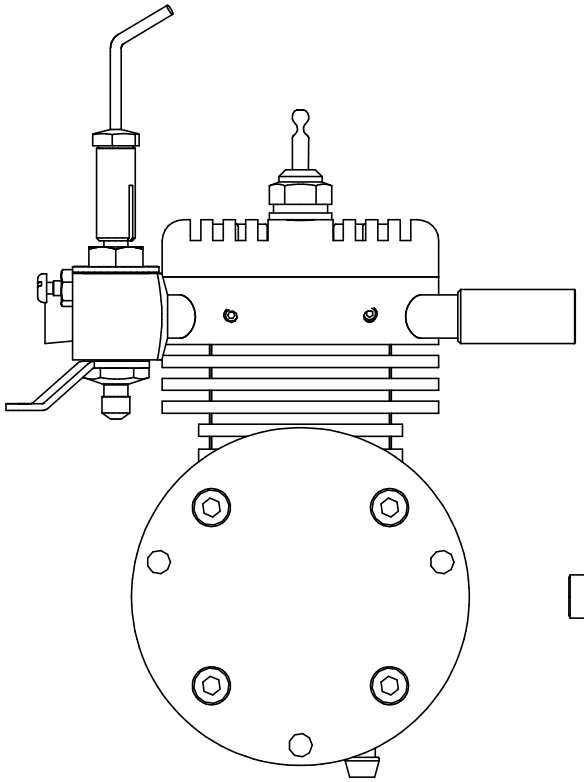
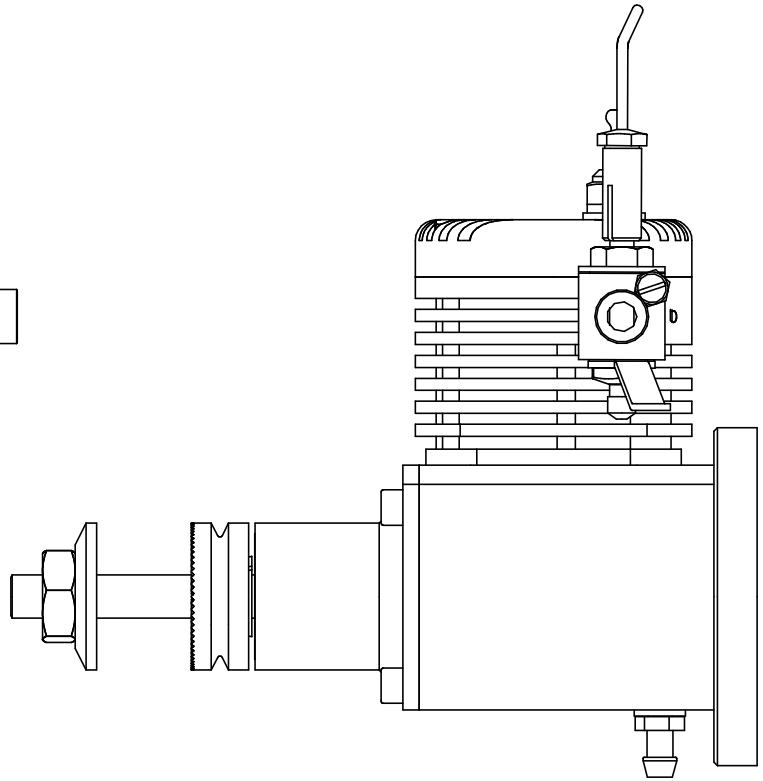
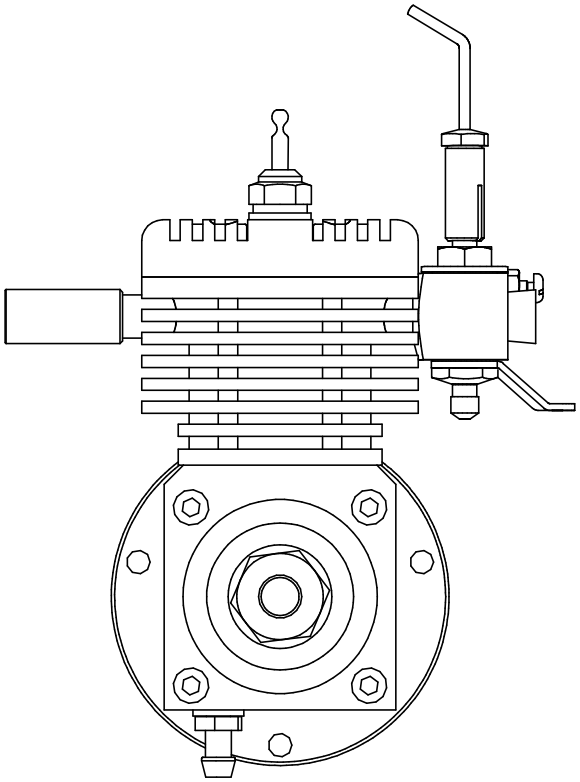
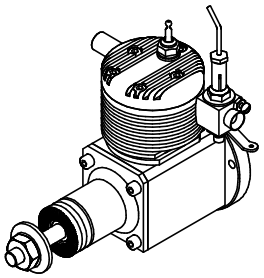
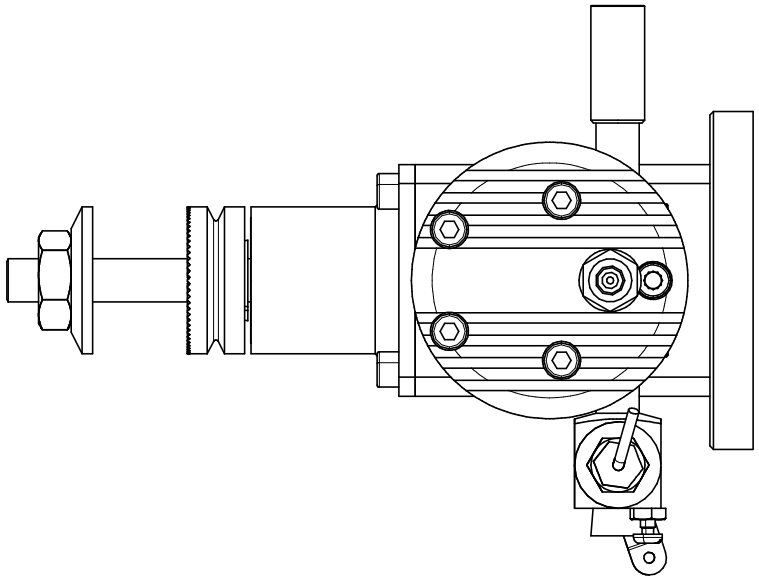
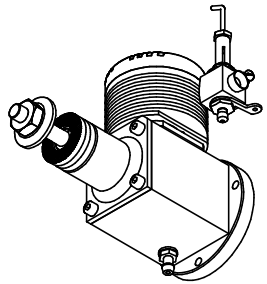




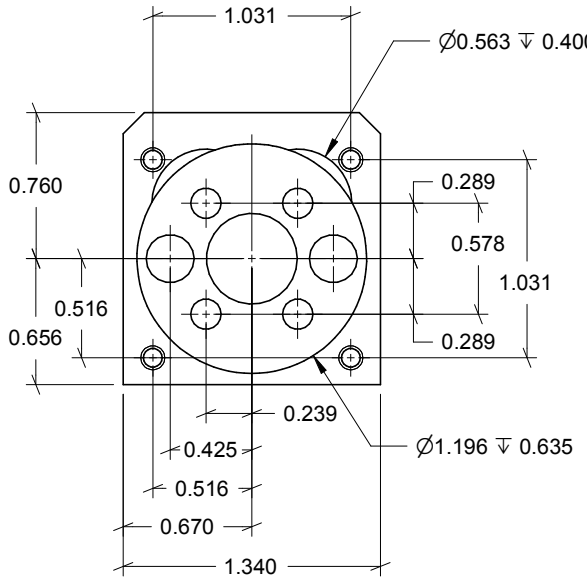


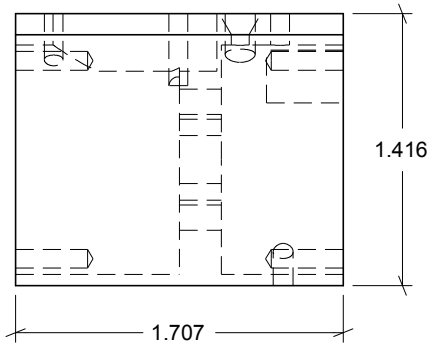


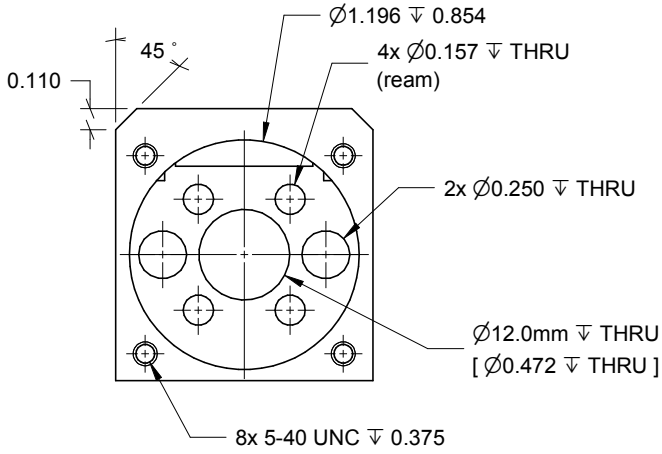


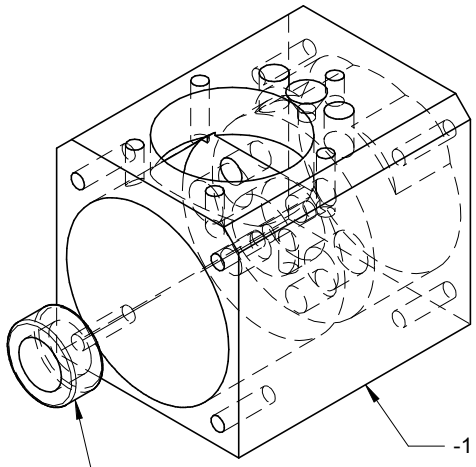


MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-02-24	Scale: 0.9 : 1
Material:		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - 3 View			Sheet: 00

