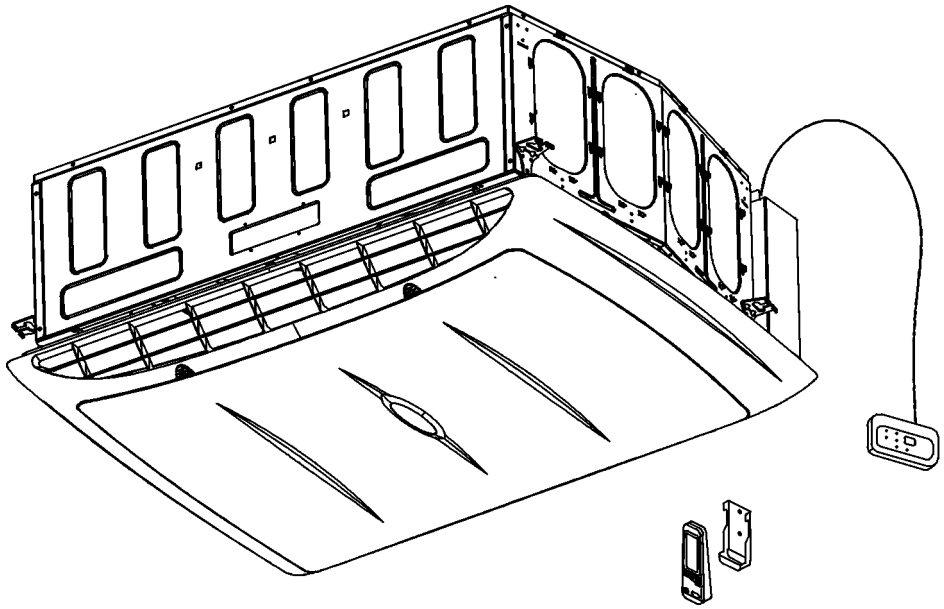
FRANÇAIS **CLIMATISEUR CENTRAL SPLIT A CONTROLE ELECTRONIQUE – SERIE MD**

ENGLISH **CENTRAL AIR CONDITIONER SPLIT SYSTEM WITH ELECTRONIC CONTROL – SERIES MD**

DEUTSCH **ZENTRALE KLIMAANLAGE SPLIT-SYSTEM MIT ELEKTRONISCHER STEUERUNG – MD-SERIE**

ESPAÑOL **ACONDICIONADOR DE AIRE CENTRAL DEL TIPO "SPLIT" CONTROL ELECTÓNICO – SERIE MD**

ITALIANO **CONDIZIONATORE D'ARIA CENTRALIZZATO SISTEMA SPLIT A CONTROLLO ELECTRONICO – SERIE MD**



MD 33
MD 38
MD 50

INSTRUCTIONS D'INSTALLATION

INSTALLATION INSTRUCTIONS

INSTALLATIONSANLEITUNG

INSTRUCCIONES DE INSTALACIÓN

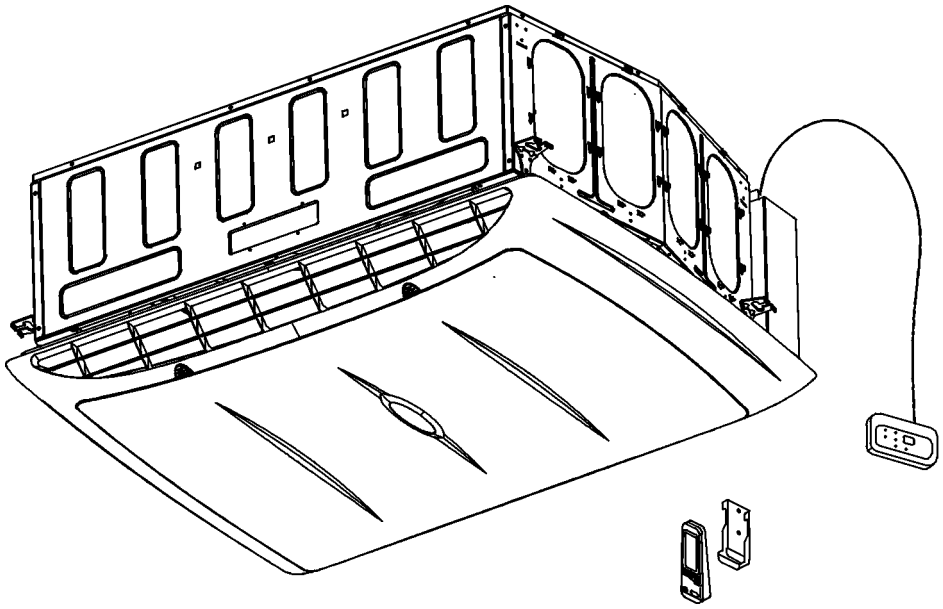
MANUALE PER L'INSTALLAZIONE

CE

Airwell

CENTRAL AIR CONDITIONER
SPLIT SYSTEM

WITH ELECTRONIC CONTROL
SERIES MD



MD 33
MD 38
MD 50

INSTALLATION INSTRUCTIONS

Airwell

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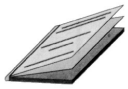
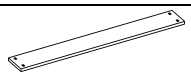
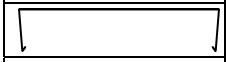
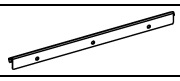
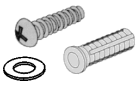
1. List of accessories provided with the air-conditioner

Description	Amount	Name	Use
	1	Technician's installation manual	Installation instructions
		Instruction manual for remote control	Operation instructions for remote control
	1	Instruction manual for the user	Operation instructions
	1	Remote control including batteries	Operating the air-conditioner
	1	Remote control bracket	Hanging the remote control on the wall
	1	Central control display	Operating and main working regime display
	2	Carbon filter	Air cleaning
	4	Rubber mounting pads	Padding of the outdoor unit
	4	Tie - Wraps	Tightening the indoor and the outdoor units electrical cables
	4	Washer for hanging the indoor unit	Securing the location of the pole in the ear on which the unit is hanging
	1	Mounting plate	Hanging the unit
	2	Hanging tracks	Hanging the unit
	6	Machine screws for hanging tracks	Installing hanging tracks
	6	Spring washer for hanging tracks	Installing hanging tracks
	6	Screws for installing adapters	Securing installment of adapters
	4	10" adapter screws	Installing 10" adapters
	4 4 4	Dibbles Screws Washers	Installing bracket for remote control and central control display
	4	8" adapter	Mounting a flexible 8" diameter duct
	1	12" adapter	Mounting a flexible 12" diameter duct
	1	10" adapter	Mounting a flexible 10" diameter duct

2. General

Only a professional technician, who went through an appropriate training by the company, may install the air-conditioner. Installation must comply with the Company's specs, according to the law of electricity, while using the Company's standard components such as tubes, ducts, electric power cables and other necessary accessories.

Installation instructions relate to MD air-conditioners that are comprised of two components: the indoor unit and the outdoor unit. The two units are interconnected between them by two refrigerant tubes, electric power cable and a control cable.

Hereby are recommendations to perform a correct installation of MD air-conditioners:

- Thermal load assessment for the structure must be carried - out.
- Short refrigerant tubes with minimal bending.
- Capacity loss of 0.3% for each meter of tubing - beyond the first 7 meters, must take into account.
- Ensure free flow of return air from the air-conditioned area into the return air grille, as well as from the return air grille to the inlet of the indoor unit. This route must be free of obstruction and must not pass through non air-conditioned areas.
- Use only the supplied distribution flaps and return air grilles of correct sizes, according to the Company's recommendations.
- In systems with connecting ducts:
  - Use deep adapters only (220 mm - at least) to connect air supply grilles and flaps.

Attention!

Below are listed frequent installation problems. It is highly recommended to relate to them before planning and performing the installation, in order to prevent them.

A. Lack of appropriate openings for returning air. Returning air via an open door is a bad solution!

B. Openings and passages to non-air-conditioned floors, or even to places open outdoor air.

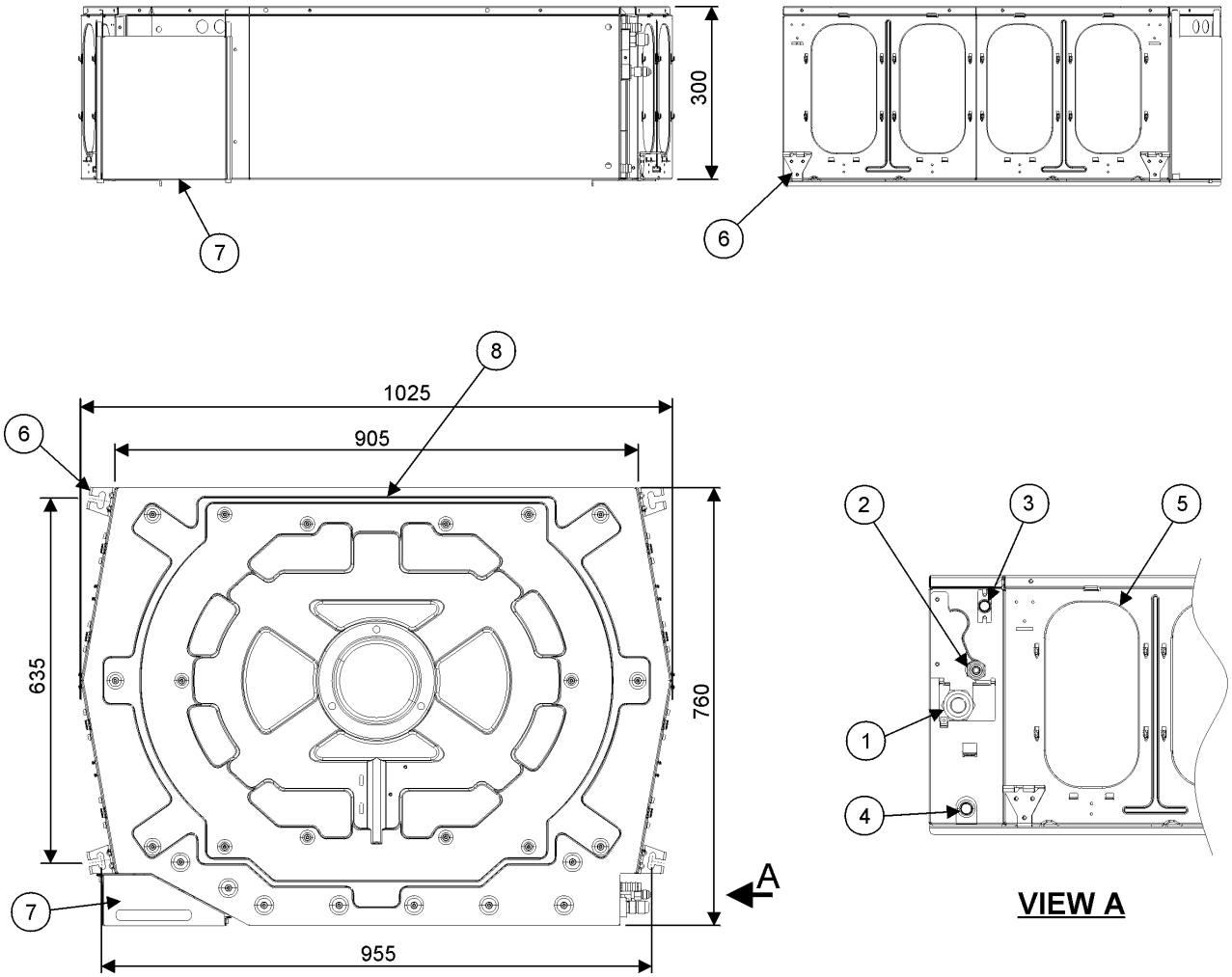
C. Incorrect allocation of air quantities among rooms.

