If you experience any problems with installation, operations or need applications information not covered in this brochure, call our "Mopar Technical Service" hot line toll free at:

1-800-86MOPAR (1-800-866-6727)
8am to 8pm M-F (ET)
"Please have Product Part Number and Application available for reference"

MOPAR Remanufactured Single Board Engine Controller (SBEC II) 12 Month / 12,000 Mile Limited Warranty

This MOPAR Single Board Engine Controller is warranted by Chrysler Corporation against defects in workmanship or materials for 12 months or 12,000 miles, whichever comes first, from the date of its installation into a Chrysler, Plymouth, Dodge, Jeep or Eagle vehicle. If it fails, it will be repaired or replaced, at the option of Chrysler Corporation. To obtain service under this Limited Warranty, return the module to an authorized Chrysler Corporation Dealer.

This is the only warranty to this computer. If this computer is not sold for installation into a vehicle which is operated for personal, family or household purposes, Chrysler disclaims any implied warranties which may pass with the sale of this computer, to the extent allowed by law. If this computer is sold for installation into a vehicle which is operated for personal, family or household purposes, Chrysler limits the duration of any implied warranties to the duration of the express warranty made above. Under no circumstances will Chrysler be liable for any incidental or consequential damages which may result from the breach of any expressed or implied warranty, including any liability for loss of use or diminished value.

Some states do not allow limitations on how long an implied warranty will last or the exclusion or limitation of incidental or consequential damages, so the above limitations or executions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Mopar REMANUFACTURED PARTS

MOPAR REMANUFACTURED SINGLE BOARD ENGINE CONTROLLER (SBEC II)

Removal and Installation Instructions

Important

Before attempting any repairs you should refer to appropriate Chrysler Corporation service manuals for complete troubleshooting and repair procedures, along with required diagnostic tools. These manuals are available through your local Chrysler Corporation Dealer.

If you experience any problems with installation, operations or need applications information not covered in this brochure, call our "Mopar Technical Service" hot line toll free at:

1-800-86MOPAR (1-800-866-6727)
8am to 5pm M-F (ET)
"Please have Product Part Number and Application available for reference"

Safety Precautions

Before replacing any damaged component you should always first determine what caused the component to fail and repair that before continuing.

Static electricity can damage electronic components. By following a few safety procedures you can reduce the risk of damage from static electricity.

(Continued on page 2)

INSTRUCCIONES EN ESPAÑOL EN EL REVERSO

ART 1172-0197 REV 5/99

1. Avoid contact with the electrical connectors.
2. By frequently touching a known good ground during installation you can discharge any static electricity that you may have developed.

Removal Procedure

Passenger Cars, Minivans & Full Size Pickups

(Mounted to left front fender wall)

When replacement of Single Board Engine Controller (SBEC II) is necessary proceed as follows:

1. Remove air cleaner duct from SBEC II (If applicable).
2. Remove battery (if needed).
3. Remove the 60 way connector for the wiring harness using an 8mm socket (Fig. 1a, b c)
4. Using the same socket, remove the (2) module mounting screws {(3) screws on full size pickup} (Fig. 1a, b, c)
5. **REVERSE** the above procedure for **INSTALLATION**.

CAUTION: Check inside of 60 way wiring harness connector for bent pins or corrosion. Repair as necessary. Install 60 way connector to the Engine Controller. Tighten mounting screw to 35 inch pounds torque. Excessive torque may cause physical damage to the Engine Controller.

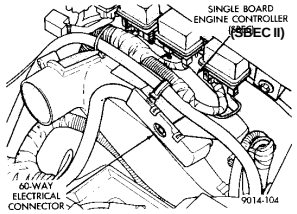

Fig 1a

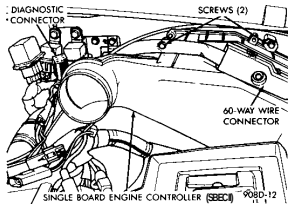

Fig 1b

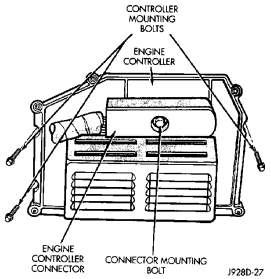

Fig 1c

Removal Procedure

Mid Size Pickups

(Mounted to right front fender wall)

1. Remove the 60 way connector for the wiring harness using an 8mm socket (Fig. 2)
2. Using the same socket, remove the (3) module mounting screws (Fig. 2)
3. **REVERSE** the above procedure for **INSTALLATION**.

