Normstahl

USER MANUAL
NORMSTAHL HSR300AISO

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The Normstahl brand has been a reliable partner and producer of premium entrance systems for the private and industrial sector since 1946. In collaboration with its network of distribution partners, Normstahl has become a leading provider of entrance solutions within Europe.

About this Manual

Purpose of user manual

All users and owners of the high speed door must read, understand and obey the information and instructions in this manual. Failure to do so may result in damage to, or failure of the equipment, and possible injury to persons.

This manual contains information and user instructions for a high speed door. When information or instructions are applicable to all the methods of operation or models, there are no operation types or model numbers in the title. When information or instructions are applicable to specific methods of operation or models, the applicable operation type or model numbers appear in the title.

1 Introduction

These operating instructions apply to the use of the Normstahl HSR300AISO high speed door with the associated control unit. They constitute part of the product and describe how to use the product properly and safely throughout the product life cycle.

1.1 Applicable documents

The operating instructions are only valid in combination with the operating instructions for the control unit and the inspection book. Both of these documents are supplied with the product. A supplement to the operating instructions, which is applicable in addition to the general operating instructions, is provided for the uninterruptible power supply (UPS).

1.2 Declaration of conformity

The declaration of conformity is included in the log book and is supplied with the door.

Design changes that affect the technical data specified in the operating instructions and the intended use, i.e. significantly alter the machine, invalidate this declaration of conformity!

1.3 Amendments and validity

The information contained in these instructions constitutes the technical specifications applicable at time of press. Significant changes will be incorporated into a new edition of the user manual. The document and version number of these instructions can be found in the footer.

1.4 Storage

Keep this manual and other operating instructions in the storage bag inside the switch box or, for doors with an MCC control system, in the supplied document box.

1.5 Target group

This manual is intended for trained, qualified and authorised staff. All settings and, in particular, repairs and maintenance, may only be performed by employees of the manufacturer or other trained specialists.

2 Safety

2.1 General instructions

Carefully read the safety instructions and the manual before starting any work. Warning notices refer to dangers to the life and health of people or to the machine, equipment or the environment. The notices applied directly to the door must be followed and kept in legible condition.

The description below uses symbols to draw the reader's attention to the various dangers and to provide useful advice.

Indicates a potential danger to persons.Take all possible precautions against risks associated with working with electrical materials, it may have power connected.

Follow exactly; ignoring this advice can cause a fault or a dangerous situation.

Important information.

May only be performed by a technician who is authorized to operate a forklift.

2.1.1 Warnings

Warning notices refer to dangers to the life and health of people or to the machine, equipment or the environment. The notices applied directly to the door must be followed and kept in legible condition. Warning notices in this document follow the pattern below:

The following warning levels are used:

Signal word	Hazard level	Consequences of non-observance
Danger	Immediate grave danger	Death or serious physical injury
Warning	Potential grave danger	Death or serious physical injury
Caution	Potential hazardous situation	Minor physical injuries, material damage

2.1.2 General safety information

The safety instructions contain important information for commissioning, operating, transporting, storing and maintaining the door safely and properly.

- Read the instructions carefully and keep them in a safe place.
- Take particular note of the information in this chapter. Also note the special safety information included in the other chapters.
- Only use the door for the intended purpose. If ownership of the door is passed to a third party, make sure that these instructions are also supplied.

2.1.3 Personal protection

Warning!
Risk of personal injury and material damage.
In case of damage to any mechanical or electrical components, immediately stop the door.

- Whenever work is performed on the door, move the main switch to "Off" or "0" (disconnection from the mains) and secure it against accidental re-activation.
- Only operate the door at the approved supply voltage and mains frequency.
- Only use accessories or attachments that have been approved by the manufacturer for use with this door.

Warning!
Risk of personal injury.
Simultaneous starting of the motor and inserting the emergency hand crank can lead to injuries.

- Always switch off the main switch before using the emergency hand crank.
- Do not put your hands on the side columns of the door or in the area of the top roll during operation.
- Lingering of persons in the working area of the door should be avoided. For pedestrian traffic existing wicket doors should be used.
- Go upright with normal walking speed.
- Untidiness may cause accidents. Keep the immediate area of the door tidy.
- Do not climb up the door.
- Do not put up a ladder against the curtain.
- When performing any type of work on the door, set the main switch (power switch) to "Off" or "0" or disconnect the CEE plug, and secure the switch or plug against accidental re-activation or reconnection, see section 3.1.8.3. Uninterruptible power supply (UPS) on page 9.
- Stop using the door immediately in the event of mechanical or electrical damage, especially if the power cable or control cables are damaged.
- The door must only be operated on defined voltage or net frequency.
- Use only equipment or additional features which are authorized by the manufacturer of the door.
- Do not operate the door when excessive wind load is present. Wind class specifications always refer to the closed position of the door.

