

Installation

Buffer charging station PLAS-WP-WM

Installation / Commissioning / Maintenance

- PLAS-WP-WM-1
- PLAS-WP-WM-1.5



Contents

- 1 Information About These Instructions 3**
- 2 Notes 4**
 - 2.1 Safety Notes4
 - 2.2 Area of application and special features4
- 3 Scope of Delivery 5**
- 4 Installation..... 6**
 - 4.1 System diagram6
 - 4.2 Wall-Mounted Installation.....6
 - 4.3 Hydraulic Connection.....6
 - 4.4 Electrical connection.....7
- 5 Start-Up 10**
 - 5.1 Notes.....10
 - 5.1.1 Operation with SolvisMia10
 - 5.1.2 Operation with SolvisLea.....10
 - 5.2 Setting the IMP pump10
 - 5.3 Fault display10
- 6 Maintenance..... 11**
- 7 Technical Data 12**

1 Information About These Instructions

These instructions are intended for you as a technician from an installation company. You will find the specifications for installation, start-up and maintenance of the system here.

Please keep these instructions with the system so they can be referred to when necessary.

We recommend that you participate in a Solvis training course to ensure safe and proper installation.

As we are interested in improving our technical documentation, we appreciate feedback of any kind.

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A list of our international representatives is provided at www.solvis.com.

Please understand that the telephone numbers are reserved for use by our installers.

Interested system operators should contact their installer.

Symbols used



DANGER

Immediate danger, with serious health consequences and even death.



WARNING

Danger, with potentially serious health consequences.



CAUTION

Possible risk of moderate or light injury.



CAUTION

Risk of damage to unit or system.



Useful information, notes and work tips.



Change of document, referring to another document.



Energy-saving tip with suggestions on how to save energy. This reduces costs and helps protect the environment.

2 Notes

2.1 Safety Notes


Observe the safety notes

This is for your own safety.

- Make sure that you are familiar with the safety notes before beginning work.
- Observe and adhere to the applicable safety regulations and accident prevention regulations.
- You should also follow the safety notes from the available system documentation.


CAUTION
Return temperatures too cold

Boiler damage or total failure possible.

- Observe the manufacturer's specifications for the permissible return temperatures.

2.2 Area of application and special features

The buffer charging stations are used to transport heat from the heat generator to the connected heating system.

Buffer charging station application area

Heat generator	System	PLAS-WP-WM	PLAS-B-4.5
SolvisLino 4 pellet boiler	SolvisMax from series 7	X	O
	SolvisDirekt with Solvis-Strato	X	O
	Other	–	X
Heat generator with minimum return temperature (e.g., wood-burning stove, solid fuel boiler, other pellet boilers)	All	–	X
Heat generators without minimum return temperature (e.g., gas condensing boilers, heat pumps)	All	X	O

"X" = recommended, "O" = possible, "–" = not permitted

The PLAS-WP-WM-1/-1.5 buffer charging stations do not have a valve for raising the return temperature. It can be used in conjunction with heat generators that do not require a minimum return temperature. This also applies to the SolvisLino 4 pellet boiler in conjunction with the SolvisMax or the SolvisStrato buffer cylinder.

The PLAS-WP-WM-1.5 is designed for heat generators with higher outputs, i.e., larger volume flows (e.g. heat pumps ≥ 17 kW). The connection dimensions and pipe diameters are larger than those of the PLAS-WP-WM-1.

3 Scope of Delivery

Buffer charging station WP wall mounting 1"

