2020 Class Rules
ARP Early Iron
MASTERS of MOTORS

Early Iron

TECHNICAL RULES – Section 300

(NOTE: This class will use a cubic inch divider in scoring to compensate for varied engine displacement. Scoring test range will be competitor selected 3000 RPM window with scoring pull beginning 200 rpm before and ending 100 rpm above selected values. Scoring window chosen must be between 3200 and 7200 RPM. RPM window selection may not changed once affirmed before starting engine. Engines claimed or verified under 260 cubic inches will receive a 10% deduction, in final score, to assure fair competition. Scoring will be as follows; Competitor will turn in any 3 accepted dyno pulls from the Masters of Motors competition. The 3 dyno sheets will supply the average torque and average power, within the score range, and those quotients will be used. The 3 average torque numbers will be added together and divided by 3 to give the average torque quotient for scoring purpose. The same will be done with the HP average numbers from those sheets. The HP and TQ quotient averages will then be added together and multiplied by 1000 and divided by the cubic inch. Standard rounding will be used in the final score number. Example : 2461.7 = 2462

300 –ENGINE

Normally Aspirated US domestic OEM production passenger car pushrod V8 engine introduced in 1968 or earlier. Must claim specific OEM engine being used for this competition.

Power adders prohibited. Any method of artificially heating and/or cooling engine fluids, fuel, and/or air prohibited (not to include thermal or friction coatings). This includes, but is not limited to, heating and/or cooling by mechanical device such as an external cooler or radiator/heat exchanger, pre-heating or cooling of any fluids with an oil heater or fuel heater/cooler, or the addition of a temperature-altering device designed to cool or heat the incoming air charge by mechanical means such as an intercooler, chemical means such as a chemical to cool either the incoming air/fuel charge or intake manifold, or electrical means such as an electric oil heater inside or outside the engine. Aftermarket SFI spec 18.1 harmonic balancer mandatory.

301 – DISPLACEMENT

Displacement is limited to .065” overbore for 1968 and earlier engine being claimed. Under bore, beyond the stock measurement for engine claimed is

NOT permitted. Cubic inch is calculated by bore x bore x stroke x 6.2832. Bore is measured at top of cylinder where ring wear is not evident. Bore and stroke are measured to the third decimal place, i.e. 0.001. Cubic inches are calculated to one (1) decimal place i.e. 350.0. Any part of a cubic inch is rounded up to the next highest inch (i.e. 301.2 = 302) for the purpose of claimed cubic inch of engine as used in scoring. The cubic inch used in scoring will be a whole number; no decimal part will be used.

302 – ENGINE BLOCK

Any domestic OEM passenger car or commercially available aftermarket OE direct replacement, cast iron block, having OEM deck height and main bore diameter. Engine block must retain OEM cylinder bore spacing, and OEM block angle. Overbore is limited to no larger than .065” for the 1968 or earlier engine being claimed. Lifter bores may be bushed. The responsibility for adapting to the SUPERFLOW dyno cart is that of the participant.

303 – MOTORPLATES

Front style “motor plates” are "required" for installation on the Superflow Dyno. Motorplate must be between 26" and 29" width as measured across the camshaft center line. 1/4" Aluminum or steel plate is acceptable.

304 –CRANKSHAFT

Any commercially available forged or cast steel or cast iron crankshaft permitted. Any journal diameter permitted. Maximum .015 stroke change for engine being claimed is permitted. Billet crankshaft prohibited. A participant supplied pilot bearing IS required. Pilot bearing I.D. required is .594

305 – CYLINDER HEADS

OEM mass-produced, cast iron passenger car cylinder heads are the only type of heads that can be used. Heads must be originally manufactured for the engine application in which they are being used. Any welding and / or brazing other than allowed repair, prohibited. Maximum valve size 2.25". Any commercially available stainless steel valve permitted. Titanium valves and/or springs prohibited. Titanium retainers permitted. Up to one intake and / or one exhaust runner may be repaired by brazing, welding or epoxy. Flow and / or directional changes by use of said epoxy arestrictly prohibited. The stock OEM intake bolt flange must be used and maintained. Head gaskets must be conventional style, embossed steel or composition with a MAX compressed thickness of .120". No part of the mating surface of the head/head gasket may extend or protrude into the cylinder of the block.

