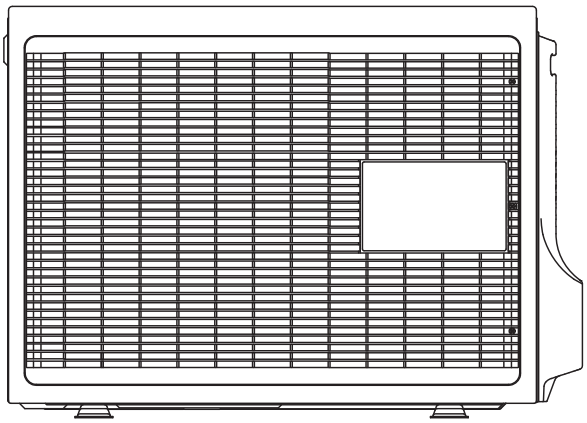
INSTALLATION INSTRUCTIONS EN

ISTRUZIONI D'INSTALLAZIONE IT

NOTICE D'INSTALLATION FR

**AEI1G30EMX**



# Split air conditioner system
# Condizionatore d'aria split system
# Climatiseur split

37.4255.220.00 02/2022

## CONTENTS

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**REGULATION (EU) No. 517/2014 - F-GAS**

The unit contains R410A, a fluorinated greenhouse gas with a global warming potential (GWP) of 2088.
Do not release R410A into the atmosphere.

R410A: 0.81 kg / 1.69 t CO2 - eq

**PRODUCT INFORMATION**

The year of production of this unit is indicated in the Nameplate:

**s/n: Y00000RR**

Year of production
example: 0=2020
1=2021

Serial number

## IMPORTANT!
## Please read before installation

This air conditioning system meets strict safety and operating standards.
For the installer or service person, it is important to install or service the system so that it operates safely and efficiently.

**For safe installation and trouble-free operation, you must:**

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.
- The unit must be supplied with a dedicated electrical line.

**WARNING**

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

**CAUTION**

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

These instructions are all you need for most installation sites and maintenance conditions.
If you require help for a special problem, contact our sale/service outlet or your certified dealer for additional instructions.

**In case of improper installation**

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

## SPECIAL PRECAUTIONS

- During installation, connect before the refrigerant system and then the wiring one; proceed in the reverse orden when removing the units.

**WARNING** **When wiring**

**ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIANS SHOULD ATTEMPT TO WIRE THIS SYSTEM.**

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked, to ensure the grounding.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring.
  Improper connections and inadequate grounding can cause **accidental injury and death**.
- Ground the unit following local electrical codes.
- The Yellow/Green wire cannot be used for any connection different from the ground connection.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- Do not use multi-core cable when wiring the power supply and control lines. Use separate cables for each type of line.

**When transporting**

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminium fins on the air conditioner can cut your fingers.

**When installing...**

**... In a ceiling or wall**

Make sure the ceiling/wall is strong enough to hold the unit-weight. It may be necessary to build a strong wooden or metal frame to provide added support.

**... In a room**

Properly insulate any tubing run inside a room to prevent “sweating”, which can cause dripping and water damage to walls and floors.

**... In moist or uneven locations**

Use a raised concrete base to provide a solid level foundation for the outdoor unit.
This prevents damage and abnormal vibrations.

**... In area with strong winds**

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

**... In a snowy area**

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

**When connecting refrigerant tubing**

- Observe the information on the tubing length.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them; screw by hand and then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

**NOTE:**

Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion, the refrigerant tubing for your particular model is specified as narrow tube for liquid, wide tube for gas.

**When servicing**

- Turn the power OFF at the main power board before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after the work, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- Ventilate the room during the installation or testing the refrigeration system; make sure that, after the installation, no gas leaks are present, because this could produce toxic gas and dangerous if in contact with flames or heat-sources.

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## 1 - INSTALLATION SITE SELECTION

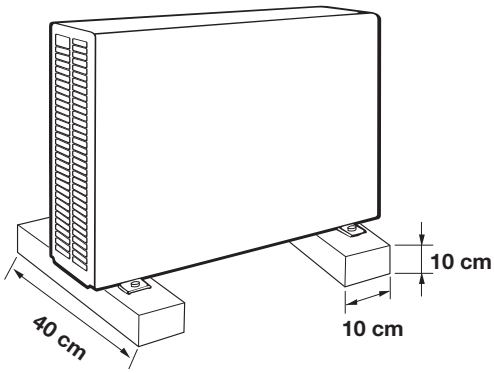
**AVOID**

- Heat sources, exhaust fans.
- Direct sunlight.
- Damp, humid or uneven locations.
- To make holes in areas where electrical wiring or conduits are located.

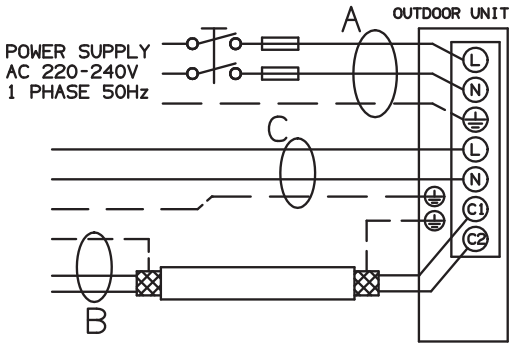
**DO**

- Choose places as cool as possible and well ventilated.
- use lug bolts or equal to bolt down the unit, reducing vibration and noise.

Provide a solid base for outdoor unit raised from the ground level. Fix unit to base using 4 anchor bolts.




