

TINY-R A2L refrigerant recovery unit

Instruction manual



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Introduction

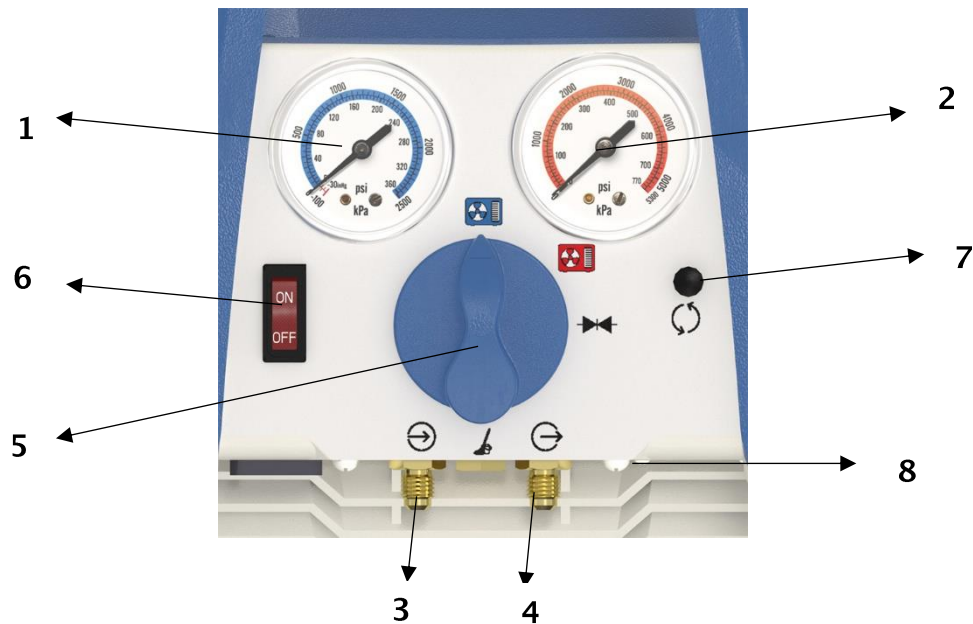
Thank you for selecting our product!

For correct installation and operation of this TINY-R, please read this instruction manual carefully in advance. If you resale or sell this TINY-R, please provide this instruction manual together with the TINY-R so that the end user can learn application method and cautions.

