



Vacuum Jacketed Pipe Systems

Vacuum Jacketed Pipe Quick Fab Cryo-Fast Application Specific Accessories



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Custom-engineered systems and components to deliver cryogenic liquids without heat.

Product lines include:

- Standard VJP
- Large-bore VJP
- Bayonets

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Acme Vacuum Jacket Pipe

LEGACY

The "Quality Cryogenics" brand of Vacuum Jacketed Pipe (VJP) was acquired by Acme Cryogenics in 2001. With the new name came added resources. Our current customers include major aerospace companies, all major gas distributors, and the US Government.

DESIGN CAPABILITIES

We offer surveying and on-site pipe design resulting in a safe and reliable system to fit your facility's needs. This guarantees the VJP system fits your building, or we fix it – for free.

EXTENSIVE PRODUCT LINE

Custom designed VJP systems, Quick-Fab VJ pipe and CryoFast piping covers virtually all uses of Vacuum Jacketed Pipe. In addition, Acme also offers a complete line of accessories including bayonet or field joint couplings, keep-colds, phase separators, tank switchers, and VJ SuperFlex hoses.

INSTALLATION SERVICE

Acme Cryogenics has a nationwide field service team available to install your new VJP system. The field service team is also trained in repairing existing systems and preventative maintenance on your current vacuum lines, regardless of manufacturer. Acme' standard manufacturer's warrenty is doubled when the VJ pipe is installed by Acme's field service technicians.

FACILITIES

The Vacuum Jacketed Pipe division of Acme Cryogenics has recently completed a move into a new 38,400 square foot facility, located in Ball Ground, Georgia. This new facility will result in shorter lead times for customers and give Acme the ability to produce larger sizes of VJP (up to 12" NPS inner line size).

EXPERTISE

Each VJP project is managed by a "sales engineer" who has been trained in ASME B31.3 pipe design, cryogenic safety and VJP project management.

RESPONSIVENESS

Our goal is to return your quote within 24 hours of submittal. Standard lead time for custom designed VJP can be as little as four weeks from approved design. Acme can offer an expedited build for critical delivery projects.

Acme Cryogenics was established in 1969. Today we are North America's leading manufacturer of cryogenic gas equipment and systems with a proud history of innovation, responsive customer service, and responsible environmental stewardship. We provide engineering, design, fabrication, installation, and repair services to the Food Packaging, Phar-maceutical, Semi-Conductor, Aerospace, Medical Gas Pipe, and Industrial Gases industries. We welcome the opportunity to deliver for you.



Acme Cryogenics has designed and fabricated Vacuum Jacketed Piping (VJP) systems, equipment, and components since 1969, serving national laboratories, Fortune 500 companies, and cryogenic equipment users worldwide.

Our VJP systems are the most cost-effective and highest quality method of transferring liquefied nitrogen, oxygen, argon, natural gas, carbon dioxide, hydrogen, and helium. We provide complete system design and installation while meeting the most stringent safety and quality standards at every stage of manufacturing.

VJP is the state-of-the-art solution for super-insulated piping that protects process integrity and the quality of process and product results. Field proven over decades of use in the most demanding applications, Acme Cryogenics VJP delivers precise performance, long life, and exceptional reliability to also ensure your process or facility's operation and safety, and to minimize downtime.



VJP – THE INSIDE STORY

Vacuum Jacketed Pipe is essentially two pipes in one an inner carrier pipe in which the cryogenic liquid is transferred, and an outer pipe that supports and seals the vacuum insulation, forming the "Vacuum Jacket" around the inner pipe. The inner line is suspended inside the outer jacket by a series of non-conductive supports. Depending on system design pressure, internal or external expansion joints are used to compensate for thermal contraction of the inner line.

The inner carrier pipe and the outer jacket are constructed from stainless steel pipe or tubing. The inner line is wrapped with a multi-layered super insulation which blocks radiative heat transfer. The entire annular space between the inner line and the outer jacket is evacuated to prevent convective heat transfer. The vacuum space is then factory sealed, forming a "static vacuum". Chemical getters are used to maintain the vacuum space and provide maintenance free operation for up to 20 years.

The result is the most efficient transfer system available for cryogenic liquids.

