QUAS-ANIMAL

Resurrecting a 206cc Intek for Performance

Tear Down: Flywheel and Head Off

Combustion Chamber Fairly Clean

Piston Rod Shattered and Scored

Governor seems to have broken loose and scored rod over time. Rod cap overheated before breaking.

Rod Shattered at Crank

Crank Main Journal Scoring

New Parts List

- Animal Rod (Take-off)
- Animal Valve Springs and Retainers
- Animal Push Rods and Rocker Arms
- Animal Camshaft (Take-off)
- Briggs Racing Intake Manifold
- Stock Intek Crankshaft (Surplus)
- Crankshaft Endplay Shims
- Ring Set
- Animal Billet Flywheel (JR Racing)

Governor Removal

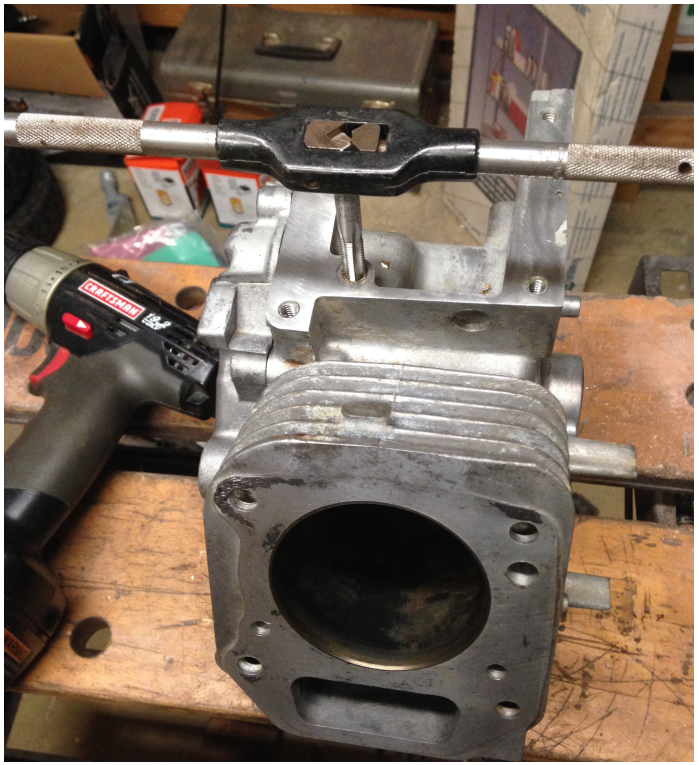
The governor consists of three (3) parts. An idler gear from the cam shaft, the main spool with flyweights and the rod which exits the block at the top of the case. The rod is located in a brass bearing. The rod is secured by a press fitting, and is removed. The rod can be driven through the bearing and removed.

The idler gear and main spool are on shafts above the crankshaft and is driven by a gear on the crankshaft. These are held in place with c-clips. On this engine, the spool c-clip had broken and the flyweights interfered with the connecting rod, causing rod failure.

Governor Spool Removal

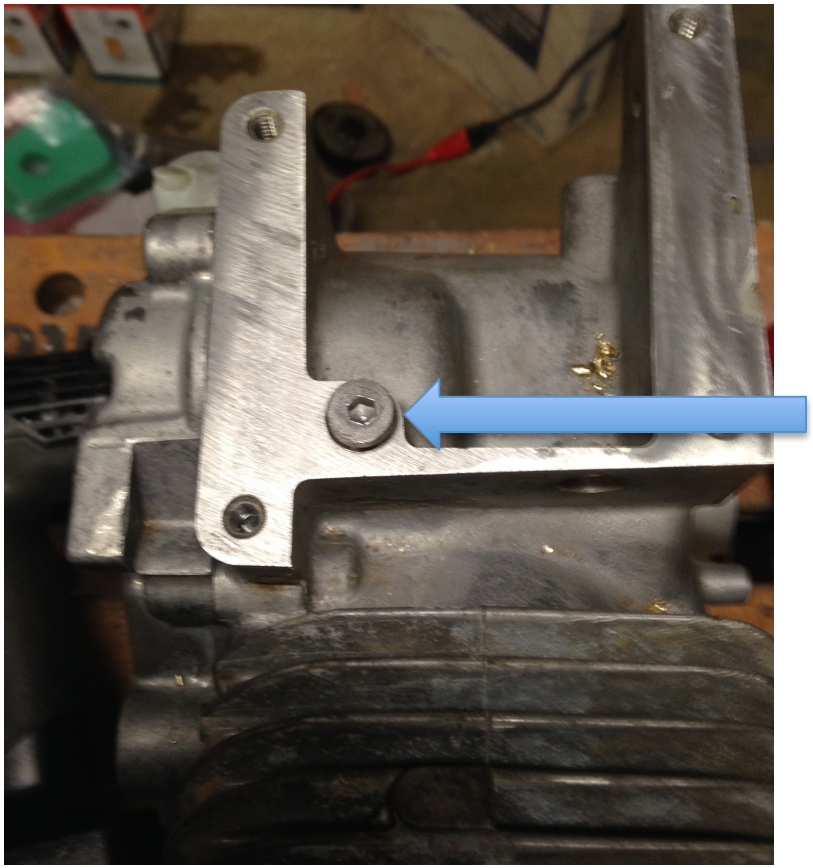
Flyweight shaft is press fit and breaks off with twist. Idler Gear shaft is press fit through block. Idler shaft was cut with hack saw and ground back to bearing surface. Washers were removed.

Governor Shaft and Rod



Bronze bushing through top of block tapped with 5/16”-18. The rod location counter sunk to accept an Allen head bolt.

Sealing Governor Rod Hole



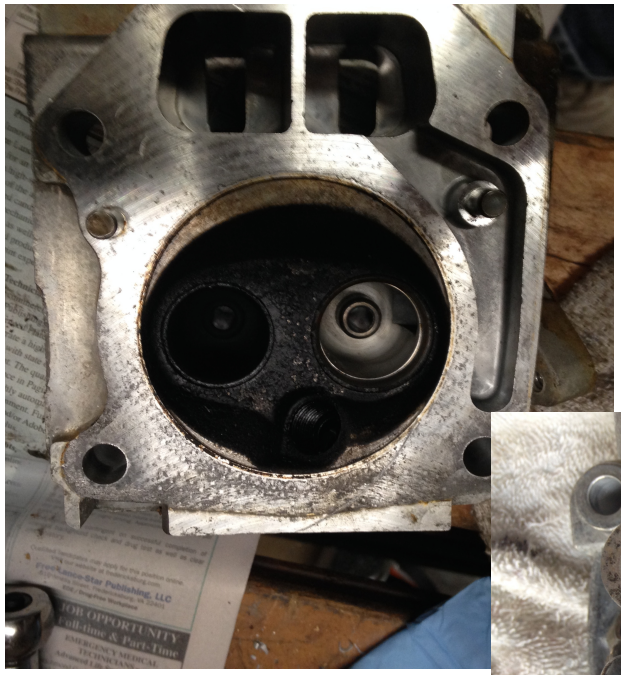
- Top plate cleaned up with a sanding disk.
- Bolt hole counter sunk and Allen bolt head reduced to fit.
- Red Loc-tite secures stainless bolt

