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NOTES:

GENERAL

- 1A. REMOVE SCALE AND BURRS AND BREAK SHARP CORNERS AND EDGES.
- 1B. THE INNER SURFACES OF THE HOSE ASSEMBLY SHALL BE CLEANED IN ACCORDANCE WITH KSC-C-123, OR ASTM G 93, OR ISO 14952, OR CGA G-4.1. CLEAN LEVEL TO BE LEVEL 300A. CGA G-4.1 SHALL HAVE A PARTICULATE LEVEL OF 300 AS SPECIFIED IN KSC-123, TABLE 1. MAXIMUM NVR LEVEL OF 1.0 mg/0.1m<sup>2</sup>. CLEANING IS FOR OXYGEN SERVICE.
- 1C. MAXIMUM ALLOWABLE WORKING PRESSURE (MAWP): 100 PSIG, BURST PRESSURE: 400 PSIG OPERATING TEMPERATURE RANGE: -423 TO 150 F
- 1D. THE MINIMUM CENTERLINE DYNAMIC BEND RADIUS SHALL BE NO GREATER THAN 21 INCHES. THE MINIMUM CENTERLINE STATIC BEND RADIUS SHALL BE NO GREATER THAN 11 INCHES.
- 1E. THE FLEXIBLE HOSE ASSEMBLY SHALL BE FABRICATED AND TESTED IN ACCORDANCE WITH ASME B31.3 PARAGRAPH 304.7.2 (c) OR (d). PARAGRAPH 304.7.2(e) SHALL NOT BE USED TO QUALIFY THE FLEXIBLE HOSE OR CONVOLUTE SECTIONS.

MATERIAL

- 2A. FLANGES SHALL BE PER ASME B16.5 WITH CONCENTRICALLY SERRATED RAISED FACES PER MSS-SP-6. MATERIAL SHALL BE PER ASTM A182 GRADE F316L.
- 2B. PIPE SHALL BE PER ASME B36.19M. MATERIAL SHALL BE SEAMLESS PER ASTM A312 GRADE TP316L.
- 2C. PIPE FITTINGS SHALL BE PER ASME B16.9. MATERIAL SHALL BE PER ASTM A403 GRADE WP316L CLASS S OR WX.
- 2D. FLEXIBLE HOSE SHALL BE CLOSE PITCH ANNULAR CONVOLUTIONS. MATERIAL SHALL BE PER ASTM A240 GRADE 316L.
- 2E. BRAID MATERIAL SHALL BE PER ASTM A580 GRADE 316L.
- 2F. REMAINING MATERIALS SHALL BE 316L STAINLESS STEEL AND SHALL MEET THE REQUIREMENTS OF ASME B31.3.

WELDING

- 3A. ALL WELDS SHALL BE PER AWS D17.1, CLAUSE (SECTION) 9, PARAGRAPH 9.1, OPTION 2, AND ASME B31.3 INSPECTION SHALL BE PER AWS D17.1, CLAUSE (SECTION) 9, PARAGRAPH 9.2.4, SEVERE CYCLIC CONDITIONS.
- 3B. ALL WELDS SHALL MEET THE REQUIREMENTS FOR LOW TEMPERATURE TOUGHNESS (IMPACT TEST) IN ACCORDANCE WITH ASME B31.3, PARA. 323.2.2. TO -423 DEGREES FAHRENHEIT.

3C PIPE TO FLEXIBLE HOSE TRANSITION AND WELDS SHALL BE PER THE FABRICATOR'S STANDARD PRACTICE.

- 3D. WELDS AND HEAT AFFECTED AREAS SHALL BE PASSIVATED PER ASTM A967.

TESTING

- 4A. TESTING SHALL BE CONDUCTED IN ORDER SHOWN BELOW.
- 4B. THE ASSEMBLY SHALL BE COLD SHOCKED WITH LN2 BY FILLING OR SUBMERSION ALLOWING ASSEMBLY TO COLD-SOAK FOR 1 HOUR.
- 4C. THE ASSEMBLY SHALL BE HYDROSTATICALLY TESTED USING FILTERED WATER AT A MINIMUM OF 150% OF THE DESIGN PRESSURE AT COINCIDENT TEMPERATURE IN ACCORDANCE WITH ASME B31.3. THE CONTRACTOR SHALL SUBMIT PROPER DOCUMENTATION OF ALL HYDROSTATIC TESTING.
- 4D. THE ASSEMBLY SHALL BE LEAK TESTED USING A HELIUM MASS SPECTROMETER LEAK DETECTOR (HMSLD). LEAKAGE NOT TO EXCEED 10E-5 STD-CC/SEC AND SENSITIVE TO 10E-6 STD-CC/SEC.

