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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

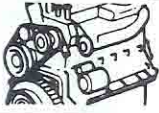
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Description

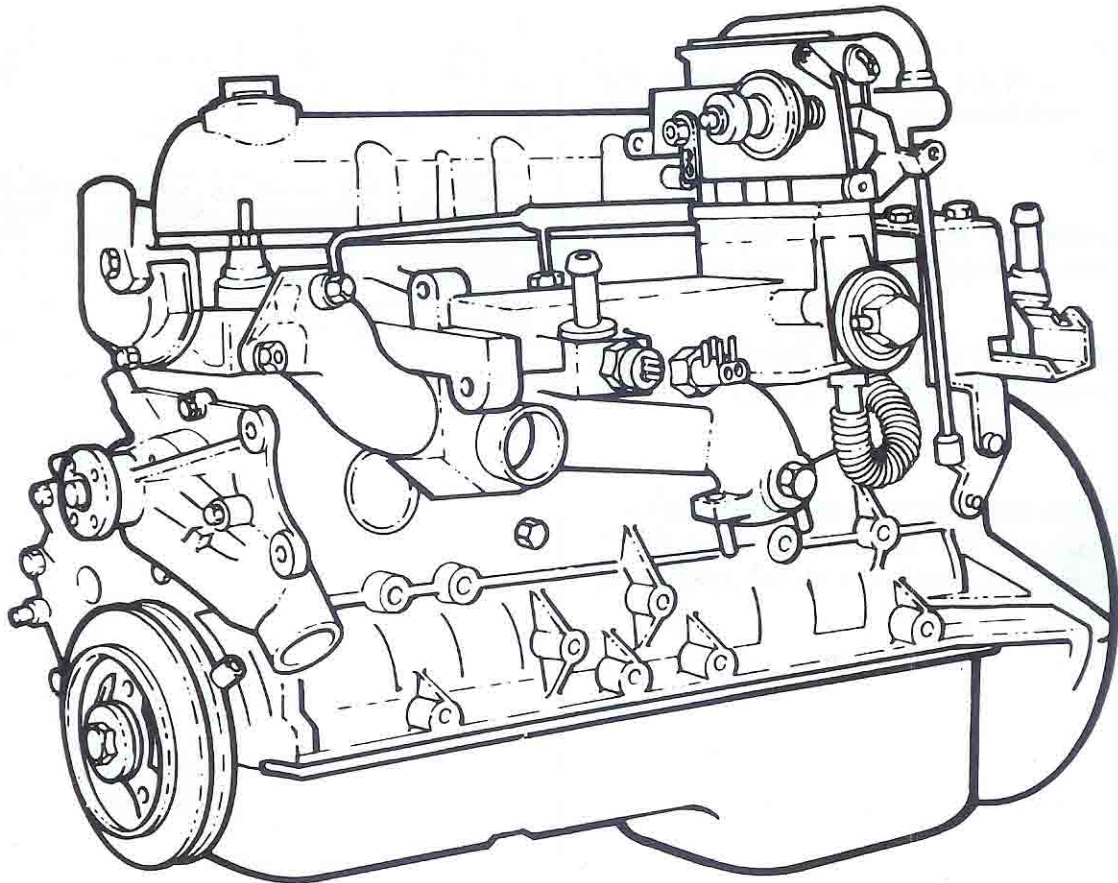
Vehicle	Engine	Displacement	Bore mm (in)	Stroke mm (in)	Comp. Ratio	Carburetor	Oil Capacity
87 88	6-cylinder	4.2L 258 CID	95.25 (3.75)	98.93 (3.895)	9.2:1	2-Venturi	4.75L 5.0 qts. 4.1 imp qts. (w/o filter change)

86348(J)



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Engine Identification

Build Date Code

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The engine Build Date Code is located on a machined surface on the right side of the cylinder block between the No. 2 and No. 3 cylinders.

The numbers in the code identify the year, month and day that the engine was built.

The code letter identifies the cubic inch displacement, carburetor type and compression ratio.

The example code identifies a 4.2 liter (258 CID) engine with a 2V carburetor and 9.2:1 compression ratio that was built on October 11, 1983.

Engine Build Date Code Explanation

Letter Code	CID	Carburetor	Compression Ratio
C	258	2V	9.2:1

1st Character (Year)	2nd and 3rd Characters (Month)	4th Character (Engine Type)	5th and 6th Characters (Day)
3 - 1983 4 - 1984	01 - 12	C	01 - 31

EXAMPLE: 3 10 C 11

60257B



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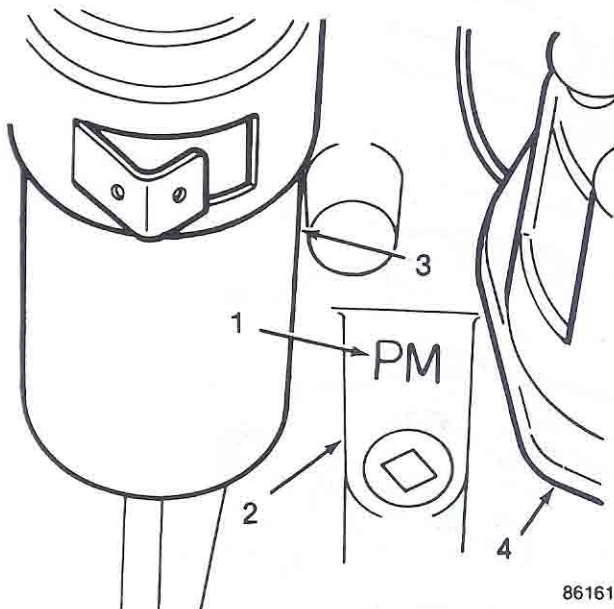


4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Oversize or Undersize Components

Some engines may be built with oversize or undersize components such as: oversize cylinder bores, undersize crankshaft main bearing journals, undersize connecting rod bearing journals or oversize camshaft bearing bores.

These engines are identified by a letter code (1) stamped on a boss (2) between the ignition coil (3) and the distributor (4).



The letters are decoded in the following chart.

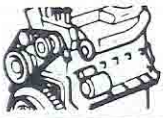
Oversize or Undersize Components Letter Code

Code Letter	Definition
B	All cylinder bores 0.254mm (0.010-inch) oversize
M	All crankshaft main bearing journals 0.254mm (0.010-inch) undersize
P	All connecting rod bearing journals 0.254mm (0.010-inch) undersize
C	All camshaft bearing bores 0.254mm (0.010-inch) oversize

Example: The code letters PM indicate that the crankshaft main bearing journals and connecting rod bearing journals are 0.254mm (0.010-inch) undersize.

60258

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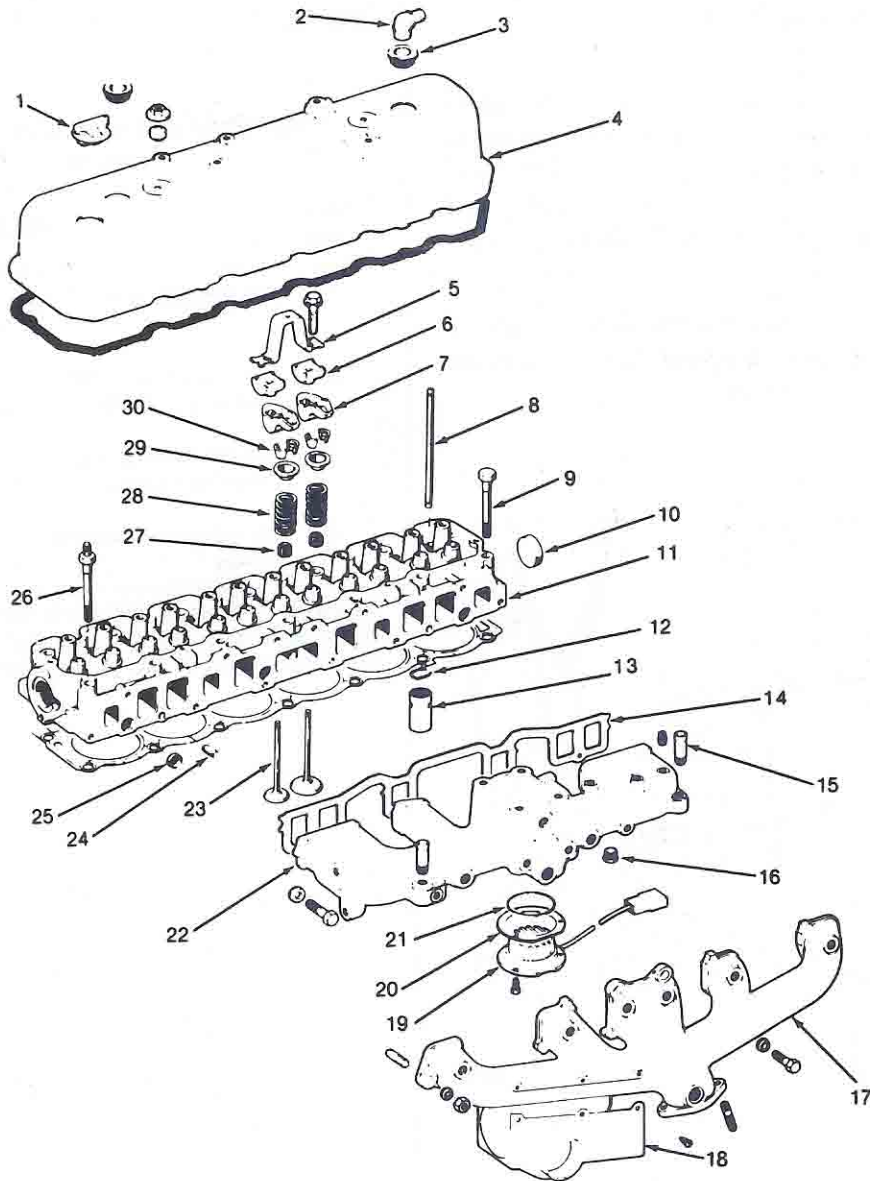


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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



SIX CYLINDER ENGINE ASSEMBLY — CYLINDER HEAD



- | | |
|----------------------------------|-----------------------------|
| 1 – Oil Filler Cap | 16 – Plug |
| 2 – Ventilation Valve | 17 – Exhaust Manifold |
| 3 – Grommet | 18 – Heat Stove |
| 4 – Cylinder Head (Rocker) Cover | 19 – Intake Manifold Heater |
| 5 – Bridge | 20 – Gasket |
| 6 – Pivot | 21 – O-Ring |
| 7 – Rocker Arm | 22 – Intake Manifold |
| 8 – Push Rod | 23 – Valve |
| 9 – Cylinder Head Bolt | 24 – Dowel Pin |
| 10 – Cylinder Head Core Plug | 25 – Plug |
| 11 – Cylinder Head | 26 – Cylinder Head Stud |
| 12 – Snap Ring | 27 – Oil Deflector |
| 13 – Tappet | 28 – Valve Spring |
| 14 – Intake Manifold Gasket | 29 – Retainer |
| 15 – Hose Fitting | 30 – Valve Locks |

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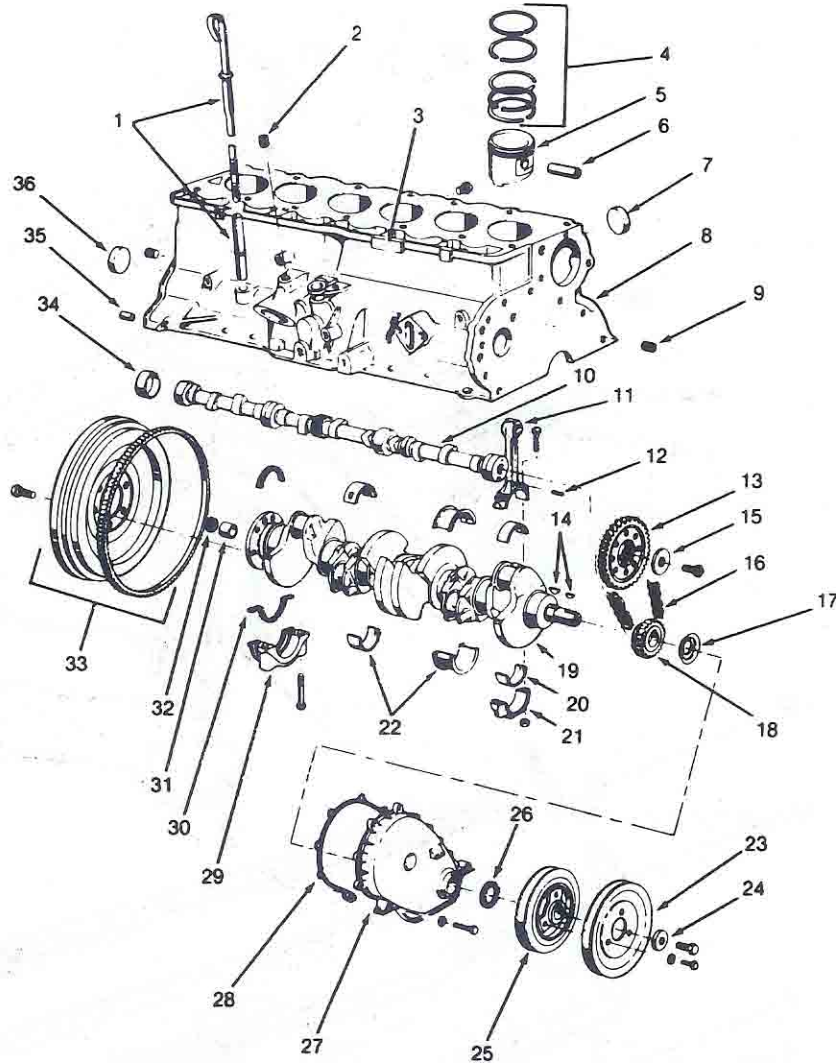


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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

SIX CYLINDER ENGINE ASSEMBLY — CYLINDER BLOCK



- | | |
|---|--|
| 1 – Oil Level Gauge (Dipstick) and Tube | 20 – Connecting Rod Bearing |
| 2 – Oil Filter By-Pass Plug | 21 – Connecting Rod Bearing Cap |
| 3 – Build Date Code Location | 22 – Main Bearings |
| 4 – Ring Set | 23 – Vibration Damper Pulley |
| 5 – Piston | 24 – Washer |
| 6 – Pin Set | 25 – Vibration Damper |
| 7 – Plug | 26 – Seal |
| 8 – Cylinder Block | 27 – Timing Case Cover |
| 9 – Oil Channel Plug | 28 – Gasket |
| 10 – Camshaft | 29 – Main Bearing Cap (Rear) |
| 11 – Connecting Rod | 30 – Main Bearing Cap Seal Kit (Rear) |
| 12 – Pin | 31 – Pilot Bushing (with Manual Transmission) |
| 13 – Camshaft Sprocket | 32 – Bushing Oil Wick (with Manual Transmission) |
| 14 – Keys | 33 – Flywheel and Ring Gear (with Manual Transmission) |
| 15 – Washer | 34 – Bearing Set |
| 16 – Timing Chain | 35 – Dowel |
| 17 – Oil Shedder (Slinger) | 36 – Plug |
| 18 – Crankshaft Sprocket | |
| 19 – Crankshaft | |

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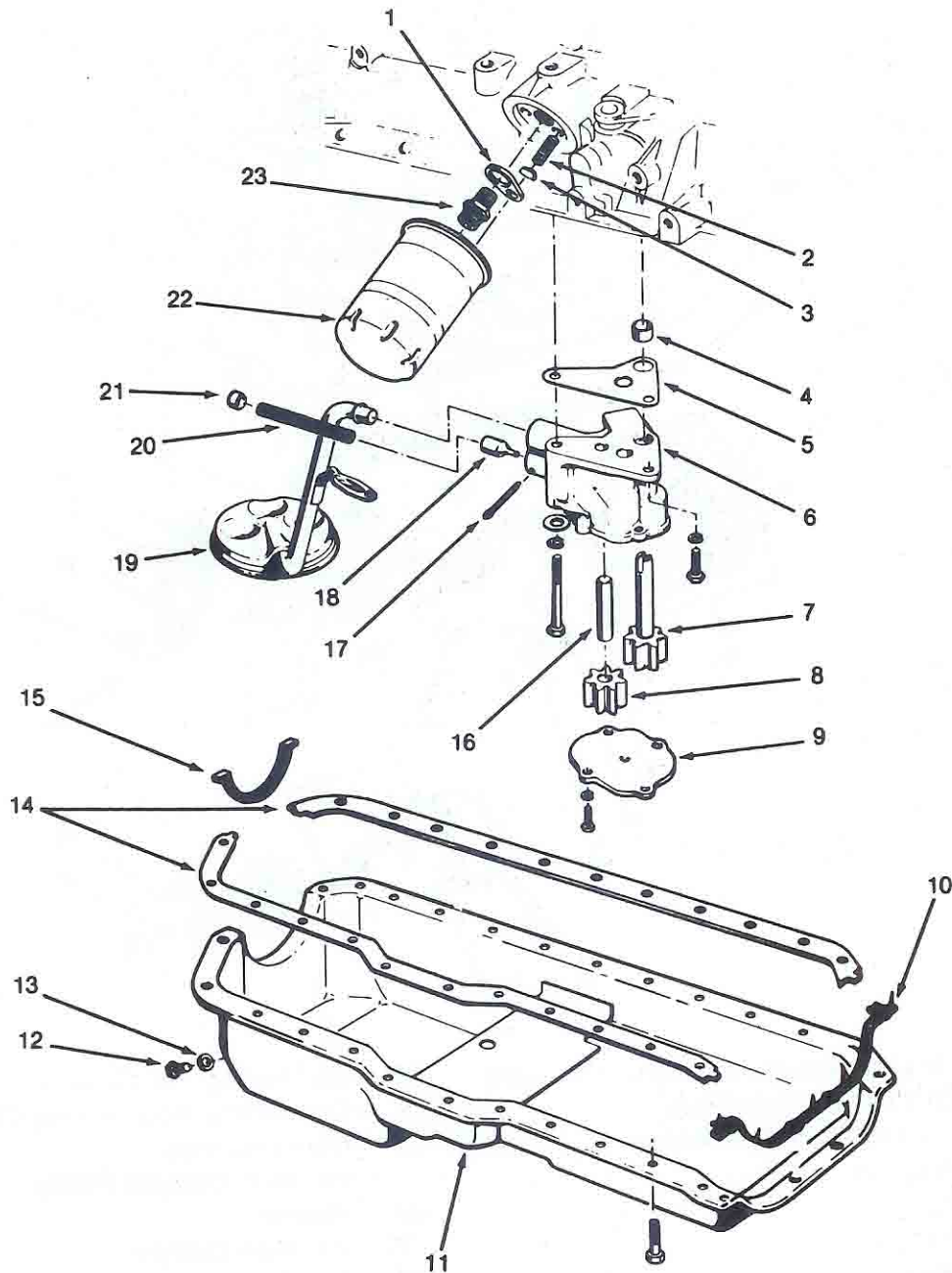


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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

SIX CYLINDER ENGINE ASSEMBLY — OIL PAN AND PUMP



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- 1 – Oil Filter By-Pass Valve Retainer
- 2 – Oil Filter By-Pass Valve Spring
- 3 – Oil Filter By-Pass Valve
- 4 – Dowel Pin
- 5 – Oil Pump-to-Cylinder Block Gasket
- 6 – Oil Pump Body
- 7 – Oil Pump Drive Shaft and Gear
- 8 – Oil Pump Idler Gear
- 9 – Oil Pump Cover
- 10 – Oil Pan Timing Case Cover Seal
- 11 – Oil Pan
- 12 – Oil Pan Drain Plug

- 13 – Oil Pan Drain Plug Gasket
- 14 – Oil Pan Gasket Set
- 15 – Oil Pan-to-Bearing Cap Seal
- 16 – Oil Pump Idler Gear Shaft
- 17 – Cotter Pin
- 18 – Release Valve Plunger
- 19 – Oil Pump Strainer and Inlet Tube Assembly
- 20 – Oil Pump Release Valve Spring
- 21 – Valve Spring Release Cap
- 22 – Oil Filter Element
- 23 – Oil Filter By-Pass Connector



