

Installation and Operation

RSC 4 PLUS DRIVE



INTEGRA 2-13 ROLLER SHUTTER COVER

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Information:

You can obtain additional information from our technical customer support.
 In line with technical advancements, we reserve the right to make modifications and improvements in production without announcement.

1. General information

1.1 System handover

This Integra 2-13 Thermosafe underfloor cover is supplied in three components:

1. Roller shutter shaft made from GRP, laminated onto the pool with integrated roll up fixture and factory-installed bench.
2. Switch box and key switch
3. Roller shutter slats packed into individual boxes

Please check the delivery in detail upon receipt and ensure correct storage at the construction site on an even foundation. Please notify us immediately in writing if the delivery of the goods contains any deficiencies. We are committed to remedying any deficiencies. Any deficiencies announced at a later stage can only be remedied by us at a cost.

Attention: as a result of manufacturing, the individual slats of the roller shutter covers may have slight differences in colour. These cannot be avoided and are not reason grounds for complaint.

1.2 Intended use

The Thermosafe roller cover is designed for use in swimming and bathing pools for public and private use. The aim is to reduce surface evaporation to have a positive energy balance.

And it is required that

- the relevant installation and operating instructions are complied with.
- the pool water is taken from the municipal pipeline network and complies with local water supply regulations and DIN 19643. Brine, mineral and well water are not suitable. The maximum metallic load should not exceed the following values:

• Iron	0.1 mg	per litre
• Manganese	0.05 mg	per litre
• Ammonium	2.0 mg	per litre
• Polyphosphate	0.005 mg	per litre
• Copper	0.01 mg	per litre
• Chloride	300 mg	per litre
	(150 mg/l if using electric heaters)	

- Higher values may cause corrosion to installed parts and devices and/or deposits on the pool walls.

- bathing water temperature must not exceed 32°C.

- the installation must only be done by contractors specialising in the swimming pool or heating/plumbing fields. Electrical connections are to be established by locally licensed specialist electrical contractors.

2. System description

2.1 Specification text



"Integra 2-13" roller shutter shaft

Roller shutter shaft

Made from glass fibre-reinforced polyester, permanently moulded onto the pool at the factory. The roller shutter shaft is used for holding the roll up fixture and the roller shutter and is equipped as standard with two jet nozzles made from stainless steel, 1 1/2" external thread.

Roller shutter shaft cover / shallow water bench

Made from GRP with 4 screw fixings, anti-slip matt finish on the surface, vent nozzles, hold-down pipe with straps. The bench is designed for a maximum load of 150 kg, evenly distributed.

Roll up fixture

With 24-V motor, switch box and key switch.

Thermosafe roller shutter cover

Made from hollow-chamber profiles with stabilisation struts, sealed water-tight at the ends.

- White solid-coloured design for indoor pools.
- Solar design with transparent top side and black underside for outdoor pools made from PVC or polycarbonate.



