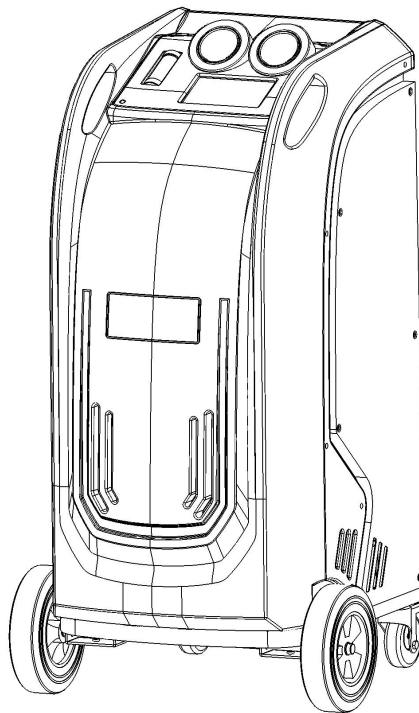


ACentre-20

For HFO-1234yf

USER MANUAL



Congratulation on the purchase of the ACentre-20 Electronic Refrigerant Processor

This is one of the best investments you have made for your workshop. Due to the company continues research and development and the joint effort of design, electronic and mechanical engineers including our sales representatives, air-conditioning manufactures and discussing the needs and issues of various workshop operators, in various countries around the world, we have manufactured one of the world most user-friendly, efficient and smart on-line refrigerant processor. The ACentre-20 refrigerant processor incorporates android platform, thus connecting it on line you will enjoy infinite pleasant surprises. This system will help your technicians in achieving their best capability in diagnosing and rectifying air-conditioning issues by our elaborate on-line training and help materials, thus increasing productivity and profitability for your business. Our company would like to work with you as partners in your business to help you achieve maximum return on your investment, so please do not hesitate to contact us or our distributors, if we can be of any further assistance in relation to this equipment or any air-conditioning related issues. We are here to help you achieve your goal.

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Specifications

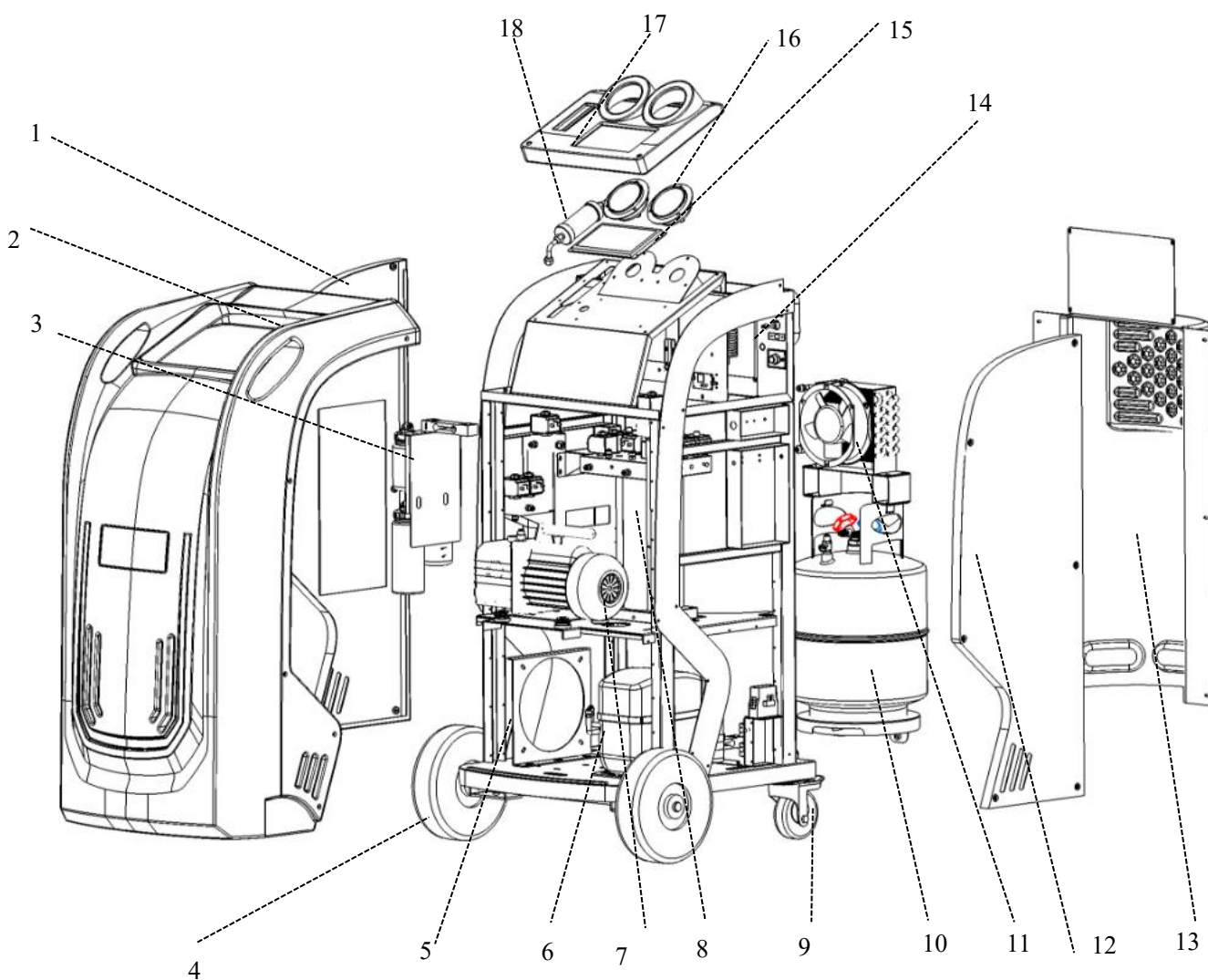
- Packaged machine dimension: 720*780*1285mm
- Unpacked machine dimensions: 644*731*1147mm
- Mains power supply: AC110V±10%~60Hz
- Compressor power: 3/8HP
- Max. refrigerant recovery speed: 0.25Kg/min. Patent pending SRR (Supreme Recovery Rate) system ensures 99% recovery rate
- Vacuum: pump capacity: 120L/min
- Evacuation time selection: 2-60 min
- Two flow-out ventilation fan, each 279CFM, to make air change rate 14m³ per minute in the cabin. Under any circumstances that fan is stopped, the machine will be powered off
- When power switch is turned on, the machine holds on with 30 sec pre-ventilation, to make 7 air changes in the cabin before the machine is powered
- Flush function: 8 minute flush for small and medium-sized A/C, with requirement of min. 4.5KG refrigerant in equipment tank; 16 minute flush for big-sized A/C, with requirement of min. 6KG refrigerant in equipment tank
- Used oil vessel: 400ml capacity, high transparency
- Refrigerant charging speed: Max. 2Kg/Min, liquid charging
- High capacity spin-on filter-drier: 600ml capacity, for recovering totally 100KG refrigerant
- Accuracy of refrigerant cylinder load cell: ±10g
- Accuracy of PAG / POE oil /Used oil bottle load cell: ±5g
- Refrigerant cylinder: 10KG, with heater band
- Machine maximum working pressure: 20bar with electronic high-pressure protection warning and safety release valve
- Automatic Non-condensable purge (NCG) based on R1234yf pressure-temperature nature
- Display: 7" touch screen
- Gauges: High side -1bar~30bar, Low side -1bar~16bar
- Digitally displayed cylinder pressure and temperature, Electronically controlled air purge
- Vehicle A/C database included
- Electronically monitoring and displaying system service intervals
- Thermal printer
- In-built HFO-1234yf refrigerant identification, accuracy 0.1%, identification time 120 seconds

