

APPENDIX 5 (a)
2019 SCOTTISH FIESTA ST CUP
TECHNICAL REGULATIONS

5.1 INTRODUCTION

The following Technical Regulations are set out in accordance with the Motorsport UK specified format and it should be clearly understood that if the following texts do not clearly specify that you can do it you should work on the principle that you cannot. Competitors are advised to read Motorsport UK Regulations Section J, J5, Section Q, Section B, Nomenclature & Definitions, Section K and Section L of the current Motorsport UK Yearbook.

5.2 GENERAL DESCRIPTION

5.2.1 The Fiesta ST Cup is for competitors participating in Ford Fiesta Mk6 ST150 (and as amended by these regulations) (MY2003 to 2008) vehicles modified in accordance with the following regulations.

5.2.2 Examination of Vehicles

The organisers (in addition to any other powers they may have under these Regulations) reserve the right before or after any race in the championship/series to designate any one or more of the competing cars for special eligibility scrutineering.

Upon such election being made the competitor shall immediately place the car under the control of the organisers and be deemed to have permitted all such scrutineering, examination and testing as the organisers may responsibly require to undertake. The organisers have the right to:

a Examine the car at the circuit for such period as they may reasonably require and take fuel and/or other samples and/or

b Retain the car for detailed examination at premises chosen by the organisers. If the organisers elect to retain the car they shall make it available for collection by the competitor at least seven days prior to the qualification session for the next race in the championship/series unless the car is found to be in breach of these regulations and/or

c Seal the car and its components in such a manner as they may choose and require the competitor at their own expense to present the car at any other premises chosen by the organisers for detailed examination within a specified period and/or remove the car by transporter at no expense to the competitor to an appointed location. The competitor will be advised in writing of the time, date and location of the subsequent testing or eligibility examination.

The overseen stripping of the engine or any required component will be undertaken by the competitor and/or mechanic/technician nominated by the competitor.

The organisers reserve the right to re-inspect vehicles at any time during the course of the season.

Competitors will be personally and solely responsible for ensuring that their cars comply with their registration details and with these regulations for each event at which they are entered. Failure to comply in either respect will be a breach of these regulations. Queries concerning eligibility should be referred in writing to the organisers/championship Eligibility Scrutineer at least seven days prior to an event entered, to permit a ruling in advance of any meeting at which it is intended to compete.

Tests to establish the power output of any car may be carried out by the organisers or their representatives. Such power testing will be carried out using any test equipment deemed suitable by the organisers.

The organisers may review the performance of vehicles within the championship with particular regard to newly introduced vehicles/models, after every three championship rounds. This may result in the minimum weight being altered for any registered model.

Any weighbridge or pad scales used by the organisers at a circuit, which may include that held by the championship organisers, will be considered definitive and the weight of a car established on such a weighbridge will be a finding of fact subject to Motorsport UK regulations [E 4.1].

A conversion factor of 0.454 kilos/pound rounded up to the nearest kilo or pound will be used. No other tolerance will be allowed.

5.2.3 It should be clearly understood that the regulations set out in the current Motorsport UK yearbook apply except where amended by the following texts.

It should also be understood that if it is not clearly specified that you can carry out a modification then you should work on the principle that you cannot.

5.3 SAFETY REQUIREMENTS

5.3.1 All Motorsport UK Appendix Section K Safety Criteria Regulations apply as the Motorsport UK Yearbook. [K 1.2.1] to [K 1.2.4] with optional bracing tubes as per Motorsport UK Yearbook drawings only and compulsory diagonal strut with upper joint on drivers side, [K 2.1.2] to [K 2.1.3], [K 3], [K 8], [K 9], [K 10], [K 13].

5.3.1.1 Fiesta ST Challenge: Cars must use the Safety Devices roll cage, part numbers RBF1573SSX, RBF157XSX, RBF157DXUN, RBF157DXUO.

5.3.2 If fitted with a sunroof, this must be made of steel and securely fixed in the closed position by at least two additional fixings.

