

ENGINE

Engine - Technical Data - X6 (N54)

ENGINE, GENERAL

11 00 ENGINE IN GENERAL N54 B30

ENGINE IN GENERAL N54 B30-SPECIFICATION

Cylinder		6
Bore	mm	84
Stroke	mm	89.6
Effective displacement	cm ³	2979
Compression ratio	:1	10.2
Max. permissible engine speed	RPM	7000
Permissible constant speed	RPM	6550
Compression pressure: Minimum and maximum values depending on position of Valvetronic.		14...16
Compression pressure: Maximum deviation of all cylinders to each other.	bar	2

ENGINE BLOCK

11 11 ENGINE BLOCK, CYLINDER CRANKCASE N54 B30

ENGINE BLOCK, CYLINDER CRANKCASE N54 B30-SPECIFICATION

Bore Ø stage 0 ⁽¹⁾	mm	84.000 ^{+0.014}
Bore Ø stage 00 ⁽¹⁾	mm	
Bore Ø stage 1 ⁽¹⁾	mm	84.250 ^{+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

11 12 CYLINDER HEAD WITH COVER N54 B30

CYLINDER HEAD WITH COVER N54 B30-SPECIFICATION

Cylinder head height: Original dimension	mm	112.00 ± 0.05
Machining limit	mm	111.70 ± 0.05

Valve guides are not available as replacement parts.		
Inside diameter of installed valve guide		
Original inlet valve	mm	5.0 ^{+0.012}
Original exhaust valve	mm	6.0 ^{+0.012}
Tilt clearance, maximum (wear between valve and valve guide)	mm	cannot be measured
Bearing of camshaft		
Guide bearing (width)	mm	22.000...22.052

11 12 CYLINDER HEAD WITH VALVE SEAT COVER N54 B30

CYLINDER HEAD WITH VALVE SEAT COVER N54 B30-SPECIFICATION

Valve seat angle	°	45
Correction angle: outer	°	15
Correction angle: inner	°	60
Valve seat width: Inlet	mm	1.0 ^{+0.1}
Valve seat width: Exhaust	mm	1.2 ^{+0.1}
Ø Valve seat		
Valve seat surface: Outside dia. inlet	mm	27.7 ^{+0.1}
Valve seat surface: Outside dia. exhaust	mm	26.6 ^{+0.1}

CRANKSHAFT WITH BEARING

11 21 CRANKSHAFT AND BEARINGS N54 B30

CRANKSHAFT AND BEARINGS N54 B30-SPECIFICATION

Ground sizes of main bearing journals		main bearing journal
Original (designation S1)	mm	55.998...55.993
Original (designation S2)	mm	55.992...55.987
Original (designation S3)	mm	55.986...55.981
Crankshaft bearing clearance, radial	mm	0.020...0.046
Max. permitted runout at center crankshaft journal	mm	0.15

11 21 CRANKSHAFT AND BEARINGS N54 B30

CRANKSHAFT AND BEARINGS N54 B30-SPECIFICATION

Ground sizes of main bearing journals		Guide bearing journal
Original (designation S1)	mm	64.998...64.993
Original (designation S2)	mm	64.992...64.987
Original (designation S3)	mm	64.986...64.981
Crankshaft bearing clearance, radial	mm	0.020...0.046

Max. permitted runout at center crankshaft journal	mm	0.15
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11 21 CRANKSHAFT AND BEARINGS N54 B30

CRANKSHAFT AND BEARINGS N54 B30-SPECIFICATION

Grinding stages, crankshaft guide bearing		
Standard	mm	24.0 F8
Size 1	mm	24.2 F8
Size 2	mm	24.4 F8
Crankshaft axial play	mm	0.060...0.250

11 21 CRANKSHAFT AND BEARINGS N54 B30

CRANKSHAFT AND BEARINGS N54 B30-SPECIFICATION

Ground sizes of conrod bearing journals		
Standard	mm	50.00 ^{-0.007} _{-0.027}
Radial conrod bearing play	mm	0.025...0.070

VIBRATION DAMPER

11 23 VIBRATION DAMPER N54 B30

VIBRATION DAMPER N54 B30-SPECIFICATION

Max. permitted radial runout	mm	0.10
Max. permitted axial runout	mm	0.10

CONNECTING ROD

11 24 CONNECTING RODS AND BEARINGS N54 B30

CONNECTING RODS AND BEARINGS N54 B30-SPECIFICATION

Ø Large connecting rod eye (without bearing)	mm	53.600 ^{+0.016}
Conrod bushing: Inside diameter	mm	22 ^{+0.013} _{+0.004}
Permissible total deviation of connecting rods in one engine (without bearing shells)	g	± 5

PISTON WITH RINGS

11 25 PISTONS WITH RINGS AND PINS N54 B30

PISTONS WITH RINGS AND PINS N54 B30-SPECIFICATION

Piston and pin are paired to each other - replace together only.		
Measuring point "A" (position)	mm	15

Piston diameter at measuring point "A"		
Original (new dimension)	mm	83.967 ^{+0.004} _{-0.009}
Repair stage (new dimension)	mm	%
Oversize (new dimension)	mm	84.217 ^{+0.004} _{-0.009}
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 N54 B30

PISTONS WITH RINGS AND PINS N54 B30-SPECIFICATION

1st groove		
End clearance	mm	0.18...0.33
Axial play	mm	0.020...0.060
2nd groove		
End clearance	mm	0.30...0.50
Axial play	mm	0.020...0.060
3rd groove		
End clearance	mm	cannot be measured
Axial play	mm	cannot be measured

CAMSHAFT

11 31 CAMSHAFT N54 B30

CAMSHAFT N54 B30-SPECIFICATION

Guide bearing (width)	mm	20.000 ^{+0.052}
Radial runout	mm	0.054...0.099
Axial play	mm	0.02 ... 0.162

VALVES WITH SPRINGS

11 34 VALVES WITH SPRINGS N54 B30

VALVES WITH SPRINGS N54 B30-SPECIFICATION

Plate dia.		
Inlet	mm	31.4 ± 0.05

Exhaust		28.0 $\pm$ 0.1
Stem Ø		
Inlet	mm	5.0 $^{-0.1}_{-0.06}$
Exhaust	mm	6.0 $^{-0.1}_{-0.06}$

OIL SUPPLY

11 40 OIL SUPPLY E71/N54 B30

OIL SUPPLY E71/N54 B30-SPECIFICATION

Oil grades and consumption:		
Filling capacity, engine oil change with oil filter element	Liters	6.50

OIL PUMP WITH FILTER

11 41 OIL PUMP WITH STRAINER AND DRIVE N54 B30

OIL PUMP WITH STRAINER AND DRIVE N54 B30-SPECIFICATION

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