speed sensor amplifier
- YES →

Connect volt meter positive probe to ③ lead and negative probe to ① lead at 4P connector.

Rotate speedometer cable.

Does volt meter show approx. 9 volts?
- NO → Faulty speed pulser
- YES →

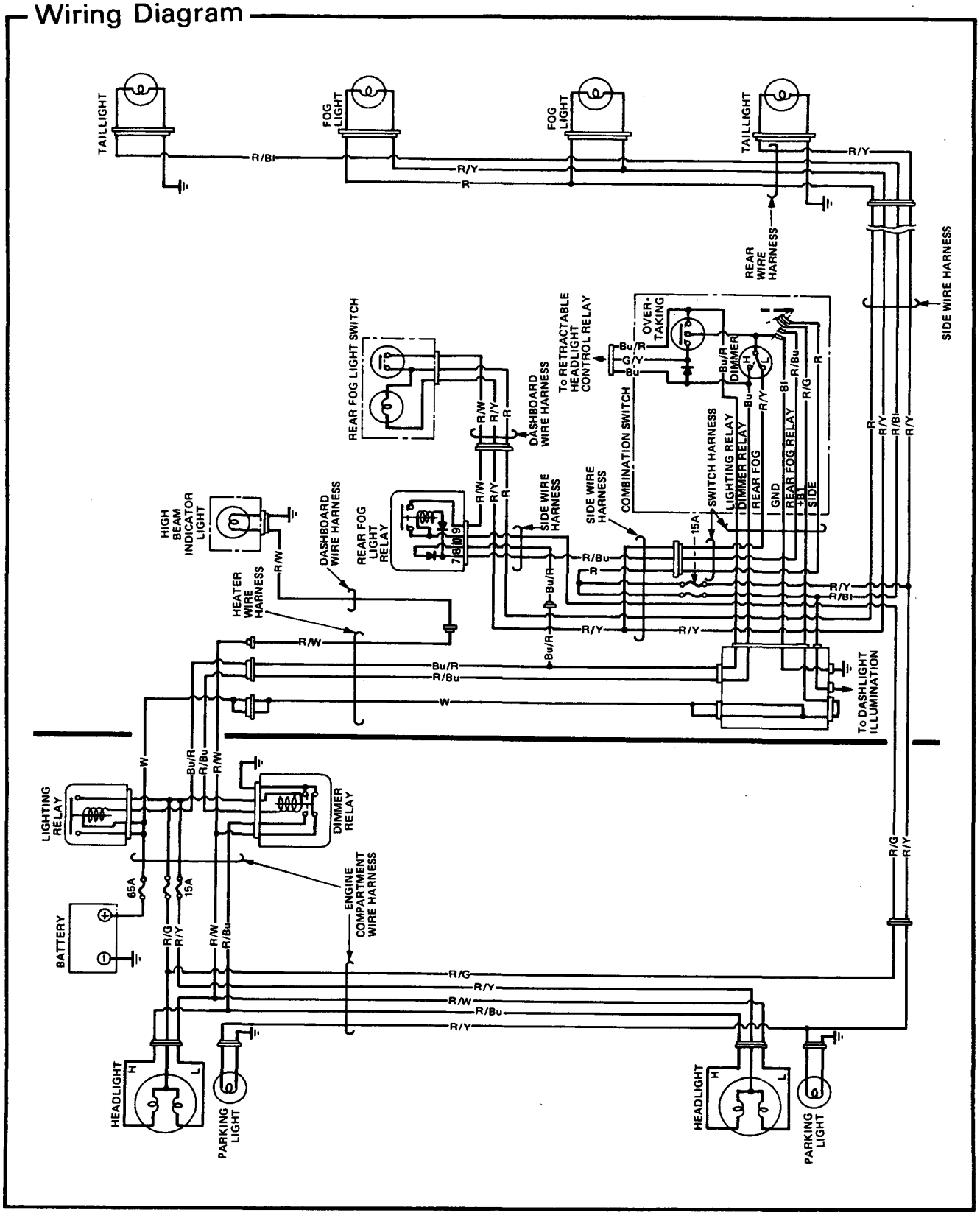
Faulty speed sensor amplifier



NOTE: In fact, voltage will fluctuate but volt meter should shown an average of the specified.

