X3 MODULAR HEAT PUMPS

MAIN FEATURES







Code	Model	Cooling capacity [kW] (1)	Heating capacity [kW] (2)
398600050	AGCH353PH	32	35
398600051	AGCH603PH	60	65

(1) Water temperature 12 °C/7 °C, outdoor air temperature 35 °C
(2) Water temperature 40 °C/45 °C, outdoor air temperature 7 °C D.B./6 °C W.B.

Code	Model	Description	Applicability
398610050	MOD. CH	Wired control*	All

*Mandatory accessory, one for each modular system

The AGCH series is made up of reversible, modular, full inverter heat pumps for cooling and heating of predominantly commercial environments that use environment-friendly R32 refrigerant. Available in two sizes, they can be used to create single configurations or configurations with up to 16 units, connected by a single central control unit. The versatility and simplicity of the configuration or installation allow these units to easily adapt to the various types of systems.
The series is also equipped with external hydronic modules, with or without inertial tank, with single or double circulator pump, so as to fulfil the various needs of the systems they serve.

Internal copper groove | Quiet mode | Weekly timer | Heating down to low temperatures | Door control | Full protection | Timer on/off | Save energy | Easy maintenance | High efficiency | Auto restart memory

Intelligent defrosting | Central control | Wide operating range | Low-voltage start-up | Wide voltage range | Auto diagnosis | -20 °C Min. outdoor temp. heating | +40 °C Max. outdoor temp. heating | -15 °C Min. outdoor temp. cooling | +52 °C Max. outdoor temp. cooling

PLUS

SILENT OPERATION

- Active noise reduction: broad plastic blades of the fans
- Passive noise reduction: special design of the fan zone
- Passive noise reduction: "QUIET MODE" function
- Passive noise reduction: acoustic insulation of the compressor

At partial loads, the noise generated by the running unit can drop down to 52 dB(A)

HIGH EFFICIENCY

The units are equipped with a heat exchanger featuring a "DUAL FLOW" design of the tube bundle, for increasing the unit's efficiency and capacity. The special design of the plate and of the relative bottlenecks at the entry to the heat exchanger ensure a regular and uniform refrigerant flow in order to improve the heat exchange efficiency. The U-shaped thread inside the copper pipes improves the laminar flow of the fluid and facilitates the heat exchange.

The unit is able to estimate the building's thermal load on the basis of the outdoor air temperature, thus modifying the delivery water temperature set-point so as to reduce energy consumption.

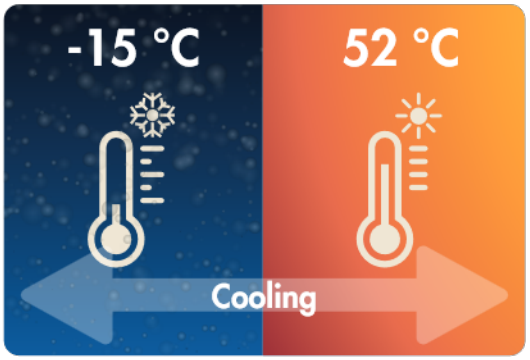
RELIABILITY

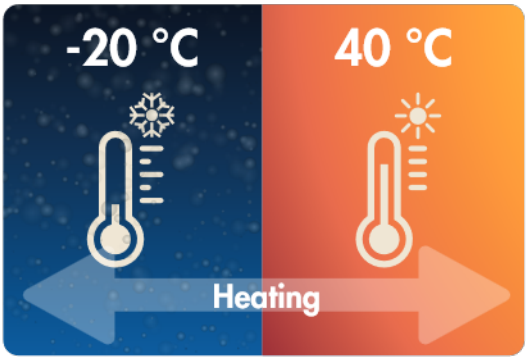
With the central control unit, it is possible to balance the work time of the compressors so as to avoid excess work only for some of them, as well as improve the system's efficiency and service life.
Only **one-third of the outdoor units** are simultaneously allowed to perform defrosting, thus reducing fluctuations of the leaving water temperature and, consequently, improving the environmental comfort.

- Each unit can be a MASTER unit;
- Timely communication between the units of the same system;
- A problem on one unit does not hinder the normal operation of the others.

The anti-freeze protection is automatically activated by the unit when the outdoor temperature drops to below 5 °C, regardless of whether it is operating in heating or cooling mode.

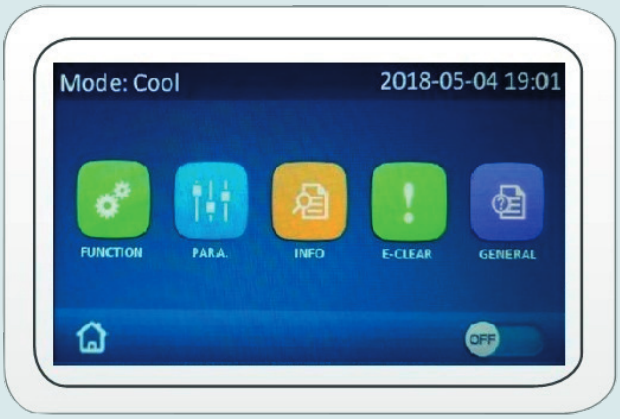
WIDE OPERATING RANGE





TOUCH-SCREEN CONTROL PANEL

The control panel, supplied separatly as a mandatory accessory, allows the management and set-up of one or more units (up to 16).