D. Using incorrect air supply grilles - there is no possibility to direct the distribution of air as required.

E. De-icing of the thermostat is inactive - no telephone line was installed between the outdoor and the indoor units.

F. Lack of fresh air in a public place.

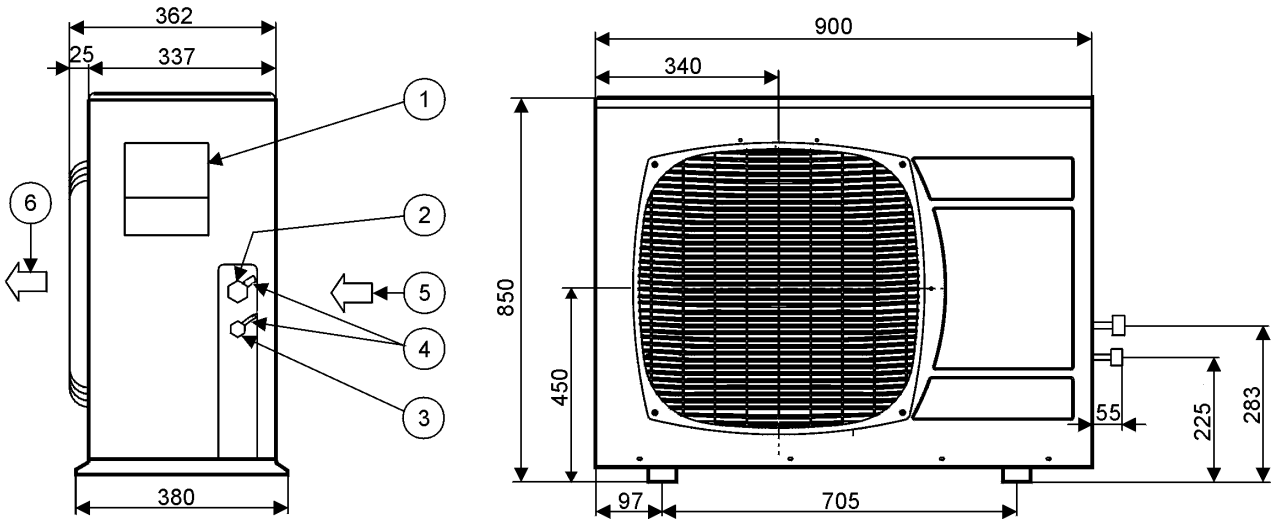
2.1 Indoor unit dimensions MD - all types



1. Suction tube connector (flared)
2. Liquid tube connector (flared)
3. Pump outlet ∅ 16 mm
4. Drain pool plug (for servicing purposes only)
5. 8” air supply opening
6. Hanging bracket
7. Electrical box
8. Fresh air opening

Fig. 1. General dimensions of MD indoor unit

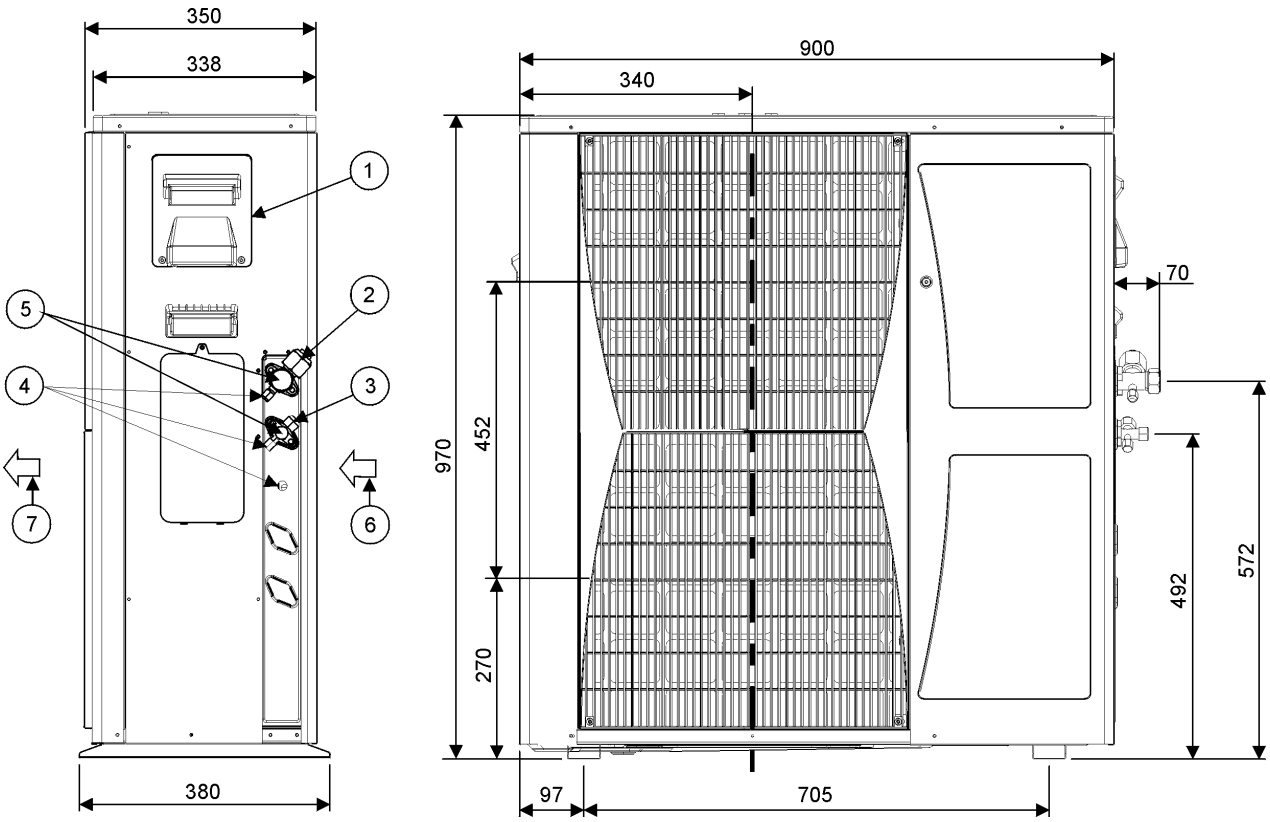
2.2 Outdoor unit dimensions MD 33



1. Wiring connections
2. Suction tube connector (flared)
3. Liquid tube connector (flared)
4. Service valve
5. Air inlet
6. Air outlet

Fig. 2. General dimensions of MD 33 outdoor unit

2.3 Outdoor unit dimensions: MD 38, MD 50



1. Wiring connections
2. Suction tube connector (flared)
3. Liquid tube connector (flared)
4. Service valves
5. Service taps
6. Air inlet
7. Air outlet

Fig. 3. General dimensions of MD 38, MD 50 outdoor units

3. Considerations for choosing installation location

3.1 Relative positioning between units

The outdoor unit must be installed as close as possible to the indoor unit, in order not to harm capacity. For determining the maximal distance allowed between them, see table No. 1 in paragraph 7.2. In case where there is a necessity to exceed that distance over described in table 1 - the Company's representative must be consulted.

3.2 Considerations in selecting location for installing the outdoor unit

- Convenient access option for service technician for handling the outdoor unit, as well as free airflow.
- Preventing direct sun radiation on the coil.
- Outdoor unit location will not disturb neighbors and the user.
- The outdoor unit will be located at the distance of at least 200 mm from the wall.
- In installation in enclosed space (porch, laundry room etc.), make sure there are sufficient ventilation openings ensuring release of hot air outside and preventing its return into the outdoor unit.
- In case of installing the outdoor units in a group, make sure that the hot air exiting from one outdoor unit will not flow into another.
- The outdoor unit must be installed on the wall by means of a special suspension that was hot - galvanized, or to put it on the floor or a platform, best installed at a height of not less than 100 mm.
- Make sure that the wall, on which the outdoor unit is installed, has a thickness of at least 200 mm, and has the capacity to carry the unit's weight. Abstain from mounting on a flimsy structure that might be subject to rattles and resonance.
- When the outdoor unit is installed on a level lower than the indoor unit, make sure the height difference between the units is according to the explanation that appears in table No. 1, paragraph 7.
- When the outdoor unit is installed above the level of the indoor unit, an oil trap must be incorporated into the suction line, every 5 meters of elevation.
- When installing the outdoor unit on a second floor, on a porch, or on a higher floor, make sure that the level of the outdoor unit upper casing is at the height of the railing. Still, if the outdoor unit was installed lower - take care that it is installed in such way to enable easy access and the possibility to remove the outdoor unit cover, during service operation.
- When the outdoor unit is installed in a place that has no free access - longer than regular tubes must be installed. These longer tubes must include a number of loops that will enable moving the unit during service operation.
- Consider the possibility of water dripping, during heating operation; if this dripping may disturb the neighbors, one must take care of drainage.
- Abstain from hanging the outdoor unit on bedroom walls.
- Outdoor unit must not be installed in places, to which access requires stepping on light roofs such as shingles and asbestos. No service shall ever be provided to outdoor units installed in such a manner.