General safety guide

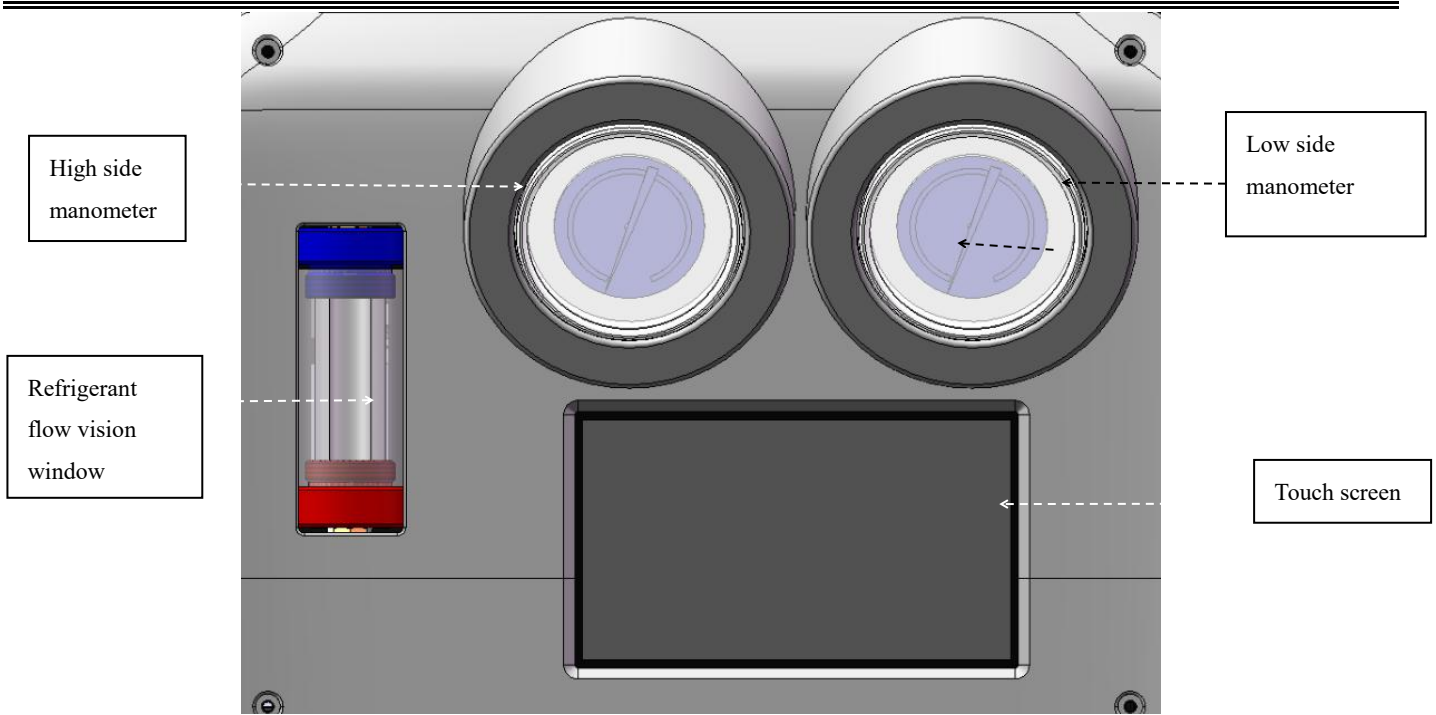
- **This equipment must only be operated by qualified technicians.**
- Read instruction manual carefully before operating this equipment. If there is anything you do not fully understand, please contact your distributor or manufacturer. We like to help.
- The refrigerant storage cylinder contains liquid refrigerant under high pressure. Overfilling of the storage cylinder may cause violent explosion. Do not disable the overfill safety protection of this machine. Always keep the cylinder on the load cell platform whenever the machine is operating.
- Only use cylinder which is supplied with this equipment or recommended by the manufacturer.
- Always use this machine in a well-ventilated area, avoid inhaling refrigerant and/or oil vapors, always read material safety instructions of refrigerant and oil packaging, for related warning and care.
- Under any circumstances that fan is stopped, the machine will be powered off.
- Always switch off the machine and disconnect power cable before removing any covers or servicing this machine, to avoid electric shock which can be fatal.
- Never use compressed air to test for leaks on vehicle or this equipment!
- Wear safety goggles and gloves, to protect eyes and skin from contact with refrigerant. Liquid refrigerant when it comes in contact with the human skin or eyes will cause frostbite and/or blindness. If accidental contact is made with eyes or skin, wash the affected area with plenty of fresh water immediately and contact a doctor if required.
- Avoid using the machine in very hot or flammable areas.
- Store the machine in a well-ventilated cool area when not in use.
- Avoid using extension power cable thinner than 1.5mm² (10amp current carrying capacity).
- Keep gasoline or other flammable substances away from the equipment.
- Once a leak is detected in the unit, switch off the equipment by pressing the Emergency stop button and contact your distributor or service dealer.