In particular it is possible to:

- Define the operating mode of the heat pump and its priorities (heating, cooling);
- Set all the main operating parameters (set point, hysteresis, etc.);
- Activate external (or internal) systems to integrate or replace the heating production unit;
- Manage the commissioning of the unit or group of units;
- Display the status of the operating parameters of the main components of the heat pump;
- Manage the unit remotely via MODBUS gateway or Wi-Fi module directly integrated into the panel.

Specific auxiliary functions are also available in the control panel, including:

- Automatic management of the flow temperature of the fluid according to the external temperature (climate curve);
- Programming of weekly and hourly operation;
- Activation of "silent" operation;
- Emergency management in case of unit failure of the single unit with detection of the unit in alarm, display of the corresponding alarm and storage of the history;
- Automatic activation of the antifreeze protection.

TECHNICAL DATA

MODEL				AGCH353PH	
Characteristics				**Cooling**	**Heating**
Performances according to EN 14511	Air +35 °C - Water +12/7 °C Air +7 °C - Water +40/45 °C	Rated capacity	kW	32.00	35.00
		EER/COP		2.74	3.3
	Air +35 °C - Water +23 °C/18 °C Air +7 °C - Water +30 °C/35 °C	Rated capacity	kW	41.38	36.00
		EER/COP		3.70	4.09
		Maximum electrical power input	kW	13.40	
		Capacity correction range	%	31% ~ 100%	
Performances according to Ecodesign (ERP) EN 14825	LOW TEMPERATURE (35 °C) AVERAGE climate	Nominal heat output	kW	24.00	
		Seasonal energy efficiency η_s	%	153	
		Annual energy consumption	kWh	12504	
		SEER/SCOP		4.4	3.9
		Energy efficiency class		A++	
	LOW TEMPERATURE (35 °C) WARMER climate	Nominal heat output	kW	26.00	
		Seasonal energy efficiency η_s	%	138.9	
		Annual energy consumption	kWh	18068	
	LOW TEMPERATURE (35 °C) COOLER climate	Nominal heat output	kW	20.00	
		Seasonal energy efficiency η_s	%	218	
		Annual energy consumption	kWh	4834	
Unit operation data		Power supply (Voltage/Phases/Frequency)	V/Ph/Hz	380-415~/3N/50	
		Sound power level	dB(A)	78	
		Sound pressure level (distance 1 m)	dB(A)	62	
	Refrigerant	Compressor type/no.		Inverter Rotary/1	
		Type and GWP		R32/675 kg CO_2 eq.	
		Quantity		5.5 kg/3.71 tons CO_2 eq.	
	Fan	Type		Axial	
		Number	No.	2	
		Air flow rate	m^3/h	2x6300	
	Water side heat exchanger	Water flow rate	m^3/h	5.5	
		Head loss	kPa	80.0	
		Hydraulic connections (IN and OUT)	inches	1"1/2	
Water side operating limits		Leaving water temperature	°C	5~20	35~50
		Water input/output temperature difference	°C	2.5~6	
Air side operating limits			°C	-15~52	-20~40
Components and dimensions		Net weight /Weight during operation	kg	405/445	
		Dimensions (H/W/D)	mm	1605/1340/920	

TECHNICAL DATA

MODEL				AGCH603PH	
Characteristics				**Cooling**	**Heating**
Performances according to EN 14511	Air +35 °C - Water +12/7 °C Air +7 °C - Water +40/45 °C	Rated capacity	kW	60.00	65.00
		EER/COP		2.88	3.27
	Air +35 °C - Water +23 °C/18 °C Air +7 °C - Water +30 °C/35 °C	Rated capacity	kW	72.18	62.60
		EER/COP		3.88	4.15
		Maximum electrical power input	kW	28.80	
		Capacity correction range	%	15% ~ 100%	
Performances according to Ecodesign (ERP) EN 14825	LOW TEMPERATURE (35 °C) AVERAGE climate	Nominal heat output	kW	51.00	
		Seasonal energy efficiency η_s	%	153	
		Annual energy consumption	kWh	25964	
		SEER/SCOP		4.6	3.9
		Energy efficiency class		A++	
	LOW TEMPERATURE (35 °C) WARMER climate	Nominal heat output	kW	39.00	
		Seasonal energy efficiency η_s	%	238.8	
		Annual energy consumption	kWh	8620	
	LOW TEMPERATURE (35 °C) COOLER climate	Nominal heat output	kW	48.00	
		Seasonal energy efficiency η_s	%	135.1	
		Annual energy consumption	kWh	34271	
Unit operation data		Power supply (Voltage/Phases/Frequency)	V/Ph/Hz	380-415~/3N/50	
		Sound power level	dB(A)	86	
		Sound pressure level (distance 1 m)	dB(A)	68	
	Refrigerant	Compressor type/no.		Inverter Rotary/1	
		Type and GWP		R32/675 kg CO_2 eq.	
		Quantity		5.5x2 kg/3.71x2 tons CO_2 eq.	
	Fan	Type		Axial	
		Number	No.	2	
		Air flow rate	m^3/h	2x12000	
	Water side heat exchanger	Water flow rate	m^3/h	10.3	
		Head loss	kPa	55.0	
		Hydraulic connections (IN and OUT)	inches	2"	
Water side operating limits		Leaving water temperature	°C	5~20	35~50
		Water input/output temperature difference	°C	2.5~6	
Air side operating limits			°C	-15~52	-20~40
Components and dimensions		Net weight/Weight during operation	kg	686/755	
		Dimensions (H/W/D)	mm	1675/2200/965	

