1971-73 CAPRI 2000 CC 4 CYLINDER

GENERAL SPECIFICATIONS

Year	Displ.		Carburetor	HP at RPM	Torque (Ft. Lbs. at RPM)	Compr. Ratio	Bore		Stroke	
	cu. ins.	cc					in.	mm	in.	mm
1971	122	1999	2-Bbl.	100 @ 5600	120 @ 3600	9.0-1	3.575	90.795	3.029	76.936
1972	122	1999	2-Bbl.	.....	.....	8.2-1	3.575	90.795	3.029	76.936
1973	122	1999	2-Bbl.	.....	.....	.....	3.575	90.795	3.029	76.936

▶ CHANGES, CAUTIONS, CORRECTIONS

See "Engine Notes" at end of article.

ENGINE IDENTIFICATION

The second series of digits of vehicle identification number, located on a plate riveted to top of right fender apron, indicates engine type.

Capri Engine	Engine Code
2000 cc	NB

ENGINE REMOVAL

1) Remove radiator lower splash shield, and hood. Drain radiator and crankcase fluids.

2) Remove air cleaner and carburetor air cleaner adapter.

3) Disconnect ground cable from battery and engine.

4) Remove radiator upper shield, hoses and radiator.

5) Disconnect heater hoses from water pump and carburetor choke fitting.

6) Disconnect wiring connector from alternator.

7) Disconnect accelerator cable and shaft swivel from bellcrank. Remove two screws mounting bellcrank, and set bellcrank aside.

8) Disconnect coil primary wire and high tension lead at coil.

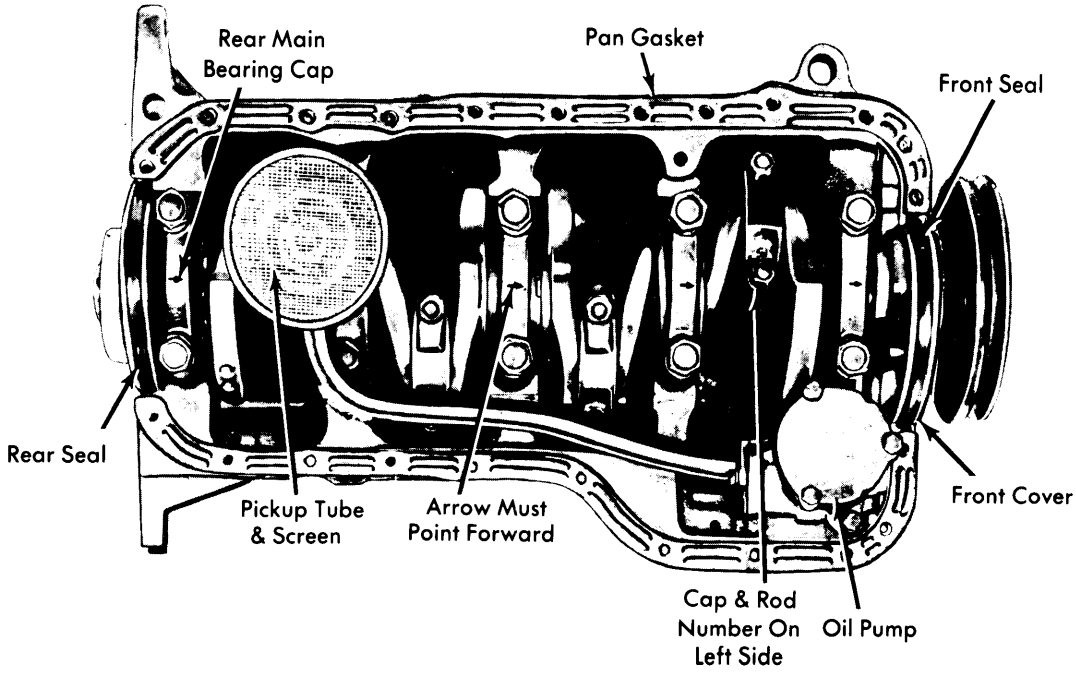
9) Disconnect oil pressure and water temperature sending unit wires at sending units.

10) Raise vehicle and remove starter.

11) Disconnect header pipe at exhaust manifold.

12) Remove flywheel or converter housing lower front cover.

13) Remove flywheel housing lower attaching bolts (Man. Trans.). Disconnect converter from flex plate. Remove connector housing to cylinder block lower attaching screws (Auto. Trans.).



