Revised January 2025

Compact ~~Cup Championship~~ Class

Technical File 2025

'Specific details are contained within the 'Compact ~~Cup Championship~~ Class Technical File'.

This file is to be used in conjunction with the 5.7: ENGINE regulations and is the definitive document in the comparison of 'standard engine parts'. *CCC 5.7.Engine*

5.7 Engine

The only permitted engine for use in the Compact ~~Cup Championship~~ Class is the BMW M44B19 16v.

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OEM Inlet cam showing 'cast in' '**E**' (einlass/inlet) and other 'cast in' identification.

Inlet cam must be a genuine BMW OEM standard part. A pattern or reprofiled cam is NOT permitted.

OEM Exhaust cam showing 'cast in' '**A'** (auspuffanlage/exhaust) and other 'cast in' identification.

Exhaust cam must be a genuine BMW OEM standard part. A pattern or reprofiled cam is NOT permitted.

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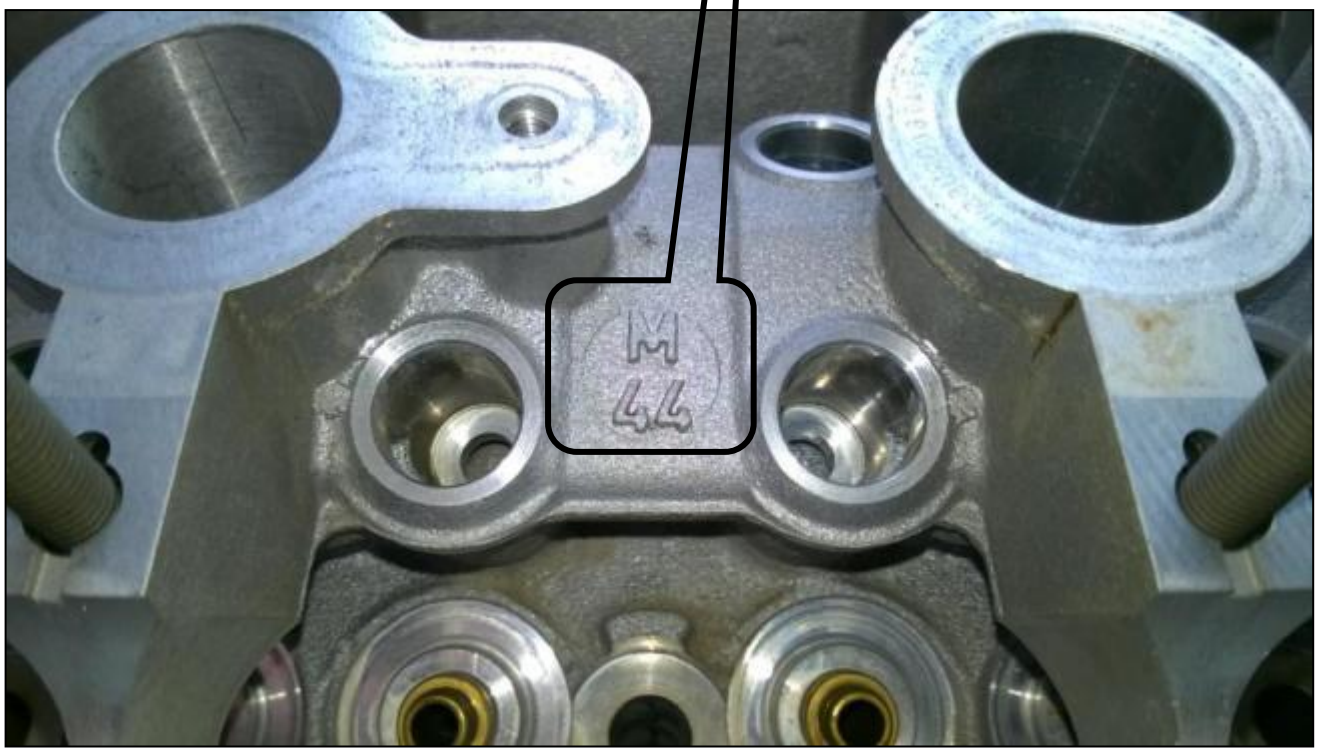
Top of cylinder head casting showing specific model number.



