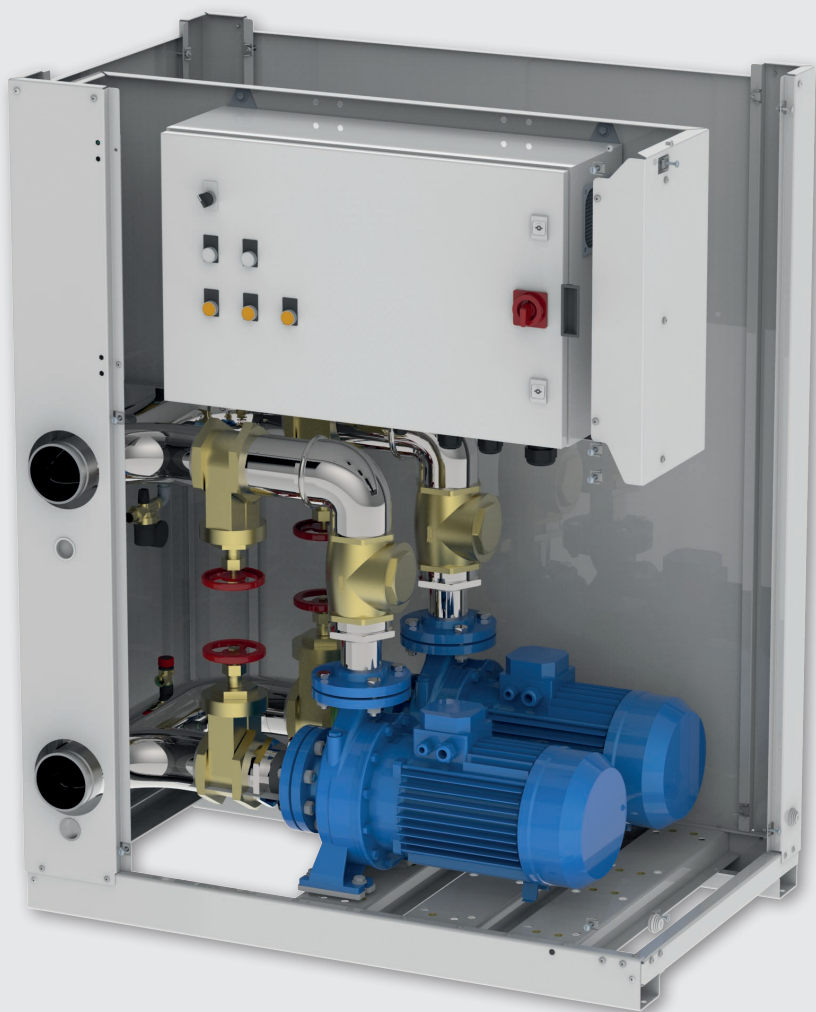


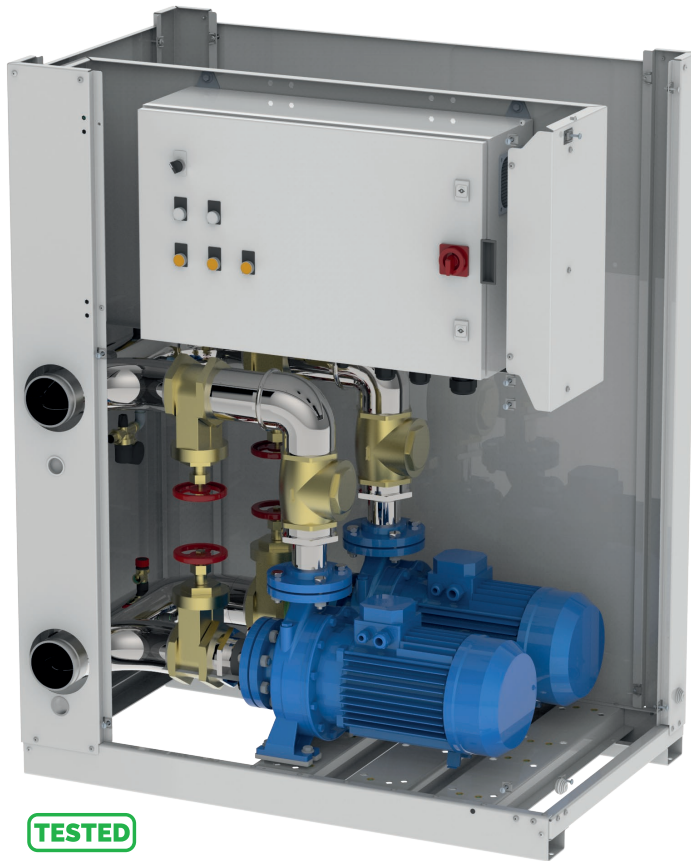
Hydronic Kits  
HP 2.0



introduction

# HP 2.0

## Hydronic system



**TESTED**

Piping insulated with anti-condensate elastomer

The HP 2.0 units are hydraulic stations meant to reduce the set-up time of the conditioning and cooling devices. They can be linked to any kind of water cooler.

The HP unit has:

- piping insulated with anti-condensate elastomere
- Single or double centrifugal pump with shut-off valve
- Power switchboard with device to alternate pumps with every start-up (version with two pumps), start-up of the back-up pump in case of breakdown (version with two pumps), magnetothermal protection, contacts to command the pumps from a distance, protection category IP55.
- Safety valve
- Deaerator
- Manometer
- Fill-up/drain valve
- Base and self-supporting panels made of galvanized and coated steel sheets, suitable for outdoor installations
- Panels that can be quickly and easily removed
- Easy and quick access to the switchboard

The broad range of combinations offers a solution for every single type of installation.