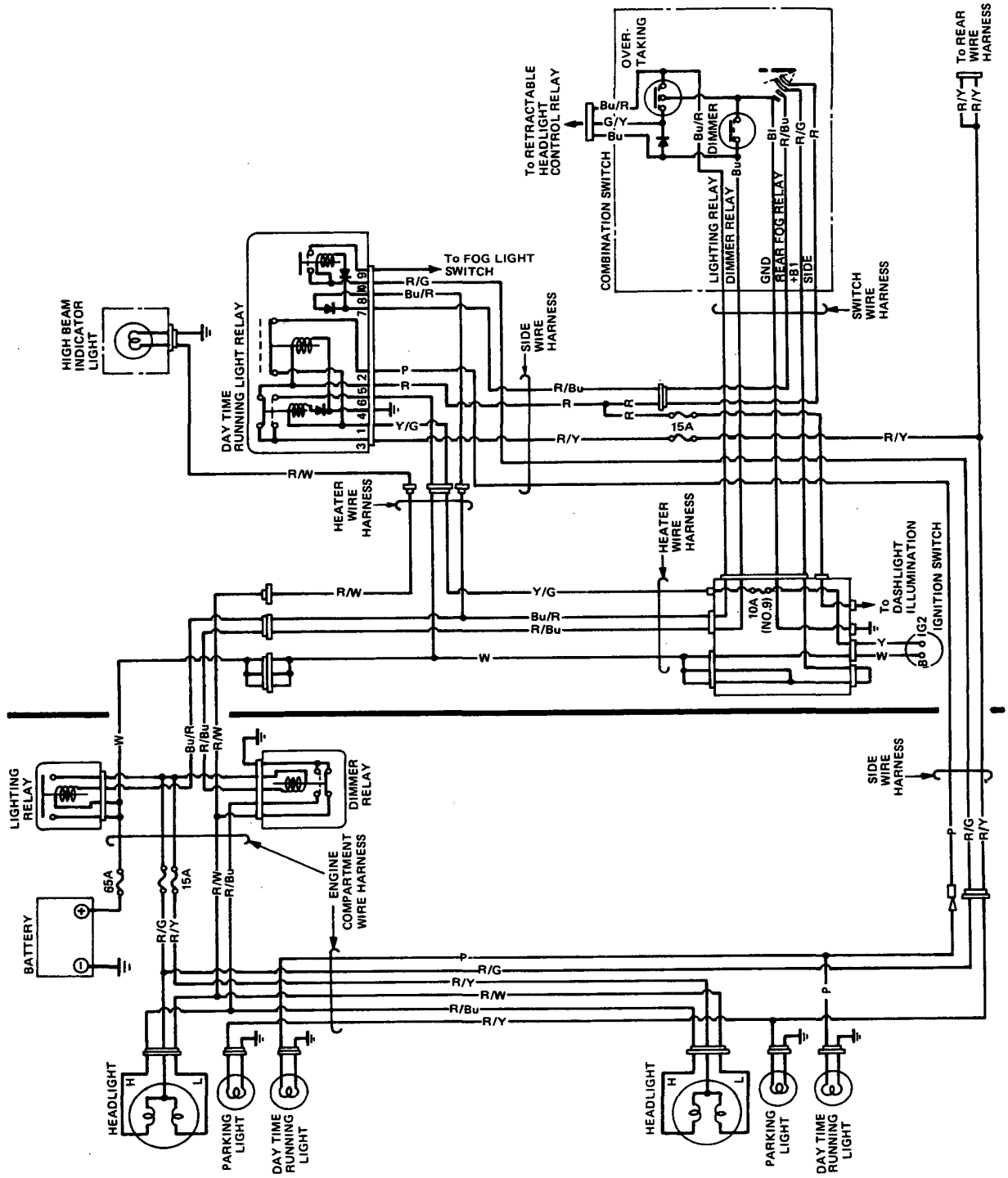
Rear Fog Light (KF and KX Model)

