

1988 Chevrolet Sprint Turbo

ENGINE OVERHAUL 1988 GENERAL MOTORS ENGINES 1.0L 2-Bbl. & 1.0L EFI Turbo 3-Cylinder

remove intercooler, pipes and hoses to airflow meter.

2. Remove rocker arm cover and distributor. Remove throttle control cable, emission control hoses, coolant hoses and electrical connectors to engine.
3. Remove brake booster vacuum hose. Remove crankshaft pulley, outer timing belt cover, timing belt and tensioner. Disconnect O2 sensor lead. Remove exhaust pipe at manifold and secondary air valve.
4. Remove fuel pump and rocker shaft assemblies. Remove engine side mount at cylinder head. Loosen and remove cylinder head bolts. Remove cylinder head and manifolds as an assembly.

CYLINDER HEAD MAXIMUM WARPAGE

Surface	In. (mm)
Cylinder Head-to-Block	.002 (.05)
Cylinder Head-to-Intake Manifold	.004 (.10)
Cylinder Head-to-Exhaust Manifold	.004 (.10)

Installation

1. Position cylinder head gasket with "TOP" mark facing up and toward crankshaft pulley side of cylinder block. Position cylinder head on gasket and tighten cylinder head retaining bolts in sequence. See **Fig. 3**.

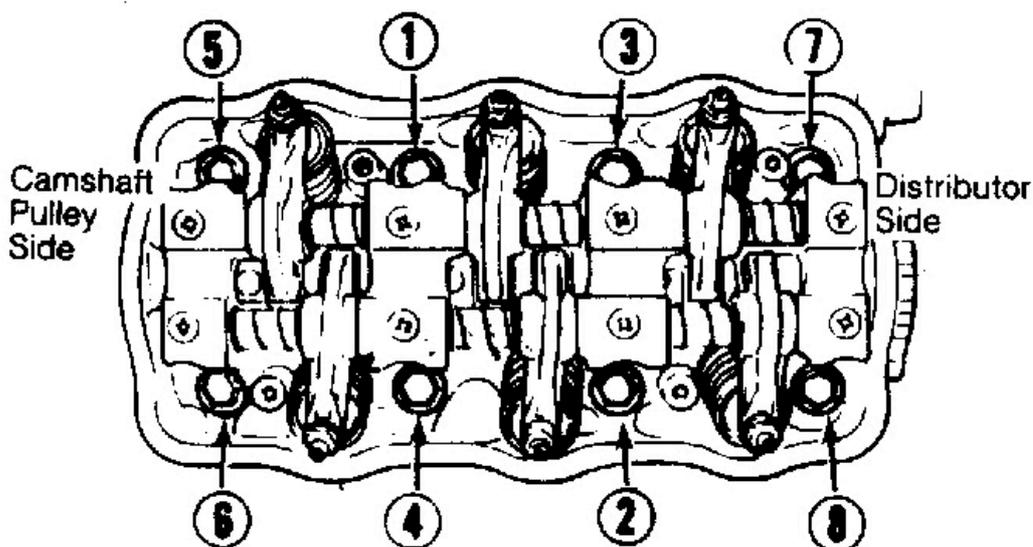


Fig. 3: Cylinder Head Tightening Sequence Courtesy of GENERAL MOTORS CORP.

2. Install camshaft and timing belt. See **TIMING BELT** in this article. To complete installation, reverse removal procedure. Adjust valve clearance and check all engine fluids. Refer to **VALVE CLEARANCE ADJUSTMENT** in this article.

CAMSHAFT

Removal

1. Disconnect negative battery cable. Remove rocker cover. Loosen valve adjuster lock nuts and back off adjusting screws. Remove rocker shaft mounting bolts and rocker shafts.
2. Remove distributor, fuel pump and fuel pump push rod. Remove crankshaft pulley, timing belt outer cover and timing belt. See **TIMING BELT**. Using Camshaft Lock Holder (J-34836) to hold camshaft pulley, loosen pulley bolt. Remove bolt, pulley and camshaft from cylinder head.

