

1 SPECIFICATION OF SUPPLY

The RT_ Links are gas powered (natural gas or LPG) heating/cooling sets, to supply hot and/or chilled water. Each group consists of a certain number of individual gas powered modules/heating/cooling appliances (GAHP/GA/AY units). The set of appliances and components is preassembled at the factory, forming a complete hydronic group already predisposed to be simply connected to the system.

1.1 APPLICATION

Each preassembled group according to its configuration (RTAR, RTCF, RTY, RTAY, RTYR, RTA, ... Link) is able to simultaneously or alternatively deliver heating, cooling, DHW production and heat recovery, according to the needs of each single installation, with a significantly extensive range of heating and cooling power. The various hydronic models (RTAR, RTCF, ... Link) are suitable for all heating and cooling systems operating with hot and/or chilled water, with common terminals (e.g. radiators, fan coils, radiant panels, fan heaters, air handling units, DHW production boilers, pool heat exchangers...), including process plants (industrial heat exchangers).

1.2 COMPOSITION (GAHP/GA/AY MODULES)

The gas heating/cooling modules that make up a Link RT_ can be:

- GAHP units, A/AR/GS/WS versions, absorption heat pumps;
- GAHP units, A/AR/GS/WS versions, absorption chillers;
- AY unit, condensing boiler.

distinguished in:

- aerothermal units (A, AR, ACF, HR, TK, LB);
- hydrothermal (WS) and geothermal (GS) units.

in variable number:

- from 2 to 5 in the case of GAHP/GA only
- from 2 to 8 in the case of GAHP/GA and AY

Groups with aerothermal units must be installed exclusively outside, while others may be installed either indoors or outdoors.

The aerothermal modules of RT_ Links may be in configuration:

- with standard fans (STD);
- with silenced fans (SIL or S1).

1.3 CONFIGURATIONS

- without circulators or with circulators (standard or oversize circulators);
- 2, 4 or 6 pipes, ie 1, 2 or 3 pairs of delivery/return hydraulic collectors/connections for hot and/or cold water, connected as needed.

1.4 SPECIFICATION OF SUPPLY

The specifications sheets of the individual units making up the preassembled group are set out in Section B, divided by product. The preassembled group composition is available:

- on the online configurator (from the portal Robur);
- in the documentation supplied with the commercial offer;
- on demand from the presale service or sales network.

The composition of the preassembled group is identified by its code, as detailed in Paragraph 1.7 p. 1.



To be specified in drawing up the chapter

- The preassembled group composition;
- The detail of any versions of the units making up the group,

if several versions are available;

- The circulating pump configuration (included or not, standard or oversized type);
- For aerothermal preassembled groups, the choice of standard or silenced fans (SIL or S1).

1.5 MANUFACTURING FEATURES

Each preassembled group, in addition to the GAHP/GA/AY heating/cooling modules/units gas powered, is composed of:

- delivery/return stainless steel hydraulic manifolds, insulated with rigid cups lined with aluminum sheet;
- galvanized steel gas outlet manifold;
- flexible connecting couplings of individual units to hydraulic and gas manifolds;
- condensate discharge manifold (only if A/GS/WS/AY condensing appliances are included);
- electrical panel with protection devices (2 electrical panels with more than 5-6 modules);
- bearing structure with galvanized steel sections.

Table 2.1 p. 14 shows the connection diameters for the connecting piping of the preassembled group.

1.6 CIRCULATING PUMPS

1.6.1 Preassembled groups without water circulation pumps

If the RT_ Link is without circulating pumps, at least one circulation pump must be installed on the water/primary circuit, appropriately selected and rated.

Preassembled groups with water circulation pumps

In the RT_ links already provided with circulators, each individual GAHP/GA/AY module that is part of the group has (at least) an independent single circulator.

The available head at the hydraulic connections of the preassembled group should be considered net of internal pressure drops, in the units and in the hydraulic manifolds.

The Table 2.2 p. 14 provides the minimum residual head to the nominal flow in the maximum configuration.

For more detailed flow, head and load loss data see Paragraph 2.6.2 p. 14.

1.7 CODING

Each group is encoded with a series of letters and digits that distinguish its composition and configuration. In order:

1. (3 or 4 letters) = group type (eg RTAR, RTCF, RTAY, RTA, RTY, ...), based on composing modules (GAHP A/AR/WS/GS, GA ACF/HR/TK/LB, AY00-120);
2. (2 or 3 digits) = cold power, given by the sum of the cold powers of the individual modules;
3. (2 or 3 digits) = heat power, given by the sum of the heat powers of the individual modules;
4. (_ /4 or /6) = number of pipes, ie delivery/return manifold pairs (1, 2 or 3);
5. (2 letters) = modules type;
6. (_ , S, S1) = standard or silenced fans (only for aerothermal units);
7. (MET/NAT, G25, GPL/LPG) = fuel gas (natural gas or LPG);
8. (2 or 3 letters) = nationality;
9. (2 letters) circulators (with or without) and type (standard or oversized);

10. (1 letter) predispositions, if any.

The 1.1 p. 2 table/figure exemplifies the meaning of the

encoding in detail, providing the key for reading any possible composition and configuration, starting from an example.

Figure 1.1

1	2	3	4	5	6	7	8	9	10	<-- CAMPO/FIELD
RTRH	118	312	/6	HR	S	MET/NAT	ITA	VW		<-- NOME/LINK NAME
										Predisposizione
										descrizione
										unita e/o serbatoio
										NESSUNA Predisposizione
										A
										B
										C
										D
										E
										F
										G
										J
										K
										O
										OUTDOOR GS/WS
										Configurazione
										descrizione
										senza HR
										con HR, GS, WS
										lato C/F
										lato I/II°
										SC
										CV
										CW
										NN
										VN
										VV
										VW
										WN
										WV
										WW
										Paese
										ITA
										DE
										CH
										AT
										FR
										KR
										ES
										UK
										BE
										NL
										Alimentazione
										descrizione
										Tipo gas
										MET/NAT
										G25
										GPL/LPG
										Ventilazione
										descrizione
										Motovelocità
										S o S1
										Versione
										descrizione
										Tipo Unità/Unit
										TK
										LB
										HR
										HT
										LT
										Tipo
										descrizione
										N° Tubi
										/4
										/6
										Calorie Caldo
										calorie
										UNIT/UNIT
										0
										72
										120
										133
										141
										120
										142
										128
										145
										Calorie Freddo
										calorie
										UNIT/UNIT
										60
										60
										58
										0
										A, GS, WS, AY
										Serie/Codice
										Serie/Code
										SERIE
										Codice
										Composizione
										RTAR
										RTCF
										RTY
										RTRH
										RTAH
										RTRC
										RTRC
										RTYR
										RTYH
										RTHF
										RTYF
										RTAY
										...

2 FEATURES AND TECHNICAL DATA

For the features of the individual modules/appliances (GAHP/ GA/AY units) that are part of the RT_ Link refer to Section B.

2.1 DIMENSIONS AND WEIGHTS



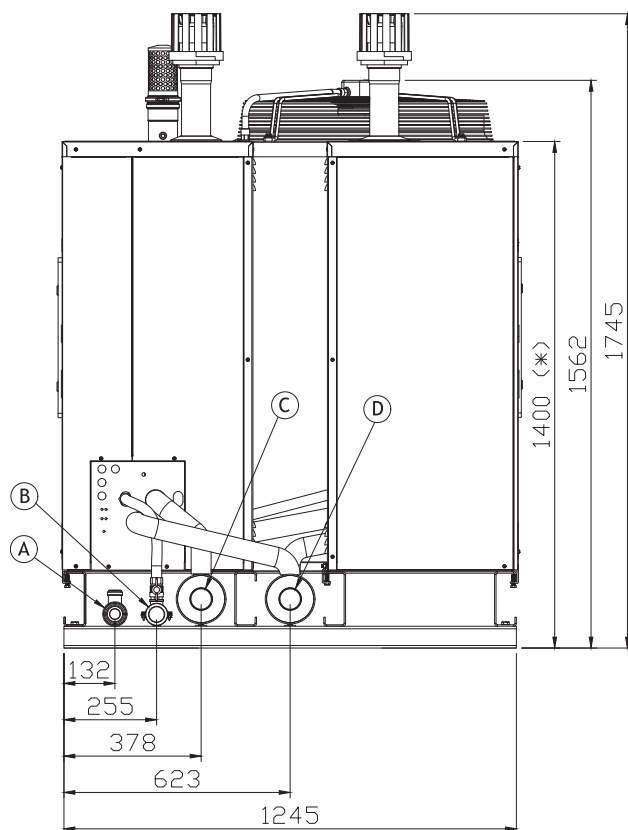
The dimensions are given for the maximum footprint configuration.



The weights are given for the maximum weight configuration.

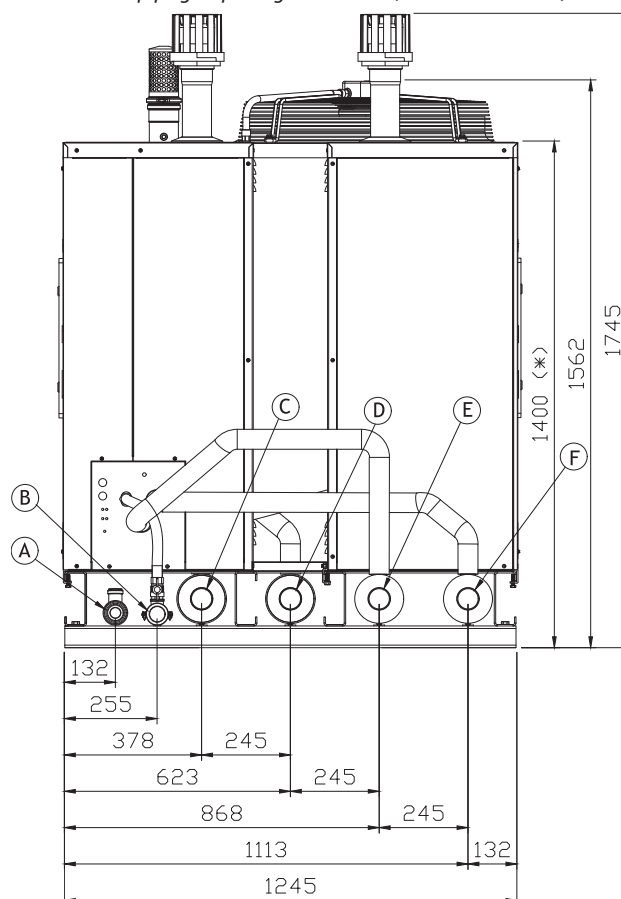
2.1.1 Hydraulic/gas connections

Figure 2.1 Water, gas and condensate discharge fittings position, for 2 pipes groups - Right side view (dimensions in mm)



