

Sliding Gate Operators

Installation and Operating Instructions

Please note:

- There are no difficulties involved with the mechanical installation of the operator. For first-time installation we strongly recommend proceeding step-by-step in accordance with the attachment instructions. Thus install errors will be avoided.
- For safety reasons only a certified electrician should handle the electrical installation.
- Commissioning must be executed precisely as specified in the instructions.
- SOMMER accepts no liability or warranty responsibility for damages that occur through non-compliance with the installation and operating instructions.

01/10/1998

We reserve the right to make technical changes

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1. Safety instructions and warnings

- Only activate the gate if there are no people or objects in the movement range of the gate. While the installed movement area safeguard is dependable and sensitive, the stopping force corresponds approximately to that required to move the gate manually and even that could result in a scratch to a vehicle or bruises to a person.
- Consequently stop the gate if there is a risk that the moving gate could hit a person or an object.
- Do not stop the gate by hand unless it is an emergency. Although this is indeed possible in principle, carelessness could result in hands and feet being jammed.
- Ensure that the movement area safeguard is always correctly adjusted. If it is incorrectly adjusted then the force required to stop the gate may be excessive. The value for the stopping force for gates in commercial use is specified as 150 N in the “Guidelines for power-activated windows, doors, and gates” published by the Federation of Employer’s Liability Insurance Associations. Check the setting regularly (at least once a year).
- Only activate the gate with radio remote control if you have visual contact with the gate.
- If you want to have the gate close automatically and without visual contact, then safeguard the closing edges with electrical contact strips and photoelectric cells.
- Check the function of safety fixtures (contact strips, photoelectric cell, EMERGENCY-STOP buttons) regularly, this means at least once a year.
- Safeguard the gate activation buttons so that it is impossible for unauthorized persons or children to operate the gate. The same applies for your hand transmitter.
- The motor has been designed for the technical data specified on the nameplate. It has rotating parts that can pose health risks and a risk of material damages if not operated properly. Consequently it is necessary that all work on the motors be assigned exclusively to technically qualified persons. The operator’s power supply data must agree with that specified on the nameplate.
- 230V or 400 V are present on the control box! Only a qualified electrician may carry out installation and adjustment work.
- The operators may only be used for the purpose described.
- The “Guidelines for power activated windows, doors, and gates” published by the Federation of Employer’s Liability Insurance Associations prescribes particular safety fixtures for commercial gates. These guidelines are available from Carl Heymanns Verlag KG Cologne Germany (order no. ZH 1/4/94).
- Naturally a sliding gate operator may only be used to open gates as described in these instructions. A different use is prohibited without the agreement of the manufacturer.
- Complete gate systems may only be commissioned if all applicable safety regulations have been complied with.
- The design of the gate system must ensure that the gate can be operated and maintained without endangering people (when used as intended).
- The operator must be mounted in such a manner that the drive pinion cannot be reached with the hand.
- Ascending gates must be equipped with a radial damper.

