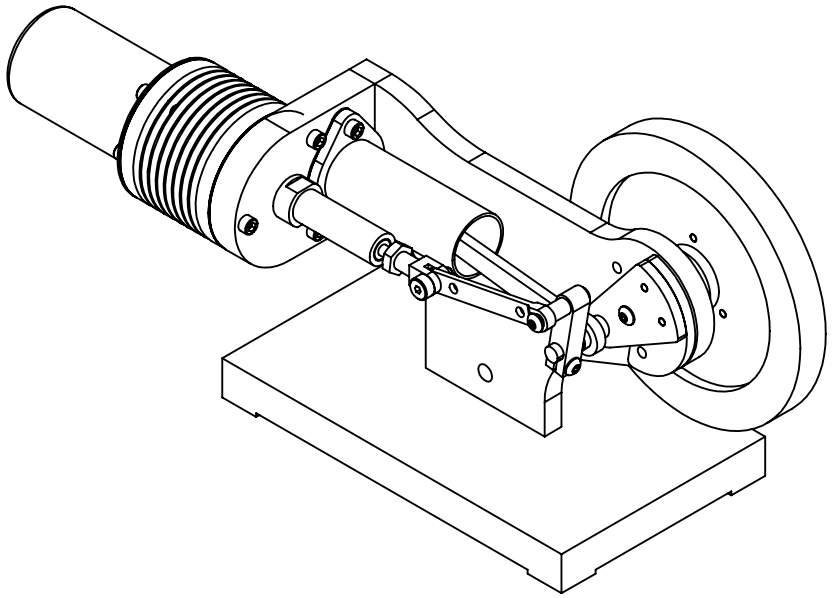


		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR: MACH ±1 BEND ± TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 FOUR PLACE DECIMAL ±.0005	DRAWN	CX	4/10/10
			CHECKED	CX	4/11/10
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE:

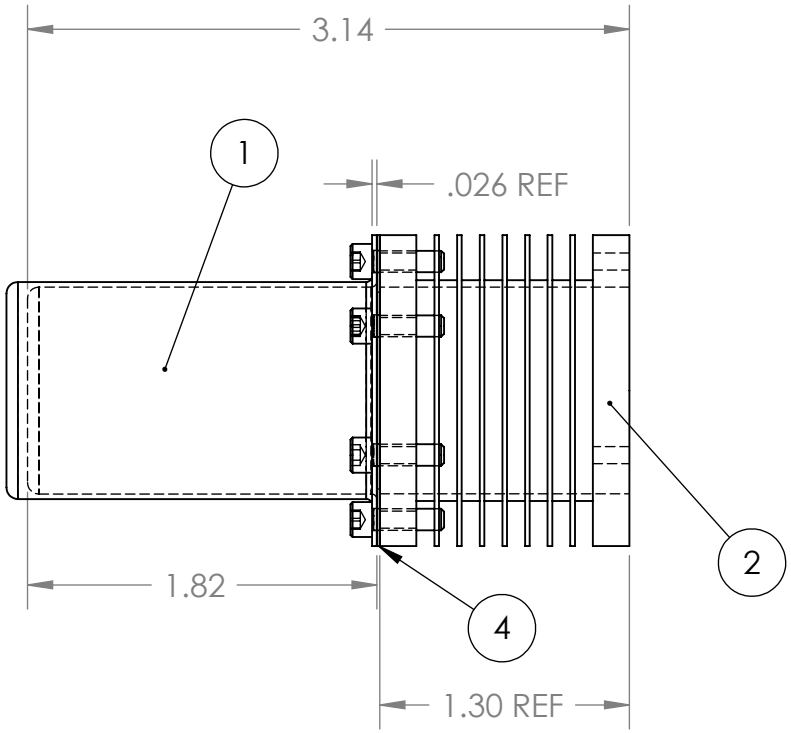
Final Stirling Engine Assembly

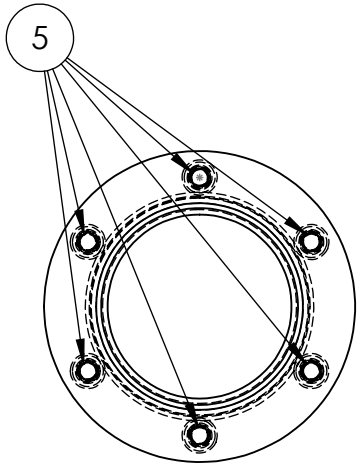
SIZE	DWG. NO.	REV
A	200	**D**

SCALE: 1:2 | WEIGHT: | SHEET 1 OF 10

5 4 3 2 1

ITEM NO.	DWG NUMBER	DESCRIPTION	QTY.
1	20	Air Chamber	1
2	12	Heat Sink	1
4	25	Air Chamber Gasket	1
5	101	SHCS 4-40x0.375	6