CAUTION-SHALL BE OPERATED BY QUALIFIED PERSONNEL

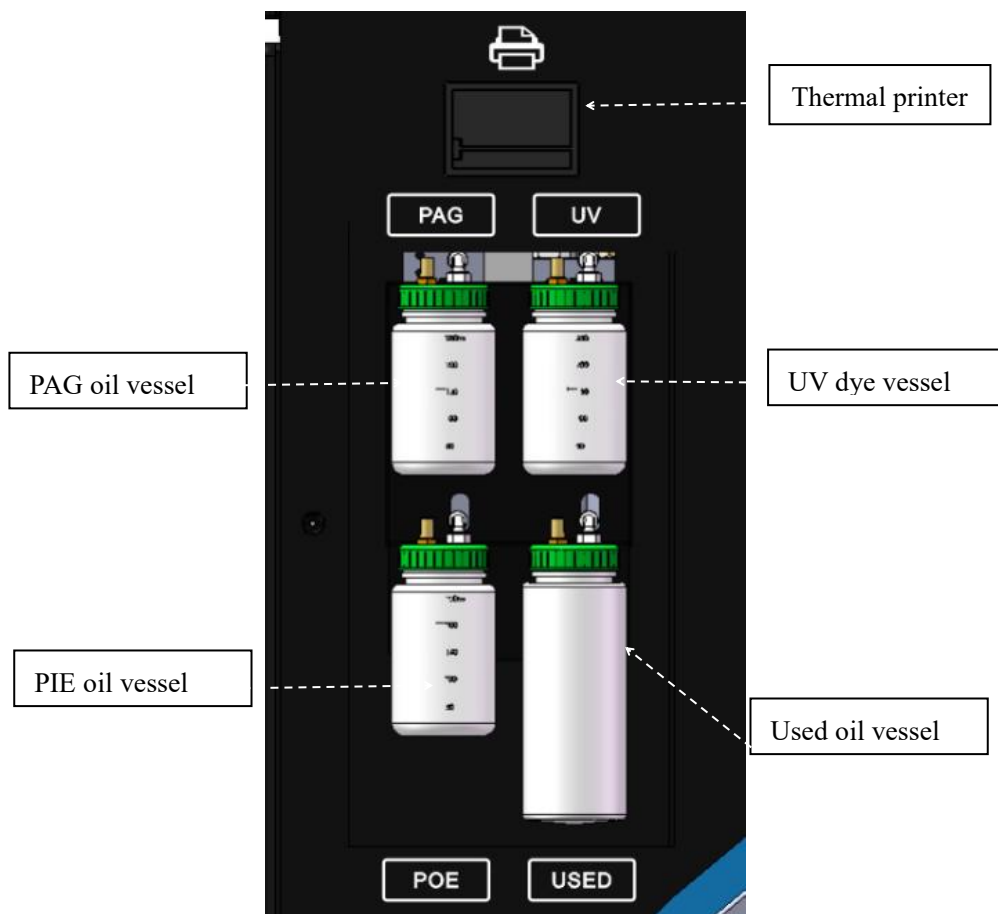
Component identification



1	Left side cover	2	Front cover	3	Oil vessel support
4	Front wheel (big)	5	Compressor ventilation fan	6	Compressor
7	Vacuum pump	8	Main manifold module (solenoids, pipelines and oil separators)	9	Rear wheels (small)
10	Refrigerant storage tank	11	Condenser and ventilation fan	12	Right cover
13	Rear cover	14	PCA board	15	Touch screen
16	Manometers	17	Control panel cover	18	Refrigerant flow vision window



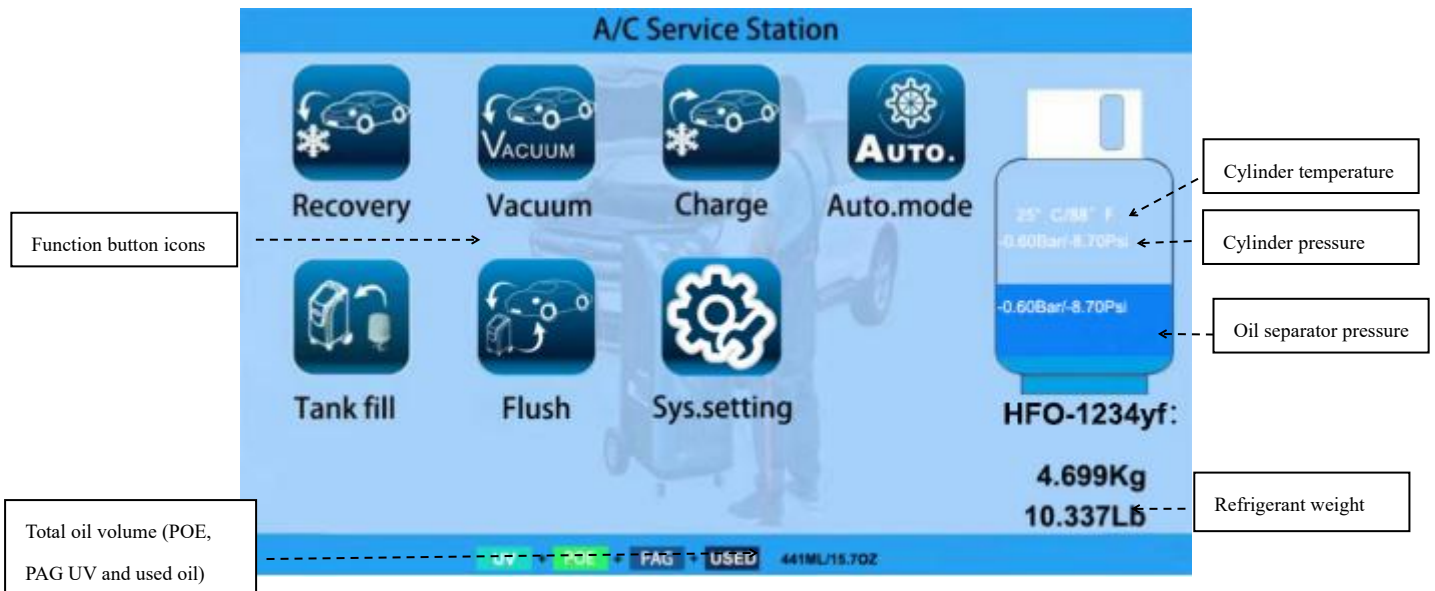
Equipment front view (Control panel)



