1971-72 307" V8 ENGINE

GENERAL SPECIFICATIONS							
Year	Displ. Cu. Ins.	Carburetor	HP at RPM	Torque (Ft. Lbs. at RPM)	Compr. Ratio	Bore	Stroke
1971	307"	2-Bbl.	200 @ 4600	300 @ 2400	8.5-1	3.87"	3.25"
1972	307"	2-Bbl.	130 @ 4400	230 @ 4400	8.5-1	3.875"	3.25"

►*NET HORSEPOWER & TORQUE NOTE: Horsepower and Torque figures given for 1972 are NET. NET Horsepower and Torque represent power at the flywheel when the engine is installed in vehicle, with wide open throttle and all systems operating such as; air cleaner, exhaust system, water pump, generator, oil pump and air conditioning.*

ENGINE IDENTIFICATION

Engine code is stamped on front of engine block below right cylinder head.

1971 Engine Code Letters

Engine	Synchro-mesh	Auto. Trans.
307" 200 HP	CCA	CCC

1972 Engine Code Letters

Engine	Synchro-mesh	Auto. Trans.
307" 2 Bbl.	① CKG	② CKH

① – Calif. cars with synchro-mesh use "CAY" engine code.
② – Calif. cars with auto. trans. use "CAZ" engine code.

ENGINE REMOVAL

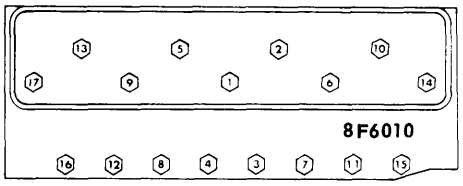
See Engine Removal at end of ENGINE Section.

OIL PAN REMOVAL

See Oil Pan Removal at end of ENGINE Section.

CYLINDER HEAD INSTALLATION

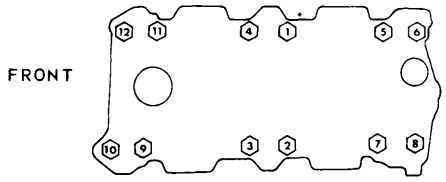
Clean head bolt threads. Use sealer on both sides of steel gasket. DO NOT use sealer on composition gasket. Apply sealing compound to head bolts and install finger tight. Tighten bolts evenly, a little at a time in sequence shown in illustration until specified torque is attained.



CYLINDER HEAD TIGHTENING SEQUENCE

INTAKE MANIFOLD INSTALLATION

Install end seals on block. Install side gaskets on cylinder heads using sealing compound around water passages. Install manifold being careful not to displace gaskets and seals. Using sequence shown in diagram, tighten manifold bolts evenly and to correct torque as listed. *NOTE – If crankshaft has been rotated while distributor was removed, time distributor again to number 1 cylinder.*



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INTAKE MANIFOLD TIGHTENING SEQUENCE

PISTONS, PINS, RINGS						
	PISTONS	PINS		RINGS		
Engine	Clearance	Piston Fit	Rod Fit	Rings	End Gap	Side Clearance
307" 1971-72	.0005-.0011"	.00015-.00025"	Press Fit	1 2 3	.010-.020" .010-.020" .015-.055"	.0012-.0027" .0012-.0032" .002-.007"

PISTON PIN REPLACEMENT

Measure piston pin and bore in piston. If clearance is in excess of .001", replace piston and pin. Use suitable tool in arbor press to press pin in and out of rod. Piston must turn freely on pin.

