

June 06, 2023

Attention: Tanya Francis TECHNICAL STANDARDS & SAFETY AUTHORITY 345 CARLINGVIEW DRIVE TORONTO, ON M9W 6N9

The design submission, Tracking Number 2023-02995, Web Portal Number 2023-S1743, originally received on May 09, 2023 was surveyed and accepted for registration as follows:

CRN: 0H06700.52 Reg Type: RENEWAL Accepted on: June 06, 2023 Expiry Date: April 06, 2033

Drawing No. : CRN-D-08051 SHT 1-4 Rev C

Fitting type: CGA CRYOGENIC LIQUID TRANSFER CONNECTIONS

Design registered in the name of : ACME CRYOGENICS

DescriptionMAWPDesign TemperatureDesign Pr./Temp. - Per Dwgs

## The registration is conditional on your compliance with the following notes:

\*\* Refer to CRN 0H6700.5R2 Renewal Scope of Registration for scope changes and additions from original registration

\*\* If these CGA cryogenic liquid transfer connections are connected to hose assembly, such hose assembly must have a valid Alberta CRN

As indicated on AB-41 Statutory Declaration or AB-351 Declaration of Conformity form and submitted documentation, the code of construction are ASME B31.3 and other engineering analysis.

- It is our understanding that the fitting(s), included as the scope of this submission, that is(are) subject to the Safety Codes Act shall comply with the requirements of the indicated Standard or Code of Construction on the AB-41 Statutory Declaration or AB-351 Declaration of Conformity as supported by the attached data which identifies the dimensions, materials of construction, press./temp. ratings and the basis for such ratings, and the identification marking of the fittings.

- This registration is valid only for fittings fabricated at the location(s) covered by the QC certificate attached to the accepted AB-41 Statutory Declaration or AB-351 Declaration of Conformity form.

- This registration is valid only until the indicated expiry date and only if the Manufacturer maintains a valid quality management system approved by an acceptable third-party agency, and maintains a valid Certification of Authorization Permit if required by the jurisdiction where manufacturing takes place, until that date.

- Should the approval of the quality management system lapse before the expiry date indicated above, this registration shall become void.

An invoice covering survey and registration fees will be forwarded from our Revenue Accounts.

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3337 or fax (780) 437-7787 or e-mail Dick@absa.ca.

Sincerely,



9410 - 20 Ave N.W. Edmonton, Alberta, Canada T6N 0A4 Tel: (780) 437-9100 / Fax: (780) 437-7787

June 06, 2023

Som Yaan Î K

POON, ASHLING, P. Eng. DOP Cert. No. D00007936



Technical Standards and Safety Authority 345 Carlingview Drive Toronto, Ontario M9W 6N9 www.tssa.org

Show facsimile of manufacturer's logo or trademark, as it will appear on the fitting, in the space below



STATUTORY DECLAI Registration of Fitting		
I, David M. Rakos, Director of Quality and Engineering		1
, (Name and Position, e.g. President, Plant Manager, Chie	f Engineer)	
of <u>Acme Cryogenics</u> , Inc.		
(Name of Manufacturer)		
Located at 2801 Mitchell Avenue, Allentown, PA 18103	(610) 791-7909	(610) 791-2837
(Plant Address)	(Telephone No.)	(Fax No.)
do solemnly declare that the fittings listed hereunder, which are subject to the and Pressure Vessels Regulation, comply with all of the requirements of	Technical Standards	s and Safety Act, Boilers
<i>(Title of recognized North American Standard)</i> which specifies the dimensions, materials of construction, pressure/temperature ratin	gs, identification marking	, the fittings and service;
or are not covered by the provisions of a recognized North American standard ASME B31.3 & CGA V-6 as supported by the attached data which pressure/temperature ratings and the basis for such ratings, the marking of the	identifies the dimension	s, material of construction.
I further declare that the manufacture of these fittings is controlled by a quality system which has been verified by the following authority, TUV Rheinland	meeting the requireme	nts of CSA B51
The items covered by this declaration, for which I seek registration, are category H		type fittings. In support of
this application, the following information and/or test data are attached as follows: Drawing CRN-D-08051, Rev. B, Scope of CRN Registration, Calculations		
(drawings, calculations, test reports, etc.)		
Declared before me at <u>Acme Crypgenics</u> in the <u>Camm</u> the <u>1345</u> day of <u>July</u> AD 20 22.	unweath c	of <u>Rensylvin</u> 's
	Commonwealth of Pennsylva EILEEN R PETRASOVITS -	nia - Notary Seal Notary Public
Commissioner for Oaths: <u>Liteen Retrasovits</u>	Lehigh Count My Commission Expires Commission Number	Jul 23, 2022
(Printed name) Celeer Ketta Soutz (Signature)	AW	
(Oignature)	(Signature of De	eclarer)
<b>FOR OFFICE USE ONLY</b> To the best of my knowledge and belief, the application meets the requirements of the <b>Technical Standards and Safety Act</b> , Boilers and Pressure Vessels Regulation, and CSA Standard B51 and is accepted for registration in CategoryH		PROMINCE OF ALBERTA
CRN:	See accepta	ance letter for
Registered by:		of registration. By: Tik Stor Para
2023-06-06 Dated:		ASHLING POON, P. Eng. DOP: D00007936 ave been affixed electronically required by Section 20(1) of
NOTE: This registration expires on: 2033-04-06		fety Regulation, in accordance

\*Information provided in this application is releasable under the Freedom of Information and Privacy Protection Act and may be disclosed upon request. PV 09553 (04/17) \*\* Drawing Sht 1-4 Rev C registered.

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## SCOPE OF CRN REGISTRATION