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OIL PAN GASKETS & SEALS

1971-73 CAPRI 2000 CC 4 CYLINDER (Cont.)

14) Disconnect right and left engine mounts at underbody bracket. Support transmission and clutch or converter housing with a floor jack.

15) Lift engine clear of vehicle and place on an engine stand.

INTAKE MANIFOLD REMOVAL

1) Remove air cleaner. Disconnect fuel line from carburetor.

2) Disconnect two distributor vacuum and crankcase ventilation hoses at intake manifold.

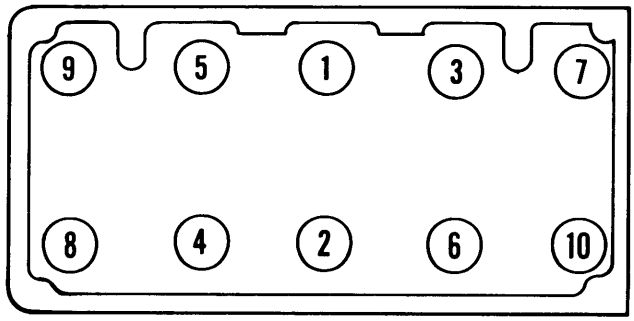
3) Remove intake manifold nuts and lift manifold, carburetor, and decel valve off studs as an assembly.

CYLINDER HEAD REMOVAL

1) Drain cooling system, remove air cleaner and rocker arm cover.

2) Remove exhaust manifold. Remove intake manifold, carburetor and decel valve as an assembly. Remove camshaft drive belt cover.

3) Loosen drive belt tensioner and remove belt. Remove water outlet elbow from head. Remove 10 head bolts using suitable tool (T71P-6065A). Lift head and camshaft assembly from engine.



CYLINDER HEAD TIGHTENING SEQUENCE

VALVES

Engine & 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)
1971-73 2000 cc							
Int.	1.653 (41.986)	44	45	.060-.079 (1.524-2.0)	.3159-.3167 (8.024-8.042)	.0008-.0025 (.020-.064)	.3993 (10.142)
Exh.	1.417 (35.992)	44	45	.060-.079 (1.52-2.0)	.3149-.3156 (7.998-8.016)	.0018-.0035 (.046-.039)	.3993 (10.142)

VALVE ARRANGEMENT

E-I-E-I-E-I-E-I (front to rear).

VALVE GUIDES

If valve guides become worn they may be reamed to install a new valve with oversize stem. When going from a standard size stem to oversize, always use reamers in sequence to obtain final desired bore. The valve seat must be refaced after a guide has been reamed, and a suitable tool used to break sharp corner (ID) of guide.

VALVE STEM OIL SEALS

With valve in head, place plastic installation cap over end of valve stem. Start stem seal carefully over cap and push seal down until jacket touches top of valve guide. Remove plastic cap and bottom seal on valve guide.

VALVE SPRINGS

Engine	Free Length In. (mm)	PRESSURE Lbs. @ In. (kg @ mm)	
		Valve Closed	Valve Open
1971-73 2000 cc	1.73 (43.94)	67@1.417 (29@35.99)	176@1.02 (79.8@24.9)

VALVE SPRING INSTALLED HEIGHT

Measure assembled height of valve spring from surface of spring pad to underside of spring retainer. If height is greater than 1.422" (36.12 mm), install a .030" (.76 mm) spacer(s) between spring and pad to obtain recommended dimension.

NOTE — Do not install spacers unless necessary. Excess use of spacers will result in overstressing valve springs and overloading camshaft, causing breakage of springs and worn camshaft lobes.

VALVE CLEARANCE ADJUSTMENT

1) Remove air cleaner and rocker arm cover. Rotate crankshaft clockwise until high point of number one cam lobe is pointing down. Check clearance between cam lobe and rocker arm on valves six and seven. *NOTE — Remove rocker retaining springs before inserting feeler gauge.*

Application	①Valve Clearance In. (mm)
Intake	.008 (.203)
Exhaust	.010 (.254)

① — Adjust valves with engine cold.

2) Rotate engine until number two cam lobe is pointing down and adjust valves three and eight. Rotate engine until number three cam lobe is pointing down and adjust valves two and five. Rotate engine until number six cam lobe is pointing down and adjust valves one and four.