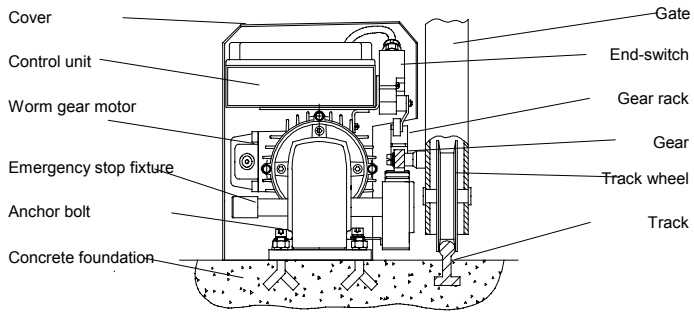


Fig. 1 Major components of the WS 300/1, DS 400/1 and DS 600/1

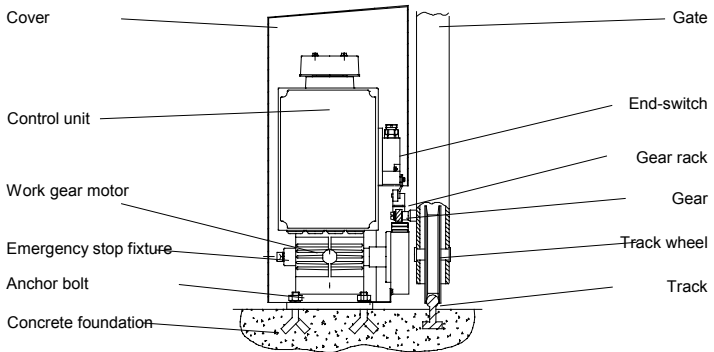


Fig. 2 Major components of the DS 1200

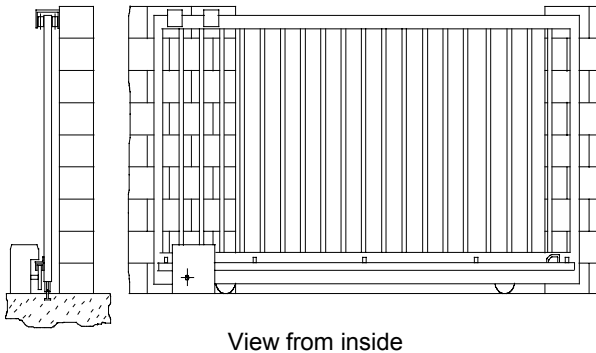


Fig. 3 Attaching the operator on the gate

2. The sliding gate operator

2.1. Implementation possibilities

You can use the sliding gate operator to move any sliding gate. The sliding gate operator is designed for fast mounting, and can be installed problem-free on any gate.

Please ensure that

- the gate moves freely in its guides and on its track.
- the track is laid out so that water drains from it and thus ice surfaces are avoided in winter.
- the gate has an end stopper in open and closed position in order to prevent the gate from unintentionally sliding out of its guide rollers.
- you mount the operator mid-way between the roller brackets for cantilevered sliding gates (strictly required).
- for cantilevered gates the gate wings can be moved out of the end stops without excessive expenditure of force.



2.2. Function

The operator moves the gate via a gear that engages in the gear rack mounted on the gate (see Fig. 1, 2, and 3). Instead of the gear and the gear rack a sprocket and a chain guide can also be implemented.

The operator can be activated with radio remote control or with a button. It switches off in the two end positions through activation of the end switches. An electronic movement range monitoring systems switches the gate off immediately if the gate encounters an obstacle.

2.3. Special equipment

There are many function possibilities available on the basic control unit. This functional variety can even be further extended through the use of supplementary cards. Please see the accompanying description of the operator control unit for precise instructions. In addition an electronic movement safeguard is present on the basic control unit, you can additionally connect the following safety devices.

Photoelectric cell

The control unit switches the operator off when the door closes and the photoelectric cell is tripped. Please be aware that a photoelectric cell cannot offer complete personal safety.

Electric contact strips

The contact strips react to touch and immediately bring the operator to a standstill when activated. This device prevents crushing and shear points from posing personal hazards. A self-monitoring system is available; this means that the operator will be switched off if a cable breaks or if the contact strip is damaged.

Warning light

A blinking light or rotating light can be connected to the control unit.

2.4. Locking the gate

The gate wing does not require a lock to be locked. The operator is self-locking. Thus the door cannot be pushed open manually.

2.5. Included with the delivery

- ... of the operator**
 - 1 worm gear motor with wired control unit ready for connection and mounted end switches
 - 1 covering for the operator
 - 1 Allen wrench for emergency detachment of the operator from the gate
- ... the control unit**
 - 1 control unit in a plastic housing
- ... the gear rack**
 - Gear racks as needed, each 1 m in length with 3 screws M 8 x 60 (incl. washers), 3 spring lock washers and 3 spacers per running meter, 2 end-switch brackets and 1 Allen wrench
- (as alternative to the gear rack)
 - ... the chain guide**
 - 1 pre-assembled chain guide with chain tensioners, anchoring brackets and end-switch brackets for the end-switching
- ... of the radio remote control unit (special equipment)**
 - 1 receiver plug-in card that can be inserted in the basic control unit
 - 1 wire antenna for insertion in the receiver
 - Hand transmitter incl. 9V battery (quantity as needed)