No special personal protection equipment is required for using the door. The door may only be used by trained and authorized staff. Regulations of the plant or facility where the door is used always apply.
The use of the emergency lever (if existent) may lead to a partly self-opening or closing of the door.
Upon failure of the electrical drive the door leaf may be unlocked and moved upwards by use of the emergency lever. At doors with emergency hand crank, the door can be opened and closed by turning the emergency hand crank which must be inserted on the bottom of the motor. This is also possible for doors with manual hand chain. In this case the drive is switched powerless.

2.1.4 Operator/user's duty of care

The door has been designed and manufactured in light of a risk analysis and with careful selection of the standards to be observed and other technical specifications. It is therefore state-of-the-art and guarantees the highest possible degree of safely.

However, this level of safety can only be achieved in practice if all the necessary measures are taken. The operator/user of the door has a duty of care to plan these measures and check their execution.

Only employees of the manufacturer or other trained staff are permitted to install, commission, inspect, maintain, repair and dismantle the door.
Only appropriately trained, qualified and authorised staff are permitted to operate the door.
Only use the machine for its intended purpose.
Only use the machine in perfect operating condition. Examine the safety mechanisms regularly for operability.
Always keep the complete operating instructions in legible condition at the location where the door is installed.
Give regular training to staff on all relevant issues of health and safety, the operating instructions and in particular the safety information contained in the instructions.
Leave all safety and warning notices applied to the machine and ensure that they are legible.

2.1.5 Intended use

Unless otherwise specified, our doors have been developed and tested under normal conditions. We are happy to advise you on the choice of suitable options for use under special conditions (e.g. permanent load on one side from temperature, overpressure/ vacuum or particular environmental influences etc.).

The door is designed to be a protective barrier and offers the following protection:

- Visible barrier for welding installations or machinery centres.
- Prevention of movement of persons and access to hazardous areas.
- Protection against a temporary increase of heat radiation up to 90°C, depending on the curtain.
- Noise protection to -20 dBA, depending on the curtain.

- Protection on milling machines and machinery centres against expulsion of broken tools or machine parts. The energy absorption under DIN EN 13128 is between 130J and 378J, depending on the curtain.
- Exterior doors are resistant to wind and rain loads. Exterior doors can of course also be used as interior doors.

2.1.6 Environmental conditions

Depending on the model, the doors are designed for installation as interior doors and for use under normal environmental conditions.

2.1.7 Safety devices

2.1.7.1 Electrical safety devices

The high speed door is either equipped with a light curtain in the side guides or a rubber bottom edge on the door leaf in combination with a door line photocell in the side guides. All electrical safety systems are designed according to the product standard EN 13241-1. Before each closing movement of the door an internal test of the safety system and the door line photocell is being performed. If a fault is detected, the closing movement is disabled and an error message is displayed by the control system.

Doors in combination with MCC (7110) fulfill according to EN 13849-1 for the safety systems category 2 with performance level d and the emergency stop category 3 with performance level d.

2.1.8 Additional protection systems

2.1.8.1 Sensors

For doors with a height of H ≤ 2.5m, a top roll cover is absolutely necessary.

Depending on the kind of door application it may be advisable to utilize additional sensors for protection reasons. This is valid for instance for applications involving a high frequency of human traffic as well as with low dimensioned doors less than 3 m in height and therefore no optical awareness given for the closing door as an additional protection.

Normstahl offers a big variety of further protection systems for high-speed doors. Light grid, motion sensing detectors, floor loops, etc. For individual cases we suggest consultation with an Normstahl representative at the application site.

2.1.8.2 Power on brake

The door is not designed for a regular manual operation.

Switching off the main switch or unplugging the power cable causes automatic door motion. If the door is closed, it opens partially, and if it is open it closes partially.

It is not possible to operate the door with an emergency lever.

2.1.8.3 Uninterruptible power supply (UPS)

Warning!
Risk of electrical shock.
Voltage is still present on the door after mains power has been switched off.

- Switch off the power switch of the UPS.
- For work inside the UPS, the internal switch must be switched off (observe the operating instructions for the UPS).

Warning!
Risk of personal injury and material damage.
Unintentional door motion can lead to damage to the product or severe personal injury.