Head Disassembly

Components disassembled easily

Will be replaced with Animal parts

Prepping Cylinder Head

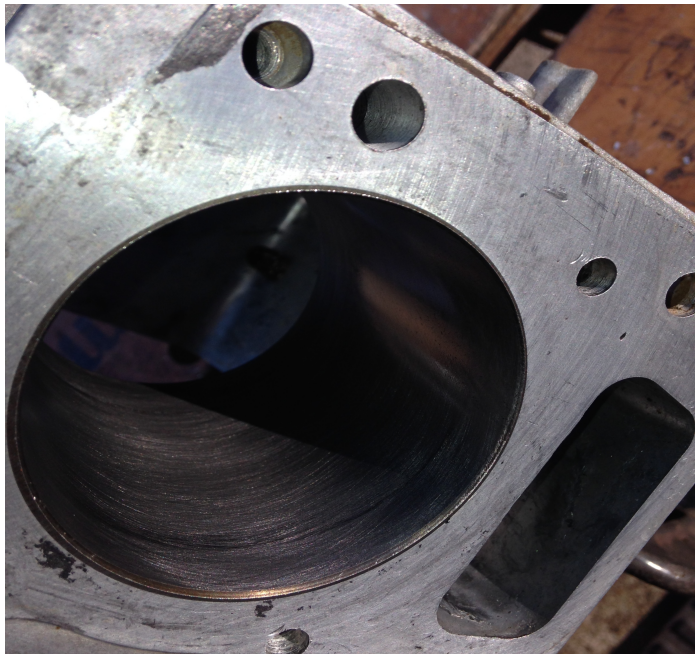


PB Blaster
Removed Carbon

Zep used to
degrease and clean

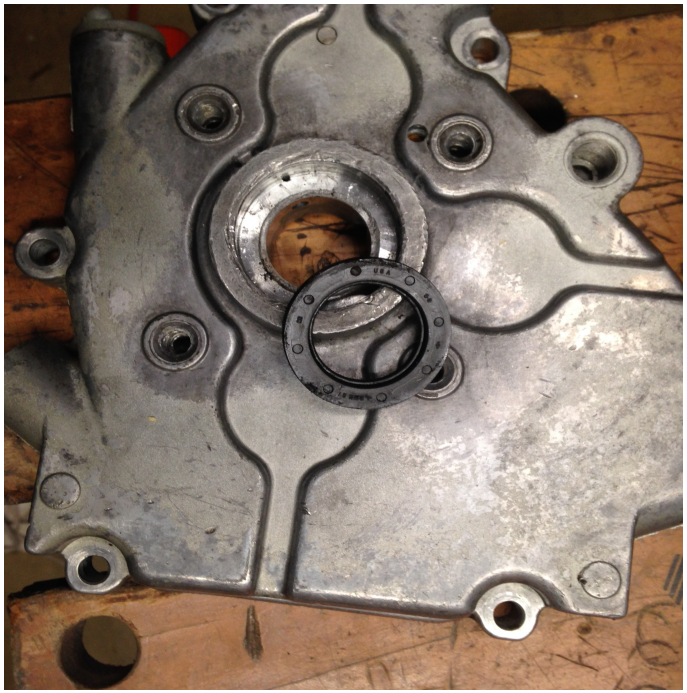
Soft wire wheel
polished chamber

Honing the Cylinder



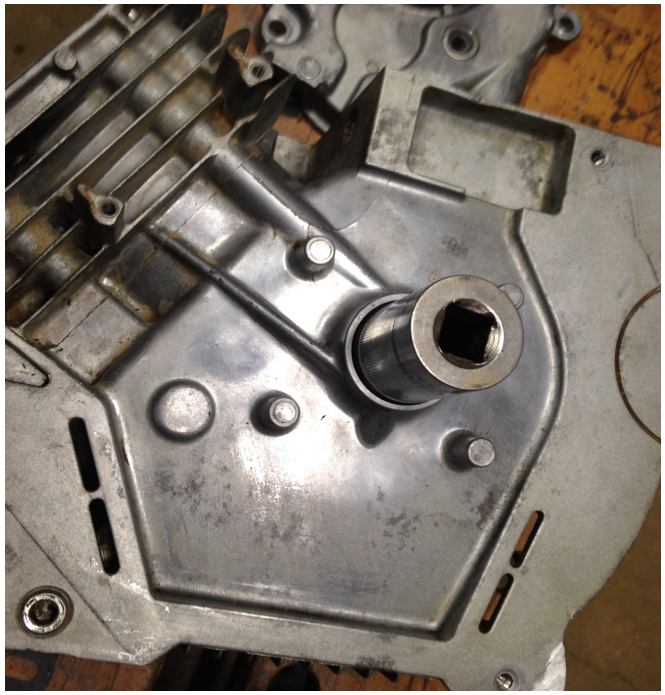
Cylinder had good amount of glaze. Cutting oil and cylinder hone used to remove build-up and restore crosshatch.

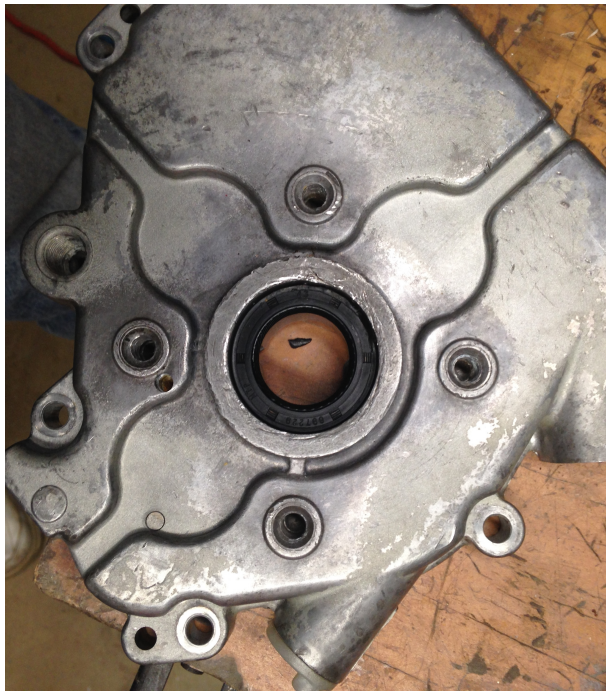
Removing Oil Seals



Seals popped out with gentle use of screw driver to avoid damaging bearing. Cleaned out oiler ports and gasket surface.

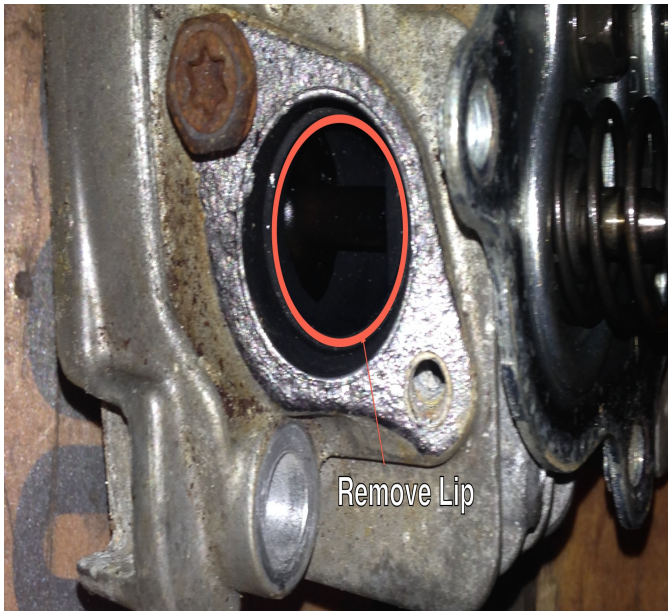
Installing Oil Seals

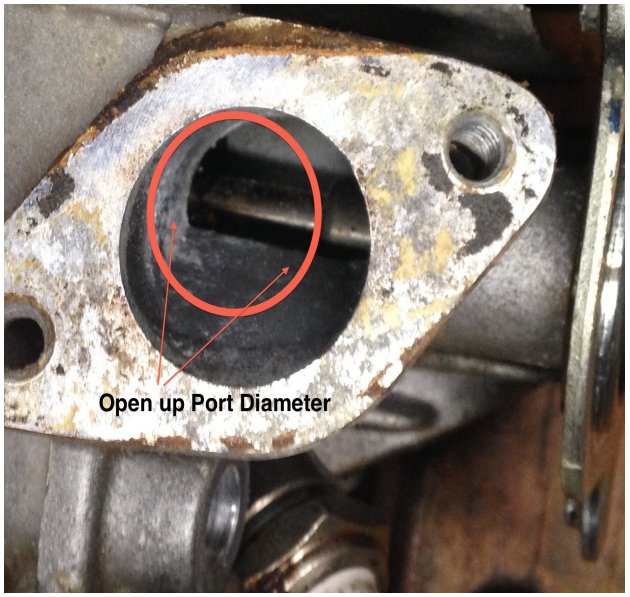




A socket used to drive the new seal into position. Care taken to avoid driving seal too deep or crushing it.

