209 Speedway Karters
KT100 IKF Flat Kart Rules

Age Requirement: Minimum age of 16 (Age subject to Race Director Approval)

1.0 Engine Rules

1.1 Rules & Intent:

A. This class is intended to be a class for

B. Birth Certificates are required for all minor drivers

1.2 Approved engines:

A. Yamaha KT100 S IKF legal

1.3 Exhaust System:

A. Open pipe and header.

1.4 Carburetor:

A. Walbro WB3A See section 616.7 of the IKF Rule Book

1.5 Fuel Tank:

A. Non-Tech. (It is recommended that for safety reasons a remote/floor mounted tank may be used.)

B. Tank must be securely fastened

1.6 Fuel:

A. Any 2cycle race fuel with no oxidizers or other illegal compounds added. Oil brand is open as long as the oil does not contain illegal additives. NO alcohol.

B. Fuel will be checked at any time with a Digatron FT64 digital fuel tester capable of detecting oxidized fuel and fuel with other illegal compounds. Fuel detected with additives must be placed in the post tech area for the remainder of the event and the racer will be disqualified for all previous qualifying, heat, or main events of that day.

C. Fuel must pass any or all of the following test: -Visual; -Continuity meter; -Gravity test, -Gas, Alcohol and Water Mix.
   - Maximum allowance is 10+ or - on meter

1.7 Clutch:

A. Any engine or jackshaft clutch.

B. Gear Ratio is open

C. No axle clutches.

1.8 Fasteners & Gaskets:

A. Non-tech but must retain their original factory size.

B. Heli-coils, studs, etc. allowed for repair purposes.

1.9 Other:

A. No traction control devices allowed. Kart must have a solid axle and fixed hubs.

B. No mirrors.

1.10 Protesting:

A. Any competitor that started the main event may protest any other competitor in the same class for legality within 15 minutes of completion of the main event.

B. Protest must be made in writing to the assigned tech steward for that race, accompanied by a $150 cash protest fee.

C. If kart in question is deemed legal, $100 will be awarded to the driver receiving the protest, if the kart in question is deemed illegal, $100 will be returned to the protesting driver.

D. See General Rules section 2.1 for more details.

2.0 General Kart and Bodywork Specifications:

2.1 Frame:

A. Frames must be of kart configuration. Not to exceed 90" in overall length.

2.2 Wheels &Tires:

A. Maximum 6" diameter kart type wheel.

B. Tires are open. Tire prep may be used.

2.3 Weight:

A. Kart and driver 390 lbs.

B. Specified karts and drivers must go to scales after A main event or will be disqualified and will forfeit any money or points for that event.

C. All weights added to the kart must be securely fastened to the kart with a minimum 5/16-inch diameter bolt that is double nutted, or safety wired.
- If weight is attached to the seat area a large "fender" washer must be used.

D. Kart Weight must be displayed on the engine shroud or top plate to aid track officials at the scales.

E. Any kart that loses a weight will be disqualified from that session and lose points/position from that session.

2.4 Bodywork:

A. All bodywork components must be constructed of high strength plastic, fiberglass, or advanced composites.

B. No metallic materials to be used for side panels or front nose piece.

C. Bodywork must not obstruct the driver's forward or peripheral view.

D. No panels or bodywork may cover the drivers head.

E. All karts must have body work or bumpers that protect the leading edge of the front tires from contact with another kart.

F. No sharp edges or protruding parts.

2.5 Bumpers and Nerf bars:

A. All karts must have front bumpers that adequately protect the driver's feet.

B. Karts must have nerf bars that adequately protect the kart from side impact and will prevent karts from "hooking" wheels.

C. "Speedway" style rear bumpers are required and must extend to at least the centerline of the rear tires.

2.6 Brakes:

A. Hydraulic brakes are mandatory

B. Brake rotor must have a guard "wolf plate" to protect the seat from contacting the brake rotor in the event of a seat mounting failure.

3.0 Tech:

3.1 Tech Procedures:

A. After the main event the top 5 karts will proceed to the designated tech area, at this point the kart will be considered "impounded".

B. Karts will be inspected in their finishing order.

C. Drivers/Crew will be required to assist with removal of parts, drain their oil, and to help facilitate the technical inspection on their kart.

