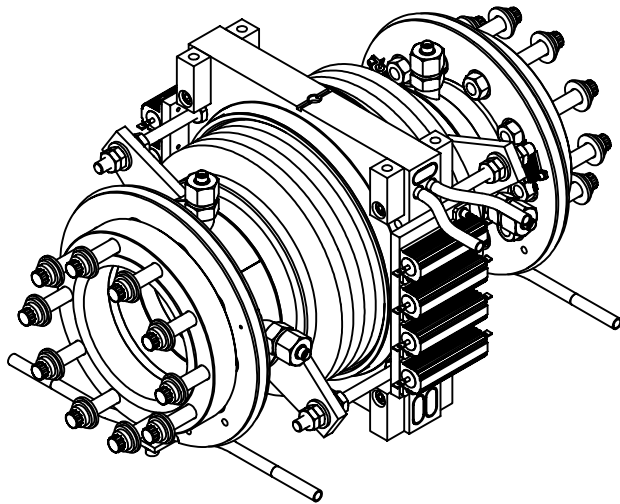
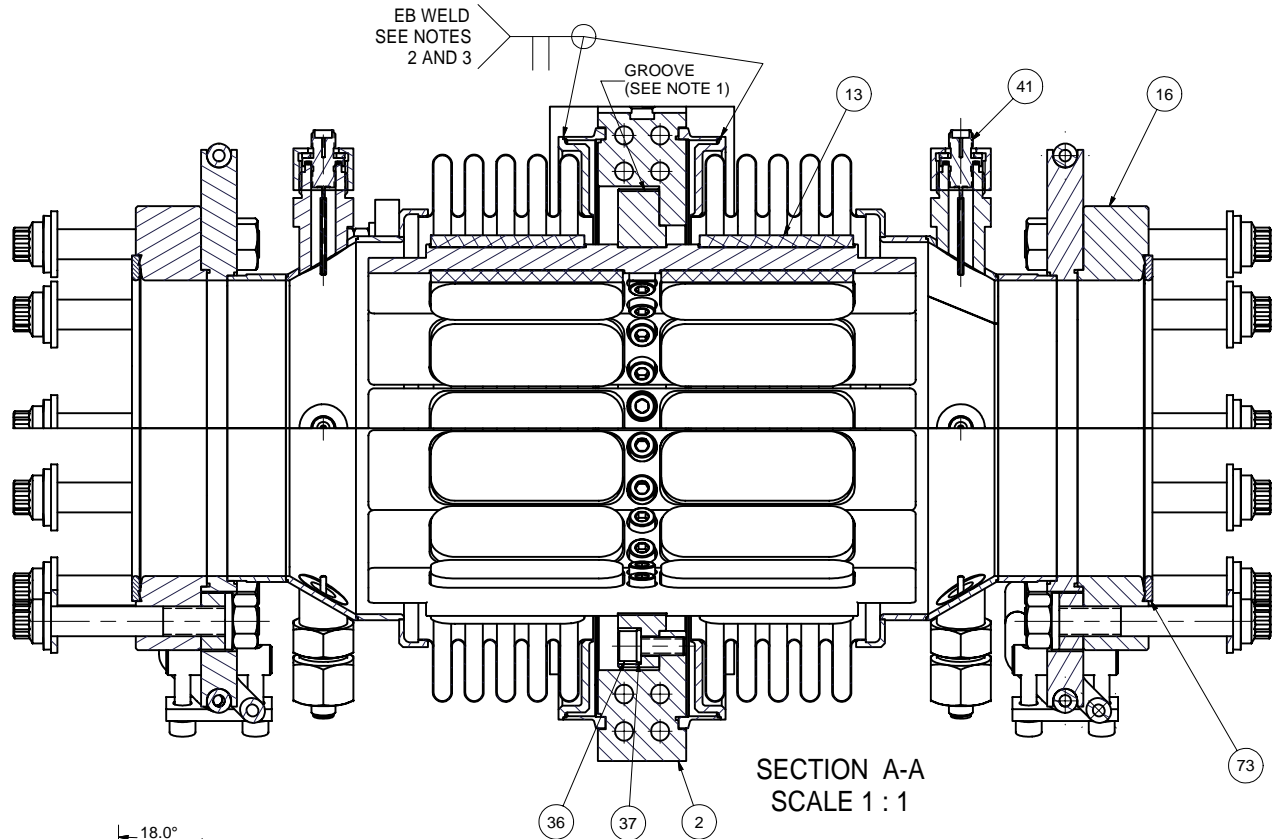
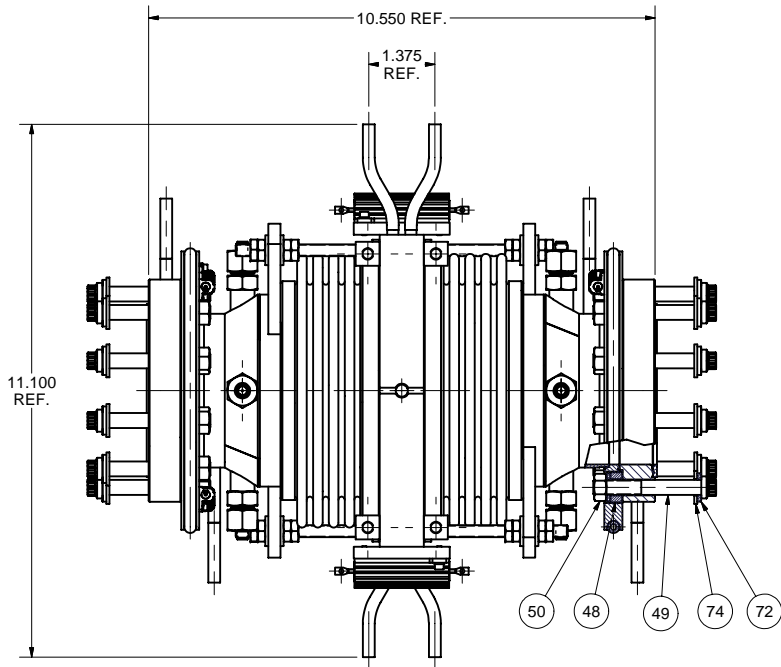
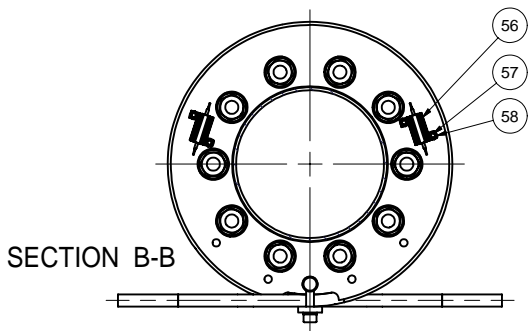
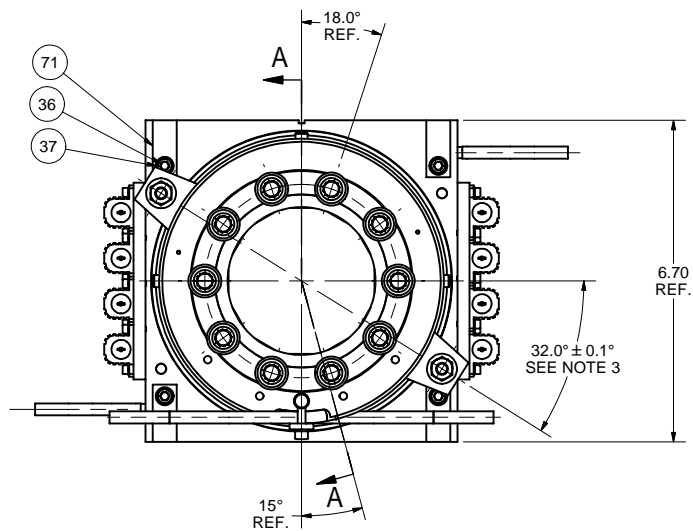
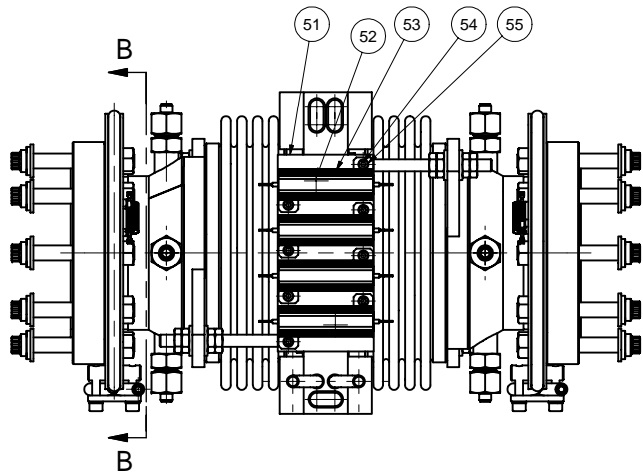


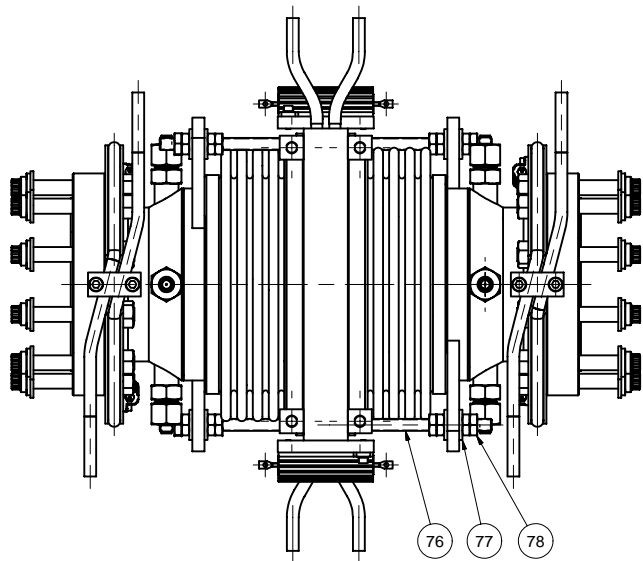
REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.



SECTION A-A
SCALE 1 : 1



SECTION B-B



- 1 78 MM HOM LOAD ASSEMBLY - Version 2
- FILE NAME: 7102-026
SHEET NO.: 1
DFT. SCALE: 1:2
MATERIAL:
QTY: 3 PER CRYOMODULE
- NOTES: 1. PAY ATTENTION ON SUBASSEMBLY ITEM 13 GROOVE POSITION:
IT SHOULD BE ON TOP.
2. WELDS TO CONFORM TO UHV SPEC.
3. RODS ITEM 16 SHOULD BE IN CENTER OF BELLOWS BRACKET HOLES WITHIN 0.01 IN.
4. LEAK RATE: $\leq 1 \times 10^{-9}$ mbar x l/sec.

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

TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
	OK	DATE	N/A
DRAFTING (O'Connell):	TIO		
MACHINE SHOP (Kaminski):	JPK		
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):	JOS		
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS	REV.
78	-	1/4-28 Hex Jam Nut				20		MMC 94805A209 316 SST
77	-	1/4 WASHER				8		MMC 90107A029 316 SST
76	7102-026 (SH. 11)	1/4-28 THREADED ROD				4		316 SST
74	-	5/16 WASHER, SAE				20		MMC 91950A030 316 SST
73	7102-024 (SH. 1)	4-5/8" CF GASKET MODIF.-78				2		-
72	-	8 MM FLANGE INCONEL 718 BELLEVILLE WASHER				40		SOLON M8-F-2.0-718
71	7102-026 (SH. 9)	SUPPORT BAR				8		316L SST
58	-	#2 Spring Lock Washer				32		MMC 92147A410 316 SST
57	-	2-56 x 1/4 Socket Head Cap Screw				32		MMC 92185A077 316 SST
56	-	5 W RESISTOR (RH005 TYPE)				16		-
55	-	#4 Spring Lock Washer				32		MMC 92147A415 316 SST
54	-	4-40 x 3/8 Socket Head Cap Screw				32		MMC 92185A108 316 SST
53	-	50 W RESISTOR (RH050 TYPE)				16		-
52	-	10-32 x 1/2 Sock. Flat Hd. Cap Screw				16		MMC 90585A989 316 SST
51	7102-026 (SH. 9)	50 W RESISTORS PLATE				4		OFE COPPER
50	-	5/16-24 HEX NUT				20		316 SST
49	-	DICRONITED 5/16-24 x 2-1/4 12-POINT or HEX HD. BOLT				20		316 SST
48	7102-026 (SH. 9)	THICK WASHER				20		316L SST
41	7102-026 (SH. 11)	RF PROBE-78 SUBASM				8		-
37	-	#10 SPRING WASHER				20		MMC 92147A430 316 SST
36	-	10-32 x 1/2 SOCK. HD. CAP SCREW				20		MMC 92185A989 316 SST
16	7102-026 (SH. 9)	OUTER HALF SUBASM-78				2		-
13	7102-026 (SH. 4)	ABSORBERS SUBASSEMBLY-78				1		-
2	7102-026 (SH. 2)	COPPER BASE SUBASM-78				1		-
1	7102-026 (SH. 1)	78 MM HOM LOAD ASSEMBLY				X		-

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES:
TOLERANCES ON:
.00 ± .010
.000 ± .005
FRACTIONS ± 1/64
ANGLES ± 0.5°
ALL SURFACES

CORNELL UNIVERSITY
LEPP
LABORATORY FOR ELEMENTARY PARTICLE PHYSICS

ERL INJECTOR CRYOMODULE
78 MM HOM LOAD VERSION-2:
ASSEMBLY

CHECKED BY: J. SEARS
APPROVED BY: M. LIEPE

DRAWN BY: VM
DRAWN FOR: M.Liepe

DATE: 5/5/2006

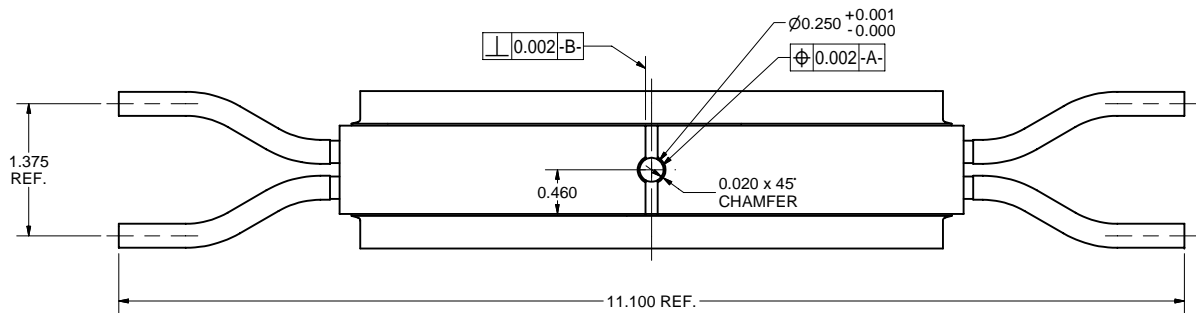
SCALE: -

D

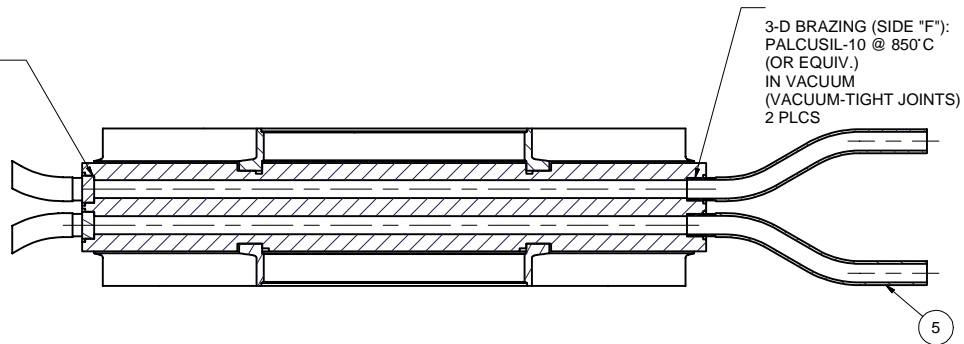
7102-026
SH. NO. 1 OF 12

REV.

