

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

1988-90 AUTOMATIC TRANSMISSIONS

K4 & PY8A Electronic Controls & Overhaul

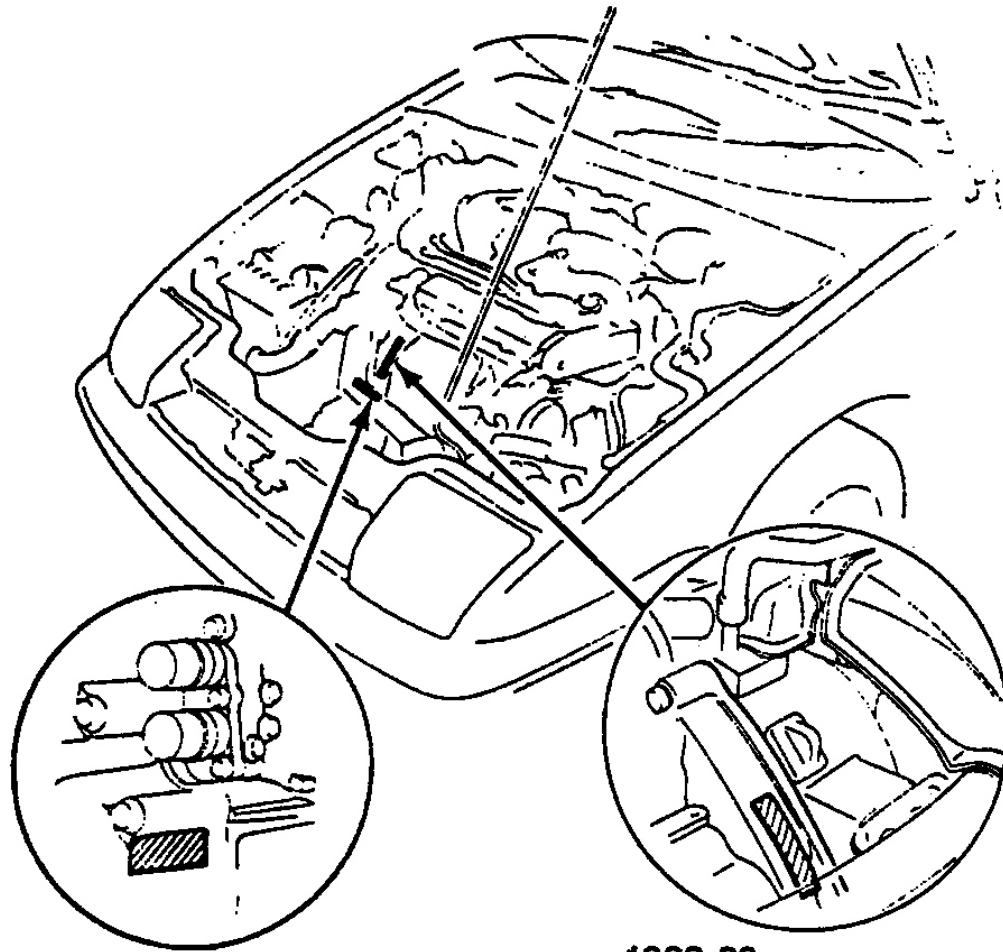
APPLICATION

TRANSAXLE APPLICATION

Application	Transaxle Model
Prelude	
1988-89	K4
1990	PY8A

IDENTIFICATION

Transaxle identification is stamped on a metal pad on top of transmission. First 2 characters indicate transaxle model. See **Fig. 1**.



**1990
Transmission Number
(Automatic)**

50C17170

**1988-89
Transmission Number
(Automatic)**

Fig. 1: Identifying Transmission Number Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DESCRIPTION

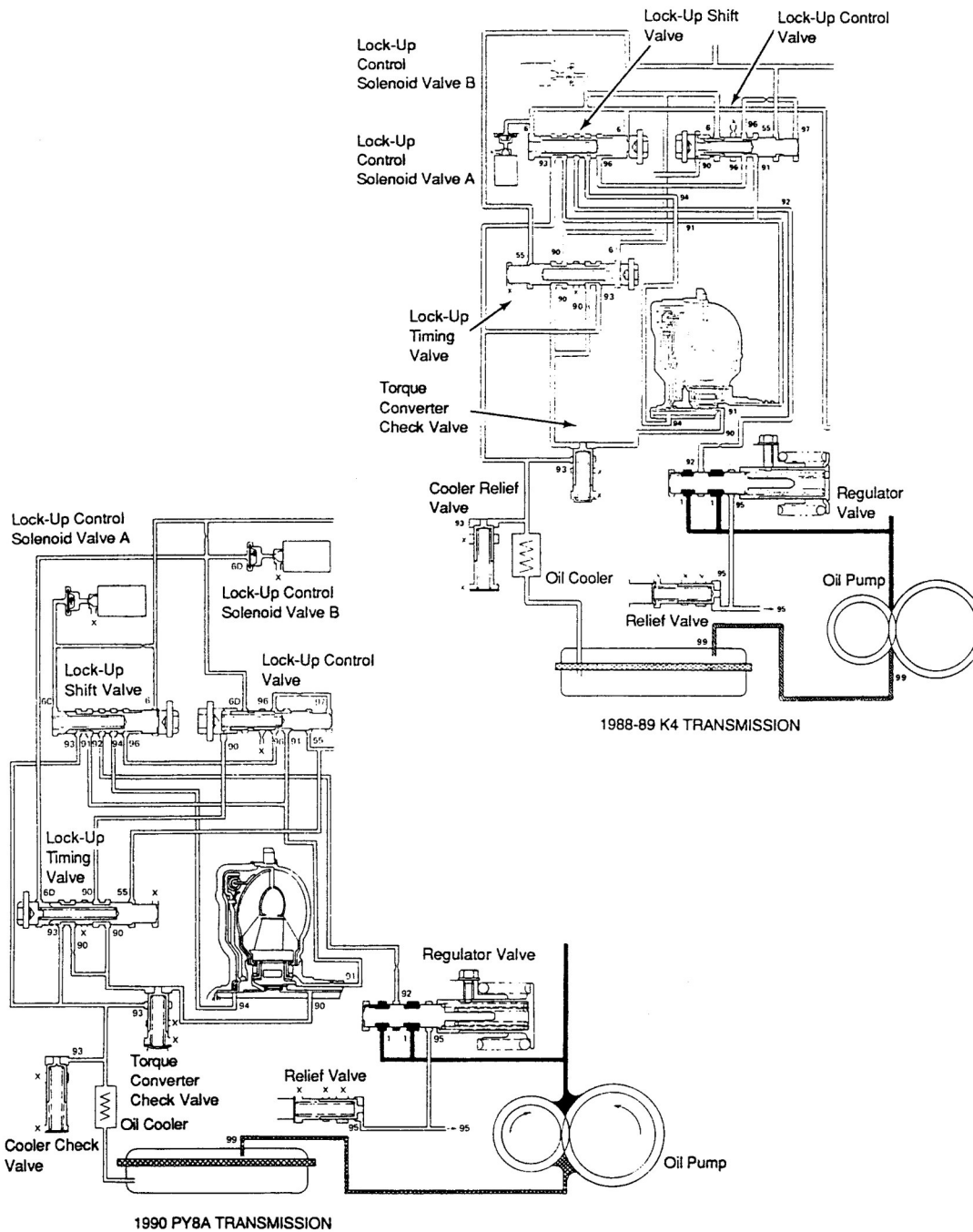
OVERVIEW

The Automatic Transmission (A/T) consists of a 3-element torque converter and dual-shaft electronically controlled transmission which provides 4 forward speeds and one reverse speed. The torque converter consists of a pump, turbine and stator, assembled in a single unit. The valve assembly includes main, secondary, servo,

regulator and lock-up. An Automatic Transmission Control Unit (ATCU), located on the passenger side firewall, is used to control transmission shifts. Input from various sensors located throughout the vehicle determines which shift control solenoid valve the ATCU will activate.

CONVERTER LOCK-UP CLUTCH

In gear selector positions "S4", or "D", and in 2nd, 3rd, or 4th gear, pressurized fluid from the torque converter is directed to the lock-up solenoid piston which locks the transmission mainshaft to the engine crankshaft. Lock-up is controlled by engine speed, hydraulic pressure and ATCU. The lock-up valve controls range of lock-up according to lock-up control solenoid valves "A" and "B", and throttle valve "B". When ATCU activates, lockup control solenoid "A" and "B" modulator pressure changes. Lock-up control solenoid valves "A" and "B" are mounted on torque convertor housing and controlled by ATCU. See **Fig. 2** .



50D17171

Fig. 2: Exploded View Of K4 & PY8A Lock-Up Clutch Schematic
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

OPERATION

GEAR SHIFT SELECTOR

The gear selector is not linked mechanically to transmission. It controls electrical switches which are connected to ATCU. The ATCU controls operation within selected range.

Shift lever has 6 positions. When shift lever is moved, manual valve on main valve body is moved by the shift cable. Shift lever also changes position of the shift position console switch, mounted near shift lever. Shift position console switch delivers an input signal to the ATCU to indicate shift lever position. The ATCU uses input signal to activate shift control solenoid valves and control transaxle.

When certain transaxle gear combinations are engaged by clutches, power is transmitted from the mainshaft to the countershaft to provide different gears. Shift lever positions operate as follows:

"P" (Park)

Front wheels lock as parking pawl engages with parking gear on countershaft. All clutches are released. Neutral safety switch, incorporated in shift position console switch, allows starting in this position.

"R" Reverse

Reverse selector engages countershaft and locks 4th gear clutch.

"N" Neutral

All clutches are released. A slide-type starter inhibitor switch enables engine to be started in this position.

"D" Drive

Vehicle starts off in 1st gear, automatically upshifts to 2nd, 3rd and 4th gear, and downshifts through 3rd, 2nd and 1st gear. Lock-up clutch can be engaged in 2nd, 3rd or 4th when "D" or "S4" is selected.

"S3" Sports

For rapid acceleration at highway speeds and general driving. Starts in 1st, shifts automatically to 2nd, 3rd and 4th, (S4) depending on vehicle speed and throttle position. Down shifts through lower gears to stop.

"2" Second

For engine braking or better traction on slippery surface, stays in 2nd gear, does not shift up or down.

SELF-DIAGNOSIS

The ATCU has a built in self-diagnosis function. If a problem within the system is present, the indicator light "S3" and LED display (on control unit) will blink. See **Fig. 4** . Counting the number of blinks will give fault code. See **ELECTRONIC DIAGNOSIS** .

SELECTOR SOLENOID APPLICATION**SELECTOR SOLENOID APPLICATION**

Gear Selector (Selector Position)	Selector Solenoid "A"	Solenoid "B"
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1st (D, S3, S4)	OFF	ON
2nd (D, S3, S4)	ON	ON
3rd (D, S3, S4)	ON	OFF
4th (D, S4)	OFF	OFF

CONVERTER LOCK-UP SOLENOID APPLICATION

CONVERTER LOCK-UP SOLENOID APPLICATION

Lock-Up Solenoid Condition	Solenoid "A"	Solenoid "B"
OFF	OFF	OFF
Slightly On	ON	OFF
Half On	ON	ON
Fully On	ON	ON
Deceleration	ON	CYCLING

LUBRICATION & ADJUSTMENTS

See appropriate SERVICING article.

ON-VEHICLE SERVICE

AXLE SHAFTS

See appropriate FWD AXLE SHAFTS article in DRIVELINE/AXLES.

OIL COOLER FLUSHING

1. Attach Oil Cooler Flusher (J38405-A) to oil cooler lines. See **Fig. 3** . Fill oil cooler flusher tank 2/3 full with Flushing Fluid (J35944-20). **DO NOT** use any other flushing fluid.
2. Ensure water and air valves on oil cooler flusher are off. Apply 80-120 psi (5.6-8.4 kg/cm²) air pressure to oil cooler flusher. Turn oil cooler flusher water valve on so water will flow through oil cooler for 10 seconds. Shut water valve off. Replace oil cooler if water will not flow through oil cooler.
3. Depress and hold mixing trigger on oil cooler flusher downward. Turn water valve on, and flush oil cooler for 2 minutes. Turn air valve on for 5 seconds every 15-20 seconds to create a surging action. Turn water valve off. Release mixing trigger.
4. Disconnect oil cooler flusher, and reverse hoses so oil cooler can be flushed in opposite direction. Repeat steps 2 and 3 .
5. Turn water valve on, and rinse oil cooler for at least one minute. Once oil cooler is flushed in both directions, turn water off. Turn air valve on for 2 minutes or until no moisture is visible from drain hose.

CAUTION: Ensure no moisture exists in oil cooler, as moisture can damage transaxle.

6. Turn air off. Disconnect oil cooler flusher. Reconnect inlet line on oil cooler. Once transaxle is installed, attach drain hose on return line and place in oil container. Fill transaxle with ATF.
7. Start engine and operate for approximately 30 seconds or until one quart (.9L) of ATF is discharged from return line. Shut engine off. Remove drain hose. Reinstall return line. Fill transaxle to proper level.

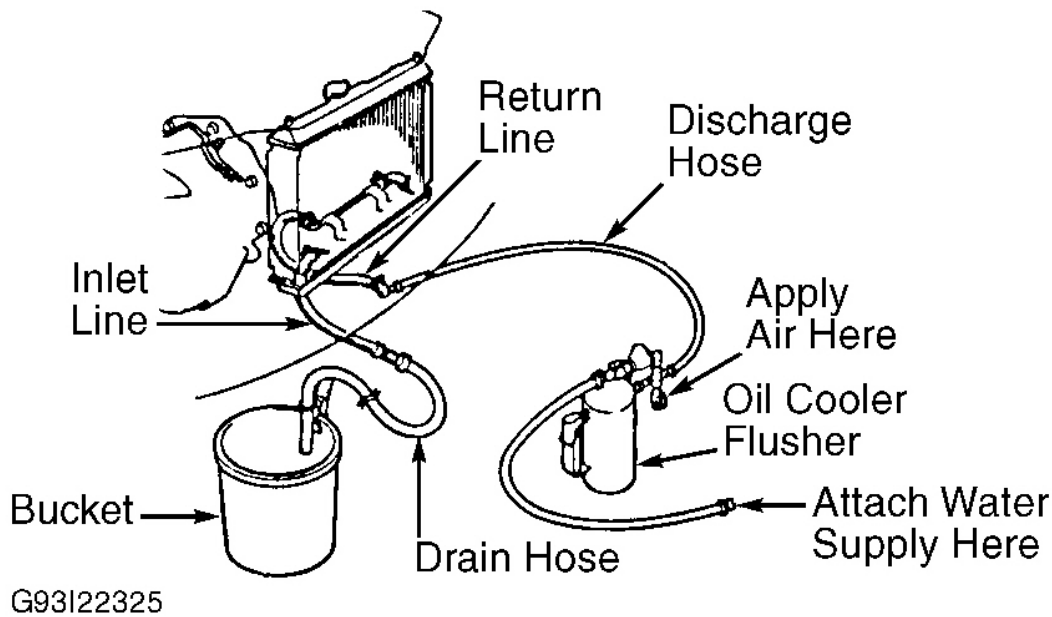


Fig. 3: Installing Oil Cooler Flusher

Courtesy of AMERICAN HONDA MOTOR CO., INC.

TROUBLE SHOOTING

PRELIMINARY INSPECTION

Transaxle malfunctions may be caused by poor engine performance, improper adjustments, or failure of hydraulic, mechanical or electronic components. Always begin by checking fluid level, fluid condition and cable adjustments. Perform road test to determine if problem has been corrected. If problem still exists, several tests must be performed on transaxle. See **TESTING**.

SYMPTOM DIAGNOSIS (K4 - 1988-89)

Engine Runs, But Car Does Not Move In Any Gear

- ATF level too low.
- Oil pump seized, gear damaged or foreign material stuck in gear.
- Mainshaft damaged.

- Final gear and countershaft worn or damaged.
- Drive plate faulty or transaxle assembly improperly installed.
- Regulator valve stuck or spring weak or damaged
- Oil filter clogged.
- Manual valve faulty or roller out of place.

Car Moves In "2", But Not In "S" Or "D"

- 1st gears worn or damaged.
- Countershaft one-way clutch worn or damaged.
- 1st clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Control cable misadjusted, cut or damaged.
- Foreign material stuck in separator orifice.

Car Moves In "S" Or "D", But Not In "2"

- 2nd gears worn or damaged.
- 2nd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch seal ring seized or damaged.
- Control cable misadjusted, cut or damaged.
- Foreign material stuck in separator orifice.

Car Moves In "S", "D" Or "2", But Not In "R"

- 4th gears worn or damaged.
- Reverse gears worn or damaged.
- 4th clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Control cable misadjusted, cut or damaged.
- Servo shaft stuck.
- 1-2 shift valve faulty.
- Foreign material stuck in separator orifice.
- Electric system faulty.

Stall RPM High In "S", "D" & "2"

- ATF level too low.
- Oil pump seized, gear damaged or foreign material stuck in gear.
- Control cable misadjusted, cut or damaged.
- Regulator valve stuck or spring weak or damaged
- Oil filter clogged.

- Foreign material stuck in separator orifice.
- Torque converter check valve faulty.

Stall RPM High In "S" & "D"

- Countershaft one-way clutch worn or damaged.
- 1st clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Control cable misadjusted, cut or damaged.

Stall RPM High In "2"

- 2nd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch seal ring seized or damaged.
- Control cable misadjusted, cut or damaged.

Stall RPM Normal

- ATF level too high.

Stall RPM Low

- Torque converter one-way clutch seized.
- Engine lacks power.

Excessive Idle Vibration

- Oil pump seized, gear damaged or foreign material stuck in gear.
- Drive plate faulty or transaxle assembly improperly installed.
- Engine lacks power.

Shift Up Speed Is Too Fast Or Slow

- Electrical system faulty.

Jumps From 1st to 3rd In "S"

- Electrical system faulty.

Jumps From 1st to 4th In "D"

- Electrical system faulty.

Shift-Up Point Too Early Or Late (1st To 2nd, 2nd To 3rd & 3rd To 4th)

- Electrical system faulty.

Shift-Up Point Too Early Or Late (1st To 2nd)

- Electrical system faulty.

Shift-Up Point Too Early Or Late (2nd To 3rd)

- Electrical system faulty.

Shift-Up Point Too Early Or Late (3rd To 4th)

- Electrical system faulty.

Harsh Upshift From 1st To 2nd

- 2nd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch seal ring seized or damaged.
- Modulator valve faulty.
- Clutch clearance incorrect.
- 1-2 shift valve faulty.
- Throttle valve "B" faulty.
- 2nd accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- Shift control solenoid valve "A" faulty.
- Electrical system faulty.

Harsh Upshift From 2nd To 3rd

- 3rd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Modulator valve faulty.
- Clutch clearance incorrect.
- 2-3 shift valve faulty.
- Throttle valve "B" faulty.
- 3rd accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- 2nd orifice control faulty.
- Shift control solenoid valve "B" faulty.
- Electrical system faulty.

Harsh Upshift From 3rd To 4th

- 4th clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Modulator valve faulty.
- Clutch clearance incorrect.
- 3-4 shift valve faulty.
- Throttle valve "B" faulty.
- 4th accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- 3rd orifice control faulty.
- Shift control solenoid valve "A" faulty.
- Electrical system faulty.

Harsh Downshift From 2nd To 1st

- 2nd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch seal ring seized or damaged.
- Modulator valve faulty.
- Clutch clearance incorrect.
- 1-2 shift valve faulty.
- Throttle valve "B" faulty.
- 2nd accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- Shift control solenoid valve "A" faulty.
- Electrical system faulty.

Harsh Downshift From 3rd To 2nd

- 3rd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Modulator valve faulty.
- Clutch clearance incorrect.
- 2-3 shift valve faulty.
- Throttle valve "B" faulty.
- 3rd accumulator faulty.
- Clutch pressure control valve faulty.

- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- 4-2 kickdown valve faulty.
- Shift control solenoid valve "B" faulty.
- Electrical system faulty.

Harsh Downshift From 4th To 3rd

- 4th clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Modulator valve faulty.
- Clutch clearance incorrect.
- 3-4 shift valve faulty.
- Throttle valve "A" faulty.
- 4th accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- 4-3 kickdown valve faulty.
- Shift control solenoid valve "A" faulty.
- Electrical system faulty.

Engine Races When Shifting From 2nd To 3rd

- 3rd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Transmission throttle control cable misadjusted.
- Clutch clearance incorrect.
- 2-3 shift valve faulty.
- Throttle valve "B" faulty.
- 3rd accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- 2nd orifice control faulty.
- Shift control solenoid valve "B" faulty.
- Electrical system faulty.

Engine Races When Shifting From 3rd To 4th (Shift Point Okay)

- 4th clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn

or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.

- Transmission throttle control cable misadjusted.
- Clutch clearance incorrect.
- 3-4 shift valve faulty.
- Throttle valve "B" faulty.
- 4th accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- 3rd orifice control faulty.
- Shift control solenoid valve "A" faulty.
- Electrical system faulty.

Excessive Shock When Shifting From 2nd To 3rd

- 3rd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Transmission throttle control cable misadjusted.
- Clutch clearance incorrect.
- 2-3 shift valve faulty.
- Throttle valve "B" faulty.
- 3rd accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.
- 2nd orifice control faulty.
- Shift control solenoid valve "B" faulty.
- Electrical system faulty.

Excessive Shock When Shifting From 3rd To 4th (Shift Point Okay)

- 4th clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Transmission throttle control cable misadjusted.
- Clutch clearance incorrect.
- 3-4 shift valve faulty.
- Throttle valve "B" faulty.
- 4th accumulator faulty.
- Clutch pressure control valve faulty.
- Foreign material stuck in separator orifice.

- Foreign material stuck in check ball.
- 3rd orifice control faulty.
- Shift control solenoid valve "A" faulty.
- Electrical system faulty.

Car Creeps Forward In "N" (Shift Cable Adjusted Properly)

- ATF level too high.
- 1st clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- 2nd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch seal ring seized or damaged.
- 3rd clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- 4th clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Needle bearing seized.
- Washers or collars seized.
- Clutch clearance incorrect.

Excessive Time Lag From "N" To "S" Or "D" (Shift Cable Adjusted Properly)

- 1st clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Foreign material stuck in separator orifice.
- Foreign material stuck in check ball.

Excessive Time Lag From "N" To "R" (Shift Cable Adjusted Properly)

- 4th clutch faulty, clutch piston stuck, foreign material stuck in clutch check valve, clutch "O" ring worn or damaged, clutch disc worn or clutch feed pipe and/or "O" ring worn or damaged.
- Servo shaft stuck.
- 1-2 shift valve faulty.

Abnormal Noise In All Gears "N" & "P"

- Oil pump seized, gear damaged or foreign material stuck in gear.
- Mainshaft damaged.
- Mainshaft or countershaft ball bearing damaged.

Vibration In All Gears

- Drive plate faulty or transaxle assembly improperly installed.

Hard To Shift

- Control cable misadjusted, cut or damaged.
- Manual valve faulty or roller out of place.

SYMPTOM DIAGNOSIS (PY8A - 1990)**Engine Runs, But Car Will Not Move In Any Gear**

- Shift cable broken or out of adjustment.
- Oil pump worn or binding.
- Pressure regulator stuck.
- ATF strainer clogged.

Car Moves In "R" & "2", But Not In "S" Or "D"

- 1st clutch defective.
- 1st accumulator defective.
- Feedpipe "O" ring broken.
- Sprag clutch defective.

Car Moves In "S","D" & "R", But Not In "2"

- 2nd clutch defective.
- 2nd clutch accumulator defective.
- Sealing rings or guide worn

Car Moves In "S", "D" Or "2", But Not In "R"

- Shift cable broken or out of adjustment.
- 4th clutch defective.
- Servo control valve stuck.
- Servo valve stuck.
- Shift fork bent.
- Reverse gears worn or damaged (3 gears).
- Reverse selector worn.

Car Moves In "N"

- Shift cable broken or out of adjustment.
- 1st clutch defective.
- 2nd clutch defective.
- 3rd clutch defective.

- 4th clutch defective.
- Gear clearance incorrect.
- Clutch clearance incorrect.

Excessive Idle Vibration

- Idle RPM too low or high.
- Torque convertor defective.

Slips In All Gears

- Oil pump worn or binding.
- Pressure regulator stuck.
- ATF strainer clogged.

Slips In 1st Gear

- 1st clutch defective.
- 1st accumulator defective.
- Feedpipe "O" ring broken.
- Sprag clutch defective.

Slips In 2nd Gear

- 2nd clutch defective.
- 2-3 shift valve stuck.
- Clutch pressure control valve stuck.
- 2nd clutch accumulator defective.
- Sealing rings or guide worn

Slips In 3rd Gear

- 3rd clutch defective.
- 3-4 shift valve stuck.
- Clutch pressure control valve stuck.
- 3rd clutch accumulator defective.
- Feedpipe "O" ring broken.

Slips In 4th Gear

- 4th clutch defective.
- Clutch pressure control valve stuck.
- 4th/reverse accumulator defective.

Slips In Reverse

- 4th clutch defective.
- 4th/reverse accumulator defective.
- Servo valve stuck.

Flares On 1-2 Upshift

- Throttle cable too long.
- Throttle "B" valve stuck.

Flares On 2-3 Upshift

- Throttle cable too long.
- Throttle "B" valve stuck.
- 2nd orifice control valve stuck.
- Feedpipe "O" ring broken.

Flares On 3-4 Upshift

- Throttle cable too long.
- Throttle "B" valve stuck.
- Orifice control valve stuck.
- Feedpipe "O" ring broken.

No Upshift, Transaxle Stays In 1st Gear

- Modulator valve stuck.
- 1-2 shift valve stuck.
- Clutch pressure control valve stuck.

No Downshift To 1st Gear

- 1-2 shift valve stuck.

Late Upshift

- Modulator valve stuck.

Erratic Shifting

- Throttle cable too short.
- Modulator valve stuck.
- 3-2 kickdown valve stuck.

Harsh Shift (Up & Down Shifting)

- Throttle cable too short.
- Wrong type ATF.
- Throttle "B" valve stuck.
- Clutch pressure control valve stuck.
- 2nd orifice control valve stuck.
- 3rd kickdown valve stuck.
- Clutch clearance incorrect.

Harsh Shift (1-2)

- Throttle cable too short.
- 2nd clutch defective.

Harsh Shift (2-3)

- Throttle cable too short.
- 3rd clutch defective.
- Clutch pressure control valve stuck.
- 2nd orifice control valve stuck.

Harsh Shift (3-4)

- Throttle cable too short.
- 4th clutch defective.
- Clutch pressure control valve stuck.
- Orifice control valve stuck.

Harsh Kickdown Shifts

- Throttle cable too short.
- Clutch pressure control valve stuck.
- 3rd kickdown valve stuck.
- 4th exhaust valve stuck.

Harsh Kickdown Shift (2-1)

- Sprag clutch defective.

Harsh Downshift At Closed Throttle

- Throttle "B" valve stuck.

Axle(s) Slips Out Of Transaxle On Turns

- Differential pinion shaft worn.
- Axle-inboard joint clip missing.

Axle(s) Stuck In Transaxle

- Differential pinion shaft worn.

Ratcheting Noise When Shifting Into "R"

- Oil pump worn or binding.
- Pressure regulator stuck.
- Shift fork bent.
- Reverse gears worn or damaged (3 gears).
- Reverse selector worn.

Loud Popping Noise When Taking Off In "R"

- Shift fork bent.
- Reverse gears worn or damaged (3 gears).
- Reverse selector worn.

Ratcheting Noise When Shifting From "R" To "P" Or From "R" To "N"

- Shift fork bent.
- Reverse gears worn or damaged (3 gears).
- Reverse selector worn.
- 4th gears worn or damaged.

Noise From Transaxle In All Selector Lever Positions

- Oil pump worn or binding.
- Torque convertor defective.

Noise From Transaxle Only When Wheels Are Rolling

- Reverse gears worn or damaged (3 gears).
- Final gears worn or damaged (2 gears).

Gear Whine, RPM Related (Pitch Changes With Shifts)

- 1st clutch defective.
- 3rd gears worn or damaged (2 gears).

Gear Whine, Speed Related (Pitch Changes With Speed)

- Shift fork bent.
- Final gears worn or damaged (2 gears).

Transaxle Will Not Shift Into 4th Gear In "S" Or "D"

- Shift cable broken or out of adjustment.
- 3-4 shift valve stuck.
- 4th exhaust valve stuck.
- 4th/reverse accumulator defective.

Lock-up Clutch Does Not Lock-up Smoothly

- Torque convertor defective.
- Lock-up clutch shift valve stuck.
- Lock-up clutch control valve stuck.

Lock-Up Clutch Does Not Operate Properly

- Throttle cable too short.
- Throttle cable too long.
- Throttle "B" valve stuck.
- Torque convertor check valve stuck.
- Lock-up clutch timing valve stuck.
- Lock-up clutch shift valve stuck.
- Lock-up clutch control valve stuck.

Transaxle Has A Multitude Of Problems Shifting, At Disassembly, Large Metal Particles Found

- Differential pinion shaft worn.

ELECTRONIC DIAGNOSIS

NOTE: Prior to starting any testing or diagnostics on transmission, ensure that basic electrical connections are proper and transmission fluid level is correct.