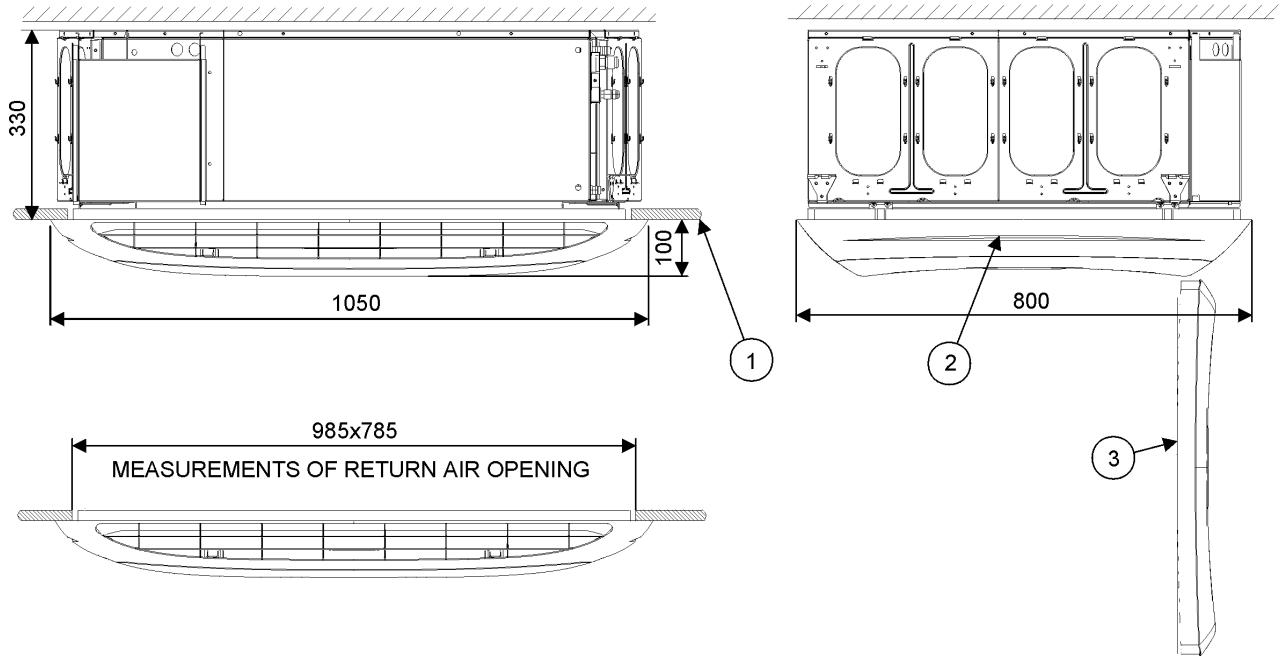
3.3 Considerations in selecting location for installing the indoor unit

- Enable maximal air dispersion, to the largest possible distance, within space that must be air - conditioned.
- Enable free passage for the return air.
- Ensure appropriate drainage of condensing water, which may be created within the unit.
- Make sure that the roof is strong enough to carry the weight of the unit.
- The unit must not be installed in an environment exposed to oil vapors or to other flammable materials.
- Either, the unit, and the remote control, must be installed at a distance of at least 3 m from any source of electromagnetic field.
- To ensure good performance in heating operation - the indoor unit must not be installed with its lower surface higher than 4 meters from the floor.
- In case of too high ceilings, the Company must be consulted.

4. Installation of the indoor unit

There are two typical indoor unit installations:

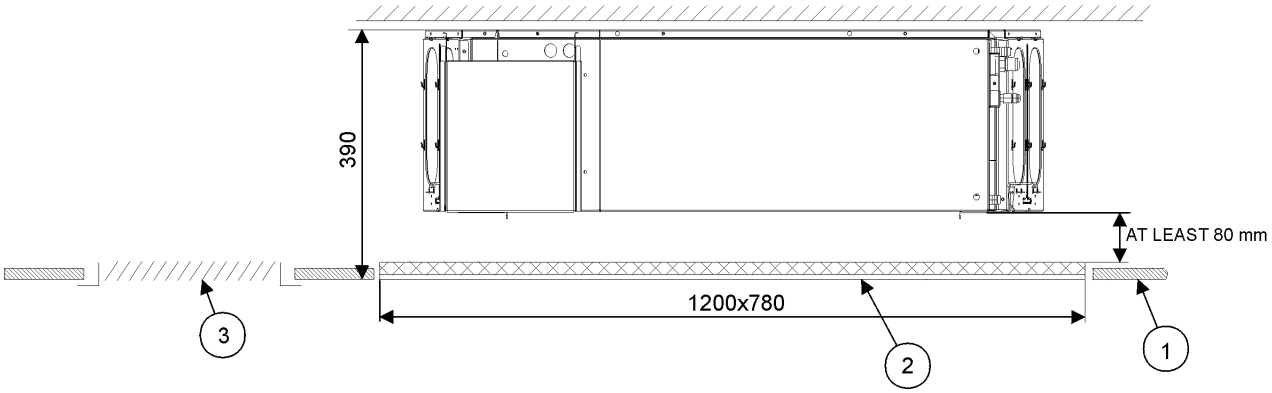
A. Installing the unit with MD return air panel, and lowering the ceiling to the unit's height.



1. Lowered ceiling
2. Return air panel frame
3. Filter access panel

Fig. 4. Installing the unit with MD return air panel

B. Installing the unit with service panel and conventional return air grille and lowering the ceiling to the distance of 80 mm, at least, below the unit.



1. Lowered ceiling
2. Service panel including acoustic isolation
3. Conventional return air grille

Fig. 5. Installing the unit with service panel and conventional return air grille

4.1 Hanging the indoor unit

There are two options to hang the indoor unit:

A. By means of a mounting plate.

B. By means of mounting brackets.

4.1.1. Hanging the indoor unit by means of a mounting plate

A. Select the location for the indoor unit while adhering to the instructions provided in paragraph 3.3.

B. Install two hanging tracks on the unit by means of 3 screws each one (see Fig. 6).

C. Mark the location for anchors on the ceiling.

D. Drill holes for the anchors.

E. Install the mounting plate on the ceiling and tighten the anchors.

F. Raise the unit and slide it onto the mounting plate (see Fig. 6).

Note:
One must level the unit.

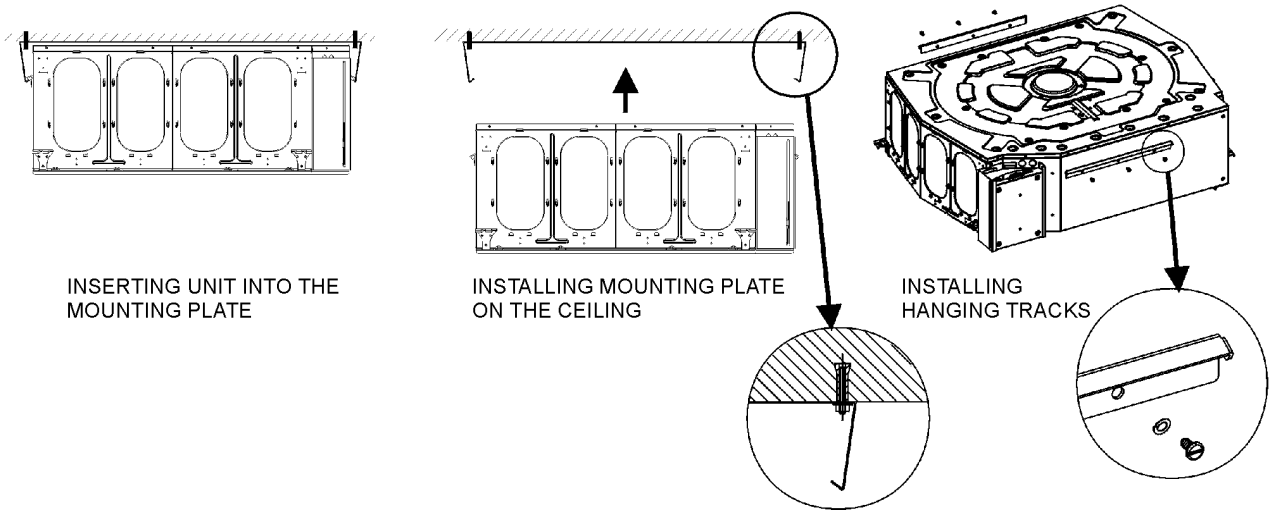


Fig. 6. Hanging the indoor unit on a mounting plate

Note:
Hanging the indoor unit on a mounting plate enables moving the unit in order to access tubing connections via the opening of return air panel (while servicing the unit). This option is useful when the ceilings cannot be taken apart (such as cement board ceilings, etc.). In order to facilitate moving the unit, the gas tubing must be prepared in an “S” form (see Fig. 7).

