

# **Model 6000 Refrigerant Reclaimer**

## **OPERATING INSTRUCTIONS**

 **Thermal**  
**ENGINEERING COMPANY**

2022 ADAMS STREET • TOLEDO, OHIO 43624

## MODEL 6000 REFRIGERANT RECLAIMER

### OPERATING INSTRUCTIONS

MODEL 6000 REFRIGERANT RECLAIMER is designed to remove and recycle refrigerants 12, 22, 500 and 502 from existing systems. Its simple operation aids the service technician in doing work quickly and efficiently without constant monitoring.

Refrigerant should be removed from systems as a liquid whenever possible. When refrigerant is removed as a gas, the reclaiming process will take much longer. Boiling the liquid refrigerant into a gas reduces its pressure and temperature thus slowing the recovery process. Do not remove refrigerant as a gas from large systems as this could cause the reclaimer to overheat.

### SAFETY WARNING

Misuse of this reclaimer 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. THERMAL ENGINEERING CO. cannot be held responsible for the improper use of this device.

Take proper safety precautions when using the Reclaimer. Wear safety glasses and protect skin from freeze burns. Use extreme caution when working with refrigerants.

### SPECIFICATIONS

Refrigerants:	R-12, 22, 500, 502	Processing Rate:	2 lbs/min max
Voltage:	110 VAC 60Hz	Current:	5 A
Compressor:	1/2 HP	Filter Area:	84 cubic inches
Size:	26"L x 16"W x 20"H	Weight:	98 lbs.
Filters:	Easy access for replacement. Uses size 42 filter cores.		
Oil Traps:	Removes contaminated oil from refrigerant. A drain fitting is provided on the back of the Reclaimer.		
Oil Return:	Automatically returns the oil back to the compressor.		
Safety Switch:	A high pressure switch will shut down the unit if pressure in the storage tank exceeds 350 PSI.		

## GENERAL NOTES AND PRECAUTIONS

INLET (RIV) and OUTLET (ROV) valves should always remain closed and flare caps in place until the Reclaimer is used.

This unit has a maximum processing rate of 2 lbs/min when reclaiming liquid. The rate will be considerably slower when reclaiming gas. The process rate of the Reclaimer will vary for field applications. The type of refrigerant, ambient temperatures, and system connections will all have an effect on flow rate.

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

During normal operation the reclaimer will shut down automatically when all refrigerant is removed from a system. The low side gauge will read 0 PSI to 10 inches vacuum.

When removing refrigerant from a system with a leak it is suggested that the low side gauge should read between 5 - 10 PSI on the Reclaimer. If the pressure is allowed to go beyond these levels, it will increase the chances of drawing air and moisture in and mixing with the refrigerant.

The Reclaimer must not be used on systems known to have water mixed in with the refrigerant. The Reclaimer cannot process refrigerant containing liquid water as, for example, on a system with a water cooled condenser that has a ruptured tube.

## SIGHT GLASS AND MOISTURE INDICATOR

Liquid refrigerant can be viewed in the sight glass (center of control panel) just before it enters the storage tank. This shows the condition of the refrigerant after it has passed through the oil separator and both filters. The moisture content of the refrigerant at this point is determined by the condition of the filter-driers and the initial condition of the refrigerant before reclaiming.

The moisture indicator color indicates moisture content: Dark green for dry, chartreuse for caution, yellow for wet.

NOTE: The moisture indicator may show caution (chartreuse) or wet (yellow) when the Reclaimer is not in use. When this happens the filters need to be replaced.

Liquid water will dissolve and wash away the color indicator material resulting in a light yellow or white color. This type of damage is permanent. The indicator material will no longer change color.

Replacement of the sight glass color element should not be necessary as long as the filters are replaced regularly.

## STORAGE TANKS

Use only approved refillable storage tanks. DO NOT USE disposable refrigerant tanks. Disposable tanks could explode and cause injury.

When using refillable storage tanks that have a single vapor valve, the tank should be in an upright position with the valve at the top. To remove refrigerant from the tank as a liquid, the tank can be inverted.

When using refillable tanks that have liquid and vapor valves or a combined liquid/vapor valve use the vapor valve for reclaiming. Use of the liquid valve will cause the reclaimer outlet pressure to rise. This will slow the reclaiming process and may cause the high pressure safety switch to engage, shutting down the reclaimer.

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 reclaiming. If the high pressure safety switch shuts down the reclaimer 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 refrigerant that is to be reclaimed until the tank is at ambient pressure. If an empty tank is used that is under vacuum, the initial surge of refrigerant into the reclaimer 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 reclaimer.

