

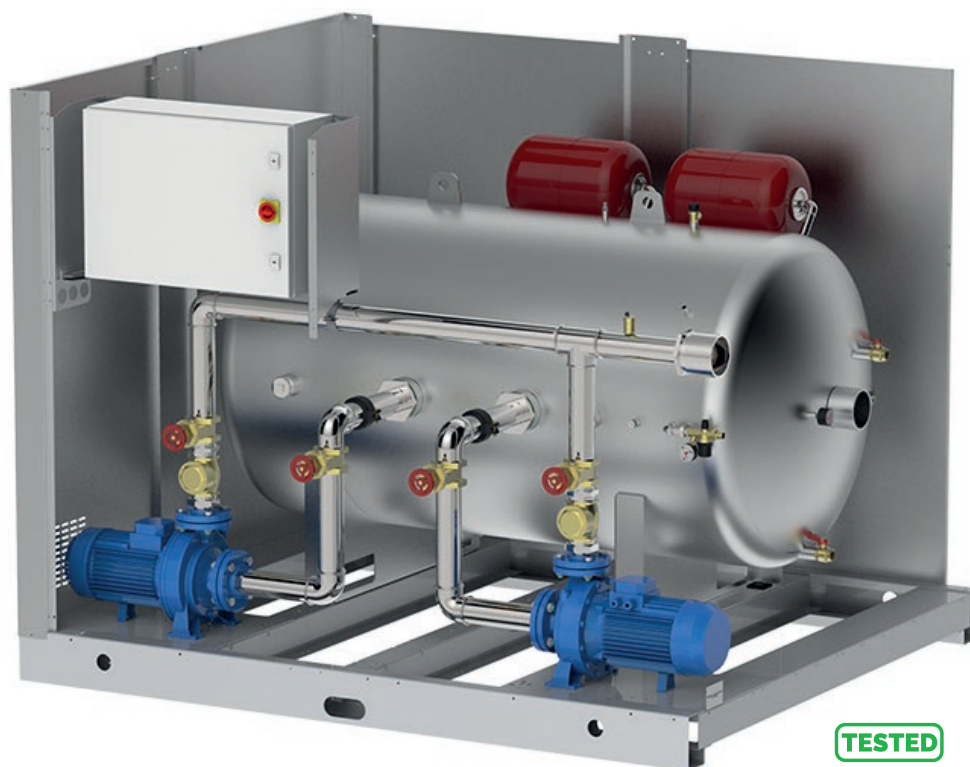
Hydronic Kits
HPT



Hydronic

Tank units for chilled water

Hydronic systems: HPT



Carbon steel tank and tubes insulated with anti-condensate elastomer

TESTED



The HPT units are hydraulic units with buffer tanks designed to reduce the production time of conditioning and cooling systems. They can be equipped with all different kinds of water coolers.

The HPT units are made of:

- carbon steel tank and tubes insulated with anti-condensate elastomer
- Centrifugal single or double pump with a shut-off valve
- Switchboard with possibility to alternate the pumps with every start-up (2 pump version), to start-up the backup pump in case of breakdown (2 pump version), magnetothermic protection, cleaned contact to signalise the distance between the pumps, protection category IP55
- Expansion vessel
- Safety valve
- Deaerator
- Manometer
- Fill-up/drain valve
- Base and self-supporting panels made of galvanized and coated steel sheets, suitable for outdoor installations.

Available versions

The broad range of pump-tank combinations makes it possible to meet all requirements. Numerous versions are available: with a single or a double pump and with tanks with a capacity of 100, 200, 300, 500, 750, 1000, 1500 and 2500 litres.

Accessories

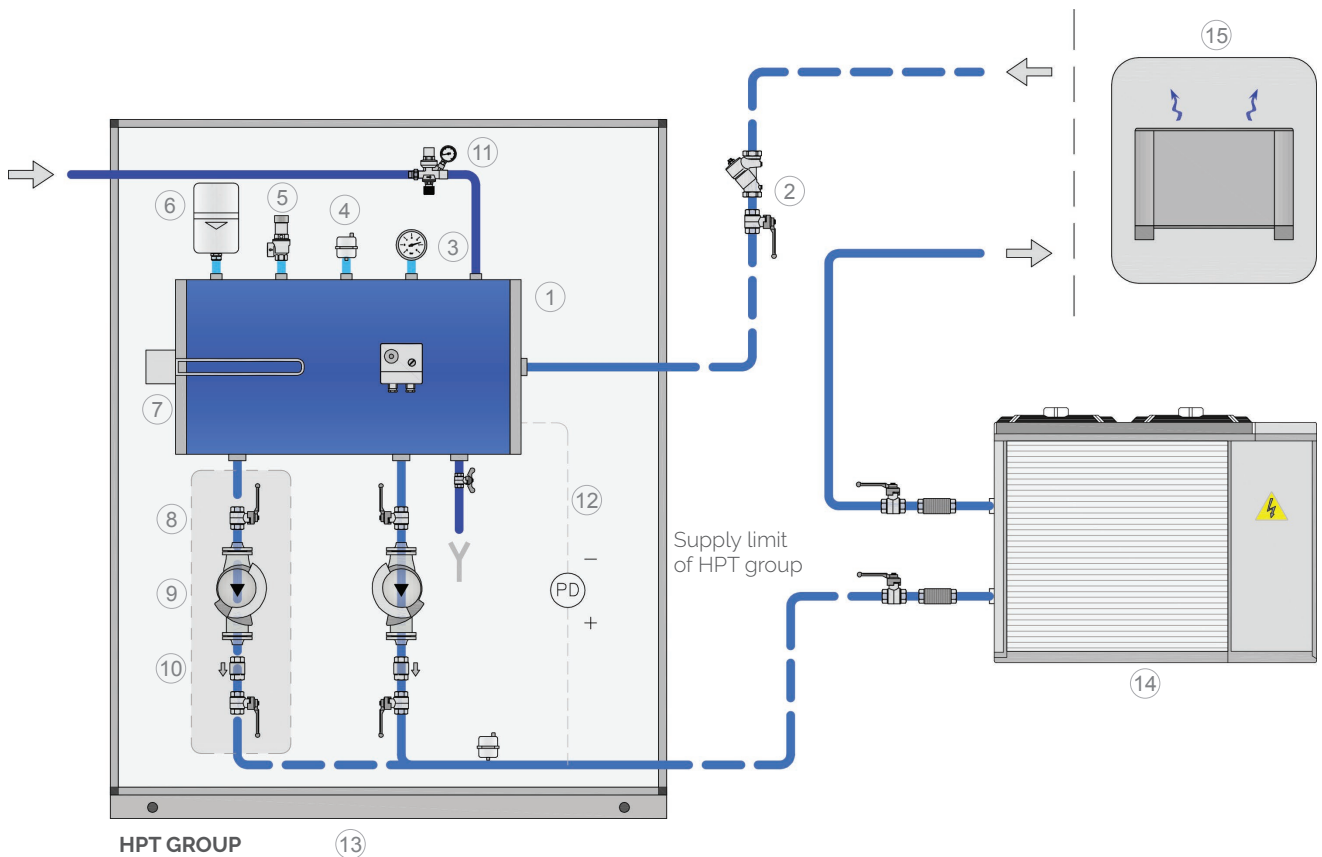
For the accessories list see pag. 104

HPT hydronic systems

Layout 1 - STANDARD

Layout 1 Features: Hydronic kit, chiller and system connected in series, hence the water flow is constant throughout the plant.

