

# Datsun/Nissan Engines

## 310, SENTRA & STANZA 4-CYLINDER

### ENGINE CODING

#### ENGINE IDENTIFICATION

Engine serial number is stamped into a machined pad, located on the engine. First 3 or 4 characters of serial number represents engine model. Serial number for 310 and Sentra models is located at left rear side of engine (near distributor). Serial number for Stanza is located at right rear side of engine (near distributor).

#### ENGINE IDENTIFICATION

Application	Code
Sentra & 310 (1488 cc) .....	E15
Stanza (1974 cc) .....	CA20

### ENGINE, MANIFOLDS & CYLINDER HEAD

#### ENGINE

**NOTE:** Engine and transaxle should be removed as an assembly.

#### Removal

1) Mark hood hinge positions and remove hood. Disconnect cables from battery, then remove battery and support bracket. Remove air cleaner. Drain coolant. Remove radiator and cooling fan.

2) Remove power steering pump and bracket (with hoses connected), and position aside. If A/C equipped, remove compressor (with hoses connected), and idler pulley. Secure compressor away from engine.

3) Disconnect exhaust pipe from manifold. Disconnect all linkages, cables and wiring from transaxle. Remove lower ball joints. Drain gear oil from transaxle.

4) Using care not to damage oil seals, remove both drive shafts from transaxle. When drawing out drive shafts, it is necessary to loosen 3 top bolts from struts. Disconnect accelerator cable.

5) Label and disconnect all vacuum, fuel and air hoses, and electrical wiring between engine and chassis. Attach lifting sling and engine hoist to engine. Disconnect engine and transaxle mounts. Lift engine and transaxle from vehicle.

#### Installation

Reverse removal procedures, to install engine and transaxle.

#### INTAKE MANIFOLD

#### Removal

1) Remove air cleaner and disconnect accelerator cable and choke cable. Disconnect and plug fuel line at carburetor.

2) Remove any vacuum hoses that would interfere with intake manifold removal. Remove nuts retaining intake manifold to cylinder head and remove intake manifold.

#### Installation

To install, reverse removal procedure and use new gasket.

#### EXHAUST MANIFOLD

#### Removal

Remove E.A.I. pipe bracket and E.G.R. tube at E.G.R. valve side. Remove exhaust manifold cover and

E.A.I. pipe. Remove exhaust manifold retaining bolts, and remove exhaust manifold.

#### Installation

To install, reverse removal procedure.

#### CYLINDER HEAD

#### Removal (All Models)

1) Turn crankshaft until No. 1 piston is at TDC on its compression stroke. Remove power steering pump, A/C compressor (if equipped). Remove exhaust and intake manifolds as previously described.

2) Remove rocker arm cover. Remove water pump (if necessary). Remove crankshaft pulley and spacer. Remove front cover retaining bolts, and remove front cover.

3) Disconnect all hoses, and electrical wires that would interfere with cylinder head removal. On Stanza remove fuel pump attaching bolts, and remove fuel pump. Loosen timing belt tensioner, and remove timing belt.

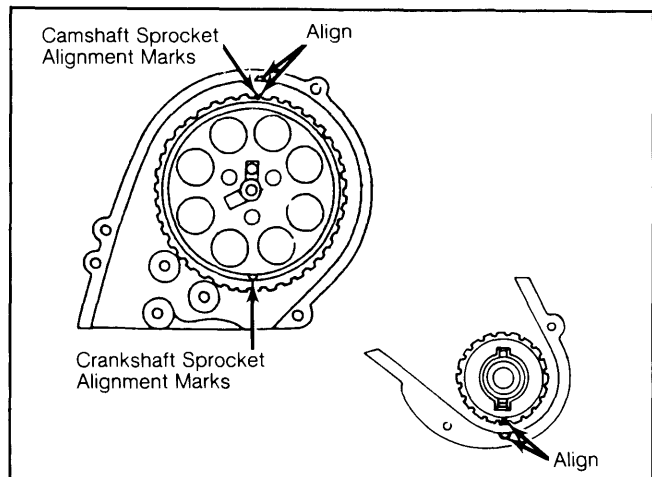
**NOTE:** After timing belt is removed, do not rotate crankshaft or camshaft separately, this could cause valves to hit piston heads.

4) Loosen head bolts gradually in reverse order of tightening sequence and remove cylinder head. See Figs. 2 & 5.

#### Installation (Sentra & 310)

1) Thoroughly clean mating surfaces of cylinder head and block, and note the following: Ensure No. 1 piston is at TDC on its compression stroke. Ensure camshaft pulley mark is aligned with cylinder head cover mark. See Fig. 1.

**Fig. 1: Timing Belt Alignment Procedure For Sentra & 310**



2) Install cylinder head gasket, and cylinder head. Install cylinder head bolts, and tighten bolts in 3 steps. See Fig. 2.

**NOTE:** There are 3 kinds of cylinder head bolts with different lengths.

3) Rotate tensioner clockwise about 70-80° and temporarily tighten lock nut. Place timing belt on pulleys.

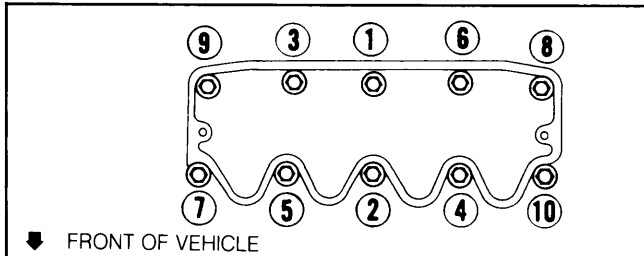
**NOTE:** When installing a used belt, be sure to install it with rotating direction mark facing engine rotating direction.

