

YAMAHA KT100J SERIES

TECHNICAL SPECIFICATIONS



VERSION 2.0 – JANUARY 2020

1.0 Introduction

The following are the Technical Specifications for the Yamaha KT100J engine, as approved by KNSW.

The engines must be original in all their components according to the Yamaha KT100J drawings.

Any removal, addition or polishing of material is strictly forbidden. This includes sandblasting, glass bead blasting, peening, acid etching, spark eroding and/or any other method of metal removal or displacement is not allowed.

ANY ALTERATIONS / MODIFICATIONS ARE STRICTLY PROHIBITED EXCEPT AS SPECIFICALLY AUTHORISED WITHIN THESE SPECIFICATIONS AND ANY CLASS REGULATIONS. IF THESE DO NOT SAY YOU CAN MAKE A MODIFICATION, THEN YOU CANNOT.

2.0 Engine

The maximum piston diameter and stroke length are:

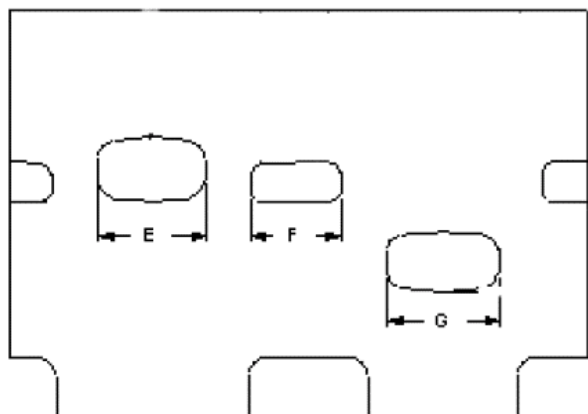
Piston: 51.00mm
Stroke: 50.05mm

2.1 Cylinder Machining

All machined surfaces may be re-machined as long as engine is within any other specifications.

2.2 Cylinder Ports

- a) All cylinder ports and passages must be in "as cast" condition.
 - No grinding is permitted at the junction of the cast iron liner and the aluminium passages.
 - The only exception being the local grinding of the ejection pin protrusion in the inlet passage adjacent to the external cylinder face.
 - No chamfer on port edges is permitted.
- b) Maximum diameter of inlet passage at the external cylinder face is 19.2mm.
- c) Inlet tract length including gaskets from cylinder wall to carburettor gasket face to be 53.00mm minimum to 56.00mm maximum including gaskets in front and behind phenolic spacer.



Width Measurements are chord lengths

CODE	DIMENSION
E	29.60mm max
F	24.45mm max
G	30.60mm max
Port Split 6.00mm minimum High Point, exhaust to transfer.	

2.3 Cylinder Head

- Must be an original Yamaha casting.
- The welding and re-machining of the combustion area, gasket face and spark plug surface is allowable. Additions/repairs must be permanent and non-adjustable. This may include an aluminium insert. Maximum diameter of any part of such repair insert is 69.00mm.
- The combustion chamber style is required to have a squish band and chamber which are visually concentric to the spark plug.
- The combustion chamber volume shall be a minimum of 11cc.

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- The combustion chamber/squish area shall not protrude beyond the gasket sealing face of the cylinder head.
- The spark plug thread may be repaired and shall retain its original position in relation to crankshaft axis. Helicoils and similar are permitted.
- Maximum distance from sealing surface of spark plug to combustion chamber sealing face shall be 33.5mm.
- Repairs to the spark plug sealing face must be by addition of weld material only and re-machining to a flat surface.

2.4 Piston

The Piston must be approved and 'stock':

