

## ASB-5: LN<sub>2</sub> Supply\_Cryosauna\_CryoUSA (Cryosense®)

### Solving Equipment Challenges for the Application

Understanding the application requirements and setting up the cryogenic equipment controls are critical for a successful system operation. Requirements for the Cryosense Brand are:

Brand	Min Pressure	Max Pressure	Ideal Ops Pressure	Relief	LN <sub>2</sub> Flow
		<b>(Back Press Set)</b>	<b>(PB Set)</b>	<b>Valve Set*</b>	
Cryosense	18 psi	28 psi	22 psi	35 psi	2 lpm**

\* Do Not Isolate RV.

\*\* 2 liters per minute

### LN<sub>2</sub> Supply New Cryosauna Portable Solution

New Cylinders / Cryosense Complete (Includes PB Regulator Kit, Over-Pressure Regulator Kit, 35 psi Relief Valve, 0-60 psi pressure gauge, and Roto-Tel™ Liquid Level Gauge)	
P/N	Description
20932440	FNL DURA-CYL 230LP SB TC / CRYOSENSE PLUMBING COMPLETE
20932706	FNL DURA-CYL 230MP SB MCR TC / CRYOSENSE PLUMBING COMPLETE
20932707	FNL DURA-CYL 230HP SB MCR TC / CRYOSENSE PLUMBING COMPLETE
21036929	FNL DURA-CYL 230LP RB TC / CRYOSENSE PLUMBING COMPLETE
21036931	FNL DURA-CYL 230MP RB TC / CRYOSENSE PLUMBING COMPLETE
21037536	FNL DURA-CYL 230HP RB TC / CRYOSENSE PLUMBING COMPLETE

### LN<sub>2</sub> Supply Retrofit Kit for Cryosauna Portable Solution

Cryosense – Field Retrofit Existing Liquid Cylinders	
P/N	Description
20931822	KIT LP OVER-PRESSURE ONLY CRYOSENSE (USED CYLINDER W/ PB KIT) <sup>(1)</sup>
20931823	KIT LP PB AND OVER-PRESSURE CRYOSENSE USED CYLINDER W/O PB KIT <sup>(1)</sup>
20931816	KIT MP/HP PB AND OVER-PRESSURE CRYOSENSE (USED CYLINDER) <sup>(1)(2)</sup>
20931813	C-STIC COMPLETE SGB-2 BOX/CAP PROBE 230L (NEW CYLINDERS) <sup>(3)(4)</sup>
20938809	C-STIC COMPLETE SGB-2 BOX/CAP PROBE 230L (RETROFIT USED CYLINDERS) <sup>(4)</sup>
20931814	C-STIC COMPLETE VGB-2 BOX/CAP PROBE 230L (ALARMS)(NEW CYLINDERS) <sup>(3)(4)</sup>
20938810	C-STIC COMPLETE VGB-2 BOX/CAP PROBE 230L (ALARMS)(RETROFIT USED CYLINDERS) <sup>(4)</sup>
9710379	MUFFLER INERT SERVICE (AVAILABLE AT WWW.CHARTPARTS.COM)
13947885	OXYGEN MONITOR (AVAILABLE AT WWW.CHARTPARTS.COM)

<sup>(1)</sup> The retrofit kits are only applicable to Dura-Cyl® 230 liter models. Please consult Chart for other models.

<sup>(2)</sup> The MP/ HP kit includes PB Regulator Kit, Over-Pressure Regulator Kit, 35 psi Relief Valve, 0-60 psi pressure gauge, Dura-Cyl® 230LP Product Label, and Yellow Roto-Tel™ Protector.

<sup>(3)</sup> The Roto-Tel™ is a mechanical gauge standard on new Dura-Cyl® liquid cylinders. With an upgrade to a Rotorex C-Stic digital gauge, a credit of \$50.00 will be offered for the removal of the Roto-Tel™ and given toward the Rotorex C-Stic price.

<sup>(4)</sup> C-Stic part numbers will only work for Dura-Cyl® 230L cylinders built since mid 2008. Please consult Chart for other models.

#### Chart Customer Service:


**1.800.400.4683 – Dura-Cyl®, Perma-Cyl®, Bulk, BulkLite® 1400**

**1.888.877.3093 – Vacuum Insulated Pipe**



# ASB-5: LN<sub>2</sub> Supply\_Cryosauna\_CryoUSA (Cryosense®)

## LN<sub>2</sub> Supply New Cryosauna Stationary Solution

Perma-Cyl® Cryosense Cryosauna Ready Requirements – Option #04 LP Liquid w/ 1/2" VJ Withdrawal		
Description	Purpose	
Models: 1000HP, 1500HP, 2000HP, 3000HP, 5500MP	With 1/2" VJ Female Bayonet & Valve.	
Backpressure Regulator, set 28 psi	To control the top end pressure. Need 1/2" size to prevent pressure spike at filling.	
Pressure Builder Regulator, set 22 psi	To control bottom end pressure.	