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

SPECIAL TOOLS

Tool Ref.	Description	Required	Recommended
J-22248	Timing Case Cover Alignment and Seal Installation Tool	■	
J-21882	Oil Pump Inlet Tube Installation Tool	■	
J-22534-01	Valve Spring Removal and Installation Tool	■	
J-22534-04		■	
J-22534-05		■	
J-9256	Timing Case Cover Oil Seal Removal Tool		■
J-22794	Air Hose Adapter		■
J-21884	Hydraulic Valve Tappet Removal and Installation Tool		■
J-8520	Dial Indicator Set		■
J-21791	Vibration Damper Removal Tool		■
J-5959-04	C-Clamp and Rod Extension		■
J-9163	Screw (used with J-22248)		■
J-5601	Piston Ring Compressor		■
J-23600	Belt Tension Gauge		■
J-23600-B			■
J-29550			■
J-24460-01	Cooling System Pressure Tester and Adapter		■
J-9789-C	Universal Carburetor Gauge Kit		■
J-10174-01	Main Jet Removal and Installation Tool		■
J-23738	Hand Operated Vacuum Pump		■
ET-501-82	Fuel Feedback System Tester	■	
ET-501-84	Fuel Feedback System Tester Adapter	■	
	Tach/Dwell Meter		■

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

TORQUE SPECIFICATIONS

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Component	Service Set-To Torque	Service Recheck Torque
A/C Compressor Bracket-to-Engine	34 N·m (25 ft-lbs)	24-38 N·m (18-28 ft-lbs)
Alternator Pivot Bolt or Nut	38 N·m (28 ft-lbs)	27-47 N·m (20-35 ft-lbs)
Alternator Adjusting Bolt	24 N·m (18 ft-lbs)	20-27 N·m (15-20 ft-lbs)
Alternator Mounting Bracket-to-Engine	38 N·m (28 ft-lbs)	31-41 N·m (23-30 ft-lbs)
Alternator Mounting Bolt-to-Head	45 N·m (33 ft-lbs)	41-47 N·m (30-35 ft-lbs)
Block Heater Nut	2 N·m (20 in-lbs)	2-3 N·m (17-25 in-lbs)
Camshaft Sprocket Bolt	68 N·m (50 ft-lbs)	61-75 N·m (45-55 ft-lbs)
Carburetor Hold-Down Nuts	19 N·m (14 ft-lbs)	16-27 N·m (12-20 ft-lbs)
Coil Bracket-to-Cylinder Head Bolt	19 N·m (14 ft-lbs)	14-24 N·m (10-18 ft-lbs)
Connecting Rod Bolt Nuts	45 N·m (33 ft-lbs)	41-47 N·m (30-35 ft-lbs)
Cylinder Head Capscrews	115 N·m (85 ft-lbs)	108-122 N·m (80-90 ft-lbs)
Cylinder Head Cover Nuts	3.2 N·m (28 in-lbs)	2.8-3.5 N·m (25-31 ft-lbs)
Crankshaft Pulley-to-Damper Bolts	27 N·m (20 ft-lbs)	20-34 N·m (15-25 ft-lbs)
Clutch Housing Spacer-to-Block Screws	16 N·m (12 ft-lbs)	12-20 N·m (9-15 ft-lbs)
Clutch Housing-to-Block Screws (Bottom)	58 N·m (43 ft-lbs)	50-64 N·m (37-47 ft-lbs)
Clutch Housing-to-Block Screws (Top)	37 N·m (27 ft-lbs)	30-41 N·m (22-30 ft-lbs)
Differential Housing-to-Left Engine Mounting Bolt	54 N·m (40 ft-lbs)	47-68 N·m (35-50 ft-lbs)
Distributor Clamp Bracket Screw	18 N·m (13 ft-lbs)	14-24 N·m (10-18 ft-lbs)
Drive Plate-to-Converter Screw	30 N·m (22 ft-lbs)	27-34 N·m (20-25 ft-lbs)
EGR Valve Tube Nuts	41 N·m (30 ft-lbs)	34-47 N·m (25-35 ft-lbs)
EGR Valve Bolts	18 N·m (13 ft-lbs)	12-24 N·m (9-18 ft-lbs)
Exhaust Manifold Bolts	31 N·m (23 ft-lbs)	24-38 N·m (18-28 ft-lbs)
Exhaust Pipe-to-Manifold Bolts	27 N·m (20 ft-lbs)	20-34 N·m (15-25 ft-lbs)
Fan and Hub Assembly Bolts	24 N·m (18 ft-lbs)	16-34 N·m (12-25 ft-lbs)
Flywheel or Drive Plate-to-Crankshaft Bolts	142 N·m (105 ft-lbs)	129-156 N·m (95-115 ft-lbs)
Front Crossmember-to-Sill Bolts	88 N·m (65 ft-lbs)	75 N·m (55 ft-lbs) min



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

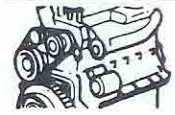
TORQUE SPECIFICATIONS (Cont'd)

Component	Service Set-To Torque	Service Recheck Torque
Front Support Bracket-to-Block Bolts	60 N·m (45 ft-lbs)	54-68 N·m (40-50 ft-lbs)
Front Support Cushion-to-Bracket Bolts	45 N·m (33 ft-lbs)	36-52 N·m (27-38 ft-lbs)
Front Support Cushion-to-Crossmember Bolts	50 N·m (37 ft-lbs)	41-61 N·m (30-45 ft-lbs)
Fuel Pump Screws	22 N·m (16 ft-lbs)	18-26 N·m (13-19 ft-lbs)
Idle Arm Bracket-to-Sill Bolts	68 N·m (50 ft-lbs)	47-81 N·m (35-60 ft-lbs)
Idle Pulley Bracket-to-Front Cover Nut	9 N·m (7 ft-lbs)	5-12 N·m (4-9 ft-lbs)
Idle Pulley Bearing Shaft-to-Bracket Nut	45 N·m (33 ft-lbs)	38-52 N·m (28-38 ft-lbs)
Intake Manifold Coolant Fittings	27 N·m (20 ft-lbs)	20-34 N·m (15-25 ft-lbs)
Intake Manifold Heater Screws	9 N·m (7 ft-lbs)	7-12 N·m (5-9 ft-lbs)
Intake Manifold Screws	31 N·m (23 ft-lbs)	24-38 N·m (18-28 ft-lbs)
Main Bearing Capscrews	108 N·m (80 ft-lbs)	101-115 N·m (75-85 ft-lbs)
Oil Filter Adapter	65 N·m (48 ft-lbs)	57-75 N·m (42-55 ft-lbs)
Oil Pan Drain Plug	41 N·m (30 ft-lbs)	34-47 N·m (25-35 ft-lbs)
Oil Pan Screws – 1/4 in –20	9 N·m (7 ft-lbs)	7-12 N·m (5-9 ft-lbs)
Oil Pan Screws – 5/16 in – 18	15 N·m (11 ft-lbs)	12-18 N·m (5-11 ft-lbs)
Oil Pump Cover Screws	8 N·m (70 in-lbs)	7-9 N·m (60-80 in-lbs)
Oil Pump Attaching Screws (Short)	14 N·m (10 ft-lbs)	11-18 N·m (8-13 ft-lbs)
Oil Pump Attaching Screws (Long)	23 N·m (17 ft-lbs)	16-27 N·m (12-20 ft-lbs)
Oxygen Sensor	48 N·m (35 ft-lbs)	43-52 N·m (32-38 ft-lbs)
Power Steering Pump Adapter Screw	31 N·m (23 ft-lbs)	24-38 N·m (18-28 ft-lbs)
Power Steering Pump Bracket Screw	58 N·m (43 ft-lbs)	50-64 N·m (37-47 ft-lbs)
Power Steering Pump Mounting Screw	38 N·m (28 ft-lbs)	34-47 N·m (25-35 ft-lbs)
Power Steering Pump Pressure Hose Nut	52 N·m (38 ft-lbs)	41-61 N·m (30-45 ft-lbs)

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

TORQUE SPECIFICATIONS (Cont'd)

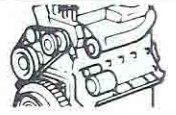
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Component	Service Set-To Torque	Service Recheck Torque
Power Steering Pump Pulley Nut	79 N·m (58 ft-lbs)	54-88 N·m (40-65 ft-lbs)
Pulse Air Tube-To-Catalytic Converter Fitting	18 N·m (13 ft-lbs)	14-24 N·m (10-18 ft-lbs)
Pulse Air Tube-To-Front Exhaust Pipe Fitting	9 N·m (7 ft-lbs)	7-12 N·m (5-9 ft-lbs)
Rear Crossmember-to-Side Sill Nut	41 N·m (30 ft-lbs)	34-47 N·m (25-35 ft-lbs)
Rear Support Bracket-to-Transmission Bolts	45 N·m (33 ft-lbs)	37-52 N·m (27-38 ft-lbs)
Rear Support Cushion-to-Bracket Bolts	41 N·m (30 ft-lbs)	34-47 N·m (25-35 ft-lbs)
Rear Support Cushion-to-Crossmember Bolts	24 N·m (18 ft-lbs)	16-34 N·m (12-25 ft-lbs)
Rocker Arm Assembly-to-Cylinder Head Bolts	26 N·m (19 ft-lbs)	18-34 N·m (13-25 ft-lbs)
Spark Plug	37 N·m (27 ft-lbs)	30-45 N·m (22-33 ft-lbs)
Starter Motor-to-Cylinder Block Bolts	45 N·m (33 ft-lbs)	38-51 N·m (28-38 ft-lbs)
Timing Case Cover-to-Block Screws	7 N·m (5 ft-lbs)	5-11 N·m (4-8 ft-lbs)
Timing Case Cover-to-Block Studs	22 N·m (16 ft-lbs)	18-26 N·m (13-19 ft-lbs)
Torque Converter Drive Plate-to-Crankshaft Bolts	54 N·m (40 ft-lbs)	
Thermostat Housing Bolt	18 N·m (13 ft-lbs)	12-24 N·m (9-18 ft-lbs)
Vibration Damper Bolt (Lubricated)	108 N·m (80 ft-lbs)	95-122 N·m (70-90 ft-lbs)
Water Pump Bolt	18 N·m (13 ft-lbs)	12-24 N·m (9-18 ft-lbs)



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



SPECIFICATIONS

Six-Cylinder Engine Specifications

	(USA) Inches Unless Otherwise Specified	(METRIC) Millimeters Unless Otherwise Specified	(USA) Inches Unless Otherwise Specified	(METRIC) Millimeters Unless Otherwise Specified
Type In Line, OHV, Six-cylinder				
Bore	3.75	95.25		
Stroke	3.895	98.93		
Displacement	258 cubic inches	4.2 liter		
Compression Ratio		8.6:1		
Compression Pressure	120-150 psi	827-1034 kPa		
Maximum Variation Between Cylinders	30 psi	206 kPa		
Firing Order		1-5-3-6-2-4		
Taxable Horsepower	33.75 Bhp	25.2 kW		
Fuel		unleaded		
Camshaft				
Fuel Pump Eccentric Diameter	1.615-1.625	41.02-41.28		
Tappet Clearance	Zero Lash (Hydraulic tappets)			
End Play	Zero (engine operating)			
Bearing Clearance	0.001-0.003	0.025-0.076		
Bearing Journal Diameter				
No. 1	2.029-2.030	51.54-51.56		
No. 2	2.019-2.020	51.28-51.31		
No. 3	2.009-2.010	51.03-51.05		
No. 4	1.999-2.000	50.78-50.80		
Base Circle Runout	0.001 (max)	0.03 (max)		
Cam Lobe Lift	0.253	6.43		
Valve Lift	0.405	10.29		
Intake Valve Timing				
Opens	9° BTDC			
Closes	73° ABDC			
Exhaust Valve Timing				
Opens	57° BBDC			
Closes	25° ATDC			
Valve Overlap	34°			
Intake Duration	262°			
Exhaust Duration	262°			
Connecting Rods				
Total Weight (less bearings)			695-703 grams	
Total Length (center-to-center)	5.873-5.877	149.17-149.28		
Piston Pin Bore Diameter	0.9288-0.9298	23.59-23.62		
Connecting Rod Bore (less bearings)	2.2085-2.2080	56.09-56.08		
Bearing Clearance	0.001-0.003	0.03-0.08		
	(0.0015-0.002 preferred)	(0.044-.05 preferred)		
Side Clearance	0.010-0.019	0.25-0.48		
Maximum Twist	0.001 per inch	0.025 per 25.4 mm		
Maximum Bend			0.0005 per inch	0.0127 per 25.4 mm
Crankshaft				
End Play	0.0015-0.0065	0.038-0.165		
Main Bearing Journal Diameter	2.4996-2.5001	63.489-63.502		
Main Bearing Journal Width				
No. 1	1.086-1.098	27.58-27.89		
No. 3	1.271-1.273	32.28-32.33		
No. 2-4-5-6-7	1.182-1.188	30.02-30.18		
Main Bearing Clearance	0.001-0.0025	0.03-0.06		
	(0.002 preferred)	(0.051 preferred)		
Connecting Rod Journal Diameter	2.0934-2.0955	53.17-53.23		
Connecting Rod Journal Width	1.070-1.076	27.18-27.33		
Maximum Out-of-Round (All Journals)	0.0005	0.013		
Maximum Taper (All Journals)	0.0005	0.013		
Cylinder Block				
Deck Height	9.487-9.493	240.97-241.12		
Deck Clearance	0.0148	0.376		
	(below block)	(below block)		

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Six-Cylinder Engine Specifications (Continued)

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	(USA) Inches Unless Otherwise Specified	(METRIC) Millimeters Unless Otherwise Specified	(USA) Inches Unless Otherwise Specified	(METRIC) Millimeters Unless Otherwise Specified
Cylinder Block (cont'd.)				
Cylinder Bore Diameter (standard)	3.7501-3.7533	95.253-95.334		
Maximum Taper	0.001	0.025		
Maximum Out-of-Round	0.001	0.025		
Tappet Bore Diameter	0.9055-0.9065	23.000-23.025		
Cylinder Block Flatness	0.001/1-0.002/6 (0.008 max)	0.03/25-0.05/152 (0.20 max)		
Piston Ring Side Clearance				
No. 1 Compression	0.0017-0.0032 (0.0017 preferred)	0.043-0.081 (0.043 preferred)		
No. 2 Compression	0.0017-0.0032 (0.0017 preferred)	0.043-0.081 (0.043 preferred)		
Oil Control	0.001-0.008 (0.003 preferred)	0.03-0.20 (0.08 preferred)		
Piston Ring Groove Height				
Compression (both)	0.0795-0.0805	2.019-2.045		
Oil Control	0.188-0.1895	4.78-4.80		
Piston Ring Groove Diameter				
No. 1 and No. 2	3.324-3.329	84.43-84.56		
Oil Control	3.329-3.339	84.56-84.81		
Piston Pin Bore Diameter	0.9308-0.9313	23.642-23.655		
Piston Pin Diameter	0.9304-0.9309	23.632-23.645		
Piston-to-Pin Clearance	0.0003-0.0005 loose (0.0005 preferred)	0.008-0.013 loose (0.013 preferred)		
Piston-to-Pin Connecting Rod	2000 lbf press-fit	8.9kN press-fit		
Cylinder Head				
Combustion Chamber Volume	64.45-67.45cc			
Valve Arrangement	E1-E1-E1-E1-E1-E1			
Valve Guide ID (Integral)	0.3735-0.3745	9.487-9.512		
Valve Stem-to-Guide Clearance	0.001-0.003	0.03-0.08		
Intake Valve Seat Angle	30°			
Exhaust Valve Seat Angle	44.5°			
Valve Seat Width	0.040-0.060	1.02-1.52		
Valve Seat Runout	0.0025	0.064		
Cylinder Head Flatness	0.001/1-0.002/6 (0.008 max)	0.03/25-0.05/152 (0.20 max)		
Lubrication System				
Engine Oil Capacity	5 quarts (Add 1 quart with filter change)	4.75 liters (Add 0.9 liter with filter change)		
Normal Operating Pressure	13 psi at 600 rpm, 37-75 psi (max) at 1600+ rpm	89.6 kPa at 600 rpm, 255.1-517.1 kPa (max) at 1600+ rpm		
Oil Pressure Relief	75 psi (max)	517.1 kPa (max)		
Gear-to-Body Clearance (Radial)	0.002-0.004 (0.002 preferred)	0.051-0.102 (0.051 preferred)		
Gear End Clearance, Plastigage	0.002-0.006 (0.002 preferred)	0.051-0.152 (0.051 preferred)		
Gear End Clearance, Feeler Gauge	0.004-0.008 (0.007 preferred)	0.1016-0.2032 (0.1778 preferred)		
Rocker Arms, Push Rods and Tappets				
Rocker Arm Ratio		1.6:1		
Push Rod Length	9.640-9.660	244.856-245.364		
Push Rod Diameter	0.312-0.315	7.92-8.00		
Hydraulic Tappet Diameter	0.904-0.9045	22.962-22.974		
Tappet-to-Bore Clearance	0.001-0.0025	0.03-0.05		
Valves				
Valve Length				
(Tip-to-Gauge Dim. Line)	4.7895-4.8045	121.653-122.034		
Valve Stem Diameter	0.3715-0.3725	9.436-9.462		
Stem-to-Guide Clearance	0.001-0.003	0.03-0.08		
Intake Valve Head Diameter	1.782-1.792	45.26-45.52		
Intake Valve Face Angle		29°		
Exhaust Valve Head Diameter	1.401-1.411	35.59-35.84		
Exhaust Valve Face Angle		44°		
Maximum Allowable Removed for Tip Refinishing	0.010	0.25		
Pistons				
Weight (less pin)	510-514 grams			
Piston Pin Bore Centerline-to-Piston Top	1.651-1.655	41.94-42.04		
Piston-to-Bore Clearance	0.0009-0.0017 (0.0012-0.0013 preferred)	0.023-0.043 (0.030-0.033 preferred)		
Piston Ring Gap Clearance – Compression (both)	0.010-0.020	0.25-0.51		
Piston Ring Gap Clearance – Oil Control Steel Rails	0.010-0.025	0.25-0.64		
Valve Springs				
Free Length	1.99 approx.	50.55 approx.		
Spring Tension				
Valve Closed	64-72 lbf at 1.786	285-320 N at 45.4		
Valve Open	188-202 lbf at 1.411	836-898 N at 35.84		
Inside Diameter	0.948-0.968	24.08-24.59		



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



SHORT ENGINE ASSEMBLY (SHORT BLOCK)

A service replacement short engine assembly (short block) may be installed whenever the original cylinder block is defective or damaged beyond repair.

It consists of a cylinder block, piston and rod assemblies and crankshaft.

NOTE: The camshaft must be procured separately and installed before the engine is installed in the vehicle.

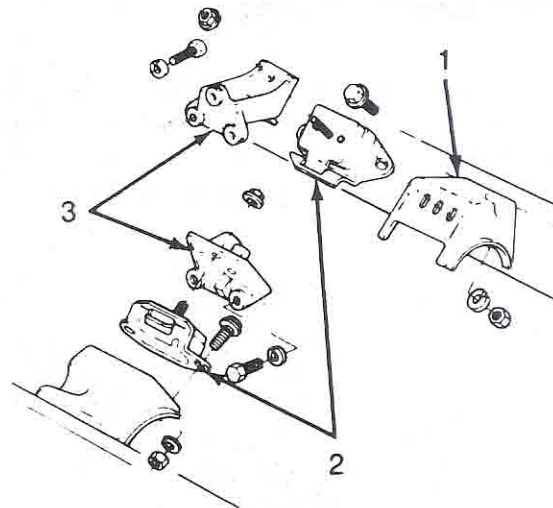
NOTE: For identification, short engine assemblies have the letter S stamped on the same machined surface where the build date code is stamped for complete engine assemblies.

Installation includes the transfer of components from the defective or damaged original engine.

Follow the appropriate procedures for cleaning, inspection and torque tightening as outlined in this manual and the MOT. 4.2L manual.

ENGINE MOUNTING

Resilient rubber cushions support the engine and transmission at three points: at each side on the centerline of the engine (1 and 2) and at the rear between the transmission adapter housing and the rear support crossmember.



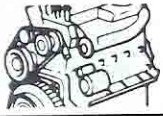
- 1 - Frame Support
- 2 - Cushions
- 3 - Engine Mounting Brackets

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Replacement of a cushion may be accomplished by supporting the weight of the engine or transmission at the area of the cushion.

CAUTION: Before raising the engine, remove the screws that attach the fan shroud to the radiator to prevent damage to the shroud by the fan.

