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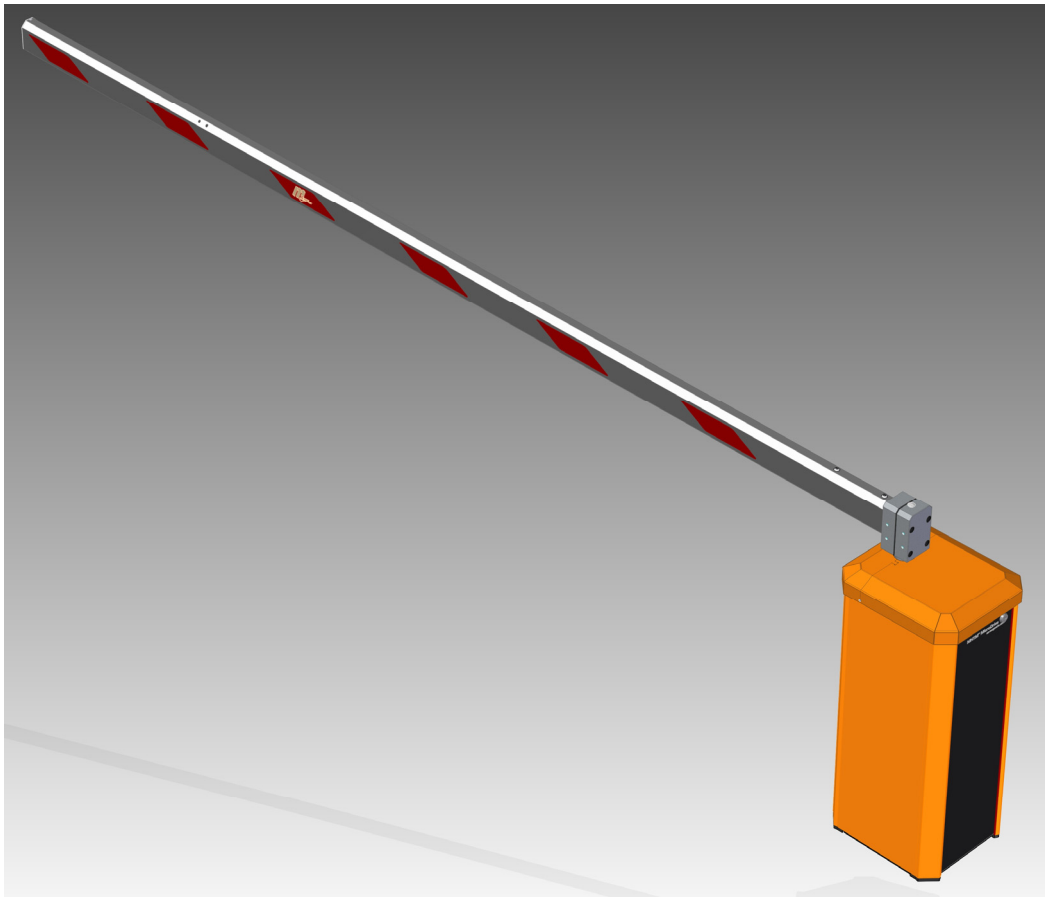
Operating Instructions

Traffic H1 Swing Gate
Horizontal Barrier



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Important Safety Instructions

- Read and follow all instructions.
- Never let children operate or play with barrier controls. Keep the remote control (where provided) away from children.
- Personnel should keep away from a barrier arm in motion and keep the moving barrier arm in sight until it is completely closed or opened. No one should cross the path of a moving barrier arm.
- Test the barrier system monthly. After adjusting the force or the limit of travel, retest the barrier system. Failure to adjust and retest the barrier system properly can increase the risk of injury or death.
- Keep barrier properly maintained. Read the owner's manual. Have a qualified service person make repairs to barrier hardware.
- The barrier is for vehicles only. Pedestrians must use separate entrance.
- Save these instructions.

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1 General

1.1 Information regarding the operating instructions

These operating instructions provide crucial information on handling of MHTM™ MicroDrive. Pre-requisite 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.

Parameterisation of the barrier control unit MGC and MGC Pro

NOTE!

For parameterisation of the control units, see separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers (Doc-ID: 5816,0006)".

General

1.2 Pictogram explanation

Warning notes

Warning notes are characterised by pictograms in these operating instructions. The warning notes are followed 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	
	The signal word DANGER points to an immediately dangerous situation, which leads to death or severe injuries if it is not avoided.

⚠ WARNING	
	The signal word WARNING points to a potentially dangerous situation, which can lead to death or severe injuries if it is not avoided.

⚠ CAUTION	
	The signal word CAUTION points to a potentially dangerous situation, which can lead to minor injuries if it is not avoided.

NOTICE	
	The signal word NOTICE points to a potentially harmful 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.

In no event shall manufacturer be liable for any incidental, indirect, special or consequential damages in connection with the use of the product.

1.4 Copyright protection

Manufacturer retains sole and exclusive ownership of all intellectual property rights with respect to the products.

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.

General

1.5 Scope of delivery

The scope of delivery comprises:

- 1 Barrier housing
  incl. drive unit and control
- 1 Barrier
- 2 Mounting profiles
- Options if applicable
- Documentation for the barrier.

