


# 1 FLUE GAS COLLECTION


According to the type of installation allowed, summarised in Table 1.2 p. 2, both single units and individual modules of a Link can be connected to one or more flue(s).

 In the case of GAHP A Indoor appliances, several appliances may not be connected to a single flue, but each appliance must have its own separate flue gas exhaust.


If sizing a flue serving several units, the following Table 1.1 p. 1 summarises the main combustion parameters for each individual unit.

If sizing a flue serving several units, consider the following:


- ▶ The flues must be designed, sized, verified and realized by a qualified firm, with materials and components in accordance with regulations.
- ▶ Always provide the necessary sockets for smoke analysis in an accessible position.
- ▶ The GAHP A, GAHP GS/WS and AY modules are condensation units and require exhaust of the flue gas with appropriate piping, with forced draft and residual head shown in Table 1.1 p. 1.
- ▶ The horizontal sections for flue gas exhaust must always be mounted on a slope towards the appliance (3° slope = 5 mm per metre of pipe).
- ▶ For vertical ducts longer than 1,5 m, a curve and a Tee (Figure 1.1 p. 2) for condensate collection and drainage must be provided. The condensate must then be evacuated in accordance with the regulations in force, at the same time as that coming from inside the appliance.

 If several forced draft appliances (GAHP A, GAHP GS/WS and AY) are connected to a single flue, it is obligatory to

install a check valve on the exhaust of each.

 In case the check valves are installed outside, an appropriate UV ray protection must be assured (if the valve is in plastic) as well as protection from potential winter freezing of condensate backflow into the siphon.

- ▶ GAHP/AY modules with different flue gas exhaust characteristics cannot be connected to the same flue but must be connected to separate and distinct flues.
- ▶ The GA units have no flue gas exhaust.
- ▶ GAHP-AR modules are fitted with a combustion blower towards the combustion system, but the residual head indicated in Table 1.1 p. 1 is sufficient only to reach the terminal of the exhaust kit supplied. If flue gas exhaust of GAHP-AR modules must be extended over the supplied kit, the pressure head at the exhaust kit terminal must be considered equal to 0 Pa.
- ▶ If the exhaust kit of GAHP-AR modules supplied with other types of flue is replaced, the residual head indicated in Table 1.1 p. 1 must be considered.
- ▶ It is recommended to insulate the stainless steel flues of GAHP-AR units.

 If several GAHP-AR appliances are connected to a single flue, NO check valves must be installed.


 To avoid corrosion phenomena, convey the GAHP-AR acid condensate drain to the base of the flue gas exhaust duct.

Table 1.1 Characteristics of flue gas exhaust

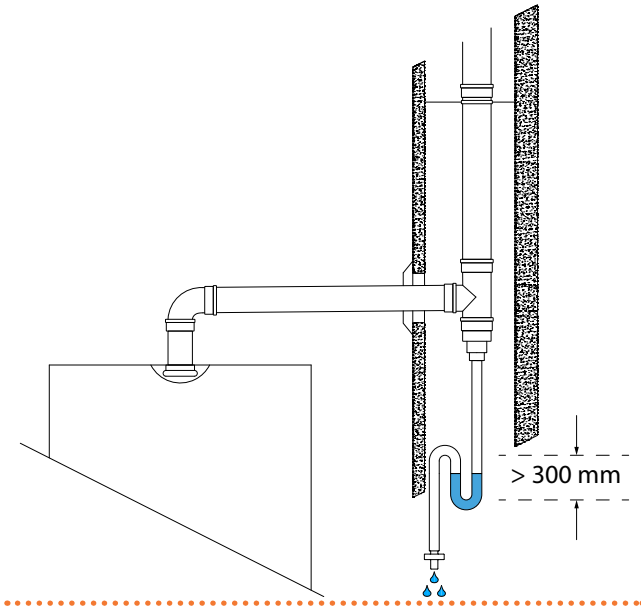
				GAHP A	GAHP GS/WS	AY			GAHP-AR	GA ACF
						AY 35	AY 50	AY 100		
<b>Heating operation</b>										
Heat input	real		kW	25,2	25,2	34,0	50,0	99,8	25,2	-
<b>Cooling mode</b>										
Heat input	real		kW	-	-				-	25,0
<b>Installation data</b>										
Fumes flow rate	Nominal heat input	G20	kg/h	42	42	54	80	80 (1)	42	42
Flue temperature	Nominal heat input	G20	°C	65,0	65,0	69,4	66,4	66,4	186,0	190,0
		G20	%	9,1	9,1	9,45 ÷ 9,25	9,3 ÷ 9,1	9,3 ÷ 9,1	8,7	8,7
		G25	%	9,1	9,1	9,35 ÷ 9,15	9,3 ÷ 9,1	9,3 ÷ 9,1	8,7	8,5
		G25.1	%	10,1	10,1	- (2)	10,5 ÷ 10,3	10,5 ÷ 10,3	- (2)	- (2)
		G25.3	%	9,0	-		9,3 ÷ 9,1		- (2)	- (2)
		G27	%	9,0	9,0	- (2)	9,3 ÷ 9,1	9,3 ÷ 9,1	8,5	- (2)
		G2.350	%	9,0	9,0	- (2)	9,3 ÷ 9,1	9,3 ÷ 9,1	8,5	- (2)
		G30	%	10,4	10,4	11,4 ÷ 11,2	11,3 ÷ 11,1	11,3 ÷ 11,1	10,2	9,3
G31	%	9,8	9,8	10,55 ÷ 10,35	10,3 ÷ 10,1	10,3 ÷ 10,1	10,5	9,1		
NO <sub>x</sub> emission class				5	5	6			5	4
Flue gas exhaust	diameter (Ø)		mm	80	80	80	80	80 (3)	80	-
	residual head		Pa	80	80	91	100	100 (4)	12	-