- Switch off the power switch of the UPS.
- For work inside the UPS, the internal switch must be switched off (observe the operating instructions for the UPS).

Doors with frequency converter control (only MCC) can optionally be equipped with an uninterruptible power supply (UPS). In case of a power grid failure the door can be run several times immediately after the failure. Alternatively one time up to 4 hours with the UPS in idle mode.

Precondition: the batteries have to provide the specified capacitiy.

2.1.9 Residual risks

The door has been designed and manufactured in light of a risk analysis and with careful selection of the standards to be observed and other technical specifications. It is therefore state-of-the-art and guarantees the highest possible degree of safety. However, this level of safety can only be achieved in practice if all the necessary measures are taken.

Persons in the nearest area of the door, must have been instructed in the use and functions of the door and the potential danger involved the closing and opening door.

3 Product description

The following sections explain the operation and design of the Normstahl HSR300AISO doors.

3.1 Door components

The door line photocell or light curtain (1) safeguards the closing area of the door. Disruption of the beam prevents or stops the closing movement and reverses the door to fully open position.

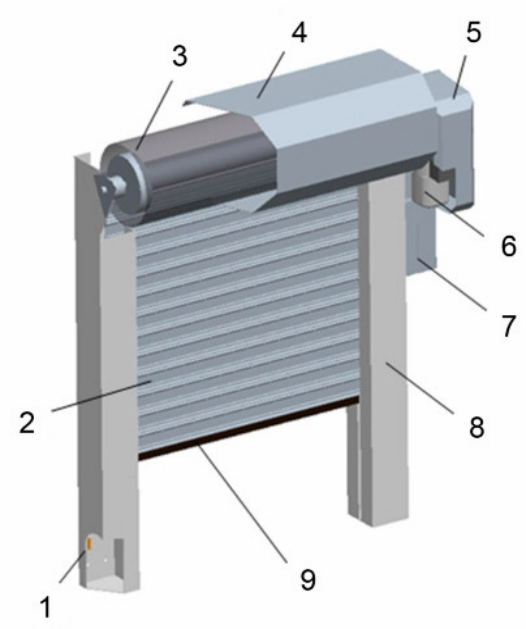
The top roll (3) has a steel shaft. The special V-Drive system prevents direct contact with the curtain surfaces during roll-up.

The drive unit (6) contains an electric motor, gearbox and limit switches.

The electrical switch box (7) contains the MCC (7110) control system.

The galvanised steel side frames (8) house the counterbalance system.

Touching the safety edge (9) during closing immediately reverses the door to the fully open position.



1. Photocell or light curtain
2. Door curtain
3. Top roll
4. Option: Top roll cover (anodized aluminum)
5. Option: Motor cover (anodized aluminium)
6. Drive system
7. Electric control system MCC (7110)
8. Side frame
9. Continuous safeguarding, electrical safety edge, rubber profile.

3.2 Operation and installation of the door systems

The Normstahl HSR300AISO high speed door is a vertically opening high-speed roll-up door. The door consists of two side frames, a top roll with an electric drive unit, a rigid door curtain, and a bottom profile.

The side frames guide the bottom profile and the door curtain, which is rolled onto the top roll when the door opens.

A spring counterbalance system is housed in the side frames. The counterbalance helps the drive unit open the door. It also enables manual opening, for example in case of power failure, since it opens the door partially on its own. Side frame covers prevent access to these moving parts.

3.2.1 Safety systems

The Normstahl HSR300AISO high speed door is fitted with standard-compliant protection on the main closing edge. This protection is either a light curtain up to 2.5m height integrated in the side frames, or a door line photocell system, integrated in the side frames. If the door line photocell or light curtain is triggered, the door stops and returns to fully open position.

3.2.2 Slats

The slats are individually suspended, double-walled extrusions sealed relative to each other. The slats are made of a foam filled sandwich-panel with steel sheets RAL 9006. Windows are optional, the number of windows depends on the door size.

3.3 Control unit

Danger!
Risk of electrical shock.

- Operating doors with drive units or control units other than the recommended types may create a risk of electrical shock.
- The door must only be operated with an original drive and control unit from the manufacturer.

Rapid roll doors may be operated with a powerful frequency converter control unit MCC or MCC (7110), which enables soft acceleration and deceleration of the door.

3.4 Drive unit

The high-speed door is operated by an electrical drive unit. The drive unit is installed at the upper part of the door, vibration muffled and not accessible from the floor. The position of the drive unit may be selected by the customer for the right (RH) or left hand (LH) side. The temperature of the drive unit is safeguarded by a thermo element, which disrupts the power supply of the drive unit upon overheating.

