

# **MONOPOSTO RACING**

## **Class Specification**

### **Historic Formula Ford**

**December 2016**

# Pre-1973 Historic Formula Ford

## I. DEFINITION

A class for single seat, open wheel race cars raced before 1973 by private owners, using the standard Ford 1600 crossflow, pushrod engine. The following commercially constructed cars are eligible.

Alexis 14 [1968] 15 [1969] 18 [1970] 18B [1971] 22 [1972]  
Beach MK11 [1969-70]  
Bobsy [1969]  
Caldwell D9 [1969] D9B [1970-71]  
Crossle 16F [1968-69] 20F [1971-72]  
Dulon LD4 [1967] LD4B [1968] LD4C [1969] LD9 [1970-72]  
Elden PH6 [1969] PH8 [1970-72] PH10 [1972]  
Elfin 600 [1969-72]  
Forsgrini MK12 [1968-69]  
Ginetta G-18 [1969-70], G-18B [1971]  
Hawke DL2 [1969] DL2A [1970] DL2B [1971] DL9 [1972] DL9A  
[1972]  
Le Grand MK10 [1969-72]  
Lola T200 [1970] T202 [1971] T204 [1972]  
Lotus 31 [1967] 51 [1967] 51B [1968] 51C [1969] 61M [1970-  
72] 61MX  
[1972] 69 [1971-72]  
Macon MR7B [1969] MR8 [1969-70] MR8B [1971]  
March 709 [1970] 719 [1971] 729 [1972]  
McNamara FFA [1970]  
Merlyn MK11 [1968] MK11A [1969] MK17 [1970] MK17A [1971]  
MK20 [1971] MK20A  
[1972]  
Mirage MK5 [1970]  
Mistrale [1969-70]  
Nike MK4 [1968-69] MK6 [1970] MK10 [1971-72]  
Royale RP2 [1969] RP3 [1970] RP3A [1971-72] RP16 [1972]  
Tecno FF [1970]  
Titan MK4 [1969] MK5 [1969] MK6 [1970] MK6A [1971-72]  
MK6B [1972]  
Winkleman WDF1 [1969] WDF2 [1970] WDF3 [1971] WDF4  
[1972]

Any otherwise eligible Formula Ford not on the Monoposto Eligibility List may be considered for eligibility upon application to the Monoposto Board by the car owner.

## **II. ENGINE**

Detailed engine rules are included in the appendix at the end of this specification. In short, they are the 2015 SCCA GCR Kent and Cortina engine rules.

## **III. TRANSMISSION**

Any transmission may be used with not more than four forward speeds and an operational reverse.

## **IV. FINAL DRIVE**

Any final drive may be used except:

- a. drive shall be to the rear wheels only;
- b. limited slip and locked differentials are prohibited.

## **V. CLUTCH**

The use of any single plate clutch is permitted provided no modification is made to the flywheel other than changing the points of attachment of the clutch to the flywheel. Flywheel may be modified to accept a single plate sintered metallic clutch [e.g., AP Borg and Beck, Tilton, etc.] providing no other regulations are broken. Carbon fiber clutches are not permitted.

## **VI. CHASSIS**

The chassis shall be of tubular steel construction with no stress bearing panels except the undertray and a single transverse bulkhead. The curvature of the undertray shall not exceed one inch. The tubes may be used to transport liquid [oil or water] unless specifically prohibited by current general competition rules in the region. Monocoque construction is prohibited. With the exception of safety related tubing [6" maximum length], no modifications from the original are allowed.

## **VII. SUSPENSION AND RUNNING GEAR**

All components shall be of steel with the exception of hub adaptors, rear hub carriers, bearings and bushings. Wheel spacers shall not exceed 1.5". Shock absorbers are free except that they shall not be more than two-way adjustable and shall not have remote reservoirs.

Aluminum shock bodies are allowed. Rubber donuts must be retained on rear half-shafts unless car owner can prove that constant velocity [CV] joints were used on the car originally. All historic Formula Fords must use donuts in the driveline except for those specific cars that have demonstrated their use in their racing design and history and have received exemption from the President, Monoposto Racing or his designee.

## **VIII. BODY**

No part of the frame or body shall project beyond a plane connecting the vertical centerlines of the front and rear tires.

Detailed exhaust requirements are spelled out in Appendix I.

The driver's seat must be capable of being entered without the removal or manipulation of any part or panel.

Wings [airfoils] are prohibited.

## **IX. BRAKES**

Free, except the restriction to cast iron calipers and iron discs. The addition of cockpit adjustable brakes bias systems is prohibited unless it can be proven to be period authentic on any particular historic Formula Ford.

## **X. WHEELS**

Wheels shall be 13" pressed steel disc type with a maximum width of 5.5". Wheels must be made of steel, but the offset may be altered.

## **XI. TIRES**

Monoposto Racing Historic Formula Fords will use only the following:

Front: Dunlop 135/545-13 CR82 9092 Formula Ford or

Avon 5.0/22.0-13 A29 14297

Hoosier VFF 44165, 135/545-13

Rear: Dunlop 165/580-13 CR82 9092 Formula Ford or

Avon 6.5/23.0-13 A29 14298

Hoosier VFF 44170, 165/580-13

For Dunlops only the 9092 compound is allowed [476 not allowed].  
For Avons only the A29 compound is allowed. It is not permitted to mix the tire brands. Additional grooving or hand-cutting is not allowed. Rain tires are not allowed.

## **XII. MINIMUM WEIGHT**

The minimum weight is: 925 lbs. [as qualified or raced without driver].  
Note: This is approximately 5% above the original rules. The intent is to encourage the use of all safety related items.

## **XIII. FUEL TANKS**

All fuel tanks must be properly secured. The original elastic cords are in most cases inadequate. Fuel cells are required. They must be of a type approved by CASC, SCCA, FIA, IMSA, etc. for road racing. Tanks must be in the original location or, if relocated, be entirely within the chassis frame.

## **XIV. ORIGINAL SPECIFICATIONS**

All Historic Pre-1973 Formula Fords must compete in the identical specification as manufactured. Updates and modifications, however "period" they might appear, are specifically prohibited. Relocation of suspension pickup points, alteration of wheelbase or track are examples of prohibited modifications. All body panels originally supplied with the model, with the exception of the engine undertray, must be used. They must be the original shape. The car must be restored to the original period specs, unless otherwise approved in writing.

# **Appendix I**

## **Engine Specification**

**12. Kent Engine**

**a. General**

1. Components shall not be interchanged between the Kent and Cortina versions of the engine unless specifically authorized.
2. The engine shall not be altered, modified, or changed in any respect unless specifically authorized herein. When a system is specified to be "unrestricted" (e.g. paragraphs p and q), the restrictions of this paragraph do not apply.
3. The gasket face of the cylinder head may be resurfaced provided the maximum compression ratio is not exceeded.
4. Valve guides are unrestricted provided the position of the valve is not changed. Standard Ford replacement valves, with oversize stems, may be used as normal repair/maintenance procedures. The specifications, in 12.f are mandatory. It is permitted to re-cut or replace valve seats. Valve seat angles are unrestricted.
5. Exhaust emission control, air pumps, and associated lines and nozzles shall be completely removed. When these air nozzles are removed from a cylinder head, the holes shall be completely plugged.
6. Balancing of all moving parts of the engine is permitted. The pistons, rods, crankshaft, and flywheel may be lightened to their stated minimum weights. It is permitted to polish parts of the engine providing the contour of the part is not altered and can be recognized as the original part. Pistons may be balanced to the minimum weight by removing weight from the pin boss, the underside of the piston crown, or the bottom edge of the skirt. "Gas porting", re-profiling, or any other modification to the piston, other than expressly permitted herein, is prohibited. Knife-edging the crankshaft throws is not permitted.
7. Compression Ratio  
Maximum compression ratio: 9.3 to 1  
The following specifications are used in determining compression ratio:
  - A. Maximum bore size: 3.200"
  - B. Minimum cylinder volume at Top Dead Center: 42.0cc
  - C. Maximum valve protrusion from head surface: .040"
  - D. Only approved head gaskets may be used (see 12.c.3)

**b. Block**

1. Bore may be enlarged for clearance between cylinder and piston.
2. Cylinder sleeves may be fitted. The top surface of the block may be milled or surface ground to obtain the maximum compression ratio specified above. Any steel center main bearing cap may be used. The oil pump mounting face on the block may be machined for the purpose of fitting an oil pump.
3. The 1600 Fiesta block is permitted as a replacement part.
4. The Ford Racing block, part number M-6010-16K, is permitted as a replacement part.

**c. Cylinder Head**

1. Ports may be reshaped by the removal of metal as long as the port diameter at the manifold face of the head does not exceed the following dimensions:

Inlet:	1.50"
Exhaust:	1.20"
2. The use of the Pierce aluminum cylinder head is permitted.
3. The following head gaskets are allowed:
  - A. Ford Part # 931M6051AA
  - B. Payen Part # AH-750
  - C. Felpro Part # 8360PT-1

**d. Inlet Manifold**

1. The ports may be reshaped by the removal of metal as long as the following dimensions are maintained:  
Maximum dimension at head face: 1.340"
2. Carburetor Flange-

Maximum dimensions at carburetor flange: see Figure 1.

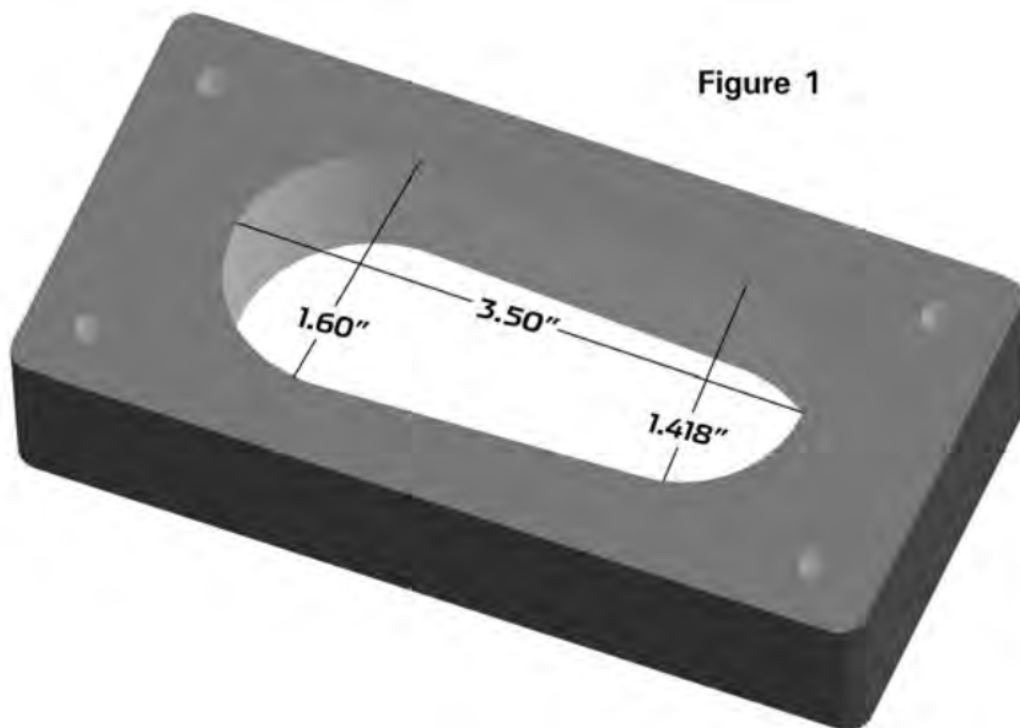


Figure 1

3. The carburetor face of the inlet manifold may be machined to the horizontal to compensate for fore/aft tilt of the carburetor.
4. Epoxy exposed in the manifold used to make repairs is acceptable, providing the total area is less than 0.75 square inches.
5. The water passages in the inlet manifold may be plugged. Holes in the inlet manifold resulting from the removal of emission/vacuum lines shall be plugged.

**e. Pistons**

1. Standard or 0.005 inch oversize pistons shall be used.
2. Standard size AE pistons P/N 18649, casting P/N 18634, standard size CP piston, part # 81-2 FF1600, or CP oversize piston, part # 81-2- FF1600+5 may be used.
3. Alternate piston identified as follows is allowed: P/N AE-M717D, casting number 711 M 6110. AE Hepolite P/N 20552, Casting # 20548A. Note: Mahle pistons are not allowed.

4. Dimensions and Weights

Maximum diameter:	3.187"
Standard:	3.192"
0.005" o/s:	
Depth of bowl:	0.470" (minimum)
Maximum diameter of bowl:	2.44" AE Hepolite, 2.50" CP Piston
Centerline of wrist pin to crown:	1.702" +/- .002"
Overall height:	3.30" AE Hepolite 2.80" CP Piston
Minimum weight:	515 grams (w/ clips, pins and rings)
Weight of pin:	115 +/- 2 grams
Ring Groove Widths:	Top Groove: 0.064" 2nd Groove: 0.0795" Oil Groove: 0.159"

5. Piston rings are unrestricted provided that:
  - A. One oil control and two compression rings are used.
  - B. No modification is made to the piston for the installation of rings.



- C. Pocketing of the piston valve reliefs is allowed up to a maximum of .050" to obtain the maximum combustion chamber volume.
6. Wrist Pins are unrestricted provided that:
- Weight is 115 +/- 2 grams.
  - No modification is made to the piston for the installation of the wrist pins.

**f. Valves**

1. Dimensions Distance apart at centers

	Iron head	Alloy head
Distance apart at centers	1.540" +/- .020"	1.570" +/- .020"
Max. diameter:	Inlet: 1.560"	
	Exhaust: 1.340"	
Overall length:	Inlet: 4.367" +/- .020"	
	Exhaust: 4.355" +/- .020"	

- Reshaping of the valves is specifically prohibited.
- Alternate valve AE p/n V34524 (intake), V34525 (exhaust) are permitted.

**g. Camshaft**

- Regrinding camshaft lobes is permitted, providing they are ground to meet FORD and SCCA profile.
- Camshaft Lobe Centers: 109° +/- 2°
  - Lift at top of pushrod:
    - Inlet: 0.231" +/- .002" Maximum
    - Exhaust: 0.232" +/- .002" Maximum
  - Lift at spring cap: (Valve Lift)
    - Inlet: 0.356" Maximum
    - (Zero tappet setting)
    - Exhaust: 0.358" Maximum
- Recontouring of the valve stem contact pad of the rocker arm is permitted, provided the maximum lift at the spring cap is not exceeded
- Offset camshaft/sprocket dowels are permitted.
- Camshaft profile and lobe centers shall be checked using the official procedure published by SCCA.
- A camshaft that is a replica of the original camshaft and of the same material may be used.

**h. Valve Springs**

Valve springs and valve spring shims are unrestricted, except that:

- Springs and shims shall be made of steel.
- No more than one spring shall be used per valve.
- Conically wound springs are not allowed.
- The standard spring cap and retainers shall be used.

**i. Pushrods**

Minimum stem diameter:	0.25"
Overall length:	7.64" Minimum
Minimum weight:	50 grams

**j. Connecting Rods**

Any ferrous connecting rod may be used provided it meets a minimum weight of 630 grams and has a center-to-center length of 4.925 +/- 0.020 inches. (Note: Weights include cap, bolts, and small end bush, but not big end bearing shells).

**k. Crankshaft**

An alternate cast steel crankshaft meeting original Ford Kent and SCCA dimensions and weight is permitted.

Weight:	24 lbs. 8 oz. Minimum
Max Stroke (at piston):	3.056" +/- .004"

Crankshaft pulley: unrestricted

The crankshaft from the Cortina engine may be used. The crankshaft from the Fiesta engine may be used. The crankshaft may be shot-peened.

**I. Flywheel**

1. Weight with ring gear: 15.5 lbs minimum.
2. The flywheel may be machined to reduce weight to the above minimum weight. Flywheel locating dowels are permitted.
3. Weight may be added to the flywheel, providing it is added ONLY to the existing clutch bolt holes, i.e., single cap screws or set screws. No continuous material shall be used.
4. An alternate flywheel, part # JAE1600 is also allowed at the above weight of 15.5 lbs.

**m. Carburetor**

Weber 32/36 DGV or Holley 5200

Venturi diameter: Primary: 26mm  
Secondary: 27mm

It is permitted to:

1. Fit any jets (including accelerator pump discharge nozzle) as long as no modifications to the carburetor body are required.
2. Modify or substitute the external throttle linkage.
3. Fit internal and/or external surge pipes.
4. Remove the air cleaner
5. Fit velocity stacks
6. Remove the choke butterflies and linkage.
7. Use an alternate carburetor gasket provided it is the same thickness as the original gasket and doesn't exceed the manifold opening dimensions
8. Modify the carburetor housing for the installation of throttle shaft bearings provided the modification serves no other purpose.

**n. Fuel Pump**

Unrestricted

**o. Exhaust Manifold**

Unrestricted

**p. Lubrication System**

Lubrication system is unrestricted; any oil pump and oil sump permitted; dry sump is permitted. Localized machining of the cylinder block is permitted to allow fitting of the oil pump. Dry sump system is permitted.

**q. Cooling System**

Cooling system is unrestricted. Any radiator, fan, water pump and drive belt permitted. Pump/fan/generator drive belt: Unrestricted

**r. Electrical Equipment**

Distributor: Distributors are unrestricted provided the original drive, location, and housing are retained. The distributor is defined as the component that triggers the LT current and distributes the HT 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. The vacuum advance mechanism may be removed, and the distributor advance plate may be secured by soldering or welding or by suitable fasteners. The advance curve and advance springs are unrestricted. Generators/ Alternators: not required. All other electrical components are unrestricted.

**s. Miscellaneous**

## 2015 SCCA GCR Engine Specification

1. The timing chain/sprocket cover may be altered or replaced.
2. The use of the following non-standard replacement parts is permitted provided their use does not result in any unauthorized modification of any other component:
  - A. Fasteners - nuts, bolts, screws, studs, etc. Intake manifold fasteners may be of either a socket head or hex head configuration, and must be 5/16" diameter.
  - B. Gaskets, except head gasket.
  - C. Washers.
  - D. Seals.
  - E. Connecting rod, crankshaft, and camshaft bearings of the same size and type as original. Normal oversize/undersize bearings are permitted. This does not allow reducing the bearing surface area by reducing the width of standard bearings.
  - F. Spark plugs.
  - G. Rocker pedestals that are of the same material and dimensionally identical (i.e., shaft location, offset, etc.) to the original components may be used.
3. Mechanical tachometer drive is permitted.
4. The crankcase breather may be altered or removed.
5. The standard rocker cover may be altered to provide for crankcase ventilation, and the filler cap may be altered or replaced. Valve or rocker covers may be substituted, provided that the replacement cover affords no additional function than that of the original stock cover. (relocated text from 8 below)
6. The crankshaft and main bearing caps may be treated with salt-bath nitriding cover under SAE specification AMS 2755A (tuffriding, etc.)
7. Any oil or lubricants may be used.
8. Water pump, fan, and generator/alternator pulley(s) are unrestricted.
9. Exhaust Outlets  
Exhaust outlets on cars registered after January 1, 1986 shall not extend more than 60 cm (23.60") behind the centerline of the rear axle and shall be positioned between 10 cm (3.9") and 60 cm (23.6) from the ground, measured to the bottom of the exhaust pipe.  
Exhaust Outlets: Cars registered prior to January 1, 1986.
  - A. It is recommended that all exhaust outlets be no longer than 60cm (23.60") behind the centerline of the rear axle and positioned between 30cm (11.8") and 60cm (23.6") from the ground.
  - B. For cars unable to comply with the above rule (A.), they shall have a support bracket that attaches within six (6) inches of the outlet end, and the support bracket shall extend no more than thirty (30) degrees from vertical to the rear. Beginning January 1, 1986, it is mandatory for all Formula F cars.

**13. Cortina Engine**

All of 12 applies to the Cortina engine except as specified in this section. Components shall not be interchanged between the Kent and Cortina versions of the engine unless specifically authorized.

**a. Compression Ratio**

Maximum compression ratio: 10.0 to 1. The following specifications are used in determining compression ratio:

- 1.64cc - top ring to top of piston
- 5.60cc - head gasket.

Minimum unswept volume per cylinder:

- 44.4cc (original engine with standard pistons)
- 45.1cc (original engine with .030" o/s pistons)

**b. Block**

The 1600 Pinto block, P/N DIFZ-6010-C, may be used as a replacement for the Cortina block; Standard Pinto tappets, P/N DORY 6500A and DIFZ 6500A may also be used when this block is used as a Cortina replacement.

**c. Cylinder head**

Ports may be reshaped by the removal of metal as long as the port diameter at the manifold face of the head does not exceed the following dimensions:

- Inlet: 1.50" Exhaust: 1.16"
- Combustion chamber:
  - Minimum depth 0.115"
  - Maximum length: 3.15"

Minimum volume per cylinder: 7.8cc

Reshaping is prohibited.

Ford Pinto cylinder head P/N DORY 6049B is permitted.

**d. Inlet Manifold**

The ports may be reshaped by the removal of metal as long as the following dimensions are maintained:

Maximum size at head face:

- Cyl. 1 & 4: 1.48" x 1.28"
- Cyl. 2 & 3: .25"
- Maximum size at carburetor flange: 3.060" x 1.389"
- Maximum width: 3.80"
- Primary choke end radius: .709"
- Secondary choke end radius: .787"

**e. Pistons**

Standard, 0.015 inch oversize or 0.030 inch oversize pistons may be used.

- Piston Maximum diameter:
  - Standard: 3.189"
  - 0.015" o/s: 3.204"
  - 0.030" o/s: 3.219"
- Depth of bowl: 0.500" +/- .005"
- Minimum volume of bowl: 31.5cc
- Maximum diameter of bowl: 2.28"
- Centerline of wrist pin to crown: 1.737" +/- .002"
- Overall height: 3.30"
- Minimum weight
  - w/rings & pin: 485 grams
  - Weight of pin: 115 +/- 2 grams

Wrist Pins are unrestricted provided that:

No modification is made to the piston for the installation of the wrist pins

**f. Valves**

Distance apart at centers: 1.540" +/- .020"

Max. diameter:

Inlet: 1.502"

Exhaust: 1.252"

Overall length:

Inlet: 4.280" +/- .006"

Exhaust: 4.260" +/- .006"

**g. Crankshaft**

Weight: 23 lbs. 8 oz. minimum

The crankshaft from the Kent engine may be used.

**h. Carburetor**

Weber 32 DFM or DFD or Holley 5200

Venturi Diameter:

Primary: 26mm

Secondary: 27mm