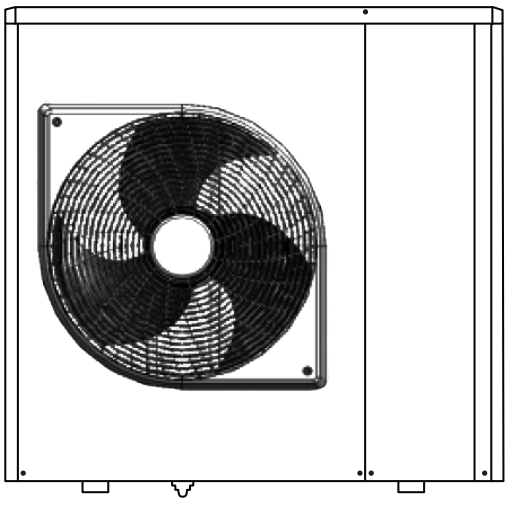
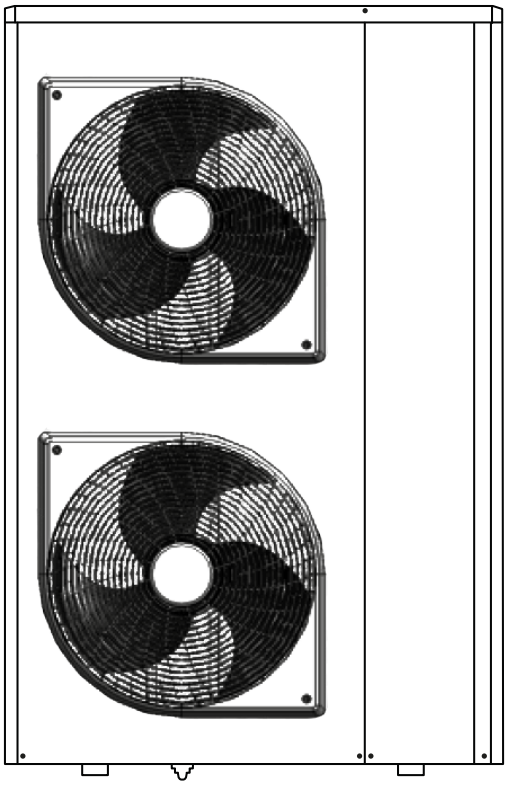
Beretta

HYDRO UNIT P 004÷014

Heat pumps





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PRODUCT DESCRIPTION

HYDRO UNIT P is a high energy efficient residential hydronic heat pump for heating, cooling and possible production of domestic hot water for domestic use.
The unit is suitable for low to medium temperature applications, and up to high temperature applications.
The unit operates on natural refrigerant R290 ensuring not only low Global Warming Potential (GWP100=0,02) and CO_2 emission, but also powerful performance with high energy efficiency at all times.
HYDRO UNIT P is also equipped with new Blue-Fin exchange coils, a special hydrophilic and anti-corrosion treatment, which improves the flow of condensation on the fins thus reducing the risk of freezing on the coil.
HYDRO UNIT P is available in 8 different models with heating capacity from 4.0 to 13.8 kW.

- High water heating temperature up to +75°C, ensure more usable hot water and helps to avoid the need for direct electric immersion to sterlize the water protecing from legionella.
- HP Keymark certified performance.
- High COP and EER.
- Low noise operation.
- DC-Inverter technology with Twin-Rotary compressor which modulates the power necessary to perfectly match the real needed load.
- They can be connected to low-temperature radiators, underfloor radiant elements and fan coil type units.
- Easy and quick installation.
- Controller WUI is included which is able to manage completely heating/ cooling/ domestic hot water system.
- The controller WUI can manage up to 4 units in cascade system (1 primary & 3 secondary).
- Anti-freeze program protects the entire system especially the hydraulic parts from damage in very cold ambient air temperature.
- Included gas separator kit to be installed externally in the leaving water pipe prevents any gas leaks inside the house.

TECHNICAL DATA

HYDRO UNIT P 004÷014

Model			HYDRO UNIT P					
			004	006	008	010	012	014
PERFORMANCE DATA IN HEATING								
Performance in heating (A7°C; W35°C)								
Nominal capacity		kW	3,95	5,80	7,60	9,60	11,40	13,80
Power consumption		kW	0,81	1,18	1,58	2,21	2,51	3,21
COP			4,90	4,90	4,80	4,35	4,55	4,30
SCOP (temperate zone)			4,70	4,82	4,69	4,69	4,48	4,48
Seasonal energy efficiency		%	185	190	185	185	176	176
Energy class		D→A+++*	A+++	A+++	A+++	A+++	A+++	A+++
Performance in heating (A7°C; W45°C)								
Nominal capacity		kW	3,85	5,50	7,80	9,50	10,80	13,60
Power consumption		kW	1,05	1,51	2,08	2,68	2,96	4,00
COP			3,65	3,65	3,75	3,55	3,65	3,40
Performance in heating (A7°C; W55°C)								
Nominal capacity		kW	3,75	5,25	7,55	9,40	10,95	13,25
Power consumption		kW	1,27	1,78	2,40	3,19	3,53	4,57
COP			2,95	2,95	3,15	2,95	3,10	2,90
SCOP (Temperate zone)			3,34	3,34	3,60	3,34	3,67	3,67
Seasonal energy efficiency		%	131	131	141	131	144	144
Energy class		D→A+++*	A++	A++	A++	A++	A++	A++
PERFORMANCE DATA IN COOLING								
Performance in cooling (A35°C; W7°C)								
Nominal capacity		kW	3,35	4,60	6,50	7,40	9,70	10,70
Power consumption		kW	1,06	1,46	2,13	2,55	3,18	3,63
EER			3,15	3,15	3,05	2,90	3,05	2,95
SEER			4,93	5,34	5,27	5,14	5,33	5,16
Seasonal energy efficiency		%	194	211	208	203	210	203
Performance in cooling (A35°C; W18°C)								
Nominal capacity		kW	4,00	6,15	8,00	8,90	12,00	14,50
Power consumption		kW	0,96	1,58	2,00	2,41	2,79	3,92
EER			4,15	3,90	4,00	3,70	4,30	3,70
ELECTRICAL CHARACTERISTICS								
Power supply		V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Total maximum input power	(1)	kW	3,50	4,40	5,00	6,40	7,10	7,10
Total maximum input current	(2)	A	15,10	19,20	21,60	27,90	30,80	30,80
COMPRESSOR								
Compressor		Type	Rotary					
Adjustment		Type	Inverter modulating					
Minimum capacity control		%	40%	32%	34%	27%	25%	21%
Refrigerant		Type	R290	R290	R290	R290	R290	R290
GWP100			0,02	0,02	0,02	0,02	0,02	0,02
Refrigerant charge		kg	0,39	0,58	0,76	0,76	1,07	1,07
CO2 equivalent		t	0,000008	0,000012	0,000015	0,000015	0,000021	0,000021
Number of circuits		n.	1	1	1	1	1	1
Hermetically sealed control box		yes/no	yes	yes	yes	yes	yes	yes
FAN								
Fan		Type	Axial					
Quantity		n.	1	1	1	1	2	2
Maximum air flow rate		m^3/h	2880	2880	2880	2880	6480	6480
Residual head		KPa	-	-	-	-	-	-

Model			HYDRO UNIT P					
			004	006	008	010	012	014
HEAT EXCHANGER SOURCE SIDE								
Heat exchanger source side		Type	Pipes in copper. fins in hydrophilic aluminium					
CIRCULATION PUMP								
Circulation pump		Type/set	Variable speed centrifuge					
Nominal delivery		m3/h	0,68	1,00	1,31	1,66	1,97	2,38
Useful head at nominal flow rate		Kpa	83	82	70	57	100	82
Maximum input power		W	75	75	75	75	140	140
Minimum input power		W	2	2	2	2	3	3
Safety valve calibration pressure		bar	3	3	3	3	3	3
Expansion tank volume	(3)	l	-	-	-	-	-	-
HEAT EXCHANGER (SYSTEM SIDE)								
Heat exchanger system side		Type	Plate					
Water capacity		l	0,6	0,9	0,9	0,9	1,5	1,5
SOUND DATA								
Sound output A7/W55	(4)	dB(A)	49	50	51	51	54	54
Sound pressure aT 5m / 1m conditions A7/W55	(5)	dB(A)	23,5/37,5	24,5/38,5	25,5/39,5	25,5/39,5	28/42	28/42
WEIGHT								
Net weight		kg	78	84	91	93	126	126

Performance is in accordance with EN 14511 and EN 14825.

* The range of energy efficiency class of this products category is between D and A+++
(1) Power input, compressors, and fans, at unit operating limits and nominal voltage (data on unit nameplate)
(2) Maximum operating current of the unit at maximum power consumption of the unit at nominal voltage (values on unit nameplate)
(3) Component not supplied with the product
(4) In dB ref=10-12 W, weighting (A). Sound emission values declared, in accordance with standard EN 12102-1 at ErP conditions (with an associated uncertainty of +/-2dB(A)). Measurement according to ISO 9614-1 and HP Keymark certification.
(5) In dB ref 20 µPa, weighting (A). Sound emission values declared, in accordance with standard EN 12102-1 at ErP conditions (with an associated uncertainty of +/-2dB(A)) Values provided for information, calculated from the sound power level Lw(A)

HYDRO UNIT P 012T÷014T

Model			HYDRO UNIT P	
			012T	014T
PERFORMANCE DATA IN HEATING				
Performance in heating (A7°C; W35°C)				
Nominal capacity		kW	11,40	13,80
Power consumption		kW	2,45	3,14
COP			4,65	4,40
SCOP (Temperate zone)			4,48	4,48
Seasonal energy efficiency		%	176	176
Energy class		D → A+++*	A+++	A+++
Performance in heating (A7°C; W45°C)				
Nominal capacity		kW	10,80	13,60
Power consumption		kW	2,88	3,89
COP			3,75	3,50
Performance in heating (A7°C; W55°C)				
Nominal capacity		kW	10,95	13,25
Power consumption		kW	3,48	4,49
COP			3,15	2,95
SCOP (Temperate zone)			3,67	3,67
Seasonal energy efficiency		%	144	144
Energy class		D → A+++*	A++	A++
PERFORMANCE DATA IN COOLING				
Performance in cooling (A35°C; W7°C)				
Nominal capacity		kW	9,70	10,70
Power consumption		kW	3,13	3,57
EER			3,10	3,00
SEER			5,33	5,16
Seasonal energy efficiency		%	210	203
Performance in cooling (A35°C; W18°C)				
Nominal capacity		kW	12,00	14,50
Power consumption		kW	2,76	3,87
EER			4,35	3,75
ELECTRICAL CHARACTERISTICS				
Power supply		V/ph/Hz	400/3/50	400/3/50
Total maximum input power	(1)	kW	10,50	10,50
Total maximum input current	(2)	A	16,10	16,10
COMPRESSOR				
Compressor		Type	Rotary	
Adjustment		Type	Inverter modulating	
Minimum capacity control		%	25%	21%
Refrigerant		Type	R290	R290
GWP100			0,02	0,02
Refrigerant charge		kg	1,07	1,07
CO2 equivalent		t	0,000021	0,000021
Number of circuits		n.	1	1
Hermetically sealed control box		yes/no	yes	yes
FAN				
Fan		Type	Axial	
Quantity		n.	2	2
Maximum air flow rate		m^3/h	6480	6480
Residual head		kPa	-	-

Model			HYDRO UNIT P	
			012T	014T
HEAT EXCHANGER SOURCE SIDE				
HEAT EXCHANGER SOURCE SIDE		Type	Pipes in copper. fins in hydrophilic aluminium	
CIRCULATION PUMP				
Circulation pump		Type/set	Variable speed centrifuge	
Nominal delivery		m^3/h	1,97	2,38
Useful head at nominal flow rate		kPa	100	82
Maximum input power		W	140	140
Minimum input power		W	3	3
Safety valve calibration pressure		bar	3	3
Expansion tank volume	(3)	l	-	-
HEAT EXCHANGER (SYSTEM SIDE)				
Heat exchanger system side		Type	Plate	
Water capacity		l	1,5	1,5
SOUND DATA				
Sound output A7/W55	(4)	dB(A)	54	54
Sound pressure aT 5m / 1m conditions A7/W55	(5)	dB(A)	28/42	28/42
WEIGHT				
Net weight		kg	128	128

TECHNICAL DATA ERP

HYDRO UNIT P 004÷014

DESCRIPTION	UM	HYDRO UNIT P					
		004	006	008	010	012	014
Temperate zone - Low temperature (30/35°C) EU reg. 811_2013							
Seasonal energy efficiency	%	185	190	185	185	176	176
SCOP		4,70	4,82	4,72	4,69	4,48	4,74
Pdeclaredh a -7°C	kW	3,36	4,32	5,69	5,69	8,27	8,27
Annual energy consumption	kWh/year	1666	2092	3057	2829	4696	4696
Energy class	D → A+++*	A+++	A+++	A+++	A+++	A+++	A+++
Sound output	dB(A)	49	50	52	51	54	54
Temperate zone - Medium temperature (47/55°C) Reg. UE 811_2013							
Seasonal energy efficiency	%	131	131	141	131	144	144
SCOP		3,34	3,34	3,60	3,34	3,67	3,67
Pdeclaredh a -7°C	kW	3,06	4,31	5,71	5,71	8,25	8,25
Annual energy consumption	kWh/year	2138	3010	4110	3989	5486	5486
Energy class	D → A+++*	A++	A++	A++	A++	A++	A++
Warm zone - Low temperature (30/35°C)							
Seasonal energy efficiency	%	259	258	252	252	253	253
SCOP		6,48	6,45	6,30	6,30	6,33	6,33
Pdeclaredh a +2°C	kW	4,07	5,14	7,62	7,62	11,14	11,14
Annual energy consumption	kWh/year	827	1048	1595	1595	2327	2327
Warm zone - Low temperature(47/55°C)							
Seasonal energy efficiency	%	168	170	174	174	173	173
SCOP		4,20	4,25	4,35	4,35	4,33	4,33
Pdeclaredh a +2°C	kW	4,37	5,14	7,62	7,62	11,14	11,14
Annual energy consumption	kWh/year	1359	1589	2294	2294	3386	3386
Cold zone - Low temperature (30/35°C)							
Seasonal energy efficiency	%	154	153	151	151	154	154
SCOP		3,85	3,83	3,78	3,78	3,85	3,85
Pdeclaredh a -7°C	kW	3,36	4,32	5,69	5,69	8,27	8,27
Annual energy consumption	kWh/year	3326	4299	5759	5759	8193	8193
Cold zone - Low temperature (47/55°C)							
Seasonal energy efficiency	%	114	116	114	114	119	119
SCOP		2,85	2,90	2,85	2,85	2,98	2,98
Pdeclaredh a -7°C	kW	3,06	4,31	5,71	5,71	8,25	8,25
Annual energy consumption	kWh/anno	4061	5655	7619	7619	10498	10498

The performance values comply with Standards: EN 14511 - EN 14825

* The range of energy efficiency class of this products category is between D and A+++