RETRIEVING CODES

When ignition is turned on, the indicator light "S3" will come on for about 2 seconds, regardless of whether there is a fault or not. This will verify proper operation of indicator bulb "S3". The indicator light "S3" will also come on when in "S3". DO NOT confuse these with a system fault.

If a system fault is present, the indicator light "S3" will come on and blink. See **Fig. 4** . The indicator light "S3"

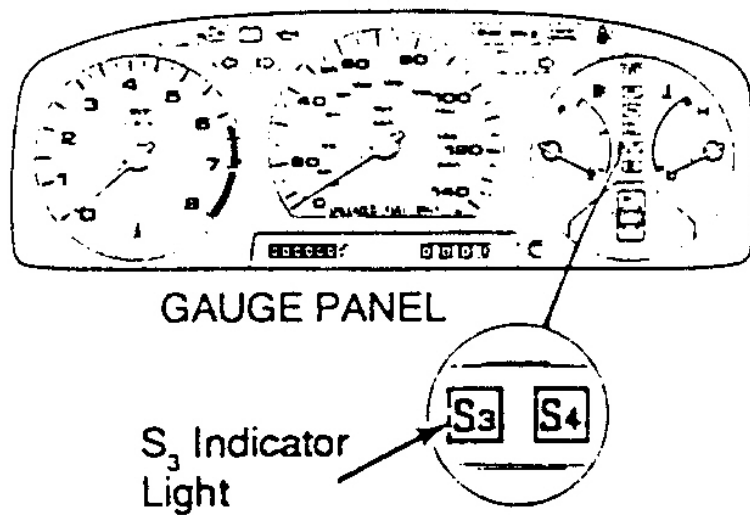
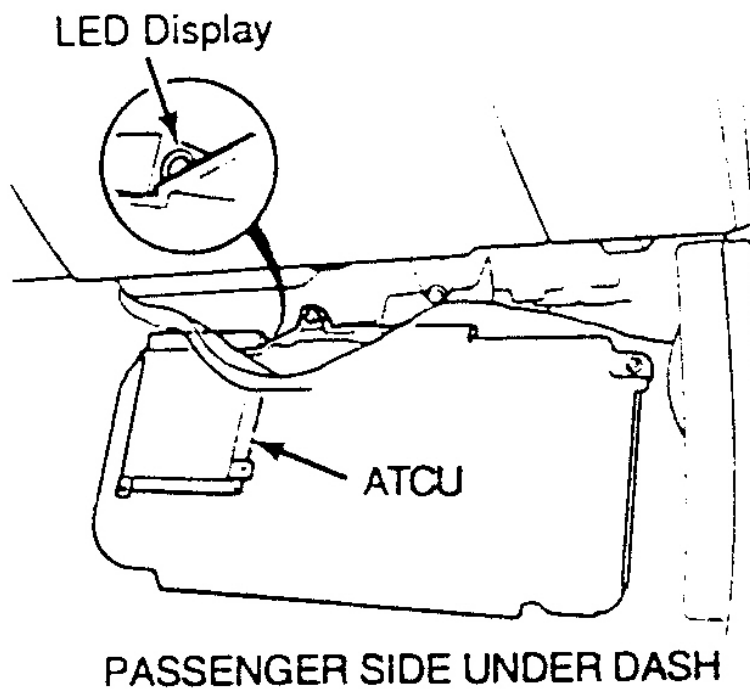
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will continue to blink until ignition is turned off. When ignition is turned on again, indicator light "S3" will not blink the original fault code. See **SYSTEM FAULT CODES** table. Check the LED on control unit for a stored code. If codes are present, see **ATCU SELF DIAGNOSIS CODES** table.

If no LED code is stored, check alternator sense fuse, in the relay box under the hood and for open circuit in White/Yellow wire between EFI ECU fuse No. 35 (10A) and ATCU terminal B-12.

To clear stored codes, disconnect EFI ECU fuse No. 35 (10A) in relay box under the hood, for more than 10 seconds.



50E17172

Fig. 4: Identifying Self-Diagnostic Indicator Lamp & ATCU
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYSTEM FAULT CODES

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Number Of LED Blinks	"S3" Light	Symptom	Probable Cause	Refer To
1	Blinks	Lock-up clutch does not engage. Lock-up clutch does not disengage. Frequent engine stalling.	Disconnected lock-up control solenoid valve "A" connector. Open or short in lock-up control solenoid valve "A" wire. Faulty lock-up control solenoid valve "A".	<u>Fig. 5</u>
2	Blinks	Lock-up clutch does not engage.	Disconnected lock-up control solenoid valve "B" connector. Open or short in lock-up control solenoid valve "B" wire. Faulty lock-up control solenoid valve "B".	<u>Fig. 6</u>
3 (1)	Blinks or OFF	Lock-up clutch does not engage.	Disconnected throttle angle sensor connector. Open or short in throttle angle sensor wire. Faulty throttle angle sensor.	<u>Fig. 7 & Fig. 8</u>
4	Blinks	Lock-up clutch does not engage.	Disconnected speed pulser connector. Open or short in speed purser wire. Faulty speed pulser.	<u>Fig. 9</u>
5	Blinks	Fails to shift other than 2nd- 4th gear. Lock-up clutch does not engage.	Short in shift position console switch wire. Faulty shift position console switch.	<u>Fig. 10</u>
6 (1)	OFF	Fails to shift other than 2nd-4th gear. Lock-up clutch does not engage. Lock-up clutch engages and disengages alternately.	Disconnected shift position console switch connector. Open in shift position console switch wire. Faulty shift position console switch.	<u>Fig. 11</u>
7	Blinks	Fails to shift other than 1st-4th, 2nd-4th, or 2nd-3rd gears. Fails to shift (stuck in 4th gear).	Disconnected shift control solenoid valve "A" connector. Open or short in shift control solenoid valve "A" wire.	<u>Fig. 12</u>

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

			Faulty shift control solenoid valve "A".	
8	Blinks	Fails to shift (stuck in 1st or 4th gear).	Disconnected shift control solenoid valve "B" connector. Open or short in shift control solenoid valve "B" wire. Faulty shift control solenoid valve "B".	Fig. 13
9	Blinks	Lock-up clutch does not engage.	Disconnected A/T speed pulser. Open or short in A/T speed pulser wire. Faulty A/T speed pulser.	Fig. 14
10	Blinks	Lock-up clutch does not engage.	Disconnected coolant temperature sensor connector. Open or short in coolant temperature sensor wire. Faulty coolant temperature sensor.	Fig. 15 -Fig. 18
11 (1)	OFF	Lock-up clutch does not engage.	Disconnected ignition coil connector. Open or short in ignition coil wire. Faulty ignition coil.	Fig. 19

(1) If symptoms 3, 6, or 11 are described and LED is not blinking, it will be necessary to recreate the symptom by test driving, and checking LED with ignition STILL ON. If LED display blinks 12 or more times, the control unit is faulty.

ATCU SELF DIAGNOSIS CODES

Symptom	Inspection Carb	Inspection EFI	Probable Cause
Indicator light "S3" does not come on with the ignition switch ON (indicator light "S3" should come on for about 2 sec.). Fails to shift (stuck in 4th gear).	1	1	Loosely or poorly connected power line to control unit or disconnected control unit ground wire. Open or short in indicator light "S3" wire Blown indicator light "S3" bulb
"S4" won't engage.	2	2	Open or short in "S4" switch wire Faulty "S4" switch
At first, you step on the brake pedal with shift lever in "N" range, then fails to shift from	3	3	Open or short in brake light switch wire

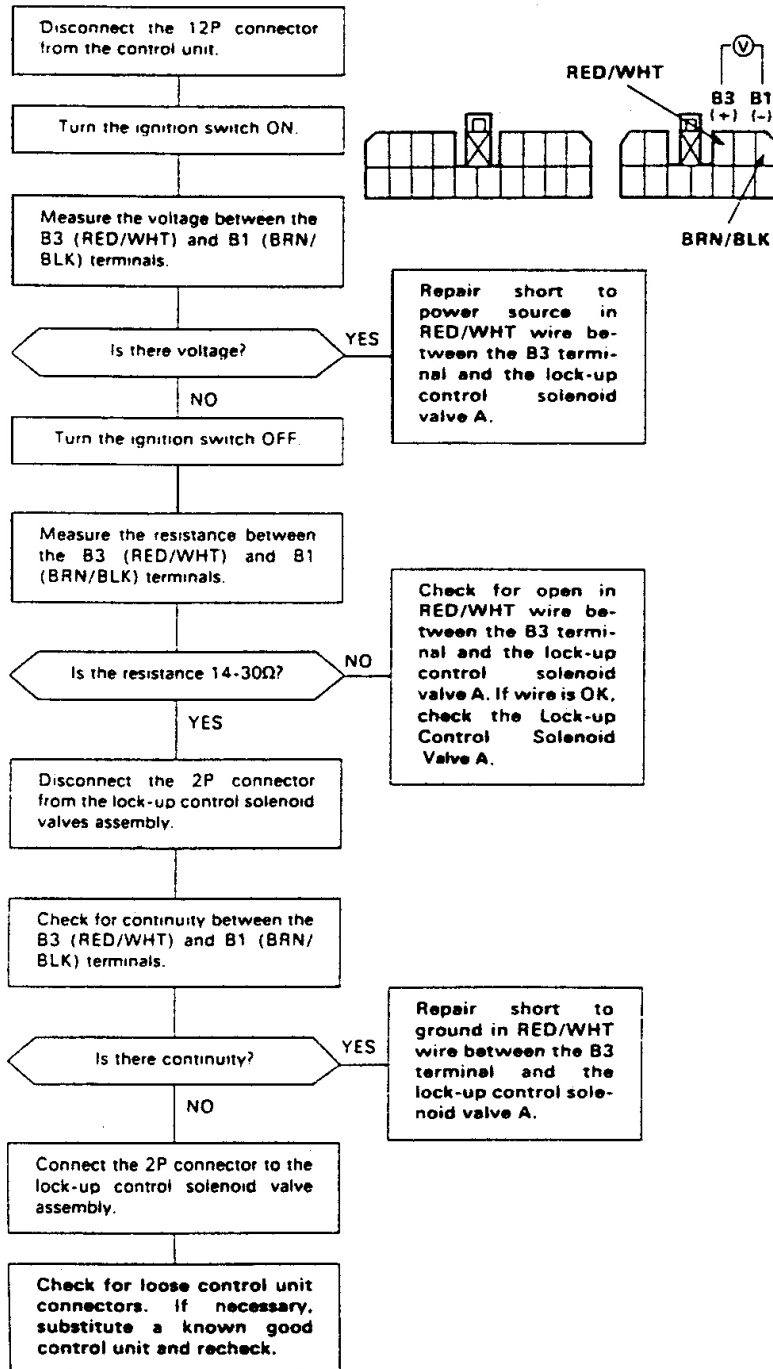
1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

2nd to 1st gear when releasing brake pedal with shift lever shifted in "S" or "D" range from "N" range.			
Lock-up clutch turns ON and OFF alternately.	4		Faulty A/C idle up solenoid valve driving signal.
Lock-up clutch does not engage.	4		Faulty A/C idle up solenoid valve driving signal.

DIAGNOSTIC TESTS

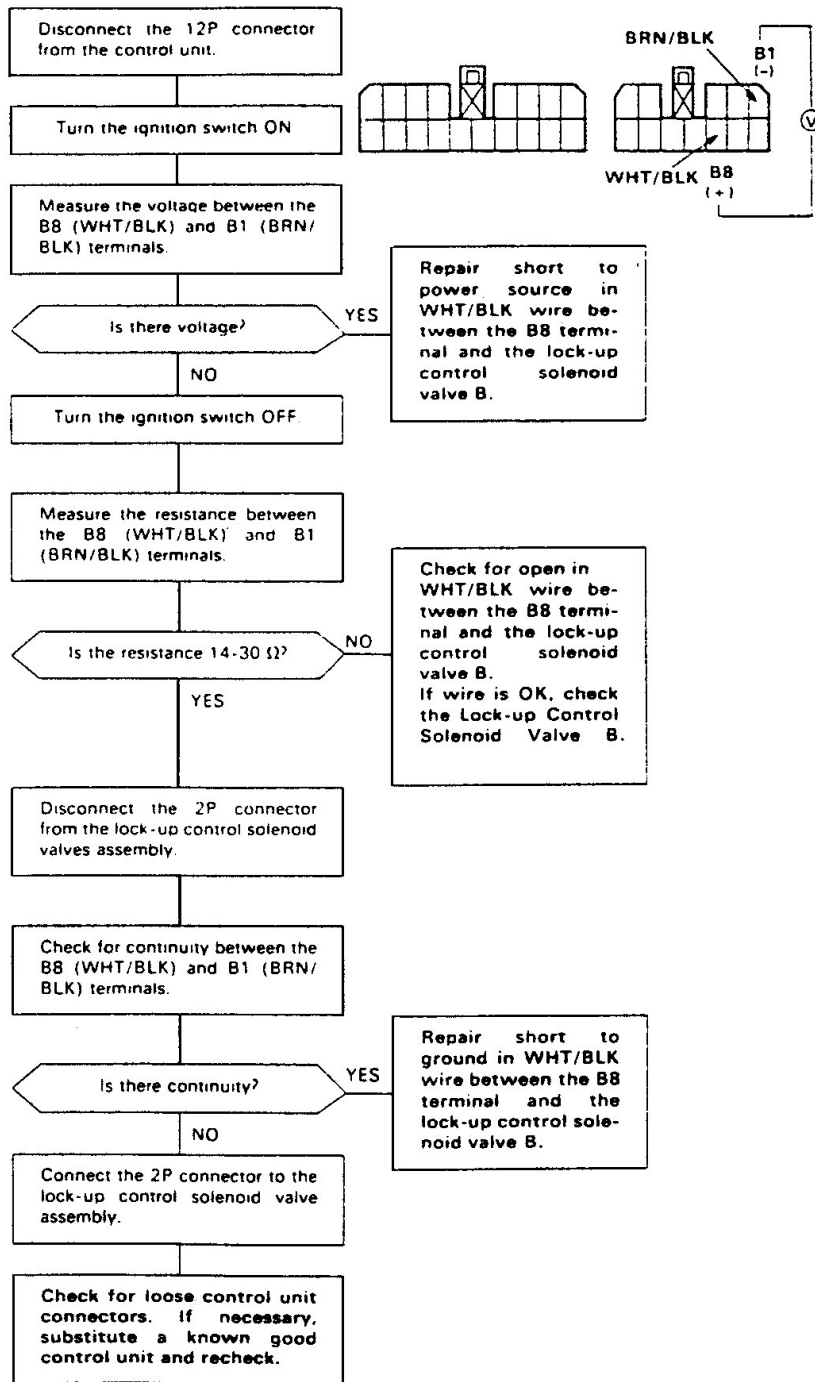
DIAGNOSTIC FLOW CHARTS



50G17174

Fig. 5: LED Blinks 1 Time

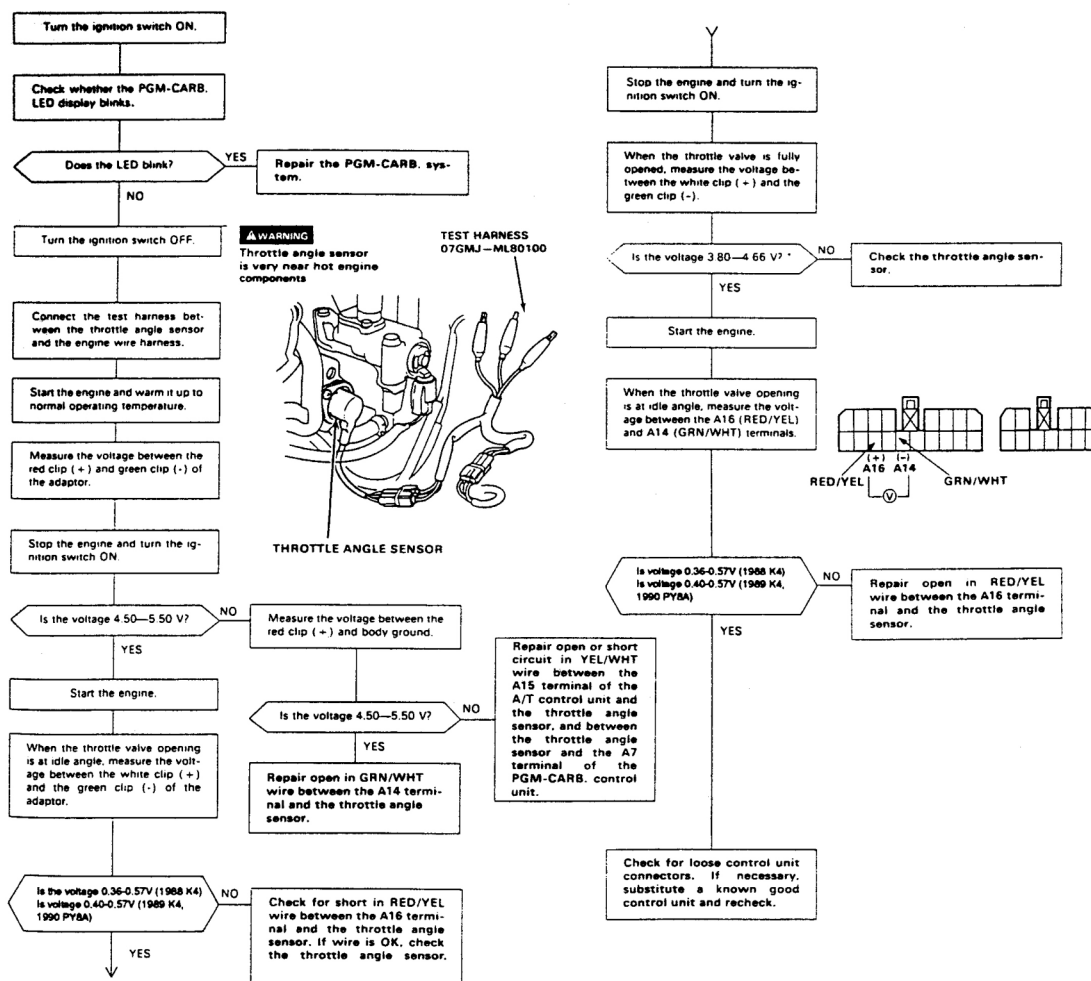
Courtesy of AMERICAN HONDA MOTOR CO., INC



50H17175

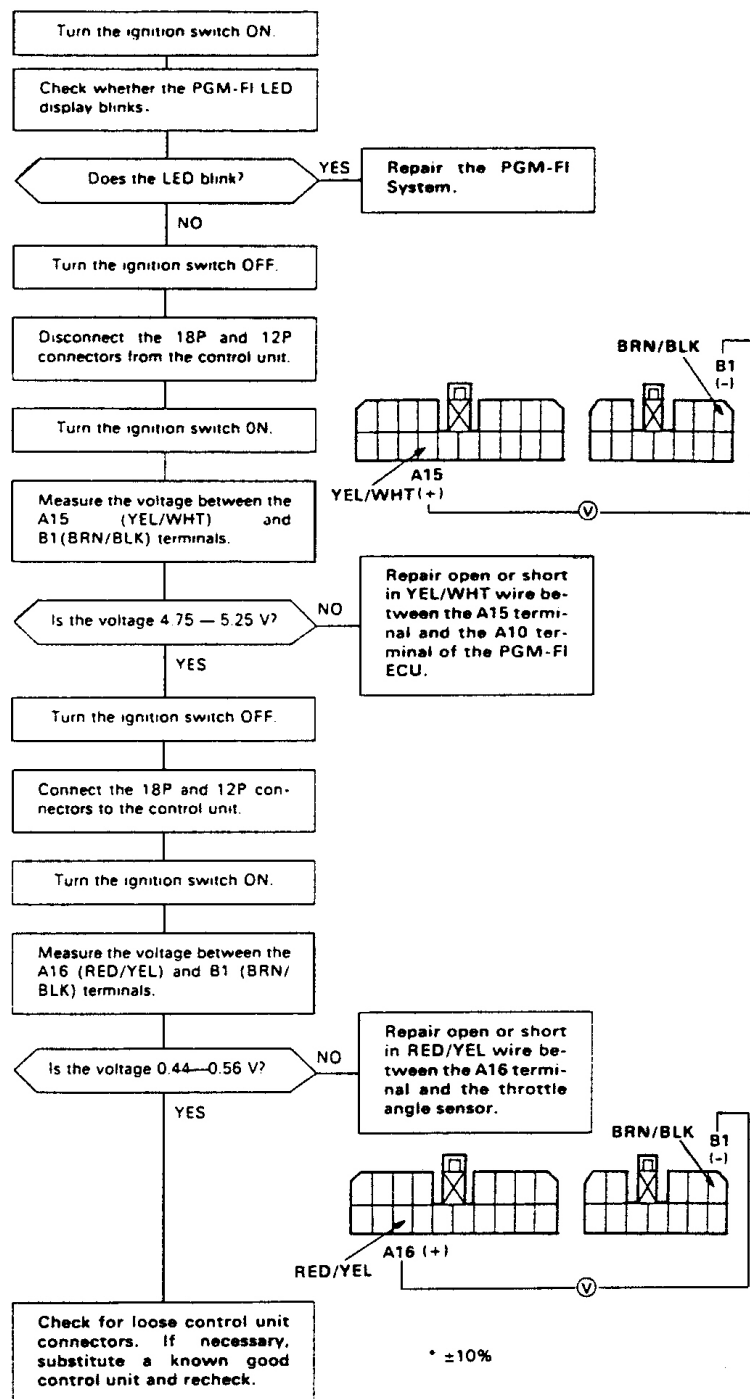
Fig. 6: LED Blinks 2 Times

Courtesy of AMERICAN HONDA MOTOR CO., INC



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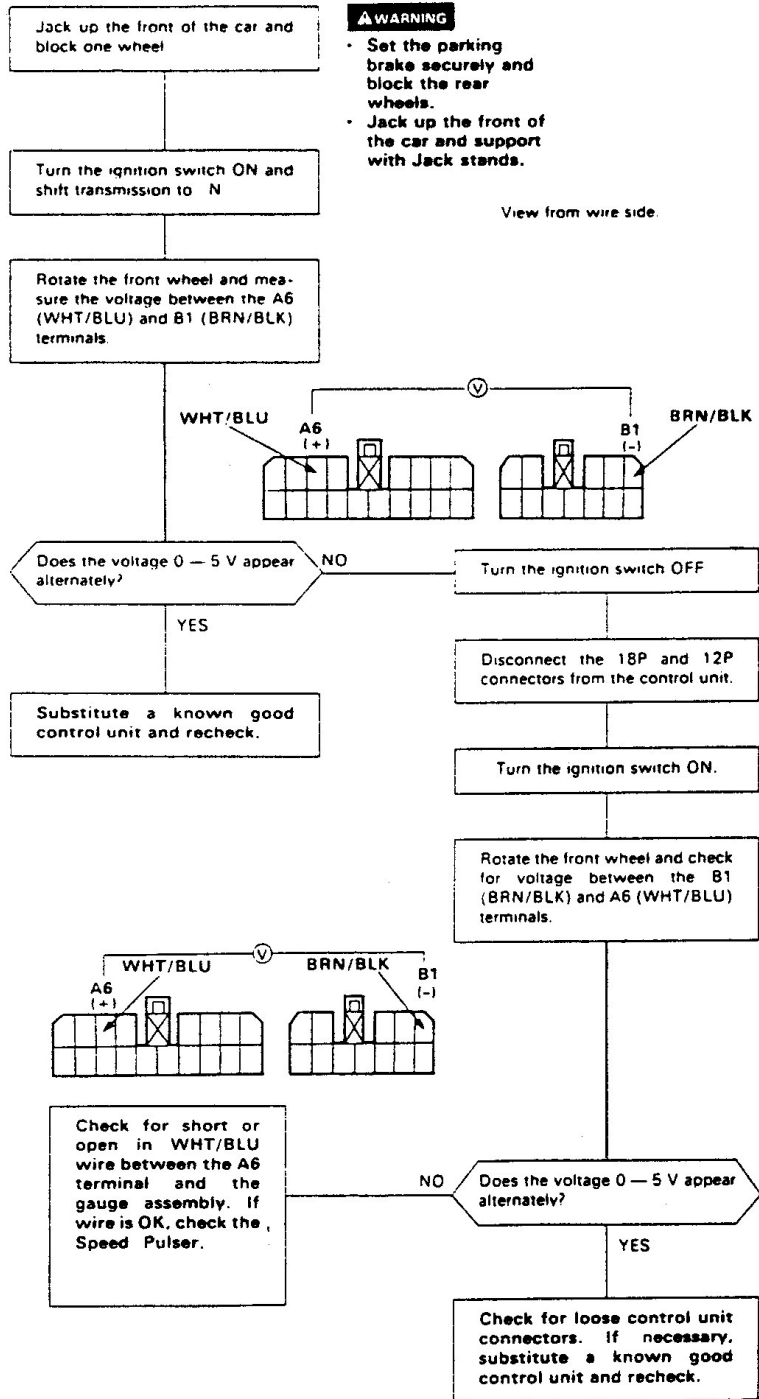
Fig. 7: LED Blinks 3 Times (Carbureted Engine)
 Courtesy of AMERICAN HONDA MOTOR CO., INC



50J17177

Fig. 8: LED Blinks 3 Times (Fuel Injected Engine)

