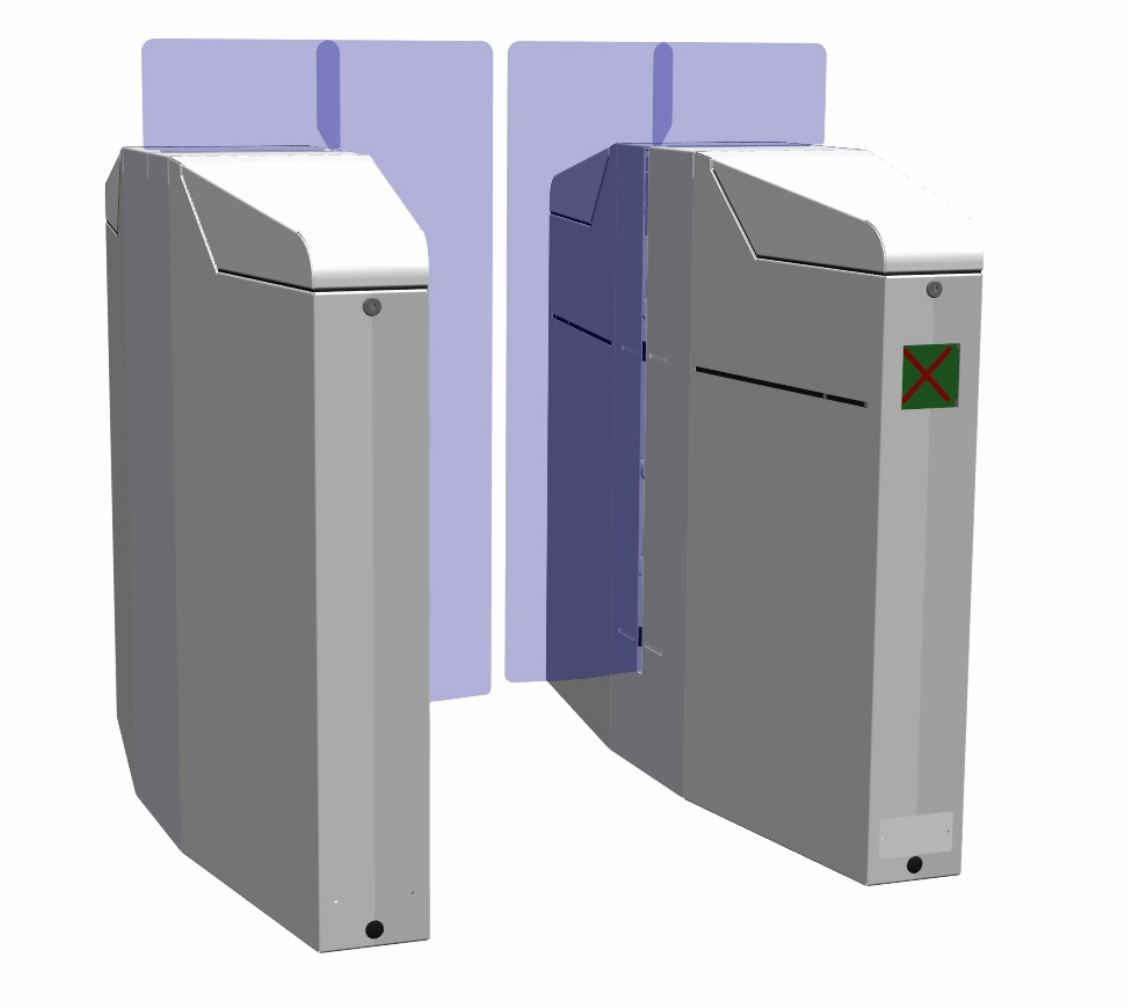
Operating Instructions

Pedestrian Barrier High Door
MPH 112



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1 General

1.1 Information regarding the operating instructions

These operating instructions provide important information on how to deal with the MAGNETIC pedestrian barrier MPH 112. Prerequisite for safe working is the observance of all specified safety notes and instructions.

In addition, the local accident prevention regulations valid at the barrier's area of application and general safety regulations have to be complied with.

Carefully read the operating instructions before starting any work! They are a product component and must be kept in direct proximity of the barrier, well accessible to the personnel at all times.

When passing the barrier on to third parties, the operating instructions must also be handed over.

Components from other suppliers may have their own safety regulations and instructions for use. These must also be observed.

1.2 Pictogram explanation

Warning notes

Warning notes are characterised by pictograms in these operating instructions. The warning notes are prelude by signal words expressing the scale of the hazard.
It is absolutely essential to observe the notes and to proceed with caution in order to prevent accidents as well as bodily injuries and property damage.

⚠ DANGER!	
	**DANGER!** … points to an immediately dangerous situation, which leads to death or severe injuries if it is not avoided.

⚠ WARNING!	
	**WARNING!** … points to a potentially dangerous situation, which can lead to death or severe injuries if it is not avoided.

⚠ CAUTION!	
	**CAUTION!** … points to a potentially dangerous situation, which can lead to minor injuries if it is not avoided.

NOTICE!	
	**NOTICE!** … points to a potential dangerous situation, which can lead to property damage if it is not avoided.

Hints and recommendations

NOTE!

… highlights useful hints and recommendations as well as information for an efficient and trouble-free operation.

1.3 Limitation of liability

All specifications and notes in these operating instructions were compiled with consideration to the valid standards and regulations, the state of the art as well as to our long-standing knowledge and experience.

The manufacturer is not liable for damages caused by:

- Non-observance of the operating instructions
- Improper use
- Deployment of non-trained personnel
- Arbitrary modifications
- Technical changes
- Use of non-approved spare and wear parts.

The actual scope of supply may differ from the explanations and illustrations described in this manual in case of special designs, if additional order options are made use of, or due to latest technical changes.

Incidentally, the responsibilities agreed upon in the delivery contract, the general terms and conditions as well as the manufacturer's conditions of delivery and the statutory provisions valid at the time of contract conclusion shall apply.

Warranty

The manufacturer guarantees the correct functioning of the applied process technology and the performance parameters identified.

The warranty period commences on the date the barrier module is delivered to the customer.

1.4 Copyright protection

Surrendering the operating instructions to third parties without written permission of the manufacturer is not permitted.

NOTE!

Content details, texts, drawings, pictures and other illustrations are protected by copyright and are subject to industrial property rights. Any improper use shall be liable to prosecution.

Any type and form of duplication – also of extracts – as well as the exploitation and/or communication of the contents are not permitted without the manufacturer's written declaration of consent.

1.5 Scope of delivery

The scope of delivery comprises:

- 1 Pedestrian barrier
- 6 Express anchors including accessories
- 2 Door keys.

Supplied documentation per barrier:

- 1 Operating Instructions.
- 1 Wiring diagram

Glass wings and anti-climb panels are not included in the delivery and have to be ordered separately.

1.6 Spare parts

⚠ WARNING!

WARNING!
Risk of injury by incorrect spare parts!

Incorrect or defective spare parts can result in damage, malfunctions or total failure and also impair safety.

Therefore:

– Use only the manufacturer's original spare parts.

Procure spare parts from authorised dealers or directly from the manufacturer. Refer to Page 2 for address.
Illustrations of spare parts can be found in the enclosure.

1.7 Warranty conditions

Subject to the condition that the operating instructions are observed, and that no inadmissible operations are carried out on the technical equipment, and that the installation has suffered no mechanical damage, MAGNETIC guarantees all mechanical and electrical components for the duration as stated in our standard terms of sales and delivery or as contractually agreed in writing.

1.8 Customer service

Our customer service can be contacted for any technical advice.

Information about the responsible contact person can be retrieved by telephone, fax, E-mail or via the Internet at any time, refer to manufacturer's address on Page 2.

NOTE!

In order to enable fast handling note the data of the type plate such as type, serial number, version etc. before calling.

1.9 Manufacturer's declaration

For "Manufacturer's declaration" (pursuant to EC Machinery Directive 98/37/EC, Annex II) refer to page 105**Fehler! Textmarke nicht definiert.**, Chapter "Manufacturer's declaration".

1.10 Environmental protection

NOTICE!	
	**NOTICE!** **Danger for the environment by hazardous materials!** Incorrect handling of environmentally hazardous materials, in particular incorrect disposal, can substantially damage the environment. Therefore: – Observe the valid environment directives. – After appropriate disassemble the parts have to be recycled. – Separate recyclable fraction and feed to recycling. – Dispose lubrication and grease properly. – Take immediate suitable measures, if environmentally hazardous materials are inadvertently released into the environment. In case of doubt, inform the responsible local authority about the damage.

2 Safety

2.1 Intended use

The MAGNETIC pedestrian barriers MPH are exclusively intended for managing the admission in to areas with restricted access.

The MAGNETIC universal controller MBC and MMC are exclusively intended for controlling the MAGNETIC pedestrian barrier MPH.

⚠ WARNING!

WARNING!
Non-intended use is dangerous!

Any use of the barriers other than intended and/or in a different manner can cause hazardous situations.

Therefore:

– Only use the pedestrian barrier and the controllers for the intended use.
– All specifications in these operating instructions have to be strictly complied with.

Any types of claims due to damage arising from improper use are excluded. The operator alone shall be responsible for any damage arising from improper use.

2.2 Changes and modifications

Changes, modifications and re-builds of the barrier modules can cause unforeseen danger.

A written authorisation of the manufacturer is absolutely required before executing any technical changes and modifications at the barrier modules, the control unit or the control program.

2.3 Operating personnel

2.3.1 Requirements

⚠ WARNING!

WARNING!
Risk of injury in case of inadequate qualification!

Improper handling can lead to considerable bodily injuries and property damage.

Therefore:

– Have any activities only carried out by the individuals designated for that purpose.

The operating instructions specify the following qualification requirements for the different fields of activity:

- **Instructed people**
  have been instructed during instructions provided by the operator with regard to the work assigned to them and possible hazards arising from improper conduct.
- **Specialised staff**
  is due to its technical training, knowledge and experience as well as due to its knowledge of the pertinent regulations able to carry out the work assigned to it and to independently recognise potential hazards.
- **Electrical specialists**
  are able, due to their technical training, knowledge and experiences as well as knowledge of the relevant standards and regulations, to execute tasks on electrical systems and to independently recognise possible hazards.
  In Germany, the electrical specialist must fulfil the provisions of the accident prevention regulation BGV A3 (e.g. master electrician). Appropriate regulations apply in other countries. The regulations valid there must be observed.

It must be expected that only those people are deployed who carry out their work reliably. People, whose ability to respond is affected, e.g. by drugs, alcohol or medicines, may not be assigned.

Furthermore, the age and profession-specific regulations valid at the operating location must be observed when selecting personnel.

2.4 Personal protective equipment

It is necessary to wear personal protective equipment when dealing with the machine so as to minimise health hazards.

Before carrying out any work, properly dress the necessary protective equipment such as work clothes, protective gloves, safety shoes and wear during work.

2.5 Occupational safety and special dangers

The remaining risks resulting from the hazard analysis are specified in the following section.

Observe the safety notes listed here and the warning notes mentioned in the other chapters of these instructions to reduce health hazards and to avoid dangerous situations.

Danger pictograms on the barrier modules

The relevant dangerous areas on the barriers can be identified by the following pictograms:

Electrical current

⚠ DANGER!

DANGER!
Mortal danger by electric current!

... denotes life threatening situations caused by electric current. Non-observance of the safety instructions causes severe injuries or death. Necessary work may only be carried out by an electrical specialist.

This pictogram is fixed on the following components:

– Mounting plates with electrical components.

Hot surfaces

⚠ CAUTION!

CAUTION!
Risk of burns!

… denotes the presence of a hot surface. Non-observance of the safety instructions can lead to minor injuries.

This pictogram is fixed on the following components:

– Transformer

Risk of crushing

⚠ CAUTION!

CAUTION!
Risk of crushing!

… denotes the presence of components and items moving towards each other. Non-observance of the safety instructions can lead to minor injuries.

This pictogram is fixed on the following component:

– Drive units

Hazard notes and occupational safety

For your own safety and for the protections of the barrier modules, the following information must be observed and complied with:

Electric current

⚠ DANGER!

DANGER!
Mortal danger by electric current!

Touching live parts can be lethal.

Damage to the insulation or to individual components can be lethal.

Therefore:

– Switch off the power supply immediately in case of damage to the insulation and arrange repair.
– Only electrical specialists may carry out work on the electrical system.
– Always turn the power supply off and safeguard against unintentional restarting before maintenance, cleaning, and repair work.
– Before starting work ensure that the electrical system is dead!
– Never bypass or deactivate fuses.
– When replacing fuses observe the correct amperage specification.
– Keep moisture away from live parts, this can result in short-circuit.

The following safety devices have to be installed on site. The safety devices have to be provided by the customer.

– Lockable two-pole mains switch
– Residual current device (RCD)
– Mains circuit-breaker

Improper transport

⚠ WARNING!

WARNING!
Danger by falling down or tilting of a barrier module!

The weight of the pedestrian barrier can severely injure a person and cause severe crushing!

Therefore:

– Have all transport work performed by trained personnel.
– Depending on the dead weight and size of the pedestrian barrier, use a pallet on which the barrier module can be moved by means of a forklift.
– For lifting a barrier module, use suitable lifting gear that is designed for the weight of the barrier.
– Lifting and carrying the pedestrian barrier from the pallet should be done by a minimum of two people.

Heavy weight

⚠ WARNING!

WARNING!
Risk of injury when lifting heavy objects alone!

The weight of heavy objects can severely injure a person!

Therefore:

– Lifting and carrying the pedestrian barrier from the pallet should be done by a minimum of two people.

Insufficient fixing

⚠ WARNING!

WARNING!
Risk of injury at insufficient fixing!

Insufficient fixing at the barrier modules or any single component at e.g. the glass wings can severely injure a person and cause severe crushing!

Therefore:

– Before operation ensure the firm fixing of the clamp bolts.
– Check the firm fixing of all screws according to maintenance schedule.
– Only qualified and skilled personnel are allowed to assemble the pedestrian barrier and the appropriate components.

Inadmissible operation

⚠ WARNING!

WARNING!
Risk of injury at inadmissible operation!

An inadmissible operation can cause death or severe injuries.

Therefore:

– Before operating the barriers check all electrical and mechanical functions.
– Only qualified and skilled personnel are allowed to operate the pedestrian barrier.

Sharp edges and spiky corners

⚠ WARNING!

WARNING!
Risk of injury on edges and corners!

Sharp edges and spiky corners can cause skin abrasions and cuts.

Therefore:

– Work carefully near to sharp edges and spiky corners.
– In case of doubt wear protective gloves.

Signposting

⚠ WARNING!

WARNING!
Risk of injury by illegible symbols!

Labels and signs can become dirty or unrecognisable in the course of time.

Therefore:

– Always keep safety, warning and operating notes in a well readable condition.
– Immediately renew damaged or unrecognisable signs or labels.

Broken glass elements

⚠ CAUTION!

CAUTION!
Risk of injury at broken glass elements!

Broken glass elements (e.g. glass wings, anti-climb panel) can cause cuts.

Therefore:

– Immediately change broken glass elements.
– Check glass elements according to maintenance plan.

3 Identification

3.1 Type plate

The type plate is provided on the upper part of the mounting plates.

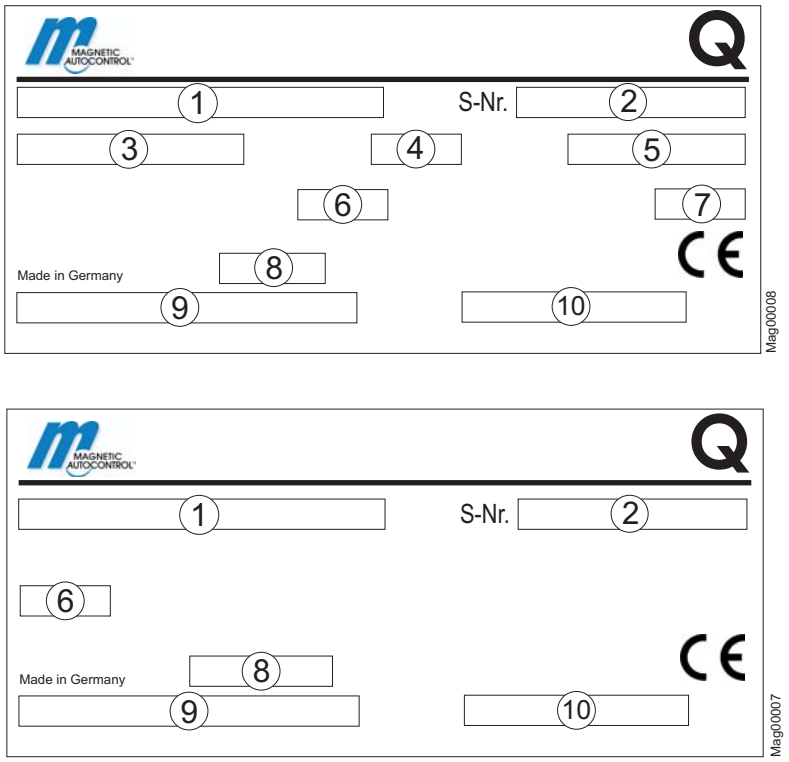

Fig. 1: Top: Type plate of the End module, Center module, Transition module Standard / Wide and Transition module Wide / Standard; Bottom: Type plate of the Basic module

1 Type code
2 Serial number
3 Power supply, Frequency
4 Current consumption
5 Power consumption
6 Protection class
7 Duty cycle
8 Year of manufacture
9 Bar code for type code
10 Bar code for serial number

3.2 Type code

M P H - 1 1 2 A - A 1 0 0 - XXXXX

Options-

Customer or project code, etc.