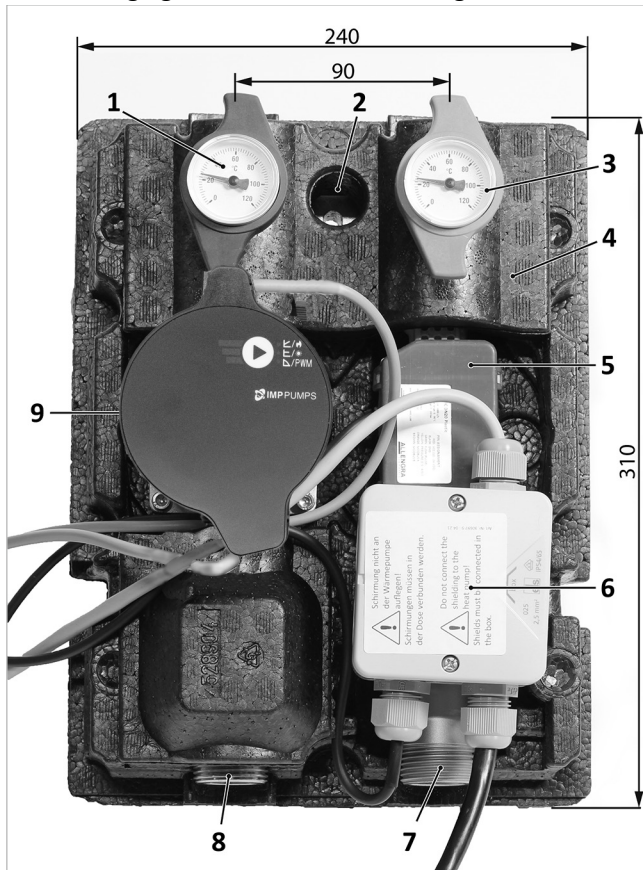


Fig. 1: Buffer charging station PLAS-WP-WM-1

- 1 Return thermometer with integrated ball valve and adjustable gravity brake (20 mbar)
- 2 Wall mounting
- 3 Flow thermometer with integrated ball valve
- 4 Heat insulation shell made from EPP
- 5 Allengra sensor
- 6 Modbus box
- 7 Heating flow
- 8 Heating return
- 9 IMP NMT HL 15/90-130 Neo heating pump

Also included in the scope of delivery:

- Wall bracket and attachment material

Instructions:

- Pump operating instructions
- Installation instructions (enclosed)

Buffer charging station WP wall mounting 1 ½"

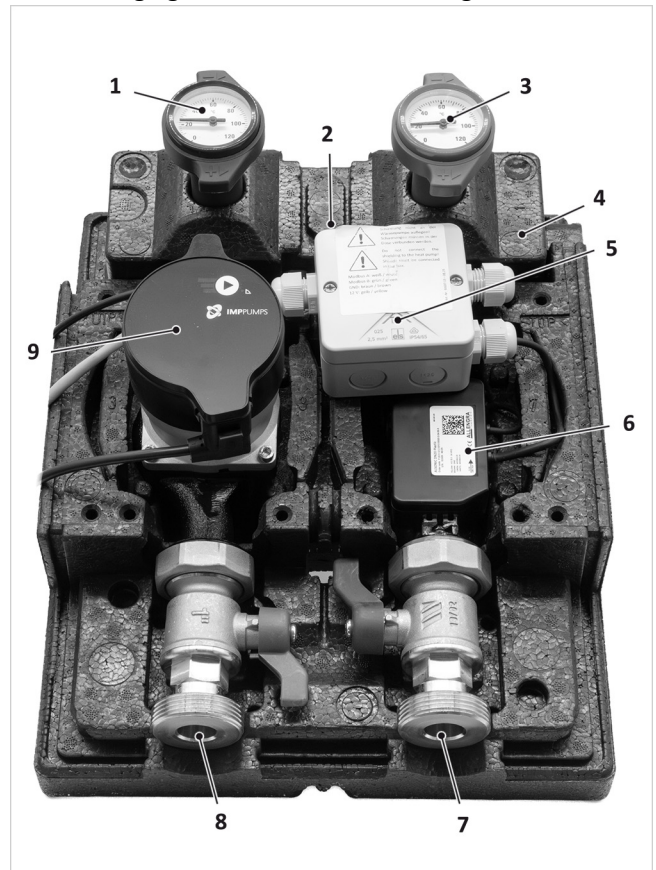


Fig. 2: Buffer charging station PLAS-WP-WM-1.5

- 1 Return thermometer with integrated ball valve and adjustable gravity brake (20 mbar)
- 2 Wall mounting
- 3 Flow thermometer with integrated ball valve
- 4 Heat insulation shell made from EPP
- 5 Modbus box
- 6 Allengra sensor
- 7 Heating flow
- 8 Heating return
- 9 IMP NMT HL 25/100-180 Neo heating pump

4 Installation

4.1 System diagram



For system diagrams, connection diagrams etc.
→ see system diagram SolvisMax (ALS-MAX-7-EN)
or system diagram SolvisBen (ALS-BEN-EN).