Roll up fixture, installed



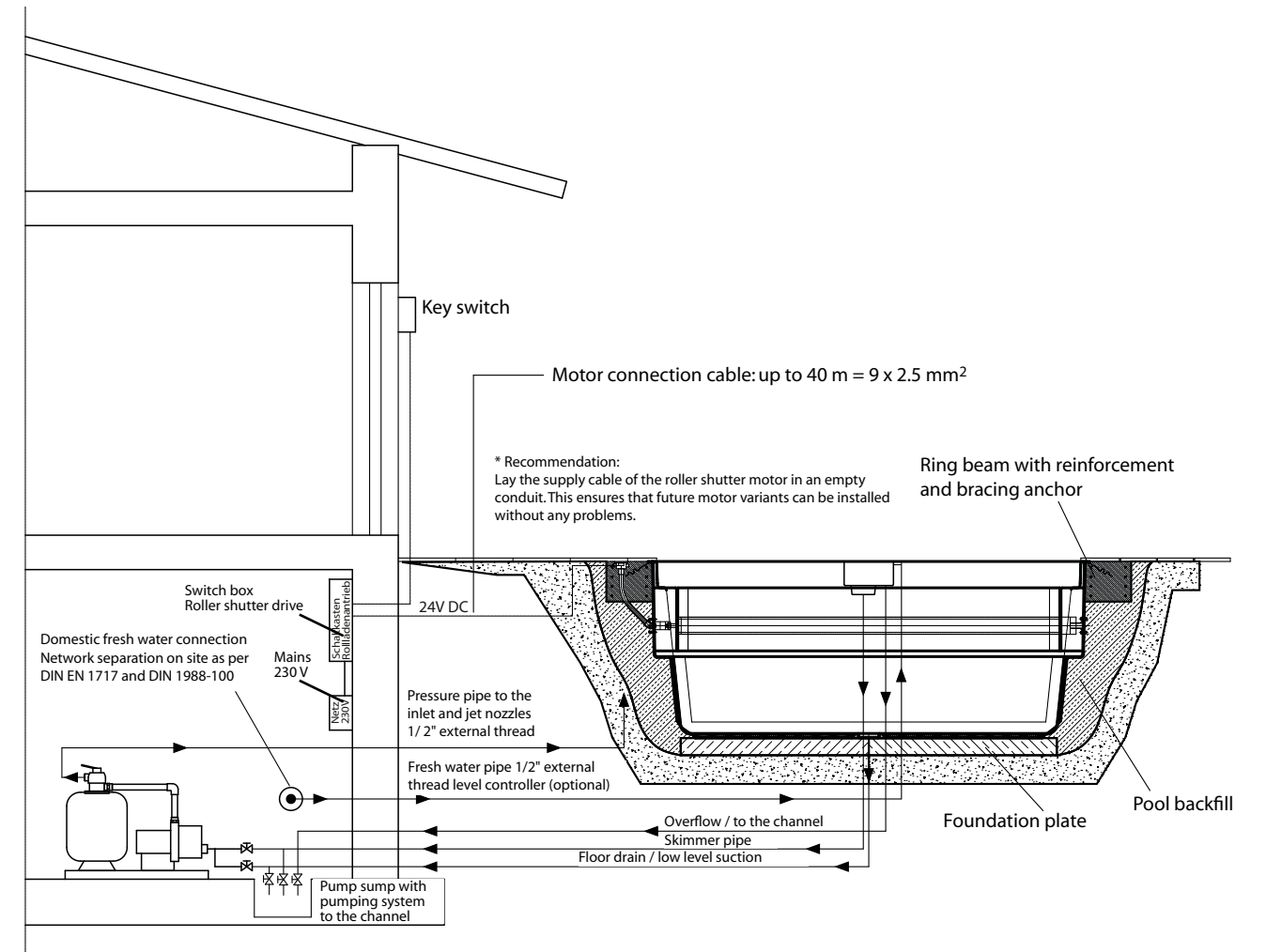
Switch box and key switch



Thermosafe roller shutter slats

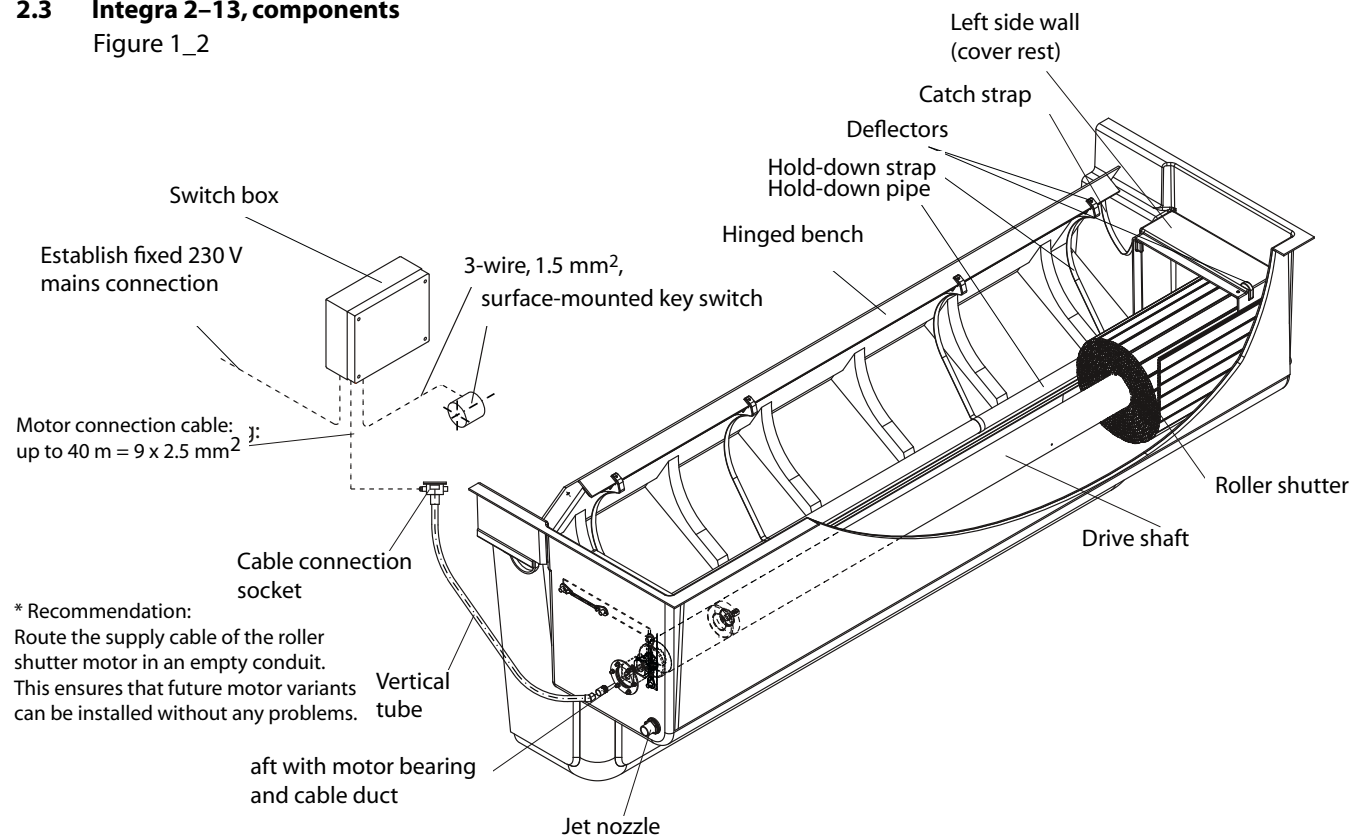
2.2 System description

Figure 1_1



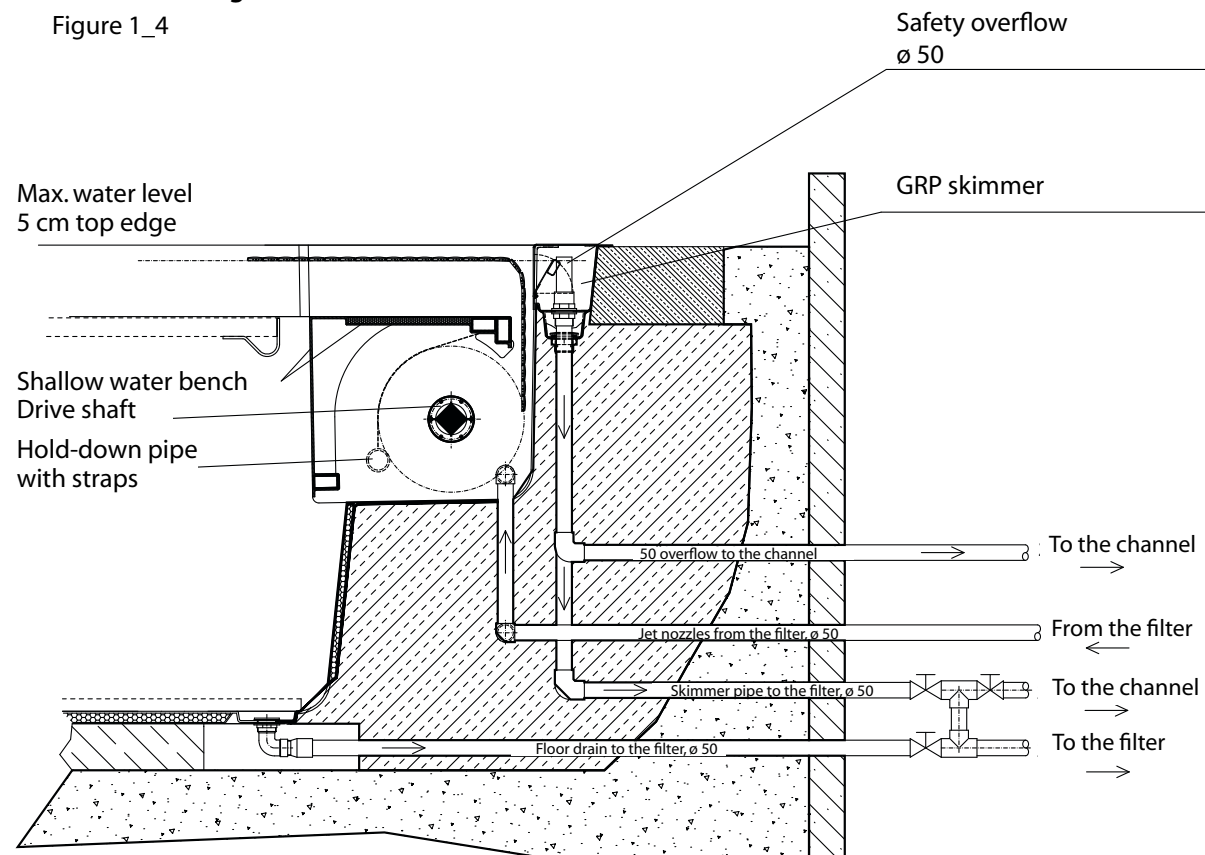
2.3 Integra 2-13, components

Figure 1_2



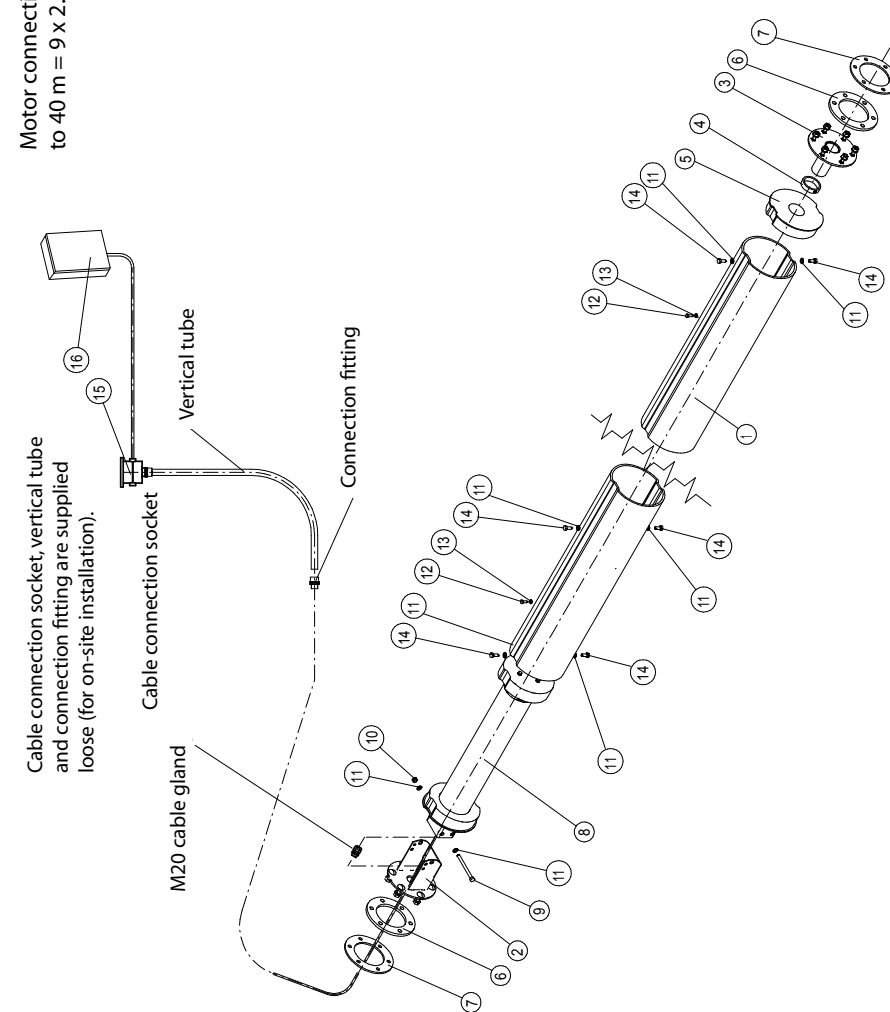
2.4 Connection diagram

Figure 1_4



2.5 RSK-370 roll up fixture, RS submersible geared motor and RSC-4 plus switch box

Motor connection cable: up to 40 m = 9 x 2.5 mm²



Pos.	Item	Pcs	Art. no.	Workshop
17	---	---	---	---
16	(RSC 4 +) switch box for RS submersible geared motor	1	22003010-4D+	Dimensions
15	Cable connection set with vertical tube	1	SBZ01650008	Quantity
14	Hex screw, M8x25 DIN 931	6	A4	Dimensions
13	Washer, A6, 4, DIN 125	4	A4	Dimensions
12	Hex screw, M6x16 DIN 933	4	A4	Dimensions
11	Washer, A8, 4, DIN 125	8	A4	Dimensions
10	Hex screw, M8x100 DIN 931	1	A4	Dimensions
9	SS1 nut, M8, DIN 985	1	A4	Dimensions
8	Hex screw, M8x100 DIN 931	1	IN-00299-AA	Dimensions
7	RT-84-0200 Rollo-Solar roller shutter motor pre-assembly	1	IN-00285-AA	Dimensions
6	Counter flange circular blank	2	IN-00088	Dimensions
5	Foam rubber seal circular blank	2	IN-00303-AA	Dimensions
4	ø 52 counter flange for GRP profile	1	IN-00092	Dimensions
3	Adjustment ring	1	IN-00091-AA	Dimensions
2	Counter bearing flange, complete	1	IN-00289-AB	Dimensions
1	Drive flange, complete, universal 2016 stainless steel	1	IN-00305-AB	Dimensions
	Hole dimensions of the GFK profiles, standard pool widths			Work p.c.

