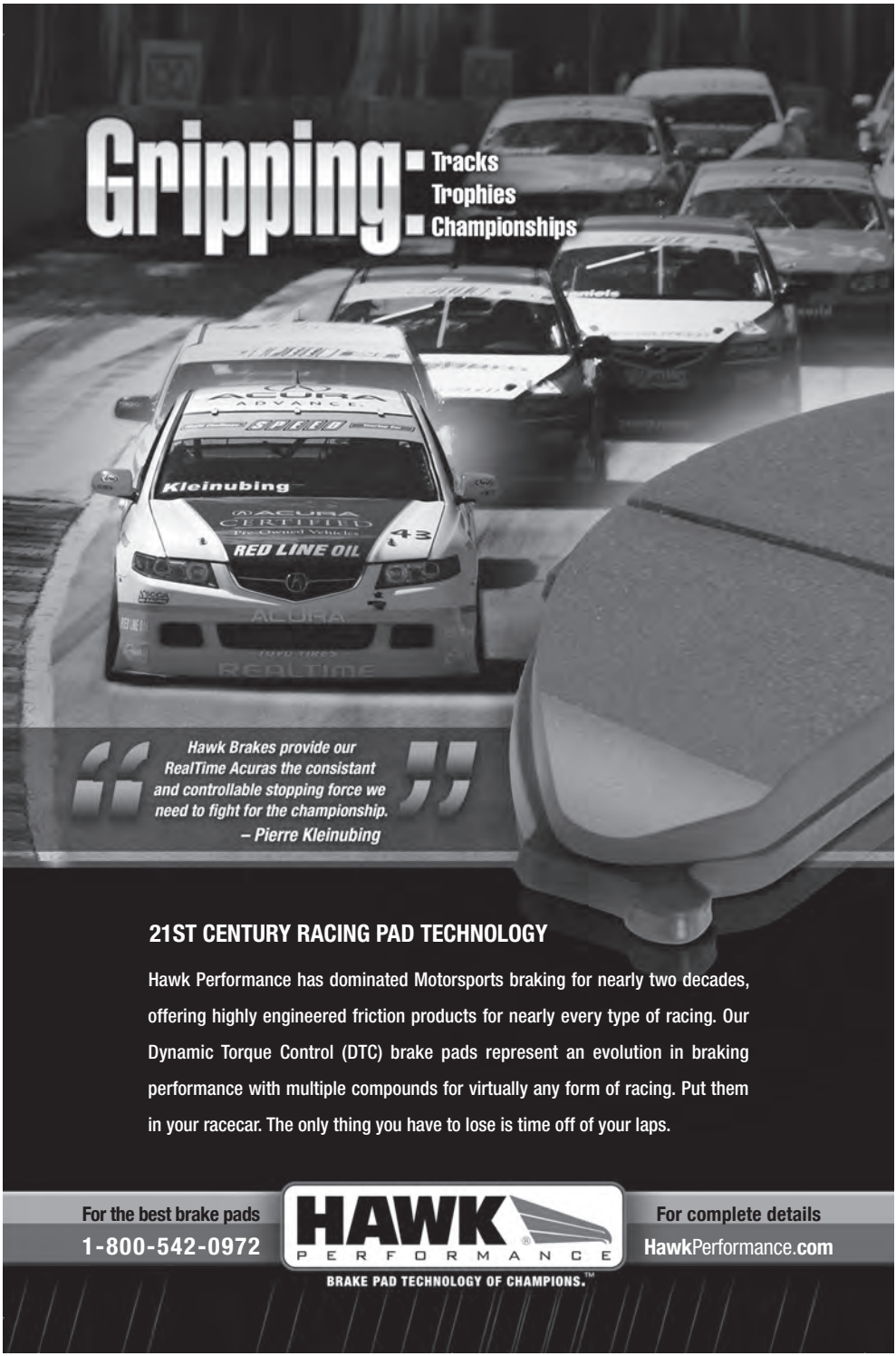

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9.1.1. FORMULA CATEGORY

These specifications are part of the SCCA General Competition Rules (GCR) and all automobiles shall conform with GCR Section 9.

The Formula Category is intended to provide the membership and interested manufacturers with the opportunity to compete in purpose built, highly modified open wheel single seat cars. The Club may alter or adjust specifications and require, permit, or restrict certain specific components to equate competitive potential.

A. FORMULA ATLANTIC PREPARATION RULES

Formula Atlantic is a restricted class. Therefore, any allowable modifications, changes, or additions are as stated herein. There are no exceptions.

New chassis of non-metallic composite construction shall be proven to meet FIA specifications for non-metallic composite chassis prior to being submitted to the SCCA for homologation. Contact the SCCA national office for a list of the relevant FIA specifications/SCCA requirements.

The SCCA shall publish Formula Atlantic Category Specifications containing the basic officially recognized specifications for each car eligible to compete in the Category during the calendar year. These classifications are listed in Table 2.

A.1. General

a. A single seat, four open-wheeled racing car with firewall, floor, and safety equipment conforming to GCR Section 9. Homologation is required for all cars registered after January 1, 1983.

b. Cars shall be equipped with on-board self starter controlled by the driver in a normal driving position.

c. The driver's seat shall be capable of being entered without the removal or manipulation of any part or panel except for a removable steering wheel and/or cockpit padding.

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

e. Superchargers or turbochargers are not permitted.

f. Power shall not be applied to more than two (2) wheels.

g. Bodywork:

1. No part of the bodywork and aerodynamic devices shall exceed in height a horizontal plane 90cm (35.4") above the ground. The safety roll bar/roll cage and the engine air box are not included in this height restriction. Measurements are to be made as raced with driver on-board.

2. The overall maximum width *of the bodywork* behind the front wheels shall not exceed 130cm (51.18 inches). The maximum width of any aerodynamic device situated behind the *rear wheels*, including the rear wing, shall not exceed 110cm (43.307 inches).

3. The bodywork ahead of the front wheels may be extended to

an overall maximum width of 150cm (59.055 inches) provided it does not extend beyond the outside of the front tires. Flexible or movable aerodynamic skirts are prohibited. No part of the body or suspended part of the car shall extend more than 1cm (0.394 inches) below the horizontal plane forming the bottom of the tub or chassis floor (both static or in motion).

4. Any part of the bodywork ahead of the front wheels exceeding an overall width of 110cm (43.307 inches) shall not extend above the height of the front wheel rims.

5. Any specific part of the car which has an aerodynamic influence on the stability of the vehicle shall be mounted on the entirely sprung part of the car and shall be firmly fixed while the car is in motion. Aerodynamic devices, including wings and end plates, shall not extend to the rear more than one meter (39.4 inches) from the centerline of the rear wheel hubs.

6. Neither the safety roll bar nor any of the units associated with the functioning of the engine or transmission shall have an aerodynamic effect by creating a vertical thrust.

7. The leading edge of an airfoil fixed to the front of the car shall not be sharp. Minimum radius -- 0.5cm (0.2 inches).

8. Cars registered with SCCA January 1, 1976, and after, shall be fitted with deformable structures per FIA regulations for Formula II as follows: Deformable Structure: The entire fuel tank area of the car licked by the airstream shall incorporate a crushable structure conforming to the following specifications. The term "licked by the airstream" is considered to define the complete external area of the body/monocoque construction irrespective of such added items as water radiators, inlet ducts, windscreens, etc.

   A. The crushable structure shall be a sandwich construction based on a fire-resistant core of minimum crushing strength of twenty-five (25) lbs./ square inch. Water pipes are permitted to pass through this core. The sandwich construction shall include two (2) sheets of 1.5mm (.060") thickness, one of which shall be aluminum sheet having a tensile strength of fourteen (14) tons/ square inch and a minimum elongation of five (5) percent.

   B. The use of a magnesium sheet will be authorized only if its thickness exceeds 3mm (.120").

   C. The minimum thickness of the sandwich construction shall be 10mm (.3937"). The fore and aft fuel tank area, however, shall provide for a crushable structure of at least 100mm (3.937") thickness at such crushable structure's thickest point. The position of this widest point to be at the manufacturer's discretion over a length of at least 35cm (13.78") after which it may be gradually reduced to 10mm (.3937").

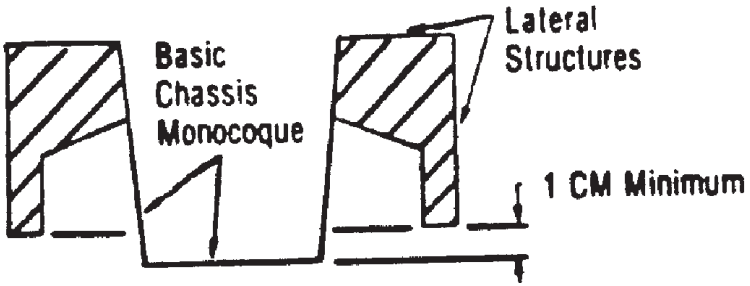
9. The minimum wheel diameter is thirteen (13) inches. Ex-FSV cars are permitted front wheel width: minimum six (6) inches, maximum eight (8) inches; rear wheel width: minimum eight (8) inches, maximum ten (10) inches. All other cars front wheel width: ten (10) inches; rear wheel width: minimum fourteen (14) inches, maximum fifteen (15) inches.

10. All cars with venturi section side pods (e.g. Ralt RT-4) shall

comply to the following rule. Aerodynamic devices shall comply with the rules relating to bodywork. Any part having an aerodynamic influence and/or any part of the bodywork and attachments to the bodywork shall be rigidly secured to the entirely sprung part of the car (chassis/monocoque), shall have no degree of freedom in relation to the entirely sprung part of the car (chassis/monocoque), and shall remain immobile in relation to the chassis/monocoque at all times. At any transverse section through the car from the rear edge of the front wheels to the forward edge of the rear wheels, no part of the car except the basic chassis/ monocoque structure shall be below a horizontal line situated 1cm (0.4") above the bottom of the chassis/ monocoque. This measurement will be taken without regard to bolt heads, rivets, etc.

Movable or hinged skirts are prohibited. Flexible sidepod skirts are allowed on cars which have their primary load bearing structure (tub) constructed of ferrous or non-ferrous alloys. No part of the bodywork or suspended part of the car between the front and rear wheels shall extend more than one (l) cm (.3937") below the horizontal panel forming the bottom of the chassis. Within the above restrictions, only wearable material (fiberglass, Kevlar, carbon fiber, high density polypropylene, Telflon, Lexan, or wood) may be attached to the side panels as a rubbing strip. Ceramics, plexiglass, plastic, and other materials which shatter or break-up causing hazardous track condition are prohibited.

The intention of this Section (9.1.1.A.1.g.10.) is to control ground effects on all cars by prohibiting "sealing" or bridging the gap between the bodywork and the road surface, and to do so in a uniform and consistent manner. Any means adopted to circumvent this intention shall automatically be regarded as a breach of these regulations.



h. Exhaust outlets shall be positioned not more than twenty-four (24) inches above the ground and shall not extend more than six (6) inches beyond the overall length of the car. In no case can the exhaust terminate more than 45.4" behind the centerline of the rear axle.

A.2. Engines

a. *Engines shall be derived from automobiles and may be prepared for competition in accordance with SCCA GT preparation rules, except as specified in the Table below.*

Note: If intake restrictors are specified, the restrictors shall be round orifices (unless otherwise specified) and located within four (4) inches of the throttle butterfly. Restrictors shall be a minimum 0.060" thick and of

the specified diameter.

The following engines are approved:

Table 1

Spec Line	Engine Series	Max. Displ. (cc)	Max. Valves / Cyl.	Notes	Req'd Restrictor	Min. Weight (lbs)
A	4 Cylinder 4 Cycle	1615	2		n/a	1160
B	4 Cylinder 4 Cycle	2135	2		n/a	1190
C	4 Cylinder 4 Cycle	1615	4		n/a	1230
D	4 Cylinder 4 Cycle	2500	2	Under 2000cc, unrestricted; under 2500cc, 33mm SIR required, except less than 9:1 CR, unrestricted.	See SIR requirement in Notes.	1230
E	4 Cylinder 4 Cycle	2500	4	Under 2000cc, 33 mm SIR required except under 10:1 CR, unrestricted; under 2500cc, 31mm SIR required except under 9:1 CR, unrestricted.	See SIR requirement in Notes.	1230
F	Mazda 12A Rotary	n/a	n/a	no peripheral port or bridgeport	n/a	1230
G	Mazda 12A Rotary	n/a	n/a	Bridgeport. One (1) auto-type 2 bbl carb or one (1) 2 bbl throttle body. Restrictors/ venturis shall be no more than 4 inches from the center line of the throttle butterfly shaft. All intake air shall pass through the required restrictors and the throttle body or carburetor body. Intake manifold for either carburetion or injection shall have individual runners connecting one throttle plate to one rotor, only. No balance tubes or other device shall connect runners between rotors.	36mm	1230
H	Mazda 13B Rotary	n/a	n/a	Streetport. One (1) 2-bbl auto-type carb or throttle body. Intake manifold shall have individual runners connecting one throttle plate/butterfly to one rotor, only. No balance tubes or other devices shall connect runners between rotors.	44mm	1230
I	Mazda 13B Rotary	NA	NA	Peripheral Port	38mm SIR	1230
J	Mazda Renesis Rotary	n/a	n/a	Porting not permitted. Unmodified OEM lower intake manifold required, upper manifold unrestricted. Balance tube not permitted. Apex seals unrestricted. Fuel injection only.	70mm Throttle Body.	1230

The following additional notes apply to all engine spec lines in this table.
Note 1: Add 25 lbs for sequential transmission.
Note 2: Add 25 lbs for fuel injection (except Volkswagen).
Note 3: Add 25 lbs for non-metallic chassis.

b. The following modifications are permitted.
   1. Any carburetor(s), fuel injection, or intake manifold(s), are permitted. Fuel injected engines shall use the specified intake restriction. Where Weber or Weber-type carburetors are specified and used, they shall retain their standard configuration of fuel distribution. This is to prohibit annular discharge carburetors.
   2. The use of any exhaust manifold(s).
   3. The use of any oil sump.
   4. The use of any oil pump(s).
   5. The use of a dry sump lubrication system.
   6. The *bore, crankshaft, stroke, and flywheel are unrestricted, providing the appropriate specified displacement limit is not exceeded*, unless restricted in the engine table above.
   7. Main bearing caps may be reinforced or substituted.
   8. The make and location of the ignition coil and condenser may be changed.
   9. Any distributor and/or transistor ignition may be used provided it's installation does not require any modification of the engine.
   10. Any make or type of spark plug may be used.
   11. The use of any starter is permitted provided it can be fitted without any modification to the engine.
   12. Substitution of the clutch and flywheel is allowed provided there is no increase in clutch diameter. The use of dowel pins is permitted.
   13. Any pistons and piston pins may be used.
   14. Any camshaft(s) may be used.
   15. Cam followers may be altered or substituted.
   16. It is permitted to lighten, balance, or modify in shape by tooling the standard or optional components of the engine, provided it is always possible to identify them positively as such. It is not permitted to add any material to the components unless specifically authorized.
   17. The use of any alternate engine components considered replacement parts such as seals, bearings, valve guides, nuts, bolts, studs, washers, and gaskets is allowed, provided they are of the same type and dimension. Bushings may be added where none are fitted as standard, provided they are concentric and that the centerline of the bushed part is not changed. Water and oil passages may be restricted or plugged. The substitution of valve springs, valve spring retainers, and keepers is permitted. Any pushrods may be used.
   18. Pulleys, including camshaft drive pulleys, may be altered or replaced with others of unrestricted origin. The use of any crankshaft vibration dampener is permitted.
   19. The compression ratio may be increased by machining, using any head gasket(s), or eliminating of head gasket(s).

20. The installation of any engine vent or breather is permitted.
21. Generator or alternator is unrestricted.
22. The use of any rocker arms or rocker arm supports.
23. Use of any connecting rod of the same basic material.
24. Valves are unrestricted in both size and material, provided the valve centerline is not altered.
25. Exhaust emission control air pumps, and associated lines and nozzles cannot be modified in any way except they may be completely removed. When these nozzles are removed from a cylinder head, the holes shall be completely plugged.
26. The use of any fuel pump(s) is permitted.
27. Valve or cam covers may be substituted.
28. Any external surface of the engine may be plated, painted, or anodized.
29. Engines produced with a cam carrier as a separate and distinct piece from the cylinder head or engine block may replace that cam carrier with a cam carrier of other manufacture, provided the replacement cam carrier affords no additional function other than the original cam carrier and provided the type and number of camshaft bearings remains the same.
30. The replacement of any jack shaft or idler shaft with another of the same basic material as the standard shaft is permitted, provided it performs no additional function over the original shaft.

A.3. Transmission

a. For all types of transmissions, no more than five forward speeds and an operational reverse gear shall be used.

b. The use of an automatic gearbox is prohibited.

c. All gear changes shall be initiated by the driver. Mechanical gear shifters, direct-acting electric solenoid shifters, air-shifters and similar devices are permitted. Electronically controlled differentials and devices that allow pre-selected gear changes are prohibited.

d. Gearboxes with shafts that are transverse to the longitudinal axis of the chassis are not allowed. The sole exception are the gearbox final drive (crownwheel) shaft axis and final drive shafts (half shafts). All change gears must be located in the case aft of the final drive.

Pro Formula Mazda Dimensions - Table 3	
Dimension (Refer to FC drawing)	**Measurement (cm)**
A. Maximum rear overhang from rear wheel axis "(not including the approved Star Mazda rear impact attenuator or the approved Star Mazda/Super Trapp Club Racing muffler assembly)	60
B. Maximum front overhang from front wheel axis	102
C. Maximum height measured from the ground	99 @ rear wing
D. Exhaust height measured from the ground	34-53
E. Maximum height of any aerodynamic device	35
F. Minimum safety rollover bar height inline with driver's spine	92
G. Minimum allowed helmet clearance	5
H. Maximum width	180
I. Maximum rear aerofoil width (includes endplates)	100
J. Maximum body width behind front wheels	132
K. Maximum nose width	**141**
L. Minimum cockpit opening	**37**
M. Minimum cockpit parallel opening length	**42**
N. Minimum cockpit overall opening length	**82**
S. Maximum exhaust length from rear wheel axis	**77**
7. Minimum wheelbase	**254**
5. Minimum track	**150**

Table 2						
Car	**Engine**	**Wheel Width (in) ± .060**	**Aero**	**TransmissAeroon**	Weight	**Notes**
Purpose built and Ex-Pro Atlantic cars	**See Table 1**	**(F) 10 (R) 14 Min. & 15 Max.**	**See FA rules**	**Up to 5 forward gears, limited slip and locked differential allowed (sequential trans. carries 25 lb penalty**	See Table 1	**All current FA rules apply**
Pro Star Mazda	Mazda rotary - Sealed Renesis with Pro Star Mazda Fuel injection and a 70 mm throttle body	Pro Star Mazda specified series wheels (F) 9 (R) 11	See Table 3	6 spd sequential transmission with open differential. Traction control is allowed. Spec Gear Ratio Stacks (no mixing) apply. Pro Star Mazda Gear Stacks:Stack A: 1st-12/29, 2nd-15/30, 3rd-15/25, 4th-19/27, 5th-20/25, 6th-19/21. Stack B:1st-12/29, 2nd-17/30, 3rd-19/27, 4th-18/22, 5th-24/26, 6th-24/24.	1325	Front Wing - Angle of attack for the front wing (main plane) is fixed. Front wing flaps may be adjusted within the range provided from an original STAR Mazda endplate. Secondary wing flaps may not be altered from STAR Mazda original part. Rear Wings - May be adjusted to include the following: Angle of attack of the lower element. Note: Rear wing endplates must be adjusted to within +/- 5 deg of vertical as measured at the trailing edge of the endplate. All Cars must use all three upper elements. Angle of attack of the upper elements must have a minimum angle of 13 degs measured front the leading edge of the forward element to the rear edge of the trailing element. The zeroing point for checking the angle of the top three elements is the rollover block on the forward edge of the cockpit opening. No gurney tabs. ECU and Shocks shall be sealed as provided by Star Mazda. Engine shall be sealed by the Star Mazda approved engine builder or Daryl Drummond Enterprises, Inc.
Formula 3 car	1600 VW (non Crossflow head) or 1835cc Volkswagen with carbs (no restrictor), FI with 37mm restrictor located between cylinder head and butterfly	(F) 9 Min. (R) 10 Min.	See FA Rules	Up to 5 Forward Gears, Limited Slip Differential (sequential Carries a 25 lb Weight Penalty)	See Table 1	NOTE: Any other classified engine must be approved by the SCCA Club Racing Technical Manger on a case by case basis. Alt block and crankshaft allowed with max. displacement of 2135cc, valve lift (measured at zero lash): .500" max.
Ex-Fran-Am 2000	Renault 2.0L with Magneti-Marelli Renault Sport Formula Renault 2000 ECU	(F) 8 (R) 10	See FA Rules	Renault Sport Formula 2000 6 Speed sequential transmission with limited slip differential. Gear ratios unrestricted.	1250	Must have roll bar meeting the requirements of GCR 9.4. Must use Formula Renault or Fran-Am engine seals on the cam cover, oil pan and crankshaft pulley bolt as applied by an approved engine builder. Fuel shall meet the requirements for IT cars per GCR section 9.3 Fuel. An SIR will be required at a time to be determined by the CRB.
Ex-Pro Formula Super Vee	1600 VW (non Crossflow head) or 1835cc Volkswagen with carbs (no restrictor), FI with 37mm restrictor located between cylinder head and butterfly	(F) 6 Min. (R) 8 Min. or (F) 8 Min. (R) 10 Min.	See FA Rules	Up to 5 Forward Gears, Limited Slip and Locked Differentials allowed (sequential transmission carries a 25 lb Weight Penalty)	See Table 1	Water cooled Super Vee cars compete in the FA class and may be prepared to their professional racing rules. GT engine prep rules, no changes in bore x stroke, unrestricted weber type side draft carburetors with no modifications. These cars can also run the present fuel injection with these engine prep rules.
Pro Formula F 2000	2.0 Liter Zetec	(F) 8 Max (R) 10 Max	See FA Rules	Up to 5 Forward Gears, Limited Slip Differential (sequential Carries a 25 lb Weight Penalty)	1230	Engine must be prepared to current FC rules except that ECU map and cams are unrestricted. An air restrictor is not required.

Swift 016	2.3 liter Mazda Duratec	(F) 10 (R) 14 Min. & 15 in Max	See notes	5 speed sequential	1420	Drivers must have a copy of Appendix A provided by Swift Engineering available to present to Tech at their request **Engine:** *The 2.3 Liter Mazda Duratec engine and ECU is unrestricted with the exceptions that a 32mm SIR must be used with a sealed air box (part no. FA11016INT) supplied by SCCA Enterprises, the maximum compression ratio is 14.0:1, and the maximum displacement is limited to 2261cc.* **Dimensions:** Wheel Base: 109.3 inches (277.6 cm) Overall Length: 177.1 inches (449.8 cm) Overall Width: F: 76.0 inches (193.0 cm) R: 75.8 inches (192.5 cm). The overall width will be measured at the wheel hub center by projecting a vertical plane from the widest outside rim surface. **Other Dimensions:** Reference Appendix A illustrations provided by Swift Engineering. All dimensions of the car within this table and Appendix A shall have a tolerance of + or - 0.2 inches. The bodywork may not be modified in shape or size; however, replacement bodywork may be supplied by sources other than Swift. **Wings:** The wings and end plates may not be changed. The wings must have a Swift label visible on each wing showing the following part numbers: front wing (part no. 01612-0010), front flaps (part no. 01612-1021LorR), lower element, rear wing (part no. 01613-0010), and upper element, rear wing (part no. 01613-0013). All wings must conform to the wing angles and dimensions specified in the Appendix A illustrations provided by Swift Engineering. **Rear Wing Top Element:** The rear wing top element may be adjusted within the designed range of +2.00 to +16.00. Front Wing Main Plane and Rear Wing Lower Element At all times, the front wing and lower rear wing element must be maintained at the designed angle (as seen in illustrations 4 and 5 of Appendix A provided by Swift Engineering) relative to the chassis zero line. **Wickers:** Wickers/gurneys may be added to the top of the trailing edge of the front flaps, front main plane, and rear wing lower elements only, and may not be used on the rear wing upper element. They must be 90 degrees to the mounting surface and may be no more 0.500 inch high as measured from the upper surface of the wing element. Wicker/gurney height must remain constant across the width of the individual component span. No saw tooth wickers/gurneys are allowed. The trailing edge of wings and flaps may be drilled for the purposes of attaching wickers/gurneys. All wing angles shall have a tolerance of + or - 0.30. Shocks absorbers must be Dynamic Suspension Model DSSV with S5 and S6 valving in the front shock absorbers and S3 and S4 valving in the rear shocks absorbers.

B. FORMULA CONTINENTAL PREPARATION RULES

Formula Continental is a Restricted class. Therefore, any allowable modifications, changes, or additions are as stated herein. There are no exceptions. IF IN DOUBT, DON'T. Homologation is required for all cars registered after January 1, 1983.

Description: Single seater racing cars as defined by these regulations.

All newly constructed cars shall meet the 1986 construction rules for Formula Ford cars as revised January 1, 2010, except as allowed in these Formula Continental preparation rules.

