

# HART Micros - 2024 Official Rulebook



>> *Please read and understand the 2024 HART - Heartland Auto Racing Tour Official Rulebook in its entirety prior to arrival to event(s). Please contact Series Director Ryan Bowling at [ryan@dirty2media.com](mailto:ryan@dirty2media.com) with any questions/concerns.*

**RACECEIVERS ARE MANDATORY.** UNLESS OTHERWISE NOTED, **FREQUENCY 454.000** WILL BE USED AT ALL EVENTS.

## SECTION I: CAR SPECIFICATIONS

1.1 - **Appearance:** All cars should be presented in appealing fashion and cleaned prior to taken on track. Any damage to a car will not cause disqualification but must be repaired prior to the next night's racing. The exception to this will be a car with damages deemed to be a safety issue by track officials.

1.2 - **Body:** All cars must have complete, sprint car type bodies. The intent of this rule is to eliminate any add-on panels of any type which could be considered an airfoil or sideboard. The area behind the driver (a frame area) cannot be enclosed at all unless it has a behind the driver radiator. Panels to be flat with no more than 1.5" flap not to exceed 45 degrees. Any body panel may not extend past the body surface more than 3-1/4". This includes rear sail panels. Firewall between the driver and the engine compartment is mandatory. Minimum thickness is .050" aluminum, or fiberglass or plastic that is .090".

1.3 - **Brakes:** Type optional. All cars must be equipped with properly functioning rear brakes capable of locking up both rear tires. Front brakes are not mandatory. If hand style brakes are required by competitor, please see a HART - Heartland Auto Racing Tour official for inspection and approval prior to taken on track.

1.4 - **Bumpers:** Front & rear bumpers are mandatory. All bumper ends must be bolted to chassis. No rivets or pins of any type may be used. Front bumper can not extend past the frame by more than 8". The car must start the race with all bumpers intact. It may finish the race without a front bumper, but rear bumper must be on the car at the completion of the race.

1.5 - **Nerf Bars:** All cars must be equipped with nerf bars. Nerf bars can not exceed past the outside of the rear tires by more than 2" and must be no more than 4" inside of the rear tires. Nerf bars must be securely mounted. No zip ties or pop rivets.

1.6 - **Chain guards:** Chain guards are required to be installed on all cars where chains are exposed to the driver. The chain guard, using a minimum of .090 aluminum material or equivalent, will run on top of the chain from front of front sprocket to the vertical centerline of the rear sprocket. The guard must be installed in such a manner that the driver cannot touch the chain and/or sprockets while sitting in the driver's seat.

1.7 - **Driver's compartment:** No car will be allowed to compete that requires dismantling portions thereof to enter or leave the cockpit with exception of the steering wheel hub. Go/No Go gauge must pass through right side. Fire Walls: There must be a metal fire wall between the driver and engine compartment isolating driver from engine compartment for YOUR safety. Minimum specifications are: Steel-24 gauge and aluminum-.0625 thick Floors and belly pans: Cars must have an under pan extended from the front of the seat to a place forward of the driver's feet on top of cross members and lower frame rails.

1.8 - **Frame:** Type optional. No aluminum

1.9 - **Fuel tank:** Type optional. All cars are mandatory to have either a bladder or safety cells. This is for driver protection. Fuel cell must be securely mounted. Tanks used in qualifying must be used for all events. No flammable liquids in cooling system.

1.10 - **Fuel System:** A fuel shut off valve at the rear of the car is mandatory and must be marked on the body for safety crews. A fuel cut-off safety switch is highly recommended but not required for all cars with an electric fuel pump. 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.

1.10a - **Fuel Pump Relay:** A fuel pump relay that turns the fuel pump off when the engine stops running is highly suggested and will be made MANDATORY for HART - Heartland Auto Racing Tour competitors in 2025. This is critical when the driver becomes unresponsive or mentally stressed in an accident where a fuel line has been compromised and the ignition is not turned off. Without a fuel pump relay, a large, sometimes uncontrollable fire can result. All late model 600cc engine ECU's have a dedicated wire to trip a fuel pump relay.