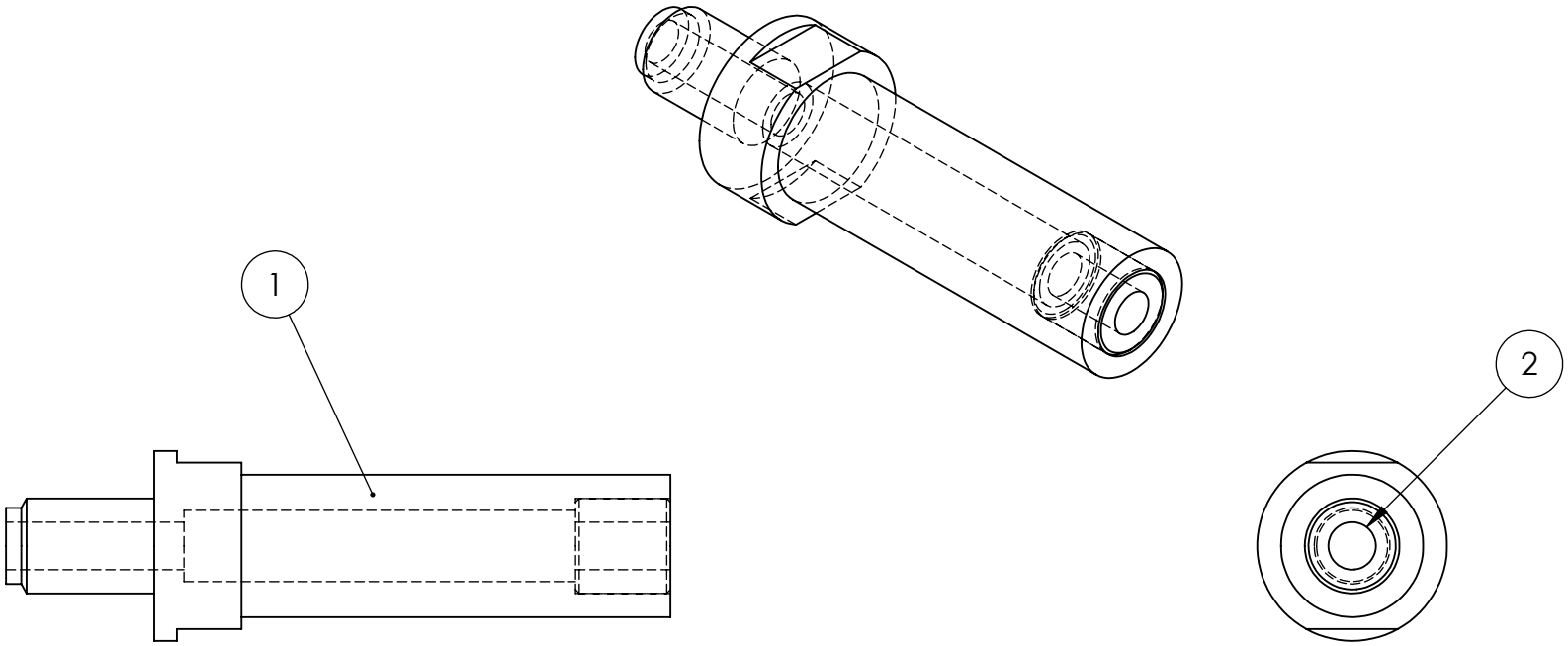


		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR: MACH ±1 BEND ± TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 FOUR PLACE DECIMAL ±.0005	DRAWN	CX	4/10/10	TITLE: Asm, Air Chamber
			CHECKED	CX	4/11/10	
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			SIZE A / DWG. NO. 201 / REV B
208						
NEXT ASSY	USED ON	FINISH				SCALE: 1:1 / WEIGHT: / SHEET 2 OF 10
APPLICATION		DO NOT SCALE DRAWING				

5 4 3 2 1

ITEM NO.	DWG NUMBER	DESCRIPTION	QTY.
1	9	Displacer Bearing Tube	1
2	27	Bronze Bearing .25(OD) x .125(ID) x .25(LG)	1

Note 1: Item 2 is a press fit into Item 1.
Note 2: You may need to ream Item 2 by hand after installation.



