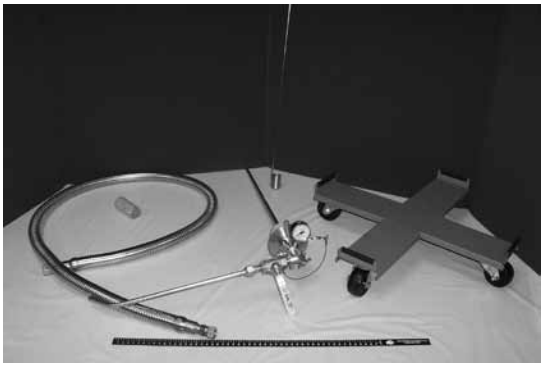
PurityPlus® Specialty Gases

Accessories



- LN2 6’ Non -Vacuum Transfer Line
- O2 6’ Non - Vacuum Transfer Line
- ¼” Phase Separator
- LN2 Dipper
- Measuring Stick
- Small Roller Base (For use with our 10 & 20 liter tanks)
- Large Roller base (For use with our 35 thru 50 liter tanks)
- Small Withdrawal Device (For use with 10D, 20D, 35D)
- Large Withdrawal Device (For use with our 35DX, 50D)

Directors

Optional accessories included in picture:

- Rollerbase
- Non-Vac Ln2 Transfer Line
- Model 250 Low-Level Alarm

Director Series Storage Vessels Specifications

Model	D-4000	D-2000C
LN2 Capacity	120 liters	60 liters
Static Hold Time	150 days	83 days
Evaporation Rate (liters/day)	0.80	0.72
Dimensions		
Necktube In.	8.5	8.5
Height In.	38	28
Outside Diameter In.	22	22
Weight		
Empty lb.	71	55
Full lb.	285	163
Racks		
Number	4	4
2 inch high boxes per rack	10	5
Box dimensions In.	5.25 x 5.25	5.25 x 5.25
Ampules per box	100	100
Boxes per vessel	40	20
Capacity		
Ampules in boxes (1.2 or 2.0 ml)	4000	2000

Liquid Nitrogen Shipping Vessels

- Increased capacity
- Lightweight
- Backed by more than 100 man years of cryogenic experience
- Convenient specimen loading/ unloading
- Durable exterior finish
- Greater necktube strength

Model		IC-2VS	IC-4VS	IC-7VS	IC-20VS
LN2 Capacity		2.4 Liters	4.6 Liters	6.1 Liters	6.3 Liters
Static Hold Time - Days		18	33	27	28
Evap. Rate - liters/ day		.13	.14	.23	.22
Dimensions:					
Necktube -	In	2.25	2.25	3.75	3.75
	mm	57	57	95	95
Outside Dia. -	In	8.75	8.75	11.25	15
	mm	222	222	286	380
Height -	In	16.5	20.6	20.6	30
	mm	419	523	523	762
Weight					
Empty -	lb	8	11	15	30
	kg	3.6	5	6.8	13.6
Full -	lb	12.2	20	26	41
	kg	5.5	9	11.8	18.6
Canisters					
Length -	In	5	11	11	11
	mm	127	279	279	279
Inside Dia -	In	1.75	1.75	2.96	2.96
	mm	44	44	75	75
Number		1	1	1	7
Capacity					
.5 cc Straws on canes		55	120	390	2730
.5 cc Straws bulk		165	300	970	6790
Vials 1.2 ml			36	132	924

Model letters denote type of unit and numbers approximate liter capacity; VS – Vapor Shipper
Weights are determined without canisters
Straw capacity based upon: Cane – 10 straws / cane Bulk - two levels in cups and goblets
Static hold time and evaporation rate are nominal.

Dewars

Dewar Specification Sheet

Model	IC-3D	IC-5D	IC-6D	IC-10D	IC-20D	IC-35D	IC-35DX	IC-50D
LN2 Capacity	3.6 Liters	5 Liters	6 Liters	10 Liters	20.5 Liters	35 Liters	35 Liters	50 Liters
Hold Time Days	21	23	30	66	100	140	140	125
Evap. Rate liters/ day	.14	.2	.2	.15	.2	.25	.25	.4
Dimensions:								
Necktube								
In	2.25	2.25	2.25	2.25	2.25	2.25	3.75	3.75
mm	57	57	57	57	57	57	95	95
Outside dia.								
In	8.75	8.75	8.75	11.25	15	18.5	18.5	18.5
mm	220	222	222	286	380	470	470	470
Height								
In	16.5	16.3	16.75	23	24.6	25.1	25.1	30.5
mm	419	414	425	584	625	638	638	775
Weight								
Empty								
lb	6.0	6	6.3	12.5	23	31	31	38
kg	3	3	3	5.6	10	14	14	17
Full								
lb	12	15	17	30.3	60	94	94	127
kg	5	7	8	13.6	27	42	42	58

