Installation and Maintenance Guide

Heat pumps for indoor swimming pools

GJPACW1S-15/20/30/60
Preface

Congratulations on your purchase of a pool heat pump from Gullberg & Jansson AB. We hope it meets your expectations and provides you with many years of energy efficient heating.

In this Installation and Maintenance Guide you can read how installation, operation, service and maintenance are to be performed to ensure correct function. It is therefore important that you read through the manual carefully before starting or serving the unit. Gullberg & Jansson can not be held responsible for damage resulting from incorrect installation, incorrect fault tracing or incorrect maintenance.

Yours sincerely,

Gullberg & Jansson AB

FOR YOUR OWN RECORDS

Please complete the details below. Keep these close to hand should anything happen.

<table>
<thead>
<tr>
<th>Product:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed by:</td>
</tr>
<tr>
<td>Telephone:</td>
</tr>
<tr>
<td>Serial number:</td>
</tr>
<tr>
<td>Date of installation:</td>
</tr>
</tbody>
</table>

The proof of installation for registration at Gullberg & Jansson AB is enclosed with the installation. It is important that this is completed and posted at the earliest possible date!

Subject to possible misprints and design alterations. Gullberg & Jansson AB is not responsible for misinterpretations, any obvious misprints and consequences resulting from these.
General information

This chapter provides background information about the pool heat pumps covered in this Installation and Maintenance Guide. Important information, guarantee conditions and safety instructions are also presented here. This chapter is intended for both users and installation engineers.

Product description

The models GJPACW1S-15/20/30/60 are a range of specifically developed air/water heat pumps designed for energy efficient heating all-year round of swimming pools or spa pools. The models have been developed and designed for the Scandinavian climate by Gullberg & Jansson AB. The pool heat pumps are designed to work with good efficiency and a low noise level.

All models feature:
- Titanium heat exchangers resistant to chlorine and salt water
- Environmentally friendly and effective coolant (R410a)
- Gas connection between indoor and outdoor unit
- Digital LED control with timer
- Dynamic defrosting function for an extended pool season
- Pan heater in outdoor unit
- Flow switch and union couplings for safe operation and easy installation
- Stainless steel casing

Functional principle

The pool heat pumps GJPACW1S-15/20/30/60 are primarily used for heating, but can also be used for cooling. The models are controlled via a flow switch and in order to work the pool’s circulation pump must be running.

The pool heat pump works with the greatest energy efficiency when there are small differences in temperature between the inlet and outlet. The recommendation is 1-2 degrees difference between the inlet and outlet. The water flow is regulated via a bypass coupling. Read more about the bypass coupling in section 2 – Installation.

All models are developed to guarantee good efficiency in the Nordic climate. However, it is important to be aware that the degree of efficiency is dependent on the surrounding outdoor temperature and the temperature of the pool water. The heat pump can be seen to perform with different efficiency during different parts of the year depending on the outdoor conditions. At the start of the season, when the water in the pool is cold, the heat pump needs to work continuously for a long period to produce the right temperature in the pool. When the pool water has reached the required temperature, the heat pump automatically stops and starts as required. It is always cost-effective to cover the pool when not in use, especially at night. Approximately 60 – 70 % of the heat disappears from the water surface of the pool. Covering also reduces the heat pump’s running time.

The outdoor unit must always be installed outdoors, as it collects its energy from the surrounding air. It must be well ventilated and must not be enclosed or in any other way shielded so the air circulation is impaired. The circulation of the air between the intake and exhaust impairs efficiency. Avoid installation close to sensitive walls, for example, bedroom rooms.

Frost or ice can form on the heat pump’s evaporator. This is completely normal. An automatic defrosting cycle will start to melt the ice. After the defrosting cycle the heat pump starts its standard program and continues to heat the pool. The swimming pool heat pump normal working condition is between -20 and 40 °C ambient temperature and between 15 and 40 °C inlet water temperature.

To guarantee a warm pool all-year round we recommend installing an electric heater or other backup heat source in series with the heat pump.
General information

Component part and accessories
1. Outdoor unit – GJPACW1SO-XX
2. Indoor unit - GJPACW1SI-XX
3. Installation accessories
   • Installation instructions
   • Union couplings
   • Damping rubber blocks

Important information

Transport and storage
The outdoor unit must be transported vertically. This is because the suspension inside the compressor can be damaged if the unit is laid down. If the heat pump is tilted during installation or draining this should be done with care and for the shortest time possible.

