



## **INTERNATIONAL KART FEDERATION**

# **IKF TECHNICAL MANUAL SUPPLEMENT DELETED RULES AND SPECIFICATIONS FROM CURRENT MANUAL, *UPDATED JANUARY 2014***

## **MISSION STATEMENT OF THE INTERNATIONAL KART FEDERATION**

The goal of the International Kart Federation since 1957 is to foster a membership driven organization providing rules for local, regional, and national competition levels. We will, through adherence to and enforcement of these rules, strive to make competitive karting a safe, affordable, and fair sport that emphasizes family involvement and entertainment. IKF is committed to build the future of the sport it serves.

### **NOTE TO ALL COMPETITORS:**

If you, as a competitor, have any questions about the legality or safety of your kart, please ask the appropriate official at

your race. For tech or safety issues, ask the Tech Director. For race procedures or general items, ask the Race Director.

### **READ THIS DISCLAIMER BEFORE PROCEEDING**

The rules and/or regulations set forth herein are designed to provide for the orderly conduct of racing events and to establish minimum acceptable requirements for such events. These rules shall govern the condition of all events and by participating in these events, all participants are deemed to have complied with these rules. No express or implied warranty of safety shall result from publications of or compliance with these rules and/or regulations. They are intended as a guide for the conduct of the sport and are in no way a guarantee against property damage, injury or death to a participant, spectator or official.

The sport of karting has inherent risks. One who participates in the sport of karting does so with the assumption of those risks, including mechanical failures which may result in injury or damage.

Use of this Rule Book is with the express understanding that the responsibility for the condition and operation of a kart or any other kind of vehicle in competition is that of the owner and/or driver of the kart or other vehicle.

While IKF seeks to communicate its 50 years of experience to all sectors of the sport, to protect the outstanding safety record of karting, and to maintain the integrity of the sport, IKF takes no responsibility for the maintenance

of, inspection of, nor individual responsibility for each owner/driver maintaining or operating their own karts.

This Rule Book seeks to enhance the sport of karting, with standardized mechanical components and overall safe operation practices. It is required that each individual use common sense, take personal responsibility for the maintenance, inspection, and operation of their kart for the safest and most enjoyable karting experience.

Your attempt to rely upon and/or comply with the Rule Book is with the express assumption of all risks of the sport of karting, and does not in any way provide a basis for attempting to hold IKF liable for any damage or injury.

Due to specific local conditions for sanctioned IKF Races, the Race Director shall be empowered to permit minor deviation from any of the rules and/or regulations herein, or impose any further restrictions that in his opinion do not alter the minimum acceptable requirements. No expressed or implied warranty of safety shall result from such alteration of rules and/or regulations. Any interpretation of a deviation from these rules and/or regulations is left to the discretion of the local track officials. Their decision is final.

—The IKF Board of Directors

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

### Section 601.2.3 Water Test:

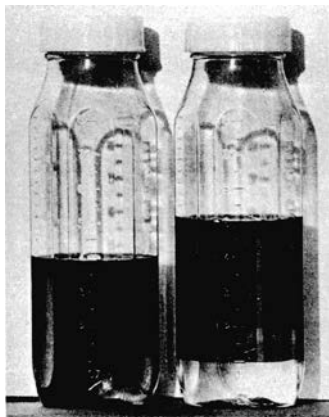
Note: The use of the Germaine test supersedes the need for the water test. Because of its accuracy and ability to detect a greater range of illegal compounds it is highly recommended

**601.2.3.1** Into a graduated container measure one ounce of water.

**601.2.3.2** Place a minimum 4-ounce sample of the competitor's fuel into the graduated container. Mark the bottle container with his class and number on a piece of tape.

(Illustration A, left bottle.)

**601.2.3.3** Add one ounce of water to the fuel sample. Thoroughly mix the gas and water. The water must settle to the bottom and form a one-ounce band of clear (colored) water. This may take approximately ten minutes (Illustration A, right bottle.) If the sample reacts in this manner, it is legal.



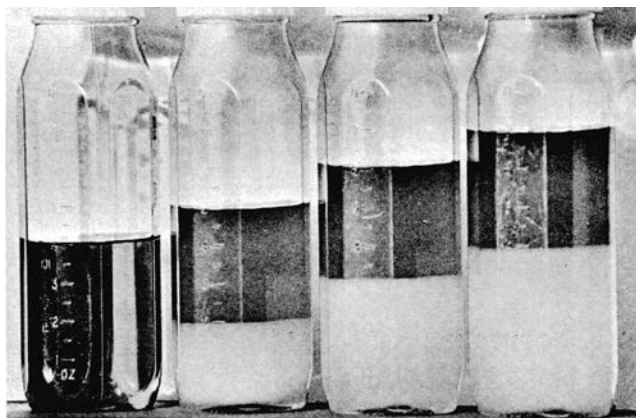
**Illustration A - Legal Water Test**

The bottle on the left has a four ounce sample of fuel. The bottle on the right is after the addition of one ounce of water. Note that the band is only one ounce wide.

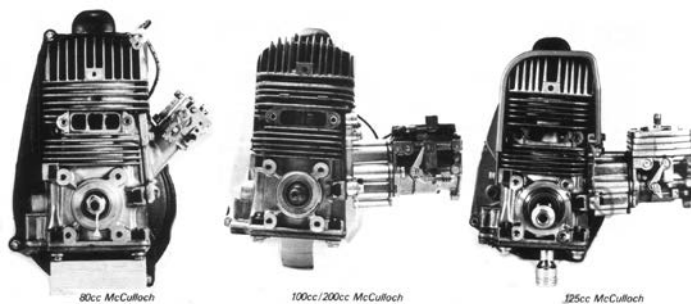
**601.2.3.4** If when the gas and water have separated, the band at the bottom is more than one-ounce wide, the fuel is illegal and the competitor shall be disqualified.

**Illustration B - Illegal Water Test**

From left to right, the first bottle has a four ounce sample of fuel. The second bottle has had one ounce of water added. Note that the lower band is two ounces wide. This is because the alcohol and/or additives in the fuel combined with the water. The third bottle has had another ounce of water added. The band is now almost three and a quarter ounces wide. The fourth bottle has had another ounce of water added, but the lower band only increased by the amount of water added. Therefore the original four ounces of fuel contained one and a quarter ounces or approximately 30% of alcohol and/or additive.



**604 80cc, 100cc/200cc, 125cc McCulloch:** this section covers all McCulloch engines. Engines to have a single cylinder, cylinder carburetor, single ignition, and single reed assembly. Unless otherwise specified all parts are to be of original manufacture and stock appearing. The following engines have been homologated for these classes: 80cc McCulloch: MC-49C, MC-49E; 100cc/200cc McCulloch: MC91, MC91A, MC91B, MC91B/1, MC91MC, MC92, MC93; 125cc McCulloch: MC101A/A, MC101D, MC101MC.



**604.1 External Modifications:** External modifications which do not in any way affect a performance gain are legal.

**604.2 Legal Additions to McCulloch Engines:** Legal additions shall be limited to the following: Air cleaner, clutch, muffler, rock guard, third bearing, starter pulley, motor mount, adapter shaft, starting nut, header pipe, external extension of carburetor jet needles, extension on throttle arm, carburetor return springs, temperature gauge and tachometer. Any factory fastener may be replaced by an allen type bolt.

**604.3 All parts of the McCulloch MC-49C, MC-49E** are interchangeable as long as no removal or addition of material is required to interchange said parts.

**604.4 Legal Change of Parts for 100cc/200cc Engines:** All parts of the McCulloch MC91, MC91A, MC91B, MC91B/1, MC91MC, MC92, MC93 are interchangeable as long as no removal or addition of material is required to interchange said parts.

**604.5 Legal Change of Parts for 125cc Engines:** All parts of the McCulloch MC101A/A, MC101D, MC101MC are interchangeable as long as no removal or addition of material is required to interchange said parts.

**604.6 Metal Treating:** Any metal treating process which alters the stock appearance of any internal engine component is illegal unless permitted by this manual.

#### 604.7 Bore and Stroke:

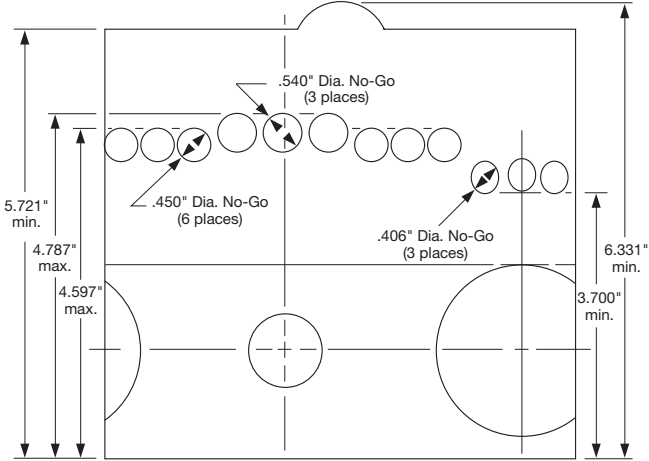
Engine	Max. Bore	Max. Stroke	Min. Stroke
80cc McCulloch	2.165	1.380	1.370
100/200cc McCulloch	2.200	1.650	1.630
125cc McCulloch	2.330	1.845	1.830

**604.8 Cylinder and Ports:** Determine the model number of the engine and refer to the proper cylinder layout. Using a precision drill blank of No-Go diameter, measure the size of the ports. The narrowest portion of an irregular hole will prevent passage of the drill blank. All intake ports should be visually inspected to insure that they are round, not oval, oblong, or irregular in shape. The dimensions in the port diagrams are for the point where the plane of the port intersects the plane of the cylinder bore wall.

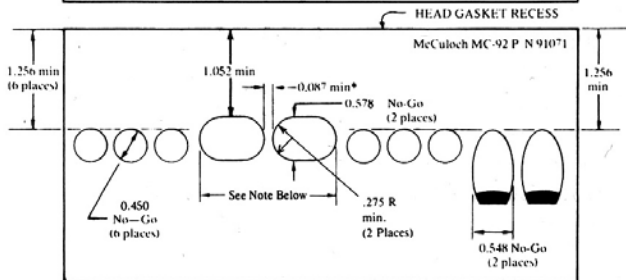
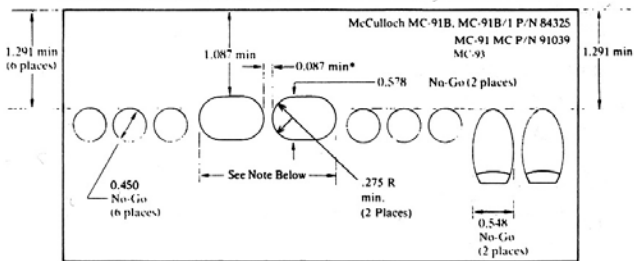
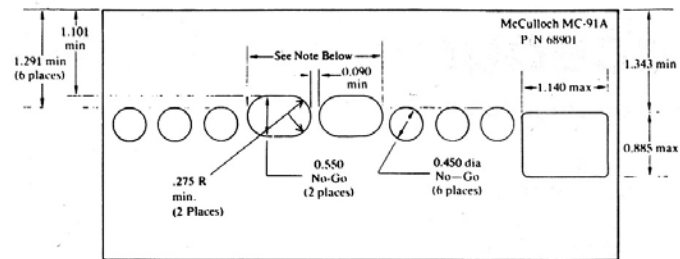
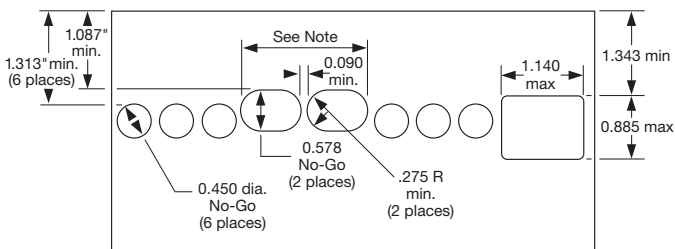
It shall be permissible to re-surface the gasket area at the exhaust ports to repair damage incurred by a loose header. Metal removal to accomplish this shall be limited to the same plane as normally contacted by the gasket. No change in port size, height, width, and/or location shall be allowed. Cylinder layouts follow for each model engine. For MC91-93, the center intake port on the manifold side is .455 No-Go using blade type gauge.

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

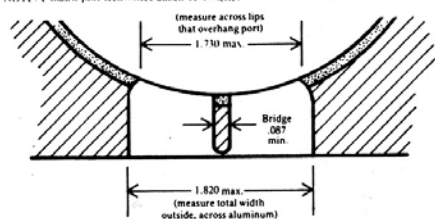
McCulloch MC-49C, MC-49 P/N 62481



McCulloch MC-91 P/N 65913



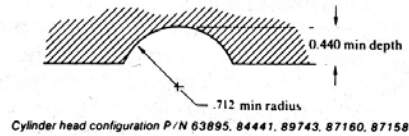
NOTE: Exhaust port tech—McCulloch 91 series



**604.9 Gaskets:** Except when specifically called out in this tech manual, any gasket can be used, but you cannot use a greater number of gaskets than was originally supplied by the manufacturer.

**604.10 Combustion Chamber 80cc McCulloch:** Measure from the bottom of the crankcase to the center of the combustion chamber, minimum 6.331". Measure from bottom of the crankcase to the combustion chamber deck, minimum 5.271". The spark plug recess may be spot faced to facilitate the use of a temperature gauge. Be alert for any modification of the squish area, such as stuffing with a machined aluminum washer. The use of heli-coil inserts to replace damaged screw or spark plug threads is legal.

**604.11 Cylinder Head and Combustion Chamber 100/200/125cc McCulloch:** Measure using a depth gauge with a round tip. The spark plug recess may be spot faced to facilitate the use of a temperature gauge. The use of heli-coil inserts to replace damaged screw or spark plug threads is legal.



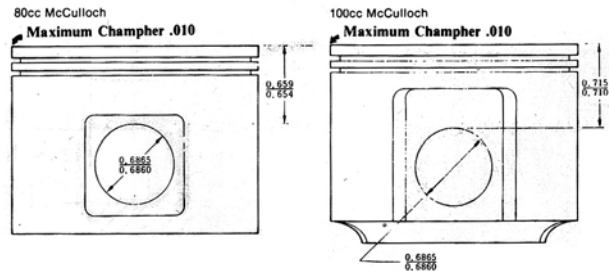
**604.12 Head Gasket (all 100/200cc McCulloch except 125cc):** The gasket thickness in the crushed area shall be no less than .012". The gasket material shall be aluminum.

**604.13 Head Gasket MC-93R:** The gasket thickness in the crushed area shall be no less than .028". The gasket material shall be aluminum.

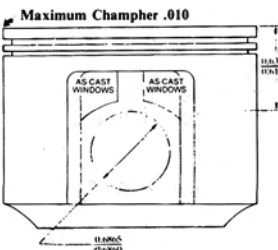
**604.14 Head Gasket MC-92 and all 125cc McCulloch:** The head gasket thickness shall have a minimum thickness of .045". The gasket material shall be copper.

**604.15 Pistons 80cc McCulloch:** Approved pistons are to be of McCulloch, Burris or Wiseco manufacture. Top of the piston must be flat and 90 degrees to the side, within 0.010" of its length (ring land area not included).

**604.16 Pistons 100/200cc McCulloch:** Approved pistons are to be of McCulloch, Wiseco (1000 series), or Burris (BC508 series). Top of the piston must be flat and 90 degrees to the side, within 0.010" of its length (ring land area not included). It is permissible to remove material from exhaust port side of the piston skirt in order to achieve proper clearance with the crankshaft.



**604.17 Pistons 125cc McCulloch:** Approved pistons are to be of McCulloch (P/N 844 series) or Burris (P/N BC518) manufacture. Top of the piston must be flat and 90 degrees to the side, within 0.010" of its length (ring land area not included).



Tech check for pistons from wrist pin bore ID to the top of the piston:

80cc .855/.835  
100cc .910/.890  
125cc .815/.790

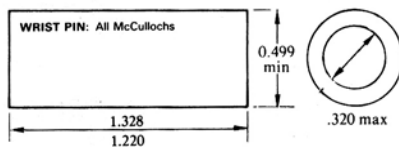
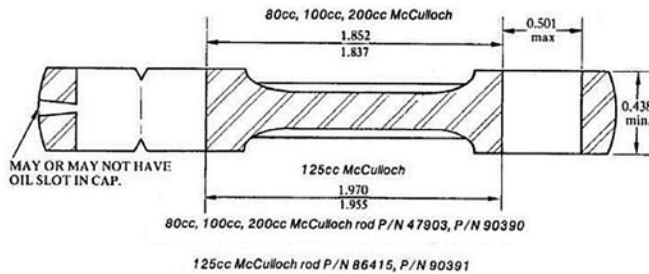
If the measurement is outside of this tolerance, then the wrist pin bearings must be removed and the dimension checked from wrist pin bore to the top of the piston.



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**604.18 Welding of Cylinder Sleeve:** welding of sleeve to repair damage caused by needle bearings is permitted as long as port dimensions and shape are within specifications.

**604.19 Connecting Rod:** No grinding or polishing of rod is permitted, although shot peening is allowed. Rod must be stock appearing. Any rod bolt may be used.



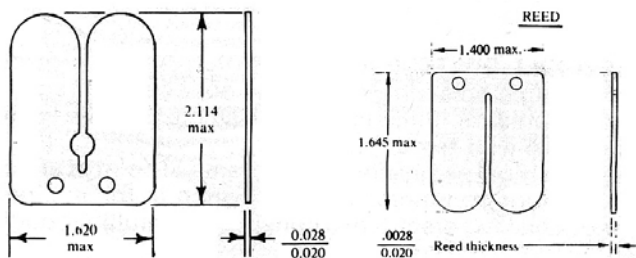
**604.20 Crankshaft 80cc McCulloch:** Approved crankshaft is P/N 10765A. Shot peening is allowed. It is legal to key the PTO side of the left hand key-less cranks. It is permissible to weld or build up an external key on the PTO side of key-less crankshafts. These procedures are not recommended as they may lead to breakage.

**604.21 Crankshaft 100/200cc McCulloch:** Approved crankshaft is P/N 48586B, 48586C, 87688, 91085, and 91085A. Shot peening is allowed. It is legal to key the PTO side of the left hand key-less cranks. It is permissible to weld or build up an external key on the PTO side of key-less crankshafts. These procedures are not recommended as they may lead to breakage. No shims are allowed behind the bearings.

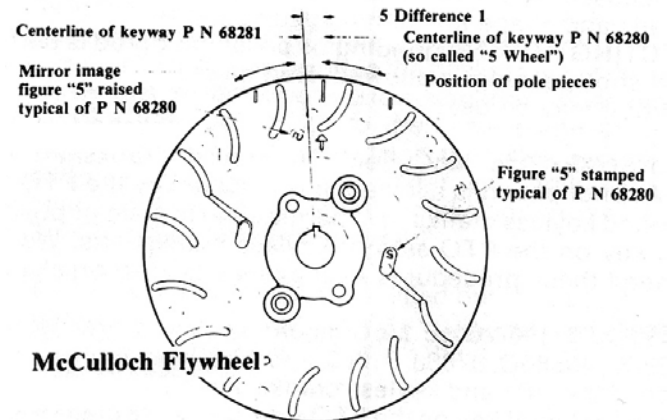
**604.22 Crankshaft 125cc McCulloch:** Approved crankshaft is P/N 69346. Stock cranks come shot peened from the factory. It is legal to key the PTO side of the left hand key-less cranks. It is permissible to weld or build up an external key on the PTO side of key-less crankshafts. These procedures are not recommended as they may lead to breakage. Cam and throw are polished on stock cranks. Stock cranks have welded on counter weights. The welds are a non-tech item. No shims are allowed behind the bearings.

**604.23 Flywheel Keys:** Keys must fill both crankshaft and flywheel slots. No offset keys are allowed. Minimum key thickness .122" No-Go.

**604.24 Reed Valves 80/100/200/125cc McCulloch:** Phenolic reeds may swell slightly from prolonged contact with racing fuel. Any color of phenolic material will be permitted. Manifold and reed cage must be stock appearing. Reed Valve must be stock appearing in shape.



**604.25 Flywheel 80/100/200/125cc McCulloch:** The only approved flywheels are P/N 68280 and 68281. Flywheel must remain in stock condition. Any type starter cup is permitted. No more than two fins may be broken. The flywheel may have a maximum of three factory drilled holes on the OD with a .348 maximum No-Go ("S" drill) diameter and a .700" maximum depth No-Go.