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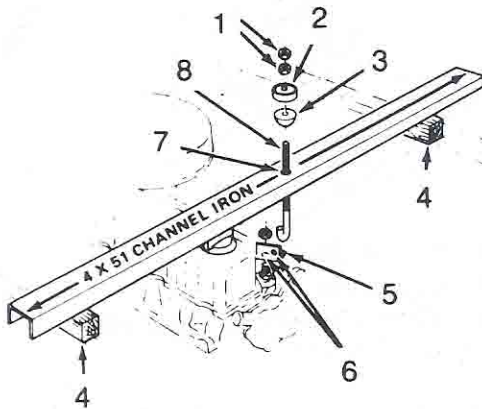
4.2 LITER (258 CID) SIX-CYLINDER ENGINE



ENGINE HOLDING FIXTURE

If it is necessary to remove the front engine mounts and front crossmember to perform service such as oil pan removal, an engine holding fixture may be fabricated as illustrated.

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- | | |
|-------------------------------|-----------------------------|
| 1 - 9/16-Inch - 12 Nuts | 5 - 1 1/4-Inch Angle Iron |
| 2 - Upper Trunnion Bearing | 6 - 1/2-Inch Holes |
| 3 - Pivot or Sleeve | 7 - 1-Inch Hole |
| 4 - 2x2x6-Inch Hardwood Block | 8 - 9/16-Inch - 12 Trunnion |

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ENGINE REPLACEMENT

Removal

The engine is removed separated from the transmission.

WARNING: The coolant in a recently operated engine is hot and pressurized. Release the pressure before removing the radiator draincock and cap.

Remove the radiator draincock and radiator cap and drain the coolant.

NOTE: Do not waste reusable coolant. If the solution is clean, drain it into a clean container for reuse.

Mark the hinge locations on the hood panel for alignment reference during installation.

Remove the engine compartment lamp, if equipped, and remove the hood.

Disconnect the battery cable clamps and remove the battery.

Disconnect the wire connectors from the alternator.

Disconnect the ignition coil and distributor wire connectors.

Disconnect the oil pressure sender wire connector.

Remove the vacuum switch assembly bracket from the cylinder head cover.

Disconnect the front fuel pipe from the fuel pump and insert a plug to prevent entry of foreign objects.

Disconnect the engine ground strap.

Remove the right front engine support cushion-to-bracket nut.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

If equipped with air conditioning:

- remove the service valve covers and front-seat the valves
- loosen the nut attaching the low pressure service valve to the compressor head
- discharge the compressor
- remove the service valve and cap the compressor port and service valve

NOTE: Refer to Chapter L – Heating and Air Conditioning for additional information pertaining to the A/C system.

Remove the air cleaner.

Disconnect the vacuum purge hose at the fuel vapor canister tee.

Disconnect the TAC system vacuum hose at the intake manifold.

Disconnect the idle speed control solenoid wire connector.

Disconnect the fuel return hose from the fuel filter.

Disconnect the carburetor bowl vent hose from the fuel vapor canister.

Disconnect the throttle cable and remove it from the bracket.

Disconnect the throttle valve rod, if equipped.

Disconnect the throttle rod at the bellcrank.

Disconnect the carburetor stepper motor wire connector.

Disconnect the oxygen (O₂) sensor wire connector.

Disconnect the coolant temperature sender wire connector.

Disconnect the upper and lower radiator hoses at the radiator.

Disconnect the coolant hoses from the rear of the intake manifold and thermostat housing.

Remove the fan shroud screws.

Disconnect the automatic transmission fluid cooler pipe fittings from the radiator, if equipped.

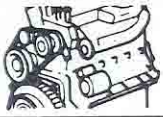
Remove the radiator attaching screws. Remove the radiator and fan shroud.

Remove the fan and spacer or Tempatrol fan assembly.

Install a 5/16 × 1/2-inch SAE capscrew through the fan pulley into the water pump flange to maintain the pulley and water pump in alignment when the crankshaft is rotated.

Remove the power brake vacuum check valve from the booster, if equipped.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

If equipped with power steering:

- disconnect the power steering hoses from the fittings at the steering gear
- drain the pump reservoir and cap the fittings on the hoses and steering gear to prevent foreign objects from entering the system

Remove the automatic transmission filler tube bracket screw, if equipped.

Lift the vehicle and support it with support stands.

Remove the starter motor.

If equipped with an automatic transmission:

- remove the converter housing access cover
- mark the converter and drive plate location for installation reference and remove the converter-to-drive plate bolts
- rotate the crankshaft for access to each bolt
- remove the exhaust pipe support brace from the converter housing (this brace also supports the inner end of the transmission linkage)

If equipped with a manual transmission:

- remove the flywheel housing access cover and the clutch release bellcrank inner support screws
- disconnect the springs and remove the clutch release bellcrank
- remove the outer bellcrank-to-throwout lever rod bracket retainer

Remove the engine mount cushion-to-bracket nuts.

Disconnect the exhaust pipe from the manifold.

Remove the upper converter (or flywheel) housing bolts and loosen the bottom bolts.

Lower the vehicle.

Remove the A/C compressor idler pulley and mounting bracket, if equipped.

Attach a lifting device to the engine.

Raise the engine off the front mount cushions.

Place a support stand under the converter (or flywheel) housing.

Remove the remaining converter (or flywheel) housing bolts.

Lift the engine out of the engine compartment.

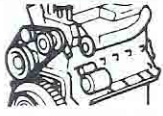
Installation

Lower the engine into the engine compartment.

If equipped with a manual transmission:

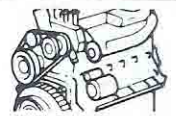
- insert the transmission shaft into the clutch spline
- align the flywheel housing with the engine
- install and tighten the flywheel housing lower bolts

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



If equipped with an automatic transmission:

- align the transmission torque converter housing with the engine
- loosely install the converter housing lower bolts
- install the next-higher bolt and nut on each side
- tighten all four bolts

Remove the support stand from beneath the converter (or flywheel) housing.

Lower the engine onto the mount cushions. Ensure the bolt holes are aligned.

Install the nuts and tighten with the specified torque.

Lift the vehicle and position supports at the front frame rails.

Install the seal and attach the exhaust pipe to the manifold. Install and tighten the nuts with the specified torque.

If equipped with a manual transmission:

- install the flywheel housing access cover
- insert the clutch release bellcrank through the bushing in the throwout lever rod bracket and install the retainer
- attach the bellcrank-to-throwout lever rod to the throwout lever and connect the springs
- attach the inner support bracket to the flywheel housing

- connect the clutch pedal to the bellcrank rod

If equipped with an automatic transmission:

- install the converter-to-drive plate bolts (turn the crankshaft for access to each bolt hole)
- ensure the installation reference marks are aligned
- install the converter housing access cover
- install the exhaust pipe support

Install the remaining converter or flywheel housing screws.

Install the starter motor and connect the cable.

Lower the vehicle.

Remove the engine lifting device.

Install the A/C compressor idler pulley and mounting bracket, if removed.

Connect the cooling system hoses and tighten the clamps.

Connect the hoses to the power steering gear.

Remove the pulley-to-water pump flange alignment capscrew and install the fan and spacer or Tempatrol fan assembly.

Tighten the drive belts according to the specifications listed in the Cooling Systems section.

Install the fan shroud and radiator.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Connect the radiator hoses and automatic transmission fluid cooler pipes, if equipped.

Connect the throttle valve rod and retainer. Connect the throttle cable and install the rod. Install the throttle valve rod spring.

Connect the carburetor wire connectors.

Connect the oxygen sensor wire connector.

Install the vacuum hose and check valve on the brake booster.

Connect the coolant temperature sender wire connector.

Connect the idle speed control solenoid wire connector.

Connect the carburetor bowl vent hose to the canister tee.

Connect the fuel return hose to the fuel filter.

Install the transmission filler tube bracket screw (automatic transmission only).

Install the vacuum switch assembly bracket.

Remove the plug and connect the fuel pipe to the fuel pump.

Connect the alternator wire connectors.

Install the engine ground strap.

Connect the oil pressure sender wire connector.

Connect the ignition system wire connectors.

If equipped with air conditioning:

- connect the compressor clutch wire
- connect the service valve to the port with replacement seals
- lubricate and tighten the nut with 38 N·m (28 ft-lbs) torque
- purge the compressor of air
- back-seat the service valves and install the covers

NOTE: Refer to Chapter L – Heating and Air Conditioning for additional information pertaining to the A/C system.

Fill the cooling system with coolant.

NOTE: Remove the coolant temperature sending unit to permit air to escape from the cylinder block. Install the coolant temperature sending unit when the system is filled.

Fill the power steering pump reservoir with fluid.

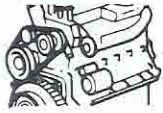
Install the battery and connect the battery cables.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

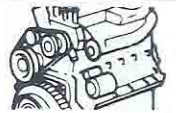
Start the engine and inspect for leaks.

Check the automatic transmission fluid level.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Stop the engine and check the coolant and engine oil levels. Fill to the specified level if necessary.

Install the air cleaner and connect the vacuum hose.

Connect the purge hose to the canister.

Install and adjust the hood. Connect the under-hood lamp, if equipped.

CYLINDER HEAD COVER

Removal

Disconnect the battery negative cable.

Remove the air cleaner and the PCV molded hose.

Disconnect the distributor vacuum advance hose at the distributor.

Disconnect the fuel pipe at the fuel pump. Rotate the pipe as necessary to provide clearance for the cylinder head cover removal/installation.

Remove the PCV valve from the cylinder head cover grommet and disconnect the PCV shut-off valve vacuum hose.

Remove the vacuum switch and bracket assembly from the cylinder head cover.

Remove the diverter valve and bracket assembly.

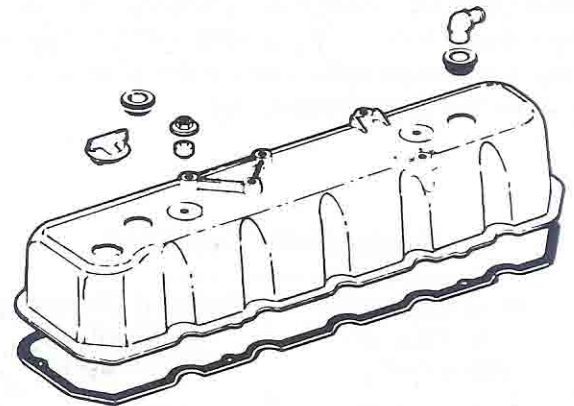
Remove all the necessary vacuum and air hoses to provide clearance for the cylinder head cover removal/installation.

NOTE: Identify and tag the hoses for installation reference.

Remove the cylinder head cover retaining nuts.

Detach the cover from the cylinder head by breaking the silicone rubber seal with a putty knife or razor blade. Do not attempt to pry the cover up until the seal has been completely broken.

Rotate the cylinder head cover toward the passenger side and remove the cover.



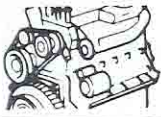
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Installation

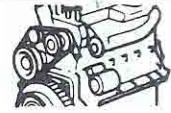
Remove the original sealer from the cover flange sealing surface and inspect the cover. Replace the cover if it is cracked or damaged in any way.

If a replacement cover is installed, transfer the PCV valve grommet and oil filler cap from the original cover to the replacement cover.

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Remove any original sealer from the cover sealing surface of the cylinder head and clean the surface using AMC Fabric Cleaner, or equivalent.

Remove all residue from the sealing surface using a clean, dry cloth.

Apply General Electric SS 4004 primer, or equivalent, to the cover sealing surface on the cylinder head. Allow 10 - 15 minutes for the primer to set-up.

CAUTION: The following step involves the application of AMC Gasket-In-A-Tube silicone sealer. For an effective seal, it is required that the sealer be no more than 12 months old at the time of use. Before using the sealer, check the date code stamped on the crimped seam at the tube bottom or on the sealer carton. The two character letter code can be deciphered using the Sealer Date Code Chart.

Sealer Date Code Chart

First Character Is Year of Manufacture	Second Character Is Month of Manufacture
K - 1980	A - January
A - 1981	B - February
B - 1982	C - March
C - 1983	D - April
D - 1984	E - May
E - 1985	F - June
F - 1986	G - July
G - 1987	H - August
H - 1988	J - September
J - 1989	K - October
K - 1990	M - November
	N - December

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Apply a 3-mm (1/8-in) diameter bead of AMC Gasket-In-A-Tube, or equivalent, silicone sealer to the sealing surfaces on the cylinder head and

cylinder head cover. Allow approximately five minutes for the sealer to set-up.

CAUTION: Avoid any time delay between the sealer set-up and cover installation. The sealer can become tack-free in 10 - 15 minutes, which will reduce its adhesive qualities.

Install replacement seals on the cylinder head cover attaching studs. Ensure that the studs are clean before installing the seals.

Install the cylinder head cover on the cylinder head as soon as the primer and sealer have set-up. Do not allow the sealer to contact the valve actuating or other components. Avoid smearing the sealer.

Install and tighten the cylinder head cover nuts with 3 N·m (28 in-lbs) torque.

NOTE: If the cover nuts are not the locking-type, replace them with lock-nuts.

Install the diverter valve and bracket assembly on the cover.

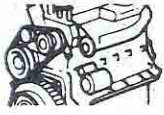
Connect the fuel pipe and the distributor vacuum advance hose.

Reposition and/or connect all the air and vacuum hoses that were moved for cover removal clearance.

Connect the PCV valve and the PCV shutoff valve hose.

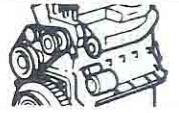
Install the air cleaner and hoses.

Connect the battery negative cable.



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Check the engine oil and add if necessary.

NOTE: It is recommended that the sealer be allowed to cure for approximately one to two hours before starting the engine.

VALVES AND ACTUATING COMPONENTS

Rocker Arm Assembly

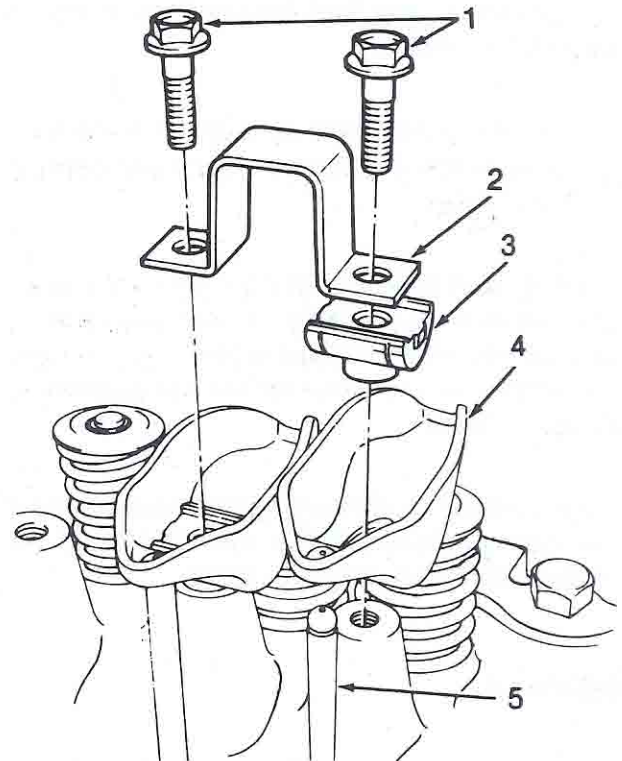
Removal

Remove the cylinder head cover. Refer to Cylinder Head Cover Removal for the procedure.

Remove the two capscrews (1) at each bridge (2) and pivot (3) assembly. Alternately loosen the capscrews, one turn at a time, to avoid damaging the bridges.

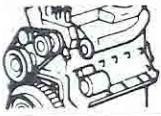
Remove the bridges, pivots and corresponding pairs of rocker arms (4) and place them on a bench in the same order as removed.

Remove the push rods (5) and place them on a bench in the same order as removed.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Cleaning and Inspection

Clean all the components with cleaning solvent and use compressed air to blow out the oil passages in the rocker arms and push rods.

Inspect the pivot surface area of each rocker arm. Replace any that are scuffed, pitted or excessively worn.

Inspect the valve stem tip contact surface of each rocker arm and replace any rocker arm that is deeply pitted.

Inspect each push rod end for excessive wear and replace as required. If any push rod is excessively worn because of lack of oil, replace the push rod and inspect the corresponding hydraulic tappet.

A wear pattern along the length of the push rod is not normal. Inspect the cylinder head for obstruction if this condition exists.

Installation

Install the push rods in their original locations. Ensure that the bottom end of each push rod is centered in the tappet plunger cap seat.

Install the rocker arms, pivots and bridge above each cylinder from where they were originally removed.

Loosely install the capscrews through each bridge.

At each bridge, tighten the capscrews alternately, one turn at a time, to avoid damaging the bridge. Tighten with 26 N·m (19 ft-lbs) torque.

Install the cylinder head cover. Refer to Cylinder Head Cover Installation for the procedure.

Hydraulic Valve Tappets

Removal

Remove the cylinder head cover. Refer to Cylinder Head Cover Removal for the procedure.

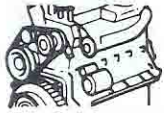
Remove the bridge and pivot assemblies and rocker arms by removing the two capscrews at each bridge. Alternately loosen each capscrew, one turn at a time, to avoid damaging the bridges.

Remove the push rods.

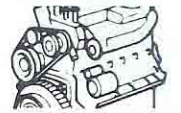
NOTE: Retain all the components in the same order as removed to facilitate installation at the original positions.

Remove the intake and exhaust manifolds, cylinder head and gasket. Refer to Cylinder Head Removal for the procedure.

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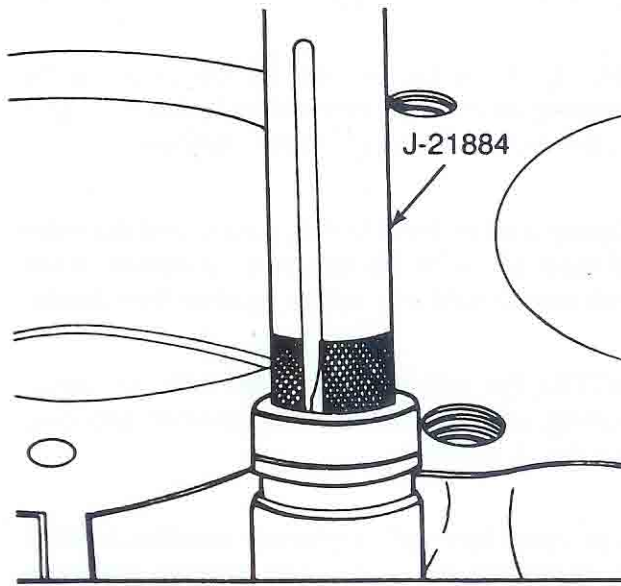


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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Remove the tappets through the push rod openings in the cylinder block with Hydraulic Valve Tappet Removal and Installation Tool J-21884.



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Retain the tappets in the same order as removed to facilitate installation at the original positions.

Installation

NOTE: It is not necessary to charge the tappets with engine oil. They will charge themselves within a very short period of engine operation.

Dip each tappet in AMC Engine Oil Supplement (EOS), or equivalent.

Use Hydraulic Valve Tappet Removal and Installation Tool J-21884 to install each tappet in the same bore from where it was originally removed.

Install the exhaust and intake manifolds, cylinder head and gasket. Refer to Cylinder Head Installation for the procedure.

Install each push rod in the same location from where removed.

Install the rocker arms and bridge and pivot assemblies at their original locations.

Loosely install the capscrews through each bridge. Tighten the capscrews alternately, one turn at a time, to avoid damaging the bridges.

Pour the remaining EOS over the entire valve actuating assembly.

NOTE: The EOS must remain with the engine oil for at least 1 609 km (1,000 mi) but need not be drained until the next scheduled oil change.

Install the cylinder head cover. Refer to Cylinder Head Cover Installation for the procedure.

Valves

NOTE: The following procedure is for the removal of the valve springs and oil deflectors with the cylinder head installed on the cylinder block. For the valve removal procedure with the cylinder head removed, refer to the MOT. 4.2L manual.

Valve Spring and Oil Deflector Removal

The valve spring is held in place around the valve stem by a retainer and a set of conical valve locks. The locks can be removed only by compressing the valve spring.

Remove the cylinder head cover and gasket. Refer to Cylinder Head Cover Removal for the procedure.