- 5.3.3 A full harness safety belt with a minimum of 4 straps (2 shoulders, 2 waists) must be installed to Motorsport UK Regulations. It is recommended that a 5 or 6 strap safety belt is used.
- 5.3.4 Fire extinguisher - a medium capacity plumbed-in unit for discharge into the cockpit and engine compartment as defined in Motorsport UK Regulation Section [K 3] of the Motorsport UK Yearbook is the minimum requirement.
- 5.3.5 A battery cut-off master switch must be installed. The circuit breaker when operated must isolate all electrical circuits with the exception of those that operate the fire extinguishers (Motorsport UK Regulation [K 8]). The triggering system for the circuit breaker should be situated at the lower part of the windscreen mounting preferably on the driver's side or below the rear window. The location is to be identified by a RED SPARK on a WHITE EDGED BLUE Triangle and the ON and OFF positions are to be clearly marked. The preferred system recommended is the Cartek fully electronic Battery Isolator System.
- 5.3.6 For scrutineering purposes the bulkhead between the main engine bay and the area occupied by the Interior Heater and Windscreen Wiper unit will be considered as a bulkhead that must be sealed. Windscreen trim can be removed.

5.4 GENERAL TECHNICAL REQUIREMENTS & EXCEPTIONS

Motorsport UK Yearbook references: [J 4], [J 5], Section Q, Section B, Nomenclature & Definitions, Section K, Section L.

- 5.4.1 Definitions: All references to standard parts and/or material in these regulations shall be interpreted as references to the manufacturer's original specification(s).
- 5.4.2 All parts must remain as Standard except for the modifications permitted listed.
- 5.4.3 Unless specifically authorised in these regulations, the use, substitution of, and/or addition of, any parts, material or processes is prohibited, other than welding or repairing material or the fitting of the manufacturers standard replacement parts, for the sole purpose in every respect of restoring the vehicle to the manufacturer's Standard specification or to comply with Motorsport UK statutory safety requirements.

It is permitted to reclaim stripped threads back to the original size using thread inserts.

It is permitted to replace fixings to a different format providing the thread size remains the same.

It is permitted to weld up housings to reclaim them back to the original specification.

5.5 CHASSIS: Standard

- 5.5.1 The following can be applied to the body shell: strengthening of the suspended part in the area of the suspension pivot locations is allowed provided that the material used follows the original shape and is in contact with it.
N.B. Larger section composite reinforcement panels are not permitted.
- 5.5.2 Only material/parts specially allowed by these regulations can be modified or removed. Removed material cannot be reused on the vehicle (see 5.8.1).
- 5.5.3 Fiesta ST Cup: Seam welding of the body shell is permitted.
- 5.5.3.1 Fiesta ST Challenge: Seam welding of the body shell is NOT permitted.
- 5.5.4 Two Towing Eyes must be fitted front and rear, and must be of the wire rope type complying with Q19.1.3b). They must be bolted to the front and rear crash structures in accordance with GR Q19.1.3, have a minimum internal diameter of 60mm, and be in a contrasting colour (eg red, orange or yellow) and must be clearly indicated in accordance with Motorsport UK General regulations.
- 5.5.5 Bonnet and tailgate fasteners must be fitted. Original locking devices must be rendered inoperative with the exception of the front bonnet catch, which must remain operative. The actuation lever of this catch must be extended into a visible position from outside the car and painted with Day-Glo paint. Disconnected locking devices may be removed.
- 5.5.6 Steering lock must be rendered inoperative and may be removed from the vehicle. Cars fitted with Safety Airbag in the steering wheel must have them removed. Caution is required over the removal of any airbag device. If in doubt contact the Eligibility Scrutineer for the correct method of removal.

5.6 BODYWORK: Standard

5.6.1 Modifications Permitted

- 5.6.1.1 Removal of spare wheel and tools.
- 5.6.1.2 Alternative steering wheel.
- 5.6.1.3 Non-standard driver's seat.
- 5.6.1.4 Removal of floor carpeting and sound deadening.
- 5.6.1.5 Removal/replacement of passenger seats.