2

	No	Dort	Product Description	Sizo	Material (mate 2)		MDMT		Colculation	No.	Part	Product Descript		. ,		DMT Design Temp (°	
1         No.2002         No.2002/00	No.	Part	Product Description	Size		1			Calculation			Fixed End Machi					E11040.3
				1													E11040.3
abs://doi:10.1001/1001/1001/1001/1001/1001/1001/1																	E11040.3
A         A	_																E11040.3
2         No.017         No.8 bits 2017				1													E11040.
1         No. 400/05         COULD (VALUE ADDRESS)         2         No. 700         No. 700         No. 700			, , , , , , , , , , , , , , , , , , , ,	1		1											E11040.
0         0																	E11040.
1         1	2.1			2													E11040.
a         a         b	4																E11040.
4         4         4         4         4         5         8         5         50         100	4.1	590-021-150RF	Fixed End Cast	1½	B62 C83600	600			E11040.04						<b>I</b>		E11040
1         1         0         0         0         0         10	5	590-037-15	Fixed End Cast	1½		600			E11040.05								
1         0000233         mode for Core         0.0         0.00         0.0	6	590-038-15	Fixed End Cast	1½		600		150									
1         0.002/13         1         1         100 <td>7</td> <td>590-041-15</td> <td>Fixed End Cast</td> <td>1½</td> <td>B62 C83600</td> <td>600</td> <td></td> <td></td> <td>E11040.07</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	7	590-041-15	Fixed End Cast	1½	B62 C83600	600			E11040.07								
No         No<	8	590-022-25	Fixed End Cast	2½	B62 C83600	600	-320	150	E11040.08								_
1       3       3       4       3       3       4       3       3       4       3	9	580-021-15	Fixed End Cast	1½	B62 C83600	600	-320	150	E11040.09								
al         bit	).1	580-021-150RF	Fixed End Cast	1½	B62 C83600	600	-320	150	E11040.09								-
dis         dis <td>9.2</td> <td>580-021-15-STUB</td> <td>F.E ARGON W/COPPER STUBS</td> <td>1½</td> <td>B62 C83600</td> <td>600</td> <td>-320</td> <td>150</td> <td>E11040.09</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	9.2	580-021-15-STUB	F.E ARGON W/COPPER STUBS	1½	B62 C83600	600	-320	150	E11040.09								
1         000000000000000000000000000000000000	10	580-034-15	Fixed End Cast	1½	B62 C83600	600	-320	150	E11040.10								
11       140       14	1	580-035-15	Fixed End Cast	1½	B62 C83600	600	-320	150	E11040.11								E11040
12         Sec2/3:5         Fried for Cast         13         42         586/23:3         Fried for Cast         23         64/33 30/34         66/3         100	1.1	580-035-15ORF	F.EARG 1.5CAST,1.5 FNPT ORIF	1½	B62 C83600	600	-320	150	E11040.11								E11040
13         93<	12	580-076-15	Fixed End Cast	1½	B62 C83600	600	-320	150	E11040.12								E1104
4         56020-13         Free for Ca:         115         362 03300         20         320         120         Free for Ca:         35         54.479 340236         50         120	.3	580-022-25	Fixed End Cast	21/2	B62 C83600	600			E11040.13								E1104
11         540 20100 5 5 20001-5 7         Fixed for Cott         15 15         540001-5 7         Fixed for Cott         20         24.27 84000, 50         24.27 8400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50         24.28 78400, 50 <td>14</td> <td></td> <td>E1104</td>	14																E1104
55         Sold 26:5         Find Ed Cat         15         Bit CBAD (SC)         Find Ed Cat         15         Bit CBAD (SC)         Find Ed Cat         15         Bit CBAD (SC)         15	4.1																E1104
31         34<						1											E1104
16         Set 0.084:5         Fried for di Cut         13         BD 22,850         600         230         130         E134017         57         Set 0.045.5         Fried for di Munimet         25         Set 0.042.0         Set 0.022.0																	E1104
17         Set 0076 55         Fired End Cat         318         80 (2010)         600         320         130         E11040 17           85 400 (22 0)         Fired End Cat         2         80 (2010)         600         320         130         E11040 18           19         54 00 (22 0)         Fired End Cat         2         80 (2010)         600         320         130         E11040 18           13         59 (2010)         Fired End Machined         134         821 (4600 H2         600         320         130         E11040 20           13         59 (2011)         Fired End Machined         134         821 (4600 H2         600         320         130         E11040 20           12         590 (2015)         Fired End Machined         134         821 (4600 H2         600         320         130         E11040 20           12         590 (2015)         Fired End Machined         134         821 (4600 H2         600         320         130         E11040 20           12         590 (2015)         Fired End Machined         134         821 (4600 H2         600         320         130         E11040 20           12         590 (2015)         Fired End Machined         134         84/73 81/9			,												1 1		E1104
8         Second 220         First find Gast         2         800 C320         First find Gast         30         821 C46400 PR2         600         320         130         1100 C020         830 C321 Stress         First find Machined         30         821 C46400 PR2         600         320         130         1100 C020         830 C321 Stress         First find Machined         30         821 C46400 PR2         600         320         130         1100 C020         830 C321 Stress         First find Machined         30         821 C46400 PR2         600         320         130         1100 C020         61         380 C321 Stress         First find Machined         30         821 C46400 PR2         600         320         130         1100 C22         61         380 C321 Stress         First find Machined         30         821 C46400 PR2         600         320         130         1100 C22         600 C31 Stress         130 C4420 PR2         600 C31 Stress         130 C4400 PR2         600 C32         130         1100 C22         61 S80 C621 Stress         First find Machined         30         847 3 3167116																	E1104
9         9         9         9         9         9         9         9         10																	E1104
50         590 (143)         Fued for Machined         15         812 (14400 ngl         60         320         11042 20           10         590 (143)         Fued for Machined         15         821 (1400 ngl         600         320         110         950 (143)         Fued for Machined         15         021 (1400 ngl         600         320         150         11042 20           10         950 (143)         Fued for Machined         15         821 (1400 ngl         600         320         150         11042 20           12         950 (143)         Fued for Machined         15         821 (1400 ngl         600         320         150         11042 21           12         950 (143)         Fued for Machined         15         821 (1400 ngl         600         320         150         11042 21           13         950 (143)         Fued for Machined         15         S473 316/316         600         320         150         11042 21           14         950 (15)         Fued for Machined         15         S473 316/316         600         320         150         11040 22           15         S490 (15)         Fued for Machined         15         S473 316/316         600         320         150																	E11040
Source																	E11040
Arr Decision         Difference         Diffe																	E11040
1         1																	E11040
2       39/039-130       Fixed End Machined       13       B1126400 H02       600       320       150       F11040221         15       90/039-130 End       Fixed End Machined       13/       B1126400 H02       600       320       150       F11040221         15       90/039-130 End       Fixed End Machined       13/       B1126400 H02       600       320       150       F11040221         16       5800/06-15       Fixed End Machined       13/       SA473 316/316       650       320       150       F11040221         16       5800/06-15       Fixed End Machined       13/       SA473 316/316       650       320       150       F11040226         16       5800/06-15       Fixed End Machined       13/       SA473 316/316       650       320       150       F11040226         15       Fixed End Machined       13/       SA473 316/316       650       320       150       F11040226         18       580/06-15       Fixed End Machined       13/       SA473 316/316       650       320       150       F1104023         18       580/06-15       Fixed End Machined       13/       SA473 316/316       650       320       150       F1104023 <td< td=""><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>E11040</td></td<>						1											E11040
