



Instructions for Replacing the Refrigerant in Large Units

This procedure is for refrigeration unit sizes 200, 330, 331, 340, 400, 500, 550, 551, 552, 650, 660, 661, 662, 670, 672, 1000, 1100, 1101, and 1102. For PCTs, this procedure explains how to replace the refrigerant mixture in the primary refrigerant circuit (not the secondary coolant circuit).

Contents of kit:

- Polycold® premixed refrigerant charge¹
- material safety data sheet

Personnel and items needed to recharge the unit:

- qualified refrigeration technician² with standard tools and materials
- manifold gauge set with at least five hoses—referred to as “manifold” in these instructions
- two 1/4-inch SAE male flare tees
- two Schrader valve push-pins (for unit sizes 200 & 400 only)
- cylinder of halogen gas (R-134a or R-22 as appropriate with local laws)
- cylinder of dry nitrogen gas with a regulator
- electronic halogen leak detector with a leak sensitivity of at least 0.40 ounces (11 g) per year designed for use with the halogen gas being used for leak checking (R-134a or R-22).
- vacuum pump with a 1/4-inch SAE male flare connection that is capable of pumping down to at least 0.05 torr or 50 microns (6.5 Pa)
- thermistor or thermocouple type vacuum gauge

Additional items needed to recover refrigerant from the unit:

- charge recovery system³
- additional pressure gauge, if the discharge side of your charge recovery system does not have one

¹ Make certain that you have the correct charge for you model—compare the label on the premix cylinder to the nameplate on your unit. Also make certain that you have the complete charge—check the total number of cylinders entered on the cylinder label(s).

² United States federal law requires a certified refrigeration technician (Type 2, High Pressure).

³ United States federal law requires that any remaining refrigerant be recovered to 10 inches Hg vacuum.

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Limited Warranty Terms

Helix Polycold Cooling Products, CryoTiger®, AquaTrap®, Polycold Compact Cooler, Repair Services and Certified Refurbished Products

Helix Polycold cryogenic cooling products, including water vapor cryopumps (PFC, PCT, FLC, FI), chillers (PGC, PGCL), cryocoolers (P), CryoTiger, AquaTrap, Polycold Compact Cooler (PCC) and accessories, Certified Refurbished products (the "Products") and Repair Service are warranted to be free from defects in materials and/or workmanship under normal service for the time period as set forth in Table A below from date of shipment from Helix Polycold Systems Inc. ("Polycold"). The warranty for Repair Service is limited to the component parts replaced or repair performed by Polycold at Polycold's facility. Customer is responsible for all charges and expenses for Polycold Services provided at Customer's location by Polycold technicians as set forth in a quotation. Certified Refurbished Products and warranty exchange Products are remanufactured to like-new condition and contain used parts and materials. Except as provided for elsewhere herein, Products are intended for use on Large Stationary Equipment only, other end-use by customer may void this warranty.

Table A

Product	New Product Warranty	Repair Warranty	Certified Refurbished Cryogenic Cooling Products	Spare Parts & Accessories
CryoTiger® Products and Systems AquaTrap® Products and Systems Polycold® Compact Cooler (PCC)	15 Months	12 Months	N/A	12 Months
Cryogenic cooling products, including Water vapor cryopumps (PFC, PCT, FLC, FI), chillers (PGC, PGCL), cryocoolers (P), and accessories	24 Months	12 Months	12 months	12 Months

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The exclusive remedies for breach of warranty will be either repair or replacement of the nonconforming parts or Products during the warranty period at the sole discretion of Polycold, shipped ExWorks (Incoterms 2000) Polycold factory. Customer's recovery from Polycold for any claim shall not exceed the amount paid by customer to Polycold for the Product or Service giving rise to such claim, irrespective of the nature of the claim, whether in contract, tort, warranty, or otherwise. Customer must inspect the Products within a reasonable time upon receipt, and must notify Polycold within 30 days of discovering a defect. Every claim on account of defective material or workmanship shall be deemed waived unless made in writing within the warranty period specified above. Polycold does not assume, or authorize any other person to assume, any other obligations or liabilities in connection with the sale of the Products.

All Polycold Products are subject to the Helix Polycold Systems Inc. General Terms and Conditions, an excerpt of which are set forth above.

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A. Before You Start

Under normal conditions the refrigerant in a Polycold refrigeration unit should not have to be replaced. The source of the problem must be determined and repaired before recharging the unit.