Left side view



Back side view



Main menu

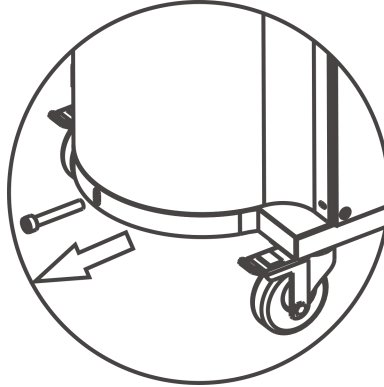
Function table

Main functions	Recovery	Recovers and purifies refrigerant from automotive A/C system and it is then stored into the machine internal storage cylinder for re-use. After the system pressure is decreased to 0bar, the equipment starts to run the patent pending SRR (Supreme Recovery Rate) system: gas refrigerant at discharge side of the equipment compressor is injected into the automobile A/C system to circulate to help the cold liquid refrigerant in the vehicle evaporate, so as to achieve an extremely high recovery rate.
	Evacuation	Removes air and moisture from the vehicle A/C system. At the end of the function, prompts to add new oil with separate oil injection tool.
	Charging	Electronically charges the selected amount of oil and refrigerant into the vehicle A/C system. “Normal charging” and “high voltage charging” can be selected, for fuel and hybrid/electric vehicles respectively
	Tank fill	Transfers liquid refrigerant from an external cylinder to the machine internal storage cylinder
	Flushing	“Small and medium-sized A/C” and “Big-sized A/C” can be selected, for different A/C system, to realized complete compressor oil extraction from A/C loop for oil replacement
	Fully automatic function selection	The machine will perform all the selected functions in a fully automatic sequence. The machine will stop automatically once all the selected functions or function have been completed
System setting	Language	Selecting language to suit
	Calibration	Calibrate refrigerant cylinder load cell, oil vessels load cells, pressure transducer. An additional dynamic password is needed to enter this setting, only professional technician can access. Mis-operation may cause equipment damage
	Component	Activate and des-activate each electric component of the equipment. An additional dynamic password is needed to enter this setting, only professional technician can access. Mis-operation may cause equipment damage
	Altitude	For equipment with integrated identifier or leak detector, altitude needs to be entered to get accurate function
	Unit	Selecting metric or imperial units of measurement
	Empty weight setting	Set empty refrigerant cylinder or refrigeration oil zero (tare) weight
Training	Technical and marketing training	The APP offers abundant training materials, for marketing and technical purposes, in form of video. You need to get access to internet to get access to these materials

Preparations before operation

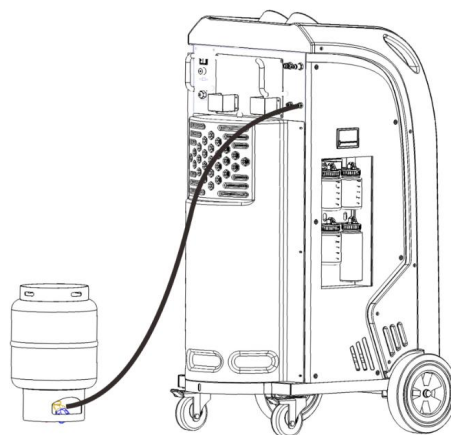
1. Unlock tank load cell

Unlock the load cell platform, by removing the safety locking **bolt** as shown below and save the bolt for future use. PLEASE NOTE, whenever transporting the machine, re-fit the safety locking bolt to avoid damage to the load cell.



2. Tank fill

Use the adaptor fitting, to connect either HP or LP service hose (blue or red) to external refrigerant cylinder **liquid port** which you will be transferring the refrigerant from. If the refrigerant cylinder has only, **One valve and one port**, invert the cylinder as shown below. If the cylinder has, **Two valves one port**, leave the cylinder upright and open the liquid valve only, if the cylinder has, **Two valves and two ports**, connect the adaptor to the liquid port, leave the cylinder upright and open liquid valve on the cylinder. Set the amount of refrigerant to be transferred into the machine storage cylinder, once the selected amount of refrigerant has been transferred, the machine will instruct the technician to close the liquid valve on the storage cylinder. The machine will then recover the refrigerant left in the service hose which is connected to the transfer cylinder and it will then stop automatically. For more details please refer to “Tank fill” in the operating procedure chapter.

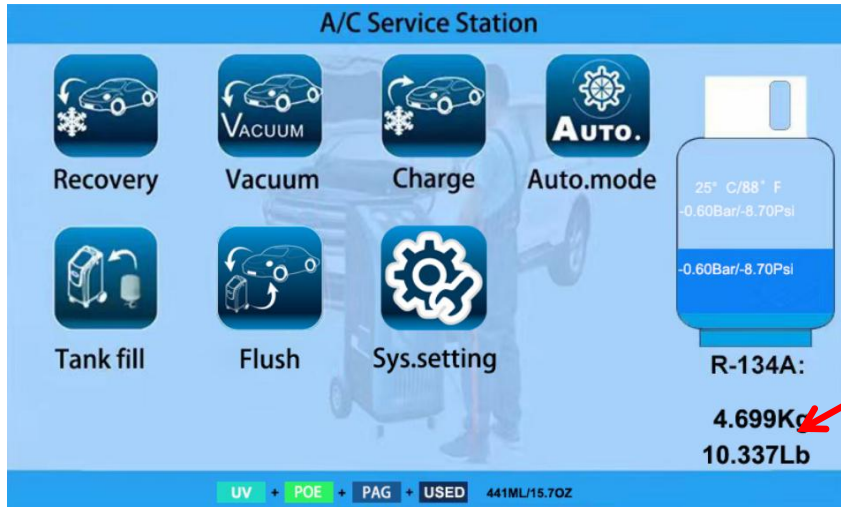


It is recommended to keep the equipment tank have 4-6KG refrigerant if the machine is used for only recovery and recharging; If flush is usually used, keep 6-7KG refrigerant in the equipment tank.