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR: MACH ±1 BEND ± TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 FOUR PLACE DECIMAL ±.0005	DRAWN	CX	4/10/10
			CHECKED	CX	4/11/10
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
			COMMENTS:		
206		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE:

Asm, Displacer Bearing Tube

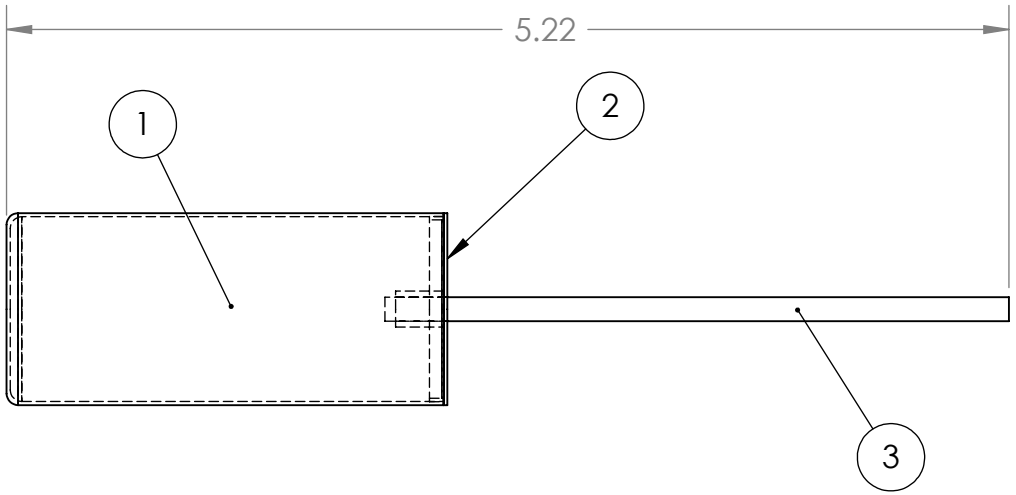
SIZE	DWG. NO.	REV
A	202	A

SCALE: 2:1 | WEIGHT: | SHEET 3 OF 10

5 4 3 2 1

ITEM NO.	DWG NUMBER	DESCRIPTION	QTY.
1	21	Displacer Piston	1
2	22	Displacer Cold Cap	1
3	23	Displacer Rod	1

Note 1: Item 2 is a press fit into Item 1.
Note 2: Use Loctite to seal Item 3 into Item 2.



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR: MACH ±1 BEND ± TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 FOUR PLACE DECIMAL ±.0005	DRAWN	CX	4/10/10
			CHECKED	CX	4/11/10
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
206					
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE: Asm, Displacer

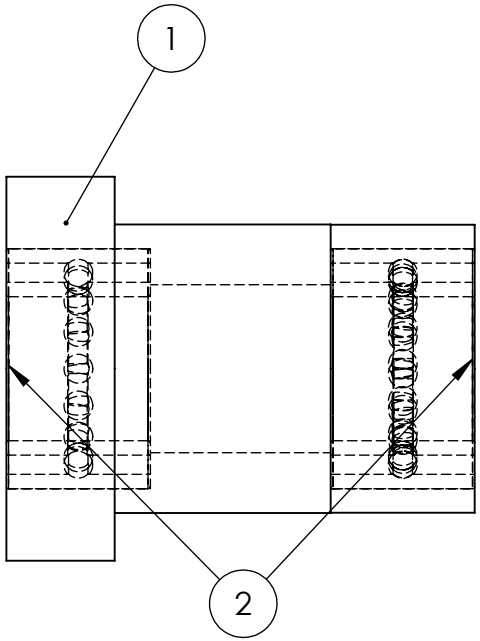
SIZE	DWG. NO.	REV
A	203	A

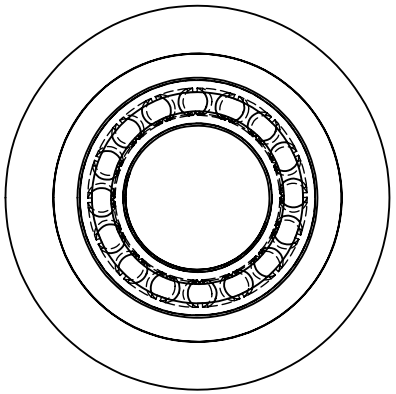
SCALE: 1:1 | WEIGHT: | SHEET 4 OF 10

5 4 3 2 1

ITEM NO.	DWG NUMBER	DESCRIPTION	QTY.
1	8	Crankshaft Bearing Tube	1
2	29	Ball Bearing #R156ZZ 3/16(ID) x 5/16(OD) x 1/8(LG)	2

Note: Item 2 is press fit into Item 1.





