



A DIVISION OF GETZ FIRE EQUIPMENT

GETZ EQUIPMENT INNOVATORS

PART NO. 4G59754 RECOVERY / RECYCLE SYSTEM

3M™ NOVEC 1230™

OPERATIONS MANUAL



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Limited Warranty

Products manufactured by Getz Equipment Innovators (with exception of electrical products or components) will be free from defects for a period of one year from shipment date. Electrical products and/or components used in manufactured products will have a (6) month warranty from shipment date. During the warranty period, customers who experience any manufacture-related service issues with our products, the product may be returned for repair or replacement. Customer must contact Getz Equipment for approval prior to any product return. Notwithstanding the foregoing, the limited warranty set forth shall be immediately void of customer uses any replacement parts other than those provided by Getz Equipment Innovators. The warranty does not cover normal wear and tear items, defects resulting from modification, alteration, misuse, exposure to corrosive conditions, extremely high temperatures, improper installation or maintenance. Warranties on component items not manufactured by Getz Equipment Innovators are provided by others whose warranty, evaluation and judgment will be final.

All implied warranties, including, but not limited to, warranties of fitness for purpose and merchantability, are limited to the time periods as stated above. In no event shall Getz Equipment Innovators be liable to incidental or consequential damages. Some states do not allow limitations on how long an implied warranty lasts or the exclusions or limitation of incidental or consequential damages, so that the above limitations or exclusions may not apply to you. Getz Equipment Innovators neither assumes nor authorizes any representative or other person to assume for it any obligation or liability other than as expressly set forth herein.

Mobile Service Vehicles:

The warranty does not cover:

- Defects in the chassis and or power unit
- Defects in separately manufactured products not produced by Getz Equipment Innovators
- Deterioration due to normal wear, tear, and exposure
- Repairs made necessary by negligent use, misuse, abuse, loading the service vehicle beyond its gross vehicle weight limitations, accident, acts of God, or other contingencies beyond the control of Getz Equipment Innovators.
- Repairs deemed necessary by reason of the failure to follow ordinary maintenance procedures.
- Repairs deemed necessary by reason of alterations done without Getz Equipment Innovators' written approval.

Warranty Service: All warranty repairs will be performed by Getz Equipment Innovators in Pekin, IL, unless otherwise authorized by Getz Equipment Innovators.

Freight: Getz Equipment Innovators will not be liable for shipping or transportation charges to or from customer's location.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. To obtain performance to the obligation of the warranty, write to Getz Equipment Innovators, 2320 Lakecrest Drive, Pekin IL 61554, USA for instructions.

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

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3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

BASIC SYSTEM COMPONENTS:

AIR POWERED PUMP

CONTROL CONSOLE AND STAND

REQUIRED ADAPTERS (4)

REQUIRED HOSES

OPTIONAL EQUIPMENT:

P/N 3G52338	15 H.P. AIR COMPRESSOR (OTHER AIR COMPRESSORS AVAILABLE)
P/N 2G0131	DIGITAL SCALE (0 TO 150 LBS. CAPACITY)
P/N 2G0002	BATTERY OPERATED LEAK DETECTOR
P/N 3G59599	RECEIVER TANK 250# CAPACITY
P/N 3G59597	RECEIVER TANK 500# CAPACITY
P/N 3G59580	1000# TANK
P/N 1G53983	300# SCALE
P/N 1G53606	2000# SCALE

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

SYSTEM OPERATION REQUIREMENTS:

1. "Cast iron air compressor" delivering 100 - 120 PSI at 18 CFM minimum.

WARNING - Do not use aluminum air compressors, unrepairable damage will occur.

Note - Customer supplied air compressor must have an adjustable pressure regulator and an airline from compressor to the 3M™ NOVEC 1230™ system.

2. Weighting scales - digital or mechanical
One scale rated for the total full weight capacity of the receiver tank.
One scale rated for the total full weight capacity of the system cylinder.

