ENGINE MECHANICAL

SERVICE DATA

0314M–01

Timing gear	Gear backlash	STD	0.02 – 0.15 mm (0.0008 – 0.0060 in.)
		Maximum	0.20 mm (0.0079 in.)
	Idle gear No. 1 thrust clearance	STD	0.06 – 0.11 mm (0.0024 – 0.0043 in.)
		Maximum	0.30 mm (0.0118 in.)
	Idle gear No. 1 inside diameter		44.000 – 44.025 mm (1.7323 – 1.7333 in.)
	Idle gear shaft diameter		43.950 – 43.970 mm (1.7303 – 1.7311 in.)
	Idle gear oil clearance	STD	0.010 – 0.070 mm (0.0004 – 0.0028 in.)
		Maximum	0.20 mm (0.0079 in.)
Cylinder head bolt	Cylinder head bolt outer diameter	STD	13.500 – 14.000 mm (0.5315 – 0.5512 in.)
		Minimum	12.60 mm (0.4961 in.)
Cylinder head gasket	New cylinder head gasket thickness	1	0.80 – 0.90 mm (0.0315 – 0.0354 in.)
		2	0.90 – 1.00 mm (0.0354 – 0.0394 in.)
		3	1.00 – 1.10 mm (0.0394 – 0.0443 in.)
Valve clearance		at cold Intake	0.20 – 0.30 mm (0.008 – 0.012 in.)
		Exhaust	0.25 – 0.35 mm (0.010 – 0.014 in.)
	Adjusting shim thickness	Mark 01	2.500 mm (0.0984 in.)
		42	2.550 mm (0.1004 in.)
		06	2.600 mm (0.1024 in.)
		43	2.650 mm (0.1043 in.)
		11	2.700 mm (0.1063 in.)
		44	2.750 mm (0.1083 in.)
		16	2.800 mm (0.1102 in.)
		45	2.850 mm (0.1122 in.)
		21	2.900 mm (0.1142 in.)
		46	2.950 mm (0.1161 in.)
		26	3.000 mm (0.1181 in.)
		47	3.050 mm (0.1201 in.)
		31	3.100 mm (0.1220 in.)
		48	3.150 mm (0.1240 in.)
		36	3.200 mm (0.1260 in.)
		49	3.250 mm (0.1280 in.)
		41	3.300 mm (0.1299 in.)
Cylinder head	Warpage		0.15 mm (0.0059 in.)
	Valve seat		
	Refacing angle	Intake	30°, 45°, 60°
		Exhaust	30°, 45°, 60°
	Contacting angle		45°
	Contacting width	Intake	1.5 – 1.9 mm (0.059 – 0.075 in.)
		Exhaust	1.8 – 2.2 mm (0.071 – 0.087 in.)
	Valve guide bush bore diameter	STD	13.000 – 13.027 mm (0.5118 – 0.5129 in.)
		O/S 0.05	13.050 – 13.077 mm (0.5134 – 0.5148 in.)
Valve guide bush	Inside diameter		8.010 – 8.030 mm (0.3154 – 0.3161 in.)
	Protrusion from cylinder head		12.8 – 13.2 mm (0.504 – 0.520 in.)
Valve	Valve overall length	STD Intake	103.29 – 103.69 mm (4.0665 – 4.0823 in.)
		Exhaust	103.29 – 103.69 mm (4.0665 – 4.0823 in.)
		Minimum Intake	102.79 mm (4.0468 in.)
		Exhaust	102.79 mm (4.0468 in.)
	Stem diameter	Intake	7.975 – 7.990 mm (0.3140 – 0.3146 in.)
		Exhaust	7.960 – 7.975 mm (0.3134 – 0.3140 in.)
	Stem oil clearance	STD Intake	0.020 – 0.055 mm (0.0008 – 0.0022 in.)
		Exhaust	0.035 – 0.070 mm (0.0014 – 0.0028 in.)
		Maximum Intake	0.08 mm (0.0031 in.)
		Exhaust	0.10 mm (0.0039 in.)
	Margin thickness	STD Intake	1.6 mm (0.063 in.)
		Exhaust	1.7 mm (0.067 in.)
		Minimum Intake	1.1 mm (0.043 in.)
		Exhaust	1.2 mm (0.047 in.)

