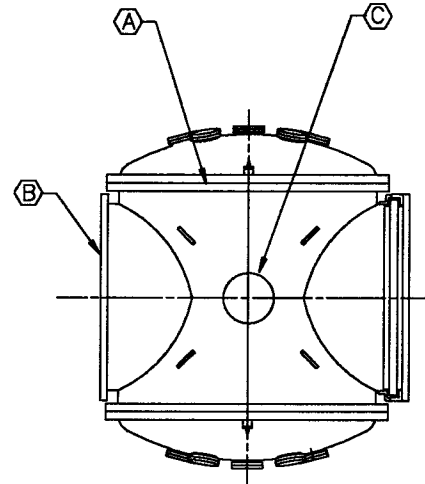


REV	DATE	DRWN	APPD	DCN/DESCRIPTION

- NOTES:
- HEADS ARE ASME F&D.
  - INCLUDE CENTERING PINS ON NOZZLE FLANGES WHERE APPROPRIATE.
  - VIEWPORT (ITEM (F)) MEASUREMENTS REFER TO INTERSECTION OF VIEWPORT AXIS WITH OUTER SURFACE OF VACUUM WALL.
  - TOLERANCES, UNLESS OTHERWISE SPECIFIED: LINEAR,  $\pm 0.25$  CM  
ANGULAR,  $\pm 1$  DEGREE

5. NOZZLE SCHEDULE PER TABLE BELOW:

ITEM	SIZE	QUANTITY	FLANGE TYPE	PURPOSE
(A)	213cm ID TUBE	2	O/O-O/METAL*	MAJOR ACCESS
(B)	152cm ID TUBE	2	O/O-O/METAL*	LASER BEAM
(C)	35cm TUBE ***	1	CONFLAT**, WITH BLIND FLANGE	ION PUMP/AIR SHOWERS, BACK-TO-AIR PURGE
(D)	25cm OD TUBE***	8	CONFLAT**, WITH BLIND FLANGE	ELECTRICAL FEEDTHROUGHS, UTILITY
(E)	30cm OD TUBE	4	CONFLAT**	SUPPORT BEAMS REFERENCE ICD # TBD
(F)	20cm OD TUBE***	10	CONFLAT**, WITH BLIND FLANGE	OBSERVATION, PICKOFFS
(G)	3.8cm TUBE	1	CONFLAT**, WITH BLIND FLANGE	ANNULUS PUMPOUT (NOT SHOWN)



- \* DUAL O-RING DESIGN, WITH CAPABILITY OF REPLACING INBOARD O-RING WITH METAL SEAL. THESE FLANGES EACH INCLUDE AN ANNULAR CHANNEL BETWEEN O-RINGS, MANIFOLDED TO A SINGLE PUMPOUT PORT ON EACH CHAMBER, WITH CONFLAT\*\* SEAL.
- \*\* REGISTERED TRADEMARK, VARIAN VACUUM PRODUCTS; COMPATIBLE ALTERNATIVES ARE ACCEPTABLE
- \*\*\* THESE FLANGES ARE TANGENT TO LOCAL VACUUM WALL, WITH MINIMUM NECK LENGTH