1       300/39/13/04/       Fixed find Muchined       13       62/14840/17/10       600       320       130       E11040/22         22       600/01/31       Mich Michined       11/       SA/73 30/304       650       320       150       E11040/22         33       590/38-15       Fixed find Muchined       11/       SA/73 30/304       650       320       150       E11040/22         45       590/06-15       Fixed find Muchined       11/       SA/73 316/318       650       320       150       E11040/22         66       590/06-15       Fixed find Muchined       11/       SA/73 316/318       650       320       150       E11040/22         67       590/06-15       Fixed find Muchined       11/       SA/73 316/318       650       320       150       E11040/22         68       590/06-15       Fixed find Muchined       11/       SA/73 316/318       650       320       150       E11040/22         70       590/06-15       Fixed find Muchined       11/       SA/73 316/318       650       320       150       E11040/21         71       590/06-15       Fixed find Muchined       11/       SA/73 30/304       650       320       150       E11040/21 <td></td> <td>580-060-15</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>E11040</td>											580-060-15						E11040
33       Spon Sk-15       Fixed Ind Machined       1%       Sk-479 316/316       650       -320       150       E11040.25         14       590 060-15       Fixed Ind Machined       1%       Sk-479 316/316       650       -320       150       E11040.25         15       590 060-15       Fixed Ind Machined       1%       Sk-479 316/316       650       -320       150       E11040.25         16       590 060-15       Fixed Ind Machined       1%       Sk-479 316/316       650       -320       150       E11040.25         17       590 060-15       Fixed Ind Machined       1%       Sk-479 316/316       650       -320       150       E11040.25         18       590 060-15       Fixed Ind Machined       1%       Sk-479 316/316       650       -320       150       E11040.25         19       590 060-15       Fixed Ind Machined       1%       Sk-479 316/316       650       -320       150       E11040.25         19       590 060-15       Fixed Ind Machined       1%       Sk-479 304/304       650       -320       150       E11040.25         12       590 060-15       Fixed Ind Machined       1%       Sk-479 304/304       650       -320       150       E11040.										64	580-061-15	Fixed End Machi	ned 1½		650 -	320 150	E11040
33       390-093-13       Hield End Machined       1%       SA479 34/3404       690       320       130       E11040.25         45       590-061-15       Fixed End Machined       1%       SA479 34/316,166       500       320       150       E11040.25         65       590-061-15       Fixed End Machined       1%       SA479 34/316,166       500       320       150       E11040.25         65       590-061-15       Fixed End Machined       1%       SA479 34/316,165       500       320       150       E11040.25         65       590-061-15       Fixed End Machined       1%       SA479 34/316,116       500       320       150       E11040.25         81       590-061-15       Fixed End Machined       1%       SA479 34/316,116       500       320       150       E11040.25         190       590-061-15       Fixed End Machined       1%       SA479 34/316,116       500       320       150       E11040.25         190       590-061-15       Fixed End Machined       1%       SA479 34/316,116       500       320       150       E11040.25         11       500-063-15       Fixed End Machined       1%       SA479 34/316,116       500       320       150 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>65</td><td>580-062-15</td><td>Fixed End Machi</td><td>ned 1½</td><td>SA-479 316/316L</td><td>650 -</td><td>320 150</td><td>E11040</td></th<>										65	580-062-15	Fixed End Machi	ned 1½	SA-479 316/316L	650 -	320 150	E11040
15       Spon61-15       Fixed End Machined       1%       SA4/93 316/3161       650       -320       150       E11040.25         165       590-062-15       Fixed End Machined       1%       SA4/93 316/3161       650       -320       150       E11040.25         17       590-063-15       Fixed End Machined       1%       SA4/93 316/3161       650       -320       150       E11040.25         18       590-063-15       Fixed End Machined       1%       SA4/93 316/3161       650       -320       150       E11040.25         19       590-063-15       Fixed End Machined       1%       SA4/93 316/3161       650       -320       150       E11040.25         19       590-063-15       Fixed End Machined       1%       SA4/93 316/3161       650       -320       150       E11040.23         10       590-063-15       Fixed End Machined       1%       SA4/93 30/3041       650       -320       150       E11040.23         12       590-063-15       Fixed End Machined       1%       SA4/93 30/3041       650       -320       150       E11040.33         12       590-070-15       Fixed End Machined       1%       SA4/93 30/3041       650       -320       150       E										66	580-063-15	Fixed End Machi	ned 1½	SA-479 316/316L	650 -	320 150	E11040
66       590-962-15       Fixed End Machined       1%       5A479 316/316.       650       -320       150       E11040.25         27       590-963-15       Fixed End Machined       1%       SA479 316/316.       650       -320       150       E11040.27         8       590-664-15       Fixed End Machined       1%       SA479 316/316.       650       -320       150       E11040.27         1%       580-967-15       Fixed End Machined       1%       SA479 304/304.6       650       -320       150       E11040.28         1%       590-968-15       Fixed End Machined       1%       SA479 304/304.6       650       -320       150       E11040.32         1%       590-968-15       Fixed End Machined       1%       SA479 304/304.6       650       -320       150       E11040.32         1%       590-969-15       Fixed End Machined       1%       SA479 304/304.6       650       -320       150       E11040.32         1%       590-970-15       Fixed End Machined       1%       SA479 304/304.6       650       -320       150       E11040.32         1%       590-970-15       Fixed End Machined       1%       SA479 304/304.6       650       -320       150       E1										67	580-064-15	Fixed End Machi	ned 1½	SA-479 316/316L	650 -	320 150	E11040
P2       S90-063-15       Fixed End Machined       1%       SA479 316/316       650       320       150       E1104027         18       590-065-15       Fixed End Machined       1%       SA479 316/316       650       320       150       E1104027         19       590-065-15       Fixed End Machined       1%       SA479 304/304L       650       320       150       E1104028         19       590-065-15       Fixed End Machined       1%       SA479 304/304L       650       320       150       E1104029         10       590-065-15       Fixed End Machined       1%       SA479 304/304L       650       320       150       E1104029         12       580-065-15       Fixed End Machined       1%       SA479 304/304L       650       320       150       E1104032         13       S90-075-15       Fixed End Machined       1%       SA479 304/304L       650       320       150       E1104032         13       S90-075-15       Fixed End Machined       1%       SA479 304/304L       650       320       150       E1104032         13       S90-075-15       Fixed End Machined       1%       SA479 304/304L       650       320       150       E1104      <										68	580-065-15	Fixed End Machi	ned 1½	SA-479 304/304L	650 -:	320 150	E11040
18       S90.064-15       Fixed End Machined       1%       SA-473 316/316L       650       -320       150       E11040.28         19       S90.065-15       Fixed End Machined       1%       SA-473 316/316L       650       -320       150       E11040.28         10       S90.065-15       Fixed End Machined       1%       SA-473 304/304L       650       -320       150       E11040.28         10       S90.065-15       Fixed End Machined       1%       SA-473 304/304L       650       -320       150       E11040.31         12       S90.065-15       Fixed End Machined       1%       SA-473 304/304L       650       -320       150       E11040.31         12       S90.065-15       Fixed End Machined       1%       SA-473 304/304L       650       -320       150       E11040.31         13       S90.070-15       Fixed End Machined       1%       SA-473 304/304L       650       -320       150       E11040.32         13       S90.070-15       Fixed End Machined       1%       SA-473 304/304L       650       -320       150       E11040.32         13       S90.070-15       Fixed End Machined       1%       SA-473 304/304L       650       -320       150 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>69</td><td>580-067-15</td><td>Fixed End Machi</td><td>ned 1½</td><td>SA-479 316/316L</td><td>650 -3</td><td>320 150</td><td>E11040</td></t<>										69	580-067-15	Fixed End Machi	ned 1½	SA-479 316/316L	650 -3	320 150	E11040
