

# 2019 SK Modified®

## Open Engine Rules Supplement

**20E- 5 GENERAL ENGINE REQUIREMENTS** – Engine must be OEM cast iron V8 production block, or the Dart SHP Block. Cylinder heads must be OEM or Dart 10024266, and intake must be OEM steel 2-barrel type. The maximum compression ratio allowed will be 11.5 to 1. Any engine found to exceed the 11.5 to 1 compression ratio limit will be deemed illegal and will refer to Whelen Modified Tour rule 20D-5.4 B for verification. The only approved engine for GM is the Chevrolet 350, Ford is the 351, Mopar is the 360. No deflashing, grinding, welding or painting of any internal area. Maximum overbore for GM and Ford is .065". Maximum overbore for Mopar is .030". No block may have more than two (2) cylinder sleeves installed and they must be made of cast iron material.

### **20E- 5.5 PISTONS/RODS**

**A.** Any flat top three (3) ring round aluminum piston with three (3) rings in place are permitted. Valve reliefs for valve clearance only may be cut into the pistons. No portion of piston may protrude above the top of the block. Self-centering connecting rod type pistons are not permitted, rods must align off the crankshaft rod journals. All three rings must be of flat magnetic steel. Dykes type rings are not permitted. The minimum ring thickness permitted is as follows:

Compression rings = .043 inch Oil ring assembly = 3.0 mm

**B.** Only magnetic steel piston pins maintaining a minimum diameter of .0927 inch are permitted. They must be contained by bushings only, not bearings. Full floating pins are permitted. Wrist pins may not be coated (DLC etc.).

**C.** Piston pin holes must be in a fixed location in the piston and connecting rods.

**D.** Only two-piece insert style connecting rod bearings are permitted.

**E.** Only solid magnetic steel stock type connecting rods are permitted. Hollow beam connecting rods are not permitted. All after-market connecting rods must be steel sportsman rods. Only normal engine balancing and the use of after-market bolts and nuts are permitted. Any form of deburring, deflashing, polishing, grinding or lightening is not permitted. Billet connecting rods are not permitted. The minimum/maximum rod lengths permitted are:

MANUFACTURER    MINIMUM    MAXIMUM

Mopar                    6.000            6.250

Ford                     5.778            6.250

GM                      5.700            6.250

All connecting rods of an engine must be the same length.

**F.** Titanium and stainless steel connecting rods are not permitted.

**G.** Minimum weight for piston, pin, ring, bearing and rod assembly is 1075 grams.

**20E- 5.5.4 OIL PAN** – Dry sumps, external oil pumps or tanks or accu-sump systems are not permitted. Evac system pumps are not permitted. Windage trays of any type will be allowed. Oil coolers are allowed. Only OEM type in the pan oil pumps are permitted. Crank scrapers are not permitted.

**20E- 5.6 HEADS** – GM must use the GM Stock OEM steel 492 castings, the old style 461, the old style 462, or the Dart part number 10024266 cylinder head. GM Angle plug, Bow-tie or Vortec heads are not permitted. Intake valve must be 2.02" maximum diameter. Exhaust valve must be 1.60" maximum diameter.

Ford Cleveland or Windsor must use Stock OEM steel heads of two-barrel design that came on a passenger vehicle, with a maximum intake valve of 2.05" and exhaust valve of 1.66". Ford Motorsports heads are not permitted.

Mopar must use the Stock OEM steel passenger car version of casting number 3418915, or ENGINEQUEST Chrysler part number 318B, all with a maximum intake valve of 2.02" and exhaust valve of 1.60". W2 or TA heads are not permitted.

All GM and Ford heads must have a minimum of 60cc combustion chambers. Mopar heads must have a minimum of 64cc combustion chambers. When heads are checked at the track you will be responsible for cleaning and carbon removal to make the respective cc limit. The only modifications allowed will be the installation of valve guide sleeves and milling of the gasket surfaces, however angle milling, changing the angle of the head gasket surface in relationship to the rest of the head, is not permitted. Additionally altering the position or angle of the valve guide is not permitted. The addition of screw-in studs, guide plates, valve spring seats, optional valve seals, Poly-Locks or jam-nut devices are permitted. The only machining of valve guide bosses allowed is for seals only. Coolant return lines are allowed to be placed on the ends of the heads. No lines will be allowed on the sides of the head. Any other head must be approved. All other head modifications are not permitted, including but not limited to: porting, polishing or any grinding in ports or combustion chambers, chemical milling, glass beading or removal of any flashing or casting marks. No welding or sectioning. No internal modifications of any kind, including painting or Teflon coating. No more than two intake-mounting holes may have HeliCoils. Intake or exhaust manifold mounting holes may not be added or relocated. Holes must take standard intake manifold bolts. Head gasket surface milling tolerance for SK Modified® is 0.00" to 0.050" from true 23.00 degrees of stock valve position.