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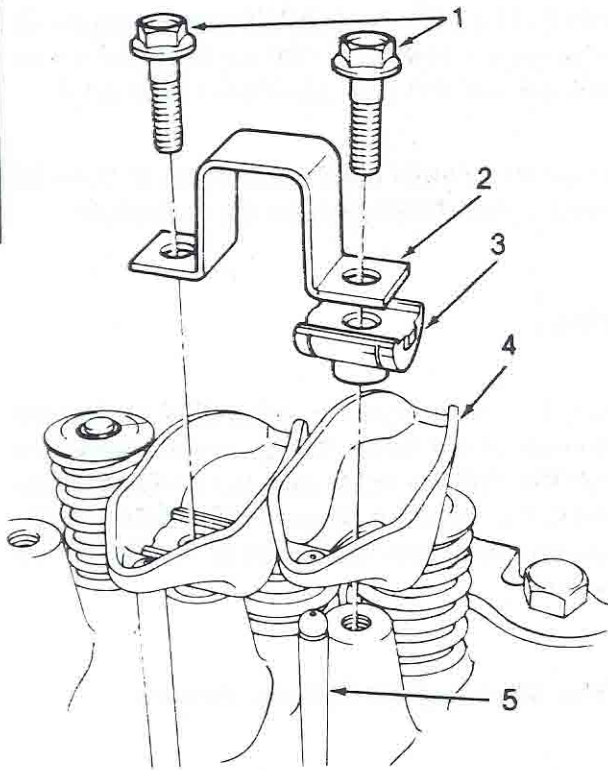
4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Remove the capscrews (1), bridge (2) and pivot assembly (3), and rocker arms (4). Alternately loosen each capscrew, one turn at a time, to avoid damaging the bridge.

Remove the push rods (5).

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NOTE: Retain the push rods, bridges, pivots and rocker arms in the same order and position as removed to facilitate installation at their original locations.

Remove the spark plug adjacent to the cylinder below the valve springs to be removed.

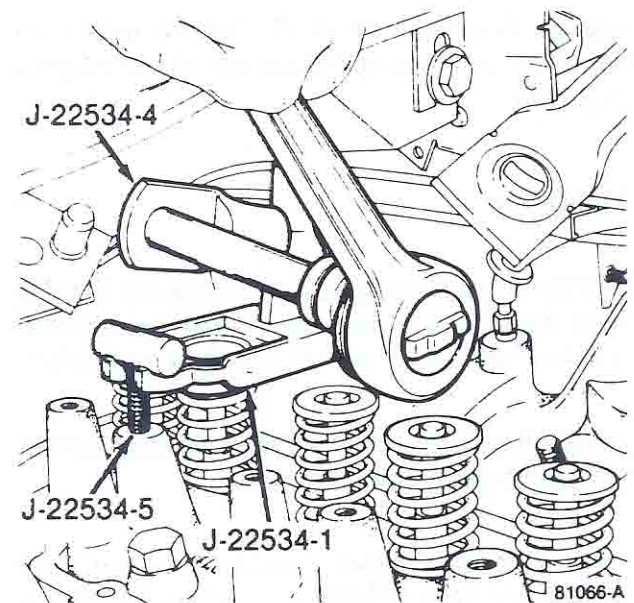
Install a 14-mm (thread size) air adapter (J-22794 or equivalent) in the spark plug hole.

NOTE: An adapter can be constructed by welding an air hose connection to the body of a spark plug with the porcelain removed.

Connect an air hose to the adapter and maintain at least 621 kPa (90 psi) of air pressure in the cylinder to hold the valves against their seats.

NOTE: For vehicles equipped with air conditioning, use a flexible air adapter when servicing the No. 1 cylinder.

Use Valve Spring Compressor Tool Set J-22534 to compress the spring and remove the locks (1).





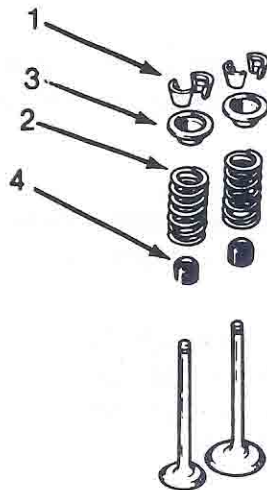
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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Remove the valve spring (2) and retainer (3).

Remove the valve stem oil deflector (4).



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Valve Spring and Oil Deflector Installation

CAUTION: Install the deflector carefully to prevent damage from the sharp edges of the valve spring lock grooves.

Use an 11-mm (7/16-in) deep socket wrench and small hammer to gently tap the oil deflector (4) onto the valve stem.

Install the valve spring (2) and retainer (3).

Compress the valve spring with Valve Spring Compressor Tool Set J-22534 and insert the valve locks (1). Release the spring tension and remove the tool.

NOTE: Tap the spring from side-to-side to ensure that the spring is seated properly on the cylinder head.

Disconnect the air hose. Remove the adapter from the spark plug hole and install the spark plug.

Install the push rods. Ensure the bottom end of each push rod is centered in the plunger cap seat of the hydraulic valve tappet.

Install the rocker arms, pivots and bridge at their original location.

Tighten the bridge capscrews alternately, one turn at a time, to avoid damaging the bridge.

Install the cylinder head cover. Refer to Cylinder Head Cover Installation for the procedure.

Measuring the Cam Lobe Lift

Remove the cylinder head cover. Refer to Cylinder Head Cover Removal for the procedure.

Remove the capscrews, bridge and pivot assemblies, and rocker arms.

Alternately loosen each capscrew, one turn at a time, to avoid damaging the bridges.

Remove the spark plugs.

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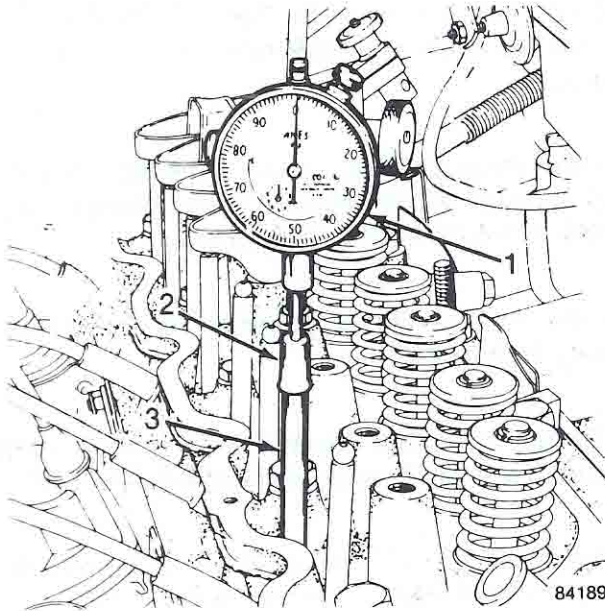
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Install a dial indicator (1) with a piece of rubber tubing (2) between the dial indicator plunger and the push rod (3).

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Rotate the crankshaft until the heel of the cam lobe (push rod in the down position) is under the valve tappet. Set the dial indicator pointer at zero.

Rotate the crankshaft until the push rod is at its maximum upward position. Note the travel distance on the dial indicator. Refer to the Specifications chart for the correct cam lobe lift.

Repeat the procedure for each cam lobe.

Valve Timing

Disconnect the spark plug wires and remove the spark plugs.

Remove the cylinder head cover. Refer to Cylinder Head Cover Removal for the procedure.

Remove the capscrews, bridge and pivot assembly, and rocker arms from above the No. 1 cylinder.

Alternately loosen each capscrew, one turn at a time, to avoid damaging the bridge.

Rotate the crankshaft until the No. 6 piston is at top dead center (TDC) on the compression stroke.

Rotate the crankshaft counterclockwise (viewed from the front of the engine) 90 degrees.

Install a dial indicator (J-8520 or equivalent) on the end of the No. 1 cylinder intake valve push rod. Use rubber tubing to secure the indicator stem on the push rod.

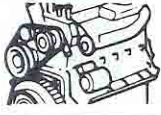
Set the dial indicator pointer at zero.

Rotate the crankshaft clockwise (viewed from the front of the engine) until the dial indicator pointer indicates 0.305-mm (0.012-in) travel distance (lift).

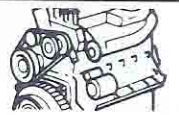
The timing notch index on the vibration damper should be aligned with the TDC mark on the timing degree scale.

If the timing notch is more than 13 mm (1/2 in) away from the TDC mark in either direction, the valve timing is incorrect.

If the valve timing is incorrect, the cause may be a broken camshaft pin. It is not necessary to replace the camshaft because of pin failure. A spring pin is available for service replacement.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

CRANKSHAFT VIBRATION DAMPER AND PULLEY

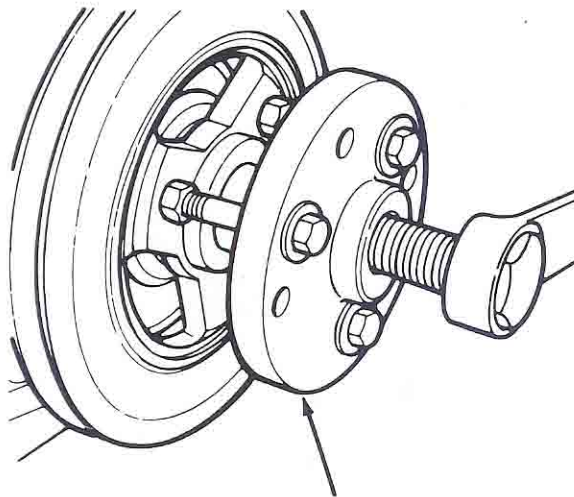
Removal

Remove the drive belt(s).

Remove the retaining bolts and separate the vibration damper pulley (V-belt only) from the vibration damper.

Remove the vibration damper retaining bolt and washer.

Use the Vibration Damper Removal Tool J-21791-01 to remove the damper from the crankshaft.



J-21791-01

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Installation

With the key in position, align the key slot of the vibration damper hub with the crankshaft key and tap the damper onto the crankshaft.

Install the vibration damper retaining bolt and washer. Tighten the bolt with 108 N·m (80 ft-lbs) torque.

NOTE: If the crankshaft turns before the damper bolt torque value is attained, the crankshaft can be prevented from turning by placing two $5/16 \times 1\frac{1}{2}$ inch bolts into the damper front pulley holes and wedging a bar between them. Rotate the bar until it contacts the frame member to prevent the crankshaft from turning.

Install the damper pulley (V-belt only) and retaining bolts. Tighten the bolts with 27 N·m (20 ft-lbs) torque.

Install the drive belt(s) and tighten to the specified tension. Refer to the Cooling Systems section.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

TIMING CASE COVER

Removal

Remove the drive belt(s), engine fan and hub assembly, fan shroud, vibration damper (1), pulley and key. Refer to Vibration Damper Removal.

Remove the A/C compressor and alternator bracket assembly, if equipped. Refer to Chapter L – Heating and Air Conditioning for additional information pertaining to the A/C system.

Remove the oil pan-to-timing case cover screws and cover-to-cylinder block bolts.

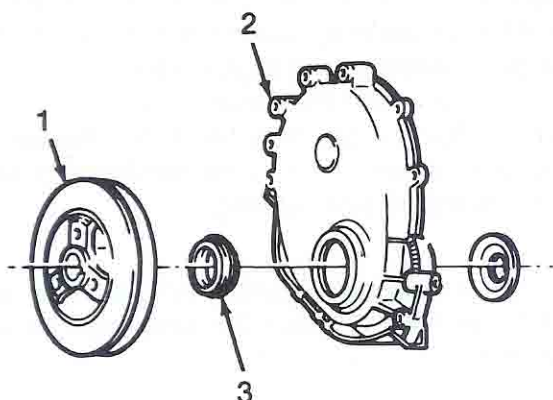
Remove the timing case cover (2), front seal and gasket from the engine.

Cut off the oil pan side gasket end tabs flush with the front face of the cylinder block and remove the gasket tabs.

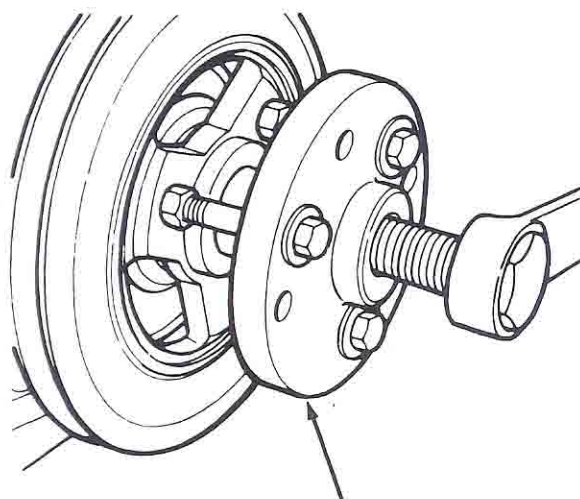
Clean the timing case cover, oil pan and cylinder block gasket surfaces.

Remove the crankshaft oil seal (3) from the timing case cover.

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ENGINES

4.2 LITER (258 CID) SIX-CYLINDER ENGINE

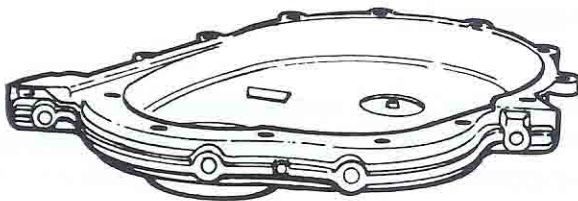


Installation

Apply sealing compound (Perfect Seal, or equivalent) to both sides of the replacement timing case cover gasket and position the gasket on the cylinder block.

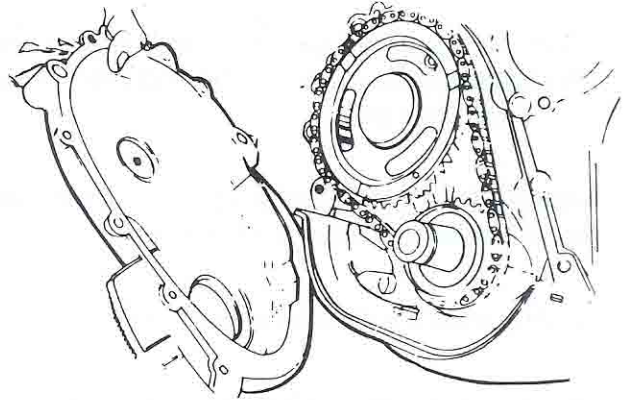
Cut the end tabs off of replacement oil pan side gaskets corresponding to those cut off the original gasket. Cement the end tabs on the oil pan.

Coat the front cover end tab recesses generously with RTV sealant (AMC Gasket-In-A-Tube, or equivalent) and position the seal on the timing case cover. Apply engine oil to the seal-oil pan contact surface.



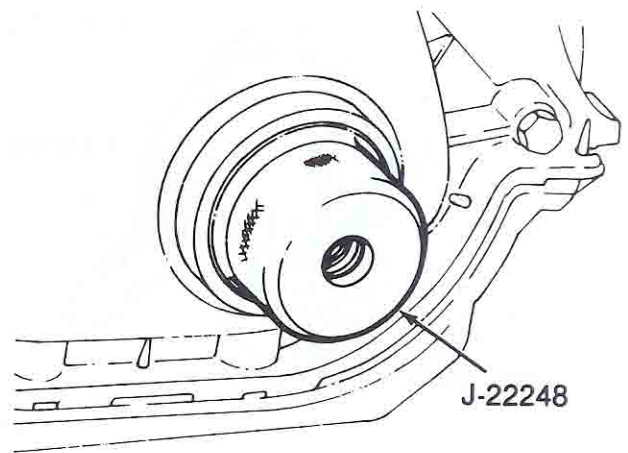
41894

Position the timing case cover on the cylinder block.



84874

Place Timing Case Cover Alignment and Seal Installation Tool J-22248 in the crankshaft opening of the cover.



J-22248

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

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Install the cover-to-cylinder block bolts and the oil pan-to-cover screws.

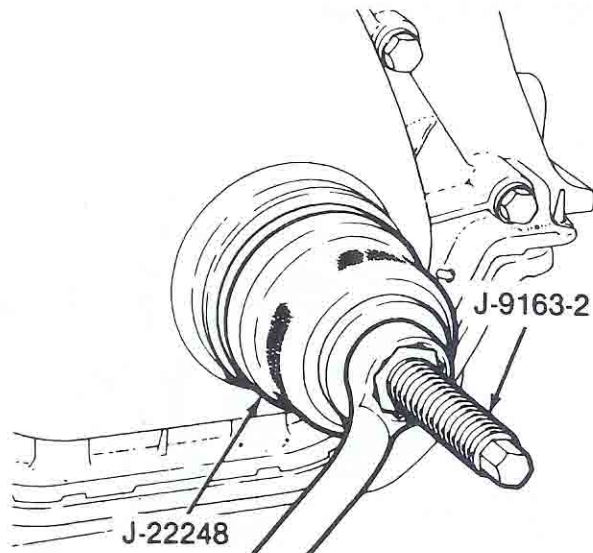
Tighten the cover-to-cylinder block bolts with 7 N·m (5 ft-lbs) torque and the oil pan-to-cover screws with 13 N·m (11 ft-lbs) torque.

Remove the cover alignment tool and position the replacement oil seal on the tool with the seal lip facing outward.

Apply a light film of Perfect Seal, or equivalent, on the outside diameter of the seal.

Lightly coat the crankshaft with engine oil.

Position the tool and seal over the end of the crankshaft and insert Screw Tool J-9163-2 into Seal Installation Tool J-22248. Tighten the nut against the tool until the tool contacts the cover.



84183

Remove the tools and apply a light film of engine oil on the vibration damper hub contact surface of the seal.

With the key inserted in the keyway in the crankshaft, install the vibration damper, washer and bolt. Lubricate and tighten the bolt with 108 N·m (80 ft-lbs) torque.

Install the A/C compressor and alternator bracket assembly.

Install the damper pulley, if removed. Tighten the bolts with 27 N·m (20 ft-lbs) torque.

Install the engine fan and hub assembly. Install the fan shroud.

Install the drive belt(s) and tighten to the specified tension. Refer to the Cooling Systems section.

TIMING CHAIN

Installation of the timing chain with the timing marks on the crankshaft and camshaft sprockets properly aligned ensures correct valve timing.

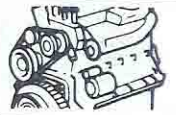
A worn or stretched timing chain will adversely affect valve timing. If the timing chain deflects more than 12.7 mm (1/2 in) replace it.

The correct timing chain has 48 pins. A chain with more than 48 pins will cause excessive slack.



ENGINES

4.2 LITER (258 CID) SIX-CYLINDER ENGINE



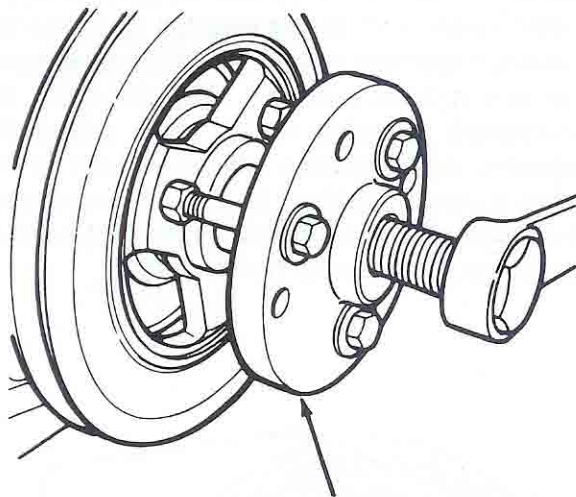
Removal

Remove the drive belt(s).

Remove the engine fan and hub (or Tempatrol fan) assembly.

Remove the vibration damper pulley (V-belt drive only).

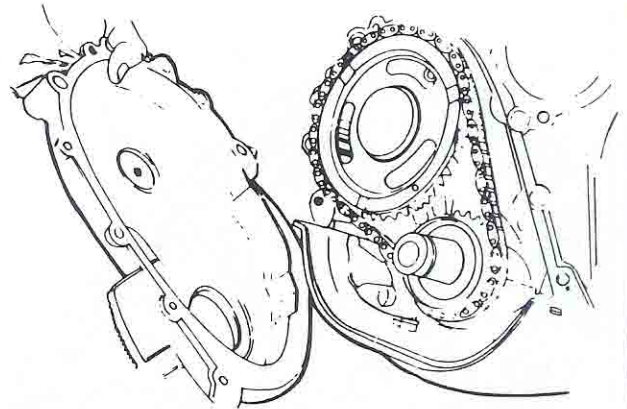
Remove the vibration damper. Refer to the removal procedure.