DESCRIPTION		HYDRO UNIT P	
		012T	014T
Temperate zone - Low temperature (30/35°C) EU reg. 811_2013			
Seasonal energy efficiency	%	176	176
SCOP		4,48	4,48
Pdeclaredh a -7°C	kW	8,27	8,27
Annual energy consumption	kWh/year	4696	4696
Energy class	D → A+++*	A+++	A+++
Sound output	**dB(A)**	**54**	**54**
Temperate zone - Medium temperature (47/55°C) Reg. UE 811_2013			
Seasonal energy efficiency	%	144	144
SCOP		3,67	3,67
Pdeclaredh a -7°C	kW	8,25	8,25
Annual energy consumption	kWh/year	5486	5486
Energy class	D → A+++*	A++	A++
Warm zone - Low temperature (30/35°C)			
Seasonal energy efficiency	%	253	253
SCOP		6,33	6,33
Pdeclaredh a +2°C	kW	11,14	11,14
Annual energy consumption	kWh/year	2327	2327
Warm zone - Low temperature(47/55°C)			
Seasonal energy efficiency	%	173	173
SCOP		4,33	4,33
Pdeclaredh a +2°C	kW	11,14	11,14
Annual energy consumption	kWh/year	3386	3386
Cold zone - Low temperature (30/35°C)			
Seasonal energy efficiency	%	154	154
SCOP		3,85	3,85
Pdeclaredh a -7°C	kW	8,27	8,27
Annual energy consumption	kWh/year	8186	8186
Cold zone - Low temperature (47/55°C)			
Seasonal energy efficiency	%	119	119
SCOP		2,98	2,98
Pdeclaredh a -7°C	kW	8,25	8,25
Annual energy consumption	kWh/year	10498	10498

The performance values comply with Standards: EN 14511 - EN 14825

* The range of energy efficiency class of this products category is between D and A+++

PERFORMANCE VALUES IN ACCORDANCE WITH STANDARDS EN 14511 AND EN 14825

HYDRO UNIT P 004						
HEATING						
Performance with full load						
CH flow temperature	35°C		45°C		55°C	
Outdoor temperature	Nominal capacity	COP	Nominal capacity	COP	Nominal capacity	COP
-7	3,35	2,75	3,11	2,17	3,05	1,85
2	3,75	3,70	3,49	2,91	3,55	2,40
7	3,95	4,90	3,85	3,65	3,75	2,95
12	4,09	5,47	3,98	4,09	3,78	3,14
15	4,16	6,06	3,98	4,42	3,83	3,34
20	4,27	7,06	3,98	4,98	3,90	3,68
35					4,32	4,11
Performance with partial load						
Tbival (-7°C)	A	B	C	D		
Outdoor temperature	-7	2	7	12		
PLR - Climate load factor	0,88	0,54	0,35	0,15		
DC - Output with full load	3,35	3,75	3,95	4,09		
COP with full load	2,75	3,70	4,90	5,47		
COP with partial load	2,75	3,70	4,10	3,38		
CR - Load factor	1,00	0,55	0,34	0,14		
f COP - Corrective factor	1,00	1,00	0,84	0,62		
COOLING						
	Climate load factor	**Outdoor temperature**	**EER**	**Nominal capacity**		
EER1	100%	35	3,15	3,35		
EER2	75%	30	4,30	2,47		
EER3	50%	25	6,09	1,59		
EER4	25%	20	7,98	1,71		

Heating
The performance values comply with Standards EN 14511 and EN 14825.
The performance values with a part load refer to a water delivery temperature of 35°C.

Cooling
The performance values comply with Standards EN 14825.

HYDRO UNIT P 006						
HEATING						
Performance with full load						
CH flow temperature	35°C		45°C		55°C	
Outdoor temperature	Nominal capacity	COP	Nominal capacity	COP	Nominal capacity	COP
-7	4,15	2,71	4,02	2,49	4,00	1,90
2	4,65	3,70	4,58	3,14	4,45	2,45
7	5,80	4,90	5,50	3,65	5,25	2,95
12	5,99	5,49	5,66	4,09	5,55	3,22
15	6,12	6,10	5,83	4,49	5,78	3,46
20	6,35	7,12	6,10	5,16	6,16	3,86
35					6,46	4,45
Performance with partial load						
Tbival (-7°C)	A	B	C	D		
Outdoor temperature	-7	2	7	12		
PLR - Climate load factor	0,88	0,54	0,35	0,15		
DC - Output with full load	4,15	4,65	5,80	5,99		
COP with full load	2,71	3,70	4,90	5,49		
COP with partial load	2,71	3,70	3,92	3,14		
CR - Load factor	1,00	0,55	0,28	0,12		
f COP - Corrective factor	1,00	1,00	0,80	0,57		
COOLING						
	Climate load factor	**Outdoor temperature**	**EER**	**Nominal capacity**		
EER1	100%	35	3,15	4,60		
EER2	75%	30	4,60	3,39		
EER3	50%	25	6,43	2,18		
EER4	25%	20	8,17	2,05		

Heating
The performance values comply with Standards EN 14511 and EN 14825.
The performance values with a part load refer to a water delivery temperature of 35°C.

Cooling
The performance values comply with Standards EN 14825.

HYDRO UNIT P 008						
HEATING						
Performance with full load						
CH flow temperature	35°C		45°C		55°C	
Outdoor temperature	Nominal capacity	COP	Nominal capacity	COP	Nominal capacity	COP
-7	5,85	2,71	5,58	2,53	5,45	1,93
2	7,00	3,50	7,13	3,05	7,00	2,45
7	7,60	4,80	7,80	3,75	7,55	3,15
12	8,02	5,64	8,02	4,28	7,95	3,43
15	8,23	6,30	8,17	4,74	8,09	3,73
20	8,57	7,39	8,41	5,50	8,34	4,24
35					8,84	4,43
Performance with partial load						
Tbival (-7°C)	A	B	C	D		
Outdoor temperature	-7	2	7	12		
PLR - Climate load factor	0,88	0,54	0,35	0,15		
DC - Output with full load	5,85	7,00	7,60	8,02		
COP with full load	2,70	3,50	4,80	5,64		
COP with partial load	2,70	3,50	3,91	3,31		
CR - Load factor	1,00	0,51	0,31	0,12		
f COP - Corrective factor	1,00	1,00	0,82	0,59		
COOLING						
	Climate load factor	**Outdoor temperature**	**EER**	**Nominal capacity**		
EER1	100%	35	3,05	6,50		
EER2	75%	30	4,49	4,79		
EER3	50%	25	6,36	3,08		
EER4	25%	20	7,33	2,95		

Heating
The performance values comply with Standards EN 14511 and EN 14825.
The performance values with a part load refer to a water delivery temperature of 35°C.

Cooling
The performance values comply with Standards EN 14825.

HYDRO UNIT P 010						
HEATING						
Performance with full load						
CH flow temperature	35°C		45°C		55°C	
Outdoor temperature	Nominal capacity	COP	Nominal capacity	COP	Nominal capacity	COP
-7	5,85	2,71	5,58	2,53	5,45	1,93
2	7,80	3,05	7,71	2,75	7,80	2,15
7	9,60	4,35	9,50	3,55	9,40	2,95
12	10,15	4,91	10,04	3,88	9,87	3,23
15	10,23	5,45	10,12	4,24	10,03	3,48
20	10,37	6,35	10,24	4,82	10,30	3,88
35					10,73	3,97
Performance with partial load						
Tbival (-7°C)	A	B	C	D		
Outdoor temperature	-7	2	7	12		
PLR - Climate load factor	0,88	0,54	0,35	0,15		
DC - Output with full load	5,85	7,80	9,60	10,15		
COP with full load	2,70	3,05	4,35	4,91		
COP with partial load	2,70	3,05	3,31	2,56		
CR - Load factor	1,00	0,46	0,24	0,10		
f COP - Corrective factor	1,00	1,00	0,76	0,52		
COOLING						
	Climate load factor	**Outdoor temperature**	**EER**	**Nominal capacity**		
EER1	100%	35	2,90	7,40		
EER2	75%	30	4,23	5,45		
EER3	50%	25	6,10	3,51		
EER4	25%	20	7,54	3,02		

Heating
The performance values comply with Standards EN 14511 and EN 14825.
The performance values with a part load refer to a water delivery temperature of 35°C.

Cooling
The performance values comply with Standards EN 14825.

HYDRO UNIT P 012						
HEATING						
Performance with full load						
CH flow temperature	35°C		45°C		55°C	
Outdoor temperature	Nominal capacity	COP	Nominal capacity	COP	Nominal capacity	COP
-7	8,10	2,71	7,86	2,56	7,70	2,02
2	8,90	3,35	8,42	2,91	8,35	2,30
7	11,40	4,55	10,80	3,65	10,95	3,10
12	11,89	5,86	11,26	4,47	11,29	3,49
15	12,02	6,86	11,55	5,03	11,60	3,84
20	12,22	8,53	12,05	5,98	12,12	4,42
35					13,20	4,60
Performance with partial load						
Tbival (-7°C)	A	B	C	D		
Outdoor temperature	-7	2	7	12		
PLR - Climate load factor	0,88	0,54	0,35	0,15		
DC - Output with full load	8,10	8,90	11,40	11,89		
COP with full load	2,70	3,35	4,55	5,86		
COP with partial load	2,70	3,35	4,55	3,33		
CR - Load factor	1,00	0,56	0,28	0,12		
f COP - Corrective factor	1,00	1,00	1,00	0,57		
COOLING						
	Climate load factor	**Outdoor temperature**	**EER**	**Nominal capacity**		
EER1	100%	35	3,05	9,70		
EER2	75%	30	4,49	7,15		
EER3	50%	25	5,96	4,59		
EER4	25%	20	8,31	3,60		

Heating
The performance values comply with Standards EN 14511 and EN 14825.
The performance values with a part load refer to a water delivery temperature of 35°C.

Cooling
The performance values comply with Standards EN 14825.

HYDRO UNIT P 014						
HEATING						
Performance with full load						
CH flow temperature	35°C		45°C		55°C	
Outdoor temperature	Nominal capacity	COP	Nominal capacity	COP	Nominal capacity	COP
-7	8,10	2,75	7,86	2,37	7,70	2,06
2	9,40	3,20	9,00	2,84	8,80	2,20
7	13,80	4,30	13,60	3,40	13,25	2,90
12	14,14	5,34	13,93	4,15	13,74	3,31
15	14,17	6,25	13,96	4,68	13,87	3,64
20	14,22	7,75	14,01	5,58	14,09	4,20
35					15,15	4,50
Performance with partial load						
Tbival (-7°C)	A	B	C	D		
Outdoor temperature	-7	2	7	12		
PLR - Climate load factor	0,88	0,54	0,35	0,15		
DC - Output with full load	8,10	9,40	13,80	14,14		
COP with full load	2,75	3,20	4,30	5,34		
COP with partial load	2,75	3,20	4,30	2,78		
CR - Load factor	1,00	0,53	0,23	0,10		
f COP - Corrective factor	1,00	1,00	1,00	0,52		
COOLING						
	Climate load factor	**Outdoor temperature**	**EER**	**Nominal capacity**		
EER1	100%	35	2,95	10,70		
EER2	75%	30	4,07	7,88		
EER3	50%	25	5,91	5,07		
EER4	25%	20	8,04	3,63		

Heating
The performance values comply with Standards EN 14511 and EN 14825.
The performance values with a part load refer to a water delivery temperature of 35°C.

Cooling
The performance values comply with Standards EN 14825.

HYDRO UNIT P 012T						
HEATING						
Performance with full load						
CH flow temperature	35°C		45°C		55°C	
Outdoor temperature	Nominal capacity	COP	Nominal capacity	COP	Nominal capacity	COP
-7	8,10	2,71	7,86	2,56	7,70	2,02
2	8,90	3,45	8,42	2,92	8,35	2,35
7	11,40	4,65	10,80	3,75	10,95	3,15
12	11,89	5,98	11,26	4,55	11,29	3,56
15	12,02	7,00	11,55	5,14	11,60	3,92
20	12,22	8,70	12,05	6,10	12,12	4,51
35					13,20	4,69
Performance with partial load						
Tbival (-7°C)	A	B	C	D		
Outdoor temperature	-7	2	7	12		
PLR - Climate load factor	0,88	0,54	0,35	0,15		
DC - Output with full load	8,10	8,90	11,40	11,89		
COP with full load	2,70	3,45	4,65	5,98		
COP with partial load	2,70	3,45	4,65	3,40		
CR - Load factor	1,00	0,56	0,28	0,12		
f COP - Corrective factor	1,00	1,00	1,00	0,57		
COOLING						
	Climate load factor	**Outdoor temperature**	**EER**	**Nominal capacity**		
EER1	100%	35	3,10	9,70		
EER2	75%	30	4,49	7,15		
EER3	50%	25	5,96	4,59		
EER4	25%	20	8,22	3,60		

Heating
The performance values comply with Standards EN 14511 and EN 14825.
The performance values with a part load refer to a water delivery temperature of 35°C.

Cooling
The performance values comply with Standards EN 14825.

HYDRO UNIT P 014T						
HEATING						
Performance with full load						
CH flow temperature	35°C		45°C		55°C	
Outdoor temperature	Nominal capacity	COP	Nominal capacity	COP	Nominal capacity	COP
-7	8,10	2,75	7,86	2,37	7,70	2,06
2	9,40	3,30	9,00	2,90	8,80	2,25
7	13,80	4,40	13,60	3,50	13,25	2,95
12	14,14	5,45	13,93	4,23	13,74	3,37
15	14,17	6,37	13,96	4,78	13,87	3,71
20	14,22	7,91	14,01	5,69	14,09	4,28
35					15,15	4,59
Performance with partial load						
Tbival (-7°C)	A	B	C	D		
Outdoor temperature	-7	2	7	12		
PLR - Climate load factor	0,88	0,54	0,35	0,15		
DC - Output with full load	8,10	9,40	13,80	14,14		
COP with full load	2,75	3,30	4,40	5,45		
COP with partial load	2,75	3,30	4,40	2,83		
CR - Load factor	1,00	0,53	0,23	0,10		
f COP - Corrective factor	1,00	1,00	1,00	0,52		
COOLING						
	Climate load factor	**Outdoor temperature**	**EER**	**Nominal capacity**		
EER1	100%	35	3,00	10,70		
EER2	75%	30	4,07	7,88		
EER3	50%	25	5,91	5,07		
EER4	25%	20	7,96	3,63		

Heating
The performance values comply with Standards EN 14511 and EN 14825.
The performance values with a part load refer to a water delivery temperature of 35°C.

Cooling
The performance values comply with Standards EN 14825.