**VALVES** – All valves must be identical in appearance and construction as an OEM type valve. No air directional devices will be permitted on any of the valve surfaces. Valve stems must have a minimum diameter of 11/32 inch. Stainless steel replacement valves are permitted.

**VALVE JOB** – Three (3) angle valve jobs are permitted. When cutting the valve seat angles, no stone or grinding marks are permitted above the bottom of the valve guide. All cutting in reference to the valve job must be centered off the centerline of the valve guide. Upon completion of the valve job, the bowl area under the valve seat down to the bottom of the valve guide should still be the same configuration as far as shape and finish as it was from the manufacturer. Surfaces and/or edges where the cutter or stone has touched must not be polished. No hand grinding or polishing is permitted on any part of the head. Un-shrouding of valves is not permitted.

**VALVE SPRINGS & RETAINERS** – Any type steel valve springs allowed. Double springs are permitted. Steel valve spring retainers only.

## **20E- 5.7 CRANKSHAFT**

- A.** Only stock production OEM crankshafts allowed. The main and rod journal size must be stock for the block being used. Original bore and stroke combination must be maintained. The maximum allowable stroke tolerance for GM and Ford will be +/- .015". Mopar will have +/- .005. Minimum main journal size .020 under stock. Minimum rod journal size .030 under stock.
- B.** After-market crankshafts, knife-edge crankshafts, small journal crankshafts are not permitted.
- C**  
. No machining or polishing of the crankshaft counterweights allowed. Standard engine balancing is the only acceptable modification that can be performed on this component. No painting or Teflon coating. No drilling of rod journals.
- D.** Minimum crankshaft weights are GM engines 50 lbs., Ford and Mopar 54 lbs.
- E.** Fluid harmonic balancers will be permitted.

## **20E- 5.8.1 CAMSHAFT**

- A.** Only magnetic steel camshafts will be permitted. The maximum camshaft bearing journal size must not be more than 1.870 inches (47.5mm).
- B.** Any type chain will be permitted. Belt-drive and gear-drive systems will not be permitted.
- C.** Only standard production sleeve type cam bearings will be permitted and must be standard diameter for the production block being used. Needle roller bearings will not be permitted.
- D.** Camshafts must be driven in the same direction of rotation as the approved standard production engine. The camshaft must maintain the same firing order as the NASCAR-approved production engine. The approved firing orders using approved cylinder identification are as follows:  
GM and Mopar 1-8-4-3-6-5-7-2  
Ford 1-3-7-2-6-5-4-8
- E.** The manufacturer's cylinder identification sequence is as follows:

GM and Mopar	Ford
(Front)	(Front)
1 -2	5-1
3-4	6-2
5-6	7-3
7-8	8-4
- F.** The front engine cover material must be acceptable to SMS Officials.
- G.** Maximum lift at the valve with zero (0) lash is .550".

**20E- 5.8.2 VALVE LIFTERS** – Stock lifter diameter must be maintained. No roller, mushroom, oversize, convex, concave or ceramic lifters. Only flat bottom magnetic steel straight barrel lifters of the same diameter and length as stock.

**20E- 5.8.3 ROCKER ARMS** – Roller rocker arms permitted. Rockers must be independent and stud type for GM and Ford. Stud girdles are permitted. Stock type shaft rocker system is allowed on Mopar only. Aftermarket shaft rocker systems are not permitted.

**20E- 5.9 INTAKE MANIFOLD** – Stock cast iron passenger car manifolds of 2 barrel design must be used. Manifold must be one that was used with an OEM two-barrel carburetor. Fuel injection/throttle body manifolds are not permitted. Throttle bores can measure no more than

1.730" dia. Intake ports must meet the following requirements a vertical height of 1.910" and a horizontal measurement of 1.175." Runner size between ports must measure between .250" & .300". You are required to have an unaltered stock manifold. No porting, polishing, acid dipping, deburring, de-flashing, abrasive cleaning, internal painting, milling, cutting, drilling holes, enlarging bolt holes, matching of ports or welding. Absolutely no modifications of any kind are permitted. An SMS supplied stock intake manifold must fit your engine complete with stock gaskets. All bolt holes must be in alignment and same size as stock. Coolant lines are not permitted in the intake manifold.

