USER MANUAL

FOR AUTOMATIC A/C CHARGING STATIONS

North Cape

North Cape Plus

Clever

Baby

Baby Evolution

North Cape 7

5

INDEX

1 INTRODUCTION

1.1 Safety instructions

This manual has been prepared to assist you during the use of A/C charging station and in order to protect your safety.

Read carefully the safety regulations listed in this manual. No responsibility is accepted in case of wrong use of the device, and in that case any warranty will be nullified.

Our A/C charging stations are destined to qualified personnel, trained to follow all safety regulations, as well as the technical instructions listed below:

- use all stations in respect of national laws and regulations;
- use protecting gloves and glasses;
- do not inhale gas;
- avoid contact with skin and/or eyes;
- do not smoke nor use free flames during station use;
- use in airy and dry environments only, not in humid ones;
- use original spare parts only;
- do not fill the gas tank more than 80% of its capacity;
- turn off the station while connecting to the car A/C system;
- use refrigerant fluid R134a only;
- disconnect the station from power network during maintenance operations, which must be executed exclusively by qualified and trained personnel;
- never position the station horizontally, to avoid oil leaks from vacuum pump.

2 EQUIPMENT

- High pressure tube RED
- Low pressure tube BLUE
- Power cable 230V
- Quick coupling R134a high pressure RED
- Quick coupling R134a low pressure BLUE

The RED and BLUE quick couplings with safety closure have to be opened by rotating as depicted in Figure 1:

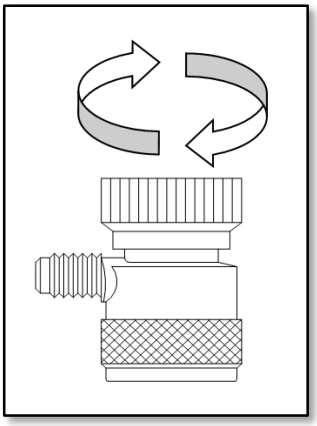


Figure 1

3 USE

3.1 Control panel

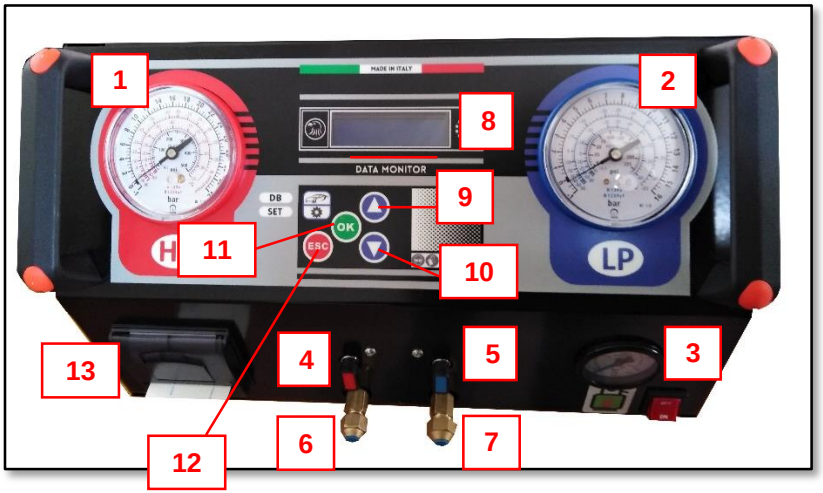


***Figure 2** (elements position may vary depending on the station model)*

Control panel includes the following elements (Figure 2):

1 - High pressure gauge:	for A/C system check and diagnosis
2 - Low pressure gauge:	for A/C system and vacuum check and diagnosis
3 - Tank pressure gauge:	for gas tank pressure check
4 - High pressure valve:	opens/closes high pressure (red)
5 - Low pressure valve:	opens/closes low pressure (blue)
6 - High pressure coupling:	connects station to car A/C system via red tube
7 - Low pressure coupling:	connects station to car A/C system via blue tube
8 - Display:	shows station info and allows to operate
9 - Button UP:	selection key
10 - Button DOWN:	selection key
11 - Button OK:	confirmation key
12 - Button ESC:	cancel key
13 - Printer	prints result of recharging operations

3.2 Preparation for first use

WARNING: Before using the station for the first time, remember to unscrew the safety lock under the station itself. This device has the purpose to lock the weight scale during transport operations, and must be repositioned in case of transport, but has to be removed during normal use, or the station will not function properly.