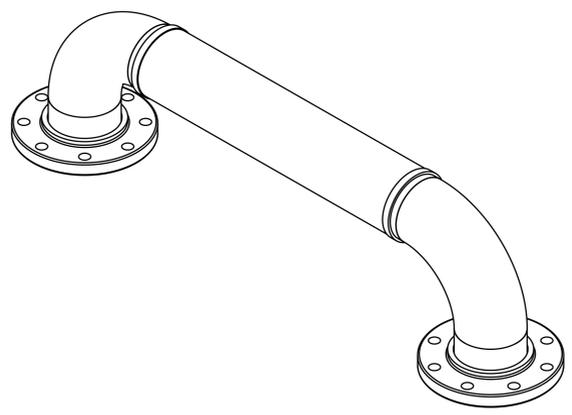
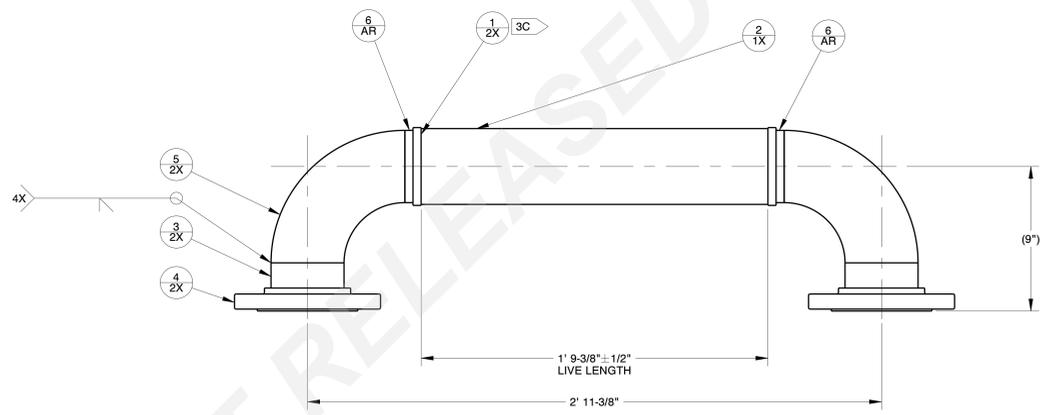
MARKING

- 5A. ELECTROCHEMICAL ETCH (TYPE II), ENGRAVE (TYPE VII), OR LASER ENGRAVE (TYPE VIII) PART NUMBER PART NUMBER-1, USING .12 INCH MINIMUM CHARACTERS PER PROVISIONS IN MIL-STD-752 AND THE GENERAL REQUIREMENTS (PARAGRAPH 3.1) AND QUALITY ASSURANCE PROVISIONS (PARAGRAPH 4) OF KSC-STD-E-0015. AT A MINIMUM, THE FOLLOWING INFORMATION SHALL BE INCLUDED:  
 MANUFACTURERS NAME  
 CONTRACT NUMBER  
 SERIAL NUMBER  
 DESIGN PRESSURE  
 TEST PRESSURE  
 TEST DATE  
 SERVICE  
 YEAR BUILT  
 TEMPERATURE RANGE  
 WEIGHT

ASSEMBLY

- 6A. FLEX HOSE SHALL BE DELIVERED CAPED USING PARTS LISTED IN TABLE I BELOW. SEALING SURFACE PARTS SHALL BE CLEANED PER NOTE 1B.
- 6B. LUBRICATE TUBE FITTING THREADS PER KSC-SPEC-Z-0009 WITH KRYTOX 240AC, BRAYCOTE 601, BRAYCOTE 815Z OR KSC DESIGN ENGINEERING APPROVED EQUAL FROM QPL-26717.
- 6C. 76K04866 PER ASME B16.21 NONMETALLIC GASKETS SHALL ONLY BE USED TO SEAL THE BLIND FLANGES FOR STORAGE AND TRANSPORT.
- 6D. FLANGE TORQUE VALUES SHALL BE 60 +/- 6 FT-LBS