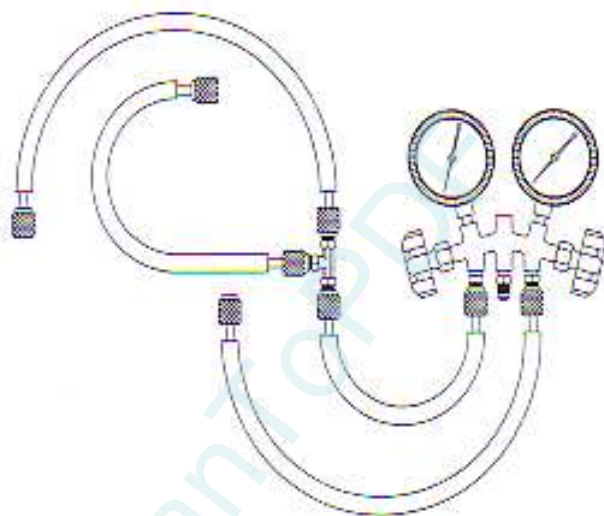
Polycold refrigeration units require a special procedure to recover and replace the refrigerant. Make certain you understand these instructions before starting this procedure. Also review the following terms used for adjusting the valves.

- **Back Seated Position (3-way valve):** To backseat a valve, turn its valve stem counter-clockwise until the valve stem is fully extended. When a valve is back-seated, refrigerant can flow freely through the valve.
- **Midseated Position (3-way valve):** To midseat a valve, first backseat the valve, then turn its valve stem two turns clockwise. Midseating a valve allows refrigerant to flow to a pressure gauge (if installed)—this is normally done while servicing the unit.
- **Front Seated Position (3-way valve):** To frontseat a valve, turn its valve stem clockwise until the valve stem is fully shortened. When a valve is front-seated, it does not allow the refrigerant to flow past the valve.
- **Open Position (2-way valve):** To open a valve, turn its valve stem counter-clockwise until the valve stem is fully extended.
- **Closed Position (2-way valve):** To close a valve, turn its valve stem clockwise until the valve stem is fully shortened.

Size of Unit	Instructions
1102, 1101, 1100, 1000, 672, 670, 662, 661, 660, 650, 552, 551, 550, 500	<ol style="list-style-type: none">1. Allow 48 hours for the refrigeration unit to warm up to room temperature.2. Remove the appropriate panels to access the compressor.
400, 340, 330, 331, 200	<ol style="list-style-type: none">1. Allow 24 hours for the refrigeration unit to warm up to room temperature.2. Remove the appropriate panels to access the compressor.

B. Connect the Manifold to the Refrigeration Unit

Note: This hose connection bypasses a tube that restricts the flow of refrigerant between the suction side of the compressor and the refrigerant expansion tank. This hose connection will permit complete evacuation and charging of the refrigerant expansion tank.



(a) Manifold with hoses connected

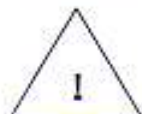
Size of Unit	Instructions
1102	1. Make certain the manifold's valves are closed.
1101	2. Connect the tee to the manifold's suction hose.
1100	3. Connect two hoses to the tee.
1000	a. Connect one suction hose to the compressor's suction valve.
672	b. Connect the second suction hose to the refrigerant expansion tank valve.*
670	
661	
660	4. Connect the manifold's discharge hose to the compressor's discharge valve.
650	
552	
551	5. Midseat the compressor's suction & discharge valves.
550	
500	6. Open the refrigerant expansion tank valve.
	*See how to identify the refrigerant expansion tanks on next page.

Size of Unit	Instructions
400 330 331 200 340	<ol style="list-style-type: none"> 1. Make certain the manifold's valves are closed. 2. Connect the tee to the manifold's suction hose. 3. Connect two hoses to the tee. <ol style="list-style-type: none"> a. Connect one suction hose to the Schraeder valve for the suction side of the compressor. Make certain the push-pin opens the Schraeder valve. b. Connect the second suction hose to the refrigerant expansion tank valve.* 4. Connect the manifold's discharge hose to the Schraeder valve for the discharge side of the compressor. Make certain the push-pin opens the Schraeder valve. 5. Midseat the refrigerant expansion tank valve.
<p>*How to identify the refrigerant expansion tanks:</p> <p><u>For 1100s with the CE mark:</u> Use the tank that is 20 inches (510mm) long with a 6-inch (150 mm) diameter.</p> <p><u>For 550's and 660's with the CE mark and for all 551's, 661's, 1101's:</u> Use the tank at the front of the unit.</p> <p><u>For PCT-500:</u> This tank is 28 inches (710 mm) long with a 7-inch (180 mm) diameter. It is positioned <i>behind</i> the coolant expansion tank which is 30 inches (760 mm) long with a 6-inch (150 mm) dia.</p> <p><u>For 331's:</u> Use the tank that is 12 inches (300 mm) long with a 6-inch (150 mm) diameter.</p> <p><u>For other units:</u> This tank is the one with the largest volume. If the unit has two large tanks positioned next to each other, use the tank closest to the front of the unit.</p>	

