



# **BRIGGS-ANIMAL TECH MANUAL**

USAC NATIONAL TECH COMMITTEE

DIRECTOR JOHN IMPELLEZERI

USAC NATIONAL SERIES

DIRECTOR JERRY COONS

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**BRIGGS & STRATTON ANIMAL – Tech Manual**  
**Updated February 14, 2017**  
**FROM 2016 USAC NATIONAL .25 MIDGET RULE BOOK, APPENDIX I**  
**731 Engine Protest Rules (applies to Honda and Briggs classes only)**

1. Protest shall be from within the same division of class only, i.e. Jr., Sr., Lt.& Hvy. 120-160, Animal or World Formula only. Competitors in the same division, and in the same race may make a protest on an engine. No protesting in Rookie Class. Handlers may not protest more than one car per event and may not protest same driver more than once per calendar year.
2. Honda Engines and World Formula/Animal Engines may be protested for \$400.00 cash only plus any applicable shipping charges if necessary. No protested related inspection will be started prior to the funds being posted with the proper official.
3. This protest form and cash must be submitted to the Chief Steward, or his/her designee, before the end of the race that the protested engine is participating in I.E. Checkered flag lap complete.
4. The protest can only be made during an A-Main event.
5. The person protesting the motor must have their engine inspected for compliance first. If the “protester’s” engine is found illegal the protest is null and void and the protest fee will go to the club. If the “protester’s” engine is found legal the protest will continue.
6. The Chief Steward, his/her designee, will hold the protest money until the protested engine has been inspected for legality. The protested engine shall be tagged/marked and sealed as soon as it car comes across the scale if it has not been sealed prior.
7. The protested engine as well as the engine of the protested party shall be immediately taken to impound and/or presented to the Tech Director for inspection. Engine must remain in impound and in the possession of tech officials throughout the entire process, including shipping to USAC Headquarters or designated tech inspection station and the transferring of funds.
8. Both protester and protestee have the option to be present at the time of inspection.
9. Any protest that is withdrawn will be assessed a \$50.00 fee that will be paid to the host club.

10. If the protested engine is found to be illegal, the motor must be completely torn down to check for additional illegalities. The Tech Director must confiscate all illegal parts and related parts from the protested engine and shall immediately forward them to the USAC Headquarters. If engine is found illegal protest money minus \$50 plus any shipping cost will be returned to the person filing the protest.
11. Refusal of protest, destroying or withholding of parts or any other lack of cooperation in this protest or inspection process shall be interpreted as an admission that the engine is illegal and shall subject the driver and handler to the conditions set forth in the Suspensions Program.
12. Any teched or protested engine, block or part which are deemed to be over maximum wear limits in one or more spots but is under maximum wear limits in other spots is subject to confiscation but not DQ'able.
13. Note: Reference to Confiscation due to Wear Limits in "Engine Block Internal Rules" of both Manuals.
14. If the engine is found legal \$400 will be given to the person whose engine was protested.

### **732 Engine Suspension Rules**

**Handlers and drivers guilty of having an engine declared illegal at technical inspections shall be disciplined as follows:**

1. First offense – up to 30-days and/or 4 race suspension for handler and driver from participating in the respective class at any USAC Sanctioned event.
2. Second offense within one year of first infraction – up to One-year suspension for handler and driver from participating in the respective class at any USAC Sanctioned event.
3. Third offense within two years of last infraction – Suspended for life from USAC's .25 Midget division.
4. Suspension for life is open to review by USAC.
5. Suspension shall begin immediately.
6. Illegal **Honda, Animal and World Formula** part/s shall be sent within five Business days to the USAC office or designee for review. The Tech director has 48 hours to determine if the part/s are legal or illegal. If the part/s are determined to be legal it shall be returned to handler. Handler shall be notified if part/s are legal or illegal. All illegal or confiscated part/s shall be sent to National Tech Director. All legal parts shall be returned to handler.
7. If a **Honda** motor is found to have a valve oil seal during tech it shall be a race disqualification only.
8. Spark plugs and exhaust infractions are a race disqualification only.
9. Failure to go to tech and/or impound will result in a race day DQ. Refusal of tech shall be interpreted as an admission that the engine is illegal and a suspension from the class shall

be immediate with all awards and qualifications being revoked with a six-month suspension driver and handler suspension at any USAC Sanctioned event.

10. For the purpose of this rule only, if a handler has multiple cars competing at one race event and more than one engine is found to be illegal at that event; it will be considered to be one offense.
11. All membership suspensions must be sent to the National Tech Director within 5 Business Days.
12. Illegal Rookie engine parts shall be confiscated (Honda or Animal) but the suspension shall not be levied against handlers or drivers for the first offense. The second offense shall result in a 30 days Suspension from Rookie.
13. The cost to appeal a suspension is \$175 plus any associated fees. The appeal must be made within 3 days of the ruling.

**UNLESS IT SAYS YOU CAN DO IT YOU CANNOT DO IT!!!**

## **GENERAL RULES**

1. Only stock Briggs & Stratton Animal # 124332-8201 and 124332-8203 – 01 engine will be allowed in this class. All parts will be stock unaltered Briggs & Stratton Animal parts specifically made for this engine by Briggs and Stratton, unless specified in this tech manual. No deburring, machining, honing, grinding, polishing, sanding, media blasting, etc, etc. No addition or subtraction of material in any form or matter.
2. Direct Drive: Clutches are not allowed.
3. Unless otherwise specifically required or allowed by this Tech manual no machining or alterations of any kind will be allowed to the Animal engine or replacement parts to be used in any Animal engine for USAC unless specifically stated in these rules. ALL PARTS ARE SUBJECT TO COMPARISON WITH A KNOWN STOCK PART.
4. Modifications or machining of any parts in order to bring them to stated minimum / maximum specs, (or for any reason). "Blueprinting" is not legal unless as stated in this tech manual.
5. Fuel: Gasoline only, no additives. Tech procedure is per USAC Rule Book.
6. ALL PERTINENT PENALTIES WILL APPLY.