RivieraPool®		Scale	Workshop
		Quantity	Dimensions
Name	Bernhardt	RSK-370 roll up fixture, RS submersible geared motor and RSC-4 + switch box	
Date	07/02/2017	Art. no.: 22003310	
Edited			
Updated on	2/09/2019		
Change			

3. On-site requirements

GRP skimmer

It must be ensured that the water level is always kept in the operating range of the roller shutter.

Suction connection:	2" external thread
Suction pipe:	Use plastic pipe ø 50 or 63
Overflow:	ø 50 bonding sleeve
Level controller (optimal) thread	Fresh water supply pipe 1/2" external thread

RG 126 skimmer

Suction connection:	1 1/2" internal thread
Overflow:	1 1/2" internal thread

Roll up fixture

Power cable:	230 V / 50 Hz / 3 x 1.5 mm ² Fixed connection to the switch box
Motor connection cable:	Up to 40 m = 9 x 2.5 mm ² *

* Recommendation: lay the supply cable of the roller shutter motor in an empty conduit. This ensures that future motor variants can be installed without any problems.

4. Installation

4.1 Work steps for installing the Integra 2-13 roller shutter shaft

1. Setting the roller shutter shaft in concrete
Laying the motor cable Pages 10/11

2. Installing the switch box and key switch

Locking the filter pump Pages 16/19

3. Applying the roller shutter shell Page 13

4. Switch configuration Page 18

4.2 Setting the roller shutter shaft in concrete

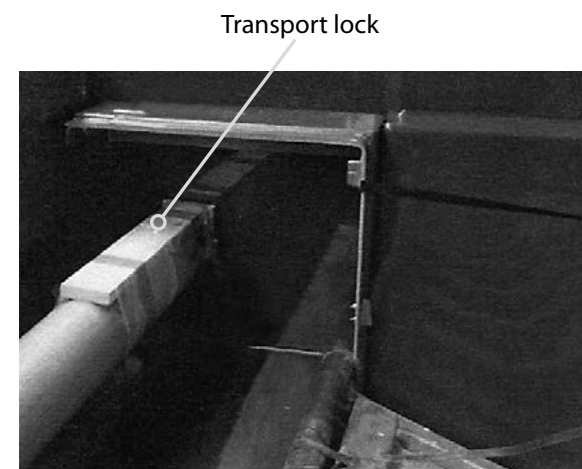
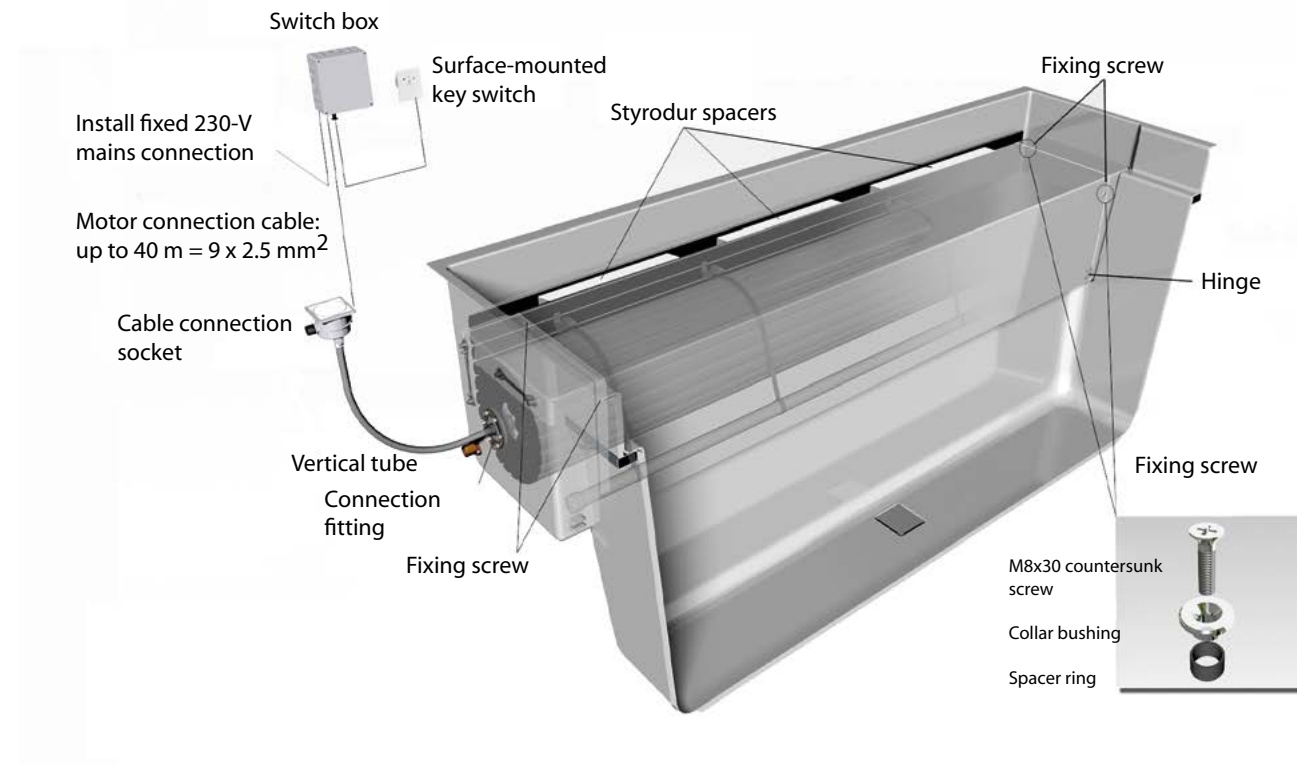


Figure 3_4 (image may differ slightly)

