

PCN	DOCUMENT RELEASE AUTHORIZATION KENNEDY SPACE CENTER, NASA	PAGE 1 OF 2
ESR NC03430		REV/DATE
DIR CCBD-DNC03430LVL3 R2	DRA NO. EM-21AMS1-1116	SIGNATURE
EFF ISS	TITLE CONVOLUTED METAL FLEX HOSE ASSEMBLY NH3 SERVICE	VEN CODE
EQ. LOC. SSPF		CONTRACT
SDL 82K04556		

DOCUMENTS									
I#	PREF	DOCUMENT NUMBER	ISSUE	SIZE	SHTS	B/L NO.	SS	MODEL NUMBER	WUC
1	CSD	82K80016	A	B	5	580.23	S1	GS5-00421	S1GAMAA000
2	CSD	82K80017	A	B	5	580.23	S1	GS5-00421	S1GAMAA000
3	CSD	82K80018	A	B	5	580.23	S1	GS5-00421	S1GAMAA000
4	DR	82K90016	A	B	3	580.23	S1	GS5-00421	S1GAMAA000
5	DR	82K90017	A	B	3	580.23	S1	GS5-00421	S1GAMAA000
6	DR	82K90018	A	B	3	580.23	S1	GS5-00421	S1GAMAA000

TECHNICAL REMARKS

CCN: BQS2PSBK

THIS RELEASE UPDATES OBSOLETE DOCUMENTATION FOR NH3 CONVOLUTED METAL FLEX HOSES.

APPROVALS					
TECHNICAL CONTACT	MAIL CODE	DATE	R&QA	MAIL CODE	DATE
<i>B. W. Farney</i> B. W. FARNEY, 7-8046	7210-C318 E212	10/14/03			
<i>J. Post</i> J. POST	7210-C318 E212	10/16/03	OTHER		
SPACE AND WEIGHT			JOINT RELEASE		
PROCUREMENT PKG.			RELEASE <i>S. Strickland</i>	7210-C318 E212	10/17/03

DISTRIBUTION NUMBER	DOCUMENT RELEASE AUTHORIZATION DISTRIBUTION KENNEDY SPACE CENTER, NASA	PAGE 2 OF 2
		DRA NO. EM-21AMS1-1116

QUANTITY	MAIL CODE	NAME	QUANTITY	MAIL CODE	NAME
DRA	UB-C3	I. KIGHT	DRA	721S-S135	PDC
1P	UB-C3	M. CARROLL	1P	721O-C318	B. FARNEY
1P	YA-E2	D. ADCOCK	DRA	721O-C318	S. STRICKLAND
1P	UB-G5	P. AGUAYO	DRA	721O-C318	J. POST
1P	YA-D1	J. ENGLAND	DRA	721S-S315	C. COLLIER
1P	YA-D1	D. PITTMAN	1P	721S-S302	D. ROMERO
1P	UB-G5	G. VEAUDRY	1P	721S-S301	S. PENGELLY
1P	UB-G5	V. STROH	1P	721O-C155	K. RAYHEL
1P	UB-C1	J. JACKSON	1P	721M-5105	R. BANTA
1P	UB-F1	J. ROGERS	1P	721O-C355	W. VALENTINO
1P	YA-G	E. SMITH	1P	721S-S130	V. SCOTT
			1P	721O-C270	W. SHERMAN
			1P	721S-S301	T. SCHMOLL
			1P	721S-0003	J. DEGANO
			1P	721S-S125	G. HENDRICKSON
			1P	721O-C360	L. WOOD
			DRA	721O-C310	K. HAMMONS
			DRA	721S-S302	M. SORENSEN
			1P	721S-S335	P. HIGH

REPRODUCTION AND DISTRIBUTION INSTRUCTIONS

RETURN ORIGINALS TO A91-E252, 721S-S135

NOTICE---WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISION HISTORY					
PART NO.	ZONE	REV	DESCRIPTION	DATE	APPROVAL
		A	REV & REDRAWN SH 1 THRU 5	10/13/03	SCOTT STRICKLAND

