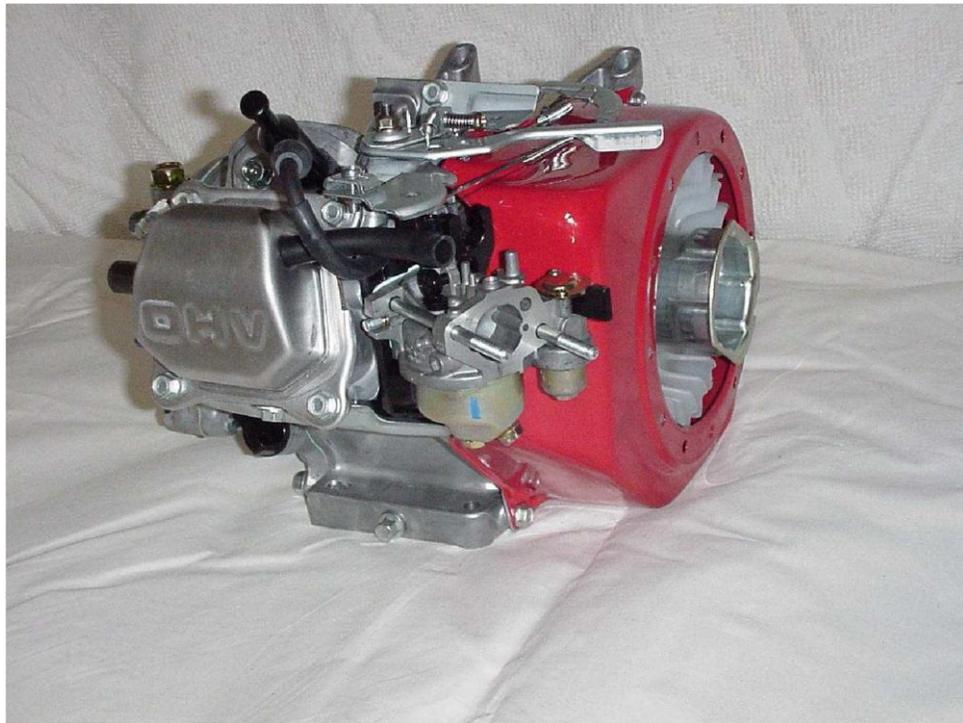




# **HONDA TECH MANUAL GX160 UT2 (ONLY)**



## **HONDA ENGINE RULES GENERAL RACING RULES SPECIFICALLY FOR 160 HONDA CLASS ONLY**

*Dave Falini, QMA Technical Director*

Updated: January 2026

## HONDA SUSPENSIONS

All suspensions must follow procedure listed in QMA rulebook. Except if otherwise noted in Tech Manuals.

Spark plugs, exhaust, gaskets and ignition timing infractions are race disqualification only.

### **NOTE:**

- Refusal of tech shall be interpreted as an admission that the engine is illegal and a suspension from the Honda class will be immediate with all awards, qualifications being revoked.
- Confiscation of part or parts - only the illegal part and all related parts and not the whole motor will be confiscated. A full motor tear down is required if an illegal part is found.

## GENERAL RULES

1. Only stock Honda GX160 UT-2 serial # beginning with GCBPT engine and gearbox will be used in this class. All parts will be stock Honda specifically made for the Honda GX 160 UT-2. No aftermarket blocks
2. All factory supplied Honda parts must be used and properly installed with the following exceptions:
  - a. The governor system may be partially or fully removed with the exception of the steel drive gear on the crankshaft. This gear must remain intact. If the shaft is removed the hole must be plugged. The hole can be tapped for thread or the use of epoxy is acceptable. Welding will not be permitted.
  - b. The factory air cleaner must be removed. Any commercially available air filter may be attached to the outside of air filter adapter. Outerwear style or equivalent can be used over carburetor only with no adapter. The approved air filter adapter may be run with or without an air filter. Any air filter may be used with adapter as long as there are no device(s) used inside the air filter or adapter. Any device, manifold, tubing, etc connected between the air filter adapter and the air filter is not legal. (\* "Outer Wear" defines a style not brand name). The spring in the UNI style air filters are allowed but cannot be altered and must use the OEM spring.
  - c. Exhaust: Steel or Stainless are the only materials allowed for exhaust pipes.
- a. Stock Honda muffler will be removed. Mounting flange may be cut off of muffler and used as adapter flange. Any transition from the "D" shape of the exhaust port to round must take place within the thickness (0.250" max.) of the flange. This applies to all exhaust systems. No steps or tapers allowed, grind marks are not allowed past 0.250" flange area. No suspension for exhaust flange or pipe infraction just disqualification. If an after market flange is used, maximum allowable flange thickness will be 0.250 inches. If slip on type flange assembly is used, pipe stub will be a maximum 0.880 inches outside diameter tubing with a maximum overall length of 1.500" inches. Pipe stub must be inserted into exhaust pipe at least 0.750 inches and will have minimal exhaust leakage. The cylinder head exhaust stud holes can be Heli coiled but must be in factory dimensional locations.
- b. Muffler exhaust leakage- It is acceptable to have minor exhaust leakage at the muffler factory seam.
- c. Muffler to be used will be 4 to 8 hp Briggs & Stratton, part number 294599 or equal equivalent. Muffler will be internally unaltered except that the round cup shaped baffle may be welded to the perforated baffle without moving its original location. Threads will not be removed from muffler.
- d. Exhaust pipe will be a maximum of 1.000" inches outside diameter with a length of 19.0" to 26.0" including a threaded pipe coupler to welded to the end of the pipe in order to screw muffler in place so that muffler may be removed for inspection. Pipe must be one piece continuous pipe from flange or slip nipple to muffler coupler. No sections of pipe welded together (butt welds). Pipe coupler will be a standard, unaltered, 3/4" NP, threaded coupler. Length will be 1.000" inches minimum to 2.250" inches maximum.
- e. There will be no steps or tapers in the exhaust pipe or flange assembly. Exhaust pipe length must be measured using a 1/4" wide tape measure inserted through pipe to measure overall length. Flange and coupler will be included in the overall length when measuring the pipe. No coating of any type may be applied to the interior of any part of the exhaust system. The intent of this rule is to have all of the exhaust pass through the muffler exit hole. All measurements are to be taken with the component pieces in the same position as they were installed and on the car.