The original packaging is intended to be used to reduce the risk of transport damage.

Remove the packaging and before installation check that the heat pump has not been damaged during transport. Report any transport damage to the forwarding agent.

Set up
The indoor unit is placed indoors. The unit must be stable, straight and have plenty of room to ensure the smoothest possible installation and service.

The outdoor unit is installed outdoors on a firm surface such as a concrete base or ground stand. The protective grille that serves as a transport guard to the evaporator coil is to be removed to minimise the risk of icing.

For the air supply to the evaporator coil to be sufficient, the distance between the outdoor unit and house wall should be at least 300 mm. The free space in front must be over 2,500 mm. This produces a higher output and improved efficiency. Avoid installing where there is cold air circulation as this reduces the output of the heat pump.

Large amounts of melt and condensation water can be discharged during defrosting and operation. Consequently, it is important to ensure good drainage and run-off from the outdoor unit.

The placement must take into account sound propagation. Placement of the unit must be done so that noise from the fan disturbs the environment as little as possible.

Checklist for installation
The following check list provides a general description of how the installation is carried out.

☐ Place the outdoor unit on a firm and horizontal surface. Make sure that the area is well drained and supply enough air for the evaporator.
☐ Place the indoor unit adjacent to the pump and filter system.
☐ Open the indoor unit, and take out the enclosed installation accessories. Ensure that all component parts have been delivered.
☐ Mount the indoor unit, with a bypass, in series after the sand filter. Exercise care to ensure the inlet and outlet are installed correctly.
☐ Install the gas pipes between the indoor and outdoor units, testing pressure and vacuuming pipes.
☐ Open the outdoor unit gas valve.
☐ Connect power and signal cables.
☐ Adjust the flow through the indoor unit to the right level.
☐ Switch on power.
☐ Check the settings.
☐ Start up.

Read more about the installation in Section 2.

Use and operation
The parameters on the display are set at the factory and do normally not need to be adjusted. The temperature is set to 27 °C. If you wish to increase the temperature, check first to ensure that your wishes of a high temperature do not contravene any guarantees concerning the general pool construction.

Maintenance procedures
Ensure on a regular basis throughout the year that the evaporator element is not blocked by leaves, snow or the like. If necessary, you can clean the evaporator element with a large brush by lightly brushing in the direction of the flanges. Do not flush water directly into the unit through the grille or the sides as this could lead to water penetration and damage to the unit.

Furthermore, check during the cold part of the year to ensure that too much snow or ice does not build up under the heat pump. Strong winds together with abundant snowfall could cause the evaporator element and fan guard to clog. Ensure
that these are free of snow. The outer case can be cleaned using a damp cloth if necessary.

**Service and support**

GJPACW1S-15/20/30/60 are designed for reliable operation and a long life. If a fault should occur you should always contact the installation engineer who carried out the installation. If the installation engineer in turn considers it to be a question of a material or manufacturing fault, he/she will contact us for inspection and action to rectify the problem. Always state the product’s manufacturing number. The number can be found on the rating plate below the LED display. A basic guide to fault tracing is presented in section 4 - Maintenance, service and fault tracing.

**Miscellaneous**

The unit may only be repaired by a qualified installation engineer or an accredited workshop. Genuine spare parts must be used for repairs.

A commissioning report for registration at Gullberg & Jansson AB is enclosed with the installation. It is important that this is completed and posted at the earliest possible date!

**Guarantee conditions**

The component parts of the system must be transported, stored and installed in accordance with the provisions set out in the manual.

Repairs must be carried out by an accredited installation engineer. Genuine spare parts must be used for repairs.

The cooling assembly must be carried out by an accredited refrigeration engineer.

The guarantee becomes void if the conditions above are violated.

**Safety Regulations**

It is especially important to take into account the following safety instructions when handling, installing and using the heat pump:

- Only qualified persons may work on the product’s cooling system.
- Always disconnect the power supply before working on the system.
Installation

A comprehensive installation description is provided in this chapter. This chapter is primarily intended for installation engineers, but can also be read by the end user to increase his/her knowledge.

The pool heat pump will work ideally under the following conditions:

☑ Access to fresh air.
☑ High enough water circulation.
☑ Correct electrical installation.