3. 3M™ NOVEC 1230™ Liquid/Vapor receiver tank

WARNING - Receiver tank must have pressure relief devices and be pressure rated for nitrogen charged 3M™ NOVEC 1230™ service.

4. Nitrogen cylinder and adjustable pressure regulator (-77 degrees dew point nitrogen)
(Customer must supply a nitrogen source for pressurizing cylinders)

AREA REQUIRED:

DEPTH - 3 FT. WIDTH - 4 FT. HEIGHT - 5 FT.

	<u>WEIGHT</u>	<u>DIMENSIONS</u>
CONSOLE & STAND	165 LBS.	24" D x 35" W x 40" H

3M™ NOVEC 1230® RECOVERY/RECYCLE SYSTEM

SYSTEM SPECIFICATIONS:

VACUUM - 15 INCHES MAXIMUM

INLET PRESSURE - 1000 PSI MAXIMUM

OUTLET PRESSURE - 400 PSI

3M™ NOVEC 1230™ LIQUID PER MINUTE - 16 LBS. AVERAGE

3M™ NOVEC 1230™ VAPOR PER MINUTE - 2 LBS. AVERAGE

MOISTURE EYE - 10 PPM (GREEN = DRY) 65 PPM (YELLOW = WET)

FILTERS - 15 MICRONS PARTICULATE MATTER

SYSTEM CAPABILITIES:

RECOVER 3M™ NOVEC 1230™ LIQUID AND VAPOR FROM CYLINDERS

RECOVER NITROGEN FROM CYLINDERS

RECHARGE LIQUID 3M™ NOVEC 1230™ AND NITROGEN TO CYLINDERS

TRANSFER LIQUID 3M™ NOVEC 1230™ FROM BULK STORAGE TANK TO CYLINDERS

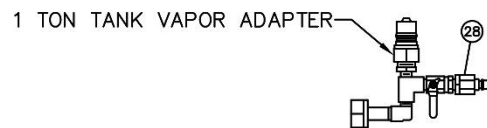
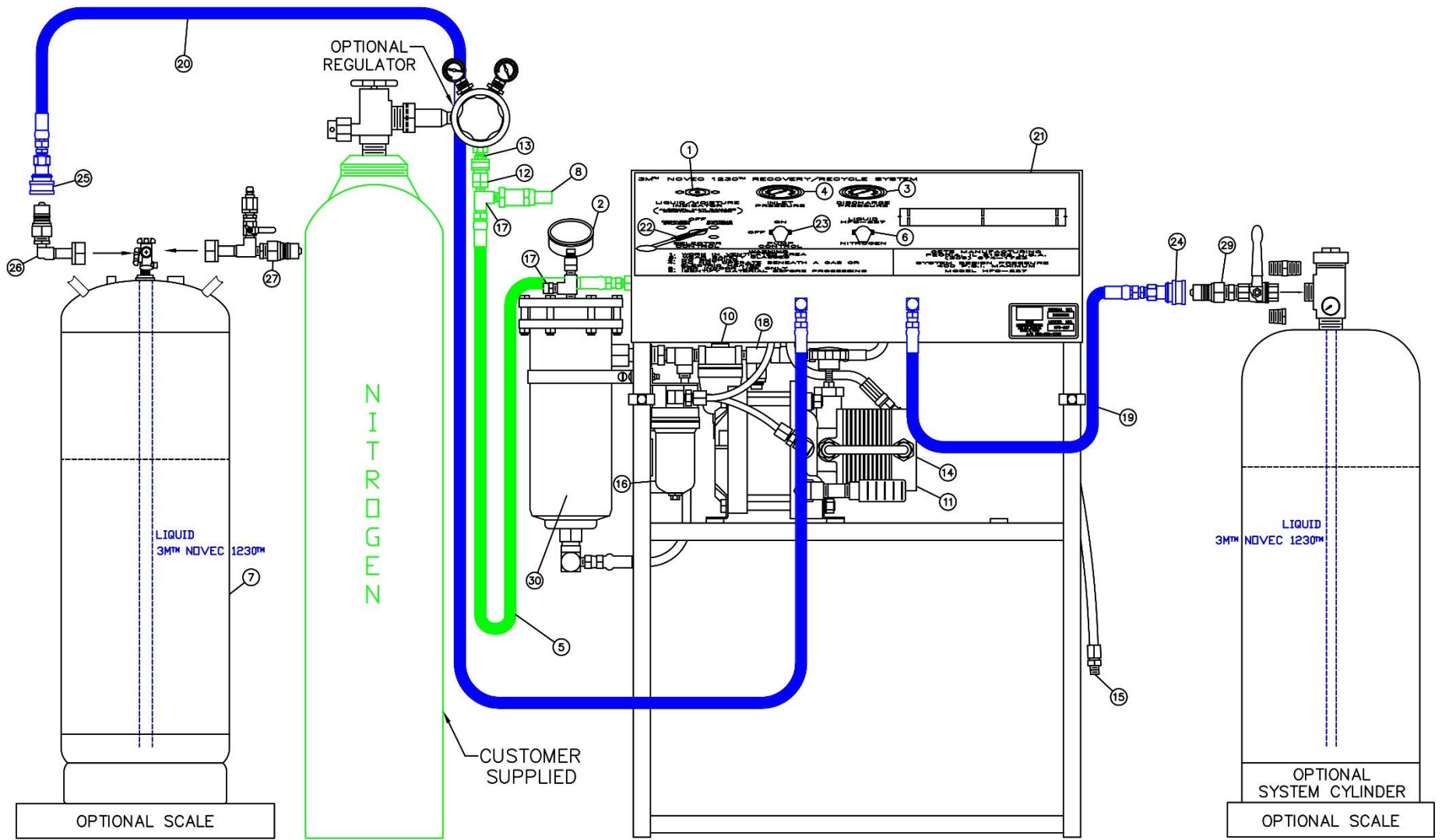
RECOVER AT A MINIMUM 99% EFFICIENCY RATE

DETECT MOISTURE IN 3M™ NOVEC 1230™

FILTER MOISTURE DOWN TO 10 PPM

FILTER PARTICULATE MATTER DOWN TO 15 MICRONS

FILTERS ACID, WAX, SLUDGE



3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

ITEM NUMBERS / DESCRIPTION:

1. MOISTURE INDICATOR - 1G0415
2. PRESSURE / VACUUM GAUGE - 1G52500
3. DISCHARGE PRESSURE GAUGE - 1G52485
4. INLET PRESSURE GAUGE - 1G52485
5. NITROGEN SUPPLY HOSE - 1G51412
6. LIQUID / NITROGEN VALVE - 1G51902
7. RECEIVER TANK (NOT INCLUDED)
8. 850 PSI PRESSURE RELIEF (NITROGEN HOSE)- 1G0274
9. 1/4" BRASS ST TEE (FILTER CAP - ITEM 37)- 1G0428
10. HIGH PRESSURE REDUCING VALVE - 1G52493
11. PUMP - 3G59526
12. FEMALE QUICK COUPLER (NITROGEN HOSE) - 1G0189
13. MALE QUICK COUPLER (NITROGEN HOSE) - 1G0030
14. BRASS STRAINER (ON PUMP) (NOT SHOWN) - 1G0414
15. 1/4" NPT PLASTIC CONNECTOR (AIR INLET) - 1G0116
16. MOISTURE FILTER - 1G51314
17. 425 PSI PRESSURE RELIEF - 1G51939
18. BRASS STRAINER - 1G52494
19. SYSTEM CYLINDER HOSE - 1G51412
20. RECEIVER TANK HOSE - 1G51412
21. CONTROL CONSOLE - 1G52486
22. SELECTOR VALVE - 1G0462
23. PUMP VALVE - 1G51908
24. FEMALE QUICK COUPLER (SYSTEM CYLINDER HOSE) - 1G58762