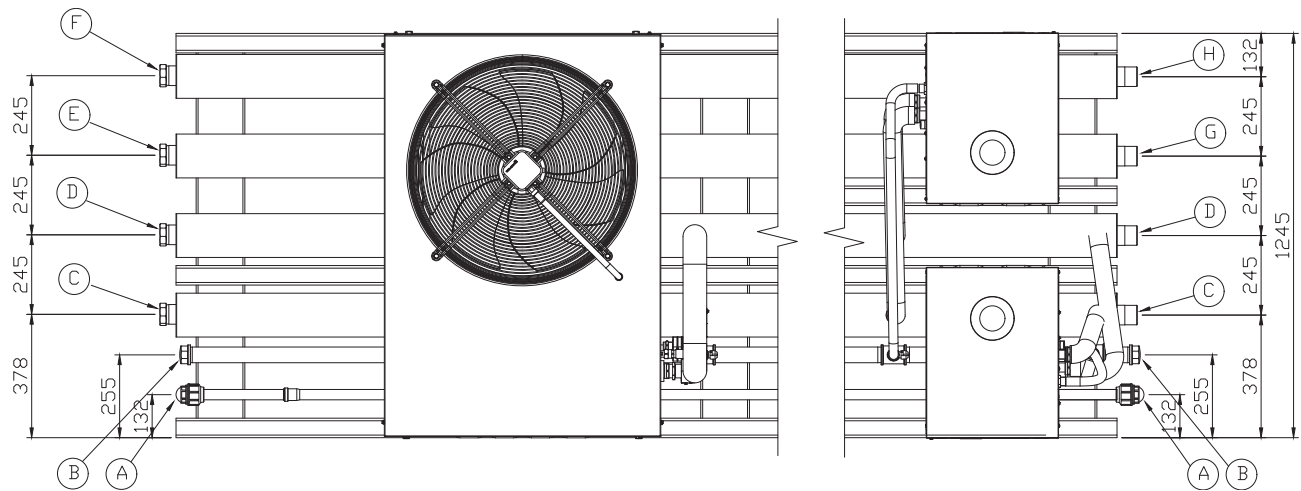
- A Condensate discharge connection [“G 1 F] (only for groups with more than one condensing unit)
- B Gas connection [“G 1 1/2 F]
- C Cold/hot water outlet [2" M]
- D Cold/hot water inlet [2" M]
- * The height of low-noise model is 1650 mm

Figure 2.2 Position of water, gas and condensate connections for 4-pipe groups - Right side view (dimensions in mm)



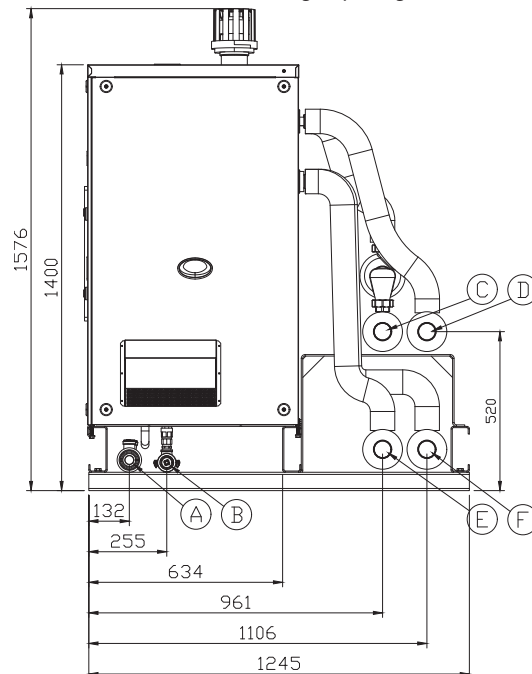
- A Condensate discharge connection [“G 1 F] (only for groups with more than one condensing unit)
- B Gas connection [“G 1 1/2 F]
- C Cold/hot water outlet [2" M]
- D Cold/hot water inlet [2" M]
- E Hot return [2" M]
- F Hot delivery [2" M]
- * The height of low-noise model is 1650 mm

Figure 2.3 Position of water, gas and condensate connections for 6-pipe groups - Top view (dimensions in mm)



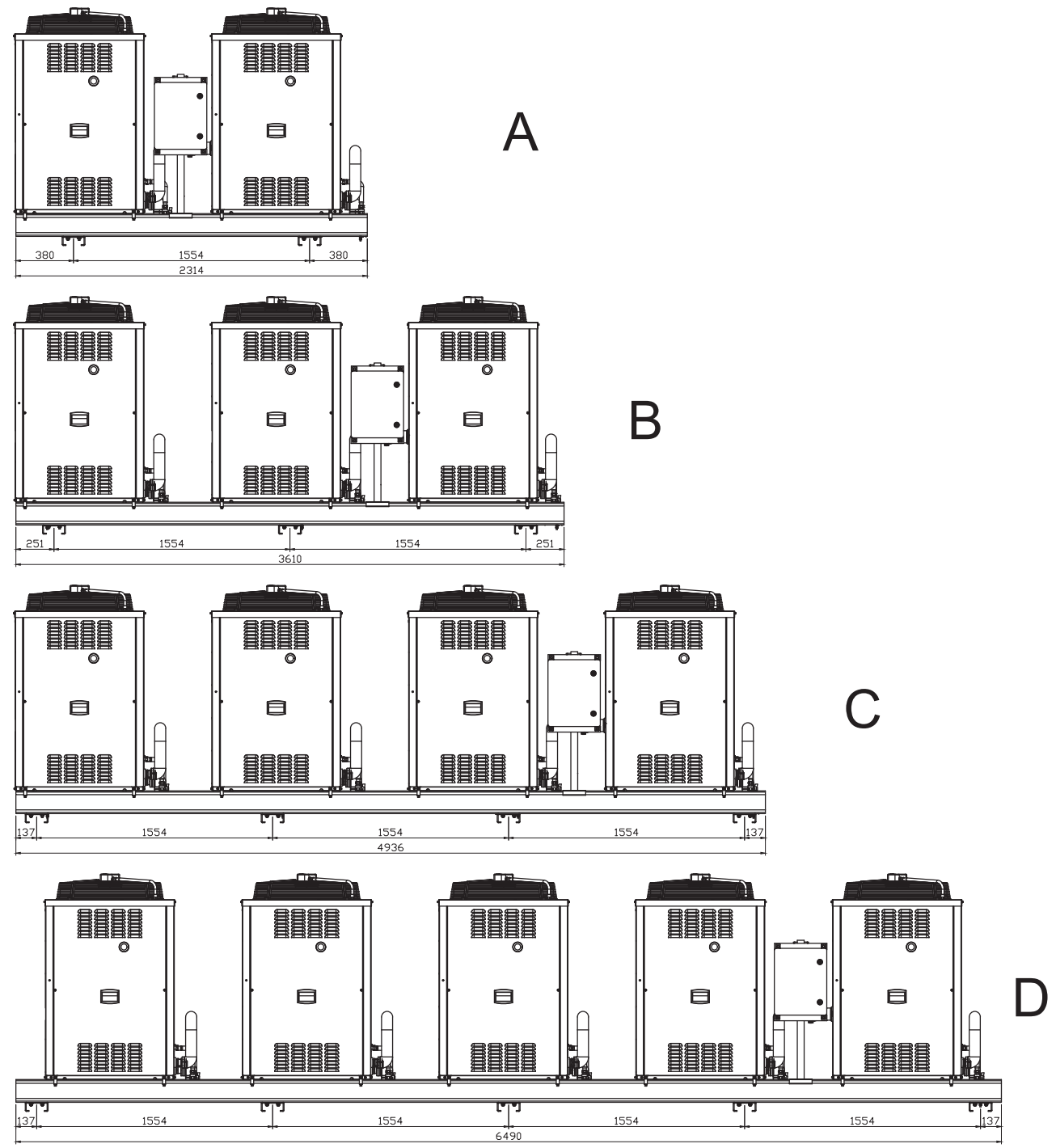
- A Condensate discharge connection ["G 1 F] (only for groups with more than one condensing unit). Sloping manifold, strictly connect on right side
- B Gas connection ["G 1 1/2 F]
- C Cold/hot water outlet [2" M]
- D Cold/hot water inlet [2" M]
- E ACF HR recovery hot delivery (only left connection) [2" M]
- F ACF HR recovery hot return (only left connection) [2" M]
- G Hot return (only right connection) [2" M]
- H Hot delivery (only right connection) [2" M]

Figure 2.4 Position of water, gas and condensate connections for RTGS/WS groups - Right side view (dimensions in mm)



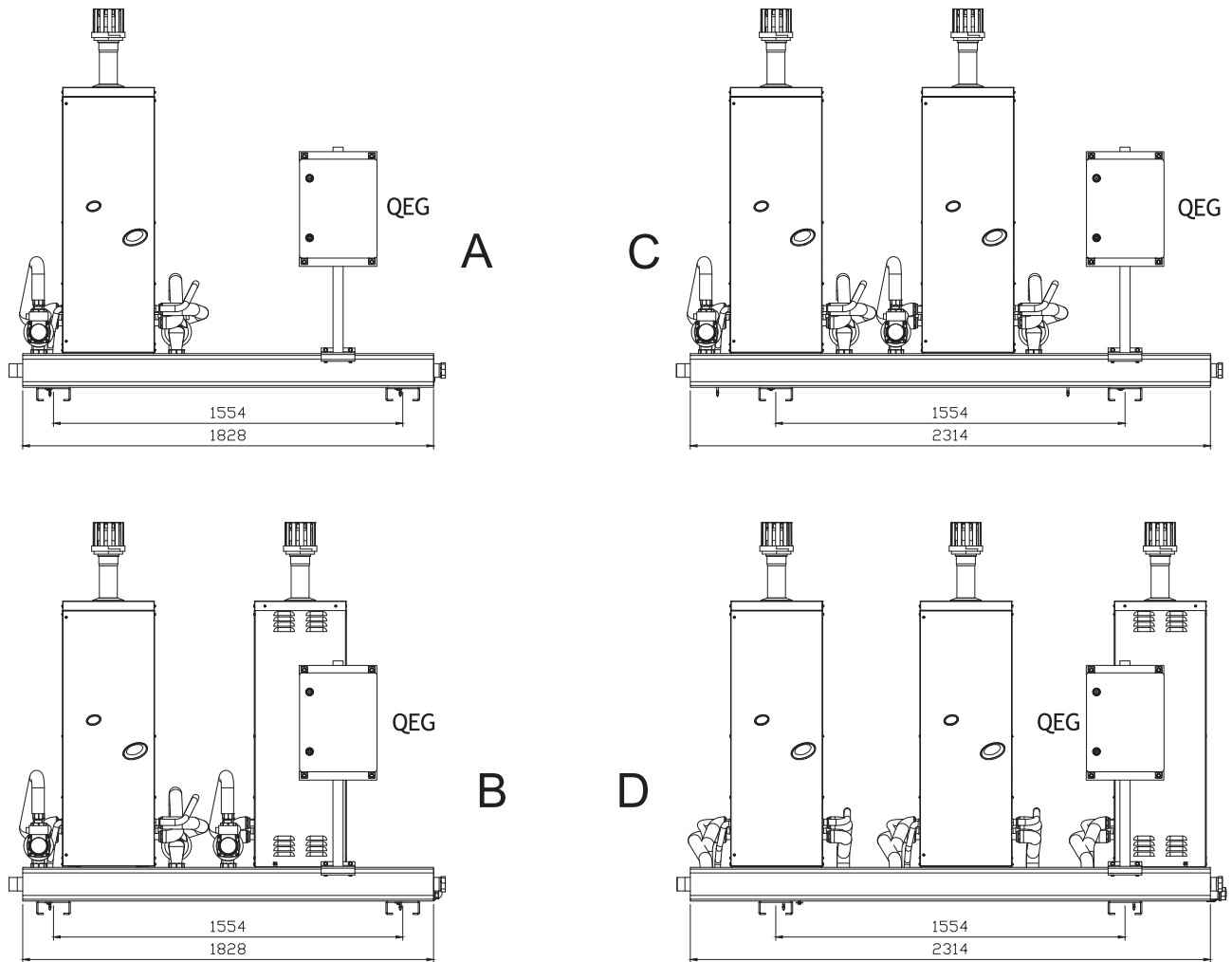
- A Condensation drain connection ["G 1 F]
- B Gas connection ["G 1 1/2 F]
- C Hot return [2" M]
- D Cold return [2" M]
- E Hot delivery [2" M]
- F Cold delivery [2" M]