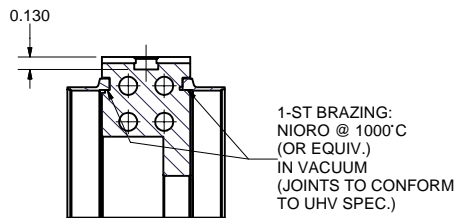
REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.
A		BOM EDITED TO STANDARDIZE VENDOR PART #s. D.M.E.	6-14-06	TIO



3-D BRAZING (SIDE "F"):
PALCUSIL-10 @ 850°C
(OR EQUIV.)
IN VACUUM
(VACUUM-TIGHT JOINTS)
3 PLCS

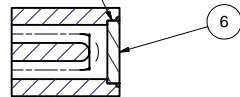


SECTION B-B

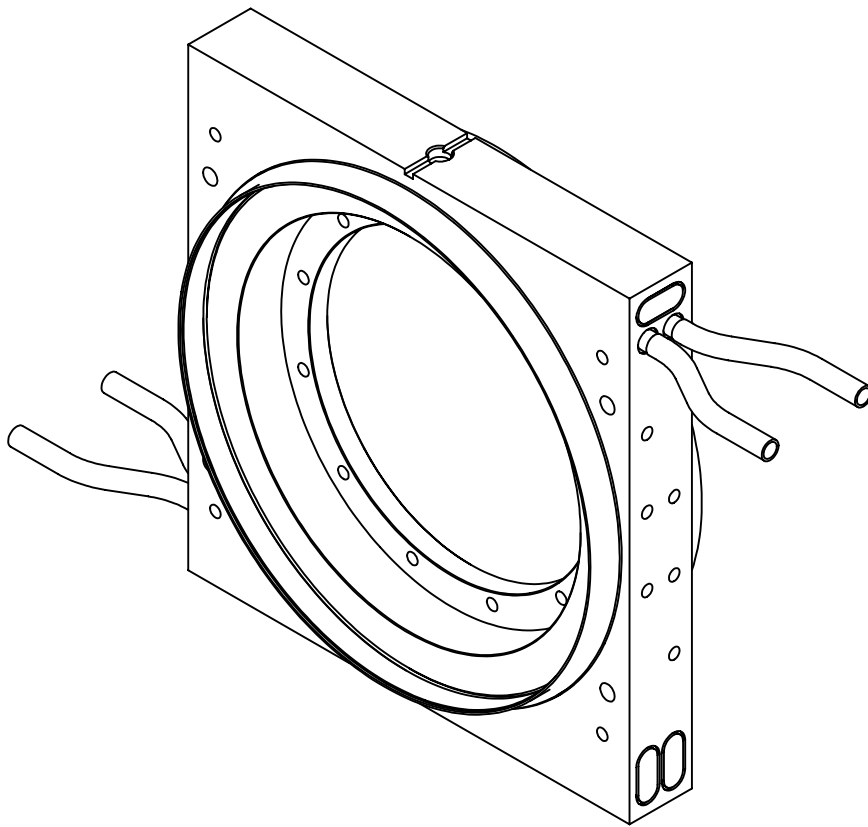


SECTION C-C

2-ND BRAZING (SIDE "E"):
PALCUSIL-15 @ 900°C
(OR EQUIV.)
IN VACUUM
(VACUUM-TIGHT JOINTS)
3 PLCS



SECTION D-D



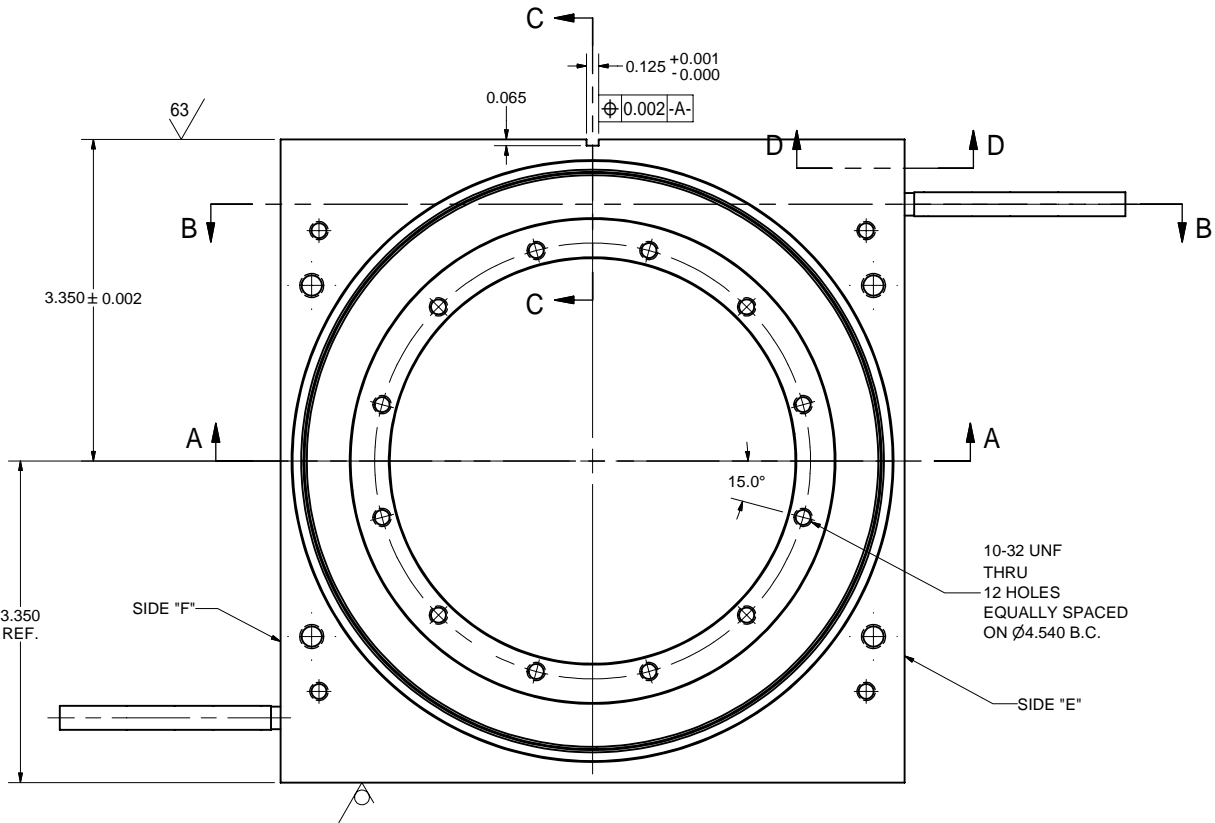
2 COPPER BASE SUBASM-78

FILE NAME: 7102-026
SHEET NO.: 2
DFT. SCALE: 1:1
MATERIAL:
QTY: 1 PER ASSEMBLY
NOTES: 1. ALL MACHINING SHOULD BE DONE AFTER BRAZING.

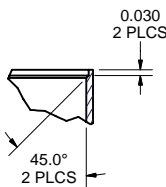
FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LEPP

TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
OK	DATE	N/A	
DRAFTING (O'Connell):			
MACHINE SHOP (Kaminski):			
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):			
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			

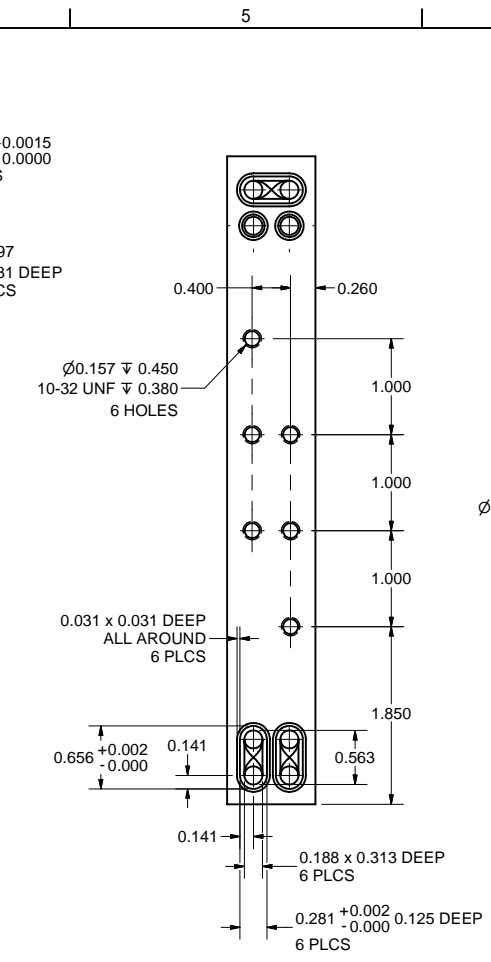
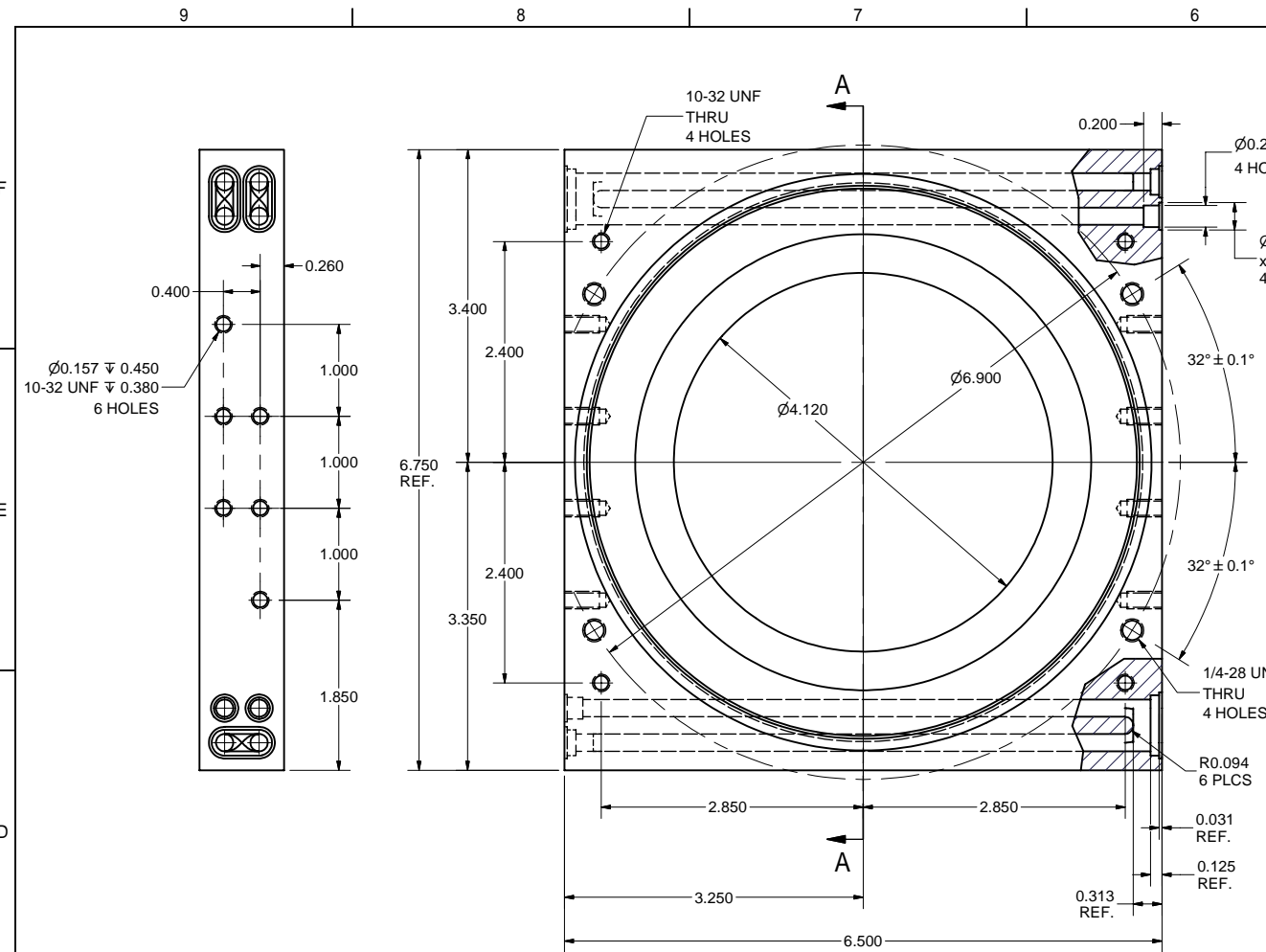
ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS	REV.
6	7102-026 (SH. 3)	CAP 1					OFE COPPER	
5	7102-026 (SH. 3)	80 K COOLING TUBE					MMC 89785K823 316L SST	
4	7102-026 (SH. 3)	CONNECTION RING-78					316L SST	
3	7102-026 (SH. 3)	COPPER BASE-78					OFE COPPER	
2	7102-026 (SH. 2)	COPPER BASE SUBASM-78	X				-	
PLOT DATE: 8/29/2007 CAD FILE NAME: 7102-026.idw								
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES $\sqrt{0.002}$								
CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853								
ERL INJECTOR CRYOMODULE 78 MM HOM LOAD VERSION-2: COPPER BASE SUBASM								
CHECKED BY: J. SEARS	DRAWN BY: VM	DRAWN FOR: M. LIEPE	DATE: 5/5/2006	SCALE: -	D	7102-026 SH. NO. 2 OF 12	REV. A	
APPROVED BY: M. LIEPE								