- 5.6.1.6 Removal of boot lid inner panel. Rear wiper motor can be removed, wiper must remain on silhouette.
Removal of passenger compartment heater, centre console (ST Cup only)
- Fiesta ST Challenge: Removal of the passenger heater and air ducting behind the dashboard is NOT permitted. Heater must remain functional as standard. Trimming the dashboard to allow fitment of the roll cage is permitted.
- 5.6.1.7 Fuel and brake lines may be routed through the driver/passenger compartment subject to provisions of Motorsport UK Regulation [J 5.12] & [J 5.13]. It is permitted to cover fuel lines to protect from heat.
- 5.6.1.8 Silhouette. No change is permitted.
- 5.6.1.9 Ground Clearance. The car with driver (in full racing kit) aboard must at all times be able to pass over a block 95 mm high x 600 mm wide situated on the car centre line without touching it. The exhaust system is excluded for the purpose of measuring the ground clearance but must comply with Motorsport UK General Regulation J.5.20.11.
- 5.6.1.10 It is permitted to remove the rear seat mountings.
- 5.6.1.11 It is permitted to use additional fixings/tethers to retain items of trim into the front and rear bumpers
- 5.6.1.12 The gear knob may be replaced.
- 5.6.1.13 Wing mirrors must be of the standard 150 mirror shape and size and conform with silhouette
- 5.16.1.14 All glass side windows may be fitted with clear colourless safety film not exceeding 100 microns thickness.
- 5.6.2 **Modification Prohibited**
- 5.6.2.1 Fiesta ST Challenge: Cars must retain the standard door cards. Trimming inner door cards to ease access is permitted. Removing door reinforcement bars is NOT permitted.
- 5.6.2.2 Dash panel and instruments must be as fitted and MUST be complete with all switches, air vents, steering controls, steering column cowl, etc. The lower steering column trim and glove box can be removed. All door trim panels must be fitted, however (except Fiesta ST Challenge) these may be of alternative materials but of the same shape, size and dimensions as original items.
- 5.6.2.3 The window mechanism of the passenger door must be operable and capable of opening/closing the front passenger door window. Central locking and alarm system must be rendered inoperative by the removal of the fuse or that wiring element. The standard electric window mechanism may be retained but a mechanical means of operation to both driver/passenger door windows may be utilised from any Fiesta fitting.

5.6.2.4 Interior mirror must be fitted and is free.

5.6.2.5 All glazing must be as per the original car.

5.7 ENGINE

5.7.1 Permitted Modifications

The only engine eligible is as fitted to the Ford Fiesta ST150 (MY2004-2008) or a standard HE 14 2.0 litre Duratec replacement unit. No modifications to the specification of this variant of the engine are permitted. Option: Fitment of an optional air con pump internal/MSport jockey wheel and shorter drive belt. As original Ford manufactured conrod bolts are now not available they may be replaced by an alternative version which has similar shape and dimension. For Technical Specifications/Dimensions see Appendix.

General

No modifications to the specification or other variant of the engine are permitted except for changes specifically detailed in these regulations. The engine blow by gases must be fed either into a catch tank with a containable internal volume in excess of 2 litres, or an internal breather. All production openings into or out of the engine not used as a direct result of this change must be effectively sealed.

The term standard shall apply to that as manufactured by the Ford Motor Company and will include the tolerances as manufactured by Ford Motor Company. If you are in any doubt then consult the Eligibility Scrutineer. Due to part availability pistons and bearings may be substituted with OEM matching quality parts to exactly the same specification as the original Ford part.

The clutch pressure plate may be replaced by an aftermarket item, but it must be the same size and dimension as the standard item.

A paddle clutch disc of the same nominal diameter may be fitted.

Engine water pipes may be changed to a silicon based hose of the same size and dimension, hoses may be covered to protect from heat.

5.7.1.1 Permitted modifications: Baffles in the sump. Any internal engine components fasteners may be replaced by suitable OEM matching quality parts.

5.7.1.2 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.

5.7.1.3 The designated engine Electronic Control Unit (ECU) or any of its associated parts shall not be modified in any way. It is not permitted to change the strength or form of any of the sensor signals to or from the ECU or ignition amplifier unit. The organisers reserve the right to require any competitor to surrender the ECU fitted to the competition vehicle and fit a supplied alternative. Note: The exchange ECU available from Ford Motor Company may be fitted, but with recorded sealing of the unit by Ford Motor Company or Eligibility Scrutineer.

All cars must have their ECU reprogrammed with the Superchips ST programme by the nominated Superchips Scotland Agent (Falkland Performance Centre, Glenrothes KY7 4PF, Tel 01592 773677). This Superchips software shall be regarded as the only software permitted to be installed and used.

