



# Whirlpool Control Mechanism

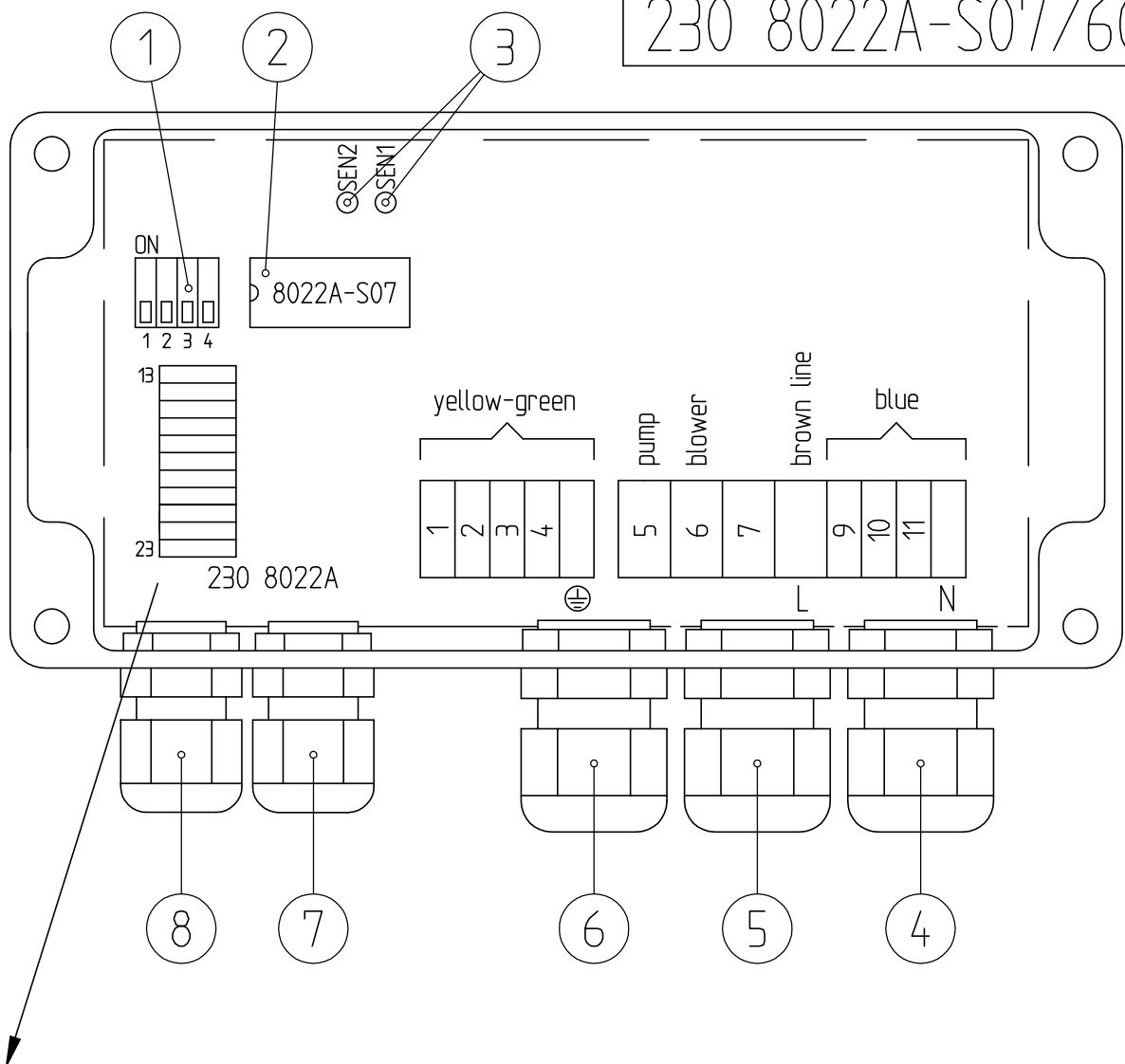
Type 230 8022A-S07  
230 8022A-S07/60

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Type 230 8022A-S07  
1147 Rev.3  
Ing. Aigner A.

# WHIRLPOOLCONTROL TYPE 230 8022A-S07

230 8022A-S07/60



|                |    |                  |
|----------------|----|------------------|
| TLS whirlp.    | 13 | ⊥ blue           |
|                | 14 | ⊥ brown          |
|                | 15 | +12V black       |
|                | 16 | ⊥                |
|                | 17 | ⊥                |
| switch whirlp. | 18 | +12V             |
|                | 19 | common           |
|                | 20 | dry out/side-LED |
|                | 21 | air              |
|                | 22 | water            |
|                | 23 | common           |

- 1 DIP-switches for settings
- 2 micro-controller
- 3 LED for control
- 4 mains voltage supply
- 5 blower
- 6 pump
- 7 switch whirlpool
- 8 TLS whirlpool

