Race Engine Challenge
Classic Rivals Class
Chevy vs Ford vs Mopar

2021 TECHNICAL RULES

If you are not sure how to interpret any rule, call Greg Finnican at 704-408-7356.

This contest WILL NOT use a cubic inch divider. Scored test RPM range is 3500-7000 RPM at 500 RPM's/second. Dyno correction factor will be SAE J607. Scores will be determined by averaging three of the best average HP dyno pulls out of up to the ten pulls permitted. The sum of the average corrected HP will determine the winner.

100 – ENGINE
Small block Chevy, Ford 9.5" deck height Windsor and small block Mopar. 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 cooling by mechanical device such as an external cooler or radiator/heater 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 is mandatory.

101 – DISPLACEMENT
410 cubic inch maximum, 400 cubic inch minimum. Cubic inch is calculated by bore x bore x stroke x 6.2832. Any part of a cubic inch is rounded up to the next highest inch, i.e. 408.3 = 409.

102 – ENGINE BLOCK
Any domestic OEM passenger car or commercially available aftermarket OEM replacement, cast iron or aluminum block permitted. Engine block must retain OEM cylinder bore spacing, deck height, block angle and stock lifter bores spacing.

103 – CRANKSHAFT
Any commercially available crankshaft permitted.

104 – CYLINDER HEADS
Commercially available 23° Chevy, 20° Ford, 18° Mopar with standard intake port height and location required. Porting or epoxy inside the original port casting permitted. Only modification to the exterior of the cylinder head is milling. Steel valves only. **HEADS TO BE USED MUST BE SUBMITTED FOR APPROVAL.**

105 – IGNITION
Distributor or coil on plug. No crank trigger. ECU and ignition components may be mounted either on the front or a plate attached to the flywheel side of the engine block and/or back of heads/intake manifold.

106 – CARBURETION
Single 4150 style four barrel style carb only. 1.780 inch maximum throttle bore diameter. Water or any other auxiliary fluid injection systems prohibited. 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.**
All engines will utilize an electric fuel pump with regulator and supply line filter supplied by the dyno facility. Each engine builder utilizing a carburetor will determine the fuel pressure. Both single and dual feed applications will be given one (1) type 8 AN connection fuel line.

107 – FUEL INJECTION
Any style throttle body. 65 psi maximum supplied fuel pressure at dyno gauge. Water or any other auxiliary fluid injection systems prohibited. 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.**
Fuel pressure regulation will be provided by a system consisting of an 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 to engine start up (engine off). This is a supply and return system. A single -10 AN fitting will be required for fuel hook-up to the fuel rails and a single -8 AN fitting will be required for the return fuel line. The use of a commercially available bolt on stand alone 4150 EFI throttle body unit is permitted.

108 – AIR SUPPLY
Provided by a plenum in the ceiling with air coming in at a 45 degree angle. No structure, deemed by the event management as designed to take advantage of air flow in the dyno room installation, is permitted.

109 – AIR FILTER
Not permitted. Structures such as ram tubes, velocity stacks, etc. attached to the inlet portion of the carburetor/fuel injection are permitted. Velocity stacks, ram tubes or other devices attached to the throttle body/carburetor limited to six (6) inches maximum.

110 – CAMSHAFT
53 MM cam journal limit.

111 – CAMSHAFT DRIVE
Three piece chain drive must be under the timing chain cover.

112 – LIFTERS
Any lifter type permitted. .904 diameter limit. Lift bushing permitted.

113 – ZERO LASH VALVE LIFT LIMIT
.700

114 – IDLE
Engine must be able to idle under 1,000 RPM's.

115 – INTAKE MANIFOLD
Engine must use a mass produced commercially available cast aluminum or composite manifold that is a direct bolt on. Internal porting of the manifold permitted. The only welding/epoxy permitted on the exterior is for installing injector bungs. Carb/TB spacer is limited to 1 inch (plus two gaskets). Water lines from the back of the manifold to the front permitted. Maximum thickness between intake manifold and cylinder heads of .125 inches. Intake manifold from another family of engine not permitted.

116– CONNECTING RODS
Steel.

117 – PISTONS AND RINGS
No smaller than 1 mm, 1 mm, 2 mm with **lateral gas ports only**.

118 – COMPRESSION RATIO LIMIT
11:5

119 – FUEL
TBD

120 – ROCKER ARMS
Unlimited.

121 – HEADERS
Chassis-style exhaust headers that run down and back from the front of the engine required. Port matching of the header flange permitted. Headers and slip-on style collectors are acceptable. Maximum collector diameter 3.5 inches. Minimum collector diameter 3 inches. No crankcase exhaust ventilation permitted.
Bungs for Lambda 02 sensors are permitted. Thermal header wraps (such as Kevlar fabric) not permitted. Adapter plates between cylinder head and header permitted. Exhaust ñport platesò permitted. **A minimum of 22 inches between collectors.**

122 – OIL PAN/SCRAPER
Oil pan must be commercially available and be of a stepped sump design without alteration to the external dimension of the pan. **Applicant will submit the pan to be used which will have to be found in a Competition Products, Jegs or Summit catalog.** Dry sump systems and vacuum pumps prohibited. Oil pumps with scavenging stages or used in conjunction with external tanks is prohibited. Oil system accumulators prohibited. Electrically powered oil pumps prohibited. No external vacuum pump. Oil pump must mount to OEM location. Internal custom scraper and baffle permitted. Temp sensor will be attached to the surface of the oil filter.

123 – OIL
All engines must be shipped ñdryò. Engine will be required to use at least 5 quarts of oil. Participants will use only the oil supplied for the competition. Competitors will have their choice of viscosity.

124 – OIL ADDITIVES
No oil additives permitted.

125 – WATER PUMP
Belt driven mechanical water pump or electric. Use of cooling system thermostat prohibited. Water pump must be mounted in the OEM location. External water lines permitted.
Water in and out for dyno hook-up requires your engine to take a 20 AN female or have a 1.25" barb or pipe on your engine.

126 – ELECTRICAL CONNECTIONS
Contestants will be supplied three (3) 12 Volt 20 AMP, one (1) switch 12V and four (4) negative connections.

127 – STARTER
Dyno will provide the starter.

128 – FLYWHEEL/FLEXPLATE
Any commercially available, SFI-certified domestic manual STEEL transmission flywheel is mandatory. Flex plates are prohibited.

129 – COATINGS
Any commercially available performance coating permitted.