PERFORMANCE DATA - HEATING CAPACITIES IN ACCORDANCE WITH EN14511

OUTSIDE AIR DRY-BULB (WET-BULB) TEMPERATURE: -20(-21) / -15(-16) °C

Outside air dry-bulb (wet-bulb) temperature (°C)															
HYDRO UNIT P 004÷014	LWT °C	-20(-21)							-15(-16)						
		Qh			COP			q	Qh			COP			q
		kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
004	35	2,86	1,29	2,86	1,61	1,54	1,61	0,14	2,47	1,70	3,64	2,14	2,16	2,01	0,12
006		3,34	1,60	3,34	2,08	2,03	2,08	0,16	3,61	2,04	5,94	2,47	2,44	2,22	0,17
008		4,15	2,34	4,15	2,25	2,17	2,25	0,20	5,10	2,98	6,26	2,54	2,56	2,39	0,24
010		4,15	2,34	4,15	2,25	2,17	2,25	0,20	5,10	2,98	6,26	2,54	2,56	2,39	0,24
012		6,46	3,11	6,87	2,36	2,31	2,33	0,31	7,46	3,68	10,68	2,58	2,59	2,20	0,36
012T		6,46	3,11	6,87	2,41	2,34	2,38	0,31	7,46	3,68	10,68	2,63	2,61	2,24	0,36
014		6,46	3,11	6,87	2,36	2,31	2,33	0,31	7,46	3,68	10,68	2,58	2,59	2,20	0,36
014T		6,46	3,11	6,87	2,41	2,34	2,38	0,31	7,46	3,68	10,68	2,63	2,61	2,24	0,36
004	45	2,47	1,21	2,47	1,36	1,24	1,36	0,12	3,59	1,59	3,59	1,76	1,66	1,76	0,17
006		3,30	1,47	3,30	1,78	1,58	1,78	0,16	4,00	1,87	5,76	1,95	1,90	1,87	0,19
008		3,95	2,25	3,95	1,94	1,80	1,94	0,19	4,89	2,83	5,97	2,18	2,08	2,10	0,23
010		3,95	2,25	3,95	1,94	1,80	1,94	0,19	4,89	2,83	5,97	2,18	2,08	2,10	0,23
012		6,17	2,91	6,56	2,07	1,88	2,06	0,30	7,15	3,45	10,31	2,25	2,10	2,05	0,34
012T		6,17	2,91	6,56	2,11	1,90	2,11	0,30	7,15	3,45	10,31	2,30	2,12	2,09	0,34
014		6,17	2,91	6,56	2,07	1,88	2,06	0,30	7,15	3,45	10,31	2,25	2,10	2,05	0,34
014T		6,17	2,91	6,56	2,11	1,90	2,11	0,30	7,15	3,45	10,31	2,30	2,12	2,09	0,34
004	55	2,12	1,12	2,12	1,05	0,99	1,05	0,07	2,98	1,51	2,98	1,47	1,30	1,47	0,09
006		2,77	1,40	2,77	1,53	1,28	1,53	0,12	3,45	1,81	4,62	1,76	1,56	1,70	0,12
008		3,27	2,20	3,27	1,65	1,51	1,65	0,12	4,75	2,75	4,81	1,89	1,73	1,88	0,14
010		3,27	2,20	3,27	1,65	1,51	1,65	0,12	4,75	2,75	4,81	1,89	1,73	1,88	0,14
012		6,38	2,75	6,38	1,87	1,52	1,87	0,19	6,98	3,29	9,19	2,01	1,71	1,99	0,21
012T		6,38	2,75	6,38	1,91	1,54	1,91	0,19	6,98	3,29	9,19	2,05	1,73	2,03	0,21
014		6,38	2,75	6,38	1,87	1,52	1,87	0,19	6,98	3,29	9,19	2,01	1,71	1,99	0,21
014T		6,38	2,75	6,38	1,91	1,54	1,91	0,19	6,98	3,29	9,19	2,05	1,73	2,03	0,21
004	65								2,16	1,37	2,16	1,11	1,02	1,11	0,07
006									2,38	1,71	2,38	1,43	1,28	1,43	0,12
008									2,94	2,57	2,94	1,49	1,41	1,49	0,12
010									2,94	2,57	2,94	1,49	1,41	1,49	0,12
012									3,14	3,14	3,14	1,39	1,39	1,39	0,17
012T									3,14	3,14	3,14	1,40	1,40	1,40	0,17
014									3,14	3,14	3,14	1,39	1,39	1,39	0,17
014T									3,14	3,14	3,14	1,40	1,40	1,40	0,17
004	75														
006															
008															
010															
012															
012T															
014															
014T															

LEGEND

LWT Leaving water temperature (°C)
Qh Heating capacity (kW)
Nom Nominal
Min Minimum
Max Maximum
COP Coefficient of Performance (kW/kW)
q Condenser water flow rate (l/s)

APPLICATION DATA

Standard units, refrigerant: R290
Condenser entering/leaving water temperature difference: according to NF414
Condenser fluid: water
Fouling factor: 0 m² K/W
Performances in accordance with EN 14511

OUTSIDE AIR DRY-BULB (WET-BULB) TEMPERATURE: -10(-11) / -7(-8) °C

Outside air dry-bulb (wet-bulb) temperature (°C)															
HYDRO UNIT P 004÷014	LWT °C	-10(-11)							-7(-8)						
		Qh			COP			q	Qh			COP			q
		kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
004	35	3,08	2,08	4,18	2,55	2,72	2,03	0,15	3,35	1,28	4,18	2,75	2,75	2,22	0,17
006		4,38	2,49	5,86	2,74	2,87	2,09	0,21	4,15	1,57	6,00	2,71	2,86	2,32	0,23
008		5,27	3,68	8,10	2,36	3,01	1,96	0,29	5,85	2,36	8,41	2,71	2,90	2,16	0,32
010		5,27	3,68	8,30	2,36	3,01	1,92	0,29	5,85	2,36	8,87	2,71	2,90	2,05	0,32
012		7,43	4,31	10,45	2,47	2,94	2,10	0,40	8,10	2,56	9,96	2,71	2,59	2,40	0,44
012T		7,43	4,31	10,45	2,57	2,97	2,15	0,40	8,10	2,56	9,96	2,71	2,59	2,44	0,44
014		7,43	4,31	10,45	2,47	2,94	2,10	0,40	8,10	2,56	10,94	2,71	2,59	2,22	0,44
014T		7,43	4,31	10,45	2,57	2,97	2,15	0,40	8,10	2,56	10,94	2,75	2,59	2,27	0,44
004	45	2,83	1,96	4,18	2,04	2,13	1,73	0,14	3,11	1,16	4,18	2,17	2,05	1,84	0,15
006		4,23	2,31	5,75	2,35	2,23	2,13	0,20	4,02	1,38	6,00	2,49	2,09	2,27	0,22
008		5,10	3,46	7,60	2,25	2,40	1,96	0,28	5,58	2,20	7,85	2,53	2,21	2,16	0,30
010		5,10	3,46	7,95	2,25	2,40	1,91	0,28	5,58	2,20	8,58	2,53	2,21	2,04	0,30
012		7,30	4,05	10,19	2,42	2,37	2,16	0,39	7,86	2,34	9,72	2,56	2,02	2,37	0,42
012T		7,30	4,05	10,19	2,24	2,40	2,01	0,39	7,86	2,34	9,72	2,56	2,02	2,20	0,42
014		7,30	4,05	10,19	2,42	2,37	2,16	0,39	7,86	2,34	10,66	2,37	2,02	2,26	0,42
014T		7,30	4,05	10,19	2,24	2,40	2,01	0,39	7,86	2,34	10,66	2,37	2,02	2,10	0,42
004	55	2,70	1,88	4,18	1,65	1,65	1,50	0,08	3,05	1,06	4,18	1,85	1,51	1,60	0,09
006		4,00	2,24	5,54	1,78	1,82	1,64	0,12	4,00	1,28	5,94	1,90	1,63	1,70	0,14
008		4,98	3,34	6,68	1,74	1,96	1,64	0,17	5,45	2,09	7,46	1,93	1,72	1,79	0,18
010		4,98	3,34	7,17	1,74	1,96	1,60	0,17	5,45	2,09	8,21	1,93	1,72	1,72	0,18
012		7,26	3,87	10,04	1,88	1,93	1,82	0,24	7,70	2,17	9,50	2,02	1,57	1,94	0,26
012T		7,26	3,87	10,04	1,96	1,95	1,86	0,24	7,70	2,17	9,50	2,02	1,57	1,98	0,26
014		7,26	3,87	10,04	1,92	1,93	1,82	0,24	7,70	2,17	10,52	2,06	1,57	1,89	0,26
014T		7,26	3,87	10,04	1,96	1,95	1,86	0,24	7,70	2,17	10,52	2,06	1,57	1,93	0,26
004	65	4,26	1,76	4,26	1,52	1,27	1,52	0,10	2,87	1,99	4,10	1,58	1,41	1,58	0,10
006		4,60	2,14	4,95	1,64	1,52	1,61	0,12	3,76	2,38	4,68	1,54	1,64	1,54	0,13
008		5,28	3,14	5,66	1,74	1,59	1,73	0,13	5,12	3,55	5,12	1,67	1,73	1,67	0,14
010		5,28	3,14	5,66	1,74	1,59	1,73	0,13	5,12	3,55	5,12	1,67	1,73	1,67	0,14
012		6,74	3,67	6,74	1,81	1,54	1,81	0,17	7,61	4,01	8,51	1,76	1,64	1,74	0,21
012T		6,74	3,67	6,74	1,86	1,56	1,86	0,17	7,61	4,01	8,51	1,82	1,66	1,79	0,21
014		6,74	3,67	6,74	1,81	1,54	1,81	0,17	7,61	4,01	8,51	1,76	1,64	1,74	0,21
014T		6,74	3,67	6,74	1,86	1,56	1,86	0,17	7,61	4,01	8,51	1,82	1,66	1,79	0,21
004	75								2,26	1,64	2,26	1,05	1,03	1,05	0,07
006									2,52	2,23	2,52	1,35	1,42	1,35	0,12
008									3,00	3,00	3,00	1,33	1,33	1,33	0,12
010									3,00	3,00	3,00	1,33	1,33	1,33	0,12
012									3,79	3,79	3,79	1,30	1,30	1,30	0,17
012T									3,79	3,79	3,79	1,31	1,31	1,31	0,17
014									3,79	3,79	3,79	1,30	1,30	1,30	0,17
014T									3,79	3,79	3,79	1,31	1,31	1,31	0,17

LEGEND

LWT Leaving water temperature (°C)
Qh Heating capacity (kW)
Nom Nominal
Min Minimum
Max Maximum
COP Coefficient of Performance (kW/kW)
q Condenser water flow rate (l/s)

APPLICATION DATA

Standard units, refrigerant: R290
Condenser entering/leaving water temperature difference: according to NF414
Condenser fluid: water
Fouling factor: 0 m² K/W
Performances in accordance with EN 14511

OUTSIDE AIR DRY-BULB (WET-BULB) TEMPERATURE: 2(1) / 7(6)°C

Outside air dry-bulb (wet-bulb) temperature (°C)															
HYDRO UNIT P 004÷014	LWT °C	2(1)							7(6)						
		Qh			COP			q	Qh			COP			q
		kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
004	35	3,75	1,32	4,07	3,70	3,69	3,47	0,20	3,95	1,50	4,80	4,90	4,90	4,35	0,19
006		4,65	1,65	5,14	3,70	3,76	3,23	0,26	5,80	1,87	7,20	4,90	4,93	4,31	0,29
008		7,00	2,53	7,62	3,50	3,84	3,19	0,40	7,60	2,74	8,47	4,80	4,93	4,10	0,37
010		7,80	2,44	8,72	3,05	3,68	2,42	0,51	9,60	2,74	10,00	4,35	4,93	3,40	0,46
012		8,90	2,62	11,14	3,35	3,04	2,95	0,54	11,40	3,00	12,92	4,55	4,80	3,88	0,55
012T		8,90	2,62	11,14	3,45	3,04	3,01	0,54	11,40	3,00	12,92	4,65	4,80	3,96	0,55
014		9,40	2,63	11,93	3,20	3,04	2,58	0,59	13,80	3,00	14,82	4,30	4,80	3,42	0,67
014T		9,40	2,63	11,93	3,30	3,04	2,63	0,59	13,80	3,00	14,82	4,40	4,80	3,48	0,67
004	45	3,49	1,18	4,27	2,91	2,66	2,80	0,18	3,85	1,34	4,80	3,65	3,40	3,39	0,19
006		4,58	1,46	5,14	3,14	2,73	2,90	0,25	5,50	1,69	7,20	3,65	3,47	3,34	0,27
008		7,13	2,27	7,62	3,05	2,75	2,82	0,41	7,80	2,57	8,47	3,75	3,47	3,28	0,38
010		7,71	2,27	8,72	2,75	2,75	2,30	0,49	9,50	2,57	10,00	3,55	3,47	2,81	0,45
012		8,42	2,36	11,14	2,91	2,31	2,56	0,51	10,80	2,68	12,92	3,65	3,42	3,16	0,52
012T		8,42	2,36	11,14	2,92	2,31	2,58	0,51	10,80	2,68	12,92	3,75	3,42	3,20	0,52
014		9,00	2,36	11,70	2,84	2,30	2,49	0,56	13,60	2,68	14,82	3,40	3,42	2,88	0,68
014T		9,00	2,36	11,70	2,90	2,30	2,54	0,56	13,60	2,68	14,82	3,50	3,42	2,92	0,68
004	55	3,55	1,05	4,37	2,40	1,96	2,37	0,11	3,75	1,20	4,80	2,95	2,38	2,74	0,12
006		4,45	1,34	5,14	2,45	2,06	2,22	0,15	5,25	1,56	7,20	2,95	2,56	2,73	0,16
008		7,00	2,16	7,62	2,45	2,11	2,26	0,25	7,55	2,47	8,47	3,15	2,53	2,70	0,23
010		7,80	2,16	8,55	2,15	2,11	1,94	0,30	9,40	2,47	10,00	2,95	2,53	2,39	0,28
012		8,35	2,16	11,14	2,30	1,77	2,07	0,31	10,95	2,45	14,40	3,10	2,50	2,68	0,33
012T		8,35	2,16	11,14	2,35	1,77	2,27	0,31	10,95	2,45	14,40	3,15	2,50	2,74	0,33
014		8,80	2,16	11,40	2,20	1,77	1,99	0,34	13,25	2,45	14,66	2,90	2,50	2,50	0,40
014T		8,80	2,16	11,40	2,25	1,77	2,16	0,34	13,25	2,45	14,66	2,95	2,50	2,55	0,40
004	65	3,47	2,53	4,48	1,94	1,83	1,88	0,08	3,36	2,81	4,80	2,20	2,11	2,16	0,08
006		4,83	3,12	5,04	2,12	2,03	1,89	0,12	4,87	3,50	7,20	2,38	2,33	2,30	0,12
008		6,75	4,66	7,41	2,07	2,09	1,97	0,19	7,06	5,24	9,60	2,46	2,40	2,30	0,17
010		7,56	4,66	7,61	1,94	2,09	1,92	0,22	8,90	5,24	9,72	2,38	2,40	2,22	0,21
012		8,32	5,15	9,63	1,96	2,01	1,89	0,25	10,32	5,64	13,78	2,42	2,40	2,29	0,25
012T		8,32	5,15	9,63	2,10	2,03	2,05	0,25	10,32	5,64	13,78	2,49	2,42	2,36	0,25
014		8,56	5,15	9,36	1,98	2,01	1,93	0,26	12,61	5,64	13,78	2,35	2,40	2,29	0,30
014T		8,56	5,15	9,36	2,04	2,03	1,99	0,26	12,61	5,64	13,78	2,42	2,42	2,36	0,30
004	75	4,09	2,15	4,09	1,47	1,28	1,47	0,10	3,29	2,43	4,36	1,55	1,47	1,54	0,10
006		4,49	2,87	5,49	1,84	1,73	1,83	0,12	4,77	3,18	6,20	2,04	1,95	2,04	0,15
008		5,98	3,99	6,17	1,69	1,61	1,69	0,16	6,90	4,58	8,12	1,92	1,84	1,92	0,16
010		6,16	3,99	6,16	1,68	1,61	1,69	0,17	7,80	4,58	8,12	1,93	1,84	1,92	0,19
012		7,58	4,82	7,58	1,65	1,57	1,65	0,23	10,68	5,24	10,68	1,92	1,83	1,92	0,25
012T		7,58	4,82	7,58	1,70	1,58	1,70	0,23	10,68	5,24	10,68	1,97	1,84	1,97	0,25
014		7,58	4,82	7,58	1,65	1,57	1,65	0,23	10,68	5,24	10,68	1,92	1,83	1,92	0,25
014T		7,58	4,82	7,58	1,70	1,58	1,70	0,23	10,68	5,24	10,68	1,97	1,84	1,97	0,25

LEGEND

LWT Leaving water temperature (°C)
Qh Heating capacity (kW)
Nom Nominal
Min Minimum
Max Maximum
COP Coefficient of Performance (kW/kW)
q Condenser water flow rate (l/s)

APPLICATION DATA

Standard units, refrigerant: R290
Condenser entering/leaving water temperature difference: according to NF414
Condenser fluid: water
Fouling factor: 0 m² K/W
Performances in accordance with EN 14511

