CPC Close Tolerance Bayonets
1/2” – 6” Sizes

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INTRODUCTION

This Installation, Operation, and Maintenance Manual is intended to be as complete and up to date as possible. It covers installation, operation, and - maintenance procedures for a Leslie Controls, Inc. product. CPC-Cryolab reserves right to update this manual and other product information concerning installation, operation, and/or maintenance, at any time and without obligation to notify product owners of such changes.

CPC-Cryolab is not responsible for injury to personnel or product damage due to improper installation, operation, and/or maintenance. All installation, operation, and maintenance procedures should only be performed by trained/certified personnel. All personnel performing these procedures should completely and carefully read and understand all supplied materials before attempting procedures. All personnel should pay strict attention to all Notes, Cautions, and Warnings that appear within procedures detailed in this manual.

CPC-Cryolab welcomes user input as to suggestions for product or manual improvement.

Contact Information

For information concerning warranties, or for questions pertaining to installation,
Operation or maintenance of CPC-CRYOLAB products, contact:

CPC-CRYOLAB
C/O LESLIE CONTROLS INC.
12501 Telecom Drive
Tampa, FL 33637

USA Phone: (813) 978-1000
USA Fax: (813) 978-0984
www.LESLIECONTROLS.com

To order replacement parts, contact CPC-Cryolab at address listed above, or call toll free:

USA/Canada/Caribbean Phone: (800) 323-8366
Note: Please include model and serial number of unit for which parts are being ordered. If ordering by phone, please have this information readily available.

GENERAL NOTES AND WARNINGS

Notes:

- If questions are not answered by this manual, or if specific installation, - operation, and/or maintenance procedures are not clearly understood, contact CPC-Cryolab for clarification before proceeding.
- If unit is damaged during installation, operation, or maintenance, complete following steps:

1. Turn off and lock out all supply to unit in an approved manner, including incoming valves.
2. Contact in-house maintenance personnel or CPC-Cryolab for instructions.

NOTE: Throughout this manual, warnings will be denoted by BOXES

CAUTION!
Piping system must be adequately designed and supported to prevent extraordinary loads to pressure equipment.

It is strongly recommended that this document be reviewed before attempting any installation, operation, or maintenance procedures.

CAUTION!

The piping system must be adequately designed and supported to prevent extraordinary loads to the pressure equipment. It is the responsibility of the end user to ensure that the piping stresses are not transmitted through the Leslie/CPC-Cryolab equipment. Failure to do so will result in failure and/or breach of the pressure boundary of the equipment

INSTALLATION

GENERAL NOTES

Prior to installation, the bayonet assembly should be unpacked and checked against the packing list and/or the approved customer drawing.

The bayonet is not to be installed or used in a pipeline that exceeds the maximum allowable working pressure as dictated by the manufacturer.

Support the bayonet connections as necessary to avoid inducing extraordinary loads to the assembly and/or the pipeline its being utilized in.

For oxygen clean and high purity applications, care must be taken to ensure the level of cleanliness is not compromised during the installation process.

WELDING INTO PIPELINE

Prior to welding, insure pipeline is clean and free from dirt, weld slag, machining burrs, and pipe scale.

The bayonet does not require disassembly to be welded in the pipeline due to the end connections. Weld into the pipeline in accordance with any and all applicable local and national codes and standards.

After installation, if system flushing is necessary, ensure it is done in a safe and controlled manner, and complies with any codes and standards for such action.

The bayonet connection, once welded in, will require a vacuum be drawn in the annular space. This vacuum helps with the reduction of heat transfer, and aids in maintaining the cryogenic media in its liquid form. Consult with the manufacturer on proper procedure for drawing vacuum once bayonet assembly is welded into place.

OPERATION

The bayonet assembly being utilized is for the transfer of cryogenic media from one vessel to another. The bayonet connections utilize an annular space under vacuum that aids in the reduction of heat transfer into the cryogenic media. When used properly, the bayonet assembly can be highly effective in reducing the heat transfer from atmosphere into the flow media, causing phase transfer from liquid to gas.

START-UP

After initial cool down, check and re-tighten fasteners as needed (see GENERAL NOTES in the MAINTENANCE Section).

The following steps are required for proper mating of the Male and Female bayonet connections. These steps must be followed closely to ensure proper operation of the connections.

Assembly

1. Remove any protective wrapping from the connections

2. Clean the O.D. of the Male and I.D. of the Female with an approved cleaning solvent Use a lint free rag; allow to dry

3. Inspect the Male and Female connections for any visual damage or imperfections. This includes scratches, dings, dents, and any other similar damage. If damage is

seen, do not install, and contact Manufacturer immediately.

