KARTSPORT NEW ZEALAND MANUAL

N15 BRIGGS & STRATTON LO206

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N15 BRIGGS & STRATTON LO206

N15.1 GENERAL SPECIFICATIONS

N15.1.1 These engine specifications are under the control of KartSport New Zealand Executive in conjunction with Briggs & Stratton (B&S). The KartSport New Zealand Executive reserves the right to alter the engine specifications and respective class rules, to ensure fairness of competition and safety, at any time. Only written submissions will be accepted for changes, with the Executive acting on them if considered necessary.

N15.1.2 Unless otherwise specified the LO206 engine used in KartSport New Zealand events must be as per original manufacturer's specifications in regard to construction and **surface finish** of all components. Any engine which does not comply with these rules is deemed illegal and the competitor will be excluded from the results of any and all competition in which the engine has been used. Further penalties may also apply (Ref C9.4.6).

N15.1.3 Glass blasting, shot peening, sand blasting, chemical or any other surface treatment in any way shape or form is not acceptable as original manufacture.

N15.1.4 All gaskets must be in situ and be original OEM Briggs & Stratton items.

N15.1.5 Filing, grinding, deburring, polishing, surface treating, machining or removing/adding of material to any component is expressly forbidden. Exception – Valve maintenance (valve job). Valve seats must remain within the factory specification of 30 and 45 degree angles only. Valve seats of additional angles and/or angles not comparable to the factory OEM of 30 and 45 degrees are not permitted. Grinding of valve stem or excessive material removal prohibited.

N15.1.6 Fitting of helicoil or steel insert type thread repair to repair damaged threads is permitted, providing such repairs are not used to derive any benefit other than rectification of damage, for shrouds, valve cover, oil drain, oil fill holes, blower housing, exhaust pipe and intake manifold attachment studs on the head and lower brackets only.

N15.1.7 Fitting of helicoil type thread repair inserts to repair damaged threads is permitted, providing such repairs are not used to derive any benefit other than rectification of damage, for shrouds, valve cover, oil drain, oil fill holes, blower housing, and exhaust pipe attachment studs on the head and lower brackets only.

N15.1.8 The engine is to be used with its air filter, carburettor, fuel pump and ignition system as supplied/specified by the manufacturer.

N15.1.9 Only the OEM Briggs & Stratton 206 Item #124332-8201 permitted.

N15.1.10 All parts must be unaltered Briggs & Stratton 206 parts specifically made for this engine by Briggs & Stratton. No aftermarket parts to be used unless noted in these Specifications.

N15.1.11 All parts are subject to comparison with a control stock part.

N15.1.12 Any component not complying with the respective Briggs & Stratton Tech Tool will be deemed illegal.

N15.1.13 It is permitted to use thread locker liquid (e.g Loctite) on threads to mount external components.

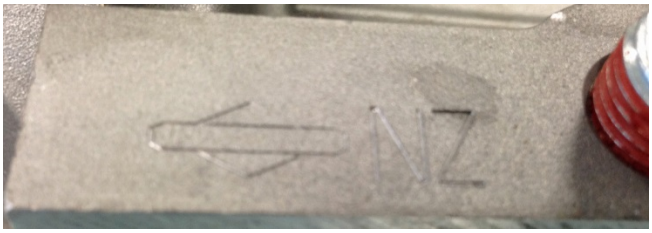
N15.2 EXCHANGE and CLAIMING

N15.2.1 **Exchange:** Following a decision of the Stewards the Technical Officer(s) may be authorized to require the exchange of one or more of competitor(s) owned Coil(s), carburettor(s), exhaust manifold(s) and/or exhaust pipe(s) with a substitute item owned by KartSport New Zealand. The substitute item(s) must be the same make and model as the item(s) previously fitted to the competitor's engine and must be returned to KartSport New Zealand when requested by the Stewards. Should an earlier return time not be nominated by the Stewards, the item(s) must be returned to their original owners no later than the end of Technical Inspection for the event.

N15.2.2 **Claiming:** Following a decision of the Stewards, KartSport New Zealand reserves the right to claim an engine at its discretion. The claimed engine must have cleared Technical Inspection for the event. The complete claimed engine and all ancillaries, less engine mount, will be delivered to the Chief Steward at the end of the event. Failure to deliver the claimed engine will result in forfeiture of all awards and exclusion from the event and/or series and possible further penalties (ref C9.3.29). KartSport New Zealand will replace the engine with a new one within 5 working days, in the same configuration, less engine mount.