		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR: MACH ±1 BEND ± TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 FOUR PLACE DECIMAL ±.0005	DRAWN	CX	4/10/10
			CHECKED	CX	4/11/10
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
206					
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE:

Asm, Crankshaft Bearing Tube

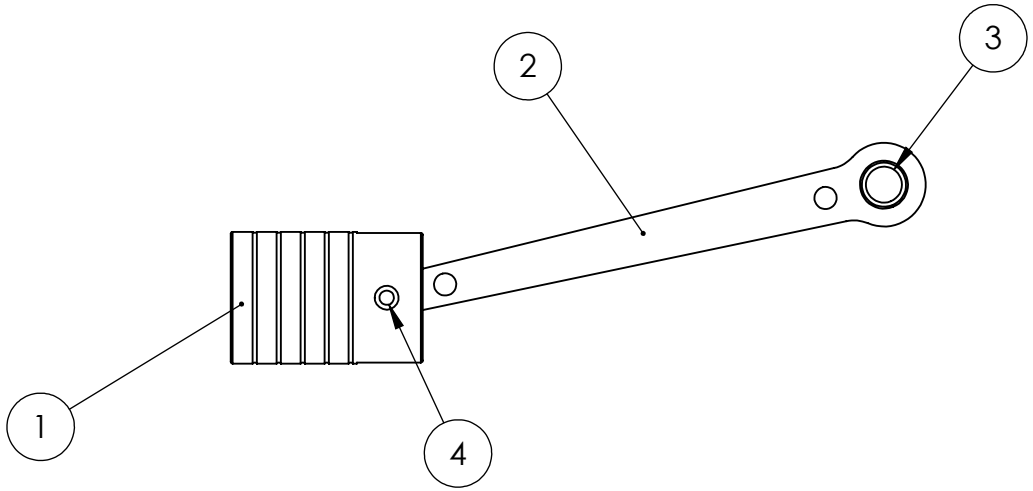
SIZE	DWG. NO.	REV
A	204	B

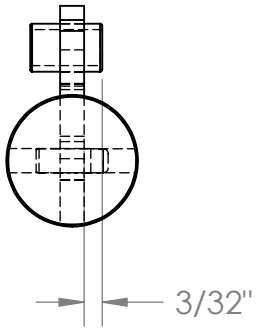
SCALE: 4:1 | WEIGHT: | SHEET 5 OF 10

5 4 3 2 1

ITEM NO.	DWG NUMBER	DESCRIPTION	QTY.
1	7	Piston	1
2	5	Piston Connecting Rod	1
3	28	Bronze Bearing .2500(OD) x .1875(ID) x .375(LG)	1
4	102	Dowel Pin .125(OD) x .375(LG)	1

Note 1: Lap Pistopn (Item 1) to fit with Piston Cylinder (DWG 207, Part 9).
Note 2: Use non-embeddeing lapping compound mixed with spindle oil.





207		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64
ANGULAR: MACH ±1 BEND ±
TWO PLACE DECIMAL ±.01
THREE PLACE DECIMAL ±.005
FOUR PLACE DECIMAL ±.0005

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	CX	4/10/10
CHECKED	CX	4/11/10
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

TITLE:

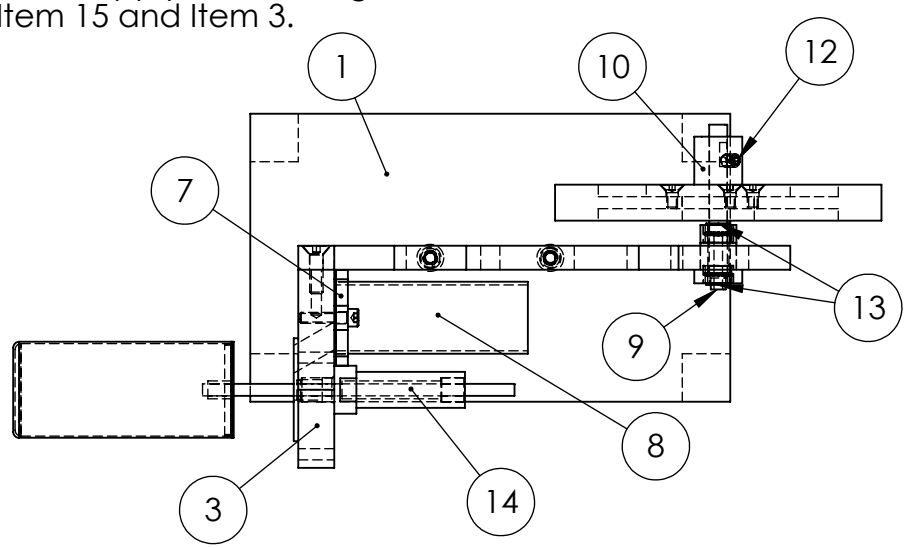
Asm, Piston

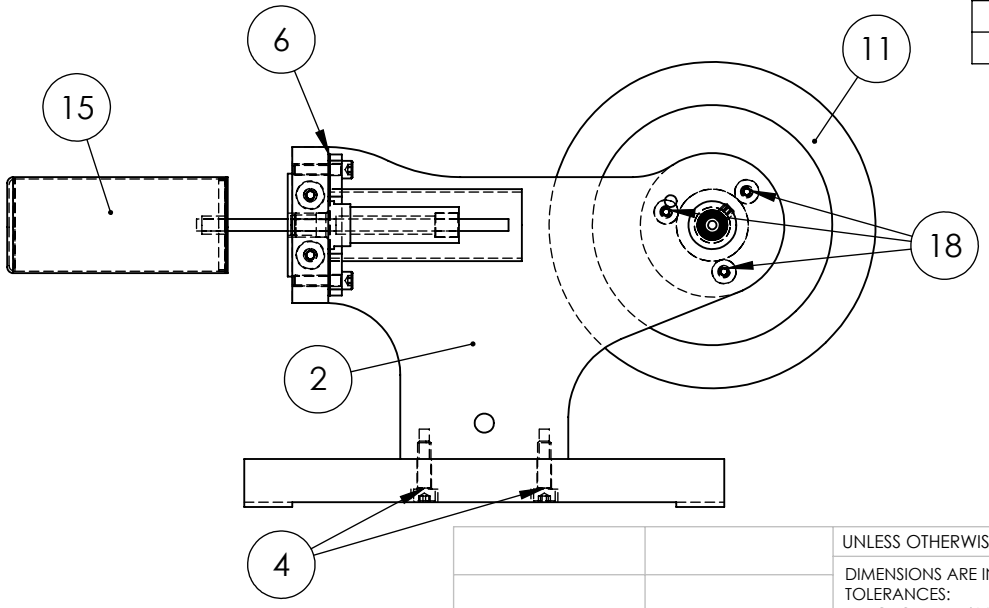
SIZE	DWG. NO.	REV
A	205	C

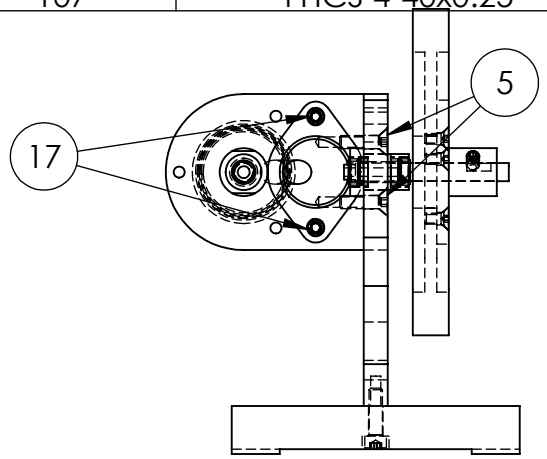
SCALE: 1:1 | WEIGHT: | SHEET 6 OF 10

5 4 3 2 1

Note: Apply non-cutting silicone sealant to interface with Item 15 and Item 3.