- 1) Open the OUTLET (ROV) and EQUALIZATION (EV) valves to remove the nitrogen.
- 2) Evacuate the unit to 300 microns through the OUTLET fitting.
- 3) Charge the unit through the INLET fitting with the type of refrigerant that is to be reclaimed until 30-50 PSI is indicated on the low side pressure gauge. The unit MUST contain refrigerant for proper warm up. -

When reclaiming the same refrigerant, it is not necessary to evacuate and charge the Reclaimer each time. The unit will contain enough refrigerant for proper warm up 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 reclaiming a different refrigerant, follow the Initial Startup Procedure. The reclaimer must be evacuated and charged with the refrigerant that is to be reclaimed.

## RECLAIMING PROCEDURE

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

The system and reclaimer can be connected using a standard 3-port service manifold. Provisions must be made to evacuate the manifold and hoses. A 4-valve manifold is highly recommended as the vacuum pump can be connected to one of the center valves. The pump must be valved off and isolated after evacuation before beginning the reclaiming process.

1. When reclaiming and storing refrigerant, be sure the storage tank is large enough to hold the complete charge of the system or have extra tanks ready for larger storage capacity. Use only approved refillable containers.
2. The Reclaimer INLET (RIV) and OUTLET (ROV) valves should always remain closed until used.
3. To reclaim liquid, connect the high side hose of the service manifold to the liquid receiver or access fitting on liquid line. To reclaim gas, connect to the compressor discharge line service valve.
4. Connect the low side hose of the manifold to the suction line service valve of the compressor.
5. Connect the manifold center hose to the refrigerant INLET fitting of the Reclaimer. If using a 4-valve manifold, connect the second center port to the vacuum pump. Evacuation of the hoses and manifold is necessary to assure that air and moisture are properly removed. Do not purge lines with refrigerant. Valve off the vacuum pump after evacuation.
6. Connect the Reclaimer refrigerant OUTLET fitting to the vapor valve of the storage tank being used. The hose must be evacuated to remove air and moisture. If empty, the tank should be precharged. Valve off the vacuum pump after evacuation. A partially filled tank containing the same refrigerant that is to be reclaimed can be used as the receiving tank. The tank should be upright. Open the storage tank valve.
7. After all hoses are properly connected, open the EQUALIZATION (EV) valve. INLET (RIV) and OUTLET (ROV) valves remain closed. The high and low pressure gauge readings on the Reclaimer must be equal for the Reclaimer to start properly.
8. Turn the Reclaimer POWER switch ON and allow it to run for 7 to 10 minutes. For R-12 run for 12 to 15 minutes. This warm up period is necessary for proper operation of the Reclaimer.
9. To Reclaim Liquid: Open the liquid receiver's service valve to allow liquid refrigerant to flow from the access fitting to the charging manifold. Open the manifold's high side valve.

To Reclaim Gas: Open the suction and discharge service valves on the system. Open the manifold's high and low side valves.

10. Open the Reclaimer's refrigerant OUTLET (ROV) valve. Close the EQUALIZATION (EV) valve.

Reclaiming Liquid: Crack the refrigerant INLET (RIV) valve open. Liquid refrigerant from the receiver will start flowing into the Reclaimer. After about five (5) minutes of operation, open the INLET (RIV) valve all the way. Opening the valve too far or too soon can slug liquid to the compressor.

Reclaiming Gas: Open the INLET (RIV) valve all the way.

11. As the last of the liquid refrigerant is being reclaimed from the receiver, open the low side gauge valve on the service manifold. This point can be determined by observing the low side gauge reading. During liquid reclaiming the gauge will read approximately 60 to 70 PSI (40 to 50 with R-12). When the reading starts dropping steadily below this point, most of the liquid has been reclaimed and the low side valve can be opened. Pressures on all gauges will drop until the Reclaimer shuts down automatically. The low side gauge should read 0 to 10 inches vacuum at shutdown. When reclaiming gas the gauges will generally show a steady drop in pressure until shutdown.
12. Close INLET (RIV) and OUTLET (ROV) valves on the Reclaimer. Turn the POWER switch OFF. If system pressures rise on the charging manifold gauges, this indicates that there is still refrigerant in the system. The size of the system will determine how long it takes for the system pressures to rise on the gauge set. On smaller systems the pressures will rise relatively quickly. Larger systems will take longer. If frosting occurs on any of the system components, the presence of liquid refrigerant under low temperature and pressure is indicated. It may be necessary to allow the system temperature to rise in order to complete reclaiming.
13. If the pressures do rise significantly:
  - A) Open the EQUALIZATION (EV) valve and allow the Reclaimer pressures to equalize.
  - B) After they equalize, turn the POWER switch ON.
  - C) Open the refrigerant OUTLET (ROV) valve.
  - D) Close the EQUALIZATION (EV) valve.
  - E) Open the INLET (RIV) valve.
  - F) Repeat steps 11 and 12.
14. After reclamation is complete, close all valves on the charging manifold, reclaimer, storage tank and system.
15. Drain contaminated oil from the oil trap of the Reclaimer. The Oil Trap removes contaminated oil from the refrigerant being reclaimed and should be drained after every use. The drain fitting is located on the back of the unit between the filter shells. The refrigerant pressure in the Reclaimer will push the oil through the fitting

when the valve core is depressed. Use caution when draining the oil. Measure the amount of oil to determine the approximate amount of oil removed from the system. Add new refrigeration oil to the system to replace the contaminated refrigerant removed.

