

# KidSprint USA National Rules 2021

The KidSprint USA will hereafter be referred to as KSUSA. Questions? Contact Chuck Kidwell 317 507 5968 or chuckkidwell@gmail.com

## SPECIFIC RULES Effective January 15, 2021

- 1. Age:** Drivers ages 6 through 12 (A driver whose 13<sup>th</sup> birthday falls during the racing season will be allowed to finish the season in which they began accruing points before their birthday.) may compete in the KidSprint Class.
- 2. Roll Cage:** Roll cages shall be at least 1 inch .083 wall thickness mild steel, or 1 inch .065 wall thickness chromoly steel minimum. The front section of the cage shall be no further back than the steering wheel. Roll cage shall have sufficient fore and aft bracing and strength to support the weight of the car & driver in case of an upset. Weld in Halos are encouraged for driver protection. Cage shall have gussets at the intersecting bars to the uprights. Bends must have at least 3 inch radius. No square or pointed corners allowed. Roll cage must be a minimum of 3 "above the driver's helmet to the top of the cage at any point above the driver's helmet. It is mandatory to install a cross brace behind the seat to support the shoulder harness at a point not lower than 1 1/2 " below or above the top of the drivers shoulders.
- 3. Bumpers and Nerfs:** Car must have bumper extending beyond the front and rear tires. Nothing may extend beyond a tangent line from the outside edge of the tires to the bumpers. Nothing may extend beyond the outside edge or the tires or wheels, whichever is the widest. No sharp corners or design as to hook or damage. All cars must be equipped with nerf bars. Nerfing bars must extend to inside edge of tires, but not beyond the outside of tire.
- 4. Safety:** Seat belts must be securely attached to the car and used at all times. Metal to metal latches only. 5 point seat belts, shoulder harness and sub strap are required. Belt dates must not be over three years old. (Example: Oct 99 may be used in 2000, 2001 and 2002.) Arm restraints are mandatory and must be adequately adjusted to keep the drivers hands below the top of the roll cage. Helmets must be full head coverage competition type and one of the three latest SNELL approvals. Nomex headsocks recommended. All drivers will wear a name brand flame-retardant uniform. Neck braces and/or cage nets with a SFI 3.2-1 rating or higher or Total Head containment seats are mandatory. SFI gloves are mandatory for safety.
- 5. Cockpit Controls:** On and off switches must be on dash, top of the cowl or on steering wheel. On/off switch must be functional. No radio communication is allowed with the car or the driver. Receivers are allowed. Cockpit controls: kill switch, starter button and engine monitor. No driver operated shock adjusters, wing sliders or panhard adjusters allowed in cockpits.
- 6. Battery:** All wet cell batteries mounted in the cockpit must be covered and vented outside the cockpit area.
- 7. Fuel:** Fuel is to be KSUSA approved. Racing gas will be Sunoco Purple; VP C-10 or C-12 or Rocket Fuel 111 octane. **Methanol will be the required fuel starting 1/5/2018**
- 8. Weight:** Minimum Wing car and driver weight: 400 lbs. Non wing weight minimum weight car and driver is 385 lbs.
- 9. Suspension:** Adjustable Aluminum or steel body shocks are legal. Coil Over or Torsion Bars or combination of both is permitted.
- 10. Wheelbase:** Max of 52 inches, Min of 50 inches, center of front axle to center of rear axle. Rear axle to be steel or splined aluminum 1 1/4" min dia.
- 11. Maximum Tread Width:** Not to exceed 55" outside of tire to outside of tire.
- 12. Steering:** Front wheels must be connected by a solid or tubular tie rod. Rear wheel drive only. All suspension bolts except wheel nuts must be secured by some type of locking device.
- 13. Brakes:** Brakes will be of sufficient strength so as to slide the wheels while the car is in motion at any given time.
