2018 Oregon Region-Only Rules

S2 - SPORTS 2000 RULES

SPORTS 2000 PREPARATION RULES

9.1.8. Sports Racing Category Specifications - from 2013 GCR

B.1. Definition

Open cockpit two (2) seater rear engine sports racing car using a standard Ford 2000cc single overhead camshaft "NE" series engine with a two-venturi carburetor as defined in 9.1.8.B.5 , or the Mazda MZR 2.0 liter as defined in 9.1.8.B.6

Sports 2000 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.

B.2. Safety Requirements

All safety equipment shall comply with Section 9 of the current GCR.

B.3. Chassis

a. Unrestricted except that the use of carbon fiber composite structural materials is prohibited. No engine oil or water tubes are permitted within the cockpit. The engine will be mounted upright and aligned fore and aft in the chassis. 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.

b. Swift DB-2 and DB-5 vehicles shall have a properly installed crush box fixed to the foremost bulkhead to protect the driver's feet. The box shall meet the following requirements:

1. It shall enclose a volume of at least 864 cubic inches (.5 cubic feet).
2. It shall extend at least 10 inches forward of the front bulkhead.
3. It shall be constructed of aluminum at least .040 inches thick, carbon fiber or kevlar.
4. The box may have access holes not exceeding 90 square inches in total.

c. All cars must have a longitudinal barrier in the left leg area forward of the dash substantially strong enough to prevent the left foot from moving more than 3 inches to the left of the vehicle centerline in the event of a side impact.

d. It is the intent of these rules to minimize the use of "ground effects" to achieve aerodynamic downforce on the vehicle. Thus, the chassis and body surfaces which comprise the underside of the car shall not deviate from a flat plane by more than 2.5cm (one (l) inch). This deviation may not be used to create an aerodynamic device. For this purpose the underside is defined as being within the rectangular area along the length between the front edge of the

front wheels and the rear edge of the rear wheels and across the outside of the front and rear rims. No aerodynamic devices (e.g. "skirts," body sides, etc.) shall extend below this surface anywhere on the car to the rear of the front wheels.

B.4. Bodywork Including Airfoils

a. The body shall provide a cockpit for two (2) seats and cover all mechanical components including wheels and suspension members except for the exhaust pipe, induction system, and camshaft cover which may protrude through the engine cover.

b. Between the front and rear axle lines the body shall:

1. Maintain over a minimum of 70% of the length of the wheelbase and over a depth of 20cm (7.9 inches) a minimum body width exceeding the greatest overall width across the tires less 15cm (5.9 inches).

2. Exceed in height the top of the tires over a width of 50cm (19.7 inches) excepting only cockpit and engine openings. There shall be no gap between the main body and the mudguards. The mudguards shall cover the full width of the tires around an arc of 120 degrees, which shall extend forward ahead of the axle centerline on the front and rear wheels and behind the rear wheels to at least 7.5cm (2.95 inches) above the axle centerline.

c. Maximum vehicle length forward of the front axle centerline: thirty-three (33) inches. Maximum vehicle length rear of the axle centerline: thirty-seven (37) inches.

d. The body above chassis level in the region of the cockpit shall not be reinforced in any way which would complicate or hinder the rescue of the driver. The cockpit opening seen in plan view shall be symmetrical about the longitudinal axis of the car and shall be large enough for a horizontal rectangle of 80cm (31.5 inches) by 40cm (15.75 inches) to be passed through with its minor axis aligned with the vehicle's longitudinal axis.

e. Space for two (2) seats shall be provided, each of at least 40cm (15.75 inches) width, and shall be positioned symmetrically about the vehicle's longitudinal axis. There shall be at least 25cm (9.9 inches) wide foot space for both driver and passenger measured at the pedals. The passenger space should provide as much sea space, elbow room, foot, and leg room in terms of length, width, and height as that of the driver. Battery boxes and fire systems are permitted in the passenger seat area.

f. Maximum height with driver on board, excluding safety roll-over bar and mirrors, shall not exceed at any time 90cm (35.4 inches) measured from the ground.

g. Airfoils and/or spoilers mounted at the front of the vehicle are permitted. These airfoils and/or spoilers may only be adjusted in a horizontal plane.

h. Adjustable airfoils and/or spoilers mounted at the rear of the vehicle shall be in the form of a flat plane and may only be adjusted within +/- 20 degrees of vertical.

i. There shall be no gap between these surfaces, or other airfoil, and the main bodywork.

j. All ducted air for heat exchangers (water/oil) shall pass through those heat exchangers.

