GETZ EQUIPMENT INNOVATORS

RECOVERY SYSTEM

CLEAN AGENT – FE-36™ / HALOTRON 1®

PART NO. 4G59751

OPERATIONS MANUAL

GETZ EQUIPMENT INNOVATORS
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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.

RECOVERY SYSTEM

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RECOVERY SYSTEM

Basic System Bill Of Materials:

Receiver Tank With Dual Port Valve

Receiver Tank Gauge Assembly

Air Powered Agent Pump

Control Console And Stand

Required Hoses And Adapters

RECOVERY SYSTEM

SYSTEM OPERATION REQUIREMENTS:

1. **Air Compressor Delivering 65 - 80 Psi At 13 Cfm Minimum.**

   Note: Customer Supplied Air Compressor Must Have An Adjustable Pressure Regulator And An Air Line From Compressor To The Agent System.

2. **Weighing Scale - Digital Or Mechanical**
   Capacity - 0 To 200 Lb. Or Larger

3. **Agent Liquid Bulk Supply**
   (Customer Must Supply 40 Lbs. Of Liquid Agent To System Receiver Tank For Initial Set-Up)

4. **Inert Gas Cylinder With Valve And Regulator**
   (Customer Must Supply Inert Gas Source For Initial Set-Up)

   Note: Inert Gas Must Be A Minimum Of -90° Farenheit Dew Point

5. **Scale Stand Or Bench Top**

Area Requirements:

Depth - 3 Ft. **Width - 7 Ft.** **Height - 5 Ft.**

	Weight	Dimensions
Console & Stand	**100 Lbs.**	**24" D X 35" W X 40" H**
Console, Stand & Compressor	**220 Lbs.**	**24" D X 35" W X 40" H**
Receiver Tank	**64 Lbs.**	**14" D X 14" W X 51" H**

RECOVERY SYSTEM

System Specifications:

Vacuum - 28 Inches Maximum

System Pressure - 250 Psi Maximum

Agent Liquid Per Minute - 16.5 Lbs. Maximum

Moisture Eye - 20 Ppm (Green = Dry) 65 Ppm (Yellow = Wet)

Filters - 15 Microns Particulate Matter 5 Ppm Moisture

Receiver Tank - Maximum Pressure Not To Exceed 240 Psi

System Capabilities:

Recover Agent Liquid And Vapor From Extinguishers

Recover Inert Gas From Extinguishers

Recharge Liquid Agent, Vapor And Inert Gas To Extinguishers

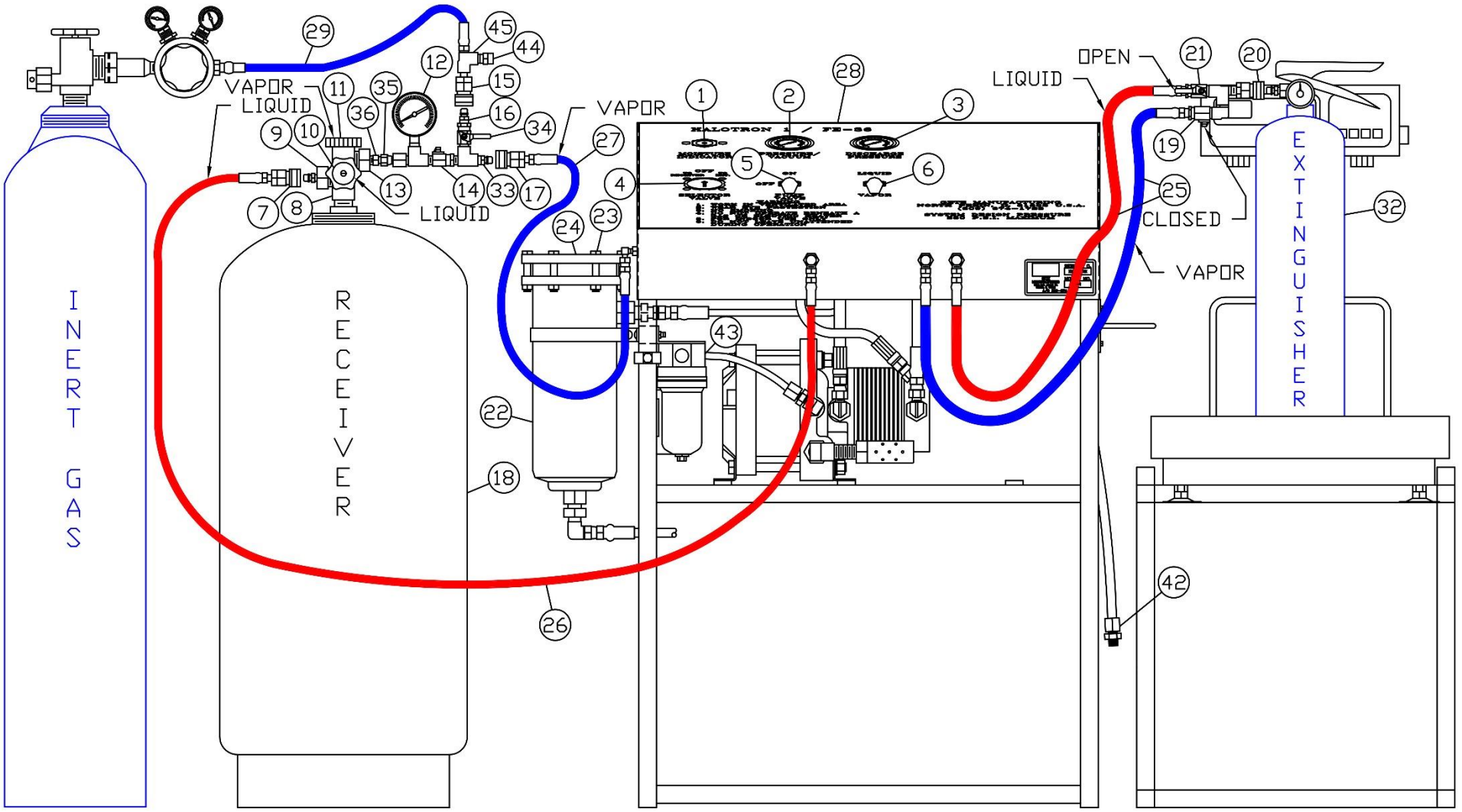
Transfer Liquid Agent From Bulk Storage Cylinders To Extinguishers

Recover At A Minimum 99% Efficiency Rate

Detect Moisture In Agent

Filter Moisture Down To 5 Ppm

Filter Particulate Matter Down To 15 Microns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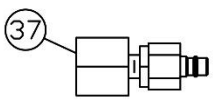
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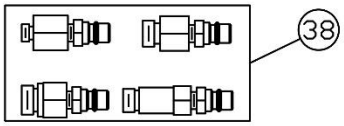
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HALOTRON 1/FE-36 RECOVERY SYSTEM

Item Numbers / Description:

1. **Moisture Indicator - 3G59239**
2. **Pressure / Vacuum Gauge - 1G0440**
3. **Discharge Pressure Gauge - 1G0439**
4. **Selector Valve – 3G59461**
5. **Pump Valve – 1G51908**
6. **Liquid / Vapor Valve – 1G51902**
7. **Female Quick Coupler (Liquid) – 1G0507**
8. **Dual Port Valve – 1G51918**
9. **Adapter Assembly – 3G59601-R**
10. **RED Handwheel (Liquid) – 1G53736**
11. **BLUE Handwheel (Vapor) – 1G53735**
12. **Receiver Tank Pressure Gauge – 1G0453**
13. **Adapter Assembly – 1G0452**
14. **1/4" BLUE Ball Valve (Vapor) – 1G53039-R**
15. **Female Quick Coupler (Inert Gas) – 1G0507-G**
16. **Male Quick Connect (Inert Gas) – 1G53048-G**
17. **Female Quick Coupler (Vapor) – 1G0507-R**
18. **Receiver Tank – 2G58624**
19. **1/4" BLUE Ball Valve (Vapor) – 1G53039-B**
20. **Female Quick Coupler (Dual Hose Assembly) – 1G0507**
21. **1/4" RED Ball Valve (Liquid) – 1G53039-R**
22. **Filter Shell – 1G0416 (4G56332)**
23. **Bolts – (4G56332)**
24. **Filter Housing – (4G56332)**
25. **Dual Hose Assembly**

Item Numbers / Description:

26. **Liquid Supply Hose Assembly**
27. **Vapor Supply Hose Assembly**
28. **Control Console – 1G51245**
29. **Inert Gas Supply Hose Assembly**
30. **(Reserved)**
31. **(Reserved)**
32. **Agent Extinguisher**
33. **Male Quick Connect (Vapor) – 1G53048-B**
34. **1/4" Green Ball Valve (Inert Gas) – 1G53039-G**
35. **Female Swivel Assembly – 1G51006**
36. **Male Nipple – 1G51227**
37. **Bulk Agent Liquid Fill Adapter Assembly – 3G59601**
38. **Extinguisher Adapters - 3G59379, 3G59380, 3G59381, 3G59382**
39. **(Reserved)**
40. **(Reserved)**
41. **(Reserved)**
42. **Air Inlet**
43. **Moisture Filter – 1G51314**
44. **Pressure Relief – 1G51939**
45. **1/4" Tee**
46. **Brass Strainer (Located Behind Rear Access Cover) - 3G59106**

RECOVERY SYSTEM

Set-Up Procedure:

1. **After all cartons 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 18). Remove the valve protector cap and note the dual port valve (item 8) on the top of the receiver tank.**

3. **Install adapter assembly (item 9) turning clockwise, to threaded valve port across from handwheel marked "liquid". Tighten securely.**

4. **Install adapter assembly (item 13) turning clockwise, to threaded valve port across from handwheel marked "vapor". Tighten securely.**

5. **Install female swivel assembly (item 35) to the male nipple (item 36) on adapter assembly (item 13). Tighten securely.**

6. **Connect female quick coupler (item 17) to male quick connect (item 33) and connect female quick coupler (item 7) to male quick connect on adapter assembly (item 9).**

7. **Locate the inert gas supply hose assembly (item 29) and connect the female quick coupler (item 15) to the male quick connect (item 16). Attach the 1/4" npt male hose coupling on the inert gas supply hose assembly (item 29) to the regulator on your inert gas supply cylinder. The inert gas regulator must be set to zero (0) psi output pressure during assembly.**

8. **Turn pump valve (item 5) on the control console (item 28) to the *off* position. Turn the liquid/vapor valve (item 6) on the control console to the *liquid* position. Connect the 1/4" npt male quick connect (item 42) to your air compressor regulator. Set regulator to 65 psi.**

9. **Place your scale (minimum capacity 200 lbs.) To the left hand side of the control console.**

10. **Place the receiver tank (item 18) on the scale and locate your agent bulk liquid supply cylinder to the right-hand side of the control console. Your agent supply cylinder should be pressurized with inert gas to approximately 90 psi.**

11. **Install the bulk gent liquid fill adapter assembly (item 37) to the liquid supply port on your agent bulk supply cylinder. Tighten securely.**

12. **Connect the female quick coupler (item 20) on the dual hose assembly (item 25) to the fill adapter assembly (item 37) on the liquid supply port of your agent bulk supply cylinder.**

13. **Turn the selector valve (item 4) on the control console to the receiver position and the liquid/vapor valve (item 6) on the control console to the *liquid* position.**

RECOVERY SYSTEM

Set-Up Procedure: (Cont.)

14. **Close the 1/4" ball valves (items 14 & 34). Open the liquid handwheel (item 10) and the vapor handwheel (item 11) on the dual port valve (item 8) of the receiver tank.**

15. **If you are using a digital scale, "tare" cylinder weight of the receiver tank (item 18). For a mechanical scale, note the empty weight.**

16. **Open the 1/4" red ball valve (item 21) on the dual hose assembly (item 25). The 1/4" blue ball valve (item 19) on the dual hose assembly should be *closed*. Open liquid supply valve on your agent bulk supply cylinder.**

17. **Turn pump valve (item 5) on the control console to the *on* position and transfer approximately 39 lbs. Of agent to the receiver tank (item 18).**

18. **Turn agent bulk liquid supply cylinder valve *off*.**

19. **Allow agent pump to cycle until the pressure/vacuum gauge (item 2) reads 20 inches of vacuum, turn 1/4" red ball valve (item 21) and pump valve (item 5) to the off position.**

20. **Disconnect the female quick connect (item 20) from the agent bulk liquid fill adapter assembly (item 37).**

21. **Remove receiver tank (item 18) from scale and place scale on your workbench or scale stand.**

22. **Refer to "procedure for adding inert gas to receiver tank" (page 10).**

23. **Proceed to the next operating procedure *or close all valves.***

RECOVERY SYSTEM

Recovery Procedure:

1. **Remove nozzle or hose assembly from extinguisher valve and install proper recharge adapter, tightening securely. Connect the female quick coupler (item 20) to the extinguisher recharge adapter and place extinguisher (item 32) on the scale platform.**
2. **Locate dual port valve (item 8) on the receiver tank, *fully open* the liquid handwheel (item 10). Turn the selector valve (item 4) on the control console to the receiver position.**
3. **Locate the two (2) 1/4" ball valves (items 19 & 21) on the dual hose assembly (item 25). *Red* ball valve (item 21) must be in *open* position and blue ball valve (item 19) must be in *closed* position. The 1/4" blue ball valve (item 14) must be in the *closed* position.**
4. **Locate the liquid/vapor valve (item 6) on the control console and turn the handle to the *liquid* position.**
5. **While watching the clear glass moisture indicator (item 1), depress the valve lever on the extinguisher (item 32) and lock *open* with a suitable clamping device. If the liquid flowing through the indicator is anything other than clear, refer to the "recycle procedure" (page 11).**
6. **Turn pump valve (item 5) on the control console to the *on* position and watch the pressure/vacuum gauge (item 2). When the pressure/vacuum gauge (item 2) reads 10 psi, lift the extinguisher from the scale platform and slowly rotate the extinguisher right side up to upside down. When the pressure/vacuum gauge (item 2) reads 20 inches of vacuum or greater while rotating the extinguisher, release the extinguisher lever.**
7. **Turn pump valve (item 5) on the control console to the *off* position. *Close* 1/4" red ball valve (item 21) and disconnect the female quick coupler (item 20) from the extinguisher recharge adapter.**
8. **Open the vapor handwheel (item 11) on the dual port valve (item 8) and check the receiver tank pressure gauge (item 12). Maximum *recommended* pressure in the receiver tank is 150 psi.**

   Note: More than one hand portable extinguisher may be recovered. When the receiver tank pressure gauge (item 12) reads approximately 150 psi, the receiver tank is fully pressurized and the recovery process is complete.
9. **You may continue the recovery process until the receiver tank pressure is approximately 150 psi or you have recovered approximately 200 lbs. of agent.**

   Note: When using the agent receiver tank supplied with the agent system, the maximum agent capacity is 250 lbs. and the maximum pressure rating is 240 psi.
10. **Before attempting to *recharge* extinguishers *wait 15 minutes*. This will allow the moisture indicator (item 1) to react if moisture is present in the agent 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. **Proceed to the next operating procedure *or close all valves*.**

RECOVERY SYSTEM

Recharge Procedure:

1. **Complete all agent extinguisher internal inspection and maintenance procedures in accordance with manufacturer's recommendations. Install proper recharge adapter in the extinguisher valve. Tighten securely.**

2. **Connect the dual hose assembly quick connect (item 20) to the extinguisher recharge adapter. Record empty weight of the extinguisher to be recharged.**

3. **Lock the extinguisher valve lever *open* with a clamp or adjustable cinch strap. Place the extinguisher on the scale platform. If you are using a digital scale, "tare" extinguisher weight or for a mechanical scale, note the "tare" weight.**

4. ***Open* the 1/4" red ball valve (item 21) and turn selector valve (item 4) on the control console to the *extinguisher* position. *Open* the blue handwheel (item 11) and red handwheel (item 10) on the dual port valve (item 8).**

5. **Turn pump valve (item 5) on the control console to the *on* position. Check scale for increased weight readings. As the extinguisher weight reading approaches within one (1) pound of calculated charge weight, slowly turn selector valve (item 4) towards the *off* position, slowing the flow of the agent to the extinguisher. When the extinguisher reaches within eight (8) ounces of the calculated charge weight, turn the selector valve (item 4) to the *off* position, then turn pump valve (item 5) to the *off* position.**

6. ***Close* the 1/4" red ball valve (item 21) and *open* the 1/4" blue ball valve (item 19) on the dual hose assembly (item 25). Turn the liquid/vapor valve (item 6) on the control console to the *vapor* position.**

7. ***Open* the 1/4" blue ball valve (item 14). Turn the pump valve (item 5) to the *on* position and watch the extinguisher pressure gauge. When the extinguisher pressure gauge reads on the high side of the operable pressure, turn the pump valve (item 5) to the *off* position. Shake the extinguisher to mix the agent and inert gas. Repeat step 7 if pressure drops below manufacturer's recommended pressure.**