OUTSIDE AIR DRY-BULB (WET-BULB) TEMPERATURE: 10(9) / 20(19)°C

Outside air dry-bulb (wet-bulb) temperature (°C)															
HYDRO UNIT P 004÷014	LWT °C	10(9)							20(19)						
		Qh			COP			q	Qh			COP			q
		kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
004	35	4,05	1,64	4,80	5,07	5,38	4,78	0,19	4,27	2,18	4,80	7,06	7,74	6,80	0,20
006		5,90	2,03	7,20	5,08	5,50	4,73	0,28	6,35	2,59	7,20	7,12	7,98	6,75	0,30
008		7,88	2,98	9,60	5,21	5,58	4,67	0,38	8,57	3,98	9,60	7,39	8,87	7,01	0,41
010		10,09	2,98	10,00	4,55	5,58	3,91	0,48	10,37	3,98	12,00	6,35	8,87	5,84	0,50
012		11,81	3,30	14,40	5,19	5,48	4,59	0,57	12,22	4,69	14,40	8,53	9,23	7,60	0,59
012T		11,81	3,30	14,40	5,30	5,48	4,68	0,57	12,22	4,69	14,40	8,70	9,23	7,75	0,59
014		14,11	3,30	16,80	4,74	5,48	4,06	0,68	14,22	4,69	16,80	7,75	9,23	6,63	0,68
014T		14,11	3,30	16,80	4,83	5,48	4,14	0,68	14,22	4,69	16,80	7,91	9,23	6,76	0,68
004	45	3,98	1,46	4,80	3,87	3,68	3,68	0,19	3,98	1,94	4,80	4,98	4,88	4,78	0,19
006		5,55	1,85	7,20	3,82	3,82	3,59	0,27	6,10	2,37	7,20	5,16	5,20	4,87	0,29
008		7,93	2,82	9,60	3,98	3,88	3,62	0,38	8,41	3,82	9,60	5,50	5,84	5,12	0,40
010		9,99	2,82	10,00	3,65	3,88	3,18	0,48	10,24	3,82	12,00	4,82	5,84	4,30	0,49
012		11,06	2,94	14,40	4,09	3,81	3,60	0,53	12,05	4,12	14,40	5,98	5,94	5,40	0,58
012T		11,06	2,94	14,40	4,17	3,81	3,67	0,53	12,05	4,12	14,40	6,10	5,94	5,51	0,58
014		13,91	2,94	16,80	3,79	3,81	3,28	0,65	14,01	4,12	16,80	5,58	5,94	4,81	0,67
014T		13,91	2,94	16,80	3,86	3,81	3,35	0,68	14,01	4,12	16,80	5,69	5,94	4,91	0,67
004	55	3,75	1,30	4,80	3,00	2,55	2,93	0,11	3,90	1,70	4,80	3,68	3,24	3,58	0,12
006		5,39	1,70	7,20	3,06	2,79	2,90	0,16	6,16	2,22	7,20	3,86	3,72	3,71	0,18
008		7,85	2,72	9,60	3,23	2,81	2,93	0,23	8,34	3,72	9,60	4,24	4,09	3,96	0,25
010		9,76	2,72	12,00	3,07	2,81	2,65	0,29	10,30	3,72	12,00	3,88	4,09	3,48	0,31
012		11,09	2,68	14,40	3,26	2,77	2,92	0,33	12,12	3,70	14,40	4,42	4,12	4,06	0,36
012T		11,09	2,68	14,40	3,33	2,77	2,98	0,34	12,12	3,70	14,40	4,51	4,12	4,14	0,36
014		13,65	2,68	16,80	3,08	2,77	2,76	0,41	14,09	3,70	16,80	4,20	4,12	3,74	0,42
014T		13,65	2,68	16,80	3,14	2,77	2,81	0,41	14,09	3,70	16,80	4,28	4,12	3,82	0,42
004	65	3,53	2,97	4,80	2,30	2,21	2,30	0,08	4,33	3,84	4,80	2,76	2,71	2,76	0,10
006		5,10	3,71	7,20	2,50	2,47	2,41	0,12	6,34	4,70	7,20	3,03	3,09	2,96	0,15
008		7,45	5,53	9,60	2,57	2,55	2,43	0,18	7,89	6,98	9,60	3,25	3,18	3,00	0,19
010		9,25	5,53	11,41	2,50	2,55	2,31	0,22	9,81	6,99	12,00	3,08	3,18	2,68	0,23
012		10,65	6,05	14,40	2,61	2,57	2,46	0,25	12,16	7,97	14,40	3,33	3,47	3,13	0,29
012T		10,65	6,05	14,40	2,69	2,60	2,53	0,25	12,16	7,97	14,40	3,39	3,51	3,22	0,29
014		13,24	6,05	14,64	2,54	2,57	2,48	0,32	13,76	7,97	16,80	3,23	3,47	2,92	0,33
014T		13,24	6,05	14,64	2,61	2,60	2,56	0,32	13,76	7,97	16,80	3,33	3,51	3,00	0,33
004	75	4,19	2,67	4,71	1,71	1,59	1,70	0,10	4,19	3,58	4,80	2,10	2,03	2,06	0,10
006		4,70	3,37	6,44	2,13	2,06	2,10	0,12	5,92	4,29	7,20	2,58	2,56	2,53	0,14
008		6,65	4,87	8,61	2,06	1,96	2,02	0,16	8,23	6,47	9,60	2,46	2,51	2,34	0,20
010		8,31	4,87	8,61	2,06	1,96	2,02	0,20	10,03	6,47	10,37	2,34	2,51	2,28	0,24
012		11,32	5,58	11,32	2,07	1,94	2,07	0,27	12,01	7,32	13,78	2,47	2,59	2,43	0,29
012T		11,32	5,58	11,32	2,13	1,96	2,13	0,24	12,01	7,32	13,78	2,55	2,61	2,50	0,29
014		11,32	5,58	11,32	2,07	1,94	2,07	0,27	13,79	7,31	13,78	2,43	2,59	2,43	0,33
014T		11,32	5,58	11,32	2,13	1,96	2,13	0,27	13,79	7,31	13,78	2,50	2,61	2,50	0,33

LEGEND

LWT Leaving water temperature (°C)
Qh Heating capacity (kW)
Nom Nominal
Min Minimum
Max Maximum
COP Coefficient of Performance (kW/kW)
q Condenser water flow rate (l/s)

APPLICATION DATA

Standard units, refrigerant: R290
Condenser entering/leaving water temperature difference: according to NF414
Condenser fluid: water
Fouling factor: 0 m² K/W
Performances in accordance with EN 14511

PERFORMANCE DATA - COOLING CAPACITIES IN ACCORDANCE WITH EN14511

OUTSIDE AIR TEMPERATURE: 10 / 15 / 25°C

Outside air Temperature (°C)																						
HYDRO UNIT P 004÷014	LWT °C	10							15							25						
		Qc			EER			q	Qc			EER			q	Qc			EER			q
		kW			kW/kW			l/s	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
004	5	3,84	2,15	4,80	7,13	9,37	5,76	0,18	3,69	1,32	4,80	6,39	7,87	4,92	0,18	3,34	1,14	4,63	4,19	4,59	3,09	0,16
006		5,30	3,65	6,43	6,36	8,61	5,22	0,25	5,08	1,81	6,16	5,37	8,10	4,55	0,24	4,60	1,57	5,60	3,86	4,32	3,43	0,22
008		5,56	3,95	5,56	6,26	8,00	6,26	0,26	5,43	2,53	5,43	5,51	7,03	5,51	0,26	5,03	2,31	5,03	4,18	4,53	4,18	0,24
010		5,56	3,95	5,56	6,26	8,00	6,26	0,26	5,43	2,53	5,43	5,51	7,03	5,51	0,26	5,03	2,31	5,03	4,18	4,53	4,18	0,24
012		8,77	4,67	8,77	6,41	9,69	6,41	0,42	8,62	3,06	8,62	5,66	7,90	5,66	0,41	8,23	2,75	8,23	4,25	4,00	4,25	0,39
012T		8,77	4,67	8,77	6,47	9,69	6,54	0,42	8,62	3,06	8,62	5,72	7,90	5,77	0,41	8,23	2,75	8,23	4,29	4,00	4,29	0,39
014		8,77	4,67	8,77	6,41	9,69	6,41	0,42	8,62	3,06	8,62	5,66	7,90	5,66	0,41	8,23	2,75	8,23	4,25	4,00	4,25	0,39
014T		8,77	4,67	8,77	6,47	9,69	6,47	0,42	8,62	3,06	8,62	5,72	7,90	5,72	0,41	8,23	2,75	8,23	4,29	4,00	4,29	0,39
004	7	4,09	2,34	4,80	7,62	10,57	6,41	0,19	3,93	1,44	4,80	6,84	9,08	5,42	0,19	3,57	1,25	4,80	4,45	5,17	3,19	0,17
006		6,10	4,30	7,20	7,29	10,80	5,79	0,29	5,37	1,96	7,20	5,65	9,35	4,08	0,26	4,85	1,71	6,71	4,04	4,81	3,15	0,23
008		6,51	4,19	7,16	6,07	8,60	5,50	0,31	6,81	2,71	8,80	4,66	7,67	3,39	0,32	6,85	2,49	8,42	4,13	4,96	3,27	0,33
010		6,51	4,19	7,16	6,07	8,60	5,50	0,31	7,63	2,71	8,80	4,08	7,67	3,39	0,36	7,65	2,49	8,42	3,66	4,96	3,27	0,36
012		10,68	4,99	13,12	5,98	10,54	4,61	0,51	10,58	4,86	12,98	5,35	8,48	4,13	0,50	10,23	2,99	12,71	4,07	4,41	3,36	0,49
012T		10,68	4,99	13,12	6,04	10,54	4,70	0,51	10,58	4,86	12,98	5,41	8,48	4,21	0,50	10,23	2,99	12,71	4,11	4,41	3,43	0,49
014		10,68	4,99	13,12	5,98	10,54	4,61	0,51	12,98	4,86	12,98	4,13	8,48	4,13	0,62	12,71	2,99	12,71	3,36	4,41	3,36	0,61
014T		10,68	4,99	13,12	6,04	10,54	4,70	0,51	12,98	4,86	12,98	4,21	8,48	4,21	0,62	12,71	2,99	12,71	3,43	4,41	3,43	0,61
004	10	4,32	2,68	4,80	8,13	12,99	7,05	0,21	4,16	1,63	4,80	7,27	11,44	5,93	0,20	3,80	1,43	4,80	4,71	6,14	3,41	0,18
006		5,63	3,93	7,19	6,70	9,42	5,00	0,27	5,77	2,17	7,20	6,10	11,28	4,85	0,28	5,22	1,90	7,16	4,35	5,53	3,34	0,25
008		7,76	4,59	8,80	5,87	9,75	5,20	0,37	7,77	4,22	8,80	5,48	7,56	4,95	0,37	7,43	2,81	8,80	4,34	5,72	3,53	0,35
010		8,84	4,59	9,17	5,24	9,75	4,96	0,42	8,80	4,22	11,00	5,00	7,56	3,83	0,42	8,20	2,81	9,94	3,79	5,72	2,86	0,39
012		11,76	5,51	13,20	6,47	12,52	5,52	0,56	11,68	5,40	13,20	5,76	9,75	5,20	0,56	11,36	3,35	13,20	4,34	4,92	3,77	0,54
012T		11,76	5,51	13,20	6,53	12,52	5,63	0,56	11,68	5,40	13,20	5,82	9,75	5,31	0,56	11,36	3,35	13,20	4,39	4,92	3,85	0,54
014		13,89	5,51	14,38	5,19	12,52	4,94	0,66	13,78	5,40	14,65	4,76	9,75	4,67	0,66	13,94	3,35	13,94	3,55	4,92	3,55	0,67
014T		13,89	5,51	14,38	5,30	12,52	5,04	0,66	13,78	5,40	14,65	4,85	9,75	4,76	0,66	13,94	3,35	13,94	3,62	4,92	3,62	0,67
004	15	4,07	3,00	4,80	10,81	16,21	9,26	0,19	4,15	2,90	4,80	8,82	12,24	7,60	0,20	4,17	2,64	4,80	5,10	6,92	4,40	0,20
006		5,96	4,95	7,20	10,87	13,72	7,82	0,28	6,54	2,57	7,20	6,93	16,17	6,23	0,31	5,93	2,28	7,20	4,90	7,30	4,07	0,28
008		8,11	5,32	8,80	7,79	11,92	7,24	0,39	8,04	5,15	8,80	6,96	9,68	6,45	0,38	8,29	3,41	8,80	4,67	7,40	4,37	0,40
010		10,39	5,32	10,78	5,99	11,92	5,66	0,50	10,11	5,15	11,00	5,58	9,68	4,99	0,48	8,95	3,41	11,00	4,00	7,40	3,06	0,43
012		11,99	6,48	13,20	8,24	16,52	7,61	0,57	12,10	8,31	13,20	7,50	10,34	6,86	0,58	12,08	4,05	13,20	5,30	6,36	4,85	0,58
012T		11,99	6,48	13,20	8,32	16,52	7,76	0,57	12,10	8,31	13,20	7,57	10,34	7,00	0,58	12,08	4,05	13,20	5,35	6,36	4,95	0,58
014		13,76	6,48	15,40	7,34	16,52	6,18	0,66	14,06	8,31	15,40	6,29	10,34	5,56	0,67	13,93	4,05	15,40	4,52	6,36	3,98	0,67
014T		13,76	6,48	15,40	7,41	16,52	6,30	0,66	14,06	8,31	15,40	6,36	10,34	5,67	0,67	13,93	4,05	15,40	4,57	6,36	4,05	0,67
004	18	4,17	3,28	4,80	12,54	18,95	11,13	0,20	4,18	3,16	4,80	10,18	14,42	8,98	0,20	4,13	2,89	4,80	5,67	7,82	4,98	0,20
006		6,47	5,37	7,20	11,96	16,31	9,75	0,31	6,12	3,93	7,20	9,20	12,13	7,34	0,29	5,98	2,52	7,18	5,62	8,74	4,67	0,29
008		8,23	5,65	8,80	9,22	13,12	8,69	0,39	8,02	5,68	8,80	8,33	11,07	7,67	0,38	8,15	3,76	8,80	5,48	8,42	5,05	0,39
010		10,11	5,65	11,00	7,33	13,12	6,60	0,48	10,12	5,68	11,00	6,39	11,07	5,68	0,48	9,08	3,76	11,00	4,58	8,42	3,52	0,43
012		12,29	7,10	13,20	10,09	19,25	9,39	0,59	11,96	9,17	13,20	9,09	11,60	8,09	0,57	12,14	4,52	13,20	6,03	7,53	5,56	0,58
012T		12,29	7,10	13,20	10,19	19,25	9,58	0,59	11,96	9,17	13,20	9,18	11,60	8,26	0,57	12,14	4,52	13,20	6,09	7,53	5,67	0,58
014		14,00	7,10	15,40	8,75	19,25	7,56	0,67	14,01	9,17	15,40	7,59	11,60	6,82	0,67	14,21	4,52	15,40	5,13	7,53	4,60	0,68
014T		14,00	7,10	15,40	8,84	19,25	7,63	0,67	14,01	9,17	15,40	7,66	11,60	6,89	0,67	14,21	4,52	15,40	5,19	7,53	4,69	0,68

LEGEND

LWT Leaving water temperature (°C)
Qc Cooling capacity (kW)
Nom Nominal
Min Minimum
Max Maximum
EER Energy Efficiency Ratio (kW/kW)
q Condenser water flow rate (l/s)

APPLICATION DATA

Standard units, refrigerant: R290
Evaporator entering/leaving water temperature difference: 5 K
Evaporator fluid: water
Fouling factor: 0 m² K/W
Performances in accordance with EN 14511