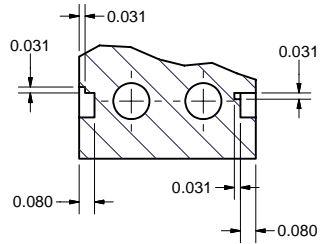
SECTION A-A



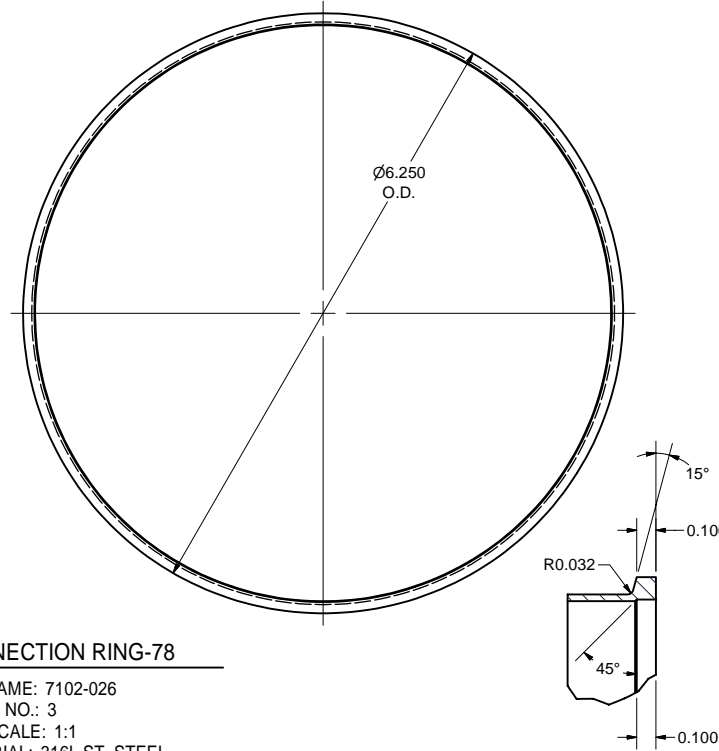
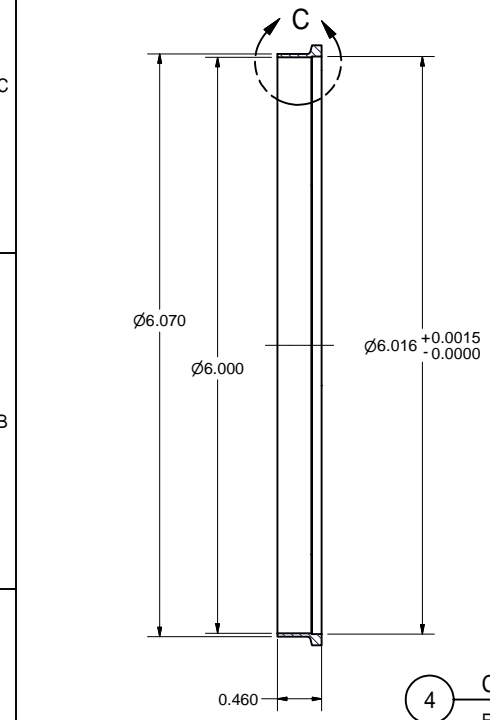
DETAIL E
SCALE 2 : 1



SECTION A-A



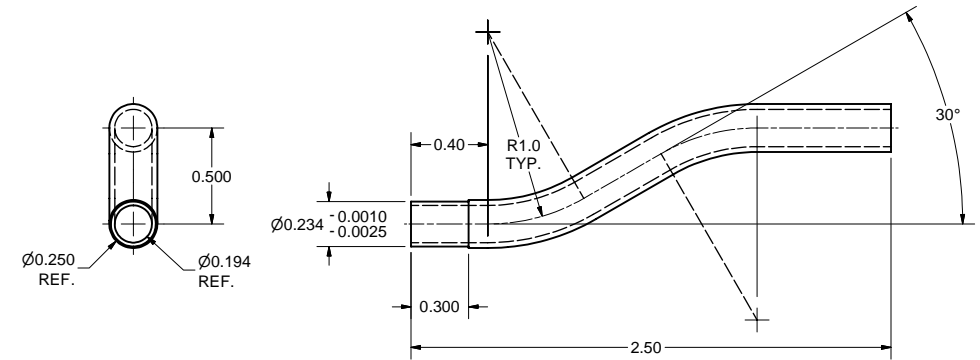
DETAIL B
SCALE 2 : 1



DETAIL C
SCALE 2 : 1

3 **COPPER BASE-78**

FILE NAME: 7102-026
 SHEET NO.: 3
 DFT. SCALE: 1:1
 MATERIAL: OFE C10100 COPPER (RRR-200 OR BETTER)
 QTY: 1 PER ASSEMBLY
 NOTES: 1. BLUNT SHARP EDGES ON OUTER CONTOUR
 WITH 0.015" CHAMFER OR RADIUS

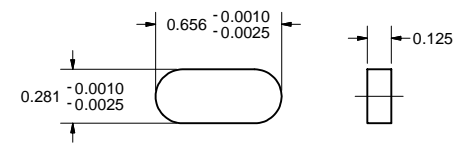


5 **80 K COOLING TUBE**







FILE NAME: 7102-026
 SHEET NO.: 3
 DFT. SCALE: 2:1
 MATERIAL: 1/4" OD x 0.028 W 316L STAINLESS STEEL
 QTY: 4 PER ASSEMBLY
 NOTES: 1. DEVELOPED LENGTH: L = 2.576". FOR

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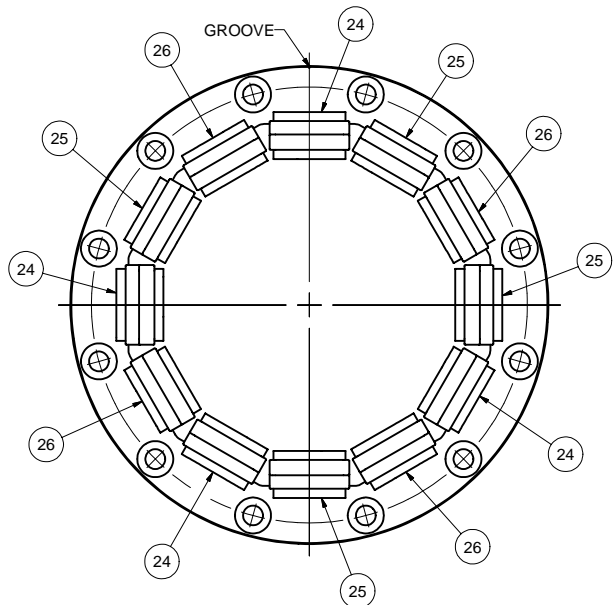
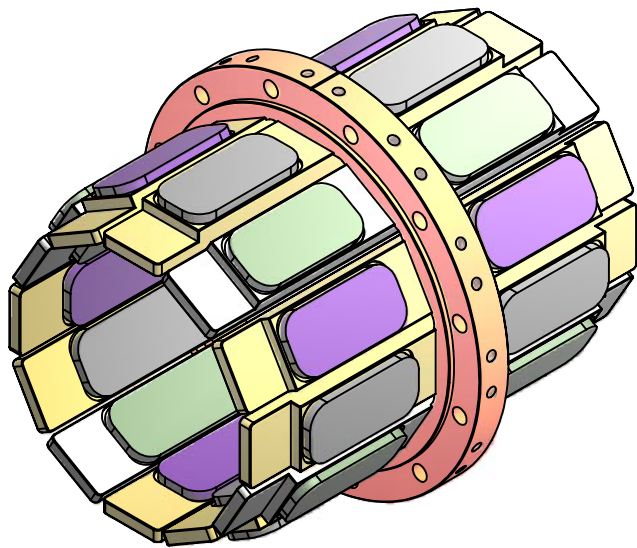
TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
	OK	DATE	N/A
DRAFTING (O'Connell):			
MACHINE SHOP (Kaminski):			
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):			
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			



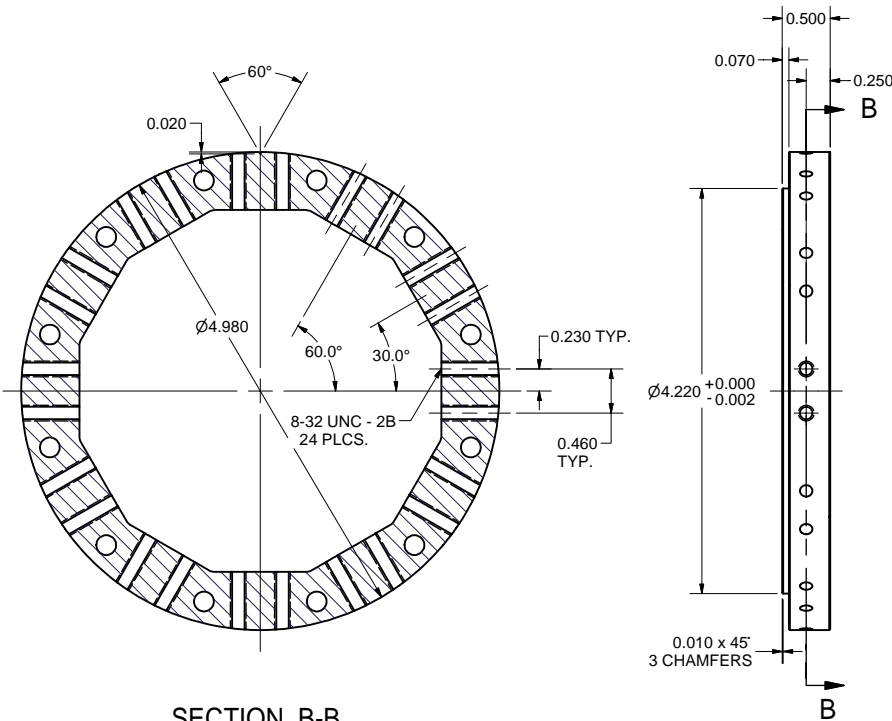
6 CAP 1
 FILE NAME: 7102-026
 SHEET NO.: 3
 DFT. SCALE: 2:1
 MATERIAL: OFE COPPER
 QTY: 6 PER ASSEMBLY
 NOTES:

 		ITEM	DWG. NO.	DESCRIPTION			G1	G2	G3	REMARKS	REV.
					QUANTITY						
	PRINT DISTR.	PLOT DATE: 8/29/2007 CAD FILE NAME: 7102-026.idw									
		CR-1	<div>UNLESS OTHERWISE SPECIFIED:</div> <div>DIMENSIONS ARE IN INCHES:</div> <div>TOLERANCES ON: .00 ±.010 .000 ±.005 FRACTIONS ±1/64 ANGLES ±0.5° ALL SURFACES </div>	<div> LEPP LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS</div> <div>CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div>							
	ERL INJECTOR CRYOMODULE 78 MM HOM LOAD VERSION-2: COPPER BASE SUBASM DETAILS										
	REV.				CHECKED BY: J. SEARS	DRAWN BY VM	DRAWN FOR M.Liepe	DATE 5/5/2006	SCALE -		7102-026
		APPROVED BY: M. LIEPE	SH. NO. 3 OF 12								

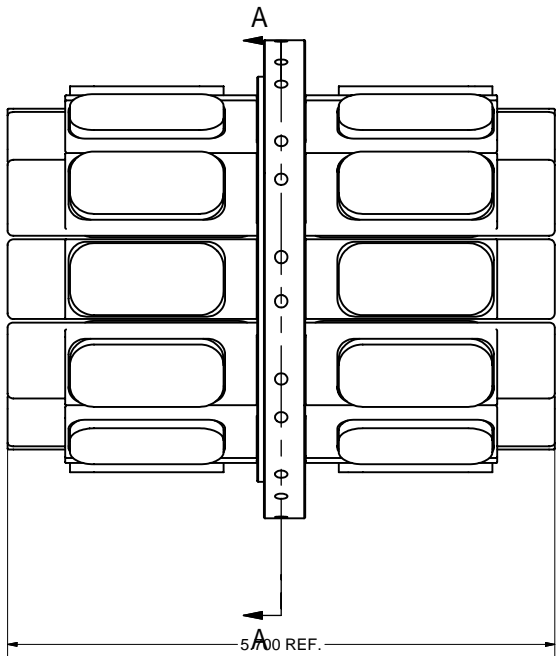
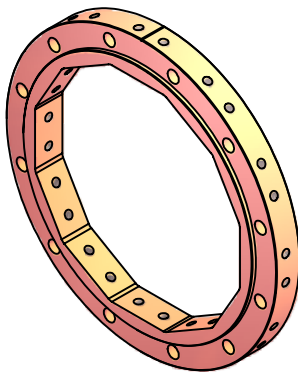
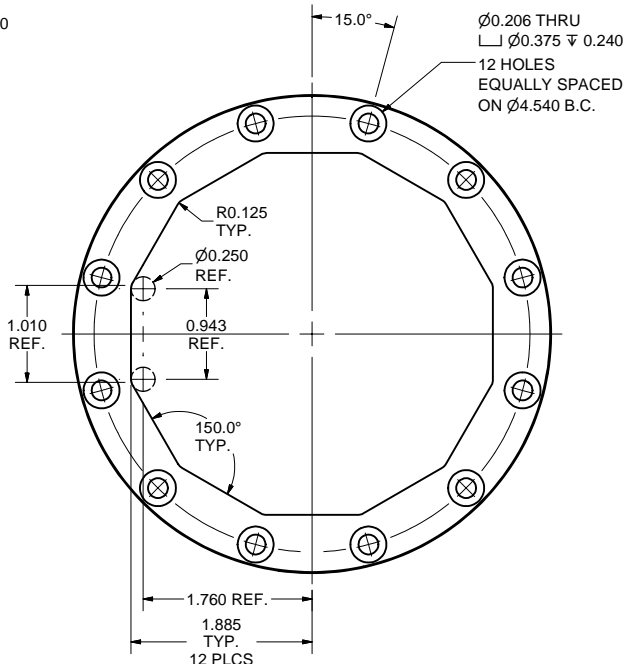
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



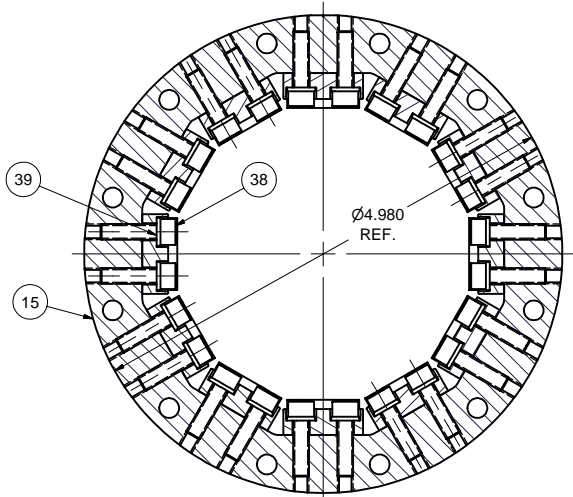
ABSORBERS MOUNTING LOCATIONS



SECTION B-B



SECTION A-A



13 ABSORBERS SUBASSEMBLY-78






FILE NAME: 7102-026
SHEET NO.: 4
DFT. SCALE: 1:1
MATERIAL:
QTY: 1 PER ASSEMBLY
NOTES: 1. MAXIMUM TORQUE ON SCREWS ITEM 38: 75 in-lbs.
2. SEE SHEET 1 FOR ABSORBER MOUNTING LOCATIONS.

