

1989 Buick Skyhawk S/E

2.0L OHV 4-CYL - VIN [1] 1989 GENERAL MOTORS ENGINES 2.0L 4-Cylinder OHV

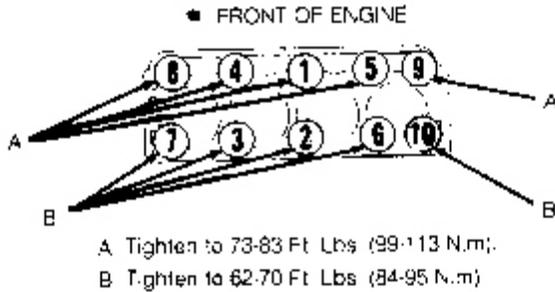


Fig. 3: Cylinder Head Bolt Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

- 1 Piston Rings
- 2 Piston & Pin
- 3 Connecting Rod
- 4 Connecting Rod Bearing
- 5 Dowel Pin
- 6 Coolant Jacket Plug
- 7 Plug
- 8 Camshaft Rear Cover
- 9 Coolant inlet
- 10 Gasket
- 11 Cylinder Block
- 12 Connecting Rod Cap
- 13 Flywheel Retainer
- 14 Flywheel
- 15 Crankshaft Rear Seal
- 16 Main Bearing
- 17 Main Cap
- 18 Oil Pump Drive
- 19 Extension Shaft
- 20 Retainer
- 21 Oil Pump
- 22 Gasket
- 23 Crankshaft Pulley
- 24 Front Crankshaft Seal
- 25 Front Timing Case Cover
- 26 Timing Chain
- 27 Crankshaft Sprocket
- 28 Woodruff Key
- 29 Water Pump
- 30 Pulley
- 31 Timing Chain Tensioner
- 32 Camshaft Sprocket
- 33 Camshaft Thrust Plate
- 34 Pin
- 35 Camshaft Bearing
- 36 Camshaft
- 37 Fuel Pump Switch
- 38 Oil Filter By-Pass Valve
- 39 Valve Lifter
- 40 Push Rod
- 41 Gasket
- 42 Oil Filter Adapter
- 43 Filter Adapter Connector

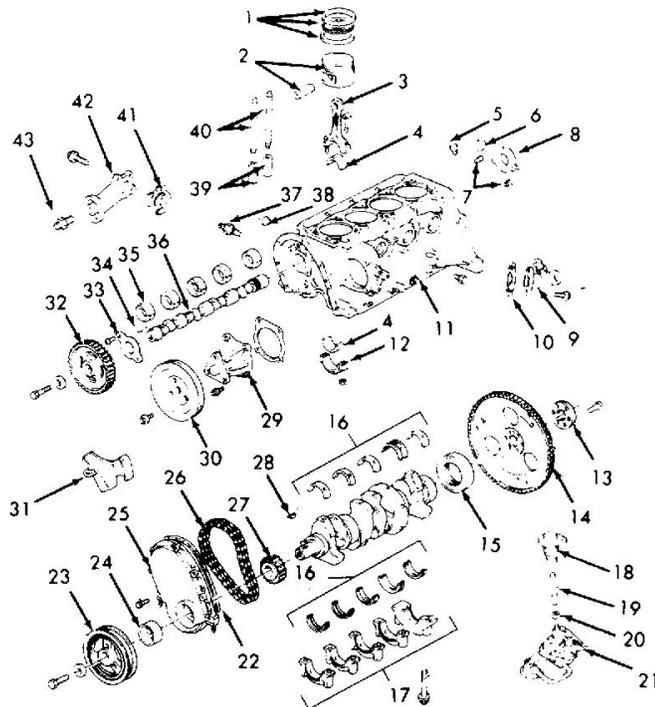


Fig. 4: Exploded View of Cylinder Block & Components

Courtesy of GENERAL MOTORS CORP.