Placement of outdoor unit

In principle the outdoor unit can be placed anywhere outdoors. However, do not place it in an enclosed space with restricted access to the air intake and air exhaust (see the figure below). A structure with a roof is not necessary. If you still want to enclose the outdoor unit, remember that exhaust air must be ventilated properly!

See illustration below for appropriate placement.

Set up

The outdoor unit must be placed on a firm, horizontal base and should not be positioned next to or be installed with brackets on sensitive walls with a lightweight structure. Positioning must be done so that noise from the fan disturbs the environment as little as possible.

The unit must stand firmly, straight and raised from ground level. Ensure there is a stable and flat surface, for example, concrete bed, ground stand, wall brackets or similar.

Large amounts of melt and condensation water can be discharged during defrosting and operation. Consequently, it is important to ensure good drainage and run-off.

The outdoor unit must be placed so that the air supply to the evaporator coil is sufficient. This produces a higher output and improved efficiency.

Drainage of condensation water

The evaporator cools outdoor air by approximately 5-10 °C. The water vapour then condenses on the evaporator coil fins. If the air humidity is high this can result in many litres of water per hour. At lower outdoor temperatures, frost forms on the evaporator coil which melts when defrosting. To counter this, there are several drainage holes in the base plate to lead off the water. It is important to consider the position of the unit so that the condensation water can be led off correctly.

Placement of indoor unit

The indoor unit should be placed indoors standing adjacent to the pool filter system. Ensure that there is sufficient space for installation and service.

Distance to the pool

The indoor unit is normally installed in connection to the pool's purification system to minimise pipe routing. If the pipes are insulated heat loses will be minimal provided that the overall pipe length is less than 30 metres (pool water in and pool water return). An approximate estimation of the heat loses over an overall pipe length of 30 metres is 0.6 kW per hour for each 5 degrees of temperature difference between the pool water and the air surrounding the pipes. This is equivalent to an increased running time for the heat pump of 3-5 %.

Pipe connections

The pool heat pump is connected to the pool's circulation system with the help of the supplied 50 mm union couplings. Screw connections to the heat exchanger must be tightened by hand.

A bypass coupling must be fitted to adjust the right partial flow to the pool heat pump, and to simplify service.

Bypass coupling

We recommend that a bypass coupling is fitted to all installations in order to adjust the right partial flow to the pool heat pump. The right partial flow results in balanced operation and reduced wear on the heat pump's most expensive section, the heat exchanger.

Adjusting the bypass

Correct adjust of the bypass can be done in different ways.
One of the easiest ways can be summarized as follows:

1. Open all the valves
2. Check parameter A and b, see section 3.
3. If the difference is above 2 degrees, gradually close the bypass valve until the difference is between 1-2 degrees.

If the display shows EE03 this means that the flow switch in the system receives insufficient water, so the bypass valve must be closed more to increase the flow through the pool heat pump.

First open all the valves to simplify adjustment of the bypass.

Gas connection

The gas should be connected by a qualified refrigeration engineer. The pipes must always be pressure tested and vacuumed before commissioning.

It is important that the gas pipes are insulated all the way between the indoor unit and the outdoor unit, including through walls. The reason for this is to avoid condensation that would otherwise occur when the heat pump is working and to minimise heat loss during defrosting.

Remember that there are shut-off valves installed in both the outdoor unit and indoor unit. When the pipes have been run, open the valves on the outdoor unit fully. Pressure testing, vacuum suction and any refilling is done later at the valves on the indoor unit.

The indoor unit is pre-filled for 5 m connection pipe. Each additional metre requires 30 g/m gas. The maximum pipe length is 20 metres with a maximum height difference of 7 metres between the outdoor and indoor units.

Electrical installation

Connecting outdoor unit

The electrical connection is made inside the indoor unit's junction box located under the plastic cover. An operating switch must be connected and be positioned fully visible next to the unit. The operating switch protects against unintentional starting, for example, when servicing the unit. The unit must be connected to earth in order to achieve adequate short circuit protection. See table below for selection of fuses.

