MODEL 5500

REFRIGERANT RECOVERY

CENTER

OPERATING INSTRUCTIONS

115 VAC 60 Hz VERSION

THERMAL ENGINEERING COMPANY • TOLEDO, OHIO U.S.A. 43624

MODEL 5500

REFRIGERANT RECOVERY CENTER

READ INSTRUCTIONS CAREFULLY BEFORE USING

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The Model 5500 is supplied with the following:

1 - Operating Instruction Manual
1 - Warranty Card
1 - 8096R Red Hose
1 - 8096B Blue Hose
1 - 8075 Yellow Tank Cable
1 - 7025 Core Depressor Valve

MODEL 5500 REFRIGERANT RECOVERY CENTER

OPERATING INSTRUCTIONS

Model 5500 Refrigerant Recovery Center was designed for removing refrigerants R-12, R-22, R-500, and R-502 in either liquid (push pull method) or gas form. This unit will remove refrigerant from a system and put it into an external storage tank. It does not reclaim or recycle refrigerant. The Model 5500 has no internal storage capacity.

SPECIFICATIONS

POWER: 115 VAC 60Hz 6 A

VAPOR REMOVAL RATE: Up to 0.2 lb/min

VACUUM RATING: 10 in. Hg

LIQUID PUSH-PULL RATE: Up to 8 lb/min

SIZE: 13" D x 12" W x 12" H

WEIGHT: 31 lbs.

REFRIGERANTS: R-12, R-22, R-500 AND R-502

DESIGN PRESSURE: HIGH 310 PSIG, LOW 225 PSIG

! SAFETY WARNING !

This unit should be operated by qualified air conditioning and refrigeration service technician only. Improper use of this unit can cause personal injury. Read instructions carefully before using. Use only approved refillable storage cylinders. Do not overfill any storage cylinder beyond its rated capacity. Do not use disposable cylinders. Use only R-12, R-22, R-500, or R-502 for the 5500. Never mix different refrigerants.

Take proper safety precautions when using the Model 5500. Wear safety glasses and protect skin from flash freezing. Hoses may contain liquid refrigerant under pressure. Use extreme caution when working with refrigerants.

This equipment should be used in locations with mechanical ventilation that provides at least four air changes per hour or the equipment should be located at least 18 inches (457mm) above the floor. Do not operate in the vicinity of spilled or open container of gasoline.

CAUTION: HIGH VOLTAGE ELECTRICITY INSIDE COVER. RISK OF ELECTRIC SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT. MOVING PARTS. HOT PARTS. DO NOT OPERATE WITH COVER REMOVED.

WARNING: TO REDUCE THE RISK OF FIRE, avoid the use of an extension cord because the extension cord may overheat. If an extension cord must be used, the cord should be 14 AWG minimum and as short as possible.

Compressor Motor Thermally Protected.

CONTROL PANEL AND CABINET LAYOUT

POWER SWITCH: Controls power to the Model 5500. When the switch is in the ON position, the condenser fan will run and the compressor will start. The power switch engages a power relay that starts the 5500 compressor. If the compressor shuts down due to low or high pressure cutout, tripped circuit breaker or power outage, it will not restart until the power switch is turned OFF then back ON. This prevents the compressor from short cycling and trying to start against a load.

POWER LAMP (AMBER): Indicates that the power switch has been turned on and power is applied to the 5500.

LOW PRESSURE CUT OUT LAMP (GREEN): Indicates the 5500 has shut down on low pressure cut out.

HIGH PRESSURE CUT OUT LAMP (RED): Indicates the 5500 has shut down on high pressure cut out.

TANK FULL LAMP (AMBER): Indicates the storage tank has reached 80% full and has shut the 5500 down.

CIRCUIT BREAKER: Push to reset.

INLET VALVE and FITTING: Controls refrigerant flow into the 5500. An internal check valve prevents refrigerant flow out of the INLET valve.

OUTLET VALVE and FITTING: Controls refrigerant flow out of the 5500.

TANK CUTOFF SOCKET: Located on top of unit. Connection for storage tanks with float switch.

GENERAL NOTES AND PRECAUTIONS

Refrigerant should be removed from systems as a liquid whenever possible. When refrigerant is removed as a gas, the removal process will take much longer. Boiling the liquid refrigerant into a gas reduces its pressure and temperature thus slowing the recovery process.

The Model 5500 cannot process liquid refrigerant directly, but can transfer liquid refrigerant using the push-pull method. See the Liquid Recovery Push-Pull Procedure.