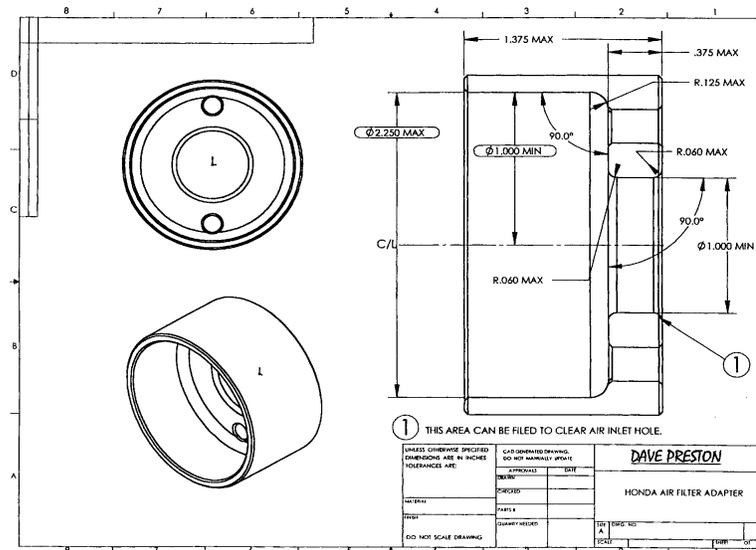
- f. All 120 & 160 .25 QM mufflers must be Briggs & Stratton Part # 294599 or equivalent. No drilling holes in the baffles. Inside seam of baffle must be straight edged. (NOTE: Some seams may not be parallel in baffle) You cannot cut off the threaded flange if it is to be used in Honda. It is OK to weld a washer or nut on the flange for a place to connect safety wire or spring. Muffler cannot be more than 1/2 turn from being hand tight.
- g. The use of air filters during qualifying at asphalt events is not permitted. USAC Officials reserve the right to allow filters at any event that it may be necessary.

**Air Filter:** Any QMA approved air filter may be attached to the outside of air filter adapter. The factory air cleaner must be removed. Any commercially available air filter may be attached to the outside of air filter adapter. Outerwear style or equivalent can be used over carburetor only with no adapter. The approved air filter adapter may be run with or without an air filter. Any air filter may be used with adapter as long as there are no device(s) used inside the air filter or adapter. Any device, manifold, tubing, etc connected between the air filter adapter and the air filter is not legal. (\* "Outer Wear" defines a style not brand name). The spring in the UNI style air filters are allowed but cannot be altered and must use the OEM spring. The stock Honda air filter gasket may be used. Outer wear style or equivalent can be used over carburetor only with no adapter We are using "outerwear" to define a style not brandname). The approved air filter adapter may be run with or without an air filter. Any air filter may be used with adapter as long as there are no device(s) may be used inside the air filter or adapter that will alter the airflow into the carburetor; however, the anti-deformation spring that is supplied with the foam filters may be used.

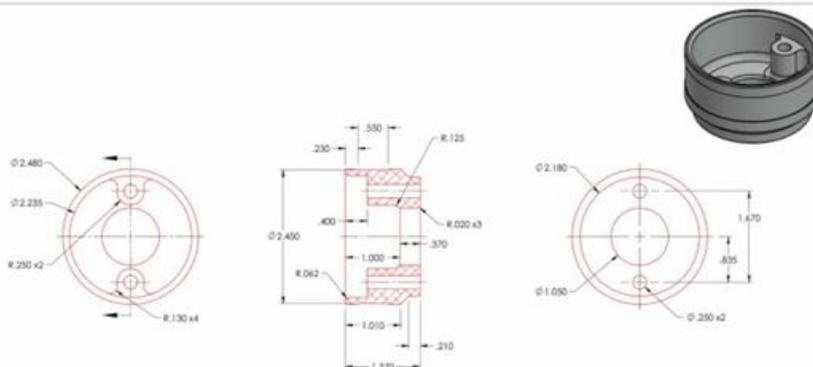
- (1) Air cleaner adapter will be maximum ID 2.250" and a maximum of 1.380" long in length, flange thickness 0.395" max. flange ID 1.000" minimum hole size straight walled, flat bottomed and parallel with carburetor using existing air cleaner mount holes.
- (2) Honda air filter gasket- It is legal to use Honda air filter gasket part number 16269-ZE1-800 between the air filter cup and the carburetor mounting face. This OEM gasket is the only legal gasket that can be used. Gasket thickness is .020" Ref.

Either Old or New style air filters adaptors are legal (PER DIAGRAM)  
 OLD STYLE Air filter cup flange thickness maximum is now .395

**OLD STYLE DIAGRAM FOR OLD STYLE AIR FILTER ADAPTOR**



**NEW STYLE DIAGRAM FOR NEW STYLE AIR FILTER ADAPTOR**



Remove Carburetor:

Air filter adapter:

- a. ID: 2.250" maximum
- b. Length: 1.380" maximum
- c. Flange thickness: 0.390" maximum
- d. Flange ID: 1.000" minimum
- e. ID hole size straight walled, flat bottomed and parallel with carburetor using existing air cleaner mount holes.
- f. Carburetor adapters with machined spacers or bosses are permitted.
- g. Carburetor adapters must meet all the current dimensions with the following additions. Only 2 bosses may be added for the purpose of mounting to the carburetor. The maximum diameter of the bosses is 0.515 The maximum length of the bosses is 0.625. The top of the bosses must be machined flat. They may not be counter bored or have a radius. A maximum 0.030 radius can be added to break the top edge.

- 2) Any type throttle linkage may be utilized. Carburetor will be unaltered with the exception of the black plastic piece on upper end of throttle shaft. This is the only part in the carburetor that can be altered.
  - a. Material may not be added to throttle stop area of black plastic piece or carb body.
  - b. Rear mounting brackets for Honda fuel tank may be removed.
  - c. The starter cup that is behind the flywheel retaining nut can be cut away to leave only the flat washer back piece that retains cooling fan.
  - d. The keyed end of the ring gear shaft may be shortened, drilled and tapped or machined for snap ring.
  - e. All threaded holes may be Heli-Coiled but are not allowed to be relocated.
  - f. Honing and deglazing of the bore is allowed.
  - g. Lapping the valves is allowed.
  - h. Oil drain back hole between lifters may be enlarged
  - i. Aftermarket drain plug and fill plugs may be used
  - j. Aftermarket valve cover gaskets is legal.
    - i. One gasket only
    - ii. No silicone on gasket surface.

**Blocking Air Flow:** No device may be used that will/or appear that it may impede airflow into the engine cooling system. This may require that the engine be run at a speed above idle by the tech personnel at the scale after the car has qualified or raced.

- 1) The choke butterfly and shaft must be removed. The 2 vacant holes from the choke shaft may be filled and sealed with epoxy or silicone sealer. Old shaft may be cut down also as an option to plug holes. The addition or subtraction of material in the bore or venturi of the carburetor will not be permitted.
- 2) The oil level switch may be disconnected, but switch assembly must remain intact in the crankcase.
- 3) The gearbox may be rotated to any of the 4 positions.
- 4) The On-Off ignition switch may be removed. The vacant hole may be covered, but not welded closed.
- 5) Procedures that affect the molecular structure of metal of any Honda parts such as Cryogenics will not be permitted.
- 6) Taking parts out of service- Reference: Wear limits in Engine Block Internal section.
- 7) Infractions involving Air filter adapter, Exhaust, Spark plug and Ignition timing will result in disqualification only. In most cases additional penalties will not be accessed.
- 8) The Honda flywheel cover shroud can be any color. The valve cover and lower head heat shroud must be as factory produced and color.
- 9) All Lip seals must have the stock spring installed in the seal and in its proper location.
- 10) The oil filler caps are a non tech item. The use of any style plastic or billet filler plugs are legal.

**TECH PROCEDURE**

External visual check of engine for required components: muffler, shrouds and sheet metal, oil level sensor (this can be partially observed from outside).

