Part# D3306 & D3307
117ci TOP END KIT
INSTALLATION INSRTUCTIONS

Please read all of the instructions ***BEFORE*** you start your ***DELKRON 107***ci top end kit installation. A few extra minutes now will pay dividends later! If after reading these instructions you do not feel comfortable making the necessary modifications**,** ***PLEASE*** contact a knowledgeable shop or engine builder to perform this work for you.

STEP # 1 - Disconnect the battery, Fuel Line(s), Oil lines.

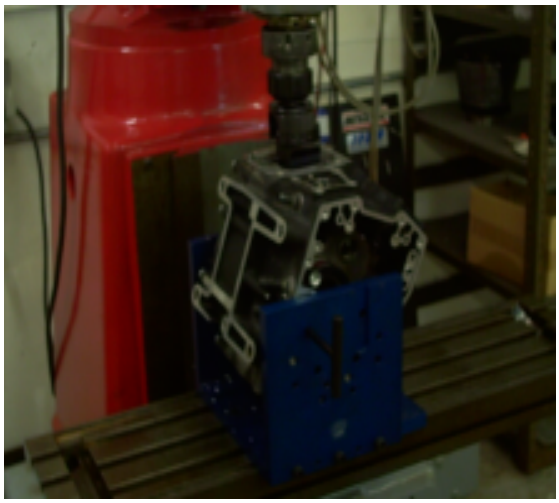
STEP # 2 - Drain all fuel from gas tank and remove gas tank.

STEP # 3 - Remove engine from chassis per service manual instructions.

STEP # 4 - Completely disassemble engine per service manual instructions

STEP # 5 – Crankcase machining … ***Cylinder studs MUST be removed for this operation***

A. Fixture crankcases so that cylinder deck is perpendicular to machining tool



B. Bore crankcase cylinder spigot bore to a finished dimension of 4.310" diameter (+/- .005") and a depth of 1.400" (+/- .010"). Note … Bridge bolt must be removed prior to machining crankcase cylinder spigot bores. ***Failure to remove bridge bolt may cause sever damage to machining tool.***

C. Drill crankcase bridge bolt hole in right side case through to a diameter of .250", use supplied ¼"x20 bolt in place of stock bridge bolt during reassembly of engine. Spot face right side crankcase at through hole to accommodate a ¼" flat washer.

STEP # 6 – Checking piston to piston clearance

It is necessary to check for correct piston to piston clearance at BDC (Bottom Dead Center)

Assemble flywheels into machined left side crankcase with cylinder studs installed. Install pistons onto connecting rods being sure that piston clearance notches face center of engine (towards each other). Install both cylinders with base gaskets and secure to cylinder studs (it is ***NOT*** necessary to torque fasteners at this time).

Rotate flywheel assembly so that both pistons are at BDC and check clearance of pistons at the clearance notches. A minimum of $1/16^{th}$ (.0625") clearance is needed. If insufficient clearance is noticed, remove pistons from cylinders and grind / machine

material from the clearance notches equally until sufficient clearance is achieved. ***Note – Material removed from pistons for clearance will not adversely affect flywheel balance.***

STEP # 7 – Piston ring end gap

Correct piston ring end gap is necessary for proper engine running.

With cylinders removed from engine and on work bench, install piston into bore of cylinder, install one compression ring at a time into the top of the cylinder 1.00" below the top of the cylinder bore, using the piston to assure that the compression ring is "Square" to the bore … measure end gap.

Correct top compression ring and secondary compression ring end gap is equal to .004” per inch of cylinder bore … example: 4.125” x .004” = .0165” of ring end gap. Rounding this number to the next highest number is permissible … example: .0165” rounds to .017”

DO NOT round to the next lowest number … example: .0165” to .016”. It is better to be slightly larger with your ring end gap than smaller. Insufficient clearance on the compression rings can lead to “Ring Abutment” at operating temperature while under compression causing irreparable engine damage.

To achieve correct ring end gap when ring end gap is insufficient, too small, grinding of the ring ends will be necessary. This can be done several different ways (File / Bench Grinder / Ring Grinder / Etc.), but it is recommended that a ring grinding tool be used. After grinding of ring be sure to deburr the ring ends ***prior*** to re-installing them into the cylinder bore.

It is very important that the ring ends are square when installed into the cylinder bore.

Ring end gaps that are not square will lead to incorrect ring end gaps that can lead to undesirable engine operation / function as well as irreparable engine damage.

STEP # 8 - Engine Reassembly and Installation

Reassemble your engine and reinstall it per your service manual instructions, making sure that all parts are thoroughly cleaned prior to reassembly.

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