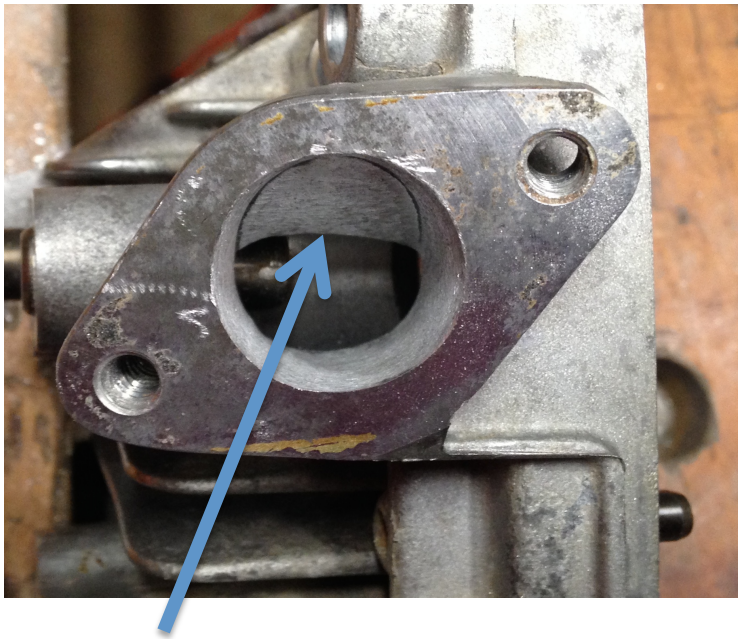
Improving Flow

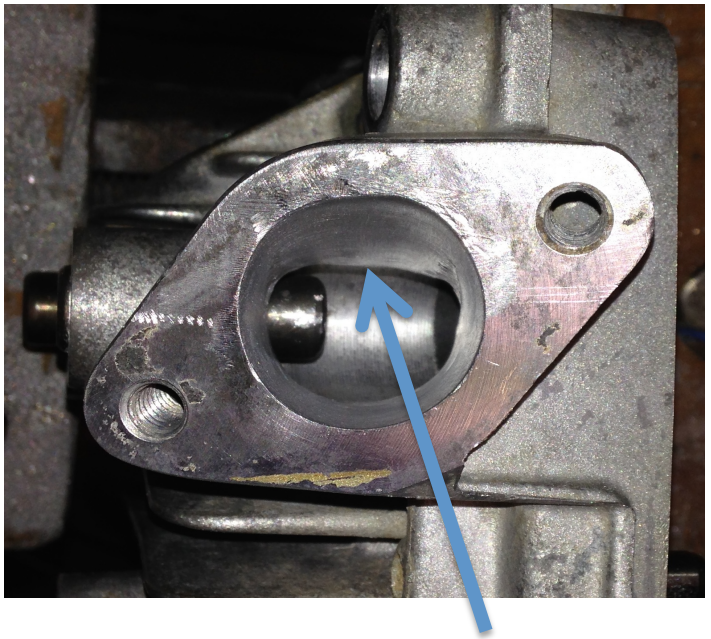




Mild porting of intake to take advantage of new carburetor and exhaust header. No work to be done to exhaust.

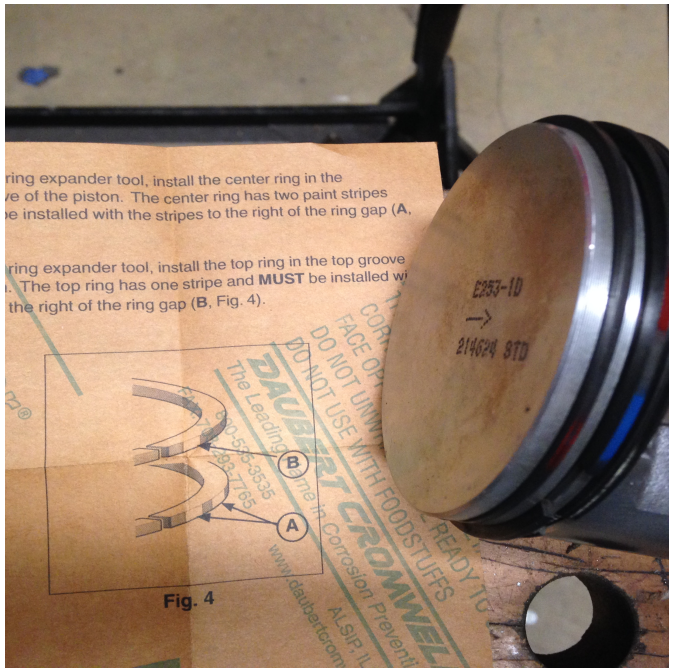
Porting Intake Tunnel





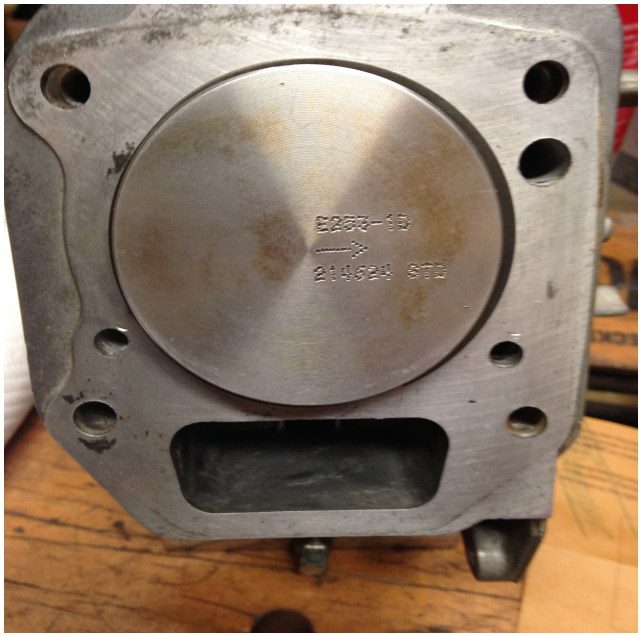
The intake tunnel narrows to a “D” shape. The image on the left is after an hour of grinding, and on the right after two hours of shaping the tunnel. To maintain better bottom end, the port is not opened up completely. Size was increased by 1/2 and smaller than the ID of the intake valve.

Short Block Assembly



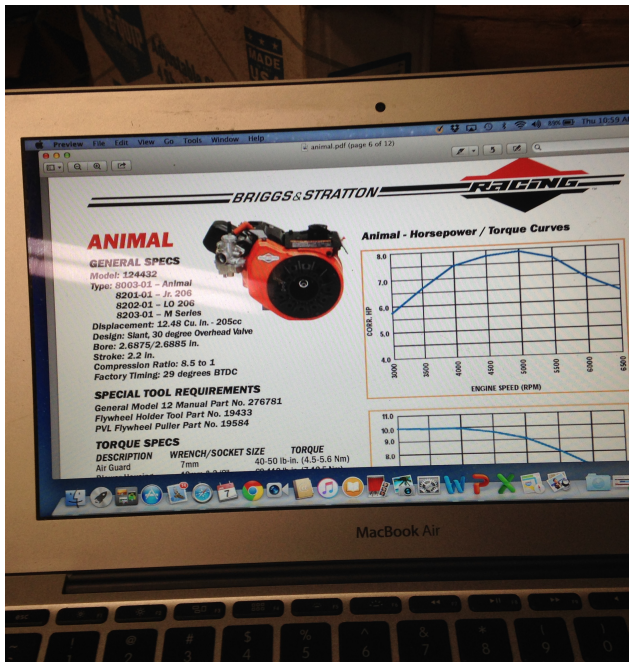
Ring gap checked prior to assembly. Oil Ring at 0.010, Middle at 0.022 and Top at 0.008. Reject at 0.030. Rings get installed by color code with code to right of ring gap.