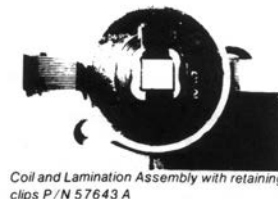


**604.26 Ignition Points:** Adjustment of point tension springs is permissible so long as there is no removal of metal.

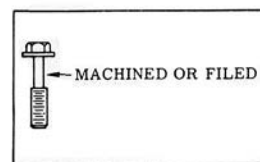
**604.27 Ignition Coil:** Slotting or enlarging of the mounting holes in the coil laminations to obtain more advance/retard is not allowed.

Machining the shanks of coil hold-down or side cover screws to provide additional coil position adjustment is not allowed.

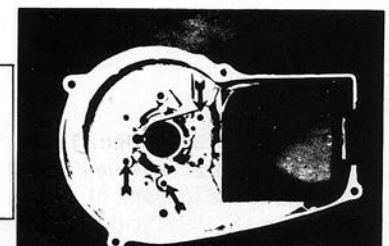
If a coil support becomes broken from the crankcase, it is permissible to repair by welding. However, only one leg may be repaired. If both legs are welded, the crankcase becomes illegal.



Top and Bottom view of epoxied Coil and Lamination  
P/N 86413



Illegal Screw Modification



Side Cover Mounting Holes  
0.212 No Go (3 places)  
(80-100-200cc McCulloch)

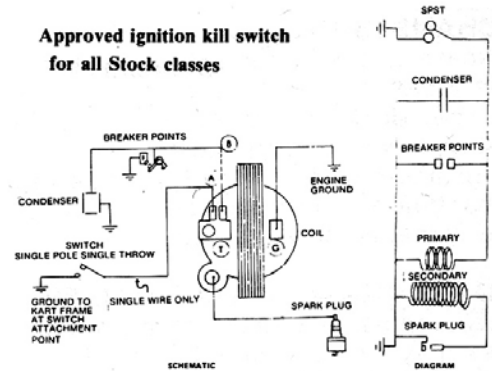
**604.28 Ignition Kill Switch:** An ignition kill switch is legal, provided that it is a single pole-single throw type and connected directly to the primary wiring of the ignition coil via a single conductor wire in accordance with the approved drawing.

The switch must be grounded to the kart frame at point of attachment. No return conductor wire from the switch to the engine is permitted. Shielded electrical cable is considered a multi-conductor type and is not allowed.

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It is permissible to remove or substitute the ignition switch wire on stock engines which are factory-equipped with this wire. However, a substitute wire must comply with the specifications outlined above.

**604.29 Illegal Coil Modifications:** Competitors in box stock classes have tried to modify McCulloch coils by disconnecting the primary coil wire beneath the terminal plate. When expertly accomplished, this modification cannot be detected visually.



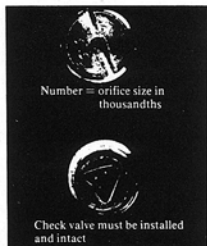
To inspect the coil for this illegal modification, use the following procedure: Disconnect wires A and B from the double terminal T, as indicated in the diagram. NOTE - Wire A will only be present if an ignition switch is used. Check for electrical continuity between terminal T and ground terminal G. This can be done with any device such as a timing light, continuity checker, or ohm meter. There must be continuity between these terminals. Lack of continuity indicates a disconnected primary coil which is illegal.

**604.30 Carburetor 80cc McCulloch:** Approved carburetors are Model SDC-43 and SDC-43A (P/N 87742). When inspecting the carburetor, the inspector must use extreme caution in the process of checking the diameters of needle seats, fuel pick-off openings and other small diameter orifices. The small welch plug must be removed in order to inspect the idle cluster inlet orifice. When using a sharp tool to remove the plug, be careful to limit penetration to a point away from the drilled passages so that no harm will be inflicted upon the passages of the tool goes too deep. Remove the high speed jet with a screwdriver and inspect the orifice. The small check valve inside the jet must be in place and function. Its action may be checked by alternately blowing and sucking on the threaded portion. The valve action will be obvious. The carburetor may be mounted in either direction. Removal of the choke is illegal.

Fuel can only pass through stock metering orifices. Any means taken to by-pass 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.

**604.30.1 Orifice Sizes:** McCulloch SDC043 and SDE043A carburetor orifice sizes as per photos and diagrams:

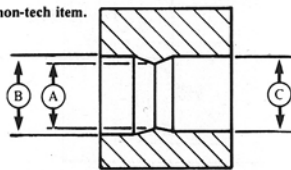
1. Inlet valve seat 0.043 No-Go
2. Idle cluster 0.032 No-Go
3. Idle cluster 0.0235 No-Go
4. Idle cluster 0.0235 No-Go
5. Idle cluster inlet 0.024 No-Go
6. High speed jet 0.034 No-Go regardless of marking on jet



**Metering Orifices on McCulloch SDC 43 Carburetor**

Idle mixture needle and inlet needle and lever.

Inlet Spring is non-tech item.



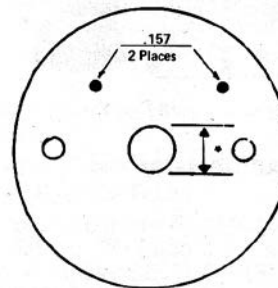
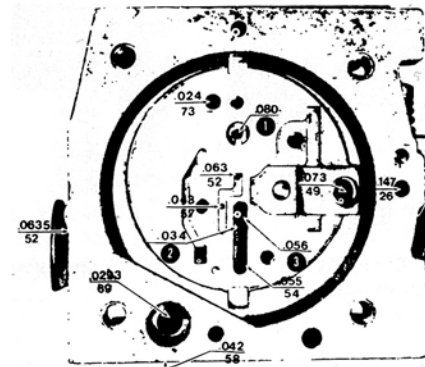
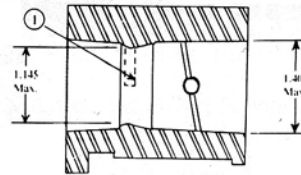
- (A) Venturi Diameter = 0.760 max
- (B) Upstream Diameter = 0.885 max
- (C) Downstream Diameter = 0.820 max

Throat dimensions for McCulloch SDC-43 and SDC-43A carburetors

**604.31 Carburetor 100/200/125cc McCulloch:** Approved carburetors are McCulloch model BDC-2, BDC-14, BDC-14A1, BDC-16, BDC-22A, BDC-22A1, BDC-23 and BDC-24. The carburetor cannot be turned 90 degrees or reversed. The choke assembly can be removed. External appearance of the carburetor to remain stock. "Stock appearance" as it relates to McCulloch class carburetors, shall be defined as the appearance of the carburetor when bolted to the engine.

**604.32 Walbro Carburetor:** Carb must remain in stock appearing condition as delivered on engines. Choke assembly can be removed. (1) Main fuel dump tube must be in place. Fuel and air passages as supplied must be retained. Hole sizes non-tech.

**14-14A1-22A-22A1-23 Walbro Bdc Series Carbs**



**604.33 Rookie Restrictor:** The McCulloch 100cc stock engine may be restricted to compete in the 80cc class. The restrictor thickness is .040" aluminum with one punched round hole in the center (\*) with two pulse holes .532" in diameter. The head gasket is .028" No-Go in crushed area. All holes must be punched. Restrictor is to be placed between the carburetor and the reed block with one gasket on each side.

Note: For Mac 92 restrictor engines, the standard .045" copper gasket *plus* one Mac 91 type .016" aluminum gasket must be used.



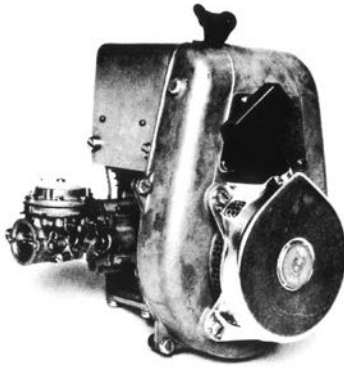
**Illegal broken cylinder**

**604.34 External Appearance:** Painting of external surfaces is permissible. No anodizing allowed.

**604.35 Cylinder Damage:** Cylinder cannot be broken out in intake area. Cylinder wall must be intact. It is illegal to re-sleeve the cylinder assembly.

# THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

## 605 US 820 TECH



**605.1 Required US 820 Engine:** Model 82040. Direction of rotation is optional.

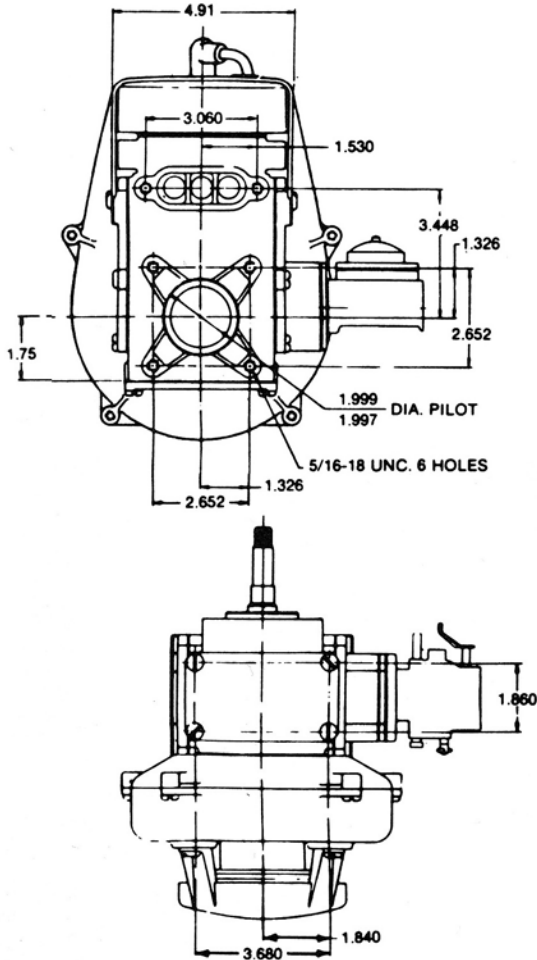
**605.2 Starter Hardware:** Recoil must remain on the engine. Flywheel screen must be on engine. Starter nut optional.

**605.3 Fuel:** Gasoline is only legal fuel. Legality will be determined by electronic fuel meter.

**605.4 Carburetor:** Stock Tillotson HL-232 mandatory. Carb can be mounted upright, inverted, or on edge. Choke must remain in

working order. There will be no internal carb tech. Diameter at narrowest part of venturi is .775". Diameter at flange end 1.020" max.

### TYPICAL DIMENSIONS



- "PANCAKE" MAGNETO ● REMOVABLE HEAD
- HI-VELOCITY V-REEDS ● ANGLED SPARK PLUG
- "VARI-POSITION" CARBURETOR MOUNTING

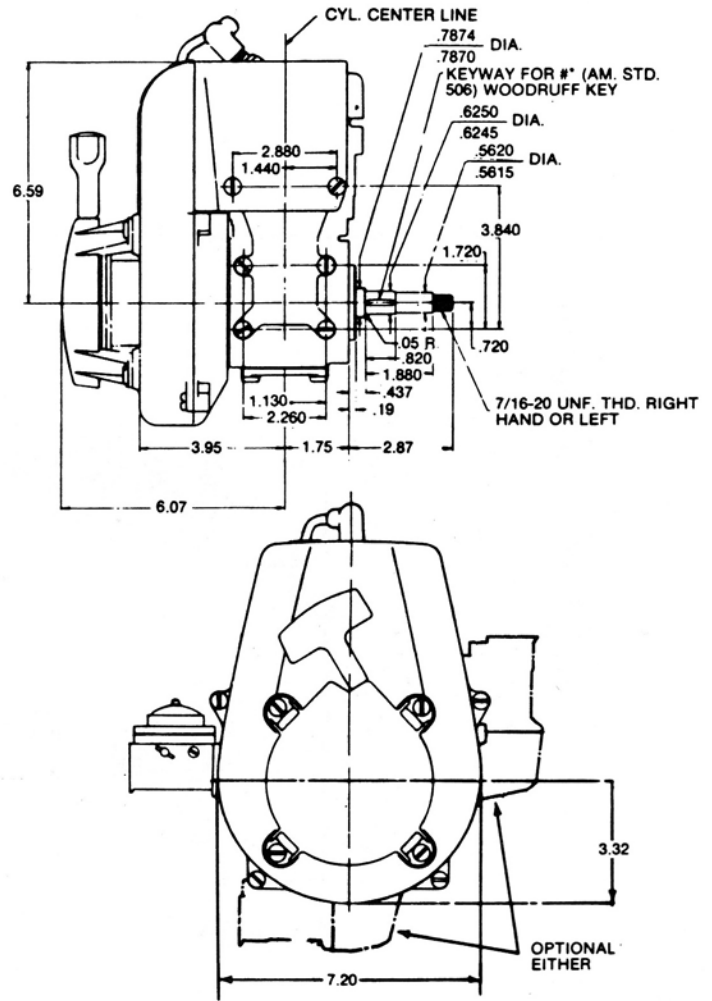
**605.5 Stuffer, Back Cover and Manifold:** Must be stock items.

**605.6 Bolts:** Any bolts are allowed.

**605.7 Gaskets and Seals:** Will not be tech items (except head gasket).

**605.8 Air Shrouds and Covers:** All stock shrouds and covers must be in place. Holes can be cut for heat gauges, tachometers, etc.

**605.9 Ignition:** Both point springs must be present and uncut. Maverick switches not allowed. Coil, coil legs, ignition points, condenser, etc., must be stock parts.



**605.10 Coil:** Must be used in stock unaltered form. No slotting of attaching holes or machining of attaching bolts allowed. Spark plug connector must be factory stock.

**605.11 Flywheel:** Stock flywheel key with no offset, mandatory.

**605.11.1 Machining:** Is not permitted. Chipped fins due to poor castings are permitted. Completely broken fins are not allowed.

**605.11.2 Flywheel Keys:** Stock flywheel key with no offset mandatory.

**605.12 Crankshaft:** Must be stock. No lightening or polishing of counter weights or addition of metal or other material is permitted. Bearing must be #6204 factory stock and must be installed in original position.

**605.13 Head:** Head must be stock as shipped from factory. No machining allowed. No metal addition allowed. Standard compression release must be retained. Spherical radius of combustion chamber is  $5.70" \pm .010"$ . Diameter of combustion chamber opening is 2.56".

**605.14 Head Gasket:** .032"  $\pm$  .0025" thickness and must be in stock, unaltered form. Coatings and sealers are not allowed.

**605.15 Block Dimensions:** Block height measured from center line of crankshaft to head gasket surface is  $4.862" \pm .005"$ .



## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**606 100CC STOCK APPEARING:** (Gas and Oil only) This section covers engines under 6.240 cu.in. maximum displacement. Engines to have a single cylinder and single stock carburetor. Internal modification allowed. External modifications which do not in any way affect a performance gain are allowable. The following engines have been homologated for this class: Atlas, Corsair T72, Corsair T-80, Corsair T-80A, Corsair T-81, Hewland Arrow KR-3, FE-4, K78TT, Komet K80, Parilla TT25, TKM FF-99, FF99TT-S89, S89TT, Komet K55, Komet K-78, Komet K-88, LMR 100, Parilla SS-21, Parilla TG-14, Parilla TT-22, Yamaha KT-100A, Yamaha KT100S, Rotax R-100, DAP T-80R, DAP T-91, TKM RL66, TKM L90TT.

All engines approved for 100cc Piston Port and 100cc Controlled (Reed/Rotary) legal for Stock Appearing.

**606.1 Legal Additions to 100cc Stock Appearing Engines:** Legal additions shall be limited to the following: air cleaner, clutch, muffler, rock guard, chain guard, third bearing, starter pulley, motor mount, adapter shaft, starting nut, header pipe, external extension of carburetor return springs, temperature gauge and tachometer. Any factory fastener may be replaced by an allen type bolt.

Air filter adapter - see sections 603.1.3 and 603.2.15.

**606.2 Calculating Engine Displacement:** Use the following equation to compute displacement. Displacement bore diameter x bore diameter x .7854 x stroke. No engine may exceed 6.240 cu.in.

**606.3 Gaskets:** Any gasket is legal in the 100cc Stock Appearing class as long as the engine remains stock appearing.

**606.4 Ignition:** (See Section 512 for more information)

**606.5 Carburetor:** See carburetor section of 100cc Stock Reed/Rotary Valve, Stock Piston Valve and Stock McCulloch for dimensions, diagrams and photographs.

### 607 OPEN CLASSES

**607.1 100cc Open:** Engine under 6.240 cu.in. displacement with no restrictions to modifications.

**607.2 100cc Reed Open:** Original McCulloch cylinder no water cooling.

Maximum bore 2.230, maximum stroke 1.650.

150cc OPEN: Engines under 9.15 cu.in. displacement with no restrictions to modifications. This class is limited to a single engine with a single cylinder.

**606.3 Calculating Engine Displacement:** Use the following equation to compute displacement: Displacement bore diameter x bore diameter x .7854 x stroke cu. in. One cubic inch = 16.39 cc's

**607.4 Supercharging:** All supercharged (forced induction) engines shall be advanced to the next higher displacement class. 300cc class cannot be supercharged.

### 608 A-LIMITED (Road Race)

100cc Open Engines-Open Fuel-Single Carburetor Only: Bore and stroke tech as per Piston Port, Reed Valve, and Rotary Valve procedures. (See appropriate sections.)

#### 608.1 Carb Restrictions:

Piston Port Engines: Any type carb, 1" maximum venturi.

Reed Valve Engines: Any butterfly type carb, 1" maximum.

Rotary Valve Engines: Prior to and including 1989, any butterfly type carb, 1" maximum venturi. All others .900.

**608.2** Must be a homologated engine. Bore and stroke to remain the same as originally homologated.

**608.3** No water cooling.

**608.4** No tech on ignition system.

**608.5** Non-interchangeability between head, cylinder and crankcase from originally homologated engines.

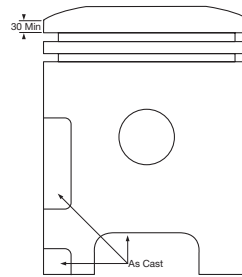
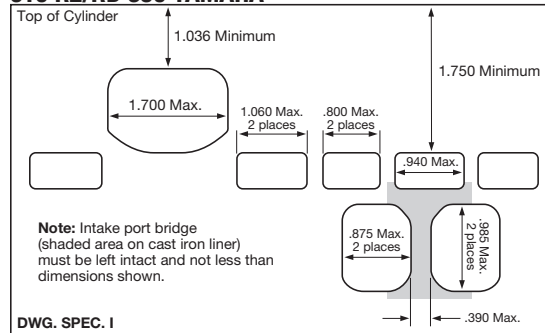
**608.6** Open pipe rule.

**608.7** External fuel pumps legal.

### 609 FORMULA A:

**609.1** Engines: Per current CIK rules. (CIK rules are available through the IKF office.)

### 610 RZ/RD 350 YAMAHA



DWG. Spec. II

Note: Piston and rings including piston pin must be stock appearing.

### 611 STOCK 100CC REED/ROTARY VALVE ENGINES, GENERAL

Note: Section 611 does not apply to engines under Section 612.5.

**611.1 Crankshaft:** Must be of original manufacture. No counterweight plugging. No metal removal. Shot peening, polishing are allowed. Any roller cage permitted. Stuffing may be notched above crank pin. Stuffing may be of aluminum or plastic material. Crank must be of same manufacture as engine. No interchangeability between engine brands. Stuffing material may be aluminum, plastic or phenolic.

**611.2 External Modifications:** External modifications which do not in any way affect a performance gain are legal. Use of rubber tubing as fin dampeners is allowed. Welding of broken fins to be allowed. No welding of braces to act as a heat sink allowed.

**611.3 Internal Modifications:** Are allowed within the guidelines of the listed rules. The addition of material shall not be allowed, with the exception of damage repair, and then only as factory intended.

**611.4 Legal Additions to Stock Class Engines:** Legal additions shall be limited to the following items: Air cleaner, clutch, muffler, rock guard, chain guard, starter pulley or nut, motor mount, header pipe, external extensions of the carburetor jet needles, carburetor return springs, temperature gage, tachometer, main bearing shims, external bearing supports and extension shaft. Air filter adapter, see 603.1.3.

**611.5 Non-Tech Items:** Unless otherwise specified, non-tech items includes gaskets, oil seals, bearings and cages, fasteners, rings and crank pin. Bearings are a non-tech item but must be of same internal diameter, width and outside diameter as original parts. No ceramic ball or any other type of exotic design main bearings are permitted.

**611.6 Rod:** Connecting rod must be of original length and made of ferrous magnetic material.

**611.7 Rotary Valve Cover:** Rotary valve covers may have a coil bracket.

**611.8 Carb Pulse Hole:** Not subject to tech.

**611.9 Manifold Opening:** All manifolds interchangeable between manufacturers, no machining allowed. No stuffing or additional material to be added in the intake area per 100cc and 135cc controlled. Engines in Section 611 may use small carb manifolds for engines from Section 612.5 because of availability.