N15.3 ENGINE NUMBER: The engine must have a KSNZ Fern and engine number embossed on the front of the crankcase

and a Briggs & Stratton NZ logo embossed on the rear of the crankcase.



Eligible engine numbers will be published from time to time on www.kartsport.org.nz.

N15.4 ENGINE SEALING: There are two custom, Homeland Security Tier III rated, seals installed on the crankcase by Briggs & Stratton. Seals can be either a black anodized or bare aluminium finish on both main body ends as shown. Note that during 2015 Briggs & Stratton began using a propriety sealing cable containing a black strand.

Tampering with the seals is not permitted and will result in exclusion from the event as per Rule C9.4.

N15.5 COOLING SHROUDS, COVERS and BLOWER HOUSINGS: All pieces of the engine cooling shroud/blower housing and control panel must be OEM B&S and properly installed. Any bolt, with the exception of the head bolt, that is used to secure sheet metal shrouds and covers may be replaced with larger diameter bolts. No taping or covering of the rewind shroud is permitted. No device may be used that will impede, or appear to impede, airflow to the engine cooling system.

N15.6 CLUTCH: Only the Hilliard Inferno Flame clutch is permitted. All components must be unmodified/OEM.

Components/part numbers:

- 3/4" heat treated hub with guard #8444-23-089
- Flame tunable racing shoes #8444-31-017
- 4x White springs (28OO rpm) #8443-35-006-A
- 4x Black Springs (3800 rpm) #8443-3s-009-A
- Bushing 3/4 (short) #8444-15-002-8
- Bowed snap ring #8444-9U-008
- Racing drum #444-13-100
- Sprocket 14, 15 or 16 tooth - 35 pitch only
- Washers #3444-22-009

Shoes may only be fitted as follows:

- All four in leading orientation or
- All four in trailing orientation or
- Two leading and two trailing.
- Respective orientation of the shoes must be opposite of each other to maintain balance.

Spring options:

- Four white springs or
- Four black springs or
- Two white and two black springs.
- Respective coloured springs must be installed opposite each other to maintain balance.

THE ADDITION OF WEIGHTS TO THE SHOES IS PROHIBITED.

A Metal Clutch Guard, securely mounted to the crankcase, must be fitted covering the top axis and forward to lower than the horizontal plain

Chain Guard as per as per Rule K1.12.

N15.7 EXHAUST:

- Header must be RLV Model 5507 for all classes.
- Header length: 476mm +/- 7mm along the long side from the back of the flange to the base of the first expansion in the pipe.
- One only compulsory gasket, 1.5mm maximum thickness and silicone/sealer are permitted to seal header to head.
- Studs or bolts are permitted to fasten header to head. Bolts or nuts must be safety wired.
- Helicoiling or fitting steel thread inserts to the threads that secure the exhaust header or support bracket is permitted.
- It is permitted to wrap the front support bracket and hose clamp with exhaust wrap.

- Supplied header support brace is mandatory. The addition of a mechanical support bracket (no welding involved) is permitted provided that there are no alterations to the shape or dimensions of the exhaust configuration.
- Silencer must be RLV B91XL (part #4104) with round baffle holes only. Safety wiring of the silencer to header is mandatory. All three baffles must remain unaltered and hole size is 3.27mm NO GO.
- Exhaust Protection. The exhaust header must be completely wrapped with a non-asbestos insulation material starting approximately 50mm from the exhaust flange.

N15.8 AIR FILTER: The only air filter permitted is the Briggs & Stratton Green Air Filter Part #555729. No modification to the filter element is permitted. It is permitted to run a pre-filter over the top of the air filter. A protective shield may be attached for wet-weather competition. It is not permitted for the protective shield to create any ram-air effect.

