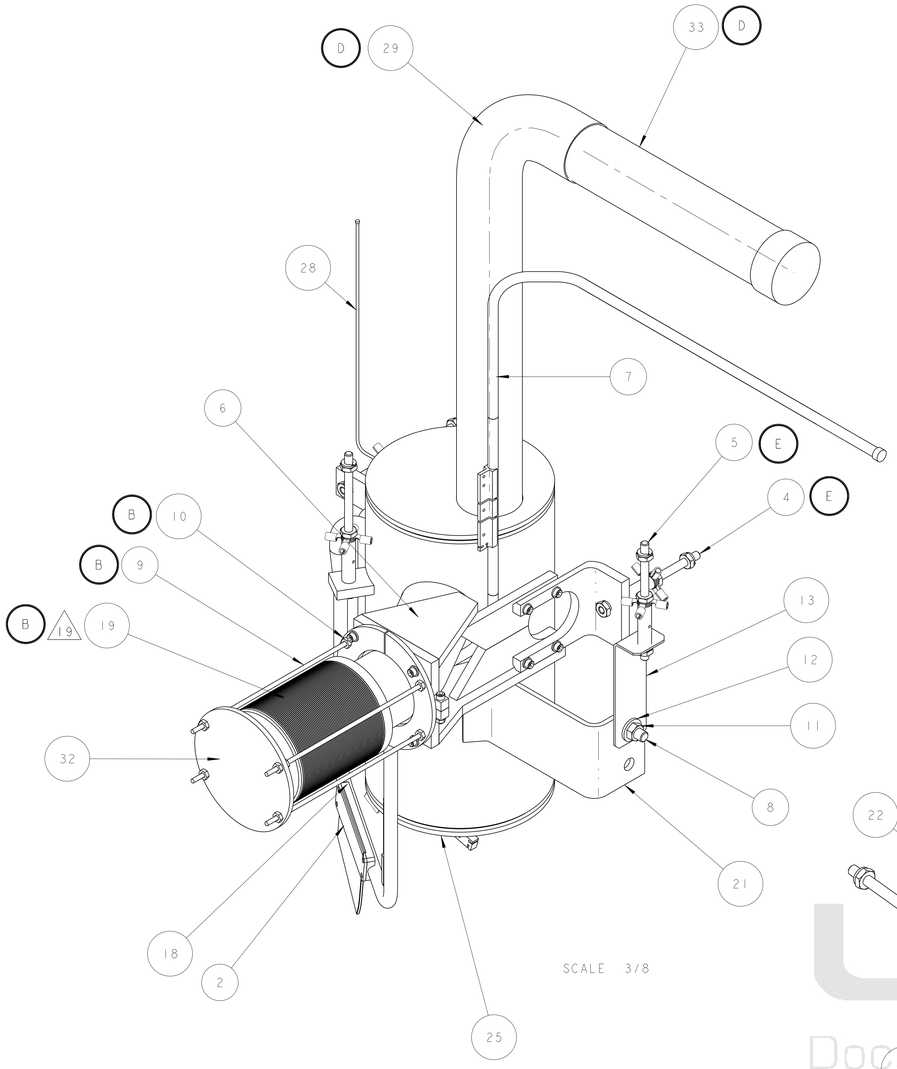
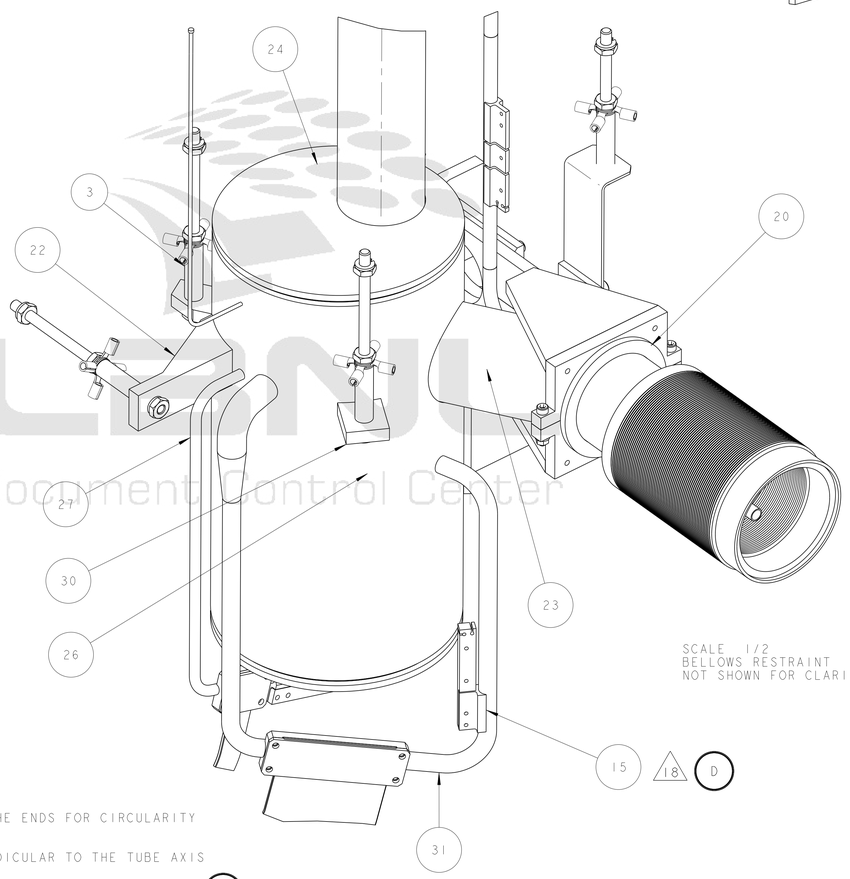