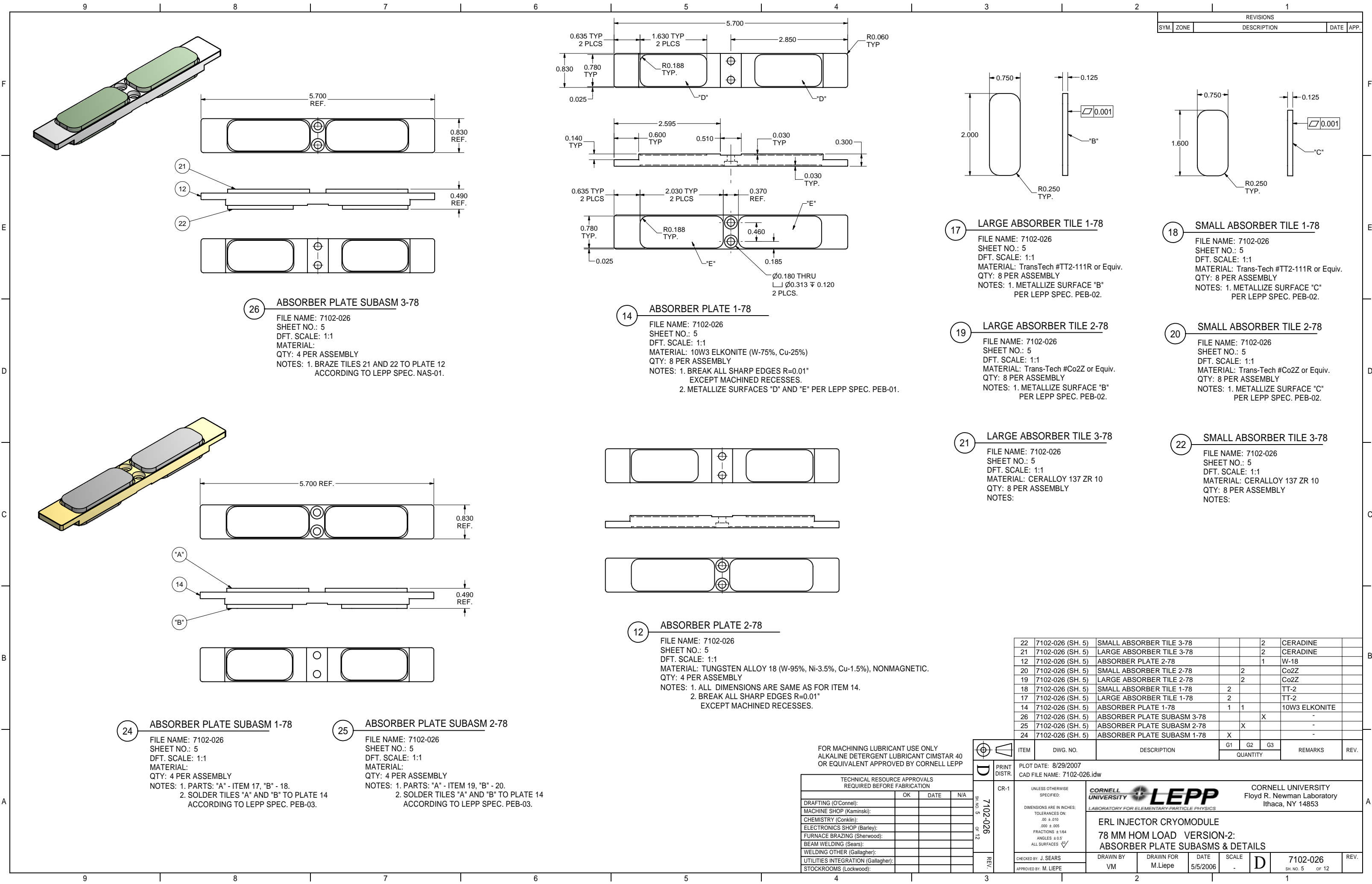
15 COPPER RING-78

FILE NAME: 7102-026
SHEET NO.: 4
DFT. SCALE: 1:1
MATERIAL: OFE C10100 COPPER (RRR-200 OR BETTER)
QTY: 1 PER ASSEMBLY
NOTES:

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OR EQUIVALENT APPROVED BY CORNELL LEPP

TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
	OK	DATE	N/A
DRAFTING (O'Connell):			
MACHINE SHOP (Kaminski):			
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):			
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			

		ITEM	DWG. NO.	DESCRIPTION			G1	G2	G3	REMARKS		REV.	
								QUANTITY					
		PRINT DISTR.	PLOT DATE: 8/29/2007 CAD FILE NAME: 7102-026.idw										
SH. NO. 4 OF 12 7102-026		CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES ✓		<div> </div> <div>CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853</div>								
					ERL INJECTOR CRYOMODULE 78 MM HOM LOAD VERSION-2: ABSORBERS SUBASM & DETAILS								
REV.		CHECKED BY: J. SEARS	DRAWN BY VM		DRAWN FOR M.Liepe		DATE 5/5/2006		SCALE -		7102-026 SH. NO. 4 OF 12		REV.
		APPROVED BY: M. LIEPE											



REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.

- 17

LARGE ABSORBER TILE 1-78

FILE NAME: 7102-026
SHEET NO.: 5
DFT. SCALE: 1:1
MATERIAL: TransTech #TT2-111R or Equiv.
QTY: 8 PER ASSEMBLY
NOTES: 1. METALLIZE SURFACE "B"
PER LEPP SPEC. PEB-02.
- 18

SMALL ABSORBER TILE 1-78

FILE NAME: 7102-026
SHEET NO.: 5
DFT. SCALE: 1:1
MATERIAL: Trans-Tech #TT2-111R or Equiv.
QTY: 8 PER ASSEMBLY
NOTES: 1. METALLIZE SURFACE "C"
PER LEPP SPEC. PEB-02.
- 19

LARGE ABSORBER TILE 2-78

FILE NAME: 7102-026
SHEET NO.: 5
DFT. SCALE: 1:1
MATERIAL: Trans-Tech #Co2Z or Equiv.
QTY: 8 PER ASSEMBLY
NOTES: 1. METALLIZE SURFACE "B"
PER LEPP SPEC. PEB-02.
- 20

SMALL ABSORBER TILE 2-78

FILE NAME: 7102-026
SHEET NO.: 5
DFT. SCALE: 1:1
MATERIAL: Trans-Tech #Co2Z or Equiv.
QTY: 8 PER ASSEMBLY
NOTES: 1. METALLIZE SURFACE "C"
PER LEPP SPEC. PEB-02.
- 21

LARGE ABSORBER TILE 3-78

FILE NAME: 7102-026
SHEET NO.: 5
DFT. SCALE: 1:1
MATERIAL: CERALLOY 137 ZR 10
QTY: 8 PER ASSEMBLY
NOTES:
- 22

SMALL ABSORBER TILE 3-78

FILE NAME: 7102-026
SHEET NO.: 5
DFT. SCALE: 1:1
MATERIAL: CERALLOY 137 ZR 10
QTY: 8 PER ASSEMBLY
NOTES:

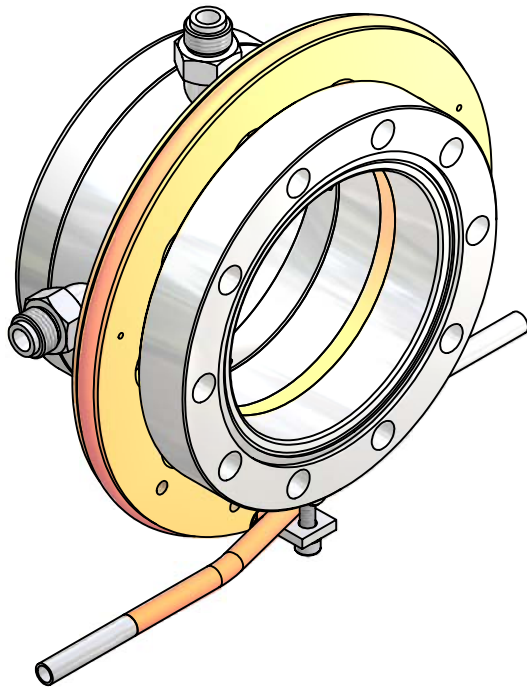
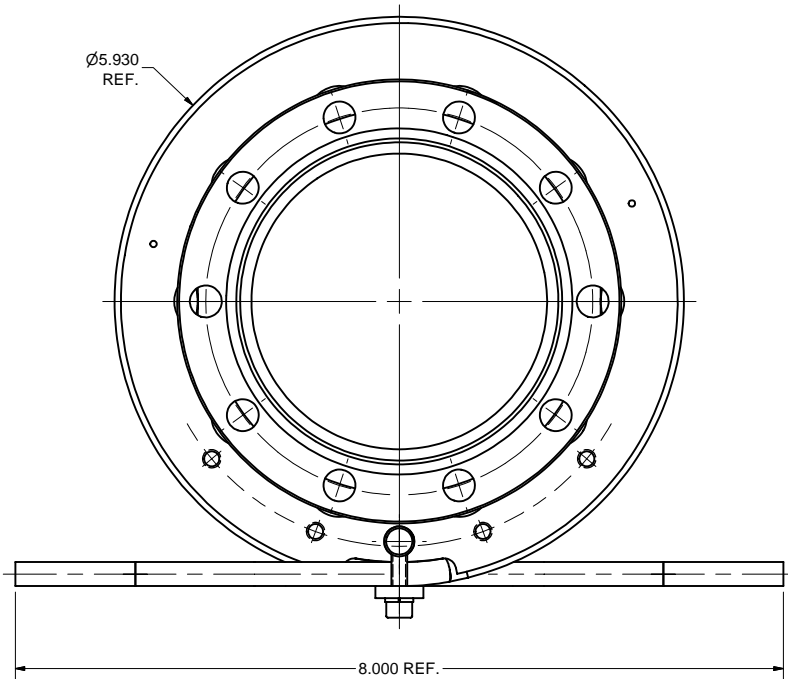
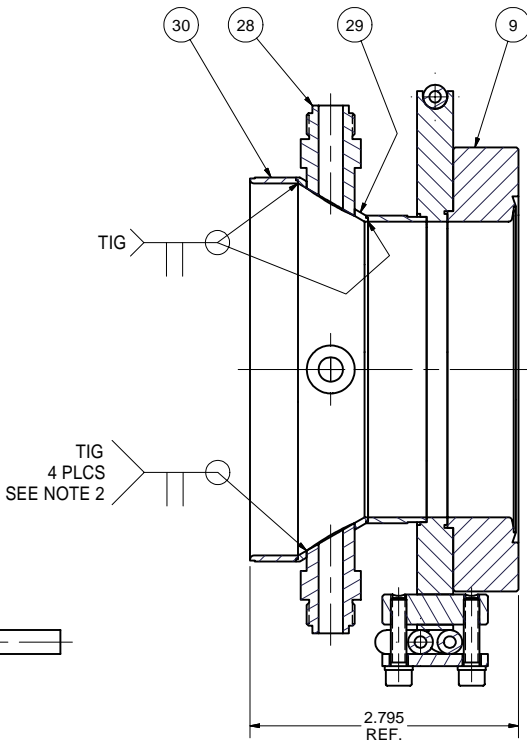
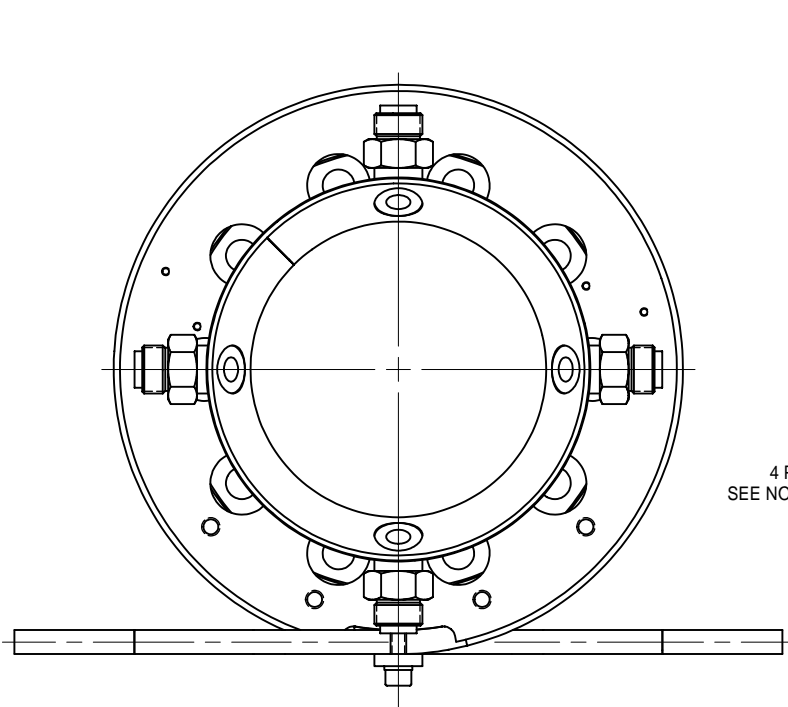
22	7102-026 (SH. 5)	SMALL ABSORBER TILE 3-78			2	CERADINE	
21	7102-026 (SH. 5)	LARGE ABSORBER TILE 3-78			2	CERADINE	
12	7102-026 (SH. 5)	ABSORBER PLATE 2-78			1	W-18	
20	7102-026 (SH. 5)	SMALL ABSORBER TILE 2-78		2		Co2Z	
19	7102-026 (SH. 5)	LARGE ABSORBER TILE 2-78		2		Co2Z	
18	7102-026 (SH. 5)	SMALL ABSORBER TILE 1-78	2			TT-2	
17	7102-026 (SH. 5)	LARGE ABSORBER TILE 1-78	2			TT-2	
14	7102-026 (SH. 5)	ABSORBER PLATE 1-78	1	1		10W3 ELKONITE	
26	7102-026 (SH. 5)	ABSORBER PLATE SUBASM 3-78			X	-	
25	7102-026 (SH. 5)	ABSORBER PLATE SUBASM 2-78		X		-	
24	7102-026 (SH. 5)	ABSORBER PLATE SUBASM 1-78		X		-	

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
PLOT DATE: 8/29/2007 CAD FILE NAME: 7102-026.idw			QUANTITY				
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES			CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853			CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853	
ERL INJECTOR CRYOMODULE 78 MM HOM LOAD VERSION-2: ABSORBER PLATE SUBASMS & DETAILS			DRAWN BY VM			DRAWN FOR M.Liepe	
CHECKED BY: J. SEARS APPROVED BY: M. LIEPE			DATE 5/5/2006			SCALE -	
7102-026 SH. NO. 5 OF 12			REV.			REV.	