N15.9 CARBURETTOR and INTAKE MANIFOLD: The Briggs & Stratton OEM carburettor part #555658 is the only carburettor permitted. 'Walbro', 'Briggs' diamond logo and/or #590890 etched in the body of the carburettor are additional visual indicators. No alterations allowed unless stated below. All parts will be compared to a OEM Briggs & Stratton part for eligibility. This includes the nozzle, emulsion tube, jets, float, float needle and all other carburettor parts. It is permitted to adjust the float height by means of bending the small tab on the float arm.
Slide must remain Briggs & Stratton stock unaltered. Slide cutaway to be measured on a flat surface. 12.7 mm flat bar. **Tech Tool A10-0.075**.
Briggs & Stratton OEM unaltered aluminium needle part #555602 marked #BGB is mandatory. Needle to be inspected using **Tech Tool A4-0.070**. Needle, when placed in **Tech Tool A4-0.070**, should not protrude through the other side. If needle protrudes through the block it is out of specification.
Carburettor overflow must be vented into a suitable leak proof container(s) of adequate capacity for the engine/carburettor used (minimum capacity 130 ml). The container(s) must have a removable top cap and access hole(s) for tubes only and be securely fastened to the kart. Overflow hoses must be leak proof without splits. A single 6mm maximum diameter vent hole is permitted in the top cap or the top of container.

Technical Item	Description	B&S Tech Tool
Needle Jet C-clip	Needle Jet C-clip must be properly installed but may be installed at any of the 5 factory settings on the needle jet.	
Throttle Cable Cap	Throttle cable cap on the top of the carburettor must be used and properly installed in tight position.	
Choke	OEM unaltered, but lever may be fastened open with a spring, rubber band, wire, etc.	
Idle Pilot Jet	#32, hole size is .33mm NO GO	
Main Jet	#95, hole size is 0.96mm. 0.91mm GO, 0.98mm NO GO	
Main Nozzle and Emulsion Tube	OEM stock unaltered – hole size = 2.57mm minimum and 2.65mm maximum. No drilling, reaming, slotting or oblonging of hole. Emulsion tube – OEM stock unaltered 4 small holes = 0.46 mm minimum, 0.53mm maximum and 4 big holes = 0.66mm minimum, 0.74mm maximum.	
Venturi Measurement	Venturi Measurement: Vertical: 20.14mm maximum.	**A8-0.792**
	Horizontal: 15.62mm maximum at widest part.	**A8-0.615**
	Horizontal: 15.29mm maximum at narrowest part.	**A20-0.602**
Air Pick Off Hole	1.44mm GO, 1.55mm NO GO	**A9**
Throttle Bore	Throttle bore – Must be as cast and bore maximum diameter = 22.20mm.	**A7-0.874**
Venturi Idle Fuel Hole	Venturi idle fuel hole = 0.92mm maximum.	
Air Filter	Air filter: Only GREEN air filter, B&S part #555729 is allowed. Filter adapters are not allowed, filter must attach directly to carburettor air horn.	
Carburettor Overflow	Carburettor overflow: Must be vented to a catch container.	
O-Ring	O-Ring part number B&S part #555601 is required and must be unaltered.	
Intake Manifold	Intake manifold length = 44.20mm minimum, 44.70mm maximum.	**A12-1.740/1.760**
	Intake manifold bore diameter = .22.48mm minimum, 22.99mm maximum.	**A11-0.885/0.905**
Choke Bore	29.19mm NO GO	**A7-1.149**
Carb Slide Cutaway	1.91mm NO GO	**A10-0.75 plus bar**
Widest Part of Combustion Chamber	67.06mm maximum	**A30-2.640**

N15.10 FUEL PUMP: Only fuel pump B&S part #808656 is legal for competition. This fuel pump can be identified by both the part number and Briggs and Stratton Diamond logo on the pump face. All other pumps are prohibited.

The fuel pump must remain mounted in original position as supplied by Briggs and Stratton.

It is prohibited to pulse from the intake manifold. The fuel pump must be pulsed from a pulse fitting mounted on the oil fill fitting located on the engine side cover. The use of silicone sealant on the brass vent is permitted.

N15.11 RECOIL STARTER: Recoil starter, B&S part #695287, must be retained, as produced and intact. Starter maybe rotated. It is permitted to repair the pull starter mechanism –e.g. replaced pull cord.

It is not permitted to have any other means to be able to start the engine.

N15.12 IGNITION SYSTEM:

- The Briggs & Stratton ignition switch and wires must remain in the OEM location. It is not permitted to alter the OEM wiring.
- Unaltered B&S OEM ignition part #555718 is mandatory. Only "GREEN" ignition module allowed. Maximum RPM: 6,150.
- Coil or its position, other than air gap, may not be altered in any way. Coil mounting bolts must be OEM and cannot be altered in any way to advance or retard timing. Attachment bolts and/or bolt holes may not be altered.
- **Spark Plug:** Only the Champion RC12YC is permitted. Spark plug must have the brand name "Champion" and Briggs and Stratton logo as well as the RC12YC identification on the insulator. OEM sealing washer must be in place. It is prohibited to run any form of sensor under the spark plug.
- Spark plug connector: Only the OEM B&S part #555714 is permitted.
- Magneto air gap is non-tech (recommended clearance of 0.41mm).
- Ignition timing: Maximum of 30 degrees BTDC.

