



Junior 206 Rules Manual



- FKA JR 206 / Novice Rookie Gas Class

Junior 206 supplement

All LO 206 rules apply were applicable with the exception of the ignition module, locking cap, exhaust system, clutch and slide tech which will be discussed in the following appendice A.

Appendice A:

1. Header and Silencer:
 - a. Header must be RAPP J 18 .880.
 - b. Silencer must be RLV B91 with round holes.
 - c. Gasket and /or silicone allowed to seal header to head.
 - d. Studs or bolts are allowed to fasten header to cylinder head. Bolts or nuts must be safety wired. Header support brace is mandatory.
 - e. Header must be wrapped to protect the driver from heat.
2. Air Filter:
 - a. Green Air Filter, Briggs & Stratton part number, 555729 **IS** required.
 - b. Dimension: large diameter of 75 mm, small diameter of 65 mm and side length of 75 mm.
 - c. Filtering media must be present. Oiling not required but greatly recommended.
3. Carburetor Slide:
 - a. Minimum length from top edge of slide to deepest part of cut away is .310". Must be stock. May not be altered in any way.
 - b. At full throttle the maximum opening of the carburetor slide is .310". This dimension to be checked with a .311+ plug gauge held against the bottom of the venturi. The gauge may need to be ground on one side to clear the brass pick off tube.
 - c. The surface of the carburetor cap that contacts the slide may be machined to attain proper opening.
 - d. The carburetor top must be secured with a Briggs Carburetor cap lock, part number 555726. Cap lock to carb will be an additional place to paint a tech seal.

4. Ignition:
 - a. Unaltered Briggs PVL component is required. The color is black and the rev limit specified on the coil is 4100.

5. Drive System:
 - a. Model SS Max Torque clutch, Briggs & Stratton is required. Engagement speed is approximately 2000 rpm with lock up at approximately 2300-2400 rpm.
 - b. Sprocket must have 12 teeth for #35 chain.
 - c. Rear axle sprocket must have 75 teeth.
 - d. Rear tire maximum circumference of 34-1/2".

Section 1

General Rules

1. Only stock Briggs & Stratton JR LO206 engine will be allowed in this class.
 - o All parts will be stock unaltered Briggs & Stratton Animal parts specifically made for this engine by Briggs and Stratton. No aftermarket parts to be used 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.

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

- o All engine safety and regulations must be followed according your standard general rule set. I.e. Chain guards
2. 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 unless specifically stated in these rules. ALL PARTS ARE SUBJECT TO COMPARISON WITH A KNOWN STOCK PART.
 3. 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.
 4. Fuel: Gasoline only, no additives. Tech procedure is per rulebook.
 5. ALL PERTINANT PENELTIES WILL APPLY.

Section 2

Required/Acceptable Modifications:

1. Oil Breather: Oil breather must vent to catch can located per standard rule set.
2. Carburetor Overflow: Carburetor overflow may be vented to the ground.
3. Fuel Pump: It is recommended but not mandatory that Walbro fuel pump, B&S part number 557033 be used. Other pumps are legal. The fuel pump must be pulsed from the pulse fitting mounted on the engine crankcase side cover fitting only. It is prohibited to pulse from the intake manifold.
4. Shrouds & Covers: Engine Shroud maybe painted any color. Engine shroud, covers, and control panel must be intact and not modified. Any bolt, with the exception of the head bolt, that is used to secure sheet metal shrouds and covers maybe replaced with larger diameter bolts. Stock kill switch must remain in stock location and wires must remain in place. No taping or covering of the rewind shroud allowed.

Section 3

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.
- 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 be run at a speed above idle by the tech personnel at the scale, after the car has qualified or raced.