## **REQUIRED MODIFICATIONS**

1. Gearbox: Only Briggs & Stratton gearbox part number 555721 and 555753 and crankshaft part number 555722 are allowed. Gearbox number 555753 includes new sun gear part number 555756 as a direct replacement to the current sun gear included in gearbox part number 555721.
  - a. Any modifications to this gearbox and crankshaft are prohibited.

2. Recoil Starter: Recoil starter must be removed. Starter cup must be removed and can be replaced with a flat washer, Briggs Part number 691736 is recommended flat washer, but any washer can be used or no washer.
3. Exhaust:
  - a. Must use exhaust port extension in port. Minimum of a 0.520 length measured from the bottom of the exhaust flange to the end of the pipe using a depth micrometer.
  - b. The total maximum exhaust header length, not including the muffler, must not be longer than 18 inches in length using a small 1/4 inch wide tape measure in the inside of header tube.
  - c. The exhaust header inside diameter cannot be larger than .905 inches for its entire length. No steps or tapers.
  - d. The only approved muffler is the RLV B91 part number 4100.
  - e. Muffler holes = .1285 inches max.
  - f. Muffler must be clamped to header. All exhaust must exit from the muffler end, leaks are not allowed.
  - g. Coatings may be applied to the interior or exterior of the exhaust pipe.
  - h. Optional allowed exhaust system - Must use exhaust port extension in port. Minimum of a 0.520 length measured from the bottom of the exhaust flange to the end of the pipe using a depth micrometer. Any style pipe and max of four, 40 B&S mufflers only. (This is the same exhaust system spec as used in World Formula).
4. Oil breather must vent to catch can under the tail cone within the engine compartment.
5. Carburetor overflow may be vented to the ground.
6. The blower housing cover rewind guard, Briggs part number 555255 must be removed.
  - a. The blower-housing opening must not be altered in a manner that would impede airflow into the flywheel fan area.

## **ALLOWABLE MODIFICATIONS**

1. Crankshaft Seal: No tech on the crankshaft seal on gearbox side, seal can be removed.
2. Fuel Pump: Fuel pump, B&S part number 808656 may be used.
  - a. If used, fuel pump must be pulsed from a pulse fitting mounted on the engine crankcase side cover fitting only. It is prohibited to pulse from the intake manifold.
3. Black Top Plate Control Cover: Black control cover B&S part number 555699 and ON/OFF switch part number 557028 may be removed and can be, but not required, replaced with any other type of metal or aluminum cover.



4. Rocker Cover: Rocker cover B&S part number 555528 may be modified for installation of oil breather line fitting. (It is allowable to have secondary drilling of holes in the breather valve area of the valve cover.)
5. The installation of the Briggs Breather By-pass system, part number 555688, per included ms-3742 sheet.
6. Mill block and head deck surfaces & hone cylinder bore per specification outlined in this tech manual listed below.
7. Heat Dispenser, Briggs part number 555690, may be installed per included ms-3758.
8. Any engine valve lash settings are allowed.
9. Heat protective wrapping of header/exhaust pipe up to but not including muffler is legal.
10. It is allowable to machine additional keyway slots and or snap ring groove in gearbox sun gear output shaft. The end of the sun gear shaft can be shortened.
11. Color of sheet metal is a non-tech item, any color is acceptable. This refers to blower housing, head shroud, top plate and valve cover.

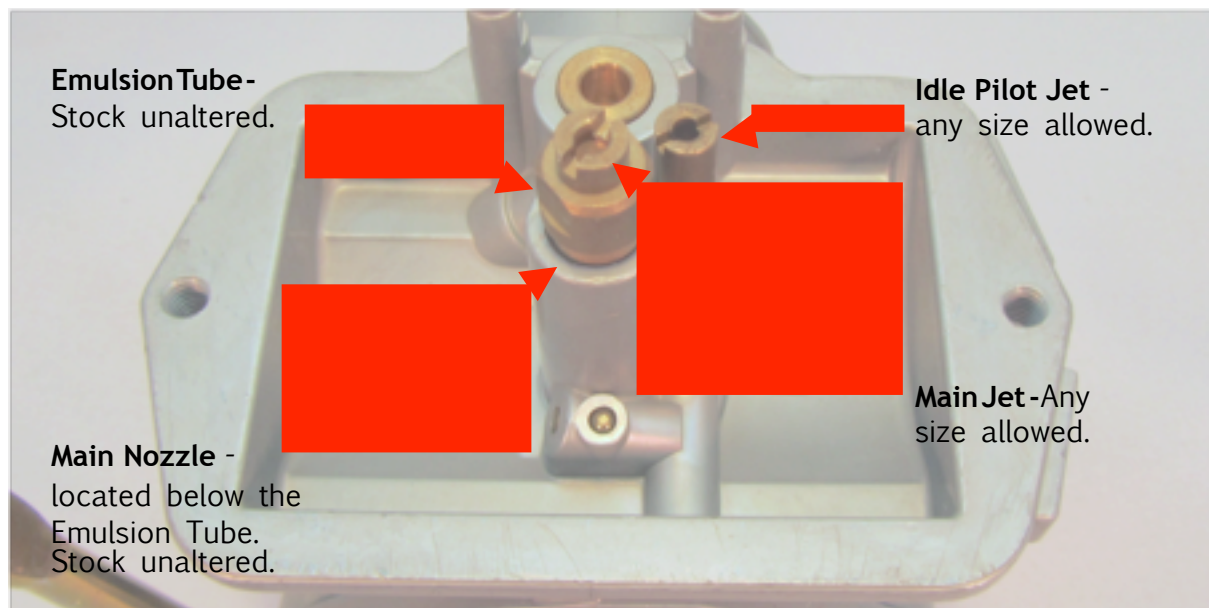
## TECH PROCEDURE

1. General
  - a. Heli-Coiled threads for shrouds, (all), valve cover, oil drain, oil fill holes, blower housing, and exhaust pipe attach studs on the head and lower brackets are allowed.
  - b. Blocking airflow: No device may be used that will, or appears that it may impede airflow into the engine cooling system. This may require that the engine to be run at a speed above idle by the tech personnel at the scale, after the car has qualified or raced.

