

CPS[®]

Pro-Set[®] TR21 SERIES

2 Cylinder Commercial Refrigerant Recovery System



GENERAL INFORMATION

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Introduction

Congratulations on your purchase of the all new **Pro-Set® TR21** series recovery unit. You've selected the best performing, the most reliable, and the most compact and light weight recovery unit on the market.

Features:

- Maintenance free oil-less compressor design
- Aesthetically unique industrial type styling
- Precision machined from aluminum and steel components
- Permanently lubricated and sealed main bearings
- Improved piston seal design for less leakage and deeper vacuums
- 550 psig high pressure cutoff switch with LED indicator
- Cleanable 100 mesh inlet filter
- Weighs less than 25 lbs.
- Fastest recovery rates in it's class
- Patent pending cooling system design improves compressor longevity
- Patent pending suction and discharge valve design for faster recovery
- Patent pending crankshaft design for improved reliability
- Patent pending head design for superior performance
- Other patents pending

This manual contains important information on the proper procedures for operating this equipment. Please pay close attention to the: **Safety Information, Warnings, and Cautions** provided throughout this manual.

ALWAYS REMEMBER "SAFETY FIRST"

GENERAL INFORMATION

General Safety Instructions

ONLY QUALIFIED SERVICE PERSONNEL SHOULD OPERATE THIS UNIT. SOME COUNTRIES MAY REQUIRE THE USER TO BE LICENSED. PLEASE CHECK WITH YOUR LOCAL GOVERNMENT AGENCY.

DANGER - The recovery tank used with this unit contains liquid refrigerant. Overfilling of the recovery tank may cause a violent explosion resulting in severe injury or even death.

As a minimum, use a scale to continuously monitor the recovery tank weight.

DANGER - Avoid breathing refrigerant vapors and lubricant vapor or mist. Breathing high concentration levels may cause heart arrhythmia, loss of consciousness, or even cause suffocation.

DANGER - ELECTRICAL SHOCK

HAZARD - Always disconnect power source when servicing this equipment.

DANGER - EXPLOSION RISK - Do not recover flammable refrigerants.

CAUTION - All hoses may contain liquid refrigerant under pressure. Contact with refrigerant may cause frostbite or other related injuries. Wear proper personal pro-

TECTIVE equipment such as safety goggles and gloves. When disconnecting any hose, please use extreme caution.

CAUTION - Avoid breathing refrigerant vapors and/lubricant mist. Exposure may irritate eyes, nose, throat and skin. Please read the manufacturers Material Safety Data Sheet for further safety information on refrigerants and lubricants.

CAUTION - To reduce the risk of fire, avoid the use of extension cords thinner than NO. 14 awg. (2,5mm²) to prevent the overheating of this cord please keep length to a minimum.

CAUTION - Do not use this equipment in the vicinity of spilled or open containers of gasoline or other flammable substances. Make certain that all safety devices are functioning properly before operating the equipment.