XX**	Customer / Project
No code	Standard glass wing travel 235 or. 430 mm
MF001	Glass wing travel 205 mm
MF002	Glass wing travel 402,5 mm
MF003	Glass wing travel 205 + 402,5 mm (E/F module)
MF004	Glass wing travel 235 + 402,5 mm (E/F Module)
MF005	Glass wing travel 205 + 430 mm (E/F Module)

Cover

0	without front panel
1	with front panel

Material

0	Powder-coated
1	Stainless steel 1.4301
2	Stainless steel 1.4571
3	Stainless chromium steel

Housing width

1	300 mm
2	520 mm
9	Customer-specific

Voltage

A	230 V / 50 Hz
B	115 V / 60 Hz

Version

A	Basic module
B	End module
C	Centre module
E	Transition module Standard / Wide
F	Transition module Wide / Standard

Drive type

2	Standard drive motor
4	Other drive versions

Housing size

1	Short housing
2	Long housing

Generation

Product type

H	High Door

Product group

P	Pedestrian

Product classification

M	MAGNETIC product

4 Technical data

4.1 Dimensions

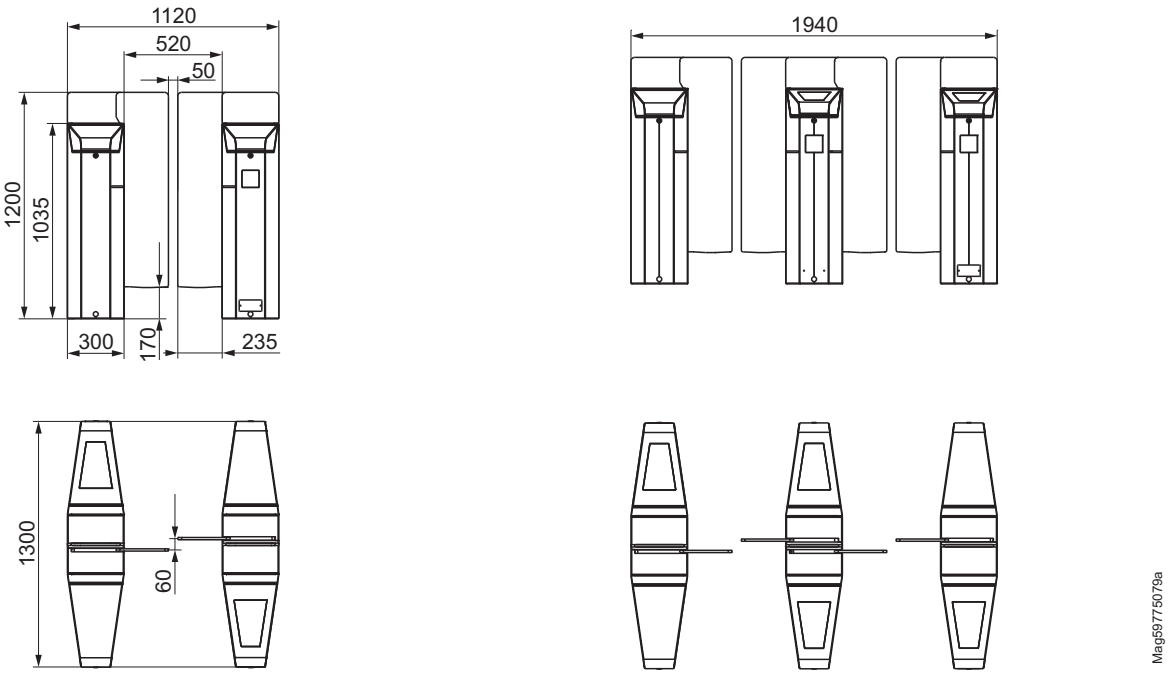

Fig. 2: Dimensions – Housing width 300 mm (Standard)

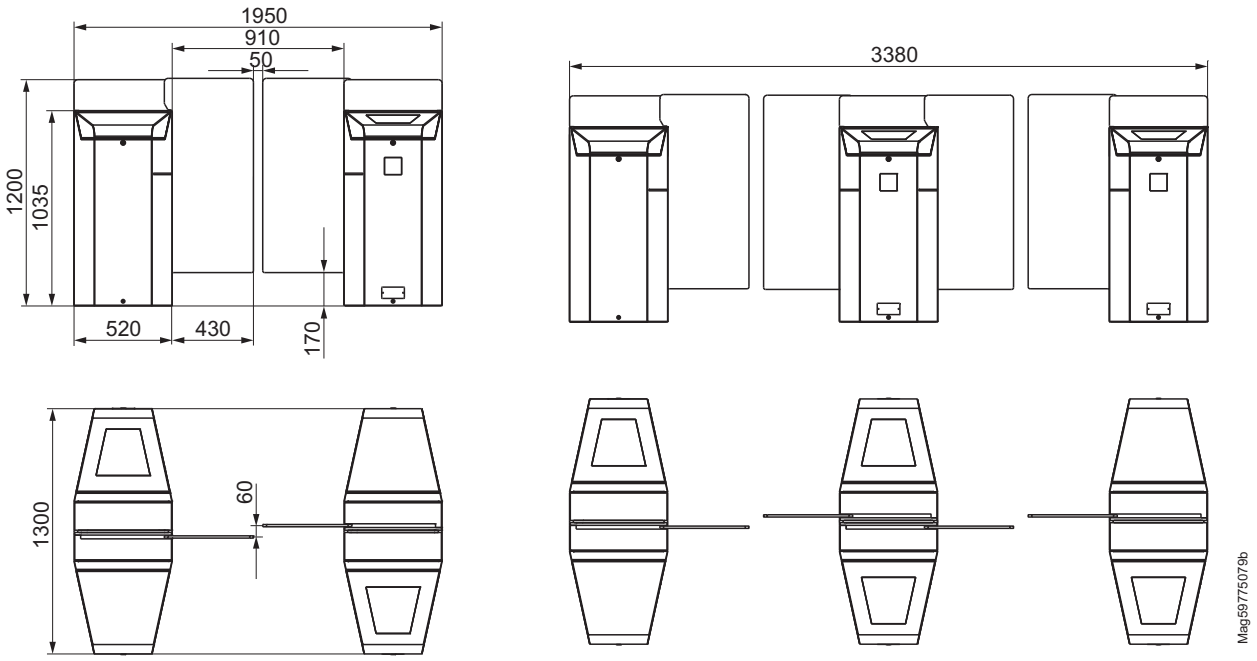

Fig. 3: Dimensions – Housing width 520 mm (Wide)

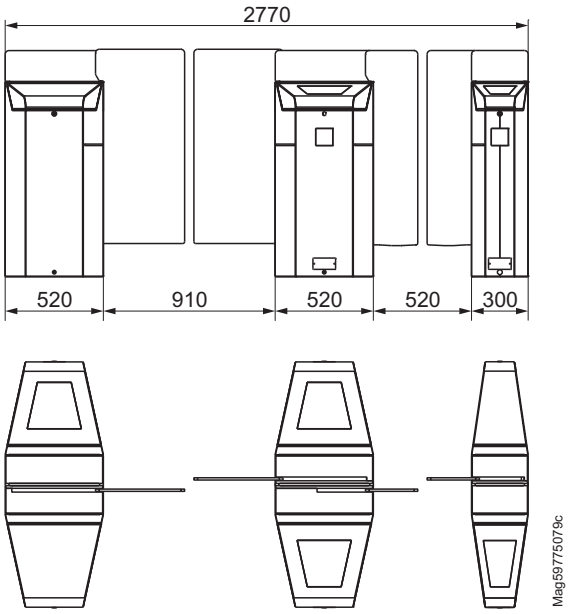

Fig. 4: Dimensions – Housing width 300 mm (Standard)/Housing width 520 mm (Wide)

4.2 Electrical connection

Designation	Unit	Value	
		MPH Standard	MPH Wide
Supply voltage	[V AC / Hz]	240 / 50 to 60	
Current consumption: Barrier open/close	[A]	0,4 / 0,6	0,4 / 0,4
Current consumption: Barrier in motion	[A]	0.7	1.7
Power consumption: Barrier open/close	[W]	60 / 100	60 / 60
Power consumption: Barrier in motion	[W]	110	320
Duty cycle	[%]	100	
Control voltage	[V DC]	42	
Control voltage	[V DC]	24	

Table 1: Technical data: Electrical connection

4.3 Operating conditions

Designation	Unit	Value	
		MPH Standard	MPH Wide
Ambient temperature range	[°C]	0 to +45	
Protection class	–	32	

Table 2: Operating conditions

4.4 Weight

4.4.1 Housing width 300 mm (Standard)

Designation	Unit	Value		
		Basic module MPH-112A	End module MPH-112B	Center module MPH-112C
Weight [1)]	[kg]	95	105	130

Table 3: Weight, Housing width 300 mm

4.4.2 Housing width 520 mm (Wide)

Designation	Unit	Value		
		Basic module MPH-112A	End module MPH-112B	Center module MPH-112C
Weight [1)]	[kg]	135	140	180

Designation	Unit	Value	
		Transition module MPH-112E	Transition module MPH-112F
Weight [1)]	[kg]	160	165

Table 4: Weight, Housing width 520 mm

4.5 Performance data

Designation	Unit	Value	
		MPH Standard	MPH Wide
Opening / Closing time [2)]	[s]	0.6 – 1.2	1.0 – 1.4

Table 5: Performance data

[1)] without glass wings/anti-climb panels

[2)] depending on the size of the glass wings

5 Design and function

5.1 Design

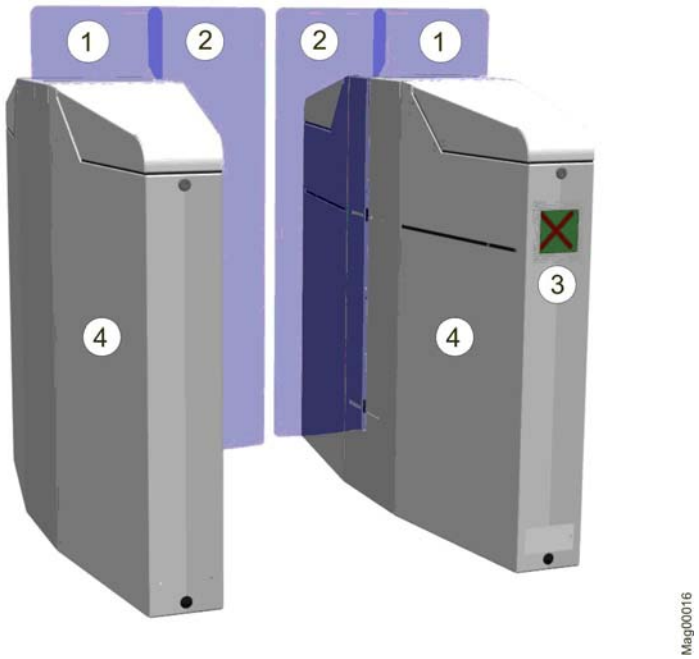

Fig. 5: Design pedestrian barrier

1 Anti-climb panel
2 Glass wing
3 Barrier End Display (GED)
4 Pedestrian barrier (module)

5.2 Lane configuration

The pedestrian barrier can be supplied in the following modules:

- Basic module
- End module
- Center module
- Transition module standard / wide
- Transition module wide / standard.

The basic module has got a slave function, the end module a master function and the others have got both, master and slave function.

For a lane, one module with slave and one with master function is always required. Each lane works independently.

The number of lanes can be expanded optionally by center and transition modules.

The following Fig. shows possible lane configurations.

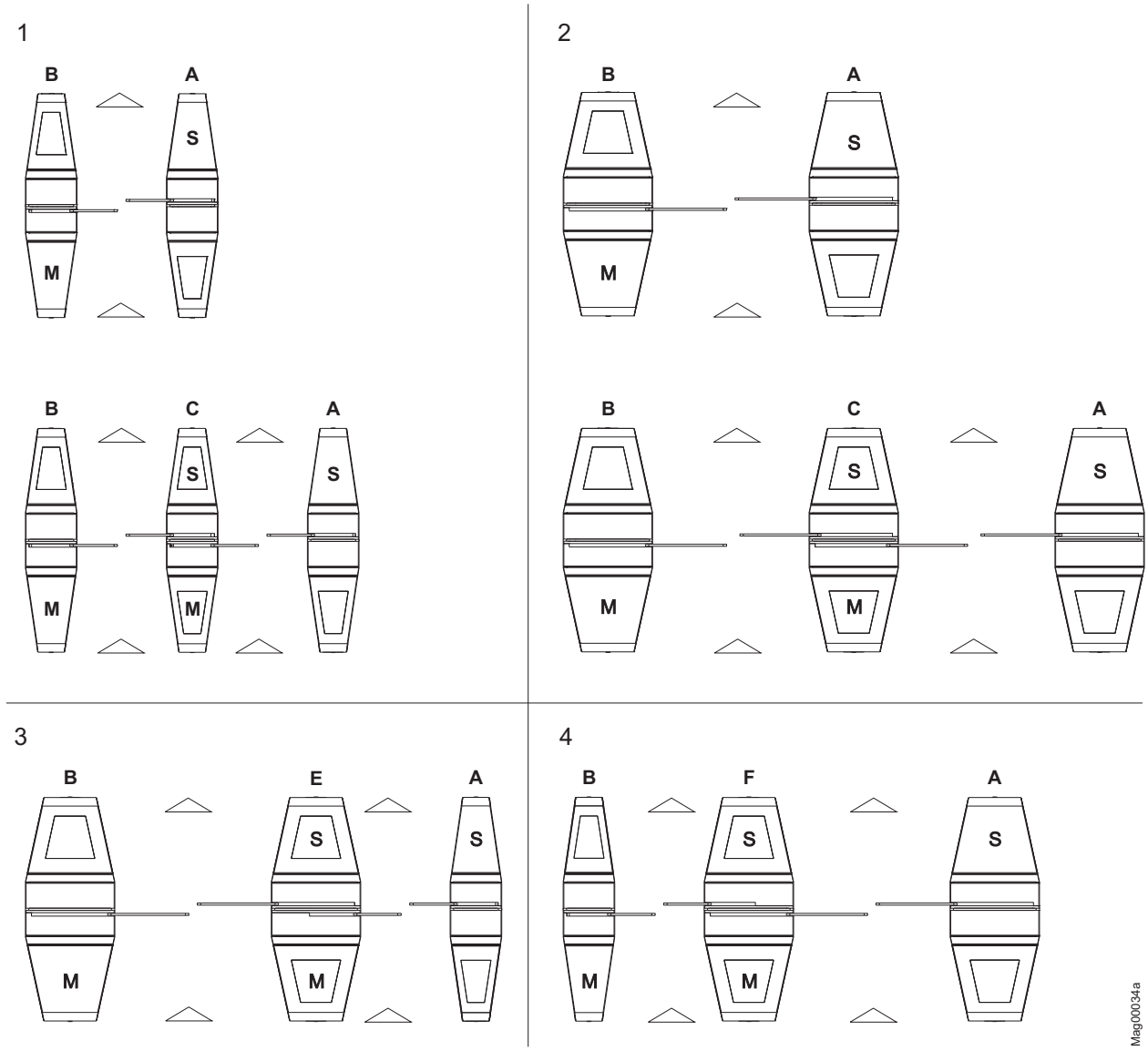

Fig. 6: Lane configuration

1 Line configuration of pedestrian barrier with modules "Standard (300 mm)"
2 Line configuration of pedestrian barrier with modules "Wide (520 mm)"
3 Line configuration of pedestrian barrier with transition modules "Standard / Wide (300 mm / 520 mm)"
4 Line configuration of pedestrian barrier with transition modules "Standard / Wide (520 mm / 300 mm)"

A Basic module
B End module
C Center module
E Transition module standard / wide (300 mm / 520 mm)
F Transition module wide / standard (520 mm / 300 mm)

M Mounting plate "Master". Connection of mains and control cables.
S Mounting plate "Slave". Connection of interconnection cables from master (pre-manufactured cables).

5.3 Function

The pedestrian barrier MPH is used for a fast access control of pedestrians e.g. at the reception area of public buildings, hotels, companies or museums. With suitable roofing, it can be used out of doors, e.g. in sports stadiums.

The modular system permits numerous different lane configurations.

Basically, the pedestrian barrier can be used in both directions. In multi-lane installations with high throughput rates, the entry and exit lanes can also be configured for one-way passage.

In its normal state, the pedestrian barrier is closed. The glass wings only open after authorisation from an external command unit, such as a card reader.

Attempted cheating by unauthorised persons, e.g. passage in the wrong direction, or an attempt by a second person to follow without authorisation (tailgating) is recognised and activates the alarm system. Recognition in such cases is by several infrared light barriers.

With MHTM direct drive technology, the glass wings can be blocked in any position, e.g. by hand. No slipping clutches or similar devices are required.

In the event of a power failure, the glass wings are opened automatically by springs.

5.4 Control system

Two motor controllers MMC-120 are connected by a CAN bus to the MBC-110 logic controller.

A total of 8 infrared light barriers and two barrier end displays are connected to digital inputs and outputs.

For the customer, there are digital inputs to open the pedestrian barrier, e.g. for a card reader, and an emergency input. From relay outputs various feedback messages are available for the customer.

The power supply for the controllers is provided by a transformer power supply with two output voltages, 30 VDC and 42 VDC.

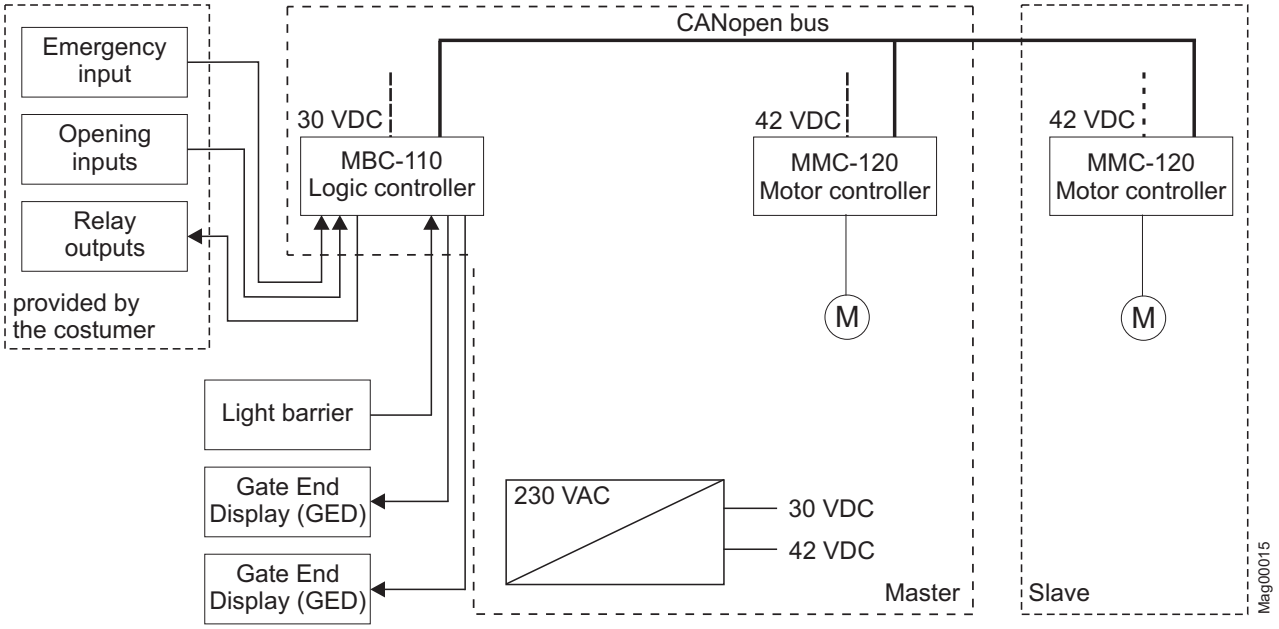

Fig. 7: Block diagram control system

5.5 Control and display elements

5.5.1 Barrier End Display (GED)

The Barrier End Display shows the passage direction in which the pedestrian barrier may be used. Basic- and end modules are each equipped with one Barrier End Display, center and transition modules are each equipped with two Barrier End Displays.

Position	Description
Green arrow	Passage is permitted.
Red cross	Passage is blocked.

Table 6: Barrier End Display

6 Transport and storage

6.1 Safety notes for transport

Improper transport

⚠ WARNING!

WARNING!
Danger by falling down or tilting of a pedestrian barrier!

The weight of the pedestrian barrier can severely injure a person and cause severe crushing!

Therefore:

– Have all transport work performed by trained personnel.
– Depending on the dead weight and size of the pedestrian barrier, use a pallet on which the barrier module can be moved by means of a forklift.
– For lifting a pedestrian barrier, use suitable lifting gear that is designed for the weight of the barrier.
– Lifting and carrying the pedestrian barrier from the pallet should be done by a minimum of two people.

Heavy weight

⚠ WARNING!

WARNING!
Risk of injury when lifting heavy objects alone!

The weight of heavy objects can injure a person!

Therefore:

– Lifting and carrying the pedestrian barrier from the pallet should be done by a minimum of two people.

Improper transport

NOTICE!

NOTICE!
The pedestrian barrier can be damaged by improper transport!

Substantial material damages can result from improper transport.

Therefore:

– Have all transport work performed by trained personnel.
– When unloading the packages and during in-plant transportation always proceed with greatest care and caution.
– Observe the symbols on the packaging.
– Observe the dimensions of the unit.
– Loading, unloading as well as moving the machine must take place with greatest care.
– Only remove packaging directly before assembly.

Personal protective equipment

The following must be worn during all transport work:

- Work clothes
- Protective gloves
- Safety shoes.

6.2 Transport inspection

Immediately check the delivery after receipt for completeness and transport damages.

Proceed as follows in the case of outwardly recognisable transport damage:

- Do not accept the delivery or only under reserve.
- Note the extent of damage on the transport documents or on the delivery note of the forwarder.
- Lodge complaint.

NOTE!

Lodge a complaint for each defect, as soon as it is recognised. Compensation claims can only be submitted within the valid complaint periods.

6.3 Transport

The pedestrian barriers arrive finally assembled.

The lifting gear must be designed for the weight of the barrier module.

For transport barrier modules consider the safety notes on Page 29, Chapter 6.1.

For future transports:

- Secure loose cables.
- Secure against vibrations.
- Securely fasten the barrier module prior to transport (e.g. screw it onto a pallet).
- Transport and put down pedestrian barrier with a forklift and lift with suitable lifting gear.

6.4 Storage

Sotre pedestrian barriers or packages under the following conditions:

- Do not store outdoors.
- Store dry and dust free.
- Do not expose to aggressive media.
- Protect against solar irradiation.
- Avoid mechanical vibrations.
- Storage temperature: –10 to +60 °C
- Relative humidity: max. 95 %, non-condensing
- Regularly check the general condition of all parts and packaging, if stored for longer than 3 months.

7 Assembly and installation

7.1 Safety

General

⚠ WARNING!

WARNING!
Danger by inappropriate installation!

Inappropriate installation can cause severe injuries!

Therefore:

– Only qualified personnel, authorised by the operator and instructed appropriately, may carry out installation tasks.
– Before beginning work, ensure that there is sufficient assembly space.
– Pay attention to tidiness and cleanness at the assembly site! Loosely stacked or discarded components and tools are accident sources.
– Ensure correct arrangement and correct fit on the components.
– Install all fastening elements correctly.

Improper transport

⚠ WARNING!

