

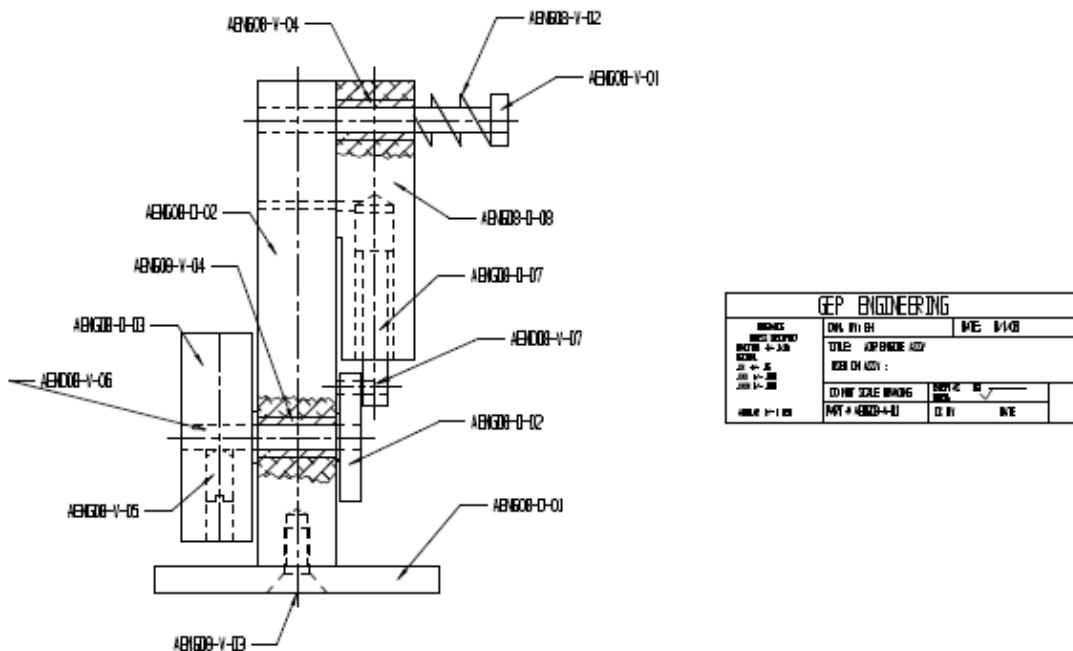
Customer Showcase

CS-EdHanyzewski

Background:

From Ed:

This project is a small compressed air powered model engine that was designed as a project for young people to build. The engine is a project that is being produced during the Western Minnesota Steam Threshers Show which is held every Labor Day weekend at Rollag, MN.



With this project, we are attempting to make it possible for young kids to actually produce a model engine that will actually run. Also it is an opportunity to show young people some of the basic machining methods, and to mention the possibility of a great career in manufacturing. A series of common drill presses have been set up with instructions for each operation for the students to finish their parts. Students are required to de-burr, machine and assemble their projects, Pictures included showing typical class. So far about 120 students have completed these. Many proud parents and grandparents.

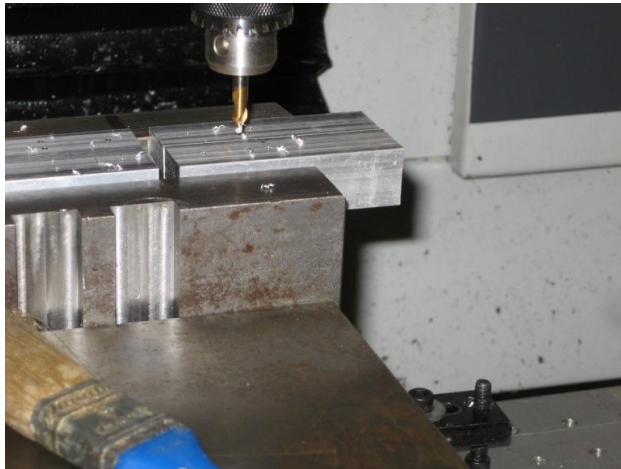
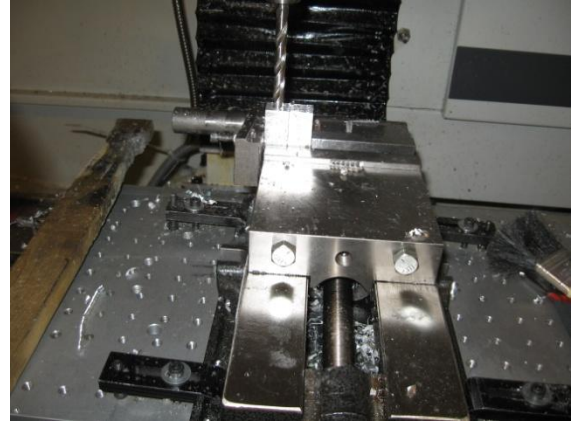
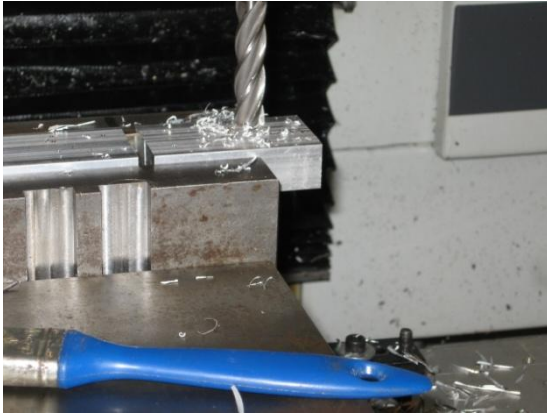
The engine design calls for parts to be made with some very close tolerances. We want the students to do as much machining as possible, without the possibility of making parts that will not allow the engine to run. With this in mind, we have produced kits for the students to use. The kit parts are drilled with a