Engine must use OEM mass produced cast iron passenger car cylinder heads. OEM factory high output or high performance "Limited" production cylinder heads prohibited. Entrant must submit head part number for pre-approval by MOM Rules committee prior to acceptance.

Cylinder head must match engine type. Porting permitted. Welding or epoxy filler prohibited. Pushrod tube or sleeve modification permitted. Minimum valve stem diameter 5/16". Ti valve springs prohibited. Guide plates permitted. Valve angle must remain as per manufacture's specifications, +1/-1 degree. Any retainer permitted. Flange adapters that connect the exhaust ports to the header prohibited.

306 – IGNITION

Engine must use Distributor ONLY. Crank trigger prohibited

Other ignition trigger devices prohibited. Spark advance functions must be by conventional mechanical systems within the distributor only. Distributor and single coil ignition only. Programmable ignitions and/or ignition boxes/devices are prohibited. Hook up of computer or remote programming device of any kind to ignition system prohibited. Analog ignition boxes: MSD 6 or 6AL are permitted. Similar NON-programmable ignition boxes from other manufactures may be permitted

with Tech Director pre-approval. Spark plug wires must be commercially available.

Ignition components must be mounted on a plate attached to the flywheel side of the engine block or back of the heads / intake. OEM size coil may be mounted in stock location if the intake provides the mounting provisions.

307 –CARBURETION

Single 4150-style carburetor only. 1.780 -inch maximum throttle plate diameter. Minimum throttle shaft - .085” measured at thinnest point; minimum throttle plate thickness - .038” measured at thinnest point. Cutting and reassembling carburetor prohibited. No split or stretched style base plates permitted. Slide valve carburetor prohibited. Carburetor must have four individual venturi and four individual throttle blades. Water or any other auxiliary fluid injection systems prohibited. Engines must be equipped with a single point rearward-pull mechanical throttle linkage compatible with the dyno actuation linkage. A bracket providing an anchor point for the dyno throttle cable and a compatible linkage ball is required at the pull point. A diagram detailing the requirement will be provided to all accepted MOM participants.

All engines will utilize a pre-pump fuel filter, electric fuel pump and regulator and supply line filter supplied by the dyno facility and each engine builder utilizing a carburetor will determine the fuel pressure. Both single and dual feed application will be given one (1) type 8 AN connection fuel line located on the SUPERFLOW dyno chassis approximately 46 inches from your carburetor, so design your system accordingly. Knock (detonation) sensors prohibited.

308 – FUEL INJECTION

The use of commercially available bolt on stand alone 4150 EFI throttle body units is permitted. (Example FiTech, Sniper.) Any ignition control is prohibited from EFI. 1.780” throttle bore MAX.

Knock (detonation) sensors prohibited. Water or any other auxiliary fluid injection systems prohibited. The throttle body must be equipped with a single point rearward-pull mechanical throttle linkage compatible

with the dyno actuation linkage. A bracket providing an anchor point for the dyno throttle cable and a compatible linkage ball is required at the pull point. A diagram detailing the requirement will be provided to all accepted MOM participants.

Fuel pressure regulation will be provided by a system consisting of pre-pump filter, electric fuel pump, regulator and supply line filter as part of the dyno fuel system. Fuel pressure will be set at 65 psi maximum on the dyno fuel pressure gauge. Fuel pressure will be set prior engine start up (engine off). This is a Supply and Return system. A single -8 AN fitting will be required for fuel hook-up and will be provided approximately 46 inches from center of engine as locked down on SUPERFLOW dyno. A single –8 AN fitted and return fuel line will be supplied to fuel tank.

310 – AIR SUPPLY

Dyno cell (Room) supplied/Fresh air

311 – AIR FILTER

Heat shields or plates between the intake manifold and carburetor prohibited. This includes any structure deemed by the event personnel as designed to take advantage of airflow in dyno installation. Structure such as ram tubes, velocity stacks, etc. attached to the inlet portion of the carburetor are prohibited.