INTEGRITY IS INTEGRAL

The integrity of our customers' processes is what drives our quality program. The companies and research institutions we serve select us because of the exceptional results they can achieve using the highest quality VJP. The design and manufacture of Acme VJP are in accordance with the highest industry and manufacturing standards.

Inner Carrier Line – The inner line is designed and built in accordance with ASME/ANSI B31.3. Typical Design Pressure = 150 psig.

Outer Jacket – The outer jacket is designed to ASME Code Section VIII for unfired pressure vessels with an internal vacuum and external atmospheric pressure with the assembly at ambient temperature.

Certified Welders – Qualified per ASME Section IX and ANSI B31.3 for MIG, TIG, and orbital welds.

All inner process and outer jacket welds are helium mass spectrometer leak tested at 1×10^{-8} cc/sec. Vacuum pumpdown, bakeout and final retention testing is performed on every individual spool assembly.

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800.422.2790
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VJ PIPE FEATURES	BENEFITS		
Double Walled Construction	Lowest Heat Inleak		
Factory Sealed Vacuum Sections	Vacuum Integrity To 20 Years		
Prefabricated	Easy Shipping and Installation		
Vacuum Insulation	Maximum Liquid Preservation		
Minimal Cryogenic Liquid Loss	Lower Ultimate Gas Costs		
Series 304 Stainless Steel Fabrication	Maximum Service Life		
Bayonet Design Options	Easy Installation		
Standard Pipe Hangers	Low Install/Maintenance Cost		
Helium Mass Spectrometer Leak-Testing	Vacuum Integrity		
Modular Construction	Ease Of Expansion/Modification		
Internal Liquid Traps	Prevents Boil-Off		
Vacuum Jacketed Valves	Branch and Equipment Isolation		
Flexible Piping Options	Thermal Contraction/Simple Installation		





More than the Sum of it's Parts

The numerous advanced features of Acme Cryogenic Vacuum Jacketed Piping solutions are designed to work together to produce exceptional efficiencies across the entire system. The result is substantial savings in terms of lost gas prevention, reduced maintenance costs, and exceptional value over the life of the system.

And because of our highly specialized expertise and cryogenic industry focus, we are able to offer the best lead times in the industry.







Value vs. Cost of Heat Leak

The biggest challenge during cryogenic liquid transfer is the loss of product due to heat transfer. Acme VJP is specifically designed to transfer cryogens with minimum heat leak. The combination of our factory sealed vacuum jacket, internal support system, and multi-layered insulation prevents heat loss due to convection, conduction, and radiation.

VJP may have a higher initial cost than less efficient piping alternatives—however, VJP's vastly superior performance characteristics more than make up the difference in just a fraction of the system's lifespan. Substantial gas savings alone, over the lifetime of the installation, make it a significantly less expensive design choice than mechanically insulated pipe.

The following represents a typical gas product loss comparison based on 200' of 1" diameter process line transporting liquid nitrogen 16 hours per day/ 5 days per week/50 weeks per year with a base LN2 price of \$0.40 per gallon.





Annual Cost of Lost Gas Product Per Year



Making the Right Connections



Acme offers two standard types of vacuum insulated connections depending on the design conditions and installation requirements.

Bayonet Connections are designed for lower pressure applications up to 150 psig. Bayonet connections do not require any welding or vacuum work in the field. With proper planning and careful measurement, bayonets offer an easy to install, low profile, vacuum insulated connection.

Field Joint Connections offer improved thermal efficiency over bayonets but require a skilled field service team and specialized vacuum equipment for installation. Field joints are designed to handle large diameter pipes and higher pressure applications and offer increase structural durability due to the all-stainless steel welded construction. In addition, field joints allow for some adjustments during the installation.

Complete Component Choice

In addition to VJP, Acme provides a complete component offering to complete our system design, manufacture, and installation capability.

Mechanical Keep-Cold Device – A float activated device used to maintain liquid in the VJ Pipe line and vent the excess gas created by normal heat leak.

Phase Separators – Typically used in applications where a single bulk tank is being used to provide both high pressure (90-150 psig) Nitrogen gas and low pressure (5-30 psig) liquid Nitrogen.

Scale-Based Tank Switcher – Used in applications that require multiple liquid cylinders to be used in succession without interruption

by automatically switching to a new cylinder as each cylinder is emptied.