## 2 - SYSTEM WIRING DIAGRAM




**TO INDOOR UNIT**

**DELAYED FUSE**

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**220 - 240 V ~ 50 Hz**

**Main switch for disconnection from the supply line must have a contact separation in all poles that provides full disconnection under category III overvoltage conditions.**

## 3 - WIRES' SIZE AND DELAYED FUSE

| A | B | C | Max. electric input | |
|---|---|---|---|---|
| S ( $mm^2$ ) | S ( $mm^2$ ) | S ( $mm^2$ ) | kW / A | |
| 1,5 | 0,75 | 1,5 | 1,6 / 6,9 | 10 A |

**Supply power wire A:**
**Multipolar electric wire; the size of the suggested electric wire is showed on the table. The wire must be Mod. H07RN-F (according to CEI 20-19 CENELEC HD 22). Make sure the length of the conductors between the fixing point and the terminals allows the straining of the conductors L, N before that of the grounding.**

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**Connecting wire B (SHIELDED):**
**Bipolar electric shielded wire; the size of the suggested electric wire is showed on the table. The wires have not to be lighter than Mod. H05VVC4V5-K (according to CEI 20-20 CENELEC HD21).**

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**Connecting wire C (with ground conductor):**
**Multipolar electric wire; the size of the suggested electric wire is showed on the table. The wires have not to be lighter than Mod. H07RN-F (according to CEI 20-19 CENELEC HD22). Make sure the length of the conductors between the fixing point and the terminals allows the straining of the conductors L, N before that of the grounding.**

## 4 - ADDITIONAL MATERIAL REQUIRED FOR INSTALLATION (NOT SUPPLIED)

- Deoxidized annealed copper tube for refrigerant tubing connecting the units of the system; it has to be insulated with foamed polyethylene (min. thickness 8mm).

| NARROW TUBE | | LARGE TUBE | |
|---|---|---|---|
| OUTER DIAMETER | MIN. THICKNESS | OUTER DIAMETER | MIN. THICKNESS |
| 6,35 mm | 0,8 mm | 9,52 mm | 0,8 mm |

- PVC pipe for condensate drain pipe (ø int.18mm) in length suitable to let the condensate flow into the outside drainage.
- Anti-freeze oil for flare connections (about 30g.).
- Electric wire: use insulated copper wires of size and length as shown at paragraph “WIRES’ SIZE AND DELAYED FUSE”.

## 5 - OPERATING LIMITS

**OPERATING LIMITS**

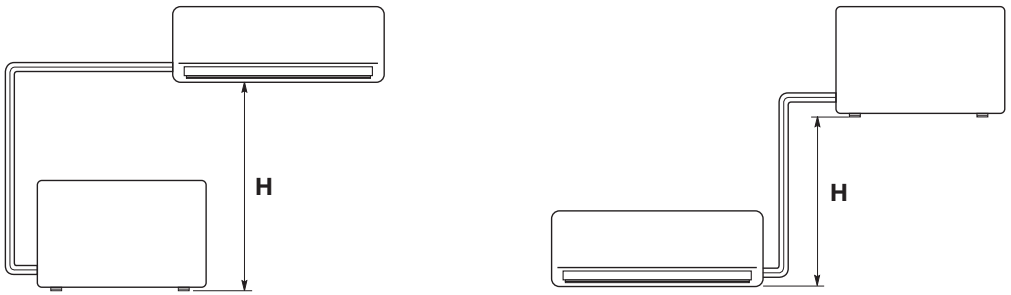
■ Cooling Maximum conditions
Outdoor temperature : 43°C D.B.
Room temperature : 32°C D.B. / 23°C W.B.

■ Cooling Minimum conditions
Outdoor temperature : –15°C D.B.
Room temperature : 10°C D.B. / 6°C W.B.

■ Heating Maximum conditions
Outdoor temperature : 24°C D.B. / 18°C W.B.
Room temperature : 27°C D.B.

■ Heating Minimum conditions
Outdoor temperature : –15°C D.B.
Room temperature : 5°C D.B.

## 6 - TUBING LENGTH AND ELEVATION DIFFERENCE LIMITS




| TOTAL TUBING LENGTH AT SHIPMENT (m) | TOTAL TUBING LENGTH WITH ADDITIONAL REFRIGERANT (m) |
|---|---|
| 7,5 | 15 |

REQUIRED AMOUNT OF ADDITIONAL REFRIGERANT
For tubing 1/4 “ - 3/8” = 15g/m
For tubing 1/4 “ - 1/2” = 20g/m
For tubing Emix (3/8”) = 15g/m

LIMIT OF ELEVATION DIFFERENCE - OUTDOOR UNIT/INDOOR UNIT: 10m (H)

No additional charge of compressor oil is necessary.

## 7 - TOOLS REQUIRED FOR INSTALLATION (NOT SUPPLIED)

1. Standard screwdriver
2. Phillips head screwdriver
3. Knife or wire stripper
4. Tape measure
5. Level
6. Sabre saw or key hole saw
7. Hacksaw
8. Core bits ø 5
9. Hammer
10. Drill
11. Tube cutter
12. Tube flaring tool
13. Torque wrench
14. Adjustable wrench
15. Reamer (for reburring)
16. Hexagonal key