4.2 Wall-Mounted Installation

E Install the buffer charging station as close to the buffer tank as possible to keep the connection lines between the station and the tank short.

Installing the buffer charging station

1. Hold the station against the wall and mark the hole (see → p. 5, fig. 1 (2)).
2. Drill the hole and insert the supplied wall plug.
3. Insert the supplied screw into the hole in the wall bracket, place the supplied foam ring on top and mount everything on the wall.

The foam ring must be positioned between the wall and the wall bracket so that it can dampen the transmission of structure-borne sound.

4.3 Hydraulic Connection



CAUTION

Prevent impermissible pressure

Expansion due to heating can lead to high pressure, which can cause the system to burst.

- The customer must ensure the safety of the heat generator by installing a suitable safety valve.

Connect the station hydraulically

1. Connect the flow and return according to the system diagram.



CAUTION

Damage can result from limescale formation and corrosion in the system

If the system fails or if water leaks out:

- Treat the fill water in accordance with the requirements of VDI directive 2035.

Filling, flushing and venting the station

1. Open the supply ball valve (red) (handle in vertical position).
2. Set the handle of the return ball valve (blue) to 45° (backflow preventer deactivated).

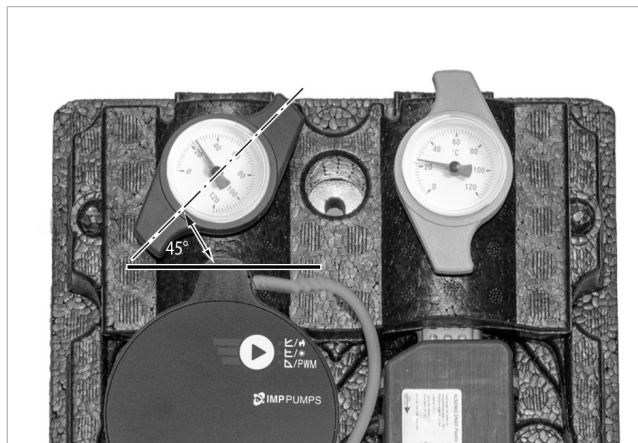


Fig. 3: Return ball valve (blue) set to 45°

3. Fill and flush the system and carry out a pressure test.
4. Move the handles of both ball valves to a vertical position.

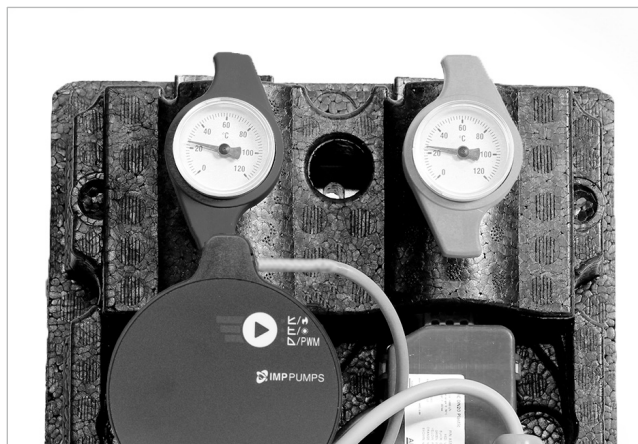


Fig. 4: Ball valves red and blue open (vertical)

5. Fit the front insulating shell and insulate the pipe in accordance with EnEV.

4.4 Electrical connection

Important:

- All electrical connections must be made by an authorized specialist in accordance with the wiring diagrams for the respective system.



DANGER

Risk of electrical shock

Damage to health, cardiac arrest possible.

- Disconnect the system from the mains before carrying out work on it and ensure that it cannot be turned on again



CAUTION

Country-specific regulations

Regulations can differ depending on the country and the region.