**611.10 Piston:** Must be of homologated manufacturer. No metal removal except boost port window or TT Notch (both may be in piston.) ASSO - DAP - IAME - WISECO - BURRIS - BM - TKM - PCR - SIRIO - MINARELLI - DINO - ELKO - MAHLE, single or two-ring design. Legally interchangeable between all engines. Both skirts must be intact and the same length. No lightening of piston allowed. A maximum of two holes (.093" no-go)

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

may be drilled to lubricate exhaust rib. For window type, piston window size is .900 no-go for width and .750 no-go for height. TT Notch - 1.00" No-Go maximum width, .400 maximum depth from skirt. Note: All approved pistons have above names cast or forged inside of piston. Circlip removal notches, 3/16" high, 1/4" wide are permitted. Maximum break on all machined edges .030" - skirt area only.

**611.11 Piston Pin:** Must be magnetic material.

**611.12 Piston Rings:** Not subject to tech, but must be in place. Must be magnetic material.

**611.13 Cylinder Head:** The combustion chamber volume shall be a minimum of 9cc. This is measured to the top of the spark plug hole with the piston at top dead center. Head gaskets and sealing device are legal.

**611.14 Ignition:** (See Section 512 for more information)

**611.15 Cylinder Head Volume Tech:** (100cc Piston Valve, Reed Valve and Rotary Valve Engines): Heads will be marked after qualifications in Sprints, volume will be checked as engine finishes the race. No "cleaning" of piston or head will be allowed.

**611.16 Filter Screens:** Two slightly different filter screens are legal: P/N 01053 (old) and P/N 01530A (new). The only visible difference is that the new screen is slightly darker.

**611.17 Fuel Pump Diaphragms:** Teflon or rubber diaphragms are allowable.

**611.18 Carburetor Tops:** Must be of original manufacture, but any color is allowable.

**611.19 Fuel Pumps:** Illegal unless integral part of the engine.

**611.20 Ports:** Two exhaust ports, three intake ports only (except LMR which has 4 intake ports). Fuel flow through ports can only be as factory intended.

### 612.1.3 Crankshaft Diameters - Maximum

3.295	DAP T-80, T-80A, T-72, T-80R; MANX
3.315	Komet K-55, K-78, K-88; Atlas; Hewland; TKM-RS-98, S89, TKM RS 80, Komet K11, Dino 545, Atomik AKL-90, Rotax 100VM, TKM 101R, Parilla TT75, PCR PC93, TKM KA100
3.354	BM SS96, 100; LMR - PCR 50/3 - Minarelli K100L, Sirio 45, Minarelli K100V
3.393	Parilla TT-25; DAP T-91; Parilla TT-65
3.433	TKM-99; Parilla SS-21; TKM RL-66

### 612.1.4 Rod Lengths

96mm	BM SS-96, DAP-T-80, 80A, 80R, Dino 545, Hewland; Komet K-55, 78, 88, LMR; MANX: TKM RE-98, S89-PCR 50/3; Minarelli K100V, Minarelli K100L, Komet K11, TKM RS80
98mm	Atlas-Sirio 45
100mm	TKM FF99, RL-66; Parilla TT-25, Parilla SS-21; BM-100; DAP-T-72; DAP-T-91; Parilla TT-65, Atomik AKL-90, Rotax 100VM, TKM 101R, Parilla TT75, PCR PC93, TKM KA100

### 612.1.5 Bore and Stroke (TT engines)

Maximum Bores	Maximum Stroke	
2.025	1.915	DAP T-81, Komet K78-80TT, TKM S 89, Hewland KE-3, BM 96-97TT
1.921	2.130	TKM FF99TT, Parilla 22/23/27TT, TKM L90TT

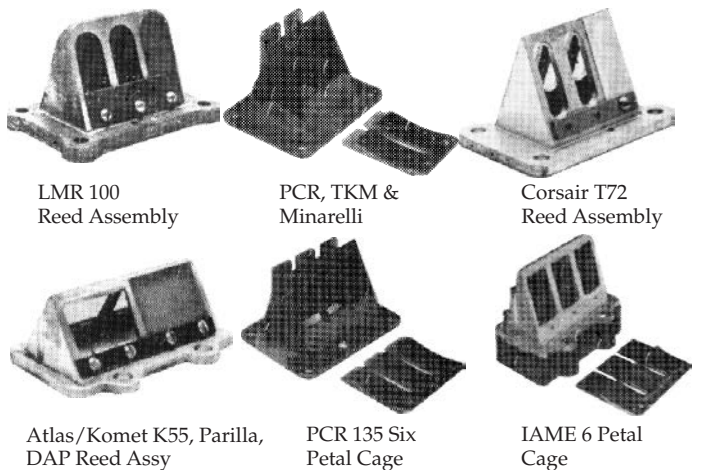
### 612.1.6 Crankshaft Diameter (TT engines)

Maximum Crankshaft Diameter	
3.298	DAP T-81
3.315	Komet K78TT, Hewland KE-3, TKM S/89TT
3.354	BM96TT
3.393	Parilla 27TT-22TT
3.433	BM97TT, TKM 99, Parilla 23TT, K8OTT,-TKM L90TT

### 612.1.7 Rod Lengths (TT engines)

Rod Lengths	
96MM	DAP T-81, Komet K78, 80TT, TKM S89, Hewland KE-3, BM96/97TT
100MM	TKM 99TT, Parilla 22-23-27 TT, TKM L90TT

**612.2 Reed Assembly:** Reed assembly must be of homologated manufacture and number of openings. Any non-metallic, single-thickness petal per opening is legal. Any bolt or Reed stops are legal. Note: Reed stops and/or retainers must be of solid construction and non-movable. Any homologated manifold and reed cage may be used in any homologated engine as long as machining is not required to fit reed cage or manifold to motor.



Note: Some engines may have rib in center splitting back of assembly.

## 612 STOCK 100CC REED/ROTARY VALVE SPECIFICATIONS

**612.1 Legal Engines:** Atlas, DAP (Corsair), T-72, T-80, T-80A, T-80R, T-91; Hewland, KE-3, KE-4; Komet K-11, K-55, K-78, K-88, Parilla SS-21, TT-25, TT-65, TT-75; LMR; TKM-FF99, RS-98, S-89, TKM RL-66, TKM RS-80, TKM 101R; PCR 50/3, PCR PC93; Atomik AKL-90; SIRIO 45, Minarelli K100V; Dino 545, Rotax 100VM; TKM KA100, Comer MIK351L, DAP T85, CRG S10-T1, ITALSISTEM ML31, JAKO 2LA, PARILLA REEDJET, PCR TSL98, VORTEX VL/C.

### 612.1.1 Maximum Bores No-Go

2.025	Atlas; BM 96, 100; DAP T-72, T-80, T80A, T-80/R, T-80R, Hewland; Komet K-55, K-78, K-88; LMR; MANX; TKM RS-98, S-89, Komet 11
1.990	PCR, Sirio 45, Minarelli K100L, Minarelli K100V, Dino 545, Parilla TT75, PCR PC93
1.921	TKM-FF99, RL-66; Parilla SS-21, TT-25; DAP T-91
1.910	T91 DAP w.54.5 Stroke; Parilla TT-65
1.985	Atomik AKL-90, Rotax 100VM, TKM 101R, TKM KA100

### 612.1.2 Maximum Stroke

1.915	Atlas; BM 96, 100; DAP T-72, T-80, T-80A, T-80R; Hewland, Komet K-55, K-78, K-88; LMR; MANX; TKM RS-98, S-89, TKM RS80, K11
1.975	PCR, Sirio 45, Minarelli K100L, Minarelli K100V, Dino 545, Parilla TT75, PCR PC93
1.995	Atomik AKL-90, Rotax 100VM, TKM 101R, TKM KA100
2.130	TKM-FF99, RL-66; Parilla SS-21, TT-25; DAP T-91
2.150	T-91 DAP-54.5 stroke; Parilla TT-65

Minimum Stroke .015" less than maximum listed.



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### 612.5 CIK Reed Valve Engines:

Note: CIK applicable homologation fiche may be used as reference in tech inspection (drawings/pictures, etc.)

Note: Information on the CRG S10-T1, and the Vortex VL/C can be found in Section 612.5 of the 2001 IKF Rule Book. Information on the DAP T85 and the Italsistem ML31 can be found in Section 612.5 in the 2002 IKF Rule Book. Information on the Comer MIK351L and the PCR TSL98 can be found in Section 612.5 in the 2006 IKF Rule Book.



PARILLA REEDJET

Parilla Reedjet: Max-Min Stroke 2.000-1.992, Max Bore 1.988, Max Exhaust w/Lad Tool 1.275

**612.5.1 Cylinder:** Externally stock appearing. Maximum three transfer and three exhaust ports.

**612.5.2 Conrod:** 100mm center-to-center length. Must be of ferrous material.

**612.5.3 Cylinder Head:** Externally stock appearing. Cylinder head volume 9cc minimum. All engines have plain aluminum heads without any color unless noted differently below. Also see 603.2.10.

Note: DAP T85 has red painted cylinder head. PCR TSL98 has purple anodized cylinder head.

Parilla Reedjet has a plain or green anodized cylinder head.

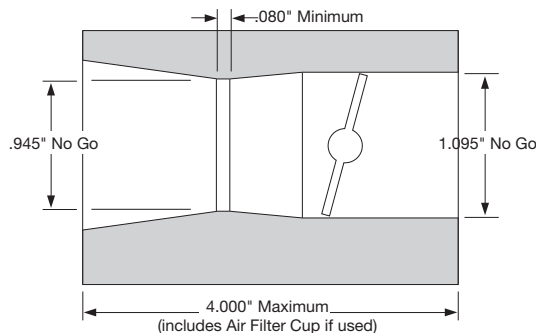
**612.5.4 Piston:** Legal interchangeable between all engines. Asso-Comer-DAP-CRG-Italsistem-Jako-Iame-PCR-Vortex, Elko

**612.5.5 Fuel Pump:** Illegal – fuel must be supplied from fuel tank at normal atmospheric pressure.

**612.5.6 Legal Ignitions:** see section 512

**612.5.7 External Modifications:** External modifications which do not in any way affect a performance gain are legal. Use of rubber tubing as fin dampeners is allowed. Welding of broken fins to be allowed. No welding of braces to act as a heat sink allowed.

**612.5.8 Carburetor:** Butterfly type with thru shaft – per drawing.



**612.5.9 Reed Cage and Manifold:** non tech

**612.5.10 Reed Cage Update:** Parilla Reedjet and PCR TLS 98 engine cases with larger reed cages and new style manifolds are allowed. It is permissible to update older engine case versions of these 2 engines to accept the larger reed cage and new manifold.

Venturi: 1.110	HR184-181 (Tillotson)	Max. Throttle Bore: 1.325
Venturi: 1.195	BMC-34G (Mikuni) HR191/HR191G (Tillotson)	Max. Throttle Bore: 1.360

**613.1.1 Note:** Carburetor may be installed with fuel pump up, down or sideways

TKM & LAD 90° manifold approved.

Burriss-Mikuni throttle shaft may be used in Tillotson HR series carbs.

Bombsight as cast. Venturi (ID of Bombsight) is machined. Maximum ID .332 no-go (Q drill) straight bore.

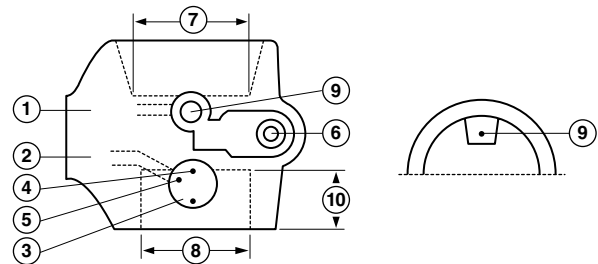
### 613.1.2 All Carbs

**613.1.2.1** Adjustment needles are a non-tech item.

**613.1.2.2** Inlet valve may be needle & seat or ball type.

**613.1.2.3** Hi Speed ball checks may be removed except Tillotson HL 166. HR181-184-191 part no. 014877 plate may have a machined recess of .562 max. diameter and .150 max. depth (measured from the gasket surface of the plate.)

**613.1.3 Walbro-WB20 - Legal for Super Stock Reed Engines only:** Carburetor 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. May be run in either position. Screen must be intact. Filtering devices to protect metering diaphragm allowed. No means of depressing diaphragm allowed. No machine work to throttle shaft allowed. May be sealed with "O" rings.



1. High Speed Needle Seat	.114 No-Go
2. Low Speed Needle Seat	.041 No-Go
3. Idle Jet	.027 No-Go
4. Transition Jet	.038 No-Go
5. Low Inlet Valve Seat	.056 No-Go
6. Fuel Inlet Valve Seat	.064 No-Go
7. Diameter at Narrowest Part of Venturi	1.025 No-Go
8. Diameter at Flange End	1.105 No-Go
9. High Speed Jet Bleed Hole	.062 No-Go
10. Maximum Throttle Bore	.500 No-Go

Note: No-Go definition, refer to section 509

## 613 CARBURETORS FOR REED/ROTARY VALVE ENGINES

Note: Section 613 does not apply to engines listed under section 612.5.

**613.1 Carburetor Reed Valve Engines:** 24mm type carb as shown at 612.5.8 allowed on Reed Valve engines. Tillotson/Mikuni Carbs. (2-Cycle): Unless otherwise specified, all jet holes must be 90° perpendicular to the throttle bore. Must be of original manufacture.

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 springs are a non-tech item. Approved carburetors: HL227A, HL250A, HL304A, HL307A, HR181A, HP184A, BMC-34G, HL317A, HL317E, HL322E, WB-20, HR191/HR191G.

No machine work to throttle shaft allowed.

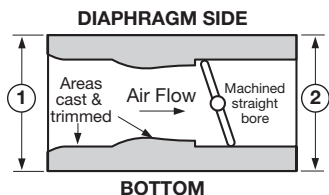
### 613.2 Carburetor Rotary Valve Engines:

Tillotson/Mikuni Carbs. (2-cycle): Unless otherwise specified, all jet holes must be 90° perpendicular to the throttle bore.

Approved stock carburetors are : Tillotson HL227A, HL250A, HL304A, and all components of the carburetors are interchangeable as long as no removal or addition of material is required to interchange said parts. When inspecting carburetors, the inspector must use extreme caution in the process of checking the diameters of needle seats, fuel pick-off openings and other small diameter orifices. Fuel can only pass through stock metering orifices. Any means taken to by-pass 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 springs are a non-tech item. Refer to following diagram for orifice sizes.

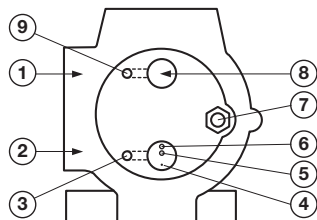
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**613.2.1 Throat dimensions for** Tillotson HL-227A, HL-250A, HL-307A, HL-304A, HL317A, HL317E and HL322E.



1. Diameter at narrowest part of venturi = .900 max.
2. Diameter at flange end = 1.010 max.

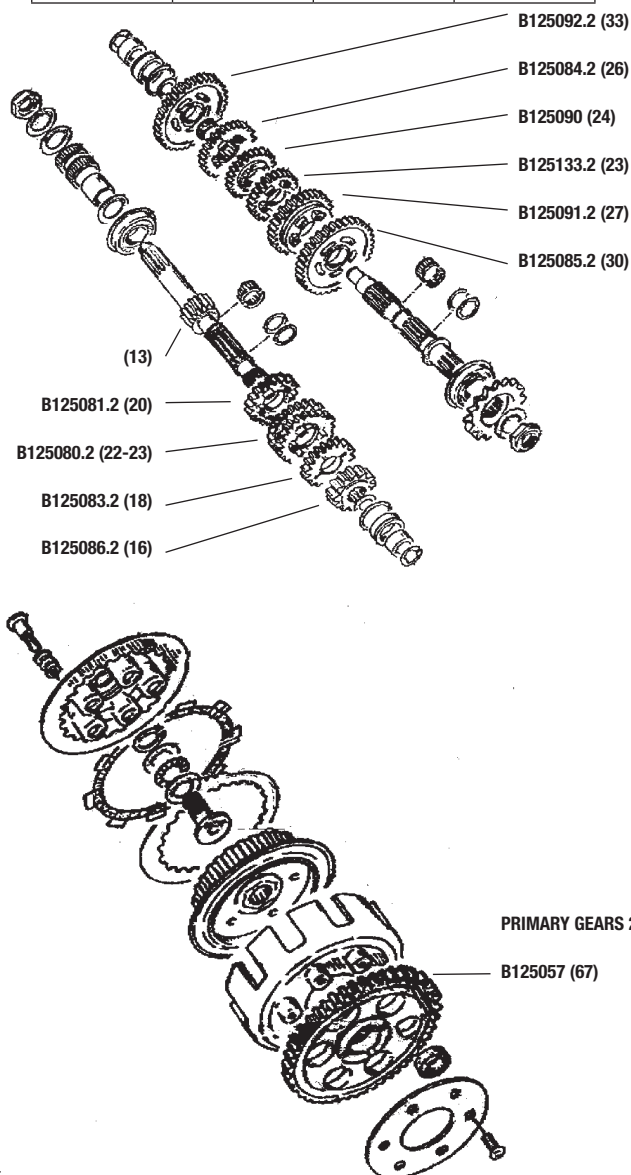
NOTE: Bores are usually non-concentric



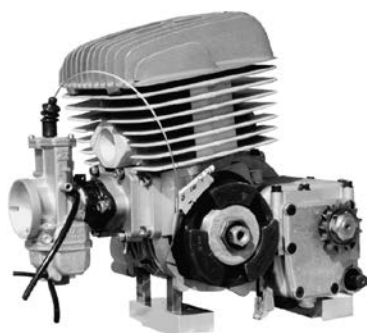
- |                                 |  |
|---------------------------------|--|
| 1. High Speed Needle Seat       | .068 No-Go                               |
| 2. Low Speed Needle Seat        | .037 No-Go                               |
| 3. Idle Speed Pick-off          | .042 No-Go                               |
| 4. Idle Jet                     | .031 No-Go                               |
| 5. Transition Jet               | .042 No-Go                               |
| 6. Air Pre-Mix Orifice          | .037 No-Go                               |
| 7. Fuel Inlet Valve Seat        | .097 No-Go                               |
| 8. High Speed Jet (Check Valve) | (HL-307A - Drilled hole with brass plug) |
| 9. High Speed Fuel Pick-Off     | .090 No-Go                               |
- Note: No-Go definition, refer to section 509.

**614.11 Transmission:** Transmission to be assembled in the order shown below using stock gears with number of teeth shown.

Gear Roll Out			
	Sprocket	Engine	Final Drive
1st	1 =	7.69	1st = 2.53
2nd	1 =	5.71	2nd = 1.87
3rd	1 =	4.56	3rd = 1.50
4th	1 =	3.80	4th = 1.25
5th	1 =	3.30	5th = 1.09
6th	1 =	2.89	6th = 1.00



### 614 MAC MINARELLI 125AR ENGINE (Formula 125 Ltd.)



It is the intent of the 125cc Limited class for the engine to be used in an "out of the box" condition. Unless otherwise specified in these tech procedures, the engine is to be factory stock. Tech may be done by comparing with a known stock part. Unless otherwise specified all parts must be of original manufacture.

**614.1 Cylinder:** Must be stock as supplied from factory. Nikasil over aluminum, no grinding allowed. There is some hand work done by the factory in the TT port. Exhaust height

1.170 in. minimum using dial indicator and IKF exhaust gauge. Main exhaust port width 1.450 in. maximum. Refacing of base gasket surface allowed. Base gasket non-tech.

**614.2 Head:** O-ring must be in place. Minimum 12cc volume to top of plug hole. Combustion chamber profile non-tech.

**614.3 Gearbox:** Factory unaltered stock gears, stock ratios. (See photo for gear placement and number of teeth.) Stock primary gears and clutch parts only. Aftermarket clutch basket reinforcing ring allowed. Gearbox ratios, crankshaft to PTO: 1st - 7.69, 2nd - 5.71, 3rd - 4.56, 4th - 3.80, 5th - 3.30, 6th - 2.89.

**614.4 Piston:** ASSO Vertex single ring piston with 16mm pin hole, no modifications allowed. Stock wrist pin; no special alloys.

**614.5 Carburetor:** Stock Mikuni TMX-35 carburetor only. May be tuned using Mikuni parts only. (ie: needle jet, pilot jet, main jet, power jet, etc.) Maximum bore 1.384 in.

**614.6 Fuel Pump:** Any pulse fuel pump is legal.

**614.7 Ignition System:** See Section 512 for more information.

**614.8 Reeds and Reed Cage Assembly:** Original reeds and reed cage as supplied by manufacturer.

**614.9 Bearings and Seals:** Bearing and seals must be of the same internal diameter, width and outside diameter as original manufacture, otherwise non-tech.