(1) Data refers to each thermal module.  
 (2) Gas not available for the appliance.  
 (3) 2 independent flue gas exhausts.  
 (4) For each of the independent flue gas exhausts.

**Table 1.2** Type of installation

		GAHP A			GAHP GS/WS	AY	GAHP-AR
		GAHP A Indoor	GAHP A HT S1	GAHP A HT			
<b>Installation data</b>							
type of installation	-	C13, C33, C43, C53, C63, C83	B23P, B33, B53P		C13, C33, C43, C53, C63, C83, B23P, B33	B23, B23P, B33, B53	B23, B53

**Figure 1.1** Flue gas condensate drain



## 1.1 MAXIMUM DRAIN PIPE LENGTH FOR AY BOILERS

**Table 1.3** Characteristics of flue gas exhaust

		AY 35	AY 50	AY 100
<b>Installation data</b>				
<b>Flue gas exhaust</b>	residual head	Pa	91	100
	diameter (Ø)	mm	80	
<b>maximum equivalent length of exhaust duct</b>		m	15	14
				14 (1)

(1) For each of the independent flue gas exhausts.  
 (2) 2 independent flue gas exhausts.

The maximum exhaust length (or equivalent linear length) is obtained by adding the length of the linear duct to the equivalent length of each additional curve.

The equivalent lengths of linear ducts and curves are given in Table 1.4 p. 2.

**Table 1.4** Pressure drop of flue pipes

	Equivalent length (m)	Pressure drop (Pa)
<b>AY 35</b>		
extension pipe Ø 80 mm, length 1000 mm	1	5,8
elbow 90° Ø 80 mm	1,5	8,7
elbow 45° Ø 80 mm	1,2	7,0
T connector Ø 80 mm	3	17,4
<b>AY 50/AY 100</b>		
extension pipe Ø 80 mm, length 1000 mm	1	7,0
elbow 90° Ø 80 mm	2,5	17,5
elbow 45° Ø 80 mm	1,4	7,8
T connector Ø 80 mm	3	21,0

## 2 FLUE GAS CONDENSATE DRAIN

Condensing appliances (GAHP A, GAHP A Indoor, GAHP GS/WS, AY, Gitié 2.0 AHAY, Gitié 2.0 ARAY and ACAY for the AY module only) produce condensate from combustion flue gas. Appliances GAHP-AR and Gitié 2.0 ARAY (for the GAHP-AR module only) produce condensate from the combustion flue gas only during the cold start-up transient.



### 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 flue condensate in gutters, due to the risk of materials corrosion and ice formation.

discharge manifold.

