

# **MONOPOSTO RACING**

## **Class Specification**

### **Formula Vee**

**December 2016**

# VINTAGE FORMULA VEE

These rules describe and specify Formula Vee racing cars as they raced in the 1969 racing season. This is a vintage racing class; the cars shall be presented and raced substantially as they might have been in 1969.

## I. DEFINITION

Vintage Formula Vee is a class for single seat racing cars based on components from the standard Volkswagen 1200 series Type I, U.S. model sedan, as originally manufactured and imported by VW from 1961 to 1965. Since it is a restricted class, all allowable modifications are stated herein. Any Formula Vee manufactured prior to January 1, 1976, is eligible for Monoposto Racing Formula Vee provided it complies with the following rules as used in 1969:

A. No component of the engine, power train, front suspension, or brakes shall be altered, modified or changed, nor be of other than VW manufacture, unless specifically authorized herein.

B. The bodywork is the original bodywork, or is substantially identical to the bodywork installed when the car was originally manufactured.

C. The car must originally have been manufactured two springs and two shocks as the supporting devices for the rear suspension.

D. There must be a VW fan shroud, working fan and working charging system as described in paragraphs below.

E. Minimum weight, as qualified or raced without driver, is 825 pounds, wheelbase is minimum 81.5"; maximum 83.5" and track is front 51.4"; rear 50.7" [standard VW sedan]. A small tolerance is allowed for cars using the permitted 4.5 inch rims. Overall length is minimum 123" and maximum 127" with the body depth at firewall: minimum 25" and maximum 34".

## II. ENGINE

The engine shall be a standard VW 1200 powerplant, based on part numbers 111-100-021 and 113-100-025, and a 1192 cubic centimeter

displacement. Any part listed by manufacturer as a current superseding part for the standard VW 1200 series, Type 1, U.S. model sedan and interchangeable with the original parts may be used. Engine components shall be assembled in standard configuration. Exceeding the wear limits specified in the VW manual or in other official VW guides is not prohibited provided that the specifications, tolerances and dimensions specified in these rules are not exceeded. Balancing of all moving parts of the engine is allowed provided such balancing does not remove more material than is necessary to achieve the balance except on those component parts where minimum weights are herein specified.

A. 1192 cc engine dimensions: engine bore: 3.040; stroke 2.520, exhaust valve diameter: 1.102 or 1.18; intake valve diameter: 1.18 or 1.24, minimum capacity of one combustion chamber in head: 43.0 cc; minimum depth, top of cylinder barrel to top of piston: 0.039.

B. The following component parts may be replaced with those of other manufacture, provided such part is of the same material, is dimensionally identical, and meets all other tolerances and specifications stated in these rules.

1. engine case [the universal replacement case is permitted];
2. cylinder heads;
3. cylinders [an O-ring for centering is permitted; and the top or bottom may be shaved to achieve legal deck height];
4. pistons and wrist pins: minimum combined weight without clips or rings = 330 grams;
5. cam followers: minimum weight = 60 grams;
6. connecting rods with bolts and small end bushing: minimum weight = 440 grams;
7. oil pump - exact replica of any standard VW pump [not limited to pumps for the 1200 engine]. [An oil pump with fittings for an external oil filter may be used.]
8. distributor [a centrifugal advance distributor intended

for a VW engine other than a 1200 may be used], ignition points and distributor cap; pointsless electronic ignitions may be used along with standard coils, such as pertronix or equal.

9. fuel pump - any standard VW fuel pump which can be fitted without modification of any other part;

10. push rods, push rod tubes and fan belt A;

11. crankshaft - [minimum weight sixteen pounds] and crankshaft gear.

### C. Allowed modifications to standard VW practice:

#### Carburetor and Intake Manifold

1. Fitting a 28 PCI or 28 PICT carburetor and any size venturi or jets that may be fitted without alteration to the carburetor body. The removable venturi in the 28 PC1 may be machined to any dimension, but must be in the standard position. The carburetor may be rotated 180 degrees about its axis. Modification of the float is allowed as long as no change is made to the float chamber or the float valve.

2. Removal of the carburetor air cleaner and choke mechanism, use of an air horn, and use of any air filter that clamps onto the carburetor or the air horn.

3. Matching of manifold flanges and removal of the manifold heat riser tube.

#### Exhaust System

Replacement of the standard exhaust system with a separate exhaust pipe of constant diameter to each cylinder terminating 1-3" behind the rear most part of the body. Two-into-one and four-into-one collectors are also allowed, within the same dimensions. The outlet from the collector may be flared.

#### Crankcase, Clutch and Flywheel

1. The crankshaft may be ground and the case may be machined to accommodate the use of factory

oversize/undersize crankshaft bearings, provided the crankshaft location is not changed. It may also be machined to permit installation of camshaft bearings.

2. Lightening of the flywheel to a minimum 12 pounds.
3. The crankshaft pulley may be replaced with a degreed pulley of standard VW dimensions.
4. The use of any VW clutch [or exact replica] as fitted to the standard VW sedan as defined herein. The heavy duty "Transporter" clutch and pressure plate are permitted. The standard clutch operating arm may be modified to allow its attachment in any appropriate position. Throwout bearing and actuation [cable, levers, or hydraulic] are free.

#### Electrical System

1. Fitting of any standard VW distributor [or replica; see paragraph II.B. on page 3].
2. The fan belt may run at any desired tension.
3. Either a 6 volt or 12 volt electrical system may be used. The generator, armature, brushes, and voltage regulator must all be in place and functioning. Nothing must be done to interfere with the normal battery charging function of the generator.

