

# **MONOPOSTO RACING**

## **Class Specification**

### **Club Formula Ford**

**December 2016**

# 1973-1981 Club Formula Ford

## I. DEFINITION

A class for single seat, open wheel race cars manufactured and raced from 1973 through 1981 by private owners, using the standard Ford 1600 crossflow, pushrod engine. The following commercially constructed cars are eligible:

ADF – Mk II  
Alexis – MK23/24/24B  
Caldwell – DL15FF and DL9 made in 1975  
Crossle – 25F/30F/32F/35F/40F/45F  
Dulon – MP15/17/19/21  
Eagle – DGF  
Elden – PRH10/17/19/20, HD24  
Elfin -620  
Hawke – DL11/12/15/17/19  
Hermes – 16/79, 16/80  
Huron – FP2  
HR2760  
Gemini - 1981  
Image – FF2/2B/3/4/5  
Javelin – JL2/5  
Legrand – MK13/13B/21/27  
Lola – T340/342/440/540  
Merlyn – MK24/25/28/29/30/31  
PRS – RH02, 81F  
Reynard – 73F/76F/77F/78F  
Rostron – RT 77/78  
Rowland – 1975/76 RP, RP 24-77, RP26-78  
Royale RP21/24/26  
Sark 2  
Sparton – FF78  
Titan – MK8/9  
Tiga – FF75F/76F  
Van Diemen – RF 73/74/75/76/77/78/79/80/81  
Viking – None  
Winkleman (became Nomad-Palliser) – KHF/1 (WDF4), KHF/2 (WDF5/6)  
Zink – Z-10, Z-16  
Zeus – FF81

Any otherwise eligible Club Formula Ford not on the MR Eligibility List may be considered for eligibility upon application to the MR President or his designee, by the car owner. Club Formula Fords will comply with the rules specified in the Monoposto Racing Rules and Regulations for Pre-1973 Historic Formula Fords (hereafter referred to as HFF Rules) and general rules specified in the Monoposto Racing Rules and Regulations with the following exceptions and clarifications:

## **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:

1. drive shall be to the rear wheels only;
2. 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**

Monocoque chassis construction is not permitted.

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

Shock absorbers are free with the exception that they may not be more than two-way adjustable and external reservoirs are not allowed. CV joints are permitted. At a minimum, one end of the car shall have outboard suspension.

## **VIII. BODY**

The body shall conform to the original design. Alterations made to improve safety and competitiveness are permitted.

Detailed exhaust requirements are spelled out in Appendix I.

## **IX. BRAKES**

Cockpit brake bias adjusters are permitted.

## **X. WHEELS**

Wheels shall be 13' with a maximum width of 5.5". Wheel covers, wheel faces or any device to fair in wheels are prohibited. Wheels must be metal (steel, aluminum, magnesium...).

## **XI. TIRES**

Monoposto Racing Club 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 tire brands. Additional grooving or hand-cutting is not allowed.

Rain tires are not allowed.

## **XII. MINIMUM WEIGHT**

The minimum weight is 950 lbs. [as qualified or raced without driver].

## **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 Club Formula Fords must compete in the specification as manufactured and raced. Updates and modifications which were made during the life of the car to improve its competitiveness and safety are permitted. However, the racer, if challenged, must be able to demonstrate that these changes were in compliance with the SCCA GCR's in effect during its racing history.

#### **XV. PRESENTATION**

Club Formula Fords shall be presented with a clean and finished appearance in keeping with the spirit of vintage racing.

# **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

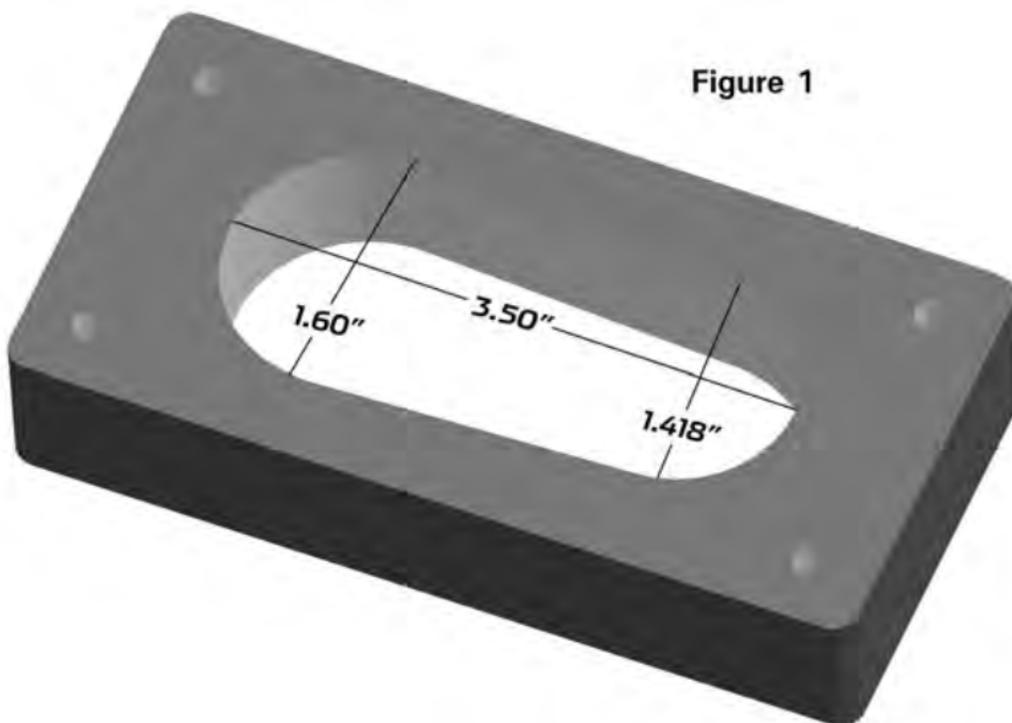
1. Ports may be reshaped by the removal of metal as long as the port diameter at the manifold face of the head does not exceed the following dimensions:

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.



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:
- A. Weight is 115 +/- 2 grams.
  - B. 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"	

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

**g. Camshaft**

- 1. Regrinding camshaft lobes is permitted, providing they are ground to meet FORD and SCCA profile.
- 2. 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
- 3. Recontouring of the valve stem contact pad of the rocker arm is permitted, provided the maximum lift at the spring cap is not exceeded
- 4. Offset camshaft/sprocket dowels are permitted.
- 5. Camshaft profile and lobe centers shall be checked using the official procedure published by SCCA.
- 6. 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:

- 1. Springs and shims shall be made of steel.
- 2. No more than one spring shall be used per valve.
- 3. Conically wound springs are not allowed.
- 4. 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"



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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