<table>
<thead>
<tr>
<th>Model</th>
<th>Fuse size</th>
</tr>
</thead>
<tbody>
<tr>
<td>GJPACW1S-15</td>
<td>10 A</td>
</tr>
<tr>
<td>GJPACW1S-20</td>
<td>10 A</td>
</tr>
<tr>
<td>GJPACW1S-30 (1P)</td>
<td>16 A</td>
</tr>
<tr>
<td>GJPACW1S-30 (3P)</td>
<td>10 A</td>
</tr>
<tr>
<td>GJPACW1S-60</td>
<td>10 A</td>
</tr>
</tbody>
</table>

Connecting outdoor unit

Connect the enclosed 6-pin and 3-pin signal cables between indoor and outdoor unit. The junction box is located behind the sheet metal cover on the side of the unit.

See the wiring diagram in section 5 for more detailed information about the electrical connection.

Starting up the unit

In order to heat the pool or spa water, the pool’s circulation pump must start and water needs to circulate through the heat exchanger. The following procedure should be followed when starting the pool heat pump for the first time:

1. Start the pool's circulation pump. Check for any leakage and that there is a flow to and from the pool.
2. Switch on the supply voltage and check the current running settings.
3. Press ON/OFF on the display, the unit should start after a few seconds.
4. After a few minutes, check that the exhaust air is colder than the outdoor air temperature (5-10 ºC).
5. Stop the pool’s circulation pump and make sure that the pool heat pump stops automatically.
6. Let the system run around the clock until the required temperature is reached. The pool heat pump will know when the temperature has been reached, but will not switch off until the required temperature has been exceeded by 1 º. The pool heat pump will then start again when the temperature in the pool drops by 1 º below the required temperature.

Flow switch: The pool heat pump is equipped with a flow switch that prevents starting in the event of insufficient water flow.

Time delay: The compressor will start after a delay of approximately 1 minute to prevent repeated restarts and compressor wear. Even a brief power failure activates the start delay of 1 minute startfördröjningen på 1 min.

When connecting 3-phase units, make sure that the phases are in correct order or the machine won’t start. If the machine won’t start at the first setup, please swap two phases around and the machine will start.
3 Use and operation

Description of LED controls

A description of the LED display is given below. All parameters are set at the factory and do not need to be adjusted before start up. During operations, press \( \uparrow \downarrow \) to check the current status of the unit. Here the set parameters; incoming water / outgoing water / evaporator / ambient temperature, can be checked. If no buttons are pressed within 5 seconds the LED display shows the incoming water temperature. When the unit is in standby mode, it shows the current time.

How to change operating parameters

1. Put the unit to standby mode by pressing the ON/OFF-button. The clock is shown.
2. Select a parameter between 0-9 by pressing the arrows.
3. Press in MODE while at the same time pressing ON/OFF.
4. When the parameter value flashes the setting can be made by pressing the arrows.
5. After 5 seconds the clock is shown and the setting is accepted.
6. Check the setting by using the arrows.
7. Start the unit again by pressing ON/OFF.

Note that the unit must be in standby mode in order to change any parameters.

Parameter 0: Required pool temp. in cooling mode. (8 - 28 °C)
Parameter 1: Required pool temp. in heating mode. (15 - 40 °C)
Parameter 2: Time between defrosting. (30 - 90 min)
Parameter 3: Start temperature for defrosting. (-30 - 0 °C)
Parameter 4: Stop temperature for defrosting. (0 - 30 °C)
Parameter 5: Maximal defrosting time (0 - 15 min)
Parameter 6: Quantity system. NOTE! Not to be changed!
Use and operation

1. Press ON/OFF to start the heat pump. The display shows the inlet temp. and the operating mode during normal operations.

2. If parameter 8 is set to 1 it is possible to switch between cooling and heating modes by pressing MODE.

How you select the operating mode

- Operating mode set to heating
- Operating mode set to cooling

Explanation of sensor values

- Inlet temperature
- Outlet temperature
- Temperature of the evaporator coil
- Discharge temperature
- Ambient air temperature
**Setting the time**

1. Press CLOCK. Current time is shown in the display.
2. Press CLOCK. The hours will start blinking, and can be adjusted with the arrows.
3. Press CLOCK again. The minutes will start blinking, and can be adjusted with the arrows.
4. Press CLOCK again to set the time.

**Timer setting and activation**

The heat pump can be started and shutdown using a timer. The LED above the button indicates an active timer.

To set the start timer follow the instructions below:

1. Press TIMER ON. Current timer setting is shown in the display.
2. Press TIMER ON again. The hours will start blinking and can be changed by using the arrows.
3. Press TIMER ON again. The minutes will start blinking and can be changed using the arrows.
4. Press TIMER ON again to set the timer.