NOTE: All HPT Fiorini standard kit kits are Layout 1



Legend

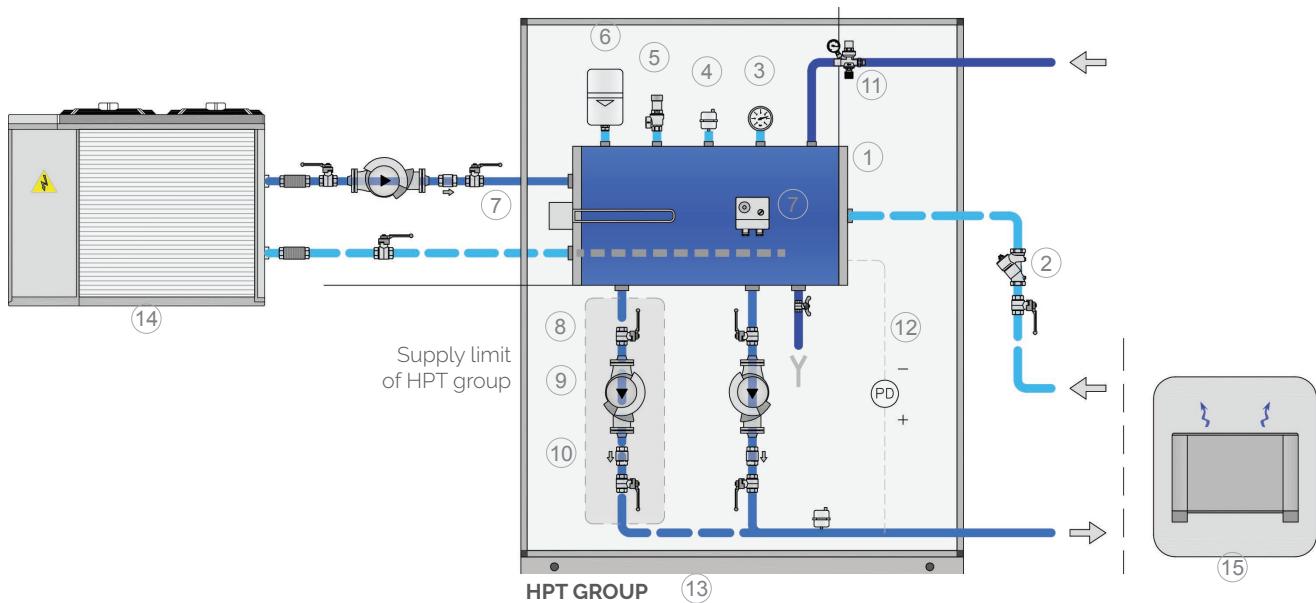
1. Storage tank
2. Y filter. Optional, supplied non-assembled
3. Manometer
4. Deaerator
5. Safety valve
6. Expansion vessel
7. Kit with electric anti-freeze resistance and anti-freeze thermostat (optional)
8. On-off valve
9. Circulator
10. Check valve (only version with 2 pumps)
11. Automatic filling unit
12. Differential pressure switch (optional)
13. Self-supporting wooden structure for outside placement
14. Chiller
15. Device

HPT hydronic system

Layout 2 - SPECIAL VERSION

Layout 2 Features: Hydronic Kit and Chiller create the primary circuit, Hydronic Kit and Plant create the secondary circuit. Hence, the two circuits have independent flow rates.

NOTE: Pump unit supplied only on one of the two circuits.



Legend

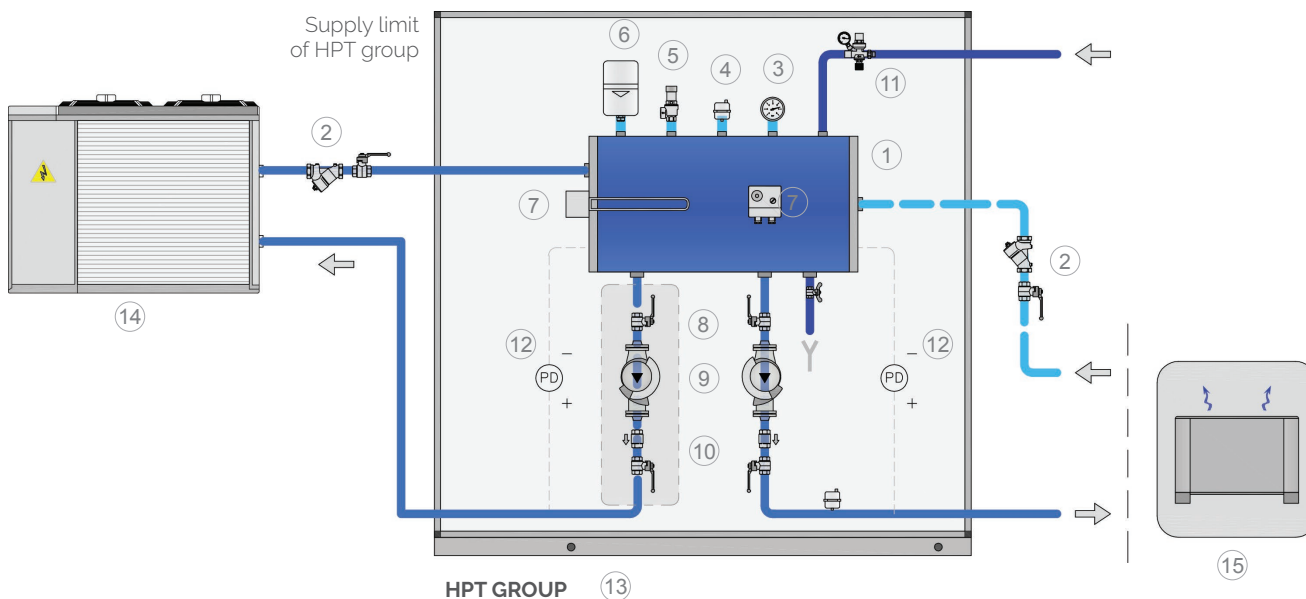
1. Storage tank
2. Y filter. Optional, supplied non-assembled
3. Manometer
4. Deaerator
5. Safety valve
6. Expansion vessel
7. Kit with electric anti-freeze resistance and anti-freeze thermostat (optional)
8. On-off valve
9. Circulator
10. Check valve (only version with 2 pumps)
11. Automatic filling unit
12. Differential pressure switch (optional)
13. Self-supporting wooden structure for outdoor placement
14. Chiller
15. Device

HPT hydronic system

Layout 3 - SPECIAL VERSION

Layout 3 features: Hydronic Kit and Chiller create the primary circuit, Hydronic Kit and the system create the independent secondary circuit. Then the two circuits have independent flow rates.

NOTE: Pump assembly supplied on both circuits.



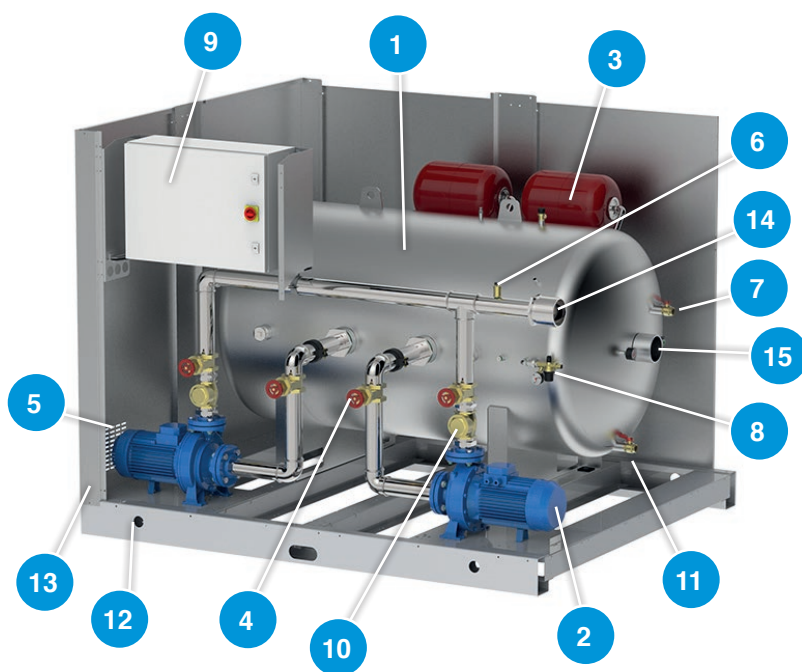
Legend

1. Storage tank
2. Y filter. Optional, supplied non-assembled
3. Manometer
4. Deaerator
5. Safety valve
6. Expansion vessel
7. Kit with electric anti-freeze resistance and anti-freeze thermostat (optional)
8. On-off valve
9. Circulator
10. Check valve (only version with 2 pumps)
11. Automatic filling unit
12. Differential pressure switch (optional)
13. Self-supporting wooden structure for outside placement
14. Chiller
15. Device