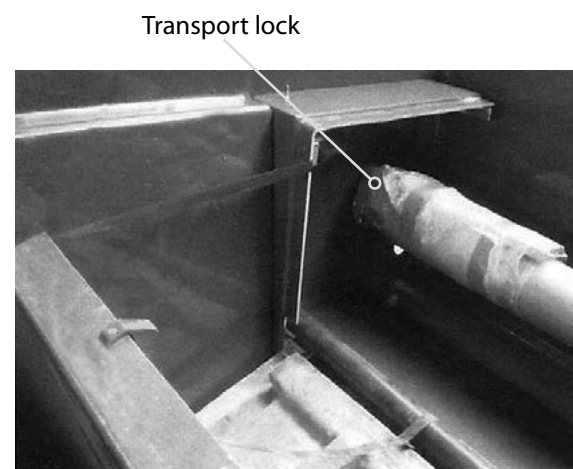


Figure 3_5 (image may differ slightly)

In accordance with the SB 2A installation instructions, the RivieraPool is to be placed on a concrete slab, aligned and all pipelines are to be connected. Afterwards, the pool is to be braced and filled with approx. 30 cm of water. Now the installation of the Integra 2-13 Thermosafe roller shutter is prepared for in the following steps:

1. Open the bench. To do this, release the 4 fixing screws and slowly open the bench toward the pool until the bench is held by its catch strap. Since the bench is very heavy, it makes sense to provide it with additional support when the pool is empty.
2. Install the vertical tube in the motor cable wall duct; feed the cable through and install the cable connection socket at the other end of the vertical tube; pull the cable through and connect it to the connection socket. Attention: pull the cable tight – there must be no loops or waves in the roller shutter shaft. The roller shutter slats may get caught by the cable. Fix the cable connection box above the pool edge. Make sure that no water can run into the motor along the end of the cable. Once the limit switch configuration is complete and after a successful test run, seal the connection sockets so as to be water-tight with the supplied magic gel.

Do not remove the wooden **transport lock** at the end of the shaft! This is required as spreaders for the concreting.

3. Close the bench again and mount it with 4 fixing screws. Attention: make sure that the spacer rings are placed around the screws. These are safety rings which ensure that the bench can still be screwed down after it has potentially been applied with pressure from the backfilling.

4. Spread the rear wall of the pool. To do this, insert the Styrodur spacers between the bench and the rear wall of the pool and fix them if necessary. If necessary, counter spread from the outside.

5. Check the spreading of the pool around the roller shutter once more. If the pool is being pressed during backfilling, the gaps between the bench and side walls are no longer aligned, which looks unsightly.

6. Now start the backfilling in accordance with SB 2 A and apply the ring beam.

7. Once the ring beam is completed, open the bench and remove the transport locks: remove the spacer rings from the 4 fixing screws; remove the transport locks (see Figures 3_4 and 3_5) on the left and right side of the shaft; remove the Styrodur spreaders.

4.3 Disassembling and changing the side parts of the Integra 2-13

All orders from 21/11/2016 onwards are supplied with the newly designed side parts for the Integra 2-13. This results in simpler assembly and disassembly of the roller shutter drive for inspection work on the motor.

Proceed as follows:

Note:

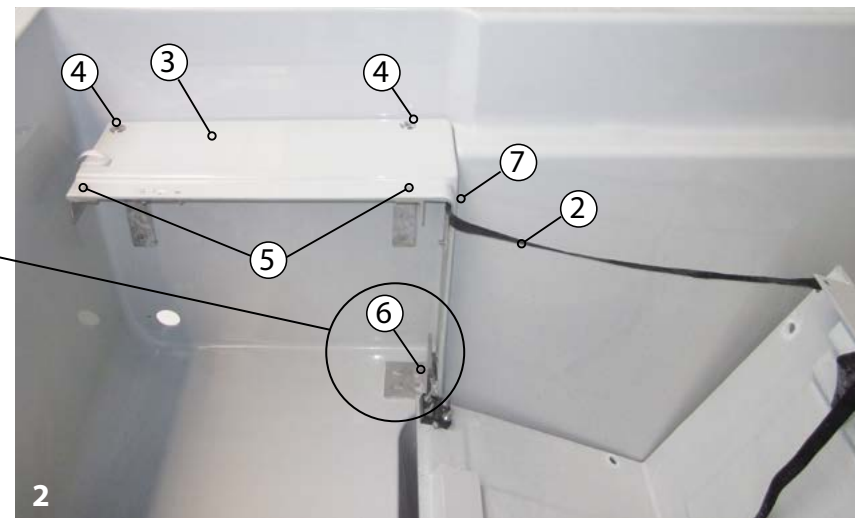
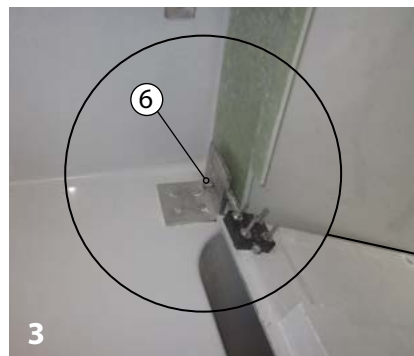
For safety reasons, we recommend emptying the pool to below the roller shutter shaft prior to working.

1. Open the seat; and release the 4 fixing screws ① (Figure 1, also see p. 10, SB 6 C, Figure 3_3) on the left and right and slowly open the bench toward the pool, until the bench is held by its catch straps ② (see Figure 2 below) on the left and right.

Lift up the bench slightly and release the catch straps on the left and right on the side parts ⑦ = cross tip. Now open the bench until it is horizontal and support it against falling downwards.

Attention: solar profiles must never be exposed to the sun without being in contact with water.

Make absolutely sure that the roller shutter slats are covered, and not exposed to direct sunlight.



Remove the fixing screws of the side parts ③

- ④ = Cross tip
- ⑤ = 4 x hexacon socket
- ⑥ = SW13 hex

and remove the side parts upwards (Figure 4).

Assembly must be done in reverse order.

4.4 Installing the roller shutter cover

The roller shutter slats are packed and delivered as individual profiles in boxes and installed on site as per the below diagram.

Attention: solar profiles must never be exposed to the sun without being in contact with water.

A slot with a retaining lug in the end cap is provided on all profiles for threading the slats into each other. The roller shutter slats are threaded into each other individually lying on the water. The groove points toward the roller shutter shaft and the tongue toward the steps. Working direction: from the end slat to the steps.

The roller shutter head is assembled according to the numbering on the slats. The locking of the individual slats to the relevant position is provided by the different milled recesses of the tongues.

Fix end slat of the roller shutter shell to the shaft with straps. Place the end slat over the pool edge and fix it there (for solar roller shutters: please protect from the sun)!

Attention: the first two profiles on the head part of the covers are shortened on the left and right by 10 cm in rectangular pools. This is to prevent the first slat from getting caught under the coping stone when emerging from the water.

