1973 JENSEN-HEALEY 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
1973	120.5	1973	2x1-Bbl.	140@6500	130@5000	8.4-1	3.752	95.30	2.732	69.39

ENGINE IDENTIFICATION

Engine has twin overhead camshafts with four valves per cylinder. An example of the engine number is D73.05.2760.

NOTE – Engines referred to as early are before and later engines are after No. D73.05.2760.

ENGINE REMOVAL

1) Raise rear of vehicle and disconnect rear and intermediate exhaust pipe clamps. Lower rear of vehicle and raise front until there is 2¾ ft. clearance at front of frame.

2) Disconnect battery and air cleaner hose. Remove air cleaner and disconnect rubber pipe from air box back plate. Remove radiator over-flow tank. Disconnect engine ground strap at right side of engine. Disconnect engine electrical harness and starter leads.

3) Remove dipstick, filler cap and drain plug, allowing engine oil to drain. Disconnect rubber oil pipe from oil pan and clutch cable clamp from right side of engine. Disconnect oil cooler pipes at filter housing.

4) Disconnect fuel inlet line and oil pressure line. Remove rubber oil pipe from oil separator at engine. Disconnect choke and throttle cables and remove windshield washer reservoir. Disconnect servo vacuum line at intake manifold.

5) Remove engine damper unit. Disconnect heater hoses at firewall. Drain and remove radiator complete with hoses. Remove bolts attaching both universal joints and ease assembly upwards until lower universal joint clears steering gear shaft.

6) Disconnect front brake hydraulic line at master cylinder and plug connections. Remove gearshift lever. Remove chassis brace plate beneath propeller shaft. Remove propeller shaft and insert a dummy shaft into transmission. Disconnect back-up light wires at transmission.

7) Disconnect speedometer cable at transmission. Disconnect exhaust pipe by removing "Y" clamp and push exhaust system toward rear of vehicle. Disconnect and remove clutch from release lever and mounting flange.

8) Support transmission and remove rear mounting bolts. Disconnect front axle crossmember braces from underbody. Support weight of engine and transmission assembly and remove nuts attaching vertical mount of front axle crossmember. Carefully lower engine/transmission assembly, together with front axle assembly. To install, reverse removal procedure.

INTAKE MANIFOLD

With air box and carburetors removed, unscrew attaching nuts and withdraw intake manifold and gasket. To install, reverse removal procedure using a new manifold gasket.

CYLINDER HEAD

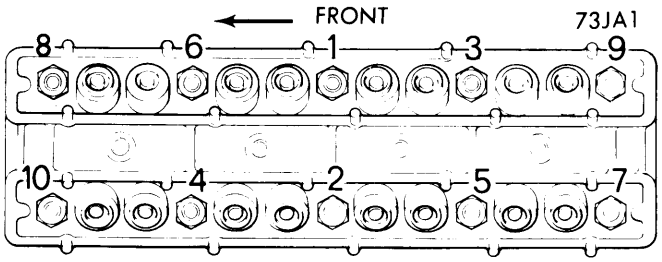
Removal – 1) With camshaft removed, See *Camshaft Removal,* remove air box, carburetors and intake manifold. Disconnect carburetor fuel lines from banjo unions and fuel inlet union, remove fuel line assembly. Disconnect water hoses.

2) Disconnect leads from spark plugs and remove exhaust manifold. Working from center outward (see illustration), loosen head nuts evenly and progressively. Lift off head and gasket.

CAUTION – Do not rotate crankshaft without first installing cylinder liner clamps (Tool HJ918) to prevent liners from being displaced.

Installation – 1) Rotate crankshaft 90° either side of TDC with pistons in middle of their stroke. Remove cylinder liner clamp (Tool HJ918) and install new head gasket dry except around oil pressure hole, on both sides of gasket.

2) Install cylinder head, tightening nuts from center outward (see illustration). Reinstall exhaust manifold, spark plug leads and water hoses. Replace fuel line assembly.



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)
1973							
Intake	1.400 (35.56)	45°	45°	.....	.281 (7.14)	.0003-.0018 (.008-.046)	.....
Exhaust	1.215 (30.86)	45°	45°	.....	.281 (7.14)	.0003-.0018 (.008-.046)	.....

1973 JENSEN-HEALEY 4 CYLINDER (Cont.)

VALVE ARRANGEMENT

Right Side – All Intake.

Left Side – All Exhaust.

VALVE GUIDE SERVICING

With cylinder head removed, compress valve springs and remove valve keepers, collars, springs and spring seats. Press out old guides and press in new guides. Ream valve guide I.D. to .2813-.2823".