8. ***Close* the 1/4" blue ball valve (item 19) on the dual hose assembly (item 25) and release extinguisher valve lever.**

9. ***Close* the 1/4" blue ball valve (item 14) and turn the liquid/vapor valve (item 6) to the *liquid* position. *Open* the 1/4" red ball valve (item 21).**

10. **Turn the selector valve (item 4) to the *receiver* position. Turn the pump valve (item 5) to the *on* position until the pressure/vacuum gauge (item 2) reads 5 inches of vacuum. Turn the pump valve (item 5) to the *off* position and *close* the 1/4" red ball valve (item 21).**

11. **Disconnect the female quick coupler (item 20) from the extinguisher recharge adapter. Leak detect extinguisher according to manufacturer's recommendations. If leak detecting fluid is used, blow all liquid residue out of the valve and wipe extinguisher to dry the exterior. Reinstall the hose or nozzle, safety pull pin and lock wire seal.**

12. **Continue extinguisher recharge procedure, proceed to the next operating procedure *or close all valves*.**

RECOVERY SYSTEM

Procedure for Adding Argon to Receiver Tank:

1. **Install an inert gas pressure regulator to the supply valve of your inert gas supply cylinder.**
2. **Attach the 1/4" npt male hose coupling on the inert gas supply hose (item 29) to the regulator on your inert gas supply cylinder.**
3. **Connect the female quick coupler (item 15) to the male quick connect (item 16). Connect the female quick coupler (item 17) to the male quick connect (item 33).**
4. **Set the inert gas pressure regulator to zero (0) output pressure, and open inert gas supply valve on inert gas cylinder.**
5. **Set inert gas regulator to 20 psi above reading on pressure gauge (item 12) but not to exceed 100 psi. Optimum initial operating pressure for the receiver tank is 90 psi.**
6. ***Open* vapor handwheel (item 11) on the dual port valve (item 8) and the 1/4" blue ball valve (item 14).**
7. **Turn the selector valve (item 4) on the control console to the *off* position.**
8. **Open 1/4" *green* ball valve (item 34) until the desired pressure is reached on the pressure gauge (item 12). Shake the receiver tank (item 18) to thoroughly mix the inert gas with the agent.**
9. **Close 1/4" *green* ball valve (item 34) and return the inert gas pressure regulator to zero (0) output pressure. Close valve on inert gas supply cylinder.**
10. **Proceed to the next operating procedure *or close all valves*.**

RECOVERY SYSTEM

Recycle Procedure:

(For removal of moisture, particulate and/or color)

Caution: If the moisture indicator on the control console (item 1) is *yellow* or the agent is any color except *clear*, the agent must be recycled through the system before you refill the extinguisher.

1. **Close the 1/4" *red* and *blue* ball valves (items 19 & 21) on the dual hose assembly (item 25).**
2. **Turn the selector valve (item 4) on the control console to the *extinguisher* position.**
3. **Turn the liquid/vapor valve (item 6) on the control console to the *liquid* position.**
4. **Locate the dual port valve (item 8) on the receiver tank (item 18). Turn the liquid and vapor handwheels (items 10 & 11) to the *closed* position.**
5. **Turn the pump valve (item 5) on the control console to the *on* position and allow the system to cycle until the pressure/vacuum gauge reads 5 inches of vacuum.**
6. **With the system recycling, remove the female quick coupler (item 17) from the male quick connect (item 33).**
7. **Connect the female quick coupler (item 20) to the male quick connect (item 33). *Open* the 1/4" red ball valve (item 21) and the 1/4" blue ball valve (item 14).**
8. **Turn the vapor handwheel (item 11) and the liquid handwheel (item 10) on the dual port valve (item 8) until fully *open*.**
9. **Allow the system to circulate the agent through the filters until the moisture indicator (item 1) turns *green* or the agent looks clear through the moisture indicator glass.**

   Note: Refer to the "filter replacement procedure" (page 13) if the moisture indicator (item 1) does not change to *green* or the color does not return to *clear* within four hours.

10. **Recycle procedure is complete when moisture eye (item 1) is green or the agent is clear flowing through the sight glass.**
11. **Close the liquid handwheel (item 10) on the dual port valve (item 8) and allow the system to cycle until the pressure/vacuum gauge (item 2) reads 5 inches of vacuum.**
12. **Close the vapor handwheel (item 11) on the dual port valve (item 8) and the 1/4" blue ball valve (item 14).**

Recycle Procedure: (Cont.)

