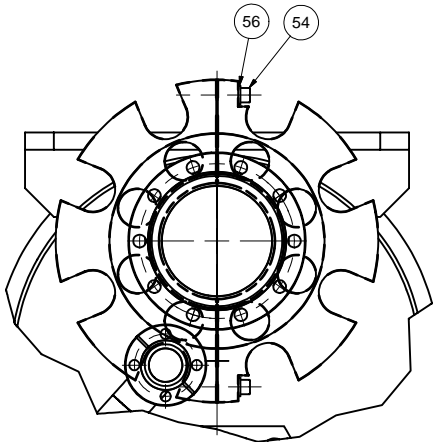
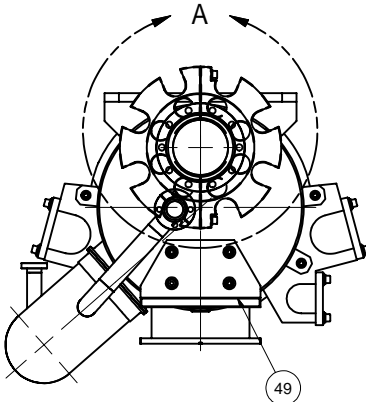


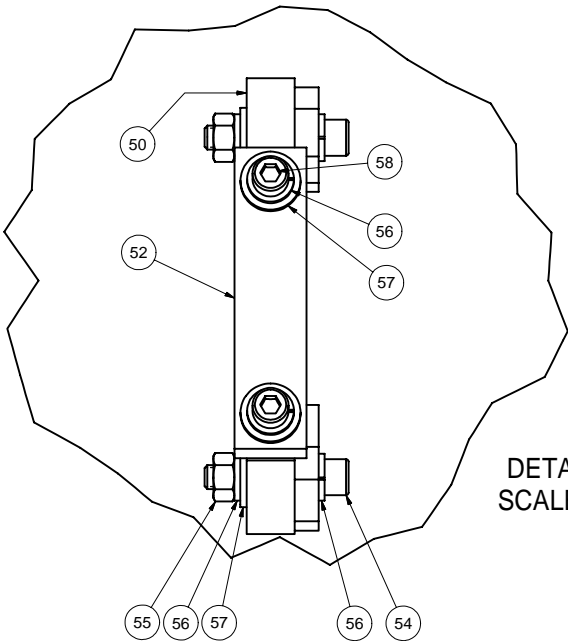
REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.
A		Updated view to show addition of holes in item 48.	9/14/07	TIO



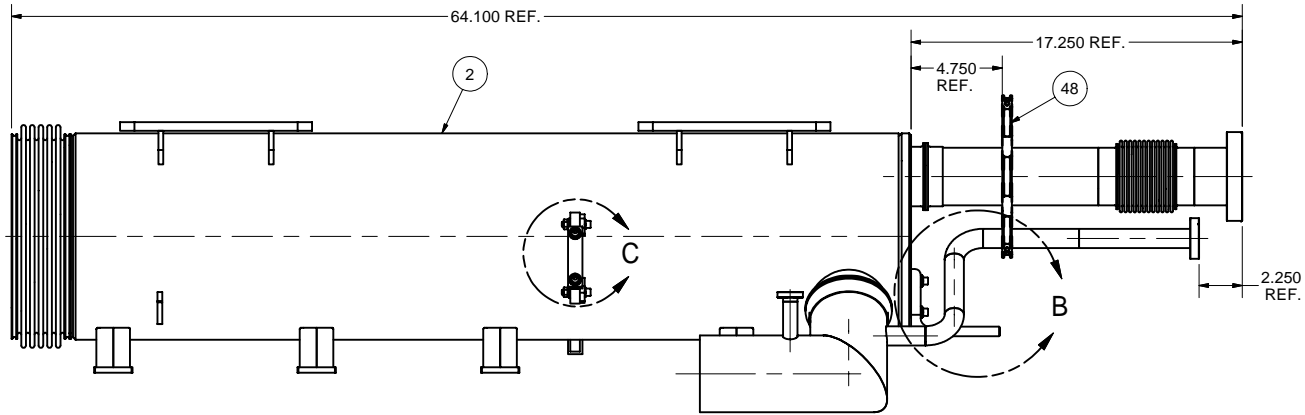
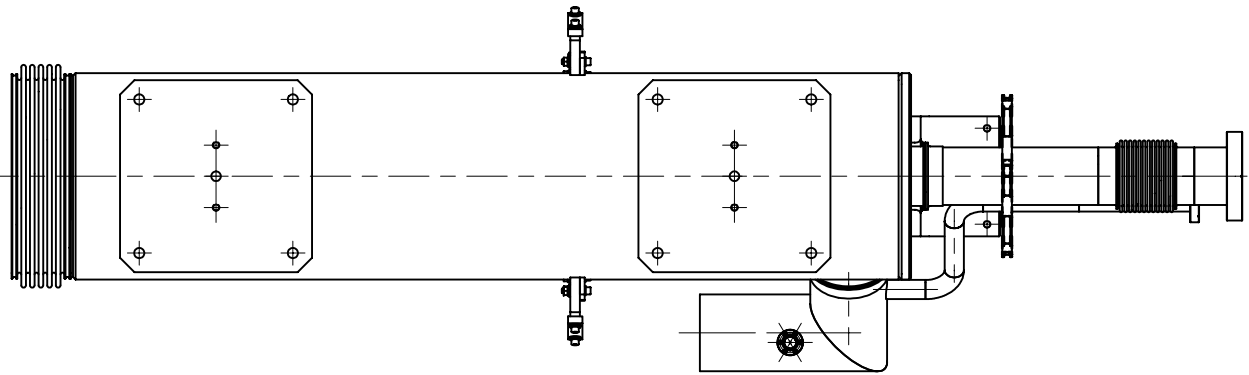
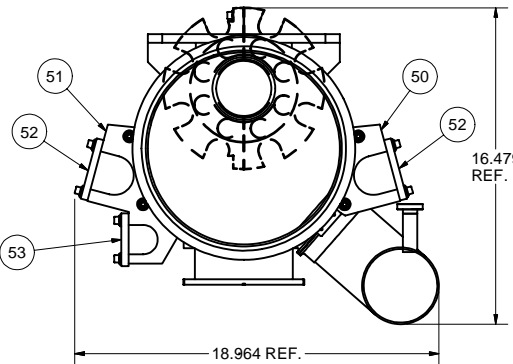
DETAIL A  
SCALE 1:2.5



DETAIL B  
SCALE 1:2.5

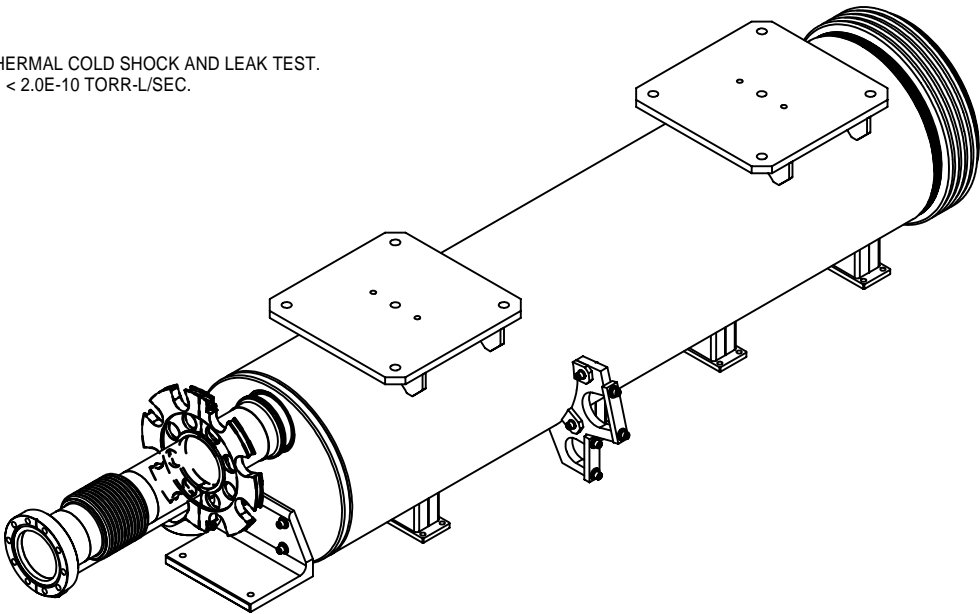
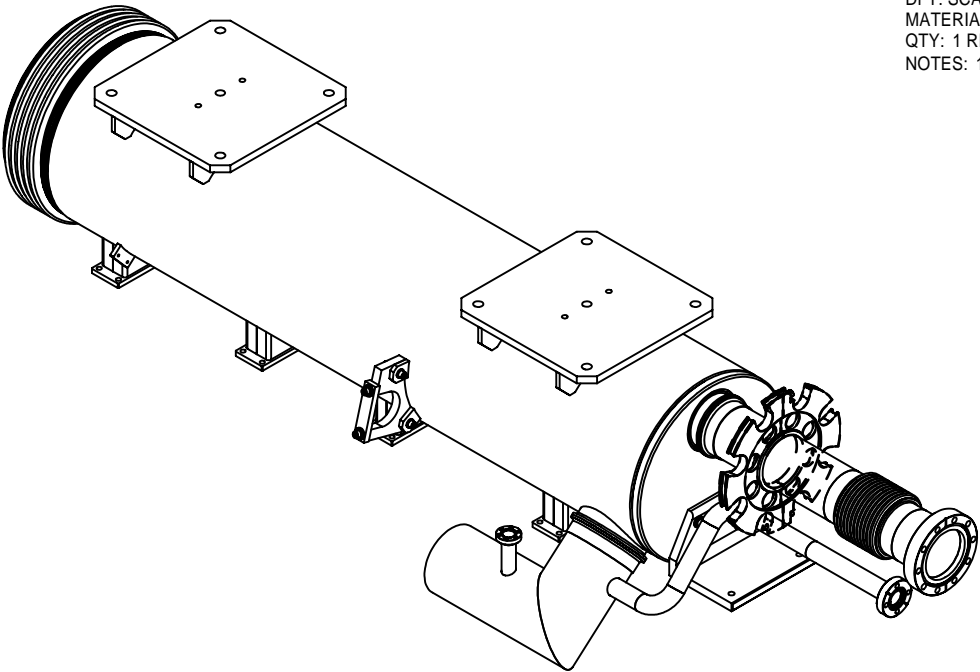


DETAIL C  
SCALE 1:1



1 HELIUM GAS RETURN PIPE, EXIT SECTION (BExS), ASSEMBLY



FILE NAME: 7102-052  
SHEET NO.: 1  
DFT. SCALE: 1:5  
MATERIAL: AS NOTED  
QTY: 1 REQ'D  
NOTES: 1. MAKE LN THERMAL COLD SHOCK AND LEAK TEST.  
LEAK RATE: < 2.0E-10 TORR-L/SEC.



