



# PUMP-CONTROLLED PRESSURIZATION SYSTEM INSTALLATION AND USER MANUAL



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Read this manual before installation. Installation and usage of the product must comply with local regulations and accepted codes of good practice.

## Liability and Warranty Conditions

TANPERA Pump-Controlled Pressurization System is a technological device produced for heating and cooling systems.

- The responsibility of the operator begins with the delivery of the device.
- The installation and operating instructions must be read before delivery.
- The installation and operating manual should be kept close to the control unit and in a visible place.
- The suitability of environmental conditions should be checked by paying attention to the Shipping, Storage, Placement related articles written in Chapter 5.
- Considering the environment and fluid conditions written in Chapter 6, mechanical and electrical installation operations should only be performed by authorized and determined persons or companies.
- After the installation processes are completed, you should call Tanpera and request the check-up form before commissioning the product.
- After the product-related commissioning check-up items are fully provided for all products, a request for commissioning should be made by calling Tanpera.
- During the commissioning phase, it should be ensured that the person or persons authorized by the user accompany, receive the product and benefit from the user training to be given.
- Do not interfere with the device before commissioning, our company is not responsible for any damage that may occur, and will result in the warranty conditions given being invalid.
- The warranty period of the products is valid for 2 years from the invoice date.

## Security



Together with the symbol word “Electricity”, failure to follow the safety information indicates electrocution, which will result in death or serious (irreversible) injury.



The symbol “Danger” together with the “Danger” word indicates an imminent danger; indicates that failure to follow the safety information will result in death or serious (irreversible) injury.



The “Hot Surface” symbol, together with the phrase, indicates that the surface to be touched is above 60°C and non-compliance with the safety information will result in serious (irreversible) injury.



Take general workplace safety precautions during device commissioning or maintenance.

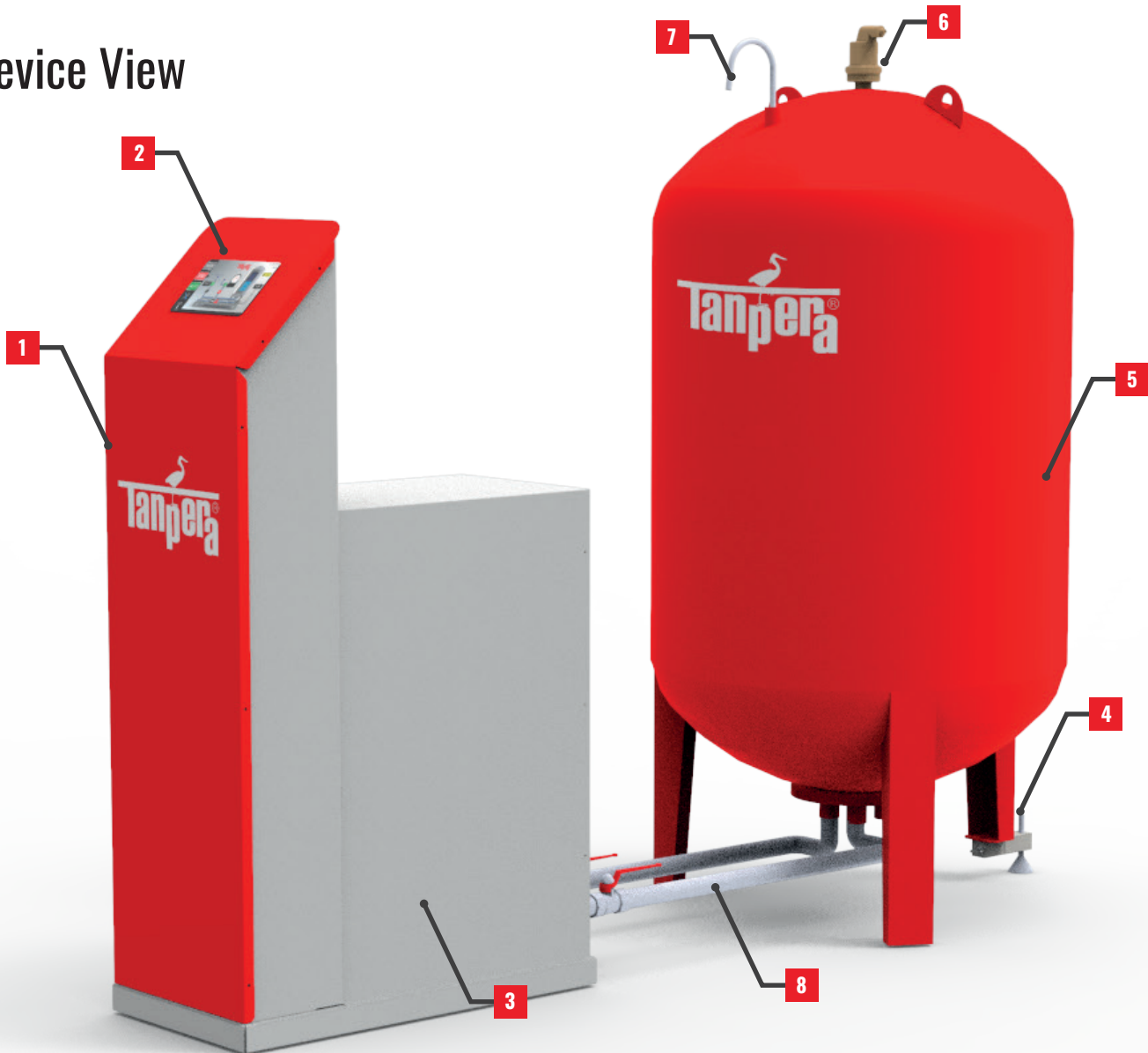
### Notes:

