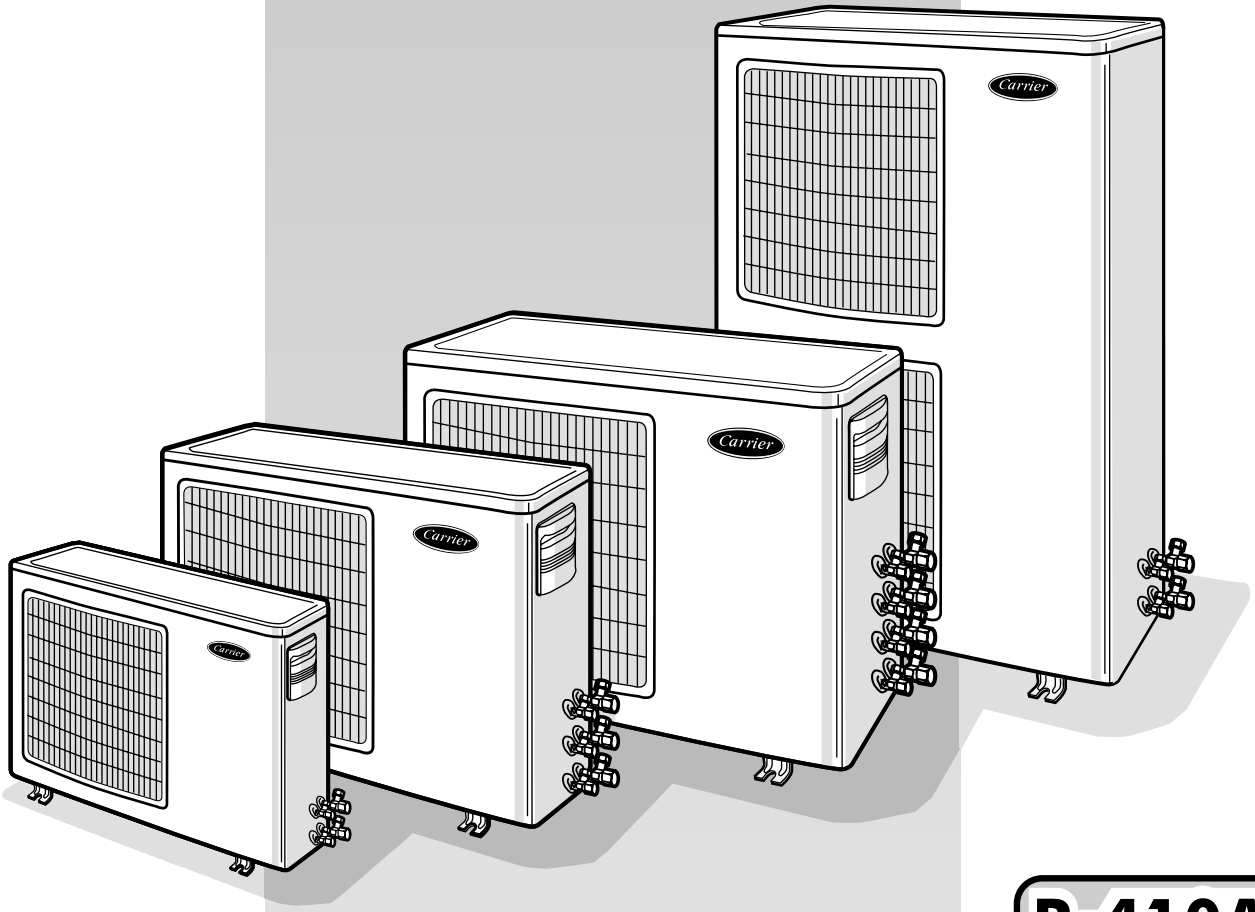
Carrier

Quality Management Systems

38GL_M...G / 38YY(S)_M...G



R-410A

INSTALLATION MANUAL

38GL_M…G / 38YY(S)_M…G R-410A
Cooling only and heat pump multisplit system outdoor units

ENGLISH

For operation and maintenance instructions of this unit as well as installation instructions of the indoor unit, refer to the relevant manuals.

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R-410A – QUICK REFERENCE GUIDE

- R-410A refrigerant operates at 50%-70% higher pressures than R-22. Be sure that servicing equipment and replacement components are designed to operate with R-410A.
- R-410A refrigerant cylinders are pink.
- R-410A refrigerant cylinders have a dip tube which allows liquid to flow out of cylinder in an upright position.
- In case of maintenance, R-410A systems should be charged with refrigerant in liquid phase. Use a commercial type metering device in the manifold hose in order to vaporize the liquid refrigerant before it enters in the unit.
- The R-410A, as for other HFC, is only compatible with oils chosen by the compressor manufacturer. For this reason, for the type of oil to be used, always refer to the plate on the compressor and the unit.
- A vacuum pump is not enough to remove moisture from oil.
- POE oils absorb moisture rapidly. Do not expose oil to atmosphere.
- Never open system to atmosphere while it is under vacuum.
- When the system must be opened for service, break vacuum with dry nitrogen and replace filter driers.
- Do not vent R-410A into the atmosphere.
- Use only Carrier matching indoor units (Table I).

38GL_M…G / 38YY(S)_M…G R-410A

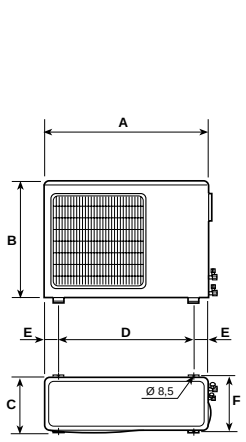
Dimensions and weight

Table I

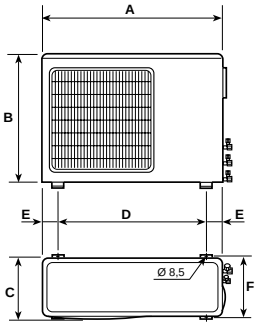
Cooling only models	Hi-Wall		Console	Cassette	Satellite		Power supply
	42PHQ-N	42PHQ-P	42VMC-N	40KMC-N	40SMC-N	40DMC	
38GL2M12G	009 - 012	009 - 012	009 - 012	012	009 - 012	-	230V ~ 50Hz
38GL2M18G	009	009	009	-	009	-	
38GL2M24G	012	012	012	012	012	-	
38GL2M36G	018	018	018	018	018	018	
38GL2M48G	024	024	024	024	024	024	
38GL3M21G	009 - 012	009 - 012	009 - 012	012	009 - 012	-	
38GL3M30G	009 - 012 - 018	009 - 012 - 018	009 - 012 - 018	012 - 018	009 - 012 - 018	-	
38GL4M24G	009 - 012	009 - 012	009 - 012	012	009 - 012	-	

Heat pump models	Hi-Wall		Console	Cassette	Satellite		Power supply
	42PHQ-N	42PHQ-P	42VMC-N	40KMC-N	40SMC-N	40DMC	
38YY2M18G	009	009	009	-	009	-	230V ~ 50Hz
38YY2M21G	009 - 012	009 - 012	009 - 012	012	009 - 012	-	
38YY2M24G	012	012	012	012	012	-	
38YY(S)2M36G	018	018	018	018	018	018	
38YY(S)2M48G	024	024	024	024	024	024	

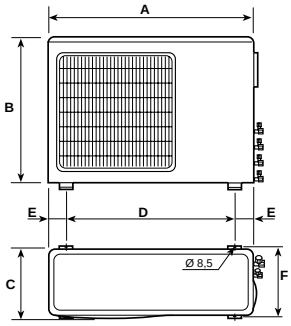
Dimensions and weight



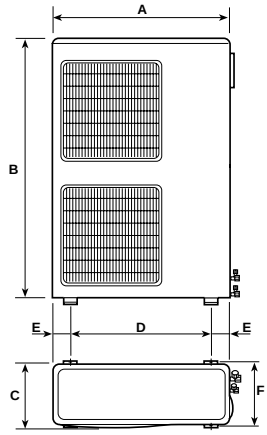
38GL2M12G



38GL2M18G
38GL2M24G
38GL3M21G
38YY2M18G



38GL3M30G
38GL4M24G
38YY2M21G
38YY2M24G

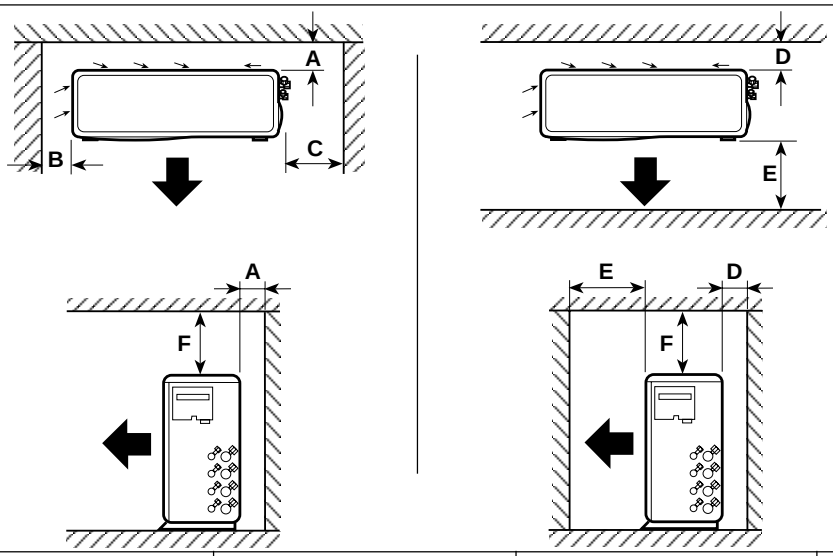


38GL2M36G 38YY(S)2M36G
38GL2M48G 38YY(S)2M48G

Cooling only models		38GL2M12G	38GL2M18G	38GL2M24G	38GL3M21G	38GL3M30G	38GL4M24G	38GL2M36G	38GL2M48G
A	mm	660	800	800	800	800	800	800	800
B	mm	504	590	590	590	803	803	1264	1264
C	mm	220	300	300	300	300	300	300	300
D	mm	390	508	508	508	508	508	508	508
E	mm	135	146	146	146	146	146	146	146
F	mm	250	330	330	330	330	330	330	330
kg	kg	39	55	58	58	75	69	109	112

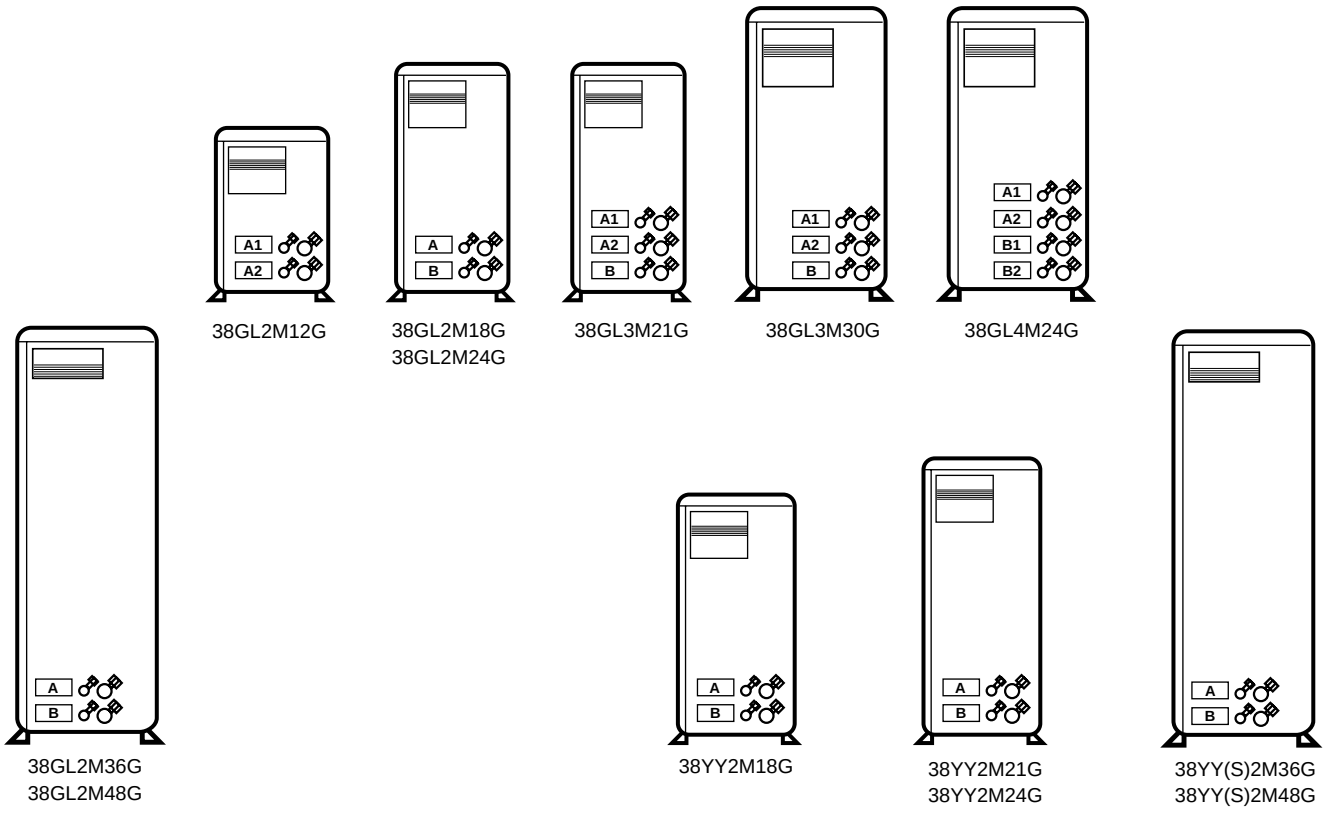
Heat pump models		38YY(S)2M36G	38YY(S)2M48G	38YY2M18G	38YY2M21G	38YY2M24G
A	mm	800	800	800	800	800
B	mm	1264	1264	590	803	803
C	mm	300	300	300	300	300
D	mm	508	508	508	508	508
E	mm	146	146	146	146	146
F	mm	330	330	330	330	330
kg	kg	112	119	59	69	71