2. Carburetor & Intake Manifold

Remove Carburetor

- a. There must be 1 gasket between the restrictor plate and the intake manifold. This gasket must not be thicker than .050 inches. There must not be gasket between the carburetor and the restrictor plate. This surface is sealed with the O-ring in carburetor groove.
- b. Stock Walbro PZ22 carburetor part number 555658 carburetor 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 by means of bending the small tab on the float arm.
 - o Slide must remain stock unaltered. Stock unaltered aluminum needle is required part number 555602 marked #BGB.
- c. Needle Jet C-clip must be properly installed but may be installed at any of the 5 factory settings on the needle jet.
- d. Throttle cable cap on the top of the carburetor must be used and properly installed in tight position.
- e. Choke: Unaltered, but lever may be fastened open with a spring, rubber band, wire, etc.
- f. Idle pilot jet – Stock ONLY, #32, hole size is 0.0130” no go.
- g. Main jet – Stock ONLY, #95, hole size is 0.0380” no go.

- h. Main nozzle – Stock unaltered – hole size = .101 min and .103 max inches. No drilling, reaming, slotting or oblonging of hole.
 Emulsion tube – Stock unaltered
 4 small holes = .018 min inches to .020 max inches
 4 big holes = .026 min inches to .028 max inches.
- i. Venturi Measurement: Vertical: .792 max inches. Horizontal: .615 max inches at widest part and .602 max inches at narrowest part.
- j. Air pick off hole - .061 max inches and .057 min inches
- k. Throttle bore – Must be as cast and bore max diameter = .874 inches.
- l. Venturi idle fuel hole = .036 inches max

A CLEAN AIR FILTER IS THE KEY TO THE LIFE OF YOUR ENGINE.

- m. Carburetor overflow: may be vented to the ground.
- n. O-Ring part number B&S part number 555601 is required and must be unaltered.
- o. Intake manifold – max length = 1.740 inches min to 1.760 inches max
- p. Intake manifold – bore diameter = .885 inches min to .905 inches max

4. Engine Cooling Shrouds/Blower Housing

All pieces of the stock engine cooling shroud/blower housing must be stock and properly installed.

5. Check valve lift & ignition timing:

Remove valve cover & blower housing

- a. Max. valve lift will be checked from the top of the valve spring retainer. Valves must be adjusted to zero clearance.
- b. Valve Lift: first camshaft check will be taken at the valve spring retainers. With the last set at zero, the movement of the valve spring retainers may not exceed the following: Intake and exhaust: .252 inches max.
- c. Install degree wheel, using positive stop method. Check ignition timing. With the right edge of the magnet, (not the magnet holder), aligned with the right edge of the notch of the right leg of the coil, the engine must be from 23 degrees BTDC to 27 degrees BTDC you must use stock key way and unaltered flywheel stock Briggs and Stratton only allowed.
- d. Tech camshaft at pushrods. Push gently down on dial indicator stem to ensure that there is no lash when push rods are going down.

5. Cylinder Head & Head Gasket

Remove cylinder head.

Head Gasket:

- a. Stock, unaltered B&S part number 555723 is the only head gasket allowed.
- b. Minimum gasket thickness between head bold holes .049 inches. Measurements are to be made with a micrometer in four places between the head bolts, from the inside of the gasket.

Head:

- a. Cylinder head, 555635 must be stock unaltered and be “as cast” with factory machining marks left on the head gasket surface are a tech item.
- b. **Hard Carbon may be scraped from head before measuring.**
- c. 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.
- d. Depth at floor of head is .319 inch min.
- e. Depth to top of valve seat is .335 inch min to .360 inch max.

Ports:

- a. No deburring, machining, honing, grinding, polishing, sanding, media blasting, etc.
- b. 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.**
 - Exhaust pipe attachment stud may be heli-coiled.
 - No alterations of any kind may be made to the intake or exhaust ports.
- c. Intake Port: Maximum diameter measurement = .918 inches max.
- d. Exhaust Port AS CAST: Maximum ID of shoulder in bottom of exhaust port = .854 inches.
- f. Valve Seats, Intake and exhaust: Must remain factory specification with one 45 degree angle only. Multi-angle valve seats are not permitted.
- g. Intake valve seat diameter inside = .965 to .972 inches.
- h. Exhaust valve seat diameter inside = .844 to .850 inches.