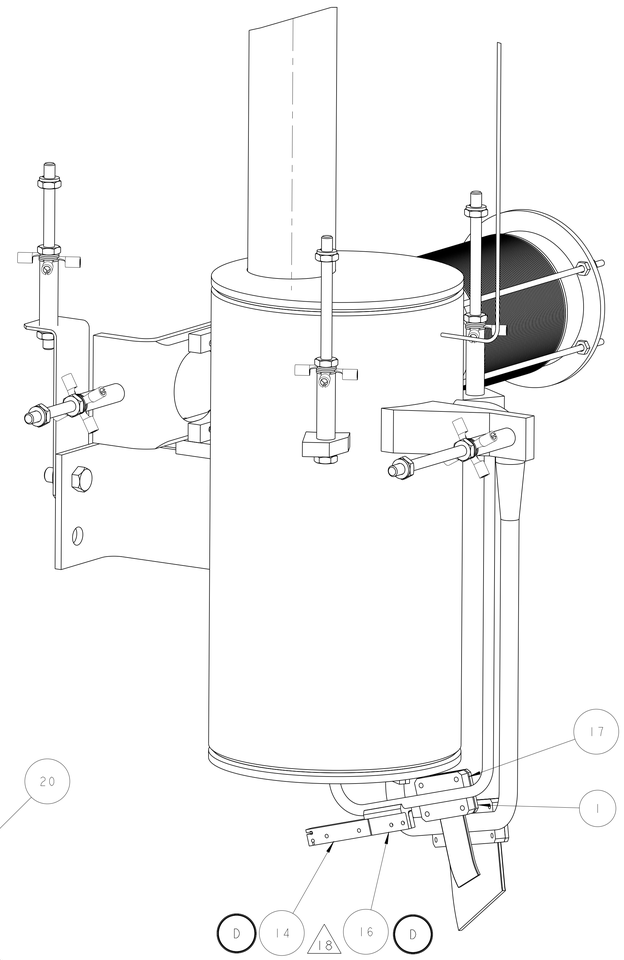