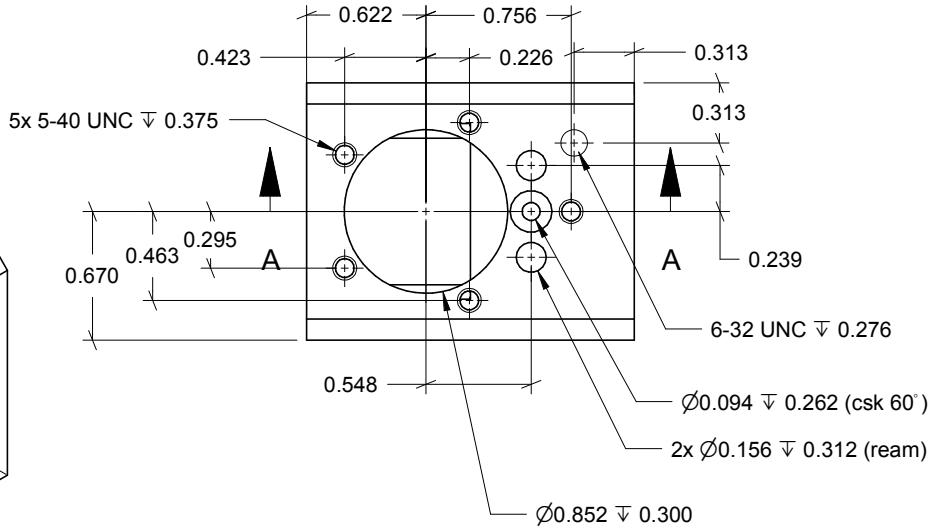


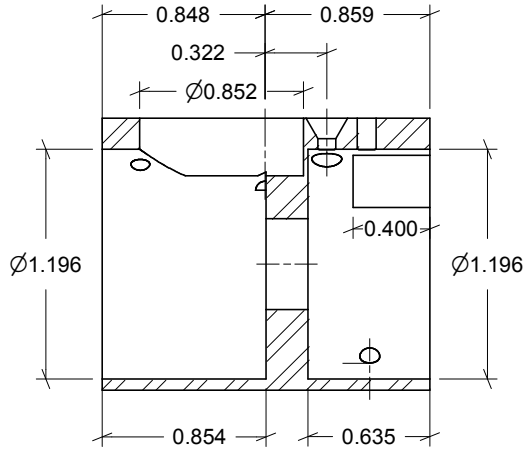






-2 Stock Oiltte bush press fit in -1
(4mm ID x 12mm OD), thin as required.

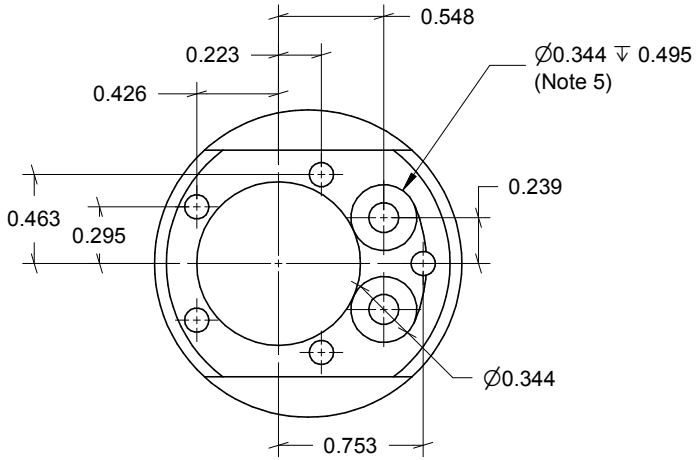


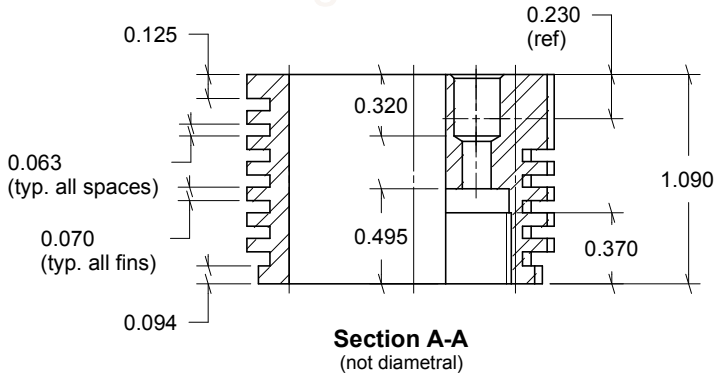


Section A-A

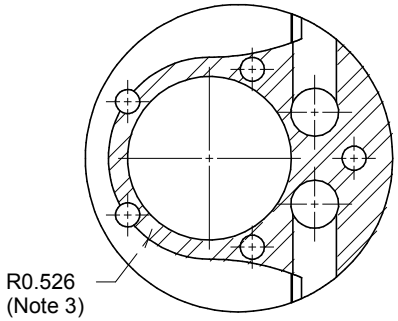
2008-03-07 Bring tappet axis in line with 2-1 Cylinder valve bores.

MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-01-18	Scale: 1 : 1
Material: Aluminum 6061-T6		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Crankcase			Sheet: 01.1

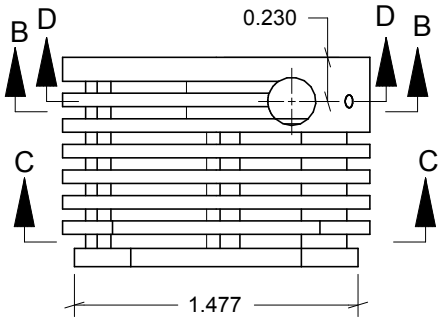




Section A-A
(not diametral)

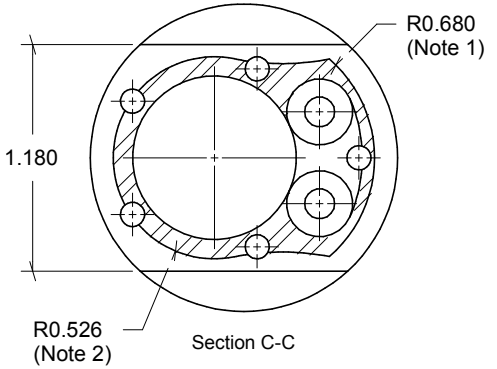


Section B-B

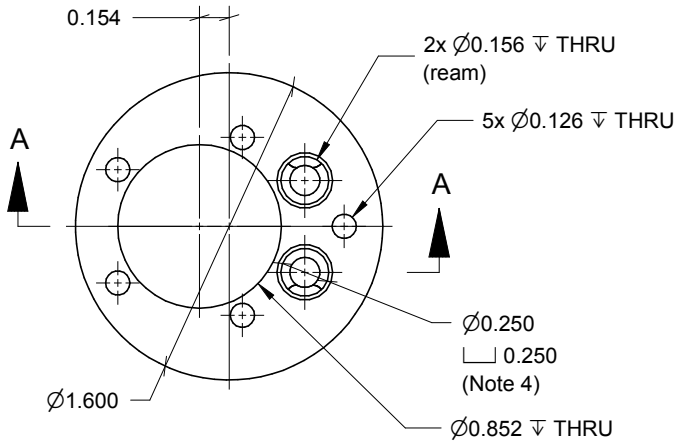


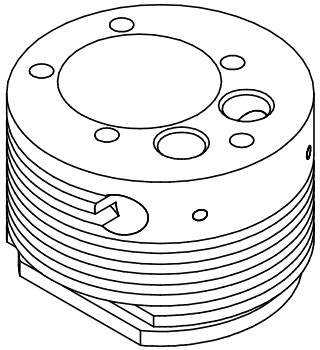
Notes:

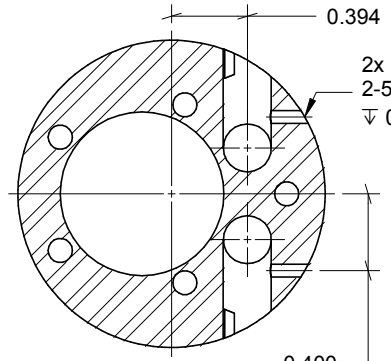
1. Cut lower five fin spaces 0.200 deep concentric with Cylinder Fin blank to dimensions shown.
2. Deepen lower five spaces with a 1/16" thick 2.5" dia. slitting saw rotated through an arc of 200° around the cylinder liner bore.
3. Upper two spaces are cut like the lower five spaces on a reduced arc of 180°.
4. Chamfer valve seats 45° at same setting to produce a seat no more than 0.016" wide.
5. Plunge cutter 0.495" deep concentric with reamed valve guide holes. Raise to 0.370" deep and join pockets concentric with cylinder liner bore to create space for insertion of valve retainer clips.



