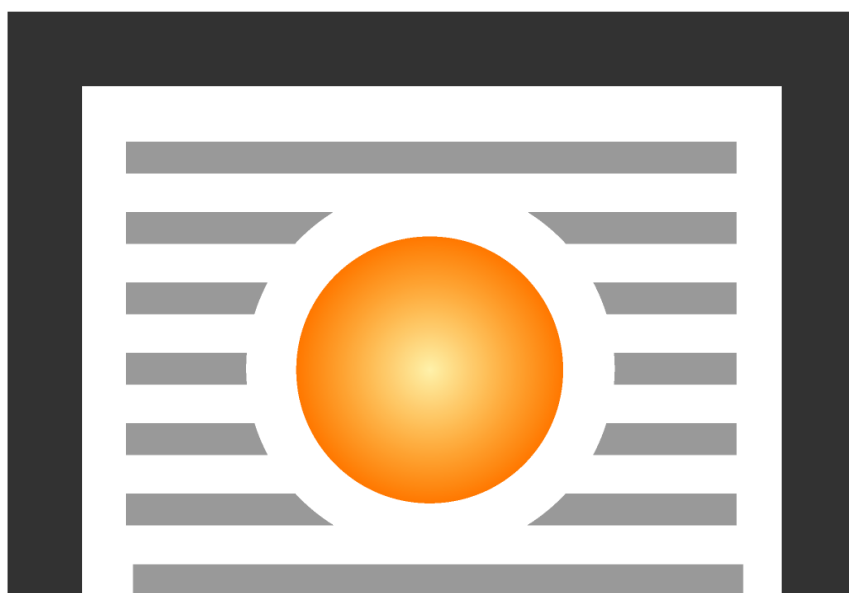


Fire damper for material transport



Model FIRESAFE R90 & K90

Assembly and maintenance manual



SAFE • VENT®



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1. Safety information

1.1 General

Read the following pages attentively. You will be given valuable information about the FIRESAFE K90/R90 fire-protection lock which you have acquired. Before the device is delivered, it is subjected to a quality check. The fire-protection lock is opened and closed **100 times**. Only if this control is successful is the device packed and delivered.

1.2 Delivery

Upon or immediately after delivery, check whether any transport damage is visible. Check whether all the screwed-on components (motors, connections etc.) are fitted tight. If the packaging is strongly damaged, establish which parts have been affected and get in touch with the manufacturer straight away.

Use the delivery note to check whether all the parts have been completely delivered.

1.3 Intermediate storage

If the fire-protection lock is put away for some time, the following points must be observed at all costs:

- The device may not be subjected to the influence of the weather. It must be protected against rain, snow or bright sunshine.
- Nothing may be placed or stored on the package.
- The packaging unit and the accessories inside the package are to be protected in such a way that they cannot be damaged by parts falling down.

1.4 Installation

Installation of the device is very simple. Nevertheless, the manufacturer's requirements must be complied with. If the installation is done ignoring the instructions, unexpected complications can occur at a later stage. In particularly severe cases, warranty is forfeited. If anything becomes unclear before or during the assembly, get in touch with the manufacturer without delay.

Each FIRESAFE K90/R90 is supplied on a special pallet. The housing is covered with a cardboard sleeve. The delivery unit is secured onto the special pallet with steel or plastic clamping belts (see Fig. 1).

1.5 Checking the fire-protection lock

It is absolutely necessary that a trial run is held at the end of installation. The trial run can be done by a qualified skilled worker. The necessary connection plans for the motor(s) can be seen under point **10 Data sheets**. The check is necessary as complications can arise during installation by ignoring the manufacturer's requirements. They must then be rectified immediately or before commissioning of the plant at the latest. The manufacturer has checked each fire-protection lock for flawless function before delivery from the factory. Each FIRESAFE K90/R90 has been opened and closed **100 times** before delivery. If a fault in function is established during this check, the device is blocked from delivery. The check of function on installation only entails correct opening and closing of the FIRESAFE K90/R90. For this, the voltage in question (24 or 230 Volt) is applied to contacts one and two. At terminal two, the phase (230 VAC, 24 VAC) or the plus pole (24 VDC) is screwed on. The neutral conductor (230 VAC, 24 VAC) or the minus pole (24 VDC) is connected to terminal one. The bridge between terminal three and four may not be removed. Further, points 4.2 or 4.3 for electrical connection must be complied with. As soon as the motor(s) is/are provided with voltage, the FIRESAFE K90/R90 starts to open its cross-section. If the voltage is removed, the closing hasp moves into the cross-section and closes the diameter 100%. When checking and in the later operation of the plant, please ensure that the exhaust air fan is only in operation when the cross-section is 100 % open. If a technical problem occurs in this check, then try to find the error under point **5 Cause of faults and rectification** and possibly to rectify it. If the fault cannot be rectified, get in touch with the manufacturer.

1.6 Standstill time until commissioning

If installation has been done according to the manufacturer's requirements and the device works without problems, it must be protected against possible damage until commissioning. There must be assurance that parts dropping cannot fall onto the device. If the device is fitted on the floor or on the ceiling, please ensure that no dirt (sand, mortar, stones etc.) can fall into the channel or the tube. If this does happen, damage to the special closing hasp cannot be ruled out.

1.7 Seals and screws

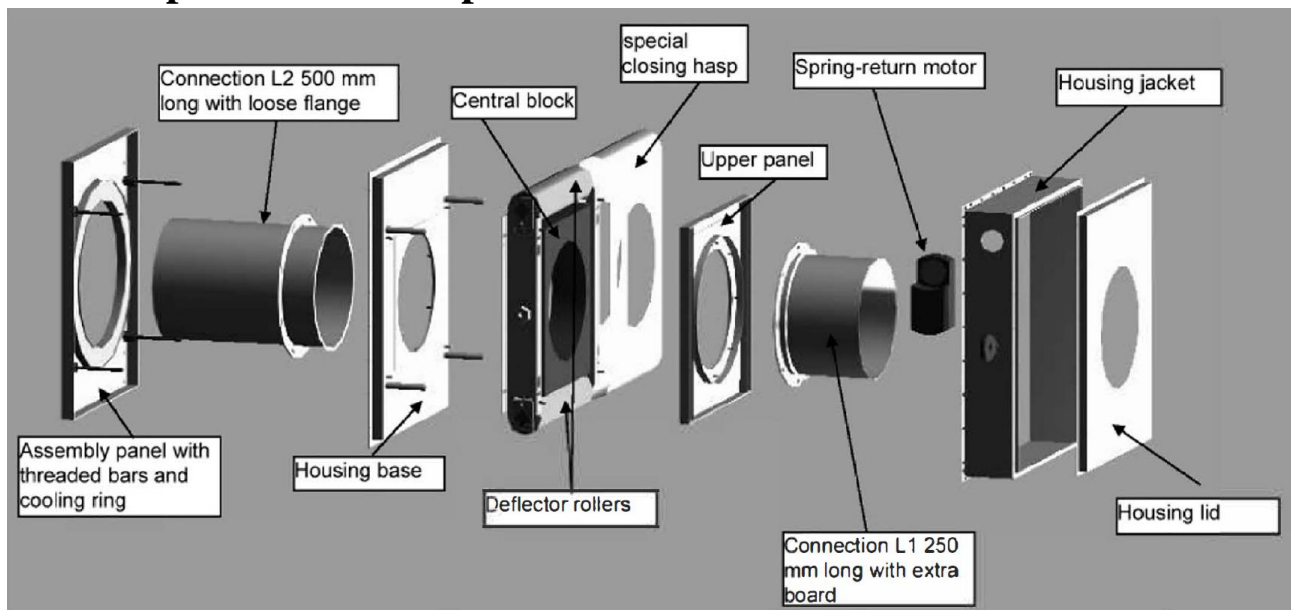
In the FIRESAFE K90 and R90 devices, special ceramic fibre seals are used. They can break under slight strain. For this reason, it is necessary that all the work occurring with the seals is done carefully. If a seal is destroyed in assembly or repair work, it is to be replaced by a new one. These seals can be purchased from Safevent. The screws are standard DIN parts. You can buy them yourselves or also get them from the manufacturer.



ATTENTION! FIRESAFE R90 installation.

We advise you to install the Firebarrier FIRESAFE R90 always horizontal (cylinders are in a vertical position) by mounting on a wall.

2. Description of the components



3. Installation instructions

The FIRESAFE K90/R90 is not connected with all the screws upon delivery. This particularly affects the screwing of the housing lid with the housing jacket and the extra board of connection L 1, as well as the threaded bars (see Fig. 4). The accessories necessary for assembly can be found in a box in connection L 1 (see arrow). Remove the packaging around the support and remove all the parts which can be found in it.

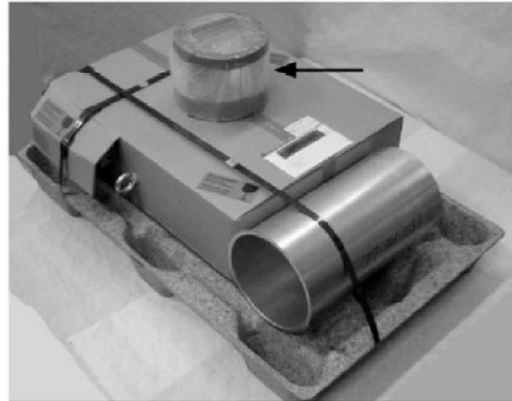


Fig. 1

Now remove the packaging of the device and check that the FIRESAFE K90/R90 is intact and whether there is transport damage. If you find any transport damage on the FIRESAFE K90/R90, you must report it straight away. Take an M5 hexagon socket screw key and open the screw connection on the corners of the device. Place the screws with the others and keep them. You need these screws for later assembly.



Fig. 2

After loosening the four screws with which the housing lid has been fitted for transport purposes, the housing lid can be removed from the housing jacket. Make sure that the seal around tube connection L 1 is not damaged (see arrow).

