

ENGINE

Engine - Technical Data - X6 (N63)

ENGINE GENERAL

11 00 ENGINE IN GENERAL N63 B44

ENGINE - TECHNICAL DATA

Cylinder		8
Bore	mm	89
Stroke	mm	88.3
Effective displacement	cm ³	4389
Compression ratio	:1	10.0
Max. permissible engine speed	RPM	7000
Permissible constant speed	RPM	6550
Compression pressure: Minimum and maximum values.		14...16
Compression pressure: Maximum deviation of all cylinders to each other.	bar	2

ENGINE BLOCK

11 11 ENGINE BLOCK, CYLINDER CRANKCASE N63 B44

ENGINE BLOCK, CYLINDER CRANKCASE - TECHNICAL DATA

Bore Ø stage 0 ⁽¹⁾	mm	89.000 ^{+0.014}
Bore Ø stage 00 ⁽¹⁾	mm	89.250 ^{+0.014}
Bore Ø stage 1 ⁽¹⁾	mm	89.500 ^{+0.014}
Permitted out-of-round of cylinder bore ⁽¹⁾	mm	0.005
Permitted conicity of cylinder bore ⁽¹⁾	mm	0.01
Permissible total wear tolerance between piston and cylinder (engine operated)	mm	0.15
⁽¹⁾ new status or recondition		

CYLINDER HEAD WITH COVER

11 12 CYLINDER HEAD WITH COVER N63 B44

CYLINDER HEAD WITH COVER - TECHNICAL DATA

Cylinder head height: Original dimension	mm	134.00 ± 0.05
Machining limit	mm	133.70 ± 0.05

Valve guides are not available as replacement parts.		
Inside diameter of installed valve guide		
Original inlet valve	mm	6.0 ^{+0.012}
Original exhaust valve	mm	6.0 ^{+0.012}
Tilt clearance, maximum (wear between valve and valve guide)	mm	0.06...0.112
Bearing of camshaft		
Guide bearing (width)	mm	13.993 ... 14.035

11 12 CYLINDER HEAD WITH VALVE SEAT COVER N63 B44

CYLINDER HEAD WITH VALVE SEAT COVER - TECHNICAL DATA

Valve seat angle	°	45
Correction angle: outer	°	15
Correction angle: inner	°	70
Valve seat width: Inlet	mm	0.9 ^{+0.1}
Valve seat width: Exhaust	mm	1.15 ^{+0.1}
Ø Valve seat		
Valve seat surface: Outside dia. inlet	mm	31.6 ^{+0.1}
Valve seat surface: Outside dia. exhaust	mm	27.6 ^{+0.1}

CRANKSHAFT WITH BEARING

11 21 CRANKSHAFT AND BEARINGS N63 B44

CRANKSHAFT AND BEARINGS - TECHNICAL DATA

Ground sizes of main bearing journals		Bearing journal 1
Original (designation S1)	mm	64.974 ... 64.980
Original (designation S2)	mm	64.967 ... 64.973
Original (designation S3)	mm	64.961 ... 64.966
Grinding stage 1 (designation B1)	mm	64.724 ... 64.730
Grinding stage 1 (designation B2)	mm	64.717 ... 64.723
Grinding stage 1 (designation B3)	mm	64.711 ... 64.716
Grinding stage 2 (designation C1)	mm	64.474 ... 64.480
Grinding stage 2 (designation C2)	mm	64.467 ... 64.473
Grinding stage 2 (designation C3)	mm	64.461 ... 64.466
Crankshaft bearing clearance, radial	mm	0.020 ... 0.046
Max. permitted runout at center crankshaft journal	mm	0.15

11 21 CRANKSHAFT AND BEARINGS N63 B44

CRANKSHAFT AND BEARINGS - TECHNICAL DATA

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Ground sizes of main bearing journals		Bearing journal 2-5
Original (designation S1)	mm	64.984 ... 64.990
Original (designation S2)	mm	64.977 ... 64.983
Original (designation S3)	mm	64.971 ... 64.976
Grinding stage 1 (designation B1)	mm	64.734 ... 64.740
Grinding stage 1 (designation B2)	mm	64.727 ... 64.733
Grinding stage 1 (designation B3)	mm	64.721 ... 64.726
Grinding stage 2 (designation C1)	mm	64.484 ... 64.490
Grinding stage 2 (designation C2)	mm	64.477 ... 64.483
Grinding stage 2 (designation C3)	mm	64.471 ... 64.476
Crankshaft bearing clearance, radial	mm	0.020 ... 0.046
Max. permitted runout at center crankshaft journal	mm	0.15