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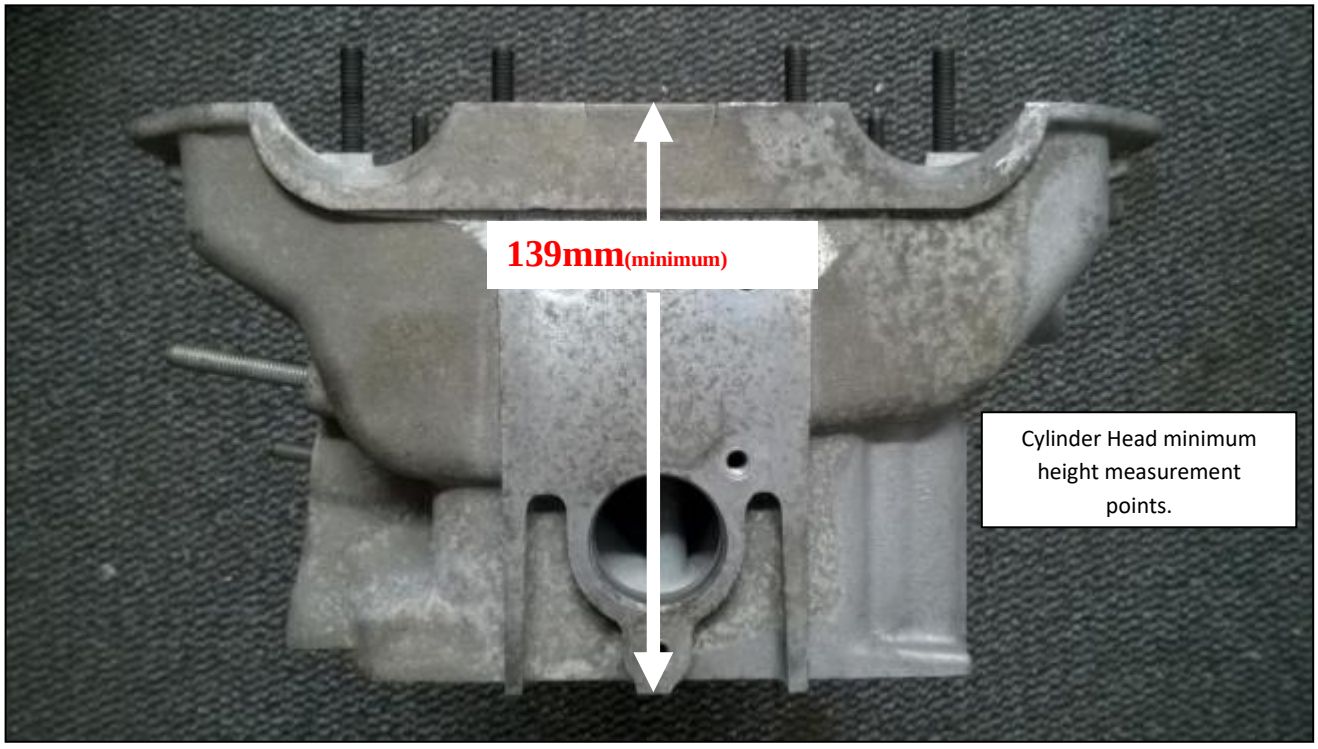