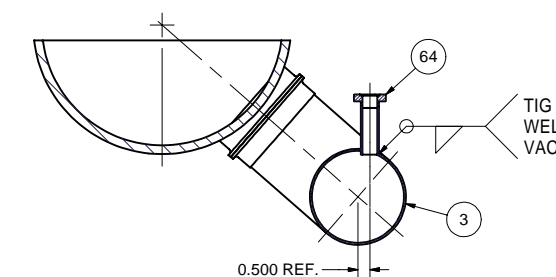
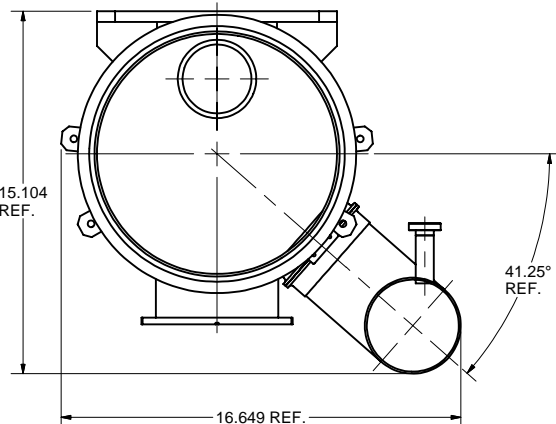
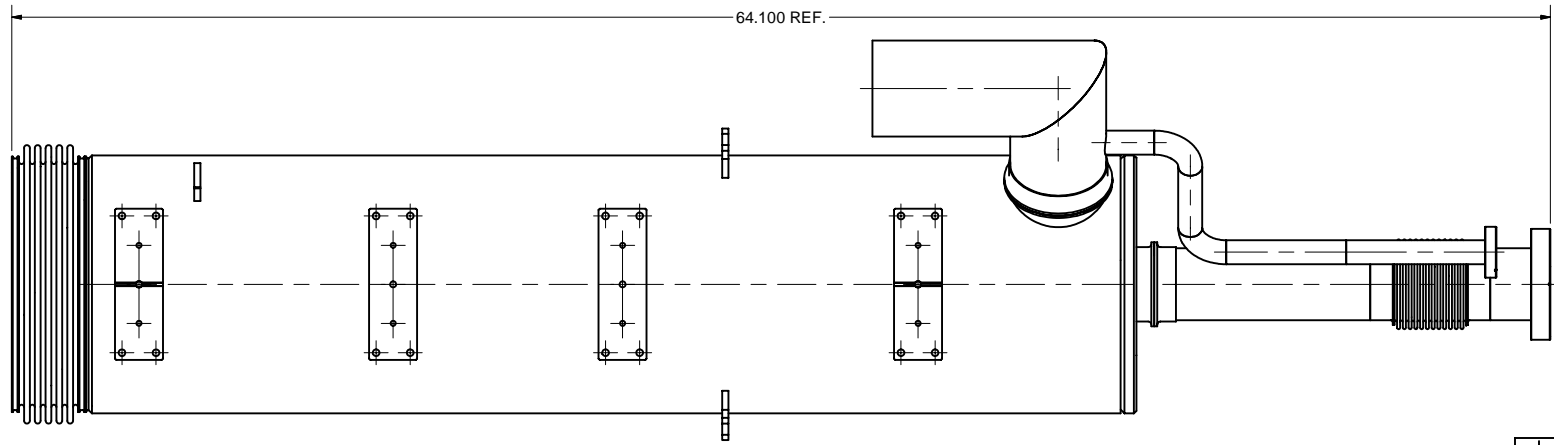
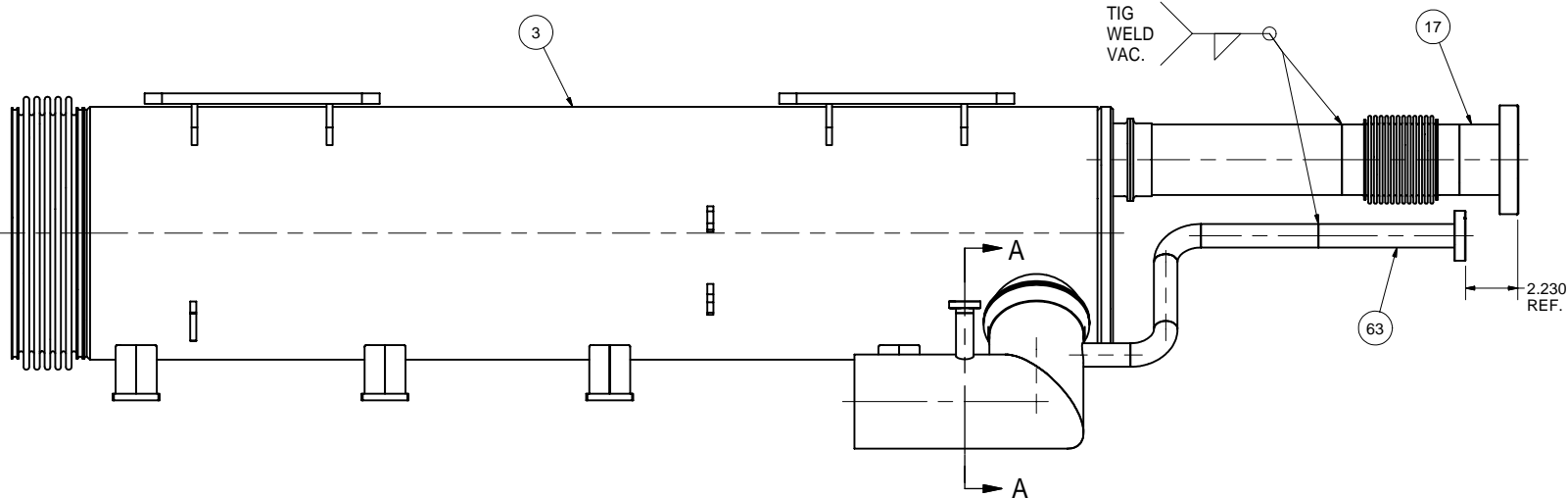
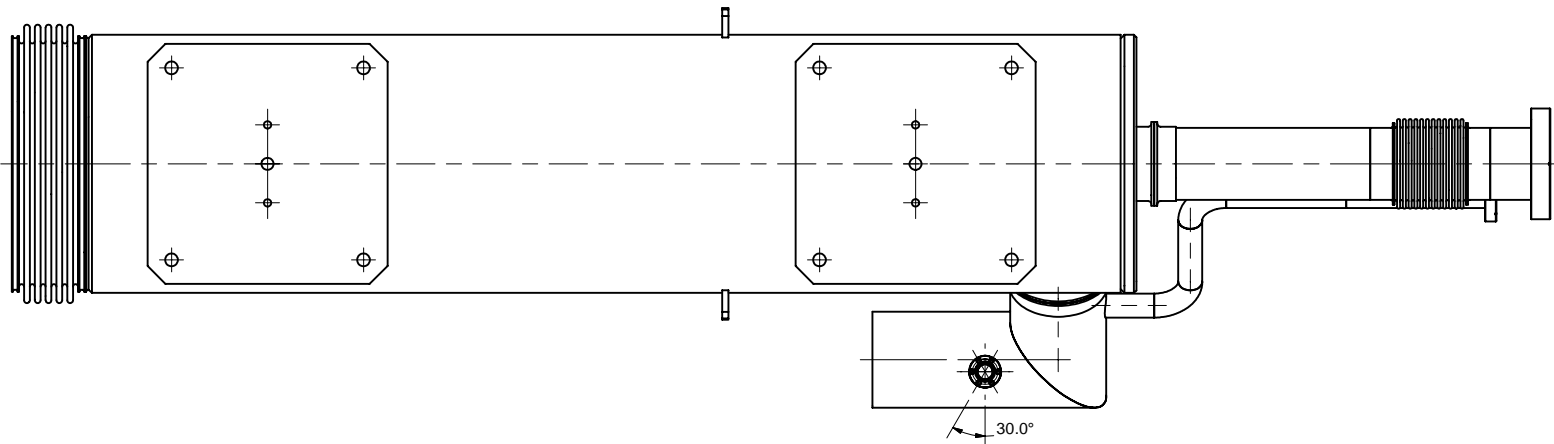
FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

Release of final PO version for Meyer Tool - June 19, 2007.

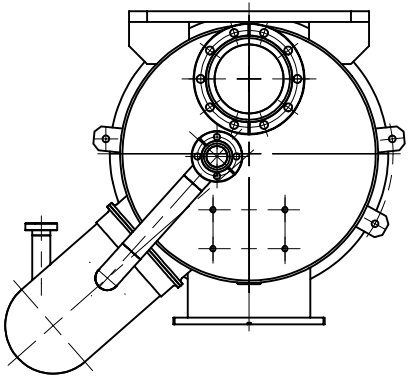
58	-	1/4-20 x 7/8 Sock. Head Cap Screw	10			316 St. Steel	
57	-	1/4 Washer	14			316 St. Steel	
56	-	1/4 Spring Lock Washer	20			316 St. Steel	
55	-	1/4-20 Hex Nut	4			Silicon Bronze	
54	-	1/4-20 x 1-1/4 Socket Head Cap Screw	6			316 St. Steel	
53	7102-050 (SH. 13)	WARM-UP TUBE CLAMP	1				
52	7102-050 (SH. 13)	5 K TUBE CLAMP	2				
51	7102-050 (SH. 13)	5 K TUBE BRACKET RIGHT	1				
50	7102-050 (SH. 13)	5 K TUBE BRACKET LEFT	1				
49	7102-052 (SH. 12)	GATE VALVE BRACKET	1				
48	7102-052 (SH. 12)	CRYOTUBES SUPPORT RING	1				
2	7102-052 (SH. 2)	HGRP BEXS WELDMENT III	1				
1	7102-052 (SH. 1)	HELIUM GAS RETURN PIPE, Exit Section (BExS), ASM	X				

		ITEM	DWG. NO.		DESCRIPTION			G1	G2	G3	REMARKS		REV.	
								QUANTITY						
D	PRINT DISTR.	PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw												
7102-052 SH. NO. 1 OF 13	CR-1	UNLESS OTHERWISE SPECIFIED:		<div><div><div><div>CORNELL UNIVERSITY</div><div></div><div>LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS</div></div><div>CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div></div></div>										
		DIMENSIONS ARE IN INCHES; TOLERANCES ON: .0 ± .02 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓												
		ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section Assembly												
A	REV.	CHECKED BY: VM		DRAWN BY		DRAWN FOR		DATE		SCALE		D	7102-052 SH. NO. 1 OF 13	REV. A
		APPROVED BY: ML		RHE/Di		M.Liepe		11/1/2006						

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



SECTION A-A








2 HGRP BExS WELDMENT III

FILE NAME: 7102-052  
SHEET NO.: 2  
DFT. SCALE: 1:4  
MATERIAL: AS NOTED  
QTY: 1 REQ'D  
NOTES:

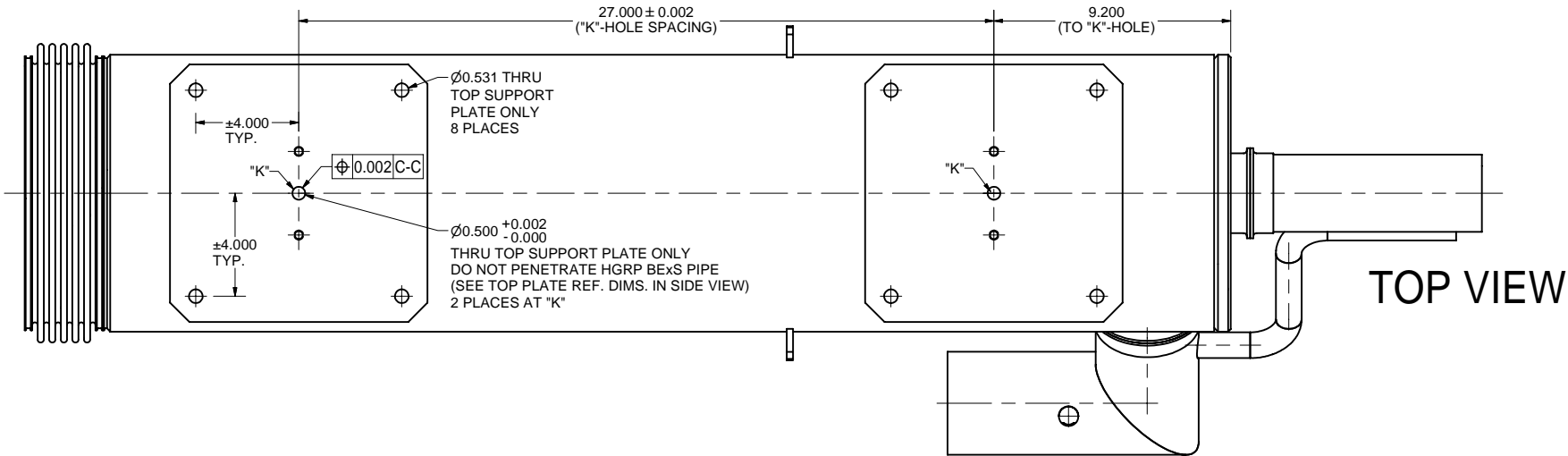
Release of final PO version for Meyer Tool - June 19, 2007.

64	7102-050 (SH. 11)	He LEVEL SENSOR TUBE SUB-ASM	1					
63	7102-052 (SH. 11)	2 K He TUBE, SUB-ASM	1					
17	7102-052 (SH. 8)	3" I.D. BELLWS TUBE, SUB-ASM	1					
3	7102-052 (SH. 3)	HGRP BExS WELDMENT II (MACHINING)	1					
2	7102-052 (SH. 2)	HGRP BExS WELDMENT III	X					

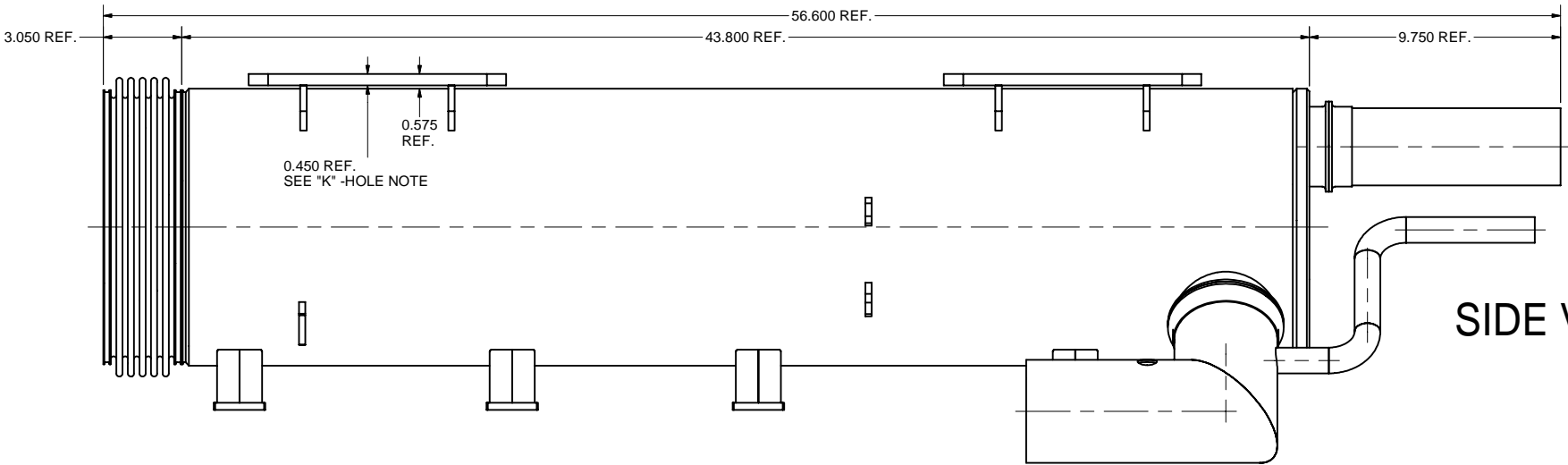
		ITEM	DWG. NO.	DESCRIPTION			G1	G2	G3	REMARKS	REV.		
					QUANTITY								
	PRINT DISTR.	PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw											
	7102-052 SH. NO. 2 OF 13	CR-1	UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .02 .00 ± .010 .000 ± .005 FRACTIONS: 1/32 ANGLES: ±0.5° ALL SURFACES 	CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853   LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS									
ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section HGRP BExS Weldment III													
REV.	CHECKED BY: VM		DRAWN BY		DRAWN FOR		DATE		SCALE			7102-052 SH. NO. 2 OF 13	REV.
	APPROVED BY: ML		RHE/Di		M.Liepe		11/1/2006						

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ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

