

Formula TKM 2-Stroke

Engine Conversion to *Extreme* Specification

Conversion to the new *Extreme* specification is easy and requires only minimal new parts. These notes are intended to give a full detailed explanation suitable for engine specialists.

Parts Required

New *Extreme* piston assembly first size 54.25mm includes new stiffer top ring and longer gudgeon pin (44mm long). Piston circlips are same as normal BT82.

Parts That Require Machining

Cylinder Bore

Cylinder needs to be bored to first size in *Extreme* piston range 54.25mm. **This must be carried out with care as it can not be bored out in one cut.** We advise 3 rough cuts (1st 52.0mm, 2nd 53.0mm, 3rd 54.0mm) and 1 finish cut leaving allowance to finish hone to size.

Before you carry out this finish honing, check that the liner locking pin hole has not been exposed by boring of cylinder to *Extreme*. This locking roll pin is located at top of cylinder in the root of two fins on side of cylinder. If boring of cylinder exposes this hole, then it is permitted to seal with a hard setting resin like Araldite. Once resin has set finish hone to size. It is not permitted to remove this locking pin.

Pistons measured at bottom are 0.1mm under the size indicated on piston crown. Example: 54.25mm piston actually measures 54.15mm. We recommend 0.09-0.11mm piston to bore clearance. So for a 54.25mm piston, the cylinder bore should measure after the finish hone 54.24 – 54.26mm.

It is advised before this boring is commenced that the spigot of the liner is checked for concentricity with the existing old cylinder bore. Previous errors in boring and honing can make it out of true. This can be quickly checked with a vernier measuring around O/D of spigot and I/D of bore in a few places. If within 0.1mm then proceed boring process using old bore to centre for new bore. If more than 0.1mm, new bore must be centred up on O/D of spigot. This is important for obvious performance reasons, and because with enlarged *Extreme* pistons the wall thickness of spigot is much thinner.

Cylinder Head

The Cylinder head needs to be machined to give increased head volume of 12.0cc minimum, and to give correct squish diameter to suit the maximum 54.75mm permitted *Extreme* bore size.

If the head has been machined to the maximum then great care must be taken so this machining does not take the head outside of limits. We suggest you machine the squish angle at 12.5 degrees with a diameter of 54.8mm. You will need to machine out the dome using firstly a 1 5/16" Ball Nose Cutter being careful not to machine too deep making head outside of limits. A small radius should then be machined at point of intersection between the dome and squish making sure it does not exceed the permitted 3mm maximum radius.

At this stage you should check your head volume on engine with a 0.030 – 0.035" squish clearance between piston crown and head. Head must be bolted down with piston at TDC. If still below permitted volume then machine out the dome some more with a bigger Ball Nose cutter, say 1 3/8". Re-check head volume.

Gauges & Rules

Use new head gauge PN 001/E and the existing PN 002 for checking head on shape limits. On *Extreme* heads you are allowed up to a 1.6mm max gap between gauge and dome. Maximum squish diameter is 55.05mm and permitted squish angles are same as normal BT82, 12 Degrees + - 1 Degree. Head gauge PN 002 must be used to check dome in relation to plug washer face, gauge must not protrude into dome.

New gauge PN 001/E is available from Tal-Ko Racing at a cost of £36.57p plus vat.

Running *Extreme* Engine

We suggest you run 2-3 teeth less on rear axle compared with normal BT82, together with a longer exhaust flex of say 80mm. We also advise carb is set at 1.85 on low jet and a 0.4 on high jet. You may have to turn in high jet a little for perfect carburation once engine is fully run in