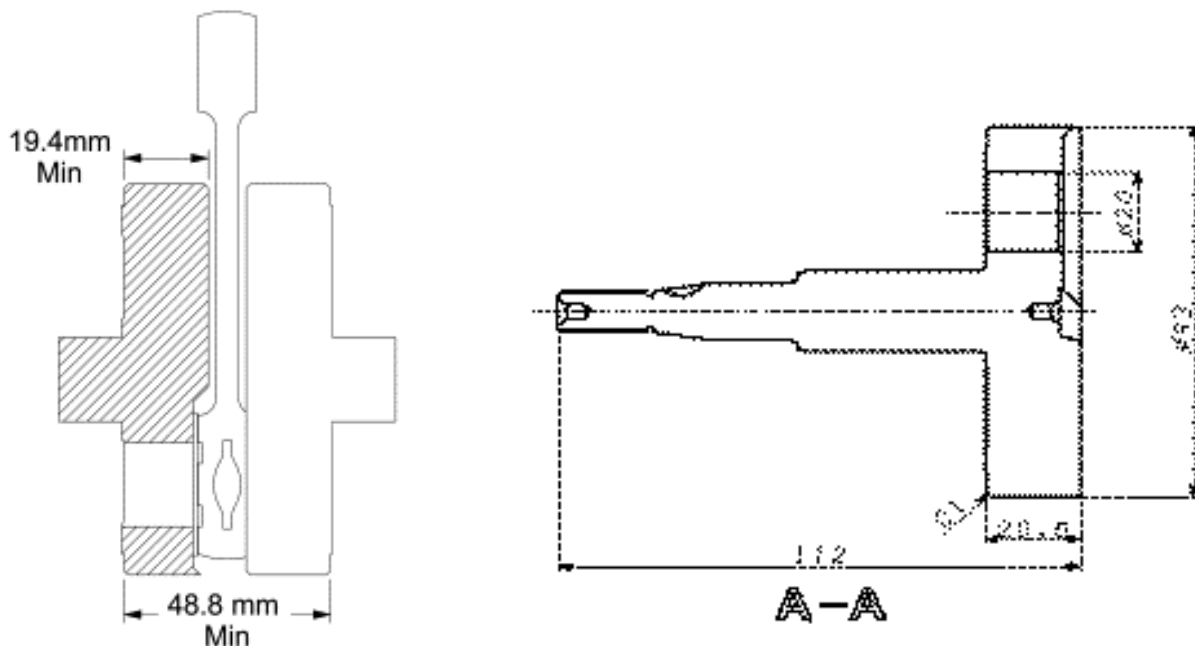
- Legal pistons are Yamaha, KSI or Strike with cast piston crowns or "Strike evolution 1" with machined piston crown.
- All piston crowns to be as manufactured with 100mm radius.
- Minimum 25.9mm from the top of the gudgeon pin to outer edge of the piston crown.
- It is permissible to notch the piston to accept earless circlips.
- Chamfer on skirt of piston to be not more than 0.9mm maximum.
- The piston skirt length may be machined, providing it conforms to the current specifications as laid down in these rules. Note: Skirt length must be equal distance on both sides.
- At no point on the inside of the skirt (of a shortened piston) can the chamfer be greater than that allowed on the outside of the skirt.

2.5 Connecting Rod

Can be either of the following:

- Yamaha (P/N 50W-11651-00, P/N 397-11651-00, P/N 787-11651-01 or P/N 7F6-11651-02) or
- KSI – No polishing or shot peening allowed.

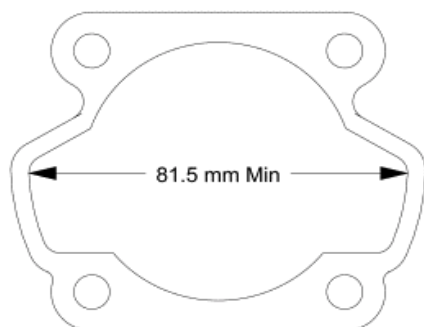
Minimum/Maximum rod length, centre to centre 99.87mm – 100.13mm.



2.6 Crankshaft

- Must be stock and have a minimum width across top of the crankwheel of 48.8mm. Plugging of the counter- balance recesses, shot peening, or polishing are forbidden. Crank pin to be standard solid pin.
- The minimum diameter of the crankshaft is 92.7mm. It is permissible to recondition the crank shaft main shaft plating. Repair the drive side crankshaft end, where the threaded section has broken off by drilling and tapping the centre of the crank to accept an M6 or M8 screw.

2.7 Crankcase



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- The crankcase ports will remain as cast.
- The minimum chordal distance measured with a vernier caliper across the widest section of the transfer ports shall be 81.5mm minimum.
- NOTE: Existing crankcases that are narrow may be spaced with a thicker gasket.
- DIAGRAM IS FOR DIMENSIONAL REFERENCE ONLY

2.8 Ignition

- Must be external rotor type and OEM supply.
- Both CDI and TCI ignition units and Stator Coils as supplied by Yamaha are eligible.
- No modifications or internal repairs to the "black box/control module" or stator coils on the TCI and CDI ignition system with the exception of the spark plug lead, which can be repaired externally only.
- No CDI unit shall vary more than one (1) degrees between 5,000 rpm and 10,000 rpm.
- It is permissible to repair/replace the connector for both CDI and TCI modules and mating wire.
- Maximum inside diameter measurement of the ignition rotor to be 62.00mm.
- The TCI rotor may be used as a replacement for the CDI rotor. Repolarising of the rotor is permitted.