2.6. Dimensional drawings

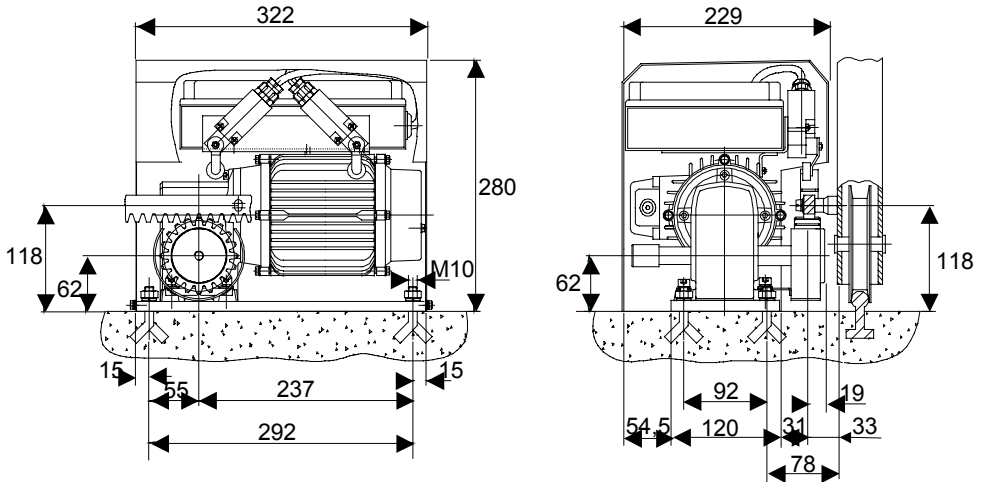


Fig. 4 Dimensional drawing for types WS 300/1, DS 400/1, and DS 600/1 with gear rack and gear

