

## Specifications

### Materials

| Name                                                               | Specification |
|--------------------------------------------------------------------|---------------|
| Engine Oil - SAE 5W-30 - Synthetic Blend Motor Oil<br>XO-5W30-Q1SP | WSS-M2C946-B1 |

### Engine

| Item                                                                  | Specification       |
|-----------------------------------------------------------------------|---------------------|
| Bore                                                                  | 4.0157 in ( 102 mm) |
| Stroke                                                                | 3.7402 in ( 95 mm)  |
| Displacement                                                          | 6.2L (379 CID)      |
| No. of cylinders                                                      | 8                   |
| Compression ratio                                                     | 9.8:1               |
| Engine weight (without accessory drive components and with flexplate) | 579.82 lb ( 263 kg) |
| Engine weight (without accessory drive components and with flywheel)  | 593.04 lb ( 269 kg) |
| Firing order                                                          | 1-5-4-8-6-3-7-2     |
| Spark plug                                                            | 12405               |

### Engine Oil

| Item                                                                                        | Specification |
|---------------------------------------------------------------------------------------------|---------------|
| Material: Engine Oil - SAE 5W-30 - Synthetic Blend Motor Oil / XO-5W30-Q1SP (WSS-M2C946-B1) | WSS-M2C946-B1 |

### Engine Oil Capacity

| Item                              | Specification   |
|-----------------------------------|-----------------|
| Service fill including oil filter | 7.0 qt ( 6.6 L) |

### Torque Specifications

Engine oil drain plug: 17 lb.ft (23 Nm)

### Oil Pressure

| Item                                                                  | Specification     |
|-----------------------------------------------------------------------|-------------------|
| Minimum oil pressure at idle (engine at normal operating temperature) | 8.0 psi ( 55 kPa) |

## Cylinder Head

| Item                                     | Specification                                                 |
|------------------------------------------|---------------------------------------------------------------|
| Combustion chamber volume                | 4.47 â€“4.60 in <sup>3</sup> ( 73.3 â€“75.3 cm <sup>3</sup> ) |
| Roller follower ratio                    | â€“                                                           |
| Valve arrangement (front to rear) â€” LH | E-I-E-I-E-I-E-I                                               |
| Valve arrangement (front to rear) â€” RH | E-I-E-I-E-I-E-I                                               |
| Valve face runout â€” intake             | 0.0024 in ( .06 mm)                                           |
| Valve face runout â€” exhaust            | 0.0020 in ( .05 mm)                                           |
| Valve face angle                         | 45.5 Â°                                                       |
| Valve guide bore diameter                | 0.314 â€“0.315 in ( 7.975 â€“8.005 mm)                        |
| Valve head diameter â€” intake           | 2.1063 in ( 53.5 mm)                                          |
| Valve head diameter â€” exhaust          | 1.6535 in ( 42 mm)                                            |
| Valve seat width â€” intake              | 0.055 â€“0.063 in ( 1.4 â€“1.6 mm)                            |
| Valve seat width â€” exhaust             | 0.063 â€“0.071 in ( 1.6 â€“1.8 mm)                            |
| Valve seat angle                         | 44.5 â€“45.5 Â°                                               |

## Valve

| Item                                      | Specification                                                                                                                                        |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Valve stem diameter â€” intake            | 0.3123 â€“0.3131 in ( 7.933 â€“7.953 mm)                                                                                                             |
| Valve stem diameter â€” exhaust           | 0.3119 â€“0.3126 in ( 7.921 â€“7.941 mm)                                                                                                             |
| Valve stem-to-guide clearance â€” intake  | 0.0009 â€“0.0028 in ( .022 â€“.072 mm)                                                                                                               |
| Valve stem-to-guide clearance â€” exhaust | 0.0013 â€“0.0033 in ( .034 â€“.084 mm)                                                                                                               |
| 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 |

## Valve Springs

| Item                              | Specification                         |
|-----------------------------------|---------------------------------------|
| Valve spring free length          | 2.563 in ( 65.1 mm)                   |
| Valve spring compression pressure | 1350 N (303 lb) @ 41.60 mm (1.638 in) |

| Item                            | Specification                        |
|---------------------------------|--------------------------------------|
| Valve spring installed height   | 2.154 in ( 54.72 mm)                 |
| Valve spring installed pressure | 450 N (101 lb) @ 54.72 mm (2.154 in) |

### Camshaft

| Item                                        | Specification                              |
|---------------------------------------------|--------------------------------------------|
| Camshaft journal bore inside diameter       | 1.128 â€”1.129 in ( 28.657 â€”28.682 mm)   |
| Camshaft journal-to- bearing clearance      | 0.0017 â€”0.0037 in ( .044 â€”0.095 mm)    |
| End play                                    | 0.0033 â€”0.0061 in ( .085 â€”1.55 mm)     |
| Journal diameter                            | 1.1255 â€”1.1265 in ( 28.587 â€”28.613 mm) |
| Lobe lift â€” intake                        | 0.316 in ( 8.019 mm)                       |
| Lobe lift â€” exhaust                       | 0.309 in ( 7.861 mm)                       |
| Runout                                      | 0.0010 in ( .025 mm)                       |
| Theoretical valve lift @ 0 lash â€” intake  | 0.522 in ( 13.25 mm)                       |
| Theoretical valve lift @ 0 lash â€” exhaust | 0.522 in ( 13.25 mm)                       |