1.11 - **Electrics and Electronics:** On and off switches must be on dash, top of the cowl or on steering wheel. On and off switch must be connected and functional. Absolutely no radio communication is allowed inside the car or on the driver. No mirrors allowed. The use of cell phones, smart watches, or any other

communication devices while inside the cockpit is strictly prohibited and will be enforced.

1.12 – **Tires:** Any method used for the altering of any tire compound is prohibited. Removal, altering, and/or covering of sidewall markings will not be permitted. HART - Heartland Auto Racing Tour officials have the right to inspect and/or analyze any tire, at any time.

1.13 - Mufflers are MANDATORY

1.14 - **Numbers:** All cars must have legible numbers painted in contrasting colors on both sides of car and the nose. Minimum height of numbers is 8" on the nose and nose wing, 10" on each side of the tail and 12" on the wing. Numbers must be separated from advertising, so they will be readable. If the scorers can not read your numbers, you will be required to change them before the next race. Cars must have the same number on all parts of car. Cars entered in non-wing events may be required to display a white number plate with black numbers, at certain events depending on local track requirements.

1.15 - **Nuts and Bolts:** All nuts and bolts and component parts of car's suspension system, chassis, and running gear must be secured with either, lock nuts, lock washers, cotter keys, or safety wire except wheel nuts when using quick change hubs. All axles must be pinned to not allow axle nut to back off.

1.16 - **Radiator:** Type optional

1.17 - **Roll Cage:** Roll cages shall be at least 1" .083 wall thicknesses, or 1 1/8" .065 wall thicknesses, or 1 1/4" .065 wall thicknesses. Roll cage shall be made of chromoly steel or equivalent material. 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. Cage shall have gussets at the intersecting bars to the uprights. Bends must have at least 3" radius. No square or pointed corners allowed. Roll cage must be a minimum of 3" above the driver's helmet. If under 3' a 3 or 4 point halo must be bolted, clamped or welded, must be used to provide proper head clearance. It is mandatory to install a cross brace behind the seat to support the shoulder harness.

1.18 - **Ballast:** Any material used for added weight must be firmly attached by either welding or securely bolting directly to the car frame. No liquid or loose ballast will be permitted. The added weight must be painted white with the car number neatly displayed. Ballast must not be able to move during competition.

1.19 - **Seats:** A full containment seat is highly suggested. If a full containment seat is not used, vertical or horizontal side frame bars on the left and right side are mandatory. Head supports on the seat should be the same height as the driver's ears.

1.20 - **Steering:** Front wheels must be connected by a solid or tubular tie rod.

1.21 - **Throttle:** Must be foot operated. No electronic traction device. If hand style throttle is required by competitor, please see a HART - Heartland Auto Racing Tour official for inspection and approval prior to taken on track.

1.22 - Stock is defined as factory delivered specifications. All gaskets are to be in place and be of O.E.M. specifications.

1.23 - Advance Timing is allowed in all classes.

## **SECTION II: SAFETY EQUIPMENT**

2.1 - **Arm restraints:** Use is mandatory. Must be adequate to keep driver's hands below roll cage.

2.2 - **Drivers helmet:** Helmets must be one-piece, full faced, and Snell rated not to exceed three prior "Snell years" evaluated January 1 of racing season. No damaged or cracked helmets permitted.

2.3 - **Driver's uniform:** Full SFI-3.2A/5 rated driving suits are mandatory. Must wear a name brand flame retardant uniform. No polyester.

2.4 - **Neck brace:** Neck collars or head & neck systems are mandatory and are to be worn according to the manufacture's recommendations. A cage net or seat mounted head-rest is required unless wearing an approved immobilization device.

2.5 - **Gloves:** SFI rated driving gloves are mandatory.

2.6 - **Seat belts and shoulder harness:** See supplemental SFI seatbelt mounting installation documents for proper seatbelt mounting methods. Five point belts, lap belts, shoulder belts, and crotch belt are mandatory. Six point belts are optional. Minimum 5/16" bolts or proper wrap around (not on bottom rail) mounting is required. Lap belt angle should be 45-80 degrees from the

horizontal. All shoulder harnesses must be mounted so that straps loop over a bar. This bar must provide the shoulder belts with a 0" to 2-1/2" above the perpendicular line of the drivers chest line to top of shoulders. Seat cutouts for shoulder belts and shoulder belt bar must be located such that they do not contact the seat. No sharp edges on the seat for any belt cut outs.