## C-Flex VIP Transfer Hoses for Cryosauna LN<sub>2</sub> Installations

### Perma-Cyl® Vacuum Insulated Pipe (VIP) Flex

3/8" C-Flex Spiral Outer Hose - 1/2" Female Flare (CGA LN<sub>2</sub>) x 1/2" Male Bayonet (fits to Perma-Cyl® VJ Option)



**Special requirement: with integrated 35 psig atmospheric relief valve at bayonet end.**

Smart Number	Description	ID [in]	OD [in]	Length [ft]	End Ftg 1	End Ftg 2	Pressure Rating
0604S-8SE-MVE2-WRV	Perma-Cyl Ready 4FB	3/8"	1-1/2"	4	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI
0606S-8SE-MVE2-WRV	Perma-Cyl Ready 6FB	3/8"	1-1/2"	6	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI
0608S-8SE-MVE2-WRV	Perma-Cyl Ready 8FB	3/8"	1-1/2"	8	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI
0610S-8SE-MVE2-WRV	Perma-Cyl Ready 10FB	3/8"	1-1/2"	10	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI
0612S-8SE-MVE2-WRV	Perma-Cyl Ready 12FB	3/8"	1-1/2"	12	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI
0614S-8SE-MVE2-WRV	Perma-Cyl Ready 14FB	3/8"	1-1/2"	14	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI
0616S-8SE-MVE2-WRV	Perma-Cyl Ready 16FB	3/8"	1-1/2"	16	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI
0618S-8SE-MVE2-WRV	Perma-Cyl Ready 18FB	3/8"	1-1/2"	18	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI
0620S-8SE-MVE2-WRV	Perma-Cyl Ready 20FB	3/8"	1-1/2"	20	1/2" SAE 45 F FI	MVE 1/2" Male Bayonet	150 PSI

### Dura-Cyl® Vacuum Insulated Pipe (VIP) Flex

3/8" C-Flex Spiral Outer Hose - 1/2" Female Flare (CGA LN<sub>2</sub>) x 1/2" Female Flare (fits to Liquid Cylinder - Liquid Connection)



**Special requirement: with integrated 35 psig atmospheric relief valve.**

Smart Number	Description	ID [in]	OD [in]	Length [ft]	End Ftg 1	End Ftg 2	Pressure Rating
0604S-8SE-8SE-WRV	Dura-Cyl Ready 4FF	3/8"	1-1/2"	4	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI
0606S-8SE-8SE-WRV	Dura-Cyl Ready 6FF	3/8"	1-1/2"	6	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI
0608S-8SE-8SE-WRV	Dura-Cyl Ready 8FF	3/8"	1-1/2"	8	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI
0610S-8SE-8SE-WRV	Dura-Cyl Ready 10FF	3/8"	1-1/2"	10	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI
0612S-8SE-8SE-WRV	Dura-Cyl Ready 12FF	3/8"	1-1/2"	12	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI
0614S-8SE-8SE-WRV	Dura-Cyl Ready 14FF	3/8"	1-1/2"	14	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI
0616S-8SE-8SE-WRV	Dura-Cyl Ready 16FF	3/8"	1-1/2"	16	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI
0618S-8SE-8SE-WRV	Dura-Cyl Ready 18FF	3/8"	1-1/2"	18	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI
0620S-8SE-8SE-WRV	Dura-Cyl Ready 20FF	3/8"	1-1/2"	20	1/2" SAE 45 F FI	1/2" SAE 45 F FI	150 PSI

\* For all piping installations, Chart recommends flex or rigid VIP/VIT. Consult factory for rigid VIP/VIT solutions.

### Chart Customer Service:

1.800.400.4683 – Dura-Cyl®, Perma-Cyl®, Bulk, BulkLite® 1400

1.888.877.3093 – Vacuum Insulated Pipe



# LIQUID CYLINDER EXCHANGE PROCEDURE FOR CRYOSAUNA UNITS WITH LIQUID NITROGEN (LN<sub>2</sub>)

**CryoUSA**  
**Cryosense® Cryosaunas**



## To Remove Empty Dura-Cyl®

1. Put on face shield.
2. Put on gloves.
3. Close BLUE handled liquid valve all the way (clockwise).
4. Immediately operate Cryosauna “cool down cycle” to release pressure in hose. Run for at least 30 seconds.
5. With the proper size wrench, remove flare fitting connection at the BLUE handled liquid valve and hose (counter-clockwise). BE AWARE THAT SOME LIQUID MAY RELEASE AT THE CONNECTION. If continuous, go back to step 3.

Note: Isolation valve at Cryosauna is normally open at all times.

## To Install Full Dura-Cyl®

1. Put on face shield.
2. Put on gloves.
3. With the proper size wrench, install flare fitting connection at BLUE handled liquid valve and hose (clockwise).
4. Confirm Cryosauna is in “off” mode, including “cool down cycle”.
5. Inspect Dura-Cyl® for proper pressure (**15-25 psi**) on pressure gauge.
6. Inspect Dura-Cyl® for proper liquid level contents.
7. Turn GREEN handled pressure builder valve counter-clockwise to confirm it is in open position.
8. Open BLUE handled liquid valve (counter-clockwise), all the way to supply LN<sub>2</sub> to the Cryosauna.
9. Inspect for leaks at hose to tank connection & tighten if necessary.