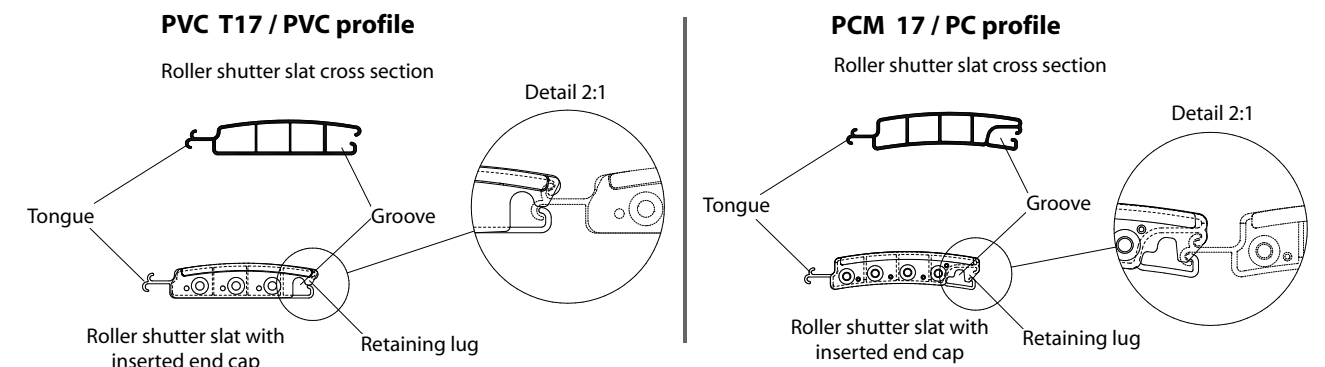
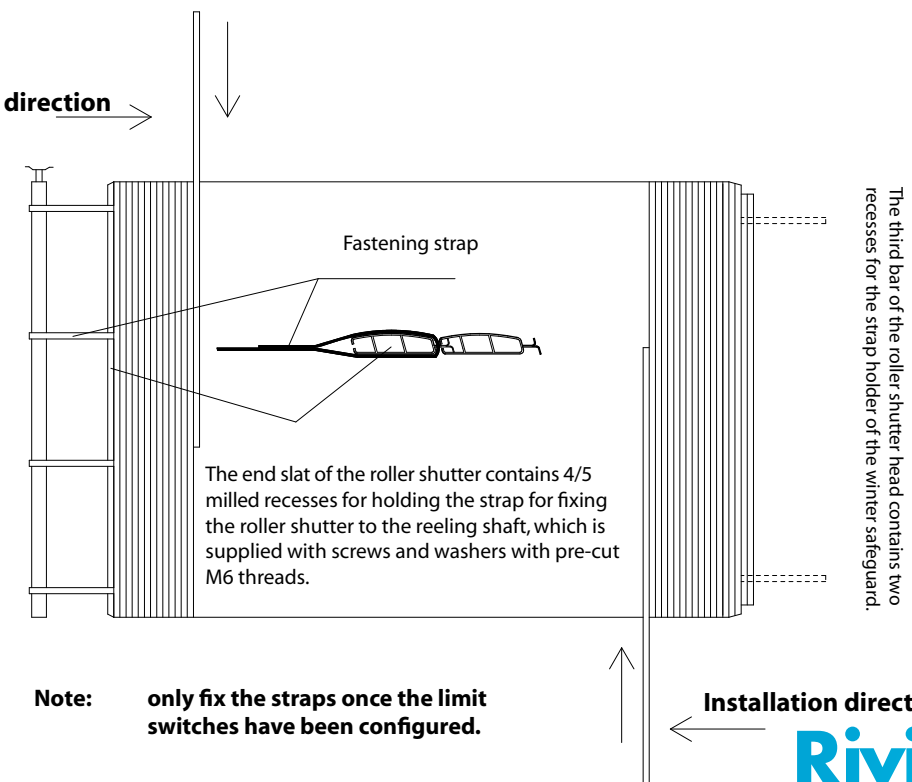


Figure 2_1

Installation direction →



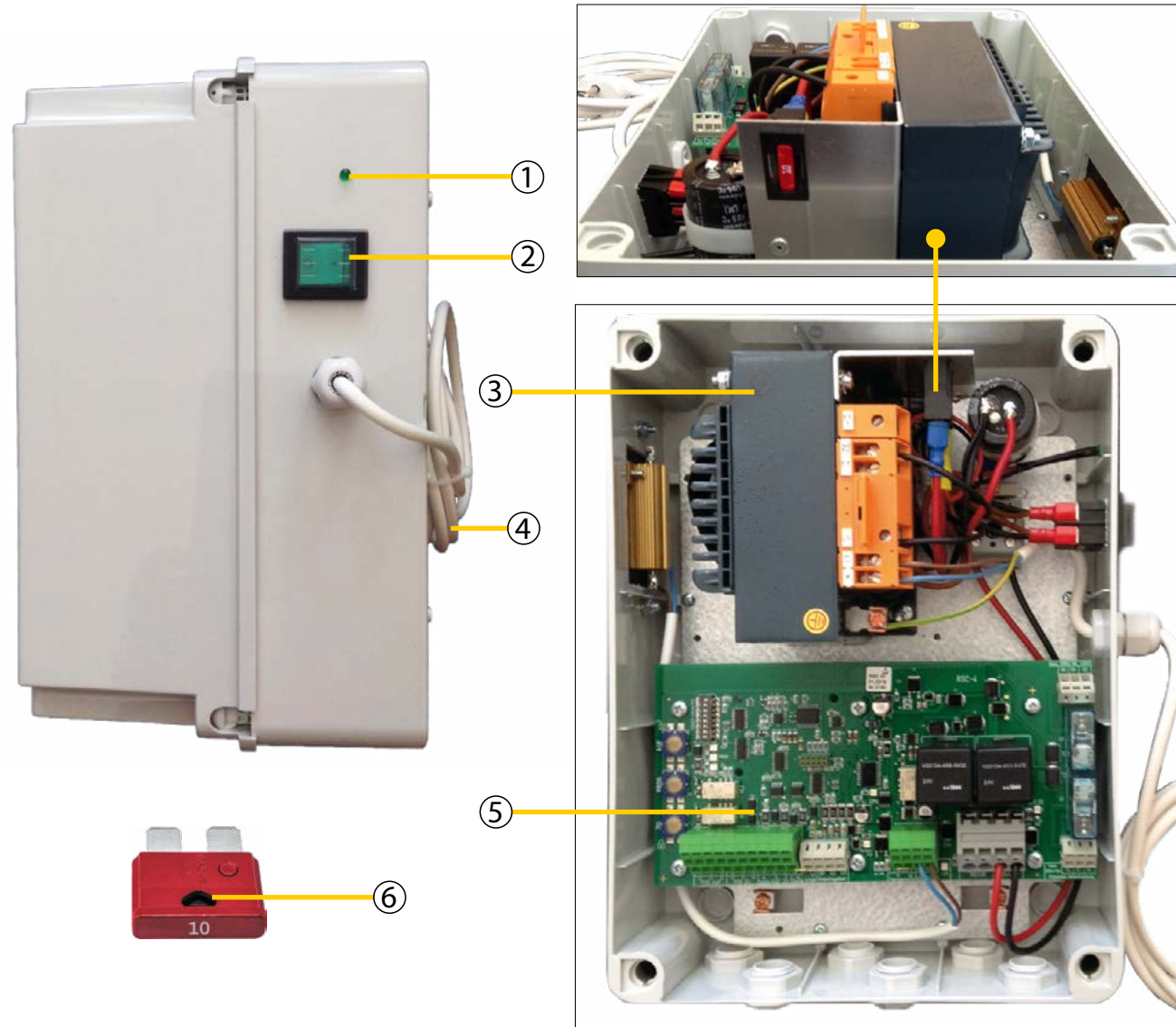
Note: only fix the straps once the limit switches have been configured.