ITEM NO.	DWG NUMBER	DESCRIPTION	Default/ QTY.
1	16	Baseplate	1
2	4	Bedplate	1
3	1	Mounting Block	1
4	103	SHCS 6-32x0.5	2
5	104	FHCS 6-32x0.25	2
6	26	Piston Flange Gasket	1
7	3	Piston Flange	1
8	24	Piston Tube	1
9	18	Output Shaft	1
10	19	Flywheel Coupler	1
11	17	Flywheel	1
12	105	SSS 6-32x0.1875	1
13	30	Shaft Spacing Shim	2
14	202	Asm, Displacer Bearing Tube	1
15	203	Asm, Displacer	1
16	204	Asm, Crankshaft Bearing Tube	1
17	106	SHCS 4-40x0.5	2
18	107	FHCS 4-40x0.25	3

208		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64
ANGULAR: MACH ±1 BEND ±
TWO PLACE DECIMAL ±.01
THREE PLACE DECIMAL ±.005
FOUR PLACE DECIMAL ±.0005

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	CX	4/10/10
CHECKED	CX	4/11/10
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

TITLE:

Asm, Frame

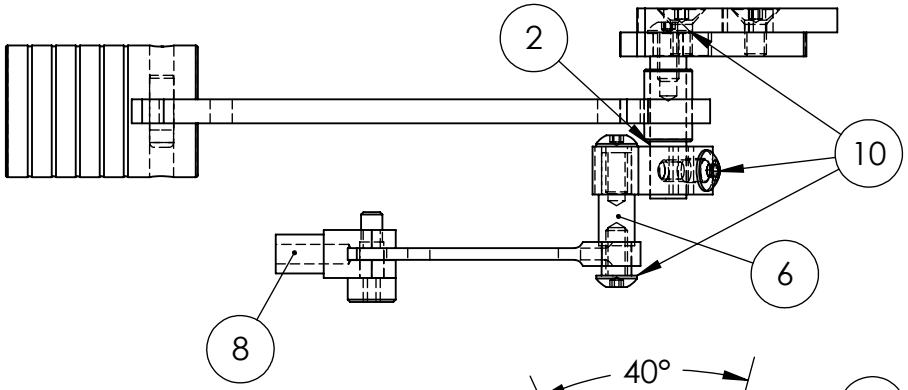
SIZE	DWG. NO.	REV
A	206	A

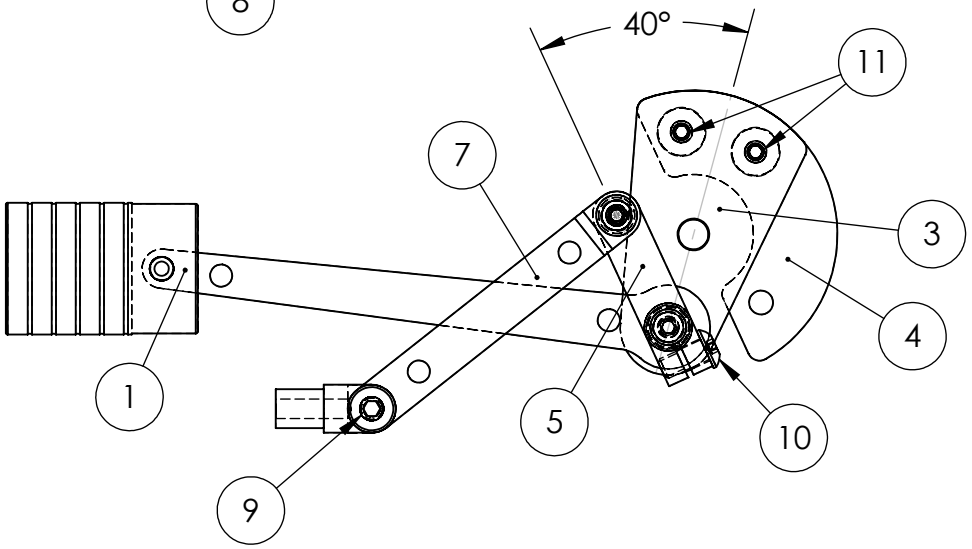
SCALE: 1:2 WEIGHT: SHEET 7 OF 10

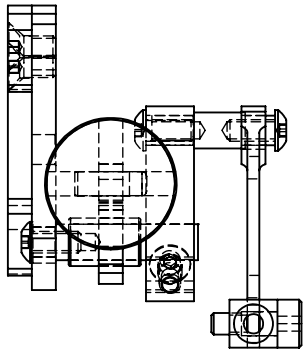
5 4 3 2 1

Note: Use 40° angle orientation between Return Crank (Item 5) and Web (Item 3).