C. Recover Any Remaining Refrigerant from the Refrigeration Unit

Recover the refrigerant according to your local codes. United States federal law requires that any remaining refrigerant be recovered to 10 inches Hg vacuum. (On July 21, 1994 the US EPA's director of the Stratospheric Protection Division ruled that Polycold refrigerant charges are to be treated as high pressure refrigerants.)

Note: Customers in the United States may purchase charge recovery kits. These kits allow you to return the used refrigerant to Helix Polycold Systems Inc. (The refrigerant must be recovered into cylinders provided by Polycold.)



Caution: The refrigerant inside the refrigeration unit may be flammable.



Caution: Polycold charges are refrigerant mixtures which do not fully condense to a liquid at room temperature. (There is no temperature-pressure chart.) Check the pressure rating of the recovery cylinders that you are using. Do not over pressurize the recovery cylinders.

Size of Unit	Cylinder Requirements
1100 1000	You will need a maximum of four 50-pound cylinders. Remove the flare cap from each cylinder's vapor access port (with the blue hand valve).
1101 1102	You will need a maximum of five 50-pound cylinders for the HC charge. You will need a maximum of four 50-pound cylinders for the LT charge. Remove the flare cap from each cylinder's vapor access port (with the blue hand valve).
672 670 662 661 660 650	You will need a maximum of three 50-pound cylinders. Remove the flare cap from each cylinder's vapor access port (with the blue hand valve).
551 550 500	You will need a maximum of two 50-pound cylinders. Remove the flare cap from each cylinder's vapor access port (with the blue hand valve).
400 340 331 330 200	You will need one 50-pound cylinder. Remove the flare cap from the cylinder's vapor access port (with the blue hand valve).

Size of Unit	Instructions
1100	1. Evacuate your charge recovery system following the manufacturer's instructions. Evacuate each cylinder according to your local codes. United States federal law requires that the cylinders be evacuated to 25-29 inches Hg vacuum.
1000	
1101	
1102	
672	
670	
662	2. Connect the manifold's center port to the inlet of your charge recovery system. Connect a cylinder to the outlet of your charge recovery system. (If the discharge side of your recovery system does not have a pressure gauge, install a gauge to the hose between your recovery system and the cylinder.)
661	
660	
650	
551	
550	
500	3. Purge hoses of air.
400	
340	
331	
330	
200	
	4. Open the valves on the manifold and on the cylinder. Turn on your charge recovery system to pump the refrigerant into the cylinder.
	5. When the cylinder is filled to its rated pressure, turn off your charge recovery system. Close the valves on your recovery system and on the cylinder. Remove the full cylinder and connect an empty cylinder. Continue this process until the unit is evacuated to the level required by your local codes.
	6. Re-install the flare cap onto each cylinder's vapor access port.

D. Check the Refrigeration Unit for Leaks

Make certain the manifold's valves are closed. Connect the R-134a or R-22 cylinder to the manifold's center hose. Open both manifold valves and the cylinder valve to pressurize the unit to 10-20 psig (70-140 kPa). Close both the manifold valves and the cylinder valve. Remove the R-134a or R-22 cylinder from the center hose.