- ▶ The junction between the pipe and the manifold must remain visible.
- ▶ The connection of the discharge to the sewerage system must be made at atmospheric pressure, i.e. by dripping into a siphoned container connected to the sewerage system.

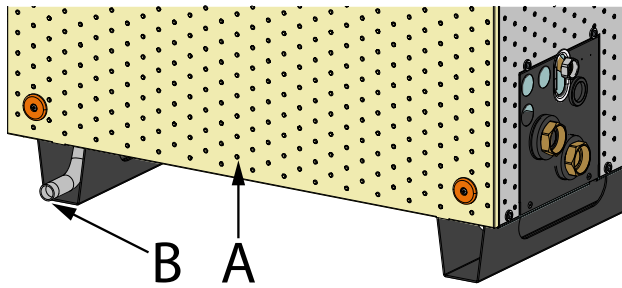
### 2.1.1 GAHP A

The fitting for flue gas condensate drain is located on the left side of the appliance (Figure 2.1 p. 3).

### 2.1 FLUE GAS CONDENSATE CONNECTION

- ▶ The condensate drain hose must be connected to a suitable

**Figure 2.1** GAHP A condensate drain

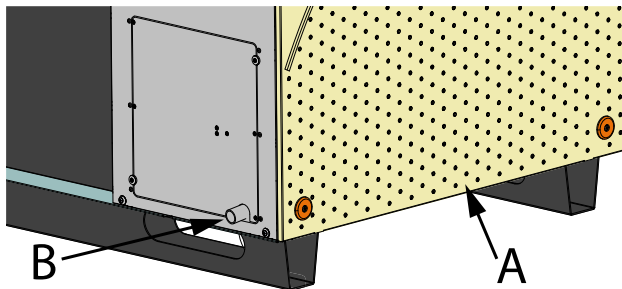


A GAHP A front panel      B GAHP A condensate drain

**2.1.2** GAHP A Indoor

The fitting for flue gas condensate drain is located on the left side of the appliance (Figure 2.2 p. 3).

**Figure 2.2** GAHP A Indoor condensate drain

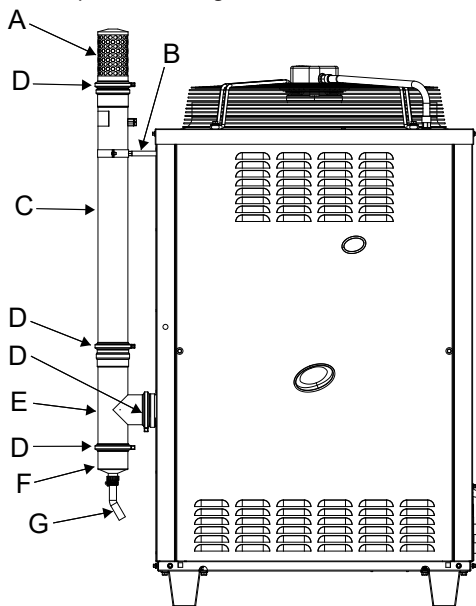


A GAHP A Indoor front panel      drain  
B GAHP A Indoor condensate

**2.1.3** GAHP-AR

The fitting for flue gas condensate drain is located on the base of the flue gas exhaust duct (Figure 2.3 p. 3).

**Figure 2.3** Components of flue gas exhaust kit

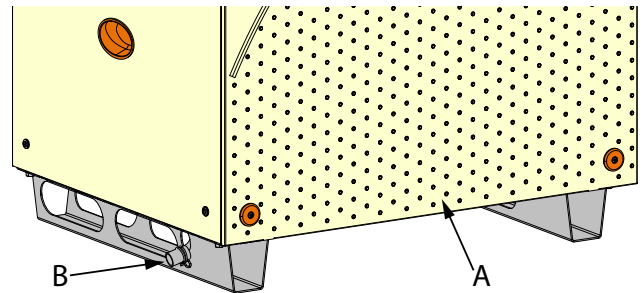


A Terminal      E T connector  
B Pipe clamp      F Condensate drain  
C Exhaust pipe L = 750 mm      G Hose adaptor + condensate drain pipe  
D Pipe clamp

**2.1.4** GAHP GS/WS

The fitting for flue gas condensate drain is located on the left side of the appliance (Figure 2.4 p. 3).