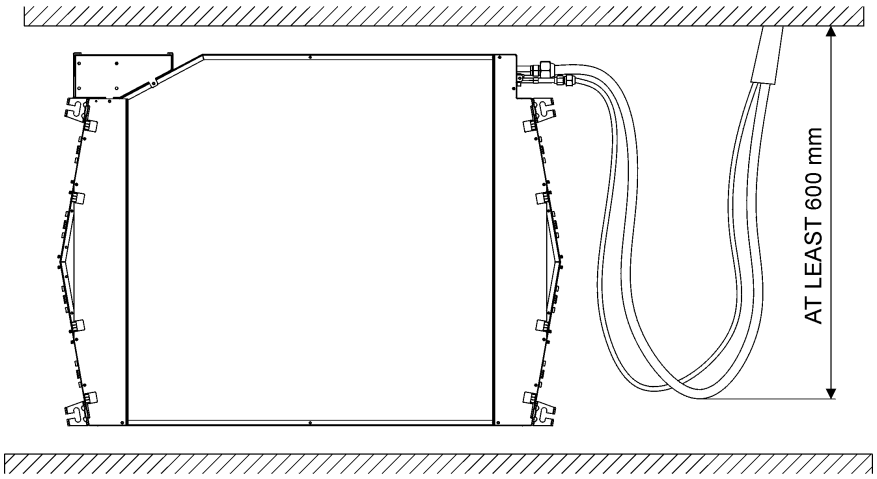


Fig. 7. Preparing gas tubing while using the mounting plate

4.1.2. Hanging the indoor unit by means of mounting brackets

A. Select location for the indoor unit while adhering to instructions provided in paragraph 3.3.

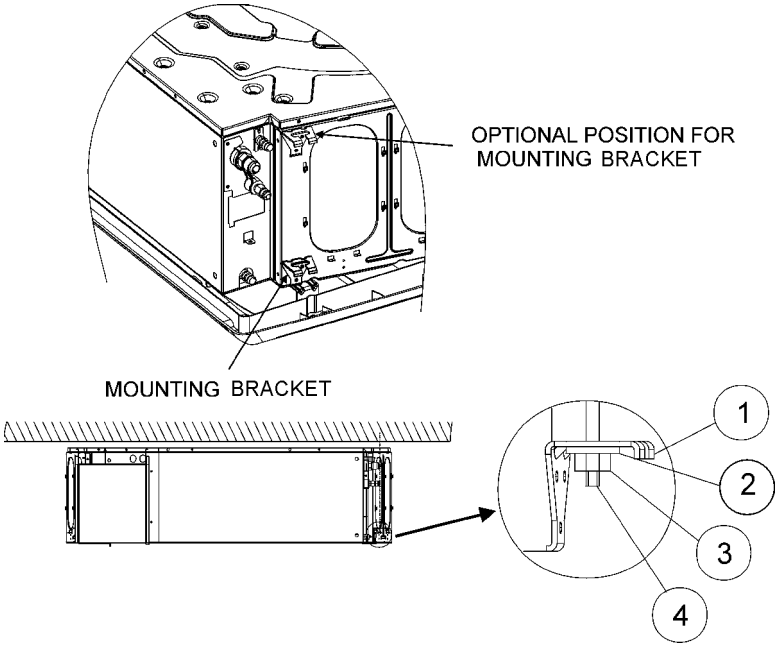
B. Select location for the unit's mounting brackets.

C. Mark the position of the hanging rods.

D. Drill the required holes for mounting flanges and install hanging rods.

E. Lift the unit carefully at all four corners.

F. Install the unit on the hanging rods by tightening the screws while making sure to keep the unit in a perfectly horizontal position.



1. Mounting bracket
2. Washer (supplied)
3. Nut
4. Hanging rod (3/8“ ,5/16“)

Fig. 8. Hanging the indoor unit on mounting brackets

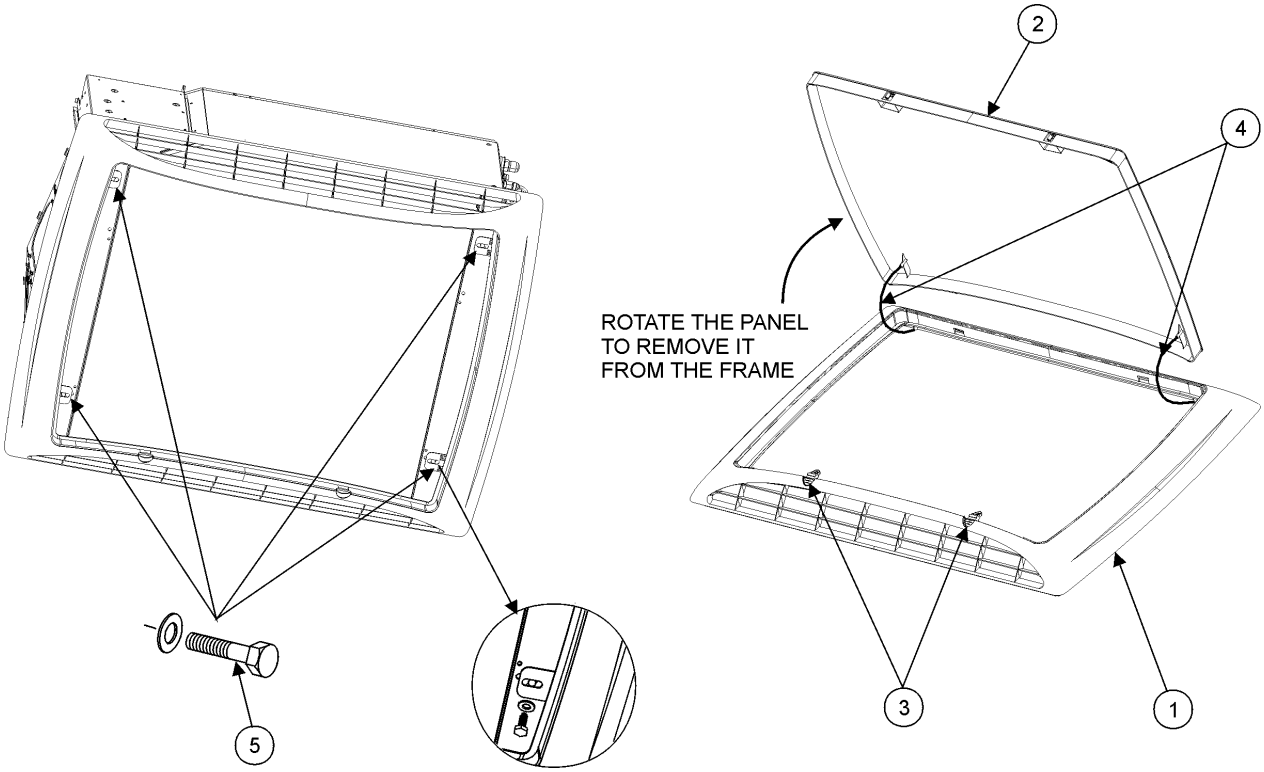
4.2 Installing MD return air panel

A. Carefully remove the entire return air panel from the packing.

B. Dismantle the filter access panel by pressing the two buttons in a circular motion and releasing the hanging wires (see Fig. 9).

C. Connect the frame to the unit using four screws and washers. After lowering the ceiling, the return air panel can be straightened according to ceiling lines or walls by releasing screws, moving frame and tightening the screws.

D. Insert the access panel into the frame and lock it by pressing.



Mounting the frame without the panel

Removing the panel from the frame

1. Frame
2. Panel
3. Buttons
4. Hanging wires
5. Screws and washers

Fig. 9. Installing return air panel

4.3 Fresh air supply (optional)

A. Using a knife cut an opening in the plastic air inlet (see Fig. 10).

B. Using a knife cut open the insulation in the fresh air opening connection (see Fig. 11).

C. Install special adapter and tighten it with four screws. Fresh air adapter can be purchased through Company service centers.

D. Connect fresh air duct with a 4-inch diameter.

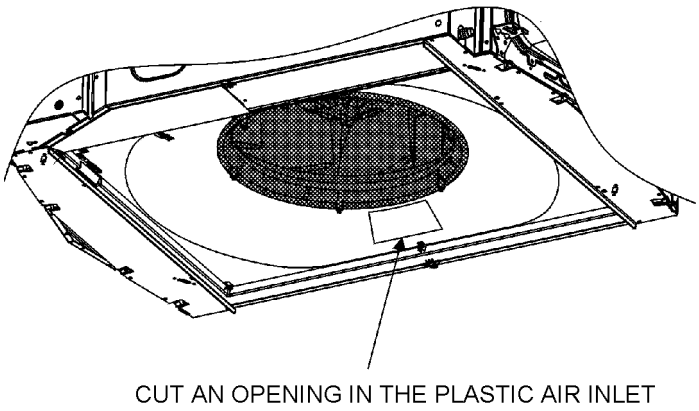


Fig. 10. Opening plastic air inlet for fresh air

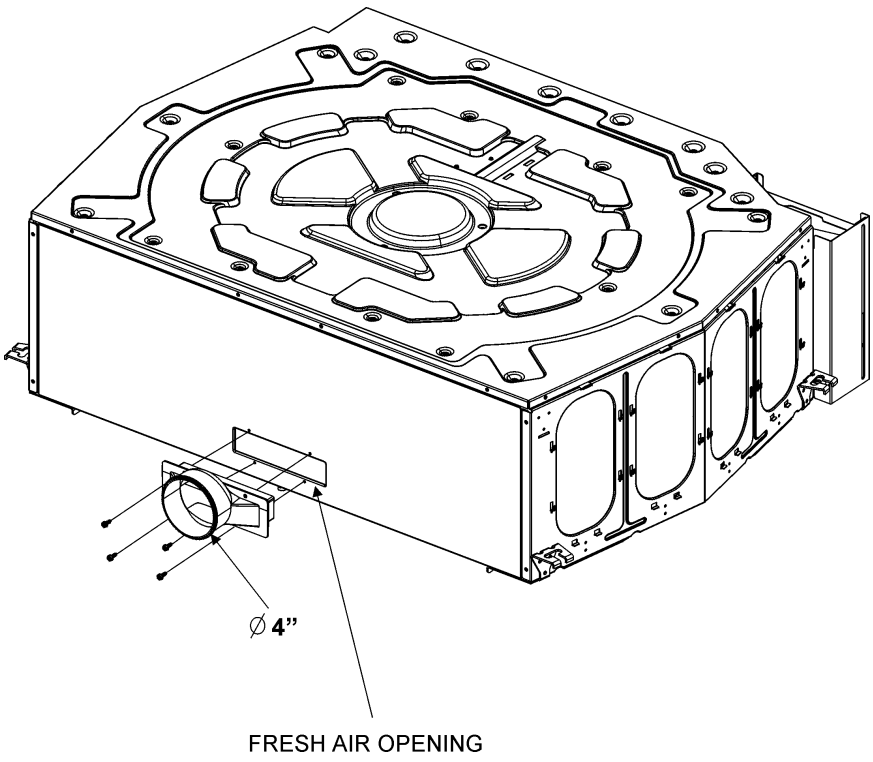


Fig. 11. Installing fresh air adapter

4.4 Connecting the drainage tube

A. It is recommended to prepare a drainage point with hard PVC ∅ 32 mm tube by a professional plumber, close to the indoor unit.