Section C-C



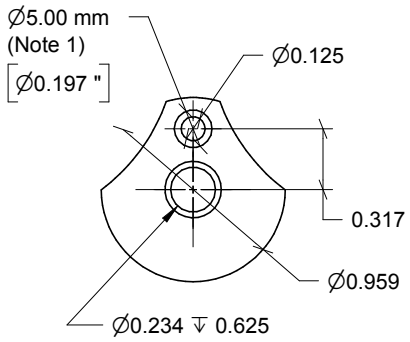


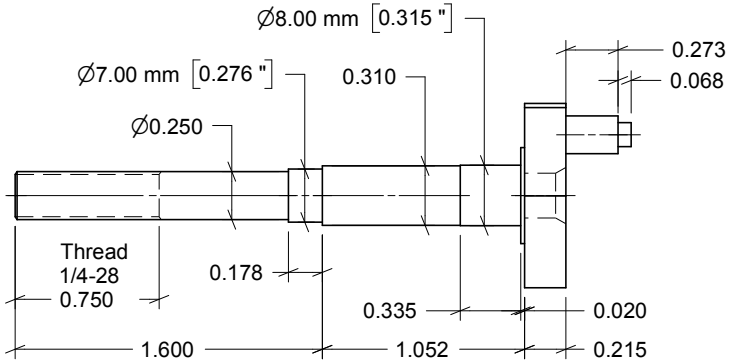


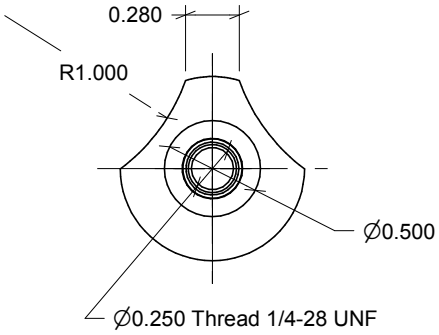
Section D-D

MOTOR BOYS (INTERNATIONAL)	CAD By: *BMBI*	Date: 208-01-18	Scale: 1 : 1
Material: Aluminum 2024			*All dimensions are inches unless otherwise stated.*
Title: Vega 30 - Cylinder Jacket			Sheet: 02.1

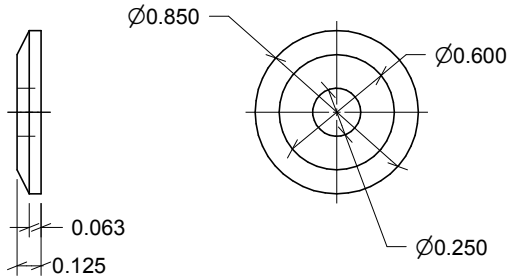
2008-03-07 Revise Section A-A and Notes.







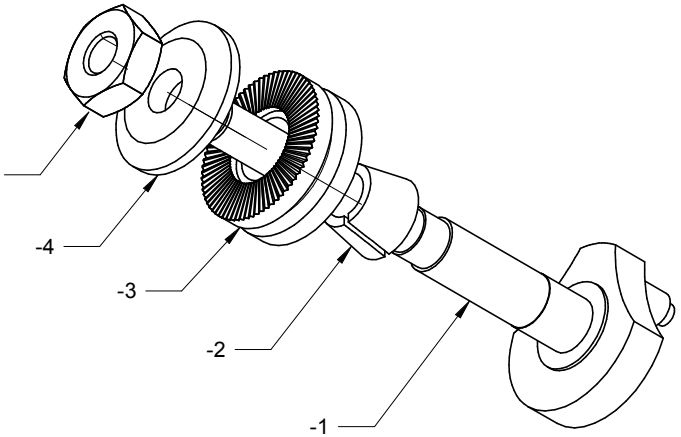
-1 CRANKSHAFT
(Steel 4140)

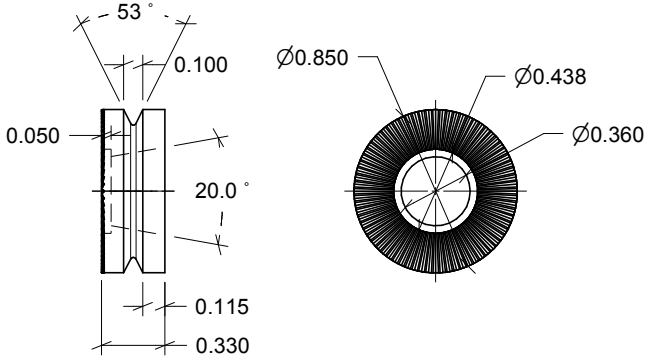


-4 PROP WASHER
(Aluminum 2024-T4)

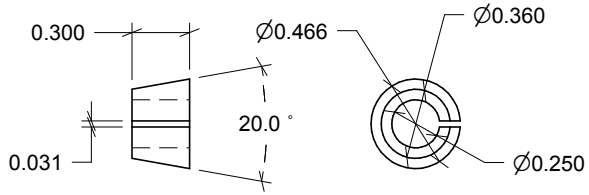
Notes:

1. Crankpin on original engines was fashioned from a Ø5.00mm steel roller and pressed into the crankshaft after hardening.
2. Straight knurl shown. Originals used a left-hand spiral knurl.



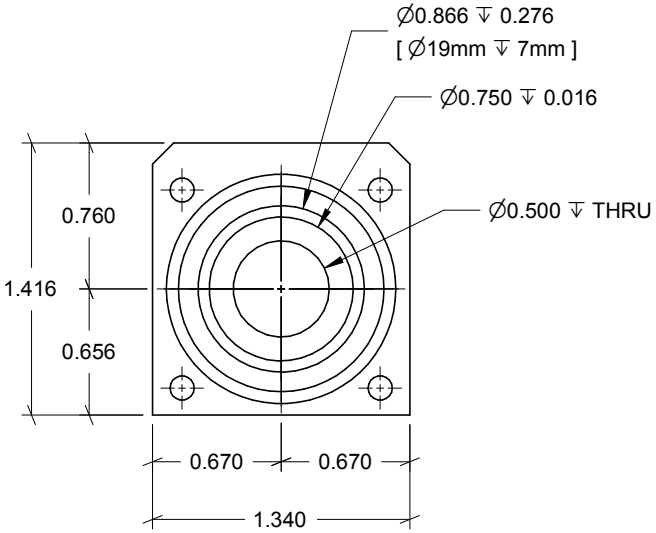


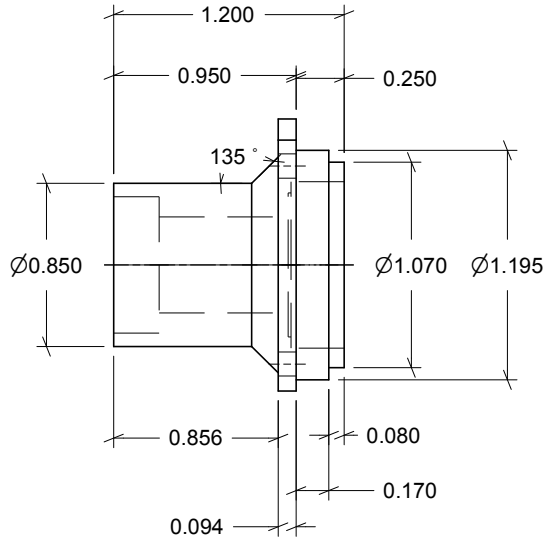
-3 PROP DRIVER
(Aluminum 2024-T4)

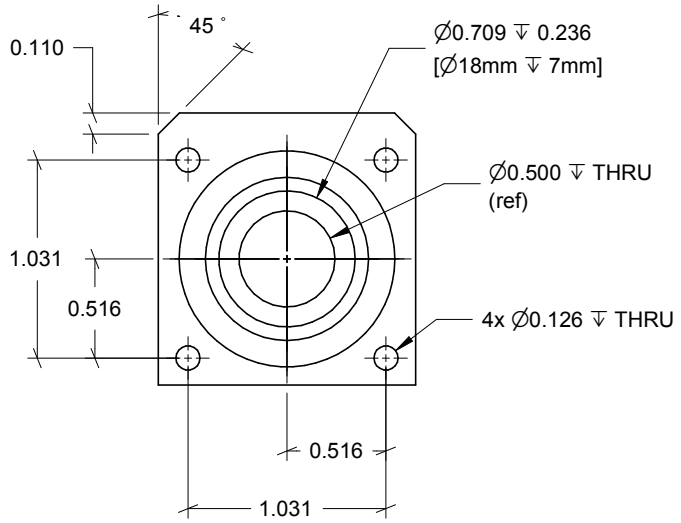


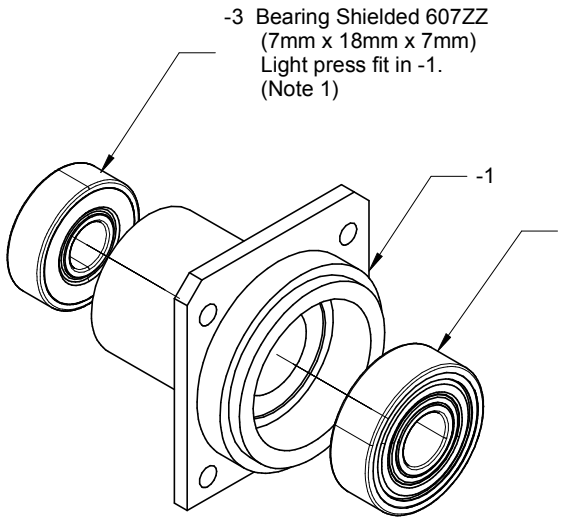
-2 SPLIT CONE
(Aluminum 2024-T4)

MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-01-18	Scale: 1 : 1
Material: As Noted.		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Crankshaft			Sheet: 03





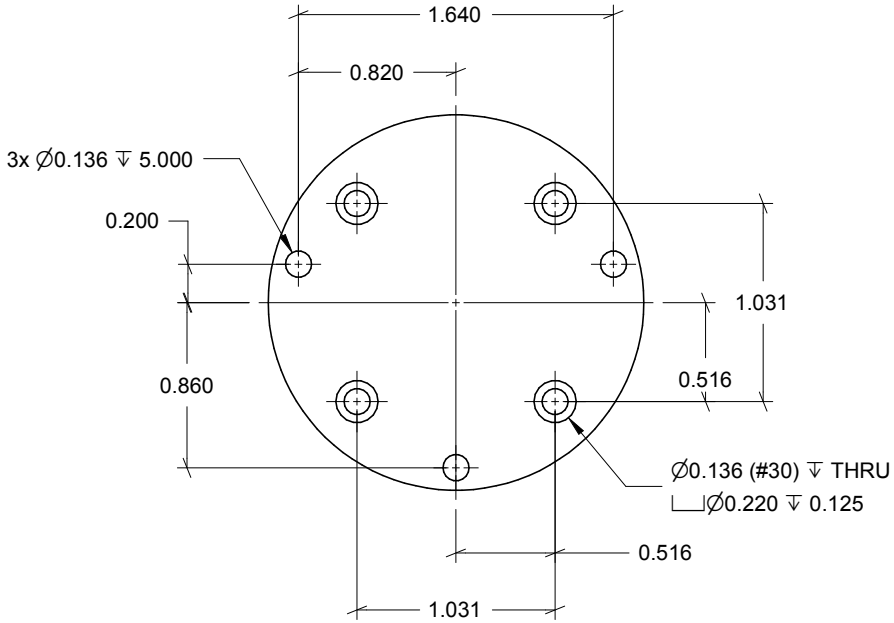


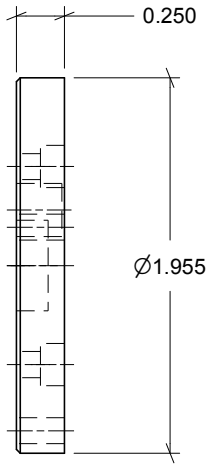


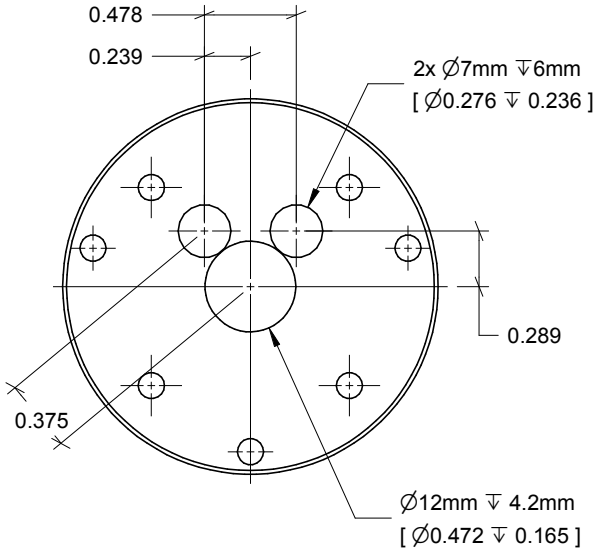
Notes:

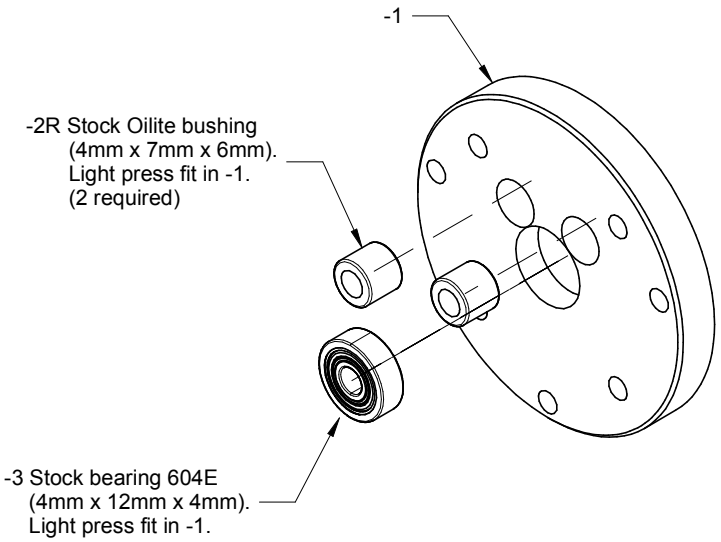
1. Original engines used an R4Z Imperial bearing in front (0.250 x 0.625 x 0.198). If this bearing is used, the front recess in the -1 Bearing Housing should be modified accordingly and the Ø7mm step on the 03-1 Crankshaft omitted.

MOTOR BOYS (INTERNATIONAL)	CAD By: *BMBI*	Date: 2008-01-18	Scale: 1 : 1
Material: Aluminum 6061			*All dimensions are inches unless otherwise stated.*
Title: Vega 30 Bearing Housing			Sheet: 04



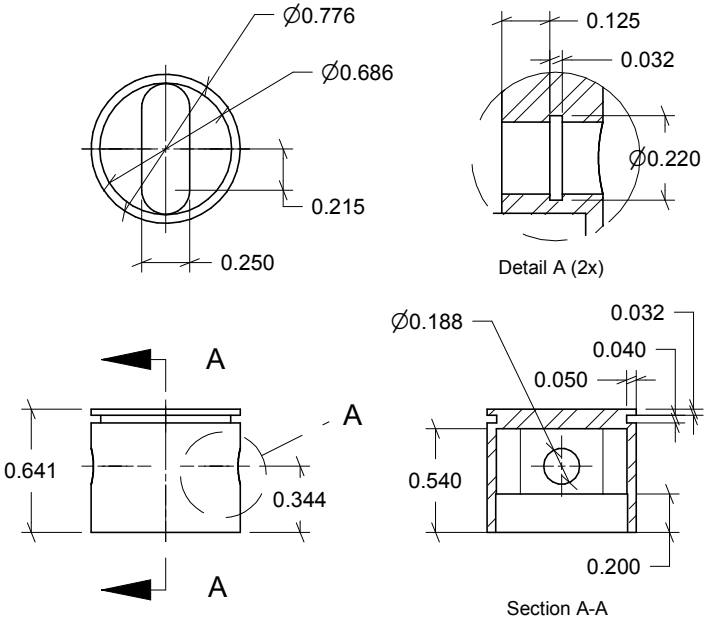




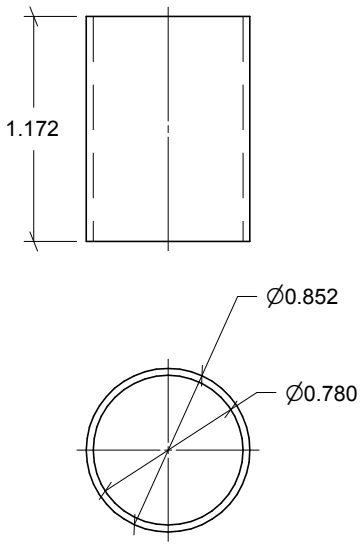


2008-03-06 Correct location of cam busing bores to match 1-1 Crankcase.