7. Valves:

Remove Valves.

- a. 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.
- b. Stock and unaltered B&S part #555552 (exhaust) and #555551 (intake) can be checked for appearance, weight, and dimensions. No machining, polishing, easing, or titanium valves 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.
- c. Valve Guides: Replacement of valve guides with B&S factory part #555645 only is allowed. Maximum depth from the head gasket surface to the intake valve guide is 1.255”.
 - d. Intake Valve: Minimum Weight of Valve 29.26 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 3.272 +/- .010 inches
 - e. Exhaust valve: Minimum weight of valve 28.62 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 3.272 +/- .010 inches

8. Valve Springs

- a. Valve Springs will be single coil stock, 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.

- b. Spring Wire Diameter .103 to .107 inches
- c. Valve spring length .930 max inches
- d. Inside diameter .615 to .635 inches

9. Rocker Arms, Rocker Ball and Rocker Arm Studs

- a. Rocker arms will be stock B&S part # 691230 and will not be altered in any way.
- b. Rocker studs will be stock, unaltered B&S part # 694544 and in stock location.
- c. Rocker Ball must be stock. Diameter .590 inch min. to .610 inch max.
- d. Rocker arm mounting positions may not be altered in any manner. No heli-coiling of mounting holes. No bending of studs.
- e. Rocker arm stud plate must be bolted to the head with one stock B&S gasket only - no alterations. Max thickness of gasket is .060 inches.
- f. Rocker arm – overall length 2.865 inches min.

10. Push Rods

- a. Push rods will be stock, unaltered B&S part #555531. Push rod length 5.638 min inches to 5.656 max inches. Push rod diameter .185 min inches to .190 max inches.

11. Engine Block

- a. 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.
- b. 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
- c. There will be no polishing, sand blasting, or glass beading to any interior surfaces.
- d. Cylinder bore will not be bored oversize
- e. Cylinder bore will not be re-sleeved.
- f. Cylinder bore position will not be moved or angled in any manner.
- g. Cylinder bore dimension - 2.697 max inches for entire length top to bottom.
- h. Check stroke from BDC to TDC - 2.204 max. push piston down at BDC to take up rod play.

Camshaft Profile Limits

a. Tech camshaft at pushrods. Push gently down on dial indicator stem to ensure that there is no lash when push rods are going down. <u>Intake lift</u> <u>0.006</u>	<u>59 to 49</u> <u>BTDC</u>
<u>0.020</u>	<u>16 TO 12</u> <u>BTDC</u>
<u>0.050</u>	<u>.5 TO 4.5</u> <u>ATDC</u>
<u>0.100</u>	<u>17 TO 21</u> <u>ATDC</u>
<u>0.150</u>	<u>33.5 TO</u> <u>37.5 ATDC</u>
<u>0.175</u>	<u>43 TO 47</u> <u>ATDC</u>
<u>0.200</u>	<u>54 TO 58</u> <u>ATDC</u>
<u>0.225</u>	<u>68 TO 72</u> <u>ATDC</u>
<u>MAX LIFT</u>	<u>0.257</u>
<u>MIN LIFT</u>	<u>0.252</u>
<u>0.225</u>	<u>38 TO 34</u> <u>BBDC</u>
<u>0.200</u>	<u>24.5 TO</u> <u>20.5 BBDC</u>
<u>0.175</u>	<u>14 TO 10</u>