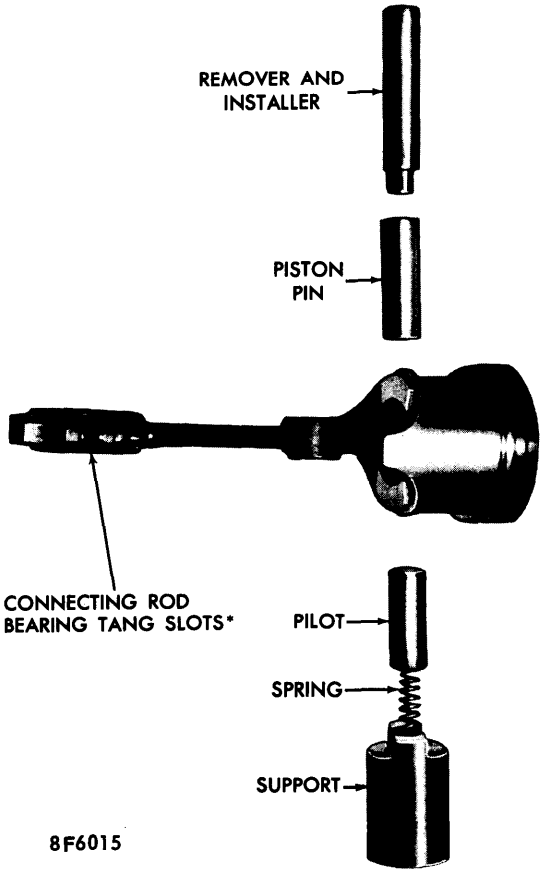
FITTING PISTONS

Measure cylinder bore diameter approximately 2½" from top of bore. Measure piston at pin centerline and see "Pistons, Pins, Rings" table for preferable clearance.

1971-72 307" V8 ENGINE (Cont.)

PISTON & ROD INSTALLATION

Install with connecting rod bearing tang slots on side opposite camshaft. Mark each connecting rod and bearing, from front to rear 1,3,5,7, on left bank and 2,4,6,8 on right bank, and install in correct cylinder. Notch in piston head should always face front of engine.

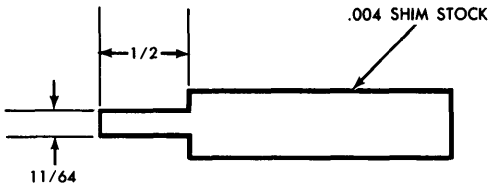


PISTON PIN ASSEMBLY

REAR MAIN OIL SEAL REPLACEMENT

Removal – Remove rear main oil cap and pry out old seal. Remove upper half of seal by tapping out with brass punch until end of seal protrudes enough to be removed with pliers.

Installation – Fabricate installing tool as shown in illustration.



OIL SEAL INSTALLATION TOOL

Coat seal lips and seal bead of upper seal. Keep oil off of mating ends. Position tip of tool between crankshaft and seal seat in cylinder block. Position seal so that seal bead contacts tip of tool. Roll seal around crankshaft, using tool as a shoehorn to protect seal bead from sharp corner of seal seat surface. Make sure that oil seal lip is positioned toward front of engine. *NOTE – Installation tool must remain in position until seal is positioned with both ends flush with block. Remove tool, being careful not to withdraw seal.*

Install lower half of seal in bearing cap, using tool as a shoehorn. Feed seal into cap using light pressure with thumb and finger. Install bearing cap with sealant applied to face, being careful to keep sealant off the seal split line.

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

	MAIN BEARINGS				CONNECTING ROD BEARINGS		
Engine	Journal Diam.	Clearance	Thrust Bearing	Crankshaft Endplay	Journal Diam.	Clearance	①Sideplay
307" 1971-72	No.1-2-3-4 2.4484-2.4493" No.5 2.4479-2.4488"	No. 1 .0008-.0020" No. 2-3-4 .0011-.0023" No.5 .0017-.0033"	No.5	.002-.006"	.....	.0013-.0035"	.002-.006"

① – Total two rods.

HARMONIC BALANCER

Removal – Remove fan, fan pulley and accessory drive pulley. Remove harmonic balancer attaching bolt and retainer washer (all). Install Tool J-23523 (or equivalent) to harmonic balancer and turn puller screw to remove balancer from crankshaft. *CAUTION – Do not pry on O.D. of harmonic balancer.*

Installation – Coat front cover seal contact area on balancer with engine oil. Place balancer in position over key on crankshaft. Assemble suitable damper Tool J-23952 (or equivalent) on damper and pull damper into position. Remove tool from crankshaft and install balancer retaining bolt and torque.

1971-72 307" V8 ENGINE (Cont.)

ENGINE FRONT COVER REPLACEMENT

Removal – Remove harmonic balancer, water pump, and oil pan, (See *"Oil Pan Removal"*). Remove front cover attaching bolts and remove front cover.