19       590-065-15       Fixed End Machined       1½       54-479 304/304L       650       -320       150       E11040.29         10       590-068-15       Fixed End Machined       1½       54-479 304/304L       650       -320       150       E11040.31         12       590-069-15       Fixed End Machined       1½       54-479 304/304L       650       -320       150       E11040.32         13       590-069-15       Fixed End Machined       1½       54-479 304/304L       650       -320       150       E11040.32         13       590-070-15       Fixed End Machined       1½       54-479 304/304L       650       -320       150       E11040.32         14       500-070-15       Fixed End Machined       1½       54-479 304/304L       650       -320       150       E11040.32         150       E11040.32       150       E11040.32       150       E11040.32       12       580-072-15       Fixed End Machined       1½       54-479 304/304L       650       -320       150       E11040.32         150       E11040.32       S90-070-15       Fixed End Machined       1½       SA-479 304/304L       650       -320       150       E110         1610       See accepl										70	580-068-15	Fixed End Machi	ned 1½	B21 C46400 H02	600 -3	320 150	E11040
103       590-067-15       Fixed End Machined       1½       SA-479 316/316L       650       -320       150       E11040.30         11       590-068-15       Fixed End Machined       1½       B21 C44600 N02 C       650       -320       150       E11040.31         12       590-069-15       Fixed End Machined       1½       SA-479 304/304L       650       -320       150       E11040.33         13       590-070-15       Fixed End Machined       1½       SA-479 304/304L       650       -320       150       E11040.33         13       590-070-15       Fixed End Machined       1½       SA-479 304/304L       650       -320       150       E11040.33         13       590-070-15       Fixed End Machined       1½       SA-479 304/304L       650       -320       150       E11040.33         13       S90-070-15       Fixed End Machined       1½       SA-479 304/304L       650       -320       150       E11040.33         15       SEGON CODE: ASME B31.3-2020       Tox error and another and another and another	28		Fixed End Machined							71	580-070-15	Fixed End Machi	ned 1½	SA-479 304/304L	650 -:	320 150	E1104
100       590-067-15       Fixed End Machined       1%       SA479 310/3101       650       -320       150       E11040.30         11       590-068-15       Fixed End Machined       1%       SA479 30/3014       650       -320       150       E11040.31         12       590-068-15       Fixed End Machined       1%       SA479 30/3014       650       -320       150       E11040.31         13       590-070-15       Fixed End Machined       1%       SA479 30/3014       650       -320       150       E11040.31         133       590-070-15       Fixed End Machined       1%       SA479 30/3014       650       -320       150       E11040.31         133       590-070-15       Fixed End Machined       1%       SA479 30/3014       650       -320       150       E11040.31         130       Sea coceptance letter for conditions of registration condition condition conditions of registration conditions of reg	29		Fixed End Machined	1½				150	E11040.29	72	580-071-15	Fixed End Machi	ned 1½		650 -	320 150	E11040
32       590-069-15       Fixed End Machined       1%       SA479 304/304L       650       -320       150       E11040.32         33       590-070-15       Fixed End Machined       1%       SA479 304/304L       650       -320       150       E11040.32         Dissip       Gradie       Gradie       Gradie       Gradie       Machine       1%       SA479 304/304L       650       -320       150       E11040.32         Dissip       Gradie       Gradie       Gradie       Gradie       Machine       1%       SA479 304/304L       650       -320       150       E11040.32         Dissip       Gradie       Gradie       Gradie       Gradie       Gradie       Machine       1%       SA479 304/304L       650       -320       150       E11040.32         Dissip       Gradie       Gradie       Gradie       Gradie       Gradie       Machine       1%       SA479 304/304L       650       -320       150       E11040.32         Dissip       Gradie       Gradie       Gradie       Gradie       Gradie       Machine       1%       SA479 304/304L       650       -320       150       E11040.32         Dissip       Gradie       Gradie       Gradie	30	590-067-15		1½	SA-479 316/316L	. 650			E11040.30	72.1	580-054-15	TAILPIECE-ARG 1	.5" 1½	SA-479 304/304L	650 -:	320 150	E11040
33       590-070-15       Fixed End Machined metry orces act - provide determined and pr	31	590-068-15			B21 C46400 H02	600	-320	150	E11040.31	73	580-072-15	Fixed End Machi	ned 1½	SA-479 304/304L	650 -	320 150	E1104
ACCEPTED: CHORONO 52 See acceptance lefter for conditions of registration. DESIGN CODE: ASME B31.3-20200 This stars and subtractionally REFERENCE MATERIAL SPECIFICA MONHS	32	590-069-15	Fixed End Machine	ABSA 1½	SA-479 304/304L	. 650	-320	150	E11040.32	74	580-073-15	Fixed End Machi	ned 1½	SA-479 304/304L	650 -	320 150	E11040
See acceptance letter for conditions of registration. Det: 64 0220       Bit Willing       ORIGINAL         DESIGN CODE: ASME B31.3-2020 REFERENCE MATERIAL SPECIFICA MORESCHARTING, SUPPORT REFERENCE MORESCHARTING, SUPPORT REFERENCE REFERENCE MORESCHARTING, SUPPORT REFERENCE REFERENCE MORESCHARTING, SUPPORT REFERENCE MORESCHARTING, SUPPORT REFERENCE MORESCHARTING, SUPPORT REFERENCE REFERENCE MORESCHARTING, SUPPORT REFERENCE REFERENCE MORESCHARTING, SUPPORT REFERENCE REFERENCE MORESCHARTING, SUPPORT REFERENCE REFERENCE MORESCHARTING, SUPPORT REFERENCE REFERENCE REFERENCE MORESCHARTING, SUPPORT REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFERENCE REFE	33	590-070-15	Fixed End MachinedAFETY codes	ACT - PROVINCE OF ALBERTA	SA-479 304/304L	650	-320	150	E11040.33	75	580-074-15	Fixed End Machi	ned 1½	SA-479 304/304L	650 -	320 150	E1104
Machine Substration of the source of the	32 33 OTES:	590-069-15 590-070-15	Fixed End Machined Fixed End MachinedAFETY CODES ACCEPTEL See acc condition Date: 6/6/2023	ABSA 1½ ACT-PROMINCEL & ALBERTA D: O-D657C0 52 ceptance letter for ons of registration. By:	SA-479 304/304L SA-479 304/304L ORIGI	650 650	-320	150 150 <u>UNLESS OTHER</u> INTERPR	E11040.32 E11040.33	74 75 DESIGN BY	580-073-15 580-074-15 WJR	Fixed End Machi Fixed End Machi DATE 12/21/2011	ned 1½ ned 1½ Title: SCOPE OF REGIST	5A-479 304/304L 5A-479 304/304L RATION - CG.	650 -: 650 -:	320 150 320 150	
REDRAWN IN SOLIDWORKS       3/17/2022       AJH       JDE       10369         Note Asset Fragment       3/17/2022       AJH       JDE       10369       THRD ANGLE PROJECTION GVOG MACK MARKED HEREIN AGE CONSIDERED PROJECTION FOR WILL DU A genut To the provide strate of the constant of the service constant activity and the service conservice constant activity and the service co	F	EFERENCE M	ATERIAL SPECIFICA	and a reference of a section of (1) of	LATION E1104	40 REV 1		2. ALL DIMENSI 3. REMOVE ALL .015 MAX 4. MACHINED SI MICR-INCHES	ONS ARE INCHES. BURRS AND SHARP EDGES URFACE TO BE 125 5 OR BETTER.		<sup>r</sup> BL	DATE 3/4/2022					
RMV ASSY TABLES ON SHTS 5-7       4/4/2023       AJH       JDE       10480         DESCRIPTION       DATE       REV BY       APPD BY       ECN NO.       CRN + OUSCASE       P/N:       DWG NO.       CRN - D-0805         Interview       Description       Date       REV BY       APPD BY       ECN NO.       Full data and the second a			REDRAWN IN SOLIDWORKS		3/17/2022		102	369		THIS DRAWING AND TH			- /+ ·				
								THIRD AN		CRYOGENICS, INC. AND PART WITHOUT THE P	IS NOT TO BE COPIED, REPRODUCED, DU RIOR WRITTEN CONSENT OF ACME CRYOG	PLICATED OR DISCLOSED TO OTHER IN WHOLE OR IN ENICS, INC. THE DRAWING SHOULD BE RETURNED AS	P/N:		DWG NO	D. CRN-D	-08051
								NO.		SOON AS IT HAS SERVE SHOULD BE PROPERLY	ED THE PURPOSES FOR WHICH IT IS FURN SAFEGUARDED AGAINST DISCLOSURE TO	SHED AND WHILE IN THE POSSESSION OF THE RECIPIENT	SCALE: 1:1 Project No.	:E210020	B SHEET:	SHEET 1 OF 4	REV
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## SCOPE OF CRN REGISTRATION