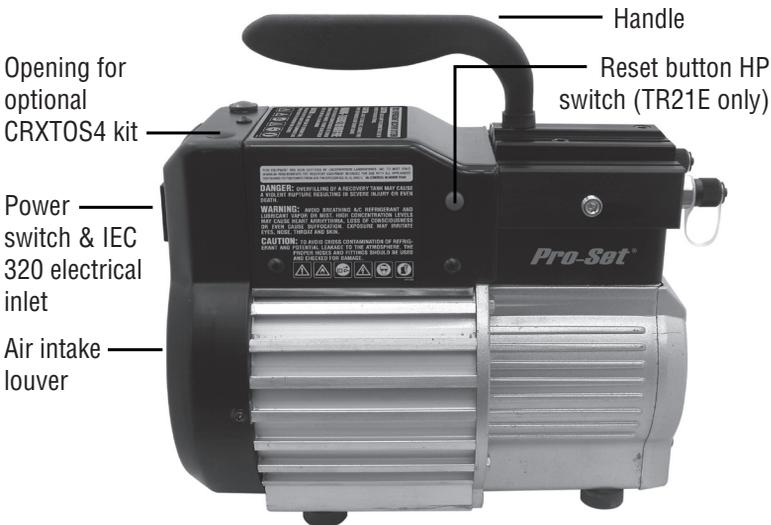


GENERAL INFORMATION

Specifications					
Model Number	TR21	TR21C	TR21E	TR21J	TR21S
Compressor Type	2 Cylinder Oil-less Reciprocating Compressor				
Dimensions	15cm (6") Wide x 30cm (12") Long x 23cm (9") High				
Weight	11.0 kg/24.3 lbs				
Operating Temperature Range	0°C (32°F) to 49°C (120°F)				
Power Source	115 V 50/60 Hz	220-240 V 50/60 Hz 1PH	100 V 50/60 Hz 1PH	220-240 V 50/60 Hz 1PH	
Power Consumption	850 W				
Filtration	Cleanable 100-mesh screen integrated into Suction Port				
Overload Protection	Motor Thermally Protected				
High Pressure Shut-Off	550 psig Auto Reset	450 psig Auto Reset	525 psig (38 bar) Manual Reset	550 psig Auto Reset	
Refrigerants	R-12, R-134a, R-22, R-401A, R-401B, R-401C, R-402A, R-402B, R-404A, R-406A, R-407A, R-407B, R-407C, R-407D, R408A, R-409A, R-410A R-411A, R-411B, R-412A, R-500, R-502, R-507, R-509				
Flow Rate @ 60Hz, reduce 15% for 50Hz					
Direct Vapor	Up to 67 kg/hr-Up to 2.5 lb/min				
Direct Liquid	Up to 326 kg/hr-Up to 12 lb/min				
Push-Pull Liquid	Up to 922 kg/hr-Up to 34 lb/min				

GENERAL INFORMATION

TR21 Unit Layout



OPERATION

Operation Direct Vapor or Liquid Recovery

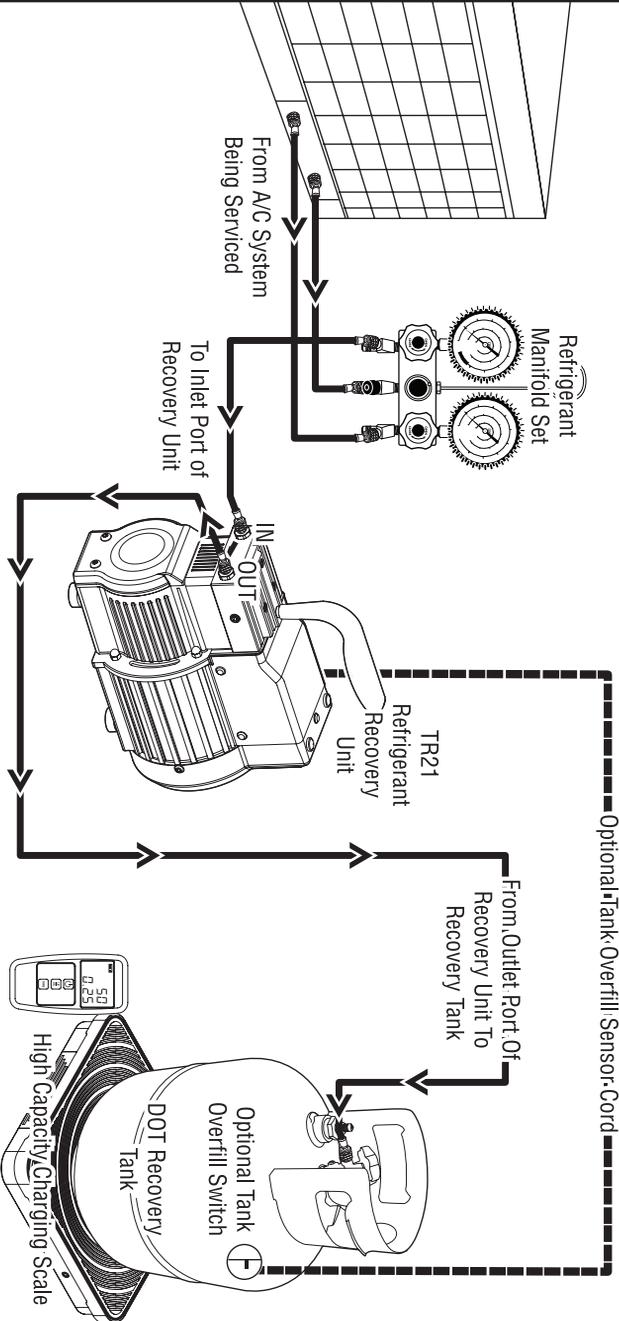
The following is recommended to maximize recovery rates.

