1971-72 HONDA 600 2 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
1971-72	36.5	598.4	1-Bbl.	36@6000	31.8@4000	8.5-1	2.91	74	2.74	69.6

ENGINE IDENTIFICATION

The engine number is stamped on upper crankcase to right and slightly behind cylinder. Engines are number N600E, followed by seven digits.

ENGINE REMOVAL

1) Drain crankcase. Disconnect battery cables from battery and remove battery. Disconnect positive cable from main fuse.

2) Disconnect the following control cables and electrical wiring from engine:

Throttle and choke cables.
Tachometer drive cable.
Engine ground strap.
Ignition primary wire (blue).
High tension wires.
Back-up switch wires.

3) Disconnect breather tube from camshaft housing cover.

4) Disconnect fuel line, vacuum advance tube and fuel solenoid from carburetor. Remove bellows from air cleaner and then remove carburetor and intake manifold as an assembly.

5) Remove all heater and exhaust air ducts, and remove heater blower motor from engine compartment.

6) Disconnect speedometer and clutch cables from engine. Disconnect starter solenoid and generator wiring.

7) Using suitable tool, remove pin from gear shift rod (in passenger compartment). Push gear shift rod into engine so rod end will clear floor-board and fire-wall when engine is removed.

8) Place a floor jack under engine and raise front end of car a minimum of 34". Place stands under car body, using care not to damage fuel lines or brake lines. Wooden blocks should be used on top of stands to prevent damage to car body.

9) Separate intermediate muffler from main muffler. Remove left and right front wheels and splash guards.

10) Remove front brake calipers and wire them to shock absorbers. Disconnect steering knuckles from shock absorber assemblies.

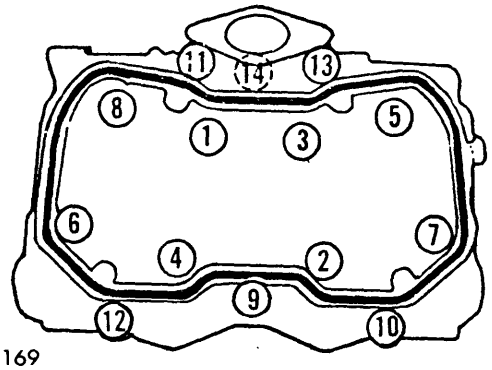
11) Remove subframe mounting bolts.

12) Carefully lower engine as an assembly including subframe, exhaust pipe and muffler. Remove engine from under car.

13) Remove intermediate muffler, header pipe, heat exchanger and exhaust manifold from engine.

14) Remove drive shafts from differential.

15) Remove engine mounting bolts and brackets and place engine on engine stand.



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HEAD TIGHTENING SEQUENCE

CYLINDER HEAD REMOVAL

1) Remove right and left shrouds and cooling fan housing.

2) Loosen and remove camshaft chain tensioner assembly.

3) Remove camshaft housing cover. Rotate camshaft until right-hand cam lobes have no rocker arm load on camshaft. Notch on flywheel pulley will align with "T" on flywheel housing cover.

4) Remove bolt attaching spark advancer to camshaft. Remove right camshaft holder, using care not to let intake rocker shaft springs jump out of housing.

5) Rotate camshaft until left-hand cam lobes are not under load. Remove left camshaft holder.

6) Remove rocker arm shafts and arms and tachometer pinion from camshaft housing.

7) Remove camshaft drive chain from sprocket and place it on right side of sprocket.

8) Push camshaft to the right until it clears camshaft housing on the left, then lift up camshaft and pull it out to the left.

9) Remove 10 mm nuts and 6 mm bolts. One of the 6 mm bolts is located below the intake manifold. Remove head.

VALVES							
Engine & Valve	Head Diam.	Face Angle	Seat Angle	Seat Width	Stem Diameter	Stem Clearance	Valve Lift
N600E							
INT.	.....	45°	58°	.032-.039"	.2591-.2595"	.0004-.0016"	.....
EXH.	.....	45°	48°	.032-.039"	.2579-.2583"	.0016-.0028"	.....

1971-72 HONDA 600 2 CYLINDER (Cont.)

VALVE ARRANGEMENT

I-E-E-I (left to right).

VALVE GUIDES

When valve guides are worn beyond proper working clearances. Drive out of head. Install valve guide circlip on guide and drive new guide into head. All guides are undersize and must be reamed to specifications. Reface valve seat to conform to new guide.

VALVE SPRINGS

Engine	Free Length	PRESSURE (LBS.)	
		Valve Closed	Valve Open
N600E	Inner 1.654"	23.8-27.6 @1.358"	....
	Outer 1.764	49.59-56.2 @1.436"	.....