1971-73 CAPRI 2000 CC 4 CYLINDER (Cont.)

PISTONS, PINS, RINGS						
Engine	PISTONS	PINS		RINGS		
	① Clearance In. (mm)	Piston Fit In. (mm)	Rod Fit In. (mm)	Rings	End Gap In. (mm)	Side Clearance In. (mm)
1971 2000 cc	.001-.002 (.025-.051)	②.0002-.0004 (.005-.010)	③.0008-.0016 (.020-.041)	Comp. Oil	.002-.003 (.051-.076) .016-.055 (.406-1.397)	.002-.003 (.051-.072) Snug
1972-73 2000 cc	.001-.002 (.025-.051)	②.0002-.0004 (.005-.010)	③.0008 (.020)	Comp. Oil	.019-.021 (.483-.533) .016-.055 (.406-1.397)	.0019-.0038 (.048-.097) Snug

① — Measure at piston pin bore centerline @ 90° from pin axis.
② — Wear limit .0008" (.020 mm).
③ — Interference fit.

OIL PAN REMOVAL

1) Remove dipstick and drain crankcase.

2) Remove starter.

3) Disconnect right and left engine mount retaining nut at underbody bracket.

4) Remove flywheel or converter housing front cover.

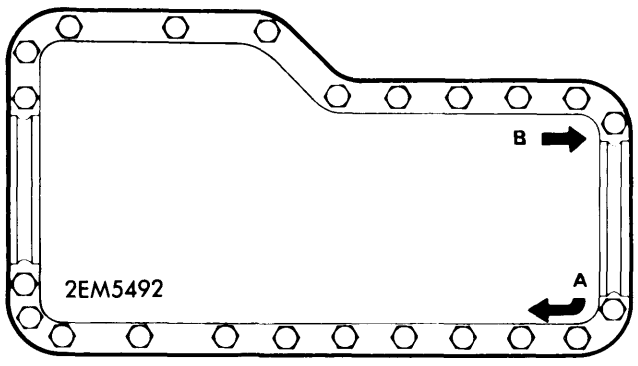
5) Raise engine slightly and remove oil pan screws.

6) Loosen front crossmember attaching screws on each side. *NOTE — Make sure screws are still retaining crossmember by a few threads.*

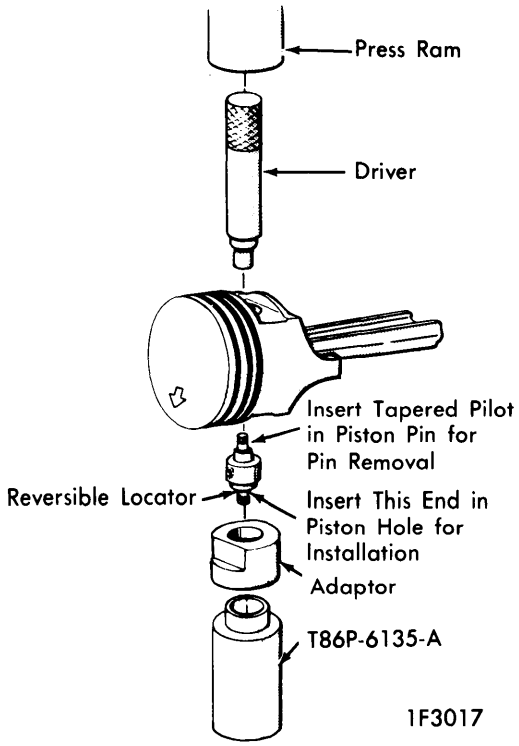
7) Disconnect oil pickup tube from oil pump and from cylinder block.

8) Move rear end of oil pan toward left, and carefully work oil pan out between engine block and crossmember.

9) When reinstalling oil pan, proper tightening sequence must be observed to prevent leaks. Tighten bolts starting with point "A" moving clockwise to point "B" (see illustration).