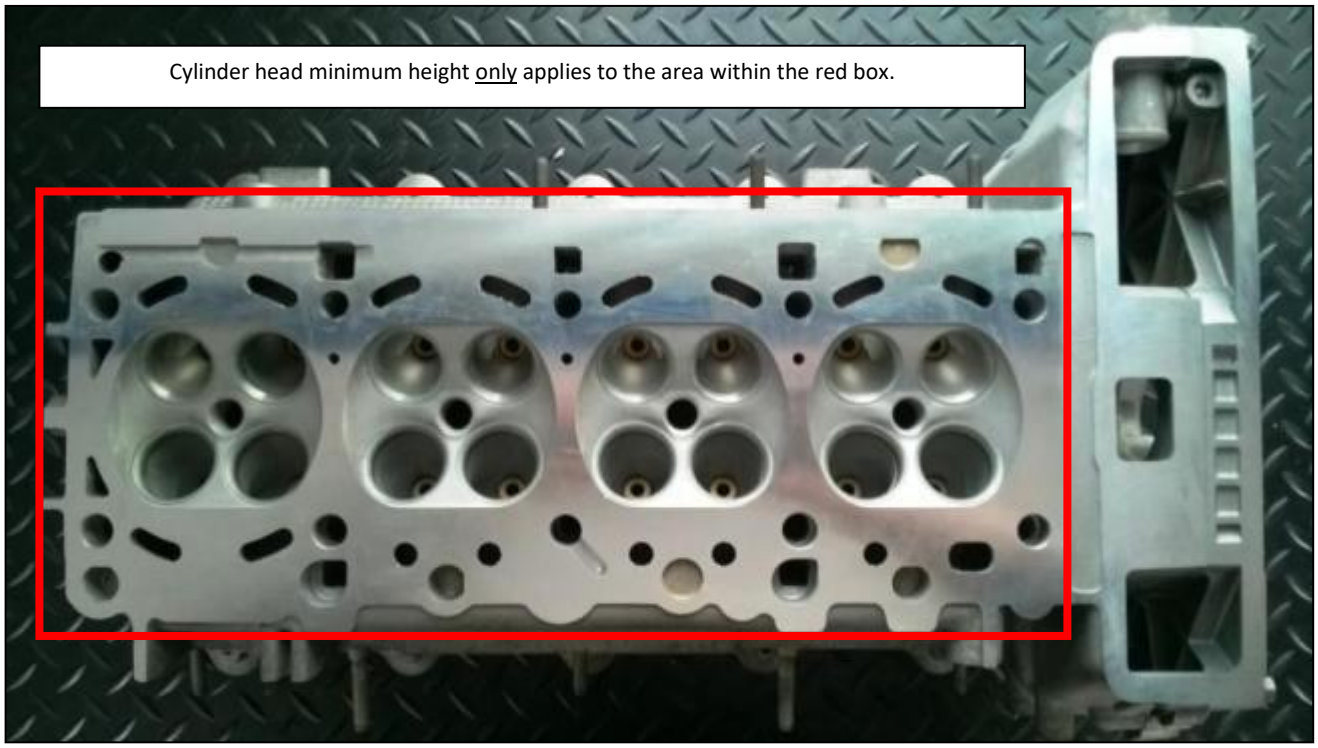

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Combustion chamber showing OEM standard installation of valve seats.

OEM standard part or standard pattern valve seats must retain the original OEM standard part dimensions and seat angle widths.

Combustion chamber showing Inlet ports

with typical 'as cast' finish

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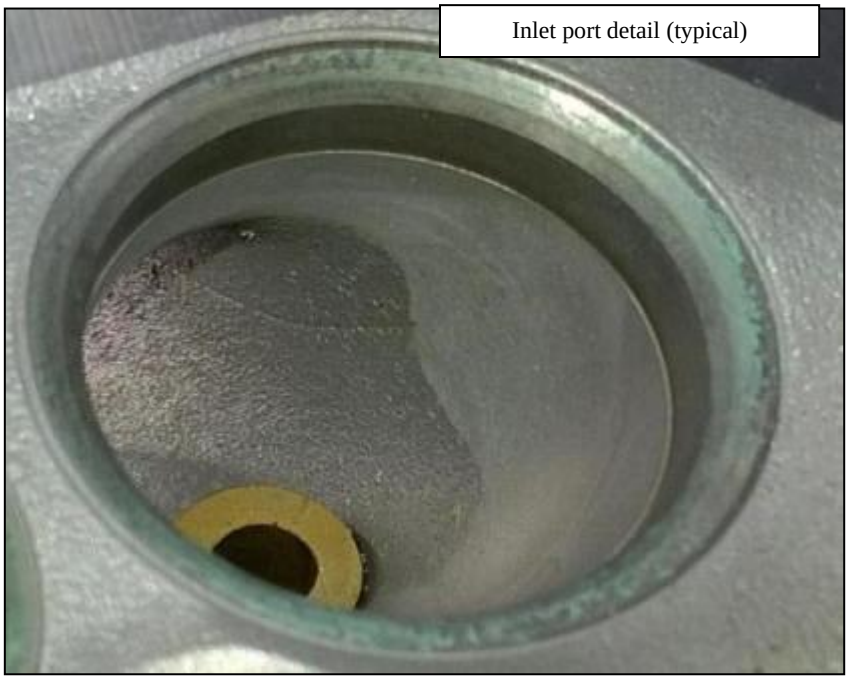
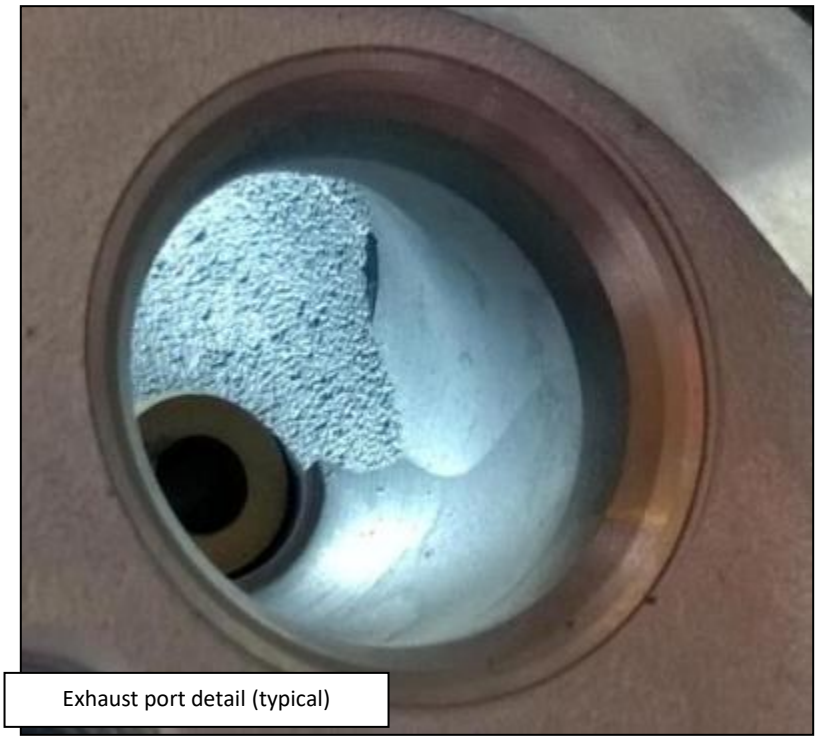