Inspection

1. Inspect rocker arms and shaft for wear. Determine rocker arm-to-shaft clearance. Rocker arm I.D. should measure .630-.631" (16.00-16.09 mm). Rocker shaft diameter is .629-.630" (15.97-15.99 mm).
2. Standard clearance is .0005-.0018" (.012-.045 mm). Maximum clearance is .004" (.09 mm). If specifications are exceeded, replace rocker shaft or arm. Mount rocker shaft in "V" blocks. Measure rocker shaft runout using a dial indicator. Maximum runout is .005" (.12 mm). Replace shaft if specifications are exceeded.
3. Measure cam lobe height using a micrometer. Refer to the **CAMSHAFT** table in this article. If height is less than specifications, replace camshaft. Mount camshaft in "V" blocks and measure runout. Maximum runout is .0039" (.10 mm).
4. Inspect camshaft journals for wear and damage. Measure journal shaft diameter and journal bore diameter to determine journal clearance. See **Fig. 4**. Journal clearance should measure .002-.0036" (.05-.09 mm). If journal clearance exceeds .006" (.15 mm), replace camshaft and/or cylinder head.

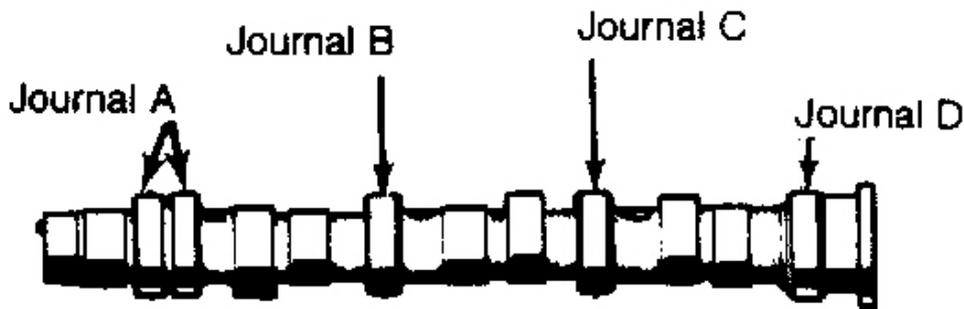


Fig. 4: Camshaft Journal Identification
Courtesy of GENERAL MOTORS CORP.

Installation

1. Apply engine oil to camshaft lobes, journals and oil seal on cylinder head. Install camshaft. Install timing belt inner cover and camshaft sprocket. Align sprocket keyway and tighten bolt.
2. Apply engine oil to fuel pump actuating rod. Install rod, gasket and fuel pump. Apply engine oil to rocker shaft and rocker arms.

NOTE: Dimensions of intake and exhaust rocker shaft stepped ends differ. Intake rocker shaft stepped end O.D. is .55" (14.0 mm). Exhaust rocker shaft is .59" (15.0 mm). Shafts are NOT interchangeable.

3. Position intake rocker arm shaft with its stepped end facing camshaft pulley side. Position exhaust rocker arm shaft with its stepped end facing the distributor side.
4. Arrange rocker arms and springs on top of valves. Refer to **Fig. 5**. Install rocker arm shafts and tighten shaft support screws. Install gasket, distributor case and distributor on cylinder head.