OUTSIDE AIR TEMPERATURE: 35 / 45°C

Outside air Temperature (°C)															
HYDRO UNIT P 004÷014	LWT °C	35							45						
		Qc			EER			q	Qc			EER			q
		kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
004	5	2,91	0,93	4,37	2,88	2,54	2,05	0,14	2,48	0,72	3,85	2,06	1,56	1,52	0,12
006		4,17	1,33	5,04	2,89	2,59	2,58	0,20	3,66	1,09	4,32	2,15	1,77	1,84	0,17
008		5,71	2,03	5,71	2,70	2,66	2,70	0,27	5,16	1,75	5,80	2,16	1,96	2,01	0,25
010		5,71	2,03	5,71	2,70	2,66	2,70	0,27	5,79	1,75	5,79	2,00	1,96	2,00	0,28
012		8,79	2,43	8,79	2,95	2,46	2,95	0,42	7,99	2,09	9,02	2,29	1,81	2,13	0,38
012T		8,79	2,43	8,79	3,01	2,46	3,03	0,42	7,99	2,09	9,02	2,33	1,81	2,20	0,38
014		8,79	2,43	8,79	2,95	2,46	2,95	0,42	9,02	2,09	9,02	2,13	1,81	2,13	0,43
014T		8,79	2,43	8,79	3,01	2,46	3,01	0,42	9,02	2,09	9,02	2,17	1,81	2,18	0,43
004	7	3,35	1,03	4,54	3,15	2,81	2,09	0,16	2,67	0,82	4,00	2,20	1,78	1,57	0,13
006		4,60	1,45	5,24	3,15	2,85	2,66	0,22	3,84	1,20	4,53	2,23	1,95	1,91	0,18
008		6,50	2,20	8,52	3,05	2,89	2,17	0,31	5,48	1,97	6,58	2,26	2,20	1,90	0,26
010		7,40	2,20	8,52	2,90	2,89	2,17	0,35	6,02	1,97	6,31	2,06	2,20	1,74	0,29
012		9,70	2,66	11,81	3,05	2,69	2,62	0,46	8,66	2,31	10,70	2,41	1,99	2,04	0,41
012T		9,70	2,66	11,81	3,10	2,69	2,70	0,46	8,66	2,31	10,70	2,45	1,99	2,11	0,41
014		10,70	2,66	11,81	2,95	2,69	2,62	0,51	10,70	2,31	10,70	2,04	1,99	2,04	0,51
014T		10,70	2,66	11,81	3,00	2,69	2,70	0,51	10,70	2,31	10,70	2,11	1,99	2,11	0,51
004	10	3,34	1,20	4,70	3,26	3,34	2,15	0,16	2,89	0,98	4,17	2,35	2,12	1,62	0,14
006		4,68	1,62	6,35	3,19	3,23	2,50	0,22	4,10	1,35	5,55	2,33	2,20	1,87	0,20
008		6,59	2,55	8,80	3,10	3,41	2,23	0,31	5,76	2,24	7,63	2,33	2,50	1,79	0,27
010		7,18	2,55	8,89	2,78	3,41	2,19	0,34	6,42	2,24	7,89	2,15	2,50	1,70	0,31
012		10,51	3,00	12,81	3,30	3,05	2,72	0,50	9,47	2,64	11,39	2,52	2,24	2,08	0,45
012T		10,51	3,00	12,81	3,37	3,05	2,80	0,50	9,47	2,64	11,39	2,57	2,24	2,14	0,45
014		12,81	3,00	12,81	2,72	3,05	2,72	0,61	11,39	2,64	11,39	2,08	2,24	2,08	0,54
014T		12,81	3,00	12,81	2,80	3,05	2,80	0,61	11,39	2,64	11,39	2,14	2,24	2,14	0,54
004	15	3,72	1,57	4,80	3,54	4,62	2,76	0,18	3,26	1,31	4,80	2,58	2,89	1,79	0,16
006		5,33	1,97	7,09	3,57	4,07	2,69	0,25	4,68	1,67	6,25	2,60	2,74	2,03	0,22
008		7,38	3,09	8,80	3,38	4,24	2,78	0,35	6,58	2,72	8,38	2,57	3,08	1,94	0,31
010		8,10	3,09	9,88	3,03	4,24	2,32	0,39	7,19	2,72	8,69	2,31	3,08	1,78	0,34
012		12,07	3,69	13,20	3,58	3,82	3,18	0,58	10,58	3,30	11,91	2,65	2,78	2,06	0,51
012T		12,07	3,69	13,20	3,65	3,82	3,27	0,58	10,58	3,30	11,91	2,71	2,78	2,12	0,51
014		14,17	3,69	14,17	2,83	3,82	2,83	0,68	11,91	3,30	11,91	2,06	2,78	2,06	0,57
014T		14,17	3,69	14,17	2,92	3,82	2,92	0,68	11,91	3,30	11,91	2,12	2,78	2,12	0,57
004	18	4,00	1,76	4,80	4,15	5,41	3,42	0,19	3,23	1,49	4,80	2,77	3,34	2,07	0,15
006		6,15	2,19	7,20	3,90	4,68	3,09	0,29	5,63	1,87	6,66	2,53	3,11	2,11	0,27
008		8,00	3,41	8,80	4,00	4,74	3,71	0,38	7,07	3,00	8,77	2,72	3,41	2,05	0,34
010		8,90	3,41	10,50	3,70	4,74	2,40	0,42	7,29	3,00	9,12	2,60	3,41	1,82	0,35
012		12,00	4,15	13,20	4,30	4,37	3,86	0,57	10,80	3,74	12,24	2,46	3,14	2,05	0,52
012T		12,00	4,15	13,20	4,35	4,37	3,94	0,57	10,80	3,74	12,24	2,51	3,14	2,11	0,52
014		14,50	4,15	15,30	3,70	4,37	3,01	0,69	11,26	3,74	12,24	2,05	3,14	2,05	0,59
014T		14,50	4,15	15,30	3,75	4,37	3,10	0,69	12,24	3,74	12,24	2,11	3,14	2,11	0,59

LEGEND

LWT Leaving water temperature (°C)
Qc Cooling capacity (kW)
Nom Nominal
Min Minimum
Max Maximum
EER Energy Efficiency Ratio (kW/kW)
q Condenser water flow rate (l/s)

APPLICATION DATA

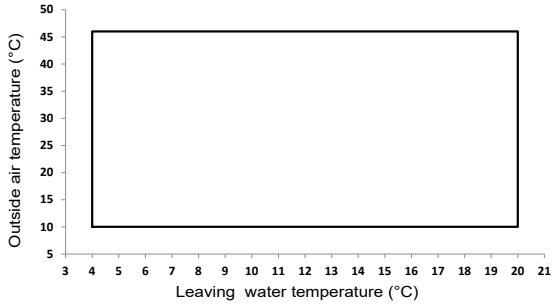
Standard units, refrigerant: R290
Evaporator entering/leaving water temperature difference: 5 K
Evaporator fluid: water
Fouling factor: 0 m² K/W
Performances in accordance with EN 14511

OPERATING RANGE

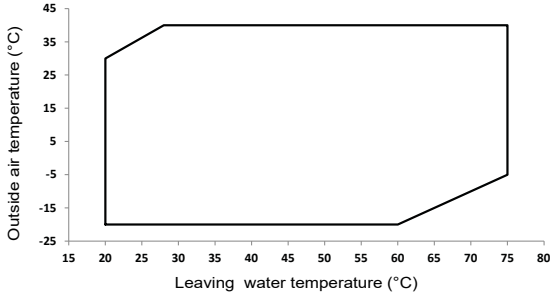
COOLING CYCLE			
Evaporator Water Temperature	°C	Minimum	Maximum
Entering water temperature at start-up		6	30
Leaving water temperature during operation		4	20
Condenser Air Temperature	°C	Minimum	Maximum
Standard unit		10	46
Heating Cycle			
Condenser Water Temperature	°C	Minimum	Maximum
Entering water temperature at start-up		15	65
Leaving water temperature during operation		20	75
Evaporator Air Temperature	°C	Minimum	Maximum
Standard unit		-20 (1)	40

(1) For operation at outdoor ambient temperature below 0°C (heating mode), the water freeze protection should be available and according to the water installation, the water loop can be protected against freeze by the installer, using an anti-freeze solution or trace heater.

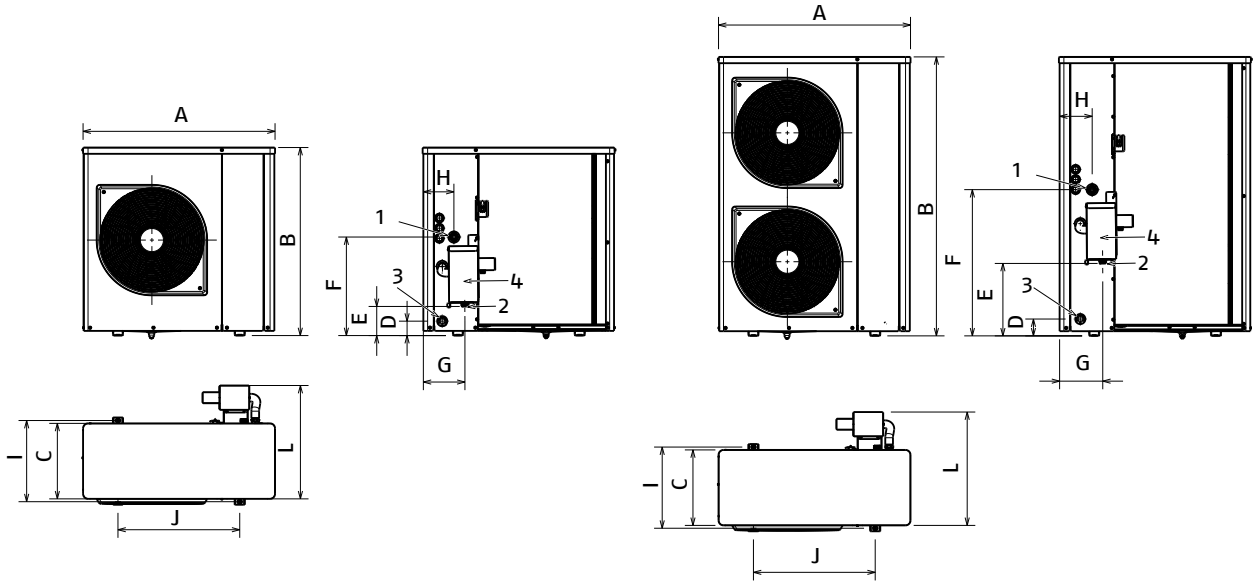
Cooling mode



Heating mode



DIMENSIONS AND LOCATION OF HYDRAULIC CONNECTIONS



1 Water Inlet
2 Water Outlet
3 Draining water pipe
4 Gas separator – mandatory for safety purposes

HYDRO UNIT P		A	B	C	D	E	F	G	H	I	J	L
004	mm	946	927	372	71	143	485	201	150	400	600	560
006	mm	946	927	372	71	143	485	201	150	400	600	560
008	mm	946	927	372	71	143	485	201	150	400	600	560
010	mm	946	927	372	71	143	485	201	150	400	600	560
012 / 012T	mm	946	1375	372	83	357	720	210	160	400	600	560
014 / 014T	mm	946	1375	372	83	357	720	210	160	400	600	560

PLACE OF INSTALLATION

This unit uses R290 refrigerant gas.
Do not attempt to replace this refrigerant with household propane.

The unit should be stored outdoors or in a controlled environment (R290 sensors and free from ignition sources area).
Units should not be stacked.

The unit should be installed so that refrigerant does not accumulate or stagnate in case of leakage (R290 refrigerant gas is heavier than air).

The unit should also be kept one meter away from any openings (doors, windows, etc.)

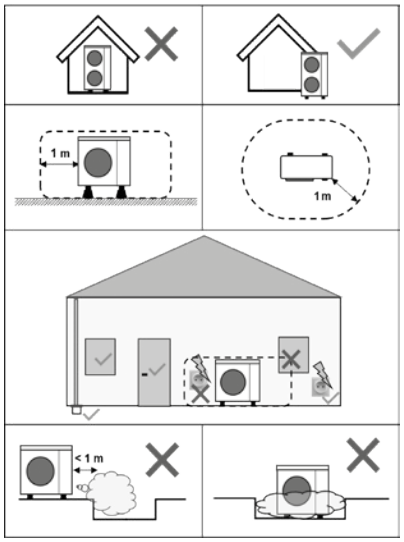
Refrigerant accumulation in an enclosed space can displace oxygen and cause asphyxiation or explosion.

In the event of a leak, the mixture of refrigerant and air can generate a flammable atmosphere.
Any source of ignition, such as open flames, hot surfaces (higher than 370 °C), or any potentially arcing devices (sockets, electrical switches, static discharges, etc.) must be kept at least one meter away from the unit.

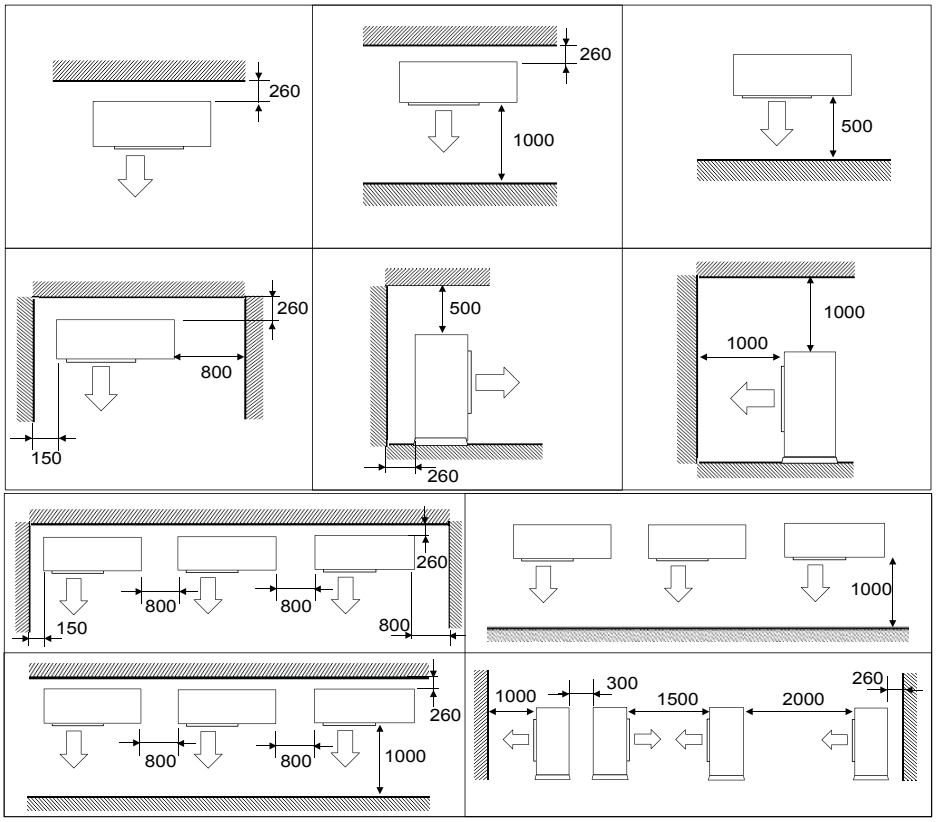
Before positioning the unit (accessing the various components/opening the panel/replacement of components...) it is necessary to schedule the various maintenance tasks to be performed.

SERVICE SPACES TO ENSURE PROPER AIRFLOW

The unit shall be installed outdoor and shall be kept one meter away from any building opening (doors, windows...) and from any ignition sources (electrical sockets, switches, lights...).
Refer to the installation guide for more details.
The unit shall not be installed so that, in the event of a leak, the refrigerant may accumulate or stagnate (propane is heavier than air).