ITEM NUMBERS / DESCRIPTION:

25. FEMALE QUICK COUPLER (RECEIVER TANK HOSE) - 1G58762
26. LIQUID FILL ADAPTER ASSEMBLY - 3G59050
27. VAPOR ADAPTER ASSEMBLY (VERTICAL TANK) - 3G59050
28. VAPOR ADAPTER ASSEMBLY (HORIZONTAL TANK) - 3G59050
29. 1/2" BALL VALVE ASSEMBLY - 3G59050
30. FILTER CANISTER - 1G0416

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

SET-UP PROCEDURE:

1. After all carton and boxes have been opened and all parts and components unwrapped, lay out all items for ease of assembly. Carefully check all parts for evidence of concealed damage. Notify the delivering carrier immediately if anything appears to have shipping damage.
2. Start with the receiver tank (item 7). Install the liquid adapter assembly (item 26) to the liquid valve of the receiver tank.
3. Install vapor adapter assembly (item 27) on a vertical tank or (item 28) on a horizontal tank, to the vapor valve on the receiver tank.
4. Connect the female quick coupler (item 25) to the male quick coupler on the liquid adapter assembly (item 26).
5. The nitrogen regulator must be set to zero (0) PSI output pressure during assembly. Install the male quick coupler (item 13) in your nitrogen regulator's outlet port. Connect the female quick coupler (item 12) on the nitrogen supply hose (item 5) to the male quick coupler (item 13).
6. Turn pump valve (item 23) on the control console (item 21) to the *OFF* position. Turn the liquid/nitrogen valve (item 6) on the control console to the *LIQUID* position. Connect the ¼" NPT plastic connector (item 15) to your air compressor's pressure regulator. Set air regulator to 100 - 120 PSI.
7. Place the receiver tank on a scale of adequate weighting capacity to inform the operator when the receiver tank has reached the full liquid weight capacity and over filling does not occur.

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

RECOVERY PROCEDURE FOR CYLINDERS:

1. **WARNING** - Before the contents of any cylinder is allowed to enter this system, a respective sample, needs to be analyzed for the determination of its contents.

WARNING - Pressure rated tanks used for the purpose of receiving the 3M™ NOVEC 1230™/nitrogen charge must be placed on a scale of precise weighting ability, to inform the operator when the liquid level inside the tank becomes full.

2. Install the manufactures recommended discharge adapter assembly onto the system cylinder valve, install the 1/2" ball valve assembly (item 29) onto the discharge adapter. Connect the female quick coupler (item 24) to the male quick coupler on the ball valve assembly.
3. Place system cylinder on a scale of precise weighting ability.
4. Turn the selector valve (item 22) on the control console to the *RECOVERY CYLINDER* position. Fully open the liquid valve on the receiver tank.
5. Locate the liquid/nitrogen valve (item 6) on the control console and turn the handle to the *LIQUID* position.
6. Discharge the system cylinder and open the 1/2" ball valve (item 29) on the discharge adapter. Watch the clear glass moisture indicator (item 1) if the liquid flowing through the indicator is anything other than blue/purple, refer to the "Recycle Procedure" (page 11).
7. Turn pump valve (item 23) on the control console to the *ON* position when the inlet pressure gauge (item 4) and the discharge pressure gauge (item 3) reads within 50 PSI of equaling pressure.
8. Continue pumping, as you watch the clear glass moisture indicator (item 1). The clear glass moisture indicator will be flowing liquid and then turn to pumping vapor.

Note - If the clear glass moisture indicator turns yellow, refer to the "Recycle Procedure" (page 11).