B.1. Chassis
The chassis shall be of tubular steel construction with no stress-bearing panels except bulkhead and undertray; curvature of the undertray shall not exceed 2.54cm (1 inch). Monocoque chassis construction is prohibited. Stress bearing panels are defined as: sheet metal affixed to the frame by welding, bonding, rivets, bolts, or screws which have centers closer than 15.24cm (6 inches). Body panels cannot be utilized as stress bearing panels, except as required for 1986 construction rules. The use of composite materials using carbon and/or Kevlar reinforcement is prohibited.

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

It is not permitted to construct any suspension member in the form of an asymmetrical airfoil or to incorporate a spoiler in the construction of any suspension member. Symmetrical streamlining of suspension members is permitted.

B.2. Bodywork and Airfoils
See Table 4. (Airfoils are a requirement for this class.)

The use of composite materials using carbon reinforcement is prohibited, except as permitted herein.

The use of "ground effects" is limited. Deviation of the undertray may not exceed 2.54cm (1") in the area between the rearmost point of the front tire to the frontmost point of the rear tire. Diffuser undertrays are permitted.

Cockpit: Forward-facing roll bar/roll cage bracing and required padding will not be considered in the dimensions shown in the table.

B.3. Engines
The only permitted engines are:

The Ford 2 liter single overhead camshaft "NE" series engine or the 1971-74 Pinto/Capri 2 liter single overhead camshaft engine.

The Ford Zetec ZX3 2 liter dual overhead camshaft engine (see section B.4.)

The Ford 2 liter single overhead camshaft "NE" series engine and the 1971-74 Pinto/Capri 2 liter single overhead camshaft engine shall conform to the following specifications. The nominal bore is 90.84mm and the nominal stroke is 76.95mm (Note: All blocks shall contain casting number HM6015BA, HM6015AA, HM6015BB, HM6015AB, HM6015DA, or HM6015AD. Dashes in the casting number are not relevant.). Production tolerances are permitted providing the total swept volume does not exceed 2000cc.

a. The rockers shall remain entirely unmodified. Alternate manufac-

turers may be used as long as the original materials and dimensions are the same. Camshafts must be from Ford Motor Company, or Crower part #E57553 FF2000, *or any camshaft that is a replica of the original and of the same material may be used*. Camshaft geometry shall be stock. *An alternate optional camshaft, Elgin part number 2000FC, may be used only in the original iron head.* Regrinding camshaft lobes is permitted as long as the camshaft lobe center is 112° ± 2°. Offset keys are permitted. Tuftriding or Parkerizing is permitted. Maximum valve lift at determined points by camshaft rotation will be established. The use of a low rate substitute valve spring is permitted. Load characteristics of special checking spring: twelve (12) lbs., at 1.417 inches, thirty (30) lbs., at 1.000 inches. An adjustable camshaft sprocket which retains the same number of teeth and pitch as the stock sprocket may be used.

b. *A standard crankshaft shall be used or any crankshaft that is a replica of the original crankshaft and of the same material may be used.* Spot machining to achieve balance is permitted. Tuftriding, Parkerizing, shot peening, shot blasting, and polishing are permitted. Minimum weight: twenty-seven point five (27.5) lbs.

c. The flywheel shall be a standard component or the approved alternate Elite-001. The minimum weight is *10.5* lbs. with ring gear. The flywheel may be machined to achieve minimum weight. Spot machining to achieve balance is permitted. Flywheel bolts are free and locating dowels are permitted. A 1600 GT starter ring may be fitted. 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. Carbon fiber clutches are not permitted.

d. Maximum compression ratio will be controlled as follows:

   1. Minimum Cylinder Head combustion chamber volume 49cc (not including head gasket). Polishing and/or tooling of the cylinder head to achieve only the required combustion chamber volume is permitted.

   2. Standard Ford gasket, Fel-Pro #8361PT, or Ferrea part number G50100 may be used. Gaskets will have a minimum thickness of 0.9mm, minimum diameter of cylinder aperture of 92mm.

   3. Pistons shall not protrude above cylinder block surface at TDC.

e. It is permissible to reshape inlet and exhaust port by removal of metal within limits. Addition of material in any form is prohibited. Maximum diameter of inlet port at manifold head face 39.5mm. Maximum dimensions of exhaust port at manifold face 35.5mm x 27mm. The distance between the valve centers and the angles of the valves shall not be altered.

f. Pistons shall be standard Ford Mahle, AE Hepolite, CP, or J&E. Pistons must be unmodified in any way except for balancing and as detailed herein.

   The following combinations are permitted:

   1. Mahle piston P/N 80HM6102LA with rings, pin, connecting rod (with bolts), but without bearings:Minimum permitted weight = 1332.5 grams.

   2. Mahle piston P/N 85HM6102DA with rings, pin, connecting

rod (with bolts), but without bearings: Minimum permitted weight = 1240 grams.

NOTE: This piston may have either casting #90V108 or #90V118.

3. AE Hepolite piston P/N 21426, casting P/N 21426 (AE Hepolite) with rings, pin, connecting rod (with bolts), but without bearings: Minimum permitted weight = 1240 grams.
4. CP piston P/N IV 2.0 LTR with rings, pin, connecting rod (with bolts), but without bearings: Minimum permitted weight = 1240 grams. Part number and Ivey logo stamped on wrist pin bosses.
5. JE piston P/N M-6102-B200 with rings, pin, connecting rod (with bolts), but without bearings: Minimum permitted weight = 1240 grams.

NOTE: M-6102-B200 piston assembly is now made by JE and is visually different. I.D. Marks: M-6102-B200, Ford racing logo. All marks pin stamped on wrist pin bosses.

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 the rings.

Localized machining of the gudgeon pin bosses to achieve balance and weight by simple machining; all external surfaces, dimensions, and profiles shall remain standard with the exception of the top surface of the piston crown which may have simple machining to achieve balance, and as required in Section 9.1.1.B.3.d.

g. Valves may be of Ford manufacture or Ferrea part numbers VSOIN200 and VSOEX2000. Valves shall remain standard; no reprofiling or polishing is permitted.

The original forty-five (45) degree seat angle shall be maintained.

Maximum face diameter inlet 42.2mm.

Maximum face diameter exhaust 36.2mm.

Maximum valve stem diameter 8.4mm.

h. Full connectng rods may be standard Ford, Cosworth, Oliver, or Crower. The approved Crower part numbers are SP93230B-4 or SP93230PF-4. Any rod bolts may be used. Floating piston pins may be used. Standard rod length must be 5.00 inches (+.005" -.010"). Machining is permitted to remove metal from the balancing bosses to achieve balance only. Tuftriding, Parkerizing, shot peening, shot blasting, polishing, etc., are permitted.

i. Maximum valve lift against cam angle with zero tappet clearance: (Lift measured in mm)

Standard Camshaft				
	Intake		Exhaust	
Angle	Opening	Closing	Opening	Closing
0	10.442	10.442	10.442	10.442

5	10.36	10.36	10.36	10.36
10	10.11	10.11	10.11	10.11
15	9.69	9.69	9.69	9.69
20	9.11	9.11	9.11	9.11
25	8.37	8.37	8.37	8.37
30	7.45	7.45	7.45	7.45
35	6.38	6.38	6.38	6.38
40	5.17	5.17	5.17	5.17
45	3.86	3.86	3.86	3.86
50	2.59	2.58	2.58	2.59
55	1.5	1.47	1.47	1.5
60	0.86	0.81	0.81	0.86
65	0.65	0.56	0.56	0.65
70	0.54	0.43	0.43	0.54
75	0.46	0.33	0.33	0.8
80	0.37	0.19	0.19	0.37
85	0.26	0.08	0.08	0.26
90	0.2	0.01	0.01	0.2

Alternate Camshaft				
	Intake		Exhaust	
Angle	Opening	Closing	Opening	Closing
0	11.182	11.182	10.149	10.149
5	11.102	11.092	10.07	10.071
10	10.853	10.821	9.831	9.829
15	10.423	10.363	9.426	9.415
20	9.821	9.721	8.854	8.826
25	9.069	8.916	8.117	8.073
30	8.177	7.955	7.205	7.154
35	7.131	6.85	6.132	6.071
40	5.96	5.624	4.92	4.866
45	4.702	4.313	3.611	3.6
50	3.425	3.01	2.346	2.38
55	2.242	1.851	1.325	1.406
60	1.278	0.994	0.722	0.825
65	0.642	0.509	0.488	0.604
70	0.334	0.307	0.385	0.524
75	0.215	0.208	0.303	0.461
80	0.134	0.13	0.224	0.404
85	0.064	0.063	0.146	0.343
90	0.022	0.024	0.09	0.279

j. Engines will be mounted upright, and aligned fore and aft in the chassis.

k. A single carburetor only will be used on a standard inlet manifold. The carburetor will be a Weber 32/36 DGV 26/27mm venturi, its origin being from a 1600 GT "Kent" or 2000 SOHC NE engine. The Holly 5200 32/36 carburetor also may be used; carburetor with the swaged fuel inlet fitting shall be replaced by drilling and tapping the carburetor body for a threaded fitting. The air cleaner may be removed and a trumpet fitted, and jets may be changed, both throttles may open together, cold start devices and diffused bar may be removed, internal and external antisurge pipes may be fitted, and seals on emission control carburetors may be removed. The bottom of the lower column portion of the auxiliary venturi may be machined for purposes of high speed enrichment. No other modifications are permitted. Chokes (venturi) shall remain standard and no polishing or profiling is permitted.

l. The addition of material by any means to any component is prohibited.

m. It is permitted, as a means of repair, to replace damaged valve seats and cylinder bores by replacement cast iron valve seat inserts and cast iron cylinder liners; valve guides may be replaced with cast iron or bronze, all to standard dimensions. Repairs to the cam towers to facilitate replacement of cam bearing and/or replacements of broken or cracked towers is permitted as long as the cam bearing center line is not changed and that one original cam tower is retained. Line boring of cam bearing caps is permitted.

n. Balancing of reciprocating and rotating parts is permitted only by removal of metal from locations so provided by the manufacturer.

o. Non-standard rocker covers are permitted providing they in no way improve the performance of the engine.

p. Standard valve spring retainers shall be used, and single valve springs only are permitted. Shims are permitted, and valve springs are otherwise free.

q. Exhaust system and manifold are unrestricted, within SCCA safety regulations.

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

s. Oil coolers are unrestricted.

t. Cooling system unrestricted. The radiator, if housed in or incorporating a cowl air-scoop deflector, shall comply with body regulations.

u. Fuel Pump: Unrestricted.

v. Distributors are unrestricted providing they retain the original drive and location. The distributor is defined as the component which triggers the L.T. current and distributes the H.T. 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.

w. Only the standard inlet manifold shall be used.

The ports may be reshaped by the removal of metal as long as the following dimensions are maintained: maximum size at head face

= 1.437" (36.5mm), maximum size at carburetor flange = 3.405" (86.5mm) x 1.595" (40.5mm). The carburetor seat face may be machined to horizontal in the fore to aft plane. The diameter of the ports may exceed the above listed dimensions if the casting bore is untouched and in its original state. 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.

x. Gaskets and seals are unrestricted except for the cylinder head gasket that has the requirements listed in B.3.D.2. and the intake gasket. The intake gasket thickness must not exceed 1.1mm. Intake gasket is not to be construed as a spacer.

y. Pump, fan, and generator drive pulleys are unrestricted.

z. The crankcase breather may be altered or removed, but all breathers shall discharge into a catch tank.

aa. Mechanical tachometer drives may be fitted.

bb. Generators are optional.

cc. Standard oversize and undersize bearings are permitted. This does not allow reducing the bearing surface area by reducing the width of standard bearings.

dd. The use of non-standard replacement fasteners (nuts, bolts, screws, studs, and washers) which are not connected with or which do not support the intake manifold or any moving parts of the engine is permitted.

ee. Only modifications or additions specifically covered by these regulations are permitted. All engine components not covered by these regulations shall remain completely standard and unmodified. When a system is specified to be "unrestricted" (e.g. paragraphs r and t), the restrictions of this paragraph do not apply.

ff. The use of the Fast Forward aluminum cylinder head is permitted. The following dimensions must be maintained.

Intake port maximum volume 70.0 cc.

Exhaust port maximum volume 52.0 cc.

Intake port surface to exhaust port surface 5.580 +/- 0.020 inches

Intake valve center line to (adjacent) intake valve center line 4.015 +/- 0.015 inches

Exhaust valve center line to (adjacent) exhaust valve center line 4.015 +/- 0.015 inches

The machine tool marks in the intake and exhaust ports must remain untouched for 0.750 inches from the respective gasket surfaces.

B.4. Engines - Zetec

The Ford Zetec ZX3 engine shall conform to the following specifications and may be modified only as specifically allowed. If these specifications do not explicitly allow a modification, then it may not be done. The philosophy of the Zetec engine in FC is to allow limited engine rebuilds but no performance modifications to the engine. Blue printing, balancing, head porting, polishing, etc. are strictly prohibited and against the spirit of the Zetec formula. Where Ford part numbers are specified, normal industry part number supersession is expected and the superseding part numbers are automatically included.

a. The cylinder head may not be ported, polished, or machined. A

standard three-angle "production" valve job is required and the only allowed angles are those defined in the Ford factory manual. The intake valve seats must be 30° 45° 70° with the 45° face a minimum 1.5 mm wide. The exhaust valve seats must be 30° 45° 55° with the 45° seat 1.5 mm wide minimum. The camshaft, valves, springs, and shim/bucket components must be original Ford parts and may not be modified in any way. Only original unmodified Ford parts may be used for direct replacement. The camshafts must remain as ground by Ford; no polishing is permitted. Valve seats may not be replaced. The head may not be surfaced or milled beyond the minimum thickness of 5.230" measured between the cam cover seating surface and the lower plane of the head. Only the Ford #RFYS4E6090AC or RFYS4E6090AD head is allowed. The only allowed camshafts are the Ford #L913B YSAA intake and #L913B C2B exhaust. The original, unmodified Ford camshaft and crankshaft timing pulleys must be used. Required camshaft timings are as follows:

Intake centerline	116-117 degrees ATDC
Exhaust centerline	106-107 degrees BTDC

b. Pistons, crankshaft, and rods may be replaced only with standard original Ford replacement parts. The crankshaft may be ground or polished for the purpose of installing oversize main or rod bearings. The rod journals must remain stock and the rods may not be bored or remanufactured in any way. The rod and crankshaft bearings may be replaced only with original or oversized Ford bearings. The required original crankshaft main bearing journal dimension is 2.282-2.283 inches and the required original crankshaft rod journal dimension is 1.846-1.847 inches. The corresponding main journal dimensions for oversized bearings are either 2.273-2.274 inches or 2.263-2.264 inches; the corresponding rod journal dimensions for oversized bearings are either 1.837-1.838 inches or 1.827-1.828 inches. The crankshaft centerline to deck dimension is 8.378 inches and may not be altered. The main bearing housing bore is 2.452-2.453 inches and the rod housing bore is 1.9642-1.9650 inches. Only original Ford rod bolts with a minimum weight of 24.6 grams or ARP rod bolts with a minimum weight of 23.5 grams may be used.

c. Only original stock Ford replacement piston rings may be used. The ring end gaps may not be altered and must remain as manufactured by Ford. All of the rings must be installed including the complete oil scraper assembly. The piston bore may be honed solely to allow piston ring seating. The first and second compression rings must be installed in the positions designated by Ford.

d. All surfaces on the head, block, rods, pistons, and crankshaft must remain as manufactured by Ford and may not be altered in any way. The original casting marks and cast surfaces must remain as-cast and also meet all of the Ford design values and tolerances as stated in the Ford factory manual or as delineated in these specifications. The block may not be decked. *Only Ford Zetec ZX3 blocks with block numbers #RFYS4G6015AA, or #RFYS4G6015AD or #RFYS4G6015AE are permitted.* The required compression ratio is 9.6:1, the required standard bore is 3.3390 – 3.3410 inches and the required stroke is 3.461 inches. The maximum bore dimension of 3.3410 inch is intended to allow for cylinder wear only. It is not permitted to machine to this dimension. This measurement will be taken .250 below the block deck where the bore is untouched by the piston ring.

e. Flywheel: The minimum weight is 8.0 lbs. and any weight removal from the specified flywheel must come from the clutch plate surface. Only the Quarter Master #QM107160 flywheel may be used.

f. Any 7¼ inch single plate or double plate, non-carbon fiber clutch is allowed.

g. Any oil pan is allowed. The oil pan may not contain an oil scraper between the oil pan and the block. No device in the oil pan may be contoured to the crankshaft assembly to function as an oil scraper nor may any device be closer to the rotating crankshaft assembly than 0.5 inches.

h. *Any three-stage oil pump with a maximum of two scavenge stages is allowed. The maximum scavenge rotor dimensions are 1.600 inches in diameter and 1.375 inches in length. The minimum pressure rotor dimensions are 1.600 inches in diameter and 0.863 inches in length.*

i. The exhaust system manifold tubing OD must be 1.5 inches and the manifold tubes must be a minimum of 24 inches in length and must terminate into a single exhaust pipe through a 4 into 1 collector. The collector angles must be the standard 15 degree bend, (30 degree included angle) with an exit diameter of 2 inches. The tail pipe must be a minimum of 24 inches in length. The tail pipe includes a muffler, if present, as long as the inlet and outlet pipes of the muffler are the same diameter as the tail pipe. 4 into 2 into 1 exhaust collectors or reduced diameter venturi sections are prohibited.

j. ECU: The Pectel T2 unit is required. The current specification "SCCA Club" map is required. Failure to use the current "SCCA Club" map will result in an automatic penalty of 1 year suspension from SCCA club racing. The map is available on the SCCA web site.

k. Intake manifold and fuel injection components: The Quicksilver Race Engines (QSRE) *intake air scoop*, intake manifold, throttle bodies, air horns, fuel rail and injector system are required and must be used with no modifications of any kind. The only allowed intake manifold and throttle body combination is the #0138 manifold available through QSRE. Only stock Ford fuel injectors may be used and they may not be modified in any way. Fuel injectors may be replaced only with stock Ford injector part number #0280155887 XS4U-AA.

l. Intake restrictor: The QSRE #1975 intake restrictor must be used. It must not be modified in any way. The new restrictor internal diameter is 1.340 inches and this value cannot be exceeded in any measurement of the diameter. The restrictor port centerlines or shape may not be altered.

m. Engines will be mounted and aligned fore and aft in the chassis

n. The addition of material by any means to any component is prohibited

o. Non-standard rocker covers are permitted providing they in no way improve the performance of the engine.

p. Oil coolers are unrestricted.

q. A liquid cooling system is mandatory, but radiator and water pump are unrestricted.

r. Fuel pump is unrestricted.

s. Gaskets and seals are unrestricted except for

1. cylinder head gasket, Ford part number XS7Z6051CA

2. a continuous o-ring of cross-section of 0.100 inches must be fitted to each intake runner groove between the intake manifold and the head which to ensures that no air by-passes the o-ring seal

t. Pump, fan, and generator drive pulleys are unrestricted.

u. The use of non-standard replacement fasteners (nuts, bolts, screws, studs, and washers) which are not connected with or which do not support the intake manifold or any moving parts of the engine are permitted.

B.5. Suspension
All parts shall be of steel or ferrous material, with the exception of hubs, hub adapters, hub carriers, bell cranks, pivot blocks, bearings and bushes, spring caps, abutment nuts, anti-roll bar links, shock absorber caps, and nuts. Titanium is prohibited.

Springs: Steel only.

Shock Absorbers: Steel or aluminum alloy body.

B.6. Brakes Unrestricted (with the below restrictions)
Brake rotors and calipers must be ferrous.

B.7. Steering Unrestricted

B.8. Wheels and Tires
Thirteen (13) inch diameter wheels with a maximum front rim width of six (6) inch and rear of eight (8) inch are the only wheel sizes permitted. Material is unrestricted providing it is metal.

B.9. Transmission

a. The gearbox shall contain not more than four (4) forward gears and include an operable reverse gear, capable of being engaged by the driver while normally seated. The ratios are unrestricted.

1. The use of automatic and/or sequentially shifted gearbox is prohibited.

2. Electronic assisted gear change mechanisms and electronically controlled differentials are prohibited.

3. Gearboxes with shafts that are transverse to the longitudinal axis of the chassis are not allowed. The sole exception are the gearbox final drive (crownwheel) shaft axis and final drive shafts (half shafts). All change gears must be located in the case aft of the final drive.

b. Rear wheel drive only is permitted.

c. Final drive ratio is unrestricted.

d. The differential cannot be modified in any way to limit its normal function. Torque biasing, limited slip, and locked differentials are prohibited.

B.10. Fuel Capacity: Maximum capacity 41 liters (10.83 gallons)

B.11. Weight
Pinto Engine - 1200 lbs.
Pinto w/ aluminum cyl. head - 1200 lbs.

Zetec Engine - 1200 lbs.

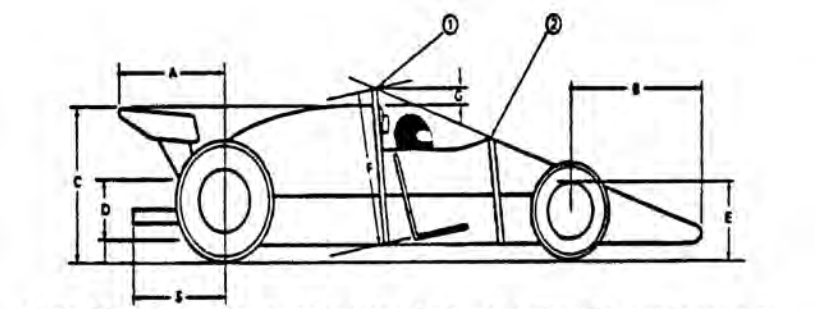
B.12. Converted Formula F: cars shall reapply for homologation as Formula C cars and meet the 1986 construction rules for Formula F.

FC Dimensions - Table 4	
Dimension (refer to drawing)	**Measurement (cm)**
A. Maximum rear overhang from rear wheel axis	**80**
B. Maximum front overhang from front wheel axis	**100**
C. Maximum height measured from the ground	**90**
D. Exhaust height measured from the ground	**20-60**
E. Maximum height of any aerodynamic device	**Rim height**
F. Minimum safety rollover bar height inline with driver's spine	**92**
G. Minimum allowed helmet clearance	**5**
H. Maximum width	**185**
I. Maximum rear aerofoil width (includes endplates)	**95**
K. Maximum nose width	**135**
L. Minimum cockpit opening	**45**
M. Minimum cockpit parallel opening length	**30**
N. Minimum cockpit overall opening length	**60**
R. Maximum body width behind front wheels	**95**
S. Maximum exhaust length from rear wheel axis	**80**
7. Minimum wheelbase	**200**
5. Minimum track	120

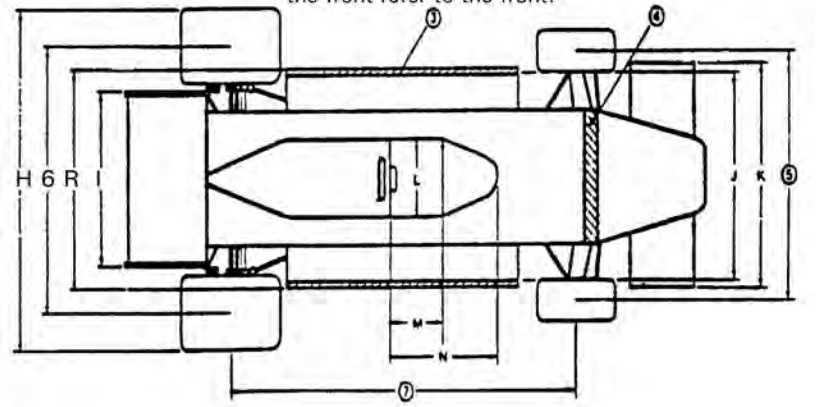
F-2000 SPECIFICATION

1. Safety roll-over bar.
2. Substantial support structure.
3. Crushable structure.
4. Substantial structure.
5. Front track.
6. Rear track.
7. Wheelbase

Maximum height is measured with the driver aboard. Maximum height excludes safety rollover bar on which there is no maximum height.



Note: Dimensions shown at the rear refer to the rear while those shown at the front refer to the front.



C. FORMULA VEE PREPARATION RULES

C.1. Background

A. History and philosophy of the class

Formula Vee was recognized by SCCA in 1963. The class is highly restricted, originally requiring the use of genuine VW parts "from the standard Volkswagen 1200 Sedan Series type 1, US model sedan as imported by VW" in the engine, drivetrain and suspension. Over the years, the rules have changed slowly to maintain parts availability and allow a gradual evolution of the class. However, the focus remains the same: to provide a cost effective, highly competitive class that, through consistent and tightly controlled component and preparation rules, emphasizes driver ability rather than technological development of the car. Today, as throughout its long history, FV is one of the most highly subscribed classes in SCCA. The goal of these rules is to maintain both the competitiveness and cost effectiveness of the class.

B. Definition

A formula for single seat, open wheel racing cars based on standard Volkswagen 1200 series Type 1, U.S. model sedan (imported by VW) components, and restrictive in specifications so as to emphasize driver ability and preparation rather than design and technology of the car.

Formula Vee is a **Restricted Class.** Therefore, any allowable modifications, changes, or additions are as stated herein. There are no exceptions. **IF IN DOUBT, DON'T**. Homologation is required for all cars regis-

tered after January 1, 1983.