Figure 2.5 Preassembled ACF/A/AR group (with 2, 3, 4 and 5 units) - Dimensions and weights of preassembled units - front view (dimensions in mm)



- A 960 kg
- B 1440 kg
- C 1920 kg
- D 2410 kg

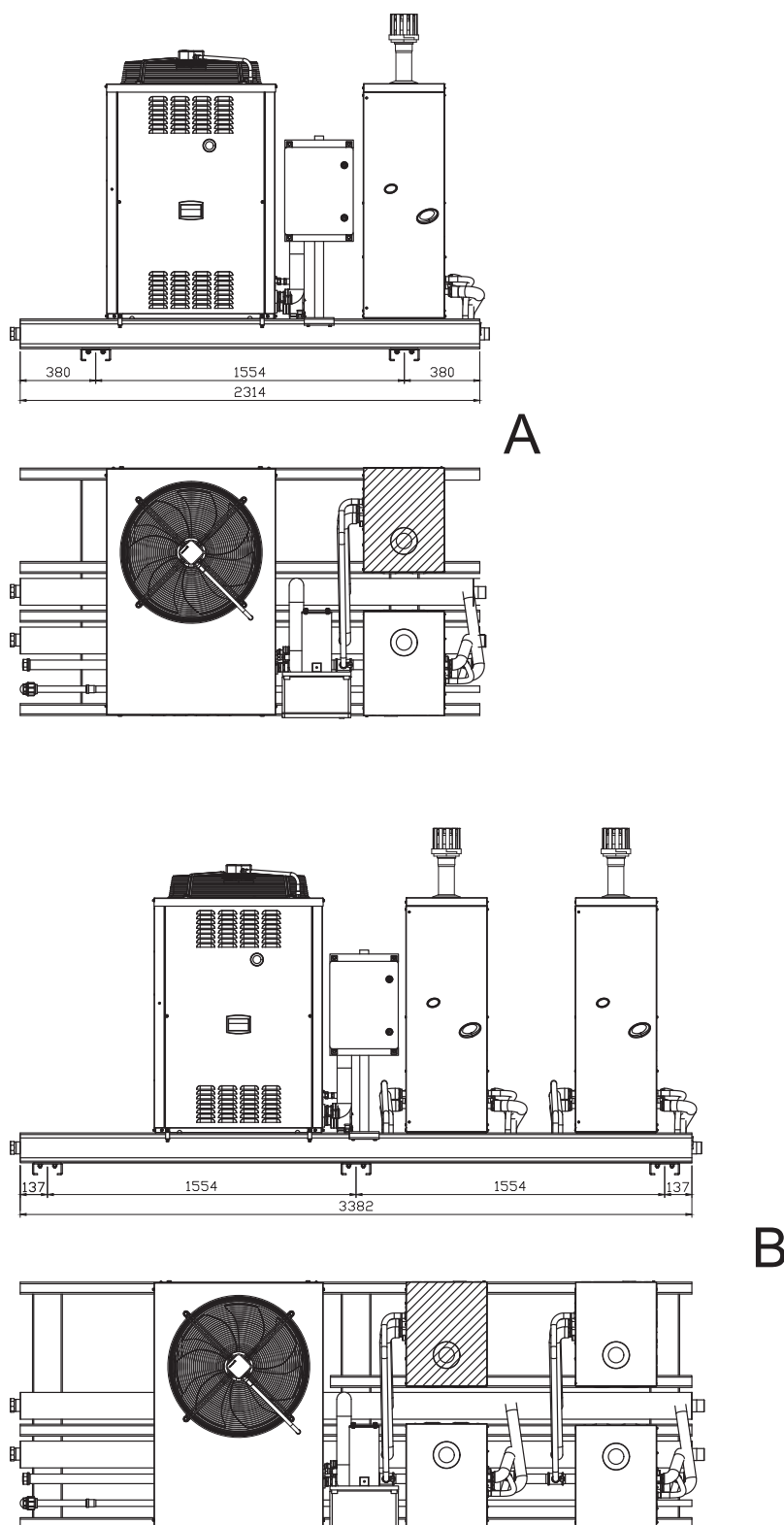
Figure 2.6 Preassembled AY group (with 2, 3, 4 and 5 units) - Dimensions and weights of preassembled groups - front view (dimensions in mm)



- A 2 AY 330 kg
- B 3 AY 450 kg
- C 4 AY 580 kg
- D 5 AY 700 kg

Note: The weight refers to links configured with oversize circulators

Figure 2.7 Preassembled ACF or A or AR + AY group (with 1+1, 1+2, 1+3, 1+4 units) - Dimensions and weights of preassembled groups - front and top view (dimensions in mm)

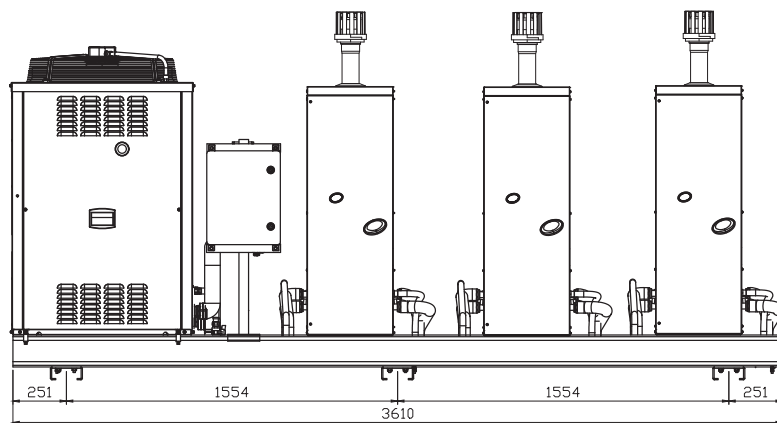


- A 1+2 790 kg (*)
 B 1+3 970 kg 1+4 1070 kg (*)
 (*) The weight refers to a 2 pipe link (silent ventilation, "S"), configured with oversize circulators

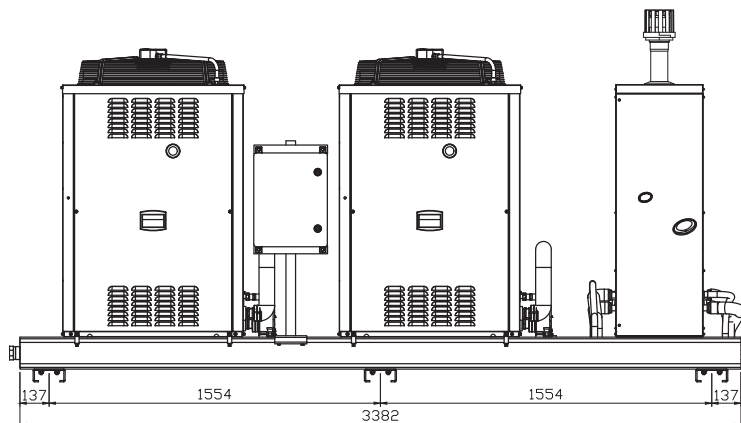
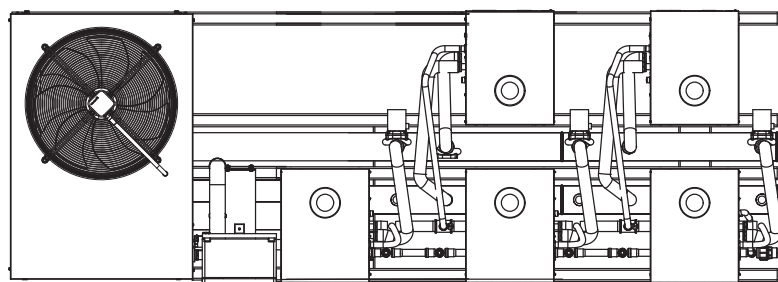


Configurations 1 GAHP/GA + 1 AY are replaced by GITIE units. Please refer to the relevant Installation, Use and Maintenance Manuals.

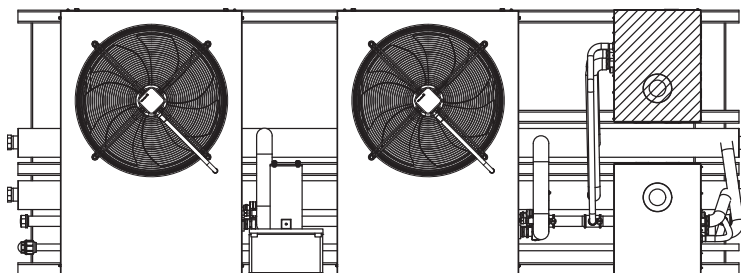
Figure 2.8 Preassembled ACF/A/AR + AY group (with 1+5, 2+1 and 2+2 units) - Dimensions and weights of preassembled groups - front and top view (dimensions in mm)



A



B



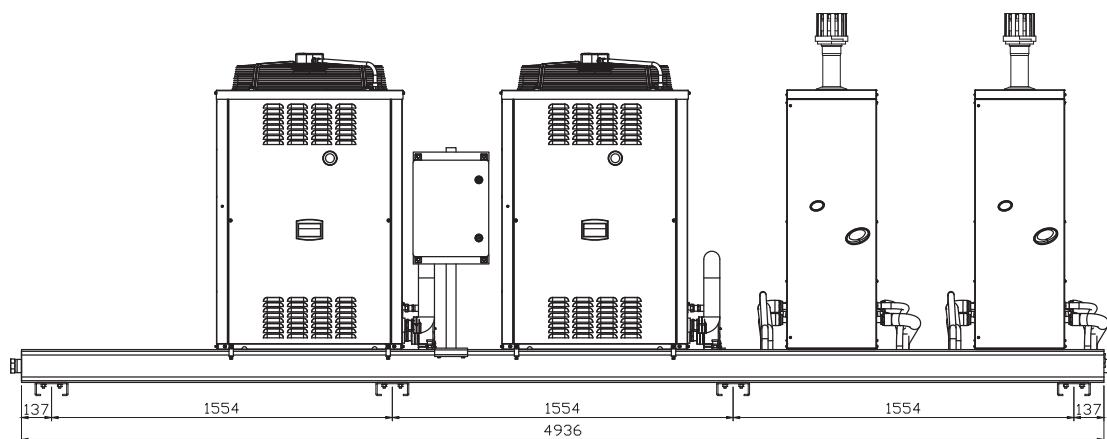
A 1+5 1210 kg (**)

B 2+1 1150 kg (*) 2+2 1270 kg (*)