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4) Ensure that timing belt is not loose around auxillary shaft and camshaft pulleys. Loosen tensioner lock nut so that tensioner pushes on timing belt. Turn camshaft pulley about 20° (2 cogs) clockwise.

5) Tighten tensioner lock nut while preventing tensioner from moving in "free" direction. Reverse removal procedure to install remaining components. Adjust valve clearance.

**Fig. 2: Tightening Sequence for Cylinder Head (Sentra & 310)**



Tighten cylinder head bolts in 3 steps.

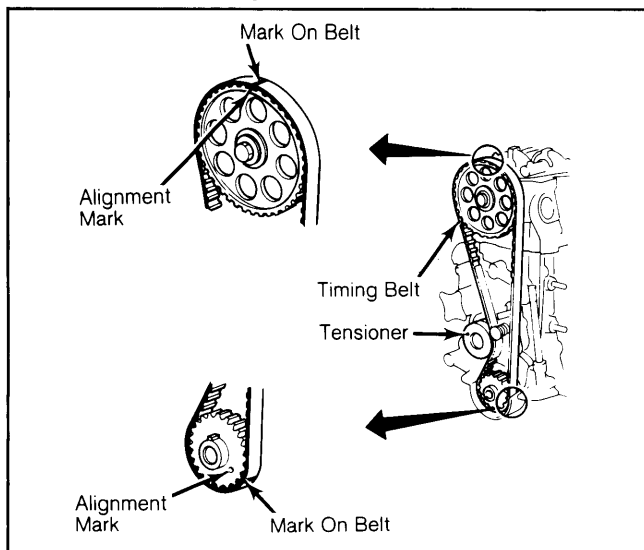
### Installation (Stanza)

1) Thoroughly clean mating surfaces, and note the following: Ensure No. 1 piston is at TDC on its compression stroke. Ensure camshaft pulley mark is aligned with cylinder head cover mark.

2) Install cylinder head gasket, and cylinder head. Install cylinder head bolts, and temporarily tighten 2 center bolts to 14 ft.lbs. (20 N.m). Final tightening should be carried out after installing timing belt and front cover.

3) Ensure tensioner bolts are not securely tightened before drive belt is installed. Align timing belt on camshaft sprocket and crankshaft sprocket. See Fig. 3.

**Fig. 3: Timing Belt Alignment Procedure For Stanza**

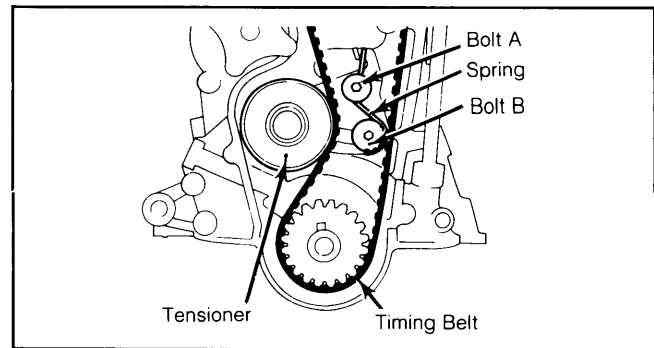


Alignment marks on belt must align with marks on pulleys.

4) Tighten belt tensioner and assemble spring. See Fig. 4. To set spring, first hook one end on bolt "B" side, then hook the other end on tensioner bracket pawl.

5) Tighten bolt "B" and then bolt "A", and belt tension will automatically be the specified value. See Fig. 4. Install lower front cover with gaskets and tighten bolts. Install upper front cover. Install front pulley damper.

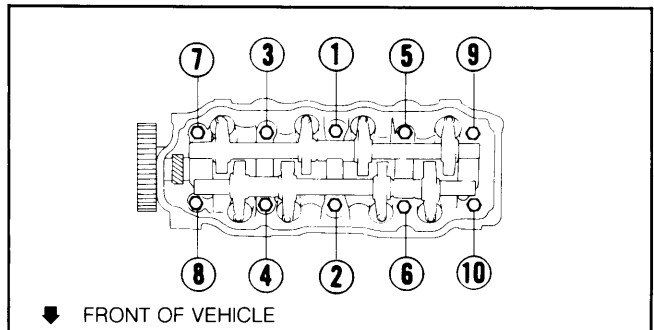
**Fig. 4: Timing Belt Tightening Procedure For Stanza**



Tighten bolt "B" and then bolt "A".

6) Install crankshaft pulley. Tighten cylinder head bolts in 3 steps. Follow sequence shown in Fig. 5.

**Fig. 5: Tightening Sequence for Stanza Cylinder Head**



Tighten cylinder head bolts in 3 steps.

### ENGINE FRONT COVER & OIL SEAL

#### Removal (Sentra & 310)

1) Remove accessory drive belts. Remove water pump pulley. Remove crankshaft pulley, and spacer. Remove front cover retaining bolts, and remove upper and lower front cover.

2) Remove timing belt tensioner, and remove timing belt. Remove auxillary shaft pulley. Remove crankshaft sprocket, and oil seal collar. Remove cylinder block cover retaining bolts, and remove cover.

3) Using a seal driver/installer tool, drive out auxillary shaft oil seal. Using same tool drive out crankshaft oil seal.

**NOTE:** Replace front cover seals anytime cylinder block cover is removed.

#### Installation

1) Lubricate oil seal lips with engine oil. Using seal driver/installer tool, drive seal into position. Thoroughly clean mating surfaces and apply sealer to both sides of cylinder block gasket.

2) Install cylinder block cover, and tighten bolts. Install oil seal collar, being careful not to damage oil seal lip. Reverse removal procedure to complete installation.

#### Removal (Stanza)

1) Drain engine oil. Remove oil pan and oil strainer. Remove water pump belt, crank pulley and crankshaft damper. Remove timing belt tensioner, and timing belt. Remove crankshaft sprocket.