Installation direction ←

5. Control system

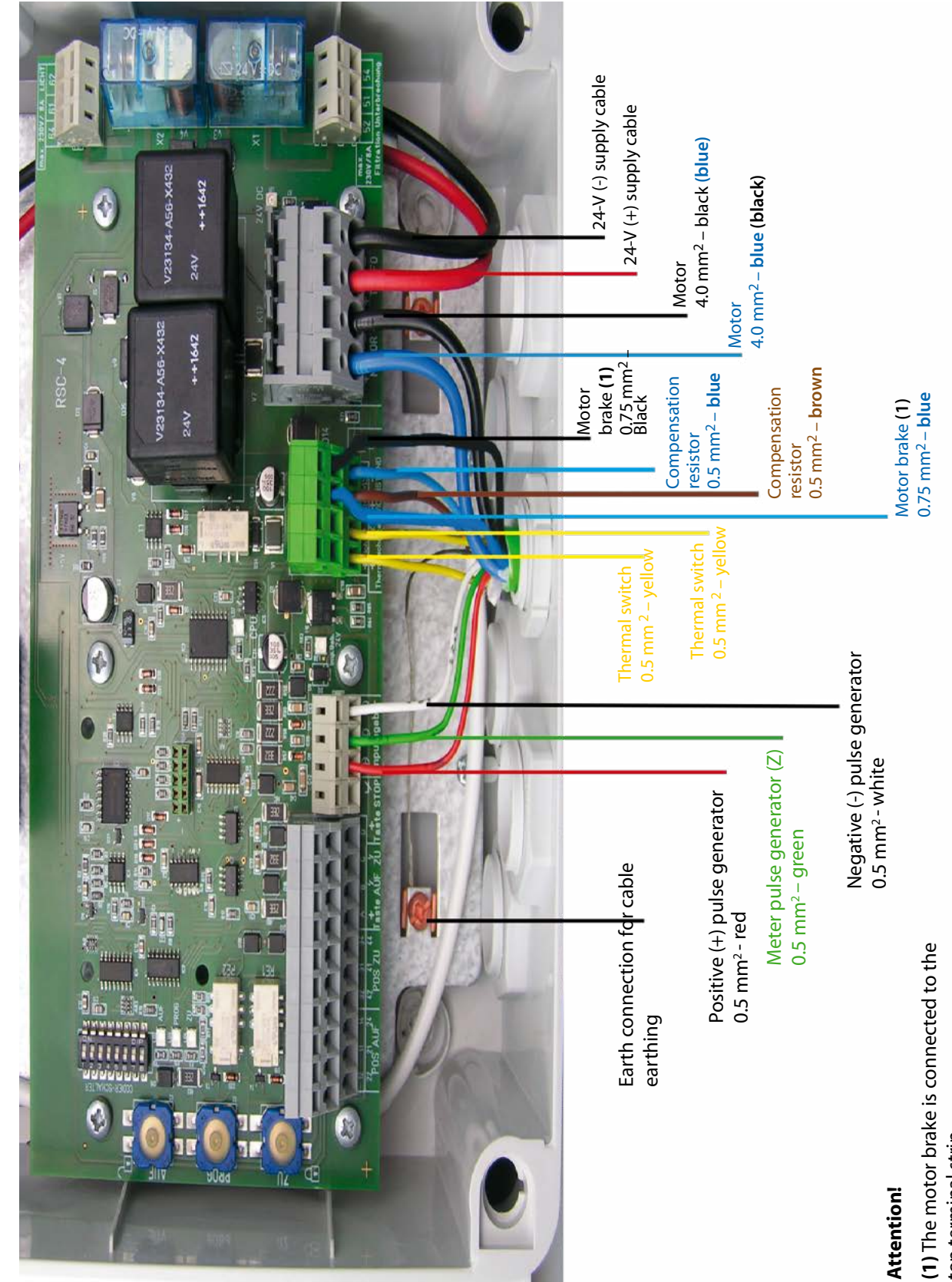
5.1 Transformer and motor fuse

Attention! The electrical connection work must only be executed by an approved electrical specialist. The PCB must be disconnected from the mains for all electrical work.



- ① LED (green) / operation light – 24-volt circuit
- ② LED (green) / mains switch / operation light – 230 volts
- ③ Transformer with motor fuse
- ④ Mains connector of the transformer
- ⑤ Control system
- ⑥ Motor fuse (enlarged – fuse rating may differ)

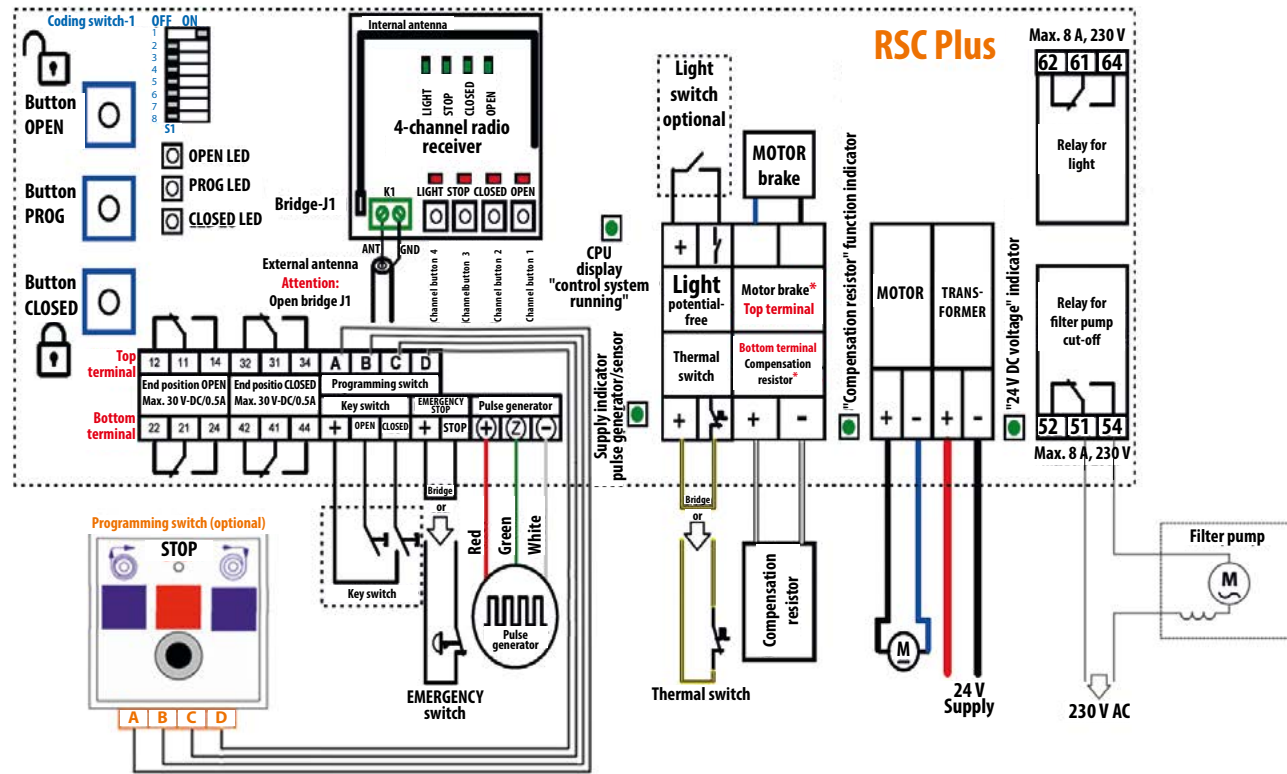
5.2 RSC-4 Plus PCB



Attention!

(1) The motor brake is connected to the top terminal strip.

5.3 PCB operational readiness



Coding switch 1 default settings*:

- *Note: In the **SWISS VERSION** the default setting is ① "OFF"
- | | | | |
|--------------------------------|---|--------------------------------|---|
| ① <input type="checkbox"/> ON | Pushbutton operation/switch operation/dead man switch | ⑤ <input type="checkbox"/> OFF | End position signal "CLOSED" when end position "OPEN" |
| ② <input type="checkbox"/> OFF | End position signal "OPEN" during fault | ⑥ <input type="checkbox"/> OFF | Motor rotation direction inverted |
| ③ <input type="checkbox"/> OFF | End position signal "CLOSED" during fault | ⑦ <input type="checkbox"/> OFF | Operation with control button/transponder |
| ④ <input type="checkbox"/> OFF | End position signal "OPEN" when end position "CLOSED" | ⑧ <input type="checkbox"/> OFF | Reserved (always OFF) |

*Please note: The compensation resistor is connected to the bottom terminal strip; the motor brake to the top terminal strip.

The connection diagram for the filter pump cut-off must always be taken from the operating instructions of the filter system. **Locking via filtration cut-off relay:** The filter system only runs if the roller shutter has reached the OPEN and CLOSED positions. Between the end points, the auxiliary relay is engaged and its contact switches the filter pump off.