- The device contains high pressure hot water during operation. During maintenance or disassembly, make sure that the device is disabled and that the system is unpressurized.
- Device components are heavy. Please take necessary safety precautions during device transporting and handling.
- The device must be used in a stable, fixed system.
- The device is not suitable for outdoor use.
- The device is not suitable for use with flammable environments and mineral oils.
- It should be operated with clean domestic water that does not contain particles.

### Working Principle

	<ol style="list-style-type: none"> <li>1-Expansion Tank</li> <li>2-Air relief Valve</li> <li>3-Solenoid Valve</li> <li>4-Control Panel</li> <li>5-Control Unit</li> <li>6-Pump</li> <li>7-Flowmeter</li> <li>8-Mains Connection Port</li> <li>9-Connection port coming from the plant</li> <li>10- Connection port to the plant</li> </ol>	<p>There is a small amount of water in the Pump-controlled Pressurization System filled with the plant's water, the system is ready for operation.</p>
		<p>As the temperature of the plant water increases, the water starts to expand, and the pressure increases. The pump-controlled pressurization automation system evaluates the data to open the motorized valve and transfer the expanding water in the plant to the tank. This way, <b>the plant pressure is kept constant.</b></p>
		<p>When the plant water temperature enters the system, <b>the pressure of the Pump-controlled Pressurization System is kept constant</b> until the maximum load is reached.</p>
		<p>Due to the operating conditions, the water in the plant starts to cool and shrink and the pressure decreases. The water stored in the Expansion Tank is re-pumped to the plant by the activation of the pump and the plant is pressurized to the desired plant pressure, hence, <b>the plant pressure is kept constant.</b> When the plant pressure reaches the desired pressure value, the pump is switched off.</p>
		<p>Depending on the conditions of usage, there may be a decrease in the plant water. The integrated water flow automation system and flowmeter, which are in the Pump-controlled Pressurization System, are used to measure the amount of water decreasing and automatically supply water from the mains to the plant. The automatic water reinforcement <b>keeps plant pressure constant.</b>  (Only available in TPG-PRO version. )</p>

