FORMULA MAZDA - FM - RULES

1. Eligibility

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

2. Formula Mazda Description

2.1. Formula Mazda cars are one design, single seat, open wheel automobiles conforming to safety standards as per regulations.

2.2. Originally manufactured by Star Race Cars and since 2009 by Moses Smith Racing LLC. Formula Mazda cars utilize a 13B Rotary Mazda Engine as supplied and sealed by approved Engine Builder.

2.3. Additional Safety Requirements
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. Star Race Cars new rollover bar design (February 2000) for the Formula Mazda Chassis is required beginning 01/01/2001.

3. The Intent of the Rules

All components of the car must 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.

4. Electrical

4.1. An Alternator must be installed and functioning.

4.2. Battery type is unrestricted. Battery must be securely mounted in front of the master cylinders, in the center nose support frame or aft of the instrument panel bulkhead.

4.3. Wiring and wiring harness may be modified so long as it does not change the actual electrical function of the car and does not circumvent the alternator and/or rev limiter.

4.4. MSD Ignition Control - (MSD P/N 6420-6AL), or (MSD P/N 6430-6ALN) is mandatory.

4.4.1. Location of the spark box and limiter is unrestricted, provided that access to visually inspect and remove the limiter chip is not impeded.

4.4.2. A maximum rpm of 6850 rpm is permitted, as measured by a tech official. Competitors may use an adjustable rev chip. Competitors are advised that rev. chip function may vary with temperature, and should take measures to ensure compliance at all times.

4.5. Instrumentation is unrestricted.

4.6. Ignition Coils - Bosch Blue (FM P/N 080-130) coil or MSD Blaster High Vibration (FM P/N 080-145) is mandatory.

5. Radiators and Plumbing

5.1. Air to Oil Cooler must be installed, functioning, and fitted behind the engine in front of the rear wing, above the gearbox.

5.1.1. Brand and Size is unrestricted. (manufacturer suggests 12”x12”)

5.1.2. Water to Oil heat exchanger is not permitted.

5.2. Water radiators (2) must be installed in series with each other and be functioning.

5.2.1. Radiators must be Volkswagen P/N 171121253D (FM P/N 100-101) or Formula Mazda specific Aluminum Radiator (FM P/N 100-142).

5.2.2. A water radiator must be installed in each sidepod. The swirl pot must be connected to the

inboard inlet of the left radiator. The outboard outlet of the left radiator must be connected to the right side radiator's outboard inlet.

5.3. Catch Tanks - All cars must be equipped with oil catch tank and coolant catch tanks per GCR Section 9.3 Oil Catch Tanks, Filters, and Breathers.

5.4. Radiator Shrouding may be installed surrounding the radiators and/or oil cooler to prevent cooling air from leaking around the radiators and/or oil cooler rather than passing through.

5.4.1. Metal, composite, and/or synthetic foam sealing material may be used for this purpose.

5.4.2. Any combination of materials must not extend more than 3" beyond the plane of the radiator and/or oil cooler.

5.5. Screens may be used to protect the radiators from damage; screen material is unrestricted. Screens may not extend outside of the bodywork.

6. Engine & Accessories

6.1. The spec engine must be the six (6) port Mazda 13B Rotary as supplied and sealed by the approved engine builder and must remain sealed with no modifications to the engine or any of its accessories or components.

6.1.1. No engine may be rebuilt except by approved Engine Builder:.

Daryl Drummond Enterprises, Inc.
www.drummondengines.com
(541) 761-5520

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

6.1.3. Engine drain plugs must be safety wired.

6.1.4. Ceramic apex seals, Mazda P/N 0000-01-9115, may be used.

6.2. Intake manifold FM P/N 050-142 is mandatory.

6.3. Spark plugs are unrestricted

6.4. External Oil Metering Pump, Oil Injection Lines, Oil Injectors, and Associated Vacuum Lines may be removed and replaced with Oil Metering Pump Block Off Kit (FM P/N 050-189). Metering Pump block off plate and Oil Injector ports must be plugged and/or sealed to avoid any leakage. When Oil injection system is removed, it is required to use premixed fuel. A minimum of one (1)oz of premium race grade premix oil per gallon of fuel is recommended.