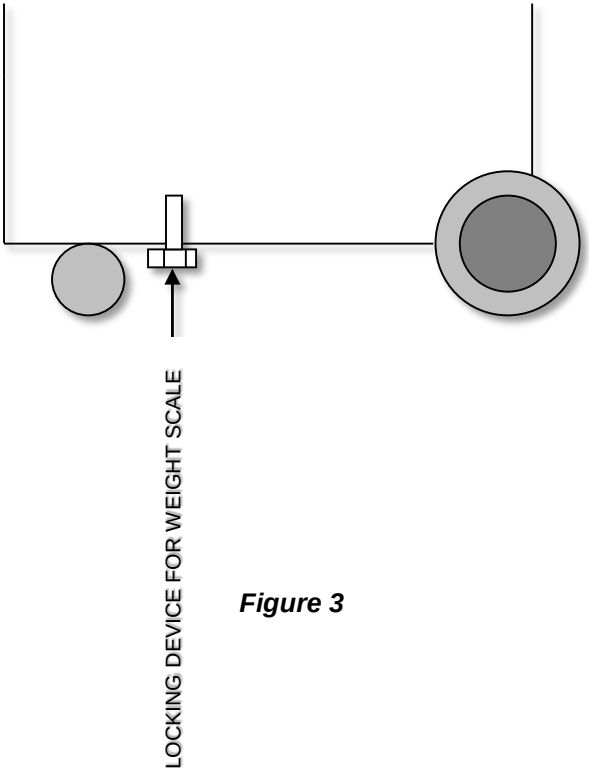


Figure 3

PREPARATION PROCEDURE

1. Ensure all valves are closed.
2. Make sure the car's A/C system is of R134a kind.
3. Clean the car's connectors.
4. Connect tubes to the car's A/C system in this way:

   RED → high pressure, BLUE → low pressure
5. Connect power cable to power network (220-240 V) and **turn on the station**. The refrigerant fluid quantity contained in gas tank will appear on display (for example: 3550 grams), otherwise the display will indicate "LOW GAS" if gas quantity is lesser than 2000 grams (*Note: this is just a warning message, but the charge can be executed anyway)*.
6. If the gas is not enough, refill the gas tank within 80% of its capacity, in this way:
   - Press **DOWN** twice, commuting display to TANK mode.
   - Confirm by pressing **OK**.
   - Connect the external gas tank to the station using the high pressure coupling (RED), orienting the tank as in Figure 4 according to float presence or absence.

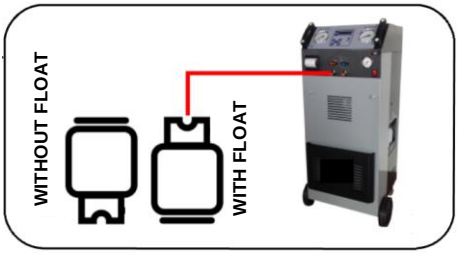


Figure 4

- The display shows the gas quantity to be charged (default value: 2000 g). Adjust the desired quantity by pressing **UP/DOWN**, keeping in mind that about further 500 grams of gas will be automatically added due to fluid recovery from station internal circuit.
- Confirm the value by pressing **OK**. The station will start gas RECOVER from external tank, automatically stopping once reached the set quantity, and will ask to close the external tank valve (do it).
- A de-icing pause is executed for about 3 minutes.
- The station returns to AUTO mode. Gas tank refilling operation is done.

7. Fill the new oil container (→ see paragraph 3.7).
8. Open the quick couplings (see Figure 1).
9. Open the station RED and BLUE valves.
10. Preparation procedure is done.

3.3 Automatic use

The station works both in completely automatic mode (it does the operations consecutively with minimum user intervention) and in manual mode (user can execute the operations individually).