Operating states	
Component / LED	Operating state
24-V pulse gen.	Pulse generator LED – permanent green illumination
CPU	CPU LED lights up at second intervals. The pulse indicator signals when motor running
24 V DC	Permanent green illumination; indicates the 24-volt DC voltage supply is present
OPEN LED	Illuminates – OPEN end position was fully reached
CLOSED LED	Illuminates – CLOSED end position was fully reached

Error messages	
LED	Error message
OPEN + CLOSED LEDs illuminate	Control system not programmed
OPEN + CLOSED LEDs flash	Control system in EMERGENCY mode (for EMERGENCY mode, see programming of the control system)
PROG + OPEN LEDs flash	Pulse generator fault or system blocked
PROG + OPEN LEDs flash	Thermal protection input is active
OPEN + PROG + CLOSED LEDs flash	Low voltage

Acknowledging error messages

Press PROG button; end positions are maintained



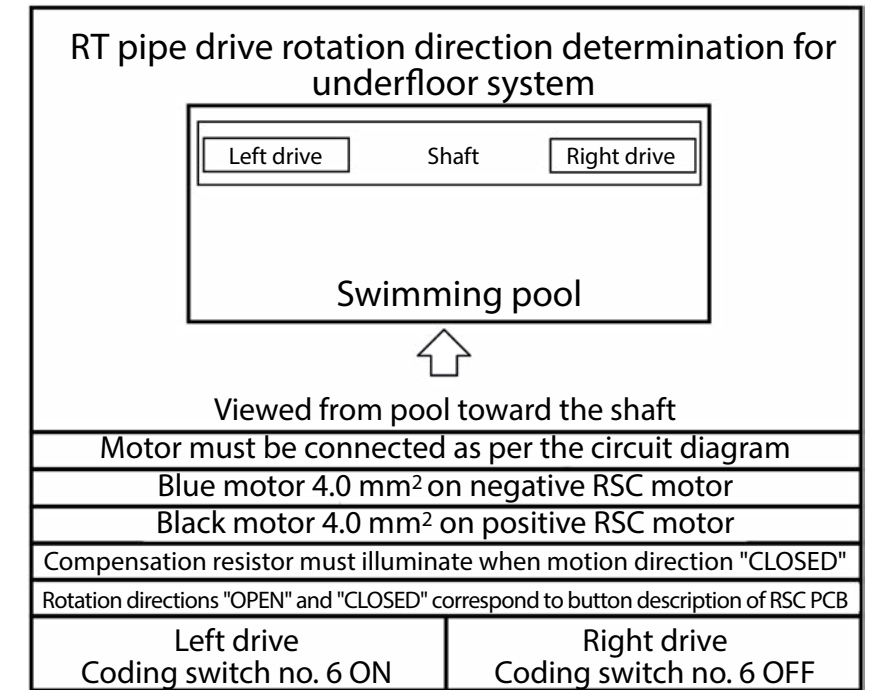
If the end positions are not fully reached, the filter pump does not switch on; there is no circulation.



If the roller shutter has not reached the OPEN or CLOSED position fully, or if a fault occurs, the filter pump is switched on. The level controller poses a risk of flooding.

5.4 Rotation direction

Attention! The electrical connection work must only be executed by an approved electrical specialist. The PCB must be disconnected from the mains for all electrical work.



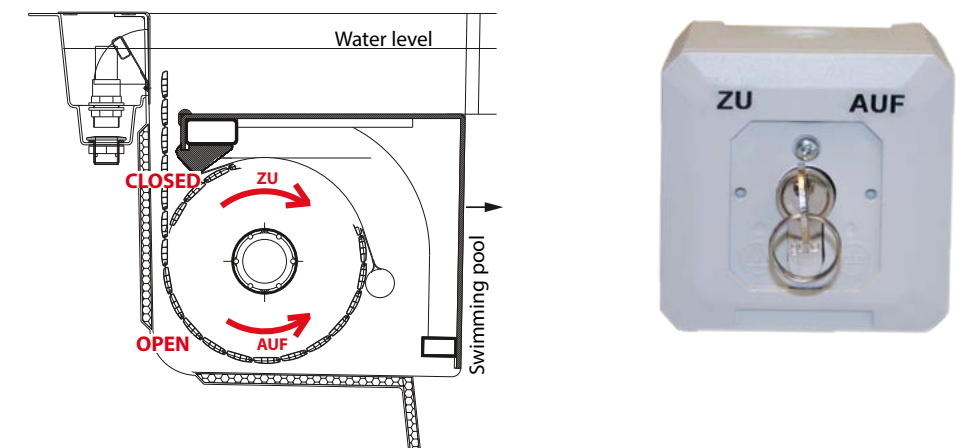
5.4.1 Checking the rotation direction

- **Set key switch to "Closed"** and check the rotation direction of the drive-shaft. This must now rotate as in rotation direction "CLOSED" on the diagram (Figure 1_13).

If this is not the case: disconnect the switch box from the voltage supply and reverse the polarity of the motor connection cable on the terminal (motor +/-). See terminal diagram on pages 17/19. Switch the switch box on again and repeat the procedure.

- **Set key switch to "OPEN"**: The shaft must now rotate as in rotation direction "OPEN" on the diagram (Figure 1_13).

Figure 1_13



5.4.2 Control system programming/ programming both end positions

1. Press all three buttons (PROG first) for approx. 3 seconds; "OPEN" LED + PROG + "CLOSED" illuminate
2. Approach "OPEN" or "CLOSED" end position
3. Press PROG button and then "OPEN" / "CLOSED" to save; LED of the programmed end position goes out.
4. Approach other end position
5. Press PROG button and then "CLOSED" / "OPEN" to save; LED of the programmed end position illuminates; PROG LED goes out; programming completed

5.4.3 Programming one end position

1. Press PROG button (first) and the end position to be programmed for approx. 3 seconds simultaneously; "OPEN" / "CLOSED" LED and PROG illuminate
2. Approach "OPEN" or "CLOSED" end position
3. Press PROG button and then "OPEN" / "CLOSED" to save; LED of the programmed end position illuminates; PROG LED turns out; programming completed

5.4.4 Factory-set, default coding switch settings*

- ① ON Pushbutton operation – switch operation / dead man switch
- ② OFF End position signal "OPEN" during malfunction
- ③ OFF End position signal "CLOSED" during malfunction
- ④ OFF End position signal "OPEN" when end position "CLOSED"
- ⑤ OFF End position signal "CLOSED" when end position "OPEN"
- ⑥ OFF Motor rotation direction inverted
- ⑦ OFF Operation with control button / transponder
- ⑧ OFF Reserved (always OFF)

Switch EMERGENCY mode on/off (attention: manual movement; end positions are ignored)

Hold down the PROG button for at least 30 seconds

*** Note:**

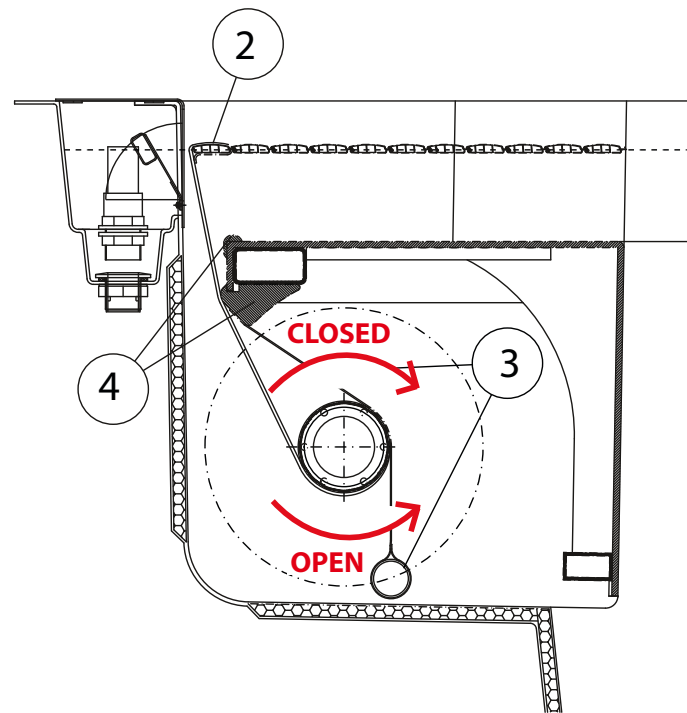
In the **SWISS VERSION**, the default setting is 1 "OFF"