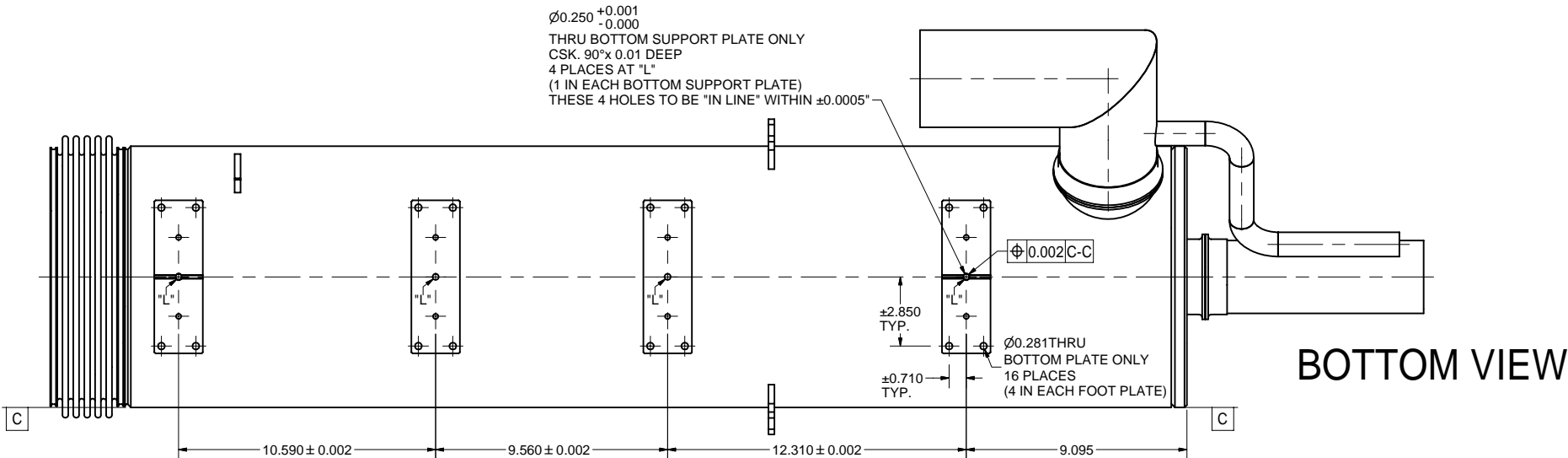
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



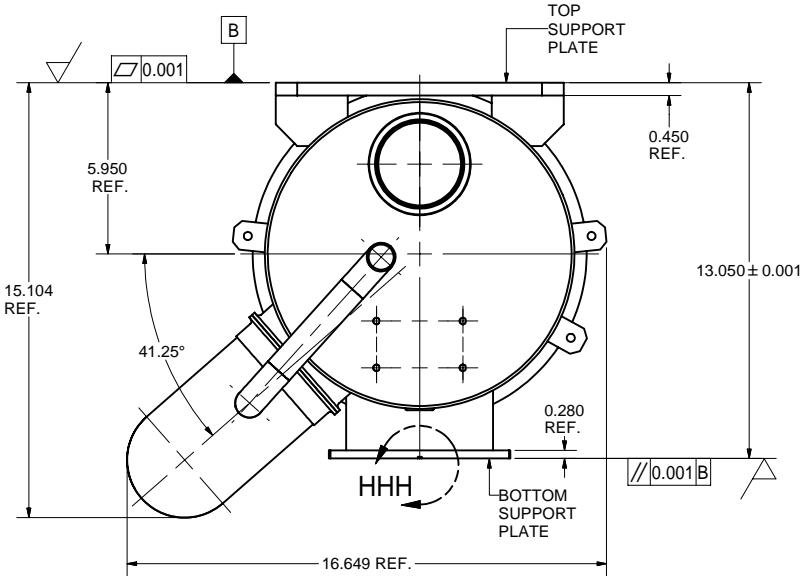
TOP VIEW



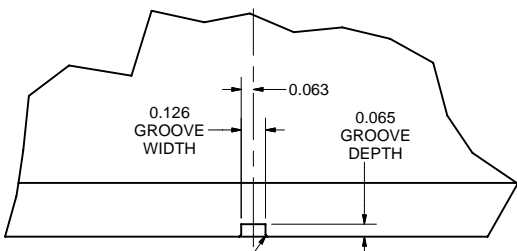
SIDE VIEW



BOTTOM VIEW



FRONT VIEW



0.01x45° CHAMFER  
2 PLACES  
(LENGTH OF GROOVE)  
TYP.

DETAIL HHH  
SCALE 2 : 1

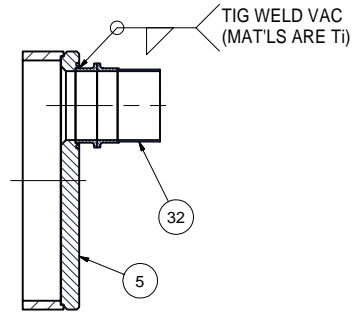
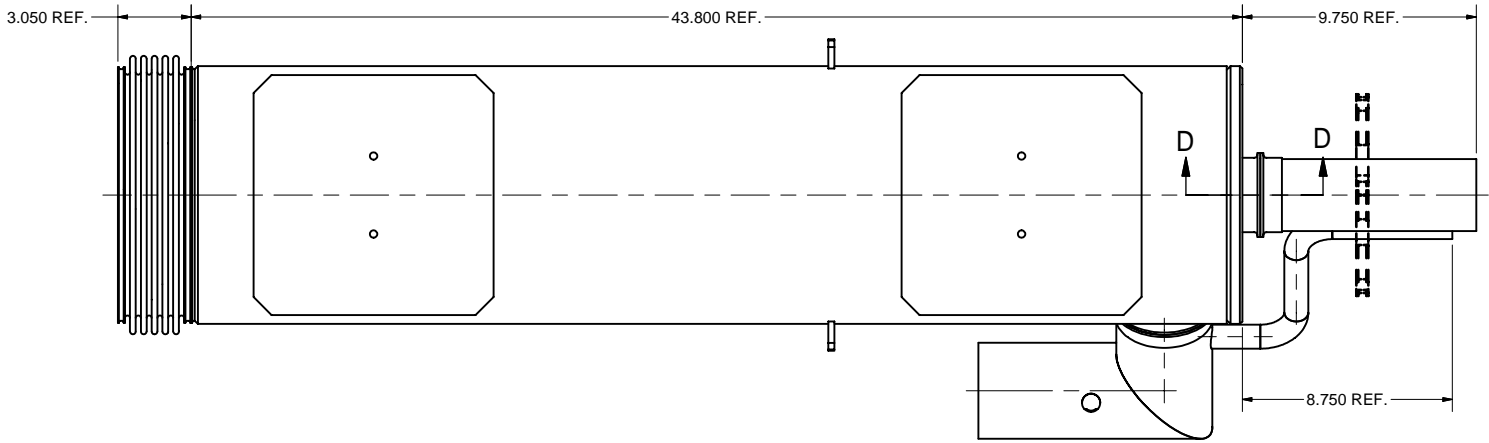
NOTE: 0.126 WD. GROOVE IS CUT ONLY IN  
TWO BOTTOM SUPPORT PLATES.  
SEE BOTTOM SIDE VIEW

3 HGRP BExS WELDMENT II (MACHINING)

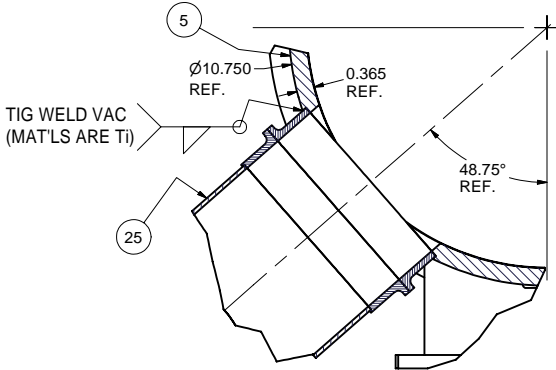
- FILE NAME: 7102-052  
SHEET NO.: 3  
DFT. SCALE: 0.3:1  
MATERIAL: MAKE FROM ITEM 4. (SEE NEXT SHEET)  
QTY: 1 REQ'D  
NOTES: 1. REMOVE ITEM 48. HEAT TREAT OR VIBRATE TO RELIEVE STRESS BEFORE FINAL MACHINING.  
2. MACHINE SURFACES OF TOP AND BOTTOM SUPPORT PLATES (SEE FRONT VIEW).  
3. MACHINE HOLES IN TOP SUPPORT PLATES (SEE TOP SIDE VIEW).  
4. MACHINE GROOVES AND HOLES IN BOTTOM SUPPORT PLATES (SEE DETAIL-HHH AND BOTTOM SIDE VIEW).

FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

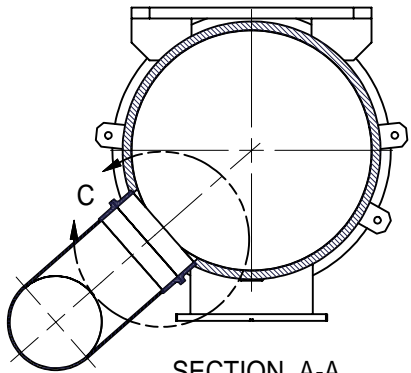
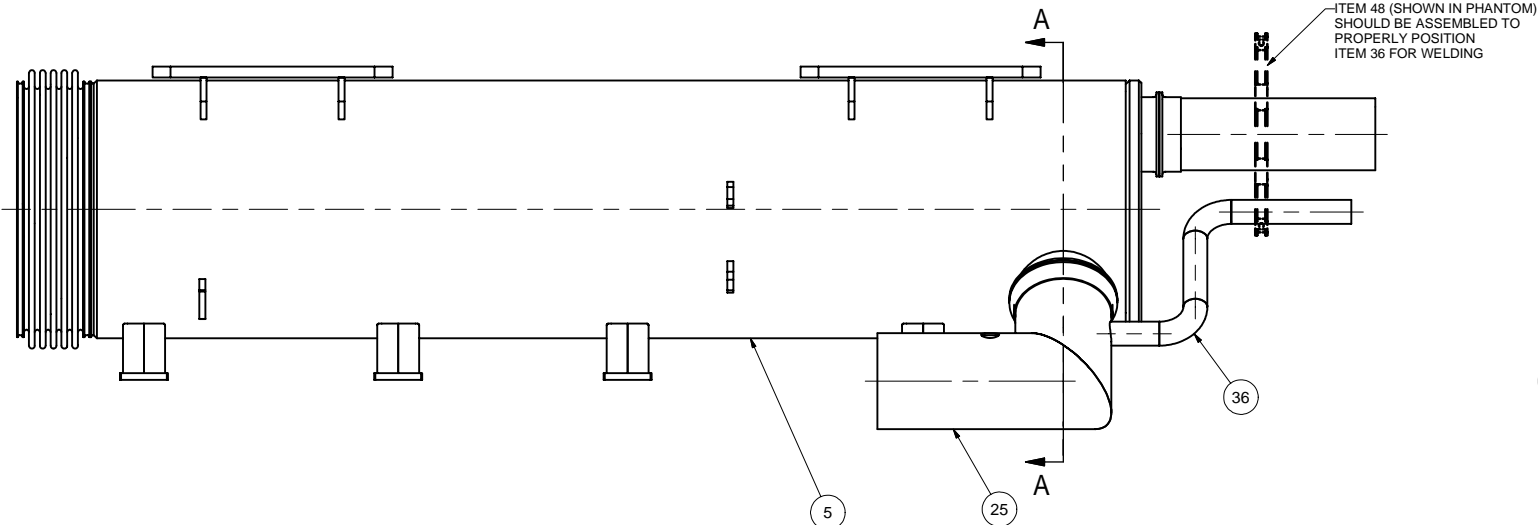
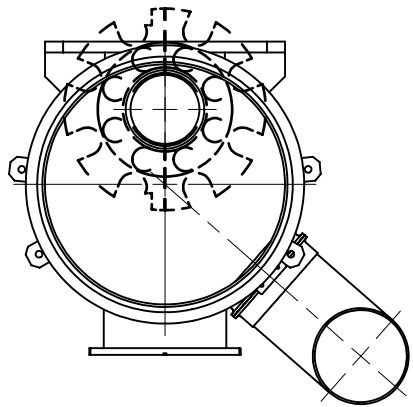
Release of final PO version for Meyer Tool - June 19, 2007.									
ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.	PRINT	DISTR.
7102-052	7102-052	ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section HGRP Weldment II (Machining)							
CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: 0.0 ± 0.02 0.00 ± 0.010 0.000 ± 0.005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES	CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853							
REV.	CHECKED BY: VM APPROVED BY: ML	DRAWN BY: RHE/DI DRAWN FOR: M.Liepe DATE: 11/1/2006 SCALE: D							



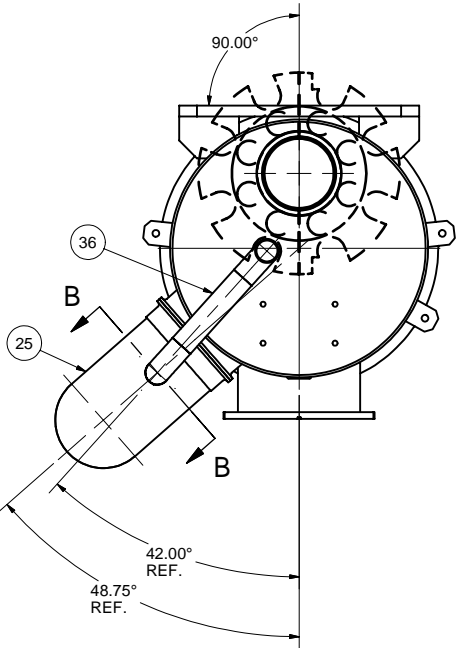
SECTION D-D



DETAIL C  
SCALE 1/2

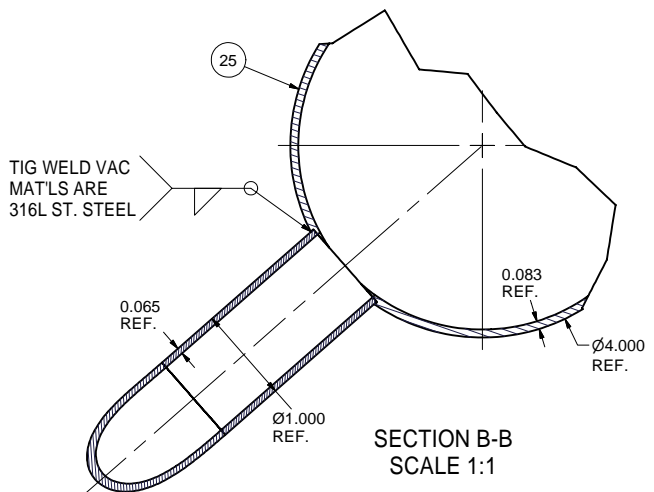


SECTION A-A



4 HGRP BExS WELDMENT II

FILE NAME: 7102-052  
SHEET NO.: 4  
DFT. SCALE: 1:4  
MATERIAL: AS NOTED  
QTY: 1 REQ'D  
NOTES: 1. ADDITIONAL MACHINING ON PREVIOUS SHEET.  
2. HORIZONTAL TUBE OF PART 25 AND  
ITEM 5 SHOULD BE PARALLEL WITHIN ±0.2°.





