

November 2017

Engine Building Data sheet – SBD 1.4L 16v XE (RACE/RALLY)

This Data sheet is designed to give information that would be needed during an engine build or rebuild using SBD parts

	Metric	Imperial	Notes
Bore preparation			See relevant piston doc.
Bore Size	+0.01/-0.00mm	+0.0004/ -0.0000"	i.e. 77.90mm = 77.91/77.90mm
Skirt clearance	N/A	N/A	Correct when bore size achieved*
Squish Clearance	0.85mm	.033"	Gasket minus average piston edge protrusion
Top Ring Gap	0.25mm	.010"	Min. **
2 nd Ring Gap	0.20mm	.008"	Min. **
Oil Ring Gap 2pc	0.20mm	.008"	Min. **
Oil Ring Gap 3pc	0.35mm	.015"	Min. **
Big End Clearance	0.045/0.064mm	.0018/.0025"	
Main Clearance	0.038/0.063mm	.0015/.0025"	
Rod side clearance	0.15/0.25mm	.006/.010"	
Crank Float	0.10/0.15mm	.004/.006"	
Valve to Piston Clearance	1.52mm	.060"	Minimum on rotation
Tappet Clearance	0.20/0.25mm	.008/.010"	SBD Mechanical ONLY

Squish Clearance –

PIST-OM77.90XS & ROD-VX-1.4XE-134S

Our range of 3 Ring Semi Skirt Pistons and matching Rods set the piston low in the bores if a standard height (un-machined) block is used; this allows the customer to machine the block face to ensure the surface is flat and has a suitable surface finish for our high specification multi-layer head gasket which is strongly recommended for an engine of this build type.

Please take time to measure and set the squish clearance correctly, this is an important part of building an engine that performs well, and an aspect that becomes more critical as the engine specification rises.

**The complex shape of SBD/Omega Pistons means that it is virtually impossible to accurately measure the piston to determine bore clearance by the end user, the machining standards which are achieved and checked by Omega before despatch mean that the end user should only be concerned by the actual bore size, if the specified limits are met the bore clearance will be correct.*

*** N.B – Over recent years ring manufacturers have increased end gaps without any detriment to the engine performance or ring sealing abilities, therefore use our clearance as a minimum value.*

Bore preparation for all Omega Pistons

As recommended by Omega.

The piston size you have ordered is actually the bore size that your block should be machined to, for example if you have ordered an 87.00mm piston, the bore tolerance will be 87.00mm to 87.01mm, this gives you a tolerance of -0.00mm to +0.01mm. The clearance for the piston has already been designed into the piston by Omega themselves and is correct for every piston size they manufacture. The accuracy that the pistons are made to is so tight that it is impossible without very accurate measuring equipment to determine the differences between each piston (see note below).

****Note:** We do not normally provide the piston clearance, this is due to the fact that the pistons are oval and barrelled in several different directions and on some versions have specific high spots designed into them making it very difficult for anybody other than Omega to measure the clearance correctly.

How accurate is the boring?

Bore is to be round to a tolerance of 0.01mm, diameter measured at top, middle and bottom of bore, both front to back & left to right.

The details below are provided by Omega for the finishing of the bore to its finished size.

TYPE = Plato Honing:

1. Bore to 0.003" (thou) undersize.
2. Hone with 160 Grit.
3. Then stone up and down twice with 600 Stone to size.
4. Running in with Cords, Comm, Millers or similar high quality Running in Oil.

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