1. SERVICE MEDIA: NH3
2. FABRICATION & DESIGN: FABRICATION SHALL BE IN ACCORDANCE WITH ASME BOILER AND PRESSURE VESSEL CODE SECTION VIII AND IX, AND ANSI/ASME B31.3 WELDING SHALL CONFORM TO NASA-SPEC-5004. WELDING AND WELD INSPECTION SHALL CONFORM TO ANSI/ASME B31.3 REQUIREMENTS FOR SEVERE CYCLIC SERVICE AND TYPE M FLUID SERVICE EXCEPT AS NOTED BELOW.
3. LONGITUDINAL SEAM WELD: NDT SHALL NOT BE REQUIRED FOR THE LONGITUDINAL SEAM OF THE CONVOLUTED TUBE, PROVIDED THE SEAM WELD IS DONE WITH AN AUTOMATIC WELD PROCESS WITHOUT THE ADDITION OF FILLER MATERIAL. INSPECTION BY BORE SCOPE ON ALL INTERNAL WELDS SHALL BE REQUIRED.
4. FILLET WELDS: ANY FILLET WELD SUBJECT TO EFFECTS OF THE SERVICE MEDIUM PRESSURE SHALL BE EXAMINED ALONG ITS FULL LENGTH. EXAMINATION SHALL BE BY LIQUID PENETRANT METHOD. NO CRACKS OR POROSITY OPEN TO THE SURFACE SHALL BE PERMITTED.
5. WELDS NOT SUBJECT TO MEDIA PRESSURE: WELDS THAT WILL NOT BE SUBJECT TO THE EFFECT OF THE SERVICE MEDIA PRESSURE SHALL BE VISUALLY INSPECTED. NO CRACKS OR POROSITY OPEN TO THE SURFACE SHALL BE PERMITTED.
6. FLOW INDUCED VIBRATION: HOSE SHALL BE CERTIFIED TO PRECLUDE PREMATURE FAILURE DUE TO FLOW INDUCED VIBRATION FOR CRITICAL GSE COMPONENT HARDWARE IN ACCORDANCE WITH NSTS 08123, PARAGRAPH 1.3.
7. PASSIVATION: PASSIVATE PER ASTM A 967 USING "NITRIC 2" TREATMENT SOLUTION.
8. MATERIALS: THE CONVOLUTED HOSE SECTION SHALL BE MADE FROM TYPE AISI 316L (NOTE: ANSI/ASME B31.3 REQUIRES IMPACT TESTING OF 316L FOR TEMPERATURES BELOW -320 DEGREES F, HOWEVER 304/304L DOES NOT.) THE EXTERIOR BRAID SHALL BE MADE OF TYPE 316/316L STAINLESS STEEL. TYPE 304L/316L STAINLESS STEEL SHALL BE USED FOR ANY WELDED PARTS EXCEPT THE CONVOLUTED HOSE SECTION. STAINLESS STEEL SHEET OR STRIP, AISI TYPE 304/304L, OR 316/316L, SHALL CONFORM TO THE REQUIREMENTS OF ASTM A240 AND ASTM A276. TUBING SHALL BE SEAMLESS, AISI TYPE 304/304L, OR 316/316L CONFORMING TO ASTM 269. ANSI/ASME B31.3 CHAPTER III TEMPERATURE LIMITATIONS SHALL APPLY TO MATERIALS SUPPLIED. CASTINGS OF METALLIC COMPONENTS ARE NOT PERMITTED.

9. FLARE AND SLEEVE: A ONE PIECE MACHINED FLARE TO BUTT WELD FITTING FOR TUBING SIMILAR IN DESIGN TO AAB1150 OR KC145, BUTT WELDED TO THE CONVOLUTED TUBE IS PREFERRED. A THREE PIECE (TUBE, SLEEVE, AND COUPLING NUT) ASSEMBLY IS ACCEPTABLE. THE SLEEVE SHALL CONFORM TO SAE AS4327. THE NUT COUPLING NUTS SHALL CONFORM TO SAE AS4326.
10. MACHINE FLARE BUTT WELD FITTINGS FOR TUBING: FITTINGS SHALL BE AISI 316 OR 316L. AISI 316L SHALL BE THE PREFERRED MATERIAL FOR ONE PIECE MACHINED FLARES.
11. PARTS: STANDARD OR COMMERCIAL PARTS AND COMPONENTS SHALL BE USED TO THE MAXIMUM EXTENT POSSIBLE PROVIDED THAT THE HARDWARE CONFORMS TO THE REQUIREMENTS OF THE SPECIFICATION.