OIL PAN TIGHTENING SEQUENCE



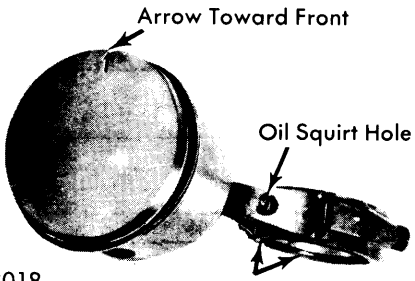
REMOVING & INSTALLING PISTON PIN

PISTON PIN REPLACEMENT

Piston pin bore and O.D. of piston pin must be within specifications. Remove old pin using an arbor press and suitable piston support and driver tool. Assemble piston to rod with the oil squirt hole in rod on right hand side of piston with

1971-73 CAPRI 2000 CC 4 CYLINDER (Cont.)

arrow pointing forward (See Illustration). Use arbor press to press pin into piston and connecting rod.



CORRECT PISTON & ROD ASSEMBLY

FITTING PISTONS

Check piston-to-cylinder bore clearance by measuring piston and bore diameters. Measure O.D. of piston at centerline of piston pin bore and at 90° to pin axis. Refer to specifications for correct clearance. Oversize pistons are available from manufacturer in .020" (.5 mm) oversize.

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)
1971 2000 cc	2.2432-2.2440 (56.977-56.998)	.0006-.0016 (.015-.041)	No. 3	.003-.011 (.076-.279)	2.0464-2.0472 (51.97-52.0)	.0006-.0015 (.015-.038)	.010-.024 (.254-.610)
1972-73 2000 cc	2.2432-2.2440 (56.977-56.998)	.0006-.0016 (.015-.041)	No. 3	.003-.011 (.076-.279)	2.0464-2.0472 (51.97-52.0)	.0006-.0015 (.015-.038)	.004-.010 (.254-.610)

MAIN & CONNECTING ROD BEARINGS

Determine crankshaft journal clearance in bearing by use of Plastigage. Place a jack under counterweight adjoining bearing being checked so that weight of crankshaft will not aid in compressing Plastigage and provide an erroneous reading.

If bearing clearance using standard size bearing inserts is excessive, a .002" undersize bearing half may be used in combination with a standard size bearing half. If .002" undersized bearings are used on more than one journal, they must be positioned in the cylinder block rather than in the bearing cap. If standard and .002" undersize combinations do not bring bearing clearance within specified limits (See Specifications), crankshaft will have to be refinished and undersize bearings installed, which are available in .010", .020", .030", and .040" undersizes.

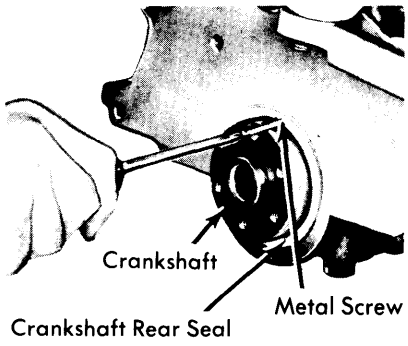
THRUST BEARING ALIGNMENT

Check crankshaft end play. If not within specifications, remove center main bearing cap and install new thrust washers. *NOTE — Always install thrust washers in pairs, (upper and lower), on rear side of main bearing.*

REAR MAIN BEARING OIL SEAL

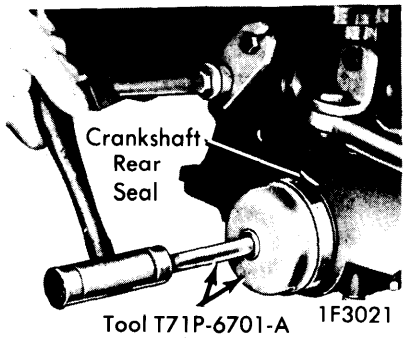
1) Remove transmission, clutch and flywheel or automatic transmission, converter and flywheel.

2) Remove rear seal using a sheet metal screw (See Illustration).



REMOVING REAR MAIN OIL SEAL

3) Install new seal using suitable tool (T71P-6701-A) (See Illustration).

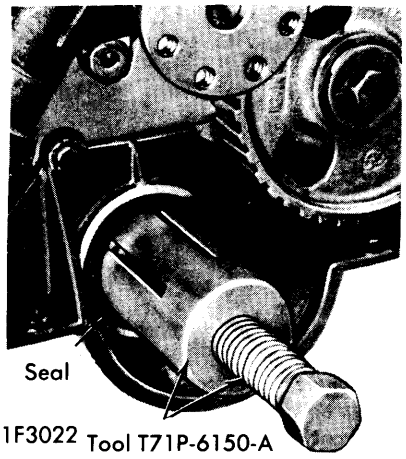


INSTALLING REAR MAIN OIL SEAL

1971-73 CAPRI 2000 CC 4 CYLINDER (Cont.)