CAUTION: Check inside of 60 way wiring harness connector for bent pins or corrosion. Repair as necessary. Install 60 way connector to the Engine Controller. Tighten mounting screw to 35 inch pounds torque. Excessive torque may cause physical damage to the Engine Controller.

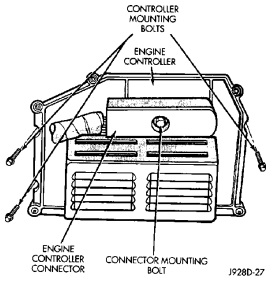

Fig 2

Removal Procedure

Full Size Van / Wagon

(Mounted to dash panel)

1. Remove the 60 way connector for the wiring harness using an 8mm socket (Fig. 3)
2. Using the same socket, remove the (3) module mounting screws (Fig. 3)
3. **REVERSE** the above procedure for **INSTALLATION**.

CAUTION: Check inside of 60 way wiring harness connector for bent pins or corrosion. Repair as necessary. Install 60 way connector to the Engine Controller. Tighten mounting screw to 35 inch pounds torque. Excessive torque may cause physical damage to the Engine Controller.

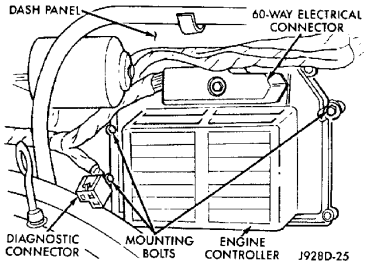

Fig 3

Removal Procedure

LH Vehicles

(Mounted to right front fender wall)

REMOVAL

1. Remove air cleaner.
2. Remove stud bolt and push pin attaching SBEC to body (Fig. 4). The push pin has a center lock (shaft). Pull center lock up to remove pin.
3. Lift SBEC up. Disconnect SBEC 60-way connector (Fig. 5).
4. Remove SBEC.

INSTALLATION

1. Install 60-way connector. **Tighten 60-way connector screw to 4 N.m (35 in. lbs.) torque. - *Excessive torque may cause physical damage to the SBEC*.**
2. Install SBEC. Tighten stud bolt to 10 N.m (7 ft. lbs.) torque. Install push pin. Push down on center lock of push pin.
3. Re-install air cleaner.

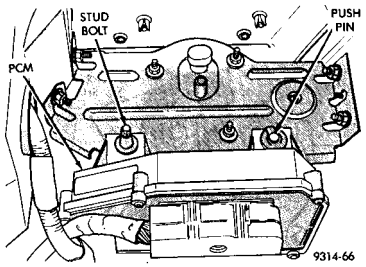

Fig 4

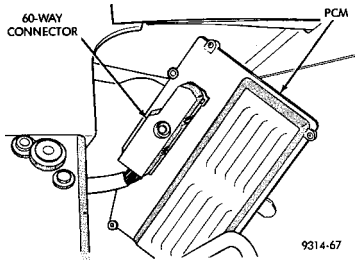

Fig 5

Removal Procedure

Jeep ZJ

(Mounted to cowl panel in the right/rear of engine compartment)

1. Disconnect the negative battery cable at the battery.
2. Remove the coolant reserve/overflow bottle from the right side of the firewall (one bolt & two nuts). (Fig. 6 - Top of Pg. 5)
3. Disconnect the 60-pin connector from the controller using an 8mm socket wrench (5/16 inch will also). (Fig. 7 - Top of Pg. 5)
4. Using the same socket, remove the 3 screws that attach the controller to the cowl panel in the right rear side of the engine compartment.
5. Remove SBEC.
6. **REVERSE** the above procedure for **INSTALLATION**.