Rod and Piston Installation



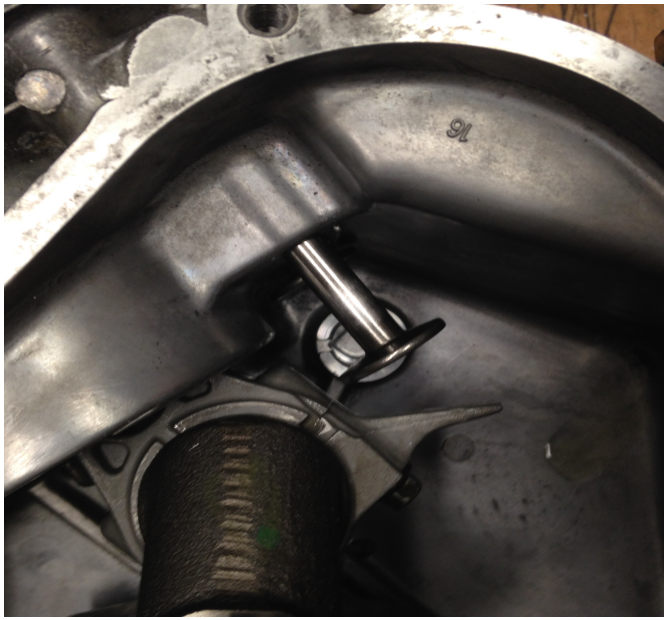
Stock Piston has arrow indicating orientation toward magneto. Animal rod is stamped “Mag.” Piston pin and rod journal lubed with 30 weight oil prior to assembly. Cylinder bore oiled before piston installed. Arrow points to right (magneto side).

Connecting Rod and Crank



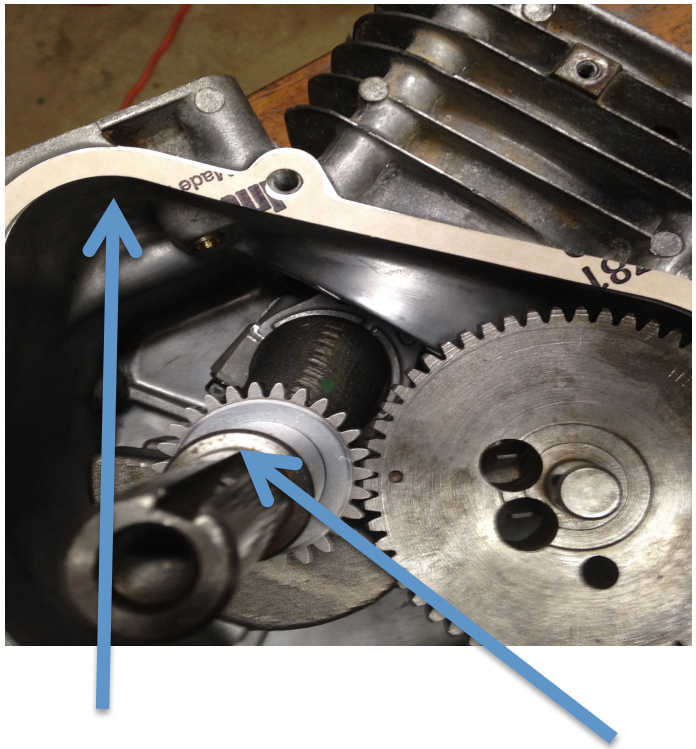
New stock crankshaft. Journals polished with 0000 steel wool and lubricated. Magneto bearing lubed. Rod bolts soaked in oil before assembly. The bolts are hand tightened and snugged with dipper side being first. Brought to torque at 140 in-lbs (Animal spec).

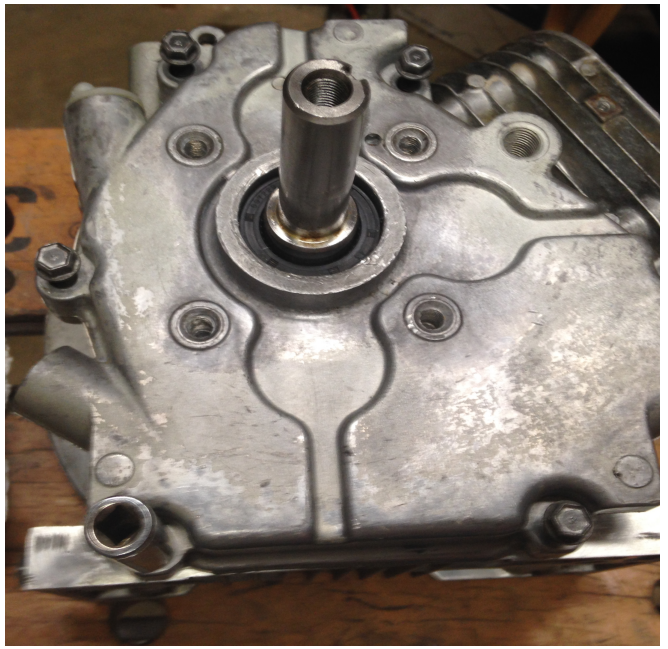
Cam and Lifters



Stock lifters reused as they are same part number as Animal. Guides lubricated as were lifters. New cam gear installed on lubed crankshaft. Cam is an Animal take-off that was degreased and polished. Lobes and bearing surfaces well lubricated.

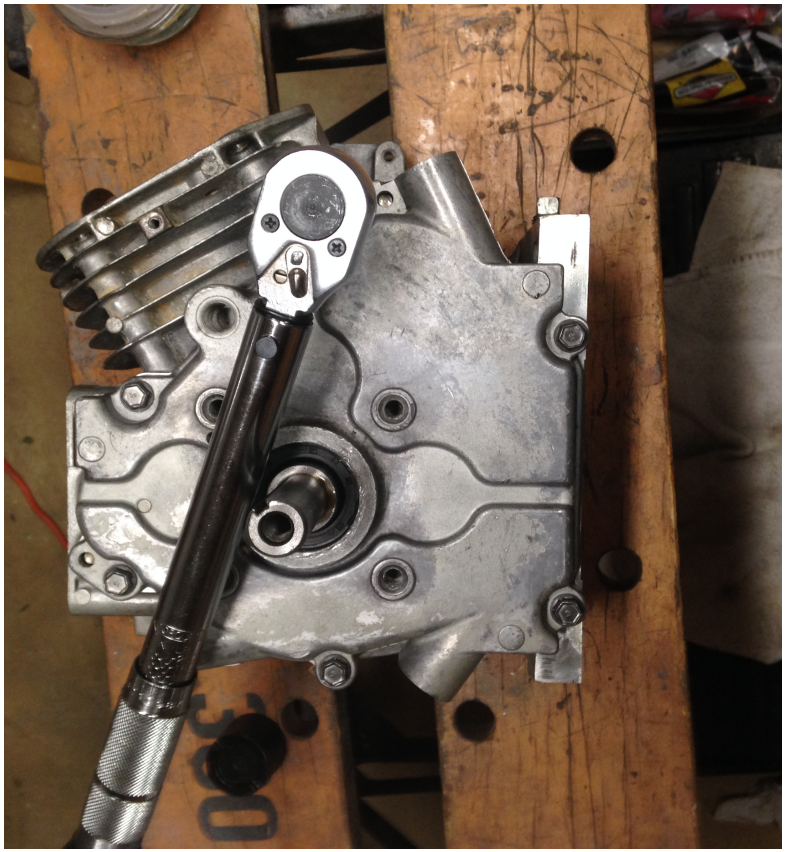
Cover and Gasket





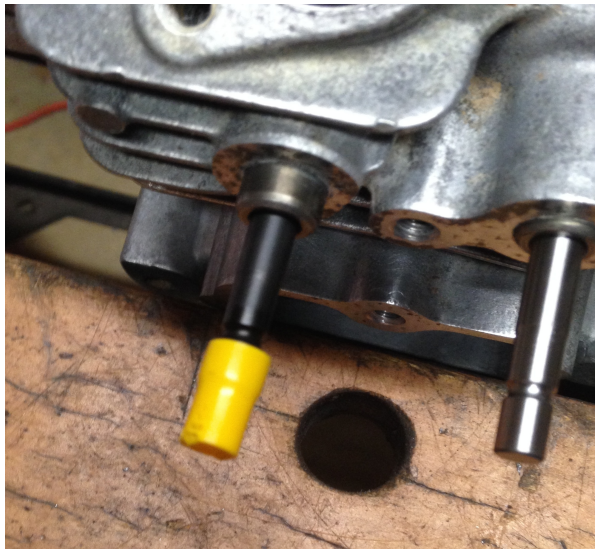
Animal cover gasket used. New thrust washer installed on crank gear. Bearing surface polished with 0000 steel wool and lubricated. Cover bolts polished and degreased prior to re-assembly.