Expansion vessel available on request.

### Accessories

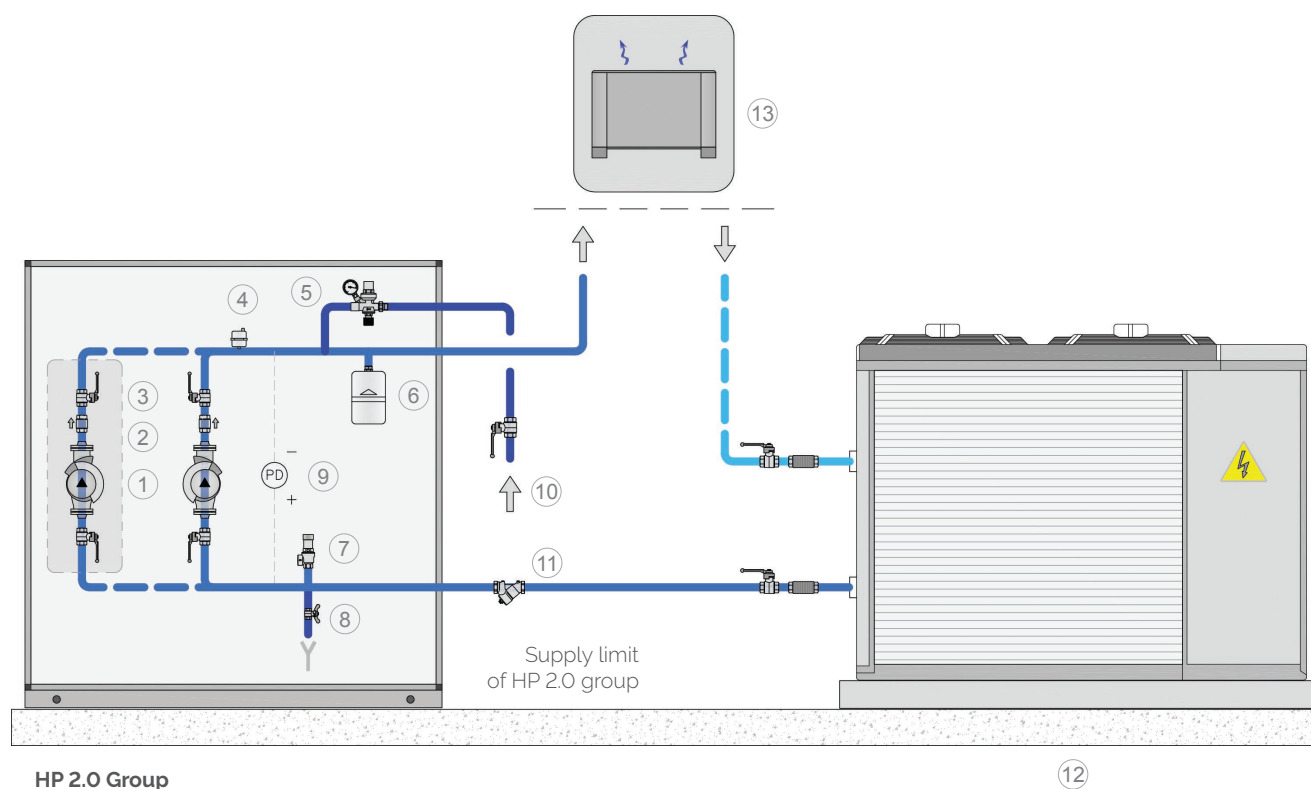
See pag. 116 for the list of available accessories



# HP 2.0 hydronic systems: hydraulic chart

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

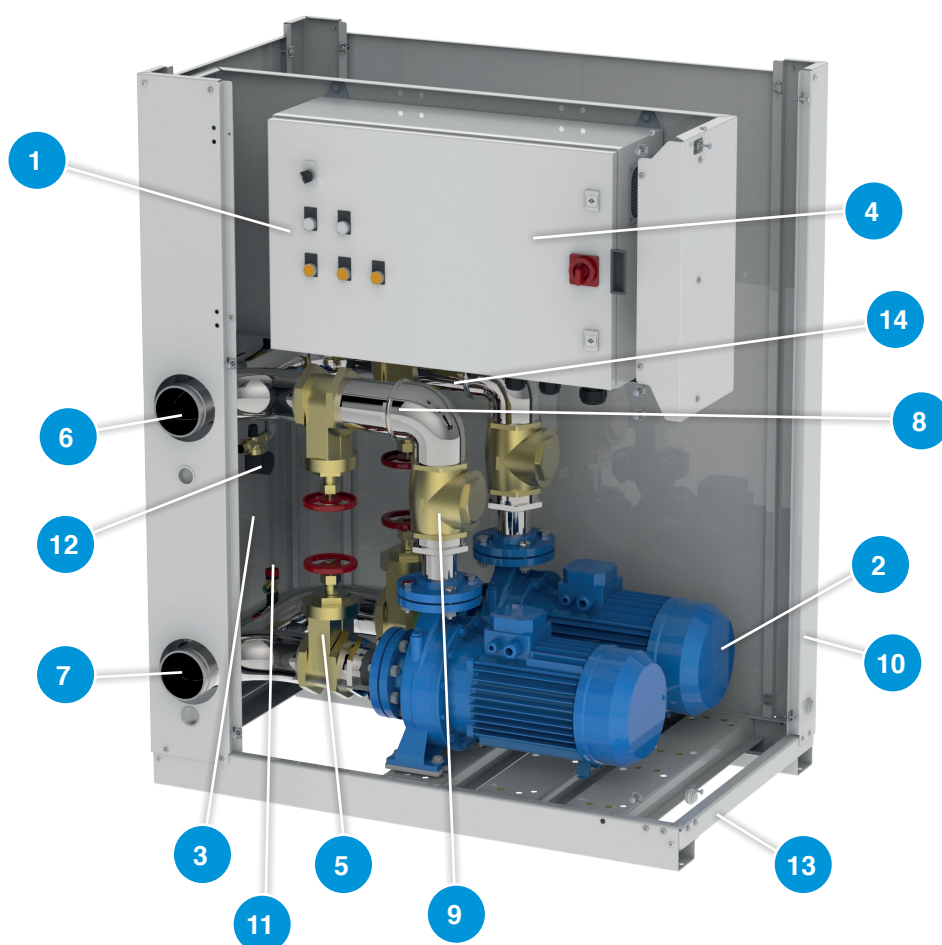
NOTE: All HPT Fiorini standard kit kits are Layout 1