J-21791-01

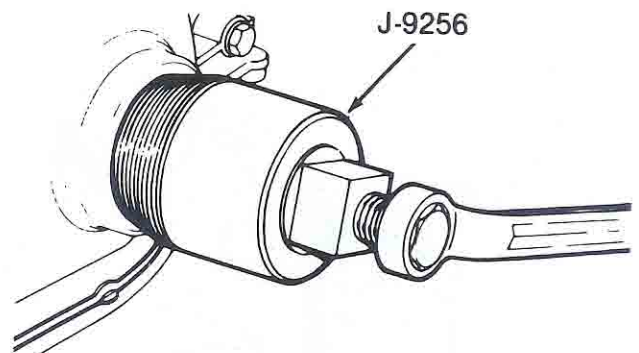
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Remove the timing case cover. Refer to the removal procedure.



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Remove the oil seal from the timing case cover with Tool J-9256.

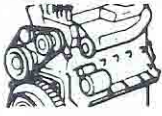


J-9256

84188

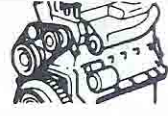
Remove the camshaft sprocket retaining bolt and washer.

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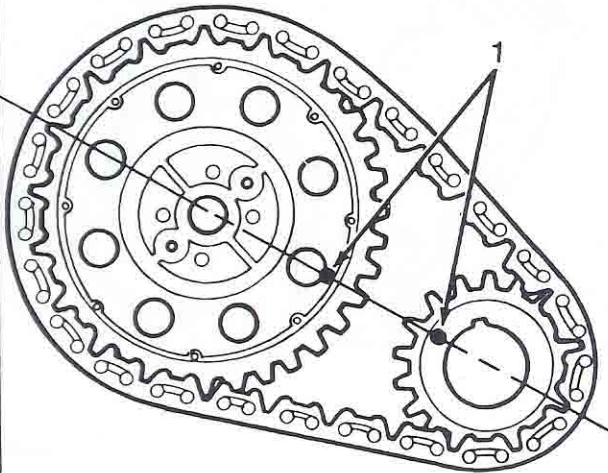
ENGINES

4.2 LITER (258 CID) SIX-CYLINDER ENGINE



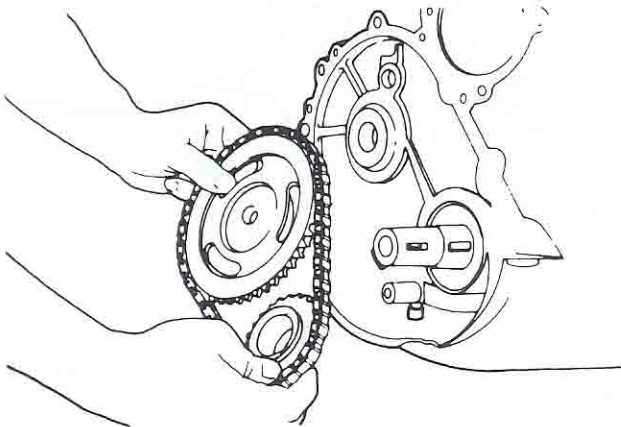
Rotate the crankshaft until the zero timing mark on the crankshaft sprocket (1) is closest to and on the centerline with the timing mark on the camshaft sprocket (1).

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86210

Remove the crankshaft sprocket, camshaft sprocket and timing chain as an assembly. Disassemble the chain and sprockets.



86177

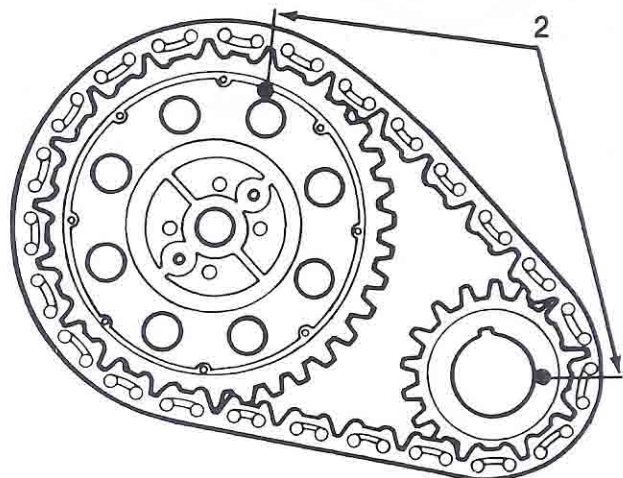
Installation

Assemble the timing chain, crankshaft sprocket and camshaft sprocket with the timing marks (1) aligned as illustrated.

With the key in the keyway on the crankshaft, install the assembly on the crankshaft and camshaft.

Install the camshaft sprocket retaining bolt and washer and tighten with 68 N·m (50 ft-lbs) torque.

NOTE: To verify the correct installation of the timing chain, turn the crankshaft to locate the camshaft sprocket timing mark at approximately the one o'clock position. This positions the crankshaft sprocket timing mark where the adjacent tooth meshes with the chain at the three o'clock position. Count the number of chain pins between the timing marks (2) on both sprockets. There must be 15 pins.



86211

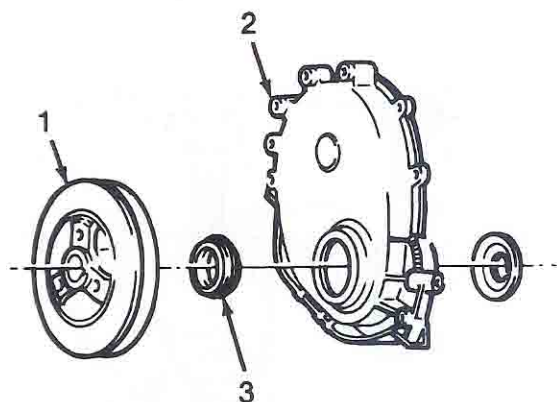


ENGINES

4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Install the crankshaft oil slinger.



84180

Install the timing case cover (2) and replacement oil seal (3). Refer to Timing Case Cover Installation.

With the key in the keyway on the crankshaft, install the vibration damper (1), washer and bolt. Lubricate and tighten the bolt with 108 N·m (80 ft-lbs) torque.

Install the damper pulley and bolts (if removed). Tighten the bolts with 27 N·m (20 ft-lbs) torque.

Install the engine fan and hub (or Tempatrol fan) assembly.

Install the drive belt(s) and tighten to the specified tension. Refer to the Cooling Systems section.

CAMSHAFT

Removal

WARNING: The coolant in a recently operated engine is hot and pressurized. Release the pressure before removing the draincock, cap and drain plugs.

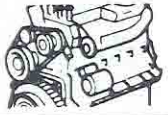
NOTE: Do not waste reusable coolant. If the solution is clean, drain it into a clean container for reuse.

Drain the cooling system.

Remove the radiator.

Remove the air conditioner condenser and receiver/drier assembly as a charged unit, if equipped. Refer to Chapter L – Heating and Air Conditioning for additional information pertaining to the A/C system.

Remove the distributor and ignition wires.



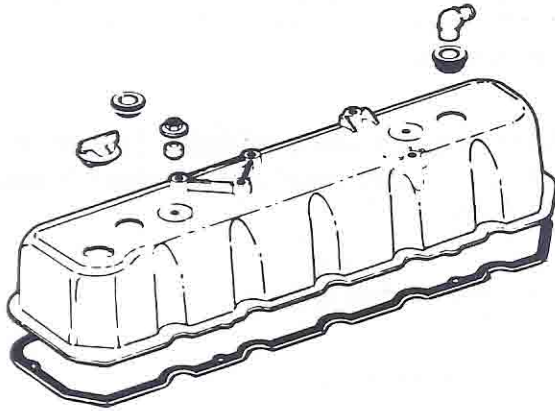
ENGINES

4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Remove the cylinder head cover. Refer to Cylinder Head Cover Removal for the procedure.

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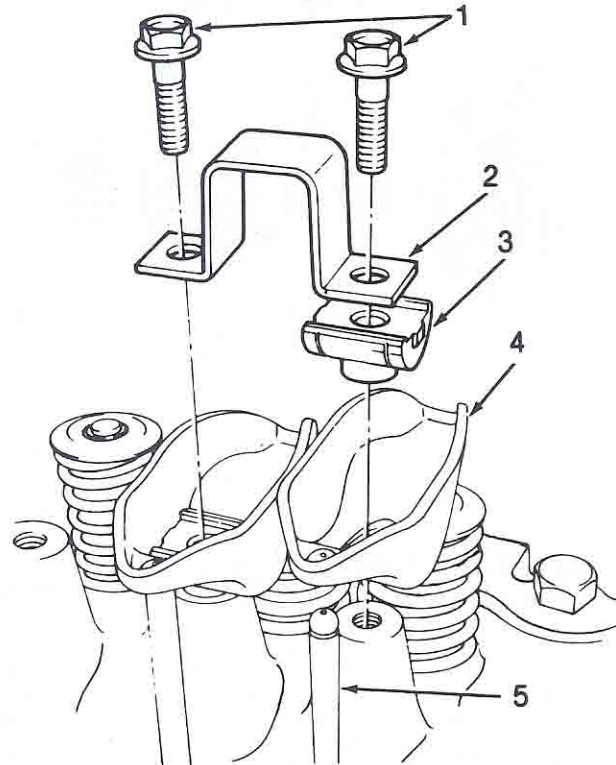


86319

Remove the capscrews (1), bridge (2) and pivot (3) assemblies, and rocker arms (4).

Alternately loosen each capscrew, one turn at a time, to avoid damaging the bridges.

Remove the push rods (5).



86162

NOTE: Position all components on a work bench in the same order as removed to facilitate installation at the original locations.

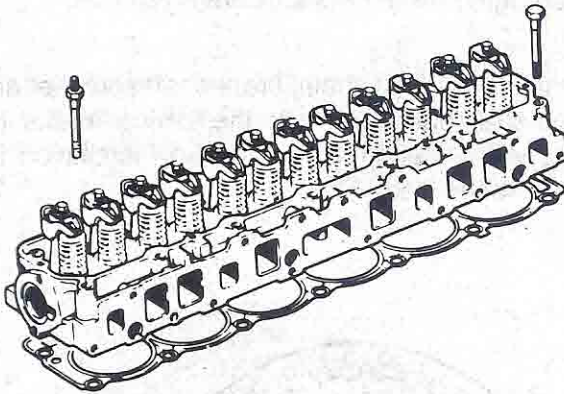


ENGINES



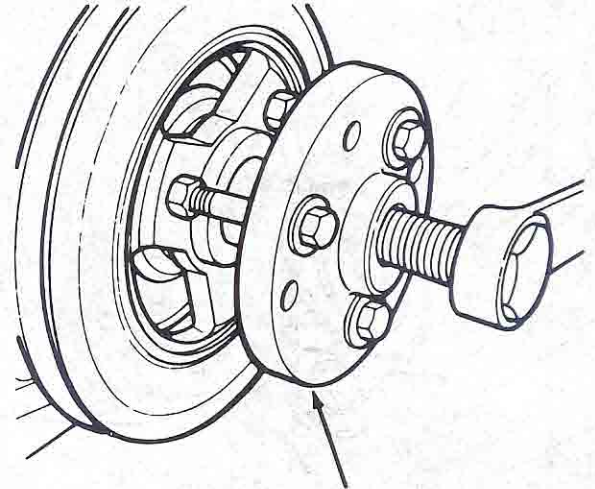
4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Remove the cylinder head and gasket. Refer to Cylinder Head Removal for the procedure.



86320

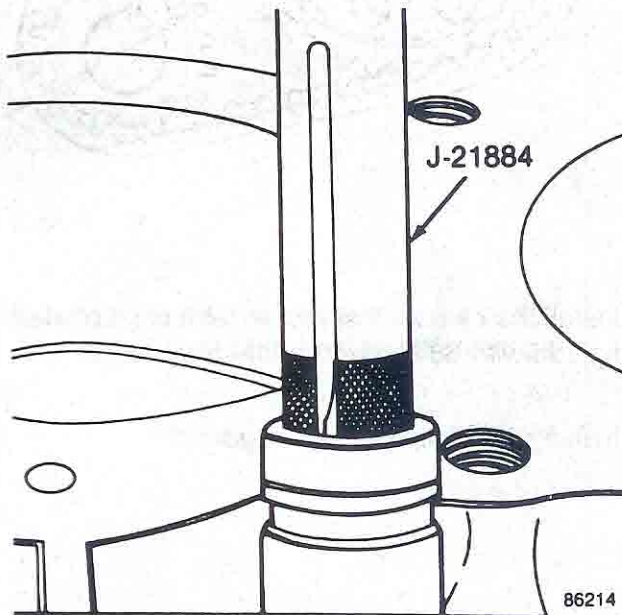
Remove the vibration damper. Refer to the removal procedure.



J-21791-01

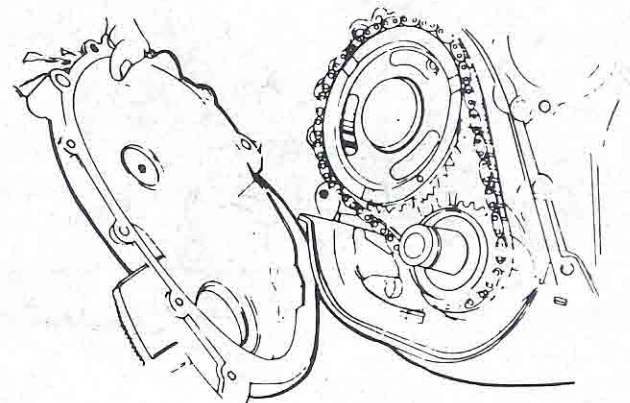
84179

Remove the hydraulic valve tappets.



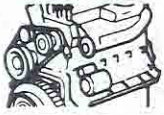
86214

Remove the timing case cover. Refer to Timing Case Cover Removal.



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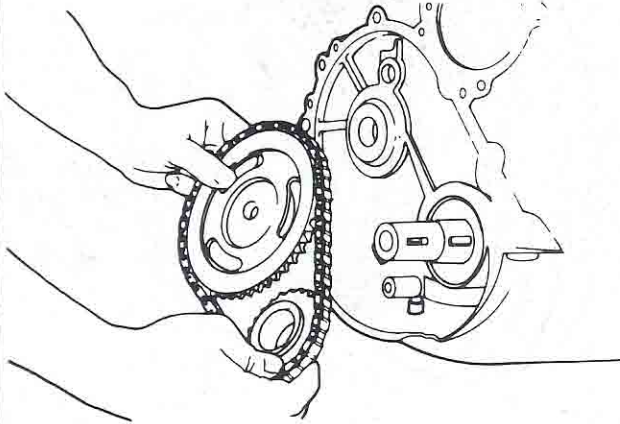
ENGINES



4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Remove the timing chain and sprockets. Refer to Timing Chain Removal.

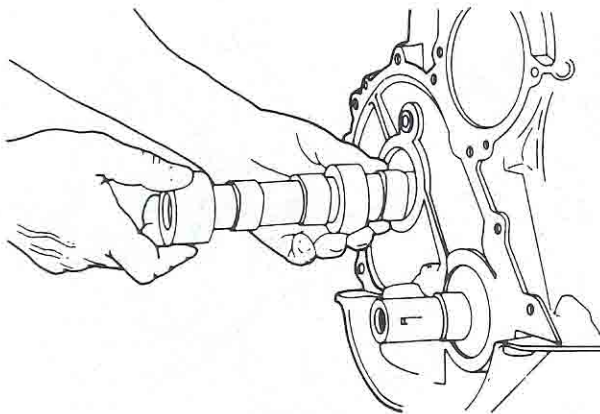
SEE
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86177

Remove the front bumper and/or grille as required.

Remove the camshaft.



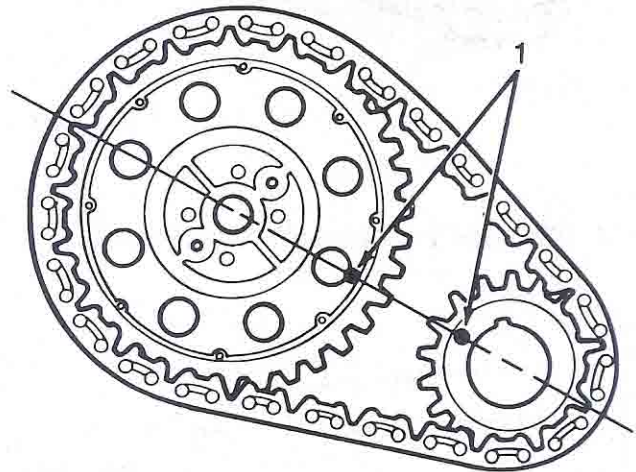
83109

Installation

Lubricate the camshaft with AMC Engine Oil Supplement (EOS), or equivalent.

Install the camshaft carefully to prevent damaging the camshaft bearings.

Install the timing chain, crankshaft sprocket and camshaft sprocket with the timing marks (1) aligned. Refer to Timing Chain Installation for the procedure.



86210

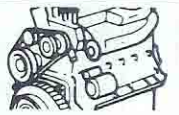
Install the camshaft sprocket retaining bolt and tighten with 68 N·m (50 ft-lbs) torque.

Install the crankshaft oil slinger.



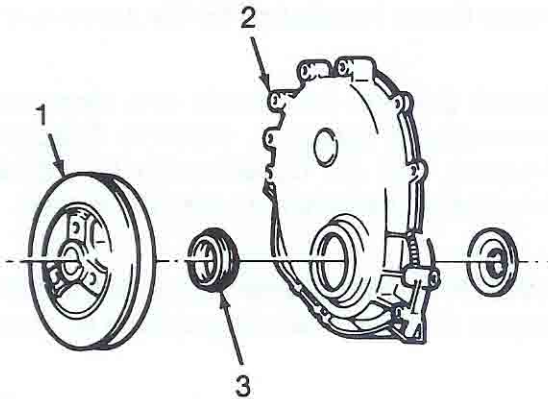
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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Install the timing case cover (2) with a replacement oil seal (3). Refer to Timing Case Cover Installation for the procedure.

Install the vibration damper (1).



84180

Install the damper pulley, if removed.

Install the fan assembly and shroud.

Install the drive belt(s) and tighten to the specified tension. Refer to the Cooling Systems section.

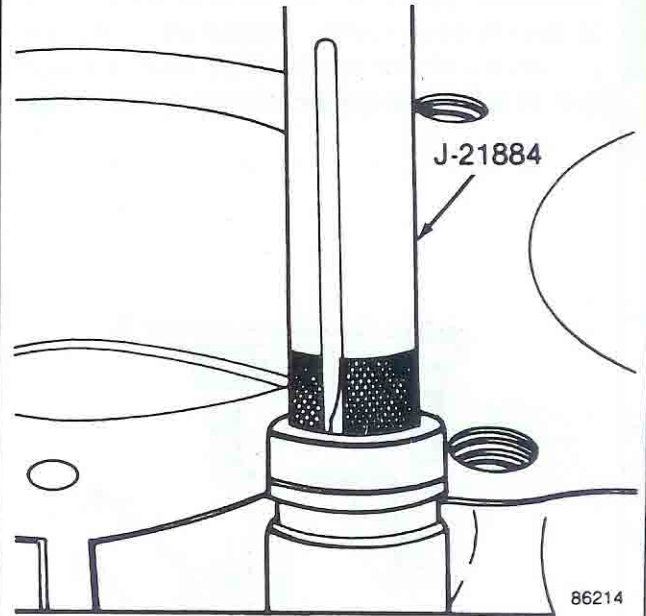
Install the fuel pump.

Rotate the crankshaft until the No. 1 piston is at the TDC position on the compression stroke.

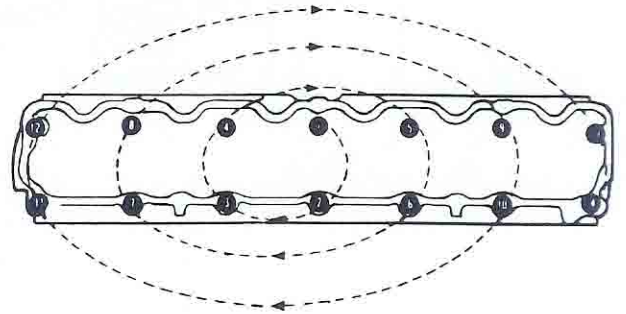
Install the distributor, cap and ignition wires.