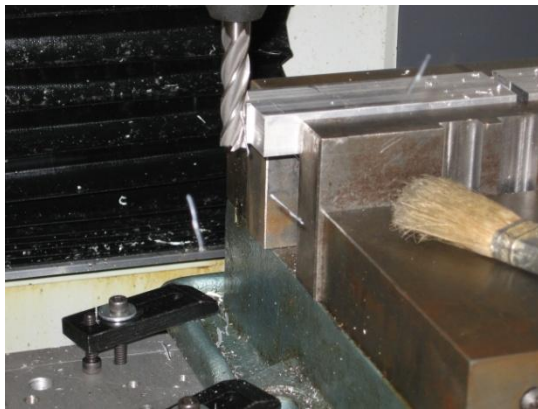
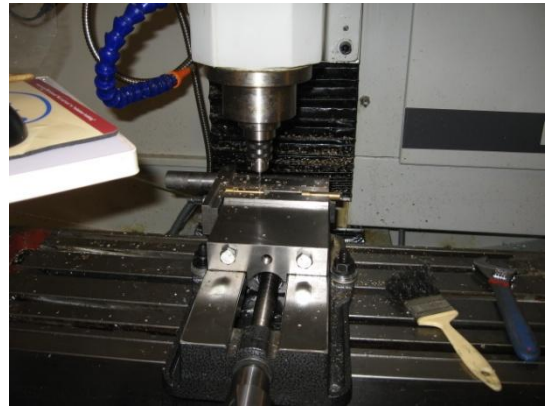
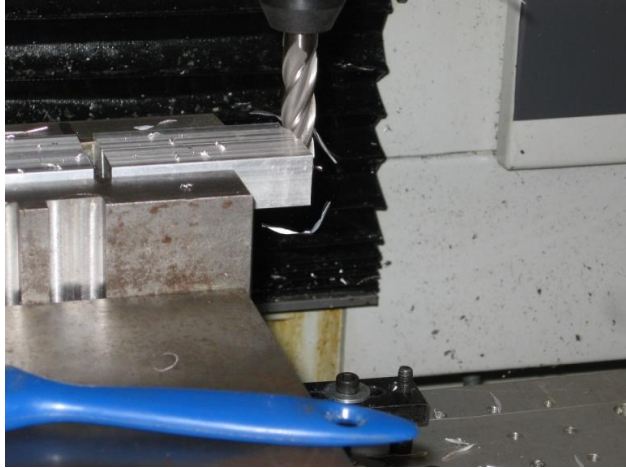
countersink for hole locations, with machining of the cylinder, piston, crank, flywheel, and purchased parts.