## CARBURETOR & INTAKE MANIFOLD

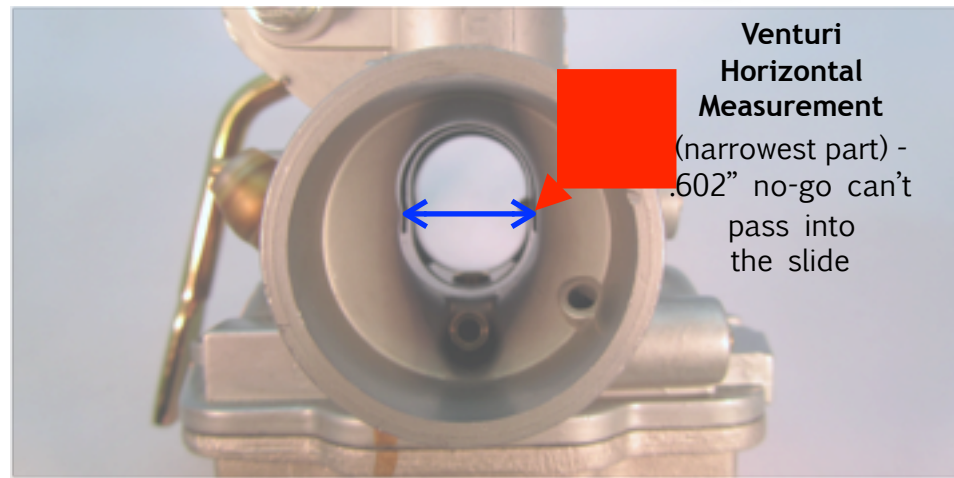
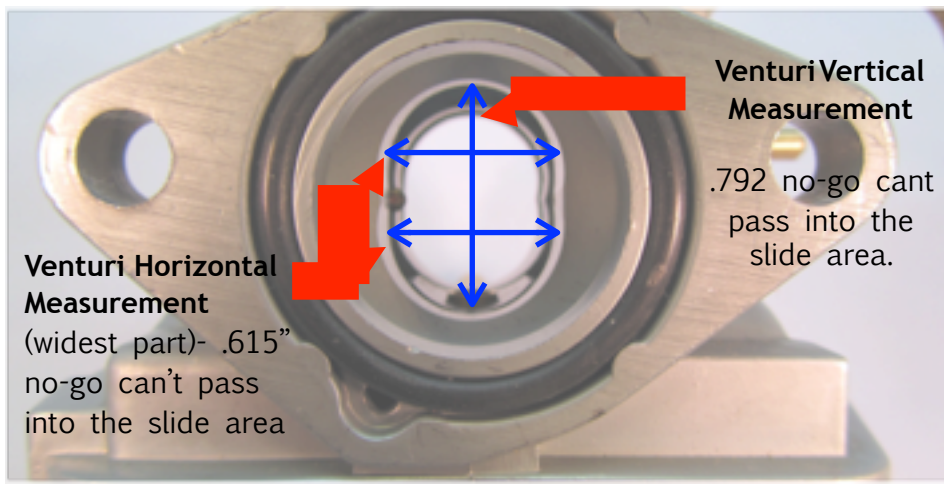
**Straight Intake Manifold**