Hydronic systems

HPT: components

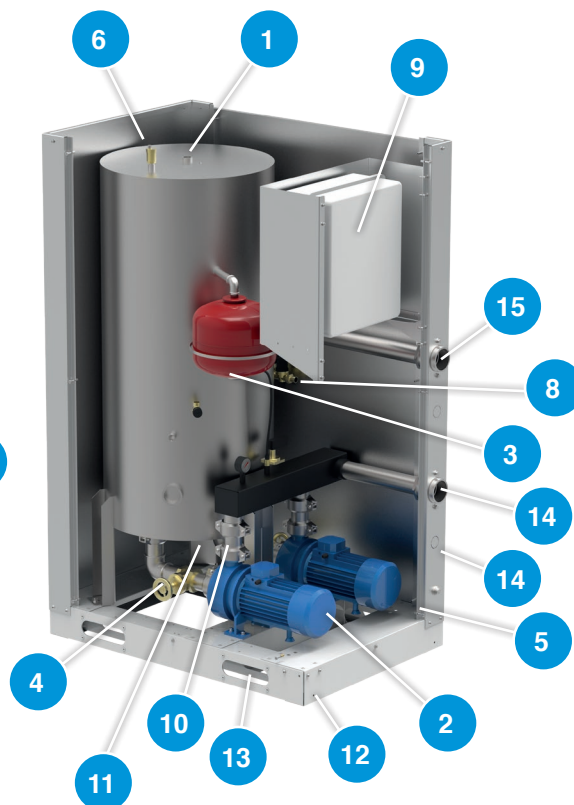
Horizontal HPT



Components

- 1 Tank
- 2 Circulator
- 3 Expansion vessel
- 4 On-off valve
- 5 Automatic ventilation system
- 6 Pressure relief valve
- 7 Filling tap
- 8 Automatic filling unit
- 9 Switchboard
- 10 Control valve (version with 2 pumps)
- 11 Drain
- 12 Anchoring point (4-6 holes m12/ ø14)
- 13 Inlet power grid
- 14 Water outlet
- 15 Water inlet

Vertical HPT

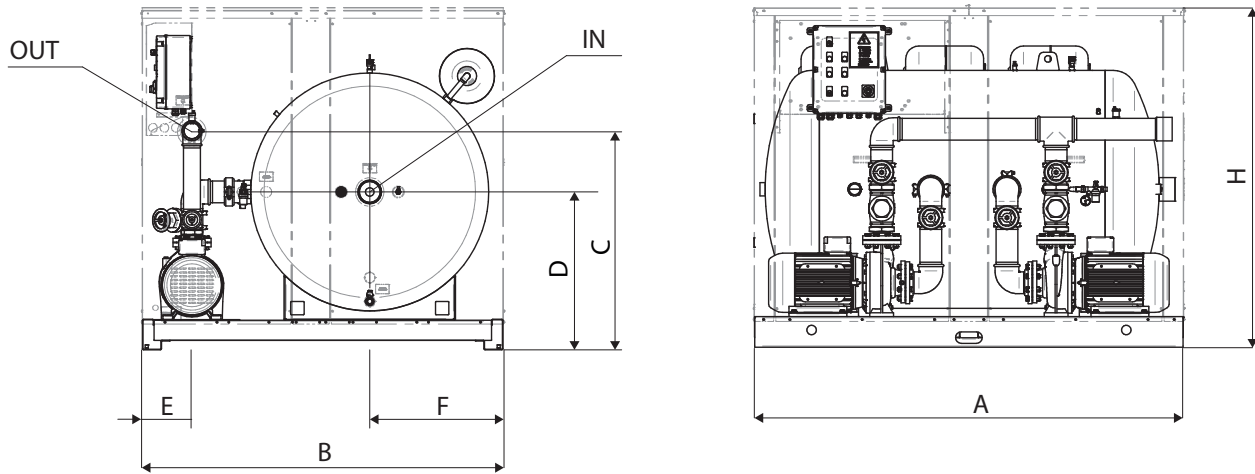


Components

- 1 Tank
- 2 Circulator
- 3 Expansion vessel
- 4 On-off valve
- 5 Automatic ventilation system
- 6 Pressure relief valve
- 8 Automatic filling unit
- 9 Switchboard
- 10 Control valve (version with 2 pumps)
- 11 Drain
- 12 Inlet power grid
- 13 Jacking points
- 14 Water outlet
- 15 Water inlet

Hydronic systems

HPT: dimensions and connections

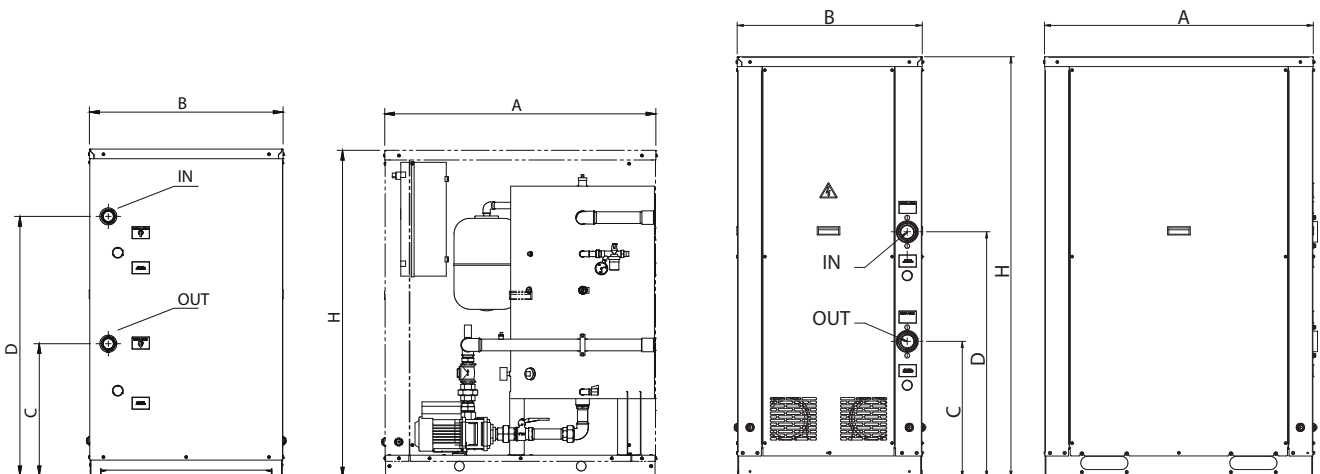


Horizontal HPT dimensions

Capacity l	A mm	B mm	H mm	C mm	D mm	E mm	F mm	IN/OUT inch
300	1504	1120	1265	738	490	212	388	2"1/2
500	1504	1120	1265	738	490	212	388	2"1/2
750	2044	1200	1510	940	604	185	440	3"
1000	2044	1200	1510	940	604	185	440	3"
1500	2260	1900	1782	1145	829	262	703	4"
2500	2260	1900	1782	1145	829	262	703	4"