SECTION B-B  
SCALE 1:1

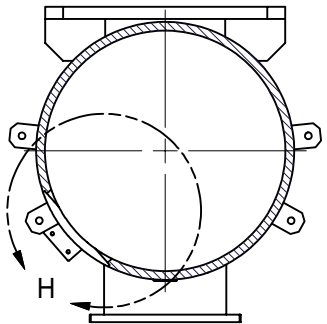
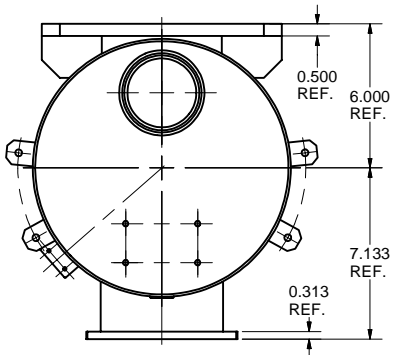
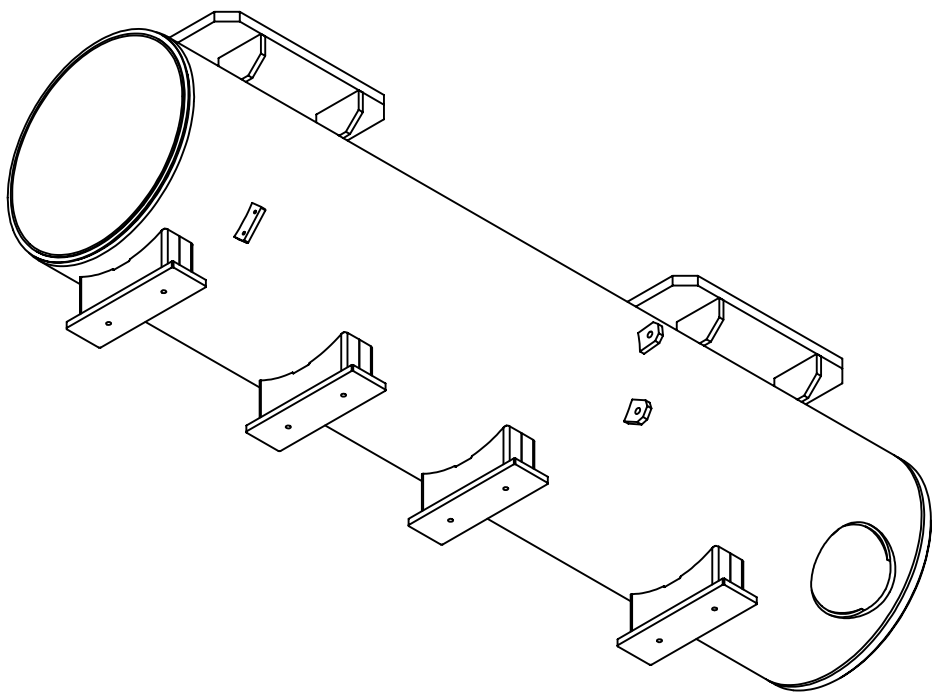
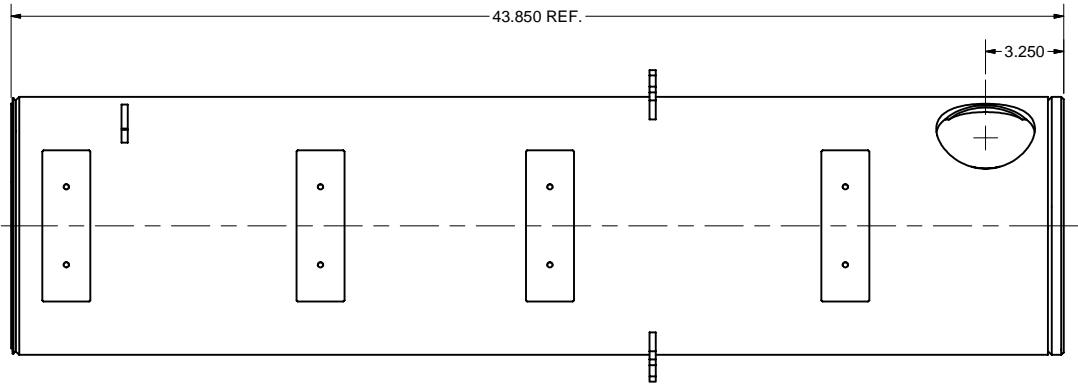
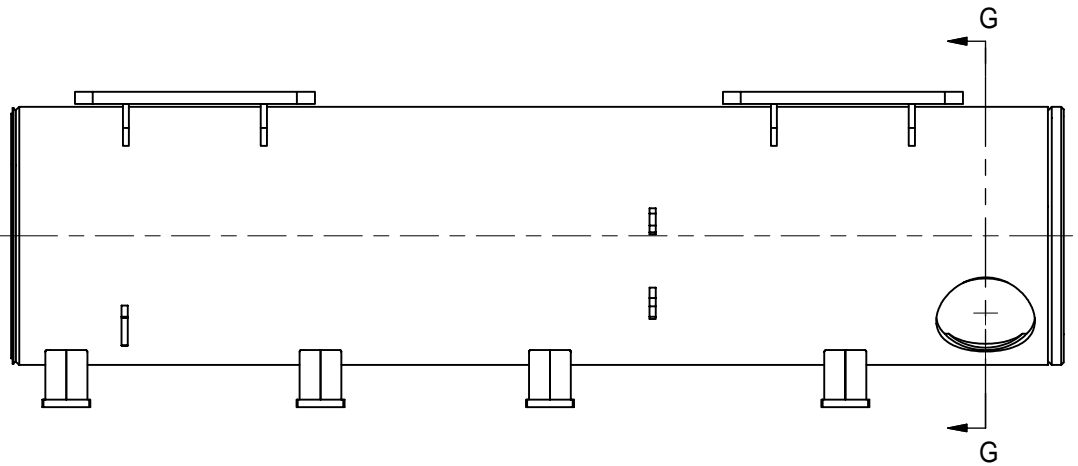
FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

Release of final PO version for Meyer Tool - June 19, 2007.

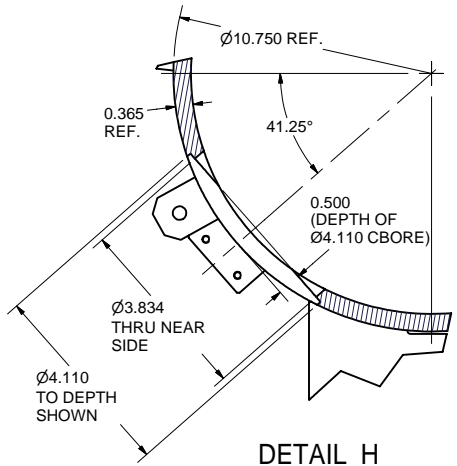
82	7102-050 (SH. 12)	Ti-BELLOWS, SUB-ASM	1					
36	7102-052 (SH. 11)	2 K TUBE SUB-ASM	1					
32	7102-052 (SH. 8)	3" TUBE, SUB-ASM	1					
25	7102-052 (SH. 9)	2 PHASE 2 K ELBOW FRONT, SUB-ASM	1					
5	7102-052 (SH. 5)	HGRP BExS WELDMENT I (MACHINING)	1					
4	7102-052 (SH. 4)	HGRP BExS WELDMENT II	X					

	ITEM	DWG. NO.	DESCRIPTION			G1	G2	G3	REMARKS	REV.	
							QUANTITY				
<b>D</b>	PRINT DISTR.	PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw									
SH. NO. 4 OF 13	7102-052	CR-1	UNLESS OTHERWISE SPECIFIED:		<div><div>CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div></div>						
			DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓								
					ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section HGRP BEsS Weldment II						
REV. A	CHECKED BY: VM APPROVED BY: ML	DRAWN BY RHE/Di		DRAWN FOR M.Liepe		DATE 11/1/2006		SCALE	<b>D</b>	7102-052 SH. NO. 4 OF 13	REV. A

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



SECTION G-G




DETAIL H  
SCALE 1 / 2

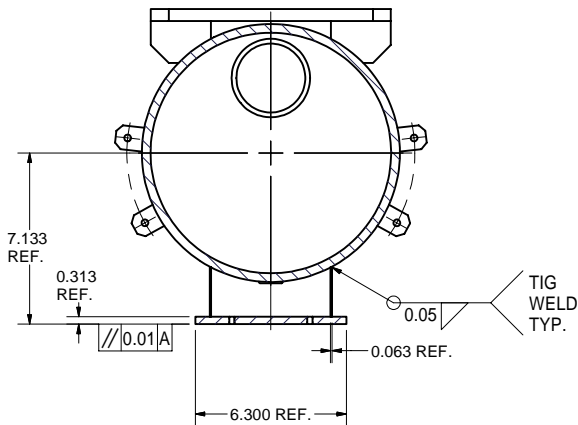
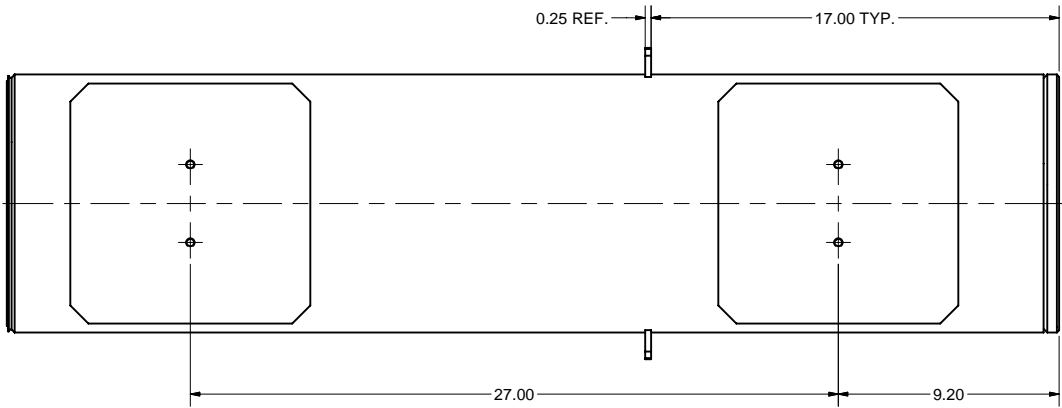
5 HGRP BExS WELDMENT I (MACHINING)  
FILE NAME: 7102-052  
SHEET NO.: 5  
DFT. SCALE: 1:4  
MATERIAL: AS NOTED  
QTY: 1 REQ'D  
NOTES: 1. MAKE FROM ITEM 6. (SEE NEXT SHEET)

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ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

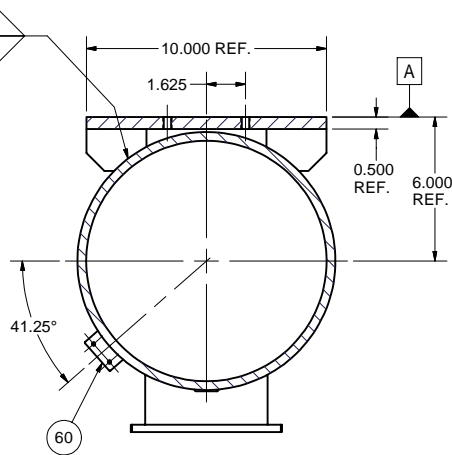
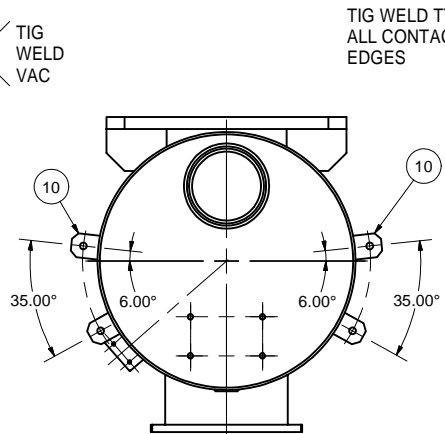
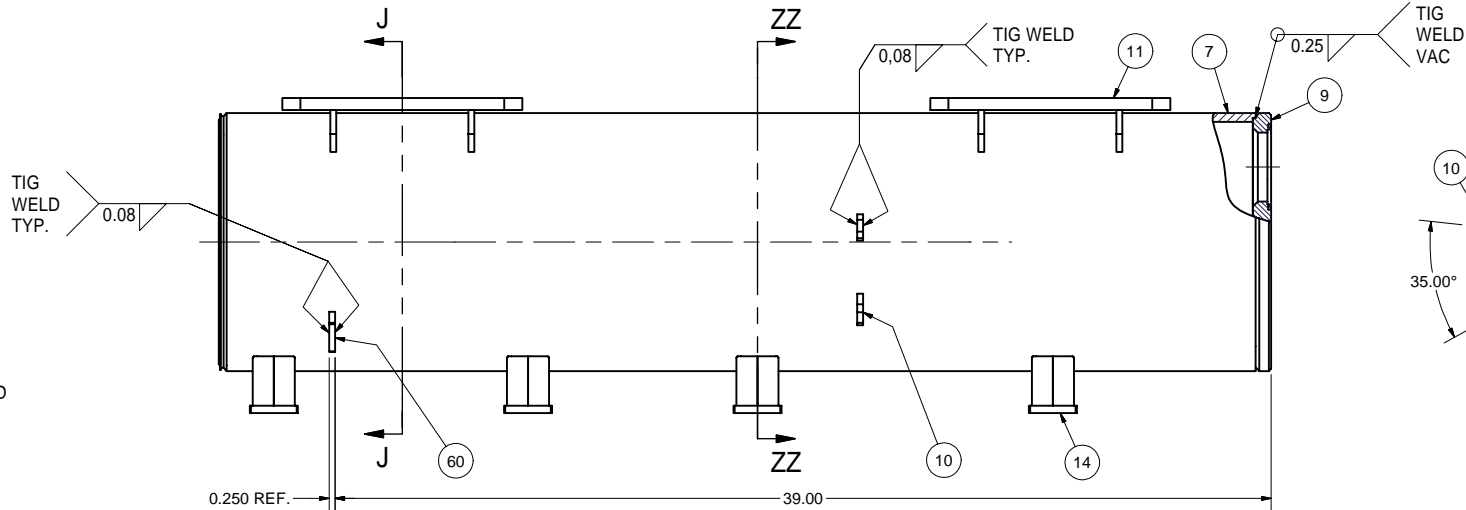
Release of final PO version for Meyer Tool - June 19, 2007.

	ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
				QUANTITY				
PRINT DISTR.	PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw							
7102-052 SH. NO. 5 OF 13	CR-1	UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓	CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853					
			ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section HGRP BExS Weldment I (Machining)					
			DRAWN BY RHE/Di					
REV.	CHECKED BY: VM	APPROVED BY: ML	DRAWN FOR M.Liepe	DATE 11/1/2006	SCALE D	7102-052 SH. NO. 5 OF 13		REV.

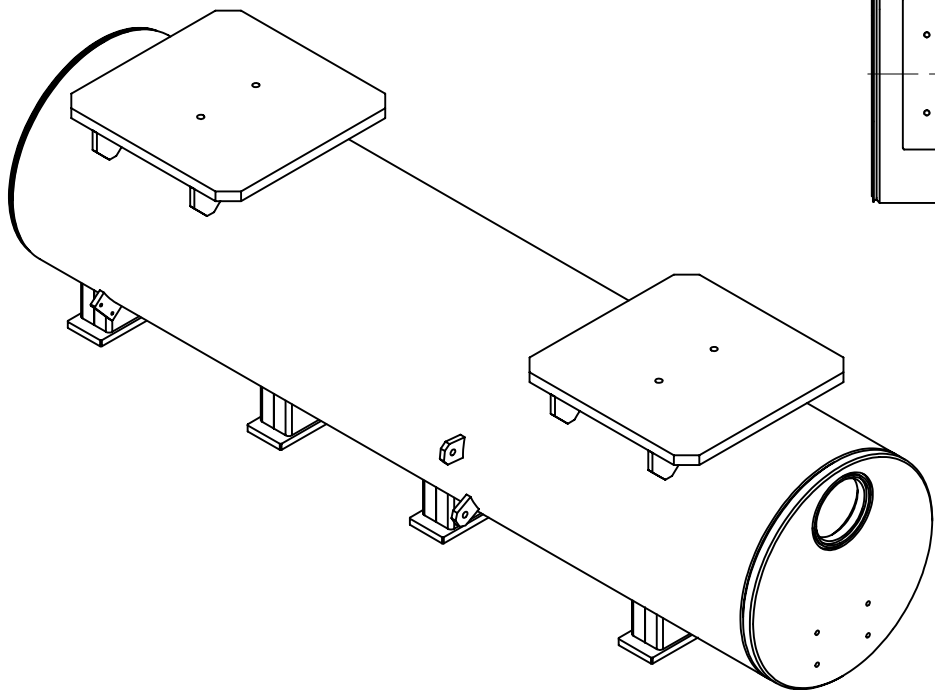
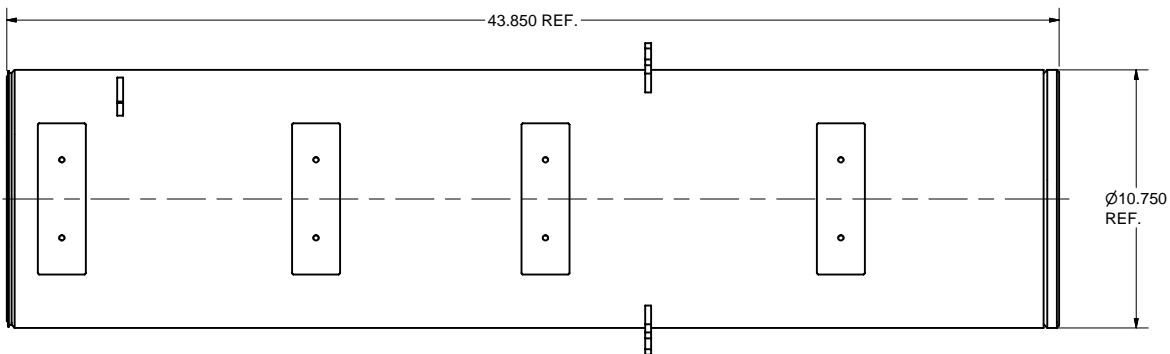
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



SECTION ZZ-ZZ



SECTION J-J




6 HGRP BExS WELDMENT I (PRE-MACHINING)

FILE NAME: 7102-052  
SHEET NO.: 6  
DFT. SCALE: 1:4  
MATERIAL: AS NOTED  
QTY: 1 REQ'D.  
NOTES: SEE PREVIOUS SHEET FOR  
ADDITIONAL MACHINING.

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ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

Release of final PO version for Meyer Tool - June 19, 2007.

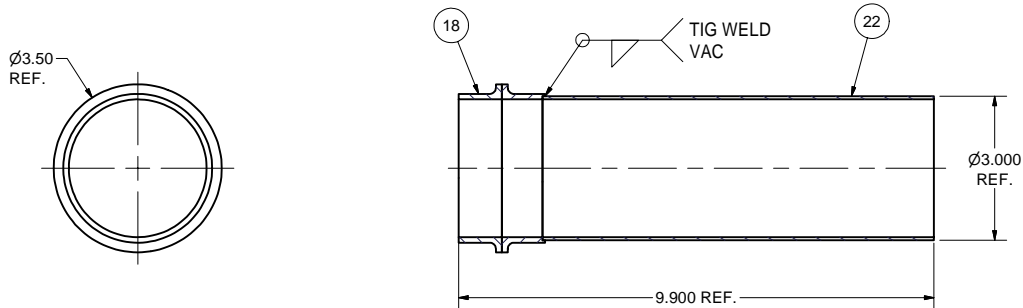
60	7102-050 (SH. 11)	2-PHASE TUBE SUPPORT TAB	1					
14	7102-050 (SH. 8)	BOTTOM SUPPORT, SUB-ASM	4					
11	7102-050 (SH. 8)	TOP SUPPORT PLATE, SUB-ASM	2					
10	7102-050 (SH. 7)	5 K TUBE SUPPORT PLATE	4					
9	7102-052 (SH. 7)	HGRP ENDPLATE II	1					
7	7102-052 (SH. 7)	HGRP BExS PIPE	1					
6	7102-052 (SH. 6)	HGRP BExS WELDMENT I (PRE-MACHINING)	X					

		ITEM	DWG. NO.	DESCRIPTION			G1	G2	G3	REMARKS	REV.
					QUANTITY						
D	PRINT DISTR.	PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw									
	7102-052 SH. NO. 6 OF 13	CR-1	UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES; TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓	CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853							
ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section HGRP BExS Weldment I (Pre-Machining)											
REV.		CHECKED BY: VM	DRAWN BY	DRAWN FOR	DATE	SCALE	D	7102-052 SH. NO. 6 OF 13			
		APPROVED BY: ML	RHE/Di	M.Liepe	11/1/2006						





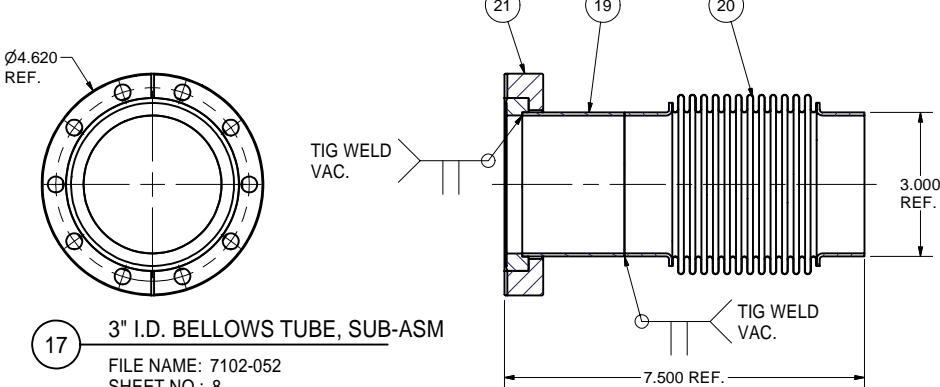
REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.



32 3" TUBE SUB-ASM

FILE NAME: 7102-052  
SHEET NO.: 8  
DFT. SCALE: 1:2  
MATERIAL:  
QTY: 1 PER ASSEMBLY  
NOTES:

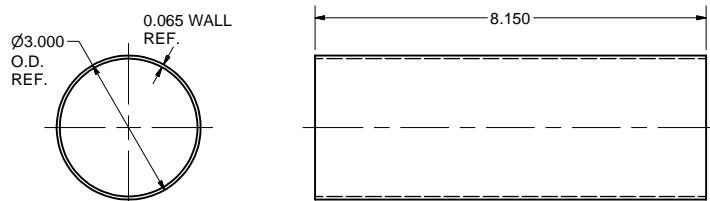
22	7102-052 (SH. 8)	3" TUBE -II			1		
18	7102-052 (SH. 8)	Ti-STN STL 3" TRANSITION			1		
32	7102-052 (SH. 8)	3" TUBE, SUB-ASM			X		



17 3" I.D. BELLOWS TUBE, SUB-ASM

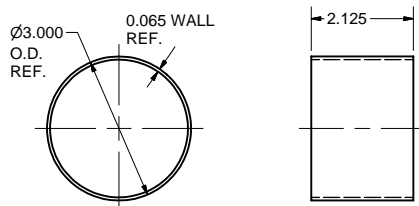
FILE NAME: 7102-052  
SHEET NO.: 8  
DFT. SCALE: 1:1  
MATERIAL: AS NOTED  
QTY: 1 PER ASM  
NOTES:

17	7102-052 (SH. 8)	3" I.D. BELLOWS TUBE, SUB-ASM	X				
20	7102-052 (SH. 8)	3" I.D. BELLOWS, SUB-ASM	1			MDC's FBW-6536	
19	7102-052 (SH. 8)	3" TUBE -I	1				
21	PUR.	4-5/8" CF Rotatable 3" Tube Flange	1			VARIAN'S F0462-0300-RC6 OR EQUIV.	



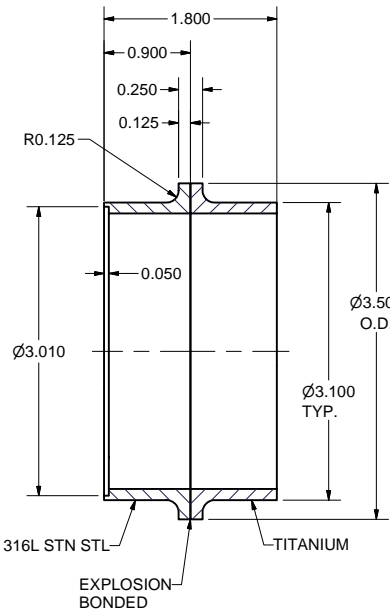
22 3" TUBE - II

FILE NAME: 7102-052  
SHEET NO.: 8  
DFT. SCALE: 1:2  
MATERIAL: 3" O.D. x 0.065 WALL UHV GRADE 316L STN STL TUBE  
QTY: 1 PER SUB-ASM  
NOTES:



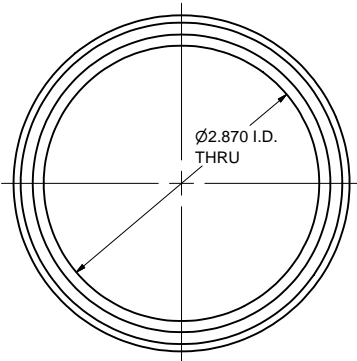
19 3" TUBE - I

FILE NAME: 7102-052  
SHEET NO.: 8  
DFT. SCALE: 1:2  
MATERIAL: 3" O.D. x 0.065 WALL UHV GRADE 316L STN STL TUBE  
QTY: 1 PER SUB-ASM  
NOTES:



18 Ti-STN STL 3.00" TRANSITION

FILE NAME: 7102-052  
SHEET NO.: 8  
DFT. SCALE: 1:1  
MATERIAL: SEE NOTES  
QTY: 1 PER SUB-ASM  
NOTES: USE EXPLOSION BONDED TITANIUM AND 316L STN STL



20 3" I.D. BELLOWS, SUB-ASM

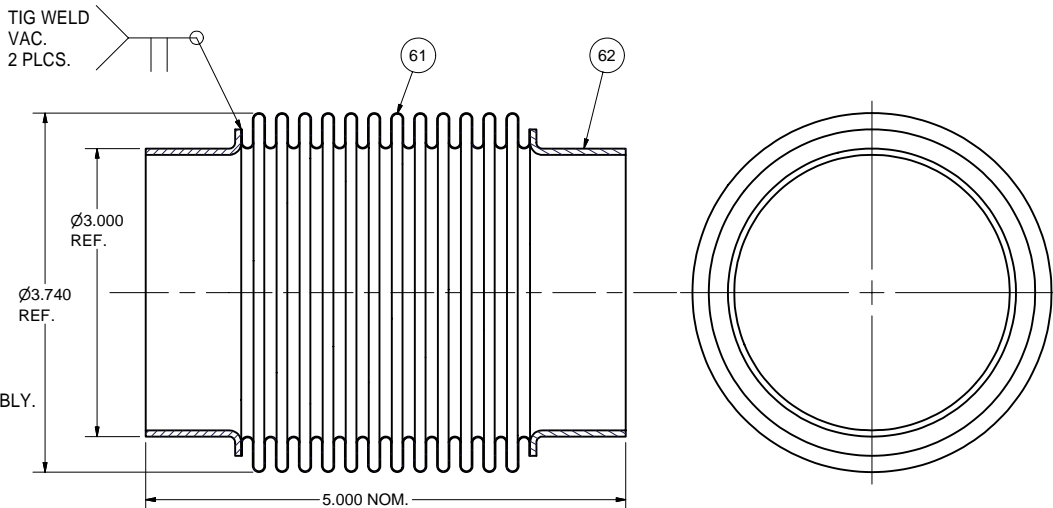
FILE NAME: 7102-052  
SHEET NO.: 8  
DFT. SCALE: 1:1  
MATERIAL:  
QTY: 1 PER SUB-ASM  
NOTES: 1. BELLOWS AND CUFFS CAN BE ORDERED AS FINISHED ASSEMBLY.