In automatic mode, in order to execute a charging cycle, once the preparation procedure is terminated (→ paragraph 3.2), proceed in this way:

1. The station shows AUTO mode and the quantity of available refrigerant fluid. Press **OK** to begin automatic cycle.
2. The station shows the vacuum time (default: 30 minutes), which can be accepted by pressing **OK** or adjusted by pressing **UP/DOWN** arrows and then **OK**. *Note: we recommend to perform the default vacuum time.*
3. Subsequently, the station shows the new oil quantity (default: 20 grams), which can be accepted by pressing **OK** or adjusted by pressing **UP/DOWN** arrows and then **OK**. *For new oil quantities, refer to table in paragraph 3.7*.
4. At this point, the station requests the quantity of refrigerant gas to be introduced into the car's A/C circuit (default: 300 grams). The amount can be accepted by pressing **OK** or adjusted by pressing **UP/DOWN** arrows and then **OK**; alternatively, it is possible to access the internal DATABASE by pressing **DB/SET**, choose the car manufacturer (**UP/DOWN** + **OK**) and the car model (**UP/DOWN** + **OK**).

5. The display shows >START<. Confirming by pressing **OK**, the cycle begins automatically, executing in sequence:

    - RECOVER (with de-icing pause)
    - DISCHARGE OF EXHAUSTED OIL (it happens automatically)
    - VACUUM (with leaking test “diagnosis”)
    - CHARGE OF NEW OIL (1…20)
    - CHARGE OF GAS (with sound alarm at end)
    - PRINT (choose YES or NOT if the station has a printer)

6. Charge operation is over. At this point, it is appropriate to execute manually the pressures test, following the instructions at paragraph 3.6. This operation cannot be executed automatically.
7. Once the pressures test is finished, turn off the station and remove the quick couplings from the car.

3.4 Manual use

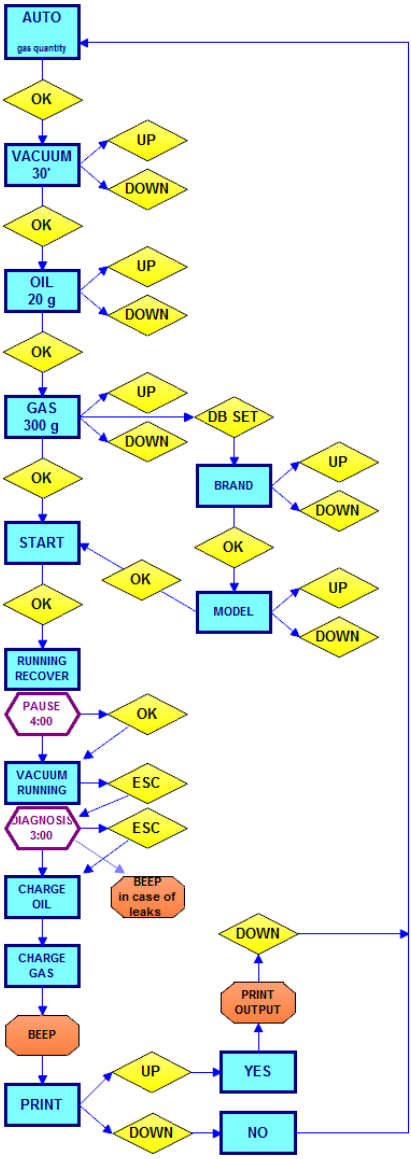
Automatic-mode operations can be executed individually in manual mode, except for the use of internal car database. To access manual mode, once the station has been turned on, press **DOWN** to commute from AUTO to MAN. The available refrigerant gas quantity remains still shown on the display.

By pressing **OK**, it is possible to access the first phase of charging cycle (RECOVER), which can be run by pressing **OK** again, or bypassed by pressing **DOWN** and switching to the next phase. Individually-executable phases are the same of automatic mode, namely:

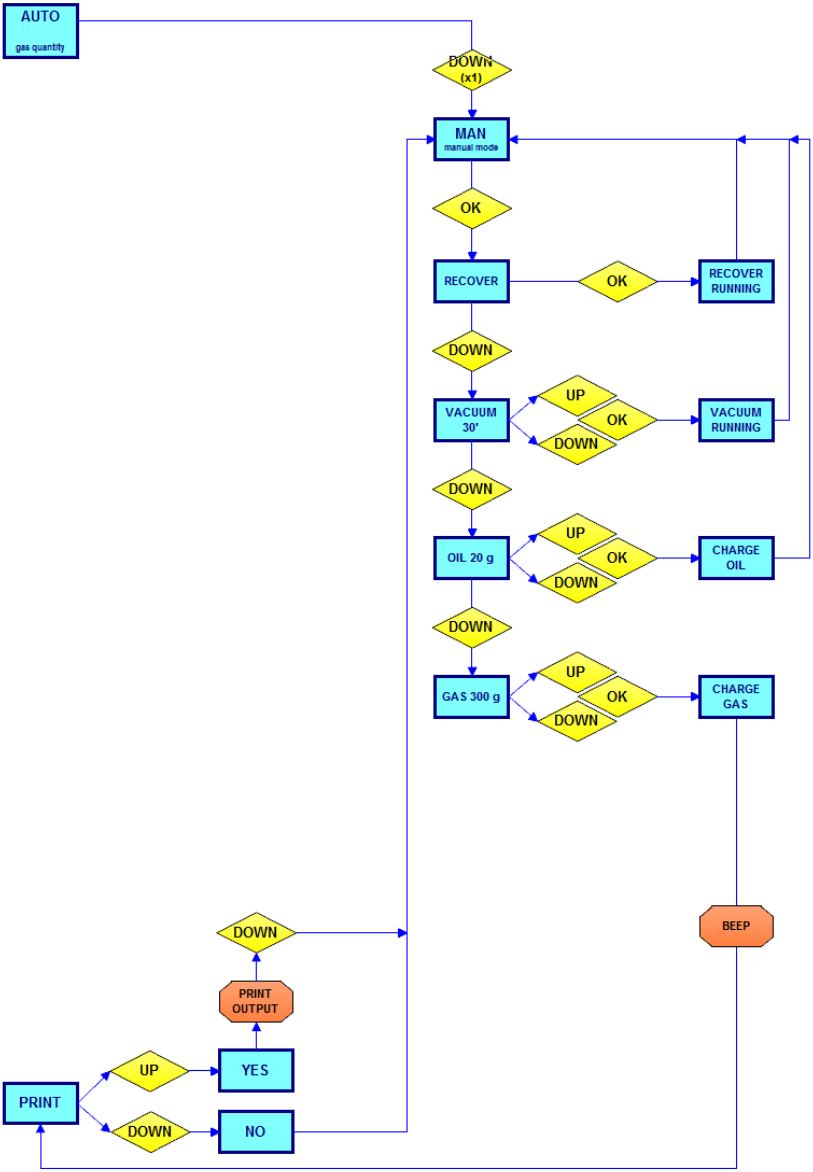
- RECOVER (with de-icing pause)
- VACUUM (with leaking test “diagnosis”)
- CHARGE OF NEW OIL
- CHARGE OF GAS (with sound alarm at end)

For VACUUM, CHARGE OF NEW OIL and CHARGE OF GAS phases, before their beginning it is possible to adjust times and quantities by pressing **UP**, **DOWN** and **OK**, in the same way as in automatic mode (→ paragraph 3.3 points 2-3-4).
At the end of each phase, however, the station does NOT switch automatically to the following step, but requires user intervention.

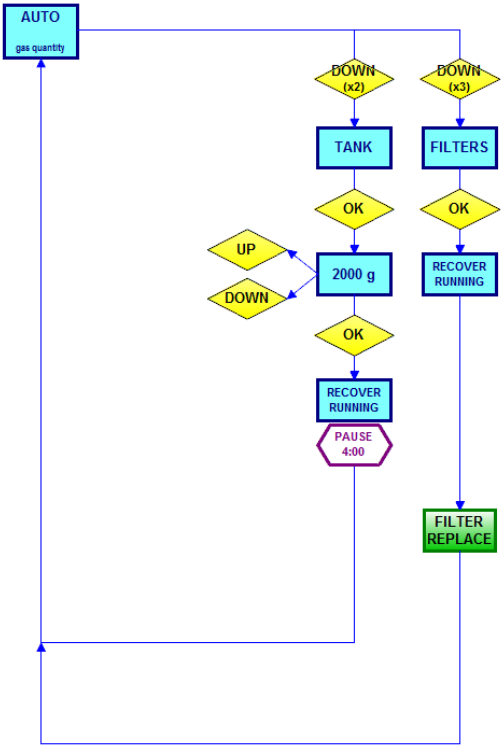
3.5 Synoptic diagram: automatic mode



3.6 Synoptic diagram: manual mode



3.7 Synoptic diagram: tank and filters modes



3.8 Pressures test

Once the charge operation is over, execute the pressures test by using the table below, in this way:

1. Let the station connected to the car with closed valves.
2. Turn on the car and the car A/C system, setting it to the lowest temperature possible.
3. Let the engine run for some minutes at about 2000 rpm.
4. Check the values on high/low pressure gauges, comparing them with those reported in the table below.