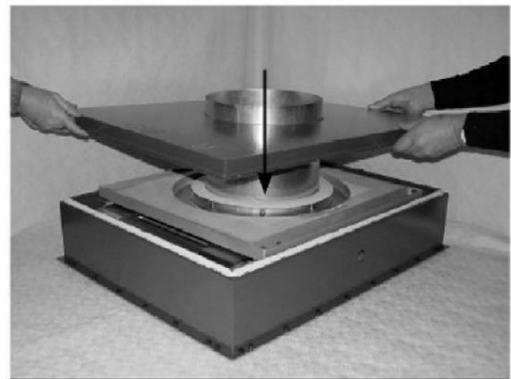


Fig. 3

After the housing lid has been removed, the upper panel is free. The panel is screwed on at a number of places with self-locking nuts, next to which there are M10 threaded rods manifesting a slot. The threaded rods are loosened by turning the nuts out. The adjusting screws arranged on either side of the fitting bolts may not be moved in the assembly ***under any circumstances.***

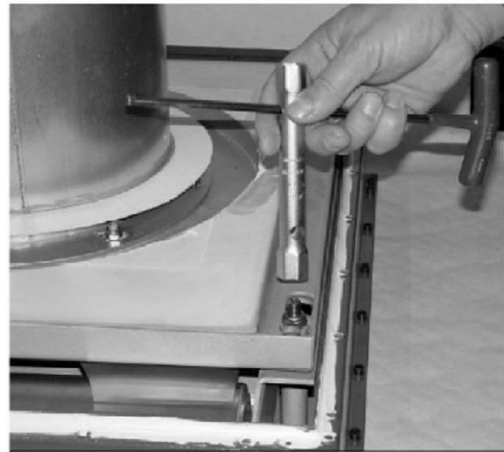


Fig. 4

Using suitable round loops, raise the FIRESAFE K90/R90 (see Fig. 5). The housing with the central block and the base plate is removed from the assembly panel. The assembly panel remains on the base. In all the lifting and assembly work, the main weight of the device must suspend on these transport.

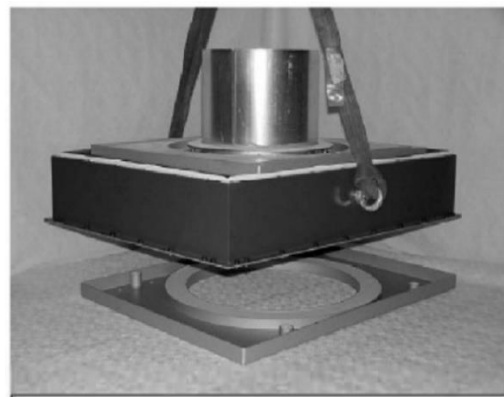
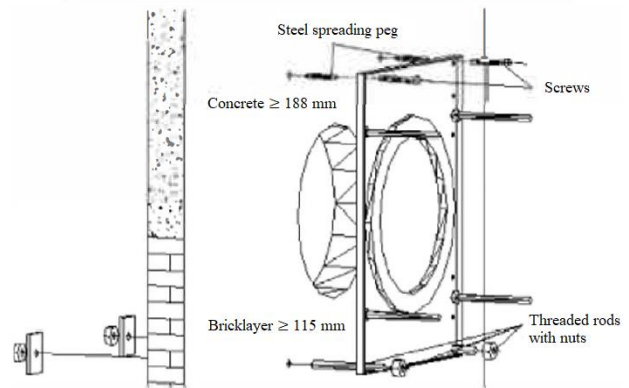


Fig. 5

After removal of the housing jacket, the assembly panel with the cast-in sealing ring and the sealing disk is freely visible. The assembly panel is now fitted on the body with the suitable fitting material. The bores above and below the inserts are provided for this purpose. For sizes 01 and 02, at least four fitting points are to be provided and at least six for size 03. If the FIRESAFE K90/R90 is added to a concrete or foam mortar wall, make sure that the fitting material has general building supervision admission.

The precise place for the bores for the fittings in the assembly panel can be seen from the drawings under **9 Assembly panels.**



When fitted to the body, the assembly frame must be absolutely flat. If this check is not made, functional disturbances can result at a later stage. We recommend checking this area and correcting it if need be before adding the assembly panel.

On the back of the housing base, the nuts of the screwed-on steel flange are to be removed. After loosening the nuts, pull the flange off the housing base. Make sure that the sealing is not damaged. A damaged sealing ring leads to leaks during conveying operation.

⚠ ATTENTION! *A damaged seal must be replaced by a new one before assembly.*

The steel flange removed according to Fig. 7 is pushed over the loose connection L2. The connection with the flange is placed on the rear of the housing base (from which the flange was removed).

The added pipe connection with the flange is pushed against the sealing over the stud bolt with the nuts on the back and screwed on. Make sure that the screwing is done across corners and evenly. In addition, make sure when screwing on that the two diameters (connection and housing base) do not manifest any offset.



Fig. 6

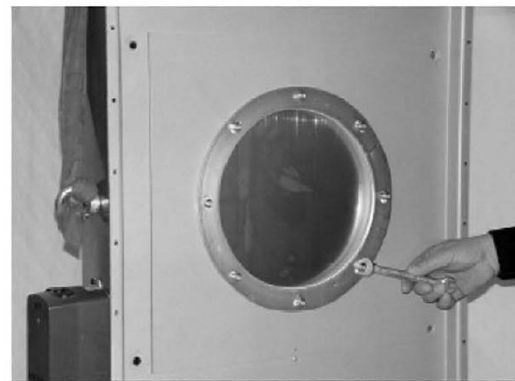


Fig. 7



Fig. 8

The supplied M10 threaded rods are to be screwed into the bushes provided on the assembly frame screwed on the wall, ceiling or floor. The threaded rods must be screwed into the Jack at least 20 mm. Make sure that the small black disks are complete and undamaged. You must be bounded in each Jack, in which the threaded bar is screwed, and a little over the edge of the jack exceed. Pushing it afterwards the fire-protection over the threaded bars on the assemble frame.

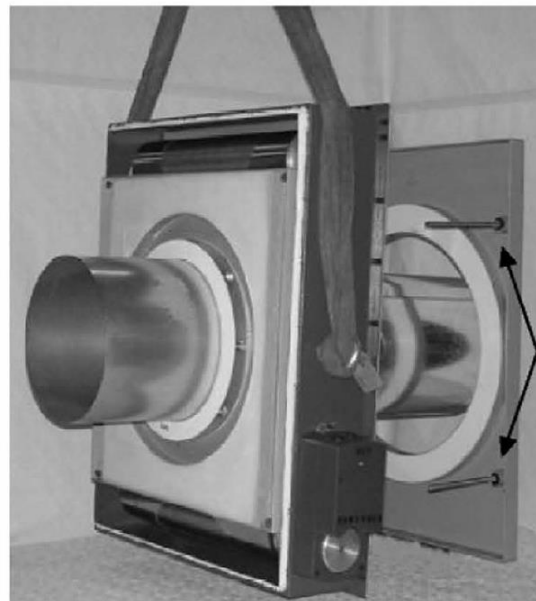


Fig. 9

As soon as the device has been completely placed on the assembly frame, the tightness of the stud bolts is to be checked once more with a screwdriver. After that, take the M10 lock nut out of the box. Now, the device is screwed onto the assembly frame with the M10 nuts.

⚠ ATTENTION! The nuts are to be tightened with a torque of 5 - 7 Nm. If they are tightened more strongly, a disturbance in function of the device can result.

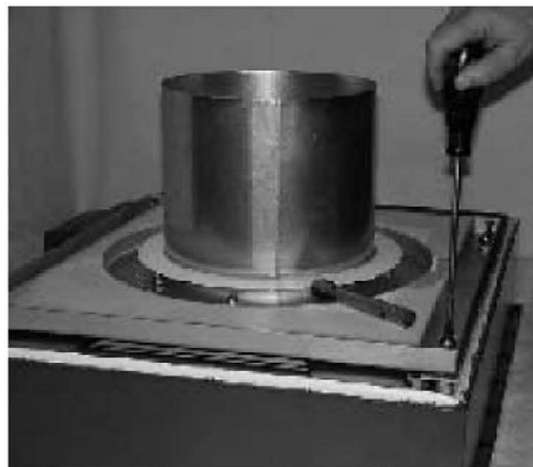


Fig. 10

Now take the lid and push it over tube connection L 1. Make sure that the seal on the board is not broken or defective. If the seal is defective, replace it with another original seal. In addition, the seal around the housing must also be intact. Take the screws and screw the lid and housing together. Tighten the M 5x16 screws across corners. The screws may only be tightened by hand (no rechargeable screwdrivers).



Fig. 11

After the lid has been positioned and screwed light all round, the self-tapping screws with hexagonal heads are screwed in around the pipe connection.



Fig. 12

Finally, the ring bolts are removed from the device. Take the disks provided for this with the seals and close the openings of the ring bolts. These seals may also not be broken or defective. To screw in, use the self-tapping screws with the Philips head.

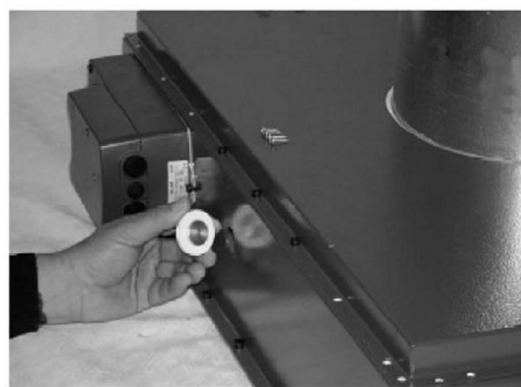


Fig. 13

4. Electrical connection

4.1 General

A distinction is to be made whether a K90 or R90 version is being used. The respective electrical plans are enclosed separately. If the connection is to be done differently, contact Safevent. Any amendment of the connection must be agreed with the manufacturer of the FIRESAFE K90/R90. No external plans from the individual manufacturers may be used without agreement with Safevent or its supplier.

⚠ If a deviating electrical installation is done without prior agreement with Safevent, warranty shall be forfeited.

The capillary tube sensor(s) to be used is/are checked for function after correct connection. ***This check may not be made with a naked flame (lighter, gas burner, etc.).*** The simulation of the triggering of a sensor must be done with boiling water.

4.2 Size 01 and 02 (nominal width 100 to 200 I 224 to 355)

As a function of the volt figure, the correct voltage is to be connected to the return motor.

4.3 Size 03 (nominal width 400 to 630)

As a function of the volt figures, the correct voltage is to be connected to the return motors.

The two motors are to be connected **parallel**.