- 5.7.1.4 Fitment of additional oil cooler within the confines of the bodywork is permitted provided this does not entail modification of the exterior bodywork or radiator grill.
- 5.7.1.5 The choice of make and type of spark plugs is free.
- 5.7.1.6 Pipercross kit part number PK308. The throttle body has a maximum internal dimension of 55mm measured at the throttle butterfly spindle.
- 5.7.2 **Prohibited Modifications**
Polishing or reworking of any part(s) including the inlet and exhaust manifolds, the inlet and exhaust tracts and combustion chamber space in the cylinder head.
- 5.7.3 **Location**
The engine must remain in the 'as manufactured' location in terms of lateral/longitudinal/vertical axis.
- 5.7.4 **Oil/Water Cooling**
The standard fan cowlings must be fitted with the standard Ford ST150 radiator. A standard Ford cowl that fits in front of the radiator may be removed but no replacement panels can be substituted to alter the airflow in the radiator. Fitment of an additional oil cooler is permitted within the confines of the bodywork provided this does not entail modification of the bodywork or radiator grill.
- 5.7.5 **Induction Systems**
No modifications to the throttle body or manifolds are permitted, except as permitted in 5.7.1.6 regarding the Pipercross kit.
- 5.7.6 **Exhaust Systems**
A fully operational 'Standard' format Catalytic Converter Exhaust System or current Ford Motor Co. exhaust sold specifically for this model of car must be fitted at all times (but see option below). This means it must be of a type supplied and fitted to the showroom model as sold by the Ford dealer network. No modifications are permitted to the catalyst, but the silencer units and tail pipe are free. The full exhaust system must be free of leaks. Catalytic operation may be tested by any means. The final section of the exhaust must exit from the rear of the car, locating the outlet in the manufacturers cut-out of the rear skirt, and comply with Motorsport UK noise levels. The exhaust system can be adjusted by bending (including heating) the pipes and mountings. It is not permitted to cut or significantly alter the profile of the pipes. The exhaust system is excluded for the purpose of measuring the ground clearance but must comply with Motorsport UK General Regulation J.5.20.11. Exhaust wrap may be used to protect from heat.

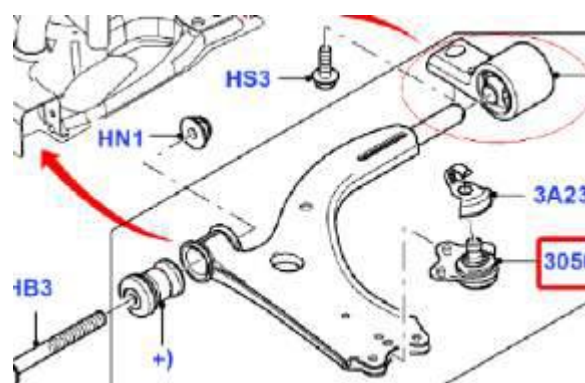
- 5.7.6.1 Fiesta ST Cup Exhaust Options;
Vortex performance Catalytic Converter – Part No Vortex FFC011 and/or
Vortex exhaust manifold downpipe – Part No Vortex FFC012 and/or
Option: Powerspeed performance Catalytic Converter – Part No Powerspeed
FFC021 and/or Powerspeed exhaust manifold downpipe – Part No Powerspeed
FFC022 and/or
Option: Milltek Sport Sports Catalytic Converter – Part No Milltek Sport SSXFD016
Milltek Sport Flexible Pipe – Part No Milltek Sport SSXFD015
Milltek Sport Cat Back System – Part No Milltek Sport SSXFD019
Exhaust manifold shield can be removed.
Exhaust system is free from catalytic converter to tailpipe but must comply with
Motorsport UK noise levels. Catalytic converter must comply with Motorsport UK
and FIA Regulations and be in working order.
- 5.7.6.2 Fiesta ST Challenge: Exhaust system must have a standard manifold and no less
than a 200 cell CAT, it must also exit from the standard location. The rest of the
exhaust system is free. A Vortek exhaust system is NOT permitted.
- 5.7.7 **Ignition Systems**
The ‘as manufactured’ ignition and engine management control unit must be used.
All modules may be sealed by the organisers and numbered and recorded.
The organiser reserves the right to download software directly onto any competitor’s
ECU. This software must not be tampered with or altered in any way. A nominal
charge for this software will be borne by the competitor. The organisers retain the
right to provide a replacement ECU at any time during any race meeting.

5.8 SUSPENSIONS

- 5.8.1.1 Fiesta ST Cup: Standard Front and rear suspension is permitted or the following
options;
- Option: Fitment of designated championship AST suspension kit. Spacers are
permitted between the front damper rod and top mount, or between the top mount
and the mounting point on the body according to AST manual.
- Option: Fitment of the SMRC GAZ Suspension kit for SMRC may be used (contact
Eligibility Scrutineer for details).
- No spacers are permitted between the rear damper rod, or damper body and the
mounting point on the body. .
- It is permitted to fit an additional element to the front suspension that will solely limit
the rotation of the shock absorber and not change any other element of the front
suspension or its designated geometry.