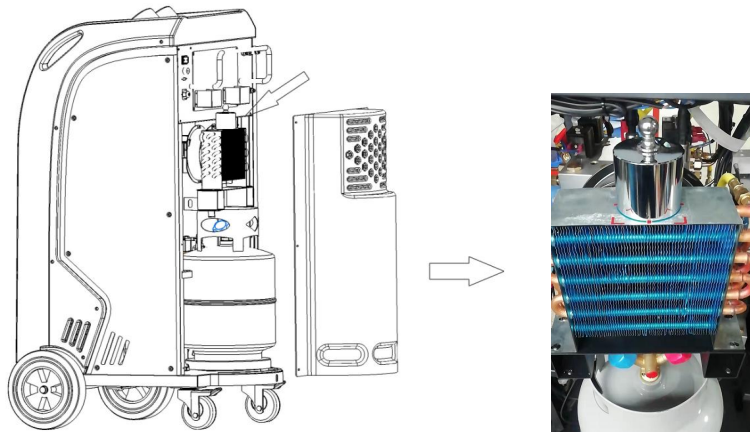
3. Refrigerant load cell accuracy check

The machine includes a 1kg (2.2lb) check weight. To check the the refrigerant load cell accuracy, please follow the procedure below:

1. Turn on the machine, enter the main menu, and record refrigerant weigh value, as A;



2. Remove the back cover of the machine, put the check weight (1kg) exactly on the icon of gravity centre of the condenser.



3. The refrigerant weight value with the check weight, as B
4. Move the check weight slightly in the gravity centre area. If difference between A and B can be reached within 1000 ± 5 grams, the refrigerant load cell is accurate; Otherwise, the refrigerant load cell needs to be calibrated. Please refer to “System setting” - “Calibration” to calibrate the refrigerant load cell.
5. Automatic non-condensable purge

After machine enters main menu, it will wait 5 minutes for stablization of pressure and temperature of the refrigerant in the equipment tank, and non-condesable purging will be performed if excessively high pressure in the tank is detected. Automatic non-condensable purging is made based on R1234yf pressure and temperature nature.

Operating procedure

After machine is turned on, it firstly displays the filter-drier life for equipment maintenance reminding purpose. Each filter-drier can be used to recover maximum 100KG refrigerant. Please replace the filter-drier before filter-drier life expiration, otherwise the machine will be blocked upon completion of recovery of 100KG refrigerant, for purpose of mandatory filter-drier replacement.

Recovery function

Refrigerant identification is firstly processed if the machine is equipped with internal refrigerant identifier, if not fitted with a refrigerant identifier, it will remind the technician to process such identification with separate identifier. Only when the purity of refrigerant is above 98% the recovery should be allowed to proceed.

Empty the used oil vessel before the recovery process is initiated.

The recovery process removes refrigerant from the vehicle A/C system, until a vacuum is reached. During this process, the refrigerant is purified from any moisture, oil and foreign particles. The processed refrigerant is then stored in the internal storage cylinder of the machine, ready for re-use. If any oil is recovered during this process, the oil will be discharged into the used oil vessel. The amount of oil if any, will be displayed and recorded.

After the system pressure is recovered to 0, the equipment starts to run the patent pending SRR (Supreme Recovery Rate) system: hot gas refrigerant at discharge side of the equipment compressor is injected into the automobile A/C system to circulate to help the cold liquid refrigerant in the vehicle evaporate, so as to achieve a very high recovery rate.

Note: The amount of refrigerant recovered of each operation is monitored and recorded, for filter-drier life expiration monitoring. The machine filter-drier is capable of purifying up to 100KG of recovered refrigerant with average contamination (refrigerant cylinder filling is not included in the filter life calculation), and upon reaching the filter-drier life expiration the machine will not be able to be powered up before the machine is serviced (filter-drier change, calibration, vacuum pump oil change and o-ring/washer change etc.) and reset.

Note: If the machine stops recovering during the function and displays **high pressure**, it may have excessive air build up in the storage cylinder, storage cylinder valves may have been left partially or fully closed, condenser cooling fan not working or machine may be used in an extremely hot environment.

Evacuation function

Select “**Vacuum**” , evacuation is performed to further remove air and moisture from the vehicle A/C system, making it ready for oil injection. Evacuation time can be set from 2 to 60 minutes. If the machine has vacuum leak test function, vacuum test can be selected to effect 1-60 minute vacuum leak test.

Charging function

Select “charge” icon and click OK to start the process.

According the vehicle being serviced, select “Normal charging” (Fuel vehicles) or “High voltage charging” (Hybrid or electric vehicles). In normal charging mode, hose flush (flush with liquid refrigerant to remove the oil residue inside the service hoses) is optional; while in high voltage charging mode, hose flush before oil injection and refrigerant charging is a must.

Oil (PAG, or *POE if equipped*) and UV (*optional*) volume can be set by technicians. **Note**, PAG is electrically conductive, and may largely influence cruise range of HV or EV given it is injected to high voltage vehicles mistakenly.

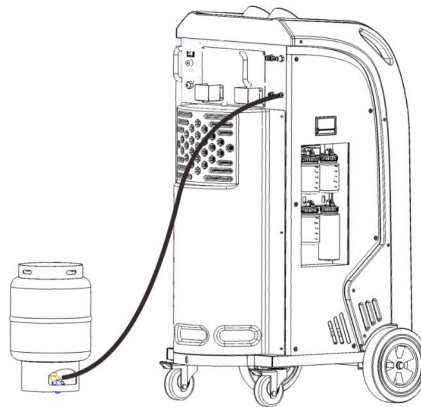
Refrigerant charge amount can be set by the technician, or by selecting car make and model in the database. Refrigerant can

be charged through high side, low side or high and low side.