D. See General Rules section 5 for more details.

3.2 Tech Items:

A. Post Tech items will include but are not limited to ALL sections of the rules.

B. Fuel for additives.

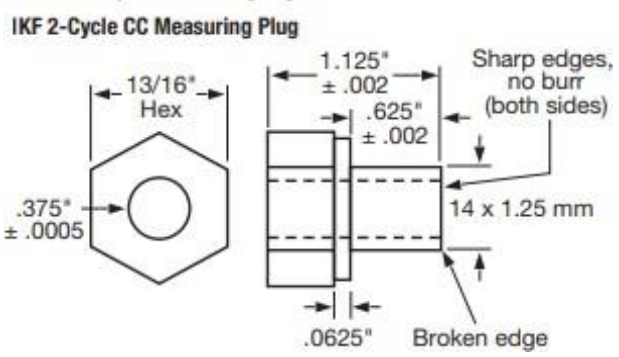
602 TECHNICAL INSPECTION PROCEDURES From IKF Rule Book

602.1 Checking Head Volume

602.1.1 Head volume is to be checked with the following tools: Burette and IKF 2 Cycle CC Measuring Plug.

602.1.2 Burette: Must be glass with Class A certification, or electronic accurate to 3 decimal places.

602.1.3 IKF 2-Cycle CC Measuring Plug



11cc minimum (see 617.7)

Notes: When reading the fluid level, use the bottom of the meniscus as the reference. Hold a finger behind the burette and slightly below the fluid level. When held up to the light, the fluid level, using the bottom of the meniscus, will become much more distinct. This tech procedure should only be performed after the engine has cooled to ambient temperature to ensure that a legal engine is not disqualified due to thermal expansion of the petroleum fluid used to check the combustion chamber volume.

602.1.4 Fill the burette with the appropriate fluid (Marvel Mystery Oil), minimizing the amount of air bubbles formed during the filling process. Allow sufficient time for all air bubbles to rise to the surface.

602.1.5 Bleed all air from the stopcock and outlet stem. Run fluid out of the burette until the lowest point on the shadow formed by the fluid surface is in line with top of the starting cc mark.

602.1.6 Install 2-Cycle cc Measuring Plug and torque to 90 in. lbs. minimum. Set the piston level of the engine to be inspected at .050 - .150 inches before top dead center. Before dispensing the fluid into the engine, show the burette to the driver, car owner, or mechanic of the engine to be checked (only one person can be with the engine). Show the starting point and finishing point to the respective person and explain the procedure. (The reason for this explanation is that this test is to be done only once. Tech inspector does have the option to retest if time permits; no head removal; wash through exhaust port with Brake Clean only [dries fast] and allow to dry before retest.) With the centerline of the spark plug hole in a vertical position, dispense the specified quantity of fluid through the CC adapter hole into the combustion chamber one CC shy of total CC. Wait 15 seconds and dispense the remaining CC. (This is to allow the residue left on the wall of the burette to be added to the engine.) Reading of the fluid level shall be done the same as in 602.1.5.

602.1.7 Slowly turn the crankshaft of the engine causing the piston to rise to top dead center. If any fluid rises to above the level of the top of the 2-Cycle CC measuring plug, the engine is illegal.

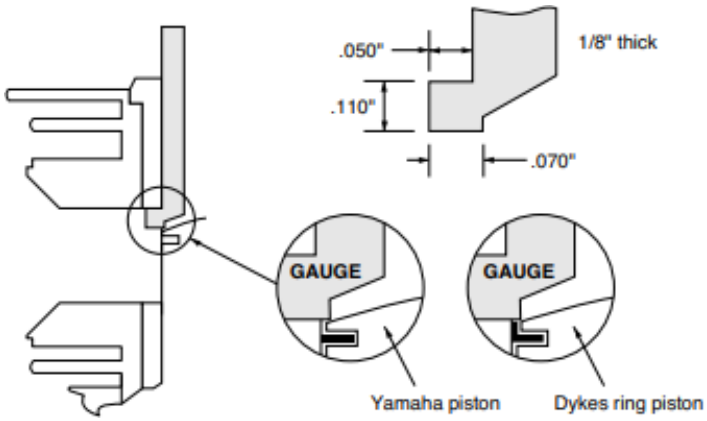
602.2 Checking Exhaust Port Height (The purpose of the exhaust check and intake gauge is to control the actual timing of these parts. Any means to circumvent the intent of these rules shall be illegal.)
To check exhaust port height, use a dial indicator. When checking exhaust port height, torque for the dial indicator bridge is not to exceed 150-inchpounds. Zero the indicator to top dead center then rotate crank until piston has traveled just past the allowable distance of the particular engine being checked. Then insert the exhaust check gauge between the controlling edge of the piston and the top of the highest exhaust port. Roll piston up until gentle contact is made. Indicator reading must now be the same, or greater than the stated dimension for the particular engine being checked.

Notes:

602.2.1 Exhaust gauge should be held against top of exhaust port roof.

602.2.2 For pistons with dykes top ring, the top edge of the ring is considered to be the controlling edge.

602.2.4 Exhaust Check Gauge: Piston Port



Port Height Check before top dead center (minimum)

Yamaha KT100S, Komet K-71, KPV/HPV = 1.155

Note: If, at the controlling edge of the exhaust port, a chamfer is present, the following visible light break check shall be used:

602.2.5 Visible Light Break Exhaust Ports Height Check

Zero dial indicator at top dead center then rotate crank until piston has traveled just past the allowable distance for the engine being checked, then roll the piston up to the dimension listed under visible light break check. Shine outside light beam directly into the center of the bore. No light shall beam thru exhaust port when piston and ring are at listed dimension. See chart.