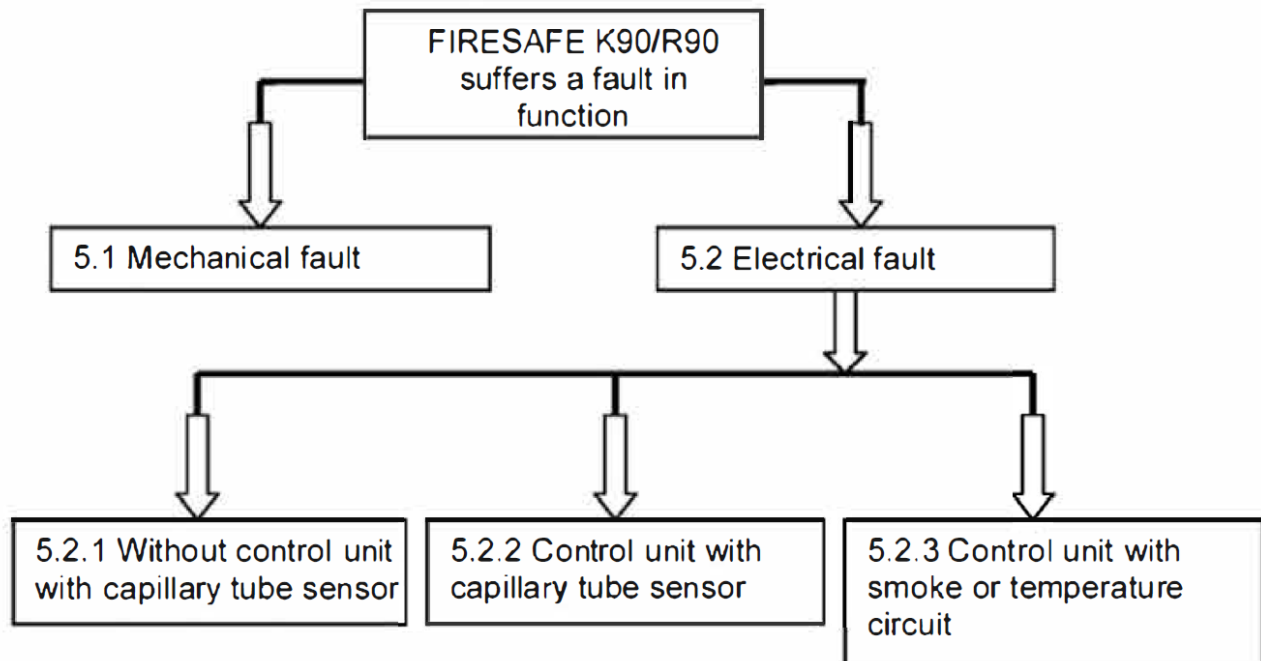
5. Cause of faults and rectification

If a fault results despite the correct installation of the fire-protection lock, please proceed as follows. In order to enable quick and effective rectification of faults, there must be a separation between the electrical

installation and mechanical installation (see sequence diagram below). First, there is a description of how you can rectify a mechanical functional fault. Then, reference is made to the electrical installation.

⚠ Under no circumstances should you try to open the FIRESAFE K90/R90 without voltage via the motor(s). This leads to a change in the works settings. In all the following points, ensure definitively that the exhaust air ventilator has been switched off.

Sequence diagram of fault rectification



5.1 Mechanical fault

In the check, it is seen that the motor(s) turn(s) a little and then stop. In this way, the passage does not open or only incompletely. If this situation is established, go through the individual points and try to open the fire-protection lock with the help of the motor(s) – depending on the nominal width of the FIRESAFE K90/R90.

- ➔ Has the device been fitted according to the manufacturer's instructions? According to admission decree Z-41.3-576 or Z-19.17-1180, the device may only be fitted to the wall, ceiling or floor. If there is a different installation situation (than stated in the general building supervision admission), the weight of the FIRESAFE K90/R90 results in a torque, e.g. on a suspended construction. Due to the torque, the tubing cannot be connected to the fire-protection lock free of load. Due to the connection of the incoming and outgoing tubing, a bracing is brought into the device via connections L 1 and L2. Support the construction in order to intercept the torque.

⚠ Attention: It there is a deviation from the general building supervision admission, Z-41.3-576 or Z-19.17-1180, individual approval is necessary in specific cases.

- ➔ Check the special closing hasp from both sides as to whether it is damaged or soiled. Removal the soiling with a soft object (no sharp or pointed objects to be used). If deformations can be seen, get in touch with the manufacturer.
- ➔ If an installation comprising fire-protection lock and calcium silicate panels has been used, the calcium silicate cover may not connect onto the FIRESAFE K90/R90 (housing lid, jacket) under any circumstances. Remove the cover and check the function. If the FIRESAFE K90/R90 does not open 100%, get in touch with the manufacturer.
- ➔ Check whether the incoming and outgoing venting lines are connected to the tube supports of the fire-protection lock **free of tension**. No radial or axial force may be exercised on tube connections L 1 and L2. If slide nipples are part of the scope of delivery, they may not be screwed together with tube connections L 1 and L2 of the FIRESAFE K90/R90.

- ➔ Check whether the ventilator is switched off in opening and closing.
- ➔ Remove the housing lid and check whether the M 10 lock nuts (see Fig. 10) have been tightened according to the manufacturer's instructions.
- ➔ Remove the motor in order to see whether the special closing hasp can be moved easily. For a detailed mode of procedure, please observe point **6 Dismantling and re-assembling a spring-return motor**. Try to turn the deflector rollers with the square shaft. They must move easily.
Note: Before the motor(s) is/are added in the manufacturing factory, the special closing hasp can be moved by turning the rollers by hand.
- ➔ Check whether the FIRESAFE K90/R90 has been fitted to a flat wall. Masonry or concrete walls must not have any protrusions or fillings behind the assembly panel (see note Fig. 6). If the fire-protection lock has been fitted to an uneven wall, it must be completely dismantled from the wall. Process the planned area accordingly and fit the device on a 100% flat wall according to instructions.

5.2 Electrical fault

The motor(s) do(es) not turn or only a little. In this way, the passage does not open or only incompletely. If this situation is established, go through the individual points and try to open the fire-protection lock with the help of the motor(s). Remember that size type 03 (NW 400 to 630) is equipped with two spring-return motors which must be actuated in **parallel**. The capillary tube sensor must also be connected parallel. If no sensor is used, a bridge must be inserted between contacts 3 and 4. **The sequence diagram of fault rectification** shows the point which is correct for your plant design.

5.2.1 Without control unit with capillary tube sensor TLR-721100 °C

- ➔ Check correct connection of the voltage supply.
- ➔ Make sure that the motor(s) is/are supplied with the correct voltage. The voltage required can be seen on the name plate directly next to the motor(s).
- ➔ Check whether the capillary tube sensor has been connected according to the manufacturer's instructions.
- ➔ Try to simulate a triggering with **boiling water**. **You may not do the simulation with a naked flame (e.g. a lighter)**. If a source of heat other than boiling water is used, the capillary tube sensor will be damaged and must then be replaced by a new sensor. As soon as the FIRESAFE K90 closes, take the sensor out of the water and wait for about a minute. After that, press the red reset button on the sensor in order to open the fire-protection lock again.
- ➔ Remove the sensor from contact terminals 3 and 4. Insert a bridge and try to open the fire-protection lock via the motor(s). If flawless function can be seen here, connect the sensor once again and try once more. If the fire-protection lock does not work yet again, order a new capillary tube sensor from the manufacturer.

5.2.2 Control unit with capillary tube sensor TLR-72/100 °C

- ➔ Check correct connection of the voltage supply.
 - ➔ Make sure that the required voltage is connected to the control unit. The required voltage is 230 Volt.
 - ➔ Check whether the wiring has been done according to the manufacturer's diagrams.
⚠ If electrical wiring which does not match the plans of the manufacturer is found, warranty shall be forfeited in the event of damage.
If no diagrams are available, you can get them directly from the manufacturer of the FIRESAFE K90/R90
 - ➔ Remove the capillary tube sensor from contact terminals 6 and 7. Insert a bridge. Try to open the fire-protection lock by pressing the reset button on the control unit. If the fault on the control unit cannot be rectified, get in touch with the manufacturer.
 - ➔ If proper functioning can be seen, connect the sensor once more and try again. Try to simulate a triggering with **boiling water**. **You may not do the simulation with a naked flame (e.g. a lighter)**. If a source of heat other than boiling water is used, the capillary tube sensor will be damaged and must then be replaced by a new sensor. If the fire-protection lock again fails to work, order a new capillary tube sensor from the manufacturer.
-

5.2.3 Control unit with smoke or temperature circuit

- ➔ Check correct connection of the voltage supply.
- ➔ Make sure that the required voltage is connected to the control unit. The required voltage is 230 Volt.
- ➔ Check whether the wiring has been done according to the manufacturer's diagrams.
⚠ If electrical wiring which does not match the plans of the manufacturer, is found, warranty shall be forfeited in the event of damage.
If no diagrams are available, you can get them directly from the manufacturer of the FIRESAFE K90/R90.
- ➔ Remove the sensor from contact terminals 4-7. Insert a bridge between contacts 6 and 7. Try to open the fire-protection lock by pressing the reset button on the control unit. If the fault on the control unit cannot be rectified, get in touch with the manufacturer.
- ➔ If you have carried out all the points properly and the FIRESAFE K90/R90 does not open, get in touch with the manufacturer.

6. Dismantling and re-assembling a spring-return motor

Note: From size 03 upwards, two spring-return motors are fitted. With this size, both motors of the FIRESAFE K90/R90 must be dismantled and refitted.

Apply the required voltage to the device and wait until the FIRESAFE K90/R90 does not open any further. Loosen and remove the three screws and pull the motor off the device in the direction of the axis. Make sure that the seal to be found between the motor and the housing jacket is not damaged. Put the seal to one side. After the motor(s) has/have been removed from the device, switch the voltage off.

Until the final refitting of the two motors in size 03, the following steps are only to be carried out on one motor.



Fig. 14

On the back of the motor, you see the square shaft and a locking ring. This ring fixes the drive bush so that it does not fall out of the motor. The hexagon cap screw in the shaft prevents the square from slipping out of the drive jack. Loosen the screw and push the shaft out through the drive jack. Put the motor to one side.



Fig. 15

Take the shaft and put it into the square of the deflector roller. You now need an open-jawed wrench with a jaw span of 13 mm. Now try to move the shaft and the deflector roller. As shown in Fig. 16, no great force is necessary. If the special closing hasp is difficult to move or does not move at all, contact the manufacturer. At the end of the manual check, put the FIRESAFE to 100% open. Check the position by looking into pipe connection L 1.