JEEP ZJ REMOVAL CAUTION: ***Check inside of 60 way wiring harness connector for bent pins or corrosion. Repair as necessary. Install 60 way connector to the Engine Controller. Tighten mounting screw to 35 inch pounds torque. Excessive torque may cause physical damage to the Engine Controller.***

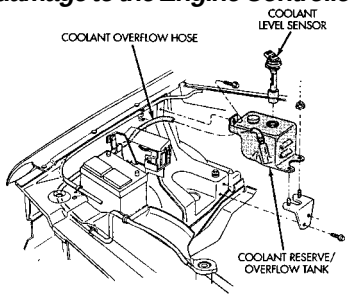

Fig 6

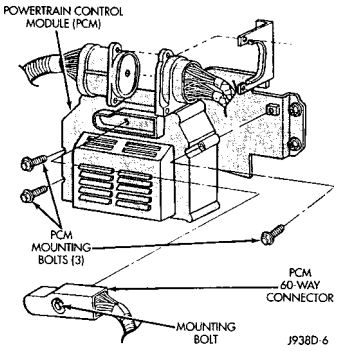

Fig 7

Removal Procedure

Jeep Wrangler, Cherokee

(Next to air cleaner - Cherokee / Fig. 8
Behind washer fluid reservoir - Wrangler / Fig. 9)

REMOVAL

1. Disconnect the negative battery cable at the battery.
2. WRANGLER models ONLY: Remove windshield washer fluid tank.
3. Disconnect the 60-pin connector from the controller using an 8mm socket wrench (5/16 inch will also). (Fig. 8 or 9)
4. Using the same socket, remove the 3 SBEC mounting bolts.
5. Remove SBEC.

INSTALLATION

1. Install SBEC. Tighten the 3 mounting bolts to 1 N.m (9 in. lbs.) torque.
2. Install 60-way connector. **Tighten 60-way connector screw to 4 N.m (35 in. lbs.) torque. - *Excessive torque may cause physical damage to the SBEC*.**
3. WRANGLER models ONLY: Install the windshield washer fluid tank.
4. Connect the negative cable to battery.

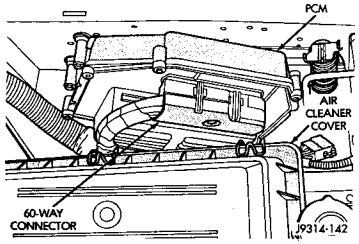

Fig 8

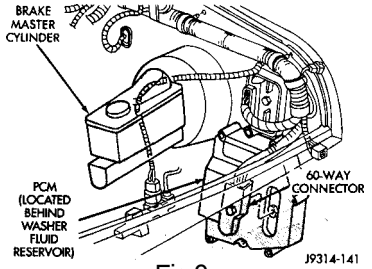

Fig 9

Troubleshooting Tips for S B E C II Controllers

Common failures that cause mis-diagnosis of SBEC II Controllers:

- Intermittent grounds; Loose or corroded grounds may cause false sensor readings. Verify all sensor grounds terminate at SBEC II 60 way connector, pin 4 (bk/lb* wire).
- Manifold absolute pressure (M A P) sensor and Throttle position sensor (TPS) voltages; check voltage over the entire range, not just the extremes. Whenever possible use oscilloscope to check MAP sensor and TPS sensor output voltages for noise spikes.
- Verify minimum T.P.S. voltage. Minimum TPS voltage should be approximately .5 to 1.5 vdc.
- Automatic idle speed (AIS) motor; Shorted windings or intermittent connections. If AIS codes are present, check to ensure motor windings or related connectors are not shorted to ground.
- Heater voltage for oxygen sensor. Verify battery volts ± 1 volt at oxygen sensor connector (dg/bk wire) with engine running.
- Charging system malfunction; Alternator defective or battery not fully charged. Check alternator output to ensure there is not excessive ripple voltage.
- Sensor voltage supply. Check for approximately 5 volt output from 60 way SBEC II connector pin 6 (vt/wht* wire) to MAP and TPS sensor, with ignition switch on.
- Distributor voltage supply. Check for approximately 8 to 9 1/2 vdc output from 60 way SBEC II connector pin 7 (org wire) to distributor connector(s) with ignition switch on and while cranking.