To set the stop timer follow the instructions below:

5. Press TIMER OFF. Current timer setting is shown in the display.
6. Press TIMER OFF again. The hours will start blinking and can be changed by using the arrows.
7. Press TIMER OFF again. The minutes will start blinking and can be changed using the arrows.
8. Press TIMER OFF again to set the timer.

**Deactivation of the timers**

1. Press TIMER ON/OFF.
2. Press CLOCK. The LED above the timer button shouldn't be lit and the timer is now deactivated.
4 Maintenance, service and fault tracing

Maintenance

- Clean the pool/spa filter regularly to ensure sufficient circulation.
- Check that the area surrounding the unit provides good drainage and ventilation.
- It is a good idea to clean the heat exchanger to promote good function and energy savings. This is easily done with winter drainage. Flush the heat exchanger using e.g. a garden hose and drain thoroughly. This will reduce the risk of chlorine deposit build up.
- Check the power supply and cable connections regularly. If the unit does not function as designed, shut it down and contact the installation engineer.
- Check that the evaporator is clean. Use a brush and vacuum to remove any dust or leaves. Don’t use a high pressure jet! Regular cleaning will guarantee maximum efficiency.
- Clean the surface using a sponge or the like. To minimize ageing of the surface, it’s recommended to apply wax at least once every year.

Fault tracing

In the event of an error message, try to restart the system by turning the operating switch on and off. If this does not help, try to solve the problem using the following tables and then restart the system again. Contact your installation engineer if the problem persists.

Fault tracing chart

<table>
<thead>
<tr>
<th>Operation disturbance</th>
<th>Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat pump not operating</td>
<td>1. Power switch off</td>
<td>1. Turn on the operating switch</td>
</tr>
<tr>
<td></td>
<td>2. Heat pump in sleep mode</td>
<td>2. Press the ON/OFF-button</td>
</tr>
<tr>
<td></td>
<td>3. Error message displayed</td>
<td>3. Resolve the error using the error code table, restart the unit.</td>
</tr>
<tr>
<td></td>
<td>4. Fuse blown</td>
<td>4. Replace the fuse, close the circuit breaker</td>
</tr>
<tr>
<td>The unit LED shows EE03.</td>
<td>1. The flow is too low.</td>
<td>1. Check that the purification system is running</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the sand filter and flush if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Check the bypass setting.</td>
</tr>
<tr>
<td>Set pool water temperature, not achieved</td>
<td>1. Heat pump is in sleep mode.</td>
<td>1. Press the ON/OFF-button.</td>
</tr>
<tr>
<td></td>
<td>2. Heat pump is in cooling mode.</td>
<td>2. Change the operating mode to heating mode as set out in the section 3.</td>
</tr>
<tr>
<td></td>
<td>3. Ambient temperature is too low.</td>
<td>3. During winter it’s preferable to backup with another heat source, like electric heater or oil boiler.</td>
</tr>
<tr>
<td>Outdoor unit icing up</td>
<td>1. Outdoor air has unusually high humidity</td>
<td>1. Reset parameter for defrosting to a longer defrosting time. If necessary run in cooling mode to melt the ice. See Section 3.</td>
</tr>
<tr>
<td></td>
<td>2. Pool temp. is lower than 15 °C.</td>
<td>2. Increase the set temp. to at least 18 °C.</td>
</tr>
<tr>
<td>Fuses blowing</td>
<td>1. The heat pump fuse is too low</td>
<td>1. See table in Section 2 under “Electrical connection” for recommended fuse</td>
</tr>
<tr>
<td></td>
<td>2. Circuit breaker worn out</td>
<td>2. Replace circuit breaker</td>
</tr>
</tbody>
</table>
Error code table

