

SPECIFICATIONS

MATERIAL SPECIFICATIONS

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Item	Specification	Fill Capacity
Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil (US); Motorcraft® SAE 5W-20 Super Premium Motor Oil (Canada) XO-5W20-QSP (US); CXO-5W20-LSP12 (Canada)	WSS-M2C945-A	-

TORQUE SPECIFICATIONS

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Description	Part Number	Torque
A/C compressor bolts and nut	W714077	25 Nm (18 lb-ft)
A/C compressor stud	W712610	9 Nm (80 lb-in)
A/C pressure tube fitting nuts	W520413	8 Nm (71 lb-in)
Accessory drive belt tensioner bolts	W503278	11 Nm (97 lb-in)
Battery cable power feed cable nut	N805320	9 Nm (80 lb-in)
Block heater	6A051	40 Nm (30 lb-ft)
Camshaft bearing cap bolts	W710702	Refer to <u>CAMSHAFT</u>
CMP sensor bolts	W503275	10 Nm (89 lb-in)
Crankshaft rear seal retainer plate bolts	W503277	Refer to <u>CRANKSHAFT REAR SEAL WITH RETAINER PLATE</u>
Crankshaft pulley bolt	W701512	Refer to <u>CRANKSHAFT PULLEY</u>
Cylinder head bolts	6065	Refer to <u>CYLINDER HEAD - LH</u> Refer to <u>CYLINDER HEAD - RH</u>
CHT sensor	6G004	10 Nm (89 lb-in)
Engine block coolant drain plug - RH	W701548	10 Nm (89 lb-in) plus an additional 720 degrees
Engine block coolant drain plug - LH	W701516	16 Nm (142 lb-in) plus an additional 180 degrees
Engine front cover bolts	-	Refer to <u>ENGINE FRONT COVER</u>
Engine mount-to-engine nuts	W714682	63 Nm (46 lb-ft)
Engine oil filter	6714	5 Nm (44 lb-in) plus an additional 180 degrees
Engine mount-to-frame bolts	W712507	90 Nm (66 lb-ft)
EOP switch	9278	Refer to <u>ENGINE OIL PRESSURE (EOP) SWITCH</u>
Exhaust manifold/catalytic converter manifold nuts	W716011	Refer to <u>CYLINDER HEAD - LH</u> Refer to <u>CYLINDER HEAD - RH</u>
Exhaust manifold/catalytic converter manifold heat shield bolts	W703715	10 Nm (89 lb-in)
Exhaust manifold/catalytic converter manifold studs	W712244	12 Nm (106 lb-in)
Flexplate bolts	6379	Refer to <u>FLEXPLATE</u>

Ground wire-to-body bolt	W710898	10 Nm (89 lb-in)
Ground wire-to-engine bolt	W705661	10 Nm (89 lb-in)
KS bolts	W500305	20 Nm (177 lb-in)
Lower intake manifold bolts	W503279	Refer to <u>LOWER INTAKE MANIFOLD</u>
Oil cooler bolts	W503277	10 Nm (89 lb-in)
Oil filter adapter	W503283	10 Nm (89 lb-in) plus an additional 45 degrees
Oil pan bolts	-	Refer to <u>OIL PAN</u>
Oil pan drain plug	6730	27 Nm (20 lb-ft)
Oil pan-to-transaxle bolts	W714722	48 Nm (35 lb-ft)
Oil pump bolts	W503282	10 Nm (89 lb-in)
Oil pump screen and pickup tube bolts	W503278	10 Nm (89 lb-in)
PTU support bracket bolts	W500724	70 Nm (52 lb-ft)
Starter bolt	W503320	27 Nm (20 lb-ft)
Starter stud bolt	W711515	27 Nm (20 lb-ft)
Starter B+ terminal nut	W706414	12 Nm (106 lb-in)
Starter S-terminal nut	W705790	5 Nm (44 lb-in)
Thermostat housing bolts	W503279	10 Nm (89 lb-in)
Timing chain guide bolts	W715118	10 Nm (89 lb-in)
Timing chain tensioner bolts	W715118	10 Nm (89 lb-in)
Torque converter-to-flexplate bolts	W714722	55 Nm (41 lb-ft)
Transaxle mount bracket bolt	W712711	80 Nm (59 lb-ft)
Transaxle mount bracket nuts	W714682	63 Nm (46 lb-ft)
Transaxle-to-engine bolts	W714722	48 Nm (35 lb-ft)
Upper intake manifold bolts	9Y450	Refer to <u>UPPER INTAKE MANIFOLD</u>
Upper intake manifold-to-bracket bolt	W503275	10 Nm (89 lb-in)
Valve cover bolts	6C519	Refer to <u>VALVE COVER - LH</u> Refer to <u>VALVE COVER - RH</u>
Valve cover stud bolts	6C519	Refer to <u>VALVE COVER - LH</u> Refer to <u>VALVE COVER - RH</u>