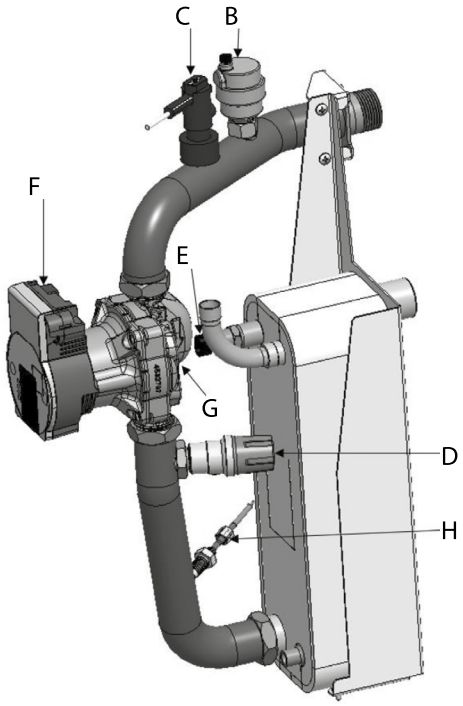
The following picture presents the minimal distances of the wall to ensure the correct air flow on air heat exchanger(1).



Notes:
Dimensions are given in mm
(1) Anticipate different maintenance actions before to place the unit (access of different parts / opening of panel/ part replacement…)

HYDRAULIC MODULE

Hydraulic module equipped with variable speed single pump low available pressure.



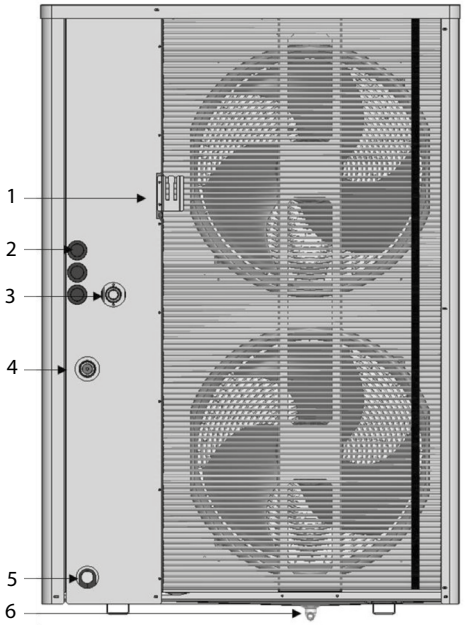
Legend

B - Automatic purge valve
C - Flow switch
D - Safety valve outlet
E - Leaving water temperature probe
F - Circulation pump
G - Plug to unblock the seizing pump
H - Entering water temperature probe

Minimum and maximum pressures necessary in the hydraulic circuit for correct operation of the units.

Hydraulic circuit	Minimum pressure at the suction of the pump to avoid the cavitation phenomena	Maximum pressure at the suction of the pump before the opening of the water relief valve
Variable speed hydraulic module	110 kPa (1,1 bar)	300 kPa (3 bar)

HYDRAULIC CONNECTIONS



Legend

1 - Outside Air Temperature sensor
2 - Customer electrical connection
3 - Water inlet
4 - Water outlet
5 - Water drain pipe
6 - Condensate draining pipe

WATER CONNECTIONS								
Model	HYDRO UNIT P							
	004	006	008	010	012	014	012T	014T
Diameter	1"	1"	1"	1"	1"	1"	1"	1"

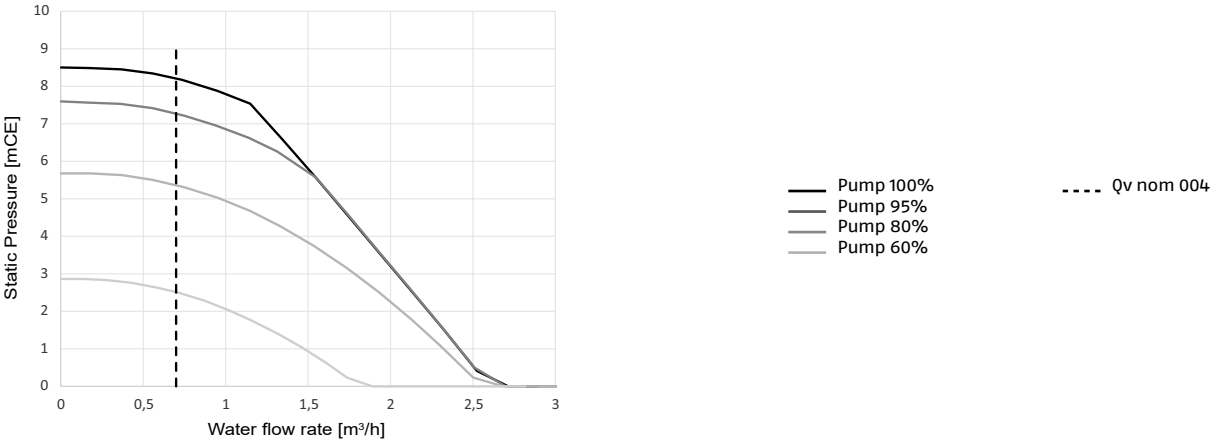
AVAILABLE EXTERNAL STATIC PRESSURE

Data applicable for fresh water application (20°C). If glycol is used, the maximum water flow is reduced.

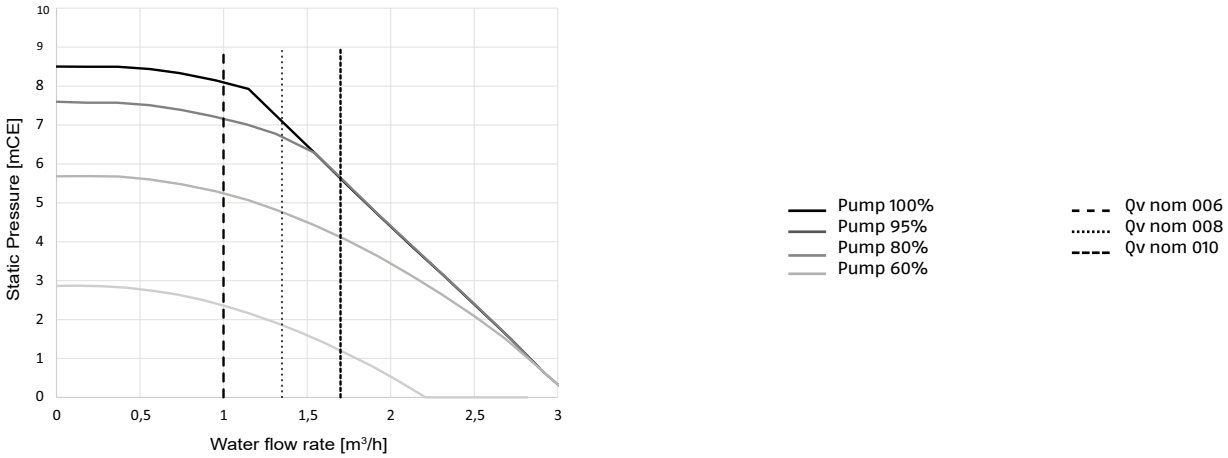
Model	UM	HYDRO UNIT P							
		004	006	008	010	012	014	012T	014T
Nominal delivery	m3/h	0,68	1,00	1,31	1,66	1,97	2,38	1,97	2,38
Useful head at nominal flow rate	kPa	83	82	70	57	100	82	100	82

(1) External air temperature 7°C BS, 6°C BU; Inlet/Outlet Water 30/35°C.

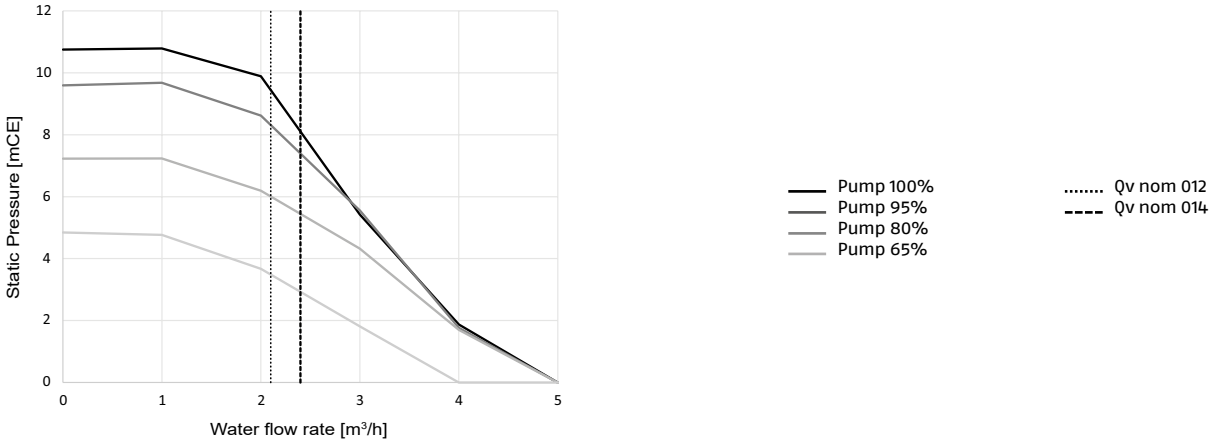
Available static pressure 4kW



Available static pressure 6 kW - 8 kW - 10 kW



Available static pressure 12 kW - 14 kW



QUALITY REQUIREMENTS OF SYSTEM FILLING WATER

At initial start-up, the specialised technician must test the reference values of the system water using special test kits.
The quality of the water used must meet the requirements stated in the table below; otherwise, a treatment system must be installed.

SYSTEM WATER REFERENCE VALUES		
pH		6,5 ÷ 7,8
Electrical conductivity	S/cm	250 ÷ 800
Total hardness	°F	5 ÷ 15
Total iron	ppm	0,2
Manganese	ppm	< 0,05
Chlorides	ppm	< 250
Sulphur ions		none
Ammonia ions		none

Well or groundwater not coming from the aqueduct should always be carefully analysed and if necessary conditioned with appropriate treatment systems.
If the initial water hardness exceeds the value indicated in the table, a water softening system must be used.
Excessive water softening (total hardness < 1.5 mmol/l) could lead to corrosion on contact with metal elements.
The conductivity value must also be kept within 600 µS/cm.
Check the chloride concentration at the outlet after regeneration of the resins.
It is strictly prohibited to introduce acids into the washing circuit.
It is strictly prohibited to constantly or frequently top up the system, as this can damage the heat exchanger of the appliance.

WATER CONTENT AND WATER FLOW RATE SYSTEM

Heat pumps require systems that guarantee a constant fluid flow rate to the device, within minimum and maximum values and with sufficient volumes to avoid any imbalance in the cooling circuits and ensure the correct degree of comfort.

WATER CONTENT
A minimum volume of water in the system's primary circuit must be guaranteed for the appliance to operate correctly.
The minimum volume is necessary to prevent the risk of ice formation during defrosting operations or continuous modulation of the compressor frequency.
It also provides the following advantages:
- less appliance wear;
- increase in system efficiency;
- improved stability and temperature precision.

The water flow rate shall be maintained constant during operation and shall comply with

Model	UM	HYDRO UNIT P							
		004	006	008	010	012	014	012T	014T
Minimum system water content	l	24	36	48	60	72	84	72	84
Minimum water flow rate	m^3/h	0,44	0,65	0,85	1,08	1,28	1,55	1,28	1,55

ELECTRICAL CONNECTIONS

Please refer to the certified wiring drawings, supplied with the unit appliance shall be installed in accordance with national wiring regulations.

POWER SUPPLY

The power supply must conform to the specification on heat pump nameplate. The supply voltage must be within the range specified in the electrical data table. For connections refer to the wiring diagrams and the certified dimensional drawings.

CAUTION:

As a standard protection, it is mandatory to install a disconnect switch to be able to disconnect the power supply of the unit.

Make sure to respect the wiring order to avoid electrical shock.

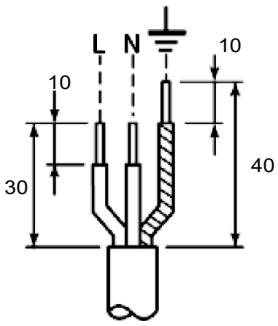
The use of an ATEX disconnect switch is mandatory if it is installed at less than one meter of the unit.

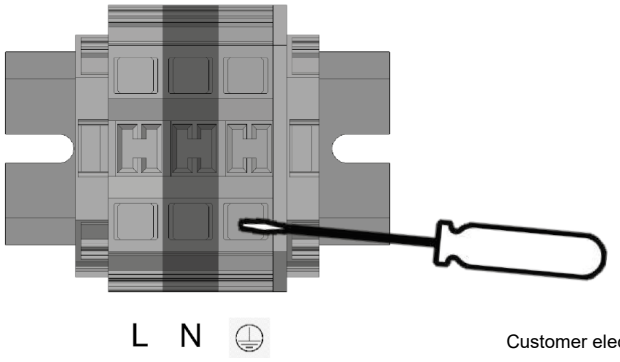
During the installation of the unit, only the side panel must be removed. The top panel shall not be removed at any time.

After the unit has been commissioned, the power supply must only be disconnected for quick maintenance operations (one day maximum). For longer maintenance operations or when the unit is taken out of service and stored (e.g. during the winter or if the unit does not need to generate cooling), water circuit and water heat exchanger must be drained.

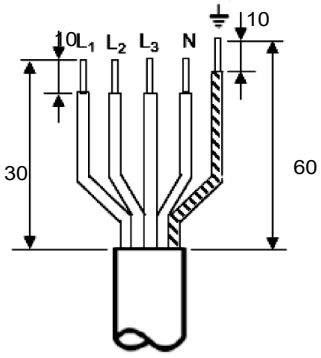
This unit is equipped with electrically powered safety measures. To be effective, the unit must be electrically powered at all times after installation, other than when servicing.

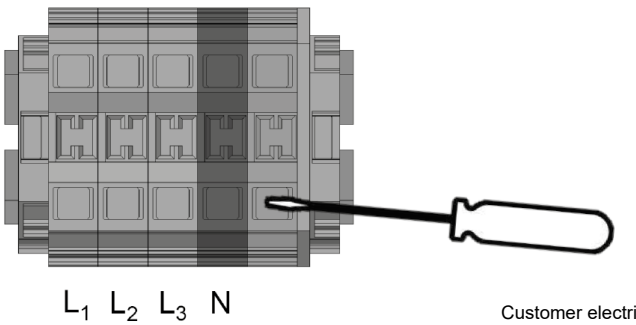
POWER SUPPLY CONNECTION DIAGRAM





Customer electrical connection - Single phase





Customer electrical connection - Three-phase

Note: Recommended scredrivers for wiring
- 5 x 1 mm flat scredriver (power terminal block)
- 2 x 0.5 mm flat scredriver (control terminal block)

RECOMMENDED WIRE SECTIONS

Wire sizing is the responsibility of the installer, and depends on the characteristics and regulations applicable to each installation site. The following is only to be used as a guideline, and does not make Manufacturer in any way liable. After wire sizing has been completed, using the certified dimensional drawing, the installer must ensure easy connection and define any modifications necessary on site.

The connections provided as standard for the field-supplied power entry cables are designed for the number and type of wires, listed in the table below.

The calculations of favourable and unfavourable cases are performed by using the maximum current possible of each unit (see the tables of electrical data for the unit).

The calculation is based on PVC or XLPE insulated cables with copper core. A maximum ambient temperature of 46°C has been taken into consideration. The given wire length limits the voltage drop to < 5% (length L in metres - see table below).

IMPORTANT:

Before connection of the main power cables (L1 - L2 - L3 - N - PE or L1 - N - PE) on the terminal block, it is imperative to check the correct order of the 3 phases before proceeding to the connection and the good connection of the neutral wire (if the neutral conductor is not connected correctly, the unit can be damaged permanently).