This unit has no internal filters and must be used with an in-line filter to protect the 5500 compressor. The filter should be replaced after every use and not be used for multiple services. Refrigerant removed with the 5500 must be recycled before reusing.

This unit has an internal solenoid that equalizes high and low side pressures within the 5500. These pressures automatically equalize when the 5500 shuts down on low pressure, high pressure or tank full.

This unit has a processing rate of up to 0.2 lb/min when removing vapor. The removal rate of the 5500 will vary for field applications. The type of refrigerant, ambient temperatures, and system connections will all have an effect on flow rate.

During normal operation the 5500 will shut down automatically when it reaches 10 inches vacuum.

The 5500 must not be used on systems known to have water mixed in with the refrigerant. The 5500 cannot process refrigerant containing liquid water and may become damaged.

Use only refrigerant hoses that have a good sealing gasket in the quick couplers. The outer jackets of the charging hoses must also be in good condition.

Two refrigeration hoses are supplied with Model 5500. These hoses have a shut off fitting on one end of each hose. The fitting will close whenever the hoses are disconnected. Shut off hoses have snap rings that hold the shut off valve together, if these valves are tightened too much these snap rings may come out of the groove that holds the valve assembly together.

STORAGE TANKS

The Model 5500 must be used with a Thermal refillable storage tank equipped with a float switch to prevent overfilling of the tank. The yellow tank cable plugs into the socket on the 5500 and to the float switch on the tank. The storage tank float switch will shut down the 5500 when the tank becomes 80% full. The 5500 will not operate unless the tank is plugged in. The unit cannot be operated with storage tanks that do not have the float switch.

Use only Thermal DOT approved refillable storage tanks. <u>DO NOT USE</u> disposable refrigerant tanks. Disposable tanks could explode and cause injury.

Thermal refillable tanks have both liquid and vapor valves. Use the vapor valve for recovery. Using the liquid valve (unless using the push-pull method) will cause the 5500 outlet pressure to rise. This will slow the recovery process and may cause the high pressure safety switch to engage, shutting down the 5500.

When removing large amounts of vapor from a system and under certain conditions such as high ambient temperatures, it may be necessary or advisable to use ice or cold water to cool down the storage tank to facilitate refrigerant removal. If the high pressure safety switch shuts down the 5500 before the storage tank is full, the tank should be cooled to reduce the tank pressure.

Empty storage tanks should be evacuated and charged before each use. Charge the empty tank using the same type of refrigerant that is to be recovered until the tank is at ambient pressure. If an empty tank under vacuum is used, the initial surge of refrigerant into the 5500 could cause liquid to slug the compressor.

INITIAL STARTUP PROCEDURE

NOTE: This unit has been factory charged with nitrogen which must be removed before using the 5500.

1. Disconnect the yellow tank cable from the tank cutoff socket.

2. Connect the 5500 to power, and turn the POWER switch ON.

3. Remove the flare cap from the refrigerant OUTLET fitting and open the refrigerant OUTLET valve to remove the nitrogen. The INLET valve should be closed.

4. When the nitrogen has been removed, connect a vacuum pump to the OUTLET fitting. Evacuate for five minutes to remove the remaining non-condensable gasses (air and nitrogen) from the Model 5500.