Minimum clearances



Models		38GL2M12G	38GL2M18G 38GL2M24G 38GL3M21G 38GL3M30G 38GL4M24G 38YY2M18G	38GL2M36G 38GL2M48G 38YY2M21G 38YY2M24G 38YY(S)2M36G 38YY(S)2M48G
A	mm	50	100	100
B	mm	250	250	250
C	mm	500	500	500
D	mm	50	50	100
E	mm	470	470	670
F	mm	400	400	400

Connections



38GL_M…G / 38YY(S)_M…G R-410A

Connections

Model 38GL	Indoor unit	Pipe diameter Liquid (Liquid) mm	(inches)	Gas (Suction) mm	(inches)
2M12G	A1	6.35	(1/4")	9.52	(3/8")
	A2	6.35	(1/4")	12.70	(1/2") (note 1)
2M18G	A	6.35	(1/4")	9.52	(3/8")
	B	6.35	(1/4")	9.52	(3/8")
2M24G	A	6.35	(1/4")	12.70	(1/2")
	B	6.35	(1/4")	12.70	(1/2")
3M21G	A1	6.35	(1/4")	9.52	(3/8")
	A2	6.35	(1/4")	12.70	(1/2") (note 1)
	B	6.35	(1/4")	9.52	(3/8")
3M30G	A1	6.35	(1/4")	9.52	(3/8")
	A2	6.35	(1/4")	12.70	(1/2") (note 1)
	B	6.35	(1/4")	12.70	(1/2")
4M24G	A1	6.35	(1/4")	9.52	(3/8")
	A2	6.35	(1/4")	12.70	(1/2") (note 1)
	B1	6.35	(1/4")	9.52	(3/8")
	B2	6.35	(1/4")	12.70	(1/2") (note 1)
2M36G	A	6.35	(1/4")	12.70	(1/2")
	B	6.35	(1/4")	12.70	(1/2")
2M48G	A	6.35	(1/4")	12.70	(1/2") (note 2)
	B	6.35	(1/4")	12.70	(1/2") (note 2)

Model 38YY(S)	Indoor unit	Pipe diameter Liquid (Liquid) mm	(inches)	Gas (Suction) mm	(inches)
2M18G	A	6.35	(1/4")	9.52	(3/8")
	B	6.35	(1/4")	9.52	(3/8")
2M21G	A	6.35	(1/4")	9.52	(3/8")
	B	6.35	(1/4")	12.70	(1/2")
2M24G	A	6.35	(1/4")	12.70	(1/2")
	B	6.35	(1/4")	12.70	(1/2")
2M36G	A	6.35	(1/4")	12.70	(1/2")
	B	6.35	(1/4")	12.70	(1/2")
2M48G	A	6.35	(1/4")	12.70	(1/2") (note 2)
	B	6.35	(1/4")	12.70	(1/2") (note 2)

Notes

1) When the indoor unit is as large as 009, use Ø 9,52 mm (3/8") pipes supplied with the flare tap adapter.
Important: do not connect the indoor unit size 012 to circuit B.

2) When the indoor unit is provided with a 15.87 mm (5/8") refrigerant connection, use Ø 12.70 mm pipes supplied with flare tap adapter.

3) **All fittings are flare type.**

4) Use only refrigeration grade pipes, (Cu DHP type according to ISO 1337), seamless, degreased, deoxidized and suitable for operating pressures of at least 4200 kPa.
Under no circumstances must sanitary type annealed copper pipe be used.

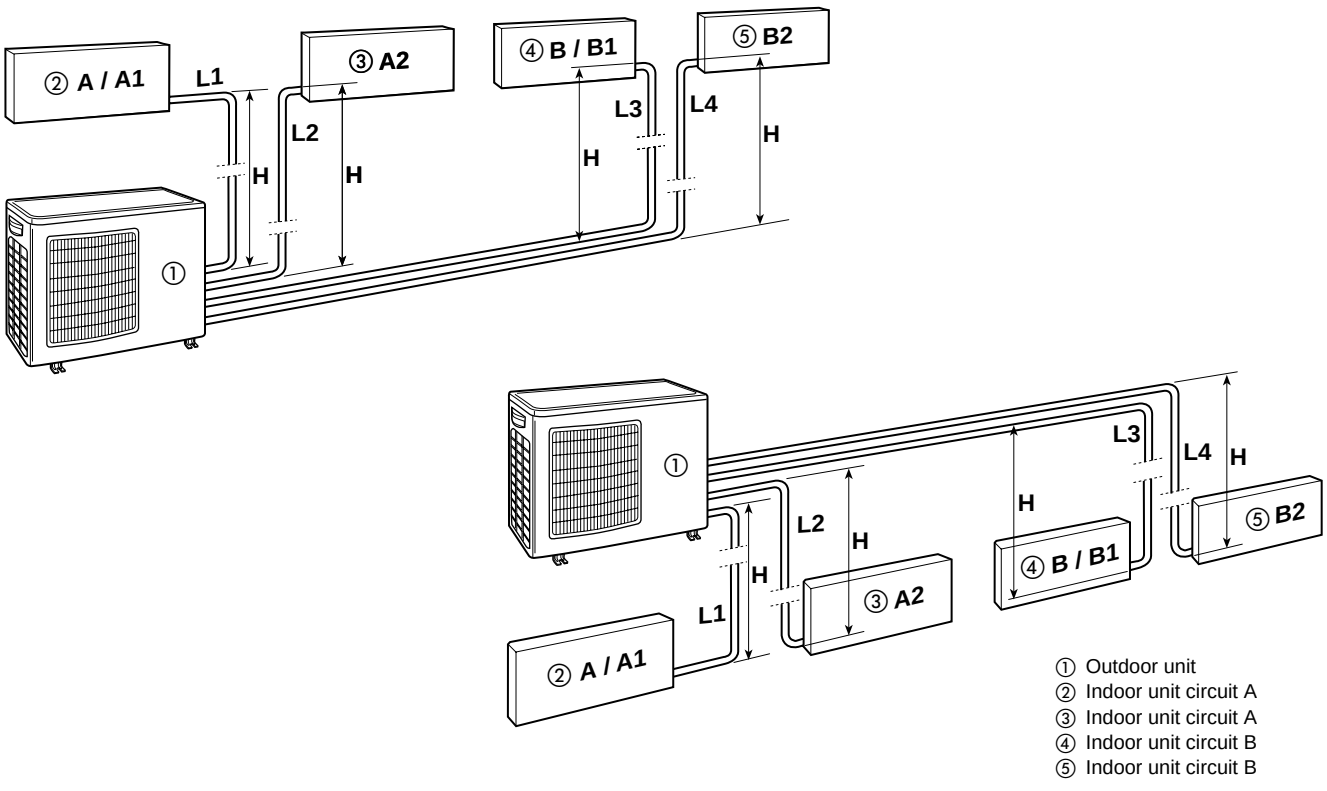


Table II: Connections

Model	38GL	2M12G	2M18G	2M24G	3M21G	3M30G	4M24G	2M36G	2M48G
Max. height difference	**H** m	5	5	5	5	5(1) / 10(2)	5	10	15
Max. pipe length	**L1** m	–	15	15	–	–	–	30	40
	L2 m	–	–	–	–	–	–	30	40
	L3 m	–	15	15	15	30	–	–	–
	L1 + L2 m	15	–	–	15	15	30	60	80
	L3 + L4 m	–	–	–	–	–	30	–	–
Min. pipe length	**L1** m	–	1.5	1.5	–	–	–	3.0	3.0
	L2 m	–	–	–	–	–	–	–	–
	L3 m	–	1.5	1.5	1.5	1.5	–	3.0	3.0
	L1 + L2 m	1.5	–	–	1.5	1.5	1.5	–	–
	L3 + L4 m	–	–	–	–	–	1.5	–	–
Difference max	**L1 - L2** m	5	–	–	5	5	5	–	–
	L3 - L4 m	–	–	–	–	–	5	–	–

Model	YY(S)	2M36G	2M48G	2M18G	2M21G	2M24G
Max. height difference	**H** m	10	15	5	5	5
Max. pipe length	**L1** m	30	40	15	15	15
	L2 m	30	40	15	15	15
	L1 + L2 m	60	80	30	30	30
Min. pipe length	**L1** m	3,0	3,0	3,0	3,0	3,0
	L2 m	3,0	3,0	3,0	3,0	3,0

Note **(1): Circuit A1 and A2**
(2): Circuit B

Table III: Operating limits (1)

		Outdoor temperature °C		Indoor temperature °C		Applicable
		d.b.	w.b.	d.b.	w.b.	
Cooling (2)	Maximum conditions	43	–	32	23	All multisplit units
	Minimum conditions	21 (3)	–	21	15	38GL2M12G 38GL2M18G; 38GL2M24G; 38GL3M21G 38GL3M30G; 38GL4M24G
		15	–	21	15	38GL2M36G(4); 38GL2M48G(4); 38YY2M18G; 38YY2M36G;38YY2M48G; 38YY2M21G;38YY2M24G.
		-10	–	21	15	38YYS2M36G;38YYS2M48G.
Heating (2)	Maximum conditions	24	18	27	–	All heat pump multisplit units
	Minimum conditions	-15	-17	20	–	

Notes: (1) Data referred to the outdoor unit only.
(2) According to prEN 14511-5.
(3) Thanks to the high pressure regulation kit, the unit can also be used with outdoor temperatures up to +10°C **(see table VI "Accessories" for kit availability).**
(4) Thanks to the high pressure regulation kit, the unit can also be used with outdoor temperatures up to -10°C **(see table VI "Accessories" for kit availability).**

d.b. - dry bulb ; **w.b.** - wet bulb

WARNING:

During heat pump operation unit will undergo several defrost cycles to eliminate ice that might possibly collect on the outdoor unit in very low ambient temperatures.
In these cycles, fan speed will automatically reduce and cannot be varied until defrost cycle is completed.

General information

Unit installation

Read this instruction manual thoroughly before starting the installation.

R-410A systems operate at higher pressures than standard R-22 systems. Do not use R-22 service equipment or components on R-410A equipment.

- **This unit complies with low-voltage (EEC/73/23) and electro-magnetic compatibility (EEC/89/336) directives.**
- **Check that the impedance of the mains power supply is in conformance with the unit power input indicated in the electric data table V (EN 61000-3-11).**
- The installation must be carried out by a qualified installer.
- Follow all current national safety code requirements. In particular ensure that a properly sized and connected ground wire is in place.
- Check that voltage and frequency of the mains power supply are those required; the available power must be adequate to operate any other possible appliances connected to the same line. Also ensure that national safety code requirements have been followed for the mains supply circuit.
- The mains supply must be connected to the outdoor unit.
- Connect indoor and outdoor units with field-supplied copper pipes by means of flare connections. Use insulated seamless refrigeration grade pipe only, (Cu DHP type according to ISO1337), degreased and deoxidized, suitable for operating pressures of at least 4200 kPa and for burst pressure of at least 20700 kPa. Under no circumstances must sanitary type copper pipe be used.
- After installation thoroughly test the system operation and explain all system functions to the owner.
- Leave this manual with the owner for consultation during future periodic maintenance.
- Use this unit only for factory approved applications: **the unit is suitable for outdoor installation.**
- This installation manual describes the installation procedures of the outdoor unit of a residential split system consisting of two units manufactured by Carrier. Consult factory or a qualified system engineer prior to connecting this unit to any other manufacturer's indoor unit. Coupling units which have different control systems, may cause irreversible damage and void the warranty protection. The manufacturer declines any liability for system malfunction resulting from unapproved coupling.

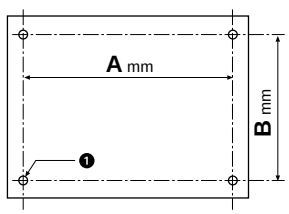
IMPORTANT:
During the unit installation make first refrigerant connections and then electrical connections. If unit is uninstalled first disconnect electrical cables, then refrigerant connections.
WARNING:
Disconnect the mains power supply switch before servicing the system or handling any internal parts of the unit.
All mains supply circuits must be disconnected.

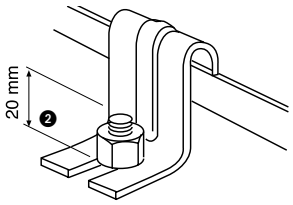
- The manufacturer declines any liability for damage resulting from modifications or errors in the electrical or refrigerant connections.
- Failure to observe the installation instructions or use of the unit under conditions other than those indicated in Table III “Operating limits”, will immediately void the unit warranty.
- Failure to observe electric safety codes may cause a fire hazard in case of short circuits.
- Inspect equipment for damage due to improper transportation or handling: file an immediate claim with the shipping company. Do not install or use damaged units.
- In case of any malfunctioning turn the unit off, disconnect the mains power supply and contact a qualified service engineer.
- This equipment contains R-410A refrigerant, a substance that is not depleting the ozone layer.
- **All of the manufacturing and packaging materials used for your new appliance are compatible with the environment and can be recycled.**
- Dispose of the packaging material in accordance with local requirements.
- This equipment contains refrigerant that must be disposed of in a proper manner. When disposing of the unit after its operational life, remove it carefully. The unit must then be delivered to an appropriate disposal center or to the original equipment dealer.
- Carefully recover refrigerant within this unit before final disposal or when servicing. Never vent refrigerant to atmosphere. Use approved recovery equipment for R-410A refrigerant. Do not use R-22 equipment.

Choosing the installation site

Positions to avoid:
- Exposed to direct sun.
- Too close to sources of heat radiation, vapour or flammable gas.
- Particularly dusty areas.

Recommendations:
- Choose a position protected from opposing winds.
- Choose a position sheltered from direct sun.
- Choose an area where air outlet and unit noise will not bother your neighbours.
- Choose a position that allows for the clearances required.
- Floor structure should be adequately strong to support unit weight and minimize vibration transmission.
- Consider a position which will not obstruct passageways or doors.

