

1 SPECIFICATION OF SUPPLY

1.1 GAHP A HT

Water-ammonia absorption heat pump, fed with natural gas or LPG, air-water version, modulating and condensing, for hot water production up to a delivery temperature of 65 °C (70 °C at 50% of maximum thermal input), for outdoor installation.

Heat output for each unit (A7W35): 41,3 kW

GUE efficiency (A7W35): 164 %

Heat input: 25,2 kW

Electrical power absorption nominal: 0,84 kW

Power supply: 230 V - 50 Hz single-phase

Weight: 390 kg

Dimensions: width 854 mm, depth 1260 mm, height 1445 mm

1.2 GAHP A HT S1

Water-ammonia absorption heat pump with brushless low-noise fan, fed with natural gas or LPG, air-water version, modulating and condensing, for hot water production up to a delivery temperature of 65 °C (70 °C at 50% of maximum thermal input), for outdoor installation.

Heat output for each unit (A7W35): 41,3 kW

GUE efficiency (A7W35): 164 %

Heat input: 25,2 kW

Electrical power absorption nominal: 0,77 kW

Power supply: 230 V - 50 Hz single-phase

Weight: 400 kg

Dimensions: width 854 mm, depth 1260 mm, height 1520 mm

2 FEATURES AND TECHNICAL DATA

2.1 FEATURES

2.1.1 Mechanical and thermo-hydraulic components

- ▶ Steel sealed circuit, externally treated with epoxy paint.
- ▶ Sealed combustion chamber (type C) suitable for outdoor installations.
- ▶ Metal mesh radiant burner, equipped with ignition electrodes and flame detection, managed by an electronic flame control box.
- ▶ Titanium stainless steel shell-and-tube water heat exchanger, externally insulated.
- ▶ Stainless steel, shell-and-tube recovery exchanger of flue gas latent heat.
- ▶ Air exchanger with finned coil, with steel pipe and aluminium fins.
- ▶ Automatic microprocessor-controlled finned coil defrosting valve.

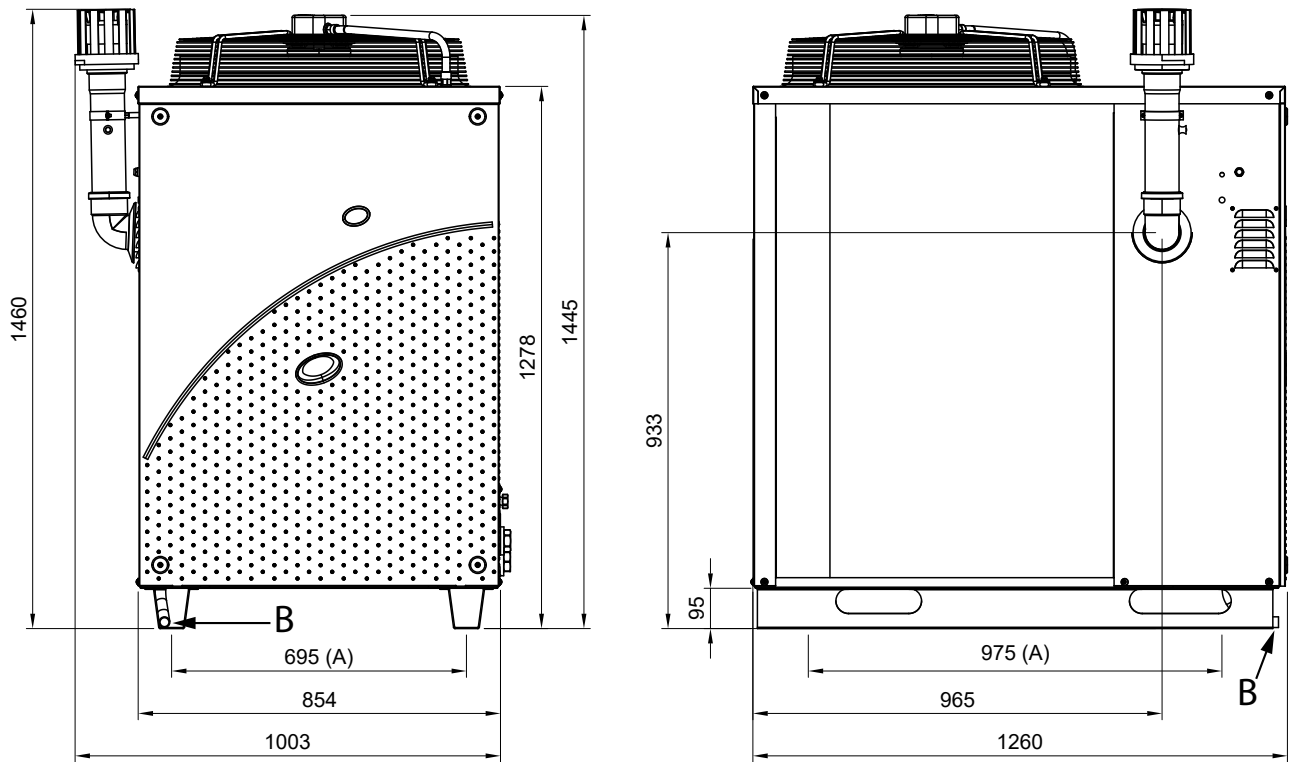
- ▶ Low power consumption refrigerant fluid oil pump.
- ▶ Standard or S1 low-noise fan (reduction of electrical consumption and reduction of sound emission).