Installation – Position new front cover gasket over studs against block. Position front cover on engine indexing over dowels, install bolts and nuts and tighten securely.

FRONT OIL SEAL REPLACEMENT

Removal – Remove front cover seal by prying out of bore with a pry bar.

Installation – Install new seal with lip of seal inward, using seal installer Tool J-23042 (or equivalent).

VALVES

Engine & Valve		Head Diam.	Face Angle	Seat Angle	Seat Width	Stem Diameter	Stem Clearance	Valve Lift
307" 1971-72	Int.	1.72"	45°	46°	.045-.071"	.3410-.3117"	.0010-.0027"	.390"
	Exh.	1.50"	45°	46°	.048-.070"	.3410-.3117"	.0012-.0029"	.410"①

① – 1972 .409"

VALVE ARRANGEMENT

E-I-I-E-E-I-I-E

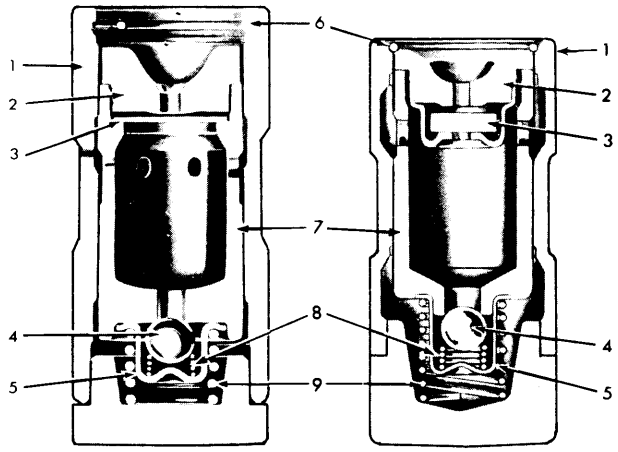
VALVE GUIDES

Integral with cylinder head. If valve stem clearance is excessive, ream to next oversize.

ROCKER ARM STUD REPLACEMENT

Replacement studs are available .003" and .013" oversize. If stud becomes loose in head, ream to smallest oversize necessary to obtain tight driven fit. To pull old stud, use sufficient flat washers and slowly tighten nut until stud is removed. Install new stud using Tool J-6880 (or equivalent) to drive new stud. Tool should bottom on cylinder head. *NOTE – If tool is not available, measure old stud before removing.*

TYPE "A" TYPE "B"



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1. Lifter Body
2. Push Rod Seat
3. Metering Valve (Lifter A) Inertia Valve (Lifter B)
4. Check Ball
5. Check Ball Retainer
6. Push Rod Seat Retainer
7. Plunger
8. Check Ball Spring
9. Plunger Spring

HYDRAULIC LIFTER ASSEMBLIES

HYDRAULIC LIFTER SERVICE

Two types of lifters are used. They are interchangeable as complete assemblies but their parts are not interchangeable. Type "A" has a groove near its base. Type "B" uses an inertia valve and retainer which should not be removed from push rod seat. To check, shake the seat and valve assembly, valve should move. Lifters are serviced as assemblies only; if parts are faulty replace entire lifter. *CAUTION – Do not force plunger or work plunger up and down during reassembly.*

HYDRAULIC LIFTER ADJUSTMENT (AT ENGINE OVERHAUL)

With No. 1 cylinder at TDC firing position, adjust Exhaust Valves 1-3-4-8 and Intake Valves 1-2-5-7. Back off rocker arm stud adjusting nut until there is play in the pushrod, then tighten nut until pushrod-to-rocker arm clearance is removed. Tighten nut 1 additional turn, which places plunger in center of its travel. Crank engine 1 complete revolution so No. 6 cylinder is at TDC firing position and adjust Exhaust Valves 2-5-6-7 and Intake Valves 3-4-6-8 in the same manner.