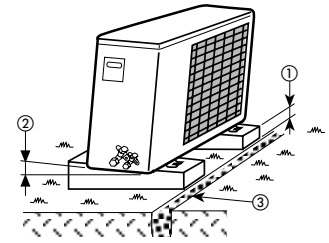




Model	A	B
2M12G	390	250
All the other models	508	330

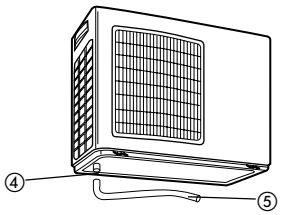
❶ No. 4 Ø 8 mm pins.
❷ Protrusion height from the support surface max. 20 mm.

- Fix the unit with locally purchased bolts buried in the block to prevent overturning due to strong gusts of wind.



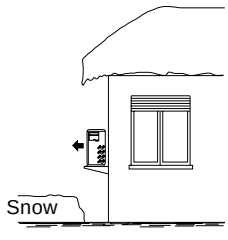
① 100 mm min
② 20 mm gradient
③ Gravel-filled trench

- For heat pump models, unit must be adequately raised above floor surface.

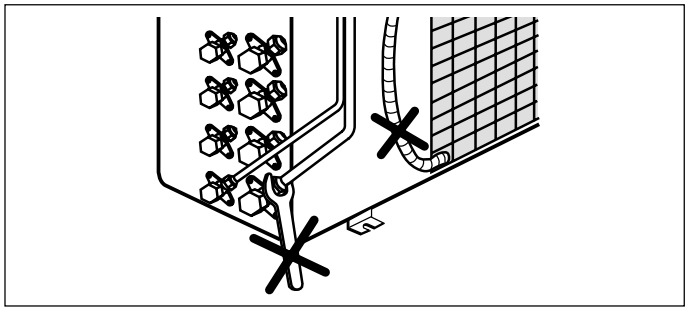


④ Drain fitting
⑤ Vinyl pipe

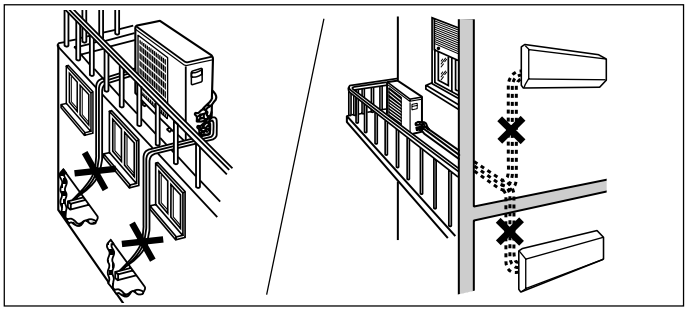
- To empty the condensate water to a drain while operating in heating mode, insert the drain fitting into the hole underneath on the centre of the base and use a vinyl pipe with a 16 mm inside diameter. It must not be used at temperatures below 0°C (not available for low temperature versions).



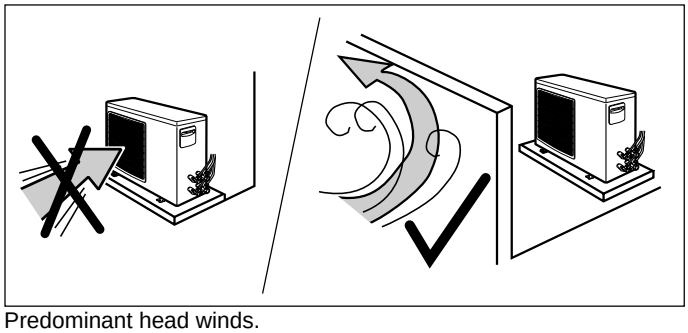
- If the unit is installed in areas where heavy snowfalls may occur, it is necessary to raise its level at least 200 mm above the usual snow level or alternatively to use the outdoor unit bracket kit.



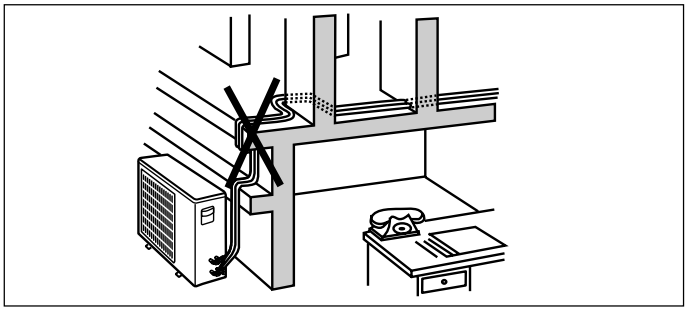
Disconnecting the refrigerant connections after installation: thiis will cause refrigerant leaks.
Connecting the condensate drain pipe to the outdoor unit.



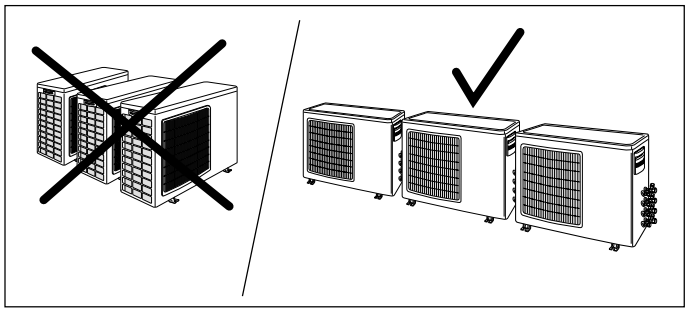
Excessive height difference between indoor and outdoor unit (see Table II "Connections"). Excessive distance between indoor and outdoor units. (see Table II "Connections").



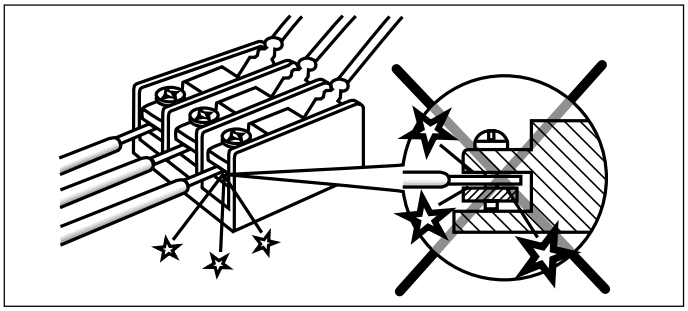
Predominant head winds.



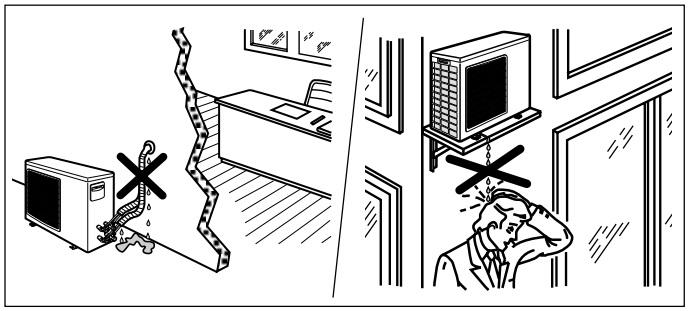
Unnecessary turns and bends in the connecting pipes.



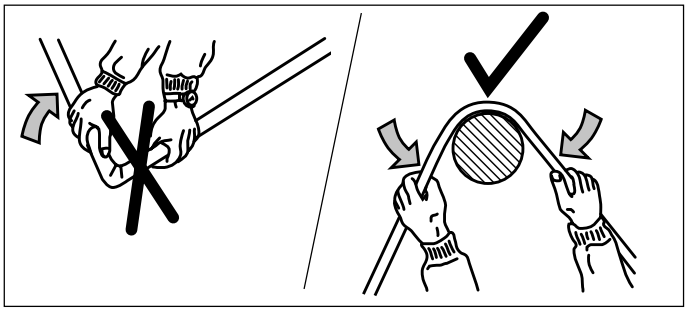
Multiple unit installation with units facing each other.



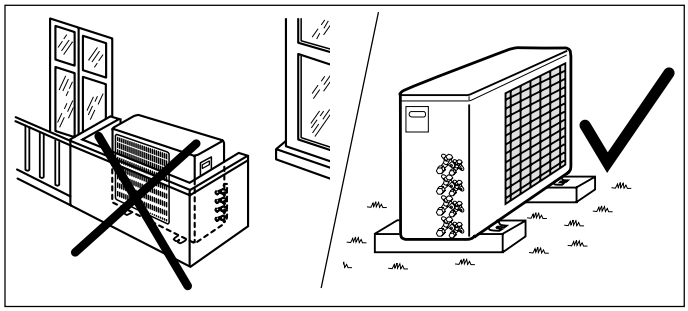
Any slack in the electrical connections.



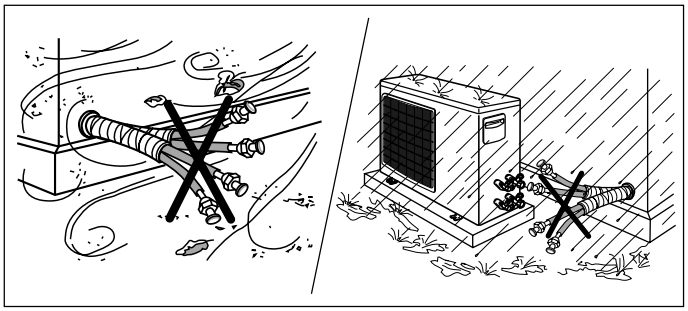
Insulating the connecting pipes only partially, which will cause dripping. Dripping into passageways.



Flattening or kinking of refrigerant or condensate pipes.

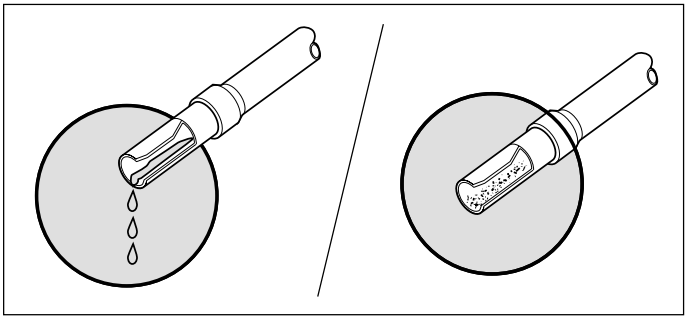


Any obstruction of the unit air outlet and intake or any obstacle that is too close (see minimum clearances required).
Installation on grassy ground or soft surfaces (in these cases a solid foundation must be included).

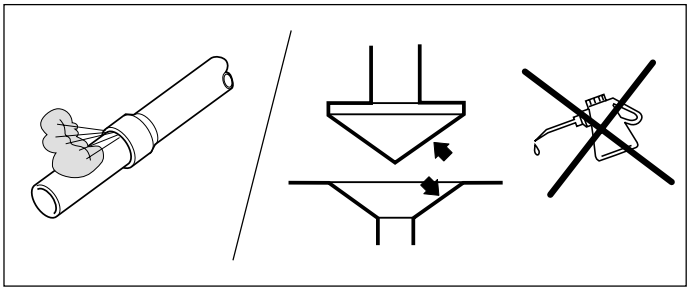


Soiling of pipe ends.
Allowing piping to get wet before connection.

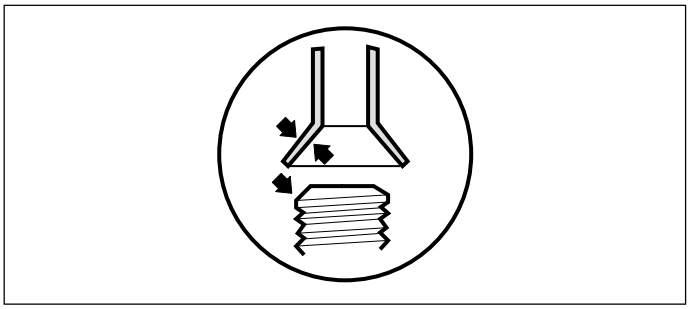
Refrigerant connections



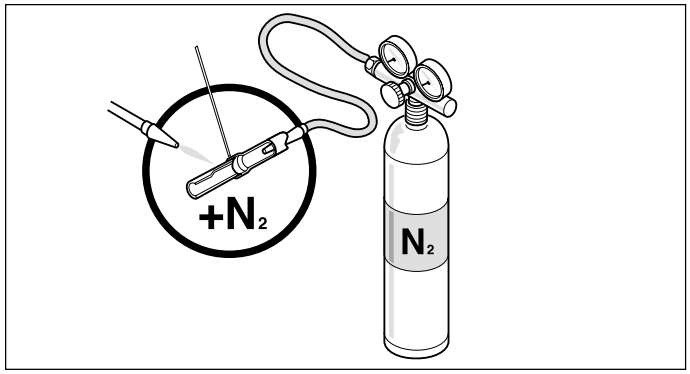
No moisture.
No dust.



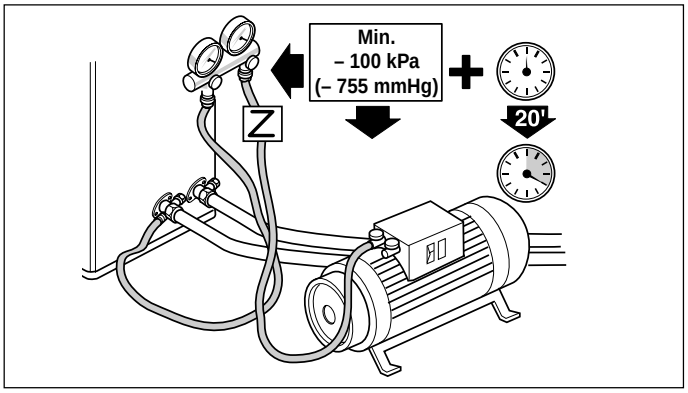
No leak.
No mineral oil.