### Device View



- 1** Safety Switch
- 2** User Control Panel
- 3** Hydraulic Unit
- 4** Level Sensor
- 5** Expansion Tank
- 6** Purger
- 7** Air Siphon
- 8** Connection Flexes

### Product Label



#### POMPALI GENLEŞME / BASINÇLANDIRMA SİSTEMİ PUMP-CONTROLLED PRESSURISATIONS SYSTEM

Model	TPG 1Tx2000/10-2PxP1		
Seri No Serial No	TPG0001		
Üretim Yılı Year of Production	2020	Çalışma Sıcaklığı Working Temperature	90°C
Dizayn Basıncı (Bar) Design Pressure	10	Test Basıncı (Bar) Test Pressure	15
Hacim (lt) Volume	2000		



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## Scope of Delivery

The scope of delivery is described in the shipping document. Check the necessary for material, accuracy and damage immediately after receiving the device.

Please notify us of shipping damage immediately.

### **On the pallet:**

- Control panel and unit
- Pressure sensor and connecting cable
- Weight sensor and connecting cable
- 2 pcs. of R1' 50cm tank connection flexes
- Installation and user manual booklet

### **In addition to:**

- Expansion tank(s)
- Dynamic pressure balancing tank

## Shipping

During shipping, the products should be transported in such a way that they do not overturn, crush or get wet.

- Carefully transport the products so that they do not fall or tip over when unloading them from the vehicle; when necessary, it should be transported to the storage or installation place by using transport vehicles.

## Storage

- Products should be stored in a dry and ventilated environment.
- Precautions should be taken to prevent the products from tipping due to a possible earthquake or other reasons.
- Do not put any load on the products and they should be stored in such a way that no objects could fall on them.
- The product should be protected against water pressure and wetting that may come from the top or the sides.

### Relocation and Dismantling Operations

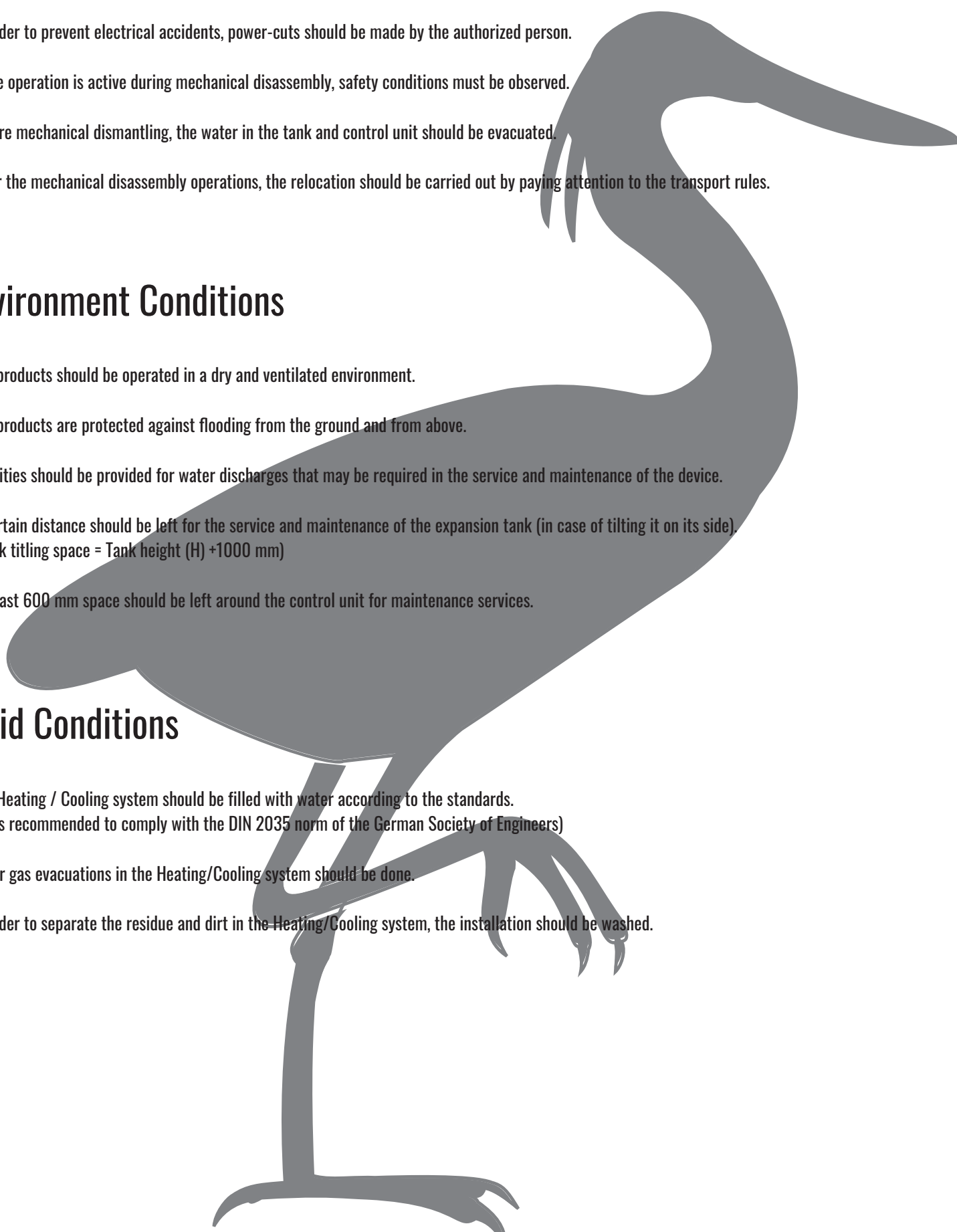
- In order to prevent electrical accidents, power-cuts should be made by the authorized person.
- If the operation is active during mechanical disassembly, safety conditions must be observed.
- Before mechanical dismantling, the water in the tank and control unit should be evacuated.
- After the mechanical disassembly operations, the relocation should be carried out by paying attention to the transport rules.