Securing Cover and Crank End-play



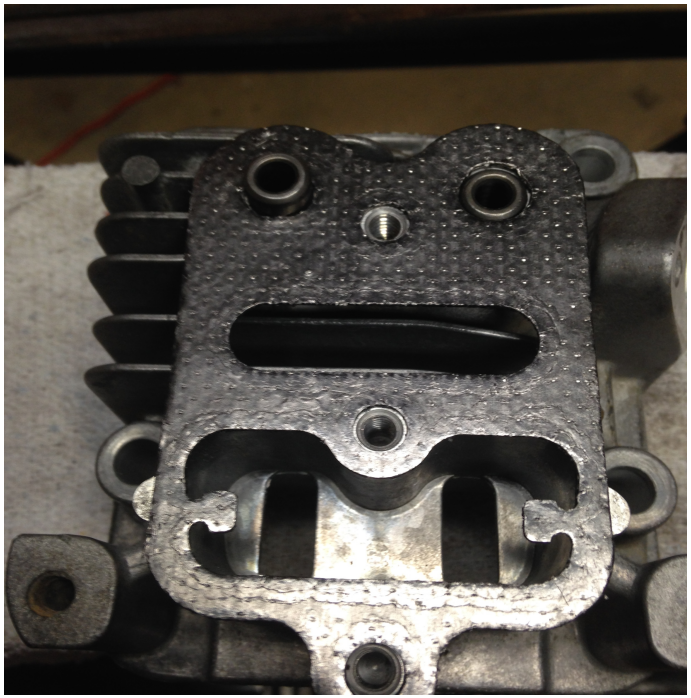
- Side cover torqued to 105 in-lbs (5 in-lbs more than stock and mid Animal) following torque sequence.
- End-play measured at 0.022, using a digital caliper (within spec).

Valve Lapping



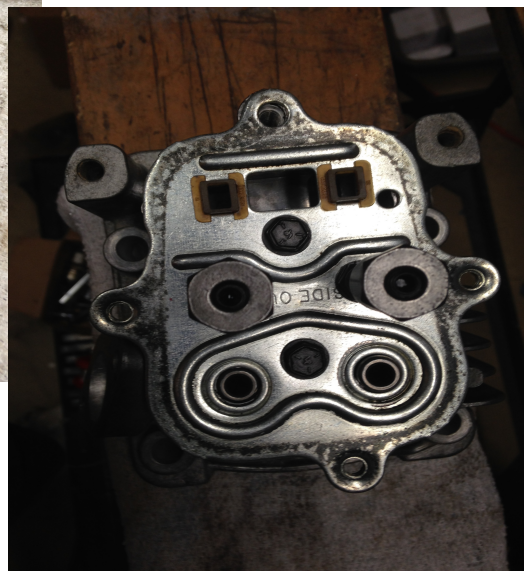
Briggs Racing Intake and Exhaust valves. Valve guides cleaned, polished and oiled. Valve stems oiled before inserting. A wire connector sleeve was used to protect the valve stem. Valves lapped to 3/32” wide seat.

Cylinder Head Plate



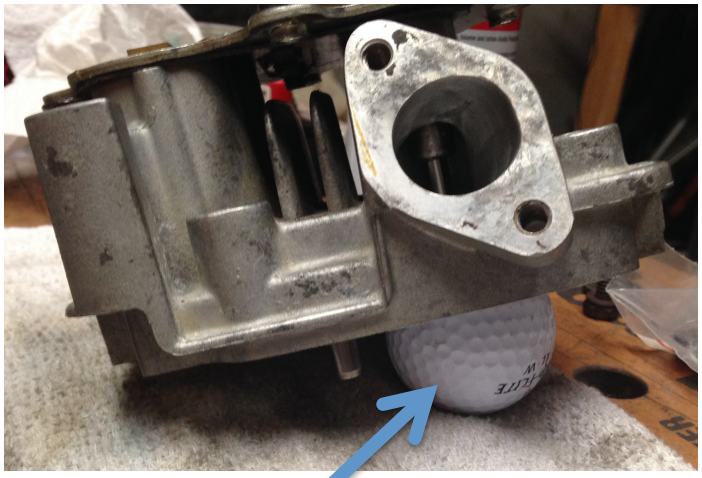
Gasket surfaces and Cylinder Head Plate cleaned. The cylinder head plate torqued to 80 in-lbs (mid Animal spec). Bolts secured with red Loc-tite.

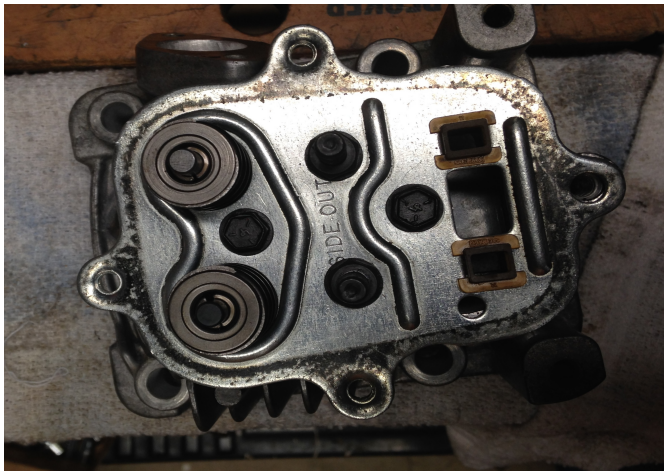
Rocker Arm Studs



Rocker studs are stock. Cleaned and installed with red Loc-tite. Torqued to 100 in-lbs (mid Animal spec).