1.4 Technical parameters

1.4.1 Electrical parameters

Electrical data table

Model	Power supply	Compressor quantity	MRC (A)	NRC (A)	Fan quantity	NRC (A)
AGCH353PH	380V-415V AC 3Ph 50Hz	1	22	19.2	2	0.70
AGCH603PH	380V-415V AC 3Ph 50Hz	2	52	32.9	2	1.28

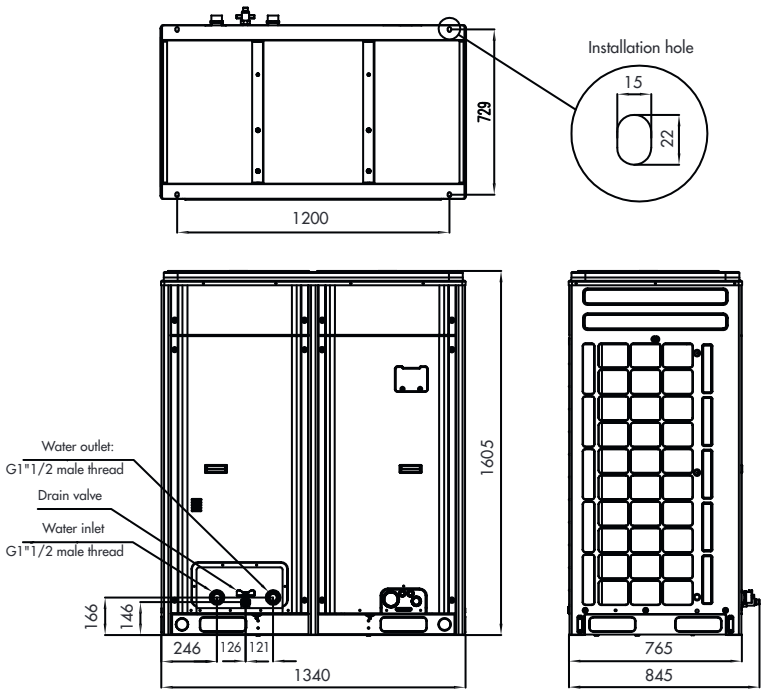
Notes:

(a) MRC: maximum running current (A)

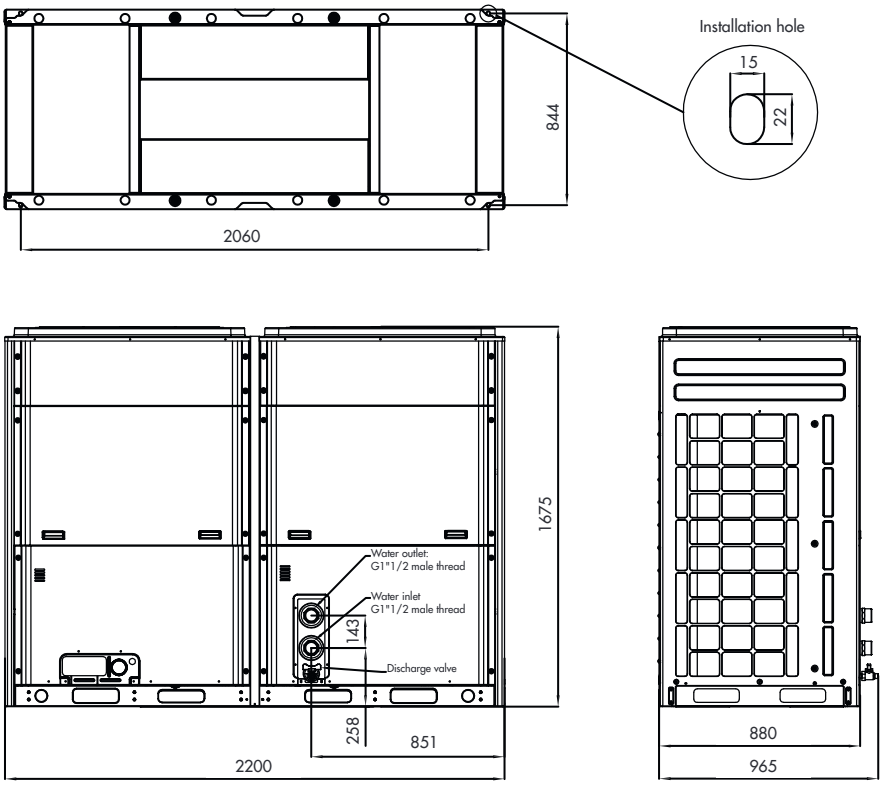
(b) NRC: nominal running current (A)