Valve spring	Deviation	Maximum	2.0 mm (0.079 in.)
	Free length		48.54 mm (1.9110 in.)
	Installed tension at 37.0 mm (1.451 in.)		301 – 332 N (30.7 – 33.9 kgf, 67.7 – 74.7 lbf)
Valve lifter	Cylinder head lifter bore diameter		40.930 – 40.950 mm (1.6114 – 1.6122 in.)
	Lifter diameter		40.892 – 40.902 mm (1.6099 – 1.6103 in.)
	Oil clearance	STD	0.038 – 0.063 mm (0.0015 – 0.0025 in.)
		Maximum	0.08 mm (0.0031 in.)
Camshaft	Circle runout	Maximum	0.06 mm (0.0024 in.)
	Cam lobe height	STD	54.810 – 54.910 mm (2.1579 – 2.1618 in.)
		Minimum	54.39 mm (2.1413 in.)
	Journal diameter		27.969 – 27.985 mm (1.1011 – 1.1018 in.)
	Journal oil clearance	STD	0.025 – 0.062 mm (0.0010 – 0.0024 in.)
		Maximum	0.10 mm (0.0039 in.)
	Thrust clearance	STD	0.080 – 0.180 mm (0.0032 – 0.0071 in.)
		Maximum	0.25 mm (0.0098 in.)
	Gear backlash	STD	0.035 – 0.145 mm (0.0014 – 0.0057 in.)
		Maximum	0.35 mm (0.0074 in.)
Cylinder block	Cylinder head surface warpage Warpage	Maximum	0.10 mm (0.0039 in.)
	Cylinder bore diameter	STD Mark 1	96.000 – 96.010 mm (3.7795 – 3.7799 in.)
		2	96.010 – 96.020 mm (3.7799 – 3.7803 in.)
		3	96.020 – 96.030 mm (3.7803 – 3.7807 in.)
		Maximum STD	92.23 mm (3.6311 in.)
		O/S 0.50	92.73 mm (3.6508 in.)
		O/S 0.75	96.96 mm (3.8137 in.)
		O/S 1.00	97.23 mm (3.8279 in.)
Piston and piston ring	Piston diameter	STD Mark 1	95.940 – 95.950 mm (3.7772 – 3.7776 in.)
		2	95.950 – 95.960 mm (3.7776 – 3.7779 in.)
		3	95.960 – 95.970 mm (3.7779 – 3.7783 in.)
		O/S 0.50	96.440 – 96.470 mm (3.7968 – 3.7980 in.)
		O/S 0.75	96.690 – 96.720 mm (3.8067 – 3.8079 in.)
		O/S 1.00	96.940 – 96.970 mm (3.8165 – 3.8177 in.)
	Piston oil clearance	STD	0.050 – 0.070 mm (0.0020 – 0.0028 in.)
		Maximum	0.14 mm (0.0055 in.)
	Piston ring groove clearance	STD No. 1	0.060 – 0.110 mm (0.0024 – 0.0043 in.)
		No. 2	0.060 – 0.100 mm (0.0024 – 0.0039 in.)
		Oil	0.020 – 0.060 mm (0.0004 – 0.0024 in.)
		Maximum	0.20 mm (0.0079 in.)
	Piston ring end gap	STD No. 1	0.350 – 0.470 mm (0.0138 – 0.0185 in.)
		No. 2	0.400 – 0.500 mm (0.0157 – 0.0197 in.)
		Oil	0.200 – 0.400 mm (0.0079 – 0.0157 in.)
		Maximum No. 1	1.03 mm (0.0406 in.)
		No. 2	1.10 mm (0.0433 in.)
		Oil	0.87 mm (0.0343 in.)
	Piston protrusion from cylinder block		0.005 – 0.254 mm (0.0002 – 0.0100 in.)