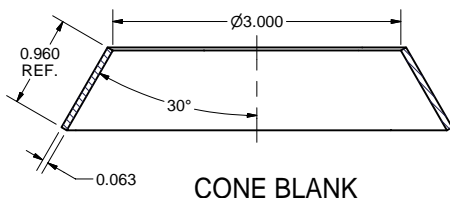
FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LEPP

TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
OK	DATE	N/A	
DRAFTING (O'Connell):			
MACHINE SHOP (Kaminski):			
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):			
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			

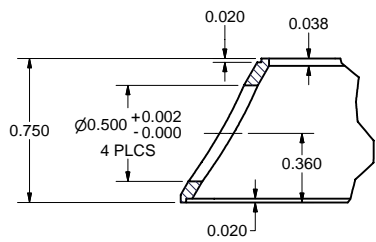
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



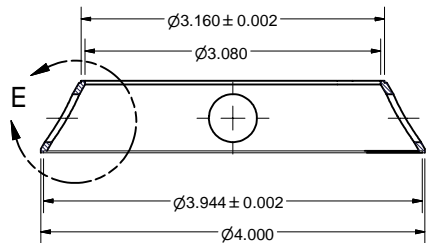
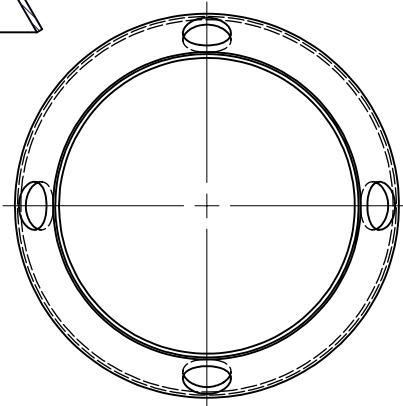
27 FLANGE UNIT SUBASSEMBLY-78
FILE NAME: 7102-026
SHEET NO.: 6
DFT. SCALE: 1:1
MATERIAL:
QTY: 2 PER ASSEMBLY
NOTES: 1. ALL WELDS TO CONFORM TO UHV SPEC.
2. WELD RF PROBE HOUSINGS (ITEM 28) LAST.



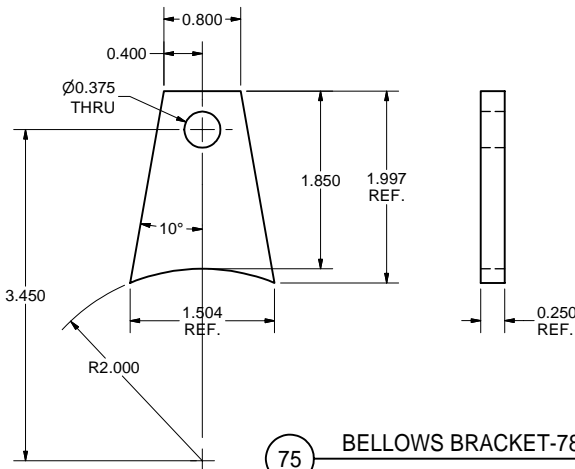
CONE BLANK



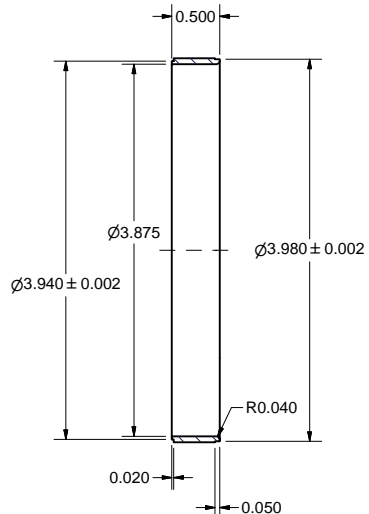
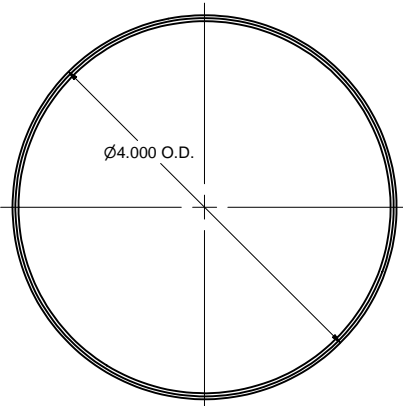
DETAIL E
SCALE 2 : 1



29 CONE-78
FILE NAME: 7102-026
SHEET NO.: 6
DFT. SCALE: 1:1
MATERIAL: 316L STAINLESS STEEL
QTY: 2 PER ASSEMBLY
NOTES:




75 BELLOWS BRACKET-78
FILE NAME: 7102-026
SHEET NO.: 6
DFT. SCALE: 1:1
MATERIAL: 1/4" 316L STAINLESS STEEL SHEET
QTY: 4 PER ASSEMBLY
NOTES:

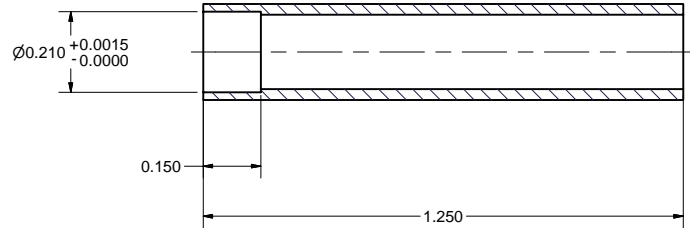
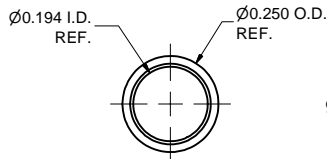
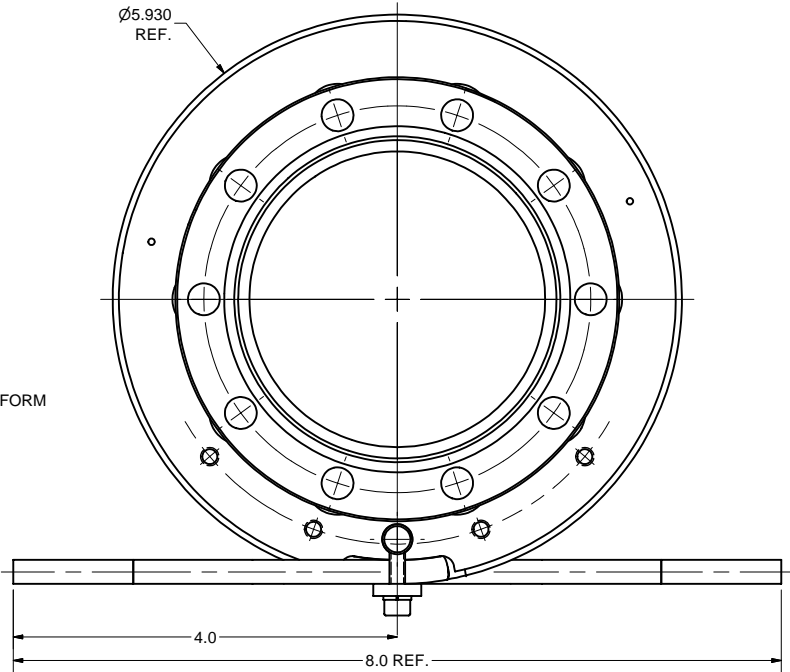
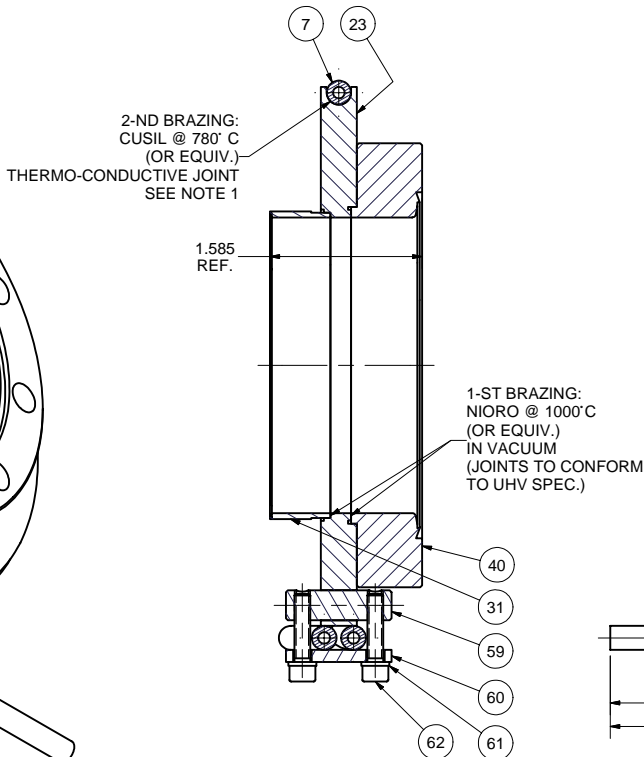
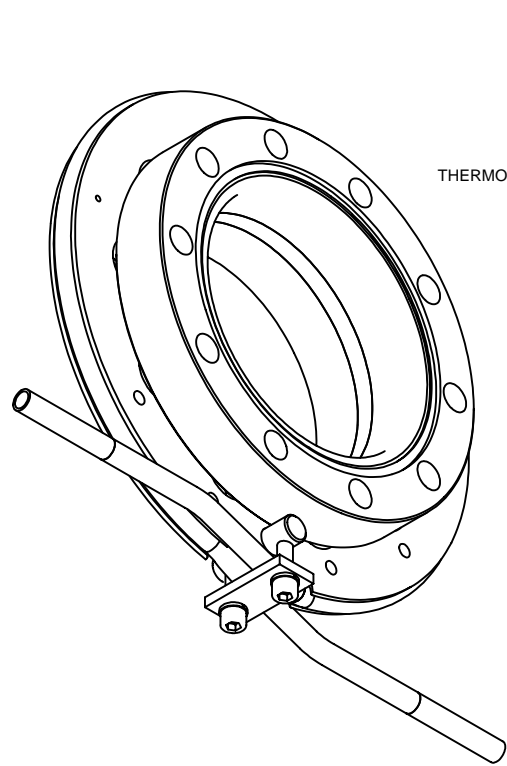


30 LARGE TUBE-78
FILE NAME: 7102-026
SHEET NO.: 6
DFT. SCALE: 1:1
MATERIAL: 316L STAINLESS STEEL
QTY: 2 PER ASSEMBLY
NOTES:

30	7102-026 (SH. 6)	LARGE TUBE-78	1			316L SST	
29	7102-026 (SH. 6)	CONE-78	1			316L SST	
28	7102-026 (SH. 9)	RF PROBE HOUSING	4			316L SST	
9	7102-026 (SH. 7)	5 K HEAT SINK SUBASM-78	1			-	
27	7102-026 (SH. 6)	FLANGE UNIT SUBASM-78	X			-	
ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS REV.

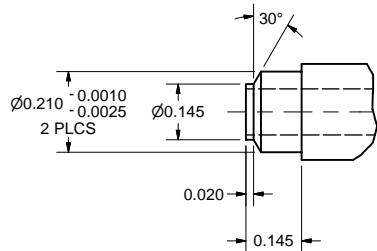
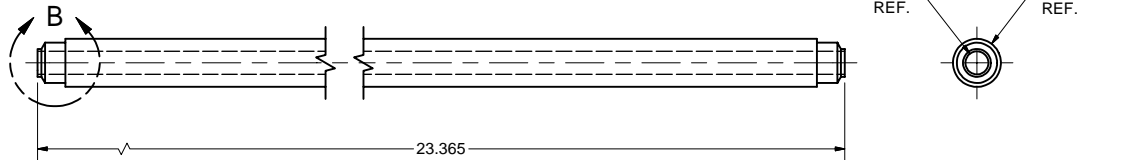
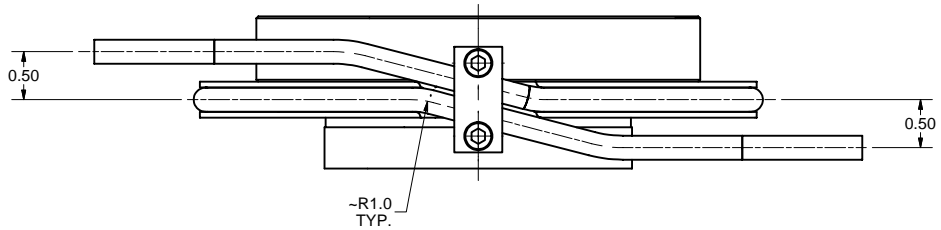
PLOT DATE: 8/29/2007		CAD FILE NAME: 7102-026.idw						
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES ✓		<div>CORNELL UNIVERSITY</div> <div></div> <div>LABORATORY FOR ELEMENTARY PARTICLE PHYSICS</div>		CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853				
				ERL INJECTOR CRYOMODULE 78 MM HOM LOAD VERSION-2: FLANGE UNIT SUBASM & DETAILS				
CHECKED BY: J. SEARS		DRAWN BY	DRAWN FOR	DATE	SCALE	D	7102-026 SH. NO. 6 OF 12	REV.
APPROVED BY: M. LIEPE		VM	M.Liepe	5/5/2006	-			

REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.
A		BOM EDITED TO STANDARDIZE VENDOR PART #s. D.M.E.	6-14-06	TIO



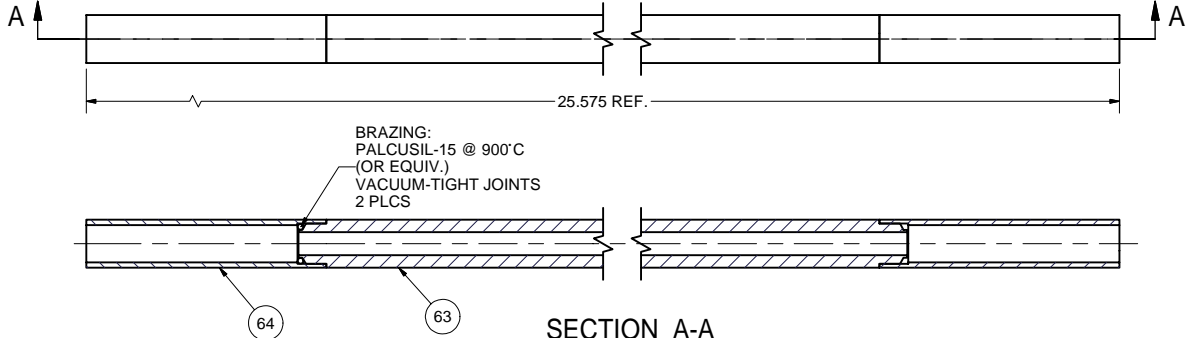
64 5 K END TUBE
FILE NAME: 7102-026
SHEET NO.: 7
DFT. SCALE: 4:1
MATERIAL: 1/4" OD x 0.028" W 316L STAINLESS STEEL TUBE
QTY: 4 PER ASSEMBLY
NOTES:

9 5K HEAT SINK SUBASM-78
FILE NAME: 7102-026
SHEET NO.: 7
DFT. SCALE: 1:1
MATERIAL:
QTY: 2 PER ASSEMBLY
NOTES: 1. TENSION TUBE ITEM 7 BEFORE 2-ND BRAZING.
USE TENSION DEVICE (ITEM 65, SEE SHEET 12).