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2) Remove oil pump retaining bolts, and remove oil pump. Drive out front oil seal from oil pump, using a seal driver/installer tool.

### Installation

1) Lubricate oil seal lips with engine oil. Using seal driver/installer tool, drive seal into position.

2) To complete installation, reverse removal procedure and not the following: When installing timing belt, ensure crankshaft and camshaft are in proper alignment. See Timing Belt in this section.

## CAMSHAFT

### TIMING BELT

#### Removal (All Models)

1) Turn crankshaft until No. 1 piston is at TDC on its compression stroke. Remove power steering pump drive belt, and A/C drive belt (if equipped).

2) Remove rocker arm cover. Remove water pump (if necessary). Remove crankshaft pulley and spacer. Remove front cover retaining bolts, and remove front cover. Remove timing belt tensioner, and remove timing belt.

**NOTE:** After timing belt is removed, do not rotate crankshaft and camshaft separately, this could cause valves to hit piston heads.

#### Installation (Sentra & 310)

1) Ensure No. 1 piston is at TDC on its compression stroke. Ensure camshaft pulley mark is aligned with cylinder head cover mark. See Fig. 1. Rotate tensioner clockwise about 70-80°, and temporarily tighten lock nut.

2) Place timing belt on sprockets. When installing a used belt, be sure to install it with rotating direction mark facing engine rotating direction. Ensure that belt is not loose around auxiliary shaft and camshaft sprockets.

3) Loosen tensioner lock nut so that tensioner pushes on timing belt. Turn camshaft sprocket about 20° (2 cogs) clockwise. Tighten nut while preventing tensioner from turning in "free" direction. Reverse removal procedure to install remaining components.

#### Installation (Stanza)

1) Ensure tensioner bolts are not securely tightened before drive belt is installed. Align timing belt on camshaft sprocket and crankshaft sprocket. See Fig. 3.

2) Tighten belt tensioner and assemble spring. See Fig. 4. To set spring, first hook one end on bolt "B" side, then hook the other end on tensioner bracket pawl.

3) Tighten bolt "B" and then bolt "A", and belt tension will automatically be the specified value. Install lower front cover with gaskets and tighten bolts. Install plate and front pulley damper. See Fig. 4.

## CAMSHAFT

### Removal

1) Remove engine front cover, and valve train components as previously outlined. Remove distributor. On Stanza, remove fuel pump.

2) Remove timing belt sprocket, and remove timing belt. On Sentra and 310 models, remove screws from camshaft lock plate. Carefully pull camshaft from cylinder head.

### Inspection

1) Thoroughly clean and inspect camshaft for wear or scoring. Check runout of camshaft using a dial indicator on center bearing journal. If runout exceeds .0039" (.10 mm), replace camshaft.

2) Check journal diameter, and if diameter is more than .0059" (.15 mm) from standard, camshaft journals must be ground to next undersize. Bearings are available in standard and three undersizes.

### Installation

1) Coat camshaft with light coat of engine oil and carefully install camshaft into engine. Install camshaft lock plate attaching screws (if equipped).

2) Install valve train components. Install timing belt with sprocket, and timing belt tensioner. See Timing Belt in this section. Install engine front cover. Reverse removal procedure, to complete installation.

## CAMSHAFT END THRUST

Check camshaft end thrust with camshaft, lock plate, and camshaft sprocket in position by using a dial indicator on camshaft sprocket bolt. If end play exceeds .016" (.4 mm) on Sentra and 310 models, or .008" (.2 mm) on Stanza, check camshaft contact surface parts, and replace faulty parts.

## CAMSHAFT BEARING CLEARANCE

With camshaft removed, measure the inside diameter of camshaft bearing with an inside dial gauge and the outside diameter of camshaft journal with a micrometer. See Camshaft Specification Table in this section. If beyond max. clearance, replace camshaft and/or cylinder head. Install camshaft as previously outlined.

## VALVES

### VALVE ARRANGEMENT

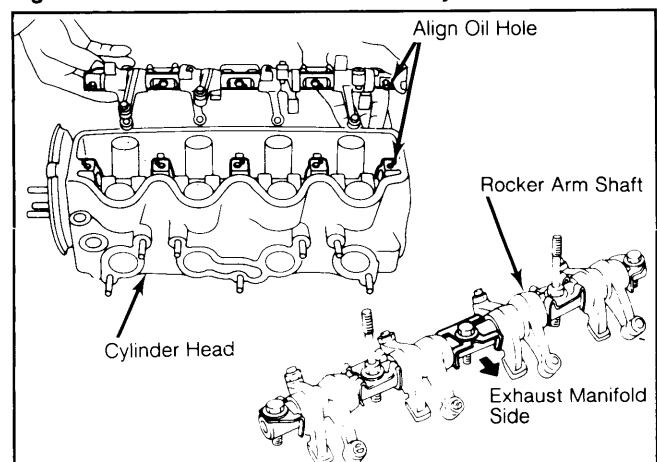
Right Side — All Intake.

Left Side — All Exhaust.

### ROCKER ARM & SHAFT ASSEMBLY

1) Remove valve cover and loosen valve adjusting screws to remove tension. Loosen rocker arm

Fig. 6: Rocker Arm and Shaft Assembly



Loosen rocker arm assembly mounting bolts evenly.

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assembly mounting bolts evenly and remove rocker arm and shaft assembly.

**NOTE:** To prevent rocker shaft springs from slipping out of rocker shafts, insert bracket bolts into bolt holes.

2) Slide rocker arms and springs off support stands. Thoroughly clean and inspect all components for signs of wear or seizure. Replace as necessary.