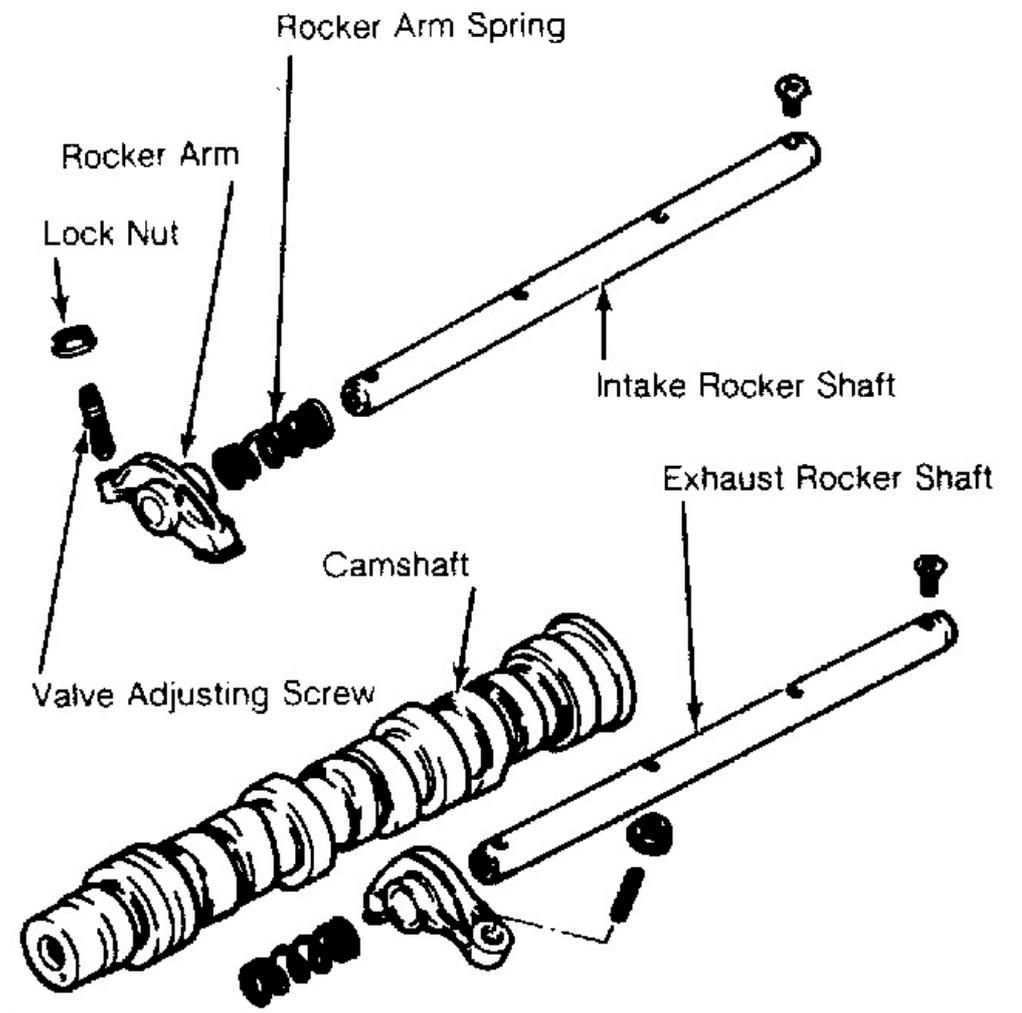


Fig. 5: Exploded View of Rocker Arm Assembly
Courtesy of GENERAL MOTORS CORP.

5. Install belt tensioner, timing belt, outside cover, crankshaft sprocket and water pump pulley. Adjust valve clearance. Install rocker arm cover. Adjust ignition timing. To complete installation, reverse removal procedure.

TIMING BELT

Removal

1. Disconnect negative battery cable. Loosen water pump pulley bolts. Remove A/C compressor adjusting bolt (if equipped). Loosen alternator adjusting bolt and raise vehicle.