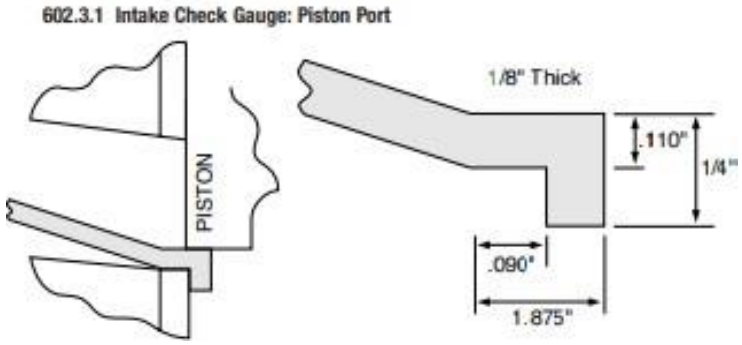
This additional tech procedure was derived from the subtraction of the .110 thickness of the LAD tool plus .015 for port and ring chamfer. This will equal .125 which was deducted off of our standard LAD gauge dimensions.

Note: The light must directly beam through the chamfer when viewed directly from the header side of the exhaust port.

602.3 Inlet Opening, Check at Top Dead Center: (The purpose of the exhaust check and intake gauge is to control the actual timing of these parts. Any means to circumvent the intent of these rules shall be illegal.)

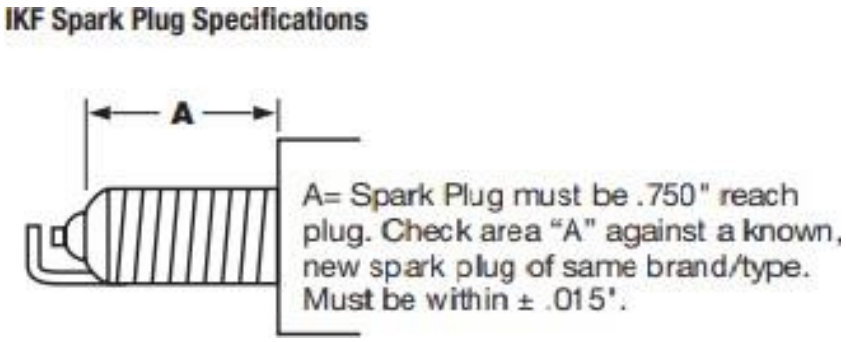
Inlet opening is checked by holding gauge against bottom of the inlet tract with inlet manifold and gaskets removed. Piston is then rotated to gently contact the gauge.

602.3.1 Intake Check Gauge: Piston Port



Inlet Opening, Check At Top Dead Center (Maximum)
Yamaha KT100S, Komet K-71, KPV = .775

602.4 Spark Plug Specifications



603 GENERAL NOTES

603.1 Carburetors

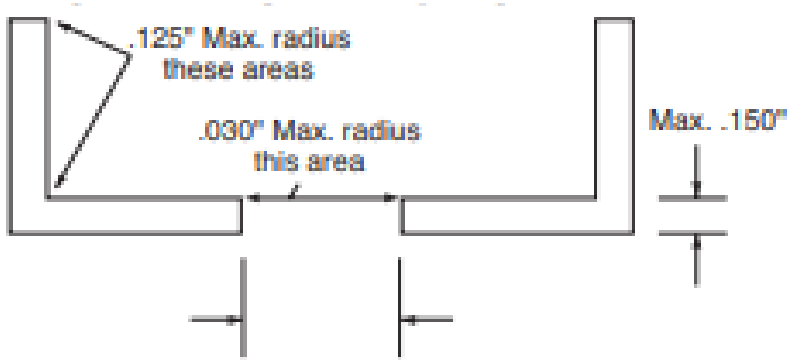
603.1.1 O-ring and/or sealing devices are approved for carb shafts. This includes the machining of the carb body to install the sealing device.

603.1.2 Button head screws may be used in carb shafts. All 2-Cycle engines, all 2-Cycle classes.

603.1.2.1 Extensions may be added to carb adjustment needles to assist in carb tuning. All 2-Cycle engines/classes.

603.1.3 Air Filter/Silencer Adapter

AIR FILTER ADAPTER - ALL CLASSES EXCEPT OPEN OR WHERE OTHERWISE NOTED



Comer K80 1.050" Min.
Walbro & HL 1.150" Min.
(Bolt bosses on HL allowed)
HR & Mikuni 1.450" Min. (see 603.2.15)

616 STOCK 100CC PISTON VALVE: Refer to 2007 Competition Regulations and Technical Manual.

616.7 Walbro WB3A Carburetor:

Note: Sections 616.7 through 616.7.3 do not apply to engines under Section 621.2. See Section 621.2.7 for carb information for these engines.