**614.10 Exhaust Pipe:** Open.

**614.12 Clutch:** Clutch to be assembled using stock parts shown below. Aftermarket clutch basket reinforcing ring allowed. Billet clutch basket is legal.

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### 615 CONTROLLED STOCK 135CC REED VALVE ENGINE (Gas and Oil Only)

#### 615.1 Legal Engines:

Engine	Max. Crank Dia.	Max. Bore	Max. Stroke	Rod Length
DAP T-62	3.395	2.130	2.225	100mm
TKM R-135	3.550	2.130	2.225	104mm
Komet K-35	3.710	2.210	2.185	102mm
DAP T62 w/54.5 stroke	3.395	2.150	2.215	100mm
PCR 135R	3.510	2.130	2.225	104mm

**615.2 Crankshaft:** Must be of original manufacture. No counter weight plugging. No metal removal. Shot peening, polishing are allowed. Any roller cage permitted. Stuffing may be notched above crankpin and be of aluminum or plastic material. Crank must be of same manufacture as engine brand. No interchangeability between engine brands.

**615.3 Legal Additions to 135cc Stock Reed Valve Engines:** Legal additions shall be limited to the following: air cleaner, clutch, muffler, rock guard, chain guard, starter pulley, motor mount, starter nut, header pipe, external extension of carburetor jet needles, carburetor return springs, temperature gauge, tachometer, main bearing shims. Air filter adapter - see 603.1.3.

**615.4 Rod:** Connecting rod must be of original length and made of ferrous magnetic material.

**615.5 Carb Pulse Hole:** Not subject to tech. Reed valve body.

**615.6 Piston:** Must be of original manufacture. (ASSO, DAP, IAME, PCR, TKM). Single or two-ring design. Legally interchangeable between all engines. Wiseco approved for K35.

Both skirts must be intact. No lightening of piston allowed. A maximum of two holes (.093" No-Go) may be drilled to lubricate exhaust rib. Two .450 dia. holes allowed - No-Go. TT notch max. width 1.150" - max. depth .450. Maximum break on all machined edges .030" - skirt area only. Note: Approved pistons have above names cast or forged inside piston. Circlip removal notches 3/16" high, 1/4" wide are permitted.

**615.7 Piston Pin:** Must be magnetic material.

**615.8 Piston Rings:** Not subject to tech, but must be in place. Must be magnetic material.

**615.9 Cylinder Head:** The combustion chamber volume shall be a minimum of 12cc. This is measured to the top of the spark plug hole with the piston at top dead center. Head gaskets and sealing devices are legal.

**615.10 Ignition:** See Section 512 for more information.

#### 615.11 Carburetor - 135cc Reed Valve Engines:

Type	Venturi	Max. Throttle Bore
Tillotson HR184-181	1.110	1.325
Mikuni BMC-34G	1.195	1.360
Tillotson HR191	1.195	1.360

See 100cc controlled section for other carb specifications.

**615.12 External Modifications:** External modifications which do not in any way affect a performance gain are legal. Use of rubber tubing as fin dampeners is allowed. Welding of broken fins to be allowed. No welding of braces to act as a heat sink allowed.

**615.13 Reed Cages:** See 612.3.

**615.14 Non-Tech Items:** Unless otherwise specified, non-tech items include gaskets, oil seals, bearings and cages, fasteners, rings and crank pin.

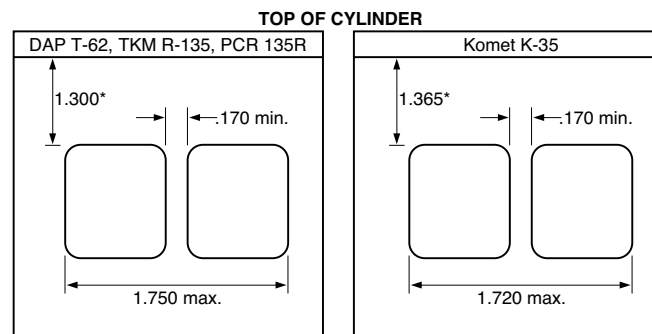
"Bearings are a non-tech item but must be of same internal diameter, width and outside diameter as original parts."

Checked as per 100cc controlled exhaust height. (See 602.2)

T62 DAP using 54.5 stroke - piston travel is 1.315".

**615.15 Intake Ports:** Flow through port can be only as factory intended - (ports must resemble factory porting). Manifold inlet hole - no stuffing or additional material to be added in the intake area per 100cc and 135cc controlled.

\*Check as per 100cc controlled exhaust height (602.2.4) with LAD tech tool



#### 615.16 Intake Port Configuration:

DAP	2 - Transfer ports
TKM	1 - TT Boost port
	2 - Finger ports - Piston fed only (These may not be in but are allowed)
K-35	4 - Transfer ports
TKM	1 - TT - Boost port
Note: TKM Homologated 2-cylinders	
PCR	2 - Transfer ports
	1 - TT Boost port
	2 - Finger ports - Case fed

### 616 STOCK 100CC PISTON VALVE

This section covers stock piston valve engines under 6.20 cu. in. maximum displacement. Engines to have a single cylinder and single stock carburetor. Unless otherwise specified, all parts are to be of original manufacture and stock appearing. The following engines have been homologated for this class: YAMAHA KT100S, DAP T-50, PCR-PP100, TKM BT-82, KOMET K-71, HPV 100, COMER P-50, COMER P-51, ITALSISTEM MA-31 Gas and oil fuel only.

**616.1 External Modifications:** External modifications which do not in any way affect a performance gain are legal. Use of rubber tubing as fin dampeners is allowed. Welding of broken fins to be allowed. No welding of braces to act as a heat sink allowed. "Media blasting is allowed. Holes drilled for cooling purposes are not allowed." This is not a change, but a clarification.

**616.2 Legal Additions to 100cc Stock Piston Valve Engines:** Legal additions shall be limited to the following: air cleaner, clutch, muffler, rock guard, chain guard, starter pulley, motor mount, starter nut, header pipe, external extension of carburetor jet needles, carburetor return springs, temperature gauge, tachometer, main bearing shims, external third bearing. Air filter adapter, see 603.1.3.

**616.3 Non-Tech Items:** Unless otherwise specified, non-tech items include gaskets, oil seals, bearings and cages, fasteners and crank pins. Bearings are a non-tech item but must be of same internal diameter, width and outside diameter as original parts. No ceramic ball or any other type of exotic design main bearings are permitted. Stuffing may be notched above crankpin.

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

**616.4 Rods:** Are not interchangeable.

**616.5 Displacement:** The maximum bore and stroke are:

Maximum		Engine
Bores	Stroke	
2.085	1.816	Yamaha KT100S, Komet K-71, HPV
2.025	1.915	DAP T-50A, TKM BT-82, PCR PP-100
1.990	1.995	Comer P-50
1.977	1.988	Comer P-51
1.974	1.994	Italsistem MA-31



## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**616.6 Inlet Opening:** Inlet opening is checked by holding gauge against bottom of the inlet tract. Piston is then rotated to gently contact the gauge.

Inlet Opening, Check After Top Dead Center	
.775	Yamaha KT100S, Komet K-71, HPV
.810	DAP T-50A, TKM BT-82, PCR PP-100
.835	Comer P-50, Comer P-51, Italsistem MA-31

### 616.7 Carburetor:

Note: Sections 616.7 through 616.7.4 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.

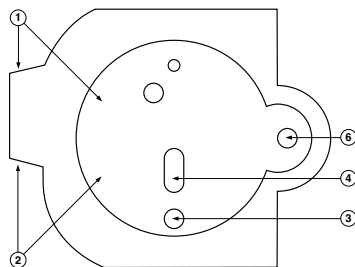
Both screens must be intact at circuit plate and under inlet needle. Filtering devices to protect metering diaphragm allowed. No means of depressing diaphragm allowed.

Fuel Inlet: funneling of brass inlet illegal.

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

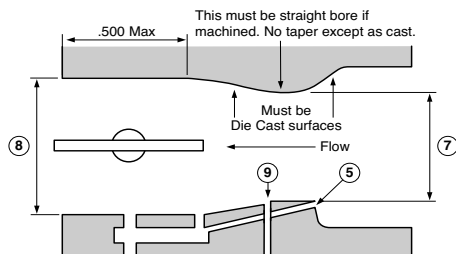
No sleeving of throttle shaft bore allowed.

(Walbro Carburetor WB3A)



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

1. High speed needle seat .081 No-Go
2. Low speed needle seat .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 venturi .950 No-Go
8. Diameter at flange end 1.010 No-Go
9. High speed jet .074 No-Go



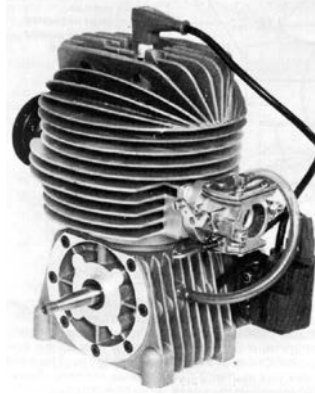
(Check with bent gauge from inside venturi)

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

**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.

## 618 DAP T-50 PISTON PORT



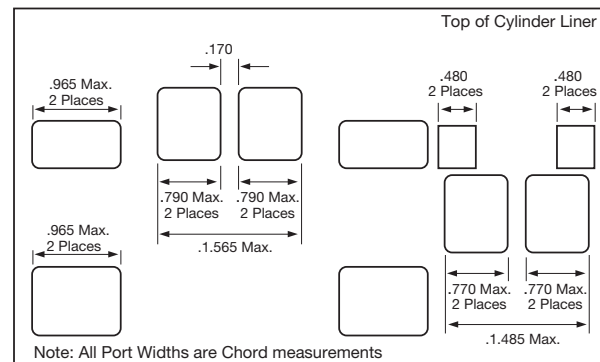
**618.1 Displacement:** Maximum Bore 2.025, Maximum Stroke 1.915

**618.2 Cylinder:** All ports, cast iron liner, and aluminum barrel as cast. No grinding allowed at any location including junction of liner and barrel. The cylinder must be run as supplied by the manufacturer. The liner may not be removed from the barrel and the locking pin must be intact. New style T50 cylinder with single port inlet opening - Maximum chord width - 1.335". All other dimensions shown on diagram above.

**Note:** Four transfer Dap T-50 cylinder legal. Maximum chord width of small transfer ports .480".

**618.3 Exhaust Port Opening:** Check with dial indicator piston travel from top dead center to exhaust opening 1.235 ATDC. See section 602.2.

**618.4 Inlet Opening:** .810 ATDC, see section 602.3.

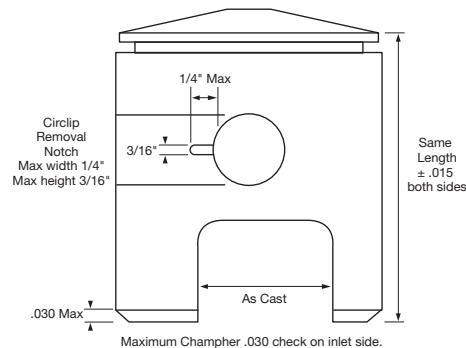


**618.5 Cylinder Head:** Any machining of the cylinder head or cylinder liner to accept a sealing device is illegal, unless it is stock equipment on the engine.

The combustion chamber volume shall be a minimum of 11cc's. This is measured to the top of the spark plug hole with the piston at top dead center. Combustion chamber shape is non-tech.

**618.6 Head Gasket Thickness:** Material should be copper or aluminum. May run without gasket.

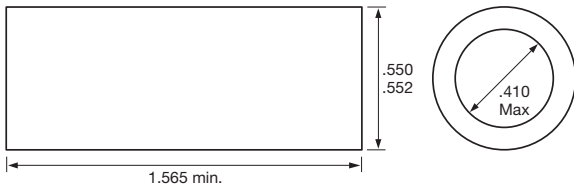
**618.7 Piston:** Piston must be approved single or double ring only and stock appearing. Legal pistons are DAP, TKM, Wiseco, ASSO and PCR-Burris. Maximum break on all machined edges .030" - skirt area only. Rings must be of magnetic material. All approved pistons must have name cast or forged inside.



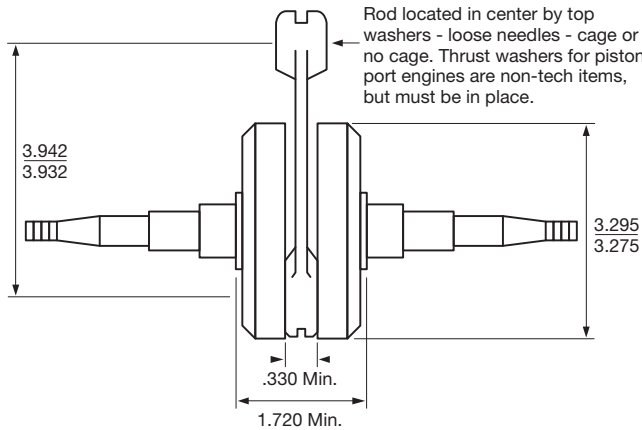
**618.8 Connecting Rod:** Rod must be of original manufacture and stock appearing. Shot peening is allowed. Maximum rod length, center to center: 3.942-3.932 (100mm).

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**618.9 Wrist Pin:** Stock type only. No tapered pins.



**618.10 Crankshaft:** Crank assembly must be of original manufacture and stock appearing. Shot peening and polishing is allowed. Aluminum crankshaft stuffers may be notched (removed) above crankpin. Crankshaft has no counterweight plugs.



**618.11 Inlet Tract:** The minimum length of the inlet tract measured from the carb mounting surface to the cylinder bore diameter 2.600 minimum, 2.800 maximum. Remove carb base gasket.

**618.12 Carburetor:** Walbro WB3. See section 616.7.

**618.13 Fuel Pump:** Illegal

**618.14 Crankcase Pulse Hole:** Internal diameter of pulse pipe hole 128 No-Go.

**618.15 Phenolic Spacer:** Hole size: 1.040 max., 1.000 min. Straight bore.

**618.16 Legal Ignitions:** See Section 512 for more information.

### 619 TKM BT-82 PISTON PORT



**619.1 Displacement:** Maximum bore 2.025, Maximum stroke 1.915

**619.2 Cylinder:** All ports - cast iron liner and aluminum barrel - as cast. No grinding allowed at any location including junction of liner and barrel. The cylinder must be run as supplied by the manufacturer. The liner may not be removed from the barrel and the locking pin must be intact. (Note: Cylinder may be notched for rod clearance.)

**619.3 Exhaust, Intake and Transfer Ports:** Check the port height and width per the following diagrams:

**619.3.1** No grinding on cast iron.

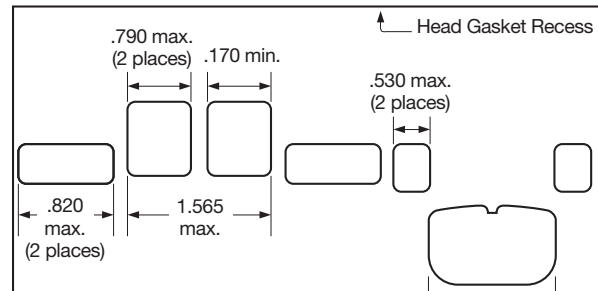
**619.3.2** Black anodize finish must be present in port passages.

**619.3.3** The liner may not be removed from the barrel and the locking pin must be in place.

**619.3.4** No grinding other than original factory on any port passage.

**619.4 Exhaust Port Opening:** Check with dial indicator piston travel from top dead center to exhaust opening 1.235 ATDC. See section 602.2.

**619.5 Inlet Opening:** .810 ATDC, see section 602.3.



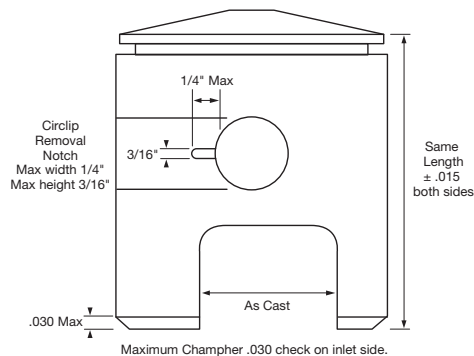
NOTE: All Port widths are chord measurements.

**619.6 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.

The combustion chamber volume shall be a minimum of 11cc's. This is measured to the top of the spark plug hole with the piston at top dead center. Combustion chamber shape is non-tech.

**619.7 Head Gasket:** Material shall be copper or aluminum. May run without gasket.

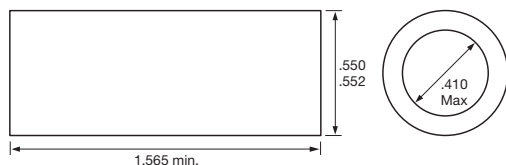
**619.8 Piston:** Piston must be an approved double ring only and stock appearing. Legal pistons are TKM, DAP, Wiseco, PCR, Burris and ASSO. Maximum break on all machined edges .030" - skirt area only. Rings must be of magnetic material. All approved pistons must have name cast or forged inside.



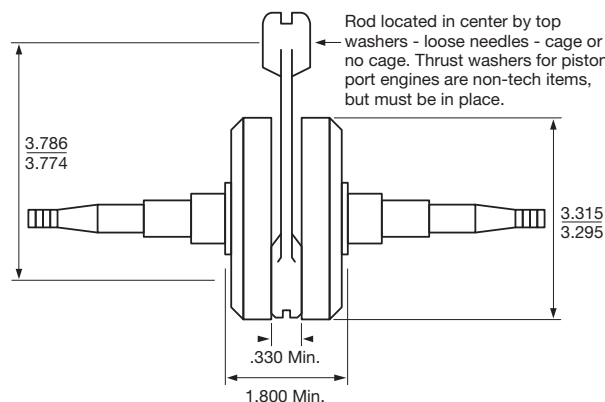
**619.9 Connecting Rod:** Rod must be of original manufacture and stock appearing. Shot peening is allowed. Maximum rod length, center to center 3.786/3.774 (96mm). New style billet connecting rod legal.

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**619.10 Wrist Pin:** No special alloys. Stock type only. No tapered pins.



**619.11 Crankshaft:** Crank assembly must be of original manufacture and stock appearing. Shot peening and polishing is allowed. Crankshaft has two phenolic plugs plus one lead counterweight on each half.



**619.12 Carburetor:** Walbro WB3, See section 616.7.

**619.13 Inlet Tract:** The minimum length of the inlet tract measured from the carb mounting surface to the cylinder bore diameter 2.600 minimum, 2.800 maximum. Remove carb base gasket.

**619.14 Fuel Pump:** Illegal.

**619.15 Crankcase Pulse Hole:** Internal diameter of pulse pipe hole .128 No-Go. May be on right or left side of engine.

**619.16 Aluminum or Phenolic Spacer:** Hole size - 1.040 max., 1.000 min. Straight bore.

**619.17 Legal Ignitions:** See Section 512 for more information.

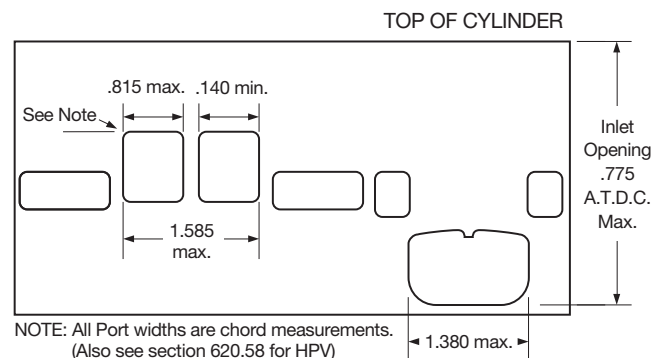
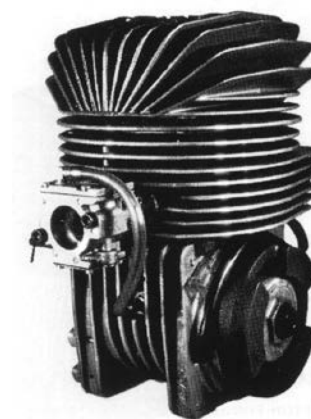
**620 KOMET K-71 PISTON PORT (See 620.50 for HPV specific rules)**

**620.1 Displacement:** Maximum Bore 2.085, Maximum Stroke 1.816

**620.2 Cylinder:** All ports - cast iron liner and aluminum barrel - as cast. No grinding allowed at any location including junction of liner and barrel. The cylinder must be run as supplied by the manufacturer. The liner may not be removed from the barrel and the locking pin must be intact. (Note: iron liner may be notched for rod clearance).