VALVE SPRINGS

Engine	Free Length In. (mm)	PRESSURE Lbs. @ In. (kg @ mm)	
		Valve Closed	Valve Open
1973			
Inner	1.475 (37.47)	.....	.....
Outer	1.845 (46.86)	.....	.....

VALVE CLEARANCE ADJUSTMENT

NOTE – If after checking valve clearances it is found necessary to make changes to valve clearances, camshaft must be removed, See Camshaft Removal.

1) Rotate camshaft until heel of cam is directly over cam follower. Using a feeler gauge, measure clearance and note which valves require adjustment. Valve clearances cold are .005-.007" (.13-.18 mm) for intake valves and .010-.012" (.25-.31 mm) for exhaust valves.

2) Remove camshaft and lift off cam follower. Measure existing shim and determine thickness of shim required. Install new shim, using only one shim per valve. Replace cam followers and camshaft and recheck valve clearances.

PISTONS, PINS, RINGS

Engine	PISTONS	PINS		RINGS		
	Clearance In. (mm)	Piston Fit In. (mm)	Rod Fit In. (mm)	Rings	End Gap In. (mm)	Side Clearance In. (mm)
1973	.0038-.0048 (.097-.122)	①	.....	Comp.	.....	.002-.004 (.04-.09)
				Oil	.....	.002-.003 (.04-.06)

① – Push fit at 68°F.

OIL PAN

Remove dipstick and unscrew attaching hardware from oil pan. Remove oil pan and gasket. To install, coat both sides of a new gasket with suitable sealing compound. Place gasket and oil pan in position and tighten attaching hardware.

PISTON & ROD ASSEMBLY

Removal – Loosen connecting rod bolts and tap bolts to release connecting rod cap. Mark rod and cap for correct reassembly. With crankshaft removed, pull connecting rod and piston assembly down out of cylinder. Using suitable tool (PT0016), withdraw cylinder liners from engine block.

Installation – 1) Push cylinder liners fully into cylinder block with their flats in a front-to-rear line. Liners must be fitted dry. Using suitable gauge (HJ912), check liner (nip) height above cylinder block face and relative to each other. "Nip" is .004-.006" and maximum variation between cylinders is .001".

2) Remove liners from block. Assemble pistons and rods so "FRONT" mark on piston will be facing forward and oil hole in connecting rod will be on right-hand side of engine. Using a ring compressor, install piston and rod assembly in their proper liners. Apply suitable sealing compound (Hylomar) to liner flange-to-cylinder block mating face, install liners. Make sure "FRONT" mark on pistons is facing forward. Reinstall rod bearings and caps.

FITTING PISTONS

Measure pistons .594" from bottom of skirt. Measure liners and determine piston clearances. Install new liners and pistons as necessary. Two grades of pistons and liners are available.

Piston & Liner Specifications

Grade	Piston Dia. In. (mm)	Liner Dia. In. (mm)
"A"	3.7467-3.7472 (95.17-95.18)	3.7510-3.7515 (95.28-95.29)
"B"	3.7472-3.7477 (95.18-95.19)	3.7515-3.7520 (95.29-95.30)

PISTON PINS

Remove circlips from piston and push pin from piston and rod. Diameter of piston pin is 1.00". Pin fit is a finger push fit at 68°F.

1973 JENSEN-HEALEY 4 CYLINDER (Cont.)

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS							
	MAIN BEARINGS				CONNECTING ROD BEARINGS		
Engine	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)
1973	① 2.4995-2.5005 (63.49-63.51)	.0012-.0025 (.03-.06)	Rear	.003-.008 (.08-.20)	1.9975-1.9985 (50.74-50.76)	.001-.003 (.03-.08)	.004-.010 (.10-.25)

① – No. 5 main journal is 2.5000-2.5005" (63.50-63.51 mm).