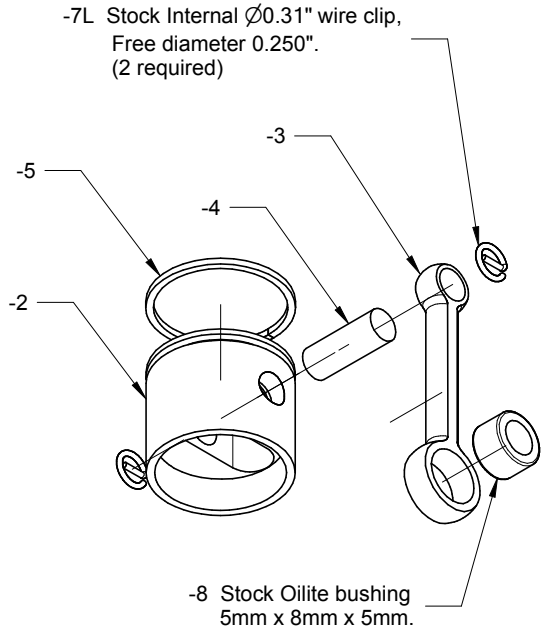
MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-01-19	Scale: 1 : 1
Material: Aluminum 6061			*All dimensions are inches unless otherwise stated.*
Title: Vega 30 - Backplate			Sheet: 05.1

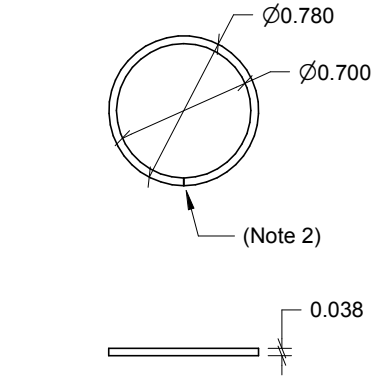


-2 PISTON
(Aluminium 2024)

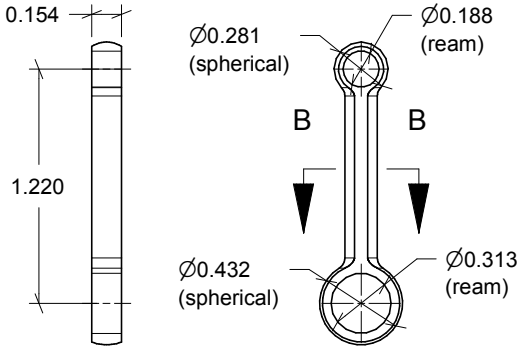


-1 CYLINDER LINER
(Fine grained CI, or "Meehanite")

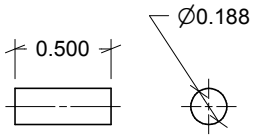




-5 COMPRESSION RING
(Fine grained CI, or "Meehanite")



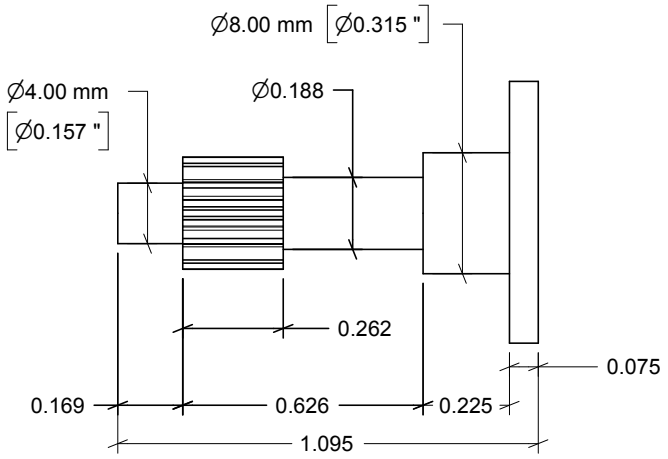
-3 CONROD
(Aluminum 2024)

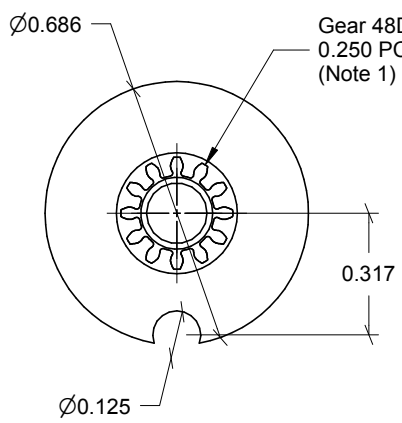


-4 WRIST PIN
(Ø3/16 Drill rod)

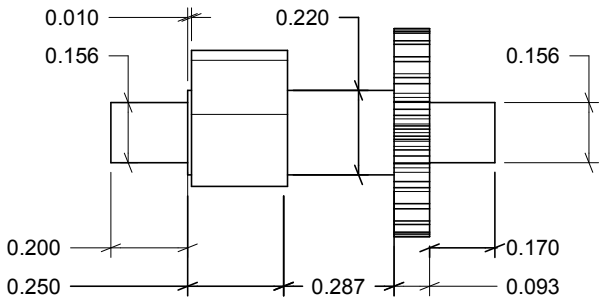
Notes:
1. Conrod ends and shank appear to have been formed by spherical turning, possibly from Ø0.5" bar before milling to width.
2. Suggested ring gap 0.093 - 0.100". Apply using your favourite method.

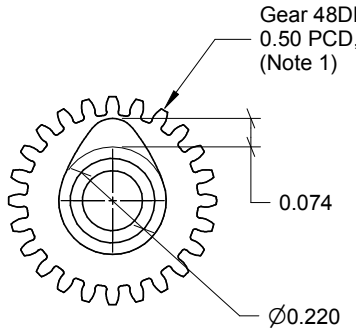
MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-01-19	Scale: 1 : 1
Material: As Stated.			*All dimensions are inches unless otherwise stated.*
Title: Vega 30 - Piston and Liner			Sheet: 06



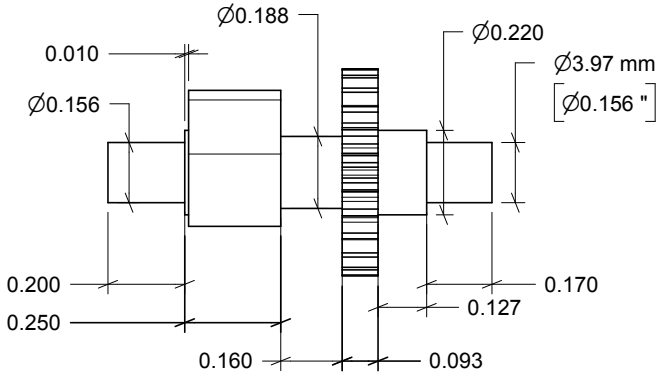


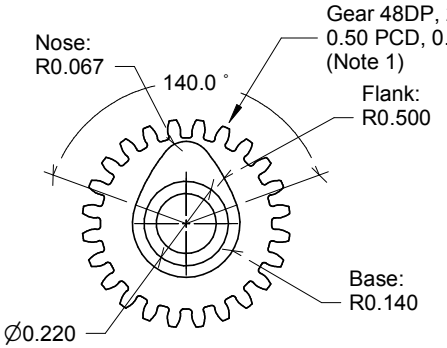
-1 FOLLOWER SHAFT
(Drill rod)



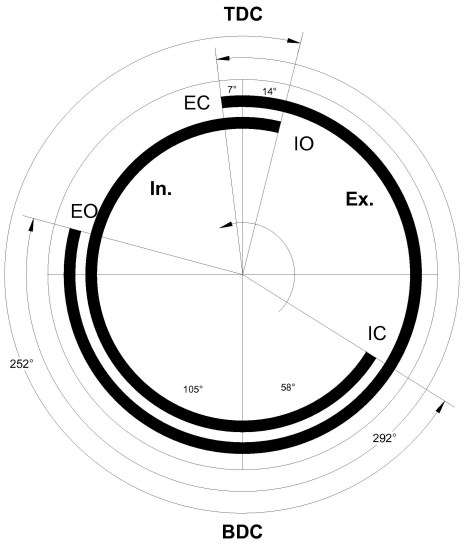


-2 EXHAUST CAM
(Drill rod)





-3 INLET CAM
(Drill rod)



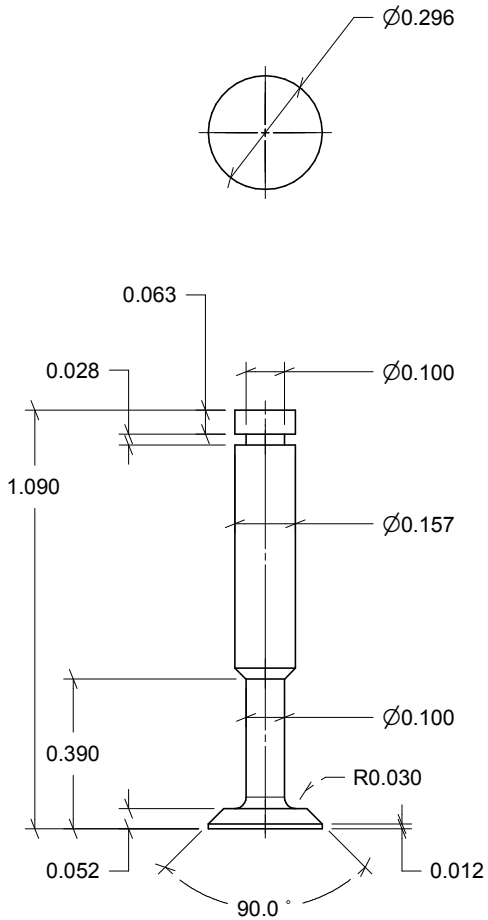
Notes:

1. All models in the Vega range used one-piece cam shafts with the gear teeth cut and cams formed before nitriding. Constructors not wishing to replicate this can simplify construction with commercially made gears pressed or glued onto the shafts. A similar approach would be permissible for the cams themselves simplifying alignment.