2.1.2 Control and safety devices

- ▶ S61 electronic board with microprocessor, LCD display and knob.
- ▶ Mod10 additional electronic board (integrated in S61).
- ▶ Auxiliary W10 electronic board.
- ▶ System water flowmeter.
- ▶ Generator limit thermostat, with manual reset.
- ▶ Flue gas thermostat, with manual reset.
- ▶ Generator fins temperature probe.
- ▶ Sealed circuit safety relief valve.
- ▶ Bypass valve, between high and low-pressure circuits.
- ▶ Ionization flame control box.
- ▶ Double shutter electric gas valve.
- ▶ Condensate drain obstruction sensor.

2.2 DIMENSIONS

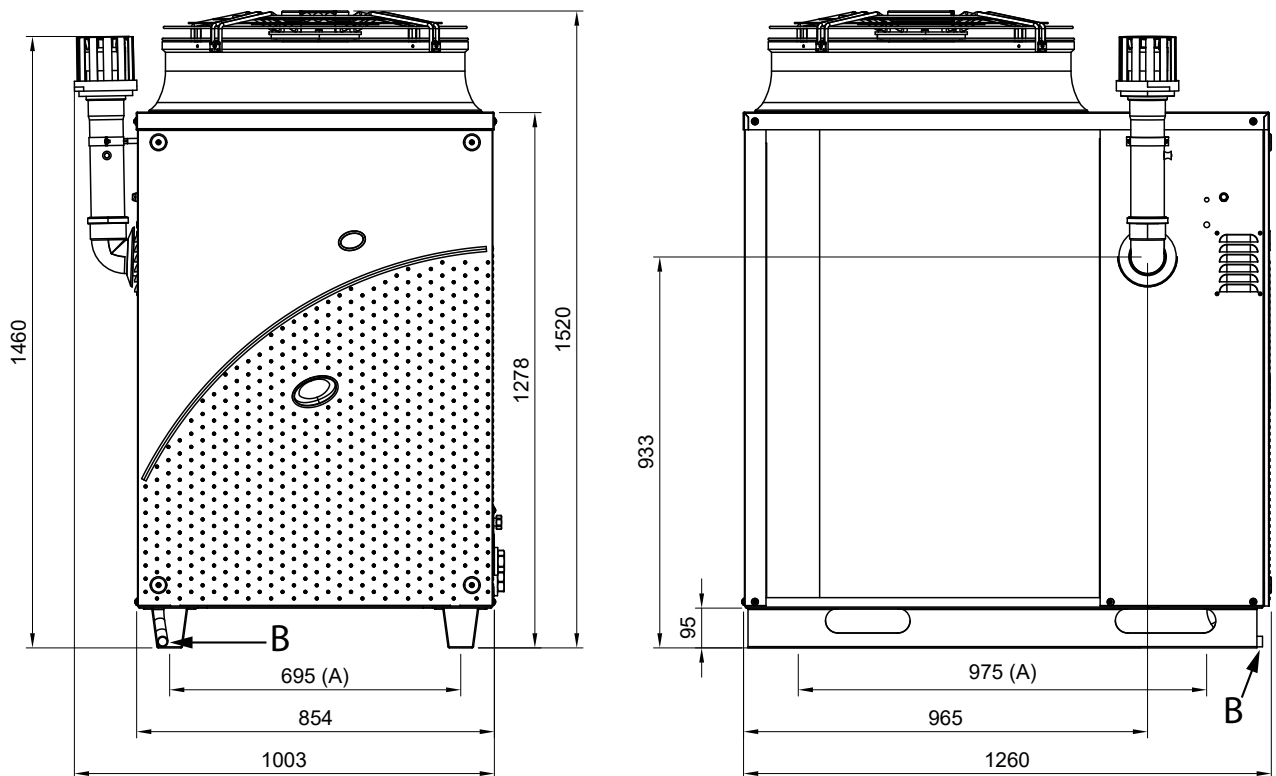
Figure 2.1 Dimensions (standard fan)