B. To enable proper drainage of the condensation water, the passage of the drainage must be planned in advance with a down slope of at least 1%, without creating any bottleneck and without upwards bends (see Fig. 12). Take care to integrate a siphon at a minimum of 50 mm height, in order to prevent penetration of unpleasant smells into the room.

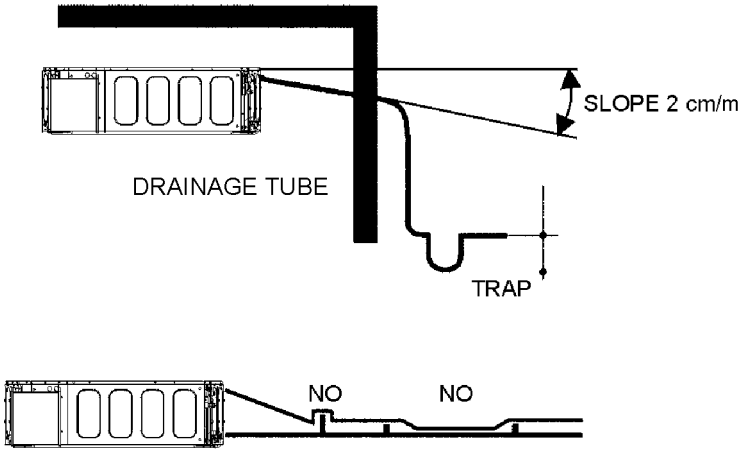


Fig. 12. Drainage tube connection

C. The MD unit includes a drainage pump with level control, which can elevate condensation water to a level of up to 60 cm from the unit's lower level. The drainage tube is connected to the upper drainage nozzle (see Fig. 13).

D. Lower drainage nozzle is intended to empty the drainage pool before servicing.

E. To check the system, fill the condense tray with water and verify its free flow through the drain line.

F. Install insulation of the Arma-flex type of 5-10 mm thickness for the condensation water line.

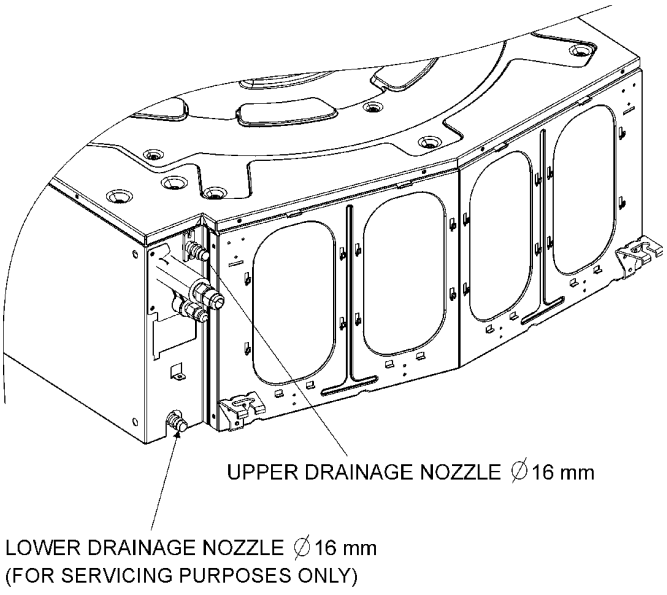


Fig. 13. Drainage connectors ∅ 16 mm

5. Installation of flexible ducts

The air-conditioner indoor unit has eight 8” air supply openings - 4 supply openings in each direction. Do not open more than a total of 6 openings. The amount of openings is intended for maximum flexibility of installation when in one side of the unit there are four rooms.
The air-conditioner is delivered with 2 open openings (one for each side). Additional openings can be easily opened by means of a cutting knife. Furthermore, the package includes a set of adapters for flexible ducts that include:

- 8" adapter - 4 units (in MD 33 model - 3 units)
- 12" adapter - one unit
- 12" to 10" adapter - one unit

5.1 Installation instructions

A. Select the necessary air openings and open them.

B. Install the adapters and secure them with the locking screw (see Fig. 14). For the installing convenience, the adapter can be mounted on the unit after it is connected to the flexible duct, before mounting the adapter to the unit.

C. Upon finishing the ducts installation and before closing the lower ceiling, check the air distribution. Installing a manual damper can regulate air distribution between the air - conditioned spaces. The damper can be regulated by turning the hexagon into the required direction. The damper can be installed in every air supply opening of the unit and the adapter is installed over it. After regulating - the locking screw must be tightened (see Fig. 15).

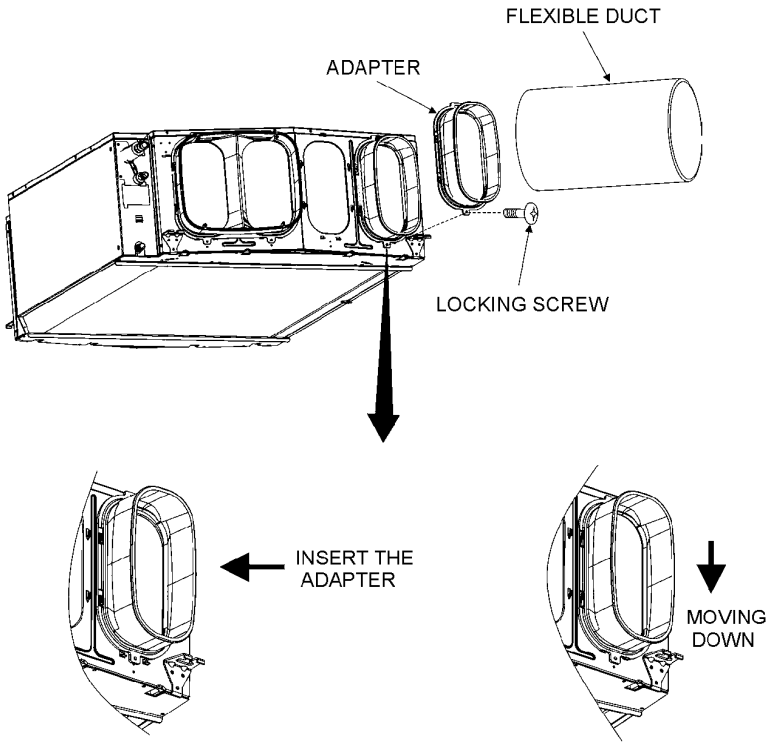
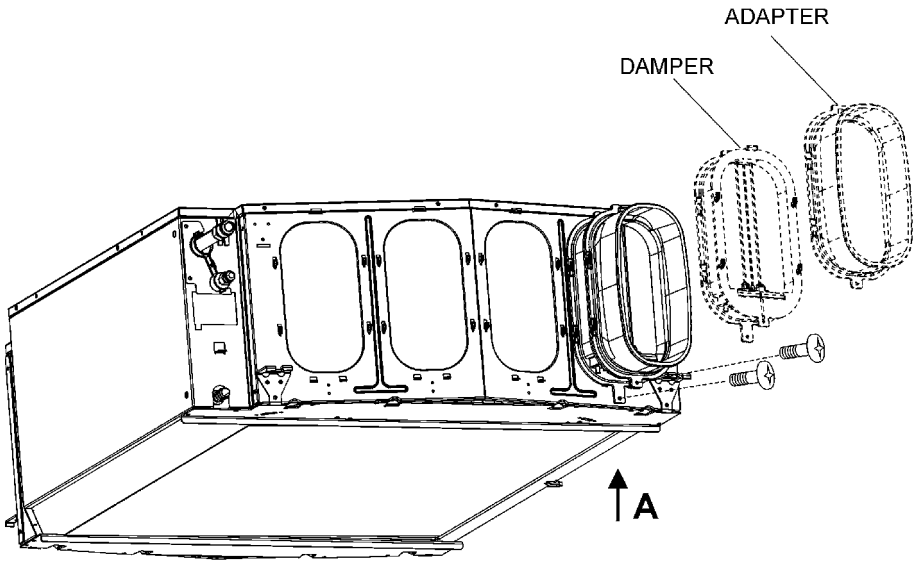
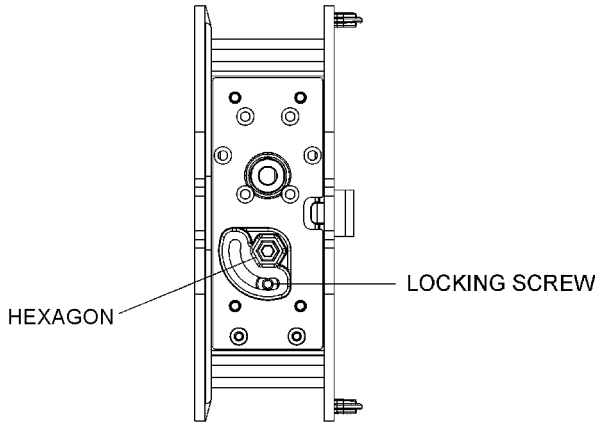


Fig. 14. Installing adapters and flexible ducts





VIEW A

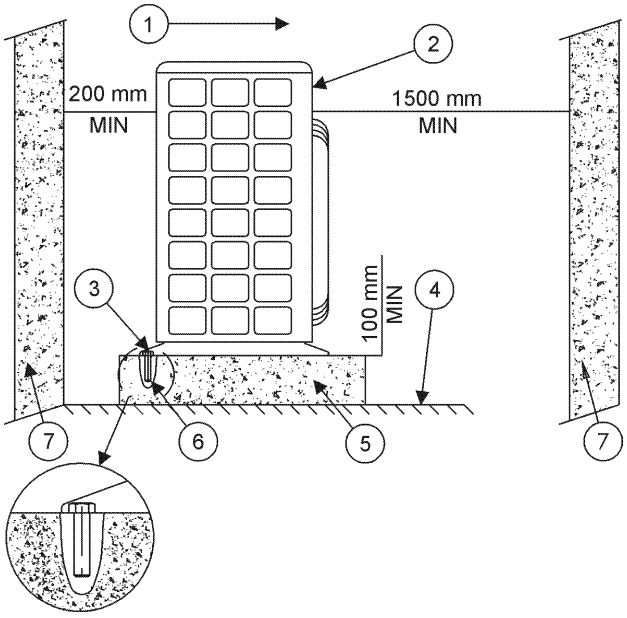
Fig. 15. Installing the manual damper

6. Installation of the outdoor unit

The outdoor unit must be installed on a raised and leveled concrete slab, or on a metal rack, with a height above ground of 100 mm.