WARNING!
Danger by falling down or tilting of a pedestrian barrier!

The weight of the pedestrian barrier can severely injure a person and cause severe crushing!

Therefore:

– Have all transport work performed by trained personnel.
– Depending on the dead weight and size of the pedestrian barrier, use a pallet on which the barrier module can be moved by means of a forklift.
– For lifting a pedestrian barrier, use suitable lifting gear that is designed for the weight of the barrier.
– Lifting and carrying the Pedestrian barrier from the pallet should be done by a minimum of two people.

Heavy weight

⚠ WARNING!

WARNING!
Risk of injury when lifting heavy objects alone!

The weight of heavy objects can severely injure a person!

Therefore:

– Lifting and carrying the pedestrian barrier from the pallet should be done by a minimum of two people.

Improper transport

NOTICE!

NOTICE!
The pedestrian barrier can be damaged by improper transport!

Substantial material damages can result from improper transport.

Therefore:

– Have all transport work performed by trained personnel.
– When unloading the packages and during in-plant transportation always proceed with greatest care and caution.
– Observe the symbols on the packaging.
– Observe the dimensions of the pedestrian barrier.
– Loading, unloading as well as moving the pedestrian barrier must take place with greatest care.
– Only remove packaging directly before assembly.

Personal protective equipment

The following must be worn during all assembly and installation work:

- Work clothes
- Protective gloves
- Safety shoes.

Special tools

Following special tools are required for assembly and installation works:

- Torque wrench (15 Nm)

7.2 Required steps

The following procedures have to be observed during assembly and installation:

- Laying the foundation
- Installing the empty conduits
- Unpacking the pedestrian barrier
- Mounting the pedestrian barrier on the foundation
- Assemble glass wings and anti-climb panels.
- Connect pedestrian barrier electrically, wire modules.
- Assemble housing.

7.3 Foundation and empty conduits

Before assembling the pedestrian barrier a foundation has to be laid and empty conduits have to be installed.

NOTE!

To provide a trouble-free operation use separate conduits for data cables and mains cables.

Foundation

The foundation must meet the following requirements:

- have sufficient load-carrying capacity.
- have a skid-proof surface.
- be level and horizontal
- have sufficient thickness for the fastenings.

Empty conduits

Observe the following during planning and installing of the empty conduits:

- Install empty conduits according to the foundation plan. Refer to Page 20, **Fehler! Verweisquelle konnte nicht gefunden werden.**.
  - Install 2 conduits between each module.
  - Install a conduit for each module with master function for the mains cables.
- Additional cabling for access control and other peripheral equipment is the customer's responsibility.
- Conduits have to be planned to a sufficient length.

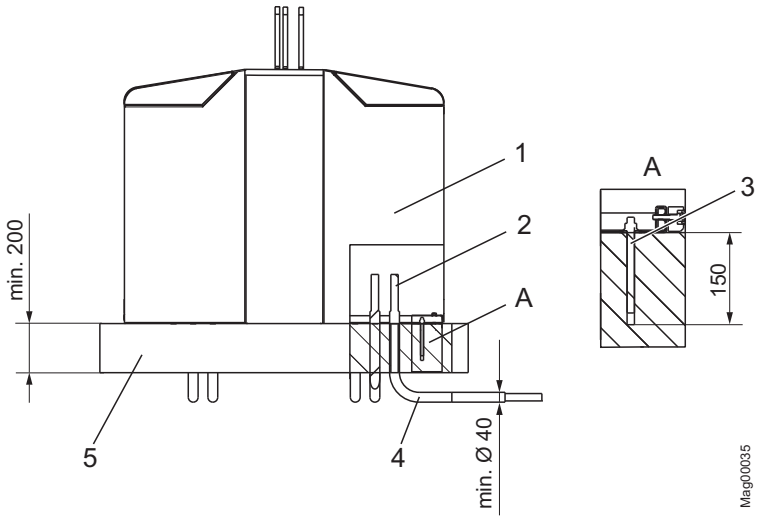

Fig. 8: Foundation

1 Pedestrian barrier
2 Have cables overlapping for approx. 1 m of the conduits
3 Express anchor bolts M12x158,
borehole average 12 mm, drilling depth 150 mm
4 Conduit for mains cable and data line
5 Foundation level and horizontal
Concrete or appropriate continuous industrial floor.
In case of flagging make sure that the anchor bolts are secured firmly in the foundation. If necessary, use longer bolts.

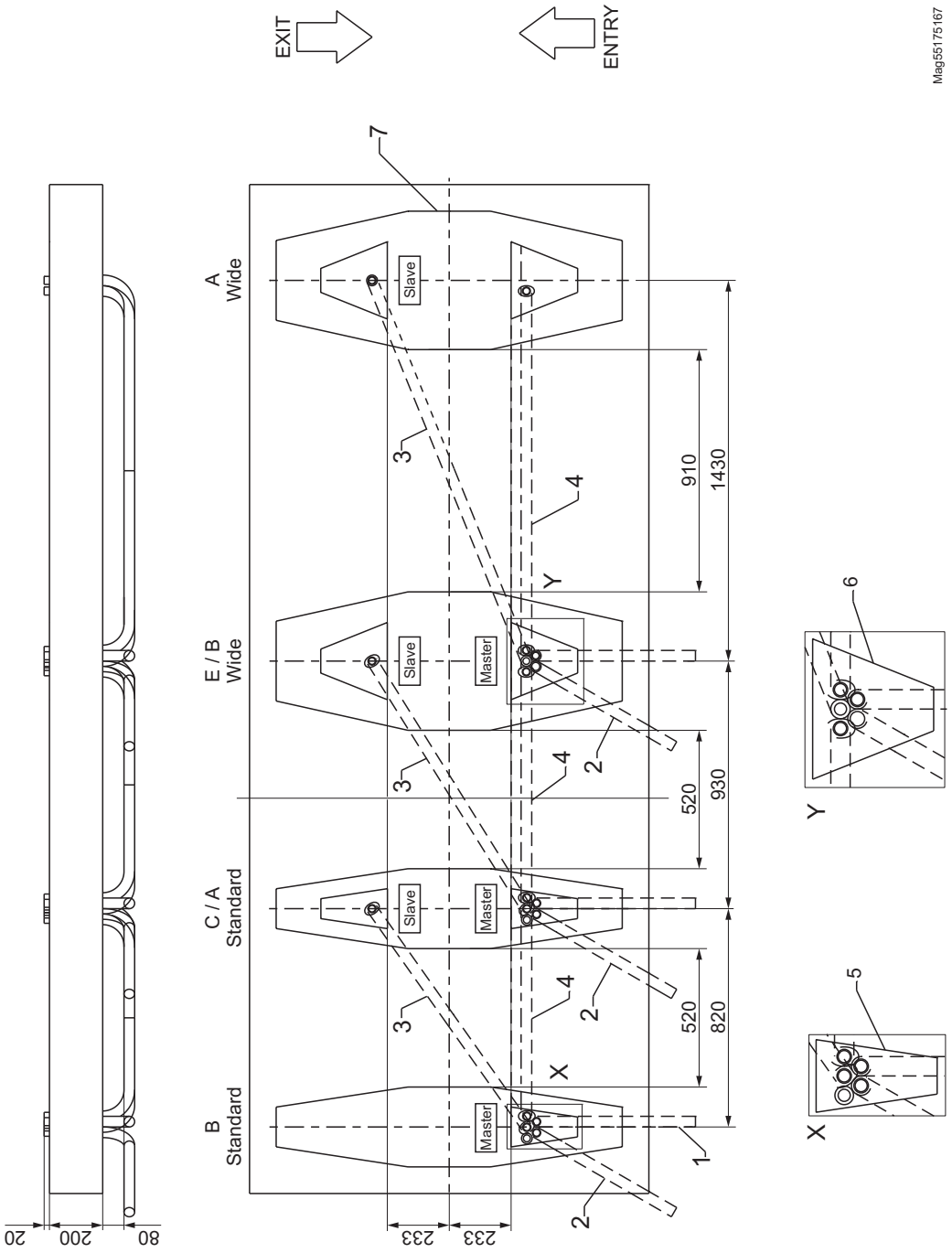

Fig. 9: Foundation plan and layout for empty conduits

1 Mains to the master
2 External control wiring to the master
3 Empty conduits master – slave, d min = 40 mm
4 Empty conduits to the card reader d min = 30 mm
5 Boundary of the "Standard" module
6 Boundary of the "Wide" module
7 Foundation, recommended distance approx. 110 mm

B End module "Standard"
C/A Center module "Standard" or End module "Standard"
E/B Transition module "Standard – Wide" or End module "Wide"
A Basic module "Wide"

Put data lines and mains cables into separate conduits. module

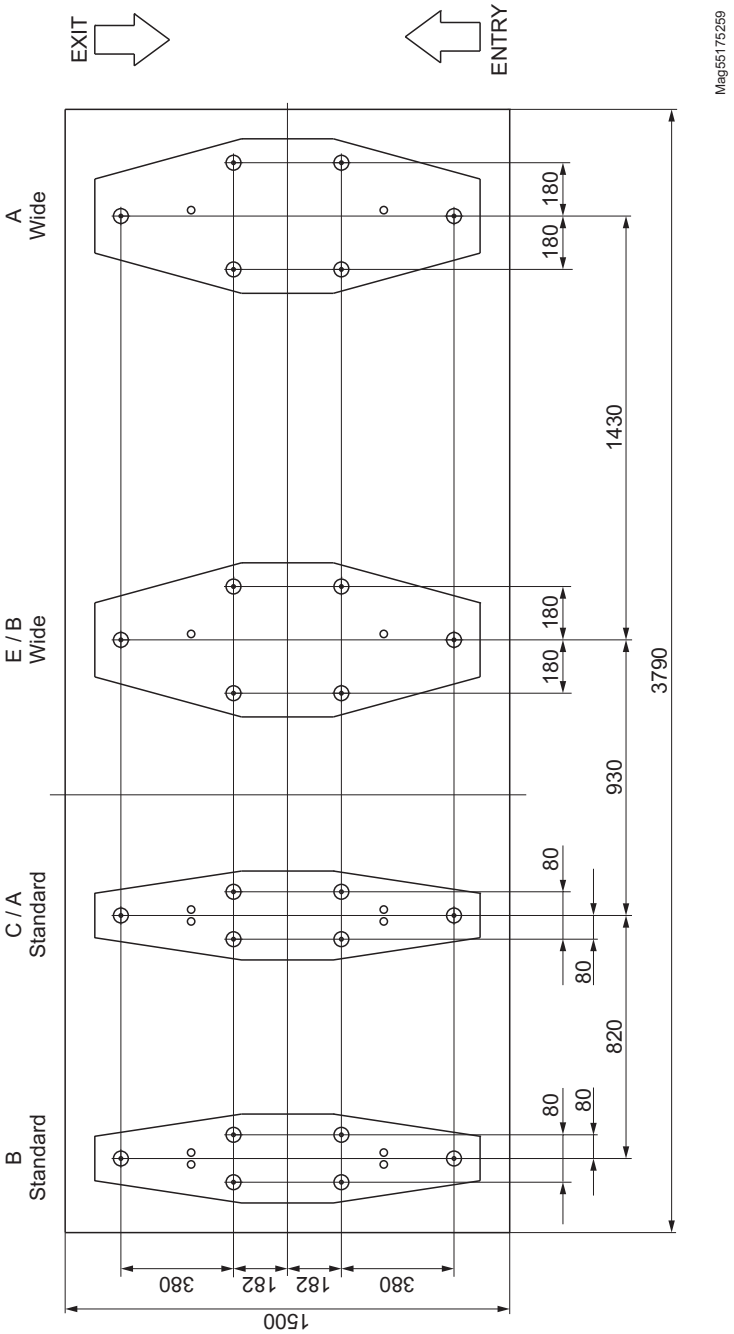

Fig. 10: Foundation plan and layout for empty conduits

B End module "Standard"
C/A Center module "Standard" or End module "Standard"
E/B Transition module "Standard – Wide" or End module "Wide"
A Basic module "Wide"

Borehole diameter D = 12 mm, drilling depth 150 mm

7.4 Unpacking

The individual packages are packed according to the expected transport conditions. Only environment-friendly materials have been used for the packaging.

The packaging should protect the individual components against transport damages, corrosion, etc up to the assembly. Therefore do not destroy the packaging and remove only directly before assembly.

1. Unpack the pedestrian barrier.
2. Align pedestrian barrier upright
3. Separate material according to type and size and continue to use them after recycling.

7.5 Dismantle end housing

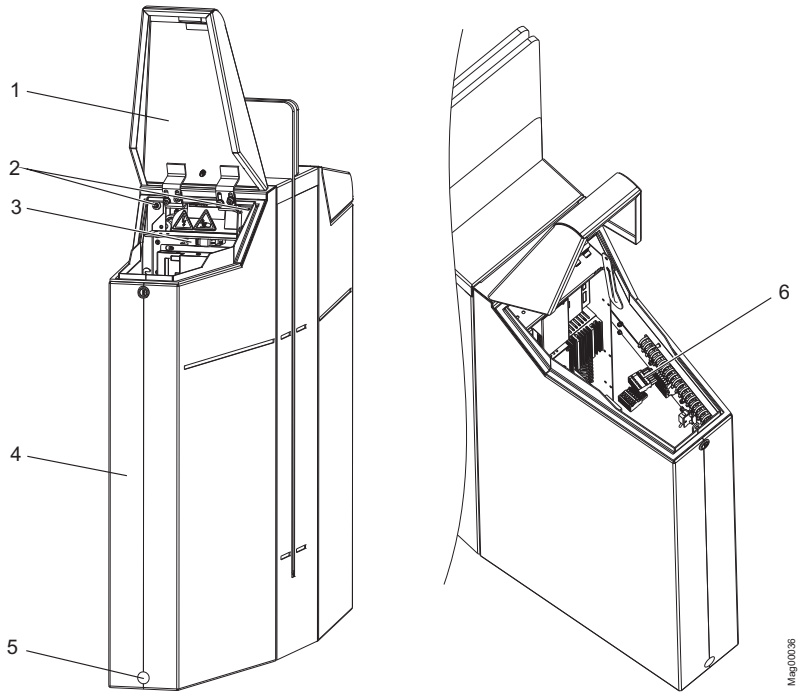

Fig. 11: Dismantle end housing

1 Top cover
2 Connecting bolt end housing – central housing
3 Mains switch on mounting plate "Master"
4 End housing
5 Lower central screw and plastic cap
6 Plug for light barriers (ST1 – ST4)

Dismantle end housing

To mount the pedestrian barrier onto the foundation the end housing has to be dismantled. See Fig. 11.

1. Open top cover.
2. Disconnect the plug for the light barriers (ST1 – ST4).
3. Disconnect the plug from Barrier End Display.
4. Undo the connecting screws "end housing – central housing" in both upper corners.
5. Undo the lower central screw.
6. Remove end housing.

7.6 Assembly on the foundation

Risk of crushing

⚠ CAUTION!

CAUTION!
Risk of crushing!

In certain circumstances a finger can be crushed when opening a glass wing.

Therefore:

– If the basic or the end module is directly placed at a wall, pay attention that there is a minimum distance of 25 mm between the glass wing edge and the wall while the glass wing is open.

1. The foundation has been set to the adequate hardness.
2. Drill holes for the anchor bolts according to the foundation plan.
   - Observe the minimum distance between the housings. Refer to Page 22, Fig. 2.
   - Ensure that the pedestrian barrier is in line.
3. Position barrier modules on the foundation.
4. The pedestrian barrier is fixed by six express anchors to the ground frame onto the foundation. The mounting material is included in delivery.

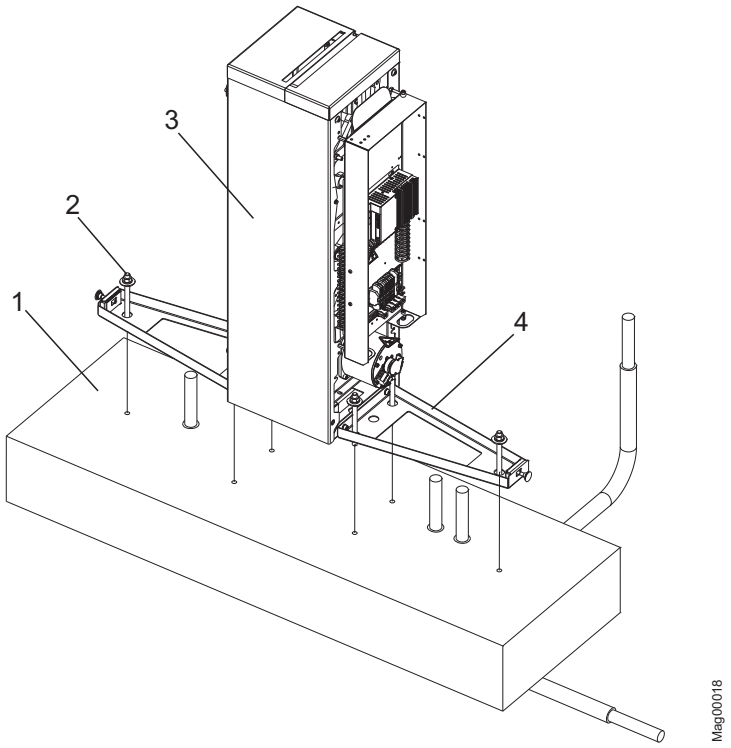

Fig. 12: Assembling pedestrian barrier on the foundation

1 Foundation
2 Express anchor, nuts, spring washer and plain washer (6 times)
3 Central housing
4 Ground frame

7.7 Assemble anti-climb panels, glass wings and cover bands

NOTE!

Imperatively keep to the order of the assembly:

- *Assemble anti-climb panel.*
- *Assemble glass wings.*
- *Assemble cover strips.*
- *Arrange electrical connections.*
- *Assemble end housing.*

7.7.1 Blocking the drive unit

Danger of crushing

⚠ CAUTION

CAUTION!
Danger of crushing!
A moving drive unit can cause crushing.
Therefore:
– Block drive unit during repair.

Risk of injury by spring tension

⚠ CAUTION!

CAUTION!
Risk of injury by spring tension!
The recuperating spring of the drive unit is under tension. Springs under tension can cause injuries. .
Therefore:
– Observe while working at the drive unit that the recuperating spring is under tension.

Risk of breakage

NOTE!

NOTE!
Risk of breakage of the glass wings!
The glass wings can fall down and break while being inappropriately assembled.
Therefore:
– Secure the glass wings against falling down while being assembled by the help of a second person.

1. Undo the holding screws of the mounting panel.
2. Swing mounting panel to the side. The drive unit is now accessible.

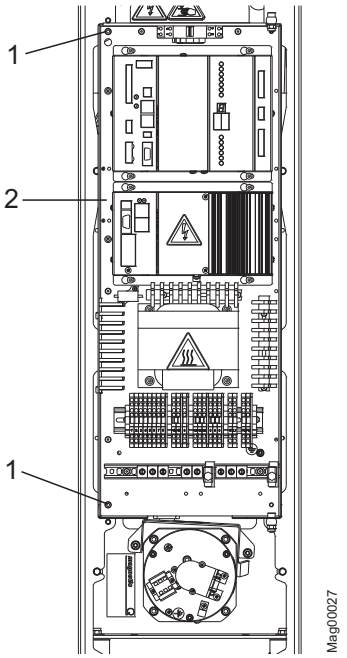

Fig. 13: Mounting panel of the left end housing

1 Holding screws
2 Mounting panel

3. Block the drive unit.
   The fixing screw must align and engage with the fixing bore in the L-lever. Loosen the counter nut to turn the fixing screw. Counter screw with the counter nut, so that the drive unit is blocked with a maximum of free play as much as possible.

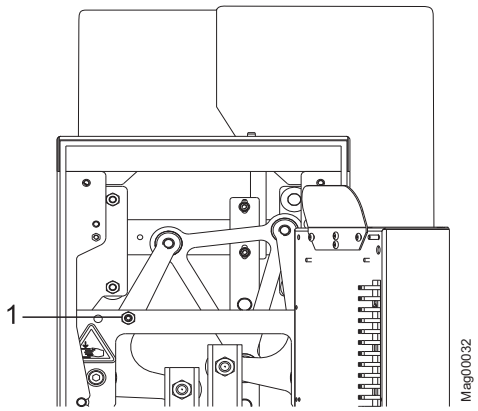

Fig. 14: Drive unit of the left end housing

1 Fixing screw of the drive unit

7.7.2 Assemble the anti-climb panel

Risk of breakage

Attention!

