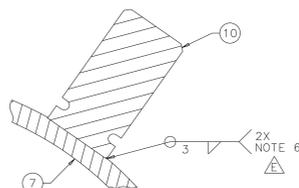
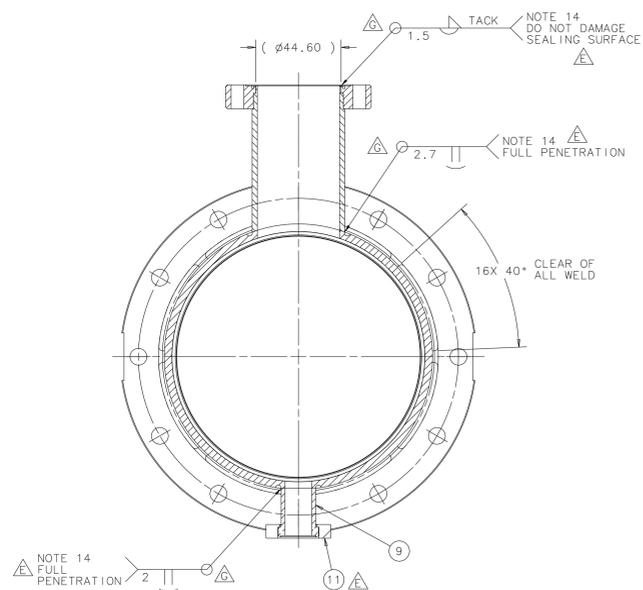
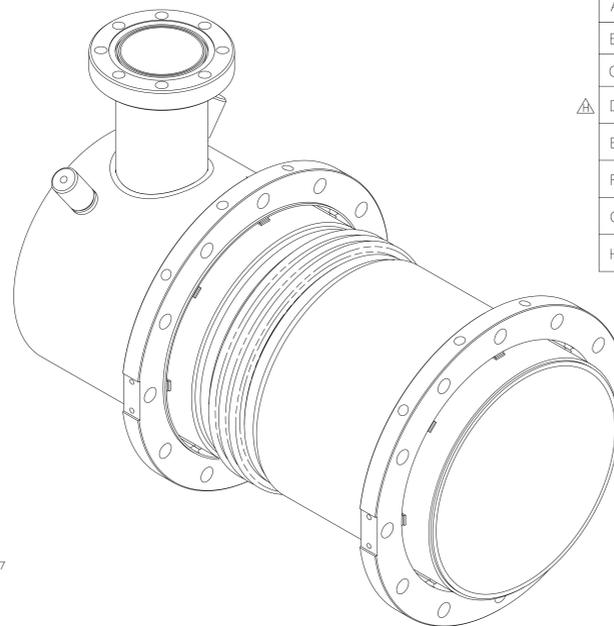
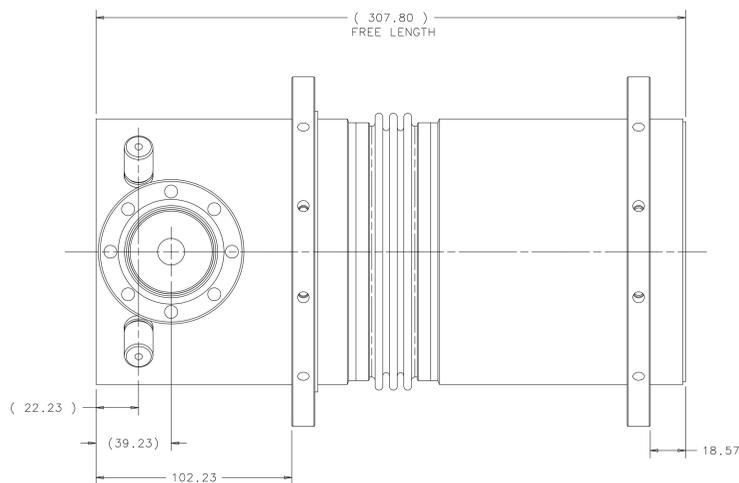