**620.3 Exhaust Port Opening:** Check with dial indicator piston travel from top dead center to exhaust opening 1.155 ATDC. See section 602.2.

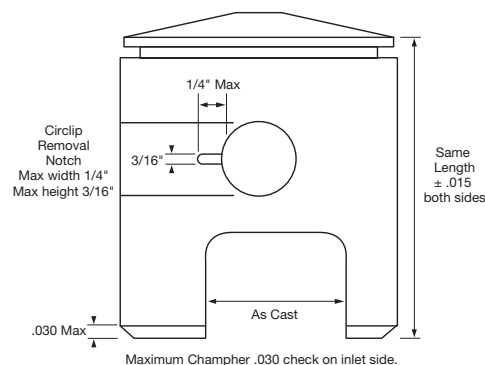
**620.4 Inlet Opening:** .775 ATDC, see section 602.3.



**620.5 Cylinder Head:** Any matching of the cylinder head or cylinder liner to accept a sealing device is illegal, unless it is stock equipment on the engine. The combustion chamber volume shall be a minimum of 11cc. This is measured to the top of the spark plug hole with the piston at top dead center. Combustion chamber shape is non-tech.

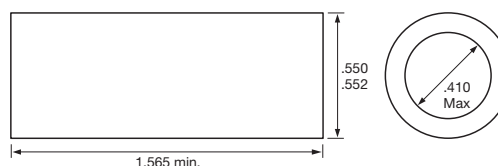
**620.6 Head Gasket:** Material shall be copper or aluminum. May run without gasket.

**620.7 Piston:** Piston must be an approved single or double ring only and stock appearing. Legal pistons are IAME and Burris. Maximum break on all machined edges .030" skirt area only. Rings to be of magnetic material. Piston must have name cast inside. (Also see 620.57 for HPV)



**620.8 Connecting Rod:** Rod must be of original manufacture and stock appearing. Shot peening is allowed. Maximum rod length, center to center: 3.786-3.774. Slotted billet rod.

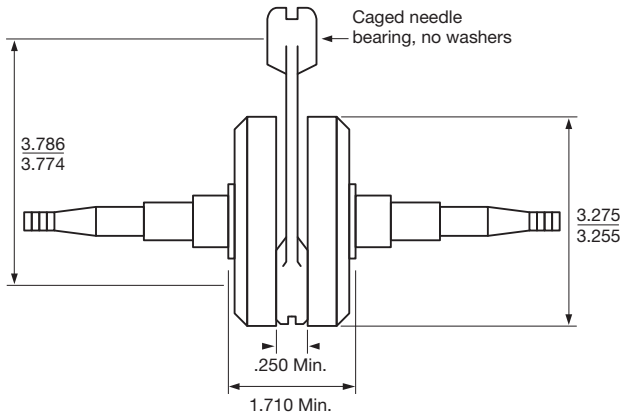
**620.9 Wrist Pin:** No Special Alloys. Stock Type Only. No Tapered Pins.





## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**620.10 Crankshaft:** Crank assembly must be of original manufacture and stock appearing. Shot peening and polishing is allowed. (Also see 620.52 for HPV)



**620.11 Carburetor:** Walbro WB3, see section 616.7.

**620.12 Inlet Tract:** The minimum length of the inlet tract measured from the carb mounting surface to the bore diameter is 2.600 minimum, 2.800 maximum. Remove carb gasket when checking.

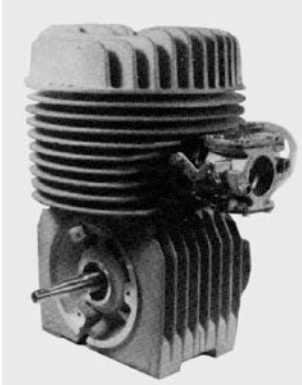
**620.13 Fuel Pump:** Illegal.

**620.14 Crankcase Pulse Hole:** Internal diameter of pulse hole in engine .128 No-Go.

**620.15 Phenolic spacer:** hole size - 1.040 max., 1.000 min. Straight bore.

**620.16 Legal Ignitions:** See Section 512 for more information.

### 621 PCR PP-100 PISTON PORT

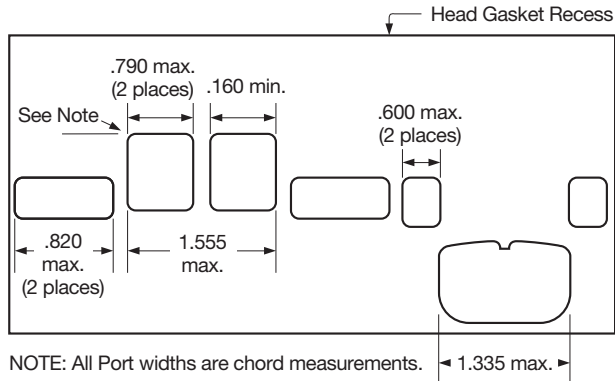


**621.1 Displacement:** Maximum Bore 2.025, Maximum Stroke 1.915

**621.2 Cylinder:** All ports - cast iron liner and aluminum barrel - as cast. No grinding allowed at any location including junction of liner and barrel. The cylinder must be run as supplied by the manufacturer. The liner may not be removed from the barrel and the locking pin must be intact. (Note: Cylinder may be notched for rod clearance).

**621.3 Exhaust Port Opening:** Check with dial indicator piston travel from top dead center to exhaust opening 1.235 ATDC. See section 602.2.

**621.4 Inlet Opening:** .810 ATDC, see section 602.3.

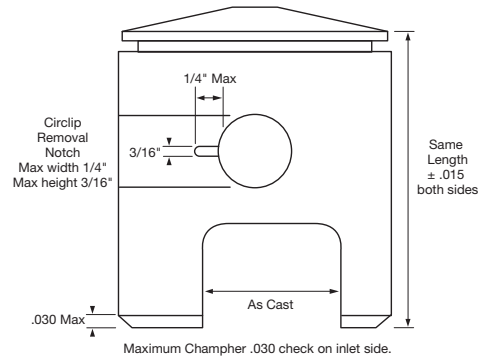


**621.5 Cylinder Head:** Any machining of the cylinder head or cylinder liner to accept a sealing device is illegal, unless it is stock equipment on the engine.

The combustion chamber volume shall be a minimum of 11cc. This is measured to the top of the spark plug hole with the piston at top dead center. Combustion shape is non-tech.

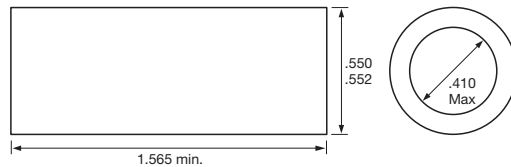
**621.6 Head Gasket:** Material shall be copper or aluminum. May run without gasket.

**621.7 Piston:** Piston must be an approved double ring only and stock appearing. Legal pistons are TKM, DAP, Wiseco, PCR, Burris and ASSO. Maximum break on all machined edges .030" skirt area only. All legal pistons must have name cast or forged inside.

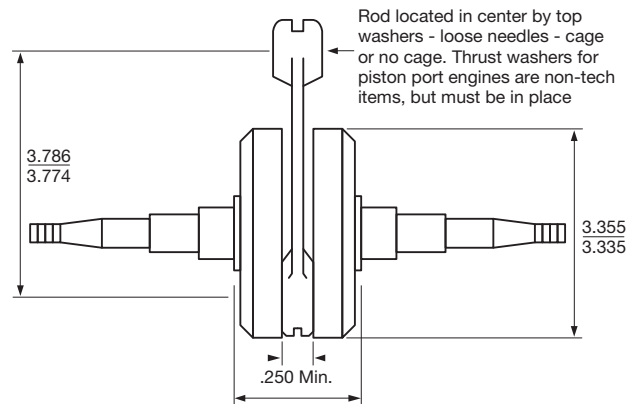


**621.8 Connecting Rod:** Rod must be of original manufacture and stock appearing. Shot peening is allowed. Maximum rod length, center to center: 3.786/3.774 (96mm) new style billet rod legal.

**621.9 Wrist Pin:** No special alloys. Stock type only. No tapered pins.



**621.10 Crankshaft:** Crank assembly must be of original manufacture and stock appearing. Shot peening and polishing is allowed. Crankshaft has no counterweight plugs. Plastic or aluminum crankshaft stuffers.



**621.11 Carburetor:** Walbro WB3, see section 616.7.

**621.12 Inlet Tract:** The minimum length of the inlet tract measured from the carb mounting surface to the cylinder bore diameter is 2.600 minimum, 2.800 maximum. Remove carb base gasket.

**621.13 Fuel Pump:** Illegal.

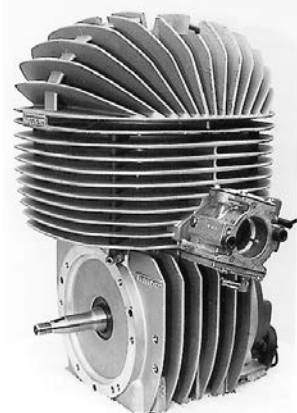
**621.14 Crankcase Pulse Hole:** Internal diameter of pulse pipe hole .128 No-Go. May be on right or left side of engine.

**621.15 Phenolic spacer:** hole size - 1.040 max., 1.000 min. Straight bore.

**621.16 Ignition:** See Section 512 for more information.

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

### 621.1 COMER P50 PISTON PORT



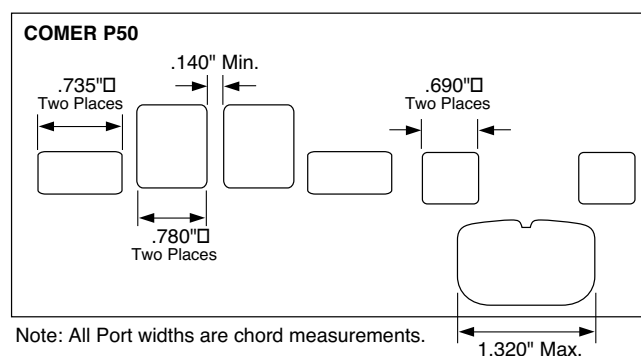
**621.1.1 Displacement:** Maximum Bore 1.990". Maximum Stroke 1.995".

**621.1.2 Cylinder:** All ports must be of intended design, conforming to drawing. Ports may be machined in the inlet and exhaust area's including the cast iron. There shall be no removal or addition of materials in the transfer passages. (Aluminum areas) The cast iron finish of the transfer ports is non tech but must meet the sizes noted in the drawing. The aluminum may be blended at the junction of the iron and may be done only with a minor amount of grinding.

**621.1.3 Exhaust Port Opening:** Check with dial indicator piston travel

from top dead center to exhaust opening – 1.295" (see 602.2).

**621.1.4 Inlet Opening:** .835" ATDC (see 602.3)



**621.1.5 Cylinder Head:** Gasket material shall be copper or aluminum. May be run without gasket. 11cc minimum.

**621.1.6 Piston:** Legal piston is Iame or Asso. See drawing at 620.7

**621.1.7 Wrist Pin:** No special alloy's. stock type only without taper. Minimum length 1.520" ----- Maximum ID .410

**621.1.8 Connecting Rod:** Must be of original manufacture and stock appearing. Approved conrods are DAP-Iame-Comer-PRD. Center-to-center length – 3.932"-3.942".

**621.1.9 Crankshaft:** Must be of original manufacture and stock appearing. Shotpeening and polishing allowed. Rod may be located top or bottom.

**621.1.10 Carburetor:** WB-3A (see section 616.7)

**621.1.11 Inlet Track Length:** The minimum length of the inlet tract measured from the carb mounting surface to the bore diameter is 2.600" minimum, 2.800" maximum. Remove carb gasket when checking.

**621.1.12 Fuel Pump:** Illegal

**621.1.13 Crankcase Pulse Hole:** ID of pulse hole in crankcase - .128" max.

**621.1.14 Phenolic Spacer:** Hole size 1.040" max. – 1.000" min. straight bore only.

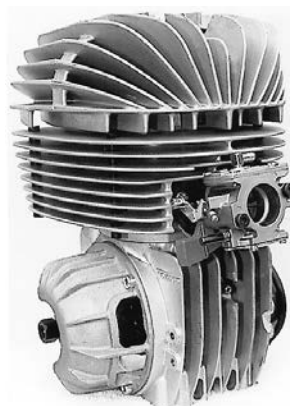
**621.1.15 Ignition:** see section 512

### 621.2 FIA/FMK 100cc PISTON PORT Engines

**Note:** CIK applicable homologation fiche may be used as reference in tech inspection (drawings/pictures, etc.).

#### COMER MIK P51

Brand	Model	Max-Min Stroke	Max Bore	Max Inlet w/Lad Tool	Max Exhaust w/Lad Tool
Comer	P51	1.992-1.984	1.977"	.835"	1.295"



**621.2.1 Cylinder:** Externally stock appearing. Iron liner only. No chrome or nikasil. Two exhaust ports only. The shape of the two exhaust ports must be rectangular.

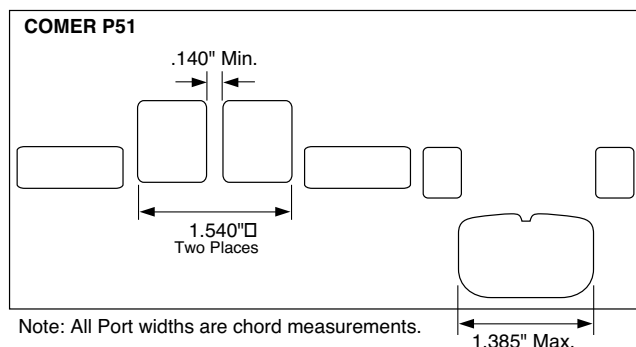
**621.2.2 Transfer Ports:** non tech

**621.2.3 Conrod:** 100mm center-to-center length. Must be of ferrous material.

**621.2.4 Cylinder Head:** Externally stock appearing. 11cc minimum.

**621.2.5 Piston:** Comer-Italsistem-Asso.

**621.2.6 Inlet Track Length:** The minimum length of the inlet tract measured from the carb mounting surface to the cylinder bore diameter – 2.600" minimum.



**621.2.7 Carburetor:** Walbro WB-32 butterfly type with thru shaft. Venturi maximum size at narrowest part of Venturi .945" no-go. Maximum diameter at flange end (throttle bore) 1.072" no-go. Maximum diameter at front opening 1.213" no-go. Filter cup non tech.

**621.2.8 Fuel Pump:** Illegal – fuel must be supplied from the fuel tank at normal atmospheric pressure.

**621.2.9 Crankcase Pulse Hole:** .120" maximum

**621.2.10 Phenolic Spacer:** hole size – 1.100" maximum – straight bore only

**621.2.11 Legal Ignitions:** see section 512

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

### 702 TECUMSEH CONTROLLED STOCK ENGINE RULES

**702.1 Engine Type:** Tecumseh H50 - SBH-9990 aluminum engine with or without steel sleeve bore. Bore 2.625 with maximum over bore 2.657. Stroke 2.500 ± .010.

**702.2 Carburetor:** Any Tillotson carburetor with butterfly throttle assembly. .900 Venturi No-Go. Air filter and adapter non-tech.

**702.3 Fuel Pump:** Auxiliary pulse type fuel pump allowed. Must be crankcase pulsed.

**702.3 Exhaust System:** Must meet IKF safety and noise rules. Can not protrude into port. No additional hoses or tubes to and from exhaust.

**702.4 Sheet Metal:** As factory supplied. Repainting allowed. May cut for tire clearance. May cut for temperature sensor clearance. Removal of starter mounting lip allowed. Old style flywheel housing allowed.

**702.5 Removal of Starter and Hub Allowed:** If starter is removed, a fixed flywheel screen must be securely mounted to housing. May use two Bellevue washers when removing starter hub.

**702.6 Ignition:** As factory supplied per #34443A. May use RTV silicone on terminals and wires. Any spark plug terminal or boot.

**702.7 Flywheel:** As factory supplied part #611084. No modifications. No paint. No broken fins. Minimum weight: 7 lbs., 8 oz.

**702.8 Flywheel Key:** Non-tech. May or may not be used.

**702.9 Crank/Flywheel Nut:** May use extended nut for electric start.

**702.10 Breather:** As factory supplied. Non-plated parts allowed. Hos./tube replacement allowed.

**702.11 Carb. Mounting Flange:** As factory supplied part #34712. May use "Star" type flange part #34349A. Bore I.D. non-tech. Addition of carb pulse hole allowed. Any single gasket between cylinder and flange. Gasket surface may be sanded or milled flat. Surfaces must be parallel and flat. No angle milling. Addition of through studs allowed.

**702.12 Cylinder Head:** As factory supplied part 330838A. Milling for temperature sensor allowed. Resurfacing of gasket surface allowed. Glass beading of combustion chamber allowed. Finish is non-tech. Repair of spark plug threads with 14mm insert. Removal of carbon deposits for tech inspection allowed.

**702.13 Head Gasket:** Part #28938C. No dimensional check as gasket will change during use and removal. Use of graphite spray to aid removal of gasket allowed. Old style metal gasket allowed. No O-rings allowed.

**702.14 Cam Timing:** Check at running clearance. 235 degrees maximum duration at 0.50 lift allowed. .280 maximum lift allowed.

**702.15 Valves:** Size and type non-tech.

**702.16 Valve Spring Keepers and Retainers:** Non-tech.

**702.17 Cylinder:** Part #35123A as cast with following exceptions: Maximum seat I.D. intake 1.100, exhaust 1.025. Welding to repair broken cylinder allowed as long as weld will not alter performance.

Deck height non-tech

Replacement valve guides allowed.

Grinding and polishing of port allowed. Area between valves and cylinder bore is considered part of port job and is non-tech.

No replacement valve seats.

Factory over bore sizes .010, .020.

Addition for 1/8 inch fuel pump pulse port allowed.

**702.18 Side Cover:** Part #31451A as factory supplied. Addition of 1/8 inch NPT fuel pump pulse port allowed. Resurfacing of gasket surface allowed. Plug governor hole allowed. Removal of crank PTO main bearing retainers allowed. Plug crank PTO main bearing retainer holes allowed.

**702.19 Crankshaft:** As factory supplied part #35223. Slip fit of PTO bearing allowed. Crank gear non-tech. Grinding of counterweights to clear camshaft. Heat treatment allowed. Regrind of rod journal O.D. and width allowed. Surface polishing of crank allowed.

**702.20 Camshaft:** Part #36423K as factory supplied. Welding of lobes allowed. Regrinding of lobes allowed. Lightening of gear allowed.

**702.21 Connecting Rod:** Non-tech.

**702.22 Piston:** A factory supplied, no modifications. Part # 33312B std. /34532 + .010 /34533 + .020.

.838-.850 from top of piston to top of wrist pin.

Wrist pin O.D. .624 ± .001.

No grinding or polishing.

Glass beading to remove carbon allowed.

**702.23 Piston Rings:** May discard expanders if desired. No multiple piece rings. Two compression rings and one oil ring must be used in their intended location.

**702.24 Valve Lifters:** Part #34034. Length may be extended by welding. Stem diameter .308-.311. Head diameter 1.025-1.050.

**702.25 Other Additions or Modifications:** Replacement of repair of threaded fasteners or holes with other fasteners, studs, or thread inserts allowed as long as original thread size and location is maintained.

Gasket sealers or lubricants are allowed.

Addition of stud girdles, safety shields, third bearing supports, throttle brackets, fuel pump bracket, and header brace allowed.

### 703 TECUMSEH CONTROLLED STOCK TECHNICAL INSPECTION PROCEDURE

Procedure:

**703.1** Inspect fuel, oil, and safety features per I.K.F. standards.

**703.2** Remove clutch, chain guard, oil, header, and motor mount.

**703.3** Remove carburetor. Inspect Venturi size with 2 point No-Go .900 maximum.

**703.4** Remove starter housing and flywheel. Inspect flywheel for modifications and minimum weight of 7 lbs. 8 oz.

**703.5** Remove cylinder head. Visually inspect combustion chamber for modifications.

**703.6** Inspect bore size 2.657 max. Inspect stroke 2.510 maximum.

**703.7** Install degree wheel and dial indicator. Inspect camshaft duration and lift at running valve clearance with valve springs installed. Duration: 235 degree maximum at .50 lift. Net lift: .285 maximum.

**703.8** Remove breather. Inspect for complete assembly.

**703.9** Remove valves and valve springs. Inspect for single valve spring with maximum free length of 1.700. Inspect valve seat I.D. with caliper maximum I.D. allowed - Intake: 1.100, Exhaust: 1.025.

**703.10** Remove side cover. Inspect for single piece camshaft. Inspect valve lifter head O.D.: 1.025 - 1.050. Valve lifter stem O.D.: .308 - .312.