Note, if defaulted high side charging (most recommended charging mode) is selected, make sure vehicle is powered off; vehicle A/C system should be switched on when charging through the low side of the vehicle A/C system

Note, if charging is selected from high and low side simultaneously, care must be taken. After charging function is completed and before starting the engine and switching on the A/C system, turn the compressor hub several times by hand to expel any liquid refrigerant that may have accumulated in the compressor compression chambers during the charging process. **Not performing this process can damage or destroy the compressor.**

Tank fill



Refrigerant identification is firstly processed if the machine is equipped with internal refrigerant identifier, if not fitted with a refrigerant identifier, it will remind the technician to process such identification with separate identifier. Only when the purity of refrigerant is above 98% the recovery is allowed or should be allowed to proceed.

Select **Tank fill** to fill or add refrigerant into machine storage cylinder. It is recommended to maintain 6-8 kg refrigerant in the machine internal cylinder at all times, to guarantee better flushing operations, or maintain 4-6KG if the machine is only used for recovery and recharging. During the refrigerant cylinder filling process once the selected amount of refrigerant is about to be reached, the machine will prompt the technician to **close hand valve on the external cylinder**, the machine will then recover the rest of refrigerant which is left in the transfer service hose and internal pipelines.

Please note: The amount of refrigerant which is transferred from external cylinder to internal cylinder is not calculated on the filter expiration life duration.

Flushing function

“Small and medium-sized A/C” (system with 500g refrigerant or less) or “Big-sized A/C” (system with more than 500g refrigerant) should be selected according to the A/C size of the vehicle A/C to be serviced. For small and medium-sized A/C, the equipment tank should have at least 4.5kg refrigerant, and flush time will be 8 minutes; while for big-sized A/C, the equipment tank should have at least 6kg refrigerant, and flush time will be 16 minutes.

Please note, empty used oil vessel before starting this operation.

Refrigerant identification is firstly processed if the machine is equipped with internal refrigerant identifier, if not fitted with a refrigerant identifier, it will remind the technician to process such identification with separate identifier. Only when the purity of refrigerant is above 98% the recovery is allowed or should be allowed to proceed.

Flushing function is performed to completely extract compressor oil from A/C system, thus all contaminants such as acidified substances, moisture and other foreign particles in the vehicle A/C system will also be extracted.

Flushing refrigerant will be recovered and purified automatically, at the end of the flushing process and stored in to the

storage cylinder, ready for re-use.

For multi-flow condenser, the debris in the condenser in clogged tubes may not be flushed out completely. It is highly recommended to replace the condenser too if a mechanical damaged compressor is to be replaced.

Note: Instead of counting whole amount of refrigerant recovered after flush (large amount of liquid refrigerant is charged into A/C system from equipment internal cylinder), the machine only calculates the refrigerant amount difference between pre-flush and after-flush for filter-drier life (this amount is not displayed on screen).

Note: Please connect the android pad to internet through WIFI, to get access to training materials given any further information is needed for flush.

Automatic function mode

Empty used oil vessel before starting this operation.

Refrigerant identification is firstly processed if the machine is equipped with internal refrigerant identifier, if not fitted with a refrigerant identifier, it will remind the technician to process such identification with separate identifier. Only when the purity of refrigerant is above 98% the recovery is allowed or should be allowed to proceed.

Please note, empty used oil vessel before starting this operation.

You can select “Auto.mode” to do full cycle of recovery, vacuum, oil injection and charge.

According to the vehicle being serviced, select “Normal charging” (Fuel vehicles) or “High voltage charging” (Hybrid or electric vehicles). In normal charging mode, hose flush (flush with liquid refrigerant to remove the oil residue inside the service hoses) is optional; while in high voltage charging mode, hose flush before oil injection and refrigerant charging is a must.

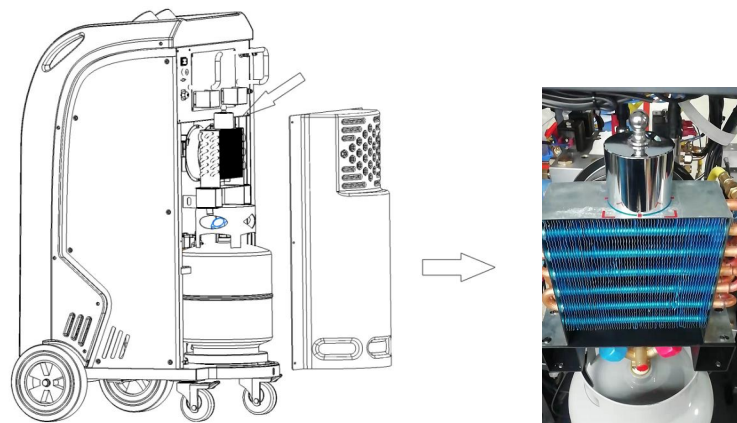
In Auto. mode, the machine makes recovery, vacuum, oil injection and refrigerant charge in sequence automatically, with data preset by users.

System setting

In main menu, select “system setting”, input password 111111 to enter system setting menu. In system setting, Language, Calibration, Air purge, Unit set, Empty container weight set, Component testing, altitude and owner information will be displayed or reconfigured.

Language: Select language in operation interfaces.

Calibration: Even though the machine is equipped with calibration weight for quick and easy calibration, it is recommended to have professional technician only to perform calibration of load cells, pressure transducer and temperature sensor. To access calibration, special dynamic password is needed. Please contact your equipment supplier or manufacturer, to receive the special password.



Warning: *Not calibrating the machine correctly can have serious consequences on the machine and/or vehicle A/C system.*

Unit settings: To set metric or imperial unit of measurement.

Empty container weight set:

The total load cell reading equals the sum of empty container weight and net refrigerant/oil content value. Thus, increase/decrease empty container weight, can correspondingly decrease/increase refrigerant/oil value displayed in the main operation interface.