Wiring Diagram



Day Time Running Light

Wiring Diagram



Day Time Running Light

Running Light Relay Test

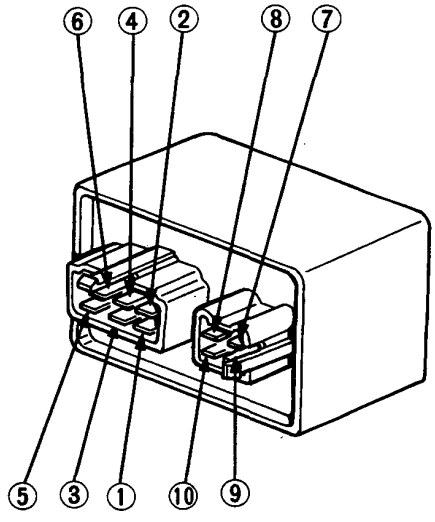
1. Check for continuity with the battery disconnected.

   - There should be continuity between ⑤ and ③ terminals.
   - There should be continuity between ① and ② terminals.
   - There should be continuity between ⑧ and ⑦ terminals.

   NOTE: Connect ohmmeter negative probe to ⑧ terminal and positive probe to ⑦ terminal.

2. Check for continuity and voltage with the battery connected.

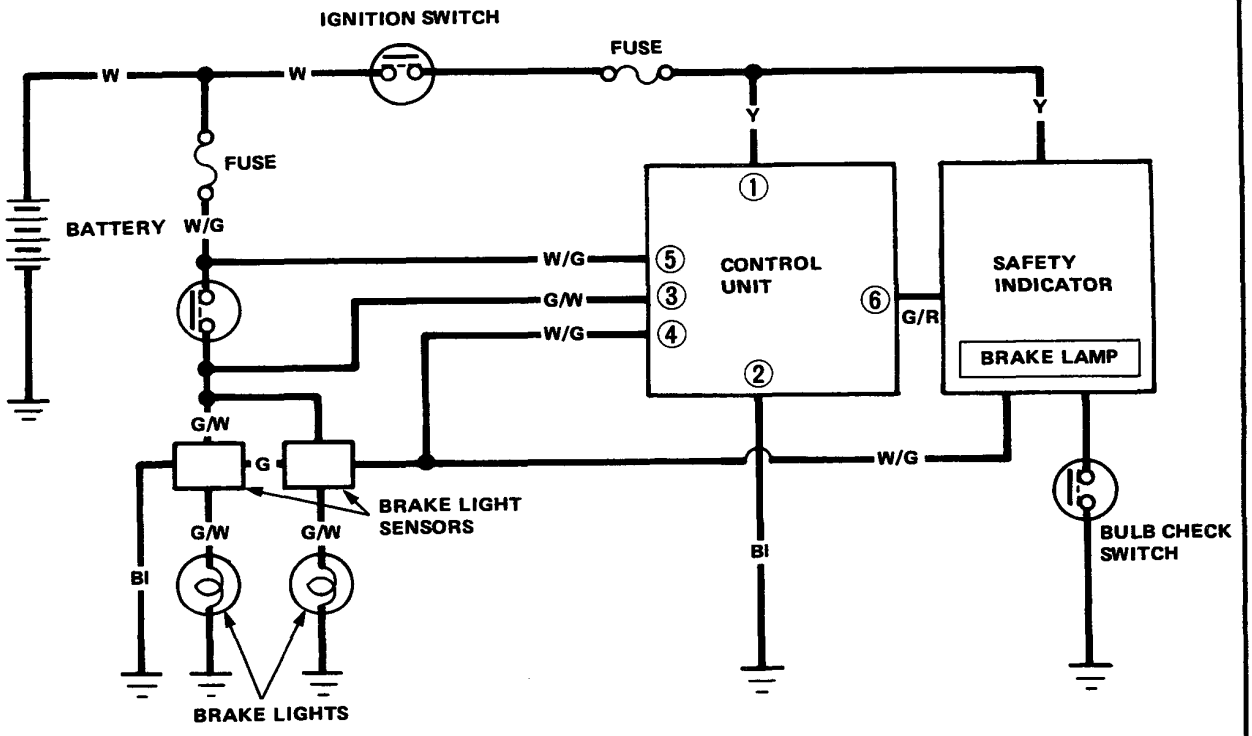
   - There should be continuity between ③ and ⑥ terminals, when the battery positive wire is connected to ① terminal and negative wire to ④ terminal.
   - There should be no continuity between ① and ② terminals, when the battery positive wire is connected to ⑤ terminal and negative wire to ④ terminal.
   - There should be 12 volts between ⑨ (positive) and ⑦ (negative) terminals, when the battery positive wire is connected to ⑩ terminal and negative wire to ⑦ terminal.