No component of the engine, power train, front suspension, brakes shall be altered, modified, or substituted unless specifically authorized. Mass-produced, direct replacement components may be substituted for the following as long as they are of the same material and dimensionally identical to the original VW components they replace:

- VW transmission components
- Rear axle components
- Front suspension
- Brake components

These replacement parts must be generally available to all competitors and must offer no competitive advantage over the original VW parts. Replacement engine components are allowed as described in section C.5.

Any external surface of the suspension, brakes, and transmission/ rear axle may be painted, plated, or anodized.

Engine components shall be assembled in standard configuration. Exceeding the wear limits specified in the VW manual or other official VW guides is allowed provided that tolerances, dimensions, and specifications stated in the GCR are met.

C.2. Weight and Dimensions

Minimum weight as qualified or raced, with driver: 1025 lbs.
Wheel base, minimum: 81.5″
Wheel base, maximum: 83.5″
Track, front: Standard VW – maximum 52.5″ (no spacers allowed)
Track, rear: 49.125″ minimum, 50.750 maximum (no spacers allowed)
Overall length, minimum: 123″ (includes exhaust)
Overall length, maximum: 127″ (includes exhaust)
Body height at firewall (bottom of frame to top of bodywork), minimum: 25″

C.3. Suspension

A. The front suspension and steering shall be standard VW Sedan as defined herein, or an exact replica of the same material and dimensionally identical. The following modifications are allowed:

1. Removal or modification of spring packs including the use of ride height adjusters incorporated into the front beam provided they are not adjustable from the cockpit. At least one spring pack shall be retained as the primary spring media for the front suspension.
2. The use of any anti sway bar(s), mounting hardware, and trailing arm locating spacers.
3. The use of any direct acting, tube type shock absorber(s) mounted in a longitudinal, vertical plane and acting through the standard mounting points. Spring shocks and linkage activated shocks are prohibited.
4. Relocation of the steering gearbox to any position utilizing an appropriate mounting structure and replacements of the tie rods. Steering damper mount and/or the steering box locating bumps may be removed.
5. Any desired pitman arm may be used.

6. Steering column may be altered or replaced and any steering wheel may be used.

7. Standard steering arms may be altered or replaced and speedometer cable hole may be plugged. No other modification of the wheel spindle is permitted. Non-VW replacement spindles shall maintain the same bearing dimensions and locations and shall maintain the geometric relationship between the spindle and the king pin bore and boss.

   Wheel tethers are recommended. If wheel tethers are used, a hole may be drilled in the spindle for the purpose of attachment.

8. The rubber portion of the bump stop and any portion or all of the bump stop horn may be removed up to its base at the beam upright.

9. Caster, camber, and toe in/out settings are unrestricted. Clearancing of carrier or trailing arm to eliminate binding is permitted. Offset suspension bushings and alternate locating spacers are permitted.

10. No structure, item, or component (including the battery) other than bodywork, can protrude further forward than ten (10) inches from the front of the lower axle beam tube. Any item protruding further than eight (8) inches must include a vertical safety plate. This plate must be constructed of no less than .060" 6061-T-6 aluminum or no less than 16 gauge steel. The plate shall have a minimum frontal surface area of 42 square inches, and shall have a height of not less than four (4) inches and a width of not less than six (6) inches. The plate may have no more than ½ inch curvature or deflection from the vertical plane, and shall be attached to the chassis (frame) at all four corners. The lower braces shall not exceed a 15-degree upward angle when measured from the horizontal plane of the lower frame tubes.

    If a vented lead acid battery is mounted in front of the axle beam, it shall be encased in a marine-type container.

    It is recommended that the front area of the nose be filled with foam to aid in impact absorption.

B. The rear axle assembly shall be standard VW sedan as defined herein with axle location provided by a single locating arm on each axle.

   1. The rear axle tube may be rotated about its axis.

   2. Coil spring(s) shall provide the primary springing medium, with telescopic shock absorber(s) mounted inside the spring(s). Cables, straps, or other positive stops may be used to limit positive camber. An anti roll bar or camber control device may also be used. When said anti roll bar or camber control device is removed, the required coil springs shall continue to perform functionally.

   3. The shock absorber mounts may be modified.

C. Wheels shall be standard fifteen (15) inch X 4J as used on the 1200cc and 1300cc VW sedan as defined herein, or any steel (15) inch X 4.5J wheel within the track dimensions of C.2. Wheels may be balanced only by the use of standard automotive balance weights (adhesive or clip on). Hub cap clips shall be removed.

D. Any tire size may be fitted, except that ungrooved radial race tires (radial slicks) are not allowed.

C.4. Brakes

A. Brake drums, backing plates, and wheel cylinders shall be standard VW Sedan as defined herein, or an exact replica of the same material and dimensionally identical. Ribbed type rear drums (VW Part # N113-501 615 D or ICP Part # 113 501 615 D) may be used in place of the 1200 series rear brake drums. Rear backing plates may be from any Type 1 model year.

B. These cars 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. Any master cylinder(s) may be used.

C. A separate hand brake (emergency brake) is not required. Removal of the hand brake and operating mechanism is permitted.

C.5. Engine

A. The engine shall be a standard VW power plant, as normally fitted to VW sedans as defined herein. Any engine part(s), listed by the manufacturer (VW) as a current, superseding, replacement part for the standard VW 1200 series, Type 1, U.S. model sedan and interchangeable with the original part(s), may be used. Turbocharging is not permitted.

B. The engine/transmission shall be mounted in the chassis with the transmission to the rear.

C. The following component parts may be replaced with that of other manufacture, provided said part is of the same material, is dimensionally identical, and meets all other tolerances and specifications stated in the GCR.

1. Engine Case – Type I or Type III style single or dual relief cases only
2. Cylinder Heads
3. Cylinders (an O ring for centering is permitted).
4. Pistons and wrist pins minimum combined weight without clips or piston rings = 330.0 grams
5. Cam followers Minimum weight = 60.0 grams
6. Connecting rods with bolts and small end bushing minimum weight = 425.0 grams
7. Oil pump exact replica of any standard VW oil pump
8. Distributor
9. Ignition points or drop-in ignition triggering module (e.g., Pertonix)
10. Distributor cap
11. Fuel pump any standard type VW fuel pump which can be fitted without modification of any other part
12. Crankshaft minimum weight sixteen (16) lbs.
13. Crankshaft gear
14. Flywheel minimum weight twelve (12) lbs.

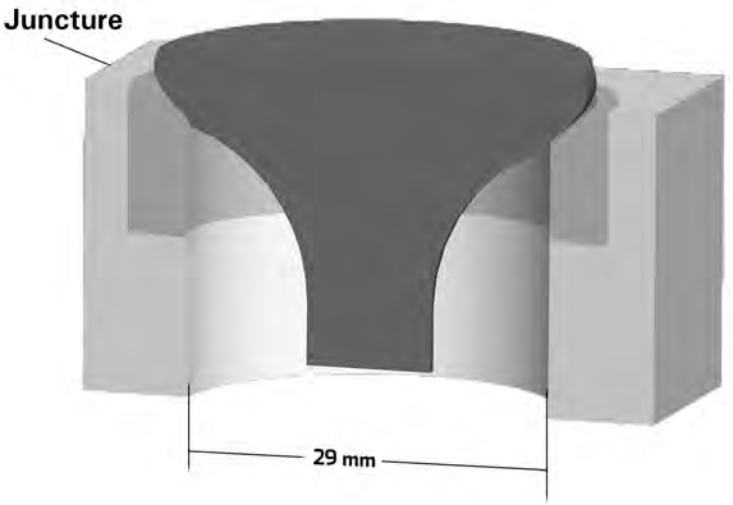
15. Pressure plate, or alternate SACHS 211 141 025 DAM pressure plate
16. Clutch disc – 180mm nominal diameter only
17. Throw out bearing
18. Push rods
19. Push rod tubes

D. Allowed Modifications

1. Replacement of standard exhaust system with any exhaust system terminating one (1) to three (3) inches behind the rearmost part of the body.
2. Lightening of the flywheel to a minimum of twelve (12) lbs.
3. Balancing of all moving parts of the engine, provided such balancing does not remove more material than is necessary to achieve the balance except on those component parts where weights are specified.
4. The crankshaft may be ground and the case may be machined to accommodate the use of standard factory oversize/undersize crankshaft bearings, provided the crankshaft location is not changed.
5. Where minimum weights are specified, any lightening is permissible provided the original part complied with the dimensional restrictions set forth.
6. The following standard dimensions and tolerances of engine components are included as information and shall be observed:
   a. Maximum bore: 3.040 inches
   b. Stroke: 2.520 inches +/ 0.005 inch.
   c. Minimum capacity of combustion chamber in head: 43.0cc (Polishing and/or tooling is prohibited.)
   d. Minimum depth, top of cylinder barrel to top of piston: 0.039 inch.

   The above dimensions may be achieved by machining any previously machined surface, provided that the total surface is machined on the same plane as the previously machined surface. The above dimensions shall be the average of all four (4) cylinders.
7. Complete or partial removal of any cooling duct component. Removal of the fan and the fan housing. Fan belt origin is unrestricted. The use of a fan belt is optional.
8. Installation of a spark plug hole repair utilizing standard thread repair methods, such as Helicoil or welding and rethreading is permitted providing that the spark plug centerline is not changed. The original size and shape of the combustion chamber must be maintained.
9. Polishing of the intake and exhaust ports, provided such polishing does not enlarge the intake port beyond 29mm (1.142") inside diameter and the exhaust port beyond 33mm (1.299") inside diameter. The measurements are to be taken at the juncture of the seat insert and the aluminum port material,

and at the manifold face. Valve seat angles shall be machined as specified in the official VW Workshop Manual.



10. Replacement of intake and exhaust valve seats is allowed for the purpose of repair only. Valve Seats may not be moved from their original position. Welding is allowed to facilitate repair and installation of replacement seats. The original size and shape of the combustion chamber must be maintained. Installed seats may neither be proud or recessed of the combustion chamber surface.

Seat Dimensions				
	VW O.D. (inches)	Max O.D. (inches)	Max I.D. (inches)	Max Depth (inches)
Intake	1.385	1.445	1.142	0.375
Exhaust	1.265	1.315	1.299	0.375

Inside diameter of intake seat shall be 1.142″ at the juncture of the seat to the aluminum on original seats. A depth of 0.340″ from the combustion chamber on replacement seats. This is to allow blending of the seat to the port. Valve seat angles may not be larger than the outer diameter of the original VW seat (1.385″ intake, 1.265″ exhaust).

11. The following standard dimensions are included for information only and must be observed:
    a. Exhaust valve diameter: 1.102 or 1.18 inches
    b. Intake valve diameter: 1.18 or 1.24 inches
    c. Reprofiling of valves is not permitted.
12. Alternate exhaust valves are allowed provided the dimensions and materials are the same as standard (VW) exhaust valves.

13. In addition to the original VW manufactured valve, any mass produced, replacement intake valve may be used provided the material, profile, and finish remain essentially identical to the original VW valve, including the prominent lip at the inner edge of the valve seat. The valve must also meet the following dimensions:

stem diameter	0.305 inches minimum, measured just below the keeper grooves
head diameter	1.24 inches maximum
length	4.450 inches maximum
valve face width	0.090 inches
distance from combustion chamber face to seat surface (including any chamfer at valve head)	0.020 - 0.090 inches
stem diameter within 1.25 inches of the head of the valve	0.293 inches minimum

14. Valve springs are unrestricted providing:
    a. No more than one spring shall be used per valve.
    b. Any steel spring cap and retainers may be used.
    c. Spring shall be made of steel.
    d. Valve spring shims may be used.
15. Rocker arms may be lightened to a minimum weight of 80.0 grams. VW parts must be used, from 1200, 1300, 1500 or 1600 Type 1 engines; 1:1 or 1.1:1 ratios only.
16. Rocker arm shafts may be modified or replaced by those of other manufacture, including shafts that replace the stock clips with a solid center spacer and bolt on end caps/washers. Wave type spacer washers may be replaced by solid steel type flat washers.
17. The rocker arm shaft assembly may be shimmed out on the cylinder head mounting studs by placing appropriate shims between the cylinder head mounting boss and the blocks on the rocker arm shaft assembly.
18. Valve covers are unrestricted and may be bolted on.
19. Fitting of any standard Solex 28 PCI or 28 PICT carburetor and any jets and emulsion tube may be used. Any venturi of standard VW/Solex dimensions may be fitted without alteration to the carburetor body. The venturi shall be fitted in the standard position, but its internal diameter may be machined. The carburetor may be rotated 180 degrees about its vertical axis. Modification of the float is allowed as long as no change is made to the float chamber and/or float valve.

    The carburetor must remain untouched with the following exceptions:

    a. No material shall be added.
    b. Bead blasting is permitted for cleaning only.

c. Throttle shaft Shall be a minimum of 0.185" with throttle plate installed. Machined sides shall remain flat and parallel with no chamfering or radiusing.

d. Throttle Plate Shall be a minimum of 0.053", flat and parallel with no chamfering or radiusing. Diameter shall be a minimum of 1.095 inches.

e. Carburetor Top The junction of the bowl and bore may be radiused. The bore beneath the radius shall be a maximum of 1.120 inches. Accelerator pump boss shall remain original. The orifice in the base of the accelerator pump boss shall not allow a #56 (0.046 in.) drill bit to pass through (maximum hole diameter shall be less than 0.046 in.).

f. Carburetor Body The removal of mold flashing from cast surfaces, including the emulsion tube carrier (holder), is permitted, but no additional material is to be removed. The emulsion tube carrier (holder) must not be otherwise modified. Bore diameter from throttle shaft down shall not exceed 1.110 inches.

g. Carburetor air cleaner and choke mechanism may be removed. Choke shaft holes may be plugged. Plugs may not protrude into the choke bowl.

20. US imported VW Type 1, 1200 sedan manifold must be used. The manifold heat riser tube and heat sink shall be removed. Removal of metal from the interior of the intake manifold and the interior rust-proofed is permitted provided that the following dimensions are not exceeded.

a. Down Tube: The down tube shall be measured at two different locations within an area between 0.500" and 2.00" above the horizontal manifold tube. Each measurement shall be taken four times rotating around the circumference of the tube, and averaged.

Averaged down tube dimensions shall not exceed 1.140 inches in O.D. Removing material from the outside of the manifold to achieve the legal dimension is not permitted. Removal of the manifold down tube from the horizontal tube is prohibited. The original factory furnace bronze attaching process and original factory bronze repair material MAY be visible, inside and outside the manifold.

b. Horizontal tube: The horizontal tube shall be measured at four different locations on each side of the down tube. The area to be measured on each side of the down tube is defined as being between the bend and a point that is 1.500" from the center of the down tube connection. Each measurement will be taken four (4) times, rotating around the circumference of the tube, and averaged. Averaged horizontal tube dimensions shall not exceed 0.994 inches O.D. In addition, the maximum O.D. of the manifold measured where the tube inserts into the two head flanges, and just above any repair material that has been added, is 1.050 inches. Removing material from the outside of the manifold to achieve the legal dimension is not permitted.

c. The finished, race prepared, manifold shall not weight less than 24 ounces. Intake manifolds may be repaired.

Repaired manifolds shall start at 24 ounces BEFORE repair. The addition of excessive material to achieve the minimum weight is not permitted.

d All exterior surfaces shall be in original condition. Bead blasting is permitted for cleaning only. Manifolds must remain unpainted with color but may have a thin, transparent coat of rust proofing material or clear coat type material applied. Removing material from the outside of the manifold to achieve the legal dimensions is not permitted.

e. Matching of manifold flanges (to the ports) is permitted. Seal rings or "gaskets" of any type are acceptable as long as the bottom of the manifold flange is not raised above the cylinder head casting around the port opening. Removal of the manifold flanges that connect the manifold to the cylinder head is prohibited. Factory "VW" casting marks surrounded by a circle and VW casting numbers shall be visible on the bottom side of the flanges, closest to the head. No repair material of any type shall be visible or cover these markings on the bottom of the flanges. Factory furnace Bronze and manifold repair material may be visible where the horizontal tube enters the top of the flange. The exterior dimensions of these flanges must not exceed 2.990" x 1.360".

21. Voltage regulator, generator, and/or generator stand may be removed.

22. Fitting of any standard VW distributor (not restricted to 1200, series) may be used. Use of any standard 6- or 12-volt non transistorized ignition coil is allowed. Coil mounting location is unrestricted.

23. A VW "D" camshaft, Part Numbers 113 109 015D,113 109 017D, 113 109 019D, 113 109 021D,113 109 023D, 113 109 025D, 13 109 027D, or an exact replica of the same material and dimensionally identical shall be used. The maximum lift at the valve spring collar with zero valve clearance is as follows:

    a. Intake .354" + 0.000"

    b. Exhaust .3365" + 0.000"

    The camshaft profile shall match those which are specified by the official SCCA camshaft plots, plus or minus .002 inch. It is permitted to regrind the camshaft to duplicate the official SCCA profile. In so doing, the relationship between the centerlines of peak lift at the exhaust/intake lobes shall remain at 214 degrees fifteen (15) minutes, plus or minus 1degree. (Reference the Official SCCA Camshaft Checking Procedure). The camshaft timing may be changed in relationship to the crankshaft by utilizing an offset key at the crankshaft timing gear. The camshaft timing may also be changed in its relationship to the crankshaft by utilizing an adjustable cam gear that retains the existing helical gear thrust angle and that is statically adjustable only (e.g., no dynamic adjustment mechanisms that respond to engine speed changes). Camshaft timing is unrestricted within the restrictions provided as authorized above. The camshaft profile shall be checked using the official procedure published by the SCCA.

24. The crankcase may be machined to permit the use of standard VW camshaft bearing inserts, provided that camshaft location

is not changed.

25. Crankshaft pulley is unrestricted and may be fitted with an oil seal. The engine case may be machined to facilitate the installation of an oil seal.
26. The installation of baffles housed completely within the original oil sump and crankcase.
27. The use of any oil temperature indicating device.
28. The oil pump cover may be modified or replaced.
29. *An oil sump extension may be fitted to the engine with a maximum internal volume not to exceed 1500cc. In operation, all movement of oil and crankcase air in and out of the extension shall be through the original oil strainer cover opening of the engine case. No additional openings in the extension are allowed above the plane of the oil strainer flange of the engine case. The oil pump pickup pipe may be extended into the sump extension. Any baffling is allowed within the extension and may extend between the engine case and the sump extension through the original oil strainer opening. Any sump may not extend below the frame rails of the chassis when viewed from the side. Accumulators (Accusump) may be fitted.*
30. Replacement of oil galley plugs with threaded plugs.
31. A single standard automotive oil filter of not more than one quart total capacity, and a suitable mounting bracket and by-pass valve may be installed. Modification to the lubrication system to facilitate installation of the oil filter is permitted. All components shall be contained within the body to the rear of the firewall.
32. Any oil cooler is allowed. Oil coolers shall be mounted completely inside a plumb line extending downward from the outermost edge of the bodywork.
33. An alternate oil pressure regulator spring and/or shims may be used.
34. The standard clutch operating arm may be modified to allow its attachment in any appropriate position. Dowel pinning of the clutch pressure plate to the flywheel is permitted.
35. The use of any starter is permitted provided it can be fitted without any modification to the engine/transmission.

C.6. Transmission/Rear Axle

A. The transmission/rear axle assembly shall be standard VW sedan, as defined herein.

B. The synchromesh components shall be in place and operating on at least three gears.

C. Reverse gear shall be operable from the driver's seat.

D. Transmission shall not be installed in an inverted position.

E. The differential cannot be modified in any way to limit its normal function. Torque biasing, limited slip, and locked differentials are prohibited.

F. Allowed modifications:
Installation of any standard VW gear set which can be fitted without modification of any component of the transmission or of the gear

set itself and the transposing of the ring gear to provide proper axle rotation. Permanent attachment of the synchro sleeve to 3rd and 4th gears is permitted.

Fully synchromeshed transmission			
Gear	**Part Number**	**# of Teeth**	**Ratio**
1st	113 311 251A	10:38	3.80
2nd	113 311 261	17:35	2.06
3rd	113 311 275	22:29	1.32
	113 331 275B	23:29	1.26
	113 331 275A	23:28	1.22
4th	211 311 341	28:23	0.82
	113 311 341	27:24	0.89
Ring & Pinion	211 517 143A	8:35	4.375
	311 517 143B	8:33	4.125
Partly synchromeshed transmission			
Gear	**Part Number**	**# of Teeth**	**Ratio**
1st	113 309 251	10:36	3.60
2nd	113 309 261A	17:33	1.94
	113 309 261	17:32	1.88
3rd	113 309 275	23:28	1.22
	113 309 275A	22:27	1.23
4th	113 309 341A	28:23	0.82
Ring & Pinion	113 517 141B	7:31	4.43
There are different part numbers for various gears in addition to the ones listed here. This in general indicates changes on the parts such as:			
Gear	**Part Number**	**Ratio**	**Comment**
4th	113 311 341	0.82	with key way
	113 311 341A	0.82	with splines
Ring & Pinion	113 517 143	4.125	6 mgt bolts
	113 517 143	4.125	8 mgt bolts
However, there are no other standard ratios than the ones listed here. A gear removed from a transmission can be identified by the number of teeth.			

C.7. Ballasting

Ballasting is permitted, per GCR.

C.8. Frame

A. The frame/chassis shall be constructed of steel tubing of a maximum diameter or width of 4 inches and be of a safe and suitable design.

B. The driver's feet shall not extend beyond the rear of the front axle beam tubes.

C. There shall not be frame/chassis rigidity or strength derived by means other than the frame tubes. Stressed skin, monocoque, or semi monocoque construction is not permitted, except that:

The firewall panel and undertray(s) may be rigidly attached to the frame tubes.

D. The undertray (belly pan) from the nose to the rear roll hoop shall not be wider than the bodywork at the bottom of the frame rail or no more than 1/4 inch wider (on each side) than the frame rail when the undertray has an upward turned edge that facilitates mounting the undertray to the chassis or that facilitates mounting the body to the chassis.

E. Engine bay undertrays shall be no wider than the frame rails in this area or no more than 1/4 inch wider (on each side) than the frame rail when the undertray has an upward turned edge that facilitates mounting the undertray to the chassis or that facilitates mounting the body to the chassis.

F. Any undertray(s) between the axle center lines shall be rigidly attached to the frame provided the curvature of said tray(s), measured vertically from the lowest point to the highest point at their attachments to the frame rail members at their sides, shall not exceed 1 inch and have no downward turned edges.

G. Transmission undertrays for cars with a rear subframe shall be no wider than the subframe or no more than 1/4 inch wider (on each side) than the subframe when the undertray has an upward turned edge that facilitates mounting the undertray to the subframe or that facilitates mounting the body to the subframe or 16 inches, whichever is wider. For cars without a subframe, the tray shall be no wider than 16 inches and shall not deviate more than 1 inch from the horizontal plane. Undertray must be firmly attached and have no downward turned edges.

H. The area between the upper and lower main frame tubes, or at least 14 inches above the floor pan whichever is greater, from the front roll hoop bulkhead to the rear roll hoop bulkhead shall be protected by one of the following methods to prevent the intrusion of objects into the cockpit.

1. Panel(s), minimum of either .060 inch heat-treated aluminum (6061-T6 or equivalent) or 18 gauge steel, attached outside of the main frame tubes.

2. Reinforced body - at minimum, consisting of a double layer, 5 ounce bi-directional, laminated Kevlar material incorporated into the body which shall be securely fastened to the frame.

For either method, fasteners shall be no closer than an average of 6 inch centers (no stress bearing panels). The material used for the chassis braces in this area shall be at least equivalent to the roll hoop brace material.

C.9. Body

A. The chart (figure - Section C.12) illustrates both the intended minimum frontal area and car configuration.

B. The rear bodywork shall enclose the engine by surrounding it from a point no higher than the lower edge of the intake manifold and extending from the front of the engine to its rear on each side.

C. The rear bodywork must have the ability to enclose the original Volkswagen fan shroud mounted in its stock location (see illustra-

tion in Section C.12).

D. The top of the rear bodywork shall extend from the back of the firewall to a point at least 16 inches to the rear of the centerline of the rear axle.

E. Any bodywork forward of the center of the torsion bar tubes shall have a maximum width of 31.75 inches (80.645cm).

F. No part of the frame or bodywork shall project beyond a plane connecting the vertical centerline of the front and rear tires.

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

H. Wings (airfoils) are prohibited.

I. Floor and safety equipment shall conform to Section 9 of the GCR.

J. A firewall to prevent passage of flame and debris between the engine area and driver's compartment shall extend the full width of the cockpit and be at least equal to the top of the carburetor in vertical height.

K. Air ducting may be attached to the carburetor and/or the engine.

L. Forward facing air ducts may be installed for the purpose of delivering cooling air directly to the engine, cylinder heads, oil cooler, and/or carburetor. If these ducts are within the profile area defined in Section C.12, then the ducted air must make a 90 degree bend within the bodywork.

M. Air duct openings may be located within the cockpit area, and/or penetrate the firewall, provided the duct is baffled or the firewall is extended to prevent flame and debris from reaching the driver. Any shape may be used to form firewall extension. Any other firewall inlet shall also prohibit passage of flame and debris.

(Recommended: All of this extension be the same width as the firewall, allowing for bodywork contour limitations, and extend in a horizontal plane back 2 inches, minimum, past the carburetor body.)

N. The bottom of any bodywork that extends below the frame members shall be on the same flat plane as the undertray (ref. C.8) and shall not deviate from that flat plane by more than 1 inch front to rear effective for any newly registered cars after January 1, 1983.

