2020 Technical Regulations for Formula Ford 1600

GENERAL
As with all regulations, "UNLESS IT SAYS YOU CAN DO IT. YOU CANNOT".

1. DESCRIPTION
Four-wheel, single seater racing car, as defined for Formula 3 (Appendix “J” Art. 273, 276) and these regulations fitted with a Ford 1600cc GT "Kent" Engine.

2. SAFETY
These regulations are based on the current Historic Monoposto Racing (HMR) Regulations 2020 Article 3.6.

3. CHASSIS
The chassis must be of tubular steel construction with no stress bearing panels except bulkhead and under tray, curvature of the under tray must not exceed 2.54cm. Monocoque chassis construction is prohibited. Stress bearing panels are defined as, sheet metal affixed to the frame by welding or bonding or by rivets, bolts or screws which have centers closer than 15.25cm. Bodywork must not be used as stress bearing panels. The use of stabilized materials, composite materials using carbon and/or Kevlar reinforcement is prohibited. The chassis specification must remain fundamentally unaltered from original manufacture. Wheelbase, track and pickup points must remain to manufacturer's specification.
Ground Clearance must be at least 40.00 mm at all times, in practice & race, including in any post-practice or post-race scrutineering.

3.1 No engine oil or water tubes are permitted within the cockpit

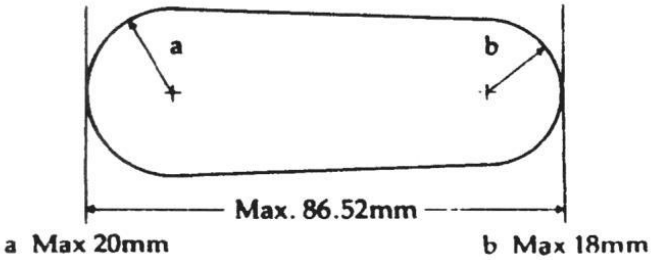
4. BODYWORK
Original type of bodywork including engine cover where applicable must be used. Separate nose cones are permitted where they are manufacturers’ update, but the description of the car must reflect this. Alloy radiators are allowed. For FF1600 any device designed to aerodynamically augment the down thrust on the vehicle is prohibited. The use of composite materials using carbon and/or Kevlar reinforcement is prohibited.

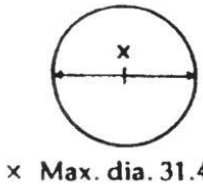
5. ENGINE
5.1 GENERAL
a) Engines will be mounted upright and aligned fore and aft in the chassis.
b) The addition of any material be it metal, plastic or composite etc. by any means be it welding, bonding, encapsulation or encasement to any component is prohibited. However, specific repair of the mounting points of the cylinder block to the transmission or chassis are allowed, whilst other casting repairs may be allowed with prior written approval of the Technical Commissioner responsible for the Formula.
c) Balancing of reciprocating and rotating parts is permitted only by removal of metal from locations so provided by the manufacturer.
d) Pump, fan and generator drive pulleys and their retention bolts, washers and belts are free.
e) Mechanical tachometer drives may be fitted.
f) Generators are optional.
g) The use of non-standard replacement fasteners, nuts, bolts, screws, studs and washers which are not connected with, or which do not support, any moving parts of the engine or its compulsorily retained accessories is permitted. Freedom granted to any fastener does not allow for freedom to move items relative to each other. For components that are granted the freedom for the fitment of a key or dowel, then material may be removed to allow the fitting of the key or dowel. Only one hole or keyway per component is allowed.
h) The use of thread locking compounds is permitted.