## **CARBURETOR**

Remove Carburetor:

**A.** Check for any alterations or worn parts that would allow additional air into engine: holes, slots, perforations, spacers, loose bolts, warped flanges.



- a. Gasket thickness: 0.025" maximum.
- b. Insulator gasket thickness: 0.025" maximum
- c. Either stock Honda UT-1 or UT-2 insulator can be used
- d. It is legal to use two (2) OEM Honda carburetor gaskets between the carburetor and the plastic insulator

**B.** Carburetor identification number: BE 65 B Thailand BE65Q & BE54D

**C.** Pilot jet: 0.0135" maximum #79 (0.0145") no go.

**D.** Check carburetor for alterations. Upper choke shaft hole may be sealed with silicone type sealer.

**E.** Carburetor Bore: Intake end: maximum diameter 0.952" ref. Throttle end: maximum diameter 0.710.

**F.** Carburetor venturi bore: 0.523- no/go. This measurement is best made with a no go gauge but may be made using a telescoping gauge as a no go.

**G.** The butterfly screw, the butterfly, and the throttle shaft must not be removed from the carburetor. Any evidence of tampering will be a disqualification and suspension.

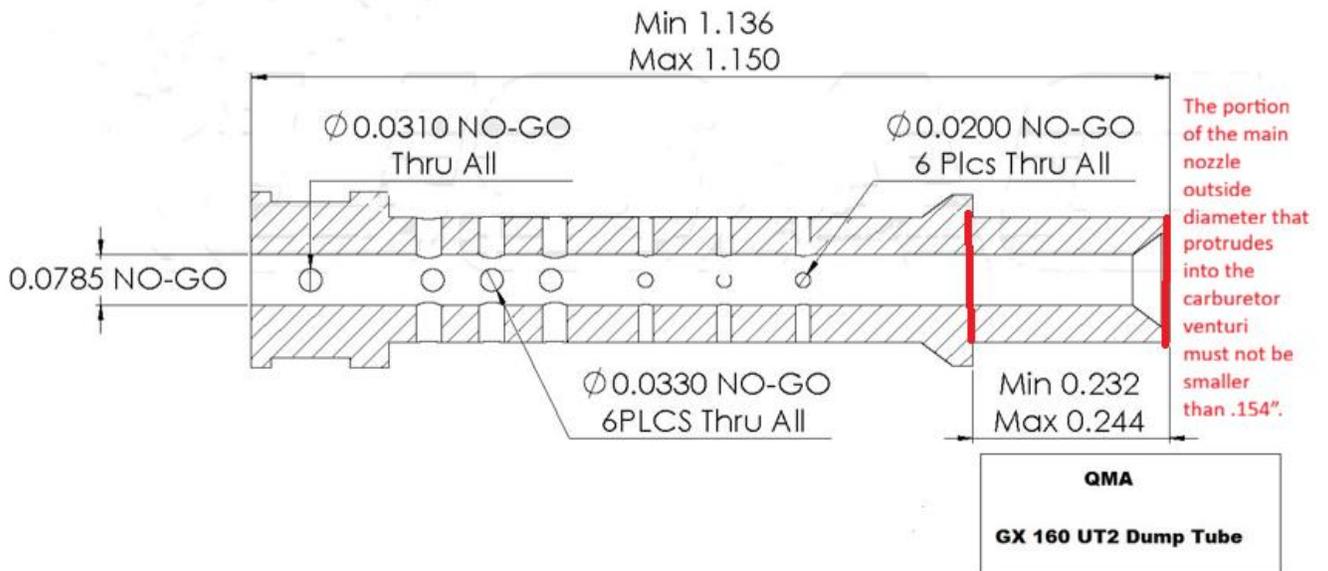
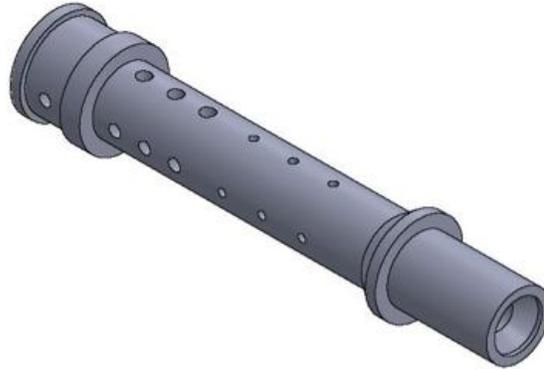
**H.** Junior 160 will use a BE65B, BE65Q or BE54D carburetor and a gray restrictor plate (.549") with gaskets on both side of the plate. Check with .550"- No-Go

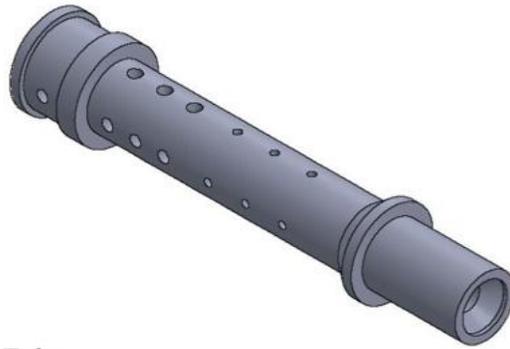
**I.** It is legal to have two (2) round hole carburetor gaskets between the carburetor and the black insulator in Light and Heavy 160 classes.

*Main nozzle will be checked with a No/Go Gauge (0.424") If gauge goes over dump tube carb is illegal. This is best measured using a 0.452" rod type gauge with a 0.424" flat area to be used as a go gauge. Main Nozzle may be changed when purchasing a new UT-2 160 to the following # 16166-ZH8-W50 in the BE54D UT-2 carb.*

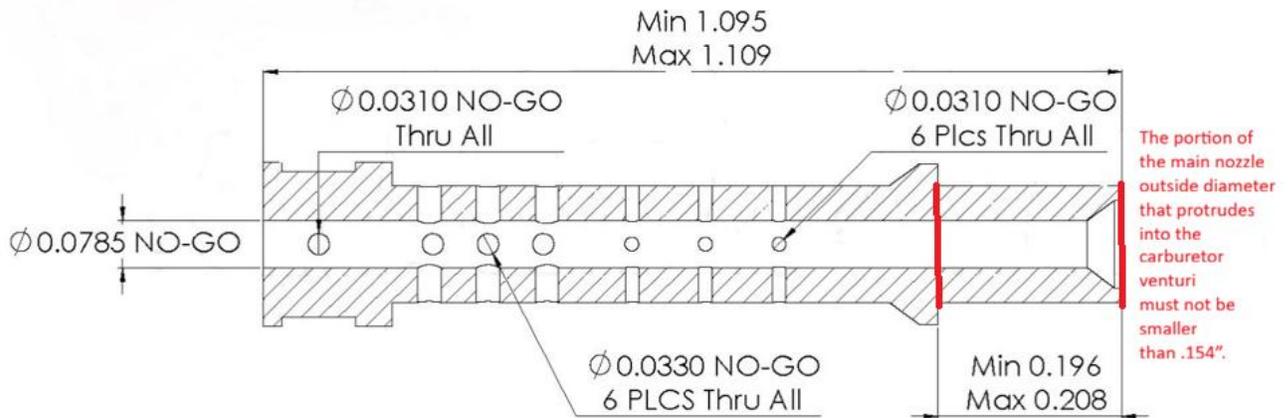


1. Air vent holes on the side of the main nozzle must not be plugged.
2. Main nozzle must not be held into place in the carburetor body by anything other than the main jet
  - Decimal equivalents of numbered size drills chart on



