



## 2020 Technical Regulations for Formula Ford 2000

### 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 Formula Ford 2000 regulations fitted with standard Ford 2000cc SOHC NEA 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 undertray. Curvature of the undertray must not exceed 25.4mm. Monocoque chassis construction is prohibited. Stress bearing panels are defined as: - Sheet metal affixed to the frame by welding, bonding or rivets or bolts or screws which have centres closer than 152.5mm. 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 40.00mm 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

Bodywork must be of a type with a proven competition history for that type of car. It is permitted to make any modification for which the primary purpose is safety or driver comfort. Cars may be updated to the specification of the latest model built by the manufacturer which appears in the list of eligible vehicles.

4.1 It is permitted to make any modification of which the primary purpose is safety or driver comfort. Cars may be updated to the specification of the latest model built by the manufacturer which appears in the list of eligible vehicles.

4.2 No modifications are permitted without the specific approval of the Eligibility Scrutineer.

The use of composite materials using carbon and/or Kevlar reinforcement is prohibited.

It is not permitted to construct any suspension member in the form of an aerofoil or to incorporate a spoiler in the construction of any suspension member

### 5. ENGINE

#### 5.1 PERMITTED MODIFICATIONS

The only permitted engine is the Ford NE series 2 Litre SOHC with 2 Venturi carburetors with nominal bore 90.84mm + 0.5mm rebore allowance and stroke 76.95mm Production tolerances are permitted providing the total swept volume does not exceed 2025cc. Engines will be mounted upright and aligned fore and aft in the chassis.

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. Balancing of reciprocating and rotating parts is permitted only by removal of metal from locations so provided by the manufacturer. Pump, fan and generator drive pulleys and their retention bolts, washers and belts are free. Mechanical tachometer drives may be fitted. Generators are optional. 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. The use of thread locking compounds is permitted. Gaskets are free except for cylinder head and carburetor to inlet manifold gaskets which must be dimensionally identical to original Ford gaskets - see note under compression ratio. Any process of cleaning may be used on any component providing the surface finish, which must remain standard, is not affected. Forced induction prohibited. The air cleaner may be removed or replaced and a trumpet fitted.

### 5.2 CYLINDER BLOCKS

It is permitted, as means of repair, to replace damaged cylinder bores with cast iron cylinder liners, all to standard dimensions. Localised machining of the cylinder block is permitted to allow fitting of the dry sump system. The crankcase breather may be altered or removed, but all breathers must discharge into a catch tank, or back to the oil tank. Cylinder blocks may be machined to achieve deck height.

The deck height, measured from the centreline of the crankshaft to the top face of the block, must be 206.8mm +0mm -3.25mm

### 5.3 CYLINDER HEADS

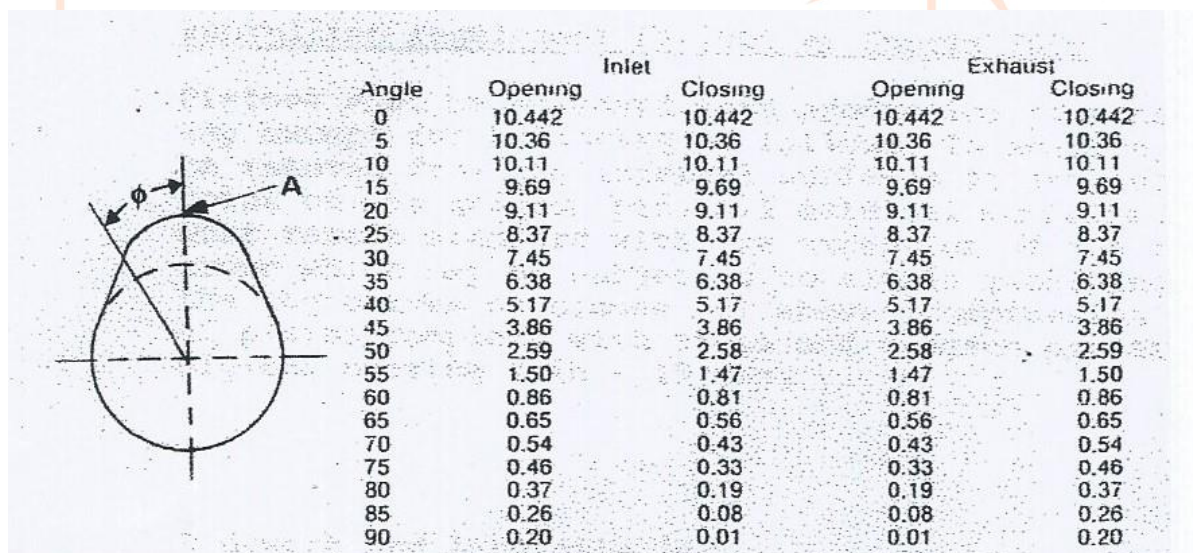
Non-standard camshaft covers are permitted providing they in no way improve the performance of the engine. Water passages are not permitted in cam covers. Standard valve spring retainers must be used, only single valve springs are permitted. Shims are permitted otherwise valve springs are free.