13. **Turn selector valve (item 4) to the *receiver* position and allow the system to cycle until the pressure/vacuum gauge (item 2) reads 10 inches of vacuum.**

14. ***Close* the 1/4" red ball valve (item 21) on the dual hose assembly (item 25). Disconnect the female quick coupler (item 20) from the male quick connect (item 33) and connect the female quick coupler (item 17) to the male quick connect (item 33).**

15. **Turn the pump valve (item 5) on the control console to the *off* position.**

16. **Proceed to the next operating procedure *or close all valves.***

RECOVERY SYSTEM

Procedure For Filter Replacement And Cleaning Brass Strainer:

1. **Close the 1/4" *red* and *blue* ball valves (items 19 & 21) on the dual hose assembly (item 25).**
2. **Turn the selector valve (item 4) on the control console to the *receiver* position. *Open* the vapor and liquid handwheels (items 10 & 11) and the 1/4" blue ball valve (item 14).**
3. **Turn the liquid/vapor valve (item 6) on the control console to the *liquid* position and turn pump valve (item 5) to the *on* position.**
4. **Allow the system to cycle for 2 minutes, then *close* the vapor handwheel (item 11) and the 1/4" blue ball valve (item 14) until the pressure/vacuum gauge (item 2) reads 10 inches of vacuum.**
5. **Turn the pump valve (item 5) to the *off* position and *close* the red handwheel (item 10).**

   The recovery system must be relieved of internal pressure. This can be accomplished by using two or three empty 17 lb. agent extinguishers.

   Carefully follow steps 6-7-8-9.
6. **Install the proper recharge adapter on one empty 17 lb. agent extinguisher. Connect the female quick coupler (item 20) on the dual hose assembly (item 25) to the extinguisher recharge adapter and lock the extinguisher valve open with a clamp or adjustable cinch strap.**
7. ***Open* the 1/4" *red* ball valve (item 21) on the dual hose assembly (item 25) and turn the selector valve (item 4) to the *extinguisher* position.**
8. **Leave the extinguisher connected to the agent system until the discharge pressure gauge (item 3) on the control console stops *decreasing* in pressure.**
9. **Release the extinguisher valve lever, close the 1/4" red ball valve (item 21) on the dual hose assembly (item 25). Disconnect the extinguisher recharge adapter from the female quick coupler (item 20). Connect another empty extinguisher. Repeat process (steps 6-7-8-9) until the discharge pressure gauge (item 3) reads zero (0) psi.**
10. **After all pressure has been relieved, remove the bolts (item 23) from the filter shell (item 22). Lift the filter housing (item 24) away from the filter shell and replace filter element following replacement procedures found on each replacement filter element canister.**
11. **Remove nut from brass strainer (item 46) and clean as necessary.**

    Note: The contents of the extinguisher/s used to relieve the internal pressure of the agent system may be reclaimed by following the "recycle procedure" (page 11 & 12).
12. **Proceed to the next operating procedure *or close all valves.***

PURGE PROCEDURE FOR CHANGING AGENTS

Warning: Following purge to avoid mixing agents

(Skip step 1 thru 4 if the system is connected to the receiver tank)

1. **Turn the selector valve (item 4) to the system cylinder position turn the liquid / vapor valve (item 6) to the liquid position.**
2. **Turn the pump valve (item 5) to the on position allow the system to cycle until the pressure/vacuum gauge (item 2) read 5 inches of vacuum.**
3. **Turn the pump control valve (item 5) to the *off* position.**
4. **Connect the female quick coupler (item 7) to the liquid port adaptor.**
5. **Open the liquid valve on the receiver tank.**
6. **Turn the selector valve (item 4) to the receiver position turn the pump control valve (item 5) to the *on* position, allow the system to cycle until the pressure/ vacuum gauge reads 5 inches of vacuum. Turn the pump control valve to the *off* position.**
7. **Set the inert gas pressure regulator to zero (0) PSI.**
8. **Turn the liquid / vapor valve (item 6) to the vapor position.**
9. **Set the inert gas pressure regulator to 20 PSI above what the discharge pressure gauge (item 3) is reading. DO NOT EXCEED 250 PSI!**
10. **Turn the pump control valve to the *on* position and allow the system cycle for one minute.**
11. **Turn the pump control valve (item 5) to the *off* position.**
12. **Set the inert gas pressure regulator to zero (0) PSI.**
13. **Turn the liquid / vapor valve (item 6) to the liquid position.**
14. **Turn the selector valve (item 4) to the *off* position.**
15. **It is now safe to use another agent.**
16. **Change filter housing (Item 22) 4G56332.**