i) Gaskets are free except for the cylinder head, intake gaskets which must be standard Ford manufacture for the engine, and inlet manifold to cylinder head gasket which must be of approximate production thickness (see 5.3e).
j) Any process of cleaning may be used on any component providing the surface finish, which must remain standard, is not affected.
k) Forced induction is prohibited. Ram Air generated by the forward motion of the car is not considered as forced induction.
I) The exterior surfaces only (of the complete engine assembly) of ferrous parts and the exterior surface of the aluminum Rocker Cover may be protected by paint or similar means. No internal component or surface may be coated by any protective finish. Other Ford produced aluminum components may be protected only on their external surfaces by a transparent clear varnish, or similar.
m) Part numbers quoted were correct at the time the regulations were drafted. However, as with all companies, the Ford Motor Company Limited reserves the right to make changes to components for reliability or other reasons. Consequently, the part numbers quoted may be superseded by later released parts. Full Ford part numbers do not necessarily appear on all parts.

5.2 PERMITTED ENGINE
The only permitted engine is the Ford 1600 GT "Kent" (also referred to as Mark II Escort 1600 "Sport") with a nominal bore 81 mm + 0.5 mm re-bore allowance and stroke 77.6mm. Production tolerances are permitted providing the total swept volume does not exceed 1620cc.

5.3 INDUCTION
a) The air cleaner may be removed or replaced and a trumpet fitted.
b) Carburetor Type: Weber 32/36 DGV and DGAV (from 1600 GT "Kent" or 2000 SOHC NE engine).
Number on engine 1
Number of Main Venturi 2
Maximum dia. of Main Venturi 26.0/27.0mm
Maximum dia. of carb outlet to inlet manifold 32.0/36.0mm
c) It is permitted to change jets, open both throttles together, remove cold start devices and diffuser bar, fit internal and external anti-surge pipes, remove seals on emission control carburetors. No other modifications are permitted, chokes must remain standard and no polishing or reprofiling is permitted. Any means of reducing intake air temperature is prohibited. Any form of water injection is prohibited.
d) Inlet manifold: standard Ford production inlet manifold for 1600 GT "Kent" engine. The carburetor seat face may be machined to horizontal in the fore and aft plane. The water passage must remain intact but may be blanked off or plugged. The manifold may be machined externally to clear the throttle mechanism in the use of both throttles being opened together.
e) Carburetor to inlet manifold gasket Thickness 5.7mm ± 0.35mm Inlet manifold to cylinder head Thickness 0.86mm (max)





Manifold port diameter may be exceeded in vertical plane if casting is original and untouched

5.4 EXHAUST SYSTEM
a) The exhaust system and manifold are free, within Vehicle Regulations.

5.5 CYLINDER BLOCK
a) It is permitted, as means of repair, to replace damaged cylinder bores with cast iron cylinder liners, all to standard dimensions.
b) Localized machining of the cylinder block is permitted to allow fitting of the dry sump system.
c) The crankcase breather may be altered or removed, but all breathers must discharge into a catch tank.
d) May be machined to maintain deck height.

** Additional acceptable Block Numbers beside 710M-6010-BA are: 711M-6010-16K, 711M-6015BA, 831C6015B34/R34 (service block South African casting), casting code “AX”

5.6 CYLINDER HEAD (INCLUDING VALVES AND VALVE GEAR)
a) Non-standard rocker covers are permitted providing they in no way improve the performance of the engine. Water passages are not permitted in rocker covers.
b) Standard valve spring retainers must be used; only single valve springs are permitted. Shims are permitted, otherwise valve springs are free.
c) Push-rods, rockers, tappets, pedestals and shafts must remain standard except that re-contouring of the valve stem contact pad on the rocker arm is permitted providing the maximum specified lift at the spring cap is not exceeded. The pedestals may be shimmed at the base to a maximum of 1mm. Rocker shaft springs are free.
d) Maximum permitted lift at the spring cap with zero tappet clearance:
inlet 9.042mm, exhaust 9.093mm.
Maximum permitted lift at the top of the push rod:
inlet 5.917mm, exhaust 5.943mm.
e) Valves must remain standard, if not original, replacement valves must have 'FFI' stamped on the stem, no re-profiling or polishing is permitted. The original 45° seat angle must be maintained.
Distance apart at centers 39.12 ± 0.5mm.
Maximum face diameter, inlet 39.62mm;
exhaust 34.00mm.
Overall length inlet 110.92 ± 0.5mm.
Overall length exhaust 110.61 ± 0.5mm.
Valve stem seals are optional.
f) It is permissible to reshape inlet and exhaust ports by removal of metal within limits. Addition of material in any form is prohibited.
Maximum port diameter at manifold face: inlet 36.12mm, exhaust 29.41mm.
Inlet and exhaust port diameter may be exceeded if the original casting is visible and untouched at the gasket face.
g) 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.
h) It is permitted to have an adjustable timing camshaft pulley.