## 8 - DIMENSIONS AND WEIGHT

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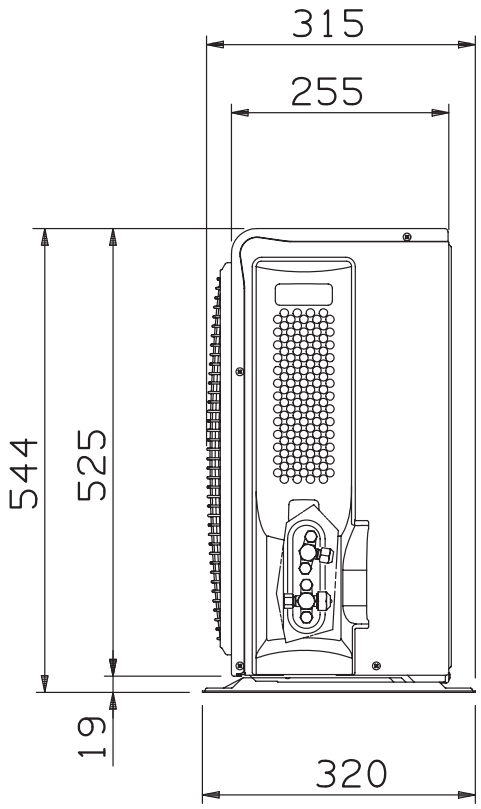
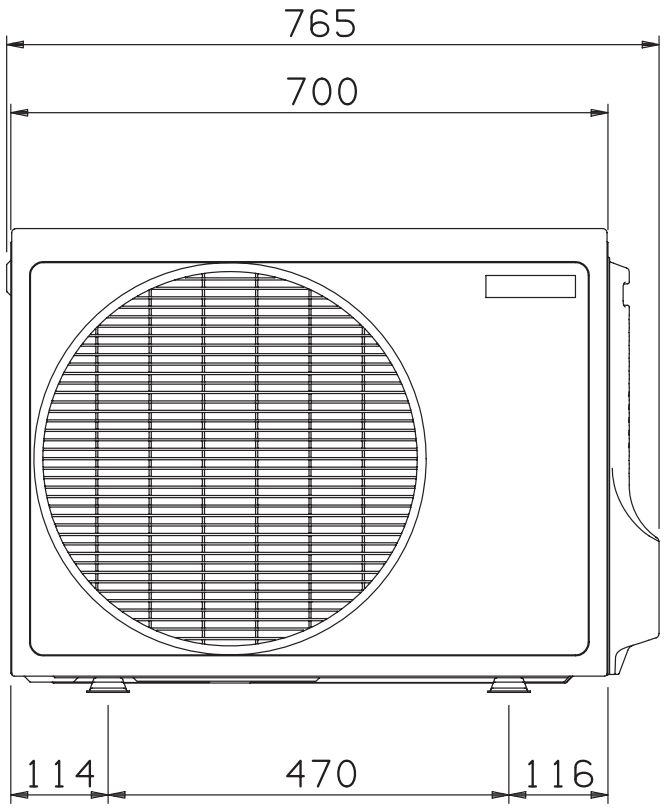
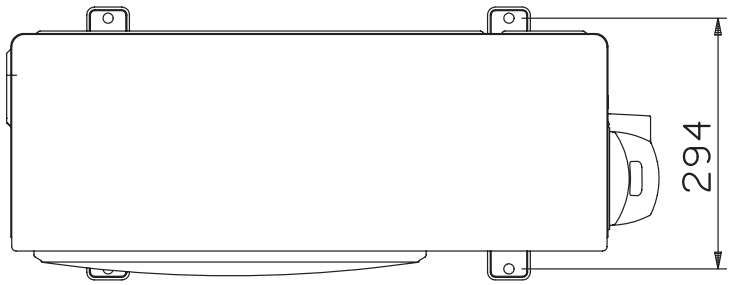


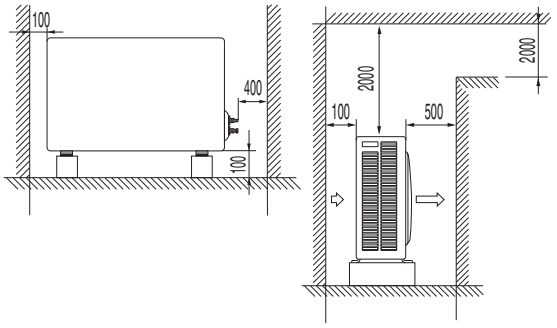

**Weight:** 35 kg



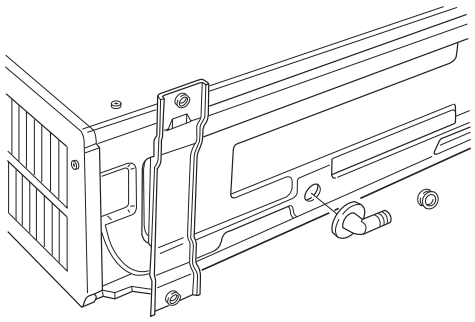

Unit: mm

## 9 - INSTALLATION PROCEDURE

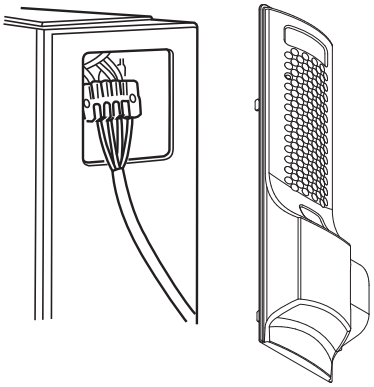
**A** Minimum operation and maintenance area.



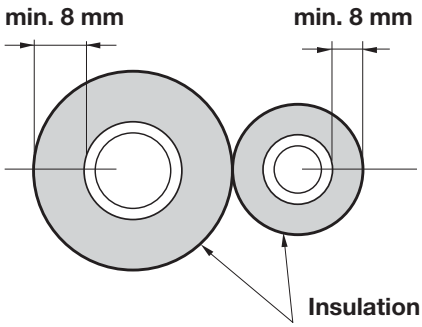

**B** Heat pump version.
Use, if necessary, the accessories supplied.



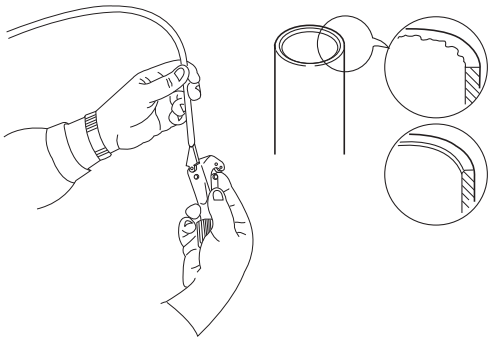
**C** Remove the side cover, then connect the power line and interconnecting wires to outdoor unit on the terminal strip and secure them with clamps.