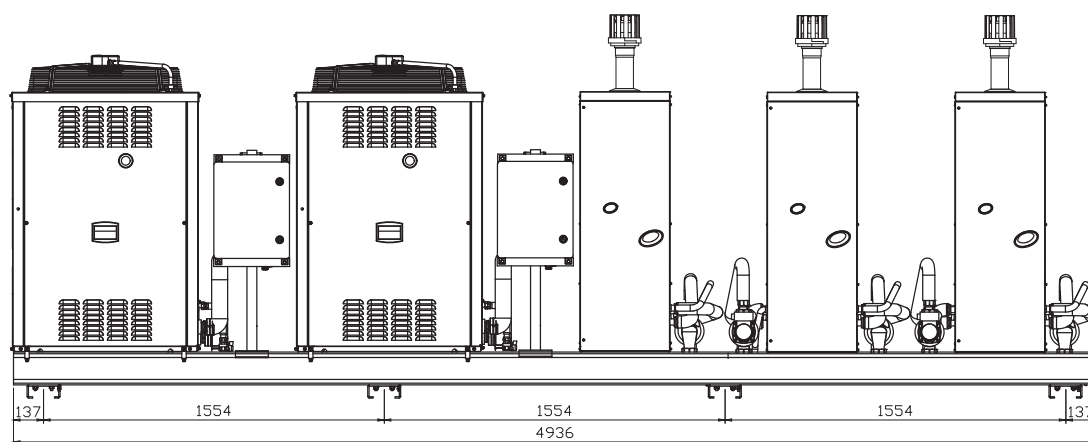
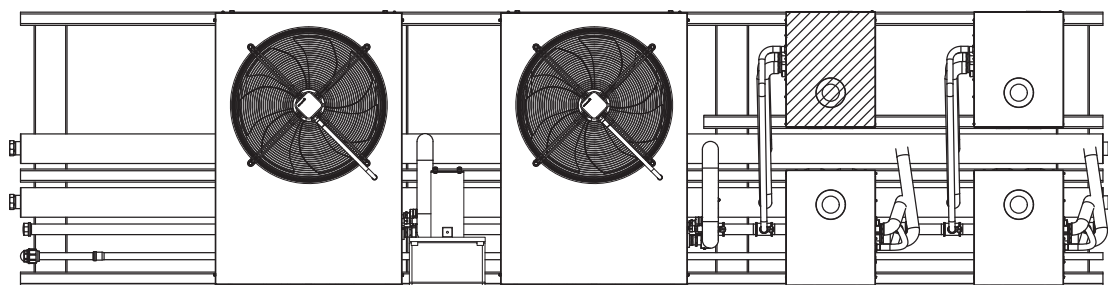
(*) The weight refers to a 2 pipe link (silent ventilation, "S"), configured with oversize circulators

(**) The weight refers to a 4 pipe link (silent ventilation, "S"), configured on both circuits with oversize circulators

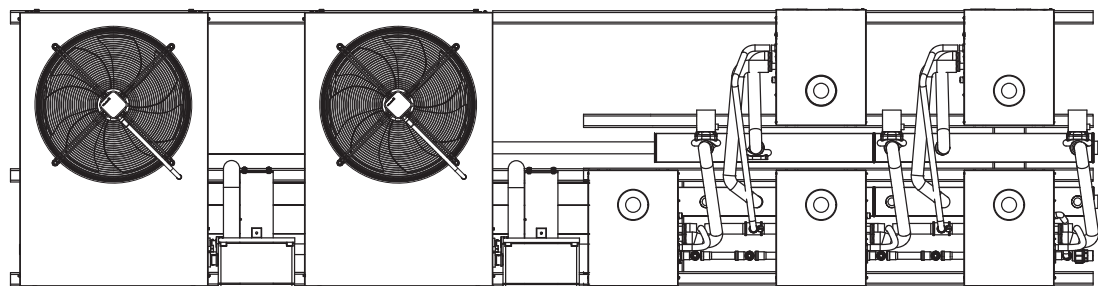
Figure 2.9 Preassembled ACF/A/AR + AY group (with 2+3, 2+4 and 2+5 units) - Dimensions and weights of preassembled groups - front and top view (dimensions in mm)



A



B



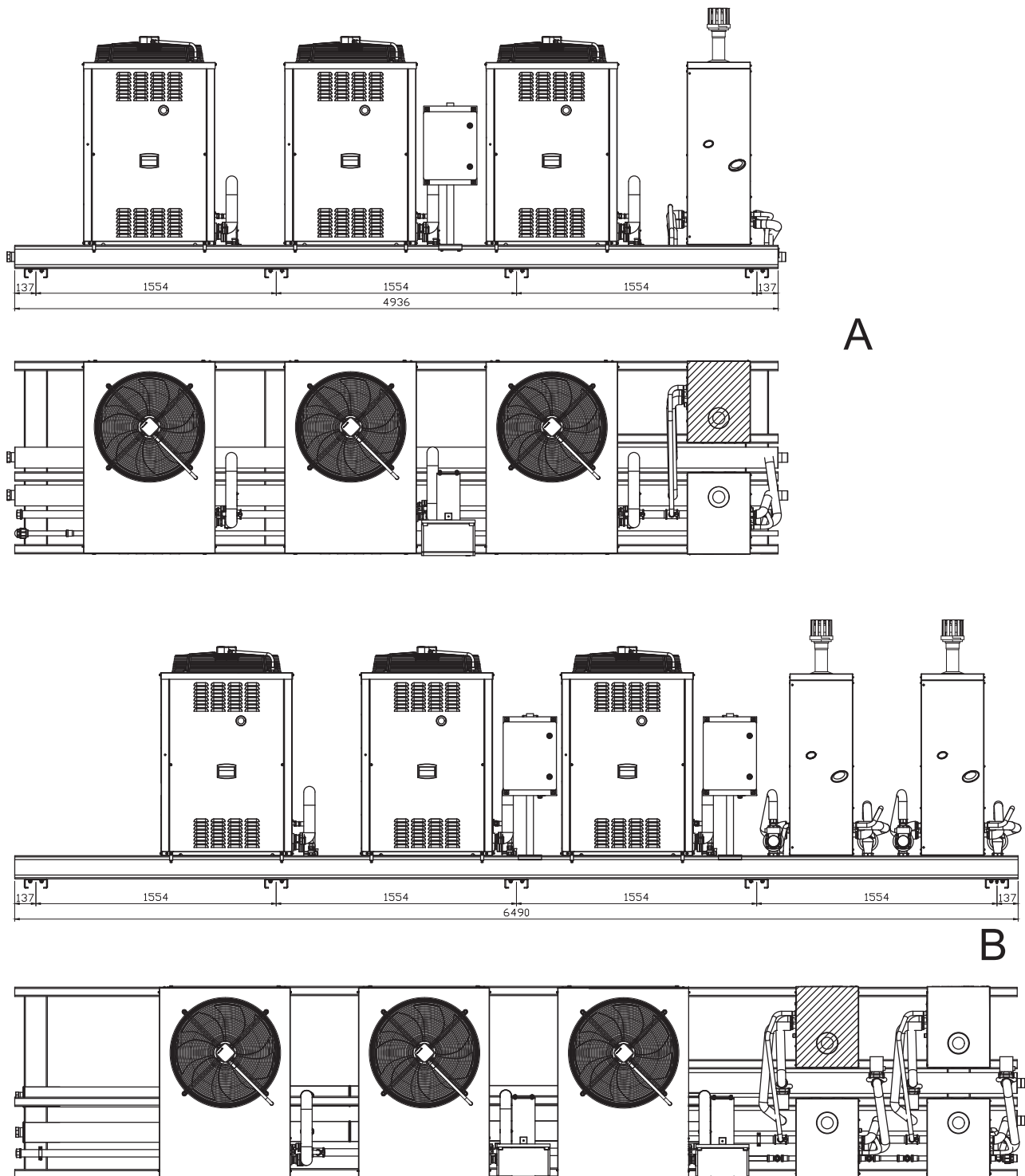
A 2+3 1460 kg (*) 2+4 1560 kg (**)

B 2+5 1700 kg (**)

(*) The weight refers to a 2 pipe link (silent ventilation, "S"), configured with oversize circulators

(**) The weight refers to a 4 pipe link (silent ventilation, "S"), configured on both circuits with oversize circulators

Figure 2.10 Preassembled ACF/A/AR + AY group (with 3+1, 3+2, 3+3 and 3+4 units) - Dimensions and weights of preassembled groups - front and top view (dimensions in mm)



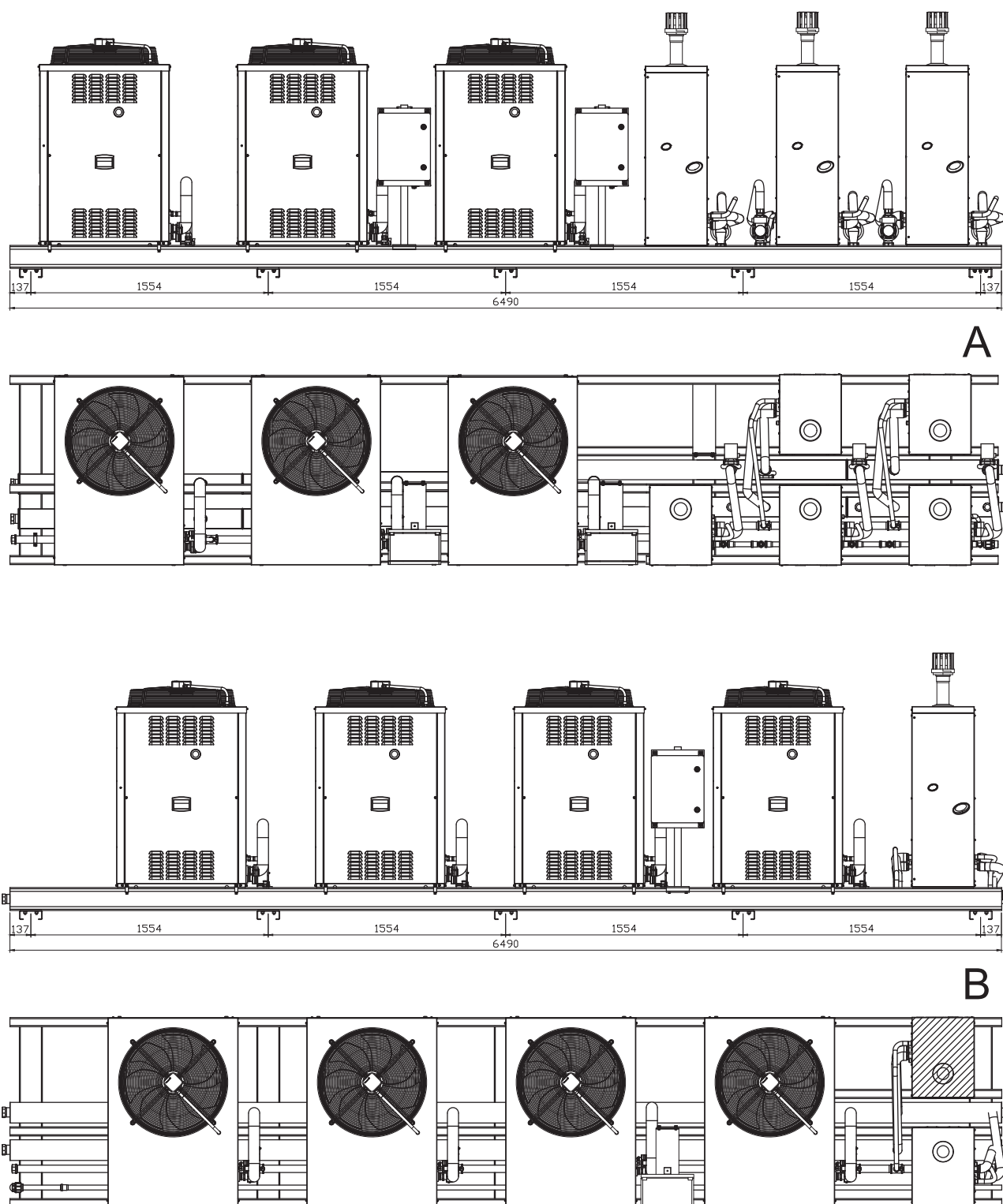
A 3+1 1630 kg (*) 3+2 1750 kg (*)

B 3+3 1880 kg (**) 3+4 2060 kg (**)

(*) The weight refers to a 2 pipe link (silent ventilation, "S"), configured with oversize circulators

(**) The weight refers to a 4 pipe link (silent ventilation, "S"), configured on both circuits with oversize circulators

Figure 2.11 Preassembled ACF/A/AR + AY group (with 3+5, 4+1 and 4+2 units) - Dimensions and weights of preassembled groups - front and top view (dimensions in mm)