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No.	Part	Product Description	Size	Material (note 2)	Design P (psi	) MDMT	Design Temp (°F)	Calculation	No.	Part	Product Description	Size	Material (note 2)	Design P (psi)	MDMT	Design Temp (°F)	) Calculation
76	580-078-15	Fixed End Machined	1½	SA-479 304/304L	650	-320	150	E11040.76	118	540-082-30	Fixed End Machined	3120	SA-479 304/304L	650	-320	150	E11040.118
77	580-079-15	Fixed End Machined	1½	SA-479 316/316L	650	-320	150	E11040.77	118.1	540-099-30	Fixed End Machined	3	SA-479 304/304L	650	-320	150	E11040.118
78	580-090-15	Fixed End Machined	1½	SA-479 316/316L	650	-320	150	E11040.78				3		600			
79	ASK-40-0015	Fixed End Machined	21/2	SB-505 C85700	600	-320	150	E11040.79	119	540-089-30	Fixed End Machined	0	B21 C46400 H02		-320	150	E11040.11
80	580-024-25	Fixed End Machined	21/2	SB-505 C85700	600	-320	150	E11040.80	120	540-091-30	Fixed End Machined	3	B21 C46400 H02	600	-320	150	E11040.12
81	580-036-25	Fixed End Machined	21/2	SB-505 C85700	600	-320	150	E11040.81	120.1	540-111-30	F.EOXY 3,TUB,BR GL 314135B	3	B21 C46400 H02	600	-320	150	E11040.12
82	580-052-25	Fixed End Machined	21/2	B21 C46400 H02	600	-320	150	E11040.82	120.2	540-112-30	F.EOXY 3,GSKLS PIPESKT BRS	3	B21 C46400 H02	600	-320	150	E11040.12
83	580-052-25	Fixed End Machined	21/2	SA-479 304/304L	650	-320	150	E11040.83	120.3	540-128-30	F.EOXY 3GASKETLESS SHORT	3	B21 C46400 H02	600	-320	150	E11040.12
84	580-069-25	Fixed End Machined	21/2	SB-505 C85700	600	-320	150	E11040.83	120.4	540-128-30SP	F.EOXY 3GSKLS SHORT NO FLATS	3	B21 C46400 H02	600	-320	150	E11040.12
85	580-075-25	Fixed End Machined	21/2	SB-505 C85700	600	-320	150	E11040.84	121	540-092-30	Fixed End Machined	3	B21 C46400 H02	600	-320	150	E11040.12
85.1	580-111-25	F.EARG 2.5 TUB BR GL 314133B	21/2	SB-505 C85700	600	-320	150	E11040.85	122	ASK-40-0434	Fixed End Brazed Block	1½	B21 C46400 H02	600	-320	150	E11040.12
85.2	580-112-25	F.EARG 2.5 GSKTLS PIPESKT BR	21/2	SB-505 C85700	600	-320	150	E11040.85 E11040.85	123	ASK-40-0454	Fixed End Brazed Block	1½	B21 C46400 H02	600	-320	150	E11040.12
	580-080-25								124	ASK-40-0416	Fixed End Brazed Block	1½	B21 C46400 H02	600	-320	150	E11040.12
86		Fixed End Machined	2½	SA-479 304/304L	650	-320	150	E11040.86	129	ASK-40-0443	Fixed End Rail Car	21/2	SA-479 304/304L	275/600	-320	150	E11040.12
87	580-081-25	Fixed End Machined	2½	SA-479 316/316L	650	-320	150	E11040.87	130	ASK-40-0444	Fixed End Rail Car	2½	SA-479 304/304L	275/600	-320	150	E11040.13
88	580-082-25	Fixed End Machined	2½	SA-479 304/304L	650	-320	150	E11040.88	131	ASK-40-0456	Fixed End Rail Car	2	SA-479 304/304L	275/600	-320	150	E11040.13
89	580-085-25	Fixed End Machined	2½	SA-479 304/304L	650	-320	150	E11040.89	132	ASK-40-0445	Fixed End Rail Car	3	SA-479 304/304L	275/600	-320	150	E11040.13
89.1	580-099-25	Fixed End Machined	2½	SA-479 304/304L	650	-320	150	E11040.89A	133	ASK-40-0086	Head Plug	1½	B21 C46400 H02	600	-320	150	E11040.13
90	540-023-15	Fixed End Machined	1½	B21 C46400 H02	600	-320	150	E11040.90	134	ASK-40-0089	Head Plug	2	B21 C46400 H02	600	-320	150	E11040.13
90.1	540-023-15ORF	F.EOXY 1.5MACH W/ORF PLT THD	1½	B21 C46400 H02	600	-320	150	E11040.90	135	ASK-40-0087	Head Plug	2½	B21 C46400 H02	600	-320	150	E11040.13
91	540-037-15	Fixed End Machined	11/2	B21 C46400 H02	600	-320	150	E11040.91	135.1	ASK-40-0199	HEADPLUG-2.5 GASKETLESS BRS	2½	B21 C46400 H02	600	-320	150	E11040.13
91.1	540-037-15ORF	Fixed End Machined	11/2	B21 C46400 H02	600	-320	150	E11040.91	136	ASK-40-0088	Head Plug	3	B21 C46400 H02	600	-320	150	E11040.1
92	540-041-15	Fixed End Machined	11/2	B21 C46400 H02	600	-320	150	E11040.92	137	ASK-40-0086S	Head Plug	1½	SA-479 316/316L	650	-320	150	E11040.1
92.1	540-041-15ORF	Fixed End Machined	11/2	B21 C46400 H02	600	-320	150	E11040.92	138	ASK-40-00003	Head Piece Threaded	1½ MNPT	B21 C46400 H02	600	-320	150	E11040.1
92.2	540-053-15	ADAPTOR MALE/MALE,OXY,1.5	11/2	B21 C46400 H02	600	-320	150	E11040.92	138.1	ASK-40-0003-6"L	Head Piece Threaded	1½ MNPT	B21 C46400 H02	600 600	-320	150	E11040.13
93	540-060-15	Fixed End Machined	11/2	SA-479 316/316L	650	-320	150	E11040.93	138.1	ASK-40-0003-0 L	Head Piece Threaded	1½ MNPT	B21 C46400 H02	600		150	
94	540-061-15	Fixed End Machined	11/2	SA-479 316/316L	650	-320	150	E11040.94					B21 C46400 H02	600	-320		E11040.13 E11040.14
95	540-062-15	Fixed End Machined	11/2	SA-479 316/316L	650	-320	150	E11040.95	140	ASK-40-0082	Head Piece Threaded	1½ MNPT			-320	150	
96	540-063-15	Fixed End Machined	11/2	SA-479 316/316L	650	-320	150	E11040.96	141	ASK-40-0080	Head Piece Threaded	1½ MNPT	B21 C46400 H02	600	-320	150	E11040.14
97	540-064-15	Fixed End Machined	1½	SA-479 316/316L	650	-320	150	E11040.97	142	ASK-40-0084	Head Piece Threaded	1½ MNPT	SA-479 316/316L	650	-320	150	E11040.14
98	540-065-15	Fixed End Machined	1½	SA-479 304/304L	650	-320	150	E11040.98	143	ASK-40-0118	Head Piece Threaded	1½ MNPT	SA-479 304/304L	650	-320	150	E11040.14
99	540-067-15	Fixed End Machined	11/2	SA-479 316/316L	650	-320	150	E11040.99	144	ASK-40-0020	Head Piece Threaded	2 MNPT	B21 C46400 H02	600	-320	150	E11040.14
100	540-068-15	Fixed End Machined	11/2	B21 C46400 H02	600	-320	150	E11040.100	144.1	ASK-40-0020BWE	HEADPC-2"W/SCH10 BWE 304 S/S	2"	B21 C46400 H02	600	-320	150	E11040.14
101	540-070-15	Fixed End Machined	1½	SA-479 304/304L	650	-320	150	E11040.101	145	ASK-40-0050	Head Piece Threaded	2 MNPT	SB-505 C857	600	-320	150	E11040.14
102	540-071-15	Fixed End Machined	11/2	SA-479 304/304L	650	-320	150	E11040.102	146	ASK-40-0051	Head Piece Threaded	2 MNPT	B21 C46400 H02	600	-320	150	E11040.14
103	540-072-15	Fixed End Machined	1½	SA-479 304/304L	650	-320	150	E11040.103	147	ASK-40-0127	Head Piece Threaded	2 MNPT	SA-479 304/304L	650	-320	150	E11040.14
104	540-073-15	Fixed End Machined	1½	SA-479 304/304L	650	-320	150	E11040.104	148	ASK-40-0125	Head Piece Threaded	2 MNPT	SA-479 304/304L	650	-320	150	E11040.14
105	540-074-15	Fixed End Machined	1½	SA-479 304/304L	650	-320	150	E11040.105	149	ASK-40-0126	Head Piece Threaded	2 MNPT	SA-479 304/304L	650	-320	150	E11040.14
106	540-078-15	Fixed End Machined	1½	SA-479 304/304L	650	-320	150	E11040.106	150	ASK-40-0004	Head Piece Threaded	21/2 MNPT	B21 C46400 H02	600	-320	150	E11040.15
100	540-079-15	Fixed End Machined	1½	SA-479 316/316L	650	-320	150	E11040.107	151	ASK-40-0097	Head Piece Threaded	2½ MNPT	B21 C46400 H02	600	-320	150	E11040.15
108	540-090-15	Fixed End Machined	1½	SA-479 316/316L	650	-320	150	E11040.108	151.1	ASK-40-0097EX	Head Piece Threaded	2½ MNPT	B21 C46400 H02	600	-320	150	E11040.1
108.1	540-054-15	TAILPIECE-OXY 1.5" 304 SST	11/2	SA-479 304/304L		-320	150	E11040.108	152	ASK-40-0129	Head Piece Threaded	2½ MNPT	SA-479 304/304L	650	-320	150	E11040.1
100.1	540-094-15	Fixed End Machined	11/2	B21 C46400 H02	600	-320	150	E11040.109	152.1	ASK-40-0129-316	HEADPC-2.5 X 2.5 MNPT 316	2½ MNPT	SA-479 304/304L	650	-320	150	E11040.15
109	540-022-20	Fixed End Machined	2	SB-505 C85700	600	-320	150	E11040.109 E11040.110	152.2	ASK-40-0129-EXT	HEADPC-2.5X2.5MNPT 304 SS 7"LG	2½ MNPT	SA-479 304/304L	650	-320	150	E11040.1
110	540-022-20	Fixed End Machined	2	SB-505 C85700	600	-320	150	E11040.110 E11040.111	152.3	ASK-40-0178	HEADPC-2.5 AR/NI SS GSKL314124	2½ MNPT	SA-479 304/304L	650	-320	150	E11040.15
	540-039-20		2						152.5	ASK-40-0131	Head Piece Threaded	2½ MNPT	SA-479 304/304L	650	-320	150	E11040.15
111.1	540-040-20	F.EOXY 2, MACH, 2 MNPT	2	SB-505 C85700 SA-479 304/304L	600	-320	150	E11040.111 E11040.112	153.1	ASK-40-0131BWE	HEADPC-3 X 2.5 SCH 10 BWE	3	SA-479 304/304L	650	-320	150	E11040.15
112		Fixed End Machined	2		650	-320	150		153.1	ASK-40-0131BWL	Head Piece Threaded	333	SB-505 C857	600	-320	150	E11040.15
113	540-024-30	Fixed End Machined	5	SB-505 C85700	600	-320	150	E11040.113									
114	540-040-30	Fixed End Machined	3	B21 C46400 H02	600	-320	150	E11040.114	155	ASK-40-0128	Head Piece Threaded	3 MNPT	SA-479 304/304L	650	-320	150	E11040.1
115	540-058-30	Fixed End Machined	3	B21 C46400 H02	600	-320	150	E11040.115	155.1	ASK-40-0128-316	HEADPC-3 X 3 MNPT 316	3 MNPT	SA-479 316/316L	650	-320	150	E11040.15
116	540-069-30	Fixed End Machined	3	B21 C46400 H02	600	-320	150	E11040.116	155.2	ASK-40-0179	HEADPC-3 OXY SS GSKTLS 314123	3 MNPT	SA-479 304/304L	650	-320	150	E11040.15
117	540-080-30	Fixed End Machined	3	B21 C46400 H02	600	-320	150	E11040.117	156	ASK-40-0049	Head Piece BE	1½ TBS	B21 C46400 H02	600	-320	150	E11040.15