## Legend

1. Circulator
2. Shut-off valve (only version with 2 pumps)
3. On-off valve
4. Deaerator
5. Automatic filling unit
6. Expansion vessel (optional)
7. Safety valve
8. Drain
9. Differential pressure switch (optional)
10. Inlet returning fluid
11. Y filter. Optional, supplied non-assembled
12. Chiller
13. Device

# HP 2.0 hydronic system: components

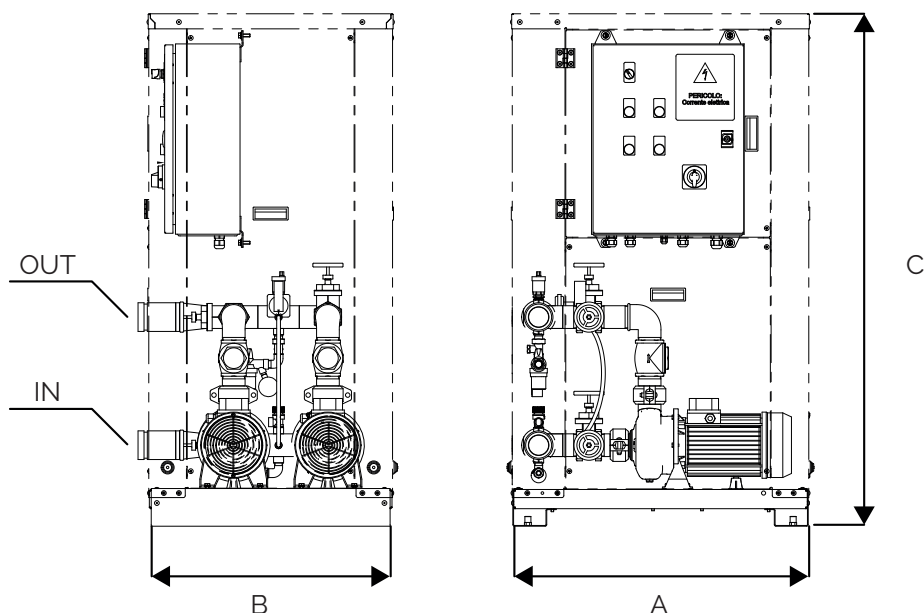


## Components

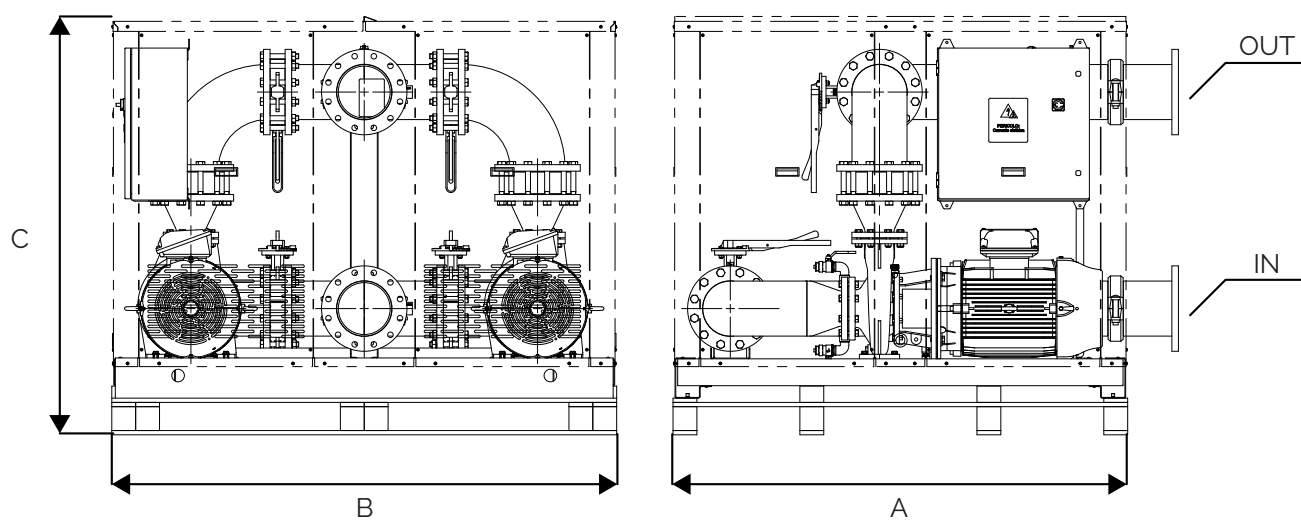
- |    |   |
|----|---|
| 1  | Switchboard   |
| 2  | Circulation pump (version with double pump, optional) |
| 3  | Removable bolted panel                                |
| 4  | Hinged panel  |
| 5  | Shut-off valve  |
| 6  | Water outlet  |
| 7  | Water inlet   |
| 8  | Pressure transmitter (only version with inverter)     |
| 9  | Check valve (only version with double pump)           |
| 10 | Ventilation grid                                      |
| 11 | Safety valve  |
| 12 | Automatic filling unit                                |
| 13 | Base  |
| 14 | Automatic pressure relief                             |