An alternative material bush may replace the standard rubber bush (front inner rear bush as circled in diagram opposite) on the front lower arm assembly (see diagram). The dimensions of the replacement bush must remain as standard.

Front anti roll bar thickness bare metal is 19mm +/- 1mm, Anti roll bar links are 284mm in length +/- 1mm or 240 +/- 1mm. Front camber must not exceed 4°



- 5.8.1.2 Fiesta ST Challenge: Gaz Suspension - Kit number “GGA468SC” must be fitted together with “Polybush Kit 205” Suspension Bushes, which should be purchased directly from www.polybush.co.uk to qualify for a 45% discount exclusive for Scottish Fiesta ST Challenge competitors.
- 5.8.2 Spring and spring trim are free.
- 5.8.3 It is permitted to remove the rear brake back plates. A one piece shim located by all four bolts may be fitted up to a maximum total thickness of 5mm between the stub and the axle. All shims must be in contact with the majority of the surface area between axle beam and stub axle and retained in place by all four existing bolts. This is to allow the adjustment of the rear camber and tracking. Rear tracking parallel plus or minus half of one degree. Camber one degree plus or minus one degree.
- 5.8.4 **Prohibited Modifications**
No modifications may be made directly to the rear axle beam to induce camber, except that Shims may be fitted, but manufacturer’s maximum camber must not be exceeded. No alterations may be made to the front wishbones and mountings for caster or camber. The standard front anti-roll bar must be fitted and operational. It is not permitted to modify the front suspension stub axle in any way. No modifications to component mountings permitted. All bolts and fastenings must be to OE specification, as must all mounting holes. Offset bushes are not permitted, all bush dimensions must remain as OE specification.
- 5.8.5 **Wheelbase/Track**
As standard or as amended by these permitted alterations (see 5.8.4)
- 5.9 **TRANSMISSIONS**
Standard differentials only. Gearbox must remain GrpN.
- 5.9.1 **General**
Modifications to the ATB torque bias differential action is expressly forbidden. Engine and gearbox upper mountings must be Ford original part or an OEM matching quality part of the same material and dimensional specifications.
- 5.9.2 **Prohibited Modifications**
No modification permitted

5.9.3 **Transmission and drive ratios**

Only Ford production parts are allowed.

5.9.3.1 A paddle clutch disc of the same nominal diameter may be fitted.

5.9.3.2 A machined retaining 'washer' may be fitted to prevent front bearings from moving out of position and thereby allowing the wheel to become detached from the front transmission unit.

5.10 **ELECTRICS**

5.10.1 **Exterior lighting**

All lights must be in full working order with the exception of the rear number plate light and the side repeater flashers which must be present but can be non-functional.

5.10.2 **Rear fog lights**

The rear fog light must work and the on/off switch must be accessible to the driver when seated in the car and ready for competition. One FIA specification high intensity LED rear light must be fitted in the centre line below the rear screen. It must be clearly visible and fitted to the outside of the car.

5.10.3 **Headlamp units**

Headlights must be retained as standard, in full working order and operable by the driver when seated in the car.

5.10.4 **Batteries**

A 12 volt battery must be used and fitted securely. Dry cell or Gel type batteries are recommended. The battery top must be covered by an insulating cover to prevent short circuits in the case of an accident. Battery may be relocated to inside cockpit but must comply to current Motorsport UK regulations.

5.10.5 **Generators**

The standard alternator must be fitted and operational at all times.

5.10.6 **Wiring Harness**

The main wiring harness cannot be modified except as required for the fitting of the battery master switch. Motorsport UK Regulation K8. No data logging equipment may be connected into the ECU either by direct or indirect means except any official datalogging systems which may be installed on selected cars by the Championship Eligibility Scrutineer for their sole use. Any such equipment shall carry a Motorsport UK seal. The fuse board, ECU and OBD diagnostic plug may be relocated within the restrictions of the standard wiring loom, tape may be used to secure wiring.

5.10.7 All cars may have a system of lamp indication to determine engine revolutions to indicate gearchange point (Shift Light) or an LED display to give the gear in which the car is currently being driven (Digital Gear Indicator). To achieve this, the unit may be wired into the instrument loom to facilitate the functionality of either unit.