## HIGH PRESSURE SAFETY SWITCH

The Reclaimer has a built-in high pressure switch that will shut down the Reclaimer should a storage vessel become overfilled. This feature is a safety feature only and should not be used on a regular basis for filling storage tanks. It will not prevent overfilling of the storage tank, but will shut down the Reclaimer when the pressure in the tank exceeds 350 PSI. The overfilling of any storage tank beyond its rated capacity can cause the tank to explode or burst.

If the unit shuts down:

1. Close INLET (RIV), OUTLET (ROV) and storage tank valves.
2. Turn the Reclaimer POWER switch OFF.
3. Open the EQUALIZATION (EV) valve.
4. See procedure for changing tanks.
5. Remove excess refrigerant from overfilled tank.

## CHANGING STORAGE TANKS DURING RECLAIMING

1. Close INLET (RIV) and OUTLET (ROV) valves. The Reclaimer should remain ON, unless it has shut down on storage tank overfill in which case the POWER switch should be turned OFF.
2. Close the valve on the storage tank.
3. Open the EQUALIZATION (EV) valve.
4. Disconnect full storage tank using proper safety precautions.
5. Connect precharged tank using the vapor valve. The hose must be evacuated to remove air and moisture. Valve off vacuum pump.
6. If the Reclaimer is ON:
  - A) Open the OUTLET (ROV) and storage tank valves.
  - B) Close the EQUALIZATION (EV) valve.
  - C) Open the INLET (RIV) valve.

If the Reclaimer is OFF:

- A) Turn POWER switch ON and allow unit to run for 3 to 5 minutes.
  - B) Open the OUTLET (ROV) and storage tank valves.
  - C) Close the EQUALIZATION (EV) valve.
  - D) Open the INLET (RIV) valve.
7. If storage tank is overfilled, remove excess refrigerant.

## MAINTENANCE

1. Replace the inlet filter after processing 450 lbs. refrigerant and the outlet filter after processing 2,250 lbs. The filters should also be replaced after reclaiming refrigerant from systems with electrical burnouts.

These figures may change depending on extent of contamination and or condition of moisture indicator.

2. Replace filter cores with Sporlan RC-4267 or an equivalent 42 series filter. Reassemble the components and tighten the bolts in an alternating sequence. Tighten evenly around the cover 14 - 16 foot-pounds.
3. Oil the fan motor every six to twelve months.

## ACCESSORIES

PART NUMBER:	DESCRIPTION:
6025	25 lb. Refillable Storage Tank
6042	Set of Two (2) Replacement Filter Cores
6050	50 lb. Refillable Storage Tank