Inlet port detail (typical)



Exhaust port detail (typical)

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Intake port showing OEM standard part machined area under valve seat & ‘as cast’ surface finish extending up to the machined area of port (typical).

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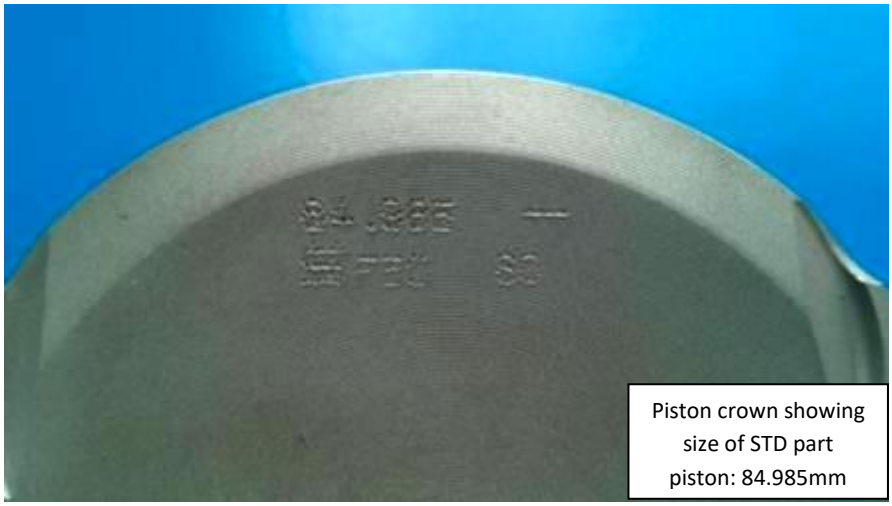
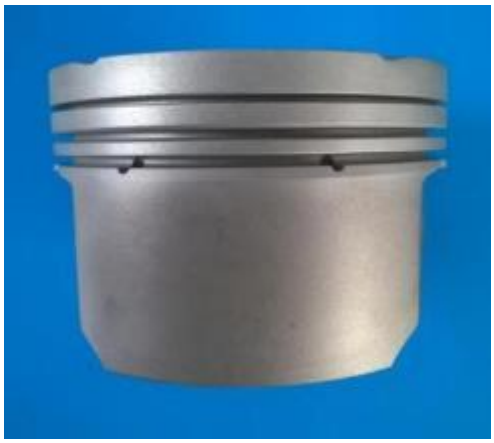


Piston crown showing size of STD part piston: 84.985mm



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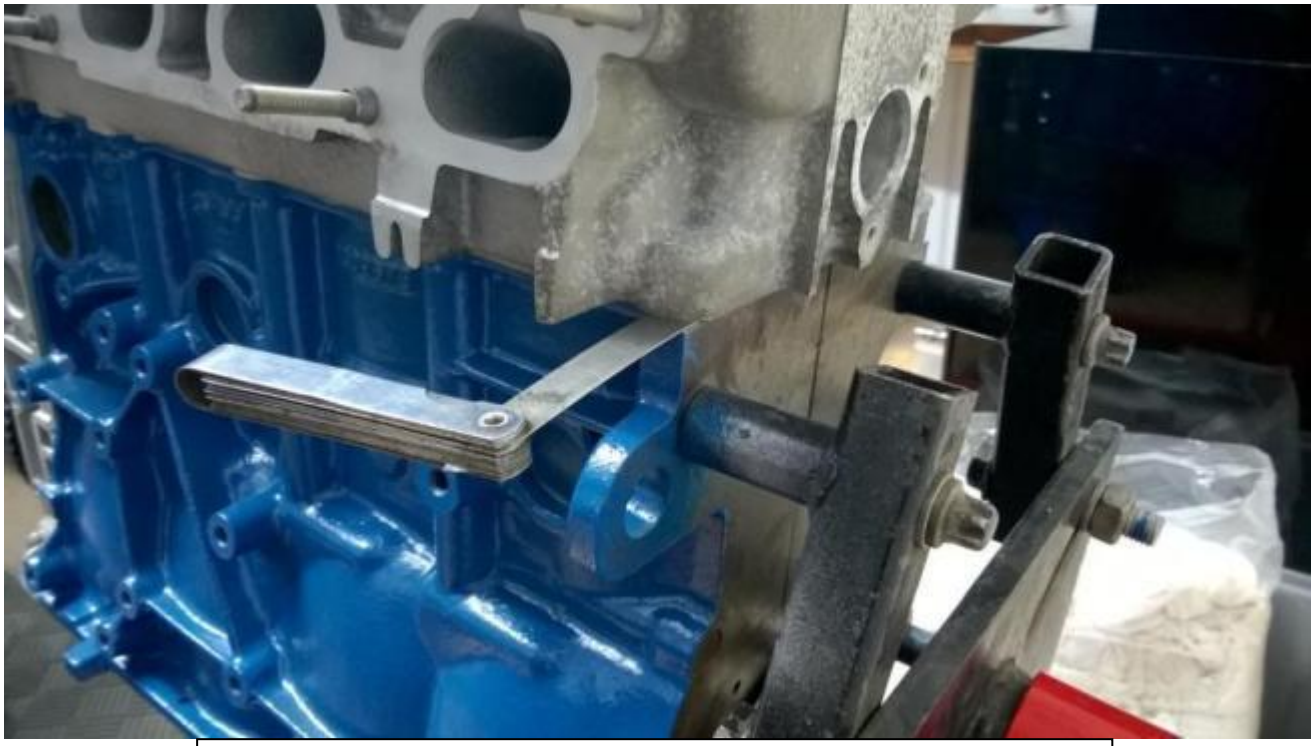