6.5. Oil lines must be -10, otherwise unrestricted

7. Mufflers

7.1.1. All cars must be equipped with muffler FM P/N 050-134

7.1.2. Bolt on "elbow" may be used as needed to meet sound requirements.

7.1.3. SuperTrapp plates may be installed as needed to meet sound requirements. Quantity of plates is unrestricted.

7.1.4. Deflectors such as the SuperTrapp mud ring are allowed when SuperTrapp plates are being used.

7.2. Exhaust Headers

7.2.1. Header FM P/N 050-133 is mandatory.

7.2.2. Headers must be unmodified with the following exceptions:

7.2.2.1. EGT Sensors and associated bungs are permitted.

7.2.2.2. O_2 Sensors and associated bungs are permitted.

7.2.2.3. High-temperature coatings are permitted.

8. Fuel System

8.1. Carburetor - Weber 50mm DCO/sp or 48mm DCO modified to 50mm are required, with no other modifications.

8.1.1. Carburetor Jets are unrestricted.

8.1.2. F15 Emulsion tubes are required.

8.1.3. Chokes - I.D. must not exceed 44.000 mm.

8.1.4. Air Horn FM P/N 050-137, unmodified, is mandatory.

8.2. Fuel pump, fuel filter(s), fuel pressure regulator are unrestricted.

8.3. Fuel lines must be –6, otherwise unrestricted.

9. Drivetrain

9.1. An “open/free differential” is mandatory

9.1.1. An Aluminum Differential Carrier/Housing is permitted in place of the original steel differential.

9.1.2. Limited slip differentials, torque biasing devices, locking differentials or full locked differentials are prohibited.

9.2. 10:31, ring and pinion is mandatory.

9.3. 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.

9.4. Lightweight CVs FM P/N 060-712 are permitted

9.5. “Aero” CV boots FM P/N 060-713 are permitted

10. Weight and Dimensions

10.1. Maximum wheelbase - 94-5/8”

10.2. Maximum track front - 59-1/4”

10.3. Maximum track rear - 57-3/4”

10.4. Minimum weight with driver = 1270 lbs

10.5. Ballasting is permitted.

10.5.1. Ballast must 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.

10.5.2. Ballast must be mounted securely.

11. Suspension

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

11.2. 5/8 or 11/16 inch front anti roll-bars and 11/16 or 3/4 inch rear anti-roll bars are required.

11.2.1. Anti-roll bars must be solid.

11.2.2. The rear anti-roll bar stiffness may be adjusted by use of sliding clamps FM P/N 020-120 or FM P/N 020-127

11.2.3. The front anti-roll bar stiffness may be adjusted by drilling .250” holes or use sliding clamps FM P/N 000-148

11.2.4. Anti-roll bars may be disconnected.

11.3. Shock Absorbers

11.3.1. Shock absorber settings are adjustable within the manufacturers specifications, but no alteration to the internal mechanism or fluid medium is allowed.

11.3.2. Shock absorber sealastic (bump rubbers) and packers may be used.

11.3.3. Front - the following options are permitted.
Koni P/N 8216-2420
Koni P/N 3012-1604FMF
Penske Front Shock FM P/N 000-163

11.3.4. Rear the following options are permitted.
Koni P/N 8216-2420
Koni P/N 3012-1616FMR
Penske Rear Shock FM P/N 020-134

11.4. Springs:

11.4.1. Front: Open

11.4.2. Rear: Open

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

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

11.7. Allowable Lower Control Arm Configurations:

11.7.1. Original Front Lower Control Arm: FM P/N 000-118 can only be used with Camber Sleeve FM P/N 000-119 and Camber Nut FM P/N 000-120 with no modifications to any of the parts.

11.7.2. Updated Front Lower Control Arm FM P/N 000-158 can only be used with Updated Camber Sleeve FM P/N 000-159 and Camber Nut FM P/N 000-160 with no modifications to the parts.

11.7.3. Original Rear Lower Control Arm FM P/N 020-110 can only be used with Camber Sleeve FM P/N 000-119 and Camber Nut FM P/N 000-120 with no modifications to any of the parts.

11.7.4. Updated Rear Lower Control Arm FM P/N 000-133 can only be used with Updated Camber Sleeve FM P/N 000-159 and Camber Nut FM P/N 000-160 with no modifications to the parts.

12. Wings

12.1. Wing Planes must be unmodified and of the following options:

12.1.1. Left Front Wing - Only FM P/N 110-118 or FM P/N 110-144 are allowed.

12.1.2. Right Front Wing - Only FM P/N 110-119 or FM P/N 110-145 are allowed.

12.1.3. Rear Wing - Only FM P/N 110-123 or FM P/N 110-146 are allowed.

12.2. Wing “angle of attack” (front and rear) is unrestricted within the adjustment range.

12.3. Gurney flaps for wings are permitted, provided they are mounted on the upper surface of the wing. Quick change attachment is prohibited, must be bolted or riveted only

13. Brakes

13.1. Caliper options allowed:
Iron Calipers - FM P/N 040-102 and FM P/N 040-103
Aluminum Caliper - FM P/N 040-130

13.2. Brake Rotor - Modification of brake rotor is prohibited. Two piece brake rotors, FM P/N 040-126 (Hat) and FM P/N 040-127 (Disk) must be used. Minimum brake rotor thickness = 0.300”.