6. System operation**6.1 Settings prior to putting into service**

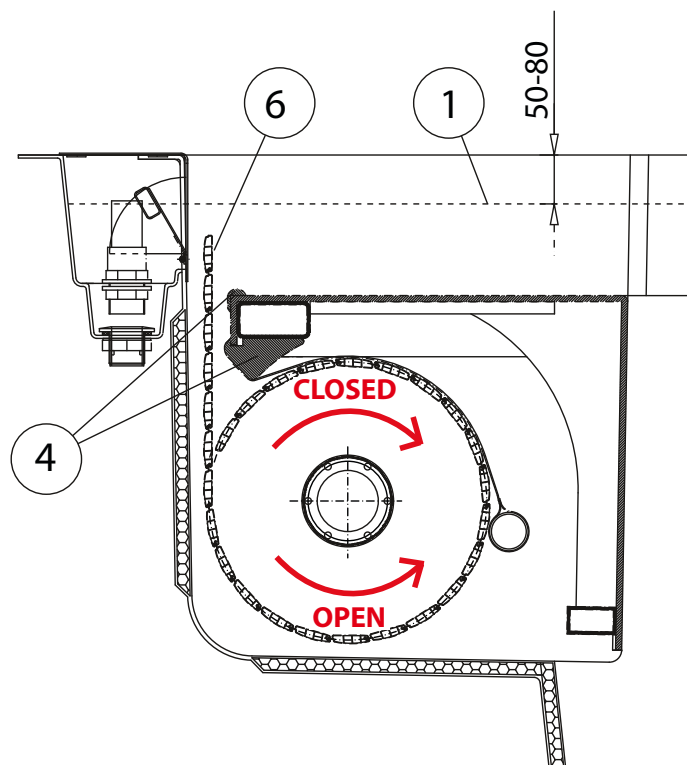
1. The standard working water level is 8 cm below the edge of the pool. The water level can be set higher. In this regard, always make sure that the roller shutter does not get caught under the coping stone when closing the pool. One must pay attention in particular if the first slat is floating on the surface of the water when closing the pool. The Riviera GRP skimmer can work properly up to a water level of 5 cm below the coping stone.
2. When the pool is closed, the last slat is horizontal in front of the skimmer. The skimmer sucks freely below the roller shutter.
Attention: spare slats are included in the delivery. Do not allow them to heat up. Instead, store them at the customers home. Returning them for a credit note is not possible.
3. Hold-down pipe and strap must be installed in the manner depicted as per the diagram in Figure 3_1.
4. The bench is equipped with sliders which prevent the roller shutter from catching on the bench.
5. When opening and closing the pool, be aware that the roller shutter cannot be sucked into the skimmer. Filter pump and roller shutter motor must be interlocked – **the filter pump must switch off and the skimmer be free of suction when the roller shutter motor goes into operation.** This interlocking must be installed on site by a locally licensed electrician.
6. 1–2 slats should remain visible above the bench when the pool is open. There is still approx. 3 cm to the water level then. So, the skimmer can operate properly.
7. The roll up fixture is installed so that the roller shutter moves up vertically when operating and cannot get caught underneath the bench. The profiles on the top head of the cover of rectangular pools are shortened by 10 cm on the left and right sides. This is to prevent the first slat from getting caught laterally under the coping stone when emerging from the water.
8. Attention: when configuring the "Open" limit switch, move the end slat forwards or lift it upwards so that the end straps are reeled taut.

6.1.1 When the pool is closed

Figure 3_1



When the pool is open



6.1.2 System operation

The Thermosafe roller cover is actuated by means of the key switch. The button is held down until the roller shutter has reached the desired position. The limit stop occurs via the automatic limit switch of the motor.

After actuation, the key is to be removed from the key switch to secure the roller shutter against unauthorised use.

The following factors must be observed during operation:

Supervision

Keep the swimming pool under supervision when actuating the roller shutter – **The surface of the water must be calm and free of people and objects.**

Water level

Ensure the level controller and overflow are configured correctly. The water level is to be set so that the roller shutter does not get caught under the coping stone and the skimmer can suck in sufficient water when emerging.

Filter system

The water circulation should switch off when the roller shutter is actuated so that the roller shutter does not attach itself to the skimmer.

Countercurrent systems and other pool devices

The roller shutter must only be operated when countercurrent systems and other pool devices are switched off. Only switch the roller shutter on once the water is completely still.

Attention: If the roller shutter has been manually pushed under the bench at any time, the drive must not be actuated. The bench must then be opened up in the pool. The roller shutter will then "free" itself and the bench can be closed again. This applies in particular if the first roller shutter slats do not emerge over the bench after the pool has been refilled.

The hold-down straps leave streaks behind on the surface of the cover. These are caused by the system and do not constitute grounds for complaint.

7. Care and maintenance

7.1 Winter periods

The roller shutter may freeze either when reeled in or reeled out. However, it may neither be stepped on nor operated in a frozen state. Over winter periods, the roller shutter must be moved onto the pool in a reeled-out condition and the skimmer pipe leading to the channel must be opened. The water level now drops down to the roller shutter edge. The opened skimmer pipe allows excess rainwater and meltwater to flow out into the channel.

The solar cover must never be subjected to direct sunlight without being cooled by contact with water. The profiles must always be protected from direct sunlight whether reeled in in an empty roller shutter box or for installation. Permanent deformations can result after just a short time without water cooling.

Temperature (air and water)

The impact resistance of the PVC profiles drops markedly when temperatures fall. They must not be stepped on in a frozen state.

Hail

The PVC roller shutter profiles are indeed impact-resistant at a normal temperature, but only hail-resistant to a limited degree. Reeling the cover in is advised if hail fall is heavy.

Condensation in the profile

Humid air is present in the profile chambers at the moment of assembly. For this reason, condensate inevitably forms in the event of temperature differences to the water on the warmer side, meaning inside the profile. This has hardly any influence on the transmission rate of the profile. Over the years, the profile will become slightly milky white, as a result of which the thermal transmission will recede accordingly.

Since every roller shutter is the dirt trap of the swimming pool in garden pools, and also limescale and algae deposits can arise in indoor pools, every roller shutter shell should be cleaned at least once to twice per year. This applies in particular to solar roller shutters on which algae deposits remain clearly visible on the underside, but especially in the profile hinges.

7.2 Bathing water treatment

Limescale deposits and algae build-up on the roller shutter profiles cannot be avoided.

The best requirement for minimum algae and limescale deposits is optimum treatment of the bathing water in the following ways:

1. Precise maintenance of the pH-value balance to maintain the limescale/carbon dioxide equilibrium so as to prevent lime precipitation.

Carbonate hardness in dKH	pH-value balance
15	7.25
12	7.5
10	7.7
7	8.0
5	8.2

2. Supply of a constant chlorine surplus of 0.3–0.6 ppm, as in public pools.
3. Constant circulation of the pool water in the case of solar covers; but at least from sunrise to sunset.
4. Configuration of the inlet nozzles which ensures that a current develops underneath the roller shutter.
5. Open and close the roller shutter regularly to prevent encrustations.

If the recommendations cited above are complied with, algae and limescale deposits on the difficult-to-clean underside of the roller shutter can be prevented to a great extent.

7.3 Cleaning the roller shutter

Unavoidable on all swimming pool covers, by contrast, is the soiling of the top side: through dust and rust from the environment on the one hand, with limescale – which crystallises due to the water evaporating in strong sunlight – on the other. Unfortunately, these deposits cannot be easily washed off and instead must first be chemically dissolved using acidic swimming pool cleaning agents (such as Herli Rapid) and then rinsed off.

Roller shutter cleaning should be performed with covered skies – meaning in the absence of intense sunlight – by 2 people.

The following procedures are tried and tested:

1. The entire surface of the roller shutter shell must be moistened with acidic swimming pool cleaning agent. A 5-litre pressure sprayer for pesticides is especially well suited for this purpose, in which the cleaning agent is dissolved and diluted as per the instructions.
2. **How it works:**
The reeled in roller shutter is reeled out slowly (one person at the key switch) and sprayed by the other person with the cleaning agent at the same time, who is standing behind the swimming pool.

3. Reel the roller shutter back in piece by piece and in doing so
 - a. clean it mechanically with a soft brush,
and
 - b. spray it down with a pressure washer, especially the "groove and tongue joints" of the individual slats.

7.4 Cleaning the roller shutter shaft

All the dirt and cleaning agent, especially the now-dissolved limescale, will then be in the swimming pool water. It is therefore recommended to drain the swimming pool water after cleaning the roller shutter; also to clean the pool and roller shutter box and then to perform a refill with fresh water.

In the roller shutter shaft, the dirt which falls on the roller shutter is also drawn into the roller shutter shaft during reeling-in and is drained here. The roller shutter shaft is fitted with jet nozzles which ensure a current of filtered water and also ensure that the majority of the deposits are also flushed back into the pool. For this purpose, a 10-cm-high connection opening running across the entire width of the pool is located at the base of the shaft, leading toward the pool. The dirt flushed into the pool can be collected seamlessly here using a pool floor vacuum cleaner or cleaning robot.

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