DETAIL B
SCALE 4 : 1

63 5 K COOLING TUBE-78
FILE NAME: 7102-026
SHEET NO.: 7
DFT. SCALE: 2:1
MATERIAL: 1/4" OD x 0.065" W OFE COPPER TUBE
QTY: 2 PER ASSEMBLY
NOTES:



7 5 K COOLING TUBE SUBASM-78
FILE NAME: 7102-026
SHEET NO.: 7
DFT. SCALE: 2:1
MATERIAL:
QTY: 2 PER ASSEMBLY
NOTES:

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

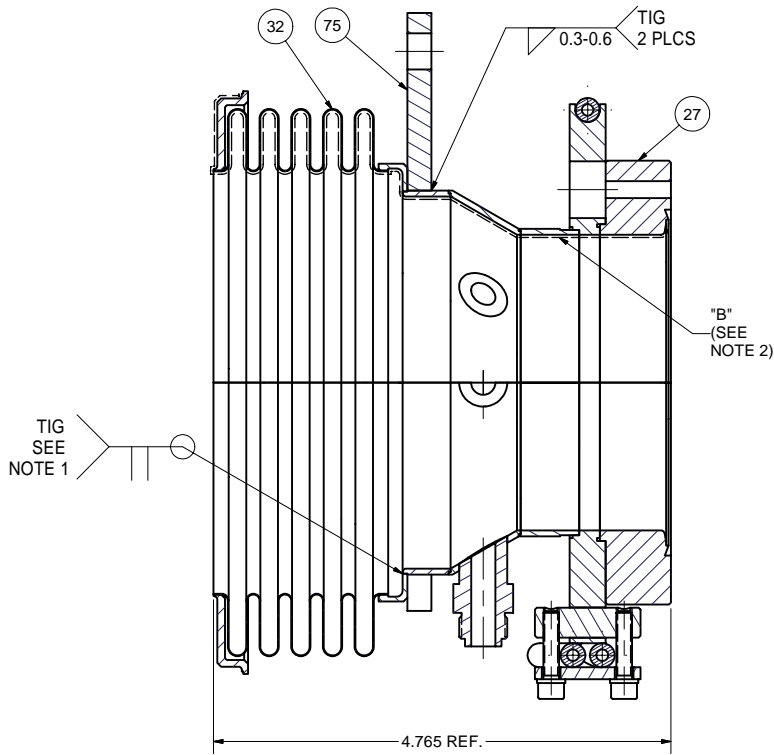
TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
	OK	DATE	N/A
DRAFTING (O'Connell):			
MACHINE SHOP (Kaminski):			
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):			
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS	REV.
64	7102-026 (SH. 7)	5 K END TUBE		2			MMC 89785K823 316L SST	
63	7102-026 (SH. 7)	5 K COOLING TUBE-78		1			OFE COPPER	
62	-	8-32 x 3/4 Socket Head Cap Screw		2			MMC 92185A197 316 SST	
61	-	#8 Spring Lock Washer		2			MMC 92147A425 316 SST	
60	7102-026 (SH. 8)	CLAMP PLATE		1			316L SST	
59	7102-026 (SH. 8)	CLAMP ROD		1			316L SST	
40	7102-026 (SH. 8)	4-5/8" CF FLANGE MODIFICATION		1			-	
31	7102-026 (SH. 8)	SMALL TUBE-78		1			316L SST	
23	7102-026 (SH. 8)	5 K HEAT SINK PLATE-78		1			OFE COPPER	
7	7102-026 (SH. 7)	5 K COOLING TUBE SUBASM-78		1	X		-	
9	7102-026 (SH. 7)	5 K HEAT SINK SUBASM-78		X			-	

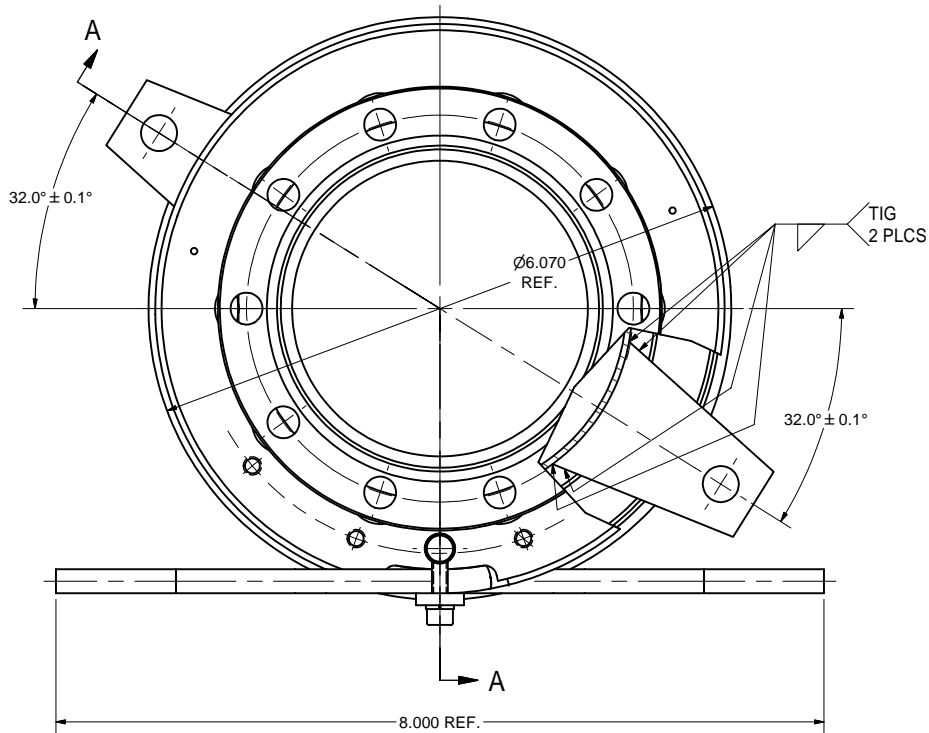
PRINT DISTR.	CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES	CORNELL UNIVERSITY LEPP LABORATORY FOR ELEMENTARY PARTICLE PHYSICS CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853
CHECKED BY: J. SEARS APPROVED BY: M. LIEPE	DRAWN BY: VM DRAWN FOR: M. Liepe DATE: 5/5/2006 SCALE: -	7102-026 SH. NO. 7 OF 12	REV. A

ERL INJECTOR CRYOMODULE
78 MM HOM LOAD VERSION-2:
SUBASMS, 5K COOLING TUBE & HEAT SINK

REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.

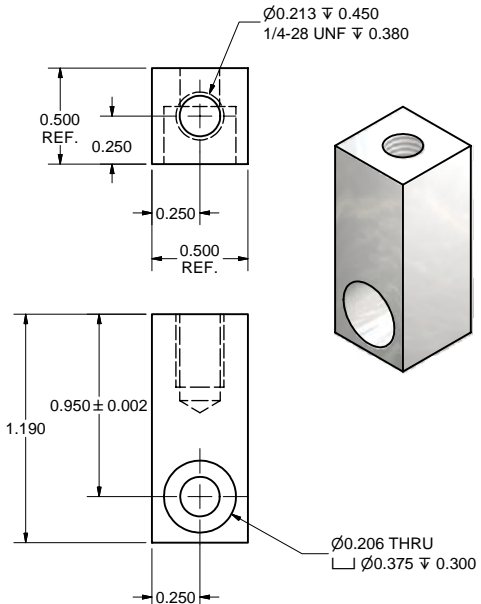
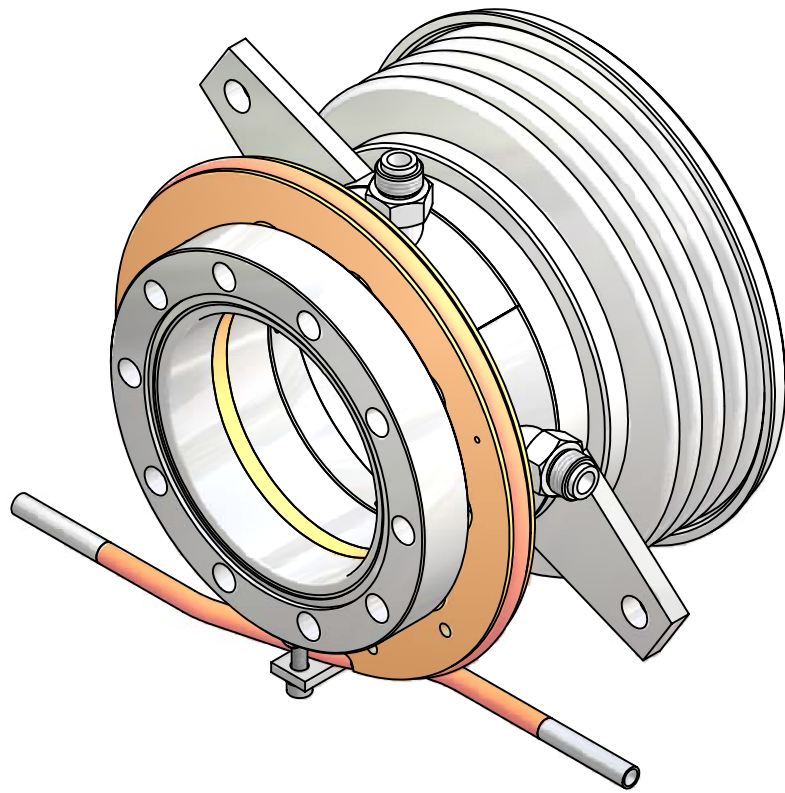


SECTION A-A



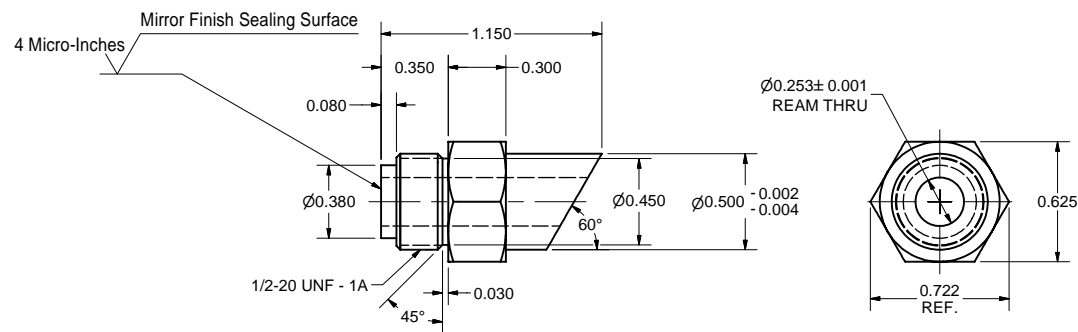
16 OUTER HALF SUBASM-78

FILE NAME: 7102-026
SHEET NO.: 9
DFT. SCALE: 1:1
MATERIAL:
QTY: 2 PER ASSEMBLY
NOTES: 1. WELD TO CONFORM TO UHV SPEC.
2. COPPER PLATE 0.0004" SURFACE "B".



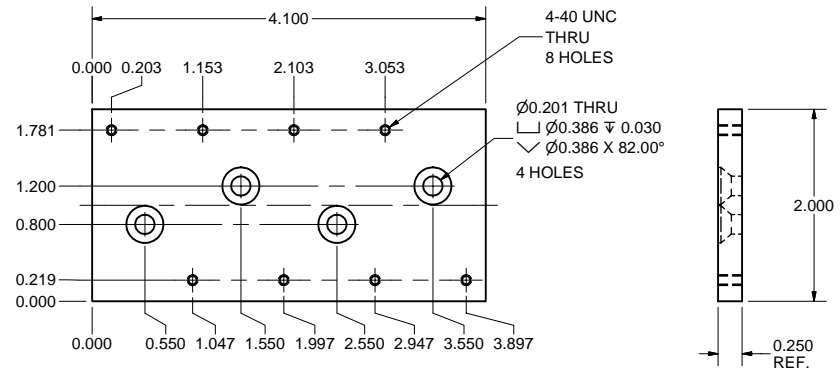
71 SUPPORT BAR

FILE NAME: 7102-026
SHEET NO.: 9
DFT. SCALE: 2:1
MATERIAL: 1/2" x 1/2" 316L STAINLESS STEEL BAR
QTY: 8 PER ASSEMBLY
NOTES:



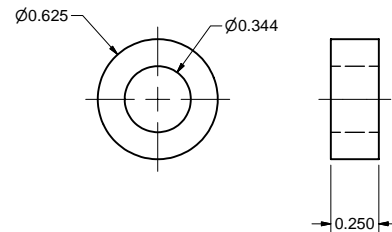
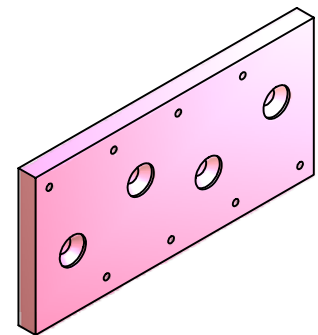
28 RF PROBE HOUSING

FILE NAME: 7102-026
SHEET NO.: 9
DFT. SCALE: 2:1
MATERIAL: 316L SST
QTY: 8 PER ASSEMBLY
NOTES:



51 50 W RESISTORS PLATE

FILE NAME: 7102-026
SHEET NO.: 9
DFT. SCALE: 1:1
MATERIAL: 1/4" OFE COPPER SHEET
QTY: 2 PER ASSEMBLY
NOTES:



48 THICK WASHER

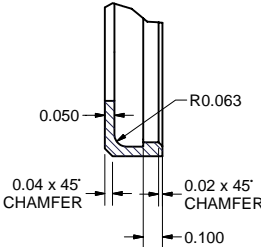
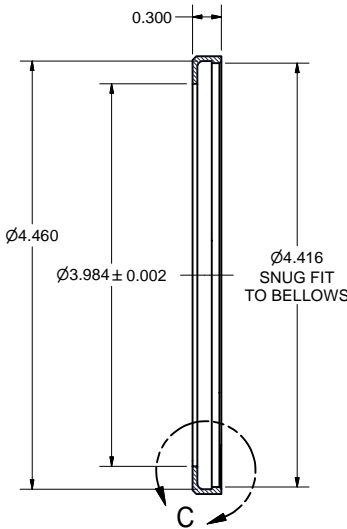
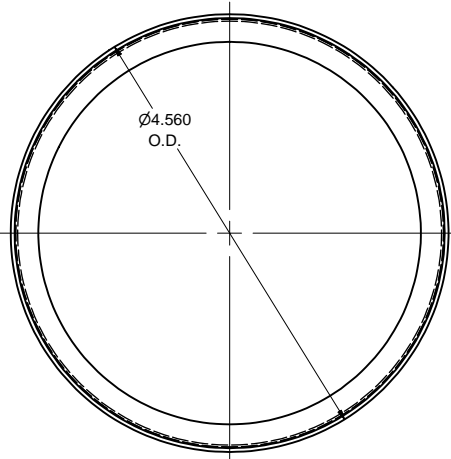
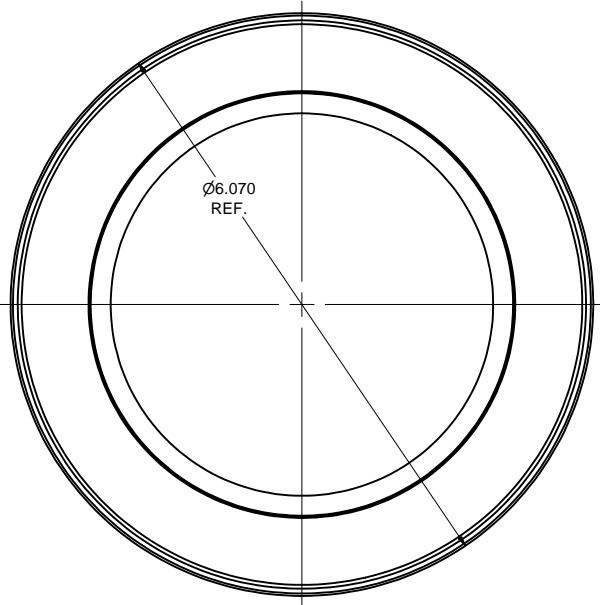
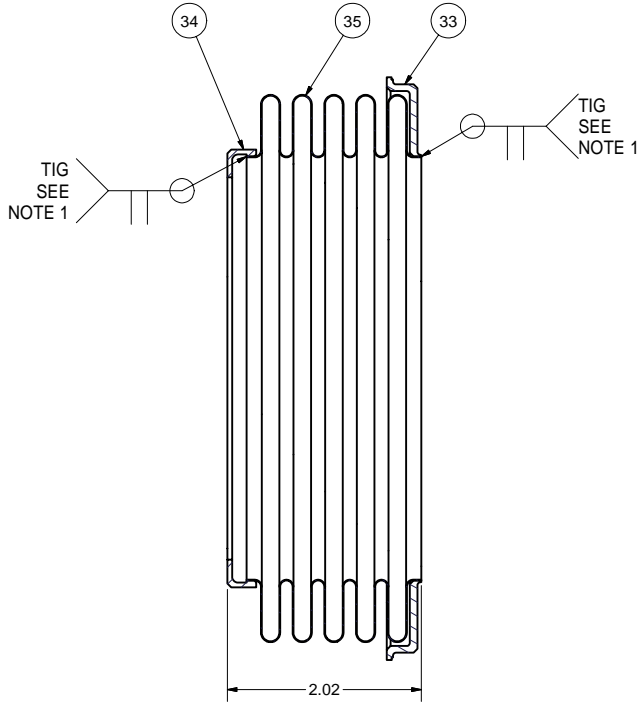
FILE NAME: 7102-026
SHEET NO.: 9
DFT. SCALE: 2:1
MATERIAL: 316L STAINLESS STEEL
QTY: 20 PER ASSEMBLY
NOTES:

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

TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
	OK	DATE	N/A
DRAFTING (O'Connell):			
MACHINE SHOP (Kaminski):			
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):			
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			

ITEM	DWG. NO.	DESCRIPTION	Q1	Q2	Q3	REMARKS	REV.
75	7102-026 (SH. 6)	BELLOWS BRACKET-78	2			316L SST	
32	7102-026 (SH. 10)	BELLOWS SUBASM-78	1			-	
27	7102-026 (SH. 6)	FLANGE UNIT SUBASM-78	1			-	
16	7102-026 (SH. 9)	OUTER HALF SUBASM-78	X			-	
PLOT DATE: 8/29/2007 CAD FILE NAME: 7102-026.idw							
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES							
CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853							
ERL INJECTOR CRYOMODULE 78 MM HOM LOAD VERSION-2: OUTER HALF SUBASM & DETAILS							
CHECKED BY: J. SEARS	DRAWN BY: VM	DRAWN FOR: M. Liepe	DATE: 5/5/2006	SCALE: -	D	7102-026 SH. NO. 9 OF 12	REV.
APPROVED BY: M. LIEPE							

REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.



DETAIL C
SCALE 2 : 1

OPERATING CONDITIONS:

Temperature: 5 K to 77 K across bellows
Vacuum inside and outside
Stroke: 2 mm (0.08 inch)
Shift: 1 mm (0.04 inch)
Maximum temperature: 200 C (473 K)
Minimum temperature: -268 C (5 K)
Leak Rate: < 1E-9 mbar x l/sec

DESIGN SPECIFICATION:

Burst Pressure, Internal: >= 30 psia (2 bar) @ 293 K
External: >= 22.5 psi (1.5 bar) @ 293 K
Working Pressure: > 15 psia (1 bar) @ 293 K

Size:

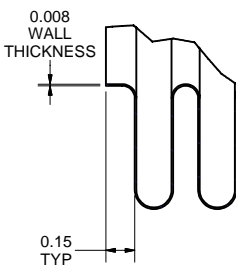
O.D.: 5.7 inch (144.8 mm)
I.D.: 4.4 inch (111.8 mm)
Overall Length: 1.82 inch (46.2 mm)
Pitch: 0.33 inch (8.4 mm)
Minimum Stroke: ± 0.250 inch (6.4 mm)
Minimum Lateral Shift: 0.08 inch (2 mm)
Minimum Cycle Life: 10000

32 BELLOWS SUBASM-78

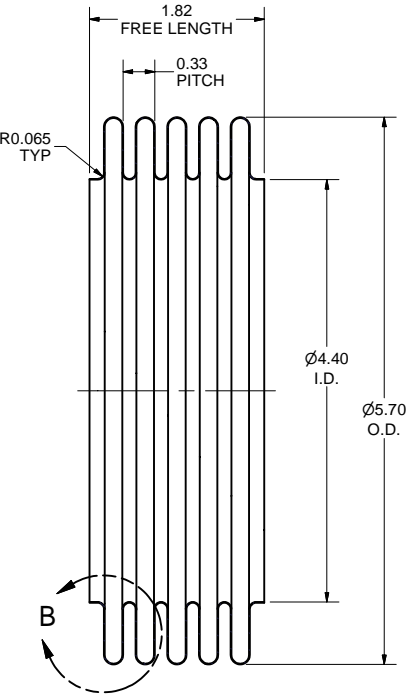
FILE NAME: 7102-026
SHEET NO.: 10
DFT. SCALE: 1:1
MATERIAL:
QTY: 2 PER ASSEMBLY
NOTES: 1. WELDS TO CONFORM TO UHV SPEC.
2. MANUFACTURER: AMERIFLEX INC. (OR EQUIV).

34 SMALL BELLOWS RING-78

FILE NAME: 7102-026
SHEET NO.: 10
DFT. SCALE: 1:1
MATERIAL: 316L STAINLESS STEEL
QTY: 2 PER ASSEMBLY
NOTES:

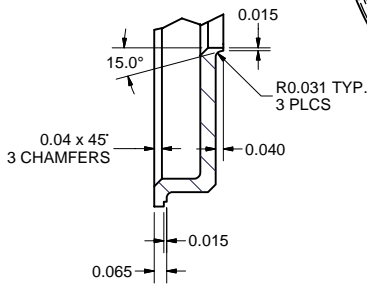
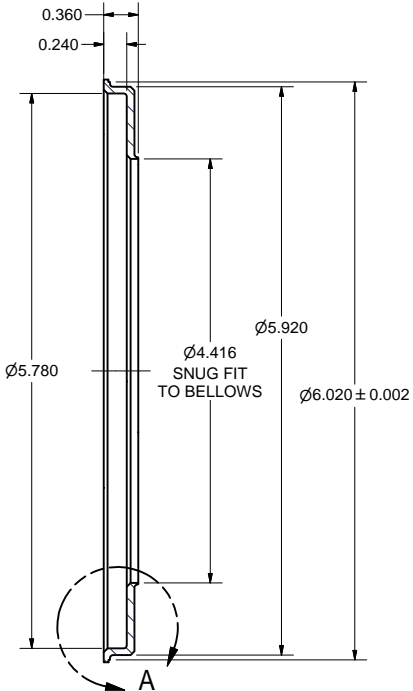
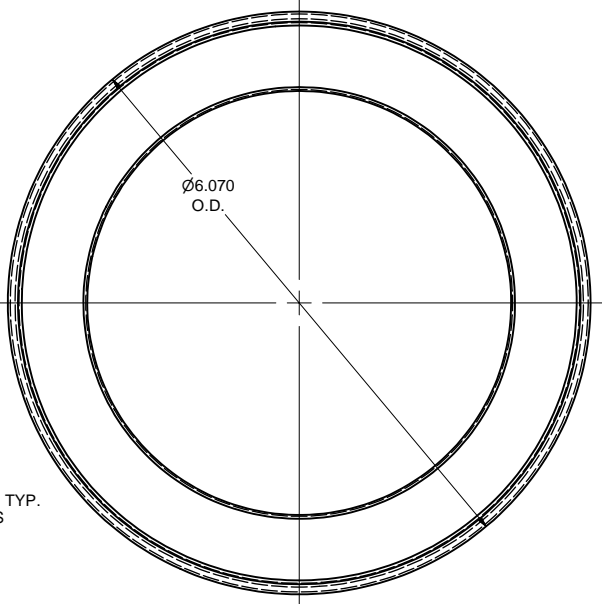


DETAIL B
SCALE 2 : 1



35 BELLOWS 4.4 x 5.7 x 0.008 x 5

FILE NAME: 7102-026
SHEET NO.: 10
DFT. SCALE: 1:1
MATERIAL: 316L STAINLESS STEEL
QTY: 2 PER ASSEMBLY
NOTES: 1. NO. OF CONVOLUTIONS: N = 5.
2. MANUFACTURER: AMERIFLEX INC. (OR EQUIV).



DETAIL A
SCALE 2 : 1

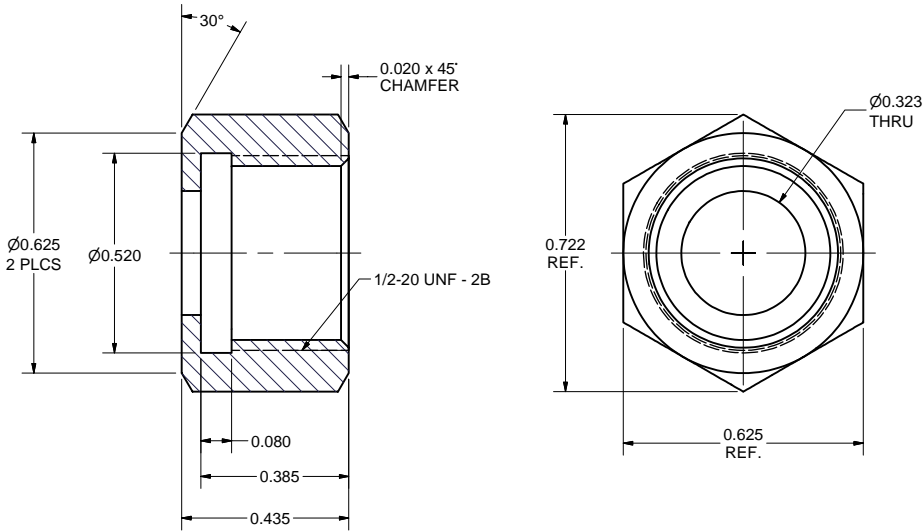
33 LARGE BELLOWS RING-78

FILE NAME: 7102-026
SHEET NO.: 10
DFT. SCALE: 1:1
MATERIAL: 316L STAINLESS STEEL
QTY: 2 PER ASSEMBLY
NOTES:

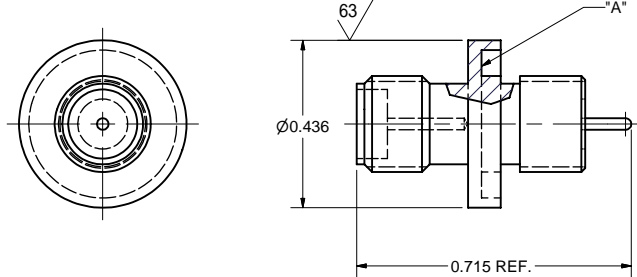
35	7102-026 (SH. 10)	BELLOWS 4.4 x 5.7 x 0.008 x 5	1			316L SST	
34	7102-026 (SH. 10)	SMALL BELLOWS RING-78	1			316L SST	
33	7102-026 (SH. 10)	LARGE BELLOWS RING-78	1			316L SST	
32	7102-026 (SH. 10)	BELLOWS SUBASM-78	X			AMERIFLEX	

ITEM	DWG. NO.	DESCRIPTION	QUANTITY			REMARKS	REV.
			G1	G2	G3		
PRINT DISTR.	7102-026	PLOT DATE: 8/29/2007 CAD FILE NAME: 7102-026.idw					
CR-1		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES ✓	CORNELL UNIVERSITY LEPP LABORATORY FOR ELEMENTARY PARTICLE PHYSICS CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853 ERL INJECTOR CRYOMODULE 78 MM HOM LOAD VERSION-2: BELLOWS SUBASM & DETAILS				
REV.		CHECKED BY: J. SEARS APPROVED BY: M. LIEPE	DRAWN BY VM	DRAWN FOR M.Liepe	DATE 5/5/2006	SCALE D	7102-026 SH. NO. 10 OF 12

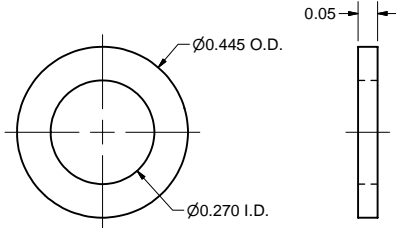
REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.
A		ITEM 41: 1.385 WAS 1.625, (ITEM 28, SH.9) WAS (ITEM 28, SH.5) ITEM 43: NOTE 1 P/N WAS 1053086-1. ITEM 44: MATL WAS 316L SST. ITEM 45: Ø0.270 ID WAS Ø0.253 ID. ITEM 46: DELETED NOTE 1, PROBE TIP IS .800 LONG D.M.E.	8-29-07	JOS



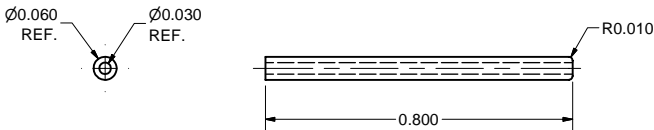
44 RF PROBE SEAT NUT
FILE NAME: 7102-026
SHEET NO.: 11
DFT. SCALE: 4:1
MATERIAL: 0.625" SILICON BRONZE, ALLOY 655 HEX ROD (OR 3/4" ROUND ROD)
QTY: 8 PER ASSEMBLY
NOTES:



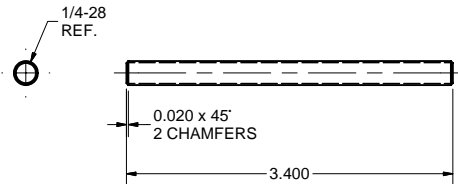
43 RF CONNECTOR MODIFICATION
FILE NAME: 7102-026
SHEET NO.: 11
DFT. SCALE: 4:1
MATERIAL: SEE NOTE 1
QTY: 8 PER ASSEMBLY
NOTES: 1. MAKE FROM TYCO/AMP 1053137-1 CONNECTOR.
2. REMOVE GOLD PLATING FROM SEALING SURFACE "A".