**Walbro PZ-22 Carburetor**



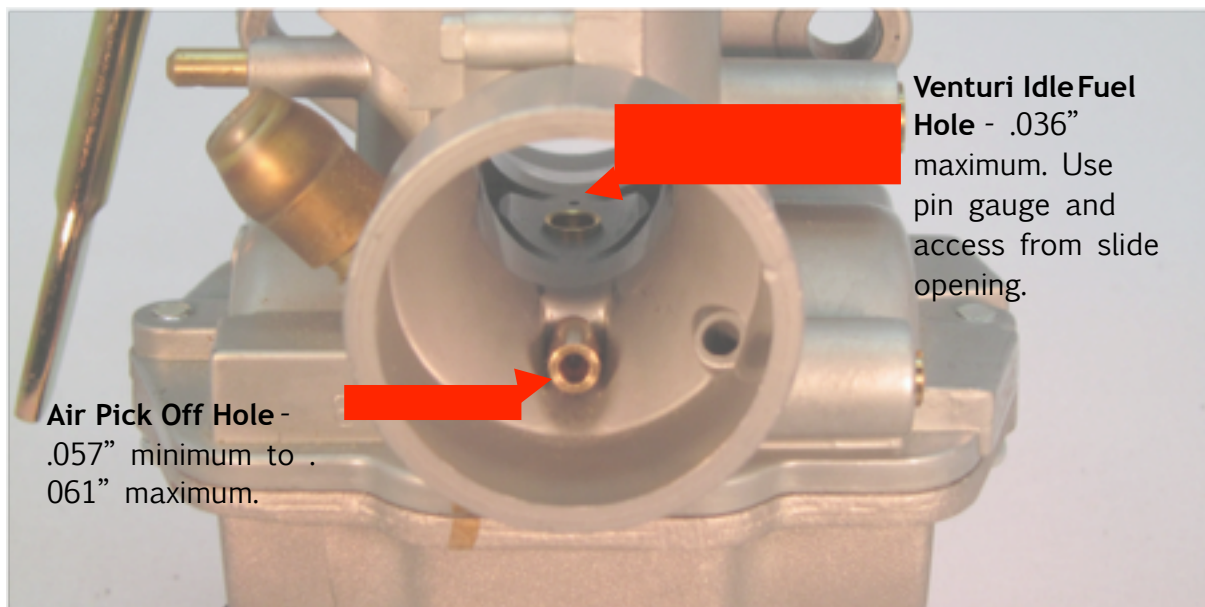
## REMOVE CARBURETOR

1. Check for restrictor plate correct placement if applicable. Restrictor plate must be placed between carburetor and intake manifold. There must be 1 gasket between the restrictor plate and the intake manifold. This gasket must not be thicker than .070 inches. Briggs gasket part number 691885 or equivalent (COMETIC #EC1624046F) is acceptable. There must not be a gasket between the carburetor and the restrictor plate. This surface is sealed with the O-ring in carburetor groove.
2. Stock Walbro PZ22 carburetor part number 555658 carb only. No alterations allowed unless stated below. All parts will be compared to stock known part for legality. This includes the nozzle, emulsion tube, jets, float, float needle and all other carb parts. It will be allowed however to adjust the float height setting, by bending the small tab on the float arm. Slide must remain stock unaltered. Stock unaltered aluminum needle is required part number 555602 marked #BGB.
3. Needle Jet C-clip must be properly installed but may be installed at any of the 5 factory settings on the needlejet.
4. Throttle cable cap on the top of the carburetor must be used and properly installed in tight position.
5. Choke: Unaltered, but lever may be fastened open with a spring, rubber band, wire, etc.



6. Idle pilot jet – Any size is allowed.
7. Main jet – Any size is allowed.
8. Main nozzle – Stock unaltered – hole size = .101 min and .103 max inches. No drilling, reaming, slotting or oblonging of hole.
9. Emulsion tube – Stock unaltered:
  - 4 small holes = .018 min inches to .020 max inches 4
  - big holes = .026 min inches to .028 max inches
  - Main center hole = .110 min inch to .112 max inch
10. Venturi Measurement:
  - Vertical: .792 max inches.
  - Horizontal: .615" no-go can't pass into the slide area at widest part and .602" no-go can't pass into the slide are at narrowest part.





11. Air pick off hole: .061 max inches and .057 min inches
12. Throttle bore: Must be as cast and bore max diameter = .874 inches.
13. Venturi idle fuel hole = .036 inches max
14. Air filter: Any style air filter allowed but is not required to be used. Filter adapters are not allowed, filter must attach directly to carb airhorn.
15. Carburetor overflow: may be vented to the ground.
16. O-Ring part number B&S part number 555601 is required and must be unaltered.
17. Intake manifold: max length = 1.740 inches min to 1.760 inches max
18. Intake manifold: bore diameter = .885 inches min to .905 inches max
19. Briggs gasket part number 691885 or equivalent is acceptable between the intake manifold and cylinder head port mounted surface. This gasket must not be thicker than .070 inches.
20. Restrictor Plates:
  - a. Jr Animal - Black USAC plate with three holes. (.2510 maximum)
  - b. Sr Animal - Gold USAC plate with single hole. (.573 maximum)
  - c. Red Rookie - Briggs Animal long slide #555728 must be used. Overall length = 1.825 with a .285 max. throttle travel - check with carb gauge. Must also use the black Jr Animal restrictor plate. The gear ratio required for the Jr Animal Rookie engine - 5.15 (33/28) using the Briggs gear box (6.07)



- d. Blue Rookie - Briggs Animal long slide #555732 must be used. Overall length = 1.800" max. with .310" max throttle travel - check with carb gauge. Must also use the black Jr Animal restrictor plate.
21. The optional aluminum curved intake is also allowed. Briggs part # 555776. No modifications are allowed to be made to the intake, this includes pulsing the fuel pump.

## **ENGINE COOLING SHROUDS/BLOWER HOUSING**

1. All pieces of the stock engine-cooling shroud must be stock and properly installed. The blower housing cover must be removed.
2. Starter cup must be removed.
3. Color of sheet metal is a non-tech item, any color is acceptable. This refers to blower housing, head shroud, top plate and valve cover.

## **CHECK VALVE LIFT AND IGNITION TIMING**

1. Remove valve cover & blower housing.
2. Max. valve lift will be checked from the top of the valve spring retainer. Valves must be adjusted to zero clearance.
3. Valve Lift: First camshaft check will be taken at the valve spring retainers. With the lash set at zero, the movement of the valve spring retainers may not exceed the following: Intake and exhaust: .256 inches max.

4. Ignition timing is to be checked with a degree wheel and a fixed pointer mounted on the engine. Use a piston stop tool inserted in the spark plug hole to properly locate the piston top dead center (TDC) position. Using a hand held electric drill, rotate the engine in a clockwise direction and with a timing light check the ignition timing.  
Animal -  
Rotation speed between 2000 - 4000 RPM  
Max. timing = 31 degrees  
Flywheel key = Must use factory production unaltered key,  
**0.182" minimum**  
Coil leg to flywheel gap = No tech
5. Tech camshaft at pushrods. Push gently down on dial indicator stem to ensure that there is no lash when push rods are going down.