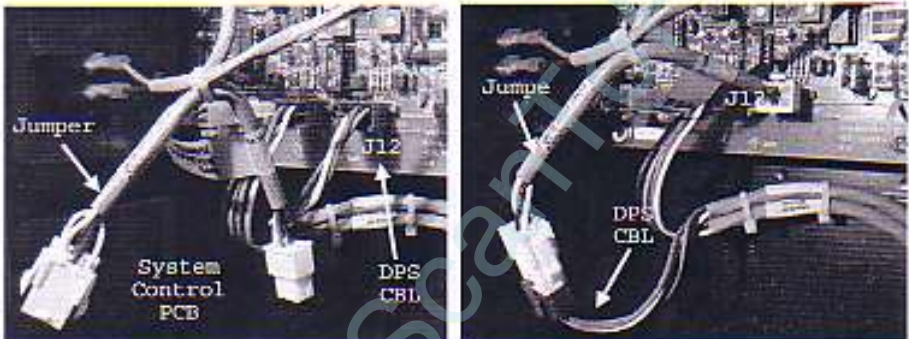
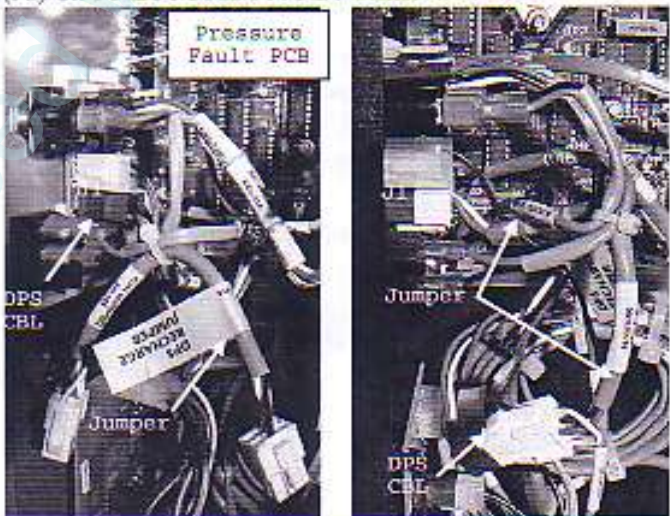
Attach the nitrogen cylinder to the manifold's center hose. Increase the pressure in the unit to 150 psig (1030 kPa).

Check the entire system for leaks with the halogen leak detector. Make certain that your leak sensor is adjusted correctly to sense the trace gas used (R-134a or R-22) and that the system is completely free of leaks.

E. Evacuate the Refrigerant Circuit

1. Inactivate the suction side of the compressor's dual pressure switch.

(This step allows the compressor to help evacuate and recharge the unit.)

Size of Unit	Instructions
1100 670 660 550 340 330	<p>Remove the low voltage box panel. Locate the blue DPS connector (J12) on the SYSTEM CONTROL PCB. Press connector's latch to unplug. Attach cable to appropriate end of DPS RECHARGE JUMPER cable. Attach other end of JUMPER to DPS connector (J12) on the SYSTEM CONTROL PCB.</p> 
1102 1101 672 662 661 552 551 331	<p>For CE marked Systems, locate the blue DPS connector (J1) on the PRESSURE FAULT RELAY PCB. (Adjacent to SYSTEM CONTROL PCB) Press latch to unplug the cable. Attach cable to appropriate end of DPS RECHARGE JUMPER cable. Attach other end of JUMPER to DPS connector (J1) on PRESSURE FAULT RELAY PCB.</p> 

Size of Unit	Instructions
1000	Locate the dual pressure switch next to the unit's electrical box.
650	For Penn switches (gray cover): Note and mark the low pressure switch's setting. Adjust the setpoint to the vacuum end of its range.
500	For Danfoss switches (off-white cover): Note and mark the low pressure switch's setting. Remove the locking plate for the two low pressure set screws.
400	
200	Turn the CUT IN setscrew about two turns counter-clockwise. This lowers the range for both the CUT IN and CUT OUT points. Standard settings are 60 psig for CUT IN and 58 psig for DIFFERENTIAL (2 psig cut-out).

2. Evacuate the unit.

Note: Contact the Polycold Service Department for additional instructions if:

- the refrigerant circuit was open to atmosphere for more than 48 hours,
- the unit was operated with the compressor suction in a vacuum, or
- you suspect contamination of the compressor oil.

Preliminary Evacuation

Remove the nitrogen cylinder from the manifold's center hose. Release the vapors/gases from system by opening both manifold valves.

Close the manifold's suction valve. Turn on the unit and allow the compressor to pump for 1-2 minutes. (This evacuates the unit through the manifold's discharge valve and unconnected center hose.) Turn off the unit and promptly close the manifold's discharge valve to prevent air from being drawn into the system. Verify the suction pressure is below 10 inches Hg vacuum (67 kPa).



Caution: Do not operate the compressor in a vacuum longer than 3-5 minutes. It has very little motor cooling under these conditions.

Deep Evacuation

Connect the vacuum pump to the manifold's center hose and turn on the pump. Open both manifold valves and evacuate the system to at least 25 inches Hg vacuum (17 kPa). Continue pumping for 1 hour. Then close both manifold valves.



Warning: The remaining refrigerant being evacuated in this process has a B1 safety rating, (Acceptable Exposure Limit* = 50 ppm (8 hrs/day, 40 hours/week), and a Short Term Exposure Limit* = 1000 ppm (1 hour)) for this refrigerant.). Vapors being pumped by the vacuum pump must be ducted or diluted in a way that workers will not be exposed to concentrations which exceed these exposure limits.