Other things to consider:

- Auto-shutdown (ASD) relay; Corroded wires or faulty relay.
- Minimum air flow; check for air leaks or airflow obstruction.
- Vacuum system; Contaminants or leaks in vacuum lines, notably in line connected to M.A.P. sensor.
- Fuel pressure and leak down.
- Vehicle speed sensor operation.
- Crankshaft and Camshaft sensors; Some aftermarket pick-ups have not worked properly with Mopar engine controllers.
- Splices and Fusible Links; check for open and/or shorted wires.
- Closed throttle switch operation on AB, AD, AN bodies.

(Continued on page 7)

- Damaged connector terminals; Remove gasket from SBEC II 60 way connector, reseat connector, and check for symptom/problem. If symptom / problem has been corrected, check 60 way harness and/or connector for terminal damage or loose connection.
- Excessive current on certain connector pins may damage the SBEC. Use of a test lamp or a short in the wiring harness of the vehicle can cause this condition. Always use a DVM when checking the unit/system.
- Check Technical Service Bulletins according to model year and system malfunction.

On Board Diagnostics

The Single Board Engine Controller (SBEC II) has been programmed to monitor several different circuits of the fuel injection system. This monitoring is called On Board Diagnosis. If a problem is sensed with a monitored circuit, often enough to indicate an actual problem, its Fault Code is stored in the SBEC II for eventual display to the service technician. If the problem is repaired or ceases to exist, the SBEC II cancels the Fault Code after 50 to 100 vehicle key on/off cycles.

Fault Code Description

When a fault code appears, either by flashes of the check engine lamp or by watching the Diagnostic Tool, it indicates that the SBEC II has recognized an abnormal signal in the system. Fault codes indicate the results of a failure but never identify the failed component directly.

Obtaining Fault Codes

1. Connect Diagnostic Tool to the connector located in the engine compartment near the SBEC II.
2. Start the engine if possible, cycle the transmission selector and the A/C switch if applicable. Shut off the engine.
3. Turn the ignition switch on. Record all the fault codes shown on the Diagnostic Tool, observe the check engine lamp on the instrument panel; the lamp should light for 2 seconds then go out (bulb check).

If you do not have a Diagnostic Readout Tool use the procedure which follows.

1. Start the engine (if possible).
2. With brakes applied, cycle the transmission selector and the A/C Switch (if applicable). Shut off the engine.
3. Turn ignition switch on, off, on, off, on within 5 seconds. This activates the display of the fault codes through flashes of the check engine lamp on the instrument panel.

(Continued on page 8)

4. The Check Engine Lamp should light for two seconds to verify the bulb is good, then go out.
5. To display fault codes the lamp will flash briefly, (first digit of the fault code) pause, then flash briefly again (second digit of the fault code), followed by a longer pause before displaying the next fault code.
6. After all fault codes have been displayed Code 55 will be displayed indicating the end of fault code messages.

Fault Codes

Code	DRB Display*	Description of Fault Code
11	No Reference Signal During Cranking	No distributor reference signal detected during engine cranking.
13 + **	Slow Change in Idle MAP Signal (MAP Pneumatic Signal)	No variation in MAP sensor signal is detected.
	or No Change in MAP from Start to Run (MAP Pneumatic Change)	No difference recognized between the engine MAP reading and stored barometric pressure reading at start up.
14 + **	MAP Voltage Too Low	MAP sensor input below minimum acceptable voltage.
	or MAP Voltage Too High	MAP sensor input above maximum acceptable voltage.
15**	No Vehicle Speed Signal	No distance sensor signal detected during road load conditions.
17	Engine is Cold Too Long (Low Engine Temp)	Engine coolant temperature remains below normal operating temperatures during vehicle travel. (Thermostat)
21**	O2 Signal Stays at Center	Neither rich or lean condition is detected from the oxygen sensor input.
	or O2 Signal Shorted to Voltage	Oxygen sensor input voltage maintained above normal operating range.
22 + **	Coolant Sensor Voltage Too High	Coolant temperature sensor input above the maximum acceptable voltage.
	or Coolant Sensor Voltage Too Low	Coolant temperature sensor input below the minimum acceptable voltage.
23	Charge Temperature Sensor Voltage High	Charge Air temperature sensor input above the maximum acceptable voltage.
	or Charge Temperature Sensor Voltage Low	Charge temperature sensor input below the minimum acceptable voltage.