312 – CAMSHAFT / LIFTERS / VALVE LIFT

312 A – CAMSHAFT

Camshaft may be custom ground. A solid flat tappet camshaft is permitted. A hydraulic roller camshaft is permitted. Camshaft must maintain OEM journal diameters as originally manufactured in production for engine claimed. Roller cam bearings prohibited. Welded camshaft cores prohibited. Nitrided cores permitted. Cam bearing O.D. is limited to a max of 1mm oversize for engine claimed. Maximum valve lift at ZERO lash is .600”. Valve lift will be measured at the retainer

312 B –LIFTERS

Engine must retain OEM lifter bore size for engine selected. Lifter bore bushings for purpose of blueprinting permitted. Relocation of lifter bore or lifter bore bushing prohibited.

313 – CAMSHAFT DRIVE

A commercially available three-piece timing chain set required. Belt drives, exposed or hidden under covers prohibited.

314 – INTAKE MANIFOLD

Engine must use a mass produced commercially available cast aluminum or OEM single four-barrel intake manifold with centrally located carburetor / throttle body flange required. Intake manifold INCLUDING all additional gaskets and spacers may not be taller than 8 inches measured at the carb / throttle body mounting flange. The measurement of carb flange is the average between the front and rear dimensions taken from the engine china rail to a straight edge across the carb / throttle body mounting surface. Pontiac engines will be measured using a line drawn at deck between both sides, front and rear. Vintage entries (Pre ’58) are exempt from intake rules.

Using an intake manifold that is designed for a different make or family of engine prohibited. Maximum thickness between intake manifold & cylinder head 0.100” measured with a “go-no go” gauge with engine assembled as to be run. External bypass coolant lines prohibited. All carburetors must mount to the intake manifold flange. Porting interior surfaces of the intake permitted. Welding and/or epoxy filler prohibited on any part of cast manifold.

315 – CONNECTING RODS

Any commercially available steel connecting rods permitted. Aluminum, titanium, or any other exotic materials prohibited.

316 - PISTONS AND RINGS

Any commercially available pistons permitted. Custom-made, modified,

and/or coated pistons permitted. Vertical gas ports prohibited. Pistons may have horizontal gas ports. The ring package must consist of two compression rings and a single oil ring assembly. Compression rings must be 1mm” or larger rings. Minimum oil ring assembly width is 2-mm.

317 – COMPRESSION RATIO

Compression ratio limited to 11:5:1

318 - ROCKER ARMS

Must be OEM rocker arm or NHRA stock eliminator accepted bolt on assemblies using factory mounting provisions for engine claimed. Basic drill and tap style work is permitted. No machining of pedestals permitted. Fabricated mounting plates prohibited. Stud girdles are permitted.

319 –HEADERS

Headers must fit the dyno target window. Maximum primary tube outside diameter is 2”. Any step in primary tube diameter is prohibited. Maximum collector diameter 4". Minimum collector diameter 3.500". Collector must be smooth (Round) with no flange. Crankcase ventilation systems that vent to any component of the exhaust system are prohibited. Bungs for Lambda 02 sensors permitted. Thermal header wraps (such as Kevlar fabric) prohibited. Exhaust systems must be properly sealed from the header flange to the muffler inlet. Adaptor plates between cylinder head & header prohibited.

320 –MUFFLERS

H-pipes, X-pipes, or any such connection between the left and right headers and/or the exhaust system prohibited. A diagram of the requirements for exhaust hook-up to the dyno facility will be provided to all participants. Mufflers will NOT be utilized in the dyno cell.

321- OIL PAN / SCRAPER

Any un-modified cataloged oil pan without any power type kickout and no wider than the block pan rails for the engine make / model is permitted. Sump “kick outs” are allowed. Oil pan must be manufactured and cataloged to fit an application. Oil Pan identifying part number and application must match current printed manufacturer’s catalog for verification. Competitor is required to present printed catalog showing oil pan part number and application. Oil pan must fit the block without alteration. Modification and/or alteration of the as-manufactured oil pan prohibited. Crank scrapers and/or windage trays permitted. Oil pan maximum depth is 12 inches measured from crankshaft centerline.