- 14. Tires and Wheels:** Wheels to be 8" dia steel or aluminum non-beadlock only. Right rear spec tire to be 10 x 8.50 x 8 American Racer (McCreary) or Hoosier RD 20 of comparable size Durometer of 42 reading minimum taken anytime. There can be no grooving, siping, softening or altering the tire in any way, must be as it arrives from the manufacturer. Wheels must be held on with 4 or more standard lug nuts or knock-off hubs.
- 15. Bodies:** All cars must have complete bodies of Sprint Car design only. Tail sections must be in place for time trials and all races. There must be a metal firewall between driver and engine, made of 24 gauge steel or .060" aluminum on cars not equipped with an approved fuel cell. Body of car must be made of aluminum, metal, fiberglass or high impact plastic. All cars must be painted an attractive color or colors. No rear view mirrors. The only part of the car allowed to be dismantled for driver to enter or exit is a quick release steering wheel hub. All mechanically operated devices must be mounted below the drivers shoulders for safety. All fuel tanks must be equipped with a one-way check valve designed to prevent the spillage of fuel from the fuel tank vent in the event of a rollover.
- 16. Transmission:** The drive will be by engine or jackshaft mounted clutch. **No axle mounted clutches or variable speed clutches of any type allowed.** No direct drive will be allowed. Chain guards will be made of .090 inch thick aluminum or equivalent and will run on top of chain from the front of the front sprocket to the center of the rear axle. Driver must not be able to touch the chain or sprockets while sitting in the cockpit.
- 17. Wings:** Right side board, maximum 42" x 20". Left side board, 42" x 20". Minimum center section size is 6 sq. ft. The wing cannot be mounted outside the centerline of the tires. Side boards may not extend more than 3" beyond center section and sides must cover center section. All wings must have 1/16" radius edges or edging. No raw edges. No wood except for ribs or spars inside center section. Lower front corner of the wing sides cannot be more than 4" below top of roll cage on a straight line to the top of the front roll cage crossmember. Top of roll cage is defined as the point of the roll cage or halo that would contact the ground. Use of a welded on Halo is encouraged for driver protection but bolt on halos are not considered as part of the chassis structure and are not the top of the roll cage or chassis. Nose wings cannot exceed 24"x 18", and must carry car number. Top wings are mandatory to enter a night's event except non wing events. Cars may finish without a wing if no replacement is available.
- 18. Numbers:** All cars must have legible numbers painted in contrasting colors on both sides of car and the nose.
- 19. License:** All drivers must be members in good standing of KidSprintUSA to qualify for prizes and contingencies supplied by KSUSA
- 20. Ballast:** Any material used for ballast must be firmly attached as a part of the car's structure. No liquid or loose ballast such as water, fuel, oil, sand bags, rocks, log chains etc. allowed.
- 21. Hubs:** Front hubs; Go kart type with 5/8" bearings and 5/16" wheel studs minimum. Rear hubs: 5/16 bolt minimum or splined with safety key.
- 22. Engine Rules:** Briggs & Stratton World Formula engines as defined by the KSUSA engine and FIA Homologation specs. Engine may or may not be sealed but both versions must pass Tech as defined by the previously mentioned rules upon request of a Track Official. The Briggs World Formula will use a RLV 5442S header or stock pipe and RLV 4100 silencer as defined in the KSUSA Briggs World Formula rules. Stock pipes may be cut and turned as necessary to fit the race car as long as the pipe still retains the original length, diameters and volume as the original stock pipe.