Courtesy of AMERICAN HONDA MOTOR CO., INC



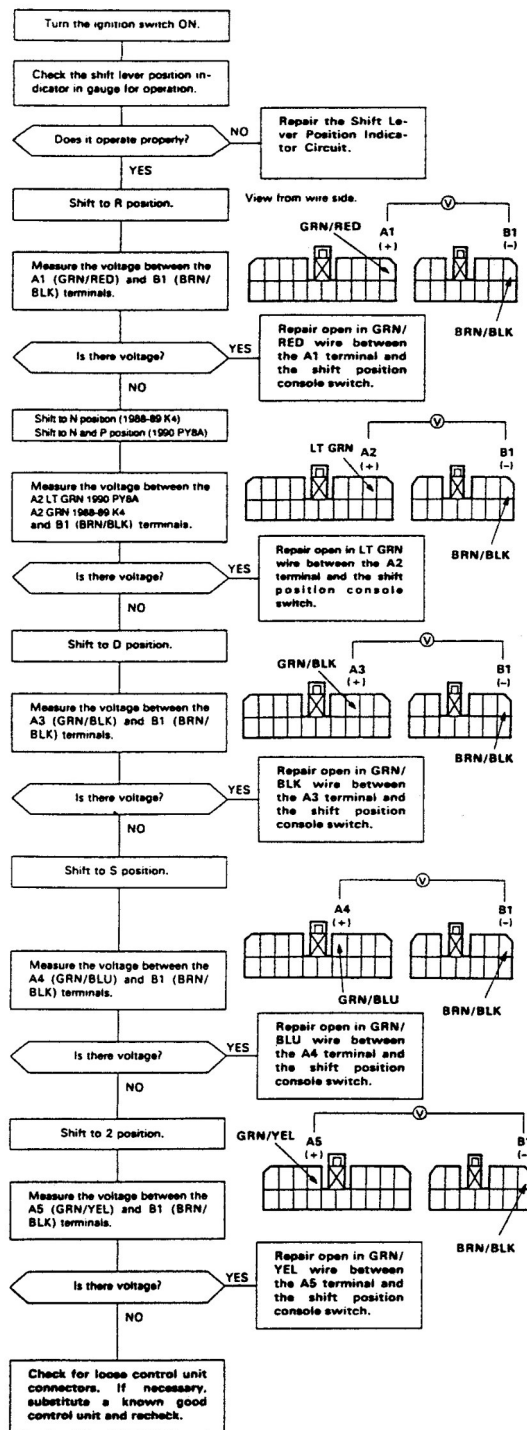
50A17178

Fig. 9: LED Blinks 4 Times

Courtesy of AMERICAN HONDA MOTOR CO., INC

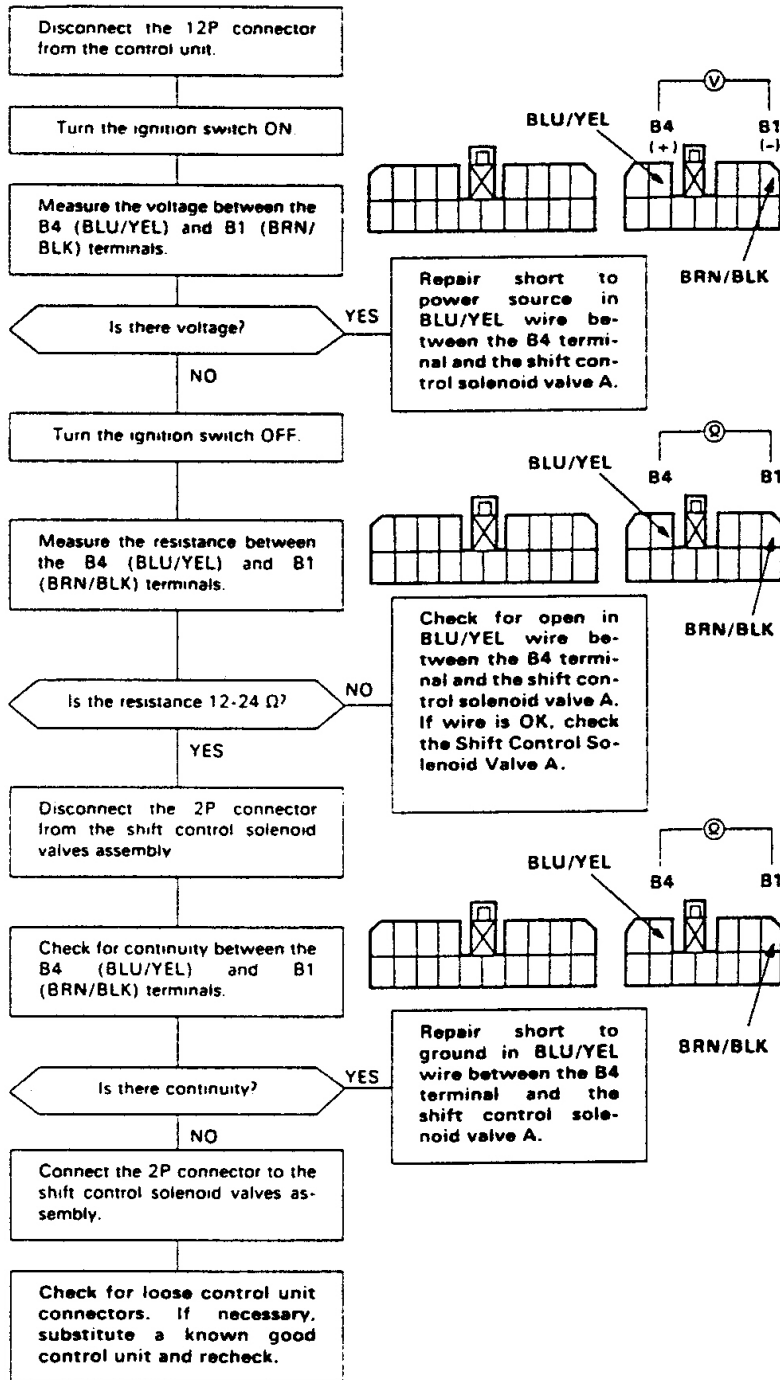


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50E17180

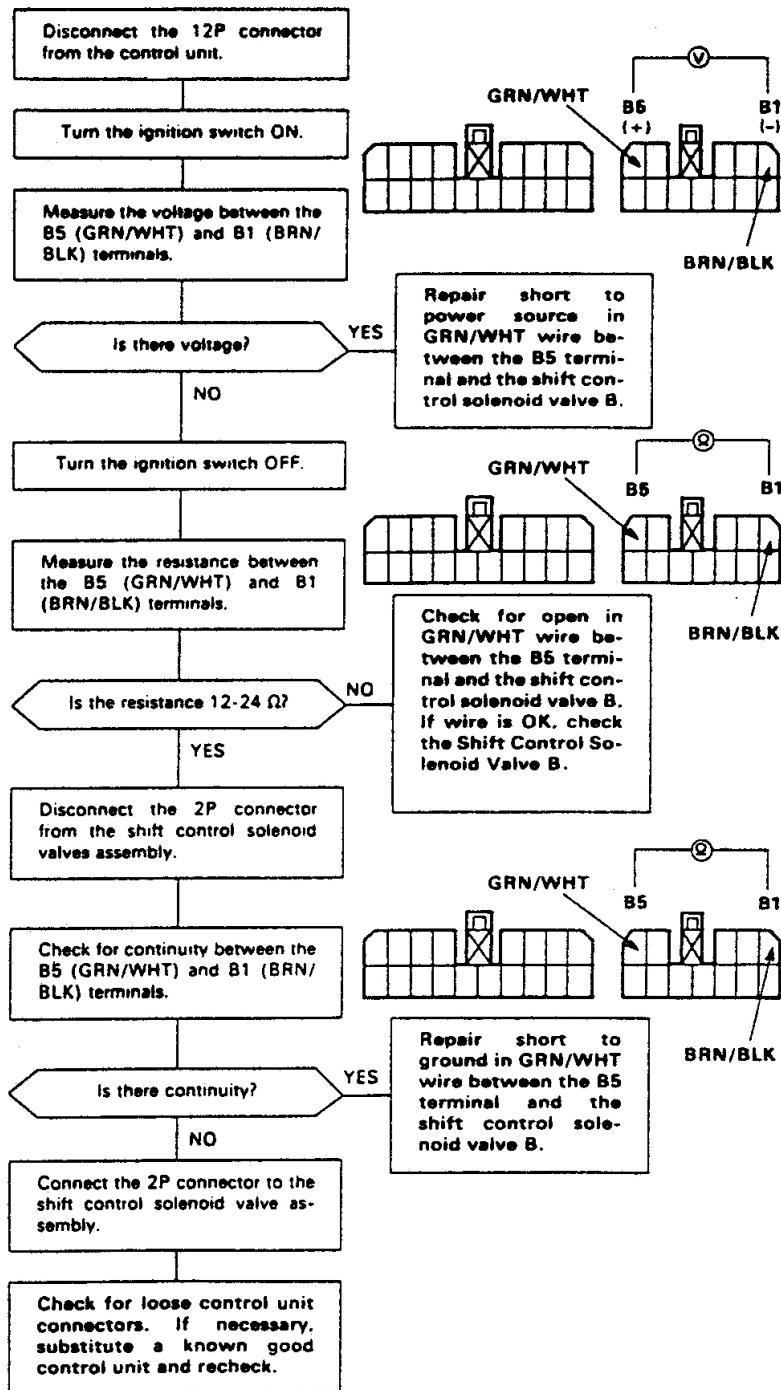
Fig. 11: LED Blinks 6 Times
 Courtesy of AMERICAN HONDA MOTOR CO., INC



50F17181

Fig. 12: LED Blinks 7 Times

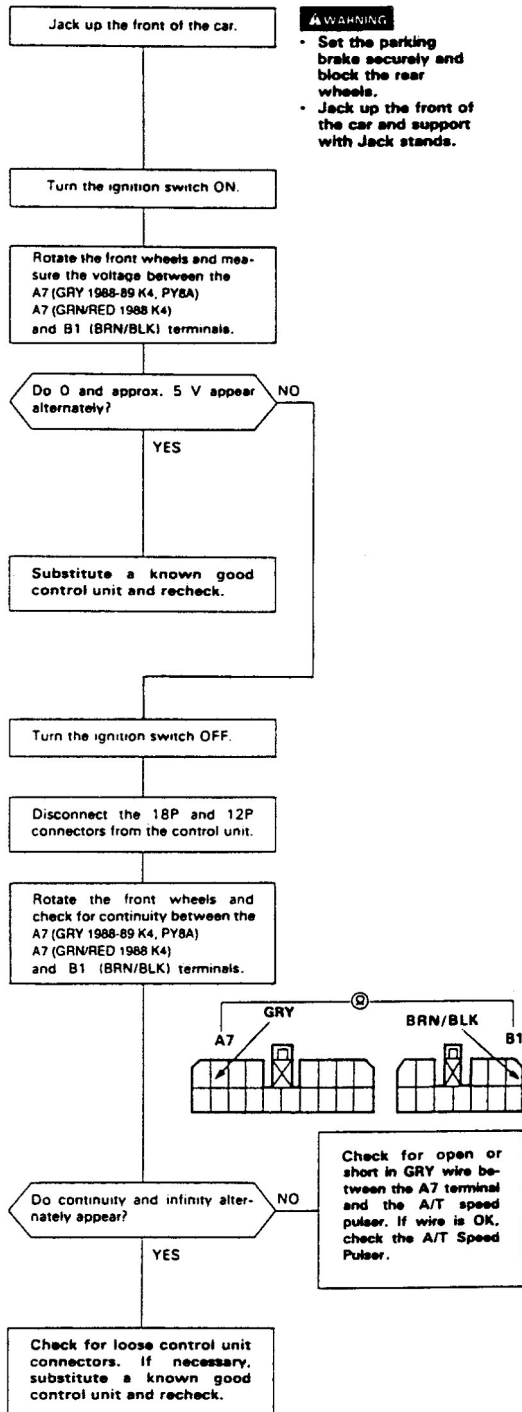
Courtesy of AMERICAN HONDA MOTOR CO., INC



50G17182

Fig. 13: LED Blinks 8 Times

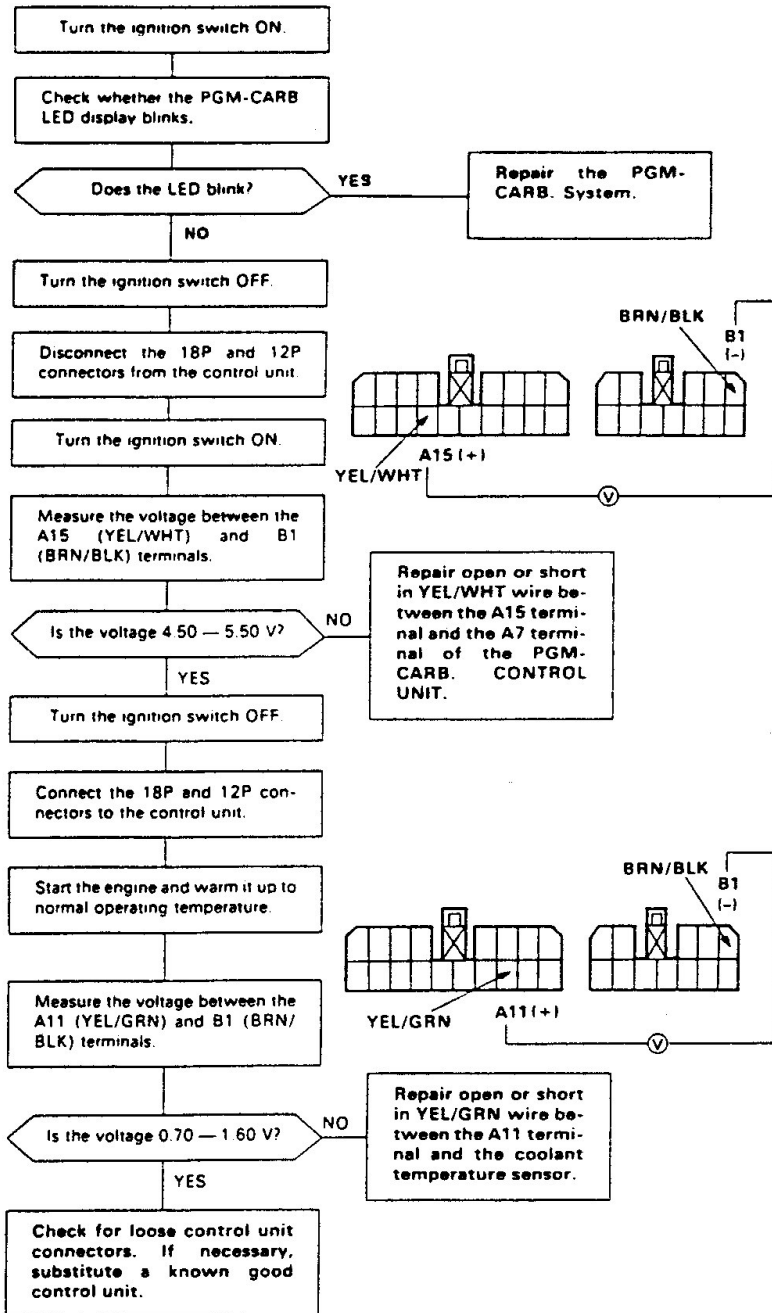
Courtesy of AMERICAN HONDA MOTOR CO., INC



50H17183

Fig. 14: LED Blinks 9 Times
 Courtesy of AMERICAN HONDA MOTOR CO., INC

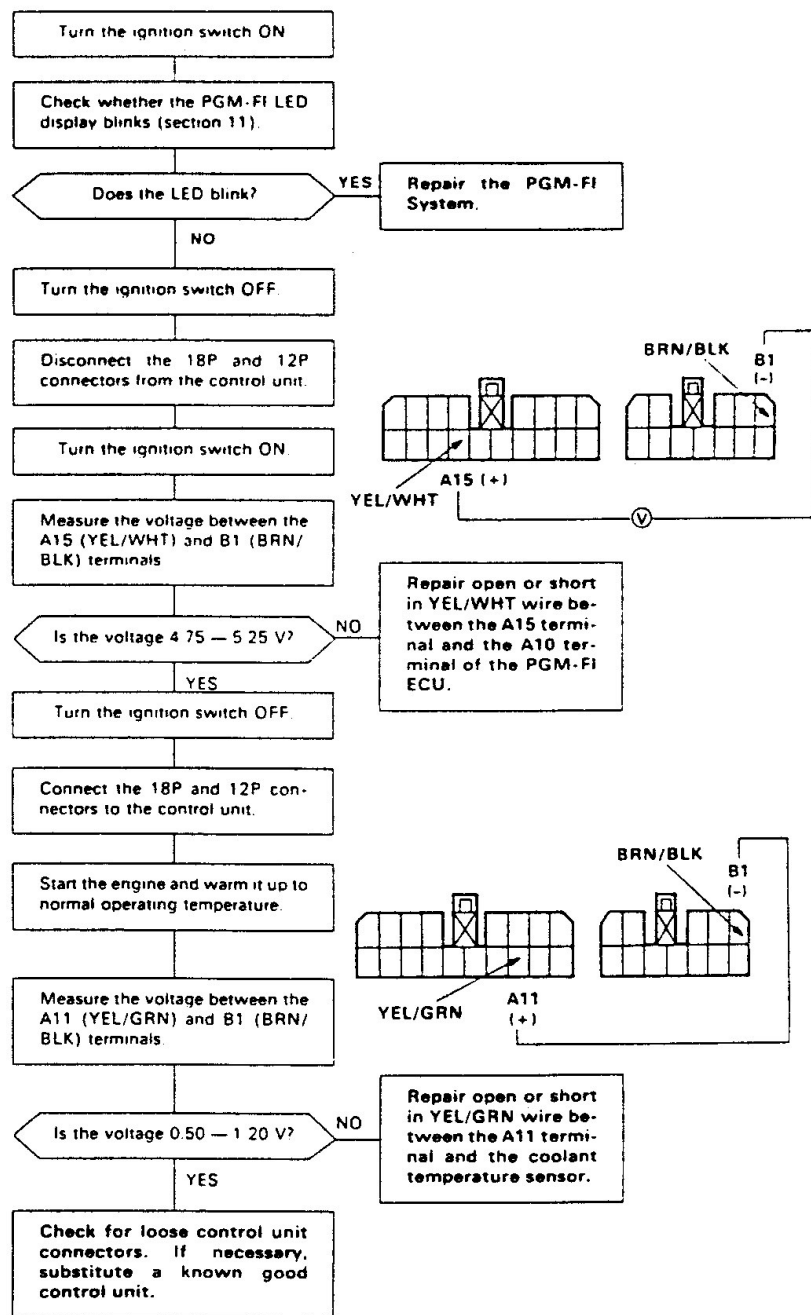
1989 K4, 1990 PY8A



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Fig. 15: LED Blinks 10 Times (1989 K4 & 1990 PY8A - Carbureted Engine)
 Courtesy of AMERICAN HONDA MOTOR CO., INC

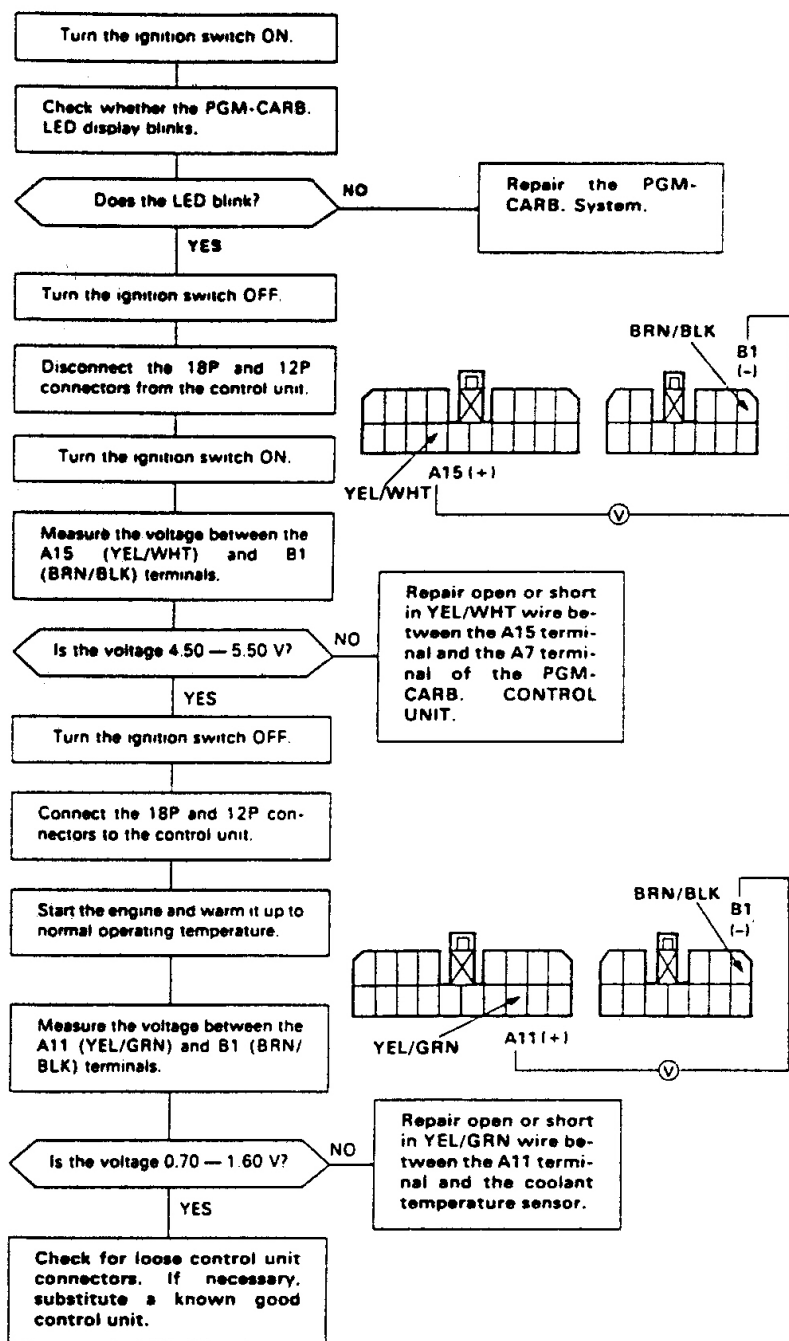
1989 K4
1990 PY8A



50J17185

Fig. 16: LED Blinks 10 Times (1989 K4 & 1990 PY8A - Fuel Injected Engine)
Courtesy of AMERICAN HONDA MOTOR CO., INC

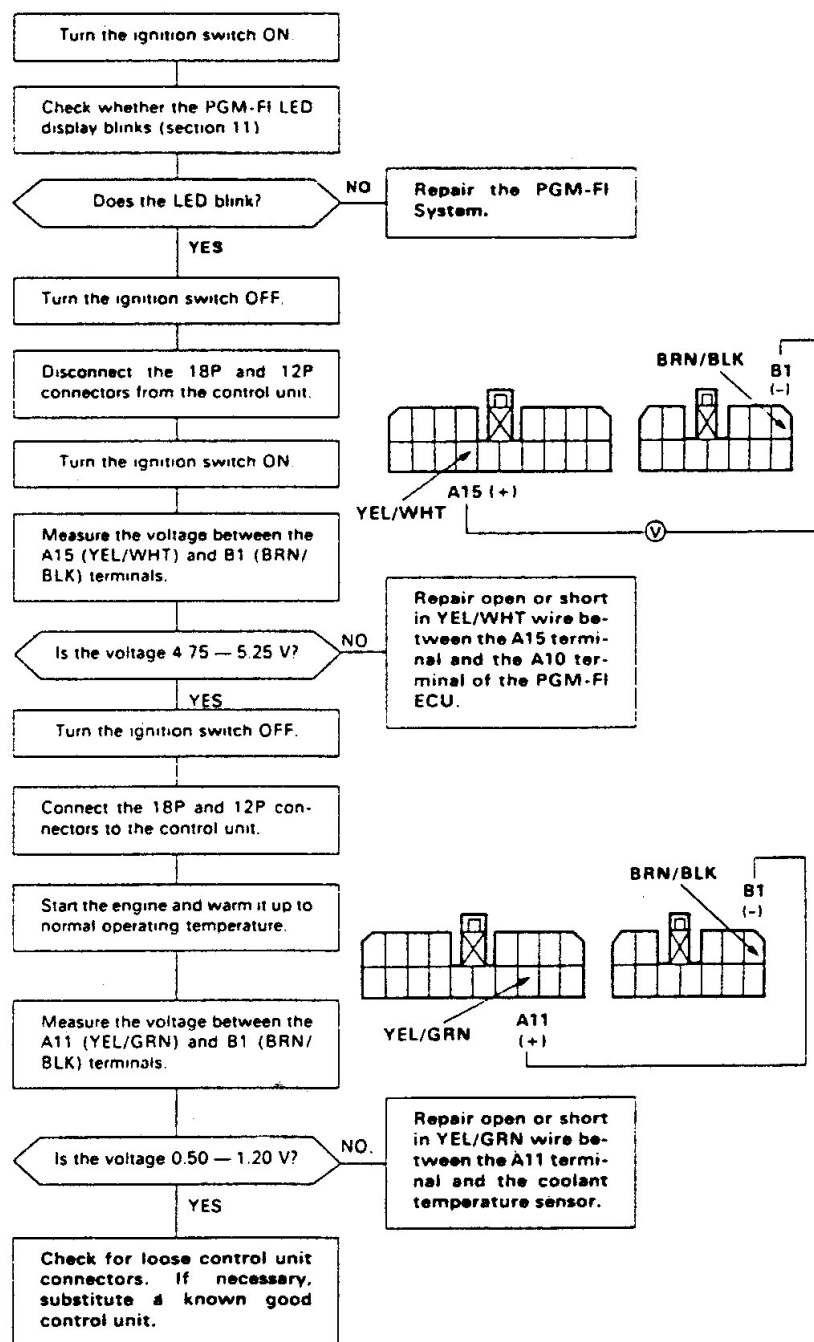
1988 K4



50A17186

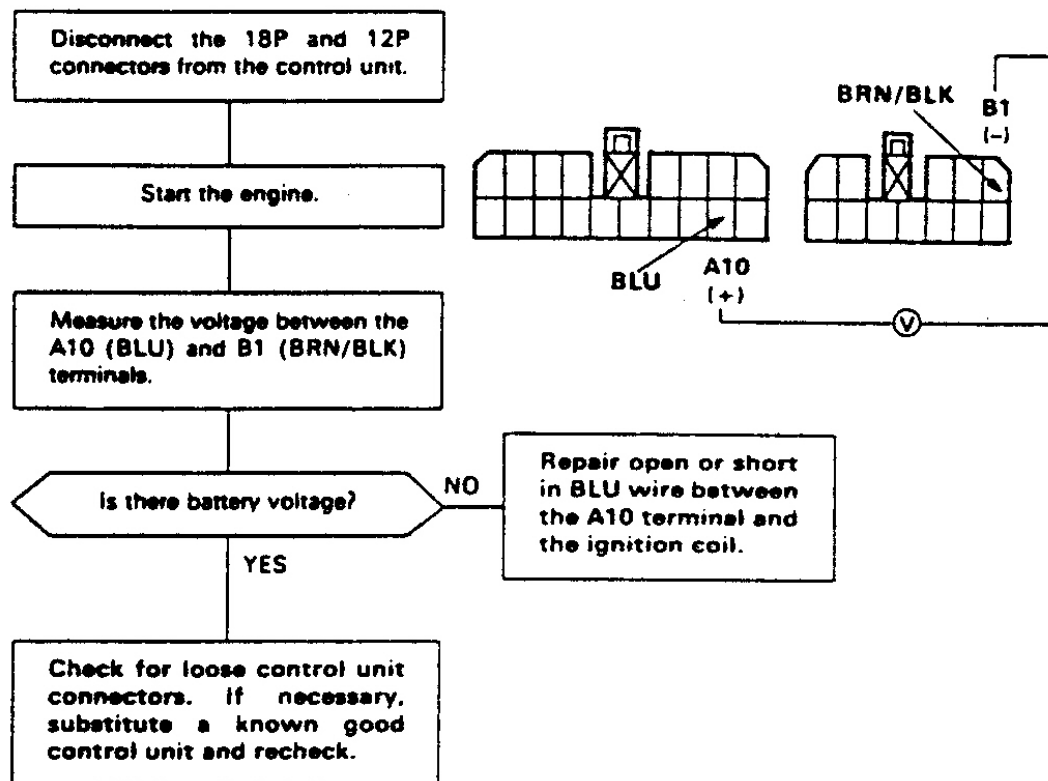
Fig. 17: LED Blinks 10 Times (1988 K4 - Carbureted Engine)
 Courtesy of AMERICAN HONDA MOTOR CO., INC

1988 K4



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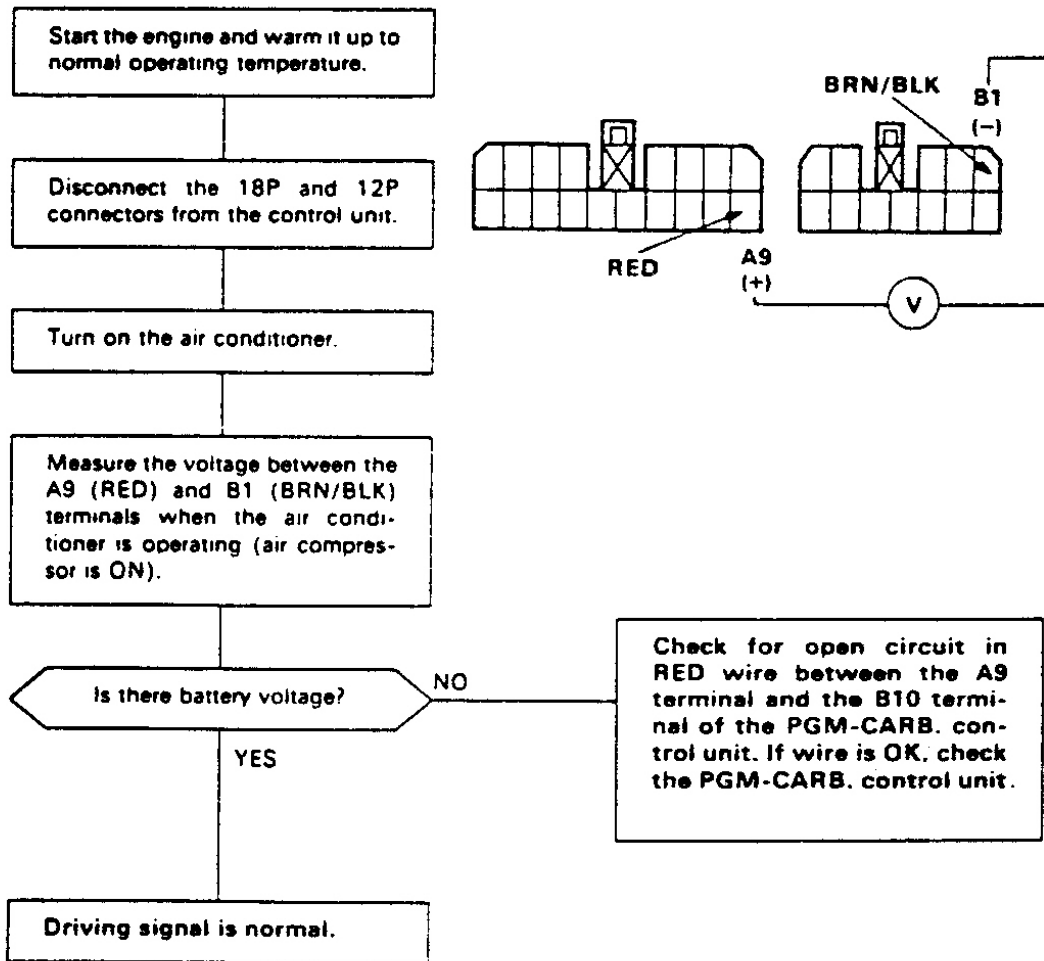
Fig. 18: LED Blinks 10 Times (1988 K4 - Fuel Injected Engine)
 Courtesy of AMERICAN HONDA MOTOR CO., INC



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Fig. 19: LED Blinks 11 Times

Courtesy of AMERICAN HONDA MOTOR CO., INC



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Fig. 20: A/C Idle Boost

Courtesy of AMERICAN HONDA MOTOR CO., INC

TESTING

ROAD TEST

"D" & "S" Range

1. Warm engine to operating temperature. Apply parking brake and block rear wheels. Shift transmission selector to "D" while depressing brake pedal.
2. Depress accelerator and release abruptly. Engine should not stall. Check that shift points occur at proper speeds. See **SHIFT SPEED SPECIFICATIONS**.
3. Check for abnormal noise and clutch slippage. Apply parking brake and block rear wheels. Shift selector

to "S" while depressing brake pedal. Depress and release accelerator pedal and release abruptly. Engine should not stall.

"2" (2nd Gear) Range

Accelerate from stop at full throttle. Check that no abnormal noise or clutch slippage occurs. Upshifts and downshifts should not occur with gear selector in this range.

"R" (Reverse) Range

Accelerate from stop at full throttle. Check that no abnormal noise or clutch slippage occurs.

