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These instructions concern Silensys® condensing units as described in chapter 2.
Read carefully the following instructions before installing the unit.



I ADVICE

Transport

For information regarding the supply of these units please refer to your terms and conditions.

Installation

- This unit and related equipment must be installed by suitably qualified staff.
- The installation of the unit is subjected to the norms and technical standards for refrigerating and electrical connections in the respective country.
- TECUMSEH EUROPE S.A. cannot be held responsible if installation and maintenance are not carried out in accordance with these instructions.

2 TECHNICAL DATA

2.1 Label

(Refer to annexe 1, page 26)

2.2 Safety devices

All units are supplied with an adjustable HBP / LBP pressure switch, rated at 16A.

2.3 Versions

The following versions of condensing units are available:

- HBP / LBP pressure switch with manual reset - with fusible plug
- Contactor and isolator - solenoid valve - suction accumulator - evaporator fan contractor.

2.4 Refrigeration diagrams

(Refer to annexe 2, page 27)

2.5 Circuit diagrams

(Refer to annexe 7, pages 34 to 39)

3 INSTALLATION

3.1 Unpacking

Make sure that the unit is in good condition and has not been damaged externally.

3.2 Handling

The packaging allows the use of a forklift truck or a pallet loader. It is recommended that the packaging be retained until the unit arrives at its location of installation.

3.3 Location

(Refer to annexe 3, pages 28 to 30)

The unit should not block or obstruct thoroughfares, doors, shutters or personnel.

The surface supporting the unit must be capable of bearing its weight - Refer to Table 2.1.1.

Keep sufficient distance between the units and any objects in its surroundings to ensure good air circulation.

Silensys® must be installed in a well-ventilated location.

The unit must be level.

3.4 Sound

Silensys® has been designed for particularly silent operation.

When installing the unit, care must be taken to avoid interference or vibration.

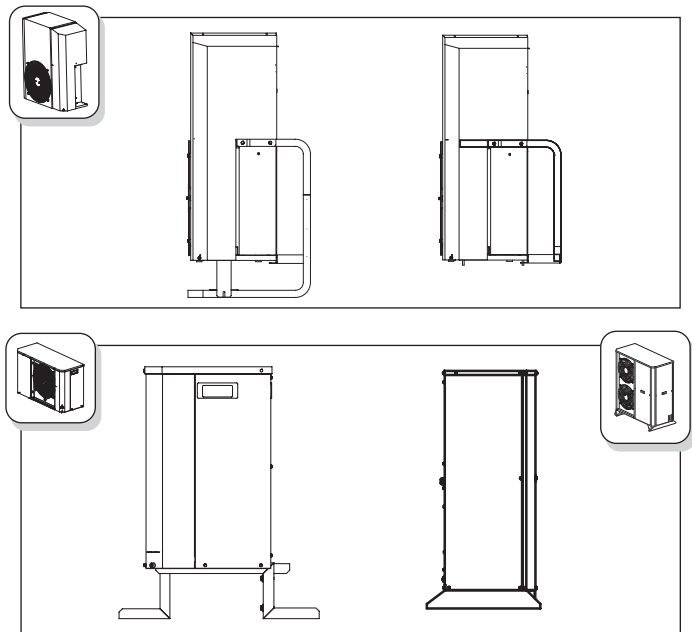
- The unit must be securely installed on a stable and rigid support. It is recommended to separate the unit from its support by blocks or anti vibration pads.
- The piping must be flexible enough to avoid the transmission of vibration (Noise level, see annexe 1 page 26).

3.5 Mounting (2 or 3 option depending upon model)

The mounting of the supports must be adapted to the surface quality and carried out according to recognised good working practices.

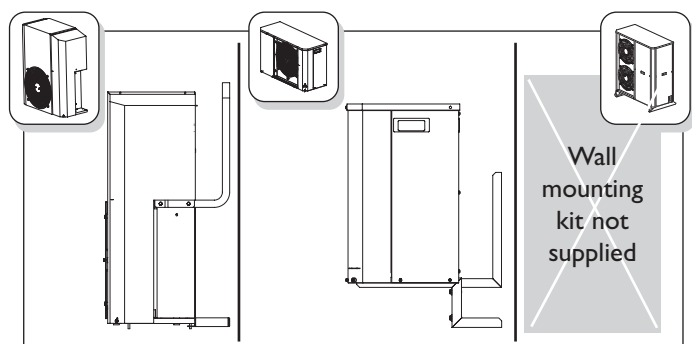
The mounting kit must only be used with the condensing unit supplied.