NOTE: Install the distributor so that the rotor is aligned with the No. 1 cylinder spark plug terminal on the cap when the distributor housing is fully seated on the cylinder block.

Install the hydraulic valve tappets.



Install the cylinder head. Refer to Cylinder Head Installation for the procedure.

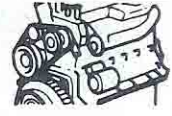


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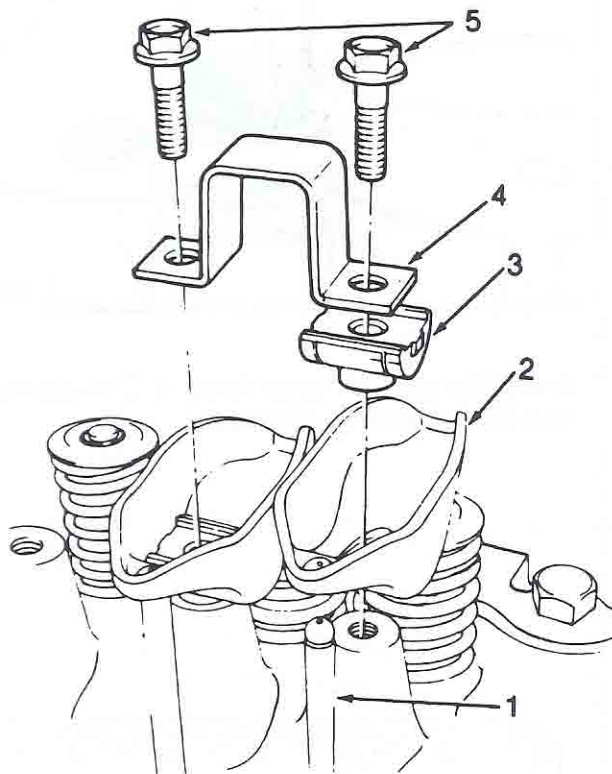


4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Install the push rods (1).

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Install the rocker arms (2) and pivot (3) and bridge (4) assemblies. Tighten each of the two capscrews (5) for each bridge alternately, one turn at a time, to avoid damaging the bridge.



86216

NOTE: Lubricate the hydraulic valve tappets and all valve actuating components with AMC Engine Oil Supplement (EOS), or equivalent, during installation. The EOS must remain with the engine oil for at least 1 609 km (1,000 mi) but need not be drained until the next scheduled oil change.

Install the cylinder head cover. Refer to Cylinder Head Cover Installation for the procedure.

Install the A/C condenser and receiver/drier assembly, if equipped. Refer to Chapter L – Heating and Air Conditioning for additional information pertaining to the A/C system.

CAUTION: Both service valves must be opened before the air conditioning system is operated.

Install the radiator, connect the hoses and fill the cooling system to the specified level. Refer to the Cooling Systems section.

Check the ignition timing and adjust as necessary.

Install the grill and bumper, if removed.

Camshaft Pin Replacement

Disconnect the battery negative cable.

WARNING: Do not loosen the radiator draincock with the system hot and pressurized because serious burns from coolant can occur.

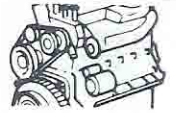
Drain the radiator.

NOTE: Do not waste reusable coolant. Drain the coolant into a clean container.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Remove the fan and shroud.

Disconnect the radiator overflow tube (or coolant recovery bottle tube), radiator hoses and automatic transmission fluid cooler pipes (if equipped).

Remove the radiator.

If equipped with air conditioning:

- remove the A/C compressor drive belt idler pulley
- disconnect and remove the alternator

CAUTION: Do not loosen or disconnect any air conditioner system fittings. Move the condenser and receiver/drier aside as a complete assembly.

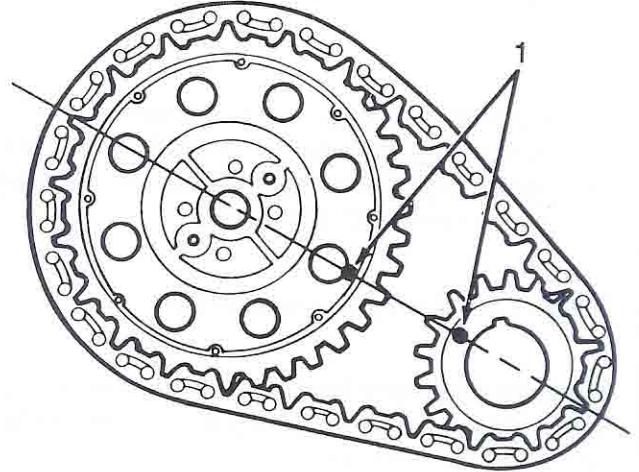
- remove the A/C condenser attaching bolts and move the condenser and receiver/drier assembly up and out of the way

Remove the drive belt(s).

Remove the crankshaft vibration damper and pulley (V-belt drive only). Refer to the removal procedure.

Remove the timing case cover. Refer to the removal procedure.

Rotate the crankshaft until the zero degree (0°) timing mark on the crankshaft sprocket is closest to and on the center line with the timing mark on the camshaft sprocket (1).

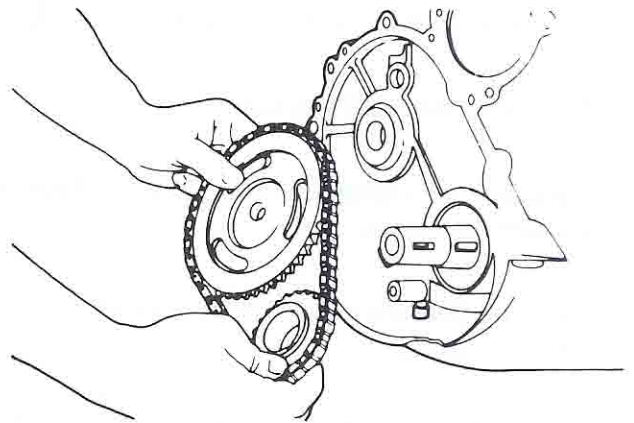


86210

Remove camshaft sprocket retaining bolt.

Remove the crankshaft oil slinger.

Remove the sprockets and chain as an assembly.



86177



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



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CAUTION: The following procedural step must be accomplished to prevent the camshaft from damaging the rear camshaft plug during pin installation.

Remove the fuel pump. Insert a suitable tool into the fuel pump opening and wedge the tool against the side of the opening and the camshaft to prevent camshaft movement.

Inspect the damaged camshaft pin.

If the pin is a spring-type pin, remove the broken pin by inserting a self-tapping screw into the pin and carefully pulling the pin from the camshaft.

If the pin is a dowel-type pin, center-punch it.

CAUTION: Ensure the exact center is located when center-punching the pin.

CAUTION: Cover the opened oil pan area to prevent metal chips from entering the pan.

Drill into the pin center with a 4-mm (5/32-in) drill bit.

Insert a self-tapping screw into the drilled pin and carefully pull the pin from the camshaft.

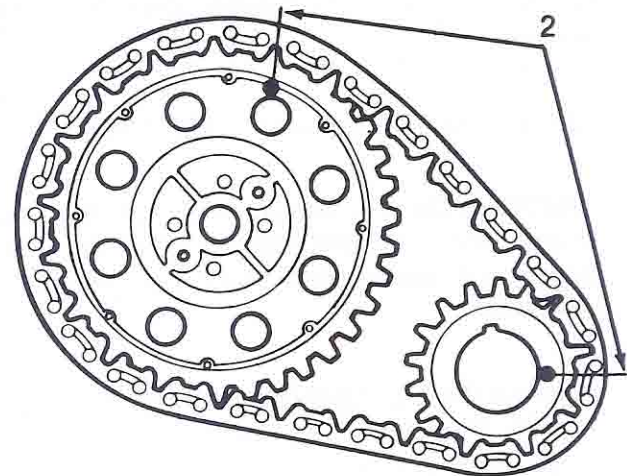
Clean the camshaft pin hole.

Compress the center of the replacement spring pin with vise grips.

Carefully drive the pin into the camshaft pin hole until it is seated.

Install the camshaft sprocket, crankshaft sprocket and timing chain with the timing marks (1) aligned.

NOTE: To verify correct installation of the timing chain, turn the crankshaft to position the camshaft sprocket timing mark at approximately the one o'clock position. This positions the crankshaft sprocket timing mark where the adjacent tooth meshes with the chain at the three o'clock position. Count the number of chain pins between the timing marks (2) on both sprockets. There must be 15 pins.



86211

Install the crankshaft oil slinger.

Tighten the camshaft sprocket bolt with 68 N·m (50 ft-lbs) torque.

Remove the tool wedged in the fuel pump opening. Install the fuel pump. Tighten the pump bolts with 22 N·m (16 ft-lbs) torque and connect the fuel pipes.

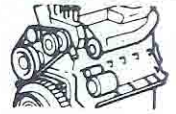
Check the valve timing. Refer to the timing procedure.

Remove the timing case cover gaskets and seal and clean the cover.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



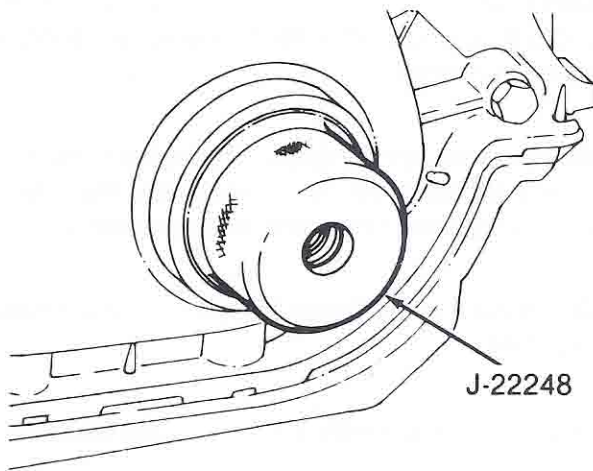
Position replacement oil pan tab gaskets on the oil pan and use RTV sealant to hold them in place.

Coat both sides of the replacement timing case cover gasket with gasket sealer. Apply a 3-mm (1/8-in) bead of RTV sealant to the joint formed at the oil pan and cylinder block.

Loosen the front four oil pan bolts three turns to allow oil pan movement during the timing case cover installation.

Position the timing case cover on the engine.

Place Timing Case Cover Alignment and Seal Installation Tool J-22248 in the crankshaft opening in the cover.



84182

Install and tighten the oil pan and timing case cover screws.

NOTE: Tighten the 1/4-20 oil pan screws with 9 N·m (7 ft-lbs) torque and the 5/16-18 oil pan screws with 15 N·m (11 ft-lbs) torque.

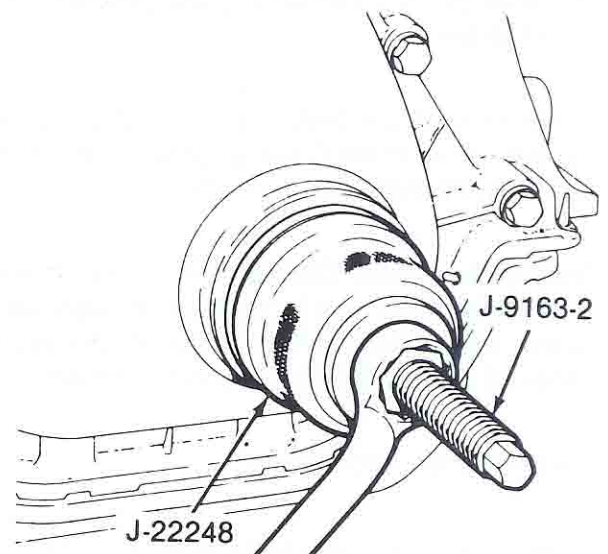
Remove the cover alignment tool and place a replacement oil seal on the tool with the lip facing outward.

Apply a light film of Perfect Seal, or equivalent, on the outside diameter of the seal.

Position the tool and seal in the timing case cover crankshaft opening.

Insert Screw Tool J-9163-2 into Seal Installation Tool J-22248.

Turn the nut until the tool contacts the cover.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Remove the tool and install the vibration damper on the crankshaft.

Lubricate and tighten the damper bolt with 108 N·m (80 ft-lbs) torque.

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NOTE: If the crankshaft turns before the damper bolt torque value is attained, the crankshaft can be prevented from turning by placing two $5/16 \times 1\frac{1}{2}$ inch bolts into the damper front pulley holes and wedging a bar between them. Rotate the bar until it contacts the frame member to prevent the crankshaft from turning.

Install the damper pulley, if applicable.

If equipped with air conditioning:

- install the A/C compressor drive belt idler pulley
- install the alternator
- install the A/C condenser and receiver/drier assembly

Install the drive belt(s) on the pulleys and tighten. Refer to the Cooling Systems section for the specifications and procedures.

Install the radiator. Connect the radiator hoses, coolant overflow tube (or coolant recovery bottle tube) and automatic transmission fluid cooler pipes, if equipped. Fill the cooling system.

Install the fan and shroud.

Tighten the fan assembly nuts with 24 N·m (18 ft-lbs) torque.

Connect the battery negative cable.

INTAKE AND EXHAUST MANIFOLDS

Intake Manifold

Removal

NOTE: It is necessary to remove the carburetor from the intake manifold before the manifold is removed. After removing the carburetor from the intake manifold, it may be set to one side with the vacuum hoses still attached.

WARNING: If the engine has been recently operated, use care to prevent scalding by hot coolant. The system is pressurized.

Remove the radiator cap and draincock to drain the coolant.

NOTE: Do not waste reusable coolant. If the coolant is acceptable for reuse, drain it into a clean container.

Remove the air cleaner. Disconnect the fuel pipe, carburetor air horn vent hose, idle speed control vacuum hose and wire connector.

Disconnect the coolant hoses from the intake manifold.

Disconnect the throttle cable from the bellcrank.

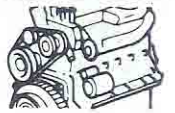
Disconnect the PCV valve vacuum hose from the intake manifold.

Remove the vacuum advance CTO valve vacuum hoses.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Disconnect the CEC system coolant temperature sender wire connector (located on the intake manifold).

Disconnect the vacuum hose from the EGR valve.

Disconnect the intake manifold electric heater (1) wire connector.

Remove the carburetor and set to one side.

Remove the power steering mounting bracket, if equipped.

Detach the power steering pump and set aside, if equipped. Do not remove the hoses.

Remove the A/C compressor drive belt idler pulley assembly from the cylinder head, if equipped.

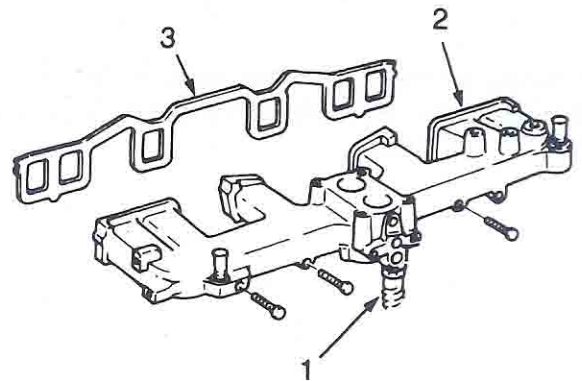
Disconnect the throttle valve linkage, if equipped with an automatic transmission.

Disconnect the EGR valve tube (1) from the intake manifold.

Remove the intake manifold attaching screws, nuts and clamps. Remove the intake manifold (2). Discard the gasket (3).

Clean the mating surfaces on the manifold and cylinder head.

NOTE: If the manifold is being replaced, ensure all the fittings etc., are transferred to the replacement manifold.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

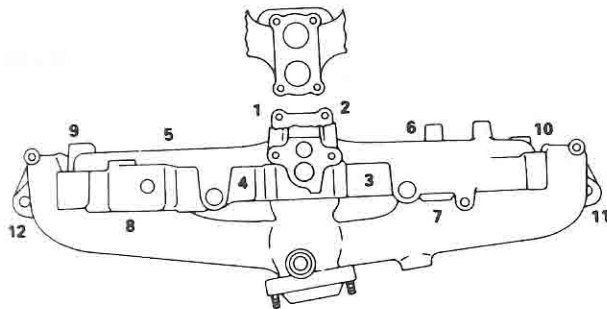
Installation

Position a replacement intake manifold gasket (3) on the cylinder head and install the intake manifold (2).

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Install the remaining attaching hardware.

Tighten all the bolts and nuts according to the sequence illustrated. Tightening torque is 31 N·m (23 ft-lbs).



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Install the vacuum hoses.

Install the carburetor studs, replacement gaskets and spacer.

Install the carburetor and connect the linkage and hoses.

Tighten the carburetor mounting nuts with 19 N·m (14 ft-lbs) torque.

Connect the fuel pipe and air horn vent hose to the carburetor.

Connect the idle speed control vacuum hose and wire connector.

Connect the choke heater wire connector.

Install the A/C compressor drive belt idler pulley assembly, if removed.

Install the power steering pump mounting bracket, if removed.

Install the drive belt(s) and tighten to the specified tension. Refer to the Cooling Systems section.

Install the vacuum advance CTO valve vacuum hoses.

Connect the following wire connectors:

- CEC (feedback) system coolant temperature sender
- electric intake manifold heater

Connect the EGR valve tube (1) to the intake manifold.

Connect the coolant hoses to the intake manifold.

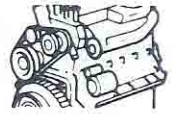
Connect the vacuum hose to the EGR valve.

Connect the throttle cable and the PCV valve hose. Connect the throttle valve rod retainer and spring.



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Install the air cleaner.

Refill the cooling system with coolant.

If replacement coolant is being used, ensure that the mixture of antifreeze and low mineral content water is acceptable for the climate.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Start the engine and inspect for leaks. Repair as necessary.

Exhaust Manifold

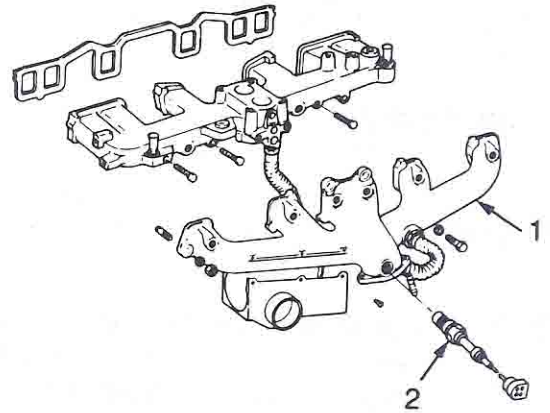
Removal

Remove the intake manifold. Refer to Intake Manifold Removal for the procedure.

Disconnect the exhaust pipe from the exhaust manifold (1).

Disconnect the oxygen sensor wire connector and remove the sensor (2) from the exhaust manifold.

Remove the nuts from the end studs and remove the exhaust manifold.



86318

Clean the mating surfaces of the cylinder head and the manifold if the original manifold is to be installed.

Installation

Position the exhaust manifold over the end studs on the cylinder head.

Install the nuts finger-tight on the end studs.

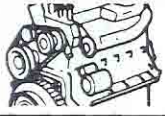
Clean the threads in the bore for the oxygen (O₂) sensor.

Apply antiseize compound to the oxygen (O₂) sensor threads.

Install the oxygen sensor and connect the wire connector. Tighten the sensor with 47 N·m (35 ft-lbs) torque.

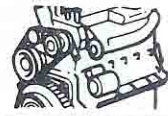
Connect the exhaust pipe to the exhaust manifold. Tighten the nuts with 28 N·m (23 ft-lbs) torque.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Install the intake manifold. Refer to Intake Manifold Installation for the procedure.

Install the EGR valve tube.

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CYLINDER HEAD

Removal

NOTE: Do not waste reusable coolant. If the solution is clean and is being drained only to service the engine or cooling system, drain the coolant into a clean container for reuse.

WARNING: Do not remove the cylinder block drain plugs or loosen the radiator draincock with the system hot and pressurized because serious burns from the coolant can occur.

Drain the coolant and disconnect the hoses at the thermostat housing.