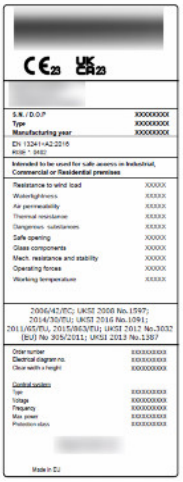
3.5 Mechanical locking unit

Warning!
Do not operate the locking device when door is running.

The door can be delivered with a mechanical locking device. The locking bolt is installed at side frame on drive side and may only be operated when door is closed. The locking bolt has to be locked by the key-cylinder in both positions: Locked / Open. In locked position the door is electrical stopped.

3.6 Type plate (example)

Example only, the actual data varies depending on the specific door.



3.7 Technical data

Subject to technical changes arising in the course of product maintenance.

The inspection book contains all technical data related to the door.

- Door dimensions (general drawings).
- Dimensions of the fitted door (general drawings).
- Installation space (general drawings).
- Fixing points (fixing plan).

4 Operation

4.1 Safety

- Do not use the door for any purpose other than that intended.
- Take the door out of operation immediately in the event of damage (mechanical or electrical). This applies in particular to damage to the mains or control cables.
- Only use accessories or attachments that have been approved by the manufacturer for use with this door.
- For more safety information, see section 3. Safety on page 5.

4.2 Operation

The choice of impulse generator is part of the design and setup of the door and control system and may only be performed by trained specialists.

The door has an electric drive unit and can be operated both using the button on the door control system and via additional, external impulse generators and safety mechanisms.

Generally the Open, Stop, and Close buttons on the door control system should be used during setup, maintenance and repair of the door. In normal operation, the door is controlled via external signal sources such as rope pull switches, induction loops, radar or radio sensors or palm buttons connected to the door control system via potential-free contacts. Machine protection doors can be operated via a higher-level control system.

5 Troubleshooting

Danger!
Risk of personal injury and material damage.
Improper fault clearance can lead to damage to the product and serious injury to staff.

- *Faults should only be cleared by appropriately qualified staff.*
- *Switch off the main switch to secure the door against accidental re-activation.*
- *Lock the main switch to secure it against re-activation or ensure safety shutdown of the machine by a second person.*
- *Secure the area of activity around the door.*

If the fault cannot be cleared, contact the supplier's or manufacturer's customer service.

5.1 Mechanical troubleshooting

5.1.1 Door opens independently

Cause	Solution
Brake on motor is defective.	• Replace brake.
Brake incorrectly set.	• Set brake.
Counter-balance is oversized	• Contact your support.

If the problem continues, contact your support.

5.1.2 Manual opening not possible

Cause	Solution
Defect counter-balance.	• Exchange the counter-balance devices.
Bowden cable hanging off or too loose.	• Check correct position and tension of the bowden cable.
Blocking brake.	• Contact your support.

If the problem continues, contact your support.

5.1.3 No function on the drive unit

Cause	Solution
Power supply is off.	• Connect the door to the power.
Electrical connections defective.	• Perform a check on the electrical connections.
Blown fuse.	• Replace fuse.

If the problem continues, contact your support.

5.2 Electrical troubleshooting

5.2.1 Door does not work

Cause	Solution
No mains power.	• Check mains power supply/fuse.
Control system fuse blown.	• Check control system and replace fuse.
Main switch off.	• Turn on control system (main switch).
Emergency stop circuit broken.	• Check emergency stop circuit. Bridge unnecessary stop inputs as per wiring diagram.

5.2.2 Door does not close

Cause	Solution
Up pulse is permanently on.	• Perform a check on the impulse actuator.
Safety photocell blocked.	• Perform a check on the safety devices.

5.2.3 Door only closes on next pulse

Cause	Solution
Alternating switching set.	• Perform a check on the set control function.

6 Assembly

6.1 Inspection of the delivery

Danger!
Risk of injury.
Improper handling of the packaged door can lead to injury.

- Position the pallet on an even surface.
- Do not remove pallet before starting the assembly.

The door is mainly pre-assembled on delivery. The side frames, roll cover, motor cover (if supplied), fixing materials, and control system are secured to a transport frame (wooden palette).

- Examine the door components for transport damage.
- Make sure that the delivery is complete. Refer to the order documentation for the required delivery contents.
- In case of damaged items, contact and report it to your dealer prior to proceeding with installation.

6.2 Fitting preparations

Danger!
Risk of injury.