VALVE SPRING INSTALLED HEIGHT

Check free length of springs before installation. Check to see if spring is square, replace if tilt is greater than .006". Place spring in spring tester, check spring poundage at installed height (see specifications). Replace springs if poundage is under 20.5 lbs. @ 1.36" (inner) or 43.33 lbs. @ 1.44" (outer).

ROCKER ARM ASSEMBLY OVERHAUL

To remove rocker arm assembly, **See Cylinder Head Removal**. Check rocker shafts for wear. Using a dial indicator, check wear in rocker arm shaft bosses. Wear should not exceed .671" outer ID, .474" inner ID. *NOTE — When reassembling camshaft holders to cylinder head, be sure spring is installed in intake rocker shaft bore. Some models of exhaust rocker shaft bores use a rubber spacer and some use a spring. Incorrect assembly may cause oil to leak from the cylinder head bolts.* Rocker arms are marked "L" and "R". Install "R" on right side and "L" on left side of head when viewed from front of engine.

VALVE CLEARANCE ADJUSTMENT

Adjust valves to .003-.005" with engine cold. Rotate crankshaft until left intake and right exhaust valves are open. Check clearance of right intake and left exhaust. Adjust by loosening rocker arm lock bolts and rotating rocker shafts. Tighten rocker arm lock bolts to 28.0 ft. lbs. and recheck valve clearance. Rotate engine until left intake and right exhaust may be checked and repeat adjusting procedure.

PISTONS, PINS, RINGS

Engine	PISTONS	PINS		RINGS		
	Clearance	Piston Fit	Rod Fit	Rings	End Gap	Side Clearance
N600E	0012-.002"	.00008-.0006"	.0006-.0016	Top Mid. Oil	.008-.016" .008-.016" .008-.016"	.0018-.003" .0006-.0018" .0006-.0018"

PISTON PIN REPLACEMENT

Remove circlips from piston and push out piston pin. If pin is worn it may be replaced. If connecting rod small end is larger than .6709", replace crankshaft assembly.

FITTING PISTONS

Fit new pistons if clearance exceeds .002". Pistons are available in oversize increments of .010". Fit rings, (see specifications for end gap and side clearance), with end gaps of top and oil ring facing forward and middle ring facing aft.

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

Engine	MAIN BEARINGS				CONNECTING ROD BEARINGS		
	Journal Diam.	Clearance	Thrust Bearing	Crankshaft Endplay	Journal Diam.	Clearance	Sideplay
N600E	1.3381-1.3386"	.0003-.0007"	.....	.0059-.0118"	.....	.004	.0047-.013"

REPLACEMENT BEARINGS

As the crankshaft is a press-assembly, only right and left main bearings may be replaced. If rod journal bearings or inner main bearings require replacement, replace entire crankshaft assembly.

MAIN BEARINGS

Main bearings are needle roller type. The right, left and one inner main bearings are doweled to crankcase for correct positioning. The remaining bearing must be positioned with its outlet hole matching hole in upper crankcase half.

CONNECTING RODS

If connecting rod big end or small end clearances exceed specifications, replace crankshaft assembly.

THRUST BEARING ALIGNMENT

There is no thrust bearing. Crankshaft floats in main bearings. End-play is controlled by a thrust washer between primary engine sprocket and main bearing (see specifications).

1971-72 HONDA 600 2 CYLINDER (Cont.)

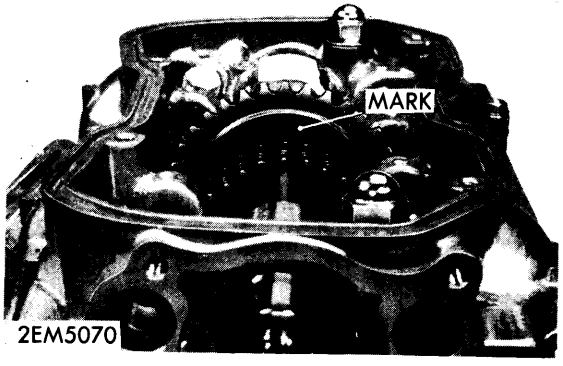
CAMSHAFT			
Engine	Journal Diam.	Clearance	Lobe Lift
N600E	.9421-.9429"	.002-.0036"	.....

CAMSHAFT & BEARING REPLACEMENT

To remove camshaft, **See Cylinder Head Removal**. Inspect camshaft journal for wear, if diameter is under .941" replace camshaft. Check camshaft lobe height, if under 1.621" (intake), 1.602" (exhaust) replace. Inspect camshaft holders ID's for wear by measuring two points perpendicular to each other. If wear exceeds .9468" replace holders.