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

RECOVERY PROCEDURE FOR CYLINDERS:

9. When the inlet pressure gauge (item 4) declines to zero (0), monitor the pressure/vacuum gauge (item 2) until a reading of 13 inches of vacuum is obtained. Turn the pump valve (item 23) to the *OFF* position. Verify the system cylinder has been recovered by checking the scale weight reading to the empty weight stamped on the system cylinder.

Note - More than one cylinder may be recovered until the discharge pressure gauge (item 3) reads approximately 400 PSI, or the scale weight reading indicates the receiver tank to be at 75 LBS/FT liquid fill density.

WARNING - Any cylinder or tank used for the purpose of receiving pure liquid 3M™ NOVEC 1230® or nitrogen charged 3M™ NOVEC 1230™ must be either D.O.T or ASME approved to withstand the high pressures and expansion characteristics associated with liquefied gases. These cylinder or tanks, must contain pressure relief devices in accordance with D.O.T.

10. Before attempting to recharge cylinders wait 15 minutes. This will allow the clear glass moisture indicator (item 1) to react if moisture is present in the 3M™ NOVEC 1230™ receiver tank. The moisture indicator will change from *GREEN* to *YELLOW* if moisture is present. If moisture is indicated, refer to the "Recycle Procedure" (page 11).
11. Disconnect female quick coupler (item 24) from 1/2" ball valve assembly (item 29).
12. Proceed to the next operating procedure or close all valves.

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

RECHARGE PROCEDURE:

1. Complete all 3M™ NOVEC 1230™ cylinder internal inspection and maintenance procedures in accordance with manufacturers recommendations. Install proper recharge adapter in the cylinder valve. Tighten securely. Install 1/2" ball valve assembly (item 29) onto the recharge adapter.
2. Turn the selector valve (item 22) toward the *RECOVERY CYLINDER* position. Fully open the liquid valve on the receiver tank.
3. Turn the pump valve (item 23) to the *ON* position. Allow the pump to cycle until the pressure/vacuum gauge (item 2) is reading 5 inches of vacuum. Turn the pump valve (item 23) to the *OFF* position.
4. Connect the female quick coupler (item 24) on the system cylinder hose (item 19) to the 1/2" ball valve assembly (item 29) and open the 1/2" ball valve.
5. Open the cylinder valve on the cylinder to be filled. Place the cylinder on the scale platform. If you are using a digital scale, "tare" extinguisher weight or for a mechanical scale, not the "tare" weight and lbs. Needed to achieve full weight
6. Turn the selector valve (item 22) on the control console to the *SYSTEM CYLINDER* position. This will allow liquid 3M™ NOVEC 1230™ to gravity feed into the cylinder being filled. "Check" recharge adapter, cylinder valve, and quick couplers for leaks.
7. When the inlet pressure gauge (item 4) and discharge pressure gauge (item 3) are reading within 50 PSI of each other, turn pump valve (item 23) on the control console to the *ON* position. Check scale for increased weight readings. As the cylinder weight reading approaches within one (1) pound calculated charge weight, turn pump valve (item 23) to the *OFF* position and turn selector valve (item 22) to the *OFF* position, stopping the flow of the 3M™ NOVEC 1230™ to the cylinder.
8. Set the regulator on nitrogen cylinder to the manufactures recommended pressure gauge reading for the cylinder being pressurized. Turn the liquid/nitrogen valve (item 6) to the nitrogen position and watch the cylinder pressure gauge. When the correct cylinder pressure gauge reading is obtained, agitate the cylinder to mix the 3M™ NOVEC 1230™ and nitrogen. Repeat step 7 if pressure drop below the manufacturers recommended pressure.