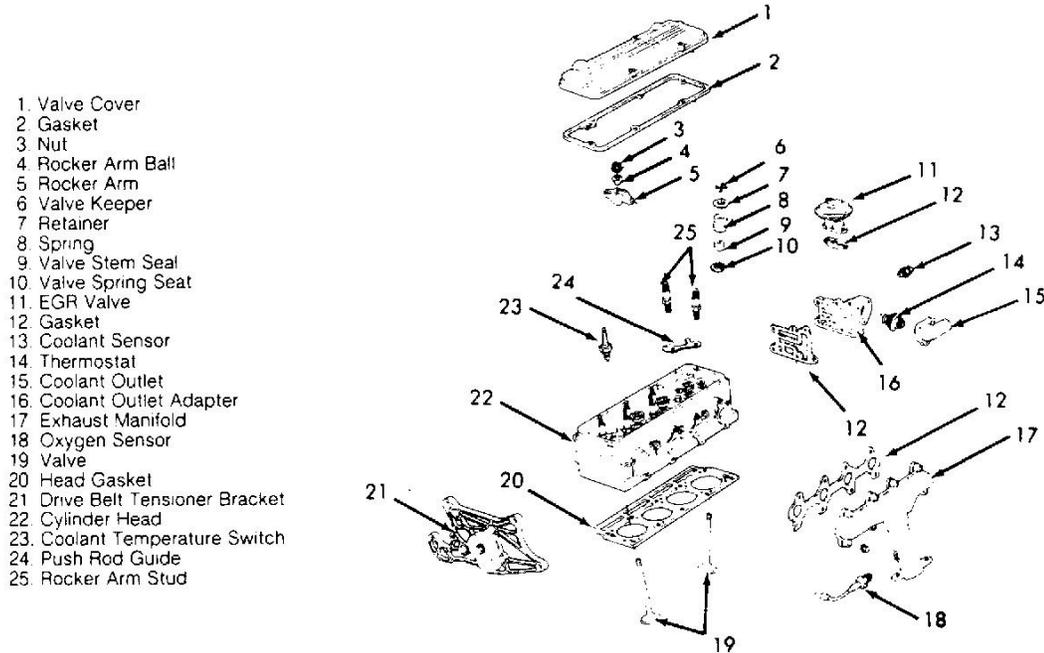


Fig. 5: Exploded View of Cylinder Head & Components
 Courtesy of GENERAL MOTORS CORP.

TIMING CHAIN & SPROCKETS

Removal

1. Remove the front timing case cover. Refer to **FRONT TIMING CASE COVER** under REMOVAL & INSTALLATION in this article. Align the camshaft and crankshaft sprocket marks with the tabs on the chain tensioner. See **Fig. 6** . Remove upper bolt from timing chain tensioner. See **Fig. 4** . Loosen timing chain tensioner torx bolt as far as possible. **DO NOT** remove bolt.

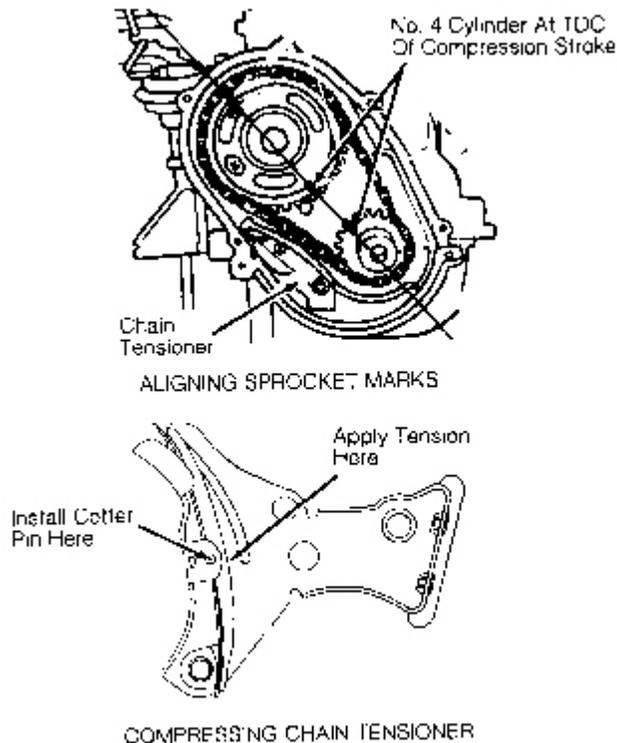


Fig. 6: Timing Chain Sprocket Alignment & Tensioner
Courtesy of GENERAL MOTORS CORP.