HPT 100-200

HPT 300



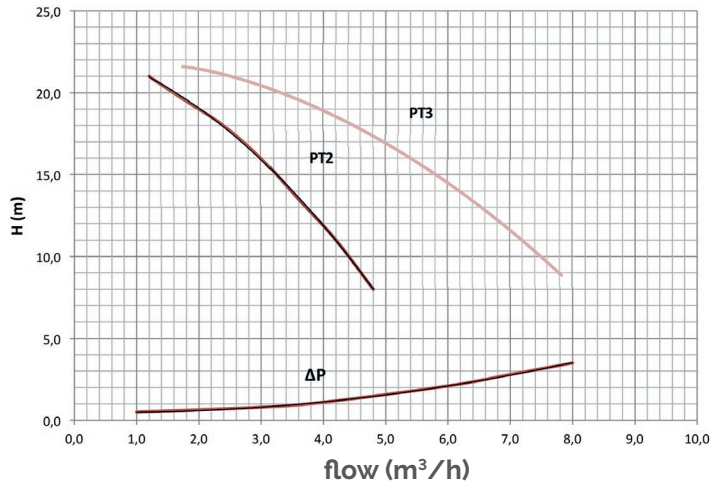
Vertical HPT dimensions

Capacity l	A mm	B mm	H mm	C mm	D mm	IN/OUT inch
100	1120	800	1350	546	1002	1" 1/2
200	1120	800	1350	546	1072	1" 1/2
300	1100	760	1726	558	1008	2" 1/2

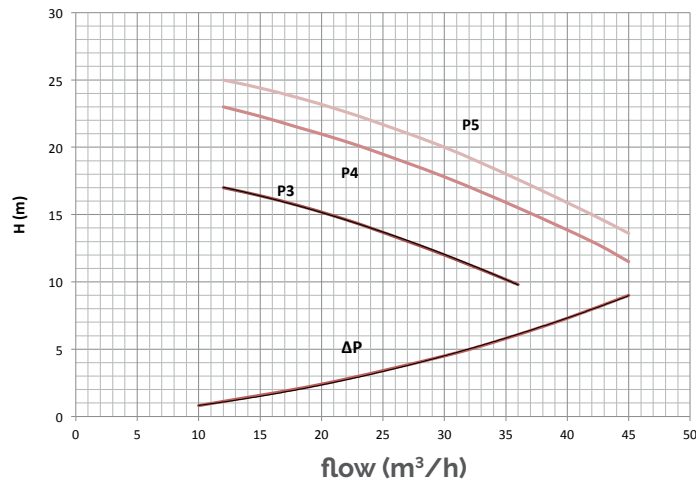
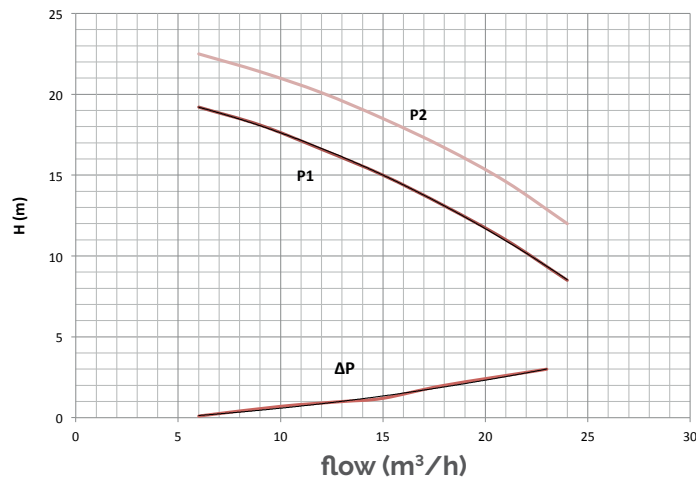
HPT hydronic systems

Prevalence and pressure loss curve

HPT-V 100-200



HPT 300-500

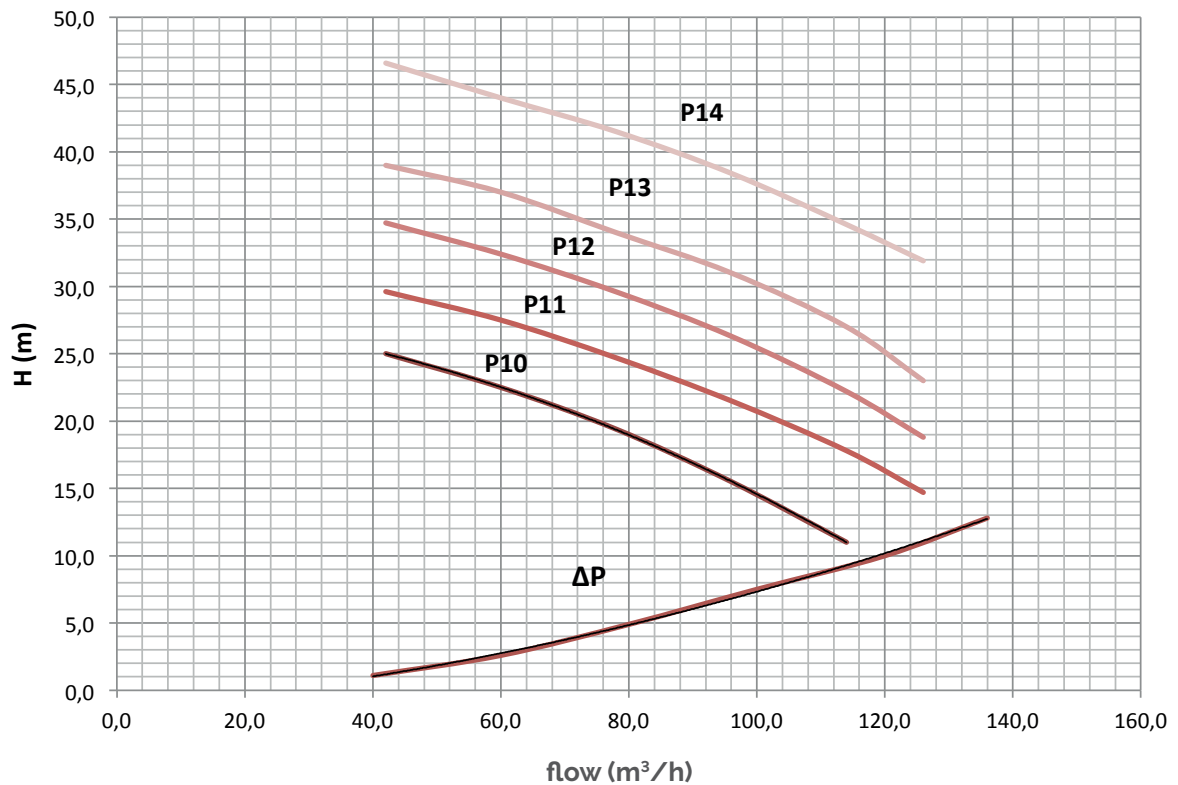
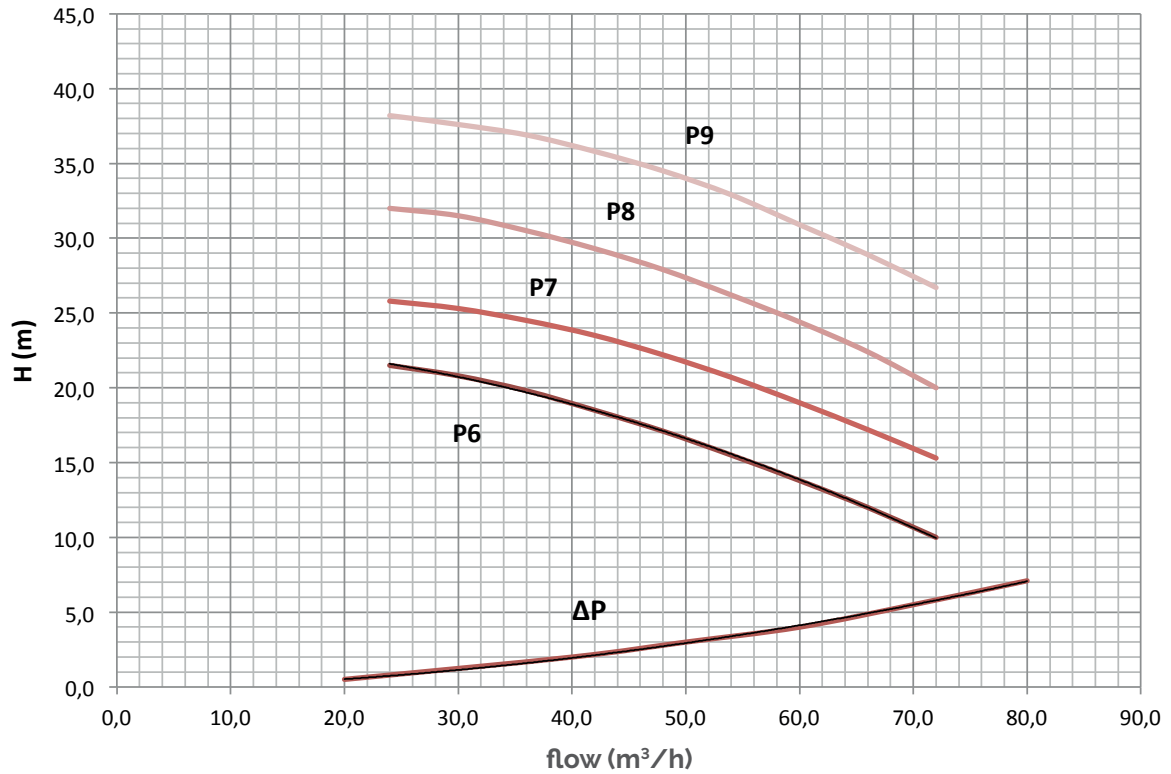