# HP 2.0 hydronic system: dimensions

## Layout of pump models PT2, PT3, from P1 to P18



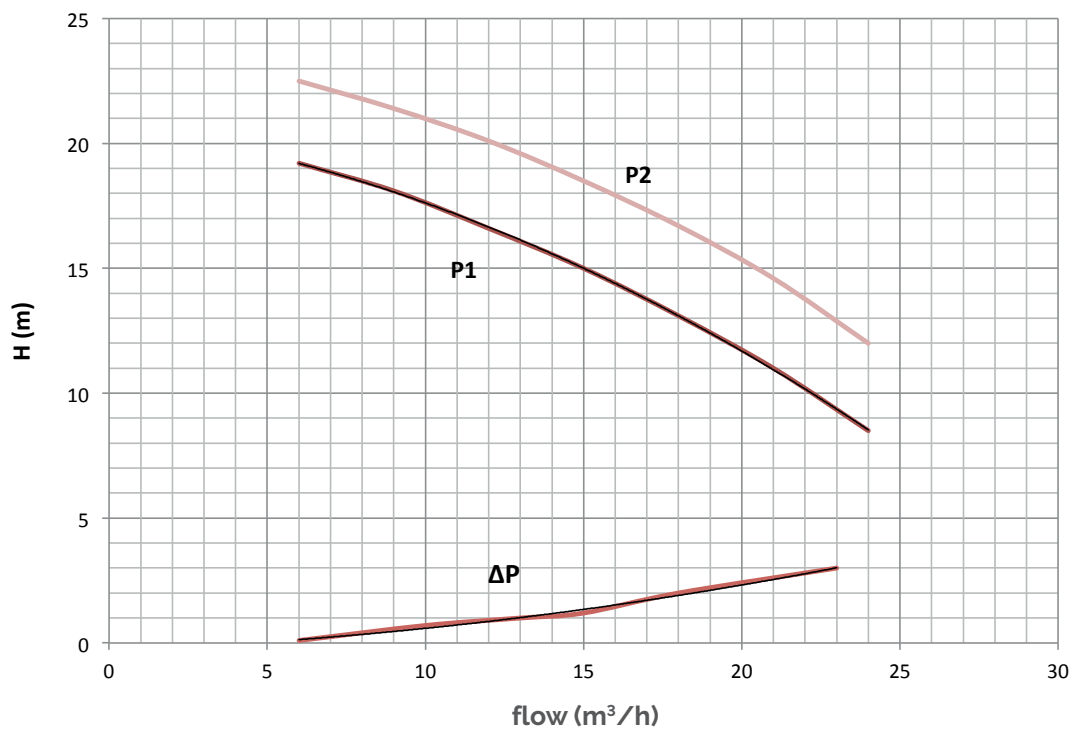
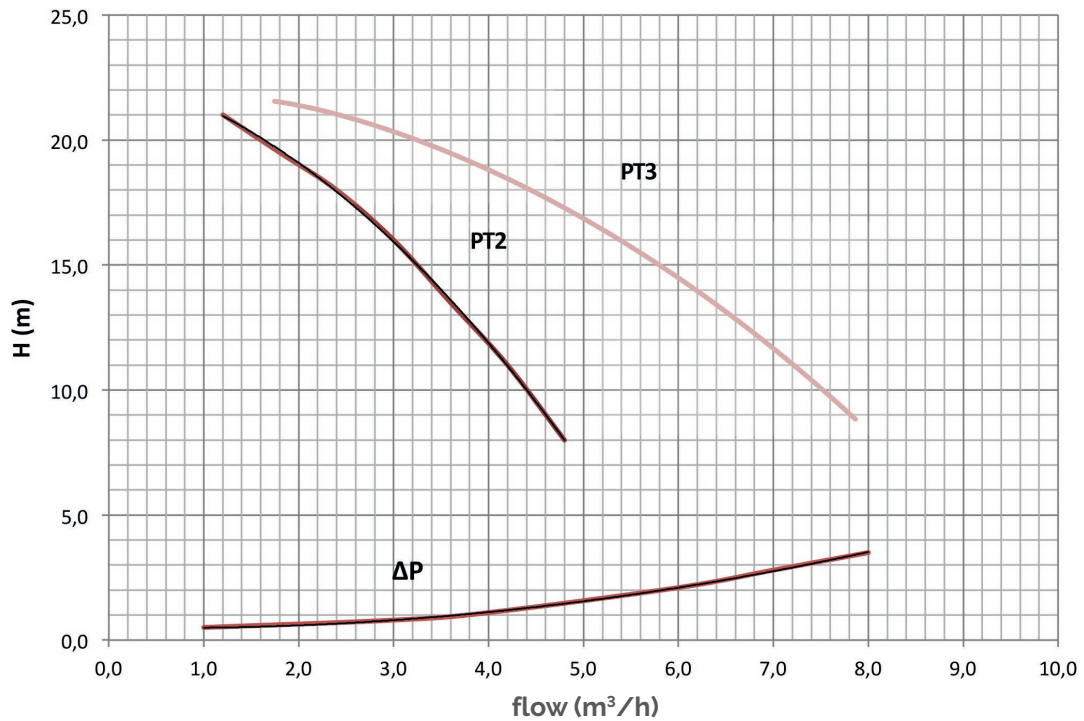
## Layout of pump models from P19 to P21