A Centre distance of holes for vibration damper supports

B Condensate drain connection

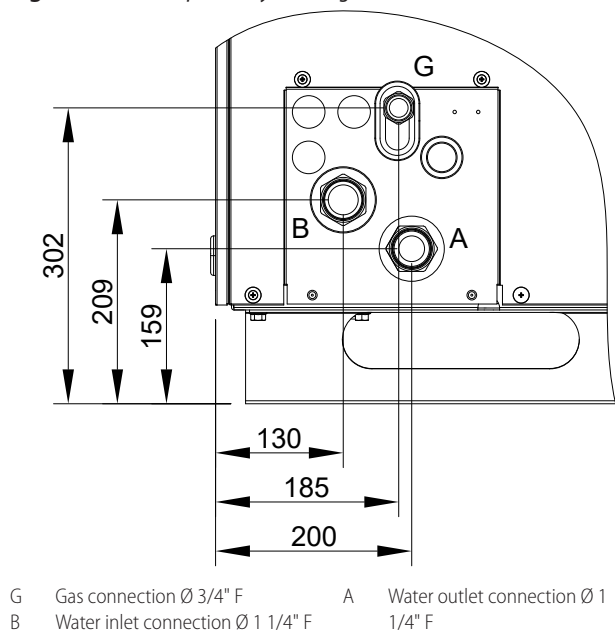
Figure 2.2 Dimensions (low-noise fan)