O. The rear locating arm(s), coil spring(s), and shock absorber(s) shall not be faired in and shall be visible from the side without removal or manipulation of any part or panel.

P. The front suspension upright(s) (shock absorber mounts), shock absorbers, and/or trailing arms shall not be faired in by covering or shrouding away from the air-stream except that the front shocks may be mounted behind the shock uprights.

C.10. Non-Standard Parts

The use of the following non standard replacement parts is permitted provided that no unauthorized modification of any other component results.

A. Fasteners (nuts, bolts, screws, etc.)

B. Wiring

C. Gaskets and seals

D. Brake lines and fuel line

E. Spark plugs (maximum ½ inch reach)

F. Piston rings

G. Wheel bearings

H. Connecting rod bearings and crankshaft main bearings of same type and size as standard VW

I. Brake shoes and brake lining

J. Valve guides

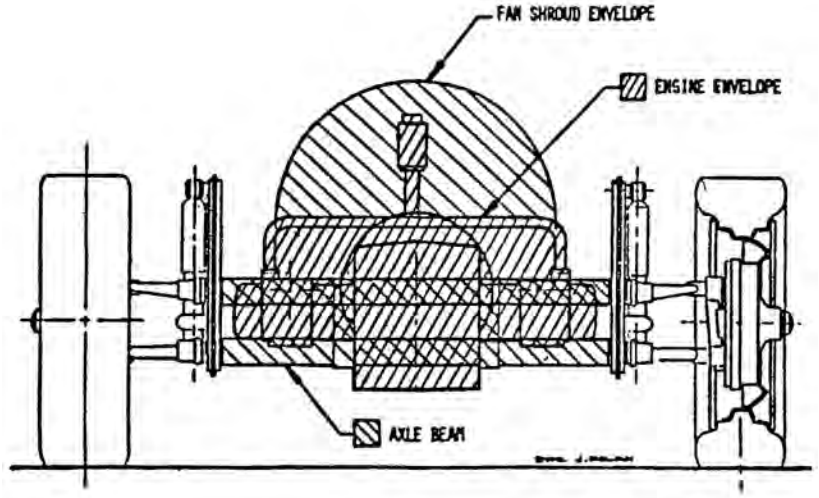
C.11. Battery

A. The use of any single 6- or 12- volt battery is permitted to power the starter and engine ignition system.

B. Any secondary batteries connected only to gauges, and communications or data acquisition equipment are allowed.

C.12. Front View

The following illustrates a fan shroud in its stock location.



D. FORMULA F PREPARATION RULES

D. FORMULA F PREPARATION RULES

NOTE: Contained herein are the 1986 Formula F chassis construction requirements (see D.6 and D.7).

Definition

a. A formula for single-seat, open-wheel racing cars using standard Ford 1600 "crossflow" pushrod engines, or a Honda Fit 1500 (L15A7) overhead cam engine, with firewall, floor, and safety equipment conforming to the GCR.

b. Formula Ford is a Restricted class. Therefore, any allowable modifications, changes, or additions are as stated herein. There are no exceptions. IF IN DOUBT, DON'T. Homologation is required for all

cars registered after January 1, 1983.

c. Three engines are allowed in Formula Ford:

1. The Ford 1600 GT "Kent" pushrod "crossflow" as installed in the Ford Cortina in 1971 and later. The Kent engine specifications are contained in D.1.

2. The Ford 1600 GT "Cortina" engine as installed in the Ford Cortina through 1970. The Cortina engine specifications are contained in D.2.

3. The Honda Fit (L15A7) 1500cc overhead cam engine as installed in a Honda Fit (all models starting 2009). The Honda Fit engine specifications are contained in D.3.

D.1. 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.

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 D.1.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 D.1.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.

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

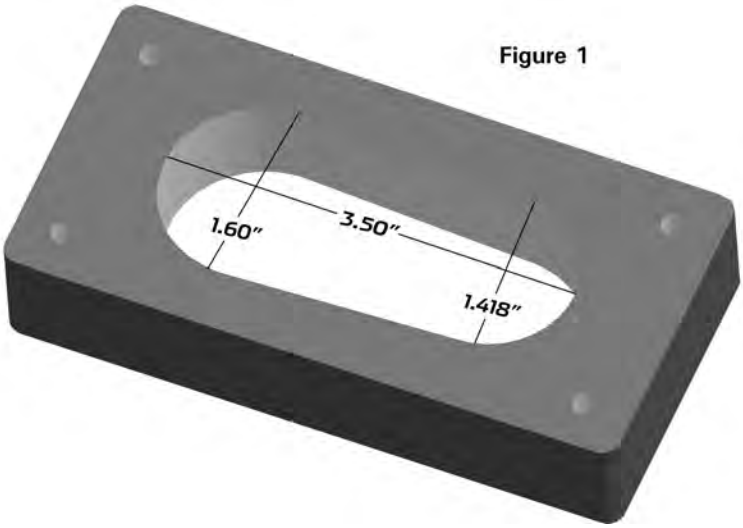
Maximum dimensions at carburetor flange: see Figure 1.

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.

Figure 1



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:		
Standard:	3.187″	
0.005″ o/s:	3.192″	
Depth of bowl:	0.470″ (minimum)	
Maximum diameter of bowl:	2.44″	AE Hepolite,
	2.50″	CP Piston
Centerline of wrist pin to crown:	1.737 +/- .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.

f. Valves

1. Dimensions

	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"

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.

l. 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
Oil pump and sump: Unrestricted

Dry sump system is permitted.

q. Cooling System
Radiator, fan, and water pump: Unrestricted

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

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 (tuftriding, 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.

D.2 Cortina Engine

All of D.1 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

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

D.3. Honda Fit 1500 (L15A7) Engine

a. General

1. No modifications to this engine are allowed except where specifically authorized within these rules. This includes, but is not limited to, all fuel injection and engine management components, electrical, cooling and lubrication systems. All systems are subject to test procedures and must conform to OEM specifications as stated in the Honda Fit factory service manual, Honda PN 61TK600 and all superseding years, or as specified in these rules. The factory service manual or its equivalent is required to be in the possession of each entrant. The manual may be the form of printed material, microfiche, CDs, DVDs and/or Internet access to manufacturer sponsored web-based databases.
2. Permitted engine maintenance includes the replacement, but not modification, of external engine and engine systems parts.
3. All rubber fluid lines may be replaced with braided metal-covered (Aeroquip type) lines. Hose clamps maybe installed on the rubber oil lines.
4. No balancing, (with the exception of the connecting rods), lightening, polishing or other modification of moving parts of the engine is permitted.
5. Only stock Honda manufactured gaskets and seals as specified in the Honda Fit factory service manual are permitted (Including, but not limited to, head gasket, intake runner gaskets and O-rings, restrictor plate gasket, and intake and exhaust gaskets).
6. For all Honda part numbers in these specifications, superceding part numbers are considered equivalent.

b. Block

1. The only permitted cylinder block is Honda PN: 11000-RP3-810
2. Honing of cylinders is permitted to a maximum diameter of 73.065 mm (2.8766 inches). Fitting of cylinder sleeves is prohibited. Re-boring to over size is prohibited.
3. Block must use stock main bearing caps, girdle and hardware as supplied.
4. Minimum deck height from crank centerline: 220.00 mm (8.661 inches).

c. Crankshaft

1. The stock Honda Fit crankshaft, Honda PN: 13310-RB1-000, must be used with no modifications allowed.

2. Minimum weight: 27.7 lbs. No pilot bearing, pulsar or hardware.
3. Maximum stroke at piston: 89.55mm (3.526 inches)
4. Main and rod bearings must not be modified in any way. OEM bearings must be used from within the standard range as allowed in the Honda Fit factory service manual.
5. The crank pulsar must not be altered in any way.
6. The crank pulley/balancer must not be altered or modified in any way.
    a. Minimum weight: 3.90 lbs.
    b. Honda PN: 13810-RB0-003.

d. Connecting Rods
    1. Stock Honda Fit connecting rod must be used PN: 13320-RB1-000.
    2. Minimum connecting rod weight with cap and bolts: 280.0 grams (9.88 ounces).
    3. Connecting rods may be balanced to the minimum weight.
    4. Maximum connecting rod length center to center: 149.05mm (5.868 inches).

e. Pistons
    1. Honda Fit OEM standard size pistons, PN: 13010-RB1-000, must be used.
    2. The use of over size pistons is not permitted.
    3. Piston dimensions and weights:
        a. Maximum standard piston diameter, measured at a point 16mm from the bottom of the skirt: 72.990mm (2.8736 inches).
        b. Centerline of wrist pin to crown maximum: 26.21mm (1.032 inches).
        c. Maximum overall height from skirt to crown edge: 47.80mm (1.882 inches).
        d. Minimum weight: 198.0 grams (6.984 ounces).
        e. Minimum weight of piston pin: 66 grams (2.25 ounces).
        f. Combined minimum weight of piston, piston pin and connecting rod: 543.5 grams (18.85 ounces).
    4. Piston rings must be as used in the Fit engine. The only modification allowed is ring end gap width. Two compression rings and one 3 piece oil control ring must be used.
        a. The standard ring pack PN 13011-RB1-004 (Riken) or 13011-RB1-006 (Nippon).
        b. No modification of the piston is permitted for the installation of rings.
        c. Ring groove widths.

            Top ring groove: 1.04mm (0.0409 inches) +/- 0.01mm.

            Middle groove: 1.02mm (0.04016 inches) +/- 0.01mm.

Oil ring groove: 2.00mm (0.07874) +/- 0.01mm.

f. Cylinder Head

1. The only permitted heads are Honda PN: 12200-RB0-G00 (US spec) and 12200-RB0-000 (Japan Spec).
2. The gasket face of the cylinder head may be resurfaced provided the maximum compression ratio is not exceeded or to a service limit of 0.2mm (0.008 inches) based on a height of 120mm (4.72 inches).
3. The cylinder head must not be ported, polished or machined. The original casting must not be modified in any way or polished.
4. Head gasket to be stock Honda Fit PN: 12251-RB0-004. Minimum compressed thickness of 0.76 mm +/- 0.05mm.
5. Cylinder head breather restrictor must be used as supplied by HPD, unmodified. PN: 15262-F21S-A200.

g. Camshaft

1. The only permitted camshaft is PN: 14110-RB1-J00; must not be modified.
2. The CMP pulse (cam trigger) plate must be as supplied, Honda PN 14221-RB0-003.
3. The camshaft and crankshaft sprockets must be as supplied, Honda PNs: 14211-RB0-J00 and 13621-RB0-003, respectively. Cam timing must not be altered; the timing chain must be installed as specified in the Honda Fit factory service manual. The timing chain/sprocket cover and crankshaft pulley may not be altered. With the engine at TDC (No. 1 cylinder), the "UP" mark on the camshaft sprocket must be at the top and the TDC grooves on the camshaft sprocket must line up with the top edge of the cylinder head.
    a. Timing chain Honda PN: 14401-RB1-003.
    b. Case assy, chain (sprocket cover) PN: 11410-RB1-000
    c. Pulley comp, crankshaft, PN: 13810-RB0-003
    d. Cam timing at lobe centers: (at 1mm after opening to 1mm before closing).
        i. Exhaust: 119 degrees, +/-1.0 degree.
        ii. Intake VTEC on: 111 degrees, +/-1.0 degree.
4. Camshaft profile and lobe centers shall be checked using the official procedure published by the SCCA.
5. Cam lobe heights: Intake, Primary: 35.240mm, secondary: 36.200mm, exhaust: 35.490mm.
6. Valve lift measured at the retainer:
    a. Exhaust: 9.200.
    b. Intake VTEC off: 8.680.
    c. Intake VTEC on: 9.900
7. Valve rockers must not be modified in any way.

a. Honda PN: 14620-RB1-010 Arm Assy, rocker.

8. The VTEC system must be stock. The VTEC activation valve must be stock. The HPD ECU will activate the VTEC at 5200 RPM. Honda PN: 15810RB0-G01.

h. Valves

OEM valves must be as used in the Fit.

1. Dimensions

a. Inlet PN: 14711-RB0-000 Exhaust PN: 14721-RB0-000

b. Maximum diameter: Inlet: 28.15mm Exhaust: 23.15mm

c. Maximum overall length: Inlet: 119.15mm Exhaust: 117.85mm

d. Minimum stem diameter: Inlet: 5.45mm Exhaust: 5.42mm

2. Valve location or angle must not be moved.

3. Reshaping of the valves is strictly prohibited.

4. Valve guides may be replaced provided the position of the valve is not changed and the replacement guides are Honda OEM parts.

Inlet PN: 12204-PJ7-305 (over size)

Exhaust PN: 12205-PJ7-305 (over size).

5. It is permitted to replace or re-cut valve seats provided the valve seat angles are stock Honda three angle cut per the Honda Fit factory service manual.

6. Valve stem installed height must be per The Honda Fit factory service manual:

Intake maximum: 46.8mm.

Exhaust maximum: 46.9mm.

7. Valve stem seals must be Honda OEM parts.

Honda PN: Intake: 12210-PZ1-004 seal A.

Honda PN: Exhaust: 12211-PZ1-003 or 12211-PZ1-004 seal B.

i. Valve Springs

1. Valve springs are Honda OEM as specified in the Honda Fit factory service manual.

a. Intake PN: 14761-RB1-003, free length: 48.55mm.

b. Exhaust PN: 14762-RB1-007, free length: 54.52mm.

2. Valve spring shims are not permitted.

j. Compression Ratio

The maximum compression ratio is 10.55 to 1 utilizing Honda Fit factory service manual limits. Carbon may be removed.

k. Intake Manifold and Fuel System

1. The lower manifold must be stock Honda Fit parts. It is not permitted to add or remove material. No coating is permitted

on the exterior or interior of the manifold. (SCCA Club Racing will have a standard port model for comparison.)

Honda PN: 17100-RB1-000

2. The upper manifold, air box and throttle body assembly must be used as delivered from HPD. External throttle return springs are unrestricted.

3. All gaskets and sensors utilized on the inlet manifold from head to throttle body must be Honda Fit OEM or HPD supplied.

   a) Gasket In. manifold: 17105-RB0-004, Honda Fit OEM.

   b) Gasket, EGR chamber cover: 17146-RB0-004, Honda Fit OEM.

   c) Gasket In. port: 17115-RB0-007, Honda Fit OEM.

   d) Gasket, restrictor: 17399-F21S-A200, (2 required) HPD.

4. The fuel rail and fuel pressure relief valve must be as supplied by HPD. Injectors must be stock Honda Fit OEM parts (PN 16450-RNA-A01).

5. The Honda Fit engine is required to have an HPD supplied air inlet restrictor of specified internal diameter and thickness correctly installed within the intake system. The restrictor may not be modified in any way; the specified value can not be exceeded in any measurement of the diameter. The restrictor centerline or shape must not be altered. SCCA Club Racing will have go-no go gauges to verify that all competitors are in compliance. [The final mandated size of the restrictor will be determined once the final production engine is complete and power verified at Quicksilver RacEngines].

l. Fuel Pump

1. The fuel pump is unrestricted.

m. Exhaust Manifold

1. The exhaust manifold must be as supplied by HPD.

2. The exhaust manifold exit may be shortened within HPD specified limits to direct the tail pipe as necessary. The exhaust pipe must maintain a 2 inch outside diameter from the manifold exit to its outlet and must meet 9.1.1.D.1.s.9.

3. The Lambda sensor placement must be within XX mm +/- XXmm of the manifold cast parting line.

4. Exhaust coatings and wraps and heat shields may be used to control engine bay temperatures and protect other components.

n. Lubrication System

1. The oil pan must be as supplied by HPD. No modifications are permitted.

2. Oil feed pump must be stock Honda Fit. No modifications are permitted. Oil pressure may be adjusted for wear.

   a. The oil pressure sensor location must be as supplied by HPD.

   b. It is recommended that oil pressure be maintained at the

factory service manual specification.

3. The scavenge pump must be as supplied from HPD. No modifications are permitted.

   a. Rotor length: 25.400mm (1.000 inches)

   b. Rotor outside diameter: 44.400mm (1.748 inches)

4. Scavenge drive pulleys must be as supplied by HPD. Drive belt manufacture is unrestricted provided the belt type and dimensions are as specified by HPD.

5. Hose routing and filter system are unrestricted.

o. Cooling System

1. Water pump and water pump pulley must be stock Honda Fit parts. No modifications are permitted.

Honda PN: 19200-RB0-003 Pump, water.

Honda PN: 19224-RB0-000 Pulley, water pump.

2. The water inlet and outlet at engine must be as supplied by HPD. The thermostat is unrestricted provided the housing is not modified. The thermostat bypass may be plugged.

3. Drive belt manufacture is unrestricted provided it is designed for use with Honda Fit crank pulley.

4. Radiator is unrestricted.

p. Electrical Equipment

1. The ECU and engine electrical harness must be as supplied by HPD. No modifications are permitted.

2. The ECU will be a sealed unit supplied by HPD. The ECU maps and inputs must not be modified The ECU is capable of being swapped in the case of a protest.

3. Ignition coils must be stock Honda Fit, PN: 30520-RB0-003. No modifications are permitted.

4. All sensors related to engine operating parameters and/or supplied by HPD must be used. These sensors, their locations and mounts, and their wiring harness leads may not be altered or “piggy backed”. Any sensors required for analog type gauges must be in addition to the HPD supplied sensors.

5. The alternator must be stock Honda Fit. PN: 31100-RB0-004. The alternator drive pulley must be stock. Alternator connections must be through the HPD engine electrical harness only. The alternator must not be disabled and must be accessible to SCCA officials.

q. Flywheel

1. The stock Honda Fit flywheel must be used. No modifications are permitted except for normal resurfacing for clutch wear.

   a. Stock Honda flywheel PN: 22100-RB0-005.

   b. Minimum weight with ring gear: 14.4 lbs.

2. The stock Honda Fit clutch must be used. No modifications are permitted.

a. Honda PN: 22300-RB0-005.

b. Minimum weight without friction disk: 7.0 lbs.

3. Stock Honda friction disk must be used. No modifications are permitted.

a. Honda PN: 22200-RB0-005.

b. Weight of new friction disk: 2.1 lbs.

r. Miscellaneous

1. All emission control devices must be removed and blocked off by the blanking plate provided by HPD, except the VTEC activation valve. The VTEC activation valve must be retained; it must be functioning.

2. Air filter is unrestricted.

3. The use of unleaded premium "pump" gas: 91 – 93 RON is recommended.

4. 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, washers, studs, etc. Head bolts, rod bolts, flywheel bolts, and crank pulley bolt must be used as provided by Honda and HPD.

b. Gaskets and seals, except those specified in the above rules.

c. Spark plugs.

d. Mechanical tachometer and analog gauges.

e. Oil and lubricants are unrestricted. HPD strongly recommends the use of oil and lubricants as described in the Honda Fit factory service manual.

f. The oil filler cap may be removed and plugged.

D.4. Transmission

Any transmission may be used with not more than four (4) forward gears and an operational reverse gear.

a. The use of automatic and/or sequentially shifted gearbox is prohibited.

b. Electronic assisted gear change mechanisms and electronically controlled differentials are prohibited.

c. Gearboxes with shafts that are transverse to the longitudinal axis of the chassis are not allowed. The sole exception are the gearbox final drive (crownwheel) shaft axis and final drive shafts (half shafts). All change gears must be located in the case aft of the final drive.

D.5. Final Drive

Any final drive unit may be used except:

a. Drive shall be to rear wheels only.

b. The differential cannot be modified in any way to limit its normal function. Torque biasing, limited slip, and locked differentials are prohibited.

D.6. 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, and provided that it shall have an operable clutch system. Carbon Fiber clutches are not permitted.

D.7. Chassis/Frame

Formula Ford 1986 construction requirements as of January 1, 1986 as revised January 1, 2010. All new Formula Ford cars are to be built to these specifications covered in D.6 and D.7. (Also required for Formula Continental.)

a. The chassis shall be of steel space-frame construction. Forward-facing braces that protecting the driver's legs and feet shall extend from the front roll hoop to the front bulkhead (The front bulkhead is defined as the transverse section of the frame immediately ahead of the pedals and drivers feet.) The soles of the driver's feet shall not extend beyond the front edge of the wheel rims (in normal position; (i.e., pedals not depressed) and shall remain behind the front bulkhead. The lower main frame rails shall be a minimum of 25 centimeters (9.84 inches) apart (inside dimension) from the front bulkhead to the rear roll hoop. Monocoque-type structures are prohibited.

A stress bearing floor pan constructed from a minimum of .060 inch heat treated aluminum sheet or 18 gauge steel sheet is required. At a minimum, it shall extend from the front bulkhead to the rear roll hoop bulkhead. Its curvature shall not exceed one inch. The floor pan may be constructed in multiple sections.

The front bulkhead, forward roll hoop (dash hoop) bulkhead and main hoop bulkhead may also utilize stress-bearing panels. No other stress-bearing panels are allowed.

Stress-Bearing Panel Definition: Any sheet material that is attached to the frame by welding, bonding, riveting, threaded fasteners, or any combination thereof, the centers of which are located closer than 6 inches. No materials other than aluminum or sheet steel are allowed for use as stress-bearing panels. Stabilized materials (honeycomb) are not permitted as stress-bearing panels.

b. The area between the upper and lower main frame tubes from the front roll hoop bulkhead to the rear roll hoop bulkhead shall be protected by one of the following methods to prevent the intrusion of objects into the cockpit.

1. Panel(s), minimum of either .060 inch heat treated aluminum (6061-T6 or equivalent) or 18 gauge steel, attached to the outside of the main frame tubes. No other material types will be allowed for these panels.

2. Reinforced body - at minimum, consisting of two layers of 5 ounce, bi-directional, laminated Kevlar material incorporated into the body which shall be securely fastened to the frame. (5 layers are highly recommended.)

For either method, fasteners shall be no closer than 6 inch centers (no stress-bearing panels). The material used for the chassis braces in this area shall be at least equivalent to the roll hoop brace material.

c A firewall(s) that seals the drivers' compartment (cockpit) and the engine compartment is required. Forward facing ducts may be installed to delivering air directly to the engine compartment. Air

duct openings may be located within the cockpit provided the firewall is extended to prevent the passage of flame and debris from reaching the driver.

d. Brackets for mounting components, such as the engine, transmission, suspension pickups, instruments, clutch and brake components, and body panels, may be non-ferrous, of any shape, and attached to the frame in any manner.

e. Impact Attenuators: See GCR 9.4.5.G.

f. No engine oil or water tubes are allowed within the cockpit, except for shielded (stainless steel braid) mechanical oil pressure lines. Chassis tubes shall not be used as oil or water transport tubes.

D.8. Bodywork

For the purposes of this section, bodywork includes all panels external to the chassis/frame and licked directly by the air stream. This includes panels above or below the floor pan, and the bottoms of any side pods.

a. a. The bodywork opening giving access to the cockpit shall have the following minimum dimensions:

Length: 60cm (23.62 inches)
Width: 45cm (17.72 inches)

This width extends over a length of 30cm (11.81 inches) minimum. This minimum rectangular opening may exist anywhere forward of the firewall. Forward-facing roll bar/cage bracing and padding will not be considered in these dimensions.

b. The driver's seat shall be capable of being entered without the manipulation or removal of any part or panel, with the exception of the steering wheel and/or drivers head surround. The steering wheel and the surround must be removable by the driver and/or safety workers without the use of any tools. Readily legible removal instructions for safety workers are recommended.

c. Bodywork (including undertrays, floor pan, spoiler and any attached components except for suspension components) shall not exceed a maximum width of 95cm (37.40 inches). No part of the bodywork, rear spoiler, or exhaust system shall extend more than 100cm (39.37 inches) behind the centerline of the rear axle nor exceed in height a horizontal plane 90cm (35.43 inches) above the ground with the car as qualified or raced with the driver on board. The safety roll bar/roll cage and engine air box are not included in these restrictions. Bodywork shall not increase in width behind the centerline of the rear axle in any horizontal section.

There shall be no forward facing gaps or openings in the bodywork with the exception of those necessary for engine cooling, engine air inlet, shock, or brake cooling. All bodywork shall be firmly attached to the chassis.

For Formula Ford, a wing shall be defined as any shape that has a leading edge and a trailing edge and creates downforce. Wings and other airfoil devices ("dive planes", etc.), whose primary purpose are to create aerodynamic downforce, are prohibited. Any part of the car which that has an influence on the aerodynamic stability of the vehicle shall be firmly attached with no provisions for adjustment to vary downforce. A single rear spoiler, that may be capable of adjustment, is permitted. Cockpit adjustment is not permitted. This spoiler shall be no wider than the surface to which it is attached, and there shall be no gap between the spoiler and the

body surface to which it is attached.

d. It is the intent of these rules to minimize (not eliminate) the use of "ground effects". A reference area is defined by the full width of the lowest surfaces of the car licked by the air stream between the front axle centerline and the rear of the rear tires. These surfaces may include the floor pan, undertrays, side pod bottoms and any essentially horizontal bodywork that is included in the lowest surfaces licked by the air stream. Within this reference area, the lowest surfaces licked by the air stream must be flat with a total vertical tolerance of 2.54cm.. An undertray beneath the engine, bell housing and/or gearbox is not required.

(For FF only) No part of bodywork is allowed to have any down-turned fences or intermediate strakes and no bodywork below the horizontal centerline of the differential and to the rear of the rear tires may be wider than 16 inches.

The perimeter of any reference area surface that transitions upward to any bodywork may use a maximum 1 inch radius.