**703.11** Remove piston, connecting rod, and crankshaft. Inspect piston for modifications. Inspect height, top of wrist pin to top of piston: .838 -.850. Inspect wrist pin diameter: .623 - .625.

**703.12** Inspect piston rings for multiple piece compression rings.

**703.13** Inspect cylinder for welding that may affect performance of engine.

### 705 SUPER STOCK ENGINE RULES

**705.1** Briggs & Stratton 5hp stock engine rules except for carb. and manifold.

**705.2** Any HL Tillotson, or Zama WIT820 carburetor with butterfly throttle assembly Venturi .900 No-Go. Carb must be stock appearing with single or double pumper stack of original style on carburetor. New style heavy body Tillotson allowed. Single high speed fuel discharge only.

**705.3** Any single piece intake manifold. Intake gasket optional, sealer may be used.

**705.4** Auxiliary fuel pump may be used. Pump must be pulsed from intake manifold only.

**705.5** Third bearing supports are not allowed.

**705.6** Any unmodified, series produced aluminum alloy rod that is available to the karting industry is allowed. Rods, other than the Briggs factory rod, may be no lighter than 135 grams with bolts and inserts, if used. Rod length, from bottom of wrist pin hole to top of crank hole must measure between 3.1200" and 3.1433". All may be used with stock Briggs & Stratton piston, or Wiseco 1992 or 1993 piston, or Burris Super Stock piston. Listed piston may accept Raptor-3 rings.



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**705.7** Minor grinding between cam lobes for rod clearance allowed. Block may be relieved for rod clearance.

**705.8** Piston pop-out may not exceed .015" (same as stock classes). Top of piston may be machined with minimum dimension of .937" from top of piston to top of wrist pin, using a depth micrometer to measure.

### 706 LIMITED MODIFIED ENGINE RULES

**706.1** Briggs & Stratton 5hp engine in unaltered "as cast" condition. Cast iron sleeves allowed. Ports per stock class rules. After market bearing holder on flywheel side of block is not permitted. Briggs replacement bushing installation is permitted. Minor grinding to clearance rod and lifters is permitted. Machining deck surface is permitted. Deck may not be surfaced below top of the valve seats. 4hp block not permitted. Reinforcement or repair of lifter boss area allowed.

**706.2** Any approved unaltered stock stroke crank with .010" for wear. Lightening of the crank, polishing of the counterweight, addition of weight or other alterations are not permitted. Any aftermarket cam gear permitted on crankshaft. Any 8 ball non self-aligning bearing allowed on PTO side and any 9 ball non self-aligning bearing allowed on flywheel side of crankshaft. Models #133230 & 135230, any 8 ball non self-aligning 6204 or 9 ball non self-aligning 6205 ball bearing allowed. Minor grinding on crankshaft to clear camshaft is allowed.

Approved cranks: Stock Briggs & Stratton, Horstman steel.

**706.3** Bore 2.6325" maximum. Any non-titanium piston and rod allowed.

**706.4** Billet flywheel mandatory.

Special Note: Not all listed flywheels are approved by all sanctioning organizations. Choose carefully, considering where you will race.

**706.4.1 Flywheel must be:** ARC #6608, Clements BSFWLTD, Clements BAF-WL, JR Racecar Engineering Model 5553284, UM&MF Model FS-1001, or VKE Briggs Billet Flywheel. Flywheel must be unaltered and as supplied by manufacturer. Painting or coating of flywheel not permitted.

**706.4.2** Weight of flywheel to be 4 pounds, 12 ounces minimum.

**706.4.3** Any flywheel key or no flywheel key allowed.

**706.4.4** Flywheel screen must be mounted on shroud.

**706.5** Any HL Tillotson or Zama WIT820 carburetor with butterfly throttle assembly. Venturi .900 No-Go. Carb must be stock appearing with single or double pumper stacks of original style on top of carburetor. Auxiliary fuel pump allowed. New style heavy Tillotson body allowed.

**706.6** Stock electronic ignition only allowed. Point plunger hole must be plugged. Coil must remain stock and will be teched per stock class rules. Coil air vane not required.

**706.7** Stock valves and valve seats with stock angles. Valve seats can be refaced as long as port diameter and seat angle are not changed. Any metallic guides are allowed. Any valve spring retainers are permitted.

**706.8** Any camshaft, lifters, valve springs, retainers and keepers allowed.

**706.9** Stock 5hp head cannot be machined below the flat cylinder portion of the head. Recess at deepest part of head must be .400" minimum. Valve area of head may be relieved for valve clearance. Relieving into gasket area not allowed. Head gasket is not a tech item. O-ring not permitted. (See 700.3 Special Notes.)

**706.10** Piston must be flat top, no domed pistons allowed.

**706.11** Crankcase breather and girdle strap are legal.

**706.12** Any replacement bolt or fastener is permitted, as long as the original diameter is used.

**706.13** Engine can be run with or without cylinder shroud and head shroud. Third bearing supports are allowed.

**706.14** Back facing of upper portion of valve chamber to stabilize valve spring retainers and prevent spring bind is allowed.

### 707 BRIGGS MODIFIED ENGINE RULES (IKF Regional Championship class)

(Same as Limited Modified with the following exceptions.)

**707.1** .100" overbore allowed.

**707.2** Any valve and cylinder OD valve seat insert in original valve location allowed.

**707.3** Stock appearing head combustion chamber non-tech. No addition of material.

**707.4** Ports (below valves) non-tech. Addition of material allowed.

**707.5** Machining of block above valve seat inserts allowed. No addition of material.

**707.6** Any stock-appearing Tillotson HL series, or Zama WIT820 carburetor permitted. Slide-type throttle not allowed.

**707.7** Any ignition utilizing the stock flywheel is permitted.

**707.8** Back facing of upper portion of valve chamber to stabilize valve spring retainers and prevent spring bind is allowed.

### 708 OPEN ENGINE RULES (IKF Regional Championship class)

**708.1** Any 5hp block allowed.

**708.2** Briggs & Stratton, Tecumseh, Deco, Honda, Kawasaki and Wisconsin engines are legal.

**708.3** Any bore and stroke, 14.2 cubic inch maximum.

**708.4** No pressure fuel injection or supercharger permitted.

**708.5** Two (2) carburetors may be utilized.

**708.6** Flywheel must be Holloway, Clements Racing Products, Horstman, JR Engineering, ARC or Stock Briggs 5hp.

Screen must be on shroud. No stock flywheel screen allowed. Horstman battery ignition allowed.

**708.7** No overhead cams or overhead valves permitted.

**708.8** Camshaft and crankshaft must run in same position as shipped from factory. No relocating allowed. Third bearing supports are allowed.

### 709 STAR CLASS

**709.1** Tecumseh HM100, Kits 730587K, 756991K or 756992K, cyl block 34922A

**709.1.1** All parts may be teched against a known stock part, unless otherwise noted.

**709.1.2** No titanium components allowed.

**709.1.3** Coating or plating of cylinder or internal engine parts is prohibited.

**709.2** Clutch, if used, must be rim centrifugal only. No disc clutches. End of crank bolt and safety washer required.

**709.3** Engine sheet metal must be unaltered, intact and in place, except:

**709.3.1** Internal baffle and starter cover may be removed from shroud.

**709.3.2** Shroud may be cut for temp sensor clearance.

**709.3.3** Exhaust mounted heat deflector is optional.

**709.4** At manufacturers request, all Tecumseh engines, including Star and H50, must use an RLV B91 series muffler.

**709.5** Carb must be any HL Tillotson with butterfly throttle assembly. Venturi .900 No-Go. Carb must be stock appearing with single or double pumper stacks of original style. New style heavy Tillotson body allowed.

**709.5.1** Air filter adapter is non tech.

**709.6** Auxiliary fuel pump allowed.

**709.7** Intake manifold, Tecumseh #34349A, stock part except:

**709.7.1** May be drilled tapped for pulse line passageway.

**709.7.2** May be mounted with longer studs to tilt carb needles to clear exhaust.

**709.7.3** Gasket surfaces may be resurfaced. minimum thickness .600". surfaces must be parallel within .005"

**709.8** Remove cylinder head, must be stock part, except:

**709.8.1** Head fin may be modified for CHT lead.

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- 709.8.2** 14mm Helicoil is allowed.
- 709.8.3** Valve area must be unaltered.
- 709.8.4** Head must have minimum depth of .360" from gasket surface to area in front of spark plug.
- 709.8.5** Head washers optional and non tech.
- 709.8.6** Compression Release allowed in head.
- 709.9** Tech head gasket for .043" minimum thickness. Any gasket allowed.
- 709.10** Maximum bore is 3.348", maximum stroke is 2.544"
- 709.11** Decking of head gasket surface is allowed. Piston pop up may not exceed .015" when checked across wrist pin.
- 709.12** Maximum valve lift is .325", maximum duration is 265 degrees at .003" lift, both lobes, checks to be made at running lift with springs installed.
- 709.13** Any valve cover may be used. Use of valve breather body is optional.
- 709.14** Valves, followers, retainers and keepers as factory supplied. Upper valve spring shims allowed.
- 709.15** Stock valve springs as factory supplied, max. length 1.700", max wire size .106".
- 709.16** Check block for porting. Porting is not allowed. Check 30 degree intake valve seat for max I.D. 1.190". Check 45 degree exhaust valve seat for max ID 1.025". Multi-angle seats not allowed.
- 709.17** Remove flywheel. Must be as factory supplied, no modifications, no paint, no broken fins, any flywheel washer allowed.
- 709.17.1** For electronic ignition motor: minimum weight 7 pounds, 5 ounces. Flywheel key optional.
- 709.17.2** For point ignition motor: Tecumseh #30561 stock unaltered stator only. Point setting ignition timing non tech. No offset keys. Flywheel part #610847 as factory supplied.
- 709.17.3** Factory supplied Motorsports Ignition only, with no modifications. Silicone RTV sealer may be used on high tension wire. Any spark plug end allowed, point type or electronic ignition.
- 709.18** Remove side cover (part #33626B ball bearing side cover) stock with the following exceptions:
- 709.18.1** Pulse port allowed.
- 709.18.2** Multiple vent tubes to catch tank allowed.
- 709.18.3** Aluminum anti-surge baffle (if installed) must be mounted as factory supplied.
- 709.18.4** Cam bearing boss may be face machined to adjust cam end play.
- 709.18.5** Peening of gasket surface allowed
- 709.18.6** Bearing retainer bolts optional.
- 709.19** Remove camshaft, check for stock Tecumseh only, no visual check on camshaft. Welding of lifter surface area may extend onto sides of lobe. Cam gear may be lightened.
- 709.20** Remove lifters. Must be stock type, welded or unwelded.
- 709.21** Remove piston, stock sizes, as factory supplied, allowed.
- 709.22** Connecting rod is non tech.
- 709.23** Check for stock Tecumseh rings as factory supplied. #2 compression ring may be compression or scraper. Use of factory oil ring expander is optional.
- 709.24** Remove circlips. Slide out wrist pin. Min. height piston top to top of wrist pin is .8375".
- 709.25** Remove wrist pin. Minimum length 2.404". Max I.D. .448". Min. O.D. .623".
- 709.26** Remove crank, check for stock unaltered part. Stock bearing only, may be slip fitted. Thrust washers allowed. Crank gear is non tech. Repair of threaded flywheel end of crank with 1/2" stud allowed.
- 709.27** Check block, #34096C or new replacement block #36900K are legal, factory stock with the following exceptions:
- 709.27.1** Decking allowed, see 709.11

**709.27.2** Side cover gasket surface may be resurfaced. Gasket surface may be peened.

**709.27.3** Removal or replacement of external coil mounting bracket allowed.

**709.27.4** Metal removal from late style CDI ignition blocks to permit mounting of point ignition stator assembly allowed.

**709.27.5** Exhaust bolt holes may be reduced to 1/4".

**709.27.6** Diaper plates allowed.

**709.27.7** Reinforcement or repair of lifter boss area allowed. Cam side of lifter bores may be chamfered or radiused. Maximum diameter of chamfer or radius is .500" no-go.

**709.27.8** Installation of factory flywheel side bushing #31461 allowed.

### 710 TECUMSEH MOTORSPORTS H-50 "STOCK"

**710.1** Tecumseh H-50 Motorsports Engine #756994K (SBH-9994) or equivalent at 335 lbs. on methanol fuel only. Standard bore 2.625 with .010 and .020 factory overbore allowed. Maximum bore size allowed 2.657. Stroke 2.500 +/- .010.

**710.2 Cylinder Block** As factory supplied. No alterations or reworking allowed unless specifically allowed. No porting or polishing, as factory supplied and unaltered. Block may be decked as long as piston does not exceed .005 above block deck surface. Bronze factory replacement bushing on flywheel side main bearing allowed. Welding to repair block below fins allowed. Resurfacing of valve seats allowed as long as original 45 degree angle is maintained. Maximum intake valve seat ID 1.088 inches. Maximum exhaust valve seat ID 1.025 inches. Header flange bolt holes may be re-sized to accept 1/4 inch bolt with the use of thread inserts. Threaded holes may be repaired with Heli-coil type or other such inserts as long as original position and diameter are maintained.

**710.2.1** Addition of pulse fitting for fuel pump allowed. Use of 1/4"-5/16" or stepped type studs for carb mounting allowed.

**710.3 Carburetor** Any single pumper Tillotson HL series carb allowed. Maximum Venturi ID .790" No-Go, Maximum throttle bore ID 1.010". Single hi-speed fuel discharge only.

**710.4 Air Filter and Adapter** Any air filter or air filter adapter allowed. No hoses to or from air filter or air filter adaptor allowed. Filter adapter is to be one piece.

**710.5 Fuel Pump** Walbro "WIP" style plastic body fuel pump only. Must be crankcase pulsed from the cylinder or side cover.

**710.6 Header/Silencer** As per IKF noise and safety rules. May not protrude into port.

**710.6.1** At manufacturers request, all Tecumseh engines must use an RLV-B91 series muffler.

**710.7 Shrouds, Covers and Sheet Metal** Must be installed in their intended locations. May be trimmed for temp sensor installation or tire clearance. May be repainted.

**710.8 Ignition** As factory supplied. Tecumseh Motorsports ignition only. Part #36605K. Any spark plug allowed. Any spark plug boot allowed.

**710.9 Flywheel** As factory supplied. No Modifications. Minimum weight 7 lbs. 8 oz. No painting. No broken fins. No coatings. Must run stock factory flywheel key. Minimum key width .124. Maximum keyway slot width .127. No offset keys allowed.

**710.10 Intake Manifold/Carburetor Adapter** Factory type only. Stock appearing as cast. No angle milling allowed. May be fitted with studs to allow mounting of approved single pumper HL carb. No tech on inside diameter or thickness. Thru studs from cylinder block for carb mounting allowed.

**710.11 Cylinder Head** Stock 5 hp As factory supplied. Machining of gasket surface allowed. Minimum depth from gasket surface to surface directly behind spark plug, in front of and between valves .315. No sandblasting. No grinding or polishing. May repair spark plug thread hole with 14 mm heli-coil or other type thread insert.

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**710.12 Camshaft** Tecumseh Motorsports cam #36673K. No welding. Camshaft gear may be lightened.

Intake	Exhaust				
.050	3btde-3	atdc	.050	34-28	bbdc
.100	11-17	atdc	.100	20-14	bbdc
.150	25-31	atdc	.150	6-0	bbdc
.200	42-48	atdc	.200	10-16	abdc
.250	68-75	atdc	.250	36-42	abdc
Max. Lift	.268	Max Lift	.268		
.250	50-41	bbdc	.250	79-71	btde
.200	21-14	bbdc	.200	52-45	btde
.150	4bbdc - 3	abdc	.150	36-28	btde
.100	10-17	abdc	.100	23-16	btde
.050	24-31	abdc	.050	12-4	btde

**710.13 Valves** As factory supplied. Length is non-tech. Ends may be ground to set lash. Valves may be re-faced as long as original 45 degree angle is maintained. Intake valve head diameter 1.210/1.226. Exhaust valve head diameter 1.149/1.173. Stem diameter in valve guide area .306 minimum. No polishing or lightening. Valve lash setting is non-tech.

**710.14 Valve Springs** Tecumseh Motorsports valve springs only. As factory supplied. Single spring per valve. Maximum wire size .106. Maximum length 1.700. No shims allowed.

**710.15 Upper Spring Retainer** Maximum thickness .033. Installed as factory intended. One per valve.

**710.16 Side Cover** As factory supplied. May add one 1/8 NPT thread pipe fitting for fuel pump pulse port. May plug governor shaft hole. May add RTV type sealer or equivalent to bearing retainer holes.

**710.17 Crankshaft** As factory supplied. No lightening, drilling, polishing or balancing. Ball bearing may be slip fitted. Crank gear no modifications. 710.18 Connecting Rod Rod non-tech.

**710.19 Piston** As factory supplied. No modifications. Minimum length from top of piston to bottom of skirt 1.895 inches. Wrist pin hole size .624/.628. Minimum length from top of piston to top of wrist pin .842. No aftermarket coatings.

**710.20 Wrist Pin** As factory supplied. No modifications. No tapered pins. Minimum length 1.960. Maximum ID hole size .450.

**710.21 Piston Rings** As factory supplied. Chrome face rings are not allowed. Rings must be run in their intended location. Top ring inside bevel facing up. Middle ring scrapper edge facing down. Single piece oil ring. May remove oil ring expander.

**710.22 Valve Lifters** As factory supplied. No welding. No lightening. Stem diameter .309/.312. Head diameter 1.040/1.052.

**710.23 Breather Valve and Plate** Baffle assembly optional. Any valve chamber cover allowed. Motor may be vented from valve chamber cover and/or from the cylinder side cover, with or without the pcv valve.

**710.24 Bolts and Fasteners** Head bolts and rod bolts as factory supplied. All others may be replaced as long as original factory size is maintained.

**710.25 Gaskets** Minimum head gasket thickness .035 as found in at least three places between bolt holes. Side cover gasket and exhaust gasket only: may use RTV or Loctite type sealers.

**710.26 Governor Assembly** All holes may be plugged with threaded fastener and RTV or epoxy sealers.

**710.27 Recoil Starter** Recoil starter may be removed. If removed, a fixed flywheel cover screen must be attached to blower housing and starter cup must be removed.

**710.28 Welding** Minor welding below fins to repair broken cylinder only. No other welding allowed.

**710.29 General** No special coatings or metal treatments allowed. All parts can be checked and compared to known stock parts. Floor mounted fuel tank only. Fuel tank may not be attached to the engine in any manner other than the fuel line. The Tecumseh H-50 may be run with an after-market motor mount replacing the stock stamped steel mount.

**710.30 Lower Valve Spring Retainers:** Aluminum type with split steel locks or early factory type stamped steel type may be used.

### 711 I.K.F SPEC LIMITED RULES

**711.1 Block:** Same as Super Stock Rules except piston pop-out and inlet port diameter (See Section 705). Girdle strap is allowed.

**711.2 Head:** Piston area of head may be machined flat, combustion chamber as cast from factory.

**711.2.1** Head may have a slot for piston clearance, max. depth .015", max width .640".

**711.3 Stock shape head gasket.** Any material may be used for the head gasket but the gasket must be the same shape as a stock Briggs head gasket.

**711.4 Stock head bolts.** Engine may be run with or without cylinder shroud and/or head shroud.

**711.5 Deck, Valve Seats, Eyebrows** - Same as Ltd. Modified (See Sect. 706)

**711.6** Stock valves, any springs and retainers

**711.6.1 Valve guides:** Any stock type valve guide allowed.

**711.7** Any aftermarket valve spring cover allowed.

**711.8** stock steel 3 hp flywheel part #296884

**711.9** 3 hp or 5 hp coil

**711.9.1** 2000 min. - 5000 max ohms

**711.9.2** Air vane optional

**711.9.3** Coil may be mounted on bracket or may be drilled to fit original posts.

**711.10 Porting:** no addition of material

**711.10.1 Exhaust port:** 1.035 No-Go

**711.10.2 Intake port:** 0.900 No-Go

**711.11 Valve seat inserts:** as per stock specs (See Sections 701.20 and 701.25)

**711.12 Carb:** Stock appearing Tillotson or Zama, single or double pumper.

**711.12.1 Carb:** Any HL Tillotson, or Zama WIT820 carburetor with butterfly throttle assembly Venturi .900 No-Go. Carb must be stock appearing with single or double pumper stack of original style on carburetor. New style heavy body Tillotson allowed. Single high speed fuel discharge only.

**711.13 Manifold:** any manifold allowed, .900" no-go at block end.

**711.14 Filter adapter:** non-tech item.

**711.15** Any fuel pump allowed, pulsed from any location.

**711.16 Camshaft:** max running lift - .252"

**711.16.1 Camshaft:** maximum running lift .252", welding allowed on lobes. Minor grinding between cam lobes for rod clearance allowed. No multi-piece cams. No billet cams. No lightening of cam gear.