A Centre distance of holes for vibration damper supports

B Condensate drain connection

Figure 2.3 Service plate - Hydraulic/gas connections detail



2.3 CONTROLS

2.3.1 Control device

The appliance may only work if it is connected to a control

2.4 TECHNICAL DATA

Table 2.1 GAHP A HT technical data

		GAHP A HT	GAHP A HT S1
Heating operation			
Seasonal space heating energy efficiency class (ErP)	medium-temperature application (55 °C)	-	A+
	low-temperature application (35 °C)	-	A+
Heat output for each unit	Outdoor temperature/Water outlet temperature	A7W35	kW 41,3
		A7W50	kW 38,3
		A7W65	kW 31,1
		A-7W50	kW 32,0
GUE efficiency	Outdoor temperature/Water outlet temperature	A7W35	% 164
		A7W50	% 152
		A7W65	% 124
		A-7W50	% 127
Heat input	nominal (1013 mbar - 15 °C)	kW	25,7
	real	kW	25,2
Hot water outlet temperature	maximum for heating	°C	65
	maximum for DHW	°C	70
Hot water inlet temperature	maximum for heating	°C	55
	maximum for DHW	°C	60
	minimum temperature in continuous operation	°C	30 (1)
Heating water flow	nominal	l/h	2500
	maximum	l/h	4000
	minimum	l/h	1400
Pressure drop heating mode	at nominal water flow	bar	0,31 (2)
Outdoor temperature (dry bulb)	maximum	°C	45
	minimum	°C	-15 (3)
Electrical specifications			

(1) In transient operation, lower temperatures are allowed.
 (2) For flows other than nominal see Design Manual, Pressure losses Paragraph.
 (3) As an option, a version for operation down to -30 °C is available.
 (4) ±10% depending on power voltage and absorption tolerance of electric motors.
 (5) Sound power values detected in compliance with the intensity measurement methodology set forth by standard EN ISO 9614. Data referred to 50 °C outlet temperature.
 (6) Maximum sound pressure levels in free field, with directivity factor 2, obtained from the sound power level in compliance with standard EN ISO 9614. Data referred to 50 °C outlet temperature.
 (7) Overall dimensions excluding flue gas exhaust.

device, selected from:

1. DDC control
2. CCI control
3. external request

2.3.2 DDC Controller

The DDC control is able to manage one or more Robur appliances in ON/OFF mode (GAHP heat pumps, GA chillers) or modulating mode (AY boilers).

DDC functionality may be extended with auxiliary Robur devices RB100 and RB200 (e.g. service requests, DHW production, third party generator control, probe control, system valves or circulating pumps, ...).

For more details see Section C01.11.

2.3.3 CCI control

The CCI control can manage up to 3 GAHP appliances in modulating mode (only GAHP A/GAHP GS/WS).

For more details see Section C01.11.

2.3.4 External request

The appliance may also be controlled with a generic request device (e.g. thermostat, timer, switch, contactor...) fitted with voltage-free NO contact. This system only provides elementary control (on/off, with fixed setpoint temperature), thus without the important functions of the DDC/CCI control. It is advisable to possibly limit its use to simple applications only and with a single appliance.

			GAHP A HT	GAHP A HT S1
Power supply	voltage	V	230	
	type	-	single-phase	
	frequency	Hz	50	
Electrical power absorption	nominal	kW	0,84 (4)	0,77 (4)
	minimum	kW	-	0,50 (4)
Degree of protection	IP	-	X5D	
Installation data				
Gas consumption	G20 natural gas (nominal)	m ³ /h	2,72	
	G25 (nominal)	m ³ /h	3,16	
	G25.1 (nominal)	m ³ /h	3,16	
	G25.3 (nominal)	m ³ /h	3,09	
	G27 (nominal)	m ³ /h	3,32	
	G2.350 (nominal)	m ³ /h	3,78	
	G30 (nominal)	kg/h	2,03	
	G31 (nominal)	kg/h	2,00	
NO_x emission class		-	5	
sound power L_w (max)		dB(A)	79,6 (5)	74,0 (5)
sound power L_w (min)		dB(A)	-	71,0 (5)
sound pressure L_p at 5 metres (max)		dB(A)	57,6 (6)	52,0 (6)
sound pressure L_p at 5 metres (min)		dB(A)	-	49,0 (6)
minimum storage temperature		°C	-30	
maximum water pressure in operation		bar	4,0	
maximum flow rate of flue gas condensate		l/h	4,0	
water content inside the appliance		l	4	
Water fitting	type	-	F	
	thread	"	1 1/4	
Gas connection	type	-	F	
	thread	"	3/4	
Flue gas exhaust	diameter (Ø)	mm	80	
	residual head	Pa	80	
type of installation		-	B23P, B33, B53P	
Dimensions	width	mm	854 (7)	
	depth	mm	1260	
	height	mm	1445 (7)	1520
Weight	in operation	kg	390	400
required air flow		m ³ /h	11000	
fan residual head		Pa	-	40
General information				
Refrigerating fluid	ammonia R717	kg	7,0	
	water H ₂ O	kg	10,0	
maximum pressure of the refrigerating circuit		bar	32	

(1) In transient operation, lower temperatures are allowed.