## CYLINDER HEAD & HEAD GASKET



**Must be the B&S # **555635** or 555635RT-1 Cylinder Head**

1. Remove cylinder head.
2. Head Gasket:
  - a. Stock, unaltered B&S part numbers 555698 or 555621 or **Cometic #MLS H3590040S are the only**
  - b. **legal head gaskets. Cometic Spring Plate Gasket P/N EC1424060HTS is allowed**
  - c. Minimum gasket thickness between head bolt holes .041' - .038". Measurements are to be made with dial caliper from inside of fire ring for gasket part number 555698.

3. Head:

- a. Cylinder head, 555635 must be stock unaltered and be “as cast” and in factory machined condition except head gasket deck surface may be machined to the following specs.
  1. Depth of head at shallow part of head .011 inch min. This measurement to be taken with a depth gage on both the combustion side and spark plug side of cylinder head.
  2. Depth at floor of head is. 319 inch min.
  3. Depth to top of valve seat is .315 inch min to .360 inch max.
  4. Head overall thickness from head gasket surface to head plate gasket surface is 2.405 inches min. No deburring, machining, honing, grinding, polishing, sanding, media blasting, etc, etc.
  5. The transition from Intake bowl to port **must** have factory defined machining **burr** at this junction. No addition or subtraction of material in any form or matter.

**Unless it says you can do it you cannot do it.**

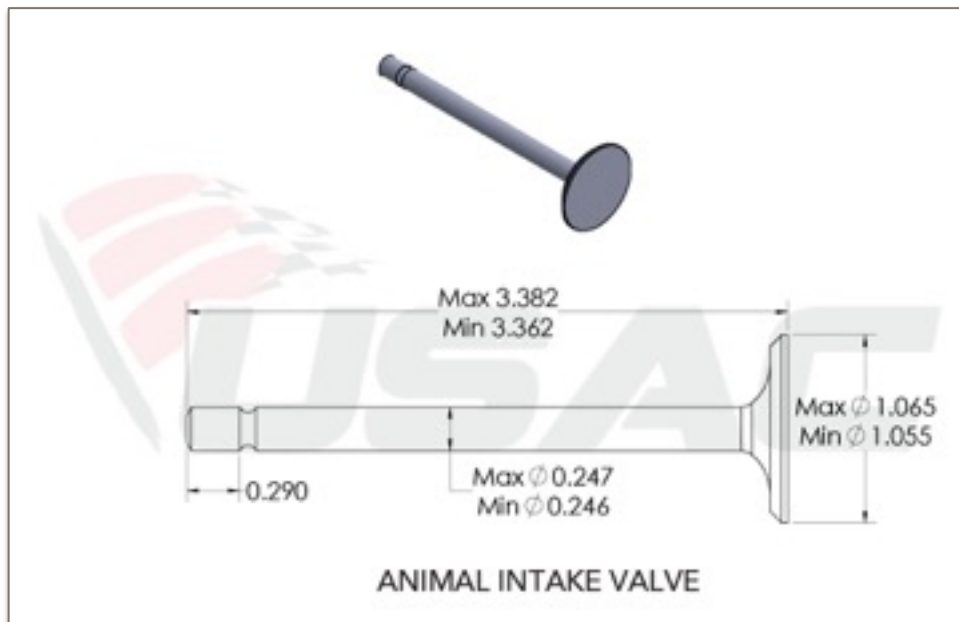
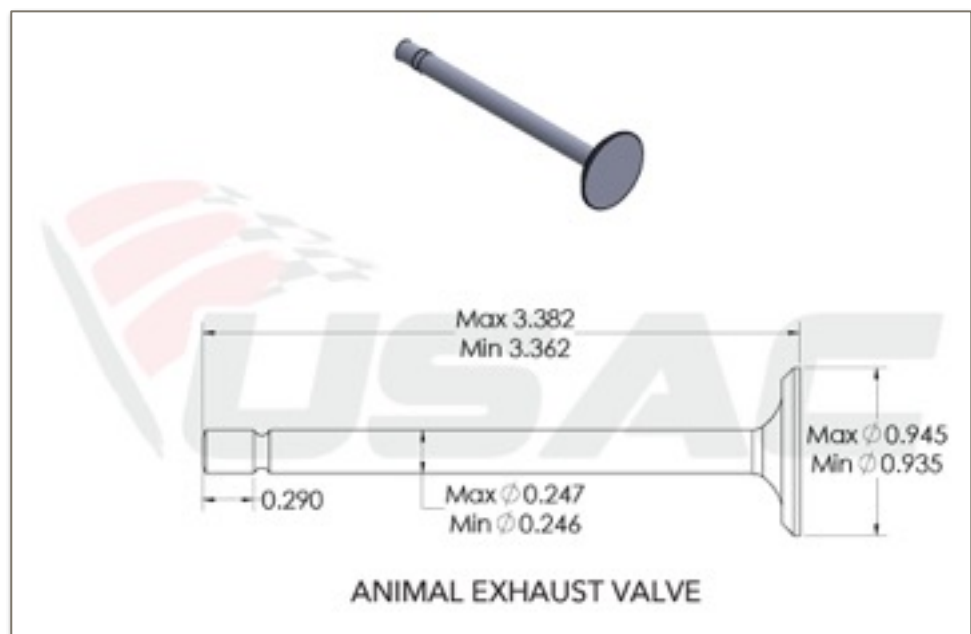
- b. No additions to or subtractions from any part of head with the exception of Heat dispenser, Briggs part number 555690 may be installed per included ms-3758.
- c. Exhaust pipe attachment stud may be heli-coiled.
- d. No alterations of any kind may be made to the intake or exhaust ports.
- e. Intake Port: Maximum diameter measurement = .918 inches max.
- f. Exhaust Port AS CAST: Maximum ID of shoulder in bottom of exhaust port = .854 inches.
- g. Valve Seats, Intake and exhaust: Must remain factory spec. with one 45 degree angle only. Multi-angle valve seats are not permitted.
- h. Intake valve seat diameter inside = .965 to .972 inches.
- i. Exhaust valve seat diameter inside = .844 to .850 inches.
- j. Valve guides – Stock valve guides as supplied from factory. Stock replacement guide part # 555645 allowed. Maximum depth from head gasket surface to top of intake valve guide is 1.255 inches.