CRANKSHAFT FRONT OIL SEAL REPLACEMENT

After removing alternator belt, remove crankshaft pulley. Remove camshaft drive belt (See Camshaft Drive Belt Replacement). Remove drive belt sprocket and belt guide. Use suitable tool (See Illustration) to remove and replace oil seal.



1F3022 Tool T71P-6150-A

REMOVING CRANKSHAFT FRONT OIL SEAL

CRANKSHAFT IDENTIFICATION

Crankshafts found in new cars may be either standard or .010" undersize. A white dot on front counterweight indicates all rod journals are .010" undersize, a white slash indicates all main journals are .010" undersize. If both a dot and a slash are found then all rod and main journals are undersize.

CAMSHAFT

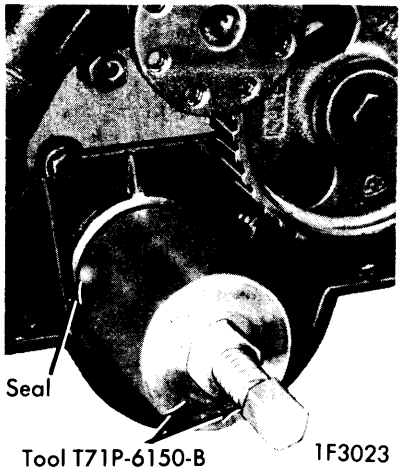
Engine ①	Journal Diam. In. (mm)	Clearance In. (mm) ②	Lobe Lift In. (mm)
1971-73 2000 cc			
No. 1	1.6532-1.6538 (41.9-42.0)	.0010-.0025 (.025-.064)	③
No. 2	1.7565-1.7570 (44.6-44.63)		
No. 3	1.7713-1.7719 (44.9-45.0)		

① — Auxiliary shaft clearance is .001-.0025" (.025-.064 mm).
② — End play is .002-.007" (.051-.179 mm).
③ — Lobe lift for 1971 is .2519" (6.4 mm), for 1972, .2512" (6.38 mm) and for 1973, .2493 (6.3 mm).

CAMSHAFT & BEARINGS

Removal — Remove rocker arms. Remove camshaft gear and belt guide plate from camshaft. Remove thrust plate from rear of cylinder head and carefully slide camshaft out from rear of cylinder head.

NOTE — Camshaft and auxiliary drive sprockets are identical components, and each can be accidentally installed in improper directions. Camshaft sprocket should be installed with balancing pads and webs facing forward. Install auxiliary drive sprocket with balancing pads and webbing facing rearward.



Tool T71P-6150-B 1F3023

INSTALLING CRANKSHAFT FRONT OIL SEAL

Installation — Pull new bearings into place with a suitable tool, making sure lube hole in bearing is aligned with one in journal. Carefully slide camshaft into place and attach thrust plate. Check camshaft for proper endplay (See Specifications). If endplay is excessive, replace thrust plate.

CAMSHAFT LOBE LIFT

Measure distance between major and minor diameters of each cam lobe with a micrometer. Difference in readings is lobe lift. If readings vary or do not meet specifications, replace camshaft.

CAMSHAFT DRIVE BELT REPLACEMENT

Removal — Loosen belt tensioner adjustment bolt and force tensioner to one side to relieve belt tension. Hold tensioner in this position and tighten bolt to hold tensioner. Lift belt off sprockets. *NOTE — Do not rotate crankshaft or camshaft with belt removed. Valve and ignition timing will be lost if this occurs.*

Installation — Place new belt over sprockets and loosen tensioner adjustment bolt to place tension on belt. Rotate crankshaft two complete turns to place timing marks in proper position and to remove all slack from belt. Torque tensioner adjustment bolt and pivot bolt to specification. Start engine, check and adjust ignition timing.

AUXILIARY SHAFT SPROCKET REPLACEMENT

Removal — Remove camshaft drive belt. Remove tensioner adjustment bolt, pivot bolt and spring. Do not pry tensioner spring free from stud. Remove sprocket bolt and washer and slide sprocket off shaft.

