

## SECTION 10 - BRIGGS AND STRATTON 5HP TECHNICAL SPECIFICATIONS

*Note – Due to the announcement by Briggs and Stratton that this engine and certain components are being phased out of production soon; the BNSS will be looking at suitable aftermarket replacement parts to approve on an ongoing basis. This will insure that those BNSS participants using the 5 hp flat head engine will not have to experience shortages and/or escalating costs.*

General: All components to be OEM Briggs & Stratton unless otherwise specified. Gaskets and fasteners non-tech unless otherwise specified. Gasket sealer on all machined surfaces acceptable.

- 10.1 Cylinder head requirements: Machining permitted on the gasket mating surfaces and the top of the post bosses only. Welding on the cylinder head is prohibited. Helicoil repair of spark plug threads in original position permitted, no protrusion into combustion chamber allowed. Bolt hole diameters .348" maximum. Combustion chamber depths: piston area .011" minimum, spark plug area .408" minimum, valve area .300" minimum. Head gasket material non-tech but must be stock configuration and .043" minimum thickness. Eight stock head bolts required.
- 10.2 Bore and Stroke: 2.6025" maximum bore, 2.437 +/- .010" stroke. Protrusion of the piston above the top of the cylinder deck is .005" maximum parallel and inline with the wrist pin. \*(See foot note)
- 10.3 Carburetor requirements: Stock Briggs & Stratton 5hp carburetor only. Filter adapter (if utilized) top surface must be flat and .250" maximum thickness from mounting face. Inside diameter of adapter may be radiused .250" maximum. No more than one filter adapter gasket may be used, thickness .075" maximum. One or two carburetor mounting flange gaskets may be used. Swirl non-tech. Throttle shaft washer and rubber seal must be in place and stock configuration. Throttle shaft leading edge .040" minimum, trailing edge .086" maximum. Butterfly must be unaltered stock with .059" minimum thickness at throttle shaft mating location. Butterfly screw must be unaltered stock, .322" minimum length. Except for outside end, needle screw must be unaltered stock with o-ring and washer present. Jet must have stock recess on backside with no funneling of hole allowed. Main metering hole diameter .062" maximum. Idle hole diameter .028" maximum. Air horn diameter 1.011" maximum. Recess at flange end must be as cast, .726" maximum diameter. Carburetor bore, from flange end recess to intersection of air horn diameter, .695" maximum diameter – must be straight, no tapering, no attempts to modify fuel/air flow permitted (rifling, dimpling, protrusions etc. not permitted). Diaphragm cover plate may be faced for proper sealing. Aftermarket diaphragm of stock configuration permitted. Spring and cup must be unaltered stock. Long fuel pickup tube may not be brass. Short tube inside diameter .066" maximum. Breather tube must be removed. Any stock, single hole, domed Briggs & Stratton fuel tank cap is permitted including those with integral splash shields.
- 10.4 Exhaust: See rule 8.3
- 10.5 Valve train: Stock, unaltered breather valve only. Two gaskets permitted. Grommet and internal foam must be in place. Stock, unaltered, single angle valves only. Length of flat from seating surface to end of valve .035" minimum. Intake valve angle 30° +/- 1°, 1.115" minimum head diameter. Exhaust valve 45° +/- 1°, .990" minimum head diameter. Stock valve springs and lower retainers required. Springs may be machined to meet length requirements. Exhaust spring must be used on exhaust valve and may be used on intake valve. One stock upper retainer may be used on either valve, .058" maximum lip thickness. Intake valve spring length 1.240" maximum; .087" maximum wire diameter. Exhaust valve spring length 1.300 " minimum, 1.500 " maximum, .088 " minimum wire diameter; inside spring diameter .625 " minimum, .640 " maximum. Both

upper valve chamber surfaces may be spot faced for valve spring stabilization. Depth and geometry of spot face non-tech. Stock, single angle valve seats required. Valve seat height to cam centerline 5.740" minimum, 5.775" maximum. Valve seat may not protrude above cylinder deck surface.

