UNTES®

HEATING VENTILATING AIR CONDITIONING

ROOF TYPE AIR CONDITIONER

INSTRUCTIONS FOR
INSTALLATION, COMMISSIONING, MAINTENANCE and USE

CE

Please read these instructions first!

Dear Customer,

Thank you for choosing UNTES. Please be sure that all of our products are produced in modern production facilities and subjected to a continuous quality control procedure to provide you the highest performance. For that reason, we ask you to read the whole instruction manual before you use the product and keep it as a reference guide for future use.

• Read the instruction manual before you install and start-up the product.
• Comply with the information about security.
• Keep the instruction manual for future use.

Yours sincerely,

Untes Air Conditioning Systems

TABLE OF CONTENT

1. INTRODUCTION AND GENERAL NOTIFICATIONS

The manual hereby was prepared according to TS 11823/95 Standard and users need to know these instructions and the other montage instructions given with this manual before starting-up their devices. With this manual, a high-security reference guide was envisioned to be prepared for installation, commissioning, operation and maintenance of roof type devices (URTP). The users must refer to the information in this manual with high importance for their own safety and comfort.

1.1. General Warnings

- Pay attention to the transport and conservation conditions in the instruction manual.
- Absolutely comply with EN378 or ISO5149 standards for installation.
- After having received and before commissioning the device, certainly perform a damage control. Be sure that cooling circuits aren't undamaged and they haven't and damage to cause leakages. In case any damage is detected, absolutely contact the relevant departments.
- List of spare parts should be requested from the company for use when required.
- Temperature values should be between -25 and +55 Celsius at conservation area.

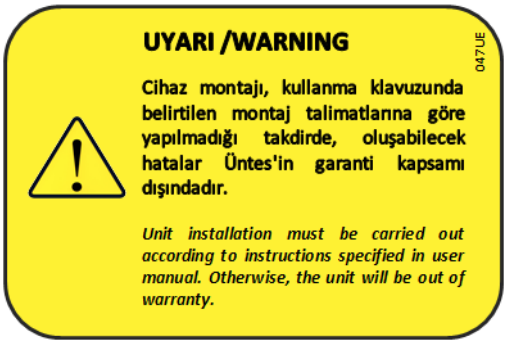
  Devices are for outer areas and were designed to operate at a clean environment. Conserving devices at risky environments for short or long periods may lead to temporary or permanent damages in them: Severely humid environments (humid basements, near sea, lake and river etc.), environments where a part of the devices may soak into water and where they may be covered with excessive dust or be earthen up, environments near areas such as boiler flue kitchen flue, car park flue, cesspool or sewage flue, placements on inclined area more than 15º, under rainwater gutters, under trees where there may sometimes be leakage such as pine and palm trees, near walls where work is being carried on.
- This unit designed for the outdoor conditions, not for use indoor conditions. The unit should be placed somewhere obstructing access by impotent people, moreover this position should absolutely be away from ignitable, explosives and inflammables.
- Packaging shouldn't be removed until the device reaches to the installation point so that no damage occurs on the device.
- Personnel to work on these units should be trained and licensed (licensed according to BA4 if IEC 60364 categorization).
- In devices with hot water coil, water within the heat exchanger should be drained through drainage valve on the equipments when water heat exchanger isn't used and the outer temperature drops under 3ºC.
- In devices with hot water coil, plastic plugs shouldn't be taken away from heat exchanger pipe outlets until pie connections are ready.
- In devices with hot water coil, hot water circulation should be going on even if the device stops at days when the outer temperature drops under 3ºC.
- In devices with hot water coil, water temperature flowing to the heat exchanger shouldn't be lower than +35 ºC.
- Heat exchangers should be controlled against the possibility of having been damaged during transportation, if required, aluminum lamellas should be corrected by combing (if they have been smashed).

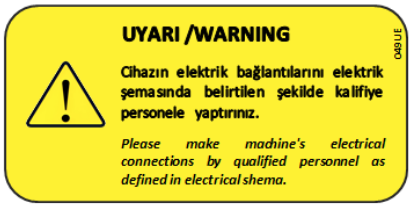
- Hardness of the water being used exceeds the value of 30ºfH; water should be subjected to hardness reduction procedure.
- PH level of the water being used is between 6 and 8, or at the level of 7.5 if possible.
- In drainage piping, drainage pipe diameter should be considered not to be lower than condensation pan outlet pipe diameter.
- Pay attention to necessary conditions for pipe connections of hot water coil.
- In winter conditions under 0 ºC, the device should be isolated on return line.
- The directions on the gas firing unit are only valid in the countries which are shown in the symbols on the units. If symbol of the country not shown, please contact us for to make arrangements on the unit for proper conditions to be used.
- For gas firing units, operating gas pressures should be at 20mbar for natural gas. In case the maximum compressive strength of gas pass is 60mbar and over this value, gas pass equipments of the device will break down and the device will be out-of-order.
- Electrical connections to be provided to the device panel from outer surface should be in compliance with the rules.
- The device cannot be used at environments with explosion hazard.
- Never perform any repair or maintenance work on the device when electricity plugged in.
- By using a voltmeter, the tag value of voltage should be checked to stay within ±%5 tolerances.
- Approximately four hours before the device is commissioned, switch on the electric supply line should be changed into off (there is electric power) status.
- While performing any maintenance on the device, the unit electricity should be unplugged and a warning sign should be used to state that the device is under maintenance.
- Let no unauthorized people to intervene with the parts of the device with electric power.
- Don’t touch electrical equipments of the device with bare hands without any protection.
- Don’t run the device while electrical and electronic equipments of the device are subjected to the environmental conditions by opening protective doors and panels.
- Never use gas pipes in grounding the device.
- Don’t touch hot surfaces and flue pipe of the device while operating.
- Gas firing unit and control unit shouldn’t be made wet with water or any other liquids.
- Don’t put anything inside or on the gas firing unit to prevent it from operating.
- Don’t touch moving parts of the gas firing when operating.
- Any maintenance and control procedure on the gas firing unit should be performed according to the rules defined in the manual.

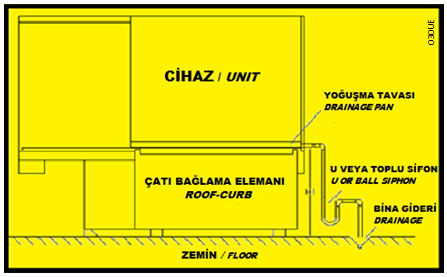
- The device involves cooling gas and transporting procedures should be applied by complying with all conditions of local regulations. In case of gas leakage, gas accumulation inside closed areas causes a high risk. Gas may lead to suffocation by replacing oxygen (in case it is inhaled for a long period or it is exposed of, it causes irritation on skin and at eyes, irregular heartbeat, loss of consciousness and even death) or explosions.
- Equipments on cooling circuits are must be checked if they operate right or not.
- Global warming potential of R-410A gas in use is (GWP):1975. According to European or local laws, periodical maintenance and controls need to be carried out for cooling gas leakages. These maintenance and controls should be performed according to national laws.
- NF E29-795 standard regulating the use and collection of halogenated hydrocarbons should absolutely be known about.
- Conditions defined for refrigerant charge should be considered.
- The device should have R-410A base and an operation pressure of ~40 bar. While working on the cooling circuit, special protection equipments should absolutely be used.
- Whether there is any bubble formation at the liquid line should be checked from the sight glass to see that the gas charge is enough, bubble formation shows that gas charge isn't enough.
- Don't step on refrigerant lines, equipments may break or crack when exposed to load. This situation may lead to injuries.
- When 410A gas or steam causes irritation when touches the eye and/or skin. Therefore, exposure to this gas should be abstained from.
- Hot pipe line, compressor outlet and electric heater are structures with high thermal hazard. These hazards should be considered.
- Caution! If cooling gas contacts with flame, it generates poisonous gas.
- Due to electromagnetic effects, the device shouldn't be operated near sensitive devices. People with cardiac pacemakers should be cautious about that.
- Room-type combines heat or humidity meter should be mounted minimum at 1.5 m.
- The device should be taken into pre-controls before commissioning.
- In a cooling system working right, extra heating level should be between 4-10 ºC.
- Power used by compressor should be measured by the contactor on the panel and checked if the given values are exceeded.
- Operation status of high pressure prosestat should be checked.
- Operation status of low pressure sensor should be checked.
- While cleaning the device, it shouldn't be passed over that wrong applications may cause unwanted damage on the device and/ or operator. Disposed as to solid waste procedure.
- Compressed air should be used for fan cleaning, if possible. Air shouldn't involve possible lubricant particles.

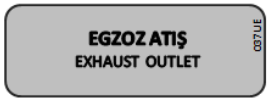
1.2. Signs and Marks Used on the Product

Marks used for the purpose of warning and informing on the device are as follows.









040UE

UYARI/WARNING

- **Cihazı devreye almadan önce montaj, devreye alma, bakım ve kullanım kılavuzunu okuyunuz.**

  Read installation, start up, maintenance and user manual completely and carefully before starting the unit up.

- **Sistemin montaj ve işletmesini ehliyetli personele yaptırınız.**

  Make the operation and maintenance by authorized personnel.

- **Cihaz kanal bağlantılarını branda ile birleştiriniz.**

  Use canvas in joining the ducts.

- **Cihazın elektrik bağlantılarını elektrik şemasında belirtilen şekilde kalifiye personele yaptırınız ve mutlaka topraklı hat kullanınız.**

  Make unit's electrical connections by qualified personnel as defined in electrical shema and use a network which has earth circuit.

- **Cihaz beyan gerilimine uygun olarak şebeke gerilimini kontrol ediniz.**

  Check out your voltage conformity in accordance with the voltage declaration in instructions.

- **Elektrik panosunun cihaza uygunluğunu kontrol ediniz ve koruyucu şalter kullanınız.**

  Check out your electrical panel's conformity with the unit and use safety switch certainly.

048UE

DİKKAT/ATTENTION

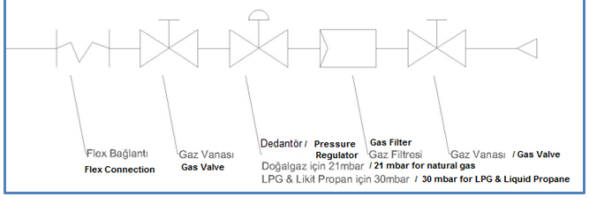
CİHAZI DEVREYE ALMADAN EN AZ 24 SAAT ÖNCE ELEKTRİK BESLEMESİNİ AÇINIZ VE KARTER ISITICILARININ ÇALIŞTIĞINDAN EMİN OLUNUZ.

POWER ON THE UNIT AT LEAST 24 HOURS BEFORE START-UP AND MAKE SURE THAT CRANKCASE HEATER İS ON.

044UE

CİHAZ GAZ HATTI BAĞLANTISINDA OLMASI ZORUNLU ELEMANLAR

EQUIPMENTS SHALL BE USED IN GAS LINE CONNECTION



050UE

DİKKAT / ATTENTION

Fan kapısı açıldığında, cihaz otomatik olarak duracaktır. Fanın serbest dönüşünü tamamlamasını bekleyiniz. Bu süre içersinde fana müdahale etmek ciddi yaralanmalara neden olabilir. Cihaz durmazsa, kapı sivici bağlantılarını kontrol ediniz.

When the fan door is opened, unit will stop automatically. Wait for stopping the free rotation of fan. In this period touching to the fan can cause serious injuries. If unit doesn't stop, check the door switch connections.

041UE

UYARI/WARNING

- **Mutlaka frekans invertörü kullanınız ve frekansı fanın maksimum devirine dikkat ederek seçiniz.**

  Use frequency inverter certainly and choose appropriate frequency with respect to the maximum allowed fan speed.

- **Cihaz etiketinde belirtilen maksimum devirden yüksek devirde çalıştırmayınız.**

  Do not turn the fan at higher speed than the max. speed written on the label.

042UE

DİKKAT /ATTENTION

KESME TEHLİKESİ
CUTTING HAZARD

ELLERİNİZİ UZAK TUTUN!
Keep Your Hands Away!

DOKUNMAYINIZ!
Do not Touch!

043UE

DİKKAT / ATTENTION

ÜZERİNİ KAPATMAYIN!
DO NOT COVER!

045UE

DİKKAT /ATTENTION

BACANIN ÜZERİNİ KAPATMAYIN !

DO NOT COVER THE FLUE!

YAKINLARINDA EVCİL HAYVAN BULUNDURMAYIN!

DO NOT KEEP PETS AROUND UNIT!

073UE

UYARI/WARNING

Üfleme sıcaklık sensörünün elektriksel soket bağlantıları montaj esnasında yapılmalıdır.

Electirical socket connections of supply tempereture sensor should be done in during assembly.

074UE

UYARI/WARNING

Dönüş/Egzoz fanlarının elektriksel soket bağlantıları montaj esnasında yapılmalıdır.

Electirical socket connections of return/exhaust fans should be done in during assembly.

051UE

UYARI/WARNING

Koruma kapağını açmadan önce cihazın ana şalterini kapatınız.

Switch off main switch of the unit before opening the protection cover.

1.3. Operation

Limits

Operation limits of the device are given at the table below. It is vital to refer to these data so that the device operates properly.

Cooling	External Ambient Air		Mixed Air	
	Dry	Wet	Dry	Wet
	° C	° C	° C	° C
Minimum	15	7,2	21	16
Average	35	21,5	27	19
Maximum	41	25,9	32	20
Heating	External Ambient Air		Mixed Air	
	Dry	Wet	Dry	Wet
	° C	° C	° C	° C
Minimum	-6	-6,7	14	-
Average	7	4,3	20	-
Maximum	15	10	24	-

1.4. List of Spare Parts

List of spare parts are requested from our company, when required. The list of parts involve parts that could be easily changed in place but aren't easy to find. The list doesn't involve especially instruments such as electric motor, contactor, refrigerant etc. that could easily be found everywhere.

Spare parts and technical service are provided in return for their cost for 10 years. Periodical maintenance to be performed by qualifies technical personnel regularly increases performance of the device.

1.5. Documents Provided with the Unit

Installation, Commissioning, Maintenance and Instruction Manual, Electric Projects, Inverter Instruction Manual, Room Remote Montage Manual

2. EQUIPMENT DESCRIPTIONS AND OPERATION PRINCIPLES

2.1. Data Panel and Microprocessor

URTP devices involve one panel. The panel has a power supplier by its structure in its body and a microprocessor to manage the control equipments belonging to the device. No extra power or control panel is required for URTP devices.

The security equipments belonging to the system has automatic and glass insurances, motor protection switches, phase protection relay and thermo magnetic switch within the panel. The outer door of panel is locked and involves another cover plate in itself. No personnel without technical competence should intervene with this part.

There is a microprocessor processing signals coming from air quality, pressure, temperature and humidity sensors within the panel. This microprocessor performs heating, cooling, air quality, fan control, damper control procedures. Besides, accessories out of standards could also be checked. Additional modules could be added to the microprocessor unit as to quantity of the options.

Moreover, Modbus providing communication with building automation system is procured as standard. Along with that, additional modules could be added by the use of other various building automation systems (Bacnet MS-TP, Bacnet IP, and Lonworks).

2.2. Compressors

In URTP devices, hermetic scroll-type compressors were used.
There are lubricant pans, pan heaters and vibration absorber wedges as standard at compressors for all models.

2.3. Lubricants

So that compressors could operate without any problems, lubricants defined at compressors' marks should be used. Compressors with other brands could be used according to models for these units.

They have lubricant indicators at which the amount of lubricant could be seen. Pay attention to that the amount of lubricant should absolutely be at the middle level of the indicator.

While low amount causes that compressor works dry and gets heated up, high amount causes operational problems by leaking into the system. Moreover, lubricant in the compressor may leak to the system when the device leans sideward during transports, don't let the device to lean sideward more than 15 degrees throughout this procedure.

The device won't need any addition or reduction of lubricant except for the case of being damage.

2.4. Condenser Coil

In URTP devices, temperature changing gas heat exchangers are used for copper tubes, aluminum fins. These heat exchangers function only as condenser in models working as coolers, while they function as condenser in summer, evaporator in winter in models with heat-pumps. In case requested, normal aluminum fins or epoxy-coated aluminum finned coil could be used.

2.5. External Axial Fans

The only purpose of these fans outside of the unit is to enable air flow over condenser coils of the device and gas temperature within the heat exchanger to change. These fans are exposed to severe air conditions because they work at outer environments. Fans should be controlled regularly and they should be made sure to be uncovered by no object. Objects to affect air flow negatively causes that the fan doesn't function and accordingly causes to disturb operation of the system.

2.6. Indoor Fans

These fans are found within the device and their purpose is to direct conditioned air needed by user to the ambient. This is done only by using the inner air or by partially taking from the outer air. The system was designed to produce pressure and air flow, and for this inner unit fan cycles should be adjusted according to system requirements. For this, fans could be set into variable cycles by frequency inverter control. The device could be adjusted to the system in an easy, fast and economic way (optional feature).

2.7. Thermostatic Expansion Valve

Thermostatic expansion valves are cooling system elements and have functions for the system to work correctly. They are connected to the evaporator inlet on liquid line. They enable that right amount of refrigerant is sent to the evaporator and lowers pressure, evaporation pressure and temperature of refrigerant. Thermostatic expansion valves enable to have a stable superheating degree at the evaporator. Superheated refrigerant steam not includes any liquid refrigerant, so liquid leakage risk to the compressor is eliminated. If superheating degree at the evaporator is high then valve becomes active and opens again.

2.8. Sensors

There are up to 14 sensors according to options and accessories to be used in the system. These are found at different sections as air and gas sides. They enable that read values are turned into 0-10 voltages by being sent to the microprocessor and necessary data for the processor are generated.

There are high pressures prostates at both circuit 1 and circuit 2 at gas side of the system. There are also sensors reading temperature and pressure of gas at absorption side. These are having a vital importance in continuously monitoring the refrigerant and in that the system operates by a correct regime.

Room temperature sensor is found at the top of room control panel of the device and senses that room conditions are suitable or not, enables that the device operates within proper capacity by giving right commands.
Blow temperature sensor which is the sensor that found at air side of the device control temperature degree of conditioned air.
External air temperature sensor helps control the capacity of device by continuously calculating atmosphere temperature.
External air humidity sensor measures humidity degree of atmosphere continuously and provides a sensitive control for free cooling/ heating operation mode.
Room air humidity sensor is found at return air section of the device and increases control sensitiveness for free cooling/ heating operation mode.
With carbon dioxide sensor that is linked to return air duct, ambient air quality is put under control constantly. For the desired degree, this sensor enables that the system set to the correct operation point and to be informed for hazardous conditions.
Smoke detector measures variable air degrees and enables that the system alarms before or right at the moment of fire.
Freeze thermostat is connected to the device in case there is additional, hot water coil in the device and gives alarm to the system in case water temperature is decreased under 5 degrees.
High temperature thermostat is used in case an additional electric heater is used in the system and also in order to deactivate heater in case heating surface temperature exceeds the defined temperature.
Differential pressure sensor is connected to the fan unit and pressure produced by the device and accordingly flow rate are measured to control the flow.
Differential pressure switch is used for the filter in the system. When the defined values are exceeded, beside giving alarm for the filter, provides variance for fan cycle continuously as to the constantly changing filter pressure loss (optional feature).

2.9. Filters

In URTP devices, there are G4 filters as standard. This filter found at the inlet of inner unit of the device is used with the purpose of protecting the inner equipment. Regular controls and cleanings are of great importance so that the system operates effectively.

2.10. Refrigerant (R410A)

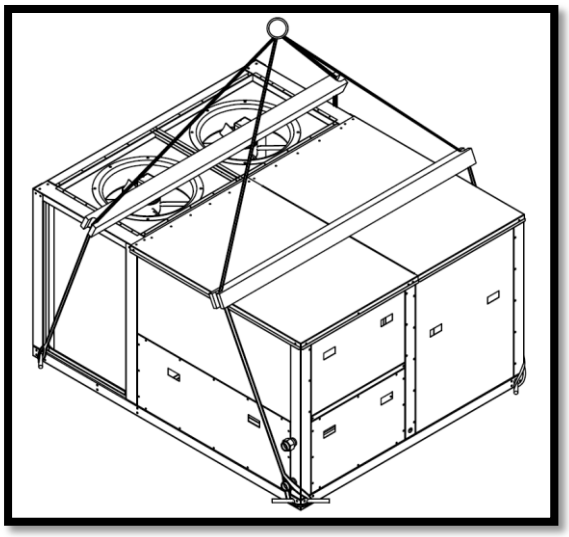
In this URTP device, R410A gas is used as cooling gas. These devices are designed according to characteristics of this gas and shouldn't be operated with another kind of gas in no way. Global heating potential of R410A gas is **GWP: 1975**. This gas involves fluorinated greenhouse gasses within the framework of Kyoto Protocol.

2.11. Free Cooling and Heating

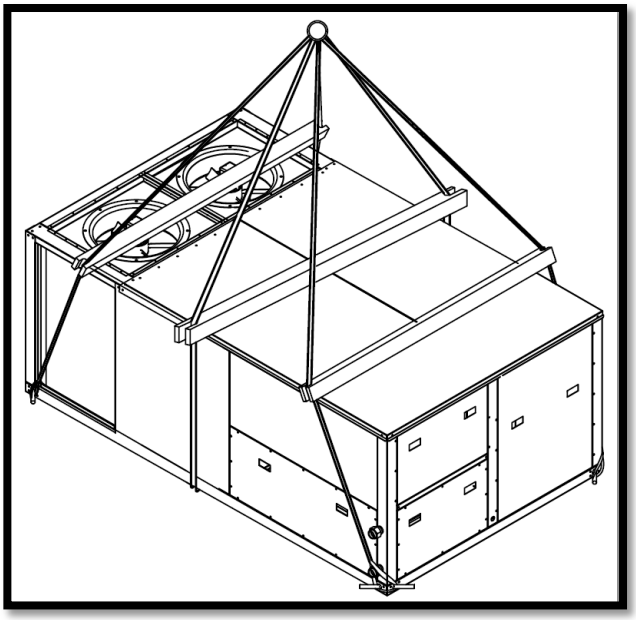
In URTP models of ECO series, there are damper and control systems enabling free heating and cooling. This system is activated in mid-seasons and when desired temperature values could be reached temperature values of outer ambient air. The system does the necessary conditioning by only sending the outer ambient air to the area and doesn't activate heating or cooling systems within its body while doing it or activates them under partial loads. This enables to reduce user costs and also to protect the environment by protecting natural resources.

3. INSTALLATION

3.1. Transport and Conservation



- Roof connector should be carried separately from the device and conserved.
- Lift the roof connector from transport points.
- The isolation material within roof connection elements at conservation area should be protected from External air conditions and possible rodents.
- Don't drag your device to place it on assembly spot while carrying it. Make use of transport and lifting opening at its bottom part. The device should be no means be transported by holding it on pipe connections, door handles or duct connection points.
- During transport, transport planks (timber bars) should be put between ropes so that the ropes don't damage your device. Otherwise, ropes may damage metal sheet details or condenser lamellas of your device. For URTP 55/70/90/110/140, 4 transport points, for 180 and 230 models, 6 transport points should be utilized. They are shown at figures.



- The distance between timber bars and transport point should be adjusted in balance. When the device is seen to have no balance in test lift, connection point should be re-determined to enable the balance.
- The distance between rope connections and transport point should be adjusted to nearly 5 meters (base angles between timber bar and lifting point knot should be lower than 60C). Having this distance lower may cause the rope to break off.
- Don't put high weights on the device to cause permanent damage.

- The device shouldn't be inclined so to lean sideward more than 15 degrees. This situation damages the device compressor.
- When your device is deactivated, make sure that the dampers aren't turned off.
- The device should be kept where the relative humidity rate doesn't exceed 80% and ambient temperature should be kept between -25 and 55^{o} C.
- Dust, gas, steam and chemical materials such as abrasives shouldn't be contacted with the device and device elements.
- Roof-type air conditioners might generally get damaged generally during transport, loading and lowering and especially in case a crane is used. Pallet truck or forklift should be used while lifting and transporting small devices by considering device weights determined at tables given on delivery note or size information section.
- In transports with forklift, the device should be placed evenly on knives. In case it is placed under knives, the bottom of device will get damaged.
- After placing the device on roof connector, lifting legs (a quantity of four) could be taken off.
- Lifting and lowering of big devices should be carried on with a crane by using suitable equipments.
- Silk rope suitable to device size and weight should be used for device security and so that the device doesn't get damaged while lifting and lowering with the crane, additional profiles should be used to prevent ropes from tightening on the device body and the device should be transported by considering its weight and having taken the necessary security precautions to prevent turning over and slipping.
- During lifting and transporting the device, no one should stand under the device and at movement area, *crush hazard should be paid attention to.*
- Before packaging, markings and warning tags showing notification values of the device should have been placed properly. *While lifting the device, the weight defined in KG at the tag should be paid attention to.*
- Devices should be wrapped with nylon and they should be packaged on lift feet against risks of getting scratched, getting deflected and deformed while loading, transporting and shipping them. Palletized boxes used against probable quakes and future damages on them while shipping devices are bigger than the devices in size. Parts of the devices with low body endurance are supported with styropor (polystyrene) of 1 cm and rapped with nylon.
- *If it needs storing for a while before install the device on its place, this storage should be a dry environment not to get affected by External air conditions.*
- General device sizes according to models are defined below. (For more detailed size data, you may look at the "Size Data" section.)