SCALE 3/8



SCALE 1/2
BELLOWS RESTRAINT
NOT SHOWN FOR CLARITY



SCALE 1/2

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. THIS IS A CRYOGENIC VACUUM COMPONENT.
2. WELDING PROCEDURE: PER VENDOR SPECIFICATION WITH LBNL APPROVAL.
3. CLEANING PROCEDURE : PER VENDOR SPECIFICATION WITH LBNL APPROVAL.
4. PACKAGING AND STORAGE PROCEDURE OF THE COMPONENTS: PER VENDOR SPECIFICATION WITH LBNL APPROVAL.
5. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M-1982. UNITS ARE IN INCHES [mm] UNLESS OTHERWISE SPECIFIED.
6. USE OF SULFUR OR SILICONE BEARING OILS, LUBRICANTS, OR COOLANTS ARE STRICTLY PROHIBITED.
7. USE OF RESIN OR RUBBER BONDED ABRASIVES UNDER POWER IS STRICTLY PROHIBITED. USE VITREOUS BONDED ABRASIVES ONLY.
8. VENDOR SUGGESTED CHANGES TO WELD PREPS; SUBJECT TO LBNL APPROVAL.
9. FITTINGS MAY BE USED IN PLACE OF BENDS; SUBJECT TO LBNL APPROVAL.
10. VENDOR SUGGESTED CHANGES TO TOLERANCES TO FACILITATE FABRICATION OR ASSEMBLY; SUBECT TO LBNL APPROVAL.
11. REMOVE ALL THE BURRS AND REAM THE ENDS FOR CIRCULARITY AND CLEAN ENDS.
12. TUBE END SURFACE MUST BE PERPENDICULAR TO THE TUBE AXIS WITHIN +/-.010.
13. PERFORM ACCEPTANCE TESTS PER LBNL SPECIFICATION M989. B
14. A MARK DESIGNATING THE INSTALLED LENGTH WILL BE UTILIZED DURING FINAL INSTALLATION OF THE FEEDBOX ASSEMBLY. MARK, SCRIBE OR ETCH THIS LOCATION IN A PERMANENT MANNER, SUBJECT TO LBNL APPROVAL, TO AN ACCURACY OF ±0.063".
15. PROVIDE A MINIMUM LENGTH OF 4.0" OF STRAIGHT, SMOOTH PIPE ON THE INDICATED SIDE OF THE INSTALLED LENGTH MARK FOR PIPE WELDING DURING FINAL INSTALLATION OF THE FEEDBOX ASSEMBLY.
16. PIPE MUST BE STRAIGHT AND SMOOTH (NO BUMPS) FOR 1.5" ON EITHER SIDE OF THE CENTER-PLANE OF THE SUPPORT. B
17. CAP BOTH ENDS OF PIPE TO FACILITATE ACCEPTANCE TESTS. B
18. INSTALL TEMPERATURE SENSOR IN ACCORDANCE WITH LHC SPECIFICATION LHC-QIT-AP-0002. SENSOR TO BE PROVIDED BY LBNL. D
19. VENDOR WILL PROTECT BELLOWS FROM DAMAGE DURING TESTING AND SHIPPING USING VENDORS PREFERRED METHOD, SUBJECT TO LBNL APPROVAL. B

THIRD ANGLE PROJECTION

REV	DWG	CHK	ZONE	DATE	CHANGES
E	RLM	JPZ		2/11/04	THRUST SUPPORT ADJUSTABLE WAS WITH THERMAL BREAK. REMOVE SUPPORT BRACKET, BELLOWS & RESTRAINT FROM TOP VIEW ON SHT 2; MOVE WELD LOC AND DEL DET B. ADD OVERLAP DIM AT QRL TRANSITION. VISUAL CHANGES TO ADJUSTABLE THRUST SUPPORTS. ADD CUT TO TAB SHT 2, C-4
D	RLM	JPZ		12/8/03	INTERFACE CHANGE AT QRL: NEW REDUCER AND END PIECE: CUT-OFF L 13.62 WAS INSTALLED LENGTH 17.20, 19.6 WAS 23.2 REPLACE TEMP SENSORS WITH THERM MOUNTING PAD ASSEMBLY. NOTE 18: LHC-QIT-AP-0002 WAS LHC-QIT-ES-0002. NUMEROUS COSMETIC CHANGES TO CLARIFY AND COMPLEMENT DRAWING
C	RLM	JER		6/9/03	PASSIVE HEATER ELBOW AND REDUCER WALL .083 WAS .100 ADDED THREADED ROD LENGTH.
B	ARH	SPV		01/15/03	RE-CONFIGURED THRUST SUPPORTS, CHANGED BELLOWS, ADDED TEMP. BELLOWS RESTRAINT, ADDED DIMS TO TOP VIEW (SHT 2), MOVED END VIEW TO NEW PAGE 3, REVISED DWG NOTES 13, 16 & 17, MINOR DRAWING DIMENSIONAL CHANGES.
A	ARH	SPV		11-20-02	INITIAL RELEASE