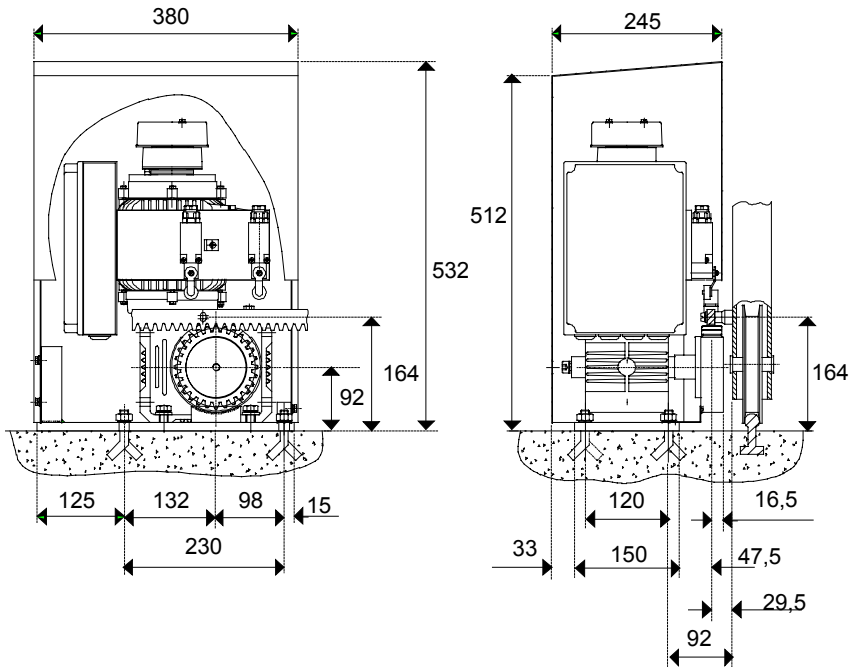


Fig. 5 Dimensional drawing for type DS 1200 with gear rack and gear

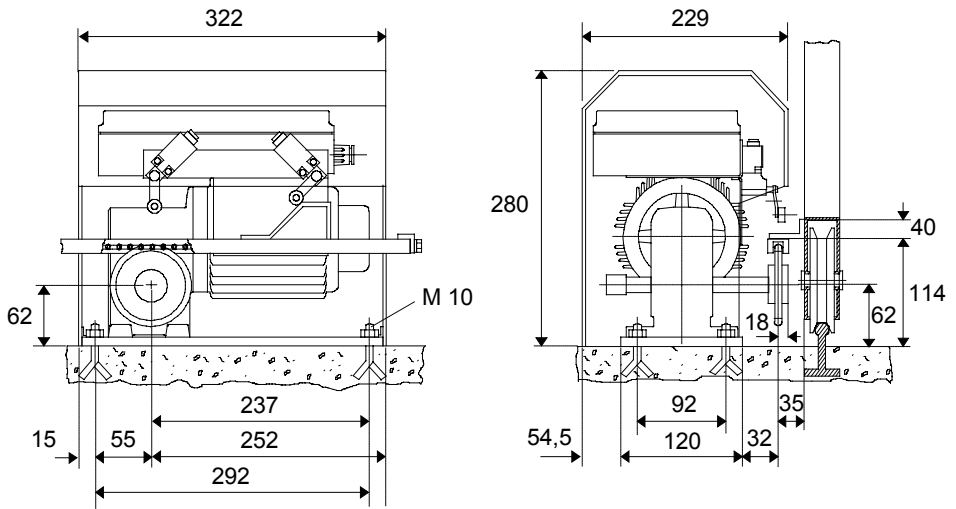


Fig. 6 Dimensional drawing for types WS 300/1, DS 400/1 and DS 600/1 with chain guide and sprocket

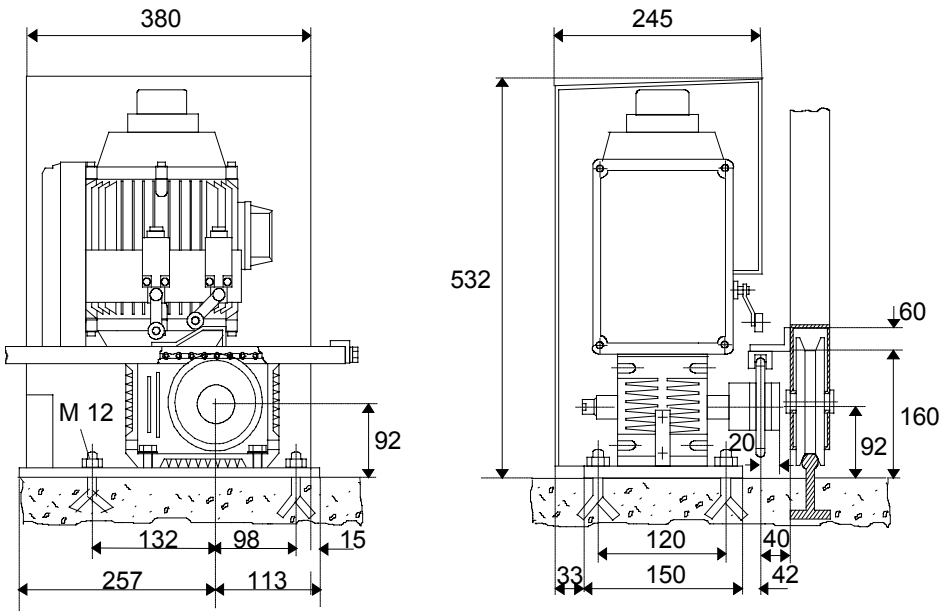


Fig. 7 Dimensional drawing for type DS 1200 with chain guide and sprocket

3. Mechanical assembly

Procedure overview

1. Lay the foundation for the operator (section 3.1).
2. Anchor the operator on the foundation (section 3.2).
3. Mount the chain gear rack or gear rack on the gate (section 3.3/3.4).
4. Attach the end switch brackets (section 3.5).

3.1. Laying the foundation

Please note:

The foundation should be elevated somewhat above the surrounding level in order to prevent moisture getting into the operator.

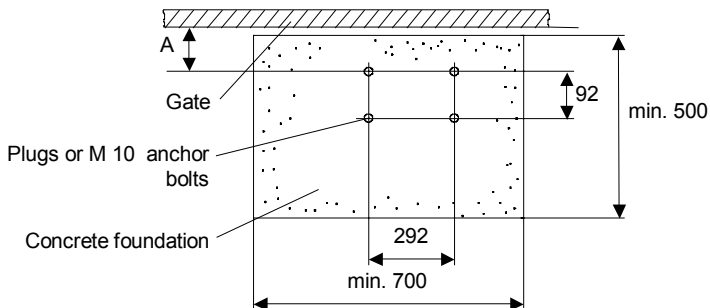


Dimensional drawing for operators WS 300/1, DS 400/1 and DS 600/1

A concrete foundation with

- a length of 700 mm in the gate movement direction
- 500 mm wide and
- frost free depth is required.

If desired, cement the anchor bolts in to attach the operator. The required positions of the anchor bolts are shown in Fig. 8 below.