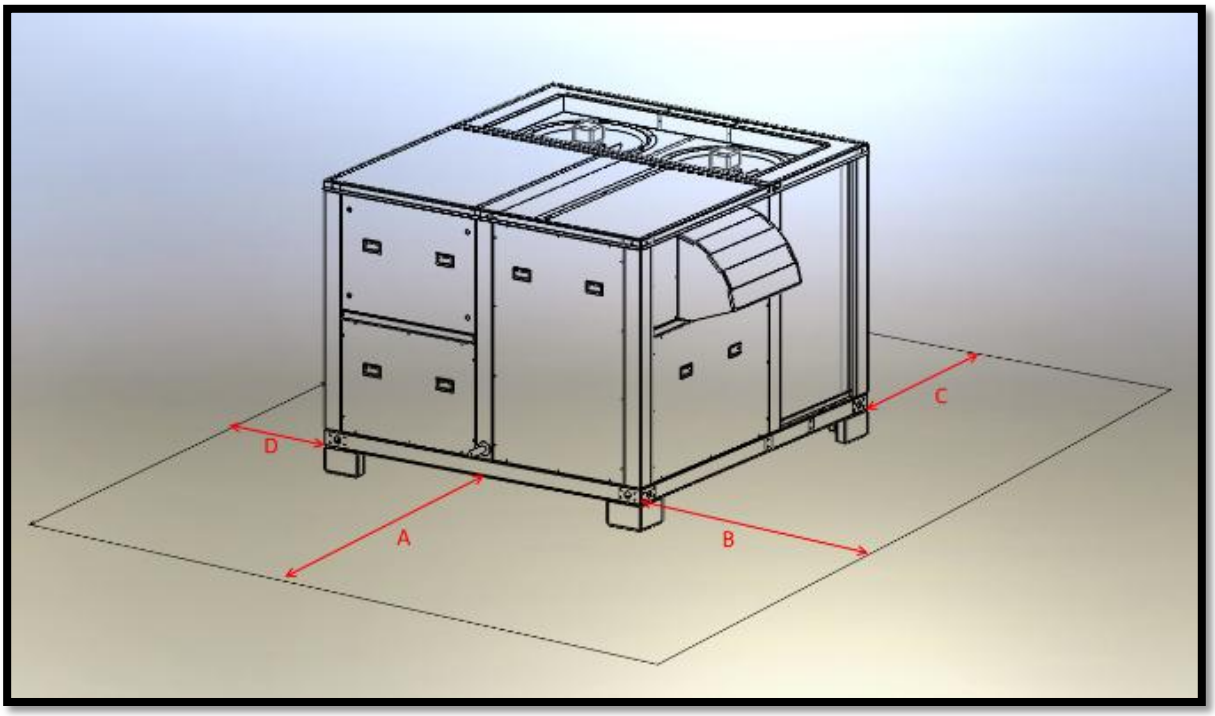
Model	URTP055	URTP070	URTP090	URTP110	URTP140	URTP180	URTP230
Sizes [W*L*H] [mm]	1858*1730*1253	1858*1730*1253	2334*1951*1253	2334*1951*1253	2926*2165*1253	2926*2165*1453	3853*2267*1453

WARNING: *No damage caused on the device due to wrong transport and storage isn't covered by the warranty.*

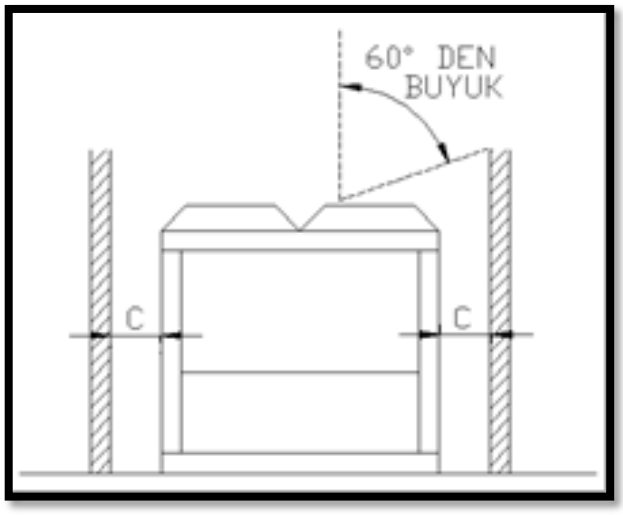
3.2. Device placement and Considerations

- The device shouldn't be unpackaged until it reaches to the installation spot so that no damage emerges.
- It is also crucial that where the device will be placed be chosen carefully. Ground should have the nature to bear weight of the device and dynamic loads to arise during operation of the device.
- *Necessary lightening should have been provided at the environment where the device is placed so that maintenance works could be carried out with ease.*

There should be left extra spaces at the width to let for maintenance works at the area where the device will be placed. Spaces to be needed for placement according to device models are seen below.



Size\ Model	URTP055	URTP070	URTP090	URTP110	URTP140	URTP180	URTP230
A [mm]	1200	1200	1600	1600	1850	1850	2400
B [mm]	900	900	1100	1100	1350	1350	1500
C [mm]	900	900	1100	1100	1350	1350	1500
D [mm]	900	900	1100	1100	1350	1350	1500



If there are higher walls than the device's height near where the device will be placed and if condenser side of the device faces this wall, the line between upper surface of the device and upper surface of walls should be 60 degrees at maximum. At higher degrees, the device won't have the necessary air flow.

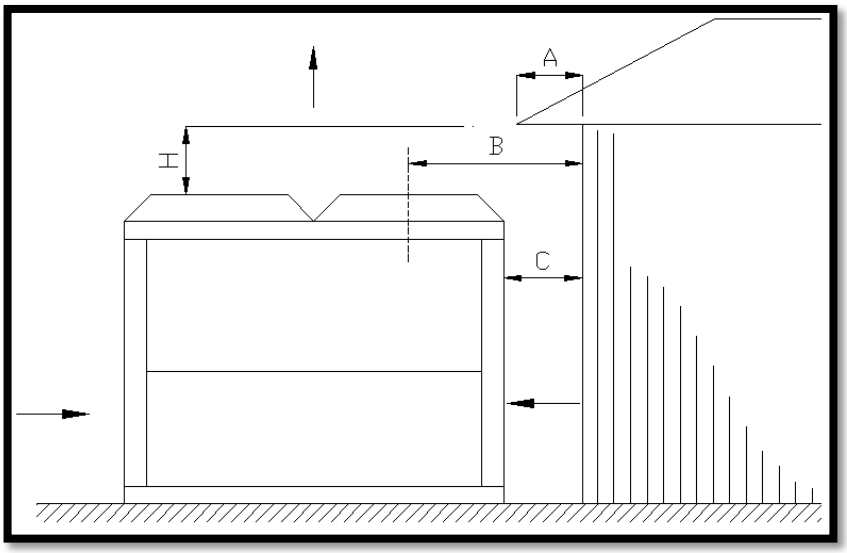
If the device cannot be taken away from walls, the linage to the device's condenser should be hollowed out and air flow should be provided.

If the distance between wall and the device more than

scale of 2 x C, the wall doesn't obstruct air flow.

If two devices are to work adjacent to each other and condenser and condenser surfaces are to face each other, the distance in-between should be higher than 2 x C +300 mm.

If the device is to work on a mezzanine floor, condenser air duct slice should be at least 1.5 fold of fan inlet diameter.



If the device is to work on a porch or near somewhere like a porch, a distance of at least 1.2 fold of the porch protrusion should be lest between the device and wall.

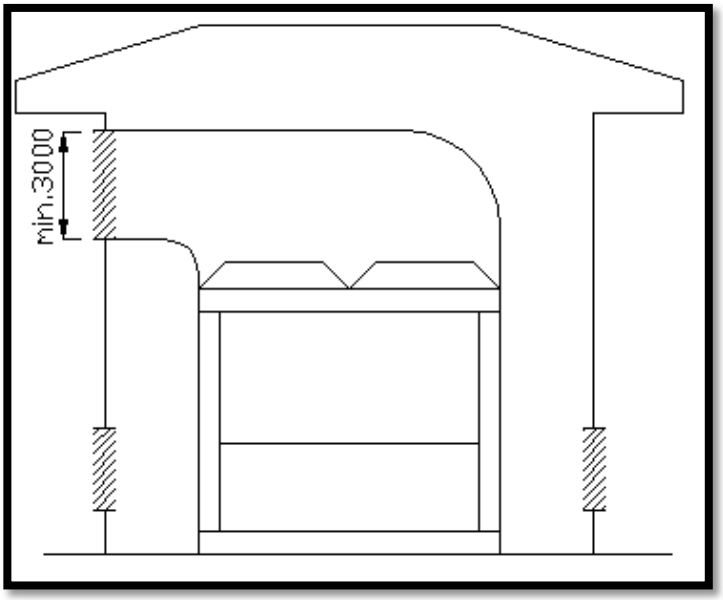
IF H > 1 M,

THEN B > A.

IF H < 1 M,

THEN C > A.

The height 'H' not being less than 3 meters for semi-closed environments is very important for the device to work effectively.



If the device is to work on snowy weather, a snow-shield should be put on the condenser side of the device. The snow-shield's surface area should be at least 1.2 fold of the condenser's surface areas.

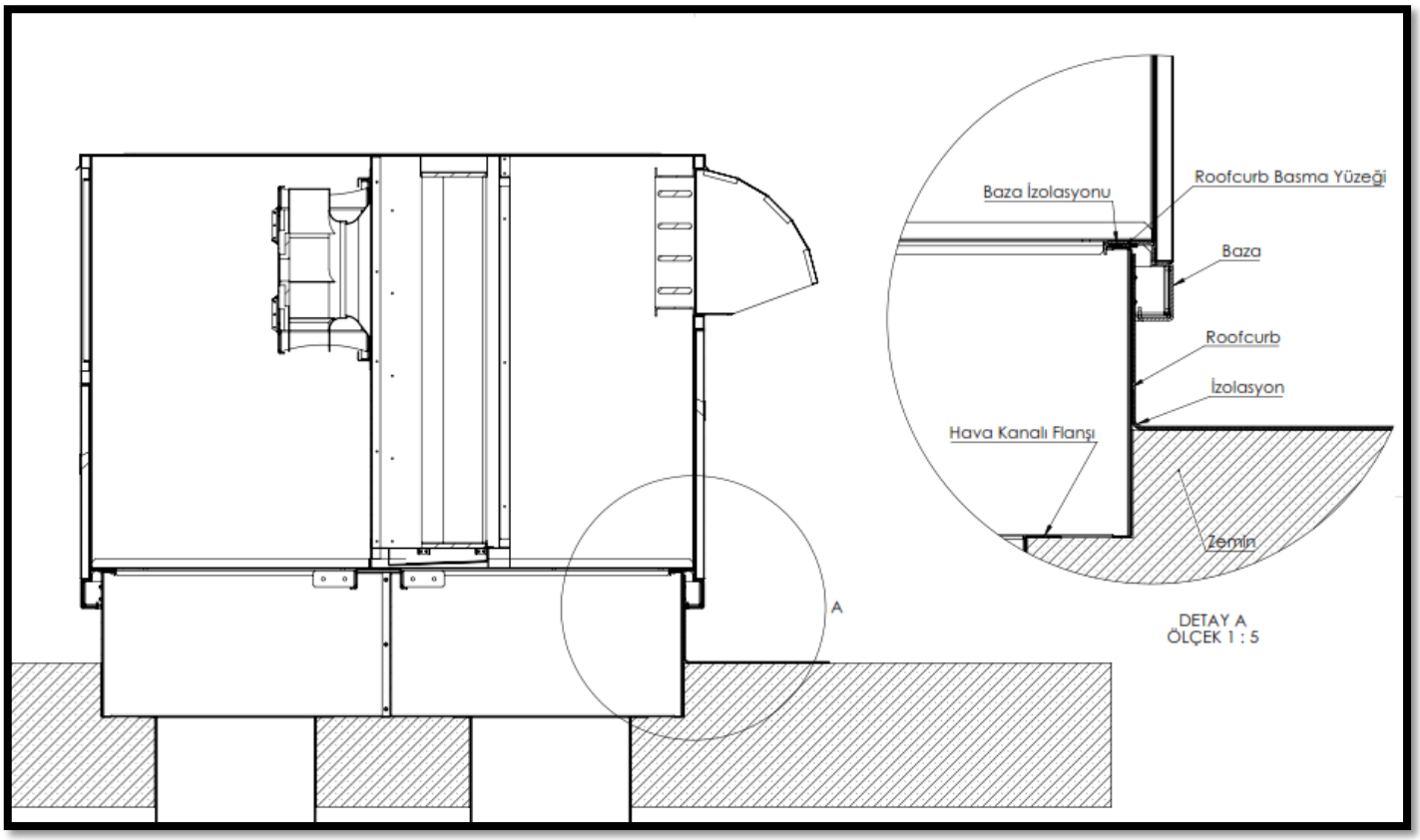
WARNİNG: *Condenser surface of the device should absolutely be protected from snow. Snow shouldn't be let to cover condenser's surface.*

3.3. Installation of Unit Body and Components

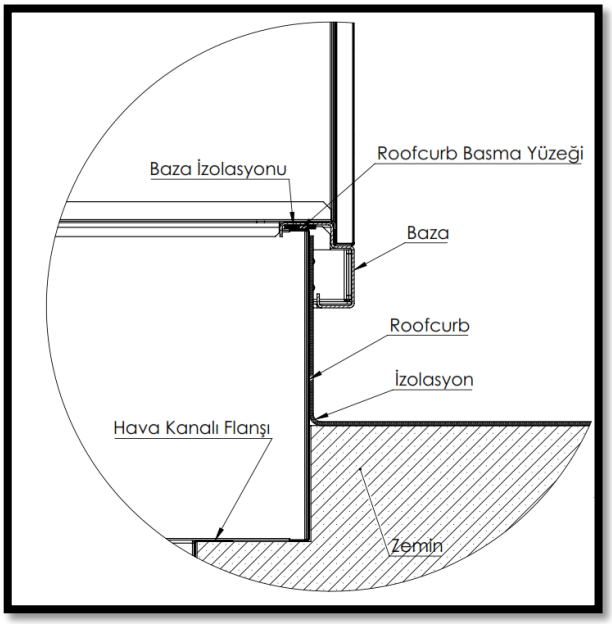
Details about placement of the device are given at the figures below.

Necessary spaces are left on roof concrete for roof connection of the device place of which is determined. After roof connection elements are placed o at the space left, the device is placed securely with fill material.

Outer surface of roof connector and ground should be covered with water-tight isolation material. And upper surface of the isolation material should be put under protection.



Before the device is placed, roof connector could be placed. In such cases, falls or injuries could be prevented by covering open spaces of roof connector with safety equipments.

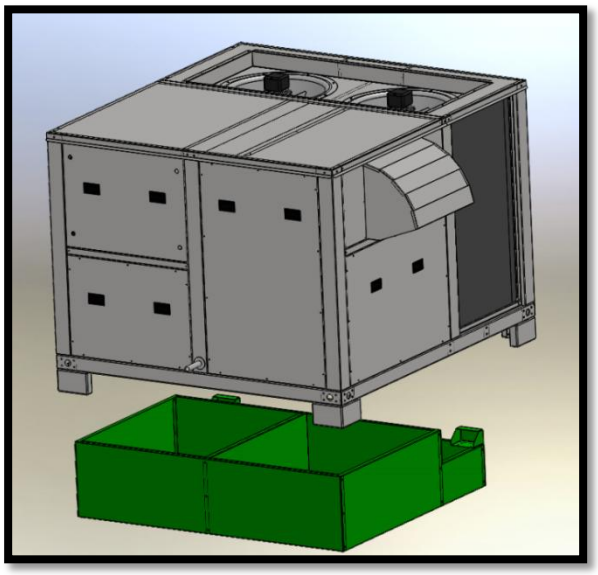


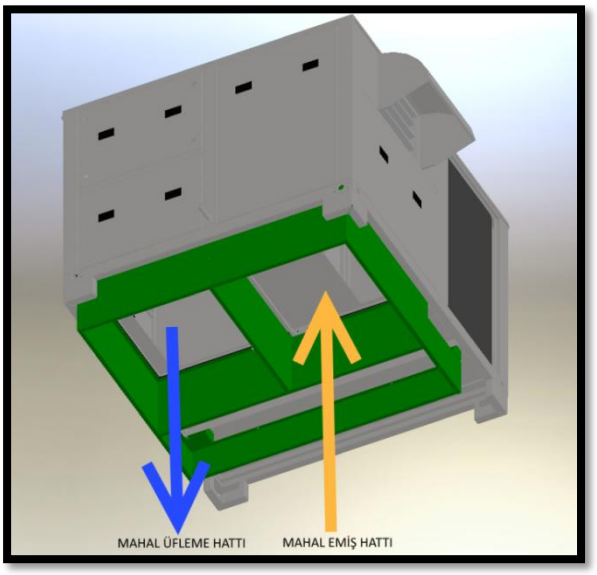
The device should be put on roof connection by the help of a crane. Isolated bottom part of the device should be placed in a way to contact with the roof connection.

3.4. Montage of Air Ducts

Connection type of roof connection of ducts and connection type of roof connection to the device for connection types with air ducts are as below.

For air duct-connection systems from the bottom;



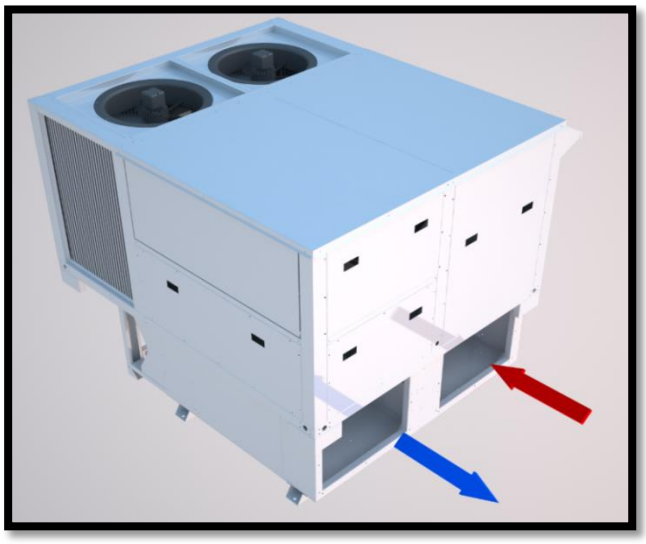


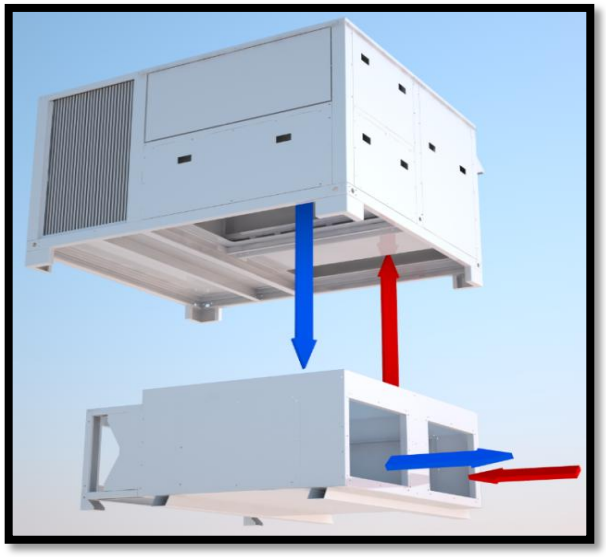
For air duct-connection systems from sides;

Some points should be paid attention to in movements of air ducts right after the device. If connection is to be provided via an elbow joint (and this isn't a preferred method), this elbow joint should absolutely have a wide curve and shouldn't narrow right after the section. The elbow joint should curve after at least 2 meters. This condition applies for devices both with bottom and side connections.

Duct connections should be provided suitable to roof connector connection sections. It is crucial that the connections be water-tight. The necessary isolation should be provided with impermeable elements against outer space effects after connections.

In addition, regardless of which air duct is used, it should be regarded that the duct wasn't made of inflammable or





poisonous gas materials. The inner surface should be smooth and of a nature keeping no dirt.

Isolations shouldn't let condensations emerge on sheet metal of duct. Connections between ducts should be made in a flexible manner and shouldn't let vibrations/ sound formation and/ or transmissions.

3.5. Conservation Precautions for the Device from External Air Conditions

Suitable choice of place and placement are required so that the device doesn't get exposed to External air conditions. If the device is to operate at an area with high snow fall rate, it should be paid attention to that condenser side of the device not stay under snow. For that, shelters might be built to distort air flow or precautions could be taken to prevent snow from accumulating on the surface.

If the device is to operate at an atmosphere close to sea side or with factors to increase corrosion, the heat exchanger surfaces should be asked to be provided with options preventing corrosion and decreasing water-trap. If this option has been missed out, necessary precautions should be taken to protect the device from corrosion.

If the area where the device is to be used is an area with a high risk of earthquakes and to get exposed to high speed winds, it is important that the device is placed away from sides and in the middle.

Besides, if the device has a natural gas firing unit, protecting gas connections against External air conditions and taking precautions against natural disasters are of the responsibility of users.

Asking the absorption and blow ducts of the device to be provided with rain-proof components will prevent rain and snow to penetrate the device in long term. Users who didn't purchase this accessory should protect absorption and blow ducts of the device. Penetration of snow or water through the device will lead to unwanted results.

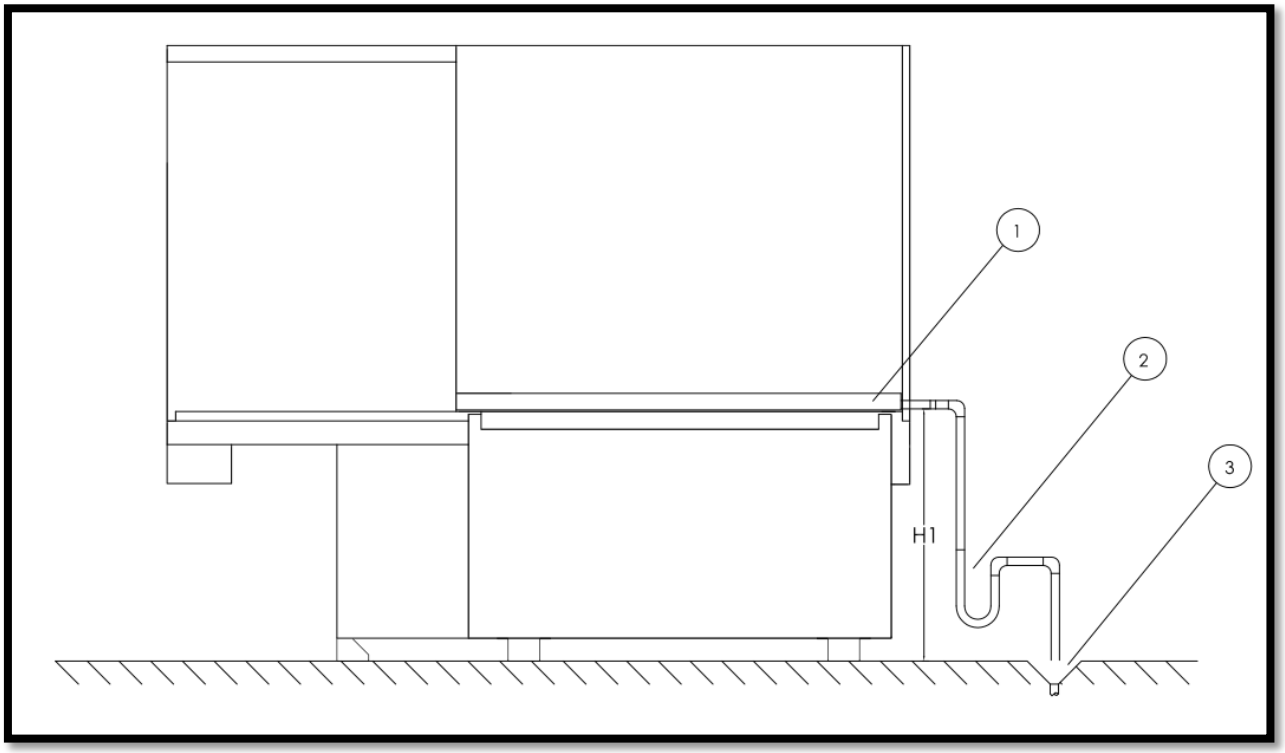
The points of URTP device or roof connection element which contact with the ground should be isolated from liquids according to the details mentioned in 3.3. Liquid penetrations between the device and the ground will lead to both corrosion of the device and the liquid to reach inner spaces.

3.6. Assemble of Device Accessories

In case the device involves an additional heater (gas, liquid or electric heater), pipe and electricity connections of these heaters are explained in details in Articles 7th, 8th and 9th. Please pay attention to explanations in the relevant articles for these connections.

3.7. Drainage Connection

- In drainage piping, it should be regarded that pipe diameter to be smaller than condensation pan outlet diameter.
- Connection between drainage pipe and condensation pan should be made with union flange so that dirt occurred in the condensation pan and pipes could easily be cleaned.
- Drainage pipe coming out from the condensation pipe should be connected according to the figures below by using flusher provided with the device.
- If drainage piping is long, a declination smaller than 1/50' should be given to the drainage line.
- More than one flush shouldn't be connected to the same pipe. For these cases, instead of using pipes, using of ducts open to the atmosphere and separate connections from the flush to this ducts are recommended.



① Condensation pan

② U Flush or Bulk Flush

③ Building Drains

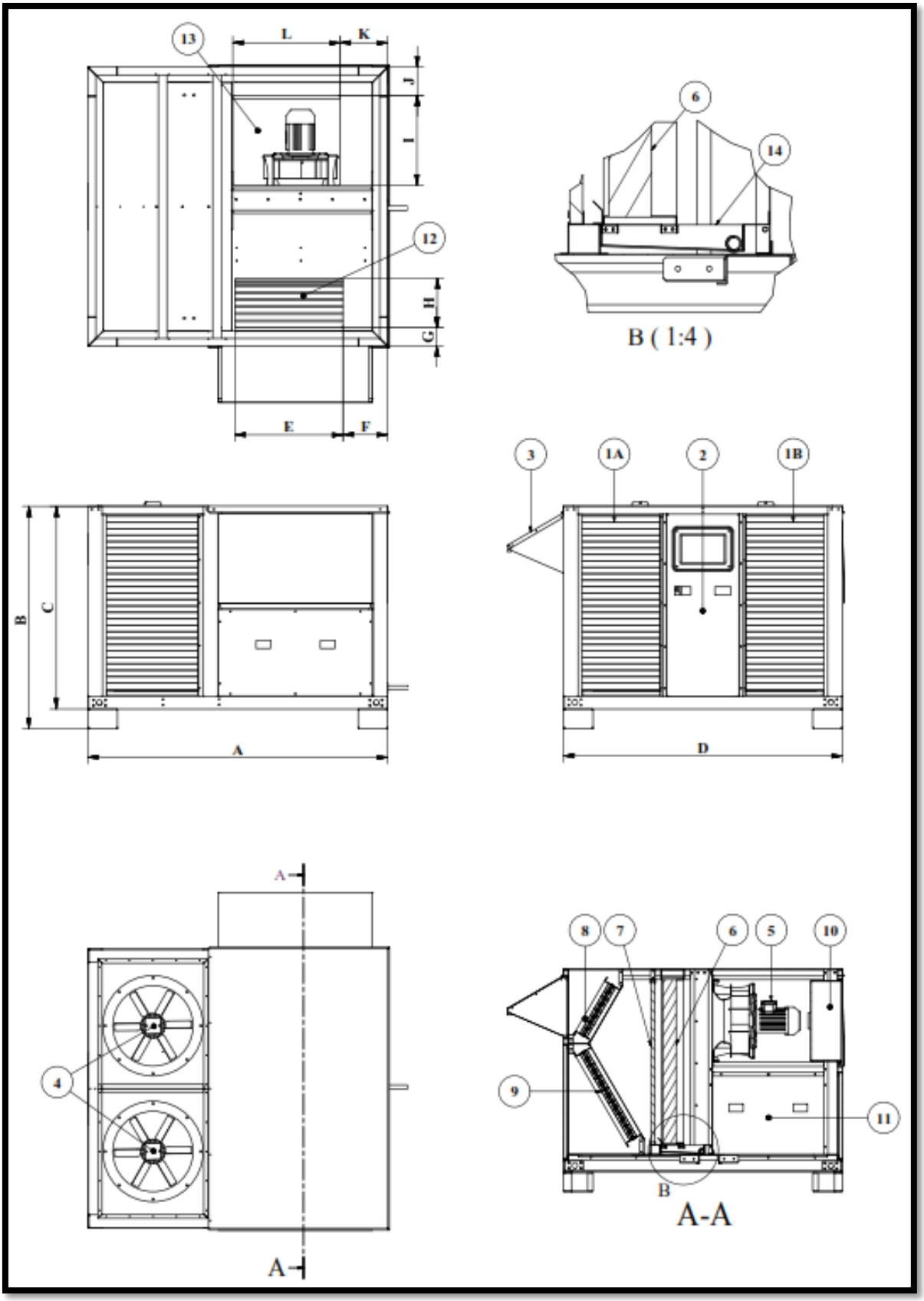
- H1 refers to the total base elevation (consisting of concrete mount basement made by customer and metal base produced by Üntes).