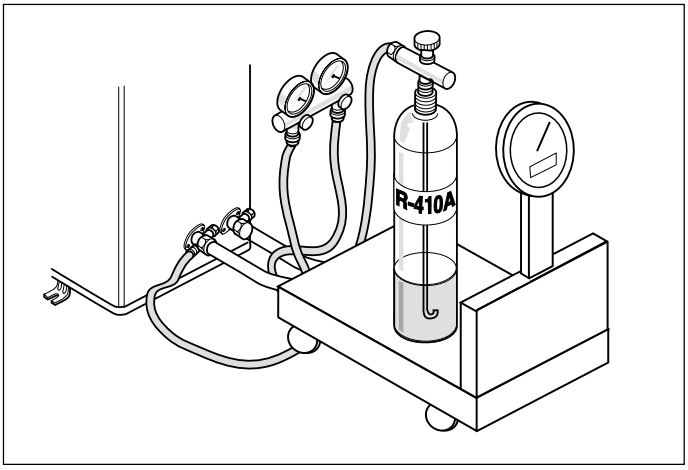
Neat.



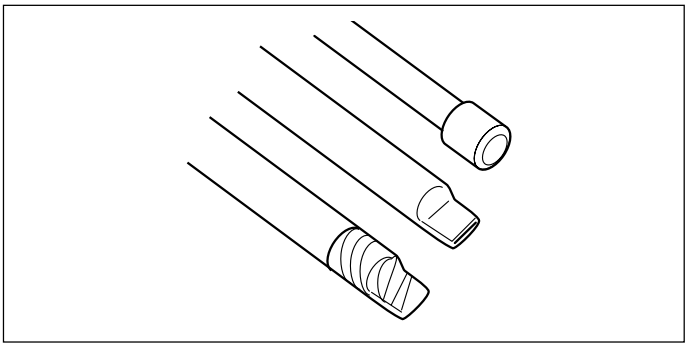
Dry nitrogen brazing.



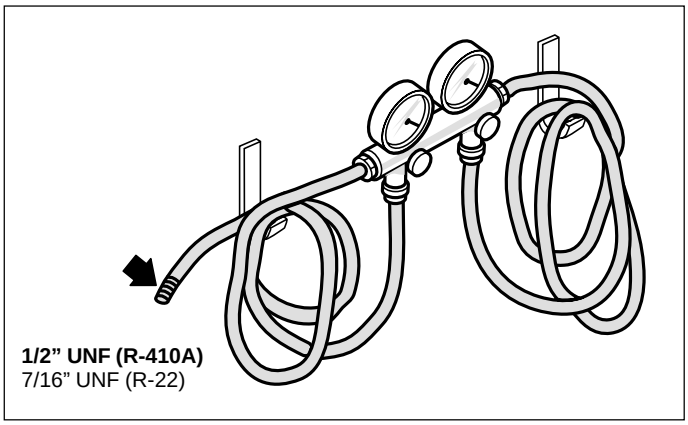
Vacuum.



Charge liquid-no gas.

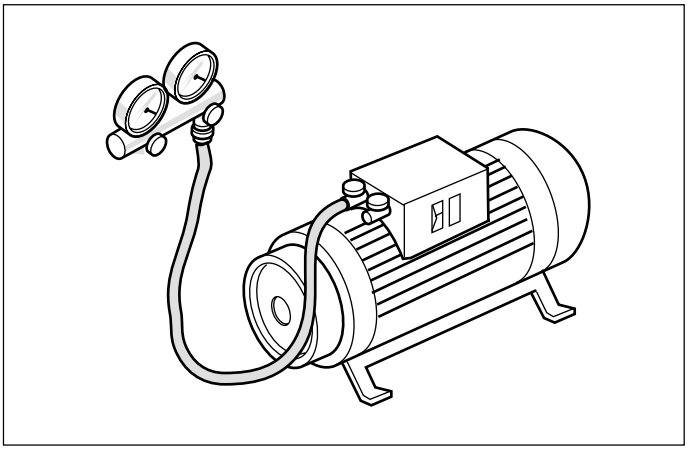


Copper tubes during storage.



1/2" UNF (R-410A)
7/16" UNF (R-22)

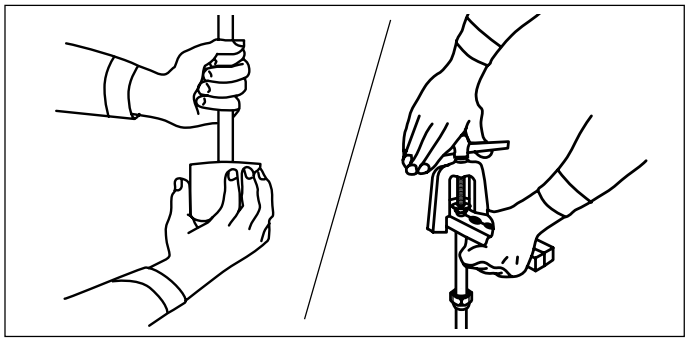
Use tools designed for R-410A higher pressure.
Keep inside clean.



2-stage vacuum pump. Replace oil regularly.

Refrigerant connections

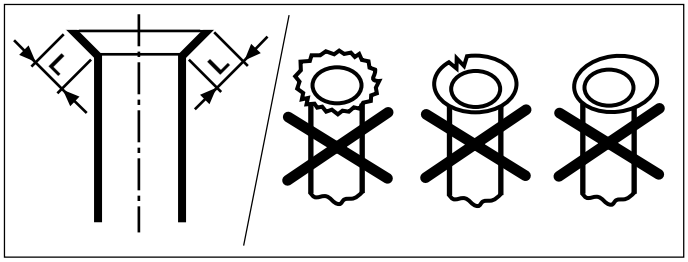
Flaring the ends of the tubing



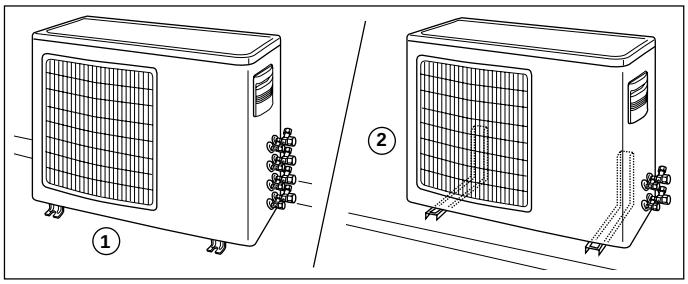
Remove protective caps from copper tube ends.
Position tube end downward, cut the tube to the requested length and remove the burrs with a reamer.

Do not leave system open to atmosphere any longer than minimum required for installation.
Oil in the compressor is extremely susceptible to moisture absorption.
Always keep ends of tubing sealed during installation.

Remove flare nuts from the unit connections and place them on the tube end.
Flare the tube with the flaring tool.

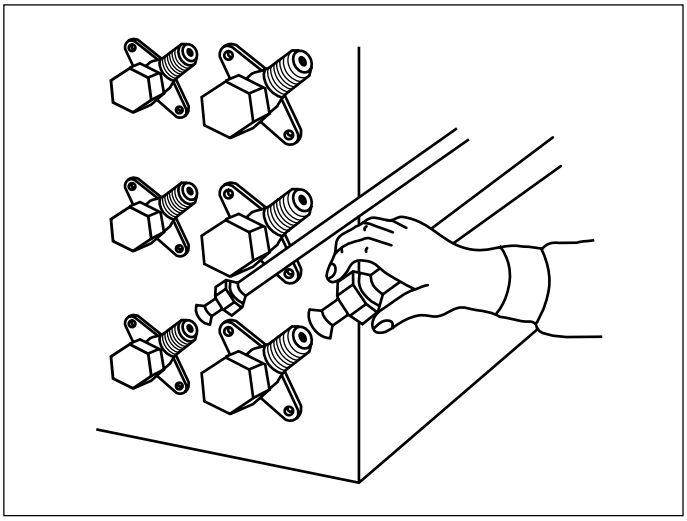


Flare end must not have any burrs or imperfections.
The length of the flared walls must be uniform.



The unit can be installed:
① on the floor;
② on the wall using the bracket kit.

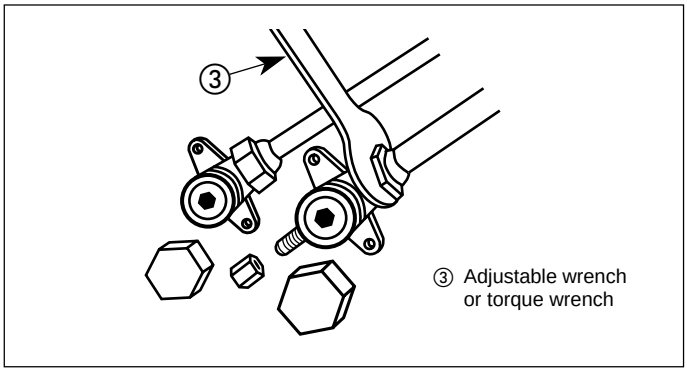
Connect tubing in accordance with the limits shown on Table II (Connections).
Finger-tighten the fitting several turns, then tighten it with a wrench by applying the tightening torque indicated in the table.



Where required, the unit must be charged with additional refrigerant.
Additional charge must be added using electronic scales and the service port (5/16") on the suction line.

Charge refrigerant only in liquid phase (bottle turned upside down or using the specific connection on bottle; see pages 5 and 8).

Connection to unit

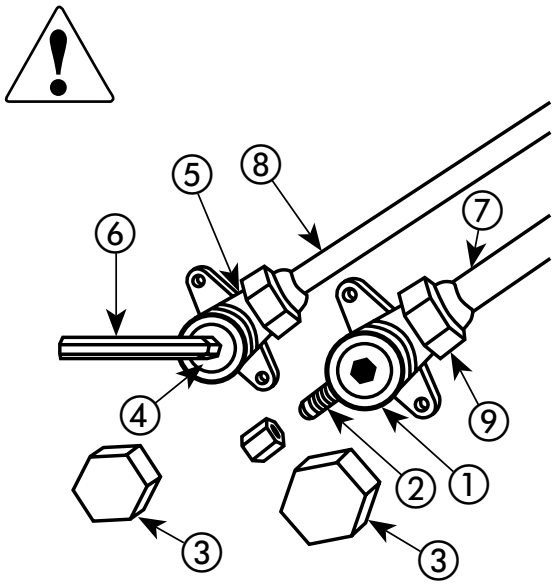


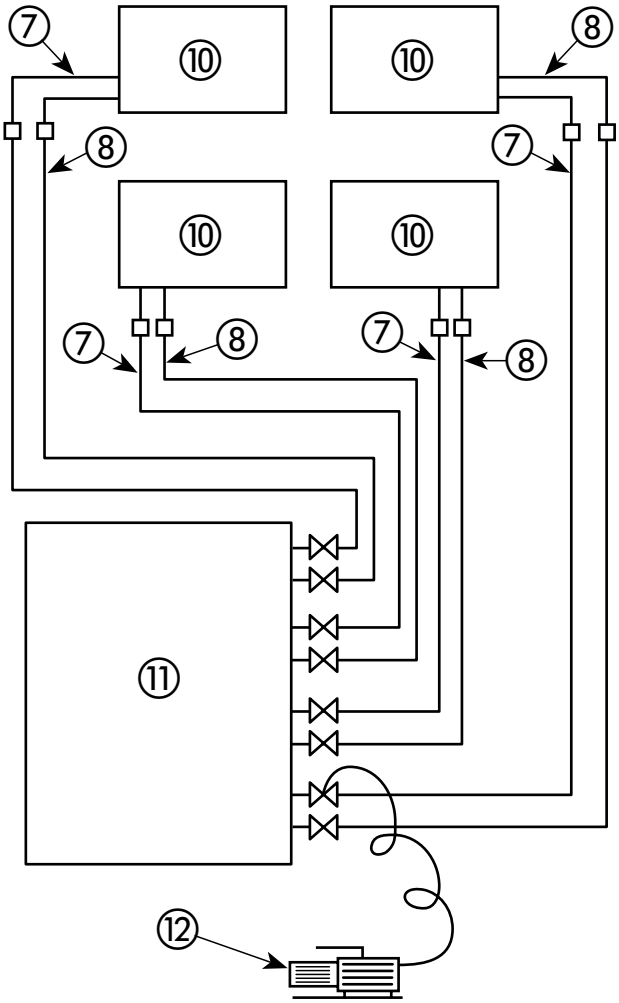
Insufficient tightening torque will cause gas leaks.
Overtightening the fittings will damage the tube flaring and cause gas leaks.

- **Make certain the refrigerant pipes and the electrical connection lines between the indoor and the outdoor unit have the same colours and reference codes (A, A1, A2, B, B1, B2) using the special adhesive references supplied.**

Tightening torque										
Valve	Flare nut		Valve cap		Pressure port cap		Valve needle		Pressure port	
	Wrench mm	Nm	Wrench mm	Nm	Wrench mm	Nm	Wrench mm	Nm	Wrench mm	Nm
1/4”	17	18	23	20	18	16 - 18	Allen (hex.) 5	9	–	0.34
3/8”	22	42	23	20	18	16 - 18	Allen (hex.) 5	9	–	0.34
1/2”	26	55	29	40	18	16 - 18	Allen (hex.) 5	13	–	0.34

Refrigerant connections





① Three-way valve
② Needle valve
③ Valve cap
④ Valve needle
⑤ Two-way valve
⑥ Allen (hex. head) wrench
⑦ Gas line (large diameter)
⑧ Liquid line (small diameter)
⑨ Flare nut
⑩ Indoor unit
⑪ Outdoor unit
⑫ Vacuum pump

Air drain

Repeat the air drain procedure for every indoor unit installed.

Use only a vacuum pump to purge air from the piping.

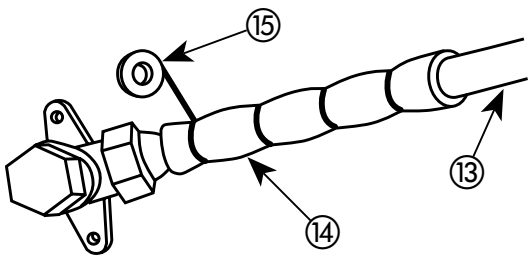
NEVER use the system compressor as a vacuum pump.

NEVER use the unit refrigerant gas to purge the connecting pipes.