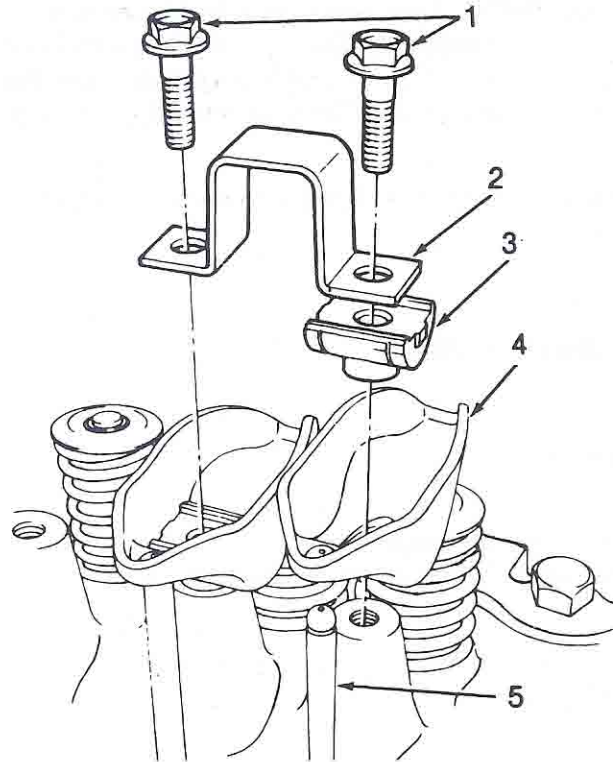
Remove the air cleaner.

Remove the fuel pipe and vacuum advance hose.

Remove the cylinder head cover. Refer to Cylinder Head Cover Removal for the procedure.

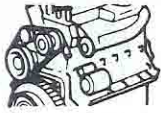
Remove the capscrews (1), bridge (2) and pivot (3) assemblies and rocker arms (4). Alternately loosen each capscrew, one turn at a time, to avoid damaging the bridge.

Remove the push rods (5).



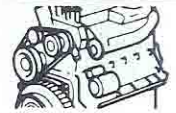
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NOTE: Retain the push rods, bridges, pivots and rocker arms in the same order as removed to facilitate installation in the original locations.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Disconnect the power steering pump bracket. Set the pump and bracket aside. Do not disconnect the hoses.

Remove the intake and exhaust manifolds from the cylinder head. Refer to Intake and Exhaust Manifold Removal for the procedures.

If equipped with air conditioning, perform the following:

- remove the air conditioner compressor drive belt idler pulley bracket from the cylinder head
- loosen the alternator drive belt and remove the alternator bracket-to-cylinder head mounting screw

NOTE: The serpentine drive belt tension is released by loosening the alternator.

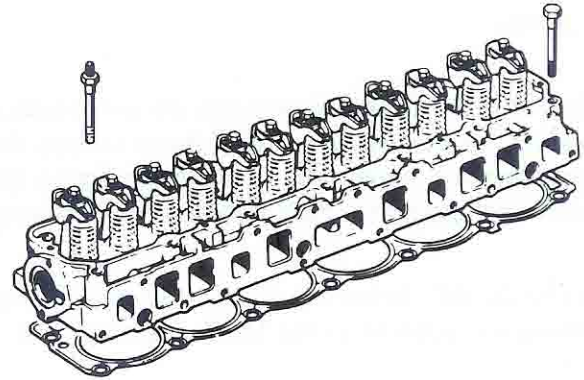
- remove the bolts from the A/C compressor mounting bracket and set the compressor aside

Disconnect the ignition wires and remove the spark plugs.

Disconnect the temperature sending unit wire connector and battery negative cable.

Remove the ignition coil and bracket assembly.

Remove the cylinder head bolts, cylinder head and gasket.



86320

Cleaning and Inspection

Thoroughly clean the machined surfaces on the cylinder head and block. Remove all gasket material and cement.

Remove any carbon deposits from the combustion chambers and the top of the pistons.

Use a straightedge and feeler gauge to check the flatness of the cylinder head and block mating surfaces. Refer to the Specifications chart.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Installation

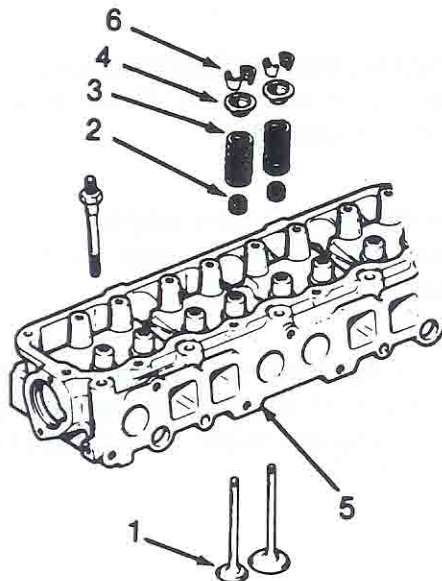
If the cylinder head is to be replaced and the original valves used, measure the valve stem diameter.

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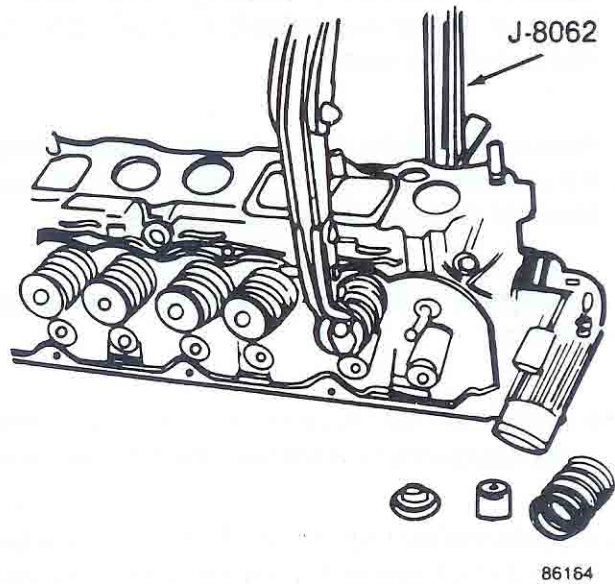
Only standard size valves can be used with a service replacement cylinder head unless the replacement head valve stem guide bores are reamed to accommodate oversize valve stems.

Remove all carbon buildup and reface the valves as outlined in the MOT. 4.2L manual.

Install the valves (1) in the cylinder head (5) with replacement valve stem oil deflectors (2). Install the valve springs (3), retainers (4) and the valve locks (6). Refer to the MOT. 4.2L manual.



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Transfer all attached components from the original cylinder head that are not included with the replacement cylinder head.

Do not install the temperature sending unit until the system is filled with coolant.

This permits trapped air to escape from the cylinder block and head. Refer to the air vent procedure described in the Cooling Systems section when refilling the system.

CAUTION: Do not apply sealing compound on the cylinder head and block gasket surfaces. Do not allow sealing compound to enter the cylinder bore.

Apply an even coat of Perfect Seal sealing compound, or equivalent, to both sides of the replacement cylinder head gasket and position the gasket on the cylinder block with the word TOP facing up.



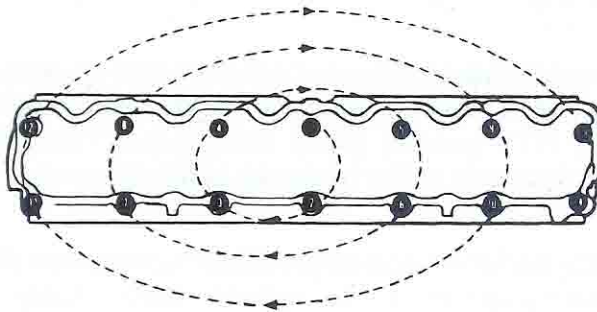
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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Install the cylinder head. Tighten the bolts in the sequence illustrated with 115 N·m (85 ft-lbs) torque.

NOTE: The cylinder head gasket is made of aluminum-coated embossed steel and does not require the head bolts to be retightened.



86215

Connect the battery negative cable.

Install the ignition coil and bracket assembly.

Install the spark plugs and connect the ignition wires.

Attach the air conditioner compressor mounting bracket to the cylinder head, if removed.

Install the intake and exhaust manifolds. Use the correct tightening sequence. Refer to Intake and Exhaust Manifold Installation for the procedures.

Install the alternator bracket screw on the head. Install the alternator belt and adjust the tension. Refer to the Cooling Systems section.

Install the power steering bracket and pump. Adjust the belt tension. Refer to the Cooling Systems section.

NOTE: Refer to the Cooling Systems section for all drive belt (including serpentine) adjustment procedures.

Install the push rods in the order removed.

Install the rocker arms and the bridge and pivot assemblies in the order removed. Loosely install the capscrews for each bridge and tighten alternately, one turn at a time, to avoid damaging the bridges.

Tighten the capscrews with 26 N·m (19 ft-lbs) torque.

Install the cylinder head cover. Refer to the installation procedure.

Connect the hoses to the thermostat housing and fill the cooling system to the specified level. Refer to the Cooling Systems section.

NOTE: The automatic transmission throttle linkage and cable must be adjusted after completing the cylinder head installation. Refer to Chapter F – Automatic Transmission.

Install the temperature sending unit and connect the wire connector.

Connect the fuel pipe and vacuum advance hose.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Operate the engine with the radiator cap off. Inspect for leaks and continue operating the engine until the thermostat opens. Add coolant, if required.

Install the air cleaner.

LUBRICATION SYSTEM

Oil Pan

Removal

Lock the steering wheel.

Raise and support the vehicle at the side sills.

Drain the engine oil.

Remove the starter motor.

Remove the flywheel/torque converter housing access cover.

Remove the oil pan screws.

Remove the oil pan by sliding it to the rear.

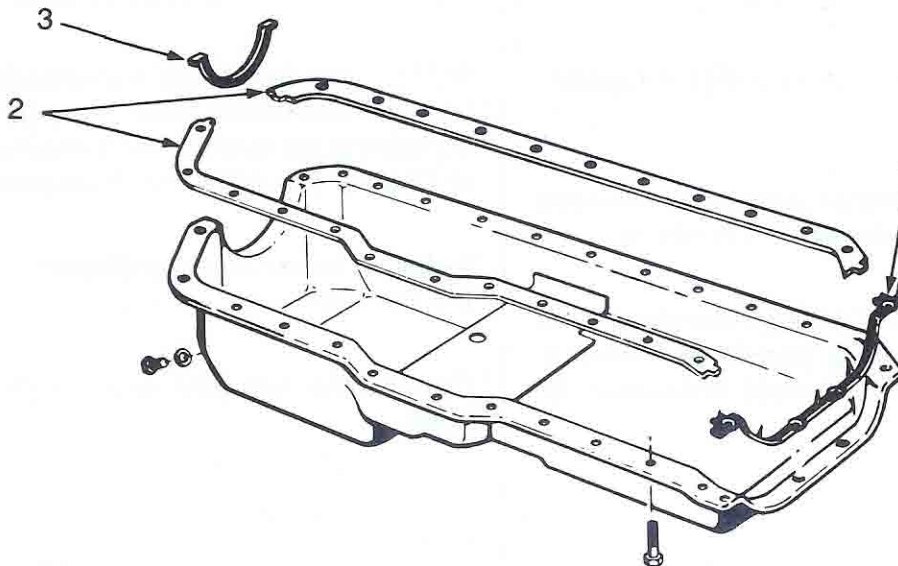
Installation

Clean the gasket and seal surfaces. Remove all sludge and grime from the oil pan sump.

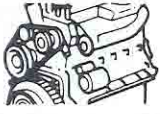
Install a replacement oil pan front seal (1) on the timing case cover and apply a generous amount of RTV sealant (AMC Gasket-in-a-Tube, or equivalent) to the recesses in the tab ends.

Cement the replacement oil pan side gaskets (2) into position on the cylinder block. Apply a generous amount of RTV sealant to the end tabs of the gaskets.

Coat the the inside curved surface of the replacement oil pan rear seal (3) with soap. Apply a generous amount of RTV sealant to the gasket contacting surface of the seal end tabs.

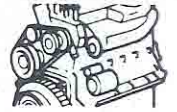


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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Install the seal in the recess of the rear main bearing cap. Ensure that it is fully seated.

NOTE: Either one of two sealing methods may be used. An RTV sealant such as AMC Gasket-in-a-Tube, or equivalent, may be used instead of a gasket. If a gasket is used, coat both sides with a quick drying adhesive such as AMC Spray-a-Gasket, or equivalent.

Apply engine oil to the oil pan contacting surface of the front and rear oil pan seals.

NOTE: Tighten the 1/4-20 oil pan screws with 9 N·m (7 ft-lbs) torque and tighten the 5/16-18 oil pan screws with 15 N·m (11 ft-lbs) torque.

Install the oil pan. Tighten the screws and the drain plug securely.

Install the starter motor.

Install the flywheel/torque converter housing access cover.

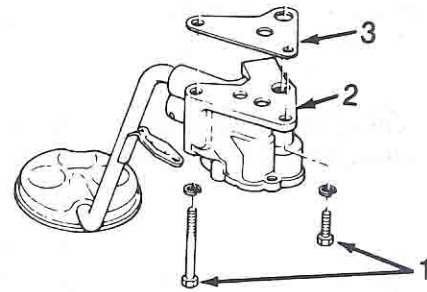
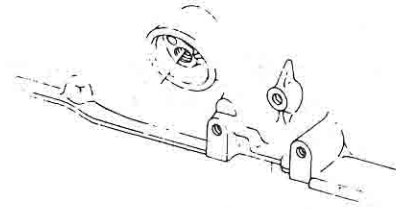
Raise the vehicle and remove the sill supports and jack. Lower the vehicle.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Fill the oil pan with engine oil to the specified level. Start the engine and inspect for leaks.

Oil Pump

A gear-type oil pump is mounted at the underside of the cylinder block opposite the No. 4 main bearing.



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Removal

NOTE: Oil pump removal or replacement will not affect the distributor timing because the distributor drive gear remains in mesh with the camshaft gear.

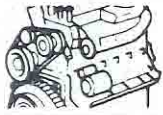
Drain the engine oil.

Remove the oil pan. Refer to Oil Pan Removal for the procedure.

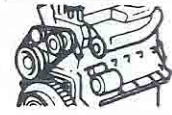
Remove the oil pump retaining screws (1), oil pump (2) and gasket (3).

CAUTION: Do not disturb the position of the oil inlet tube and strainer assembly in the pump body. If the tube is moved within the pump body, a replacement tube and strainer assembly must be installed to assure an airtight seal.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Installation

NOTE: To ensure self-priming of the oil pump, fill the pump with petroleum jelly before installing the oil pump cover. Do not use grease.

Install the oil pump with a replacement gasket. Tighten the short screws with 14 N·m (10 ft-lbs) torque and the long screws with 23 N·m (17 ft-lbs) torque.

NOTE: Rotate the gears to ensure that a binding condition does not exist before installing the oil pump.

Install the oil pan with replacement gaskets and seals. Refer to Oil Pan Installation for the procedure. Fill the oil pan with replacement engine oil to the specified level.

Oil Pump Overhaul

Refer to the MOT. 4.2L manual for the oil pump overhaul procedure.

Oil Pressure Gauge

Refer to Chapter C – Electrical for operation, diagnosis and replacement of the oil pressure gauge.

PISTONS AND CONNECTING RODS

Replacement As An Assembly

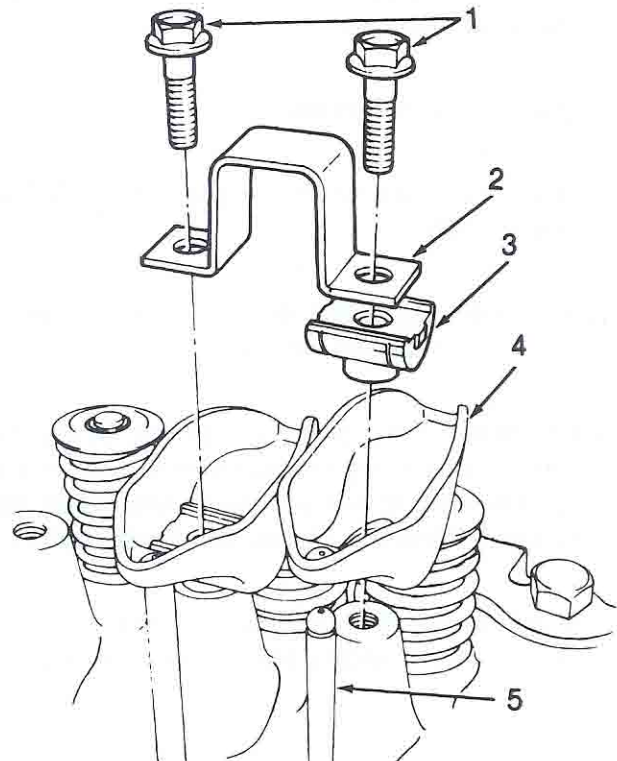
NOTE: The following procedure is for servicing the piston and connecting rod assemblies with the engine installed.

Removal

Remove the cylinder head cover. Refer to Cylinder Head Cover Removal for the procedure.

Remove the capscrews (1), bridge (2) and pivot (3) assemblies and rocker arms (4). Alternately loosen the capscrews, one turn at a time, to avoid damaging the bridge.

Remove the push rods (5).



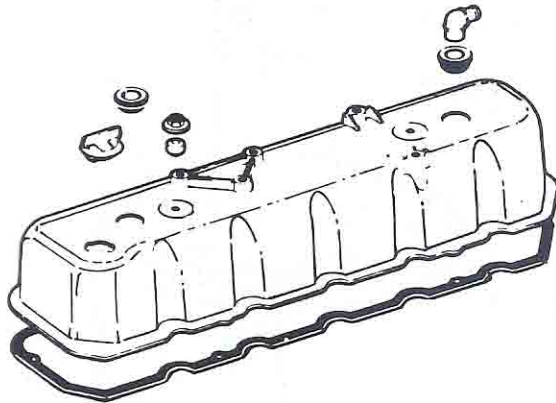


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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Remove the cylinder head and gasket. Refer to Cylinder Head Removal for the procedure.



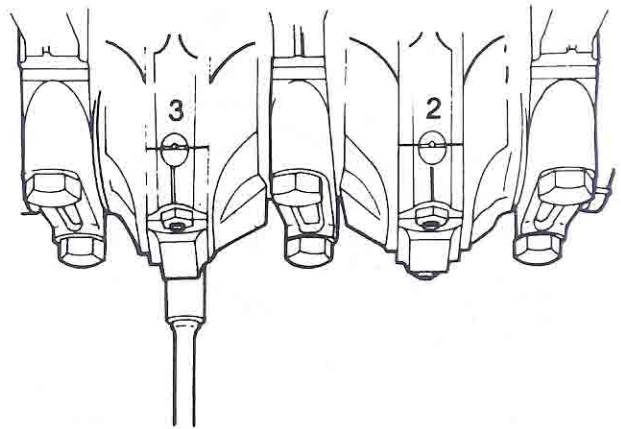
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Position the pistons one at a time near the bottom of the stroke and use a ridge reamer to remove the ridge from the top end of the cylinder walls. Use a protective cloth to collect the cuttings.

Drain the engine oil.

Remove the oil pan, gasket and seals. Refer to Oil Pan Removal for the procedure.

Remove the connecting rod bearing caps and inserts. Retain them in the same order as removed to facilitate installation in the original location.

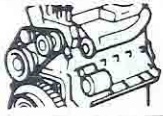


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NOTE: The connecting rods and caps are stamped with the corresponding cylinder number.

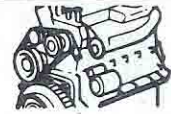
CAUTION: Ensure that the connecting rod bolts do not scratch the crankshaft journals or cylinder walls. Short pieces of rubber hose, slipped over the connecting rod bolts, will provide protection during removal.