- 5.10.8 The external rear wiper blade assembly must be fitted to conform with the vehicle silhouette.
- 5.11 BRAKES**
Friction Materials: The brake pads are free.
- 5.11.1 Standard callipers and brake discs must be used together and the duct shields may be removed from the front discs. It is permissible to fit any production hydraulic wheel cylinder or pedal box cylinder as long as they fit the vehicle without modification. This includes the fitment of load sensitive rear brake correction valve, which may be made adjustable but not from within the car. The ABS as fitted must remain and be in fully operational state. Anti-slip or extension pads may be added to all foot control pedals. High quality aircraft specification flexible brake pipes are allowed subject to meeting minimum FIA Appendix J Safety Regulations (Art.253.3.2.). These require that all lines containing hydraulic fluid with the exception of lines under gravity head only, must have a burst pressure of 70 Bar (1000 psi) or higher according to operating pressure and a minimum operating temperature of 232 degrees centigrade (450 degrees Fahrenheit). When flexible these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).
- 5.11.2 Brake ducting can be installed for the front brakes using the front fog light position in the front bumper as an entry point. Mounting of the ducting will be behind the bumper. The standard bezels and mounting must be retained in the standard position.
- 5.11.3 **Prohibited modifications**
No further modifications permitted.
- 5.12 WHEELS/STEERING**
Construction and material: Alloy 7x15, Offset 35/40mm
- 5.12.1 **Permitted Options:**
Fiesta ST Cup:
Team Dynamics/Rimstock wheel 7 x 15 Pro Race-12 Offset 35/40 mm.
Option: 7 x 15 ATS DTC Lightweight Silver - Offset 35/40mm
- Fiesta ST Challenge:
Team Dynamics/Rimstock wheel 7 x 15 Pro Race-12 Offset 35/40 mm.
Option: Rally Design Offset 35/40mm (WKC715FD)
Option: Any Ford Manufactured road wheel can be used as long as it conforms to the above dimensions
- 5.12.2 Fitment of wheel bearing retaining washer is permitted. A standard, and unmodified Power Assist Steering (PAS) steering rack must be retained. The mounting bushes for the steering rack shall be either the standard bushes or the Ford Motor Company Limited specified bushes only. The power assist pump must remain unmodified and fully operational at all times. Only front upright assemblies for the power assist steering are allowed. Power steering pipes may be substituted. A remote power steering reservoir may be fitted.
Option: An additional power assist pump cooler may be fitted.

- 5.12.3 Either the standard steering wheel, with the Safety Air bag fully disarmed or removed, or the alternative steering wheel (with 360° constant radius rim) may be used.
- 5.12.4 **Prohibited Options**
Until further notice, the steering wheel containing a live airbag assembly is not permitted. No other item is permitted.
- 5.13 TYRES**
Yokohama A048R tyres are mandatory.
- 5.14 VEHICLE WEIGHT**
- 5.14.1 Definition: As per current Motorsport UK Yearbook Regulations [J 5.15].
- 5.14.2 **Minimum Weights**
The all-up weight, including the driver in full racing kit, at any time during competition is 1110Kg. Ballast can only be installed in the position as per Motorsport UK Regulation [J 5.15.2 to J 5.15.4] (or as amended).
- 5.15 FUEL TANK/FUEL**
- 5.15.1 **Types**
Standard production fuel tank must be retained. Additionally, an approved protective plate or tank guard must be fitted below the tank.
- 5.15.2 **Location**
The tank must be retained in its standard position.
- 5.15.3 **Fuel**
Only unleaded pump fuel is allowed.
- 5.16 SILENCING**
Vehicles must be silenced in accordance with Motorsport UK Regulation [J 5.17] & [J 5.18].