5.7 COMPRESSION RATIO
a) The maximum compression ratio will be controlled as follows:
i) Minimum combustion volume in piston 41cc (with piston at TDC in cylinder and no account taken of volume down from the crown to the top piston ring).
ii) Standard Ford cylinder head gasket Part No. 781M 6051 AA / 931M 6051 AA
minimum compressed thickness 0.85mm,
minimum diameter of cylinder head aperture 82.50mm.
iii) Pistons must not protrude above the cylinder block face at TDC. The cylinder block surface may be machined.
iv) Maximum permitted protrusion of the valves into the combustion chamber 1.2mm.

5.8 CAMSHAFT

a) The only permitted camshaft is that specified for Kent Formula Ford use. Part N° 771M-6250-BA conforming to the lift tables below.

b) The camshaft must remain entirely unmodified. It must be fully manufactured and ground to the Ford Motor Company profile by the designated supplier FFI also with the serial number in the example form 'FFI 103' on the rear face of the camshaft. It is prohibited to grind from blanks, regrind or re-profile.

Tuft riding or Parkerizing is permitted. Shot peening, shot blasting or polishing are prohibited. Offset dowels are permitted.

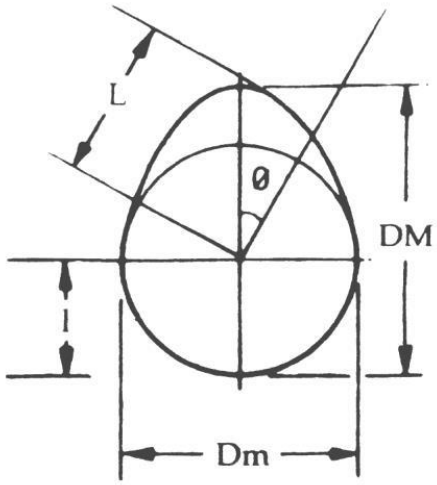
c) The cam profile is defined by determination of lift (L-l) against a flat-footed follower at various angles (Ø). Maximum lift at all points on the camshaft must not be exceeded.

The standard Ford tolerances of ±0.1mm apply to the following camshaft table and drawing.

Dimension	Symmetrical	
	Inlet	Exhaust
DM (max)	33.60mm	33.65mm
Dm	27.78mm	28.15mm
Lift at 0°	5.87 mm	5.89mm
Lift at 5°	5.81mm	5.85mm
Lift at 10°	5.64mm	5.67mm
Lift at 15°	5.38mm	5.41mm
Lift at 20°	5.00mm	5.03mm
Lift at 30°	4.01mm	4.04mm
Lift at 40°	2.69mm	2.77mm
Lift at 60°	0.46mm	0.61mm
Lift at 90°	0.05mm	0.20mm

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Angle between major axes of inlet and exhaust cams: 109°.



5.9 PISTONS
a) The only permitted piston is that specified for Kent Formula Ford use. Part number 711M-6102-DA/EA/CA* (NLA) supplied by FFI (Formula Ford International)/Sky Ford/ Hartwell Ford or pistons must be standard Ford production pistons for the 1600cc engine, unmodified in any way except for balancing and as detailed.
b) All three piston rings must be fitted, piston rings must be standard production or similar replacements, i.e. the compression rings must be one piece, with conventional plain gaps, chromium plating of the top ring is optional, the oil control rings must be either single piece, two-piece, twin land type or apex three piece (two rails and an expander). Molybdenum faced top compression rings are permitted.
c) Localized machining of the bowl including valve relief and gudgeon pin bosses of the piston to achieve volumetric and weight balance and minimum weight is permitted. Minimum weight complete with piston rings and gudgeon pin: 520gm, weight of gudgeon pin: 113 ± 2.0gm.