Measuring ‘as installed’ head gasket thickness. Minimum 1.50mm (0.059”)

Casting number on M44 block. (typical)

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Piston(s) protruding above the block deck by more than .254mm (.010”) is not permitted.

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Standard Part Crankshaft showing casting number and stroke (Hub 83.5)

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Standard Part Dual Mass Flywheel: Gearbox Side

Standard Part Dual Mass Flywheel: Block Side

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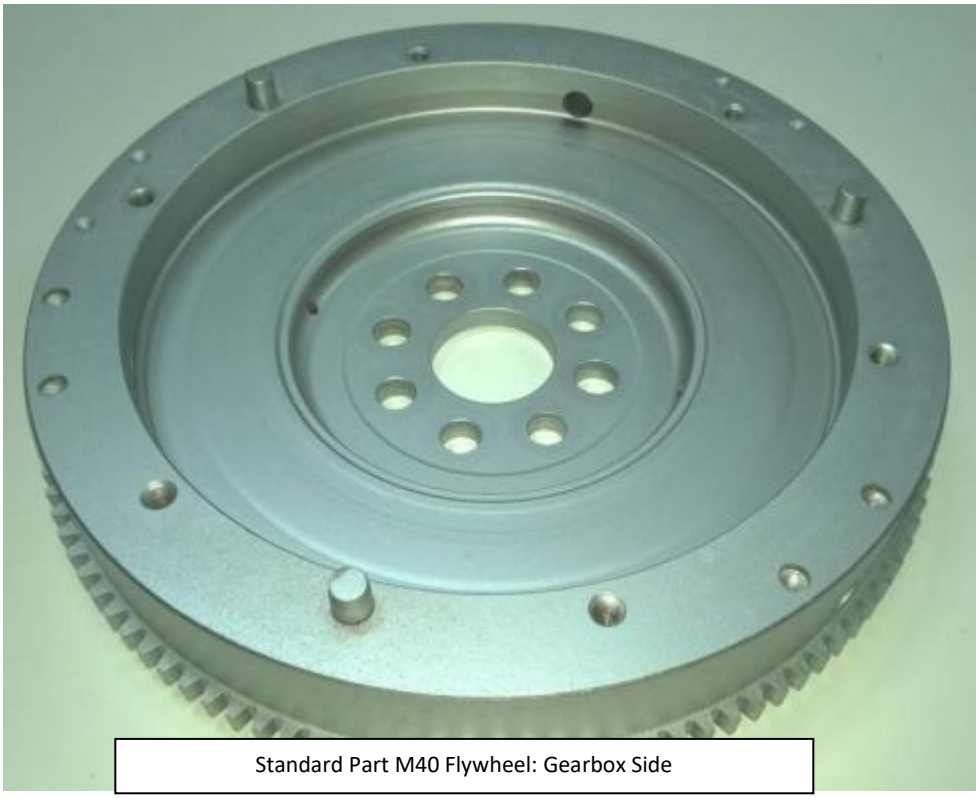

Standard Part M40 Flywheel: Gearbox Side

Standard Part M40 Flywheel: Block Side

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Valeo Flywheel Kit (gearbox side) showing included components

Valeo Flywheel Kit (block side) showing included components

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Standard Part RHD Exhaust Manifold is mandatory

Further view of Standard Part RHD Exhaust Manifold.