Brake Warning System

Operation

When the ignition switch turned ON, brake warning lamp (BRAKE LAMP) stays on.
When the brake pedal is depressed once, the warning lamp should go out.
If there is defect in the brake system (blown fuse, defective brake light switch, open or short circuit and/or blown bulb(s)) the brake warning lamp stay on with the brake pedal operated.



Troubleshooting

- If the BRAKE LAMP does not go off with the brake pedal depressed, check the following items. Repair or replace if necessary.

- Blown fuse (Brake)
- Open or short (in brake light circuit)
- Faulty brake light switch
- Blown brake light bulb(s)

1. BRAKE LAMP does not come on when the ignition switch ON.

Push the bulb check switch.

Check the other indicator.

Does the lamp go on? NO → Check fuse.

Check fuse. → Is it normal? NO → Replace and recheck

Is it normal? YES → Remove the instrument panel.

Remove the instrument panel. → Check for voltage between Y and BI terminals of safety indicator coupler.

Check for voltage between Y and BI terminals of safety indicator coupler. → Is there 12 V? NO → Open circuit

Is there 12 V? YES → Disconnect the coupler.

Disconnect the coupler. → Check for continuity between BI terminal and body ground.

Check for continuity between BI terminal and body ground. → Is there continuity? NO → Poor ground or open circuit

Is there continuity? YES → Replace the safety indicator

YES → Short the G/R terminal of the control unit coupler to the body ground.

Short the G/R terminal of the control unit coupler to the body ground. → Check the BRAKE LAMP.

Check the BRAKE LAMP. → Does the lamp go on? NO → Open circuit

Does the lamp go on? YES → Check for voltage between the Y and BI.

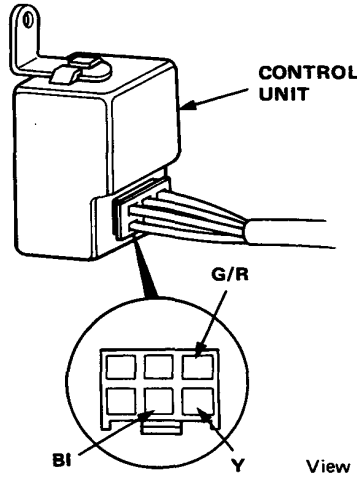
Check for voltage between the Y and BI. → Is there 12 V? NO → Open circuit

Is there 12 V? YES → Disconnect the control unit coupler.

Disconnect the control unit coupler. → Check for continuity between BI terminal to body ground.