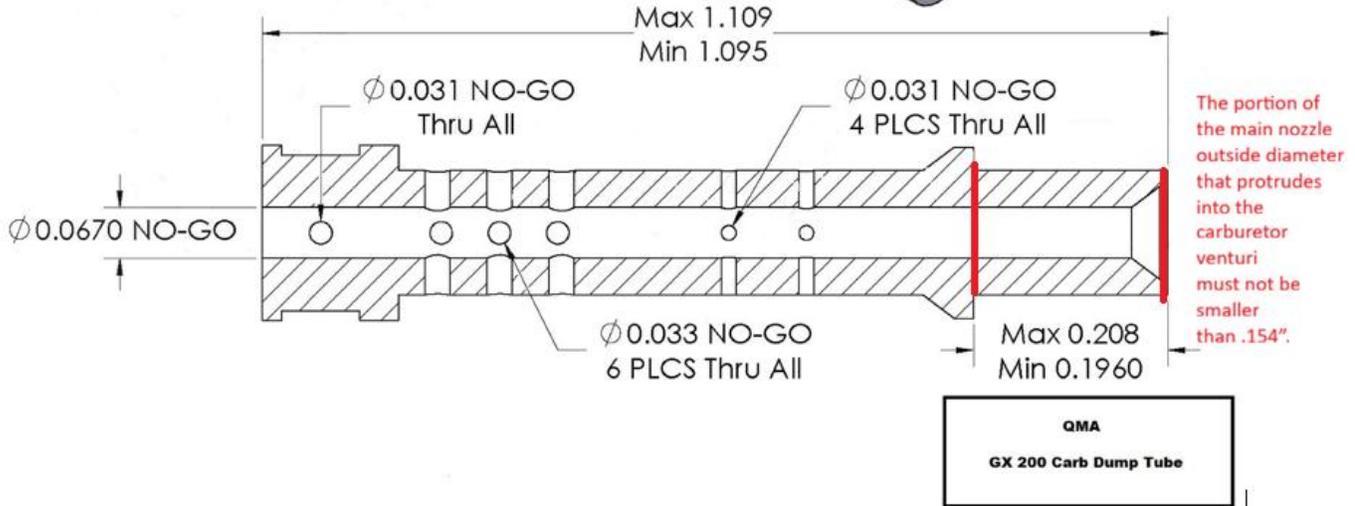
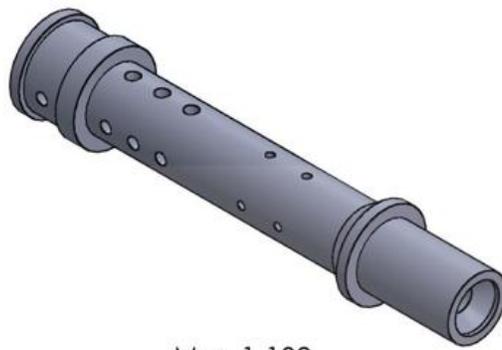


**QMA  
GX160 Dump Tube**



## GX 200 CARBURETORS ON HEAVY 160 ONLY

- A. Check for any alterations or worn parts that would allow additional air into engine: holes, slots, perforations, spacers, loose bolts, warped flanges etc.
  - Carb insulator (see above for standard 160 carb)
- B. Must use BE64Y carburetor Honda part number 16100-Z0V-921. It is not legal to use a 160 carburetor for the Hvy 160 class- Only the BE64Y carburetor can be used.
- C. Must use Honda UT1 or UT2 insulator only. No modifications allowed.
- D. Main jet must be an OEM Honda jet (Brass or Silver). Jets can be drilled to any size. Only modification allowed is drilling the main hole in the jet.
- E. Main jet – Any size allowed. This specification refers to the main jet primary small center hole only. It is not legal for any other jet modifications and will be compared to a stock known factory jet. Counter boring and/or chamfering of the larger holes of the jet on both the front and back sides of jet are not allowed.
- F. Check carburetor for alterations. Upper choke shaft hole may be sealed with silicone type sealer.
- G. Pilot jet: +/- 0.001 (0.018")
- H. Carburetor Bore: Intake end: maximum diameter 0.952" ref. Throttle end: maximum diameter 0.751
- I. Carburetor venturi bore: 0.576- no/go. This measurement is best made with a no go gauge but may be made using a telescoping gauge as a no go.
- J. Main nozzle will be checked with a No/Go Gauge (0.449") If gauge goes over dump tube –
  - carb is illegal. This is best measured using a 0.570" rod type gauge with a 0.449" flat area to be used as a go gauge.
- K. The butterfly screw, the butterfly, and the throttle shaft must not be removed from the carburetor. Any evidence of tampering will be a disqualification and suspension.

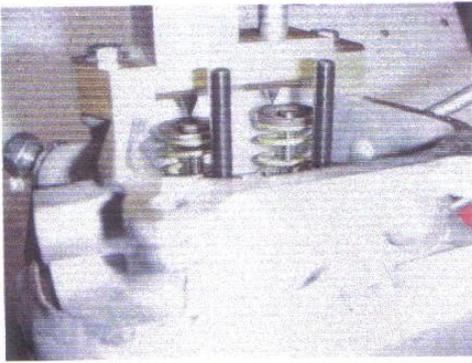


## ENGINE COOLING SHROUDS

- A. All pieces of the stock engine-cooling shroud must be properly installed.
- B. There must be no addition or subtraction of any material from the shrouding except for the covering of the switch hole. (Any material). Starter cup may be altered to be used as washer retainer for the cooling fan.
- C. Fan Shroud may be any color. All other shrouds must remain as produced by Honda.

### Check Valve Lift at Valve

1. Install indicator as shown.
2. Zero dial indicator after exhaust bump. (0.050) ref.
3. Maximum valve lift will be checked from the top of valve spring retainer. Valves may be adjusted to zero clearance or shims may be installed to create zero clearance. This may dictate making special shims, as it is difficult to insert feeler gauge blades so as not to interfere with indicator contracts on retainer.
  - Valve lift:
    - Intake: 0.245 Maximum
    - Exhaust: 0.255 Maximum



### **CYLINDER HEAD, HEAD GASKET, VALVES, SPRINGS**

Remove cylinder head.

Head gasket thickness: 0.008" minimum thickness of inner rim.

Combustion chamber cc: 17.2 cc. Ref. with stock spark plug

Remove valves: The use of stock valve seal is legal on the intake only.

### **VALVE SPRINGS**

- A. Valve springs will be stock Honda PN 14751-ZF1-000 or PN 14751-ZE1-000.
  - **No modifications allowed.**
- B. The Honda GX120 or GX140 valve springs will be permitted for use. The Honda springs must be used as supplied without any modification.