PHYSICAL CHARACTERISTICS.

12. LENGTH: THE HOSE ASSEMBLY SHALL BE FURNISHED IN LENGTHS AS SPECIFIED BY THE PART NUMBER CODING. THE HOSE LENGTH SHALL BE MEASURED AS SHOWN ON SHEET 5. THE HOSE ASSEMBLY SHALL NOT CONSIST OF SPLICED OR SEPARATE SECTIONS OF HOSE ASSEMBLIES JOINED/WELDED TOGETHER.
13. BEND RADIUS: THE HOSE ASSEMBLY SHALL BE CAPABLE OF REPEATED FLEXURE, WHILE PRESSURIZED, TO THE MINIMUM BEND RADIUS SPECIFIED ON SHEET 4 OVER ITS USEFUL LIFE.
14. REINFORCEMENT: THE EXTERIOR HOSE REINFORCEMENT OR PROTECTIVE COVER SHALL CONSIST OF BRAIDED PLIES OF STAINLESS STEEL WIRES. REINFORCEMENT SEPARATION MATERIALS, IF USED, SHALL PERMIT GAS EFFUSION TO ESCAPE TO ATMOSPHERE. THERE SHALL BE NO BROKEN OR SPLICED REINFORCING WIRE.
15. RELIABILITY: WHEN OPERATED WITHIN THE LIMITS OF THIS SPECIFICATION, THE HOSE SHALL BE DESIGNED FOR A MINIMUM USEFUL LIFE OF 20 YEARS.

COMPONENT SPECIFICATION

CAD MAINTAINED. CHANGES SHALL BE INCORPORATED ONLY BY THE DESIGN ACTIVITY.				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994. TOLERANCES ON:		ORIGINAL DATE OF DRAWING (YY/MM/DD) 02/10/11		JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA			
SOFTWARE MICROSTATION/J				FRACTIONS DECIMALS ANGLES		DRAFTSMAN F. KIRTLEY CHECKER C. GAITHER		FLEXIBLE HOSE ASSEMBLY CONVOLUTED METAL NH3 SERVICE			
FILENAME D80016A0.001				_____ _____ _____		ENGINEER B. FARNEY CHECKER					
MATERIAL _____						ENGINEER		SUBMITTED		SIZE B CAGE CODE 22264 DWG NO 82K80016 REV A	
HEAT TREATMENT _____		NEXT ASSY		USED ON		JEAN POST		SCALE _____		UNIT WEIGHT SEE SH 4 SHEET 1 OF 5	
FINAL PROTECTIVE FINISH _____		APPLICATION				APPROVED S. STRICKLAND					