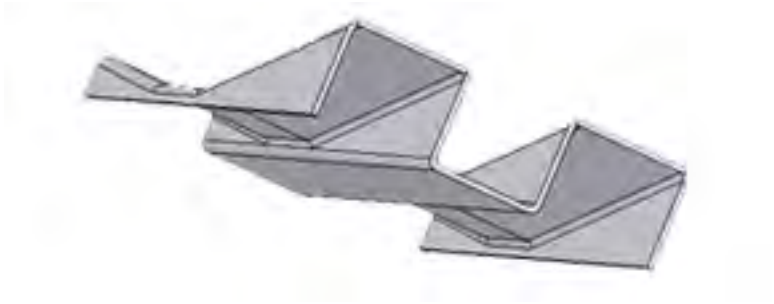
Mirrors and any primarily vertical bodywork (e.g., cockpit sides) that extend laterally past the outer edges of the floor pan and/or undertrays are not subject to the reference area restrictions. Fairings for streamlining suspension pickups are not subject to the reference area restrictions; however, such fairings shall be symmetrical about their horizontal axis.

Measurement for compliance of the defined area shall be performed as follows:

1. A non-flexible straight-edge bar shall be placed against the lower surface of the reference area in a suitable section (unworn and flat enough to prevent rocking of the bar) from which the bar can be oriented to measure all parts of the reference area. The competitor shall be responsible for the availability of such a surface. The bar shall be of sufficient length to reach all portions of the reference area from that surface.
2. All measurements shall be taken vertically from the bar to the reference area surfaces. The total maximum vertical distance (additive upward and downward) from the bar to any part of the reference area surfaces shall be 2.54 cm. Skid blocks and or rub strips are not included in this measurement.

No aerodynamic devices (e.g., skirts, body sides, skid "planks", undertrays, skid blocks, etc.) may extend more than 1 cm (.394 inches) below the reference area.

Shaping of the lower surfaces to create "venturi" type tunnels is prohibited. An example of venturi tunnels is shown in the following figure.



e. It is not permitted to duct air through any part of the bodywork for the purpose of aerodynamic downforce. All ducted air for heat exchangers shall pass through those heat exchangers.

f. Carbon fiber is not permitted in any external bodywork. Cockpit interior panels, internal ductwork, air intakes and mirrors are not subject to this restriction. Kevlar may be used for reinforcement of any bodywork.

g. Fuel cell vents shall be located at least 25cm (9.84 inches) to the rear of the cockpit.

D.9. Suspension

Suspension is defined as the system of springs, shock absorbers, control arms, links, etc., supporting the vehicle on its axles. Sway bars, sway bar links, steering components, etc., are not considered as suspension in this section.

All suspension components shall be of steel or ferrous material, with the exception of hubs, hub adapters, hub carriers, bell cranks, pivot blocks, bearings, bushings, spring caps, abutment nuts, shock absorber caps and nuts. Titanium and carbon fiber are prohibited.

Front and rear hub carriers shall be only steel or aluminum alloy for cars manufactured after January 1, 1983. (applies to FF only) Springs shall be steel only.

Control arms and all associated items that attach directly to the chassis members shall be boxed in or captured to prevent intrusion into the cockpit.

Shock absorbers: Design - unrestricted; casing material: steel or aluminum alloy.

All components that are not defined as chassis/frame or suspension are unrestricted, unless otherwise restricted by these rules or the GCR. Titanium is prohibited. Carbon fiber is prohibited

It is not permitted to attach spoilers, fairings or other devices that may exert downforce to the movable suspension members. If the suspension member is of streamline or airfoil cross section, it shall be symmetrical about its horizontal axis. Brake lines may be attached to suspension members. Brake lines may be enclosed in a symmetrical fairing.

D.10. Brakes

Unrestricted, except that calipers shall be cast iron, and rotors are restricted to ferrous material.

Forward facing brake cooling ducts may be installed, but shall serve no other function or purpose.

D.11. Wheels

Wheels are unrestricted except that:

a. Material is unrestricted providing it is metal.

b. Diameter shall be thirteen (13) inches.

c. Rim width shall not exceed 5.5 inches.

D.12. Weight

Minimum weight as qualified or raced, with driver:
1050 lbs. Ford Cortina Engine
1100 lbs. Ford Kent and Honda Fit Engines

D.13. Cars Registered Prior To 1/1/86

The following specifications are for cars registered prior to January 1, 1986 and for Technical Inspection only. No cars are to be built to these specifications as of January 1, 1986.

A. Chassis/Frame

The chassis is defined as the frame. It shall be a steel space frame. Monocoque-type structures are prohibited. Sheet material affixed to the frame by welding, bonding, or riveting, or by bolts or screws which are six (6) inch centers are defined as stress-bearing panels.

The undertray, for safety reasons, shall be a stress-bearing panel. Its curvature shall not exceed one (1) inch. The mountings for brake and clutch pedals and cylinders, and for the instrument panel and the bulkhead (panel) behind the driver may be stress-bearing. No other stress-bearing panels are permitted.

Brackets for mounting components, such as the engine, transmission, suspension pick-ups, instruments, clutch, and brake components, and body panels may be non-ferrous, of any shape, and fastened to the frame in any manner.

Gussets are defined as of steel, fastened to a maximum of two (2) members, and are specifically permitted.

The firewall portion of the bulkhead (panel) shall extend the full width of the cockpit and be as high as the top of the carburetor. Forward facing air ducts may be installed for the purpose of delivering air directly to the engine area. Air duct openings may be located within the cockpit provided the firewall is extended to prevent flame and debris from reaching the driver. (Any shape may be used to form firewall extension.) All firewall inlets shall prohibit passage of flame and debris.

B. Suspension and Running Gear

Suspension is defined as the system of springs, shock absorbers, A-arms, links, etc., supporting the vehicle on its axles. Sway bars, sway bar links, steering rack housings, steering links, etc., are not classified as suspension or running gear for this application.

All components shall be of steel, with the exception of hubs, hub adapters, rear hub carriers, and bearings and bushings. Front hub carrier material shall be of steel or aluminum alloy. The materials for front and rear hub carriers on cars manufactured after January 1, 1983 will be only steel or aluminum alloy. Springs: steel only, titanium is prohibited.

Shock absorbers: Design: Unrestricted.

Casing Material: Steel or aluminum alloy.

All components which are not defined as chassis/frame or suspen-

sion or running gear are unrestricted, unless otherwise restricted by the GCR. Titanium is prohibited.

C. Body

1. Definition of Bodywork

   Internally: All visible parts of the passenger compartment.

   a. The bodywork opening giving access to the cockpit shall have the following minimal dimensions:

      Length: 60cm (23.622 inches)

      Width: 45cm (17.72 inches)

      This width extends over a length of 30cm (11.811 inches) minimum. This minimal rectangular opening may exist anywhere forward of the firewall. Forward facing roll bar/cage bracing and required padding will not be considered in these dimensions.

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

   c. Bodywork, including fuel tanks, shall not exceed a maximum width of 95cm (37.4 inches).

   d. No part of the bodywork and aerodynamic devices shall exceed the height of a horizontal plane 90cm (35.4 inches) above the ground. The safety roll bar/roll cage and engine air box are not included in this height restriction. Measurements are to be made in any condition, driver on board.

   e. No part of the bodywork shall extend more than 100cm (39 inches) behind the centerline of the rear axles.

   f. Any specific part of the car which has an aerodynamic influence on the stability of the vehicle shall be firmly fixed with no provisions for adjustment to vary downforce.

   g. Side-mounted radiators (behind the front wheels) may extend beyond the 95cm (37.4 inches) limitation, but not beyond a vertical plane passing through the centerlines of the front and rear tires. Any portion of a radiator that extends beyond the 95cm (37.4 inches) limitation cannot be covered with any type of shrouding. Radiators mounted in front of the front wheels are considered front mounted and cannot exceed the 95cm (37.4 inches) limitation.

2. Wings and other airfoil devices which have the principal effect of creating aerodynamic down-thrust are prohibited. Airfoil: Any device or part of a car (excepting normal and conventionally styled bodywork) which has a principal effect of creating aerodynamic downthrust. Within this definition may be included forward facing gaps or openings in the bodywork, but shall not include spoilers in the form of raised surfaces, continuous with the body surface, and not wider than the body surface.

3. It is the intent of these rules to minimize the use of "ground effects" to achieve aerodynamic down-force on the vehicle. Thus, for the full width of the body between the front and rear axles, the lower surface (surface licked by the air-stream) shall not exceed 2.54cm (1 inch) deviation from the horizontal in any longitudinal section through that surface. (This is not

to be interpreted as requiring a floor pan beneath the motor, transaxle, transmission, or final drive housing.) No aerodynamic devices (e.g., skirts, body sides, etc.) may extend more than 1cm (0.394 inches) below the lower surface of the tub or chassis floor to the rear of the front axle. Seat buckets or other protrusions shall not circumvent this rule. It is not permitted to duct air through any part of the bodywork for the purpose of providing aerodynamic downforce on the car. All ducted air for heat exchangers (water/oil) shall pass through those heat exchangers.

4. Fuel tank air vents shall be located at least 25cm (9.843 inches) to the rear of the cockpit.

E. FORMULA 500 PREPARATION RULES

E.1. Definition
A class for single-seat, open-wheel, rigid-suspension race cars using snowmobile-derived engines and drive components. Specifications are restrictive in nature in order to emphasize driver ability rather than design.

Formula 500 is a Restricted class. Therefore, any allowable modifications, changes, or additions are as stated herein. There are no exceptions. IF IN DOUBT, DON'T. Homologation is required for all cars registered after January 1, 1983.

E.2. Weight and Dimensions
Minimum weight as qualified and raced, with driver, shall be 700 pounds (800 pounds for AMW and Rotax RAVE/non-RAVE 494 engines, 825 pounds for Rotax 493 engines).

Wheelbase:	Maximum	80"
Overall Length:	Minimum	110"
	Maximum	150"
Overall Width:	Minimum	50"
	Maximum	55"

E.3. Suspension shall be restricted and of a safe, suitable design. "Restricted" is defined as follows:

A. There shall be no springs or shock absorbers acting either directly or indirectly between the frame/chassis and axle.

B. Rear driving axle shall be of solid or tubular steel. Axle shall be one piece live axle, driving both rear wheels. Trailing arms are allowed. Differentials and/or slip joints are not permitted. The object of E.3.B., is to eliminate independent rear suspension of any type, or provision for lateral movement of the axle shaft to facilitate independent-type suspension.

C. Blocks, bushings, and/or mounts of rubber or similar material shall be used to isolate engine and drive assemblies, and/or axles from vibration, shock, or track irregularities. The number of mounts shall not exceed one (1) per wheel and shall not exceed one (1) inch in thickness in uncompressed state nor shall they be stacked. The diameter of the mounts shall not exceed two (2) times their thickness. The mounts shall carry the weight of the car. Installation will be evaluated on compliance with both the letter and the intent of this provision.

D. Front axle(s) design and/or mounting configuration shall be such that the axle(s) does not function as a torsion bar. Split-axle/inde-

pendent front suspension is permitted so long as suspension control is effected solely by the mounting defined herein.

E. Anti-sway bars are not permitted.

E.4. Brakes
Brakes shall be foot-pedal operated, hydraulic disc or drum-type, acting on all four wheels. The brakes shall be a dual system, arranged in a manner to provide braking for at least two (2) wheels in the event of failure in part of the system.

E.5. Steering
Steering is unrestricted provided it is of a safe and suitable design.

E.6. Transmission and Final Drive
Transmission of power from the engine to the rear wheels shall be through an automatic torque converter-type, centrifugal variable ratio drive, using a belt and/or drive chain and centrifugal clutch. Sprocket and/or pulley diameters may be changed to alter the drive ratio. No electronically or driver-controlled variable drive is permitted.

E.7. Frame/Chassis
The frame/chassis assembly shall be constructed of steel tubing, and shall be of a safe and suitable design. The monocoque-type chassis is permitted but shall have reinforcement plates at all points of attachment for axles, engine, drive components, roll cage, and driver restraint system. There shall be a bulkhead incorporated in the chassis forward of the soles of the driver's feet with the pedals depressed. Forward-facing braces protecting the driver's legs and feet shall extend from the front roll hoop to the front bulkhead*, unless foot protection is provided in accordance with 9.4.5.G.1.B.*

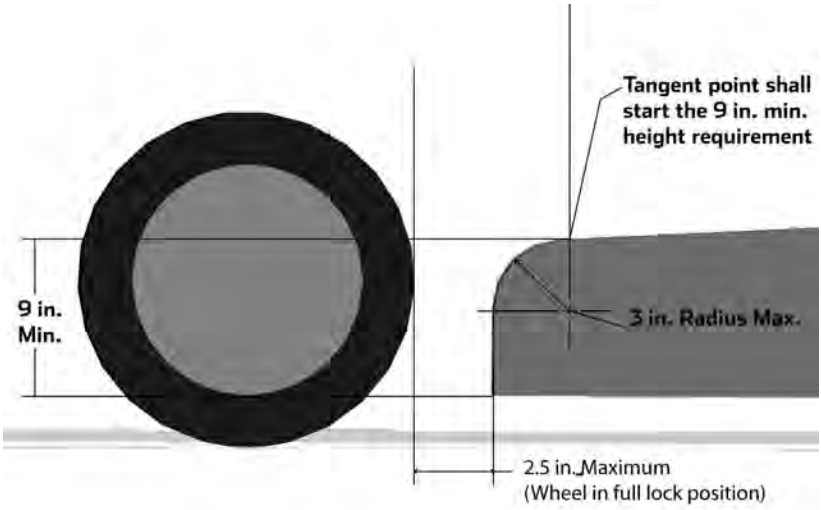
The soles of the driver's feet shall not extend beyond the front edge of the wheel rims (in normal position; i.e., pedal not depressed).

E.8. Roll Cage
Cars shall have a full roll cage complying with section 9.4, made of steel, designed so that when viewed from overhead, an opening, having a minimum width of fourteen (14) inches and a minimum length of seventeen (17) inches is available for driver extraction under emergency conditions.

E.9. Bodywork
All mechanical components of the car, forward of the roll cage, shall be covered by suitable bodywork. Exceptions are the wheels, brakes, front suspension components, and the cockpit. Driver's seat shall be capable of being entered without the removal or manipulation of any part or panel. Sports car noses are recommended provided they do not extend beyond the outside edge of the front tires, do not stand taller than the top of the front tires, and their rearward most portion does not extend beyond an imaginary line drawn from the center of the front wheel, forty (40) degrees forward from vertical.

Bodywork behind the front wheels and forward of the rear wheels shall extend to within one (1) inch of a line connecting the outer edges of the front and rear wheels. *In a horizontal plane, it shall begin within 2.5 inches of the rear-most part of the tire in the completely turned position and extend to within 4.5 inches of the front of the rear tire.* The sidepod(s) shall be continuous from the outside edge of the main bodywork, at a minimum height of nine (9) inches, maximum twelve (12) inches measured from the bottom plane of the car. The sidepod(s) shall be closed across the front except for air duct openings to heat exchanger(s), but ALL ducted air shall pass through those exchanger(s). The sidepod(s) may be open to the rear.

Sidepod(s) is (are) intended to restrict wheel entanglement between cars. The purpose of these rules is to eliminate the use of "ground effects" to achieve aerodynamic downforce on the vehicle. Thus, for full width of the body between the front and rear axles, the lower surface (surface licked by the airstream) shall not exceed 2.54cm (1 inch) deviation from the horizontal in any longitudinal section through that surface. (This is not to be interpreted as requiring a floor pan beneath the motor or rear axle.) The bodywork shall not extend below the surface of the tub or chassis floor to the rear of the front axle. Seat bucket or other protrusions shall not circumvent this rule. It is not permitted to duct air through any part of the bodywork for the purpose of providing aerodynamic downforce on the car. Wings are prohibited.



E.10. Tires
Any recognized ten (10) inch racing tire with any tread width up to a designed 7.5 inch width may be used. Any HR rated radial tire may be used as a rain tire.

E.11. Wheels
Wheels shall not exceed a ten (10) inch diameter and 8.5 inch width.

E.12. Ballast
Ballast may be added to meet the minimum weight requirement provided it is securely mounted within the bodywork and serves no other purpose. It is recommended that underweight cars be brought to the minimum limit by adding strengthening material to areas providing driver protection; i.e., roll cages, frame rails, etc., rather than simply bolting in additional weight.

E.13. Fuel Tank
The fuel container shall be located within the bodywork, ahead of the rear wheels and behind the centerline of the front wheels.

E.14. Engines
Engines shall be two-cylinder, two-cycle, water-cooled in stock configuration as listed below: Fuji "Chaparral" Model G44bw. "Kawasaki TC440A"/C-200, B-201, C-201, C-202, F-202, and G-203. The F-202 and the G-203 are electric start engines. Cylinder head P/N 440/2A is permitted for the engines listed. Only the "A" series engine is legal; the use of any parts from other Kawasaki series engines is prohibited. *Rotax Model 494 and Model 493, single expansion chamber and electric and/*

or pull starter, and Rotax 494 RAVE engine must use the 494 non-RAVE rotor, Ski Doo part numbers 420 924 509 or 420 924 508, 147 degree designation. RAVE valves may be blocked in the "full open" position or left as delivered. 494 RAVE and non-RAVE cylinder heads may not be interchanged between engines.

AMW engine as specified:
The AMW engine approved for F500 shall be the AMW model no. 250-2 RC2, two-cylinder, two cycle, liquid cooled, reed valve engine with a nominal bore and stroke of 72mm x 61mm and a displacement of 497cc. All components of the engine shall be in "as cast" condition or as delivered from AMW. No component of the engine may be altered, modified, or changed nor be of any other origin than the original equipment manufacturer (OEM) unless specifically authorized in these rules. Any Y-pipe exhaust manifold and single expansion chamber meeting 9.1.1.E.14.B is permitted. All factory technical bulletins shall be approved by the Club Racing Board prior to implementation and publication. AMW Technical Bulletins #10/96.01, Published October 1996, #03/97.01, Published January 1997 and Technical Bulletin #04/99.01, Published February 1999, have been approved by the Club Racing Board.

The engine must be installed in the chassis so that the exhaust ports face the front of the car. The engine may be inclinded from vertical.

Hardware items (nuts, bolts, etc.) may be replaced with similar items performing the same fastening function(s).

No component of approved engines may be altered, modified, or changed, nor be of any other than original equipment manufacture unless specifically authorized. Engine components shall be assembled in stock configuration. Stock configuration is defined as including: thermostat, water outlet elbow, ignition harness, etc.

Authorized Changes:

A. Carburetors: The induction system is restricted to two (2) 38mm Mikuni VM 38 round slide carburetors (except AMW). No modifications are permitted to the carburetor bodies. The use of any jets or jet needles is permitted.

   Carburetor mounting shall be of individual runners, no balance pipes, no plenums unless fitted as standard as on the 493 engine. Supercharging, turbocharging, and direct fuel injection are prohibited.

B. Any exhaust pipe(s) may be used (unless otherwise specified). Maximum exhaust length behind the rear axle centerline is twenty-four (24) inches. It is the intent of this rule that the exhaust pipe includes the exhaust manifold.

C. Alternate piston replacement for Chaparral engine only, "Wiseco" one-ring piston.

D. Any thermostat may be used.

E. Alternate AMW/Wiseco piston (#2687) is permitted.

F. Engine specifications will not be changed during the current year.

G. Rotax 494 and 493 engines: Any Rotax 494 or 493 respectively, model thermostat housing or water outlet elbow may be used. The water bypass may be blocked.

H. Rotax 494 engine only: Rotax OEM 0.010" overbore piston P/N 887-554 is permitted. Engines may be overbored as specified by Rotax so that this piston may be fitted.

I. Alternate WISECO piston (#2084PS) is permitted (for Kawasaki engine only).

J. Rotax 493 engine only: Rotax OEM 0.010" overbore piston P/N 420888443 is permitted. Engines may be overbored as specified by Rotax so that this piston may be fitted.

E.15. Chain/Belt Guards
Protective guards made from 1/8" aluminum or 3/32" steel are required where belt or chain breakage could result in injury to the driver or damage to items necessary for the safe operation of the vehicle. This includes, but is not limited to, fuel lines, fuel tanks, brake lines, radiator, and water hoses.

E.16. Radiator
Capacity, size, shape, location, and number are unrestricted. Overhead radiators shall be at least six (6) inches rearward of driver's head.

E.17. Safety Items
In addition to previously mentioned items, the following equipment is required. Vehicle will be fitted with:

A. Mirrors affording the driver clear fields of vision behind him/her, and on both sides of the car.

B. Cars shall not be started with rear wheels on the ground unless a driver is on board.

F. FORMULA MAZDA

F.1. Eligibility
Only cars homologated as Formula Mazda are eligible for competition in this class.

F.2. Formula Mazda Description
Formula Mazda cars are one design, single seat, open wheel automobiles conforming to safety standards as per regulations. Engine - Mazda 13B rotary as approved by SCCA Club Racing.

F.3. The Intent of the Rules
All components of the car shall be purchased from *Moses Smith Racing*, sourced from the supplying manufacturer to *Moses Smith Racing* or fabricated as exact replicas of components supplied by *Moses Smith Racing*. It is the explicit intention of these rules and regulations to prohibit innovation and alteration of the cars except as provided by these regulations or supplements.

F.4. Additional Safety Requirements, Decals, and Patches
A firewall, full width between the roll bar upright, securely attached at the level of the shoulder harness attachment bolts, up to and bolted to the upper headrest cross member, is mandatory. The manufacturer's new rollover bar design (February 2000) for the Star Race Car FM chassis is accepted. All *Moses Smith Racing* Formula Mazda chassis shall be converted to the manufacturer's new rollover bar design by 1/1/2001.

F.5. Electrical
A. Alternators (P/N 3A2T4167 Mitsubishi 65 Amp or P/NA5T41474 Mitsubishi 60 Amp) shall be in working order and not modified in any manner. Belt tension shall be within the factory tolerance.

B. Battery shall be securely mounted in front of the master cylinders, in the center nose support frame. Battery type is unrestricted.

C. The wiring harness may be modified so long as it does not change the actual electrical function of the car and does not override the alternator or rev limiter.

D. The use of the MSD (P/N 6446 only) 6T spark box, MSD Soft Touch limiter, or MSD (P/N 6420 - 6AL) is mandatory. Location of the spark box and limiter is unrestricted, provided that access to visually inspect and remove the limiter chip is not impeded. A 6600 rpm limiter chip is standard. A maximum rpm of 6850rpm is allowed. Competitors may use adjustable rev chip (Moses Smith Racing part # 080-135). Competitors are advised that MSD chip function may vary with temperature, and should take measures to ensure compliance at all times.

E. Instrumentation is unrestricted

F. Bosch Blue coil is mandatory.

G. MSD Spark Plug wires (Part #31919) are mandatory.

F.6. Radiators and Plumbing

A. Fluidyne oil cooler #DB30130 or any brand oil cooler measuring (+/- 1/2") 2" thick x 12" wide x 12 1/4" high shall be fitted behind the engine in front of the wing, above the gearbox.

B. Water radiators shall be fitted in both sidepods. They shall be installed in series with each other. The swirl pot shall be connected to the inboard inlet of the left radiator. The outboard outlet of the left radiator shall be connected to the right side radiator's outboard inlet. Approved radiators: Volkswagen P/N 171121253D. Moses Smith Racing P/N 100-101 and Moses Smith Racing P/N 100-142.

C. All cars shall be equipped with oil and coolant catch tanks per GCR Section 9.3.

D. Flat sheet metal blanking material may be fitted surrounding the radiators and oil cooler to prevent cooling air from leaking around the radiators or oil cooler rather than passing through. Synthetic foam sealing material may also be used for this purpose, provided that any combination of materials do not extend more than 3" beyond the plane of the radiator or cooler, and may not extend outside the standard bodywork.

F.7. Engine

A. The spec engine shall be the six (6) port Mazda 13B Rotary or the four (4) port Mazda Renesis Rotary as approved by SCCA Inc. Said engine is to be sealed by an approved engine builder and shall remain so with no modifications to the engine or any of its accessories or components.

All engines shall be returned to an SCCA approved engine builder to be dynoed and resealed with the new generation engine seals.

B. No engine may be rebuilt except by a rebuilder approved by SCCA Club Racing.

Approved Engine Builders:

Daryl Drummond Enterprises, Inc.
3590 North River Rd
Gold Hill OR 97525
mailing address:
PO Box 678
Rogue River OR 97537
(541) 582-1786

C. The use of any impregnating material in the engine is expressly prohibited.

D. Engine drain plugs shall be safety wired.

E. Alternate Header (13B) Moses Smith Racing P/N 050-133 or Moses Smith Racing system provided with Renesis conversion kit is permitted.

F. Minimum flywheel weight - 8.5 lbs.

G. Alternate one-piece intake manifold (part # 050-142) is permitted. If the Renesis motor is used, the standard, unmodified factory fuel injection must be used.

H. Spark plugs are unrestricted

I. Ceramic apex seals, Mazda part number 0000-01-9115, may be used.

J: Replacement Water Pump, Mazda part number 8AF2-15-010B may be used.

K. Two functional belts must be used to drive the alternator and water pump.

F.8. Fuel System

A. All carburetor jets are unrestricted, but no other modifications shall be made to the carburetor (50mm DCO/sp or 48mm DCO modified to 50mm, as supplied). Chokes 44mm. F.15 emulsion tubes are required.

