MEMORANDUM

To: The public who might like to build this thing

From: Gerry, AKA Oldboatguy

Date: October 21, 2008

Re: A different beam engine

This document is meant to supplement and perhaps explain/excuse this new beam engine design.

I had undertaken this project for something to contribute to the board since I do not have any current engine builds to show. (My son & I are migrating my shop from the damp garage down to the dry & warm basement. So I do hope to actually build this one.) This engine is meant to be build from bar stock as much as possible. I have included some laser cut pieces since I think I will be able to source them for reasonable costs. I believe that all of the lasered components could be made by alternate methods. For example, I have considered building the side frames up from rosewood timbers with brass connecting plates at the joints. That could make a very interesting looking engine. This engine is intended to run at low RPMs with modest pressure. I will probably never run it on anything but air since I do not have a boiler.

This design was done with Autodesk Inventor then downloaded as Autcad DWG files then converted to PDF files. If there are legibility problems or things lost in translation, contact me & I will try to remedy that. Since my intention is that this design be public, if someone wants the DWG files I am willing to e-mail them upon request. I would just like to see pictures of your finished engine.

The work of designing this thing was quite educational for me since I began not really understanding how the parallel links actually were supposed to work. I knew that on the full sized engines they were to keep the piston rod from bending at full extension. It took me a while to figure out the geometry of the motions but be assured, I have had this thing running in virtual reality with no more binds. (virtual reality is less forgiving than actual reality since it does not allow you to rely on sloppy fits to cover mistakes in geometry. It works with absolute points in space.) My first go at it locked right up so I had to re-think how the links worked to get it to move.

This engine is admittedly more complex than it needs to be but I enjoy appearance as much as operation and I think lots of different motions happening looks cool. It is kind of whimsical & you probably will never find a full size prototype remotely like this, but it’s meant to be fun! This engine is meant to be absolutely useless for any practical purpose but is intended to look cool running. If what we do in this hobby had to be useful &

practical, we would probably have to call it work and then we would want to run for the bushes.

This design is meant to be public domain. Please do not hesitate to add to it or improve on it. For example, if you are masochistic you might add a Stephenson reversing setup and a flyball governor.
Everything is relatively small so I think this one could be built if all you had was a Unimat with a milling attachment. Almost all of the fasteners are #2-56 UNF so that you don't have to load up with a large variety of taps, dies, tap drills & clearance drills. The #2-56 stuff is actually a bit smaller than my old eyes like to work with but keeping the engine size modest will keep the materials budget within reason. If you want to scale it up, have at it.
A word of caution; if you choose to make the cylinder or steam chest out of aluminum bronze (like Aamco 18) I would strongly recommend going with a larger tap drill for 50-60% thread engagement. I made that mistake on a little launch engine 30 years ago and learned after spending a young fortune on #2-56 taps, that it works much better to go that way.

The drawings may lack some finesse in tolerances and fits but I figured that anyone savvy enough to build engines for a hobby would be able to figure out what adjustments to make for good fits. The drawings should be studied to understand what fits with what before starting to cut anything. I apologize for the lack of completeness of detail but hey folks, these drawings are free!

If you decide to build it, I hope you enjoy it as much as I enjoyed designing it.

Regarding the machine shop move, we had hoped to sneak the stuff down there without my wife catching on but it's really hard to sneak with an 800 pound mill. We've been busted so now I have to clean the basement first before I can do anything.

Gerry Dykstra
(Oldboatguy)