



YAMAHA

KT100SEC

(ELECTRIC START)

TECHNICAL SPECIFICATIONS



UPDATED JANUARY 2012



YAMAHA KT100SEC (ELECTRIC START) ENGINE TECHNICAL SPECIFICATION

Preamble:

The following are the Technical Specifications for the Yamaha KT100SEC (ELECTRIC START) engine, as approved by the Australian Karting Association.

This engine is approved for use in the following classes.

- Junior Clubman
- Clubman Light
- Clubman Heavy
- Clubman Super Heavy
- Over 40's Clubman
- Yamaha TAG 100

Unless otherwise specified, the engines must be original in all their components according to the Yamaha KT100SEC drawings.

Any removal, addition or polishing of material is strictly forbidden.

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.

IF THESE SPECIFICATIONS DO NOT SAY YOU CAN MAKE A MODIFICATION, THEN YOU CANNOT.

SEC 1.01 Engine Displacement:

As an "out of the box" engine, the bore diameter, stroke length and displacement are;

BORE	STROKE	DISPLACEMENT,
52.00mm	46.00mm	97.6cm ³

The maximum piston size is 52.75mm.

SEC 1.02 Cylinder:

No modifications, grinding or machining is permitted. The minimum cylinder length is 81mm.

SEC 1.03 Cylinder Base Gasket:

A cylinder base gasket, of similar type and style as supplied with the engine must be used, and may be of any material, the minimum thickness allowed is 0.35mm.

SEC 1.04 Cylinder Head:

Must be of original engine manufacturer and marked with the word YAMAHA and conform to drawings supplied by manufacturer. The distance from the spark plug sealing surface to combustion chamber sealing face shall be 32.00mm +/- 0.1mm.

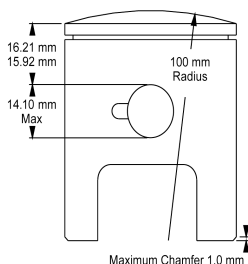
SEC 1.05 Head Gasket:

A head gasket must be retained; the minimum allowed thickness of the head gasket shall be 0.40mm.

SEC 1.06 Cylinder Head Volume:

The combustion chamber volume must have a minimum of 11.5 cc (Refer rule 26.01)

SEC 1.07 Piston:



Maximum allowed piston size is 52.75mm, and must be a genuine Yamaha.

Minimum length 59.2mm and as per drawing, no modifications permitted.

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.

SEC 1.08 Conrod:

Min/Max Length centre to centre 99.87mm (min) -100.13mm (max) Yamaha only

(i) Yamaha "J" conrod is not eligible



YAMAHA KT100SEC (ELECTRIC START) ENGINE TECHNICAL SPECIFICATION

SEC 1.09 Crankshaft:

Must be of original engine manufacturer and conform to drawings supplied by manufacturer – The KT100 SE/SD crankshaft with alloy balance weights is the only one to be used in the SEC engine.

- (i) It is permissible to recondition the crankshaft main shaft by plating.
- (ii) No machining permitted. The minimum crankshaft diameter is 86.8mm

SEC 1.10 Crankcase:

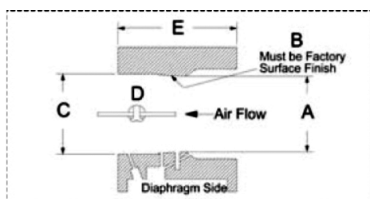
Must be of original engine manufacturer no machining permitted

SEC 1.11 Ignition:

Yamaha TCI Type AF Model 49011 as supplied with engine only must be used.

SEC 1.12 Carburettor:

Walbro Model WB3A as supplied with engine, NO modifications allowed.



Measurement code:

- A As cast MAX Venturi diameter 24.13mm
- B As cast (area will extend from the front of the carburetor 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

(a) It is permissible to machine the Walbro carburettor body to

- (i) conform to dimension E
 - (ii) conform to dimension C
 - (iii) 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) Allowed to have adjustable (extended) low jet mixture screw, (flex jet).
 - g) Adjustment of carburetor jet needles must be done by manually turning the jet needle (or its extension) only.
 - h) Carburettor throttle cannot be actuated by electro mechanical means.
 - i) 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.

No internal inspection required, ie covers will not be removed and only external measurements and visual inspection taken.

SEC 1.13 Internal Additions:

- (a) The use of thermal barrier coatings / ceramic coatings on or in the engine / engine components and on or in exhaust components is prohibited.
- (b) The use of anti friction coatings on or in the engine / engine components is prohibited.

SEC 1.14 Air Box Adaptor:

Air box adaptor must be original Yamaha as supplied with the engine.

SEC 1.15 Airbox: (Noise induction silencer)

Refer Chapter 25.24 of the AKA Manual.

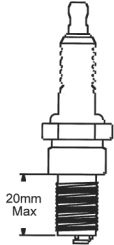
SEC 1.16 Non-tech Items:

- (a) Non-tech items are gaskets, seals, big end roller/cage, little end spacers, rings, washers, cages, fasteners, fulcrum spring (carburetor meter levering spring), spark plug and spark plug lead and cap, gudgeon pins, main bearings, coolant sealing "O" rings, engine sprocket and key.
 - 1. Unless specified, 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.
 - 2. Head gasket/s must be retained.