GENERAL SPECIFICATIONS

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Item	Specification
Engine	
Displacement	3.7L (4V) (226 CID)
No. cylinders	6
Bore/stroke	95.5 mm (3.760 in) - 86.7 mm (3.413 in)
Fire order	1-4-2-5-3-6
Spark plug	12405
Spark plug gap	1.25 mm (0.049 in) - 1.35 mm (0.0531 in)
Oil pressure	Minimum 30 psi @ 1, 500 rpm with engine at normal operating temperature
Compression ratio	10.5:1
Engine weight (without accessory)	161 kg (354.94 lb)

drive components)	
Engine and transaxle weight (without accessory drive components)	260.8 kg (574.96 lb)
Cylinder Head and Valve Train	
Cylinder head gasket surface flatness	Flat within 0.08 mm (0.003 in) length end to end, area 150 mm (5.9 in) x 150 mm (5.9 in) (or full width) should be less than 0.05 mm (0.002 in)
Combustion chamber volume	56.651 cm ³ (3.46 in ³)
Valve tappet clearance - intake	0.15 mm (0.0059 in) - 0.25 mm (0.0098 in)
Valve tappet clearance - exhaust	0.36 mm (0.0142 in) - 0.46 mm (0.0181 in)
Valve guide bore inner diameter	5.519 mm (0.2173 in) - 5.549 mm (0.2185 in)
Valve stem diameter - intake	5.479 mm (0.2157 in) - 5.497 mm (0.2164 in)
Valve stem diameter - exhaust	5.466 mm (0.2152 in) - 5.484 mm (0.2159 in)
Valve stem-to-guide clearance - intake	0.022 mm (0.0009 in) - 0.07 mm (0.0028 in)
Valve stem-to-guide clearance - exhaust	0.035 mm (0.0014 in) - 0.083 mm (0.0033 in)
Valve head diameter - intake	36.82 mm (1.4496 in) - 37.18 mm (1.4638 in)
Valve head diameter - exhaust	30.82 mm (1.2134 in) - 31.18 mm (1.2276 in)
Valve face runout	0.05 mm (0.002 in)
Valve face angle	45.75 - 45.25
Valve seat width - intake	1.3 mm (0.0512 in) - 1.5 mm (0.0591 in)
Valve seat width - exhaust	1.7 mm (0.0669 in) - 2 mm (0.0787 in)
Valve seat runout	0.04 mm (0.0016 in) MAX
Valve seat angle	44.5 - 45.5
Valve spring free length (approx.)	48 mm (1.8898 in)
Valve spring compression pressure (N @ spec. length)	525 N (118.03 lb) @ 27 mm (1.063 in)
Valve spring installed height	37 mm (1.4567 in)
Valve spring installed height pressure (N @ spec. length)	235 N (52.83 lb) @ 37 mm (1.4567 in)
Valve spring installed pressure - service limit	10% force loss @ specified height
Camshaft	
Theoretical valve lift @ 0 lash - intake	10 mm (0.3937 in)
Theoretical valve lift @ 0 lash - exhaust	9.68 mm (0.3811 in)
Lobe lift - intake	10 mm (0.3937 in)
Lobe lift - exhaust	9.68 mm (0.3811 in)
Allowable lobe lift loss	0.062 mm (0.0024 in)
Camshaft journal bore inside diameter - 1 st journal	39.038 mm (1.5369 in) - 39.063 mm (1.5379 in)
Camshaft journal bore inside diameter - intermediate journals	25.988 mm (1.0231 in) - 26.013 mm (1.0241 in)