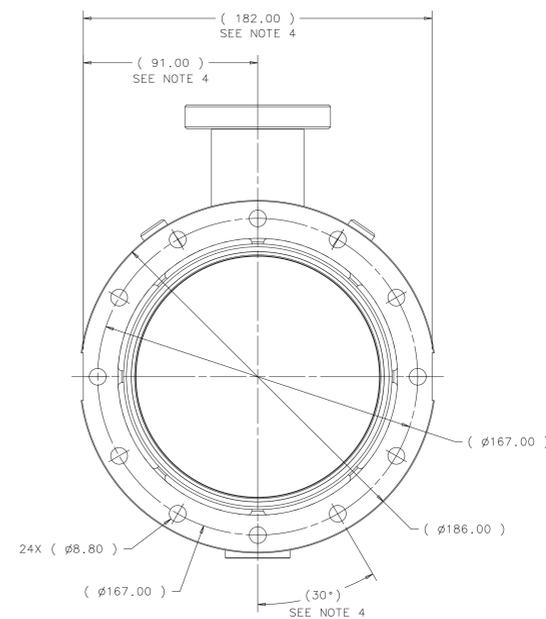
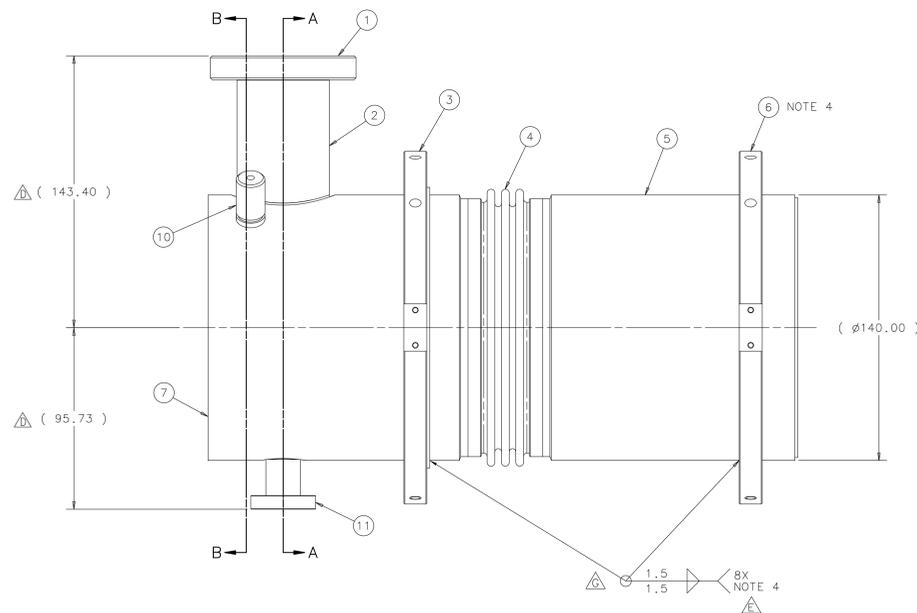
SECTION B-B