B. Only the standard Weber 48 DCOE intake horns are permitted.

C. Fuel pump, fuel filter(s), fuel pressure regulator are unrestricted. Fuel lines shall be –6 metal braided hose, otherwise unrestricted.

D. Only the factory fuel injection can be used with the Renesis motor. A restrictor plate supplied by the engine builder must be utilized in the throttle body. The plate shall measure .250" thick and contain one 44.0mm hole centered in the plate with no radiusing. No air shall bypass the restrictor.

F.9. Drivetrain

A. Limited slip differentials, torque biasing devices, locking differentials or full locked differentials are prohibited. Aluminum or modification of the unit provided is prohibited.

B. 10:31, ring and pinion.

C. *Polishing of driveline components is permissible through either conventional mechanical polishing techniques or by way of chemically assisted systems such as the REM Isotropic finishing system. Coatings are not permitted.*

F.10. Weight and Dimensions

A. Maximum wheelbase - 94-5/8"

B. Maximum track front - 59-1/4"

C. Maximum track rear - 57-3/4"

D. Minimum weight with driver = 1350 lbs w/ 6 port 13B, 1400 lbs w/ 4 port Renesis.

E. Ballasting is permitted. Ballast shall be mounted forward of the fuel cell but aft of the instrument panel bulkhead and/or aft of the nose pole but ahead of the master cylinder bulkhead. Ballast shall be

mounted securely.

F.11. Suspension

A. Ride height is unrestricted within the standard adjustment range. Droop limiters are not allowed.

B. Anti-roll bar stiffness may be adjusted within the range allowed by sliding clamps on the anti-roll bar or front bars may be drilled for adjustment. Anti-roll bars may be disconnected.

C. 5/8 or 11/16 inch front and 11/16 or 3/4 inch rear anti-roll bars (solid) are required.

D. Shock absorber settings are unrestricted, but no alteration to the internal mechanism or fluid medium is allowed. Extended top shock spring retainers may be used to ensure clearance from suspension members, or to prevent spring disengagement at full droop.

E. Shock absorber - front: Koni P/N 82x-2236, rear: 82x-2269. Alternates: front: 8216-2420, rear: 8216-2421, or front: 3012-1604FMF, rear: 3012-1616FMR. Spring rates are unchanged. Shock absorber sealastic – 55mm P/N 000-141 (Koni P/N 70-34-53-000-0) or 40mm P/N 000-146 (Koni P/N 70-34-54-000-0). Shock absorber packer(s) P/N 000-147 (Koni P/N 15-34-62-000-0). The number of packers is unrestricted. Sealastics and packers shall be unmodified except that the standard slit may be widened or made into a wedge shape to facilitate installation and removal. When Koni shock absorbers 3012-1604FMF and/or 3012-1616FMR are used, the Koni shock bumpers P/N 000-152, *Koni part # 72-34-48-000-0.*

F. Springs: Front: six (6) or seven (7) inch unrestricted length, 450, or 750 lbs./inch rate. Rear: eight (8) inch unrestricted length, 400 or 500 lbs/inch rate.

G. Camber, caster, toe-in/out, bump steer, are unrestricted within the adjustment range provided on the car.

H. Manufacturer and construction of spherical bearings and rod ends are unrestricted; however, geometry and length cannot be changed.

F.12. Wings

A. Wing "angle of attack" (front and rear) is unrestricted within the adjustment range. Rear wing adjuster link (P/N 110-126) length is 2.25" overall. It is permitted to shorten existing rear wing adjuster links to 2.25" overall length to match revised part (P/N 110-126).

B. Wings may be of aluminum construction, but shall conform to stock dimensions as described by the manufacturer.

C. Gurney flaps for wings (3/4" Front max. & 3/8" Rear max.) are permitted, provided they are mounted on the upper surface of the wing). Note: Gurney flaps are measured from the upper wing surface, normal to the surface and must not serve to increase the plane of the wing. (Quick change attachment is prohibited, bolted or riveted only)

F.13. Brakes

A. Tilton brakes bias adjustment may be fitted.

B. Brake master cylinder - Use of (any) 3/4" or 5/8" master cylinders (with individual reservoir) is approved.

C. Any mass produced brake pad that fits the standard caliper without

modification is permitted.

D. Modification of brake rotor is prohibited. Option: Two piece brake rotor, Moses Smith Racing P/N 040-126 and Moses Smith Racing P/N 040-127 may be used. Minimum brake rotor thickness = 0.300".

E. Optional brake caliper Moses Smith Racing P/N 040-130 may be substituted.

F. The use of any ferrous brake caliper piston is permitted.

F.14. Tires and Wheels

A. A competitor shall start the race on the same set of tires (meaning the original four) used in the qualifying session. It is the responsibility of the competitor to ensure their tires are marked appropriately for the qualifying and race sessions. It is recommended that regions offer these services at a central location and at a standardized time, preferably at Tech.

B. Any change of tires during or between a qualifying session shall automatically result in all previous times being disallowed.

C. If a tire is damaged during a qualifying session, the competitor may replace that tire with a used tire upon approval by the Chief Steward. Should a tire be replaced for any reason, the competitor shall forfeit his grid position and start at the back of the grid.

D. Rain tires may be used at any time.

E. Any competitors deemed to have taken steps to circumvent these rules, or deemed to have used a foreign substance on the tire in order to gain an advantage shall be immediately disqualified from that event.

F. All cars shall run BBS (8" x 13") front and (10" x 13") rear wheels as specified by the manufacturer. Alternate BBS wheel center (part # 000-143 & 000-154) is permitted.

G. Use of tire warmers or cooling methods other than natural air convection or conduction is prohibited.

F.15. Gearbox

A. All cars shall be equipped with some combination of the following gears:

Mark5, or Mark8 Series Gears 15:36 – 15:30 – 15:25 – 17:34 – 19:32 – 18:25 – 21:29 – 17:23 – 22:30 – 24:27 – 19:23 – 23:28 – 25:26 – 26:25 – or 26:26 Webster; 24:24 Hewland

B. Additional approved gear ratios may be added by the manufacturer with SCCA Club Racing authorization.

C. Reverse shall be installed and in workable condition.

D. Gearbox rear covers may be modified to permit installation of longer shift finger shafts.

E. Transmission drain plugs shall be safety wired.

F. Shift rail stops may be added to transmission shift mechanism.

F.16. Clutch

A. *Only a 1700 Pound KEP, 2300 Pound KEP, or Stage 2 KEP (Moses Smith Racing part # 060-104) All Steel Pressure Plate is permitted and must be used unmodified. [The original pressure plate is no longer available. The replacement is the KEP Stage 2, all steel*

plate.]

B. Clutch disc may be a "Dalkin" or "Marchal" or L&T disc remanufactured on VW core with organic friction material. Moses Smith Racing P/N 060-103

C. Minimum flywheel weight - 8.5 pounds. Moses Smith Racing P/N 060-102

F.17. Mufflers

A. All cars shall be equipped with a SuperTrapp muffler P/N 5AS-2556 with none or any number of plates installed as needed to meet sound If no plates are present the end plate is not required.

B. The main muffler, Power Pulse Muffler (Racing Beat) P/N 16400, shall be in good working order with no removal of steel wool or other alternations allowed.

C. The following options are allowed:
   1. Use of the approved "Lo-back" muffler as a substitute for the Racing Beat muffler. Alternate Muffler Moses Smith Racing P/N 050-134 and header Moses Smith Racing P/N 050-133, are permitted. All other specifications to remain the same.
   2. Use of deflectors such as the SuperTrapp mud ring are alowed.

F.18. Headers

Headers must be unmodified except that high-temperature coatings are permitted.

F.19. Hardware and Fluids

A. Fasteners, links, and rod ends may be either metric or standard threads, but shall be at least grade five (5). Hardware and fasteners may not be modified to change adjustment parameters.

B. Brake fluid, fasteners, clamps, and radiator hoses are unrestricted.

C. Lubricants and fluids, except fuel, are unrestricted.

F.20. Cockpit

A. Cockpit controls and mechanisms may be adjusted within their stock operating range.

B. It is permissible to modify the driver's seat. The driver's seat attachment bracket on the chassis may be modified to facilitate adjustment, but shall ensure positive retention of seat attachment bolts. Seat shell may be removed and the assembly replaced by a poured foam seat.

C. The head rest may be extended forward to improve head support, provided the spacer(s) and attachments serve no other purpose.

D. A quick disconnect steering wheel may be used. Make and diameter are unrestricted.

E. A fabricated sheet aluminum cockpit liner is permitted.

F.21. Bodywork

A. Engine covers are required. Air inlet ducts may be trimmed but must not change profile of outside bodywork.

B. Mirrors are California by Vitaloni - Model #01CBT. Alternate rear view mirror (P/N 110-136) is permitted.

C. No modification to body external contour or dimensions is permitted. No openings may be added or reshaped. A blister may be added

to the engine cover if needed for clearance between carburetor linkage and bodywork. Optional: rearmost, rear face of sidepods may be open, closed, or vented by drilling.

D. The aluminum undertray may be replaced with a stress-bearing undertray, minimum of eighteen (18) gauge steel. This undertray shall be attached to the frame by welding, bonding, or by rivets or threaded fasteners.

E. Star Formula Mazda bodywork or exact equivalent is required.

F. A windscreen may be added to the bodywork, it shall: 1) Not exceed 144 square inches of surface, nor stand more than six inches normal (measured 90 degrees to the surface) to the bodywork. 2) Be constructed from flat stock with no compound curves. 3) Be symmetrical left to right. 4) Not extend more than 12 inches to each side from the car's longitudinal centerline, measured along the cockpit opening. 5) Not constitute a potential hazard to driver, emergency crews or other competitors.

G. Engine compartment belly pan, Moses Smith Racing P/N 030-132, or any sheet metal pan covering the underside of the engine compartment, provided it is flat when viewed from the bottom (may have a bend up at the leading edge for stiffness), and does not extend past the trailing edge of the frame, nor more than 1.5" past the outer edges of the frame on each side.

G. FORMULA S CLASS (FS) (REGIONAL CLASS ONLY):

G.1. Definition

A formula for purpose built, highly modified single-seat, open-wheel, open cockpit racing cars, which meet the general regulations of Section 9. of the GCR for Formula Category cars, yet are different in concept and specifications from the current SCCA Formula classes. Homologation is required on ALL Formula S cars.

All Formula S cars registered after January 1, 2003 shall meet all preparation rules of Section G. Formula S cars registered prior to January 1, 2003 may be updated to Section G. specifications but they shall meet all requirements of Section G. without exception.

Exceptions to the FS specifications must be requested with the homologation application and will be listed on the homologation certificate.

G.2. Chassis/Frame

Chassis/frame construction is unrestricted within the following limitations:

A. Chassis of non-metallic composite construction shall be proven to meet FIA specifications for non-metallic composite chassis prior to being submitted to the SCCA for homologation. There are no exceptions. Contact SCCA National Office for a list of the relevant FIA specifications/SCCA requirements.

B. Chassis of metallic tube and/or metallic monocoque construction shall be manufactured to be consistent with the safety requirements outlined within these rules and the GCR.

G.3. Engines

Any engine(s) may be used within the following limitations:

A. Piston or rotary internal combustion, gasoline-fueled engines only. No turbines. Turbo and/or supercharging is permitted.

G.4. Fuel System

Fuel system is unrestricted within the following limitations:

A. Fuel Cell Vents: Fuel tank air vents shall be located at least 25cm (9.843 inches) to the rear of the cockpit.

G.5. Electrical System

Electrical system is unrestricted within the following limitations:

A. Self Starter: Cars shall be equipped with on-board self-starter and on-board power supply controlled by the driver while in a normal driving position.

G.6. Transmission / Final Drive

Transmission / final drive system is unrestricted within the following limitations:

A. Power shall not be applied to more than two (2) wheels.

G.7. Bodywork and Airfoils

Bodywork and airfoils are unrestricted within the following limitations:

A. Cockpit Opening:

The driver's seat shall be capable of being entered without the removal or manipulation of any part or panel (except for a removable steering wheel and removable cockpit padding).

The cockpit opening of metallic chassis shall have the following minimal dimensions:

Length: 60cm (23.622 inches)

Width: 45cm (17.717 inches)

This width extends over a length of 30cm (11.811 inches) minimum. This minimal rectangular opening may exist anywhere forward of the bracing, and required padding will not be considered in these dimensions.

The cockpit opening of non-metallic chassis shall be designed to meet the FIA F3 homologation requirements (article 275).

B. Aerodynamic Devices:

1. The mounting apparatus of any part having an aerodynamic influence (i.e. bodywork, floor, sidepods, wings, spoilers, etc.), shall be rigidly secured to the entirely sprung part of the car (chassis/monocoque), shall have no degree of freedom in relation to the entirely sprung part of the car (chassis/monocoque), and shall remain immobile in relation to the chassis/monocoque at all times. This allows for actively adjusted aerodynamic elements (i.e. wings, diffusers, etc.).

2. No Aerodynamic skirts per GCR Section 9.3 Aereodynamic Skirts. Within the preceding restrictions, only wearable material (fiberglass, Kevlar, carbon fiber, high density polyethylene, polypropylene, Teflon, Lexan, or wood) may be attached to the side panels as a rubbing strip. Ceramics, brittle plastics (i.e. Plexiglas), and other materials which shatter or break-up causing hazardous track conditions are prohibited.

3. Ground effects are permitted, but may not be attained by "sealing" or bridging the gap between the bodywork and the road surface. Any means adopted to circumvent this intention shall automatically be regarded as a breach of these regulations.

4. Leading Edges of Airfoils: The leading edge of any airfoil fixed to the front of the car shall not be sharp. Minimum radius: 0.5cm (0.2 inches).

G.8. Suspension

Suspension is unrestricted within the following limitations:

A. All cars shall be equipped with a full suspension system (i.e. springs, torsion bars, etc.) front and rear. Rigid mounted suspensions are prohibited. Monoshock/monospring systems are permitted.

G.9. Steering

Unrestricted provided that it is of a safe/secure design and acts upon at least two wheels at one end of the vehicle.

G.10. Wheels and Tires

Wheels and tires are unrestricted within the following limitations:

A. Tires shall have a minimum speed rating of 120 mph or better. Tires shall be the same size and design (i.e. radial, bias-ply, etc.) for the right and left sides of the front axle(s), and same size and design (i.e. radial, bias-ply, etc.) for the right and left sides of the rear axle(s).

B. Wheels: Minimum diameter 10", minimum width 5.5". Wheels shall be identical for the right and left sides of the front axle(s), and identical for the right and left sides of the rear axle(s). Wheel material shall be metal. Cars shall be equipped with a minimum of four (4) wheels. Wire wheels are prohibited.

G.11. Brakes

Brakes are unrestricted within the following limitations:

A. Cars shall have a braking system that acts upon all wheels of the vehicle. Chain/belt driven cars may have a single brake caliper that acts upon the differential, thereby applying braking force to the two (2) drive wheels.

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

G.12. Weight (without driver)

The minimum weight of the vehicle as raced, without driver, shall be 750 lbs.

G.13. Additional Safety Equipment

A. Mirrors per GCR Section 9.3 Mirrors. Additionally, there shall be at least two (2) mirrors, each with a minimum 55cm² (8.53 in²) of reflective surface.

B. Towing Eyes per GCR Section 9.3 Towing Eyes. Additionally, if the rollbar is faired-in, the fairing shall have rollbar access hole(s) to allow for quick retrieval.

C. Side Intrusion Protection

For metallic chassis, the area between the upper and lower main frame tubes from the front roll hoop bulkhead to the rear roll hoop bulkhead shall be protected by one of the following methods to prevent the intrusion of objects into the cockpit.

1. Panel(s), minimum of either .060" heat-treated aluminum (6061-T6 or equivalent) or eighteen (18) gauge steel, attached outside of the main frame tubes.

2. Reinforced body - at minimum, consisting of a double layer, five (5) oz., bi-directional, laminated Kevlar material incorporated into the body which shall be securely fastened to the frame.

3. For either method, the material used for the chassis braces in this area shall be at least equivalent to the roll hoop brace material.

4. Non-metallic chassis are covered under the FIA chassis homologation.

D. Driver's Feet Position

For metallic chassis, the frame shall incorporate forward-facing braces to protect the driver's legs and feet. The braces shall extend from the front roll hoop to the front bulkhead. (The front bulkhead is defined as the furthest forward transverse section of the main frame.) The soles of the driver's feet shall not extend beyond the front edge of the wheel rims (in normal position; i.e., pedals not depressed) and shall remain behind the front bulkhead. The lower main frame rails shall be a minimum of twenty-five (25) centimeters (9.84") apart (inside dimension) from the front bulkhead to the rear roll hoop.

1. Non-metallic chassis are covered under the FIA chassis homologation.

H. FORMULA 1000 PREPARATION RULES

Formula Formula 1000 is a restricted class. Therefore, all allowable modifications, changes, or additions are as stated herein. There are no exceptions. IF IN DOUBT, DON'T. Homologation is required for all cars.

H.1. Definition

A formula for purpose built, open-wheel, open cockpit racing cars. F1000 allows converted Formula Continental, Formula 2000, Formula F, and purpose-built motorcycle-powered tube frame chassis. Re-homologation as an F1000 is required for all converted cars.

H.2. Chassis

A. The chassis shall be of tubular steel construction only. Composite construction (defined as carbon fiber, Kevlar, honeycomb or fiberglass) in a structural application is prohibited, except as specifically allowed in these rules. Stress bearing panels are not permitted except as specifically allowed in these rules. Stress bearing panels are defined as sheet metal affixed to the frame by welding, bonding, rivets, bolts, or screws which have centers closer than 150mm.

B. The soles of the driver's feet shall not extend beyond the front edge of the wheel rims (in normal position; i.e., pedals not depressed) and shall remain behind the front bulkhead. The lower mainframe tubes shall be a minimum of 25cm apart (inside dimension) from the front bulkhead to the rear roll hoop.

C. The area between the upper and lower mainframe tubes from the front roll hoop bulkhead to the rear roll hoop bulkhead shall incorporate one of the following:

1. Panel(s), minimum of either .060 inch heat-treated aluminum (6061-T6 or equivalent) or eighteen (18) gauge steel, attached outside of the chassis tubes.

2. Reinforced body - at a minimum, consisting of a double layer, five (5) oz., bi-directional, laminated Kevlar material incorporated into the body which shall be securely fastened to the frame.

For either method, fastener centers shall not be closer than 150mm

(no stress-bearing panels). The material used for the chassis braces in this area shall be at least equivalent to the roll hoop brace material.

D. A stress-bearing floor pan/undertray is permitted between the front bulkhead and the rear axles. Composite or stabilized materials shall not be used for stress-bearing panels. The mountings for brake and clutch pedals and cylinders (front bulkhead), instruments, (front roll hoop bulkhead), and rear roll hoop bulkhead (behind the driver) may be stress bearing panels, also. The firewall portion of the rear roll hoop bulkhead (panel) shall extend the full width of the cockpit. Forward facing air ducts may be installed to deliver air directly to the engine area. Air duct openings may be located within the cockpit provided the firewall is extended to prevent flame and debris from reaching the driver. (Any shape may be used to form the firewall extension.) All firewall inlets shall prohibit passage of flame and debris.

E. Brackets for mounting components, such as the engine, transmission, suspension pickups, instruments, clutch and brake components, and body panels may be ferrous, aluminum alloy, or magnesium alloy, of any shape, and fastened to the frame in any manner.

F. No engine oil or water tubes are permitted within the cockpit.

G. It is not permitted to construct any suspension member in the form of an asymmetrical airfoil or to incorporate a spoiler in the construction of any suspension member. Symmetrical streamlining of suspension members is permitted.

H. Front and rear impact attenuation structures are strongly recommended. Impact attenuation structures shall be securely attached to the entirely sprung part of the car. Attachment of any front impact attenuation structure shall not extend more than 50mm to the rear of the front bulkhead. Impact attenuation structures may be fabricated from metallic and/or composite materials.

H.3. Bodywork and Airfoils

A. See Table 5. (Airfoils are a requirement for this class.) Forward-facing roll bar/roll cage bracing and required padding will not be considered in the cockpit opening dimensions shown in the table.

B. The driver's seat shall be capable of being entered without the manipulation or removal of any part or panel, except the steering wheel and/or driver's head surround structure. The steering wheel and head surround must be removable by the driver without the use of any tools.

C. Carbon fiber is prohibited in any external panels or any panels licked by the airstream (e.g., radiator ducting or engine air inlet), with the exception of impact attenuation structures. Carbon fiber may be used in internal panels and components (e.g., instrument panel, radio boxes) unless otherwise restricted.

D. The entrant shall designate a flat rectangular reference area with minimum dimensions of 30cm by 30cm. This reference area is located on the lower surface of the car (the surface licked by the air stream) between the rear of the front tire and the front of the rear tire. The center of the reference area must be no more than 75mm from the longitudinal centerline of the vehicle.

Between the rear of the front tire and the front of the rear tire, no point on the lower surface of the car (the surface licked by the air stream) shall be more than 25mm above the plane determined by

the reference area designated by the entrant and on a line perpendicular to that reference plane. No point on the lower surface of the car may be below the plane determined by the reference surface on a line perpendicular to that reference plane, except as specifically permitted herein. Compliance with these requirements shall be accomplished by placing a straight edge on the reference surface designated by the entrant and verifying that the requirements are met. A maximum of four (4) rub blocks of maximum dimension 75mm by 125mm are allowed anywhere on the lower surface of the chassis, and may extend below the reference plane.

E. A diffuser is permitted behind the front of the rear tires. The diffuser may be divided internally into multiple sections. The radius of transitions between the diffuser sides and adjacent horizontal structures may be up to 25mm. The width of the diffuser, as measured between its sides and above any radiused transitions, may not exceed 95cm in any lateral section. Strakes within the diffuser are allowed.

F. Movable aerodynamic devices, including aerodynamic skirts, are prohibited.

G. The maximum permitted width of the bodywork is 150cm. The width of the entire lower surface of the car between the rear of the front tires and the front of the rear tires shall not exceed the maximum width of the bodywork by more than 50mm and shall not exceed 150cm.

H. The safety roll bar/roll cage and engine air box are not included in the maximum height restriction (dimension C in Table 5).

H.4. Engines

A. Motorcycle-based 4-cycle up to 1000cc.

B. Engine internals and compression ratio must remain stock. The competitor must present, on demand, an original factory manual for the engine to allow compliance verification.

C. The stock ECU shall be used. The ECU fuel map may be changed. Devices that modify inputs to the ECU (e.g., Power Commander) may be used. Stand-alone after market ECUs are not permitted.

D. Turbochargers and superchargers are prohibited.

E. Carburetion and fuel injection are unrestricted.

F. The exhaust system and exhaust manifold are unrestricted, within SCCA safety regulations.

G. The lubrication system is unrestricted. A dry sump system is permitted; any oil pan and/or baffling is permitted.

H. Oil coolers are unrestricted.

I. The cooling system is unrestricted. Radiators, if housed in or incorporating a cowl air-scoop deflector, shall comply with bodywork rules.

J. The stock chain tensioner may be replaced with any mechanical chain tensioner.

H.5. Inlet Restrictors

The air inlet system is unrestricted at this time. However, the CRB may require the use of an inlet restrictor at any time by publishing the requirements in FasTrack.

H.6. Fuel system
The fuel system is unrestricted within the following limitations:

A. Any fuel permitted for any class per GCR 9.3 Fuel, may be used in F1000.

B. Fuel Cell Vents: Fuel tank air vents shall be located at least 25cm to the rear of the cockpit.

C. Fuel capacity: maximum 10.83 gallons.

H.7. Electrical System
The electrical system is unrestricted within the following limitations:

A. Self-starter: Cars shall be equipped with an on-board self-starter and an on-board power supply controlled by the driver while in a normal driving position.

H.8. Transmission/Final Drive

A. Rear wheel drive only is permitted.

B. The final drive ratio is unrestricted. Internal transmission gears shall remain stock.

C. Cars may use sequentially shifted motorcycle transmissions. Reverse gear is not required.

D. All gear changes must be initiated by the driver. Mechanical gear shifters, direct-acting electric solenoid shifters, air-shifters and similar devices are permitted. Devices that allow pre-selected gear changes are prohibited.

E. The clutch assembly is unrestricted.

H.9. Suspension

A. All suspension components shall be of steel or ferrous material, except that hubs, hub adapters, hub carriers, bell cranks, pivot blocks, bearings and bushings, spring caps, abutment nuts, anti-roll bar links, shock absorber caps, and nuts may be aluminum alloy or magnesium alloy.

B. Springs: steel only.

C. Shock absorbers: Steel or aluminum alloy body.

D. Control arms and all associated items that attach directly to the chassis members shall be boxed in or captured to prevent intrusion into the cockpit.

E. Front A-arms shall be equipped with anti-intrusion bars to limit intrusion into the cockpit.

H.10. Brakes
Unrestricted, except:

A. All pistons in a given caliper must be of the same size. Calipers must be ferrous or aluminum alloy.

B. Brake rotors are restricted to ferrous material.

H.11. Steering
Unrestricted.

H.12. Wheels and Tires
Thirteen (13) inch diameter wheels with a maximum rim width of ten (10) inches are the only wheel sizes permitted. Material is unrestricted providing it is metal.

H.13. Minimum weight
Minimum weight is 1000 lbs.