VALVE TIMING

Engine	INTAKE		EXHAUST	
	Open (BTDC)	Close (ALDC)	Open (BLDC)	Close (ATDC)
307" 1971-72	28°	72°	78°	30°

VALVE SPRINGS

Engine	Free Length	PRESSURE (LBS.)	
		Valve Closed	Valve Open
307" 1971-72	.....	80@1.70"	200@1.25"

1971-72 307" V8 ENGINE (Cont.)

CAMSHAFT			
Engine	Journal Diam.	Clearance ①	Lobe Lift
307" 1971-72	1.8682-1.8692"	.0008-.0044"	.....

CAMSHAFT REPLACEMENT

Removal – Remove radiator, distributor, intake manifold, engine front cover, push rods and lifters. Remove fuel pump and pushrod. Align timing marks on timing chain sprockets and remove timing chain and sprockets. Remove camshaft thrust plate and carefully pull camshaft from engine.

Installation – Coat camshaft lobes with Molykote or equivalent and reverse removal procedure. Lubricate shaft before installing.

CAMSHAFT BEARING REPLACEMENT

Install front and rear bearings first. These bearings will act as guides for the pilot tool, and will center the remaining bearings as they are pulled into place by the installing tool. As each bearing is installed, make sure the oil holes in the bearing are aligned with the oil holes in the block. After all bearings have been installed, install a new rear camshaft plug. *NOTE – Plug should be installed flush to 1/32" deep and be parallel with rear surface of block.*

TIGHTENING SPECIFICATIONS

Bolt or Nut	Ft. Lbs.
Cylinder Head	65
Intake Manifold	30
Exhaust Manifold	20
Oil Pan (¼" Bolts)	80 INCH Lbs.
(5/16" Bolts)	65 INCH Lbs.
Main Bearing Cap	75
Connecting Rod Cap	45
Flywheel-to-Crankshaft	60
Camshaft Sprocket	20
Water Pump	30
Oil Pump	65
Oil Filter	25
Clutch Pressure Plate	35
Spark Plugs	15

ENGINE OILING

Crankcase Capacity – 4 Qts. Add 1 Qt. with oil filter change.

Oil Pressure – 40-45 Lbs. at 2000 RPM.

Pressure Regulator Valve – In pump body, not adjustable.

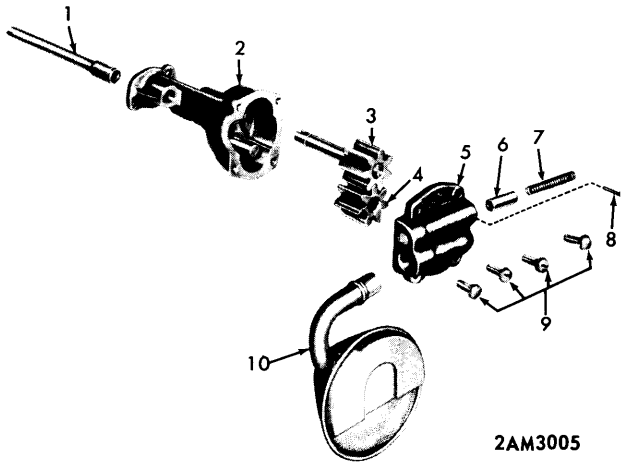
ENGINE OILING SYSTEM

Full pressure lubrication through a full flow oil filter is furnished by a gear-type oil pump. Main oil gallery feeds oil through drilled passages, to camshaft and crankshaft to lubricate bearings. Valve lifter gallery feeds rockerarms through hollow push rods.

ENGINE OIL PUMP ASSEMBLY

Removal – Mark gears so they may be reassembled with same teeth indexing. Do not disturb pick-up screen on pipe. Screen is serviced as an assembly. *NOTE – If pump gears or body are damaged or worn, replacement of entire pump is necessary.*

Installation – Apply sealer to end of pipe and tap in place. Install idler gear in pump body with smooth side of gear in pump body with smooth side of gear towards cover opening. *NOTE – Bottom of screen must be parallel with pump body.*



1. Shaft Extension
2. Pump Body
3. Drive Gear and Shaft
4. Idler Gear
5. Pump Cover
6. Pressure Regulator Valve
7. Pressure Regulator Spring
8. Retaining Pin
9. Screws
10. Pickup Screen and Pipe

ENGINE OIL PUMP