*NLA stands for NO LONGER AVAILABLE through the Ford Network. Any item annotated with NLA may be sourced as a pattern part, no FORD logo. It should however be noted that such part must comply with the regulations in full, where stated. This means, material, weight and size, all of which can and may be checked against an original reference part. Original part numbers remain for reference.

5.10 CONNECTING RODS
a) Connecting rods must be standard Ford Part No. 2737E 6200 B* (NLA). Machining is permitted to remove metal from the balancing bosses on the big-end cap and at the little end to achieve balance only. Polishing is prohibited. Big-end cap bolts are free, whilst respecting the minimum weight.
Minimum weight (including bolts and small end bearing) 640gm.

5.11 CRANKSHAFT
a) A standard crankshaft with part number 711M-6303-AE or steel crankshaft with part number 711M-6303-AG also with the 'FFI' stamp and serial number in the example form 'FFI 101' along with the logo on the first journal must be used.
It is allowed to use a certificated SCAT-crankshaft, this implies however, that the Competitor/driver must be able to show the certificate to the HMR on request. In the United Kingdom these SCAT-crankshafts are available with the FF Engine Part Suppliers Sky Ford/Hartwell Ford Hemel Hempstead – Don Hilton's FFI (Formula Ford International) and only these will be allowed by the HMR. This certified SCAT-crankshaft has an unique identity approved by FORD. The HMR permits expressly only this SCAT-crankshaft in conformity as written in the English regulations "Technical Regulations Formula Ford with 1600 Kent Engine".
Machining to achieve balance and fit is permitted. Tuft riding shot peening and shot blasting are permitted. Polishing is prohibited. Crankshaft minimum weight: 11.2kg.
b) Crankshaft pulley is free as is tooth belt drive.
c) It is not permitted to alter the number of bearings or fit bearings of less than standard production width.
d) Standard oversize and undersize bearings are permitted.
e) The rear main journal may be fillet rolled in the radius

5.12 FLYWHEEL AND CLUTCH
a) The flywheel and clutch assembly must be standard components. To achieve minimum weight and balance, material may be removed from the originally machined surfaces, rim/flange etc. For rectification, the clutch mating face may be resurfaced. Cast surfaces must remain in original condition. It is permitted to use a similar pattern replacement clutch (i.e. conventional single diaphragm spring) driven plate with shock absorber springs. Organic friction material only is permitted. Racing clutches are prohibited.
b) Flywheel bolts are free and locating dowels are permitted.
c) It is permitted to secure the starter ring to the flywheel.
d) Flywheel minimum permitted weight is 8.28kg

5.13 LUBRICATION SYSTEMS
The lubrication system, external to the engine, is free. Existing standard production oilways, linings or oil grooves may be enlarged or reduced, but no additional ones are permitted. Standard friction surfaces must remain unchanged. Dry sump is permitted, oil coolers are free.

5.14 COOLING SYSTEM
a) A liquid cooling system is mandatory, but radiator is free. Only the standard water pump is permitted.
b) The radiator, if housed in or incorporating a cool air scoop or deflector, must comply with bodywork regulations.

5.15 FUEL PUMP
a) Only the standard mechanical fuel pump for the engine is permitted.
b) Fuel pipes are free. Fuel cooling radiators are permitted, within safety regulations, but must be mounted within the main chassis frame

5.16 DISTRIBUTOR
a) Distributors are free providing they retain the original drive and location.
b) The distributor is defined as the component which triggers the LT current and distributes the HT ignition current. The ignition timing may only be varied by vacuum and/or mechanical means. It is prohibited to use any other method or component to trigger, distribute or time the ignition.
c) It is permitted to mount a simple indicating pointer to the engine to facilitate the timing of the distributor with respect to the crankshaft/flywheel.