Environment temperature °C	LOW PRESSURE			HIGH PRESSURE		
	R134A			R134A		
	min		max	min		max
15,5	0,5	-	2,5	6,5	-	10
18	0,5	-	2,5	7	-	12
22	0,5	-	2,5	8	-	14
30	0,5	-	2,5	10	-	17
35	0,5	-	2,5	11,5	-	20
40	0,5	-	3	14	-	22

3.9 New/exhausted oil

EXHAUSTED OIL

Empty the oil container when it reaches about 200/220 cc.

The exhausted oil must be disposed of in the appropriate sites. Do not disperse into the environment.

NEW OIL

New oil level must never be less than 80/100 cc.

We advise to use specific oil recommended by car's manufacturer, or anyway Synthetic R134A oil.

OIL RESTORATION

Gas quantity (grams)	Suitable oil quantity	Oil ISO 46	Notes
From 270	20		For more dense oils (type ISO 100) increase by 5
From 500	25		
From 750	30		
From 1000	35		
From 1250	10		

WARNING: The quantities reported in the table are purely indicative. Always make sure that the oil is compatible with the one suggested by the car manufacturer.

4 SERVICE

4.1 Dehydrator filter replacement

Recommended interval for filter replacement is 300 cycles. We recommend to execute the maintenance at authorized centers.

Press **DOWN** three times in order to access FILTERS mode and confirming by pressing **OK** to initiate RECOVER. Executing this operation, there will not be gas leaks during filter replacement.

WARNING: Mount the filter as in Figure 5.

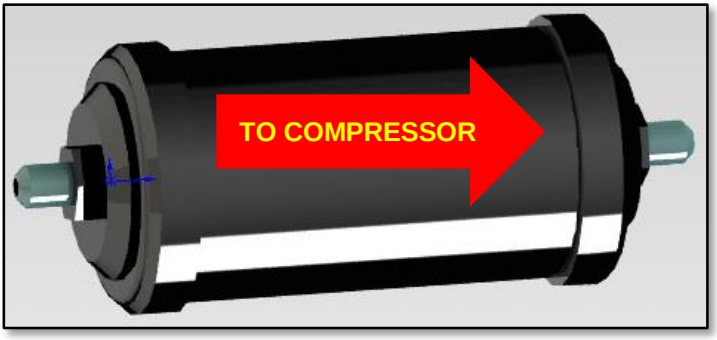


Figure 5

4.2 Vacuum pump oil replacement

Recommended interval for pump oil replacement is 300 cycles. We recommend to execute the maintenance at authorized centers.

- **Periodically check the pump oil level.**
- **Replace pump oil at recommended intervals, and in any case after the first 100 working hours or in the case it darkens.**

PROCEDURE

- Empty the pump by the screw at the bottom. **(2)**
- Open the tap at the top and introduce new oil. **(1)**
- Check the oil level (it must be about at half of the glass) **(3)**

WARNING: The exhausted oil must be disposed of in the appropriate sites, following the environmental laws and regulations in force in your nation/region.

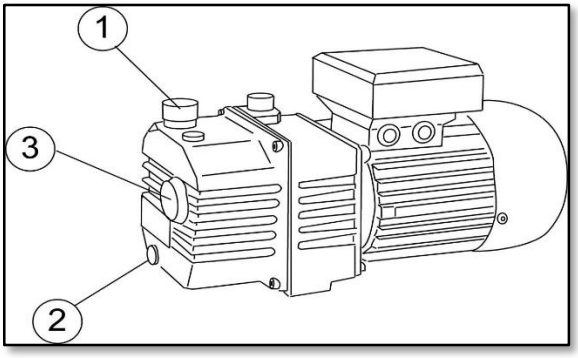


Figure 6

5 TECHNICAL SPECIFICATIONS

COMPRESSOR	9 cc
VACUUM PUMP	80 l/min 0,1 Mbar
GAS TANK	12 litres (NORTH CAPE, CLEVER, 5) 7 litres (BABY EVOLUTION)
FILTERS	High-efficiency filters
WORKING TEMPERATURE	From 10°C to 50°C
VOLTAGE	220 V 50 Hz
RECOVERY SPEED	500 gr/min
DIMENSIONS	520x460x1100 mm (NORTH CAPE) 450x670x940 mm (CLEVER) 430x410x1100 mm (5) 500x480x900 mm (BABY EVOLUTION)
WEIGHT	60 kg (NORTH CAPE, CLEVER, 5) 50 kg (BABY EVOLUTION)
REFRIGERANT FLUID TYPE	R134a