CAMSHAFT CHAIN REPLACEMENT

Camshaft chain is an endless chain. To replace chain use a chain breaker to break chain. *CAUTION – Use care that link parts or chain do not fall down into crankcase. Use wire on chain ends to hold chain.* Attach new chain to old chain by a master-link. Rotate crankshaft until new chain is in position. Separate old and new chain, and secure ends of new chain with master-link. **See Valve Timing** for procedure to set camshaft sprocket to correct valve timing.



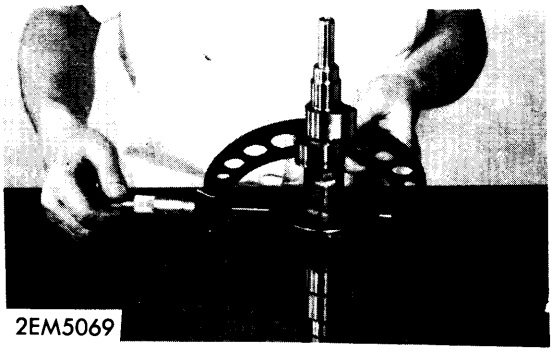
VALVE TIMING MARK

CAMSHAFT SPROCKET REPLACEMENT

With camshaft removed, measure sprocket root diameter (see illustration). If root diameter is under 3.114", replace camshaft.

CHECKING CAM LOBE

Measure cam lobe from base circle to toe of cam with a micrometer. If cam measures under 1.621" intake lobe, 1.602" exhaust lobe, replace camshaft.



CHECKING CAMSHAFT SPROCKET

VALVE TIMING				
	INTAKE		EXHAUST	
Engine	Open (BTDC)	Close (ABDC)	Open (BBDC)	Close (ATDC)
N600E	5°	20°	40°	10°

VALVE TIMING

Rotate crankshaft until "T" mark on flywheel housing cover and notch on flywheel pulley are aligned. Turn camshaft until mark on camshaft sprocket is horizontal and parallel to flange surface of camshaft housing. Pull both ends of chain to remove any slack, and mount chain to sprocket.

ENGINE OILING

Lubrication is provided by a plunger type oil pump located in the primary drive housing. Pump has two main routes through which oil is fed. One route supplies oil through oil nozzles to primary chains. The other route feeds oil to engine. After leaving oil filter, oil is fed through passages in the crankcase to main bearings and through crankshaft to rod bearings. Oil is squirted on cylinder walls and wrist pins. The oil passage continues to hydraulic chain tensioner, from chain tensioner it goes to a pair of passages in the cylinder. From cylinder passages, it is fed to cylinder head where camshaft, camshaft chain, rocker arm assemblies and valve stems are lubricated. *NOTE – Crankcase oil is a single supply of oil for engine, primary drive and transmission. Therefore it is very important that oil filter is maintained and changed at proper intervals.*

CRANKCASE CAPACITY – 3.2 qt. (with filter).

OIL FILTER TYPE & REPLACEMENT – Full flow, replace every 6,000 miles.

OIL PUMP VOLUME – 3.277 qts. @ 2800 RPM.

OIL PUMP

Plunger type oil pump operates by reciprocating action of pump rod which is connected to a cam on the back side of primary drive sprocket hub. Remove two oil pump retaining bolts and primary drive sprockets. Withdraw pump plunger and rod from pump housing. Clean housing and oil strainer. Measure cylinder ID and plunger OD. Replace if cylinder ID is greater than .8681" or plunger OD is less than .8626". Check pump volume, if less than specifications and piston and cylinder are good, check valves are leaking. Replace pump housing.