5. Close the OUTLET valve after evacuation is complete.

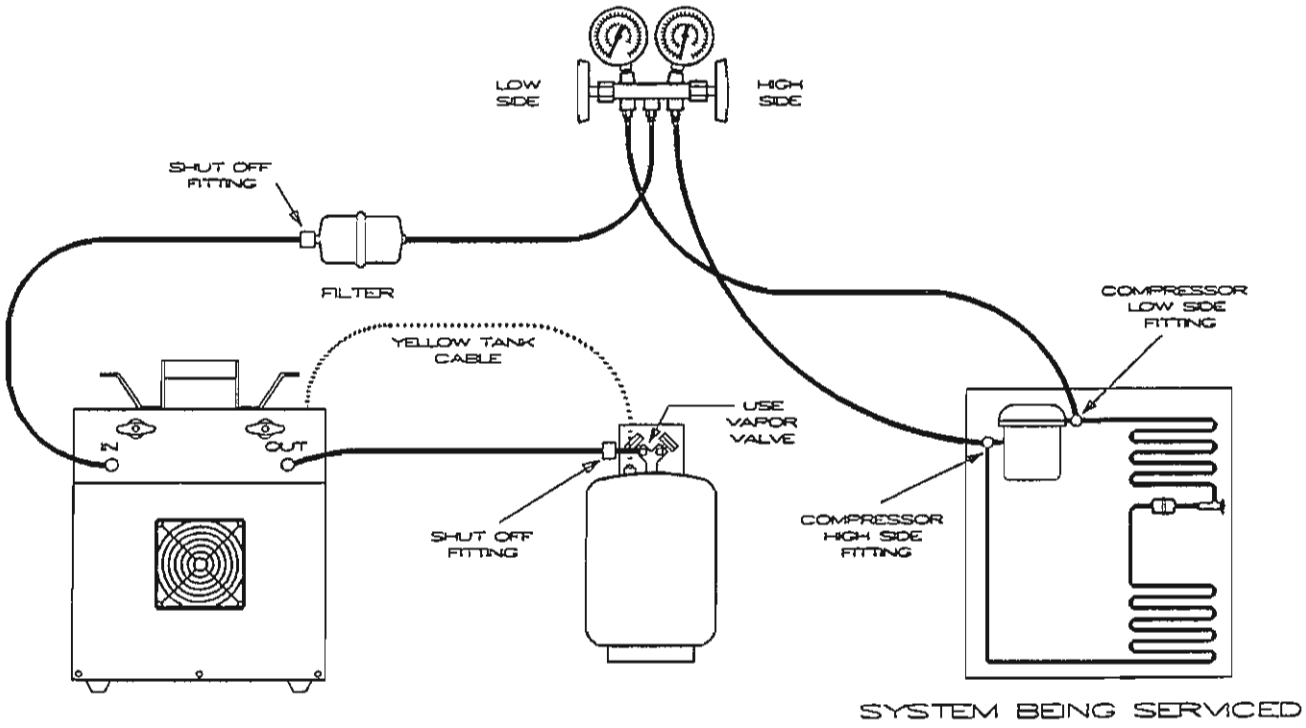
6. Connect the INLET fitting to the VAPOR valve of a cylinder that contains the same type of refrigerant to be recovered.

7. Open the refrigerant cylinder VAPOR valve and allow gas to flow until the pressure is at least 20 PSI is in the 5500. The pressures can be allowed to equalize.

10. Close the refrigerant cylinder valve and INLET valves. The Model 5500 is now ready to recover this type of refrigerant.

When recovering the same refrigerant, it is not necessary to evacuate and charge the 5500 each time. The unit will contain enough refrigerant for proper operation from the previous use. However, if the unit was used on a system with an electrical burnout, it is advisable to evacuate and charge before the next use. When removing a different refrigerant, follow the CHANGING REFRIGERANT TYPE Procedure. The 5500 must be evacuated and charged with the same type of refrigerant that is to be recovered.

MODEL 5500 VAPOR RECOVERY



VAPOR RECOVERY PROCEDURE

The system from which refrigerant is being removed must be OFF. Do not remove refrigerant while the system is operating.

1. Connect the storage tank float to the socket on the Recovery Center using the yellow tank cable.

2. Connect the INLET fitting to the inline filter and the filter to the manifold center port.

3. Connect the manifold to the high and low side vapor fittings on the system being serviced.

4. Connect the OUTLET fitting to the storage tank VAPOR valve.

5. Open the manifold, INLET, OUTLET and storage tank VAPOR valves.

6. Turn POWER switch ON. When the system is pulled into a vacuum of 10 inches, the green low pressure lamp will light and the 5500 will shut down.