**Remove Valves:**

Inspect retainers for alterations that would increase valve spring pressure .055 to .075 max flange thickness. Both intake and exhaust must have stock B&S valve keepers.

**VALVES**





1. Check valves for dimensions and weight. Stock and unaltered B&S part #555552 (exhaust) and #555551 (intake). Titanium valves are not allowed. Valve surface must be unaltered factory ground and have one 45 degree sealing surface only. There will be no other angles ground on any part of the valve.
2. Valve Guides: Replacement of valve guides with B&S factory part #555645 only is allowed.
3. Intake Valve:
 

Minimum Weight of Valve	27.90 grams min.
Diameter of valve stem	.246 to .247 Diameter
of valve head	1.055 to 1.065 inches
Diameter of valve seat	.965 to .972 inches ID
Valve length	3.372 +/- .010 inches
4. Exhaust valve:
 

Minimum weight of valve	27.70 grams min.
Diameter of valve stem	.246 to .247
Diameter of valve head	.935 to .945 Diameter
of valve seat	.844 to .850 inches ID
Valve length	3.372 +/- .010 inches

## VALVE SPRINGS



### B&S 26826 VALVE SPRING

1. Valve Springs will be single coil stack, unaltered B&S part # 26826. Must be identical in appearance to factory part and have 4.25 to 4.75 coils in stack. Caution – If higher pressure springs would be used cam lobe wear will result and reduce performance.
2. Spring Wire Diameter .103 to .107 inches.
3. Valve spring length .950 max inches
4. Inside diameter .615 to .635 inches
5. 15 lbs at .812 inches

## ROCKER ARMS, ROCKER BALL AND ROCKER ARM STUDS



1. Rocker arms will be stock B&S part # 555711 and #797443 and will not be altered in any way. Rocker arm overall length - 2.820" min.
2. Rocker Ball must be stock. Diameter .590 inch min. to .610 inch max.
3. Rocker arm mounting positions may not be altered in any manner. No heli-coiling of mounting holes. No bending of studs. Rocker arm stud plate #698214 or #797442 must be bolted to the head with one stock B&S gasket only - no alterations. Max thickness of gasket is .060 inches.
4. Rocker arm – overall length 2.820" min.
5. Rocker studs will be stock, unaltered B & S part #694544 (1/4-28 thread) or #797441 (M8 x 1.00 thread) and in stock location. #797443 rocker must be used with #797441 stud and #555711 rocker must be used with #694544 stud.

## **PUSH RODS**

1. Push rods will be stock, unaltered B&S part #555531. Push rod length 5.656 max inches. Push rod diameter .185 min inches to .190 max inches.



## ENGINE BLOCK

1. Engine block must be in "as cast-stock factory machined condition with no alterations except head gasket deck surface can be milled down to allow a piston pop per below specification. There must be no addition or subtractions of metal or any substance to the inside or outside of the cylinder block.
2. Machining of deck surface is permitted. Piston pop up can be .007 inches max. Piston pop up to be checked with flat bar in center of piston parallel to piston pin and then again checked 90 degrees to piston pin. Angle milling or peak decking is not allowed It is allowable to remove carbon buildup in needed to meet .007 max pop up rule.
3. There will be no polishing, sand blasting, or glass beading to any interior surfaces.
4. Cylinder bore will not be bored oversize.
5. Cylinder bore will not bere-sleeved.
6. Cylinder bore position will not be moved or angled in any manner.
7. Cylinder bore dimension - 2.693 max inches for entire length top to bottom. Take out of service with no DQ or suspension.
8. Check stroke from BDC to TDC - 2.204 max. Push piston down at BDC to take up rod play.
9. Tech camshaft at pushrods. Push gently down on dial indicator stem to ensure that there is no lash when push rods are going down.

## CAMSHAFT PROFILE LIMITS

CAMSHAFT PROFILE INFORMATION							
INTAKE DEGREES				EXHAUST DEGREES			
0.005"	55 - 65	BTD		0.005"	278 – 284	BTD	
0.020"	12 - 19	BTD		0.020"	237 – 241	BTD	
0.050"	1 - 5	ATD		0.050"	219 - 224	BTD	
0.100"	17 - 21	ATD		0.100"	202 - 206	BTD	
0.150"	32 - 37	ATD		0.150"	186 - 190	BTD	
0.200"	53 - 57	ATD		0.200"	166 - 171	BTD	
0.225"	66 – 72	ATD		0.225"	152 – 156	BTD	
0.258 MAX - 0.252 MIN				0.259 MAX - 0.252 MIN			
0.225"	141 – 145	ATD		0.225"	71 – 75	BTD	
0.200"	154 - 159	ATD		0.200"	58 - 62	BTD	
0.150"	174 - 179	ATD		0.150"	38 - 42	BTD	
0.100"	191 - 195	ATD		0.100"	22 - 26	BTD	
0.050"	208 – 212	ATD		0.050"	5 - 9	BTD	
0.020"	225 – 232	ATD		0.020"	8 – 13	ATD	
0.005"	269 -276.5	ATD		0.005"	52 - 58	ATD	

## FLYWHEEL

1. No modifications allowed to flywheel. – Min weight of flywheel, fins and attachment bolts = 4 pounds 1 oz.
2. Stock B&S part # 555683 only. No machining, glass beading, sand blasting, painting or coating of flywheel is allowed.