3) If valve contact surface of rocker arm is worn, resurface using a grinder.

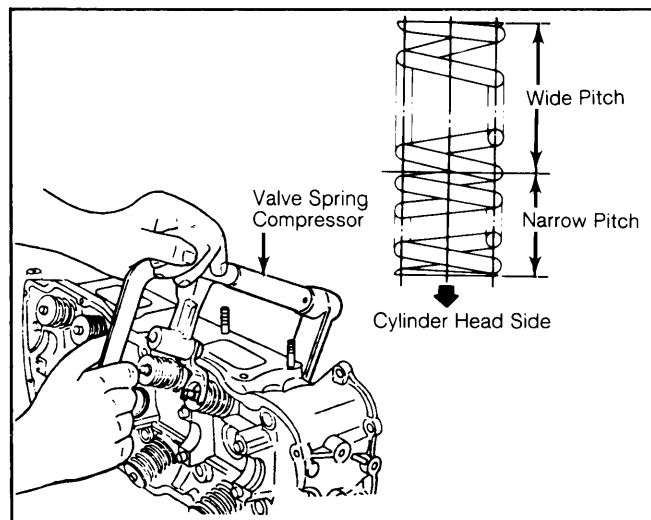
4) Reverse disassembly and removal procedures to assemble and install rocker arm assembly. Adjust valve clearance.

### VALVE SPRINGS

#### Removal

With cylinder head removed, compress valve spring using a valve spring compressor, and remove valve keepers. Release spring compressor and remove spring retainer and spring(s).

**Fig. 7: Valve Spring Removal & Replacement**



#### Installation

1) Install valve spring seat(s) and valve oil seal, then insert valve in guide carefully to avoid damaging lip seal.

2) Install valve spring (uneven pitch type) with its narrow pitch side toward cylinder head. Using a valve spring compressor, compress spring and install retainer and keepers.

### VALVE SPRING INSTALLED HEIGHT

Valve spring must be square within .079" (2.0 mm) for Sentra and 310 models. On Stanza models spring must be square within .087" (2.2 mm) on outer spring, and .075" (1.9 mm) on inner spring.

Check valve spring by applying specified load and measuring spring height. If spring height, pressure or squareness do not meet specifications, replace spring. See Valve Spring Specification Table in this section.

### VALVE STEM OIL SEALS

Valve stem lip seals are used on all guides. Valve spring seat must be in position, then place seal on

guide. Tap seal installer tool (KV10104800) with plastic hammer to ensure proper position of seal on guide.

### VALVE GUIDE SERVICING

1) Measure clearance between valve stem and valve guide with micrometer and hole gauge. Check diameter of valve stem in 3 places: top, center, and bottom.

2) Insert hole gauge in valve guide bore and measure at center. Subtract highest reading of valve stem diameter from valve guide bore to determine clearance.

3) As a quick check, a valve may be inserted into valve guide and moved either left and right, (parallel with rocker arm). If tip moves .008" (.2 mm) or more, clearance is beyond maximum limit.

**NOTE:** Information on valve guide replacement for Stanza models is not available from manufacturer.

4) If clearance is beyond acceptable limits and valve stem is not worn, the valve guide must be replaced. To replace guide, heat cylinder head to 300-400°F (150-200°C), and use a drift to drive old guides out from combustion chamber side toward rocker arm cover.

5) With head at room temperature, ream valve guide hole to .480" (12.2 mm). Re-heat cylinder head and install new guide. Use reamer to finish stem bore to .2758-.2764" (7.005-7.020 mm) and reface valve seat surface.

### VALVE CLEARANCE

#### Sentra & 310

1) Set valves to .009" (.22 mm) cold for assembly purposes. Rotate crankshaft until No. 1 cylinder is at TDC on compression stroke and adjust as follows: No. 1 Exhaust and Intake, No. 2 Intake, and No. 3 Exhaust.

2) Rotate crankshaft and bring No. 4 cylinder to TDC on compression stroke and adjust remaining valves as follows: No. 2 Exhaust, No. 3 Intake, and No. 4 Intake and Exhaust.

3) Warm engine to normal operating temperature and repeat adjustment procedure. Set clearance to .011" (.28 mm).

#### Stanza

1) Set intake valves to .008" (.21 mm), and exhaust valves to .009" (.23 mm) cold for assembly purposes. Rotate crankshaft until high point of No. 1 cam lobe points down and adjust as follows: No. 1 Intake, No. 2 Intake, No. 3 Exhaust, and No. 4 Exhaust.

2) Rotate crankshaft until high point of No. 1 cam lobe points up and adjust remaining valves, No. 1 Exhaust, No. 2 Exhaust, No. 3 Intake, and No. 4 Intake.

3) Warm engine to normal operating temperature and repeat adjustment procedure. Set clearance to .012" (.30 mm).

## PISTONS, PINS & RINGS

### PISTON & ROD ASSEMBLY

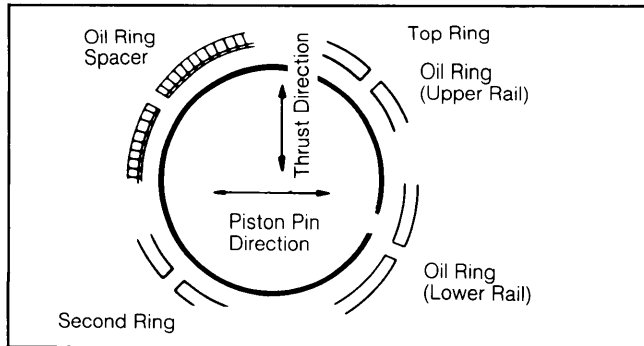
1) With engine removed from vehicle, remove cylinder head and oil pan. Remove nuts from connecting rod and remove connecting rod cap with bearing half. Push piston and connecting rod assembly with bearing half up and out through top of cylinder block.