IGNITION ROTOR

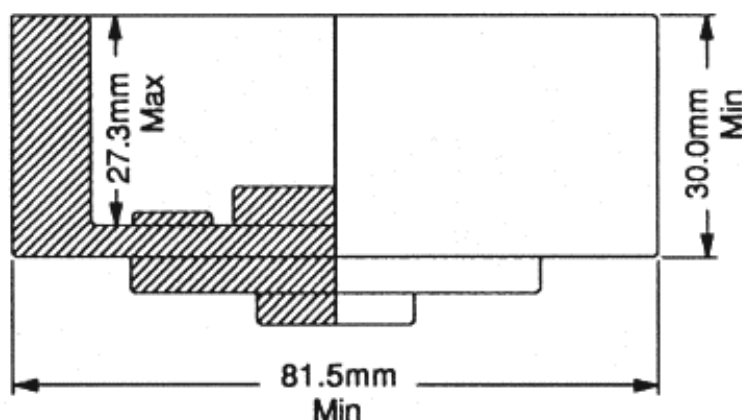
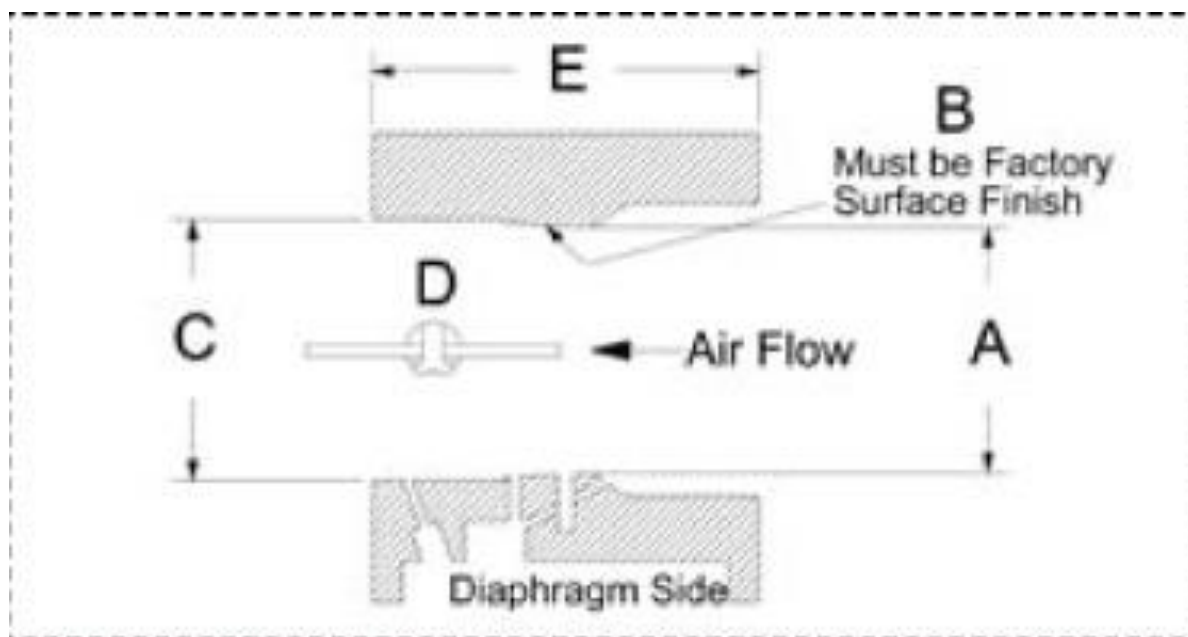


DIAGRAM IS FOR DIMENSIONAL
REFERENCE ONLY

3.0 Carburettor

Must be Walbro WB series conforming to dimensions as per diagram. (Note – WB 24 is not eligible).



Measurement code:

- A: As cast MAX Venturi diameter 24.13mm
- B: As cast (area will extend from the front of the carburettor to the progression discharge jet which must have all or portion of this jet in the cast area.)
- C: MAX downstream diameter 25.7mm
- D: Butterfly shaft must be located at the bore centre.
- E: MIN carburettor body length of 37.5mm

(DIAGRAM IS FOR DIMENSIONAL REFERENCE ONLY)