Refrigerators

Model	IC-3R	IC-6R	IC-10R	IC-20R	IC-20RX	IC-35R	IC-35RX	IC-38RX/6	IC-38RX/10	IC-50RX	ARCTIC 22R	ARCTIC 22RX
LN2 Capacity	3.5 Liters	6 Liters	10 Liters	20 Liters	20 Liters	35 Liters	35 Liters	38 Liters	38 Liters	50 Liters	22 Liters	22 Liters
Hold Time, Days	21	30	100	205	105	291	180	135	135	125	146	146
Evap. Rate - Liters/ day	.13	.2	.10	.10	.19	.12	.19	.28	.28	.4	.15	.15
Work Time - Days/Weeks	13/2	18 / 3	62 / 9	128 / 18	65 / 9	182 / 26	112/ 16	84 / 12	84 / 12	78 / 11	120/16	120/ 16
Dimensions												
Necktube- In	2.25	2.25	2.25	2.25	3.75	2.25	3.75	5.0	5.0	3.75	2.62	2.62
mm	57	57	57	57	95	57	95	127	127	95	66	66
Outside Dia. In	8.75	8.75	11.25	15.0	15.0	19	19	19	19	19	15	15
mm	220	220	286	380	380	483	483	483	483	483	380	380
Height - In	16.5	18.5	23	25	25	25	25	27.6	27.6	30.5	26	26
mm	419	432	584	630	630	630	630	691	691	775	660	660
Weight												
Empty - lb	6.5	7.7	19.5	24	24	29	29	32	32	38	25	25
kg	3	3.5	8.8	10	10	13	13	14.5	14.5	17	11	11
Full - lb	11.5	14	37.3	60	60	90	90	99.7	99.7	127	64	64
kg	5	6	16.9	26	26	40	40	44.9	44.9	58	29	29
Canisters												
Length, In	5	5	11	11	11	11	11	11	11	N/A	11	11
Inside Dia.- In	1.75	1.75	1.75	1.75	2.96	1.75	2.96	4.1	2.96	N/A	2.0	2.0
mm	44	44	44	44	75	44	75	104	75	N/A	51	51
Number	6	6	6	6	6	6	6	6	10	6	3	6
Capacity												
.5 cc Straws on canes	330	330	660	660	2340	660	2340	4680	3900	2340	500	1000
.5 cc Straws Bulk	990	990	1800	1800	5820	1800	5820	10320	9700	5820	1360	2720
Vial 1.2 ml	-	-	216	216	792	216	792	1584	1320	768*	-	-

Straw capacity on canes: 10 Straws / cane for 11" canisters
5 Straws / cane for 5" canisters

Bulk: Two level goblets for 11"; one level for 5"

Vial capacity on canes: 6 vials / cane

* with square canisters, 2 1/4 x 2 1/4 x 1 7/8 high box; 8 box / rack (768 - 1/2 x 1/2 x 1 7/8 compartments)

PurityPlus® Specialty Gases

Series 8636 Whisper Valve®

silenced cryogenic safety relief valve

Description

The Whisper Valve is a silenced safety device for use with cryogenic containers.

The valve solves the problem of the loud noise, over 100 dB, associated with the activation of the relief valve in cryogenic containers containing nitrogen, argon or carbon dioxide. Many users of gas in cryogenic containers complain to their suppliers that the loud activation noise scares their employees and causes work disruptions and results in damaged product.

The Whisper Valve is easily installed on the vent valve of any cryogenic container and silently relieves the container pressure slightly below the normally installed relief valve. Whisper Valve reduces the relief of gas pressure to a noise level of 40-50 dB under normal conditions. For reference the average library noise level is 40 dB.

The Whisper Valve also reduces the gas losses of your cryogenic container to average of less than 48 cubic feet over 24 hours.

Whisper Valves are available in four settings, 22, 230 psig, 350 psig, and 500 psig. Other settings available on request.

