Keepfull Vent Device

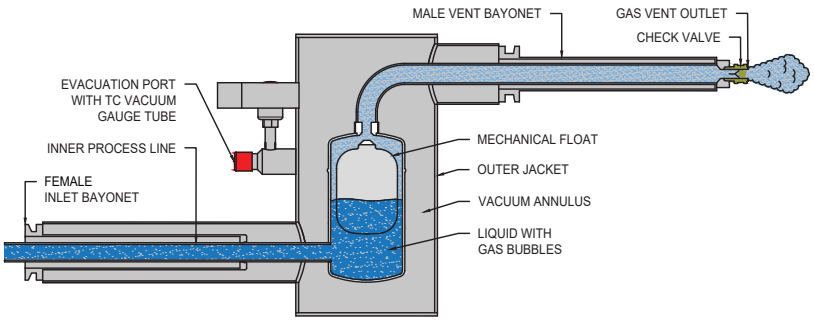
Get an uninterrupted, instantaneous supply of liquid when you incorporate a CryoWorks Keepfull Vent Device into your Vacuum Insulated Piping (VIP) system. Properly designed systems will incorporate Keepfulls at all system highpoints to keep your system full of liquid at all times. CryoWorks Keepfull Vent Device has an internal mechanical float that drops to allow accumulated gas to vent. Once all of the gas vents, the float rises to seal off the vent orifice. This simple design requires no field adjustments, no sensors, no pneumatics, and no electronics.

Keepfull Design Specifics:

- Located at high points in a system, a Keepfull will provide a higher quality LN2 at the point of use.
- An internal float assembly controls the venting of gases but retains the liquid nitrogen.
- The Vacuum Jacket surrounding the float assembly prevents frost and ice build up.

Keepfull Features:

- Various bayonet connection/sizes available.
- Available in Inline, End of Line and Vertical configurations.
- Liquid on Demand Performance.
  - Install Keepfull Vent Devices at all system highpoints.
  - Slope piping up to each keepfull.
  - Properly size your VIP lines for the required flow rate.
  - Ensure all piping, valves & connections are vacuum insulated to minimize heat gain.



Keepfull Technical Specifications:

VACUUM INSULATION — **Standard:** Static Vacuum Design
Optional: Dynamic Vacuum Design

MATERIALS — 304/304L Stainless Steel

CODES AND CERTS — Built to ASME B31.3 Process Piping

OPTIONAL VENT HEATER — **Standard:** 100 – 120 VAC (50 – 60 Hz)
Optional: 220 – 240 VAC (50 – 60 Hz)

VENT FLOW DATA (GAS)

PSIG	SCFM	Lb/Hr.	Kg/Hr.
150	14.5	63.8	(29.0)
125	12.2	53.7	(24.4)
100	10.0	44.0	(20.0)
75	7.8	34.3	(15.6)
50	5.5	24.2	(11.0)
25	3.0	13.2	(6.0)

OPTIONS — Custom Configurations, Dual Floats, Vent Heaters, Extended Vent lines & Custom End Connections.

Vent Options:

- **Vent Heater** - generally used for outdoor venting or vent line termination in a large enclosed area with proper air exchange. Our heater provides an ice-free termination, minimizing safety hazards such as falling ice, water drips, large ice accumulation, and roof damage. The protective outer mesh shields personnel from the high-temperature heater located at the vent.
- **Ambient Ventline Heater (AVH)** - generally used indoors where the cold discharge gas needs to be warmed prior to venting. Typically used for long-distance vent lines to eliminate the need for insulation or for venting into exhaust ducts. Our AVH provides an ice-free (ambient temperature) vent gas, minimizing safety hazards such as falling ice, water drips, large ice accumulation, and roof damage.
- **Vacuum Insulated Vent Line** - generally used to route vent gas safely and condensation free to an outside termination point.
- **Bayonet to Copper Adapter** - generally used to allow connections for copper vent piping with mechanical insulation.

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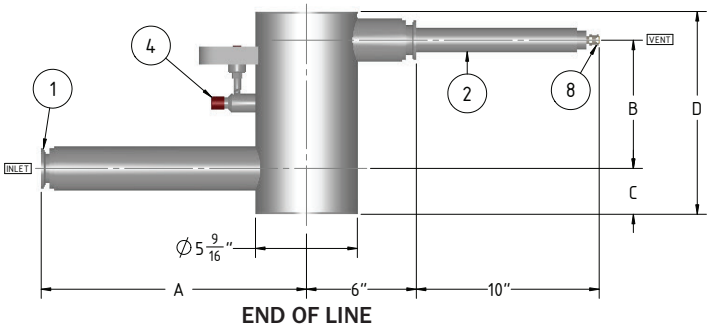
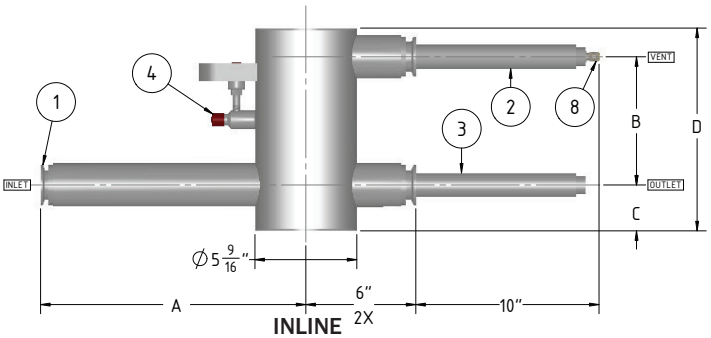
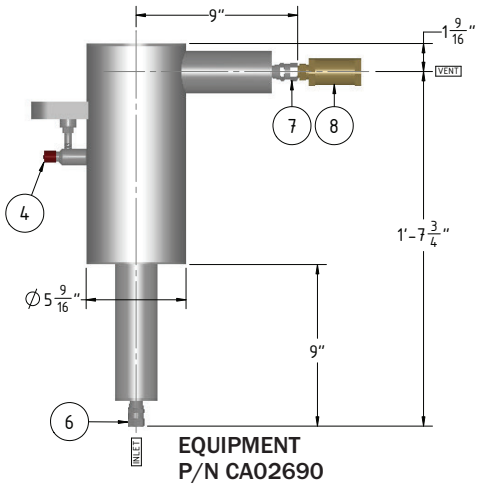
Keepfull Diagrams:



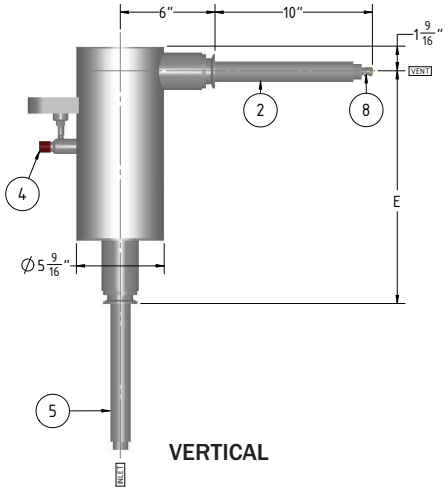
END OF LINE



INLINE



EQUIPMENT
P/N CA02690

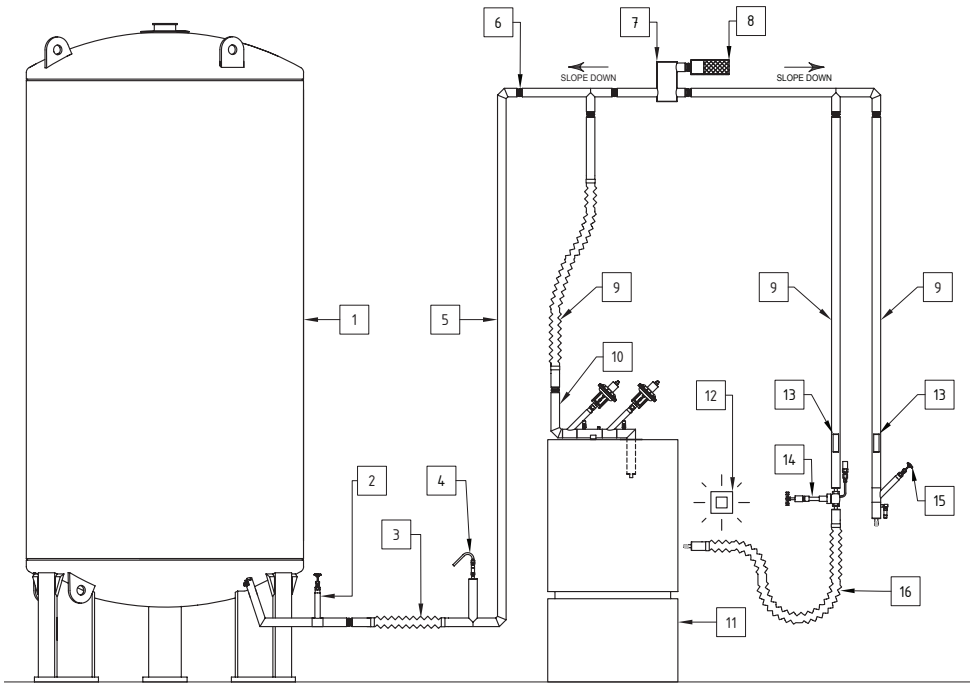


VERTICAL

Inlet Bayonet Line Size	End of Line Part Number	Inline Part Number	Vertical Part Number	A	B	C	D	E
⅝"	CA02710	CA02750	CA00414	1' - 0"	7"	2 ½"	11 1/16"	1' - 2 ¾"
1 ¼"	CA02790	CA02830	CA00416	1' - 2 ½"	7"	2 ½"	11 1/16"	1' - 2 ¾"
½"	CA00020	CA00060	CA00410	1' - 2 ½"	7"	2 ½"	11 1/16"	1' - 2 ¾"
1"	CA00100	CA00140	CA00411	1' - 3"	7"	2 ½"	11 1/16"	1' - 2 ¾"
1 ½"	CA00260	CA00300	CA00412	1' - 9 ½"	8 ¼"	2 ½"	1' - 0 ¼"	1' - 3 ¾"
2"	CA00340	CA00380	CA00413	1' - 9 ½"	8 ¼"	3"	1' - 1 ¾"	1' - 3 ¾"

① INLET FEMALE BAYONET
② VENT ½" MALE BAYONET
③ OUTLET MALE BAYONET
④ EVAC PORT W/VACUUM GUAGE
⑤ INLET MALE BAYONET
⑥ INLET ½" FEMALE FLARE
⑦ OUTLET ½" FEMALE FLARE
⑧ VENT CHECK VALVE

System Schematic:



ITEM #	DESCRIPTION
1	LN2 BULK TANK
2	VACUUM INSULATED WITHDRAWAL VALVE AND BAYONET
3	VACUUM INSULATED FLEX SECTION
4	SAFETY RELIEF VALVE (SRV)
5	VACUUM INSULATED RIGID PIPE
6	BAYONET CONNECTION
7	KEEPFULL VENT DEVICE (INLINE)
8	VENT HEATER
9	VACUUM INSULATED SUPPLY LINE
10	LN2 CONTROL MANIFOLD
11	CUSTOMER EQUIPMENT
12	OXYGEN MONITOR
13	INTERNAL GAS TRAP
14	BRONZE CRYO-VALVE W/SRV
15	VACUUM INSULATED MANUAL VALVE
16	VACUUM INSULATED TRANSFER HOSE

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