### Environment Conditions

- The products should be operated in a dry and ventilated environment.
- The products are protected against flooding from the ground and from above.
- Facilities should be provided for water discharges that may be required in the service and maintenance of the device.
- A certain distance should be left for the service and maintenance of the expansion tank (in case of tilting it on its side).  
(Tank titling space = Tank height (H) +1000 mm)
- At least 600 mm space should be left around the control unit for maintenance services.

### Fluid Conditions

- The Heating / Cooling system should be filled with water according to the standards.  
(It is recommended to comply with the DIN 2035 norm of the German Society of Engineers)
- Air or gas evacuations in the Heating/Cooling system should be done.
- In order to separate the residue and dirt in the Heating/Cooling system, the installation should be washed.





## Pre-Commissioning Preparation

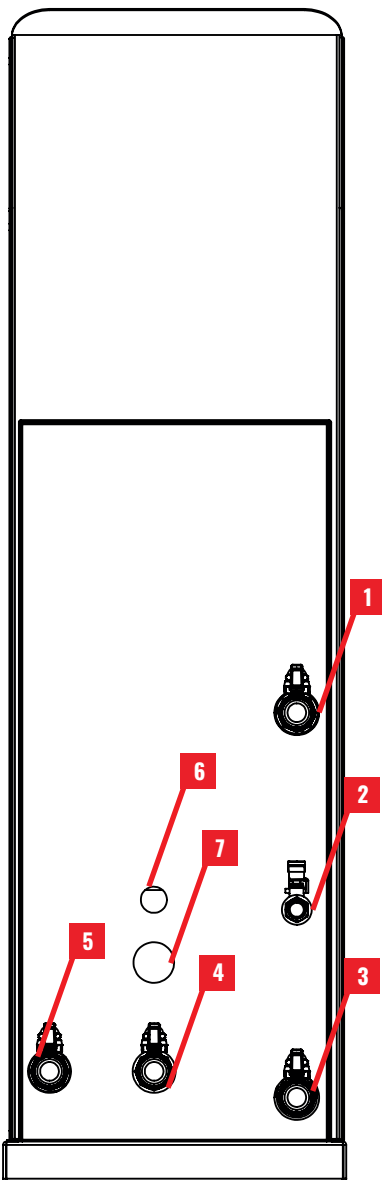
Please review the form below for pre-commissioning and pre-installation preparation. Please review the form below before making electrical and mechanical connections. When the conditions are met, please contact our company for commissioning.