Fig. 16

Proceed as follows for assembly and dismantling of the motor:

Use a screwdriver to loosen the black locking ring on the back of the motor (Fig. 15). Take the drive jack out of the motor and put the square shaft back into the drive jack (Fig. 17 right). Screw the Allen screw into the square shaft. Fix the motor on the housing jacket with the three screws and apply the voltage to the motor. Wait until the motor has stopped turning.



Fig. 17

Take the drive jack with the square shaft and put it into the motor. Insert the shaft into the deflector roller of the FIRESAFE K90/R90. Check once again, that the fire-protection lock is 100% open by looking into pipe connection L 1. It need be, correct the position of the closing hasp by turning the drive jack. After that, push the square shaft with the drive jack into the spring-return motor. When you have pushed the large disk right into the motor, loosen the three screws and remove the motor with the square shaft from the housing jacket. Make sure that the drive jack does not slip out of the motor when pulling the motor off and in the following work steps.



Fig. 18

On the reverse of the motor, now push the locking ring into the groove of the drive jack. After that, place the seal on the underside of the motor and put it back onto the housing jacket. Here too, make sure that the FIRESAFE K90/R90 is 100% open and the motor has been completely lifted. Screw the spring-return motor on again and check the function of the fire-protection lock by a number of trial runs.

For size 03, both motors must be screwed on to the housing jacket.



Fig. 19

7. Release mechanical bracing

At the start of point 7 "Release mechanical bracing" and 8 "Change the special closing hasp" we draw your attention to the fact that this work may only be done with the approval of the manufacturer. If you proceed without prior agreement with Safevent the warranty is forfeited immediately.

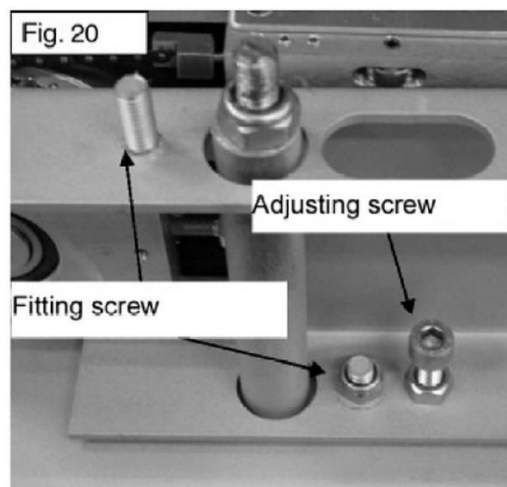
If a disturbance in function is established and the suggestions made under point 5.1 **Mechanical Fault** have not contributed to rectification, you can rectify the fault in function by changing the factory settings.

For this, you must gain approval from the manufacturer before the intervention in the fire-protection lock.

If you proceed without prior agreement with Safevent, the warranty is forfeited immediately. In the following points, you must make absolutely sure that no parts of the body protrude into the closing area when checking the closing procedure by the motor(s). The bores in the upper panel and the central block are arranged mirror-inverted. If parts have to be removed, ensure before dismantling that the parts are not put in the wrong way round in re-assembly.

7.1 Fitting and adjusting screws

On each fire-protection lock, there are fitting and adjusting screws (see Fig. 20). The adjusting screws can be clearly recognized as hexagon socket screws with a lock nut. In sizes 01 and 02, four screws exist for each size, six screws for size 03. There are MS self-securing nuts in the immediate vicinity. These are used on the one hand to fix the central block to the housing base, on the other hand to fix the upper panel to the central block. The adjusting screws are needed to set the gap in which the closing hasp moves. ***These screws may only be moved in agreement with the manufacturer or by trained personnel.*** If these screws are moved clockwise, the gap for the special closing hasp increases. ***If the screws are moved anti-clockwise, the locking of the screws is loosened and a complete resetting is necessary.***



7.2 Releasing bracing

- ➔ Loosen the connection of the tube line with tube connection L 1.
- ➔ Remove the housing lid from the device. For this, loosen the circumferential screws (see Fig. 2). Then push the lid over the tube connection L 1 and remove it from the device (see Fig. 3)
- ➔ Loosen the upper panel by loosening the nuts from the fitting screws. Try to close the device with the help of the motor(s) by switching the voltage on or off. However, if the device still does not close or open after loosening the upper panel, skip the following point and go straight on to the point after that.
- ➔ If the closing process is done properly, turn the adjusting screws 90° to the inside (to the right). Tighten the upper panel again by tightening the nuts of the fitting screws. Try a repeated function check. If there is no alteration of the closing process, repeat the process from the start.

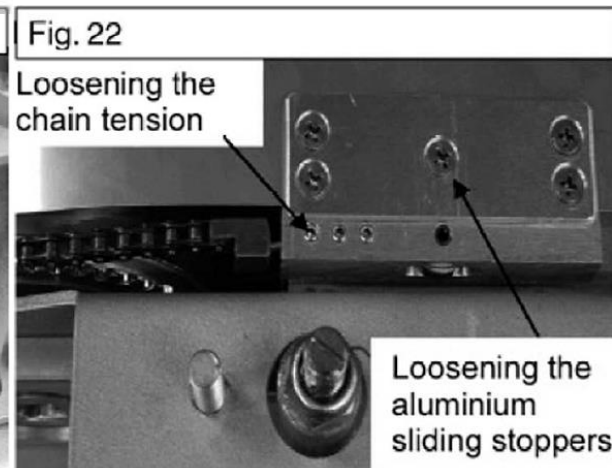
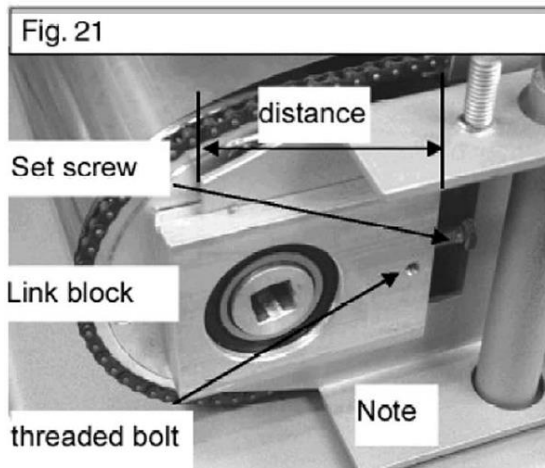
- ⚠ Attention: the gap from which the special closing hasp comes out (upper panel and central block; see diagram: description of components) may not be more than 5 mm around the radius.** If the distance has reached the limit of 5 mm and no improvement of the closing function of the FIRESAFE K90/R90 has taken place, get in touch with the manufacturers straight away.
- ➔ If the special closing hasp does not move after the loosening of the upper panel, take the following steps. Completely loosen the nuts from the fitting screws and remove the upper panel from the central block.
 - ⚠ Attention: mark the position of the panel beforehand. It must be put back in again exactly as it was removed!**
 - ➔ Take a matching socket spanner, push it through the longitudinal hole on the **side pointing away from the motor** and loosen the fitting screws underneath it. Take a hexagon socket screw key and turn the adjusting screws next to the loosened fitting screws 90° to the inside (to the right). Carry out a function test. If no alteration of the state has occurred, repeat the process from the beginning.
 - ⚠ Attention: the gap from which the special closing hasp comes out (upper panel and central block; see diagram: description of components) may not be more than 5 mm around the radius.** If the distance has reached the limit of 5 mm and no considerable improvement of the closing function of the FIRESAFE K90/R90 has taken place, get in touch with the manufacturers straight away.
 - ➔ As soon as proper function can be seen, tighten the fitting screws. Screw the upper panel onto the central block again and carry out a function test. After that, you can screw the housing lid back onto the fire-protection lock.

8. Replacing the special closing hasp

If the special closing hasp has been damaged by improper handling, it must be replaced by another one. To start with, the device must be dismantled in order to remove the central block from the housing base. Remove the motor(s) from the device as described under point 6. Remove the screws on the housing lid and push the latter over the front connection L 1. After this, loosen the fitting nuts with which the upper panel is fitted to the central block and take the panel with the support off the central block. Then, remove the screw connection on the lower edge of the housing jacket. After that, you can remove the jacket via the central block. If you loosen and remove the fitting screws (see Fig. 20), you can then remove the central block from the housing base.

All the following work is to be done on the opposite side of the chain. Do not alter the setting of the link block in the immediate vicinity of the chain wheel.

Take a calliper gauge and measure the distance between the link block and the U-shaped section recess of the central block (see distance). Note this dimension on the leg of the central block (see Noting). You need it when replacing the device. After recording the measured figure, you can loosen the threaded bolt. After this, the special closing hasp is relieved by turning the set screw in the link block. Firstly, relieve the link block on the same roller opposite the chain wheel, then the other one on the second roller, but on the same side. Here too, the distance is measured and noted before adjusting the set screw. Before you can pull the special closing hasp down laterally across the central block, the screw connection of the sliding stopper must be loosened (see Fig. 22). Make a note of the sliding stoppers in the special closing hasp. After loosening and removing the screws, you can now finally remove the special closing hasp from the central block (see diagram: description of components).



Take the new special closing hasp and push it over the rollers onto the central block (exactly as the old special closing hasp was attached). Make sure that the markings of the holes are identical with the old holes. Attach a metal marker to the screws and attach the aluminum sliding stoppers to the special closing hasp. Make sure that the chain is in the chain wheel. Tense the special closing hasp to the dimension measured beforehand by turning the individual set screws. After each special closing hasp has been individually welded, slight tolerances in the length of the belt can be seen. As soon as the special closing hasp has been tensed again, fix each set screw through the threaded pin in question.