MINIMUM AND MAXIMUM WIRE SECTION (PER PHASE) FOR CONNECTION TO HYDRO UNIT P UNITS

Wire sizing is the responsibility of the installer, and depends on the characteristics and regulations applicable to each installation site. The following is only to be used as a guideline, and does not make Manufacturer in any way liable.

HYDRO UNIT P	Max. connectable section(1)	Calculation favourable case: - Suspended aerial lines (standardised routing No. 17) - XLPE insulated cable			Calculation unfavourable case: - Conductors in conduits or multi-conductor cables in closed conduit (standardised routing No. 41) - PVC insulated cable, if possible		
	Section	Section(2)	Max. length for voltage drop <5%	Cable type	Section(2)	Max. length for voltage drop <5%	Cable type(3)
	mm² (per phase)	mm² (per phase)	m	-	mm² (per phase)	m	-
004	3G10²	3G2.5²	50	H07RNF	3G2.5²	50	H07RNF
006	3G10²	3G2.5²	40	H07RNF	3G4²	60	H07RNF
008	3G10²	3G4²	50	H07RNF	3G4²	50	H07RNF
010	3G10²	3G4²	40	H07RNF	3G6²	60	H07RNF
012	3G10²	3G4²	40	H07RNF	3G6²	55	H07RNF
014	3G10²	3G4²	40	H07RNF	3G6²	55	H07RNF
012T	5G4²	5G1.5²	50	H07RNF	5G4²	150	H07RNF
014T	5G4²	5G1.5²	50	H07RNF	5G4²	150	H07RNF
Accessory Remote WUI	Use cables H07RN-F 4x0,75 mm² up to 50m to connect the user interface WUI (not supplied with accessory) CAUTION: Use the grey ferrite which is supplied in accessory to clamp around the WUI cable. Please clamp it directly after the customer's terminal block						

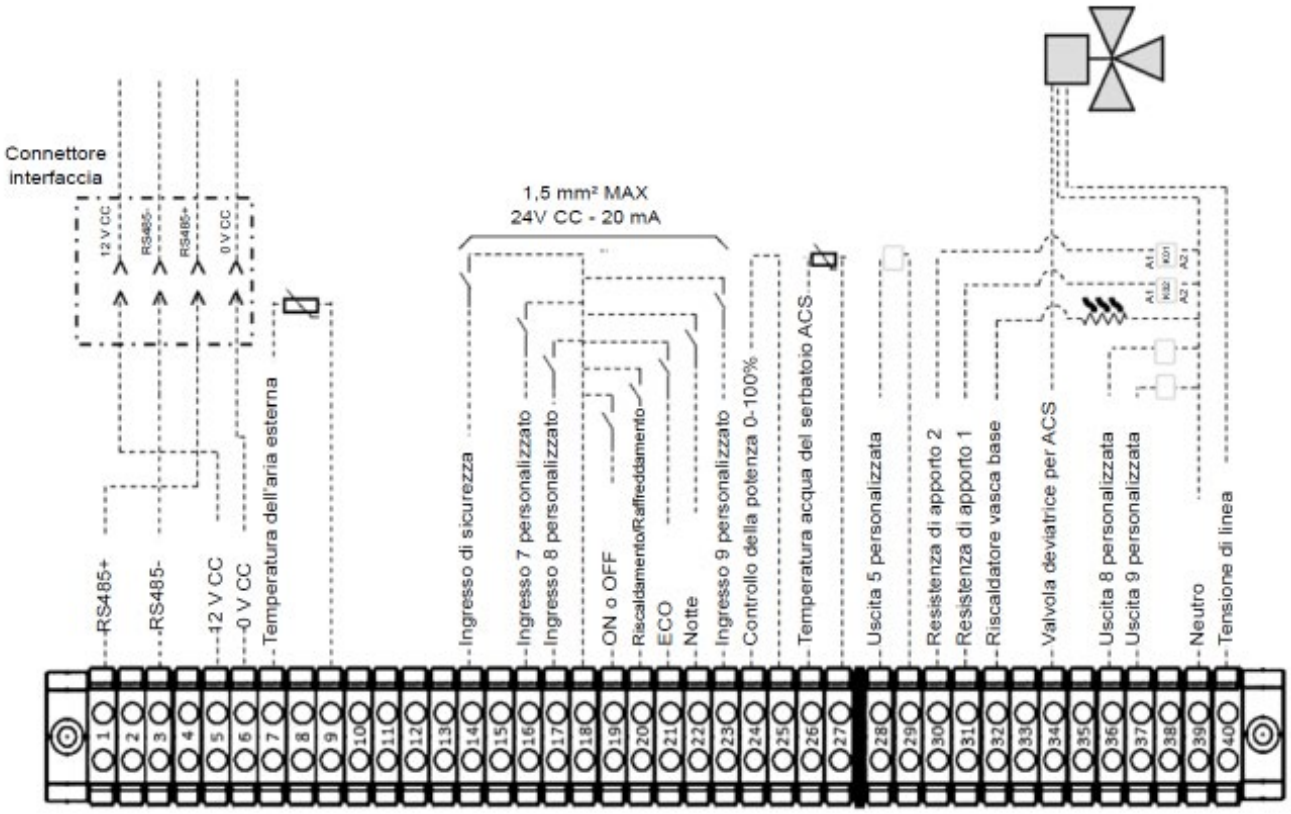
Notes:
(1) Connection capacities actually available for each machine, defined according to the connection terminal size, the control box access opening size and the available space inside the control box.
(2) Selection simultation result considering the hypothesis indicated.
(3) If the maximum calculated section is for an XLPE cable type, this means that a selection based on a PVC cable type can exceed the connection capacity actually available. Special attention must be given to the selection.

RECOMMENDED CUSTOMER ELECTRICAL PROTECTION

Electrical protection is the responsibility of the installer, and depends on the characteristics and regulations applicable to each installation site. The following is only to be used as a guideline, and does not make manufacturer in any way liable.

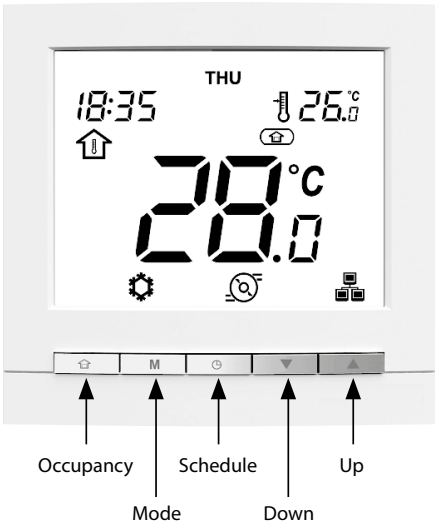
HYDRO UNIT P		004	006	008	010	012	014	012T	014T
Circuit breaker									
Type		C	C	C	C	C	C	C	C
Current	A	16	20	25	32	32	32	20	20
Fuses									
Type		gG	gG	gG	gG	gG	gG	gG	gG
Current	A	20	25	32	40	40	40	25	25

general customer electrical connection on terminal block
For details on electrical connections refer to the INSTALLER manual of the product.



CONTROL PANEL

Your system is controlled by a Wall-Mounted User interface (WUI) that can be installed inside your home.
This manual provides guidelines on how to use this
interface effectively.
If you have any questions regarding the display and its configuration, please contact your installer for more information.



Key features

- Heating / Cooling: Depending on the unit, the system may operate in Heating or Cooling.
- Occupancy control allows you to easily set the system to operate in the following modes:

  Home
  Sleep
  Away

- Easy temperature control: Depending on system configuration, room temperature or water temperature will be constantly displayed on the screen.

  Room temperature icon indicates that system control is based on room temperature.

  Water temperature icon means that the system is controlled according to water temperature.

- The setpoint which is the temperature to be achieved is displayed in the upper-right corner of the screen.
- Schedule control allows you to set the unit to operate with a set of predefined parameters (heating/cooling, occupancy, setpoint) in a specific period of time. You can always modify the schedule if necessary.
- Additional data display: In addition to the standard display, you may easily check other parameters, which provide information on the general status of the unit.
- Alarms are used to warn of potentially dangerous situations that may result in the failure of the unit.

TIP - To configure the advanced parameters of the unit, please contact professional technicians.

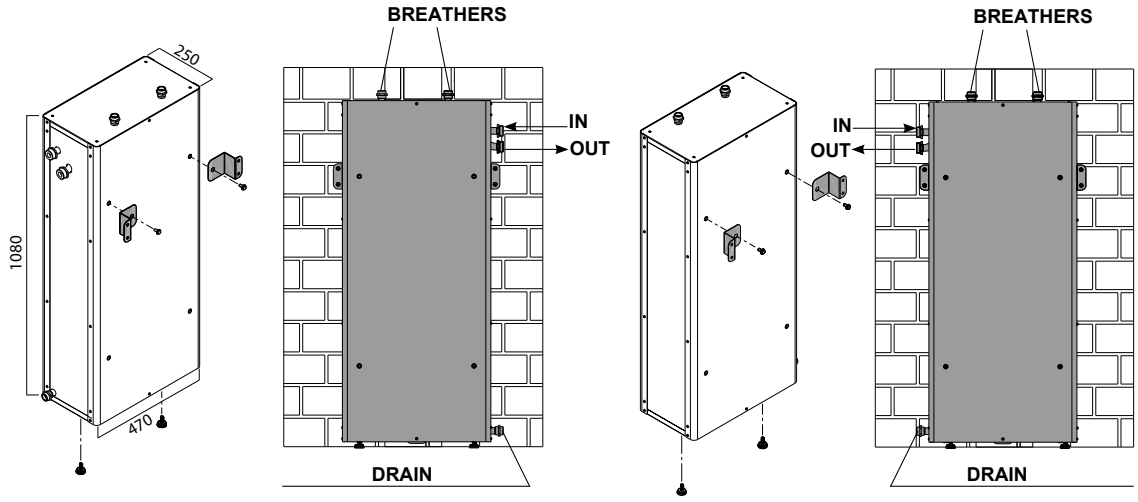
MAIN ACCESSORIES

50 L INERTIAI TANK

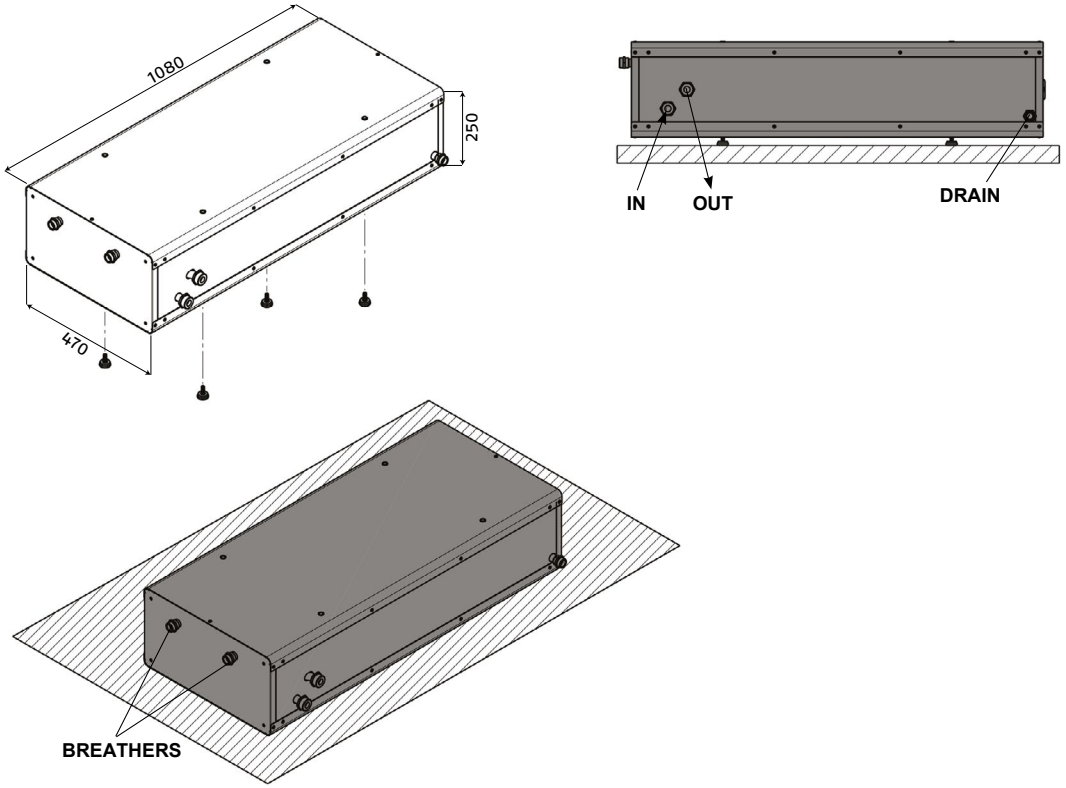
Insulated 50-litre inertia tank designed to minimise heat pump on/off cycles when the system is running at almost full capacity. The inertia tank ensures, if required, the minimum water content in the system that the heat pump needs, depending on the installed capacity. This ensures the machine runs efficiently and optimally even in part load conditions.

- For hot and cold applications;
- It can be installed vertically or horizontally, inside or outside the building;
- It can be installed horizontally under the heat pump, thus minimising any space availability issues;
- Filling and emptying caps;
- Fitted with rubber elements to dampen the vibration generated by the heat pump.

WALL INSTALLATION

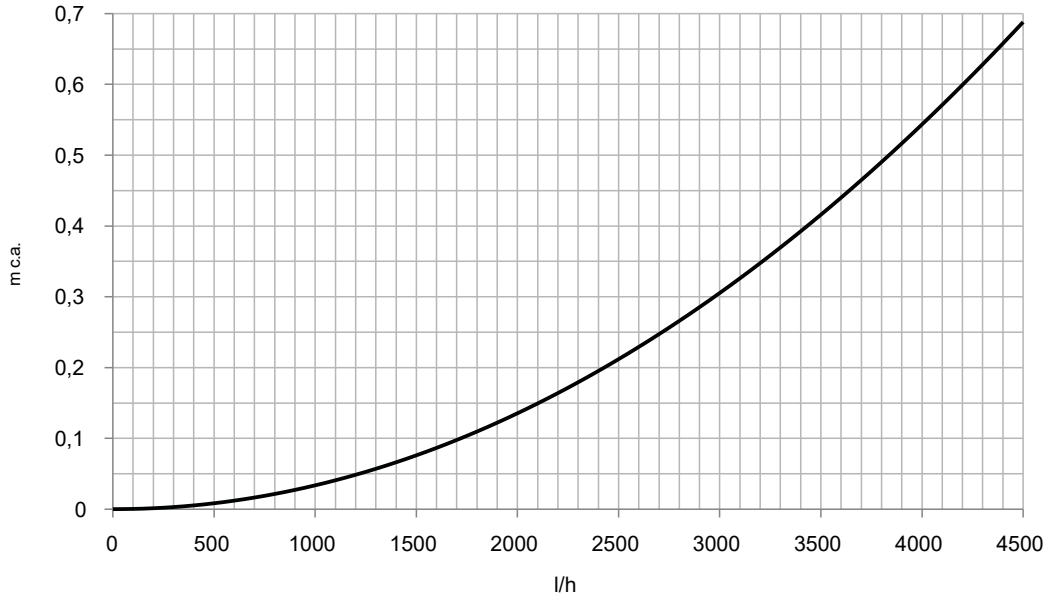


FLOOR INSTALLATION



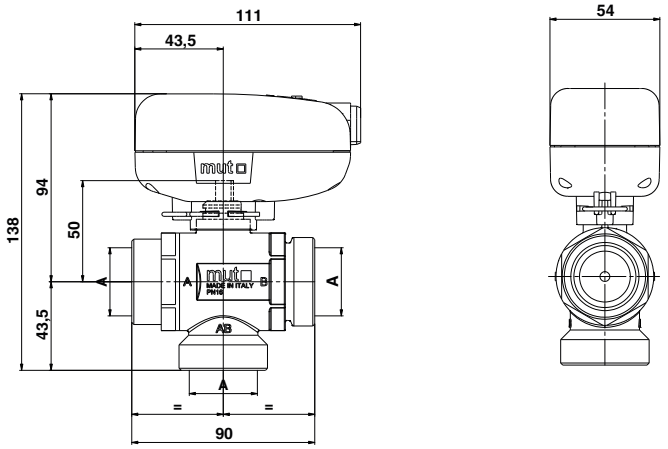
Specific tank conductivity 0.94 (W/K)