2. Remove camshaft sprocket and timing chain. Using Sprocket Puller (J-22888), remove crankshaft sprocket. Remove torx bolt and chain tensioner (if required).

Installation

1. If chain tensioner was removed, install chain tensioner and torx bolt. Compress tensioner spring and install small cotter pin in hole of chain tensioner. See **Fig. 6**.
2. If crankshaft sprocket was removed, install sprocket using Sprocket Installer (J-5590). Lubricate camshaft thrust surfaces with Lubriplate.

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3. Install timing chain and camshaft sprocket so sprocket marks are aligned with tabs on chain tensioner. See **Fig. 6** .
4. Ensure hole in camshaft sprocket aligns camshaft dowel pin. Install camshaft sprocket retaining bolt and tighten to specification. Ensure all timing marks are aligned.
5. Lubricate timing chain with oil. Remove cotter pin from chain tensioner. To install remaining components, reverse removal procedure.

FRONT TIMING CASE COVER

Removal

1. Disconnect negative battery cable. Remove accessory drive belts. Raise and support vehicle. Remove right front tire and wheel.
2. Remove right inner fender splash shield. Remove accessory drive pulley from crankshaft pulley hub. Remove crankshaft pulley retaining bolt. Using puller, remove crankshaft pulley hub.
3. Remove oil pan. See appropriate OIL PAN REMOVAL article in this section. Remove front timing case cover bolts and remove cover.

Installation

1. To install cover, reverse removal procedure using new gasket. Apply engine oil to front cover seal and RTV sealant to keyway of crankshaft pulley hub prior to installation.

CAUTION: Crankshaft pulley hub keyway must be coated with RTV sealant prior to installation.

2. Position Hub Installer (J-29113) on hub until at least .24" (6.1 mm) of thread is engaged. Using hub installer, install hub on crankshaft. To install remaining components, reverse removal procedure.

FRONT CRANKSHAFT SEAL

Removal

1. Disconnect negative battery cable. Remove accessory drive belts. Raise and

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support vehicle. Remove right front tire and wheel.

2. Remove right inner fender splash shield. Remove accessory drive pulley from crankshaft pulley hub. Remove crankshaft pulley hub retaining bolt. Using puller, remove crankshaft pulley hub.
3. Pry seal from cover. Use care not to damage seal area of crankshaft or cover. Note direction of seal installation.

Installation

1. Using Seal Installer (J-35468), drive seal into case cover with seal lip toward the engine. Ensure seal is fully seated.
2. Apply engine oil to front cover seal and RTV sealant to keyway of crankshaft pulley hub prior to installation.

CAUTION: Crankshaft pulley hub keyway must be coated with RTV sealant prior to installation.

3. Position Hub Installer (J-29113) on hub until at least .24" (6.1 mm) of thread is engaged. Using hub installer, install hub on crankshaft. To install remaining components, reverse removal procedure.

REAR CRANKSHAFT SEAL

Removal

1. Remove transaxle assembly. Place reference mark on clutch pressure plate (M/T) and flywheel for reassembly reference.
2. Remove pressure plate and clutch disc (if equipped) and flywheel. Pry seal from housing. Use care not to damage crankshaft or seal surface. Note direction of seal installation.

Installation

1. Coat inner and outer seal surfaces with engine oil. Install seal on mandril of Seal Installer (J-34686) until dust lip bottoms against tool collar. See **Fig. 7**.
2. Align seal installer dowel pin with alignment hole of crankshaft. See **Fig. 7**. Install seal installer on crankshaft. Tighten seal installer bolts to 27-62 INCH

lbs. (3-7 N.m).

