



## SPECIFICATIONS

GENERAL SPECIFICATION	
DISPLACEMENT .....	5.0L (302 CID)
NUMBER OF CYLINDERS .....	8
BORE AND STROKE .....	4.00x3.00
FIRING ORDER .....	1-3-7-2-6-5-4-8
OIL PRESSURE (HOT 2000 RPM) .....	40-60
CYLINDER HEAD AND VALVE TRAIN 2	
COMBUSTION CHAMBER VOLUME (cc) .....	60.6-63.6
VALVE GUIDE BORE DIAMETER .....	0.3433-0.3443
VALVE SEATS	
Width — Intake .....	0.060-0.080
Width — Exhaust .....	0.060-0.080
Angle .....	45°
Runout (T.I.R.) Max. ....	0.002
VALVE ARRANGEMENT (Front-to-Rear) .....	(LH) E-I-E-I-E-I-E-I (RH) I-E-I-E-I-E-I-E
VALVE STEM TO GUIDE CLEARANCE	
Intake .....	0.0010-0.0027
Exhaust .....	0.0015-0.0032
Service Clearance .....	0.0055
VALVE HEAD DIAMETER	
Intake .....	1.770-1.794
Exhaust .....	1.453-1.468
VALVE FACE RUNOUT LIMIT .....	0.002
VALVE FACE ANGLE .....	44°
VALVE STEM DIAMETER (Std.)	
Intake .....	0.3416-0.3423
Exhaust .....	0.3411-0.3418
(0.015 Oversize)	
Intake .....	0.3566-0.3573
Exhaust .....	0.3561-0.3568
(0.030 Oversize)	
Intake .....	0.3716-0.3723
Exhaust .....	0.3711-0.3718
VALVE SPRINGS	
Compression Pressure (Lb. @ Spec. Length)	
Intake .....	74-82 @ 1.78 — 211-230 @ 1.33
Exhaust .....	77-85 @ 1.60 — 200-226 @ 1.15
Free Length (Approximate)	
Intake .....	2.02
Exhaust .....	1.79
Assembled Height	
Intake .....	1.75-1.80
Exhaust .....	1.58-1.64
Service Limit .....	10% Pressure Loss @ Specified Length
Out of Square Limit .....	5/64" (.078)
ROCKER ARM	
Ratio .....	1.59:1
PUSH ROD RUNOUT (T.I.R. MAX.) .....	0.015
VALVE TAPPET, LIFTER OR ADJUSTER	
Diameter (Std.) .....	.8740-.8745
Clearance to Bore .....	0.0007-0.0027
Service Limit .....	0.005
Hydraulic Leakdown Rate 3 .....	10-50 Seconds
Collapsed Tappet Gap — (Allowable) .....	0.098-0.198
Collapsed Tappet Gap — Desired .....	0.123-0.146
CAMSHAFT	
LOBE LIFT	
Intake .....	0.278
Exhaust .....	0.2780
Allowable Lobe Lift Loss .....	0.005 Max.
CAMSHAFT (Continued)	
THEORETICAL VALVE LIFT @ ZERO LASH	
Intake .....	0.4420
Exhaust .....	0.4420
END PLAY .....	0.005-0.0055
Service Limit .....	0.009
JOURNAL TO BEARING CLEARANCE .....	0.001-0.003
Service Limit .....	0.006
CAMSHAFT GEAR BACKLASH .....	0.006-0.011
JOURNAL DIAMETER	
NO. 1 .....	2.0805-2.0815
NO. 2 .....	2.0655-2.0665
NO. 3 .....	2.0505-2.0515
NO. 4 .....	2.0355-2.0365
NO. 5 .....	2.0205-2.0215
Runout Limit .....	0.005 Max. T.I.R.
Out-of-Round Limit .....	0.0005 Max. T.I.R.
BEARING INSIDE DIAMETER	
NO. 1 .....	2.0825-2.0835
NO. 2 .....	2.0675-2.0685
NO. 3 .....	2.0525-2.0535
NO. 4 .....	2.0375-2.0385
NO. 5 .....	2.0225-2.0235
FRONT BEARING LOCATION 4 .....	0.005-0.020
CYLINDER BLOCK	
Head Gasket Surface 2 .....	90-150
Head Gasket Surface Finish (RMS) .....	60-150
TAPPET BORE DIAMETER .....	0.8752-0.8767
MAIN BEARING BORE DIAMETER .....	2.4412-2.4420
DISTRIBUTOR SHAFT BEARING BORE DIAMETER .....	0.4525-0.4541
CRANKSHAFT AND FLYWHEEL	
MAIN BEARING JOURNAL DIAMETER .....	2.2490-2.2482
Out-of-Round Limit .....	0.0006 Max.
Taper Limit (Per Inch) .....	0.0004 Max.
Journal Runout Limit .....	0.002
Surface Finish (RMS) .....	12 Max.
Runout Service Limit .....	0.005
THRUST BEARING JOURNAL	
Length .....	1.137-1.139
CONNECTING ROD JOURNAL	
Diameter .....	2.1228-2.1236
Out-of-Round Limit (Per Inch) .....	0.0006
Taper Limit .....	0.0006 Per Inch Max.
Surface Finish (RMS) .....	12 Max.
MAIN BEARING THRUST FACE	
Surface Finish (RMS) .....	35 Front/25 Rear
Runout Limit .....	0.001 Max.
FLYWHEEL CLUTCH FACE	
Runout Limit (T.I.R.) .....	0.010
FLYWHEEL RING GEAR LATERAL RUNOUT (T.I.R.)	
Automatic Transmission .....	0.060
CRANKSHAFT FREE END PLAY .....	0.004-0.008
Service Limit .....	0.012 Max.
CRANKSHAFT RUNOUT TO REAR FACE	
OF BLOCK (T.I.R. Max.) .....	0.005

CRANKSHAFT AND FLYWHEEL (Continued)	
<b>CONNECTING ROD BEARINGS</b>	
Clearance to Crankshaft	
Desired	0.0008-0.0015
Allowable	0.0008-0.0024
Bearing Wall Thickness (Std.) (5)	0.0572-0.0577
<b>MAIN BEARINGS</b>	
Clearance to Crankshaft	
Desired	0.0004-0.0015
Allowable	0.0004-0.0021
Bearing Wall Thickness (Std.) (5)	0.0957-0.0962
<b>CONNECTING ROD, PISTON AND RINGS</b>	
<b>CONNECTING ROD</b>	
Piston Pin Bore Diameter	0.9112-0.9096
Crankshaft Bearing Bore Diameter	2.2390-2.2398
Out-of-Round Limit	0.0004 Max.
Taper Limit	0.0004 Max.
Length (Center-to-Center)	5.0885-5.0915
<b>ALIGNMENT (BORE-TO-BORE MAX. DIFF.) (6)</b>	
Twist	0.024
Bend	0.012
<b>SIDE CLEARANCE (ASSEMBLED TO CRANK)</b>	
Standard	0.010-0.020
Service Limit	0.023
<b>CYLINDER BORE AND PISTON</b>	
<b>CYLINDER BORE</b>	
Diameter	4.000-4.0048
Surface Finish (RMS)	18-38
Out-of-Round Limit	0.0015
Out-of-Round Service Limit	0.005
Taper Service Limit	0.010
<b>PISTON</b>	
Diameter (7)	
Coded Red	3.9972-3.9980
Coded Blue	3.9984-3.9992
Coded Yellow	3.9996-4.0004
PISTON-TO-BORE CLEARANCE	0.0030-0.0038
PIN BORE DIAMETER	0.9124-0.9127
<b>RING GROOVE WIDTH</b>	
Compression (Top)	0.060-0.061
Compression (Bottom)	0.060-0.061
Oil	0.1587-0.1597
<b>PISTON PIN</b>	
Length	3.010-3.040
<b>DIAMETER</b>	
Standard	0.9119-0.0124
0.001 Oversize	0.9130-0.9133
0.002 Oversize	0.9140-0.9143
PIN TO PISTON CLEARANCE	0.0002-0.0004
PIN TO ROD CLEARANCE	Interference Fit
<b>PISTON RINGS</b>	
Ring Width	
Compression (Top)	0.0577-0.0587
Compression (Bottom)	0.0577-0.0587
<b>Side Clearance</b>	
Compression (Top)	.002-.004
Compression (Bottom)	.002-.004
Oil Ring	Snug Fit
Service Limit	0.006 MAX.
<b>Ring Gap (14)</b>	
Compression (Top)	0.010-0.020
Compression (Bottom)	0.010-0.020
Oil Ring (Steel Rail)	0.015-0.055

LUBRICATION SYSTEM		
<b>OIL PUMP</b>		
Relief Valve Spring Tension		
(Lbs. at Spec. Length)	10.6-12.2 @ 1.704	
Driveshaft-to-Housing Bearing Clearance	0.0015-0.0030	
Relief Valve-to-Bore Clearance	0.0015-0.0030	
Rotor Assembly End Clearance (Assembled)	0.004 Max.	
Outer Race-to-Housing Clearance	0.001-0.0013	
OIL CAPACITY (QUARTS U.S.)	4 (8)	
TORQUE SPECIFICATIONS		
DESCRIPTION	N·m	LB-FT
ALTERNATOR ADJUSTMENT ARM TO WATER PUMP STUD NUT	27-53	20-39
ALTERNATOR ADJUSTMENT ARM TO ALTERNATOR BOLT	32-54	24-40
THROTTLE BODY ATTACHING NUT	16-24	12-18
CAMSHAFT SPROCKET GEAR TO CAMSHAFT BOLT	54-61	40-45
CAMSHAFT THRUST PLATE TO CYLINDER BLOCK BOLT	12-16	9-12
CONNECTING ROD — NUT	26-32	19-24
CYLINDER FRONT COVER BOLT	16-24	12-18
CYLINDER HEAD BOLT	75-88	55-65
	88-98	9
		65-72
DAMPER TO CRANKSHAFT BOLT	95-122	70-90
DISTRIBUTOR HOLD DOWN BOLT	24-35	18-26
EGR VALVE TO SPACER INTAKE MANIFOLD	16-24	12-18
EXHAUST MANIFOLD TO CYLINDER HEAD BOLT	24-32	18-24
FAN TO WATER PUMP HUB — BOLT	20-30	15-22
FLYWHEEL TO CRANKSHAFT BOLT	102-115	75-85
INTAKE MANIFOLD TO CYLINDER HEAD BOLT	(15)	(15)
MAIN BEARING CAP — BOLT	81-95	60-70
OIL FILTER INSERT TO CYLINDER BLOCK ADAPTER BOLT	27-41	20-30
OIL FILTER TO CYLINDER BLOCK (12)		
OIL INLET TUBE TO OIL PUMP BOLT	16-24	12-18
OIL PAN DRAIN PLUG	20-34	15-25
OIL PAN TO CYLINDER BLOCK — BOLT	8-12	71-106
		(Lb·In)
OIL PUMP TO CYLINDER BLOCK — BOLT	30-43	22-32
OIL INLET TUBE TO MAIN BEARING CAP — NUT	30-43	22-32
PULLEY TO DAMPER BOLT	47-68	35-50
ROCKER ARM FULCRUM BOLT TO CYLINDER HEAD	24-34	18-25
SPARK PLUG TO CYLINDER HEAD	7-14	5-10

TORQUE SPECIFICATIONS (CONTINUED)

DESCRIPTION	N·m	LB·FT
ALTERNATOR AND THERMACTOR 3/8	30-43	22-32
PUMP BRACKET TO CYLINDER HEAD 7/16	54-75	40-55
THERMACTOR PUMP PIVOT BOLT	47-68	35-50
THERMACTOR PUMP ADJUSTMENT ARM TO PUMP	30-43	22-32
THERMACTOR PUMP PULLEY TO PUMP HUB	11-15	100-130 (Lb-In)
VALVE — ROCKER ARM COVER BOLT	14-18	10-13
VACUUM FITTING/PLUG TO INTAKE MANIFOLD w/TEFLON TAPE	14-20	10-15
WATER OUTLET HOUSING BOLT	16-24	12-18
WATER PUMP TO CYLINDER BLOCK FRONT COVER BOLT	16-24	12-18
TAPPET GUIDE PLATE	8-12	71-106 (Lb-In)

- ① Newly Installed — Refers to the condition of the “NEW” drive belt before the engine has made no more than one rotation and before the belt has had a chance to stretch or seat into the pulley grooves.
- ② Gasket Surface Flatness 0.003 in any 6 inches — 0.006 overall — Surface Finish (RMS) 90-50.
- ③ Time required for plunger to leak down 1/16 inch of travel with 50 lb. load and leak down fluid in tappet.
- ④ Distance from edge of bearing is installed below front face of cylinder block.
- ⑤ .002 undersize — add .001 to standard thickness.
- ⑥ Pin bore and crank bore must be parallel and in same vertical plane within the specified total difference when measured at the ends of an 8” bar, 4” on each side of rod centerline.

NEW AND USED DRIVE BELT TENSION SPECIFICATIONS		
Belts have differing tension specifications depending on whether they are Newly Installed ① or Used (more than ten minutes of engine operation).		
BELT TYPE	BELT CONDITION AND TENSION IN LBS.	
	INSTALLED	RESET LIMIT
6 Rib (with Tensioner)	100-130	Reference Only Non-Adjustable

- ⑦ Measured at the piston pin bore centerline, at 90° to the pin.
- ⑧ Add 1 quart with filter change.
- ⑨ Torque in 2 steps:  
First step 75-88 N·m (55-65 Lb-Ft)  
Second step 88-97 N·m (65-72 Lb-Ft)
- ⑫ 1/2 turn after gasket contacts sealing surface.
- ⑭ Specification in gauge.
- ⑮ Tighten in two steps:  
First step 20-27 N·m (15-20 Lb-Ft)  
Second step 31-34 N·m (23-25 Lb-Ft)