HEAD LOSS

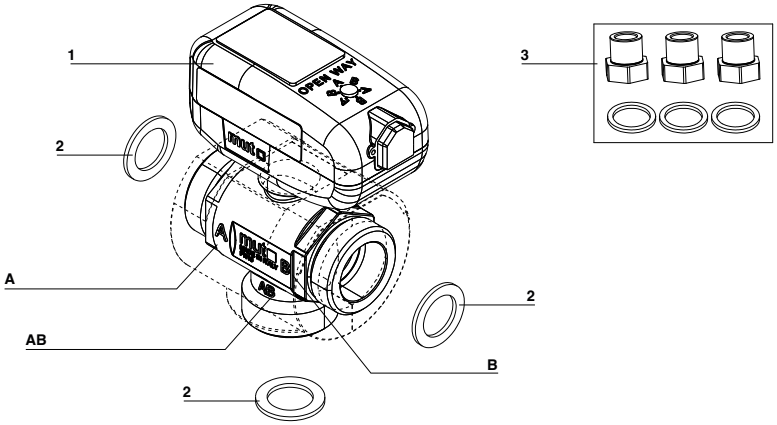


DIVERTER VALVE

- 3-way motorised full bore ball diverter valve for automatic diversion of the heat-transfer fluid distributed in air conditioning or DHW distribution systems.
- Common fluid way: AB fluid passes on way A or on way B.G1" or G1 ¼" fittings available (ISO 228-1).
- CW617N brass body. CW617N brass ball, chrome-plated.
- Ball hydraulic seal in PTFE (Teflon®) with O-Ring in EPDM Perox TIMO. O-Ring in EPDM Perox TIMO.
- Motor casing in PA66 GF25 – UL94-V0.
- Usage fluids water and glycol solutions; maximum glycol percentage 50%. Nominal pressure 16 bar.
- PN16. Maximum operating differential pressure 6 bar.
- Outflow coefficient, Kvs: 15.5.
- Fluid operating temperature range 2 - 90°C.
- Operating ambient temperature range 0 - 60°C.
- Power supply 230 V (or 24 V); power input 7 W.
- Auxiliary micro contacts capacity 3 (1) A, 250 V.
- Protection rating IP 40.
- Insulation class: II - Ref. European standard EN 60730.
- Commutation time: 25 s.

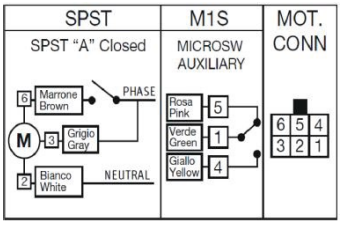


DIVERTER VALVE ASSEMBLY



1. 3-way motorised ball diverter valve SPST 230 Vac-50/60 Hz - 1"1/4 M fitting
2. 1" flat gasket in Centellen
3. Unions for adapters 1" 1/4 F- 1" 1"1/4 F - 1" M and relative gaskets

ELECTRICAL CONNECTIONS



To connect the electricity, see the terminal board of the indoor unit

FUNCTIONAL CHARACTERISTICS

- AB way always open
- Type of valve operation: diverter (on/off)
- Nominal pressure: PN16
- Max. differential pressure: 6bar
- Flow rate coefficient Kvs in diversion: 90° ([m3/h] at ΔP= 1bar): Kvs=15.5
- Fittings: Threaded - ISO 228/1
- Full bore valve (DN25)
- Fluid temperature limits: 2 ÷ 90 °C [max]
- Usage fluid: Water, glycol solutions [max 50%]
- Ambient temperature range: 0 - 60 °C
- Type of actuation: SPST = Single-pole external electr. comm. (with built-in relay)
- With 1 auxiliary micro as standard: 3(1)A - 250 Vac
- Insulation class: II Ref. European standard EN 60730
- Protection rating: IP 40 Ref. European standard IEC EN 60529
- Type of connector: Molex Mini-Fit JR 6 pole or compatible
- Cable length: 1000 mm
- Voltage: 230V or 24V
- Synchronous motor
- Electric power supply: 230V (±10%) - 50/60 Hz / 24V (±10%) - 50/60 Hz
- Power input: 7W(Max)
- Manoeuvre ON time: 25 s
- Manoeuvre OFF time: 25s

MATERIALS

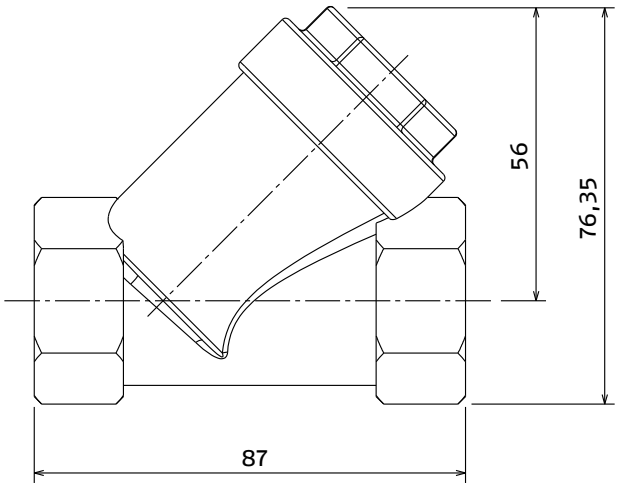
- Valve body: Brass
- Control shaft: Brass
- Ball: Brass
- Seal rings: PFTE (Teflon®)
- O-Rings: EPDM Perox (TIMO®)
- Servomotor casing: PA66GF30 (ISO 1874-PA 66, GHR, 14-100, GF30)

LOAD LOSS GRAPH

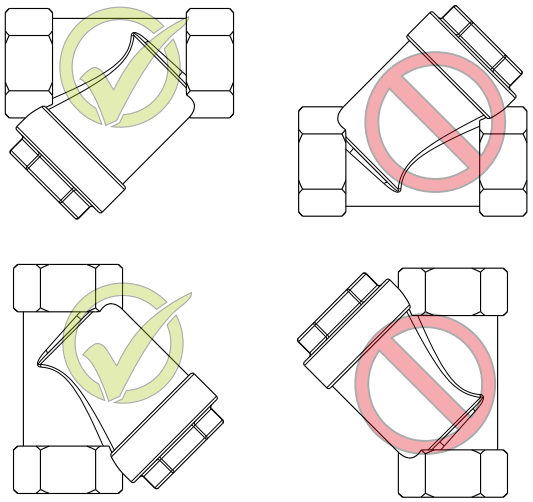
Load losses do not vary substantially with the variation of the route travelled, nor with the variation of the direction of travel.

WATER FILTER Y 1”

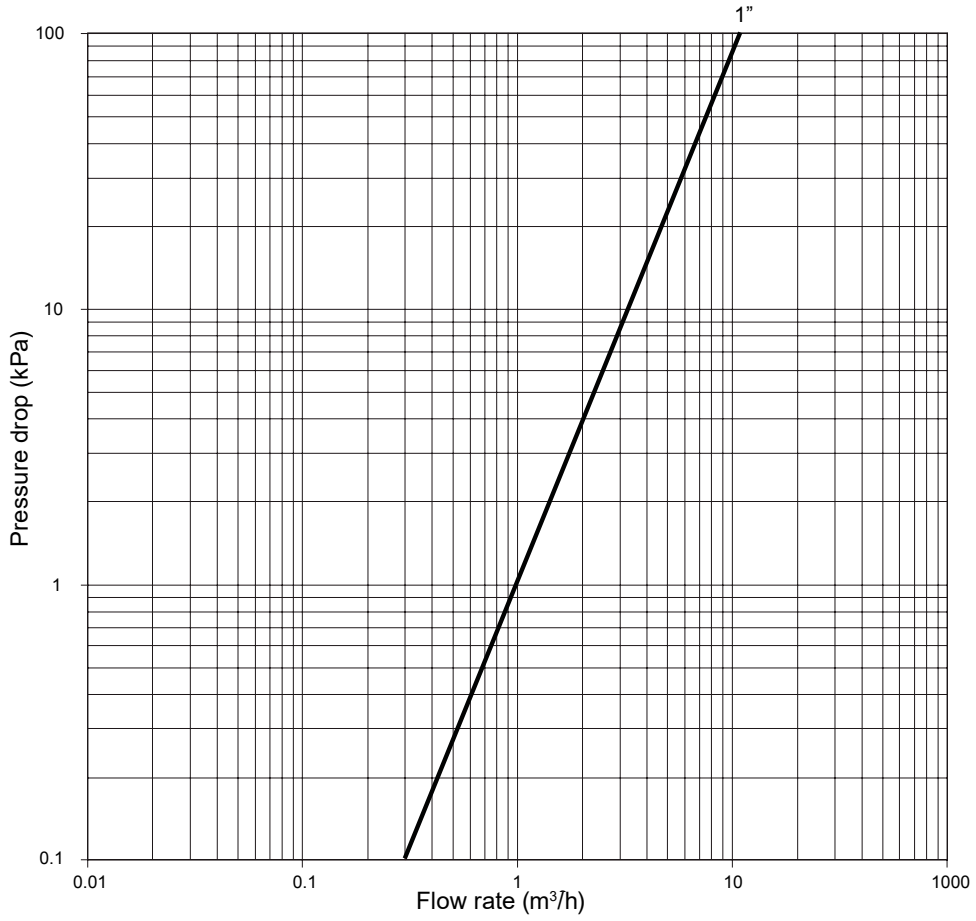
DIMENSIONS



Y WATER FILTER ASSEMBLY



HEAD LOSS



MEASUREMENT	Kv
1”	11

SPECIFICATION DESCRIPTIONS

The low GWP natural gas R290 hydronic heat pumps HYDRO UNIT P are high-efficiency, ErP-compliant monobloc heat pumps (Class A+++ in the efficiency class range from D up to A+++, SCOP up to 4.82).

Main features:

- inverter fans for silent operation
- compressor Twin Rotary with DC inverter technology and control via a PWM signal, wide modulation range with R290 gas
- gas/water plate heat exchanger
- self-modulating high-efficiency electronic circulator and electronic part with integrated advanced functions
- remote control panel, connected to the outdoor unit via ModBus (4 wires), which can also perform the function of an ambient probe with weekly time programmer

COMPRESSOR

Advanced technology ensuring optimum energy efficiency and characterised by high output levels in peak conditions and optimised efficiency at low and medium compressor speeds.
The heat pump HYDRO UNIT P is equipped with IPDU (intelligent control unit) hybrid technology with an inverter, which combines two electronic control logics: pulse amplitude modulation (PAM) and pulse width modulation (PWM), to ensure optimised compressor operation under all operating conditions, minimise temperature fluctuations, and provide perfect comfort regulation, all while significantly reducing energy consumption.
PAM: the modulation of the direct current pulse amplitude commands the compressor to work in maximum load conditions (start-up and peak load) so as to increase the voltage in the case of a fixed frequency. The compressor works at high speed to quickly reach the required temperature
PWM: the modulation of the direct current pulse width commands the compressor to work in partial load conditions, adapting the frequency in the case of a fixed voltage.
The compressor speed is precisely regulated and the system offers a high comfort level (no temperature fluctuations) in working conditions of outstanding efficiency.
The compressor frequency increases constantly until it reaches the maximum level.
This ensures that there are no intensity peaks during the start-up phase, and also means a secure connection to the single-phase current supply even for high-output systems.
The two rotating blades of the compressor are dephased by 180°. Along with the DC brushless motor, fitted with a perfectly balanced shaft, they guarantee that noise and vibrations are kept at a minimum even at extremely low operating speeds.
All twin rotary compressors with brushless DC inverter motor are equipped with casing assembly resistors as standard.
The compressor has a double protective sound insulation shield to further reduce the noise levels.

EXTERNAL COIL

- The new aluminium-copper coil features a blue hydrophilic coating, which allows water to move more easily (by gravity) towards the bottom of the heat exchanger.
- In particular, this innovation means: the frosting time to be increased by reducing the accumulation of frost on the coil better defrosting by improving the flow of water over the fins.

EXTERNAL FAN

Variable speed fans (driven by a VFD variable frequency drive system) with patented, innovative impellers shaped for optimal air distribution combined with exceptionally low sound levels.

ELECTRONIC EXPANSION VALVE

The electronic expansion valve is a dual flow electronic expansion device whose job is to optimise the volume of the refrigerant fluid in the circuit and therefore the overheating issue, preventing the fluid from returning to the compressor. This device further boosts the high efficiency and reliability of the system as it enables to work even with very low condensation pressure values across the whole operating range.

PLATE HEAT EXCHANGER

Vertical plate heat exchanger made of AISI 316 stainless steel insulated with closed-cell anti-condensation coating ranging from 6 to 13 mm.

TOP PERFORMANCE

HYDRO UNIT P extremely high level of energy efficiency in both heating and cooling mode, thereby guaranteeing significant energy savings. The large, high-efficiency coils, together with the optimised circuits, ensure results that meet the European ecodesign directive. Efficiency levels in partial load conditions (seasonal energy efficiency) are the highest in this industrial sector.

Comfort throughout the year: the ground-breaking technology employed for HYDRO UNIT P means boosted comfort levels for users in terms of both water temperature control and low noise operation. The required temperature is reached quickly and kept constant, without any fluctuations. HYDRO UNIT P optimised, personalised comfort levels both in winter and in summer.

HYDRO UNIT P can work in cooling mode even with low outdoor temperatures (from 10°C, and up to 46°C). To ensure the maximum comfort for the user, the units work in heating mode with outdoor temperatures down to -20°C, whereas in summer they can produce hot water up to 75°C for DHW applications, with the outdoor temperature as high as 40°C.

HYDRO UNIT P also with new FREE DEFROST technology. This advanced control logic allows energy to be extracted from the outside air, so that defrosting is energetically optimised without the need for any compressor intervention. In fact, defrosting via the FREE DEFROST system, unlike traditional defrosting, has practically no thermal impact on the water circuit.

RELIABILITY

Each unit is subject to testing during all stages of production to ensure the tightness of the circuit, electrical compliance, and correct water and refrigerant fluid pressure. At the end of production, all operating parameters of the unit are thoroughly tested. Corrosion resistance test. Accelerated ageing tests on critical components and fully assembled units, with simulation of thousands of hours of continuous operation.

Burner equipment

The heat pumps HYDRO UNIT P are delivered fixed on a wooden pallet and protected by polystyrene packaging.

The following documents can be found inside the packaging:

- instruction booklet for the installer and for Technical Services
- instruction booklet for the user
- spare parts/warranty labels
- energy labels

Kit gas separator is delivered as separated box on the top of the heat pump packaging.

The heat pumps HYDRO UNIT P are compliant with:

2014/35/EU Low Voltage Directive

2014/30/EU Electromagnetic Compatibility Directive

2014/68/EU Pressure Equipment Directive

2009/125/CE Ecodesign Directive

Ecodesign regulation (EU) No 813/2013

Energy Labelling regulation (EU) No 811/2013

2011/65/EU Restriction of Hazardous Substances Directive (RoHS)

REACH regulation (EC) No 1907/2006

NOTE

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HYDRO UNIT P

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