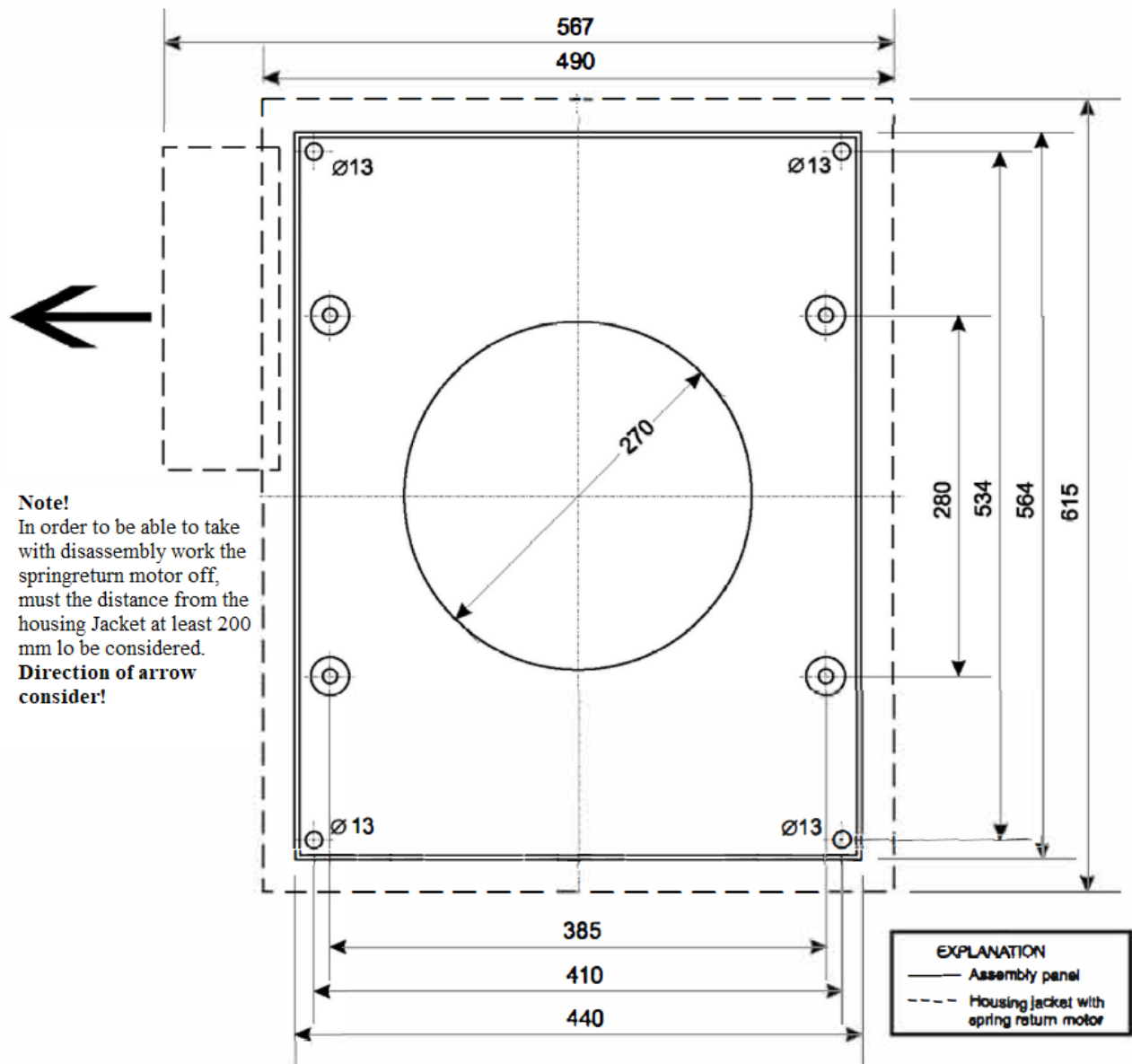
Make sure that the closing process can be done by hand, the chain has no tension and the distances between the link block and the U-shaped section recess are approximately identical on all sides.

If the chain is under tension after clamping the special closing hasp, the tension can be removed from the chain by loosening the 3 screws on the aluminum sliding stopper (see Fig. 22). As soon as this has been done, put the central block back on the housing base and tighten the fitting screws. After that, put the housing base on the base plate and screw them to one another. Then, attach the spring-return motor(s) to the device. Proceed as described under point 6. Before the upper panel is screwed to the central block, a function test of the device is necessary. If this is free of faults, attach the upper panel with the supports to the central block and carry out a further function test. If you find a disturbance in function, go back to **Point 5 Causes of faults and rectification**. Finally, screw the housing lid onto the housing Jacket and reconnect the tubing.

9. Assembly Panels

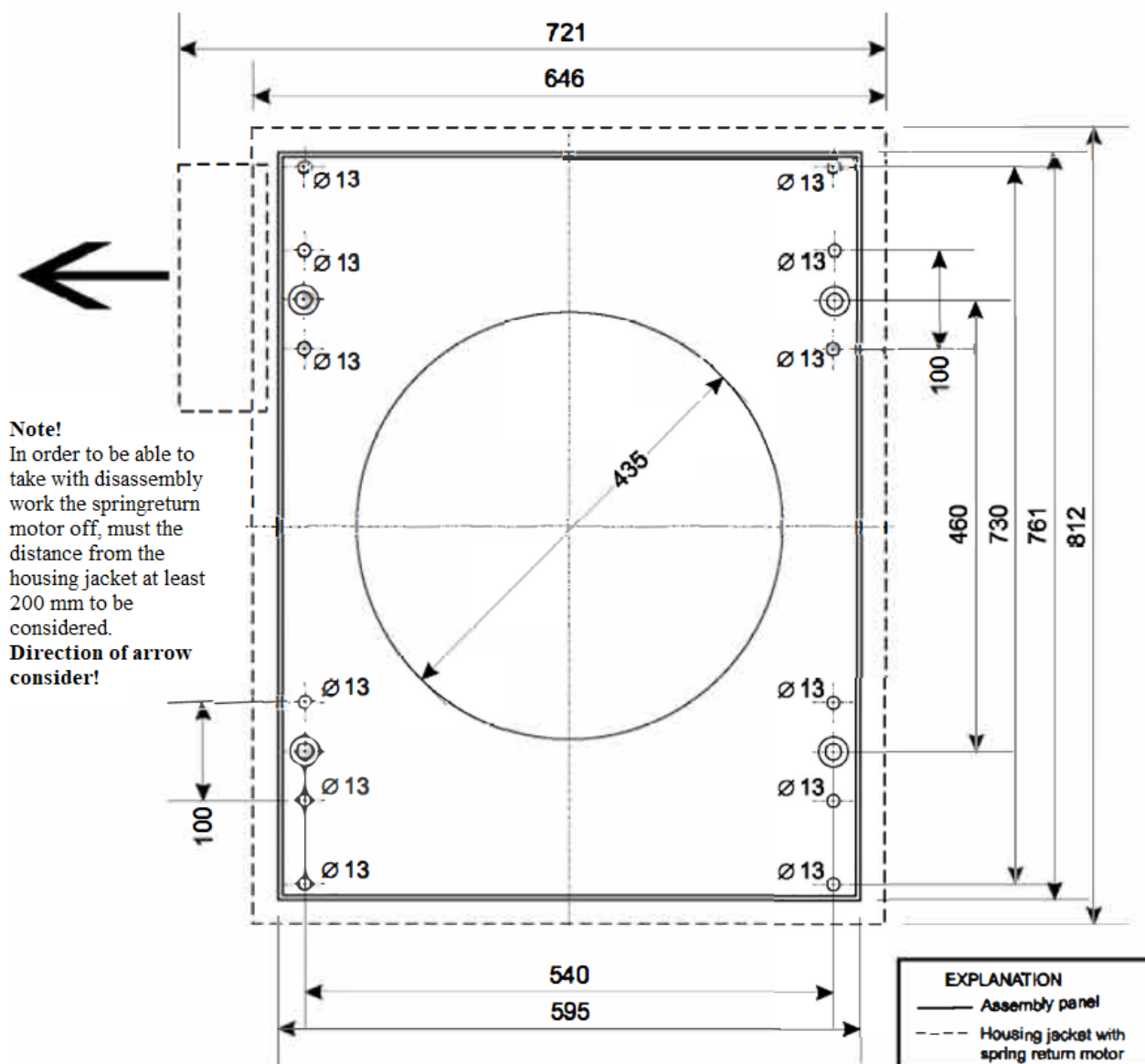
9.1 Fitting point, size 01

4 steel straddling dowels or M 10 through bolts are necessary to fit the assembly frame. Each fitting element is to go through the $\varnothing 13$ mm bore next to each of the 4 threaded rods.



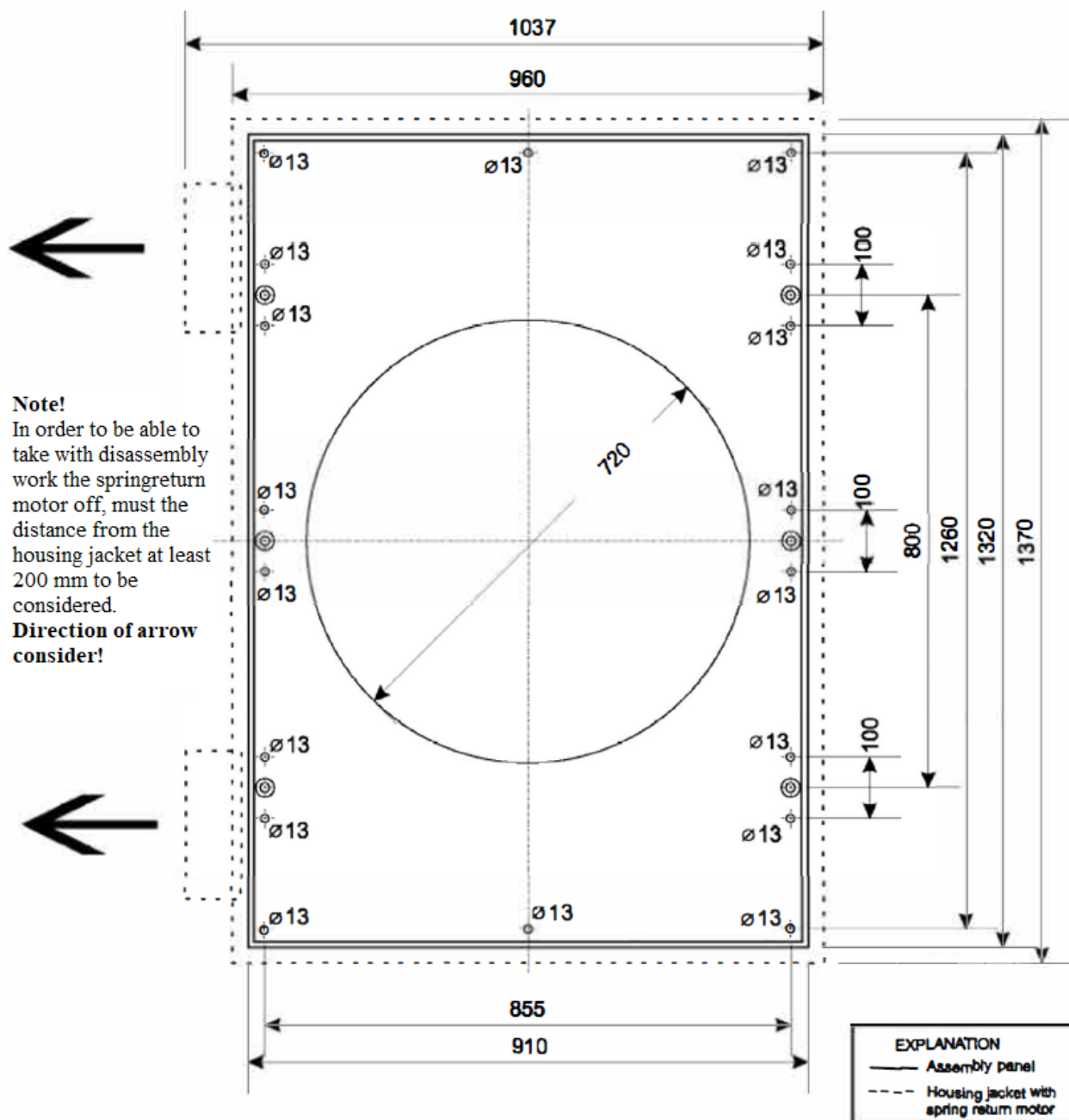
9.2 Fitting points, size 02

4 steel straddling dowels or M 10 through bolts are necessary to fit the assembly frame. Each fitting element is to go through the $\varnothing 13$ mm bore next to each of the 4 threaded rods. The other bores in the assembly panel can also be used.