Pump model	1 pump Dimensions			2 pumps (1 redundant) Dimensions			IN/OUT inch
	A mm	B mm	C mm	A mm	B mm	C mm	
PT2-PT3	790	650	1360	790	650	1360	1'1/2
P1-P2-P3-P4-P5	790	650	1360	790	650	1360	2'1/2
P6-P7-P8-P9	1200	790	1360	1200	790	1360	3'
P10-P11-P12-P13-P14-P15-P16-P17-P18	1200	790	1360	1280	790	1600	4'
P19-P20-P21	2000	1800	1575	2000	1800	1575	DN 200 UNI PN16

# HP 2.0 Hydronic systems

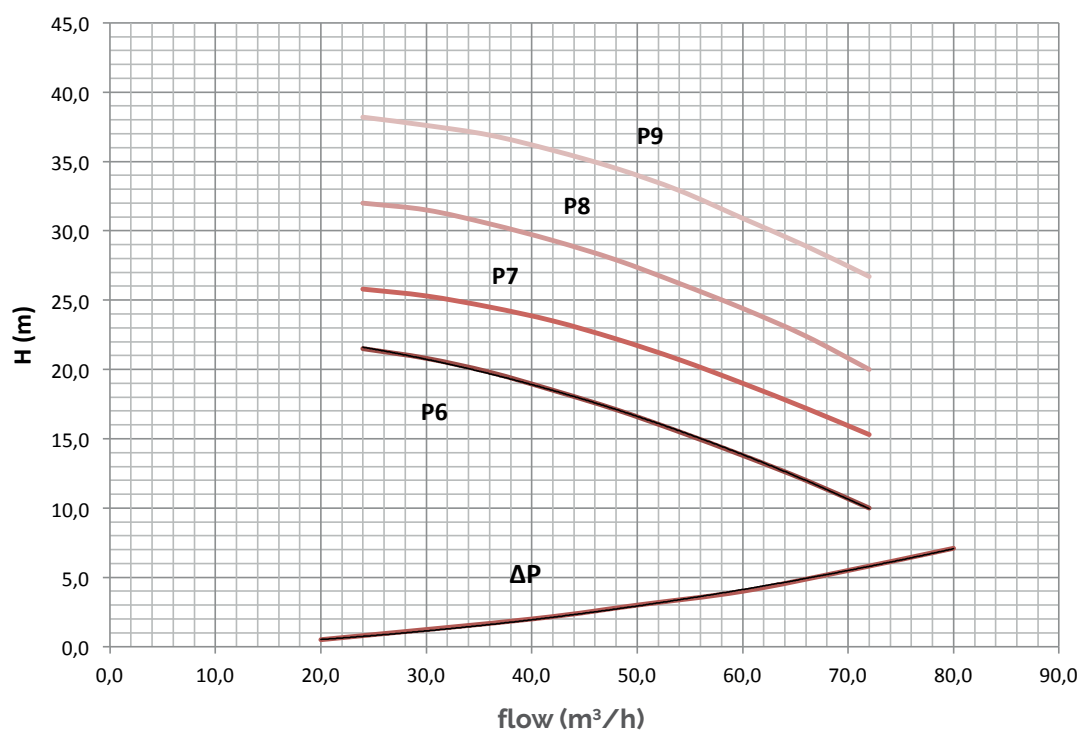
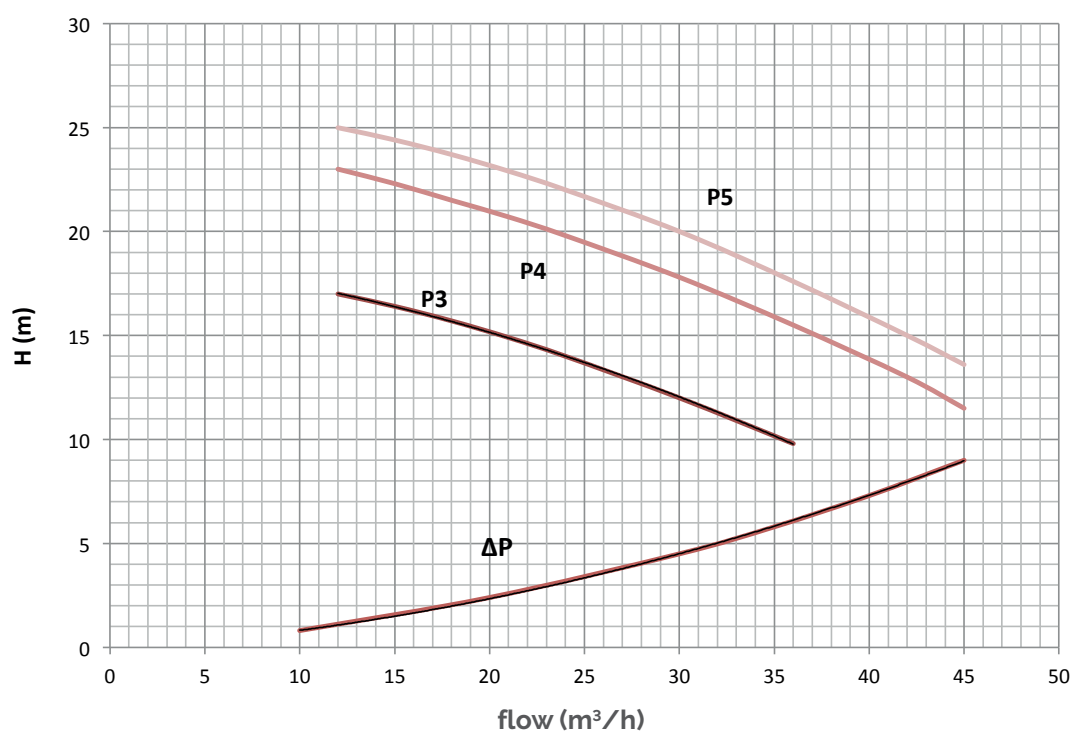
## Prevalence and pressure loss curve