Project name:		Company name:		Date	
Project Address:		Telephone:			
		Mail			
PRODUCT TYPE:		SERIAL NUMBER:			
1	Does the device work in a heating circuit or a cooling circuit?				
2	What is the name of the circuit where the device is located?				
3	Is the device in the right place, close to the system return line and at the same level for the right circuit?				
4	Is the floor flat for the Control Unit and especially the Membrane?				
5	If necessary, has it been protected against flooding, wetting from the ground (eg the base) and from above?				
6	Has the device been evacuated for floods that may occur in case of opening the safety valve? Can the safety valve be observed?				
7	In case of doing maintenance for the expansion tank, is there some space around the device? (Tilting size = H+1000mm)				
8	Is a space of at least 600 mm left around the control unit for maintenance services?				
9	Is the device operated in a dry and ventilated environment?				
10	Has it been filled with water of quality conforming to with the standards of the Heating/Cooling system?				
11	Has the water leak test been carried out in accordance with the standards of the Heating/Cooling system?				
12	Are air or gas vents in the Heating/Cooling system done?				
13	Has the Heating/Cooling system been flashed/washed?				
14	Has the Heating/Cooling system been brought to the operating pressure at which it should be operated?				
15	Has the energy supply been brought up to the rear of the control unit in accordance with the standards?				
16	The energy supply being three-phase (380 V) , have the voltage values been measured before connection?				
17	Are the cable cross-sections used in the energy supply of suitable diameter depending on the power the device can draw?				
19	Are expansion and pressurization lines of suitable diameter (1" up to 5 meters, 1 1/4' of 5 – 10 meters) drawn from the system return line, provided that the distance between them is at least 500 mm?				
20	Is the R ½" diameter coupling for the connection of the pressure sensor supplied with the device installed in the system return line?				
21	Is the feeding water in accordance with the standards for the automatic water supply system available in the device made with a pipe installation of at least R ½" diameter up to the device?				
22	Do connections in the control unit consist of 5 pieces, 2 pieces of pressurization to the system return line, 2 pieces of flex connection set provided with the device and 1 automatic water supply line and were these connections' tightness checks made?				
23	Is the small volume expansion tank supplied with the device to prevent dynamic pressures connected to the return line of the system?				
<b>NOTES</b>					
.....					
.....					
.....					
.....					
<b>WE DECLARE THAT ALL THE ABOVE ITEMS ARE COMPLETED</b>					
Title of Company Requesting Commissioning: .....					
Authorized Name Surname: .....					
Authorized Title: .....					
Date : .....					
					Signature

### Installation

**Electrical connection:** In order to make the electrical connections of the device, a three-phase electrical line with a diameter of  $5 \times 1.5 \text{ mm}^2$  and a panel with automatic switch is required. There is a residual current relay inside the device. For the electrical connections of the device, the electrical cable coming out of the PG25 gland from the rear of the hydraulic unit must be properly inserted into the panel. The control panel should not be opened, only the electrical cable left for assembly should be connected.

**Mechanical connection:**



Device Back View

**Connection Number 1:** De-pressurization (when expanding) Line Connection of the heating system to the return line, never use a shut-off valve in between, even if it is used, prevent the opening/closing from being used by unauthorized persons. R1” up to 5 meters, R1 ¼” up to 15 meters, please consult our company for longer and more complex situations.