Valve Springs and Keepers



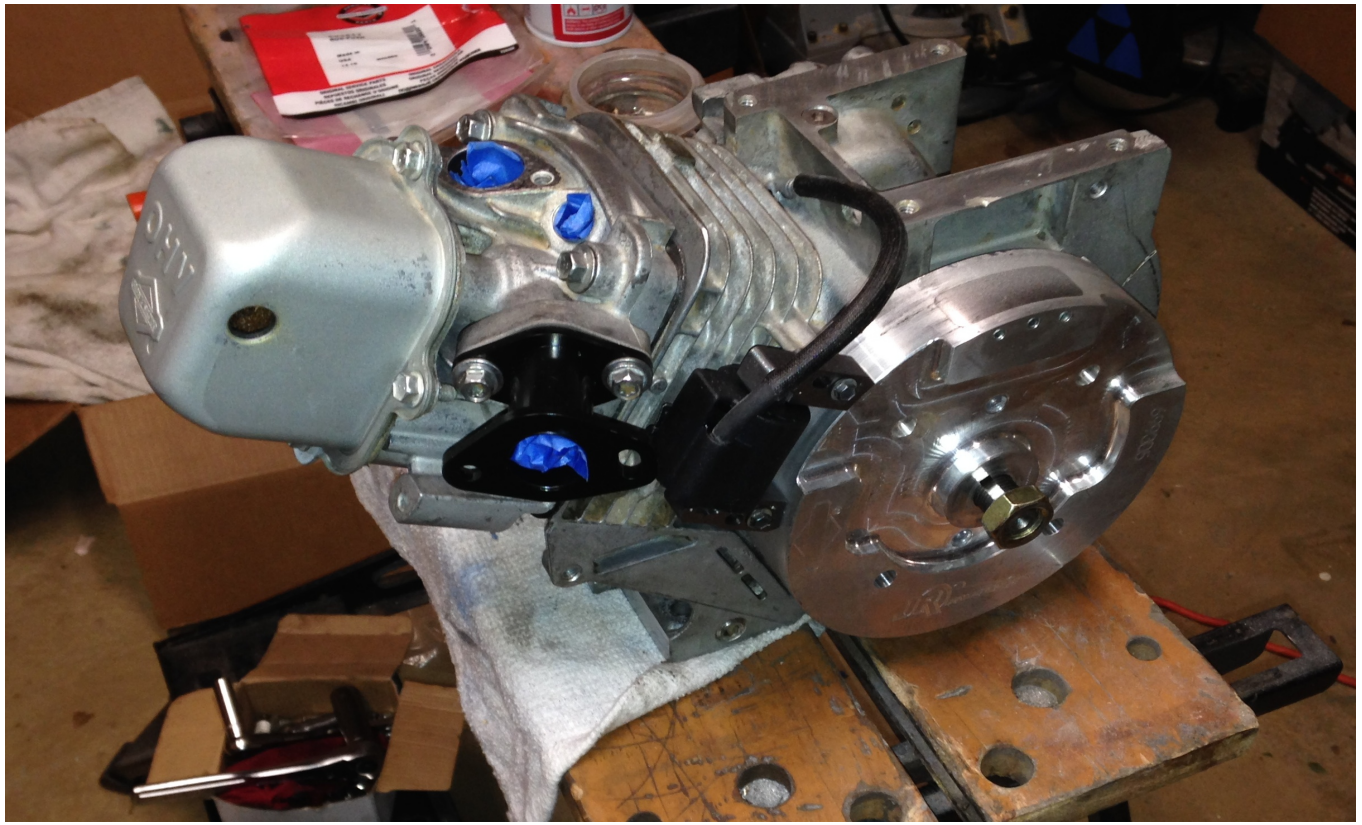


A golf ball was used to hold the valve in place to install keepers. Valve stems oiled prior to inserting in guides. Springs are Briggs Animal and valve keepers are 3-piece Briggs Racing.

Rocker Arms and Push Rods

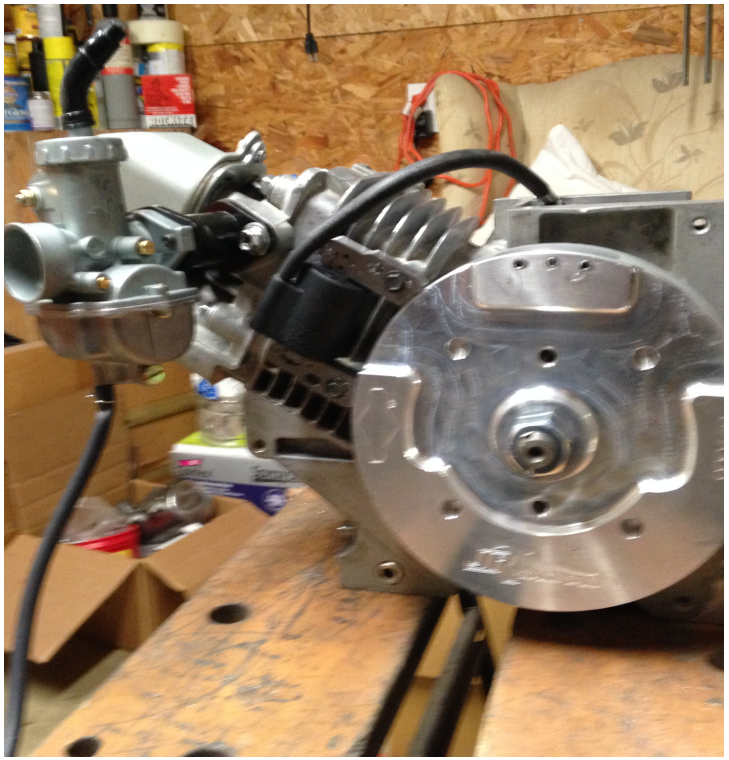
Rocker arms are Briggs Animal. Rocker arm adjusters are stock and secured with blue Loc-tite. Push rods lightly oiled and head mocked up on block.

Engine Mock-up



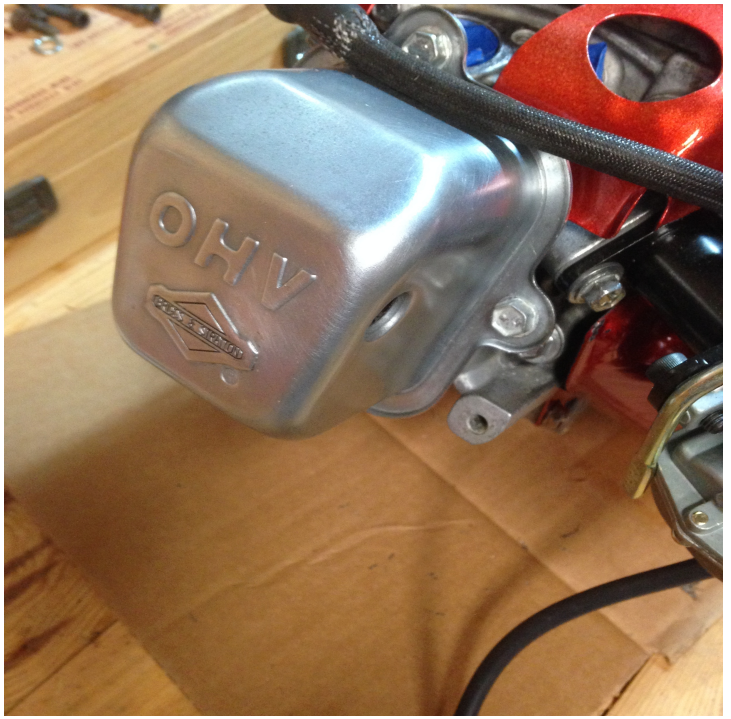
Briggs Racing intake manifold installed. New Briggs coil installed with a JR Racing Junior Dragster flywheel (old style).

Engine Mock-up



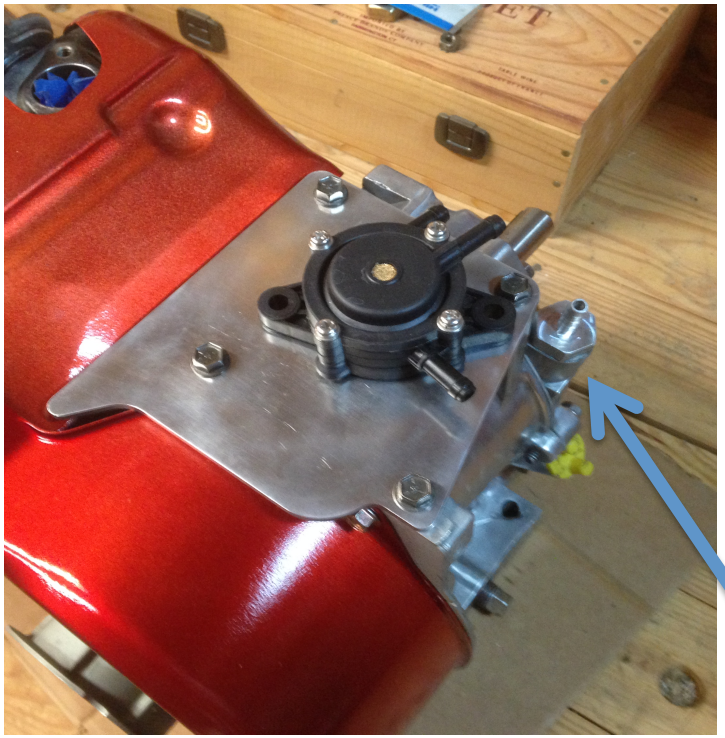
Walbro-style PZ22 Carburetor with stock jets. Block polished with steel wool and rotary wheel.