N15.13 FLYWHEEL:

- No modifications are allowed to the flywheel.
- The minimum weight of the flywheel, fins and attachment bolts is 1.843kg.
- OEM B&S part #555683 only. No machining, glass beading, sand blasting, painting or coating of flywheel is allowed.
- A flywheel fan, B&S part #692592, with broken fins will be deemed illegal and must be replaced.
- OEM, unaltered B&S flywheel key with the B&S logo is required. Width of the key is 4.64mm min - 4.76mm max. No offset keyways permitted.

N15.14 CYLINDER HEAD:

- The ONLY head casting for the B&S 206 is the 'RT-1', cast into the head just off the head gasket surface (towards the rear of the engine, clutch side). The overall head minimum thickness is 61.73mm.
- Cylinder head must be "as cast". Factory machining marks left on the head gasket surface are a tech item.
- Hard Carbon may be scraped from head before measuring.
- Depth of shallow area of combustion chamber must be 0.76mm minimum. This measurement to be taken with a depth gauge on both the combustion side and spark plug side of cylinder head.
- Depth at floor of combustion chamber is 8.63mm minimum.
- Inspect retainers for alterations that would increase valve spring pressure. 1.41mm min to 1.91mm max flange thickness. Both intake and exhaust must have OEM B&S valve keepers.
- Unaltered B&S part #555552 (exhaust) and #555551 (intake) valves 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 30 and one 45 degree sealing surface only. There will be no other angles ground on any part of the valve. **Tech Tool: A22**.
- Valve Guides: Replacement of valve guides with B&S part #555645 only is permitted. Depth from the head gasket surface to the intake valve guide is 31.88mm maximum.
- Rocker cover breather insert must consist of a rubber insert into rocker cover with a 90 degree insert fitted into it to attach the breather hose.

N15.15 HEAD GASKET:

- Unaltered B&S part #555723 is the only head gasket permitted.
- Minimum gasket thickness between head bolt holes 1.24mm. Measurements are to be made with a micrometre in four places between the head bolts, from the inside of the gasket.

N15.16 PORTS:

- No de-burring, machining, honing, grinding, polishing, sanding, media blasting, etc.
- 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. No alterations of any kind may be made to the intake or exhaust ports.
- Intake Port: Maximum diameter measurement = 23.33mm maximum. **Tech Tool A6-0.918**.
- Exhaust Port AS CAST. Exhaust Outlet: 24.90mm maximum. **Tech Tool A6-0.980**.
- Valve Seats. Intake and exhaust: Must remain factory specification with one 30 degree and one 45 degree angle only. Valve seats of additional angles and/or angles not comparable to the factory stock are not permitted.
- Intake valve seat diameter inside = maximum 24.69mm. **Tech Tool A2-0.972**.
- Intake port pocket bowl (area just below valve seat) = 24.19mm NO GO. **Tech Tool A2-0.952**.
- Exhaust valve seat diameter inside = maximum 21.60mm. **Tech Tool A1-0.850**.

N15.17 VALVES:

- Intake valve:

Weight of valve	29.26 grams minimum
Diameter of valve stem	6.25mm min, 6.28mm maximum
Diameter of valve head	26.80min to 27.05mm maximum **Tech Tool A17**
Diameter of valve seat	24.69mm ID maximum
Valve length	85.49mm minimum
Height from angle of valve face to top of the valve	1.45mm minimum **Tech Tool A26**

- Exhaust valve:

Weight of valve	28.62 grams minimum
Diameter of valve stem	6.25mm min, 6.28mm maximum
Diameter of valve head	23.75mm min, 24.00mm maximum **Tech Tool A18**
Diameter of valve seat	21.59mm ID maximum
Valve length	85.49mm minimum
Height from angle of valve face to top of the valve	1.53mm minimum **Tech Tool A27**

N15.18 VALVE SPRINGS:

- Valve Springs are single coil stock, unaltered B&S part #26826. Must be identical in appearance to OEM part and have 4.25 to 4.75 coils in stack.
- Spring Wire Diameter: 2.61mm minimum, 2.71mm maximum.
- Valve spring length: 23.62mm maximum **Tech Tool A15-0.930**.
- Inside diameter: 15.63mm minimum, 16.13mm maximum.