Must be of original manufacture and stock appearing. Fuel can only pass through stock metering orifices. Any means taken to bypass fuel to the engine in any other manner is illegal, no matter how it is accomplished. Any components not specifically called out must be stock appearing. Inlet spring is a non-tech item. Carburetor may be run in either position.

No machine work or metal removal of throttle shaft allowed. Shaft may be sealed with “O” rings. No sleeving of throttle shaft bore allowed.

Both screens must be intact at circuit plate and under inlet needle. Filtering devices to protect metering diaphragm allowed. No means of depressing diaphragm allowed.

Fuel Inlet: funneling of brass inlet illegal.

Shims are allowed under metering spring to adjust pop-off pressure.

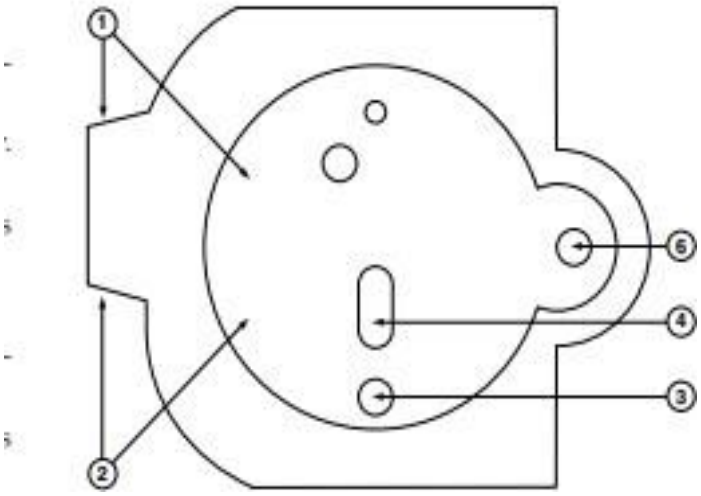
No sleeving of throttle shaft bore allowed.

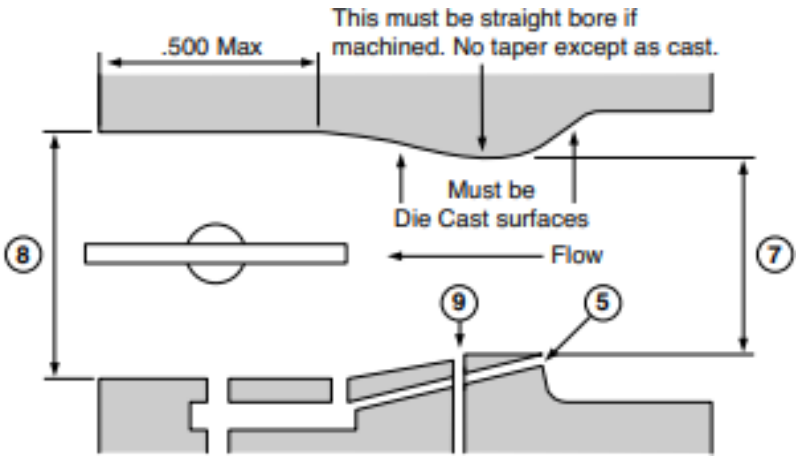
616.7.1 Yamaha KT100S, DAP T50, PCR PP100, TKM BT-82, Komet K-71, KPV, Comer P-50

1. High speed needle seat	.081 No-Go
2. Low speed needle	.0595 No-Go
3. Idle Jet	.042 No-Go
4. Transition Jet	.052 No-Go
5. Air pre-mix orifice	.042 No-Go Max.
	.032 No-Go Min.
6. Fuel inlet valve seat	.064 No-Go
7. Diameter at narrowest part of venture	.950 No-Go
8. Diameter at flange end	1.010 No-Go
9. High speed jet	.074 No-Go

(Check with bent gauge from inside venturi)

Note: No-Go definition, refer to Section 509.





(Walbro Carburetor WB3A)

616.7.2 Fuel Pump Diaphragms: Either Teflon or rubber types are legal.

616.7.3 Fuel Passage Holes: All fuel passage holes on fuel pump side are .140" no-go. (Note: some older carbs may have cast radius at top of holes) No-go drill blank may start into brass inlet tube but may not go through.

617 YAMAHA KT 100S

NOTE: Any attempt to modify, change, or defeat any of the basic design criteria of the Yamaha KT100S engine is illegal.