Attention!
Risk of breakage of the anti-climb panel!
The anti-climb panel can break if it cants.
Therefore:
– Do not cant the anti-climb panel while being assembled.

1. Loosen the four hexagon-head screws. Do not remove hexagon-head screws.

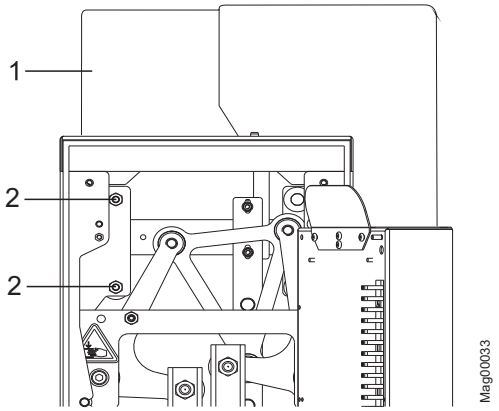

Fig. 15: Central housing if mounting panels swung away

1 Anti-climb panel
2 Hexagon head screws

7.7.3 Assemble the glass wings

Risk of breakage

NOTE!

NOTE!
Risk of breakage of the glass wings!

The glass wings can fall down and break while being inappropriately assembled.

Therefore:

– Secure the glass wings against falling down while being assembled by the help of a second person.

1. Stick the glass wing into the appropriate clamping strip. Secure the glass wings against falling down by the help of a second person.

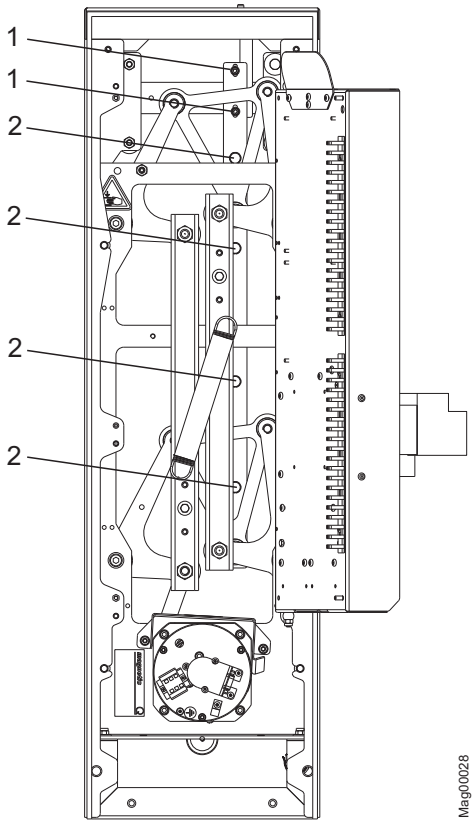

Fig. 16: cover strip carrier, screws on the clamping strip

1 Nuts for the cover strip carrier
2 Clamping screws on the clamping strip

2. Tighten highest and lowest clamping screw, so that the glass wing is fixed but can be positioned.
3. Position the glass wing. Set the following measures between housing and glass wing:
   - MPH Standard: 150 mm
   - MPH Wide: 190 mm

   Due to manufacturer tolerances, there may be differences.
4. Take the drive unit off its block. Loosen fixing screw. Refer to Page 42, Fig. 14. Make sure that the counter nut is tightened again to prevent unintended turning of the fixing screw.
5. Position drive unit at "glass wing open" and check if the glass wing squares up with the housing to the passage side.
6. Should the glass wing not square up with the housing repeat steps 2 to 5 to correct the appropriate difference.
7. Tighten the clamping screws progressively and alternately to a torque of approx. 15 Nm. Refer to Page 44, Fig. 16.

7.8 Assemble the cover strip

1. Hinge cover strip to the carrier pin.

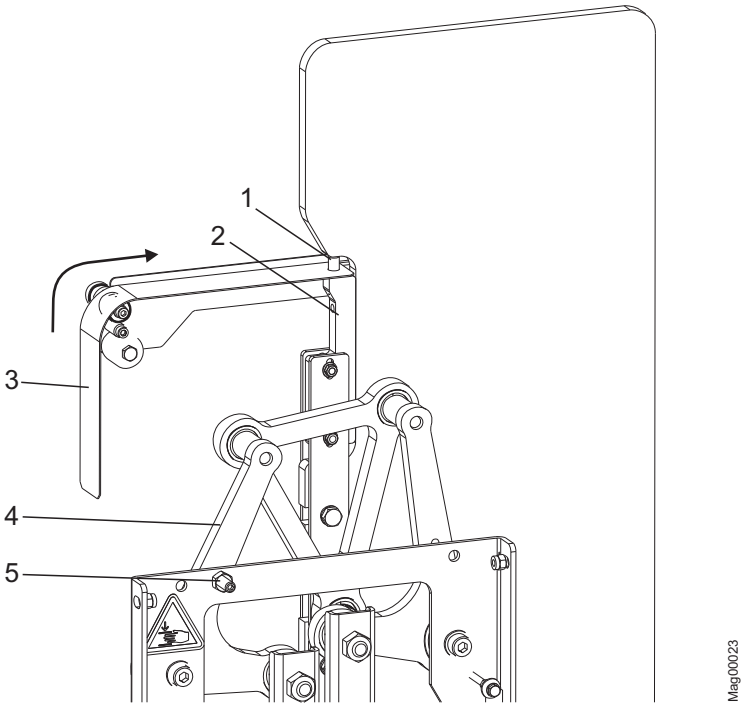

Fig. 17: Changing the cover strip

1 Carrier pin
2 Carrier
3 Cover strip
4 L-lever

2. Move carrier to the highest position, so that the carrier pin abuts upon the edge of the panel.
3. Tighten fastening nuts. Pay attention that the carrier abuts on the glass wing edge.
4. Unblock drive unit.
5. Fix mounting plate. Refer to Page 42, Fig. 14.

1. Carry out electrical connection according to Chapter 8, Page 47.
2. Assemble end housing to Chapter 9, Page 58.

8 Electrical connection

8.1 Safety

General

⚠ WARNING!	
	**WARNING!** **Danger by inappropriate installation!** Inappropriate installation can causes severe injuries or death. Therefore: – Only qualified personnel, authorised by the operator and instructed appropriately, may carry out installation tasks. – Pay attention to tidiness and cleanness at the assembly site! Loosely stacked or discarded components and tools are accident sources. – Install all fastening elements correctly.

Electrical connection

Electric current

⚠ DANGER!

DANGER!
Mortal danger by electric current!

Touching live parts can be lethal.

Damage to the insulation or to individual components can be lethal.

Therefore:

- Switch off the power supply immediately in case of damage to the insulation and arrange repair.
- Only electrical specialists may carry out work on the electrical system.
- Before starting work ensure that the electrical system is dead!
- Always turn the power supply off and safeguard against unintentional restarting before maintenance, cleaning, and repair work.
- Never bypass or deactivate fuses.
- When replacing fuses observe the correct amperage specification.
- Keep moisture away from live parts, this can result in short-circuit.

The following safety devices have to be installed on site. The safety devices have to be provided by the customer.

- Lockable 2-pole mains switch
- Residual current device (RCD)
- Mains circuit-breaker

Hot surfaces

⚠ CAUTION!

CAUTION!
Danger of burns!

The heating unit, transformers or motors may have a hot surface. Touching these hot surfaces can lead to burns.

Therefore

- Do not touch these hot surfaces.
- After switching off the power supply wait some minutes until these components have cooled down.
- Wear protective gloves if necessary.

Personal protective equipment

The following must be worn during all installation work:

- Work clothes
- Protective gloves
- Safety shoes.

8.2 Electrical connection

The end housings must be dismantled. Refer to Page 38.

1. Earth system. Connect barrier modules with each other by using the earthing clamps.
2. Connect the mains cable to every centre and end module according to wiring diagram. Refer to Page 20, Fig. 19 and to Page 106.
3. Connect low-voltage cables and data cable (CAN bus) according to wiring diagram. Use shielded cables. Refer also to Page 50, Fig. 19.
4. Connect the cable shields of both ends of the shielded cables to EMC clamps on the mounting plates.

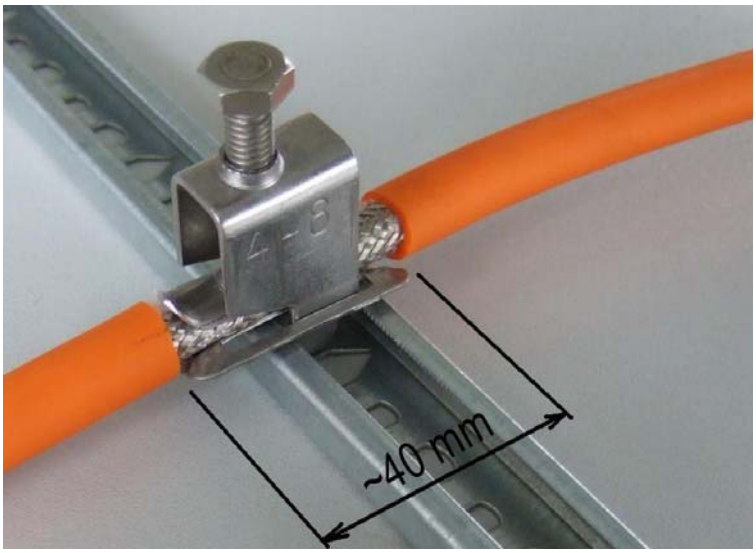

Fig. 18: Assembly EMC clamp

Electrical connection

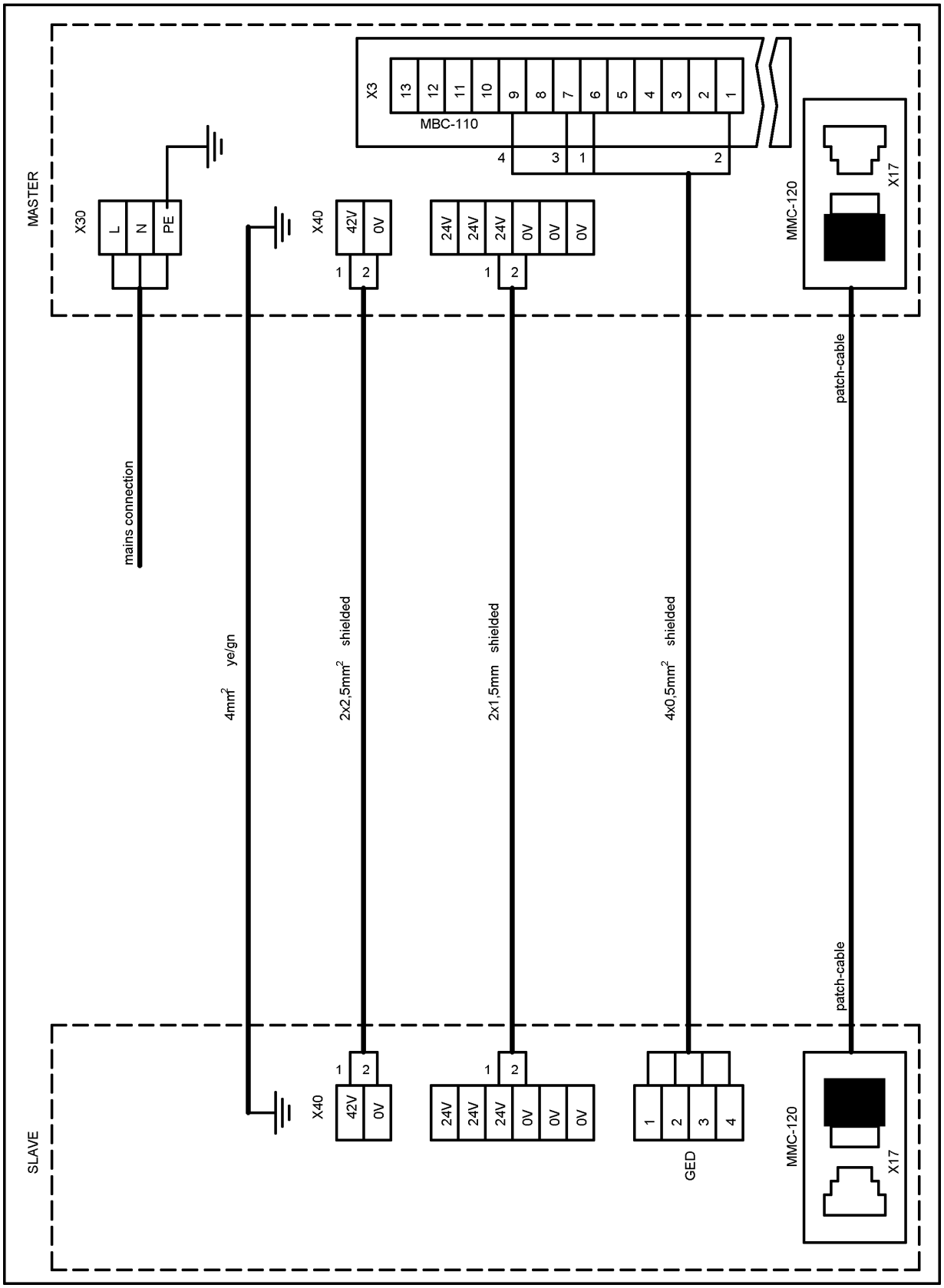

Fig. 19: Connections for mains supply and connecting lines

8.3 Connecting customer's control wiring (MBC-110)

The following connections are available for control and feedback on customer's side:

- 3 Digital inputs to control the pedestrian barrier.
- 6 Relays outputs to feed back information.

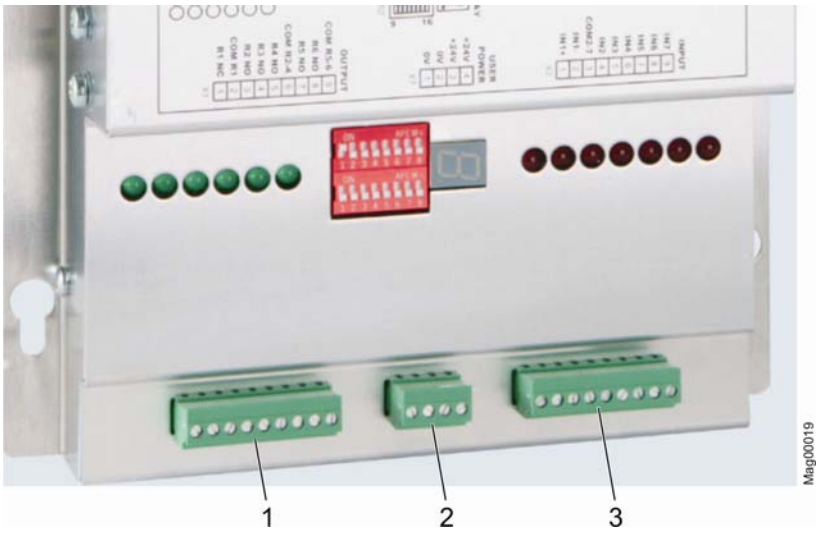

Fig. 20: Customer connections to MBC-110

1 Connection relay outputs, plug X1
2 24 V DC output, max. 300 mA, plug X7
3 Connection digital inputs, plug X2

Electrical connection

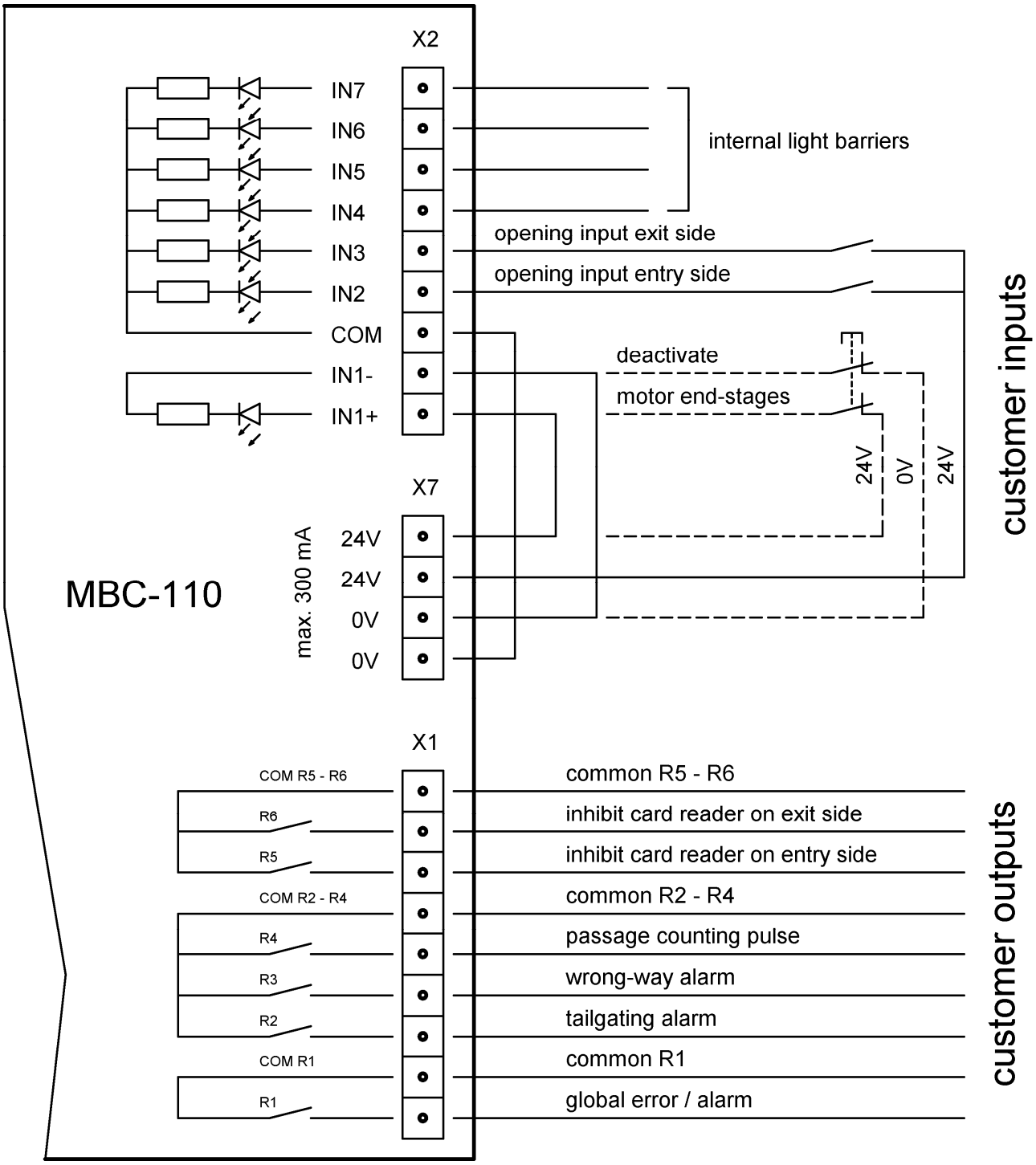

Fig. 21: MBC-110, connecting diagram customer's side

NOTE!

The maximum output current at connector X7 is limited to 300 mA by a self-resetting fuse.

8.3.1 Digital inputs

- All inputs galvanically isolated by optocouplers
- Input voltage 24V ±10%
- Input current 10 mA per input
- Impulse length for inputs 100 ms – 300 ms

Input	Function	Description
1	Deactivate motor end-stages in case of emergency	This input permits to power of the motor end-stages in case of an emergency. The glass wings are pulled open by springs then. The input is fail-safe, i.e. the pedestrian barrier is only operative when a continuous signal is present. Refer also to Page 57.
2	Opening input entry side	At this input, the barrier can be opened by a card reader, for example, indicating a valid passage on the entry side. Refer also to Page 57.
3	Opening input exit side	At this input, the barrier can be opened by a card reader, for example, indicating a valid passage on the exit side. Refer also to Page 57.
4	Light barrier LS 1	The two light barriers LS 1 and LS 2 are evaluated together to permit direction detection of a passage. They are in front of the card reader on the entry side of the pedestrian barrier.
5	Light barrier LS 2	
6	Light barrier LS 5	The two light barriers LS 5 and LS 6 are evaluated together to permit direction detection of a passage. They are in front of the card reader on the exit side of the pedestrian barrier.
7	Light barrier LS 6	
8	Safety light barrier LS 3A and LS 3B	The light barriers LS 3A and LS 3B work in parallel. They provide a security monitor close to the glass wings. In combination with safety light barriers LS 4A and LS 4B, they also serve to detect a completed passage with ensuing closure of the glass wings.
9	Safety light barrier LS 4A and LS 4B	The light barriers LS 4A and LS 4B work in parallel. They provide a security monitor close to the glass wings. In combination with safety light barriers LS 3A and LS 3B, they also serve to detect a completed passage with ensuing closure of the glass wings.