DIMENSIONAL DRAWINGS

Model AGCH353PH

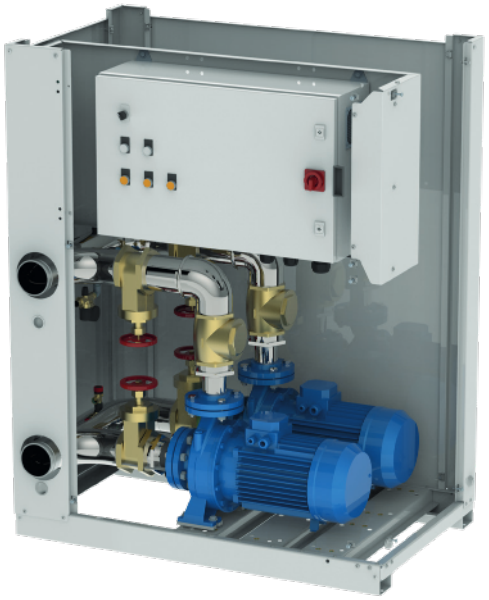


Model AGCH603PH



HYDRONIC UNITS

MOD-HYDRO



MOD-HYDRO VT



They are used to distribute the heat transfer fluid, in heating and cooling mode. Easy to install, they can be positioned outdoors and are equipped with one or two circulator pumps and, sometimes, an buffer tank.

HYDRONIC KITS

Code	Model	Tank	No. of pumps	Applicability
387030644	MOD-HYDRO 1P 30	-	1	30 kW
387030645	MOD-HYDRO 2P 30		2	
387030646	MOD-HYDRO 1P 60		1	60 kW
387030647	MOD-HYDRO 2P 60		2	
387030648	MOD-HYDRO 1P 90		1	90 kW and 120 kW
387030649	MOD-HYDRO 2P 90		2	
387030650	MOD-HYDRO V T100 1P 30	100	1	30 kW
387030651	MOD-HYDRO V T100 2P 30		2	
387030652	MOD-HYDRO V T200 1P 60	200	1	60 kW
387030653	MOD-HYDRO V T200 2P 60		2	
387030654	MOD-HYDRO V T300 1P 90	300	1	90 kW and 120 kW
387030655	MOD-HYDRO V T300 2P 90		2	

HYDRONIC KIT ACCESSORIES

Code	Description	Applicability
387030660	Vibration dampers	MOD-HYDRO V T
387030661	Vibration dampers	MOD-HYDRO
387030656	Fitting kit 1"1/2*	MOD-HYDRO 1P/2P 30
387030657	Fitting kit 2"1/2*	MOD-HYDRO 1P/2P 60-90

*Mandatory accessory for adapting from Victaulic to threaded connections

MOD-HYDRO KIT





It can be combined with any type of modular chiller with single or multiple configuration (up to 120 kW) of the proposed range.

The unit includes:

- pipes insulated with anti-condensate elastomer;
- single or double centrifugal pump with shut-off valve;
- power electrical panel with device for pump alternation at every start-up (version with 2 pumps), reserve pump start-up in case of pump malfunction (version with 2 pumps), residual-current devices, contacts for remote signalling of running pumps, IP55 protection rating;
- safety valve;
- deaerator;
- pressure gauge;
- filling/discharge valve;
- base and panel made of galvanised and coated sheet metal, suitable for outdoor installations;
- easily and quickly removable panels.

MOD-HYDRO KIT VT



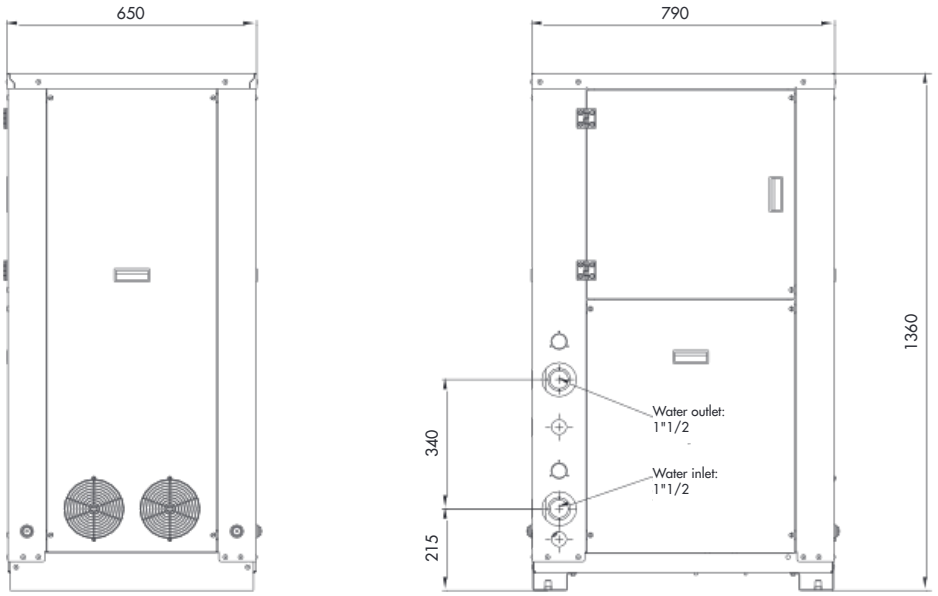
It can be combined with any type of modular chiller with single or multiple configuration (up to 120 kW) of the proposed range.