Installation — Place sprocket on shaft and install tensioner pivot bolt with spring and adjustment bolt. Snug up adjustment bolt to hold tensioner out of the way. Make sure timing marks are aligned and install drive belt on sprockets. Loosen tensioner bolt and rotate crankshaft two complete turns to place timing marks in position again and take slack from belt. If timing marks are correct, locate tension spring under anchor. Then torque adjustment and pivot bolts to specification.

1971-73 CAPRI 2000 CC 4 CYLINDER (Cont.)

AUXILIARY SHAFT & BEARING REPLACEMENT

Removal – Remove camshaft drive belt and auxiliary shaft sprocket. Remove distributor, fuel pump and three shaft cover bolts and remove cover. Remove thrust plate screws and plate, and remove auxiliary shaft. Remove bearing from block with suitable tool, if worn.

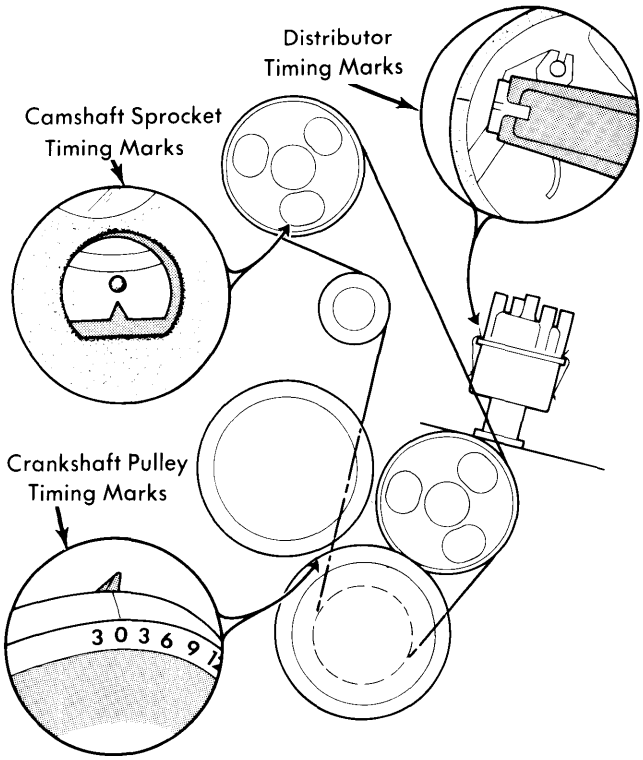
VALVE TIMING

Engine	INTAKE Open (BTDC)	INTAKE Close (ABDC)	EXHAUST Open (BBDC)	EXHAUST Close (ATDC)
1971-72 2000 cc	.014" (.36 mm) @18°	.019" (.48 mm) @ 70°	.014" (.36 mm) @ 65°	.019" (.48 mm) @ 24°
1973 2000 cc	.014" (.36 mm) @ 24°	.019" (.48 mm) @ 64°	.014" (.36 mm) @ 70°	.019" (.48 mm) @ 18°

CRANKSHAFT & CAMSHAFT VALVE TIMING

1) Remove bolts retaining camshaft belt shield and remove shield. Rotate engine until number one piston is on TDC of compression stroke. *NOTE – If turning engine by hand, always turn in direction of normal rotation; backward rotation may cause belt to jump time due to arrangement of belt tensioner.* Align timing marks on crankshaft pulley with timing pointer, then distributor rotor should line up with mark on distributor housing. Camshaft sprocket timing pointer should be on timing mark with belt properly tensioned (see illustration).

2) If timing marks are off, inspect belt for wear or damage. To adjust timing, mark relation of belt to camshaft and remove belt from camshaft sprocket. Rotate camshaft slightly as necessary and install belt. With belt tensioner loose, rotate crankshaft two revolutions to remove belt slack and allow tensioner to move tighter against belt. Torque tensioner adjustment and pivot bolts to specification. Recheck timing marks. Install camshaft drive belt cover and check and adjust ignition timing as required.



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TIMING MARKS

ENGINE OILING

Crankcase Capacity – 4 qts. Add 1 qt. with filter change.

Oil Filter – Full flow type.

Application	①Oil Pressure RPM	psi
1971	1500	35-40
1972	2000	35-60
1973	2000	45-60

① – At normal operating temperature.

Pressure Relief Valve – Not adjustable.