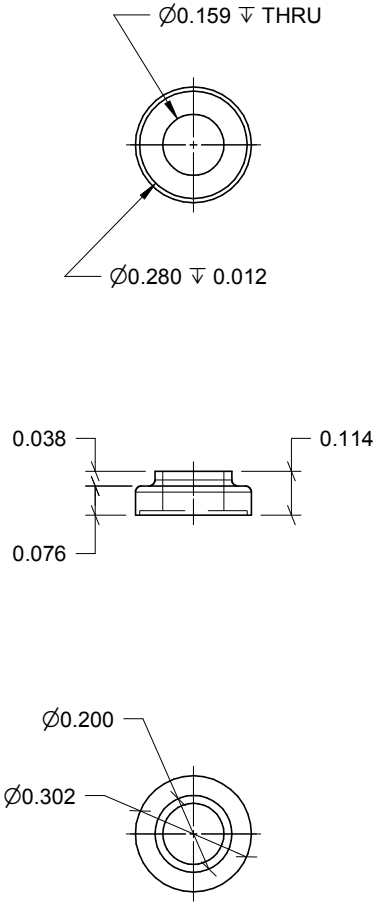
2. Inlet and exhaust cams have the same profile:
   Base Circle: Ø 0.240"
   Flank Radius: 0.500"
   Nose Radius: 0.067"
   Lift: 0.074"
   Angle: 140°

3. The inlet and exhaust durations in the timing diagram represents measurements taken from a single engine. The difference in exhaust and inlet durations is due to the variation in tappet length and hence, clearance.

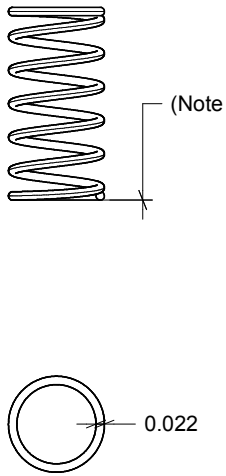
MOTOR BOYS (INTERNATIONAL)	CAD By: Ron Chernich	Date: 2008-01-21	Scale: 2 : 1
Material: As Noted		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Camshafts			Sheet: 07



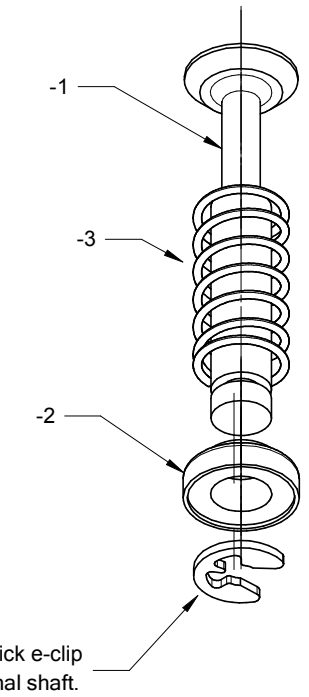
-1 POPPET VALVE
(Stainless Steel)



-2 VALVE CAP
(Bronze)

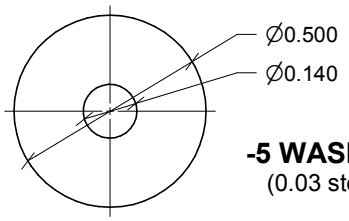


-3 VALVE SPRING
(Ø0.022 Stainless wire)

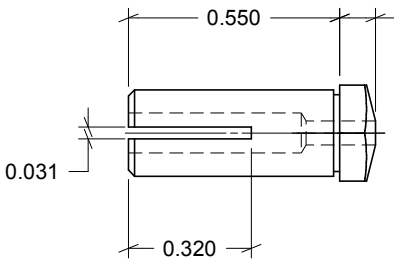


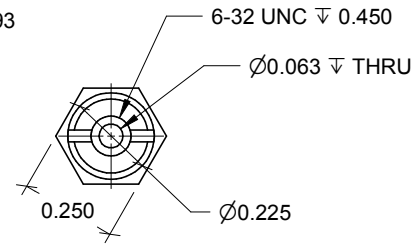
Notes: 1. Valve springs wound with Ø 1/4" outside diameter; five (5) complete turns with a free length 0f 1/2" and closed, unground ends.

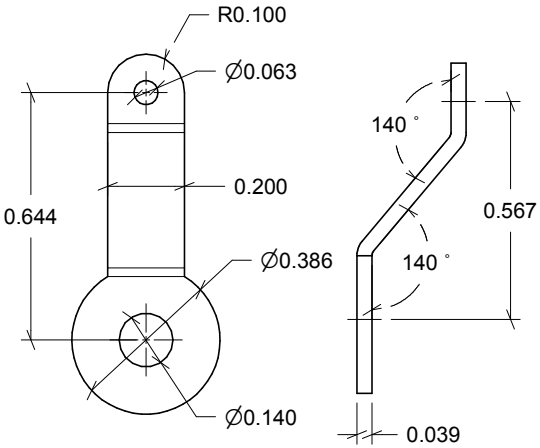
MOTOR BOYS (INTERNATIONAL)	CAD By: Ron Chernich	Date: 2008-01-19	Scale: 2 : 1
Material: As Noted		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Valve Gear			Sheet: 08



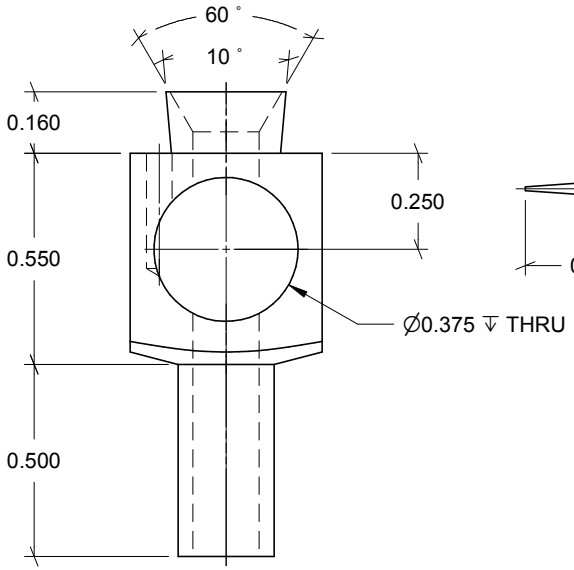
-5 WASHER
(0.03 steel)



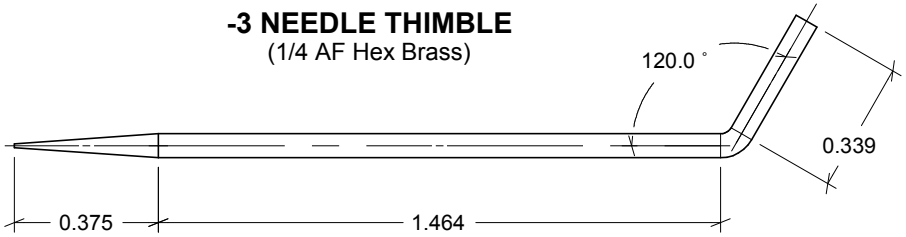




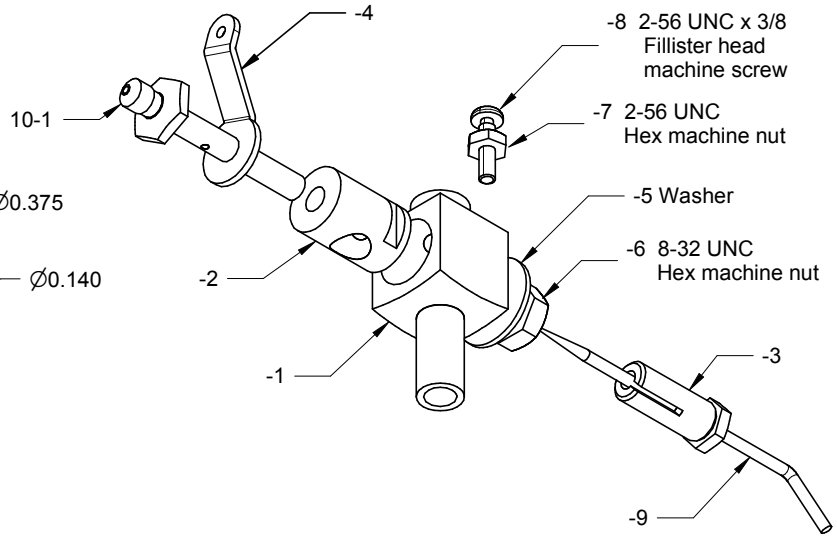
-4 THROTTLE ARM
(1mm sheet steel)

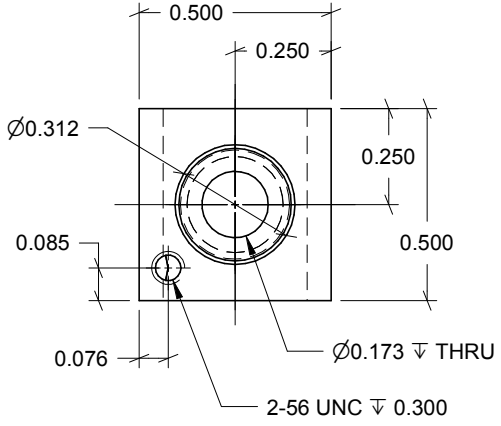


-3 NEEDLE THIMBLE
(1/4 AF Hex Brass)

