



2020



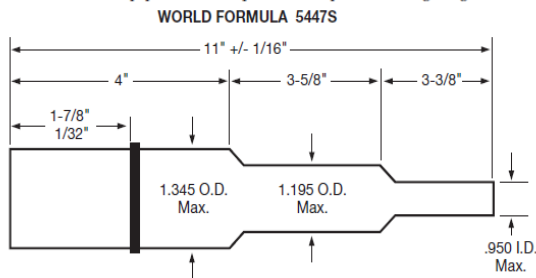
# TAG™ WORLD FORMULA Tech Specifications

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.

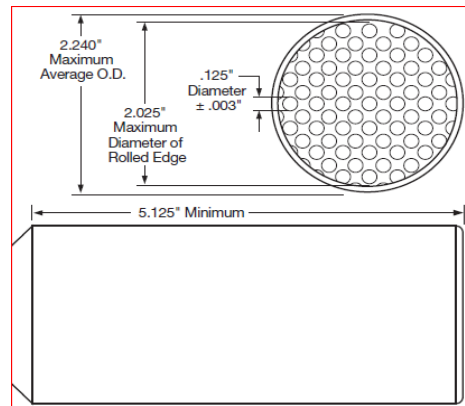
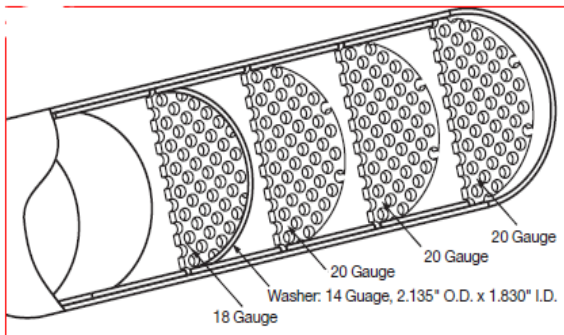
- **Shrouds and covers:** All shrouds and covers must be run as supplied. Alternatively, Briggs & Stratton panel #555699 may replace plastic control cover and control cover bracket. Bracket attaching flywheel shroud to control cover bracket may be removed from flywheel shroud. Cylinder shield may be bent slightly around spark plug hole to allow fitting cylinder head temperature lead. Starter recoil starter must be retained, as produced and intact. Recoil may be rotated. Specifically, the recoil, shroud, etc may not be taped or covered. Cylinder shield may be trimmed for CHT sensor installation and header flange clearance. Cylinder shield may be notched to clear gusset on new block (#555687) which is now legal.
- Bolts used to secure sheet metal or plastic covers may be replaced with bigger diameter bolts.
- Breather by-pass (555688) is allowed. Aluminum tube may be replaced with longer tube. Tube may be secured to rubber fittings with hose clamps, ty wraps, or double wire wrapping. Tube must be supported by bracket, any bracket allowed.

## Header and silencer

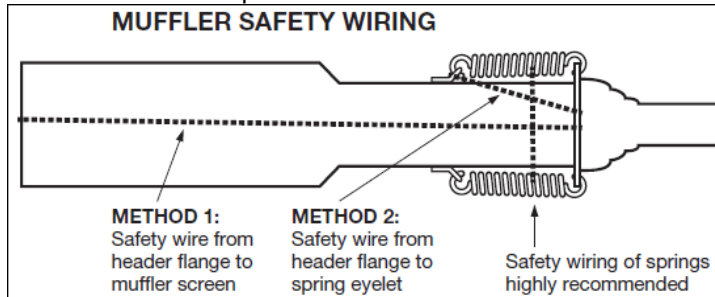
- Factory header is required to be run as supplied with factory paint or no paint, may not be repainted, coated, plated, etc. Wrapping of the header from just above flange to the welded on braces is required.
- Do not wrap silencer. Tech personnel may require wrapping to be removed at any point in the event. Any exhaust gasket or no exhaust gasket allowed. Sealer allowed on header. Header nuts are not required to be safety wired. If a bolt or bolts are used to attach header, bolts must be drilled and wired around the header. Bottom braces must be bolted to head.
- Exhaust gas sensor is not allowed. Exhaust gas sensor fitting is not allowed, even if plugged.
- RLV pipe #5447S required, tech per following diagram.



- RLV Silencer #4108 required, tech Silencer baffles per drawing



- Springs attaching Silencer to header are highly recommended to be safety wired. Silencer must be safety wired to header (see diagram).
- **MUFFLER SAFETY WIRING**
- **METHOD 1:** Safety wire from Header flange to muffler screen
- **METHOD 2:** Safety wire from header flange to spring eyelet
- Either "Method" Required



- Silencer must be supported from kart frame or bumper.

#### **Electric starter:**

- Starter motor must remain on motor. Starter motor must remain complete and intact as delivered. Briggs & Stratton bracket #557119 must be installed on side cover and starter.
- Starter motor and bracket may be removed only if starter is replaced with an approved cover. Approved covers are Mike's Kart Stands part #KS06FC and B&S part #555702.
- Use of battery for starting is not required. Battery need not be carried on kart. If battery is on kart, it must be of sealed AGM, gel or dry cell design. Battery must be securely mounted to frame or floor pan, no mounting to bumpers or nerf bars.