OPERATING CONDITIONS:

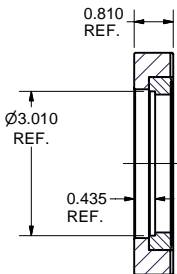
Temperature: 2 K  
Vacuum outside  
Helium gas inside  
Stroke: 10.0 mm (0.4 inch)  
Shift:  $\pm 2.5$  mm ( $\pm 0.1$  inch)  
Maximum temperature: 200 C (473 K)  
Minimum temperature: -265 C (2 K)  
Leak Rate: < 1E-9 mbar x l/sec

DESIGN SPECIFICATION:

Burst Pressure, Internal:  $\geq 30$  psia (2 bar) @ 293 K  
External:  $\geq 22.5$  psia (1.5 bar) @ 293 K  
Working Pressure: > 15 psia (1 bar) @ 293K, 30 mbar @ 2K  
Size:  
O.D.: 3.74 inch (95.0 mm)  
I.D.: 3.00 inch (76.2 mm)  
Wall Thickness: 0.008 inch (0.2 mm)  
Pitch: 0.24 inch (6.1 mm)  
Overall Length: 5.00 inch (127.0 mm)  
Minimum Stroke: +0.30/-0.75 inch (+7.6/-19.1 mm)  
Minimum Lateral Shift:  $\pm 0.15$  inch ( $\pm 3.8$  mm)  
Minimum Cycle Life: 10000

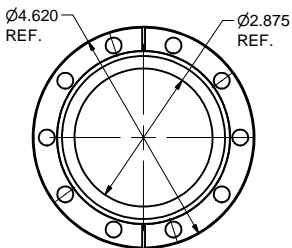


62	7102-052 (SH. 13)	3" I.D. BELLOWS CUFF		2			
61	7102-052 (SH. 13)	3" I.D. BELLOWS		1			
20	7102-052 (SH. 8)	3" I.D. BELLOWS, SUB-ASM	1	X			




21 4 5/8 ROTATABLE CF FLANGE

FILE NAME: 7102-052  
SHEET NO.: 8  
DFT. SCALE: 1:2  
MATERIAL: SEE NOTE 1  
QTY: 1 PER SUB-ASM  
NOTES: 1. MATERIAL - 316LN (OR 316L) ST. STEEL  
VARIAN'S F0462-0300-RC6 OR EQUIV.



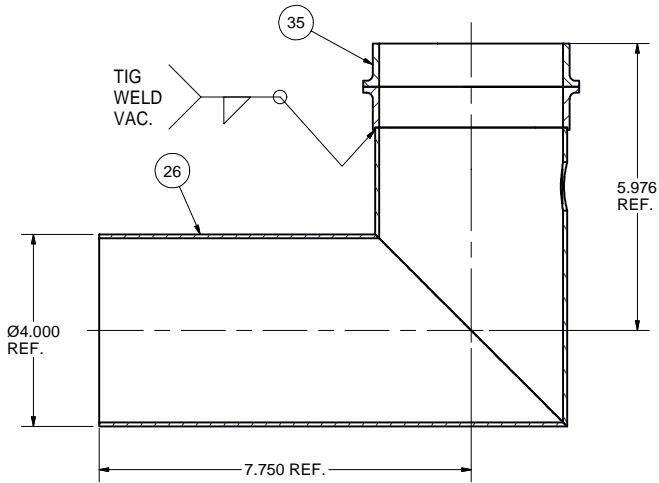
FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

Release of final PO version for Meyer Tool - June 19, 2007.

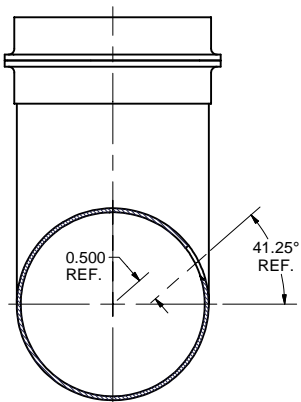
		ITEM	DWG. NO.	DESCRIPTION			G1	G2	G3	REMARKS		REV.
		QUANTITY										
D	PRINT DISTR.	PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw										
7102-052 SH. NO. 8 OF 13	CR-1	UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES; TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓		<div>CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div> <div>ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section 3.00" Bellows Tube, Details and Sub-Asm</div>								
REV.	CHECKED BY: VM APPROVED BY: ML	DRAWN BY: RHE/Di	DRAWN FOR: M.Liepe	DATE: 11/1/2006	SCALE	D	7102-052 SH. NO. 8 OF 13		REV.			



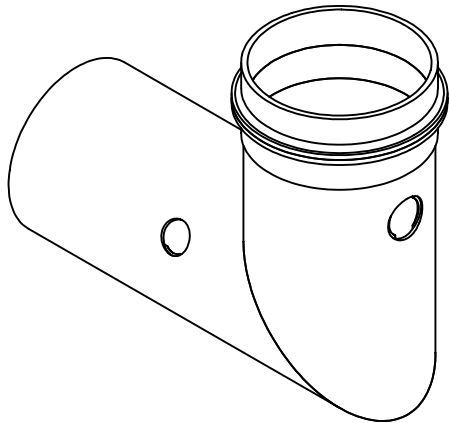
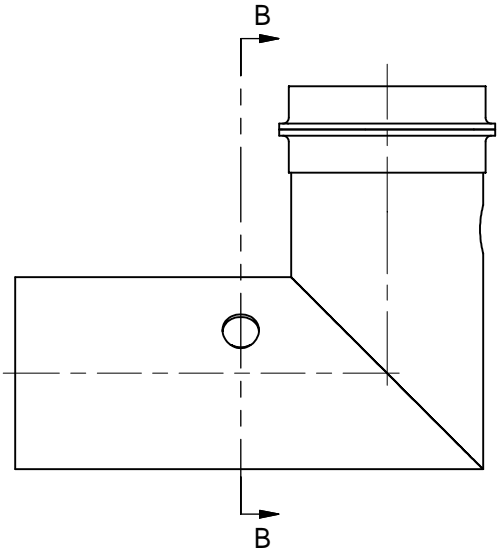
REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.



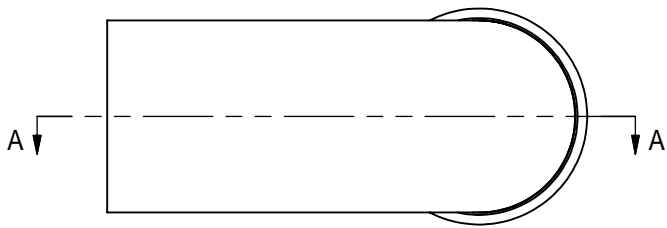
SECTION A-A



SECTION B-B








25 2-PHASE 2 K ELBOW FRONT, SUB-ASM  
FILE NAME: 7102-052  
SHEET NO.: 9  
DFT. SCALE: 1:2  
MATERIAL: AS NOTED  
QTY: 1 PER ASM  
NOTES:



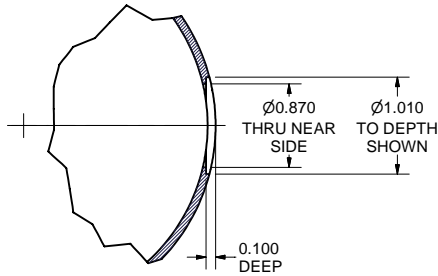
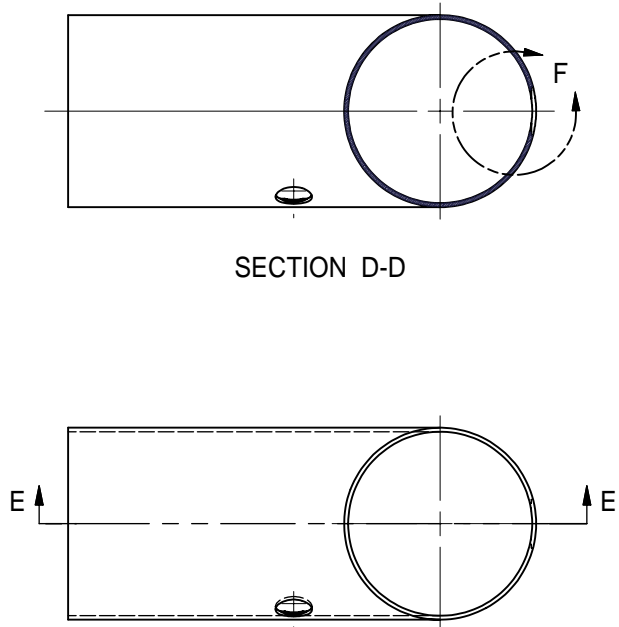
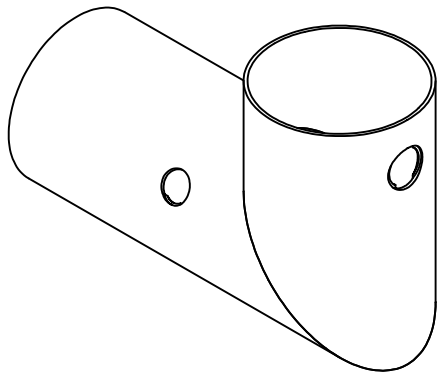
FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

Release of final PO version for Meyer Tool - June 19, 2007.

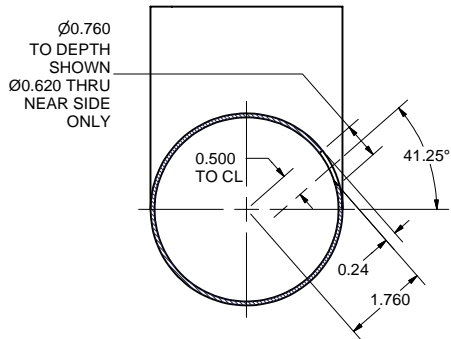
35	7102-050 (SH. 11)	Ti-SST 4" TRANSITION	1				
26	7102-052 (SH. 10)	2 K ELBOW FRONT, SUB-ASM	1				
25	7102-052 (SH. 9)	2-PHASE 2 K ELBOW FRONT, SUB-ASM	X				

		ITEM	DWG. NO.	DESCRIPTION			G1	G2	G3	REMARKS	REV.
					QUANTITY						
	PRINT DISTR.	PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw									
	7102-052 SH. NO. 9 OF 13	CR-1	<div>UNLESS OTHERWISE SPECIFIED:</div> <div>DIMENSIONS ARE IN INCHES; TOLERANCES ON:     .00 ± .02     .00 ± .010     .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES </div>	<div><div>CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div></div> <div>ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section 2 Phase-2K Elbow, Sub-Assembly (Front)</div>							
CHECKED BY: VM				DRAWN BY	DRAWN FOR	DATE	SCALE		7102-052 SH. NO. 9 OF 13		
APPROVED BY: ML	RHE/Di	M.Liepe	11/1/2006								

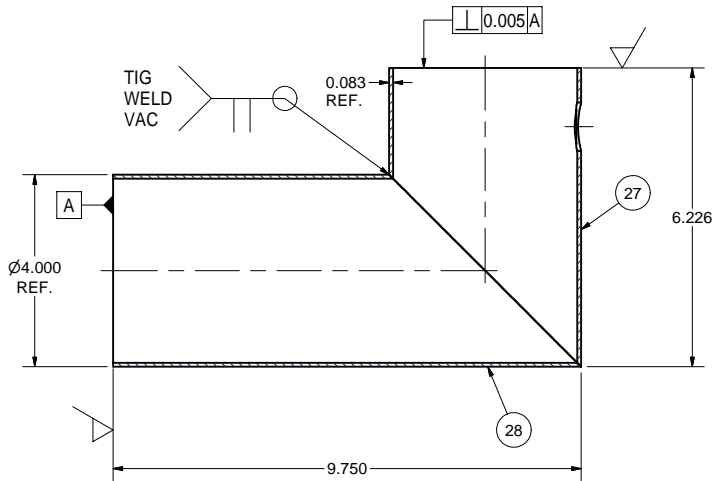
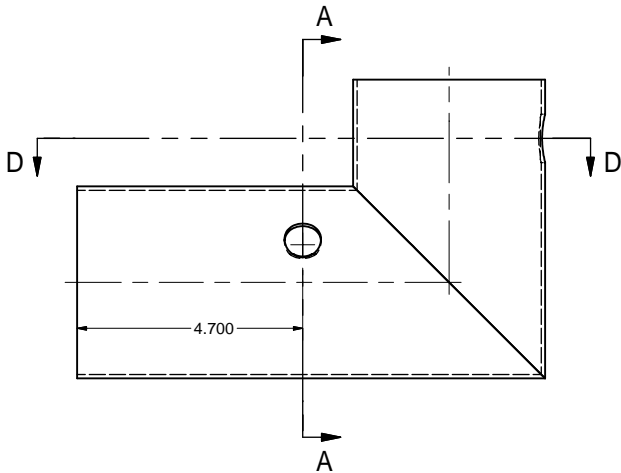
REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.