6 TROUBLESHOOTING

PROBLEM	SOLUTIONS
General problems	
The station doesn't work, the switch is not illuminated.	5
Turning on the station, the display is not illuminated.	1-2-3
The station works, but does not accept any input from the control panel.	1-2-3
Weighing problems	
Turning on the station, the gas weight is not indicated, although the fluid is present.	9-10
During the recovery phase, the station does not indicate the weight of recovered gas.	8-9-10-16-20
Working problems	
At the beginning of the cycle, the station bypasses recovery phase and switches directly to vacuum phase.	1-14-15-20
The recovery phase begins, but no gas is recovered.	1-8-14-15-16-20
Vacuum phase does not create vacuum.	1-13-21
Gas charging is not completed.	23-25-26

SOLUTIONS LIST

1. Replace CPU motherboard *
2. Replace display card *
3. Replace display connection cable *
4. Calibrate the station (reset tare)
5. Check main fuse (the one mounted in feeding socket)
6. Check secondary fuse in transformer circuit
7. Replace vacuum switch
8. Replace compressor *
9. Make sure the weight scale is not blocked
10. Replace refrigerant load cell and recalibrate the station
11. Replace oil load cell *
12. Replace solenoid valve *
13. Replace vacuum pump *
14. Replace pressure switch *
15. Verify pressure switch calibration *
16. Make sure the receiver's taps are open
17. Replace heater resistance (if present)
18. Check power cable
19. Replace transformer *
20. Replace solenoid valve INLET *
21. Replace solenoid valve VACUUM *
22. Replace solenoid valve RECOVERY *
23. Replace solenoid valve CHARGE *
24. Replace solenoid valve OIL CHARGE *
25. Check if the vacuum has been performed
26. Check the oil level in new oil container