#### 120 Spring

- A. Wire diameter: 0.071" Maximum
- B. Outside diameter of spring: 0.790" Maximum
- C. Number of total coils: 5.3
- D. Spring pressure: 11 LBS max. at 0.812"
- E. Stacked length will be: 0.394" Maximum

#### 140 Spring

- A. Wire diameter: 0.079" Maximum
- B. Outside diameter of spring: 0.816" Maximum
- C. Number of total coils: 7
- D. Spring pressure: 16 LBS max. at 0.812"
- E. Stacked length will be: 0.524" Maximum

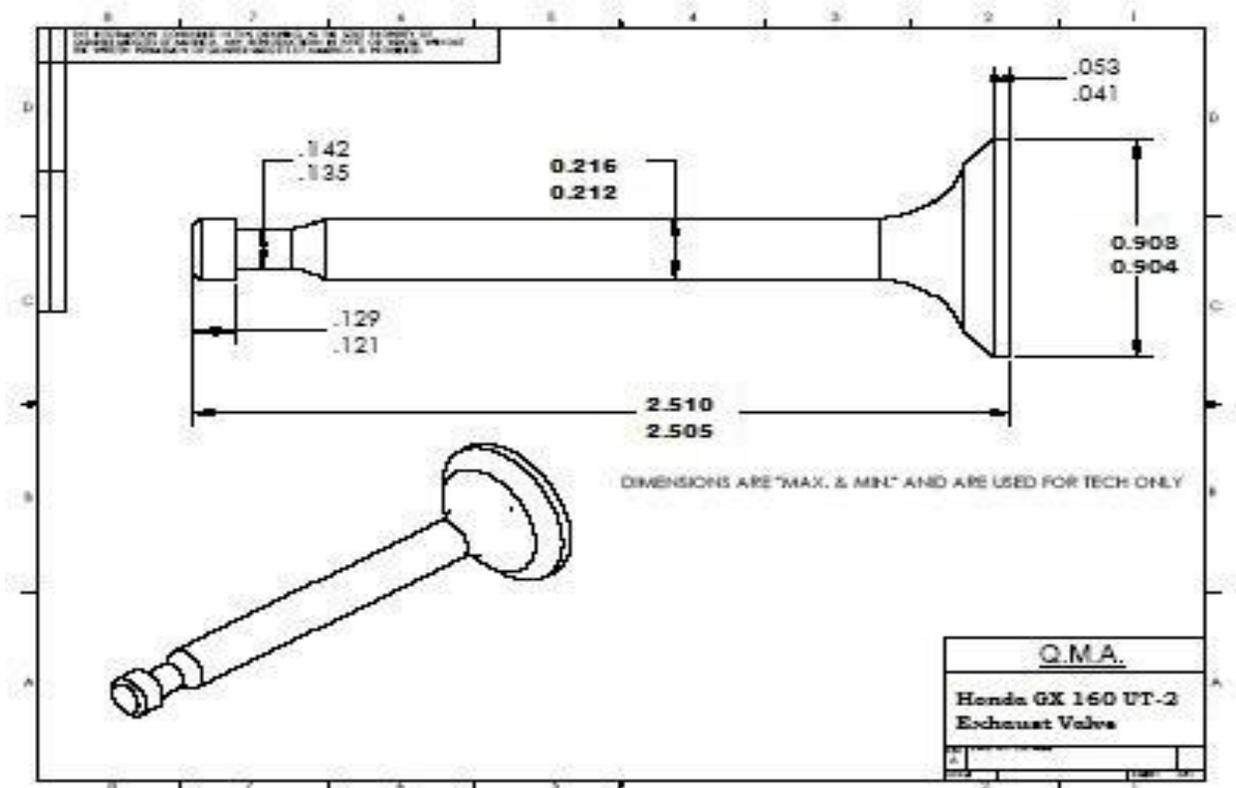
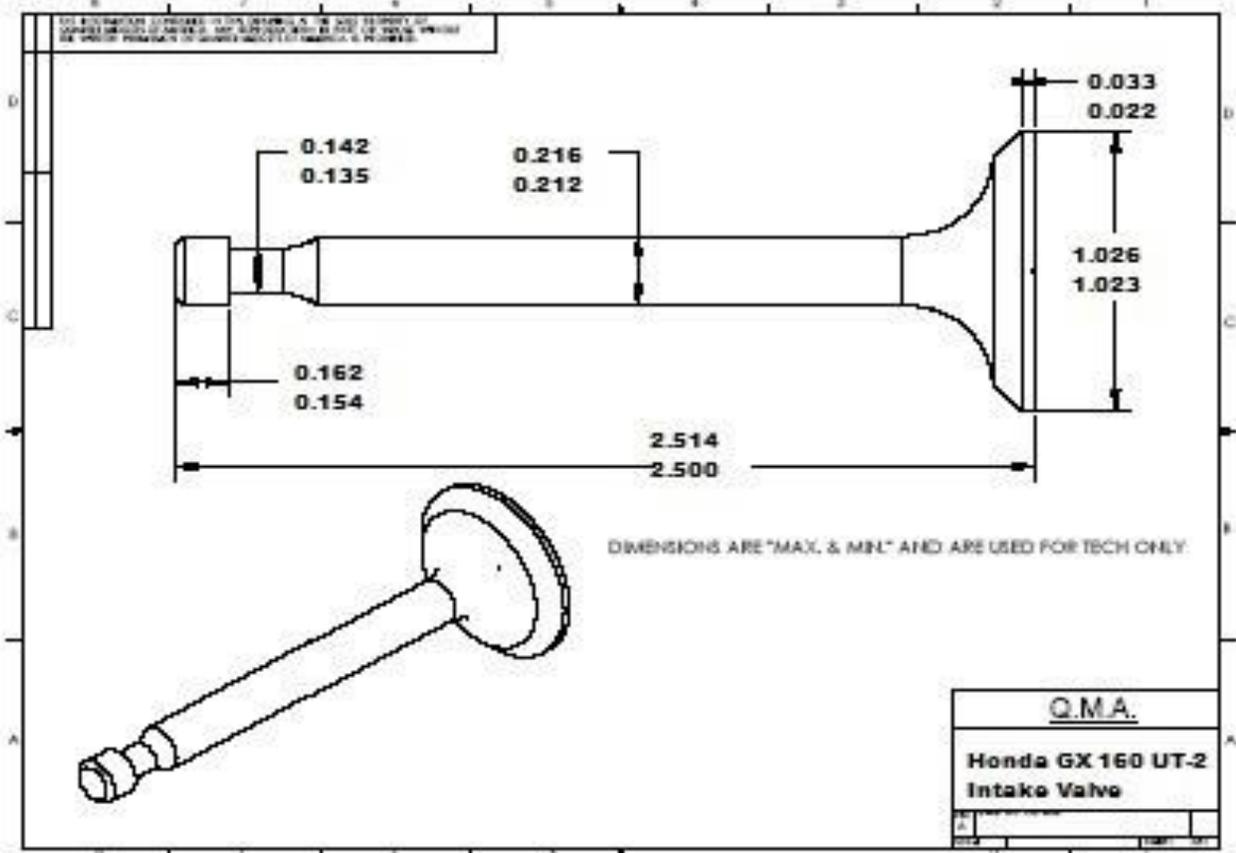


## **ROCKER ARMS – PUSH RODS – STUDS**

Rocker arms will be stock Honda and will not be altered in any way. Rocker arm studs will be stock Honda. They or their mounting position may not be altered in any manner. No heli-coiling of mounting holes. No bending of studs. Push rods will be stock Honda and will not be altered in any way. Push rod length will be 5.279" max.