2.7 - It is mandatory to install a cross brace on the frame behind the seat to support the shoulder harness.

2.8 - Any driver requiring medical attention as a result of an accident while participating at any HART - Heartland Auto Racing Tour events must obtain a written release from the attending physician before being allowed to race again.

2.9 - All mechanically operated devices must be mounted below the driver's shoulders for safety.

2.10 - Quick release pins are recommended in wing divisions for easy removal in emergencies.

2.11 - **Head Clearance & Halo:** A minimum of 5" clearance for Non-Wing divisions and 3" clearance for Winged divisions from the top of the drivers helmet to the top of the roll cage, when seated in normal driving position, directly above the head. If the clearance is less than 5", a 3 or 4 point halo (bolted clamped or welded in) must be used to provide proper head clearance.

## **SECTION III: FUEL**

Methanol or Ethanol only, no nitro or additives allowed. Fuel is subject to inspection at anytime by HART - Heartland Auto Racing Tour officials. Fuel samples may be taken for analysis and prize monies may be withheld until results are known. Penalty for fuel infraction will result in forfeiture of all points and monies won during the event in which detected. A fine of up to \$1,000 may be imposed for first infraction. In the event of a second infraction, the driver is subject to suspension of up to 1 calendar year.

# 2024 HART MICROS CLASS RULES

>> Please read and understand Sections I, II, & III above. Rules from these sections apply to **ALL HART Micro classes!**

## - 2024 HART Outlaw Non-Wing Micros

1. **AGE:** Drivers age 12 and up may compete with HART Non-Wing Micros. A driver younger than 12 years of age may compete with HART Non-Wing Micros at the discretion of the track promoter and/or series director. Must be approved prior to arriving at track.
2. **ROLL CAGES:** Roll cages shall be at least 1" .083 wall thicknesses, or 1 1/8" .065 wall thicknesses, or 1 1/4" .065 wall thicknesses. Roll cage shall be made of chromoly steel or equivalent material. 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. Cage shall have gussets at the intersecting bars to the uprights. Bends must have at least 3" radius. No square or pointed corners allowed. Roll cage must be a minimum of 3" above the driver's helmet. If under 3' a 3 or 4 point halo must be bolted, clamped or welded, must be used to provide proper head clearance. It is mandatory to install a cross brace behind the seat to support the shoulder harness. If using 1' .065 wall thickness, we highly suggest to add Outlaw bars, they need to be a minimum 1' .065 tubing.
3. **ELECTRICS & ELECTRONICS:** On and off switches must be on dash, top of the cowl or on steering wheel. On and off switch must be connected and functional. Absolutely no radio communication is allowed inside the car or on the driver. No mirrors allowed. The use of cell phones, smart watches, or any other communication devices while inside the cockpit is strictly prohibited and will be enforced.
4. **BATTERY:** All wet cell batteries mounted in the cockpit must be covered and vented outside of the cockpit area.
5. **WEIGHT:** Minimum car and driver weight is 750 pounds.
6. **TIRES:** Tires of any manufacture and/or compound are permitted.
7. **WHEELS:** Only 10" diameter wheels can be used.
8. **SUSPENSION:** Minimum wheel-base of 50 inches. Maximum wheel-base of 70 inches center of front axle to center of rear axle. Maximum width from center left rear tire to center right rear tire is 55". **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.

9. **SHOCKS:** Any shock absorber is legal.
10. **ENGINE:** 4-cylinder 640cc MAX displacement engines. All engines must have a cockpit operated electric starter, a lever manual clutch inside the car, and an on-board battery capable of starting engine. Nitrous, turbo, or superchargers are not permitted.