General safety guidelines

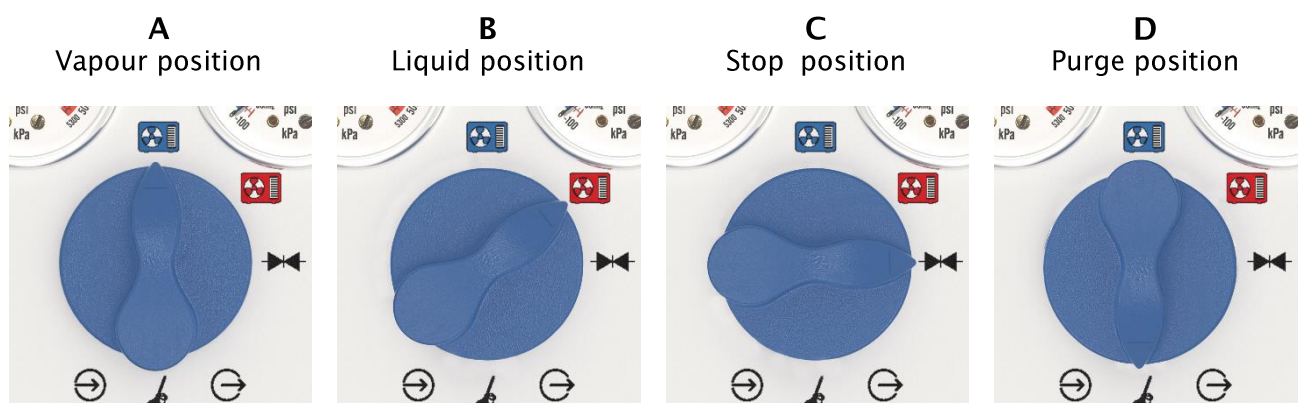
1. Read all safety guidelines and operating instructions before operating this TINY-R.
2. Only qualified technicians should operate this TINY-R!
3. Always wear safety goggles, respiratory protection and protective gloves when working with refrigerants to protect your skin and eyes from refrigerant gases and refrigerant liquids. Avoid getting in touch with caustic liquids or gasses.
4. Do not expose this TINY-R to the sun or rain.
5. Be sure that any room where you are working is thoroughly ventilated.
6. Use ONLY authorized refillable refrigerant tanks. It requires the use of recovery tanks with a minimum of 4000 KPa (40 bar) working pressure.
7. Do not overfill the storage tank. Tank is full at 80 % of its volume. There should be enough space for liquid expansion. Overfilling of the tank may cause a violent explosion. A scale must be used to avoid overfilling the storage tank.
8. Before recovering the refrigerant, the tank should achieve a vacuum level of -100 KPa = -0,1 MPa (Mega pascal) = -75cm Hg = -1 bar.
9. When the TINY-R is not used, all valves should be closed. Air or moisture in the air may harm the recovery result and will shorten the service life of the TINY-R.
10. When using an extension cord it should be a 14A WG minimum and no longer than 7,6 meter. Longer cords will cause a voltage drop that could damage the compressor.
11. The TINY-R is supplied with 1 filter and connection hose. A filter drier must always be used and should be replaced frequently. Each type of refrigerant must have its own filter. To assure proper operation of the TINY-R, please use only a 1/4" filter driers. High quality dry filters will bring high quality services.
12. The high pressure cut out switch (7) must be manually reset and this can be done when the pressure in the TINY-R has come down to 2900 KPa (29 bar) or lower.
To reset:
 - Switch of the TINY-R
 - Make sure the internal pressure is reduced to 2900 KPa (29 bar) or lower.
 - Press the high pressure cut out switch (7).
 - Turn on the power.
 - The TINY-R / compressor should run again.When you have had a High pressure cut out of the TINY-R, you should find the reason for it and solve it.
High pressure cut out can be a result of following problems:
 - The inlet valve of your recovery bottle is closed: open this valve.
 - The temperature of the recovery bottle is too high: use the storage tank cooling method to reduce the recovery bottle pressure.
13. If the tank pressure exceeds 2070 KPa (20,7 bar), use the storage tank cooling method to reduce the tank pressure.
14. To maximize the recovery rate, use the shortest possible length of service hose. A hose no longer than 1,5 meter with a minimum inside diameter of 4mm should be used.
15. When recovering large amounts of liquid, use the liquid push/pull method.
16. After recovering, make sure there is no refrigerant left in the TINY-R. Read the self-purging method carefully. Liquid refrigerant that has been left in the TINY-R may expand and destroy or harm certain components.
17. If the TINY-R is to be stored or not used for any period of time, we recommend that it be completely evacuated and purged with dry nitrogen.
18. Grounding and power cord connection or damage: use only equipment with a properly wired outlet or required ampacity. Any connection or power cord damage requires replacement by factory authorized technicians.
19. Do not recover flammable refrigerants such as R290, R600A or NH3.
20. Please wash the inlet screen frequently and keep it clean. If it is damaged please replace it by a new one.

Description of front panel



- 1. Suction pressure gauge
- 2. Discharge pressure gauge
- 3. Inlet port 1/4" SAE male flare
- 4. Outlet port 1/4" SAE male flare
- 5. Function switch
- 6. ON/OFF switch
- 7. High pressure cut out switch (pressostat)
- 8. Switch 110V/220V

