

## **STRYKER TECHNICAL REGULATIONS (ORIGINAL REGISTRATION NO .SSMPO1/1/98)**

Amendments to these technical regulations may be issued from time to time by way of official MI Bulletin and published on Motorsport Ireland Website under Technical section ([www.motorsportireland.com](http://www.motorsportireland.com))

Maximum and minimum figures have no tolerance allowed.

All modifications of any kind to competing cars or any of their components parts which are not specifically allowed by these regulations are expressly forbidden. If it does not say in these regulations that you can do it, then you cannot. In the event of a dispute over eligibility the decision of the Motorsport Ireland Eligibility Scrutineer as to what constitutes an eligible part or car shall be final.

Note where the term “as supplied by Raw Engineering” is used this means that parts can be sourced elsewhere but must meet the same specification as the original supplied by Raw Engineering Ltd. Where the term “supplied by Raw Engineering” is used this means that these parts can only be supplied by Raw Engineering Ltd or its authorised agents.

Eligibility Scrutineer as appointed by Motorsport Ireland - Mr Neil Wilson, 65 Hillview, Clane, Co. Kildare.

### **1) Chassis**

Make of car: Raw/Sylva Model: Stryker

The chassis must have been manufactured by Sylva Auto Kits Ltd from Oct 97 to 2002 or by Raw Engineering from 2002 on. The only modifications allowed to the chassis is the removal of headlamps brackets, fitting of brace bar supplied by Raw Engineering Ltd between top chassis rails in front of the engine, this is optional and the fitting position is as described below. Fitting of two drive shaft safety hoops supplied by Raw Engineering mounted in the drive shaft tunnel to prevent drive shaft entering drivers compartment/fuel cell is compulsory. Fitting in support box on top chassis rails to new chassis is allowed as long as it complies with the same fitting position and size of box as the old type chassis this is optional. Chassis repairs are allowed but all repairs to the chassis must be done with same size and type materials and to original positions as specified by Sylva Auto Kits / Raw Engineering.

Fitting position of strut brace between the 2 top chassis rails just in front engine  
Must be fitted between 170mm to 190mm measuring from inner face of front box section to front face of strut brace box section.

Fitting of drive shaft hoops: The drive shaft hoops must only be welded to the bottom box section in the drive shaft tunnel. The front hoop must be fitted between 60mm to 100mm measuring from centre of hardy Spicer to centre of

hoop. The rear hoop must be fitted between 80mm to 120mm measuring from centre of hardy Spicer to centre of hoop.

The driver's seat must be produced by a recognised manufacturer and must be deemed acceptable by the MI Scrutineer. The seat should be fitted and where required, braced in a manner acceptable to the MI Scrutineer.

## **2) Weights**

Weight of car including driver, helmet, race gear, fuel, oil and water as it is presented for scrutiny or returns from racing or qualifying must be minimum 640 kilos.

## **3) Dimensions of car**

Length overall max 3150mm

Width overall max 1580mm

Length and width to be measured including bodywork

Track (at stated ride height) front max 1311mm

The use of spacers are allowed on rear wheels but must not exceed the stated

Track (at stated ride height) rear max 1370mm

Wheel base (at stated ride height) max 2200mm

## **4) Suspension settings**

Ride height including driver and race gear as car comes in after race/qualifying  
Front measured between ground and underside of front corner chassis minimum 115mm

Rear measured between ground and underside of chassis just in front of wheel arch minimum 115mm

Camber at stated ride height

Front 0 Degrees + or - 3 Degrees

Rear 0 Degrees + or - 1 Degrees

Castor front max positive 5 Degrees

Rear tow in/out .5 degrees

## **5) Engine and engine auxiliaries**

As described in technical regulations for Stryker Sports car challenge with 1800 Zetec engine

## **6) Body Work**

5 piece body work as supplied by Sylva Auto Kits or 7 piece body work supplied by Raw Engineering. The fitting of fly screen is allowed but must be as supplied by Raw Engineering Ltd. Standard body work must be used without additional holes, except for up to 7 holes of max. diameter 55mm at rear of bonnet, up to 3 holes not to exceed 25mm in diameter per hole, or one single hole not to exceed 25mm in height and 100mm in length with a 25mm radius at each end on front of bonnet bulge, air cleaner hole plus up to 3 holes in the number plate position not

to exceed 60mm diameter per hole. Rear bodywork tonneau cover supplied by raw engineering is optional.