## **VALVES**

- A. Check valves for dimensions and weight. Valve seating surface must be factory ground to a single angle only, 45 degrees. There will be no other angles ground on any part of valve. Valves must not be polished, lightened or altered in any way.
- B. INTAKE VALVE
  - a Inspect the valve for dimensions and weight. The valve seating surface must be factory ground using (1) one single 45 degree angle. Compound angles will not be permitted. The valve must not be polished, lightened, or modified in any way.
  - b Intake valve length: 2.500" / 2.514"
  - c Intake valve stem diameter .212" / .216"
  - d Intake valve face diameter 1.020" / 1.026"
  - e Intake valve weight 22 grams minimum
- C. EXHAUST VALVE
  - a Inspect the valve for dimensions and weight.
  - b The valve seating surface must be factory ground using (1) one single 45 degree angle. Compound angles will not be permitted. The valves must not be polished, lightened, or modified in any way.
  - c Exhaust valve length 2.505" / 2.510"
  - d Exhaust valve stem diameter .212" / .216"
  - e Exhaust valve face diameter .904" / .908"
  - f Exhaust valve weight 20.5 grams minimum



## HEAD

Cylinder head will be in “as cast” condition and there must be no addition of metal or any other substance to the inside or outside of the cylinder head except head gasket surface may be milled. This includes any type of machining or grinding to increase airflow. Head gasket surface is a non-tech item.

- A. Measure from the head gasket surface to valve seat. This dimension will be:
- maximum 0.305”
  - minimum 0.287”
- B. Measure from head gasket surface to top of valve guide. This dimension will be: 1.015” Maximum



- C. Measure from surface of head to lowest machined area in the bowl of the port. This dimension will be:
- Intake: 1.130” Min to 1.150” Max depth  
Exhaust: 1.087” Min to 1.105” Max depth
- Thickness of head. This will be measured from valve cover surface to head gasket surface at the side at a position in line with upper intake & exhaust flange bolt.  
Maximum 2.917” Minimum 2.908”

## INTAKE AND EXHAUST PORTS

- A. Ports will be “as cast” and in factory machined condition. The addition or subtraction of any other substance to the inside or outside of the cylinder head is illegal.
- B. No alterations of any kind to be made to the intake or exhaust port.
- C. This includes any grinding, polishing, etching, sand blasting or glass beading to interior surface of port and bottom of port bowl by the guide.
- D. Valve seats must be a stock single 45-degree angle. Multi angle valve seats are not permitted. Valve seats may not be replaced.
- E. Intake and Exhaust ports at valve:
- Intake: maximum 0.950”  
Exhaust: maximum 0.832”
- F. Honda 160UT2 cylinder head **ACT-12**, **ACT-13** and **ACT-14**-The intake port floor leading up to the short side corner is allowed to have factory tooling pull groove marks. However the short side corner where the port floor and the bowl meet must still have a sharp corner at this junction. This rule applies only to the **ACT-12**, **ACT-13** and **ACT-14** head casting and only the factory produced tooling pull marks are legal. There is no grinding allowed leading up to the short side corner. The no addition or subtraction rule still applies to this cylinder head.

## **ENGINE BLOCK**

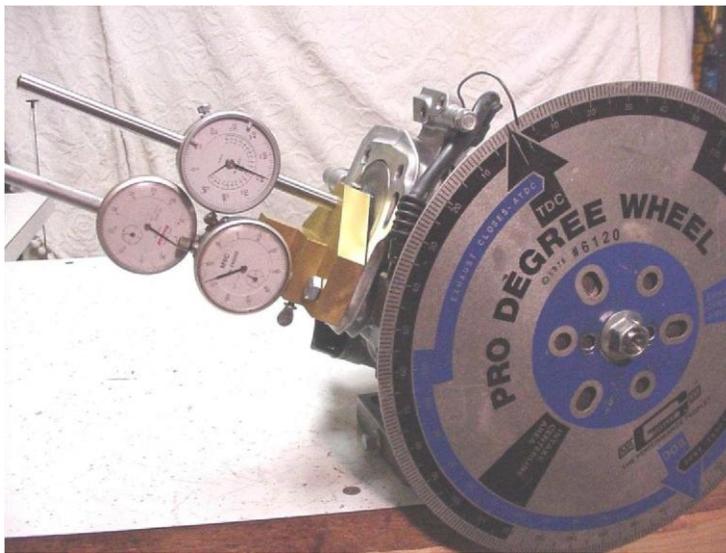
This engine block must be “as cast”. There must be no addition of metal or any other substance to the inside or outside of the cylinder block, crankcase over, crankshaft, rod, piston, pin, rings, flywheel or coil with the following exceptions below. Still needs to meet other requirements listed. Head gasket surface may be milled. Head gasket surface of the block is non-tech.

- Addition of brackets, fittings etc. to accommodate throttle linkage, tachometer, temperature gauge is allowed.
- Bore size: 2.682 maximum.
- **“Wear Limits/Parts Out of Service”** QMA reserves the right to confiscate 160 Honda engine parts deemed illegal or at QMA maximum wear limits. EXAMPLE: Cylinder Bore will be 2.682 Max. All measurements taken at top of bore or very bottom of bore parallel to crank, 90 degrees from crank. Any cylinder block that has one measurement over QMA maximum wear limits will be taken out of service. If no measurements exceed QMA maximum wear limits the part of block will not be confiscated. Handler has the right to have confiscated parts returned to them but will be rendered unusable
  - Check stroke: 1.778 maximum to 1.758” minimum
- Measure amount that piston is up or down from block surface at T.D.C. This will be measured at the edge of piston top and bottom, and side to side. When measuring top and bottom of piston take an average of the numbers measured. i.e. top =+.003, bottom =-.003 the piston to deck would be .000. Measurement must NOT be taken in the center or relieved part of the piston.
- The dimension will be .000” Max. NO PISTON POPUP!! Carbon may be removed to check piston pop up
- Head gasket surface of engine block may be milled to obtain desired piston pop-up.

## **CAMSHAFT**

Recommended to use a 11” degree wheel

- Cam will be checked with indicator reading off the top end of tappets, which will provide zero clearance. The inverted radius of the top of the tappet presents some problem to get accurate readings and to prevent binding of indicator stem. Indicator holder and positions are very critical in this operation. When indicator is mounted on the top of lifters use a 3/16” or 1/4” ball between lifter and dial indicator end.
- Zero indicator on base circle of cam. Be sure that compression release does not affect zeroing exhaust indicator. (Zero dial indicator after exhaust bump) ref.
- Turning engine in normal rotation, clockwise facing flywheel, take reading at specified opening. Readings must fall between specified degrees on the following chart.
- One profile check point on intake and one profile check point on exhaust may be out of spec, with the exception of the maximum camshaft lift. Maximum camshaft lift cannot exceed maximum spec.