ΔP : pressure loss of the HPT unit

HPT hydronic systems

Prevalence and pressure loss curve

HPT 750-1000

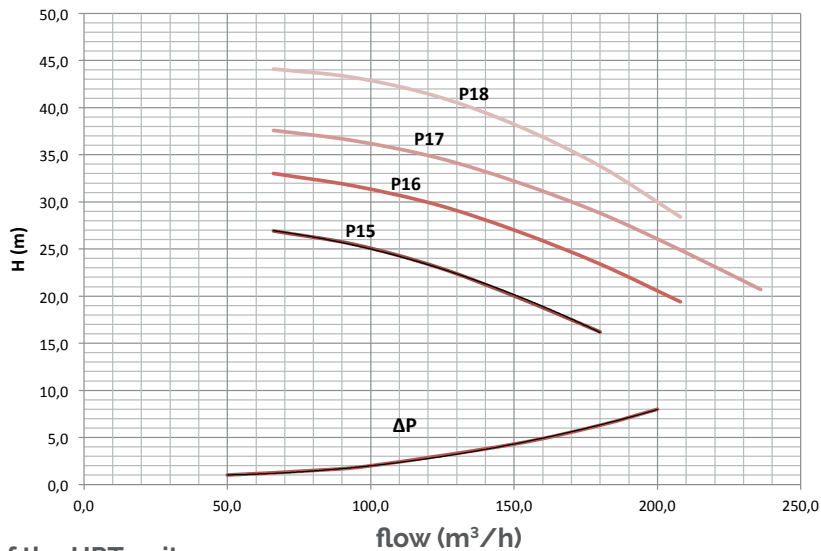
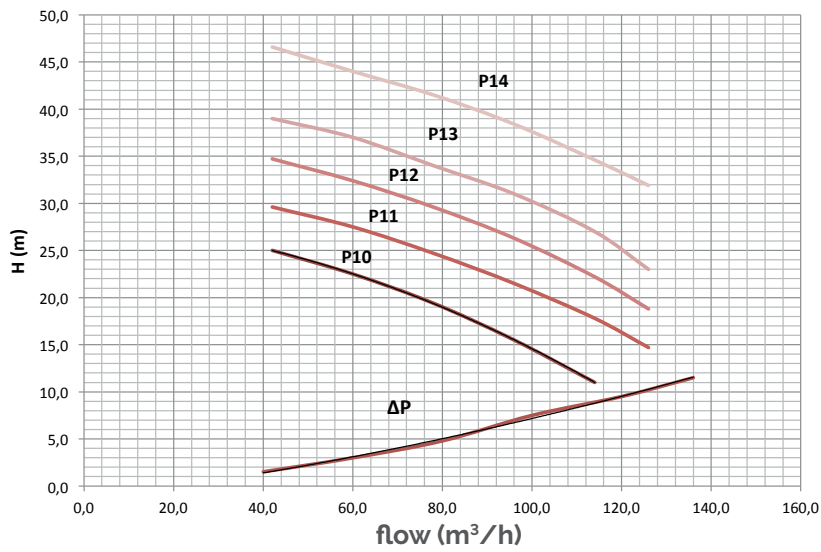
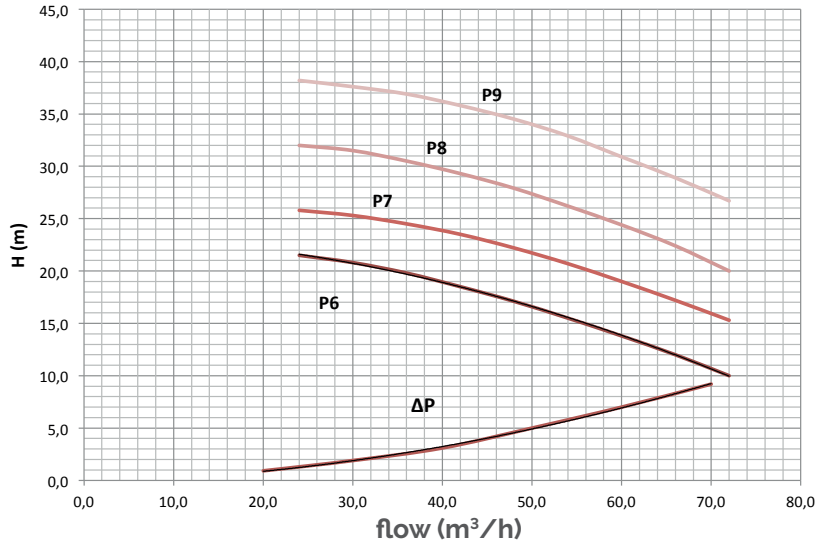