Check for continuity between BI terminal to body ground. → Is there continuity? NO → Poor ground or open circuit

Is there continuity? YES → Replace control unit



View from wire side

(cont'd)

Brake Warning System

Troubleshooting (Cont'd)

2. BRAKE LAMP does not go off with the brake pedal depressed while the brake system is normal.

Turn the ignition switch OFF.

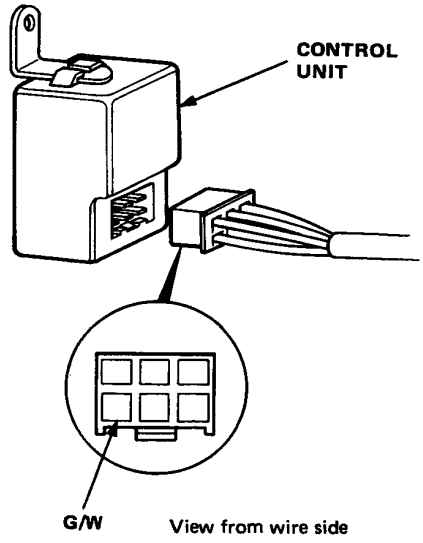
Disconnect the couplers from the control unit and brake light switch.

Check for continuity between G/W terminals of the each coupler.

Is there continuity? — NO — Open circuit

YES

Replace the control unit



Control Unit Test

Disconnect the control unit coupler.

Check for voltage between the W/G (5) and body ground.

Is there 12 volts. — NO — Open circuit

YES

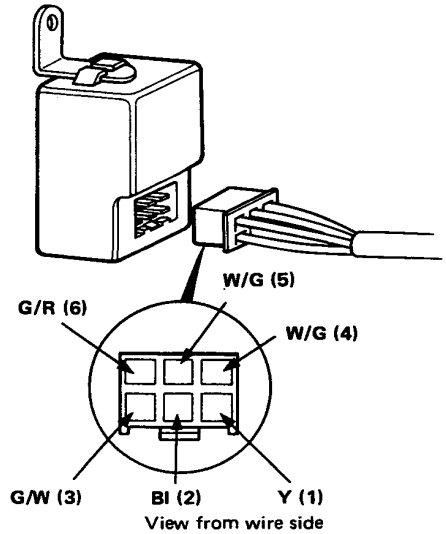
Check for voltage between the G/W (3) and body ground.

Is there 12 volts with the brake pedal depressed. — NO — Open circuit

YES

See page 25-37.

NOTE: Before this test, make sure that the brake bulb and fuse are good condition.



(cont'd)

Control Unit Test

(From page 25-36

Check for continuity between BI terminal to body ground.

Is there continuity? NO — Poor ground

YES

Turn the ignition switch ON.

Check for voltage between Y terminal and body ground.

Is there 12 volts? NO — Open circuit

YES

Check for continuity between the W/G (4) terminal and body ground while the brake pedal depressed.

Is there continuity? NO — Open circuit, Faulty brake light sensor

YES

Turn the ignition switch OFF.

Disconnect the safety indicator coupler.

Check for continuity between G/R terminals.

Is there continuity? NO — Open circuit

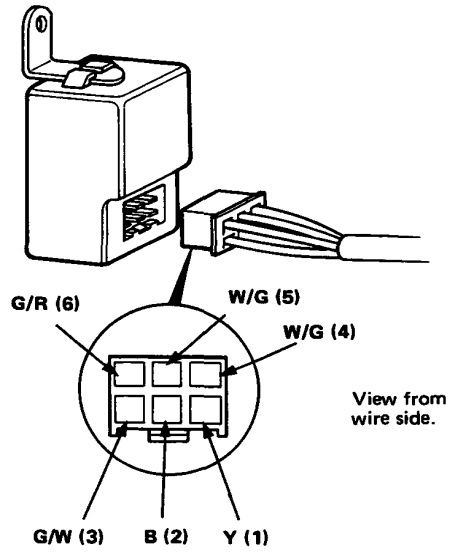
YES

Check for continuity between the W/G terminals.

Is there continuity? NO — Open circuit

YES

Replace the control unit.



MEMO

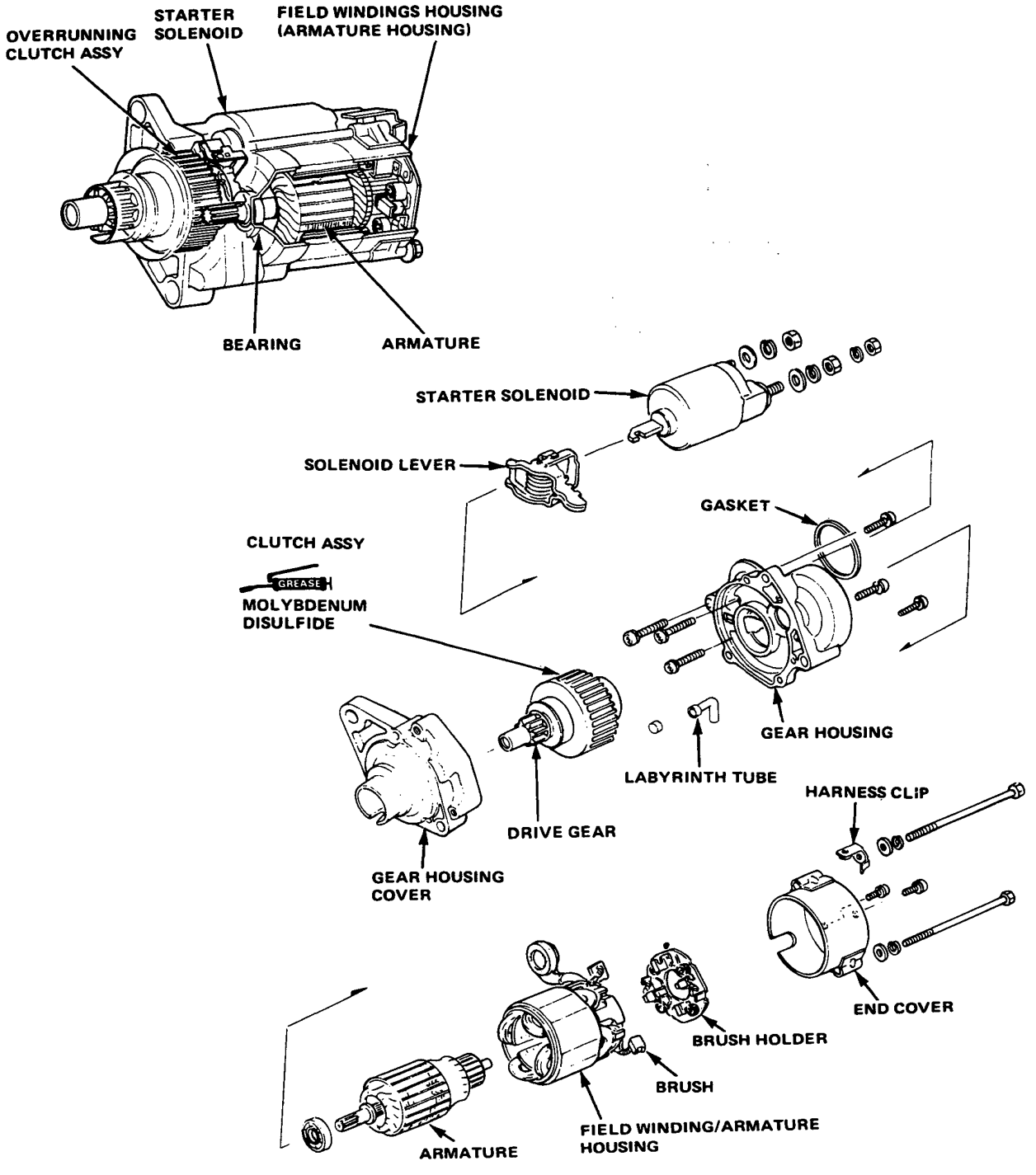
Starting

Starting

Illustrated Index

CAUTION: Disconnect ground cable from battery post before removing starter.