#### **Air filter:**

- If used, must be Green Brand 40 X 75 filter. Pre-filter may be used, must not constitute a scoop.

#### **Spark plug:**

- Any commercially available, 10mm thread, 3/4" reach, spark plug allowed. Spark plug must be stock. Indexing washers allowed.

#### **Fuel Pump and Lines:**

- Fuel pump must be Briggs & Stratton part 557033/808656. Pump must be pulsed from intake manifold only. Pump must not be altered from stock. Pulse line must be 1/4" only and must not exceed 15" in overall length.
- Fuel line must be 1/4" inch or smaller ID. Fuel lines must be run by the most direct route with no excess line anywhere in the system. Fuel lines must be secured at all connecting points with approved fasteners such as safety wire or cable ties. Return line from carb fuel inlet line back to tank is allowed. Refer to photo shown

#### **Clutch:**

- Clutch must be as supplied by Premier. Any Premier springs allowed. May use #219 or #35 sprockets. No additional grooving, dimpling or texturing of shoes or drum allowed.

#### **Rev Limiter:**

- Rev Limit is 7100 rpm +/- 100 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.

**Fuel:**

- Fuel to be gasoline with no additional additives. Fuel may be checked by any means. Each competitor is allowed one courtesy check of fuel in his tank with the method to be used at the event. Each event is encouraged to designate a common source of gasoline for the class. Compliance with the common source will be determined by zeroing a Digatron gas meter in a sample of source gasoline and allowing each competitor deviation of + / -5 points from zero.

**Carburetor, Spacer, Manifold:**

- Stock Walbro PZ Model 26 carburetor only, no alterations allowed. Stock, unaltered carburetor spacer only, Briggs & Stratton part 557130. Stock, unaltered intake manifold and pulse line only, part 557009.
- Carb bowl overflow must be attached to catch can.
- Slide must remain unaltered. Minimum Length: 1.310" measured from cutout to top of slide with dial caliper, or 1.309" No-Go tool. Stock needle marked CDB is required.
- Choke lever may be fastened open with spring or rubber band.
- Unaltered Idle Jets marked 36, 38, 40 are allowed. Maximum I.D. is .0165" No-Go.
- Unaltered main jet required. Hole size required is .034" go, to .041" No-Go.

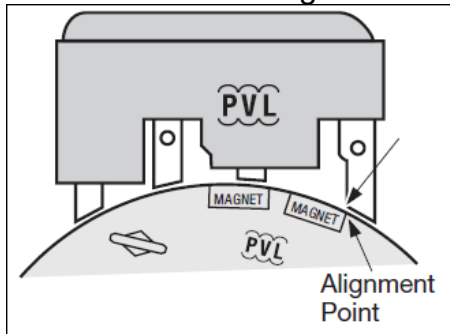
**Venturi measurement**

- Vertical .9902" max
- Horizontal .7382" max
- Idle air jet, left side, is .0495" No-Go. Main air jet, right side, is .0345" No-Go.
- Brass fuel nozzle id is .1040" No-Go. Minimum length is .450".

**Camshaft and Ignition Timing:**

- 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".
- Camshaft must be as supplied with compression relief.
- Install degree wheel, using positive stop method.
- Check Ignition Timing for PVL coil and flywheel: 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 BTDC to 27 degrees BTDC.

PVL Coil Diagram



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
.303	MIN	.303
.3085	MAX	.3085
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

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

#### Deck/Piston Clearance:

- Machining of deck surface is permitted. Hard carbon may be scraped from piston crown before measuring pop up.
- Piston pop up minimum 0.010" and maximum 0.025" above block surface in the 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.
- **Bore:** Maximum bore 2.725". Factory oversize pistons allowed.
- **Stroke:** Maximum stroke is 2.204". Push piston down to take up rod play.

**Head Gasket:** Stock B&S head gasket #55572 or B&S "Fire Ring" head gasket #555698 is legal. Minimum thickness allowed is .042", measured with micrometer from inside cylinder hole of gasket. B&S Fire ring gasket is measured only on the metal fire ring. Non fire ring gasket is measured between the head bolt holes.

- B&S head gasket with logo is required.

**Head:** Head with heat disperser at exhaust side front head bolt area is legal.

- Rocker Arms / Rocker Arm Studs / Push Rods / Cylinder Head Plate: All must be as produced.
- Rocker arm minimum length to be 2.820". Pushrod length is 5.638" No-Go to 5.658 must go.
- Pushrod diameter is .185" to 190".
- **A.** Rocker arm must be stock B&S part #555711 (US) or #797443 (METRIC) and may not be altered in any way. BRIGGS LOGO must be present.
- **B.** Cylinder head plate gasket must be stock with maximum thickness of .060". Rocker arm stud plate must be bolted to the head with one, OEM stock B&S gasket only – no alterations. Maximum thickness of gasket is .060 inches. Rocker plate to head fastener holes must remain stock, .289" Max.
- **C.** Rocker studs must be stock, unaltered B&S part # 694544 US (1/4-28 thread) or #797441 Metric (M8x1.00 thread) and in stock location. Rocker arm #555711 (US) must be used with rocker stud #694544 (US).
- Rocker arm #797443 (Metric) must be used with rocker stud #797441(Metric).