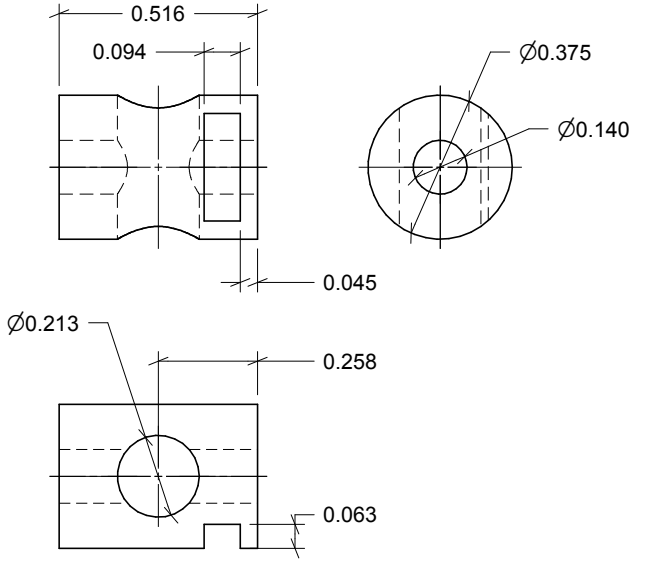


-9 NEEDLE
(Ø1/16 Music wire)



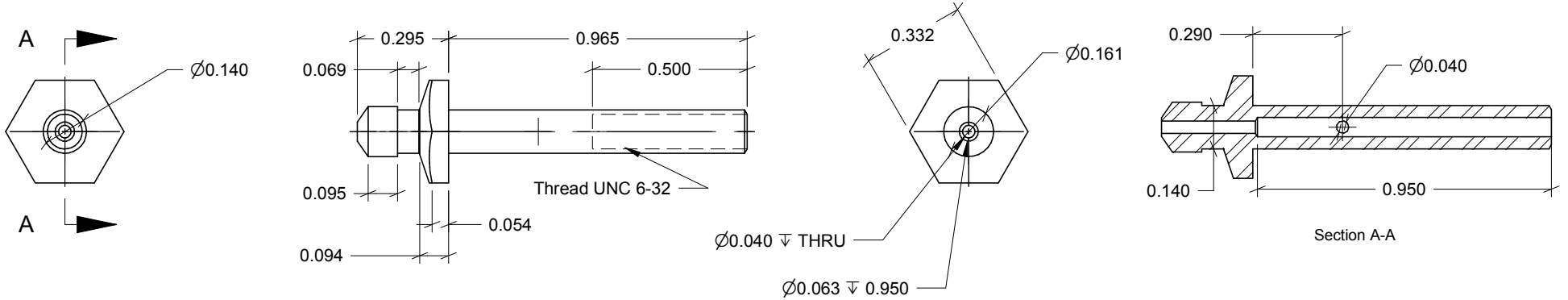


-1 THROTTLE BODY
(Aluminum 6061)

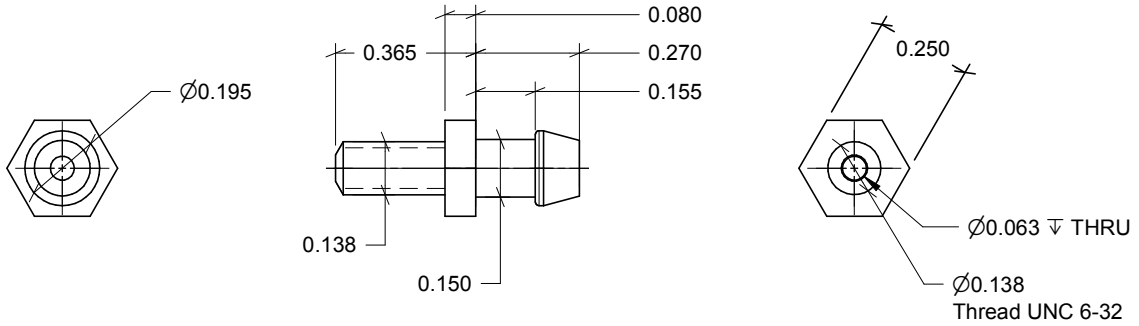


-2 THROTTLE BARREL
(Brass)

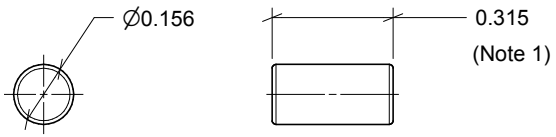
MOTOR BOYS (INTERNATIONAL)	CAD By: Ron Chernich	Date: 2008-01-20	Scale: 2 : 1
Material: As Noted.		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Carburetor			Sheet: 09



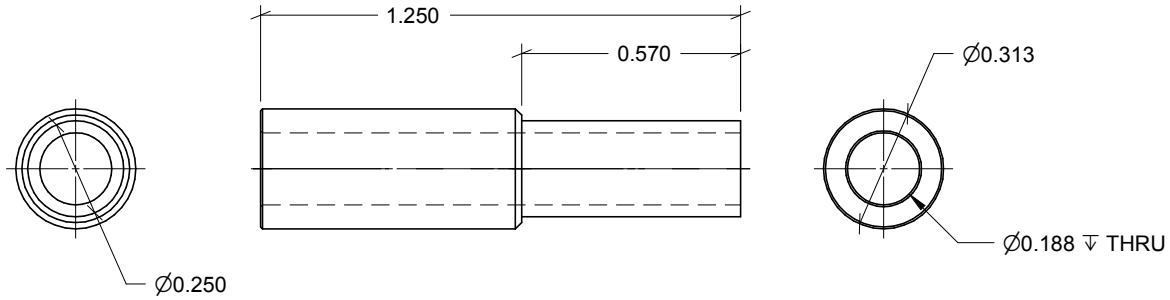
-1 Spraybar
(Hex brass)



-2 Crankcase Vent
(Hex brass)



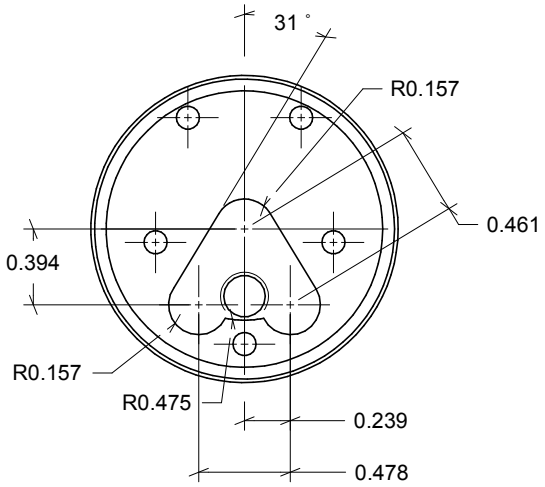
-3 Tappet
(Ø5/32" Roller)

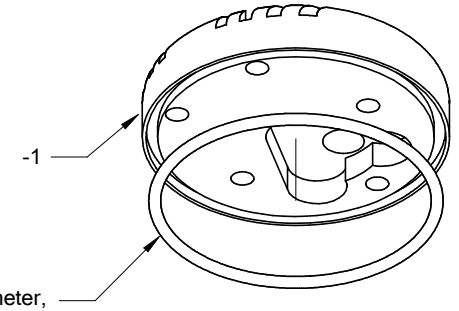


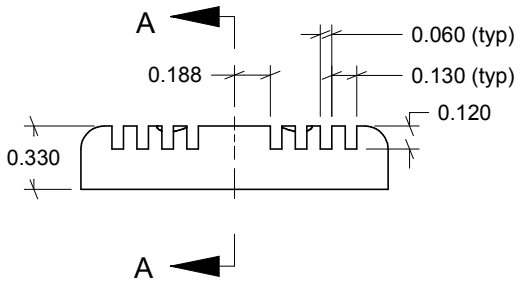
-4 Exhaust Pipe
(aluminum)

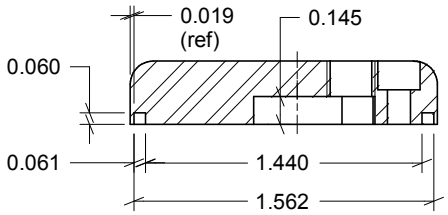
Notes: 1. Dimension shown is nominal. Tappet length ground to provide 0.005" clearance to valve when fully closed.

MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-02-23	Scale: 2 : 1
Material: As Noted		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Misc.			Sheet: 10

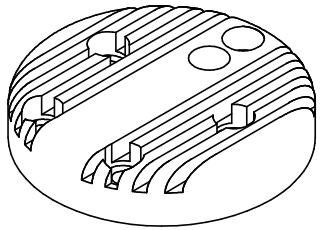


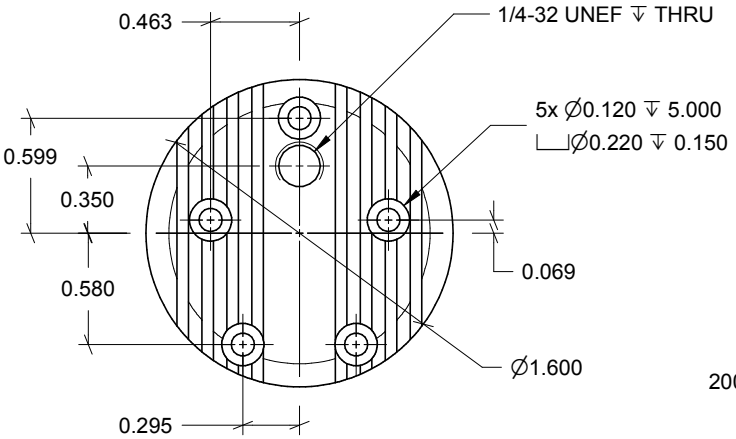






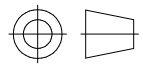
Section A-A



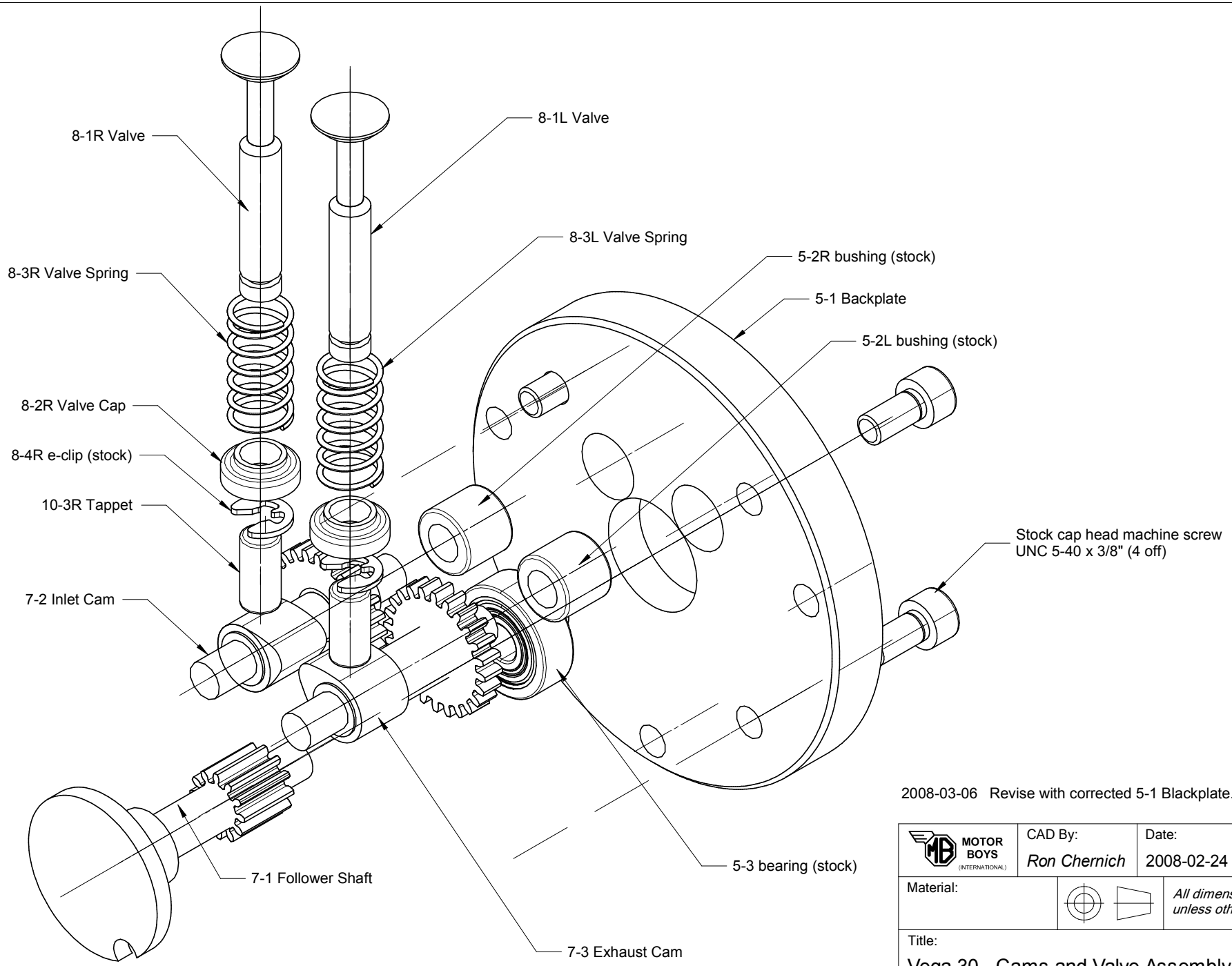


Mill cavity with ∅ 5/16" cutter:

1. Mount head on a rotary table centered under mill spindle.
2. Rotate so Y axis is 31° from fore-aft position.
3. Plunge 0.145" deep and mill out for 0.461".
4. Return to center, rotate 31° to otther side and repeat step 3.
5. Move cuter axis to 0.319" from center and rotate the table to connect the two slots. Remove the remaining island.

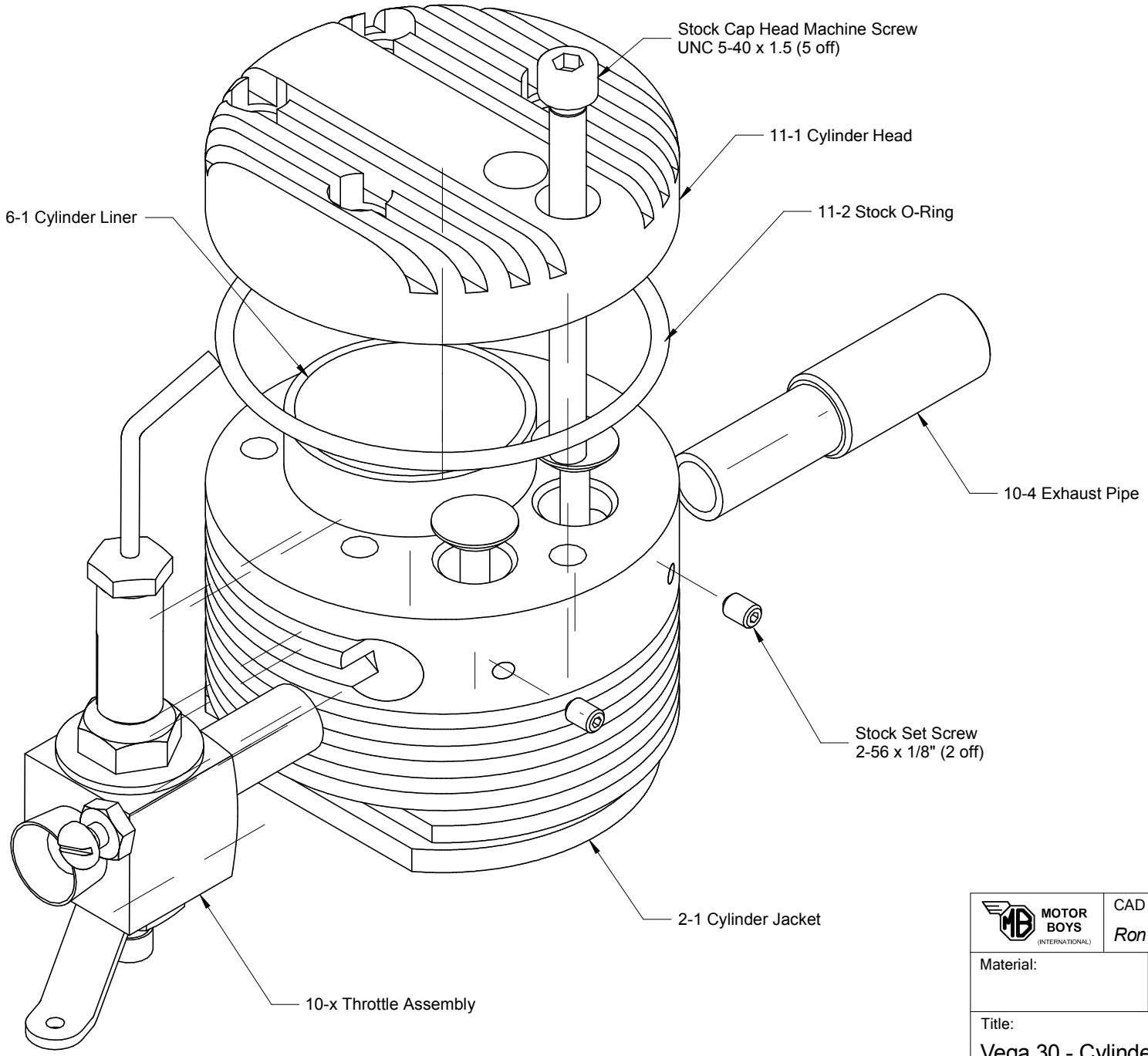
MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-01-20	Scale: 1 : 1
Material: Aluminum 6061-T6		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Cylinder Head			Sheet: 11.2.1

2008-03-07	Correct placement of valve pockets to align with 2-1 Cylinder valve axis.
2008-03-06	Correct drawing number in title block.



2008-03-06 Revise with corrected 5-1 Blackplate.

MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-02-24	Scale: 2 : 1
Material:		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Cams and Valve Assembly			Sheet: 12.1



MOTOR BOYS (INTERNATIONAL)	CAD By: *Ron Chernich*	Date: 2008-02-27	Scale: 2 : 1
Material:		*All dimensions are inches unless otherwise stated.*	
Title: Vega 30 - Cylinder Assembly			Sheet: 13