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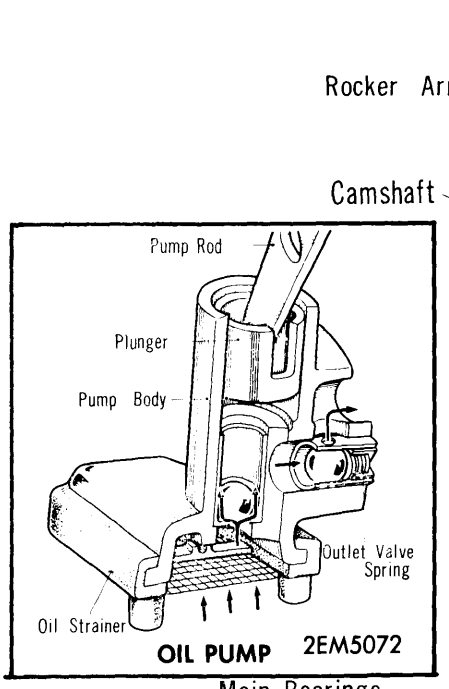
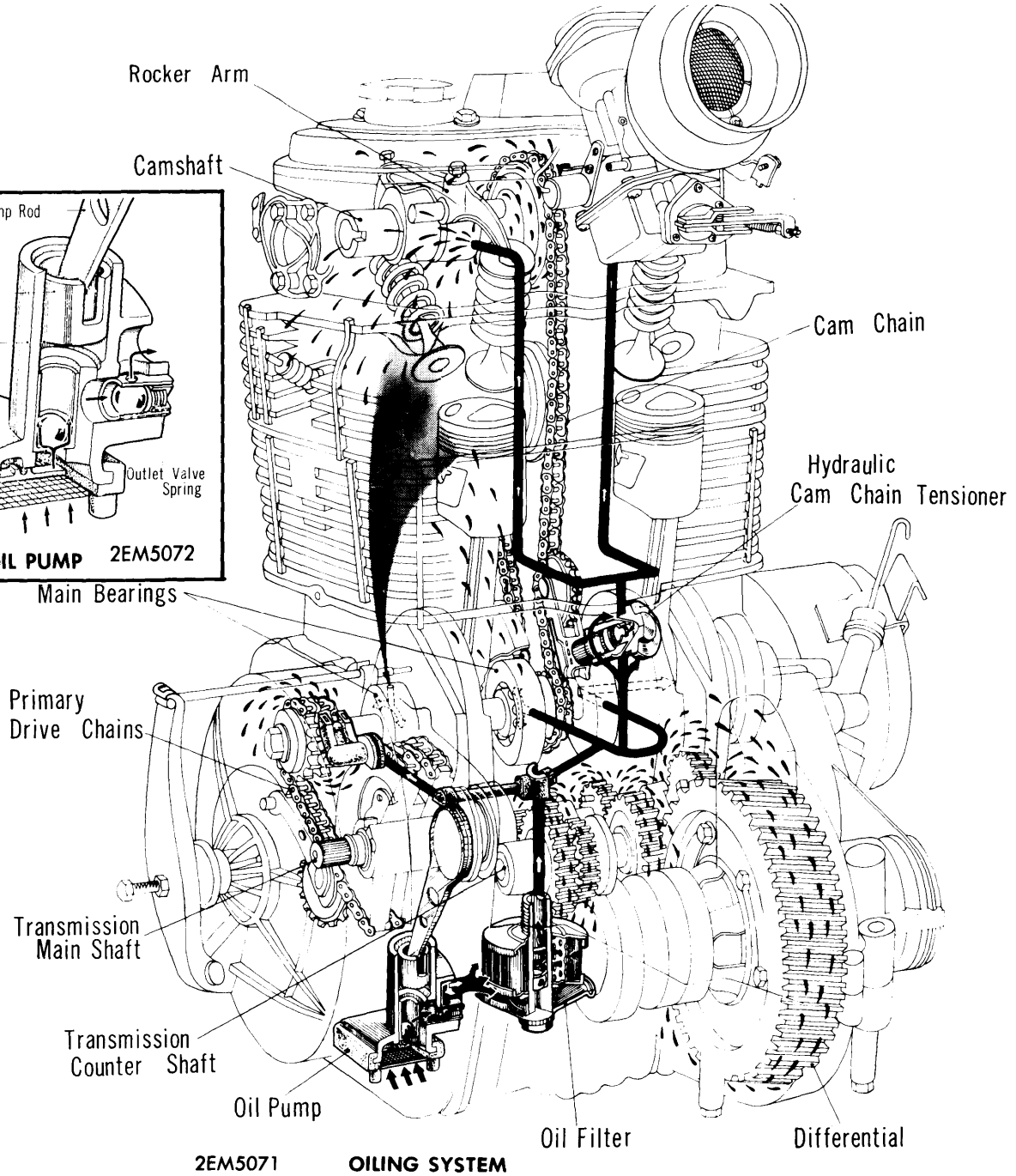
ENGINE OILING (Cont.)



OIL PUMP 2EM5072



2EM5071 OILING SYSTEM

ENGINE COOLING

ENGINE COOLING SYSTEM

Engine is air cooled by air passage over cooling fins. Cooling shrouds are mounted on cylinder and cylinder head and connect to a fan. When vehicle is stopped or moving very slowly, fan will draw cool air through cooling fins. During normal driving a ram air effect will force air over cooling fins.

TIGHTENING SPECIFICATIONS

Application	Torque (Ft. Lbs.)
Crankcase Bolts (6 mm)	7-9
(8 mm)	18.1-20.3
Center Main Bearing Holder	25.3-28.9
Cylinder Head (6 mm nuts)	6.5-8.7
(10 mm nuts)	20.3-23.1
Rocker Arm Lock Bolt	28.9