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Standard Part Throttle Body showing casting numbers & butterfly linkage all of which must remain unaltered.

Detail of throttle body spindle (primary)

Detail of throttle body spindle (secondary)

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Detail of throttle body spindles & locked screw fittings.

Position of primary butterfly at W.O.T

Position of secondary butterfly at W.O.T. showing over Centre rotation. This positioning must not be adjusted from the Standard Part OEM setting.

Position of secondary butterfly at W.O.T. showing over Centre rotation.

This positioning must not be adjusted from the Standard Part OEM setting.

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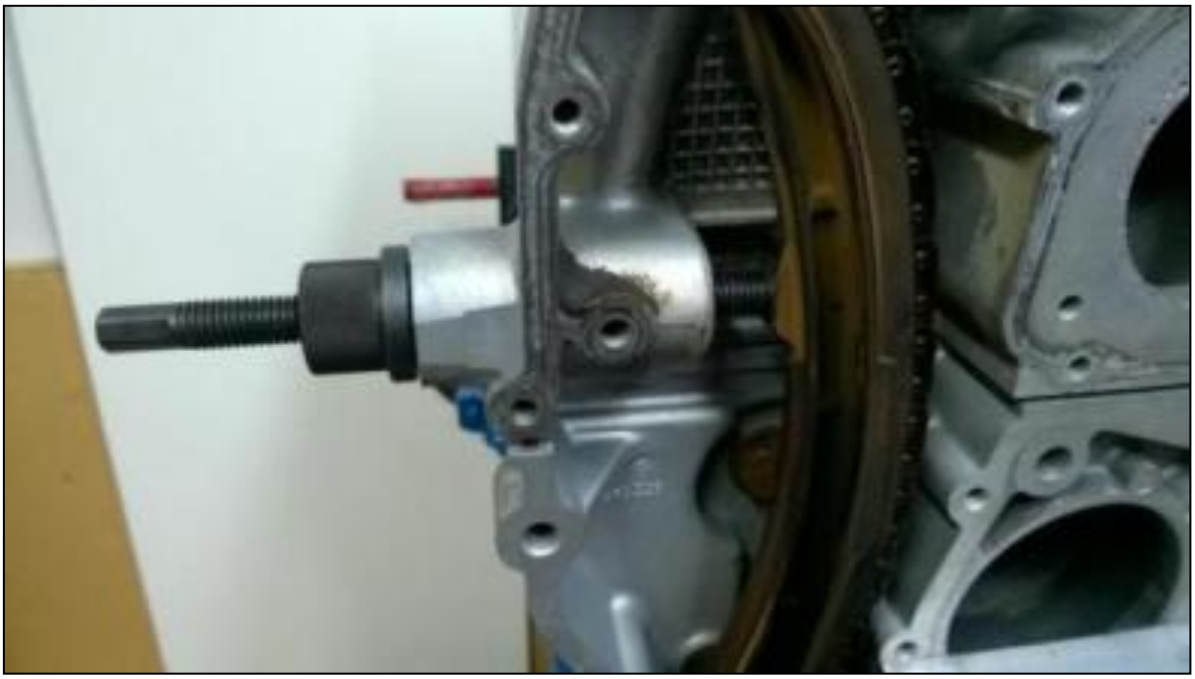
Image CCCTT

Compact Class Cam Timing Tools



*1. Mechanical cam chain tensioner installed.

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*2 Degree Wheel Installed

Deadstop tool

*3. Deadstop tool inserted through #1 spark plug hole.

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*4. Indicator positioned on Timing Disc according to deadstop readings.

*5. Exhaust cam sprocket

Showing vertical alignment of arrow on sprocket.

*6. Inlet cam sprocket

Showing vertical alignment of arrow on sprocket.