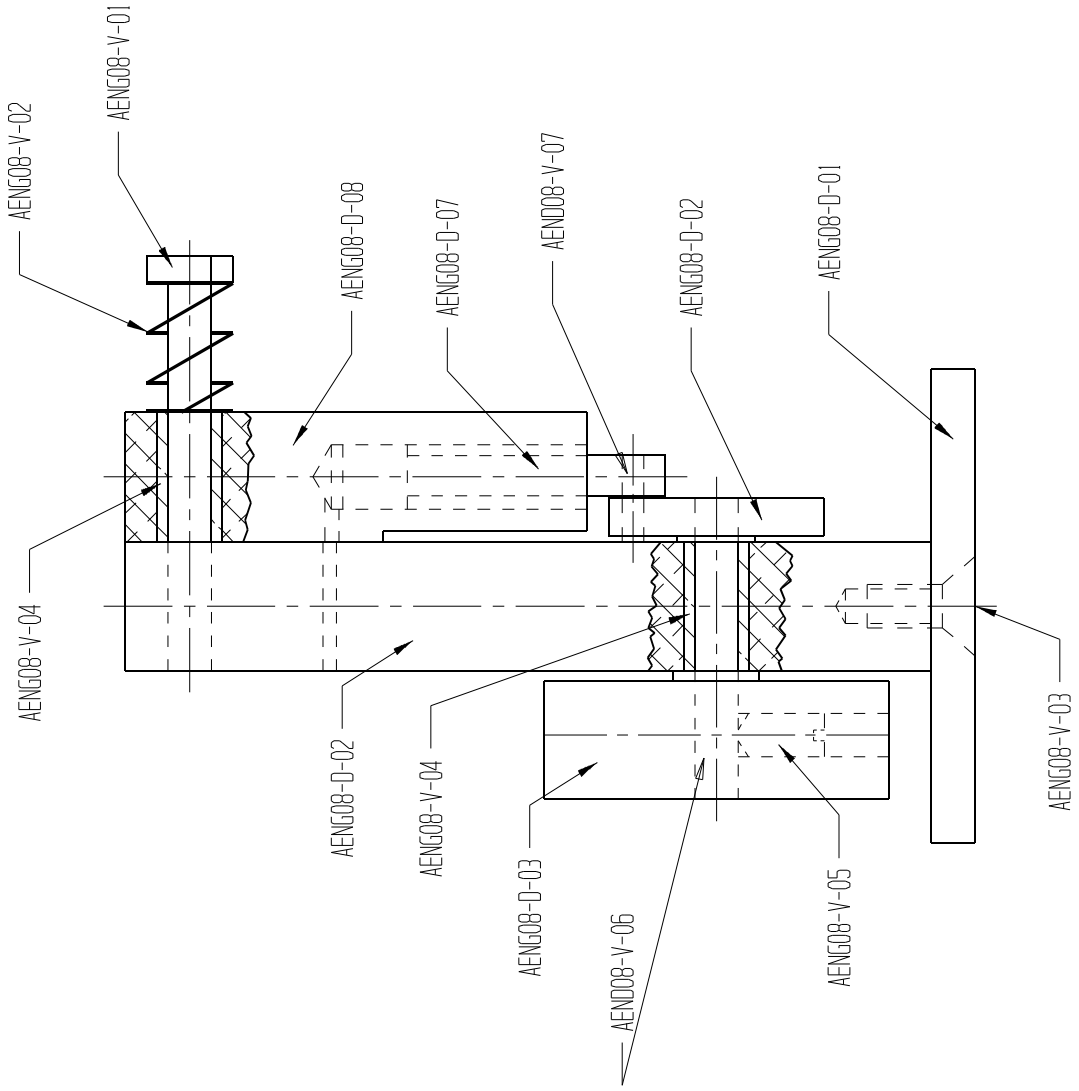
As you can see by the pictures, This project would not have been possible without the use of my Tormach Mill. At the present time we have completed about 250 kits.

I have found excellent support from Ann, Bob, and Eric in the completion of this project. Recently I upgraded my machine with a spindle upgrade. Speeds, and spindle start and stopping is a very good addition to the machine capabilities. Also recently purchased Sprut Cam for future projects we are thinking about. Will need the 3D machining capability, and use of 4 axis engraving. Still learning the program, but having success..... training videos very well done, and good support from Eric.