9.3 Fitting points, size 03

6 steel straddling dowels or M 10 through bolts are necessary to fit the assembly frame. Each fitting element is to go through the \varnothing 13 mm bore next to each of the 6 threaded rods. The other bores in the assembly panel can also be used.



10. Data sheets

10.1 Spring-return motor

Open/closed electrical actuators with spring return

Device Properties

- Spring-return actuators
- 2-point actuation
- 2 potential-free ancillary switches
- 12 mm adapter for square axle
- 2 adjustable ancillary switches

Direct connection of TLR 72/100 or safety device



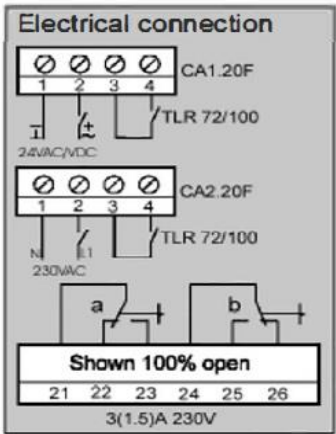
Type designation / specification / technical data

CA 1.20F Actuator 24 VACNDC with 2 adjustable ar
CA2.20F Actuator 230 VAC with 2 adjustable ancillary switches

Actuator type		CA1.20F	CA2.20F
Torque, motor	Nm	6	6
Torque, spring	Nm	5	5
Running time, motor opening	Sec	150	150
Running time, spring return	Sec	10	10
Operating voltage	V	24 VAC/24 VDC	230 VAC
Frequency	Hz	50...60 Hz	50...60 Hz
Power consumption			
- In operation	W	10	8
- In final position	W	4.0	4.5
Dimensioning	VA	18	13
Weight	Kg	2.7	2.7

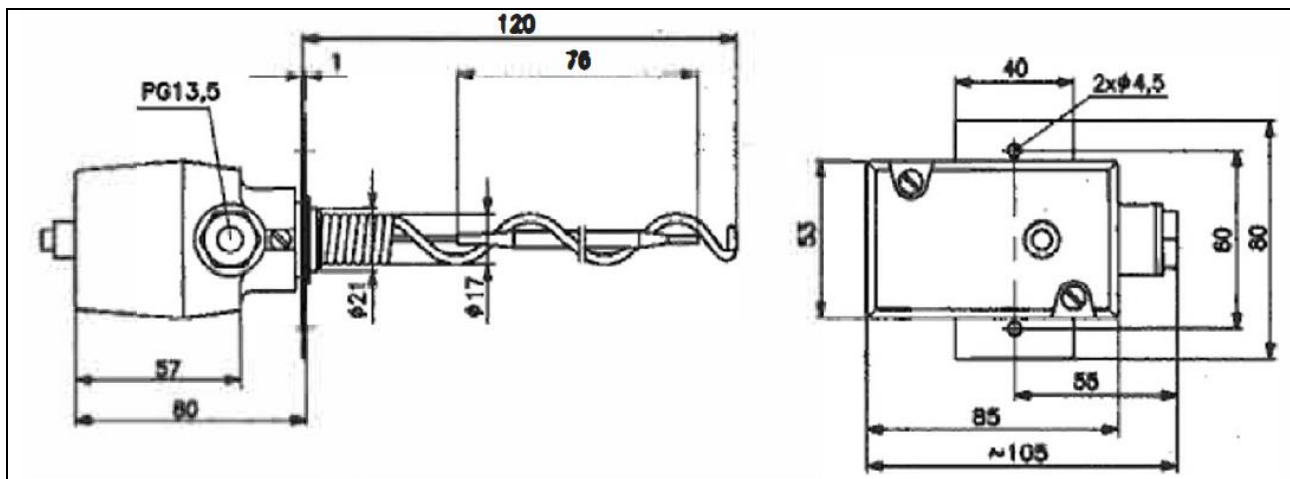
Control Signals

2 point	
Positioning signal	Mechanical
Swing angle / working range	450° (455° merch.)
Swing angle / limitation	None
Capacity, ancillary switch	3 (1.5) Amp. 230V
Sound level	45 dB (A)
Protection class	II
Kind of protection	IP 44 or IP 54 with Pg11 screw connection
Ambient temperature	-20...50°C
Ambient humidity	5...95% rH
Norms	The devices fulfil CE requirements
Maintenance	Maintenance-free



10.2 Capillary venting regulator

Operating and assembly instructions Capillary venting regulator (temperature limiter) FIRESAFE Thermostat TLR 72 and TLR 100																					
<u>Please remember!</u>	The electrical installation may only be done by a trained electrician. The existing safety directives must be observed. Right to technical alterations reserved.																				
<u>Installation:</u> The TLR 72/100 temperature limiter possesses a flange as well as a protective helix for direct fitting in the air channel. The temperature sensor itself can be retrofitted. The protective helix guarantees that the air flow reaches the sensor bulb directly.	<u>Function:</u> A micro-switch with a change-over contact acts as a switching element. The switching point in a rise in temperature is fixed at 72°C for the TLR 72 and 100° C for the TLR 100. When this temperature is reached, the limiter switches and has to be unlocked by the reset button after the temperature has dropped below the threshold figure (-5K). Attention! The maximum admissible sensor temperature is 15% above the fixed temperature figure. Exceeding it results in destruction of the capillary system.																				
<u>Technical data:</u> <table border="1"> <tr> <td>Temperature range:</td><td>TLR 72 - fixed at 72°C TLR 100 – fixed at 100°C</td></tr> <tr> <td>Switching difference:</td><td>± 1K</td></tr> <tr> <td>Operating voltage:</td><td>24...250 V~/50 Hz</td></tr> <tr> <td>Switching capacity:</td><td>15(8) A, 24...250 V~</td></tr> <tr> <td>Kind of protection:</td><td>IP 54</td></tr> <tr> <td>Protection class:</td><td>I</td></tr> <tr> <td>Contact:</td><td>Change-over switch</td></tr> <tr> <td>Bulb and capillary:</td><td>Copper</td></tr> <tr> <td>Sensor temperature:</td><td>Max. +15% of the fixed figure</td></tr> <tr> <td>Ambient temperature</td><td>0...80°C</td></tr> </table>	Temperature range:	TLR 72 - fixed at 72°C TLR 100 – fixed at 100°C	Switching difference:	± 1K	Operating voltage:	24...250 V~/50 Hz	Switching capacity:	15(8) A, 24...250 V~	Kind of protection:	IP 54	Protection class:	I	Contact:	Change-over switch	Bulb and capillary:	Copper	Sensor temperature:	Max. +15% of the fixed figure	Ambient temperature	0...80°C	
Temperature range:	TLR 72 - fixed at 72°C TLR 100 – fixed at 100°C																				
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Contact:	Change-over switch																				
Bulb and capillary:	Copper																				
Sensor temperature:	Max. +15% of the fixed figure																				
Ambient temperature	0...80°C																				



10.3 Electrical connection, sizes 01 and 02.

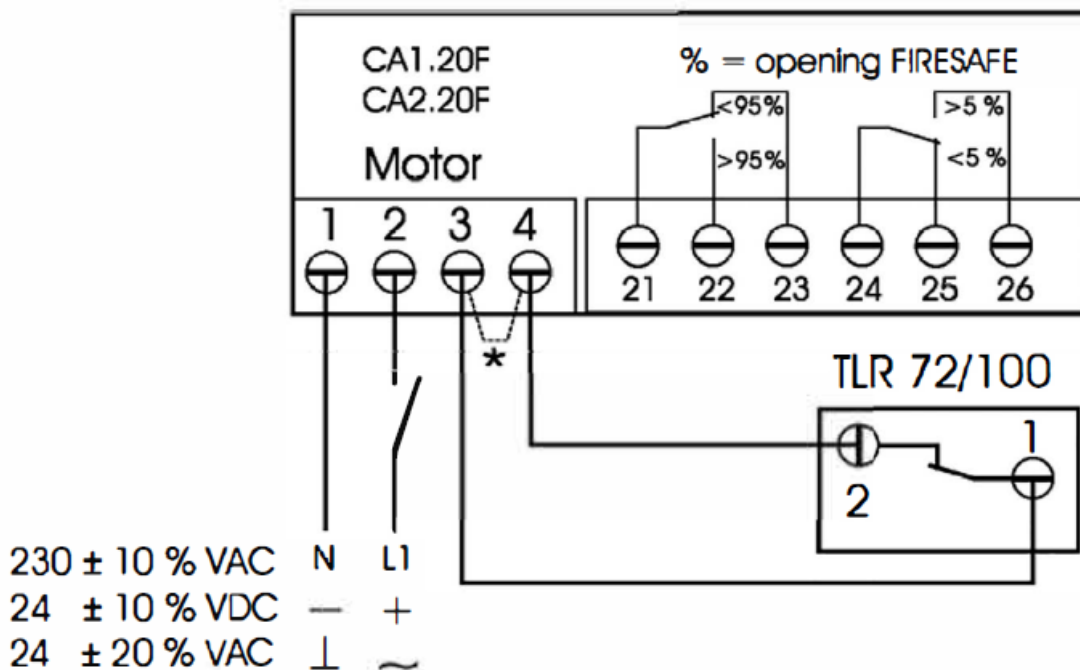
Wiring of FIRESAFE K90 for size 01-02 without control unit

When closing or opening the fire barrier (FIRESAFE), It Is important to make sure that the exhaust fan is not operating (is not moving air). The contact terminals on the FIRESAFE spring-return motor (numbers 21-23 and 24-26) can be used for sending signals to the exhaust fan. The same applies for a position indicator if one Is needed, for FIRESAFE 100 % open or 100 % closed for the purpose of informing the fire brigade control room.