**Figure 2.4** GAHP GS/WS condensate drain



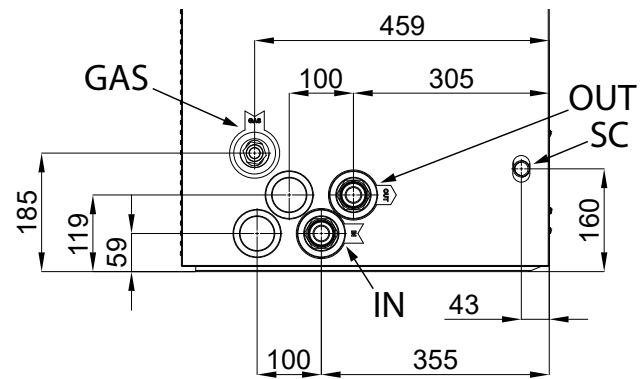
A GAHP GS/WS front panel      B GAHP GS/WS condensate drain

**2.1.5** AY

The flue gas condensate drain connection is located on the right side of the appliance at the connection plate.

**2.1.5.1** AY 35/AY 50

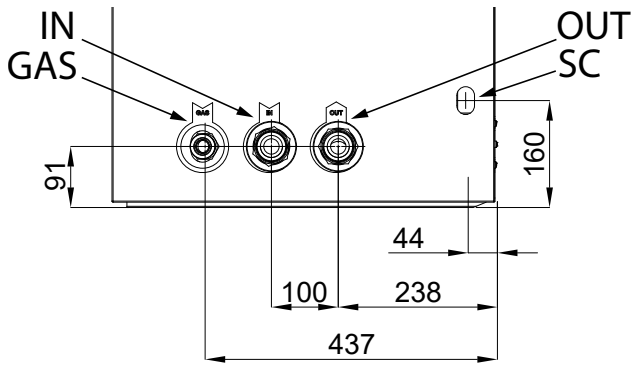
**Figure 2.5** Service plate - Hydraulic/gas connections detail



OUT Water outlet connection Ø 1 1/4" F  
IN Water inlet connection Ø 1 1/4" F  
SC Condensate drain connection (outside diameter 25 mm, inside 21 mm)  
GAS Gas connection Ø 3/4" M

2.1.5.2 AY 100

Figure 2.6 Service plate - Hydraulic/gas connections detail



- OUT Water outlet connection Ø 1 1/2" F
- IN Water inlet connection Ø 1 1/2" F
- SC Condensate drain connection (outside diameter 25 mm, inside 21 mm)
- GAS Gas connection Ø 1" M

2.1.6 Gitié

Refer to the position of the flue gas condensate connection for each of the appliances making up the Gitié 2.0:

- ▶ GAHP A Paragraph 2.1.1 p. 2
- ▶ GAHP-AR Paragraph 2.1.3 p. 3
- ▶ AY Paragraph 2.1.5.1 p. 3

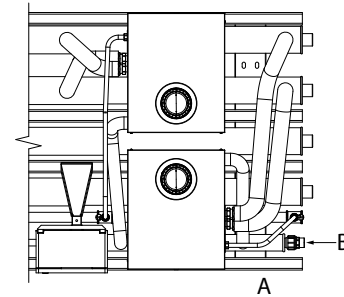
2.1.7 Link

If two or more condensing modules (GAHP A, GAHP GS/WS, AY) are included in the Link, the Link is equipped with a flue gas

condensate manifold.

The flue gas condensate drain connection is located on the right side of the Link (Figure 2.7 p. 4).

Figure 2.7 Link condensate drain connection



- A Front of the Link
- B Condensate drain connection [1" F] (only for Link with more than one condensing unit). Sloping manifold, strictly connect on right side

2.2 FLUE GAS CONDENSATE DRAIN MANIFOLD

To make the condensate drain manifold:

- ▶ Size the ducts for the maximum condensate flow (refer to the technical data of the individual appliances, available in Section B) and in any case with a diameter of not less than 15 mm.
- ▶ Use plastic materials resistant to acidity pH 3-5.
- ▶ Provide for min. 1% slope, i.e. 1 cm for each m of the length (otherwise a booster pump is required).
- ▶ Prevent freezing.
- ▶ Dilute, if possible, with domestic waste water (e.g. bathrooms, washing machines, dish washers...), basic and neutralising.