- These are to be observed and adhered to in order to ensure safe and faultless operation.
- If certain laws and regulations do not apply in a particular country, they are to be replaced by the country's own specific laws and regulations.



CAUTION

Criteria for line installation

Malfunction or failure of heating system possible.

- Check that all cable and plug connections are connected correctly.
- The bus and sensor lines must be routed separately from lines over 50 V to prevent the controller from being influenced by electromagnetic fields.
- Do not install control devices directly adjacent to control cabinets or electrical devices.
- The electrical lines must not come into contact with hot parts.
- If possible, run all lines in a cable channel and, if necessary, secure with strain relief devices.



CAUTION

Criteria for line length

Risk of heating system fault or failure.

- The total cable resistance for the sensor cables must not exceed 2.5 ohms. For cables with a cross section of 0.25 mm², this corresponds to a length of up to 5 m.
- For cross sections of 0.5 or 0.75 mm², the maximum cable length is 15 or 50 m.
- Sensor cables for temperature sensors should not be unnecessarily long. For very long cables, sensor correction can be performed to minimise the systematic variance errors.



CAUTION

Observe ambient conditions

Malfunction or failure of system possible.

- Avoid ambient temperatures outside of the permitted range of 5 °C to +50 °C.
- Avoid dew condensation and an annual mean relative humidity higher than 75 % (briefly 95 %).

The pump group has three connection cables:

1. Mains cable

The mains cable is used for the 230 V power supply to the pump and must be connected to a corresponding output of the controller used (observe the system diagram).

2. Signal cable

The speed of the pump can be controlled via a suitable PWM signal. To do this, the signal cable must be connected to the corresponding output of the controller, e.g.

SolvisMax 7, output "LP +/-" (O-4), wire assignment:

- blue: "LP -"
- brown: "LP +"
- black: not necessary



CAUTION

When combining with SolvisLino 4, note

Malfunction or failure of the heating system possible.

- The speed of the PLAS pump must be controlled via a PWM signal.
- Connect the signal cable of the pump to the mains module as described.



If the PLAS pump is not speed-controlled via the system or heat generator control, the signal cable does not need to be connected.

- The speed can be set to a fixed value directly on the pump for the specific system.
- The setting is described in the → "Commissioning" chapter.

4 Installation

3. Modbus cable

The Alsonic volume flow sensor is already connected to the connection box in the buffer charging station. Communication between the SolvisControl 3, the volume flow sensor and the internal heat pump controller takes place via a Modbus connection. To avoid interference, the connection must be established using shielded cables.

Connect the Modbus connection box with Solvis-Ben/SolvisMax

1. Open the cover of the PLAS, route the Modbus cable of the connection box from the PLAS to the cylinder, using the corresponding pipe feed-throughs.
2. Connect the Modbus cable to the SC-3. The socket next to the ribbon cable is used for this (Modbus 1).
3. Feed the Modbus cable with the shield into the shield terminal. For SolvisMax, screw the shield terminal to the frame of the charging module (see → fig. 5). For SolvisBen, attach the shield clamp to the circuit board door. To do this, hold the cable with the clamp (see → fig. 6), mark the position and drill a 4 mm hole. Then screw the shield clamp in place.
4. Secure the cable to the shield clamp with a cable tie over the insulation for strain relief.