ITEM NO.	DWG NUMBER	DESCRIPTION	QTY.
1	205	Asm, Piston	1
2	11	Return Shaft	1
3	2	Web	1
4	10	Balance Weight	1
5	14	Return Crank	1
6	15	Displacer Shaft	1
7	6	Displacer Connecting Rod	1
8	13	Displacer Rod Fork	1
9	108	Shoulder Bolt	1
10	109	BHCS 4-40x0.25	4
11	110	FHCS 4-40x0.25	2







208		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64
ANGULAR: MACH ±1 BEND ±
TWO PLACE DECIMAL ±.01
THREE PLACE DECIMAL ±.005
FOUR PLACE DECIMAL ±.0005

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	CX	4/10/11
CHECKED	CX	4/11/10
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

TITLE:

Asm, Connecting Rods

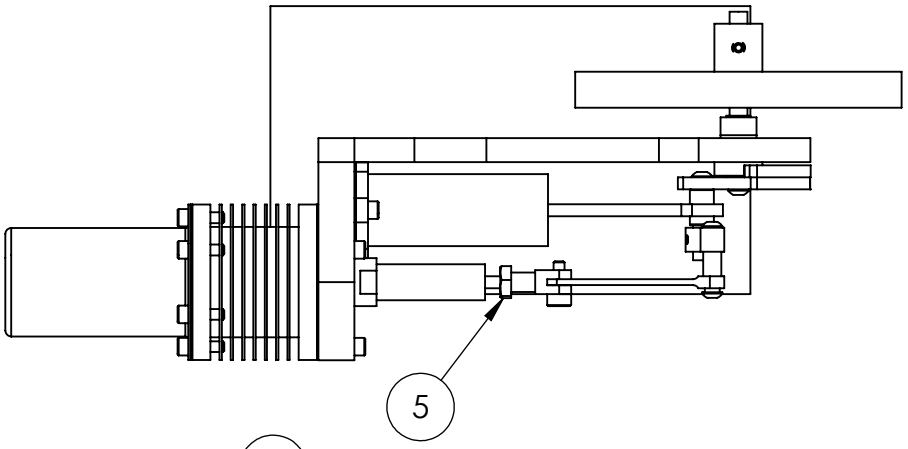
SIZE	DWG. NO.	REV
A	207	A

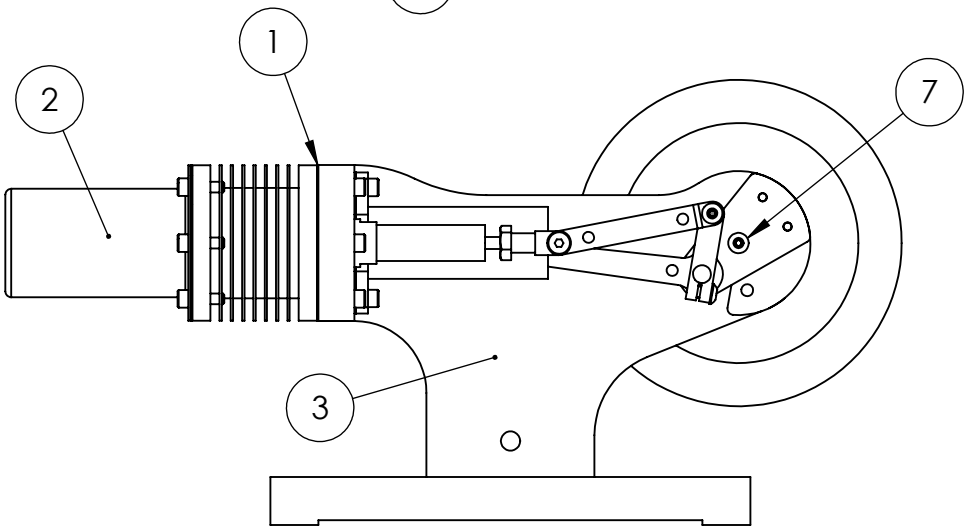
SCALE: 1:1 | WEIGHT: | SHEET 8 OF 10

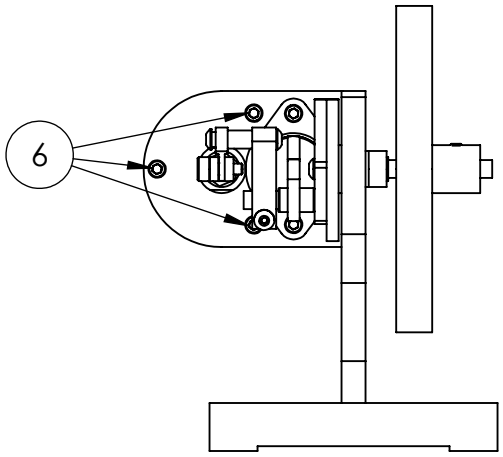
5 4 3 2 1

Note: Add a few drops of oil to Piston grooves before installation.

ITEM NO.	DWG NUMBER	DESCRIPTION	Default/ QTY.
1	25	Air Chamber Gasket	1
2	201	Asm, Air Chamber	1
3	206	Asm, Frame	1
4	207	Asm, Connecting Rods	1
5	111	MSHXNUT 5-40	1
6	112	SHCS 4-40x0.5	3
7	113	BHCS 4-40x0.25	1







NEXT ASSY	USED ON	
APPLICATION		DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64
ANGULAR: MACH ±1 BEND ±
TWO PLACE DECIMAL ±.01