- Floor mounting only (see annexe 3 pages 28 to 30): only use the mounting kit supplied with the condensing unit



(see annexe 4 page 31, to remove the Silensys® access panel)

- Wall mounting (see annexe 4, page 31): only use the mounting kit supplied with the condensing unit



3.6 Accessibility of the connection points

(see annexe 5, page 32)

● 3.7 Refrigeration connections

In order to always ensure the highest quality for our products, the refrigeration circuit of the condensing unit is supplied dry and filled with nitrogen.

ADVICE

To maintain the quality of a TECUMSEH EUROPE S.A. unit and to ensure its smooth operation, it is recommended to:

- Braze under nitrogen,
- Insulate the suction line up to the compressor inlet. Use anti condensation material (the insulation material should be 19 mm thick).

(Refer to annexe 5, page 32 for the refrigeration connection)

● 3.8 Electrical connections



Only install the unit when isolated from the power supply.

ADVICE

To maintain the quality of a TECUMSEH EUROPE S.A. unit, by ensuring the safety of the installation and its smooth operation, it is necessary to:

- Verify that the power supply voltage is compatible with that of the unit (refer to label)
- Verify that the circuit diagram of the unit is compatible with that of the installation.
- Size the wiring for the connection (power, control circuit) according to the properties of the installed unit.

(refer to following table with defined power requirements annexe 7, page 34)

- Protect and earth the electrical power supply.
- Carry out electrical connections according to the norms of the respective country.

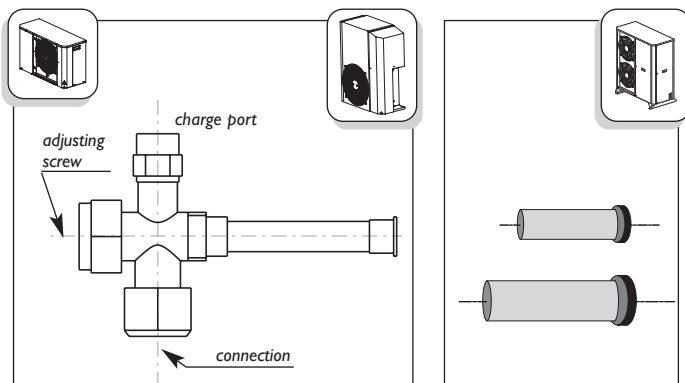
CONNECTION OF THE COMPONENTS

Refer to electrical diagram (annexe 7, pages 34 to 39) to connect the components.

- Connect all control and safety devices installed on the unit.
- Secure the cable/s with the cable clamps supplied with the unit.
- Close the electrical box after completion of the wiring.

4 PUTTING INTO OPERATION

The connection valves are provided with a SAE 7/16"-20 UNF 2A gauge U connection with removable "Schrader" valve.



● 4.1 Leak tightness of the circuit

All connections must be systematically checked for leaks with an electronic leakage detector.

● 4.2 Evacuation

Evacuate the installation to about 200 micron metres Hg, to ensure a good quality vacuum.

It is recommended to evacuate simultaneously on both sides (HBP and LBP) to accelerate the operation and to obtain an identical vacuum throughout the entire circuit.

● 4.3 Refrigerant charge

Only charge the installation with the refrigerant the unit has been designed for (refer to label).

In the case of a blend, the refrigerant must always be charged in the liquid phase to avoid changes in the composition.

Never start the compressor under vacuum (HBP and LBP), but slowly charge the refrigeration circuit to 4-5 bar in the case of R-404A or R-22 (4 bar) and to about 2 bar in the case of R-134a.

The remaining charge is filled until the nominal operation conditions of the installation are reached, when the unit is running. Please refer as well to the chapter "Verification before start" before power is applied to the installation.

VERIFICATION BEFORE START

1. Compatibility of the power supply voltage with that of the condensing unit (fan(s)).
2. Calibration of the electrical protection devices.
3. Check the service valves are fully open.
4. Check the crankcase heater is working.
5. Check the condenser fan(s) are free to rotate.
6. Check of the installation for possible faults.