No additional refrigerant has been provided in the unit for this purpose.
Remove the caps from the two and three-way valves.
Create a vacuum with a vacuum pump connected to the service connection of the suction shut-off valve, as shown, keeping the shut-off valves completely shut until a -100 Pa (-1 bar) vacuum has been reached.
Now open the two-way valve for 3 sec., then quickly shut it to check for possible leaks.

After the leak check, fully open the two and three-way valves. Do not go beyond the valve stop limit.

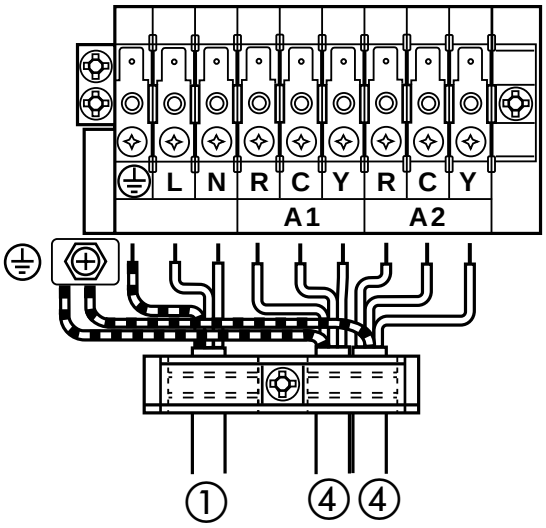
Replace caps and check for leaks.

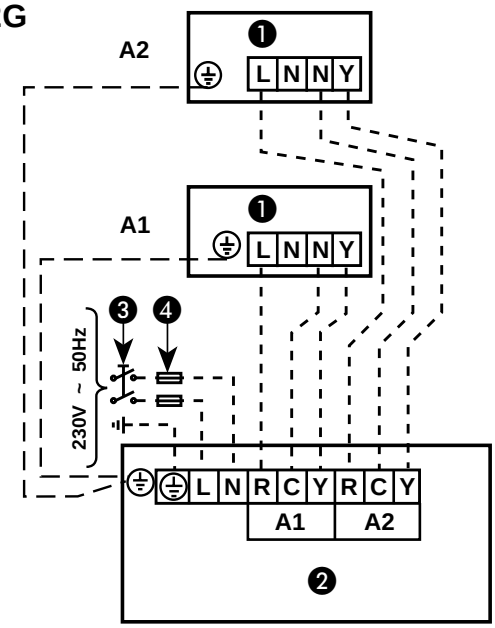


⑬ Pipe
⑭ Pipe insulation
⑮ Fastening tape

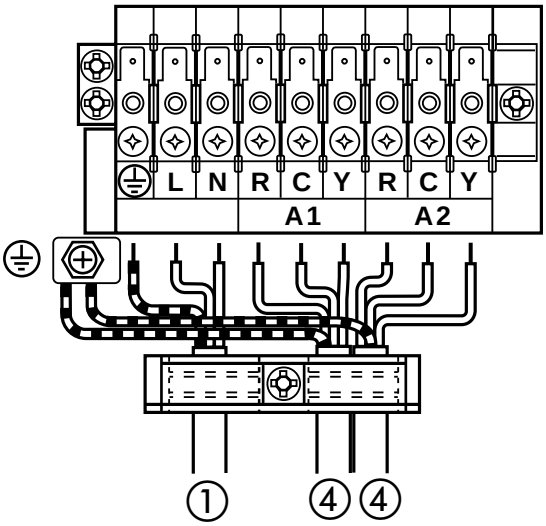
Once all connections have been completed, check for leaks by using a leak detector specific for HFC refrigerants.
Finally wrap the valves and pipes with anti-condensate insulation and tighten this with tape, without exerting too much pressure on the insulation.
Repair and cover any possible cracks in the insulation.
Fix the pipes to the wall with hooks or conduits.

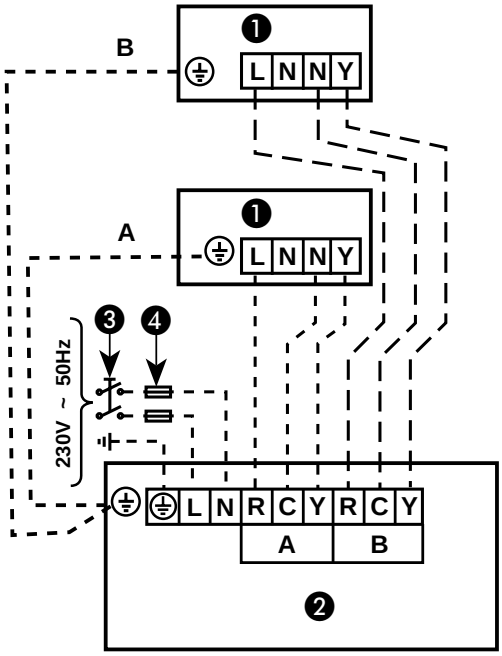
Mod. 38GL2M12G





Mod. 38GL2M18G - 38GL2M24G





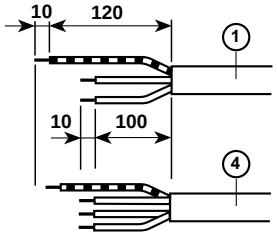
WARNING!

The system power supply must always be made through the outdoor unit.

If the indoor units are provided with heaters, their power supply must be ensured by indoor sections.

Terminal box legend

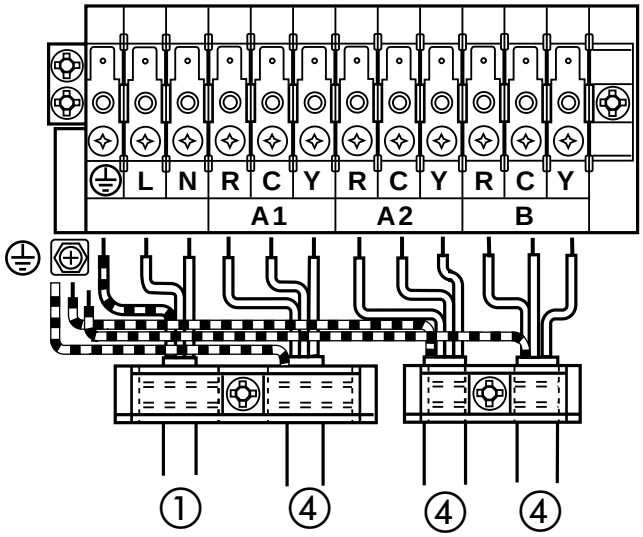
- ⏚ Earth
- **L** Live power supply
- **N** Neutral power supply
- **R** Live connection indoor/outdoor unit
- **C** Neutral connection indoor/outdoor unit
- **Y** Compressor interlocking contact

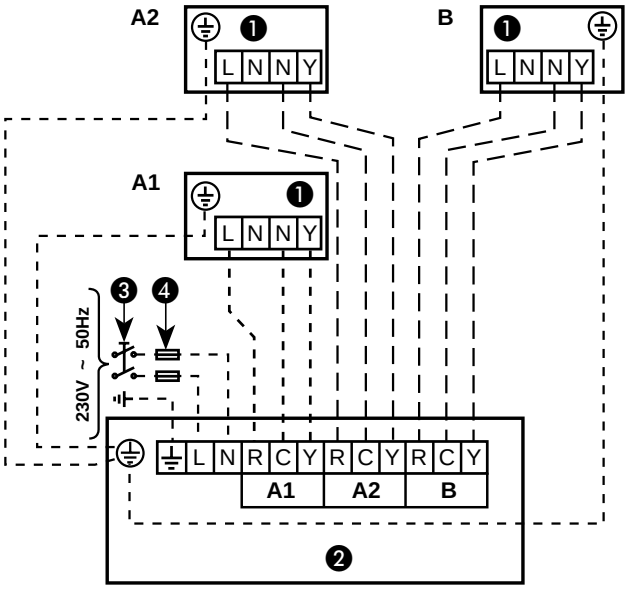


① Mains supply connecting cable (field wiring).
④ Connecting cable Outdoor unit – Indoor unit (R - C - Y - ⏚) - (field wiring).
❶ Indoor unit
❷ Outdoor unit
❸ Main switch
❹ Time-delay fuse or circuit breaker (see table V "Electrical data").

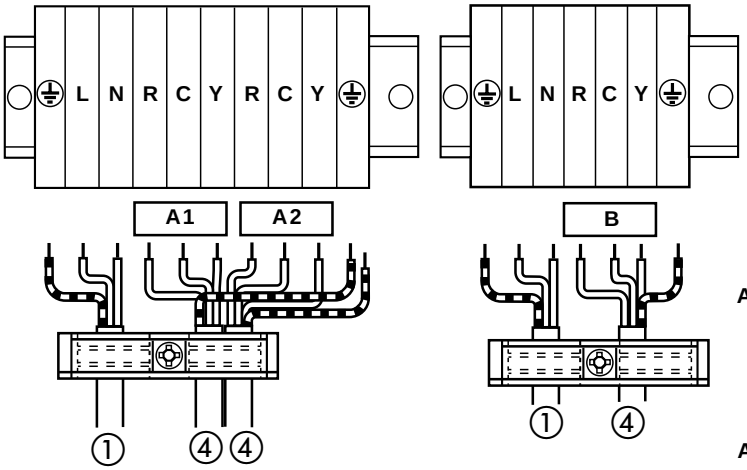
Electrical connections

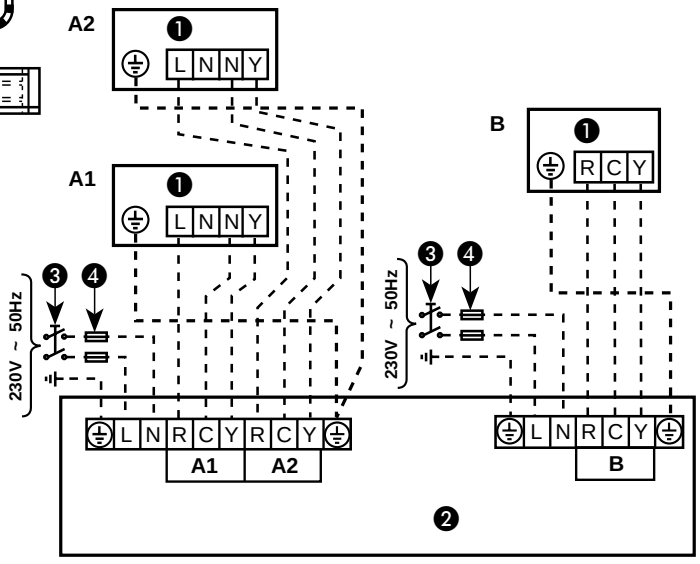
Mod. 38GL3M21G





Mod. 38GL3M30G





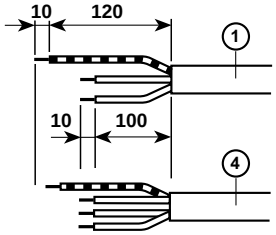
WARNING!

The system power supply must always be made through the outdoor unit.

If the indoor units are provided with heaters, their power supply must be ensured by indoor sections.

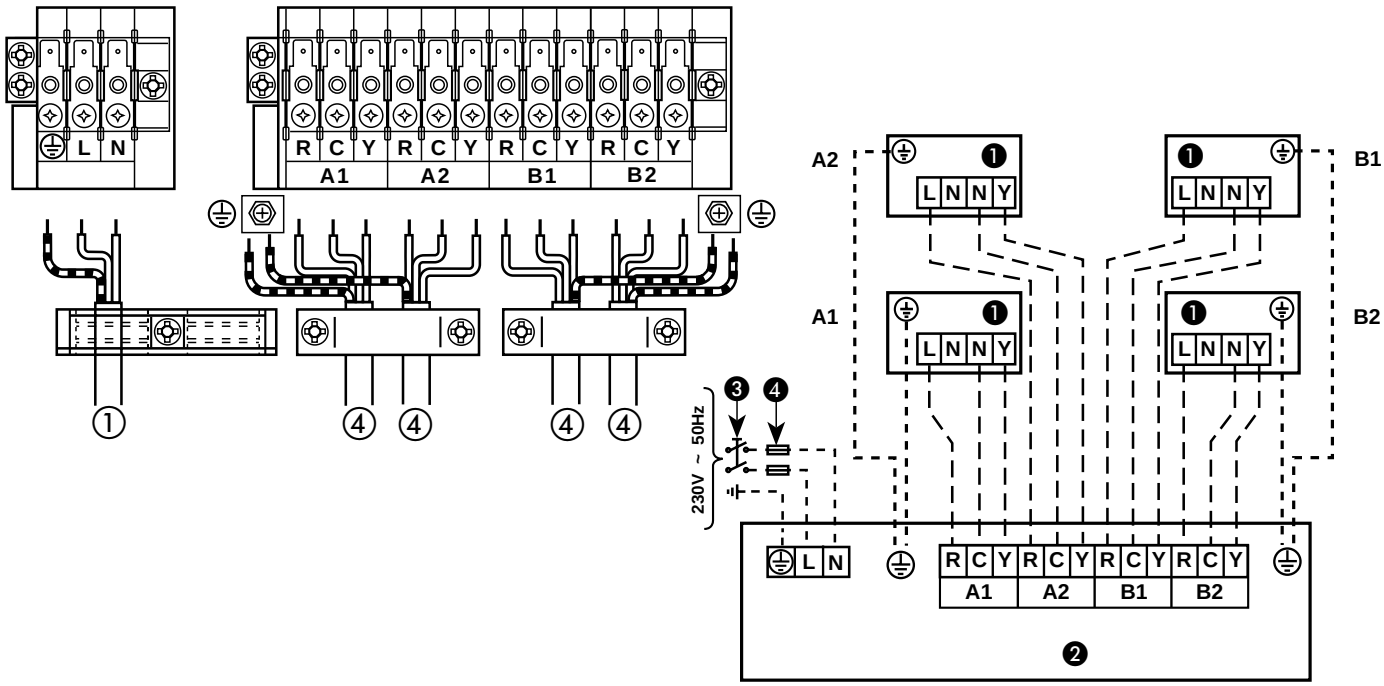
Terminal box legend

- ⏚ Earth
- **L** Live power supply
- **N** Neutral power supply
- **R** Live connection indoor/outdoor unit
- **C** Neutral connection indoor/outdoor unit
- **Y** Compressor interlocking contact