DETAIL-C
SCALE 2:1

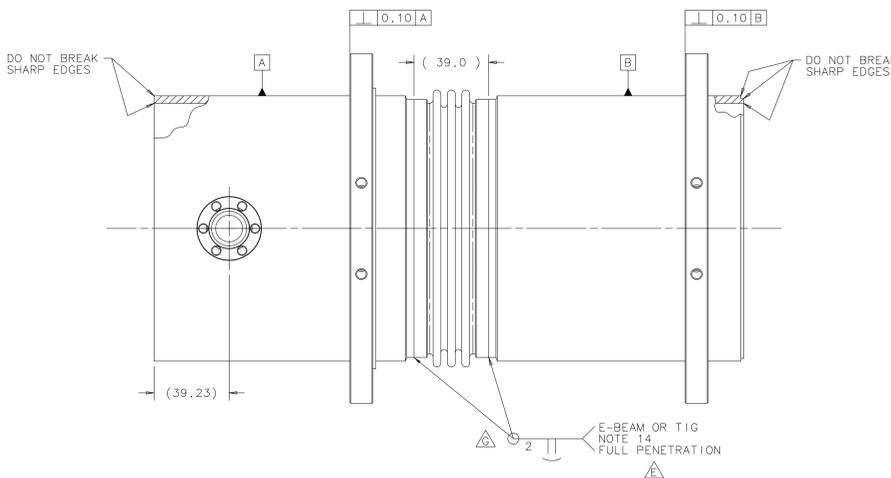


SECTION A-A



NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS.
- SEALING SURFACES ON FLANGES MUST BE FREE FROM ANY NICKS AND RADIAL SCRATCHES.
- ASSEMBLY MUST BE FREE FROM DIRT, GREASE, OIL AND CHIPS AND PROPERLY PACKAGED TO AVOID DAMAGE DURING SHIPPING.
- MOUNTING HOLES FROM FLANGES, ITEM 3 AND ITEM 6, ARE TO BE IN-LINE WITHIN $\pm 0.15^\circ$. FLATS ON ITEMS 3 & 6 SHALL BE PERPENDICULAR TO [A] AND [B] WITHIN 0.10mm.
- ITEM 5 AND ITEM 7 MUST BE CONCENTRIC WITH EACH OTHER WITHIN ± 0.15 mm.
- ITEM 10 TO BE LOCATED ON PRE-MACHINED FLAT SURFACES ON ITEM 7.
- ALL CLEANING AND WELDING PROCEDURES WILL CONFORM TO THE AMERICAN WELDING SOCIETY SPECIFICATION: AWS G2.4/G2.4M: 2007, *GUIDE FOR THE FUSION WELDING OF TITANIUM AND TITANIUM ALLOYS.*
- VENDOR'S OPTION: AN ACCEPTABLE PICKLE BATH MAY BE IMPLEMENTED TO CLEAN THE WELD JOINT MATERIAL. USE A RECOMMENDED BATH OF 35 VOL.% NITRIC ACID (70% CONCENTRATION), AND 5 VOL.% HYDROFLUORIC ACID (48% CONCENTRATION). RINSE WITH COLD WATER AND THEN RINSE WITH HOT WATER TO FACILITATE FASTER DRYING. INSURE THAT THE PARTS ARE CLEAN, COMPLETELY DRY, AND OXIDATION FREE PRIOR TO WELDING. CLEAN PARTS MUST BE USED WITHIN 4 HOURS OR STORED IN AN OXYGEN PURGED ENVIRONMENT.
- ALL WELDS MUST BE PERFORMED INSIDE OF AN ARGON FILLED GLOVEBOX WITH AN OXYGEN COUNT OF 20-30 PPM OR LESS. WELDS MUST BE FREE OF ALL TITANIUM OXIDATION AND DISCOLORATION. E-BEAM WELDING IN A VACUUM ENVIRONMENT IS AN ACCEPTABLE VENDOR OPTION.
- WELDERS MUST BE QUALIFIED AND CERTIFIED IN TITANIUM WELDING. VERIFICATION DOCUMENTS AND WELDING COUPONS FOR EACH WELDER MUST BE SUPPLIED TO FERMI LAB FOR WRITTEN APPROVAL PRIOR TO ANY PRODUCT WELDING. THE VENDOR WILL CREATE WELD SAMPLES (DRAWING THE A-4) AND PERFORM DESTRUCTIVE TESTING TO VERIFY THE WELD QUALITY. RESULTS OF THE TESTING WILL BE PROVIDED TO FERMI LAB.
- ON A DAILY BASIS, PRIOR TO PRODUCT WELDING, WELD COUPONS OF COMPARABLE SIZE AND TYPE WILL BE PREPARED BY THE WELDER. THESE COUPONS WILL BE ETCHED WITH THE DATE, TIME, AND WELDER'S NAME AND KEPT FOR RECORD. THE WELD COUPONS WILL BE PART OF THE DELIVERABLE TO FERMI LAB.
- THE VENDOR'S WRITTEN PROCEDURE DESCRIBING THE CLEANING AND WELDING PROCEDURES MUST BE SUPPLIED TO FERMI LAB FOR WRITTEN APPROVAL PRIOR TO ANY PRODUCT WELDING.
- INSPECTION OF FINAL PRODUCT WILL BE CONDUCTED AT FERMI LAB PRIOR TO ANY ULTRASONIC OR WIRE-BRUSH CLEANING. DO NOT MODIFY THE FINAL WELDS PRIOR TO PRODUCT ACCEPTANCE.
- ALL WELDS TO BE VACUUM TIGHT. NO LEAK SHALL BE DETECTABLE ON THE MOST SENSITIVE SCALE OF A HELIUM LEAK DETECTOR WITH A MINIMUM SENSITIVITY OF 2×10^{-10} ATM. CC/SEC. STABILIZE VESSEL BETWEEN ITEMS 3 & 6 WITH THREADED RODS AND NUTS PRIOR TO VACUUM LEAK TESTING.
- MATERIAL CERTIFICATIONS ARE REQUIRED AND MUST BE INCLUDED WITH SHIPPING. THERE WILL BE NO PRODUCT ACCEPTANCE WITHOUT THE PROPER MATERIAL CERTIFICATIONS.