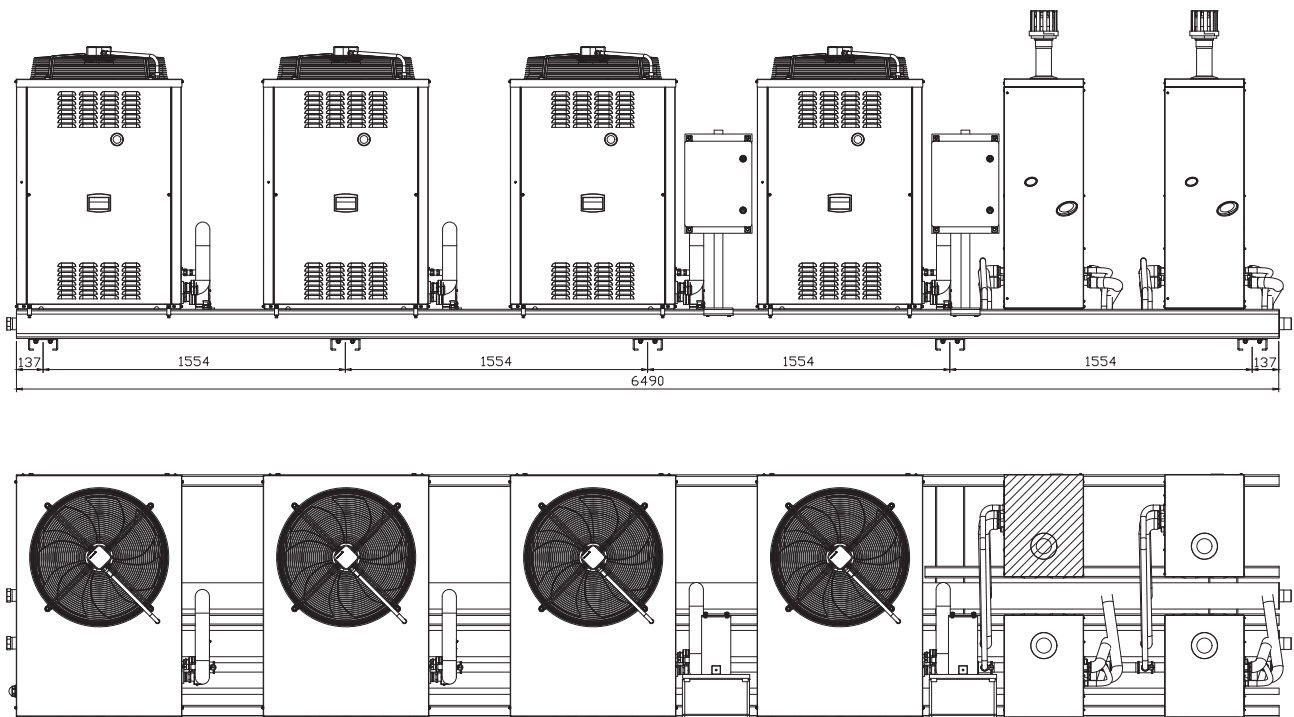
A 3+5 2190 kg (**)

B 4+1 2120 kg (*) 4+2 2240 kg (**)

(*) The weight refers to a 2 pipe link (silent ventilation, "S"), configured with oversize circulators

(**) The weight refers to a 4 pipe link (silent ventilation, "S"), configured on both circuits with oversize circulators

Figure 2.12 Preassembled ACF/A/AR + AY group (with 4+3 and 4+4 units) - Dimensions and weights of preassembled groups - front and top view (dimensions in mm)



4+3 2380 kg (*)

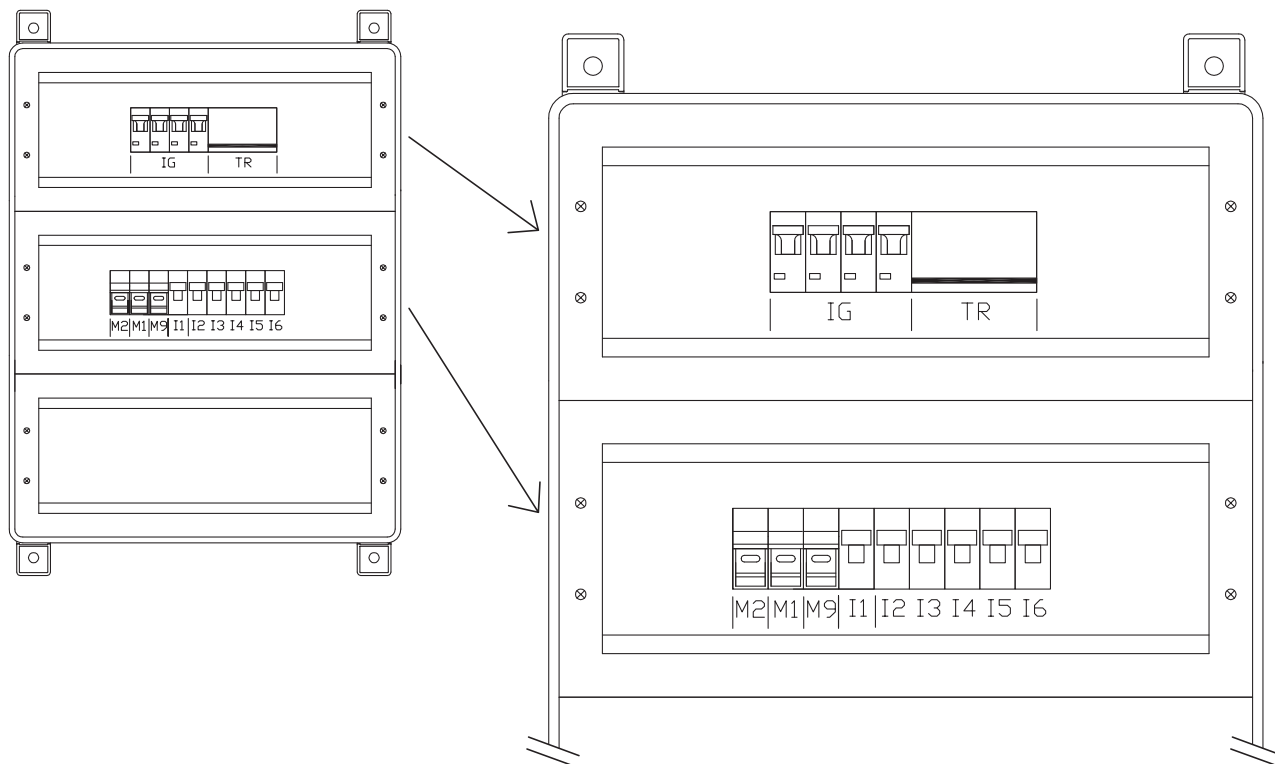
4+4 2480 kg (*)

(**) The weight refers to a 4 pipe link (silent ventilation, "S"), configured on both circuits with oversize circulators

2.2 ELECTRICAL SPECIFICATIONS

2.2.1 Group Electrical Panel

Figure 2.13 Group Electrical Panel



IG Group electrical panel (QEG) switch disconnect
 TR transformer 230/24 Vac
 M1 transformer primary fuse
 M2 condensate heating resistance protection fuse
 M9 transformer secondary fuse
 A blind panel (for detail of internal terminal blocks see specific figure)
 I1 "ID00" unit magnetothermal breaker

I2 "ID01" unit magnetothermal breaker
 I3 "ID02" unit magnetothermal breaker
 I4 "ID03" unit magnetothermal breaker
 I5 "ID04" unit magnetothermal breaker
 I6 "ID05" unit magnetothermal breaker

Note: the components within the QEG may have an order and/or position other than the one shown in the figure

2.2.2 Power supply

The power supply of preassembled groups is 400 V three-phase or 230 V single-phase.

2.2.3 Degree of protection

Preassembled groups have degree of protection IP X5D.

2.3 ELECTRONIC BOARDS

Each GAHP/GA/AY module/unit that is part of the group contains one or more prewired electronic boards, interconnected and wired to the preassembled group Electrical Panel with CAN-BUS cable.

2.4 OPERATION MODE

2.4.1 ON/OFF or modulating operation

Depending on the types, the GAHP / GA / AY modules present on a Link RT_ can work in one of the two following ways:

- mode (1) ON/OFF, i.e. On (at full power) or Off, with circulating pump at constant or variable flow;

- mode (2) MODULATING, i.e. at variable load from 50% to 100% of heating capacity, with circulating pump at variable flow.

The GAHP A, GAHP GS/WS modules can operate both in mode (1) and mode (2).

GAHP-AR, GA ACF/HR/TK, and AY00-120 modules can only operate in mode (1).

For each mode, (1) or (2), specific control systems and devices are provided (Paragraph 2.5 p. 13).

2.5 CONTROLS

2.5.1 Control device

The preassembled group can only work when connected to a control device, chosen from:

- (1) **DDC controller** (for ON/OFF operation);
- (2) **CCP/CCI controller** (for modulating operation, only for A/WS/GS).

For connection the selected device to the RT_ Link Electrical Panel (Figure 3.4 p. 18), see paragraph 3.5.4 p. 17.

2.5.2 Control system (1) with DDC (ON/OFF units)

The DDC controller is able to control the appliances, a single GAHP unit, or even several Robur GAHP/GA/AY units in cascade, only in ON/OFF mode (non modulating). For more information see Section C1.12.

2.5.3 Control system (2) with CCP/CCI (modulating GAHP unit)

The CCP/CCI control is able to control up to 3 GAHP units in modulating mode (therefore A/WS/GS only, excluding AR/ACF/AY), plus any integration ON/OFF boiler. For more information see Section C1.12.

2.6 TECHNICAL CHARACTERISTICS

Refer to the technical data of individual GAHP/GA/AY modules making up the group, set out in Section B for the specific product.

2.6.1 Fittings diameter

Table 2.1 *Fittings diameter*

Installation data	
Gas fitting diameter	1 1/2" F
Water fittings diameter (inlet/outlet)	2" M
Condensation discharge fitting diameter	1" F

2.6.2 Pressure drops

In the RT_ links already provided with circulators, each individual GAHP/GA/AY module that is part of the group has (at least) an independent single circulator.

The available head at the hydraulic connections of the preassembled group should be considered net of internal pressure drops, in the units and in the hydraulic manifolds.

The Table 2.2 *p. 14* provides the **minimum** residual head at nominal flow in maximum configuration.

In this way it is possible to perform an immediate preliminary check of the selected independent circulating pump's suitability with respect to the expected system pressure drops:

- if the indicated minimum head is sufficient, no additional checks are required;
- if the indicated minimum head is not sufficient, the actual pressure drop of the specific RT_ Link must be calculated, on the basis of the indications in Paragraph 2.6.2.1 *p. 14* and

the actual head of the circulating pumps under design conditions must be checked. For more detailed data on flow rate and head of circulating pumps please refer to Section C1.05.

Table 2.2 *Minimum residual head*

	Residual head [m w.c.]
Wilo Yonos 25/0,5-7	2,0
Wilo Yonos 25/0,5-10	3,5
Wilo Stratos Para 25/1-11	2,0
Wilo Stratos Para 25/1-12	5,0

In RT_ Links without circulating pumps, the circulation pump of the primary circuit must be appropriately selected and rated, considering both pressure drops associated to the individual modules, and the pressure drops arising from pre-assembly, calculated on the basis of the indications in Paragraph 2.6.2.1 *p. 14* below.

2.6.2.1 Preassembled group pressure drop calculation

The pressure drop associated to the specific RT_ preassembled group is given by the sum of pressure drops associated to the individual modules and the pressure drops arising from preassembly.

For pressure drop data of individual modules of the preassembled group please refer to Section B, concerning the pressure drop data of the individual module considered.