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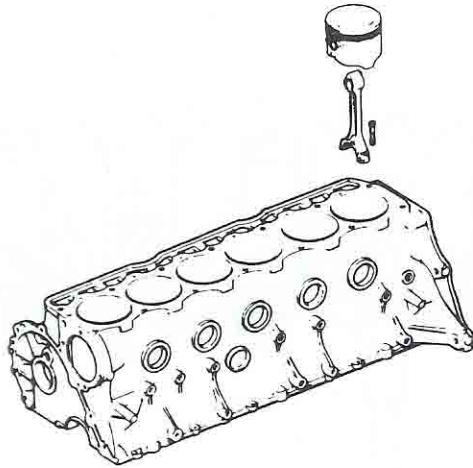
4.2 LITER (258 CID) SIX-CYLINDER ENGINE



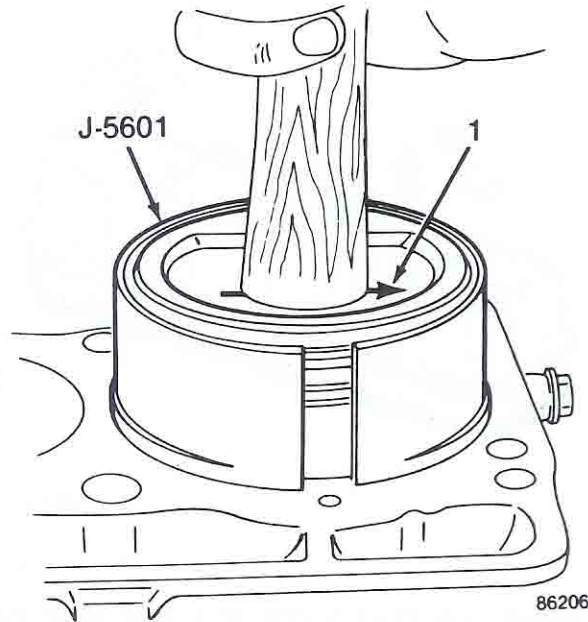
Remove the connecting rod and piston assemblies through the top of the cylinder bores.

Use a piston ring compressor (J-5601) to install the connecting rod and piston assemblies from the top of the cylinder block. Ensure the arrow (1) on the piston top points to the front of the engine.

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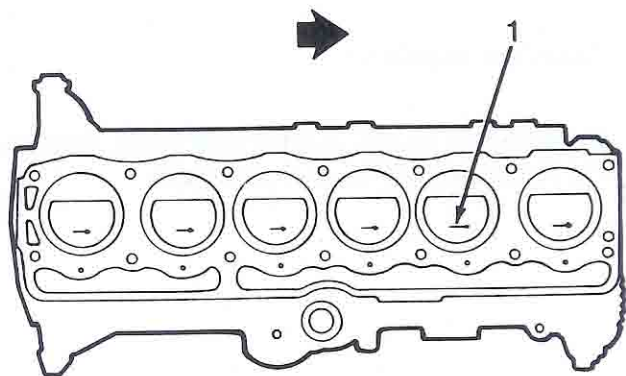
Installation

Clean the cylinder bores thoroughly. Apply a light film of clean engine oil to the bores with a clean, lint-free cloth.

Install replacement piston rings on the pistons, if necessary. Refer to the MOT. 4.2L manual for the procedure.

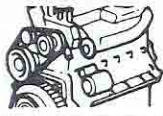
Lubricate the pistons and rings with clean engine oil.

CAUTION: Ensure that the connecting rod bolts do not scratch the crankshaft journals or cylinder walls. Short pieces of rubber hose, slipped over the connecting rod bolts, will provide protection during installation.



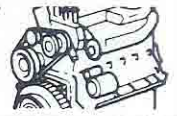
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NOTE: Verify that the oil squirt holes in the rods face the camshaft and that the arrows on the pistons face the front of the engine.



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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



Install the connecting rod bearing caps and inserts in the same order as removed. Refer to Connecting Rod Bearings Installation for the procedure.

Install the oil pan using replacement gaskets and seals. Tighten the drain plug securely. Refer to Oil Pan Installation for the procedure.

Fill the oil pan with engine oil to the FULL MARK on the dipstick.

Install the gasket and cylinder head. Refer to Cylinder Head Installation for the procedure.

Piston Pins

Refer to the MOT. 4.2L manual for the removal and installation procedure.

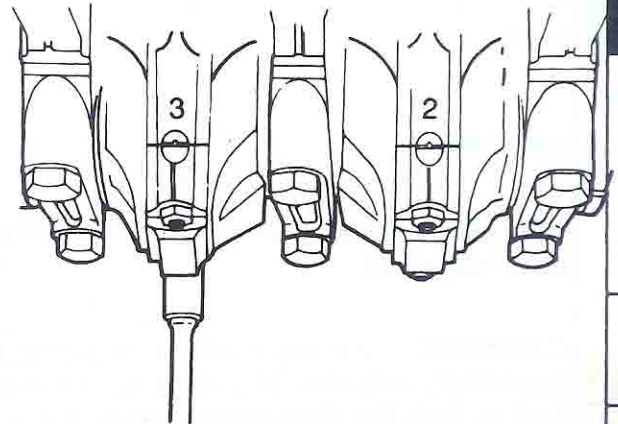
Connecting Rod Bearings

Removal

Drain the engine oil.

Remove the oil pan, seals and gaskets. Refer to Oil Pan Removal for the procedure.

Rotate the crankshaft as required to position two of the connecting rods at a time at the bottom of the stroke.



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Remove the connecting rod bearing cap. Remove the lower bearing insert.

Remove the upper bearing insert by rotating/sliding it out of the connecting rod.

NOTE: Do not intermix the bearing caps. Each connecting rod and its bearing cap are stamped with the corresponding cylinder number on a machined surface adjacent to the oil squirt hole that faces the camshaft side of the cylinder block.

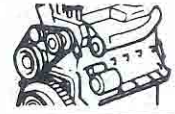
Inspection

Refer to the MOT. 4.2L manual for the procedure.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Measuring Bearing-to-Journal Clearance with Plastigage

Refer to the MOT. 4.2L manual for the procedure.

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Installation

Lubricate the bearing surface of each insert with clean engine oil.

CAUTION: Use care when rotating the crankshaft with the bearing caps removed. Ensure that the connecting rod bolts do not accidentally come into contact with the crankshaft journals and scratch the surface. Bearing failure would result. Short pieces of rubber hose, slipped over the connecting rod bolts, will provide protection during installation.

Install the connecting rod, bearing inserts and cap around the journal and secure with the retaining nuts. Tighten with 45 N·m (33 ft-lbs) torque.

Install the oil pan using the replacement gaskets and seals. Tighten the drain plug securely. Refer to Oil Pan Installation for the procedure.

Fill the crankcase with engine oil to the FULL MARK on the dipstick.

Pistons

For piston replacement and servicing procedures, refer to the MOT. 4.2L manual.

CRANKSHAFT

Removal and Installation

Replace the crankshaft if it is damaged to the extent that reconditioning is not feasible. Removal and installation procedures are described in the MOT. 4.2L manual.

Crankshaft Main Bearings

Removal

Drain the engine oil.

Remove the oil pan. Refer to Oil Pan Removal for the procedure.

Remove the main bearing cap and lower insert.

Remove the lower insert from the bearing cap.

Remove the upper insert by loosening all of the other bearing caps and insert a small cotter pin tool in the crankshaft journal oil hole.

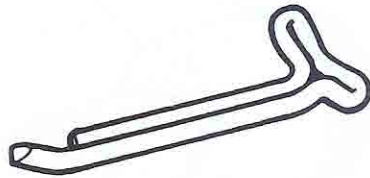
Bend the cotter pin as illustrated to fabricate the tool. A tongue depressor may also be used to remove the bearing insert.

With the cotter pin tool in place, rotate the crankshaft so that the upper bearing insert will rotate in the direction of its locking tab.



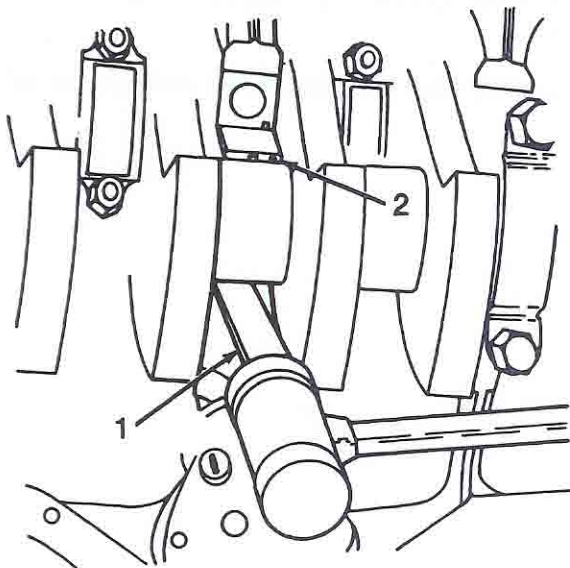
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4.2 LITER (258 CID) SIX-CYLINDER ENGINE



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NOTE: Because there is no hole in the No. 4 main journal, use a tongue depressor (1) or similar soft-faced tool to remove the bearing insert (2). After moving the insert approximately 25 mm (1 in) it can be removed by applying pressure under the tab.



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Using the same procedure described above, remove the remaining bearing inserts one at a time for inspection.

Measuring Main Bearing-to-Journal Clearance with Plastigage (Crankshaft Installed)

Refer to the MOT. 4.2L manual for the procedure.

Installation

Lubricate the bearing surface of each insert with engine oil.

Loosen all the main bearing caps. Install the removed main bearing upper insert(s).

Install the main bearing cap(s) and lower insert(s).

Tighten all the bolts with 54 N·m (40 ft-lbs) torque. Then tighten with 95 N·m (70 ft-lbs) torque. Finally, tighten with 108 N·m (80 ft-lbs) torque.

Rotate the crankshaft after tightening each main bearing cap to ensure the crankshaft rotates freely.

NOTE: When installing a crankshaft kit (crankshaft plus bearing inserts), measure each bearing-to-journal clearance with Plastigage to ensure proper fit.

Install the oil pump. Refer to Oil Pump Installation for the procedure.

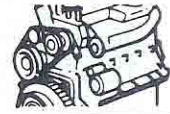
Install the oil pan with replacement gaskets and seals. Tighten the drain plug securely. Refer to Oil Pan Installation for the procedure.

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Fill the oil pan with engine oil to the FULL MARK on the dipstick.

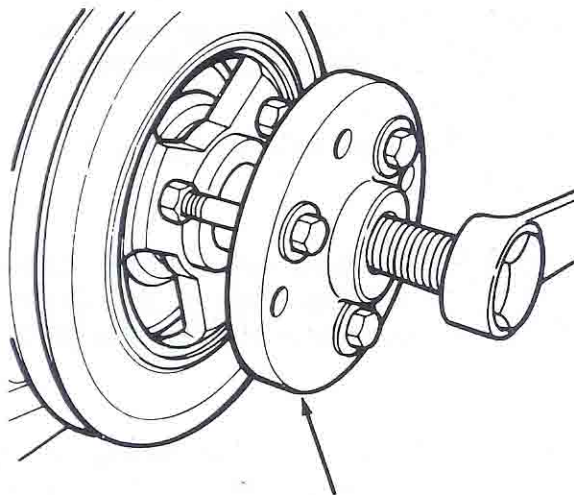
Crankshaft Front Oil Seal Replacement (Cover Not Removed)

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Remove the drive belts and fan shroud.

Remove the vibration damper pulley, if equipped (V-belt drive only).

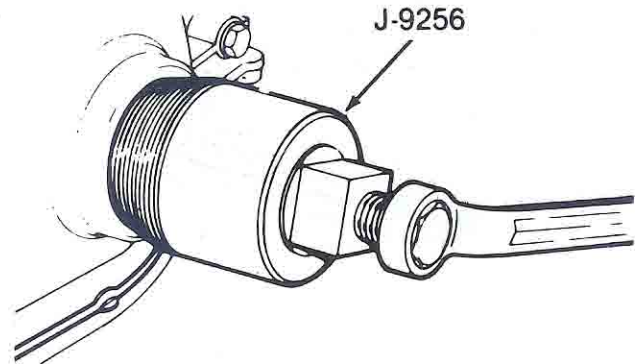
Remove the vibration damper and key with Tool J-21791. Refer to the removal procedure.



J-21791

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Remove the oil seal with Tool J-9256.

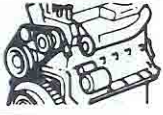


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Position the replacement oil seal on Timing Case Cover Alignment and Seal Installation Tool J-22248 with the seal lip facing outward.

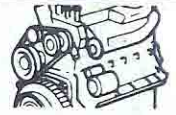
Apply a light film of Perfect Seal, or equivalent, on the outside diameter of the seal.

Lightly coat the crankshaft with engine oil.



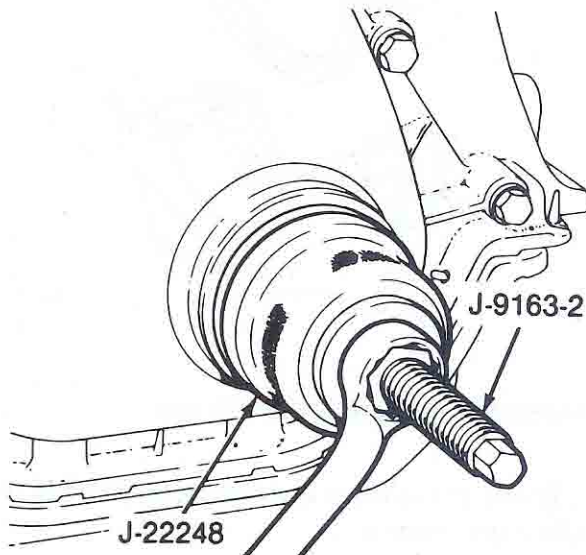
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Position the tool and seal over the end of the crankshaft and insert Screw Tool J-9163-2 into the seal installation tool.

Tighten the nut against the tool until the tool contacts the cover.



Remove the tools.

Apply a light film of engine oil on the vibration damper hub contact surface of the seal.

With the key inserted in the keyway on the crankshaft, install the vibration damper, washer and bolt.

Lubricate and tighten the bolt with 108 N·m (80 ft-lbs) torque.

NOTE: If the crankshaft turns before the damper bolt torque value is attained, the crankshaft can be prevented from turning by placing two $5/16 \times 1\frac{1}{2}$ inch bolts into the damper front pulley holes and wedging a bar between them. Rotate the bar until it contacts the frame member to prevent the crankshaft from turning.

Install the damper pulley, if removed. Tighten the bolts with 27 N·m (20 ft-lbs) torque.

Install the drive belt(s) and tighten to the specified tension. Refer to the Cooling Systems section.

Rear Main Bearing Oil Seal

The crankshaft rear main bearing oil seal is a two-piece, single-lip neoprene seal. The upper half of the seal fits tightly between the cylinder block and the crankshaft. The lower half of the seal fits tightly between the bearing cap and the crankshaft.

Replace the upper and lower seal halves as a unit to ensure leak-free operation.

Removal

NOTE: When replacing the rear main oil seal, the transmission must be removed. Refer to the applicable transmission removal procedure.

Remove the flywheel or converter drive plate. Refer to the removal procedure. Mark the drive plate before removal for installation reference.

Remove the oil pan. Refer to Oil Pan Removal for the procedure.

Remove the rear main bearing cap and discard the lower half of the seal.

Loosen all the remaining main bearing caps.

Tap the upper half of the seal with a brass drift and hammer until it protrudes out far enough to permit pulling it out from around the crankshaft.

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4.2 LITER (258 CID) SIX-CYLINDER ENGINE

Discard the upper half of the seal.

Clean the rear main bearing cap thoroughly.
Remove all the sealant.

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Installation

Wipe the crankshaft seal surface area clean and
apply a thin coat of engine oil.

Coat the lip on both halves of the replacement
rear main bearing seal (1) with engine oil.

Insert the upper half of the replacement seal into
cylinder block and around the crankshaft.

NOTE: The seal lip faces inward toward the front
of the engine.

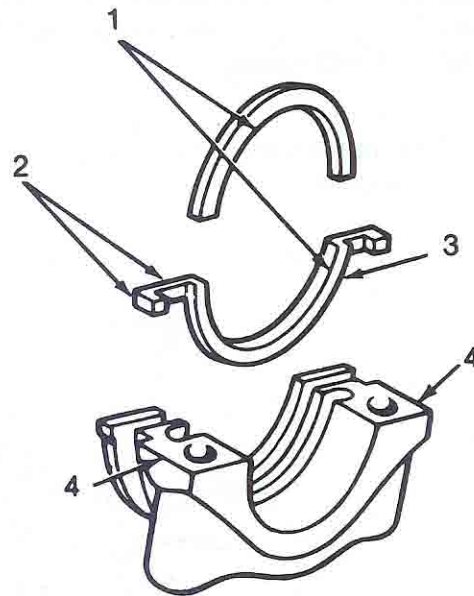
Coat both sides of the replacement lower seal
end tabs (2) with RTV sealant (AMC Gasket-in-
a-Tube, or equivalent). Do not apply sealant to
the lip of the seal.

Coat the outer curved surface of the lower half of
the replacement seal (3) with liquid soap.

Position the lower half of the replacement seal
into the the bearing cap recess and seat it firmly.

Coat both chamfered edges on the bearing cap
(4) with RTV sealant (AMC Gasket-in-a-Tube, or
equivalent).

CAUTION: Do not apply sealant to the cylinder
block-to-bearing cap mating surface because
this will alter the bearing-to-journal clearance.



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Install the rear main bearing cap.

Tighten all the main bearing caps with 108 N·m
(80 ft-lbs) torque.

Install the oil pan with replacement gaskets and
seals. Refer to Oil Pan Installation for the
procedure.

Fill the oil pan to the FULL MARK on the dipstick.

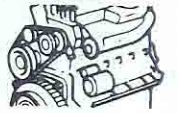
Install the converter drive plate or flywheel with
replacement bolts. Refer to the converter drive
plate/flywheel installation procedure.

Install the transmission. Refer to the applicable
installation procedure.



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Flywheel/Drive Plate and Ring Gear

The ring gear can be replaced only on engines with a manual transmission. The ring gear is welded to and balanced as part of the converter drive plate on engines with automatic transmissions.

If defective, the entire drive plate and ring gear assembly must be replaced for engines with automatic transmissions.

Ring Gear Replacement (Manual Transmission)

Position the flywheel on an arbor press with steel blocks equally spaced under the ring gear.

Press the flywheel down through the ring gear.

NOTE: The ring gear can also be removed by breaking with a chisel.

Apply heat to expand the inside diameter of the replacement ring gear.

Press the flywheel into the replacement ring gear.

NOTE: For engines equipped with a manual transmission, the flywheel is balanced as an individual component and also as part of the crankshaft assembly. Do not attempt to duplicate the original flywheel balance holes when installing a service replacement flywheel. Service replacement flywheels are balanced during manufacture and do not require additional balancing.

CYLINDER BLOCK

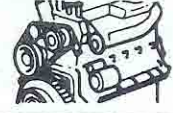
Disassembly/Assembly

Refer to the MOT. 4.2L manual for the procedures.

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COOLING SYSTEMS

SPECIAL TOOLS

Tool Ref.	Description	Required	Recommended
J-23600	Belt Tension Gauge		■
J-23600-B	Belt Tension Gauge		■
J-29550	Belt Tension Gauge		■
J-24460-01	Cooling System Pressure Tester and Adapter		■

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TORQUE SPECIFICATIONS

Component	Service Set-To Torque	Service Recheck Torque
Alternator Adjustment Bolt Four-Cylinder Engine Six-Cylinder Engine	24 N·m (18 ft-lbs) 24 N·m (18 ft-lbs)	20-27 N·m (15-20 ft-lbs) 20-27 N·m (15-20 ft-lbs)
Alternator Pivot Bolt/Nut Four-Cylinder Engine Six-Cylinder Engine	38 N·m (28 ft-lbs) 38 N·m (28 ft-lbs)	27-47 N·m (20-35 ft-lbs) 34-41 N·m (25-30 ft-lbs)
Pulley-to-Vibration Damper Bolts Four-Cylinder Engine Six-Cylinder Engine	27 N·m (20 ft-lbs) 27 N·m (20 ft-lbs)	20-34 N·m (15-25 ft-lbs) 20-34 N·m (15-25 ft-lbs)
Cylinder Block Heater T-Type Compression Type	2 N·m (20 in-lbs) 14 N·m (10 ft-lbs)	2-3 N·m (17-25 in-lbs) 11-18 N·m (8-13 ft-lbs)
Fan and Pulley-to-Hub Bolts Four- and Six-Cylinder Engines	24 N·m (18 ft-lbs)	16-34 N·m (12-25 ft-lbs)
A/T Fluid Cooler Pipe Flared Fitting Nuts	34 N·m (25 ft-lbs)	20-41 N·m (15-30 ft-lbs)
A/T Fluid Cooler Pipe Radiator Fitting	20 N·m (15 ft-lbs)	14-41 N·m (10-30 ft-lbs)
Power Steering Pump Adjustment Bolt Six-Cylinder Engine	41 N·m (30 ft-lbs)	34-47 N·m (25-35 ft-lbs)
Power Steering Pump Pivot Bolt Six-Cylinder Engine	41 N·m (30 ft-lbs)	34-47 N·m (25-35 ft-lbs)