## **CAMSHAFT PROFILE LIMITS**

### **Intake Degrees**

0.050" 4 - 8 ATDC  
 0.100" 22 - 27 ATDC  
 0.150" 42 - 46 ½ ATDC  
 0.200" 71 - 75 ATDC

### **MAX LIFT**

**0.227"**

0.200" 143 1/2 - 147 ATDC  
 0.150" 172 - 175 ½ ATDC  
 0.100" 192 ½ - 195½ ATDC  
 0.050" 210.5 ½ - 214 ATDC

### **Exhaust Degrees**

0.050" 208 - 212 BTDC  
 0.100" 189 - 195 BTDC  
 0.150" 172 - 176 BTDC  
 0.200" 145 - 149 BTDC

### **MAX LIFT**

**0.229"**

0.200" 69 - 74 BTDC  
 0.150" 41 ½ - 45 BTDC  
 0.100" 22 - 25 BTDC  
 0.050" 4 ½ - 8 ½ BTDC

- Check max lift at intake and exhaust.

### **FLYWHEEL, FAN AND IGNITION SYSTEM**

*Caution should be used when removing flywheel. Do not hit with hammer or other heavy objects. Service manual show flywheel to be removed with commercially available 6" puller. Another method is inertia type knocker that threads onto crankshaft end.*

The transistorized magneto ignition is fixed at 20 degrees BTDC and may not be altered in any way. Firing must not exceed 0.104 “or 20 degrees BTDC. Offset flywheel key is allowed in the UT-2 160 engine only. Either Honda or offset key must be used (no-key not allowed) flywheel may also be lapped on UT-2 160 only with use of key. Acceptable magnet insulator colors are: White, Green and Yellow.

## **PROCEDURE FOR CHECKING TIMING**

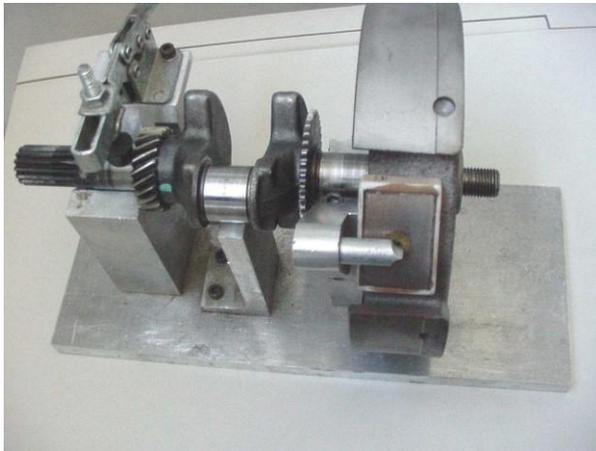
### **Recommend Using a 11” Degree Wheel**

Use a suitable automotive timing light to check timing at a rotational speed of 800RPM through 900RPM. Engine must be no more than 20.5° at 800 RPM through 900 RPM

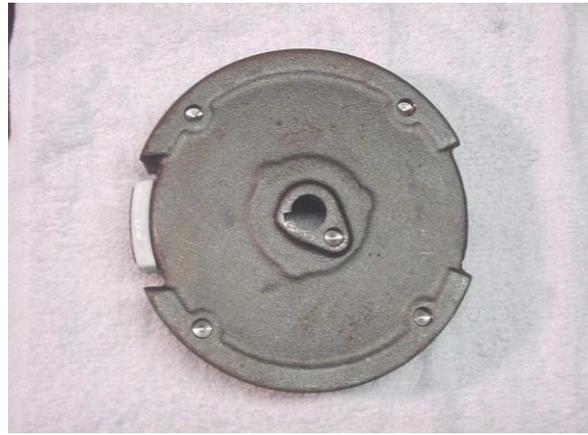
- A. With degree wheel and pointer installed use the positive stop method to find exact TDC
- B. Timing must not exceed 20.5 degrees BTDC maximum at any point between 800 RPM through 900 RPM.



- A. Flywheel keyway or its position must not be altered.
- B. Key must be in place.
- C. Magnet and its position may not be altered in any way.
- D. Magnet retaining screw may not be altered in any way. Screw may not be replaced with larger or smaller screw. No heli-coiling of mounting hole.
- E. Ignition coil air gap: Measure the air gap between the flywheel and the coil. The air gap must not exceed 0.035”
  - a. Max air gap 0.035”- this can be accomplished with a set of feeler gauges
    - 1. 0.36 No-Go recommended using Feeler Gauges .017, .015, .004 together.
  - b. The gauge cant pass under the full length of each leg of the coil and the flywheel od at the magnet



- F. All nylon blades on the cooling fan must be intact. If missing fins due to normal breakage and hasn't been modified, Take out of service.
- G. **Modified nylon fan blades will be a race day DQ ONLY**



- G. No metal may be added or removed from the flywheel.
  - Flywheel weight will be: 2300 grams minimum
- H. A stock Honda spark plug cap, (wire end and resistor), must be used.
- I. Any automotive type spark plugs with  $\frac{3}{4}$ " reach maximum is allowed. Tapered seat plugs are not allowed. Race DQ only.
- J. No plug-indexing washers allowed.
- K. If temperature sensor is used under spark plug, factory washer must be removed.

### **GEAR BOX AND RING GEAR**

- A. Gear box may not be altered in any way. May be rotated to desired position.
- B. Ring gear may not be altered in any way with the exception of the keyed end of shaft that may be shortened, drilled and taped or machined for snap ring groove. No other machining, drilling, grinding etc. to ring gear. Keyway may be cut deeper.
- C. Ring gear may not be altered in any way including polishing or use of any compound or abrasive on gear shaft where bearings ride.
- D. Two gaskets maximum between gear box halves.



## CRANKCASE COVER

### Remove crankcase cover.

- A. Cover must be “as cast” and in factory machined condition and there must be no addition or subtraction of metal or any other substance to crankcase cover.
- B. Crankcase cover gasket must be stock Honda. Only one gasket may be installed with a maximum thickness of 0.025”.
- C. Critical dimensions are - thrust face of camshaft holder and position of crank bearing. Place a straight edge over crank bearing and cam boss thrust face. These surfaces should be level. Maximum tolerance will be  $\pm 0.005$ ”. There will be no alterations to crankcase cover. This includes any alteration to crank bearing and camshaft holder position and height in an attempt to alter valve timing.

## PISTON – WRIST PIN AND PISTON RINGS

Remove rod and piston – dot on top of piston must point toward push rods - piston, wrist pin and rings must be absolutely stock and not altered in any manner.



## PISTON NOTES

Piston will be stock Honda standard size and will not be altered in any way.