MAIN & CONNECTING ROD BEARINGS

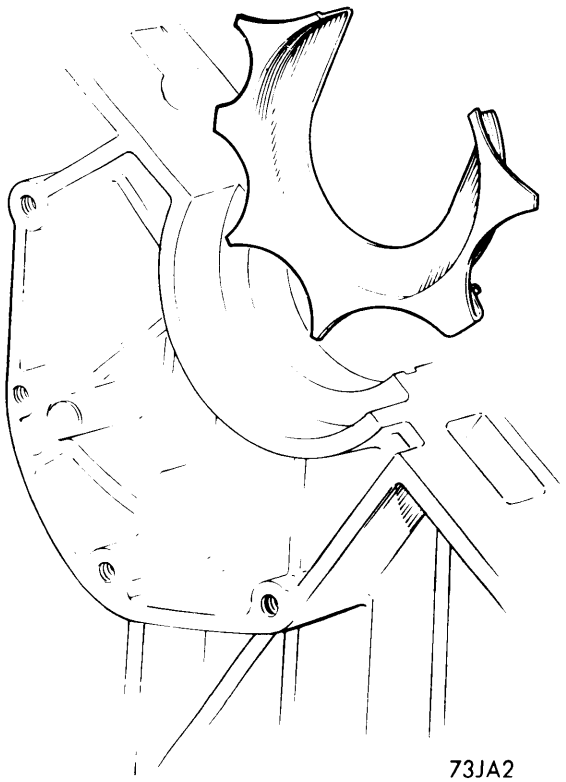
To determine bearing clearances of main and connecting rod bearings, use Plastigage method. Note that number five main bearing journal has a different diameter than other journals. When installing main bearing housing, there is no gasket used, apply a thin coat of joint compound (Wellseal) to maintain an oil tight joint.

THRUST BEARING ALIGNMENT

Measure crankshaft end play between crankshaft and thrust washers. Install new thrust washers if necessary with oil grooves (copper side) facing crankshaft.

REAR MAIN BEARING OIL SEAL

Early Engines – With crankshaft removed, press seal firmly into crankcase with a 2.25" diameter bar. Before removing bar, cut ends of seal flush with block and bearing housing. Apply grease to seal face and sealing compound to seal ends.



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REAR OIL SLINGER INSTALLATION

Late Engines – Install oil seal with open face toward engine and with closed face flush with rear face of seal housing. Apply a thin coat of Silastic 732 PTV compound to engine side of oil slinger. Place oil slinger in block with cut-out positioned to receive crankshaft (see illustration). With crankshaft installed, rotate oil slinger in a clockwise direction when viewed from rear of engine, so that cut-out edge is flush with main bearing housing-to-cylinder block face.

ENGINE FRONT COVER

Removal – With crankshaft sprocket removed, remove camshaft belt tensioner. Unscrew attaching screws and withdraw front cover, gasket and belt tensioner pulley. Press old seal from cover.

Installation – 1) Insert new oil seal with outer diameter coated with a suitable sealing compound (Wellseal). Press seal in until it is flush with rear face of cover, using suitable tool (PY0013).

2) Install cover and gasket and tighten screws. Install camshaft belt tensioner and attaching nut. Slide adjuster onto locating stud in cylinder block.

CAMSHAFT			
Engine	Journal Diam. In. (mm)	Clearance In. (mm)	Lobe Lift In. (mm)
1973			
No. 1	1.9585-1.9590 (49.75-49.76)	.0010-.0025 (.03-.06)	.....
No. 2	1.9485-1.9490 (49.49-49.50)	①	
No. 3	1.9385-1.9390 (49.24-49.25)		
No. 4	1.9285-1.9290 (48.98-49.00)		
No. 5	1.7485-1.7490 (44.41-44.42)		

① – End play is .001-.008" (.03-.20 mm).

TIMING BELT

Removal – 1) Remove cooling fan and belt guard. Rotate crankshaft until number one piston is at TDC on compression stroke. Loosen alternator adjusting bolts and remove drive belt. Remove crankshaft pulley.

2) Loosen nut attaching belt tensioner pulley, and using suitable wrench (PT0026) on large nut behind pulley or a 22 mm wrench on nut in front of pulley, turn counterclockwise to loosen belt. Remove belt.

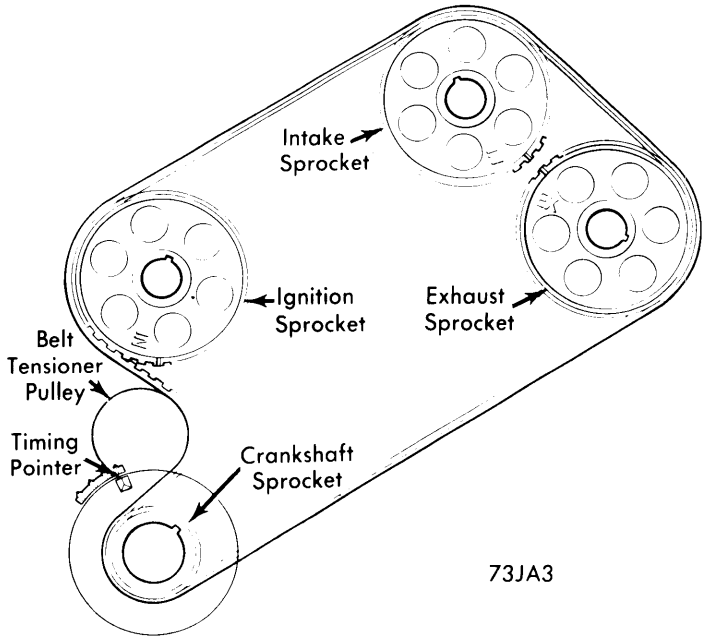
1973 JENSEN–HEALEY 4 CYLINDER (Cont.)