The only permitted camshafts are the standard Ford production camshafts for 2000SOHC NE engines, part number 1584660 or the C12 camshaft kit as supplied by the Historic FF2000 association. The camshaft and rockers must remain entirely unmodified. They must be fully manufactured and ground by the Ford Motor Co. It is prohibited to grind camshafts from blanks or regrind or reprofile. Tuftriding or Parkerising is permitted.

As an alternative to the Ford camshaft specified above, the FF2000 camshaft kit, as supplied by Universal Racing Services (URS), or the SC2000 (FF2000) camshaft kit from Kent Cams Ltd. May be used. These camshafts have been measured and recorded to ensure conformity with the standard Ford profiles. None of the above camshafts may be reground, reprofiled or modified in any way.

It is allowed to have an adjustable timing camshaft pulley. Cylinder head face may be skimmed.

Maximum valve lift at determined points by camshaft rotation will be established by using a low rate substitute valve spring (load characteristics 12lb at 1.417in, 30lb at 1.000in), with zero tappet clearance.



Valves and rockers must remain dimensionally identical to the standard Ford items, no reprofiling or polishing is permitted. The original 45deg. seat angle must be retained.

Maximum face diameter inlet 42.2mm Maximum face diameter exhaust 36.2mm

Overall length inlet 111.15 - = 0.5mm. Overall length exhaust 110.55 - = 0.5mm

Maximum valve stem diameter 8.4mm



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 dimension at manifold head face inlet diameter 39.5mm exhaust 35.5mm X27mm Sizes may only be exceeded if the castings are oversize, in such cases the castings must be seen to be original and untouched. An external oil drain pipe from the cylinder head is permitted. The fitting of a union by drilling and tapping is permitted. It is permitted, as means of repair, to replace damaged valve guides and valve seats by replacement cast iron valve guides and cast-iron valve seat inserts all to standard dimensions. Inlet and exhaust port diameter may be exceeded if the original casting is visible and untouched at the gasket face.

Broken camshaft carriers may be repaired by means of machining the broken carrier(s) flat, and replacing with a ferrous block, screwed into, or welded to the head casting. The block may then be line bored to accept the camshaft.

#### **5.4 COMPRESSION RATIO**

The maximum compression ratio will be controlled as follows: Minimum combustion volume in cylinder head 50cc. Standard Ford cylinder head gaskets part no's 70HM6051 BiA, 70HM6051 B3B, 70HM6051 GIA: minimum compressed thickness 0.9mm minimum diameter of cylinder aperture 92,0mm or dimensionally identical aftermarket gasket. Pistons must not protrude above cylinder block surface at TDC. Cylinder block face may only be machined flat.

#### **5.5 PISTONS**

Pistons must be standard Ford or absolutely identical aftermarket production pistons, unmodified in any way except for balancing and as detailed.

All three piston rings must be fitted, piston rings must be standard production or similar approved pattern replacements, i.e. the compression rings must be one-piece, single homogeneous material type with conventional plain gaps, chromium plating of the top ring is optional, the oil control rings must be either single piece twin land type or apex three piece (two rails and an expander). Molybdenum faced top compression rings are permitted. To achieve balance, material may be removed from the internal surfaces at any location below the lowest point of the gudgeon pin. All external surfaces, dimensions and profiles must remain standard with the exception of the top surface of the piston crown which may be subjected to simple machining to achieve balance and the objectives of the section entitled "Compression ratio" Minimum weight of pistons, plus rings, connection rod, connection rod bolts and nuts, less big end bearings, 1255grms

#### **5.6 CONNECTING RODS**

Connecting rods must be standard Ford part. Machining is permitted to remove metal from the balancing bosses to achieve balance only. Tuft-riding, Parkerising, shot-peening, shot-blasting and polishing are permitted. It is permitted to radius the area around the big-end retaining bolt heads and nuts. Big end bolts part no. 905500 are permitted as are similar aftermarket big end bolts.