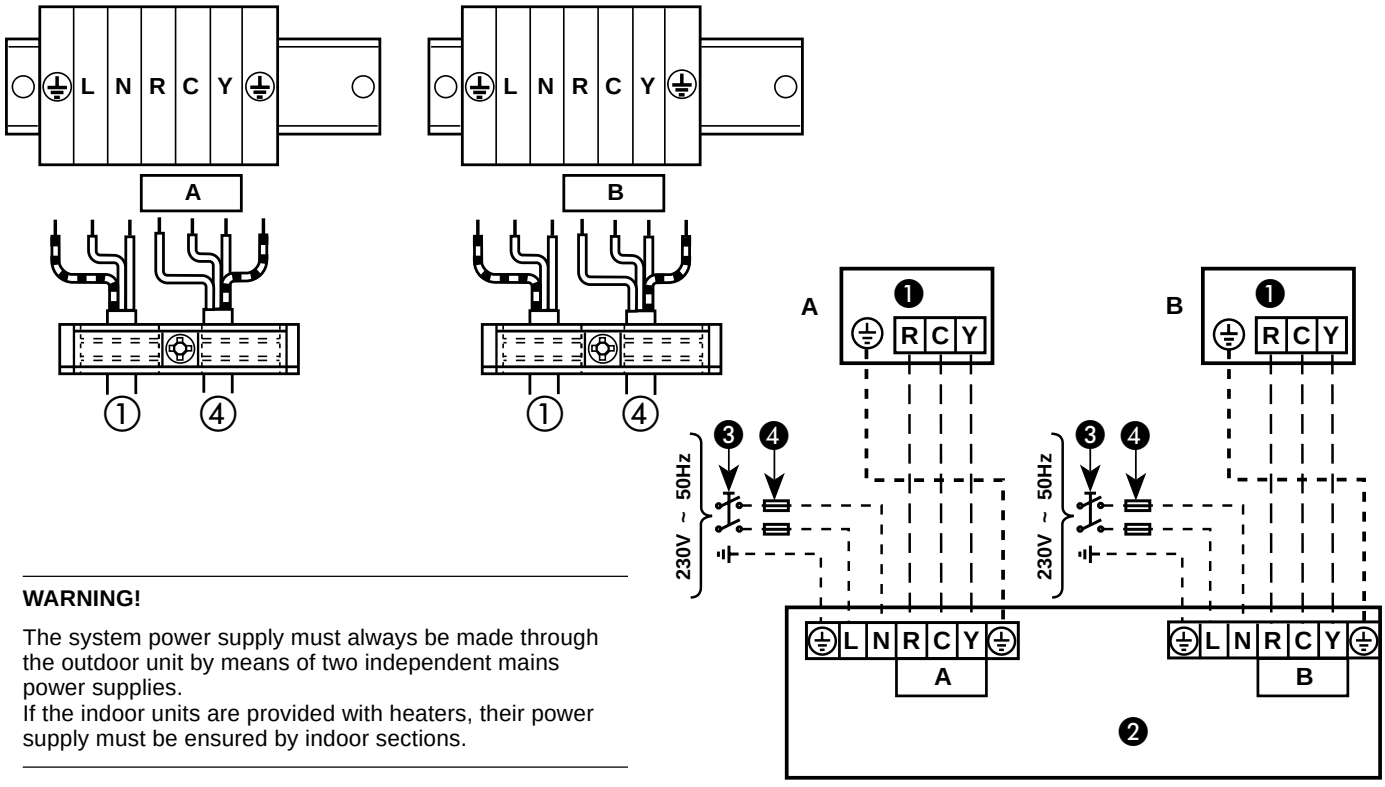


① Mains supply connecting cable (field wiring)
④ Connecting cable Outdoor unit – Indoor unit (R - C - Y - ⏚) - (field wiring)
❶ Indoor unit
❷ Outdoor unit
❸ Main switch
❹ Time-delay fuse or circuit breaker (see table V "Electrical data")

Mod. 38GL4M24G



Mod. 38GL2M36G - 38GL2M48G

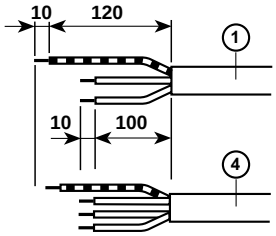


WARNING!

The system power supply must always be made through the outdoor unit by means of two independent mains power supplies.
If the indoor units are provided with heaters, their power supply must be ensured by indoor sections.

Terminal box legend

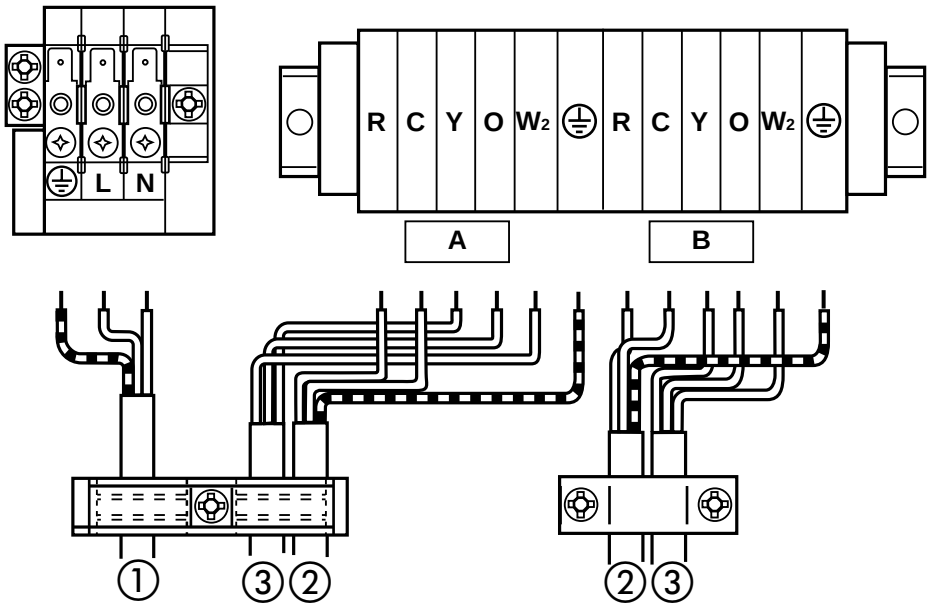
⏚	Earth
L	Live power supply
N	Neutral power supply
R	Live connection indoor/outdoor unit
C	Neutral connection indoor/outdoor unit
Y	Compressor interlocking contact
PCB	External electronic card

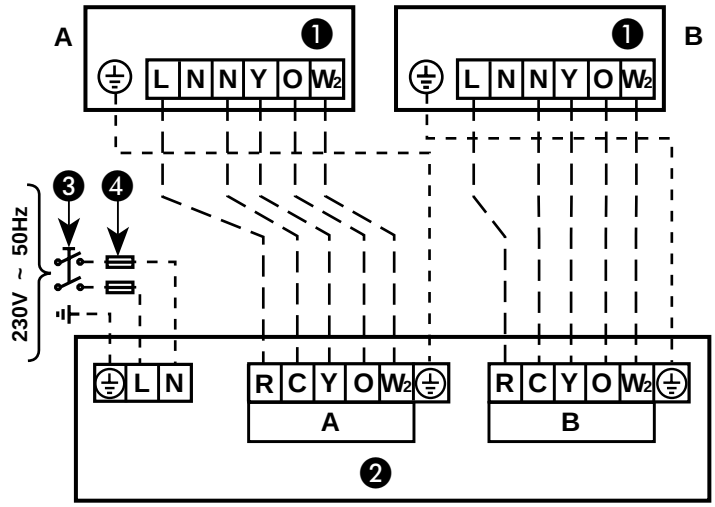


① Mains supply connecting cable (field wiring)
④ Connecting cable Outdoor unit – Indoor unit (R - C - Y - ⏚) - (field wiring)
❶ Indoor unit
❷ Outdoor unit
❸ Main switch
❹ Time-delay fuse or circuit breaker (see table V "Electrical data")

Electrical connections

Mod. 38YY2M18G - 38YY2M21G - 38YY2M24G





WARNING!

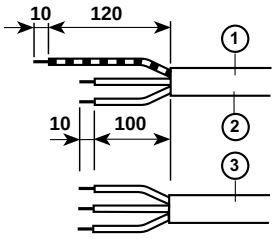
The system power supply must always be made through the outdoor unit.
If the indoor units are provided with heaters, their power supply must be ensured by indoor sections.

Indoor units which are connected to the heat pump units need the "Multisplit" configuration by remote controller.

The two heat pump circuits can operate simultaneously only in the same mode (all circuits operating in the Cooling or Heating mode).

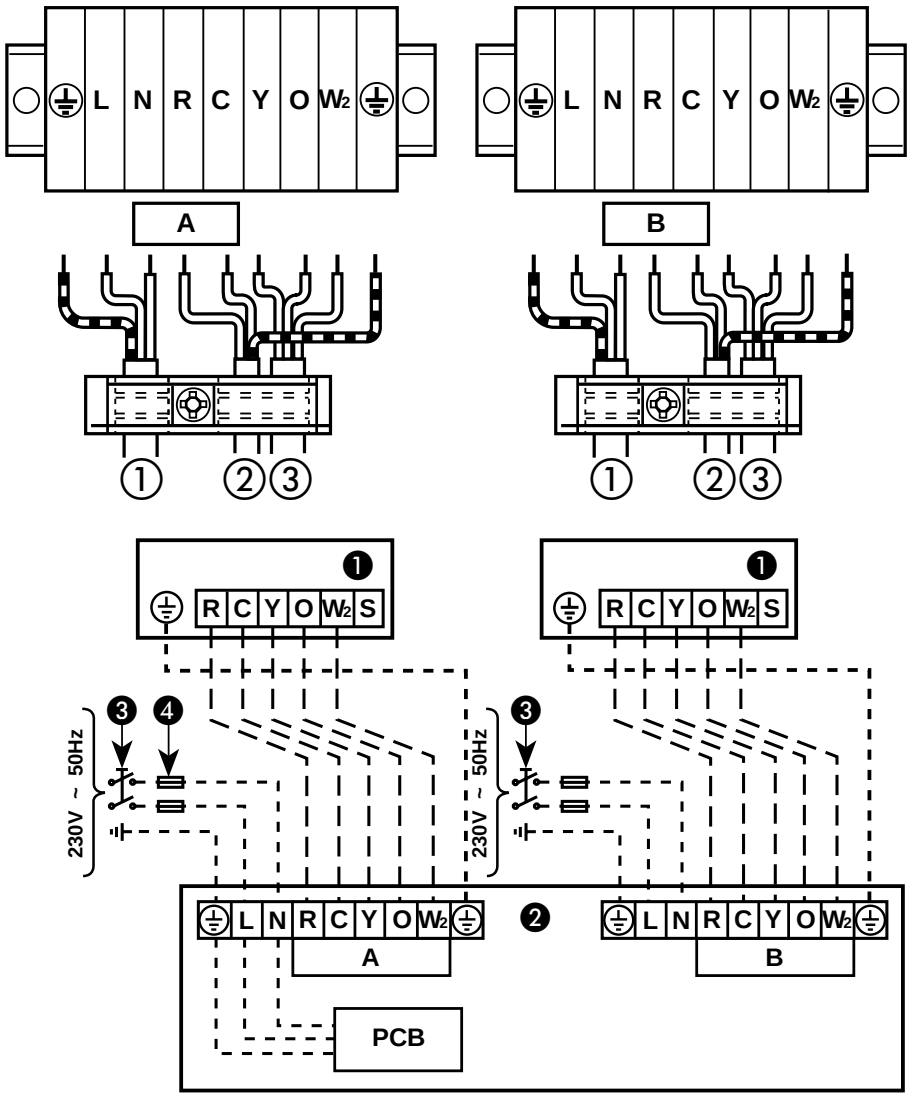
Terminal box legend

- ⏚ Earth
- **L** Live power supply
- **N** Neutral power supply
- **R** Live connection indoor/outdoor unit
- **C** Neutral connection indoor/outdoor unit
- **Y** Compressor interlocking contact
- **O** Reversing valve control (Heat pump only)
- **W2** Outdoor fan signal (Heat pump only)



① Mains supply connecting cable (field wiring)
② Connecting cable Outdoor unit – Indoor unit (R - C - ⏚) - (field wiring)
③ Connecting cable Outdoor unit – Indoor unit (Y - O - W_2) - (field wiring)
❶ Indoor unit
❷ Outdoor unit
❸ Main switch
❹ Time-delay fuse or circuit breaker (see table V "Electrical data")

Mod. 38YY(S)2M36G - 38YY(S)2M48G



WARNING!

The system power supply must always be made through the outdoor unit by means of two independent mains power supplies.

If the indoor units are provided with heaters, their power supply must be ensured by indoor sections.

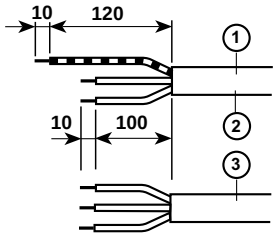
Indoor units which are connected to the heat pump units need the "Multisplit" configuration by remote controller.

The two heat pump circuits can operate simultaneously only in the same mode (all circuits operating in the Cooling or Heating mode).

The system will not operate if circuit "A" is not energized.