3. Tighten seal installer handle to install seal in seal bore until seal installer collar is even with cylinder block. To install remaining components, reverse removal procedure.
4. Apply thread sealant to flywheel bolts prior to installation. On M/T models, ensure reference marks are aligned on pressure plate and flywheel.

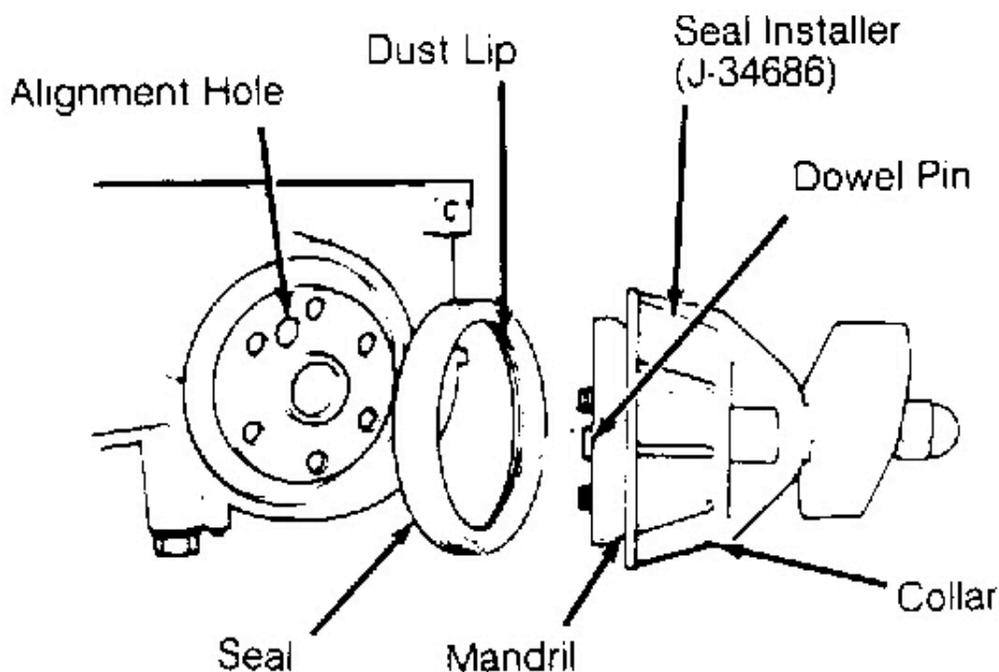


Fig. 7: Installing Rear Crankshaft Seal
Courtesy of GENERAL MOTORS CORP.

VALVE LIFTERS

Removal

Remove valve cover. Loosen rocker arm nut. Rotate rocker arm and remove push rod. Using flexible magnet, remove valve lifter. Mark lifter location for reassembly reference.

CAUTION: If valve lifters are replaced, coat camshaft end of lifter with Camshaft Lubricant (1052365) prior to installation. Verify for oversized valve lifters by marking on cylinder block near lifter bore.

Installation

To install, reverse removal procedure. Ensure lifter is installed in original location. Coat camshaft end of lifter with Camshaft Lubricant (1052365) prior to installation. Install remaining components.

WATER PUMP

Removal & Installation

Disconnect negative battery cable. Drain cooling system. Remove accessory drive belts. Remove alternator and brackets. Remove water pump pulley. Remove water pump bolts, water pump and gasket. To install, reverse removal procedure using new gasket.

OIL PAN

1. Disconnect negative battery cable. Disconnect exhaust pipe shield and remove. Raise and support vehicle. Drain crankcase. Remove A/C brace at starter and at A/C bracket.
2. Remove starter bracket at block. Remove starter and lay aside. Remove flywheel cover and A/C brace. Remove 4 right support bolts. Lower support slightly to gain clearance for oil pan removal. Remove oil filler and extension on automatic transaxles. Remove oil pan bolts and oil pan. To install, reverse removal procedure.

OVERHAUL

CYLINDER HEAD OVERHAUL

Inspection

Inspect cylinder head for warpage at deck surface and manifold surfaces. Resurface cylinder head if warpage exceeds specification. See **ENGINE SPECIFICATIONS**