The unit includes:

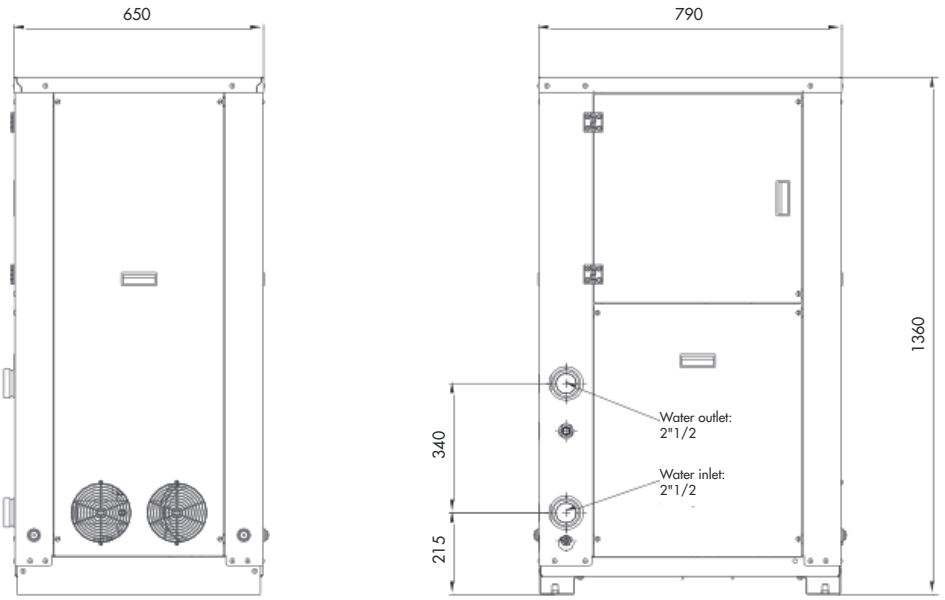
- carbon steel tanks and pipes insulated with anti-condensate elastomer (100, 200 and 300 liters);
- single or double centrifugal pump with shut-off valves;
- power electrical panel with device for pump alternation at every start-up (version with 2 pumps), reserve pump start-up in case of pump malfunction (version with 2 pumps), residual-current devices, dry contacts for remote signalling of running pumps, IP55 protection rating;
- expansion vessel;
- safety valve;
- deaerator;
- pressure gauge;
- filling/discharge valves;
- base and panel made of galvanised and coated sheet metal, suitable for outdoor installations.