Quick-Fab Modular VJ Pipe

Acme Cryogenics' Quik-Fab Vacuum Insulated Pipe provides a low cost, high thermal efficiency solution for the transfer of cryogenic liquids. Our pre-engineered VJP sections come in a variety of straight lengths, with 90 degree elbows and tee sections that can be configured to meet most applications. Typical orders can ship within two weeks. Quik-Fab pipe is connected with a foam joint protected by a rugged stainless steel sleeve, then sealed to provide a moisture barrier. Installation requires field welding and a pneumatic pressure test in accordance with ASME B31.3. Quik-Fab VJ piping systems provide vastly superior thermal performance compared to 100% foam piping systems without the expense and long lead time of a custom measured VJP system.

DESIGN:

- Cryogenic Liquid Transfer (LN2, LAR, LNG, and LCO2)
- Designed per ASME B31.3
- MAWP = 150 PSIG (Internal Bellows) or MAWP = 400 PSIG (External Bellows)
- A312-304SS Pipe (inner line and outer jacket)
- MLI "Super Insulation"
- Static Vacuum with Complete Getter System

FEATURES & BENEFITS:

- Thermal Performance (1" thick vacuum insulation is 40 times more efficient than 6" thick foam insulation)
- Low pressure (internal bellows) design keeps pipe from shifting in racks and eliminates the need for VJ Flex
- Stainless steel pipe sleeve offers an exact fit for easy seal to eliminate moisture intrusion
- Modular sections can be reconfigured or reused
- Structured material pricing eliminates risk of cost overruns
- Vacuum design life of over 10 years
- Custom lengths, VJ flex sections and valves also available





Quick-Fab Modular VJ Pipe Ordering Info

Internal Bellows (150 PSIG Max)	External Bellows (400 PSIG Max)			
P/N	P/N	SIZE	DESCRIPTION	LINEAR FT
5798	6303	1⁄2″ X 2″	4" SCH 5 FIELD CAN 30" LONG	2.5
5648	6296	1⁄2″ X 2″	90° ELBOW SECTION	4
5646	6295	1/2" X 2"	TEE SECTION	6
6381	6382	1⁄2″ X 2″	6FT VJ FLEX SECTION (10 FT OAL)	10
5650	6297	1/2" X 2"	STRAIGHT SECTION - 5FT	5
5651	6298	1/2" X 2"	STRAIGHT SECTION - 8 FT	8
5652	6299	1/2" X 2"	STRAIGHT SECTION - 10 FT	10
6217	6300	1⁄2″ X 2″	STRAIGHT SECTION - 12 FT	12
6218	6301	1⁄2″ X 2″	STRAIGHT SECTION - 16 FT	16
5653	6302	1⁄2″ X 2″	STRAIGHT SECTION - 20 FT	20
5799	6334	1" X 3"	6" SCH 5 FIELD CAN 30" LONG	2.5
5649	6327	1" X 3"	90° ELBOW SECTION	4
5647	6326	1" X 3"	TEE SECTION	6
6383	6384	1" X 3"	6FT VJ FLEX SECTION (10 FT OAL)	10
5654	6328	1" X 3"	STRAIGHT SECTION - 5 FT	5
5655	6329	1″ X 3″	STRAIGHT SECTION - 8 FT	8
5656	6330	1" X 3"	STRAIGHT SECTION - 10 FT	10
6219	6331	1" X 3"	STRAIGHT SECTION - 12 FT	12
6220	6332	1" X 3"	STRAIGHT SECTION - 16 FT	16
5657	6333	1" X 3"	STRAIGHT SECTION - 20 FT	20
5796	6350	2" X 4"	6" SCH 5 FIELD CAN 30" LONG	2.5
5794	6351	2" X 4"	90° ELBOW SECTION	4
5793	6356	2" X 4"	TEE SECTION	6
6385	6376	2" X 4"	6FT VJ FLEX SECTION (10 FT OAL)	10
5909	6352	2" X 4"	STRAIGHT SECTION - 5 FT	5
5910	6353	2" X 4"	STRAIGHT SECTION - 8 FT	8
5911	6354	2" X 4"	STRAIGHT SECTION - 10 FT	10
6221	6377	2" X 4"	STRAIGHT SECTION - 12 FT	12
6222	6378	2" X 4"	STRAIGHT SECTION - 16 FT	16
5795	6355	2" X 4"	STRAIGHT SECTION - 20 FT	20
5800	6357	3″ X 5″	8" SCH 5 FIELD CAN 30" LONG	2.5
6193	6358	3″ X 5″	90° ELBOW SECTION	4
6198	6363	3″ X 5″	TEE SECTION	6
6386	6387	3″ X 5″	6FT VJ FLEX SECTION (10 FT OAL)	10
6164	6359	3" X 5"	STRAIGHT SECTION - 5 FT	5
6195	6360	3″ X 5″	STRAIGHT SECTION - 8 FT	8
6196	6361	3″ X 5″	STRAIGHT SECTION - 10 FT	10
6223	6379	3″ X 5″	STRAIGHT SECTION - 12 FT	12
6224	6380	3″ X 5″	STRAIGHT SECTION - 16 FT	16
6197	6362	3″ X 5″	STRAIGHT SECTION - 20 FT	20