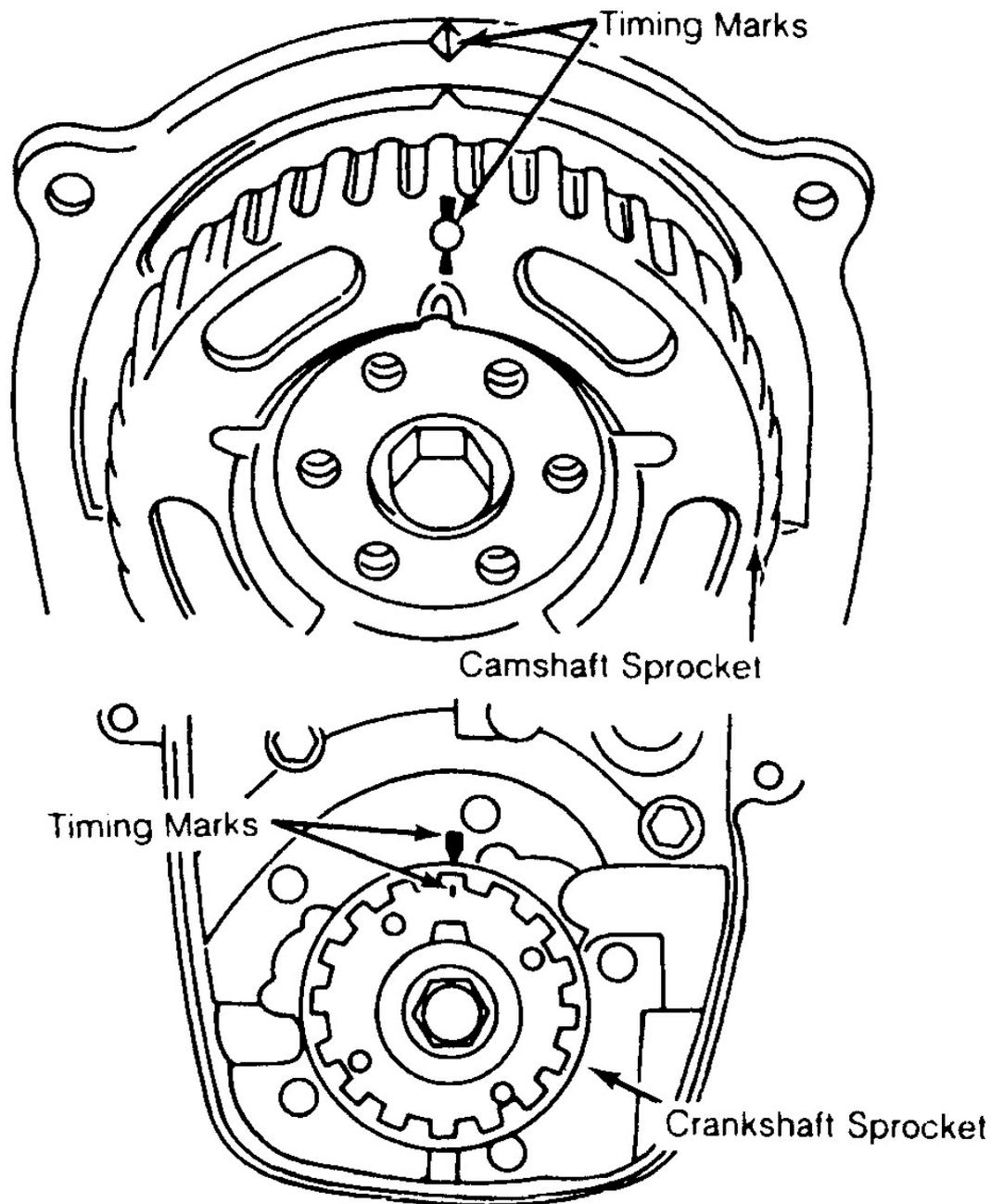
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2. Remove drive belt splash shield and body plug in right fender. Remove alternator and A/C drive belt (if equipped). Remove crankshaft and water pump pulleys. Remove bolts from bottom of timing belt cover.
3. Lower vehicle and remove top timing belt cover. Remove rocker arm cover. Loosen rocker arm adjusting screws. Remove distributor cap. Loosen timing belt tensioner bolt and stud.
4. Slide belt tensioner upward to facilitate timing belt removal. Remove timing belt. Remove tensioner, tension plate and tensioner spring. Inspect timing belt for wear or cracks and replace if necessary.

Installation

1. Insert lug of tensioner plate into tensioner hole. Install tensioner, plate and spring. Hand tighten tensioner bolt and stud. Ensure proper plate movement. If no movement occurs between plate and tensioner, remove tensioner and plate and reinsert lug into tensioner hole.
2. Rotate camshaft sprocket clockwise and align timing mark on camshaft sprocket with "V" mark on timing belt cover. Rotate crankshaft and align punch mark on timing belt sprocket with arrow on oil pump. See **Fig. 6**.



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Fig. 6: Aligning Timing Marks
Courtesy of GENERAL MOTORS CORP.

3. With marks aligned, install timing belt onto sprockets so that drive side of belt is free of any slack with tensioner plate pushed up. To remove slack in timing belt, turn crankshaft one revolution clockwise after installing timing belt.