<table>
<thead>
<tr>
<th>Operating disturbance</th>
<th>Error message</th>
<th>Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor error inlet (INWT)</td>
<td>PP01</td>
<td>Sensor not connected, broken cable or short circuit</td>
<td>Check or replace the sensor</td>
</tr>
<tr>
<td>Sensor error outlet (OUTWT)</td>
<td>PP02</td>
<td>Sensor not connected, broken cable or short circuit</td>
<td>Check or replace the sensor</td>
</tr>
<tr>
<td>Sensor error evaporator (PIPE1)</td>
<td>PP03</td>
<td>Sensor not connected, broken cable or short circuit</td>
<td>Check or replace the sensor</td>
</tr>
<tr>
<td>Sensor error hot gas sensor (PIPE2)</td>
<td>PP04</td>
<td>Sensor not connected, broken cable or short circuit</td>
<td>Check or replace the sensor</td>
</tr>
<tr>
<td>Sensor error outdoor sensor (ROOMT)</td>
<td>PP05</td>
<td>Sensor not connected, broken cable or short circuit</td>
<td>Check or replace the sensor</td>
</tr>
<tr>
<td>Too high temp. difference between inlet and outlet</td>
<td>PP06</td>
<td>Insufficient water flow, 12 degrees difference between inlet and outlet</td>
<td>Check the water flow</td>
</tr>
<tr>
<td>Anti-freeze protection</td>
<td>PP07</td>
<td>Inlet under 4 °C and outdoor air 0 °C or colder</td>
<td>Automatic heating mode</td>
</tr>
<tr>
<td>Flow switch</td>
<td>EE03</td>
<td>Low flow or no water in the system</td>
<td>Check the water flow, adjust the bypass, replace the flow switch</td>
</tr>
<tr>
<td>High pressure or low pressure pressostat</td>
<td>EE04</td>
<td>Gas quantity too high or low.</td>
<td>Contact installer.</td>
</tr>
<tr>
<td>Communication error</td>
<td>EE08</td>
<td>No contact with the control unit</td>
<td>Check the connection between the control unit and display</td>
</tr>
</tbody>
</table>

Service

If a problem should occur that you cannot solve you should always contact the installation engineer who carried out the installation. If he in turn considers it to be a question of a material or manufacturing fault, he will contact us for inspection and action to rectify the problem. Always state the product's manufacturing number. Information can be obtained from the above fault tracing guide. Always read through this section before contacting your dealer.

Drainage

If the indoor unit needs to be drained of water, unscrew both PVC pipe connections.
Connection key Chiller 300.2

### No. | Designation | Description
--- | --- | ---
3 | AC-N | Neutral conductor (230 VAC)
4 | AC-L | Phase conductor (230 VAC)
5 | COMP1 | Control signal to compressor relay (230 VAC)
6 | COMP2 | Control signal to compressor relay (230 VAC)
7 | VAL1 | Control signal to four way valve (230 VAC)
8 | VAL2 | Control signal to four way valve (230 VAC)
9 | FAN | Control signal to fan motor (230 VAC)
10 | PUMP | Control signal to circulation pump (230 VAC)
11 | HEAT | Alarm signal (230 VAC)
12, 14 | KYOUT/GND | On/Off switch (output signal, not connected)
13, 14 | MDOUT/GND | Mode output (not connected)
15-17 | NET/GND/12V | Display controller
18, 20 | KYIN/GND | On/Off switch (input signal, not connected)
19, 20 | MDIN/GND | Mode input (not connected)
21-22 | WATER/GND | Flow switch (input signal)
23-24 | FROST/GND | Defrosting signal (not connected)
25-27 | SYS/GND/12V | Pressostat signal (input signal)
28 | INTWT | Incoming water temperature (input signal)
29 | OUTTWT | Outgoing water temperature (input signal)
30 | PIPE1 | Evaporator coil temperature (input signal)
31 | PIPE2 | Discharge gas temperature (input signal)
32 | ROOMT | Ambient temperature (input signal)
Technical specification