- A. Use the shortest length of 3/8" ID Refrigeration hose on the suction side of the unit.
- B. If the refrigerant is clean, remove all suction side filters, screens, etc...
- C. Remove all Schrader type valve cores and any valve depressors from the hoses and service valves.
- D. Use an evacuated DOT tank.
- E. If the unit trips off on High Pressure, change the recovery cylinder.
- F. When recovering large amounts of R410a or if recovering under very high ambient temperatures, we suggest our accessory the MT69.

1. Connect the unit as shown in **Diagram - 1**. The technician will need to use a refrigerant manifold and one spare hose. The manifold should be connected between the unit being serviced and the TR21 **IN** port. The spare hose should connect from the TR21 **OUT** port to an evacuated DOT recovery tank vapor valve. **Note: The recovery tank must be rated for (38 bar) 550 PSI.**
 2. Open the vapor valve on the DOT recovery tank.
 3. Keep the manifold valves closed at this time.
 4. Push the main power switch "**ON**".
 5. Once unit has started, open both **HI & LO** manifold valves to start the refrigerant recovery flow.
- Note: The TR21 is designed to directly recover large amounts of liquid refrigerant. If during vapor recovery process the compressor begins to make a slugging or hammering noise, meter the incoming liquid refrigerant by closing the low side manifold valve until the noise subsides.**
6. The TR21 will run continuously. When a 10" hg. vacuum is observed on the low side manifold gauge, close both the **LO & HI** side manifold valves off.
 7. If the pressure on the HI side manifold gauge starts to rise, repeat steps **4-7**. If HI side manifold gauge remains in a vacuum, close all tank, manifold and hose valves. Re move discharge hose from TR21 outlet port. **Recovery and Self-Clearing are now complete.**

OPERATION

Diagram - 1



OPERATION

Operation High Speed Direct Liquid Recovery

The following is recommended to maximize recovery rates.

- A. Use the shortest length of 1/4" ID Refrigeration hose on the suction side and discharge side of the unit.
- B. If the refrigerant is clean, remove all suction side filters, screens, etc...
- C. Remove all Schrader type valve cores and any valve depressors from the hoses and service valves.
- D. Use an evacuated DOT tank.
- E. Install a hose between the DOT recovery tank and vapor service valve on the A/C system being serviced. (See Diagram - 2)
- F. Use 90lb DOT recovery tank or larger to minimize tank change over.