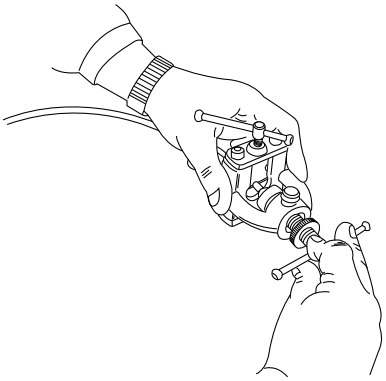
**D** Use insulated copper tube. Cut approximate 30-50 cm. longer than actual distance between units.




**E** Remove burrs at the ends of the copper tubes. Hold the tube end downward and be sure that no dirt falls into the tube.



**F** Insert flare nuts removed from the units, than make a flare at the end of copper tubes.



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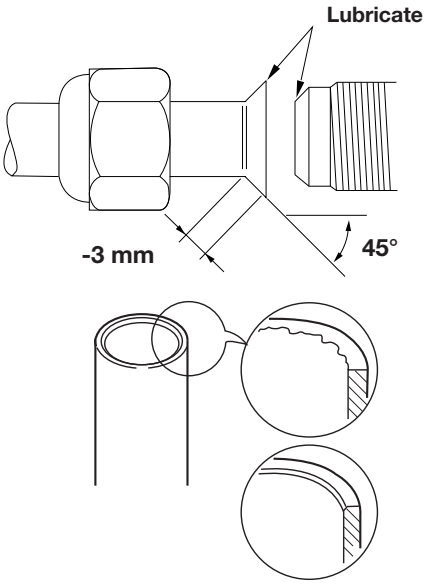
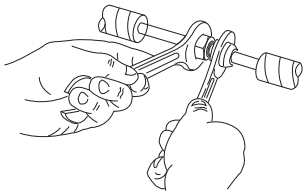
**G** A good flare has the following characteristics:
- inside surface is glossy and smooth
- edge is smooth
- tapered sides are of uniform length.

Apply refrigerant lubricant to the matching surface of the flare and union before connecting them together.

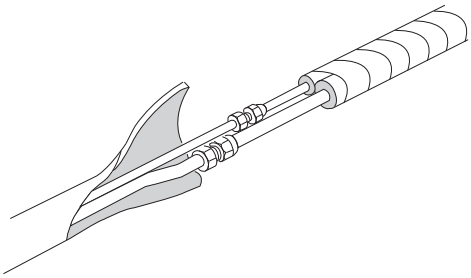



**H** Tighten connections using a spanner and a torque wrench; apply specified torque (see table).

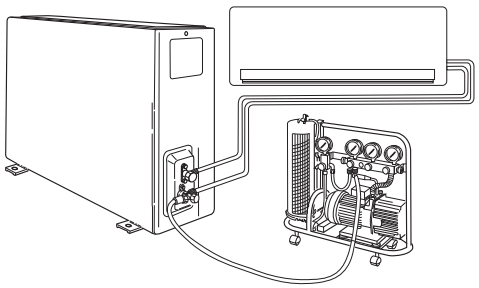


| TUBE DIA. | TIGHTENING TORQUE |
|---|---|
| 6,35 mm (1/4") | Approx. 150 – 200 kgcm (15 - 20 Nm) |
| 9,52 mm (3/8") | Approx. 350 – 400 kgcm (30 - 40 Nm) |
| 12,7 mm (1/2") | Approx. 500 – 550 kgcm (50 - 55 Nm) |

**I** Insulate tubes leaving connections uncovered for leak test.

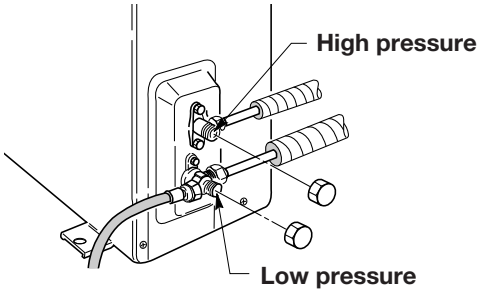


**J** Air purging of internal unit and refrigerant tubes. Connect the vacuum pump to the outside unit as shown in the figure. Air and moisture have undesiderable effects on the refrigerant system.

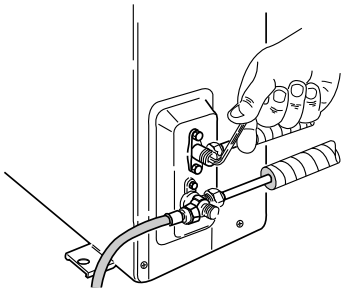


| VACUUM PUMP CAPACITY 100 l /h | |
|---|---|
| Tubing length: less than 10 m | Tubing length longer than 10 m |
| 10 min. or more | 15 min. or more |

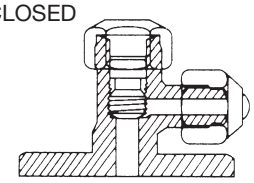
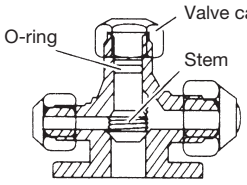
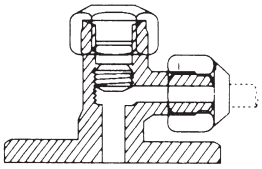
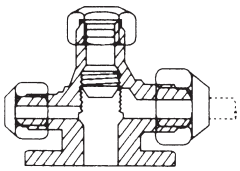
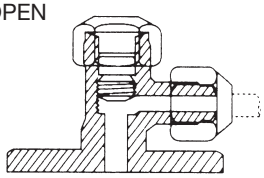
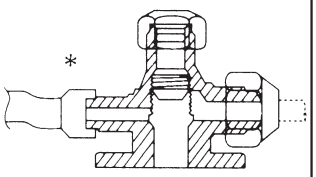
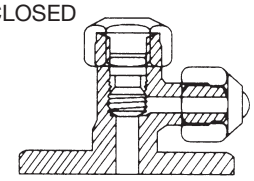
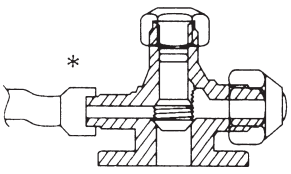
**K** Remove caps from service valves of both tubes. Then start vacuum pump and let it run for the time indicated in the table (vacuum 10 mm Hg abs.).