- H1 = P + 75 (mm)
  ("P" value within the formula is the static pressure value within cell in which there is ceiling and ÜNTES is responsible for that.)

4. SIZE INFORMATION

4.1. Dimensions of the Units

Drawing and measurement table belonging to the device is as below.



	MEASUREMENTS OF ROOFTOP MODEL [mm]						
	55	**70**	**90**	**110**	**140**	**180**	**230**
A	*1865*	*1865*	*2335*	*2335*	*2991*	*2991*	*3850*
B	*1382*	*1382*	*1382*	*1382*	*1382*	*1582*	*1582*
C	*1262*	*1262*	*1262*	*1262*	*1262*	*1462*	*1462*
D	1735	1735	1950	1950	2164	2164	2295
E	*673*	*673*	*1200*	*1200*	*1480*	*1480*	*2045*
F	*278*	*278*	*125*	*125*	*175*	*175*	*435*
G	*115*	*115*	*134*	*134*	*124*	*124*	*115*
H	*308*	*308*	*280*	*280*	*400*	*400*	*410*
I	*559*	*559*	*588*	*588*	*640*	*640*	*620*
J	*176*	*176*	*185*	*185*	*262*	*262*	*256*
K	*295*	*295*	*275*	*275*	*355*	*355*	*315*
L	*670*	*670*	*1050*	*1050*	*1270*	*1270*	*1440*

① Condenser heat exchanger

② Access panel of cooling elements

③ Rain shield

④ Condenser fans

⑤ Fan motor group on blow air side

⑥ Evaporator battery

⑦ Blow Air filter

⑧ Fresh air damper

⑨ Return air damper

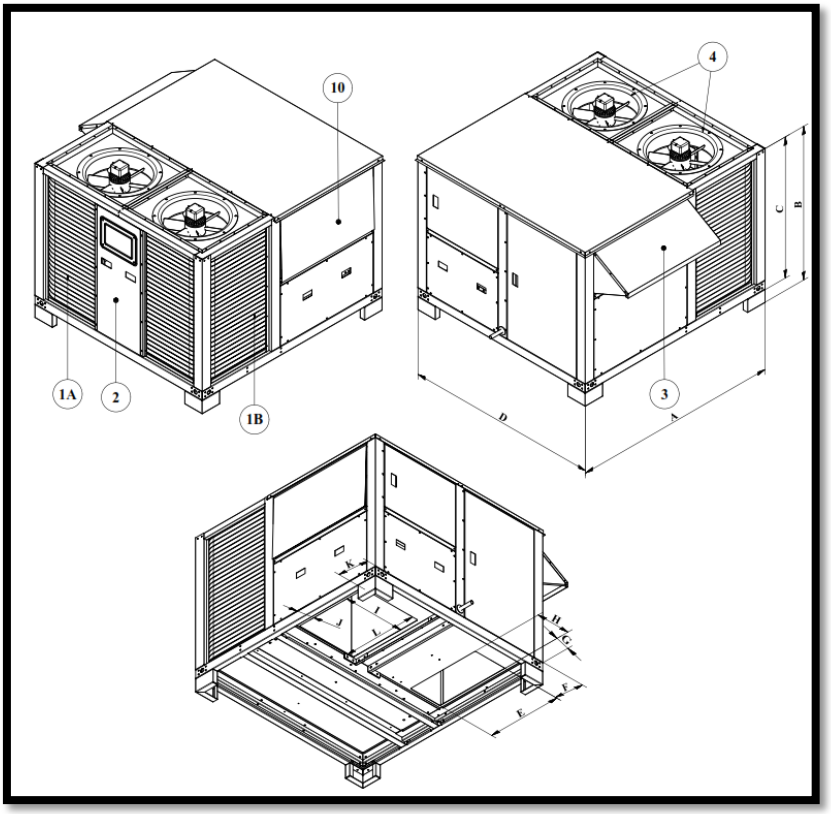
⑩ Device panel

⑪ Access panel of additional heaters section

⑫ Absorption duct inlet of return air

⑬ Outlet duct of blow air

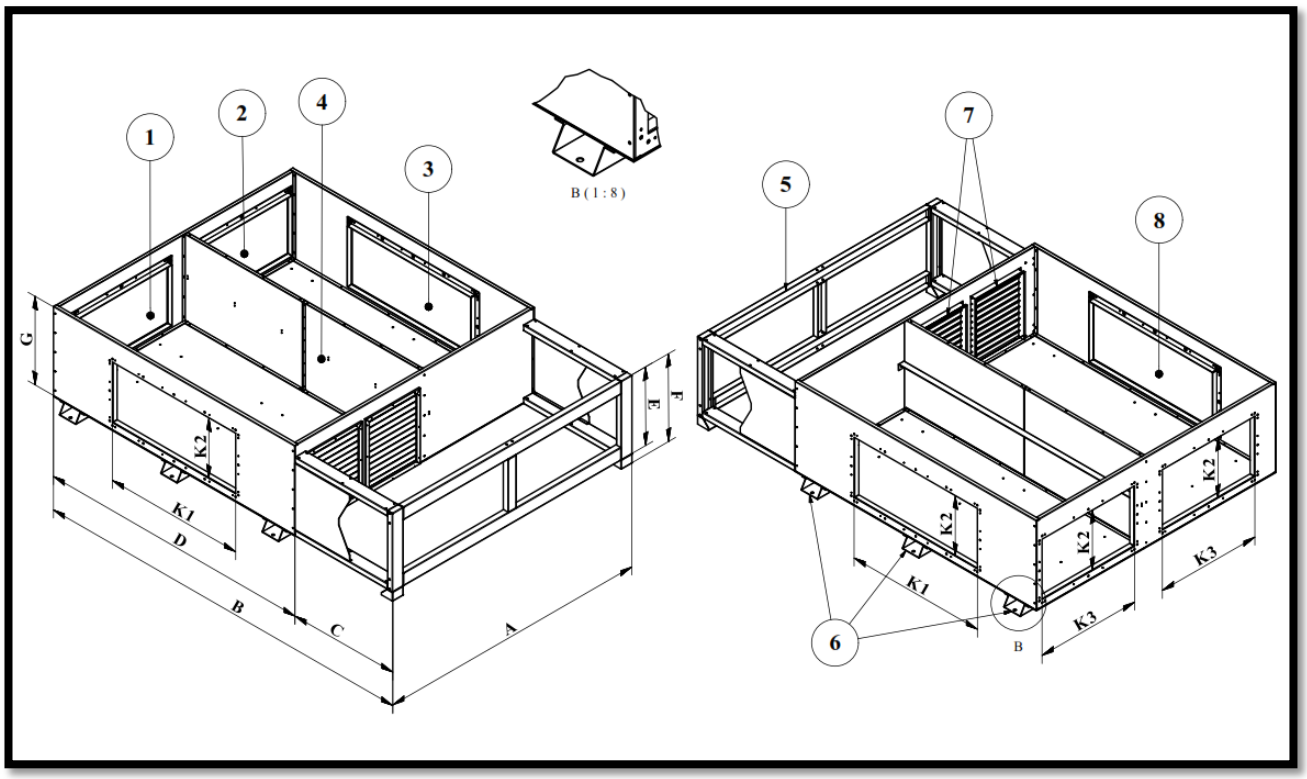
⑭ Condensation pan on evaporator side



4.2. Size Data of Roof Curb

Variations of roof connection elements of URTP devices are as below.

4.2.1. Side Flow Supply



	ROOF CONNECTOR WITH SIDE OUTPUT						
	55	**70**	**90**	**110**	**140**	**180**	**230**
A	1619	1619	1834	1834	1988	1988	2179
B	1366	1366	1748	1748	2358	2358	3081
C	402	402	415	415	640	640	889
D	964	964	1333	1333	1718	1718	2192
E	610	610	610	610	610	610	610
F	680	680	680	680	680	680	680
G	700	700	700	700	700	700	700
K1	492	492	681	681	877	877	1120
K2	475	475	475	475	475	475	475
K3	624	624	707	707	766	766	840

① Alternative duct connection of absorption air 1

② Alternative duct connection of blow air 1

③ Alternative duct connection of blow air 2

④ Partition metal sheet of absorption and blow air

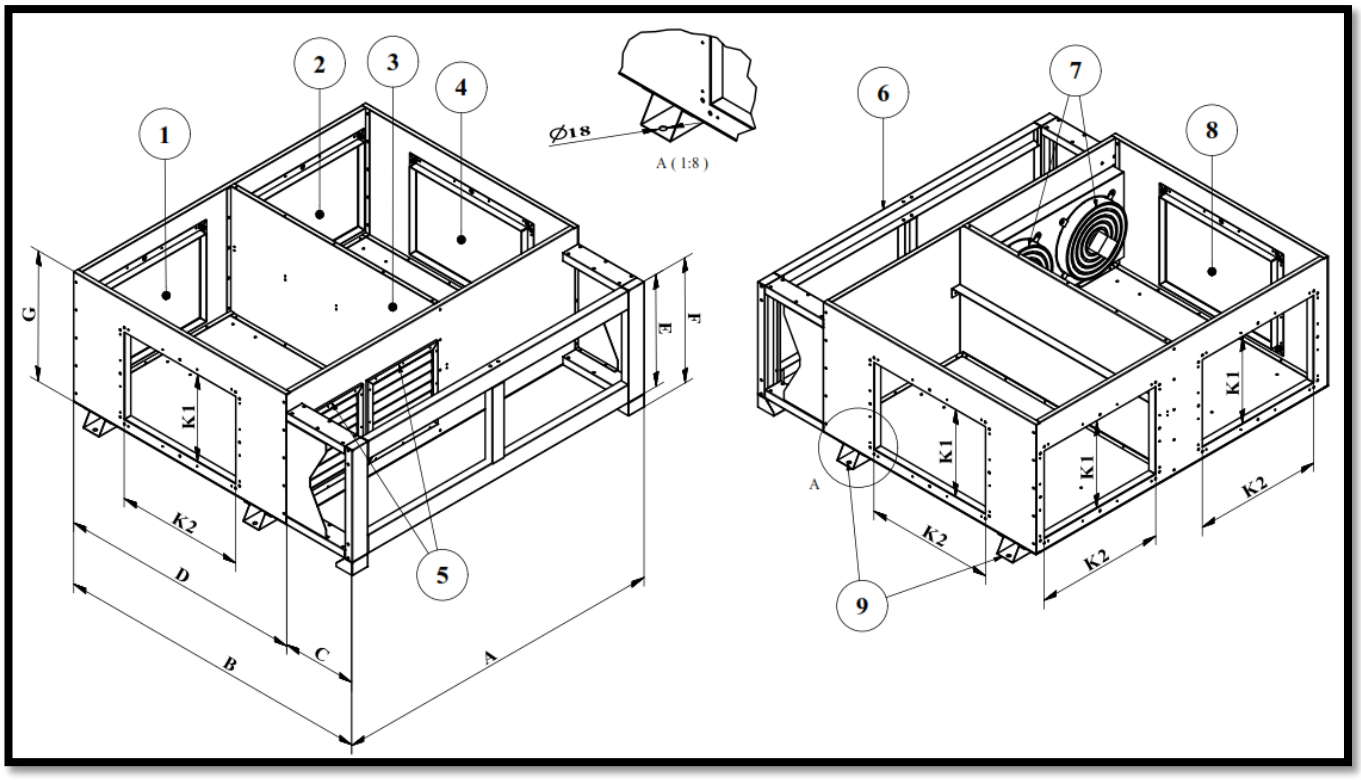
⑤ Balance Connection Extension

⑥ Roof Connection's mounting holes on the ground

⑦ Exhaust gravity dampers

⑧ Alternative duct connection of absorption air 2

4.2.2. With Side Flow Exhaust Fan



	ROOF CONNECTOR WITH SIDE OUTPUT AND AXIAL EXHAUST FAN						
	55	**70**	**90**	**110**	**140**	**180**	**230**
A	1619	1619	1834	1834	1988	1988	2179
B	1366	1366	1748	1748	2358	2358	3081
C	402	402	415	415	640	640	889
D	964	964	1333	1333	1718	1718	2192
E	610	610	610	610	610	610	610
F	680	680	680	680	680	680	680
G	700	700	700	700	700	700	700
K1	475	475	475	475	475	475	475
K2	624	624	707	707	766	766	840

① Alternative duct connection of absorption air 1

② Alternative duct connection of blow air 1

③ Partition metal sheet of absorption and blow air

④ Alternative duct connection of blow air 2

⑤ Exhaust gravity damper

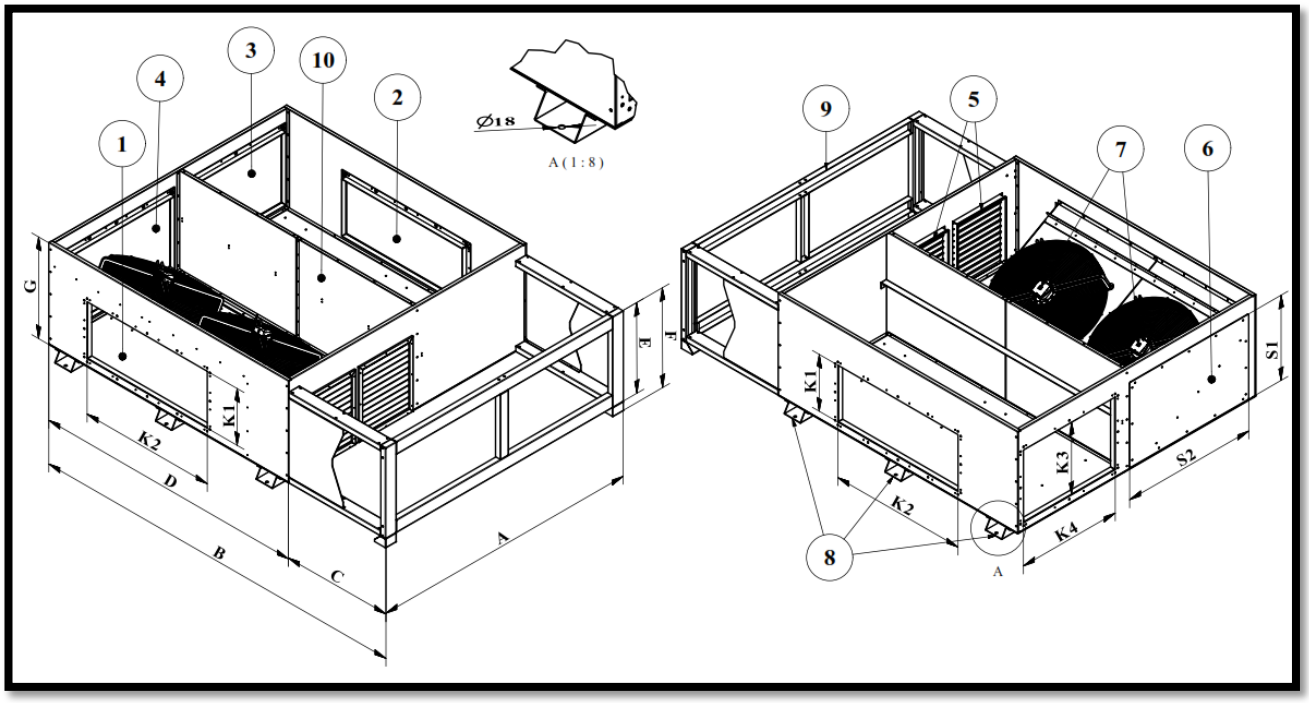
⑥ Balance Connection Extension

⑦ Axial Exhaust Fans

⑧ Access panel of exhaust fan

⑨ Roof Connection's mounting holes on the ground

4.2.3. With Side Flow Return Fan



	ROOF CONNECTOR WITH SIDE OUTPUT AND AXIAL RETURN FAN						
	55	**70**	**90**	**110**	**140**	**180**	**230**
A	1619	1619	1834	1834	1988	1988	2179
B	1366	1366	1748	1748	2358	2358	3081
C	402	402	415	415	640	640	889
D	964	964	1333	1333	1718	1718	2192
E	710	710	710	710	710	710	710
F	780	780	780	780	780	780	780
G	800	800	800	800	800	800	800
K1	450	450	450	450	450	450	450
K2	485	485	700	700	860	860	1100
K3	575	575	575	575	575	575	575
K4	625	625	707	707	765	765	840
S1	675	675	675	675	675	675	675
S2	795	795	900	900	975	975	1070

① Duct connection space of absorption air

② Alternative duct connection of blow air 1

③ Alternative duct connection of blow air 2

④ Access panel of return fan

⑤ Exhaust gravity damper

⑥ =④

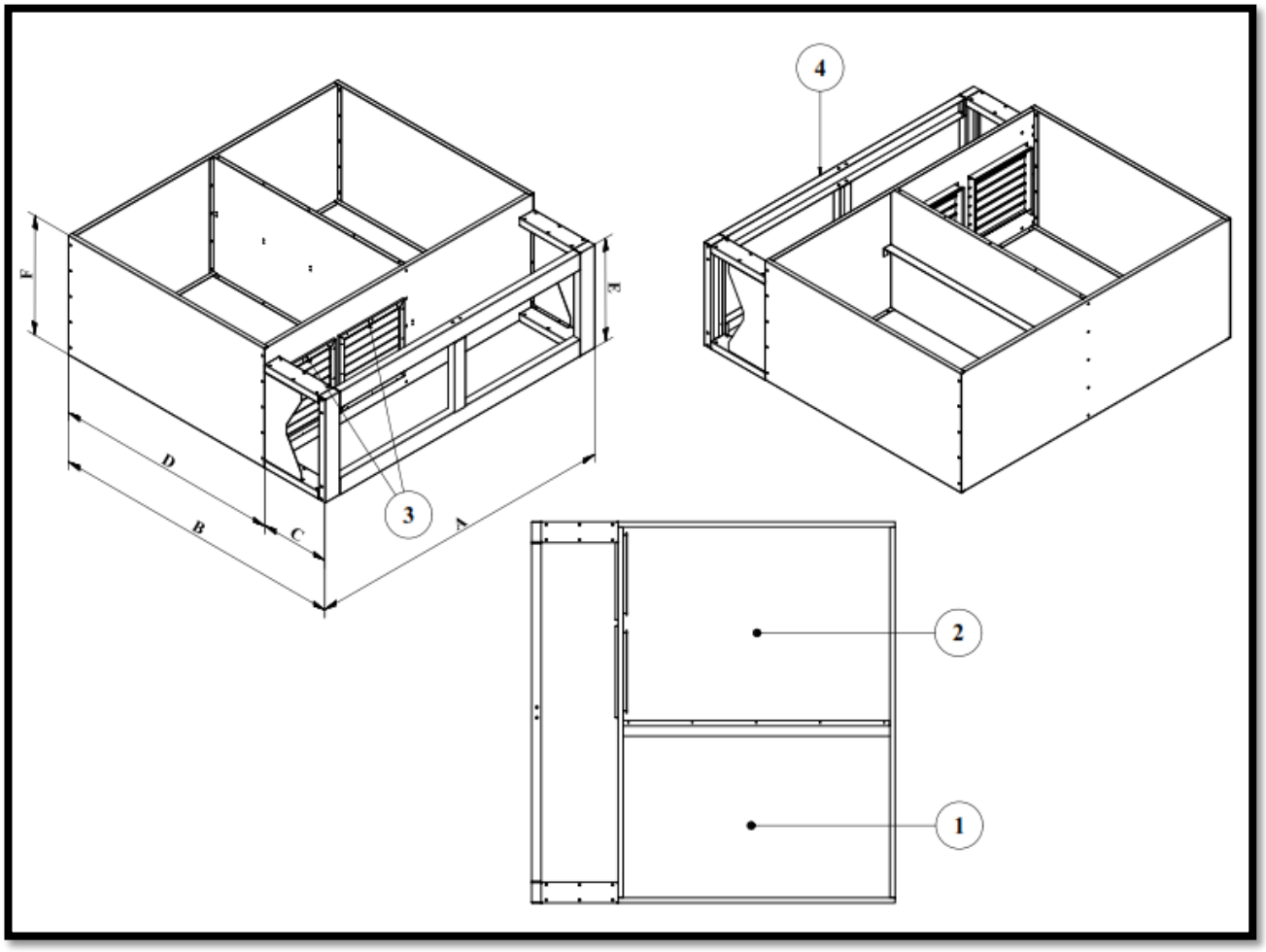
⑦ Axial return fans

⑧ Roof Connection's mounting holes on the ground

⑨ Balance connection extension

⑩ Partition metal sheet of absorption and blow air

4.2.4. Down Flow Supply



	DOWN OUTPUT ROOF CONNECTOR						
	55	**70**	**90**	**110**	**140**	**180**	**230**
A	1619	1619	1834	1834	1988	1988	2179
B	1366	1366	1748	1748	2358	2358	3081
C	402	402	415	415	640	640	889
D	964	964	1333	1333	1718	1718	2192
E	610	610	610	610	610	610	610
F	700	700	700	700	700	700	700

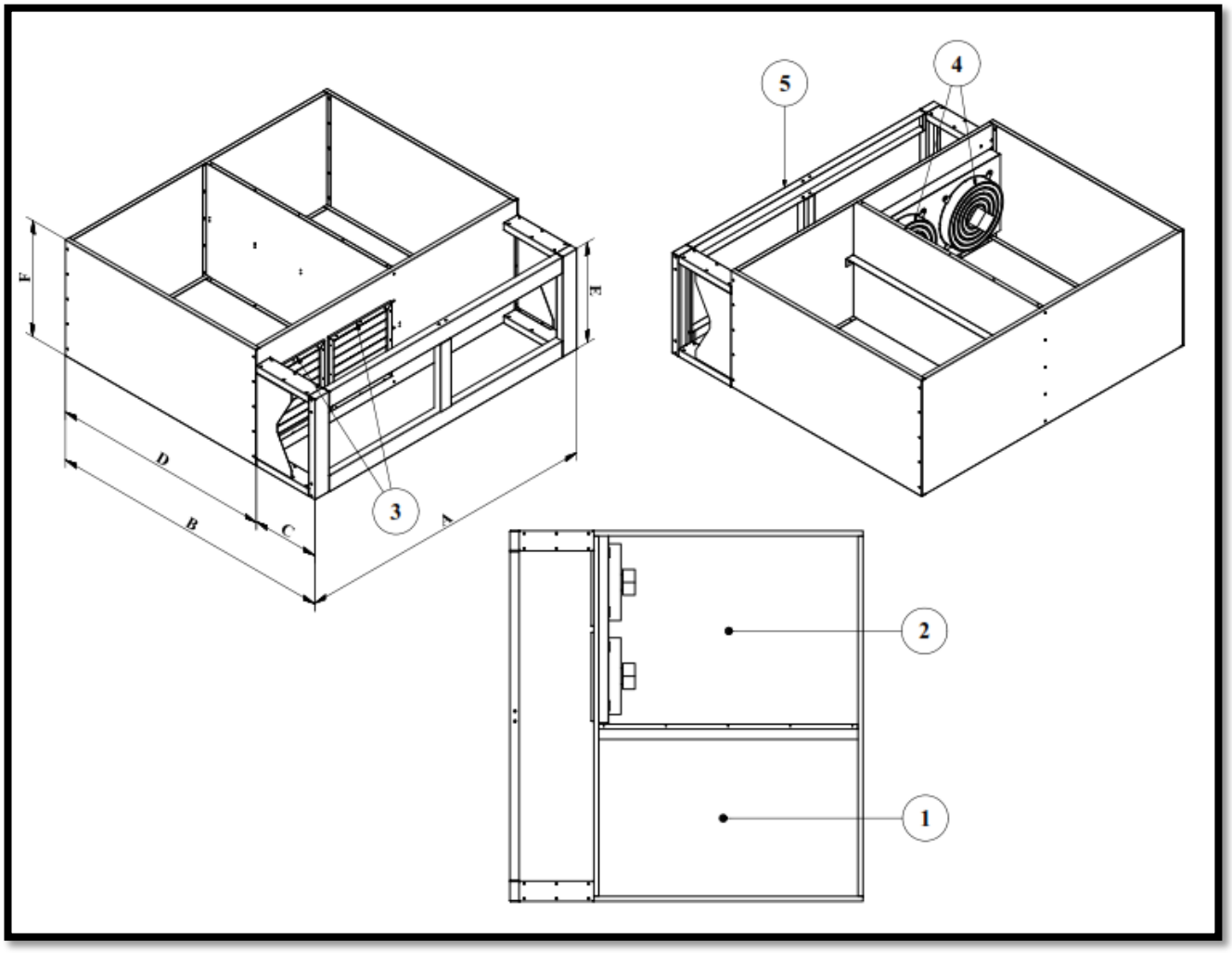
① Duct connection space of blow air

② Duct connection space of absorption air

③ Exhaust gravity damper

④ Balance connection extension

4.2.5. With Down Flow Exhaust Fan



	ROOF CONNECTOR WITH DOWN OUTPUT AND AXIAL RETURN FAN						
	55	**70**	**90**	**110**	**140**	**180**	**230**
A	1619	1619	1834	1834	1988	1988	2179
B	1366	1366	1748	1748	2358	2358	3081
C	402	402	415	415	640	640	889
D	964	964	1333	1333	1718	1718	2192
E	610	610	610	610	610	610	610
F	700	700	700	700	700	700	700