CAUTION – Do not turn camshafts with number one piston at TDC. If camshafts are to be rotated, rotate crankshaft back 90° to bring pistons half-way down cylinders. This will prevent a piston from bending an open valve.

Installation – 1) Rotate crankshaft until number one piston is at TDC on compression stroke and distributor rotor is pointing vertically upwards. Align timing mark on crankshaft pulley with mark on front cover. Camshaft sprockets should be aligned with and next to each other (see illustration).

2) Position belt tension gauge (KM 128) on the belt between ignition sprocket and intake sprocket and as close to ignition sprocket as possible. Check that reading on scale is 3-3½ when buzzer operates. *NOTE – Belt should be as tight as possible, without causing whine in operation. Insufficient tension will shorten belt life.*

3) To adjust belt tension, loosen tension pulley adjusting lock nut and turn large nut behind pulley clockwise to tighten and counterclockwise to slacken the belt. Tighten tension pulley adjusting lock nut and recheck belt tension. Replace alternator drive belt, belt guard and cooling fan.



VALVE & IGNITION TIMING MARKS AT TDC

CAMSHAFT

Removal – 1) With camshaft covers and drive belt removed, remove complete camshaft housings and gaskets.

NOTE – As each housing is being removed, push down on cam followers so that adjusting shims will not fall out.

2) Remove sprockets from camshafts. Remove rear cover bolts, covers and "O" rings. Unscrew thrust washer attaching bolts and remove thrust washers. Slide camshafts out, together with oil seals from front of housings.

Installation – 1) Apply a thin coat of graphite grease to bearing surfaces in camshaft housing. Carefully slide camshaft into bearing housing from the front of housing. Using suitable tool (PT0014/5), install new front oil seal until it is flush with front face of housing. Pushing seal in further will block oil drain holes.

2) Install thrust washer so it engages dowel on rear of camshaft and tighten attaching bolt. With a new "O" ring, install rear cover and tighten attaching bolts. Install Woodruff key and camshaft sprockets, making sure that intake and exhaust sprockets are on correct camshaft.

CAUTION – Rotate crankshaft to TDC of number one piston. Then rotate crankshaft back 90° to bring pistons half-way down cylinders. This will prevent a piston from bending an open valve. To set valve timing, See Timing Belt.

3) Using up to two gaskets fitted dry, install camshaft housings on cylinder head and tighten nuts. Check valve clearances and adjust as necessary.

CAMSHAFT BEARINGS

With camshafts removed, inspect camshaft bearing journals and bearings in camshaft housing. Excessive clearances will require camshaft or housing replacement. Measure end play at thrust washer, if clearance is excessive, replace thrust washer.

VALVE TIMING

Engine	INTAKE		EXHAUST	
	Open (BTDC)	Close (ABDC)	Open (BBDC)	Close (ATDC)
1973	21°	71°	71°	21°

VALVE TIMING

With engine at TDC on number one piston compression stroke. Camshaft timing marks will be next to each other and parallel to camshaft cover mating face on cylinder head (see illustration). For complete timing procedure and Caution, See *Timing Belt.*

ENGINE OILING

Crankcase Capacity – 15.9 pts. (including filter).

Oil Filter – Full-flow, disposable.

Normal Oil Pressure – 60 psi at 2500 RPM.

Pressure Regulator Valve – Nonadjustable.

ENGINE OILING SYSTEM

An eccentric rotor type pump is used to take oil from oil pan and pressure feed it through oil filter to crankshaft and connecting rods. By means of oil passages, oil is carried to camshaft and auxiliary shaft bearings.

1973 JENSEN-HEALEY 4 CYLINDER (Cont.)

ENGINE OILING (Cont.)

OIL PUMP

Removal – 1) Remove bolts attaching oil pump and auxiliary housing, noting length and location of bolts. Remove housing and discard gasket. Remove sprocket from auxiliary shaft.

2) Remove attaching bolts and separate oil pump from housing. Use care not to misplace spring in end of auxiliary shaft.

3) Remove spring from oil pump end of auxiliary shaft. Remove circlips from shaft at inner rotor and front end of shaft. Push shaft out front end of housing. Using a suitable drift, drive out oil seal. Measure pump clearances and inspect parts for wear or damage.