Table 7: Digital inputs

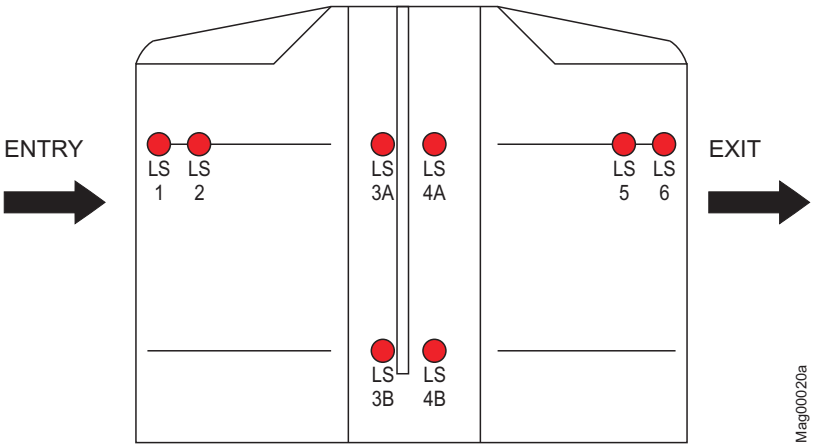

Fig. 22: Position light barriers

8.4 Connecting emergency input

The inputs IN1– and IN1+ are intended to be used as superior emergency opening inputs, for example for fire alarm systems. Factory setting of these inputs are defined at 0 V or 24 V by means of two wire jumpers.

Several pedestrian barriers should be interrupted at the same time by a central emergency switch:

1. Install a customer's 24V power supply in the external control cabinet to drive the relays.
2. In every pedestrian barrier install each a customer two-pole relay.
3. Remove wire jumpers from terminals IN1– and IN1+.
4. Wire emergency input according to Fig. 21 and Fig. 23.

In case that input IN1 is interrupted the motor end-stages are powered off, i. e. the motors are powerless, the glass wings are opened by springs and the passage is completely free.

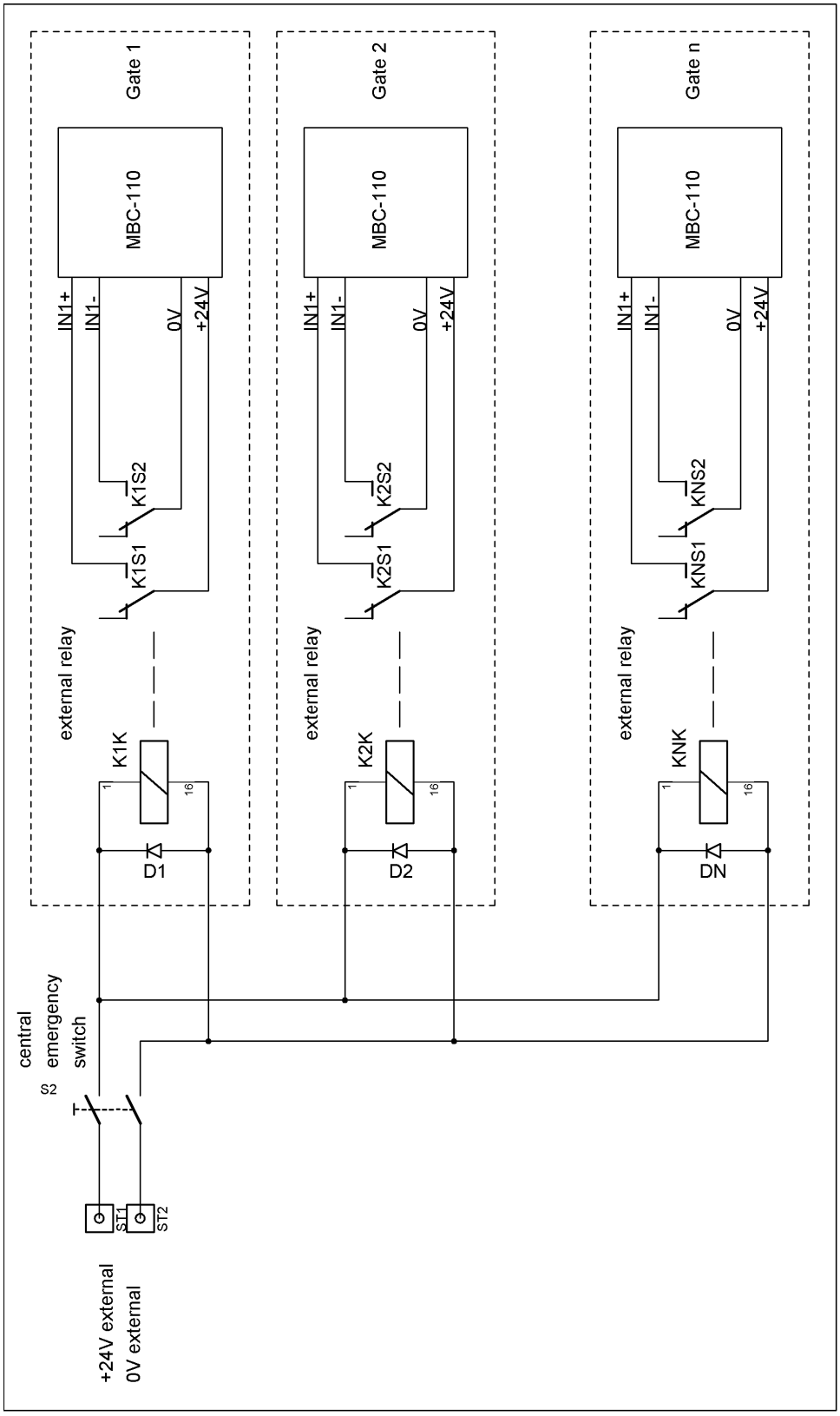

Fig. 23: Connection emergency input

8.4.1 Relay outputs

- Isolated relay contacts, wired in groups
- Switched voltage 5 – 24V
- Switched current 10 mA – 1 A

Relay output	Function	Description
1	Global error / alarm output	When certain errors occur, an alarm is given at this output; it continues as long as the error persists. Refer also to the following note. Possible errors are: ■ Obstruction detected ■ Emergency input is interrupted ■ CAN communication with end stage is impaired ■ Hardware fault in end stage ■ Software error in end stage ■ Power failure ■ Wire breakage in alarm line
2	Tailgating alarm output	At this output, a continuous signal is given if tailgating is detected. The signal remains active until there is only one object in the lane.
3	Wrong-way alarm output	An alarm is given at this output if the lane is entered from the wrong direction. This warning is also given when an object is in the entry zone without clearance for too long with the pedestrian barrier closed. The signal is cancelled as soon as the zone is cleared, or after 15 seconds.
4	Passage counting pulse	When a passage is detected, a counting pulse ca. 400 ms long is given at this output. This also applies in case of free entry/exit mode. Pulses resulting from both directions are counted.
5	Inhibit card reader on entry side	At this output, a card reader on the entry side can be blocked if a passage is requested from the exit side.
6	Inhibit card reader on exit side	At this output, a card reader on the exit side can be blocked if a passage is requested from the entry side.

Table 8: Relay outputs

NOTE!

Relay 1 operation is fail-safe, i.e. a power failure or a wire breakage at the relay output is also indicated at the global error output. This means that the relay contact pair is closed as long as there is no error. As soon as the global error described above occurs, the relay contacts open.

8.4.2 MOSFet outputs

- Not isolated
- Switched voltage 5 – 24V
- Switched current 500 mA

MOSFet output	Function	Description
MOSFet output 1	Barrier End Display red cross on entry side	This output controls the red cross in the Barrier End Display on the entry side.
MOSFet output 2	Barrier End Display green arrow on entry side	This output controls the green arrow in the Barrier End Display on the entry side.
MOSFet output 3	Barrier End Display red cross on exit side	This output controls the red cross in the Barrier End Display on the exit side.
MOSFet output 4	Barrier End Display green arrow on exit side	This output controls the green arrow in the Barrier End Display on the exit side.

Table 9: MOSFet outputs

8.5 Installing access-control devices

Observe the provided assembly dimensions.

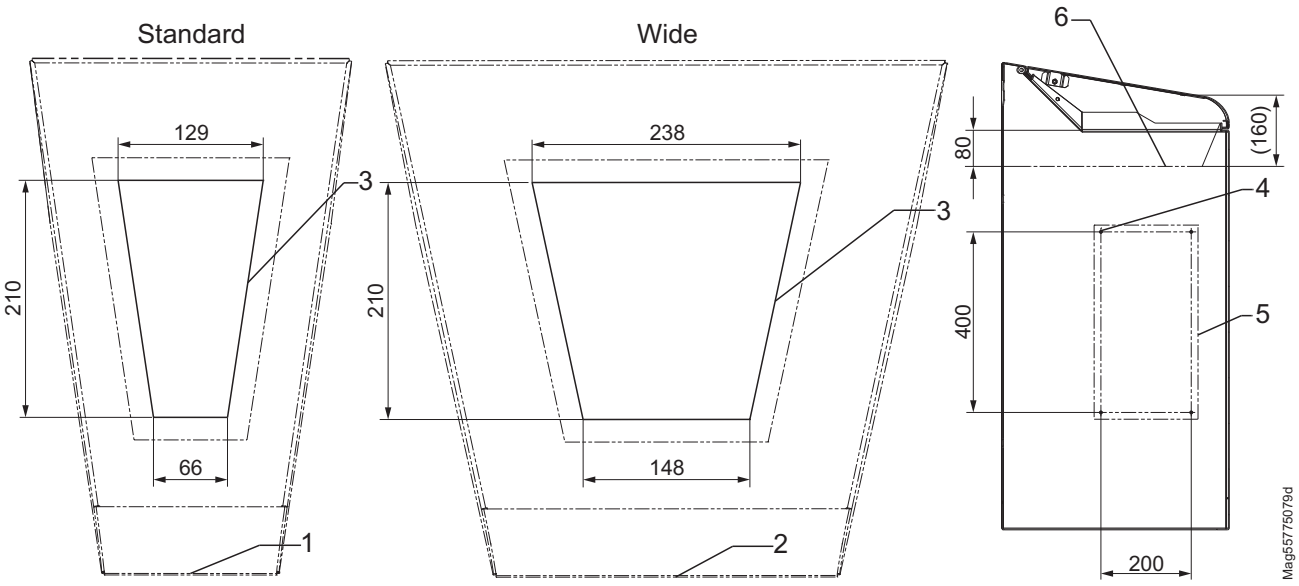

Fig. 24: Maximum installation volume for card reader

Connect access control devices as e.g. card readers to both inputs IN2 and IN3 according to Page 51, Fig. 20.

8.6 Post-installation check

The following points have to be checked after the electrical installation of the pedestrian barrier:

- Does the supply voltage match the specification on the type plate?
- Are the pedestrian barriers connected according to wiring diagram?
- Are all screws firmly fixed?
- Have all covers been properly assembled?

9 Assemble end housing

9.1 Assemble end housing

Assemble end housing

Assemble end housing in reverse order as at dismantling. Refer also to Page 35, Fig. 11.

1. Assemble end housing. Pay attention that no cable or plug is pinched.
2. Tighten lower central screw.
3. Tighten connecting screws "end housing – central housing" in both upper corners.
4. Insert plug for the Barrier End Display.
5. Insert plug for the light barriers.
6. Close top cover.

9.2 Post-installation check

The following points must be checked after assembly and installation of the pedestrian barrier:

- Are all express anchors firmly fixed?
- Are all screws firmly fixed?
- Have all covers been properly assembled?

10 Configuration of pedestrian barrier

10.1 Safety

General

⚠ WARNUNG!

WARNING!
Risk of injury due to inappropriate configuration!

Inappropriate configuration can cause severe injuries or to death.

Therefore:

– Only sufficiently qualified personnel authorized and instructed by the user are allowed for the configuration of the pedestrian barrier.
– Execute all operating steps according to the instructions in this operating instruction manual.

Electric current

⚠ DANGER!

DANGER!
Mortal danger by electric current!

Touching live parts can be lethal.

Damage to the insulation or to individual components can be lethal.

Therefore:

– Switch off the power supply immediately in case of damage to the insulation and arrange repair.
– Only electrical specialists may carry out work on the electrical system.
– Before starting work ensure that the electrical system is dead!
– Always turn the power supply off and safeguard against unintentional restarting before maintenance, cleaning, and repair work.
– Never bypass or deactivate fuses.
– When replacing fuses observe the correct amperage specification.
– Keep moisture away from live parts, this can result in short-circuit.

Personal protective equipment

The following must be worn during all configuration work:

- Work clothes
- Protective gloves
- Safety shoes.

10.2 Configuring the pedestrian barrier

Some functions and parameters of the pedestrian barrier can be adjusted via two blocks each equipped with 8 DIP switches. For a detailed description refer to Page 65, Chapter 10.2.1 and Page 63, Chapter 10.2.2.

The following adjustments or inspections have to be performed:

1. Switch off power supply.
2. Adjust the program mode 2 (MPH) via the DIP switches S2.1 and S2.2.
3. Set passage direction via DIP switches S2.3 and S2.4.
4. Set the "behaviour" when an obstruction is detected via DIP switch S2.8.
5. Check DIP switch for CAN bus termination and addressing on all three control units. Refer to Page 86, Chapter 13.3.

NOTE!

Changes to DIP switch settings only become effective after the power supply to the pedestrian barrier has been switched off and then on again.

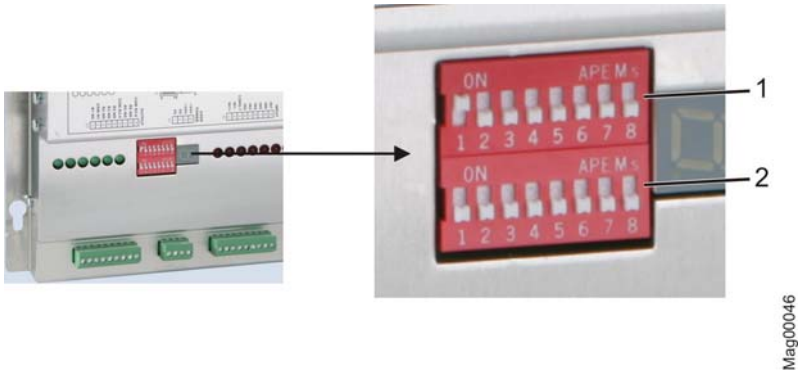

Fig. 25: DIP switch block S1 und S2

1 *DIP-switch block S1*

2 *DIP-switch block S2*

10.2.1 DIP switch block S1

<table>
<tr><th>DIP S1.x</th><th>Function</th><th>Description</th></tr>
<tr><td>1</td><td>Opening pulse storage</td><td>When pulse storage is switched off, the barrier can be opened by a pulse at one of the two opening inputs. If further opening pulses are received while the barrier is still open, they are ignored.
With opening pulse storage activated, several opening pulses can be stored. The barrier then remains open until the number of stored pulses is again zero. With each passage, the number of stored pulses is reduced by one.
Options
■ OFF: No pulse stored
■ ON: Up to 5 opening pulses can be stored</td></tr>
<tr><td>2</td><td>Buzzer</td><td>When it is activated, the buzzer gives a warning in certain situations.
Continuous tone: during a reference run (homing) or when there is a global error
Tone at rapid intervals: on "tailgating" by a second person
Tone at slow intervals: for unauthorised access or the unauthorised presence of a person in the light barrier zone
Options
■ OFF: Buzzer switched off
■ ON: Buzzer switched on</td></tr>
<tr><td>3 and 4</td><td>Safety delay time</td><td>The safety delay time is the maximum time for which the lane remains open after all safety light barriers have been cleared. On expiry of the safety delay time, the barrier closes. The safety delay time has four possible settings.
Options
<table>
<tr><th>DIP S1.3</th><th>DIP S1.4</th><th>Safety delay time</th></tr>
<tr><td>OFF</td><td>OFF</td><td>0 s</td></tr>
<tr><td>ON</td><td>OFF</td><td>1 s</td></tr>
<tr><td>OFF</td><td>ON</td><td>2 s</td></tr>
<tr><td>ON</td><td>ON</td><td>3 s</td></tr>
</table></td></tr>
</table>

Configuration of pedestrian barrier

<table>
<tr><th>DIP S1.x</th><th>Function</th><th colspan="3">Description</th></tr>
<tr><td rowspan="6">5 and 6</td><td rowspan="6">Hold-open time</td><td colspan="3">The hold-open time is the maximum time for which the lane remains open after an opening signal if there is no one in the lane. On expiry of the hold-open time, the barrier closes if no one has passed through. The hold-open time has four possible settings.
Options</td></tr>
<tr><td>DIP S1.5</td><td>DIP S1.6</td><td>Hold-open time</td></tr>
<tr><td>OFF</td><td>OFF</td><td>2 s</td></tr>
<tr><td>ON</td><td>OFF</td><td>4 s</td></tr>
<tr><td>OFF</td><td>ON</td><td>6 s</td></tr>
<tr><td>ON</td><td>ON</td><td>12 s</td></tr>
<tr><td>7</td><td>Query software version status</td><td colspan="3">If this function is activated during operation, the version status of the software is displayed cyclically on the 7-segment display.
Options
■ OFF: Normal operating display
■ ON: Version status of software is displayed</td></tr>
<tr><td>8</td><td>Reserved</td><td colspan="3">Not used</td></tr>
</table>

Table 10: DIP switch block S1

10.2.2 DIP switch block S2

<table>
<tr><th>DIP S2.x</th><th>Function</th><th colspan="3">Description</th></tr>
<tr><td rowspan="6">1 and 2</td><td rowspan="6">Program mode</td><td colspan="3">The program mode determines which control program is used when power to the barrier is switched on.
Options</td></tr>
<tr><td>DIP S2.1</td><td>DIP S2.2</td><td>Program mode</td></tr>
<tr><td>OFF</td><td>OFF</td><td>1 = not valid</td></tr>
<tr><td>ON</td><td>OFF</td><td>2 = MPH</td></tr>
<tr><td>OFF</td><td>ON</td><td>3 = KPH</td></tr>
<tr><td>ON</td><td>ON</td><td>4 = not valid</td></tr>
<tr><td rowspan="6">3 and 4</td><td rowspan="6">Permitted direction of passage</td><td colspan="3">Using DIP switches S2.3 and S2.4, you can determine in which direction the pedestrian barrier may be used.
These two DIP switches are used together with digital inputs IN1 to IN3 of the MBC-110 to select the operating mode of the pedestrian barrier
Options</td></tr>
<tr><td>DIP S2.3</td><td>DIP S2.4</td><td>Permitted direction of passage</td></tr>
<tr><td>OFF</td><td>OFF</td><td>Passage is not possible in either direction</td></tr>
<tr><td>ON</td><td>OFF</td><td>Passage only permitted in the entry direction</td></tr>
<tr><td>OFF</td><td>ON</td><td>Passage only permitted in the exit direction</td></tr>
<tr><td>ON</td><td>ON</td><td>Passage permitted in both directions</td></tr>
<tr><td>5</td><td>Reserved</td><td colspan="3">Not reserved</td></tr>
<tr><td>6</td><td>Reserved</td><td colspan="3">Not reserved</td></tr>
<tr><td>7</td><td>Reserved</td><td colspan="3">Not reserved</td></tr>
<tr><td>8</td><td>Behaviour when obstruction detected</td><td colspan="3">This DIP switch determines the behaviour of the barrier after a glass wing has contacted a person or a piece of luggage.
Options
■ OFF: Glass wings continue to press
■ ON: Glass wings open immediately and close again at reduced speed depending on the status of the light barriers</td></tr>
</table>

Table 11: DIP switch Block S2

10.3 Selecting the operating mode

All in all choose among 10 operating modes. Set the operating mode via the digital inputs IN1 to IN3 and the DIP switches S2.3 and S2.4.

NOTE!

The pedestrian barrier is always closed when no opening pulse is being processed.

Define the permitted passage direction via both DIP switches S2.3 and S2.4.

It is important to differentiate between free passage and controlled access, e.g. by a card reader.

If a continuous signal is present at an opening input, then free passage is activated for this direction.