Commercially available cast or billet replacement style oil pump allowed. Oil pump must mount in factory location using OEM style provision for the engine type. Dry sump systems and vacuum pumps prohibited. Oil system accumulators prohibited. External oil feed lines prohibited. Belt-driven external oil pumps prohibited.
Electrically powered oil pumps prohibited. Drain plug must be ½-20 thread.

322-OIL

All engines must be shipped “dry”. Engine will be required to use at least 6 quarts of oil. Participants will only use supplied oil for competition. Propylene Oxide or other oxidizing agents/substances prohibited. Oil is provided at the event. Oil filter must be dry and will be removed for inspection prior to running.

323- OIL ADDITIVES

No oil additives permitted.

324 - WATER PUMP

Water pump must be belt driven by crankshaft. Mechanical water pump required. Water pumps must be mounted in the OEM location. Water flow in and out of the water pump must be provided by the OEM block provisions only. Use of a cooling system thermostat prohibited. Water "feed" connections are limited to a set diameter of 1.5 inch O.D. and water "return" connections are limited to a set diameter of 1.5 inch O.D. Additional plumbing required to adapt engine to these sizes is participant’s responsibility. If the connections you have do not match the sizes listed above you could be required to forfeit your position in the run order.

325 - ELECTRICAL CONNECTIONS

BE PREPARED! Participants should arrive at the event fully prepared (tools & supplies) to alter or change the electrical connections on their engine during the Pre Dyno Tech to fit the required connections on the dyno. Failure to comply with Rule (section 325) could result in loss of, or forfeiture of run position.

It is the participant’s responsibility to assure the electrical equipment on the engine will work with the SUPERFLOW dyno connectors at location.

326 - STARTER

Not required. Starter is built into the Superflow dyno system.

327 – FLYWHEEL

Any commercially available, unmodified SFI-certified domestic manual STEEL transmission flywheel mandatory. Flexplates prohibited. Special order flywheels prohibited. Installation and torque of the flywheel bolts will be done by the Team Leader and observed by a MOM Tech official. Starter ring may need to be removed from the flywheel for clearance inside the Superflow Pro Bell (recommended).

328 - BELLHOUSING

Each Engine entered in MOM "MUST" fit the SuperFlow Pro Bell housing. The Bellhousing is part of the SuperFlow system at the JE pistons R&D Dynothat is being used in the MOM competition. (It is the responsibility of each participant to make sure his engine will fit a Super Flow Pro bellhousing)

329 - COATINGS

Any commercially available performance coating permitted. The application of thermal and/or friction coatings can be performed at any time prior to the competition on any part. Coating a part is not considered a modification, and parts that cannot be legally modified, may be coated.

330 – FUEL

Gasoline supplied at the event will be TBA

SIGNATURE AND ACCEPTANCE OF 2020 MASTERS of MOTORS RULES
SIGN AND RETURN WITH ENTRY FEE NO LATER THAN MAY 1st, 2020

The undersigned Team Leader, on behalf of all members of their Team's Accepted Entry Application into the 2020 AMSOIL Masters of Motors competition presented by JE Pistons, hereby confirms that they have read, understand, agrees to, and will adhere to the Rules of the 2020 AMSOIL Master of Motors event.

Additionally, the undersigned acknowledges that these Rules are effective upon date of release and publication of the Rules. It is also further understood that the Rules may be amended or modified by Masters of Motors: The Masters of Motors and the Masters of Motors Event Management at its sole discretion at any time in accordance with the provisions in this document, wherein such Amendments and/or Addendums are effective upon their date of publication on www.mastersofmotors.com, and/or by email communication to all Entrants, and/or by written memorandum to all Entrants, and/or by a pre-event participant's meeting.

It is expressly understood that it is the responsibility of the entrant to monitor the website and/or email or mail notification for any Rules Amendments, Addendums, Modifications, or Special Provisions. Entrant agrees to adhere to and abide by any such Rules Modifications that may be made subsequent to this document.

TEAM NAME: _____

Signature of Team Leader: _____

Printed Name: _____

Date:_____

If after reading the Rulebook you still have questions please correspond via email to questions@mastersofmotors.com. Please make sure your questions are specific and well prepared in advance.