DIMENSIONAL DRAWINGS

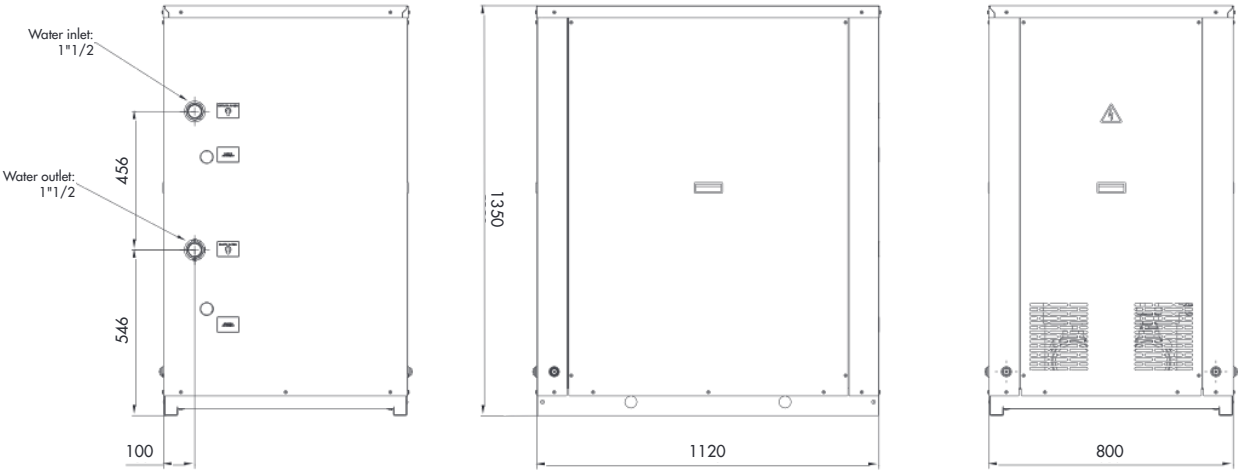
MOD-HYDRO 1P 30 - MOD-HYDRO 2P 30



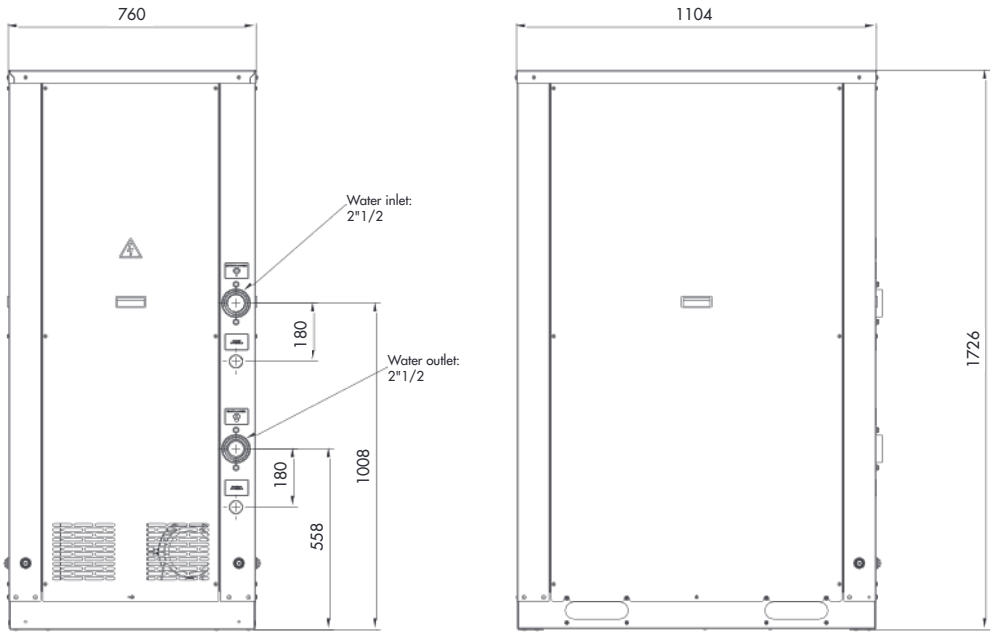
MOD-HYDRO 1P 60 - MOD-HYDRO 2P 60
MOD-HYDRO 1P 90 - MOD-HYDRO 2P 90