L With vacuum pump still running close the low pressure knob on valve manifold. Then stop vacuum pump. Using an hexagonal key, open the service valve on small tube, then close it after 10 seconds. Check tightness of all joints using liquid soap.



## 10 - BASIC FUNCTIONS OF THE SERVICE VALVES

| Action | Narrow tube service valve (2-way) | Wide tube service valve (3-way) |
|---|---|---|
| Shipping | CLOSED  |   |
| Operating and test running the air conditioner | OPEN  |  |
| Measuring pressure and gas charging | OPEN  | *  |
| Air purging with a vacuum pump | CLOSED  | *  |

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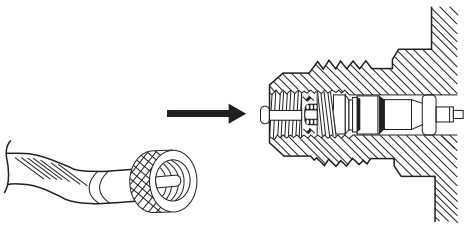

The service port on the wide tube service valve uses a Schrader core valve to access the refrigerant system. Therefore, be sure to use a hose connector which has a push-pin inside.

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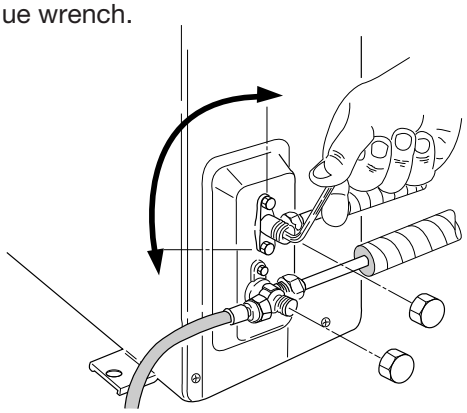
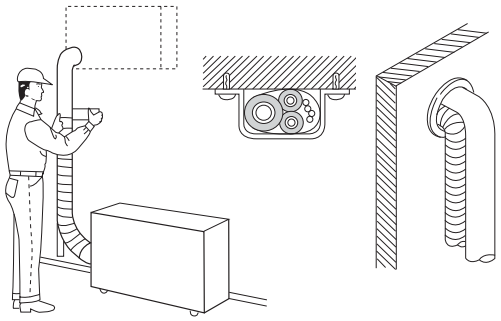
**M** Turn the service valves stem in counterclockwise to fully open the valves. At this point vacuum pump flexible hose can be disconnected. Replace bonnet and flare nut, tighten them to 200 kg/cm with a torque wrench.



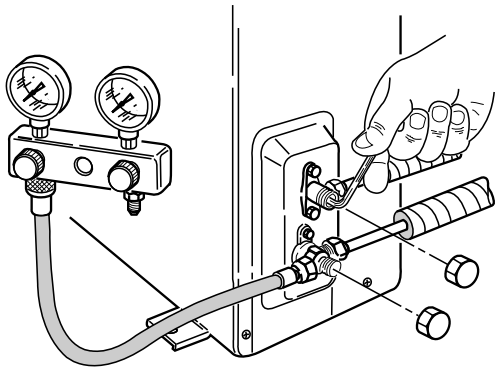
**N** Complete insulation of refrigerant tubes; wrap with armoning tape. Fix and support tubes with brackets. Seal hole in the wall, if necessary.



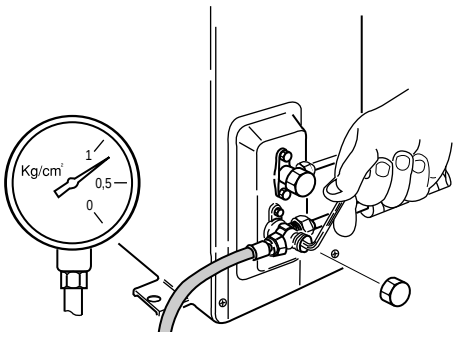
## 11 - PUMP DOWN PROCEDURE

Pump down means collecting all refrigerant gas in the system back into the outdoor unit without losing gas. Pump down is used when the unit is to be moved of before servicing the refrigerant circuit.

**A** Connect a valve manifold to the charge port on a wide tube service valve, partially open it (1/4 turn). Let the air purge from the manifold. Fully close the narrow tube service valves all the way.

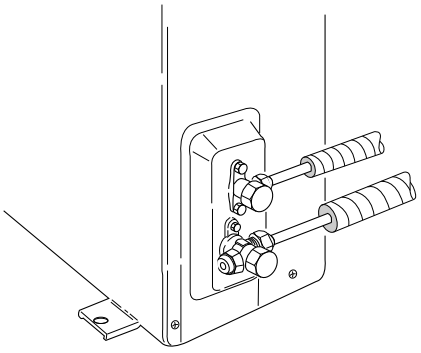


**B** Turn on the unit's operating switch and start cooling operation. When the low-pressure gauge reading falls to 1 to 0,5 Kg/cm$^2$, close the wide tube valves and then quickly turn off the unit.




**C** Remove the valve manifold.

At that time, PUMP DOWN has been completed and all refrigerant gas will have been collected in the outdoor unit.



# 12 - AUTO-DIAGNOSIS TABLE

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**CAUTION**

Disconnect power and wait that all LEDs are OFF before servicing on the electrical box.