B.5. Engine (Ford Pinto)

A permitted engine is the Ford 2 liter single overhead camshaft "NE" series engine or the 1971-74 Pinto/Capri 2 liter single overhead camshaft engine with nominal bore 90.84mm and stroke 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 manufacturers may be used as long as the original materials and dimensions are the same. Camshafts must be from Ford Motor Company, or Crower part #E-5753 FF2000, or any camshaft that is a replica of the original camshaft 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) pounds at 1.417 inches, thirty (30) pounds at 1.000 inches. An adjustable camshaft tsprocket 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) pounds.

c. The flywheel shall be a standard component or the approved alternate: Elite-001. The minimum weight is 14.4 pounds 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 .9mm, and a minimum diameter of cylinder aperture 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 Pistons P/N IV 2.0 LTR with rings, pin, connecting rod (with bolts), but without bearings: Minimum permitted weight = 1240grams. Part number and Ivey logo stamped on wrist pins bosses.

5. J&E 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.Piston rings are unrestricted provided that:

1. One oil control and two compression rings are used.

2. No modification is made to the piston for the installation of 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 9.1.8.B.5.d.3.

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 connecting 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)

	Inlet		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

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 venture 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 permissible as long as the cam bearing center line is not changed and that one original cam tower ir 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 cylinder head gasket, that has the requirements listed in B.5.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.6 Engine (Mazda MZR)

An alternate permitted engine is the Mazda MZR 2.0L dual overhead camshaft engine, which must conform to the following specifications and may be modified only as explicitly allowed. If these specifications do not explicitly allow a modification, then it may not be done. The philosophy of the MZR engine in Sports 2000 is to allow limited engine rebuilds but no performance modifications to the engine. Overhaul procedures that in the slightest way

would increase performance are not permitted (e.g., porting, polishing, coating). Blueprinting, lightening, and balancing are inconsistent with the philosophy of this formula and are not allowed. Where Mazda part numbers are specified, normal industry part number supersession is expected and the superseding part numbers are automatically included.

a. All surfaces on the head, block, connecting rods, pistons, and crankshaft must remain as manufactured by Mazda 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 Mazda design values and tolerances stated in the Mazda factory manual or delineated in these specifications. The block may not be decked. The minimum block deck height is 11.930 inches. Only Mazda MZR engine blocks with serial numbers LFE2-10-300E ('05-'08) or LF9G-10-300 ('09) are permitted. The maximum compression ratio is 10.8:1, the required standard bore is from 3.445 inches to 3.448 inches, and the required stroke is 3.272 inches. The maximum bore dimension of 3.448 inches is intended to allow for cylinder wear only. It is not permitted to machine to this dimension. The bore measurement will be taken 1.650 inches below the block deck where the bore is untouched by the piston ring.

b. Pistons, crankshaft, and connecting rods may be replaced only with standard, original Mazda production parts. The connecting rods may not be bored or remanufactured in any way. Standard oversize and undersize main or connecting rod bearings are permitted. Reduction of the width of the standard bearings is not permitted. Replacement main bearings must be standard Mazda or Cosworth KK3481. Replacement connecting rod bearings must be standard Mazda or Cosworth KK3483. Any rod bolts may be used. c. Only original Mazda replacement piston rings may be used. The ring end gaps may not be altered and must remain as manufactured by Mazda. 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 Mazda.

d. The cylinder head may not be ported, polished, or machined. The minimum head height is 4.875 inches. A standard three-angle "production" valve job is required, and the only allowed angles are those defined in the Mazda factory manual. The intake valve seat angles must be 35°, 45°, and 70°; the 45° seat must be a minimum 0.048 inches wide. The exhaust valve seat angles must be 30°, 45°, and 65°; the 45° seat must be a minimum of 0.048 inches wide. The camshafts, valves, springs, retainers, and shim/ bucket combinations must be original Mazda parts and not modified in any way. The camshafts must remain as ground by Mazda; no polishing is permitted. Valve seats may not be replaced. Only the Mazda L3G2-10-271A ('05-'08) or LF9G-10-090a ('09) cylinder heads are allowed. Only the Mazda L3E3-12-420 intake and L309- 12-441A exhaust camshafts are allowed. The original, unmodified Mazda camshaft sprockets and crankshaft timing pulley must be used. Camshaft timing must remain stock and must be set per the procedure outlined in the Mazda factory manual. Modifications to the variable valve timing mechanisms are prohibited.

e. Flywheel: The minimum weight is 5 pounds. Any one piece flywheel may be used. Flywheel bolts are free.

f. Any dual plate 5.5 inch or single plate 7.25 inch diameter, noncarbon fiber clutch is permitted, provided no modification is made to the flywheel other than changing the clutch's points of attachment to the flywheel. The original, unmodified Mazda clutch assembly may be used.