VERIFICATION AFTER START

After some hours of operation, verify the following:

1. Voltage and power requirement of the unit.
2. HBP and LBP of the installation.
3. Rotation of the condenser fan(s).
4. Superheat.
5. Leak check.

Make sure that the installation is running smoothly.

Carry out a general inspection of the installation (cleanliness, unusual noises...).

● 4.4 Fan speed control

The rotation speed of the fan is controlled by a pressure device. Its role is:

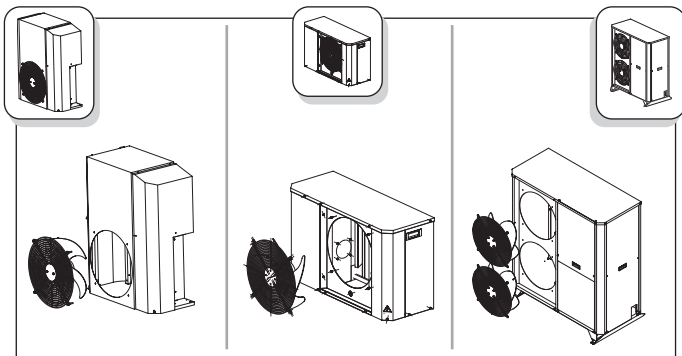
- To avoid low condensing pressure in winter, which could interfere with the operation of the expansion valve.
- To further reduce the sound level when the ambient temperature permits it.

(Refer to annexe 6, page 33, for the possibilities of control)

5 SERVICE AND MAINTENANCE

5.1 Condenser

Clean the condenser and the unit at least once per year. The unit can be accessed by removing the fan plate.



5.2 Fan replacement

- Disconnect the fan motor cable from the junction box.
- Remove the 4 fixing screws from the grill.
- Remove the fan motor / grill combination.
- Replace the condenser fan motor.

5.3 Verifications

Carry out a leak check once per year or according to national regulations.

Verify regularly:

- The safety and control devices settings,
- The state of the electrical and refrigeration connections (security, oxidation...),
- The operating conditions,
- The fixing of the unit on its support,
- The fixing of the casing (no vibrations),
- The operation of the crankcase heater.

5.4 Drier

The Silensys® units are provided with a drier :

- Connection kits for each model: B22Z, B29Z, B43Z, B53Z, H38Z, H49Z, H54Z, H71Z, H84Z, H116Z/T, H123Z/T, H143Z/T, H162Z/T, H166Z/T, H46Y, H56Y, H68Y, H80Y, H89Y, H98Y.
- delivered separately for the models: H14Z, H21Z, H25Z, H30Z, H15Y, H19Y, H23Y, H28Y, B08Z, B09Z, B10Z, B15Z.

The joint is leak tight by the use of a copper washer which should be changed each time the joint is broken. Connection kit:

- ø3/8" => Maximum run current 30 Nm / 305 cm.kg
- ø1/2" => Maximum run current 60 Nm / 588 cm.kg
- ø5/8" => Maximum run current 100 Nm / 981 cm.kg

Drier replacement:

When changing the drier it needs to be replaced by a drier of equivalent capacity.

5.5 Compressor replacement

A L'Unité Hermétique® compressor with valves can be used as a replacement for the original compressor.

6 WARRANTY

Refer to your terms and conditions of sale.

7 DECLARATION OF CONFORMITY

- We hereby declare, that the Silensys® condensing units comply with the low voltage directive 93/68/EC.
- Harmonised norms applied:
 - CEI 335-1 [EN 60 335-1]: Safety of electrical domestic and analogue appliances - general descriptions.
 - CEI 335-2-34 [EN 60 335-2-34]: Safety of electrical domestic and analogue appliances - particular rules for motor compressors.
- To incorporate our products into an installation, the Declaration of Incorporation of the manufacturer must be applied. Our condensing units are not directly affected by the directive 97/23/EC concerning pressure equipment, but shall be considered as a compatible sub-entity.
- Certificates of conformity available upon request.

8 DECLARATION OF INCORPORATION

Only suitably qualified staff are authorised to work on the unit

This product represents a defined component for incorporation into an installation according to the European directive 89/392/EC.

It is not permitted to start the operation of the condensing unit before the installation, into which it has been incorporated, has been found or declared to be in accordance with the legislation in force. Thus, this product is not subjected to the directive 89/392/EC.

In order to continuously improve its products, TECUMSEH EUROPE S.A. preserves the right to change these instructions without prior notification.

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