- Guide covers for rigid doors can fall down.
  Push up and unhook the bottom guide cover to unmount the upper guide cover.
- Do not remove the straps securing the door curtain until after the drive unit has been fitted.
- The door must only be installed by trained/authorized personnel.
- The fitting should only be done by manufacturer personnel/subcontractor or manufacturer trained personnel.
- The upper side cover must be mounted when removing the bottom guiding cover.

Complete the following preparations before installing the door:

- Check the fitting site with regard to necessary fixing points and lift up conditions. If necessary a supporting frame or other fixing possibilities must be made. The upper fixing points should be screwed onto a steel supporting frame or concrete element. Consult the installation drawing in the inspection book.
- Check measures of the actual dimensions (width and height) of the door opening and compare with order papers.
- The fitting site must be secured against pedestrian and vehicle traffic.
- The plastic packing of the door must be removed before fitting.

6.3 Installation

The door must be connected to the potential equalization rail (min. 6 mm²). Therefore is an earthing screw in the area of the drive unit or in the lower part of the side frame on the drive side which is marked with an earth symbol.

May only be performed by a technician who is authorized to operate a forklift.

The fitting team has a detailed installation manual. In case of questions, contact Normstahl.

6.4 Dismantling

To dismantle the door, follow the installation instructions in reverse order.

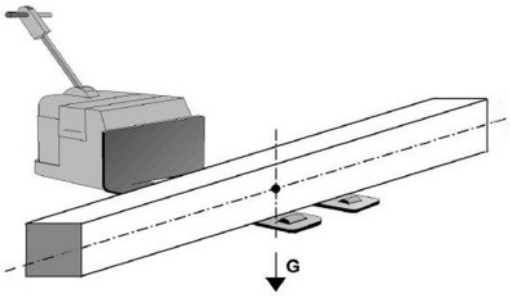
7 Lifecycle

7.1 Transport

The individual door components may only be removed from the transport palette at the installation site.

Danger!
Risk of injury.
Improper transport can lead to the load slipping and falling.

- Follow the public safety regulations during transport to the installation site.
- Secure the door against tipping and slipping.
- Lift the door at its centre of gravity to prevent it slipping sideways.



7.1.1 Dimensions

Dimensions of the door with packaging

Door opening height	Transport pallet		Drive and control unit pallet
	Length (mm)	Width (mm)	Length x width (mm x mm)
H ≤ 4700 pallet 1 (top roll)	W + 850	850	-
H > 4700 pallet 1 (top roll)	W + 850	980	-
H > 4700 pallet 2 (side frames)	H + 600	750	-

W = width of door opening
H = height of door opening

7.1.2 Weight

Weight of the door with pallet (kg±10%).
Intermediate values can be interpolated; weights may vary depending on specific configuration options.

WxH	Top roll	Side frame
2 x 2 m	-	-
2 x 2.5 m	-	-
3 x 3 m	300 kg	400 kg

WxH	Top roll	Side frame
4 x 4 m	430 kg	520 kg
5 x 5 m	580 kg	630 kg
6 x 6 m	750 kg	770 kg

7.2 Storage

The partially pre-assembled door is delivered on a transport/assembly palette and is shrink-wrapped. If the packaging is undamaged, the door can be stored outside for a few days.

7.3 Commissioning

Read the information in the appropriate control system manual.

7.4 Maintenance and cleaning

Contact the supplier or manufacturer for maintenance / fault clearance / repair.

7.4.1 Safety information

Only the manufacturer or trained staff may maintain, inspect or service the door.

- Disconnect the power supply with the lockable main switch in the switch box prior to any maintenance and cleaning work.
- Make sure that there is no power to the switch box, use a testing device.
- Make sure that all scaffolding, ladders etc. comply with the applicable safety regulations.
- Cordon off the work area. When the work is finished, remove any spilled lubricants and tools or other materials from the floor.

7.4.2 Cleaning and care

7.4.2.1 Door curtain

Caution!
Risk of material damage.
Improper cleaning of the curtain may damage the surface.

- Do not use glass cleaners as they contain aggressive substances.
- Never use abrasive cleaners, scrapers, razor blades, filling knives etc.
- Clean with warm water, a low dose of a gentle plastic cleaner and a clean, soft and non-fluffy cloth.

Caution!
Risk of personal and material damage.
Improper cleaning of the curtain may damage the surface.

- Pollution of the curtain can cause reduction (loss) of the protection property for laser protection doors.
- The surface facing to the laser must be kept clean.