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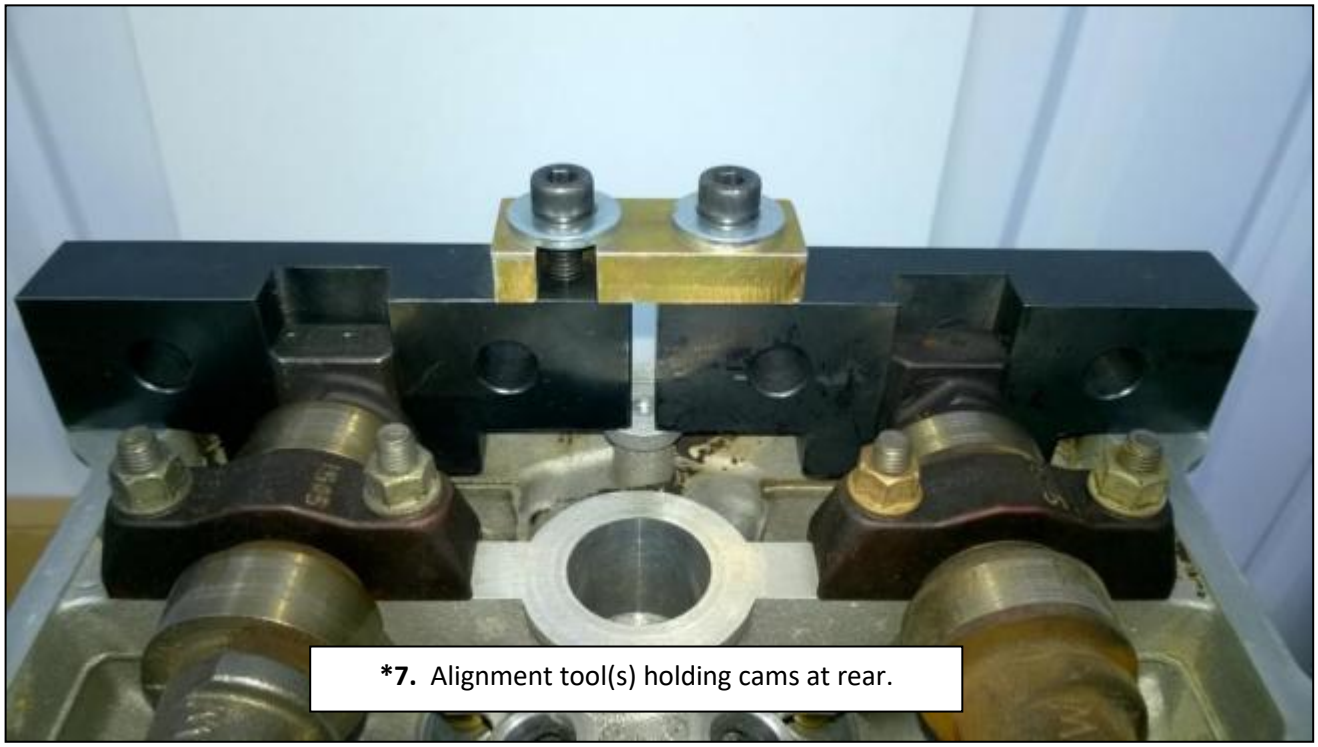

***7.** Alignment tool(s) holding cams at rear.

NB. *The ~~previous~~ above numerical image sequence illustrates the optimal sequential method of checking Compact ~~Cup Championship~~ Class cam timing.

~~This~~ The use of the Compact Class Cam Timing Tools as shown in image CCCTT, is the only method of camshaft checking/setting recognised with reference to the Compact ~~Cup Championship~~ Class Tech File.

~~The settings in *1.*2.*3.*4.*5.*6. and *7. **must**be synchronised to confirm the correct Compact Cup Championship cam timing.~~

When all tooling has been fitted as per the above processes, and with the deadstop tool removed, the base edges of the Alignment tools shown in image *7 must sit completely flush against the cylinder head face. Any gap between the base edges of the tools and the cylinder head face will result in cam timing to be considered as non-compliant with Compact Class technical regulations.

This is the mandatory cam timing for the Compact ~~Cup Championship~~ Class.

NO OTHER CAM TIMING SETTINGS ARE PERMITTED

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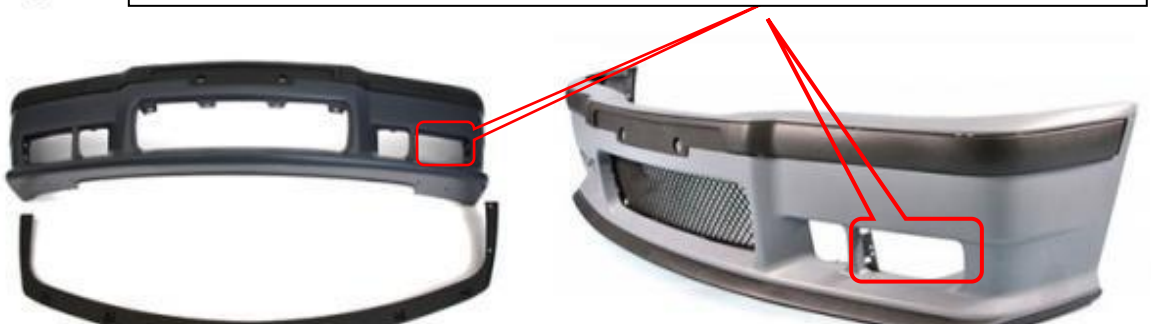
Diagram 1 **This is the <u>only</u> location permissible for the 'Cold Air Pickup' to the air filter box.**



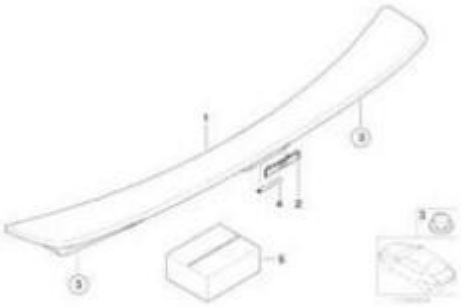
The fog lamp position on the O/S (RHD) of the bumper may be blanked.