Note:
Make sure slotted rubber pads are installed under the outdoor unit supports, otherwise vibrations might occur, and might be transmitted, with noise, into the building.

6.1 Installation on a concrete slab



1. Outside the building
2. Outdoor unit
3. Rubber padding under legs
4. Floor
5. Concrete slab
6. Anchoring screws
7. Building

Fig. 16. Installing the outdoor unit on a concrete slab

6.2 Installation on the wall

- Anchor the rack to the wall by means of 1/2“ diameter bolt - on studs with washers on the wall’s inner side.
- Make sure that the rack is level.
- Use only racks that were hot galvanized and are of appropriate strength, to carry the unit's weight - according to the Israeli standard, part 4.
- Position the outdoor unit on ribbed rubber pads supplied with the unit.

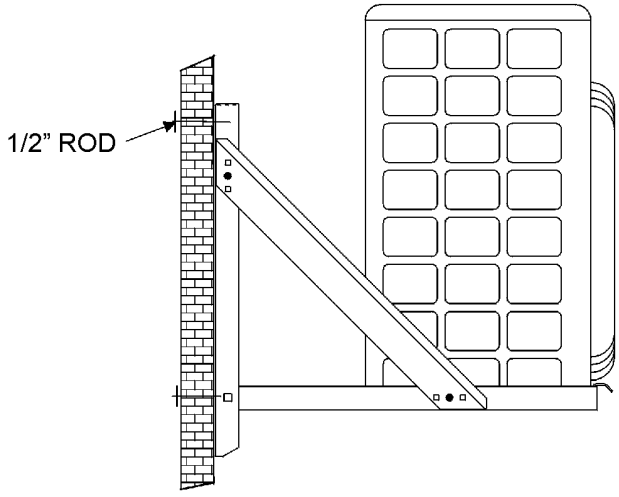


Fig. 17. Installing the outdoor unit on a rack frame

7. Installation of interconnecting tubing between indoor and outdoor units

7.1 General

For routing the interconnecting tubing between the indoor and the outdoor units, prepare passage for a 60 mm PVC tube (see Fig. 18).

Make sure the following:

- The passage tube must have a 10 degrees slant towards the outside, to prevent water from penetrating into the building.
- The seal of the space between the refrigerant tubes and the outer shell of the PVC tube should be done by an insulating material. The openings (both indoor and outdoor) must be sealed-off using the appropriate sealing material, to prevent water penetration.

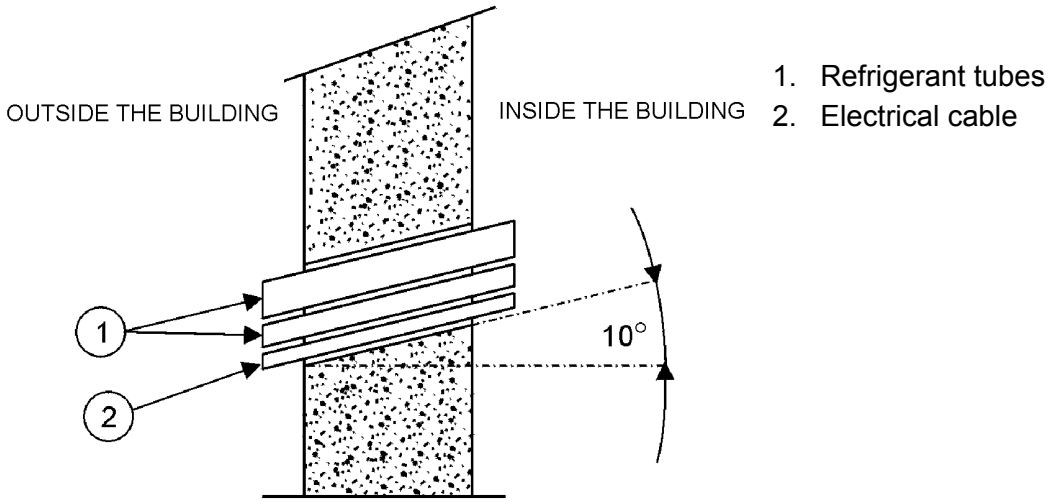


Fig. 18. Interconnecting tubing and cable between units

7.2 Gas tubes

During gas tubes (copper) installation, Abstain, as much as possible, from unnecessary bending of tubes. If bending is required, it must be performed using a professional tube - bending tool (never by hands). Take care to perfectly insulate the tubes throughout their entire length, including the tubes terminations and connectors, to prevent the tubes from sweating and water leakage in the area the tubes pass through.
Make sure that you direct the tubes route in straight lines as much as possible.
The copper part must be of the L type, to be whole and to be thermally insulated throughout its entire length.
The diameter of the tubes connecting the indoor and the outdoor units will be determined according to table No. 1. In tubes whose diameters differ from the diameter of connectors supplied with the unit - the technician must prepare a suitable transition, by soldering, that will connect between the unit connectors and the tubes.

Note:
Make sure the tubes are clean of dirt and moisture. If necessary, rinse and cleanse the tubes with Freon before performing vacuum.

Table 1. Recommended diameter for the connecting tubes (outer diameter in inches)

Model	Line Type	Length of Tubes up to (meter)					Maximal Height Difference
		10	15	20	25	30	
MD 33	Suction Liquid	5/8” 3/8”	5/8” 3/8”	3/4” 3/8”	3/4” 3/8”	3/4” 3/8”	10
MD 38	Suction Liquid	3/4” 3/8”	3/4” 3/8”	3/4” 3/8”	3/4” 3/8”	3/4” 3/8”	15
MD 50	Suction Liquid	3/4” 3/8”	3/4” 3/8”	3/4” 3/8”	3/4” 3/8”	7/8” 3/8”	15

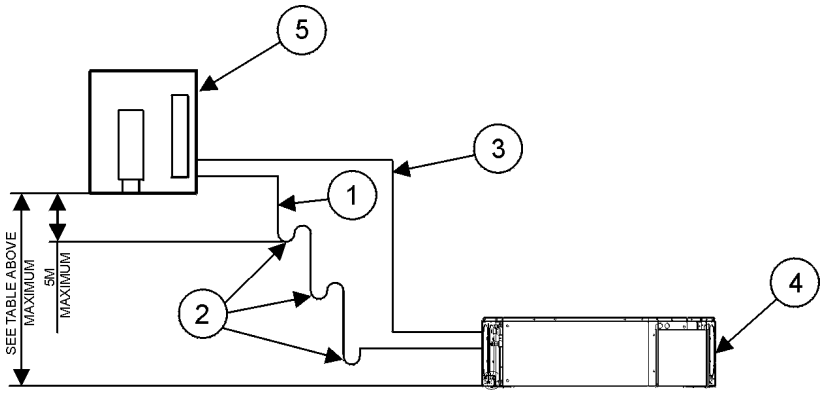
7.3 Relative positioning of the indoor and outdoor units

The options to position the outdoor unit in relation to position of the indoor unit are described schematically in Fig. 19, 20, 21 and 22.

- The outdoor unit is installed above the indoor unit (see Fig. 19). This type of installation requires an oil trap in the suction line. The oil trap will be positioned at that point where the vertical section of the tube starting to bend, and to continue horizontally from that point. The radius of the bend in the oil trap position must be the smallest possible (see Fig. 20). The suction tube, which is located in a horizontal position, shall have a 0.5% slope towards the outdoor unit.
- The liquid line should be parallel to the suction line (except for trap). In case the insulation must be partially removed for installation purposes, it is imperative that all the tubes be fully insulated with Arma-flex, including the connectors in the indoor unit, after installation has been completed.
- The outdoor unit is installed below the indoor unit according to table No. 1 (see Fig. 21). No oil traps are required in this type of installation. Refer to instructions described in previous paragraph.
- The outdoor and the indoor units are installed at the same level (see Fig. 22). No oil traps are required in this type of installation. Refer to instructions described in previous paragraph.

Pay attention!

The maximal distance of the tubes, which connects the outdoor unit with the indoor unit, must not be longer than the lengths listed in the table. For installations, which require longer tubes routing between the units, one must consult the Company’s authorized representative.



1. Suction tube
2. Oil trap every 5 m
3. Liquid tube
4. Indoor unit
5. Outdoor unit

Fig. 19. Outdoor unit installed above the indoor unit

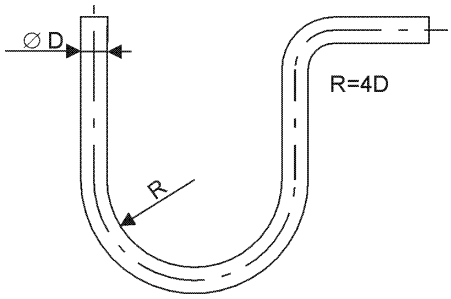
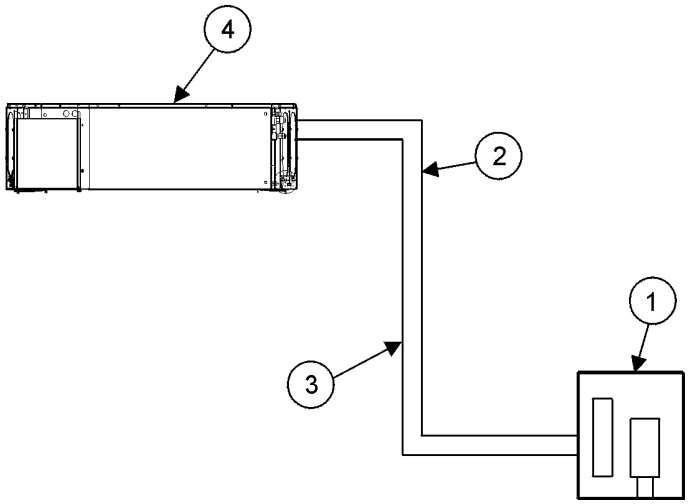
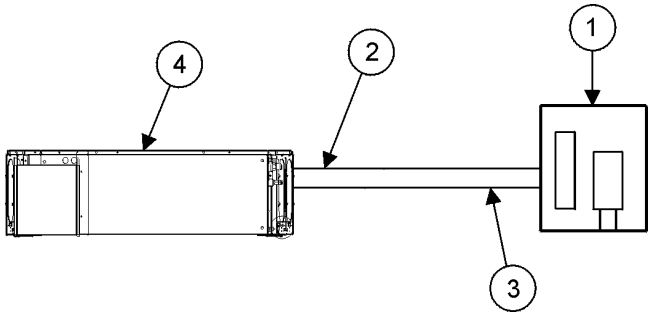


Fig. 20. The radius of curve in oil trap



1. Outdoor unit
2. Liquid tube
3. Suction tube
4. Indoor unit

Fig. 21. Outdoor unit installed below the indoor unit



1. Outdoor unit
2. Suction tube
3. Liquid tube
4. Indoor unit

Fig. 22. Outdoor and indoor units are installed at the same level

7.4 Insulating the gas tubes

A. Insulate each tube separately, using 6 mm thick insulation for the 3/8”-5/8“ diameter tubes, and 9 mm thick insulation for the 3/4“ tubes.