- **2024 HART Restricted Micros**

1. **AGE:** Drivers age 8 to 16 may compete in the Restricted Class. (A driver whose 16th birthday falls during the racing season will be allowed to finish the season in which they began accruing points before their birthday.
2. **ROLL CAGE:** Roll cages shall be at least 1" .083 wall thicknesses, or 1 1/8" .065 wall thicknesses, or 1-1/4" .065 wall thicknesses. Roll cage shall be made of chromoly steel or equivalent material. 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. Cage shall have gussets at the intersecting bars to the uprights. Bends must have at least 3" radius. No square or pointed corners allowed. Roll cage must be a minimum of 3" above the driver's helmet. If under 3" a 3 or 4 point halo must be bolted, clamped or welded, must be used to provide proper head clearance. It is mandatory to install a cross brace behind the seat to support the shoulder harness. 2a. If using 1" .065 wall thickness, we highly suggest adding Outlaw bars, they need to be a minimum 1" .065 tubing.
3. **ELECTRICS AND ELECTRONICS:** On and off switches must be on dash, top of the cowl or on steering wheel. On and off switch must be connected and functional. Absolutely no radio communication is allowed inside the car or on the driver. No mirrors allowed. The use of cell phones, smart watches, or any other communication devices while inside the cockpit is strictly prohibited and will be enforced.
4. **FUEL:** Gasoline or methanol permitted. No nitro or additives allowed
5. **WEIGHT:** Minimum car and driver weight is 725 pounds.
6. **COCKPIT:** No cockpit adjusters of any kind are permitted. If an inside panhard adjuster is used, it must be bolted to where it cannot be adjusted during competition.
7. **SUSPENSION:** Minimum wheel-base of 50 inches. Maximum wheel-base of 70 inches center of front axle to center of rear axle. Maximum width from center left rear tire to center right rear tire is 55". **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.

8. **SHOCKS:** Any shock absorber is legal. No cockpit adjustable shocks allowed.
9. **TIRES:** Tires of any manufacture and/or compound are permitted.
10. **WHEELS:** Only 10" diameter wheels can be used.
11. **BODIES:** All cars must have complete, sprint car type bodies. The intent of this rule is to eliminate any add-on panels of any type which could be considered an airfoil or sideboard. The area behind the driver (a frame area) cannot be enclosed at all unless it has a behind the driver radiator. Panels to be flat with no more than 1.5" flap not to exceed 45 degrees. Any body panel may not extend past the body surface more than 3-1/4". This includes rear sail panels. Firewall between the driver and the engine compartment is mandatory. Minimum thickness is .050" aluminum, or fiberglass or plastic that is .090".
12. **TRANSMISSION:** Complete with all stock gears in working order. Any car equipped with a shifting mechanism must have this device mounted in the drivers compartment. Shift levers may mount outside the driver's compartment. Chain guards are required to be installed on all cars where chains are exposed to the driver. The chain guard, using a minimum of .090 aluminum material or equivalent, will run on top of the chain from front of front sprocket to the vertical centerline of the rear sprocket. The guard must be installed in such a manner that the driver cannot touch the chain and/or sprockets while sitting in the driver's seat.
13. **WINGS:** 10 square feet max. Left sideboard dimensions measuring 24" x 48" and right sideboard dimensions measuring 18" x 48". Nose wing dimensions of 18" x 24" max. Offsets are allowed. Nose wings cannot exceed 8 1/2" tall or 21" long. Max dimension of 3" for top wing wicker bill.
14. **ENGINE:** 4-cylinder 600cc stock production bike engine for public sale in the U.S.A. No current year production engines permitted. Except as noted, all internal and external engine parts must remain stock with no modifications, metal removal, blueprinting. Must remain stock bore & stroke. Valve seat inserts may be reworked. Valves must remain as produced with no modifications. Valve springs may be shimmed with standard or aftermarket shims. Cylinder head combustion chambers may be cleaned by bead blasting with valves seated in place. Intake and exhaust ports may not be bead blasted. Cylinder head gaskets may be replaced only with original equipment manufacturer's (OEM) stock parts (all 3 layers of the head gasket must be used). All other gaskets may be replaced with duplicate aftermarket parts. Light cleaning of gasket surfaces with steel wool, Scotch-Brite, etc. is allowed. Transmission gears may be shimmed only for the purpose of proper engagement. Standard or aftermarket shims may be utilized. Aftermarket cam chain tensioner allowed for safety of engine. Fuel injection engines may run carburetors. Fuel