RECOVERY SYSTEM

Recommended Periodic Maintenance:
(Minimum recommendations - perform more frequently if required)

1. **Lubricate all male quick connects (items 9, 16 & 33) and recharge adapters (item 38) with a light coat of high quality o'ring lubricant *when female quick couplers (items 7, 15, 17 & 20) are difficult to disconnect.***

2. ***Every day,* empty the moisture filter (item 43).**

3. ***Every day,* remove the nut on the brass strainer (item 46) and clean as necessary. (refer to the "procedure for filter replacement and cleaning brass strainer".)**

4. ***Once per month,* check the complete system for leaks (while performing the "recharge" or "recycle" procedure) using an agent 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. ***Every three (3) months or if pump slows while operating,* lubricate spool valve in the agent pump (refer to the "Haskel pump operation and maintenance manual").**

7. ***Once per year,* dismantle the pump. Clean and lube the o'rings on the air drive piston (refer to pump manual).**

8. ***Once per year,* change the filter elements (in item 22). (refer to the "procedure for filter replacement and cleaning brass strainer").**

9. ***Once per year,* have your inert gas regulator on the inert gas supply cylinder cleaned and recalibrated.**

RECOVERY SYSTEM

Trouble Shooting Guide:

Problem:	Solution:
A. Agent flows slowly or not at all through system.	**A. 1. Make sure all liquid valves (red) are open and selector valve is in the proper position.** **2. Check or change filters inside of filter housing (item 22) and clean brass strainer (item 46). Refer to procedure on page 13.**
B. Agent leaks from female quick couplers (items 7 - 17 - 20).	**B. Relieve internal pressure on system. (refer to procedure on page 13), replace u-cup seal on the inside of the quick coupler or replace the female quick coupler.**
C. Pump cycle is slow.	**C. 1. Check incoming air pressure to system - set at 65-80 psi and 13 cfm minimum.** **2. Refer to spool valve lubricating instructions in Haskel pump maintenance manual. (Refer to procedure on pages 18 - 24.**
D. Pump valve or liquid/vapor valve is leaking agent.	**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 fittings 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 strainer".** **2. If moisture indicator is *white*, replace with new moisture indicator. Relieve all internal pressure in accordance with procedure on page 13.**

Trouble Shooting Guide: (Cont.)

Problems:	Solutions:
G. Blue, red or green ball valves leak agent.	**G. Replace with new ball valve/s.**
H. Relief valve exhausts agent.	**H. Refer to "operations manual" on the procedure you are performing. Verify that all valves are in the proper position and all fittings are properly connected.**
I. Pump cycles but will not build a vacuum.	**I. Leak test the system with agent leak detector, repair leaks as necessary.**
J. Agent leaks around tank valve adapters (items 9 & 13).	**J. Tighten adapters or replace gaskets in adapters.**
K. Agent leaks out of pump.	**K. Refer to agent pump maintenance manual.**
L. Extinguisher begins building weight then stops or extinguisher builds pressure but little or no weight.	**L. Add agent to the receiver tank and pressurize to approximately 90 psi. (Reference procedure on page 10.)**
M. Extinguisher is recharged but pressure gauge on extinguisher drops below manufacturer's recommended gauge pressure.	**M. Add inert gas to the receiver tank in accordance with the procedure on page 10. Recover agent and recharge the extinguisher in accordance with applicable procedures.**

RECOVERY SYSTEM

Recommended Spare Parts:

Quantity	Item Code	Description
1 Each	1G51908	Pump Valve (2 Way - Brass)
1 Each	1G51902	Liquid/Vapor Valve (3 Way - Brass)
1 Each	3G59239	Moisture Eye
2 Each	1G0418	Filter Core Elements
4 Each	1G53039	1/4" Ball Valve
1 Each	3G59106	Brass Strainer
3 Each	1G53042	Gasket For Receiver Tank Adapter
2 Each	1G0507	Female Quick Coupler
2 Each	1G53048	Male Quick Connect
1 Tube	1G51515	Seal Lubricant For Halon Pump Air Drive
1 Tube	1G51516	O'Ring Lubricant (Visilox-728)