**Connection Number 2:** Mains Water Connection, conditioned according to the heating water standard, minimum pre-pressure,  $p=1 \text{ bar}$ , maximum pressure: 10 bar, of R ½” connection diameter.

**Connection Number 3:** Make an unstrained, flexible connection with the R1”-50 cm flexible connection set to the port no. 3 of the membrane tank to be mounted next to it. This optional distance can be kept longer by contacting our company.

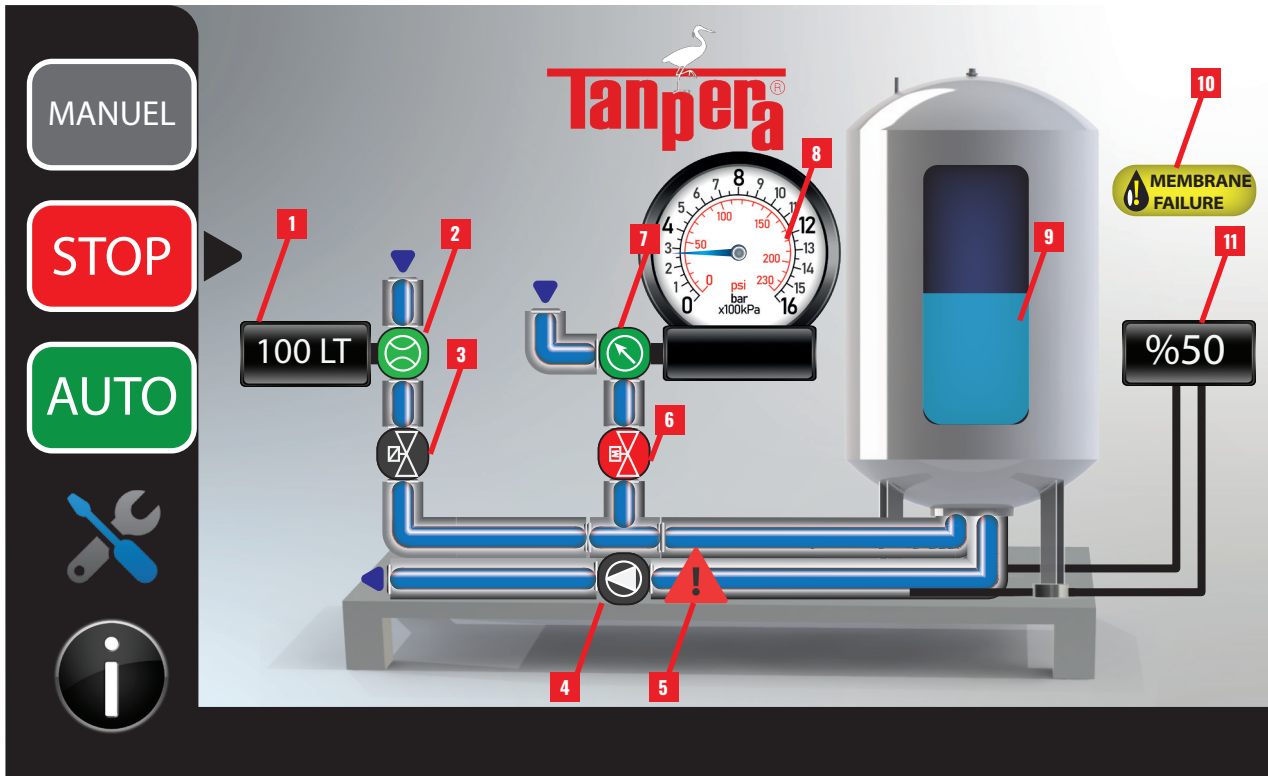
**Connection Number 4:** Make an an unstrained, flexible connection with the R1”-50 cm flexible connection set to the mouth no. 4 of the membrane tank to be mounted next to it. This optional distance can be kept longer by contacting our company.