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DESIGN BY	WJR	DATE	12/21/2011		
DRAWN BY	PGZ	DATE	04/05/2012		-
CHECKED BY	BL	DATE	3/4/2022	TRANSFE	
APPROVED BY	JDE	DATE	03/17/2022		
CRYOGENICS, INC. AND IS N PART WITHOUT THE PRIOR V	OT TO BE COPIED, REPRODUCED VRITTEN CONSENT OF ACME CRY	OGENICS, INC.	OR DISCLOSED TO OTHER IN WHOLE OR IN THE DRAWING SHOULD BE RETURNED AS	P/N:	
SHOULD BE PROPERLY SAFEC	UARDED AGAINST DISCLOSURE	TO ANYONE EX	CEPT EMPLOYEES WHO REQUIRE IT FOR WORK	SCALE: 1:1	Project
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	CHECKED BY CHECKED BY APPROVED BY THIS DRAWING AND THE INE CRYOGENICS, INC. AND IS NO CRYOGENICS, INC. AND IS NO CRYOGENICS, INC. AND IS NO SOLULI BE PROPERLY SPECE SHOULD BE PROPERLY SPECE	WJR DRAWN BY PGZ CHECKED BY BL APPROVED BY JDE THIS DRAWING AND THE INFORMATION OR DATA CONTAINED GRYGGENICS, INC. AND IS NOT TO BE COPIED, REPRODUCED, PART WITHOUT THE PRIOR WAITTEN CONSIGNT OF ADJE CON- SOON AS IT MAN SERVED THE PRIORSE FOR WITHOUT THE PRIOR SOON AS IT MAN SERVED THE PRIORSE FOR WITH TO ANYON SOON AS IT MAN SERVED THE PRIORSE FOR WITH TO THE OWNED FOR ADDUCED BY SERVENCTION SHARE TO SUCCOME OR A JOB. THE SERVENCTION SHARE TO SUCCOME	WJR           DRAWN BY         PGZ         DATE           CHECKED BY         BL         DATE           APPROVED BY         JDE         DATE           CHECKED BY         BL         DATE           APPROVED BY         JDE         DATE           CHECKED SERVED THE PRODUCTS FOR WIGHT IN CONSTRUCT A AND END TO BE COPIED, REPRODUCED, DUPLICATED OF PART WITHOUT THE PRIOR WRITTED CONSENT OF AND EXPROSPEND AND ANYONE EX SOON AS THE SERVED THE ANYONE EX CONTROL DESCRIPTION TO SCORRE TO ANYONE EX OR A JOB. THE SERVICITION SHALL NOT APPLY TO INFORMATION OR ANYONE EX OR A JOB. THE SERVICITION SHALL NOT APPLY TO INFORMATION OR ANYONE EX	WJR         12/21/2011           DRAWN BY         PGZ         DATE         04/05/2012           CHECKED BY         BL         DATE         3/4/2022           APPROVED BY         JDE         DATE         03/17/2022	WJR     12/21/2011       DRAWN BY     PGZ       DATE     04/05/2012       CHECKED BY     BL       DATE     3/4/2022       APPROVED BY     JDE       DATE     03/17/2022       THIS DRIVING AND THE INFORMATION OR DATA CONTAINED HERE INFORMETANY TO ACHE       CYNDENKS, INC. AND IS NOT TO BE COMED, REPRODUCED, DUPLICATED OR DISCLOSED TO OTHER IN WHICH CA IN       PART WITHOUT THE PRIOR WHITTEN COMENT OF ACHE CONTAINED HERE INFORMETANY TO ACHE       CHARGE MERST DER ANDROXACES, DAVIE IN THE RARRISSED AND WHITTEN COMENT OF ACHE       CON DIE IN SERVICIT EN ANNO ESCONTE TO ANNOTE TO ACHE       CON DIE INS SERVICIT EN ANNOTES COM WHITTEN COMENT OF ACHE       SOCIA SIT INS SERVICIT EN ANNOTES COM WHITTEN COMENT OF ACHE       SOCIA SIT INS SERVICIT EN ANNOTES COM WHITTEN COMENT OF ACHE       SOCIA SIT INS SERVICIT EN ANNOTES COM WHITTEN COMENT OF ACHE       SOCIA SIT INS SERVICIT EN ANNOTES COM WHITTEN COMENT OF ACHT COMMINICATION OF ACTA COMPANY.       SOCIA SIT INS SERVICIT EN ANNOTES COM WHITTEN COMENT OF ACHT COMPANY.       SOCIA SIT INS SERVICIT EN ANNOTES COMENT ON ACHIEVEN THE RECEIPT FORMATION OF ACTA COMPANY.       SOCIA SIT INS SERVICIT EN ANNOTES COMENT ON THE RECEIPT FORMATION OF ACTA COMPANY.       SOCIA SIT INS SERVICIT EN ANNOTES COMENT ON ACTA COMPANY.       SOCIA SIT INS SERVICIT EN ANNOTES COMENT ON ACTA COMPANY.       SOCIA SIT INS SERVICITUATION OF ACTA COMPANY.       SOCIA SIT INS SERVICITUATION OF ACTA COMPANY.