**711.16.2** May run extended lifters.

**711.17 Piston:** Any piston with stock compression piston pin height allowed. Wrist pin non-tech. Must be ferrous metal.

**711.18 Rings:** non-tech item.

**711.19 Crankshaft:** see Super Stock rules at Section 705. After market crankshaft gear allowed.

**711.20 Rod:** See Super Stock rules at Section 705.6

**711.21 Exhaust:** RLV/B91 Muffler REQUIRED

**711.22** Unless otherwise specified, all other specifications are per stock engine rules.

### 712 BRIGGS BLUE WAZOOM RULES

This engine is to be run as originally manufactured in Council Bluffs, Iowa or Omaha, Nebraska (no modifications of any kind). In order to assure that no modifications are performed, the side of the engine is sealed. The side cover seal is required in order for the participant to be allowed to race. No tampering of any kind is allowed. The following specifications are to aid the Tech personnel in determining whether the engine has been altered from when originally manufactured. The seals are not to be re-used. In no way do these specifications constitute a need for additional blue printing. Any other method of determining the legality of the engine is OK. Tech gauging is available from Uncle Frank's upon request. After an engine is re-built, it must be re-checked and re-sealed by an authorized service center. Most items are stock, un-altered parts from Briggs & Stratton. Most parts can be compared to known stock parts.

**712.1 Technical Procedure:** Engine to be run as supplied. No blue printing allowed. Check side cover seals for tampering.

**712.2** Remove carburetor, manifold, and air filter adapter



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**712.2.1** Zama .820 Carburetor with butterfly throttle assembly. Venturi, .820 no-go. Carb must be stock with single pumper stack of original style on carburetor.

**712.2.2** Inspect carburetor for "as cast" venturi surface.

**712.2.3** Inspect dump tube for original installation.

**712.2.4** Check for additional holes, or enlarged holes in carburetor.

**712.2.4.1 Hi-speed needle seat** .070" no-go. Lo-speed needle seat .070" no-go. Inlet needle seat .055" no-go.

**712.2.5** Inspect manifold for angle cuts and offset bolt pattern.

**712.2.6 Manifold bore, block end:** .900" no go, carburetor end: 1.000" no go, 1.670" to 1.680" long.

**712.2.7** Air filter adapter to measure less than 1.00" long, taper to 1.070" small I.D., no radius allowed. Inspect air filter per stock 5 HP rules.

**712.2.8** Remote Adjusters are allowed.

### 712.3 Remove Header

**712.3.1** Robertson Torque Tube #BW 1675 only, 1.045 I.D., Straight, no tapering, installed so that the header is angled away from the carburetor. Header length shall not exceed 16-3/4" long with RLV muffler UFB91LMO installed. Header and muffler may not be altered in any way, including, but not limited to, wrapping, painting, plating, coating in any fashion. Braces may be welded to header only. Exhaust gas temperature fittings are not allowed.

### 712.4 Remove Head

**712.4.1** Factory head only. Spark plug non-tech.

**712.4.2** Head to have slot for piston top clearance, up to .015" deep, .640" max. width.

**712.4.3** Combustion chamber as cast from Briggs & Stratton

**712.4.4** Spark plug area to check .385" minimum depth.

**712.4.5** Factory supplied head bolts only.

**712.4.6** Inspect deck for reworking of eyebrow area.

**712.4.7** Single plane machining of deck is permitted. Deck may not be surfaced below top of valve seats.

**712.4.8** Check bore maximum 2.607" diameter.

**712.4.9** Check stroke 2.427" - 2.447".

**712.4.10** Check for one (1) head gasket present.

### 712.5 Remove Valve Spring Cover

**712.5.1** Supplied cover may be used or PCV valve may be added to side cover or valve spring cover. With installation of PCV valve, holes in supplied cover may be plugged or cover replaced.

### 712.6 Remove Valves

**712.6.1** Stock unaltered 5 H.P. valves, any dual springs and retainers. Back facing of upper valve spring seating area allowed.

### 712.7 Remove Flywheel Cover

**712.7.1** Inspect cover for stock. Factory supplied flywheel screen only. No alteration to flywheel screen. Tape is permitted.

**712.7.2** No air vane. Sheet metal may be repainted or plated.

**712.7.3** Inspect for Briggs & Stratton #491922 fuel pump.

**712.7.4** Only one pump allowed.

### 712.8 Remove Flywheel

**712.8.1** Check for unaltered stock rewind clutch if used. Check for stock, straight key. Aftermarket starter nut allowed.

**712.8.2** Check for stock 3 H.P. Briggs & Stratton #296884 flywheel (4 lb 12 oz min)

**712.8.3** Check coil for Briggs & Stratton #496914, 3000 ohms max.

**712.8.4** Supplied spark plug connector only. Boot allowed.

### 712.9 Port Diameters Porting as received. No additional porting allowed.

**712.9.1** Carburetor inlet side .900" no go. Port finish as cast.

**712.9.2** Exhaust side 1.035" no go. Port finish as cast.

### 712.10 Valve Seat Diameters

**712.10.1** Tech for unaltered stock intake seat, single 30 deg. angle. 1.005" ID no go.

**712.10.2** Tech for unaltered stock exhaust seat, single 45 deg. angle. .880" ID no go.

### 712.11 Inspect Camshaft All checks to be made with no valve lash.

**712.11.1** Max lift, both intake and exhaust, .255".

**712.11.2** Intake, as valve is opening, is to reach 2 deg. ATDC before .100" lift.

**712.11.3** Intake, as valve is closing, is to reach 26 deg. ABDC after .100" lift.

**712.11.4** Exhaust, as valve is opening, is to reach 40 deg. BBDC before .100" lift.

**712.11.5** Exhaust, as valve is closing, is to reach 5 deg. BTDC after .100" lift.

### 712.12 Inspect Lifters

**712.12.1** Check lifters for alterations or re-working. No extended or adjustable lifters. 1.005" OD maximum. It is legal to chamfer or radius the cam side of the lifter bores. Excessive metal removal is not allowed.

### 712.13 Inspect for lightening of cam, crankshaft, rod and piston

**712.13.1** Any stock length (Super Stk legal) rod allowed per 705.6 rules.

**712.13.2** Inspect for unaltered Wiseco Super Stock or Briggs Raptor III piston.

**712.13.3** Inspect for Briggs 5 H.P. or Total Seal rings.

**712.13.4** Blocks repaired for broken rod or camshaft are OK if not used to disguise modifications. Repair of lifter boss area is allowed.

### 712.14 Chain guard/clutch cover may be other than factory supplied.

### 712.15 Junior Class carburetor, manifold and air filter adapter:

**712.15.1** Zama .630 Carburetor with butterfly throttle assembly. Venturi .630" no-go. Carb must be stock with single pumper stack of original style of carburetor.

**712.15.2** Inspect carb for "as cast" venturi surface.

**712.15.3** Inspect dump tube for original installation.

**712.15.4** Check for additional holes, or enlarged holes in carb.

**712.15.4.1** Hi-speed needle seat .068" no-go. Lo-speed needle seat .068" no-go. Inlet needle seat .055" no-go.

**712.15.5** Inspect manifold for angle cuts and offset bolt pattern.

**712.15.6** Manifold bore, block end: .900" no-go, carb end: 1.000" no-go. Manifold length 1.670" - 1.680".

**712.15.7** Air filter adapter to measure less than 1.00" long, taper to .865" small i.d., no radius allowed. Inspect air filter per stock 5 hp rules.

**712.15.8** Remote adjusters are allowed.

## 713 SENIOR SPORTSMAN (National Sprint Gas Class)

This class is intended to be run without any blueprinting done to the engine. All parts are to be original parts furnished by the factory in the type engine that is to be run. Any exceptions are noted.

**713.1** Briggs & Stratton models 133230 and 135230 only.

**713.2** All parts to remain stock. To be compared against known stock parts.

**713.3** Engine must be equipped with a straight header and an RLV-91 muffler.

**713.4** Spark plug type is optional.

**713.5** Gasoline Only, no additives allowed. Tank repair use of Briggs part #224009 or #555220 is allowed.

**713.6** No remote carburetor adjusters allowed. Coin or washer on end of screw is a remote adjuster.

**713.7** No Blueprinting Allowed. Oversize pistons allowed. Raptor-3 piston is allowed all Briggs classes. For clarification, may be installed with arrow in either direction.

**713.8** Aftermarket dipper allowed. Same as stock classes.

**713.9** Stock, unaltered, flywheel key only. No Modifications. Flywheel screen must be run as supplied by the factory. No additional holes, enlarging holes or tape covering holes allowed.

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**713.10** Valve lash is non-tech.

**713.11** No engine monitoring instruments may be used during competition.

**713.12** Ratech GE series clutch only.

**713.13** Jet size is non-tech.

**713.14** Use of air filter and filter adapter, same as stock classes.

**713.15** No Experts Allowed In This Class.

**713.16** Any replacement bolts or fasteners may be used for attachment of carburetor, exhaust manifold, and between carburetor and fuel tank.

**713.17** Engine without header, muffler, air filter, air filter adapter, clutch and chain guard may be claimed by any driver finishing the race.

**713.17.1** Claimant must present cash money \$295.00 for aluminum bore, \$325.00 for steel sleeve bore to the Race Director within 30 minutes of the end of on track competition.

**713.17.2** If more than one claim is made for a motor, the valid claim will be determined by drawing numbers from a hat, low number being the valid claim. Race Director will then return money to drivers with invalid claims. Driver may not claim his own motor.

**713.17.3** Failure of driver to release claimed motor when requested by Race Director will result in disqualification and loss of all awards by the driver refusing to release motor.

**713.17.4** Race Director will pay money to driver of claimed motor when motor is released to valid claimant from post-race tech.

**713.18** Throttle bell crank may be altered to hook up the throttle cable. Top arm on butterfly shaft may be shortened or bent to adjust opening of the butterfly.

placed with a stud or socket head cap screw with the exception of the rod bolts. The throttle butterfly screw must remain stock.

**714.1.5 Paint:** The cylinder block may be painted but not anodized.

**714.1.6 Clutch:** All Honda engines must have a operational clutch that will allow the engine to idle without moving the kart. The clutch must be engine mounted, centrifugally activated, and of the "dry" type. An approved clutch guard must be fitted.

**714.1.7 Shrouds:** All pieces of the factory supplied stock Honda cooling shrouds must be present and properly installed. Shrouds must not be altered in any way so as to alter the air flow or change appearance, except for chrome plating or painting. The ignition switch may not be removed and must be functional. Covered fan shroud intakes are allowed only in the pit lane, and must be removed prior to entry onto the racing surface. An approved horizontal shroud may be added to the top of the engine to replace the air passage normally provided by the gas tank, and shall be made of a non sparking material.

**714.1.8 Fuel Pump:** Any vacuum operated fuel pump may be used, providing that there is no performance gain over the stock Walbro unit.

**714.1.9 Air Filters and Adapters:** The stock Honda air filter and adapter may be replaced with any after market air filter and adapter that falls within IKF STOCK CLASS AIR FILTER ADAPTER RULE. The centerline of the adapter shall be perpendicular to the mounting face, in its entirety. The stock Honda air filter and adapter may not be modified to become air scoops or velocity stacks. Any extra gasket or spacing between the carburetor and the adapter will be included in the maximum length.

**714.1.10 Governor:** The governor apparatus may be removed from the engine, and any holes caused by this removal must be plugged.

**714.1.11 Pistons:** Re-sizing, knurling, or lightening of pistons is not allowed. The use of Teflon, or material, "buttons" is not allowed. Coating of pistons with Teflon or other substances is not allowed. Pistons must be installed correctly. (Triangle to back)

**714.1.12 Recoil:** The recoil starter assembly must be in place on all Honda engines, and must be the only method of starting the engine.

**714.1.13 Rings:** All three piston rings must be used and properly installed. Rings must be installed with the identification marks toward the head. Ring expanders must not be used under the top two rings. Only Honda factory supplied expanders may be used under the three piece oil rings. Ring tension may not be increased or decreased by heating or other means. Ring gaps may be altered, and any ring gap may be used.

**714.1.14 Fuel:** Fuel to be used is "regular unleaded". Fuel may be tested at any time. The reading must be within a range of plus or minus ten (10) of the test gas used that day. Irregularly colored or scented fuel may be disallowed, and the entrant asked to change his/her fuel. \*See fuel tests\*

**714.1.15 Oil:** Crankcase oil may be tested at any time. Hot oil additives are specifically not allowed.

**714.1.16 Variable Speed:** No variable speed drive may be used.

**714.1.17 Spark Plugs:** Spark plugs may be of any manufacturer, provided that they are of the same reach as intended for the particular engine. The plug gasket must be in place, unless the engine is competing with a temperature gauge sensor installed in place of the gasket.

**714.1.18 Valves:** Valves must not be altered in any way, polished, lightened, welded, brazed, machined, etc. except for valve lifter clearance in the G200, and the lapping of valves in a normal fashion for all the Honda engines. Only stock valve keepers may be used. The keepers may not be altered or modified in any way, and they must be properly installed. Valve re-facing at the stock angle ( a single angle of 45 degrees only) is allowed unless it constitutes lightening or does not appear stock, as determined by the Technical Inspector.

**714.1.19 Valve Springs:** Valve springs may not be heated and/or stretched in any way. Shimming of valve springs is not allowed. The technical measurements for all Honda valve springs are:

Wire Diameter:	.075"min-.0795"max.
Coil Diameter:	.790"min-.815"max.
Free Length:	1.450" maximum

Note: If you are using stock, unaltered, Honda G200 valve springs, you will pass tech.

**714.1.20 Carburetors, Jets and Emulsion Tubes:** No drilling, modifying, plugging, or alteration of the carburetor body, jet, emulsion tube, needle

### 714 HONDA GX140, GX160, AND GX160K1 ENGINE RULES

All engine parts must be standard, unaltered, in their stock location, genuine Honda parts, manufactured for the particular engine, unless otherwise stated in this manual. Modification or machining of the engine block, or any components will not be permitted, unless otherwise stated. This rule includes gaskets. It is the responsibility of the driver to ensure that all engine parts are within the specifications stated in this manual.

I.K.F. rules apply in all circumstances unless stated otherwise.

Any production change by the manufacturer of the engine causing any part not to conform to the specifications stated in this manual, will be subject to a decision by the 4-Cycle Technical Committee, as to whether or not the part will be legal, before it will be allowed in competition.

Any repair or damage to the engine block or components must be inspected and approved by the Technical inspector before the engine can be used for competition. This approval must be in writing. This approval must be drawn to the attention of the race inspector before post-race tech on that engine begins.

After "painting" for qualifying, there will be no valve lash adjustment or inspection allowed, under the valve cover seal, except for malfunction or breakage, with the prior approval of the Technical inspector for the day.

The term "No Go" is defined as an apparatus of fixed and known size that shall not pass through, or even start to pass into a pre-determined size of aperture, as stated in the rules, or conforms to a known size.

#### 714.1 Common Rules to all Honda Engines

**714.1.1 Deck Height:** The cylinder deck must not be re-machined or altered in any way. No decking, truing, polishing, sanding, milling, or coating is permitted. Piston crown height (pop-up) is a maximum of .000" above deck as measured from the aluminum piston crown, across the axis of the wrist pin, any carbon buildup is not to be considered a portion of the measurement. I.E., cleaning of the piston is allowed to make tech. This applies to all Honda engines.

**714.1.2 Fuel Tank:** The stock Honda fuel tank and fuel shut-off must be removed from the top of the engine, and cannot be reused. No pressurized fuel tanks are permitted. No fuel cooling system of any nature may be used.

**714.1.3 Fittings:** The addition of fittings to accommodate the fuel pump impulse line, a tachometer, or a temperature gauge, is permitted. One impulse fitting is allowed, with the maximum size in the block being a 1/8" pipe thread.

**714.1.4 Fasteners:** Any bolt hole, except ignition, may be re-threaded, and/or fitted with a heli-coil or thread insert. Any bolt may be re-

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

valve, or passages is allowed, unless specifically stated. The tube height is measured from the top of the emulsion tube to the upper surface of the carburetor venturi. The emulsion tube may not be glued or epoxied into the body. The tube must be fastened into the main body of the carb by the main jet only. A stock Honda main jet must be used in the carburetor. The jet must be tight!

Although the throttle butterfly must remain stock, the control linkages may be modified or replaced in an approved manner, which will, in no way affect engine performance. The choke may be removed as long as the holes left are plugged properly. For "California carbs", which can be identified by 4 transition port holes in the venturi. The main metering air bleed hole can be reduced, using only a Allen set screw, not any other type of plug, and having a .043" hole drilled in the plug. (Drill #57 go, #56 nogo) This set screw must be removable.

**714.1.21 Engine Blocks:** The engine block must be in "as cast" condition, and there must be no addition or removal of material to or from the inside or outside of the block unless specifically stated in the rules for that particular type of engine. A measurement shall be taken between the deck surface and the surface of a 25.0 mm (0.984") mandrel shaft inserted through the crankcase bearings. The side cover must be in place, utilizing dowel-pins and gasket, and bolted tight. The measurement from the deck surface to the mandrel shaft should be no less than 4.627" (-0.001") Heli-coils, or inserts are allowed providing no performance gain is made by their use. Fuel tank mounting ears may be filed flat.

**714.1.22 Bore Size:** The cylinder bore may be bored oversize to accommodate the three Honda oversize pistons only. These pistons are designated as: 0.25mm, 0.50mm, and 0.75mm oversize.

**714.1.23 Valve Seats:** The valve seat seating surfaces may be reground or cut, but the original seating angle of 45 degrees must remain unaltered. Only the top edge of the seating surface may be machined at an angle of 30 degrees to reduce seat width. No material may be removed from the bottom of the seating surface to reduce seat width.

**714.1.24 Ports:** Intake and exhaust ports must remain in "as cast" condition. No enlarging, reducing, polishing, sand blasting, glass beading, acid washing, or smoothing of parts is permitted.

**714.1.25 Alignment:** The crankcase cover alignment pins must be in place. The pins and pin holes must not be altered in any way.

**714.1.26 Head Gasket:** The minimum head gasket thickness is 0.040". This measurement is to be taken anywhere on the fire ring of the head gasket (Steel O Ring). The head gasket may not be altered in any way. The use of any sealing compounds or paint between the cylinder head, gasket, or block deck surface is not permitted.

**714.1.27 Connecting Rod:** No oil grooving, grinding, polishing, lightening, shot peening, glass beading, sanding or balancing is permitted. No re-sizing of bore diameter is permitted.

**714.1.28 Flywheel and Fan:** The flywheel key way must not be altered in any way. Offset flywheel keys are not permitted unless stated for a particular Honda engine. The flywheel may not be lightened or balanced. All nylon blades must be intact and complete.

**714.1.29 Camshafts:** No metal may be removed, nor material added to any part of the camshaft, with the exception of the governor apparatus. Camshafts must be properly installed with the timing marks aligned on the camshaft and crankshaft gears. Camshaft timing is not specified, any change to the cam timing must be done by turning the cam drive gear on the crank. All camshafts used in competition must not exceed duration, lift and decompression specification minimums and maximums as listed per each specific Honda engine type. A visual inspection of the camshaft should disclose no "pit" type marks anywhere on the lobe surface, especially at the maximum lift, and base of circular portion. (Top and bottom of lobe)

**714.1.30 Valve Lifters:** Lifters may not be ground or altered unless specified for that Honda engine type.

**714.1.31 Ignition System:** No alterations, modifications, or machining of any kind is permitted to any part of the ignition system, or its fastening apparatus. Coil mounting bolt holes may not be enlarged or slotted. Coil mounting bolts must be of original size for the motor.

**714.1.32 Exhaust:** Any legal header which falls within IKF specs and limits for safety and noise requirements. RLV B-91 series muffler mandatory.

**714.1.33 Spark Plug Cap:** Any after-market spark plug cap can be used for a replacement of a damaged stock cap, providing it has no performance gain over the stock piece.

**714.1.34 Oil Catch Cans:** Oil catch cans are not required.

### 714.2 Common Rules to GX140, GX160, and GX160K1 Honda Engines only

Certain GX heads are slightly machined at the outside edge of the ports for flash removal. Certain GX heads are slightly machined in the valve guide area for flash removal. Decision on legality, by the Tech Inspector is FINAL.

Check with the "Parts Interchangeability Chart" before changing any parts from one type of motor to another.

**714.2.1 Cylinder Head:** Thickness at measurable bolt hole: 1.160" min. Head Height: As measured from the head gasket surface to the valve cover gasket surface is GX140 (#1,2,3) 2.898" min. All other GX heads are 2.911" min. The head gasket surface of the head must not be machined or altered in any way. If applicable the head gasket surface to casting in push rod area is: 0.060" min. (Newer castings no longer have this depression.) No alterations, modifications, or machining of any kind is permitted to the cylinder head with the exception of rule 714.1.23. Heads with excessive machining will be considered unacceptable manufacturer's deviations.