DETAIL F  
SCALE 1 : 1



SECTION A-A



SECTION E-E

26 2K ELBOW FRONT, SUB-ASM

FILE NAME: 7102-052  
SHEET NO.: 10  
DFT. SCALE: 1:2  
MATERIAL: AS NOTED  
QTY: 1 PER ASM  
NOTES: HOLES TO BE MACHINED  
AFTER WELDING

FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

Release of final PO version for Meyer Tool - June 19, 2007.

28	7102-050 (SH. 10)	ELBOW PIPE II	1				
27	7102-050 (SH. 10)	ELBOW PIPE I	1				
26	7102-052 (SH. 10)	2K ELBOW FRONT, SUB-ASM	X				
ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				



PRINT  
DISTR.

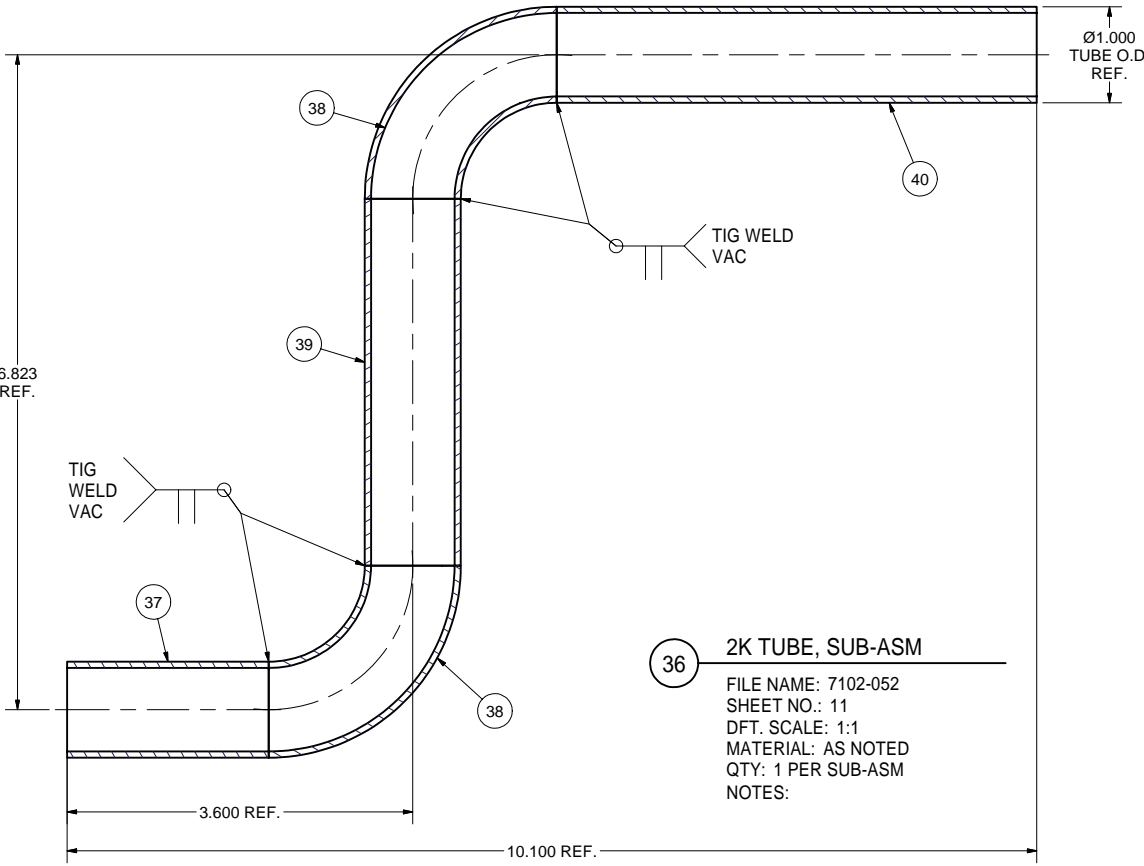
7102-052  
SH. NO. 10 OF 13

REV.

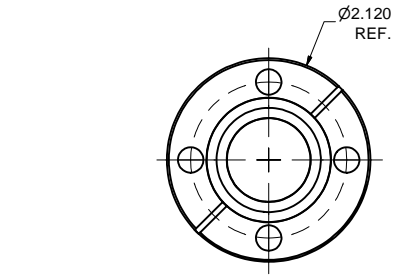
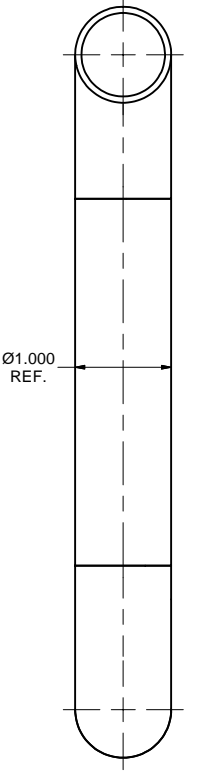
PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓		CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853	
CR-1		ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section 2K Elbow Front, Sub-Assembly		CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853	
CHECKED BY: VM	DRAWN BY: RHE/Di	DRAWN FOR: M.Liepe	DATE: 11/1/2006	SCALE: D	7102-052 SH. NO. 10 OF 13
APPROVED BY: ML					REV.

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.

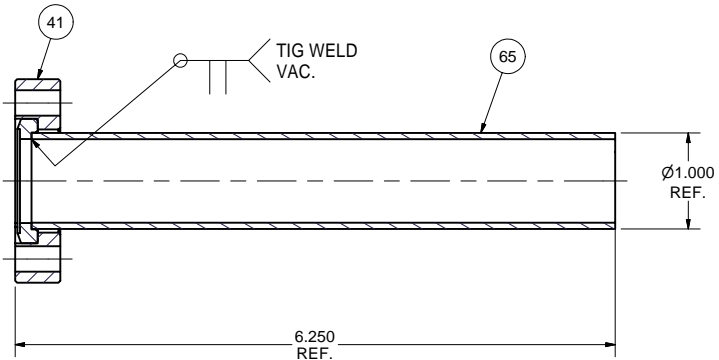
F  
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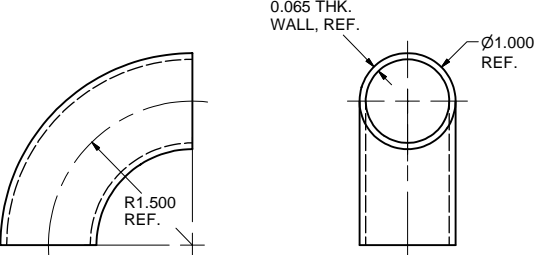
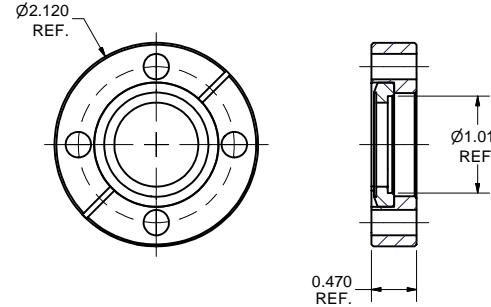
**36 2K TUBE, SUB-ASM**  
FILE NAME: 7102-052  
SHEET NO.: 11  
DFT. SCALE: 1:1  
MATERIAL: AS NOTED  
QTY: 1 PER SUB-ASM  
NOTES:



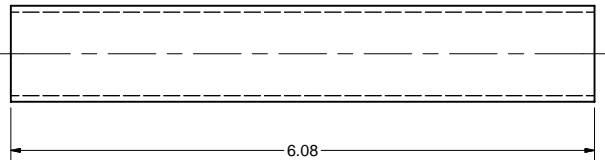
**41 2K TUBE CF ROTATABLE FLANGE**  
FILE NAME: 7102-052  
SHEET NO.: 11  
DFT. SCALE: 1:1  
MATERIAL: SEE NOTE 1  
QTY: 1 REQ'D  
NOTES: 1. MATERIAL - 316LN (OR 316L) ST. STEEL  
VARIAN'S F0212-0100-RC6 OR EQUIV.



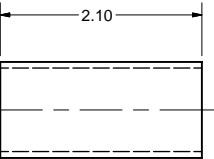
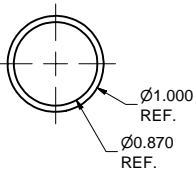
**63 2 K He TUBE SUB-ASM**  
FILE NAME: 7102-052  
SHEET NO.: 11  
DFT. SCALE: 1:1  
MATERIAL:  
QTY: 1 PER ASSEMBLY  
NOTES:



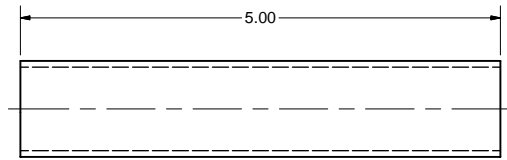
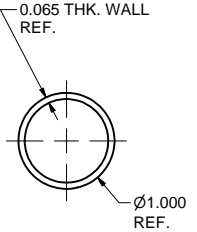
**38 1" TUBE ELBOW**  
FILE NAME: 7102-052  
SHEET NO.: 11  
DFT. SCALE: 1:1  
MATERIAL: SEE NOTE 1  
QTY: 2 PER SUB-ASM  
NOTES: 1. MATERIAL: UHV GRADE 316L ST. STEEL, VARIAN'S WE90100 OR EQUIV.



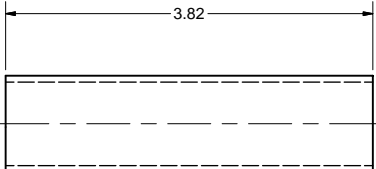
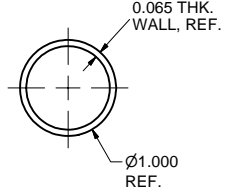
**65 2 K TUBE-IV**  
FILE NAME: 7102-052  
SHEET NO.: 11  
DFT. SCALE: 1:1  
MATERIAL: UHV GRADE 316L STN STL 1.000 O.D. x .065 WALL TUBE  
QTY: 1 PER SUB-ASM  
NOTES:



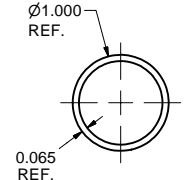
**37 2 K TUBE -I**  
FILE NAME: 7102-052  
SHEET NO.: 11  
DFT. SCALE: 1:1  
MATERIAL: UHV GRADE 316L STN STL 1.000 O.D. x .065 WALL TUBE  
QTY: 1 PER SUB-ASM  
NOTES:



**40 2 K TUBE-III**  
FILE NAME: 7102-052  
SHEET NO.: 11  
DFT. SCALE: 1:1  
MATERIAL: UHV GRADE 316L STN STL 1.000 O.D. x .065 WALL TUBE  
QTY: 1 PER SUB-ASM  
NOTES:



**39 2 K TUBE-II**  
FILE NAME: 7102-052  
SHEET NO.: 11  
DFT. SCALE: 1:1  
MATERIAL: UHV GRADE 316L STN STL 1.000 O.D. x .065 WALL TUBE  
QTY: 1 PER SUB-ASM  
NOTES:



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OR EQUIVALENT APPROVED BY CORNELL LEPP

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41	PUR.	2-1/8" CF Rotatable 1" Tube Flange	1		VARIAN'S F0212-0100-RC6 OR EQUIV.
65	7102-052 (SH. 11)	2 K TUBE -IV	1		
63	7102-052 (SH. 11)	2 K He TUBE, SUB-ASM	X		
40	7102-052 (SH. 11)	2 K TUBE -III	1		
39	7102-052 (SH. 11)	2 K TUBE -II	1		
38	PUR.	1"OD, 90 DEG. ELBOW, 316L S.S.	2		VARIAN'S WE90100 OR EQUIV.
37	7102-052 (SH. 11)	2 K TUBE -I	1		
36	7102-052 (SH. 11)	2K TUBE, SUB-ASM	X		

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				

PRINT  
DISTR.  
7102-052  
SH. NO. 11 OF 13  
REV.