11 21 CRANKSHAFT AND BEARINGS N63 B44

CRANKSHAFT AND BEARINGS - TECHNICAL DATA

Grinding stages, crankshaft guide bearing		
Standard	mm	$28^{+0.053}_{+0.020}$
Size 1	mm	$28.2^{+0.053}_{0.020}$
Size 2	mm	$28.4^{+0.053}_{+0.020}$
Crankshaft axial play	mm	0.080 ... 0.246
Coefficient of friction - crankshaft	Nm	MAX 5

11 21 CRANKSHAFT AND BEARINGS N63 B44

CRANKSHAFT AND BEARINGS - TECHNICAL DATA

Ground sizes of conrod bearing journals		
Standard	mm	53.971...53.990
Size 1	mm	53.721...53.740
Size 1	mm	53.471...53.490
Radial conrod bearing play	mm	0.025 ... 0.070

VIBRATION DAMPER

11 23 VIBRATION DAMPER N63 B44

VIBRATION DAMPER - TECHNICAL DATA

Max. permitted radial runout	mm	0.30
Max. permitted axial runout	mm	0.30

CONNECTING ROD WITH BEARING

11 24 CONNECTING RODS AND BEARINGS N63 B44

CONNECTING RODS AND BEARINGS - TECHNICAL DATA

Ø Large connecting rod eye (without bearing)	mm	57.600 ^{+0.016}
Conrod bushing: Inside diameter	mm	22.000 ^{+0.016} +0.008
Connecting rod bearing, installation clearance	mm	
Permissible total deviation of connecting rods in one engine (without bearing shells)	g	± 2

PISTON WITH RINGS AND PIN

11 25 PISTONS WITH RINGS AND PINS N63 B44

PISTONS WITH RINGS AND PINS - TECHNICAL DATA

Piston and pin are paired to each other - replace together only.		
Measuring point "A" (position)	mm	10
Piston diameter at measuring point "A"		
Original (new dimension)	mm	88.985 ^{+0.014} -0.014
Repair stage (0.08)	mm	89.065 ^{+0.014} -0.014
Oversize (0.25)	mm	89.235 ^{+0.014} -0.014
Oversize (0.50)	mm	89.485 ^{+0.014} -0.014
Piston installation clearance (piston new)	mm	0.000...0.034
Piston installation clearance (piston worn)	mm	0.020...0.047
Permissible total wear tolerance between piston and cylinder (engine operated)	mm	0.15

11 25 PISTONS WITH RINGS AND PINS N63 B44

PISTONS WITH RINGS AND PINS - TECHNICAL DATA

1st groove		
End clearance	mm	0.15...0.30
Axial play	mm	0.020...0.060
2nd groove		
End clearance	mm	0.30...0.50
Axial play	mm	0.015...0.060
3rd groove		
End clearance	mm	cannot be measured
Axial play	mm	cannot be measured

CAMSHAFT

11 31 CAMSHAFT N63 B44

CAMSHAFT - TECHNICAL DATA

Guide bearing (width)	mm	14.165...14.207
Radial runout	mm	0.10 ... 0.050
Axial play	mm	0.022... 0.107

VALVES WITH SPRINGS

11 34 VALVES WITH SPRINGS N63 B44

VALVES WITH SPRINGS - TECHNICAL DATA

Plate dia.		
Inlet	mm	33.2 ^{±0.1}
Exhaust		29 ^{± 0.1}
Stem Ø		
Inlet	mm	5.94 ⁺⁰ _{-0.04}
Exhaust	mm	5.92 ^{+0.02} _{-0.02}

OIL SUPPLY

11 40 OIL SUPPLY E71 / N63 B44

OIL SUPPLY - TECHNICAL DATA

Oil grades and consumption:		
Filling capacity, engine oil change with oil filter element	Liters	8.50
Oil quantity in oil sump	Liters	8.00
Oil quantity in oil filter element	Liters	0.50
Oil quantity in oil lines and in engine oil cooler	Liters	1.20

OIL PUMP WITH FILTER AND DRIVE

11 41 OIL PUMP WITH STRAINER AND DRIVE N63 B44

OIL PUMP WITH STRAINER AND DRIVE - TECHNICAL DATA

Oil pressure at idle speed with engine at operating temperature	min bar	1.5
Control pressure with engine at operating temperature	bar	4.0 ... 6.0