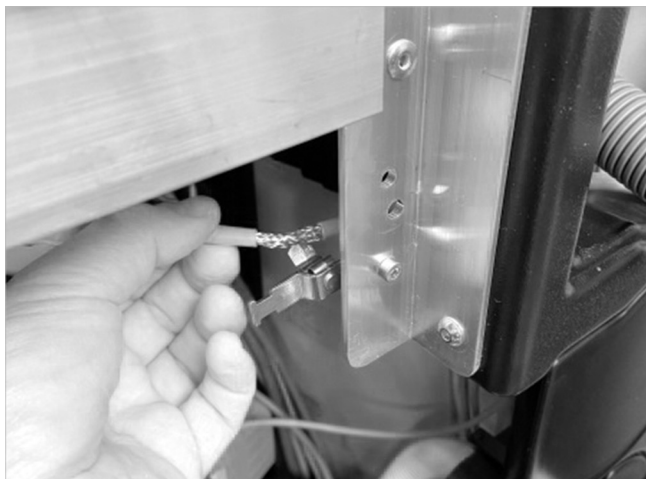


Fig. 5: Shield clamp on the frame of the SolvisMax charging module

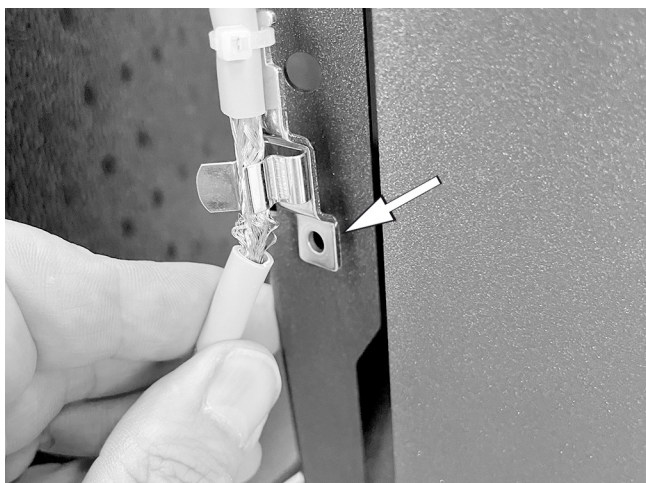


Fig. 6: Attaching the shield clamp to the SolvisBen mains board door

5. Bridge cable (12 V; yellow) and GND (brown), which are connected to the plug of the Modbus cable, must be connected to a 12 V plug on the expansion board.

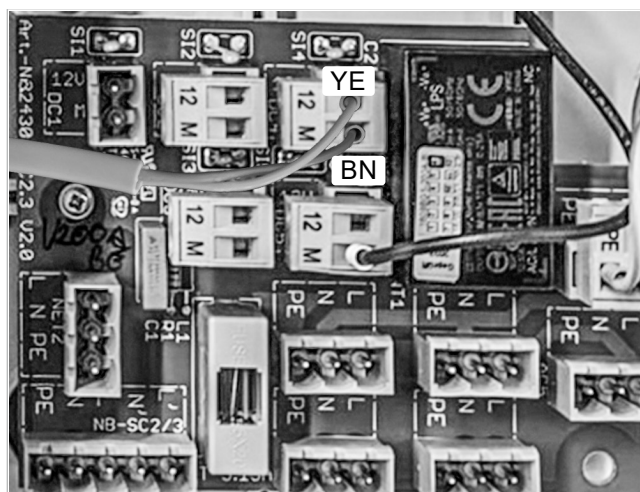


Fig. 7: Jumper cable connected to expansion board

6. SolvisBen and SolvisMax 7 of the older generation do not have an extension board. In this case, connect the 12 V connection to VCC (yellow) and I3- (brown).

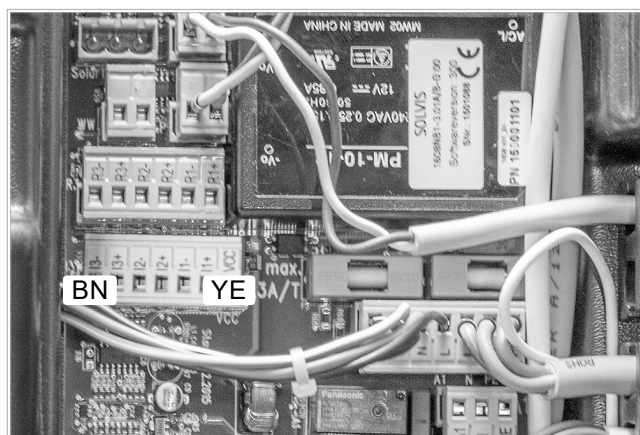


Fig. 8: Connection to VCC and I3-

Connecting the Modbus cable from the heat pump

1. Open the connection box.
2. Insert the shielded Modbus cable coming from the heat pump into the connection box. To do this, use the side cable guide on the insulation or one of the ventilation slots (see → fig. 9).