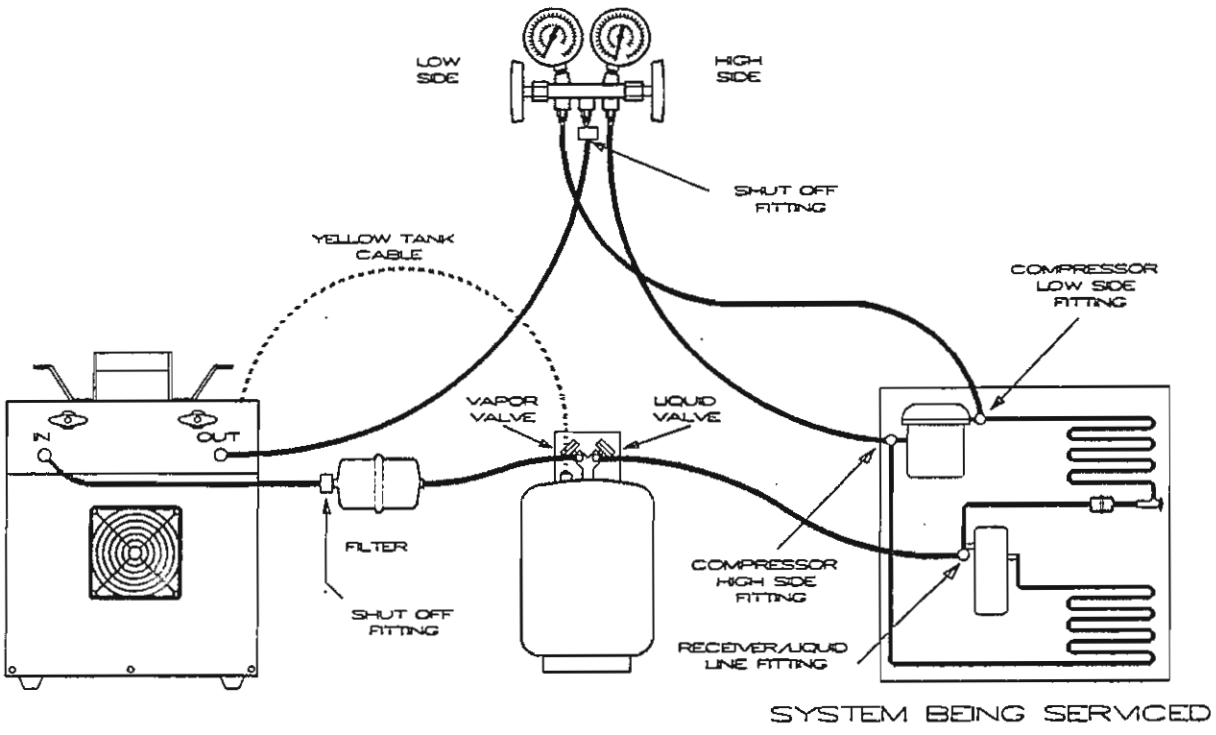
7. Close the manifold valves and the storage tank valve.

8. Turn POWER switch off. The Model 5500 should remain attached to the system being serviced. After five minutes, observe the system pressure. If refrigerant remains in the system, open the manifold and storage tank valves and repeat steps 6 through 8.

9. When recovery is complete, close all valves and turn POWER switch OFF.

MODEL 5500 PUSH—PULL LIQUID RECOVERY

SERVICE MANIFOLD



LIQUID RECOVERY PROCEDURE, PUSH PULL METHOD

The system from which refrigerant is being removed must be OFF. Do not remove refrigerant while the system is operating.

1. Connect the storage tank float to the socket on the Recovery Center using the yellow tank cable.

2. Connect the INLET fitting to the inline filter and the filter to the storage tank VAPOR valve.

3. Connect the manifold to the high and low side vapor fittings on the system being serviced.

4. Connect the OUTLET fitting to the manifold center port.

5. Connect the storage tank LIQUID valve to the receiver or liquid line access fitting on the system being serviced.

6. Open the manifold, INLET, OUTLET and both storage tank valves.

7. Turn the POWER switch ON.

8. After the liquid refrigerant has been recovered, turn the POWER switch OFF and follow the VAPOR RECOVERY PROCEDURE to recover the remaining refrigerant.

HIGH PRESSURE SAFETY SWITCH

The 5500 has a built-in high pressure switch that will shut down the unit when the refrigerant outlet pressure exceeds 350 PSI. This is a safety feature only and will not prevent overfilling of the storage tank. The overfilling of any storage tank beyond its rated capacity can cause the tank to explode or burst.

If the 5500 shuts down on high pressure, check the storage tank. If the OUTLET fitting was connected to the LIQUID valve of a two valve storage tank, reconnect to the VAPOR valve. If high ambient temperatures caused the shutdown, the tank will need to be cooled to continue recovery.

CHANGING REFRIGERANT TYPE

Refrigerant must be removed from the 5500 before changing refrigerant types. Refrigerant can be removed from the 5500 using a second recovery unit. Remove the refrigerant through the OUTLET fitting with the POWER switch ON and the storage tank UNPLUGED. After removing the refrigerant, follow the INITIAL STARTUP PROCEDURE.