SAVE TIME AND MONEY Eliminate the Hassle of Liquid Cylinders in the Lab

Vacuum Insulated Piping

Cryo-Fast





Cryo-Fast

Acme Cryogenics' Cryo-Fast Vacuum Jacketed Piping Solution provides hassle-free cryogenic liquid delivery in a simple, costeffective package. Cryo-Fast delivers cryogenic liquid, on demand, directly to your lab, minimizing the need for your lab personnel to spend valuable time handling liquid cylinders.

The Cryo-Fast system includes lightweight, thermally efficient vacuum jacketed piping. Optional VJ Superflex Hose drops offer continuous vacuum insulation right to your lab equipment. The result is the most efficient, low-loss system available to transfer cryogenic liquid from your liquid cylinders to your equipment.

Product is delivered when and where you need it... FAST!!



Features & Benefits



Scale-Based Tank Switcher

Our optional Scale-Based Tank Switcher takes the guesswork out of switching cylinders. This feature allows you to have multiple liquid cylinders connected at a central station. A simple and reliable weight-based control system automatically switches over to a full cylinder in order to maintain a continuous flow of LN₂ to your lab.







Vacuum Jacketed Piping Application Specific Accessories

Application Specific Accessories Bayonets Field Joint Connections Mechanical Keep Cold E-Stop Control System Phase Monitor Superflex Vj Hose

2" Female Air Force Bayonet Parts List (Liquid Hydrogen Service)

QTY	PART#	DESCRIPTION			
1	C-02277	2" FEMALE BAYONET (st.stl.)			
1	B-02280	NUŢ STANDARD (BRASS)			
1	A-02419	RETAINING RING (cad. stl.)			
1	B-02379	DUST COVER (ALUM)			
1	C-08124	REPLACEABLE NUT ASSEMBLY (BRASS)			
	QTY 1 1 1 1 1 1	QTY PART# 1 C-02277 1 B-02280 1 A-02419 1 B-02379 1 C-08124	QTY PART# DESCRIPTION 1 C-02277 2" FEMALE BAYONET (st.stl.) 1 B-02280 NUŢ STANDARD (BRASS) 1 A-02419 RETAINING RING (cad. stl.) 1 B-02379 DUST COVER (ALUM) 1 C-08124 REPLACEABLE NUT ASSEMBLY (BRASS)		



www.opwces.com or 800.422.2790 webinquires@acmecryo.com





2" Male Air Force Bayonet Parts List (Liquid Hydrogen Service)

ITEM#	QTY	PART#	DESCRIPTION
1	1	C-02258	2" MALE BAYONET (st.stl.)
2	1	B-02264	TIP SEAL (TEFLON)
3	1	ORING-2-344\	ORING (VITON)
4	1	B-02263	NUT STANDARD (BRASS)
5	1	A-02420	RETAINING RING (cad. stl.)
6	1	C-02266	DUST COVER (ALUM)
7	1	C-08207	REPLACEABLE NUT ASSEMBLY (BRASS)





1" Female ACME (Dual Seal) Bayonet Parts List (Liquid Oxygen, Nitrogen, & Argon)

ITEM#	QTY	PART#	DESCRIPTION					
1	1	C-03028	1" FEMALE	ACME BAYO	NET			
2	1	C-03032	LOOSE	FLANGE	(BRASS)			







1¹/₂" Female ACME (Dual Seal) Bayonet Parts List

(Liquid Oxygen, Nitrogen, & Argon)