### **7) Wheels and tyres**

Diameter 13 Inch

Rim width 6 Inch

Type pressed steel or minilite / minilite replica alloys, offset measured from inner mounting face to inner extremity of rim must be between 100mm to 110mm

Tyre 185/60/13 Yokohama Advan A048 soft compound serialized and available only from Raw Stryker Irish Distributor.

### **8) Fuel system**

Fuel pump: Any facet fuel pump may be used

Pressure regulator: Any make or type may be used

Fuel Tank: Must be foam filled, fitted on passenger floor and must be secured behind a fire-wall.

Carburettor make: Dellorto model DHLA40

Number on engine: 2

Number of main venturi: 4

Maximum diameter of main venturi: 38mm

Maximum diameter of barrels at throttle 40.07mm

Ram pipe total length is free.

Ram pipe inside diameter at face is free.

Throttle coupling to be mechanical

All jetting is free

### **9) Steering**

Steering rack must be Ford Escort Mark 2 type with minimum of 2.4 turns from lock to lock. The fitting of alloy rack mounts is permitted. Steering column make and type are free. Front uprights and hubs must be standard Mark 2 Escort. IE: The type where steering arms are part of the uprights, not removable and the upright has been modified in accordance with Sylva Auto Kits / Raw Engineering specification. Track rod ends as fitted to Mark 2 Escort.

### **10) Suspension**

Front and rear shock absorbers Type: Spax part number G451 or Gas P/N: 130-090B12RAW.

Front coil springs 8 to 9 inch in length x 2.25 inch inner diameter x 180 pounds pressure or 250 pounds pressure.

Rear coil springs 8 to 9 inch in length x 2.25 inch inner diameter x 130 pounds pressure or 180 pounds pressure.

Front rockers and bushings supplied by Raw Engineering Ltd/Sylva Auto Kits, it is allowed to use washers or shims at ends of top rocker shaft so to make castor adjustable.

Front wishbones and bushings as supplied by Raw Engineering Ltd/Sylva Auto Kits. The front wishbones bones may be reinforced to improve strength.

Rear trailing arms and bushings supplied by Raw Engineering Ltd/Sylva Auto Kits.

250lb springs & shock absorbers to be supplied by McGrath Motorsport.

Panhard rod and bushings supplied by Raw Engineering Ltd/Sylva Auto Kits.

Top ball joints as used in rover metro or Vauxhall Chevette

Lower ball joints as used for track rod end in Sherpa Van

### **11)Braking system**

Front brakes Type standard Escort Mark 2. Two pot calliper with disc 240.7 mm in diameter and 12.7mm in thickness.