injection engines running carburetors may change all fuel metering devices to tune fuel curve. Injection must be OEM, stock OEM throttle bodies no mixing manufacturers (i.e. Suzuki on Suzuki, Yamaha on Yamaha etc.) with OEM boots in place. Modification of oil pan & pick up is allowed (aftermarket is permitted). Modification to thermostat cover is allowed (aftermarket permitted). Modification to water pump cover allowed (aftermarket permitted). Any air box permitted. Any 600cc OEM CV carburetors are permitted (no flat slides allowed). Stock ECU, FuelTech FT550, PE3-IG2 and PE3-8400 engine control units are permitted for use with carburetors and stock fuel injection. No cones allowed inside intake or carburetors. Any 3/4" restrictor plate will be allowed. Restrictor plate must be located on the top next to carburetors. All stock classes will be allowed to run Electronic or Mechanical Injectors with a mechanical fuel pump with stock OEM throttle bodies or carbs. No mixing of manufacturers. No wheel sensors of any kind for traction control. No sprocket or transmission sensors for traction control. NO TRACTION CONTROL of any type specifically listed or not.

- **2024 HART Junior Sprints**

**1. AGE:** Drivers ages 6 through 12 are eligible to compete. It is required that parents/guardians read and understand HART - Heartland Auto Racing Tour rules. If a driver turns 13 after March 1 they may compete in the Junior Sprint class for the remainder of the calendar year.

**2. ROLL CAGES:** 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. 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. It is mandatory to install a cross brace behind the seat to support the shoulder harness.

**3. COCKPIT CONTROLS:** On and off switches must be on dash, top of the cowl or on steering wheel. On and off switch must be connected and functional. Absolutely no radio communication is allowed inside the car or on the driver. No mirrors allowed. The use of cell phones, smart watches, or any other communication devices while inside the cockpit is strictly prohibited and will be enforced. Cockpit controls permitted: carb adjusters, kill switch, and engine monitor. No driver accessible wing sliders or panhard adjuster's are allowed.

**4. FUEL:** Racing or pump gas is permitted, but must not exceed 110 octane. Methanol is allowed. No upper end lubricants allowed. No nitro products allowed.

**5. WEIGHT:** Minimum car and driver weight 400 pounds.

**6. SUSPENSION:** Coil-over shock suspension or torsion bar suspension allowed. Tread; Maximum 46 inches. Minimum 32 inches, center to center of tires. Wheelbase; Maximum 52 inches. Minimum 50 inches, center of front axle to center of rear axle. Rear axle to be steel 1 1/4" min diameter or the new aluminum axle. 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.

**7. SHOCKS:** Aluminum or steel body shocks are legal.

**8. TIRES & WHEELS:** Wheels to be 8" diameter, steel or aluminum. Wheels must be held on with 4 or more standard lug nuts or knock-off hubs. Three spoke front wheels may be ran if they are manufactured that way. Tires of any manufacture and/or compound are permitted.

**9. 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 .0625" aluminum. 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. Mud guards must be aluminum, metal, fiberglass or high impact plastic. There will be no tops or body encasements allowed. Minimum opening on the right side of the car will be 14" from top of roll cage to the top of the mud guard or sissy bar and 16" minimum from front down tube to the back. All mechanically operated devices must be mounted below the driver's 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.

**10. TRANSMISSION:** The drive will be by engine or jackshaft mounted clutch. No axle mounted clutches allowed. No direct drive will be allowed. Chain guards will be made of .060-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.

**11. WINGS:** Right side board, maximum 42" x 20" - 16" x 16" minimum. Left side board, maximum 42" x 20" - 18" x 18" minimum. Overall wing size minimum 5.5. 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. Nose wings cannot exceed 24"x 18", and must carry car number. Side boards not to

exceed 8.5 inches tall and 21 inches long. Top wings are mandatory to enter a night's event. Cars may finish without a wing if no replacement is available. Side boards must be 90 degrees to the center section. The side board kick out cannot exceed 2 inches. It is your responsibility to check the size of your wing to make sure it is correct.

**12. HUBS:** Front hubs; Go kart type with 5/8" bearings and 5/16" wheel studs minimum. Rear hubs; Douglas 5 x 130 Go kart type or equivalent or the new aluminum axle and wheels or any new style hub approved by tech inspection.