ITEM#	QTY	PART#	DESCRIPTION			
1	1	C-03039JKTA	1 1/2" FE	MALE ACME B	AYONET	
2	1	C-03043	LOOSE	FLANGE	(BRASS)	





2" Female ACME (Dual Seal) Bayonet Parts List (Liquid Oxygen, Nitrogen, & Argon)

ITEM#	ŧ	QTY	PART#	DESCRIPTION			
1	1		C-01795JKTA	2" FEMALE ACME	BAYONET		
2		1	C-01796	LOOSE	FLANGE	(BRASS)	







3" Female ACME (Dual Seal) Bayonet Parts List

(Liquid Oxygen, Nitrogen, & Argon)

ITEM	#	QTY	PART#	DESCRIPTION			
1	1		C-03360JKTA	3" FEMALE ACM	E BAYONET		
2		1	C-03364	LOOSE	FLANGE	(BRASS)	





1" Male ACME (Dual Seal) Bayonet Parts List (Liquid Oxygen, Nitrogen, & Argon)

ITEM# QTY PART#		PART#	DESCR	IPTION		
1	1		C-03288JKTA	1" MA	LE ACME BAY	ONET
2		1	ORING-2-230	S	SILICON	ORING
3	1		A-03280	TIP	SEAL	
4	1		A-03288-KIT	LOOSE	PARTS KIT	
4a		6	BOL-SS-3/8-0	200	BOLT, 3/8" 1	6UNC X 2″ LG.
4b		6	NUT-BR-3/8-2	16	NUT, 3/8" 16	5UNC-2b (BRASS)
4c		6	WAS-SS-3/8-I	LOCK W	ASHER, LOCK	, 3/8" (St. Stl.)







1¹/₂" Male ACME (Dual Seal) Bayonet Parts List

(Liquid Oxygen, Nitrogen, & Argon)

ITEM# QTY PART#		PART#	DESC	CRIPTION			
1		1	C-03287JKTA		1 1/2" MAL	E ACME BAYONET	
2		1	ORING-2-235	S	SILICON	ORING	
3	1		A-03282	TIP	SEAL		
4	1		A-03287-KIT	LOOS	SE PARTS KIT		
4a		6	BOL-SS-3/8-0	200	BOLT, 3/8" :	16UNC X 2" LG.	
4b		6	NUT-BR-3/8-2	16	NUT, 3/8" 1	6UNC-2b (BRASS)	
4c		6	WAS-SS-3/8-I	OCK	WASHER, LOC	K, 3/8" (St. Stl.)	





2" Male ACME (Dual Seal) Bayonet Parts List (Liquid Oxygen, Nitrogen, & Argon)

ITEM#	ł	QTY	PART#	DESC	RIPTION	
1	1		C-01794JKTA	a 2" MA	LE ACME BAY	DNET
2		1	ORING-2-24	55	SILICON	ORING
3	1		A-03133	TIP	SEAL	
4	1		A-01794-KIT	LOOSI	E PARTS KIT	
4a		6	BOL-SS-7/16	-204	BOLT, 7/16"	14UNC X 2 1/4″ LG.
4b		6	NUT-BR-7/16	5-14	NUT, 7/16" 1	4UNC-2b (BRASS)
4c		6	WAS-SS-7/16	5-LOCK V	VASHER, LOCK	, 7/16" (St. Stl.)







3" Male ACME (Dual Seal) Bayonet Parts List

(Liquid Oxygen, Nitrogen, & Argon)

ITEM#	ŧ	QTY	PART#	DESCR		
1	1		C-03355JKTA	3″ MA	LE ACME BAY	DNET
2		1	ORING-2-254	IS	SILICON	ORING
3	1		A-03359	TIP	SEAL	
4	1		A-03365-KIT	LOOSE	PARTS KIT	
4a		8	BOL-SS-7/16	-204	BOLT, 7/16"	14UNC X 2 1/4" LG.
4b		8	NUT-BR-7/16	5-14	NUT, 7/16" 1	4UNC-2b (BRASS)
4c		8	WAS-SS-7/16	-LOK	WASHER, LO	CK, 7/16" (St. Stl.)