① Duct connection space of blow air

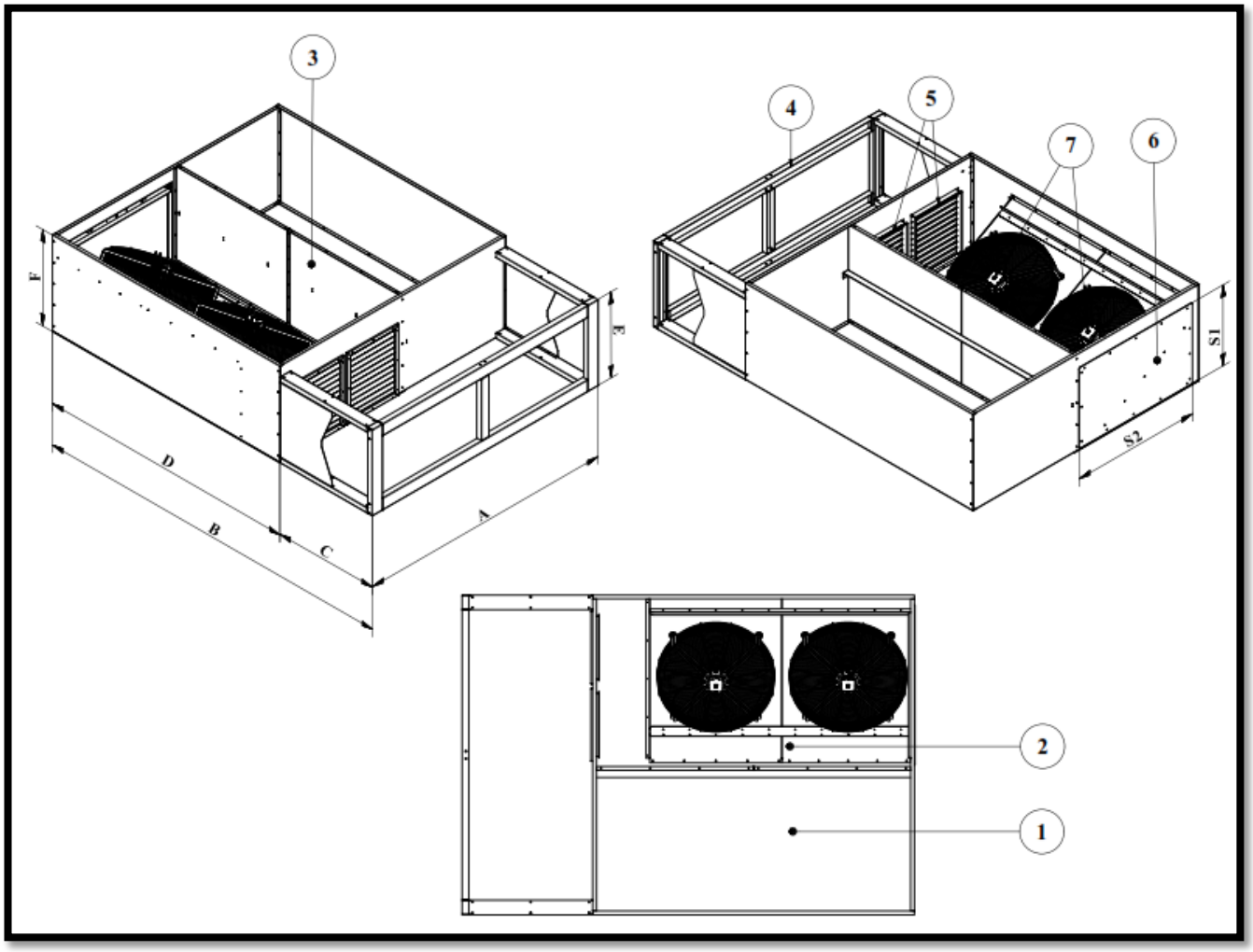
② Duct connection space of absorption air

③ Exhaust gravity damper

④ Axial exhaust fans

⑤ Balance connection extension

4.2.6. With Down Flow Return Fan



	ROOF CONNECTOR WITH DOWN OUTPUT AND AXIAL RETURN FAN						
	55	**70**	**90**	**110**	**140**	**180**	**230**
A	1619	1619	1834	1834	1988	1988	2179
B	1366	1366	1748	1748	2358	2358	3081
C	402	402	415	415	640	640	889
D	964	964	1333	1333	1718	1718	2192
E	710	710	710	710	710	710	710
F	800	800	800	800	800	800	800
S1	675	675	675	675	675	675	675
S2	810	810	917	917	995	955	1090

① Duct connection space of blow air

② Duct connection space of absorption air

③ Partition metal sheet of absorption and blow air

④ Balance connection extension

⑤ Exhaust gravity damper

⑥ Access panel of return fans

⑦ Axial return fans

5. TECHNICAL AND CAPACITY DATA

5.1. Device Tables

FEATURES/ MODEL FOR **ECO_SS** SERIES		55	70	90	110	140	180	230
Cooling Capacity	Cooling capacity [kW]	31,4	38,8	51,8	60,7	79,8	101,9	130,1
	Consumed power(H/M/L) [kW]	16,1/15,4/14,9	19,6/18,6/17,9	26,8/25,2/24,3	29,8/28,2/27,3	38,1/36,2/34,7	49,3/47,1/45,2	66,7/63,4/61,2
	EER value**	2,84/2,74/2,67	2,89/2,80/2,76	2,94/2,85/2,74	2,90/2,79/2,70	3,01/2,91/2,82	2,91/2,83/2,71	2,85/2,75/2,65
Heating Capacity	Heating capacity [kW]	-	-	-	-	-	-	-
	Consumed power (H/M/L) [kW]	-	-	-	-	-	-	-
	COP value**	-	-	-	-	-	-	-
Outer Fan	Normal air flow [m3/h]	8700	8550	11700	11500	18500	18800	24400
	Type	Axial						
	Number [Quantity]	2						
	Fan diameter [mm]	500	500	560	560	630	630	800
	Consumed power [kW]	1,42	1,42	2,32	2,32	5,26	5,26	4,66
	Rotation speed [rpm]	1384	1384	1400	1400	925	925	910
Inner Fan	Normal air flow [m3/h]	5500	7000	9000	11000	14000	18000	23000
	Static pressure value(H/M/L) [Pa] (High)	790/370/170	840/430/200	910/510/210	720/300/100	800/390/160	800/460/150	900/500/200
	Type	Plug Fan						
	Fan number [Quantity]	1	1	2	2	2	2	2
	Fan diameter [mm]	350	400	310	350	400	450	500
	Motor power [kW]	2,2	3,0	2,2	2,2	3,0	4,0	5,5
	Consumed power [kW]	2,55	3,48	5,12	5,12	6,97	9,30	12,79
	Rotation speed [rpm]	3093	2842	3685	3093	2842	2602	2381
Compressor	Type	Scroll						
	Number [Quantity]	2						
	Stage counter [Quantity]	3	3	3	3	3	3	3
Energy	Network data	400V / 3 ph / 50 Hz / Neutral + Earthen						
Maximum Current Draw	Compressors (a/b) [A]	11,9/15,6	15,6/17,7	17,7/22,0	21,3/24,1	25,7/30,2	30,2/44	44/53
	Condenser fans [A]	2,2	3	2,2x2	2,2x2	3x2	3x2	5,5x2
	Evaporator fans [A]	5,0	7,0	5,0x2	5,0x2	7,0x2	10,5x2	13x2
	Control elements [A]	1,15	1,15	1,15	1,15	1,15	1,15	1,15
Refrigerant	Type	R 410A						
	Amount [kg]	10	12	15	21	32	32	42
Device Weight	[kg]	755	815	910	955	1204	1534	1794
Sound power Level	[dBA]	82	82	85	85	84	84	84
Sound pressure	[dBA]*	60	60	63	63	62	62	62
Drain Diameter	[Ø]	1 ¼”						

*Sound pressure value is for 5 meters away from the source and direction factor Q: 2 .

**COP and EER values were calculated in accordance with EN14511 standards.

FEATURES/ MODEL FOR **ECO_HP** SERIES		55	70	90	110	140	180	230
Cooling Capacity	Cooling capacity [kW]	31,4	38,8	51,8	60,7	79,8	101,9	130,1
	Consumed power(H/M/L)	16,1/15,4/14,9	19,6/18,6/17,9	26,8/25,2/24,3	29,8/28,2/27,3	38,1/36,2/34,7	49,3/47,1/45,2	66,7/63,4/61,2
	EER value**	2,84/2,74/2,67	2,89/2,80/2,76	2,94/2,85/2,74	2,90/2,79/2,70	3,01/2,91/2,82	2,91/2,83/2,71	2,85/2,75/2,65
Heating Capacity	Heating capacity [kW]	36,8	45,0	51,8	74,3	83,5	107,8	153,1
	Consumed power (H/M/L) [kW]	16,1/15,4/14,9	19,6/18,6/17,9	26,8/25,2/24,3	29,8/28,2/27,3	38,1/36,2/34,7	49,3/47,1/45,2	66,7/63,4/61,2
	COP value**	3,20/3,10/3,02	3,28/3,19/3,15	3,50/3,39/3,27	3,50/3,37/3,25	3,55/3,43/3,32	3,53/3,43/3,28	3,51/3,40/3,27
Outer Fan	Normal air flow [m3/h]	8700	8550	11700	11500	18500	18800	24400
	Type	Aksiyal						
	Number [Quantity]	2						
	Fan diameter [mm]	500	500	560	560	630	630	800
	Consumed power [kW]	1,42	1,42	2,32	2,32	5,26	5,26	4,66
	Rotation speed [rpm]	1384	1384	1400	1400	925	925	910
Inner Fan	Normal air flow [m3/h]	5500	7000	9000	11000	14000	18000	23000
	Static pressure Value(H/M/L)	790/370/170	840/430/200	910/510/210	720/300/100	800/390/160	800/460/150	900/500/200
	Type	Plug Fan						
	Fan number [Quantity]	1	1	2	2	2	2	2
	Fan diameter [mm]	350	400	310	350	400	450	500
	Motor power [kW]	2,2	3,0	2,2	2,2	3,0	4,0	5,5
	Consumed power [kW]	2,55	3,48	5,12	5,12	6,97	9,30	12,79
	Rotation speed [rpm]	3093	2842	3685	3093	2842	2602	2381
Compressor	Type	Scroll						
	Number [Quantity]	2						
	Stage counter [Quantity]	3	3	3	3	3	3	3
Energy	Network data	400V / 3 ph / 50 Hz						
Maximum Current Draw	Compressors (a/b) [A]	11,9/15,6	15,6/17,7	17,7/22,6	21,3/24,1	35,7/30,2	30,2/44	44/53
	Condenser fans [A]	1,5	1,5	2,4	2,4	3,0	3,0	3,8
	Evaporator fans [A]	5,0	7,0	5,0x2	5,0x2	7,0x2	10,5x2	13x2
	Control elements [A]	1,15	1,15	1,15	1,15	1,15	1,15	1,15
Refrigerant	Type	R 410A						
	Amount [kg]	10	12	15	21	32	32	42
Device Weight	[kg]	760	820	915	960	1210	1540	1800
Sound power Level	[dBA]	82	82	85	85	84	84	84
Sound pressure Level	[dBA]*	60	60	63	63	62	62	62
Drain Diameter	[Ø]	1 ¼”						

*Sound pressure value is for 5 meters away from the source and direction factor Q: 2 .

**COP and EER values were calculated in accordance with EN14511 standards.

6. ELECTRICAL DATA

6.1. Power Data of Basic Elements and Options

SERİ [BSC_SS] / EXPLANATION		URTP 055	URTP 070	URTP 090	URTP 110	URTP 140	URTP 180	URTP 230
Installed Power without Option [For Low Pressure]	W	17081	20550	27847	32390	40830	52780	69650
Current in Nominal Capacity **	A	26,1	30,5	39,9	40,5	50,3	64,5	83,4
Current in Maximum Capacity	A	32,5	39,1	52,9	61,6	77,6	100,4	132,4
Start up Current	A	121	136	172	177	219	260	279
Installed Power without Option [For Middle Pressure]	W	17481	21250	28647	33190	42230	54380	71650
Current in Nominal Capacity**	A	27,1	32,0	41,5	42,6	52,0	67,7	87,4
Current in Maximum Capacity	A	32,3	40,4	54,5	63,1	80,3	103,4	136,2
Start up Current	A	122	138	174	179	222	264	283
Installed Power without Option [For High Pressure]	W	18181	22050	30047	34590	43830	56380	74650
Current in Nominal Capacity**	A	28,5	33,6	44,3	45,4	54,9	71,7	93,4
Current in Maximum Capacity	A	34,5	41,9	57,1	65,8	83,3	107,1	141,5
Start up Current	A	124	140	177	182	226	268	289
OPTIONS and ACCESSORIES								
Power Consumed for Natural Gas Firing Unit	W	74	74	97	97	123	130	130
Natural Gas Firing Unit	A	0,33	0,33	0,44	0,44	0,56	0,59	0,59
Consumed Power of Return Fan Unit	W	540	770	860	1080	1540	2140	2000
Current Draw of Return Fan Unit	A	1,1	1,5	0,8x2	1,1x2	1,5x2	2,1x2	1,8x2
Consumed Power of Exhaust Fan Unit	W	190	260	380	380	520	660	860
Current Draw of Exhaust Fan Unit	A	0,4	0,5	0,4x2	0,4x2	0,5x2	1,4x2	0,8x2
Consumed Power of Electric Unit [High Cap./ Stage 1]	W	11500	15000	18000	22000	30000	40000	50000
Consumed Power of Electric Unit [High Cap./ Stage 1]	A	16,62	21,67	26	31,78	43,34	57,78	72,23
Consumed Power of Electric Unit [High Cap./ Stage 2]	W	22500	28000	37000	45000	55000	70000	90000
Consumed Power of Electric Unit [High Cap./ Stage 2]	A	32,50	40,45	53,45	65,0	79,45	101,12	130,0
Consumed Power of Electric Unit [Low Cap./ Stage 1]	W	6000	8000	10000	13000	16000	20000	26000
Consumed Power of Electric Unit [Low Cap./ Stage 1]	A	8,67	11,56	14,45	18,78	23,12	28,89	37,56
Consumed Power of Electric Unit [Low Cap./ Stage 2]	W	13000	16000	21000	25000	32000	41000	52000
Consumed Power of Electric Unit [Low Cap./ Stage 2]	A	18,78	23,12	30,34	36,12	46,24	59,24	75,14

** Users should add option or accessory power values, if available, to the installed power to find out about power value of their own device.*

*** 400V is the power inlet in nominal voltage.*

**** Standardized Eurovent Conditions: By wet thermometer, the inner ambient temperature is 19°C, in standard fan performance; the external ambient temperature is 35°C.*

Sizes of power line cable to be spanned for the device panel should comply with the standards (YVV(NYY)TS 212). The Nominal cable sections are given at the table below. Regarding the voltage drop calculation, you may take this table as basis in your calculations. Power cables are used under earth, in cable ducts, at inner and outer spaces, under sweet water (under salty water in case of being specially produced), at power plants, industrial plants and switch stations. Single-core cables have single wire up to 1.5-10 mm2, multiple wires from 10 mm2 to 300 mm2. They are isolated with non-conductor coating and there is also outer coating around them. The ones with 2-4 cores have single wire up to 10 mm2, multiple wires in sections greater than 10 mm2. There is a common coating over twisted cores and also a black outer coating.

HIGHEST CONDUCTIVE TEMPERATURE: 70ºC / NOMINAL VOLTAGE: 0.6/1kV

Nominal section in mm^2	Wire number	Conductor diameter in mm	Thickness of non-conductive coating in mm	Thickness of outer coating in mm	Out-to-out diameter in mm	Twist diameter in cm	Resistance in Ohm/km	CURRENT TRANSPORT CAPACITY		Weight in kg/km
								Under earth A	In the air A	
1x1,5	1	1,38	1,5	1,8	8	11	11,9	37	26	65
1x2,5	1	1,80	1,5	1,8	8,4	11	7,14	50	35	80
1x4	1	2,26	1,5	1,8	8,9	12	4,47	65	46	110
1x6	1	2,80	1,5	1,8	9,4	13	2,97	83	58	140
1x10	1-7	4,1	1,5	1,8	10,7	14	1,79	110	80	195
1x16	1-7	5,2	1,5	1,8	11,7	15	1,12	145	105	270
1x25	7	6,4	1,5	1,8	12,9	18	0,712	190	140	370
1x35	7-19	7,7	1,5	1,8	14,1	20	0,514	235	175	480
1x50	19	9,2	1,5	1,8	15,6	23	0,379	280	215	640
1x70	19	11	1,5	1,8	17,2	26	0,262	350	270	850
1x95	19	12,7	1,6	1,8	19,4	29	0,189	420	335	1115
1x120	37	14,4	1,6	1,8	21,4	30	0,150	480	390	1340
1x150	37	16,1	1,8	1,8	23	33	0,122	540	445	1660
1x185	37	18	2,0	2,0	25,7	36	0,0972	620	510	2030
1x240	61	20,5	2,2	2,0	29	44	0,0740	770	620	2650
1x300	61	22,7	2,4	2,0	32	48	0,0590	820	710	3370
2x1,5	1	1,38	0,3	1,8	11	14	12,1	30	21	170
2x2,5	1	1,80	0,9	1,8	13	16	7,28	41	29	220
2x4	1	2,26	1,0	1,8	14	17	4,56	53	38	290
2x6	1	2,80	1,0	1,8	15	18	3,03	66	48	350
2x10	1-7	4,1	1,0	1,8	17	21	1,83	88	66	480
3x1,5	1	1,38	0,8	1,8	12	15	12,1	27	18	190
3x2,5	1	1,80	0,9	1,8	13	16	7,28	36	25	260
3x4	1	2,26	1,0	1,8	15	19	4,56	46	34	340
3x6	1	2,80	1,0	1,8	16	20	2,03	58	44	420
3x10	1-7	4,1	1,0	1,8	17	21	1,83	77	60	580
4,1,5	1	1,38	0,8	1,8	13	16	12,1	27	18	230
4x2,5	1	1,80	10,9	1,8	14	17	7,28	36	25	300
4x4	1	2,26	1,0	1,8	16	19	4,56	46	34	410
4x6	1	2,80	1,0	1,8	17	21	3,03	58	44	510
4x10	1-7	4,1	1,0	1,8	20	23	1,83	77	60	780
4x16	1-7	5,2	1,0	2,0	23	27	1,15	100	80	1100
3x25/16	7	6,4	1,5	2,0	27	33	0,07270	130	105	1420
3x35/16	7-19	7,7	1,5	2,0	30	36	0,524	155	130	1790
3x50/25	19	9,2	1,5	2,2	36	44	0,387	185	160	2290
3x70/35	19	11	1,5	2,2	40	49	0,268	230	200	3066
3x95/50	19	12,7	1,6	2,4	45	55	0,193	275	245	4097
3x120/70	37	14,4	1,6	2,6	50	61	0,153	315	285	5700
3x150/70	37	16,1	1,8	2,8	52	69	0,124	355	325	6132
3x185/95	37	18	2,0	3,0	59	77	0,991	400	370	7625
3x240/120	61-37	20,5	2,2	3,2	66	82	0,574	460	435	9950
3x300/150	61-37	22,7	2,4	3,4	73	92	0,0601	520	500	12500

6.2. Electricity Connection

Electric connections to be provided from outside should comply with the rules below. These rules aren't just recommendations but the rules to be complied with in terms of user safety;

- Equipments and cables to be used in electricity connection should be chosen according to maximum current values given at schema and the catalogue in the following. Schemas will also be seen on the device's panel door.

  - Supply line directly should reach to the device panel after thermal magnetic switch while being placed. There shouldn't be any section, addition or intermediate element on the line.
  - Connections, over current protection and magnetic switches provided should comply with CEI EN 60204 European norms. If leakage current relay will be used in addition to magnetic protection, this relay should have a 30–300 mA blog. This operator will protect the operator against isolation lines.
- Grounding cable sections should by no means be under the values given at schemas.

These procedures should have been completed by customer before commissioning!

6.3. Voltage Phase Instability

If voltage imbalance exceeds 2%, the device should by no means be operated. This formula should be used to find out voltage imbalance.

$$\text{Voltage imbalance [\%]} = \frac{\text{The Maximum Deviation from the Mean Voltage}}{\text{Mean Voltage}}$$

Sample:

If measured voltages are AB=399, BC=395 in a feed in which Nominal supply is 400-3-50, if AC=406, voltage imbalance is measured as follows;

Mean voltage value = (399+395+406)/3 =400 V)

For maximum deviation from mean voltage;

AB=400-399=1

BC=400-395=5

AC=406-400=6

Maximum deviation value is 6 volts. In accordance, voltage imbalance is found as (6/400)*100 = 1.5%.

6.4. Area Control Cabling

Please consult with the technical service directorate of our company for area control cabling.

UNTES
HEATING VENTILATING AIR CONDITIONING

6.5. Motor Tables

PERFORMANCE

Cycle, power factor, performance, moving rotor current
400 V,50 Hz Torque values

3 phase, 400 V, 50 Hz
Service type : S1 (continuous)
Protection level : IP 55 (TEFV)
Isolation class : F (105K)
Temperature increase :Class B (80K)

OUTLET POWER	TYPE			FULL LOAD DATA								Moment of inertia J		Weight B3	Suitable cable section for connection NYY
				CYCLE	CURRENT I_N			TORQUE M_N	Power factor	Performance η					
Kw				n	A					%		Kg/m²		kg	mm²
				min⁻¹	At 380V	At 400V	At 415V	Nm	Cos Ø	At 4/4	At 3/4				
2 Pole, 3000 min⁻¹															
0.09	AGM	56	2a	2800	0.26	0.26	0.29	0.31	0.74	65.3	65.0	0.00011	2.7		
0.12	AGM	56	2b	2800	0.39	0.35	0.37	0.41	0.72	66.4	66.0	0.00012	2.9		
0.18	AGM	63	2a	2820	0.50	0.49	0.50	0.61	0.80	66.3	66.0	0.00011	3.3		
0.25	AGM	63	2b	2840	0.65	0.66	0.61	0.85	0.79	69.2	69.0	0.00013	3.7		4*2.5
0.37	AGM	71	2a	2800	1.10	1.05	1.02	1.26	0.73	67.8	67.5	0.00026	5.1		4*2.5
0.55	AGM	71	2b	2780	1.30	1.27	1.25	1.90	0.84	73.5	73.2	0.00034	6.3		4*2.5
0.75	AGM	80	2a	2780	1.80	1.90	1.80	2.60	0.83	71.6	71.3	0.00053	7.8		4*2.5
1.1	AGM	80	2b	2800	2.45	2.50	2.35	3.80	0.83	78.1	78.0	0.00066	8.9		4*2.5
1.5	AGM	90	S2	2800	3.45	3.30	3.30	5.10	0.84	79.2	79.0	0.0011	11.4		4*2.5
2.2	AGM	90	L2	2840	4.90	4.65	4.60	7.40	0.84	81.6	81.5	0.0014	13.8		4*2.5
3	C.AGM	90	L2	2840	6.50	6.20	6	10	0.84	83.7	83.6	0.0017	16		4*2.5
3	AGM	100	L2	2850	6.60	6.10	6	10	0.87	83.2	83.1	0.0024	17.3		4*2.5
4	C.AGM	100	L2	2870	8.20	8	7.60	13.3	0.85	84.8	84.7	0.0031	21		4*2.5
4	AGM	112	M2	2850	8.20	7.80	7.70	13.4	0.87	84.8	84.8	0.0039	27		4*2.5
5.5	C.AGM	112	M2	2870	11	10.8	10.6	18.3	0.86	86.1	86.0	0.0048	30		4*2.5
5.5	AGM	132	S 2a	2870	11.3	11	10.8	18.4	0.84	85.9	85.8	0.0090	33		4*2.5
7.5	AGM	132	S 2b	2890	15.4	14.7	14.3	24.8	0.85	87.6	87.5	0.012	39		4*4
11	C.AGM	132	M2	2915	22	21.5	21	36	0.84	89.2	89.1	0.018	59		4*6
11	GM	160	M2a	2935	22.4	21.5	21	36	0.84	88.5	88.5	0.026	96		4*6
15	GM	160	M2b	2940	28.5	28	27	49	0.86	89.5	89.5	0.034	107		4*6
18.5	GM	160	L2	2940	35	34	33	60.4	0.87	90.5	90.5	0.041	122		4*10
22	C. GM	160	L2	2930	41	39	38	71.7	0.88	91.3	91.3	0.051	140		4*10
22	GM	180	M2	2950	41.5	40	39	71.5	0.88	91.0	91.0	0.064	164		4*10
30	C. GM	180	L2	2940	56	54	52	97	0.88	92.2	92.2	0.082	190		4*16
30	GM	200	L2a	2940	56	54	52	97	0.88	91.8	91.7	0.10	220		4*16
37	GM	200	L2b	2955	68	65	63	120	0.89	92.5	92.5	0.13	240		3*25+16
45	C. GM	200	L2	2960	82	78	76	145	0.90	93.0	93.0	0.15	275		3*35+16
45	GM	225	M2	2960	82	78	76	145	0.90	93.0	93.0	0.19	315		3*35+16
55	C. GM	225	M2	2965	100	95	92	177	0.90	93.3	93.2	0.23	343		3*50+25
55	GM	250	M2	2970	100	95	92	177	0.90	93.2	93.3	0.32	390		3*50+25
75	C. GM	250	M2	2970	134	128	123	241	0.90	93.9	93.9	0.41	450		3*70+35
75	GM	280	S2	2975	136	129	125	241	0.90	93.8	93.8	0.50	540		3*70+35
90	GM	280	M2	2970	161	152	148	289	0.91	94.0	94.0	0.62	590		3*95+50
110	C. GM	280	M2	2975	196	186	180	353	0.91	94.0	94.0	0.74	640		3*120+70
110	GM	315	S2	2980	196	186	180	353	0.91	93.8	93.8	1.3	787		3*120+70
132	GM	315	M2a	2980	235	223	216	423	0.91	93.9	93.9	1.5	895		
160	GM	315	M2b	2980	280	266	258	513	0.92	94.4	94.4	2.0	1020		3*120+70
185	GM	315	L2a	2900	320	304	295	593	0.93	94.5	94.4	2.2	1120		
200	GM	315	L2b	2900	341	330	320	641	0.93	94.5	94.4	2.3	1150		
250	GM	355	M2a	2980	438	416	401	801	0.91	95.0	95.0	2.8	1310		
315	GM	355	M2b	2975	545	518	499	1011	0.92	95.0	95.0	3.6	1460		
355	GM	355	M2c	2980	610	580	563	1138	0.93	95.0	95.0	4.2	1620		
400	GM	355	L2	2980	690	656	632	1282	0.92	95.1	95.0	4.7	1850		

PERFORMANCE

Cycle, power factor, performance, moving rotor current
400 V,50 Hz Torque values

3 faz, 400 V, 50 Hz
Service type : S1 (continuous)
Protection level : IP 55 (TEFV)
Isolation class : F (105K)
Temperature increase :Class B (80K)