- a) It is permissible to machine the Walbro carburettor body to:
 - Conform to dimension E;
 - Conform to dimension C (provided the machined bore and face remain visually concentric to the cast area);
 - Accept an O ring for the low speed jet and throttle shaft.
- b) A threaded butterfly screw must be retained, countersunk screws are not permitted. Butterfly and shaft must be as manufactured.
- c) It is permissible to repair the inlet seat and throttle shaft bore in the Walbro carburettor. Carburettor bore may not be sleeved.
- d) It is permissible to enlarge only existing fuel / air holes, but they may not be deleted or relocated. The holes must be the same shape as originals when viewed externally.
- e) All air must pass through the carburettor throat.
- f) Adjustment of carburetor jet needles must be done by manually turning the jet needle (or its extension) only.
- g) Carburettor throttle cannot be actuated by electro mechanical means.
- h) It is permissible to fit a mechanical stop to limit the range of carburetor jet needle movement, however no modifications to the carburetor are permitted to mount such a stop.
- i) Where internal inspection is required, the carburettor will be impounded for further inspection by a State Technical Officer.

3.1 Pressurised Fuel Systems

- Fuel pump or pressurised fuel systems are forbidden.
- Squeeze type pump between fuel tank and carburettor is permitted.

3.2 Phenolic Spacer

To remain as moulded by Yamaha Factory and conform to diagram below. Drilling of the phenolic spacer mounting holes permitted. Sealing face may be re-faced.

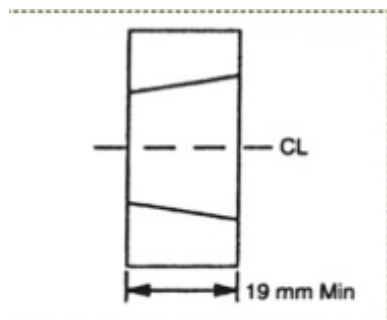


DIAGRAM IS FOR DIMENSIONAL REFERENCE ONLY

4.0 External Modifications

External modifications, which do not in any way affect a performance gain, are legal.

4.1 Internal Parts

All internal parts must be finished as per Yamaha Factory specifications.

4.2 Internal Additions

- No additional material may be added except in the case of engine repairs and shall only restore engine or components to original specifications. The cylinder may NOT be repaired in any of the port or passage as cast areas.
- The use of thermal barrier coatings / ceramic coatings on or in the engine / engine components and on or in exhaust components is prohibited.
- The use of anti friction coatings on or in the engine / engine components is prohibited.

4.3 Legal Additions

Legal additions shall be limited to the following: Chain guard, motor mount, direct drive gear, extension of carburettor jet needles, carburettor return springs, third bearing and adapter, temperature gauge and tachometer.

4.4 Non-tech Items

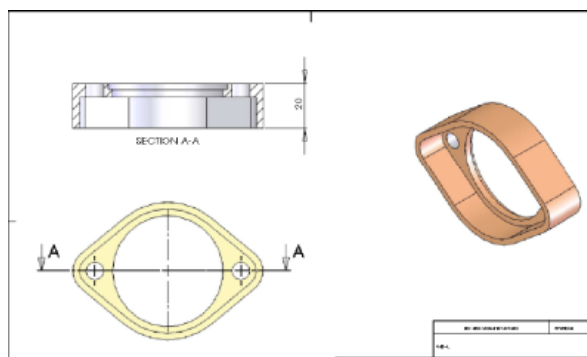
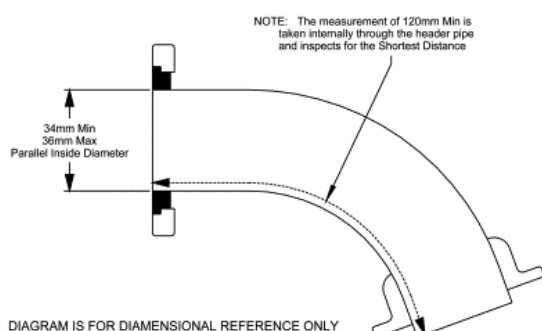
Non-tech items are gaskets, seals, big end roller/cage, little end spacers, rings, washers, cages, fasteners, fulcrum spring (carburettor meter levering spring), spark plug and spark plug lead and cap, gudgeon pins, main bearings, coolant sealing "O" rings, engine sprocket and key.

- Non-tech items are to be of the same type and style as the original. No alteration from the original manufacturer's specifications is permitted to fit a non-tech item.
- Head gasket/s must be retained.
- Cylinder base baskets are dimensionally free.
- Carburettor base and phenolic spacer gaskets are dimensionally free.
- Only crankcase half gasket may be formed from liquid gasket compounds.
- Cylinder base adjusting shims/spacers may be of any material and must be of uniform thickness.
- Spark plugs must have a maximum engagement length of 20mm without the washer.
- A direct drive sprocket (complete) cannot weigh more than 100 grams.
- A direct drive sprocket retaining nut cannot be made from a hex material greater than 19mm AF.
- Pull start and electric start systems are non-tech.