Installation – 1) Press new seal in auxiliary housing with lip of seal facing housing. Using new key, circlips and inner rotor, install key in oil pump end of auxiliary shaft. Place inner rotor on shaft and lock in place with a circlip.

2) Push auxiliary shaft into housing from oil pump end. With shaft protruding through oil seal, install circlip. Insert spring into oil pump end of auxiliary shaft. Coat both sides of gasket with sealing compound and install oil pump to auxiliary housing.

3) Using suitable sealing compound (Wellseal), attach auxiliary housing to cylinder block. Make sure bolts are in their original position because of different lengths. Using a new key, install auxiliary shaft sprocket with mark "IN" facing forward.

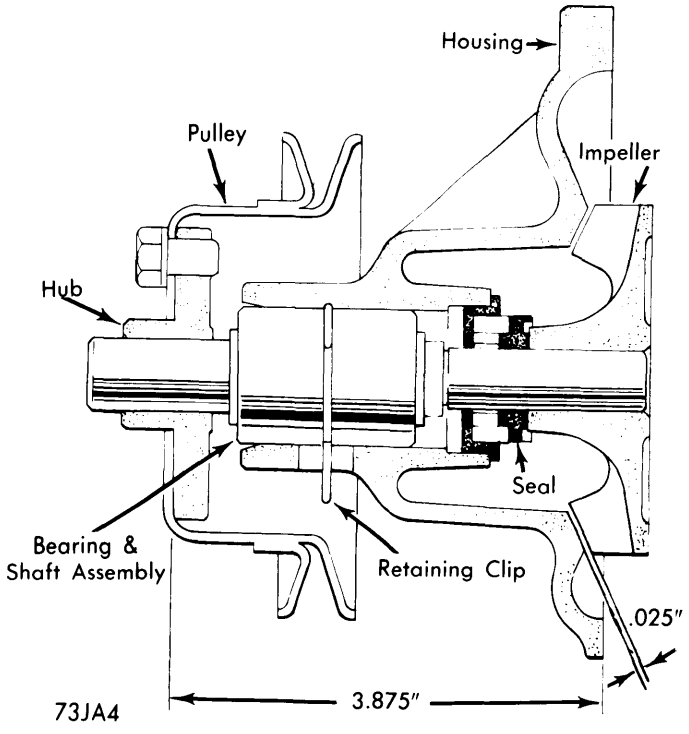
Oil Pump Specifications

Application	Clearance In. (mm)
Inner-to-Outer Rotor	.006 (.15) max.
Rotor Side Play	.0005-.0015 (.01-.04)
Outer Rotor-to-Housing	.001-.003 (.03-.08)

ENGINE COOLING

Thermostat – Opens 179°F.

Cooling System Capacity – 14.4 pts. (with heater).



WATER PUMP IMPELLER CLEARANCE

WATER PUMP

Removal – 1) Remove radiator hose and thermostat housing. Disconnect hose from water pump housing. Remove water pump and gasket. Pry bearing retaining clip from housing.

2) Press pulley hub from pump shaft. Using a suitable press, push shaft, bearing, seal and impeller as an assembly from fan end of housing. Press impeller from shaft. Inspect all parts for wear or damage.

Installation – 1) Press shaft and bearing assembly into pump housing until groove in bearing aligns with groove inside housing. Install new bearing retaining clip in bearing and housing grooves, using grease in grooves to prevent rust.

2) Place a new seal on rear end of shaft with carbon thrust face towards impeller. Press pulley hub onto front end of shaft until there is .025" clearance between impeller and housing (see illustration). To install remaining components, reverse removal procedure using suitable sealing compound (Hylomar).

TIGHTENING SPECIFICATIONS

Applications	Ft. Lbs. (mkg)
Cylinder Head (Cold)	83-87 (11.5-12.0)
Main Bearing Housing	
15/32" Bolts	55 (7.6)
5/16" Bolts	14-16 (1.9-2.2)
Rear Allen Bolts	14-16 (1.9-2.2)
Connecting Rod Caps	84-86 (11.6-11.9)
Flywheel	47-49 (6.5-6.8)
Oil Pan	7-8 (1.0-1.1)
Camshaft Sprocket	54-56 (7.5-7.7)
Camshaft Housing-to-Cylinder Head	18-20 (2.5-2.8)
Crankshaft Pulley	58-60 (8.0-8.3)
Camshaft Covers	3-4 (0.4-0.6)
Intake Manifold	7-8 (1.0-1.1)
Front Cover	7-8 (1.0-1.1)
Auxiliary Shaft Sprocket Bolt	48-50 (6.6-6.9)