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2) To install piston and connecting rod assembly, thoroughly oil rings, piston and cylinder wall. Make sure ring gaps are situated approximately 180° apart and not on thrust side of piston. See Fig. 8. Make sure bearing halves are properly seated in connecting rod and cap.

**Fig. 8: Piston Ring Gap Positioning**



Ensure ring gaps are not on thrust side of piston.

3) Install a ring compressor and compress piston rings. Install piston in cylinder with notch on top of piston toward front of engine. Ensure connecting rod and bearings are seated against crankshaft journal. Install rod cap with numbers on the same side as connecting rod. Tighten rod cap nuts.

4) Install cylinder head and oil pan as previously outlined. Reverse removal procedure, to complete installation

### FITTING PISTONS

1) Check piston-to-cylinder clearance with a feeler gauge, and spring tension gauge. With a .0016" (.04 mm) feeler gauge installed between piston and cylinder wall, a force of 1.1-3.3 lbs. (.5-1.5 kg) measured on spring tension gauge, should be needed to extract feeler gauge.

**NOTE:** It is recommended that piston and cylinder be at 68°F (20°C) when checking piston fit.

2) Measure piston diameter at top of skirt 90° to piston pin axis. Measure cylinder bore halfway down cylinder and 90° to crankshaft center line. Pistons and rings are available in standard and 2 oversizes.

### Piston Specifications

Application In. (mm)	Diameter In. (mm)
<b>310 &amp; Sentra</b>	
Std. ....	2.9908-2.9928 (75.967-76.017)
.0008 (.020) O/S .....	2.9916-2.9936 (75.987-76.037)
.020 (.50) O/S .....	3.0105-3.0125 (76.467-76.517)
<b>Stanza</b>	
Std. ....	3.3254-3.3274 (84.465-84.515)
.0197 (.50) O/S .....	3.3451-3.3470 (84.965-85.015)
.0394 (1.0) O/S .....	3.3648-3.3667 (85.465-85.515)

### PISTON PIN REPLACEMENT

1) Remove piston and connecting rod assembly as previously outlined. Use a press and pin press stand, to remove and install pin in piston/rod assembly.

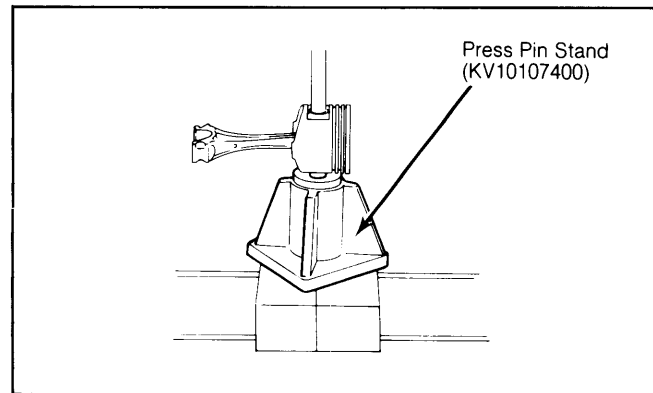
2) Check piston-to-pin clearance by measuring pin and hole diameters. If clearance is not within

specifications, replace both piston and piston pin. Piston pin should push fit by hand through piston, with both piston and pin at room temperature.

3) Piston pin should be press fit into connecting rod. If interference fit is not within specifications, replace connecting rod or piston pin as necessary. If connecting rod is replaced, ensure weight difference between rods is within .2 ounces.

4) To assemble piston and connecting rod assembly, use same mandrel and driver used for disassembly. Thoroughly oil pin, piston and connecting rod. Install piston on connecting rod so that number on top of piston is pointing toward front of engine and oil squirt hole on connecting rod is toward right side of block.

**Fig. 9: Removing and Installing Piston Pin**



Piston pin is press fit into connecting rod.

## CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

### MAIN & CONNECTING ROD BEARINGS

#### Removal

1) With engine removed from vehicle, remove cylinder head, and oil pan. Remove connecting rod cap nuts, and remove piston and connecting rod assemblies. Remove alternator and engine mounting bracket.

2) Remove the following: water pump pulley, oil pump, crankshaft pulley, timing belt cover, belt tensioner, timing belt, and crankshaft sprocket.

3) On Sentra and 310 models, remove front cylinder block cover. Remove clutch assembly, and flywheel. Loosen main bearing cap bolts in 2 steps, then remove caps. Remove rear oil seal retainer, and carefully lift out crankshaft.

#### Inspection

1) Thoroughly clean and inspect crankshaft. Blow out oil passages with compressed air. Check crankshaft for runout on center main bearing journal. If runout is more than .0016" (.04 mm), crankshaft is bent and must be replaced.

2) Check all main and connecting rod bearings, using Plastigage method. Check main and connecting rod journals for out-of-round or taper.

3) If more than .0004" (.01 mm), crankshaft must be ground to next undersize. Main and connecting rod journals may be ground to the undersizes indicated in tables.

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### MAIN BEARING JOURNALS

Application In. (mm)	Diameter In. (mm)
310 & Sentra	
Std. ....	1.9663-1.9671 (49.943-49.964)
.01 (.25) U/S .....	1.9567-1.9572 (49.701-49.714)
.02 (.50) U/S .....	1.9469-1.9474 (49.451-49.464)
.03 (.75) U/S .....	1.9370-1.9376 (49.201-49.214)
Stanza	
Std. ....	2.0847-2.0852 (52.951-52.964)
.01 (.25) U/S .....	2.0732-2.0737 (52.658-52.671)
.02 (.50) U/S .....	2.0633-2.0638 (52.408-52.421)

#### Installation

1) Install main bearing halves to engine block ensuring that all bearings are on correct journal. Journal No. 3 requires a thrust bearing. Upper and lower bearings are not interchangeable.