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GISTRATION - CGA RYOGENIC LIQUID NNECTIONS DWG NO. CRN-D-08051 ct No.: E210020 B SHEET: SHEET 2 OF 4 REV. C

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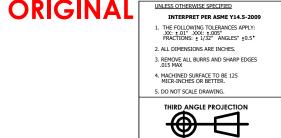
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## SCOPE OF CRN REGISTRATION

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No.	Part	Product Description	Size	Material (note 2)	Design P (psi)	MDMT	Design Temp (°F)	Calculation	No.	Part	Product Description	Size	Material (note 2)	Design P (psi	i) MDMT	Design Temp (°F)	) Calcula
157	ASK-40-0052	Head Piece BE	1½ TS	B21 C46400 H02	600	-320	150	E11040.157	182.4	320-130-15	F.ECO2 1.5" W/1/2"&1/4"PORTS	1½	SA-479 304/304L	650	-320	150	E11040
157.1	ASK-40-0052DP	Head Piece BE	1½ TS	B21 C46400 H02	600	-320	150	E11040.157	182.5	326-019-15	F.EN2O 1.5 FNPT W/PURGE	1½	B16 C36000 H02	600	-320	150	E11040
158	ASK-40-0116	Head Piece BWE	1½ PBW	SA-479 316/316L	650	-320	150	E11040.158	183	320-016-10	Head Piece	1	SB-283 C37700	600	-320	150	E1104
158.1	ASK-40-0166	HEADPC-1.5" X 1" FNPT BRS	1½ PBW	B21 C46400 H02	600	-320	150	E11040.158	183.1	320-016-10S	HEADPC-1 CO2 THRD SS	1	SA-479 304/304L	650	-320	150	E1104
159	ASK-40-0135	Head Piece BWE	1½ TBW	SA-479 316/316L	650	-320	150	E11040.159	184	320-014-15	Head Piece	11/2	SB-283 C37700	600	-320	150	E1104
160	ASK-40-0117	Head Piece BE	1¼ PS	SA-479 304/304L	650	-320	150	E11040.160	184.1	320-014-155	HEADPC-1.5 CO2 THRD SS	1½	SA-479 304/304L	650	-320	150	E1104
161	ASK-40-0119	Head Piece BWE	1½ PBW	SA-479 304/304L	650	-320	150	E11040.161	184.2	320-014-15SPE	HEADPC-1.5 CO2 PLAIN END 316S	1½	SA-479 304/304L	650	-320	150	E1104
161.1	ASK-40-0418	HEADPC-1.5 BRAZED BLOCK	1½ PBW	SA-479 304/304L	650	-320	150	E11040.161	184.3	320-151-15	HEADPC 1.5"CO2 X 1" MNPT	1½	B16 C36000 H02	600	-320	150	E1104
162	ASK-40-0053	Head Piece BE	2 TS	SB-505 C85700	600	-320	150	E11040.162	184.4	326-009-15	HEADPC-1.5 NITROUS OXIDE	1½	SB-283 C37700	600	-320	150	E1104
163	ASK-40-0054	Head Piece BE	2 TS	B21 C46400 H02	600	-320	150	E11040.163	185	320-028-20	Head Piece	2	B16 C36000 H02	600	-320	150	E1104
164	ASK-40-0033	Head Piece BE	2 TS	B21 C46400 H02	600	-320	150	E11040.164	185.1	320-108-20	Head Piece	2	B16 C36000 H02	600	-320	150	E1104
165	ASK-40-0034	Head Piece BE	2½ TS	B21 C46400 H02	600	-320	150	E11040.165	185.2	320-028-205	HEADPC-2 CO2 THRD SS	2	SA-479 304/304L	650	-320	150	E1104
166	ASK-40-0120	Head Piece BWE	2½ PBW	SA-479 304/304L	650	-320	150	E11040.166	185.3	320-028-20SPE	HEADPC 2" CO2 PLAIN END 316S	2	SA-479 316/316L	650	-320	150	E1104
167	ASK-40-0032	Head Piece BE	3 TS	SB-505 C85700	600	-320	150	E11040.167	186	320-035-30	Head Piece	3	B16 C36000 H02	600	-320	150	E1104
168	ASK-40-0032 ASK-40-0121	Head Piece BWE	3 TBW	SA-479 304/304L	650	-320	150	E11040.168	186.1	320-109-30	Head Piece	3	B16 C36000 H02	600	-320	150	E1104
168.1	ASK-40-0121 ASK-40-0121-316	HEADPC-3 X 3 SCH10BWE 316 SS	3 TBW	SA-479 304/304L	650	-320	150	E11040.168	180.1				B16 C36000 H02	600	-320	150	E1104
168.1	ASK-40-0121-316		3 IDVV 1	SB-283 C37700	300	-320	100	E11040.169		320-048-10	Male Adapter	-					-
		Flange SBT w/Tongue	11/						188	320-049-15	Male Adapter	1½	B16 C36000 H02	600	-320	150	E1104
170	ASK-40-0152	Flange SBT w/Tongue	1½	SB-283 C37700	300	-320	100	E11040.170	189	320-050-20	Male Adapter	2	B16 C36000 H02	600	-320	150	E110
171	-	(del eted)	-	-	-	-	100	E11040.171	190	320-051-30	Male Adapter	3	B16 C36000 H02	600	-320	150	E110
172	ASK-40-0150	Blind Flange TS w/Tongue	1	SB-283 C37700	350	-320	100	E11040.172	191	320-079-20	MaleAdapter	2	B16 C36000 H02	600	-320	150	E110
173	ASK-40-0149	Flange SBT w/Groove	1	SB-283 C37700	300	-320	100	E11040.173	192	320-080-15	Male Adapter	1½	B16 C36000 H02	600	-320	150	E110
174	ASK-40-0153	Flange SBT w/Groove	1½	SB-283 C37700	300	-320	100	E11040.174	193	ASK-40-0124	Hex Brass Bushing with 3 Purge Ports	1	B16 C36000 H02	600	-320	150	E110
175	-	(del eted)	-	-	-	-		E11040.175	194	ASK-40-0076	Hex Brass Bushing with 3 Purge Ports	1½	B16 C36000 H02	600	-320	150	E110
176	ASK-40-0151	Blind Flange SBT w/Groove	1	SB-283 C37700	350	-320	100	E11040.176	195	ASK-40-0077	Hex Brass Bushing with 3 Purge Ports	2	B16 C36000 H02	600	-320	150	E110
177	320-019-10	Fixed End	1	SB-283 C37700,	600	-320	150	E11040.177	195.1	ASK-40-0077SPEC	BUSHING-CO2 NO PURGE 2F 1-1/2M	2F x 1½M	B16 C36000 H02	600	-320	150	E1104
177.1	320-019-10HVY	Fixed End	1	SB-283 C37700,	600	-320	150	E11040.177	196	ASK-40-0078	Hex Brass Bushing with 3 Purge Ports	2	B16 C36000 H02	600	-320	150	E1104
177.2	320-019-10S	F.ECO2 1,THRD,SS	1	SA-479 304/304L	650	-320	150	E11040.177	197	ORIFICE-PRX-*	Orifice Plate	1.625	B16 C36000 H02	600	-320	150	E1104
177.3	320-019-10S-PUR	F.ECO2 1" S/S W/1/4"PURGE	1	SA-479 304/304L	650	-320	150	E11040.177	198	590-123-15	Fixed End Cast with Integral Flange	11/2	B584 C86500	600	-320	150	E1104
177.4	326-003-10	F.EN2O 1"	1	SB-283 C37700,	600	-320	150	E11040.177	198.1	590-123-15ORF	F.ENIT 1.5, INT FLG ORF THD	1½	B584 C86500	600	-320	150	E1104
177.5	326-003-10-PUR	F.E-N20 1" W/ 1/2" PURGE	1	SB-283 C37700,	600	-320	150	E11040.177	199	580-123-15	Fixed End Cast with Integral Flange	1½	B584 C86500	600	-320	150	E1104
177.6	326-003-10S	F.E. N2O 1" 304 S/S	1	SA-479 304/304L	650	-320	150	E11040.177	199.1	580-123-15ORF	F.EARG 1.5 INT FLG,ORF,THD	1½	B584 C86500	600	-320	150	E1104
178	320-000-15	Fixed End	1½	SB-283 C37700,	600	-320	150	E11040.178	200	540-123-15	Fixed End Cast with Integral Flange	1½	B584 C86500	600	-320	150	E1104
178.1	320-000-155	F.ECO2 1.5,THRD,SS	1½	SA-479 304/304L	650	-320	150	E11040.178	200.1	540-123-15ORF	F.EOXY 1.5 INT FLG,ORF THD	1½	B584 C86500	600	-320	150	E1104
178.2	320-000-15S-PUR	F.ECO2 1.5,S/S W/1/4"PURGE	1½	SA-479 304/304L	650	-320	150	E11040.178	200.1	590-119-25	Head Piece Adapter	2½	B21 C46400 H02	600	-320	150	E1104
178.3	326-008-15	F.EN2O 1.5"	1½	SB-283 C37700,	600	-320	150	E11040.178	201	580-132-25	Head Piece Adapter	21/2	B21 C46400 H02	600	-320	150	E1104
178.4	326-008-15-PUR	F.E-N2O 1.5" W/ 1/2" PURGE	1½	SA-479 304/304L	650	-320	150	E11040.178	202	540-119-30	Head Piece Adapter	3	B21 C46400 H02	600	-320	150	E1104
178.5	326-008-155	F.E.N2O 1.5" 304 S/S	11/2	SA-479 304/304L	650	-320	150	E11040.178	203	ASK-40-0148S		1		650		150	
179	320-031-20	Fixed End	2	B16 C36000 H02	600	-320	150	E11040.179			Flange SW w/Tongue	-	SA-479 304/304L		-425		E110
179.1	320-031-205	F.ECO2 2.THRD.SS	2	SA-479 304/304L	650	-320	150	E11040.179	205	ASK-40-0152S	Flange SW w/Tongue	1½	SA-479 304/304L	650	-320	150	E110
179.1	320-031-203	Fixed End	3	B21 C46400 H02	600	-320	150	E11040.179 E11040.180	206	ASK-40-0156S	Flange BW w/Tongue	2	SA-479 304/304L	650	-320	150	E1104
180.1	320-038-30	F.E. CO2 3" THRD 304 S/S	3	SA-479 304/304L	650	-320	150	E11040.180 E11040.180	207	ASK-40-0149S	Flange SW w/Groove	1	SA-479 304/304L	650	-320	150	E1104
		Fixed End with Purge Port	3			1			208	ASK-40-0153S	Flange SW w/Groove	1½	SA-479 304/304L	650	-425	150	E1104
181	320-086-10	¥		B16 C36000 H02	600	-320	150	E11040.181	209	540-000-15	NUT-OXY 1.5"	11/2	SB-505 C86500	650	-320	150	E1104
181.1	320-122-10	Fixed End with Purge Port		B16 C36000 H02	600	-320	150	E11040.181	209.1	540-000-15LH	NUT-OXY 1.5" LH	1½	SB-505 C86500	650	-320	150	E1104
181.2	320-129-10	F.ECO2 1" W/ 1/2"&1/4"PORTS	1	B16 C36000 H02	600	-320	150	E11040.181	209.2	540-055-15	NUT-OXY 1.5" 316L	1½	SA-479 304/304L	650	-320	150	E1104
181.3	326-018-10	F.EN2O 1" W/FNPT & PURGE	1	B16 C36000 H02	600	-320	150	E11040.181	210	540-005-30	NUT-OXY 3"	3	SB-505 C86500	650	-320	150	E110
182	320-087-15	Fixed End with Purge Port	1½	B16 C36000 H02	600	-320	150	E11040.182	210.1	540-093-30	NUT-OXY 3"	3	SA-479 304/304L	650	-320	150	E110
182.05	320-123-15	Fixed End with Purge Port	1½	B16 C36000 H02	600	-320	150	E11040.182	210.2	540-059-30	NUT-OXY 3" 316L	3	SA-479 316/316L	650	-320	150	E110
182.1	320-121-20	Fixed End with 2 Purge Ports	2	B16 C36000 H02	600	-320	150	E11040.182A	211	540-010-20	NUT-OXY 2"	2	SB-505 C86500	650	-320	150	E110
182.2	320-120-20	Fixed End with 2 Purge Ports	2	B16 C36000 H02	600	-320	150	E11040.182B	211.1	540-010-20S	NUT-OXY 2" SS	2	SA-479 316/316L	650	-320	150	E110
182.3	320-087-155	F.ECO2 1.5" W/PURGE PORT SS	1½	SA-479 304/304L	650	-320	150	E11040.182	212	580-000-25	NUT-ARG 2.5"	21/2	SB-505 C86500	650	-320	150	E110



