

OFF ROAD APPENDIX

OFF ROAD ENGINE INSPECTION AND SEALING

Modified Article	Date of Application	Date of Publication

A capitalised and italicised word in this document is defined in the FIA International Sporting Code (Code) or the National Competition Rules (NCR), including their Appendices.

Any HEADING is for reference only and has no regulatory effect.

1. DESCRIPTION

- (a) This document is to provide detail for the checking of the Cylinder Capacity of a piston engine to be used OR that is in use for *Motorsport Australia Off Road Events*.
- (b) The Cylinder Capacity of an engine may be inspected at the following times:
 - (i) as the engine is assembled at the request of the *Automobile* owner or an engine builder; or
 - (ii) at any time as requested by a *Motorsport Australia* Scrutineer or Technical Delegate.

2. DEFINITIONS

The following terms apply to this document:

Cylinder Capacity: as per *Motorsport Australia Manual* Definitions Technical

Component Seal: as per *Motorsport Australia Manual* Definitions Technical

Engine Builder: a person engaged to assemble an engine by agreement with the *Automobile* owner or may be the *Automobile* owner themselves

Motorsport Australia Engine Sealer: person nominated by *Motorsport Australia* to conduct engine inspection and sealing tasks.

Measurement Tool: a tool which is able to provide a graduated measurement with a minimum tolerance of 0.1mm, such as a Vernier caliper, micrometre or dial gauge.

3. CYLINDER CAPACITY INSPECTION

3.1 Engine Assembly

The Cylinder Capacity may be inspected as an engine is being assembled by the following methods:

- (a) Physical measurement of the bore and stroke of a cylinder or cylinders with piston, connecting rod and crankshaft fitted correctly to an engine block with all related fasteners torqued to the required specifications.
- (b) Measurement must be conducted using a suitable Measurement Tool.
- (c) The measurement may be undertaken by the engine builder under the direct observation of a *Motorsport Australia* Engine Sealer or by the *Motorsport Australia* Engine Sealer with permission from the engine builder.
- (d) The *Motorsport Australia* Engine Sealer may request multiple measurements be conducted on multiple cylinders to determine the consistency of measurements taken.

3.2 Request of Motorsport Australia Scrutineer or Technical Delegate

At the request of a *Motorsport Australia* Scrutineer or Technical Delegate the Cylinder Capacity of an engine may be inspected at an *Event* by the following methods:

- (a) By the use of tools/gauges and suitable Measurement Tools capable of taking a bore and stroke measurement through the spark plug hole, once a spark plug has been removed.
- (b) By the use of tools/gauges that can provide a measurement of the volume of the cylinder, calculated as the volume of air within the swept range of the cylinder bore. The devices known as a "puffer" can be used to give a calculation of the swept volume of a cylinder through the spark plug hole. Specific

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instructions for each type of device must be followed and recorded in each inspection using this method.

4. ENGINE SEALING

4.1 Component Seal for an engine

- (a) The seals used must be able to withstand the conditions experienced whilst in use (heat, vibration etc.).
- (b) The seals must be fitted in suitable locations on the engine and different engines may require different locations.
- (c) The seals must be fitted in such a way that they can be expected to remain in place for the duration of the serviceable life of an engine.
- (d) Three types of seals are available:
 - (i) HARCOR Plastic Rotary Seal – suitable for areas not subject to high heat, and best used with braided seal wire.
 - (ii) HARCOR Mini Cable Seal – suitable for most areas, fitted with fixed wire.
 - (iii) ENVOSEAL/HARCOR Brass clasp type Seal – suitable for all areas, and best used with braided seal wire and lead retainer.

4.2 Location of engine seals

- (a) Engine seals must be fitted to ensure that the internal components of the engine that are related to the swept volume (crankshaft, engine block/bore) are sealed to ensure that these components cannot be changed without the removal of the seal.
- (b) Multiple seals must be fitted with a minimum of two required on each engine at locations such as:
 - (i) Sump pan to engine block
 - (ii) Timing cover to engine block
 - (iii) Rear seal cover to engine block

5. ENGINE SEAL REPORTS

5.1 Engine Inspection Sheet

- (a) The *Motorsport Australia* Engine Inspection Sheet must be completed at the time the engine seal/s are fitted. This includes all relevant information noting that for some categories not all the details are required such as Cylinder Head or Compression Ratio information. The Engine Sealer must complete and sign this form.
- (b) Once complete this Sheet is to be retained by the car owner and presented as requested for Scrutiny purposes.

5.2 Vehicle Log Book

- (a) The *Motorsport Australia* Vehicle Log Book must be noted as to the date the seals were fitted and the Seal Numbers, this can be entered into the Scrutiny History section of the Log Book.