## Technical data

|  |                 |
|--|-----------------|
| Nominal voltage                        | 230V AC 50/60Hz |
| Total connected load                   | max. 3600W      |
| Switching current each channel (relay) | max. 8A         |
| System of protection                   | IP55            |
| Housing dimensions                     | 160x80x58 mm    |

DIP-switches

|                          |   |
|--------------------------|---|
| <input type="checkbox"/> | 4 interval, ON/OFF                            |
| <input type="checkbox"/> | 3 automatic dry out, ON/OFF                   |
| <input type="checkbox"/> | 2 status LED air/water, ON=air/OFF=water      |
| <input type="checkbox"/> | 1 configuration (20) ON=side-LED, OFF=dry out |

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## 1 General Information

This control mechanism has 2 outputs. The output for the blower (6) is provided for the blower and the output for the pump (5) is provided for the pump.

Operating elements and sensors are connected to the 5 V or 12 V control voltage (safety extra-low voltage, SELV). You may operate the whirlpool by means of the push-button on the edge of pool. All of times listed in this description are reference values. Should any modifications be made on the equipment, the warranty claim will expire.

( ).....terminal designations

### 1.1 DIP switch description

|    |   |
|----|---|
| S1 | configuration switch (20) ON=side-LED, OFF= dry out |
| S2 | Status LED air/water, ON=air/OFF=water              |
| S3 | dry out automatic ON/OFF                            |
| S4 | interval ON/OFF                                     |

## 2 Description of the Status Display(LED) on the Push-Button

Is the control mechanism connected to the power supply, the status display (LED - Light Emitting Diode) from the pump symbol (or from the symbol blower, at configuration S2=ON) flashes on every 8 seconds for the time of 0,5 seconds → „supply voltage existing“.

If the pool is filled with water (TLS height), the flash-rhythm from the status display changes to a steady flashing of 0,5 seconds → „pool ready“. After the „pool ready“ signal appears all functions could be used. Is a function active the LED from this function lights. If a function is active after the pool is empty (depends on the variant for instance the dry out with the blower), the speed of the flashing from the status display on the push-button changes to a double flashing with a break of 0,5 seconds. When all of the functions have ended, the status display shows the flashing function of → „supply voltage existing“

## 3 Description of the Side LED at Push-Buttons with Border Illumination

If a push-button with border illumination is used, the configuration connection "side LED" can be attached for the border lights (DIP-switch S1=ON).

The side LED of the push-button are switched on at a sufficient water-level (height of the dry running protection sensor) and turned off when the water-level is falling below.

## 4 Description from the Limiting of the Running Time

This function is also called the OFF-TIMER. Automatic switch-off is a function that protects the whirlpool against functioning without supervision.

When the status display shows the „pool ready“ signal and the control mechanism registers that a button has been pressed for the first time, the switch activates the 20 minutes running time limit. You may use any of the whirlpool functions during this time as much as you desire. All of the aggregates are switched off when the running time limit is reached regardless what function is activated. If all of the functions are switched off during this time, the running time limit will also be set back. Pressing a button again starts this time again. Then the aggregates can be switched on again immediately after automatic stop. When the button is pressed for the first time, the running time limit is started again.

## 5 The Dry Running Protection System TLS

This system consists of the capacitive proximity switch (dry running protection sensor - TLS) whose maximum switching distance (pool wall thickness) is 20 mm. The TLS is mounted on the outside of the pool with a suitable bonder such as silicone.

The TLS has to be connected because the whirlpool must not be put into operation without water. Otherwise, the pump shaft seal or the spotlight could be damaged as a result of too little cooling. Furthermore, the pool surface could be deformed.

The switching status of the TLS is displayed directly on the TLS and in the control mechanism in each case by a LED. If there is a lack of water, the LED (SEN2) in the control mechanism lights. The LED of the dry running protection sensor works inverted. If the water comes under the required water level the aggregate will be switched off automatically after approximately 5 seconds and they can not be switched on again. If there is no TLS connected, the control mechanism operates normal like the pool is full. The LED (SEN2) does not light.

### designations for connections:

|       |   |
|-------|---|
| black | +12 V <sub>DC</sub> max. 50mA                                     |
| blue  | GND   |
| brown | signal output<br>L-level → water existing<br>H-level → water away |

H-level → High-level, L-level → Low-level

## 6 Settings

### 6.1 Adjusting the Interval

You may adjust the interval using the DIP switch S4 (refer to figure position 1).

In the interval mode the aggregates switch "ON" and "OFF" in a 2 seconds rhythm.