DWG NO 82K80016 SHEET 1 REV A

10/14/03



REVISION HISTORY					
PART NO.	ZONE	REV	DESCRIPTION	DATE	APPROVAL
		A	REDRAWN NO CHANGE	10/13/03	SCOTT STOCKLAND

0327
10/14/03

16. CLEANING: CLEAN, PROTECT, AND INSPECT PER KSC-C-123.
- A. PROCEDURE: AS APPICABLE
 - B. CLEANLINESS LEVEL: 50A
 - C. TEST METHOD: I
 - D. FITTING ENDS TO BE PROTECTED AFTER CLEANING PER SECTIONS 3.10.2.1, 3.10.3.4.2 AND 3.10.3.4.5.
 - E. PREPARATION FOR DELIVERY SHALL BE PER SECTION 5.
 - F. CERTIFICATION REQUIRED
17. IN ADDITION TO THE ABOVE CLEANING REQUIREMENTS, THE FOLLOWING REQUIREMENTS SHALL BE SATISFIED:
- CONVOLUTED FLEX HOSES SHALL BE VERIFIED AS PRECISION-CLEAN IN A VERTICAL ORIENTATION. FOR FLEX HOSE TUBE DIAMETERS GREATER THAN 1 INCH, VERIFICATION OF PRECISION CLEANLINESS SHALL BE PERFORMED BY SAMPLING A RINSE FLUID APPLIED INTERNALLY THROUGH THE USE OF A HIGH-PRESSURE NOZZLE TO THE ENTIRE LENGTH OF THE FLEX HOSE. FOR FLEX HOSE TUBE DIAMETERS 1 INCH OR LESS, THE USE OF A HIGH-PRESSURE NOZZLE IS PREFERRED, BUT MAY BE PERFORMED BY FLUSHING A RINSE FLUID THROUGH THE ENTIRE LENGTH OF THE FLEX HOSE, BOTTOM TO TOP, WITH FLEX HOSE AGITATION. PRECISION CLEANING SHALL BE CONSIDERED SUCCESSFUL WHEN THE VERIFICATION RINSE FLUID INDICATES COMPLIANCE WITH THE REQUESTED LEVEL. DEIONIZED (DI) WATER SHALL BE USED AS THE RINSE FLUID, FOR CONDUCTING HYDROSTATIC TESTING AND IMMERSING HOSES FOR PNEUMATIC LEAK TESTING, AND ANY OTHER TESTING REQUIRING THE USE OF WATER.
18. DRYING: HOSES TO BE DRIED INTERNALLY AND EXTERNALLY USING A HEATED INERT GAS AT COMPLETION OF ALL DI WATER TESTING.
19. MAXIMUM ALLOWABLE WORKING PRESSURE (MAWP): MAWP IS DEFINED AS THE MAXIMUM PRESSURE WHICH THE HOSE WILL BE SUBJECTED TO UNDER THE MOST SEVERE SYSTEM OPERATING PRESSURE. SEE SHEET 4.
20. OPERATING/WORKING PRESSURE TEST: THE HOSE ASSEMBLY SHALL BE PRESSURIZED WITH GASOUS HELIUM TO THE MAXIMUM OPERATION PRESSURE FOR A MINIMUM OF FIVE (5) MINUTES WHILE HOSE IS SUBMERGED IN DI WATER. EVIDENCE OF BUBBLES OR FORMATION OF BUBBLES DURING PRESSURIZATION TIME SHALL BE CAUSE FOR REJECTION.
21. PROOF PRESSURE TEST: PLACE HOSE ASSEMBLY IN A HYDROSTATIC TEST SETUP. APPLY AND MAINTAIN THE PROOF PRESSURE OF ONE AND ONE HALF (1 1/2) TIMES ITS MAWP FOR FIVE (5) MINUTES USING CLEAN DI WATER AT 66 TO 74 DEGREES FAHRENHEIT. NO VISUAL EVIDENCE OF PERMANENT DEFORMATION OR OF LEAKAGE OF EITHER THE FLUID CARRIER OR BRAIDED REINFORCEMENT IS ALLOWED.
22. LEAK TEST: AFTER PULLING A VACUUM OF 10-3 TORR INTERNALLY, WHILE SENSING WITH A MASS SPECTROMETER SET TO A SENSITIVITY OF 1 X 10-5 SCC/SEC, WITH THE COMPLETE HOSE ASSEMBLY ENVELOPED BY A SHROUD FILLED WITH GASOUS HELIUM, THE MASS SPECTROMETER SHALL INDICATE NO LEAKAGE.
23. OPERATING TEMPERATURE: THE HOSE ASSEMBLY SHALL BE CAPABLE OF CONTINUOUS OPERATION OVER A TEMPERATURE RANGE OF -45 DEGREES F TO + 200 DEGREES F WITHOUT DEGRADATION OR FAILURE DUE TO TEMPERATURE EXTREMES.