(2) For flows other than nominal see Design Manual, Pressure losses Paragraph.

(3) As an option, a version for operation down to -30 °C is available.

(4) ±10% depending on power voltage and absorption tolerance of electric motors.

(5) Sound power values detected in compliance with the intensity measurement methodology set forth by standard EN ISO 9614. Data referred to 50 °C outlet temperature.

(6) Maximum sound pressure levels in free field, with directivity factor 2, obtained from the sound power level in compliance with standard EN ISO 9614. Data referred to 50 °C outlet temperature.

(7) Overall dimensions excluding flue gas exhaust.

2.4.1 Pressure drops

Table 2.2 GAHP A and GAHP A Indoor pressure drops

Hot water flow	Heat transfer fluid temperature at outlet		
	35 °C	50 °C	60 °C
	bar	bar	bar
2000 l/h	0,23	0,21	0,19
2500 l/h	0,33	0,31	0,29
3000 l/h	0,46	0,43	0,40
4000 l/h	0,78	0,72	0,67

2.4.2 Performances

Table 2.3 p. 5 shows the heat output for a single unit at full load and in stable operation, depending on hot water delivery temperature to the system and outdoor temperature.

Table 2.3 Heat output for each GAHP A HT and GAHP A Indoor

Outdoor temperature	Water delivery temperature							
	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	65 °C	70 °C(1)
	kW	kW	kW	kW	kW	kW	kW	kW
-20 °C	33,9	31,5	29,6	27,7	25,7	23,7	22,7	9,3
-15 °C	35,2	32,8	30,9	29,0	27,0	24,9	23,9	10,0
-10 °C	36,4	34,0	32,1	30,2	28,2	26,2	25,2	10,6
-5 °C	40,3	37,7	35,2	32,7	30,6	28,5	26,4	11,1
0 °C	40,8	39,2	37,1	35,1	32,7	30,3	28,2	11,3
5 °C	41,3	40,0	38,8	37,5	34,8	32,0	30,2	11,8
7 °C	41,3	40,2	39,3	38,3	35,7	33,0	31,1	12,0
10 °C	41,3	40,6	39,8	38,9	36,6	34,4	32,5	12,4
15 °C	41,6	41,3	40,6	39,8	38,3	36,8	34,8	13,1
20 °C	41,6	41,4	40,8	40,2	39,5	38,5	37,1	13,8
25 °C	41,7	41,5	41,0	40,4	39,9	39,2	38,2	14,2
30 °C	41,8	41,6	41,1	40,5	40,1	39,4	38,4	14,4
35 °C	41,9	41,7	41,2	40,6	40,2	39,5	38,5	14,5


(1) Thermal input reduced to 50%

Table 2.4 p. 5 shows the GUE at full load and stable operation, and outdoor temperature, depending on the hot water delivery temperature to the system

Table 2.4 GUE for GAHP A HT and GAHP A Indoor

Outdoor temperature	Water delivery temperature							
	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	65 °C	70 °C(1)
	%	%	%	%	%	%	%	%
-20 °C	134	125	118	110	102	94	90	74
-15 °C	139	130	123	115	107	99	95	79
-10 °C	144	135	128	120	112	104	100	84
-5 °C	160	150	140	130	121	113	105	88
0 °C	162	155	147	139	130	120	112	90
5 °C	164	159	154	149	138	127	120	93
7 °C	164	160	156	152	141	131	124	95
10 °C	164	161	158	154	145	137	129	98
15 °C	165	164	161	158	152	146	138	104
20 °C	165	164	162	160	157	153	147	110
25 °C	165	165	163	160	158	156	152	113
30 °C	166	165	163	161	159	156	152	114
35 °C	166	165	163	161	160	157	153	115

(1) Thermal input reduced to 50%

 Please consider that, according to the actual heating request, the appliance may often need to operate under


partial load conditions and in non-stationary operation.