The function of the aggregates if a push-button is pressed (valid for the symbols water and air) works as follows.

| pressing the button                     | S4 in the „ON“ position | S4 in the „OFF“ position |
|---|-------------------------|--------------------------|
| pressing the button for the first time  | aggregate - ON          | aggregate - ON           |
| pressing the button for the second time | aggregate - interval    | aggregate - OFF          |
| pressing the button for the third time  | aggregate - OFF         | refer to first time      |
| pressing the button for the fourth time | refer to first time     |                          |


## 7 Description of dry out


### dry out automatic:

The DIP switch S3 (see figure position 1) must be in the "ON" position in order to automatically start this function after every time the pool has been used. If the water in the pool reached the level (TLS height) and a whirlfunction was shortly active, after 30 seconds the control activates the function dry out. Independent on the operating time of the pool the dry out function is in a waiting position.

### dry out manual:

In the DIP switch S1 and S3 in "OFF" position the function can only be started manually by the push button.

Hold the button  pressed until the flashing control lamp (LED) switches to continuous light (protection against incorrect usage – child protection). Independent on the operating time of the pool the dry out function is in a waiting position.

To cancel the function press the button  once briefly. The function can only be cancelled if the pool is empty.

### 7.1 dry out

If the function is activated the blower turns on, after the dry running protection sensor TLS does not register water over a time of 20 minutes (after emptying the pool), for 3 minutes.

The air-system is dried by the air of the blower.

## 8 Connection and electrical installation

Connection, electrical component installation and adjusting operations must only be performed by a qualified electrician or under the supervision and responsibility of such a person (by an electrical installation company authorised for this purpose).

**Note:** If work is carried out on the water installation, the complete control must be switched off and reliably disconnected from the electric power system.

To connect the control to the mains supply, use only a line of type H05VV-F3G1 (medium PVC hosepipe, YMM-J 3x1 mm<sup>2</sup>) or H05VV-F3G2,5 (YMM-J 3x2,5 mm<sup>2</sup>).

Please note when making the connection:

- Work only in the de-energised condition!
- Insulation stripping length at the ends of the conductors: 6mm
- With fine-wire conductors it is possible to use wire end ferrules.
- Keep the earthed conductor extra long so that it is pulled from the terminal after the mains conductors should the pull relief fail.
- Connect the conductors only at the connection points provided for this purpose according to the connection diagram.
- Ensure sound contact to the means of connection (introduce stripped conductor ends fully into the terminals, pull test), especially with the earthed conductor connection.
- Do not accommodate any “conductor reserves” (loops; individual cores where the insulation stripping length is excessive etc.) in the control box.
- Then check the correct connection of the entire device. Faulty connections can result in the equipment being destroyed or impair the intended safety measures!

To maintain the type of protection **IP 55**

- completely introduce the outer sheathing of the lines (jacket) in the attachment screw connection,
- properly secure the acorn nuts of attachment screw connections (open-end wrench),
- unused introduction openings closed or blanked off with insulating material,
- line introduction openings arranged downwards or laterally and
- housing covers reinstalled properly.

Cut all lines leading to the control to size such that all electrical parts are easily accessible and can be removed for repairs. Upon installation and attachment ensure that the insulation cannot be damaged or squashed by sharp edges or burrs, heated-up or moving parts.

Strictly adhere to the connection requirements of the local power supply companies and the additional requirements in terms of establishing power systems, especially such for “bathrooms” (protection area, potential equalisation etc.).

DE: DIN VDE 0100-701 (VDE 0100 Part 701)  
AT: ÖVE-EN 1, Part 4 § 49/1980 and 1996

Attach all electrical components so that only parts are accessible to persons in the bath, which are supplied with 12V low safety voltage. Also ensure that electrical equipment is installed, attached and secured so that it cannot fall into the pool.

Furthermore in the case of the connection of the whirlpool have to be provided:

- A separator which makes possible switching the electrical circuit all-pole off, space-pole with at least 3 mm of contact opening distance to disconnected from the electric power system.
- Supply over a fault current circuit breaker with at least 25A 230/400 V ~ and maximum rated breaking current  $I_{\Delta N} = 30\text{mA}$ .
- Production of the additional potential equalisation (minimum cross section 4mm<sup>2</sup> copper)

After completion the electrical installation must be inspected and tested (function test) by a qualified electrician. In addition, the effectiveness of the performed protective measures, earth connection and earthed conductor connections, potential equalisation, insulation condition etc. of the newly established system component must be checked and documented.

If the bath control shall be used in other, e.g. medical-technology areas (hospital institutions, out-patient department, health cure and rehabilitation institutions etc.), the additional requirements have to be taken into account for the construction of such plants (previous contacting with the manufacturer recommended).

## 9 Water installation

The connection must only be performed by an officially licensed installation company or under the supervision and responsibility of such a person (by an installation company authorised for this purpose). The installation regulations of the local water supply companies and the provisions of DIN 1988 must be strictly adhered to. A stink trap must be provided for the water connection. In the case of pools with integrated filling a flexible connection hose (armoured hose) must also be provided for the water connection.

**Note:** No rigid pipe connection between whirlpool and water line – breaking hazard!