**20E- 5.10 CARBURETOR** – Holley two-barrel model #4412 carburetor must be used. Only Holley replacement or service parts can be used in any carburetor rework. Carburetors and/or carburetor components machined from billet materials are not permitted. All parts must be a Holley manufactured part for the 4412 model. Polishing, grinding, resizing or reshaping of any part or orifice is not permitted. The body, base plate, metering block, and bowl must be a standard Holley 4412 part, HP parts are not permitted. OEM type gaskets, jets and power valve must be used. The diameter of every hole in carburetor must pass the standard NASCAR /SMS pin and tooling gauges as part of our routine tech process.

(1) Body of carburetor and metering block: No polishing, grinding or reshaping of any part.

Drilling of additional holes or plugging holes is not permitted.

(2) The choke may be removed, but all screw holes must be permanently sealed.

(3) Choke Horn: Choke horn may not be removed.

(4) Boosters: Boosters may not be changed. Size or shape must not be altered. Height must remain standard.

(5) Venturi: Venturi area must not be altered in any manner. Casting ring must not be removed.

(6) Alterations to allow additional air to be picked up below the opening of the venturi such as altered gaskets, base plates and drilling holes into the carburetor will not be permitted.

(7) Base Plate: Base plate must not be altered in shape or size.

(8) Butterflies: The stock Holley 4412 or Stainless Steel Holly part #346 butterflies must be used. They may not be thinned or tapered. The Butterflies must remain as manufactured, and must maintain the Holley production tolerance thickness of .0438" to .0398". Idle holes may be drilled in butterflies. Screw ends may be cut even with shaft but screw heads must remain standard.

(9) Throttle Shaft: Shaft must remain standard and must not be thinned or cut in any manner.

**20E- 5.10.2 CARBURETOR SPACER** – Only one solid spacer made of aluminum or phenolic plastic of a maximum height of 1" permitted. Only one .075" maximum thickness gasket per side. No wedge shaped mounting surfaces, both top and bottom surfaces must be parallel. Spacer can be no larger than base of carburetor. Port holes or hole must be vertical to the surface with no beveling, tapering, or flaring. No additional openings for the induction of air allowed. SMS Officials must approve all spacers.

## **20E- 9 ENGINE EXHAUST SYSTEM**

**A.** Headers are permitted. Headers must be a commercially manufactured header.

**B.** 180-degree headers, Tri-Y headers and Multi-merge headers are not permitted.

**C.** The exhaust header flange must mount directly to the cylinder head with no spacers between the flange and the cylinder head. A maximum header flange thickness of ½ inch is permitted.

**D.** Inserts are not permitted in any part of the header or collector. Only one (1) collector allowed per side.

**E.** Exhaust pipes must come out of engine at cowl and must extend a minimum of six (6) inches past the cowl. Turn-downs must be used after the mufflers, on each side. The turn-downs must be installed so that hot exhaust, engine debris, or engine flames are aimed at the ground (from pointing straight down to less than 90 degrees to horizon).

**NON-SPEC ENGINE:** LOBAK # RCM 30-12-30, LOBAK # 35-12-35, Kooks P/N R3530-10 Flow-Right P/N FR350 or the Kooks R35-35-10 (3.5) mufflers are required at all times.

Modifications or repairs of any type are not permitted on the muffler. Both muffler flanges must be intact. Mufflers must be removable for inspection.

**NOTE:** Both muffler flanges must still be intact. Mufflers must be removable for inspection.

**G.** Thermal wrap is not permitted anywhere on exhaust system.

**H.** Only one muffler and exhaust pipe allowed per side.

**I.** Exhaust system subject to approval by SMS Officials.

**J.** Interior coatings are permitted.

**NOTE:** The life expectancy for all mufflers are two years. All owners are responsible to make sure their mufflers are in proper working order. If found not to be, the muffler will be deemed illegal (i.e. missing one or more of the internal baffles).

**20E- 15 FUEL SPECIFICATIONS** – The only approved fuel is Sunoco Supreme.

**A.** Icing or cooling of the fuel system is not permitted in the paddock, pit or racing area.

**B.** Gasoline may be tested and certified at any event through the application of various chemical analyses as considered appropriate by SMS Officials. Gasoline may be checked before, during and after the racing events.

**C.** Nothing may be placed in the fuel line other than a standard fuel filter. The use of any type of fuel catalyst or other fuel-altering devices is prohibited.