ΔP: Pressure drop HP unit

# HP 2.0 Hydronic systems

## Prevalence and pressure loss curve

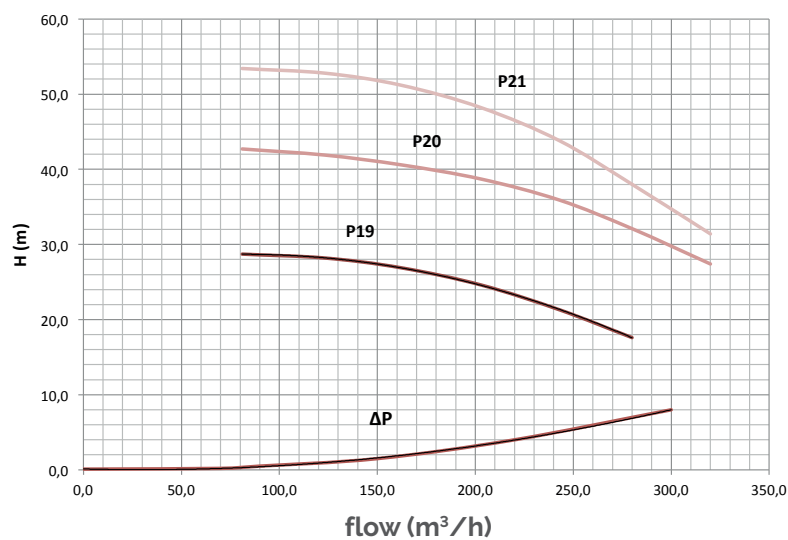
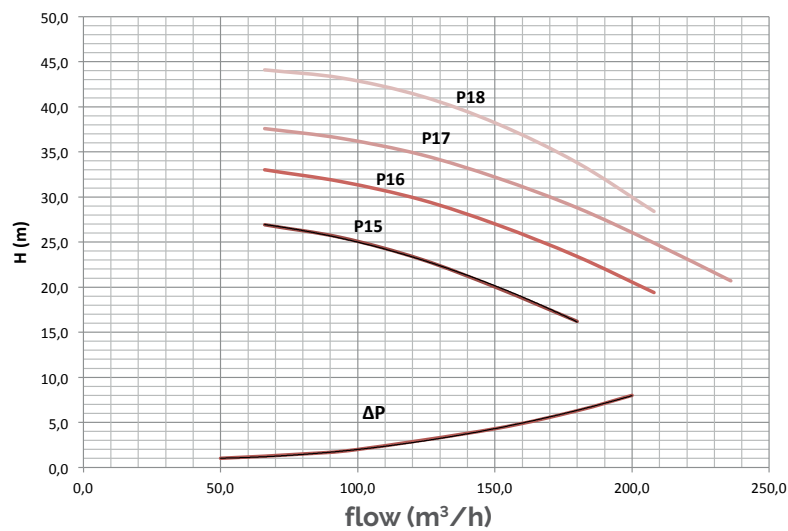
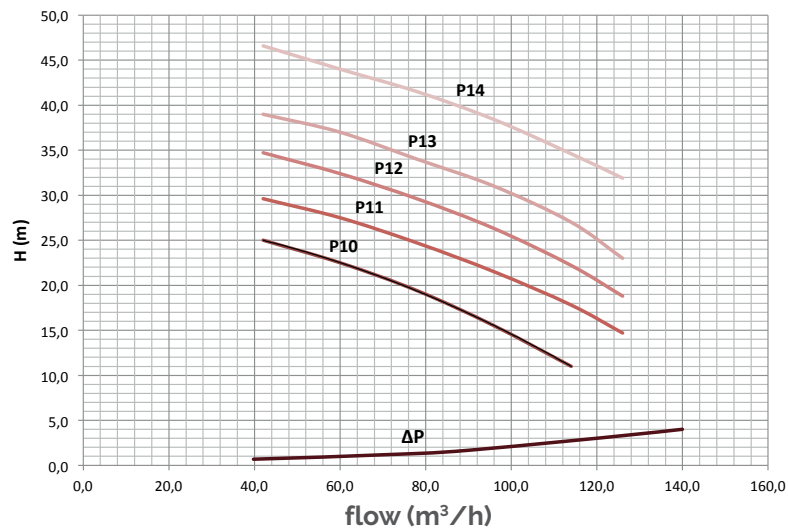