24. PRODUCT MARKING: THE MANUFACTURER SHALL IDENTIFY THE HOSE ASSEMBLY WITH A PERMANENTLY ATTACHED CORROSION RESISTANT STEEL TAG OR BAND BEARING THE FOLLOWING INFORMATION.
- A. GOVERNMENT PART NUMBER (82K80016-...)
 - B. MANUFACTURER'S NAME
 - C. MANUFACTURER'S PART NUMBER (IF DIFFERENT FROM GOVERNMENT PART NUMBER)
 - D. FABRICATION DATE (MONTH AND YEAR)
 - E. HYDROSTATIC/PENUMATIC TEST DATE (MONTH AND YEAR)
 - F. RATED WORKING PRESSURE (REF. PAGE 4)
 - G. SERVICE MEDIA (NH3)
 - H. SERIAL NUMBER, IF APPLICABLE
- QUALITY ASSURANCE PROVISIONS.
25. RESPONSIBILITY FOR INSPECTION: UNLESS OUTHERWISE SPECIFIED IN THE CONTRACT ORDER, THE SUPPLIER IS RESPONSIBLE FOR PERFORMANCE OF ALL INSPECTION REQUIREMENTS SPECIFIED HEREIN. EXCEPT AS OUTHERWISE SPECIFIED, THE SUPPLIER MAY USE HIS OWN FACILITIES OR ANY COMMERICAL LABORATORY ACCEPTABLE TO THE GOVERNMENT. THE GOVERNMENT RESERVES THE RIGHT TO PERFORM ANY INSPECTIONS SET FORTH IN THE SPECIFICATION WHERE SUCH INSPECTIONS ARE DEEMED NECESSARY TO ENSURE SUPPLIES AND SERVICES CONFORM TO PRESCRIBED REQUIREMENTS.
26. GENERAL INSPECTION: COMPONENT DAMAGE, POOR WORKMANSHIP, NON-CONFORMANCE TO MATERIAL REQUIREMENTS OR NON-CONFORMANCE TO ANY OF THE REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER FOR DISPOSITION. ANY OF THE ABOVE LISTED ITEMS MAY BE CAUSE FOR REJECTION OF THE HOSE ASSEMBLY.
27. QUALITY CONFORMANCE INSPECTIONS: THE MANUFACTURE SHALL PERFORM ON EACH HOSE ASSEMBLY A PROOF TEST FOLLOWED BY A LEAK TEST AS SPECIFIED IN THIS SPECIFICATION. RESULTS OF THESE TESTS SHALL BE IN ACCORDANCE WITH THIS SPECIFICATION. (DATE OF PROOF TEST SHALL BE RECORDED ON THE HOSE ASSEMBLY'S PARTS TAG IN CONFORMANCE WITH THE PRODUCT MARKING PROVISIONS OF THIS SPECIFICATION.)