A = 78 mm when using a gear rack
A = 81 mm when using a chain guide

Fig. 8 Anchor bolt positions in the foundation
For operators WS 300/1, DS 400/1 and DS 600/1

For the DS 1200 operator

The required dimensions of the foundation depend on the weight of the gate. Have an architect determine the size of the foundation.

If desired cement the anchor bolts in to attach the operator. The required positions of the anchor bolts are shown in Fig. 9 below.

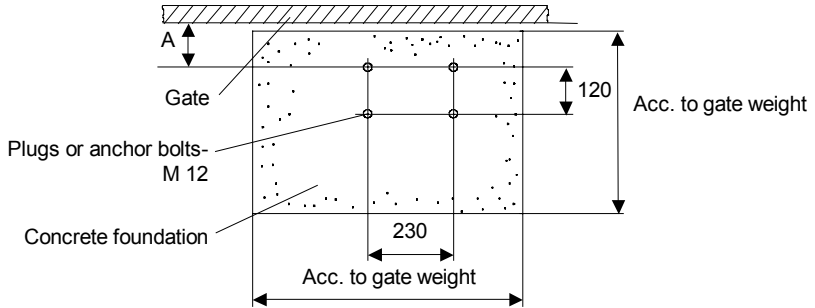


Fig. 9 Anchor bolt positions in the foundation for the DS 1200 operator

3.2. Installing the operator

Anchor the operator on the foundation with plugs or by using the cemented-in anchor bolts if provided.

Please ensure that

- the operator is positioned horizontally on the foundation. If required lay washers under the base plate.
- the sprocket or gear lies precisely parallel to the movement direction of the gate.



3.3. Installing the chain guide

Use anchoring brackets to attach the chain guide on the gate.

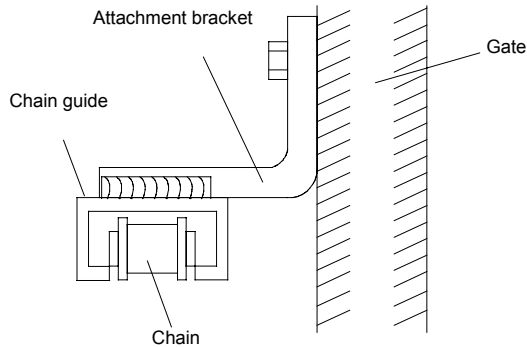


Fig. 10 Attaching the chain guide on the gate

1. Loosen the sprocket from the drive shaft with the emergency detachment unit so that the gate can be pushed by hand. Precise instructions for this are in section 5.2.
2. Mark off 114 mm from the lower edge of the base plate for the WS 300/1, DS 400/1 and DS 600/1 operators, or 160 mm for the DS 1200 operator (see also Fig. 6 and 7) over the entire length on the gate. The dimension must always be measured in the vicinity of the sprocket so that the sprocket securely engages in the chain guide at each position. So push the door a little at a time and measure the dimension.
3. Screw in the anchoring brackets along the marking on the gate at a distance of 0.5 m.
4. Attach the chain sprocket, first provisionally with screw clamps on the anchoring brackets. If the chain guide consists of multiple parts, then first butt the parts together.
5. Push the gate by hand. Ensure that the sprocket runs over the full gate length in the middle of the chain and that the vertical play is app. 1 to 2 mm. Correct the position of the chain guide if required.
6. Lift the chain guide at the angles and check it again to ensure the correct chain guide position.
7. Weld the chain guide to the angle brackets. If the chain guide is comprised of multiple parts, then weld these as well.

3.4. Installing the gear rack

The sliding gate operator moves the gate with a gear via a gear rack. The install instructions that deviate from the chain guide install instructions are listed below.

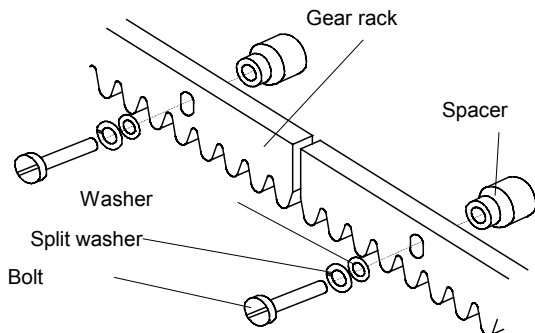


Fig. 11 Position of the spacers, washers and split washers on the gear rack.