$\Delta P$ : Pressure drop HP unit



# HP 2.0 Hydronic systems

## Prevalence and pressure loss curve



ΔP: Pressure drop HP unit



# HP 2.0 hydronic systems: technical information

Pump model	F.L.I. kW	F.L.A. (400/3/50) A	1 pump			2 pumps (1 redundant)		
			Code	Price	Weight kg	Code	Price	Weight kg
<b>PT2*</b>	0,72	1,3	838060261X		100	838060262X		114
<b>PT3*</b>	0,72	1,3	838060263X		100	838060264X		114
<b>P1</b>	1,1	2,5	838060129X		129	838060119X		150
<b>P2</b>	1,5	3,2	838060130X		130	838060120X		151
<b>P3</b>	1,5	3,4	838060131X		131	838060121X		153
<b>P4</b>	2,2	4,8	838060132X		135	838060122X		157
<b>P5</b>	3	5,6	838060133X		137	838060123X		163
<b>P6</b>	3	6,1	838060107X		183	838060193X		256
<b>P7</b>	4	8,7	838060108X		190	838060194X		272
<b>P8</b>	5,5	10,4	838060109X		208	838060195X		311
<b>P9</b>	7,5	13,6	838060110X		224	838060196X		343
<b>P10</b>	5,5	10,4	838060111X		215	838060197X		323
<b>P11</b>	7,5	13,6	838060112X		231	838060198X		355
<b>P12</b>	9,2	17,2	838060235X		284	838060236X		407
<b>P13</b>	11	21,3	838060183X		284	838060217X		412
<b>P14</b>	15	27,7	838060184X		309	838060218X		503
<b>P15</b>	11	20,2	838060227X		279	838060228X		460
<b>P16</b>	15	26,6	838060185X		316	838060219X		549
<b>P17</b>	18,5	33	838060186X		319	838060220X		569
<b>P18</b>	22	40,4	838060187X		340	838060221X		587
<b>P19</b>	18,5	33	838060229X		703	838060230X		1265
<b>P20</b>	30	53,5	838060231X		844	838060232X		1519
<b>P21</b>	37	65,6	838060233X		865	838060234X		1557

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

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

## Legend

F.L.I. Max absorbed power

F.L.A. Max absorbed current

Pve Preload of expansion vessel

Ps Max operating pressure

Tmin Min temperature of the liquid

# HP 2.0 hydronic systems: Capacity of the circuit and the expansion vessel

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

On chart 1 the max water volume in the hydraulic installation is indicated, compatible with the capacity of the expansion vessel and applicable to all HP 2.0 models. The safety valve also has a start-up value (3 bar for all models). If the effective water content in the device, as well as in the storage tank, exceeds the operating conditions in the chart, another/second expansion vessel should be installed to take the added water volume.

Tav. 1

Pump model	Hydraulic height	m	15	10
	Preload of the expansion vessel	bar	1,80	1,50
PT2 PT3 P1 P2 P3 P4 P5	Circuit's max water content (1)	l	492	615
	Circuit's max water content (2)	l	315	394
P6 - P18	Circuit's max water content (1)	l	984	1230
	Circuit's max water content (2)	l	630	788
P19 - P21	Circuit's max water content (1)	l	1968	2460
	Circuit's max water content (2)	l	1260	1576

**Note: the expansion vessel is optional and should be ordered separately.**

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/ glycol mix.	Water temperature		Correction factors	Reference value
	max °C	min °C		
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)

# Hydronic systems

## HP 2.0 preload of the expansion vessel

The expansion vessel, of all models, is preloaded with a standard value of 1.5 bar.

The value has to be adapted though to the height H of the device.

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

Should the preload value be less than the standard value, no intervention has to be carried out. This means that an installation with a height of less than 12.25 meters has a preload of 1.5 bar. In this case the operator should only check the pressure value and not intervene.

### Example

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

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

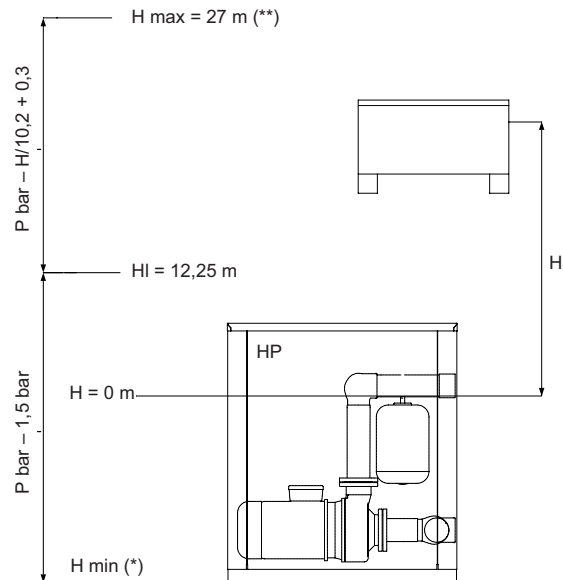
H: height of the device

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 pressure

\*\* verify that the highest point of the device does not exceed the max height H max=27 m.



## HP 2.0 hydronic system user's conditions

### Normal user conditions

The HP 2.0 hydronic group is designed to fit into air conditioning systems, normally 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 service.