617.1 Displacement:
Maximum Bore 2.090 Maximum Stroke 1.816

617.2 Cylinder: All ports are to be in “as cast” condition except at the junction of the cast iron sleeve and aluminum jacket. Factory grinding is permitted to remove casting irregularities at the junction only. **No chamfer on port edges.**

This rule does not allow:

617.2.1 Grinding the aluminum to change the roof angle of the transfer ports.

617.2.2 Grinding the port to alter the height, width, or angle.

617.2.3 Grinding to change the shape or size of the passages from the cylinder base to the port.

617.2.4 Grinding to match the cases to the port passages (when cylinder is or is not reversed.)

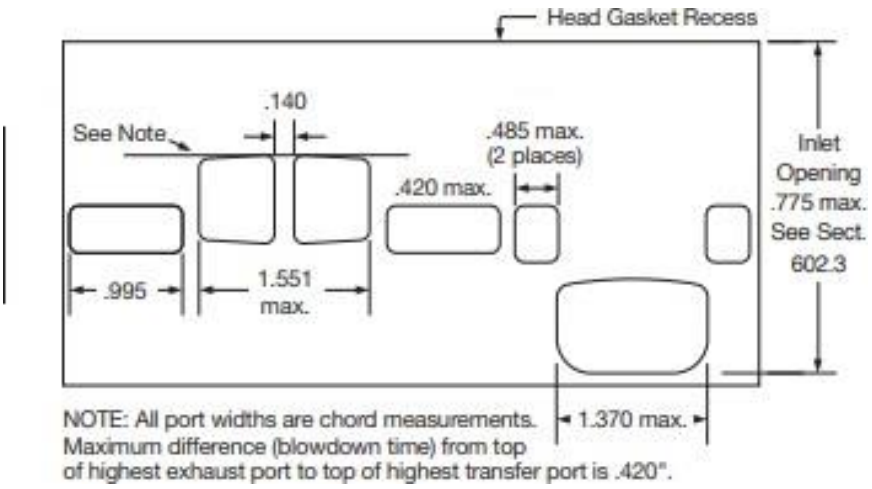
617.2.5 Sandblasting, glass beading, peening, etc. are not a substitute for “as cast” condition.

617.2.6 Due to the manufacturing procedures, it is possible that some engines may have slightly "broken" port edges. When this exists it is uniform on all port edges (tops, bottoms and sides) of all ports in the cylinder. The intersection of the port edges and the cylinder wall must still be within tech measurements. As the bore size increases the amount of "break" diminishes. If the cylinder bore size is 2.065 or larger, no "broken" edges are allowed.

617.2.7 Cast iron may show grinding nicks only. Aluminum only may be blended in the inlet track behind carb and exhaust outlet areas only. Aluminum surfaces non-tech in these two areas only. Maximum no-go exhaust 1.600.

617.2.8 Blowdown Checking Procedure for Yamaha KT100S Engines:

1. By a careful visual inspection, identify the highest exhaust port and the highest transfer port.
2. Using the Lad tool, zero the dial indicator on the highest exhaust port, taking care to hold the shaft of the tool against the cylinder wall. Refer to Section 602.2.4 for Lad Tool Usage.
3. Roll the crankshaft backwards five turns (.500" on the dial indicator).
4. Insert the Lad tool into the highest transfer port, holding the shaft of the tool against the cylinder wall.
5. Roll the crankshaft forward until the piston stops on the Lad tool and note the value.
6. The value must be between .380" and .420" to be considered legal.
7. Engine to be checked as raced.



617.3 Inlet Opening: .775 ATDC (maximum). See Section 602.3.

617.4 Cylinder Position: It is legal to turn the cylinder and piston 180 degrees on the Yamaha KT100S. Matching of the transfer passages in the case and cylinder is not legal.

617.5 Exhaust Port Opening: Check with dial indicator. Piston travel from top dead center to exhaust opening 1.155 ATDC (minimum). See Section 602.2.

617.6 The Exhaust Port Rule: On old cylinders, one and only one exhaust port opening can be ground upon. This includes bottom, sides and top of that one port opening. The cast iron can be ground on. The other exhaust port opening must be in "as cast" condition on the cast iron. aluminum surface will remain non-tech. Great care must be taken not to remove too much cast iron on the .140" minimum rib width side. Widening of this port is allowed, but 1.551" is the no-go size. New cylinders are still "as cast" in all port areas, including exhaust.

To specify a new type cylinder a boss with 787 and Y3 or Y4 is located between the bottom and first fin approximately in the center of the cylinder. One boss each side.

617.6.1 New Style Y3 or Y4 Tech Procedures: Tech will be done using new dimensions listed and must still follow items 1 thru 7. No grinding on cast iron on these cylinders. Any means taken to revoke or alter identification boss will result in that cylinder being teched as a new style.

617.6.2 Old Style tech will be done using new dimensions listed and must still follow items 1 through 7, with the exception that one exhaust port may have the cast iron ground to bring exhaust measurements closer to specification. The remaining other exhaust port must have unaltered as cast finish on cast iron.

The competitors engine that has been ground is **required** to mark the aluminum surface on top of the cylinder next to the stud located above port altered, with an arrow or an X.

The altered port top must be ground a minimum of 90° to cylinder wall. No chamfer allowed. No freeporting of exhaust ports.