Fig. 9: Modbus cable routed through ventilation slot

3. Strip the cable and expose the shielding.
4. Strip the insulation from the wires and fit wire end ferrules.

5. Pull the terminal holder slightly out of the box so that the terminals can be opened.
6. When connecting the Modbus cable to the terminals of the Modbus connection box, observe the sticker on the cover of the connection box, if present. There may be deviations in the coloured wire assignment.
7. If there is no sticker, connect the wires to the terminals according to the following colour coding (see → fig. 10):

yellow	12 V
brown	GND
white	Modbus A
green	Modbus B

ATTENTION: Only applies if there is no sticker in the box.

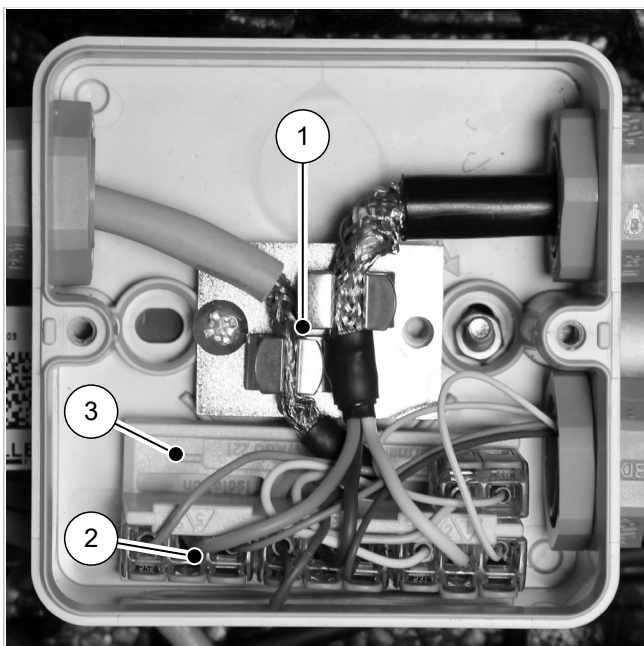


Fig. 10: Modbus connection box

- 1 Shield clamps
 - 2 Connection/Wago terminals
 - 3 Terminal holder
8. Click the terminal holder back into the box and connect the shielding of the WP Modbus cable.
 9. Close and screw down the connection box.

5 Start-Up

5.1 Notes

5.1.1 Operation with SolvisMia

To enable operation with the volumetric flow sensor installed in the buffer charging station, the software version on the SC-3 system controller must be greater than or equal to MA3.18.14. If this is not the case, the system controller must be updated using the memory card supplied with the SolvisMia. The update is described in the supplement to the memory card (BAL-RG-SC-3-MIA).

5.1.2 Operation with SolvisLea

Like the buffer charging station, the SolvisLea has a volumetric flow sensor. This is still used by the controller; safe operation is only possible without using the volume flow sensor in the buffer charging station.

The volume flow sensor must therefore not be connected in systems with SolvisLea.

5.2 Setting the IMP pump



With the IMP NMT HL 15/90 Neo and IMP NMT HL 25/100 Neo heating pump, the PWM heating signal is preset at a constant speed. It is not possible to change this presetting.

5.3 Fault display

The pump fault display is independent of which heating pump is installed.

In the event of an error, the three-part level display flashes as follows:

Flashes	Error	Cause/solution
1 x	Load error	• Low water level detected (pump running dry) • Motor overloaded (tough medium / faulty motor)
2 x	Active protection	• Module is hot (power reduced or switched off) • Hardware overloaded (safety shutdown) • Mains voltage too high or too low
3 x	Hot motor	Average motor load too high (pump load is higher than permitted)
4 x	Elec. fault	• LED fault • 15 V missing (internal) or DC voltage in the impermissible range
5 x	Motor fault	Motor is working in the impermissible range
No display		Disconnect and reconnect the mains connection
Pump is not running		Check the connection voltage and fuse

6 Maintenance

Check as part of system maintenance:

- Proper functioning of the buffer charging station
- Tightness of the connected pipes
- Correct fit of the insulation
- Function test of the pump:
Manually switch on the output associated with the charging pump on the SolvisControl and check for correct circulation.



