## COMMERCIAL PARTS LIST

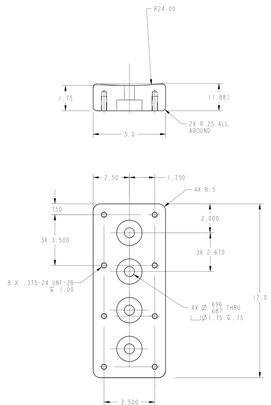
| BALLOON NO. | DESCRIPTION | QTY/ ASSY |
|---|---|---|
| 1 | CON-FLAT FLANGE, Ø4.47 O.D. X .680 THK, Ø1.875 I.D. THRU HOLE WITH ⌴ Ø2.010, MATL: 304L STAINLESS STEEL, 8X 5/16-24 TAPPED HOLES, REF NO. 450-200-T | 2 |
| 2 | CON-FLAT FLANGE, Ø2.72 O.D. X .500 THK, Ø1.375 I.D. THRU HOLE WITH ⌴ Ø1.510, MATL: 304L STAINLESS STEEL, 8X 1/4-28 TAPPED HOLES, REF NO. 275-150-T | 4 |
| 3 | CON-FLAT BLANK FLANGE, Ø4.47 O.D. X .680 THK, MATL: 304L STAINLESS STEEL, 8X Ø.332 HOLES, REF NO. 450-000 | 2 |
| 4 | CON-FLAT BLANK FLANGE, Ø2.72 O.D. X .500 THK, MATL: 304L STAINLESS STEEL, 6X Ø.265 HOLES, REF NO. 275-000 | 4 |
| 5 | CON-FLAT GASKET, Ø3.24 O.D. X Ø2.505 I.D., MATL: OFE COPPER, REF NO. 450-CG | 2 |
| 6 | CON-FLAT GASKET, Ø1.895 O.D. X Ø1.53 I.D., MATL: OFE COPPER, REF NO. 275-175-CG | 4 |
| 7 | HEAVY HEX BOLT, .625-11 UNC-2A X 2.00 LG, MATL: 300 SERIES STAINLESS STEEL, SILVER PLATED | 8 |
| 8 | SIZE 5/8 TYPE B PLAIN WASHER (1.25 O.D. X .656 I.D. X .10 THK), MATL: 300 SERIES STAINLESS STEEL | 8 |
| 9 | 1/4-28 X .875 LG, HEX SOCKET HEAD CAP SCREW, TYPE 304 PER ASTM A320, GRADE B8, CLASS 2, SILVER FLASH PER AMS 2411 - DOMESTIC (GOVERNMENT FURNISHED) | 36 |
| 10 | 5/16-24 X 1.25 LG, HEX SOCKET HEAD CAP SCREW, TYPE 304 PER ASTM A320, GRADE B8, CLASS 2, SILVER FLASH PER AMS 2411 - DOMESTIC (GOVERNMENT FURNISHED) | 16 |
| 11 | PLAIN FLAT WASHER FOR 1/4" SCREW, MATL: TYPE 304 STAINLESS STEEL, (Ø12"O.D.) | 36 |
| 12 | PLAIN FLAT WASHER FOR 5/16" SCREW, MATL: TYPE 304 STAINLESS STEEL, (Ø11/16"O.D.) | 16 |

## TORQUE VALUES (UNITS INDICATED)

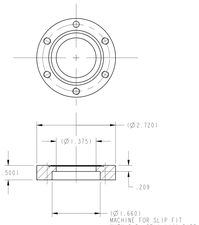
| NO. | TIGHTENING TORQUE |
|---|---|
| C7 | 128-144 FT-LBS |
| C9 | 8.6-9.7 FT-LBS |
| C10 | 14.9-16.7 FT-LBS |

## DRAWING LIST

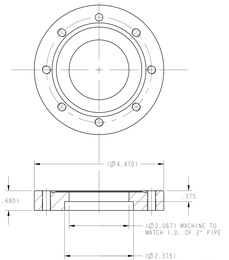
| DRAWING NUMBER: DRAWING CODE | BALLOON NO. | DESCRIPTION | QTY/ ASSY |
|---|---|---|---|
| G13706MRA002 | | CRYOGENIC TEST TANK ASSEMBLY LAYOUT DRAWING | - |
| G13706MRA004 | | STRUT ATTACHMENT PLATE | 3 |