Engine Mock-up



Valve cover polished with steel wool and rotary wheel. Valve cover coated in VHT engine clear. Tins painted with anodized red after base silver ground coat.

Top Plate and Fuel Pump

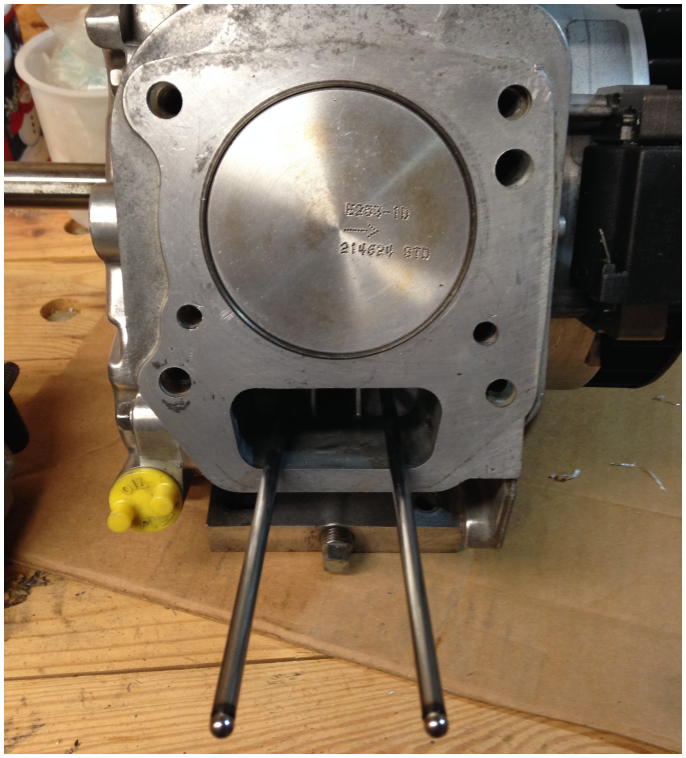


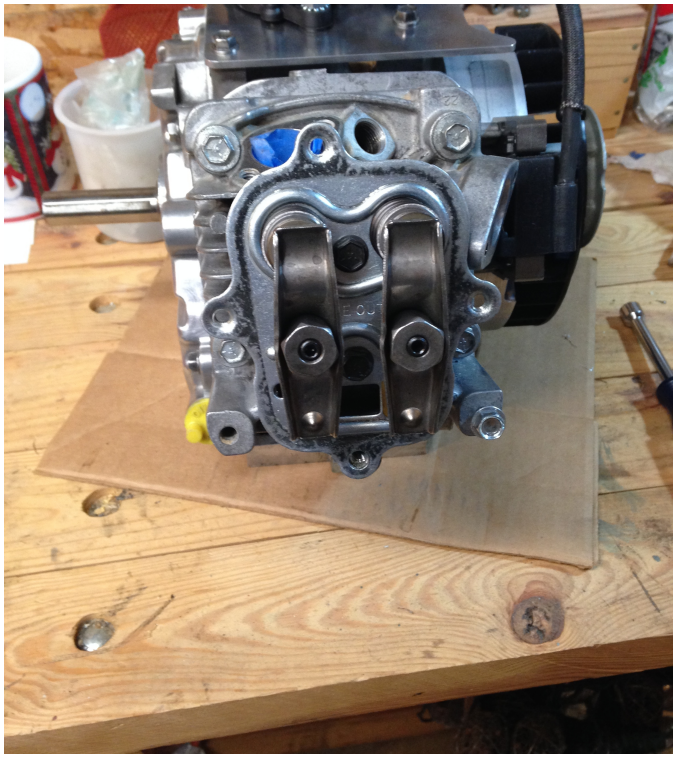
Honda fuel pump located on top plate, pulse fitting installed on upper oil fill port.

Carburetor Set-up

Briggs LO206 float setting of 22mm used (7/8”). Both sides of float were checked.

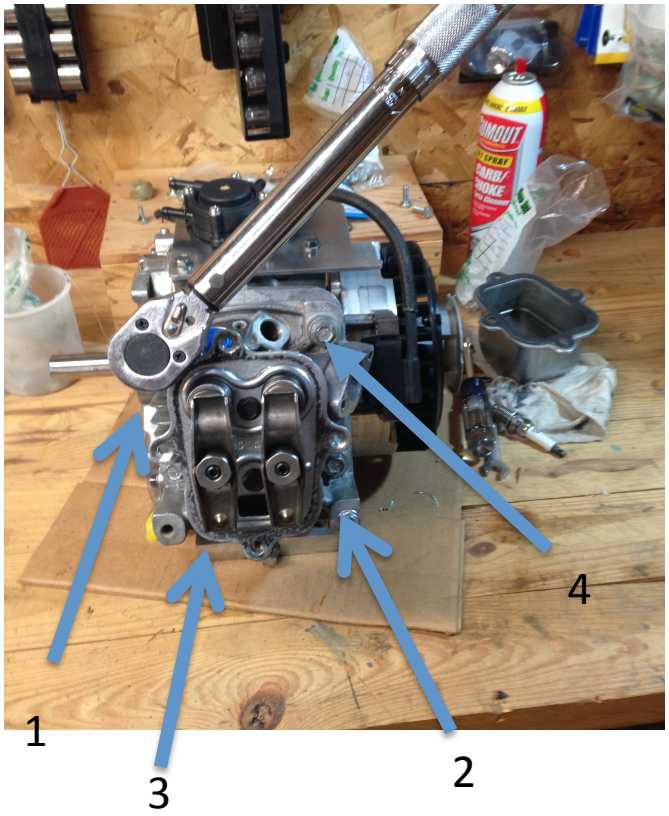
Cylinder Head

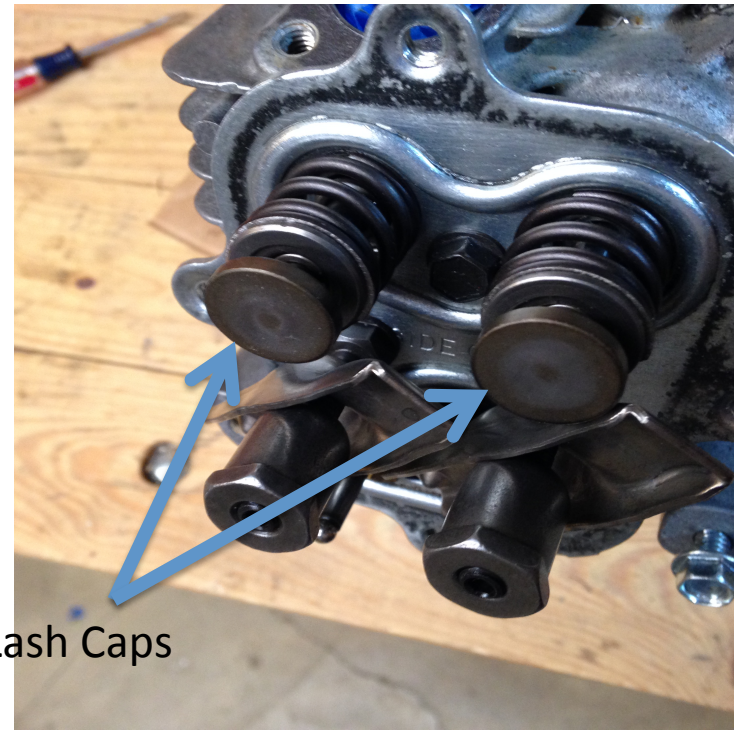




Piston rotated to TDC on compression stroke and moved 1/8” beyond TDC per Briggs Animal instructions. Head reinstalled and loosely tightened.