OUTLET POWER	TYPE			FULL LOAD DATA								Moment of inertia J	Approximate Weight B3	Suitable cable section for connection NYY mm^2
				CYCLE	CURRENT I_N			TORQUE M_N	Power factor	Performance η				
Kw				n	A				Cos Ø	%		Kg/m^2	kg	
				min^{-1}	At 380V	At 400V	At 415V	Nm		At 4/4	At 3/4			
4 Pole 1500 min^{-1}														
0.06	AGM	56	4a	1370	0.24	0.25	0.27	0.42	0.56	58.7	58.6	0.000 11	2.7	
0.09	AGM	56	4b	1375	0.35	0.36	0.38	0.63	0.54	64.4	64.2	0.000 12	2.8	
0.12	AGM	63	4a	1365	0.40	0.41	0.42	0.84	0.65	58.8	58.8	0.000 17	3.2	
0.18	AGM	63	4b	1340	0.58	0.60	0.60	1.28	0.65	61.4	61.4	0.000 21	3.7	
0.25	AGM	71	4a	1380	0.81	0.81	0.82	1.73	0.68	63.6	63.5	0.000 40	4.9	4*2.5
0.37	AGM	71	4b	1390	1.20	1.15	1.15	2.54	0.69	70.0	70.0	0.000 54	5.9	4*2.5
0.55	AGM	80	4a	1365	1.60	1.60	1.55	3.90	0.71	70.9	70.8	0.000 83	7.6	4*2.5
0.75	AGM	80	4b	1370	2.10	2.00	2.00	5.20	0.74	72.2	72.2	0.001 1	8.7	4*2.5
1.1	AGM	90	S4	1380	2.70	2.60	2.55	7.60	0.79	76.8	76.7	0.001 9	11.5	4*2.5
1.5	AGM	90	L4	1390	3.60	3.50	3.40	10.3	0.78	78.6	78.5	0.002 4	13.6	4*2.5
2.2	AGM	100	L4a	1400	5.30	5.10	5.20	15	0.77	81.3	81.2	0.004 0	17.3	4*2.5
3	AGM	100	L4b	1405	6.60	6.45	6.35	20.4	0.81	82.9	82.9	0.005 2	20.8	4*2.5
4	AGM	112	M4	1420	8.70	8.20	8.20	27	0.82	84.7	84.7	0.009 2	28.7	4*2.5
5.5	AGM	132	S4	1430	11.8	11.3	11	36.7	0.82	86.2	86.2	0.019	39	4*2.5
7.5	AGM	132	M4	1430	15.8	15.3	15	50	0.80	87.4	87.2	0.026	47	4*4
9	C.AGM	132	M4	1445	19	18	17.5	59.5	0.82	88.4	88.0	0.032	56	4*4
11	GM	160	M4	1455	22.5	21.5	21	72.2	0.84	88.6	88.5	0.054	108	4*6
15	GM	160	L4	1460	30.5	29	28.5	98	0.83	89.5	89.5	0.072	140	4*6
18.5	C. GM	160	L4	1450	37	35	34.5	122	0.83	90.1	90.1	0.084	150	4*10
18.5	GM	180	M4	1460	38	36	35	121	0.82	90.1	90.1	0.11	160	4*10
22	GM	180	L4	1460	44	42	40.5	144	0.83	90.7	90.7	0.13	185	4*10
30	GM	200	L4	1460	57	54	52	196	0.88	91.5	91.5	0.19	240	4*16
37	C. GM	200	L4	1465	69	66	64	241	0.88	92.1	92.1	0.23	260	3*25+16
37	GM	225	S4	1465	70	66	64	241	0.87	92.2	92.2	0.29	275	3*25+16
45	GM	225	M4	1465	84	80	77	293	0.87	92.7	92.7	0.35	320	3*35+16
55	C. GM	225	M4	1470	101	96	93	357	0.88	93.2	93.2	0.44	360	3*50+25
55	GM	250	M4	1470	102	97	94	357	0.88	93.0	93.0	0.54	400	3*50+25
75	C. GM	250	M4	1470	138	131	127	487	0.87	93.3	93.6	0.72	455	3*70+35
75	GM	280	S4	1475	140	133	128	485	0.87	93.6	93.6	0.90	530	3*70+35
90	GM	280	M4	1480	166	158	152	581	0.88	93.9	93.9	1.1	610	3*95+50
110	C. GM	280	M4	1480	204	194	183	710	0.87	94.0	94.0	1.3	660	3*120+70
110	GM	315	S4	1480	205	195	189	710	0.87	94.0	94.0	1.9	770	3*120+70
132	GM	315	M4a	1485	245	233	225	849	0.87	94.0	94.0	2.4	890	3*120+70
160	GM	315	M4b	1485	295	280	272	1029	0.88	94.3	94.2	3.1	1015	
185	GM	315	L4a	1485	340	323	312	1190	0.88	94.4	94.3	3.6	1115	
200	GM	315	L4b	1485	368	350	339	1286	0.87	94.4	94.3	3.9	1165	
250	GM	355	M4a	1485	450	428	415	1608	0.88	95.8	95.8	6.5	1450	
315	GM	355	M4b	1485	560	532	515	2026	0.89	96.2	96.2	8.1	1657	
355	GM	355	M4c	1485	635	603	582	2283	0.88	96.3	96.3	9.4	1800	
400	GM	355	L4	1485	710	675	650	2572	0.89	96.3	96.3	10	1965	

UNTES
HEATING VENTILATING AIR CONDITIONING

PERFORMANCE

Cycle, power factor, performance, moving rotor current
400 V,50 Hz Torque values

3 faz, 400 V, 50 Hz
Service type : S1 (continuous)
Protection level : IP 55 (TEFV)
Isolation class : F (105K)
Temperature increase :Class B (80K)

OUTLET POWER	TYPE			FULL LOAD DATA							Moment of inertia J	Approximate Weight B3	Suitable cable section for connection NYY mm^2
				CYCLE	CURRENT I_N			TORQUE M_N	Power factor	Performance ŋ			
Kw				n	A					%	Kg/m^2	kg	
				min^{-1}	At 380V	At 400V	At 415V	Nm	Cos Ø	At 4/4			
6 Pole,1000 min^{-1}													
0.18	AGM	71	6a	920	0.60	0.61	0.62	1.87	0.64	67.0	0.00064	5.4	
0.25	AGM	71	6b	910	0.83	0.83	0.85	2.62	0.66	65.3	0.00086	6.3	4*2.5
0.37	AGM	80	6a	910	1.10	1.10	1.10	3.90	0.65	74.9	0.0017	8.1	4*2.5
0.55	AGM	80	6b	890	1.50	1.50	1.50	5.90	0.73	72.3	0.0022	9.5	4*2.5
0.75	AGM	90	S6	910	2.20	2.10	2.10	7.90	0.70	74.0	0.0029	11.4	4*2.5
1.1	AGM	90	L6	915	3.10	3.00	3.00	11.5	0.69	76.8	0.0038	13.7	4*2.5
1.5	AGM	100	L6	925	3.60	3.50	3.60	15.5	0.77	76.9	0.0084	19.4	4*2.5
2.2	AGM	112	M6	940	5.30	5.10	5.00	22.4	0.75	82.6	0.013	26.5	4*2.5
3	AGM	132	S6	945	7.00	6.90	6.80	30.5	0.76	82.6	0.022	36	4*2.5
4	AGM	132	M6a	940	9.40	9.00	8.80	41	0.78	82.6	0.028	43.5	4*2.5
5.5	AGM	132	M6b	945	13	12.3	12	55.6	0.76	84.4	0.043	49.6	4*2.5
7.5	GM	160	M6	960	16	15.2	14.3	74.6	0.82	87.1	0.079	115	4*4
11	GM	160	L6	955	23	22	21.5	110	0.83	86.6	0.11	131	4*6
15	GM	180	L6	960	30.5	29	28	149	0.83	89.7	0.16	187	4*6
18.5	GM	200	L6a	970	38	36	35	182	0.83	89.6	0.21	216	4*10
22	GM	200	L6b	975	45	43	41	216	0.82	90.5	0.26	240	4*10
30	GM	225	M6	970	61	58	56	294	0.82	91.0	0.57	330	4*16
37	C. GM	225	M6	980	75	71	69	363	0.82	91.6	0.71	365	3*25+16
37	GM	250	M6	970	75	71	69	364	0.82	91.6	0.77	400	3*25+16
45	C. GM	250	M6	975	90	88	83	441	0.82	91.8	0.99	450	3*35+16
45	GM	280	S6	980	93	90	85	439	0.80	91.8	1.2	530	3*35+16
55	GM	280	M6	985	113	107	104	533	0.80	92.7	1.5	605	3*50+25
75	C. GM	280	M6	985	150	143	138	727	0.81	93.3	1.6	700	3*70+35
75	GM	315	S6	985	146	139	134	727	0.83	93.3	3.3	740	3*70+35
90	GM	315	M6a	985	175	166	161	873	0.85	92.5	4.1	850	3*95+50
110	GM	315	M6b	990	208	198	191	1061	0.85	94.5	5.4	975	3*120+70
132	GM	315	L6	990	247	235	227	1273	0.86	94.2	6.4	1040	3*120+70
160	GM	355	M6a	990	305	290	281	1543	0.84	94.6	7.1	1350	
200	GM	355	M6b	990	380	361	350	1929	0.85	94.4	8.9	1540	
250	GM	355	M6c	990	474	450	431	2388	0.85	94.5	11	1720	
315	GM	355	L6	990	600	570	550	3039	0.84	94.5	13	2100	

7. ADDITIONAL GAS-FIRED HEATING OPTION

7.1. Introduction

In URTP devices, there is optionally an alternative system to water or electric heating systems with additional gas fired heating module. One of the fuel types of natural gas should be used for gas fired modules. These units have condensation technology and are devices with high efficiency.

Information given in the table below about gas fired heating module that used in URTP units.

Description		**URTP 055**	**URTP 070**	**URTP 090**	**URTP 110**	**URTP 140**	**URTP 180**	**URTP 230**
Flue Type		C13-C33-C53-C63						
Nominal Inlet Heat (Min-Max)(Qn)	kW	7,6-34,9	7,6-34,9	12,4-65	12,4-65	16,4-82	21-100	21-100
Outlet Heat (Min-Max)	kW	8,1-33,6	8,1-33,6	13,4-62,9	13,4-62,9	17,8-80	22,8-97,2	22,8-97,2
(Min)	%	96,37	96,37	97,36	97,36	97,62	97,68	97,68
Max. Condensation*	Lt/h	0,9	0,9	2,1	2,1	3,3	2,7	2,7
CO-(O2 Percentage)**	ppm	<5						
NOx-(O2 Percentage)***		42 mg/kWh-24ppm	42 mg/kWh-24ppm	39 mg/kWh-22ppm	39 mg/kWh-22ppm	32 mg/kWh-18ppm	32 mg/kWh-18ppm	41 mg/kWh-23ppm
Nox Glass	Pa	5						
Flue Press. Drop	Pa	90	90	120	120	120	120	120
Gas Category		I2H						
Gas Type		G20						
Gas Pressure	mbar	20						
Gas Connection Dia.		1”						

* Given condensation values are for value of %30 capacity of Qn.
**Reference values for G20
***This value according to the EN1020 and G20 for lower heating value of the gas.

Gas categories and values of the countries are given in the table below.

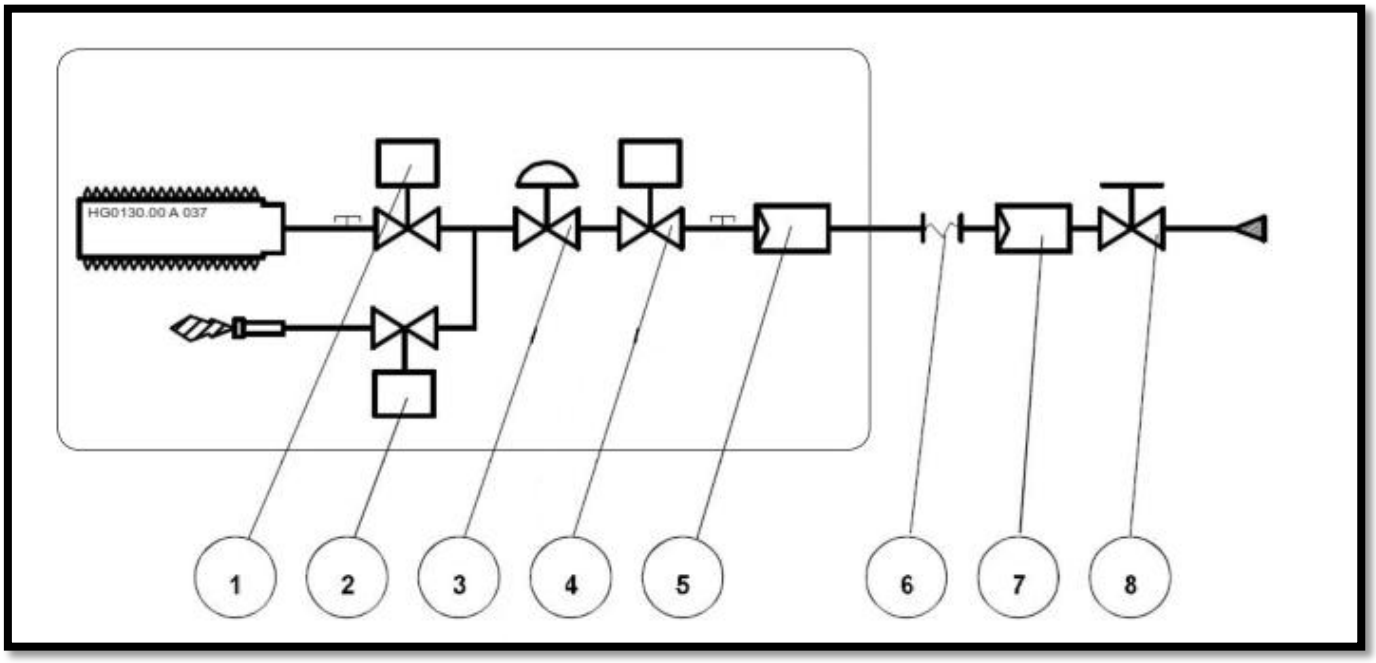
Country	**Category**	**Gas**	**Pressure**
AT, CH, CZ, DK, EE, ES, FI, GB, GR, HR, IE, IT, LV, NO, PT, RO, SE, SI, SK, TR	I2H	G20	20 mbar

7.2. Gas Connection

Gas connection of the device's gas firing unit should be provided suitably to the gas pass equipments described below and in the right alignment.

IMPORTANT: Gas connections should be made with gas pipes in compliance with local rules. Tightening torque values for gas pipes are as follows.

-Ø ¾": 150Nm. / -Ø 1": 200Nm. / -Ø 1 1/2": 300Nm.



Standard equipments within the device;

① Main burning gas solenoid valve

② Pilot light gas solenoid valve

③ Pressure compensating regulator

④ Safety gag solenoid valve

⑤ Small gas filter

Equipments to be adjusted to the device's gas pass;

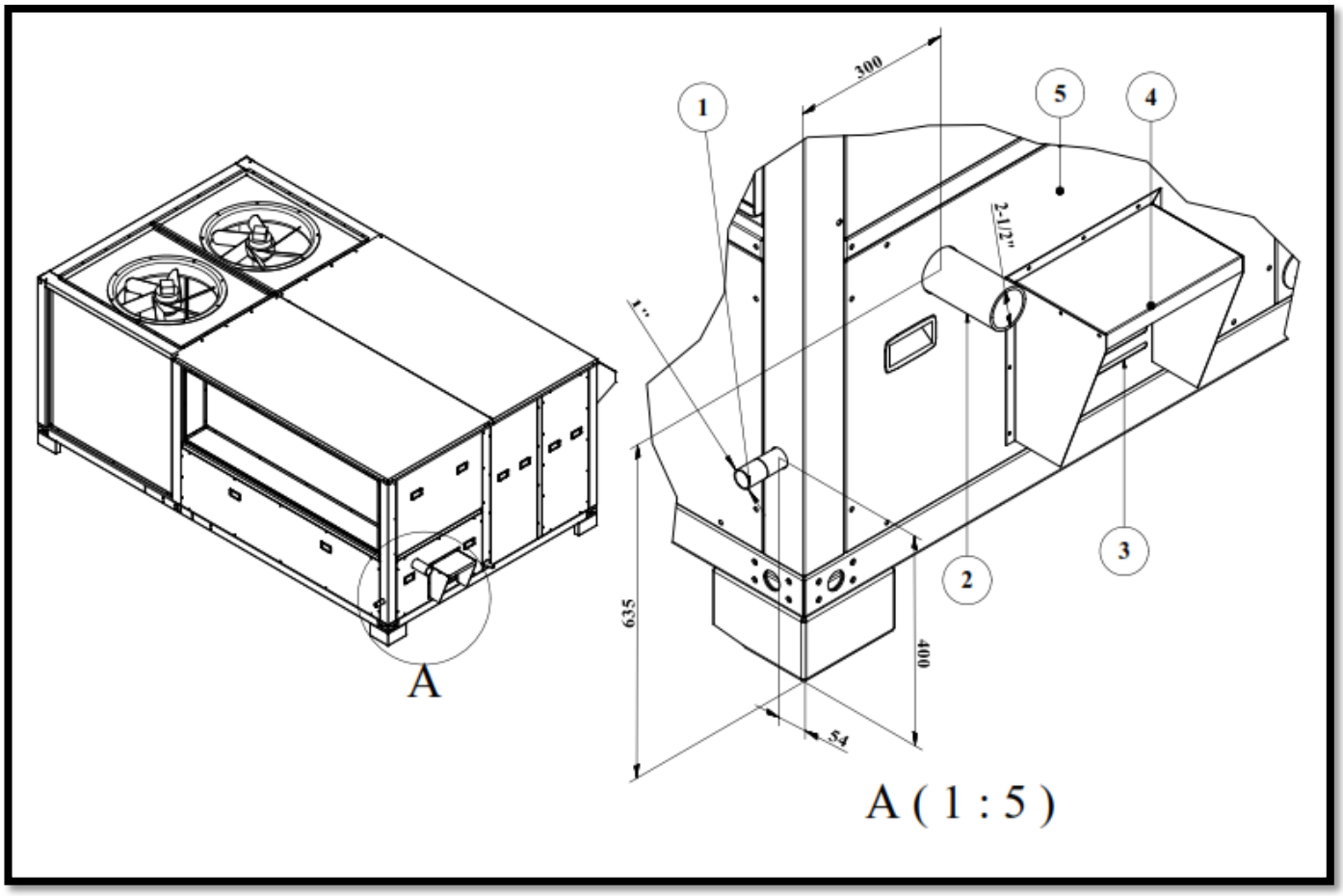
⑥ Vibration isolator connection

⑦ Gas filter

⑧ Gas valve

7.3. Chimney Connection

Absorption and exhaust parts should by no means covered. In areas with heavy snow fall, the front part of this door and absorption grid should always be cleared.



① Gas connection inlet

② Chimney

③ Absorption grid of combustion air

④ Rain shield

⑤ Access panel of additional heating module

7.4. Operation Limits

Operation gas pressures of natural gas for gas firing unit is 20mbar. Maximum compressive strength of the device's gas pass is 60mbar and in case this value is exceeded the device's gas pass equipment will be broken and the device will become out-of-order.

And on the air side, the standard product works until -15°C without any problem. For temperatures under -15°C, the system is made to work without any problem by using over-device, electric heating type gas firing units.

Please refer to the capacity table for unit capacity values.

7.5. Controls to be considered before commissioning

The device should be checked in terms of compliance with the rules determined by local authorities.

These unit devices could only be used at uncovered areas or semi-covered areas with very good ventilation.

People without technical competence shouldn't be let to intervene with this device.

Don't start-up the device before complying with producer's instructions.

Special gas distribution tap should be attached according to gas type to be used in devices.

Gas type, power source, unit adjustments should always be checked. The device should be made sure to operate in compliance with its adjustments.

There should be assuredly at least an opening of 2 meters on gas module side. This both simplifies intervention with the device and enables to let the device slide air in easily.

Exhaust chimney of combustion unit must be placed somewhere away from the ambient where people might inhale it. Released suffocative gasses cause vital hazard for all living creatures.

Products given with the device should be used in the device's gas transformation. Use of products other than the ones provided by the producer may lead to malfunctions. It shouldn't be forgotten that this situation will end the warranty of the device.

Unit's gas pass connections should be checked in terms of compliance with the instructions.

WARNING: Never use fire for gas leakage test.

7.6. Commissioning

Please refer to the control panel section at the Section 12 for commissioning the unit.

7.7. Service and Maintenance

Please refer to the maintenance section mentioned at the Section 13 for service and maintenance the unit.

7.8. Failure and Troubleshooting

You may see the failure codes of additional heater with gas firing on control panel inside the gas firing unit.

CODE	DESCRIPTION	REASON	SOLUTION
F10	Failure to ignite flame after 4 attempts performed by the equipment.	• Phase and neutral reversed. • Grounding wire not connected. • Phase-phase connection without neutral. • Start-up electrode failed or badly positioned • Detection electrode failed or badly positioned • Detection electrode that moves or disperses to the grounding system when hot. • Low CO value	Manual reset
F11	Ill-timed flame		
F12	Failure of ignition; not visible. The count, displayed in the historical list, indicates whether the heater has had problems with ignition.		
F13	The TER equipment does not accept the reset command from CPU-SMART	TER has finished its 5 reset attempts in the period of 15 minutes.	Wait 15 minutes or use reset button on equipment
F14	Lack of communication between TER equipment and CPU for more than 60 seconds	TER equipment or CPU-SMART PCB broken	Auto-reset
F15	The CPU-SMART PCB sent the ignition signal to the equipment. After 300 seconds, the equipment has not yet lit the flame.	safety thermostat lockout at start up • No mains gas pressure • Live and neutral reversed. • No or faulty grounding terminals • TER equipment broken	Check contact closing Manual reset
F16	Generic equipment lockout	TER equipment broken	Manual reset
F17	Internal malfunction of TER equipment that does not accept reset command from CPU-SMART	TER equipment broken	Manual reset of equipment
F20	Activation of safety thermostat STB	• Excess air temperature due to lack of air circulation • Safety thermostat broken or not connected	Manual reset
F21	Input ID1 open caused by: NOT USED - Jumped	ID1 - IDC1 jumper missing	Manual reset of CPU-SMART
F30	Fan speed too low in start up phase - VAG	Burner fan broken. FAN electrical cables broken or not connected	Manual reset
F31	Fan speed too high in start up phase - VAG		Manual reset
F32	Fan speed, during operation, outside minimum and maximum set parameters - VAG		Manual reset, auto-reset after 5 minutes
F41	Probe NTC1 error, intake air temperature	Absence of signal from probe or broken probe	Auto-reset
F51	The temperature of the air intake probe NTC1>TH1	• The minimum heat output of the PCH heater module is over-sized compared to the heat output required by the environment. • Check the TH1 parameter - air intake set point.	Auto-reset if NTC1< TH1-15
F60	Communication error between CPU-SMART PCB and ModBus network, SmartControl or SMART.NET	• ModBus network is disconnected. • The address of the PCB is wrong and/or not configured in the ModBus network.	Auto-reset
F75	No voltage during operation cycle (ex- cluding stand-by); the fault is not visible on remote control but only counted.	No voltage during operation	Auto-reset
F00	Internal malfunction of CPU-SMART PCB	Perform a manual reset of the PCB; replace the CPU-SMART if the problem persists.	Manual reset

8. ADDITIONAL HOT WATER COIL OPTION

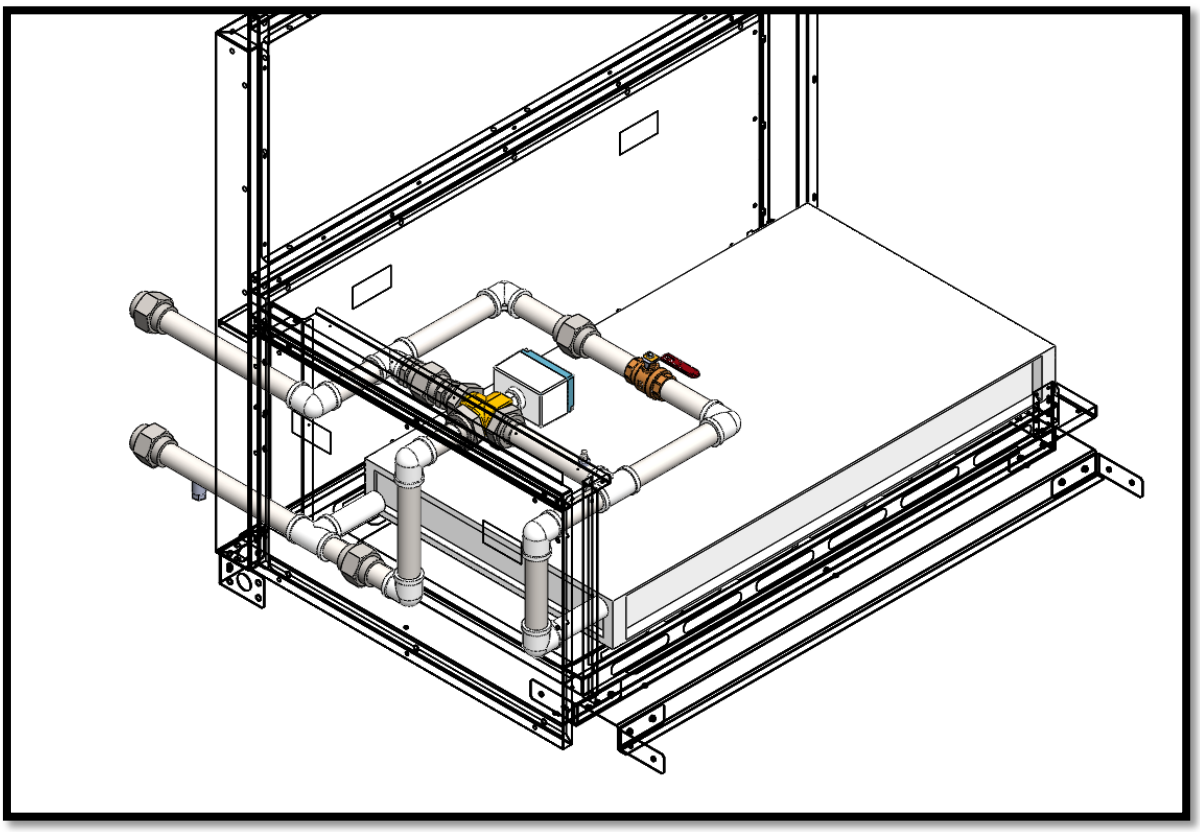
8.1. Introduction

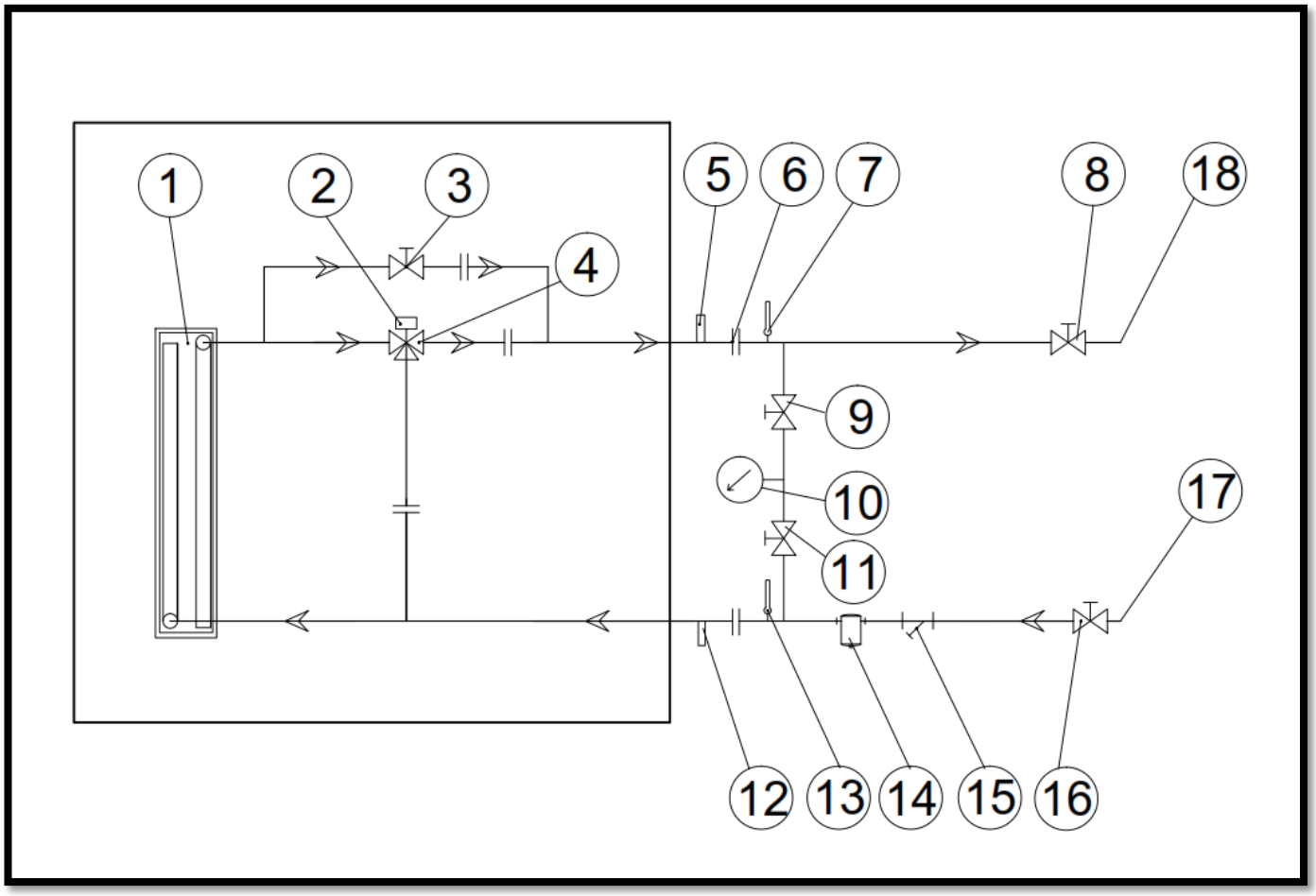
Heating heat exchangers with warm water are equipments that could be used optionally in all series of URTP devices. While completely mounting the device, there are 3-way valve and servo motor in standard on the unit delivered. The desired capacity could be reached by this means by doing water flow rate modulation. The heat exchangers in use were tested under 22-25 bar pressure and cause no efficiency problem for the conditions of use. With this option, low temperature thermostat has been involved in the system and user is warned by the system when the temperature drops under 5°C.