**714.2.2 Crankshaft Throw Journal:** 1.177" min.-1.180" max.

**714.2.3 Rod Length:** 2.358" min.-2.363" max.

**714.2.4 Rod Big End Bore:** 1.177" min.-1.184" max.

**714.2.5 Valve Cover Gaskets:** Stock Honda valve cover gaskets may be replaced with gaskets made from an approved material (E.G.. Neoprene), provided that the uncompressed thickness limits are 0.030" min. to 0.063" max., and is shaped the same as the original gasket. The gasket may be affixed (glued) to the valve cover.

**714.2.6 Piston Length:** 2.105" min.-2.110" max.

#### 714.2.7 Wrist Pin:

Outside Diameter: 0.710" max. (18mm)  
Inside Diameter: 0.554" max. (14mm+)  
Length: 2.120" min.

**714.2.8 Stroke:** Limitations are: 1.765" min.-1.778" max.

**714.2.9 Camshafts:** (See rule 714.1.29) All camshafts must fall within the profile limit parameters listed below. \*All measurements are after Top Dead Center\*. With head removed, attach dial indicator holder to block. Place the dial indicator over the exhaust portion. Position the crankshaft so that the exhaust lobe is up 0.020", and set the degree wheel pointer at 135 degrees. Turn the wheel to T.D.C. The indicator should read 0.000". Read the appropriate lifts. Switch the dial indicator to the intake lobe, set the lobe up 0.020", and read. (This is done to determine overlap.) Change the degree wheel to read 357 degrees, and take the intake readings. All readings should fall within the parameters set up in the chart. A camshaft with less than 8 (eight) degrees overlap should be visually checked.

Intake: 1.086" min.-1.090" max.  
Exhaust: 1.088" min.-1.093" max.

Lift	Exhaust Acceptable:	Intake Acceptable:
.001"		
.010"	110-113	332-339
.020"	135	357
.050"	151-154	12-15
.100"	169-172	29-31
.200"	215-217	73-77
.230" max.	250-256	.227"max.105-108
.200"	286-291	135-140
.100"	332-336	181-184
.050"	349-352	197-201
*.020"	6-12	212-217
.000"	74-81	274-285
Duration: 230-237 Degrees 225+*=	Duration: 213-221 Degrees 3+**=	

Overlap: 8-15 Degrees



## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**714.2.10 Carburetor Jets:** All GX carburetor jets are to be 0.029" NOGO, stamped #72, and unaltered. Also see rule 714.1.20.

**714.2.11 Ignition Air Gap:** Ignition air gap may be adjusted to any clearance.

### 714.3 Specific Rules GX140 Honda Engines only

**714.3.1 Bore Size:** 2.521" (64mm) min.-2.561" (65mm) max.

**714.3.2 Valves, Stelite:** Stelite exhaust valves are legal and are: #14721-ZE1-810.

**714.3.3 Valve Seats:** Diameters are:

Intake: 0.875" max.

Exhaust: 0.790" max.

**714.3.4 Ports: Diameters are:**

Intake: 0.750" max.

Exhaust: 0.830" X 0.880" max.

**714.3.5 Exhaust:** See rule 714.1.32.

**714.3.6 Ignition:** See rule 714.1.28, 714.1.31 and XK-11, with the exceptions being; The stock flywheel key may be off set by filing, grinding, or machining to obtain the desired ignition timing.

**714.3.7 Carburetor:** See rule 714.1.20 and XK-10, with the exceptions being; The idle control jet may be drilled to any size. The venturi may be enlarged up to 0.579" NOGO.

### 714.4 Specific Rules GX160 and GX160K1 Honda Engines only

**714.4.1 Bore Sizes:** 2.692" (68mm) min.-2.720" (69mm) max.

**714.4.2 Valves, Stelite:** Stelite exhaust valves are legal and are: #14721-ZH8-810

**714.4.3 Pistons:** See rule C-11. All GX160 and K1 pistons are of the "dished" type. GX160 pistons (stamped on top of piston as GX-160) must have a minimum dish of 0.080" as measured from the top of the piston at the outer edge to the lower central portion. K1 pistons (stamped on top of piston as ZH8) must have a minimum dish of 0.035". The piston must be installed properly as well, triangle pointing down.

**714.4.4 Parts Mixing:** Any GX160 that contains any designated K1 part (Head and /or piston) is a K1!! That GX160 must be distinctly labeled as a K1 either by the recoil decal, or by another approved method. This rule is to avoid confusion at the weight scales.

**714.4.5 Valve Seats:** Diameters are:

Intake: 0.910" max.

Exhaust: 0.872" max.

**714.4.6 Port Diameter:** Diameters are:

GX160 K1

Intake: 0.788" max. 0.870" max.

Exhaust: 0.835" max. chord 0.920" max.

**714.4.7 Exhaust:** See rule 714.1.32.

**714.4.8 Ignition:** See rules 714.1.28, C714.1.31 and 714.2.11 with the exceptions being; The stock flywheel key must be retained (0.157").

**714.4.9 Carburetor:** See rules 714.1.20 and 714.2.10 with the exception being; The venturi must remain stock. (0.525" NOGO)

### 714.5 Fuel Tests:

Either on practice day for an event and/or in the newsletter preceding the event, a specific location and pump number where the sample fuels will be purchased, will be communicated to the racing members present. These sample fuels will be purchased during the practice day for the event. It is recommended that each competitor purchase the fuel that they will use from this same source. Each competitor is entitled to 1 (one) fuel test by the technical inspector for the division, for a fee of 5 (five) dollars. The competitor will not see or be told the meter reading, only that the fuel is "legal" or "illegal". The source will usually be the closest to the track and is not chosen with prejudice. A test sample will be taken (this can be from the fuel line, sinter bowl or float bowl) and poured into a glass "baby bottle" and tested when:

1. There is insufficient fuel in the tank.
2. There is insufficient access to the tank.
3. The fuel in the tank and the level cannot be seen.
4. Any other reason. (Tech inspector's discretion.)

\*\*Insufficient fuel for a test in the bottle results in a disqualification Insufficient is defined as less than 10 (ten) oz.

### 714.6 Interchangeability Chart

This is a parts Interchangeability chart for Honda engines. The left vertical

column denotes all engine parts. An asterisk(\*) denotes that part will fit only the engine it is listed under, and is not interchangeable with others. The "OK" sign means that there is a limitation, explained below. Please refer to this chart very carefully!

PART	G200	GX140	GX160	K1
Alignment Pins	*	OK	OK	OK
Bearings	OK	OK	OK	OK
Block	*	*	OK	OK
Camshaft	*	OK	OK	OK
Carburetor	*	(OK)#	(OK)#	(OK)#
Carburetor Gaskets	*	OK	OK	OK
Crankshaft	*	OK	OK	OK
Exhaust Valve	*	*	OK	OK
Exhaust Valve Cap	NA	OK	OK	OK
Fan	*	OK	OK	OK
Flywheel	*	OK	OK	OK
Head	*	*	*	*
Head Gasket	*	*	OK	OK
Intake Valve	*	*	OK	OK
Ignition Coil	*	OK	OK	OK
Muffler, Small	NA	*	OK	OK
Muffler, Big	NA	*	NA	NA
Muffler Gasket	*	OK	OK	OK
Piston	*	*	*	*
Push Rods	NA	OK	OK	OK
Recoil	*	OK	OK	OK
Rings	*	*	OK	OK
Rocker Arms	NA	OK	OK	OK
Rocker Arm Studs	NA	OK	OK	OK
Rod	*	OK	OK	OK
Seals	OK	OK	OK	OK
Shroud	*	OK	OK	OK
Side Cover	*	OK	OK	OK
Side Cover Gasket	*	OK	OK	OK
Starter Cup	*	OK	OK	OK
Valve Cover	*	OK	OK	OK
Valve Cover Gasket	*	OK	OK	OK
Valve Retainers	*	OK	OK	OK
Valve Springs	OK	OK	OK	OK
Valve Lifters	*	OK	OK	OK
Wrist Pin	*	OK	OK	OK

Note: Any GX160 that contains any K1 parts (head and/or piston) is a K1.

The basic GX140 carb is interchangeable with the GX160 carb, and the K1 carb. When the venturi is altered, it is no longer interchangeable!

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**715 ANIMAL SPORTSMAN RULES** - IKF National Sprint class, IKF Regional rules for Gasoline fuel classes.  
Briggs & Stratton (B&S) Model 124-432 Type 8001/2

All parts must be B&S factory production parts unless otherwise noted in these rules. No machining or alteration of parts is permitted unless specifically noted in these rules. All parts are subject to comparison to a known stock B&S part.

**715.1 Shrouds & Covers:** Engine shroud may be painted any color. Engine shroud, covers and control bracket must be intact and not modified, except control cover may be modified to attach fuel pump. Any bolt, except head bolts, used to secure sheet metal shrouds and covers may be replaced with a larger diameter bolt. Stock kill switch must remain in stock location but wires may be removed to make it inoperable.

**715.2 Header and Silencer:** Per Section 700.1 with the following special conditions:

**715.2.1** Header shall have a maximum length of 24" to be measured in the ID using a 1/4" wide steel tape measure. Loop pipes, 360° turns, are not allowed.

**715.2.2** Silencer must be RLV B91 with round baffle holes only.

**715.2.3** Gasket and/or silicone allowed to seal header to head.

**715.2.4** Studs or bolts allowed to fasten header to head. Bolts or nuts must be safety wired. Header support brace is mandatory.

**715.2.5** Pipe may extend into port (a maximum of 5/8") to fit the pocket cast into head. When measuring the overall length of Animal class pipes, the length that protrudes under flange, into port will be subtracted from overall length.

**715.3 Air Filter:** Air cleaner not required. Any air cleaner permitted. Must be installed directly to carb. No filter adapters allowed. Filter may not be used as an air ram and must filter from all areas as raced. Any open areas in filter must be covered with a filter sock.

**715.4 Carburetor:** PZ Model 15 Carburetor only. Any 1/4" bolts may be used to attach carb to manifold. No studs allowed. Carb to manifold seal is by O ring only. No sealer allowed. Air must enter carb at air horn only. Choke must be stock as from factory and must operate. Spring or rubber band may be used to hold choke lever in position. Choke lever may have 1 hole drilled in it to attach spring.

**715.4.1** Throttle bore I.D. is .874" no-go. Must be as cast.

**715.4.2** Choke bore I.D. is 1.149" no-go. Must be as cast.

**715.4.3 Venturi:** Vertical dimension is .792" no-go. Horizontal dimension is .615" no-go. No machining allowed. Must be as cast.

**715.4.4** Air pick off hole is .061" no-go.

**715.4.5 Throttle slide:** Minimum length from top edge of slide to deepest part of cut away is 1.148" Must be stock.

**715.4.6** Jets must be stock gasoline jets only. Needle jet - BGB set at any notch, Pilot jet - #32, Main jet #95. Factory marking required.

**715.4.7** Overflow from float bowl must be vented to catch can.

### 715.5 Intake Manifold

**715.5.1 Length:** 1.740" minimum to 1.765" maximum.

**715.5.2 Inside Diameter:** .885" no-go minimum, .905" no-go maximum.

**715.5.3** Stock manifold to block gasket required. Gasket may be modified to open hole to diameter larger than manifold.

**715.6 Fuel Pump:** Auxiliary pulse type pump required. Pump must be pulsed only from crankcase side cover top oil fill cap only. No hoses or tubes to or from intake.

**715.7 Valve Cover:** Stock valve cover from factory.

**715.7.1** Valve cover gasket must be stock. No sealer allowed.

**715.7.2** Filter or tubing may be fitted to outlet. No welding or tapping of valve cover allowed.

**715.7.3** Tube to catch can is not required.

**715.8 Rocker Arms:** Must be stock. This is a critical part and will be examined closely.

**715.8.1** Overall length 2.880" ± .005".

**715.9 Camshaft:** First camshaft check will be taken at the valve spring retainers.

ers. With the lash set at zero, the movement of the valve spring retainer may not exceed .257".

All cam profile readings must be taken with zero valve lash and degree wheel set at top dead center (TDC) of the compression stroke with a positive stop inserted through spark plug hole. Readings shall be measured from the push rods. Zero dial indicator at TDC and do not reset during the profile process. Only broached stock factory camshaft with stock alignment as shipped from factory is permitted. Mechanical compression relief lift is required on exhaust lobe.

**715.9.1 Camshaft profile limits:** Each lobe may be out of specification in two places, provided that subsequent visual inspection of camshaft lobes reveals no alteration to surface finish of lobes.

Exhaust Lobe Lift, in inches	Degrees	Intake Lobe Lift, in inches	Degrees
.020	61 - 56 BBDC	.020	18 - 13 BTDC
.050	44 - 40 BBDC	.050	0 TDC - 4 ATDC
.100	27 - 23 BBDC	.100	16 - 20 ATDC
.150	11 - 7 BBDC	.150	33 - 37 ATDC
.175	1 BBDC - 3 ABDC	.175	42 - 46 ATDC
.200	10 - 14 ABDC	.200	53 - 57 ATDC
.225	24 - 28 ABDC	.225	67 - 71 ATDC
Max lift is .257"		Max lift is .257"	
.225	78 - 74 BTDC	.225	39 - 35 BBDC
.200	64 - 60 BTDC	.200	25 - 21 BBDC
.175	53 - 49 BTDC	.175	15 - 11 BBDC
.150	43 - 39 BTDC	.150	5 - 1 BBDC
.100	27 - 23 BTDC	.100	12 - 16 ABDC
.050	10 - 6 BTDC	.050	28 - 32 ABDC
.020	5 - 10 ATDC	.020	44 - 49 ABDC

**715.10 Ball Rocker:** must be stock

**715.10.1** Diameter .600" +/- .010"

**715.11 Push rods:** Must be stock.

**715.11.1** Diameter is .185" - .190".

**715.11.2** Length is 5.638" - 5.656".

**715.12 Head Bolts:** Four stock head bolts are mandatory.

**715.13 Head Gasket:** Must be of stock B&S part.

**715.13.1** .049" minimum thickness measured in four places between head bolts. Measurement to be made with micrometer from inside of gasket.

**715.14 Cylinder head plate:** Must be stock

**715.14.1** Cylinder head plate gasket must be stock configuration with maximum thickness of .055".

**715.15 Rocker arm studs:** Must be stock.

**715.16 Valves:** Stock valves only. One angle only. Valve may not be polished or lightened. If working area (that portion of the valve stem translating with the valve guides) of valve stem is cleaned, no material may be removed. No grooves, cross hatching, etc.

**715.16.1 Intake Valve:** 45 degree face. Head diameter is 1.055" - 1.065".

**715.16.2 Exhaust valve:** 45 degree face. Head diameter is .935" - .945".

**715.17 Valve Springs:** Stock B&S valve springs and keepers are mandatory. Springs must remain unaltered as supplied from the factory.

**715.17.1** Maximum valve spring length is .930". Wire diameter is .103" to .107", measured in three places on the spring. Inside diameter of spring is .615" minimum to .635" maximum.

**715.18 Valve Spring Retainers:** Thickness is .060" - .070".

## THESE RULES ARE ONLY VALID AT IKF SANCTIONED AND INSURED EVENTS

**715.19 Cylinder Head:** Stock B&S part #555558 as shipped from factory is only configuration approved. No machining of head allowed. Machining marks left on head gasket surface are a tech item. Bosses on back of head, just below valve cover gasket surface may be tapped for attachment of header supports.

**715.20 Valve Seats:** Must be one 45° angle only on valve seats. Stock B&S seats are mandatory.

**715.20.1** Intake seat diameter is .966" - .972".

**715.20.2** Exhaust seat diameter is .844" - .850".

**715.21 Ports:** Must be stock, no machining.

**715.21.1 Intake inlet port:** .918" no-go. When checking 90° to line between center of studs, no - go will be straight. When checking on line with center of studs, no-go will set on floor of port at bottom and stop at upper edge of port on top.

**715.21.2 Exhaust outlet:** .980" no-go.

**715.21.3** Valve guides must be stock as supplied from factory. Maximum depth from the head gasket surface to the intake valve guide is 1.255". Replacement of valve guides with B&S factory part 555645 is allowed.

**715.23 Deck/Piston Clearance:** No machining of deck surface is permitted. Factory machining marks on deck are a tech item. Piston pop up cannot exceed .005" above block surface in the center of the piston. When measuring piston pop up, set bar stock across piston parallel to wrist pin. When measuring piston pop up, hard carbon may be scraped from piston crown, set bar stock across piston parallel to wrist pin.

**715.24 Cylinder Bore:** No circular or machined grooving of cylinder is allowed.

**715.24.1** Stock bore is 2.690". Over boring permitted up to maximum of 2.725", approximately .035 over.

**715.25 Stroke:** maximum stroke is 2.204". Push piston down to take up rod play. Check stroke from BDC to TDC.

**715.26 Ignition:** Unaltered B&S stock coil is mandatory. Attachment bolts must not be altered.

**715.26.1** Spark plug connector must be stock factory type.

**715.26.2** Rubber plug boot is allowed.

**715.26.3** There must be resistance from plug wire to ground. Resistance must be between 3000 ohms, minimum, to 6000 ohms, maximum. Coil resistance may be rechecked after a minimum of 10 minutes if correct reading is not attained upon first check.

**715.26.4** Coil air gap is non tech.

**715.26.5** Any commercially available sparkplug allowed. Sparkplug must be stock except plug sealing ring may be removed.

**715.27 Starter:** Recoil starter must be retained, as produced and intact.

May be rotated.

**715.28 Flywheel:** B&S billet flywheel with plastic fins is the only flywheel permitted. No machining, glass beading, sandblasting, painting or coating of flywheel is allowed. Minimum factory overspray is allowed.

**715.28.2** Stock flywheel key required.

**715.28.3** Minimum weight of flywheel, fins and fin attachment bolts is 4 pounds, 8 ounces.

**715.29 Crankcase side cover:** Must remain stock, except fuel pump must be pulsed from upper oil fill hole on front of cover.

**715.29.1** One or two stock gaskets are required.

**715.31 Valve Lifters:** Must be stock.

**715.31.1** Lifter head diameter to be .820" minimum to .860" maximum.

**715.31.2** Overall length of lifter to be 1.515" minimum to 1.525" maximum.

**715.32 Connecting Rod:** Stock B&S rod only. Rod may not be lighter than known stock rod. No under-sizing of rod is permitted. Rod may be clearanced providing that it is in stock configuration and finish, with no dimpling or media blasting. Rod ends must be concentric with crank journal and wrist pin with no chamfer or breaking of edges.

**715.32.1** Rod length, measured from bottom of wrist pin hole to top of crank journal hole, is 2.419" minimum to 2.429" maximum.

**715.32.2** Oil hole opening is .185" no-go.

**715.33 Wrist pin:**

**715.33.1** Maximum I.D. is .414".

**715.33.2** O.D. is .624" - .626".

**715.33.3** Minimum length is 1.901".

**715.34 Piston rings:** Three rings mandatory. Top compression ring must have chamfer or O toward top of piston. Second scraper ring must be installed with inside chamfer down and O toward top of piston. Oil ring must be installed as from factory. No alteration of rings allowed except end gapping and lapping. Rings must be in one piece when removed from block.

**715.34.1** Minimum width of top two rings is .095".

**715.34.2** Thickness of top two rings is .059" - .064".

**715.34.3** Minimum width of oil ring is .065". Ring groove must be present. Expander must be installed.

**715.34.4** Thickness of oil ring is .098" - .102".

**715.35 Piston:** No alteration of piston allowed. Arrow must point toward flywheel.

**715.35.1** Minimum from top of piston to top of wrist pin on circlip side is .658".

**715.35.2** Minimum piston length is 1.768".

**715.36 Crankshaft:** Stock B&S crankshaft with stock timing gear installed in stock location only. No alteration in any manner allowed. Offset crankshafts not permitted. Stock bearings required.

**715.36.1** Shim(s) must be installed as from factory.

**715.36.2** Crankshaft journal diameter is 1.094" - 1.100".

**715.37 Block:** Must be stock with no alterations, except blocks may be repaired from broken rod damage, providing that repair does not constitute a functional modification of original block. No welding is permitted from the cooling fins upward. Block may not be machined on intake or exhaust port gasket surface. No knurling of guides allowed.

**715.38 Clutch:** Clutch to be Noram/Ratech GE series only, not GE Ultimate. Stamped drum only. No coated shoes. Any springs. Heat-treated shoes required. No grooving, dimpling or texturing of any kind allowed on shoes or drum. No alterations to clutch allowed, except springs. Clutch coolers not allowed.