- 10.6 Ignition systems: Stock, unaltered coil and coil air vane required. OEM plug wire only. Connector and plug boot non-tech. Resistance from spark plug wire to ground is 2,000 ohms minimum, 5,000 ohms maximum. Stock, unaltered 5hp flywheel required. Flywheel weight, 5 lbs 12 oz's minimum. (*Due to the pending shortage of 6 lb 4 oz flywheels the BNSS has reverted to the old weight to allow the use of the many lighter flywheels that are in the system but are not currently legal with other sanctioning bodies.*) Flywheel coating of any type is prohibited. Revolving or adjustable flywheel screens are prohibited. Flywheel key is optional and non-tech.
- 10.7 Piston requirements: Approved commercially available aluminum piston and ring configuration permitted. (Briggs, Burriss, Wiseco approved Super Stock type.) Length from top of piston to top of wrist pin bore .925" minimum. (Decking of piston permitted to adjust pop up within the .925" min.) Wrist pin outside Diameter .490 " maximum, inside diameter .290 " maximum, length 1.727 " minimum, 1.737 " maximum.
- 10.8 Rings: All three required. Must be stock appearing.
- 10.9 Connecting rod requirements: Approved commercially available aluminum connecting rod is permitted. Length from bottom of wrist pin bore to top of crankshaft journal bore 3.1233 " minimum, 3.1333 " maximum. Connecting rod bolts and dipper are non-tech.
- 10.10 Crankshaft requirements: Stock crankshaft required. Machining, polishing, addition of material or otherwise altering of counterweights is prohibited. Stock timing gear in stock configuration required. Connecting rod journal diameter .990" minimum, Crankshaft journals may be clearance to .775" minimum diameter to facilitate bearing removal. Thermal treatment of crankshaft is permitted.
- 10.11 Camshaft requirements: Camshaft base circle is .770 "diameter maximum. Lifter material to be ferrous steel only. Lifter head diameter .982"minimum, 1.005" maximum, Length 1.606" maximum. Cam profile check must be taken with zero (0) valve lash.

**Camshaft profile limits**

Lift	Exhaust degrees	Intake degrees
.050	38°BBDC to 33°BBDC	7°BTDC to 0°TDC
.100	21°BBDC to 16°BBDC	10°ATDC to 17°ATDC
.150	2°BBDC to 3°ABDC	29°ATDC to 36°ATDC
.200	21°ABDC to 31°ABDC	55°ATDC to 64°ATDC
Max	.233 " maximum	.233 " maximum
.200	76°BTDC to 65°BTDC	43°BBDC to 33°BBDC
.150	48°BTDC to 40°BTDC	13°BBDC to 6°BBDC
.100	28°BTDC to 21°BTDC	6°ABDC to 13°ABDC
.050	10°BTDC to 4°BTDC	23°ABDC to 31°ABDC

- EZ Spin: start 45° to 60° ABDC
  - EZ Spin lift base: .013" minimum, .019" maximum, 30° minimum duration, .001" maximum drop during duration.
- 10.12 Block requirements: Side cover must be stock. Stub for governor may be removed and hole plugged. Gasket mounting surface of side cover and block may be pin punched.

Block must be unaltered stock with the following exceptions. The lifter bores may be countersunk to provide lifter head fillet radius clearance. Any means to raise the bottom of the lifter bore boss is prohibited. Welding to the block shall be for damage repair or lifter bore reinforcement only and may not constitute a functional modification. The cylinder deck may be machined, but cannot extend into the rear fin. Carburetor and exhaust pipe mounting surfaces must be unaltered stock. Alterations to inside surfaces of intake and exhaust ports are allowed so long as the intake port will not accept an .880 “ diameter No-Go plug gage and the exhaust port will not accept a 1.005 “ diameter No-Go plug gage. No addition of material is allowed. No additional holes may exist in the intake and/or exhaust ports. No alterations on the underside of the valve seats are allowed. Cylinder sleeve, if present, shall be ferrous material and uncoated.

\*(Note: Areas wishing to allow IKF legal engines (w/ .015” popup) may do so as a local option. Participant must declare which rules the engine conforms to prior to teardown.)