## LIMITED WARRANTY

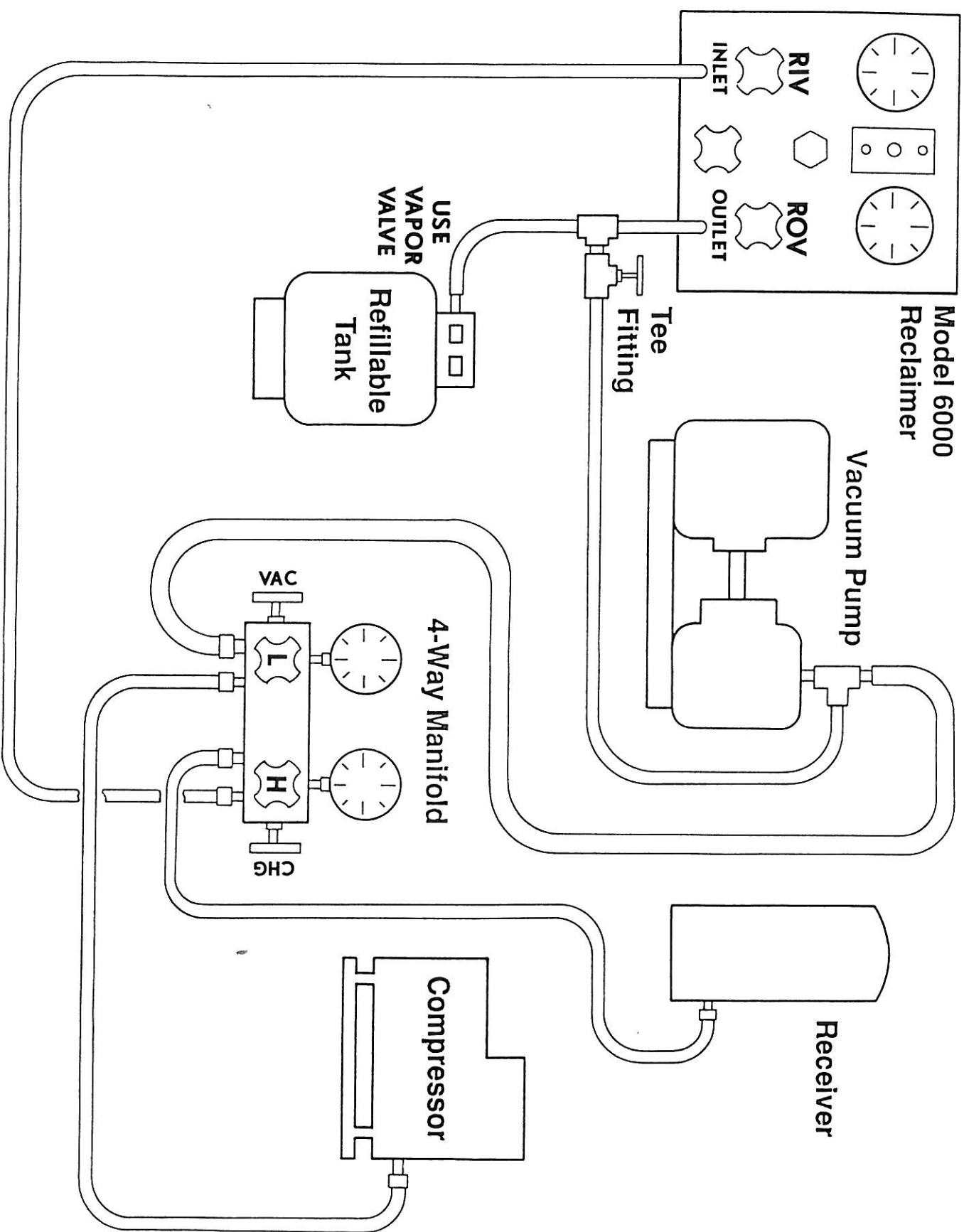
All products sold are warranted against defects in workmanship or materials under normal use for one year. Manufacturer assumes no liability on the actual use of this equipment. Components subject to normal wear and tear such as filter and indicator cores are specifically excluded from this warranty. 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 CCR2



Model 6000  
Reclaimer

Vacuum Pump

Receiver

4-Way Manifold

Compressor

Refillable  
Tank

MODEL 6000 CONNECTIONS

## MODEL 6080 RECLAIMER CART KIT FOR MODELS 6000 AND 8000

This kit contains the following items:

- 1 pc. Cart Handle
- 1 pc. 5" Front Caster on mounting plate
- 2 pc. 10" Wheels
- 4 pc. (ea.) Mounting Bolts, Nuts and Washers
- 8 pc. Rivets
- 4 pc. 1/2 in. Collars
- 4 pc. Hex Head Screws

### PROCEDURE:

When mounting the cart handle, the recycling unit should be placed on its side with the Compressor Sight Glass pointing up. The sight glass is on the right (outlet) side of the cabinet toward the bottom. This position will prevent oil from running out of the compressor.

- 1) Remove the four small casters from the bottom rails of the Reclaimer by drilling out the rivets with a 3/16" drill bit.
- 2) Remove the rear (closest to the filters) chrome handles. Use a 9/16" wrench to remove the nuts on the outside of the rail. Pull the handle out until stopped by the nuts on the inside of the rail. Cut or saw the handles off as close to the rail as possible. The pieces of handle inside the rail can be removed by tipping the reclaimer.
- 3) Attach the cart handle to the rails using the mounting hardware provided. Do not tighten the nuts until all the bolts are in place. Tighten until snug. Overtightening can cause the rails to distort.
- 4) Align the front caster assembly with the holes in the rail. Attach the caster with the supplied rivets.
- 5) Before attaching the wheels, remove the two philips head screws on each side of the lower rear corner of the unit. Replace with the supplied hex head screws. This will allow the Reclaimer top to be removed once the wheels are installed.
- 6) Slide a collar on the axle. This acts as the inner stop for the wheel. Tighten with 1/8 in. allen wrench. Slide the wheel on the axle and use another collar to keep the wheel in place.
- 7) The front caster can be locked by pushing down on the brake bar on the side of the caster.

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