X LED OFF  O LED ON  ☼ LED BLINKING

| COD. | LEDs ON BOARD | | | | | DESCRIPTION |
|---|---|---|---|---|---|---|
| 10 | X | ☼ | X | X | X | CDT PROBE DAMAGED OR NOT CONNECTED |
| 9 | X | X | ☼ | X | X | OAT PROBE DAMAGED OR NOT CONNECTED |
| 8 | X | X | X | ☼ | X | OCT PROBE DAMAGED OR NOT CONNECTED |
| 7 | X | X | X | X | ☼ | COMPRESSOR ERROR |
| 6 | ☼ | ☼ | X | X | X | PCB OVERTEMPERATURE (COMPRESSOR MODULE) |
| 5 | X | ☼ | ☼ | X | X | FAN MOTOR ERROR |
| 4 | X | X | ☼ | ☼ | X | PCB OVERTEMPERATURE (FAN MOTOR MODULE) |
| 3 | X | X | X | ☼ | ☼ | ERROR ON INDOOR UNIT |
| 2 | ☼ | ☼ | ☼ | X | X | COMMUNICATION ERROR |
| 1 | X | ☼ | ☼ | ☼ | X | PFC PROTECTION |
| | **DL3** | **DL4** | **DL5** | **DL6** | **DL7** | |
| | **O** | **O** | **O** | **O** | **O** | |

LEGENDA

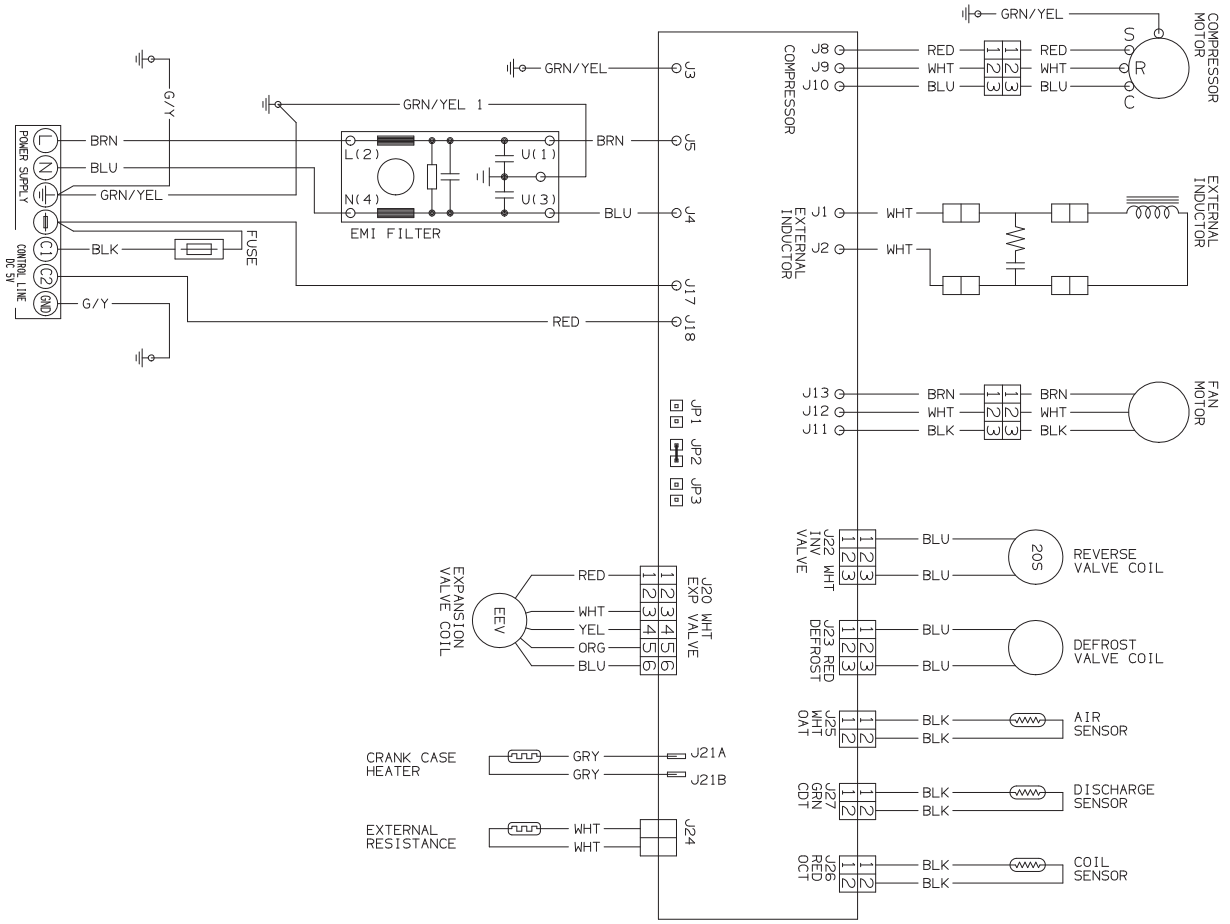
PFC = Power factor corrector (*)
OCT = Outdoor coil temperature
OAT = Outdoor air temperature
CDT = Compressor discharge temperature

(*) Meaning
Automatic protection against power supply disturbances and instabilities.