B. Wrap the refrigerant tubes and wiring cables with a white PVC tape (ultraviolet protected). Alternatively, the entire tubes assembly can be pass through a duct.

C. After testing the operation of the air-conditioning system, and making sure there is no leakage from the connectors, insulate the connectors.

7.5 Preparing the flare and connecting the tubes between units

A. Cut the tube on which the flare must be performed with a tube cutter; make sure that the cut is perpendicular to the tube axis and is clean off debris (see Fig. 23).

Note:
Before processing tube endings by means of the flaring tool, slide the flaring nuts; use only flaring nuts supplied with the unit. In order to facilitate the connection it is advisable to use several drops of cooling oil.

B. Set the tube within the flaring tool (see Fig. 24). The height "A" of the tube protrusion will be determined by the tube outer diameter. See table No. 2.

C. Flare the cones on the tube endings that are connected to the indoor and outdoor units.

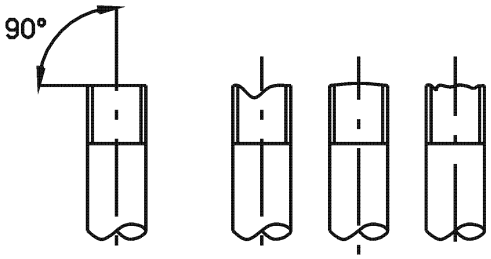


Fig. 23. Cutting the tube

1. Copper tube
2. Flaring tool

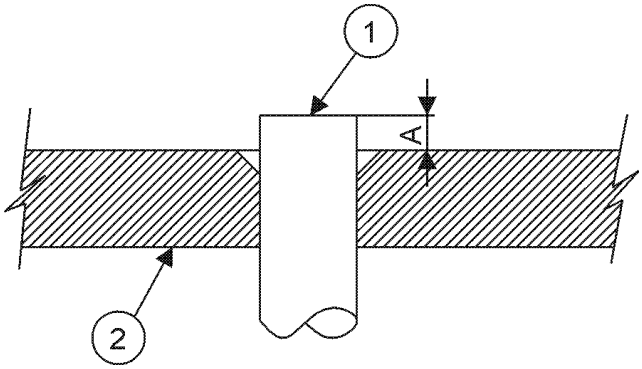


Fig. 24. Setting the tube in the flaring tool

Table 2. Setting the height "A" of the tube protrusion (outer tube diameter in inches)

A (mm)	Outer tube diameter (inch)
1.3	3/8“
1.6	1/2”
1.9	5/8”
2.1	3/4“

8. Preparing the air-conditioner for operation

The advanced steps to prepare the air-conditioner for operation are critical in guaranteeing the appropriate operation of the air-conditioner for a long time; adhere meticulously to the following steps:

- Make sure that the connecting tubes are clean of dirt and moisture. If necessary, rinse and clean with ammonia before connecting the units.
- Release the nuts in the indoor unit only when you are ready to connect the tubes! (The indoor unit contains a small amount of gas and is under pressure).
- In order to prevent possible breakage of the tubes, and to receive maximal diameter the tubes must be bent by means of a special bending tool specifically designed for bending copper tubes.

8.1 Performing vacuum in the indoor unit and in tubes

A. Connect the flare nuts to the suitable connectors in the units (see Fig. 25).

B. Connect two charging tubes with the ends without locking pins to the pressure gage connection in the manifold. Connect the other two ends of the tubes, with locking pins, to the service opening on the suction tap and the liquid tap (see Fig. 25).

Note:
In units, where there is no service valve in the liquid tap, connect the tube to the suction tap only (the service valve in the liquid tap is supplied only in certain units).

C. Connect the charging tube from the middle connection of the manifold to the vacuum pump.

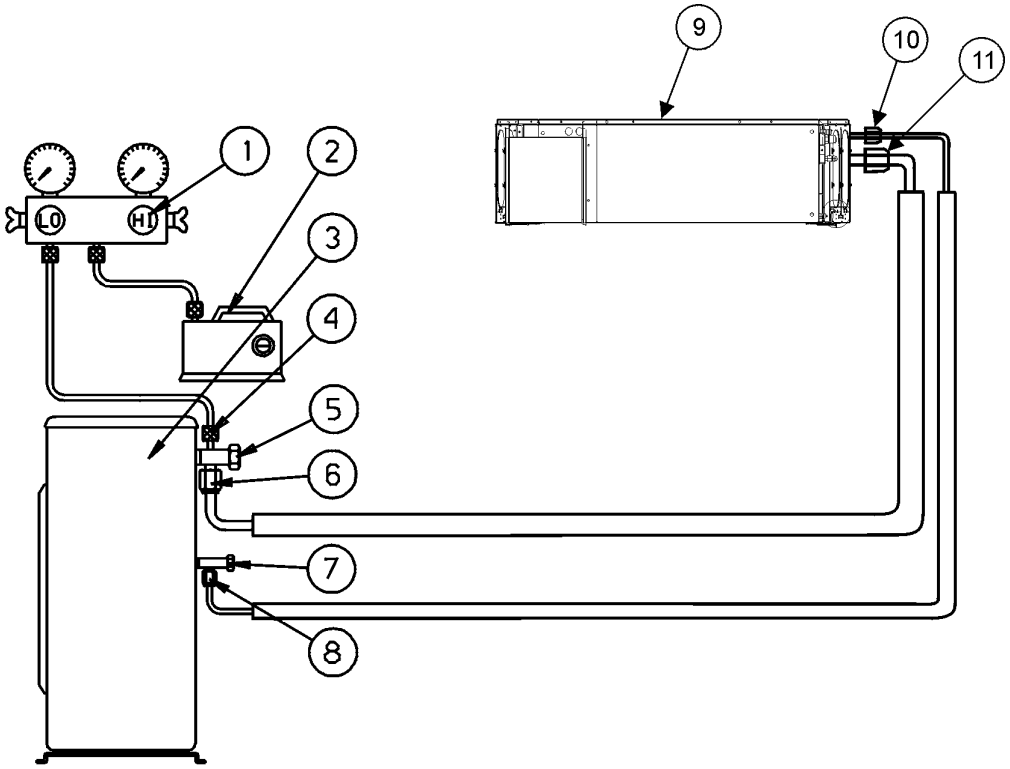
D. Activate the vacuum pump (service taps are closed); make sure that the suction pressure gage moves between 0 cm-Hg to 76 cm-Hg, and enable the system to perform the vacuum operation for 10 minutes.

Warning:
If the pressure gage does not show movement from 0 cm-Hg to 76 cm-Hg, it testifies that the system is not sealed off. The following action must be taken: tighten all connections. If the leakage was corrected after tightening the connectors, continue working according to the following steps. If leakage was not corrected after tightening the connectors, find the location of the leakage (by means of soapsuds) and correct as necessary. Continue the process according to the following steps only after correcting all signs of leakage.

E. Close the two service taps of the manifold, on suction side and on the compression side, and stop the operation of the vacuum pump. Make sure that at this stage the pressure gage remains stationary and stable, and does not change its reading for the next 5 minutes.

F. Disconnect charging tubes from the pump and from the two service taps.

G. Close and tighten the two protective caps of the service taps. Take care to use torque wrench, set to the appropriate torque value (see table No. 3 for the appropriate torque values for tightening the connectors).



1. Service manifold
2. Vacuum pump
3. Outdoor unit
4. Service valve
5. Cap
6. Suction tap
7. Service valve (optional)
8. Liquid tap
9. Indoor unit
10. Flared connection - suction side
11. Flared connection - liquid side

Fig. 25. Tube connections for performing vacuum test

8.2 Tightening nuts

Warning:
While opening or closing gas taps, as described in the following steps, you must not expose your face to the service openings and / or any other openings when you try to insert the Allen key; remember that the system is under pressure.

A. Remove the caps from the two taps using Allen key; open the two caps to their fully open position. Finally, close back the two caps.

B. Check the connectors using a leakage-detecting device, or by solution of water and soap in order to make sure that there is absolutely no leakage in all the connection sites.

C. The outdoor unit is delivered with some amounts of gas and oil - sufficient for tubes with the length specified in the nameplate located on the side of the unit. If adding gas is required, only an authorized technician must do it, and only by means of a gas charging measuring tube, or an electronic scale - all that after performing vacuum.