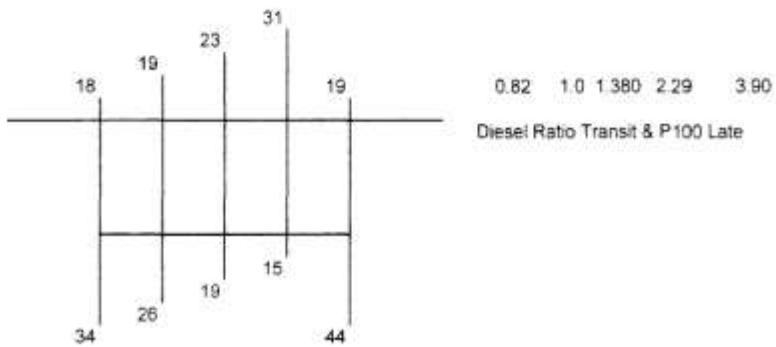
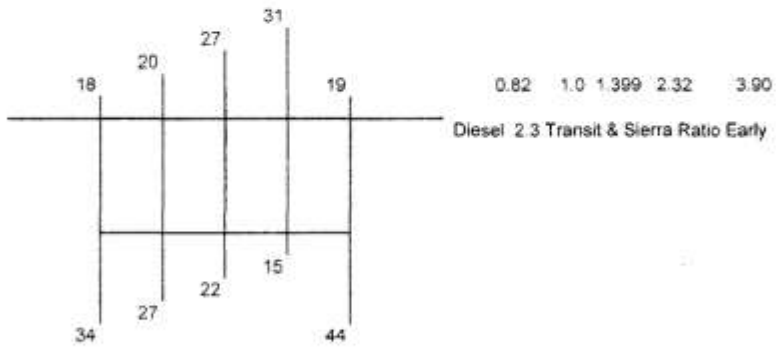
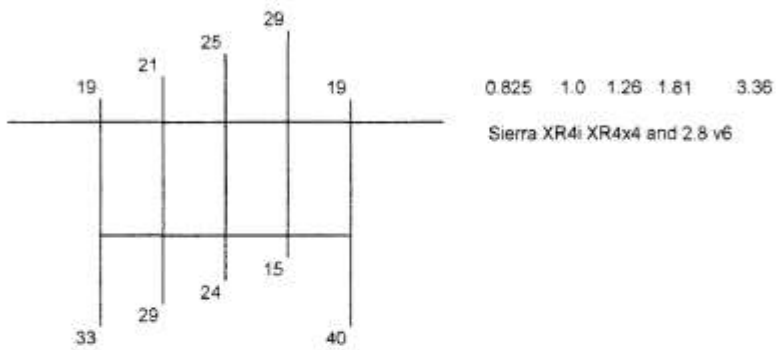
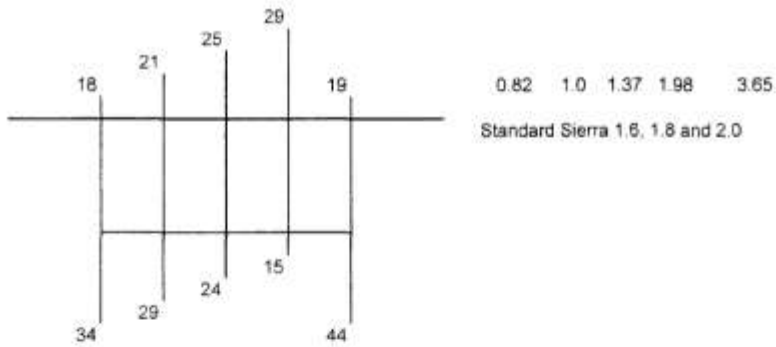
Rear brakes Type drum dimensions Diameter 203mm width 44mm shoes and wheel cylinders and back plate as fitted to Mark 2 Escort or discs and callipers as supplied by Raw Engineering Ltd, the half shafts may be machined so disc will sit flush and centred on half shafts. The use of carbon metallic braking materials may not be used. Master cylinders must be Escort Mark 2 equivalent or twin system with balance bar and adjuster as supplied by Raw Engineering Ltd. It is allowed to fit a brake proportion valve. It is allowed to modify pedal box so that the steering column will fit through pedal box. No brake servo system is allowed.

### **12)Transmission and final drive**

The gearbox and bell housing must be standard Ford Type 9 five speed and must be one of the below gear ratios. It is not permitted to swap gear ratios between gearboxes. All gearbox parts must remain standard Ford parts with exception of steel baulk ring and an upgraded material synchromesh hub manufactured by BGH Geartech Ltd. Quick shift gear stick is permitted. Spigot shaft may be machine for crank shaft clearance purposes. It is permitted to fit a dipstick in the top of the gearbox and it is also permitted to have a removable cover on the tunnel panel to allow access to level/filler plug. Gearbox mounting must be part no EM680 Quenten Hazel or equivalent. It is permitted to pack mounting to restrict movement. It is permitted to remove a small corner from the bell housing to stop it interfering with the tunnel cover next to the driver. Prop shaft must be as supplied by Raw Engineering/Sylva Auto Kits. Axle housing, diff, half shaft bearings and half shafts must be standard Ford escort Mrk2 English type.

Axle pick up points modified in accordance with Raw Engineering Ltd/Sylva Auto Kits. Differential final drive ratio is 3.88 to 1. IE: 35 teeth on crown wheel and 9 on pinion. No limited slip differential is allowed. It is permitted to fit a differential oil drain plug on the back axle tube.

## 5 Speed Gearbox Standard



### **13) Safety**

The car must be fitted with seat belts and a fire extinguisher and all other safety regulations to meet the current scrutiny requirements as per the current Motorsport Ireland green book.