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
33	-	1	PIPE, PER ASTM A269	SS 304L
32	-	1	1/4" PLATE	SS 304L
31	-	1	2ND PASSIVE HEATER	SS 304L
30	251913	2	SUPPORT BRACKET, SURGE TANK	SS 304L
29	25M982	1	XB SURGE TANK ATTACHMENT, DFBXA	SS 304L
28	251850	1	TRANSDUCER TUBING	SS 304L
27	251840	1	HEATER TUBE	SS 304L
26	251572	1	SURGE TANK BODY	SS 304L
25	251358	1	SURGE TANK BOTTOM	SS 304L
24	251357	1	SURGE TANK TOP	SS 304L
23	251220	1	PIPE, XB, SURGE TANK ATTACHMENT	SS 304L
22	25M821	1	XB BELLOWS SUPPORT BRACKET	SS 304L
21	25M928	1	XB VERTICAL SUPORT BRACKET	SS 304L
20	25M862	1	WELD BRACKET	SS 304L
19	-	1	BELLOWS, FNAL# 5520-MB-390499	SS 300 SERIES
18	25M877	1	CLAMP BASE PLATE, 5/8 TUBE X 5.00 "	OFHC C101
17	251426	1	CLAMP BASE PLATE	OFHC C101
16	25M979	1	THERMOMETER PAD 3/8"	CDA 101
15	25M977	1	THERMOMETER PAD	CDA 101
14	25M978	2	SUPPORT PLATE	CDA 101
13	25M926	1	XB HANGER, ANGLE PLATE	304 SS
12	-	1	1/2" FLAT WASHER	18-8 SS
11	-	1	1/2" HEX NUT	18-8 SS
10	-	12	1/4-20 HEX NUT	18-8 SS
9	-	4	1/4-20 THREADED ROD	18-8 SS
8	-	1	HEX HD BOLT, 1/2-13 X 1-1/4 LG	18-8 SS
7	251210	1	PIPE, CY1	-
6	25M863	1	XB BELLOWS SUPPORT BRACKET	-
5	25M810	1	THRUST SUPPORT, ADJUSTABLE	-
4	25M810	1	THRUST SUPPORT, ADJUSTABLE	-
3	25H413	3	THRUST SUPPORT, ADJUSTABLE	-
2	25M814	1	CLAMP COVER 4"	OFHC, C101
1	25M813	1	CLAMP COVER 1"	OFHC, C101

UNLESS OTHERWISE SPECIFIED
TOLERANCES: X.X ± 0.1 | FRAC. ± 1/64 | X.XX ± 0.03 | Angles ± 1.00° | X.XXX ± 0.010 | FINISH 125 (3.2 µm)
DO NOT SCALE PRINT
THREADS ARE CLASS 2
CHAMFER ENDS OF ALL SCREW THREADS 30°
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS
BREAK EDGES .016 MAX. ON MACHINED WORK
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE
IN ACCORDANCE WITH ASME Y14.5M & BAE.1

SHOP ORDERS
ACCT NO. | REQD NO. | DATE ISSD | DATE REQD
SURFACE TREATMT:
WELD METHOD TAG
PROJECT NUMBER N/A
PROJECT NAME N/A
DWG BY KNOLLS | DATE 07-Dec-01
CHK BY Jon Zbasnik/S.Virostek | DATE 20-Nov-02
APP BY Jon Zbasnik/D.Oshatz | DATE 4-02-02

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY
UNIVERSITY OF CALIFORNIA - BERKELEY

LHC IR FEEDBOX
CRYOGENICS
PIPE, XB DFBXA

MICROFILMED: | PATENT CLEAR: | DWG. TYPE: ASSEM | DESIGN ACCT. NO.: Z5LCE2 | SHOWN ON: - | CATEGORY CODE: LH2003 | SCALE: 1/4 | DO NOT SCALE PRINTS | SHEET 1 OF 3 | DWG. NO.: 2515266 | SIZE: E | REV.: E