**Connection Number 5:** Plant Pressurization (when shrinking) Line Connection of the heating system to the return line, never use a shut-off valve in between. If used, prevent the opening/closing from being used by unauthorized persons. R1” up to 5 meters, R1 ¼” up to 15 meters, please consult our company for longer and more complex situations.

**Connection Number 6:** Pressure Sensor Collector Connection Inlet Diameter ¼”

**Connection Number 7:** Energy Input (380V Three-phase, 50 Hz), Device power requirement is 1.6 kW, If the cable to be used does not exceed 10 meters, the recommended minimum energy supply cable should be a TTR cable with a cross section of  $5 \times 1.5 \text{ mm}^2$ . Please consult our company for longer connections.

### Device Usage



**Note: The working pressure of the system can only be changed by authorized service.**

- |                              |                          |                              |                                      |
|------------------------------|--------------------------|------------------------------|--------------------------------------|
| <b>1</b> Flowmeter Indicator | <b>4</b> Pump            | <b>7</b> Manometer           | <b>10</b> Membrane Failure Indicator |
| <b>2</b> Flowmeter           | <b>5</b> Fault Indicator | <b>8</b> Manometer Indicator | <b>11</b> Fill rate indicator        |
| <b>3</b> Solenoid Valve      | <b>6</b> Solenoid Valve  | <b>9</b> Status of fill rate |                                      |

The device has a 7" touch screen on the control panel. The explanation of the icons on the screen is given below.

#### Manual Mode:

It allows turning on the equipment (solenoid valve, motorized valve and pump) one by one according to the request of the user. Once clicked on the equipment to be operated, its icon will turn green and open. When you want to turn it off, click on it again to make the icon turn gray.

#### Auto Mode:

It provides automatic pressurization and depressurization according to the pre-set working pressure.

#### Stop Mode:

It puts the device into standby mode by safely turning off all the equipment on the device.

#### Settings Screen:

After clicking the setting icon to enter the setting screen, the Customer password is entered as '1234' in the password section that appears on the screen. There is only programmable ventilation mode in the setting screen. The pump-controlled pressurization system can automatically provide the necessary circulation, separate the air in the plant and discharge it through the air relief purge on the tank. It can be set as a date time or a loop.