### **14) Electrical**

Battery must be fitted on passenger floor and must be sealed type battery, if using standard sealed battery it must be fitted in a battery box. If using race type sealed battery there is no need for battery box. The car must have FIA approved cut-off switch and on switching off it must cut off electrical powered devices. Alternator: Make and type is free but must be charging at all times when the engine is running. The car must be fitted with two working stop lights of 21 watt or LED equivalent and two working tail lights of 5 watts or LED equivalent. All electrical aids such as launch control, traction control, power shift units etc are not permitted. An onboard lap timing system is permitted. See 1800 Zetec engine regs for engine electrical regs.

## **ENGINE & ENGINE AUXILIARIES**

### **GENERAL**

a) Gaskets are free except for the cylinder head, intake and exhaust system gaskets which must be as produced by Ford

b) The expression 'Standard', 'Standard Production' or similar expression is deemed to imply that the part has been manufactured by the Ford Motor company, Ford authorised sub contractor or an after-market manufacturer that is producing parts to the original Ford specification for specific use on a specific model of the vehicle or engine. Consequently for these championship rules only parts manufactured specifically for the Ford 1800cc. 16 Valve engine (Zetec) in its 130PS form, may be used. Any machining marks on cast components resulting from manufacturing procedures will not cause disqualification.

### **Permitted Engine.**

a) The permitted engine is the Ford 1800cc, 16 Valve (Zetec) engine in its 130PS form (code RQC or RQB) with nominal standard bore 80.6mm and over size bore 81.1 and stroke 88.0mm. Production tolerances are permitted providing the total swept volume does not exceed 1800cc at standard bore or 1819cc at 0.5mm oversize

## **Induction**

Inlet manifold: Must be as supplied by titan engineering.

Choke size: Up to 38mm.

Jetting is free.

Air Filters are optional but when used must be K&N type.

Internal polishing of inlet manifold is not allowed.

The inlet gasket may be fettled to same dimensions as inlet port.

## **Ignition**

a) All standard production engine sensors which have any influence whatsoever on the engine management system must be retained in the correct position and in working order. It is not permitted to reposition positional sensors. The only ECU's allowed shall be MBE 967ID or MBE967IG with matching wiring loom.

All ECU's will be mapped exactly the same and can at any time be checked.

All ECU's must be fitted in a position where they will be kept clean and dry.

## **Exhaust System**

a) At all times the car must conform to the noise requirements of the circuit, the series regulations and vehicle regulations as regards the position of the exhaust outlet. The exhaust must exit towards rear of car.

Exhaust manifold: Part Number MES001 or as supplied by Raw Engineering.

Silencer must be as supplied by Raw Engineering.

Exhaust manifold gasket may be fettled to same dimensions as manifold ports.

## **Cylinder Block**

a) It is permitted, as means of repair, to replace cylinder bores with cast iron cylinder liners, in standard material and to standard dimensions. The liners must remain dry liners. The centre line of the cylinder bores must remain within Ford production tolerance. No offsetting of the cylinder bores is allowed. It is permitted as means of repair to re bore cylinder bore to 0.5mm oversize and fit 0.5mm over size pistons

## **Cylinder head including valves and valve gear.**

a) It is permitted, as means of repair, to replace damaged valve guides and valve seats by replacement valve guides and valve seat inserts all to standard dimensions.

b) No work which removes, adds, replaces, or transfers material is allowed on the cylinder head, except for simple cleaning which does not alter in any way the shape of the component, and minimal material from the head face to correct combustion chamber volume and/or reclaim head face flatness.

- c) The cam cover assembly cannot be modified or replaced.
- d) All valve train components, other than simple shims under valve springs, may not be modified or replaced. The hydraulic tappets cannot be modified in any way. It is not permitted to 'lock up' the hydraulics within the tappets.
- e) Valves must remain standard, no re-profiling or polishing is permitted. The original 45' (90' included) seat angle must be maintained. Distance apart at centres (inlet) 35.20+0.5mm. Distance apart at centres (exhaust) 35.20+0.5mm. Maximum face diameter (inlet) 32.13mm. Maximum face diameter (exhaust) 28.13mm. Overall length (inlet) 97.10+0.5mm. Overall length (exhaust) 96.70+0.5mm. Standard valve stem seals must be retained.
- f) Valve seat dimensions are shown in Appendix "E".

### **Compression Ratio**

- a) The maximum compression ratio will be controlled as follows:
- b) Minimum combustion volume in the cylinder head (with the race spark plug fitted) = 42.4cc.
- c) Standard cylinder head gasket with a minimum compressed thickness of 1.54mm, minimum diameter of cylinder aperture 82.00mm.
- d) The piston will protrude a maximum of 0.65mm out of the cylinder block when the piston is at TDC. The cylinder block head face surface may be machined.