g. A Life Racing F42R or F88R ECU and engine wiring harness must be used; the current specification map is required. Failure to use the current map will result in an automatic penalty of 1 year suspension from SCCA Club Racing. The map is available on the SCCA website. Ignition coils must be standard Mazda. Spark plugs are unrestricted.

h. The Jenvey SCCA-S2 intake kit including intake manifold, o-rings, throttle bodies, throttle position sensor, air horns, and fuel rail must be used. *Only non-performance modifications may be made for installation in the race car.* Fuel injectors must be Mazda L3G5-13- 250 or Bosch 0 280 155 868. Intake air filters are unrestricted. All air entering the engine must pass through the throttle bodies. i. Intake restrictor: 1.205 inch diameter restrictor plate per intake port.

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

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

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

m. Non-standard cam / valve covers are permitted provided they in no way improve the performance of the engine.

n. Three-stage dry sumps having no more than two scavenge stages are permitted. Localized machining of the engine block is permitted to allow fitment of the oil pump. An engine block breather cover may be fitted. The lubrication system is otherwise unrestricted.

o. Oil coolers are unrestricted.

p. A liquid cooling system is required; radiators and water pumps are unrestricted. The cylinder head water outlet housing may be modified or replaced to facilitate the routing of coolant lines.

q. Fuel pumps are unrestricted.

r. Gaskets and seals are unrestricted, except cylinder head gasket, Mazda part L3G2-10-271A must be used.

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

t. Generators are unrestricted.

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

B.7. Suspension

All parts shall be of steel or ferrous material, with the exception of hubs, hub adapters, bell cranks, pivot blocks, and bushes. Front and rear hub carrier material shall be steel or aluminum alloy. Titanium prohibited. Springs: steel only. (Rear hub carrier material on car manufactured before January 1, 1983, is unrestricted, but replacement parts shall be steel or aluminum alloy.)

B.8. Brakes

a. Only the following ferrous calipers are permitted: AP LD19, AP LD20, AP LD65, ICP-20L/R, ICP-65R, ICP-14F, Girling 12SP and Girling 14F.

b. Aluminum alloy calipers of two-piece construction (split into two halves that are fastened together by bolts) having no more than 4 pistons and 2 brake pads are permitted. Spacers placed between caliper halves to adjust for rotor width are permitted. Maximum one caliper per wheel.

c. Brake rotors must be ferrous. Rotor hats / bells must be ferrous or aluminum alloy.

d. Brake system otherwise unrestricted.

B.9. Shock Absorbers

Design: Unrestricted. Case material: steel or aluminum alloy.

B.10. Steering

Unrestricted.

B.11. Wheels and Tires

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

B.12. Transmission

a. The gearbox shall include an operable reverse gear, capable of being engaged by the driver while normally seated, and contain not more than five forward gears. Five forward gears are permitted with a 25 lb. weight penalty. The ratios are unrestricted.

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 locking / locked differentials are prohibited. Excessive shimming of the differential is prohibited.

e. The use of automatic shifting gearboxes is prohibited. Sequentially shifted gearboxes are permitted.

f. Electro-mechanical, electronic, hydraulic, pneumatic, and/or similarly operated gear change mechanisms and differentials are not permitted. Gear changes must be made through direct mechanical linkage, e.g. by rod or cable. Devices that in any way automate engine speed matching, interrupt ignition, and/or interrupt fuel for the purpose of assisting a gear change are not permitted.

g. Gearboxes with shafts that are transverse to the longitudinal axis of the chassis are not allowed. The sole exception is 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.13. Fuel Capacity

41 lit. (10.8 gal) maximum.

B.14. Weight

1310 lbs., minimum, Pinto w/iron cylinder head and standard camshaft. 1335 lbs., minimum, Pinto with Fast Forward aluminum cylinder head and standard camshaft. 1335 lbs., minimum, Pinto with iron cylinder head and FC2000 alternate camshaft. 1335 lbs., minimum, Mazda MZR.

B.15. Windscreens are optional

B.16. Bulkheads and Cells

Fuel cells shall be isolated by means of bulkheads and so vented in case of spillage, leakage, or a failure of the cell that fuel and fumes will not pass into the driver or engine compartment or around any part of the exhaust system. No part of any oil or water tank shall be exposed to any part of the driver and passenger compartment. Safety fuel cells, as listed in Section 9.3 Fuel Cell Specifications, are required for cars registered after January 1, 1983. There shall be a liquid tight and fireproof bulkhead separating the fuel tank(s) from the cockpit.