### CONNECTING ROD JOURNALS

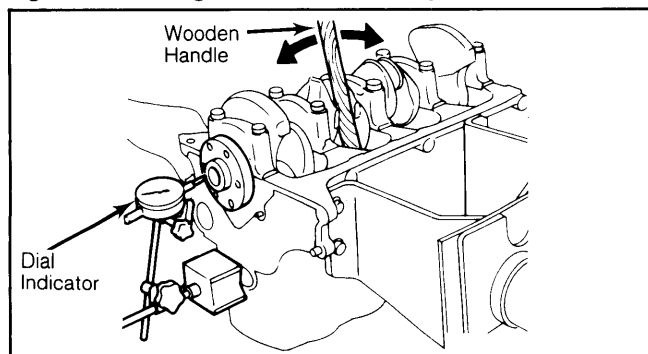
Application In. (mm)	Diameter In. (mm)
310 & Sentra	
Std. ....	1.7698-1.7706 (44.954-44.974)
.003 (.08) U/S .....	1.7670-1.7675 (44.881-44.894)
.01 (.25) U/S .....	1.7603-1.7608 (44.711-44.724)
.02 (.50) U/S .....	1.7504-1.7509 (44.461-44.474)
.03 (.75) U/S .....	1.7406-1.7411 (44.211-44.224)
Stanza	
Std. ....	1.7701-1.7706 (44.961-44.974)
.003 (.08) U/S .....	1.7657-1.7662 (44.848-44.861)
.01 (.25) U/S .....	1.7641-1.7646 (44.808-44.821)
.02 (.50) U/S .....	1.7590-1.7595 (44.678-44.691)
.03 (.75) U/S .....	1.7492-1.7497 (44.428-44.441)

2) Apply oil to main bearing surface, and install crankshaft. On Sentra and 310 models, install main bearing caps so that the number on bearing cap faces toward the water pump.

3) On Stanza install main bearing caps so that the numbers on the bearing caps are in a row from the front of engine. Tighten main bearing caps in 2 or 3 steps, starting at center bearing and working outward. Ensure crankshaft rotates smoothly.

4) Check crankshaft end play. See Thrust Bearing Alignment in this section. Install rear oil seal retainer. Reverse removal procedure, to complete installation.

**Fig. 10: Checking Crankshaft End Play**



End play should be .002-.007" (.05-.18 mm).

### THRUST BEARING ALIGNMENT

Thrust bearing is installed on No. 3 main bearing journal. Check crankshaft end play by inserting a feeler gauge between flange of thrust bearing and crankshaft. End play should be .002-.007" (.05-.18 mm). Service limit is .012" (.30 mm).

### REAR MAIN BEARING OIL SEAL

#### Removal & Installation

1) With engine removed from vehicle, remove clutch assembly. Remove flywheel, and engine end plate. Remove oil pan, and oil seal retainer. Drive out old seal from retainer, using a seal driver/installer tool.

2) Lubricate seal lips. Using seal driver/installer tool, drive seal into position. Install oil seal retainer. Reverse removal procedure, to complete installation.

**NOTE:** When replacing front or rear oil seal, note seal mounting direction.

### ENGINE OILING

#### CRANKCASE CAPACITY

All models 3.7 qts. (3.5L) with filter.

#### OIL FILTER

Full-flow, replaceable element.

#### OIL PRESSURE

More than psi (.8 kg/cm<sup>2</sup>) at idle; psi (3.8-5.2 kg/cm<sup>2</sup>) at 3000 RPM.

#### PRESSURE RELIEF VALVE

Non-adjustable, located in oil pump cover.

#### OIL PUMP

##### Removal (Sentra & 310)

1) Place drain pan under oil pump assembly. Loosen alternator lower bolts. Remove alternator belt and adjusting bracket bolt, and move alternator aside. Disconnect oil pressure gauge harness.

2) Remove 4 pump mounting bolts, and remove oil pump. Check all clearances using a feeler gauge. If beyond wear limit replace entire pump assembly.

##### Installation

To install, reverse removal procedure.

##### Removal (Stanza)

1) Drain engine oil. Remove oil pan and oil strainer. Remove water pump belt, crank pulley and crankshaft damper. Remove timing belt tensioner, and timing belt. Remove crankshaft sprocket.

**NOTE:** After timing belt is removed, do not rotate crankshaft and camshaft separately, this could cause valves to hit piston heads.

2) Remove oil pump retaining bolts, and remove oil pump. Check all clearances with a feeler gauge. If beyond wear limit replace entire pump assembly.

##### Installation

To install, reverse removal procedure, and note the following: When installing timing belt, ensure crankshaft and camshaft are in proper alignment. See Timing Belt in this section.

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### OIL PUMP SPECIFICATIONS

Application	Wear Limit In. (mm)
Rotor-to-Rotor Side Clearance .....	.0024 (.06)
Rotor-to-Tip Clearance .....	.0079 (.20)
Rotor-to-Pump Body .....	.0197 (.50)
Free Length .....	1.71 (43.49)
Length at 8.09 lbs. (3.67 kg) .....	1.19 (30.3)