### **Camshaft**

- a) The only permitted camshaft is the standard production camshaft (Part No. Inlet 928M 6A266 GK, or 958M 6A266 CA; & Exhaust 928M 6A269 GD, or 938M 6A269 CB — or subsequent production camshafts conforming to the lift tables indicated below).
- b) The camshaft must remain entirely unmodified. It must be fully manufactured and ground as by the Ford Motor Company. It is prohibited to grind from blanks, regrind or retrofire. Only the production surface finish is permitted. Shot-peening, shot-blasting or polishing are prohibited. The cam drive pulley may be keyed to the camshaft by woodruff key or dowel.
- c) The cam profile is defined by determination of lift (L minus I) against a flat footed follower at various angles (0) standard Ford tolerance apply to camshaft drawing below.
- d) The angular setting of the camshafts is free.



## INTAKE CAM

DM(max)	45.31mm		45.41mm	
Dm	36.00mm		36.00mm	
	Primary		Secondary	
	Open	Close	Open	Close
Lift at 0°	9.31mm	9.31mm	9.41mm	9.41mm
Lift at 5°	9.22mm	9.22mm	9.32mm	9.32mm
Lift at 10°	8.94mm	8.94mm	9.05mm	9.05mm
Lift at 15°	8.48mm	8.48mm	8.61mm	8.61mm
Lift at 20°	7.85mm	7.85mm	7.99mm	7.99mm
Lift at 25°	7.05mm	7.06mm	7.22mm	7.23mm
Lift at 30°	6.11mm	6.12mm	6.30mm	6.31mm
Lift at 35°	5.06mm	5.07mm	5.26mm	5.27mm
Lift at 40°	3.95mm	3.98mm	4.16mm	4.18mm
Lift at 45°	2.85mm	2.88mm	3.06mm	3.08mm
Lift at 50°	1.75mm	1.79mm	1.95mm	1.99mm
Lift at 60°	0.17mm	0.22mm	0.24mm	0.29mm
Lift at 70°	0.00mm	0.04mm	0.01mm	0.05mm

## EXHAUST CAM

DM(max)	44.61mm		44.71mm	
Dm	36.00mm		36.00mm	
	Primary		Secondary	
	Open	Close	Open	Close
Lift at 0°	8.61mm	8.61mm	8.70mm	8.70mm
Lift at 5°	8.52mm	8.52mm	8.62mm	8.62mm
Lift at 10°	8.26mm	8.26mm	8.36mm	8.36mm
Lift at 15°	7.83mm	7.83mm	7.95mm	7.95mm
Lift at 20°	7.25mm	7.25mm	7.37mm	7.37mm
Lift at 25°	6.51mm	6.51mm	6.65mm	6.66mm
Lift at 30°	5.65mm	5.65mm	5.81mm	5.82mm
Lift at 35°	4.67mm	4.68mm	4.85mm	4.86mm
Lift at 40°	3.62mm	3.64mm	3.81mm	3.83mm
Lift at 45°	2.52mm	2.55mm	2.72mm	2.75mm
Lift at 50°	1.46mm	1.50mm	1.65mm	1.69mm
Lift at 60°	0.16mm	0.21mm	0.22mm	0.27mm
Lift at 70°	0.11mm	0.06mm	0.02mm	0.07mm

## **Pistons**

a) Pistons must be standard production pistons (Part No. 928M 611OEK or 958M 611OEL for reference only), or aftermarket equivalent (and is allowed to go 0.5mm oversize) and unmodified in any way except for balancing and as detailed.

b) All three piston rings must be fitted, piston rings must be standard production.

c) The combustion chamber face of the piston cannot be modified, other than a machining cut at 90° to the stroke in order to obtain correct piston to top of block dimensions. The minimum piston weight shall still be observed. The minimum weight of the connecting-rod and piston assembly shall be 1004gm. (Complete piston with rings and pin, and connecting-rod with bolts but excluding crankshaft bearings).

d) The piston cooling oil squirt jets, and the oil feed lines to them, must be retained. It is permitted to strengthen the fixing of the nozzle to the body of the piston cooling jet provided the original function is maintained and unaltered.