ENGINE OILING SYSTEM

Oiling system is force feed type using a full flow oil filter. Oil enters main oil gallery from oil filter and flows to main bearings and camshaft bearings. Connecting rod bearings are supplied from front and rear main bearings via inclined passages. A squirt hole in each rod bearing end supplies oil to piston thrust side of cylinder. Auxiliary shaft is connected with main oil gallery. Distributor shaft receives oil from passage drilled in auxiliary shaft. Cams and cam follower arms are supplied from center camshaft bearing (which is provided with a groove 180° around its periphery) via an oil line.

OIL PUMP

If oil pump has been disassembled for cleaning and inspection, be sure identification mark on rotor and on outer race both face to bottom of pump when reassembling. Inner rotor and shaft and outer race are serviced as an assembly only. See following table for oil pump unit clearances.

Oil Pump Specifications

Application	In.
Relief Valve Spring Tension	14-15 Lbs. @ 1.39"
Drive Shaft to Bearing Clearance	.001-.002"
Relief Valve Clearance	.001-.002"
Rotor Assembly End Clearance	.001-.004"
Outer Race to Housing (Radial)	.005-.011"

1971-73 CAPRI 2000 CC 4 CYLINDER (Cont.)

ENGINE COOLING

Cooling System Capacity – 7 1/2 qts. (with heater).

Pressure Radiator Cap – Opens at 13 psi.

Thermostat – Opens at 185-192°F. (New).
Opens at 178-199°F. (Used).

WATER PUMP

If pump is defective or becomes worn, replace with new pump.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Auxiliary Shaft Gear	32-36 (4.4-5)
Auxiliary Shaft Thrust Plate	5-8 (.7-1)
Belt Tensioner	32-36 (4.4-5)
Camshaft Gear	32-36 (4.4-5)
Camshaft Thrust Plate	5-8 (.7-1)
Connecting Rod	29-34 (4-4.7)
Crankshaft Pulley	39-43 (5.4-6)
Cylinder Head	
Step 1	30-40 (4-5.5)
Step 2	40-50 (5.5-7)
Step 3	65-80 (9-11)
Exhaust Manifold-to-Cyl. Head	12-15 (1.7-2)
Flywheel-to-Crankshaft	47-51 (6.5-7)
Front Cover	6-9 (.8-1.2)
Intake Manifold-to-Cyl. Head	12-15 (1.7-2)
Main Bearing Cap	65-70 (9-10)
Oil Pan-to-Block (Snug up Bolts First)	4.5-6 (.5-.8)
Rocker Arm Ball Stud	32-36 (4.4-5)
Rocker Arm Cover	
1971	
Step 1	1.5-2 (.1-.3)
Step 2	4-5 (.6-.7)
1972-73	
Step 1 (Six Rear Bolts, Rear-to-Front)	4-6 (.6-.8)
Step 2 (Front Vertical Bolts)	1-2 (.1-.3)
Step 3 (Two Lateral Bolts)	4-6 (.6-.7)
Step 4 (Two Front Lateral Bolts)	4-6 (.6-.7)
Timing Belt Cover	6-13 (.8-1.8)
Water Pump-to-Cyl. Block (M8)	12-15 (1.7-2)
Water Pump-to-Cyl. Block (M10)	26-31 (3.6-4.3)

ENGINE NOTES

► *TIMING BELT CAUTION* – Do not rotate the 2000 cc engine counterclockwise. If rotated in this direction, the timing belt can and may jump the camshaft sprocket one or two teeth.

► *1971-73 CAPRI W/2000 cc – CAM FOLLOWER WEAR* – When checking a wear condition of cam followers, the lubrication tube should always be checked for oil being directed onto cam followers. If lubrication is not being dispensed properly, replace distribution tube.

► *1971-73 CAPRI W/2000 cc – FRONT CAMSHAFT SEAL LEAKING* – If valve cover retaining screws are overtightened and/or gasket is misaligned, it is possible to block the oil return hole on right side of front camshaft bearing support. This can cause oil pressure in this area to push camshaft seal out of position. Ensure proper gasket alignment and bolt torque when replacing valve cover.

► *1973 CAPRI W/2000 cc – CRANKSHAFT KEYWAY REVISION* – On these vehicles, built after January, 1973 (engine build date code 3A8 and later), a redesigned crankshaft having one large Woodruff key to retain the timing belt sprocket and fan pulley is used instead of crankshaft with two smaller keys. Note this difference and use proper size Woodruff key(s).