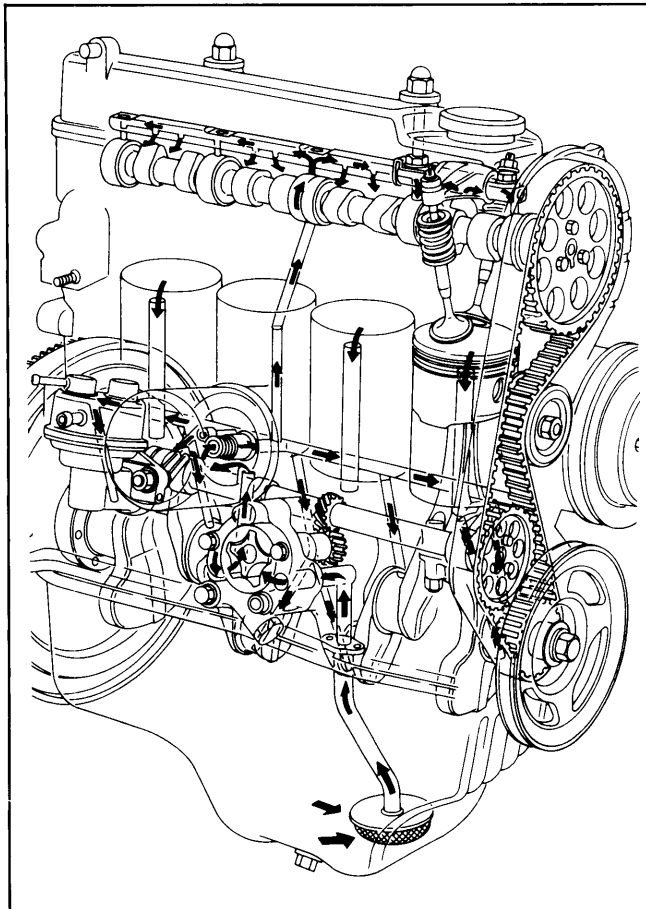
### ENGINE OILING SYSTEM

#### Sentra & 310

Pressure is provided to oiling system by a trochoid rotor type pump. Oil pump is mounted on side of crankcase and is driven by auxiliary shaft. Oil pump feeds oil from pan to full flow oil filter.

Oil is then pumped into main oil gallery of crankcase where it is distributed to crankshaft journals, main bearing journals. From this point oil is fed to the camshaft journals and from center camshaft journal to rocker arm shaft to lubricate rocker arms and valves. Cylinder walls and piston pins are lubricated by oil squirt hole in connecting rod.

Fig. 11: Sentra & 310 Engine Oiling System

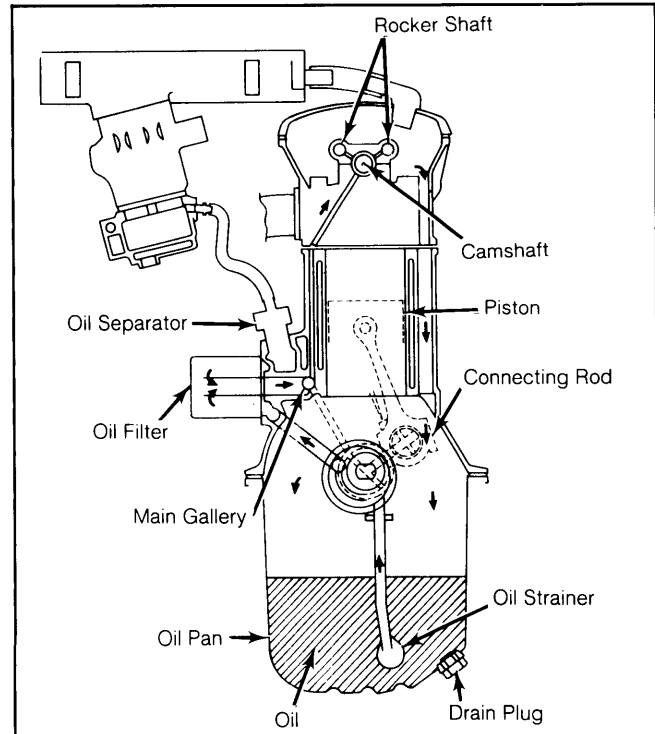


#### Stanza

Pressure is provided to oiling system by an inner gear type pump. Oil pump is mounted on front of crankshaft, and is driven by crankshaft. Oil pump feeds oil from pan to full flow oil filter. Oil is then pumped into main oil gallery of crankcase where it is split into 2 circuits.

Oil is distributed to the main bearings and to the cylinder head oil gallery. From the main bearings oil is fed to connecting rods. Cylinder walls and piston pins are lubricated by oil squirt hole in connecting rod. From the cylinder head oil gallery oil is fed to the number 4 camshaft bracket, which feeds the camshaft, rocker shaft, and the rocker arm.

Fig. 12: Stanza Engine Oiling System



### ENGINE COOLING

#### COOLING SYSTEM CAPACITY

Sentra & 310 6.0 qts. (5.7 L).

Stanza 6.0 qts. (5.7 L).

#### THERMOSTAT

Opens at 180°F (82°C).

#### WATER PUMP

##### Removal

1) Drain coolant. Remove power steering drive belt, and remove power steering pump (if equipped). Remove alternator drive belt. A/C compressor drive belt (if equipped).

2) On Stanza remove front cover retaining bolts, and remove front cover. Remove water pump pulley. Remove water pump retaining bolts, and remove water pump.

##### Installation

To install, use new gasket and reverse removal procedure. Ensure gasket contact surfaces are clean.

# Datsun/Nissan Engines

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## 310, SENTRA & STANZA 4-CYLINDER (Cont.)