13.3. Remote Brake Bias Adjuster may be fitted in the cockpit.

13.4. Brake master cylinder - Use of (any) 3/4” or 5/8” master cylinders (with individual reservoir) is permitted.

13.5. Brake Pad - any mass produced brake pad that fits the standard caliper without modification is permitted.

14. Tires and Wheels

14.1. FM Dry Tire Specification -

14.1.1. Manufacturer, size, and compound are unrestricted

14.1.2. Cantilevered tires are not allowed

14.1.3. Any type of grooving is not allowed

14.1.4. Any type of modification is not allowed

14.1.5. Any type of chemical treatment is not allowed

14.2. FM Rain/Wet Tire Specification -

14.2.1. Manufacturer, size, and compound are unrestricted

14.2.2. Cantilevered tires are not allowed

14.2.3. Hand grooving is not allowed

14.2.4. Any type of modification is not allowed

14.2.5. Any type of chemical treatment is not allowed

14.3. Use of tire warmers is prohibited. The penalty for violation will be the loss of qualifying times and/or the disqualification of race results

15. Wheels

15.1. Wheels - All cars must run BBS wheels as specified by the manufacturer.
BBS Front Wheel - 8” x 13” - FM P/N 000-101
BBS Rear Wheel - 10” x 13” - FM P/N 020-101
BBS wheel center FM P/N 000-143 and/or FM P/N 000-104 are mandatory.

16. Gearbox

16.1. All cars must be equipped with some combination of the following gears:

16.1.1. Mark 5 Series Gears - 15:30, 15:25, 18:25, 17:23, 19:23, 24:27, 25:26

16.1.2. Mark 8/9 Series Gears - 15:36, 17:34, 19:32, 21:29, 22:30, 23:28, 24:27, 25:26, 24:24, 26:26, 26:25

16.2. Reverse must be installed and in working condition.

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

16.4. Transmission drain plugs must be safety wired.

17. Clutch and Flywheel

17.1. Pressure Plate permitted options below must be used unmodified.
Stage II KEP all steel pressure plate FM P/N 060-104
Stage II KEP aluminum face pressure plate FM P/N 060-231

17.2. Clutch disc must be FM P/N 060-103

17.3. Flywheel must be FM P/N 060-102. Minimum flywheel weight - 8.5 pounds.

18. Hardware and Fluids

18.1. Titanium hardware is not permitted.

18.2. Radiator hose material is unrestricted

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

18.4. Ceramic bearings are not permitted. All bearing components must be ferrous metal, except for

bearing retainers and bearing cages. This definition is applicable to all bearings, including, but not limited to, wheel bearings and transmission / gearbox bearings.

19. Cockpit

19.1. Full containment head surround is allowed, so long as it does not hinder egress from the cockpit. SFI rated material is suggested.

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

19.3. A fabricated sheet aluminum cockpit liner is permitted.

19.4. Addition of tubing to the cockpit area is allowed for added safety to the driver. Tubing will be round and a minimum of .875 OD, .095 wall thickness, and of DOM construction.

19.5. An SFI rated foam seat and roll bar padding is recommended.

20. Bodywork

20.1. Star Formula Mazda bodywork or exact equivalent is required

20.1.1. The addition of materials such as Carbon Fiber, Kevlar, or other composite materials may be added for strength, rigidity, or anti-intrusion, so long as it does not change the exterior dimensions or shape.

20.1.2. No modification to body external contour or dimensions is permitted, except a blister may be added to the engine cover if needed for clearance between carburetor linkage and bodywork.

20.1.3. No openings may be added or reshaped to bodywork except, the rear most face of sidepods may be open, closed, or vented.

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

20.2. Main Belly Pan must be attached to the frame by welding, bonding, rivets or threaded fasteners. Permitted options are:
Aluminum Belly Pan FM P/N 030-102
Stainless steel belly pan FM P/N 030-139

20.3. Engine compartment belly pan, FM P/N 030-132 may be used at competitor discretion.

20.4. A windscreen may be added to the bodywork, it must:

20.4.1. Not exceed 48 square inches of surface, nor stand more than 3 inches normal (measured 90 degrees to the surface) to the bodywork.

20.4.2. Be constructed from flat stock with no compound curves.

20.4.3. Be symmetrical left to right.

20.4.4. Not extend more than 8 inches to each side from the car’s longitudinal centerline, measured along the cockpit opening.