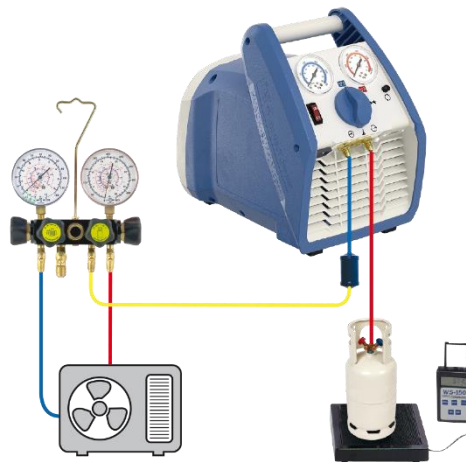
Function switch positions



Standard liquid / vapour recovery method

1. Make sure the TINY-R is in good operating condition.
2. Make sure all connections are correct and tight. Put the recovery bottle on a weighing scale for manual overfill protection (See below picture).
3. Put the function switch (5) in the stop position (C)
4. Open the red valve on your manifold gauge set. Opening the liquid port will allow you to remove the liquid from the system first.
5. Open the REF valve on the manifold.
6. Connect the TINY-R to a recovery bottle suitable to accept the refrigerant that will be recovered from the HVAC system. Switch the power switch to 'ON' position to start the compressor of the TINY-R.
7. Turn the function switch (5) slowly to the liquid position (B). If the compressor would start to knock, move function switch (5) slightly back towards the STOP position (C) until knocking stops.
8. Run until the liquid recovery has finished, open blue valve on your manifold gauge set and move/turn the function switch (5) to vapour position (A). This will accelerate the recovery speed.
9. Run until desired vacuum is achieved.
10. Close red, blue and ref valve on the manifold.
11. Turn off the TINY-R.
12. Proceed with the self-purge method as explained in the next step.

Caution: Always purge the TINY-R after each use. Failure to purge the remaining refrigerant from the TINY-R could result in the acidic degradation of internal components, ultimately causing malfunction or destruction.



Self-purging method

1. Put the function switch (5) in the purge position (D).
2. Make sure red, blue and ref valve on your manifold are closed.
3. Start the TINY-R and let it run until desired vacuum is achieved. Then the self purging procedure is completed.
4. Close the valve on the recovery bottle.
5. If you are working with hoses that have a ball valve in the end, close these ball valves.
6. Disconnect all hoses carefully and slowly from the TINY-R.
7. Mount the end caps on the inlet and outlet of the TINY-R.

Liquid push/pull method

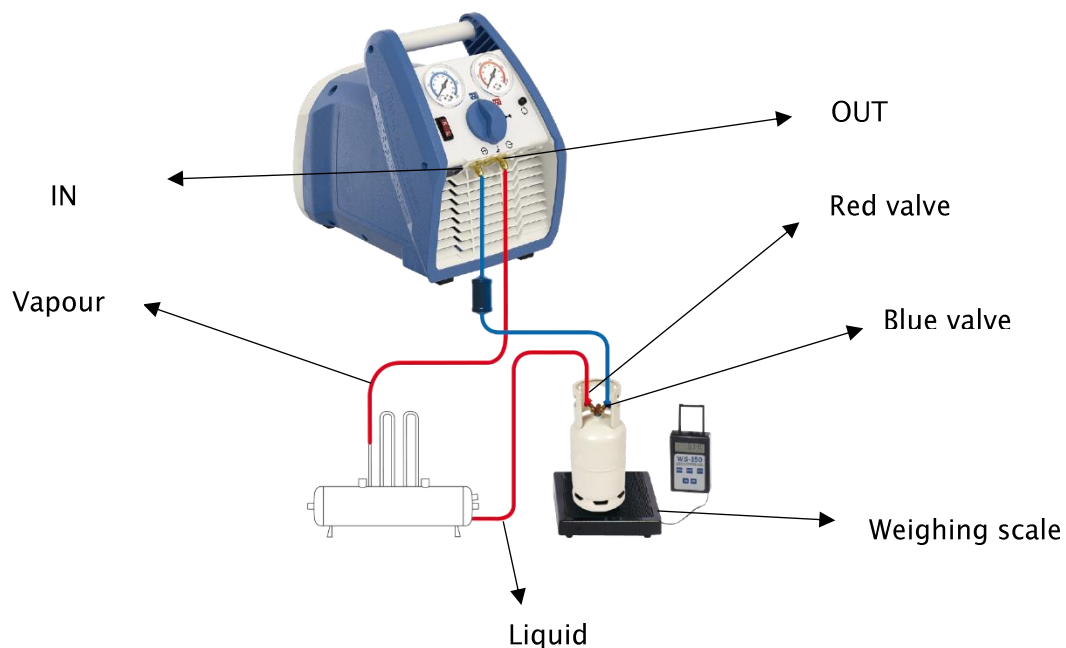
Push/pull method only works with large systems where the liquid refrigerant content is not less than 10 kg.

Caution:

When using the push/pull method, a scale must be used to avoid overfilling the storage tank, once the procedure is started, it can continue and overfill the storage tank even if the tank is equipped with a float level sensor. The procedure can continue even when the machine is turned off. You must manually close the valves on the tank and the TINY-R to prevent overfilling of the recovery tank or bottle.