### ENGINE SPECIFICATIONS

#### GENERAL SPECIFICATIONS

Year	DISPLACEMENT		Fuel System	HP@RPM	Torque Ft. Lbs.@RPM	Compr. Ratio	BORE		STROKE	
	Cu. In.	cc					In.	mm	In.	mm
1982 310 & Sentra Stanza	90.8 120.4	1488 1974	2-Bbl. 2-Bbl.	..... .....	..... .....	9.0:1 8.5:1	2.99 3.33	76 84.5	3.23 3.46	82 88

#### VALVES

Engine Size & Valve	Head Diam. In. (mm)	Face Angle	Seat Angle	Seat Width In. (mm)	Stem Diameter In. (mm)	Stem Clearance In. (mm)	Valve Lift In. (mm)
1488 cc Intake	1.457 (37.0)	45.2°-45.7°	45°	1.354-1.362 (34.4-34.6)	.2744-.2750 (6.970-6.985)	.008-.0020 (.02-.05)	.....
Exhaust	1.181 (30.0)	45.2°-45.7°	45°	1.161-1.169 (29.5-29.7)	.2734-.2740 (6.945-6.960)	.0018-.0030 (.045-.075)	.....
1974 cc Intake	1.575-1.583 (40.0-40.2)	45.5°	45°	1.638-1.646 (41.6-41.8)	.2742-.2748 (6.965-6.980)	.008-.0021 (.020-.053)	.....
Exhaust	1.378-1.386 (35.0-35.2)	45.5°	45°	1.472-1.480 (37.4-37.6)	.2734-.2740 (6.945-6.960)	.0016-.0029 (.040-.073)	.....

#### PISTONS, PINS, RINGS

Engine	PISTONS	PINS		RINGS		
	Clearance In. (mm)	Piston Fit In. (mm)	Rod Fit In. (mm)	Ring No.	End Gap In. (mm)	Side Clearance In. (mm)
1488 cc	.0010-.0018 (.025-.045)	.0003-.0005 (.008-.012)	.0007-.0014 <sup>1</sup> (.017-.035)	1 2 Oil	.0079-.0138 (.20-.35) .0059-.0118 (.15-.30) .0118-.0354 (.30-.90)	.0016-.0028 (.04-.07) .0012-.0024 (.03-.06) Snug
1974 cc		.0003-.0005	.0007-.0015	1 2 Oil	.0098-.0157 (.25-.40) .0059-.0118 (.15-.30) .0118-.0354 (.30-.90)	.0016-.0029 (.040-.073) .0012-.0025 (.030-.063) .....

#### CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

Engine	MAIN BEARINGS				CONNECTING ROD BEARINGS		
	Journal Diam. In. (mm)	Clearance In. (mm)	Thrust Bearing	Crankshaft End Play In. (mm)	Journal Diam. In. (mm)	Clearance In. (mm)	Side Play In. (mm)
1488 cc	1.9663-1.9671 (49.94-49.96)	.0022-.0029 (.055-.073)	No. 3	.0020-.0059 (.050-.150)	1.7698-1.7706 (44.95-44.97)	.0015-.0031 (.038-.079)	.004-.008 (.1-.2)
1974 cc	2.0847-2.0852 (52.951-52.964)	.0016-.0024 (.04-.06)	No. 3	.0020-.0071 (.05-.18)	1.7701-1.7706 (44.961-44.974)	.0008-.0024 (.02-.06)	.004-.008 (.1-.2)

# Datsun/Nissan Engines

## 310, SENTRA & STANZA 4-CYLINDER (Cont.)

### ENGINE SPECIFICATIONS (Cont.)

#### CAMSHAFT

Engine	Journal Diam. In. (mm)	Clearance In. (mm)	Lobe Lift In. (mm)
1488 cc No. 1, 3 & 5	1.6515-1.6522 (41.949-41.965)	.0014-.0030 (.035-.076)	.....
No. 2 & 4	1.6498-1.6505 (41.906-41.922)	.0031-.0047 (.078-.119)	.....
1974 cc All	1.8085-1.8092 (45.935-45.955)	.....	.....

#### VALVE SPRINGS

Engine	Free Length In. (mm)	PRESSURE Lbs. @ In. (Kg @ mm)	
		Valve Closed	Valve Open
1488 cc	1.8386 (46.70)	.....	.....
1974 cc Outer	1.9677 (49.98)	.....	.....
Inner	1.7362 (44.10)	.....	.....

#### VALVE TIMING

Engine	INTAKE		EXHAUST	
	Open (BTDC)	Close (ABDC)	Open (BBDC)	Close (ATDC)
1488 cc 1974 cc	11° 1	41° 1	46° 1	6° 1

<sup>1</sup> — Information not available from manufacturer.

#### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
<b>310 &amp; Sentra</b>	
Cylinder Head .....	51-54 (69-73)
Connecting Rod Caps .....	23-27 (31-37)
Main Bearing Caps .....	36-43 (49-59)
Camshaft Sprocket .....	29-35 (39-48)
Rocker Arm Shaft .....	14-18 (19-25)
Manifolds .....	11-14 (15-19)
Crankshaft Pulley .....	108-145 (147-197)
Flywheel .....	58-65 (79-88)
<b>Stanza</b>	
Cylinder Head .....	51-58 (69-78)
Connecting Rod Caps .....	22-27 (29-37)
Main Bearing Caps .....	33-40 (44-54)
Camshaft Sprocket .....	36-43 (49-59)
Rocker Arm Shaft .....	13-16 (18-22)
Manifolds .....	13-16 (18-22)
Timing Belt Tensioner .....	13-16 (18-22)
Crankshaft Pulley Damper Bolt .....	90-98 (123-132)
Flywheel .....	72-80 (98-108)

#### INCH Lbs. (N.m)

<b>310 &amp; Sentra</b>	
Camshaft Lock Plate .....	35-43 (4-5)
Timing Belt Tensioner .....	52-70 (6-8)
Front Cover .....	43-61 (5-7)
Oil Pump .....	78-121 (9-14)
<b>Stanza</b>	
Camshaft Lock Plate .....	35-43 (4-5)
Front Cover .....	43-61 (5-7)
Oil Pump .....	78-121 (9-14)