The "45" eZee Steam Engine

Here's a nice, simple oscillating steamer that is simple to build and does not require a lot of material. The "45" comes from the angle of the frame relative to the base. A nice piece of hardwood could be substituted for the aluminum base if preferred.

As with all these oscillating engines, the sliding surface of the cylinder and the frame must be very smooth against each other. I usually use toothpaste to "lap" (or "smooth") these sliding surfaces together. Be sure to flush all grit off the engine before running. A small amount of light oil (or even WD-40) will help before the first run of the engine. Try about 20 psi of air to begin with.

Five "45" engines above (some still have layout bluing on them)

Here's a happy group of recent students with their "45s".
Flywheel and Crankwheel are pressed onto Mainshaft. Be sure that two small washers are used as spacers, to keep each wheel from rubbing the Frame. Be sure that mainshaft spins easily after wheels are pressed on. Allow about 0.010" clearance from each washer. Excess length of Mainshaft should extend out from Flywheel. Be sure sliding surfaces of Cylinder and Frame are very smooth. You may wish to "lap" these surfaces against each other with toothpaste. Use about 20 to 40 psi air pressure to run engine.

NOTE "A" Intake
1/4-20 THD
X .25 Deep
ø0.082
X .42 Deep

1/4-20 X .75
socket head bolt

1/4-20 X 1.5
Hinge Bolt

Intake
Exhaust

Cut from 3/8" x 3/8" x 3/8" plate. Rough-cut 1/8" on band-saw, press pin in center, and chuck in lathe to turn to exact Ø0.315 and lathe-file until piston just fits cylinder bore.

1.0 (1/4-20 threaded rod)

For Rubber
Air Hose Coupling
(Note "A")