Operating mode	IN1 Deactivate motor end-stages	IN2 Opening entry side	IN3 Opening exit side	DIP S2.3	DIP S2.4
Emergency mode	Interrupted	x	x	x	x
Out-of-service mode	+24V	x	x	OFF	OFF
Controlled entry mode	+24V	IMPULSE	x	ON	OFF
Controlled exit mode	+24V	x	IMPULSE	OFF	ON
Bidirectional mode	+24V	IMPULSE	IMPULSE	ON	ON
Free entry mode	+24V	CONTINUOUS SIGNAL	x	ON	OFF
Free exit mode	+24V	x	CONTINUOUS SIGNAL	OFF	ON
Free entry, controlled exit mode	+24V	CONTINUOUS SIGNAL	IMPULSE	ON	ON
Free exit, controlled entry mode	+24V	IMPULSE	CONTINUOUS SIGNAL	ON	ON
Fully-free mode	+24V	CONTINUOUS SIGNAL	CONTINUOUS SIGNAL	ON	ON

Table 12: Selecting the operating mode

X non-relevant

10.3.1 Emergency

Power to the motors is cut off, the glass wings are opened by springs, and the lane is completely clear for passage in both directions.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Green arrow	Not used	Is active	Not used
Free passage is possible in this direction.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Green arrow	Not used	Is active	Not used
Free passage is possible in this direction.				

10.3.2 Out-of-service mode

The pedestrian barrier is completely blocked for passage in either direction, i.e. the glass wings are closed and opening signals are not accepted.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Red cross	Not used	Is active	Are evaluated
The passage is blocked. Unauthorized access attempts generate an alarm. See Chapter 10.4.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Red cross	Not used	Is active	Are evaluated
The passage is blocked. Unauthorized access attempts generate an alarm. See Chapter 10.4.				

10.3.3 Controlled entry mode

The pedestrian barrier is only enabled for passage from the entry direction. Passage from the exit direction is forbidden.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Green arrow	Pulses are evaluated	Is switched off	Are evaluated
Tailgating and the unauthorized presence of a person are detected and generate alarms. See Chapter 10.4.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Red cross	Not used	Is active	Are evaluated
The passage is blocked. Unauthorized access attempts generate an alarm. See Chapter 10.4.				

10.3.4 Controlled exit mode

The pedestrian barrier is only enabled for passage from the exit direction. Passage from the entry side is forbidden.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Red cross	Not used	Is active	Are evaluated
The passage is blocked. Unauthorized access attempts generate an alarm. (see chapter 10.4)				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Green arrow	Pulses are evaluated	Is switched off	Are evaluated
Tailgating and the unauthorized presence of a person are detected and generate alarms. See Chapter 10.4.				

10.3.5 Bidirectional mode

The pedestrian barrier is enabled for passage from either side.

If a valid opening signal is detected on one side of the pedestrian barrier the Barrier End Display on the other side then switches to "red cross" and access from the other side is blocked. The appropriate output to inhibit the card reader on the other side is set.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Green arrow	Pulses are evaluated	Is controlled	Are evaluated
Tailgating, unauthorized access and the unauthorized presence of a person are detected and generate alarms. See Chapter 10.4.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Green arrow	Pulses are evaluated	Is controlled	Are evaluated
Tailgating, unauthorized access and the unauthorized presence of a person are detected and generate alarms. See Chapter 10.4.				

10.3.6 Free entry mode

The pedestrian barrier is only enabled for free passage from the entry side. The pedestrian barrier is normally closed. When a person enters the light barriers on the entry side, the pedestrian barrier opens the lane for free passage.

Passage from the exit side is forbidden.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Green arrow	A continuous signal is present	Is switched off	Open the glass wings on entry
There are no unauthorized access attempts in this direction.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Red cross	Not used	Is active	Are evaluated
The passage is blocked. Unauthorized access attempts generate an alarm. See Chapter 10.4.				

10.3.7 Free exit mode

The pedestrian barrier is only enabled for free passage from the exit side. The pedestrian barrier is normally closed. When a person enters the light barriers on the exit side, the pedestrian barrier opens the lane for free passage.

Passage from the entry side is forbidden.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Red cross	Not used	Is active	Are evaluated
The passage is blocked. Unauthorized access attempts generate an alarm. See Chapter 10.4.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Green arrow	A continuous signal is present	Is switched off	Open the glass wings on entry
There are no unauthorized access attempts in this direction.				

10.3.8 Free entry, controlled exit mode

The pedestrian barrier is enabled for free passage from the entry side. In the exit direction, access is controlled by an access-control device (e.g. card reader). After the lane has been opened from one side, the Barrier End Display on the other side then switches to "red cross" and access from that side is blocked.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Green arrow	A continuous signal is present	Is activated	Open the glass wings on entry
There are no unauthorized access attempts in this direction.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Green arrow	Pulses are evaluated	Is controlled	Are evaluated
Tailgating, unauthorized access and the unauthorized presence of a person are detected and generate alarms. See Chapter 10.4.				

10.3.9 Free exit, controlled entry mode

The pedestrian barrier is enabled for free passage from the exit side. In the entry direction, access is controlled by an access-control device (e.g. card reader). After the lane has been opened from one side, the Barrier End Display on the other side then switches to "red cross" and access from that side is blocked.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Green arrow	Pulses are evaluated	Is controlled	Are evaluated
Tailgating, unauthorized access and the unauthorized presence of a person are detected and generate alarms. See Chapter 10.4.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Green arrow	A continuous signal is present	Is activated	Open the glass wings on entry
There are no unauthorized access attempts in this direction.				

10.3.10 Fully free mode

The pedestrian barrier is free for passage from both directions, the glass wings are open, but, in contrast to the emergency mode, the motors are switched on. Additionally, passage counting pulses are given in this mode.

Entry side	**Barrier End Display (GED)**	**Input IN2 Opening entry side**	**Relay 5 Inhibit card reader**	**Light barriers LS1 and LS2**
	Green arrow	A continuous signal is present	Is active	Not used
Free passage is possible in this direction.				
Exit side	**Barrier End Display (GED)**	**Input IN3 Opening exit side**	**Relay 6 Inhibit card reader**	**Light barriers LS5 and LS6**
	Green arrow	A continuous signal is present	Is active	Not used
Free passage is possible in this direction.				

10.4 Unauthorised access attempts

10.4.1 Attempted unauthorised following (tailgating)

When an unauthorised person (without a ticket) attempts to follow an authorised person (known as "tailgating"), an alarm is triggered at relay output 2 and the buzzer sounds an alarm (rapid tone interval).

Detection of a second person is controlled by a timer setting. It is therefore possible that items of luggage are assumed to be a following person and trigger a false alarm.

10.4.2 Unauthorised access in the blocked direction

If a person tries to enter the lane from the blocked direction, an alarm is triggered at relay output 3 and the buzzer sounds an alarm (slow tone interval). The alarm is cancelled after a delay time if the person steps back out of the pedestrian barrier lane.

If the glass wings are already open, they will try to close. Opening pulses that are already stored are retained, but will only be processed again after the unauthorised person has stepped back out of the pedestrian barrier lane.

10.4.3 Unauthorised presence of a person

If a person has entered the pedestrian barrier from the permitted side, but has not triggered an opening signal within 5 seconds (e.g. at a card reader), then an alarm is triggered at relay output 3 and the buzzer sounds an alarm (slow tone interval).

The alarm is cancelled after a delay time if the person steps back out of the pedestrian barrier lane, or if an opening pulse is generated.

11 Start-up and operation

11.1 Safety

General

⚠ WARNING!

WARNING!
Danger by inappropriate start-up and operation!

Inappropriate start-up and operation can cause severe injuries or death.

Therefore:

– Only qualified personnel, authorised by the operator and instructed appropriately, may operate the barrier.
– Carry out all operating steps according to the specifications of these Operating Instructions.
– Prior to start of works ensure that all housing covers are correctly mounted.

Electric current

⚠ DANGER!

DANGER!
Mortal danger by electric current!

Touching live parts can be lethal.

Damage to the insulation or to individual components can be lethal.

Therefore:

– Switch off the power supply immediately in case of damage to the insulation and arrange repair.
– Only electrical specialists may carry out work on the electrical system.
– Before starting work ensure that the electrical system is dead!
– Always turn the power supply off and safeguard against unintentional restarting before maintenance, cleaning, and repair work.
– Never bypass or deactivate fuses.
– When replacing fuses observe the correct amperage specification.
– Keep moisture away from live parts, this can result in short-circuit.

Personal protective equipment

The following must be worn during start-up:

- Work clothes
- Protective gloves
- Safety shoes.

11.2 Start-up

Inspection prior to initial start-up

The following inspections must be performed prior to initial start-up:

- Check wiring emergency input IN1.
  Refer to Page 51, Fig. 21 and Page 55, Fig. 23.
- Check connection of digital inputs IN2 and IN3.
  Refer to Page 51, Fig. 21.
- Check connection of relays outputs 1 to 6.
  Refer to Page 51, Fig. 21.
- The program mode 2 (MPH) must be set by the DIP switches S2.1 and S2.2. Refer to Page 63, Table 11.

NOTE!

Remember that the safety light barriers are activated during a system start. The glass wings can only close when the safety light barriers are clear.

Make sure that, when the power supply is switched on, there are no obstructions to operation of the barrier. The access lane must be clear.
Every time the power is switched on, the glass wings go to the closed position. The first closure takes place at reduced speed and serves as a reference run for the system to learn the end positions.
There are three exceptions:

- An opening impulse is present.
- The input "Emergency" to controller MBC-110 is interrupted
- The safety light barriers are not clear.

11.3 Operation

11.3.1 Switching on and off the pedestrian barrier

Switching on

Switch on pedestrian barrier at the mains switch. The mains switch is on the mounting plate "Master". Refer also to Page 38, Fig. 11.

Switching off

Switch off pedestrian barrier at the mains switch. The mains switch is on the mounting plate "Master". Refer also to Page 38, Fig. 11

11.4 Program mode MPH

Default setting fort he pedestrian barrier MPH is the program mode MPH. This one is set by the factory via the DIP switches S2.1 and S2.2. In this program mode the light barriers and the safety light barriers initiate the opening and the closing of the glass wings and realise unauthorized access attempts.

The light barriers 1 and 2 as well as 5 and 6 fulfil the following function:

- opening of the glass wings if a person enters the freed side
- serve to detect the direction and
- detect unauthorized access attempts.

The safety light barriers 3A and 3B as well as 4A and 4B fulfil the following function:

- safety monitoring
- close glass wings if a person passed both light barriers.

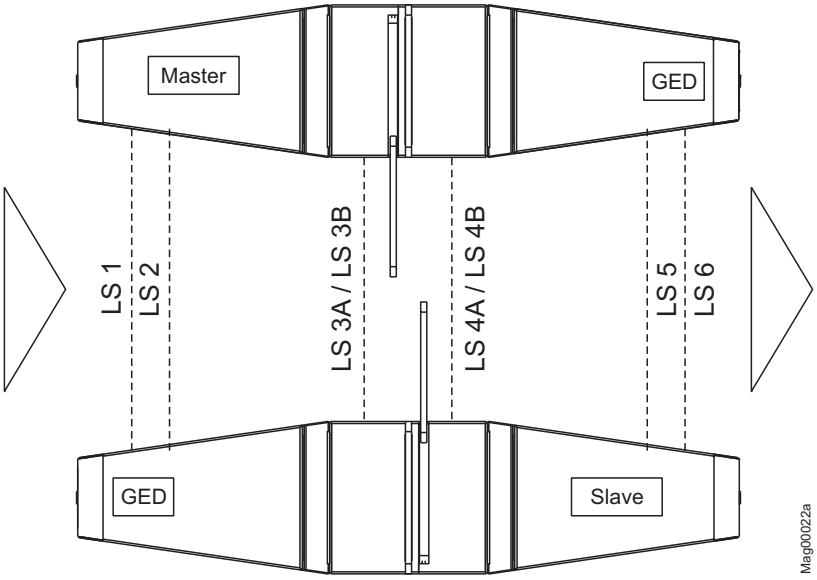

Fig. 26: Function of the light barriers

11.5 Normal operation

11.5.1 Power-off state

When the power is off, the motors have no voltage and the lane is free.

11.5.2 Reference run (homing)

When the power supply is switched on, the glass wings carry out a reference run. This teaches the system the two end positions. The first closing motion is carried out at reduced speed. From the next closing motion, the glass wings move at normal speed.

Because it can happen that there is an object between the glass wings during the first closing motion, the outer limit position is taken as a reference point only when a certain minimum angle between the inner and outer stop positions is exceeded. If the minimum angle is not achieved, the control system goes out of service and gives an alarm. A service technician on site must switch the power off and then on again.

11.5.3 Normal operation without pulse storage

At the opening inputs, the lane can be enabled for one passage at each input. On receipt of an opening pulse, the hold-open time starts to expire.

If a passage does not start within the hold-open time, the lane is blocked again. The associated opening signal is then cancelled.

If a passage has started, the system will wait until both safety light barriers are interrupted simultaneously for a short time. In this case the hold-open time is immediately cleared, but the barrier does not yet close. Only when both safety light barriers are clear again does the barrier close immediately, unless a safety delay is active. If a safety delay has been set, it will only start to expire when at least one safety light barrier has been interrupted. Only on expiry of the safety delay time, does the barrier close.

Depending on the setting of DIP switch S2.5, the barrier either opens again, or closes if one safety light barrier is interrupted again during closure.

Without pulse storage, a request for a further passage is ignored as long as an already recognised clearance has not been completed. Only when the barrier has closed again, or the hold-open time has expired, can a new opening pulse be processed.

11.5.4 Normal operation with pulse storage

In this operating mode, up to 5 opening pulses can be stored and processed sequentially in the order in which they occur (only in bidirectional mode).

When at least one request pulse has been stored, the hold-open time starts to expire immediately. As soon as a passage has been completed, the hold-open time restarts if a pulse is still stored.

The pedestrian barrier remains open until the last opening pulse has been processed.

11.6 Special cases within motion sequence

11.6.1 Obstruction detection

Normally, a person in the safety zone is protected by the safety light barriers. It is, however, possible that there is an object (e.g. a suitcase) in the safety zone when the glass wings close which, due to its form, is not recognised by the safety light barriers.

The behaviour of the barrier when an obstruction is detected depends on how DIP switch S2.8 is set.

11.6.2 Attempted break-in

When the glass wings are in their closed end position, they are blocked (linkage at top-dead-centre). However, should someone succeed in pulling the glass wings out of their end position, an alarm is given.

11.6.3 Emergency situation

If the input "emergency" is interrupted during operation, the pedestrian barrier goes immediately to a safe condition, i.e. power to the motors is cut off and springs pull the glass wings to the open position. The lane is thus free for passage in both directions.

The control system returns to operation when there is voltage again at the input "emergency".

12 Maintenance

12.1 Safety

General

⚠ WARNING!

WARNING!
Danger by inappropriate maintenance!

Inappropriate start-up and operation can cause severe injuries or death.

Therefore:

– Only qualified personnel, authorised by the operator and instructed appropriately, may carry out maintenance tasks.
– Before beginning work, ensure that there is sufficient assembly space.
– Pay attention to tidiness and cleanness at the assembly site! Loosely stacked or lying around components and tools are accident sources.
– If components have been replaced: Pay attention to correct installation of the spare parts. Reinstall all fastening elements correctly.
– Before restarting, ensure that all doors are locked properly.

Electric current

⚠ DANGER!

DANGER!
Mortal danger by electric current!

Touching live parts can be lethal.

Damage to the insulation or to individual components can be lethal.

Therefore:

– Switch off the power supply immediately in case of damage to the insulation and arrange repair.
– Only electrical specialists may carry out work on the electrical system.
– Before starting work ensure that the electrical system is dead!
– Always turn the power supply off and safeguard against unintentional restarting before maintenance, cleaning, and repair work.
– Never bypass or deactivate fuses.
– When replacing fuses observe the correct amperage specification.
– Keep moisture away from live parts, this can result in short-circuit.

Risk of crushing

⚠ CAUTION!

CAUTION!
Risk of crushing!

A moving drive unit can cause crushing.

Therefore:

– Block drive unit for maintenance work.
– If work must be carried out at the basic, center or transition module always disconnect power supply at the neighbouring pedestrian barrier with the master function. The pedestrian barrier with master function could start the pedestrian barrier with the slave function.

Personal protective equipment

The following must be worn during maintenance work:

- Work clothes
- Protective gloves
- Safety shoes.

12.2 Cleaning

NOTICE!

NOTICE!
Unit damage possible!

Aggressive cleaning agents and substances can damage or destroy electrical cables and components.

Therefore:

– Do not use cleaning agents with aggressive ingredients.

Carrying out cleaning work:

1. Switch off power supply and secure against restarting.
2. Remove soiling appropriately.
   - Use a water-in-oil emulsion spray as cleaning agent. We recommend the stainless steel care spray of the company 3M.
   - If necessary, pre-clean surface with a damp cloth and dry carefully.
   - Spray surface evenly and thinly with stainless steel care.
   - Clean surfaces with a dry and clean one way cloth. Never use wet cloth.
3. Clean all glass parts with damp cloth.
4. Absorb lubrication and grease deposits with absorbing materials.
5. Remove dust inside the cabinets with a vacuum cleaner.
6. After cleaning work, check that all previously opened covers are closed again and that all safety equipment function correctly.

12.3 Maintenance schedule

The following describes the maintenance work that is necessary for optimal, trouble-free operation. Maintenance intervals must be observed.

If increased wear of individual components or functional groups is revealed during regular inspections, the operator must reduce the required maintenance intervals on the basis of the actual signs of wear.

In case of queries regarding the maintenance work and intervals: contact the manufacturer (service address → Page 2).

Interval	Maintenance work	To be carried out by
Monthly	Check all glass parts for damages and sharp edges.	Operator
	Visual inspection of the housing in and outside for damage. If necessary, clean housing and correct defect in paint work.	Specialist
Every 6 months	Check fixing of the glass wings.	Operator
	Check function of the residual current operated device	Electrical specialists
	Check function of safety installations as e.g. light barriers.	Electrical specialists
Every 12 months	Check electric cables for damages.	Electrical specialists
	Check if all electrical connections are firm.	Electrical specialists
	Check rubber buffers and replace if necessary.	Specialist
	Check signs and labels for legibility.	Operator
	Check foundation fastening.	Specialist

Table 13: Maintenance schedule

13 Malfunctions

This chapter describes possible causes of malfunctions and trouble shooting tasks.

Contact the manufacturer in case of malfunctions that cannot be repaired by means of the following information (→ Page 2)!

13.1 Malfunction table – Pedestrian barriers

Malfunction	Possible cause	Corrective action	To be carried out by
Glass wings move too slowly	Motor is overheated.	As soon as the motor has cooled down, the speed will return to normal.	–
	I²t surveillance has reduced speed to protect the motor.		–
	A mechanical obstruction disables the movement.	Remove obstruction.	Operator
One or both glass wings do not move.	Cabling inaccurate or defective. Green LEDs must be permanently illuminated at both MMC-120.	Green LED is switched off: Check that there is +42V between terminals DC+ and DC–. If not, check the wiring and power supply.	Electrical specialist
		Green LED blinks: Safety input signal is missing: Check that there is 24V at input IN1 of MBC-110 (red LED on IN1 must be illuminated). Check that the CAN cables between the controllers are not damaged. Check that the CAN addresses on all controllers are correctly set. Check that the CAN termination resistors on all controllers are correctly set.	Electrical specialist
	Check if one or both MMC-120's are showing an error.	The red LED shows the error code: Count the number of blink impulses and look up the error code. Refer to Table 18.	Specialist / Electrical specialist
	Check if the MBC-110 display is showing an error.	Read the error code in the display: Look up the error code. Refer to Table 15.	Specialist / Electrical specialist
	Emergency input has possibly been interrupted. Red LED at IN1 of the MBC-110 must be illuminated.	If the red LED is not illuminated, check the emergency input.	Specialist
	Light barrier covered.	Remove obstruction.	Operator

Malfunction	Possible cause	Corrective action	To be carried out by
One or more light barriers do not operate	Wiring incorrect or light barriers defective.	Orange supply voltage LEDs must be illuminated on transmitter and receiver. Green status LED on receiver must change state when the light barrier is interrupted by passing your hand through it. The status of light barriers LS 1, LS 2, LS 5 and LS 6 can also be checked at the appropriate red LEDs at inputs IN4 to IN7 of controller MBC-110.	Electrical specialist
Barrier End Display does not work.	Incorrect connection of the Barrier End Display.	Check wiring and connection of the Barrier End Display.	Electrical specialist

Table 14: Malfunction table – pedestrian barrier

NOTE!

Additionally, dispose of the diagnostic program MBC Diag for further diagnostics. Use this program to read-out each error status from the MBC-110 and the associated MMC-120. For further information contact your authorised dealer or MAGNETIC directly.