4. Clean the O-rings and nose seal prior to installation. Inspect both for damage, scratches, and any other like imperfections. If any is seen, do not install, and contact Manufacturer immediately.

5. Apply small amount of vacuum grease onto o-rings. Install nose seal onto nose piece on Male connection. Proper installation can be seen in figure 2.

6. Align Male and Female connections and gently slide together. Be sure that nose seal stays in place. The connection should be smooth; stop sliding together if resistance is observed. Pull back, and try again. If difficulty continues, contact manufacturer immediately.

7. Once connection is made, insert bolting through bolt holes in flanges. Tighten to specified torque found in Fig. 3 later in this document.

Disassembly

1. Prior to disassembly, be certain that internal line pressure has been vented to atmospheric pressure. Failing to do so can result in injury, or even death.

2. Once line pressure has been vented, loosen Bolting connections.

3. Slide Male portion from Female

4. Once pieces have been removed from each other, allow to warm to ambient temperatures, dry, and then clean. Replace any covers, and store in clean, dry area until ready for re-use.

5. Contact Manufacturer for replacement O-rings, nose seals, or general questions on proper use and/or storage.

MAINTENANCE

WARNING!

Injury or death can occur due to failure to completely isolate equipment from all sources of pressure before beginning disassembly. Do not proceed until system has been completely isolated from the process and vented to atmospheric pressure.

GENERAL NOTES - IMPORTANT

Apply Krytox® or any other suitable anti-sieze lubricant to all threads (manual stem threads, body/bonnet fasteners, and packing fasteners). Use vacuum grease for o-rings prior to reassembly. WARNING: Lubricant must be compatible with process fluid. Use of non-compatible lubricant could lead to system failure, which could result in damage, injury, or death.

Bolting for the flanges shall be tightened down prior to operation, and should follow the torque requirements in Figure 3. If any spare parts are required, please refer to Figure 1 for proper replacement part numbers. For any further questions or concerns, please contact the Manufacturer.

Replacement Parts List

**Note: Denotes parts required for Hydrogen Service*

1/2" x 2" Male & Female Bayonet

Description	Part Number	Qty.
O-ring (silicon)*	F-9892	1
O-ring (silicon)*	F-9893	1
O-ring (Buna-N)	F-1051	1
O-ring (Buna-N)	F-1053	1
Nose Seal (Teflon)	F-1047	1
Gakset*	F-17432	1

1" x 2-1/2" Male & Female Bayonet

Description	Part Number	Qty.
O-ring (silicon)*	F-5659	1
O-ring (silicon)*	F-5658	1
O-ring (Buna-N)	F-1488	1
O-ring (Buna-N)	F-1490	1
Nose Seal (Teflon)	F-1078	1
Gakset*	F-17394	1

1-1/2" x 3" Male & Female Bayonet

Description	Part Number	Qty.
O-ring (silicon)*	F-5390	1
O-ring (silicon)*	F-5666	1
O-ring (Buna-N)	F-1158	1
O-ring (Buna-N)	F-1476	1
Nose Seal (Teflon)	F-1157	1
Gakset*	n/a	n/a

2" x 4" Male & Female Bayonet

Description	Part Number	Qty.
O-ring (silicon)*	F-1345	1
O-ring (silicon)*	F-5391	1
O-ring (Buna-N)	F-5130	1
O-ring (Buna-N)	F-1334	1
Nose Seal (Teflon)	F-1342	1
Gakset*	F-13099	1

3" x 5" Male & Female Bayonet

Description	Part Number	Qty.
O-ring (silicon)*	F-1219	1
O-ring (silicon)*	F-2204	1
O-ring (Buna-N)	F-5668	1
O-ring (Buna-N)	F-1220	1
Nose Seal (Teflon)	F-1218	1
Gakset*	F-12107	1

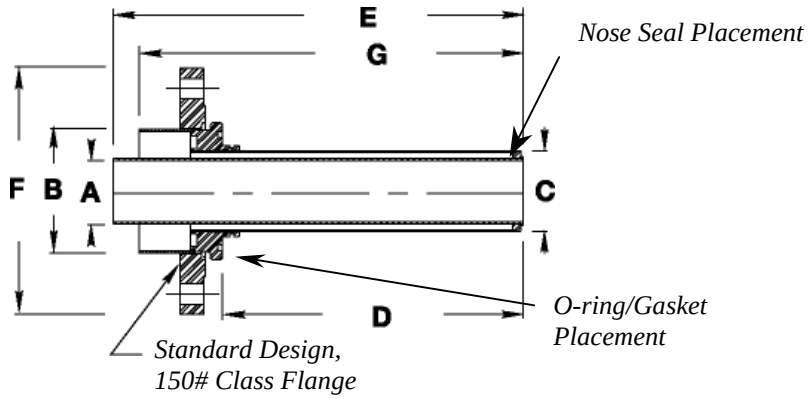
4" x 6" Male & Female Bayonet

Description	Part Number	Qty.
O-ring (silicon)*	F-5671	1
O-ring (silicon)*	F-5672	1
O-ring (Buna-N)	F-1478	1
O-ring (Buna-N)	F-1480	1
Nose Seal (Teflon)	F-1522	1
Gakset*	n/a	n/a