# 2020 KSUSA Engine National Rules Briggs World Formula

1/6/2021

All parts must be Briggs & Stratton factory production parts unless otherwise noted in these rules. No machining, polishing or alteration of any parts is permitted unless specifically noted in these rules.

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**These rules are proprietary and cannot be changed or altered without the express written consent of Chuck Kidwell**

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**All parts are subject to comparison with a known stock part. All tolerances are + \- .001 inch  
CYA Rule: If the rules do not say you can - You can't!!!!!!**

717.1: Shrouds and covers: All shrouds and covers must be run as supplied. Cylinder shield may be bent slightly or drilled around spark plug hole to allow fitting cylinder head temperature lead and clearance for Coil Ground lead. Flywheel Cover, Top Cover and Plate are non tech items. They are replaced by Part # 555699.

717.2 : Header and silencer

717.2.1: Factory header or RLV part number 5442S. Any exhaust gasket or no exhaust gasket allowed. Sealer allowed on header. Header nuts are not required to be safety wired. Bottom bracing must be bolted to head. Factory header may be cut and turned to fit car as long as the overall length and tube size remains the same as the stock factory header: OAL 20.5" OD .9375" x .065 wall (ID .807 +/- .005) Coating the pipe is allowed.

717.2.2: Exhaust gas temp sensor is optional.

717.2.4: RLV Silencer #4100 required. Baffle rattle is allowed however if baffles have been altered or removed, the muffler will be deemed illegal.

Baffle holes are .128 inch(#30 drill bit) no go gauge. Coating is allowed

717.2.5: Springs attaching Silencer to header must be safety wired. Silencer must be attached and functional to header or car at the end of the race or driver and car will be DQ'd

717.3 : Electric starter: Starter motor must be operational and capable of starting engine. Battery must be minimum of 8 AH rating and capable of starting warm engine. Recoil starter and flywheel starter cone optional. Starter support bracket P\N 557119 is optional.

717.4: Air filter must be Green Brand 40 X 75 filter attached directly to Carb. No Extensions or Adapters.

717.5 : Spark plug: Any commercially available, 10 mm thread, spark plug allowed. Spark plug must be stock. Indexing washers allowed. Removal of factory sealing washer is not allowed unless using head temp sensor ring.

717.6: Fuel pump must be B&S part 557033. Must be pulsed from intake manifold only.

717.7: Clutch: May be engine and/or Jackshaft mounted. Belt or chain drive from engine to jackshaft. May use #219 or #35 sprocket.

717.8: Rev Limiter: Rev Limit is 7100 rpm +/- 50 rpm. Rev limiter may be checked at any point in the race program. Rev limit will be checked with a suitable memory capable tachometer attached to the plug lead and the motor accelerated until the rev limiter begins to function. All rev limiters must function within 100 rpm when checked with the same instrument. Each competitor is allowed one courtesy check of the rev limiter with the instrument to be used at the event.

717.9: Fuel: **KSUSA FUEL WILL BE METHANOL IN 2018** Specific Gravity for Methanol is 0.7913@68 degrees F. Use a Temperature Correction Chart to determine exact SG. Legal Methanol Corrected Specific Gravity is 0.760 to 0.800. VP M1 Methanol is the standard for Zeroing a Digitron or any device for testing Methanol for power enhancing additives. VP M3 and M5 and other brands of like chemistry are Illegal.

717.9.1: OIL: Any crankcase oil is allowed BUT MUST PASS THE BURN TEST AND/OR THE SNIFFER TEST. (Recommend TIFF Industries Sniffer)

717.10 Carburetor: Stock Walbro PZ carburetor only. No alterations allowed; choke excluded. Carb mount boot Briggs #557130 is required. New Carburetor may have different color and exterior appearance.

717.10.2: Slide must remain unaltered. Unaltered Stock needle marked CDB is required,

717.10.3: Choke assembly is optional and may be removed and shaft holes plugged with silicon. If choke is retained choke lever may be fastened open with spring, rubber band or tie wrap.

717.10.4: Methanol Jets : Drilling or reaming of gas carb jets is allowed: Nozzle .111" no go; pilot/slow jet .026" no go; Main jet .072" no go. NOGO Gauge must NOT pass thru. No drilling of main jet diffuser tube. **No tolerance allowed.**

717.10.6: Venturi measurement

717.10.6.1: Vertical .9902" max

717.10.6.2: Horizontal .7382" max

717.11: Camshaft: No alteration of the camshaft by machining, polishing, or altering is allowed. Must compare to stock Briggs part. First camshaft check will be taken at the valve spring retainers. With the lash set at zero, the movement of the valve spring retainer may not exceed .3085".

Any camshaft with a measurement at the push rod of less than .306 should be removed and measured on the grind and checked for alteration. Camshaft must be as supplied with Stock Profile and compression relief.

717.11.1: Install degree wheel, using positive stop method.

717.11.2: Check ignition timing. With the right edge of the magnet (not the magnet holder) aligned with the right edge of the notch on the bottom of the right leg of the coil.

The degree wheel must indicate between 23 and 29 degrees BTDC. Flywheel key must have BS logo. Minimum key width is .182 inch.