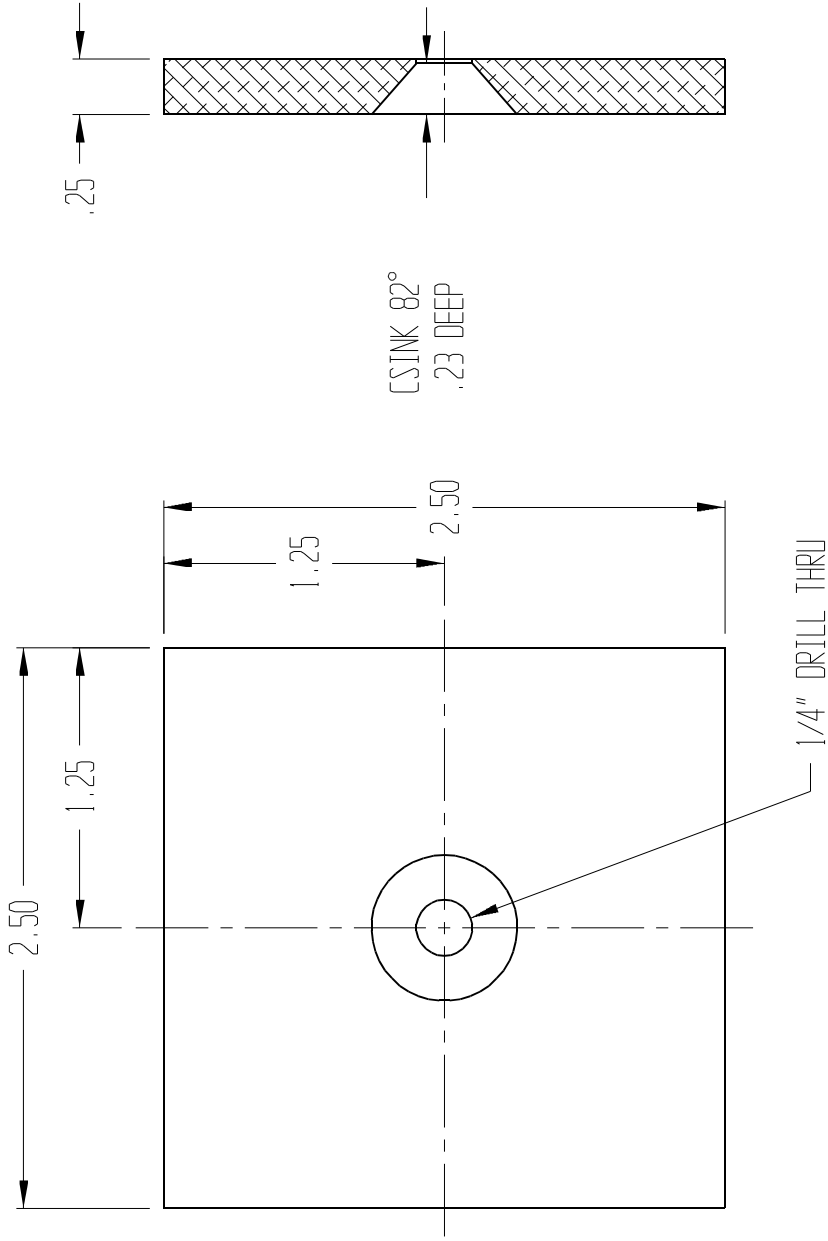








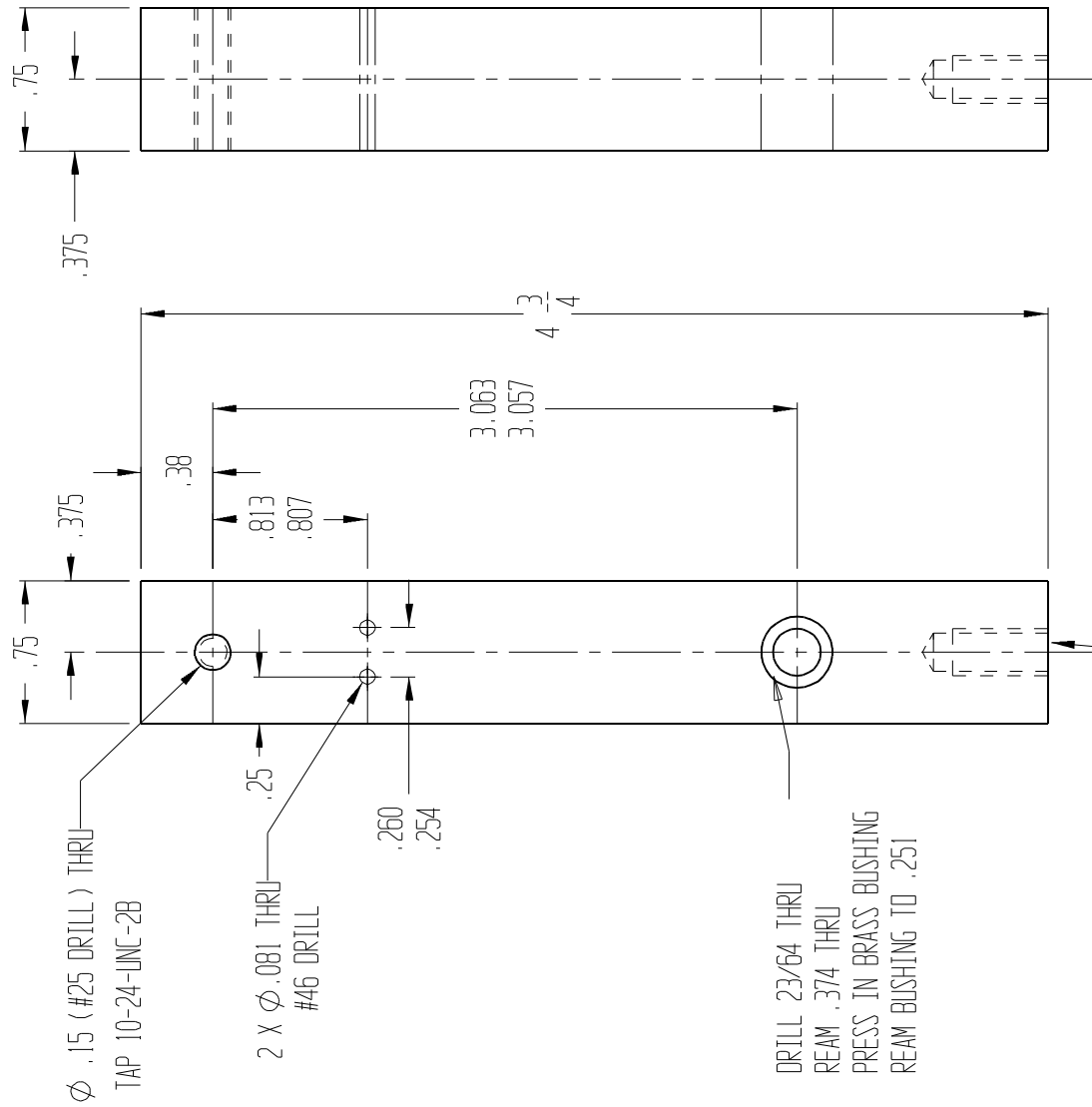
GEP ENGINEERING	
TOLERANCE UNLESS SPECIFIED FRACTION 1/16 DECIMAL .05 .XXX 1/100 .XXX 1/100 .XXX 1/100 ANGULAR 1/2 DEG	DWN. BY: EH DATE: 8/1/08 TITLE: AIR ENGINE ASSY USED ON ASSY : DO NOT SCALE DRAWING PART # AENG08-A-01 EXCEPT AS NOTED. CK BY: _____ DATE: _____



GEP ENGINEERING

<p style="text-align: center;">TOLERANCE UNLESS SPECIFIED FRACTION +/- 1/16 DECIMAL .XX +/- .05 .XXX +/- .010 .XXXX +/- .001</p> <p style="text-align: center;">ANGULAR +/- 1 DEG</p>	<p style="text-align: center;">DWN. BY:EH</p>	<p style="text-align: center;">DATE: 8/1/08</p>
<p style="text-align: center;">TITLE: BASE PLATE</p> <p style="text-align: center;">USED ON ASSY :</p>		
<p style="text-align: center;">DO NOT SCALE DRAWING</p>	<p style="text-align: center;">EXCEPT AS NOTED, <input checked="" type="checkbox"/> 63</p>	<p style="text-align: center;">DATE</p>
<p style="text-align: center;">PART # AENG08-D-01</p>	<p style="text-align: center;">CK BY</p>	<p style="text-align: center;">DATE</p>