3. The plastic flywheel fan part number 692592, with broken fins must be replaced.
4. Plastic starter ring gear between flywheel and engine may be removed.
5. Stock, unaltered flywheel key is required. No offset keys allowed.
6. Can use any flat washer under flywheel nut.

## IGNITION SYSTEM



**B&S PVL Ignition with Green Coil Max  
RPM 6100**

1. Unaltered B&S stock ignition part #555718 is mandatory. Only “GREEN” Coil allowed. Ignition coil or its position, other than air gap may not be altered in any way. Coil mounting bolts must be stock and cannot be altered in any way to advance or retard timing. Attachment bolts and/or bolt holes may not be altered.
2. Spark plug: Any automotive type, unaltered with stock washer. Indexing washer is not allowed. No taper seat plugs allowed. If temperature sensor is used under spark plug, factory washer may be removed.
3. Magneto air gap is non-tech.
4. (Space reserved for future use).

## GEAR BOX



**B&S 555721 Gear Reduction Box**



1. Briggs & Stratton gearbox part numbers 555721 and 555753 are the only approved gearboxes. Gearbox number 555753 includes new sungear part number 555756 as a direct replacement to the current sungear in gearbox 555721. Must be in stock form and color.
2. It is allowable to machine additional keyway slots (straight or woodruff), drill/tap and or snap ring groove in gearbox sun gear output shaft. Also the end of the sun gear shaft can be shortened.
3. Aftermarket gaskets are approved between the gear box and engine side cover, one gasket only

## CRANKCASE COVER

1. Remove crankcase cover
2. Cover must be in stock, unaltered, "as cast in factory" condition. No alterations or subtractions of metal or any other substance to crankcase cover.
3. Aftermarket gaskets are approved, however must be of same size and material as stock gasket. Only one gasket is allowed.

## **PISTON**



**B&S 555660 Piston**

1. Remove rod and piston
2. Stock standard bore unaltered B&S piston part # 555660 only.
3. It is allowed to carefully remove the raised material only from the stamped numbers and letters on the top of the piston. Recommended method is a dull pocketknife or a small stone.
4. Minimum from top of piston to top of wrist pin on circlip side is .658 inches.
5. Minimum overall piston length is 1.762 inches.
6. Oversized pistons are not allowed.
7. Arrow on top of piston must point towards flywheel side.

## **RINGS**

1. Must be stock, unaltered B&S rings part # 555664 only.
2. No decreasing of ring tension by heating, machining or any other means.
3. Three rings mandatory.

- a. Top chrome compression ring must have chamfer or O toward top of piston.
  - b. Second scraper ring must be installed with inside chamfer down and O toward the top of piston.
  - c. Oil ring must be installed as from factory.
1. Minimum width of top two rings is .095 inches.
  2. Thickness of top two rings is .059 to .064 inches (each ring)
  3. Minimum width of oil ring is 0.65 inches. Ring groove must be present.
  4. Thickness of oil ring is .098 to .102 inches.
  5. Oil expander ring total overall length = 8.200" min
  6. All 3 rings including oil expander ring must be in 1 piece when removed from engine during tech. Broken rings are not allowed.
  7. Rings must be self-supporting in cylinder bore of the engine being teched.

## **WRIST PIN**

1. Must be stock, unaltered B&S part #555520 wrist pin and lock part #555521
2. Wrist Pin: Maximum I.D.= .414"  
Max. O.D.= .626"  
Minimum length – 1.901"

## **CONNECTING ROD**



**B&S 555626 Connecting Rod**

1. Must be stock, unaltered B&S part # 555626.

2. Rod length, measurement from bottom of wrist pin hole of top of crank journal hole is 2.419 inches minimum to 2.429 inches maximum.
3. Diameter of big end = 1.005 inch max
4. Diameter of small end – .6265 in max

## **CRANKSHAFT**



### **B&S 555722 Crankshaft**

1. Stock B&S part # 555722 crankshaft must remain unaltered. No polishing, grinding or deburring allowed.
2. Crankshaft journal diameter = 1.094 inches to 1.100 inches.
3. Stock, unaltered B&S ball bearings required. PTO side part number # 692517 & Flywheel side part number # 690824. Ceramic bearings are not allowed.
4. B&S part # 555049 woodruff key – cam gear
5. B&S part # 222698s aluminum key – flywheel
6. Shim, (s), Briggs part #55619, if used must be installed as from factory.
7. Stock, unaltered part #555574 timing gear installed in stock location on crankshaft only.
8. No offset keyways allowed on cam gear for crankshaft or flywheel key.
9. The use of Loctite to retain crank gear secure to crankshaft is acceptable and legal.
10. Splines are non-tech.

## CAMSHAFT



### **B&S 696816 Camshaft**

1. Stock, unaltered B&S part # 696816 ground camshaft. Aftermarket camshafts are not legal.
2. There will be no additions or subtractions to any part of the camshaft except for the compression release tabs as outlined below.
3. Note – The older style Briggs broached cams are not allowed.
4. Compression release will remain intact however the centrifugal force tabs can be removed or altered for easier starting.
5. Cam base circle .870 inch max.
6. Lobe center angle will not be altered by any means.
7. Lobe profile will not be altered in any way.
8. No deburring, machining, honing, grinding, polishing, sanding, media blasting, etc, etc. No addition or subtraction of material in any form or matter to cam except as outlined for compression release tabs. Unless it says you can do it you cannot do it. Cam lodes cannot be welded.