7.4.2.2 Door frame

Caution!
Risk of material damage
Improper cleaning of the door frame may damage the surface

- Do not use pressure cleaners.
- Remove dust with a soft cloth.
- Remove heavier soiling with water and an ordinary liquid cleaner.
- Metal surfaces that are soiled with grease or oil should be cleaned with an agent that contains a solvent.

7.4.2.3 Surrounding area

After maintenance work in particular, the floor in the immediate vicinity of the side frames may be soiled. Remove this with care.

7.5 Decommissioning

- Follow the assembly instructions in reverse order during dismantling.
- Disconnect the power from the door before dismantling. In particular, make sure that all the springs are de-tensioned.
- Check parts that are subject to wear and tear and replace if necessary before reassembly.
- Check connectors, do not kink cables.
- Store all the components in a clean, dry place.

7.6 Disposal

The door packaging can be returned to the manufacturer. Defective door components must be disposed of in an environmentally friendly way by the customer.

Defective electronic components must be disposed of as special waste.

8 Technical data

Door principle	Roller door
Direction of movement	Vertical
Application	Exterior and interior door
Wind class	2-4
U-value	2.0 W/(m^2·K)
Maximum opening speed	2.2 m/s
Maximum closing speed	0.7 m/s
Available size, W min	1250 mm
Available size, W max	7000 mm
Available size, H min	2500 mm
Available size, H max (height increment)	6000 mm (100 mm)
Drive	Electrical
Mains power	See control unit manual
Motor performance	1.1 kW
Control system	MCC (7110)
Control voltage	24 VDC
Operating temperature range	+10°C ±40°C
Motor protection rating	IP55
Side frame	Galvanized steel
Door curtain	Foamed sandwich-panel with steel sheets RAL 9006. Optional with double-glazed windows.
Lifting device	Flat belt with reinforcing steel ropes, belt.
Sound pressure level	70 dBA

9 Inspection

Register all maintenance, repair and modification work in the inspection list that is included in the inspection book for every door to ensure that all changes can be traced.

Register the requisite services, inspections and implementation notes in the inspection plan.

9.1 Service intervals

Service interval mentioned in the tables for the inspection plan. The numbers are used in inspections plans for each model.

	Service interval
1	Half-yearly or 50.000 cycles
2	Annually or 50.000 cycles
3	Annually or 100.000 cycles
4	Annually
5	Clean if necessary
6	Every 4 years
7	150.000 cycles
8	250.000 cycles
9	500.000 cycles
10	150.000 cycles,
11	150.000 cycles
12	-
13	450.000 cycles
14	200.000 cycles
15	DH < 3m: 500.000 cycles; DH ≥ 3m: 250.000 cycles
16	DH < 4m: 300.000 cycles; DH ≥ 4m: 200.000 cycles

≤150.000 cycles: ±10.000 cycles
>150.000 cycles: ±20.000 cycles

9.2 Inspection plan

9.2.1 Installation fixing

Service	**Service interval**
Tighten screws.	3
Check welding seams.	3

9.2.2 Drive unit

Service	Service interval
Check the fixing of the torque arm and buffer.	3
Check brake condition and function of break release lever.	3
Check operation smoothness and function of the emergency manual lever, maybe lubricate.	3
Check the chain, adjust and possibly retension and lubricate.	2

9.2.3 Drive shaft

Service	Service interval
Check the screws to drive shafts and flange bearings.	2
Lubricate the pedestal bearing and retighten the fixation.	-
Check the drive shaft in the aluminium shaft for secure fit.	-
Check the tightening position of belt and rope disks.	-
Check the condition of the cable drums.	-
Check the retainer of spiral disk on the shaft.	3
Chain drive: check fastening of locking element, tighten the screws with 18 Nm.	2
Check the condition of sound isolation profiles at the spiral disks.	2
Check the flat belts for wear and damage; check connection to spiral disks.	2

9.2.4 Door curtain

Service	Service interval
Check curtain for cracks and traces of scrapes or shavings in the guides.	2
Check fixation of door leaf at the top roll and at the bottom profile.	-
Check tight position and wear and tear of the wind tabs.	-
Belt: condition, lubrication, wear; if necessary replace teeth.	-
Check exact position of slat sealing.	3
Check fixing of slats on pulling device and endcaps.	2
Check slats around adapters for damage (especially 1-5 from top).	2
Check solid position of slat adapter.	3
Check sliding pieces of bottom lamella (min. thickness 7mm)	2-3

9.2.5 Side frame

Service	Service interval
Check fixing and condition of the profiles with attachments.	3
Check cable laying and if applicable cable chain.	3
Remove dirt from the photocell optics.	5