#### Valve Caps:

- Unaltered Briggs Part #557016 Valve caps required. Minimum diameter 0.594". Minimum overall thickness 0.201". Minimum thickness valve insertion point 0.055".
- **Rocker Ball:** Must be stock. Diameter to be .590" - .610".

- Cylinder head gasket 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 the same plane. Hard carbon may be scraped off before measurement is made.
- **Combustion chamber must remain as cast.**

### Ports

- Intake port:
- Maximum diagonal measurement is 1.101".
- Maximum vertical measurement is 1.044".
- Intake port has a machined chamfer where the bottom of the intake port intersects with the bowl cut for the valve seat. Chamfer does not reach iron seat. May be checked against a known stock part.
- Exhaust port:
- Maximum I.D. of shoulder in bottom of exhaust port is .854"

### Valve seats - one 45° angle only

- Intake valve seat diameter is .966" must-go to .972" No-Go.
- Exhaust valve seat diameter is .841" must-go to .850" No-Go.
- Hard carbon may be removed from inside diameter of valve seat before seat diameter is checked.

### Valves

- Intake valve head diameter is 1.055" - 1.065".
- Exhaust valve head diameter is .935" - .945".
- Valve stem diameter is .247" ± .002".
- Valve face must have one 45° sealing surface only.
- Intake and exhaust valve length is 3.372" + or - .010".

### Valve springs

- Dual valve springs as supplied by factory are required.
- Inner spring wire diameter is .066" - .068".
- Outer spring wire diameter is .112" - .114".

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

**Ignition:** Unaltered stock B&S PVL 4 legged coil is required. PVL coil must be used with PVL flywheel. Attachment bolts must not be altered.

- Spark plug connector must be stock factory type.
- Rubber plug boot is allowed.
- There must be resistance from plug wire to ground.
- Coil air gap is non tech.
- 717.17.5 Spark plug wire may be wrapped to protect from rubbing.

**Flywheel:** B&S PVL flywheel is required. PVL flywheel must be used with PVL coil. No machining, glass beading, sandblasting, painting or coating of flywheel is allowed. Minimum factory overspray is allowed.

- PVL flywheel: Plastic fan is required. Fan must be attached with 2 shoulder bolts. Must have starter ring gear. Minimum weight is 4 pounds 1 ounce.
- Stock flywheel key is required. Width to be .1825" - .1875".

**Crankcase Cover:** One or two crankcase gaskets are required.

**Valve Lifters:** Must be stock.

- Lifter head diameter must be .953" No-Go to .995" must-go.
- Length of lifters must be 1.515" to 1.525".

**Connecting Rod:** Stock B&S part #557005 rod only. Rod may not be altered.

- 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.
- Use of B&S factory supplied Torx head or hex head rod bolts is allowed. Hex head bolts may require minor clearancing of bottom of cylinder which is allowed.
- Rod length, measured from bottom of wrist pin hole to top of crank journal hole, is 2.419" minimum to 2.429" maximum as measured with caliper at narrowest point on jaws.
- Oil hole opening is .185" No-Go. Crank end of oil hole is chamfered.

**Wrist pin:**

- Maximum I.D. is .414".
- O.D. is .624"- .626".
- Minimum length is 1.901".

**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. Rings must be self-supporting in the cylinder bore of the engine being inspected. Ends of ring must remain flat. Excessive end gapping of rings is not allowed. Maximum end gap of 0.050". Rings must conform to all listed factory specifications and be of stock configuration.
- Known standards for piston/ring configurations are Briggs & Stratton factory approved parts. No alteration of rings allowed except lapping and end gapping. Rings must be in one piece when removed from block.
- Minimum width of top two rings is .095".
- Thickness of top two rings is .059" - .064".
- Minimum width of oil ring is .065". Ring groove must be present.
- Expander must be installed. Ends of expander may be clipped.
- Thickness of oil ring is .098" - .102".

**Piston:** Stock "kidney bean" piston required. Arrow on piston must point to flywheel side.

- Piston dome may be machined to achieve correct piston pop-up. A resemblance of the dome on the piston must still be present. Pop-up must be no less than .010 and no more than .025 as measured with a bar centered over and parallel to the wrist pin.
- Factory oversize World Formula pistons are allowed.

**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. Ceramic bearings are not allowed.
- Shim(s), if used, must be installed as from factory. B&S part 555652.
- Crankshaft journal diameter is 1.094" - 1.100".

**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.

**Breather:**

- Briggs and Stratton breather assembly 555688 from rocker cover to upper fill hole on crankcase cover is allowed. Aluminum tube may be replaced with a longer tube. Tube may be secured to rubber fittings with hose clamps, cable ties or double wire wrapping. Tube must be supported by bracket, any bracket allowed.