F1000 Dimensions - Table 5	
Dimension (Refer to FC drawing)	Measurement (cm)
A. Maximum rear overhang from rear wheel axis	**80**
B. Maximum front overhang from front wheel axis	100
C. Maximum height measured from the ground	90
D. Exhaust height measured from the ground	20-60
E. Maximum height of any aerodynamic device	Rim height
H. Maximum width of entire car	185
I. Maximum rear aerofoil width (includes endplates)	95
J. Maximum width of body and lower surface of the car behind the front wheels	150
K. Maximum front wing width *(includes endplates)*	**135**
L. Minimum cockpit bodywork opening	**45**
M. Minimum cockpit parallel opening length	**30**
N. Minimum cockpit overall opening length	**60**
S. Maximum exhaust length from rear wheel axis	**80**
7. Minimum wheelbase	**200**
5 & 6. Minimum track	**120**
Maximum diffuser width	**95**

Note: Maximum height is measured with the driver aboard. The safety roll bar/roll cage and engine air box are not included in the maximum height restriction (dimension C).

I. FORMULA FIRST

I.1. Definition

1. Formula First is a class for single seat racing cars based on components from the standard Volkswagen Types 1 sedan, as originally manufactured by Volkswagen from 1966 to 2004. Since it is a restricted class, all allowable modifications are stated herein. The purpose of the Formula First class is to emphasize driver ability and to encourage the participation of owner/builders and owner/preparers while using proven Volkswagen components (or exact replicas). Homologation is required for all cars registered after January 1, 1983. Homologation for FS classification is required on all Formula First cars.

2. No component of the engine, power train, front suspension, or brakes shall be altered, modified, or changed, or be of other than VW manufacture (or an exact replica thereof), unless specifically authorized herein. Parts used are classified as original, made by VW parts, exact replacement parts usually bearing a VW part number used in the VW model range specified below. Finally, mass-produced direct replacement parts can be substituted for the original components if authorized in the rules. These direct replacement components must be constructed of original material(s) or an acceptable substitute, maintain the original function(s) and general dimension(s) of the VW components they replace. Furthermore, these replacement parts must be generally available to all competitors and offer no competitive advantage over the original VW parts. There are no exceptions. IF IN DOUBT, DON'T.

3. Any VW Type 1 component, of VW manufacture or an exact replica in size, shape, and material, may be used unless a specific part (VW or aftermarket) is specified.
4. All measurements given in these rules are exact unless a specific tolerance is stated. A car exceeding any measurement or outside a tolerance, BY ANY AMOUNT is not in compliance.
5. Any external surface of the suspension, brakes, and transmission/rear axle tubes may be painted, plated, or anodized.
6. Weights and Measurements
    1. Minimum weight, as qualified or raced, with driver: 1125 pounds
    2. Wheelbase minimum 81.5"; maximum 85.5"
    3. Front track maximum: 57" at zero camber & toe
    4. Rear track maximum: 55" at zero camber & toe
    5. Overall length: Maximum 140" (includes exhaust)

I.2. Suspension

1. Front Suspension

The front suspension shall be standard VW Type 1 sedan ball joint H-beam front suspension or an exact replica of one of them and dimensionally identical. The following modifications are permitted:

1. Lugs may be welded, brackets attached by welding or otherwise, and holes drilled in the ball joint H-beam to permit attachment of the beam to the chassis, and other components wholly or partially to the beam. Brackets may be welded to the torsion arms for the sole purpose of actuating the shock(s) and/or external mounted anti-roll bar and shall perform no other function.
2. Front spring(s) are unrestricted except that the front suspension lifting spring(s) must be a continuous unit measuring 37.63" (+ or - .13") in length, is completely housed internal of the torsion spring tube(s), and fit unaltered control arm spring sockets.
3. Removal of the shock towers above the upper H-beam tube centerline.
4. Relocation of the shock dampers is permitted. Shock dampers and their actuation are free providing that no VW components are altered, modified or changed unless specifically authorized herein. Bump rubbers with a maximum length of 2 ½" may be used to protect the shock(s)/chassis from bottoming. Use of related bump rubber packing washers/solid spacers is free. Coil spring mounted (coil-over) shocks are not permitted.
5. The use of any anti-sway bar or bars, internal or external, mounting hardware, and trailing arm locating spacers. The anti-sway bar fitted as part of the standard suspension may be removed. Sway bars may not be cockpit adjustable. Front suspension Z-bars are not permitted.
6. Replacement of torsion bar rubbers with spacers of another material.
7. Installation of ride height adjuster(s), constructed for use with standard VW spring packs, to the H-beam allowing rotation of the spring pack. One (1) ride height adjuster per torsion spring tube is permitted. No cockpit adjustment of ride height is permitted.

8. Removal of the brake backing plates.
9. Camber/caster eccentric adjusting nut may be replaced with an aftermarket nut of different design. Caster, camber, and toe-in are free.
10. Any wheel bearings that fit the VW type 1 spindles and disk brake hubs without modification may be used.
11. Steering column may be altered or replaced. Steering wheel is free, and may be detachable. Steering mechanism is free, but tie rods must attach to the spindle using existing steering arm, a modified steering arm, or a suitable new or modified bracket welded to the spindle. Ball joints in the tie rods may be replaced with rod ends.

2. Rear Suspension
   1. The rear axle and tube assembly shall be standard VW Type I up to 1966, sedan swing axle (no outer pivot point for a half shaft) with axle location provided by a single locating arm on each axle. The rear axle tube may be rotated about its axis. The standard shock mounting and brake pipe brackets may be removed. Rear axle O.A. length: 26 11/16" + or – 1/8".
      1. The rear axle bearing retainer flange mating surface may be machined, or shims may be installed under the rear axle bearing, for the sole purpose of adjusting bearing axial float.
   2. Springs, shock dampers, their actuation, and camber compensating devices are free.

I.3. Braking System

1. Standard VW Type 1 disc brake components must be used, including any standard VW Type 1 original or aftermarket direct replacement brake caliper constructed of cast iron material. Front rotor minimum weight: 13.0 lbs. each without wheel mounting studs.
   1. Caliper housing material may be removed on the outer radius surface of the outer piston housing to clear the inside of the rotating wheel. This metal removal shall only be to allow wheel clearance.
2. Any type pad material may be used on standard VW Type 1 brake pads.
3. Adapter plates may be fitted to allow mounting of front or rear brake calipers.
4. Cross-drilling or grooving of rotors is not permitted.
5. Rear brake drum assemblies must be removed and replaced with one-piece cast iron rear brake rotors with machined-in rear axle splines. Caliper mounting is free. Min. rotor weight: 15.0 lbs each, without wheel mounting studs.
6. 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.
7. A separate hand brake is not required. Removal of the hand brake and operating mechanism is permitted.
8. Brake lines may be of any suitable material, including steel braided lines.

9. Wheel mounting lug bolts may be replaced with studs.
10. All brake components must remain within the safety tolerances and minimum dimensions established by the component manufacturer.

I.4. Wheels and Tires

1. Wheels shall be 13" diameter by 6" wide. (+ or – 1/8" for all dimensions).
    1. Wheels must be of one-piece construction and may be constructed of steel, aluminum, or magnesium, but each wheel must comply with a minimum weight of 10 pounds, less tire, wheel weights and valve stem assembly.
    2. Wheel bolt pattern is free, except that it must use 4 lug bolts or studs with lug nuts. No centerlocks. As a recommended standard, the common bolt pattern for Formula First is 4"x 4 bolt.
    3. Spacers between the wheel and rotor are permitted.
2. Tires shall be Formula F slicks in standard front and rear sizes and using a hard compound. The Region, Division and/or racing series sanctioning the races shall specify which manufacturer or manufacturer's tires meeting this general description shall be permitted.

Regional, Divisional and/or Race Series Tire Options:

1. Option 1. The spec tire manufacture for Formula First shall be Hoosier Tire. Front tires shall be #43130 20.0"x 6.0" – 13" R60 or R60A compound. Rear tires shall be #43302 22.5"x 7.5"– 13" R60 compound or #43307 22.5" x 7.2" x 13" R60A compound.
2. Option 2. The spec tire manufacture for Formula First shall be Goodyear Tire. Front tires shall be #807-366-068 3321 20.0"x 6.0" – 13" R600 compound. Rear tires shall be #870-274-068 2015 22.5"x 7.5"– 13" R600 compound.
3. Option 3. The spec tire manufacture for Formula First shall be American Racer Tire. Front tires shall be 20.0"x 6.0" – 13" 133 compound. Rear tires shall be # 22.5"x 7.5"– 13" 133 compound.
4. Inter divisional races or special events may choose to allow more than one tire option by listing the options allowed for said event in the event supplemental regulations.

3. Any tires (brand, size, tread or construction) fitting the 13 x 6 rims may be used when the Chief Steward declares a rain race.

I.5. Engine

1. The engine shall be the standard VW "1600" (1584 cc) twin port, unless otherwise stated in these rules.
    1. Engine components shall be assembled in standard configuration. Exceeding the wear limits specified in the VW manual or in other official VW guides is permitted provided that the specifications, tolerances, and dimensions specified in these rules are not exceeded.
    2. Standard engine reconditioning practices are permissible as set out below. Such machining shall occur on the same plane as original VW specification. It is not permissible to add metal or any other material to any engine component, unless specifically stated herein.

3. Balancing of the following moving parts of the engine is allowed: pistons, connecting rods, crankshaft, flywheel, front pulley, and clutch disc and clutch cover. Balancing may not remove more material than is necessary to achieve the balance, except on those component parts where minimum weights are specified herein. The addition of weight to the clutch cover plate, for the sole purpose of achieving balance, is permitted.
4. Polishing of the contact faces of moving parts is permitted.

2. 1584 cc engine dimensions
Bore 85.7 mm maximum
Stroke: 69.1 mm maximum
Exhaust valve diameter: 32.10mm maximum
Intake valve diameter: 35.60mm maximum
Intake port dimension at head: 33 mm maximum
Exhaust port dimension at head: 33 mm maximum
Intake manifold horizontal inside diameter: 33 mm maximum
Manifold casting maximum diameter at flange: 33 mm maximum
Maximum valve lift: .455". Measured at Valve cap with 0" lash. An average of the four exhaust valves must be .455" or less and an average of the four intake valves must be .455" or less.
Rod weight with bolt and small end bushing: Minimum 560 grams.
Rod length, center to center: 5.35" to 5.45". Any piston rod may be used that meets the VW dimensional and weight specifications listed herein.
Piston weight with pin: Minimum 515 grams.
Minimum distance: Top of piston to top edge of #1 ring groove: 8.0 mm
Crankshaft weight: 20 pounds minimum
Flywheel: Clutch diameter 200 mm; weight - 12 pounds minimum
Deck height: .045" minimum
Cam followers: 90 grams minimum
Rocker arms: 80 grams minimum (w/o adjuster)

3. Crankcase, Clutch and Flywheel
   1. Any 1200 or 1600 VW case or exact replica may be used. (Aftermarket competition cases that vary in design from the original VW case are not permitted.)
   2. Standard reconditioning of the case halves is permitted.
   3. The case may be drilled to accept an external oil cooler or oil filter.
   4. Generator/alternator, stand, and fan housing and fan may be removed.
   5. Oil baffles may be installed. They must be housed completely within the original oil sump and crankcase.
   6. An oil temperature sending unit may be installed in the crankcase.
   7. Oil galley plugs may be replaced with threaded plugs.
   8. Cylinder head studs may be replaced with studs of different material.
   9. The crankshaft may be ground and the case may be machined to accommodate the use of the standard VW oversize/undersize crankshaft bearings, provided the crankshaft location is not changed. It may also be machined to permit installation of camshaft bearings.

10. The use of an aftermarket counterweighted crankshaft with standard VW stroke, index and journal sizes is mandatory. Bearings may be standard VW undersized/oversized and rods ground to accommodate them.
11. Crankshaft front pulley is free.
12. The flywheel may be lightened to a minimum of 12 pounds. Flywheel dowels may be reconditioned. Additional dowels may be added on the same face. The flywheel clutch plate surfaces may be machined.
13. Any 200 mm VW clutch disc, pressure plate and throwout bearing (or replacement replica) as fitted to the VW Type 1, 2 and 3 are permitted. The standard VW clutch actuation arm may be modified to allow its attachment to the standard VW clutch throwout bearing shaft in any appropriate position. Clutch shaft arm actuation (cable, levers, or hydraulic) is free.
14. Oil filler/engine vent(s), dry sump tank and catch tank(s) are unrestricted provided they meet section 9.3.
15. The installation of a crankshaft pulley oil seal is permitted.
16. The installation of case center main web location pins or shuffle pins are permitted.

4. Camshaft
   1. Only the Engle W110 camshaft is permitted. Specifications listed herein are for checking purposes only. Re-grinding of the Engle W110, or any camshaft, to meet or maximize these specifications is strictly prohibited.

      Cam lift: Exhaust and Intake .392" variance + .003"

      Lobe centers: 108 deg +/- 30 sec.

      Intake opens @ 19 deg. Intake closes @ 48 deg. (at .050" valve lift) (+/- 30 sec)

      Exhaust opens @ 55 deg. Exhaust closes @ 12deg. (at .050" valve lift) (+/- 30 sec)
   2. Cam timing (advance/retard) may be achieved by offset keys or adjustable cam gear. Cam timing may not be adjustable without disassembling the case. No form of VTEC, cockpit adjustment, or other variable cam timing is permitted.
   3. Cam gear must be of stock dimensions, including angle and width of teeth.
   4. Cam followers may be reconditioned and/or may contain camshaft face lubrication holes.

5. Pistons and Cylinders

Pistons and cylinders shall be standard VW replacement parts or exact replicas. Any piston rings that can fit the standard grooves are permitted. Piston pin retaining clips may be replaced with Teflon buttons.

6. Cylinder Head
   1. The original standard VW twin port cylinder heads or any direct replacement cylinder head that complies with the original standard VW twin port cylinder head dimensions listed herein are permitted.

      Reference list of some common manufacturers, part and casting numbers:

Auto Lineas	P/N 040-101-375 xx (Note: xx varies)	Casting "040"
Auto Lineas	P/N 043-101-375A	Casting "043"
Mofoco 040	P/N CHH 040	Casting "040"
OE VW Original	P/N 113-101-375 A	Casting "113"
OE VW Replacement	P/N 040-101-355	Casting "040"
OE VW Replacement	P/N 043-101-375H	Casting "043"

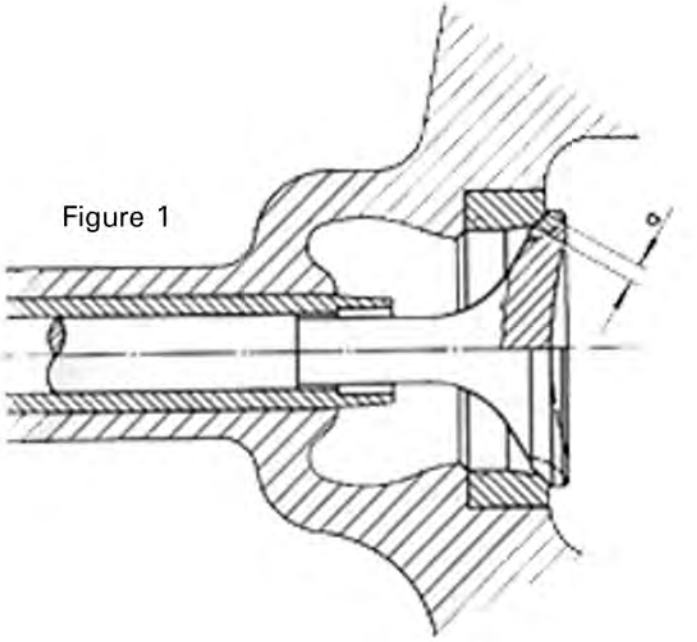
Other cylinder heads can be added as requested if the castings are the same dimensionally (e.g., combustion chamber volume, valve size and location) as an approved VW manufactured head. This allows casting duplicates that may be of better quality (longevity), appearance, and/or price.

2. The intake and exhaust ports are to remain in as-cast condition, except that material may be removed *from the intake ports* for the sole purpose of matching/blending up to 1.5 inches from the intake flange mating point and up to 1.5 inches from an intake valve seat. *Material may be removed from the exhaust ports for the sole purpose of matching/blending up to .75 inches from the exhaust flange mating point and up to 1 inch from an exhaust valve seat. The remainder of the ports must be untouched.*

3. The combustion chamber must hold a minimum of 47 cc, with valves in place.

4. Replacement of valve seats and valve guides with others of standard dimensions and material is permitted.

5. Valves and valve seats may not be reshaped. Valve to valve seat mating surface (figure 1) shall be cut as follows. The 45 deg valve seat width (figure 2) shall be maintained by cutting a 15 deg chamfer (figure 3) at the outside edge of the seat and a 75 deg chamfer (figure 4) at its inner edge. Seats cannot be refaced if too little material remains for a 15 deg chamfer to be cut without going beyond the boundary of the insert. If the chamfer extends to the head, the seat or the head must be replaced.



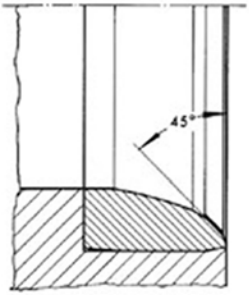


Figure 2

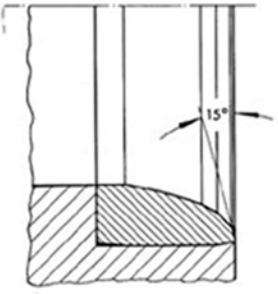


Figure 3

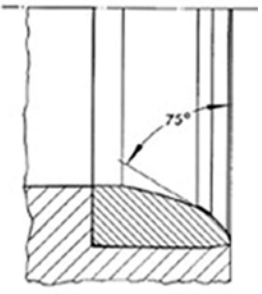


Figure 4

1. Valve specifications (figures 1 & 5):
Dimension "a" – valve seat contact width: Intake – 1.30 mm to 1.60 mm

Exhaust – 1.70 mm to 2.00 mm Seat contact angle on valve: 45 deg Intake and Exhaust

Dimension "A" – valve head dia: Intake – 35.56 mm max. Exhaust – 32.06 mm

Dimension "B" – valve length: 110.5 mm to 112.5 mm

Dimension "C" – valve stem dia: Intake – 7.94 mm min. Exhaust – 7.91 mm

Dimension "b" – valve head margin: Intake - .80 to 1.50 mm Exhaust – 1.00 to 1.70 mm

Dimension "d" – face angle of valve only: Intake - 44 deg Exhaust – 45 deg

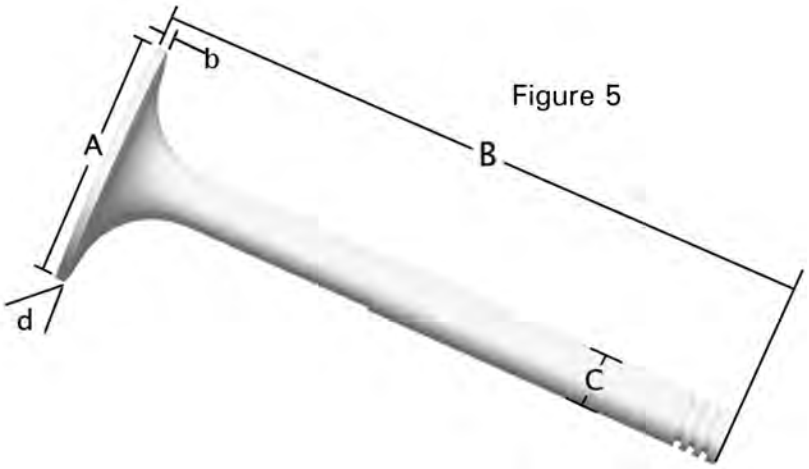


Figure 5

6. Stainless steel valves of the same dimensions as stock are permitted.
7. Single valve springs must be used, but are otherwise free except that no unauthorized modifications to other parts may be made to accommodate them.
8. Shimming of valve springs is permitted.
9. Combustion chambers are to remain in standard, as cast condition, except that fly cutting is permitted to obtain the permitted compression ratio. No other tooling or polishing of the combustion chamber is permitted.
10. Any aluminum or steel pushrod may be used. Length is free.
11. Only standard 1.1:1 ratio 1600 rocker arms may be used. The two bars need to be visible. Minimum rocker arm weight listed under 5.2.
12. Wavy washers in the rocker gear may be replaced with solid washers.
13. Swivel-foot valve adjusters may be used, provided that they are on the same center plane as the standard screw and offer no increase in valve lift.
14. The rocker shaft posts may be shimmed to restore original geometry after authorized fly cutting.
15. Spark plug holes may be repaired using standard thread repair methods, such as Helicoil inserts, providing that the spark plug centerline is not changed.
16. Valve covers are unrestricted and may be bolted on.
17. Push rod tubes are unrestricted.
18. Any ferrous metallic valve spring retainers and keepers are permitted.

7. Oil system
   1. Any standard VW Type I, or replacement replica in size, shape, and material, oil pump may be used. Oil pump pressure port plugging is permitted.

2. Any oil pump cover may be used.
3. A dry sump oiling system is permitted.
    1. The dry sump pump must bolt into the standard location, must be driven by the camshaft and have no more that two stages.
4. A sump extension may be fitted using or in place of the oil strainer cover plate. The oil pump pickup pipe may be extended into the sump extension. The sump extension shall not extend below the lower frame members surrounding the engine.
5. Any oil cooler is allowed provided it is located within the bodywork and behind the firewall.
6. An alternate oil pressure regulator spring or springs may be used.
7. A standard or racing type automotive oil filter of not more than one-quart capacity may be installed provided it is located within the bodywork and behind the firewall. No cooling fins are permitted on the filter or connecting lines. Connecting lines shall not exceed 12 feet in total length, including oil cooler connections if part of the oil filter circuit.

8. Fuel pump

Fuel pump is free. A block off plate may be installed if the mechanical fuel pump is removed.

9. Carburetor
    1. Only the Mexican made Bocar 34 PICT/3 replacement carburetor shall be permitted. The carburetor shall be in “as new” condition. The carburetor may be cleaned with commercially available “carb cleaner”. NO MEDIA BLAST CLEANING IS PERMITTED. Original replacement replica gaskets, float, needle & seat may be replaced as needed. Float level may be adjusted via shim(s) under the needle & seat. Only the modifications listed herein are permitted. If you don’t see it listed herein, you can’t do it, NO EXCEPTIONS.
    2. The choke plate, choke heater element and related components, choke shaft and related hardware may be removed and the shaft holes taped or plugged. Any air filter, air horn, or combination of filter and horn may be used.
    3. Modification or removal of the idle shutoff solenoid to allow air/fuel flow without power is permitted.
    4. Main fuel and air correction jet sizes are free.
    5. The carburetor may be rotated 180 degrees about its vertical axis.
    6. The choke heater element housing may be cut off the carburetor top housing.
    7. The fuel inlet must be threaded into the carburetor top housing, the original brass swaged in fitting is not permitted.
    8. Vacuum fittings may be removed and ports plugged.
    9. The full throttle stop bracket may be modified to allow for full throttle operation.
    10. Throttle plate screws shall be “as supplied” from Bocar, no grinding, filing or trimming on these screws, NO EXCEPTIONS.

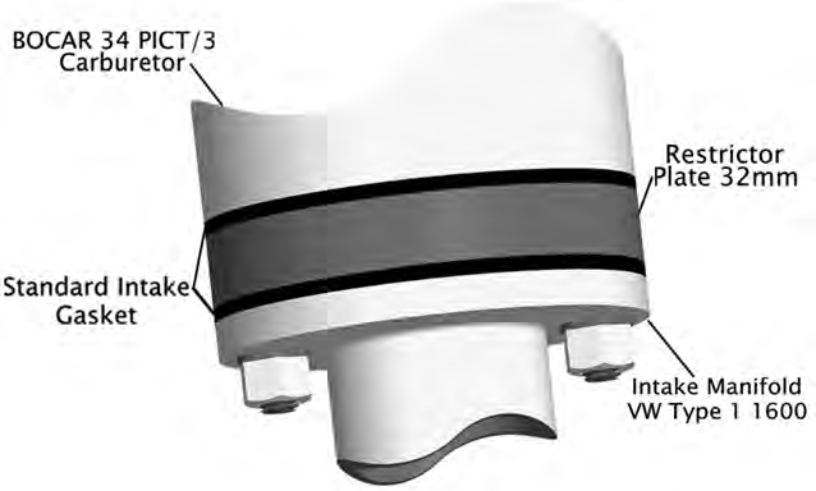
11. NO OTHER TOOLING OR MODIFICATIONS ARE PERMITTED. REBUILDING IS NOT AN EXCUSE FOR MACHINING, MODIFYING OR CHANGING ANY DIMENSIONS OR ANY COMPONENT OF THE CARBURETOR, NO EXCEPTIONS.
12. Carburetor dimensions: Specifications listed herein are for checking purposes only. Re-working of the Bocar PCIT/3 to meet or maximize these specifications is strictly prohibited.