6" x 10" Male & Female Bayonet

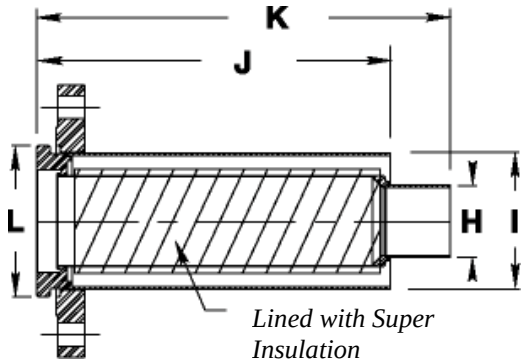
Description	Part Number	Qty.
O-ring (silicon)*	F-5675	1
O-ring (Buna-N)	F-1482	1
O-ring (Buna-N)	F-1484	1
Nose Seal (Teflon)	F-1552	1
Gakset*	F-12109	1

FIGURE 1 – SPARE PARTS LIST



MALE CLOSE TOLERANCE							TEMP. -423F MAWP 275 PSIG		
Size	**Part Number**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**ΔQ***
1/2" X 2"	F-BMCTPS04X	0.84	2.37	1.56	8.00	12.00	6.00	11.00	4.50
1" X 2-1/2"	F-BMCTPS08X	1.31	2.87	1.75	10.00	14.00	7.00	13.00	4.90
1-1/2" X 3"	F-BMCTPS12X	1.90	3.50	2.44	9.00	13.00	7.50	12.00	9.10
2" X 4"	F-BMCTPS16X	2.37	4.50	2.94	11.00	15.00	9.00	14.00	9.70
3" X 5"	F-BMCTPS24X	3.50	5.56	3.92	12.00	16.00	10.00	15.00	10.50
4" X 6"	F-BMCTPS32X	4.50	6.62	5.35	16.00	20.00	11.00	19.00	19.20
6" X 10"	F-BMCTPS48X	6.62	10.75	8.39	18.00	22.00	16.00	21.00	41.00

ALL DIMENSIONS IN INCHES



FEMALE CLOSE TOLERANCE							TEMP. -423F MAWP 275 PSIG
SIZE	**PART NUMBER**	**H**	**I**	**J**	**K**	**L**	**ΔQ***
1/2" X 2"	F-BFCTPS04X	0.84	2.37	9.00	11.00	2.94	6.70
1" X 2-1/2"	F-BFCTPS08X	1.31	2.87	11.38	13.38	3.88	7.90
1-1/2" X 3"	F-BFCTPS12X	1.90	3.50	10.38	12.38	4.00	6.50
2" X 4"	F-BFCTPS16X	2.37	4.50	11.63	13.63	5.00	6.00
3" X 5"	F-BFCTPS24X	3.50	5.56	13.75	15.75	6.49	14.70
4" X 6"	F-BFCTPS32X	4.50	6.62	18.00	20.00	7.94	31.70
6" X 10"	F-BFCTPS48X	6.62	10.75	19.25	21.25	11.94	37.00

ALL DIMENSIONS IN INCHES

*Note: The above ΔQ values are conductive heat loss from ambient to cryogenic temperatures (BTU/Hr. @ LN2 temperatures)

FIRUGE 2 –

MALE/FEMALE DIMENSIONING AND HEAT LEAK

Bayonet Size	# of Bolts (per standard design)	Torqure Value, per bolt (FT-LB.)
1/2" X 2"	4	10
1" X 2-1/2"	4	10
1-1/2" X 3"	4	10
2" X 4"	8	25
3" X 5"	8	37
4" X 6"	8	45
6" X 10"	12	76

FIGURE 3 – BOLTING TORQUE TABLE

It is solely the responsibility of the system designer and the user to select products and materials suitable for their specific application requirements and to ensure proper installation, operation and maintenance of these products. Assistance shall be afforded with the selection of the materials based on the technical information supplied to CPC-Cryolab™; however, the system designer and user retain final responsibility. The designer should consider applicable Codes, material compatibility, product ratings and application details in the selection and application. Improper selection, application or use of the products described herein can cause personal injury or property damage. If the designer or user intends to use the product for an application or use other than originally specified, he must reconfirm that the selection is suitable for the new operating conditions.

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