The capillary tupe sensor type TLR 72/100 must be connected directly to the terminals on the FIRESAFE spring-return motor (terminals 3 and 4).

If the electrical items are configured in any way other than that prescribed here, the Safevent or any of its manufacturers will not accept any guarantee for proper functioning!

shown: CLOSED position



* Remove bridge between contact 3 and 4 in the final connection

Connection diagramm, capillary tupe
sensor type TLR-72/100 without control unit

Connection diagramm spring-loaded return motor
with the operating voltage
230 VAC CA2.20F
24 VAC/VDC CA1.20F

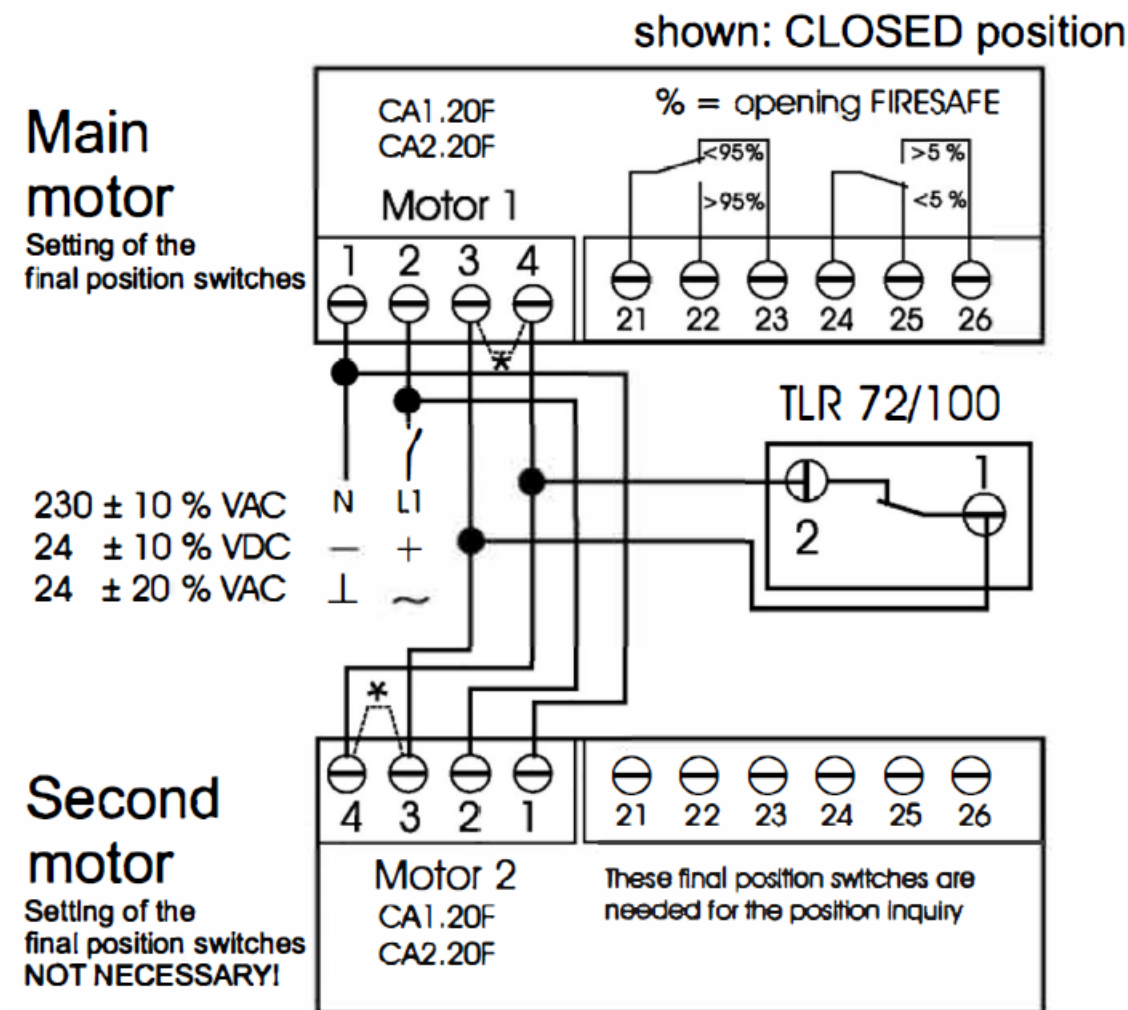
10.4 Electrical connection, size 03

Wiring of FIRESAFE K90 for size 03 without control unit

When closing or opening the fire barrier (FIRESAFE), It is important to make sure that the exhaust fan Is not operating (is not moving air). The contact terminals on the FIRESAFE spring-return motor (numbers 21-23 and 24-26) can be used for sending signals to the exhaust fan. The same applies for a position indicator if one is needed, for FIRESAFE 100 % open or 100 % closed for the purpose of informing the fire brigade control room.

The capillary tupe sensor type TLR 72/100 must be connected directly to the terminals on the FIRESAFE spring-return motors (terminals 3 and 4).

If the electrical items are configured in *any* way other than that prescribed here, the company Safevent or any of its manufacturers will not accept any guarantee for proper functioning!

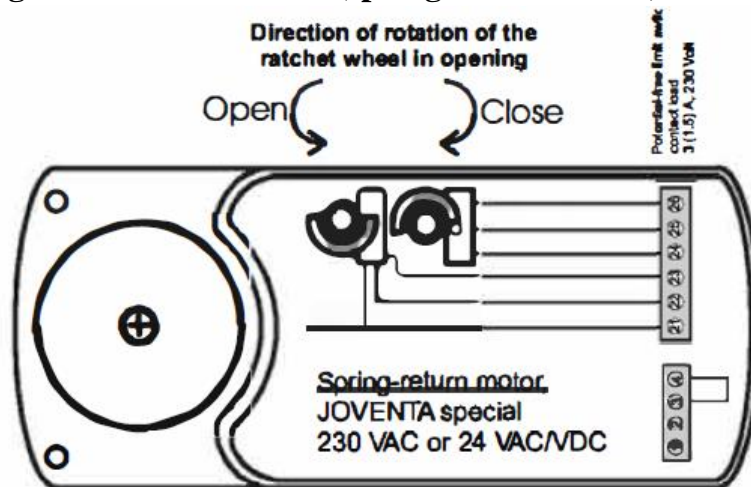


* Remove bridge between contact 3 and 4 in the final connection

Connection diagramm, capillary tupe sensor type TLR-72/100 without control unit

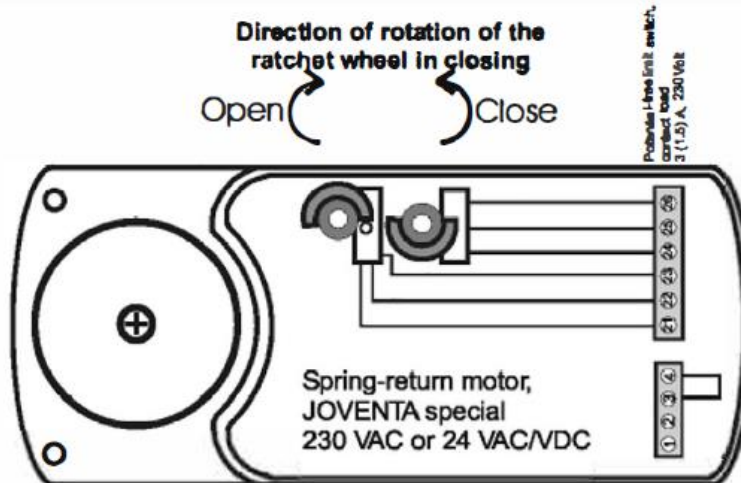
Connection diagramm spring-loaded return motor with the operating voltage
230 VAC CA2.20F
24 VAC/VDC CA1.20F

10.5 Positioning of the limit switches (spring-return motor)



100 % closed position of FIRESAFE K90/R90

The right-hand CLOSED switch has not been pressed by the ratchet wheel, a passage can be seen on terminals 24 and 25. However, at the same time, a not 100 % opened FIRESAFE is stipulated. The left-hand OPEN switch has been pressed by the ratchet wheel, a passage can be seen on terminals 21 and 23.



100 % open position of FIRESAFE K90/R90

The left-hand OPEN switch has not been pressed by the ratchet wheel, a passage can be seen on terminals 21 and 22. However, at the same time, a not 100 % closed FIRESAFE is stipulated. The right-hand CLOSED switch has been pressed by the ratchet wheel, a passage can be seen on terminals 24 and 26.

11. Maintenance instructions FIRESAFE K90/R90

11.1 Principal points on maintenance of the FIRESAFE[®] tube bulkhead:

Long-term securing of the readiness for function of the FIRESAFE mechanical tube bulkhead and the component parts involved in the closing process (coherent system) primarily presuppose regular and proper maintenance. This affects both the permanent readiness for function in the interest of unproblematic and fault-free operation of the plant engineering in daily operation as well as ensuring the independent closing function of the FIRESAFE[®] mechanical tube bulkhead in the event of fire. To ensure the closing function in the long term, regular maintenance of the coherent system and its component parts has been prescribed as being mandatory by building supervision authorities.

11.1.1 Technical maintenance, FIRESAFE K90

As a function of the quantity and properties of the suspended particles in the medium transported, the FIRESAFE[®] K90 mechanical tube bulkhead is also to be maintained with regard to technical operating safety and to be upkept periodically. Maintenance is to be recorded in a test record.

11.1.2 Technical maintenance, FIRESAFE R90

A check of readiness for operation must be made at least once a month. If a disturbance of the function is seen, it must be rectified immediately. The operator is further obliged to carry out a test of disturbance-free operation of the tube bulkhead in interaction with the conveying plant and braking plant as well as maintenance once a year or to have this work done. This test and maintenance may only be done by an expert or a person trained in this. The results are to be recorded in a test book.