***** *DRB display message may vary depending on model year of vehicle.*
+ *Check Engine Lamp On*
****** *Check Engine Lamp On (California only).*

(Continued on page 9)

Code	DRB Display*	Description of Fault Code
23	Throttle Body Temp Voltage High	**{5.9 TBI RWD Trucks/Vans}** Throttle body temp. input above the maximum acceptable voltage.
	or Throttle Body Temp Voltage Low	Throttle body temp. input below the minimum acceptable voltage.
24 + **	Throttle Position Sensor Voltage High	Throttle position sensor input above the minimum acceptable voltage.
	or Throttle Position Sensor Voltage Low	Throttle position sensor input below the maximum acceptable voltage.
25**	Automatic Idle Speed Motor Circuits	A shorted condition detected in one or more of the AIS control circuits.
27	Injector # Control Ckt	Injector output driver does not respond properly to the control signal. DRB will display injector number.
31**	Purge Solenoid Circuit	An open or shorted condition detected in the purge solenoid circuit.
32**	EGR Solenoid Circuit	An open or shorted condition detected in EGR solenoid circuit.
	or EGR System Failure	Required change in Fuel/Air ratio not detected during diagnostic test.
33	A/C Clutch Relay Circuit	An open or short detected in A/C clutch relay circuit.
34	Speed Control Solenoid Circuits	An open or short detected in the speed control vacuum or vent solenoid circuits.
35	Idle Switch Shorted Low	**{5.9 TBI -- RWD Trucks/Vans}** Idle contact switch input circuit shorted to ground.
	or Idle Switch Open Circuit	Idle contact switch input circuit opened.
36 **	Air Switching Solenoid Circuit	**{5.9 TBI -- RWD Trucks/Vans}** An open or shorted condition detected in the air switching solenoid circuit.
36 + **	Wastegate Solenoid Circuit	**{TURBO ONLY}** An open or shorted condition in the turbocharger wastegate control solenoid circuit.
37	Torque Converter Lockup Solenoid Circuit	An open or short detected in the torque converter lockup circuit.
41 + **	Alternator Field Not Switching Properly	An open or short detected in the alternator field control circuit.

***** *DRB display message may vary depending on model year of vehicle.*
+ *Check Engine Lamp On*
****** *Check Engine Lamp On (California only).*

(Continued on page 10)

Code	DRB Display*	Description of Fault Code
42	Auto Shutdown Relay Control Circuit *or* No ASD Relay (Z1) Voltage Sense at Controller	An open or short detected in the autoshutdown relay circuit. No ASD relay voltage sensed when the ASD relay is energized.
43	Ignition Coil # Primary Circuit	**{3.3 MPI, 3.8 MPI & 2.2 TURBO II ONLY}** Peak primary circuit current not achieved with maximum dwell time. DRB will display coil number.
44	Battery Temp. Voltage	An open or short condition detected in the overdrive solenoid circuit.
45	Overdrive Solenoid Circuit	**{3.9, 5.2 & 5.9 MPI -- RWD ONLY}** An open or short condition detected in the overdrive solenoid circuit.
45	Turbo Boost Limit Exceeded	**{TURBO ONLY}** MAP reading above overboost limit detected during engine operation.
46 + **	Charging System Voltage Too High	Battery voltage sense input above target charging voltage during engine operation.
47 + **	Charging System Voltage TooLow	Battery voltage sense input below target charging voltage during engine operation and no significant change in voltage detected during active test of alternator output.
51 **	O2 Signal Stays Below Center (Lean)	Oxygen sensor signal input indicates lean fuel/air ratio condition during engine operation.
52 **	O2 Signal Stays Above Center (Rich F/A)	Oxygen sensor signal input indicates rich fuel/air ratio condition during engine operation.
53	Internal Controller Failure	Internal engine controller fault condition detected.
54	No Sync Pick-Up Signal	**{MPI ONLY}** No fuel sync signal detected during engine rotation.
61**	Baro Read Solenoid Circuit	**{TURBO ONLY}** An open or shorted condition detected in the baro read solenoid circuit.
62	Controller Failure EMR Mileage Not Stored	Engine Controller Failure - EMR Mileage Not Stored.
63	Controller Failure EEPROM Write Denied	Unsuccessful attempt to write to an EEPROMl location by the controller.
76	Fuel Pump Resistor Bypass Relay Circui	**{2.5 & 4.0 — JEEP XJ & MJ ONLY}** Open or shorted condition detected in the ballast resistor bypass circuit.
55	N/A	Completion of fault code display on CHECK ENGINE lamp.