### Cylinder Block

| Item                               | Specification                                                                                                                                                                                              |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cylinder bore diameter â€” grade 1 | 4.0157 â€”4.0161 in ( 102 â€”102.01 mm)                                                                                                                                                                    |
| Cylinder bore diameter â€” grade 2 | 4.0161 â€”4.0165 in ( 102.01 â€”102.02 mm)                                                                                                                                                                 |
| Cylinder bore diameter â€” grade 3 | 4.0165 â€”4.0169 in ( 102.02 â€”102.03 mm)                                                                                                                                                                 |
| Cylinder bore maximum taper        | 0.0006 in ( .016 mm)                                                                                                                                                                                       |
| Cylinder bore maximum out-of-round | 0.0008 in ( .02 mm)                                                                                                                                                                                        |
| Main bearing bore inside diameter  | 2.850 â€”2.851 in ( 72.4 â€”72.424 mm)                                                                                                                                                                     |
| 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) in any 25 mm (0.984 in) x 25 mm (0.984 in) area overall |

### Crankshaft

| Item                                 | Specification                              |
|--------------------------------------|--------------------------------------------|
| Connecting rod journal diameter      | 2.0761 â€”2.0769 in ( 52.733 â€”52.753 mm) |
| Connecting rod journal maximum taper | 0.0003 in ( .008 mm)                       |

| Item                                             | Specification                              |
|--------------------------------------------------|--------------------------------------------|
| Connecting rod journal maximum out-of-round      | 0.0002 in ( .006 mm)                       |
| Crankshaft end play                              | 0.0055 â€”0.0177 in ( .14 â€” .45 mm)      |
| Main bearing journal diameter                    | 2.6567 â€”2.6577 in ( 67.481 â€”67.505 mm) |
| Main bearing journal maximum out-of-round        | 0.0002 in ( .006 mm)                       |
| Main bearing journal maximum taper               | 0.0003 in ( .008 mm)                       |
| Main bearing journal-to-cylinder block clearance | 0.0010 â€”0.0020 in ( .025 â€” .05 mm)     |

## Piston

| Item                                                     | Specification                         |
|----------------------------------------------------------|---------------------------------------|
| Piston diameter â€” grade 1 (at right angle to pin bore) | 4.0142 in ( 101.96 mm)                |
| Piston diameter â€” grade 2 (at right angle to pin bore) | 4.0146 in ( 101.97 mm)                |
| Piston diameter â€” grade 3 (at right angle to pin bore) | 4.0157 in ( 102 mm)                   |
| Piston-to-cylinder bore clearance (at grade size)        | 0.0004 â€”0.0016 in ( .01 â€” .04 mm) |
| Piston pin bore diameter                                 | 0.9449 in ( 24 mm)                    |

## Rings

| Item                                             | Specification                         |
|--------------------------------------------------|---------------------------------------|
| Piston ring end gap â€” top                      | 0.0138 â€”0.0197 in ( .35 â€” .5 mm)  |
| Piston ring end gap â€” intermediate             | 0.0138 â€”0.0236 in ( .35 â€” .6 mm)  |
| Piston ring end gap â€” oil control              | 0.0059 â€”0.0256 in ( .15 â€” .65 mm) |
| Piston ring groove width â€” top                 | 0.0591 in ( 1.5 mm)                   |
| Piston ring groove width â€” intermediate        | 0.0591 in ( 1.5 mm)                   |
| Piston ring groove width â€” oil control         | 0.0984 in ( 2.5 mm)                   |
| Piston ring width â€” top and intermediate       | 0.0591 in ( 1.5 mm)                   |
| Piston ring-to-groove clearance â€” top          | 0.0579 â€”0.0591 in ( 1.47 â€”1.5 mm) |
| Piston ring-to-groove clearance â€” intermediate | 0.0579 â€”0.0591 in ( 1.47 â€”1.5 mm) |

## Piston Pin

| Item                     | Specification                           |
|--------------------------|-----------------------------------------|
| Piston pin diameter      | 0.9449 in ( 24 mm)                      |
| Piston pin length        | 2.441 in ( 62 mm)                       |
| Piston pin-to-piston fit | 0.0003 â€”0.0008 in ( .008 â€” .021 mm) |

Connecting Rod

| Item                                           | Specification                      |
|------------------------------------------------|------------------------------------|
| Connecting rod bearing-to-crankshaft clearance | 0.0010 ±0.0026 in ( .025 ±.065 mm) |
| Connecting rod length (center-to-center)       | 6.2008 in ( 157.5 mm)              |
| Connecting rod maximum allowed bend            | 0.0015 in ( .038 mm)               |
| Connecting rod-to-pin clearance                | 0.0001 ±0.0007 in ( .003 ±.018 mm) |
| Connecting rod pin bore diameter               | 0.9452 in ( 24.009 mm)             |
| Connecting rod side clearance                  | 0.0394 in ( 1 mm)                  |

mcx30.com