Connecting rod	Thrust clearance	STD	0.100 – 0.300 mm (0.0039 – 0.0118 in.)
		Maximum	0.40 mm (0.0157 in.)
	Connecting rod oil clearance	STD	0.036 – 0.054 mm (0.0014 – 0.0021 in.)
		U/S 0.25, U/S 0.50	0.037 – 0.077 mm (0.0015 – 0.0030 in.)
		Maximum	0.10 mm (0.0039 in.)
	Connecting rod bearing center wall thickness (Reference)		
		STD Mark 2	1.486 – 1.489 mm (0.0585 – 0.0586 in.)
		3	1.489 – 1.492 mm (0.0586 – 0.0587 in.)
		4	1.492 – 1.495 mm (0.0587 – 0.0589 in.)
		5	1.495 – 1.498 mm (0.0589 – 0.0590 in.)
		6	1.498 – 1.501 mm (0.0590 – 0.0591 in.)
	Rod bend	Maximum per 100 mm (3.94 in.)	0.03 mm (0.0012 in.)
	Rod twist	Maximum per 100 mm (3.94 in.)	0.15 mm (0.0059 in.)
	Bush inside diameter		34.012 – 34.024 mm (1.3391 – 1.3395 in.)
	Piston pin diameter		34.000 – 34.012 mm (1.3386 – 1.3391 in.)
	Piston pin oil clearance	STD	0.008 – 0.016 mm (0.0003 – 0.0006 in.)
		Maximum	0.03 mm (0.0012 in.)
	Connecting rod bolt tension portion diameter	STD	8.500 – 8.600 (0.3347 – 0.3385 in.)
		Minimum	8.30 mm (0.3268 in.)
Crankshaft	Thrust clearance	STD	0.040 – 0.240 mm (0.0016 – 0.0094 in.)
		Maximum	0.30 mm (0.0118 in.)
	Thrust washer thickness	STD	2.430 – 2.480 mm (0.0957 – 0.0976 in.)
		U/S 0.125	2.493 – 2.543 mm (0.0981 – 0.1001 in.)
		0.25	2.555 – 2.605 mm (0.1006 – 0.1026 in.)
	Main journal oil clearance	STD	0.030 – 0.048 mm (0.0012 – 0.0019 in.)
		U/S 0.25, U/S 0.50	0.037 – 0.077 mm (0.0015 – 0.0030 in.)
		Maximum	0.10 mm (0.0039 in.)
	Main journal diameter	STD	69.994 – 70.000 mm (2.75566 – 2.75590 in.)
		U/S 0.25	69.988 – 69.994 mm (2.75543 – 2.75566 in.)
		0.50	69.982 – 69.988 mm (2.75519 – 2.75543 in.)
	Main bearing center wall thickness (Reference)		
		STD Mark 2	2.482 – 2.485 mm (0.0977 – 0.0978 in.)
		3	2.485 – 2.488 mm (0.0978 – 0.0980 in.)
		4	2.488 – 2.491 mm (0.0980 – 0.0981 in.)
		5	2.491 – 2.494 mm (0.0981 – 0.0982 in.)
		6	2.494 – 2.497 mm (0.0982 – 0.0983 in.)
	Crank pin diameter	STD	58.994 – 59.000 mm (2.32259 – 2.32283 in.)
		U/S 0.25	58.988 – 59.994 mm (2.32236 – 2.32259 in.)
		0.50	58.982 – 58.988 mm (2.32212 – 2.32239 in.)
	Circle runout	Maximum	0.06 mm (0.0024 in.)
	Main journal taper and out–of–round	Maximum	0.02 mm (0.0008 in.)
	Crank pin taper and out–of–round	Maximum	0.02 mm (0.0008 in.)
	Main bearing cap bolt outer diameter	STD	13.500 – 14.000 mm (0.5315 – 0.5512 in.)
		Maximum	12.60 mm (0.4961 in.)