THREE PLACE DECIMAL ±.005
FOUR PLACE DECIMAL ±.0005

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

	NAME	DATE
DRAWN	CX	4/10/11
CHECKED	CX	4/11/10
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

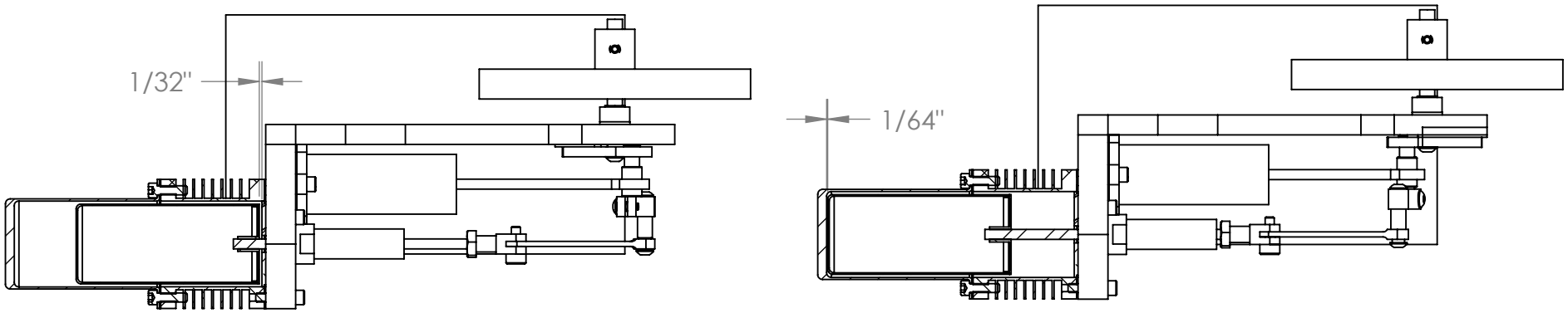
TITLE:

Asm, Stirling Engine

SIZE	DWG. NO.	REV
A	208	B

SCALE: 1:2 WEIGHT: SHEET 9 OF 10

5 4 3 2 1



Note1: Adjust length of Displacer Rod (DWG 23) together with throw of Return Crank (DWG 14) to give about 1/64" clearance at hot end of chamber & 1/32" clearance at cold end.

Note2: Place a few drops of light spindle oil to Piston (DWG 7) & Displacer Rod (DWG 23). Apply a small torch flame to the Air Chamber (DWG 20) & then give it a flick in the forward direction (i.e. that in which the displacer proceeds the piston).

NEXT ASSY	USED ON	
APPLICATION		DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64
ANGULAR: MACH ±1 BEND ±
TWO PLACE DECIMAL ±.01
THREE PLACE DECIMAL ±.005
FOUR PLACE DECIMAL ±.0005

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

	NAME	DATE
DRAWN	CX	4/10/10
CHECKED	CX	4/11/10
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

TITLE:

Asm, Air Chamber Clearances

SIZE	DWG. NO.	REV
A	209	A

SCALE: 1:2 | WEIGHT: | SHEET 10 OF 10

5 4 3 2 1