**13. ENGINE RULES:** Briggs & Stratton World Formula engines. No sprocket or transmission sensors for traction control. No traction control of any type specifically listed or not. All parts must be B&S factory production parts unless otherwise noted in these rules. No machining or alteration of parts is permitted unless specifically noted in these rules. All parts are subject to comparison with a known stock part. DO NOT ASSUME ANY ITEM IS LEGAL BECAUSE SPECIFIC REFERENCE IS NOT MADE.

- Engine Specs:

1. Shroud and covers: All shrouds and covers must be run as supplied. Flywheel cover, top plate are non tech items. Cylinder shield may be trimmed for CHT sensor installation and header flange clearance. Bolts used to secure metal or plastic covers may be replaced with bigger diameter bolts. Breather by-pass (555688) is allowed.

2. Header and silencer: RLV 5442S only (coated or non-coated allowed). Header may be cut and turned to fit car as long as the overall length and tube size remains the same as stock factor header: 20.5" .9375" x .065" wall (.807 +/- .005). Any exhaust gasket or you may use sealer. Exhaust gas temp sensor is allowed. RLV Silencer #4100 Required and may be coated. If baffles have been altered or removed, the muffler will be deemed illegal. Baffle rattle is allowed. Baffle holes are .128" no-go gauge. Silencer to header must be safety wired. If Silencer becomes dis-attached from header in race the racer will be DQ'd.

3. Electric starter: Starter motor must operational and capable of starting engine.

4. Air cleaner: B&S #698973 Green air filter brand 40 x 75. Pre-filter may be used.

5. Spark plug: Any commercially available, 10mm thread spark plug allowed. Spark plug must be stock. Indexing washers allowed. If using temp sensor you may remove sealing washer.

6. Fuel pump: B&S #557033 only. Must be pulsed from intake manifold only.

7. Clutch: May be on engine or jack shaft mounted. Belt or chain drive from engine to jack shaft. May use #35 or #219 chain.

8. Rev Limiter: Rev limit is 7100 rpm +/- 100 rpm. May be checked at any point in race program. Rev limit will be checked with a suitable memory capable tachometer attached to the plug lead and motor accelerated until the rev limiter

begins to function. All rev limiter must function within 100 rpm when checked with the same instrument.

9. Oil: Any crankcase oil is allowed. Must pass oil burn test.

10. Carburetor, Spacer, Manifold: Stock Walbro PZ carburetor only, no alteration allowed. Verturi .9902" max and Horizontal .7382" max. Unaltered carburetor spacer only B&S #557130. Unaltered intake manifold and pulse line only B&S #557009 a.) Slide must remain unaltered and unaltered needle marked CDB is required. b.) Choke assembly is optional and may be removed and shaft holes plugged with silicon. c.) Jets and Nozzle: pilot jet .026" no-go. Main jet .072" no-go. Nozzle .111" no-go.

11. Camshaft: First camshaft check will be taken at valve spring retainer. With the lash set at zero, the measurement on 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.

a.) Install degree wheel, using positive stop method.

12. Check ignition timing: With the left edge of the right coil leg aligned with the right edge of the right magnet, the motor must be from 23 degrees to 29 degrees BTDC. Flywheel key must have B&S logo. Minimum key width is .182".

13. Tech camshaft at push rod: Push gently down on dial indicator stem to ensure that there is no lash when push rod are going down. Exhaust Lobe Lift 75-71 BBDC .020 57-53 BBDC .050 39-35 BBDC .100 25-21 BBDC .150 9-5 BBDC .200 12-16 ABDC .250 25-29 ABDC .275 .3085 MAX 70-66 BTDC .275 57-53 BTDC .250 37-33 BTDC .200 21-17 BTDC .150 6-2 BTDC .100 11-15 ATDC .050 29-33 ATDC .020 Intake Lobe 34-30 BTDC 18-14 BTDC 2BTDC-2ATDC 13-17 ATDC 29-33 ATDC 49-53 ATDC 63-67 ATDC .3085 MAX 31-28 BBDC 18-14 BBDC 2-6 ABDC 19-22 ABDC 33-37 ABDC 49-53 ABDC 66-70 ABDC

14. Push Rods: Must be stock. Diameter is .185" - .190". Length is 5.638" - 5.656"

15. Deck/Piston: Machining of deck surface is permitted. Piston pop-up cannot exceed .035" above block surface in center of the piston. When measuring piston pop-up, it should be accomplished with bar stock on a parallel with the piston wrist pin and using a dial indicator, check the piston pop-up in this area.