* based on the refrigerant manufacturer's recommendations

3. Evacuate the unit a second time.

Connect the nitrogen cylinder to the manifold's center hose. Open the manifold's suction valve and pressurize to 10-20 psig (70-140 kPa). Wait 10-15 minutes.

Repeat Step 2 above. The system must be evacuated to 0.1 torr or 100 microns (13 Pa) to assure that it is clean and dry.

Note: Polycold strongly recommends that you connect a vacuum gauge to verify that the unit has been properly evacuated. Make certain you do not allow any contaminants to enter the unit while connecting or disconnecting it.

F. Recharge the Refrigeration Unit



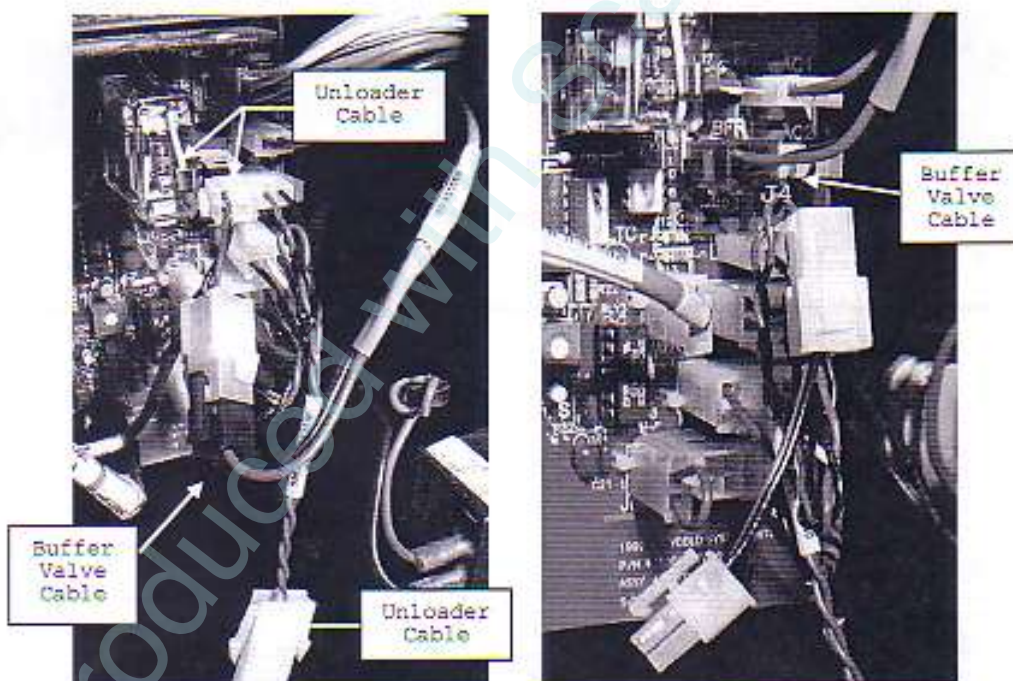
CAUTION!

Failure to follow this procedure may burst the rupture disk and result in refrigerant loss.

1. Determine if your unit has a Buffer Unloader Cable (680221-00 or 680220-00) connected to the Buffer Valve Cable (680056-06) with a blue molex plug.

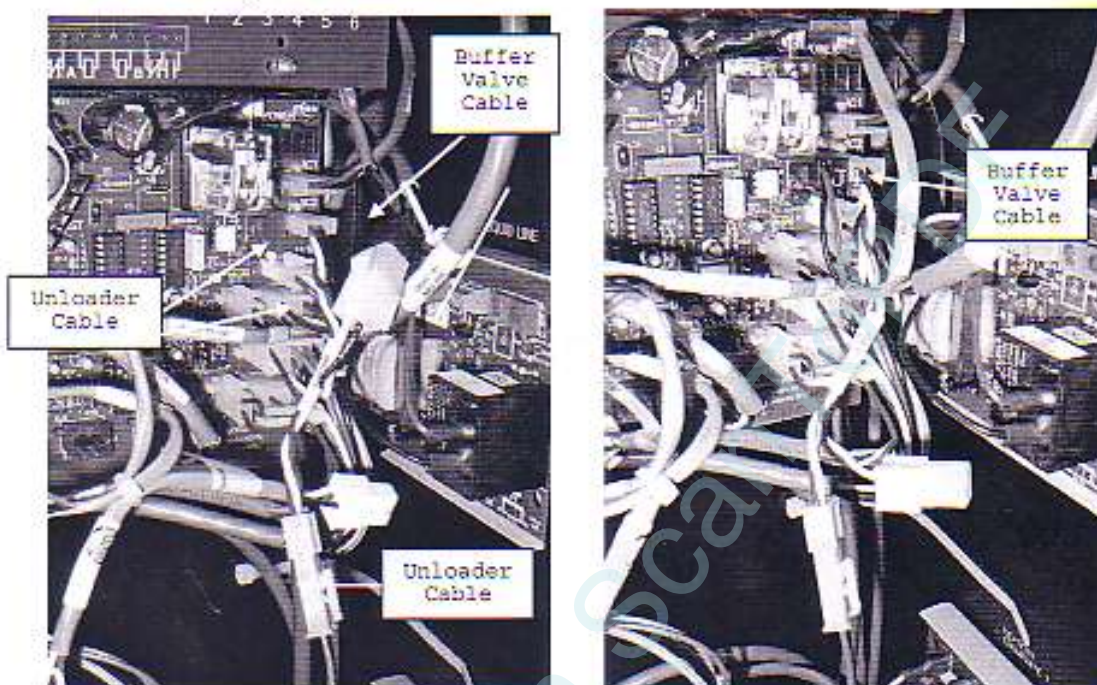
**Models 1102, 552, 672 and other models with Buffer Unloader Cable:
680221-00**