APPENDIX: Engine Specifications/Dimensions

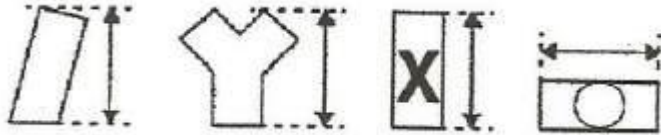
Number of Supports **3**

Total minimum volume of a combustion chamber **48.5 cubic cm**

Minimum volume of a combustion chamber in the cylinder head **41.3 cubic cm**

Maximum compression ratio (in relation with the unit) **11.3:1**

Minimum height of the cylinder block **302mm** (according to the drawing below)
(Fiesta ST Challenge minimum block height is **302.7mm**)



Pistons

(a) Sleeves Material **Ferrous Alloy**

(b) Number of rings **3**

(c) Minimum weight 420g with pin and rings

(d) Distance from gudgeon pin center line to highest point of piston Crown **28.5 +/- 0.1mm**

(e) Distance (+/-) between the top of the piston at TDC and the gasket plane of the cylinder block **0.65 +/- 0.15mm**

(f) Piston groove volume **0.8 +/- 0.5cm³**



Crankshaft – maximum diameter of crank pins **47.0mm**

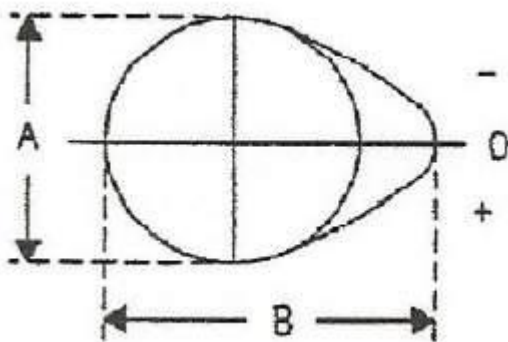
Cylinderhead – minimum height (block face to top of head) **123mm**

Thickness of tightened cylinderhead gasket **0.5 +/- 0.2mm**

Camshaft

(a) Diameter of bearings **25.0mm**

(b) Cam dimensions	Admission	A = 33.0 +/- 0.1mm
	Intake	B = 42.1 +/- 0.1mm
	Echappement	A = 33.0 +/- 0.1mm
	Exhaust	B = 41.1 +/- 0.1mm



Distribution/Timing

(a) Theoretical clearance for valve timing

Admission Intake **0.25mm**
Echappement Exhaust **0.30mm**

(b) Cam lift in mm (dismounted camshaft)

ADMISSION / INTAKE				ECHAPPEMENT / EXHAUST			
Ford/Mazda drawing, INLET Cam P/n 1S7G-6A271 BH & RF 1S7G-6A271-BG Fitted from 15/11/2004 to 05/02/2007				Ford/Mazda drawing, EXHAUST Cam P/n 1S7G-6A272-EA & RF 1S7G-6A272-BG			
Rotation angle in degrees	Lift in mm (+/- 0.1mm)	Rotation Angle in Degrees	Lift in mm (+/- 0.1mm)	Rotation angle in degrees	Lift in mm (+/- 0.1mm)	Rotation angle in degrees	Lift in mm (+/- 0.1mm)
0	9.13		9.13	0	8.07		8.07
-5	9.04	+5	9.04	-5	7.98	+5	7.98
-10	8.78	+10	8.78	-10	7.73	+10	7.73
-15	8.36	+15	8.35	-15	7.31	+15	7.32
-30	6.11	+30	6.08	-30	5.09	+30	5.11
-45	2.64	+45	2.68	-45	7.19	+45	1.84
-60	0.30	+60	0.37	-60	0.27	+60	0.34
-75	0.03	+75	0.10	-75	0.01	+75	0.07
-90	0.00	+90	0.00	-90	0.00	+90	0.00
-105		+105		-105		+105	
-120		+120		-120		+120	
-135		+135		-135		+135	
-150		+150		-150		+150	

A shift of +/- 2 degrees of the whole measurement is accepted

Cam timing

Piston No.1 at TDC camshaft locking tool must be able to locate into timing slots of camshaft. Use of profile tool can be permitted for scrutineers observation of camshafts.

(c) Maximum valve lift

	Maximum valve lift
Admission / Intake	8.9 +/- 0.2mm
Echappement / Exhaust	7.8 +/- 0.2mm

with clearance according to (a) above

Admission / Intake

Number of springs per valve **1**

Under a load of **34kg** the max length of the spring is **31.5mm**

External diameter of the springs **24.75 +/- 0.2mm**

Number of spring coils **8.5**

Diameter of spring wire **3.23 +/- 0.1mm**

Max free length of the springs **48.1mm**

Echappement / Exhaust

Number of springs per valve **1**

Under a load of 34kg the max length of the spring is 31.5mm

External diameter of the springs **24.75 +/- 0.2mm**

Number of spring coils **8.5**

Diameter of spring wire **3.23 +/- 0.1mm**

Max free length of the springs **48.00mm**