REV	DESCRIPTION	DRAWN	DATE
--	E.# 7569		
A	ECC# 5737: UPDATE TUBE CONNECTIONS	P. BELKO	08/21/04
B	ECC# 8278: REMOVED SUPPORT LUGS ADDED SECOND INVAR PIN ADDED NOTES 8, 9 AND 10	D. MITCHELL	08/21/04
C	ECC# 8570: REMOVE NOTES 8 AND 9 REMOVE FLANGE, VESSEL END STEPPED	V. MARTINEZ	03/17/06
D	ECC# 8711: REPLACE MB-426261 WITH MC-426262. EXTENDED LENGTH OF ITEMS 2 & 9. REMOVED ALL NOTES.	D. MITCHELL	17-APR-08
E	ECC# 8719: NOTES REVISED AND MODIFIED WELD CALLOUTS. ITEM #4, MC-426253 WAS REPLACED WITH MC-457114, ADDED ITEM #11.	J. MONTELONGO	20-OCT-08
F	ECC# 8874: NOTES #8 & #9 REVISED. ADDED VENDOR'S OPTION FOR PART CLEANING.	D. MITCHELL	27-OCT-08
G	ECC# 8823: ALTERED JOINTS TO IMPROVE FULL-PENETRATION WELDS. SEE PART DETAILS FOR CLARITY.	C. GRIMM	1-JUN-07
H	ECC# 8978: BOM ITEM 8 MODIFIED TO REMOVE LINED-OUT P/N MB-426261 AND REMOVED QUANTITY "1". REMOVED REVISION "D".	D. MITCHELL	22-JUN-07
		M. FOLEY	30-JUL-07
		D. MITCHELL	4-OCT-07
		M. FOLEY	8-OCT-07
		D. MITCHELL	6-FEB-08
		M. FOLEY	7-FEB-08

ITEM	PART NO.	DESCRIPTION OR SIZE	QTY.
11	COM'L	FLANGE OF 1-1/3" ROTATABLE BODY 316L S.S. KURT LESKER P/N F0133X00R	1
10	MB-426260	PIN, HELIUM VESSEL, INVAR CONNECTION	2
9	MC-426262	FLANGE, HELIUM VESSEL DRAIN	1
8		REMOVED FROM BOM	
7	MD-426251	SHELL, He VESSEL-He SUPPLY LINE	1
6	MC-426258	FLANGE, HELIUM VESSEL TUNER RING	1
5	MD-426250	SHELL, HELIUM VESSEL	1
4	MC-457114	BELLOWS WELDMENT	1
3	MC-426257	FLANGE, VESSEL TUNER STEPPED RING	1
2	MB-426278	TUBE, He VESSEL SUPPLY A0	1
1	MC-426277	FLANGE, RF CAVITY He SUPPLY	1

PARTS LIST

UNLESS OTHERWISE SPECIFIED	ORIGINATOR	D. MITCHELL
.X	.XX	X*
± 0.1	± 0.08	± 1*
1: BREAK ALL SHARP EDGES MAX.	APPROVED	D. MITCHELL
2: DO NOT SCALE DRAWING.	USED ON	
3: DIMENSIONS BASED UPON ASME Y14.5M-1994	MATERIAL	PER ITEM
4: MAX. ALL MACH. SURFACES		
5: DRAWING UNITS: mm		

FERMI NATIONAL ACCELERATOR LABORATORY
UNITED STATES DEPARTMENT OF ENERGY

SCRF - 3RD HARMONIC ACCEL
HELIUM VESSEL
HELIUM VESSEL WELDMENT STYLE C

SCALE	DRAWING NUMBER	SHEET	REV
3/4 & AS NOTED	5520.000-ME-426450	1 OF 1	H

CREATED WITH: Ideast1NXSeries GROUP: TD/DDCS-DESIGN-COMPUTING