The aperture <u>must</u> remain.

Some derivatives of the E36 Compact have the main air intake grill blanked from the rear of the bumper. It is therefore permissible to blank the main air grill from the rear of the bumper.

The aperture <u>must</u> remain.

Diagram 2



Images illustrate a BMW E36 M-TEC boot spoiler / pattern part

Diagram 3

Images illustrate a BMW E36 M Sport rear bumper & diffuser

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PISTONS

Material of piston:	Cast Aluminium
Diameter of Piston @ skirt:	84.985mm (nominal)
	OVERSIZE PISTONS NOT PERMITTED
Number and Thickness of Rings:	Top: 1.2mm, Second: 1.5mm, Oil: 2.0mm
Overall Piston Height:	54.00mm (nominal)
Weight:	321g (minimum)

PISTON PIN

Diameter:	21.99mm
Length:	53.85mm (minimum)
Weight:	100g (minimum)

CONNECTING RODS

Dowel Cap Type:	
Length Center to Center:	140mm (nominal)
Weight:	548g (minimum)
Crack Cap Type:	
Length Center to Center:	140mm (nominal)
Weight:	532g (minimum)

CYLINDER HEAD

Overall Height:	139.00mm (minimum)

VALVES

Inlet:	
Length:	105.90mm (nominal)
Diameter of head:	32.90mm (nominal)
Diameter of stem:	5.94mm (minimum)
Weight:	47g (nominal)

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Exhaust:

Length:	105.47mm (nominal)
Diameter of Head:	30.40mm (nominal)
Diameter of stem:	5.94mm (minimum)
Weight:	47g (nominal)

Valve Seats:

Inlet (Internal throat diameter):	28.00mm (nominal)
Exhaust (Internal throat diameter):	24.70mm (nominal)

Valve Seat Angles: 3 angle: 30°-45°-60°

Valve Guide:

Inlet Guide Length:	39.50mm (minimum)
Exhaust Guide Length:	43.50mm (minimum)
Valve Guide Material:	Brass

Camshafts:

Inlet: (**E**inlass)

Base Circle Diameter. (BCD):	38mm (minimum)
Total Lobe Height:	43.85mm (maximum)
Lobe Width:	15mm (nominal)

Exhaust: (**A**uspuffanlage)

Base Circle Diameter. (BCD):	38mm (minimum)
Total Lobe Height:	43.85mm (maximum)
Lobe Width:	15mm (nominal)

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Crankshaft:

Stroke: (Hub)	83.5mm (nominal)
Main Bearing Journal Size:	
Std:	60mm (nominal)
.25mm undersize:	59.75mm (nominal)
Rod End Journal Size:	
Std:	45mm (nominal)
.25mm undersize:	44.75mm (nominal)

Throttle Body

Primary throttle diameter @ butterfly:	35.00mm (maximum)
Secondary throttle diameter @ butterfly:	54.00mm (maximum)

Head Gasket

It is not permitted to use a head gasket with an 'as installed' thickness of less than 1.50mm. (.059″)

Internal Engine Cleaning

Other than the use of *'Super Finishing' and or polishing any method of cleaning internal engine components is permitted.

'Super Finishing' of any engine or transmission component's is prohibited and non-compliant with the Compact ~~Cup Championship~~ Class rules.

Nomenclature:

The phrase(s) *'Super Finished/*Super Finishing' used within these regulations refers to the metal finishing enhancement process developed by the Chrysler Corporation in 1934.

The termology encompasses any of its applied forms: Chemically Assisted Surface Enhancement Isotropic Superfinishing, Vibratory Deburring, REM or indeed any process derived from the principal of 'Super Finished/Super Finishing' originally developed by the Chrysler Corporation in 1934.

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Compact Gearbox

Model: ***Getrag S5D 250G***

Ratios:
1st: *4.23:1*
2nd: *2.52:1*
3rd: *1.66:1*
4th: *1.22:1*
5th: *1.00:1*

The following part numbers are the variations of gearboxes that have been available and or fitted during the production period to the BMW 318Ti:

2300.752.77.29
2300.143.44.15
2300.122. 23.38
2300.122.22.71
2300.122.22.25
2300.122.19.75

These gearboxes were shared in production by the 316, 318 and Z3 both in E36 & E46 format and also some six cylinder models.

The gear ratios remained unchanged throughout the production of this gearbox irrespective of model or part number variance.

Any and all of the above listed gearboxes along with their individual internal upgrades are permissible for use in the Compact ~~Cup Championship~~ Class