## **Connecting Rods**

a) Connecting rods must be standard (Ford Part No. 928M 6200AIJ for reference) or equivalent. Machining is permitted to remove metal from the big-end cap to achieve balance only. (Area for balancing defined in Appendix "E"). Polishing is prohibited. The minimum weight of the connecting-rod and piston assembly shall be 1004gm. (Complete piston with rings and pin, and connecting-rod with bolts but excluding crankshaft bearings).

## **Crankshaft**

a) A standard crankshaft must be used. Spot machining (by radial drilling or milling) to achieve balance is permitted. Polishing is prohibited. Crankshaft minimum weight is 13.6kg (including gearbox spigot bearing). Crankshaft journals must remain within Ford positional tolerances if a repair regrind is carried out.

b) A standard crankshaft pulley and damper must be used.

c) It is not permitted to alter the number of bearings or fit bearings of less than standard production width.

d) The crank journals may be reground for reclaim, as long as the minimum crank weight is respected. Standard oversize and undersize bearings are permitted.

## **Flywheel and Clutch**

a) The flywheel assembly must be a standard component. The unit may be reduced in weight according to Drawing MS92FF 6K39OA8. No other machining is allowed. To achieve minimum weight and balance, material may be removed from the area indicated on the drawing. For rectification the clutch mating face may be resurfaced, provided the minimum weight is respected. It is permitted to use a similar pattern replacement clutch (i.e., conventional single diaphragm spring) and driven plate with shock absorber springs (four or more spring assemblies). Organic friction material only is permitted. It is permitted to alter the clutch spline to suit the gearbox. Racing clutches are prohibited. The position of the ignition timing mark on the flywheel relative to the crankshaft sensor must remain within Ford design limits at all times. No part of these regulations allows this to be altered. Also the electronics regulations specifically ban any change that could in any way alter the ignition timing as defined by the standard calibration within the engine electronics.

b) Flywheel bolts must remain standard.

c) Flywheel minimum permitted weight+7.25kg (excluding all flywheel and crankshaft mounting bolts). Flywheel and Clutch Cover minimum permitted weight= 11.4kg (clutch cover bolts not included).

## **Lubrication System**

a) The lubrication system must remain standard except for modifications to oil pickup and modified sump. Oil coolers are allowed. Dry sump system is not allowed.

## **Cooling System**

a) A liquid cooling system is mandatory. The standard production water pump must be retained. The radiator and associated pipes are free. Cooling fan make and type is free. It is permitted to duct incoming air through radiator to assist cooling but this ducting must not direct air towards carburettors to cause a ram effect.

## **Engine mountings**

a) The engine mounts must be Ford Fiesta XR2 or Ford Transit type or equivalent

## **Electrical**

- a) The coil unit may be repositioned, but the standard coil and HT leads must be retained without modification.
- b) It is prohibited to use any other method or component to trigger, distribute or time the ignition
- c) A 12 Volt (nominal) alternator must be fitted. The alternator may be driven from either the engine or transmission. The minimum output of the alternator shall be 240 Watts, and the installation shall ensure that this output is available at all times whilst the car is circulating on the race track. Only high volume automotive alternators may be used.
- d) The battery must be capable of demonstrating at least 5 engine starts without external recharge at any time during practice, the race, or in park ferme.

## **E.C.U. MANAGEMENT:**

IN THE INTEREST OF FAIR PLAY AND SPORTSMANSHIP, THE MI SCRUTINEER WILL HAVE THE OPTION TO CHANGE AND RELOCATE ALL ECU'S BETWEEN COMPETITORS. THIS MAY HAPPEN AT ALL VENUES AND BEFORE ANY RACE. ECU'S MAY ALSO BE MONITORED THROUGH MODEM SOFTWARE AT ANY POINT THROUGHOUT THE SEASON

## **ENGINES**

All engines are to be sealed units (by MI Technical Committee) and must comply with the BHP test at Westward Engineering as described below. Engine seals must not be broken without the permission of the Championship Eligibility Scrutineer or a Scrutineer delegated to examine the components, or by written permission from the Technical Committee on behalf of MI. All engines which have their seal broken for routine maintenance or overhaul must be tested and resealed at Westwood Engineering Ltd. An engine can only be resealed if found to be 170 brake horsepower or less. The Eligibility Scrutineer must be in attendance for this test for verification. Carburettor Jets and ECU will be supplied by MI Scrutineer for this test.