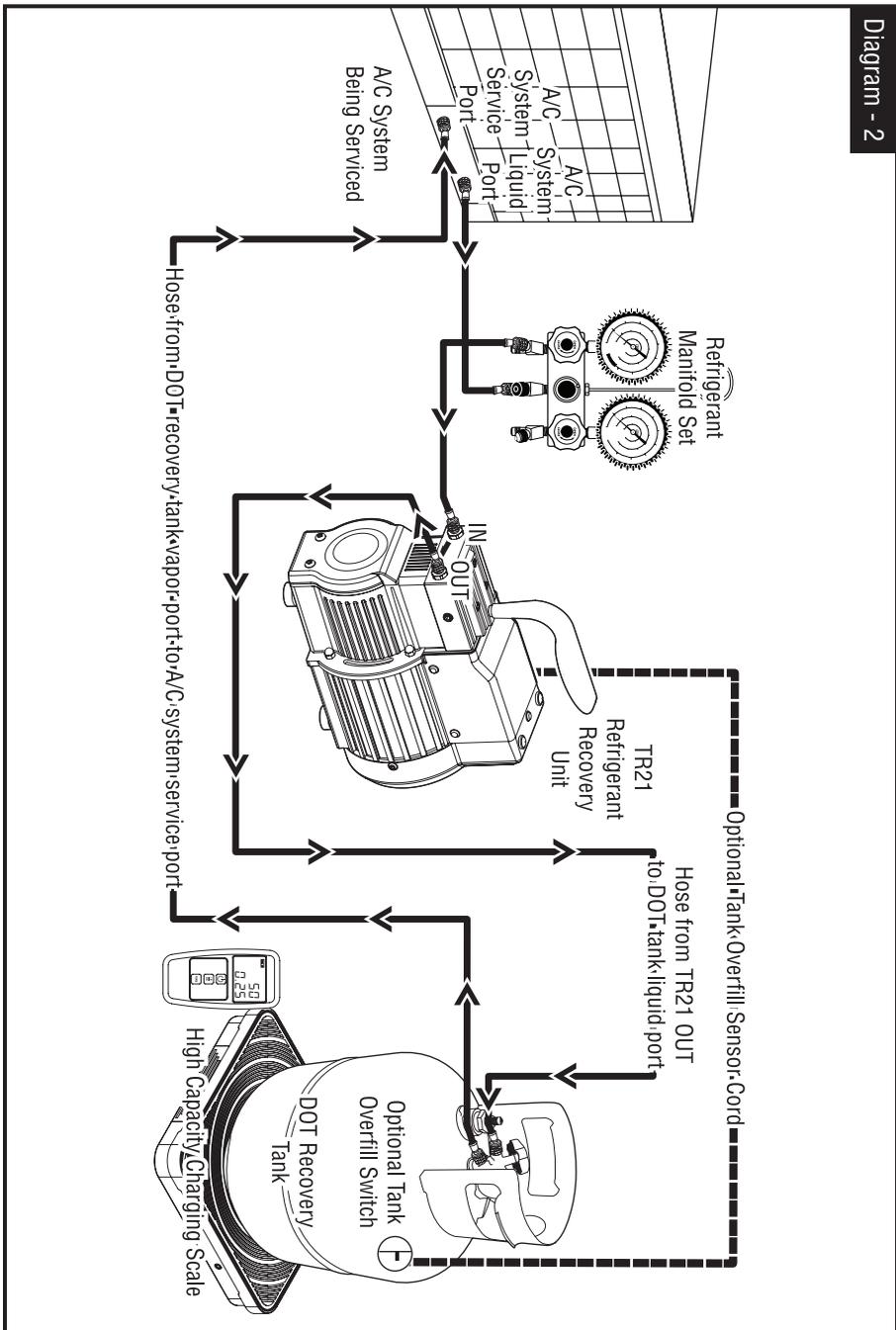
1. Connect the unit as shown in **Diagram - 2**. The technician will need to use a refrigerant manifold (with sight glass) and two spare hoses. The manifold should be connected between the unit being serviced and the TR21 **IN** port. Connect a refrigerant hose from the TR21 **OUT** port to an evacuated DOT recovery tank liquid valve. Connect another refrigerant hose from the DOT tank vapor port to a service port of the unit being serviced. **Note: The recovery tank must be rated for (38 bar) 550 PSI.**
2. Open both the vapor and liquid valves on the DOT recovery tank.
3. Keep the manifold valves closed at this time.
4. Push the main power switch "**ON**".
5. Once unit has started, open the **LO** manifold valve on the manifold to start the liquid refrigerant flow to the TR21. Monitor the liquid refrigerant flow in the manifold sight glass.

Note: The TR21 is designed to directly recover large amounts of liquid refrigerant. If during vapor recovery process the compressor begins to make a slugging or hammering noise, meter the incoming liquid refrigerant by closing the low side manifold valve until the noise subsides.