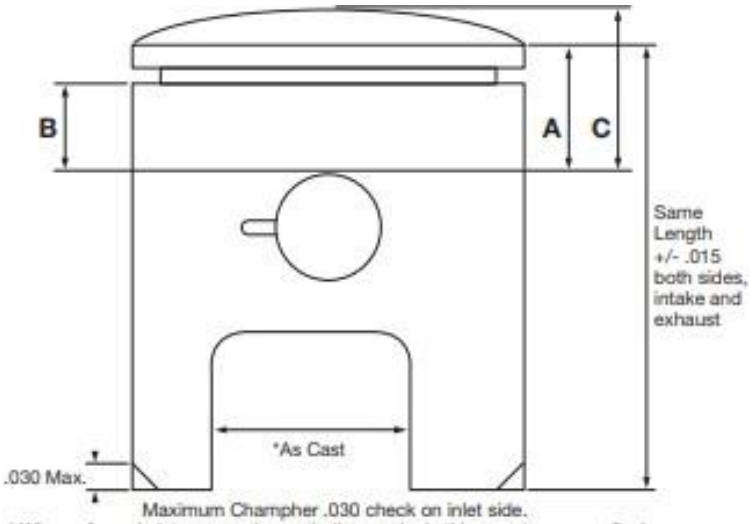
617.7 Cylinder Head: Any machining of the cylinder head or cylinder liner to accept a sealing device is illegal, unless it is stock equipment on the engine Yamaha KT100S. Head locating pins not allowed.

The combustion chamber volume shall be a minimum of 11cc. The IKF 2-Cycle CC Measuring Plug will be used. See Section 602. New die cast head 787-11111-04 is approved. Combustion chamber shape is non-tech.

617.8 Head Gasket Thickness: Yamaha KT100S. Material shall be copper or aluminum. KT100S engine to have a ring type head gasket, and a maximum OD of 2.580.

617.9 Piston: Piston must be an approved single ring only and stock appearing. Legal pistons are Yamaha, Burris, Wiseco, RKE 787, and KSI 2012. All approved pistons should have name cast inside. Bottom of piston should be 90° to sides. Transfer area of piston must be as cast, no scalloping. Piston top must be of dome shape. Burris two ring piston approved (1-dykes + 1 thin). Maximum break on all machined edges .030". Rings must be of magnetic material. See Sect. 504.1.

Piston dome must be stock shape and no metal removal. The top of the piston dome to the ring groove will be compared to a known stock piston.



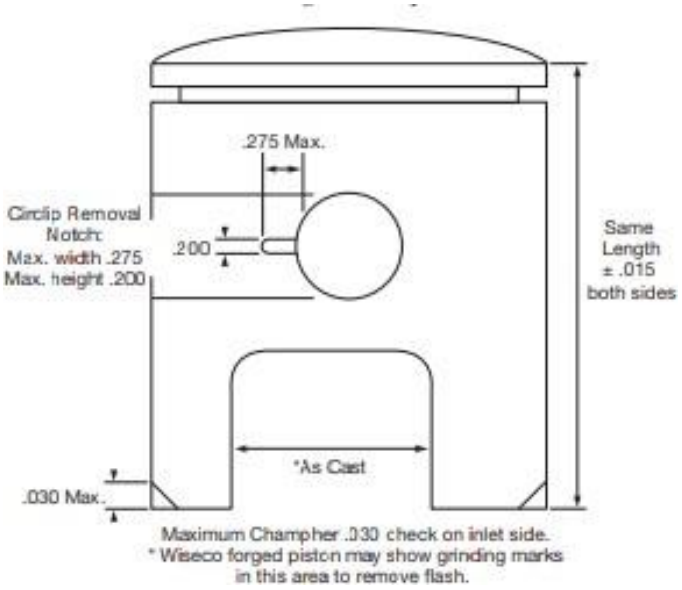
Brand	A	B	C
Burris	0.633"	0.533"	0.760"
KSI	0.629"	0.490"	0.756"
KSI 2012	0.609"	0.470"	0.736"
RKE-787	0.635"	0.489"	0.756"
Wiseco	0.635"	0.496"	0.760"
Yamaha	0.635"	0.489"	0.756"

A. Top of piston pin to controlling edge of the piston

B. Top of piston pin to top of ring groove

C. Top of piston pin to top of the piston

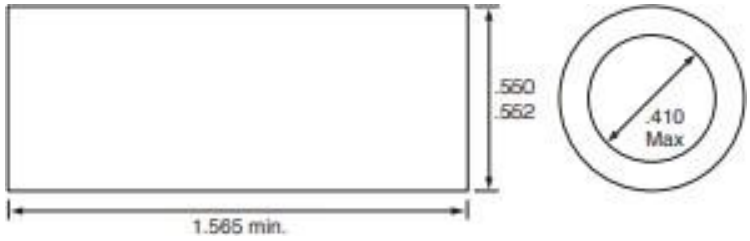
17.9.1 Yamaha engines in all classes except Open: Piston must be installed as factory intended, i.e. ring locating pin must be installed to carburetor side, resulting in wrist pin off set to exhaust side.