For the procedure, see → *Installer operating instructions (BAL-SBSX-3-I-EN)*.

7 Technical Data

Station

Designation	Value	
Type	PLAS-WP-WM-1	PLAS-WP-WM-1.5
W x H x D (incl. insulation)	240 x 310 x 217 mm	300 x 370 x 245 mm
Height measurement from male thread to male thread	310 mm	370 mm
Distance from piping (centre) to wall	68 mm	68 mm
Distance (axes) VL / RL strand	90 mm	125 mm
Pipe connections	1" male thread with 1" female thread union fitting, flat-sealing	1 ½" male thread with 1" female thread union fitting, flat-sealing
Insulation	Heat insulation shell made from EPP	

Pump in PLAS-WP-WM-1

Designation	Value
Type	IMP NMT HL 15/90-130 Neo
Maximum permitted operating pressure	10 bar
Permitted media temperature	-10 °C to 110 °C
Mains connection	230 V ~/ 50 Hz
Maximum power consumption	75 W
Maximum delivery height	9 m
Maximum volume flow	5.6 m³/h

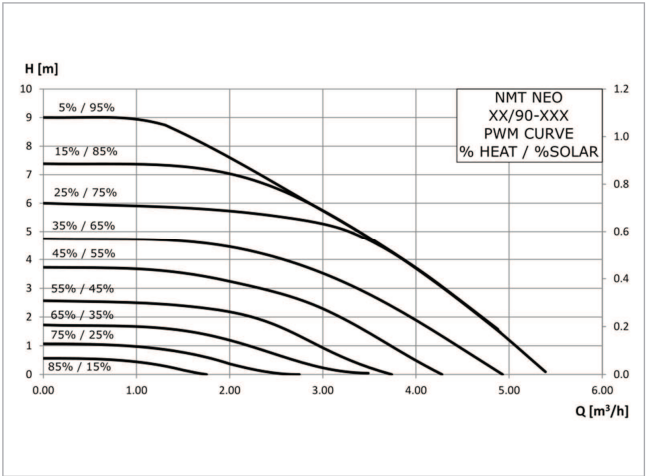


Fig. 11: Pump characteristic IMP NMT HL 15/90-130 Neo (constant speed)
H Pump height [m]
Q Volume flow [m³/h]

Pump in PLAS-WP-WM-1.5

Designation	Value
Type	IMP NMT HL 25/100-180 Neo
Maximum permitted operating pressure	10 bar
Permitted media temperature	-10 °C to 110 °C
Mains connection	230 V ~/ 50 Hz
Maximum power consumption	75 W
Maximum delivery height	10 m
Maximum volume flow	5.6 m³/h

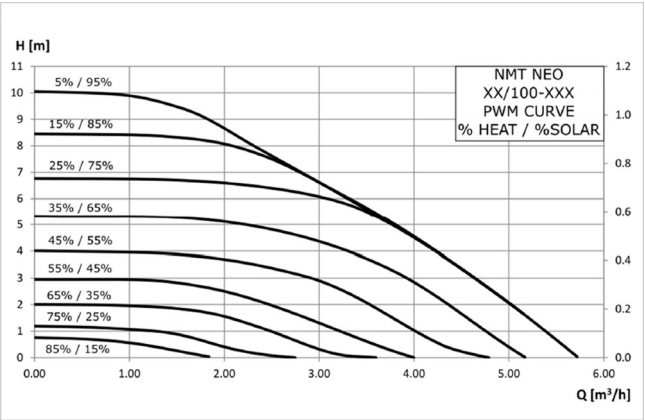


Fig. 12: Pump characteristic IMP NMT HL 25/100-180 Neo (constant speed)
H Pump height [m]
Q Volume flow [m³/h]

Notes

Notes



SOLVIS GmbH
Grotrian-Steinweg-Straße 12
D-38112 Braunschweig
Phone: +49 (0) 531 28904-0
E-mail: info@solvis.de
Internet: www.solvis.com