DESIGN BY	WJR	DATE 12/21/2011	Title:			٨			
DRAWN BY	PGZ	<sup>DATE</sup> 04/05/2012			RATION - CG GENIC LIQUII		AUNE		
CHECKED BY	BL	DATE 3/4/2022	TRANSFE	r conne	CTIONS		CRYOGE	NIĆS	
APPROVED BY	JDE	DATE 03/17/2022					Q <u>uarra</u> as	<b>IV</b>	
CRYOGENICS, INC. AND IS N PART WITHOUT THE PRIOR V	OT TO BE COPIED, REPRODUCED, WRITTEN CONSENT OF ACME CRY	HEREIN ARE CONSIDERED PROPRIETARY TO ACME , DUPLICATED OR DISCLOSED TO OTHER IN WHOLE OR IN 'OGENICS, INC. THE DRAWING SHOULD BE RETURNED AS	P/N:				DWG NO. CRN-D-	08051	
SHOULD BE PROPERLY SAFEC	UARDED AGAINST DISCLOSURE	IRNISHED AND WHILE IN THE POSSESSION OF THE RECIPIENT TO ANYONE EXCEPT EMPLOYEES WHO REQUIRE IT FOR WORK ATION OR DATA CONTAINED HEREIN WHICH IS AVAILABLE TO	SCALE: 1:1	Project No.	: E210020	В	SHEET: SHEET 3 OF 4	REV.	С
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No.	Part	Product Description	Size	Material (note 2)	Design P (psi)	MDMT	Design Temp (°F)	Calculation
212.1	580-059-25	NUT-ARG 2.5" 316L	2½	SA-479 316/316L	650	-320	150	E11040.212
212.2	580-093-25	NUT-ARG 2.5" 304 SS	21/2	SA-479 304/304L	650	-320	150	E11040.212
213	580-002-15	NUT-ARG 1.5"	1½	SB-505 C86200	650	-320	150	E11040.213
213.1	580-055-15	NUT-ARG 1.5" 316L	1½	SA-479 316/316L	650	-320	150	E11040.213
214	590-000-15	NUT-NIT 1.5"	1½	SB-505 C86200	650	-320	150	E11040.214
214.1	590-055-15	NUT-NIT 1.5" 316L	1½	SA-479 316/316L	650	-320	150	E11040.214
215	590-002-25	NUT-NIT 2.5"	2½	SB-505 C86200	650	-320	150	E11040.215
215.1	590-093-25	NUT-NIT 2.5" 304	21/2	SA-479 304/304L	650	-320	150	E11040.215
215.2	590-108-25	NUT-NIT 2.5" SST	21/2	SA-479 316/316L	650	-320	150	E11040.215
215.3	590-059-25	NUT-NIT 2.5" 316 SS	21/2	SA-479 316/316L	650	-320	150	E11040.215
216	590-088-30	NUT-NIT 3" BRONZE	3	SB-148-C95500	650	-320	150	E11040.216
217	320-015-10	NUT-CO2 1"	1	B16 C36000 H02	650	-320	150	E11040.217
217.1	320-060-10	NUT-CO2 1" SS	1	SA-479 304/304L	650	-320	150	E11040.217
218	320-008-15	NUT-CO2 1.5"	1½	B16 C36000 H02	650	-320	150	E11040.218
218.1	320-070-15	NUT-CO2 1.5" SS	1½	SA-479 304/304L	650	-320	150	E11040.218
219	320-027-20	NUT-CO2 2"	2	SB-505 C86200	650	-320	150	E11040.219
219.1	320-027-20S	NUT-CO2 2" SS	2	SA-479 304/304L	650	-320	150	E11040.219
220	320-034-30	NUT-CO2 3"	3	SB-505 C86200	650	-320	150	E11040.220
221	320-041-40	NUT-CO2 4"	4	SB-505 C86200	650	-320	150	E11040.221
222	326-000-10	NUT-NITROUS OXIDE 1"	1	B16 C36000 H02	650	-320	150	E11040.222
223	326-005-15	NUT-NITROUS OXIDE 1.5"	1½	B16 C36000 H02	650	-320	150	E11040.223
224	450-000-30	NUT-LNG 3"	3	SB-505 C95200	650	-320	150	E11040.224
224.1	450-000-30S	NUT-LNG 3" SST	3	SA-479 304/304L	650	-320	150	E11040.224
224.2	450-000-305-316	NUT-LNG 3" 316 S/S	3	SA-479 316/316L	650	-320	150	E11040.224
225	600-000-15	NUT-ARGOMIX 1.5"	1½	SB-505 C95500	650	-320	150	E11040.225
226	600-000-25	NUT-ARGOMIX 2.5"	21/2	SB-505 C95500	650	-320	150	E11040.226
227	450-003-30	F.ELNG 3" W/GASKET ASSY	3	B505 93200	450	-320	150	E11040.227
227.1	450-003-30C836	F.ELNG 3" C83600	3	B62 C83600	450	-320	150	E11040.227
227.2	450-003-30M	F.ELNG 3"	3	B505 93200	450	-320	150	E11040.227
227.3	450-003-30S	F.ELNG 3" 304S/S W/3"FNPT	3	SA-479 304/304L	650	-320	150	E11040.227
227.4	450-003-30BW316	F.ELNG 3" 316 S/S W/BWE	3	SA-479 316/316L	650	-320	150	E11040.227
227.5	450-003-30SM	F.ELNG 3" 304SST FNPT	3	SA-479 304/304L	650	-320	150	E11040.227
227.6	450-003-SM316	F.E -LNG 3"316 S/S W/3"FNPT	3	SA-479 316/316L	650	-320	150	E11040.227
227.7	450-003-30SMPS	F.E LNG 3" 304S/S W/3"PIPE SKT	3	SA-479 304/304L	650	-320	150	E11040.227
227.8	450-003-30S-PS	F.E.LNG 3" 304S/S W/3"PIPE SKT	3	SA-479 304/304L	650	-320	150	E11040.227
228	450-004-30	HEADPC-3 LNG W/RETAINER ASSY.	3	SB-505 C85700	450	-320	150	E11040.228
228.1	450-004-30	HEADPC-3" LNG	3	SB-505 C85700	450	-320	150	E11040.228
228.2	450-010-30M	HEADPC-3"LNG W/2"FNPT BRASS	3	SB-505 C85700	450	-320	150	E11040.228
229	450-004-30S	HEADPC-3" LNG SS W/ 3"FNPT	3	SA-479 304/304L	650	-320	150	E11040.229
229.1	450-004-30-316	HEADPC 3" LNG 316 S/S W/BWE	3	SA-479 316/316L	650	-320	150	E11040.229
229.2	450-010-30M316	HEADPC-3" LNG 3"FNPT 316 SST	3	SA-479 316/316L	650	-320	150	E11040.229

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UNLESS OTHERWISE SPECIFIED INTERPRET PER ASME Y14.5-2009	DESIGN BY	WJR	DATE 12/21/2011	Title:				Ā			
<ol> <li>THE FOLLOWING TOLERANCES APPLY: .XX: ±.01" .XXX: ±.005" FRACTIONS: ± 1/32" ANGLES" ±0.5*</li> </ol>	DRAWN BY	PGZ	DATE 04/05/2012			RATION - CG GENIC LIQUII		A	ACIVIE		
2. ALL DIMENSIONS ARE INCHES.	CHECKED BY		DATE 2/4/0000		R CONNE		-		C DVO CE	A LLOCA	
3. REMOVE ALL BURRS AND SHARP EDGES .015 MAX	CILCULE DI	BL	<sup>DATE</sup> 3/4/2022	IKANSFE		CIIONS			CRYOGE		
<ol> <li>MACHINED SURFACE TO BE 125 MICR-INCHES OR BETTER.</li> </ol>	APPROVED BY	JDE	DATE 03/17/2022	1					QMUIT 🔿	CYI	
5. DO NOT SCALE DRAWING.		<b>J</b> DE	00/17/2022								
	CRYOGENICS, INC. AND IS PART WITHOUT THE PRIOR	NOT TO BE COPIED, REPRODUCED WRITTEN CONSENT OF ACME CR	HEREIN ARE CONSIDERED PROPRIETARY TO ACME 0, DUPLICATED OR DISCLOSED TO OTHER IN WHOLE OR IN YOGENICS, INC. THE DRAWING SHOULD BE RETURNED AS IRNISHED AND WHILE IN THE POSSESSION OF THE REFOREMENT	P/N:				DWG NO.	CRN-D-	08051	
	SHOULD BE PROPERLY SAFE	EGUARDED AGAINST DISCLOSURE		SCALE: 1:1	Project No.	: E210020	В	SHEET: S	Sheet 4 of 4	REV.	С

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