13.2 Malfunction – Logic controller MBC-110

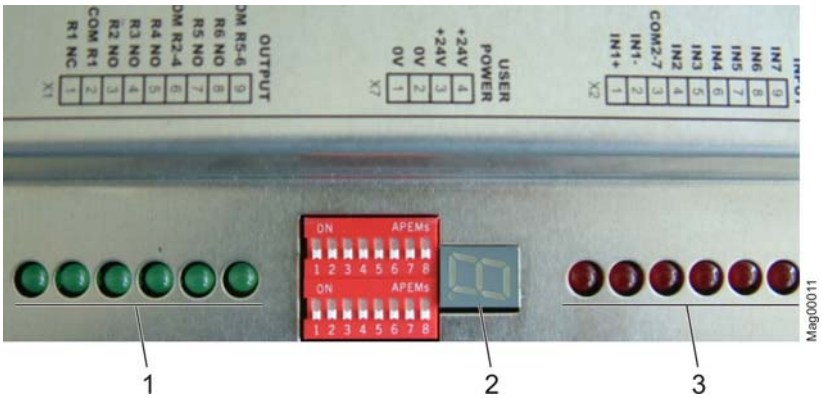

Fig. 27: LEDs on the logic controller MBC-110

1 Green LEDs indicate the switching status of the customer interface outputs
2 One-digit display
3 Red LEDs indicate the switching status of the customer interface inputs

The customer interface inputs and outputs of the MBC-110 indicate their switching status through LEDs.

- Red LED is switched on: Input is activated.
- Red LED is switched off: Input is not activated.

13.2.1 Display of the error codes at the MBC-110

If the DIP switch S1.7 is OFF (factory setting), the display shows an error code in case of an error. Refer also to Page 62, Table 10.

During normal operation mode the point continuously flashes at 0.5 Hz.

Error codes are shown in the one-digit display of the MBC-110. The characters of the error codes are displayed one after another.

Example

The error code E05 is displayed as follows:

1. E (Error)
2. Pause
3. 0
4. Pause
5. 5
6 Pause
7 Step 1 to 6 is repeated.

13.2.2 Display of the software version of the MBC-110

If the DIP switch S1.7 is ON the display shows the current software. Refer also to Page 62, Table 10.

The characters of the error code are displayed one after another. The characters are displayed for 2 seconds.

Example

The software version 1.4 is displayed as follows:

1. u
2. 1. (first character with point)
3. 4 (second character)
4. Pause
5. Step 1 to 4 is repeated.

13.2.3 Error codes of the MBC-110

Error code	Description	Corrective action	To be carried out by
E02 [1)]	**Emergency input IN1 is interrupted** The signal at IN1+ or IN1- has been interrupted, e.g. by an external fire alarm system.	Check if the wires to IN1+ or IN1- are broken or if the input was actually interrupted by an external safety system.	Electrical specialist
E03 [1)]	**Safety light barrier interrupted during reference run** The reference run cannot be carried out because at least one safety light barrier is covered.	Remove obstruction.	Electrical specialist
E04 [1)]	**Attempted break-in** Someone has attempted to force one or both glass wings out of its closed end position.		Electrical specialist
E05 [1)]	**Obstruction detection** An obstruction has been detected.		Electrical specialist
E06 [1)]	**Unauthorised access** **The passage was entered in the wrong direction.** Someone has attempted to pass through the barrier in the wrong direction, or a person has stayed too long in the entry zone without generating an opening signal.		Electrical specialist
E07 [1)]	**MBC-110 reset by Watchdog** The MBC-110 has detected a program sequence error and has been restarted by Watchdog.		Electrical specialist
E09 [1)]	**Following by a second person (tailgating) detected** An unauthorised person has been detected attempting to follow an authorised person. This error can also occur when, for example, a large piece of luggage is detected as a following person.		Electrical specialist
E20 [2)]	**Check sum error in program memory**	Device must be newly programmed or sent to MAGNETIC for repair.	Electrical specialist
E21 [2)]	**MMC-120 detected with wrong software** At least one MMC-120 has been found to have the wrong application software.	Download application software from MBC-110 to MMC-120.	Electrical specialist

Malfunctions

Error code	Description	Corrective action	To be carried out by
E22 [2)]	**MMC-120 detected with wrong software** At least one MMC-120 has been found to have the wrong application software.	Download application software from MBC-110 to MMC-120.	Electrical specialist
E30 [2)]	**Error downloading from MBC-110 to MMC-120** Software in the MMC-120 could not be deleted.	If necessary repeat download for several times.	Electrical specialist
E31 [2)]	**Error downloading from MBC-110 to MMC-120** No communication with MMC-120 boot loader.	If necessary repeat download for several times.	Electrical specialist
E32 [2)]	**Error downloading from MBC-110 to MMC-120** Re-programming of MMC-120 does not work.	If necessary repeat download for several times.	Electrical specialist
E33 [2)]	**Error downloading from MBC-110 to MMC-120** Error when activating new MMC-120 software.	If necessary repeat download for several times.	Electrical specialist
E40 [2]	**Minimum angle not achieved on reference run** During a reference run (homing), the glass wing mechanism must move through a minimum angle, otherwise the reference run cannot be completed.	Remove obstruction.	Electrical specialist
E41 [2)]	**Invalid program mode set** DIP switches S2.1 and S2.2 are set to an invalid program mode.	Select program mode MPH. Refer to Page 63, Table 11.	Electrical specialist
E42 [2)]	**MMC-120 cannot be activated when starting** At least one MMC-120 cannot be activated by the CAN bus during a program start.	CAN communication between MBC-110 and MMC-120 is malfunctioning, error at MMC-120	Electrical specialist
E43 [2)]	**Error in MMC-120 detected during operation** At least one MMC-120 has detected an internal error.	Read error code via LEDs of MMC-120. Correct cause. Refer to Page 88, Table 18	Electrical specialist
E60 [2)]	**Error when initialising CAN protocol stack** Internal software error in MBC-110		Electrical specialist
E61 [2)]	**Error when initialising CAN bus** CAN bus is blocked, e.g. by a short circuit in the CAN cable.	Correct short-circuit at CAN-cable.	Electrical specialist

Error code	Description	Corrective action	To be carried out by
E62 [2]	**No communication with MMC-120, MMC-120 in operation** CAN cable broken.	Check CAN cable. DE /EN	Electrical specialist
	Plug not correctly inserted.	Insert plug correctly.	
	Wrong CAN address set	Set correct CAN-address.	
	Termination resistors not correctly set.	Set termination resistors correctly.	
	There is an old firmware on one or both of the MMC-120	Download software from MBC-110 to MMC-120.	
E64 [2]	**MMC-120 does not answer, MMC-120 in operation** See Error E62 for possible causes		Electrical specialist
E65 [2]	**EEPROM error in MBC-110** The EEPROM memory in MBC-110 could not be read or written in.	Possibly hardware error in MBC-110	Electrical specialist
E66 [2]	**Checksum error in parameter memory**	Hardware defect, send the unit to MAGNETIC for repair.	Electrical specialist
E70 [1]	**Error in light barrier LS 1** Light barrier covered for longer than 30 seconds. Light barrier dirty or defective.	Check light barrier.	Electrical specialist
E71 [1]	**Error in light barrier LS 2** Light barrier covered for longer than 30 seconds. Light barrier dirty or defective.	Check light barrier.	Electrical specialist
E72 [1]	**Error in light barrier LS 3A / 3 B** Light barrier covered for longer than 30 seconds. Light barrier dirty or defective.	Check light barrier.	Electrical specialist
E73 [1]	**Error in light barrier LS 4A / 4B** Light barrier covered for longer than 30 seconds. Light barrier dirty or defective.	Check light barrier.	Electrical specialist
E74 [1]	**Error in light barrier LS 5** Light barrier covered for longer than 30 seconds. Light barrier dirty or defective.	Check light barrier.	Electrical specialist
E75 [1]	**Error in light barrier LS 6** Light barrier covered for longer than 30 seconds. Light barrier dirty or defective.	Check light barrier.	Electrical specialist

Table 15: Error codes of the MBC-110

1) Self-resetting error: The pedestrian barrier is still operating. The error code is displayed as long as the error is pending. If the error is corrected, the error code is displayed again for a max of another 10 seconds.

2) Non-self-resetting error: The pedestrian barrier is out of operation. The error code is shown as long as the error is pending.

13.3 CAN bus addressing and termination

The MBC-110 logic controller and the two MMC-120 motor controllers exchange data via a CAN bus.

Each of the controllers must have a fixed CAN address assigned to it. Additionally, a termination resistor must be activated at both ends of the bus to prevent interference.

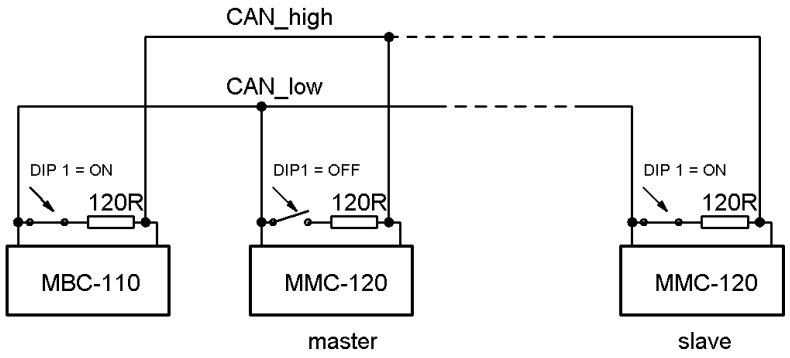

Fig. 28: CAN bus termination

Each controller is equipped with a DIP switch block. The termination is activated or deactivated using DIP switch 1. The CAN addresses are set using the DIP switches 2 to 4 of each controller.

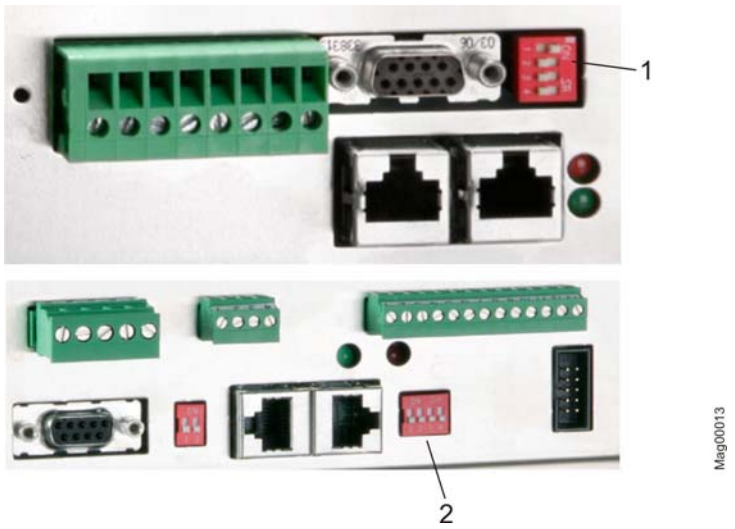

Fig. 29: DIP switches for CAN bus addresses and termination

1 DIP switch o MMC-120 Master and MMC-120 Slave
2 DIP switch of MBC-110 Master

The DIP switches must be set according to the following table:

Function	DIP switch	MBC-110 Master	MMC-120 Master	MMC-120 Slave
Termination	1	ON	OFF	ON
CAN address	2	OFF	OFF	ON
	3	OFF	OFF	ON
	4	OFF	OFF	ON

Table 16: Setting of the DIP switches

13.4 Malfunction – Motor controller MMC-120

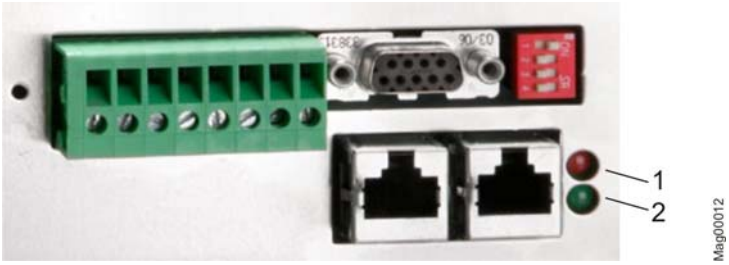

Fig. 30: LEDs on MMC-120

1 Green LED for indication of the power supply state and the safety input state
2 Red LED for error diagnosis

LED	Description	Possible cause / Corrective action	To be carried out by
Green LED is OFF.	No power supply	Check power supply.	Electrical specialist
Green LED is flashing	Power supply is present. Safety input signal is missing.	Missing signal at emergency input IN1 of the MBC-110. CAN connection between MBC-110 and MMC-120 defective.	Electrical specialist
Green LED is ON.	Normal operation	–	–
Red LED is OFF	No error code	–	–
Red LED is ON.	External error with emergency stop	Check for error in MBC-110 or other MMC-120.	Electrical specialist
Red LED is flashing	Error Number of blink impulses indicates the error code.	Refer to Page 23, Table 18.	Electrical specialist
Red and green LED are ON	Application program has been erased. Boot loader is waiting for downloading the application program.	Download has been interrupted. Refer to the following Section "Downloading application program".	Electrical specialist

Table 17: Description of the LEDs on the MMC-120

Downloading application program

If the red and green LED of both MMC-120 is ON, it is not possible to download the software from the MBC-110 to the two MMC-120. The MBC-110 wrongly detects two boot loaders.

Carry out the following procedure:

1. Disconnect the MMC-120 of the pedestrian barrier with the slave function from the CAN bus.
2. Download software from the MBC-110 to the connected MMC-120.
3. Switch off power supply.
4. Re-connect the MMC-120 of the pedestrian barrier with the slave function.
5. Switch on power supply.
6 Download software from the MBC-110 to the MMC-120 of the pedestrian barrier with slave function.

Error code	Description	Possible cause
2	Resolver error	Plug not properly inserted, short circuit
4	Motor phase error	Motor cable not connected. Wiring defective.
5	Lifeguarding CAN	CAN communication with MBC-110 interrupted
6	Short circuit to ground	Short circuit between motor phase and ground
7	Motor phases shorted	Short circuit between two motor phases
8	DC bus Over-voltage	DC bus voltage too high (> 56 V)
9	DC bus Under-voltage	DC bus voltage too low (< 17 V)
11	Over-temperature end-stage	Heat sink temperature too high (> 80 °C)
20	I^2t surveillance motor	Motor overloaded

Table 18: Error codes of the MMC-120

14 Repair

14.1 Safety

General

⚠ WARNING!

WARNING!
Danger by inappropriate maintenance!

Inappropriate repair can cause severe injuries or death.

Therefore:

– Only qualified personnel, authorised by the operator and instructed appropriately, may carry out repair tasks.
– Prior to work, ensure that there is sufficient assembly space.
– Pay attention to tidiness and cleanness at the assembly site! Loosely stacked or lying around components and tools are accident sources.
– If components have been replaced: Pay attention to correct installation of the spare parts. Reinstall all fastening elements correctly.
– Before restarting, ensure that all doors locked properly.

Electric current

⚠ DANGER!

DANGER!
Mortal danger by electric current!

Touching live parts can be lethal.

Damage to the insulation or to individual components can be lethal.

Therefore:

– Switch off the power supply immediately in case of damage to the insulation and arrange repair.
– Only electrical specialists may carry out work on the electrical system.
– Before starting work ensure that the electrical system is dead!
– Always turn the power supply off and safeguard against unintentional restarting before maintenance, cleaning, and repair work.
– Never bypass or deactivate fuses.
– When replacing fuses observe the correct amperage specification.
– Keep moisture away from live parts, this can result in short-circuit.

Risk of crushing

⚠ CAUTION!

CAUTION!
Risk of crushing!

A moving drive unit can cause crushing.

Therefore:

– Block drive unit during maintenance work
– During work at basic, center and transition module always disconnect the power supply of the neighbouring pedestrian barrier with master function.
– The drive unit of the pedestrian barrier with master function could be restarted by the drive unit of the pedestrian barrier with slave function.

Personal protective equipment

The following must be worn during all repair work:

- Work clothes
- Protective gloves
- Safety shoes.

14.2 Dismantle and assemble the end housing

Definition

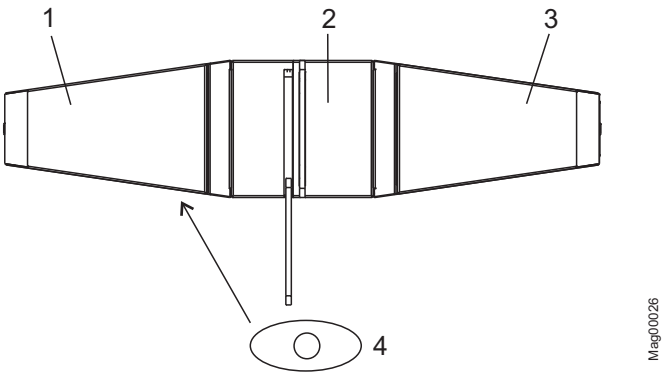

Fig. 31: Definition left and right end housing, central housing

1 Left end housing
2 Central housing
3 Right end housing
4 Observer, position barrier

Dismantle end housing

1. Switch off power supply.
2. Secure glass wings against fall-down by the help of a second person.
3. Open the top cover of the left end housing.
4. Switch off pedestrian barrier at the mains switch. The mains switch is located on the mounting plate "Master".
5. Disconnect the plug for the light barriers (ST1 – ST4).
6. Disconnect the plug from the Barrier End Display.
7. Loosen the connecting screws in the two upper corners. See Fig. 32.
8. Loosen the lower central screw.
9. Remove end housing.

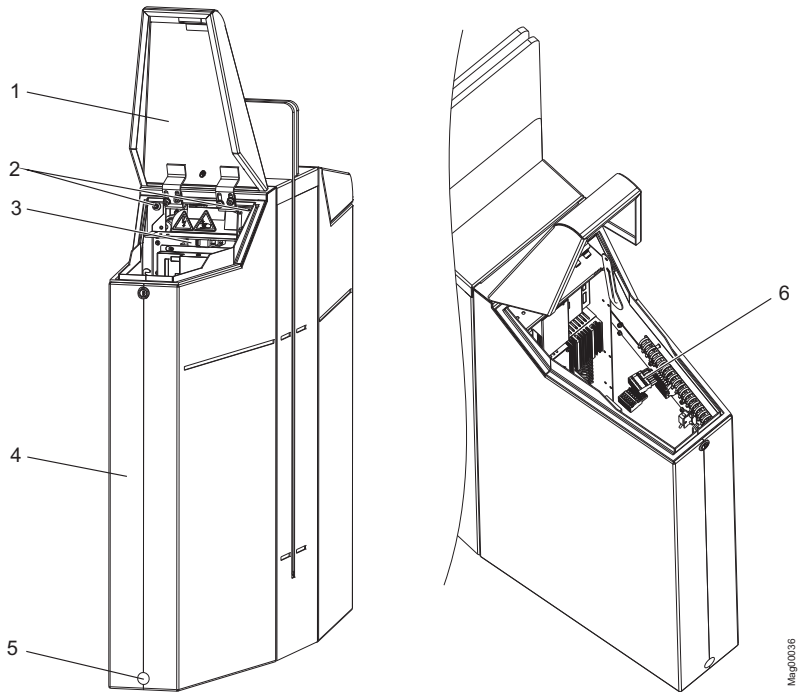

Fig. 32: Dismantle end housing

1 Top cover
2 Connecting screw end housing – central housing
3 Mains switch on mounting plate "Master"
4 End housing
5 Lower central screw
6 Plug for light barriers (ST1 – ST4)

Assemble end housing

Assemble end housing in reverse order as at dismantling. Refer also to Page 35, Fig. 11.

1. Assemble end housing. Pay attention that no cable or plug is pinched.
2. Tighten lower central screw.
3. Tighten connecting screws "end housing – central housing" in both upper corners.
4. Insert plug for the Barrier End Display.
5. Insert plug for the light barriers (ST1 – ST4).
6. Close top cover.

14.3 Blocking the drive unit

Danger of crushing

⚠ CAUTION

CAUTION!
Danger of crushing!
A moving drive unit can cause crushing.
Therefore:
– Block drive unit during repair.

Risk of injury by spring tension

⚠ CAUTION!

CAUTION!
Risk of injury by spring tension!
The recuperating spring of the drive unit is under tension. Springs under tension can cause injuries. .
Therefore:
– Observe while working at the drive unit that the recuperating spring is under tension.

Risk of breakage

NOTE!

NOTE!
Risk of breakage of the glass wings!
The glass wings can fall down and break while being inappropriately dismantled and assembled.
Therefore:
– Secure the glass wings against falling down while being dismantled and assembled by the help of a second person.