**717.11.3: Tech camshaft at pushrods.** Push gently down on dial indicator stem to ensure that there is no lash when pushrods are going down.

Exhaust Lobe	Lift	Intake Lobe
75-71 BBDC	.020	34-30 BTDC
57-53 BBDC	.050	18-14 BTDC
39-35 BBDC	.100	2BTDC-2ATDC
25-21 BBDC	.150	13-17 ATDC
9-5 BBDC	.200	29-33 ATDC
12-16 ABDC	.250	49-53 ATDC
25-29 ABDC	.275	63-67 ATDC
.3085 MAX	.	3085 MAX
70-66 BTDC	.275	31-28 BBDC
57-53 BTDC	.250	18-14 BBDC
37-33 BTDC	.200	2-6 ABDC
21-17 BTDC	.150	18-22 ABDC
6-2 BTDC	.100	33-37 ABDC
11-15 ATDC	.050	49-53 ABDC
29-33 ATDC	.020	66-70 ABDC

717.12: Deck/Piston Clearance: Machining of deck surface is permitted. There will be no knife edge finishes allowed, Smooth finish only. Piston pop up cannot exceed .035" above block surface in the center of the piston. When measuring piston pop up, use the backside of the Sox pushrod gauge or set flat bar stock across piston parallel to wrist pin. Use dial indicator to check pop up on center of this bar. Carbon may be removed from the top of the piston prior to measuring. Top of piston may be filed to relieve protrusions left by number stamp on top of piston.

717.13: Bore: Maximum bore 2.725". Factory oversize pistons allowed.

717.14: Stroke: Maximum stroke is 2.204". Push piston down to take up rod play.

**717.15:** Head gasket: Any commercial available head gasket may be used but must maintain same configuration of shape of standard Briggs World Formula gasket. Minimum thickness is .040 measured with a micrometer from inside of cylinder hole of gasket at 4 points between the head bolts. Fire Ring B&S gasket is legal. **Current engines using .010 and thicker will be legal to 01/5/2019. Any engine built after 7/15/2017 will use the .040 head gasket. This will allow those engines that are fresh to be used til 1/15/2019 then rebuilt to .040 spec. All engines used in 2018 will require the .040 gasket.**

717.16: Head: Head may not be altered in any way from factory specifications. NO PORTING OF ANY SHAPE OR WAY! Heat sink P\N 555690 is allowed.

**717.16.05:** Cylinder head gasket surface may be machined. Remove Carbon first. Depth from gasket surface to head surface between valves must be a minimum of .319". Measure by using a depth micrometer. No knife edges or angle milling of head. **Cylinder head must be as furnished from Briggs. No polishing, grinding or machining of valve seat angles, or intake and exhaust runners allowed. 45 degree Valve Face and Seat angle and width as factory supplied.**

**717.16.1: Rocker Arms / Push Rods:** rocker arms must be as produced. Length must be 2.820 inches minimum. Push rod length 5.638" no go to 5.656 must go. Push rod diameter is .185 to .190".

717.16.5.1: Intake port and manifold: No media blasting of any type allowed on intake port in\on the head or manifold. Must be as cast.

Maximum diagonal measurement is 1.101".

Maximum vertical measurement is 1.044".

717.16.5.2: Exhaust port: No media blasting of any type allowed on exhaust port. Must be as cast.

Maximum I.D. of shoulder in bottom of exhaust port is .854"

717.16.6: Valve seats - one 45° angle only

717.16.6.1: Intake valve seat diameter is .966" - .972".

717.16.6.2: Exhaust valve seat diameter is .844" - .850".

717.16.7: Valves

717.16.7.1: Intake valve head diameter is 1.055" - 1.065".

717.16.7.2: Exhaust valve head diameter is .935" - .945".

717.16.7.3: Valve stem diameter is .232" - .238".

717.16.7.4: Valve face must have one 45° sealing surface only.

717.17.8 Valve springs

717.17.8.1: Dual valve springs as supplied by factory are required.

717.17.8.2: Inner spring wire diameter is .066" - .068".

717.17.8.3: Outer spring wire diameter is .112" - .114".

717.17.8.4: Valve Guides: Replacement of valve guides with B&S factory part 555645, is allowed.