617.10 Connecting Rods: Rod must be of original manufacture and stock appearing. Shot peening is allowed.

Maximum rod length, center to center: Yamaha KT100S 3.932-3.942 in. No grinding and polishing is allowed. Legal rods 50W-11651-00 (light) and 7F6-11651-02 (heavy duty) are approved.

617.11 Wrist Pin: Stock Type Only - No Tapered Pins - No Coatings.



617.12 Crankshaft: Crank assembly must be original manufacture and stock appearing. Shot peening and polishing is allowed. Outside diameter measurement: Yamaha KT100S 3.410 min. 3.435 max. Concentric bushings may be applied to crankshaft journals to repair worn crankshaft. Bushings may be tack welded to hold in place. Any fastener may be used to retain bushings. No modifications other than listed. No drilling, plugging, etc. May be compared to a known stock part. May be teched by any means at the discretion of the Technical Inspector (weight, dye penetrant, x-ray, etc.).

Crankshaft weight information: Crankshaft assembly with crank savers, medium rod, Yamaha part #7F6-11651-02, ignition half, PTO Half, crank pin and plugs. Maximum weight 1830 grams. Minimum weight 1790 grams. Crankshaft assembly but, with light rod part #50W11651-00 Maximum 1815 grams, Minimum weight 1775 grams. Crankshaft assembly with two ignition side halves 30 grams lighter. The use of two ignition crankshaft halves not legal in 200 Sprint division. Weight without cranksavers deduct 45 grams. If crankshaft assembly does not meet specifications then further investigation is required to determine legality.

617.13 Spacers: The top end of the rod may use two spacers with loose or caged type bearings. Spacer material may be steel, brass or aluminum. The bottom of the rod shall have a caged type bearing.

617.13.1 Bottom location of connecting rod approved with:

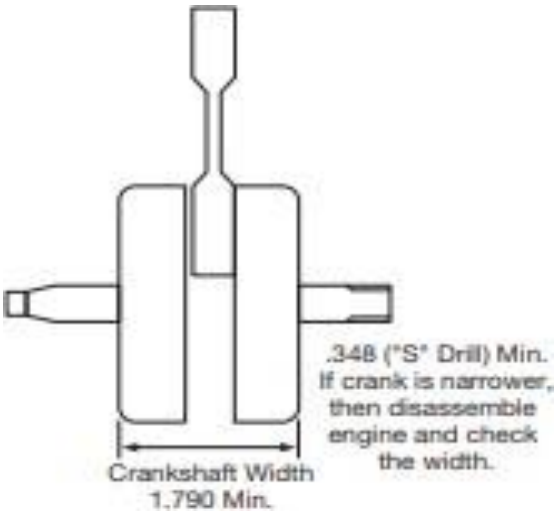
2 - 1mm lower washers
1 - 13.95mm width lower cage

Must have rod located either top or bottom, but not both.

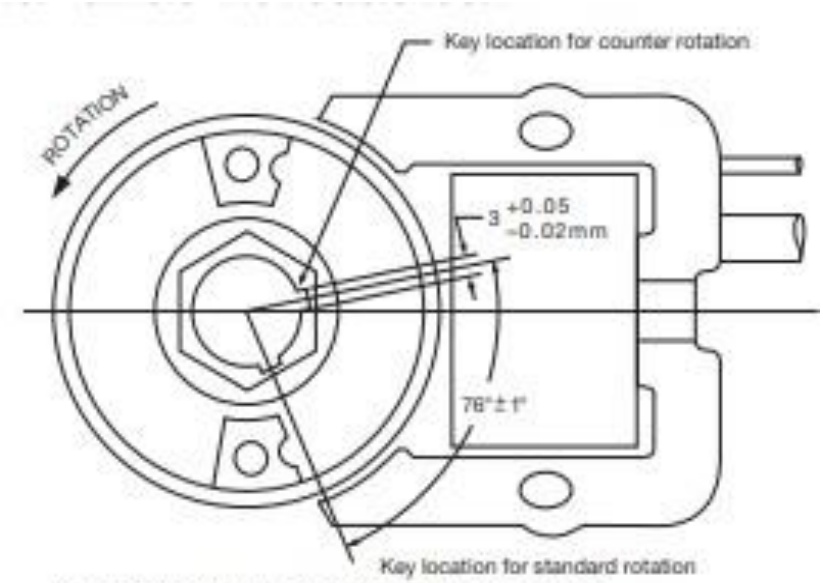
The crankpin shall be hollow and may have two steel plugs in place. Crankpin minimum ID after plug is removed is .400. Plug must be of drillable material and the competitor is responsible for removal of the plug in tech.