If another unit is not available, refrigerant release to the atmosphere can be minimized by using a storage tank that has been evacuated to 29.5" vacuum using a vacuum pump and following the steps below:

1. Connect the OUTLET fitting of the 5500 to the VAPOR valve of the EVACUATED storage tank. The yellow tank cord should be disconnected from the 5500.

2. Turn the POWER switch ON and open the OUTLET valve. After the refrigerant is removed follow the INITIAL STARTUP PROCEDURE.

CHANGING STORAGE TANKS DURING RECOVERY

When the storage tank becomes full, the 5500 will shut down and will not operate until the tank has been replaced.

1. Turn POWER switch OFF. Close storage tank valve and OUTLET valve. Disconnect the hose from the full tank and connect to the new tank.

2. Unplug the tank cable from the full tank and plug into the new tank.

3. Open the closed valves, turn POWER switch ON and resume recovery.

CHANGING COMPRESSOR OIL

For best performance and maximum life, the oil in the Model 5500 compressor must be changed regularly. This should be done weekly for heavily used units and every two weeks for normal use.

1. Disconnect the Model 5500 from power and remove cabinet cover.

2. Locate the 1/4 flare access fitting on the inlet side of the 5500. This fitting will be in the copper line that goes into the side of the compressor.

3. Remove the flare cap and attach the core depressor valve.

4. Place the unit on the edge of a table or bench and tip it on the side with the valve down.

5. Carefully open the valve and drain the compressor oil into a small container. The pressure in the unit will push the oil out of the compressor. If there is no pressure in the unit, apply 5 - 10 PSI through the INLET valve.

6. Set the unit upright and pump 6 ounces of 150 weight (3GS) refrigeration oil into the access fitting using a Thermal Model 1702 Charge-Oil Pump or equivalent.

7. Remove the valve from the access fitting, attach the flare cap and put the cabinet cover on the unit.

REPLACEMENT PARTS

PART #	DESCRIPTION:
8025	Dual Valve 25 lb. DOT approved Refillable Storage Tank With Float Switch.
8050	Dual Valve 50 lb. DOT approved Refillable Storage Tank With Float Switch.
8075	Yellow Tank Cable
8096R	Red 96" Hose with Shut Off Fitting
8096B	Blue 96" Hose with Shut off Fitting
5500RC	Replacement Compressor 115V 60 Hz

LIMITED WARRANTY

Model 5500 is warranted against defects in workmanship or materials under normal use for one year. Manufacturer assumes no liability on the actual use of this equipment. Components subjected to abnormal wear and tear are specifically excluded from this warranty.

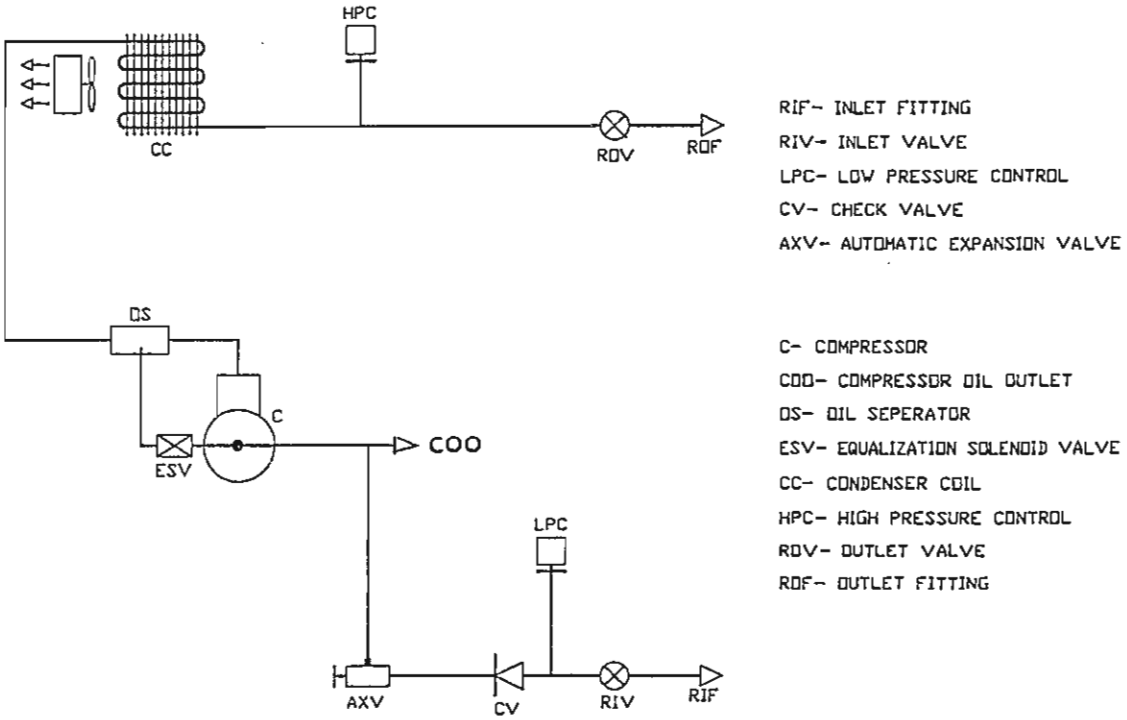
Compressors that fail due to lack of oil or that have been damaged by liquid refrigerant will not be warranted. Safety responsibility lies with the user.