6. Once liquid refrigerant is no longer present in the manifold sight glass, close the DOT recovery tank vapor valve. This will transition the unit into direct vapor recovery.
7. Allow the TR21 to run continuously. When a 10" hg. vacuum is observed on the low side manifold gauge, close both the **LO** & **HI** side manifold valves off.
8. If the pressure on the **LO** side manifold gauge starts to rise, open **LO** side manifold valve and restart the TR21. If the LO side manifold gauge remains in a vacuum, close all tank, manifold and hose valves. Remove discharge hose from TR21 outlet port. **Recovery and Self-Clearing are now complete.**

OPERATION

Diagram - 2



OPERATION

Operation Push-Pull Liquid Recovery

The following is recommended to maximize recovery rates.

- A. Use the shortest length of 3/8" ID refrigeration hose on the suction side of the unit to the vapor port on the tank.
- B. Use 3/8" ID refrigerant hoses from the system liquid service valve to the liquid port on the tank.
- C. If the refrigerant is clean, remove all suction side filters, screens, etc...
- D. Remove all Schrader type valve cores and any valve depressors from the hoses and service valves.
- E. Use 90lb DOT recovery tank or larger to minimize tank change over.

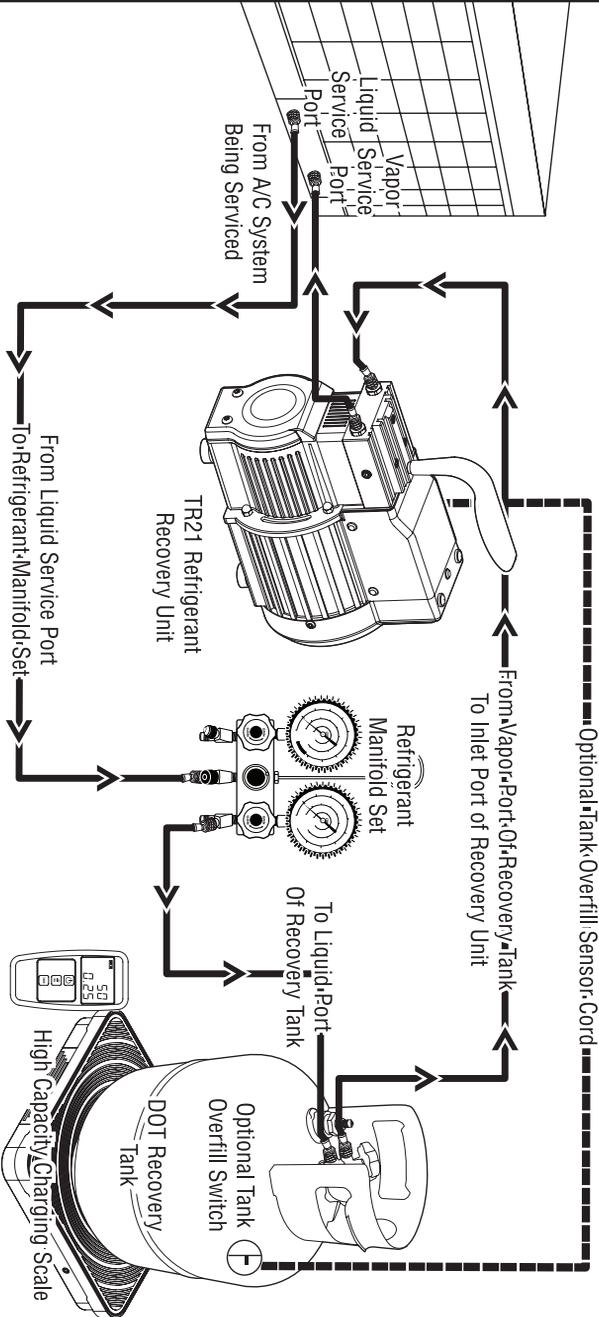
1. Connect the unit as shown in **Diagram - 3**. The technician will need to use a refrigerant manifold with sight glass and two spare hoses. The manifold should be connected between the liquid service port of the system being serviced and the DOT Recovery tank liquid valve. One spare hose should connect from the TR21 **IN** port to the DOT recovery tank vapor valve. The other spare hose should connect from the TR21 **OUT** port to the vapor service port on the system being serviced.