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

RECHARGE PROCEDURE (CONT.):

9. Close the cylinder valve according to the manufacturers recommended procedure on the filled cylinder. Turn the liquid/nitrogen valve (item 6) to the *LIQUID* position and turn the selector valve (item 22) to the *RECOVERY CYLINDER* position. Turn the pump valve to the *ON* position and watch the pressure/vacuum gauge (item 2) until 5 inches of vacuum is obtained. Turn the pump valve (item 23) to the *OFF* position. Verify there is no pressure indication on the inlet pressure gauge (item 4). If a pressure reading is indicated, the cylinder valve may not have seated when closed. Reclose the cylinder valve and repeat step 8. After no pressure reading is indicated, disconnect the quick coupler (item 24) for the 1/2" ball valve assembly (item 29).
10. Remove manufacturers recharge adapter from cylinder valve and continue cylinder recharge procedures.
11. Proceed to the next operating procedure or close all valves.

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

RECYCLE PROCEDURE:

(FOR REMOVAL OF MOISTURE, PARTICULATE, AND/OR COLOR)

CAUTION: If the clear moisture indicator (item 1) on the control console is YELLOW or the 3M™ NOVEC 1230™ is any color except blue/purple, the 3M™ NOVEC 1230™ must be recycled through the system before you refill the cylinder

1. Turn the selector valve (item 22) on the control console to the *RECOVERY CYLINDER* position.
2. Turn the liquid/nitrogen valve (item 6) on the control console to the *LIQUID* position.
3. Fully open the liquid valve on the receiver tank (item 32).
4. Turn the pump valve (item 23) on the control console to the ON position and allow the system to cycle until the pressure/vacuum gauge (item 2) reads 5 inches of vacuum.
5. With the system cycling, connect the female quick coupler (item 24) on the system cylinder hose (item 19) to the male quick coupler on the vapor adapter assembly (item 30 or 31).
6. Fully open the vapor valve on the receiver tank. Turn the selector valve (item 22) on control console to the *SYSTEM CYLINDER* position.
7. Allow the system to circulate the 3M™ NOVEC 1230™ through the filters until the clear glass moisture indicator (item 1) turns *GREEN* or the 3M™ NOVEC 1230™ looks blue/purple though the moisture indicator glass.

NOTE: Refer to the "filter replacement procedure" (page 12) if the moisture indicator (item 1) does not change to *GREEN* or the color does not return to *CLEAR* within one hour.

8. Recycle procedure is complete when moisture eye (item 1) is *GREEN* or the 3M™ NOVEC 1230™ is blue/ purple flowing through the clear glass moisture eye
9. Turn the selector valve (item 22) to the *RECOVERY CLYINDER* position. Allow the system to cycle for 1 minute, close the vapor valve on the receiver tank, and monitor the pressure/ vacuum gauge (item 2) until a reading of 5 inches of vacuum is obtained. Disconnect female quick coupler (item 24) and turn the pump valve (item 23) on the control console to the *OFF* position.
10. Close all valves or proceed to the next procedure.

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

PROCEDURE FOR FILTER REPLACEMENT AND CLEANING BRASS STRAINERS:

1. Turn the pump valve (item 23) on the control console to the *OFF* position.
2. Close any valve that is in line with the female quick coupler (item 24). Turn the selector the valve (item 22) on the control console to the *RECOVERY CYLINDER* position.
3. Turn the liquid/nitrogen valve (item 6) on the control console to the Liquid position. Turn the liquid valve on the receiver tank fully open. Turn the pump valve (item 23) to the *ON* position.
4. Allow the system to cycle until the pressure/vacuum gauge (item 2) read 5 inches of vacuum.
5. Turn the pump valve (item 23) to the *OFF* position and close the liquid valve on the receiver tank.

WARNING - If either of the gauges in step 6 are indicating a pressure reading, Do not attempt to service the filters.

6. Verify that the inlet pressure gauge (item 4) and the pressure/vacuum gauge (items 2) are at a (0) PSI pressure reading. Repeat steps 1 thru 6 is a pressure reading is indicated on either gauge. Refer to the trouble shooting guide on page 15-16 if steps 1 thru 6 do not correct the pressure reading.
7. Remove the bolts from the filter canister (item 30). Lift the filter cap away from the filter canister and replace filter cores. Follow replacement procedures found on each replacement filter core canister.
8. Turn the brass hex nut from strainer bodies (item 14 & 18) counter clockwise. Remove and clean the fine mesh screens using an air gun at 30 PSI air pressure.