1. Put the function switch (5) in the liquid position (B).
2. Connect the hoses as shown in below picture.
3. Open all valves on the recovery bottle and hoses.
4. Start the TINY-R.
5. If compressor in the TINY-R would start to knock, move function switch (5) slightly back towards the STOP position (C) until knocking stops.
6. When the readout on the weighing scale does not count up anymore, the liquid push/pull method has been finished.

From this point on please proceed with the standard liquid/vapour recovery method as explained on page 4.



Storage tank cooling method

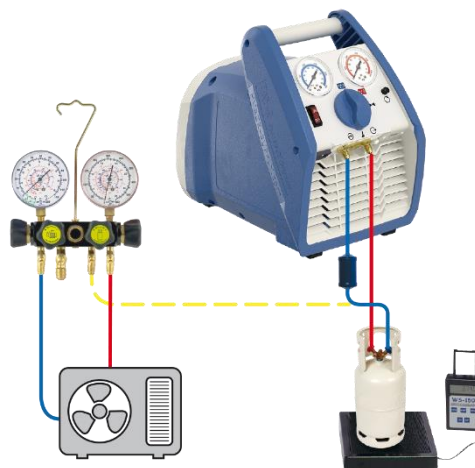
A. Pre-work cooling procedure:

1. To start you must have a minimum of 0,5 kg of liquid refrigerant in the tank.
2. Put the function switch (5) in the vapour position (A).
3. Connect hoses as shown in below picture.
4. Open the Vapour and liquid valve of the recovery bottle.
5. Start the TINY-R.
6. Throttle the red valve on the recovery bottle so that the output pressure is about 700 KPa (7 bar) higher than the input pressure, but never more than 2000 KPa (20 bar).
7. Run procedure until tank is cold.



B. During the recovery process:

1. Connect the vapour side (blue valve) of the recovery bottle with the inlet of the TINY-R.
2. Put the function switch (5) in the vapour position (A).
3. Open the vapour valve (blue) of the recovery bottle (normally during the recovery it is closed).
4. Close the two valves of the manifold gauge.
5. Follow step 5 and 6 of the pre-work cooling procedure. (Storage tank cooling method)



Specifications

Refrigerants:	All CFC, HCFC, HFC and HFO refrigerants in category A1, A2 and A2L (including R32)
Power supply:	100 – 240V / 50–60 Hz (dual voltage, manual switch)
Compressor:	3/4 HP, oil-less, air-cooled
Motor speed:	2300 RPM
Max. current draw:	5A at 220V, 8A at 110V
High pressure shut off:	3860 KPa / 38,6 bar / 560 PSI
Recovery rate:	50 to 72 kg/hour in liquid 3,5 to 5,5 kg/hour in vapor 150 to 230 kg/hour in push / pull
Operating temperature:	0°C to +40°C (32°F to 104°F)
Dimensions:	350 x 220 x 300 mm (L x W x H)
Weight:	8,50 kg

Troubleshooting

Problem	Cause	Action
Compressor does not start:	Power supply cord not attached.	Attach the power supply cord.
	Voltage is not right.	Check the power supply at job site.
	The TINY-R is in high pressure shut off.	Reduce pressure and press the high pressure cut out switch (7) when pressure is below 2900 KPA (29bar).
	The storage tank is full at 80 % volume.	Change for a new storage tank.
Compressor starts, but cuts off within a few minutes:	The valve on the recovery bottle is closed and TINY-R is in high pressure shut off.	Open valve on the recovery bottle. Press the high pressure cut out switch (7) when pressure is below 2900 KPA (29bar).
	The ball valve on the hose connected to the outlet of the TINY-R is closed.	Open valve on the hose.
	Function switch (5) is in Purge position (D).	Rotate function switch (5) to Liquid position (B).
	Failure in motor or other electrical components.	Factory service required.
Recovery process is too slow:	Head pressure is too high (> 20 bar).	Reduce tank temperature with storage tanks cooling method.
	Compressor seals are worn.	Factory service required.
	TINY-R is transferring vapour refrigerant instead of liquid	Make sure your TINY-R is connected to a service point in the RAC system where liquid refrigerant is present.
TINY-R does not pull any vacuum:	Some of the hose connections are not leak tight.	Tighten all hoses correctly.
	Leakage inside the TINY-R.	Factory service required.