ΔP: pressure loss of the HPT unit

HPT hydronic systems

Prevalence and pressure loss curve

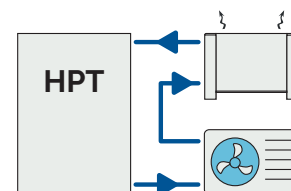
HPT 1500-2500



ΔP: pressure loss of the HPT unit

Hydronic systems

HPT Layout 1 Codes



HPT Capacity	1 pump				2 pumps (1 redundant)				F.L.I. kW	F.L.A. (400/3/50) A	Ve l
	Model	Code	Price	Weight kg	Model	Code	Price	Weight kg			
100 vertical	PT2*	838011493X		159	PT2*	838011494X		195	0,72	1,3	18
	PT3*	838011495X		159	PT3*	838011496X		195	0,72	1,3	18
200 vertical	PT2*	838011497X		195	PT2*	838011498X		211	0,72	1,3	18
	PT3*	838011499X		195	PT3*	838011500X		211	0,72	1,3	18
300 vertical	P1	838010891X		186	P1	838010896X		216	1,1	2,5	25
	P2	838010892X		188	P2	838010897X		220	1,5	3,2	25
	P3	838010893X		188	P3	838010898X		220	1,5	3,4	25
	P4	838010894X		191	P4	838010899X		225	2,2	4,8	25
	P5	838010895X		194	P5	838010900X		231	3	5,6	25
300 horizontal	P1	838010349		186	P1	838010354		216	1,1	2,5	25
	P2	838010350		188	P2	838010355		220	1,5	3,2	25
	P3	838010351		188	P3	838010356		220	1,5	3,4	25
	P4	838010352		191	P4	838010357		225	2,2	4,8	25
	P5	838010353		194	P5	838010358		231	3	5,6	25
500 horizontal	P1	838010359		208	P1	838010364		238	1,1	2,5	25
	P2	838010360		210	P2	838010365		242	1,5	3,2	25
	P3	838010361		210	P3	838010366		242	1,5	3,4	25
	P4	838010362		213	P4	838010367		247	2,2	4,8	25
	P5	838010363		215	P5	838010368		253	3	5,6	25
	P6	838010879X		234	P6	838011056X		279	3	6,1	25
750 horizontal	P6	838010374		341	P6	838010379		428	3	6,1	25
	P7	838011384X		341	P7	838011385X		428	4	8,7	25
	P8	838010375		370	P8	838010380		485	5,5	10,4	25
	P9	838011392X		370	P9	838011393X		485	7,5	13,6	25
	P10	838010376		373	P10	838010381		493	5,5	10,4	25
	P11	838010377		377	P11	838010382		501	7,5	13,6	25
	P12	838011400X		377	P12	838011401X		501	9,2	17,2	25
1000 horizontal	P6	838010384		364	P6	838010389		455	3	6,1	25
	P7	838011386X		364	P7	838011387X		455	4	8,7	25
	P8	838010385		392	P8	838010390		512	5,5	10,4	25
	P9	838011394X		392	P9	838011395X		512	7,5	13,6	25
	P10	838010386		396	P10	838010391		520	5,5	10,4	25
	P11	838010387		400	P11	838010392		528	7,5	13,6	25
	P12	838011402X		400	P12	838011403X		528	9,2	17,2	25
P13	838010388		400	P13	838010393		528	11	21,3	25	

Pve (bar) 1,5 Ps (bar) 3 T min (°C) -10

* PT2 and PT3 available in single-phase version on request

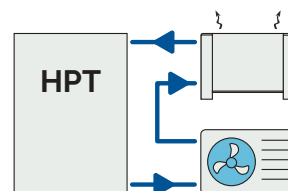
NOTE - Layout 1 is the standard execution unless otherwise stated in the order. Prices for Layout 2 and Layout 3 on request.

Legend

F.L.I. Maximum absorbed power
 F.L.A. Maximum current absorbed
 Ve Expansion vessel capacity
 Pve Expansion vessel pre-charge
 Ps Maximum operating pressure
 T min Minimum liquid temperature

Hydronic systems

HPT Layout 1 Codes



HPT Capacity	1 pump				2 pumps (1 redundant)				F.L.I kW	F.L.A. (400/3/50) A	Ve l
	Model	Code	Price	Weight kg	Model	Code	Price	Weight kg			
1500 horizontal	P6	838010705		513	P6	838010458		586	3	6,1	2x25
	P7	838011388X		513	P7	838011389X		586	4	8,7	2x25
	P8	838010704		565	P8	838010630		696	5,5	10,4	2x25
	P9	838011396X		565	P9	838011397X		696	7,5	13,6	2x25
	P10	838010703		569	P10	838010696		696	5,5	10,4	2x25
	P11	838010702		569	P11	838010695		696	7,5	13,6	2x25
	P12	838011404X		569	P12	838011405X		696	9,2	17,2	2x25
	P13	838010701		569	P13	838010694		696	11	21,3	2x25
	P14	838010700		628	P14	838010693		814	15	27,7	2x25
	P15	838011380X		628	P15	838011381X		814	11	20,2	2x25
	P16	838010699		634	P16	838010692		826	15	26,6	2x25
	P17	838010698		646	P17	838010691		850	18,5	33	2x25
P18	838010697		660	P18	838010690		878	22	40,4	2x25	
2500 horizontal	P6	838010689		565	P6	838010682		638	3	6,1	3x25
	P7	838011390X		565	P7	838011391X		638	4	8,7	3x25
	P8	838010688		613	P8	838010681		732	5,5	10,4	3x25
	P9	838011398X		613	P9	838011399X		732	7,5	13,6	3x25
	P10	838010687		617	P10	838010680		740	5,5	10,4	3x25
	P11	838010686		617	P11	838010679		740	7,5	13,6	3x25
	P12	838011406X		617	P12	838011407X		740	9,2	17,2	3x25
	P13	838010685		617	P13	838010678		740	11	21,3	3x25
	P14	838010684		680	P14	838010677		866	15	27,7	3x25
	P15	838011382X		680	P15	838011383X		866	11	20,2	3x25
	P16	838010707		686	P16	838010459		878	15	26,6	3x25
	P17	838010683		698	P17	838010676		902	18,5	33	3x25
P18	838010706		712	P18	838010633		930	22	40,4	3x25	

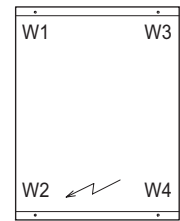
Pve (bar) 1,5 Ps (bar) 3 T min (°C) -10
 * PT2 and PT3 available in single-phase version on request

NOTE - Layout 1 is the standard execution unless otherwise stated in the order. Prices for Layout 2 and Layout 3 on request.

Legend

F.L.I. Maximum absorbed power
 F.L.A. Maximum current absorbed
 Ve Expansion vessel capacity
 Pve Expansion vessel pre-charge
 Ps Maximum operating pressure
 T min Minimum liquid temperature

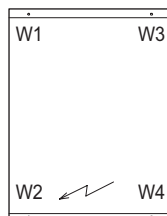
HPT hydronic systems: vertical distribution of the weight



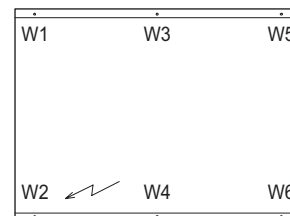
Unit top view

Pump model	Tank capacity l	1 pump				2 pumps (1 redundant)			
		W1 kg	W2 kg	W3 kg	W4 kg	W1 kg	W2 kg	W3 kg	W4 kg
PT2	100	29	67	50	115	33	76	56	131
	200	44	101	75	176	46	106	78	183
PT3	100	29	67	50	115	33	76	57	131
	200	44	102	76	175	46	106	79	182
P1	300	175	91	147	75	129	129	129	129
P2	300	178	91	146	75	132	132	129	129
P3	300	177	91	146	77	130	130	130	130
P4	300	178	93	147	76	132	132	132	132
P5	300	179	92	149	76	134	134	132	132