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 executions 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

## HP 2.0: 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
838080861X	ANTI-VIBRATING FOR HP PT2/PT3 AND FOR P1 A P18	
838081286X	ANTI-VIBRATING FOR HP P19/P20/P21	

### 4 Expansion vessel kit

Code	Description	Compatible with	Price
838081187X	EXPANSION VESSEL 12L INNER	HP 2.0 UP TO P18	
838081195X	EXPANSION VESSEL 25L INNER	HP 2.0 UP TO P18	
838081234X	EXPANSION VESSEL 2x25L INNER	HP 2.0 UP TO P18	
838081480X	EXPANSION VESSEL 2x25L INNER	HP 2.0 FOR P19/P20/P21 VERSIONS	
838081616X	EXPANSION VESSEL 3x25L INNER	HP 2.0 UP TO P18	

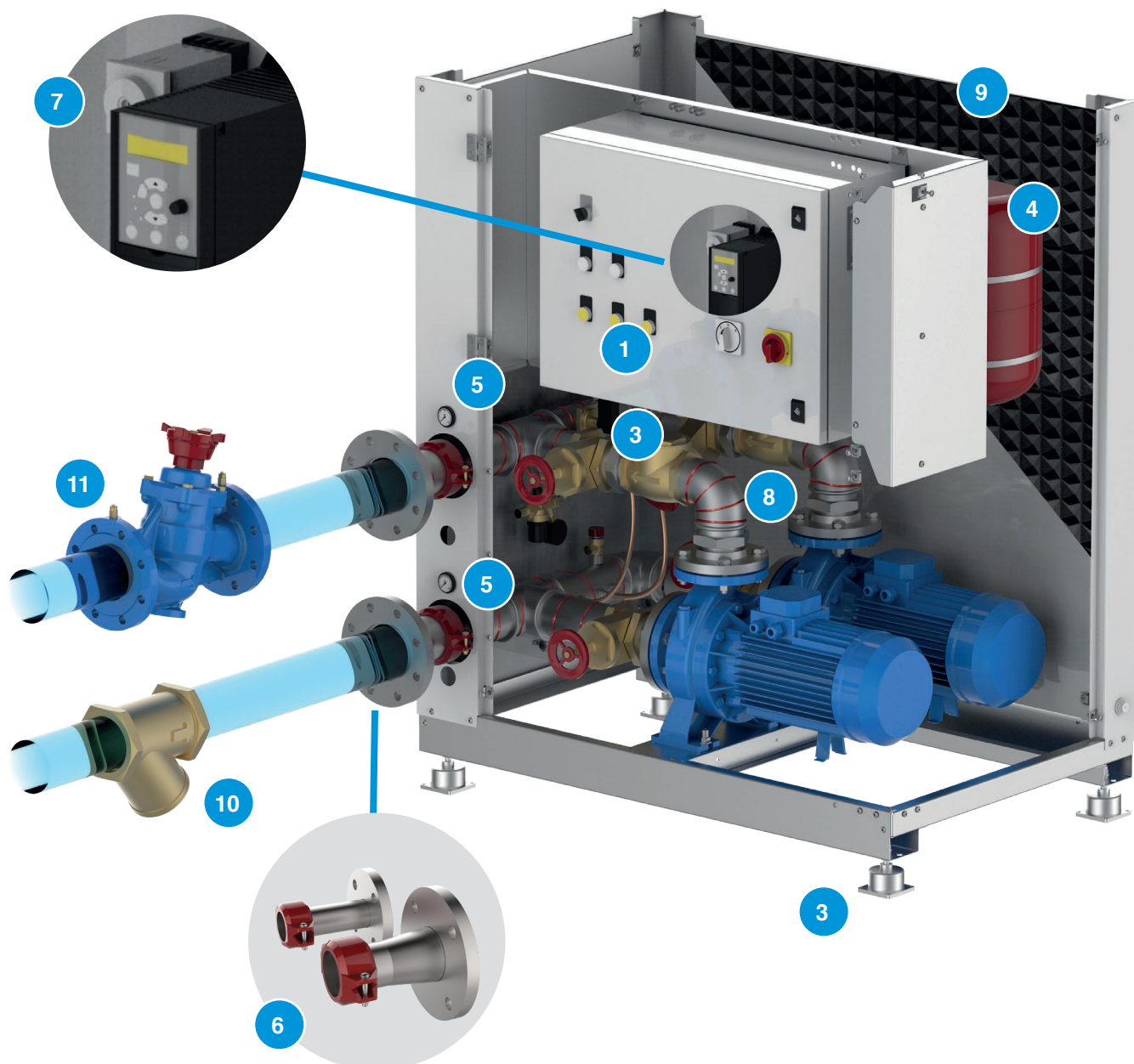
### 5 Manometer kit

Code	Description	Price
838081583X	MANOMETER KIT	

### 6 Galvanized Transformation in Victaulic connections

They transform the victaulic connections into UNI-EN PN 16 flanged connections. A version with the same diameter and one with a larger diameter is available. The codes and prices below are for single piece.

Original connction Victaulic	Transformed connection UNI-EN PN 16	Code	Price
1 1/2	DN40	838081247X	
	DN50	838081248X	
2"	DN50	838081249X	
	DN65	838081250X	
2 1/2	DN65	838081251X	
	DN80	838081252X	
3"	DN80	838081253X	
	DN100	838081254X	
4"	DN100	838081255X	
	DN125	838081256X	



**7 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**

**8 Antifreeze electric resistance kit (special version)** The kit provides protection against freezing by means of a heating cable wound around piping. The kit also includes a bi-thermostatic antifreeze adjustment ( $-35 / + 35^{\circ}\text{C}$ ) and is supplied assembled, wired and tested.  
**see page: 131**

**9 Soundproof coating (special version)** The soundproofing is available, which attenuates the sound level of the machine significantly.  
**see page: 131**

**10 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**

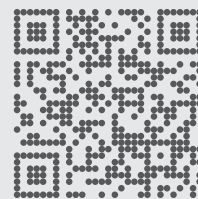
**11 Balancing valves (special version)** Valve can be connected externally to balance the flow within the circuit.  
**see page: 131**

**Wooden box packing (special version)** Extra protective packing suitable for risky and long-distance transport.  
**see page: 131**



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