Service	Service interval
Check condition, fixing and lengthwise extension of the ropes and belts.	2
Check the condition and function of the counterweight system.	2
Check condition and installation of the springs and the spring mounting, if applicable check for easy movement of the axial bearing.	-
Doors with ripped belt / rope or broken springs are to be immediately taken out of service.	-
Check leaf tensioning system.	-
Check for wear and tear (s) on guiding rails, especially in the area of funnel (s<4mm).	3
Renew belt/s.	16
Renew spring/s.	16
Renew ropes.	-
Renew ropes and pulleys for counterbalance.	-
Renew ropes or rubber cable for curtain tension.	-
Renew flat belt *.	9
Grease plastic guidings.	-

*Regular conditions: central European climate, door mounted interior or exterior with covers, no aggressive ambient conditions.

9.2.6 Control box and additional attachments

Service	Service interval
Check for full number/completeness of circuit diagrams	4
Check main switch/CEE-plug and control box lock	4
Check the fixing	4

9.2.7 Electrical components

Service	Service interval
Visual inspection for mechanical damage.	2
Check potential balance.	4

9.2.8 Functions

Service	Service interval
Check function of safety edge, photocell, additional safeties and actuators.	1
Check function and condition of the torque arm during operation.	2
Assess possibility of emergency opening.	2
Check opening and closing position of the bottom profile.	2
Check winding performance of door curtain and ropes/belts.	2
Check main closing edge according to EN 13241-1 respectively local.	4

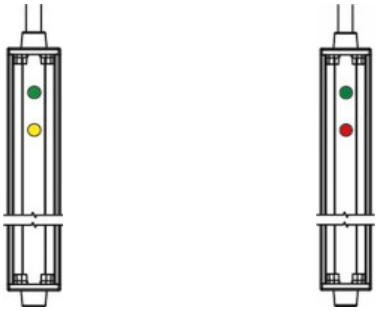
10 Manual safety light grid

During commissioning and operating, it must be ensured that the light grid cannot be influenced by other photocells or sources of infrared light.

The safety light grid is a TÜV approved contactless working safety device. It can be mounted directly in the closing plane of the door as a stand-alone safety.

The fitting team has a detailed installation manual. In case of questions, contact Normstahl.

Transmitter	Reciever
Green LED	Green LED
Yellow LED	Red LED



LED lit (green, yellow, red)

LED flashing

LED off

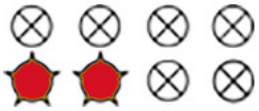
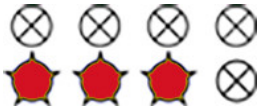
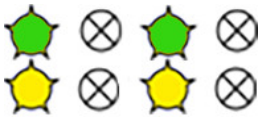
10.1 Operating mode

The light grid has several status LEDs, which indicate the respective operating mode.

Transmitter		**Receiver**	
Power supply = OK Blanking = Off		Free detection zone	
Power supply = OK Blanking = On		Interrupted detection zone	
Test (LEDs flashing alternately)		Test (LEDs flashing alternately)	

10.2 Error mode

The LIGI has an internal error diagnosis function which indicates errors by means of an LED code depending on the type of error. In the event of an error, the LIGI switches to safe mode and the door can then only be operated in "hold-to-run" mode.

	Transmitter	Error mode	Receiver	Solution
No supply voltage		-		Check supply voltage.
Receiver polarity rversed		Yellow LED flashes 3x, long pause.		Check receiver operating voltage.
Short at output	-	Red LED flashes 2x, long pause.		Check output cable, overload, wrongly connected, cable defective, output on light grid defective.
Error in sync cable		Yellow/red LED flashes 3x, long pause.		Check cable, may only be connected between transmitter and receiver.
Internal device error		All LEDs flashing.		Light grid must be replaced.