#### **5.7 CRANKSHAFT**

A standard crankshaft must be used. Spot machining to achieve balance is permitted. Tuft-riding Parkerising, shot-peening, shot blasting and polishing are permitted. Crankshaft minimum weight 28lbs. It is not permitted to alter the number of bearings or fit bearings of less than standard production width. Standard oversize and undersize bearings are permitted.

#### **5.8 FLYWHEEL AND CLUTCH**

The flywheel must be a standard component. To achieve minimum weight and balance, materials 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. Friction material is free. The clutch must be a standard Ford road car unit or aftermarket replacement of identical diameter and type, or AP Racing models CP5351-1 or CP5351-2. Sintered clutches are forbidden. Flywheel bolts are free and locating



dowels are permitted. It is permitted to secure the starter ring to the flywheel. Flywheel and clutch assembly minimum permitted weight 12.5kg (including all flywheel and crankshaft securing bolts).

### 5.9 OIL/COOLING SYSTEM

A liquid cooling system is mandatory, but radiator and water pump are free provided that the water pump is mechanically operated. (i.e. non-electrical) The radiator, if housed in or incorporating a cool air scoop or deflector, must comply with bodywork regulations. 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 with the exception of an external drain from the head to the sump. Standard friction surfaces must remain unchanged. Dry sump is permitted, oil coolers are free

### 5.10 INDUCTION SYSTEMS

**Carburetor Type:** Weber 32/36 DGV & DGAV. Number on engine 1 Number of Main Venturi 2. Maximum diameter of carburetor outlet to inlet manifold 32.0/36.0mm. Maximum diameter of Main Venturi 26.0/27.0mm

It is permitted to change jets, open both throttles together, remove cold start devices and diffuser bar, fit internal and / or 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. Flexible mounts for the carburetor may be incorporated providing they do not exceed a maximum of 25.4mm from flange to flange. The bore of the casting must remain untouched and in its original condition. The carburetor seat face may be machined to horizontal in the fore and aft plane. The water passage in the inlet manifold may be blanked off or plugged.

The manifold may be machined externally sufficiently to clear the throttle mechanism in the case of both throttles being opened together.

### 5.11 EXHAUST SYSTEM

The exhaust system and manifold are free, within Vehicle Regulations, but must comply to the set noise restrictions of the event as laid down in the supplementary regulations.

### 5.12 FUEL PUMP

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

### 5.13 DISTRIBUTOR

Distributors are free providing they retain the original drive and location. 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. 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

Suspension as original. Remanufactured or replacement suspension components shall be dimensionally as original, but material thickness may be changed in the interests of safety. The suspension shall utilise only the original pick-up points unless these were modified and used on the chassis and raced in a Formula Ford 2000 race prior to 31/12/81.

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.**



No modification permitted without consultation and ratification by the Eligibility Scrutineer. Dampers shall be of the same type in terms of appearance as originally fitted to the car and shall be mounted to the original mounting points. Remote reservoirs or any form of external control system are excluded. The use of more than one spring per corner is prohibited. Dampers must be **steel-bodied**. **Sheathing of non-ferrous dampers with a ferrous material is prohibited.**

Minimum wheelbase: 2000mm  
Minimum track: 1200mm

## 7. BRAKES

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

## 8. WHEELS/STEERING

8.1 Rear wheel steering prohibited, otherwise free. Material is free providing it is metal. Centre lock wheel retaining nuts must be fitted with safety ('R') clips and painted in a bright colour. Aircraft type self-locking nuts are not acceptable as an alternative.

8.2 Wheels may be constructed from aluminium alloys or magnesium alloys.

Note: Competitors are reminded that alloy/mag wheels can have a tendency to crack, especially the older ones. For safety reasons, please keep a check on your wheels.

8.3 Rim dimensions:

Front 13" dia x 6" wide maximum: Rear 13" dia x 8" wide maximum.

## 9. TRANSMISSION

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

## 10. FUEL SYSTEM

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

## 11. STARTING

- 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.
- A supplementary external source of energy temporarily connected to the car may be used to start the engine whilst in the pit area.



## 12. WEIGHTS

Weight is the **weight of the vehicle** as it finishes the race but excludes the driver.  
The weight of the car shall not be less than 440kg

## 13. 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 2.0mm dia. holes pre-drilled in readily accessible locations on installed engines must be available. Failure to comply renders the entrant liable to a sanction.

## 14. RED WARNING LIGHT

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

## 15. 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 behaviour 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 Fibre Dashboards (non-structural) and Mirrors are permitted
- e) Only modifications or additions specially covered by these regulations are permitted. All engine components not covered by these regulations must remain completely standard and unmodified.

**Knac Nationale Autosport Federatie**