Table 3. Torque values for tightening the connectors

Tube diameter (inch) Torque (N.m)	1/4	3/8	1/2	5/8	3/4
Flare nut	11-13	40-45	60-65	70-75	80-85
Protective cap	13-20	13-20	18-25	18-25	40-50
Service valve	11-13	11-13	11-13	11-13	11-13

1. Tap cap
2. Crevice for inserting Allen key
3. Protective cap
4. Tap
5. Service valve
6. Flare nut
7. Unit back
8. Tubes

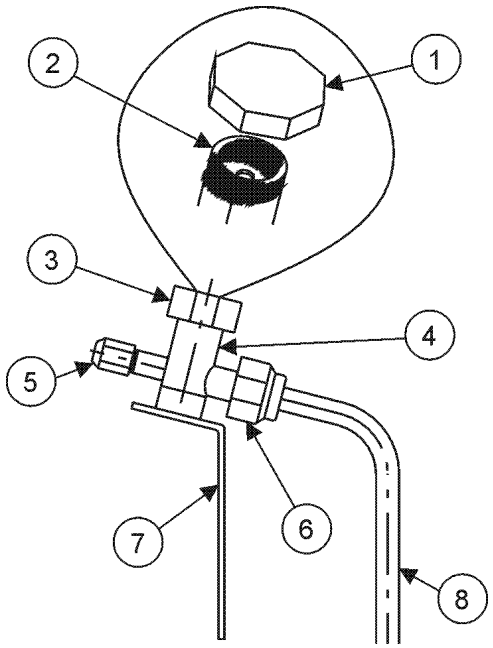


Fig. 26. Service tap for the cooling system

9. Electrical and tubes installation

Make sure that the electrical cable connecting between the indoor and the outdoor units is of the NYY type (triple insulation). Make sure and check that the cable is continuous and contains grounding wires. The electrical connection to the outdoor unit will be made by means of a quick connector provided with the unit. When installing the cable under the floor, it must be good protective and isolated from any possible contact with water. It is obligatory to connect the feeding cable through an automatic circuit breaker (Type C), with a time-delay, and with a ground-leakage detection circuit breaker. The allowed voltage swing is 10%.

Note:
When there is a case of a duct system with large pressure losses, the high - speed connection of the indoor unit motor must be modified, refer to wiring diagram.

- Appropriate length of wires must be provided, to enable the lowering of electrical power box.
- In order to install a connecting cable and a communication cable between the units, the electrical power box must be lowered.
- The stages of lowering the electrical power box are:
  1. Release two screws at the bottom of the box (see Fig. 27).
  2. Lower the box (see Fig. 28).
  3. If necessary, take the box out off the rail by removing the screw (see Fig.29).

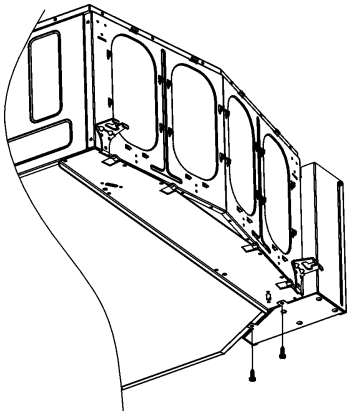


Fig. 27. Releasing screws at the bottom of the box

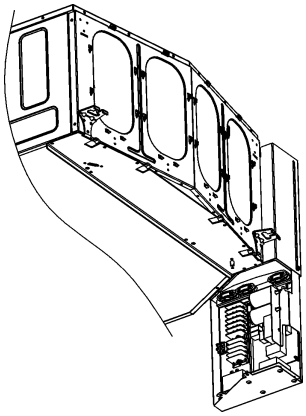


Fig. 28. Lowering the box

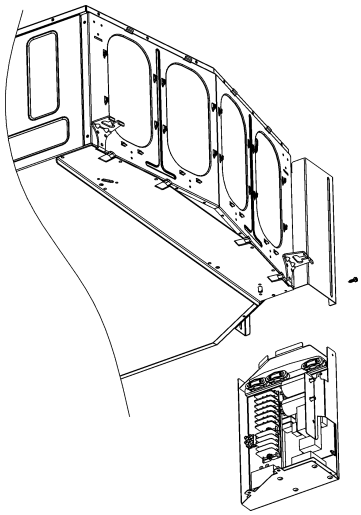


Fig. 29. Taking the box off the rail

9.1 1PH units

Customer is required to provide an appropriate main power supply, which must include:

- A time-delayed, C type, single-phase automatic circuit breaker, to be installed at the beginning of the main supply line, on the main connection panel. The capacity of the automatic circuit breaker can be determined according to the nameplate.
- An electrical cable suitable to the capacity of the automatic circuit breaker.
- Main power supply will be terminated with a standard circuit breaker that has a minimal contacts gap of 3 mm installed nearly from outdoor unit.

9.2 3PH units

Technician is required to provide an appropriate main power supply, which must include:

- A time-delayed, C type, triple-phase automatic circuit breaker, to be installed at the beginning of the main supply line, on the main connection panel. The capacity of the automatic circuit breaker can be determined according to the nameplate.
- An electrical cable suitable to the capacity of the automatic circuit breaker.
- The main supply line will be terminated close to the outdoor unit, either with a safety switch water proof, or with a water-proof socket.

1. Outdoor unit
2. Terminal block
3. Connecting cable between units
4. Indoor unit
5. Control display
6. Wireless remote control
7. Wired remote control (optional)
8. Power supply
9. Two - wire control cable
10. Safety switch in outdoor unit, water protected (installed by an electrician)
11. Safety switch in indoor unit, 16A

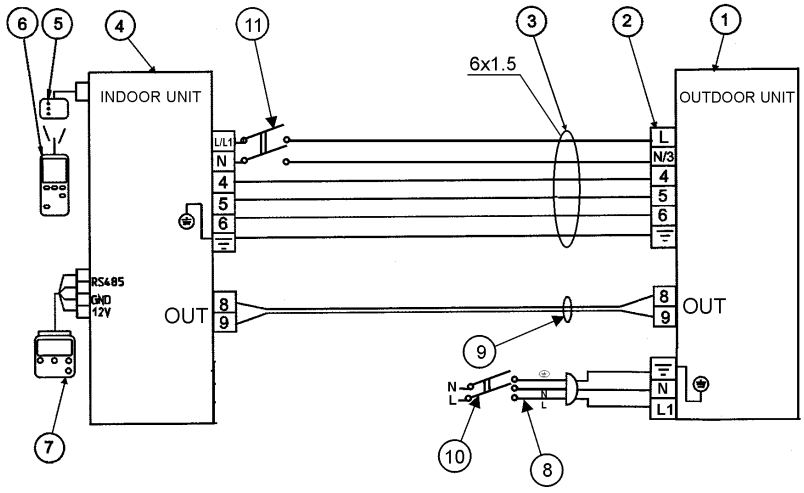


Fig. 30. Electrical wiring diagram - one-phase units (power supply to outdoor unit)

1. Outdoor unit
2. Terminal block
3. Connecting cable between units
4. Indoor unit
5. Control display
6. Wireless remote control
7. Wired remote control (optional)
8. Power supply
9. Two - wire control cable
10. Safety switch in outdoor unit, water protected (installed by an electrician)
11. Safety switch in indoor unit 10A

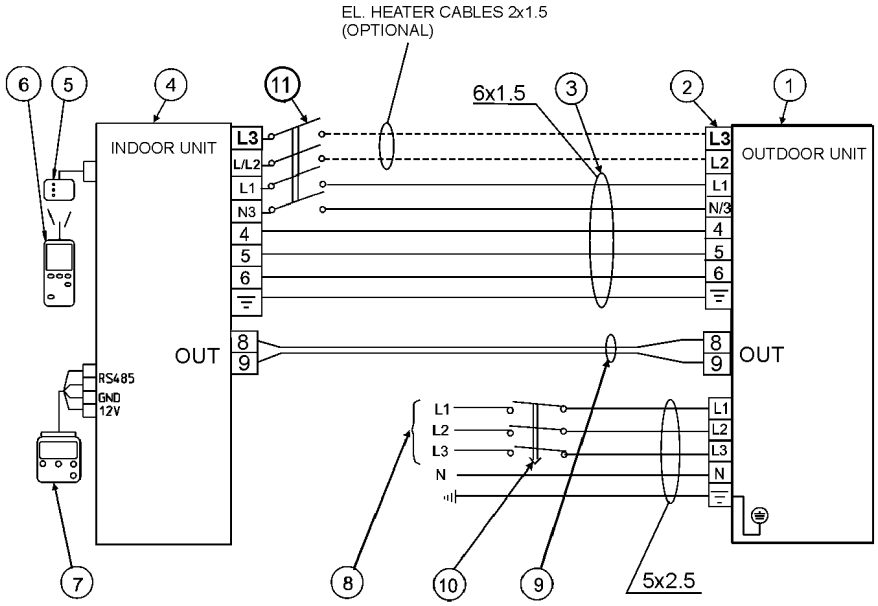


Fig. 31. Electrical wiring diagram - three-phase unit

10. Remote control

- Installation instructions for the remote control are supplied with the remote control.
- In case off wireless remote control, locate it so that it will be in line sight with the control display (at less than 10 m).
- In each case when the user wants to operate the air-conditioner, by using the remote control sensor (in operation modes of LOCAL, I FEEL), the remote control unit must be positioned in a place that will reflect the average temperature in the air-conditioned area or in the user's proximity. In no case the remote control must be positioned within the direct airflow that exits from the grilles.

11. Tests upon completing installation

A. Return all caps and covers to their places and make sure that they are tightly closed.

B. Seal off all cracks and crevices on the tube sides and bore holes.

C. Connect the electrical wires and the tubes to the walls, by means of the brackets. See instructions in paragraph 9.

D. Check the air-conditioner for all aspects and modes of operation. If necessary, consult the user manual.

1) Testing the indoor unit
   - All remote control commands are received in the air-conditioner control panel.
   - The lights on the control panel operate correctly.
   - The air-conditioner performs all commands of the remote control.

2) **Testing the outdoor unit**
   - There is no exceptional noise or vibrations during the air-conditioner operation.
   - Noise, drainage of condensed water or airflow are not disturbing the neighbors.
   - Unusual noise from the compressor, in the three-phase unit. In case of noise, make sure that the phases are connected correctly.

3) **Activate the air-conditioner for cooling and heating**

   Following are a number of operation instructions that must be conveyed to customer:
   - How to remove the filter, to clean it, and return it to its place.
   - How to turn on and off the air-conditioner.
   - How to choose between cooling and heating modes and setting the desirable temperature.
   - How to set the turn-on and turn-off times by means of the timer.
   - How to operate the air-conditioner from the control panel.
   - Give the customer the installation and operation brochures.
   - Help the customer to fill-in the warranty form.

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