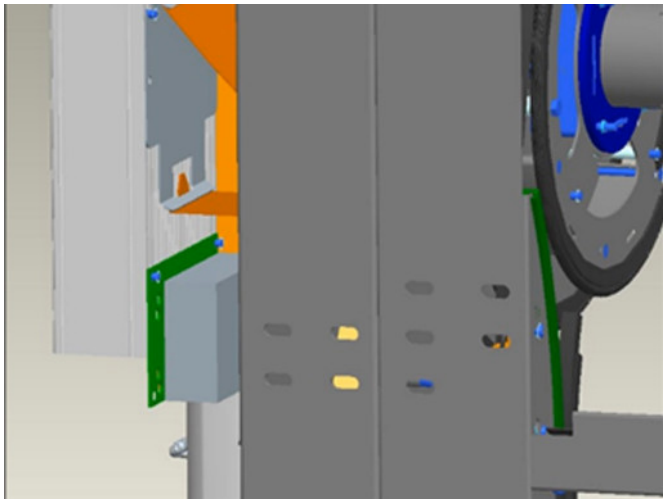
11 Installation of PFC- and EMC-filter for MCC (7110)

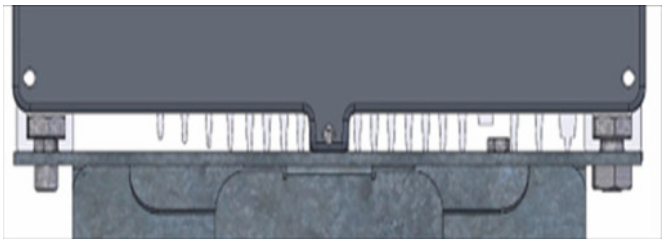
This chapter is additional to the MCC (7110) control system user manual. The entire control unit is a combination of the MCC (7110) control system together with the PFC-filter and, if necessary, EMC-filter. They are part of the product and describe the intended and safe use throughout the whole product life cycle.

Before the installation of the PFC-filter and EMC-filter carefully read this user manual, this chapter and the MCC (7110) user manual.

11.1 PFC-filter

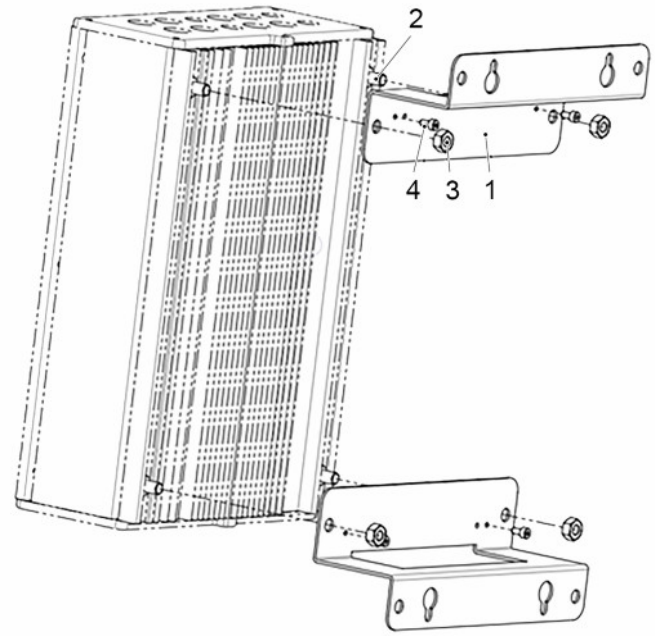
- Slide two hexagon head screws M8x16 in the chamber of the MCC (7110) and assemble with two nuts M8.
- Assemble the PFC-Bracket 50 mm lower from the bottom edge of the MCC (7110).



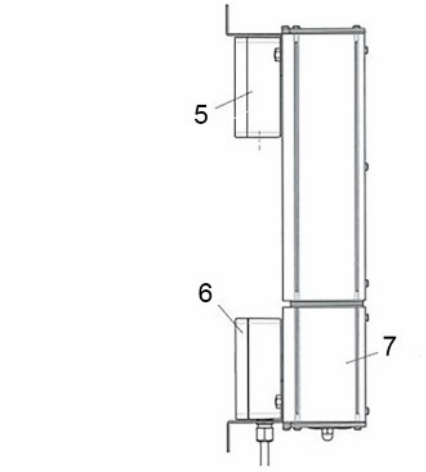


11.2 PFC-filter and EMC-filter on MCC (7110) wall-mounted

- Brackets are pre-assembled with four hexagon head screws M8x12 and four nuts M8.
- The EMC-filter (5) is fitted at the upper edge of the extension box (7), MCC (7110), with two hexagon socket screws M4x8.
- The PFC-filter (6) is fitted at lower edge if the extension box (7), MCC (7110), with two hexagon socket screws M4x8.
- Assemble both brackets on the wall with four screws/dowels (fastening material not included).



1. MCC (7110) bracket wall with EMC-filter (2 pcs)
2. Hexagon head screw M8x12 (4 pcs)
3. Hexagon nut M8 (4 pcs)
4. Hexagon socket screw M4x8 (4 pcs)



5. EMC-filter
6. PFC-filter
7. Extension box

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