Outdoor unit

Technical data

<table>
<thead>
<tr>
<th>Modell</th>
<th>GJPACW1SO-15</th>
<th>GJPACW1SO-20</th>
<th>GJPACW1SO-30</th>
<th>GJPACW1SO-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating output²</td>
<td>kW</td>
<td>6.8</td>
<td>9.2</td>
<td>13.8</td>
</tr>
<tr>
<td>Input power</td>
<td>kW</td>
<td>1.2</td>
<td>1.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Heating capacity¹</td>
<td>m³</td>
<td>20 - 35</td>
<td>30 - 50</td>
<td>40 - 80</td>
</tr>
<tr>
<td>Operating voltage</td>
<td></td>
<td>230 VAC 1-phase 50 Hz</td>
<td>400 VAC</td>
<td></td>
</tr>
<tr>
<td>Operating current</td>
<td>A</td>
<td>5.23</td>
<td>7.50</td>
<td>11.4</td>
</tr>
<tr>
<td>Fuse size</td>
<td>A</td>
<td>10</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Compressor</td>
<td>Rotary compressor</td>
<td>Scroll compressor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrgerant amount (R410a)</td>
<td>kg</td>
<td>0.9</td>
<td>1.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Fan consumption</td>
<td>W</td>
<td>50</td>
<td>75</td>
<td>120</td>
</tr>
<tr>
<td>Rated air flow</td>
<td>m³/h</td>
<td>1600</td>
<td>2300</td>
<td>2300</td>
</tr>
<tr>
<td>Noise level (1 m)</td>
<td>dB(A)</td>
<td>47</td>
<td>51</td>
<td>54</td>
</tr>
<tr>
<td>Pressostat break value HP</td>
<td>bar</td>
<td>44 (makes again at 32 bar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressostat break value LP</td>
<td>bar</td>
<td>0.2 (makes again at 1.5 bar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>mm</td>
<td>550</td>
<td>650</td>
<td>650</td>
</tr>
<tr>
<td>Width</td>
<td>mm</td>
<td>970</td>
<td>985</td>
<td>985</td>
</tr>
<tr>
<td>Depth</td>
<td>mm</td>
<td>310</td>
<td>420</td>
<td>420</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>50</td>
<td>61</td>
<td>66</td>
</tr>
</tbody>
</table>

¹ GJPACW1SO-30 can be either 1-phase or 3-phase.
² Heating output measured at 24 °C / 19 °C outdoor temperature, DB / WB (Dry bulb / Wet bulb). Incoming water temperature 27 °C.
³ Heating capacity should be seen as guide values for an insulated pool covered at night.

Dimensions and connections

<table>
<thead>
<tr>
<th>Dim.</th>
<th>GJPACW1SO-15</th>
<th>GJPACW1SO-20/30</th>
<th>GJPACW1SO-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>286</td>
<td>390</td>
<td>650</td>
</tr>
<tr>
<td>B</td>
<td>600</td>
<td>694</td>
<td>400</td>
</tr>
<tr>
<td>C</td>
<td>900</td>
<td>905</td>
<td>720</td>
</tr>
<tr>
<td>D</td>
<td>550</td>
<td>650</td>
<td>740</td>
</tr>
<tr>
<td>E</td>
<td>970</td>
<td>985</td>
<td>880</td>
</tr>
<tr>
<td>F</td>
<td>310</td>
<td>420</td>
<td>-</td>
</tr>
</tbody>
</table>
Component placement

GJPACW1SO-15/20/30

Component placement
1 Stainless steel casing - front
2 Steel casing - inside
3 Bracket for electric parts
4 Chiller 300.2
5 Relays
6 Relays
7 Fan motor capacitor
8 Compressor capacitor
9 Compressor
10 High pressure switch
11 Low pressure switch
12 Chassis
13 Stainless steel casing - side
14 Gas connector bracket
15 Power connector
16 Gas suction valve
17 Gas discharge valve
18 Four way valve
19 Protective net
20 Ambient sensor
21 Evaporator sensor
22 Evaporator
23 Stainless steel casing - top
Component placement

GJPACW1SO-60

Component placement
1  Fan motor
2  Impeller
3  Fan motor capacitor
4  Chiller 300.2
5  Power connector
6  Compressor contactor
7  Phase relay
8  Electronic box casing
9  3/4"-gas valve
10  3/8"-liquid valve
11  Gas valve bracket
12  Stainless steel casing
13  Electronic box bracket
14  Low pressure switch
15  High pressure switch
16  Chassis
17  Compressor
18  Four way valve
19  Liquid separator
20  Evaporator sensor
21  Evaporator
22  Ambient sensor
23  Protective net
24  Stainless steel casing - top
25  Fan protection net
**Technical specification**

**Wiring diagram**

**One phase connection**

![Wiring Diagram](image-url)

**GJPACW1SO-15/20**

**LEGEND:**
- CM: Compressor
- COND: Evaporator temperature sensor
- DT: Discharge temperature sensor
- EXT: Ambient temperature sensor
- FM: Fan motor
- HP: High pressure switch
- K1: Compressor relay
- K4: Pump relay
- LP: Low pressure switch
- RK1: Compressor relay coil
- RK4: Pump relay coil
- TS: Ambient temperature switch

![Wiring Diagram](image-url)

