

Beaver Dam Raceway Junior Sprints 2020

SECTION 7 KID SPRINTS

7.1.1 KID SPRINTS

Drivers age 6 through 14 or as approved by Raceway officials. Drivers may be directed to start in the rear of any event at the discretion of track officials for unspecified reasons.

7.2.1 FRAME

Must be constructed of minimum 1" O.D. X .083 wall thickness mild steel or 1" x .065 wall thickness 4130 chrome moly tubing. The front upright can be no further back than the front edge of the steering wheel. Rear upright must be behind the driver. Cage must be constructed in a manner acceptable to Raceway officials. Minimum 3" bend radius. All main post intersections must be adequately gusseted. Minimum 3" clearance from the top of the driver's helmet to the top of the halo/cage when the driver is seated in the car as raced. Horizontal shoulder must be installed behind the driver. Shoulder bar must be within 1 1/2" above or below the driver's shoulder level when the driver is seated in the car as raced. All cages must be padded in a manner acceptable to Raceway officials.

7.2.2 WHEELBASE

Minimum 50" center to center Maximum 52" center to center

7.2.3 WIDTH

Maximum 55" outside of tire to outside of tire.

7.2.4 WEIGHT

Minimum car and driver 400lbs Weight is taken as car exits racetrack. All weights must be securely mounted. No loose weights permitted. No liquid ballast permitted. All weights must be mounted below the body lines.

7.2.5 BUMPERS

Cars must have bumpers and nerf bars to race. Front and rear bumpers must extend beyond the front and rear tires. Nerf bars must be between the front and rear tires. Must be minimum to the inside edge of the tires. May not extend beyond the outside edge of the tires. Tire/wheel must be the widest part of the car. All nerfs and bumpers must be smooth, and of a design as to not create a safety hazard. Any nerfs or bumpers not acceptable to Raceway officials will be repaired or replaced before being allowed to race.

7.3.1 SAFETY EQUIPMENT

Raceway tech official approved 5 Point safety restraint system (seat belts) required. Restraints must be dated 2016, 2017, 2018, 2019 or 2020. Restraints must be installed as required by the manufacturer. Arm restraints required. Arm restraints must be adjusted to keep all parts of the driver's arms below the top of the roll cage. Drivers must wear SFI rated full driver's suit. SFI rated gloves, shoes, and socks mandatory. Nomex head sock recommended. Head nets (rated 3.2.1 or higher) or neck brace/support required. Full containment seats recommended. If not running a full containment seat, head supports are required on both sides. Full face helmet meeting SA 2010, SA2015 or higher required. All safety equipment must meet the approval of Raceway officials.

7.4 DRIVERS COMPARTMENT

Clearly marked functional on/off switch located on dash cowl or steering wheel required. Permitted controls are carb adjusters, kill switch, starter switch, and engine monitors. No radios, wing sliders, mirrors, or suspension controls permitted in driver's compartment.

7.5 BATTERIES

All wet cell type batteries mounted in driver's compartment must be covered and properly vented. Gel type batteries recommended.

7.6.1 SUSPENSION

Aluminum or steel body shocks permitted. Only 4 Shocks per car, 1 per wheel. Front hubs shall be Kart style 5/8" bearing with minimum 5/16" wheel studs. Rear hubs Douglas 5X130 Kart style or equivalent. All suspension bolts must be secured by locking device. All cars must be rear wheel drive only. Rear axle to be steel or aluminum, splined with a minimum Diameter of 1.250" O.D.

7.6.2 BRAKES

Functional brakes required that meet the approval of Raceway officials. Brakes must stop the car on demand.

7.6.3 WHEEL/TIRE

Wheels must be 8" Dia. Steel or aluminum non-bead-lock style. Right rear must be 10X8.50X8

American Racer or Hoosier RD20 No grooving, siping, grinding, or altering of the tires. Front and left rear tire open to any manufacturer. Wheels must mount with 4 or more standard lug nuts or be center knock off style.