Terminal box legend

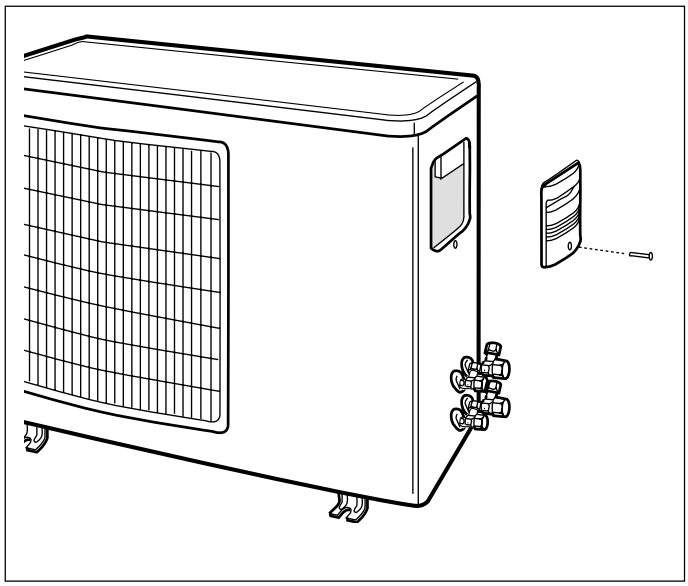
⏚	Earth
L	Live power supply
N	Neutral power supply
R	Live connection indoor/outdoor unit
C	Neutral connection indoor/outdoor unit
Y	Compressor interlocking contact
PCB	External electronic card
O	Reversing valve control (Heat pump only)
W2	Outdoor fan signal (Heat pump only)



① Mains supply connecting cable (field wiring)
② Connecting cable Outdoor unit – Indoor unit (R - C - ⏚) - (field wiring)
③ Connecting cable Outdoor unit – Indoor unit (Y - O - W_2) - (field wiring)
❶ Indoor unit
❷ Outdoor unit
❸ Main switch
❹ Time-delay fuse or circuit breaker (see table V "Electrical data")

38GL_M…G / 38YY(S)_M…G R-410A

Electrical connections and electrical data



Remove electric box cover.
Connect the wires to the terminals according to the wiring diagram and firmly tighten.

IMPORTANT:
Make ground connection prior to any other electrical connections.

- Make electrical connections between units prior to proceeding to mains supply unit connection.
- Before proceeding with the unit connection to the mains supply locate live **L** and neutral **N**, then make connections as shown in the wiring diagram.
- According to the installation instructions, the disconnecting switches from the mains power supply should have a contact gap (4 mm) such that total disconnection can be ensured under the conditions provided for by overvoltage class III.
- The mains supply indoor unit – outdoor unit connecting cable must be H07 RN-F (60245IEC66), type synthetic rubber insulation with neoprene coating.
- **Make certain the refrigerant pipes and the electrical connection lines between the indoor unit and the outdoor unit have the same colours and reference codes (A, A1, A2, B, B1, B2) using the special adhesive references supplied.**

Note:
All field electrical connections are the responsibility of the installer.

Note:
After connections have been completed, replace electric box cover.

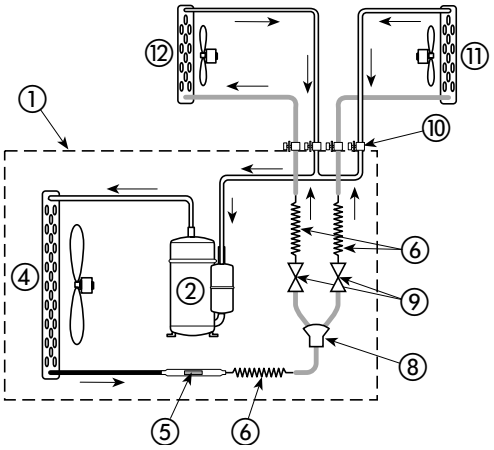
Table V: Electrical data

	Starting current (3)	Power input (2)								Main power connections (5)		Indoor/Outdoor unit connections Wire size (4-5)					
		Cooling				Heating											
		Nominal conditions 230V ~ 50Hz PrEN14511-5 indoor 27°C d.b. 19°C w.b. outdoor 35°C d.b. 24°C w.b.		Peak conditions 198V ~ 50Hz PrEN14511-5 indoor 32°C d.b. 23°C w.b. outdoor 43°C d.b. 32°C w.b.		Nominal conditions 230V ~ 50Hz PrEN14511-5 indoor 27°C d.b. 19°C w.b. outdoor 35°C d.b. 24°C w.b.		Peak conditions 198V ~ 50Hz PrEN14511-5 indoor 27°C outdoor 24°C d.b. 18°C w.b.		Time-delay fuse gL type	Wire size (4-5)	⏚	R	C	Y	O	W_2
Cooling only	**A**	**A**	**W**	**A**	**W**	**A**	**W**	**A**	**W**	**A**	**mm²**	**mm²**					
38GL2M12G	30	6.6	1460	9.5	1850	---	---	---	---	16	2.5	1.0	1.0	1.0	1.0	---	---
38GL2M18G	30	9.0	2040	11.7	2500	---	---	---	---	20	2.5	1.0	1.0	1.0	1.0	---	---
38GL2M24G	30	10.9	2560	16.4	3250	---	---	---	---	25	2.5	1.0	1.0	1.0	1.0	---	---
38GL3M21G	30	10.8	2450	16.3	3180	---	---	---	---	25	2.5	1.0	1.0	1.0	1.0	---	---
38GL3M30G (7)	30	5.8	1310	8.3	1600	---	---	---	---	16	2.5	1.0	1.0	1.0	1.0	---	
38GL3M30G (8)	50	9.0	2020	12.4	2420	---	---	---	---	20	2.5	1.0	1.0	1.0	1.0	---	
38GL4M24G	30	11.3	2580	16.6	3230	---	---	---	---	25	2.5	1.0	1.0	1.0	1.0	---	---
38GL2M36G(7)	50	8.7	2000	12.1	2410	---	---	---	---	20	2.5	1.0	1.0	1.0	1.0	---	---
38GL2M48G(7)	60	11.0	2430	15.3	3000	---	---	---	---	25	2.5	1.0	1.0	1.0	1.0	---	---
Heat pump	**A**	**A**	**W**	**A**	**W**	**A**	**W**	**A**	**W**	**A**	**mm²**	**mm²**					
38YY2M18G	50	8.5	1920	11.7	2300	7.9	1810	10.5	2060	20	2.5	1.0	1.0	1.0	1.0	1.0	1.0
38YY2M21G	55	9.5	2180	14.2	2760	10.1	2280	15.0	2880	25	2.5	1.0	1.0	1.0	1.0	1.0	1.0
38YY2M24G	60	10.6	2470	15.9	3140	10.5	2410	15.7	3060	25	2.5	1.0	1.0	1.0	1.0	1.0	1.0
38YY(S)2M36G (6)	50	8.3	1920	11.7	2370	8.0	1830	11.7	2300	20	2.5	1.0	1.0	1.0	1.0	1.0	1.0
38YY(S)2M48G (6)	60	10.6	2320	12.5	2730	12.5	2780	14.6	2810	25	2.5	1.0	1.0	1.0	1.0	1.0	1.0

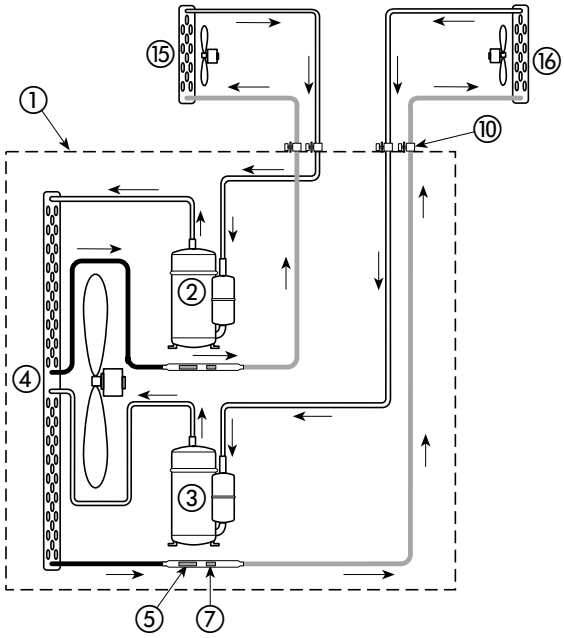
Notes:
1. **Unit is suitable for outdoor installation.**
2. Data referred to the outdoor unit only.
3. Starting current duration is usually lower than 1 sec.
4. The section of the cables refers to cables with a maximum length of 15 metres.
5. The mains supply indoor unit – outdoor unit connecting cable must be H07 RN-F (60245IEC66), type synthetic rubber insulation with neoprene coating.
6. If the indoor unit is provided with an electric heater, consult indoor unit installation manual for correct sizing of the wires.
7. Electrical input refer to each one of the two mains supplies.
8. Circuit A1 - A2
9. Circuit B

Refrigerant charge control

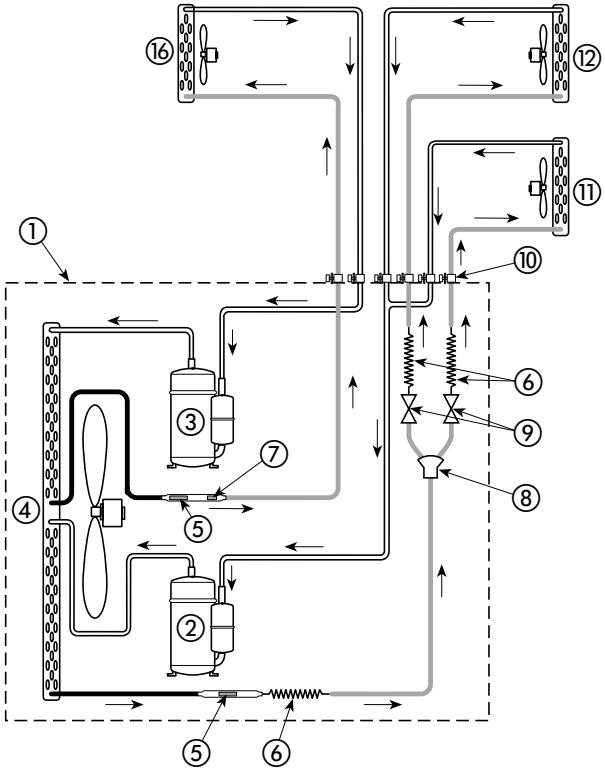
38GL2M12G



38GL2M18G - 38GL2M24G - 38GL2M36G - 38GL2M48G



38GL3M21G - 38GL3M30G



① Outdoor unit
② Circuit A compressor
③ Circuit B compressor
④ Outdoor unit coil
⑤ Filter
⑥ Expansion device (Capillary)
⑦ Expansion device (Accurater)
⑧ Distributor
⑨ Solenoid valve
⑩ Service valve
⑪ Indoor unit coil A1
⑫ Indoor unit coil A2
⑬ Indoor unit coil B1
⑭ Indoor unit coilB2
⑮ Indoor unit coil A
⑯ Indoor unit coil B

Gas
Liquid + Gas
Liquid

Pump Down

Pump down is an operation intended to collect all the system refrigerant in the outdoor unit.
This operation must be carried out before disconnecting the refrigerant tubing in order to avoid refrigerant loss to the atmosphere, if it becomes necessary to disconnect the refrigerant connections for unit repair, removal or disposal; in this case, after removal, unit must be delivered to an appropriate disposal centre or the original dealer.

Shut off the liquid valve with the Allen wrench.
Turn the system on in cooling with fan operating at high velocity. (Compressor will immediately start, provided 3 minutes have elapsed since the last stop).
After 2 minutes of operation, shut the suction valve with the same wrench.
Turn the system off and switch mains supply off.
Disconnect tubing.
After disconnection, protect valves and tubing ends from dust.

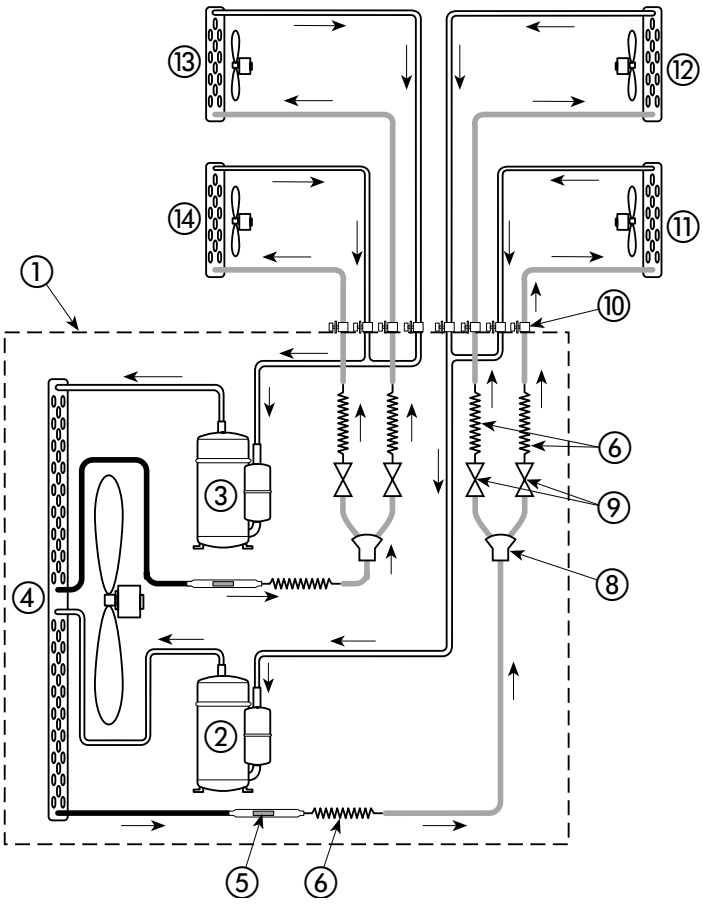
Check the refrigerant charge

- This check becomes necessary after any refrigerant leak due to incorrect connection, or after replacement of the compressor.
- The best method to correctly charge refrigerant is to completely empty the refrigerant circuit using refrigerant recovery equipment.
  Then charge the exact quantity of refrigerant according to the data shown on the unit nameplate, using a balance
  (see page 8).
- **R-410A refrigerant cylinders contain a dip tube which allows liquid refrigerant to flow from the cylinder in an upright position.**
  Charge R-410A units with cylinder in upright position and a commercial-type metering device in manifold hose in order to vaporize the liquid refrigerant before it enters in the unit.
  Charge refrigerant into suction-line.