MOD-HYDRO V T100 1P 30
MOD-HYDRO V T100 2P 30

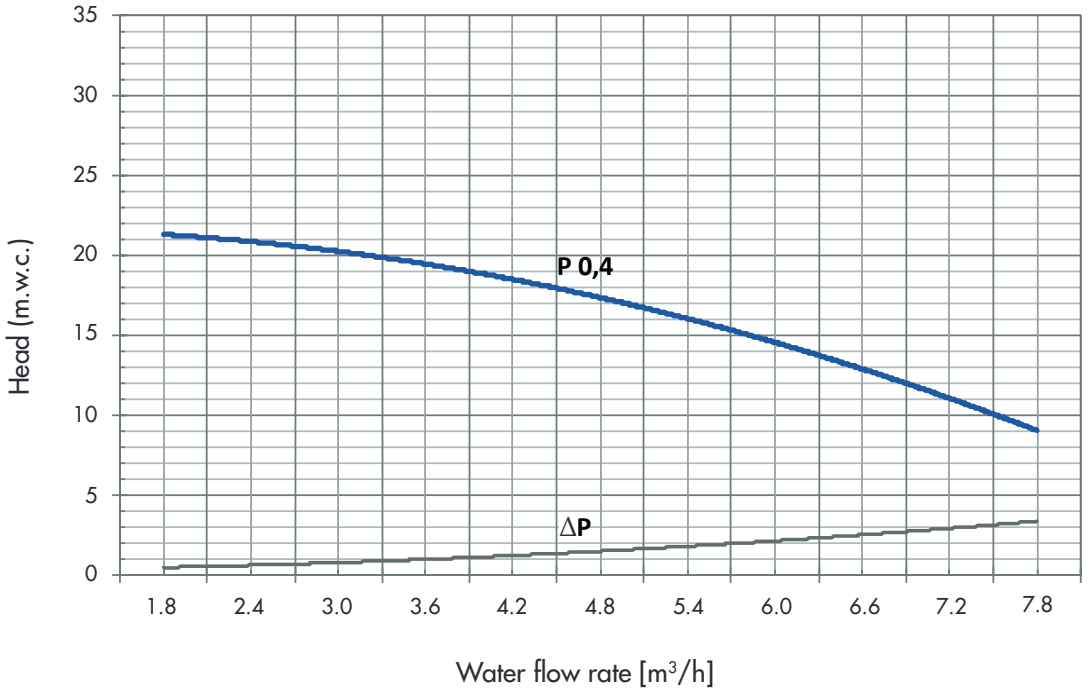


MOD-HYDRO V T200 1P 60 - MOD-HYDRO V T200 2P 60
MOD-HYDRO V T300 1P 90 - MOD-HYDRO V T300 2P 90

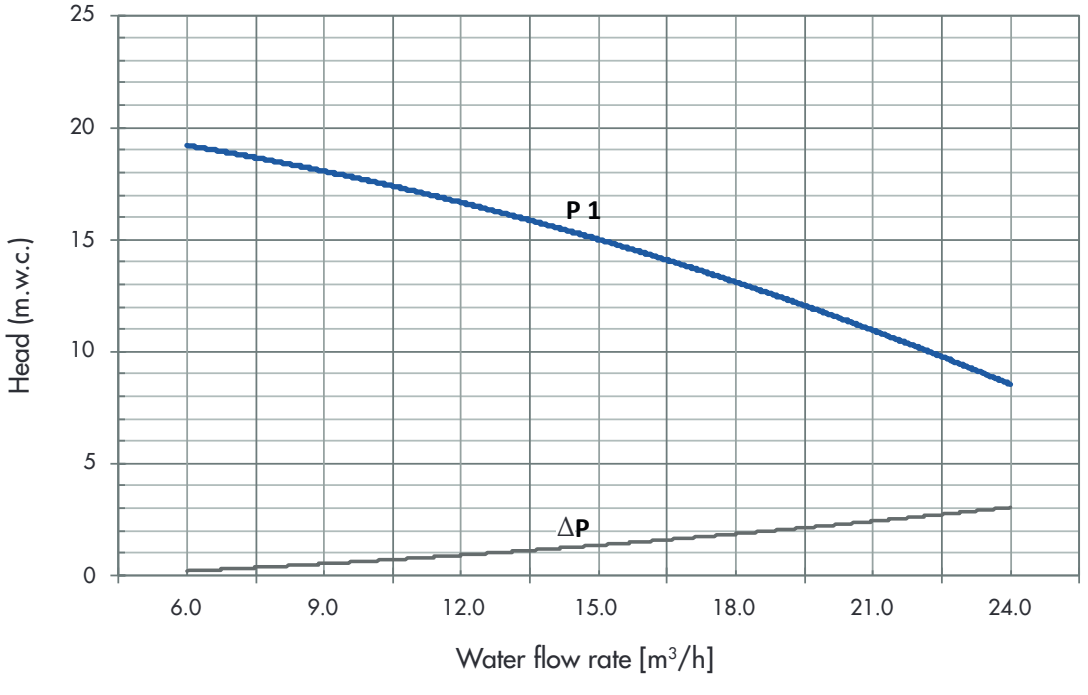


DIAGRAMS OF THE CIRCULATOR PUMPS FLOW/HEAD

MOD-HYDRO 1P 30 - MOD-HYDRO V T100 1P 30
MOD-HYDRO 2P 30 - MOD-HYDRO V T100 2P 30

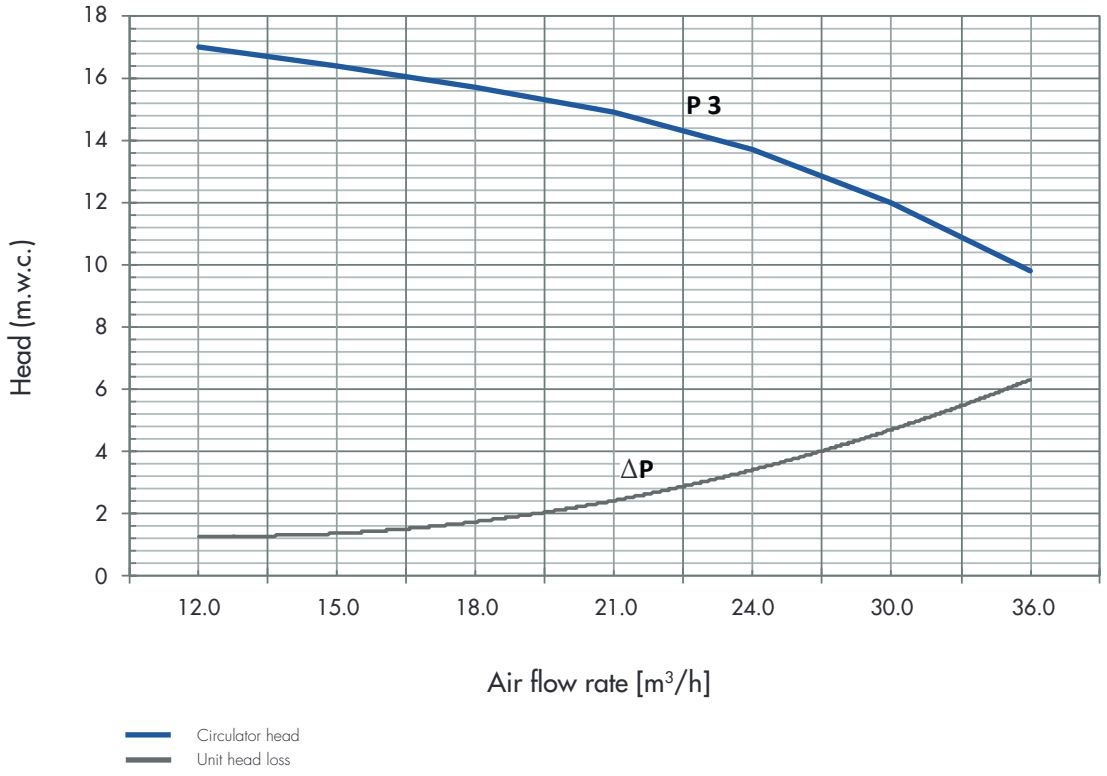


MOD-HYDRO 1P 60 - MOD-HYDRO V T200 1P 60
MOD-HYDRO 2P 60 - MOD-HYDRO V T200 2P 60



DIAGRAMS OF THE CIRCULATOR PUMPS FLOW/HEAD

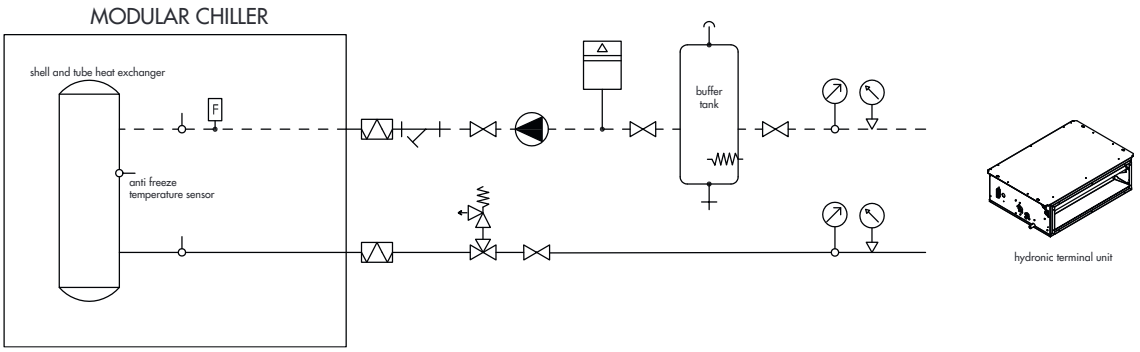
MOD-HYDRO 1P 90 - MOD-HYDRO V T300 1P 90
MOD-HYDRO 2P 90 - MOD-HYDRO V T300 2P 90



HYDRONIC UNITS INSTALLATION EXAMPLES