***** *DRB display message may vary depending on model year of vehicle.*
+ *Check Engine Lamp On*
****** *Check Engine Lamp On (California only).*

Part Number Applications

Reman. Part No.	Vehicle Application - Year, Body Type	Engine Specifications
R4778488	1992 P BODY	2.2L TBI CAL A/T (3ATX)
R4778484	1992 P BODY	2.2L TBI FED & CAL M/T
R4778486	1992 P BODY	2.2L TBI FED A/T (3ATX)
R4778504	1992 S BODY	2.5L TBI BUX M/T
R4778502	1992 S BODY	2.5L TBI CAL & FED A/T (3ATX)
R4778496	1992 A,G,J,P BODY	2.5L TBI CAL A/T (3ATX)
R4778494	1992 A,G,J,P BODY	2.5L TBI FED & BUX A/T (3ATX)
R4778490	1992 A,G,P BODY	2.5L TBI FED & CAL M/T
R4778498	1992 C BODY	2.5L TBI FED A/T (3ATX)
R4778500	1992 S BODY	2.5L TBI FED M/T
R4773859	1992/93 G,J,P BODY	3.0L MPI CAL & FED M/T (SBECIIA)
R4778020	1992 S BODY	3.0L MPI CAL A/T (3ATX & 4EATX)
R4778002	1992 A,G,J,P,1 BODY	3.0L MPI FED (3ATX & 4EATX) MEX
R4778018	1992 S BODY	3.0L MPI FED A/T (3ATX & 4EATX)
R4778008	1992 G,J,P BODY	3.0L MPI FED M/T
R4762738	1992 S BODY	3.3L MPI BUX A/T (4EATX) W/O CAL
R4762728	1992 C,Y BODY	3.3L MPI CAL A/T (4EATX)
R4762736	1992 S BODY	3.3L MPI CAL A/T (4EATX)
R4762726	1992 C,Y BODY	3.3L MPI FED A/T (4 EATX)
R4762734	1992 S BODY	3.3L MPI FED A/T (4EATX)
R4762742	1992 Y BODY	3.8L MPI CAL A/T (4EATX)
R4762740	1992 Y BODY	3.8L MPI FED A/T (4EATX)
R6027143	1992 B,D,N BODY	5.2L MPI A/T CAL
R6027141	1992 B,D,N BODY	5.2L MPI A/T FED
R4672649	1993 A,G BODY	2.5L MPI M/T A/T MEX
R4727026	1993 A, G, J, P BODY	2.5L TBI A/T(3ATX) FED BUX
R4727106	1993 A,G,P BODY	2.5L TBI M/T FED CAL

(Continued on page 12)