DWG. NO. 2515266 SHT 1 REV E

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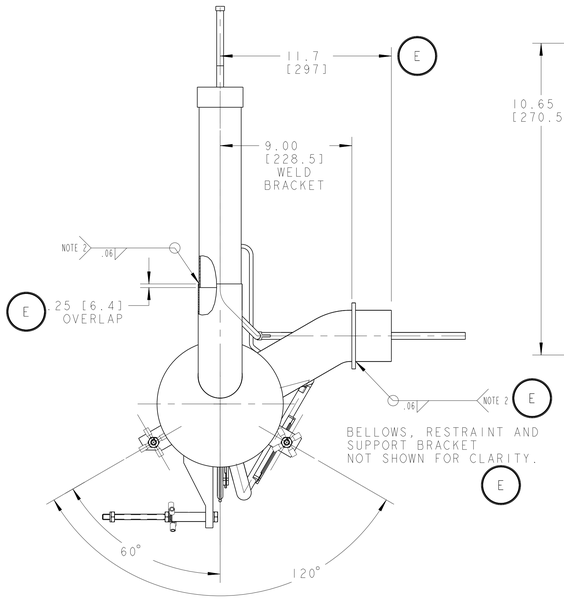

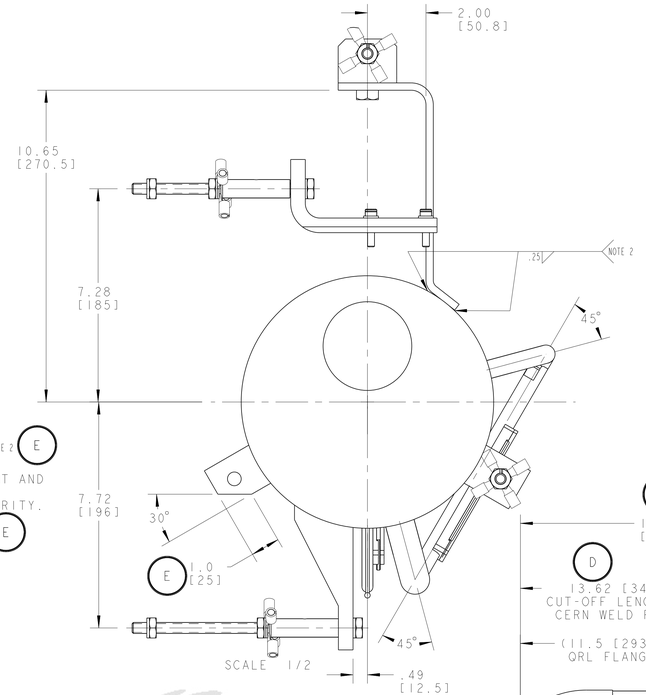

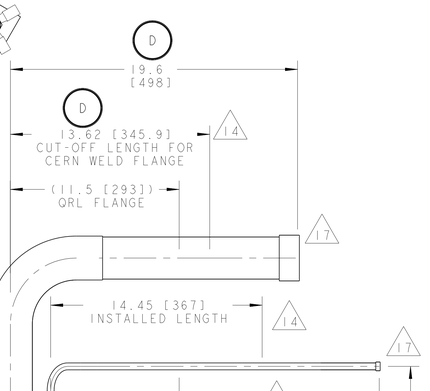

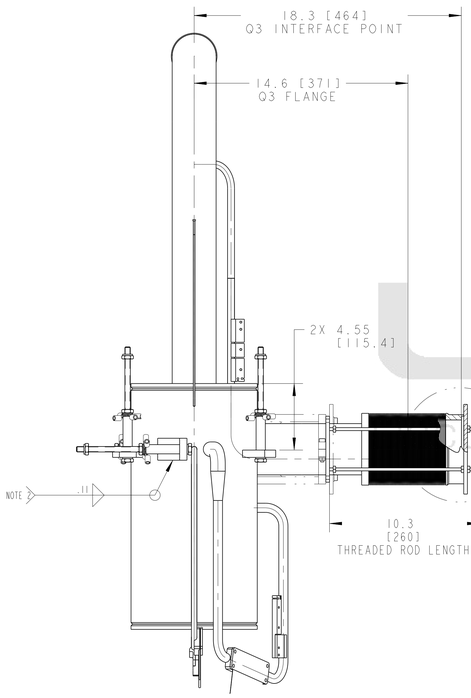

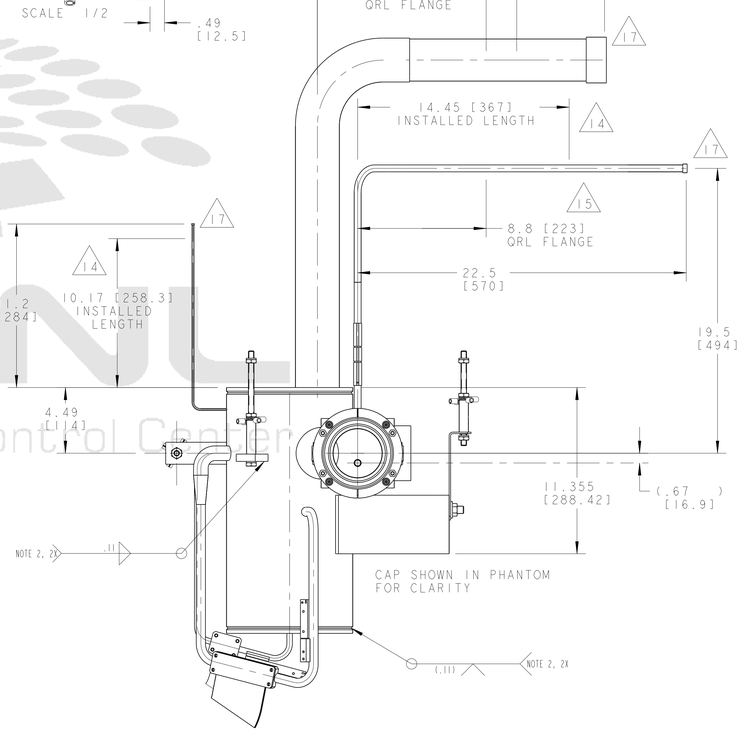

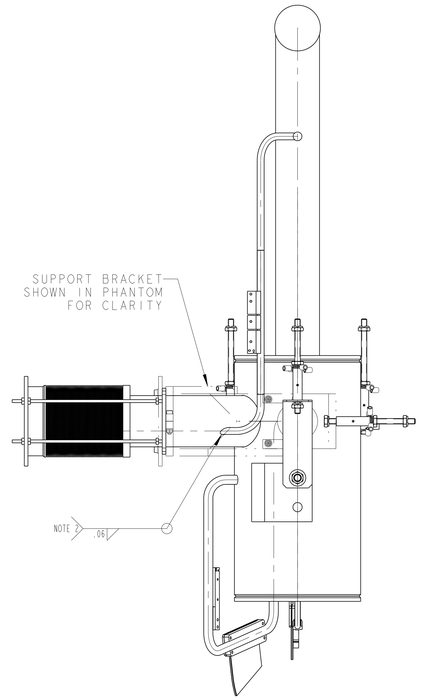

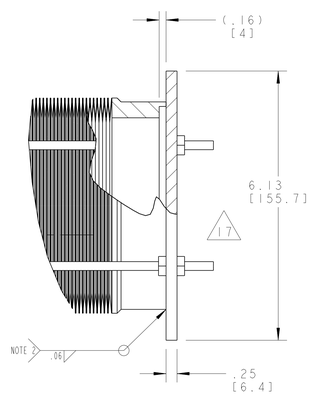

DETAIL H
SCALE 3/4

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LHC IR FEEDBOX
CRYOGENICS
PIPE, XB DFBXA

MICROFILMED:	DWG. TYPE: ASSEM	SHOWN ON: -	SCALE: 1/4	DO NOT SCALE PRINTS
			SHEET 2 OF 3	
PATENT CLEAR:	DESIGN ACCT. NO.: Z5LCE2	CATEGORY CODE: LH2003	DWG. NO.: 2515266	SIZE: E / REV.:

DWG. NO. 2515266 SHEET REV. 2 E

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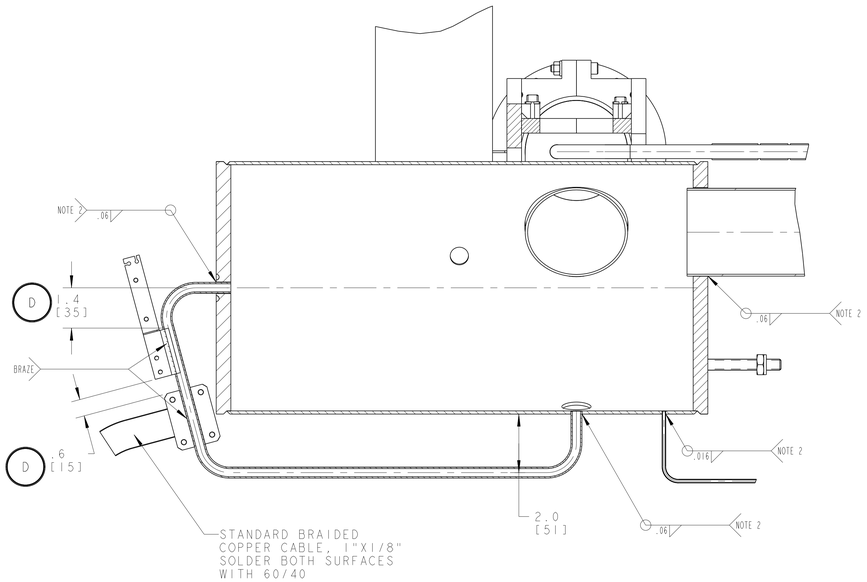
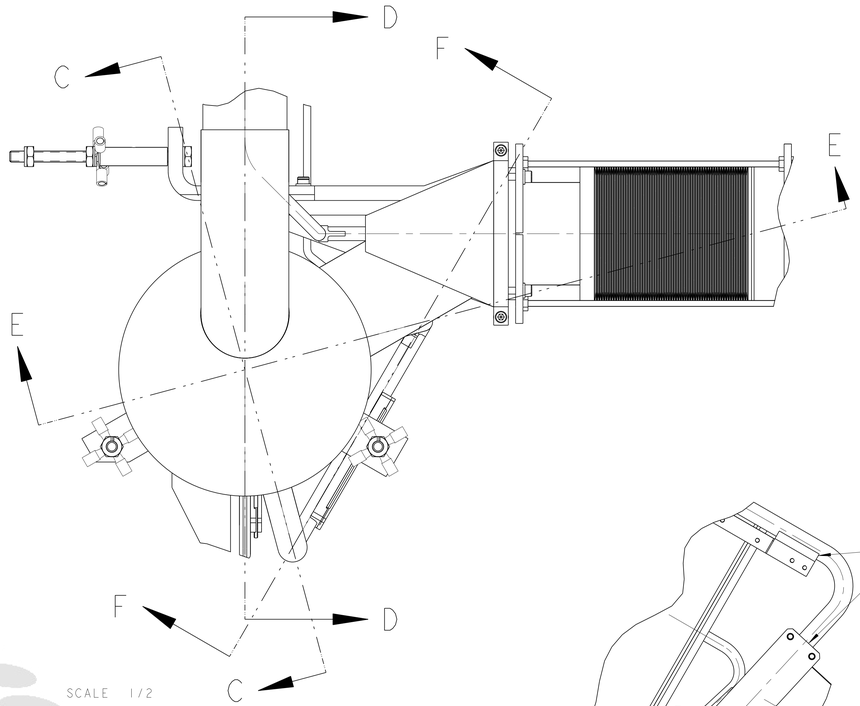
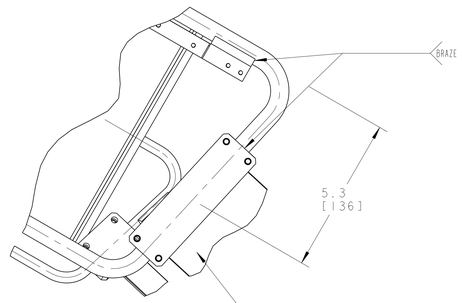
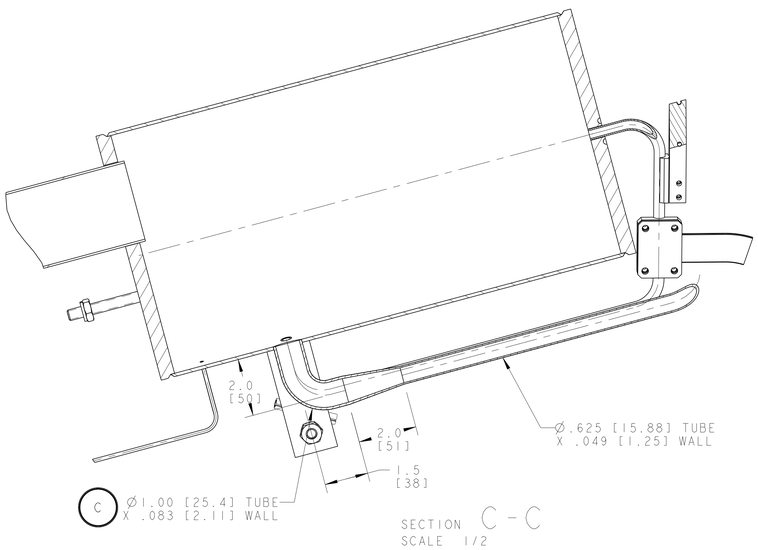