WARNING - Replace the fine mesh screen on either strainer if bent, torn, or frayed. System damage will result if not maintained.

9. Proceed to the next operating procedure or close all valves.

WARNING: FOLLOW PURGE PROCEDURE TO AVOID MIXING OF CLEAN AGENTS

PURGE PROCEDURE FOR SWITCHING CLEAN AGENTS:

- 1) Turn the selector valve (item 22) on the control console to the RECEIVER position. Open the liquid vane on the receiver tank. Turn the pump valve (item 23) to ON and allow the system to cycle until the pressure/vacuum gauge (item 2) reads 5 inches of vacuum. Turn the pump valve (item 24) to OFF.
- 2) Connect the female quick connect (item 24) to the receiver tank vapor port adapter (item 30).
- 3) Open the vapor valve on the receiver tank.
- 4) Turn the pump valve (item 23) to ON. Allow the pump to run for 1 minute to purge all liquid from the system.
- 5) Close the vapor valve on the receiver tank and allow the system to cycle until the pressure/vacuum gauge (item 2) reads 5 inches of vacuum. Turn the pump valve (item 23) to OFF.
- 6) Connect the female quick connect (item 24) to the male quick connect (item 13) using the adapter.
- 7) Set the pressure reducing regulator to zero (0) output pressure, and open the supply valve on the nitrogen cylinder.
- 8) Set regulator to 20 PSI above reading on pressure gauge (item 3) but not to exceed maximum receiver tank pressure.
- 9) Allow the nitrogen to flow until the pressure on gauge (item 3) equals the pressure on the regulator.
- 10) Set the pressure reducing regulator to zero (0) output pressure, and close the supply valve on the nitrogen cylinder. Turn the pump valve (item 23) to ON. Allow the system to cycle until the pressure/vacuum gauge (item 2) reads 5 inches of vacuum. Turn the pump valve (item 23) to OFF. Close the liquid valve on the receiver tank.
- 11) You may now use a different clean agent.

3M™ NOVEC 1230™ RECOVERY/RECHARGE SYSTEM

RECOMMENDED PERIODIC MAINTENANCE:

(Minimum recommendations - perform more frequently if required)

1. Every day, lubricate all male and female quick couplers (items 24, 25) with a light coat of 3M™ NOVEC 1230™ compatible O-ring lubricant.
2. Every day, empty the airline moisture filter (item 16).
3. Every day, remove the brass hex nut on the strainer body (item 14 & 18). Clean and inspect for damage. Refer to "procedure for filter replacement and cleaning brass strainer" on page 12.

WARNING - SYSTEM DAMAGE WILL RESULT IF NOT MAINTAINED.

4. Once per month, check the complete system for leaks while "performing the recycling procedure" using a 3M™ NOVEC 1230™ leak detector or leak detecting fluid.

CAUTION: If a leak detecting fluid is utilized, proper care should be observed to remove all excess fluid after testing.

5. Once per month, retighten all bolts and nuts securing component parts to the system.
6. Once per month, or if the pump slows while operating, lubricate spool valve in the NOVEC 1230™ pump.
7. Once every six months or if clear glass moisture indicator (item 1) will not turn green, change the filter elements P/N 1G0418. Refer to the "Procedure for filter replacement and cleaning brass strainer" on page 12.
8. Once per year, have your nitrogen regulator on the nitrogen supply cylinder cleaned and recalibrated.