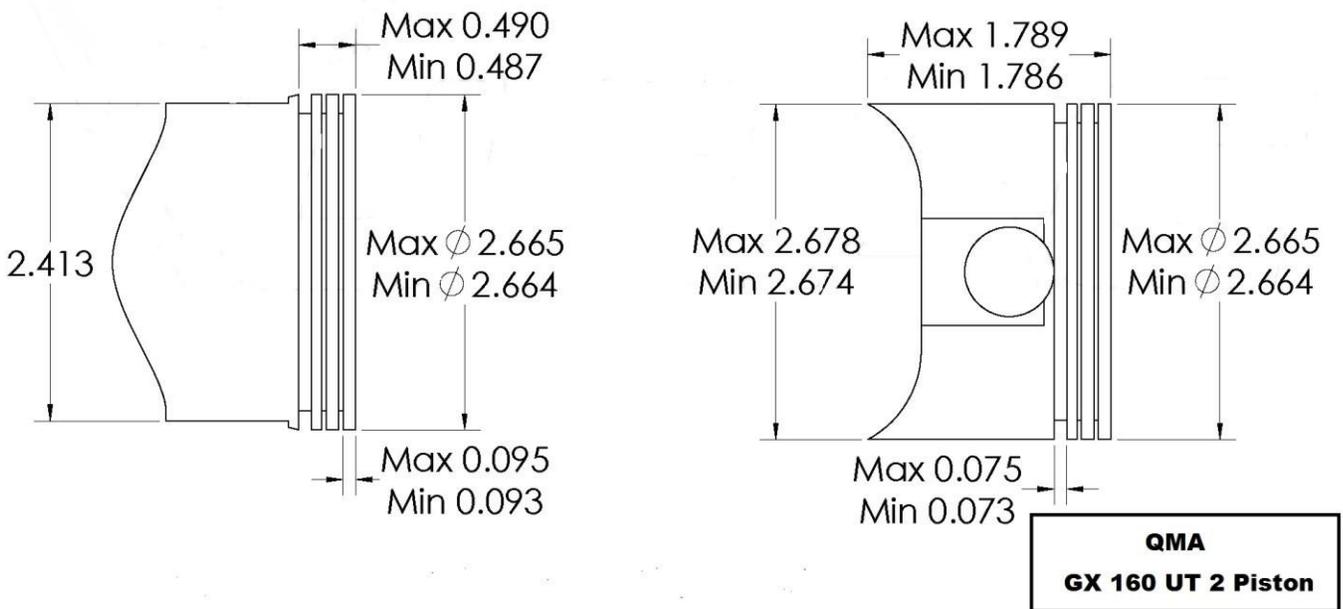
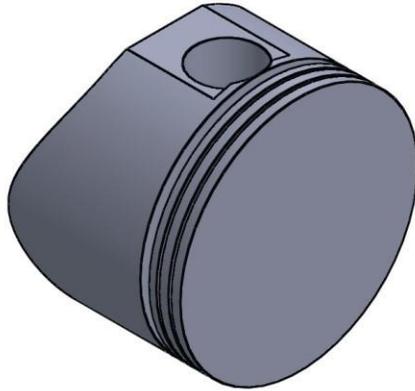
- Oversized pistons must not be used.

All three piston rings must be used and installed properly.

- *Top ring*: Chrome compression ring installed with 1 R on rail up. No expander under ring.
- *Middle ring*: Oil scraper ring installed with R on rail up. No expander under ring.
- *Bottom ring*: Check oil ring expander for alterations that will alter ring tension (cutting ends of expander ect.)

Piston may not be knurled, grooved or coated

- A. Total Piston weight: With rings, pin, and clips 195 grams minimum
- B. Minimum total combined weight: 337 Grams = (Piston, rings, complete rod w/ bolts wrist pins & retainers.)
- C. See drawing for dimensions
- D. Letters on rings may be worn off after run (not legible)



## RINGS

- A. Must be stock Honda rings with stock size and configuration.
- B. No decreasing of ring tension by heating, machining or any other means.
- C. Ring thickness: UT-2
  - Compression: 0.036" min.
  - Scraper: 0.036" min.
  - Oil Ring: 3-piece oil ring = 0.076 min.

## WRIST PIN

Stock Honda wrist pin and retainer



- OD: 0.708" Minimum 0.709" Maximum
- Length: 2.120" Minimum 2.128" Maximum
- ID: 0.556" ref. +/-
- Weight: 40 grams minimum

### **CONNECTING ROD**

Stock Honda rod with no alterations, except the big end of the rod may be honed out.

- A. Connecting rod big end size: 1.176 "minimum 1.184" maximum
- B. Pin end bore is: .710" ref.
- C. Length from bottom of pin bore to top of big end bore will be:  
2.446 maximum 2.436" minimum
- D. Rod weight with bolts: 140 grams
- E. No oil grooves on bearing surface of either end.

### **CRANKSHAFT**

Stock Honda crankshaft with no alterations.

The only legal crankshafts are the UT2 and UT2.5 as listed below. 13310- Z4X- 620 (UT2) 13310- z4X- 621 (UT2.5)  
The flywheel side ball bearing can have a slip fit or press fit on one or both the crankshaft and the cylinder block locations. Staking and or Loctite is legal but not required at these interface locations. This is necessary so the UT2 and UT2.5 crankshafts can be interchanged between the UT2 and UT2.5 Honda 160 engines

Stock Honda crankshaft with no alterations. The only legal crankshafts are the UT2 and UT2.5 as listed below. 13310- Z4X- 620 (UT2) 13310- Z4X- 621 (UT2.5)

#### **Notes:**

- A. No removal or addition of any metal from or to the crankshaft is allowed.
- B. No balancing of the crank is allowed.
- C. No oil grooving is allowed on the crank journal.
- D. Keyway location must not be altered.
- E. Measure thrust to crank gear side = 3.340 Min.
- F. Thailand crankshafts have no heat treat marks.
- G. Governor drive gear on crankshaft is optional.





K. Machined surface of block down to bearing face:  
3.416" minimum

3.435" maximum



***Tech officials have the right to tech any or all cars in any class at their discretion. Tech Officials follow the same chain of command as all officers of QMA – as follows: Local – Regional – National I.E. Regional tech officials can tech at any event at their region and National Tech Officials can tech at any event in QMA. National Tech Director is final authority on all tech issues.***

## DECIMAL EQUIVALENTS OF NUMBER SIZE DRILLS

Size in		Size in		Size in		Size in	
No.	Decimals	No.	Decimals	No.	Decimals	No.	Decimals
1	.2280	21	.1590	41	.0960	61	.0390
2	.2210	22	.1570	42	.0935	62	.0380
3	.2130	23	.1540	43	.0890	63	.0370
4	.2090	24	.1520	44	.0860	64	.0360
5	.2055	25	.1495	45	.0820	65	.0350
6	.2040	26	.1470	46	.0810	66	.0330
7	.2010	27	.1440	47	.0785	67	.0320
8	.1990	28	.1405	48	.0760	68	.0310
9	.1960	29	.1360	49	.0730	69	.0292
10	.1935	30	.1285	50	.0700	70	.0280
11	.1910	31	.1200	51	.0670	71	.0260
12	.1890	32	.1160	52	.0635	72	.0250
13	.1850	33	.1130	53	.0595	73	.0240
14	.1820	34	.1110	54	.0550	74	.0225
15	.1800	35	.1100	55	.0520	75	.0210
16	.1770	36	.1065	56	.0465	76	.0200
17	.1730	37	.1040	57	.0430	77	.0180
18	.1695	38	.1015	58	.0420	78	.0160
19	.1660	39	.0995	59	.0410	79	.0145
20	.1610	40	.0980	60	.0400	80	.0135