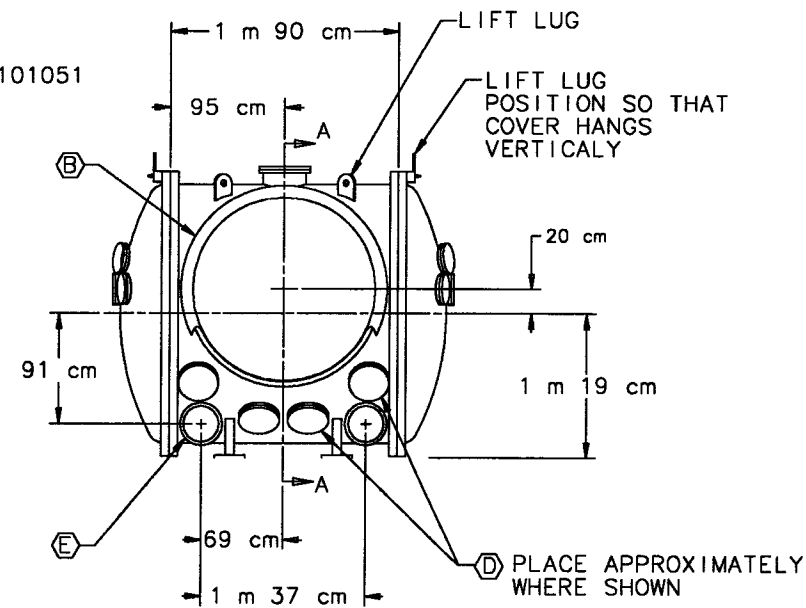
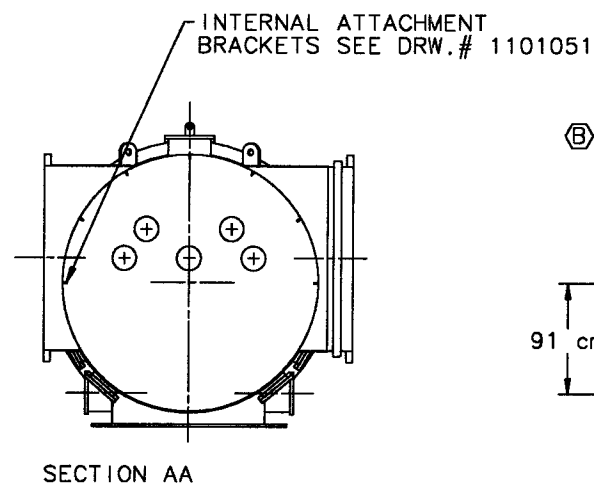
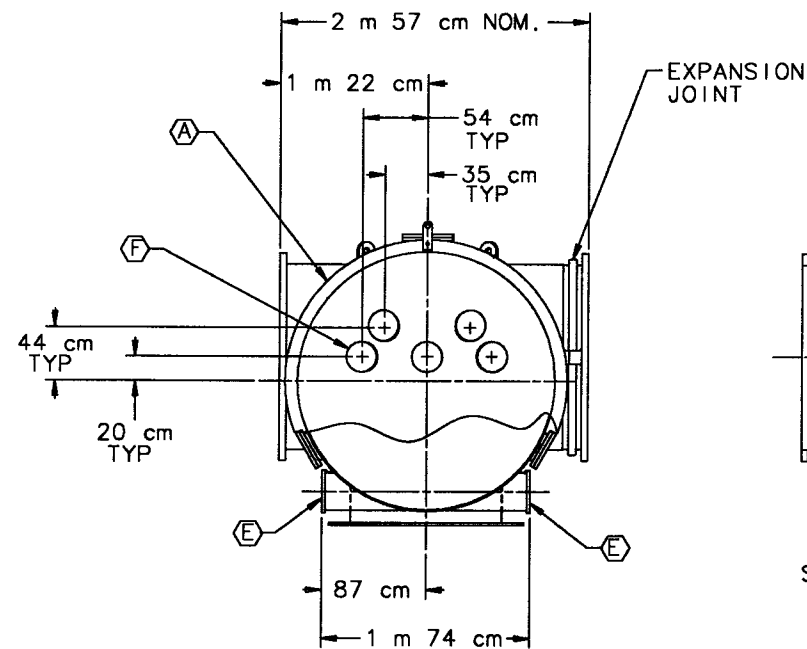


Figure 9.

CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		LIGO PROJECT	
DRWN	J. JOELE	HORIZONTAL ACCESS MODULE (HAM)	
CHK		SCALE:	DRAWING NUMBER 1101010
		SHEET	1 of 1
		REV.	