DWG NO 82K80016
SHEET 2
REV A



COMPUTER FILE NAME: D80016A0.002		SIZE B	CAGE CODE 22264	DWG NO 82K80016	REV A
SCALE	UNIT WEIGHT	SHEET 2 OF			



REVISION HISTORY					
PART NO.	ZONE	REV	DESCRIPTION	DATE	APPROVAL
		A	REDRAWN NO CHANGE	10/13/03	SCOTT BRICKLAND

062
10/14/03

28. DOCUMENTATION: THE MANUFACTURER SHALL FURNISH THE PROCURING AGENCY THREE (3) COPIES EACH OF THE FOLLOWING DOCUMENTS. EACH DOCUMENT SHALL BE IDENTIFIED WITH THIS SPECIFICATION NUMBER. IN CASE OF MULTIPLE PROCUREMENT OF LIKE HOSE ASSEMBLIES, DOCUMENTS PERTAINING TO TEST DATA SHALL BE FURTHER IDENTIFIABLE TO THE INDIVIDUAL HOSE ASSEMBLY. DOCUMENTATION SHALL BE SHIPPED WITH THE HOSE ASSEMBLY.
- A. NON-RESTRICTIVE ASSEMBLY DRAWINGS
 - B. PARTS LISTS
 - C. INSTRUCTIONS
 - D. CERIFIED TEST REPORTS (PROOF AND LEAKAGE)
 - E. INSPECTION REPORT (CLEANING, PASSIVATION, AND OVERALL HOSE CONDITION)
 - F. MATERIAL CERTIFICATION OF CONFORMANCE.
 - G. ALL REPORTS REQUIRED BY THE WELDING SPECIFICATION AND ANSI/ASME B31.3.
29. EXCEPTION AND DEVIATIONS: ANY CHANGES TO THE COMPONENTS DESCRIBED BY THIS SPECIFICATION REQUIRES PRIOR KSC DESIGN ENGINEERING APPROVAL.
30. SUGGESTED SOURCES SHALL BE APPROVED BY KSC DESIGN ENGINEERING, QUALITY ENGINEERING, AND M AND P ENGINEERING.
31. SUGGEST SOURCE: MICROFLEX INC.
1800 U. S. 1 NORTH
ORMOND BEACH, FL 32074-0468
CAGE NO. 64440
32. MOUNTING ATTITUDE: ANY POSITION
33. INSTALLATION REQUIREMENTS: HOSE INSTALLATION DESIGN SHALL REQUIRE HOSE RESTRAINTS PER KHB 1710.2 ANNEX E, AND PER 80K51846, SECTION 8.0.

SPECIFIC NOTES:

- A. SEE DWG. 82K90016 FOR MAINTENANCE REQUIREMENTS

DWG NO 82K80016
SHEET 3
REV A



COMPUTER FILE NAME:
D80016A0.003

SIZE	CAGE CODE	DWG NO	REV
B	22264	82K80016	A
SCALE	UNIT WEIGHT	SHEET 3	OF

SPECIFIC NOTES:

A THE LAST FOUR DIGITS OF BOTH KSC AND VENDOR PART NO. ARE TO BE ADDED WHEN HOSE ASSY LENGTH IS DETERMINED. SEE SH 5.

B 9368-04-XXXX DOUBLE BRAIDED

A **A** **B**

REVISION HISTORY					
PART NO.	ZONE	REV	DESCRIPTION	DATE	APPROVAL
		A	REV TO SHOW VENDOR CHANGES	10/13/03	SCOTT STRICKLAND

0272
10/14/03

KSC PART NUMBER	VENDOR PART NUMBER	NOMINAL TUBE SIZE (INCHES)	NOMINAL HOSE I. D. (INCHES)	MIN BEND RADIUS (INCHES)	MAWP AT 70° F (PSIG)	HOSE WT (LBS/FT)	MINIMUM LENGTH FOR NON VIBRATION (FT)	NOMINAL HOSE O.D. (INCHES)	REMARKS
82K80016-1-XXXX	9368-04-0002-XXXX	1/4	1/4	5	3935	.30	3-1/2	41/64	
82K80016-2-XXXX	9368-04-0003-XXXX	3/8	3/8	5-1/2	2740	.41	4-1/4	27/32	
82K80016-3-XXXX	9368-04-0005-XXXX	1/2	1/2	7-1/2	2065	.50	4-1/2	15/16	
82K80016-4-XXXX	9368-04-0007-XXXX	3/4	3/4	8-1/2	1800	.84	5-3/4	1-21/64	
82K80016-5-XXXX	9368-04-00010-XXXX	1	1	10	1365	1.06	7	1-41/64	
82K80016-6-XXXX	9368-04-0012-XXXX	1-1/4	1-1/4	11-1/2	1000	1.30	7-1/4	1-15/16	
82K80016-7-XXXX	9368-04-0015-XXXX	1-1/2	1-1/2	13	955	1.81	8	2-15/64	
82K80016-8-XXXX	9368-04-0020-XXXX	2	2	15	865	2.73	9-1/2	2-57/64	

DWG NO 82K80016 SHEET 4 REV A



COMPUTER FILE NAME:
D80016A0.004

SIZE B	CAGE CODE 22264	DWG NO 82K80016	REV A
SCALE	UNIT WEIGHT	SHEET 4 OF	

SPECIFIC NOTES:

A. LENGTH SHALL BE SPECIFIED BY FOUR DIGITS WHICH BECOME A PART OF THE ASSY PART NO. THE FIRST THREE DIGITS ARE TO INDICATE INCHES, THE LAST DIGIT TO INDICATE FRACTIONS IN EIGHTHS. FOR EXAMPLE:

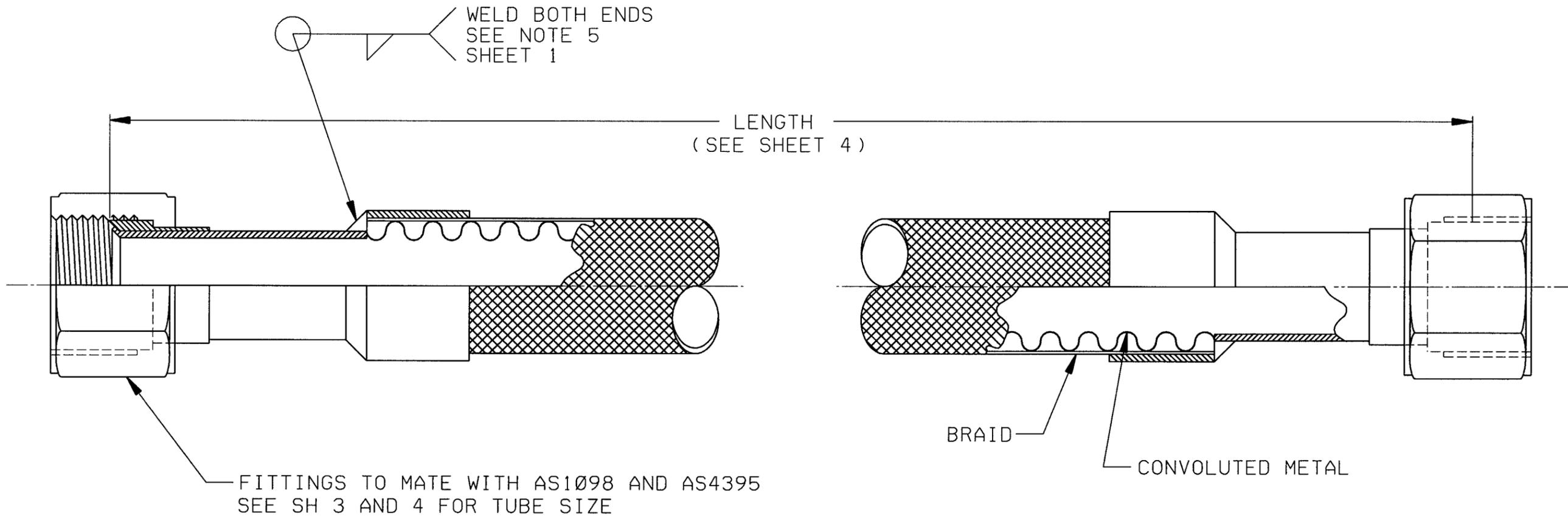
82K80016-3-0846 IS A HOSE ASSY 84-3/4 INCHES, THE LAST FRACTION OF AN INCH IN EIGHTHS LENGTH IN INCHES

B. LENGTH TOLERANCES: UNDER 18 INCHES LONG $\pm 1/8$ INCH
 FROM 18 TO 36 INCHES $\pm 1/4$ INCH
 FROM 36 TO 50 INCHES $\pm 1/2$ INCH
 OVER 50 INCHES $\pm 1\%$

C. FLEX HOSE FITTING SHALL BE PERPENDICULAR TO THE FLEX HOSE BODY (BEFORE AND AFTER WELDING).

REVISION HISTORY					
PART NO.	ZONE	REV	DESCRIPTION	DATE	APPROVAL
		A	REDRAWN NO CHANGE	10/13/03	SCOTT BLACKLAND

CEB
10/14/03



HOSE ASSEMBLY
 SCALE: NONE

DWG NO 82K80016
 SHEET 5
 REV A

	COMPUTER FILE NAME:	SIZE	CAGE CODE	DWG NO	REV
	D80016A0.005	B	22264	82K80016	A
		SCALE	UNIT WEIGHT	SHEET 5 OF 5	