SECTION D - D



SCALE 1/2





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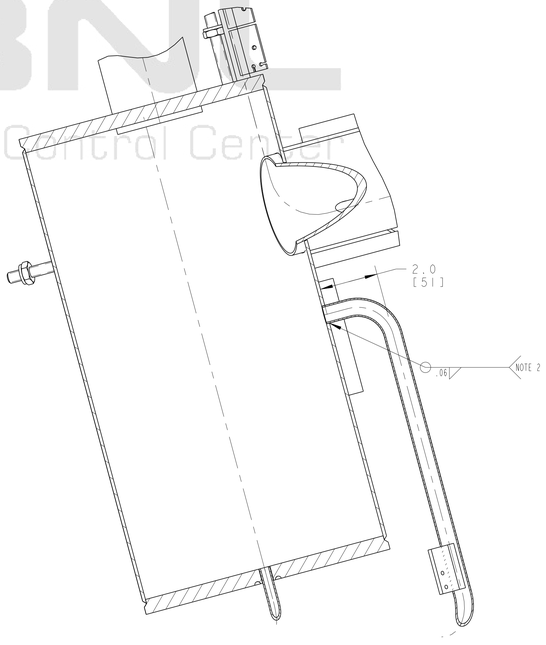

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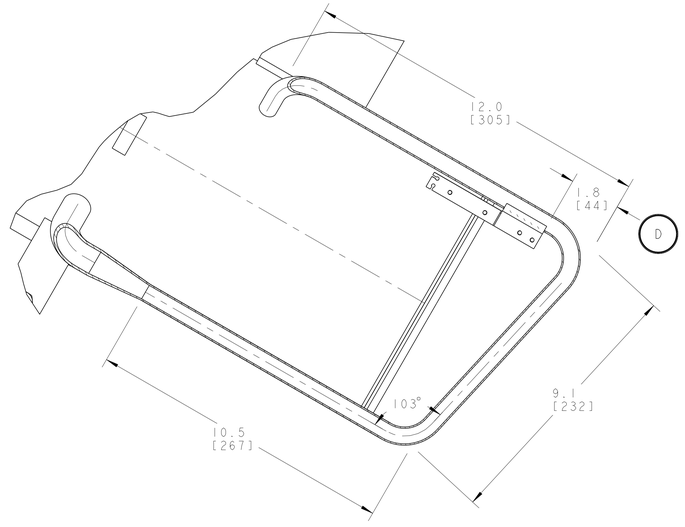

SECTION F - F
SCALE 1/2

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LHC IR FEEDBOX
CRYOGENICS
PIPE, X8 DFBXA

MICROFILMED:	DWG. TYPE	SHOWN ON	SCALE: 1/4	DO NOT SCALE PRINTS
	ASSEM	-	SHEET 3 OF 3	
PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CODE	DWG. NO.	SIZE / REV.
	Z5LCE2	LH2003	2515266	E

DWG. NO. 2515266 SIZE/REV. E SHT. 3

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