    Throttle plate thickness: .055" Minimum

    Throttle shaft thickness: .210" Minimum

    Venturi/Choke inside dimension: 26 mm Maximum

10. Intake Manifold
    1. The intake manifold shall consist of standard VW Type 1 1600 (1584 cc) twin port components, or direct replacement, unless stated otherwise in the following rules.
    2. The heat sink casting may be removed or modified.
    3. Other EXTERNAL modifications to the cast sections are permitted for clearance purposes, provided no performance advance results.
    4. The standard 1600 manifold end castings must be untouched internally other than for the purpose of port matching.
    5. Port matching to a depth of 1.0" into the manifold casting from the manifold/head joining surface is permitted.
    6. The official Formula First 32mm restrictor plate, *SR Racing part number SRA-FST-RESTRICTOR*, must be installed per the instructions below. Absolutely no modifications are permitted to the restrictor plate. Any defects or marks on the blue anodize is not allowed and must be exchanged immediately for a new official Formula First 32 mm restrictor plate. *Small external scratches are considered normal wear.*
        1. The official Formula First 32 mm restrictor plate must be installed/assembled exactly in the following order, using only the listed parts. No exceptions allowed.
            1. Intake manifold
            2. (1) Standard VW (or direct replacement) carburetor gasket
            3. Official Formula First 32 mm restrictor plate



4. (1) Standard VW (or direct replacement) carburetor gasket
5. Bocar 34 PICT/3

2. Installation diagram supporting I.5.10.6.1.
3. Any Formula First car may be subject to a "spot check" for restrictor plate compliance. A spot check may be visual or may require a vacuum leak check performed as follows:
    1. Run engine at 2500 RPM
    2. Seal the carburetor air inlet
    3. Engine must stall within 4 seconds

7. All intake manifold vacuum fittings or ports must be plugged.

11. Engine cooling system
The air-cooling system for cylinders and cylinder heads is free, subject to limitations on bodywork. See I.5.7.7. with respect to oil coolers and lines.

12. Exhaust System
The exhaust system is free, but must comply with SCCA and local noise requirements and with overall body dimensions requirements.

13. Electrical System
1. 12-volt electrical systems shall be used.
2. The distributor must be a standard VW mechanical advance distributor, or Bosch 009, or a replacement replica, with the following modifications permitted.
3. The advance curve may be adjusted.
4. Standard Bosch or replica points may be replaced with an electronic replacement points set (Pertronix, Comp-U-Fire, etc.). The replacement set must be totally within the distributor.
5. Any coil is permitted.
6. Any 12v on-board automotive starter capable of starting the

engine from the driver's compartment is permitted.

14. Other non-standard components.
Use of the following non-standard replacement parts is permitted provided that no unauthorized modification of any component results: Any fasteners (nuts, bolts, screws, etc); wiring; gaskets and seals; fuel line; spark plugs; piston rings; fan belt; and connecting rod bearings, camshaft bearings, and crankshaft main bearings, provided the bearings are of the same type and size and VW standard or oversize bearings.

I.6. Transaxle

1. The standard VW Type 1, 2 or 3 swing axle type transaxle must be used in standard configuration unless stated otherwise in these rules. All five gears (including reverse) must be operable, and controllable from the driver's seat. Synchromesh must be operating on all four forward gears. A direct replacement transmission case, VW part # 081-301-051, or replacement replica, "Rhino" case is permitted.
2. Shock damper mounts may be modified or removed.
3. Transmission shall not be installed in an inverted position.
4. The crown wheel must be transposed in the transmission case.
5. The differential cannot be modified in any way to limit its normal function. Torque biasing, limited slip, and locked differentials are prohibited.
6. The following gear ratios must be used with the 1600(1584) engine:
1 - 3.80; 2 – 2.06; 3 – 1.26; 4 – 0,89; differential 4.125

I.7. Frame and Body

1. Frame
    1. The frame shall be constructed of steel tubing with a maximum cross section of 4". The driver's feet shall not extend forward the rear edge of the front axle beam tubes.
    2. No frame/chassis rigidity or strength shall be derived from anything other than the steel frame tubes. No stressed skin, monocoque, or semi-monocoque construction is permitted.
    3. The firewall panel must extend the full width of the cockpit and be at least equal to the top of the carburetor in vertical height from the floor pan may be rigidly attached to the frame tubes.
    4. The undertray(s) or belly pan(s) shall be rigidly attached to the frame provided that the curvature of said undertray(s), measured vertically from the lowest point to its highest point at its attachment point to the frame rail member at its sides, shall not exceed 1" and have no downward turned edges. Undertray(s) or belly pan(s) shall not extend more than ¼" beyond the vertical line of the closest mating bodywork.
    5. The area between the upper and lower main frame tubes, or at least 14" above the undertray(s) or belly pan(s) whichever is greater, from the front roll hoop bulkhead to the main roll hoop bulkhead shall be protected by one of the following methods to prevent the intrusion of objects into the side of the cockpit area. For either method, fasteners shall be no closer than an average of 6" centers (no stress bearing panels). The material used for chassis braces in this area shall be at least equivalent

to roll hoop brace material.

1. Panel(s): Minimum of either .060" aluminum (6061 T-6 or equivalent) or 18 gauge steel attached outside of the main frame tubes.
2. Reinforced Body: Minimum 2-layers of 5 oz. bi-directional Kevlar material laminated to the inside of the bodywork and securely fastened to the frame.

2. Body
   1. The body shall be constructed of fiberglass, aluminum, steel, Kevlar, carbon fiber or any combination thereof.
   2. The body must not be rigidly attached so as to form part of the structural integrity of the car.
   3. Rear (Tail) Bodywork: The rear bodywork shall extend from the firewall to a point at least 16" aft of the rear axle centerline.
   4. Front (Nose) Bodywork: Any bodywork forward of the front beam torsion spring tubes shall have a maximum width of 31.75" (80.65 cm)
   5. Main (Center) Bodywork: No part of the frame or bodywork shall project beyond a plane connecting the vertical centerline of the front and rear tires. Fuel filler necks, caps or lids shall not protrude beyond the bodywork of the car. The bottom of any bodywork that extends below the frame members shall be on the same flat plane as the undertray and shall not deviate from that flat plane by more than 1".
   6. Cockpit Opening: The driver's seat shall be capable of being entered without the removal or manipulation of any part or panel (except for a removable steering wheel and removable cockpit padding). The cockpit opening of the bodywork shall have the following minimal dimensions: Length: 60cm (23.622 inches) Width: 45cm (17.717 inches). This width extends over a length of 30cm (11.811 inches) minimum. This minimal rectangular opening may exist anywhere forward of the bracing, and required padding will not be considered in these dimensions.
   7. Air Ducting: Air ducts may be installed for the purpose of delivering air to, or extracting air from the cylinders, cylinder heads, oil cooler and/or carburetor. Air duct opening(s) may be located within the cockpit area and/or penetrate the firewall provided the duct(s) design and construction would prohibit flame and debris from reaching the driver.
   8. Aerodynamic Devices: Wings are prohibited. Any device specifically designed to use air speed to create aerodynamic downforce is prohibited.

J. FORMULA ENTERPRISES PREPARATION RULES

1. Definition

One design, fixed specifications, open cockpit, single seat Formula car with Mazda 2.3 engine. Cars are packaged and sold by SCCA Enterprises, Inc. All replacement parts are supplied through SCCA Enterprises, Inc., and shall be official Spec Formula Car parts except where noted in A.5.4.

2. Safety Requirements
Car will be delivered from the manufacturer with approved safety equipment. Replaced items shall be supplied through SCCA Enterprises, except safety harnesses may be replaced by any other that conforms to GCR Section 9.

3. Vehicle Configuration
All cars to GCR section 9 with the following exceptions: Section 9.3 Accumulators.

4. Maintenance and Repairs
It is permitted to perform routine maintenance and repairs as long as existing parts are in no way modified and replacement parts are official Enterprises Formula Car parts. If any official Enterprises' seal is broken, lost by accident or intent, the procedures outlined under A.5.18., shall be followed. Parts and materials with an Enterprises part number having the prefix "WM10" are considered to be unrestricted, providing their dimensions and materials are comparable. No other parts are to be considered "unrestricted" except where specified.

5. Chassis
NO MODIFICATIONS ALLOWED except as noted in these rules.

a. All cars shall use the stock, as delivered by Enterprises, wood floor of 6mm, with an allowable deviation of 3 mm across the surface for wear.

b. Seats are free. Panels inside the cockpit may be attached to the frame as long as the points of attachment are no closer than 6 inches apart. No welding or gluing of the seat to the structure of the car is allowed.

   Definition of cockpit is: area between the front roll hoop and rear roll hoop.

c. Painting or powder coating of the chassis is allowed.

d. Enterprises foot drop box part # WM180020J may be installed.

e. Enterprises impact attenuator part #WM180023 (crush box) shall be installed.

6. Bodywork
NO MODIFICATIONS ALLOWED (except as specified). If any seal, label, stamp is missing the parts must be returned to Enterprises for resealing.

a. Bodywork shall remain unmodified with the exception of holes for a slave or jumper battery plug, trackside beacon receiver, and tow hooks. All repair work must match original body dimensions and contours.

b. Bodywork fasteners are free.

c. The car may be painted any color(s), except primer.

d. It is required that all cars display the official sponsors of Enterprises decals and locations as specified by Enterprises.

e. Radiator screens are allowed and recommended.

f. All aerodynamic devices shall be used as delivered: i.e. wings, body winglets. No modification to mounting location or holes.

g. The front wing main plane, front wing secondary elements, front wing support mounts, and front wing endplates must be used and mounted as delivered from Enterprises. Any modification to these

parts is strictly forbidden. The main wing plane angle is zeroed on the rear upper aft transmission surface measured with a suitable angle gauge, i.e.: digital level on the top main plane 2 inches outward from the nose box mounts. It must meet a minimum measurement of negative .5 degrees (angled down in the back) and a maximum measurement of positive 2.5 degrees (angled up in the back). It is acceptable to shim the main plane to obtain this measurement.

h. The rear wing and its related mounting components are to be used and mounted as delivered. Any modifications are strictly prohibited. The lower plane angle, zeroed on the rear upper aft transmission surface, measured with a suitable angle gauge. i.e.; digital level on the top surface of the lower rear wing must meet a minimum of −3.0 degrees (angled down in the back) and a maximum of +2.0 degrees (angled up in the back). It is acceptable to adjust the lower rear element to meet these requirements. The upper rear wing element may only be adjusted within the parameter of the endplates and wing adjusters as provided from Enterprises. No additional holes may be added.

i. The stock headrest may be modified or replaced with any headrest meeting GCR section 9.4.1.B. The stock lateral bolsters may be modified or removed.

j. Enterprises windscreen P/N: WM137000 is allowed.

7. Engine and Drivetrain

a. Engine

1. NO MODIFICATIONS ARE ALLOWED EXCEPT WHERE SPECIFICALLY AUTHORIZED WITHIN THESE RULES. This includes all fuel injection and engine management components, including exhaust, cooling, electrical and lubrication systems. All systems are subject to test procedures and must conform to OEM specifications as stated and supplied by Enterprises. All fluids, except fuel, are unrestricted.

2. Enterprises, Inc., seals on the engine, and other components shall remain in place at all times. All engines shall be rebuilt, checked on an engine dynamometer, and sealed through Enterprises.

3. Engine maintenance, which is permitted, includes the replacement, but not modification of external engine and engine systems parts.

4. There are six (6) seals on the engine. Two (2) on the timing cover, two (2) on the top of the valve cover, and two (2) on the oil sump. They may not be removed or tampered with.

5. All rubber oil lines may be replaced with braided metal-covered (Aeroquip type) lines. Hose clamps may be installed on the rubber oil lines.

6. Intake manifold: No modifications are allowed. Absolutely no porting or the addition of material is allowed. No coating is allowed on the exterior or interior of the manifold.

7. Engine Control Unit (ECU): Manufactured by MBE and sealed by Enterprises. Tampering of the ECU, ECU program, seal, wiring or sensors is prohibited.

8. The flywheel weight is a minimum of 2.6 pounds for the Enter-

prises supplied flywheel. No modifications to the flywheel with the exception of normal resurfacing for clutch wear are allowed.

9. No modification to the crankshaft dampener is allowed.

The following parts must be used:

10. Clutch: Enterprises supplied clutch and flywheel contained in kit #WM701000A, Piston #WM701004A, Throw out bearing #WM701006A, Small O-ring #WM1010405, Large o-ring #WM1010406, Flexplate and Ring Gear # WM1101053.
11. Spark Plugs, Part # NGK PTR5F-11, NGK ITR5F-13, or Motorcraft # AGSF32FEC.
12. Fuel Injectors: Part # WM591929
13. Throttle Body: Part # WM591930
14. Fuel Filter: *Any 10 micron fuel filter may be used as long as it performs no other purpose than to filter fuel.*
15. Air Filter: Part # WM301020
16. Exhaust systems may be thermal coated or wrapped.
17. A heat shield between the engine block and the exhaust system is recommended for the purpose of protecting hoses, shifter cable, and wiring from the heat of the exhaust.
18. An Enterprises muffler kit part # WM301046 is required. The muffler may not extend beyond the back of the transmission. An additional muffler may be added to accompany the stock muffler as needed to meet sound requirements.
19. An optional air to oil cooler is allowed. The maximum core size is 13 inches wide by 6.5 inches high. No water to oil heat exchanger is allowed.
20. An optional Enterprise alternator kit is allowed, Part # WM1100101
21. Fuel shall meet the requirements for IT cars per the GCR.

b. Transmission

1. The 5 speed sequential transaxle supplied by Enterprises is the only permitted gearbox. The casting has to remain original. No internal or external modification (including lightening) other than normal racing repair.
2. The servicing, replacement and modification of internal components is permitted by the competitor. With the following exceptions:
    a. All components must be ferrous metal, except for bearing retainers and bearing cages.
    b. Components manufactured by alternate manufacturers are permitted. Replacement components must be direct replacements to the original components. Absolute minimum weights are listed below.
3. The rear cover plate may manufactured or remanufactured using aluminum.
4. Only the following gear ratios are permitted:
    1st gear combination 12:29 Ratio number 2.41
    2nd gear combination 15:28 1.86

3rd gear combination 16:24 1.50
4th gear combination 18:22 1.22
5th gear combination 24:26 1.08

5. Differential – Only final drive ratio allowed is 2.75. The differential must remain an open differential. No limited slip mechanism is allowed. Differential must work as supplied (no tightening of the differential to limit slip) Must be able to use existing components.

6. Polishing, shot peening, REM© Isotropic treatment, heat and cold treatments are allowed. No coatings or plating is allowed.

7. Shift cable is free, but shifting must remain cable operated.

8. Throttle cable is free, but must remain cable operated.

9. The shift actuator assembly must operate as supplied by Enterprises. It can be polished, shot peened, or have REM treatment, heat and cold treatments.

MINIMUM WEIGHTS OF THE FOLLOWING PARTS
Differential Housing (both parts including bearings) 7.4 lbs
Ring Gear 3.6 lbs
Pinion Shaft 4.0 lbs
1st gear 2.7 lbs
2nd gear 1.2 lbs
3rd gear 1.1 lbs
4th gear 1.1 lbs
5th gear 1.0 lbs

8. Suspension

a. NO MODIFICATIONS ALLOWED. Adjustments are permitted within the limits of the suspension and steering components. All rod ends shall be engaged at least 1.5 times the diameter of the end.

b. Front Springs: 600 lbs. ±25 lbs. Part # WM203008. Wire size shall measure .360" ±.005".

Rear Springs: 1000 lbs. ±25 lbs. Part # WM203009. Wire size shall measure .410" ± .005".

c. Competitors may use the entire travel of all suspension adjusted components as delivered. Alternate parts are not allowed.

d. All suspension parts shall have the SCCA code embedded (a label/ or an Enterprises stamp) in the part. If they do not it is required to return part to Enterprises for proper labeling.

e. Rod ends may be replaced with rod ends having specifications equal to or greater than the OEM supplied rod ends. This includes dimensional material and strength specifications. Replacement rod ends shall be capable of being installed with no modifications to any original components.

f. Anti-roll bars (sway bars) may be disconnected, but not removed.
Anti roll bar sizes:
Front .875" OD ±.005"
Top Tee .750" x .135" wall, ±.005"
Top Tee Length: 7.5" maximum end to end
Rear lower stalk .615" Dia. ±.005"
Upper stalk .765" ±.005"
Arm length 5.470" shoulder to shoulder

9. Shocks

a. NO MODIFICATIONS ALLOWED. 4 Bilstein Shocks, Part # WM203001 or 4 Penske shocks, Part # WM1180090. Same type on all 4 corners.

b. Only shims provided on the shocks are legal (no bump rubbers, packers or modification to shims).

c. Adjustments for the Bilstein will be at the spring perch and with pressure (if rebuilt). Adjustments for the Penske will be at the spring perch or with the rebound adjuster.

d. Bilstein shocks may be used in the original configuration or may be rebuilt. Both shock types can only be rebuilt by Enterprises or its authorized rebuilder.

e. All shock absorbers must be sealed by Enterprises or its authorized rebuilder.

10. Steering

NO MODIFICATIONS ALLOWED, except as described within these rules

a. An alternate steering wheel may be used. "Butterfly" style steering wheels are not allowed.

b. Upper steering shaft may be modified to accept an alternate steering wheel and/or hub (if applicable). It may also be modified to accommodate a larger driver.

11. Brakes

NO MODIFICATIONS ALLOWED, except as described within these rules. Only the AP 4 PISTON CALIPER BRAKE SYSTEM AS SUPPLIED WITH VENTED ROTORS as supplied by Enterprises shall be used

a. Brake pads as labeled and supplied from Enterprises.

b. Brake rotors are used as delivered, no drilling or lightening is allowed. Minimum Diameter is 10.450". Part # WM801002x Left, Part # WM801003x Right. Min width is .600"

c. Master cylinders must be the Girling type.

Front master cylinder is.700" piston diameter, Part # WM802005

Rear master cylinder is .750" piston diameter, Part # WM802006

d. Calipers must be AP 4 piston. Part numbers are:

LF # WM802004 RF #WM802003

LR # WM802002 RR # WM802001

e. Brake lines are free (no plastic allowed).

12. Wheels (Only wheels supplied by Enterprises)

NO MODIFICATIONS or MACHINING ALLOWED Aluminum racing wheel supplied from Enterprises with SCCA logo. If logo is worn off or wheels that have been painted or powder coated, wheels must be inspected by Enterprises or one of their designated Customer Service Representatives and logos replaced.

Front: 8 in X 13 in Part # WM 205001

Rear: 10 in X 13 in Part # WM205002

a. All wheel bearings shall be run with grease (not oil), no special coatings are allowed, and the bearing grease seal shall be intact. No ceramic wheel bearings are permitted.

b. Wheel spacers are not allowed.

13. Tires

Tires must run in sets of 4 as stated below:

Hoosier R45, R45A, or R45B (SCCA Labeled) Compound
Front: PN: 43270, 21.5 in X 8.0 in X13.0in
Rear: PN: 43301, 22.0 in X10.0 in X 13.0 in

Hoosier Wet Compound
Front: PN: 44195, 21.5 in 7.5 in X 13.0 in
Rear: PN: 44217, 22.0 in 9.0 in X13.0 in

a. A competitor shall start the race on tires used in a qualifying session for the race as identified by markings made on the tires by a race official. It is the responsibility of the competitor to ensure that his or her tires are appropriately marked prior to (e.g. on the false grid), during, or immediately after (e.g. as the car leaves the track) a qualifying session.

b. For races with more than one qualifying session, a competitor shall start the race on any marked tires from any qualifying session for the race.

c. If a competitor chooses to start the race on any tires that were not used in a qualifying session for the race and not appropriately marked, the competitor shall forfeit his or her grid position and start from the back of the grid. This forfeiture of grid position shall not apply if all qualifying sessions for the race were run under rain or wet conditions.

d. A complete set of four (4) rain or wet track tires may be used at the competitor's discretion for any race. Rain tires may be in new or used condition and require no special marking if used as a complete set of four.

14. Electrical System

NO MODIFICATIONS ALLOWED, except as described within these rules.

a. Wiring harnesses must remain as delivered.

b. Battery may be replaced with a larger one as long it remains in the same location.

c. Battery wiring is free. Car must shut off when master switch is turned off.

d. Any instrumentation is allowed.

e. Data acquisition is allowed, no telemetry is allowed.

f. Any rain light is allowed.

15. Weight

The car shall weigh 1250 lbs. minimum, including the driver.

a. Ballast must be placed between the front dash bulkhead and the front engine bulkhead. They shall be fastened securely to the floor with flat head 5/16 bolts, washers and nuts on both ends of the weight.

16. Updates

Provisions will be made for updates on all safety and mechanical improvements. Such updates will be effective when authorized by Enterprises, announced by the National Office, and published in FasTrack.

17. Vehicle Logbook

The Vehicle Logbook for each Enterprises Formula Car remains the property of Enterprises and will contain not only the record of technical inspections, but also the major maintenance performed and all transfers of ownership. The Vehicle Logbook number will be the same as the factory chassis number that is stamped on the name plate mounted on the fuel cell behind the driver's shoulders. When the vehicle is sold, traded, or scrapped, the logbook shall be sent to SCCA Enterprises, Inc.,. 14550 E. Easter Ave Suite 400 Centennial, Co. 80112. The logbook will them be reissued to the new owner. When the logbook has been filled, a new one shall be requested from SCCA Enterprises, Inc.

A FEE OF $200 WILL BE CHARGED FOR LOST LOGBOOKS.

The logbook shall be presented at scrutineering for each event entered. All Enterprises Formula Cars are subject to normal safety inspection. Additionally, scrutineers will check each official seal. A competitor may not be barred from competing at a specific event if a seal is broken, damaged, lost or part not properly labeled but the part may be considered suspect and will be treated as such and will be required to be sent back to Enterprises for inspection. If engine cam cover or oil pan seals are broken, damaged, or missing, the engine shall be removed and sent to Enterprises for testing and resealing. The competitor will bear all expenses at the competitor's cost prior to the next event.

18. Seals

Enterprises engine seals are required for all races. Any competitor who runs an event without all proper engine seals in the required locations shall have his engine removed and shipped to Enterprises for testing and sealing after that event. The competitor will be responsible for all cost incurred by this procedure regardless of the findings, and subject to penalty by the SOM if engine is found to be not as specified.

SCCA Enterprises, Inc., seals are required on all Formula Car Engines.

Any counterfeit engine seal found by an authorized representative of SCCA, Inc., or SCCA Enterprises, Inc., shall immediately render that engine illegal for further use, without need of dyno testing or inspection. Enterprises, Inc., will not be under any obligation to bring an illegally sealed engine back to legal condition. Penalties shall include all of the following: 19.1., 19.2., 19.3., and 19.4.

19. Penalties (Specific to Enterprises Spec Cars)

If a competitor refuses to give his engine and/or unlabeled parts for testing per a request of the Chief Steward, the following penalties will automatically be imposed:

a. Vehicle logbook will be impounded.

b. Disqualification from the event.

c. Suspension of SCCA competition privileges for thirty (30) days.

d. The car and drive train are suspended from competition until the unit(s) specified by the Chief Steward are replaced.

In a case where a competitor does comply with the Chief Steward's request to have an engine and/or parts inspected and the impounded unit(s) are found legal, the SCCA, will stand all the costs incurred for the testing, including shipping. Should the impounded unit(s) be found illegal, the following penalties will be imposed:

1. Disqualification from the event.

2. A fine of $250.00.

3. $500.00 testing fee plus freight charges paid to Enterprises.
4. Competition privileges will be suspended immediately, and the suspension will continue for a minimum of thirty (30) days after the date when all fines and costs are paid in full and the license is received by the Chairman SOM or the SCCA Topeka Office.
5. For a second illegal drive train offense, the competitor will be permanently disqualified from further Enterprises Formula Car competition.

20. Enterprises Formula Car Drive Train Protest

a. Protests shall be filed per the GCR.

b. Protestor will specify the drive train item suspected (i.e., transmission or engine). The teardown bond to remove the motor and transmission is in three (3) parts:

   1. Remove and replace motor and transmission - $400.00
      a. Will be done by an SCCA representative or other shop that is equipped for this type of work and will be paid directly.
   2. Ship motor to Enterprises and test - $500.00 plus freight and crating charges
      a. Enterprises will inspect the motor, (item 2), and will notify the Chairman SOM as soon as possible as to the results.
   3. Protest Fee: Regional - $25.00, National - $50.00.

c. Enterprises shall retain the evidence, and the SCCA shall retain the fee, (item 3), until the period for appeal has passed.

d. The Chairman SOM is required to inform Enterprises of the protest using the FE Protest Information Form. A copy of the protest shall be sent to Enterprises.

   If the protest proves to be valid and any appeal fails, the protest fee, (item 3), will be returned to the protestor. Also, the protestee will be required to reimburse the protestor the remaining fees ($900). The protestee will not be allowed to compete again until all costs are paid. If found legal, the protester forfeits fee (items 1 and 2) above.

e. If found illegal, competition privileges will be suspended immediately, and the suspension will continue for thirty (30) days after all costs are paid in full.

f. For a second illegal drive train offense, the competitor will be permanently disqualified from competing in FE competition.

21. Accessory Items

a. Mirrors are free.

b. Two-way radios may be installed in the car. All components shall be securely attached and approved by Tech inspection.

c. Racers tape may be used to repair crash damage, or as a precautionary means of securing the body retaining latches. Crash-damage is defined as having occurred during the current event, and the tape should be of an appropriate color if possible. Taping of body joints is not allowed

d. The spark plug wires may be fire sleeved and may be loomed, but must be original Mazda wire as supplied by Enterprises.

e. Engine compartment fluid hoses may be insulated using heat shield or wrap.

f. Front and rear tow hooks are required, see GCR section 9.3 Towing Eyes.