Check the refrigerant charge

Refrigerant charge control

38GL4M24G



① Outdoor unit
② Circuit A compressor
③ Circuit B compressor
④ Outdoor unit coil
⑤ Filter
⑥ Expansion device (Capillary)
⑦ Expansion device (Accurater)
⑧ Distributor
⑨ Solenoid valve
⑩ Service valve
⑪ Indoor unit coil A1
⑫ Indoor unit coil A2
⑬ Indoor unit coil B1
⑭ Indoor unit coilB2
⑮ Indoor unit coil A
⑯ Indoor unit coil B

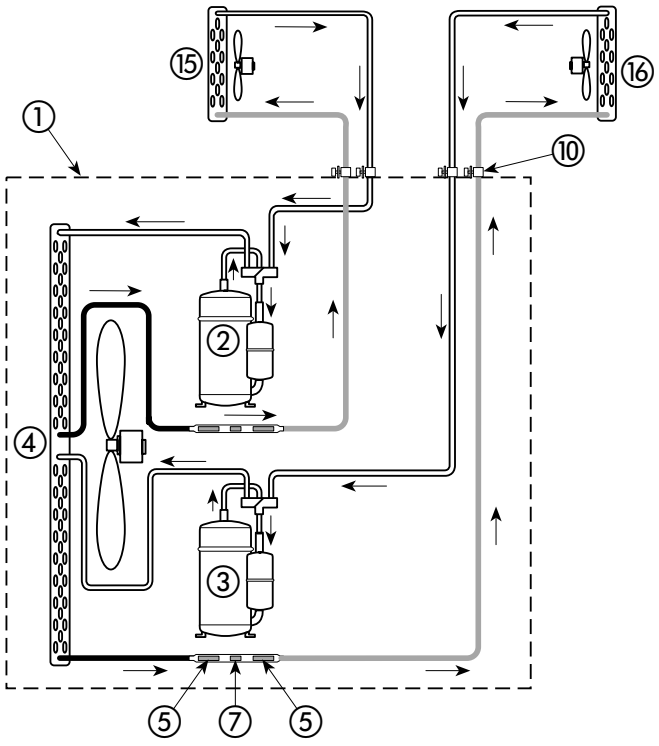
Gas

Liquid + Gas

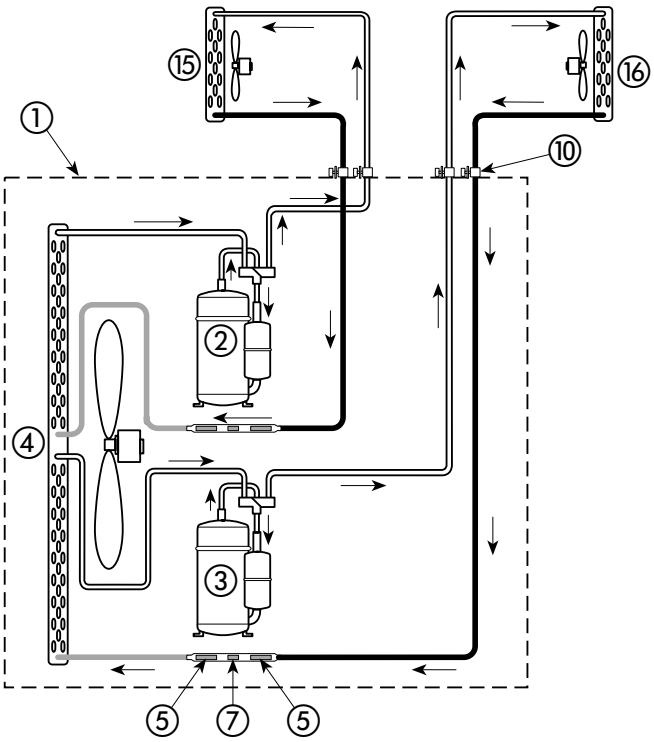
Liquid

Heat pump unit

Cooling cycle mod. 38YY - 38YY(S)



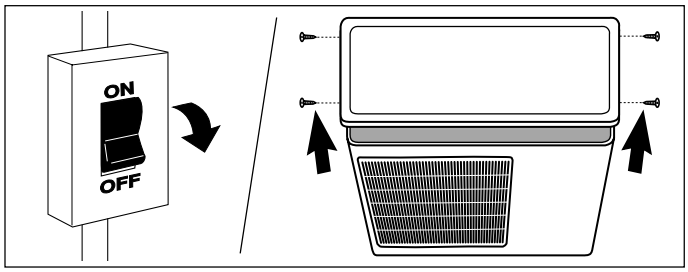
Heating cycle mod. 38YY - 38YY(S)



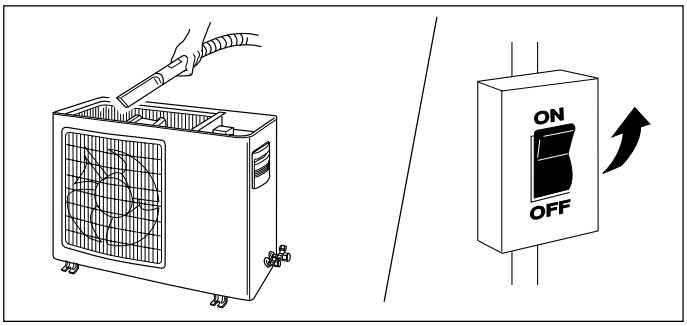
Unit maintenance

The following maintenance operations must be carried out by qualified personnel.

Cleaning the coil
When necessary, proceed as follows for more careful cleaning of the coil:



Switch the mains supply OFF.
Remove unit top cover by losening holding screws and lifting the cover.



Carefully clean the coil with a vacuum cleaner from inside to outside.
With the same vacuum cleaner, dust the inside of the fan compartment and the fan blades. Avoid any damage to the blades which may cause future vibrations and noise.

Replace the unit cover and tighten the screws.

If the unit is started for the first time after a long period during which it has been disconnected from the mains power supply (for heat pump units only).
Energize the system by pressing the main switch, but do not start the system (the remote controller must be in the OFF position).
Do not de-energize the unit during the operating season.

Troubleshooting

Before starting troubleshooting check the correct operation of all fuses installed on the electronic cards (if any).

Compressor and fan of the outdoor unit do not start:
- Unit is not energized; check the mains power connections.
- Main switch OFF; check and put to the ON position.
- Main switch fuses have blown; replace.
- Wait for 3 minutes; compressor cycling protection is on.
- Accessory pressure switch open; check and eliminate cause.
- Mains voltage too low.
- Electrical connections loose or wrong; check and repair.

Compressor will not start, but outdoor fan is running:
- Electrical connections of compressor loose or wrong; check and repair.
- Compressor burnt out, seized or protection device on; check for the cause and replace compressor if necessary.
- Faulty run capacitor for the single-phase models; replace it.

Compressor starts, but stops due to its overtemperature protection (other than stops caused by the normal operation of the thermostat):
- Wrong refrigerant charge (excessive or low) or air or other non condensable gases in the circuit; drain refrigerant (see note 1), evacuate and recharge.
- Mains voltage wrong (too high or too low).
- Condenser coil obstructed; remove obstructions.
- Outdoor fan off; check cause and repair.
- Run capacitor faulty; check and replace.
- Refrigerant circuit clogged; check and remove obstructions.
- Faulty reversing valve; replace it.
- Expansion device clogged or covered with ice; drain refrigerant (see note 1), evacuate and recharge.

Compressor runs continuously:
- Unit selected too small for actual air conditioning needs.
- Indoor temperature selection too low (cooling) or too high (heat pump heating); check temperature selection.
- Refrigerant charge low; check and add refrigerant.
- Condenser fan faulty; replace.
- Air or other non condensable gases in the circuit; drain refrigerant (see note 1), evacuate and recharge.
- Obstructions at air intake or dirty indoor unit filters; remove obstruction or clean filter.

Ice on the outdoor coil (heat pump heating):
- Outdoor fan is off; check for cause and repair.
- Wrong electrical connection between indoor and outdoor units; check and repair the electric connections.
- Check the correct positioning and connection of the outdoor coil sensors.

Discharge pressure too high:
- Outdoor coil dirty or obstructed; clean or remove obstructions.
- Condenser fan faulty; replace.
- Refrigerant charge too high; drain some refrigerant (see note 1).
- Air or other non-condensable gases in the circuit; drain refrigerant (see note 1), evacuate and recharge.

Discharge pressure too low:
- Refrigerant charge too low; add refrigerant.
- Outdoor coil dirty or obstructed; clean or remove obstructions.
- Indoor unit air filter dirty; clean filter.

Suction pressure too high:
- Refrigerant charge too high; drain some refrigerant (see note 1).
- Internal high pressure relief valve open; check for cause and repair.

Suction pressure too low:
- Refrigerant charge too low; add refrigerant.
- Evaporator coil covered with ice; see the following points.
- Air circulation on the evaporator unit not sufficient; check for the cause and repair.
- Expansion device or suction line clogged: check and repair.
- Outdoor unit fan does not stop during defrosting (heat pump heating); check the connections.

Outdoor fan motor runs always at low speed:
- The cable is not connected to the card; check connections between the temperature sensor and the card.
- Faulty temperature sensor; replace the sensor.
- Faulty electronic card; replace it.

Outdoor fan motor runs always at high speed:
- Short-circuited temperature sensor; replace the sensor.
- Faulty electronic card; replace it.

Outdoor fan does off or starts and stops due to its overtemperature protection:
- Faulty fan motor capacitor; replace it.
- Electrical connections to the fan motor are loose; check and tighten connections.
- Fan motor burnt-out; replace it.
- Fan motor bearings seized; check for cause and repair.
- Expansion device clogged or covered with ice; drain refrigerant (see note 1), evacuate and recharge.

Note 1:
Do not release refrigerant to the atmosphere; use refrigerant recovery equipment.

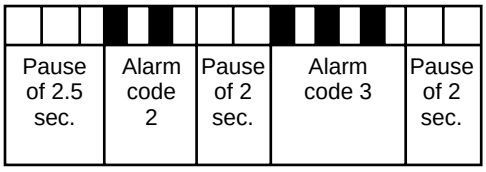
Diagnostics

The electronic control made on the unit ensures continuous monitoring of the unit operation and in case of wrong operation an alarm is generated. This alarm is signalled by the red LED (D6), which the electronic card is provided with. Moreover, an alarm log is stored into the electronic card memory, and it will be identified by a code. The memory contains a maximum of 6 alarms. Dip Switch 4 OFF[1] (S1): if no alarm is generated, the red LED blinks to indicate normal operation (1 second ON and 1 second OFF). In the event of an alarm, the red LED OFF blinks for 2.5 sec. and then for a number of times equal to the number of the alarm code, for 0.5 seconds ON and for 0.5 seconds OFF. The code sequence is followed by 2 seconds during which the LED is OFF. When the last alarm is coded the alarm sequence will start from the first alarm being detected.
The diagnostics indicates the detected alarms but not their number. Dip Switch 4 ON (S1): the log of the alarms contained in the memory is signalled by the red LED that blinks as many times as the alarm code number. If no alarms are detected, the code being signalled is "1". There follows a list describing the possible cause of each alarm code:

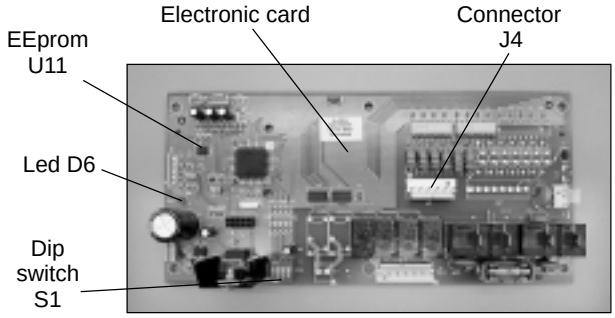
Alarm code	Description	Action	Alarm reset mode	Possible cause
1	No alarm stored.	No action	Automatic	No cause
2	Faulty outdoor air temperature sensor.	Unit is stopped	Automatic	Sensor is out-of-scale, or not connected to the card, sensor wires are cut or sensor is faulty.
3	Circuit "A" coil temperature sensor is faulty.	Unit is stopped	Automatic	Sensor is out-of-scale, or not connected to the card, sensor wires are cut or sensor is faulty.
4	Circuit "B" coil temperature sensor is faulty.	Unit is stopped	Automatic	Sensor is out-of-scale, or not connected to the card, sensor wires are cut or sensor is faulty.
5	Parameter diagnostics	Unit is stopped	Automatic	EEprom "U11" is faulty or wrongly installed on the card. Card end of line test aborted.
6	Wrong input signal	Unit is stopped	Automatic	Cables Y-O-W2 reversed on the connection terminal block or on the "J4" card. Indoor units not configured as multisplit units.

[1] Position selected at the factory.

Example of alarm code 2 followed by alarm code 3:



Led off Led on



WARNING: By passing Dip Witch 4 (S1) from the ON to the OFF position for three times in 5 seconds, the alarm log is cancelled. At the end of this operation, put the Dip Switch 4 (S1) in the OFF position.

Testing

- To operate testing follow the instructions contained in the indoor units installation manual.
- For multisplit systems testing can be carried out only if made on one circuit at a time.

Table VI: Accessories

Description	Part number	38GL_M...G								38YY-M...G	
		2M12G	2M18G	2M24G	2M36G	2M48G	3M21G	3M30G	4M24G	2M18G	2M24G
Wall bracket kit	38YL-900---002-40	●									
Wall bracket kit	38YL-900---001-40		●	●						●	●
PTC starting kit	38YL-900---010-40	●(1)	●(2)	●(2)			●(2)	●(1)	●(2)		
Low temperature kit	38GLX9001		●(1)	●(1)							
Low temperature kit	38GLX9002	●(1)									
Low temperature kit	38GLX9004				●(2)	●(2)		●(1)	●(1)		

(**1**): 1 part - (**2**): two parts

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