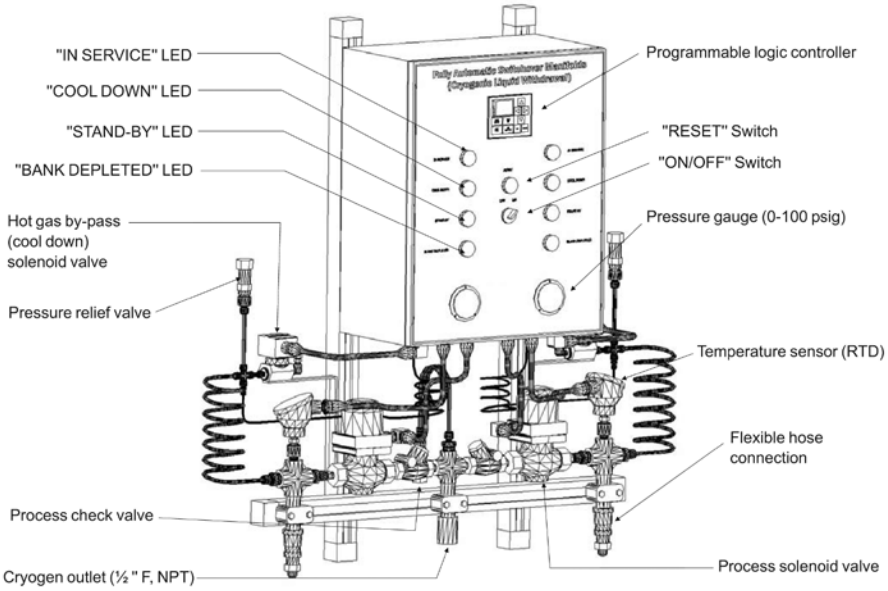
Features

- Reduces cryogenic relief valve blow-off noise to 40-50 dB.
- Easily installs on any cryogenic argon, oxygen, or nitrogen container.
- Available in four ranges to prevent most container noisy blow-offs.
- Reduces gas losses to less than 48 cubic feet per 24 hours.
- Convenient wall mount kit available.
- Standard CGA 295 inlet connection for nitrogen.
- CGA 440 inlet connection for oxygen.

Ordering Information

Model Number	Description
8636-22	Whisper valve for cryogenic containers with 22 psig relief setting
8636-230	Whisper Valve for cryogenic containers with 230 or 235 psig relief setting
8636-350	Whisper Valve for cryogenic containers with 350 psig relief setting
8636-500	Whisper Valve for cryogenic containers with 500 psig relief setting
8636-KIT	Wall mount bracket, panel mount nut, and six-foot hose with CGA 295
8636-02-22	Whisper valve for cryogenic containers of oxygen with 22 psig relief setting
8636-02-230	Whisper valve for cryogenic containers of oxygen with 230 or 235 psig relief setting
8636-02-350	Whisper valve for cryogenic containers of oxygen with 350 psig relief setting
8636-02-500	Whisper valve for cryogenic containers of oxygen with 500 psig relief setting
8636-02-KIT	Wall mount bracket, panel mount nut, and six-foot hose with CGA 440

fully automatic switchover manifolds for cryogenic liquid supply — Series CTM75



Description

The CTM75 Cryo Transfer Manifold assures a continuous supply of cryogenic liquid. It is set to transfer from the "in use" empty bank to the "reserve" full bank based on pressure and temperature.

This PLC-based system is continuously monitoring the pressure and temperature of both banks. In "read only" mode, the PLC screen indicates actual pressure and temperature of each bank and compares them to their switchover (target) settings. In "programming" mode, the PLC allows you to change the switchover settings.

The LEDs indicate the status of each bank at all times.

Features

- Continuous cryogenic liquid supply
- Automatic switchover from "depleted" bank to "stand-by" bank without operator's involvement
- Built-in "hot gas by-pass" for each manifold side Audible (optional) and visual alarms indicating when a supply side is depleted
- Two supply modes:
  - On Demand
  - Keep full
- Use the entire amount of cryogen in the cylinders
- Eliminates downtime due to empty cylinders
- Easy field pressure and temperature settings to better meet your application needs

Ordering Information

Series	Fluid	Qty. of Cyl. left bank	Qty of cyl right bank	Application	Options
CTM75	Argon = 3	(Max. 2 cylinders)	(Max. 2 cylinders)	Bio Medical = BM Laser = L Industrial = I High Purity = HP	Floor Stand = FS Vaccuum insulated flexible hose = VJH Flashing beacon = FB Audible Alarm = AA

Operation Mode Description

ON-DEMAND

The "On Demand" supply mode vents the "hot gas" coming from the liquid cylinders through the cool down solenoid valve before opening the process solenoid valve. The process solenoid valve will open only when receiving an external signal. The same process occurs during the switchover between the depleted "in use" side to the "full reserve" side.

KEEP FULL

The "Keep Full" supply mode assures instant liquid withdrawal whether or not dispensing. The system monitors both pressure and temperature and keeps optimal conditions by opening and closing the cool down solenoid valves. By doing so, quality liquefied gas is maintained up to the process solenoid valves. Thus, the CTM75 will dispense cyrogenic liquid within seconds. Because both sides are "kept Full" at all times, the "reserve bank" will immediately supply cryogenic liquid as soon as the "in use" side is depleted. The end use must be aware that the "Keep Full" supply mode will vent product to atmosphere if the demand is low.