Reman. Part No.	Vehicle Application - Year, Body Type	Engine Specifications
R4887258AA	1993 A,G,J,P 1 BODY	3.0L MPI A/T (3ATX / 4EATX) MEX FED
R4887262AA	1993 C,Y BODY	3.3L MPI A/T (4EATX) FED
R6029101	1993 D BODY	5.9L DIESEL M/T 50ST
R4605428	1993 LH BODY	3.3L MPI A/T CAL
R4605427	1993 LH BODY	3.3L MPI A/T FED
R4605435	1993 LH BODY	3.5L MPI A/T CAL
R4605429	1993 LH BODY	3.5L MPI A/T FED
R4605436	1993 LH BODY	3.5L MPI A/T W/HI SPEED TIRES FED
R4778510	1993 P BODY	2.2L TBI M/T FED CAL
R4887203AA	1993 S BODY	3.0L MPI A/T (3ATX / 4EATX) FED BUX
R4887272AA	1993 S BODY	3.3L MPI A/T (4EATX) AWD FED CAL
R4887267AA	1993 S BODY	3.3L MPI A/T (4EATX) FED RFI
R4887268AA	1993 S BODY	3.3L MPI A/T (4EATX) CAL
R4887266AA	1993 S BODY	3.3L MPI A/T (4EATX) FED
R4887286AA	1993 Y BODY	3.8L MPI A/T (4EATX) FED
R6028313	1993-94 ZJ	4.0L MPI A/T (4SPD) CAL RFI
R6028113	1993-94 ZJ	5.2L MPI A/T (4SPD) 50ST RFI
R4727008	1994 A BODY	2.5L TBI A/T (3ATX) FED
R4887174AA	1994 A,J,P,1 BODY	3.0L MPI A/T (3ATX / 4EATX) FED
R4887175AA	1994 A,J,P,1 BODY	3.0L MPI A/T (3ATX / 4EATX) FED RFI
R4727004	1994 A,P BODY	2.5L TBI A/T (3ATX) CAL
R6027304	1994 BR BODY	5.9L DIESEL A/T (4SPD) ALL RFI
R4759139	1994 LH BODY	3.3L MPI A/T 50ST
R4653135	1994 LH BODY	3.5L MPI A/T LIMITED FED
R4653136	1994 LH BODY	3.5L MPI A/T UNLIMITED FED
R4778518	1994 P BODY	2.2L TBI A/T (3ATX) FED CAL
R4727002	1994 P BODY	2.5L TBI A/T (3ATX) FED
R4727595	1994 S BODY	2.5L TBI A/T (3ATX) FED CAL BUX
R4887178AA	1994 S BODY	3.0L MPI A/T (3ATX / 4EATX) FED CAL

(Continued on page 13)

Reman. Part No.	Vehicle Application - Year, Body Type	Engine Specifications
R4887179AA	1994 S BODY	3.0L MPI A/T (3ATX/4EATX) FED CAL RFI
R4887182AA	1994 S BODY	3.3L MPI A/T (4EATX) FED CAL
R4887183AA	1994 S BODY	3.3L MPI A/T (4EATX) FED CAL RFI
R4887190AA	1994 S BODY	3.8L MPI A/T FED CAL
R6027884	1994 XJ	2.5L TBI M/T 50ST RFI
R6027892	1994 XJ	4.0L MPI A/T (4SPD) ECE RFI
R6027884	1994 XJ	2.5L TBI M/T 50ST RFI
R6027888	1994 XJ	4.0L MPI A/T (4SPD) FED RFI
R6027890	1994 XJ	4.0L MPI M/T 50ST RFI
R6027575	1994 YJ	2.5L TBI M/T 50ST RFI
R6027579	1994 YJ	4.0L MPI M/T (5SPD) 50ST RFI
R6028311	1994 ZJ	4.0L MPI A/T (4SPD) FED RFI
R4886665	1994-95 B BODY	3.9L MPI A/T FED CAL RFI
R4886671	1994-95 B BODY	5.2L MPI A/T FED CAL RFI
R6028350	1994-95 B BODY	5.9L MPI A/T FED RFI
R4886669	1994-95 BR BODY	5.2L MPI A/T FED CAL RFI
R6028475	1994-95 BR BODY	5.9L MPI A/T CAL RFI
R6028328	1994-94 BR BODY	5.9L MPI A/T FED CAL HD RFI
R6028326	1994-95 BR BODY	5.9L MPI A/T FED RFI
R6028439	1994-95 BR BODY	5.9L MPI M/T FED CAL HD RFI
R6028324	1994-95 BR BODY	5.9L MPI M/T FED CAL RFI
R4886673	1994-95 BR BODY	8.0L MPI A/T FED CAL RFI
R6028523	1994-95 BR BODY	8.0L MPI A/T FED CAL RFI
R4886661	1994-95 N BODY	3.9L MPI A/T FED RFI
R6028729	1994-95 N BODY	3.9L MPI M/T RFI
R4886667	1994-95 N BODY	5.2L MPI M/T FED CAL RFI
R6028342	1994-95 N BODY	5.2L MPI FED CAL RFI
R4686886	1995 A BODY	2.5L TBI A/T (3ATX) FED CAL