8.2. Pipe Connections of Heating Water

The table belonging to hot water coil pipe connections distances and diameters for all URTP models are given at the table below. Before making these connections, cut-off valves should absolutely be placed on water inlet and outlet lines. Besides, any kind of dirt, air and sediments to come from the installation, sediment and dirt strainer and air discharge purges should be placed at the system inlet. Clearing the heat exchangers and the installation off dirt and sediments will prolong the device life and besides, enable the values to be acquired throughout the whole operation period to be the parameters displayed at the catalogue.

The mentioned sample installation schema is given below.





Equipments for inner device;

① Hot Water Coil

② Three-Way Valve Motor

③ Three-Way Valve By Pass Valve

④ Three-Way Valve

Equipments for outer device;

⑤ Air Discharge Purge

⑥ Connection Union

⑦ Outlet Line Temperature Thermometer

⑧ Inlet Line Cut-Off Valve

⑨ Manometer Interference Cut-Off Valve

⑩ Manometer

⑪Manometer Interference Cut-Off Valve

⑫ Discharge Tap

⑬ Inlet Line Temperature Thermometer

⑭ Sediment Catcher

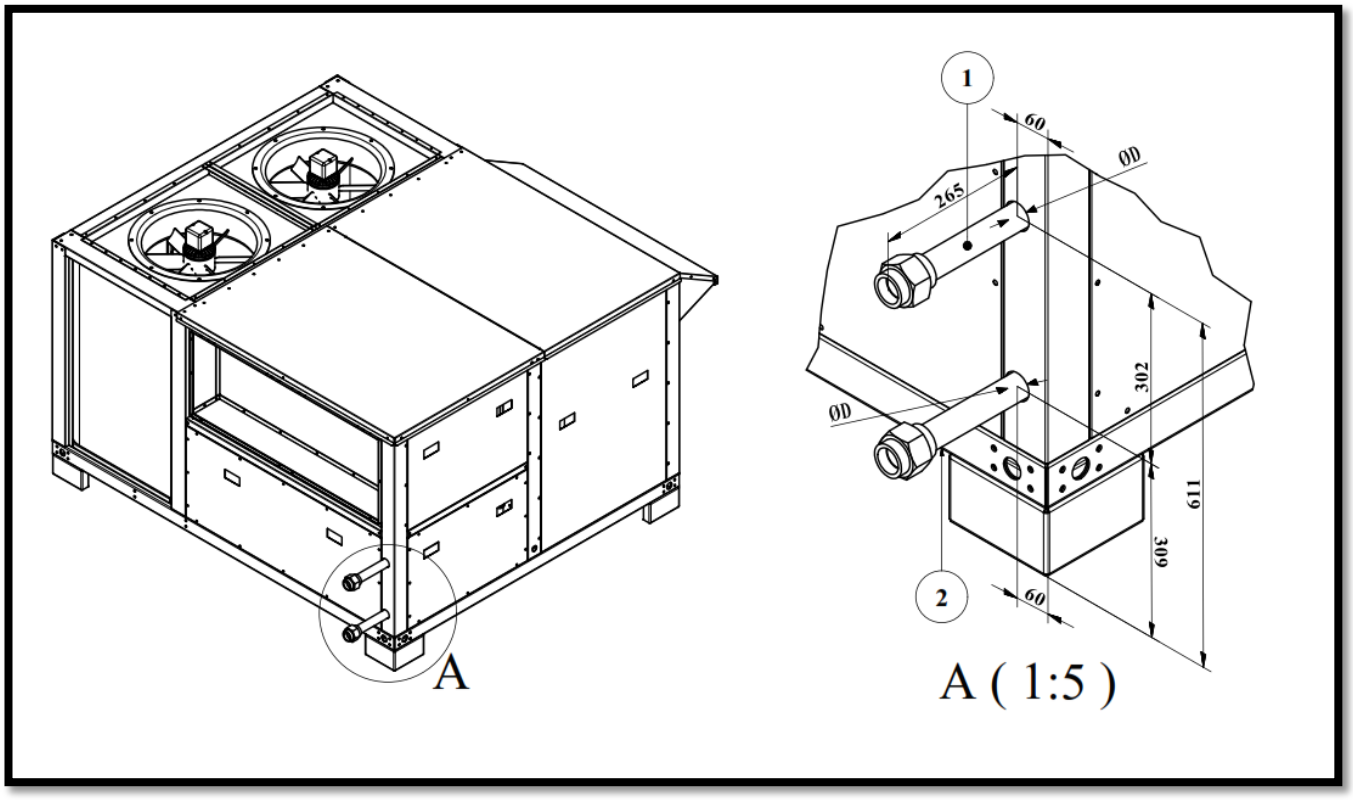
⑮ Dirt Catcher

⑯ Inlet Line Cut-Off Valve

⑰ Hot Water Inlet Line

⑱ Hot Water Outlet Line

The placement information for the additional hot water coil device is as follows.



① Warm water outlet

② Warm water inlet

ØD: For all modules 1 ¼”

8.3. Operation Limits

Please check the capacity table for the unit’s capacity values.

Operation value on the water side for additional hot water coil is limited to 90/70 water regime. Hot water coil isn’t used for hot water or steam regimes over this.

For air side operation values, in case the External air temperature drops under 0°C, water pumps keep on operating even if the boiler doesn’t work.

In case External air temperature drops under -10°C, the boiler should work and continuous warm water cycle should be kept going between the boiler and the battery.

In case External air temperature drops under -20°C, fresh air damper of the system should certainly be deactivated, because freeze risk will increase. Warm water cycle should be kept going without interruption.

8.4. Controls to be Considered Before Commissioning

Water level at the facility and in hot water coil should be checked, if the first water intake has occurred, dirt catcher should absolutely be checked and air should be taken out of the system.

After water intake, the hot water coil should absolutely be checked against water leakages by opening the service door.

Detected water leakages should be eliminated.

8.5. Commissioning

Please refer to the control panel section at the Section 12 for commissioning the unit.

8.6. Service and Maintenance

Please refer to the maintenance section mentioned at the Section 13 for service and maintenance the unit.

8.7. Failure and Troubleshooting

Please check the explanations under the title of "12.4. Alarm Management of Room Control Unit" for this unit.

9. ADDITIONAL ELECTRIC HEATER OPTION

9.1. Introduction

Electric heaters are used optionally in all series of URTP devices. For the electric heater complete installation and connections of which are made, there is no need for an additional installation or connection. The electric heater prepared by rapping stainless steel band on stainless steel pipe is operated at the factory by letting pas through all tests and presented to its users. There is a high temperature limit termostate on resistant heater. This might be number 1 or 2 according to the heater's size. In case the temperature on this resistance exceeds 70°C, heater blocks electricity connection and the device cools down. Besides, the electric heater operates in coordination with blow fan. At times when the fan doesn't work, electric heater should never be activated. In addition to that, even in case the electric heater is deactivated, fan keeps on working for a while. This is a precaution to prevent water accumulation on electric heater. Finally, currents consumed by electric heaters are continuously checked on the panel. In case the limit values are exceeded, limiters cut off the current to prevent any bad results.

9.2. Power Cable Connections of Heating

It is enough that users provide the device with power by power supply panel. There is no need for cabling for the electric heater. It should certainly be regarded that the electric heater is fully loaded in determining cable section.

9.3. Operation Limits

Power distribution in electric **heaters** is composed of two asymmetrical stages. The system activates primarily the 1. Stage according to the requirements. By the requirement increases, the 1. Stage is shut down and the 2. Stage is activated. In case the requirement exceeds the capacity of the 2. Stage, the desired capacity is acquired by activating both stages (1+2). Stage capacity of additional heaters are as follows.

Type/Model [W]	URTP 055	URTP 070	URTP 090	URTP 110	URTP 140	URTP 180	URTP 230
Low Type 1.Stage	6000	8000	10000	13000	16000	20000	26000
Low Type 2.Stage	13000	16000	21000	25000	32000	41000	52000
High Type 1.Stage	11500	15000	18000	22000	30000	40000	50000
High Type 2.Stage	22500	28000	37000	45000	55000	70000	90000

* These capacities are given for 400V-3F-50Hz.

9.4. Controls to be Considered Before Commissioning

It should be made sure that stage connections of the 3rd phase, neutral and grounding connections, are provided correctly.

It should be checked whether the electric supply connection is at ±%5 tension tolerance.

9.5. Commissioning

Please refer to the control panel section at the Section 12 for commissioning the unit.

9.6. Service and Maintenance

Please refer to the maintenance section mentioned at the Section 13 for service and maintenance the unit.

9.7. Failure and Troubleshooting

Please check the explanations under the title of "12.4. Alarm Management of Room Control Unit" for this unit.

10. COMMISSIONING (COOLING OR HEAT PUMP)

Before commissioning the device, ensuring that all procedures about installation are gone through is important in terms of a healthy operation. Necessary observations should be performed by a control list prepared for this purpose. You may see a similar list prepared by us below;

***Crankcase** on cooling circuit of the device **heater should be activated** before technician to commission the device arrives. This action should be taken at least twenty four hours before the device is activated. By this means, compressor oil is heated and refrigerant is evaporated. If this action isn't taken, compressor is exposed to the refrigerant in liquid phase and may get damaged.*

10.1. Pre-Controls

10.1.1. Control of Power Supply Connection

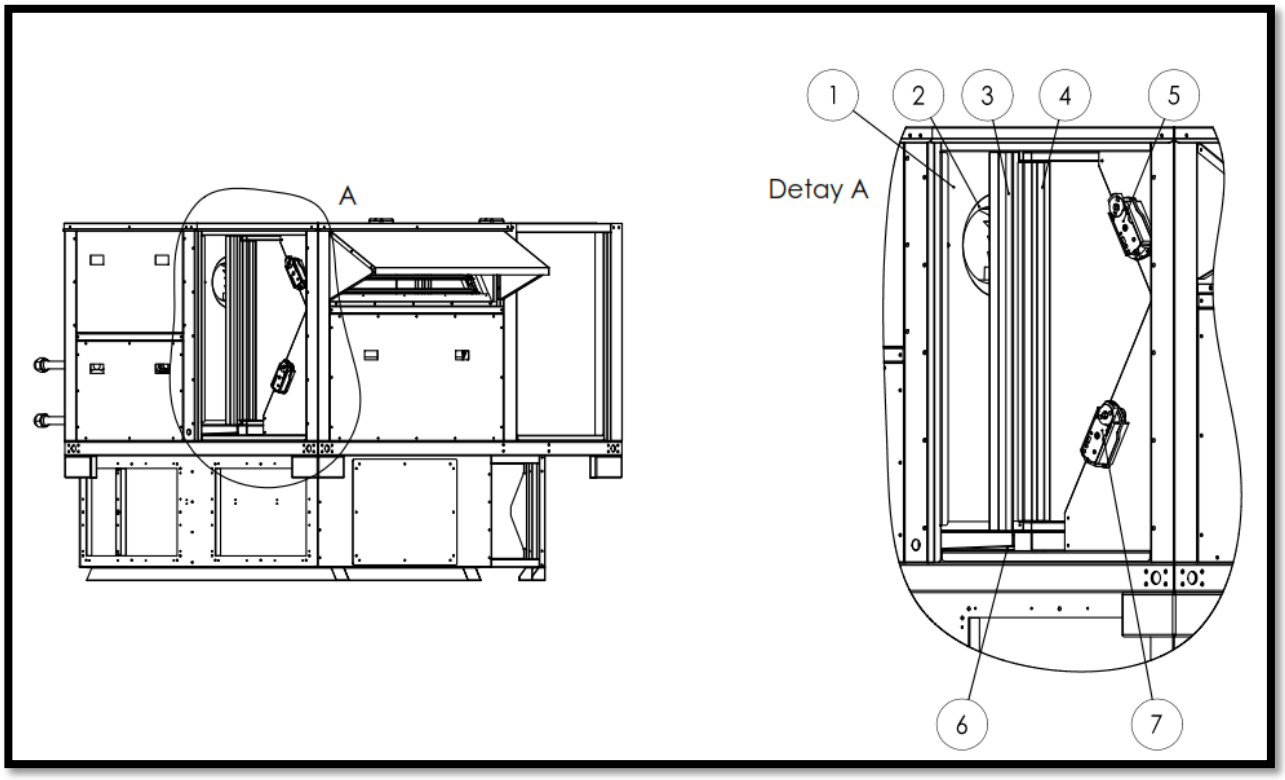
- It should be made sure that 3 phases are provided with neutral and grounding connections correctly.
- It should be checked whether the electric supply connection is at ±%5 tension tolerance.
- It should be ensured that a supply cable in the right cable diameter is spanned to the device panel.
- A “double stranded”, 2x0,8 mm2 knx transmission cable should be spanned between the device’s electric panel and room control unit.

10.1.2. Control of Additional Heater Connections

- It should be checked that hot water connections and gas connections are provided as explained in the instruction manual and on the right inlet and outlet points.
- It should be checked whether manual control valves were placed at inlet and outlet of hot water coil.
- It should be ensured that there are no valves or counter slopes on drainages.
- It should be ensured that human exposure to drainages connected to waste water installation isn’t possible.

10.1.3. Control of Air Duct Connections and Air Filters

- It should be checked that all air duct connections (exhaust, fresh air, absorption ducts from the ambient, blow ducts to the ambient) are made to the right connection parts.
- It should be ensured that flexible material (tarpaulin) is used especially in connections of absorption duct from the ambient, blow duct to the ambient.
- It should be made sure that probable sound absorbers are connected.
- It should be ensured that blow and absorption ducts were isolated.
- It should be checked whether blow part and filters at the area are attached at the first operation. These filters should be mounted to their places after the first operation. Otherwise, filters may get dirty early.



① Metal sheet of low fan

② Blow fan

③ Inner coil

④ Filter cradles

⑤ Fresh air absorption damper and service motor

⑥ Condensation pan and drain pipe

⑦Exhaust air absorption damper and service motor

10.1.4. Control of Heat and Humidity Sensors

- If room type sensors are used, it should be checked whether they are installed as stated in the instruction manual.
- It should be ensured that cable connections between sensor and microprocessors are provided as stated in the instruction manual.

10.1.5. If Exists, Control of Remote Control's Second Interface

- If remote control is utilized in the system, it should be ensured that the second interface is installed as stated in the instruction manual.
- It should be ensured that cable connections between the second interface and microprocessor are provided as stated in the instruction manual.

Notes

Except for the subject above, problems to occur during control should be noted down in this section. Whether these problems affect the commissioning procedure should be added at the end of this section and action should be taken accordingly.

10.1.6. Control of Electric Equipment

Before starting to work on commissioning, power circuits of the device should be checked and compliance of voltage levels should be confirmed. Later on, it should be ensured that all studs on the terminal are fixed. The same control should be performed on other equipments working linked to the terminal.

Tag value of the voltage should be checked to stay within ± %5 tolerances by the help of a voltmeter. And another important factor is to check rotation direction of fans. Fans must be checked to rotate in the right direction by providing power to them. Otherwise, fans must be made to turn in the right direction by changing between two phases in fan electricity connection. This control should be conducted in all electricity connections. Whether phase sequence is correct should be checked by phase protection relay.

Before activating compressors, current values consumed by fans should be checked on values given at electric schemas. If current draw values exceed limit values, mechanic operation conditions of fans should be checked and probable problems should be eliminated. Later on, when compressors are commissioned, it should also be checked whether current values consumed by compressors are above limit values.

The units have phase sequence and phase protection relay in scroll compressor. In case phase sequence is correctly connected and all phases are in order in the unit supply connection, led light on the phase protection relay on the panel will be green. Otherwise, the led light isn't on and doesn't let the system operate. In this case, phase connections should be checked and unless any correction, phase sequence should be changed. Phase protection relay should never be deactivated. Otherwise, compressor is irreversibly damaged. This case is assessed as an operational error and is non-warrantable.

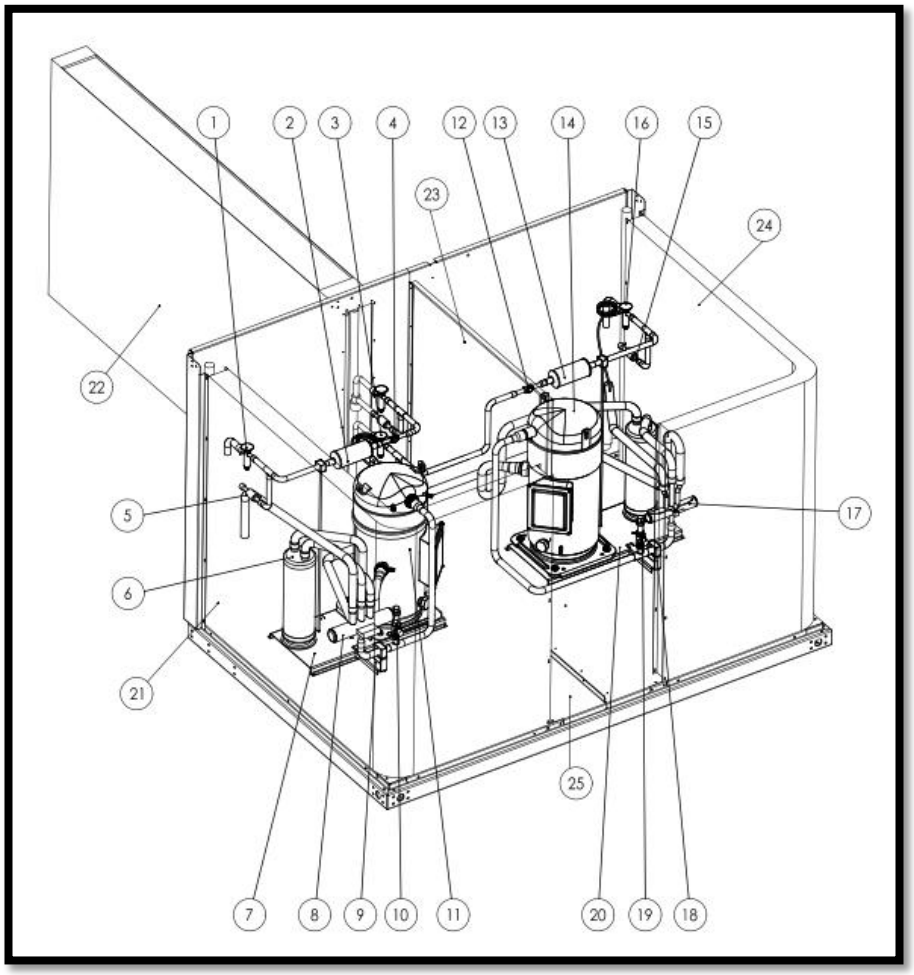
10.1.7. Operation Control of Cooling Circuit

Approximately twenty four hours before commissioning, switch on the device's supply line should be turned into off position (there is electric connection). *Therefore, lubricant crankcase heater is given electricity and the lubricant inside lets the refrigerant in a mixed state evaporate. And this prevents compressors from getting damaged at the first operation.* This procedure should also be repeated after the device electricity is cut off for a long time. Electric on the device isn't cut off under normal operation status.

Future probable damages on the machine are regarded as an operational error and is non-warrantable.

From now on, you may turn the device into an activated status by pressing the "on" button on the device's microprocessor. After 15–20 minutes, it should be checked whether equipments on cooling circuit operate or not. By this purpose, control procedures below should be gone through;

- Gas Charge Status within the Circuit
- Evaporation Pressure
- Condensation Pressure
- Contamination Status of Filters in Liquid Line
- Power Used by Compressor
- Operation Status of High Pressure Switch
- Operation Status of Low Pressure Sensor
- Operation Temperature of Compressor



① Mechanic expansion valve

② Filter

③ Mechanic expansion valve

④ Observation glass

⑤ One-way control valve

⑥ Accumulator

⑦ Base

⑧ 4-way valve

⑨ Pipe bracket

⑩ Safety valve

⑪ Compressor

⑫ Observation glass

⑬ Filter

⑭ Compressor

⑮ One-way control valve

⑯ Mechanic expansion valve

⑰ 4-way valve

⑱ Pipe bracket

⑲ Safety valve

⑳ Base

21 Outer coil

22 Inner coil

23 Partition metal sheet

24 Outer coil

25 Bottom metal sheet

10.1.8.Status of Gas Charge in the Circuit

It is the first check to be made in a cooling circuit. If the amount of the gas charge within the system is not proper, then the measurements for other parameters will remain meaningless. In order to check the gas

charge, it may suffice to observe through the sight glass on the liquid line whether bubbles come into being in the gas. If the gas charge is not sufficient, then bubbles will come into being in the gas (it should never be ignored that the state of gas overcharge cannot be perceived this way.). It means two things if bubbles exist in the gas. The amount of the gas may not be sufficient, or there may be a gas leak within the system. If the gas charge is not sufficient, some additional gas should be charged. If bubbles come into being again despite the gas charge, it means a gas leak in the system. In this case, the leak should be spotted by using soap bubbles, and it should be eliminated afterwards.

Additionally, the chromatic indicator in the sight glass is green under normal circumstances. If it may be spoken of humidity mixing with the gas, the indicator will turn yellow. In this case, the gas and the dryer within the system should replaced by the new ones.

10.1.9. Evaporation Pressure

In order to check this condition, the end of the ¼”-diameter service valve on the suction side of the compressor should be attached with a manometer which has 20 bars as the last pressure value on its scale, and the valve should be checked to insure that it is open. Evaporation pressures and temperatures are generally high within the units. Thus, if you read lower evaporation pressures and temperatures, this may have various reasons. In this case, required steps should be taken by using troubleshooting tables.

10.1.10. Condensation Pressure

In order to check this condition, the end of the ¼”-diameter service valve on the force side of the compressor should be attached with a manometer which has 20 bars as the last pressure value on its scale, and the valve should be checked to insure that it is open.

Under a proper working condition, the condensation pressure should be fixed as long as possible. Lower condensation temperatures will lead to lower evaporation temperatures, thus resulting in over-cooling and over-humidity. Higher condensation temperatures will, on the other hand, hinder the efficiency of the cooling system and lead to higher consumption of electricity.

Therefore, condensation temperatures should be kept, if possible, around 45-50ºC under working conditions. This is accepted as 15ºC higher than the outdoor temperature. For example, f the outdoor temperature is 30ºC, then the condensation temperature should be selected to be 45ºC. This value should be determined when choosing the condenser. It is quite natural that the condensation temperature will inevitably increase dependent to higher outdoor temperatures. The temperature difference has been explained in the section of limit values presented in the beginning of the instruction manual. You can herein find ΔT values to be used dependent to outdoor temperatures. It is recommended that you receive assistance for selections.

Keys are provided on the air-cooling condensers arriving with the device to adjust the condenser fan rotational speed based on the outdoor temperature. The problem of low condensation temperature due to low outdoor temperatures will thereby be eliminated. This key is used under the IP 55 protection and is located outdoors with the condenser. If the device has been purchased without a condenser, then the key should be obtained as an accessory, and placed on the condenser side of the electrical panel.

The adjustments to be made on these keys are carried out in our factories. Should adjustment becomes a need in the mounting place, it should be carried out by service professionals.

10.1.11. Dirt Status of Filters in the Liquid Line

The filters on the liquid line play a vital role for the units. Contamination, dirt and remnants to be involved in gas lines at the factory or during the assembling-in-place enter the compressor, it may cause permanent damages to the compressor.

This filter should be checked periodically. In the event that the filter is blocked, it causes a resistance to the gas flow, due to which the gas pre-evaporates, thus losing its capacity. This situation may be observed as bubbles seen through the sight glass or small temperature differences between the entrance and the exit of the filter.

10.1.12. Power Released by the Compressor

The power or the current released by the compressor should be measured from the relevant contractor on the panel during the operation and checked to insure that it does not exceed the limit values offered.

10.1.13. Operation Status of the High-Pressure Switch

Attach a manometer with 50 bars as the last pressure value on its scale to the end of the ¼"-diameter service valve on the discharge side of the compressor. Stop the fan condenser when the device is operating, and follow the rise of the pressure on the barometer. A high-pressure Switch of 40 bars should stop the compressor. If it reaches 40 bars but the compressor does not stop, turn off the device without delay and check the high-pressure Switch. If the adjustment point is correct, then the Switch may be malfunctioning. Never operate the device again unless you replace this Switch.

10.1.14. Operation Status of the Low-Pressure Switch

Attach a manometer with 20 bars as the last pressure value on its scale to the end of the ¼"-diameter service valve on the discharge side of the compressor. Turn off the valve on the suction side of the compressor when the device is operating. The low pressure Switch of 2.5 bars should stop the compressor. If it does so, open the valve again, and the compressor should start to work when it reaches 2.5 bars. If it reaches 2.5 bars with the valve closed but the compressor does not stop, turn off the device without delay and check the low pressure Switch. If the adjustment point is correct, then the Switch may be malfunctioning. Never operate the device again unless you replace this Switch.