In return for shipping merchandise PREPAID to factory service location, Thermal Engineering Company will make a good faith effort for prompt disposition regarding any product which proves to be defective within or out of warranty. A complete description of the problem should be included. If product was damaged in transit to you, file claim with carrier.

For repair return to your local distributor or:

Thermal Engineering Company
2022 Adams Street
Toledo, OH, USA 43624
419-244-7781

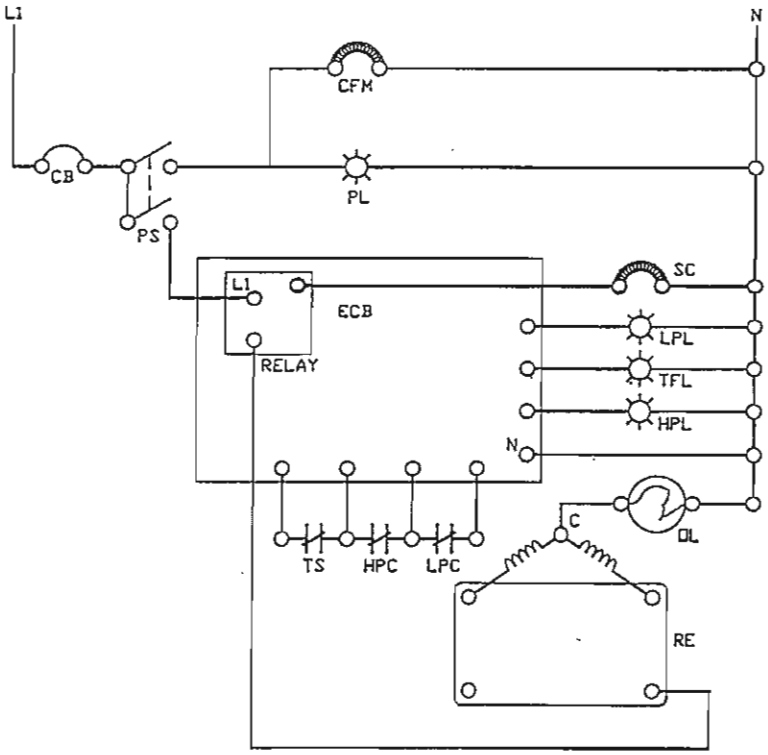
FORM 5500-1



RIF- INLET FITTING
RIV- INLET VALVE
LPC- LOW PRESSURE CONTROL
CV- CHECK VALVE
AXV- AUTOMATIC EXPANSION VALVE

C- COMPRESSOR
COO- COMPRESSOR OIL OUTLET
OS- OIL SEPERATOR
ESV- EQUALIZATION SOLENOID VALVE
CC- CONDENSER COIL
HPC- HIGH PRESSURE CONTROL
ROV- OUTLET VALVE
ROF- OUTLET FITTING

MODEL 5500 PLUMBING DIAGRAM



CB- CIRCUIT BREAKER
PS- POWER SWITCH
PL- POWER LIGHT
CFM- CONDENSER FAN MOTOR
ECB- ELECTRONIC CIRCUIT BOARD
TS- TANK SWITCH
HPC- HIGH PRESSURE CONTROL
LPC- LOW PRESSURE CONTROL
TFL- TANK FULL LIGHT
HPL- HIGH PRESSURE LIGHT
OL- OVERLOAD
RE- RELAY

SC- SOLENOID COIL
LPL- LOW PRESSURE LIGHT

MODEL 5500 WIRING DIAGRAM