- NOTES:
1. MAT'L 6061 ALUM 1/4 X 2.5 X 2.5



Ø .15 (#25 DRILL) THRU
TAP 10-24-UNC-28

2 X Ø .081 THRU
#46 DRILL

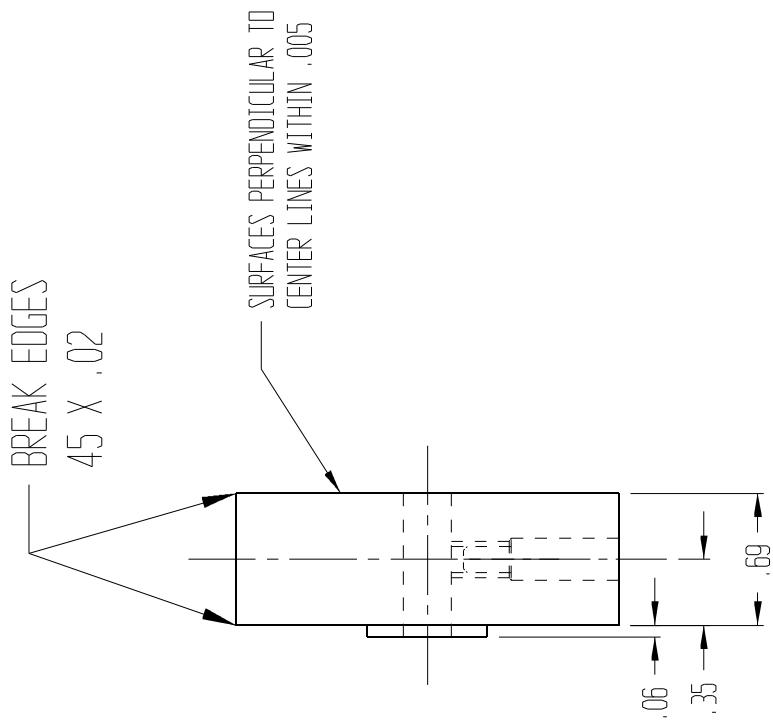
DRILL 23/64 THRU
REAM .374 THRU
PRESS IN BRASS BUSHING
REAM BUSHING TO .251

Ø .201 (#7 DRILL) DEEP .75
TAP 1/4-20-UNC-28 DEEP .6

GEP ENGINEERING

TOLERANCE UNLESS SPECIFIED FRACTION +/- 1/16 DECIMAL .XX +/- .05 .XXX +/- .010 .XXXX +/- .001 ANGULAR +/- 1 DEG	OWN. BY: EH	DATE: 8/4/08
	TITLE: BODY USED ON ASSY :	
DO NOT SCALE DRAWING	EXCEPT AS NOTED, 63	CK BY DATE
PART # AENG08-D-02		

NOTE
1. MATL 6061 AL 3/4 X 3/4



DRILL .250"

ϕ .63

ϕ 1.975

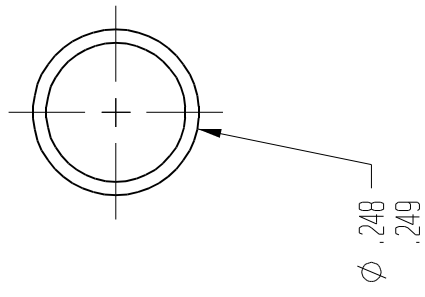
- ϕ .149 (#25 DRILL) THRU
- ϕ .2188 (7/32) BORE .625 DEEP
- TAP 10 -24 UNC

SURFACES PERPENDICULAR TO CENTER LINES WITHIN .005

GEP ENGINEERING	
OWN. BY: EH	DATE: 8/7/08
TITLE: FLYWHEEL USED ON ASSY :	
DO NOT SCALE DRAWING	EXCEPT AS NOTED. 63
PART # AENG08-0-03	CK BY _____ DATE _____
TOLERANCE UNLESS SPECIFIED FRACTION 1/2 1/16 DECIMAL .XX +/- .05 .XXX +/- .010 .XXXX +/- .001 ANGULAR +/- 1 DEG	

NOTES:

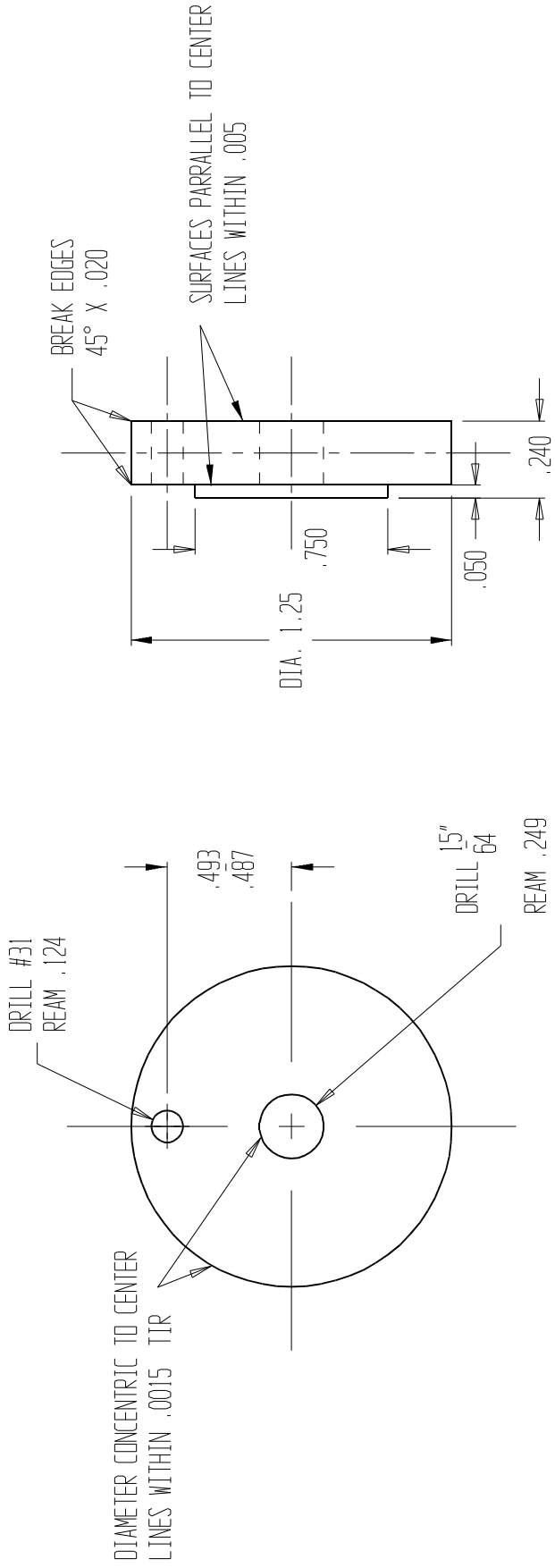
1. MATL 6061 T6 AL ϕ 2
2. .25 AND 1.975 DIA. CONC. TO CENTER LINE WITHIN .0015



NOTES:

1. MATL 1018 CR $\frac{1}{4}$ RD
2. 10° CHAMFER .12 LONG ON ONE END

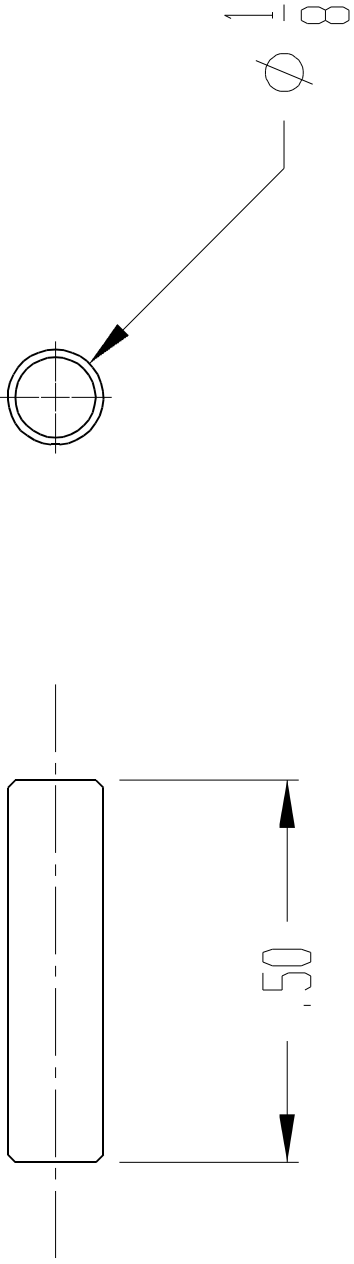
GEP ENGINEERING			
TOLERANCE UNLESS SPECIFIED FRACTION +/- 1/16 DECIMAL .XX +/- .05 .XXX +/- .010 .XXX +/- .001		OWN. BY: EH	DATE: 8/8/08
TITLE: CRANK SHAFT USED ON ASSY :		EXCEPT AS NOTED, 63	
DO NOT SCALE DRAWING		CK BY	DATE
ANGULAR +/- 1 DEG		PART # AENG08-D-04	



NOTES:

1. MATL: 6061 T6 ALUMINIUM

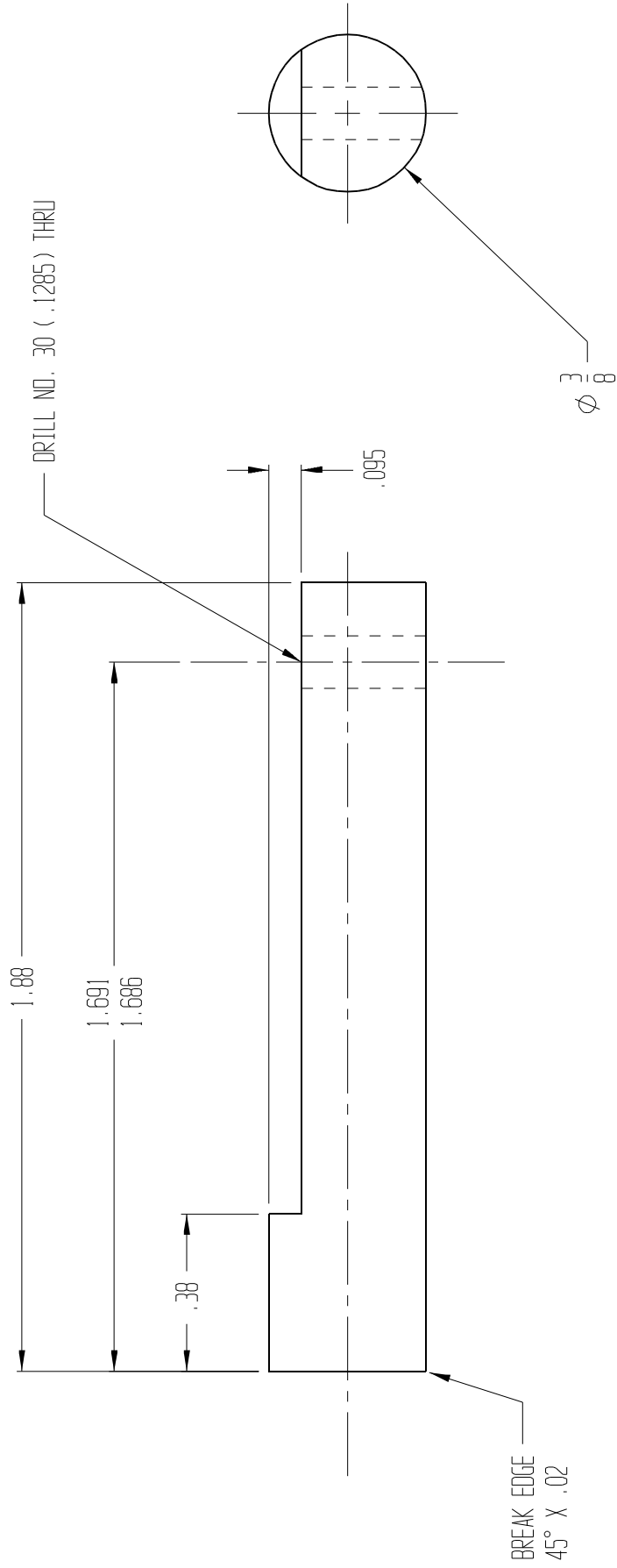
GEP ENGINEERING	
TOLERANCE UNLESS SPECIFIED FRACTION +/- 1/16 DECIMAL .XX +/- .05 .XXX +/- .010 .XXXX +/- .001 ANGULAR +/- 1 DEG	DWN. BY: EH DATE: 8/10/08 TITLE: CRANK FACE PLATE USED ON ASSY : DO NOT SCALE DRAWING EXCEPT AS NOTED.
PART # AENG08-0-05	CK BY: _____ DATE: _____



GEP ENGINEERING	
TOLERANCE UNLESS SPECIFIED FRACTION +/- 1/16 DECIMAL .XX +/- .05 .XXX +/- .010 .XXXX +/- .001 ANGULAR +/- 1 DEG	DMN. BY:EH DATE: 8/11/08 TITLE: CRANK PIN USED ON ASSY : DO NOT SCALE DRAWING PART # AENG08-D-06
EXCEPT AS NOTED.	63 CK BY DATE

NOTES:

1. MATL 1018 CR - ROUND



NOTES:

1. MATL BRASS 3/8 CR - RD

GEP ENGINEERING			
TOLERANCE UNLESS SPECIFIED FRACTION +/- 1/16 DECIMAL .XX +/- .05 .XXX +/- .010 .XXXX +/- .001 ANGULAR +/- 1 DEG	DWN. BY: EH	DATE: 8/12/08	
	TITLE: PISTON USED ON ASSY :		
	DO NOT SCALE DRAWING	EXCEPT AS NOTED,	63
	PART # ENG08-D-07	CK BY	DATE