10.1.15. Operation Temperature of the Compressor

The temperature on the upper parts of the compressor should be around 60-70ºC under normal operating conditions. This values may be around 20-30ºC on the lower parts. If temperatures fall below these values and condensation is seen on the upper parts of the compressor, this means that the temperature turning back to the compressor is too low. This is usually encountered when it turns back to the compressor as a liquid. This occurs in the event that the extra heating is lower than it should have been. For this purpose, the expansion valve adjustments should be checked.

If the temperature on the force side of the compressor is 50ºC or higher, this means that the expansion valve allows insufficient gas to pass into the evaporator, which is a problem to be corrected by the expansion valve adjustments.

Expansion valve adjustments should be made by cooling professionals. Damages due to these adjustments are regarded as operative errors and are not covered by the warranty.

10.2. Procedure of Start Up and Operation

The operation to take the device into the circuit for the first time should always be carried out by Untes technical personnel. **The operations carried out by unauthorized people will cause the device to remain out of the scope of the warranty.** This procedure with the exception of circuiting for the first time is introduced in 12.1 Mounting and Using the Unit.

11. ACCESSORIES AND OTHER OPTIONS

The accessories and options usable with URTP devices are as follows:

11.1. CO2 Detector

Constantly checking the system exhaling air, it activates the fresh air damper to the extent that the system allows (and if the pre-determined temperature settings are in the range) in the point that the air quality gets lower. It thereby provides more fresh air to the environment.

11.2. Smoke Detector

Constantly checking the system rotational air, it turns off the device and detects a fire alarm to the room control unit if the amount of CO in the air exceeds the pre-determined amount.

11.3. Filter Dirty Warning

Sending information of the changing filter pressure to the control panel thanks to the different pressure key, it lets you know that the level of dirt in the filter has increased. The factory pressure setting is 250 Pa. You will receive a Filter contaminated warning if it exceeds this value.

11.4. Indoor Air Flow Control

The flow can be calculated instantly thanks to the different pressure information readable from the factory-released measurement nozzles on the plugged fans, constantly checking so that the flow value entered into the system could remain the same.

11.5. Speed Control of Condenser Fan

With this option offered so that the system will not return an error of low pressure at lower outdoor temperatures, capacities of condenser fans may be decreased by making its revolutions adjustable. The system can thereby function properly at lower temperatures.

11.6. Hydrophilic and Epoxy Coating

Depending on the device operation conditions, the interior and exterior heat exchangers of the device may be applied coating against corrosion and extreme condensation.

11.7. Heat Exchanger Protection Grill

The surface of the device condenser heat exchangers is composed of thin (0.1 mm) aluminum lamellas, it can be covered with a 4mm painted wire cage for protection of people and animals from these sharp surfaces.

11.8. Gravity Damper

It functions like a non-return valve to prevent unwanted air and particles through the exhaust when the device is not operating.

11.9. Return Fan

It operates in series with the exhaling air fan and has been designed for the cases where the exhaling air fan cannot meet the pressure falling on the rotational side. Using the system exhaling fan, it insures that the exhaling fan will win over the total pressure.

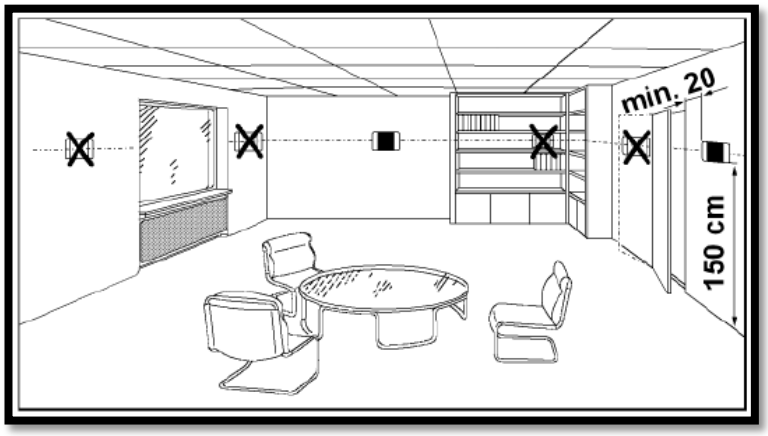
11.10. Power Exhaust Fan

Within the systems operating with a large amount of fresh air, it can be used to export the extra air indoors.

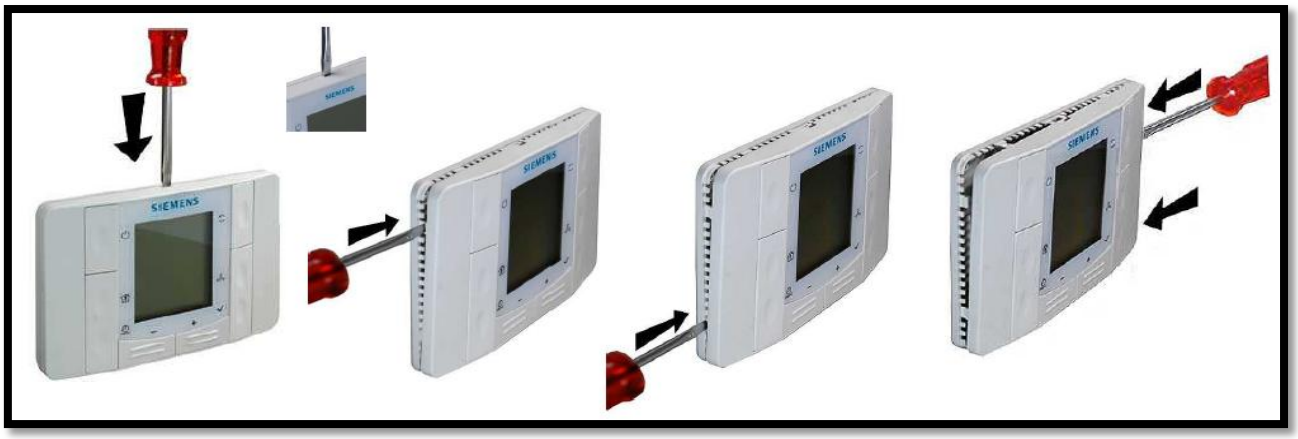
12. CONTROL PANEL

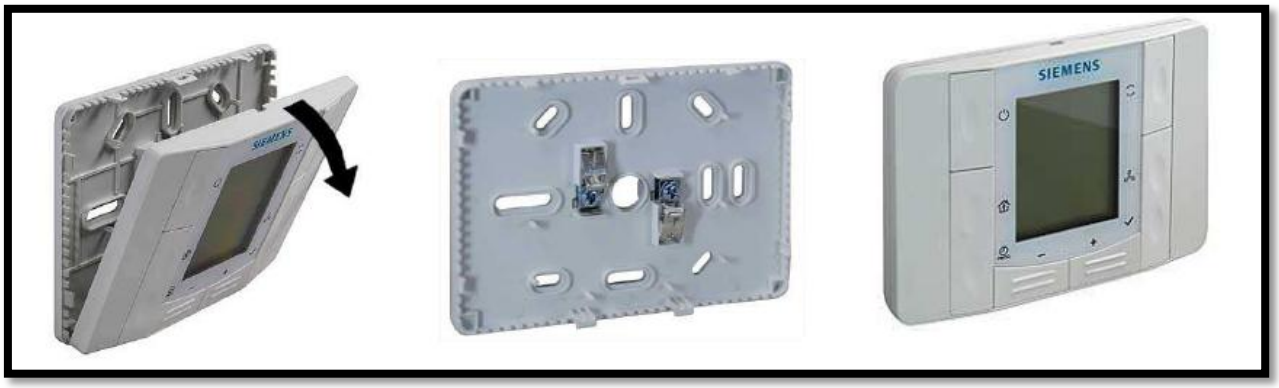
12.1. Installing and Using the Auto control Unit

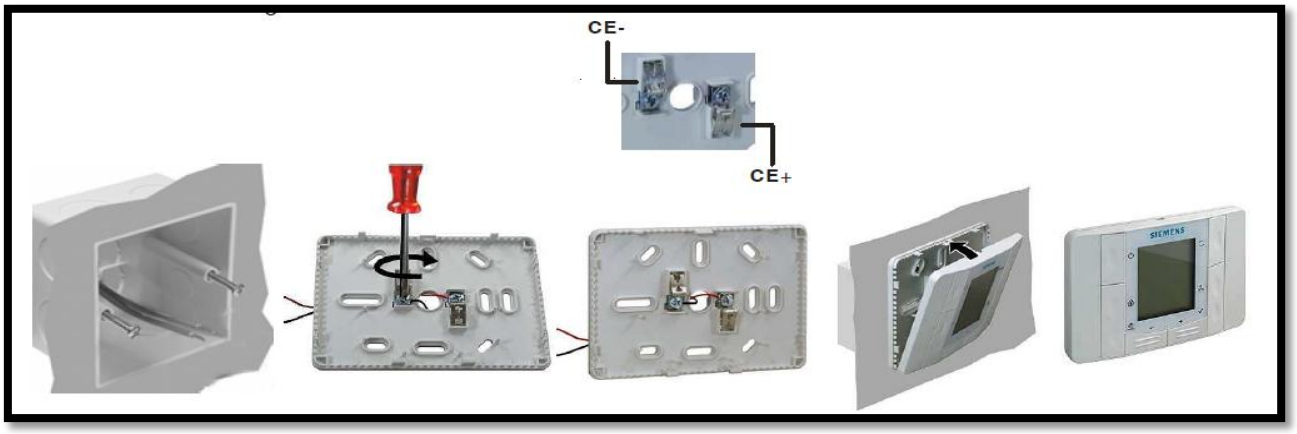
It should be applied at a 1.5-meter height of a flat wall where the device can get the temperature of the environment addressed properly, is not directly affected by the sunlight other heating/cooling sources and in the following ways. The proper cable (2x 0,8mm^2 double-helix knx communication cable, twisted pair, unscreened) should be extended by the customer between the "URTP" device and the room control unit. The electrical cable connections should be made in compliance with the "URTP" device's electrical project.

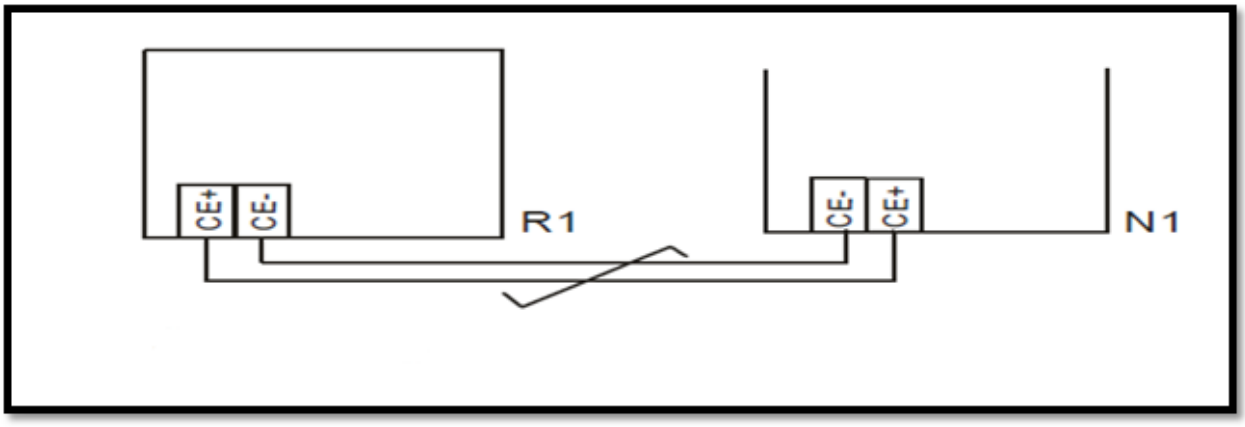


You can see in the following figures the demounting of the screening side and the back cover of the room control unit, mounting of the back cover onto the wall and the points of the electrical cable connections (CE+, CE-). You can find the detailed information from the documentation coming out of the box of the room control unit.



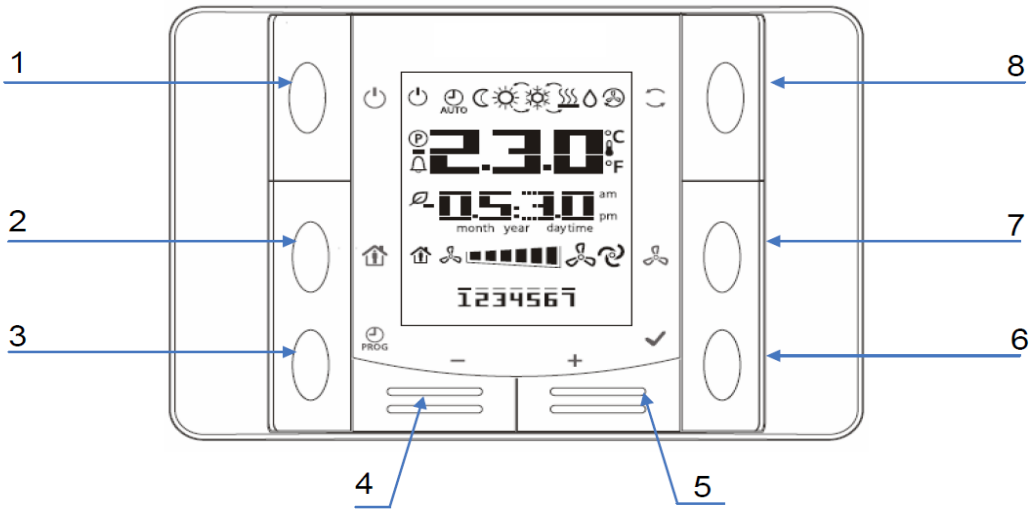






R1: POL Room Unit / N1: POL Controller / Medium Cable (~): Double-Helix Cable

The room control unit have 8 keys on it. These keys are demonstrated below by numbering.



You may see the table explaining functions of buttons below.

Button Number	Image	Function
1		It is used to switch on and off the device and activate or deactivate time program.
2		It displays available alarms when pressed for 5 second on the main screen.
3	PROG	It displays date-hour settings and automatic operation program when pressed twice on the main screen. It locks or unlocks the screen when pressed on for 5 seconds on the main screen. It takes you back to the main screen when pressed once on other menus.
4	-	It is the button for returning back between menus and decreasing set values. Room temperature settings are displayed when pressed on the main screen when the device is on.
5	+	It is the button for returning back between menus and increasing set values. Room temperature settings are displayed when pressed on the main screen when the device is on.
6	✓	The screen for temperature set value opens up when pressed once on the main screen. It is the enter-confirm button and it also functions as reset button for alarms when pressed on for 5 seconds on the alarm menu.
7		It activates dehumidification mode manually when pressed on for 5 seconds on the main screen. If the manual dehumidification mode is active on the main screen, it deactivates the dehumidification mode when pressed on for 5 seconds.
8		It switches between heating and cooling modes when pressed on for 5 seconds on the main screen. It switches between comfort, economy and protection modes when pressed for once on the main screen.

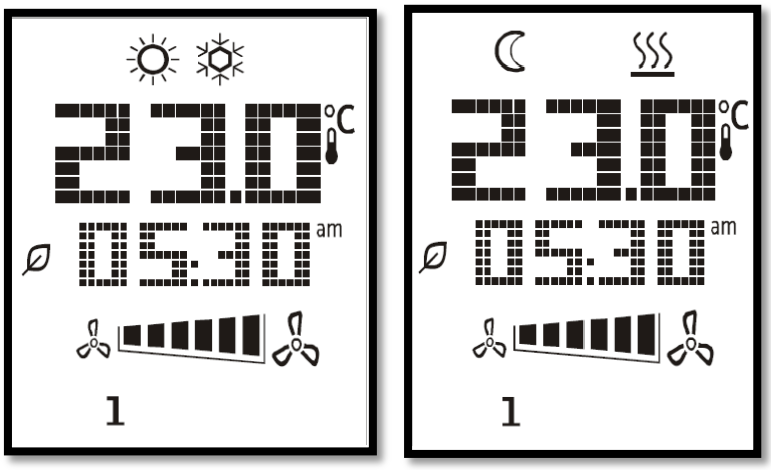


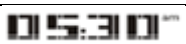
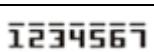
Figure A Figure B

Figure A and Figure B demonstrate the images of the home screen of the room control unit of the "URTP" device.

Figure A :Comfort mode, Cooling Mode Room Temperature 23 C, Time: 05:30, Exhaling fan operating, Day:Mon

Figure B :Eco Mode, Heating mode, Room temperature 23 C, Time : 05:30, Exhaling fan operating, Day:Mon

You may see explanations for images on the room control unit screen at the table below.

Button Number	Image	Function
1		It displays room temperature value.
2		It displays hour information.
3		It displays operation status of blow fan. (Note: Blow fan is on a single stage.)
4		It displays days of a week. (1-Monday, 2-Tuesday, 3-Wednesday, 4-Thursday, 5-Friday, 6-Saturday, 7-Sunday)
5		Protection mode: It diplays that the device is on protection mode (closed mode).
6		Automatic mode: It displays that the automatic operation mode is activated.
7		Economy mode
8		Comfort mode
9		Cooling mode
10		Heating mode
11		Manual dehumidification mode
12		It displays active alarm status.

12.2. Adjusting of Set Values of the Unit

From the room control unit of the "URTP" device, two separate set adjustments can be possible as Comfort and Eco Modes. These set points are presented below.

- Comfort Heating Room Temperature Set Value
  Comfort Cooling Room Temperature Set Value
- Eco Heating Room Temperature Set Value
  Eco Cooling Room Temperature Set Value

There are two methods to adjust the room temperature set values. For the first method, press ✓ key on the home screen to enter the menu containing the set values, enter the set values to be changed by pressing its ✓ key, change it by pressing the (-) or (+) key and confirm the new set value by pressing the ✓ key. For the second method, while the device is operating, press the (-) or (+) key to change the room temperature set values belonging to the current mode.

12.3. Room Control Panel Lock of the Unit

The room control unit has a screen lock to prevent unauthorized people to make changes to the operation modes or setting points of the room control unit due to the place it will be located. The screen lock can be activated by pressing the PROG key for 5 seconds, and none of the keys will function from now on. The screen lock can be deactivated by pressing the PROG key for 5 seconds again.

12.4. Alarm Management of Room Control Unit

If there is an alarm situation on the "URTP" device, the icon will be active. Press the key (in the middle to the left) for 5 seconds to open the screen containing the active alarms. If the factor causing the alarm has been eliminated, press the ✓ key (in the bottom to the right) for 5 seconds to reset the alarm. Below is the table demonstrating the descriptions of the relevant alarm codes.

Alarm List for Room Control Unit

Alarm Code	Alarm Description	Std. / Opt.
1	External air temperature Sensor Error	Opt.
2	Blow Fan Error	Std.
3	Filter Contaminated Warning	Opt.
4	Blow Air Temperature Sensor Error	Std.
5	Room Air Temperature Sensor Error	Opt.
6	Room Humidity Sensor Error	Opt.
7	Blow Variation Pressure Sensor Error	Opt.
8	Freeze Alarm with Warm-Watered Heating Battery	Opt.
9	Electric Heating High Temperature Alarm	Opt.
10	Gas Burner Unit Alarm	Opt.
11	Blow Fan Operation Hour Alarm	Std.
12	Front Filter Contaminated Warning	Opt.
13	Exhaust/ Return Fan Error	Opt.
14	-	-
15	-	-
16	-	-
17	Stage 1 High Pressure Alarm	Std.
18	Stage 1 Low Pressure Alarm	Std.
19	Stage 1 Compressor Thermal Alarm	Std.
20	Stage 1 Compressor Absorption Temperature Sensor Error	Std.
21	Compressor 1 Operation hour Alarm	Std.
22	Stage 1 External air temperature Alarm	Std.
23	Compressor 1 Maximum Start Number Alarm	Std.
24	-	-
25	-	-
26	Stage 2 High Pressure Alarm	Std.
27	Stage 2 Low Pressure Alarm	Std.
28	Stage 2 Compressor Thermal Alarm	Std.
29	Stage 2 Compressor Absorption Temperature Sensor Error	Std.
30	Compressor 2 Operation hour Alarm	Std.
31	-	
32	Stage 2 External air temperature Alarm	Std.
33	Compressor 2 Maximum Start Number Alarm	Std.

NOTE: Due to an alarm in any of the compressor circuits, the "URTP" device will stop completely as a warning to the authorized person so that bigger problems could be avoided. If the alarm situation persists in the relevant compressor circuit after the authorized person resets the alarm from the room control unit, that circuit will be blocked and the "URTP" device will start to operate again.

Outdoor Air Temperature Sensor Failure: Check the temperature value taken from the sensor. Check the electrical cable connections.

Exhaling Fan Failure: Check the feed fuse and frequency invertor of the exhaling fan motor. Resetting the alarm from the room control unit may not suffice; reset from the frequency inverter may be required as well.

Filter Contaminated Warning: Check the different pressure key and the status of dirt in the filters.

Exhaling Air Temperature Sensor Failure: Check the temperature value taken from the sensor. Check the electrical cable connections.

Room Air Temperature Sensor Failure: This sensor is located below the room control unit. Check the temperature value taken from the sensor.

Room Humidity Sensor Failure: Check the temperature value taken from the sensor. Check the electrical cable connections.

Exhaling Air Different Pressure Switch Failure: This sensor is used with the option of flow control. Check the air probe connections of the sensor and the electrical cable connections.

Hot Water Heating Battery Freezing Warning: Check the electrical cable connections and setting value of the freezing thermostat. Resetting the alarm only from the room control unit will not suffice as the freezing thermostat requires manual reset.

Electrical Heater High Temperature Alarm: Check the electrical cable connections and setting value of the electrical heater thermostat.

Gas Combustion Unit Alarm: Check the electrical cable connections of the gas combustion unit. Resetting the alarm only from the room control unit will not suffice as the control card of the gas combustion unit requires manual reset.

Exhaust/Return Fan Failure: Check the feed fuse of the exhaust or Return Fan motors, and check the electrical cable connections and connection elements.

Circuit 1 High Pressure Alarm: Check the operation status of the condenser fan, electrical cable connection of the high pressure Switch and status of dirt on the surface of the heat exchanger. Resetting the alarm only from the room control unit will not suffice as the high pressure alarm requires manual reset from the high pressure Switch.

Circuit 1 Low Pressure Alarm: Check the gas pressures of the system and the electrical cable connections of the low pressure Switch.

Circuit 1 Compressor Thermal Alarm: Check the operative currents of the compressor and the motor protection switch. Resetting the alarm only from the room control unit will not suffice as the motor protection switch of the compressor requires manual reset.

Circuit 1 Compressor Suction Temperature Sensor Failure: Check the temperature value taken from the sensor. Check the electrical cable connections.

Circuit 2 High Pressure Alarm : Check the operation status of the condenser fan, electrical cable connection of the high pressure Switch and status of dirt on the surface of the battery. Resetting the alarm

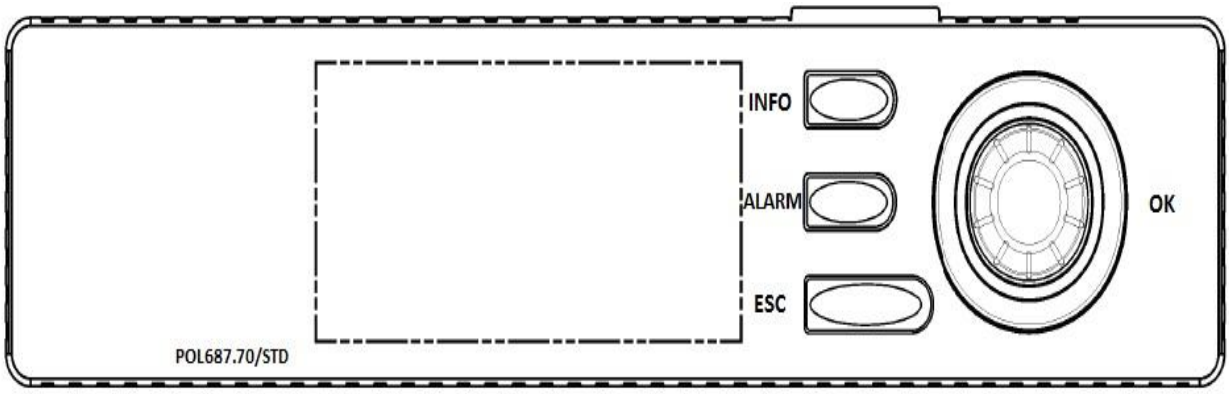
only from the room control unit will not suffice as the high pressure alarm requires manual reset from the high pressure Switch.

Circuit 2 Low Pressure Alarm: Check the gas pressures of the system and the electrical cable connections of the low pressure Switch.

Circuit 2 Compressor Thermal Alarm: Check the operative currents of the compressor and the motor protection switch. Resetting the alarm only from the room control unit will not suffice as the motor protection switch of the compressor requires manual reset.

Circuit 2 Compressor Suction Temperature Sensor Failure: Check the temperature value taken from the sensor. Check the electrical cable connections.

ROOF TYPE PACKAGE AIR CONDITIONER UNIT- POL687.70/STD USE OF SCREEN



BUTTON NAME	ACTION	FUNCTION
OK	Turning right	Sliding downwards or increasing inlet value
OK	Turning left	Sliding upwards or decreasing inlet value
OK	Pressing for once	Selecting or confirming
INFO	Pressing for once	It opens up HMI password log in page when pressed for once on the main screen.
INFO	Pressing for once	It returns to the main screen when pressed for twice on another screen than the main screen
ESC	Pressing for once	Cancelling changes, returning to the previous window, returning to an upper menu
ALARM	Pressing for once	It opens up the window with alarm information.

12.5. Logging in PLC User's Password

Two separate methods could be applied for logging in password.

The first method displays the password log in page when pressed on INFO button on the "Main Screen".

ÜNTES ROOFTOP	1/9
Main Menu	>
25/06/15 Per	08:18
External air temperature	23 oC
Blow Air Temperature	22 oC
Room Temperature	15 oC
Manual Operation	Auto.
Actual Operation Mode	Protection
Actual Device Mode	Deactivated
Stage1 Active Operation Mode	Deactivated
Stage2 Active Operation Mode	Deactivated

Enter password	2/2
Log-in	* * * *

The second method is;

- Enter the "Main Menu" when on the "Main Screen".

ÜNTES ROOFTOP	1/9
Main menu	>
25/06/15 Per	08:18
External air temperature	23 oC
Blow Air Temperature	22 oC
Room temperature	15 oC
Manual Operation	Auto.
Actual Operation Mode	Protection

Main menu	1/4
Enter password	>
Unit	>
System Items	>
Overview to Communication	>
Manufacturer's Information	>

Actual Device Mode	Deactivated
Stage1 Active Operation Mode	Deactivated
Stage2 Active Operation Mode	Deactivated

- Click on “Enter Password” segment on the “Main Menu”.