3 DESIGN


Compliance with installation standards

Design and installation must comply with applicable regulations in force, based on the installation Country and site, in matters of safety, design, implementation and maintenance of:

- heating systems
- cooling systems
- gas systems
- flue gas exhaust
- flue gas condensate drain

 Design and installation must also comply with the manufacturer's provisions.

3.1 APPLIANCE POSITIONING

 Please refer to Section C01.02.

3.2 PLUMBING DESIGN

 Please refer to Section C01.03.

3.3 WATER PUMP

The circulation pump (flow and head) must be selected and installed based on pressure drops of plumbing/primary circuit (piping + components + exchange terminals + appliance). For the appliance's pressure drops refer to Table 2.2 p. 4.

 Please refer to Section C01.04 for the characteristics of

the pumps available as Robur optional.

3.4 SYSTEM WATER QUALITY



Please refer to Section C01.05.

3.5 ANTIFREEZE PROTECTION



Please refer to Section C01.06.

3.6 FUEL GAS SUPPLY



Please refer to Section C01.08.

3.7 COMBUSTION PRODUCTS EXHAUST



Compliance with standards

The appliance is approved for connection to a combustion products exhaust duct for the types shown in Table 2.1 p. 3.

3.7.1 Flue gas exhaust connection

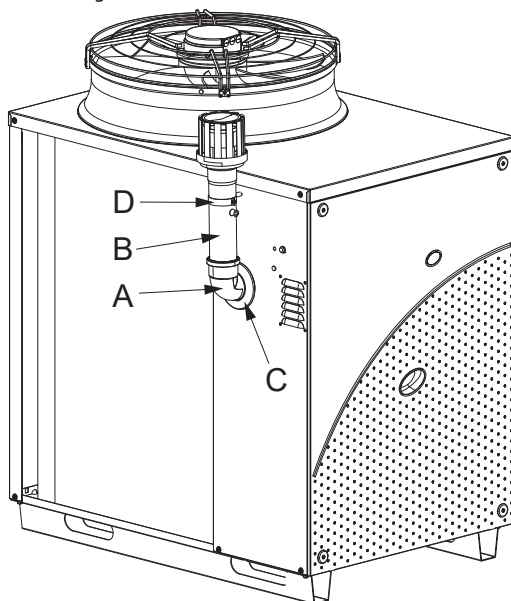
Ø 80 mm (with gasket), on the left, at the top (Figure 3.1 p. 6).

3.7.2 Flue gas exhaust kit

The appliance is supplied with flue gas exhaust kit, to be fitted by the installer, including (Figure 3.1 p. 6):

- ▶ 1 pipe Ø 80 mm, length 300 mm, with terminal and socket for flue gas analysis
- ▶ 1 support collar
- ▶ 1 90° elbow Ø 80 mm
- ▶ 1 rain cover

Figure 3.1 Flue gas exhaust



- | | | | |
|---|--------------------------------|---|------------|
| A | 90° elbow Ø 80 | C | Rain cover |
| B | Pipe Ø 80 300 mm with terminal | D | Collar |

3.7.3 Possible flue

If required, the appliance may be connected to a flue appropriate for condensing appliances.



For more details see Section C01.09.

3.8 FLUE GAS CONDENSATE DRAIN



Please refer to Section C01.09.

3.9 ELECTRICAL AND CONTROL CONNECTIONS



Please refer to Section C01.10.

3.10 EXAMPLE DIAGRAMS



Please refer to Section C01.13.

3.11 ACOUSTIC



Please refer to Section C01.14.