Use the supplied M 8 screws to attach the gear rack to the gate. It is easiest to cut an M8 thread in the structural section of the gate and to screw the gear rack onto this. The position of the spacers, washers, and split washers is shown in Fig. 11 above.

If the wall thickness of the gate is insufficient for the permanent screw connection, for instance, if the lower brace only consists of one rectangular shaft, then rivet nuts (blind rivet nuts) of steel must be fed in or set. We recommend RIV-KLE rivet nuts M 8 - 30 steel and the M 8 type S KOB-SERT/RIV-KLE setting tool from Böllhoff + Co. GmbH + Co. KG, Bielefeld among other rivet nuts or setting tools.

To mark off the drill holes for the thread you must detach the sprocket or gear from the operator shaft with the emergency removal fixture, so that the gate can be pushed by hand. Marking off the drill holes should always be done in the proximity of the operator gear rack.

Tip:



In order to precisely mount the individual parts of the gear rack, we recommend always inserting a third gear rack piece on the butts (transition from one gear rack piece to the next one) from below on the two parts to be installed so that the teeth engage. Thus an exact engagement of the gear or sprocket is ensured for the future as well.

After the gear racks have been attached to the gate wing, then the individual part lengths can be precisely aligned. To do this, push the gate back and forth again by hand. Adjust to ensure play of app. 2 mm between the gear and the gear rack.

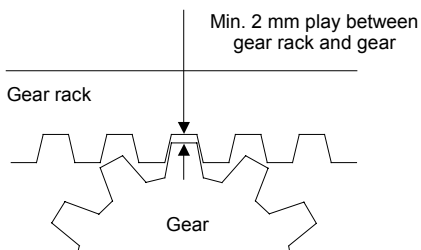


Fig. 12

3.5. Installing the end switch bracket

The operator is switched off in the end positions via two end switches attached to the operator that are activated by the end switch brackets.

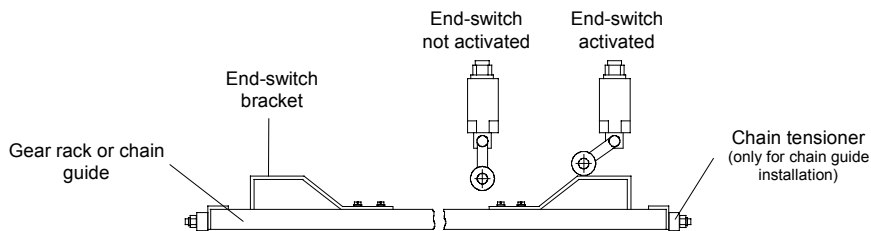


Fig. 13

1. To install the bracket for the closing gate, push the gate almost into the CLOSED position. To install the bracket for the opening gate, push the gate almost into the OPENED position. However do not fully close or open the gate because possible gate over-travel must be taken into consideration when installing the bracket.
2. Set the end-switch bracket on the gear rack or chain guide in such manner that the end-switch's roller lever is lightly pressed up.
3. Drill holes through the middle of the long slots of the end-switch bracket in the chain guide. Cut an M 4 size thread and screw the end-switch bracket onto the chain guide. You can make the fine adjustment of the end switch-off through the long slot in the brackets.
4. The end-switch brackets for gear racks are supplied with the attachment screws. Screw the brackets into the appropriate position with the supplied Allen Wrench.

4. Electrical installation

4.1. Fundamentals of the electrical installation

Please note:

- For safety reasons only a certified electrician should handle the electrical installation.
- The guarantee claims are invalidated if there are improper interventions in the controller.
- During the connecting work moisture that has possibly penetrated the controller must be dried out with a blower.
- Installation of a motor protection switch in the feed line is strongly recommended to protect the operator from undependable current flows.
- According to the safety guidelines a lockable main switch must be provided in the supply cable.



Procedure overview

1. Lay the cable from the power supply and from possible additional devices to the control unit (see Fig. 14 on page 15).
2. Connect the cable to the control unit (see assembly and operating instructions for the control unit).
3. Insert additional plug-in cards and modules (if present) in the appropriate slots (see assembly and operating instructions for the control unit).
4. Connect the plug-in cards (see assembly and operating instructions for the control unit).
5. Make the required adjustments on the control unit (see assembly and operating instructions).