Main menu	1/4
Enter password	>
Unit	>
System Items	>
Overview to Communication	>
Manufacturer’s Information	>

Enter password	2/2
Log in	* * * *

12.6. Starting and Stopping of the Unit

You need to enter your password to operate or stop the unit outside of room control unit. After entering user password, the number 6 will appear on upper left side of the screen.

- Enter the “Main Menu” when on the “Main Screen”.

6	ÜNTES ROOFTOP	1/10
Main Menu		>
25/06/15 Per	08:18	
External air temperature		23 oC
Blow Air Temperature		22 oC
Room Temperature		15 oC
Manual Operation		Auto.>
Actual Operation Mode		Protection

6	Main menu	1/5
Enter password		>
Unit		>
System Items		>
Overview to Communication		>
Manufacturer’s Information		>

Actual Device Mode	Deactivated
Stage1 Active Operation Mode	Deactivated
Stage2 Active Operation Mode	Deactivated
Service Mode	Deactivated>

- Enter “Unit” segment when on the “Main Menu”.

6 Main menu	2/5
Enter password	>
Unit	>
System Items	>
Overview to Communication	>
Manufacturer’s Information	>

6 Unit	1/6
Inlet/ Outlet	>
Operation Modes	>
Time Program	>
Setting Points	>
Operation Time	>
Alarm List	>

- Enter “Operation Modes” segment when on the “Unit”.

6 Unit	2/6
Inlet/ Outlet	>
Operation Modes	>
Time Program	>
Setting Points	>
Operation Time	>
Alarm List	>

6 Operation Modes	1/8
Manual Operation	Auto.>
Actual Operation Mode	Protection
Actual Device Mode	Deactivated
Time Program	Protection
Service Mode	Deactivated>
Heating-Cooling Selection	Auto.
Stage1 Active Operation Mode	Deactivated
Stage2 Active Operation Mode	Deactivated

You may change the unit's operation mode on "Manual Operation" segment on "Operation Modes". Within this segment, "Auto. – Comfort – Economy – Protection" modes could be selected. On "Auto.", mode selections made on the room control unit have special features. However, if any of "Comfort-Economy-Protection" modes are chosen instead of "Auto.", modes selected on the room control unit are ineffective and mode selection made on the screen is primary. When you turn "On" the "Service Mode" found at "Operation Modes" menu to stop the unit completely, all protections are deactivated and the unit is consequently deactivated.

NOTE: The unit stops working in "Protection" mode. However, when room temperature decreases under the room freeze set value, the unit keeps on working. Moreover, scenarios of water battery freeze protection etc. may be activated. When the "Service Mode" is selected to be on, it shouldn't be forgotten that all protections such as freeze etc. will be deactivated, because all outlets at the control card will be blocked.

12.7. Changing of Adjustment Points and Setting of Time Program

User password should be entered to be able to change setting points such as unit temperature etc. After entering the user password, the number 6 will appear on upper left of the screen and to change temperature setting points;

- Enter the "Main Menu" when on the "Main Screen".

6 ÜNTES ROOFTOP	1/10
Main menu	>
25/06/15 Per	08:18
External air temperature	23 oC
Blow Air Temperature	22 oC
Room temperature	15 oC
Manual Operation	Auto.>
Actual Operation Mode	Protection
Actual Device Mode	Deactivated
Stage1 Active Operation Mode	Deactivated
Stage2 Active Operation Mode	Deactivated
Service Mode	Deactivated>

6 Main menu	1/5
Enter password	>
Unit	>
System Items	>
Overview to Communication	>
Manufacturer's Information	>

- Enter the “Unit” segment when on the “Main Menu”.

6 Main menu	2/5
Enter password	>
Unit	>
System Items	>
Overview to Communication	>
Manufacturer’s Information	>

6 Unit	1/6
Inlet/ Outlet	>
Operation Modes	>
Time Program	>
Setting Points	>
Operation Time	>
Alarm List	>

- Enter the “Setting Points” when on “Unit”.

6 Unit	4/6
Inlet/ Outlet	>
Operation Modes	>
Time Program	>
Setting Points	>
Operation Time	>
Alarm List	>

6 Setting Points	1/6
Temperature Setting Points	>
AHU Setting Points	>
Stage 1 Setting Points	>
Stage 2 Setting Points	>
DX Stages	>
HP Stages	>

- Enter “Temperature Setting Points” segment when on “Setting Points”. You may change the setting points defined with “>” on the opened screen.

6 Temperature Setting Points	1/12
Eco. Cooling Temp. Setting Point	28 oC>
Conf. Cooling Temp. Setting Point	24 oC>
Conf. Heating Temp. Setting Point	20 oC>

6 Temperature Setting Points	1/12
Blow Temperature Lower Limit	11 oC
Cooling Blow Temperature	11 oC
Heating Blow Temperature	11 oC

Eco. Heat. Temp. Setting Point	16 oC>
Room Freeze Setting Point	8 oC>
Blow Temperature Upper Limit	50 oC

Instant. Heating Temp. Setting Point	0 oC
Instant. Cooling Temp. Setting Point	0 oC
Instant. Temp. Setting Point Correction	0 K

To set the time program;

- Enter “Time Program” segment when on the “Unit”.

6 Unit	3/6
Inlet/ Outlet	>
Operation Modes	>
Time Program	>
Setting Points	>
Operation Time	>
Alarm List	>

6 Time Program	1/9
Available Value	Deactivated
Monday	Protection>
Tuesday	Protection>
Wednesday	Protection>
Thursday	Protection>
Friday	Protection>
Saturday	Protection>
Sunday	Protection>
Exception	Protection>

- Enter the segment of the day you want to change when on “Time Program”. You may set time program of the unit by selecting mode as to time intervals. For instance, at the time program unit displayed below, the unit will be on comfort mode between 06.00-22.00, on economy mode between 22.00-00.00, on protection mode between 00.00-06.00 on Monday.

6 Time Program	1/9
Available Value	Deactivated
Monday	Protection>
Tuesday	Protection>
Wednesday	Protection>

6 Monday	1/12
Time 1	06:00
Value 1	Comfort
Time 2	22:00
Value 2	Eco

Thursday	Protection>
Friday	Protection>
Saturday	Protection>
Pazar	Protection>
Exception	Protection>

Time 3	00:00
Value 3	Protection
Time 4	*:*
Value 4	Protection
Time 5	*:*
Value 5	Protection
Time 6	*:*
Value 6	Protection

12.8. Reading of Temperature, Pressure and Instantaneous Values

You may read the External air temperature, blow air temperature and room temperature values on the “Main Screen”. To read the other values such as temperature and pressure etc.;

- Enter the “Main Menu” when on the “Main Screen”.

ÜNTES ROOFTOP		1/9
Main menu		>
25/06/15 Per	08:18	
External air temperature		23 oC
Blow Air Temperature		22 oC
Room Temperature		15 oC
Manual Operation		Auto.
Actual Operation Mode		Protection
Actual Device Mode		Deactivated
Stage1 Active Operation Mode		Deactivated
Stage2 Active Operation Mode		Deactivated

Main menu	1/5
Enter password	>
Unit	>
System Items	>
Overview to Communication	>
Manufacturer’s Information	>

- Enter “Unit” segment on the “Main Menu”.

Main menu	2/5
Enter password	>
Unit	>
System Items	>
Overview to Communication	>
Manufacturer’s Information	>

Unit	1/6
Inlet/ Outlet	>
Operation Modes	>
Time Program	>
Setting Points	>
Operation Time	>
Alarm List	>

- Enter “Inlet/ Outlet” segment on the “Unit”.

Unit	1/6
Inlet/ Outlet	>
Operation Modes	>
Time Program	>
Setting Points	>
Operation Time	>
Alarm List	>

Inlet/ Outlet	1/3
Digital Inlets	>
Analog Inlets	>
Digital/ Analog Outlets	>

- You may instantaneously read temperature, pressure etc. values on “Analog Inlets”.

Inlet/ Outlet	2/3
Digital Inlets	>
Analog Inlets	>
Digital/ Analog Outlets	>

Analog Inlets	1/10
Roof Type Package Air Conditioner	
Blow Temperature	22 oC
Room temperature	15 oC
External air temperature	23 oC
Stage 1	
Stage 1 Absorption Pressure	5 Bar

Stage 1 Absorption Temperature	10 oC
Stage 2	
Stage 2 Absorption Pressure	5 Bar
Stage 2 Absorption Temperature	10 oC

12.9. Language Selection

You need to enter user password to change the screen (HMI) language. After entering user password, to do the Language Selection;

- Enter the “Main Menu” when on the “Main Screen”.

6	ÜNTES ROOFTOP	1/10
Main menu		>
25/06/15 Per	08:18	
External air temperature		23 oC
Blow Air Temperature		22 oC
Room Temperature		15 oC
Manual Operation		Auto.>
Actual Operation Mode		Protection
Actual Device Mode		Deactivated
Stage1 Active Operation Mode		Deactivated
Stage2 Active Operation Mode		Deactivated
Service Mode		Deactivated>

6	Main menu	1/5
Enter password		>
Unit		>
System Items		>
Overview to Communication		>
Manufacturer’s Information		>

- Enter “System Items” segment when on the “Main Menu”.

6	Main menu	3/5
Enter password		>

6	System Items	1/9
25/06/15 Per	08:18	

Unit	>
System Items	>
Overview to Communication	>
Manufacturer's Information	>

Language Selection	>
Application Data	>
Save/ Load	
Password Management	>
Target	
Day Light Saving	
HMI	>
Diagnosis	

- Enter "Language Selection" segment, when on "System Items". You may select language on HMI language section.

6	System Items	2/9
25/06/15 Per		08:18
Language Selection		>
Application Data		>
Save/ Load		
Password Management		>
Target		
Day Light Saving		
HMI		>
Diagnosis		

6	Language Selection	1/3
HMI dili		Turkish
Saving Alarm		
Save to SD		Turkish

12.10. Alarm Management

If there is an alarm sign on the right side of the screen, this shows that the unit has alarm system. To get information on the alarm content and reset it;

- Press once on the Alarm button. Enter "Alarm List" segment on the opened page.

Alarming	1/1
Alarm List	1>

Alarm List	1/1
Reset	1
+ Gas Burner Error: Active	

- When entered into the relevant alarm on the "Alarm List", a page opens including hour-date data related to the alarm.

Alarm List	1/1
Reset	1
+ Gas Burner Error: Active	>

Alarm List	1/3
+Gas Burner Error: Active	
2	Low(B)
11.03.2015	14.56.36

- If you want to reset present alarms, do the controls related to the situation causing this alarm and if the problem wasn't solved, enter your user password. Press the reset segment for once and select "apply" on the "Alarm List" menu.

6 Alarm List	1/1
Reset	1
+ Gas Burner Error: Active	>

6 Alarm List	1/1
Reset	Apply

12.11. Unit Alarms

Blow Fan Error

- Check the inverter feeder insurance.

- Check the inverter user panel and if there is any error, refer to inverter instruction manual.
- Check cable connections.
- Check the power motor. (mechanic and electric connections)
- Check the network voltage.

Room Sensor Error

- Check sensor cable connections.
- Check cable connections between room control unit and control panel.
- Check temperature sensor on the room unit.

Blow Sensor Error

- Check sensor cable connections.

External Air Sensor Error

- Check sensor cable connections.

Humidity Sensor Error

- Check sensor cable connections.
- Check sensor feeder voltage.

Freeze Error

- Check warm water inlet and outlet temperatures belonging to the unit.
- Check the dirt holder.
- Check water pressure of the installation.
- Evacuate air in the installation.
- Check the three-way valve motor.
- Check the three-way valve.
- Check inlet and outlet valves.
- Check cable connections of freeze thermostat, check setting values.

Front Air Filter Error

- Check the front air filter.

Compressor 1 Low Pressure Error

- Check gas pressures in this stage.
- Check low pressure safety element.
- Check exp. valve element.
- Check filter within gas circuit.
- Check valve positions on gas installation.
- Check electric cable connections.
- Check the set value of safety element.
- Check cleanness of air filter within the device.
- Check cleanness of evaporator surfaces.

Compressor 2 Low Pressure Error

- Check gas pressures in this stage.
- Check low pressure safety element.
- Check exp. valve element.
- Check filter within gas circuit.
- Check valve positions on gas installation.
- Check electric cable connections.
- Check the set value of safety element.
- Check cleanness of air filter within the device.
- Check cleanness of evaporator surfaces.

Compressor 1 High Pressure Error

- Check feeder switch belonging to the compressor.
- Check high pressure safety element.
- Check condenser fans.
- Check cleanness of condenser surfaces.
- Check cable connections.
- Check safety elements belonging to the compressor.
- Check Hp relay coil and its contacts.
- Check the feeder voltage.

Compressor 2 High Pressure Error

- Check feeder switch belonging to the compressor.
- Check high pressure safety element.
- Check condenser fans.
- Check cleanness of condenser surfaces.
- Check cable connections.
- Check safety elements belonging to the compressor.
- Check Hp relay coil and its contacts.
- Check the feeder voltage.

12.12. Use of Frequency Inverter

The subject under this title is explained in the frequency inverter manual in details.

13. MAINTENANCE

The protective maintenance program is a crucial part of an effective safety program. Maintenance works should be carried out by experienced and trained personnel. In order to insure the maintenance safety, use a repair switch near the device. Always make sure that the repair switch is off when carrying out maintenance and repair works in order to secure yourself and prevent second people from getting involved. Do not try to carry out maintenance works prior to cutting the electricity and insuring the safety of the fan.

13.1. Maintenance Program

All the maintenance works should be carried out by technicians trained about Üntes products and considering the Üntes quality and safety standards. Please contact the directorate of technical service.

Realize all the service activities and tests throughout the working life of the unit in compliance with the national laws in effect. If a similar measure is not present for the local administrations, one can make use of the information regarding checks during a work in the EN 378-2 standard, Annex C.

WARNING: Prior to any operation carried out on the device, the device should always be stopped and the main electricity feed switch should be off.

13.2. Monthly Maintenance

- Check the water flow through the drainage pipe.
- Check the status of the doors, insulation and hinges.
- Check the filter frame and filter itself.
- Check the outer and inner streamers manually and by eyes.
- Check the device air input areas and damper equipment manually and by eyes.

13.3. Maintenance per Three/Six Months

- Check the operative currents of the motor and the compressor.
- Check the fans, the motor and the compressor for high temperatures and noise.
- Check the system electricity panel and operation of the control systems.
- Check the U siphon and drainage lines of the condensation pan.
- Check the status of the heat exchanger pipe systems. Check the gas sight glasses.
- Apply the checks for additional accessories in the relevant section of the instruction manual.
- Check the filter frame, and replace the filter.
- Gas pressures and temperatures should be checked.

13.4. Annual Maintenance

- Check the filter frame, and replace the filter.
- Check the streamers and their wings. Wash them if necessary.
- Check the streamers for leaks.
- Check the compressor and motor oils.
- Check the operation of dampers.
- Check whether device doors can open easily and whether locking systems function properly.
- Check all the cables, control and insulation equipment and terminal connections etc.
- Apply the checks for additional accessories in the relevant section of the instruction manual.

WARNING: In the event that any of the parts are replaced, refer to the relevant section of the instruction manual and fulfill the requirements prior to operating the device again.

13.5. After Two Weeks of Study

The following checks should be carried out following the two-week operation without any problems:

- Operative currents of the compressor and fan motors
- Operation temperature of the compressor and fan motors
- Status of the filters
- Carry out condensation and drainage in order to see the water flow in the pan
- Operation Status of the control systems
- Sound levels should be checked in the Operation Status of the device equipment.
- The device main electricity supply voltage values should be checked.

13.6. Cleaning the Device

Read carefully, and make sure that you understand, the following instructions prior to starting to clean the device. It should never be ignored that improper and incorrect applications may cause damage to the device and the operator during all the cleaning operations.

Fulfill the following instructions prior to dismantling the device or starting the cleaning operations as all the devices have moving and pressured parts.

- Make sure that all the electricity connections have been cut off. Not only lifting the power switch, all the electricity connections should be removed from their mount Clemens, and a warning of maintenance should be posted on the panel.
- Make sure that all the moving parts have stopped completely.
- All the switches on the supply line should be taken to the on (no electricity) position.

These instructions apply only to the cleaning of Attic Type air conditioners. It is supposed that all the other parts of the system (inner parts of air channels, culverts and shades opening outdoors, culvers of air turning from the room, damping supply water cleaning, condensation water drainage systems etc…) have been cleaned in compliance with the instructions provided by their manufacturers.

It should never taken to mean that fulfilling the cleaning and disinfection operations according to these instructions will insure the wanted hygienic conditions of the place. Air conditioning systems cannot make the environment hygienic. They are used only to maintain the hygienic conditions currently in place. The user will be responsible for monitoring, and replacing on time, HEPA filters on the exit of the system.

13.6.1. Equipments to Be Used During Cleaning

The professionals working for the cleaning should be wearing the following costumes. This is required both for the protection of the workers and the device to be cleaned.

- A clean coverall
- Protective goggles
- Latex gloves (dirty gloves should immediately be replaced during cleaning and disinfection operations).
- Antiseptic half mask - respiratory equipment
- Protection worn on the shoes

Following the completion of the cleaning and disinfection operation, all the dressing items except for the coverall should be disposed. The coverall can, however, be used again after being cleaned and disinfected properly.

13.6.2. Disposal of Wastes to be Generated after Cleaning

During the cleaning of the devices, both solid wastes (Filter contaminated replaced, operator dressing items, worn belts (if any), etc.) and liquid wastes (washing water and rinse water remnants) come into existence.
Solid wastes should be put into non-permeable boxes and disposed wit the wastes of a hospital. Different from this, liquid wastes will be disposed through the waste water system of the air conditioner. This system should previously be connected to the waste water system of the building.

13.6.3. Cleaning Method

As roof-type air conditioners contain electrical parts (electrical motor, micro processor, sensors, etc...), they may be damaged in the event that they are exposed to high temperatures or water. The cooling system may also be damaged under high pressures. Thus the following elements should not be used during the cleaning:

- Hot steam jet,
- Intensive water jet,

Water and disinfectant required for the disinfection operation should be used in an atomized way. Rinsing should also be carried out this way. Liquid wastes should be sent to the drainage system afterwards. Atomized water can be obtained through manually controlled atomizer equipment. For the cleaning and washing process, water with 4% ammonium chloride added may be used. Another chemical equivalent to ammonium chloride may be used instead.

We can examine the cleaning of roof-type air conditioners under three main sections.

Cleaning of Technical Parts: This section involves the control equipment,, compressor and such equipment items. There is no need for disinfection in this section. Besides, they should be cleaned once every six months with other disinfection operations in accordance with the following procedure.

Cleaning of Operative Parts: This section details the parts responsible for conditioning the air. These parts are in touch with both the air taken from the outside and contained inside the device and the air turning from the environment (for the mixing air devices).
Filtering systems are located in the air suction part, while bacteria can find suitable places to settle and reproduce themselves by time in the turning air and dispersion parts of the unit. This is possible over long-term operation of the device. It may result in a risk in later operations of the device.

These parts should be washed and disinfected by using the methods to be presented later on. The cleaning operation should be carried out at least once a month. This cleaning should be repeated for the places known for bacteria to have a potential to reproduce them.

Cleaning of Outer Surfaces of Devices; As the outer surfaces of the devices are painted, only fulfilling the cleaning operation will suffice. This cleaning should be carried out in accordance with the criteria and methods described below.

Each part will have a different cleaning and disinfection procedure due to its unique features. For that reasons, the procedures are presented below under three main titles.

- Procedure of cleaning the technical parts
- Procedure of cleaning and disinfecting the inside of operative parts
- Procedure of cleaning the outer part of the device

13.6.3.1 Cleaning Procedure of the Technical Part

Technical parts should be cleaned with a vacuum and replaceable paper filtered cleaning instrument (like a vacuum cleaner) and a soft brush. There is n need for disposing the paper filter with septic wastes unless otherwise stated to technicians.

Fulfill the following instructions throughout the cleaning process:

- Stop the device and take the main switch and the service switch to the off position to cut the electricity.
- Post onto the electricity panel a note stating that the device has been serviced and the electricity switch should never be taken to the on position.
- Open the cover of the technical part by using the appropriate spanner.
- Make the vacuum cleaner absorb the dust on the equipment and the wall. This operation should be carried out from the top towards the bottom.
- Wipe the device cover with a damped clothe.
- Then wipe carefully the side walls and the cover with a clean and dry clothe.
- Close the cover carefully in order to avoid damages to the power switch.
- If operative parts and the outer surface are not to be cleaned, take the power switch to the on position to supply electricity to the device again. The device is now ready for working.

13.6.3.2 Procedure of Inner Cleaning and Disinfection of Operating Parts

İnner surfaces of operative parts are continuously in touch with outdoor air and and the indoor air (for mixing air devices). Even though filters are located inside the unit and in the outdoor air input this touch causes micro-organisms to settle and reproduce on the inner surfaces of the device. Thus these surfaces should be periodically cleaned and disinfected.

Unless otherwise stated by responsible technicians, this operation should be carried out at least once every six months regardless of the device being used or not. In this case, the cleaning and disinfection operation should be materialized independent from periodical cleaning.

The following procedure should be followed for cleaning and disinfection.

- Make sure that you have all the required materials and replacement filters.
- Stop the device and take the main switch and the service switch to the off position to cut the electricity.
- Post onto the electricity panel a note stating that the device has been serviced and the electricity switch should never be taken to the on position.
- If they are dirty, dismantle the filters in the fresh air input and insure their disposal in compliance with the solid waste disposal procedure.
- For mixing air devices, , dismantle the filters in the turning air section and replace them. All the dismantled filters should be put into an insulated box and disposed in compliance with the solid waste disposal procedure stated by the local authorities. The section between the turning air damper and the filter mount should be cleaned in such a way as to leave no sign for contamination.
- The filters on the device should be dismantled (the G4 quality filter in the outdoor air input). All the dismantled filters should be put into an insulated box and disposed in compliance with the solid waste disposal procedure stated by the local authorities. Replacement filters should be attached later on. Otherwise, they may be damaged or polluted during cleaning and disinfection operations.
- Wash completely and disinfect operative parts on the exhaling side by using 4% ammonium chloride thanks to a manual atomizer in the following order.
  - Air exhaust damper for free heating/cooling devices
  - Turning air fan for free heating/cooling devices Make sure that the entire fan rotor is washed by turning it manually.
  - Heat exchanger on the fresh air side for free cooling/heating heating devices solution should be sprayed from the front top of the heat exchanger and spraying should be continued until solution flows from the back bottom of the heat exchanger.
  - All the pipes included in the cell for free cooling/heating devices
  - Turning air damper and its wings for free heating/cooling devices
  - The section between the filter and the damper for free heating/cooling devices
  - Side walls of the entire section for free heating/cooling devices (provided that it starts from the top)

- Rinse the operative parts on the exhaling side washed completely by spraying sterilized water in a pulverized manner. Rinsing should be carried out in the order specified above, that is to say, in the same step with the washing.
- Mount the new filters into its proper places in the unit.
- Make sure that all the inner parts are completely dry.
- Lift the main power switch and the service switch to supply electricity.
- Your device is now ready for working.

13.6.3.3 Procedure of Exterior Cleaning of Devices

If the device is placed in a surgery room or any of side rooms of a surgery room (anesthesia room, intensive care, surgery monitoring room etc.) the outer surfaces should be cleaned with every inner cleaning unless otherwise stated by the surgery room technician. If the device is placed in a technical room with no

direct connection to a surgery room, cleaning should be carried out only if dust and dirt exist on the outer surfaces.
The outer case should be cleaned in the following manner.

- Stop the device and take the main switch and the service switch to the off position to cut the electricity.
- Post onto the electricity panel a note stating that the device has been serviced and the electricity switch should never be taken to the on position.
- Clean the outer case with any alcoholic solution (or any chemically equivalent solution). Cleaning should be carried out by spraying the solution onto the device. Wipe the device dry with a soft cloth. *Do not use benzene-like solvents (acetone, oil, etc.) or corroding cleaning powders for cleaning the device.* Clothes used for cleaning should be put into a closed box and disposed with the other solid wastes of the hospital.

Lift the main power switch and the service switch to supply electricity following the completion of cleaning.

14. PROBLEM ANALYSIS

In this section, the operator will be provided with some information to understand the reason for the problem and eliminate the problem for various types of problems. The tables have been designed to help understand, and describe ways of solutions of, frequently encountered problems. Descriptions of reasons are generalized. Thus the explanations herein are not model-dependent. Considering the device having the problem, indicators and ways of solution should be examined presented in the section of the relevant problem.

Replacements and repairs to the device should be carried out by trained professionals. Do not try to carry out these repairs yourselves if you lack sufficient information regarding the operational principles of the device. *Refer to the assistance of professionals for this purpose. Prior to any operation on the device, always cut off the electricity and remember to post onto the panel a note stating that the device is under maintenance and the it should never be operated.*

14.1. Failure Finding and Troubleshooting Table

Problem	Reason	Solution
Device does not operate	No power. The main switch is on. The phase order is incorrect. Low voltage. A protection failure. The contactor is open Compressor failure	Connect the power source, Turn off the main unit power cut switch, Check the voltage and eliminate insufficiency, Resetting, Check the contactor and replace it if necessary, Check the compressor and replace it if necessary
The unit starts to operate and then stop too often	Failed compressor contactor. Failed compressor. Gas loss from the cooler Changing input voltage.	Check the contactor and replace it if necessary, Check the compressor and replace it if necessary, Check the cooler gas amount
The unit remains at the low suction temperature	Cooling unit/heat pump, failed low pressure Switch, gas loss from the cooler, Inner/Outer fan does not operate	Check the low pressure Switches and replace them if necessary, check the cooling gas amount and add if necessary, Check the fan motors,
The unit constantly	Cooling unit/heat pump, Failed high pressure	Check the pressure Switches and replace

remains at the saturated force temperature	Switch, Blocked filter dryer, Indoor/Outdoor fan does not operate,	them if necessary, Check the filter and replace it if necessary, Check the fan motors,
The device makes an unusual sound	Noisy compressor, Badly mounted panels	Check it and replace it if necessary,
Compressor oil	System leak	Repair the leaks,
Water loss	Failed drainage connections	Check and tighten the connections if necessary,

This warranty provided by Üntes does not cover the elimination of failures due to using of the device in a manner different from its purpose of use, nor does it cover the following situations.

1. Damages and failures due to a usage error
2. Damages and failures to occur during the loading, unloading and carrying after the delivery of the product to the customer
3. Damages and failures due to low or high voltages; improper electric wiring; use of a different voltage from what is printed on the product label and the instruction manual.
4. Damages and failures due to a fire or lightning
5. Failures due to use in a manner not written in the instruction manuals of the product
6. Failures due to someone apart from authorized service professionals involving the product

The afforested problems shall be eliminated against determined fees, and the period of warranty starts with the billing date.

UNTES®

HEATING VENTILATING AIR CONDITIONING

SERVICE STATIONS FOR SPARE PARTS PROCUREMENT

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