6. SUSPENSION
Only original type suspension utilising the original suspension pick up points may be used.

All parts must be of steel or ferrous material, with the exception of hubs, hub adapters, hub carriers, bearings and bushes, spring caps, abutment nuts, anti-roll bar links, shock absorber caps and nuts. **Remote reservoir and / or light alloy dampers are prohibited**.

7. BRAKES
Only brake discs made predominantly from Ferrous material are permitted. Calipers must be of Ferrous material with a maximum of two working cylinders per caliper. Brake pad materials, including carbon metallic, are free.

8. STEERING
The steering must consist of a mechanical link between the driver and the wheels, rear wheel steering prohibited, otherwise free.

9. WHEELS & TYRES
a) 13-inch diameter steel wheels with a maximum rim width of 5.5 inch are the only wheels permitted. They must be of standard manufacture, but the off-set may be altered. (It is recommended that weekly checks for cracks be carried out and that the wheels be replaced twice a year).
b) The only tyres permitted are those listed in the Historic Monoposto Racing Regulations 2020 for the event. Minimum tread depth 1mm at the start of each practice session and race.
c) Tyre warmers are not permitted. Tyre covers whose only function is to protect the tyre in the paddock area are allowed.

10. TRANSMISSION
a) The gearbox must contain not more than four forward gears and include an operable reverse gear, capable of being engaged by the driver whilst normally seated. The ratios are free.
b) Rear wheel drive only is permitted.
c) Final drive ratio is free.

d) Torque biasing, limited slip and locked differentials are prohibited. Non-ferrous differential components prohibited.
e) Gear change must be manual in operation.
The gearchange must use the conventional 'H' pattern gearchange gate. Any gear change mechanism that only allows sequential selection of gears is not permitted.
f) Replicas to original model (VW Rhino) will be permitted.

11. FUEL SYSTEM
a) Tanks outside the chassis frame must comply with FIA Spec FT3.
b) Inboard tanks, covered externally with a fireproof coating, are acceptable for events of less than 70km.
c) Maximum capacity 41 liters unless carried in FIA spec FT3 tank or better.
d) These regulations are based on the current Historic Monoposto Racing (HMR) Regulations 2020 Article 3.4.

12. STARTING
a) Compulsory electric starter with electrical source of energy carried on board the car, and able to be controlled by the driver when normally in his seat.
b) A supplementary external source of energy temporarily connected to the car may be used to start the engine whilst in the pit area.

13. WEIGHT
Minimum car weight at any time during the competition is 420Kg.

14. ENGINE SEALING
These regulations are based on the current Historic Monoposto Racing (HMR) Regulations 2020 Article 2.27. All engines should have provision for scrutineer's wire seals 2.0 mm dia. holes pre-drilled in readily accessible locations on installed engines must be available. Failure to comply renders the entrant liable to a sanction.

15. RED WARNING LIGHT
These regulations are based on the current Historic Monoposto Racing (HMR) Regulations 2020 Article 3.6.3.

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16. MISCELLANEOUS
a) The use of titanium, ceramic, high strength composites and similar materials is prohibited.
b) Electronic dashboards and Data logging equipment are allowed subject to them having no influence whatsoever on the behavior of the car during competition. All information obtained from any Data logging or storage equipment shall be made freely available to the Scrutineer on request.
c) Competitors are reminded that only modifications or additions specifically covered by these regulations are permitted. Engine components not covered by these regulations must remain completely standard and unmodified. In cases of dispute on engines, reference will be made to Ford Motor Company Limited drawings.
d) The use of carbon and/or Kevlar reinforcement is prohibited. (Unless expressly permitted). Items such as Carbon Fiber Dashboards (non-structural) and Mirrors are permitted