* = call assistance service

7 SPARE PARTS

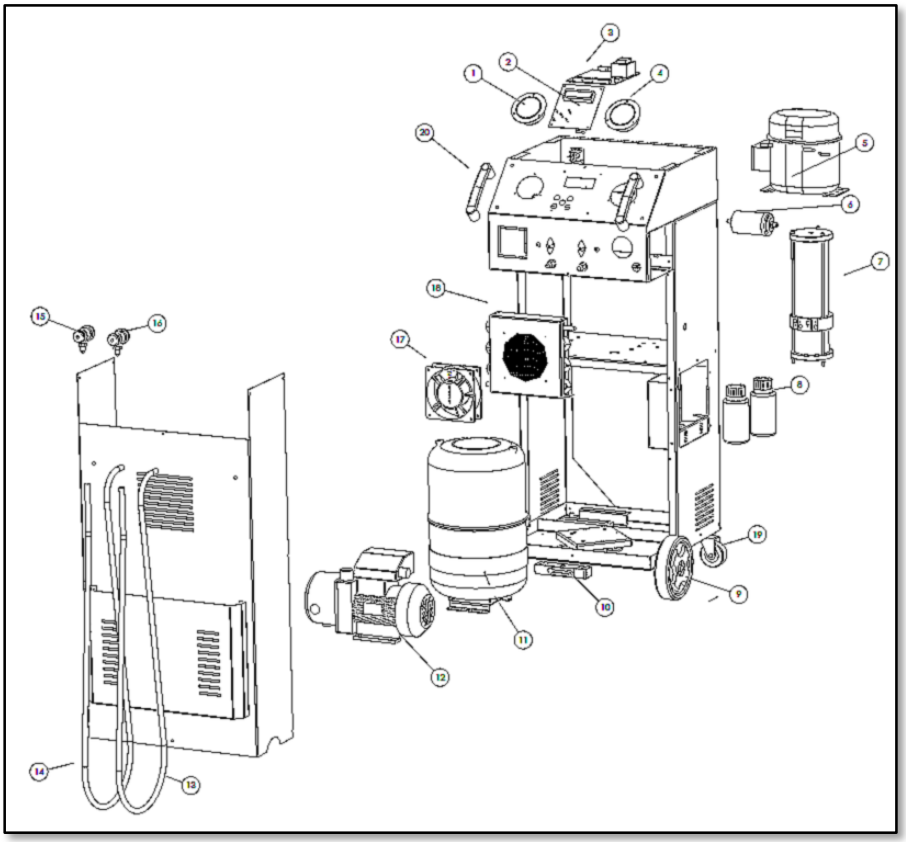


Figure 7

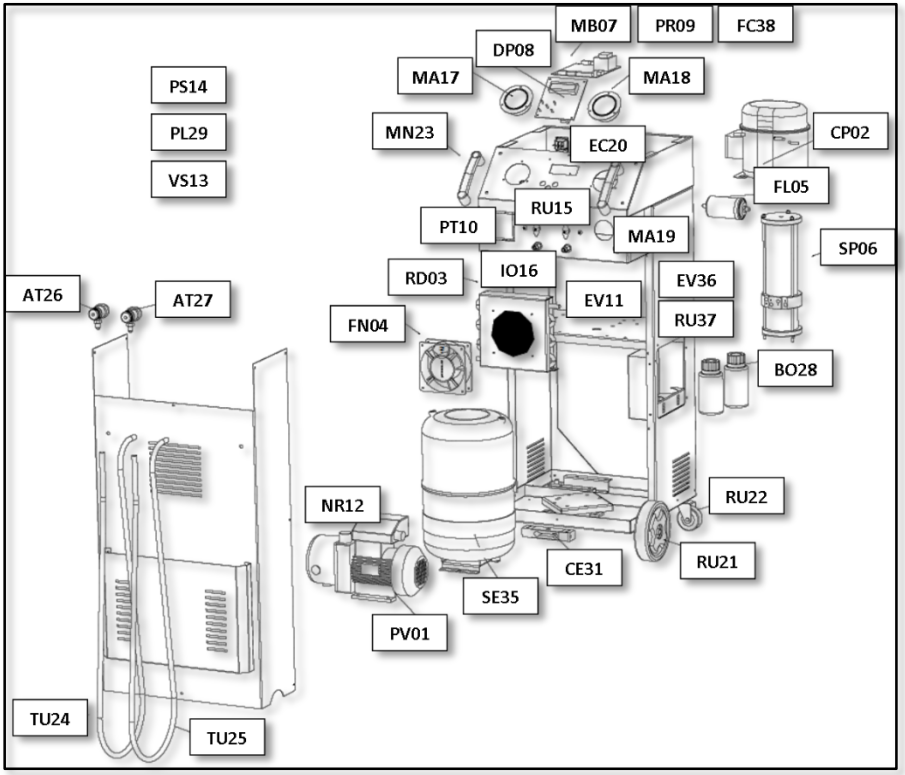

MB07
PR09
FC38
DP08
MA17
MA18
PS14
PL29
VS13
MN23
EC20
CP02
FL05
RU15
PT10
MA19
SP06
RD03
IO16
EV36
AT26
AT27
EV11
RU37
FN04
BO28
NR12
RU22
CE31
RU21
SE35
PV01
TU24
TU25

Figure 8

8 CONFORMITY DECLARATION

Dichiarazione di Conformità
EC Declaration of Conformity

Itech di Moro Giampaolo
Via Provinciale, 35
24020 Peia Bergamo Italy

dichiariamo sotto la nostra esclusiva responsabilità che il prodotto
declare under our exclusive responsibility that the product

Device for handling air	*with serial number*

alla quale questa dichiarazione si riferisce, risponde alle seguenti Direttive applicabili
to which this declaration relates, complies with the following applicable Directives

2006/42/WE	Machinery Directive
2006/95/WE	Low Voltage Directive
2004/108/WE	Electromagnetic Compatibility Directive

Per la conformità alle suddette direttive sono state seguite, in modo totale o parziale, le seguenti Norme Armonizzate:
In order to comply with the abovementioned directives, were followed, wholly or partly, the following Harmonized Regulations:

EN ISO 12100:2012P	Safety of machinery – General principles for design – Risk assessment and risk reduction
EN 55014-1:2012P	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission
EN 61000-6-3:2008/A1:2012P	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard environments: residential, commercial and light-industrial
EN 61000-6-2:2008P	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 60947-1:2010/A1:2011E	Switchgear and control Voltage – Part 1: Generality
EN 60204-1:2010P	Safety of machinery – Electrical equipment of machines – Part 1: General Requirements

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