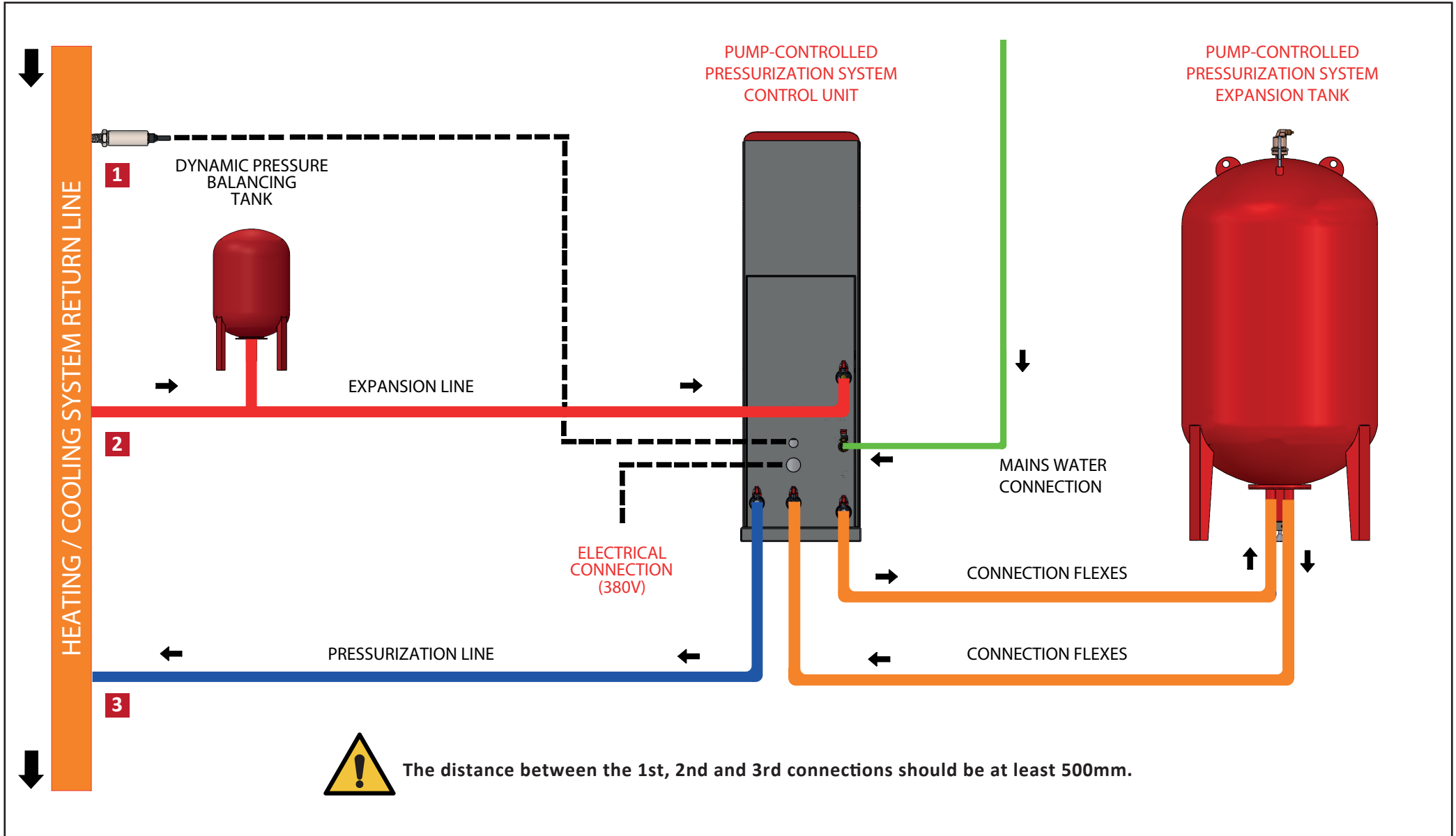
#### Information Menu:

The information section where the place the system works, serial number of the system, code, operating conditions, etc. information are displayed.

### Failure/Error Codes

Error Code	Cause	Solution
Error Code 01	Pressure Sensor Error	Check that the sensor is connected to the plant/facility, if the error persists, contact the service team.
Error Code 02	Pump Error	Check the device safety switch and electrical connections, check the pump rotation direction by operating the pump device in manual mode, bleed the pump, if the error persists, contact the service team.
Error Code 03	Load Sensor Not Connected	Check the mechanical connection of the load sensor on the expansion tank, check that the tank is positioned flat on the ground, if the error persists, contact the service team.
Error Code 04	Membrane Water Contact	Contact the service team to check the tank membrane.
Error Code 05	Pressure Relief Solenoid is Faulty	Check the plant and tank connection valves, make sure they are all open, if the error persists, contact the service team.
Error Code 06	Automatic Water Fill Error	Check that there is no leakage in your plant, check that the mains water connection is made, if the error persists, contact the service team.
Error Code 07	Power Cut	Check the electrical connection of the device.
Error Code 08	Bleeding Mode is Faulty	Check that the mains water connection is made, if the error persists, contact the service team.
Error Code 09	Lost or Leakage Water Warning	Check that there is no leakage in your plant, check that the mains water connection is made, if the error persists, contact the service team.
Error Code 10	Repeated Leakage	Check that there is no leakage in your plant, if the error persists, contact the service team.
Error Code 11	Tank Full at Maximum Load (95%)	Contact the service team.
Error Code 12	Tank at Minimum Level (5%)	Contact the service team.

### Flow Diagram





# PUMP-CONTROLLED PRESSURIZATION SYSTEM INSTALLATION AND USER MANUAL



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