N15.19 ROCKER ARMS, ROCKER BALL and ROCKER ARM STUDS:

- Rocker arms must be unaltered OEM B&S part #691230 (US) or #797443 (metric) and will not be altered in any way.
- Rocker studs must be unaltered OEM B&S part #694544 (US) or #797441 (metric) and in OEM location.
- Rocker Ball must B&S OEM. Diameter 14.99mm minimum, 15.50mm maximum. **Tech Tool A16**.
- 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 must be bolted to the head with one OEM stock B&S gasket only - no alterations. Thickness of gasket is 1.53mm maximum.
- Rocker arm – overall length 72.27mm minimum. **Tech Tool A13-2.856**.

N15.20 PUSH RODS:

- Push rods must be unaltered OEM B&S part #555531.
- Push rod length 143.20mm minimum to 143.71mm maximum. **Tech Tool A5-5.658/5.638**.
- Push rod diameter 4.70mm minimum to 4.83mm maximum.

N15.21 VALVE LIFT:

- Maximum valve lift is checked from the top of the valve spring retainer. Valves must be adjusted to zero clearance.
- Valve Lift: Camshaft check is 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: 6.48mm maximum.

N15.22 CAMSHAFT PROFILE LIMITS:

Measured at the push rod. Push gently down on dial indicator stem to ensure that there is no lash when push rods are going down.

Intake lift: MAXIMUM LIFT 6.53mm - MINIMUM LIFT 6.40mm

Exhaust lift: MAXIMUM LIFT 6.58mm - MINIMUM LIFT 6.40mm

All other camshaft specifications as per Briggs & Stratton LO206 specification sheet.

N15.23 ENGINE BLOCK:

- Engine block must be unaltered “as cast” B&S factory machined condition. There must be no addition or subtractions of metal or any substance to the inside or outside of the cylinder block.
- Both (2) B&S engine seals must be present with both the fastener and seal in “as shipped” from the factory location and condition. Any defined tampering with the fasteners or damage to the wire/seal itself (example: delaminated hologram) are grounds for disqualification. Take proper care of your seals to ensure their integrity. It is recommended that you wrap your seals (using a plastic bag, etc.) to prevent exposure to harsh solvents such as carb cleaner, etc.
- Deck gasket surface finish is not a tech item.
- Piston pop up: 0.13mm maximum. Piston pop-up to be checked with flat bar in centre of piston parallel to piston pin and then again checked 90 degrees to piston pin. **Tech Tool A25**.
- Angle milling or peak decking is not permitted.

- Carbon build-up on the piston can be removed before pop-up is measured as long as material is not removed from the piston. Exception: Competitors can deburr the manufacturing part number/marks IF needed as long as:
    - Removal does not extend beyond the defined script area.
    - De-burring does not extend below the original piston surface area.
    - The original part numbers and script are still clearly visible.
- Cylinder bore will not be bored oversize
- Cylinder bore will not be re-sleeved.
- Cylinder bore position is not be moved or angled in any manner.
- Cylinder bore dimension: - Briggs & Stratton OEM bore is 68.33mm. Allowance for wear is permitted up to 68.41mm maximum for entire length, top to bottom.
- Maximum stroke is 55.99mm". Push piston down to take up rod play. Check stroke on BDC to TDC. **Tech Tool A21-2.204**.

N15.24 CRANKCASE:

- Crankcase and cover must be B&S OEM, unaltered, "as cast in factory" condition. No alterations or subtractions of metal or any other substance to crankcase cover.
- Both crank seals must be in place and in original condition as supplied by Briggs & Stratton.
- Oil breather must vent into a suitable leak proof container(s) of adequate capacity for the engine/carburettor used (minimum capacity 130 ml). The container(s) must have a removable top cap and access hole for tube only and be securely fastened to the kart. Overflow hoses must be leak proof without splits. Two 6mm maximum diameter vent holes are permitted in the top cap or the top of container.

N15.25 ENGINE MOUNT:

Only the PMI model PM-36-I15MPTHK with 19mm engine support plate is permitted.