Unplug the Buffer Unloader Cable from connector J4. Disconnect the Buffer Valve Cable from the Buffer Unloader Cable, then plug the Buffer Valve Cable directly into J4.



**Models 340, 552 & 672 and models with Buffer Unloader Cable:
680220-00**

Unplug the blue molex plug from the Buffer Valve Cable then plug it into the J4 on the system control board.



Refer to tables on this page and the following pages for charge part numbers and acceptable pressure ranges by model.

Model	Pressure Range
PFC-1100	160-190 psig (1100-1310 kPa)
PFC-1101	160-190 psig (1100-1310 kPa)
PFC-1101 HC	145-165 psig (1000- 1140 kPa)
PFC-661 HC	155-175 psig (1070-1210 kPa)
PFC-660	145-160 psig (1000-1100 kPa)
PFC-650	115-125 psig (790- 860 kPa)
PFC-551	140-155 psig (970-1070 kPa)
PFC-550	115-125 psig (790- 860 kPa)
PCT-500	100-115 psig (690- 790 kPa)
PFC-200,400	115-125 psig (790-860 kPa)
PFC-340,331,330	130-140 psig (890-970 kPa)

Model	Charge Part	Cylinders	Model	Charge Part	Cylinders
P-20ST	940027-37	1	PFC-661 HC	940070-15	3
P-50S	940027-34	1	PFC-1101 HC	940070-35	5
P-50LT	940027-29	1	PFC-1101 LT	940070-19	4
PGC100	940027-28	1	FLC-15A	940075-41	1
P-75ST	940027-27	1	PFC-662 HC	940079-15	2
P-100ST	940027-31	1	PFC-1102 HC	940079-35	3
PFC-100ST	940027-26	1	PFC-552 HC	940079-12	2
PGC-100	940027-36	1	PGC-152 WC	940075-53	1
PGC-102	940027-04	1	PGCL-1	940075-54	1
PGC-150NM	940027-25	1	PGCL-2	940075-56	1
PGC-150	940027-33	1	P-100 ST	940088-31	1
PCT-200	940027-06	1	PFC-100 ST	940088-26	1
PFC&P-200ST	940027-49	1	PGC-100	940088-36	1
PFC&P-200HT	940027-07	1	PGC-150	940088-33	1
PCT-200 A	940027-08	1	PGC-151	940088-61	1
PFC&P-200 A	940027-50	1	P or PFC-200 HT	940088-07	1
PFC&P-200 HT A	940027-09	1	P or PFC-200 ST	940088-49	1
PFC 330	940027-40	1	P or PFC-200 (AC)	940088-50	1
PFC&P-400ST	940027-38	1	PFC-330 ST	940088-40	1
PFC&P-400LT	940027-39	1	PFC-331 ST	940088-62	1
PCT-550	940027-10	1	P or PFC-400 ST	940088-38	1
PFC&P-550ST	940027-11	2	P or PFC-400 LT	940088-39	1
PFC-550HT/HC	940027-12	2	P or PFC-550 ST	940088-11	2
PFC&P-550LT	940027-13	2	P or PFC-550 HT/HC	940088-12	2
PFC-660HT/HC	940027-15	2	P or PFC-550 LT	940088-13	2
PFC&P-660ST	940027-14	2	PFC-551 HC	940088-63	2
PFC&P-650ST	940027-17	2	P or PFC-650 ST	940088-17	2
PFC&P-650HT	940027-18	2	P or PFC-650 HT	940088-18	2
PCT-650	940027-24	2	P or PFC-660 HT/HC	940088-15	2
PFC&P-1100ST	940027-01	3	P or PFC-660 ST	940088-14	2
PFC&P-1100HT	940027-02	3	PFC-661 HC	940088-64	2
PFC&P-1100LT	940027-19	3	PFC-1100 ST	940088-01	3
PFC&P-1100HC	940027-35	3	PFC-1100 HT	940088-02	3
PGC-151	940070-33	1	PFC-1100 LT	940088-19	3
PFC-331 ST	940070-40	1	PFC-1100 HC	940088-35	3
PFC-551 HC	940070-12	2	PFC-1101 HC	940088-65	3
FI-5A	940070-51	2	PFC-1101 LT	940088-70	3