Unit working properly:

| | | | | | |
|---|---|---|---|---|---|
| O | O | X | X | X | IF AT LEAST ONE INDOOR UNIT IS ON |
| O | X | X | X | X | IF ALL INDOOR UNITS ARE OFF |
| **DL3** | **DL4** | **DL5** | **DL6** | **DL7** | **DESCRIPTION** |

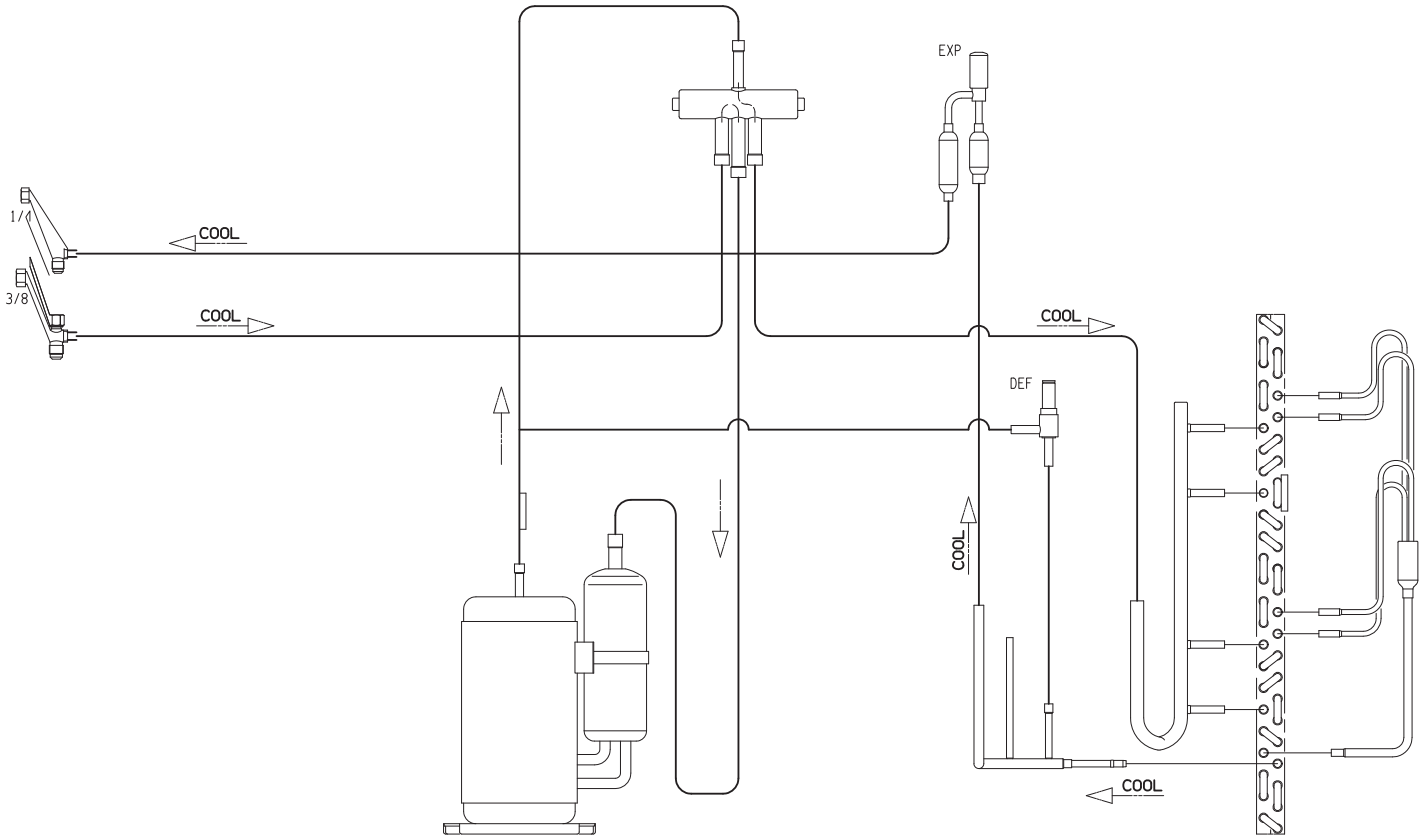
# 13 - ELECTRICAL WIRING DIAGRAM • SCHEMA ELETTRICO • SCHÉMA ÉLECTRIQUE




| COLOURS | EG | I | F | D | E | P |
|---|---|---|---|---|---|---|
| **BLK** | BLACK | NERO | NOIR | SCHWARZ | NEGRO | PRETO |
| **BLU** | BLUE | BLU | BLEU | BLAU | AZUL | AZUL |
| **BRN** | BROWN | MARRONE | MARRON | BRAUN | MARRÓN | CASTANHO |
| **GRN / YEL - G / Y** | GREEN / YELLOW | VERDE / GIALLO | VERT / JAUNE | GRÜN / GELB | VERDE / AMARILLO | VERDE / AMARELO |
| **GRY** | GREY | GRIGIO | GRIS | GRAU | GRIS | CINZENTO |
| **ORG** | ORANGE | ARANCIONE | ORANGE | ORANGE | NARANJA | COR-DE-LARANJA |
| **PNK** | PINK | ROSA | ROSE | ROSA | ROSA | COR-DE-ROSA |
| **RED** | RED | ROSSO | ROUGE | ROT | ROJO | ENCARNADO |
| **VLT** | VIOLET | VIOLA | VIOLET | VIOLETT | VIOLETA | VIOLETA |
| **WHT** | WHITE | BIANCO | BLANC | WEISS | BLANCO | BRANCO |
| **YEL** | YELLOW | GIALLO | JAUNE | GELB | AMARILLO | AMARELO |