617.13.2 Note: New crankpin with no plugs approved. Maximum I.D. .425 No-Go.

617.13.3 No coating of crankpin allowed.



617.14 Ignition: Ignition must be of original manufacture and stock appearing. Key is required, but is a non-tech item. Any means taken to alter the coil position is illegal. Machining the shanks of coil hold-down screws to provide additional coil position adjustment is not allowed. Modifying the flywheel in any manner in order to change ignition timing is illegal. Ignition bearing may be removed. Taper bore flywheels have only one keyway and both rotations have the cast side out.



KT-100S COUNTER ROTATION IGNITION ROTOR
787-85551-70 STRAIGHT SHAFT 7F6-85551-50 TAPER SHAFT

617.14.1 New Style Flywheel: 7F6-85551-01 (Std.), 7F6-8555-51 (Rev.) are approved.

Three bosses minimum thickness in boss area .950". Length of boss .750 minimum. Main body thickness .817 minimum. Minimum diameter 2.350".

External coil damage may be repaired with silicone or epoxy.

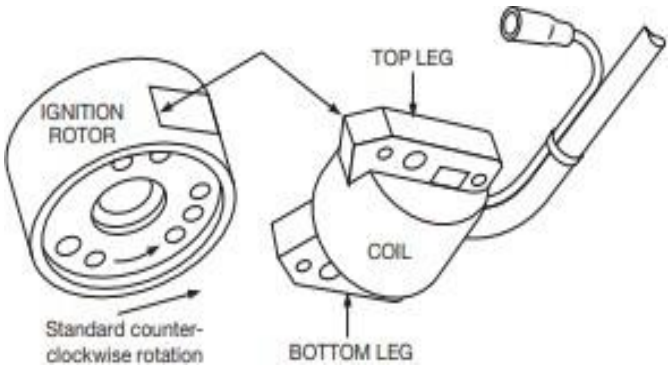
Note: The Atom ignition module is approved for the KT100S.

The PRD T.C.I. ignition is approved for the KT100S. Metal case is stamped with the letters PRD. Only one module may be used.

617.14.2 Old Type Flywheels: Minimum diameter 2.350", Minimum width .827".

617.14.3 New Yamaha ignition coil is approved. “JAPAN” is stamped on the new coil.

617.14.4 The leading edge of the ignition rotor’s magnet must line up with the trailing edge of the ignition coil’s leg when the piston is at TDC to .015" BTDC. On clockwise ignitions, the coil’s trailing edge is the bottom leg.



617.15 Carburetor: Walbro WB3, see Section 616.7.

617.16 Phenolic Spacer: Hole Size 1.050 maximum, 1.000 minimum. Maximum thickness .484". Straight bore.

617.17 Aluminum Carburetor Mount Plate: Factory stock mount plates only.

Hole (I.D.) size 1.050" maximum, 1.000" minimum. Straight bore.

Diameter (O.D.) 2.360" +/- .020".

Maximum thickness .484".

617.18 Crankcase Pulse Hole: May be relocated to front of engine for use with reversed cylinder. Hole not in use will be plugged. Internal diameter of pulse pipe to be .128" No-Go.

617.19 Inlet Tract: The minimum length of the inlet tract measured from the carb mounting surface (remove carb base gasket) to the cylinder bore diameter:

without restrictor - 2.600" minimum, 2.700" maximum.
with restrictor - 2.650" minimum, 2.750" maximum.

617.19.1 Intake Track Gaskets: For all gaskets in the intake track, maximum .060" thickness at each location, including carb base gasket.

617.20 Crankcase: New Yamaha case approved. Identified by 7ET on bottom of case.

617.21 Old Style Yamaha Cylinders: All Yamaha classes using any type of exhaust or carburetor restriction must add 30 lbs. The cylinder will be identified with a vertical red paint stripe on the outboard side of the cylinder. The competitor will be responsible for having this marking in place prior to pre-tech. This will affect classes using the HPV/KPV/RLV YBX, SSX, SSX-V and SBX mufflers.

4.1 Race Procedure & Safe Driving:

A. Competition is expected to proceed without you endangering yourself or others.

B. If in the judgment of the race official, a driver bumps, crowds, or pushes another driver, the offending driver may be penalized or disqualified.

C. A one-way radio receiving device (i.e., Raceceiver) is mandatory for all classes (1 race grace period only).
   - Drivers must have their unit on and working at all times while on hot grid and the track.
   - Failure to observe this rule shall result in your kart not being scored and/or additional penalties.
   - No 2-way radio communication between the driver and crew.

4.2 Penalties:

A. Any kart found in blatant tech or protest violation may lose all points, prizes and recognized finishing position for the event, as well as earned points towards the championship up to that point in time.

B. Certain nonperformance rule infractions may be handled with a written warning and correct by next race waiver per the governing bodies/tech steward's discretion.

C. Although the rules are comprehensive, they may not address every situation.

D. If the rules do not specify you can do something, assume that you cannot until clarified.

E. The Race Director's decision is final.