| TABLE I |                     |  |
|---------|---------------------|--|
| QTY     | PART NUMBER         | DESCRIPTION                                  |
| 32      | AEW26X62N000SE4A11  | WASHER, TYPE B, NARROW, 5/8, STAINLESS STEEL |
| 2       | KT00380-150FL04D000 | GASKET, CLASS 150, B16.21                    |
| 2       | KT00114-150SS04D00  | FLANGE, BLIND, B16.5, CLASS 150              |
| 32      | 76K04876-10         | NUT, HEX                                     |
| 16      | 76K04875-1017-10    | 0.625X4.25 STUD ASTM A320                    |



ISOMETRIC

| AR | ZONE | FRGNO OR ITEMNO | MFR CODE | PART OR STOCK NO   | DESCRIPTION                         |
|----|------|-----------------|----------|--------------------|-------------------------------------|
| 6  |      | 22264           |          | KT00378-04D00010S4 | PIPE 4 NPS, SCHED 10                |
| 2  |      | 22264           |          | KT00104-10SS04D00  | ELBOW, 90 DEG, LG RAD, ASME B16.9   |
| 2  |      | 22264           |          | KT00116-150SS04D00 | FLANGE, LAP JOINT, B16.5, CLASS 150 |
| 2  |      | 22264           |          | KT00112-10SS04D00  | STUB END, SHORT, B16.9, SCHED 10    |
| 1  |      | 22264           |          | K0000094324-P002   | FLEXIBLE HOSE, 4 INCH               |
| 2  |      | 22264           |          | K0000094324-P001   | PIPE TO HOSE TRANSITION, 4 INCH     |

|   |   |  |  |
|---|---|--|--|
| CAD MAINTAINED. CHANGES SHALL BE INCORPORATED ONLY BY THE DESIGN ACTIVITY.<br>SOFTWARE: CREO PARAMETRIC 2.0<br>PLOTTER: K0000094324D<br>MATERIAL: NOTED<br>FINISH/TREATMENT: NONE<br>FINAL PROTECTIVE FINISH: NOTED | UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES. INTERPRET DIM AND TOL PER ASME Y14.5-2009. TOLERANCES ON:<br>DIMENSIONS: 1 PL ±.1, 2 PL ±.03, 3 PL ±.010<br>ANGLES: 1 PL ±.1° | ORIGINAL DATE OF DRAWING (YYYYMMDD): 2014/12/22<br>DESIGNED BY: D. C. STANIFER<br>CHECKED BY: J. T. POLLOCK<br>ENGINEER: J. R. WILLIAMS<br>DRAFTER: D. A. REWINDEL<br>SUBMITTED BY: J. J. BEAHN<br>APPROVED BY: J. G. GADDONE<br>E. A. THAXTON | JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA<br><b>FLEX HOSE</b><br>SIZE: E<br>CAGE CODE: 22264<br>DWG NO: K0000094324<br>SCALE: 250<br>NET WEIGHT: 44.69<br>SHEET: 1 OF 1 |
|   |   | THIRD ANGLE PROJECTION<br>APPLICATION  | REVISION HISTORY<br>REV. DESCRIPTION DATE APPROVAL   |

# K0000094324D.DRW (FLEX HOSE DRAWING)

Document Number: K0000094324D.DRW  
Version: -  
Name: FLEX HOSE DRAWING  
Type: Drawing  
Container: UPSS Development Test Site Product  
State: In Work  
Modified By: Jeffrey R. Williams  
Modified On: Thu, May 28, 2015 13:57:38 EDT  
Change Requests:  
Affected PMNs:

## Maturity History

| Version | State   | Promoted By     | Promoted On                    |
|---------|---------|-----------------|--------------------------------|
| -.1     | In Work | Daniel Stanifer | Mon, Dec 22, 2014 15:58:43 EST |

## KDDMS Routing History

| CN/CT Number    | Task | Assignee | Role | Events | Comment | Started | Completed |
|-----------------|------|----------|------|--------|---------|---------|-----------|
| 0 records found |      |          |      |        |         |         |           |