2" Female Cryenco Style Bayonet Parts List (Liquid Helium Service)

ITEM#	QTY	PART#	DESCRIPTION
1	1	C-02362	2" FEMALE CRYENCO BAYONET
2	1	ORING-2-335S	SILICON ORING
3	1	B-02455	2" FEMALE DUST COVER (ALUM)
4	1	C-02365	V-BAND CLAMP ASSEMBLY
4	1	C-02365	V-BAND CLAMP ASSEMBLY











2" Male Cryenco Style Bayonet Parts List

(Liquid Helium Service)

ITEM#	QTY	PART# DES	SCRIPTION
1	1	C-02386	2" MALE CRYENCO BAYONET
2	1	ORING-2-335S	SILICON ORING
3	1	B-02451	TIP SEAL
4	1	B-02495	2" MALE DUST COVER (ALUM)
5	1	C-02365	V-BAND CLAMP ASSEMBLY



2" Female Linde HQK Bayonet Parts List (Liquid Hydrogen Service)

ITEM#	QTY	PART#	DESCRIPTION
1	1	C-01888	2" FEMALE LINDE HQK BAYONET (ST. STL.)
2	1	ORING-2-234S	SILICONE O-RING
3	1	B-01956	2" FEMALE DUST COVER (ST. STL.)
4	1	C-02075	V-BAND CLAMP ASSEMBLY









2" Male Linde HQK Bayonet Parts List (Liquid Hydrogen Service)

ITEM#	QTY	PART#	DESCRIPTION
1	1	C-01857	2" MALE LINDE HQK BAYONET (ST. STL.)
2	1	B-01860	TIP SEAL
3	1	C-01899	DUST COVER (ALUM)
			(SHOWN WITH OPTIONAL
			HANDLE)







1" Female Acme (Close Tolerance) Bayonet Parts List

(Liquid Oxygen, Nitrogen, Argon, & Helium)

ITEM#	QTY	PART#	DESCRIPTION	
1	1	C-04018	1" FEMALE ACME BAYONET	
2	1	C-01177	LOOSE FLANGE (st. stl.)	







1" Male Acme (Close Tolerance) Bayonet Parts List (Liquid Oxygen, Nitrogen, Argon, & Helium)

ITEM#	QTY	PART# DES	CRIPTION
1	1	C-04019	1" MALE ACME BAYONET
2	1	ORING-2-230S	SILICON ORING
3 1		A-04019-KIT LOC	DSE PARTS KIT
3a	8	BOL-SS-3/8-0204	BOLT, 3/8" 16UNC X 2 1/4" LG.
3b	8	NUT-IMP-3/8-16	NUT, 3/8" 16UNC-2b (impreglon)
3c	8	WAS-SS-3/8-LOCK	WASHER, LOCK, 3/8" (St. Stl.)





1 ¹/₂" Female Acme (Close Tolerance) Bayonet Parts List (Liquid Oxygen, Nitrogen, Argon, Hydrogen & Helium)

ITEM#	QTY	PART#	DESCRIPTION	
1	1	C-04264	1 1/2" FEMALE ACME BAYONET	
2	1	C-01323	LOOSE FLANGE (st. stl.)	







1 ¹/₂" Male Acme (Close Tolerance) Bayonet Parts List (Liquid Oxygen, Nitrogen, Argon, Hydrogen & Helium)

ITEM#	ŧ	QTY	PART#	DESCRIPTION	
1		1	C-04265	5 1 1/2" MALE ACME BAYONET	
2		1	ORING-2-23	2-235S SILICON ORING	
3	1		A-04265-KI	5-KIT LOOSE PARTS KIT	
3a		8	BOL-SS-3/8	3/8-0204 BOLT, 3/8" 16UNC X 2 1/4" LG.	
3b		8	NUT-IMP-3/	P-3/8-16 NUT, 3/8″ 16UNC-2b (impreglon)	
3c		8	WAS-SS-3/8	-3/8-LOCK WASHER, LOCK, 3/8" (St. Stl.)	



¹/2" Female Linde Type Bayonet Parts List (Liquid Nitrogen, & Helium Service)

ITEM#	QTY	PART#	DESCRIPTION		"A"
1	1	C-04465	1/2" X 3" LONG (ST. STL.)	3.42″
2	1	C-03532	1/2" X 6" LONG (ST. STL.)	6.38″
3	1	C-05578	1/2" X 9" LONG (ST. STL.)	8.82″
4	1	C-03618	1/2" X 15" LONG	(ST. STL.)	14.82"
5 1		A-03805	DUST COVER	(PLASTIC)	









1/2" Male Linde Type Bayonet Parts List (Liquid Nitrogen, & Helium Service)

ITEM#	QTY	PART# DES	CRIPTION	"A"
1	1	C-04463	1/2" X 3" LONG (ST. STL.)	3.42"
1	1	C-03552	1/2" X 6" LONG (ST. STL.)	6.17"
1	1	C-05577	1/2" X 9" LONG (ST. STL.)	8.97"
1	1	C-06166	1/2" X 15" LONG (ST. STL.)	14.96"
2	1	ORING-2-212V	O-RING (VITON)	
3	1	RING-RETAINER	RETAINING RING (CAD. STL.)	
				"B"
4	1	B-06163	1/2" X 3" DUST COVER (PLASTIC)	3.63"
4	1	B-05665	1/2" X 6" DUST COVER (PLASTIC)	6.38"
4	1	B-06164	1/2" X 9" DUST COVER (PLASTIC)	9.18"
4	1	B-06165	1/2" X 15" DUST COVER (PLASTIC)	15.18"







Field Joint Connector

The QC SS Welded Field Joints provide a vacuum insulated connection between two factory sealed VJ pipe spool sections. To assemble the field joint, the inner lines are welded together with a buttweld or sock weld coupling. The chemical getters are applied and the inner pipe is wrapped with super-insulation. The outer sleeve slides into place and is weided to seal off the vacuum space. Finally, the joint is evacuated to less than 15 microns. Field Joint installation should be completed by certified welders trained in cryogenic insulation and vacuum technologies.

Low Heat Leak

QC Field Joint connections incorporate a continuous vacuum insulation between individual spool sections insuring minimal heat leak. Each Field Joint connection includes: Outer Sleeve with evacuation port, Chemical Getter, and Super Insulation.

Field Adjustment

One of the major advantages of QC Field Joint connections is the ability to adjust the lengths of VJ pipe runs during installation. Our standard sleeve can accommodate up to +/-4 inches of adjustment by simply extending or trimming the inner line.

Compact Design

QC Field Joint Connections are designed with a stacked cone style transition providing a long heat path vacuum break within a short working space. Coupled with our low profile sleeves, QC Field Joints can fit into tight spaces and allow easy access for welders during installation.

Durability

QC Field Joints are constructed from 304SS stainless steel pipe and welded for maximum durability. The end result is a maintenance free connection with a design life of 20+ years.



Inner Pipe Size/Material	Field Joint BTU/Hr (Watt)
1/2" IPS Sch5 21.3 mm OD 304SS	5.9 (1.7)
1" IPS Sch5 33.4 mm OD 304SS	5.9 (1.7)
1-1/2" IPS Sch5 48.3 mm OD 304SS	8.5 (2.5)
2" IPS Sch5 60.3 mm OD 304SS	11.5 (3.4)
3″ IPS Sch5 88.9 mm OD 304SS	29.4 (8.6)
4" IPS Sch5 114.3 mm OD 304SS	35.3 (10.3)





Mechanical Keep-Cold

The Mechanical Keep-Cold is a float activated device used to maintain liquid in the VJ pipeline and vent the excess gas created by normal heat leak. This device helps provide liquid on demand to your application.

LOCATION

The Mechanical Keep-Cold is located at the highest points of the VJ pipe system and close to the application to provide liquid on demand.

CONFIGURATIONS

Acme Cryogenics offers two vacuum jacketed configurations of Mechanical Keep-Colds. The first style is attached to the VJ pipe system with a bayonet connection. This style provides the least amount of heat into the system while functioning as a liquid level controller for the piping system.

The second is attached to the VJ piping system with a threaded connection.



OPERATION

One of the major advantages of the Mechanical Keep-Cold is that it is self contained and does not require electricity or pneumatics to work. Adjustments are not required in the field.



The Mechanical Keep-Cold device allows gas to rise in its vertical well and be vented to atmosphere through a valve. As the gas is vented from the VJ piping the liquid will raise the mechanical float valve and stop the venting. This system maintains the liquid at a constant level in the

VJ piping.



E-Stop Control System

The Emergency Stop Control System is the latest state of the art system that is designed for industrial applications and is outfitted with a rugged stainless steel enclosure.

Acme Cryogenics offers the most complete set of standard features while maintaining competitive pricing.

Standard Features & Specifications Include

- White light illuminates when power is on and conditions are safe
- Red light illuminates when alarm condition exists to alert personnel. Audible alarms are optional and can be added
- Once the alarm has been acknowledged by the personnel and it is safe to resume operation, the reset button must be pressed to allow for the system to re-open the liquid nitrogen supply valve
- Includes solenoid valve used to operate with a pneumatic actuated valve and can also operate electric valves.
- Designed to work with pneumatic actuated valves that require air pressure between 30-150 PSIG.
- Air supply, Control and Air Vent ports have a ¹/₄" ODT connection.
- Mounting: Wall mount.
- Dimensions (approx.): 12"W x 16"H x 8.75" D
- Power: 120 VAC

Optional Stack Light Assembly

- Length= 8-2/3"
- Width= 2"
- Height= 8-2/3"
- Diameter= 2"
- Depth= 2"
- Lamp Life= 2500 Hours
- 5000 Candle Power
- Voltage= 115 V
- 0.4 Amps AC
- 15 Watts
- Surface Mounting
- Operating Temp= -4
- UL E164155 Standards







E-Stop Control System

The E-Stop Control System is designed to interact with Midwest Cryogenics/Acme Cryogenics' Oxygen Deficiency Monitor or other monitors with proper connections. The remote actuated liquid nitrogen supply valve will close if one for the following occurs: power is lost; internal fault is detected within the oxygen deficiency monitor or to the E-Stop Control System; if an auxiliary alarm condition occurs; if the oxygen monitor goes into a low oxygen alarm; or simply of the red emergency stop button is pushed.







Phase Separator

In-Line Adjustable Pressure Phase Separator

Take the gas out of your liquid application

Acme's In-Line Adjustable Pressure Phase Separator is the perfect solution for providing a variety of liquid nitro-gen pressures to multiple use points from a common main supply line in your building.

Low pressure nitrogen gas operated valves allow for gas supply from the liquid use bulk tank for a 'closed loop' system.

Better liquid quality at the point of use means more efficient cooling resulting in a more cost efficient process.



Overhead adjustable pressure phase separator





Superflex VJ Hose

- Stays warm during operation
- Remains flexible during and after filling
- Armor flex construction for increased durability
- Eliminates frost and sweating for cleaner operation
- Reduced LN₂ consumption

SuperFlex[®] VJ Hose Applications

- Liquid Cylinder Filling
- Freezer Filling
- Cryogenic Dewar Filling
- Laboratories
- Equipment Connections





Our commitment to quality shows in everything we do. From our strict manufacturing standards to our custom engineering and innovative design capabilities, Acme Cryogenics is the Quality Leader.





Superflex VJ Hose

Payback Calculation

How much money can you save when you feed your equipment with a QC SuperFlex[®] Hose?

	Hours Used Per Day	Cost Per Day ⁽¹⁾	Cost PerYear ⁽²⁾
6 ft. Standard Transfer Hose	8	\$8.25	\$2,145.00
6 ft. QC SuperFlex [®] Hose	8	\$0.07	\$ 18.00
You Save			\$2,127.00
6 ft. Standard Transfer Hose	24	\$24.75	\$6,435.00
6 ft. QC SuperFlex [®] Hose	24	\$0.21	\$ 54.60
You Save			\$6,380.40

(2) 8 or 24 hours per day, 5 days a week, 52 weeks per year

These calculations exclude the heat loss at the non-insulated ends of the hose, at tank and equipment connections.

Specifications

Size	3/8" ID x 1½" OD (Inner Hose) (Outside of Armor Flex)	1/2" ID x 1 7/8" OD (Inner Hose) (Outside of Armor Flex)	End	Connectio	ns
Pressure Rating	150 psi	100 psi			
Material	304 SS with Vacuum	304 SS with Vacuum			
Minimum Bend Radius	Superinsulation 4½"	Superinsulation 6"			
Length	3' through 25' std (Other custom configurations available)	3' through 25' std (Other custom configurations	1/2" Flare Nut (Std LN2	Male Pipe Thread	Female Pipe Thread
End Connections	as needed	as needed	Connection)		

Not for use with oxygen.

Other customer specified ends are available.

Optional Accessories



Relief Valve Assembly





Phase Separators





Notes



Notes



Notes





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