16. Bore: Max bore 2.725". Factory oversize pistons allowed.

17. Stroke: Max stroke is 2.204". Push piston down to take up rod play.

18. Head gasket: Any commercially available head gasket may be used but must maintain same configuration of shape of standard B&S "Fire Ring" head gasket. Minimum thickness .040", measured with micrometer from inside cylinder hole of gasket.

19. Head: Only the Head Gasket side of surface may be machined. Depth from gasket surface to head surface between valves must be a minimum of .319". If gasket surface is machined, the section of the head directly over the piston

must be machined to same plane. Hard carbon may be scraped off before measurement is made. a.) Rocker Arms: Minimum length to be 2.820" b.) Rocket Arms Studs / Cylinder Head Plate: All must be as produced. c.) Valve Cap: Unaltered valve cap required. d.) Intake port: Maximum diagonal measurement is 1.101" Maximum vertical measurement 1.044" e.) Intake port has a machined chamber where the bottom of the intake port intersects with the bowl cut for the valve seat. Chamber does not reach iron seat. f.) Exhaust port: Maximum I.D. Of shoulder in bottom of exhaust port is .854" g.) Valve seat: one 45 degree angle only. h.) intake valve seat is .972" No-go. Exhaust valve seat .850" No-go. i.) Valves: Intake valve head diameter is 1.055" – 1.065". Exhaust valve head is .935" - .945". Valve stem diameter is .247" +/- .002". Valve face must have one 45 degree sealing surface only. Intake and exhaust valve length is 3.372" +/- .010". \*\*\* May use Stainless steel W/F exhaust valve in place of stock B&S exhaust valve\*\*\* j.) Valve spring: Dual valve springs as supplied by B&S are required. Inner spring wire diameter is .066" - .068". Outer spring wire diameter is .112" - .114". k.) Valve guides: Replacement of valve guides with B&S factory parts is allowed.

20. Ignition: Unaltered stock B&S PVL #557125 coil is required. PVL flywheel must be used. Attachment bolts must not be altered. Spark plug connector must be stock factory type. Coil air gap is non tech.

21. PVL Flywheel: Unaltered from B&S required. a.) Plastic fan and starter ring gear required. b.) Minimum weight is 4 pounds 1 ounce.

22. Valve lifters: Must be stock. a.) head diameter must be .964" No – go b.) length of lifter must be 1.515" to 1.525"

23. Connecting rod: Stock connecting rod or unmodified series produced aluminum alloy rod that is available to the karting industry is allowed. Must meet stock specs. a.) Rod length, measured from bottom of wrist pin hole to top of crank journal hole is 2.419" minimum to 2.429" maximum. Oil hole opening is .185" no-go.

24. Wrist pin: Maximum I.D. Is .414". O.D. Is .624" - .626". Minimum length is 1.901"

25. Piston rings: Three rings mandatory. Top compression ring must 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. Rings must be self-supporting in the cylinder bore of engine being inspected. Ends of ring must remain flat. Excessive end gapping of rings is not allowed. Maximum end gap of .050". Rings must be in one piece when removed from block. Aftermarket rings are allowed if they meet the specifications listed below. a.) Minimum width of top two rings is .095" b.) Thickness of top two rings .059" - .064" c.) Minimum width of oil ring is .065" . Thickness of oil ring is .098" - .102". Ring groove must be present. Expander must be installed. End of expander may be clipped.

26. Piston: Stock “kidney bean” piston required. Arrow on piston must point to flywheel side a.) Minimum from top of piston to top of wrist pin .658” b.) Minimum piston length is 1.768” c.) Factory oversize World Formula B&S piston are allowed.

27. Crankshaft: Stock B&S crankshaft with stock timing gear installed in stock location only. No alteration in any manner allowed. Offset crankshafts not permitted. Stock bearings required. a.) Shim(s): if used, must be installed as from factory. b.) Crankshaft journal diameter is 1.094” - 1.100”

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