Camshaft bearing outside diameter - 1 st journal	38.99 mm (1.535 in) - 39.01 mm (1.5358 in)
Camshaft bearing outside diameter - intermediate journals	25.963 mm (1.0222 in) - 25.937 mm (1.0211 in)
Camshaft journal-to-bearing clearance, 1 st journal - service limit	0.073 mm (0.0029 in) MAX
Camshaft journal-to-bearing clearance, intermediate journals - service limit	0.076 mm (0.003 in) MAX
Runout	0.04 mm (0.0016 in) MAX
End play - standard	0.032 mm (0.0013 in) - 0.17 mm (0.0067 in)
End play - service limit	0.19 mm (0.0075 in) MAX
Cylinder Block	
Cylinder bore diameter	95.5 mm (3.760 in) - 95.52 mm (3.761 in)
Cylinder bore roundness	0.013 mm (0.0005 in)
Cylinder bore taper	0.01 mm (0.0004 in) per 25.4 mm (1 in)
Block main bore roundness	0.008 mm (0.0003 in)
Main bearing bore inside diameter	72.4 mm (2.8504 in) - 72.424 mm (2.8513 in) Head gasket surface flatness Flat within 0.08 mm (0.0031 in) in length end to end per 150 mm (5.9055 in) X 150 mm (5.9055 in) or full width should be less than 0.05 mm (0.002 in)
Crankshaft	
Main bearing journal diameter	67.5 mm (2.6575 in)
Main bearing journal maximum taper	0.004 mm (0.0002 in)
Main bearing journal maximum out-of-round	0.152 mm (0.006 in)
Main bearing journal-to-main bearing clearance	0.026 mm (0.001 in) - 0.041 mm (0.0016 in)
Connecting rod journal diameter	55.983 mm (2.2041 in) - 56.003 mm (2.2048 in)
Connecting rod journal maximum taper	0.004 mm (0.0002 in)
Connecting rod journal maximum out-of-round	0.006 mm (0.0002 in)
Crankshaft maximum end play	0.101 mm (0.004 in) - 0.291 mm (0.0115 in)
Piston and Connecting Rod	
Piston diameter - single grade	95.49 mm (3.7594 in) - 95.476 mm (3.7589 in)
Piston-to-cylinder bore clearance	0.01 mm (0.0004 in) - 0.044 mm (0.0017 in)
Piston ring end gap - compression (top, gauge diameter)	0.17 mm (0.0067 in) - 0.27 mm (0.0106 in)
Piston ring end gap - compression (bottom, gauge diameter)	0.3 mm (0.0118 in) - 0.55 mm (0.0217 in)
Piston ring end gap - oil ring (steel rail, gauge diameter)	0.15 mm (0.0059 in) - 0.45 mm (0.0177 in)
Piston ring groove width -	

compression (top)	1.23 mm (0.0484 in) - 1.25 mm (0.0492 in)
Piston ring groove width - compression (bottom)	1.53 mm (0.0602 in) - 1.55 mm (0.061 in)
Piston ring groove width - oil ring	2.53 mm (0.0996 in) - 2.55 mm (0.1004 in)
Piston ring width - upper compression ring	1.17 mm (0.0461 in) - 1.19 mm (0.0469 in)
Piston ring width - lower compression ring	1.47 mm (0.0579 in) - 1.49 mm (0.0587 in)
Piston ring-to-groove clearance (upper and lower compression rings)	0.04 mm (0.0016 in) - 0.08 mm (0.0031 in)
Piston pin bore diameter	23.004 mm (0.9057 in) - 23.008 mm (0.9058 in)
Piston pin diameter	22.997 mm (0.9054 in) - 23 mm (0.9055 in)
Piston pin length	55.975 mm (2.2037 in)
Piston pin-to-piston fit	0.004 mm (0.0002 in) - 0.011 mm (0.0004 in)
Piston-to-connecting rod clearance	2.7 mm (0.106 in)
Connecting rod-to-pin clearance - standard	0.007 mm (0.0003 in) - 0.022 mm (0.0009 in)
Connecting rod pin bore diameter	23.007 mm (0.9058 in) - 23.019 mm (0.9063 in)
Connecting rod length (center-to-center)	152.68 mm (6.011 in)
Connecting rod maximum allowed bend	0.038 mm (0.0015 in)
Connecting rod maximum allowed twist	0.05 mm (0.002 in)
Connecting rod bearing bore diameter - grade 1	59.866 mm (2.3569 in) - 59.872 mm (2.3572 in)
Connecting rod bearing bore diameter - grade 2	59.873 mm (2.3572 in) - 59.879 mm (2.3574 in)
Connecting rod bearing bore diameter - grade 3	59.88 mm (2.3575 in) - 59.886 mm (2.3577 in)
Connecting rod bearing-to-crankshaft clearance	0.02 mm (0.0008 in) - 0.054 mm (0.0021 in)
Connecting rod side clearance (assembled to crank) - standard	0.175 mm (0.0069 in) - 0.425 mm (0.0167 in)
Connecting rod side clearance (assembled to crank) - service limit	0.175 mm (0.0069 in) - 0.425 mm (0.0167 in)