Additional information for gates in commercial use

Gates in commercial use must correspond to the “Guidelines for power-operated windows, doors, and gates” published by the Federation of Employer’s Liability Insurance Associations (available from Carl Heymanns Verlag KG, Cologne). The responsible supervisory authorities will check compliance with these guidelines. If you provide the devices listed below, then your gate system corresponds to the current guidelines.

1. An EMERGENCY-STOP button, motor protection switch, and a lockable main switch must be present.
2. The gate will be operated by an authorized person who is in visual contact with the gate using a deadman controller.

or:

In addition to the already present movement range monitoring, contact strips must be provided that safeguard all crushing points and shear points up to a height of 2.5 m.

3. A suitable person who has been expressly assigned this task must inspect the safety devices annually. The completed test must be logged in a logbook.

4.2. Installation diagram

The operator must be connected to the power supply (230 V alternating current for WS 300/1 and 400 V three-phase current for DS 400/1, DS 600/1, DS 1200). The cables from the control unit to the motor, and to the end switches are pre-wired in the factory, no further installation is required here. Lay the cable to the additional devices and safety devices as required.

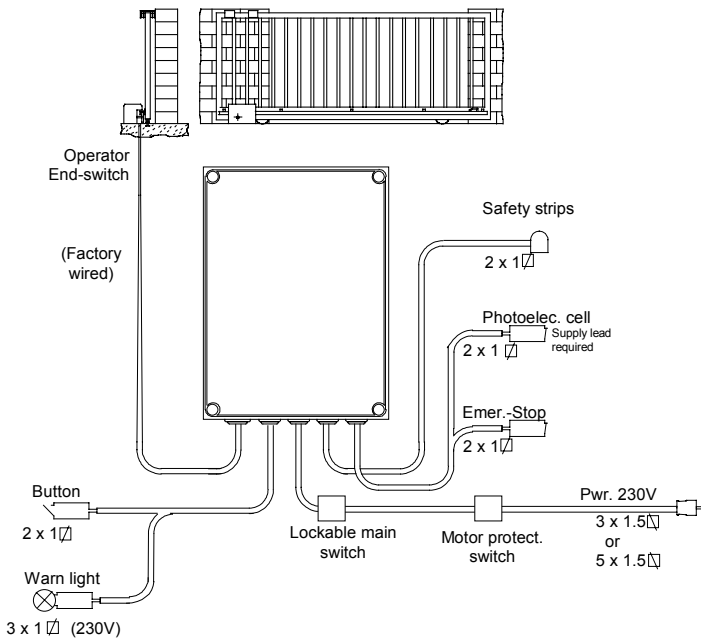


Fig. 14 Installation diagram

Please note:

In the accompanying description of the control unit all required explanations are included for connecting the operator as well as the control and safety devices.

Please familiarize yourself thoroughly with this control unit. This is the only way to fully exploit the diverse possibilities offered by the control unit.



5. Operation

5.1. Winter operation

The drive is fundamentally winterized without requiring additional measures. However you must take into consideration that friction values are higher at lower temperatures, and that the gate's freedom of movement will be decreased. If the gate sticks from time to time then adjust the stopping force higher. Do not forget however to reverse this setting when the season changes.

5.2. Emergency activation in the event of power failure

Before detaching the operator from the gate, ensure that the main switch or the motor protection switch have been switched off.

The operator can be simply uncoupled from the gate. Use the supplied Allen wrench to turn the Allen screw, behind the round opening in the cover, one half turn counter-clockwise. Now the gate can be opened by hand.

Tighten the screw by turning clockwise to place the operator back in service.

5.3. Maintenance

Gear unit

Because gear oil ages, we recommend having it replaced in a specialized workshop or in the factory after 8 to 10 years. Use only ESSO S 410 or equivalent grade oil from a different manufacturer to refill the unit.

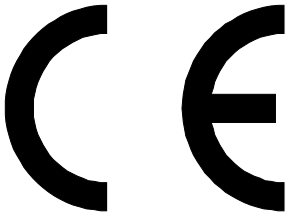
End switches

Lubricate the roller levers of the two end-switches occasionally with thin oil.

Chain guide

Lubricate the chain guide occasionally (according to frequency of operation) with grease or spray it with Molykote spray.