2. On Models 1102, 1101, 1100, 670, 662, 661, 660, 552, 551, 331 & 330 that do not have Buffer Unloaders, unplug the SPS Cable (680061-00) from the System Control PCB.



Size of Unit

Instructions

1100
1000
1101
1102
672
670
662
661
660
650
552
551
550
500

3. Make certain the manifold's valves are closed. Make certain the compressor's suction & discharge valves are in the midseated position. Make certain the refrigerant expansion tank valve is open.¹
4. Connect part 1 of the premixed refrigerant to the manifold's center hose. If the cylinder has two ports, use the vapor access port (with the blue hand valve).
5. Purge the manifold's center hose of air using the following procedure. First, loosen the hose where it connects to the manifold. Second, slightly open the cylinder's valve for no more than 1-2 seconds. Third, immediately tighten the hose at the manifold.
6. Open the cylinder's valve. Turn the cylinder **upside down** so that the liquid refrigerant will be drawn into the refrigeration unit first.
7. Open the manifold's discharge valve. Wait for the pressures to equalize. (The manifold's suction & discharge gauges should have the same pressure.) The pressures should equalize within 5 minutes.



CAUTION!

Failure to follow this procedure may burst the rupture disk and result in refrigerant loss.

8. Close the manifold's discharge valve. Close the refrigerant expansion tank valve.² Leave the compressor's suction valve midseated.
9. Open the manifold's suction valve. Turn on the refrigeration unit.
10. After having the compressor on for 15 seconds frontseat the compressor's suction valve. Allow the compressor to pump the cylinder down to 5-10 inches Hg (67-84 kPa) vacuum, as shown on the manifold's suction gauge.

11. Close the cylinder's valve. Close the manifold's suction valve. Turn off the unit.
12. Repeat steps 1-8 for each tank of the refrigerant charge as appropriate.
13. Midseat the compressor's suction valve. Open the refrigerant expansion tank valve.¹ Wait 5 minutes for the pressures to equalize.
14. If the unit's pressure is above the acceptable range (See table at beginning of this section.), then draw some of the refrigerant back into the cylinder using the following procedure. First, open the cylinder's valve. Second, momentarily open the manifold's suction valve. Then recheck the pressure.
15. Backseat the compressor's suction valve.
16. Backseat the compressor's discharge valve.
17. If you are working with model 1102 or a model that originally had the Buffer Unloader Cable 680221-00 installed. Re-install the cables to the way they were before performing this procedure. Unplug the Buffer Valve Cable from J4. Reconnect the Buffer Valve Cable to the Buffer Unloader Cable. Then reconnect the Buffer Unloader Cable to J4.
18. If you are working with models 552 & 672 or a model that originally had the Buffer Unloader Cable 680220-00 installed. Re-install the cables to the way they were before performing this procedure. Unplug the blue molex plug from the J4 on the system control board and then plug it back into the Buffer Valve Cable.

¹ For units with TÜV approved refrigerant expansion tanks built before January 1997: midseat the refrigerant expansion tank valve.

² For units with TÜV approved refrigerant expansion tanks built before January 1997: backseat the refrigerant expansion tank valve.

Size of Unit	Instructions
400 340 331 330 200	<ol style="list-style-type: none"> 3. Make certain the manifold's valves are closed. Make certain the ball valve on the compressor's suction line is open. Make certain the refrigerant expansion tank valve is in the midseated position. 4. Connect part 1 of the premixed refrigerant to the manifold's center hose. If the cylinder has two ports, use the vapor access port (with the blue hand valve). 5. Purge the manifold's center hose of air using the following procedure. First, loosen the hose where it connects to the manifold. Second, slightly open the cylinder's valve for no more than 1-2 seconds. Third, immediately tighten the hose at the manifold. 6. Open the cylinder's valve. Turn the cylinder upside down so that the

liquid refrigerant will be drawn into the refrigeration unit first.