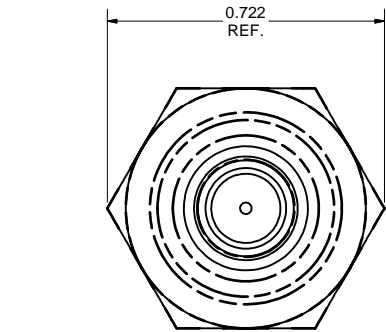
45 RF PROBE WASHER
FILE NAME: 7102-026
SHEET NO.: 11
DFT. SCALE: 4:1
MATERIAL: ALUM/BRONZE, AMPCO-18 OR EQUIV.
QTY: 8 PER ASSEMBLY
NOTES:



46 RF PROBE TIP-78
FILE NAME: 7102-026
SHEET NO.: 11
DFT. SCALE: 4:1
MATERIAL: 1/16 O.D. COPPER TUBE. K+S ENGINEERING #117 OR EQUIV.
QTY: 8 PER ASSEMBLY
NOTES:



76 1/4-28 THREADED ROD
FILE NAME: 7102-026
SHEET NO.: 11
DFT. SCALE: 1:1
MATERIAL: 1/4-28 316 STAINLESS STEEL THREADED ROD
QTY: 4 PER ASSEMBLY
NOTES:



41 RF PROBE-78 SUBASM
FILE NAME: 7102-026
SHEET NO.: 11
DFT. SCALE: 4:1
MATERIAL:
QTY: 8 PER ASSEMBLY
NOTES: 1. USE OMNI-SPECTRA CRIMPER, 76873-2,
SETTING #3 TO FIX TIP 46 ON CONNECTOR 43.
2. MAY USE 0.060 DIA. INDIUM INSTEAD OF PARKER SEAL.

47	-	PARKER ULTRA SEAL #QO-55	1			SEE NOTE 2		
46	7102-026 (SH. 11)	RF PROBE TIP-78	1			COPPER		
45	7102-026 (SH. 11)	RF PROBE WASHER	1			AMPCO 18		
44	7102-026 (SH. 11)	RF PROBE SEAT NUT	1			316L SST		
43	7102-026 (SH. 11)	RF CONNECTOR MODIFICATION	1			-		
41	7102-026 (SH. 11)	RF PROBE-78 SUBASM	X			-		
ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS	REV.

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

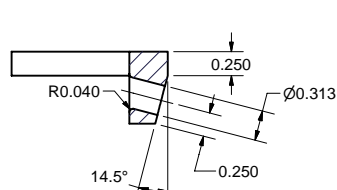
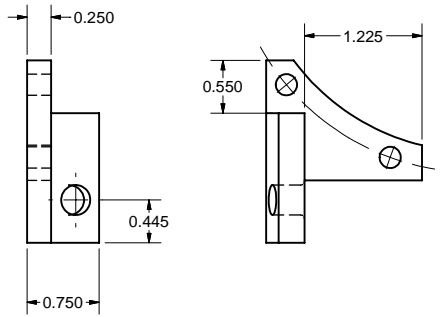
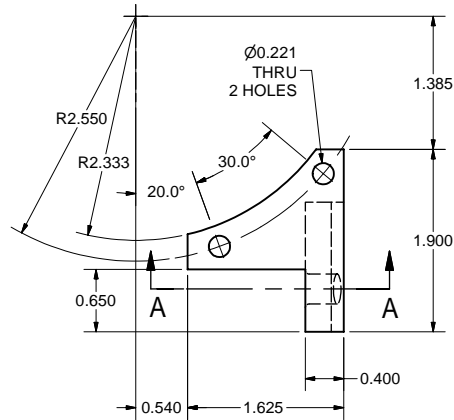
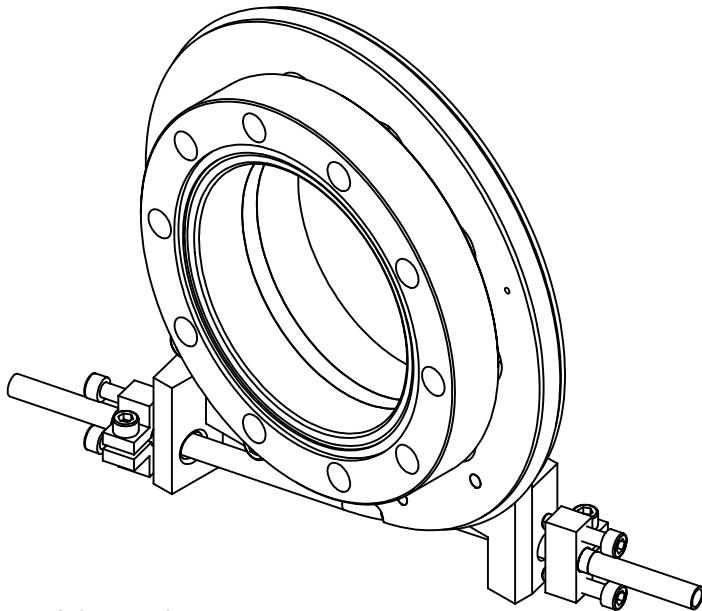
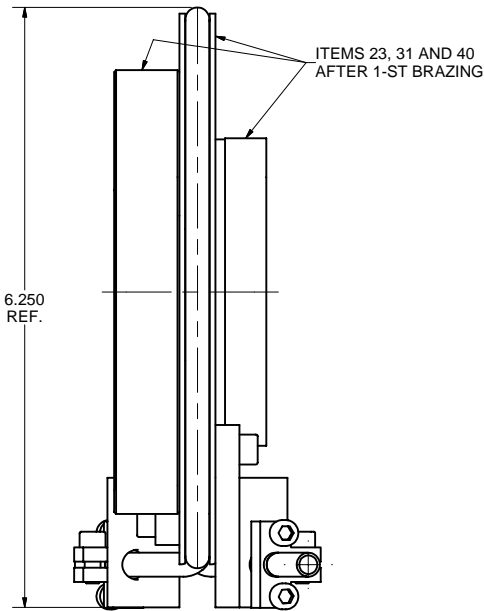
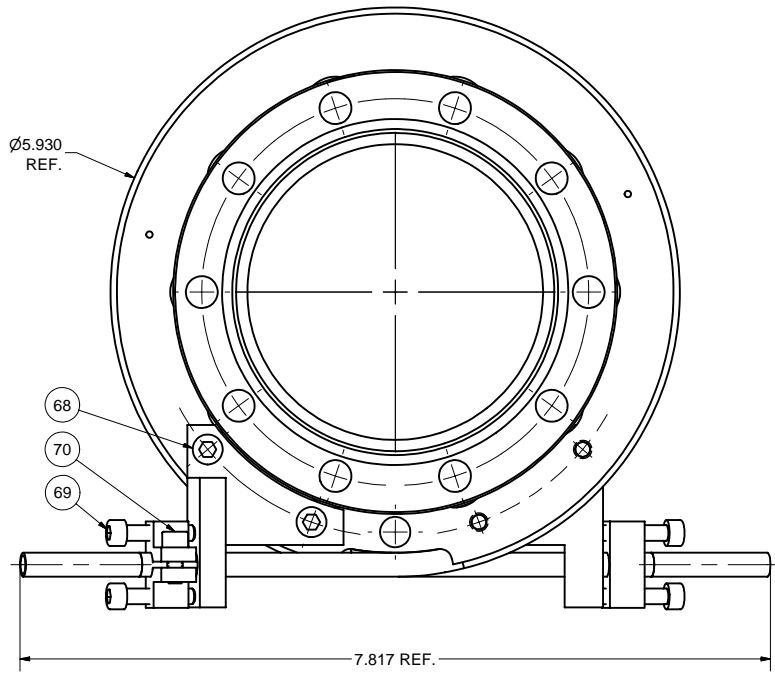
TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
	OK	DATE	N/A
DRAFTING (O'Connell):			
MACHINE SHOP (Kaminski):			
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):			
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			

PRINT DISTR.	CR-1	7102-026 SH. NO. 11 OF 12	REV. A
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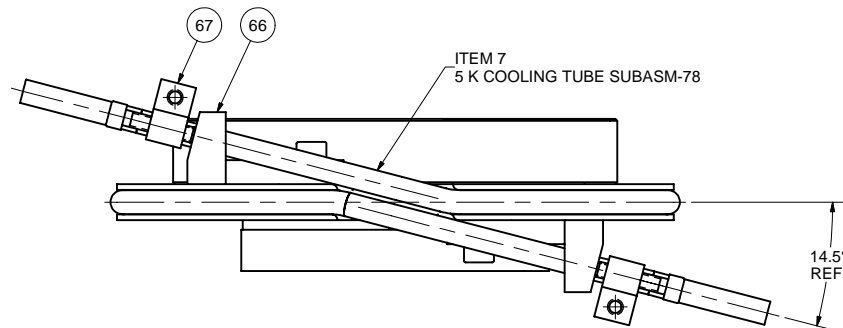
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES	CORNELL UNIVERSITY LEPP LABORATORY FOR ELEMENTARY PARTICLE PHYSICS	CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853
CHECKED BY: J. SEARS APPROVED BY: M. LIEPE	DRAWN BY: VM DRAWN FOR: M. Liepe	DATE: 5/5/2006 SCALE: - D
7102-026 SH. NO. 11 OF 12		REV. A

ERL INJECTOR CRYOMODULE
78 MM HOM LOAD VERSION-2:
RF PROBE SUBASM & DETAILS

REVISIONS				
SYM.	ZONE	DESCRIPTION	DATE	APP.
A		BOM EDITED TO STANDARDIZE VENDOR PART #s. D.M.E.	6-14-06	TIO

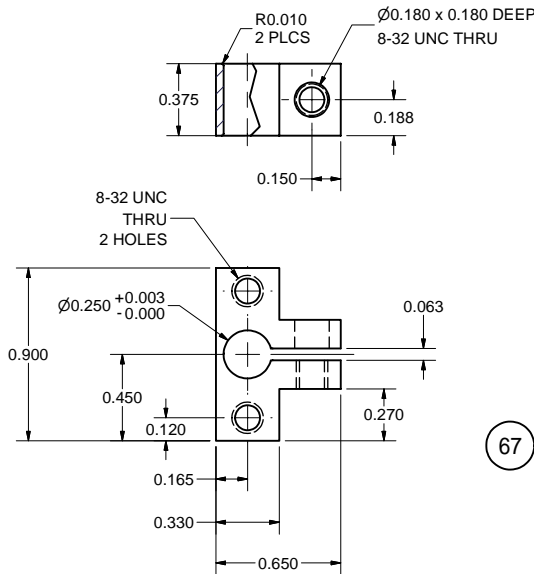


SECTION A-A



65 5 K COOLING TUBE TENSION DEVICE-78
FILE NAME: 7102-026
SHEET NO.: 12
DFT. SCALE: 1:1
MATERIAL: 304 STAINLESS STEEL
QTY: 1 PER PROJECT
NOTES:

66 TENSION BRACKET-78
FILE NAME: 7102-026
SHEET NO.: 12
DFT. SCALE: 1:1
MATERIAL: 304 STAINLESS STEEL
QTY: 2 PER PROJECT
NOTES:



67 TUBE CLAMP
FILE NAME: 7102-026
SHEET NO.: 12
DFT. SCALE: 2:1
MATERIAL: 304 STAINLESS STEEL
QTY: 2 PER PROJECT
NOTES:

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

TECHNICAL RESOURCE APPROVALS REQUIRED BEFORE FABRICATION			
	OK	DATE	N/A
DRAFTING (O'Connell):			
MACHINE SHOP (Kaminski):			
CHEMISTRY (Conklin):			
ELECTRONICS SHOP (Barley):			
FURNACE BRAZING (Sherwood):			
BEAM WELDING (Sears):			
WELDING OTHER (Gallagher):			
UTILITIES INTEGRATION (Gallagher):			
STOCKROOMS (Lockwood):			

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
70	-	8-32 x 3/8 Socket Head Cap Screw	2			MMC 92185A192 316 SST	
69	-	8-32 x 3/4 Socket Head Cap Screw	4			MMC 92185A197 316 SST	
68	-	10-32 x 5/8 Socket Head Cap Screw	4			MMC 92185A990 316 SST	
67	7102-026 (SH. 12)	TUBE CLAMP	2			304 SST	
66	7102-026 (SH. 12)	TENSION BRACKET-78	2			304 SST	
65	7102-026 (SH. 12)	5 K COOLING TUBE TENSION DEVICE-78	X			-	
PLOT DATE: 8/29/2007 CAD FILE NAME: 7102-026.idw							
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .00 ± .010 .000 ± .005 FRACTIONS ± 1/64 ANGLES ± 0.5° ALL SURFACES ✓							
CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853							
ERL INJECTOR CRYOMODULE 78 MM HOM LOAD VERSION-2: 5K COOLING TUBE TENSION DEVICE							
CHECKED BY: J. SEARS APPROVED BY: M. LIEPE		DRAWN BY VM	DRAWN FOR M.Liepe	DATE 5/5/2006	SCALE -	7102-026 SH. NO. 12 OF 12	REV. A