"P" (Park) Range

Park vehicle on incline (about 16 degrees). Apply parking brake and shift selector in "P". Release brake and check for vehicle movement. Movement should not occur.

SHIFT SPEED SPECIFICATIONS

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

Upshift "D"		1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/12 throttle Coasting down-hill from a stop	1988-89	11-13	20-24	26-32	13-17
7/16 throttle Acceleration from a stop	1988-89	17-21	33-39	54-60	59-63
Full-throttle Acceleration from a stop	1988	34-39	62-68	91-97	81-85
	1989	35-40	63-69	90-96	81-85
"S" (With Switch "S ₄ " In Operation)		1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/12 throttle Coasting down-hill from a stop	1988-89	11-13	21-25	36-42	22-26
7/16 throttle Acceleration from a stop	1988-89	17-21	39-45	66-72	71-75
Full-throttle Acceleration from a stop	1988	34-39	62-68	91-97	83-87
	1989	35-40	63-69	90-96	81-85
Downshift "D"		LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/12 throttle Coasting or braking to a stop	1988-89	11-15	—	18-22	4-7
7/16 throttle When car is slowed by increased grade, wind, etc.	1988	44-48	—	—	—
	1989	45-49	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	1988	78-82	78-86	55-62	25-31
	1989	79-86	78-86	52-59	23-29
"S" (With "S ₄ " In Operation)		LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/12 throttle Coasting or braking to stop	1988-89	20-24	—	18-22	4-7
7/16 throttle When car is slowed by increased grade, wind, etc.	1988	51-55	—	—	—
	1989	52-56	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	1988	78-82	—	—	—
	1989	79-83	78-86	52-59	23-29

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Fig. 21: Transmission Shift Point Chart (1988-89 K4 - Carbureted)

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

Upshift "D"		1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/12 throttle Coasting down-hill from a stop	1988	11-13	20-24	30-36	13-17
	1989	13-15	22-26	30-36	13-17
7/16 throttle Acceleration from a stop	1988	17-21	33-39	54-60	59-63
	1989	17-21	33-39	54-60	48-52
Full-throttle Acceleration from a stop	1988	39-44	70-76	98-104	91-95
	1989	33-38	63-69	90-96	79-83
"S" (With Switch "S ₁ " In Operation)		1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/12 throttle Coasting down-hill from a stop	1988-89	11-13	23-27	36-42	22-26
7/16 throttle Acceleration from a stop	1988	17-21	39-45	66-72	71-75
	1889	17-21	39-45	62-68	70-74
Full-throttle Acceleration from a stop	1988	39-44	70-76	98-104	90-94
	1989	33-38	63-69	90-96	79-83
Downshift "D"		LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/12 throttle Coasting or braking to a stop	1988	11-15	—	18-22	4-7
	1989	11-15	—	18-22	6-9
7/16 throttle When car is slowed by increased grade, wind, etc.	1988	47-52	—	—	—
	1989	48-52	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	1988	88-92	87-95	57-64	28-34
	1989	77-81	75-83	57-64	24-30
"S" (With "S ₁ " In Operation)		LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/12 throttle Coasting or braking to stop	1988	20-24	—	18-22	4-7
	1989	20-24	—	18-22	6-9
7/16 throttle When car is slowed by increased grade, wind, etc.	1988	51-55	—	—	—
	1989	52-56	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	1988	87-91	87-95	60-67	32-38
	1989	77-81	75-83	57-64	24-30

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Fig. 22: Transmission Shift Point Chart (1988-89 K4 - Fuel Injection)

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

Upshift "D"	1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/8 throttle Coasting down-hill from a stop	11-13	21-25	29-35	13-17
1/2 throttle Acceleration from a stop	20-24	35-41	57-63	64-68
Full-throttle Acceleration from a stop	34-39	61-67	87-93	81-85
"S" (With Switch "S ₁ " In Operation)	1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/8 throttle Coasting down-hill from a stop	11-13	25-29	39-45	22-26
1/2 throttle Acceleration from a stop	26-30	46-52	67-73	71-75
Full-throttle Acceleration from a stop	34-39	61-67	87-93	81-85

CAUTION: DO NOT shift from "D" or "S" to "2" at speeds over 60 MPH; damage may occur to transmission.

Downshift "D"	LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/8 throttle Coasting or braking to a stop	13-15	—	18-22	4-7
1/2 throttle When car is slowed by increased grade, wind, etc.	51-55	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	79-83	78-86	52-59	23-29
"S" (With Switch "S ₁ " In Operation)	LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/8 throttle Coasting or braking to a stop	22-24	—	18-22	4-7
1/2 throttle When car is slowed by increased grade, wind, etc.	57-61	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	79-83	78-86	52-59	23-29

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Fig. 23: Transmission Shift Point Chart (1990 PY8A - Carbureted)

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

Upshift "D "	1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/8 throttle Coasting down-hill from a stop	11-13	22-26	28-34	13-17
1/2 throttle Acceleration from a stop	21-25	39-45	59-65	68-72
Full-throttle Acceleration from a stop	36-41	65-71	91-97	80-84
"S" (With Switch "S _L " In Operation)	1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/8 throttle Coasting down-hill from a stop	11-13	23-27	31-37	24-28
1/2 throttle Acceleration from a stop	28-32	49-55	71-77	76-80
Full-throttle Acceleration from a stop	36-41	65-71	97-97	80-84
Downshift "D"	LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/8 throttle Coasting or braking to a stop	13-15	—	18-22	6-9
1/2 throttle When car is slowed by increased grade, wind, etc.	53-57	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	76-80	75-83	56-63	23-29
"S" (With Switch "S _L " In Operation)	LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/8 throttle Coasting or braking to a stop	23-27	—	18-22	6-9
1/2 throttle When car is slowed by increased grade, wind, etc.	58-62	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	76-80	75-83	56-63	23-29

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Fig. 24: Transmission Shift Point Chart (1990 PY8A - 2.0L Fuel Injection)

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

Upshift "D"	1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/8 throttle Coasting down-hill from a stop	11-13	22-26	28-34	13-17
1/2 throttle Acceleration from a stop	21-25	39-45	59-65	68-72
Full-throttle Acceleration from a stop	33-38	61-67	83-89	82-86
"S" (With Switch "S ₁ " In Operation)	1st-2nd (MPH)	2nd-3rd (MPH)	3rd-4th (MPH)	LC ON (MPH)
1/8 throttle Coasting down-hill from a stop	11-13	23-27	31-37	24-28
1/2 throttle Acceleration from a stop	28-32	49-57	71-77	76-80
Full-throttle Acceleration from a stop	33-38	61-67	83-89	82-86
Downshift "D"	LC OFF (MPH)	4th -3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/8 throttle Coasting or braking to a stop	13-15	—	18-22	6-9
1/2 throttle When car is slowed by increased grade, wind, etc.	53-57	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	76-80	75-82	56-63	23-29
"S" (With Switch "S ₁ " In Operation)	LC OFF (MPH)	4th-3rd (MPH)	3rd-2nd (MPH)	2nd-1st (MPH)
1/8 throttle Coasting or braking to a stop	24-26	—	18-22	6-9
1/2 throttle When car is slowed by increased grade, wind, etc.	58-62	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	76-80	75-82	56-63	23-29

CAUTION: DO NOT shift from "D" or "S" to "2" at speeds over 60 MPH; damage may occur to transmission.

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Fig. 25: Transmission Shift Point Chart (1990 PY8A - 2.1L Fuel Injection)

STALL SPEED TEST

CAUTION: To prevent transmission damage, DO NOT test stall speed for more than 10 seconds at a time. DO NOT shift lever while raising engine speed. Be sure to remove pressure gauge before testing stall speed.

1. Engage parking brake and block front wheels, connect safety chains to front hooks and to a stationary object. Connect tachometer, and start engine.
2. After engine has warmed to operating temperature, shift into "2". Fully depress brake pedal and accelerator for 6 to 8 seconds, and note engine speed. Allow 2 minutes for cooling, then repeat same test in "D" and "R".

NOTE: Stall speed in "D", "2" and "R" must be the same, and must also be within

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

limits.

TORQUE CONVERTER STALL SPEED SPECIFICATIONS

Application	Engine RPM
1988-90 Carbureted Engine	
Stall Speed	2600 RPM
Service Unit Range	2450-2750 RPM
1988-89 K4 Fuel Injected Engine	
Stall Speed	2550 RPM
Service Unit Range	2400-2700 RPM
1990 PY8A Fuel Injected Engine	
Stall Speed	2650 RPM
Service Unit Range	2500-2800 RPM

TORQUE CONVERTER STALL SPEED TROUBLE SHOOTING

Trouble	Probable Cause
Stall RPM high in "D", "2" & "R"	Low Fluid Level Or Oil Pump Output Clogged Oil Strainer Pressure Regulator Valve Stuck Closed Slipping Clutch
Stall RPM high in "R"	Slippage Of 4th Clutch
Stall RPM high in "2"	Slippage Of 2nd Clutch
Stall RPM high in "D"	Slippage Of 1st Clutch Or 1st Gear One-Way Clutch
Stall RPM low in "D", "2" & "R"	Engine Output Low Torque Converter One-Way Clutch Slipping

HYDRAULIC PRESSURE TEST

CAUTION: Prior to testing, ensure that transmission fluid, level is correct. Also, before installing pressure gauge test equipment, ensure that correct inspection hole is used with corresponding pressure measurement. Incorrect diagnosis could result if not performed properly. Ensure correct pressure test port is used. See [Fig. 26](#) .

NOTE: Record highest pressure reading obtained and compare with specification. See [HYDRAULIC PRESSURE SPECIFICATIONS](#) .

Test Hook-Up

With engine off, attach hoses from pressure testing Gauge Set (07406-00200003), or equivalent, to transmission. Torque hose fittings to 13 ft. lbs. (18 N.m). DO NOT reuse aluminum washers.

Line Pressure Test

Make line pressure measurement after setting parking brake securely and running engine at 2000 RPM.

Clutch Pressure Test

When making clutch pressure measurement, set parking brake and block rear wheels. Raise front of vehicle and support safely. Run engine at 2000 RPM.

Low/High Pressure Test

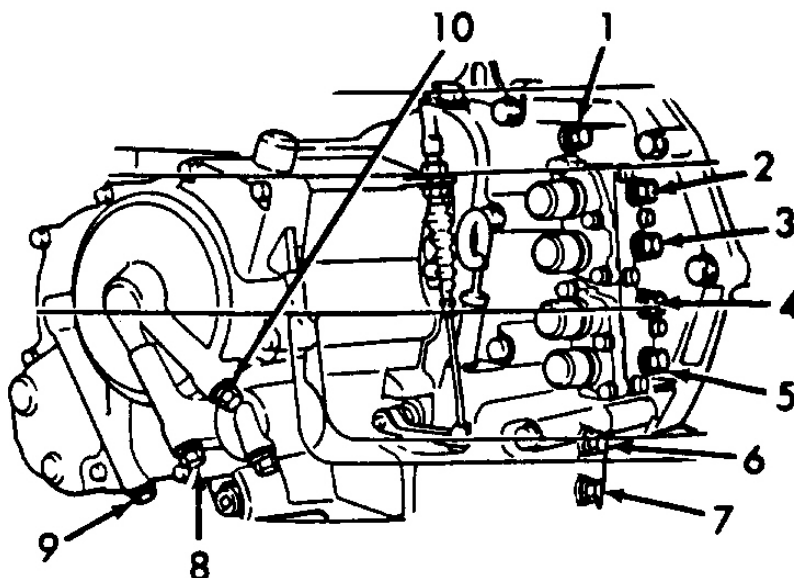
1. Set parking brake, block rear wheels securely, raise car and support with safety stands.
2. Attach gauge set to appropriate pressure test port, remove cable end of throttle control lever. Warm up engine to normal operating temperature (cooling fan comes on).
3. With engine idling, move selector lever to "S" or "D". Slowly move throttle linkage to increase engine RPM until pressure is indicated on appropriate gauge. Then release the throttle linkage, allowing engine to return to an idle, and record pressure reading.
4. Repeat step 3 for each clutch pressure being inspected.
5. With the engine idling, lift throttle control lever up approximately 112 of its possible travel and increase the engine RPM until pressure is indicated on appropriate gauge. Record highest pressure reading obtained.

Throttle "B" Pressure Measurement

When making throttle "B" pressure measurement, set parking brake and block rear wheels. Run engine at 1000 RPM. DISCONNECT throttle control cable from throttle lever and set control lever in full throttle position.

Modulator Pressure Measurement

Set parking brake securely and block wheels. Start engine and run at 2000 RPM. Measure modulator pressure.



- | | |
|--|------------------------------------|
| 1. Line Pressure Tap | 6. Throttle Valve "B" Pressure Tap |
| 2. Lock-Up Control Solenoid Valve "B" Modulator Pressure Tap | 7. 2nd Clutch Pressure Tap |
| 3. Lock-Up Control Solenoid Valve "A" Modulator Pressure Tap | 8. 4th Clutch Pressure Tap |
| 4. Shift Control Solenoid Valve "A" Modulator Pressure Tap | 9. 3rd Clutch Pressure Tap |
| 5. Shift Control Solenoid Valve "B" Modulator Pressure Tap | 10. 1st Clutch Pressure Tap |

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Fig. 26: Identifying Transaxle Pressure Taps

Courtesy of AMERICAN HONDA MOTOR CO., INC.

HYDRAULIC PRESSURE SPECIFICATIONS**LINE PRESSURE MEASUREMENT 1988-89 K4**

Pressure	Selector Position	Probable Cause	Fluid Pressure psi (kPa)			
			PGM-FI		Carburetor	
			Standard	Service Limit	Standard	Service Limit
Line	"N" or "P"	Torque converter, oil pump pressure regulator, torque converter check valve, oil pump	121-128 (834-883)	114 (785)	114-121 (785-834)	107 (736)

G00159475

Fig. 27: Line Pressure Specifications (1988-89 - K4)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

LINE PRESSURE MEASUREMENT 1990 PY8A

Pressure	Selector Position	Probable Cause	Fluid Pressure psi (kPa)			
			Fuel-Injected Engine		Carbureted Engine	
			Standard	Service Limit	Standard	Service Limit
Line	"N" or "P"	Torque converter, oil pump pressure regulator, torque converter check valve, oil pump	121-128 (834-883)	114 (785)	110-117 (760-809)	103 (711)

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Fig. 28: Line Pressure Specifications (1990 - PY8A)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1988 K4 CLUTCH PRESSURE MEASUREMENT

Pressure	Selector Position	Symptom	Probable Cause	Fluid Pressure psi (kPa)			
				PGM-FI		Carburetor	
				Standard	Service Limit	Standard	Service Limit
1st Clutch	"S" or "D"	No or low 1st pressure	1st Clutch	121-128 (834-883)	114 (785)	114-121 (785-834)	107 (736)
2nd Clutch	"2"	No or low 2nd pressure	2nd Clutch	82 - 128 (569) (883)	75 (520) (closed) 114 (785) (3/8 below)	82 - 121 (569) (834)	75 (520) (closed) 114 (785) (below)
3rd Clutch	"S"	No or low 3rd pressure	3rd Clutch				
4th Clutch	"S" (with switch "S ₂ " in operation or "D")	No or low 4th pressure	4th Clutch				
	"R"		Servo valve	Throttle control lever fully closed	Throttle control lever opened 3/8 or more	Throttle control lever fully closed	Throttle control lever 3/8 opened or more
				Enclosed in parenthesis are throttle control lever opening angles		Enclosed in parenthesis are throttle control lever opening angles	

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Fig. 29: Clutch Pressure Specifications (1988 - K4)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

1989 K4 CLUTCH PRESSURE MEASUREMENT

Pressure	Selector Position	Symptom	Probable Cause	Fluid Pressure psi (kPa)			
				PGM-FI		Carburetor	
				Standard	Service Limit	Standard	Service Limit
1st Clutch	"S" or "D"	No or low 1st pressure	1st Clutch	121-128 (834-883)	114 (785)	114-121 (785-834)	107 (736)
2nd Clutch	"2"	No or low 2nd pressure	2nd Clutch				
2nd Clutch	"S" or "D"	No or low 2nd pressure	2nd Clutch	82 - 128 (569) - (883)	75 (520) (Closed) 114 (785) (3/8 Below)	82 - 121 (569) - (834)	75 (520) (Closed) 114 (785) (Below)
3rd Clutch	"S" or "D"	No or low 3rd pressure	3rd Clutch				
4th Clutch	"S" (with switch "S ₄ " in operation or "D")	No or low 4th pressure	4th Clutch	Throttle control lever fully closed	Enclosed in parenthesis are throttle control lever opening angles	Throttle control lever fully closed	Enclosed in parenthesis are throttle control lever opening angles
	"R"		Servo valve or 4th Clutch	121-128 (834-883)	114 (785)	114-121 (785-834)	107 (736)

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Fig. 30: Clutch Pressure Specifications (1989 - K4)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1990 PY8A CLUTCH PRESSURE MEASUREMENT

Pressure	Selector Position	Symptom	Probable Cause	Fluid Pressure psi (kPa)			
				Fuel-Injected Engine		Carbureted Engine	
				Standard	Service Limit	Standard	Service Limit
1st Clutch	"S" or "D"	No or low 1st pressure	1st Clutch	121-128 (834-883)	114 (785)	110-117 (760-809)	103 (711)
2nd Clutch	"2"	No or low 2nd pressure	2nd Clutch				
2nd Clutch	"S" or "D"	No or low 2nd pressure	2nd Clutch	68 - 128 (471) - (883)	61 (422) with throttle lever closed 114 (785) with throttle lever 3/8 opened or more.	68 - 117 (471) - (809)	61 (422) with throttle lever closed 103 (711) with throttle lever 3/8 opened or more.
3rd Clutch	"S" or "D"	No or low 3rd pressure	3rd Clutch				
4th Clutch	"S" (with switch "S ₄ " in operation or "D")	No or low 4th pressure	4th Clutch	Throttle control lever fully closed	Enclosed in parenthesis are throttle control lever opening angles	Throttle control lever fully closed	Enclosed in parenthesis are throttle control lever opening angles
	"R"		Servo valve or 4th Clutch	121-128 (834-883)	114 (785)	110-117 (760-809)	103 (711)

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Fig. 31: Clutch Pressure Specifications (1990 - PY8A)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

1988-1990 K4 & PY8A LOW-HIGH PRESSURE

Pressure	Selector Position	Symptom	Probable Cause	Fluid Pressure psi (kPa)			
				Fuel-Injected Engine		Carbureted Engine	
				Standard	Service Limit	Standard	Service Limit
2nd Clutch	"S" or "D"	No or low 2nd pressure	2nd Clutch	68-128 (471-883)	61 (422) with throttle lever released 114 (785) with throttle lever 3/8 opened or more	68-117 (471-809)	61 (422) with throttle lever released 103 (711) with throttle lever 3/8 opened or more
3rd Clutch	"S" or "D"	No or low 3rd pressure	3rd Clutch				
4th Clutch	"D"	No or low 4th pressure	4th Clutch				

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Fig. 32: Low-High Pressure Specifications (1988-89 - K4 & PY8A)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

1988-89 K4 THROTTLE PRESSURE MEASUREMENT

Pressure	Selector Position	Symptom	Probable Cause	Fluid Pressure psi (kPa)			
				PGM-FI		Carburetor Engine	
				Standard	Service Limit	Standard	Service Limit
Throttle B	"S" or "D"	No or low Throttle B pressure	Throttle valve B	0 (close) 121-128 (834-883) (fully opened) Enclosed in parenthesis are throttle control lever opening angles.	— 114 (785) (fully opened) Enclosed in parenthesis are throttle control lever opening angles.	0 (close) 114-121 (785-834) (fully opened) Enclosed in parenthesis are throttle control lever opening angles.	— 100 (686) (fully opened) Enclosed in parenthesis are throttle control lever opening angles.

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Fig. 33: Throttle Pressure Specifications (1988-89 - K4)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

1990 PY8A THROTTLE PRESSURE MEASUREMENT

Pressure	Selector Position	Symptom	Probable Cause	Fluid Pressure psi (kPa)			
				Fuel-Injected Engine		Carbureted Engine	
				Standard	Service Limit	Standard	Service Limit
Throttle B	"S" or "D"	No or low Throttle B pressure	Throttle valve B	0 (close) 121-128 (834-883) (fully opened) Enclosed in parenthesis are throttle control lever opening angles.	— 114 (785) (fully opened) Enclosed in parenthesis are throttle control lever opening angles.	0 (close) 110-117 (760-809) (fully opened) Enclosed in parenthesis are throttle control lever opening angles.	— 103 (711) (fully opened) Enclosed in parenthesis are throttle control lever opening angles.

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Fig. 34: Throttle Pressure Specifications (1990 - PY8A)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

1988-89 K4 MODULATOR PRESSURE MEASUREMENT

Pressure	Selector Position	Symptom	Probable Cause	Fluid Pressure psi (kPa)	
				Standard	Service Limit
Modulator Pressure	"N" or "P"	No or low 1 pressure	Lock-Up Control Solenoid Valve B	68-74 (471-510)	61 (422)
		No or low 2 pressure	Lock-up Control Solenoid Valve A		
		No or low 3 pressure	Shift Control Solenoid Valve A		
		No or low 4 pressure	Shift Control Solenoid Valve B		
		No or low All of ports pressure	Modulator Valve		
		High pressure	Modulator Valve		

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Fig. 35: Modulator Pressure (1988-89 - K4)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

REMOVAL & INSTALLATION**TRANSAXLE**

See appropriate REMOVAL & INSTALLATION article.

TORQUE CONVERTER

Torque converter consists of pump, turbine and stator assembled as a unit. Torque converter cannot be serviced and must be replaced if defective.

NOTE: For torque converter stall speed test, see **TESTING** .

TRANSAXLE DISASSEMBLY

1. Remove end cover to case bolts. Remove end cover. Use Mainshaft Holder (07GAB-PF50100) to lock mainshaft. See **Fig. 36** .
2. Remove staked mainshaft lock nut (lock nut has LEFT-HAND threads). Use bearing puller to remove parking gear and countershaft 1st gear. See **Fig. 37** .
3. Install Housing Puller (07HAC-PK40100) with 4 bolts. Align control shaft spring with cut out in transmission housing. See **Fig. 38** .
4. Tighten puller bolt against end of countershaft until housing comes loose. Remove mainshaft and countershaft together. See **Fig. 39** and **Fig. 40** . Refer to individual **COMPONENT DISASSEMBLY & REASSEMBLY** for further information.

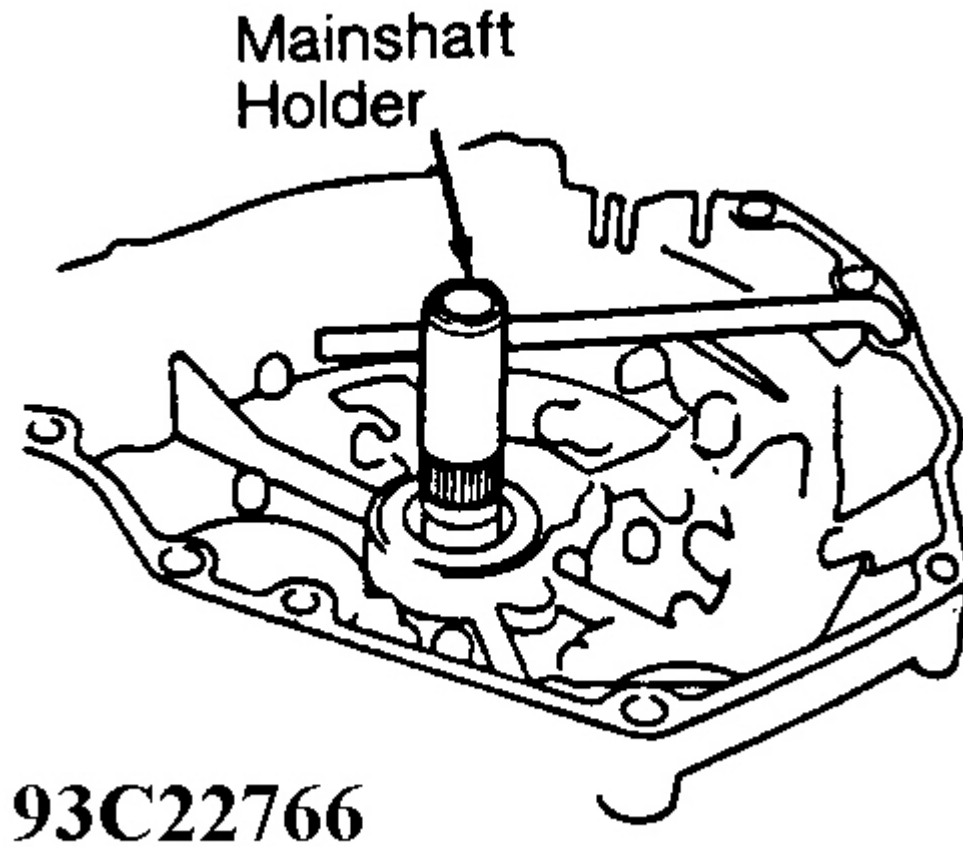
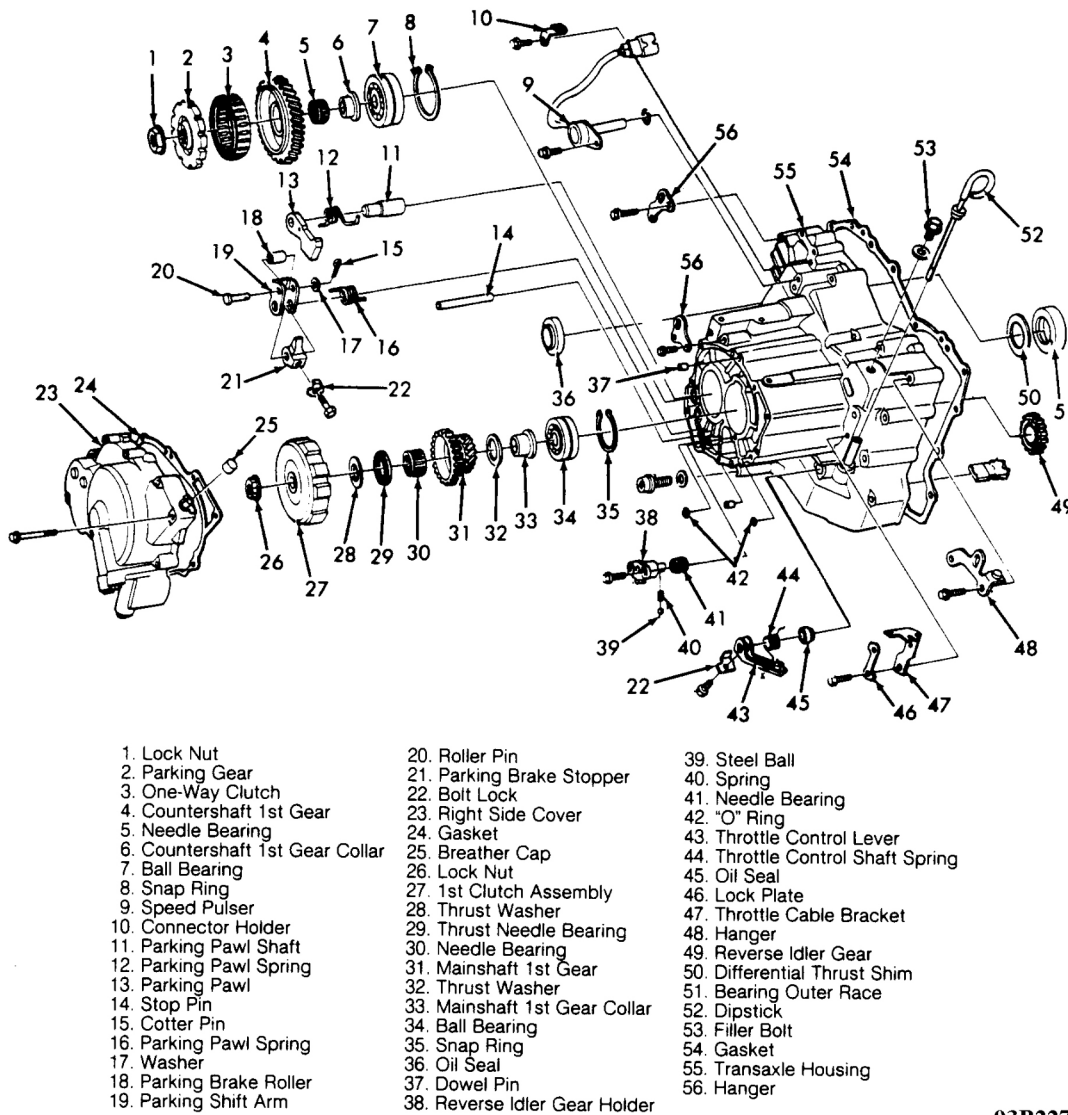


Fig. 36: Installing Mainshaft Holder

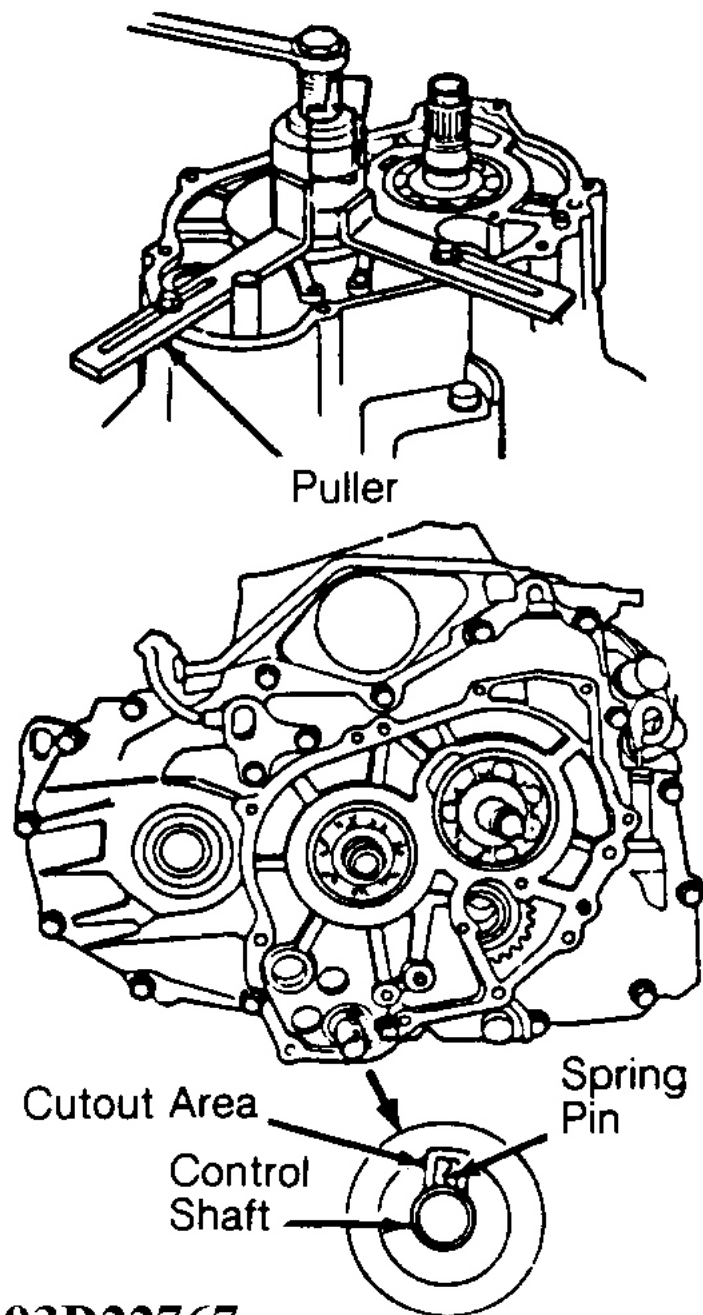
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 37: Exploded View Of Right Side Cover, Transaxle Housing & Components (1988-89 - K4 & 1990 - PY8A)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

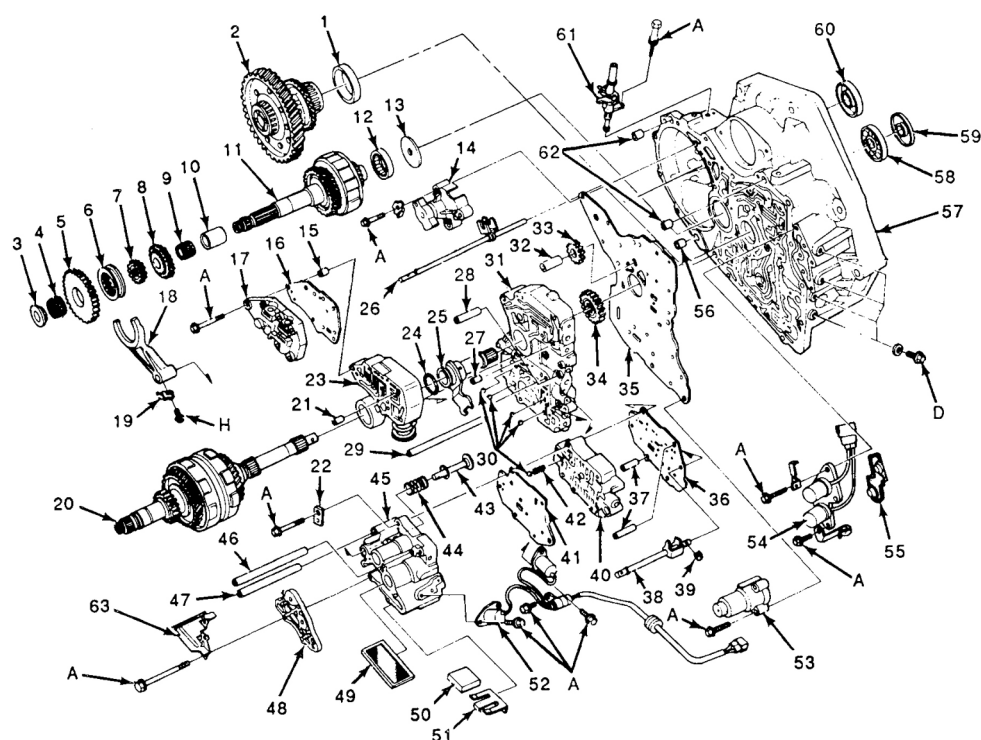


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Fig. 38: Aligning Spring Pin & Removing Transaxle Housing
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

1990 Honda Prelude 2.0 S

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul



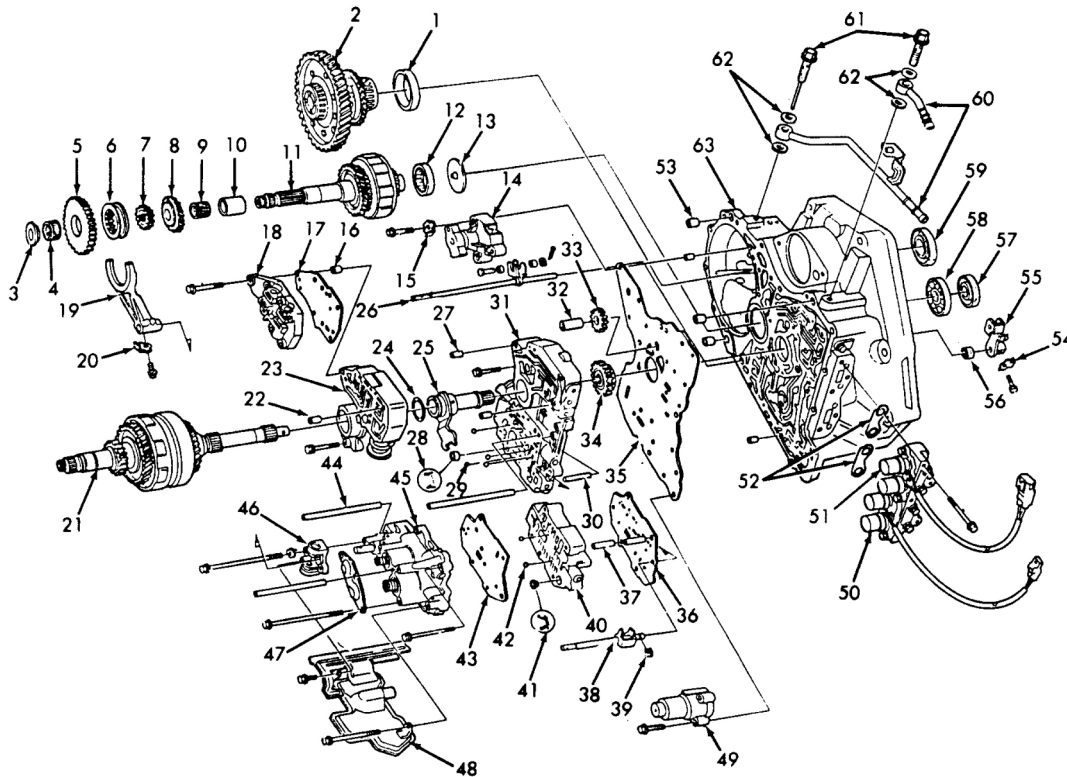
	Torque Value	Bolt Size	Remarks
A	106 INCH Lbs. (12 N.m)	6 mm	
B	71 INCH Lbs. (8 N.m)	5 mm	
C	37 Ft. Lbs. (50 N.m)	10 mm	
D	13 Ft. Lbs. (18 N.m)	8 mm	Sealing Bolt
E	33 Ft. Lbs. (45 N.m)	20 mm	Filler Plug

	Torque Value	Bolt Size	Remarks
F	30 Ft. Lbs. (40 N.m)	14 mm	Drain Plug
G	16 Ft. Lbs. (22 N.m)	8 mm	

- | | | | |
|--|-------------------------------------|-----------------------------------|---|
| 1. Differential Bearing Outer Race | 17. Lock-Up Timing Valve Body | 36. Secondary Separator Plate | 52. Shift Control Solenoid Valve Assembly |
| 2. Differential Assembly | 18. Reverse Shiftfork | 37. Dowel Pin (8 x 40 mm) | 53. 2nd Accumulator Body |
| 3. Reverse Gear Collar | 19. Lock Washer | 38. Throttle Valve Shaft | 54. Lock-Up Control Solenoid Valve Assembly |
| 4. Needle Bearing (32 x 38 x 14 mm) | 20. Mainshaft | 39. "E" Clip (7 mm) | 55. Lock-Up Control Solenoid Base Gasket |
| 5. Reverse Gear Selector | 21. Dowel Pin | 40. Secondary Valve Body Assembly | 56. Dowel Pin (14 x 25 mm) |
| 6. Reverse Gear Selector Hub | 22. Lock Plate | 41. Servo Separator Plate | 57. Torque Converter Housing |
| 7. Counter Shaft 4th Gear | 23. Regulator Valve Body | 42. Spring | 58. Ball Bearing (40 x 68 x 9 mm) |
| 8. Needle Bearing (28 x 33 x 20 mm) | 24. "O" Ring (31 x 1.7 mm) | 43. Shift Fork Shaft | 59. Oil Seal (44 x 68 x 8 mm) |
| 9. Distance Collar (28 mm) | 25. Stator Shaft Arm | 44. Servo Return Spring | 60. Oil Seal (38 x 54 x 8 mm) |
| 10. Counter Shaft | 26. Control Shaft | 45. Servo Valve Body | 61. Speed Sensor Assembly |
| 11. Roller Bearing (38.5 x 67 x 19 mm) | 27. Dowel Pin | 46. 4th Clutch Pipe | 62. Dowel Pin (14 x 20 mm) |
| 12. Oil Guide Plate | 28. Stop Pin (8 x 80 mm) | 47. 3rd Clutch Pipe | 63. Baffle Plate |
| 13. Speed Pulser Rotor | 29. 1st Clutch Pipe | 48. Accumulator Cover | |
| 14. Dowel Pin (8 x 14 mm) | 30. Steel Balls | 49. Filter Screen | |
| 15. Lock-Up Timing Valve Separator Plate | 31. Main Valve Body | 50. Transmission Magnet | |
| | 32. Pump Gear Shaft | 51. Magnet Holder Spring | |
| | 33. Pump Driven Gear | | |
| | 34. Pump Drive Gear | | |
| | 35. Main Valve Body Separator Plate | | |

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Fig. 39: Exploded View Of Torque Converter Housing & Components (1988-89 - K4)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



- | | | |
|-------------------------------------|--------------------------------|---|
| 1. Differential Bearing Outer Race | 22. Dowel Pin | 43. Servo Separator Plate |
| 2. Differential Assembly | 23. Regulator Valve Body | 44. Clutch Feed Pipe |
| 3. Countershaft Reverse Gear Collar | 24. "O" Ring | 45. Servo Valve Body |
| 4. Needle Bearing | 25. Stator Shaft | 46. Servo Detent Base |
| 5. Countershaft Reverse Gear | 26. Control Shaft | 47. Accumulator Cover |
| 6. Reverse Gear Selector | 27. Dowel Pin | 48. Fluid Strainer |
| 7. Reverse Selector Hub | 28. Filter | 49. 2nd Accumulator Body |
| 8. Countershaft 4th Gear | 29. Check Ball | 50. Shift Control Solenoid Valve Assembly |
| 9. Needle Bearing | 30. Stop Pin | 51. Lock-Up Control Solenoid Valve Assembly |
| 10. Distance Collar | 31. Main Valve Body | 52. Gasket |
| 11. Countershaft | 32. Oil Pump Driven Gear Shaft | 53. Dowel Pin |
| 12. Needle Bearing | 33. Oil Pump Driven Gear | 54. Bolt Lock |
| 13. Oil Guide Plate | 34. Oil Pump Drive Gear | 55. Control Shaft Lever |
| 14. Pulser Rotor | 35. Main Separator Plate | 56. Oil Seal |
| 15. Lock Plate | 36. Secondary Separator Plate | 57. Oil Seal |
| 16. Dowel Pin | 37. Dowel Pin | 58. Mainshaft Bearing |
| 17. Lock-Up Body Separator Plate | 38. Throttle Control Shaft | 59. Differential Oil Seal |
| 18. Lock-Up Body | 39. Retaining Ring | 60. Cooler Pipe |
| 19. Reverse Shift Fork | 40. Secondary Valve Body | 61. Joint Bolt |
| 20. Bolt Lock | 41. Filter | 62. Seal Washer |
| 21. Mainshaft | 42. Check Ball | 63. Torque Converter Housing |

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Fig. 40: Exploded View Of Torque Converter Housing & Components (1990 - PY8A)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT DISASSEMBLY & REASSEMBLY

ONE-WAY CLUTCH/PARKING GEAR

Disassembly

CAUTION: DO NOT pry on 3 copper friction strips. If strip is broken or damaged, clutch will not operate properly.

Separate countershaft 1st gear from parking gear by turning parking gear, in clockwise direction. Remove one-way clutch by prying up using screwdriver. See **Fig. 37** .

Cleaning & Inspection

Inspect parking gear and countershaft 1st gear for wear or scoring. Inspect one-way clutch for damage or faulty movement.

Reassembly

After parts are assembled, hold countershaft 1st gear and turn parking gear in clockwise direction to ensure that it rotates freely.

MAIN VALVE BODY

Disassembly

Accumulator cover is spring loaded. To prevent possibility of stripping threads from converter housing, press down on accumulator cover while removing bolts in a crisscross pattern. Follow this procedure for installation. DO NOT use a magnet to remove steel balls. Balls may become magnetized and result in improper transmission operation. Note installed position of all valves and springs for reassembly reference. See **Fig. 41** and **Fig. 42** .

Cleaning & Inspection

1. Thoroughly clean all parts in solvent or carburetor-cleaner. Dry using compressed air and blow out all passages. Replace valve body as an assembly if any parts are worn or damaged.
2. Check that all valves move freely. If valves do not move freely polish off burrs or rough areas using ATF soaked No. 600 abrasive paper. Rewash entire valve body and parts thoroughly if polishing was needed.
3. Ensure that all springs meet specifications. See appropriate spring free length table. Coat all parts in ATF before reassembly.

Reassembly

1. Install 3-4 shift valve, 3-4 shift valve spring and shift cap in main valve body and secure with roller. Install 1-2 and 2-3 shift valves in main valve body in same manner as 3-4 shift valve. Install manual valve roller (6 x 16 mm) and spring.
2. Set relief spring in relief valve and install it in main valve body. Install spring with a screwdriver, then install check valve cap with cutout aligned with screwdriver. Install orifice control valve in main valve body in same manner.

SPRING FREE LENGTH (1988 - K4)

Application	Free Length - In. (mm)
Regulator Valve Outer	
Carbureted Engine	3.49 (88.6)
Fuel Injected Engine	3.41 (86.5)

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Regulator Valve Inner	1.73 (44.0)
Stator Reaction	1.19 (30.3)
Torque Converter Check Valve	1.36 (34.5)
Relief Valve	1.88 (47.7)
2nd Orifice Control Valve	1.48 (37.7)
Servo Orifice Control Valve	1.76 (44.8)
Throttle Control Valve "A" Outer	0.83 (21.0)
Throttle Control Valve "B" Outer	1.18(30.0)
Throttle Control Valve Inner	1.63 (41.4)
Low One-Way Ball	0.55 (14.0)
1-2 Shift	1.50 (38.1)
1-2 Shift Ball	0.50 (12.7)
2-3 Shift	1.56 (39.6)
3-4 Shift	1.56 (39.6)
Low Accumulator "A"	2.19 (55.0)
Low Accumulator "B"	1.65 (42.0)
4th Accumulator	3.07 (78.0)
2nd Accumulator	3.31 (84.1)
3rd Accumulator	3.08 (78.3)
Cooler Check Valve	1.84 (46.8)
2nd Kickdown Valve	1.48 (37.7)
UC Control	1.50 (38.0)
UC Timing Valve	2.43 (61.7)
CPC Valve	1.52 (38.5)
Servo Return	1.59 (40.3)
UC Shift Valve	2.90 (73.7)
Modulator Valve	1.28 (32.4)
Kickdown Valve 3rd	2.04 (51.9)
Servo Return	1.59(40.3)

SPRING FREE LENGTH (1989 - K4)

Application	Free Length - In. (mm)
Regulator Valve Spring "A"	
Carbureted Engine	3.49 (88.6)
Fuel Injected Engine	3.41 (88.5)
Low One-Way Ball	0.55 (14.0)
Regulator Valve Spring "B"	1.73 (44.0)
Stator Reaction	1.19 (30.3)
Torque Converter Check Valve	1.36 (34.5)
Relief Valve	1.88 (47.7)
Cooler Check Valve	1.84 (46.8)

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1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

2nd Orifice Control	2.00 (50.7)
2nd Kickdown	1.48 (37.7)
Servo Orifice Control	1.76 (44.8)
Throttle Spring	0.85 (21.6)
Throttle Adjust Spring "A" (Throttle Pressure "B")	1.18 (30.0)
Throttle Spring "B"	1.63 (41.4)
1-2 Shift	1.63 (41.5)
1-2 Shift Ball	0.50 (12.7)
2-3 Shift	1.56 (39.6)
Low Accumulator Spring "A"	2.21 (56.2)
Low Accumulator Spring "B"	1.65 (42.0)
4th Accumulator	3.07 (78.0)
2nd Accumulator	3.45 (87.7)
3rd Accumulator	3.08 (78.3)
UC Shift	2.90 (73.7)
UC Timing	2.43 (61.7)
L/C Control Spring "A"	1.50 (38.0)
UC Control Spring "B"	1.50 (38.0)
UC Control Spring "C"	1.50 (38.0)
UC Control Spring "D"	1.50 (38.0)
UC Control Spring "E"	1.50 (38.0)
Clutch Pressure Control Valve Spring "A" (Modulator Pressure)	1.26(32.4)
Clutch Pressure Control Valve Spring "B" (Modulator Pressure)	1.26 (32.4)
Clutch Pressure Control Valve Spring "A" (CPC Pressure)	1.52 (38.5)
Clutch Pressure Control Valve Spring "B" (CPC Pressure)	1.52 (38.5)
3rd Kickdown	2.04 (51.9)
Servo Return	1.59(40.3)

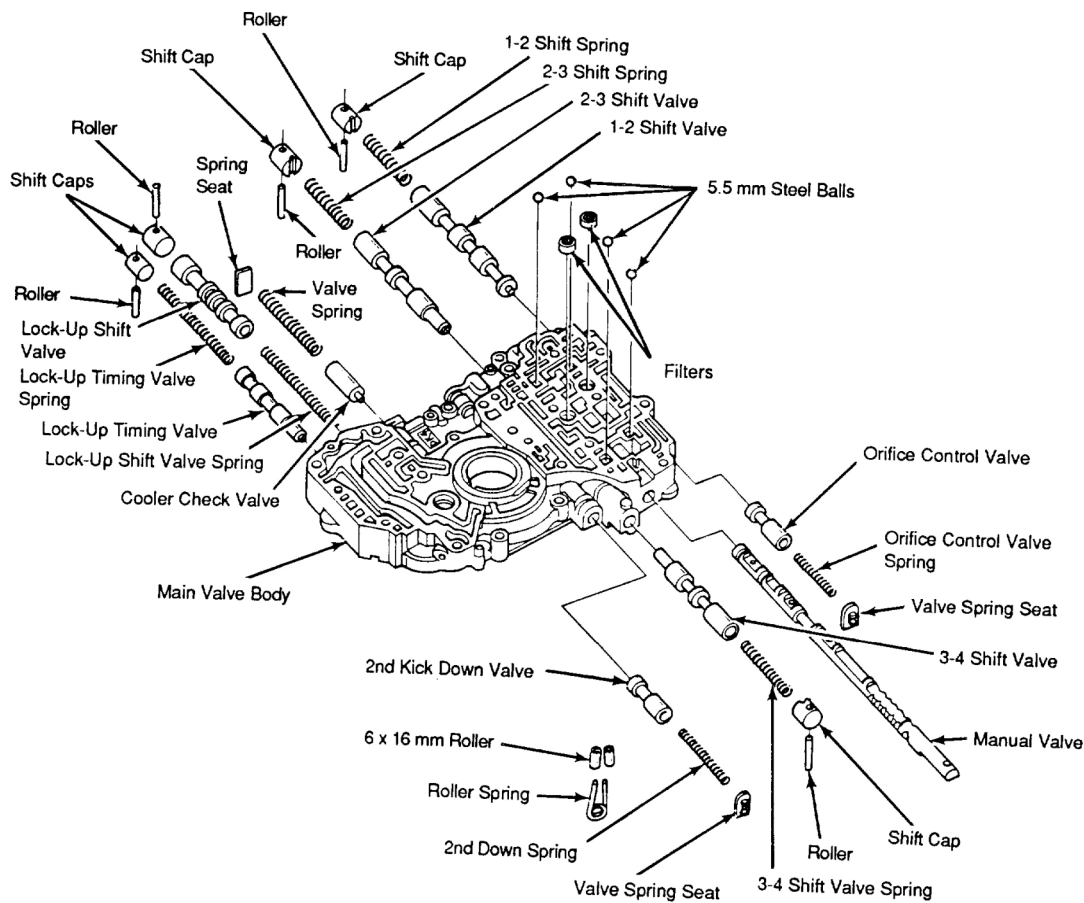
SPRING FREE LENGTH (1990 - PY8A)

Application	Free Length - In. (mm)
1st one-Way Ball	0.55 (14.0)
Idle Shaft Spring "A"	0.57 (14.6)
Idle Shaft Spring "B"	0.81 (20.7)
Regulator Valve Spring "A"	
Carbureted Engine	3.35 (85.1)
Fuel Injected Engine	3.49 (88.6)
Regulator Valve Spring "B"	1.73 (44.0)
Stator Reaction	1.19 (30.3)
Torque Converter Check Valve	1.43 (36.3)
Relief Valve	2.28 (57.8)

1990 Honda Prelude 2.0 S

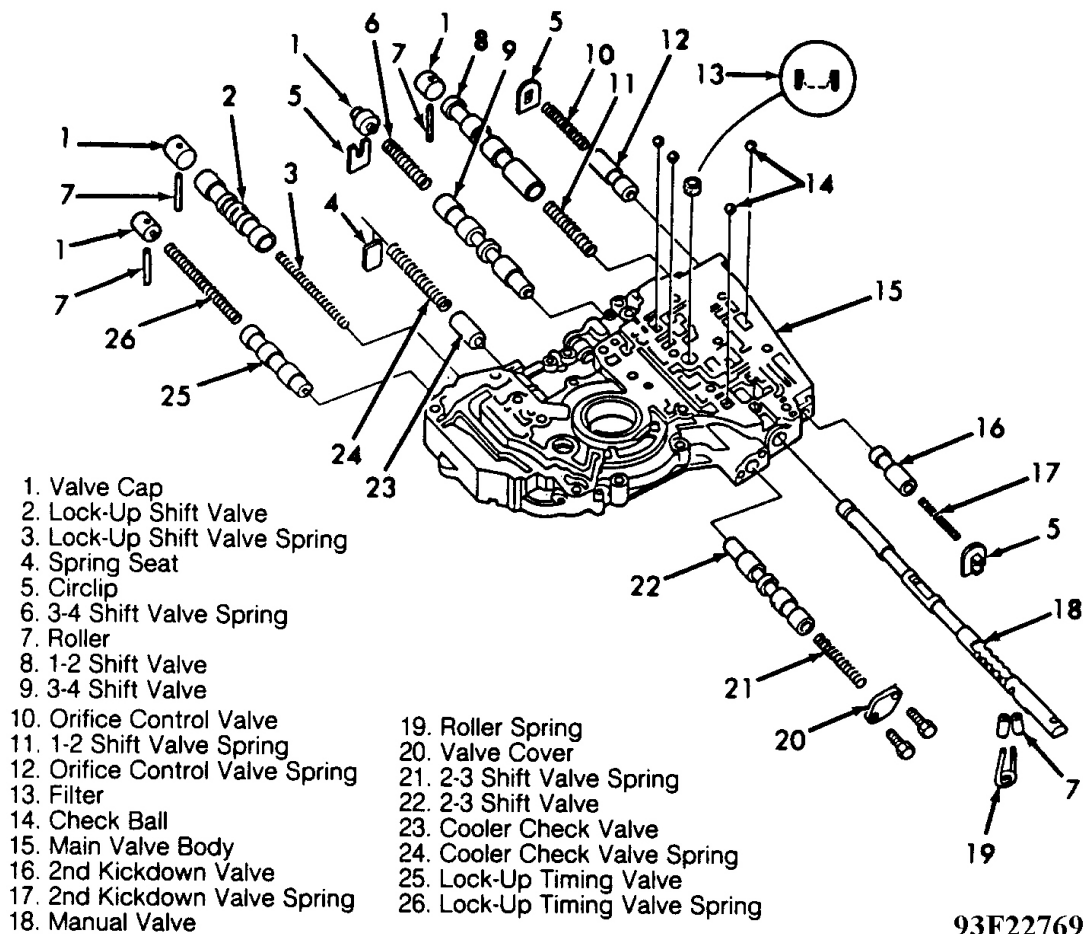
1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

Cooler Check Valve	1.84 (46.8)
2nd Orifice Control	1.85 (46.9)
Servo Orifice Control	1.57 (40.0)
4th Exhaust	1.34 (34.1)
Throttle Valve Adjusting	1.18 (30.0)
Throttle "B"	1.63 (41.5)
1-2 Shift	1.63 (41.5)
3-4 Shift	2.00 (50.8)
2-3 Shift	2.00 (50.8)
1st Accumulator Spring "A"	2.21 (56.2)
1st Accumulator' Spring "B"	1.65 (42.0)
4th Accumulator	3.11 (79.0)
2nd Accumulator	3.35 (85.0)
3rd Accumulator	2.99 (75.9)
Lock-Up Shift	2.90 (73.7)
Lock Up Timing	2.39 (60.8)
Lock-Up Control Spring ("A", "B", "C", "D", "E")	1.50 (38.0)
CPC Valve	1.44 (36.6)
Modulator Valve	1.28 (32.4)
3rd Kickdown	2.50 (63.5)
Servo Control	1.65 (42.0)
3-2 Kickdown Valve	1.46 (37.1)



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Fig. 41: Exploded View Of Main Valve Body (1988-89 - K4)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 42: Exploded View Of Main Valve Body (1990 - PY8A)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL PUMP

Cleaning & Inspection

1. Install pump gears and shaft in main valve body. Install oil pump shaft and measure side clearance of drive and driven gears. See **Fig. 43** .
2. Standard pump side (radial) drive gear clearance should be 0.0083- 0.0104" (0.210-4.265 mm). Driven gear (radius) clearance should be 0.0014-0.0025" (0.035-0.063 mm). Inspect teeth for wear or damage.
3. Measure thrust clearance of driven gear-to-valve body. See **Fig. 44** . Standard clearance should be 0.001- 0.002" (0.03-0.05 mm). Service limit is 0.0028" (0.070 mm).

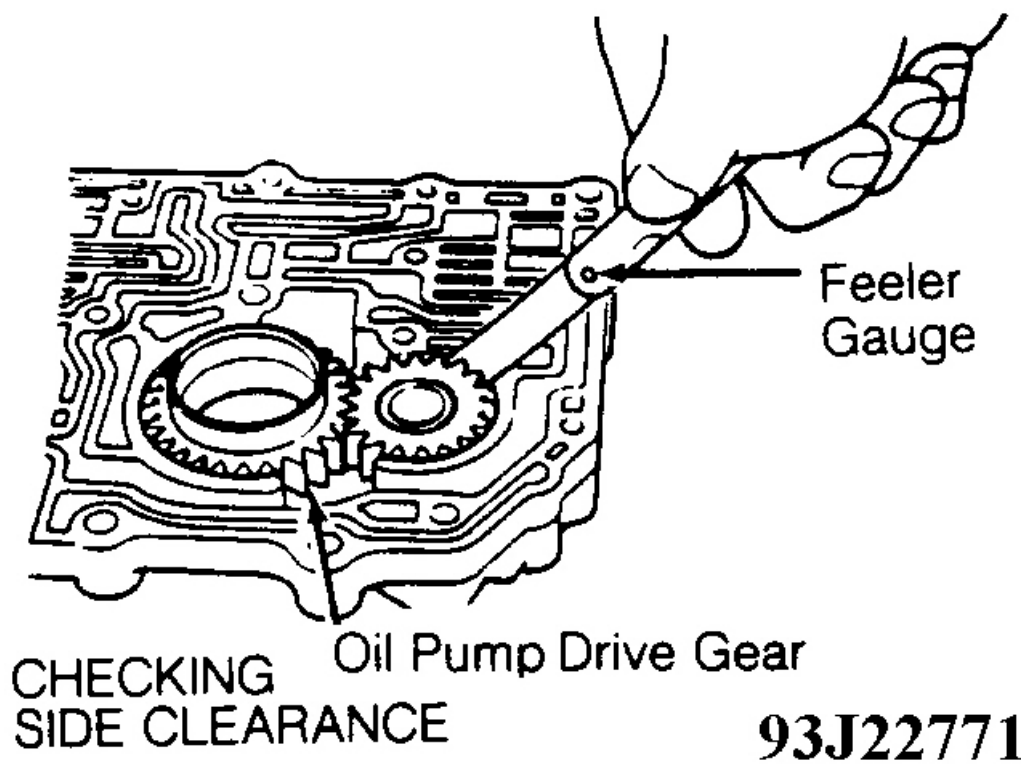


Fig. 43: Checking Side Clearance

Courtesy of AMERICAN HONDA MOTOR CO., INC.

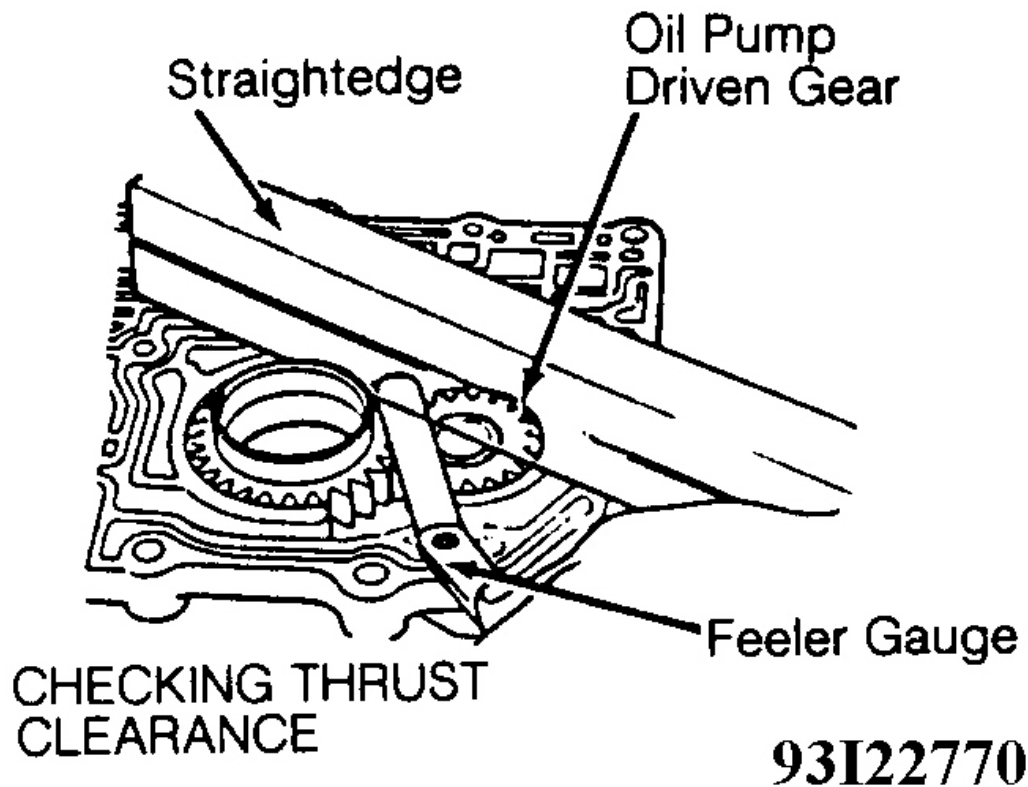


Fig. 44: Checking Thrust Clearance

Courtesy of AMERICAN HONDA MOTOR CO., INC.

REGULATOR VALVE BODY

Disassembly

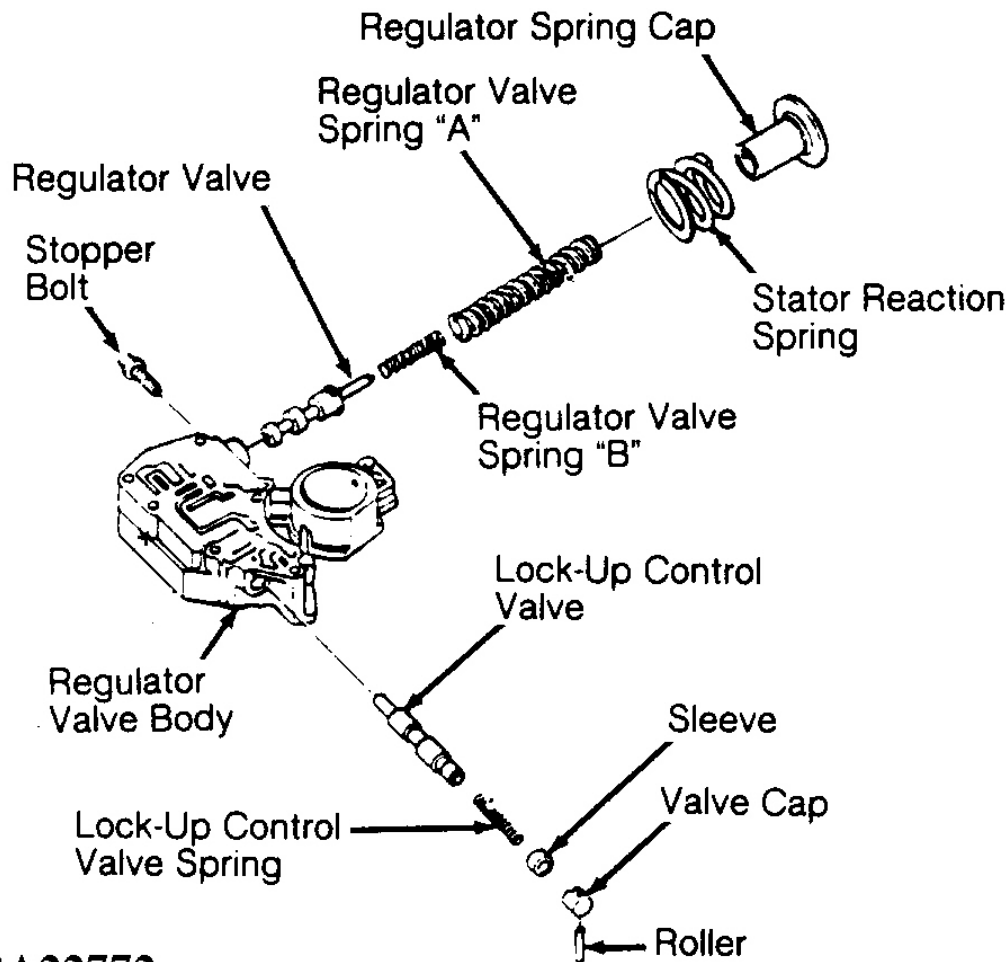
Secure retainer in place while removing lock bolt. When bolt is removed, release retainer slowly. See [Fig. 45](#).

Cleaning & Inspection

1. Thoroughly clean all parts in solvent or carburetor cleaner. Dry using compressed air and blow out all passages. Replace valve body as an assembly if any parts are worn or damaged.
2. Check that all valves move freely. If valves do not move freely polish off burrs or rough areas using ATF soaked No. 600 abrasive paper. Rewash entire valve body and parts thoroughly if polishing was needed.
3. Ensure that all springs meet specifications. See appropriate SPRING FREE LENGTH table. Coat all parts in ATF before reassembly.

Reassembly

1. Install pressure regulator valve and regulator valve spring "A" and "B". Install reaction spring, spring seat and retainer.
2. Align hole in retainer with hole in valve body: Press retainer into valve body and torque lock bolt to 10. INCH lbs. (12 N.m).



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Fig. 45: Exploded View Of Regulator Valve Body
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

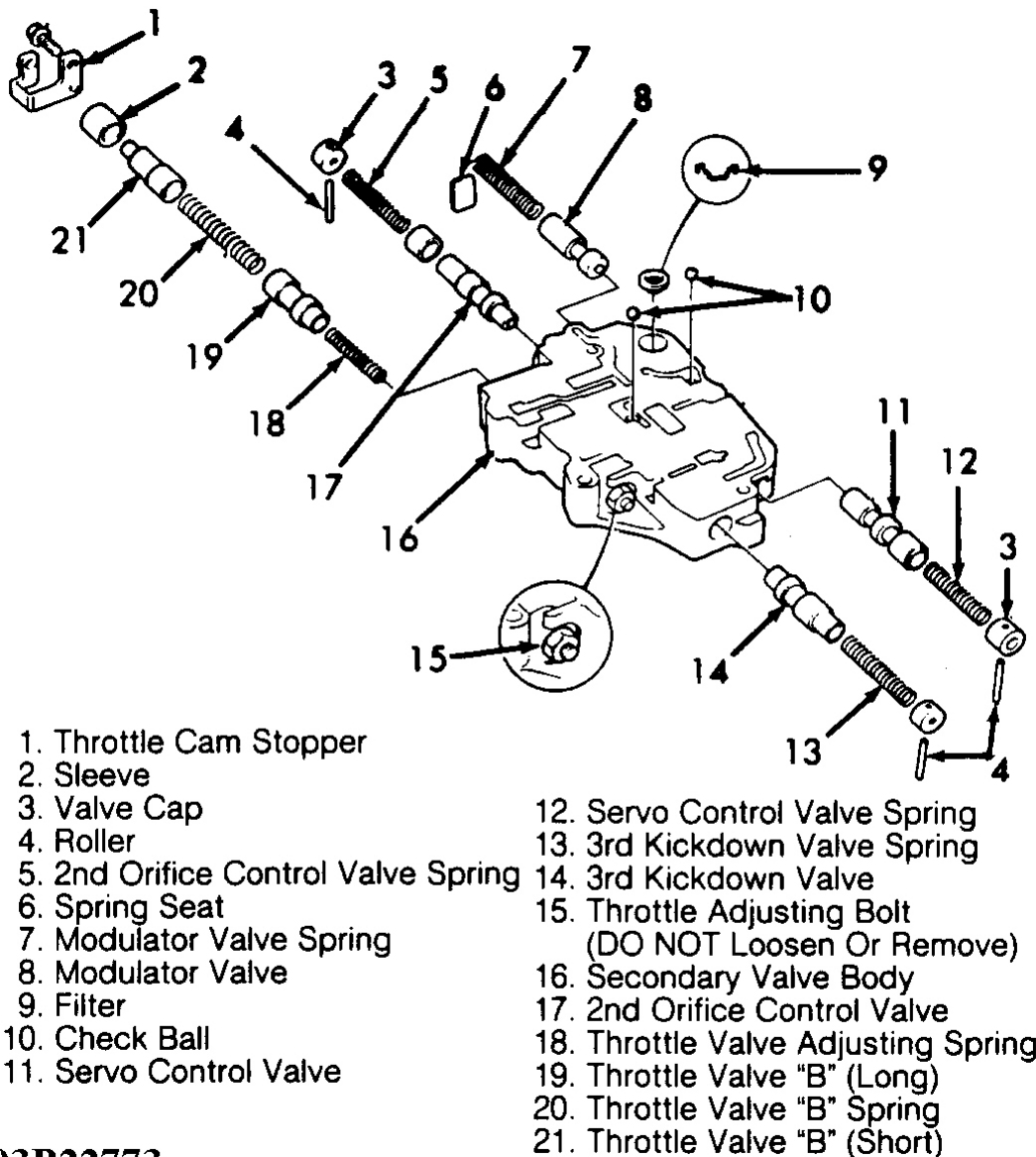
SECONDARY VALVE BODY

Disassembly & Reassembly

For information on disassembly and reassembly. See **Fig. 46**.

Cleaning & Inspection

1. Thoroughly clean all parts in solvent or carburetor cleaner. Dry using compressed air and blow out all passages. Replace valve body as an assembly if any parts are worn or damaged.
2. Check that all valves move freely. If valves do not move freely polish off burrs or rough areas using ATF soaked No. 600 abrasive paper. Rewash entire valve body and parts thoroughly if polishing was needed.
3. Ensure that all springs meet specifications. See appropriate SPRING FREE LENGTH table. Coat all parts in ATF before reassembly.



93B22773

Fig. 46: Exploded View Of Secondary Valve Body
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

SERVO VALVE BODY**Disassembly & Reassembly**

For information on disassembly and reassembly. See **Fig. 47** .

Cleaning & Inspection

1. Thoroughly clean all parts in solvent or carburetor cleaner. Dry using compressed air and blow out all passages. Replace valve body as an assembly if any parts are worn or damaged.
2. Ensure valves move freely. If valves do not move freely polish off burrs or rough areas using ATF soaked No. 600 abrasive paper. Rewash entire valve body and parts thoroughly if polishing was needed.
3. Ensure that all springs meet specifications. See appropriate SPRING FREE LENGTH table. Coat all parts in ATF before reassembly.

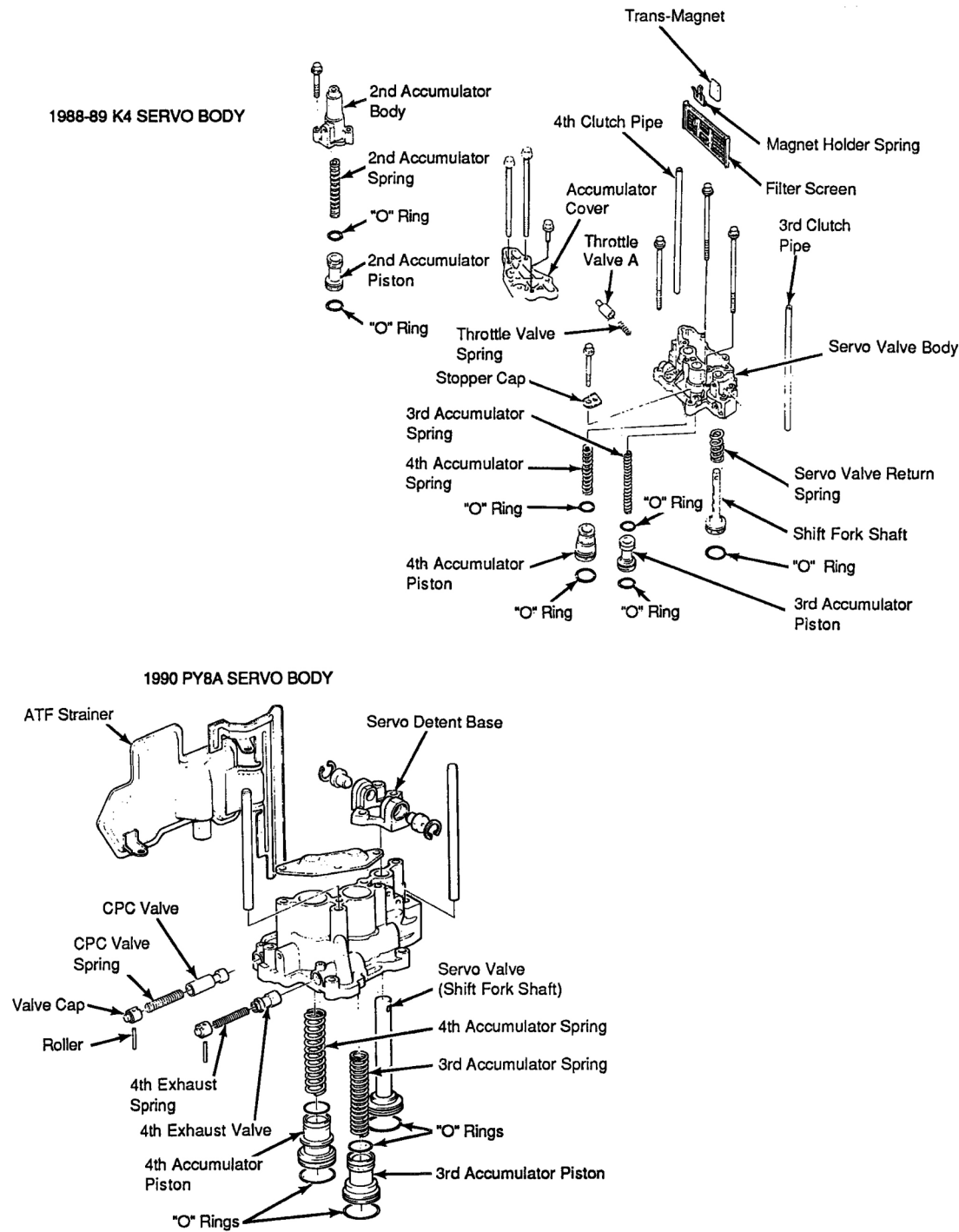


Fig. 47: Exploded View Of 1988-89 K4 & 1990 PY8A Servo Valve Body
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

LOCK-UP BODY

Disassembly & Reassembly

For information on disassembly and reassembly. See **Fig. 48**.

Cleaning & Inspection

1. Thoroughly clean all parts in solvent or carburetor cleaner. Dry using compressed air and blow out all passages. Replace valve body as an assembly if any parts are worn or damaged.
2. Check that all valves move freely. If valves do not move freely polish off burrs or rough areas using ATF soaked No. 600 abrasive paper. Rewash entire valve body and parts thoroughly if polishing was needed.
3. Ensure all springs meet specifications. See appropriate SPRING FREE LENGTH table. Coat all parts in ATF before reassembly.

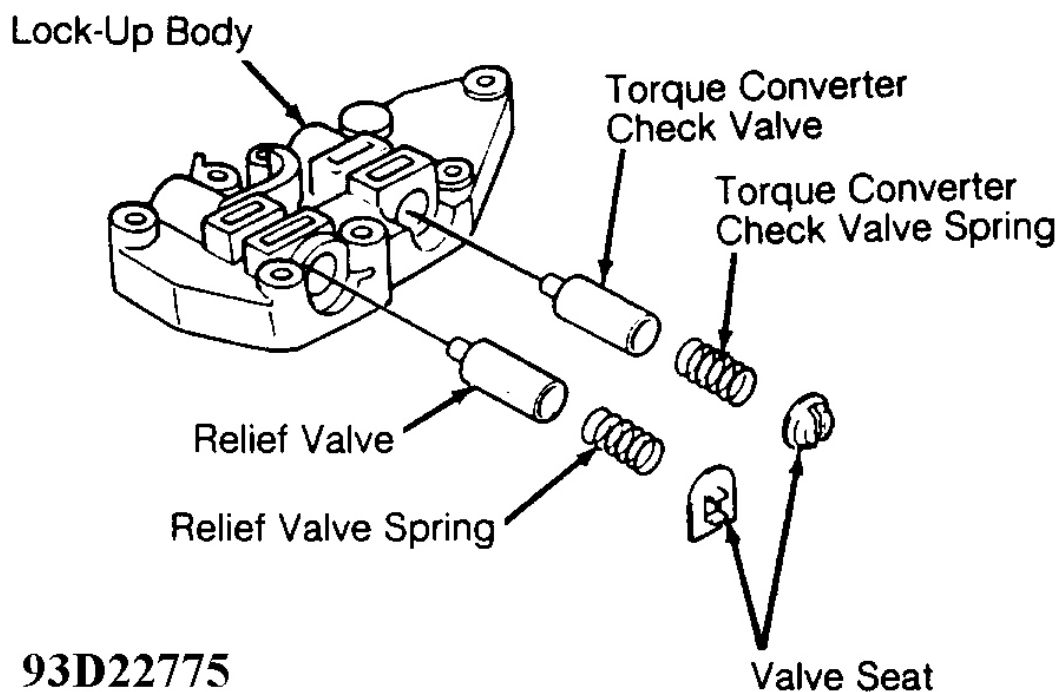


Fig. 48: Exploded View Of Lock-Up Body

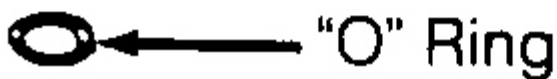
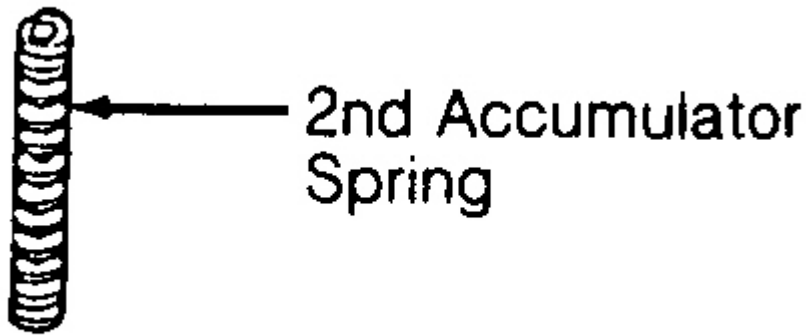
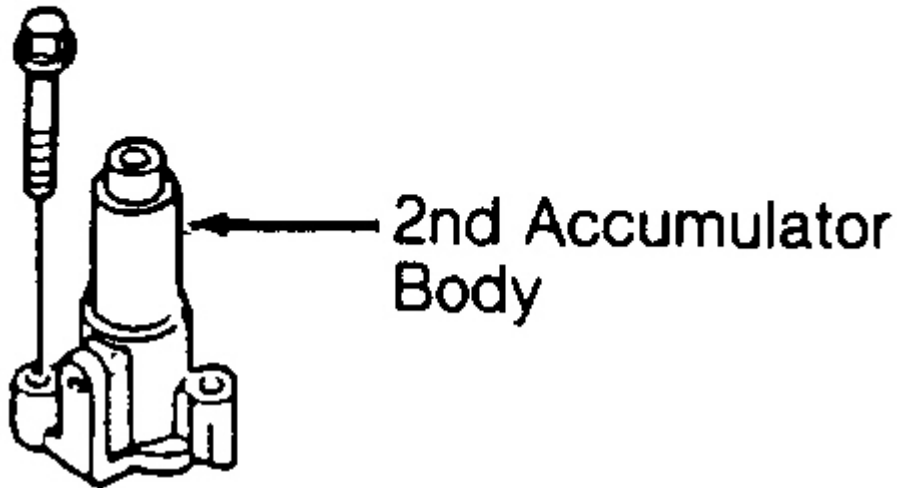
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2ND ACCUMULATOR BODY**Disassembly & Reassembly**

For information on disassembly and reassembly. See **Fig. 49**.

Cleaning & Inspection

1. Thoroughly clean all parts in solvent or carburetor cleaner. Dry using compressed air and blow out 2nd Accumulator passages. Replace valve body as an assembly if any parts are worn or damaged.
2. Check that 2nd accumulator moves freely. If 2nd accumulator piston does not move freely polish off burrs or rough areas using ATF soaked No. 600 abrasive paper. Clean entire valve body and parts thoroughly if polishing was needed.
3. Ensure all springs meet specifications. See appropriate SPRING FREE LENGTH table. Coat all parts in ATF before reassembly.



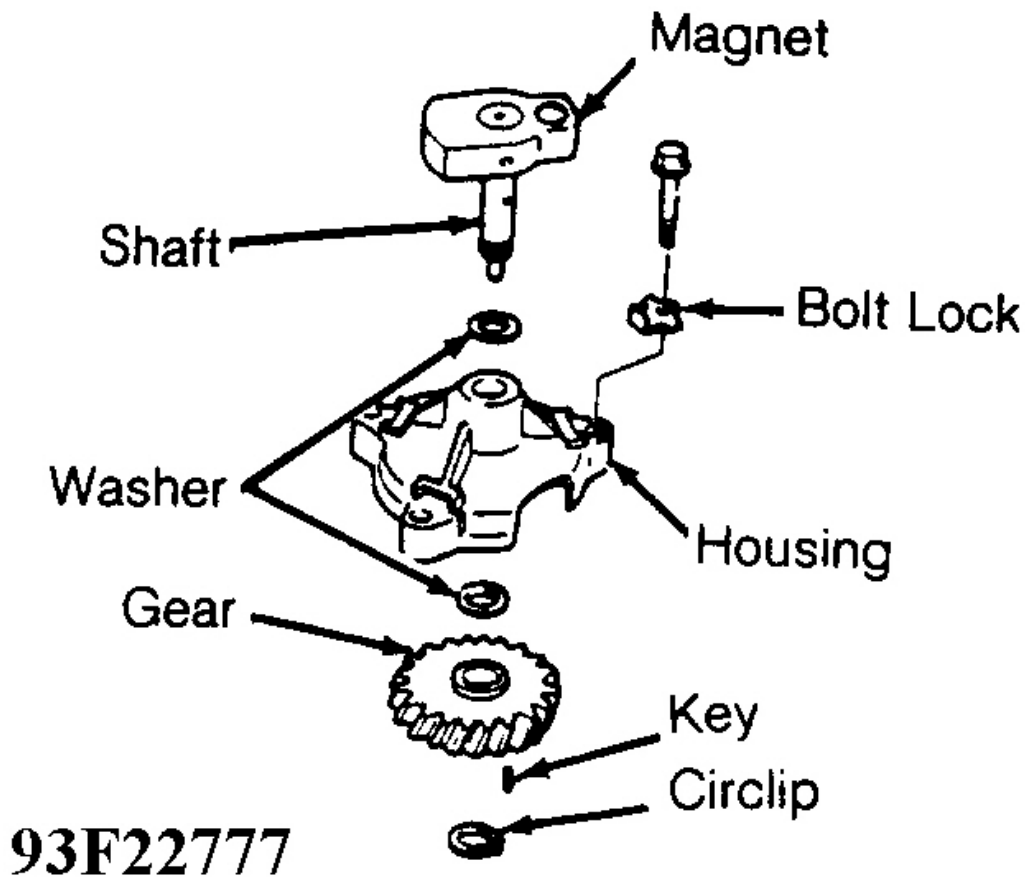
93E22776

Fig. 49: Exploded View Of 2nd Accumulator Body

Courtesy of AMERICAN HONDA MOTOR CO., INC.

PULSER ROTOR**Disassembly & Reassembly**

1. For information on disassembly and reassembly. See **Fig. 50** .
2. Thoroughly clean all parts in solvent or carburetor cleaner. Dry using compressed air and blow out all passages.

**Fig. 50: Exploded View Of Pulser Rotor**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

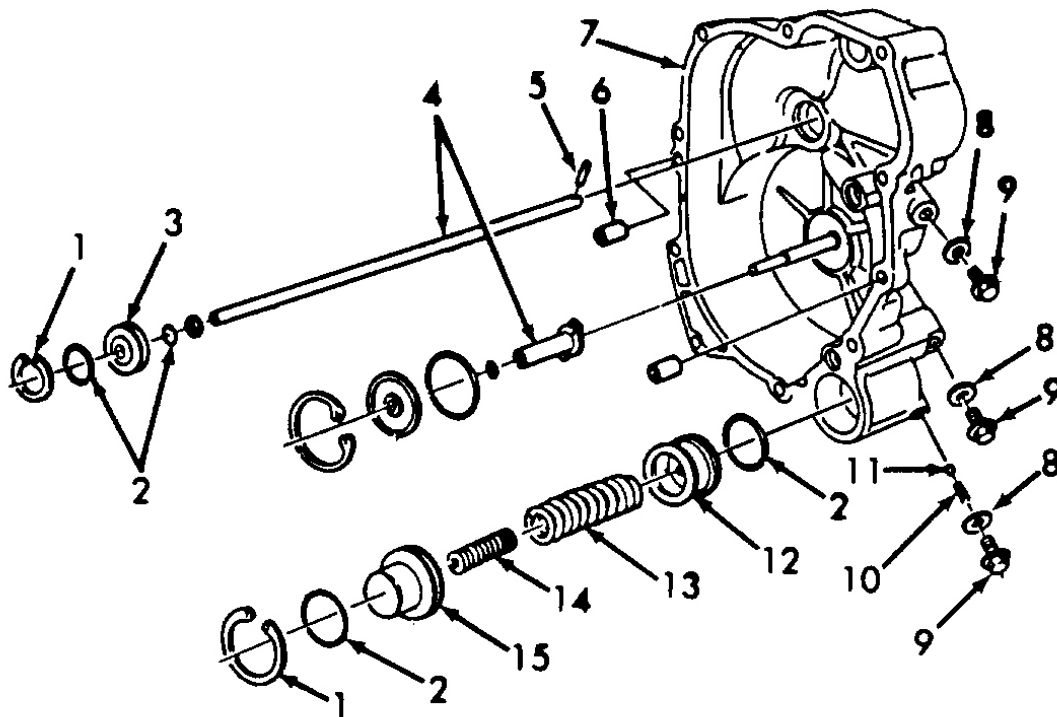
RIGHT SIDE COVER

Disassembly & Reassembly

For information on disassembly and reassembly. See **Fig. 51** .

Cleaning & Inspection

Thoroughly clean all parts in solvent or carburetor cleaner. Dry using compressed air and blow out all passages. Coat all parts with ATF before reassembly.



- | | |
|---------------------|--------------------------------|
| 1. Snap Ring | 9. Sealing Bolt |
| 2. "O" Ring | 10. Spring |
| 3. Flange | 11. Steel Ball |
| 4. Clutch Feedpipe | 12. 1st Accumulator Piston |
| 5. Pin | 13. 1st Accumulator Spring "A" |
| 6. Dowel Pin | 14. 1st Accumulator Spring "B" |
| 7. Right Side Cover | 15. Accumulator Cover |
| 8. Seal Washer | |

93G22778**Fig. 51: Exploded View Of Right Side Cover**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT & COUNTERSHAFT**Disassembly**

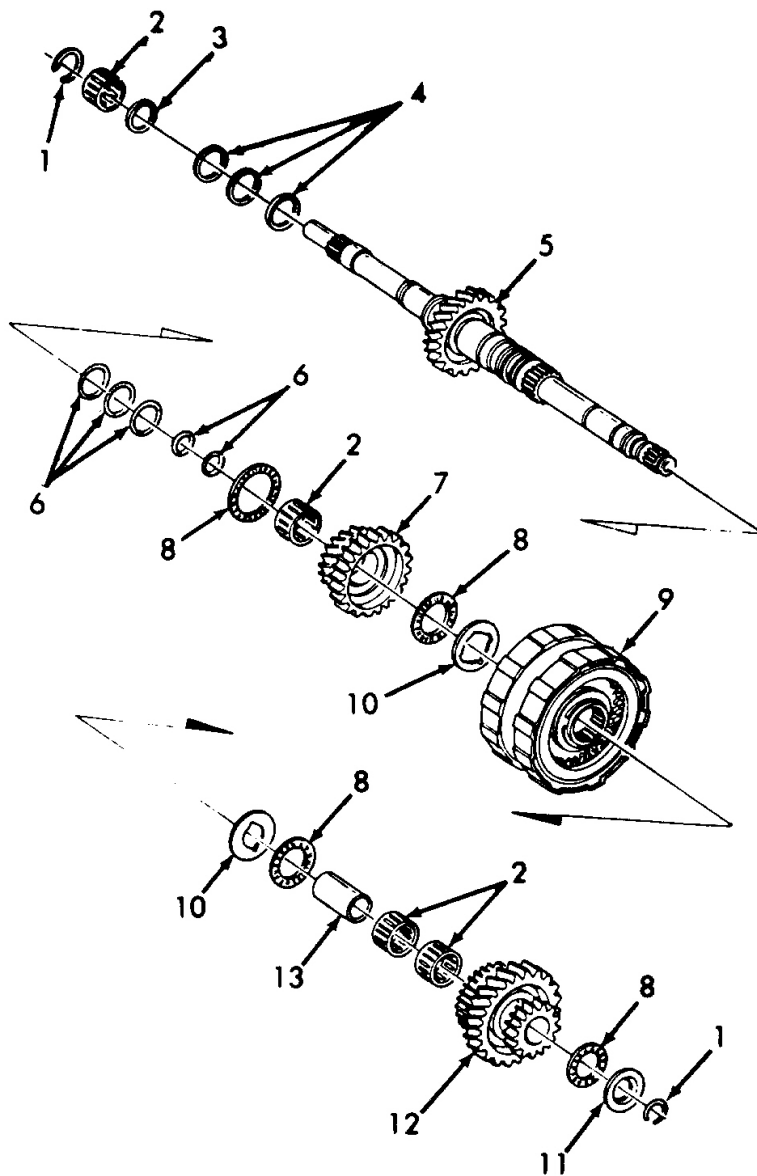
For information on disassembly. See **Fig. 52** and **Fig. 53** .

Cleaning & Inspection

1. Check all splines for excessive wear or damage. Also check bearing surfaces for scoring, scratches or excessive wear. Replace metal seal rings.
2. Check needle bearings for galling and rough movement. Replace all "O" rings.

Reassembly

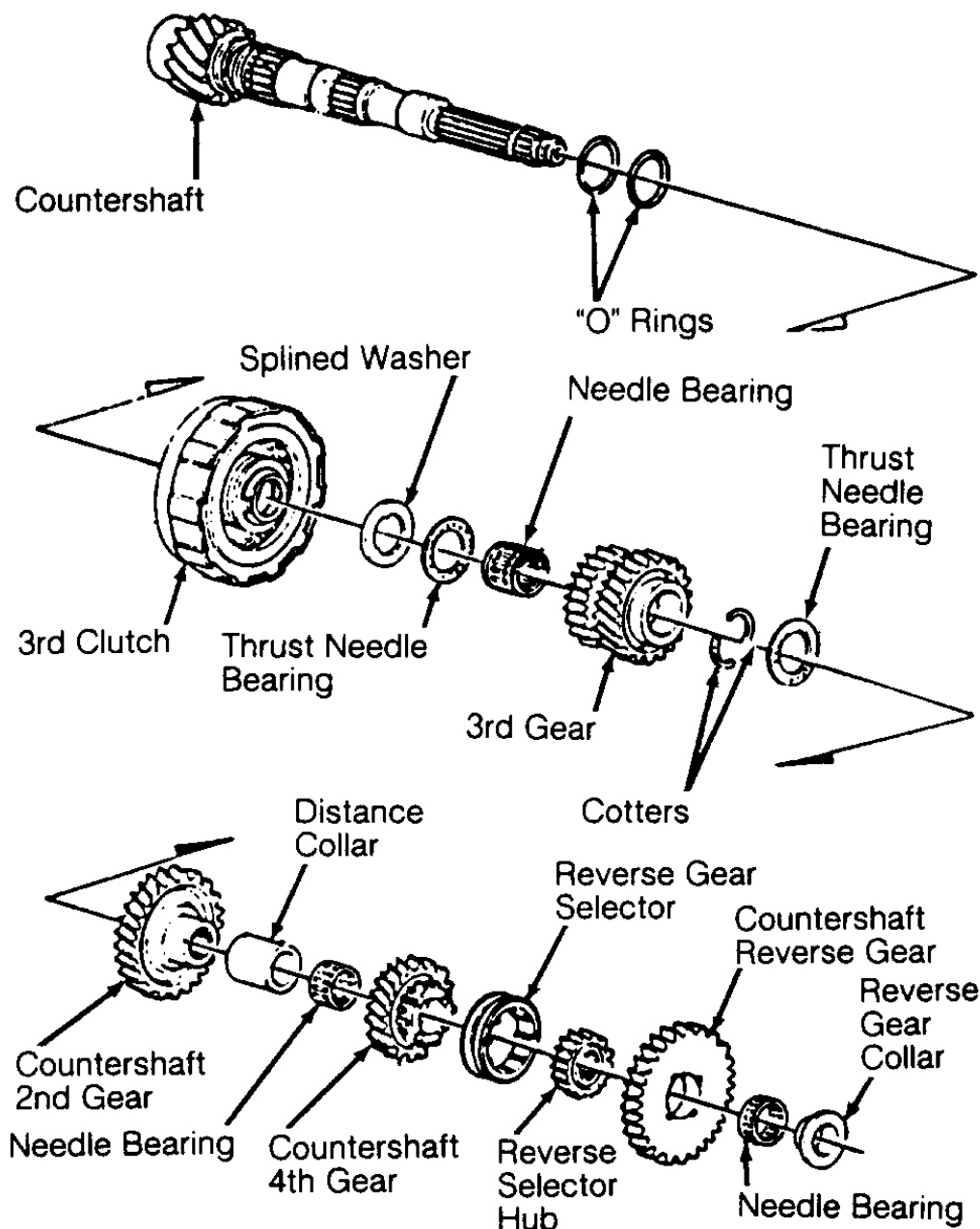
Lubricate all parts with ATF prior to reassembly. Install thrust needle bearings with unrolled edge of bearing retainer facing washer.



- | | |
|-----------------------|-----------------------------------|
| 1. Snap Ring | 8. Thrust Needle Bearing |
| 2. Needle Bearing | 9. 2nd-4th Clutch |
| 3. Spacer Collar | 10. Thrust Washer (Selective Fit) |
| 4. Metal Seal Ring | 11. Washer |
| 5. Mainshaft | 12. Mainshaft 4th Gear |
| 6. "O" Ring | 13. 4th Gear Collar |
| 7. Mainshaft 2nd Gear | |

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Fig. 52: Exploded View Of Mainshaft & Components
 Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 53: Exploded View Of Countershaft & Components
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT/MAINSHAFT CLEARANCE MEASUREMENTS

NOTE: Countershaft lock nut has LEFT-HAND threads.

1. Remove countershaft bearing from transmission housing. Assemble all parts including countershaft bearing on countershaft.
2. Torque countershaft lock nut to 22 ft. lbs. (30 N.m). Measure clearance between shoulder on selector hub and shoulder on 4th gear. Standard: 0.003-0.006" (0.07-0.15 mm).
3. If clearance exceeds clearance, measure the thickness of the distance collar and select one which will give the correct clearance. Sizes are available in 1.534-1.573" (38.97-39.95 mm) in .001 increments.
4. Slide 3rd gear out fully. Measure and record clearance between 2nd and 3rd gear with a feeler gauge.
5. Slide 3rd gear in fully and again measure clearance between 2nd and 3rd gears. Calculate difference between 2 readings to determine actual clearance. Service Limit: 0.003-0.006" (0.07-0.15 mm). See **Fig. 54**.
6. If clearance exceeds service limit, measure thickness of the spline washer and select one which will give the correct clearance. Sizes are available in .117-.134" (2.97-3.40 mm) in .001 increments.
7. Install thrust needle bearing, needle bearing, 2nd gear, thrust needle bearing, thrust washer and 2nd-4th clutch assembly to mainshaft. Attach dial-indicator to mainshaft 2nd gear.
8. Measure 2nd gear axial clearance while pushing clutch assembly toward 3rd gear. Measure clearance at 3 places 120 degrees apart, and take average as the actual clearance. Standard: 0.003-0.006" (0.07-0.15 mm). If clearance exceeds service limit, measure thickness of the thrust washer and select one which gives proper clearance. See **Fig. 55** and **Fig. 56**. Sizes are available in .117-.134" (2.97-3.40 mm) in .001 increments.

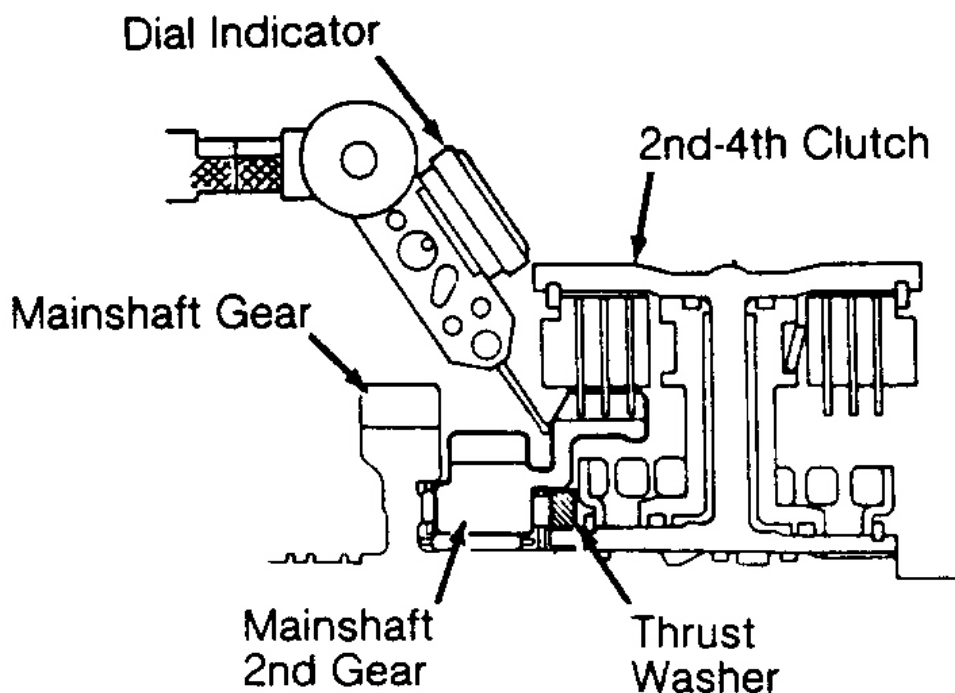
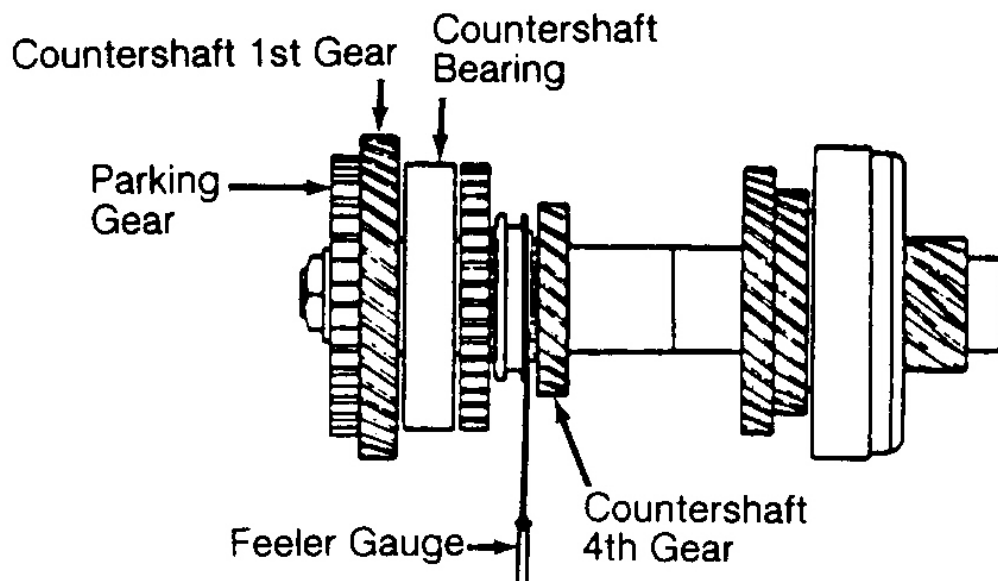
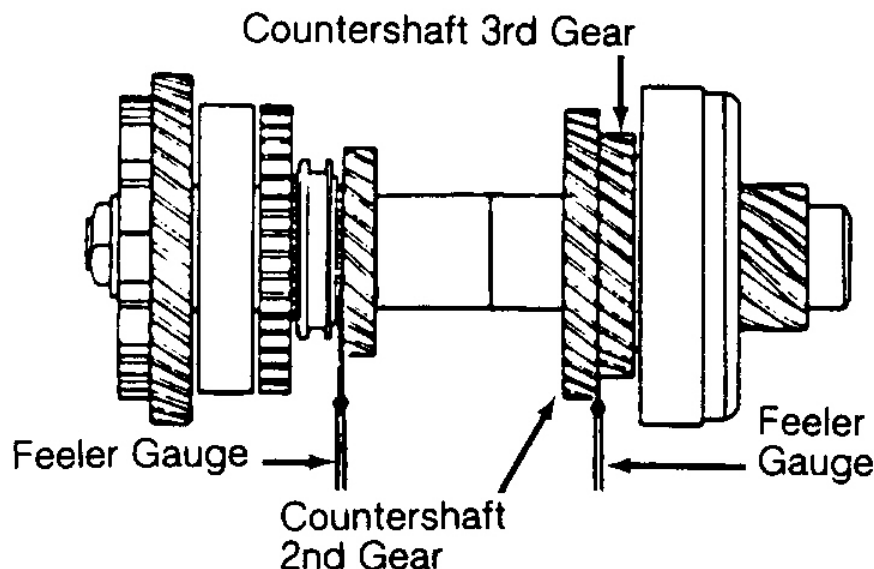
**93A22780**

Fig. 54: Checking Mainshaft 2nd Gear Clearance

Courtesy of AMERICAN HONDA MOTOR CO., INC.

**CHECKING COUNTERSHAFT
4TH GEAR CLEARANCE****93C22782****Fig. 55: Checking Countershaft 4th Gear Clearance**

Courtesy of AMERICAN HONDA MOTOR CO., INC.



CHECKING COUNTERSHAFT 2ND-3RD GEAR CLEARANCE

93D22783

Fig. 56: Checking Countershaft 2nd Gear-To-3rd Gear Clearances
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CLUTCH

Disassembly

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

1. On 1st and 3rd, 2nd and 4th clutch, remove snap ring, end plate, clutch discs and plates. Remove clutch piston plate. Using Spring Compressor (07HAE-PL50100), compress clutch return spring. See **Fig. 57** . For clutch component locations, see **Fig. 58 -Fig. 60** .
2. On 1st and 3rd clutch, assemble spring compressor on clutch drum and compress clutch return spring. Follow same procedure for 2nd and 4th clutch.
3. Remove snap ring, spring compressor, spring retainer and spring. With clutch drum wrapped in shop towel, apply compressed air to oil passage to remove piston. Place fingertip on other end while applying air pressure.

Cleaning & Inspection

Clean all parts thoroughly using solvent and dry using compressed air. Ensure that all passages are blown out. Lubricate all parts with ATF before reassembly. Use new "O" ring on clutch pistons.

Reassembly

CAUTION: Before installing plates and discs, ensure that inside of clutch drum is free of dirt or other foreign matter. DO NOT pinch "O" ring by forcing piston installation.

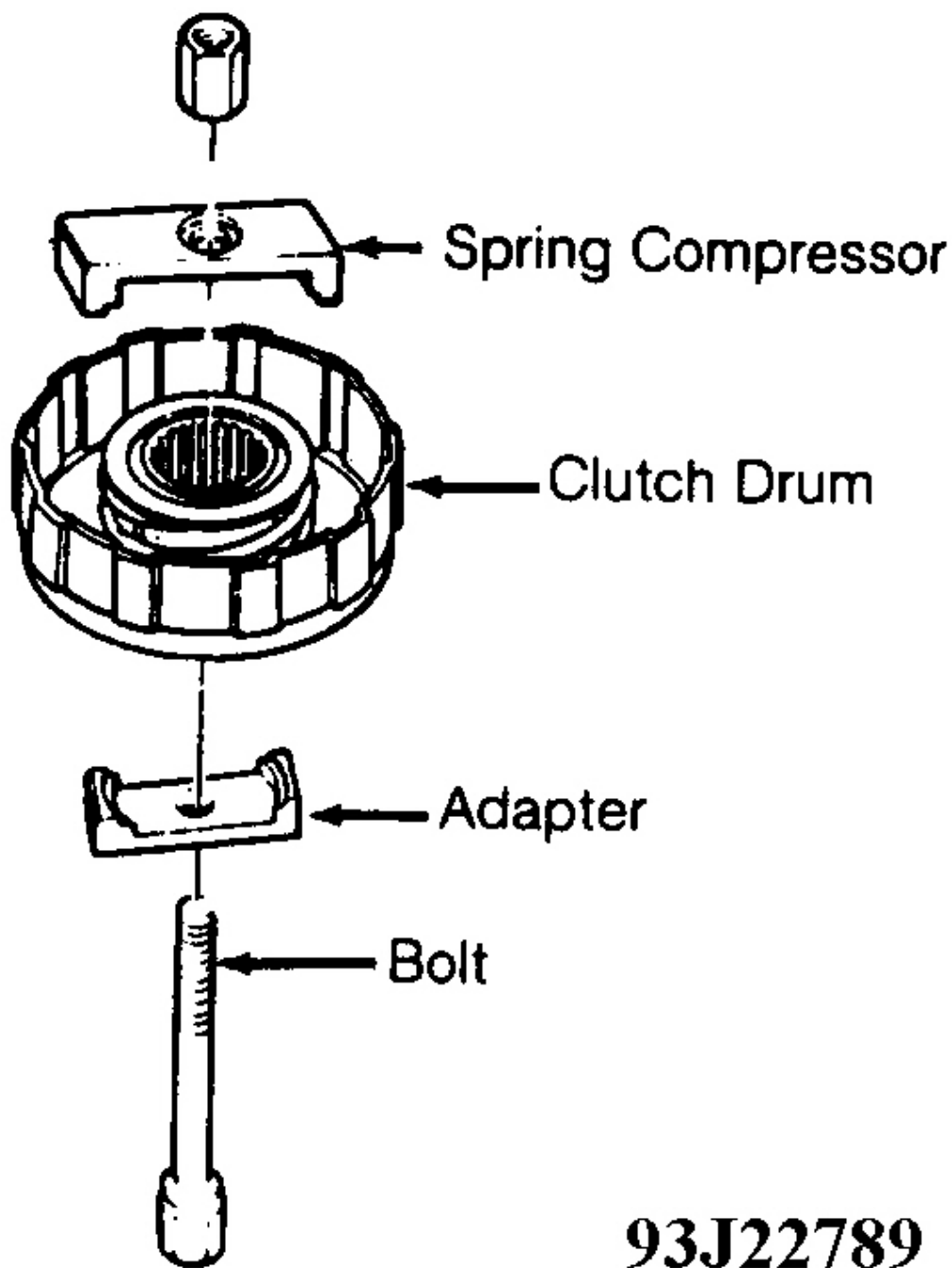
1. Ensure clutch discs thoroughly soak in ATF for a minimum of 30 minutes before installation. During reassembly ensure piston plate and spring washer are installed correctly. See **Fig. 58 -Fig. 60** .
2. Reverse disassembly procedure to complete reassembly. Starting with clutch plate, alternately install clutch plates and discs.
3. Install clutch end plate with flat side toward disc. Install snap ring. Check engagement by blowing air into oil passage in clutch drum hub. Remove air pressure and check that clutch releases.
4. Measure clearance between clutch end plate and top disc with a dial indicator. Zero dial indicator with the clutch end plate lowered and lift it up to snap ring. The distance that clutch end plate moves is clearance between clutch end plate and top disc. See **CLUTCH CLEARANCE SPECIFICATIONS** table. Measure at 3 locations. See **Fig. 61** .
5. If clearance is not within service limits, select a new clutch end plate. See **CLUTCH END PLATE SPECIFICATIONS** table.

CLUTCH CLEARANCE SPECIFICATIONS

Application	In. (mm)
1st Clutch	.026-.033 (.65-.85)
2nd, 3rd & 4th Clutches	.016-.024 (.40-.60)

CLUTCH END PLATE SPECIFICATIONS

Plate Number	Part Number	Thickness - In. (mm)
1	22551-PF4-000	.082 (2.10)
2	22552-PF4-000	.086 (2.20)
3	22553-PF4-000	.090 (2.30)
4	22554-PF4-000	.094 (2.40)
5	22555-PF4-000	.098 (2.50)
6	22556-PF4-000	.102 (2.60)
7	22557-PF4-000	.106 (2.70)
8	22558-PF4-000	.110 (2.80)
9	22559-PF4-000	.114 (2.90)
10	22560-PF4-000	.118 (3.00)
11	22561-PF4-000	.122 (3.10)
12	22562-PF4-000	.126 (3.20)
13	22563-PF4-000	.130 (3.30)
14	22564-PF4-000	.134 (3.40)



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Fig. 57: Compressing Return Spring (1st Clutch Shown; Others Are Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

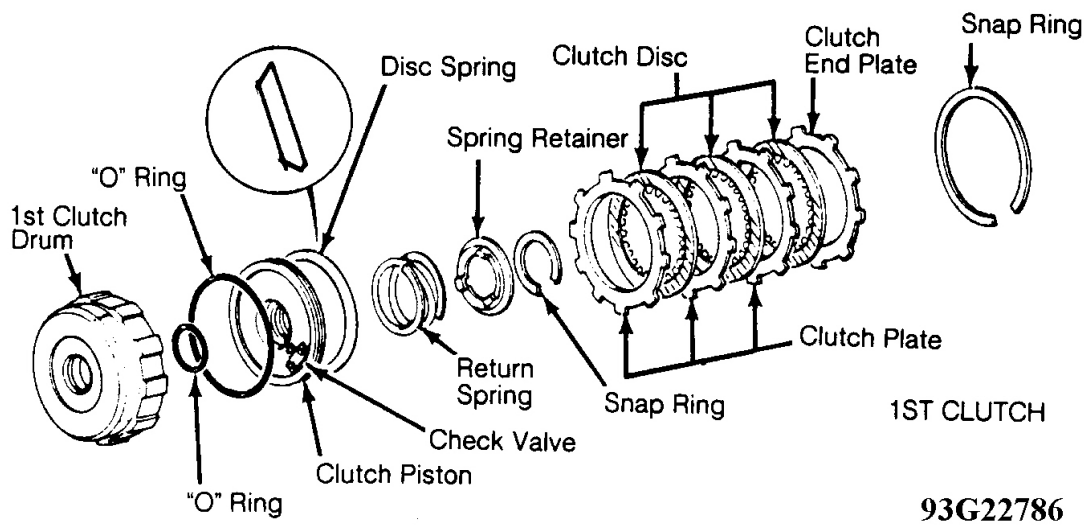


Fig. 58: Exploded View Of Clutch Assemblies (1 of 3)
Courtesy of AMERICAN HONDA MOTOR CO.,

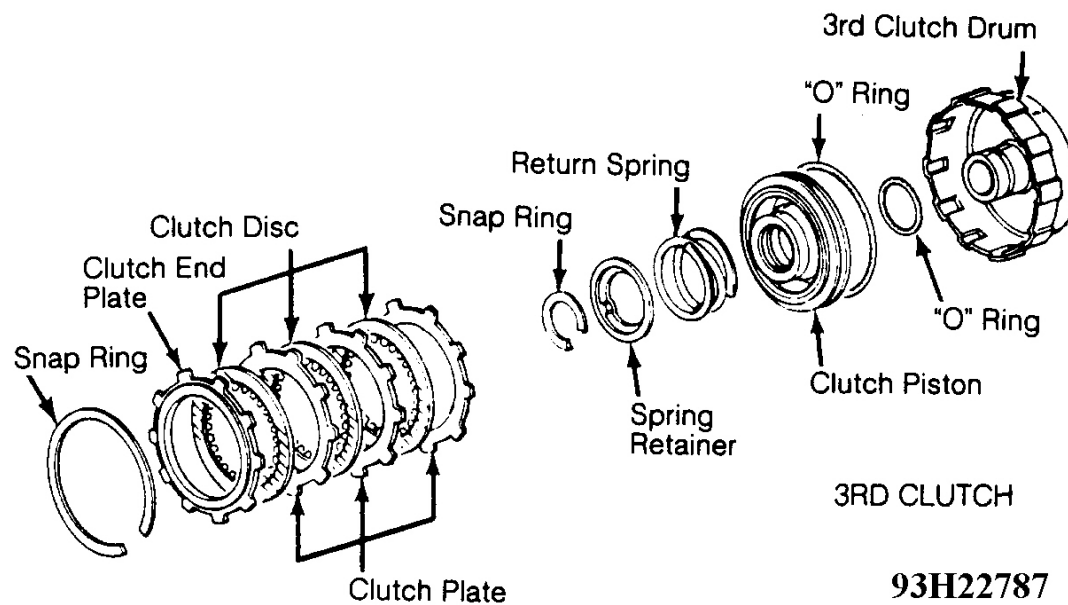
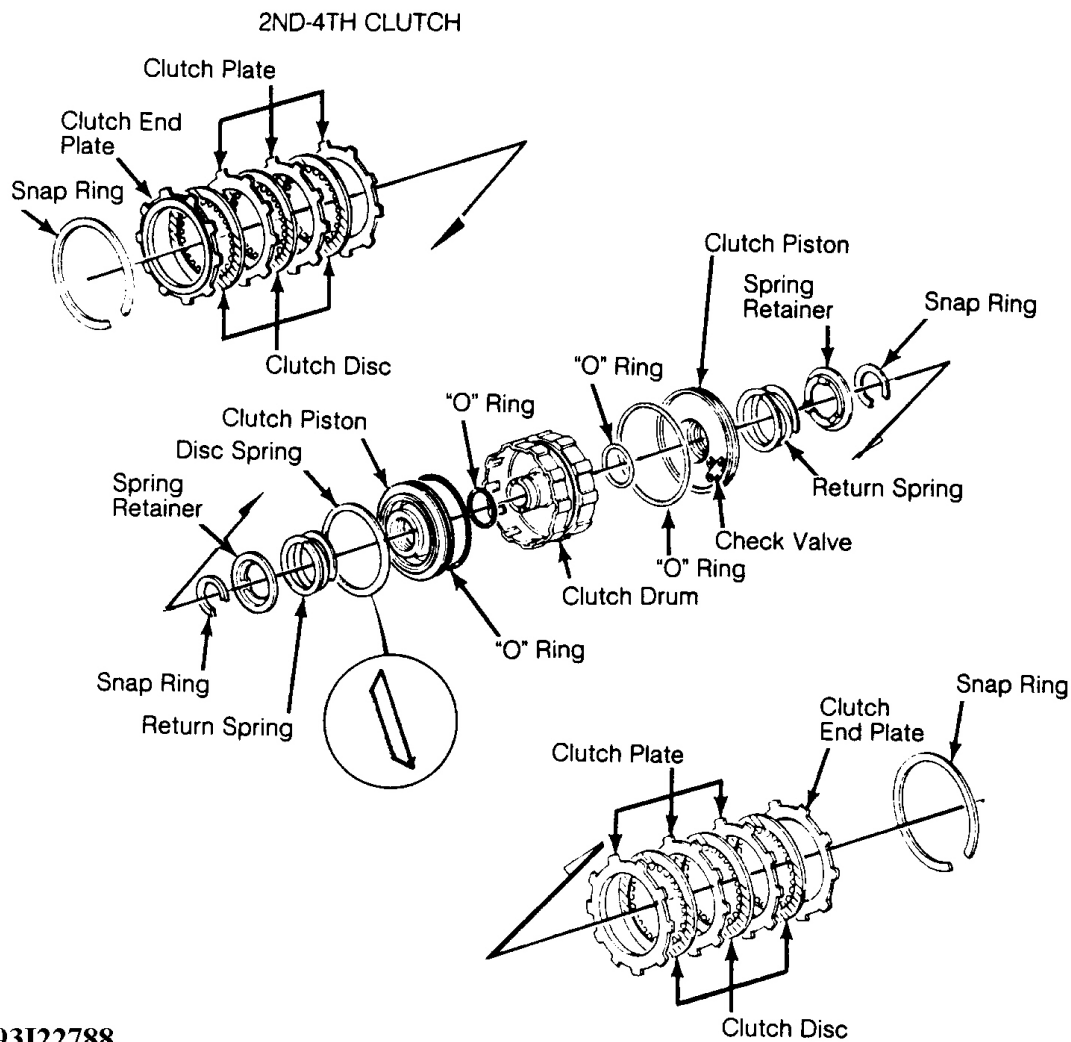


Fig. 59: Exploded View Of Clutch Assemblies (2 of 3)
Courtesy of AMERICAN HONDA MOTOR CO.,



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Fig. 60: Exploded View Of Clutch Assemblies (3 of 3)
 Courtesy of AMERICAN HONDA MOTOR CO.,

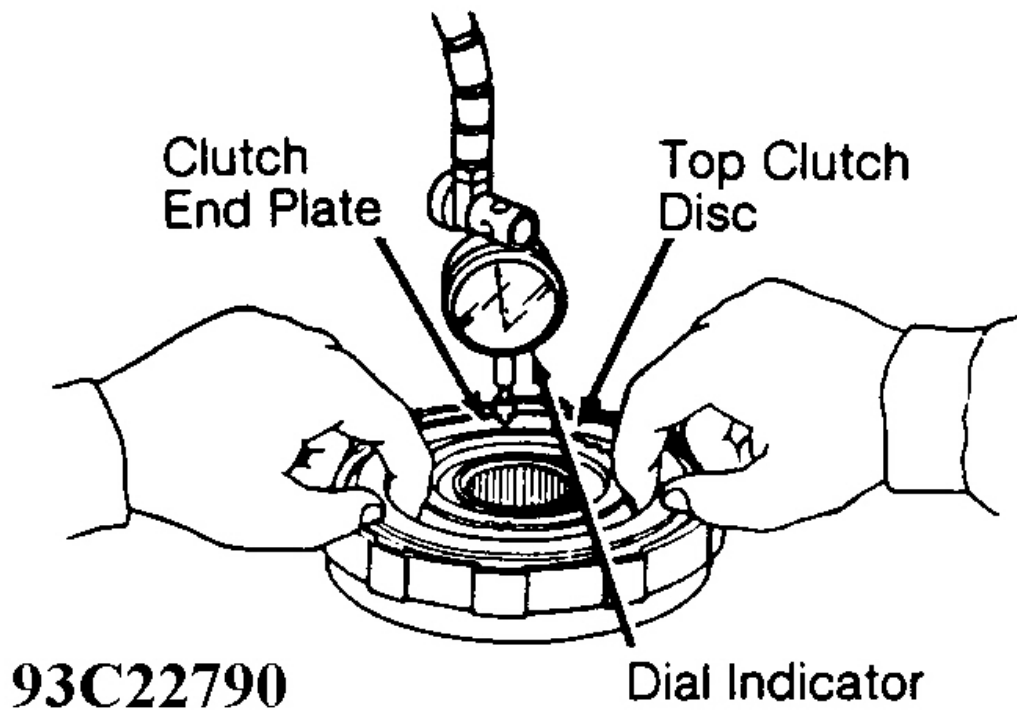


Fig. 61: Measuring Clutch Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TORQUE CONVERTER HOUSING

Disassembly

Remove mainshaft, countershaft bearing and oil seal.

Cleaning & Inspection

Wash all parts thoroughly in solvent and dry with compressed air. Inspect all parts for wear or damage and replace if worn or defective.

Reassembly

Replace mainshaft, countershaft bearing and oil seals.

TRANSMISSION HOUSING

Disassembly

Remove mainshaft bearing and countershaft bearing. DO NOT remove snap ring in housing unless it is necessary to clean grooves in housing.

Cleaning & Inspection

Wash all parts thoroughly in solvent and dry with compressed air. Inspect all parts for wear or damage and replace any that are worn or defective.

Reassembly

Replace mainshaft and countershaft bearing.

REVERSE IDLER GEAR

Install reverse idler gear with chamfered side facing torque converter housing. Always use new washer.

TRANSMISSION REASSEMBLY

1. Install differential assembly, if bearings in torque converter, transmission housing or differential side bearings were replaced. Differential preload must be checked.
2. Assemble manual valve lever on control shaft and install in torque converter housing. Install control lever and new lock plate on other end of shaft. Tighten bolt to specification and bend tab over against bolt head.
3. Install new filter screen on torque converter housing. Ensure that filter screen support is facing in. Install main separator plate and dowel pin on torque converter housing.

NOTE: **Ensure that oil pump driven gear is installed with chamfered side facing down.**

4. Install oil pump gears and shaft. Loosely tighten check valve on main valve body assembly and check valve spring on torque converter housing.
5. Install main valve body on torque converter housing and loosely tighten 5 bolts in sequence. See **Fig. 62** . Once all bolts have been loosely tightened, securely torque bolts No. 1 and 2 to 16 ft. lbs. (22 N.m), Torque bolts 3, 4 and 5 to 106 INCH lbs. (12 N.m).

CAUTION: If pump gear and pump shaft do not move freely, loosen valve body bolts, realign shaft and retighten to specification. Failure to align pump shaft correctly will result in seized pump gear or pump shaft.

6. Ensure pump drive gear rotates smoothly in normal operating direction and pump shaft moves smoothly in axial and in normal operating directions.
7. Install 4 steel balls in main valve body oil passages. Install stator shaft arm, stop pin and dowel pins. Install regulator valve body assembly on main valve body assembly.
8. Install lock-up shift body separator plate using 2 dowel pins and lock pins. Install lock-up body assembly using 5 bolts. Torque bolts to 106 INCH lbs. (12 N.m). Install secondary separator plate and secondary

valve body assembly on main valve body assembly.

9. Install secondary filter, ball spring and steel balls in secondary valve body assembly. Second valve body assembly is not fixed on main valve body assembly. Ensure not to move assembly during or after installing steel balls and spring.
10. Install separator plate and dowel pins and install throttle control shaft. Install shift fork shaft and servo return spring on servo valve body assembly. Install magnet assembly on servo body. Install servo valve body assembly on secondary valve body assembly.
11. Ensure that stopper shaft, is installed correctly. Install accumulator springs and cover. Torque bolts to 106 INCH lbs. (12 N.m) in crisscross pattern. On 1990 PY8A install 2nd accumulator cover and torque bolts to 106 INCH lbs. (12 N.m).
12. Install assembled shift control valve assembly to main valve body. Install ATF strainer, 2nd accumulator body and ensure assembled control shaft is installed correctly. Install transmission pulser rotor using new lock plates and 3 (6 mm) bolts. Bend tabs on lock plate to secure. Torque bolts to 106 INCH lbs. (12 N.m). Set countershaft and mainshaft in place as an assembly. DO NOT tap on shafts with hammer to drive in place.

NOTE: Install reverse gear selector with flat face up. Install reverse gear selector hub with groove facing up.

13. Install distance collar, needle bearing, countershaft 4th gear, reverse shaft fork, reverse gear selector and reverse selector hub. Install shift control solenoid valves "A" and "B" in main valve body.
14. Install reverse shift fork over servo valve stem. Align hole in stem with hole in fork. See **Fig. 63** . Install bolt and new lock plate. Bend lock tab against bolt head. Torque bolt to 10 ft. lbs. (14 N.m).
15. Install countershaft reverse gear, needle bearing and reverse gear collar. Install baffle plate and suction pipe. Install new gasket and 3 dowel pins in torque converter housing.

CAUTION: Ensure main valve control shaft lines up with the hole in the housing and that reverse idler gear meshes with the mainshaft and countershaft, or housing will not go on. When tightening transmission housing bolts DO NOT distort or damage throttle control bracket, damage to bracket will change transmission shift points.

16. Place transmission housing on torque converter housing. Install transmission hooks on housing. Torque bolts to 41 ft. lbs. (55 N.m) in 2 or more steps. See **Fig. 64** .
17. Install throttle control lever and spring on throttle control shaft. Install bolt and new lock plate. Torque bolt to 71 INCH lbs. (8 N.m). Bend lock tab against bolt head.
18. Install parking brake roller, roller pin and washer on the parking shift arm and secure with a new cotter pin. Install parking brake, spring, parking shift arm and parking brake stopper on shift shaft with the bolt. Torque bolt to 10 ft. lbs. (14 N.m). Bend the lock tab against the bolt head.
19. Install countershaft 1st gear collar and needle bearing on countershaft. Install 1st gear collar and new "O" rings on mainshaft. Install parking gear and countershaft 1st gear on countershaft with (34 mm) socket wrench and mallet. Loosely install new lock nut on countershaft.

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

20. Install stop pin, parking pawl shaft parking pawl and pawl release spring. Shift to "P" and install mainshaft holder. Install and torque new countershaft lock nut. Torque lock nut to 103 ft. lbs. (140 N.m), loosen and retorque to 103 ft. lbs. (140 N.m).
21. Stake lock nut flange at 2 places into gear grooves using a 3.5 mm punch. Install 31 x 36 x 18.5 mm needle bearing and thrust washer on mainshaft. Install 1st gear, thrust needle bearing, and thrust washer on the mainshaft.
22. Install the 1st clutch assembly on mainshaft. Attach mainshaft holder from underside of torque converter case.

CAUTION: Mainshaft lock nut has LEFT-HAND threads.

23. Torque new mainshaft lock nut to 70 ft. lbs. (.95 N.m), loosen and retighten to 70 ft. lbs. (95 N.m). Stake lock nut flange into groove in 1st clutch. See **Fig. 65**.
24. Set parking shift arm in park position. Measure distance between the face of parking pawl shaft and face of parking shift arm roller pin. If measurement is out of specification, select appropriate parking brake stopper, install on parking shift arm.
25. Install gasket, dowel pins, and "O" rings on transmission housing. Install end cover and torque 106 INCH lbs. (12 N.m). Install transmission oil cooler pipes "A" and "B" on transmission housing with new sealing washers.
26. Attach torque converter to drive plate with 4 mounting bolts. Torque bolts to 40 ft. lbs. (55 N.m) in crisscross pattern. Check for free rotation.

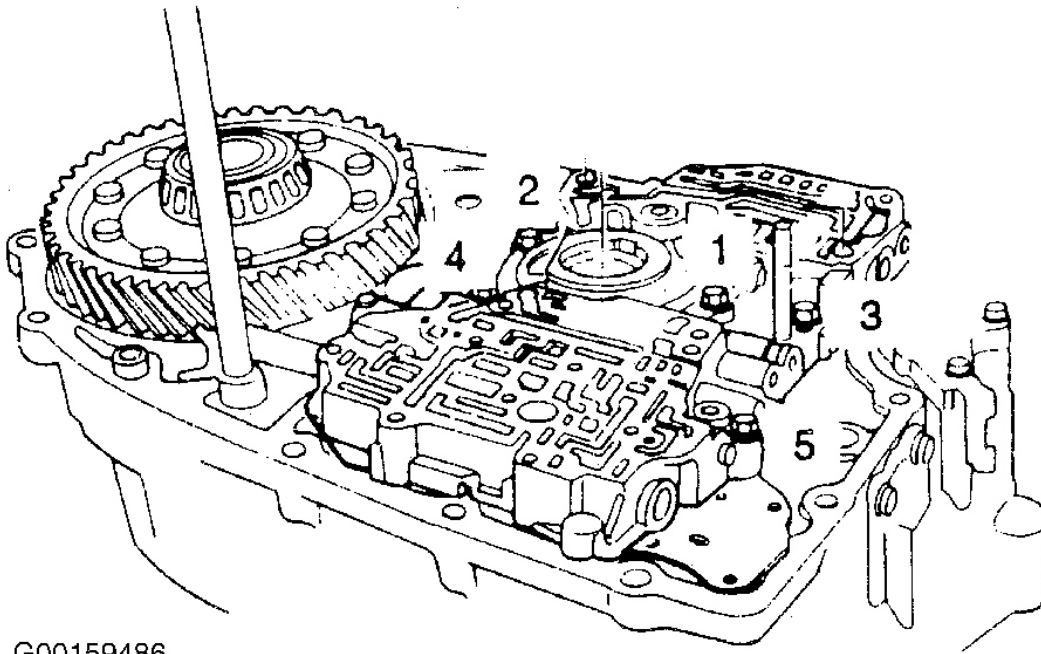
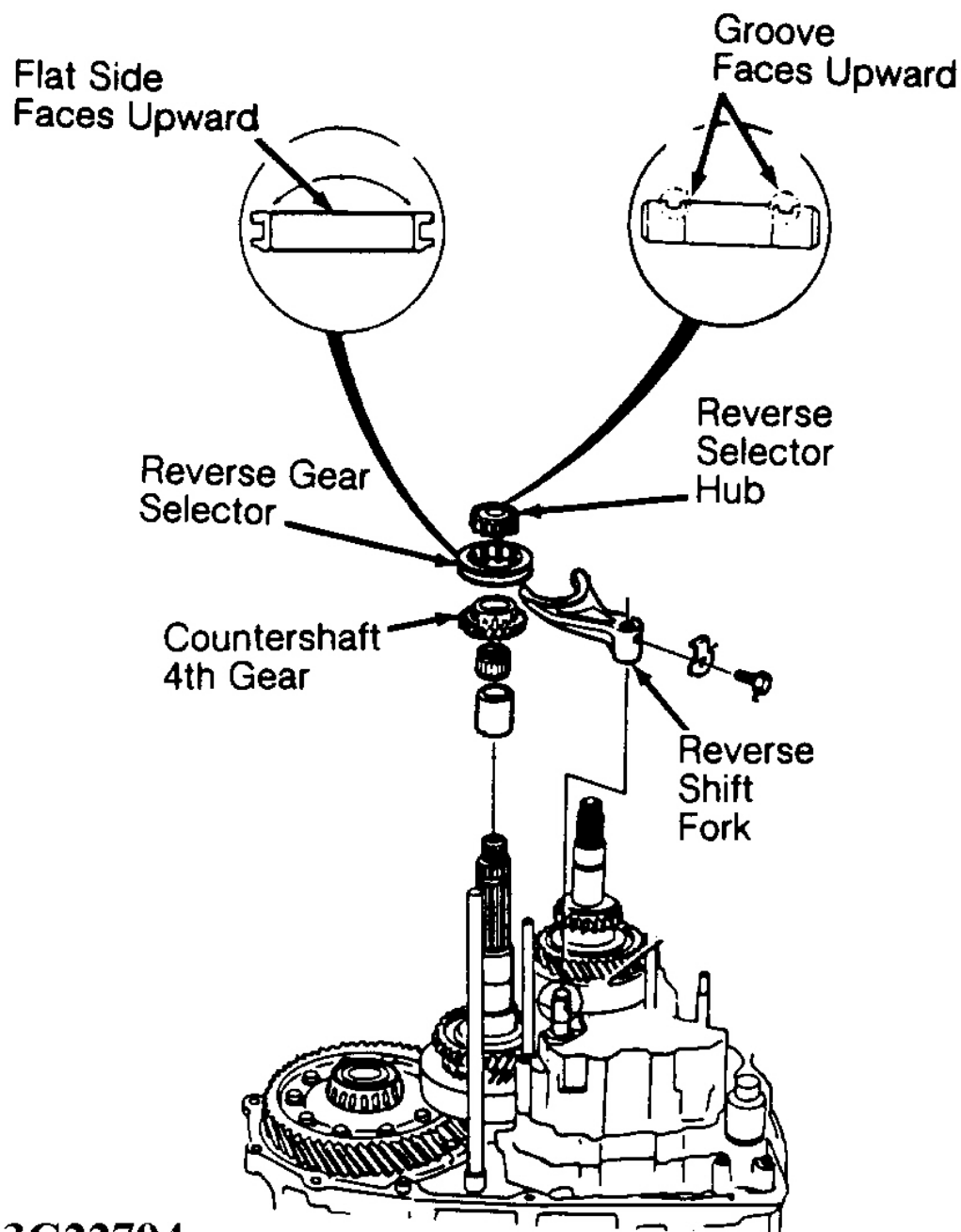
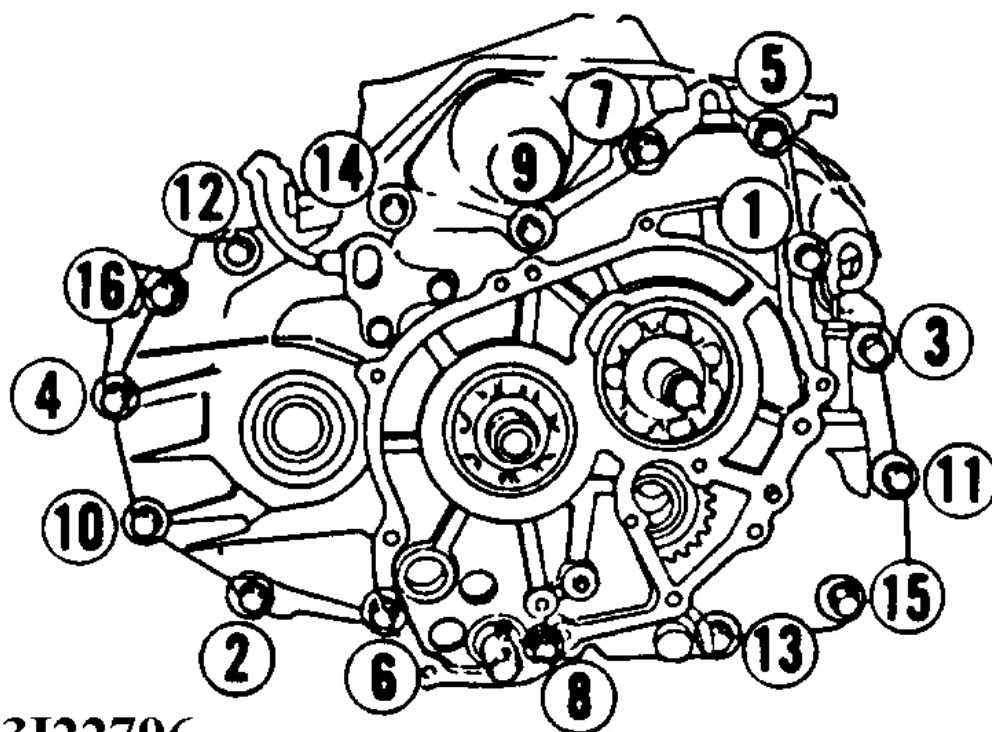


Fig. 62: Main Valve Body Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.



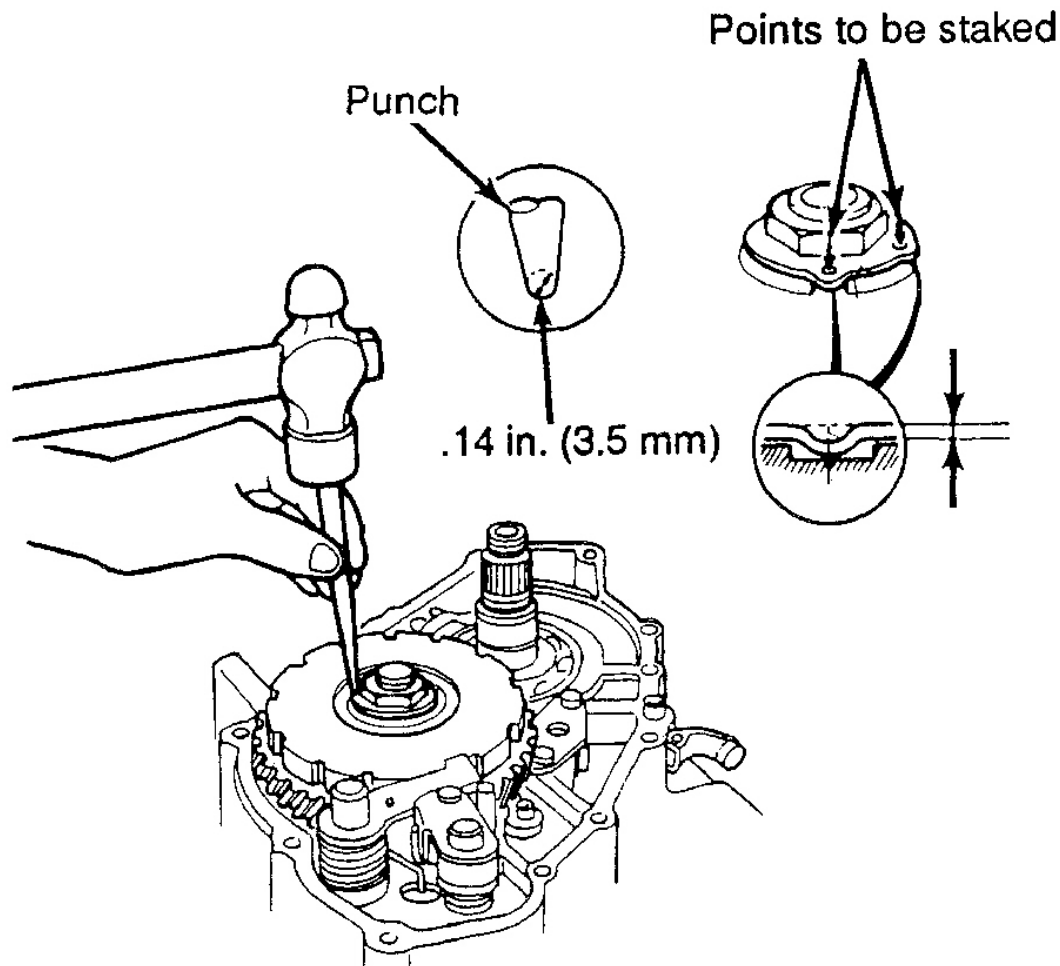
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Fig. 63: Installing Reverse Gear Selector & Reverse Selector Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 64: Transaxle Housing Bolt Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 65: Staking Lock Nut Flange

Courtesy of AMERICAN HONDA MOTOR CO., INC.

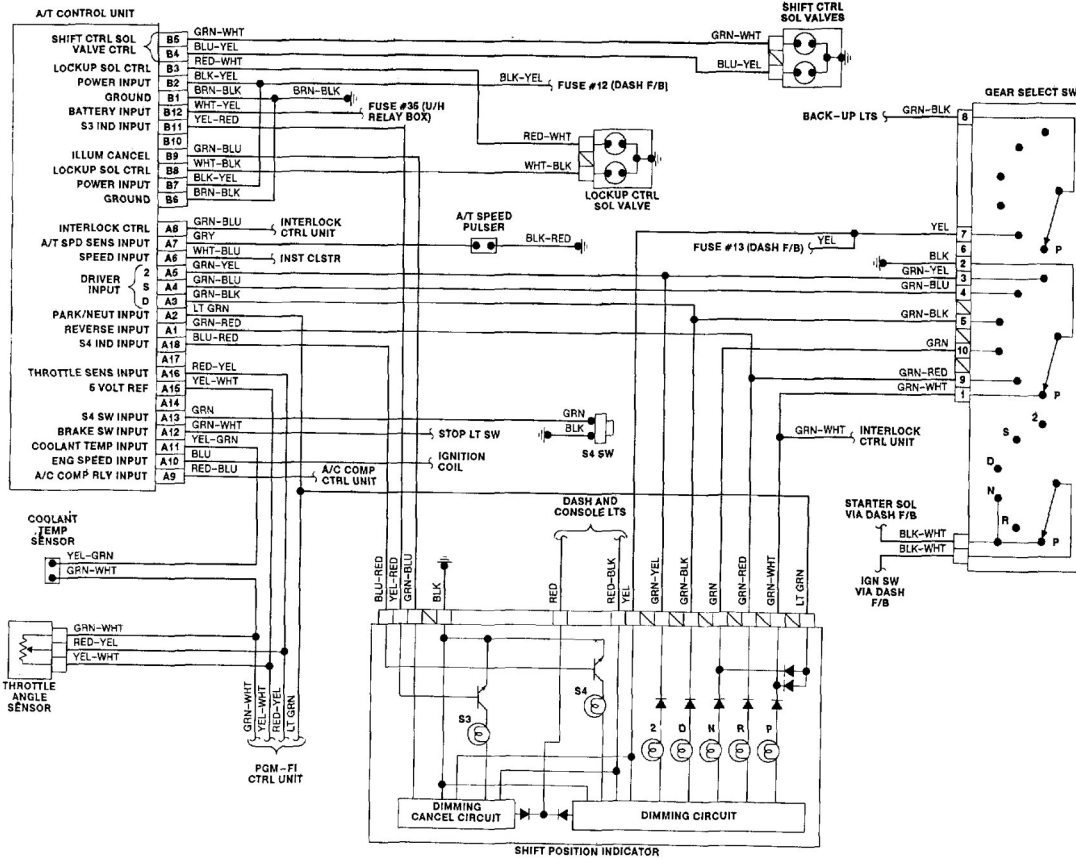
TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Countershaft Lock Nut	103 (140)
Mainshaft Lock Nut	70 (95)
Parking Brake Stopper Bolt	10 (14)
Reverse Shift Lock Lock Bolt	10 (14)
Torque Converter Housing Bolts	41 (55)
INCH Lbs. (N.m)	

1988-90 AUTOMATIC TRANSMISSIONS K4 & PY8A Electronic Controls & Overhaul

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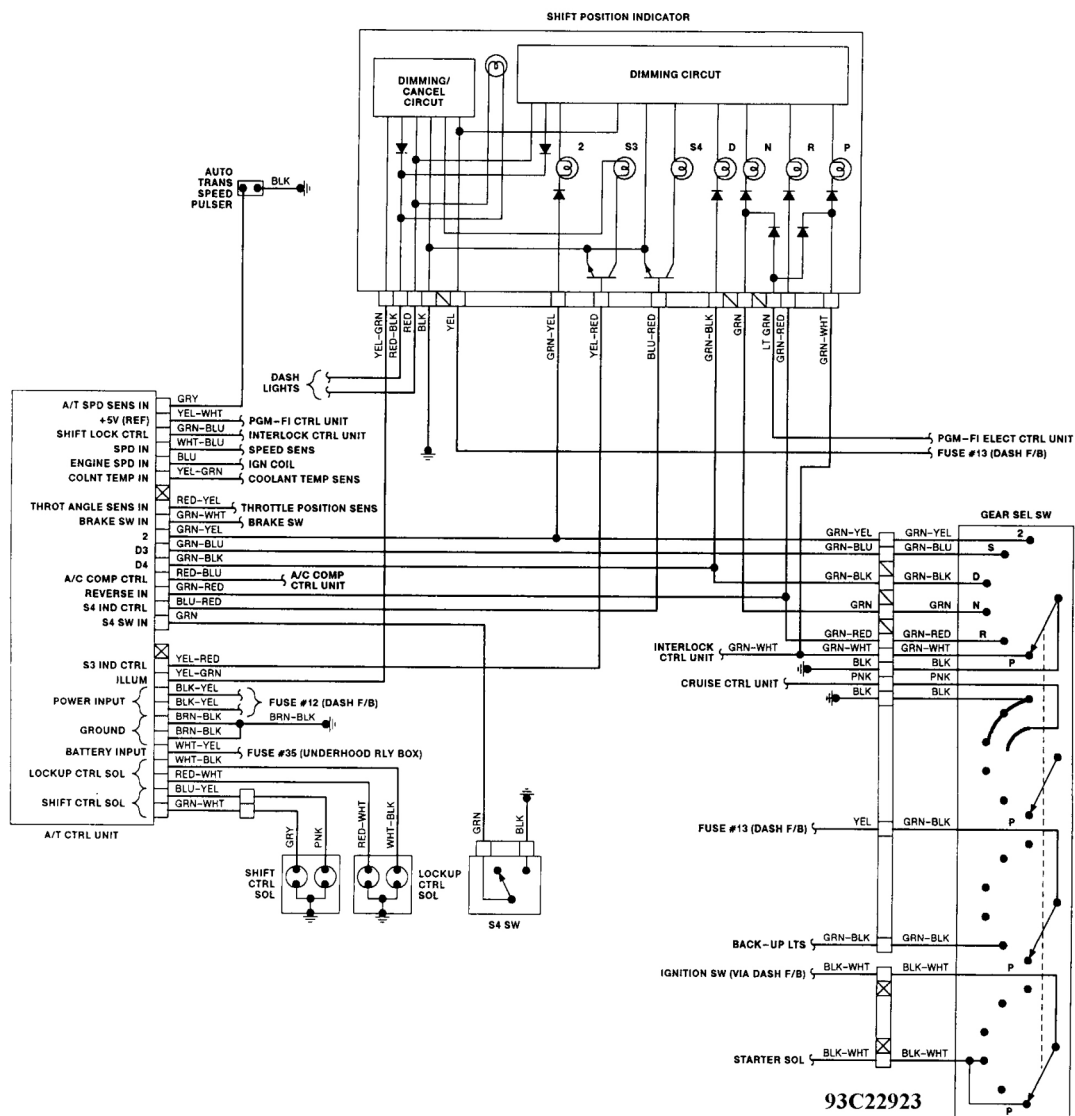


Fig. 68: Transaxle Wiring Diagram (1990 PY8A)