5.0 Exhaust Header Pipe

The Exhaust Header Pipe is not restricted to the original Manufacturer, but must conform to the type (style) and of the original header pipe:

- Inside diameter must be parallel.
- Minimum Length permitted 120mm (as per diagram below)
- Maximum inside diameter of 36mm.
- Minimum diameter 34mm. Refer diagram
- It is permissible to stiffen the exhaust flange to the extent shown in the drawing.
- The maximum length from the engine side face of the flange to the end of any stiffening is 20mm.
- Any stiffening must not interfere with the fitting of exhaust seals.
- Modifications to fit an exhaust probe are permissible. A maximum of one (1) Exhaust probe/fitting is permitted.
- Exhaust header studs must remain in their original position.

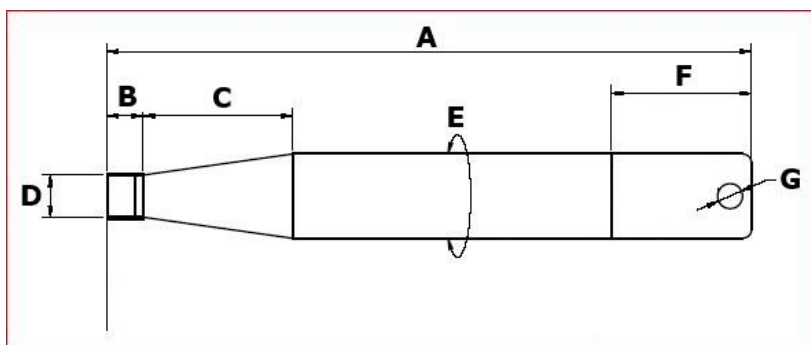


5.1 Exhaust System

- Must be such as to carry the exhaust gases away from and to the rear of the driver.
- Exhaust gases must all pass through the exhaust header pipe and the muffler and silencer (if mandatory) at all times.
- Mufflers must conform to the Technical Regulations in regards to maximum noise levels.
- The open end must point in such a way so that it does not present a hazard to other drivers.
- Muffler must be securely fastened with springs to a mounting bracket cradle and to the header pipe of the engine. A secondary fastening system, comprising a multi-strand wire (as used in throttle cables) to be secured through a fixing lug or a similar attachment (e.g. hose clamp) on the muffler and must be attached to the kart frame.
- It is permissible to use, externally, heat proof wrapping between the springs and exhaust cradle and the springs and flex.

5.2 Exhaust Muffler

- Any commercially available mufflers conforming to the dimensions below may be used.
- The main section must measure the same outside circumference for its entire length. This does not include any heatshield, brackets or attachments e.g.: safety wires or safety spring retainers.
- No device capable of being moved whilst racing is permissible in or on the exhaust muffler.
- It is permissible to weld a fixing lug to the external surface.
- With the exception of repair to fixing points, any attempt to repair damage, or alter the muffler by cutting, welding or fabrication will automatically remove eligibility of the exhaust muffler.



Reference	Description	Size in mm
A	Overall length	650-680mm
B	Internal tail pipe length	38mm
C	Inlet pipe to first weld (cone length)	150-180mm
D	"Internal diameter" tail pipe inlet	46.0 +/- 1mm
E	Circumference	278-292mm
F	Maximum end cap length	150mm
G	Maximum diameter outlet hole	26.3mm

Dimensional References:

Unless specified as a maximum measurement, all dimensions are subject to [Technical Regulations – General Tolerances](#).

- a) Any measurement related to welds, will be taken to the centre line of the weld.
- b) The exhaust header pipe and muffler can be joined by a pipe or flexible tube with a constant wall thickness, ends must be within 5 degrees of perpendicular to the centreline of the tube, min 36mm ID, max 46.5mm OD these being an absolute size all TOLERANCES included.
- c) Exhaust spacers are allowed and must be of material equal to the permitted size of the joining exhaust flex or pipe, be of parallel bore, and within 5 degrees of perpendicular.

6.0 Clutch

The only permissible clutches to be used with the Yamaha KT100J engine are the following:

- Strike SSS AKA # 38
- Drive belt pulley AKA # 52 (Strike SSS clutch) only
- Ital Red AKA # 55 (long shaft)
- Tomar TD22 AKA # 56
- Zedtec ZD1 Long shaft