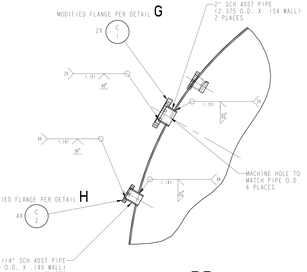

DETAIL E
CART INTERFACE BLOCK
MATL: TYPE 304 STAINLESS STEEL
2 REQD.
SCALE 1/2



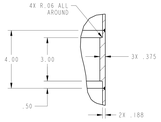

DETAIL H
CON-FLAT FLANGE MODIFICATION
1 REQD.
SCALE 1/1



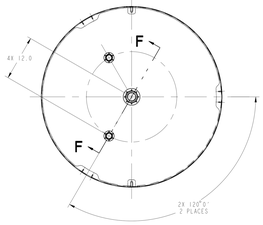

DETAIL G
CON-FLAT FLANGE MODIFICATION
2 REQD.
SCALE 1/1

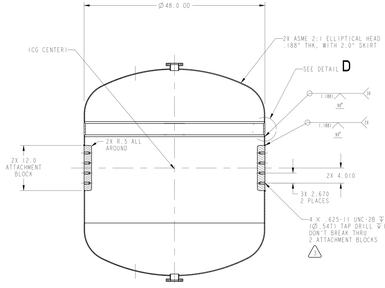



SECTION F-F
SCALE 1/4

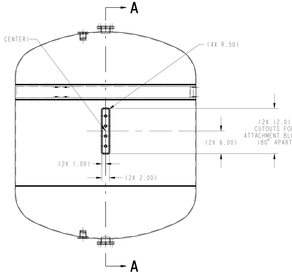



DETAIL D
GIRTH RING
SCALE 1/2

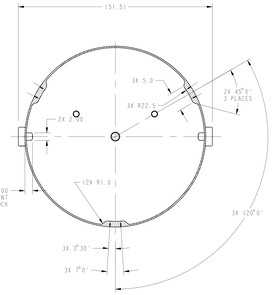


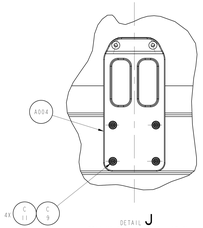

SECTION A-A



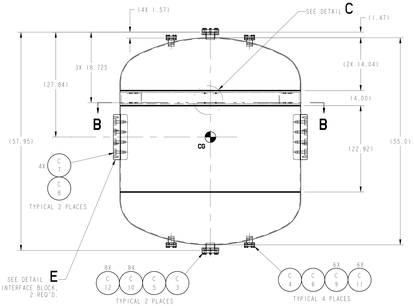

CART INTERFACE BLOCKS, BLANK FLANGES, GASKETS AND ATTACHMENT HARDWARE OMITTED FOR CLARITY



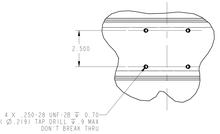

SECTION B-B
GIRTH RING




DETAIL J
ATTACHMENT PLATE INSTALLATION
3 PLACES
SCALE 1/2




STRUT ATTACHMENT PLATES OMITTED FOR CLARITY, SEE DETAIL J FOR ATTACHMENT PLATES




DETAIL C
ATTACHMENT PLATE MOUNTING HOLE PATTERN, 3 PLACES
SCALE 1/2

1. SEE "REDUCED BOIL-OFF CRYOGENIC TANK DESIGN AND FABRICATION SPECIFICATIONS (B122711)" FOR FABRICATION REQUIREMENTS.
2. ASSEMBLY OF FLANGES SHALL BE AS FOLLOWS:

   CHECK THAT BOTH FLANGE SURFACES ARE CLEAN AND THE SEALING EDGES ARE FREE FROM NICKS AND SCRATCHES.

   USING CLEAN, LINT-FREE GLOVES, UNPACK REQUIRED GASKET.

   PLACE GASKET OVER THE SEALING AREA ON THE MALE FLANGE.

   ALIGN THE MATING FLANGE HOLE PATTERN AND LEAK TEST GROOVES.

   INSTALL THE PROPER BOLTS AND TIGHTEN HAND TIGHT. CHECK TO SEE THAT THE FLANGE FACES ARE PARALLEL.

   TIGHTEN THE BOLTS 1/4 TO 1/2 TURNS USING A CIRCULAR CLOCKWISE PATTERN.

   TORQUE THE FASTENERS TO THE LISTED TORQUE VALUE IN TORQUE TABLE.

3. △ MACHINE MOUNTING HOLES AFTER WELDING.
4. ESTIMATED WEIGHT : 644.2 LBS, ESTIMATED VOLUME : 48.5 CU. FT.

| | |
|---|---|
| DRAWING NUMBER: | G13706MRA002 |
| REV | R |
| SHT | 1 |

PROVIDED TO USE VERIFY THE INTENDED PURPOSE IN PDM ("FOR" ATTRIBUTE)

| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | |
|---|---|
| TOLERANCE ON | |
| X | ± 0.03 |
| XX | ± 0.01 |
| XXX | ± 0.005 |
| FRACTION | ± |
| ANGULAR | ± 0.25° |
| BREAK EDGES | .01 |

| | |
|---|---|
| CONTRACT | NNC06AA07B |
| CONTRACTOR | ARRC AEROSPACE |
| TYPE CODE | DESIGN |
| DRAFTER | ARRC/D. ROBINSON |
| ENGINEER | ZETOTR CHRISTIE |
| DESIGNER | ARRC/D. ROBINSON |

DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN H. GLENN RESEARCH CENTER
LEWIS FIELD
CLEVELAND, OHIO

A002 CRYOGENIC TEST TANK ASSEMBLY LAYOUT DRAWING

PDM REL LEVEL: PDM REVISION:
PDM DATABASE: NOT UNDER CONFIG MANAGEMENT
MODEL NAME: G13706_CRYO_TEST_TANK-BLOCK4
CHECK FOR ANY DEFICIENCIES BEFORE PROCEEDING

| SIZE | DRAWING NUMBER | REV | BLOCK | AREA |
|---|---|---|---|---|
| R | G13706MRA002 | | | |

| SCALE | INITIAL RELEASE DATE | SHEET | DISCIPLINE |
|---|---|---|---|
| 1:1 | 2/13/08 & 5/2/08 | 1 OF 1 | MECHANICAL |

| CODE | ZONE | DESCRIPTION | APPV/DATE |
|---|---|---|---|
| REVISIONS | | | |

PROE VERSION: Wildfire 3.0

G13706MRA002