MITSUBA (REDUCTION TYPE) 1.4 kw



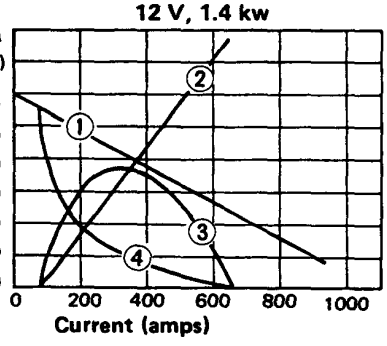
Specifications

	MITSUBA 1.4 kw
Type	SM302-08
Normal output	1.4 kw
Nominal voltage	12 V
Hour rating	30 seconds
Direction of rotation	Clockwise as viewed from pinion gear side
Weight	3.7 kg (8.2 lb)

			MITSUBA 1.4 kw
No load	Terminal voltage	V	11.5
	Current	A	90 max.
	Draw speed	min^{-1} (rpm)	3,500 min.
Load	Terminal voltage	V	8.5
	Torque	N·m (kg-m, lb-ft)	13.5 (1.35, 9.8)
	Current	A	350 max.
	Draw speed	min^{-1} (rpm)	1,000 min.
Braked	Terminal voltage	V	2.4 at 20°C (68°F).
	Current draw	A	450 max.
	Torque	N·m (kg-m, lb-ft)	11 (1.1, 7.9) min.

STARTER PERFORMANCE CURVES ① Voltage ② Torque ③ Output ④ min^{-1} (rpm)

①	②			③	④
V	N·m	lb-ft	kg-m	kW	min^{-1} (rpm)
12	24	17.4	2.4	2.4	6000
10	20	14.5	2.0	2.0	5000
8	16	11.6	1.6	1.6	4000
6	12	8.7	1.2	1.2	3000
4	8	5.8	0.8	0.8	2000
2	4	2.9	0.4	0.4	1000
0	0	0	0	0	0



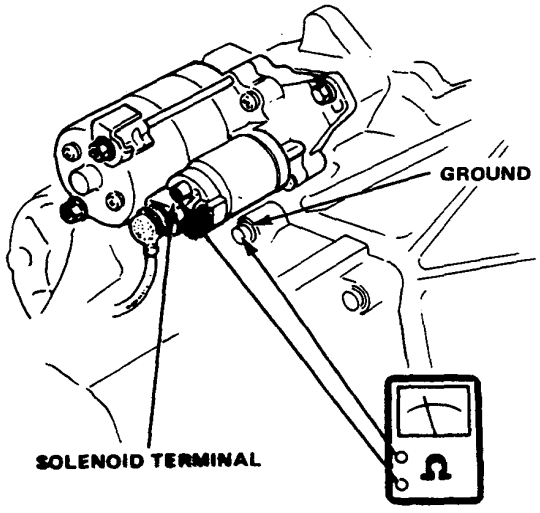
Standard and Service Limit (MITSUBA 1.4 kw)

MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Commutator runout	0–0.02 mm (0–0.0008 in.)	0.05 mm (0.002 in.)
Commutator O.D.	28 mm (1.10 in.)	27.5 mm (1.08 in.)
Mica depth	0.4–0.5 mm (0.016–0.020 in.)	0.15 mm (0.006 in.)
Brush length	14.3–14.7 mm (0.56–0.58 in.)	9.3 mm (0.37 in.)

Starting

Starter Solenoid Check

1. Check pull-in coil continuity between the solenoid terminal and any convenient ground. Coil is OK if there is continuity.



2. Check hold-in coil continuity between the solenoid terminal and motor terminal on the solenoid.

   Coil is OK if there is continuity.

MITSUBA 1.0 kw and 1.4 kw