Pressure drop associated to preassembly

This figure derives from the pressure drop associated to the water manifolds supplied with the preassembled group, it is constant and equal to 0,02 bar.



Module pressure drop

The pressure drop of individual modules must not be added up, but that referring to the unit with the highest level with respect to operating conditions is simply to be considered. This is because the modules are hydraulically parallel on the manifolds.

2.6.3 Performances

For heating/cooling efficiency and GUE efficiency of the individual modules making up the preassembled group, refer to Section B of the specific product.

3 DESIGN

3.1 PLUMBING DESIGN

Please refer to Section C1.04.

3.2 FUEL GAS SUPPLY

Please refer to Section C1.09.

3.3 COMBUSTION PRODUCTS EXHAUST



Compliance with standards

The appliances that make up a preassembled group (GAHP/AY modules/units) are approved for connection to a discharge duct of combustion products.

3.3.1 Flue gas exhaust connection

The diameters (mm) of the connections, the residual head (Pa), the flow rate (kg/h), the temperature (°C) and other flue gas exhaust properties of individual GAHP/AY appliances making up the group are indicated in Section B, for the corresponding product.

For further information also see Section C1.10.

3.3.2 Flue gas exhaust kit

GAHP/AY units that are part of the group are equipped as standard with smoke exhaust kits, already assembled or to be assembled by the installer, which generally includes:

- 1 pipe complete with terminal and socket of sampling;
- 1 support collar;
- 1 possible 90° curve;
- 1 rain cover.

Possible flue

If necessary, the preassembled group can be connected to one or more flue(s).

For sizing the flue(s), refer to the data and information in Section B of the specific product and Section C1.10.

3.4 FLUE GAS CONDENSATE DISCHARGE

If the preassembled group include GAHP A, GAHP GS/WS and AY00-120 condensing appliances, condensation water is produced from combustion fumes, which must be evacuated in compliance with current regulations.



Condensate acidity and exhaust regulations

The flue gas condensate contains aggressive acid substances. Refer to applicable regulations in force for condensate exhaust and disposal.

- If required, install an acidity neutraliser of adequate capacity.



Do not use gutters to discharge the condensate

Do not discharge the fume condensate in gutters, due to the risk of materials corrosion and ice formation.

Flue gas condensate connection

The fitting for flue gas condensate discharge is located on the right side of the preassembled group (condensate discharge manifold below Figures 2.1 p. 3, 2.2 p. 3, 2.3 p. 4, 2.4 p. 4).



The condensate drain cap can not be moved on the opposite side as the condensate manifold is sloping towards the right side.

Flue gas condensate evacuation

To make the condensate evacuation duct:

- Size the ducts for maximum condensation flow rate (kg/h), equal to the sum of the flow rates of the individual GAHP/AY appliances/modules (see Manuals of the individual GAHP/AY units attached);
- Use plastic materials resistant to acidity with pH 3 to 5;
- Provide for min. 1% slope, i.e. 1 cm for each m of pipe length

(otherwise a booster pump is required);

- Prevent freezing;
- Dilute, if possible, with domestic waste water (bathrooms, washing machines, dish washers...), basic and neutralising.

3.5 ELECTRICAL AND CONTROL CONNECTIONS

3.5.1 Warnings



Earthing

- The preassembled group must be connected to an effective earthing system, installed in compliance with regulations in force.
- It is forbidden to use gas pipes as earthing.



Do not use the power supply switch to turn the preassembled group on/off

- Never use the external switch to turn the preassembled group on and off, as it may cause damage to the appliances and the system.
- To turn the preassembled group on and off, exclusively use the suitably provided control device (DDC or CCP/CCI).



Control of water circulation pump

In the case of RT_ Links without circulators:

- The common hydraulic/primary circuit water pump must be controlled by the Electrical Panel of the preassembled group (terminals KK, PP, 12).
- Circulator start/stop is not allowed without the request of the preassembled group.



Cable segregation

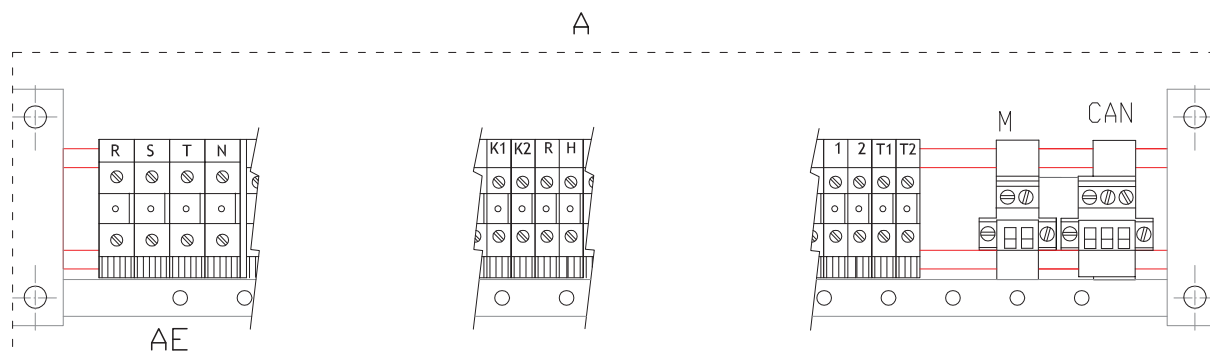
Keep power cables physically separate from signal ones.

3.5.2 Electrical systems

Electrical connections must provide:

- (a) power supply line (three-phase or single-phase)
- (b) control system.

Figure 3.1 Blind panel: detail of internal terminal blocks on DIN rail



A blind panel of QEG
 AE power supply input terminals
 K1-K2 24 V coil terminals for circulator request (hot/cold circuit side)
 R-H condensate heating resistor terminals

1-2 24 V coil terminals for circulating pump request (HR recovery circuit side)
 T1-T2 DHW tank thermostat terminals (HR recovery circuit side)
 M 2-pole 24 Vac connector for service uses
 CAN 3-pole connector for CAN-BUS network connection

3.5.3 Electrical power supply



Electrical protection

A 4-pole (three-phase) disconnector GS Figure 3.2 p. 16 or bipolar (single-phase) IR+Id Figure 3.3 p. 17 must be provided by the installer in the external power supply electrical panel, with fuses suitable for phases, minimum contact opening 3 mm. No fuse on the neutral is allowed. Indirect contact protection by means of differential switch and overload must be guaranteed by means of a

sufficiently dimensioned automatic switch or fuse.



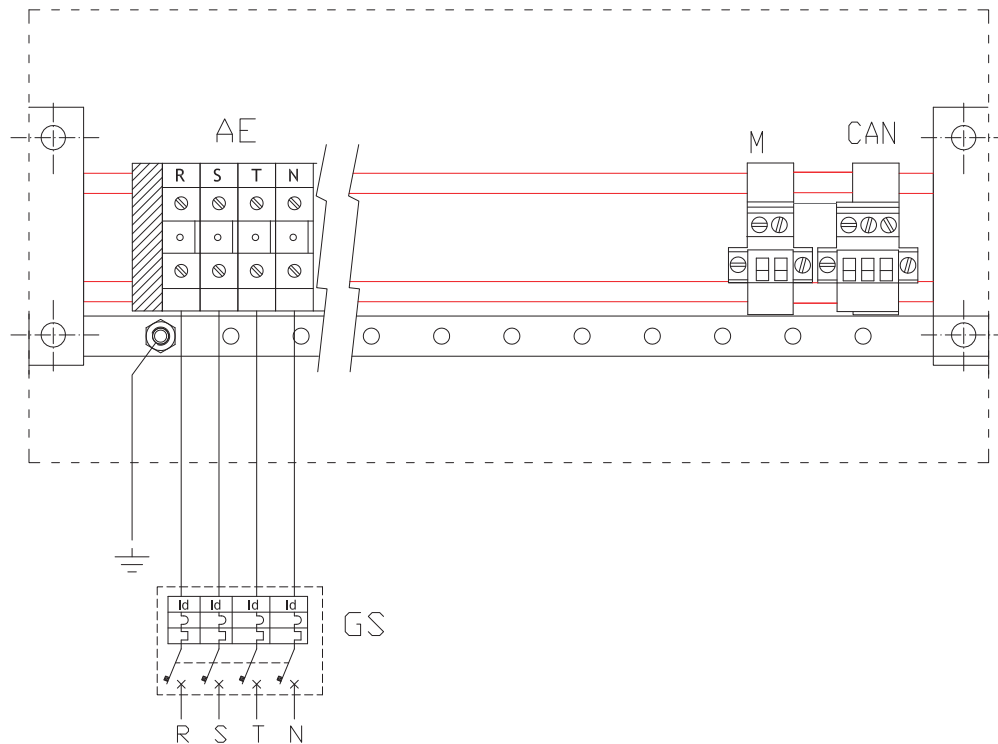
Do not modify the RT_ Link Electric Panel or add components inside it (relays, ...).

Power supply line (three-phase or single-phase)

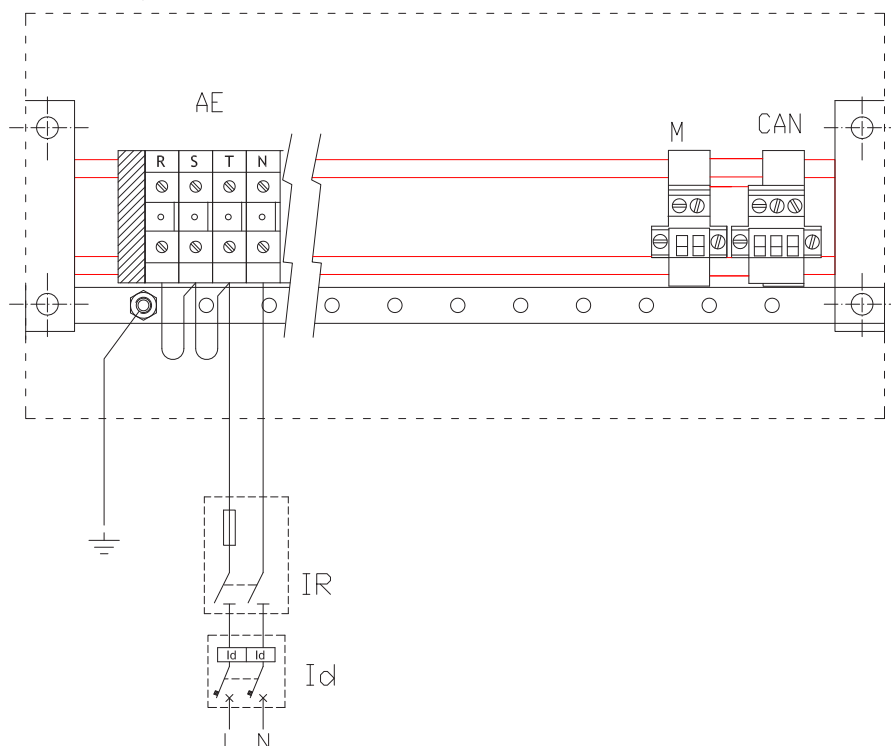
Provide a protected line (by the installer), which may be:

- three phase 400 V 3N - 50 Hz (Figure 3.2 p. 16),
- or as an alternative,
- single phase 230 V 1N - 50 Hz (Figure 3.3 p. 17).

Figure 3.2 Three phase power supply electrical connection 400 V 3N - 50 Hz



AE power supply input terminals
GS three-phase magnetothermal switch
RSTN phases/neutral

Figure 3.3 Single phase power supply electrical connection 230 V 1N - 50 Hz

AE power supply input terminals
 IR bipolar disconnector with suitable fuse and minimum contact opening of 3 mm
 LN phase/neutral

3.5.4 Set-up and control



Switching for reversible units

Use that entails frequent switching between heating/conditioning operating modes are to be avoided for reversible units.