Component test:

The technician can activate and deactivate different electrical component of the machine. This is for quick and easy diagnosis and troubleshooting.

Please note:

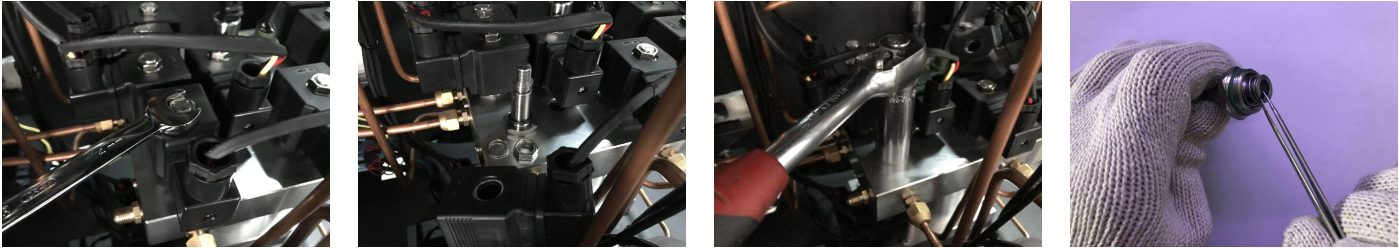
Only qualified technician (with special dynamic password) is allowed to access this function, not performing this test correctly could cause damage to the machine or injury to the operator.

Owner information:

The technician can change password and input their company name and contact information in this function. Please remember well your new password, or the use of the machine will be restricted. The contact information you input will be automatically printed, when you select “print” after any function or service job is completed.

Machine Maintenance

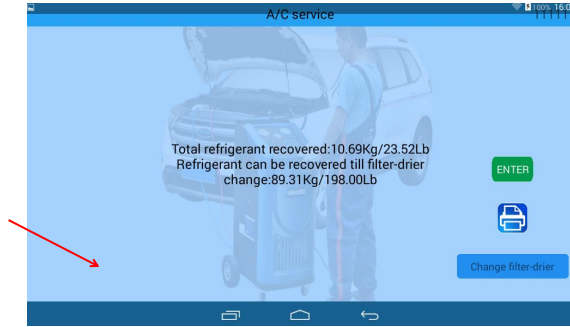
Changing solenoid or spool seals



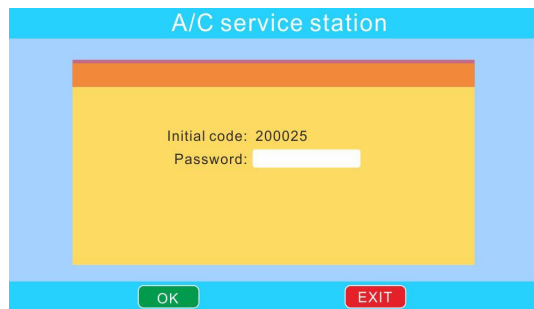
Filter-drier replacement

Once a total of 100KG of refrigerant has been recovered, the machine automatically shuts down and reminds the technician to replace the filter-drier. It is recommended to service the machine at your convenience after a total of 80KG of refrigerant has been recovered.

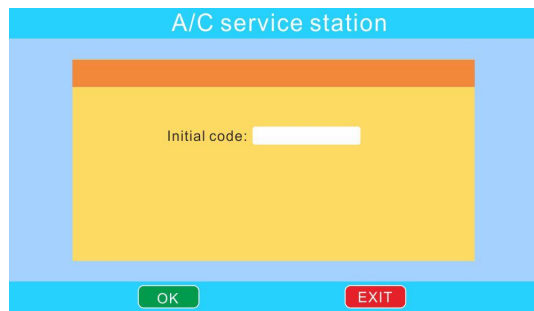
After you input password to access ACentre-20 app, you can select “change filer-drier” when the following interface is displayed, see below,



The machine will display to input dynamic password (Please contact your equipment distributor or manufacturer to receive the code), as following interface:



Then you are asked to input filter-drier code (each filter-drier from the factory has an individual code) in the following interface:

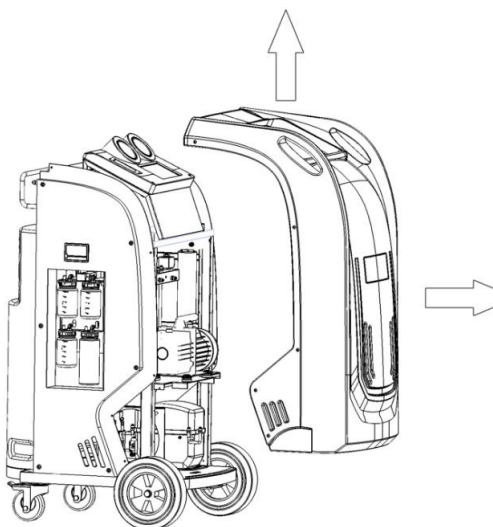


DO NOT press “Reset service interval time” button at the following interface.



Please remove front cover and change filter-drier, drain and re-fill vacuum pump with oil, see images below, press “Reset service interval time” button.

1.Remove screws and remove front cover.

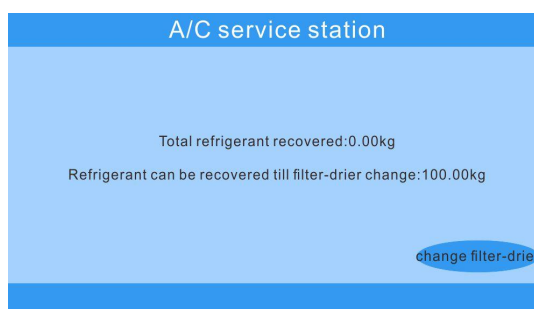


2.Change filter-drier.