1. Switch off power supply.
2. Secure glass wings against falling down by the help of a second person.
3. Dismantle end housing. Refer to Page 91, Chapter 14.2.

4. Undo the holding screws of the mounting panel.
5. Swing mounting panel to the side. The drive unit is now accessible.

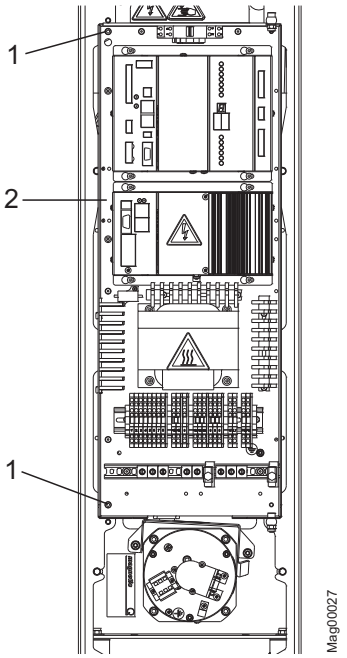

Fig. 33: Mounting panel of the left end housing

1 Holding screws
2 Mounting panel

6. Block the drive unit.
   The fixing screw must align and engage with the fixing bore in the L-lever. Loosen the counter nut to turn the fixing screw. Counter screw with the counter nut, so that the drive unit is blocked with a maximum of free play as much as possible.

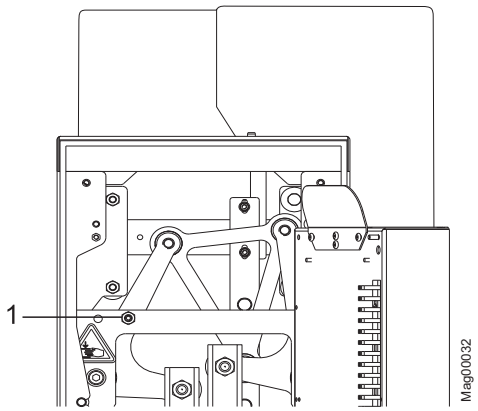

Fig. 34: Drive unit of the left end housing

1 Fixing screw of the drive unit

14.4 Changing the glass wings

Risk of breakage

NOTE!

NOTE!
Risk of breakage of the glass wings!

The glass wings can fall down and break while being inappropriately dismantled and assembled.

Therefore:

– Secure the glass wings against falling down while being dismantled and assembled by the help of a second person.

Dismantle glass wings

To change the glass wing, the left end housing must be dismantled from the center housing.

1. Switch off power supply.
2. Secure the glass wings against falling down by the help of a second person.
3. Dismantle end housing. Refer to Page 91, Chapter 14.2.
4. Block drive unit. Refer to Page 93, Chapter 14.3.

5. Loosen the nuts for the cover strip carrier. Do not remove the nuts.
6. Loosen the screws on the clamping strip starting at the bottom and working upwards. Do not remove screws.

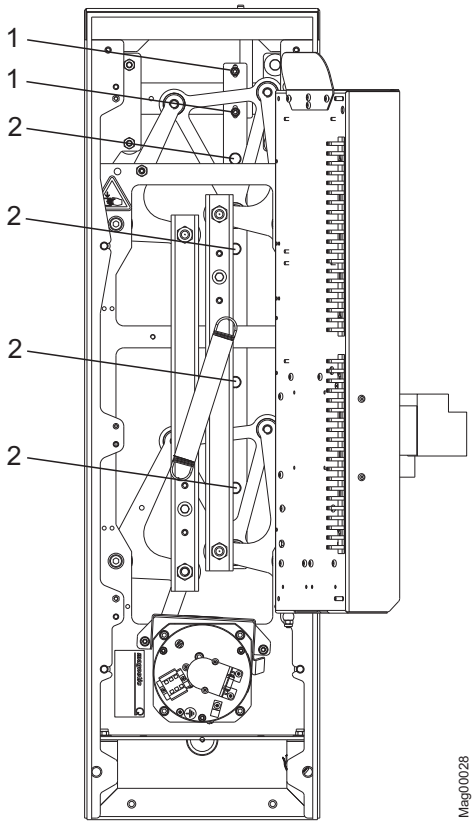

Fig. 35: cover strip carrier, screws on the clamping strip

1 Nuts for the cover strip carrier
2 Clamping screws on the clamping strip

7. Pull out glass swing.

Assemble glass wing

1. Stick the glass wing into the appropriate clamping strip. Secure the glass wings against falling down by the help of a second person. Refer to Page 94, Fig. 34.
2. Tighten highest and lowest clamping screw, so that the glass wing is fixed but can be positioned.
3. Position the glass wing. Set the following measures between housing and glass wing:
   - MPH Standard: 150 mm
   - MPH Wide: 190 mm

   Due to manufacturer tolerances, there may be differences.

4. Take the drive unit off its block. Loosen fixing screw. Refer to Page 94, Fig. 34. Make sure that the counter nut is tightened again to prevent unintended turning of the fixing screw.
5. Position drive unit at "glass wing open" and check if the glass wing squares up with the housing to the passage side.
6. Should the glass wing not square up with the housing repeat steps 2 to 5 to correct the appropriate difference.
7. Tighten the clamping screws progressively and alternately to a torque of approx. 15 Nm. Refer to Page 96.
8. Hinge cover strip to carrier pin. Refer to Page 99, Fig. 38.
9. Move carrier to the highest position, so that the carrier pin abuts upon the edge of the panel.
10. Tighten fastening nuts. Pay attention that the carrier abuts on the glass wing edge.

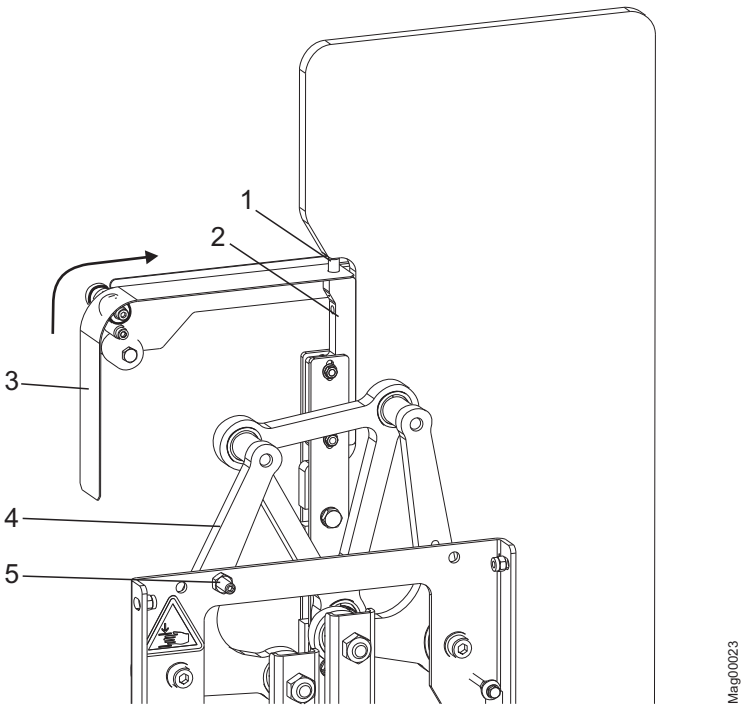

Fig. 36: Changing the cover strip

1 Carrier pin
2 Carrier
3 Cover strip
4 L-lever
5 Fixing screw of the drive unit

11. Fix mounting plate. Refer to Page 94, Fig. 33.
12. Assemble end housing. Refer to Page 92, Fig. 32.
13. Insert plug for the light barriers (ST1 – ST4).
14. Insert plug for the Barrier End Display.

14.5 Changing the anti-climb panel

Dismantle anti-climb panel

To change the anti-climb panel the left and right end housing must be dismantled from the center housing.

1. Switch off power supply.
2. Secure the glass wings against falling down during dismantling and assembly e.g. by the help of a second person.
3. Dismantle end housing. Refer to Page 91, Chapter 14.2.
4. Block drive unit. Refer to Page 93, Chapter 14.2.

Risk of breakage

Attention!

Attention!
Risk of breakage of the anti-climb panel!
The anti-climb panel can break if it cants.
Therefore:
– Do not cant the anti-climb panel while being dismantled or assembled.

5. Loosen the four hexagon-head screws. Do not remove hexagon-head screws.

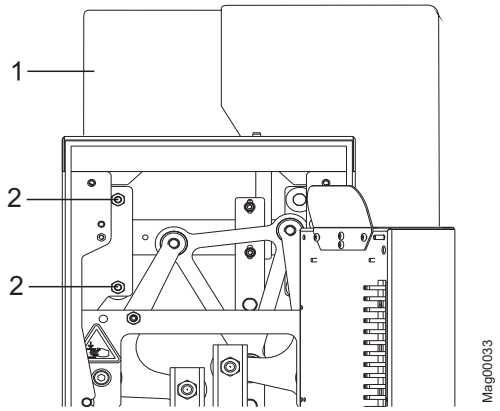

Fig. 37: Central housing if mounting panels swung away

1 Anti-climb panel
2 Hexagon head screws

Assemble anti-climb panel

Assemble anti-climb panel in reverse order to dismantling.
Carefully cross-tighten hexagon-head screws with 15 Nm.

14.6 Changing the cover strip

Dismantle cover strip

To change cover strip, dismantle the left end housing from the central housing.

1. Switch off power supply.
2. Secure glass wings against falling down e.g. by the help of a second person.
3. Dismantle end housing. Refer to Page 91, Chapter 14.2.
4. Block drive unit. Refer to Page 93, Chapter 14.2.
5. Pull down carrier, so that the carrier pin releases the cover strip.
6. Take off the cover strip of the guiding in opposite to the glass wing direction.

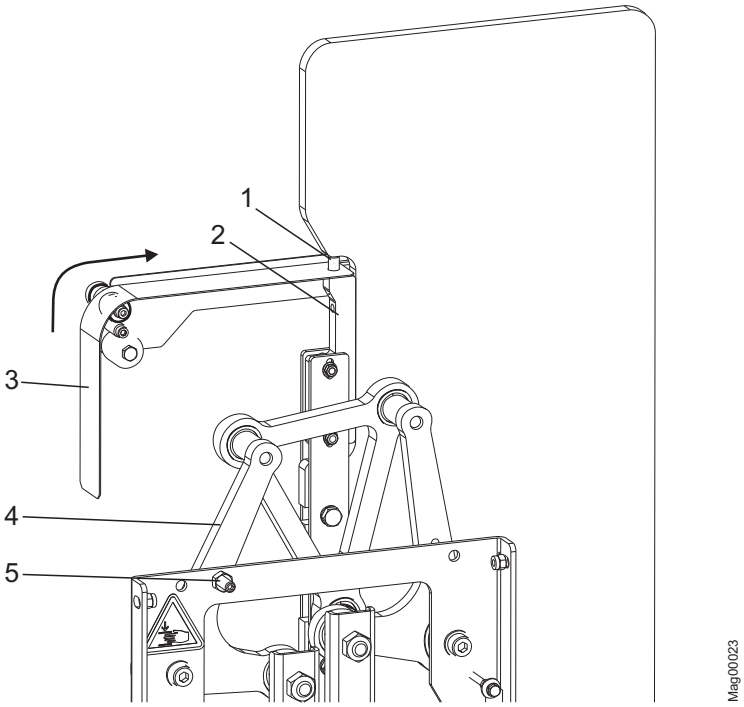

Fig. 38: Changing the cover strip

1 Carrier pin
2 Carrier
3 Cover strip
4 L-lever
5 Fixing screw of the drive unit

Assemble cover strip

Assemble cover strip in reverse order to dismantling.

1. Hinge cover strip to the carrier pin.
2. Move carrier upwards, so that the carrier pin abuts upon the edge of the panel.
3. Tighten fastening nuts. Pay attention that the carrier abuts on the glass wing edge.
4. Unblock drive unit.

14.7 Changing the motor and the resolver

Resolver

NOTICE!

The resolver must be exchanged with the motor as a complete unit. The resolver is situated at the rear end of the motor and requires a particular calibration.

Dismantle motor

To change the motor, dismantle the left end housing from the central housing.

1. Switch off power supply.
2. Secure glass wings against falling down e.g. by the help of a second person.
3. Dismantle end housing. Refer to Page 91, Chapter 14.2.
4. Block drive unit. Refer to Page 93, Chapter 14.2.
5. Undo screw clamping the motor lever on the motor shaft.

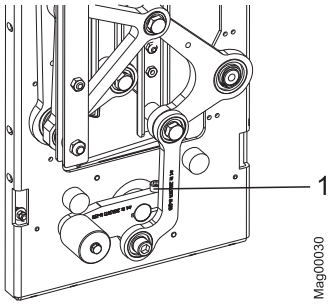

Fig. 39: Drive unit and motor lever

1 Screw for the motor lever

6. Disconnect all wiring and connectors from the rear end of the motor.
7. Remove the four screws of the motor fixing.

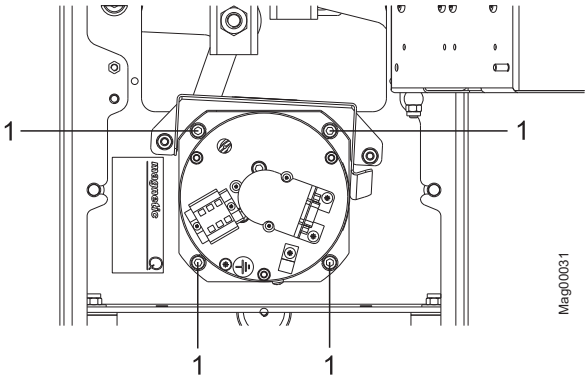

Fig. 40: Rear end of the motor

1 Screws for motor fixing

8. Lift the motor out of the base frame and simultaneously release the clamping lever from the motor shaft.

Assemble motor

Assemble motor in reverse order to dismantling.
Tighten the motor clamping lever to a torque of 25 Nm.

14.8 Changing motor controller MMC-120

1. Switch off power supply.
2. Switch off pedestrian barrier via the mains switch of the mounting plate "Master".
3. Note position of DIP switches. The DIP switches set the CAN-address and the termination resistance is activated or deactivated.
4. Disconnect cables.
5. Replace motor controller MMC-120.
6. Re-connect cables. Set DIP switches to previous setting. Refer to Page 86, Chapter 13.3.

14.9 Changing logic controller MBC-110

1. Switch off power supply.
2. Switch off pedestrian barrier via the mains switch of the mounting plate "Master".
3. Note position of DIP switches. The DIP switches set the CAN-address and the termination resistance is activated or deactivated.
4. Disconnect cables.
5. Replace logic controller MBC-110.
6. Re-connect cables. Set DIP switches to previous setting. Refer to your notes. Refer to Page 86, Chapter 13.3.

14.10 Update software of the MBC-110 and the MMC-120

NOTE!T

The program MBC-Flasher is for disposal of the MBC-110 and the MMC-120. Update the software of the MBC-110 using this program. The software of the MBC-110 always contains the appropriate software for the MMC-120. For further information contact your authorized dealer or MAGNETIC directly.

Fig. 41: MAGNETIC program MBC-Flasher

1. Update the software of the control unit MBC-110 by using the program MBC-Flasher. See separate operating instructions for the operation.
2. Download software from MBC-110 to both MMC-120.
   If an error appears during download from MBC-110 to the MMCs-120, refer to Page 83, Chapter 13.2.3 and Page 87, Chapter 13.4.

15 Spare parts

⚠ WARNING!

WARNING!
Risk of injury by incorrect spare parts!

Incorrect or defective spare parts can result in damage, malfunctions or total failure and also impair safety.

Therefore:

– Use only the manufacturer's original spare parts.

Procure spare parts from authorised dealers or directly from the manufacturer. Refer to Page 2 for address.

16 Decommissioning and disposal

NOTICE!

NOTICE!
Danger for the environment by hazardous materials!

Incorrect handling of environmentally hazardous materials, in particular incorrect disposal, can substantially damage the environment.

Therefore:

– Observe the valid environmental directives.
– After appropriate disassembly the parts have to be recycled.
– Separate the recyclable fraction and send for recycling.
– Dispose lubrication and grease properly.
– Take immediate suitable measures, if environmentally hazardous materials are inadvertently released into the environment. In case of doubt, inform the responsible local authority about the damage.

A barrier module that is no longer usable should not be recycled as a complete unit, but disassembled into individual components and recycled according to material types. Non-recyclable materials have to be disposed of in an environmental-friendly manner.

Decommissioning and disposal

- Prior to decommissioning and disposal of the barrier module, it must be completely separated from the surrounding units.
- The disassembly and disposal of the barrier module may only be carried out by specialised staff.
- Lubricants and greases must be properly stored and must not be allowed to enter the environment in an uncontrolled fashion.
- The barrier module has to be disposed of in accordance with the respective country-specific regulations.

Risk of fire

⚠ WARNING!

WARNING!
Risk of injury by fire!

Incorrect disposal of combustible or flammable materials can cause fire and therefore severe injuries or death.

Therefore:

– Dispose combustible or flammable materials correctly and not with normal rubbish.

NOTE!

For expert information regarding disposal of electric equipment contact MAGNETIC or competent electricians.

Herstellererklärung

Manufacturer's Declaration

Der Hersteller/ manufacturer

MAGNETIC Autocontrol GmbH

Grienmatt 20 **Telefon** **+49 (0) 7622 / 695-5**

D-79650 Schopfheim **Telefax** **+49 (0) 7622 / 695-602**

erklärt hiermit, dass das von ihm gelieferte Produkt/ herewith *declares, that the product supplied by himself*

Bezeichnung/ *designation*	Personensperre
Typ/ *type*	MPH-112x-Axxx
Serien-Nr./ *serial no.*	

eine für sich allein nicht funktionsfähige Maschine im Sinne der **EG-Maschinenrichtlinie 98/37EG** ist und aus diesem Grund noch nicht in allen Teilen den einschlägigen Bestimmungen dieser Richtlinie entspricht. Die Inbetriebnahme dieser Maschine ist daher solange untersagt, bis festgestellt wurde, dass die Maschine nach ihrer Fertigstellung, für sich allein oder im Rahmen einer Gesamtmaschine, funktionsfähig ist und den Bestimmungen der Maschinenrichtlinie, sowie ihrer nachfolgenden Änderungsrichtlinien entspricht./ *is inoperable on its own for the purpose of the **EC Machinery Directive 98/37/EC**. Therefore it does not yet comply with all corresponding regulations of this directive. Consequently, it is prohibited to commission the machine on its own or as a part of a complete machine, before it is secured that the machine, after its completion, is operable and fully complies with the regulations of the EC Machinery Directive including any subsequent changes to the directive.*

Die Maschine ist konform mit den folgenden EG-Richtlinien/ *The machine is in accordance with the following EC directives*:

Richtlinie/ ***directive*** **2006/95/EG** (Niederspannungs-Richtlinie/ *low voltage directive*)
Richtlinie/ ***directive*** **89/336/EWG** (EMV-Richtlinie/ *EMC directive*)

Angewandte harmonisierte Normen (oder Teile daraus)/ *Realized harmonized norms (or parts of them)*:

EN ISO 12100-2 (2004-04)
Sicherheit von Maschinen - Grundbegriffe, allgemeine Gestaltungsleitsätze- Teil 2: Technische Leitsätze/ *safety of machinery - basic concepts, general principles for design - part 2: technical principles*

EN 60204-1 (2007-06)
Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen- Teil 1: Allgemeine Anforderungen/ *Safety of Machinery - Electrical Equipment of Machines- Part 1: Specifications for General Requirements*

EN 61000-6-2 (2006-03)
Elektromagnetische Verträglichkeit (EMV)- Teil 6-1: Fachgrundnormen- Störfestigkeit für Industriebereich/ *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for industrial environments*

EN 61000-6-3 (2007-09)
Elektromagnetische Verträglichkeit (EMV)- Teil 6-3: Fachgrundnormen- Störaussendung für Wohnbereich, Geschäfts- und Gewerbebereiche sowie Kleinbetriebe/ *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments*

Diese Erklärung ist keine Zusicherung von Eigenschaften im Sinne des Produkthaftungsgesetzes. Die Sicherheitshinweise der Bedienungsanleitung sind zu beachten./ *This declaration is not a guarantee of characteristics in the sence of product liablity law. The safety regulations of the operations manual/maintenance instructions have to observed.*

Schopfheim, den 26.02.2009
Ort und Datum/ *place and date*

_____
Unterschrift/ *signature*

18 Appendix

18.1 Wiring diagram

Wiring diagram refer to separate appendix.

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