7.7 STEERING

Front Wheels must be connected by tubular or solid tie rod. All steering components must be secured with a locking style fastener in a manner acceptable to Raceway officials. All steering systems must be approved. Quick release steering wheel required. Center of steering wheel shall be padded.

7.8.1 BODIES

Bodies must be of a sprint car design only. Bodies must be full and complete at all times the car is on the track unless approved by a Raceway official. Bodies may be made of fiberglass, aluminum, steel or plastic. Bodies may not be removed for driver to enter/exit car. No components mounted above drivers' shoulder line. All cars must have legible numbers on both sides of car and nose. Transponders must be mounted using a HRP transponder mounting bracket in a uniform location to be determined by Raceway officials. Failure to keep transponder mounted properly and numbers clean will result in not being scored. Firewall required between drivers compartment and engine minimum .060 aluminum or 24 gauge steel. All cars must have a rock screen mounted to the roll cage in front of the driver. Must be approved by Beaver Dam officials. Screen must have opening less than 2".

7.8.2 WINGS

Top wings required to begin an event. Cars may finish an event without the wing if approved by Raceway officials. Must utilize the same size wing for the duration of the event. No changing wing size or configuration to enhance performance. The wing you qualify with must be utilized for the entire event unless replacement is approved by Beaver Dam officials. This includes top and nose wings. Minimum size is 6 square feet. Outside edges of wing must be inside the centerline of the tires. Right and left side board maximum 42"x20" Side boards must cover center section and may not extend more than 3" beyond center section. Wings must have 1/16" radiused edges No wooden, plastic or composite wings. Wings must be constructed of aluminum only. No part of the wing shall be more than 4" below the top of the roll cage. Nose wings optional. May not exceed 24"x18". If running a nose wing car number must be on the wing.

7.8.3 FUEL TANK

All fuel tanks required to have functional one-way check valve to prevent fuel leakage.

7.9.1 ENGINE

Briggs and Stratton World Formula engines as defined by KSUSA and FIA homologation specs. Engines may be sealed or unsealed but must pass tech inspection. RLV5442S header or stock pipe and RLV4100 silencer as defined by KSUSA Briggs World Formula rules required. Stock pipes be cut and turned as necessary to fit the chassis as long as the length, diameter and volume remains the same. Full engine down loadable rules are available at www.kidsprintusa.com

Kid Sprint Engine Rules Briggs World Formula

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. All parts are subject to comparison with a known stock part. All tolerances are +/- .001inch 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.

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: Spec Gas Only. No Additives Allowed

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 silicone. If choke is retained choke lever may be fastened open with spring, rubber band or tie wrap.

717.10.4: Pilot Jets: 36, 38, 40 are allowed. Check by .017-inch (#77drill bit) no go gauge. Drilling or reaming is allowed.

717.10.5: Main Jets: 90, 93, 96, 98, 100, 102 are allowed. Check by .041-inch (#59 drill bit) no go gauge. Drilling or reaming of jets 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 2020 BDR's Jr Sprint Rules 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 01/5/2018. Any engine built after 7/15/2017 will use the .040 head gasket. This will allow those engines that are fresh to be used until 1/5/2018 then rebuilt to .040 spec. All engines used in 2020 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.

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: 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.

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.

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 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.

7.9.2 FUEL

Fuel is to be Beaver Dam approved. Approved fuel will be available at the Dodge County Co-op at the intersection of Raceway Road and Hwy 33. PREMIUM GRADE FUEL, 91 octane only.

7.9.3 TRANSMISSION

The drive will be by engine or jack shaft mounted clutches. No axle mounted clutches permitted. No direct drive permitted. Chain guards required. Minimum .090 aluminum or approved equivalent. Must cover the top of the chain from the front of the front sprocket to the center of the rear axle. Driver must not be able to contact the chain or sprockets when seated in the cockpit.

7.10 Weight Car

Minimum weight to be 400 lbs. All weights will be car and driver as raced. No allowances for lost parts or liquids.

7.10 Raceceiver Radio

Raceceiver radio or equivalent tuned to channel 250, frequency # 453.1125 required at all times car is on track.