6. Declaration of Conformity



EU Declaration of Conformity

with the EMC directive, 89/336/EEC and
machine directive 89/392 EEC

SOMMER Antriebs- und Funktechnik GmbH declares that the

**Sliding gate operators,
WS 300/1, DS 400/1, and DS 600/1**

are in compliance with the directive of the Council of the European Community for approximation of legal guidelines of the Member States relating to electromagnetic compatibility (EMV directive 89/336/EEC), and are in compliance with the machine directive (89/392/EEC, Attachment 1).

This EU Declaration of Conformity is the result of testing, which has been executed by the EMC test laboratory of the Hessian Technical Inspection Authority (TÜV Hessen GmbH), Knorrstr. 36, in 34121 Kassel; and is in compliance with article 10 of the Directive, in agreement with the standards EN 55 022, EN 50081-1 and EN 50082-1.

7. Troubleshooting tips if there are malfunctions

Please note:

Only a specialist may check the control unit.



Type of malfunction	Check	Cause/remedy
The gate does not move, neither with transmitter nor button.	Is the display for power on the control unit illuminated?	No mains power. Check the main fuse and controller unit fuse and replace if necessary. Check fuse, earth leakage breaker, or motor protection switch and switch on.
	Does the gear or sprocket on the shaft slip?	De-energize the operator with the main switch or motor protection switch and retighten the emergency detachment screw.
	Is one of the end-switches stuck?	The trigger lever of the end switch installed on the operator must be vertically positioned down if it is not activated. Lubricate it if required.
	Does the motor hum but nothing moves?	Immediately switch off main switch, fuses or motor protection switch. It is possible that the motor or the control unit is defective. Have it checked in the factory.
	In winter: Is the gate frozen?	Remove ice from the gate, also from the end switch cams.
Gate does not move via radio remote control	Is the LED on the hand transmitter illuminated?	<i>yes</i> – check whether the LED on the radio remote control receiver plug-in card is illuminated. <i>no</i> – replace battery. Has the battery perhaps been inserted with reversed polarity?
	Is the LED on the radio remote control receiver card illuminated?	<i>no</i> – check the battery in the hand transmitter. Check the coding of the radio remote. The transmitter codes and receiver codes must agree. Re-teach the codes. Check frequency (40 MHz / 27 MHz) Transmitter and receiver must have the same frequency. <i>Only in the local area</i> – hand transmitter is too weak or hand transmitter is damaged through impact, or the antenna position is not favourable.
	Is the malfunction sporadic and brief?	Test again after 10 to 20 seconds. Strong, proximate paging systems in hospitals or industrial facilities can overlay the radio transmission for brief periods. Remedy can possibly be provided by the local Telecom organization.

The gate cannot be moved via the buttons.	Does the Start/Stop LED light up when activating the button?	<i>no</i> – Switch off the device power using the main switch, fuses or motor protection switch and tighten the terminal screws. Check the buttons for correct function.
The gate only sticks sporadically and at different points.	Is the movement range protection adjusted too sensitively?	Switch off the device power using the main switch, fuses, or motor protection switch, and increase the stopping force.
The gate always sticks at the same point.	Is there an obstacle in the swing area? When moving the gate by hand (emergency detachment see section 5.2) are there points where the freedom of movement is impaired?	Remove. In winter you may have to remove ice. Areas where the freedom of movement is reduced indicate installation errors on the part of the gate manufacturer (weld warpage, sticking rollers, ascending gear or sprocket).
The gate always sticks after it starts up.	Are the LEDs for the speed sensor display illuminated? Is the movement range protection adjusted too sensitively?	<i>no</i> – Switch off the device power using the main switch, fuses or motor protection switch and tighten the terminal screws. If the gate stops after only 1 or 2 seconds of motion, then increase the stopping force
Connection error with the safety devices	Does the Start/Stop LED light up when activating the button? Is the LED illuminated when the photoelectric cell is tripped? Does the LED light up when activating the respective end switch?	<i>no</i> – Switch off the device power using the main switch, fuses or motor protection switch and tighten the terminal screws.
The transmission range of the radio remote control decreases	Is the battery used up, or is it too weak due to cold temperatures? Is the decrease in transmission range sporadic?	Replace battery or store the hand transmitter in a frost-free location. Atmospheric disturbances, no remedy is possible.

If the malfunction cannot be resolved with the information in the above table, then you must consult a specialist. Interventions in the control unit are prohibited and can destroy the control unit. Such intervention in the control unit renders the guarantee null and void.