Control systems, options (1) or (2)

Two separate control systems are provided for RT_ Links, (1) and (2), each with specific features, components and diagrams:

- System (1), with **DDC control** (with CAN-BUS connection);
- System (2), with **CCP/CCI control** (with CAN-BUS connection).

For electrical connections and hookup Figure 3.4 p. 18.

CAN-BUS communication network

The CAN-BUS communication network, implemented with the cable of the same name, makes it possible to connect and

remotely control one or more Robur appliances with the DDC or CCP/CCI control devices.

It entails a certain number of serial nodes, distinguished in:

- intermediate nodes, in variable number;
 - terminal nodes, always and only two (beginning and end).
- Each component of the Robur system, appliance (GAHP, GA, AY, ...) or control device (DDC, RB100, RB200, CCI, ...), corresponds to a node, connected to two more elements (if it is an intermediate node) or to just one other element (if it is a terminal node) through two/one CAN-BUS cable section/s, forming an open linear communication network (never star or loop-shaped).

CAN-BUS signal cable

The DDC or CCP/CCI controllers are connected to the RT_ Link through the CAN-BUS cable, shielded, compliant to Table 3.1 p. 17 (admissible types and maximum distances).

For lengths ≤ 200 m and max 4 nodes (e.g. 1 DDC + 3 GAHP), a simple 3x0.75 mm shielded cable may even be used.

Table 3.1 CAN BUS cables type

CABLE NAME	SIGNALS / COLOR			MAX LENGTH	Note
Robur					Ordering Code OCV008
ROBUR NETBUS	H= BLACK	L= WHITE	GND= BROWN	450 m	
Honeywell SDS 1620					In all cases the fourth conductor should not be used
BELDEN 3086A	H= BLACK	L= WHITE	GND= BROWN	450 m	
TURCK type 530					
DeviceNet Mid Cable					
TURCK type 5711	H= BLUE	L= WHITE	GND= BLACK	450 m	
Honeywell SDS 2022					
TURCK type 531	H= BLACK	L= WHITE	GND= BROWN	200 m	

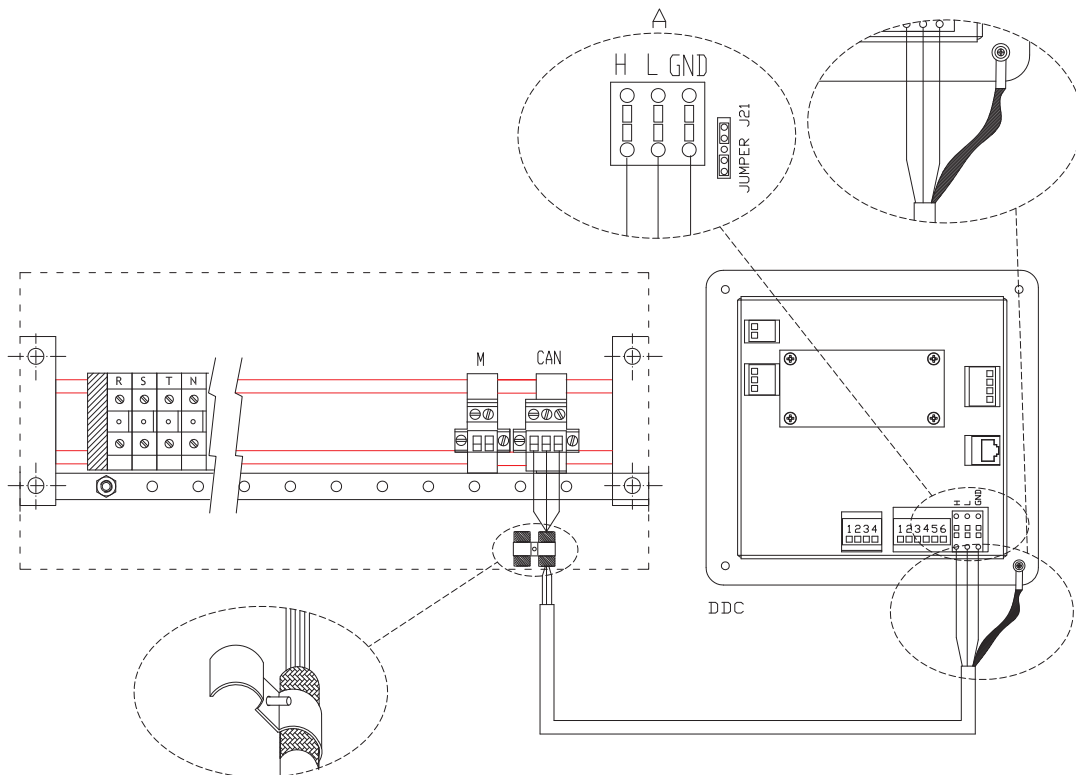


How to connect the CAN-BUS cable to the RT_Link

To connect the CAN-BUS cable to the preassembled group Electrical Panel, hence to the pre-wired S61/AY10 boards of the appliances it consists of (Figure 3.4 p. 18):

1. Access the terminal blocks in the Electrical Panel of the group (Paragraph 3.5.2 p. 15).
2. Connect the CAN-BUS cable to the GND (shielding/earthing) + L and H terminals (two signal wires).
3. Block the cable with the earthing terminal located behind
4. Position the J1 jumpers of the board of the last appliance on the left of the Link_RT closed if the node is terminal (case of one Link_RT only) or open if the node is intermediate (case of several Link_RT in the same system) Figure 3.6 p. 20.
5. connect the CCI or DDC (and possibly the RB100 or RB200) by means of the CAN-BUS cable according to the instructions in the relevant Manuals and in Section C1.12.

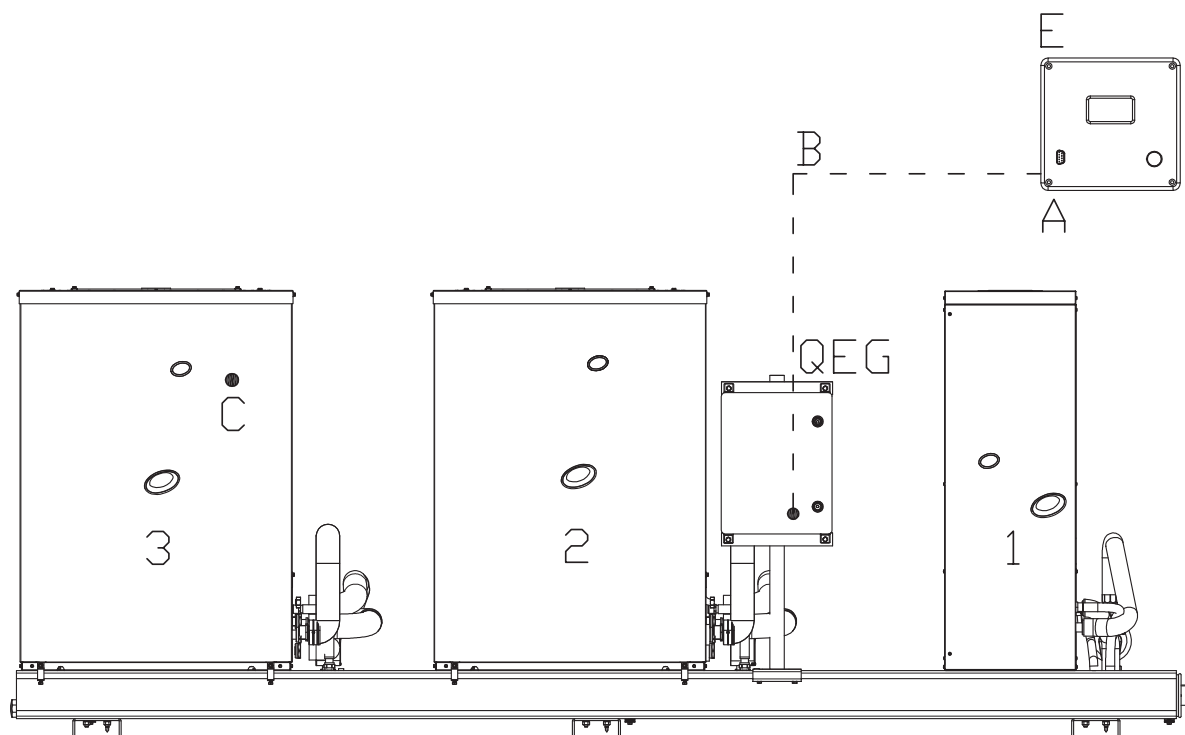
Figure 3.4 Connection with CAN-BUS cable between 1 CCI/DDC and the electrical panel of the preassembled group



CAN 3-pole connector for CAN-BUS network connection
DDC CCI/DDC (rear view)

1 Link RT_ + DDC/CCI configuration

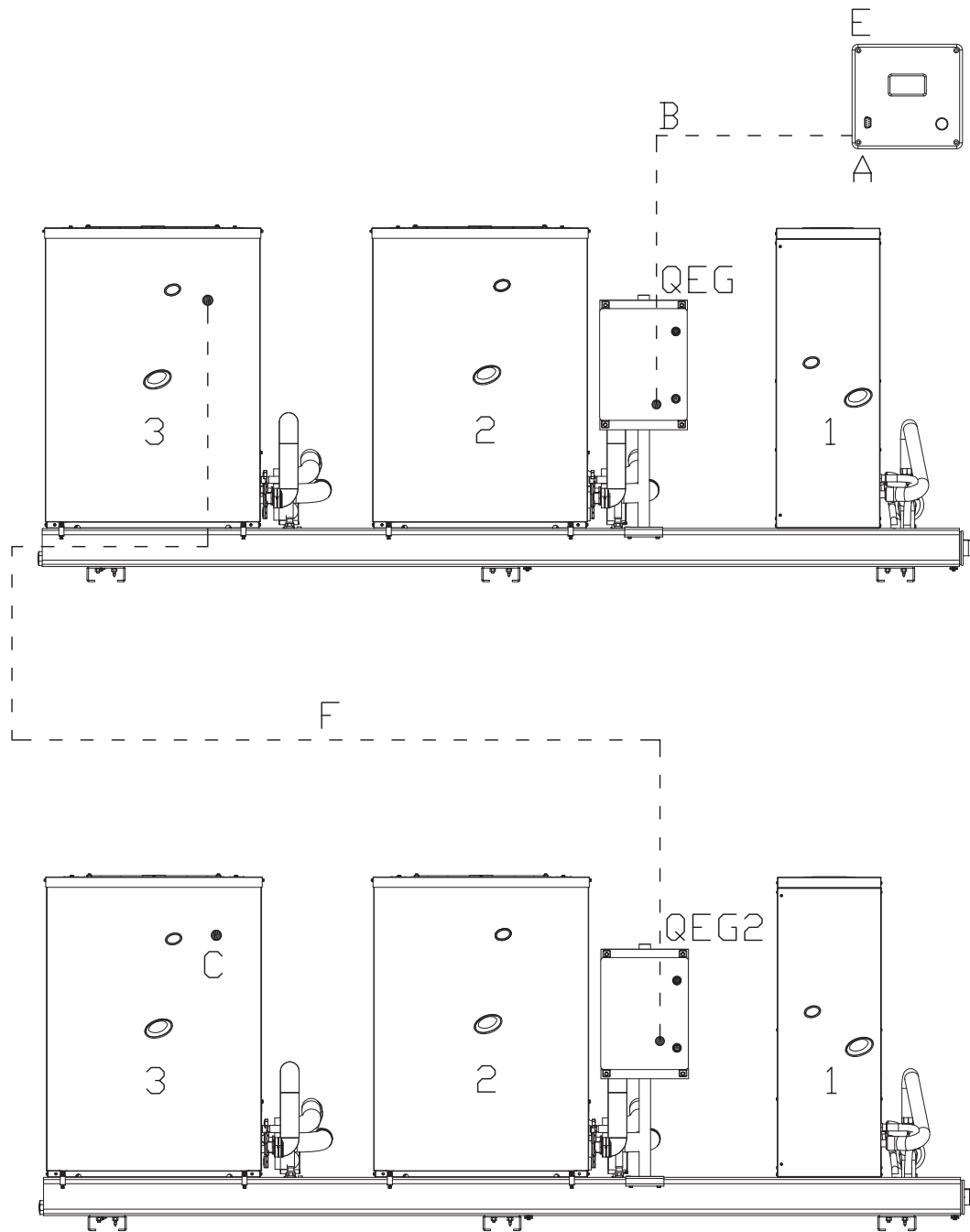
Figure 3.5 CAN-BUS connection for systems with one unit



- | | | | |
|---|--|-----|--------------------------------------|
| A | terminal node connection to CCI/DDC | QEg | group electrical panel |
| B | CAN-BUS cable (not supplied - see table) | E | CCI/DDC |
| C | terminal node on last unit (prewired) | 3 | last unit of appliance (with "ID00") |

2 Link RT_ + DDC configuration

Figure 3.6 Example of CAN network with 7 nodes (1 CCI/DDC + 2 appliances connected on a single hydraulic circuit).