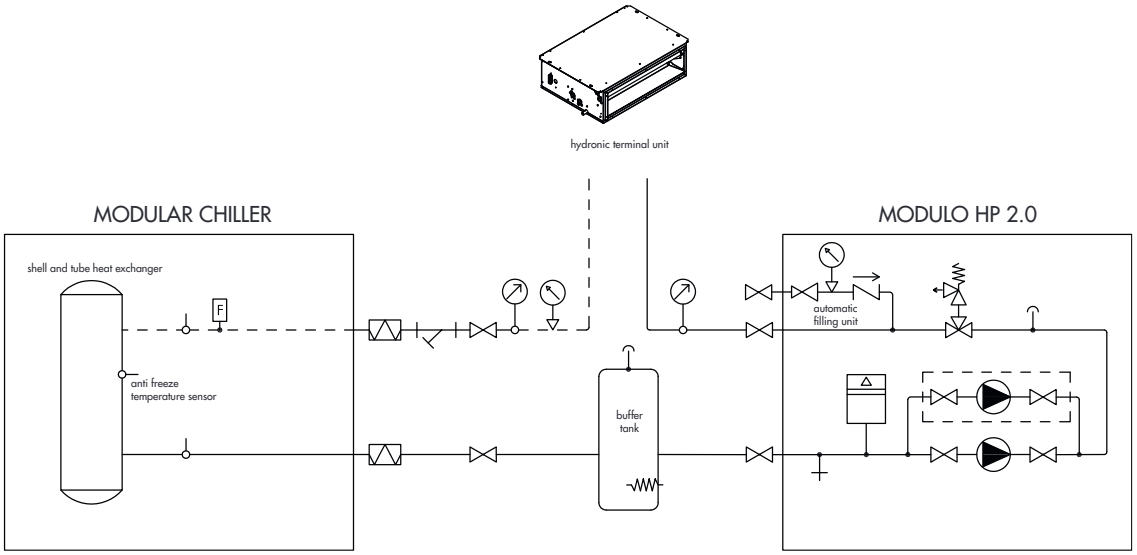
SOLUTION ONLY UNIT

LEGEND
shut-off valve
vibration dumping joint
Y-filter
safety relief valve
flow switch
dial thermostat
check valve
dial manometer
temperature sensor
drain valve
air reliet valve
electrical heater



SOLUTION UNIT AND PUMP GROUP

LEGEND
shut-off valve
vibration dumping joint
Y-filter
safety relief valve
flow switch
dial thermostat
check valve
dial manometer
temperature sensor
drain valve
air reliet valve
electrical heater



SOLUTION UNIT AND PUMP GROUP WITH BUFFER TANK

LEGEND
shut-off valve
vibration dumping joint
Y-filter
safety relief valve
flow switch
dial thermostat
check valve
dial manometer
temperature sensor
drain valve
air reliet valve
electrical heater