Note: The DOT recovery tank must be rated for (38 bar) 550 PSI.

- 2. Close the manifold **LO** side valve. Open the manifold **HI** side valve. Open the DOT recovery tank's liquid valve.
- 3. Push the main power switch "**ON**".
- 4. Open the DOT recovery tank vapor valve. A Push-Pull flow is now enabled.
- 5. Monitor the scale for DOT recovery tank capacity.
- 6. Monitor the sight glass in the manifold for the presence of liquid refrigerant. Once liquid refrigerant is no longer being pushed out of the A/C system being recovered, close the vapor valve on the DOT recovery tank. Let run for 30 seconds, then turn off unit.

Note: The Push-Pull recovery does not completely recover all the refrigerant. It will be necessary to proceed to Direct Vapor Recovery Operation (page 6) to complete the recovery process.

Diagram - 3



OPERATION

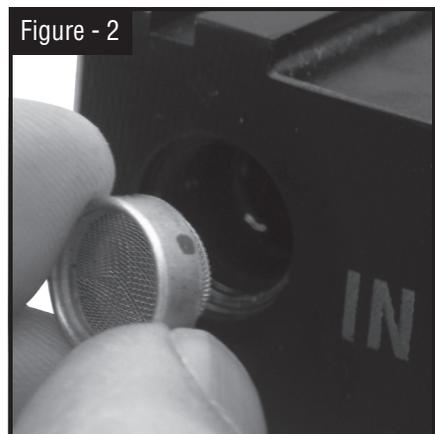
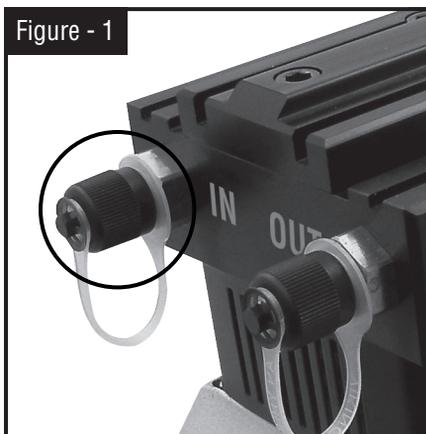
Routine Maintenance

Filter Maintenance: The TR21 is equipped with a 100-mesh screen filter. This filter should be checked periodically. A partially clogged filter will slow down the recovery rate of this unit.

Check the filter cartridge as follows:

1. Use a 5/8" socket or boxed end wrench to remove the **IN** port as shown in **Figure - 1**.
2. Remove the suction port-filter cartridge as shown in **Figure - 2**.
3. Either clean the current cartridge or replace with new cartridge (CPS P/N CRXF3).
4. Inspect O-ring. Re-lubricate with compressor oil or equivalent.
5. Place filter cartridge back into suction port fitting.
6. Hand tighten this assembly back onto the TR21.
7. Use a 5/8" socket or boxed end wrench to tighten 1/8 of a turn. Do not over tighten; damage to the O-ring may occur.
8. Check the connection for leaks.

Piston Seal Maintenance: In cases where a customer is using our unit for virgin refrigerant recovery, it is recommended to add .25 ounce of refrigerant oil to the inlet port before each use.



WARRANTY

CPS® Products, Inc. guarantees that all products are free of manufacturing and material defects to the original owner for one year from the date of purchase. If the equipment should fail during the guarantee period it will be repaired or replaced (at our option) at no charge. This guarantee does not apply to equipment that has been altered, mis-used or solely in need of field service maintenance. All repaired equipment will carry an independent 90-day warranty. This repair policy does not include equipment that is determined to be beyond economical repair.

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