HPT hydronic systems: horizontal distribution of the weight



Unit top view up to P5



Unit top view from P6

Pump model	Tank capacity l	1 pump						2 pumps (1 redundant)					
		W1 kg	W2 kg	W3 kg	W4 kg	W5 kg	W6 kg	W1 kg	W2 kg	W3 kg	W4 kg	W5 kg	W6 kg
P1	300	144	94	150	100	-	-	148	110	149	111	-	-
	500	216	132	223	139	-	-	221	149	221	149	-	-
P2	300	145	94	151	100	-	-	150	110	151	111	-	-
	500	216	133	223	140	-	-	222	150	222	150	-	-
P3	300	145	94	151	100	-	-	150	110	151	111	-	-
	500	216	133	223	140	-	-	222	150	222	150	-	-
P4	300	146	95	152	101	-	-	151	111	152	112	-	-
	500	217	133	224	140	-	-	224	151	224	151	-	-
P5	300	147	95	153	101	-	-	153	113	154	114	-	-
	500	218	134	225	141	-	-	225	152	225	152	-	-
P6	500	224	137	231	144	-	-	233	157	233	157	-	-
	750	230	122	236	128	242	134	245	152	243	150	241	149
	1000	296	148	302	154	308	160	309	181	307	179	305	177
	1500	368	290	374	297	381	304	379	321	377	319	376	318
	2500	567	443	574	449	580	456	579	455	586	461	592	468
P7	750	230	122	236	128	242	134	245	152	243	150	241	149
	1000	296	148	302	154	308	160	309	181	307	179	305	177
	1500	368	290	374	297	381	304	379	321	377	319	376	318
	2500	567	443	574	449	580	456	579	455	586	461	592	468
P8	750	228	127	237	136	247	146	242	170	242	170	242	170
	1000	293	153	303	162	312	172	310	197	309	196	308	195
	1500	368	305	376	314	385	322	382	353	381	352	380	351
	2500	575	450	582	456	588	463	588	496	585	493	582	490
P9	750	228	127	237	136	247	146	242	170	242	170	242	170
	1000	293	153	303	162	312	172	310	197	309	196	308	195
	1500	368	305	376	314	385	322	382	353	381	352	380	351
	2500	575	450	582	456	588	463	588	496	585	493	582	490
P10	750	229	128	238	137	248	147	244	171	244	171	244	171
	1000	293	153	303	163	313	173	311	198	310	197	309	196
	1500	368	305	376	314	385	322	382	353	381	352	380	351
	2500	576	451	583	457	589	464	589	497	586	494	583	491
P11	750	230	128	239	137	249	147	245	172	245	172	245	172
	1000	294	153	304	163	314	173	313	199	312	198	311	197
	1500	368	305	376	314	385	322	382	353	381	352	380	351
	2500	576	451	583	457	589	464	589	497	586	494	583	491
P12	750	230	128	239	137	249	147	245	172	245	172	245	172
	1000	294	153	304	163	314	173	313	199	312	198	311	197
	1500	368	305	376	314	385	322	382	353	381	352	380	351
	2500	576	451	583	457	589	464	589	497	586	494	583	491
P13	750	229	130	238	138	247	148	244	174	244	174	244	174
	1000	286	156	299	169	312	181	304	208	303	207	302	206
	1500	358	309	370	321	382	332	370	365	369	364	368	363
P14	2500	566	455	575	465	585	474	577	510	574	507	571	504
	1500	365	318	379	331	392	345	387	387	386	386	385	385
	2500	568	468	579	480	591	497	585	544	582	541	579	537
P15	1500	365	318	379	331	392	345	387	387	386	386	385	385
	2500	568	468	579	480	591	497	585	544	582	541	579	537
P16	1500	366	319	380	332	393	346	389	389	388	388	387	387
	2500	569	469	580	481	592	498	587	546	584	543	581	539
P17	1500	368	321	382	334	395	348	393	393	392	392	391	391
	2500	571	471	582	483	594	500	591	550	588	547	585	543
P18	1500	370	323	384	336	397	350	398	398	397	397	396	396
	2500	573	474	584	486	596	502	596	555	593	552	590	548

HPT hydronic systems

capacity of the expansion vessel

Max water content in the device and the dimensions of the expansion vessel

On the first chart, the max water content in the hydraulic device which is compatible with the capacity of the expansion vessel (supplied with every HPT model) and with the start-up value of the safety valve (3 bar for all models) is indicated. If the actual water volume in the device, the storage tank included, is more than the operative conditions on the chart, more expansion vessels need to be installed.

Tav. 1

		Hydraulic height H Preload of the expansion vessel	m bar	15 1,80	10 1,50
HPT 100		Max water capacity in the circuit in litres (1)		708	885
		Max water capacity in the circuit in litres (2)		453	567
HPT 200		Max water capacity in the circuit in litres (1)		708	885
		Max water capacity in the circuit in litres (2)		453	567
HPT 300		Max water capacity in the circuit in litres (1)		984	1230
		Max water capacity in the circuit in litres (2)		630	788
HPT 500		Max water capacity in the circuit in litres (1)		984	1230
		Max water capacity in the circuit in litres (2)		630	788
HPT 750		Max water capacity in the circuit in litres (1)		984	1230
		Max water capacity in the circuit in litres (2)		630	788
HPT 1000		Max water capacity in the circuit in litres (1)		984	1230
		Max water capacity in the circuit in litres (2)		630	788
HPT 1500		Max water capacity in the circuit in litres (1)		1964	2461
		Max water capacity in the circuit in litres (2)		1261	1576
HPT 2500		Max water capacity in the circuit in litres (1)		2953	3691
		Max water capacity in the circuit in litres (2)		1891	2363

Operative conditions

- (1) cooling
Min temp of fluid = 4°C
Max temp of fluid = 40°C
- (2) heating (heat pump)
Min temp of fluid = 4°C
Max temp of fluid = 50°C

Tav. 2

Water temperature				
Water/glycol mix.	max.	min.	Correction factor	Reference
10%	40	-2	0.507	(1)
10%	5	-2	0.686	(2)
20%	40	-4	0.434	(1)
20%	50	-4	0.604	(2)
30%	40	-6	0.393	(1)
30%	50	-6	0.555	(2)

HPT hydronic systems

Preload of the expansion vessel

The expansion vessel, of all models, is preloaded with a standard value of 1.5 bar. However, the value has to be adjusted to the height of the device H.

The formula used to calculate the preload value of the expansion vessel is:

$$P = (H / 10.2) + 0.3$$

Legend

H: height of the device in meters

P: preload of the expansion vessel in bar

If the result of the preload value is less than the standard value, no steps should be taken. This means that for every installation with a height below 12.25 m, the preload of the expansion vessel should be 1.5 bar. In these cases the operator should only check the pressure value without carrying out any intervention.

Example:

You take a height H of 15.3 m. The preload value is:

$$P = (15.3 / 10.2) + 0.3 = 1.8 \text{ bar}$$

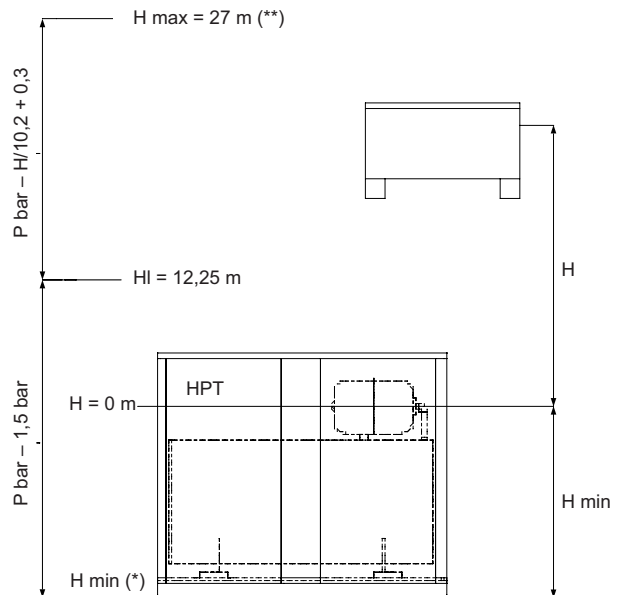
H height of the device

Hmax: max height of the device

H1: height when the preload of the expansion vessel is the same as the standard value

* verify that the lowest point of the device can support the device's pressure

** verify that the highest point of the device is not higher than H max = 27 m



HPT hydronic system user's conditions

Normal user conditions

The HPT Hydronic Group is designed to be placed in air conditioning systems, usually coupled with a chiller or a heat pump.