7. Open the manifold's discharge valve. Wait for the pressures to equalize. (The manifold's suction & discharge gauges should have the same pressure.) The pressures should equalize within 5 minutes.



CAUTION!

Failure to follow this procedure may burst the rupture disk and result in refrigerant loss.

8. Close the manifold's discharge valve. Backseat the refrigerant expansion tank valve. **Keep the ball valve on the compressor's suction line open.**
9. Open the manifold's suction valve. (For 340, 331 and 330 units only - Unplug the single pressure switch cable) Turn on the refrigeration unit.
10. **After having the compressor on for 15 seconds close the ball valve on the compressor's suction valve.** Allow the compressor to pump the cylinder down to 5-10 inches Hg vacuum (67-84 kPa), as shown on the manifold's suction gauge.
11. Close the cylinder's valve. Close the manifold's suction valve. Turn off the unit.
12. Open the ball valve on the compressor's suction line. Open the refrigerant expansion tank valve. Wait 5 minutes for the pressures to equalize.
13. If the unit's pressure is above the acceptable range (See table at beginning of this section.), then draw some of the refrigerant back into the cylinder using the following procedure. First, open the cylinder's valve. Second, momentarily open the manifold's suction valve. Then recheck the pressure.
14. **For 331 and 330 units only** - Re-install the single pressure switch cable.
15. **For 340 units** - Re-install the Buffer Unloader cable.

G. Prepare the Refrigeration Unit for Operation

1. Re-activate the suction side of the dual pressure switch.

Size of Unit	Instructions
1102, 1101, 1100, 672, 670, 662, 661, 660 552, 551, 550, 340, 331, 330	<ol style="list-style-type: none"> 1. Disconnect the DPS RECHARGE JUMPER cable. 2. Reconnect the original cable to the DPS connector on the SYSTEM CONTROL printed circuit board. See Section E "Evacuate the Refrigerant Circuit", Step 1. 3. Re-install the low voltage box panel.
1000, 650, 500	<ol style="list-style-type: none"> 1. Turn the low pressure adjustment back to its original position (before changing it in Section E "Evacuate the Refrigerant Circuit", Step 1). 2. Verify the pressure switch stops the compressor at 2 psig using the following procedure. Frontseat the compressor's suction valve and turn on the unit. Observe the unit's suction gauge and note when the pressure switch turns off the compressor.¹ If it is not at 2 psig, adjust the setscrew and try again. Continue doing this until the pressure switch turns off the compressor at 2 psig. <p>¹ For Penn pressure switches: press the cut-out's reset button.</p>
400, 200	<ol style="list-style-type: none"> 1. Turn the low pressure adjustment back to its original position (before changing it in Section E "Evacuate the Refrigerant Circuit", Step 1). 2. Verify the pressure switch stops the compressor at 2 psig using the following procedure. Close the ball valve in the compressor's suction line. Observe the unit's suction gauge and note when the pressure switch turns off the compressor.¹ If it is not at 2 psig, adjust the setscrew and try again. Continue doing this until the pressure switch turns off the compressor at 2 psig. <p>¹ For Penn pressure switches: press the cut-out's reset button.</p>

2. Remove the manifold.

Size of Unit	Instructions
1102, 1101 1100, 1000 672, 670, 662, 661, 660, 650 552, 551, 550, 500	<ol style="list-style-type: none"> 1. Close the refrigerant expansion tank valve.¹ 2. Remove the hoses. 3. Re-install the seal caps on the access fittings and valves. <p>¹ For units with TÜV approved refrigerant expansion tanks built before January 1997: backseat the refrigerant expansion tank valve.</p>

Size of Unit	Instructions
400	1. Backseat the refrigerant expansion tank's valve.
340	2. Open the ball valve on the compressor's suction line.
331	3. Remove the hoses.
330	4. Re-install the seal caps on the access fittings and valves.
200	

3. Check the refrigeration unit.

Size of Unit	Instructions
1102, 1101, 1100 1000, 672, 670, 662, 661, 660, 650, 552, 551, 550, 500	1. Check all fittings, valve stems and caps for leaks. 2. Turn on the unit. The compressor's sight glass should be 1/8 to 1/2 full of oil.
400 340 331 330 200	Check all fittings, valve stems and caps for leaks.



Caution: Most Polycold refrigerants are shipped in disposable cylinders. These cylinders are suitable for one-time use only. Puncture the cylinders before disposing of them.