## TAPPETS





### **B&S 690977 Tappets**

1. Stock, unaltered B&S part # 690977 tappets only.
2. Tappet diameter = .820 min to .860 max.
3. Tappet overall length = 1.515 min to 1.525 max

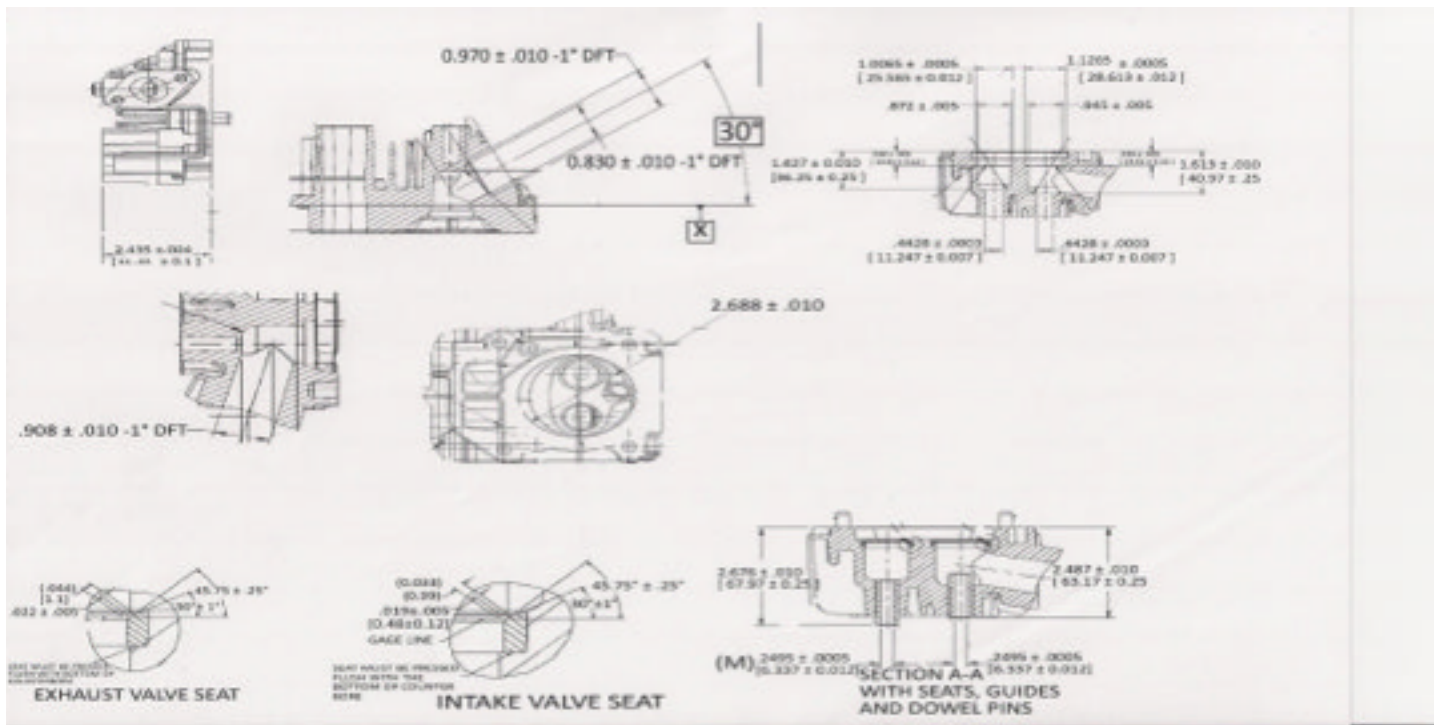
### **TORQUE SPECIFICATIONS**

Non-Tech, recommended by B&S

Flywheel Nut	55-75 ft. lbs. (74.5-101 Nm)
Cylinder Head	200-220-in. lbs. (20-25 Nm)
Connecting Rod	115-120 in. lbs. (13.5-15.8 Nm)
Crankcase Cover	95-125 in. lbs. (13.5-15.8 Nm)
Cylinder Head Plate	70-90 in. lbs. (8-10 Nm)
Rocker Arm stud	90-120- in. lbs (8-12.5 Nm)
Valve Cover	30-60 in. lbs (11-16 Nm)
Spark Plug	95-145 in. lbs. (11-16 Nm)

Tech officials have the right to tech any or all cars in any class at their discretion.

Parts in question that need further review, must be sealed and boxed up at the track in front of the handler. The handler and tech director must also sign a slip indicating that they both acknowledge the part is in question. The part must then be shipped to the USAC National office at 4910 West 16th Street, Speedway, IN, 46224.



No.	Size of Drill
1	.2280
2	.2210
3	.2130
4	.2090
5	.2055
6	.2040
7	.2010
8	.1990
9	.1960
10	.1935
11	.1910
12	.1890
13	.1850
14	.1820
15	.1800
16	.1770
17	.1730
18	.1695
19	.1660
20	.1610

No.	Size of Drill
21	.150
22	.
23	.
24	.
25	.
26	.147
27	.
28	.
29	.
30	.
31	.130
32	.
33	.
34	.
35	.

36	.100
37	.
38	.
39	.
40	.

No.	Size of Drill
41	.0960
42	.0935
43	.0890
44	.0860
45	.0820
46	.0810
47	.0785
48	.0760
49	.0730
50	.0700
51	.0670
52	.0635
53	.0595
54	.0550
55	.0520
56	.0465
57	.0430
58	.0420
59	.0410
60	.0400

No.	Size of Drill
61	.0390
62	.0380
63	.0370
64	.0360
65	.0350
66	.0330
67	.0320
68	.0310
69	.0292
70	.0280
71	.0260
72	.0250

73	.0240
74	.0225
75	.0210
76	.0200
77	.0180
78	.0160
79	.0145
80	.0135

### **Decimal Equivalents of Number Size Drills**