Important information:

- **Ensure that the sealing agents and seals used do not contain any silicone.**
- **In cleaning, no pointed or sharp objects may be used.**
- **The cleaning agents used may not be strongly acidic or alkaline.**
- **All parts must be unambiguously marked before dismantling. They must be put back in the same position in later re-assembly.**
- **During dismantling and re-assembly, the adjusting screws may not be moved.**
- **Observe the weight of the individual components before you remove the screw connections.**
- **The sealings (ceramic fibre, Promasil or Kôrapop 225) may not be destroyed or removed. Should it be necessary to replace these sealings, they are to be replaced by original sealings.**
- **During cleaning, make sure that damage to the closing hasp is ruled out.**

11.2 Sequence of the maintenance work K90/R90

1. The maintenance work starts with an open hasp position of the FIRESAFE[®].
2. Apply the correct voltage to the motor and wait until the motor no longer turns. Open the three screws and pull the motor off the device in the direction of the axle. Make sure that the seal between the motor and the housing jacket is not damaged (see Fig. 23).
3. Separate the tube connection L 1 (250 mm) of the FIRESAFE from the tube/channel line.
4. After loosening the Allan keys on the housing lid and the circumferential self-tapping screws on pipe connection L 1, the housing lid can be removed from the housing jacket. Make sure that the seals are not damaged (see Fig. 24-26).
5. The upper panel to be found under the raised lid is removed from the central block by undoing the fitting nuts (see Fig. 27). Make sure that the upper panel is removed from the central block in one move. The adjusting screws protrude on the reverse of the upper panel. If the upper panel is placed on or pressed onto the closing hasp underneath it when being tilted, pushing the adjusting screws

into the closing hasp cannot be avoided.

▲ During cleaning, make sure that damage to the closing hasp is ruled out.

6. The upper panel with tube connection L 1 is to be cleaned with suitable cleaning agents. On the back of the upper panel, four black sealing strips have been stuck on in a square arrangement. This Promasil seal is 3 cm wide and arranged around the cross-section depending on the size. The circumferential sealing strips (Promasil) must be undamaged, no large areas may be missing and they may not be removed. If the sealing strip is no longer closed, the missing areas are to be improved with original seals.
7. The inner tube of the central block is to be cleaned with suitable cleaning agents with the hasp open. After this, the further areas which can be reached with the hasp open are to be cleaned as described above.
Note: In some FIRESAFE devices, a special rubber seal has been fitted in the inner tube. It may neither be removed nor damaged.
8. The transport chain is to be cleaned as described above (see Fig. 28). After this, the transport chain is lubricated.
9. The closing hasp is moved manually into the: "FIRESAFE closed" position. The closing hasp and the deflector rollers are examined for deposits and cleaned by wiping or vacuum cleaning if need be. The inside can be freed from the soiling by slightly lifting the closing hasp at the side.
10. If the housing base, the deflector rollers and the closing hasp are severely soiled, the housing jacket is removed by removing the circumferential Allan screws from the housing base.
11. There are fitting screws, to which self-tapping M 16 nuts are screwed on, on both sides of the central block (see Fig. 29).

▲ ATTENTION: CONSIDER THE WEIGHT OF THE CENTRAL BLOCK.

The central block is dismantled from the housing base by loosening and removing the fitting screws. Welded-on M 16 nuts can be found on the lateral elbows of the central block. The central block is fixed with ring bolts and lifting slings before the housing base is loosened. When all the fitting nuts have been removed, the central block can be lifted off the housing base and all the accessible parts underneath it can be cleaned. There is also a sealing strip (Promasil) fitted around the cross-section of the housing base. See also point 6 of the maintenance instructions.

12. Before re-assembly of the loosened parts, all the sealing surfaces are to be checked for cleanliness and damage. Defective seals are to be removed and new ones fitted. Please observe the information for the drying time of the sealing material.
13. Before and during the re-assembly of the loosened parts, flawless running function of the closing hasp must be checked. The closing hasp must be easy to move to and for by hand (see Fig. 30).
14. All the loosened parts are to be assembled in reverse order.
15. The closing hasp must be put into the "100% open" position by hand. The motor is attached to the device under current. **ATTENTION!** After the motor has been attached, the closing hasp must still be in a 100 % open position. If you see that the screw connection of the motor does not match up with the housing jacket, read Chapter 6. **Dismantling and re-assembly of a spring-return motor.** Make sure that the closing hasp does not protrude into the opening area after the attachment of the motor to the FIRESAFE"!!
16. Carry out a trial run on the device by repeated electrical opening and closing of the FIRESAFE".
17. The result of the maintenance work is to be entered into the test book or record.



Fig. 23

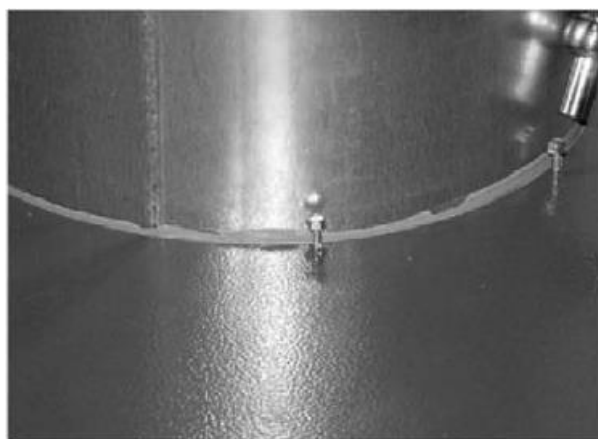


Fig. 24



Fig. 25



Fig. 26

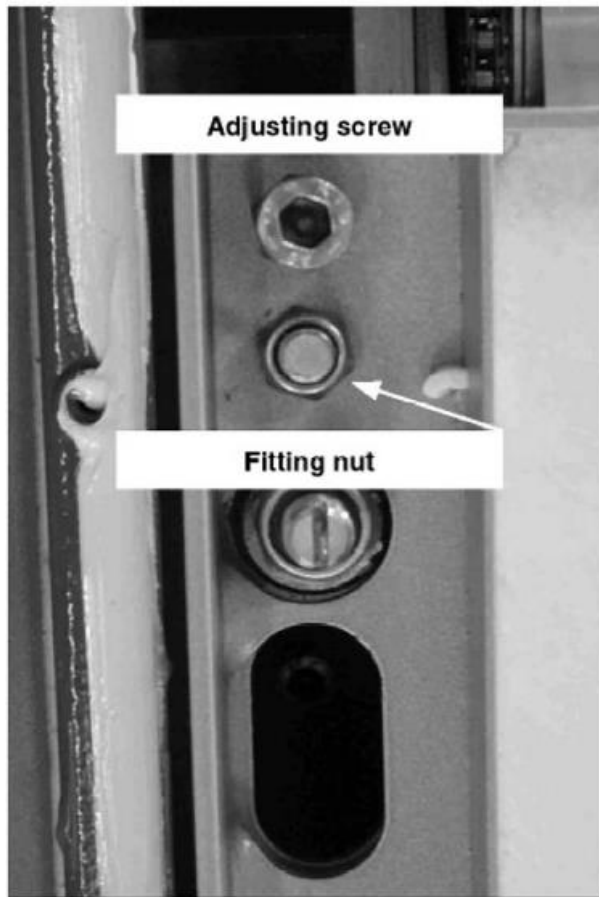


Fig. 27

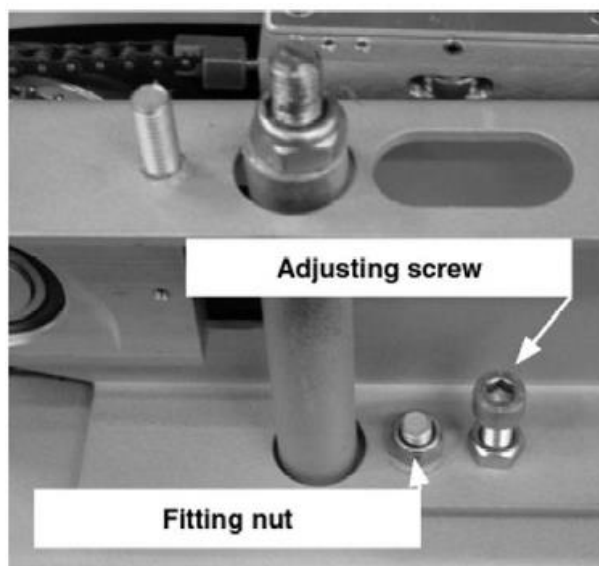


Fig. 29

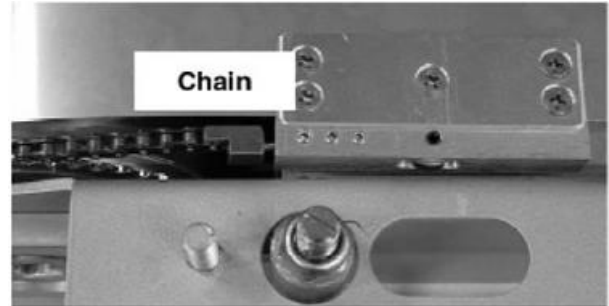


Fig. 28

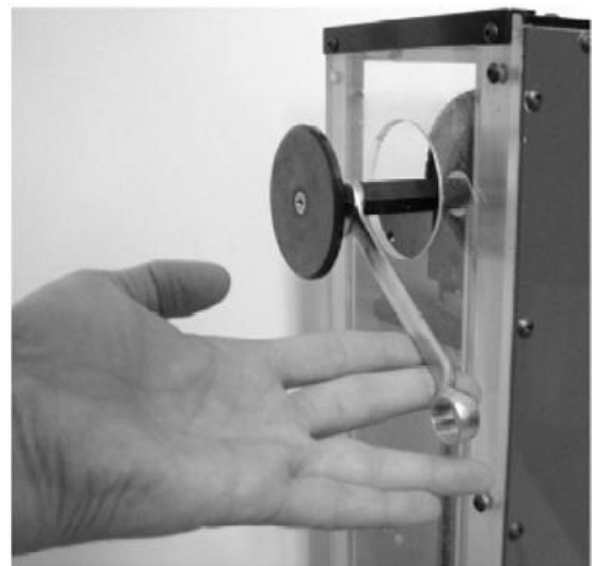


Fig. 30