The groups are designed to work with water or ethylene glycol and water mixtures up to a maximum of 30%. For operation with percentages of higher glycols or with different fluids, you must consult our technical support.

The minimum operating temperature of the fluid is -10 ° C, of course with a mixture of water and glycol, while the maximum is 60 ° C. Special versions for operation with lower or higher temperature fluids are available on request.

The outdoor air temperature range is -20 ° C + 40 ° C. Again, special versions are available for operation outside the standard range.

The maximum working pressure of the group is 3 bars. Versions with maximum operating pressure are available on request. Also versions for open vessel operation (atmospheric pressure) can be made on request.

Hydronic systems

HPT accessories

1 Programmable timer for alternating pumps

In the dual pump configuration, the timer can be used to handle alternating pump operation at specified time intervals. Without the timer, the alternating pump operation occurs at each startup of the group. Default alternation every 48 hours programmable.

*** WARNING:** If the system operates 24 hours a day, 7 days a week, the pump alternation is not guaranteed by the standard group. In this case, we recommend the use of this accessory.

Code	Description	Price
838081104X	TIMER OPTION 48H	

2 Differential pressure switch

Security device that allows you to verify that there is flow inside the system. The device generates an alarm signal but does not automatically stop the machine.

Code	Description	Price
838081000X	DIFFERENTIAL PRESSURE SWITCH	

3 Anti-vibrating feet

Set of anti-vibrating feet to be placed on the machine's support points. The feet are supplied disassembled.

Code	Description	Price
838080917X	ANTIVIBRATION FOR HPT 300/500	
838080936X	ANTIVIBRATION FOR HPT 750/1000	
838080938X	ANTIVIBRATION FOR HPT 2500	

4 Inverter (special version)

Each pump can be operated by an inverter. The units equipped with inverters have a pressure sensor, 0-10 bar, which communicates with the inverter with 4-20 mA signal. All adjustment parameters are pre-loaded during the test run at the company. The user must choose only the desired set point pressure value.

see page: 131

5 Antifreeze electric resistance kit (special version)

The kit, mounted inside the tank, consists of an electrical resistance of 1300 W for dimensions up to 1000 l and two 1300 W electric resistors for larger dimensions. The kit also includes a bi-thermostatic antifreeze adjustment (-35 / + 35 ° C) and is supplied assembled, wired and tested.

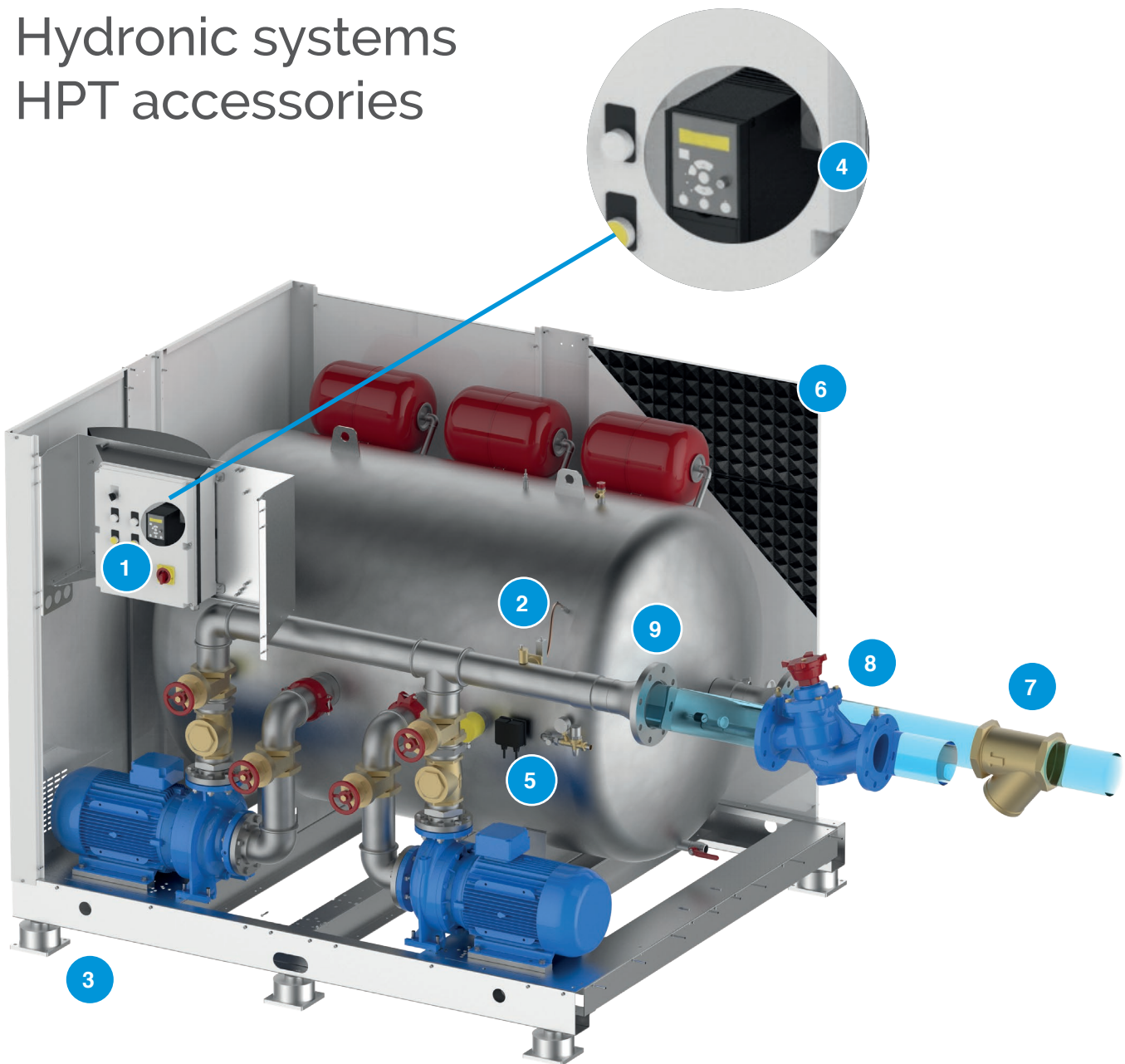
see page: 131

6 Soundproof coating (special version)

The soundproofing is available, which attenuates the sound level of the machine significantly.

see page: 131

Hydronic systems HPT accessories



7 Filter (special version)

Mesh filter, with 1000 micron holes, can be placed outside the unit to protect the pumps from any impurities in the equipment.

see page: 131

8 Balancing valves (special version)

Valve can be connected externally to balance the flow within the circuit.

see page: 131

Wooden box packing (special version)

Extra protective packing suitable for risky and long-distance transport.

see page: 131

9 Tailored connections

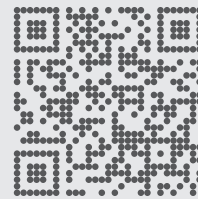
From Threaded to Flanged/Victaulic Standard **see page: 130**

Special version for larger size, flanged victaulic in various materials **see page: 131**



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