A terminal node connection to CCI/DDC
 B CAN-BUS cable (not supplied - see table)
 C terminal node on last unit (prewired)
 QEG1 first appliance group electrical panel

QEG2 second appliance group electrical panel
 E CCI/DDC
 F CAN-BUS cable (not supplied - see table)
 3 last unit of appliance (with "ID00")

3.5.5 Water circulation pumps

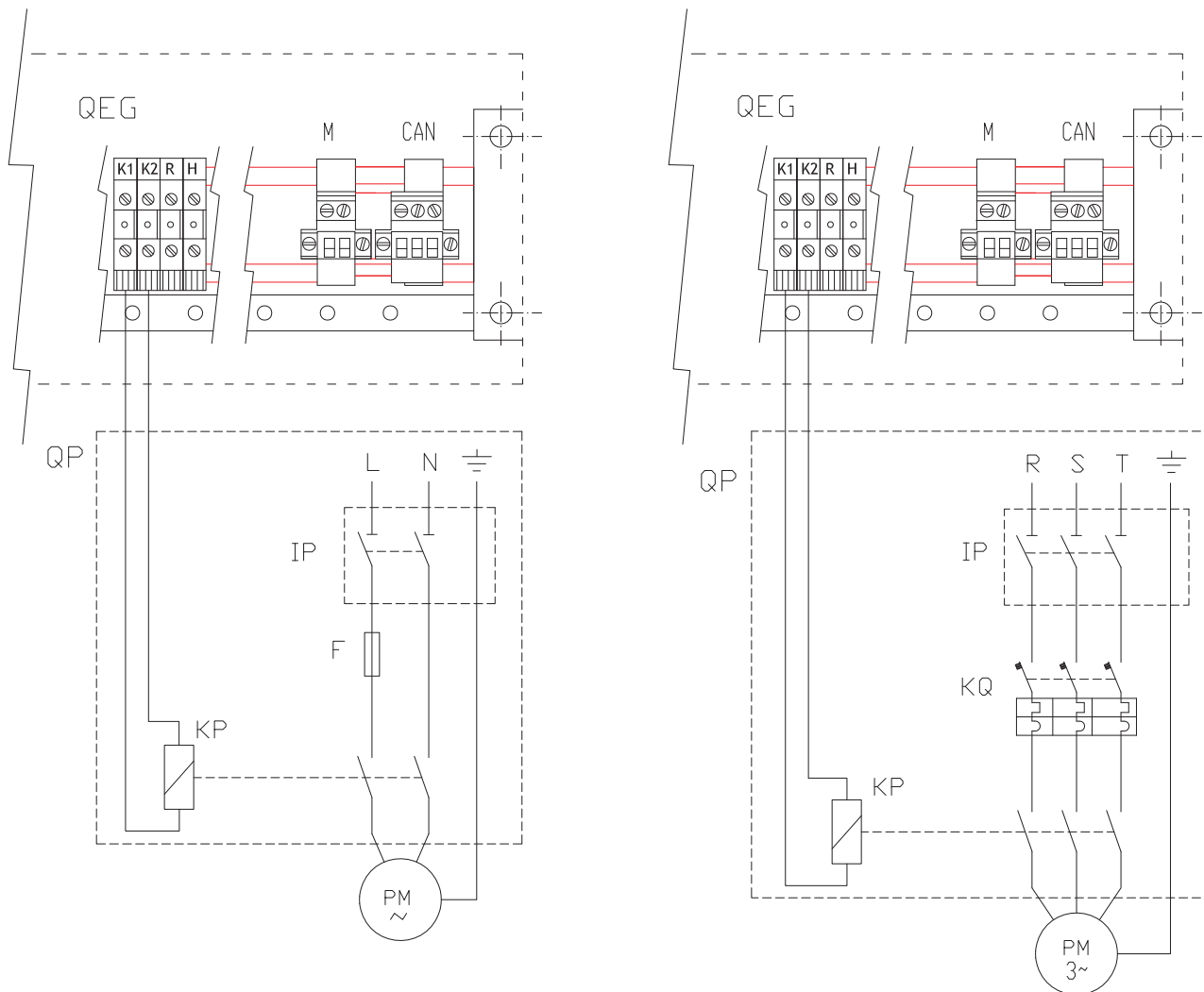
In RT_ Links with circulating pumps, the individual independent circulating pumps (1 or 2 for each GAHP/GA/AY module) are already mounted and pre-wired on the preassembled group.

In RT_ Links without circulating pumps, electrical connections

must be made (both for power supply and control) of the common water circulation pump of the primary water circuit, as shown in the diagrams Figures 3.7 p. 21, 3.8 p. 22.

Common circulation pump of a Link RT_ SC

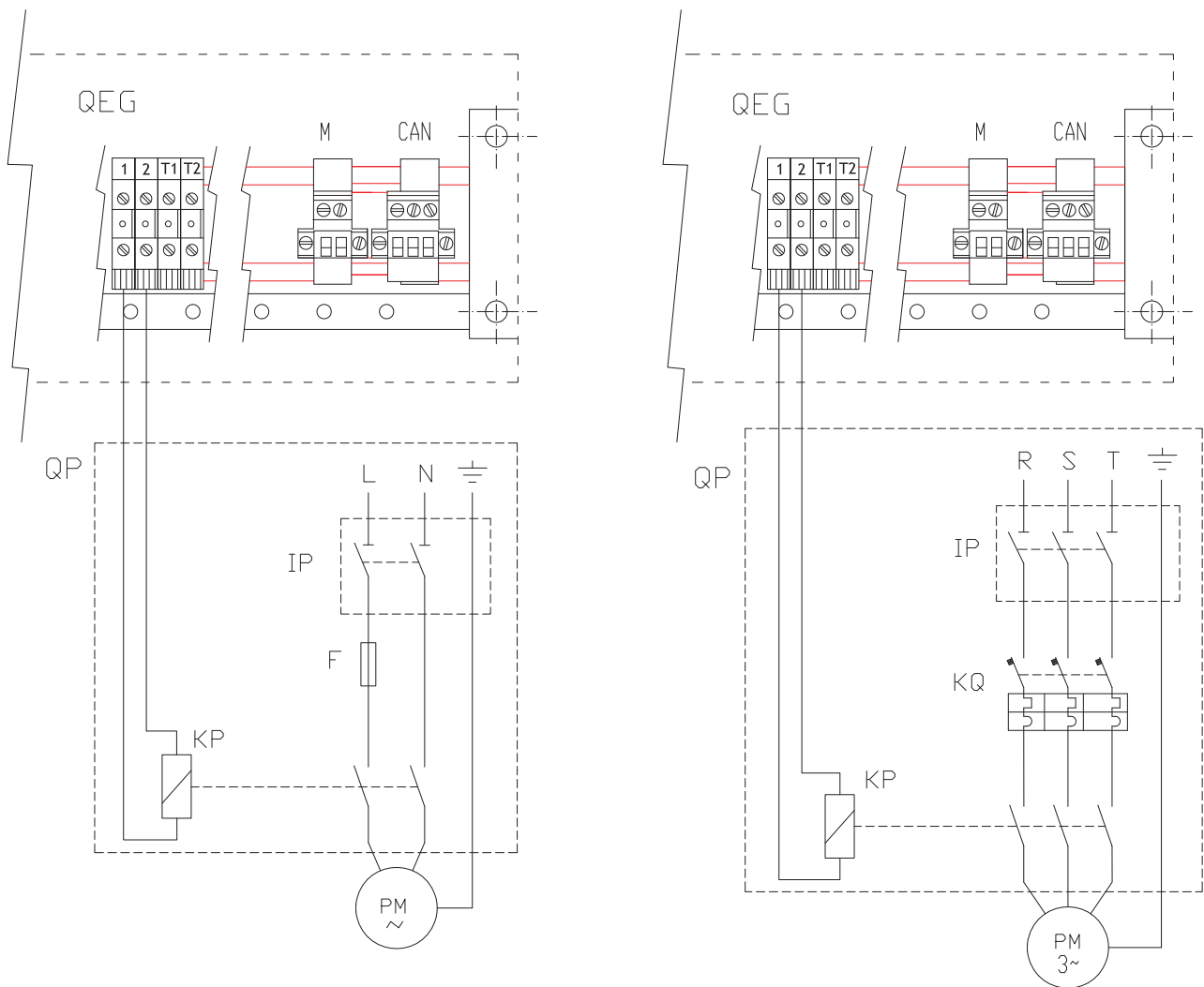
Figure 3.7 Electrical connection of single- or three-phase circulator directly controlled by the group (configurations "without circulators")



PM primary system water circulator (not supplied)
 QP circulator electrical panel (external)
 QEG preassembled group electrical panel
 N/L neutral/phase single-phase circulation pump power supply
 RST three-phase circulator power supply phases
 IP circulating pump disconnector (not supplied)

F appropriate fuse for protecting the circulating pump used
 KQ appropriate motor protection switch for the circulating pump used
 KP NO relay for controlling the circulating pump (not supplied)
 K1-K2 24 Vac coil terminals for the common circulating pump request of the hot/cold link circuit

Figure 3.8 Heat recovery exchanger: electrical connection of single- or three-phase circulator directly controlled by the group (configurations "with-out circulators")



PM primary system water circulator (not supplied)
 QP circulator electrical panel (external)
 QEG preassembled group electrical panel
 N/L neutral/phase single-phase circulation pump power supply
 RST three-phase circulator power supply phases
 IP circulating pump disconnector (not supplied)

F appropriate fuse for protecting the circulating pump used
 KQ appropriate motor protection switch for the circulating pump used
 KP NO relay for controlling the circulating pump (not supplied)
 1-2 24 Vac coil terminals for the common circulating pump request of the heat recovery circuit of link with HR



How to connect the common circulation pump

To connect the common circulation pump (single-phase or three-phase) of an RT_ Link without any circulating pumps fitted on (Figure 3.7 p. 21 or 3.8 p. 22)

1. Access the terminal blocks in the Electrical Panel of the group (QEG) (Paragraph 3.5.2 p. 15).
2. Connect the two enable conductors to the appropriate terminals K1-K2 or 1-2.