YAMAHA KT100SEC (ELECTRIC START) ENGINE TECHNICAL SPECIFICATION

3. Cylinder base baskets are dimensionally free
4. Carburettor base and phenolic spacer gaskets are dimensionally free
5. Only crankcase half gasket may be formed from liquid gasket compounds
6. Cylinder base adjusting shims/spacers may be of any material and must be of uniform thickness.
7. Spark plugs must have a maximum engagement length of 20mm without the washer.



8. A direct drive sprocket (complete) cannot weigh more than 100 gms.
9. A direct drive sprocket retaining nut cannot be made from a hex material greater than 19mm AF.
10. Pull start and electric start systems are non-tech.

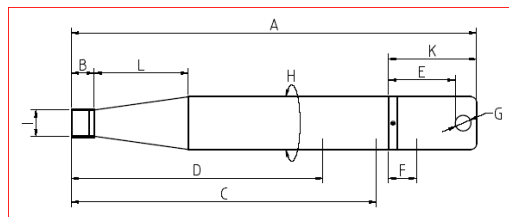
SEC 1.17 Header Pipe:

A genuine original equipment standard Yamaha swivel header pipe without modification (as supplied by Yamaha or OE for the KT100J and KT100SE/SD engines) may be used.

SEC 1.18 Exhaust System:

1. Must be such as to carry the exhaust gases away from and to the rear of the driver.
2. Exhaust gases must all pass through the exhaust header pipe and the muffler and silencer (if mandatory) at all times.
3. Mufflers must conform to Rule 24.2 of the AKA manual with respect to noise level. (Supplementary Regulations may allow for a lesser noise level.)
4. The open end must point in such a way so that it does not present a hazard to other drivers.
5. 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 fixed to the chassis, excluding rear bumper bar to prevent the exhaust system detaching from the kart.
6. It is permissible to use, externally, heat proof wrapping between the springs and exhaust cradle and the springs and flex.

SEC 1.19 Exhaust Muffler: AKA 39 CONTROLLED EXHAUST MUFFLER



Reference	Description	AKA 39
A	overall length	680mm
B	internal tail pipe length	38mm
C	tail pipe to baffle length	508mm
D	tail pipe to deflector length	422mm
E	exhaust outlet hole position	112mm
F	end cap to baffle	47mm
G	maximum diameter outlet hole	26.3mm max
H	circumference	280mm
I	"internal diameter" tail pipe inlet	46.0 +/- 1mm
J (not shown)	maximum diameter of internal baffle plate hole	N/A
K	end cap length	148mm
L	inlet pipe to first weld (cone length)	158mm



YAMAHA KT100SEC (ELECTRIC START) ENGINE TECHNICAL SPECIFICATION

Dimensional References:

Unless specified as a maximum measurement, the following dimensions are subject to Rule 26.02 General Tolerances, in the AKA Manual.

- (a) No device capable of being moved whilst racing is permissible in or on the exhaust.
- (b) The only permissible exhaust muffler for classes using the KT100SEC engine is the control pipe AKA 39 manufactured by Powermac. The AKA 39 exhaust pipe carries precise dimension specifications that allow confidence in equality of performance for all competitors using the KT100SEC engine.
- (c) Any measurement related to weld at either end of the cone will be taken to the centre line of the weld.
- (d) All other dimensions not specified carry stringent technical specifications. Any attempt to alter these dimensions will deem the unit illegal.
- (e) Any accidental damage (when all gasses still pass through the exhaust system as per rule 25.09.2) will not incur a technical breach of these rules.
- (f) It is permissible to weld a fixing lug to the external surface of the AKA 39 body.
- (g) With the exception of repair to fixing points, any attempt to repair damage by cutting, welding or fabrication will automatically remove eligibility of the exhaust unit.
- (h) 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. 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.
- (i) An "R" end-cap for the AKA39 control pipe is not permitted to be fitted to an AKA14 "J" body and an "R" end-cap for the AKA14 control pipe cannot be fitted to an AKA39 "S" body.

For information and clarification of Exhaust Bodies and End Caps:

- An AKA39 complete exhaust unit is identified by an alphanumerical stamp on the main body at the inlet end, and on the end-cap. (Eg: S00123456)
 - An AKA39 end-cap replacement is identified by an alphanumerical beginning with R on the end-cap (: Eg R123456)
 - An AKA14 complete exhaust unit is also identified by an alphanumerical stamp on the main body at the inlet end, and on the end-cap. (Eg: S00123456)
 - An AKA14 end-cap replacement is identified by an alphanumerical beginning with R on the end-cap (: Eg R123456)
 - A pre alpha numerical AKA14 complete exhaust pipe is identified by the AKA14 stamp on the main body of the pipe and the end-cap and is eligible for competition.
- Competitors are requested to check their exhaust pipes for compliance with the new regulation.

SEC 1.20 Clutch:

The only permissible clutches are the following AKA registered clutches; refer to rule 25.17 of the AKA Manual.

- Freeline SL AKA # 44
- Strike SSS AKA # 47
- Strike SSS Evolution AKA # 47 (Yamaha long shaft) only
- KT100SEC 7yps AKA # 57
- Ital Red S Taperlock AKA # 55A (short shaft) only
- Zedtec ZD1 (long shaft and short shaft)

SEC 1.21 Electrical wiring and Starter:

Must be as supplied with the engine and battery. Connections may be replaced with non genuine items to repair damaged connectors.

SEC 1.22 These rules may be altered or adjusted as directed by the AKA at short notice.