UNLESS OTHERWISE SPECIFIED:  
DIMENSIONS ARE IN INCHES;  
TOLERANCES ON:  
.00 ± .02  
.00 ± .010  
.000 ± .005  
FRACTIONS ± 1/32  
ANGLES ± 0.5°  
ALL SURFACES

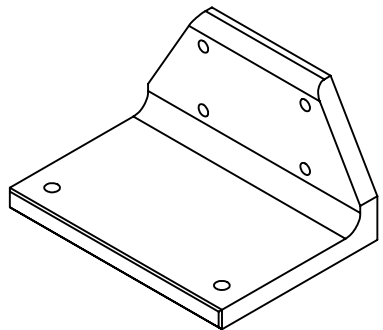
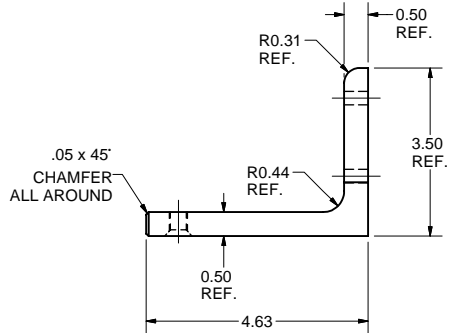
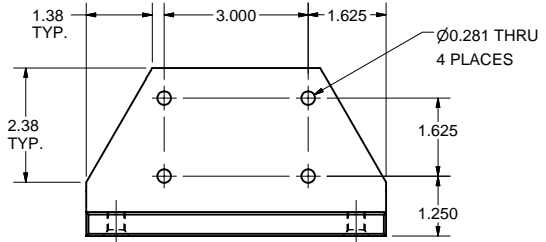
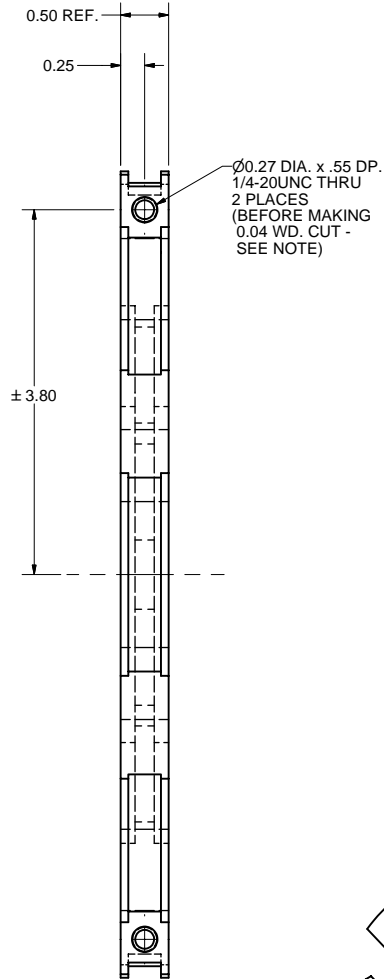
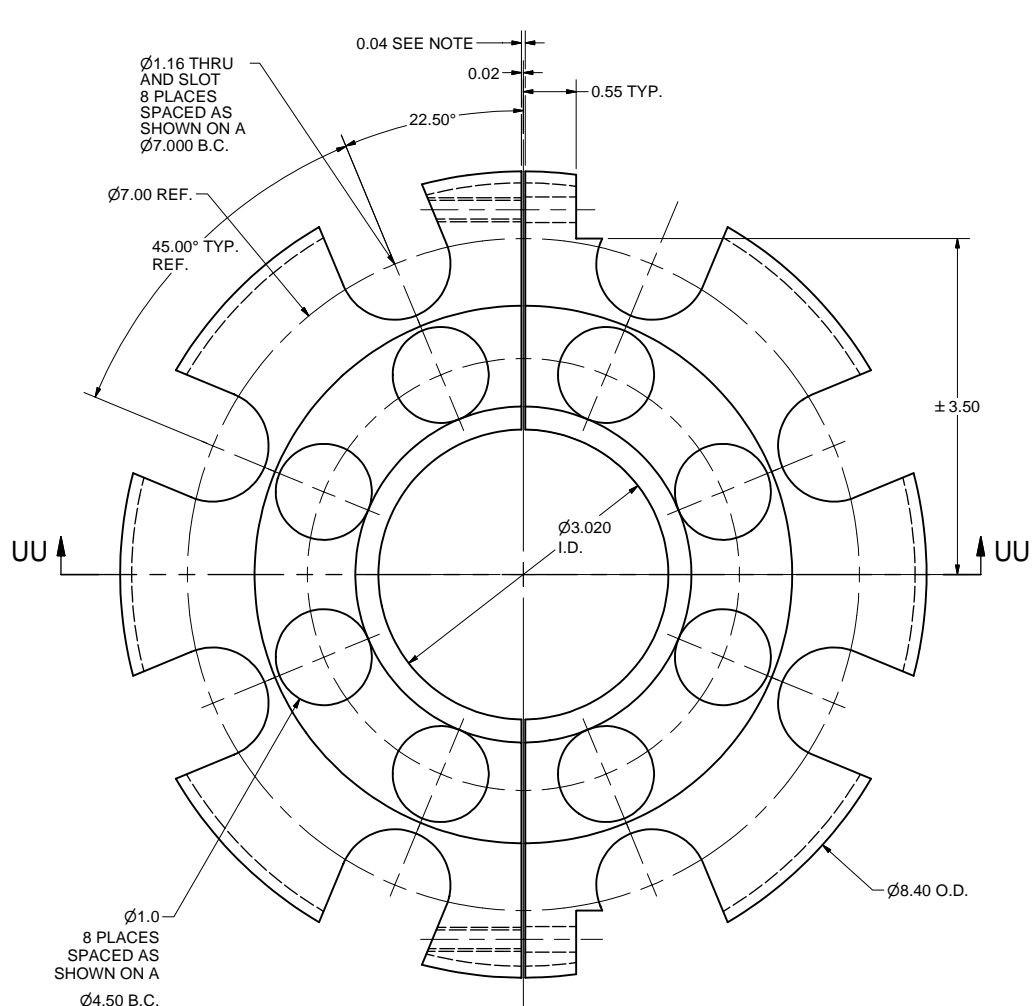
CORNELL UNIVERSITY  
Floyd R. Newman Laboratory  
Ithaca, NY 14853

ERL Injector Cryomodule  
Helium Gas Return Pipe, Exit Section  
2K Tube, Details and Sub-Assemblies

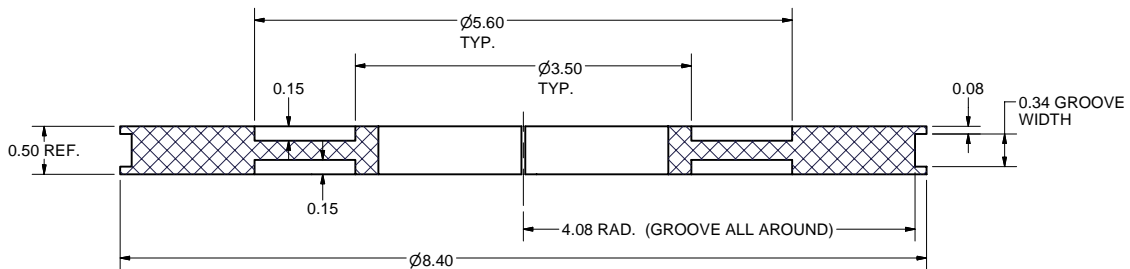
CHECKED BY: VM	DRAWN BY: RHE/Di	DRAWN FOR: M.Liepe	DATE: 11/1/2006	SCALE: D	7102-052 SH. NO. 11 OF 13	REV.
APPROVED BY: ML						

F  
E  
D  
C  
B  
A

REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.
A	D8	Added 1" dia holes (x8) to Item 48.	9/14/07	TIO

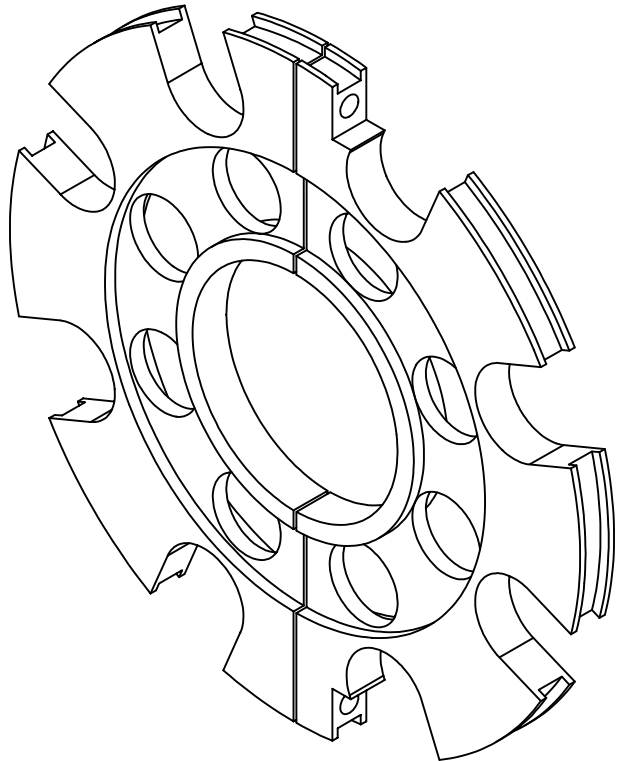


**49 GATE VALVE BRACKET**  
FILE NAME: 7102-052  
SHEET NO.: 12  
DFT. SCALE: 1:2  
MATERIAL: 3.5" x 5" x 0.50 THK. 6061-T6 ALUM ANGLE  
QTY: 1 PER ASM  
NOTES:



SECTION UU-UU

**48 CRYO-TUBE SUPPORT RING, SUB-ASM**  
FILE NAME: 7102-052  
SHEET NO.: 12  
DFT. SCALE: 1:1  
MATERIAL: 1/2" SHEET G-10  
QTY: 1 PER ASM  
NOTES: MAKE .04" WIDE CUT THRU  
AFTER ALL OTHER MACHINING



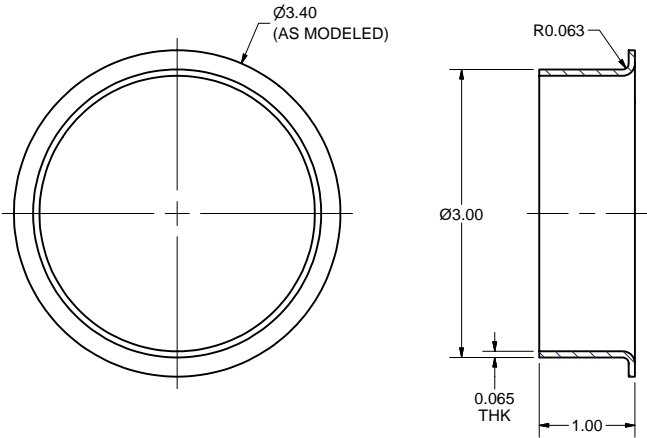
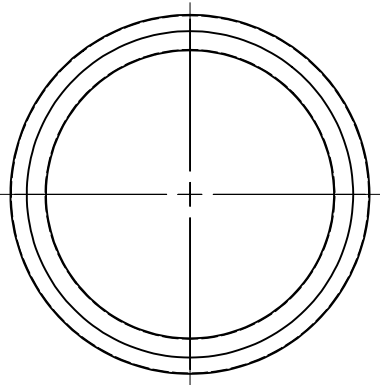
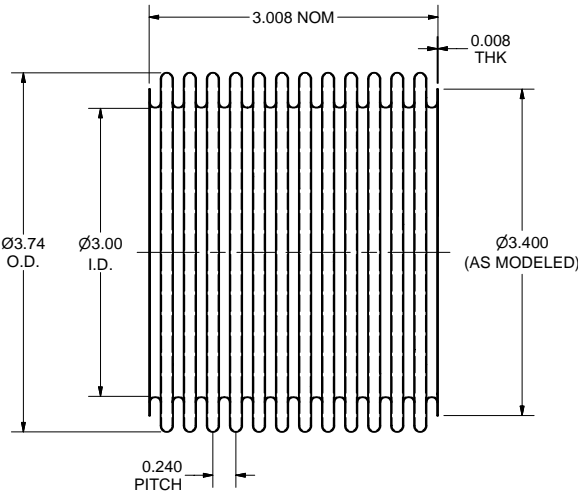
FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM		DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
D		PRINT	PLOT DATE: 9/14/2007	QUANTITY				
D		DISTR.	CAD FILE NAME: 7102-052.idw					
7102-052		CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON: .00 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES	CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853				
A		REV.	CHECKED BY: VM APPROVED BY: ML	DRAWN BY: RHE/Di	DRAWN FOR: M.Liepe	DATE: 11/1/2006	SCALE: D	7102-052 SH. NO. 12 OF 13

Release of final PO version for Meyer Tool - June 19, 2007.

**CORNELL UNIVERSITY**  
**LEPP**  
LABORATORY FOR ELEMENTARY PARTICLE PHYSICS  
ERL Injector Cryomodule  
Helium Gas Return Pipe, Exit Section  
Cryo-Tube Support Ring and Gate Valve Bracket Details

REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.





61 3" I.D. BELLOWS

FILE NAME: 7102-052  
SHEET NO.: 13  
DFT. SCALE: 1:1  
MATERIAL: 316L ST. STEEL  
QTY: 1 PER ASSEMBLY  
NOTES: 1. NO. OF CONFOLUTIONS: N = 12  
2. MANUFACTURER: AMERIFLEX INC. OR EQUIV.  
3. SEE ITEM 20 (SHEET 8) FOR OPERATING CONDITIONS AND DESIGN SPEC.

62 3" I.D. BELLOWS CUFF

FILE NAME: 7102-052  
SHEET NO.: 13  
DFT. SCALE: 1:1  
MATERIAL: UHV GRADE 316L ST. STEEL  
QTY: 2 PER ASSEMBLY  
NOTES:

Release of final PO version for Meyer Tool - June 19, 2007.

	ITEM	DWG. NO.	DESCRIPTION			G1	G2	G3	REMARKS		REV.
						QUANTITY					
D	PRINT DISTR.	PLOT DATE: 9/14/2007 CAD FILE NAME: 7102-052.idw									
7102-052 SH. NO. 13 OF 13	CR-1	UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES; TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓			<div>CORNELL UNIVERSITY </div> <div>CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div>						
		ERL Injector Cryomodule Helium Gas Return Pipe, Exit Section Bellows, Details									
		REV.	CHECKED BY: VM APPROVED BY: ML	DRAWN BY RHE/Di	DRAWN FOR M.Liepe	DATE 11/1/2006	SCALE	D	7102-052 SH. NO. 13 OF 13		REV.

FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP