

SPECIFICATIONS

MATERIAL SPECIFICATIONS

MATERIAL SPECIFICATIONS

Item	Specification	Fill Capacity
Motorcraft® Metal Surface Prep ZC-31-A	-	-
Motorcraft® Premium Gold Engine Coolant VC-7-B (US); CVC-7-A (Canada); or equivalent	WSSM97B51-A1	23.5L (26 qt)
Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil XO-5W20-QSP (US); Motorcraft® SAE 5W-20 Super Premium Motor Oil CXO-5W20- LSP12 (Canada); or equivalent	WSSM2C930-A	6.6L (7.0 qt) with filter
Silicone Gasket and Sealant TA-30	WSEM4G323-A4	-
Motorcraft® Silicone Gasket Remover ZC-30	-	-
Threadlock 262 TA-26	WSKM2G351-A6	-

GENERAL SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Specification
Engine	
Displacement	6.2L (379 CID)
Number of cylinders	8
Bore	102 mm (4.015 in)
Stroke	95 mm (3.74 in)
Firing order	1-3-7-2-6-5-4-8
Spark plug	CYFS-092FP
Spark plug gap	0.95 mm (0.037 in)
Minimum oil pressure at idle (engine at normal operating temperature)	55 kPa (8 psi)
Oil pressure at 2,000 rpm (engine at normal operating temperature)	-
Compression ratio	9.8:1
Engine weight (without accessory drive components and with flexplate)	263 kg (580 lb)
Cylinder Head and Valve Train	
Combustion chamber volume	48.1-51.1 cc (2.94-3.12 cu in)
Valve arrangement (front to rear) - LH	E-I-E-I-E-I-E-I
Valve arrangement (front to rear) - RH	E-I-E-I-E-I-E-I
Rocker arm ratio - Exhaust	-

Rocker arm ratio - Intake	-
Valve guide bore diameter	7.953-7.975 mm (0.3131-0.3139 in)
Valve stem diameter - intake	7.933-7.953 mm (0.3123-0.3131 in)
Valve stem diameter - exhaust	7.921-7.942 mm (0.3118-0.3126 in)
Valve stem-to-guide clearance - intake	0.022-0.072 mm (0.0008-0.0028 in)
Valve stem-to-guide clearance - exhaust	0.034-0.084 mm (0.0013-0.0033 in)
Valve head diameter - intake	53.5 mm (2.106 in)
Valve head diameter - exhaust	42 mm (1.653 in)
Valve face runout - intake	0.060 mm (0.0023 in)
Valve face runout - exhaust	0.050 mm (0.0019 in)
Valve face angle	45.5 degrees
Valve seat width - intake	1.4-1.6 mm (0.05-0.06 in)
Valve seat width - exhaust	1.6-1.8 mm (0.06-0.07 in)
Valve seat angle	44.5-45.0 degrees
Valve spring free length	65.1 mm (2.562 in)
Valve spring compression pressure	23 N (45 lb) @ 54.72 mm (2.154 in)
Valve spring installed height	54.72 mm (2.154 in)
Valve spring installed pressure	23 N (45 lb) @ 54.72 mm (2.154 in)
Head gasket surface flatness	0.025 mm (0.001 in) in any 25 mm (1 in) x 25 mm (1 in) area; 0.05 mm (0.002 in) in any 150 mm (6 in) x 150 mm (6 in) area; 0.1 mm (0.004 in) overall
Camshaft	
Theoretical valve lift @ 0 lash - intake	13.25 mm (0.521 in)
Theoretical valve lift @ 0 lash - exhaust	13 mm (0.511 in)
Lobe lift - intake	8.019 mm (0.315 in)
Lobe lift - exhaust	7.861 mm (0.309 in)
Allowable lobe lift loss	0.127 mm (0.005 in)
Journal diameter	28.587-28.613 mm (1.125-1.126 in)
Camshaft journal bore inside diameter	28.657-28.682 mm (1.128-1.129 in)
Camshaft journal-to-bearing clearance	0.044-0.095 mm (0.0017-0.0037 in)
Runout	0.025 mm (0.0009 in)
End play	0.025-0.150 mm (0.0009-0.0059 in)
Cylinder Block	
Cylinder bore diameter - grade 1	102.000-102.010 mm (4.0157-4.0161 in)
Cylinder bore diameter - grade 2	102.010-102.020 mm (4.0161-4.0165 in)
Cylinder bore diameter - grade 3	102.020-102.030 mm (4.0165-4.0169 in)

Cylinder bore maximum taper	0.016 mm (0.0006 in)
Cylinder bore maximum out-of-round	0.020 mm (0.0008 in)
Main bearing bore inside diameter	72.400-72.424 mm (2.8504-2.8509 in)
Head gasket surface flatness	0.03 mm (0.001 in) in any 40 mm (1.5 in) x 40 mm (1.5 in) area; 0.05 mm (0.002 in) in any 150 mm (6 in) x 150 mm (6 in) area; 0.025 mm (0.0009) in any 25mm (0.984 in) x 25 mm (0.984 in) area overall
Crankshaft	
Main bearing journal diameter	67.481-67.505 mm (2.6568-2.6576 in)
Main bearing journal maximum taper	0.008 mm (0.0003 in)
Main bearing journal maximum out-of-round	0.006 mm (0.0002 in)
Main bearing journal-to-cylinder block clearance	0.025-0.050 mm (0.0009-0.0019 in)
Connecting rod journal diameter	52.733-52.753 mm (2.0761-2.0768 in)
Connecting rod journal maximum taper	0.008 mm (0.0003 in)
Connecting rod journal maximum out-of-round	0.006 mm (0.0002 in)
Crankshaft end play	0.140-0.260 mm (0.005-0.010 in)
Piston and Connecting Rod	
Piston diameter - grade 1 (at right angle to pin bore)	101.960 mm (4.0141 in)
Piston diameter - grade 2 (at right angle to pin bore)	101.970 mm (4.0145 in)
Piston diameter - grade 3 (at right angle to pin bore)	102 mm (4.0157 in)
Piston-to-cylinder bore clearance (at grade size)	0.010-0.040 mm (0.0003-0.0015 in)
Piston ring end gap - top	0.35-0.50 mm (0.137-0.0196 in)
Piston ring end gap - intermediate	0.35-0.50 mm (0.137-0.0196 in)
Piston ring end gap - oil control	0.15-0.65 mm (0.005-0.025 in)
Piston ring groove width - top	1.5 mm (0.059 in)
Piston ring groove width - intermediate	1.5 mm (0.059 in)
Piston ring groove width - oil control	2.5 mm (0.098 in)
Piston ring width - top and intermediate	1.5 mm (0.059 in)
Piston ring-to-groove clearance - top	1.47-1.50 mm (0.0578-0.0590 in)
Piston ring-to-groove	1.47-1.50 mm (0.0578-0.0590 in)

clearance - intermediate	
Piston pin bore diameter	24 mm (0.944 in)
Piston pin diameter	24 mm (0.944 in)
Piston pin length	62 mm (2.44 in)
Piston pin-to-piston fit	0.17-0.80 mm (0.006-0.0031 in)
Connecting rod-to-pin clearance	0.3-0.18 mm (0.001-0.007 in)
Connecting rod pin bore diameter	24.009 mm (0.945 in)
Connecting rod length (center-to-center)	157.50 mm (6.2 in)
Connecting rod maximum allowed bend	0.038 mm (0.0015 in)
Connecting rod bearing bore diameter (with assembled liners)	-
Connecting rod bearing-to-crankshaft clearance	0.025-0.065 mm (0.0009-0.0025 in)
Connecting rod side clearance	1.0 mm (0.039 in)

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Description	Nm	lb-ft	lb-in
A/C compressor bolts	25	18	-
Accessory drive belt tensioner bolt	25	18	-
Accessory drive belt idler bolt	25	18	-
Axle carrier mounting bushing bolts	115	85	-
Camshaft bearing cap bolts ⁽¹⁾	-	-	-
Camshaft phaser and sprocket bolts ⁽¹⁾	-	-	-
Camshaft Position (CMP) sensor bolt	10	-	89
Connecting rod bolts ⁽¹⁾	-	-	-
Coolant pump bolts ⁽¹⁾	-	-	-
Coolant pump pulley bolts	25	18	-
Crankshaft rear seal retainer plate bolts ⁽¹⁾	-	-	-
Crankshaft damper pulley bolt ⁽¹⁾	-	-	-
Crankshaft main bearing bolts (cross-mounted) ⁽¹⁾	-	-	-
Crankshaft main bearing bolts (vertical) ⁽¹⁾	-	-	-
Crankshaft Position (CKP) sensor bolt	10	-	89
Cylinder head bolts ⁽¹⁾	-	-	-
Cylinder Head Temperature (CHT) sensor	10	-	89
Engine front cover bolts ⁽¹⁾	-	-	-
Engine Oil Pressure (EOP) switch ⁽¹⁾	-	-	-
Engine support insulator-to-cylinder block bolts	63	46	-

Engine support insulator through bolt	350	258	-
Engine support insulator-to-frame bolts	175	129	-
Engine support insulator-to-frame nuts	250	184	-
Engine support insulator-to-frame stud bolt	15	-	133
Exhaust manifold heat shield bolts	12	-	106
Exhaust manifold nuts ⁽¹⁾	-	-	-
Exhaust manifold studs	25	18	-
Exhaust Y-pipe flange nuts	40	30	-
Flexplate bolts ⁽¹⁾	-	-	-
Flexplate inspection cover bolts	34	25	-
Front frame crossmember bolts	90	66	-
Fuel rail bolts ⁽¹⁾	-	-	-
Generator support bracket bolts ⁽¹⁾	-	-	-
Ground cable-to-engine front cover nut	25	18	-
Hood bolts	12	-	106
Heater coolant inlet fitting bolt	10	-	89
Heater coolant return fitting bolt	10	-	89
Intake manifold-to-cylinder head bolts ⁽¹⁾	-	-	-
Knock Sensor (KS) bolts	20	-	177
Oil cooler ⁽¹⁾	-	-	-
Oil filter ⁽¹⁾	-	-	-
Oil filter adapter bolts	25	18	-
Oil level indicator tube bolt	10	-	89
Oil pan bolts ⁽¹⁾	-	-	-
Oil pan drain plug	23	17	-
Oil pump bolts ⁽¹⁾	-	-	-
Oil pump screen and pickup tube bolts	10	-	89
Oil pump screen and pickup tube nut	24	18	-
Oil pump stud bolts ⁽¹⁾	-	-	-
Piston oil cooler valve bolt ⁽¹⁾	-	-	-
Power steering fluid return tube bolt	23	17	-
Power Steering Pressure (PSP) hose support bracket nut	10	-	89
Power steering pump bolts	25	18	-
Radio ignition interference capacitor nut	25	18	-
Rocker arm shaft assembly bolts ⁽¹⁾	-	-	-
Spark plug	12	-	106
Starter wiring harness support bracket nut	10	-	89
Steering shaft bolt	30	22	-
Thermostat housing bolts	10	-	89
Timing chain guide bolts ⁽¹⁾	-	-	-
Timing chain hydraulic tensioner bolts ⁽¹⁾	-	-	-
Torque converter-to-flexplate nuts	36	27	-

Transmission fluid cooler tube support bracket nut	10	-	89
Transmission fluid cooler tube rear support bracket bolt	48	35	-
Transmission mount-to-crossmember nuts	90	66	-
Transmission-to-engine bolts	48	35	-
Valve cover bolts ⁽¹⁾	-	-	-
Wiring harness ground cable	10	-	89

(1) Refer to the appropriate procedure(s).