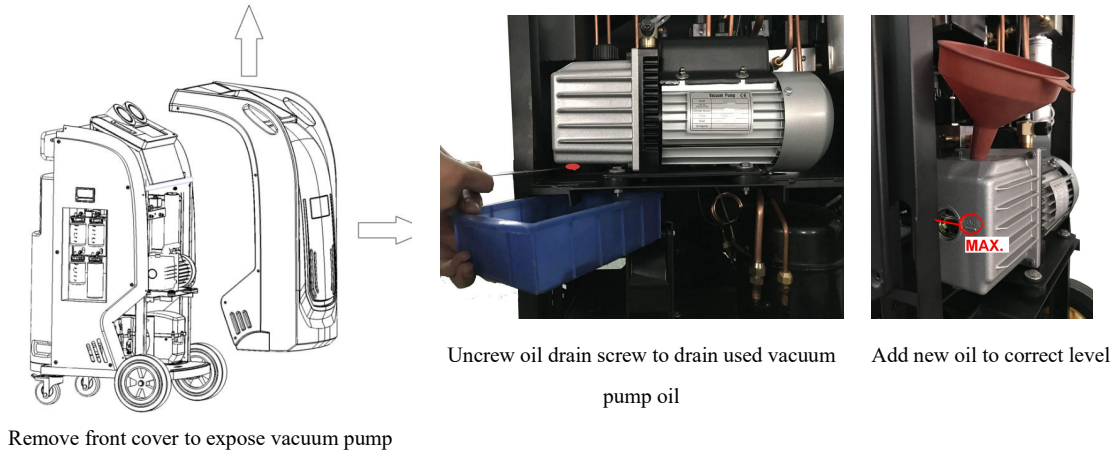
Cleaning before installation

The filter-drier and vacuum pump oil replacement, is now completed. When you re-enter Air-095 app you can see the amount of refrigerant left to be recovered (100KG).



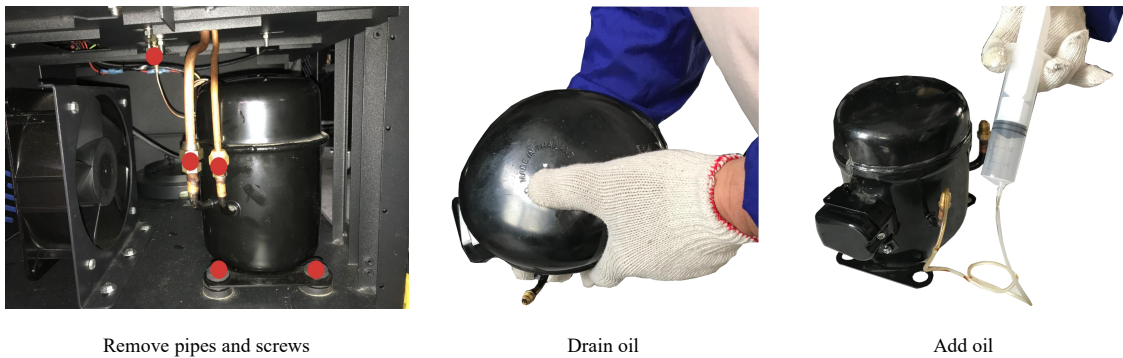
Vacuum pump oil change

It is recommended to change vacuum pump oil every time you change filter-drier. By removing front cover, you will have easy access to vacuum pump oil drain port, beneath the pump. After draining the old oil, re-fill the vacuum pump with new oil. Note the level line at the side of the vacuum pump, to fill proper quantity of oil. Oil type: ISO100.



Compressor oil change (Recommended if flushing function is usually performed)

Remove the recovery compressor from the machine by removing the suction and discharge pipes as shown below. Remove the 4 mounting bolts which fix the compressor to the chassis as shown below. Drain the oil from the suction port (from where the larger pipe was connected) by inverting the pump as shown below (drain oil) Add 480ml refrigeration oil as shown below. Re-fit compressor and pipes. Pressurize system and make leak test connections. This can be achieved by charging refrigerant in to the service lines, then select recovery and run recovery for 5 seconds and stop. This action will pressurize the internals of the machine, including the two pipes which were disconnected from the recovery compressor. By using a good reliable leak tester or soapy solution around the recovery pump fittings, you will be able to check for any possible leaks. Oil type: POE68; volume: 450ml.



Calibration of load cells, pressure transducer and temperature sensor.

We suggest that only well-trained technicians gain access to the calibration and machine troubleshooting program. Please contact your distributor or manufacturer if you require assistance.

A calibration weight of 1KG is supplied with the machine.

Please follow the machine instructions to do the calibration.

Caring for your equipment

- Keep your equipment clean and well maintained at all times.
- Keep service hoses stored on the storage adaptors when not in use, to avoid dirt and dust contaminating the internals of the couplers which will then end-up in the vehicle A/C system, which can cause serious system malfunction.
- Always clean vehicle A/C system service ports before connecting machine quick couplers on to the service ports.
- Keep the system stored in a clean area and away from direct sunlight and artificial heat source, when not in use.
- Perform regular services on the system as recommended by the manufacturer. Ignoring and skipping services will deteriorate the integrity of the machine.
- If the machine is used on badly contaminated A/C systems frequently, it is recommended that more frequent vacuum pump oil changes are made and main filter replacements are performed. Contaminated vacuum pump oil will cause the vacuum pump to corrode badly internally, which eventually the vacuum pump will fail. Contaminated main filter will diminish the refrigerant purity.
- Do not bump or move the machine when the technician is in the process of charging a vehicle, this can affect the charging accuracy.
- If the machine is bumped or knocked down accidentally, check the calibration and that there are no leaks internally.
- **DO NOT** use compressed air to test for leaks.
- If the technician is not sure on the correct way of operating the machine, please do not hesitate to contact your distributor or manufacturer. We always like to help you.

Packing list

Serials Number	Name	Amounts	Package
CP010050	ACentre-20 main unit	1	
BZ030017	3m red service hose	1	
BZ030016	3m blue service hose	1	
BZ130032	HP quick coupler	1	
BZ130033	LP quick coupler	1	
DZ160033	30A fuse	1	
DZ180034	Update cable with USB	1	
WJ010007	HP/LP block cap	2	
YS050015	Dust proof cover	1	
BZ130034	1KG check weight (2.2lb)	1	
WJ070009	Tank fill fitting	1	