3M™ NOVEC 1230™ RECOVERY/RECHARGE SYSTEM

TROUBLE SHOOTING GUIDE:

PROBLEM:

SOLUTION:

- | | |
|---|---|
| A. 3M™ NOVEC 1230™ flows slowly or not at all through system. | A. 1. Make sure all liquid valves are open and selector valve is in the proper position.
2. Check or change filters inside of filter housing (item 30) and clean brass strainers (item 14 & 18). refer to procedure on page 12. |
| B. 3M™ NOVEC 1230™ leaks from female quick couplers (item 24 & 25) | B. Replace O-ring seal on the inside of the quick or replace the female quick coupler. |
| C. Pump cycle is slow. | C. 1. Check incoming air pressure to system. Set at 100 to 120 PSI and 13 CFM minimum. |
| D. Pump valve or 3M™ NOVEC 1230™ liquid/D. liquid nitrogen valve is leaking 3M™ NOVEC 1230™ | D. Insert Allen wrench in set screw on the side of the handle and turn counter clockwise until handle is free. Lift handle off valve and tighten slotted packing nut around valve stem slightly. Replace handle and retighten set screw clockwise or replace valve. |
| E. Pump cycles but will not build pressure. | E. Refer to "Operations Manual" on the procedure you are performing and verify all valves are properly positioned and all fitting are properly connected. |
| F. Moisture indicator will not turn green or is white. | F. 1. Refer to the "Procedure for filter replacement and cleaning brass strainers" on page 12.
2. If moisture indicator is <i>WHITE</i> , replace with new moisture indicator. Relieve all internal pressure in accordance with procedure on page 12. |

3M™ NOVEC 1230™ RECOVERY/RECHARGE SYSTEM

TROUBLE SHOOTING GUIDE (CONT.):

PROBLEMS:

SOLUTIONS:

G. Relief valve (item 17) exhausts 3M™ NOVEC 1230™.

G. Refer to "Operations Manual" on the procedure you are performing. Verify that all valves are in the proper position and all fitting are properly connected.

H. Pump cycles but will not build vacuum.

H. Leaks test system with 3M™ NOVEC 1230™ leak detector, a leaks as necessary.

I. 3M™ NOVEC 1230™ leaks around tank valve adapters (items 26)

I. Tighten adapters or replace gasket in adapters.

J. System cylinder begins building weight but stops or builds Pressure but little or no weight.

K. There may be no liquid 3M™ NOVEC 1230™ in the receiver tank(item 7).

K. Cylinder is recharged but pressure gauge on cylinder drops below manufacturers Recommended gauge pressure.

L. Add nitrogen to the filled cylinder, and re-agitate the 3M™ NOVEC 1230™ and nitrogen until pressure gauge stabilizes. Leak test the filled cylinder valve.

3M™ NOVEC 1230™ RECOVERY/RECYCLE SYSTEM

RECOMMENDED MAINTENANCE KIT OR SPARE PARTS:

<u>QUANTITY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
1 EACH	3G58941	KIT MAINTENANCE
1 EACH	3G58800	REPLACEMENT MOISTURE EYE CARTRIDGE
2 EACH	1G0418	FILTER CORE ELEMENTS
1 EACH	1G52534	FINE MESH REPLACEMENT FILTER (STRAINER)
2 EACH	1G51344	GASKET FOR RECEIVER TANK ADAPTERS
1 EACH	1G51445	SEAL KIT FOR SPOOL VALVE ON PUMP
1 EACH	3G58846	DOWEL ROD FOR SPOOL VALVE REMOVAL
4 EACH	3G58801	O-RING SEAL FOR FEMALE QUICK COUPLER
4 EACH	3G58802	O-RING SEAL FOR MALE QUICK CONNECT
1 TUBE	1G51515	SEAL LUBRICANT FOR PUMP AIR DRIVE
1 EACH	1G52535	BRASS NUT & REPLACEMENT MESH FILTER (STRAINER)
1 EACH	1G58835	ORING FOR BRASS NUT & REPLACEMENT MESH FILTER
1 EACH	1G52540	SELECTOR VALVE REPAIR KIT