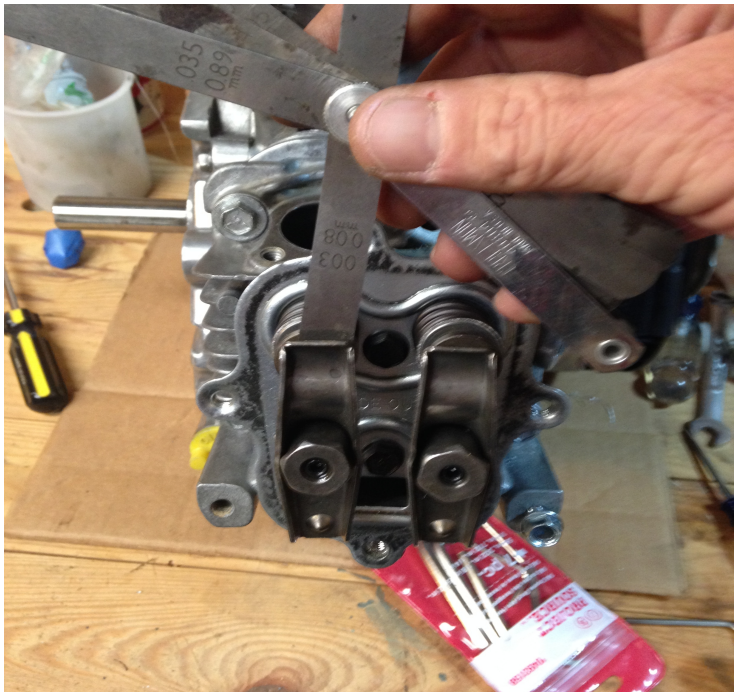
Head and Valve Train

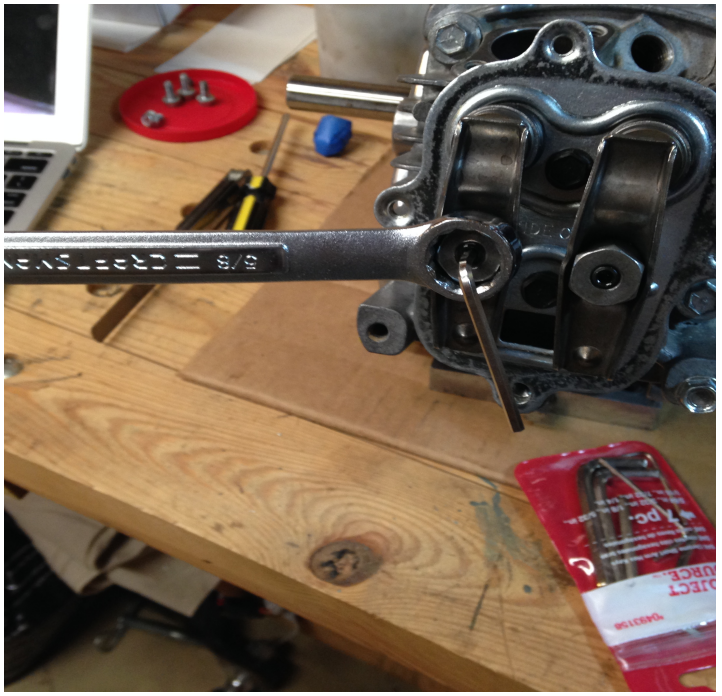




Head was torqued to 210 in-lbs/mid Animal spec. Head brought to torque spec in thirds. Reinstalled lash caps (not used on Animal engines).

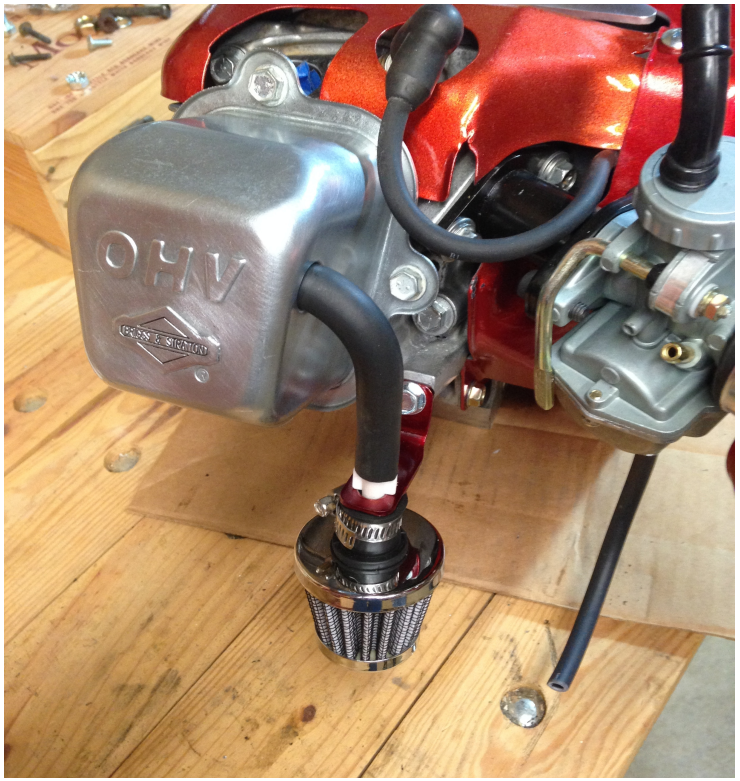
Setting Valve Lash





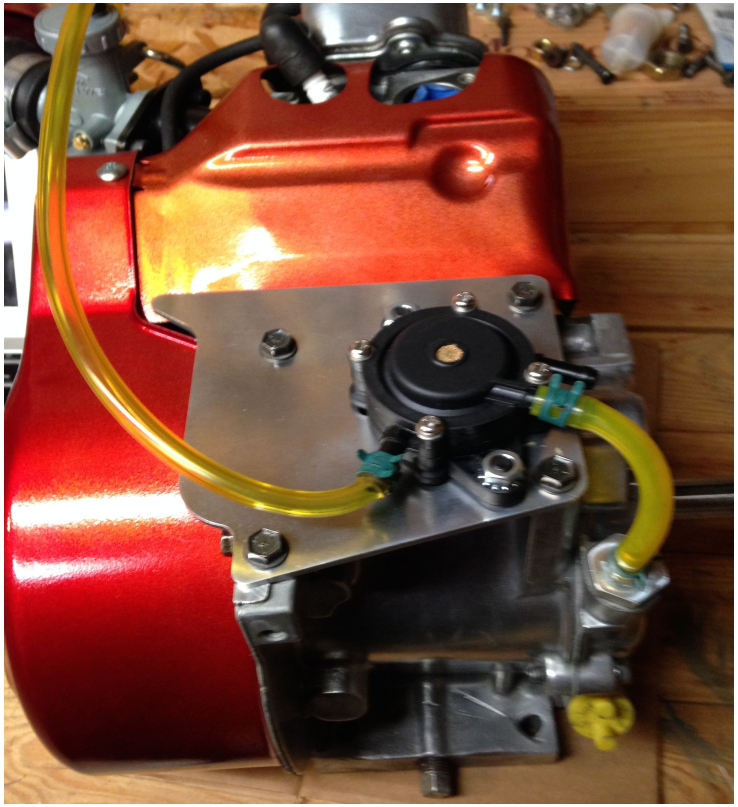
For consistency, valve lash is always set cold. Animal specs 0.001-0.003”. Lash is set to a tight 0.003”. After securing, rechecked and adjusted to exhaust. After break-in, valve lash will be reset. Engine was rotated by hand ensure valve train did not interfere with piston.

Valve Cover and Vent



Valve cover torqued to 30 in-lbs. A bracket attaches to an unused head boss to secure breather filter.

Final Details



Waiting for *good* Weather

Needed: One final coat of anodized red on the tins and urethane clear.
The engine is ready to test fire…but *what* will it power???