	<u>BBDC</u>
<u>0.150</u>	<u>4.5 TO .5</u> <u>BBDC</u>
<u>0.100</u>	<u>12 TO 16</u> <u>ABDC</u>
<u>0.050</u>	<u>29 TO 33</u> <u>ABDC</u>
<u>0.020</u>	<u>45.5 TO</u> <u>49.5 ABDC</u>
<u>0.006</u>	<u>81 to 91</u> <u>ABDC</u>
<u>Exhaust lift</u>	<u>101 to 91</u>
<u>0.006</u>	<u>BBDC</u>
<u>0.020</u>	<u>59 TO 55</u> <u>BBDC</u>
<u>0.050</u>	<u>43 TO 39</u> <u>BBDC</u>
<u>0.100</u>	<u>26 TO 22</u> <u>BBDC</u>
<u>0.150</u>	<u>9 TO 5</u> <u>BBDC</u>
<u>0.175</u>	<u>1 TO 5</u> <u>ABDC</u>
<u>0.200</u>	<u>11.5 TO</u> <u>15.5 ABDC</u>
<u>0.225</u>	<u>25 TO 29</u> <u>ABDC</u>
<u>MAX LIFT</u>	<u>0.257</u>
<u>MIN LIFT</u>	<u>0.252</u>
<u>0.225</u>	<u>76 TO 72</u> <u>BTDC</u>
<u>0.200</u>	<u>62.5 TO</u> <u>58.5 BTDC</u>
<u>0.175</u>	<u>52 TO 48</u> <u>BTDC</u>
<u>0.150</u>	<u>42 TO 38</u> <u>BTDC</u>
<u>0.100</u>	<u>25.5 TO</u> <u>21.5 BTDC</u>
<u>0.050</u>	<u>8.5 TO 4.5</u> <u>BTDC</u>
<u>0.020</u>	<u>8 TO 12</u> <u>ATDC</u>

12. Flywheel

No modifications allowed to flywheel. – Min weight of flywheel, fins and attachment bolts = 4 pounds 1 oz.

- a. Stock B&S part # 555683 only. No machining, glass beading, sand blasting, painting or coating of flywheel is allowed.
- b. A flywheel fan, part #692592, with broken fins must be replaced.
- c. Stock, unaltered flywheel key with the B&S logo is required. Width of the key allowed is .1825”-.1875”. No offset keyways allowed.

13. Ignition System

- a. 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 boltholes may not be altered.
- b. Spark plug: Must use Briggs & Stratton factory unaltered spark plug part number # 491055 - Champion RC12YC. Sealing washer must be in place as from factory.
- c. Magneto air gap is non-tech (recommended clearance .014”)
- d. Checking ignition timing: Set up a degree wheel on the engine with a piston stop inserted in the spark plug hole. With the left edge of the right coil leg aligned with the right edge of the right magnet, the engine must be from 23 degrees BTDC to 27 degrees BTDC.
- e. Spark plug connector, part number 555714, must be as shipped from the factory.
- d. (Space reserved for future use)

14. Engine Bottom-end

In the event of a short block claim, the entire Animal bottom-end tech is available.

15. Crankcase

- a. Crankcase and cover must be in stock, unaltered, “as cast in factory” condition. No alterations or subtractions of metal or any other substance to crankcase cover.

16. Piston/Deck

- a. Stock standard bore unaltered B&S piston part # 555660 only.
- b. No modification or material removal from the piston is allowed.
- c. Arrow on the piston must point towards flywheel side of the engine.
- d. No machining of the deck surface is permitted. Factory Machining marks ARE a tech Item.
- e. Maximum pop out allowed is .005” measured with a flat bar set on top of the piston parallel to the wrist pin.

17. Cylinder Bore

Stock bore is 2.690". Allowance for wear is permitted up to 2.696".

18. Stroke

Maximum stroke is 2.204". Push piston down to take up rod play. Check stroke on BDC to TDC.

19. Starter

Recoil starter must be retained, as produced and intact. Starter may be rotated.

20. Header and Silencer

- a. Rapp J 18 .880 header
- b. Silencer must be RLV B91 with round baffle holes only.
- c. Gasket and/or silicone allowed to seal header to head.
- d. Studs or bolts allowed to fasten head to head. Bolts or nuts must be safety wired. Header support brace is mandatory.