| SYMBOL | EG | IT | FR |
|---|---|---|---|
| **A1** | CONTROL BOARD | SCHEDA CONTROLLO | CARTE DE COMMANDE |
| **A2** | 2V EXPANSION BOARD | SCHEDA ESPANSIONE 2V | CARTE D'EXPANSION 2V |
| **A3** | 4V EXPANSION BOARD | SCHEDA ESPANSIONE 4V | CARTE D'EXPANSION 4V |
| **C** | DC BUS 3PH CONDERSER | CONDENSATORE DC BUS 3PH | CONDENSATEUR DC BUS 3PH |
| **CCH1** | COMPRESSOR CRANK CASE HEATER | RESISTENZA COMPRESSORE | RESISTANCE DU COMPRESSEUR |
| **CCH2** | OIL SEPARATOR CRANK CASE HEATER | RESISTENZA SEPARATORE OLIO | RESISTANCE DU SEPARATEUR D'HUILE |
| **CDT** | COMPRESSOR DISCHARGE SENSOR | SENSORE SCARICO COMPRESSORE | CAPTEUR DECHARGE COMPRESSEUR |
| **CM** | COMPRESSOR MOTOR | MOTORE COMPRESSORE | MOTEUR DU COMPRESSEUR |
| **EEV** | EXPANSION VALVE COIL | BOBINA VALVOLA ESPANSIONE | BOBINE DE LA VANNE D'EXPANSION |
| **EF** | EMI FILTER | FITRO EMI | FILTRE EMI |
| **EI** | EXTERNAL INDUCTOR | INDUTTORE ESTERNO | INDUCTEUR EXTÉRIEUR |
| **ER** | EXTERNAL RESISTANCE | RESISTENZA ESTERNA | RESISTANCE EXTÉRIEURE |
| **F** | CONTROL BOARD FUSE | FUSIBILE SCHEDA CONTROLLO | FUSIBLE CARTE DE CONTRÔLE |
| **FM1** | UPPER FAN MOTOR | MOTORE VENTOLA SUPERIORE | MOTEUR DU VENTILATEUR SUPÉRIOR |
| **FM2** | LOWER FAN MOTOR | MOTORE VENTOLA INFERIORE | MOTEUR DU VENTILATEUR INFÉRIOR |
| **CTST** | COMPRESSOR TOP SHELL TEMPERATURE | SENSORE TESTA COMPRESSORE | CAPTEUR DE LA TÊTE DU COMPRESSEUR |
| **INV** | INVERSION VALVE COIL | BOBINA VALVOLA INVERSIONE | BOBINE DE LA VANNE RÉVERSIBLE |
| **NTT** | NARROW TUBE SENSOR | SENSORE TUBO PICCOLO | CAPTEUR DU PETIT TUBE |
| **WTT** | WIDE TUBE SENSOR | SENSORE TUBO GRANDE | CAPTEUR DU GROS TUBE |
| **OAT** | OUTDOOR AIR SENSOR | SENSORE ARIA ESTERNO | CAPTEUR AIR EXTÉRIEUR |
| **OCT** | OUTDOOR COIL SENSOR | SENSORE BATTERIA ESTERNO | CAPTEUR ECHANGEUR DE CHALEUR EXTÉRIEUR |
| **R** | DC BUS 3PH RELAY | RELÉ DC BUS 3PH | RELAIS DC BUS 3PH |
| **RB** | 3PH RECTIFIER BRIDGE | PONTE RETTIFICATORE 3PH | PONTE REDRESSEUR 3PH |
| **LP** | LOW PRESSURE SWITCH | INTERRUTTORE BASSA PRESSIONE | INTERRUPTEUR BASSE PRESSION |

## 14 - REFRIGERANT CIRCUIT • CIRCUITO FROGORIFERO • CIRCUIT RÉFRIGÉRANT



| SYMBOL | DE | ES | PT |
|---|---|---|---|
| **CMP** | KOMPRESSOR | COMPRESOR | COMPRESSOR |
| **4WV** | 4-WEGE RÜCKWÄRTSVENTIL | VÁLVULA INVERSA DE 4 VÍAS | VÁLVULA REVERSA DE 4 VIAS |
| **DEF** | ABTAUVENTIL | VÁLVULA DE DESCONGELACIÓN | VÁLVULA DE DESCONGELAÇÃO |
| **EXP** | EXPANSIONSVENTIL A-B-C-D-E-F | VÁLVULA DE EXPANSIÓN A-B-C-D-E-F | VÁLVULA DE EXPANSÃO A-B-C-D-E-F |
| **CDT** | KOMPRESSOR AUSGABESENSOR | SENSOR DE DESCARGA DEL COMPRESOR | SENSOR DE DESCARGA COMPRESSOR |
| **CHT** | SENSOR VOM KOMPRESSORKOPF | SENSOR CABEZA DEL COMPRESOR | SENSOR CABEÇA DO COMPRESSOR |
| **OAT** | AUSSENLUFTSENSOR | SENSOR AIRE EXTERIOR | SENSOR AR EXTERIOR |
| **OCT** | AUSSEN WARMETAUSCHER SENSOR | SENSOR INTERCAMBIADOR DE CALOR EXTERIOR | SENSOR TROCADOR DE CALOR EXTERIOR |
| **WTT** | SENSOR VOM WEITEN ROHR | SENSOR TUBO GRANDE | SENSOR TUBO LARGO |
| **NTT** | SENSOR VOM ENGEN ROHR | SENSOR TUBO PEQUEÑO | SENSOR TUBO ESTREITO |
| **LP** | NIEDERDRUCK VENTIL | VÁLVULA BAJA PRESIÓN | VÁLVULA BAIXA PRESSÃO |
| **HP** | HOCHDRUCK VENTIL | VÁLVULA ALTA PRESIÓN | VÁLVULA ALTA PRESSÃO |
| **LR** | FLÜSSIGKEITSEMPFÄNGER | RECEPTOR LIQUIDO | RECEPTOR LÍQUIDO |
| **LS** | FLÜSSIGKEITSABSCHEIDER | SEPARADOR DE LIQUIDO | SEPARADOR DO LÍQUIDO |
| **HE** | WÄRMETAUSCHER | INTERCAMBIADOR DE CALOR | TROCADOR DE CALOR |
| **OS** | ÖLABSCHEIDER | SEPARADOR DE ACEITE | SEPARADOR DE ÓLEO |
| **BP** | BY-PASS-VENTIL | VÁLVULA DE PASO | VÁLVULA DE PASSAGEM |
| **E-MIX** | KÄLTEMITTELGASANSCHLUSS EMIX-EMIX TANK | CONEXIÓN DE GAS REFRIGERANTE EMIX-EMIX TANK | CONEXÃO DE GÁS REFRIGERANTE EMIX-EMIX TANK |

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