717.18: Ignition: Unaltered B&S stock coil #557040 w\External Limiter or #557125 with Internal RPM Limiter is mandatory.

Attachment bolts or bolt holes may not be altered.

717.18.1: Spark plug connector must be stock factory type.

717.18.2: Rubber plug boot is allowed.

717.18.3: There must be resistance from plug wire to ground on coil #557040. Resistance must be between 3000 ohms, minimum, to 6000 ohms, maximum. Coil resistance may be rechecked after a minimum of 10 minutes if correct reading is not attained upon first check. No spec available on P\N #557125.

717.18.4: Coil air gap is non tech.

717.19: Flywheel: Only stock Cast Iron or Cast Aluminum Briggs #557126 flywheel is permitted. Starter ring gear and all cooling fins must be in place. No machining, glass beading, sandblasting, painting or coating of flywheel is allowed. Minimum Flywheel Weight with starter ring, cooling fins, and attachment bolts 4 pounds 3 oz.

717.19.1: Chipped fins due to poor casting are legal. Completely broken off fins are not allowed. **Minimum 1.750 inch Flywheel cover opening inch allowed.**

717.19.2: Stock flywheel key with B & S logo is required and will determine Aluminum flywheel ignition timing. The flywheel key may be aluminum or steel. **.182 minimum width.** NO offset keys permitted.

717.20: One or two stock crankcase gaskets are required. minimum

717.21: Valve Lifters: Must be stock. No Polishing allowed.

717.21.1: Lifter head diameter must be .964" - .984".

717.22: Connecting Rod: Stock B&S part #557005 or 557117 rod only. Rod may not be altered or polished. Rod may be clearanced providing that it is in stock configuration and finish, with no dimpling or media blasting. Rod ends must be concentric with crank journal and wrist pin with no chamfer or breaking of edges.

717.22.1: Rod length, measured from bottom of wrist pin hole to top of crank journal hole, is 2.419" minimum to 2.429" maximum.

717.22.2: Oil hole opening is .185" no-go. Crank end of oil hole is chamfered.

717.23: Wrist pin:

717.23.1: Maximum I.D. is .414".

717.23.2: O.D. is .624"-626".

717.23.3: Minimum length is 1.901".

717.24: Piston rings: Three rings mandatory. Top compression ring must have chamfer or O toward top of piston. Second scraper ring must be installed with inside chamfer down and O toward top of piston. Oil ring must be installed as from factory. No alteration of rings allowed except end gapping and lapping. Maximum RING GAP of Rings .050. Rings must be self supported in the cylinder bore of the engine being inspected. Rings must remain flat. Rings must be in one piece when removed from block. Aftermarket rings are allowed if they meet the Specifications listed below.

717.24.1: Minimum width of top two rings is .095".

717.24.2: Thickness of top two rings is .059" - .064".

717.24.3: Minimum width of oil ring is .065". Ring groove must be present. Expander must be installed but may be trimmed in overall length.

717.24.4: Thickness of oil ring is .098" - .102".

717.25: Piston: Stock "kidney bean" piston required. No alteration, polishing or machining allowed. Only piston skirts are coated and coating cannot be removed and skirts or any part of piston be polished. Factory finish only.

717.25.1: Minimum from top of piston to top of wrist pin on circlip side is .658".

717.25.2: Minimum piston length is 1.768".

717.25.3: Factory oversize World Formula pistons are allowed.

717.26: Crankshaft: Stock B&S crankshaft casting #772 and #052 only allowed, all finishes being as factory supplied, with stock timing gear installed in stock location only. No alteration or polishing in any manner allowed. Offset crankshafts not permitted. Stock bearings required. Side cover may be peened to retain side cover bearing.

717.26.1: Shim(s) if used, must be installed as from factory.

717.26.2: Crankshaft journal diameter is 1.094" - 1.100".

717.27: Block: Must be stock with no alterations, except blocks may be repaired from broken rod damage, providing that repair does not constitute a functional modification of original block. No welding is permitted from the cooling fins upward.

CYB rule: Unless the rules say you can; you can't!!!

717.28 All Tolerances +\-.001 measured with dial indicators, micrometers or calipers due to calibration variance.