#### Lubricating System

1. The installation of baffles housed completely within the original oil sump and crankcase.
2. The use of a wet oil sump. The oil pump pickup may be extended into the sump extension.
3. The use of one standard automotive type oil filter of not more than one quart capacity, and a suitable mounting bracket and bypass valve. Oil lines shall not exceed 12 feet in total [both lines] length. The lubrication system may be modified to facilitate installation of the filter, except the standard oil cooler shall be retained in place. Cooling fins are not permitted on component.
4. The use of any standard VW oil pump or replica [see

paragraph II.B. on page 3].

5. Replacement of oil galley plugs with threaded plugs.

### Cooling System

1. Any cooling fan from a Type 1 VW, 1192 or 1131 cc, may be used [sixteen blade minimum].
2. Removal of cooling duct components other than the fan shroud and the 2 sheet metal cylinder covers.
3. Only the standard oil cooler is permitted. No external oil cooler.

### Ports and Valve Train

1. Polishing of the intake and exhaust ports, provided such polishing does not enlarge the exhaust port beyond 33 mm inside diameter and the intake port beyond 29 mm inside diameter. The measurement shall be taken at the juncture of the seat material and the aluminum port material and at the manifold face. Valve seat angles shall be machined as specified in the official VW workshop manual.
2. The use of valve spring shims provided the fitted length of the spring is not less than the standard dimension.
3. A VW "D" camshaft, or an exact replica, as specified in the SCCA GCR. Camshaft timing may be changed in relationship to the crankshaft by utilizing an offset key at the crankshaft gear.
4. The timing gears, their fasteners, and their fastener holes shall not be altered, nor the shims at the rear of the crankshaft altered from standard VW practice, in order to achieve greater camshaft timing retard.
5. Non-VW exhaust valves are allowed provided the dimension and materials are the same as standard VW exhaust valves. Intake valves shall be standard VW. Valves shall not be re-profiled.
6. Rocker arm wave type spacer washers may be replaced by solid steel type flat washers of suitable thickness.

7. Use of either 1200 cc or 1300 cc VW rocker arms, or exact replacements. They may be lightened to a minimum weight of 80 grams.

#### D. Miscellaneous

Use of the following non-standard replacement parts is permitted provided that no unauthorized modification of any other component results: any fasteners [nuts, bolts, screws, etc.]; wiring; gaskets and seals; fuel line; spark plugs [maximum 1/2 inch reach]; piston rings; fan belt; and connecting rod bearings, camshaft bearings, and crankshaft main bearings, provided the bearings are of the same type and size as VW standard or oversize bearings.

### **III. BRAKES**

A. Brake drums, backing plates, brake shoes, and wheel cylinders shall be standard 1192 VW sedan or exact replacement parts. Ribbed-type rear brake drums [part number 113-501 615 D or F] may be used in place of the 1200 series rear brake drums.

B. Any type lining material may be used on the standard brake shoes.

C. The car shall be equipped with a dual braking system operated by a single control. In case of a leak or failure at any point in the system, effective braking power shall be maintained on at least two wheels.

D. A separate hand brake is not required. Removal of the hand brake and operating mechanism is permitted.

E. Brake lines may be of any suitable material, including steel braided lines.

### **IV. SUSPENSION**

A. The front suspension shall be standard VW sedan prior to serial number 116,000,001, or an exact replica and dimensionally identical. The following modifications are permitted:

1. Removal of one torsion bar and modification of either or

both torsion bars.

2. The use of any anti-sway bar or bars, mounting hardware, and trailing arm locating spacers. The anti-sway bar fitted as part of the standard suspension may be removed.

3. Use of any shock absorber that can be mounted on the standard mounts, except coil-overs. Shock absorbers shall be maximum two-way adjustable and shall not have remote reservoirs.

4. Mounting the shock absorbers behind the vertical shock absorber mounting fixture is not permitted.

5. Relocation of the steering box to a central position on the torsion bar tube, and replacement of the tie rods with others of a suitable length. VW ball joints may be replaced with rod ends.

6. Steering column may be altered and any steering wheel may be used. A detachable steering wheel hub may be fitted.

7. Use of any desired type of steering arm.

8. Linkpin bushings may be bored at an angle to permit the wheels to run at negative camber.

9. Any wheel bearings that fit the VW sedan spindles and brake drums without modification may be used.

B. The rear suspension shall be of the "single trailing arm" type, with two coil springs and two telescopic shock absorbers providing the springing medium. Camber control devices may be used.

## **V. WHEELS AND TIRES**

A. Wheels shall be standard 1192 cc VW sedan [4"], slotted 1300 sedan [4"], or standard [non-offset or reversed] 4.5" chrome VW sedan.

B. Any type and size of tire [radial, bias-ply or factory treaded racing] that may be safely fitted to the above specified rims may



be used. Slick, hand-grooved, special wet racing tires, or recapped tires are NOT allowed. Minimum overall rear tire diameter is 24 inches.

## **VI. TRANSMISSION AND REAR AXLE**

A. The transmission/rear axle assembly shall be standard 1192 cc VW, with the synchromesh components in place and operating on at least three forward gears. Reverse must be a functional working gear and operable from the driver's seat.

B. Installation of any standard VW gear set as listed in SCCA GCR which can be fitted without modification of any component of the transmission or of the gear itself, transposing the ring gear to provide proper axle rotation and alteration or removal of the shock absorber mounts is allowed.

## **VII. FRAME AND BODY**

A. The frame must be constructed of steel tubing and be of such design to present no hazard to either the driver or other competitors.

B. The body must fully enclose the engine and may not fair in the wheels or suspension. Air ducting may be utilized providing it is attached to the body or frame of the car. Ducting may not be made part of or attached in any way to the engine assembly. The body may be made of metal, aluminum, fiberglass, or any original material.