**GJPACW1SO-30 (1P)**

**LEGEND:**
- CM: Compressor
- COND: Evaporator temperature sensor
- DT: Discharge temperature sensor
- EP: Exhaust temperature switch
- EXT: Ambient temperature sensor
- FM: Fan motor
- HP: High pressure switch
- K1: Compressor relay
- K4: Pump relay
- LP: Low pressure switch
- RK1: Compressor relay coil
- RK4: Pump relay coil
- TS: Ambient temperature switch
GJPCW1SI-15/20/30/60

Technical data

<table>
<thead>
<tr>
<th>Model</th>
<th>GJPCW1SI-15</th>
<th>GJPCW1SI-20</th>
<th>GJPCW1SI-30</th>
<th>GJPCW1SI-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating output kW</td>
<td>6.8</td>
<td>9.2</td>
<td>13.8</td>
<td>26</td>
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<tr>
<td>Operating voltage</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water connection mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated water flow m³/h</td>
<td>2.2</td>
<td>3</td>
<td>4.5</td>
<td>9</td>
</tr>
<tr>
<td>Pressure drop at rated flow bar</td>
<td>0.12</td>
<td>0.10</td>
<td>0.10</td>
<td>0.12</td>
</tr>
<tr>
<td>Height mm</td>
<td>640</td>
<td>640</td>
<td>640</td>
<td>600</td>
</tr>
<tr>
<td>Width mm</td>
<td>340</td>
<td>340</td>
<td>340</td>
<td>450</td>
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<tr>
<td>Depth mm</td>
<td>280</td>
<td>280</td>
<td>280</td>
<td>360</td>
</tr>
<tr>
<td>Weight kg</td>
<td>13</td>
<td>13</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>

Wiring diagram

LEGEND:
FS: Flow switch
IT: Inlet temperature sensor
OT: Outlet temperature sensor
Appendices

Frequently asked questions

1. How do I set the temperature?
   Answer:
   a. Switch off the unit.
   b. Select parameter 1
   c. Press in MODE while at the same time pressing ON/OFF.
   d. When the preset temperature flashes, you can change the temperature by pressing the arrow keys.

2. Why is the temperature difference between the inlet/outlet water so small?
   Answer: The heat pump works with small differences in temperature, but circulates the entire pool volume several times a day. We recommend 1-2 degrees difference between the inlet and outlet.

3. Why does it take “so long” to heat a pool?
   Answer: This is because a tremendous amount of energy is stored in the water and this energy can not be generated quickly with a heat pump without it being extremely powerful and expensive. Calculate with 7-10 days to raise the temperature a corresponding number of degrees. If you require quicker heating you should invest in a larger model than what is normally recommended.

4. Why is it so difficult to heat up the pool if it is cold outside, for example, 10 °C?
   Answer: This is because the leakage up to the air is extremely large and if the insulation around the pool is inadequate the ground and groundwater will cool the pool even more. Finally the heat pump has a lower output the colder the outdoor temperature. A rule of thumb is that you can usually increase the temperature in the pool by 10 degrees compared with the average day temperature.

5. Why do I receive a flow switch error warning?
   Answer: The most likely cause is that the water flow to the heat pump is too small due to an incorrect bypass setting. Otherwise it may be due to dirt particles blocking the inlet or damaging the flow switch (unusual).

6. How long will it take for the pool to be warm?
   Answer: You usually calculate with about a 1-2 degree increase in the temperature per day. However, if you require faster heating you can always choose a larger model. If you have a non-insulated pool and at great deal of groundwater at the same time as you do not cover the pool at night heating can stop completely.

7. What maintenance does the pool heat pump need?
   Answer: It is a good idea to continuously check the condition of the intake section. Clean using a sponge or the like. Regular maintenance guarantees optimal efficiency.

8. How large should the difference between the incoming and outgoing water really be?
   Answer: We recommend 1-2 degrees (read off the difference between parameters A and b).

9. What do I do if I experience problems with my heat pump?
   Answer: Contact the dealer from whom you purchased your pool heat pump and they will, or with our help, rectify your problem. However, the manual provides information (about e.g. error codes) that can make the work easier. An error code will be shown on the display if a real fault occurs and this can be interpreted by looking in the manual. Finally, if you have any questions that your dealer finds difficult to answer please do not hesitate to contact us at: support@gullbergjansson.se.