1.6 Warranty

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,we grant a warranty on all mechanical and electrical components of the product to the extent as stated in its standard terms of sales and delivery or as contractually agreed in writing.

We makes no warranties, express or implied, regarding the products, including the value, design, condition, merchantability or fitness for particular purpose or use of the products.

1.7 Customer service

Your vendor is available to you for technical information

For the address, see invoice, delivery note or the reverse of these instructions.

NOTE!

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

1.8 Environmental protection

NOTICE

Danger for the environment by improper disposal of components or the barrier!

In case of improper disposal of components or the barrier, damage to the environment may result.

– Observe the local and national laws and directives.
– Disassemble barrier according to resources. Sort resources and supply them to recycling.

2 Safety

2.1 Intended use of the barriers

The MHTM™ MicroDrive Traffic barriers are solely intended for temporarily blocking the access by vehicles and on foot to specific public or industrial areas and leaving of these areas by specific motor vehicles and/or persons, or to temporarily lock lanes or paths.

The barrier must only be controlled by a person or by external systems in the manual modes. The setting of automatic operating mode at the MGC control unit is not intended for these barriers. The barrier must be monitored with induction loops and/or safety scanners.

To reach the required minimum protection level in the industrial area, the entire swivel range of the barrier arm must be monitored by a contact-free safety device. We recommend using safety laser scanners as a safety device.

In the public area, only the slow-moving horizontal barriers TRAFFIC H1L at the slowest speed must be used to avoid exceeding the permitted impact forces.

The barrier must only close against flowing traffic. The barrier must never close with flowing traffic. Exceptions are systems with changing crossing traffic in industrial areas.

Permitted use: Closing of the barrier against traffic

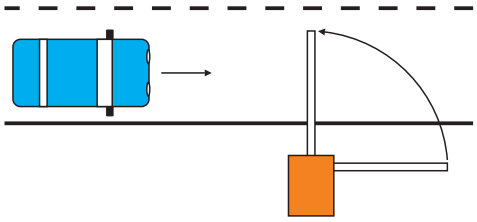


Fig. 1: Closing of the barrier against traffic

Forbidden: Closing of the barrier with traffic

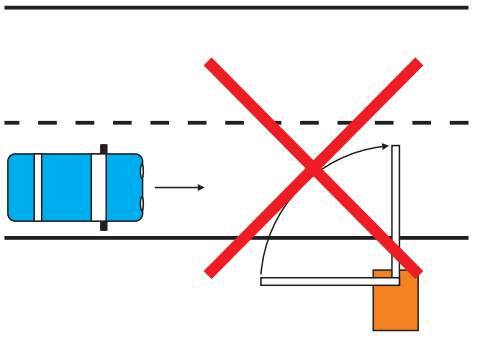


Fig. 2: Closing of the barrier with traffic

Folding arm in industrial facilities

An industrial folding arm must only be used in industrial plants.

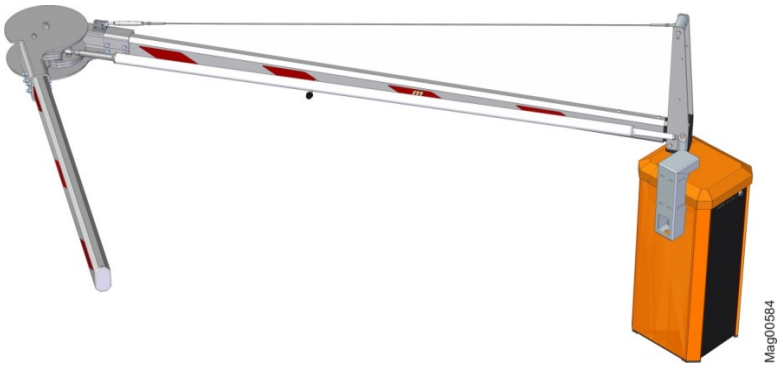


Fig. 3: Folding arm

Before lanes are blocked, the flowing traffic must be stopped by suitable signals (traffic lights) in front of the barrier.

Electrical energy is used exclusively for operating the barrier.

The barrier consists of a barrier housing with drive system and control, as well as the barrier arm.

2.1.1 Intended use for certain road vehicles

Certain road vehicles according to chapter 1.1 paragraph 1 need to have sufficiently large metal areas in the vehicle floor area to enable detection by induction loops.

Other or complementary safety facilities must be provided for road vehicles that cannot be detected by induction loops due to the metal area in the vehicle floor area being too small.

Additional safety installations must be provided for motorcycles. Passages for motor vehicles and motorcycles must be constructed apart from one another.

2.1.2 Barrier, pedestrian traffic impossible

In vehicle barriers where pedestrian traffic is excluded, use for pedestrian traffic is non-intended use.

The presence of persons and animals must be excluded by the operator.

Safety

2.1.3 Barrier, pedestrian traffic not impossible

In vehicle barriers where pedestrian traffic cannot be excluded, use for pedestrian traffic is intended use.

If persons and animals may be present, only the following barrier type may be used.

- Traffic H1L at the slowest speed

It must be ensured that the swivel range of the barrier arm is monitored by a contact-free safety device. The safety device for recognition of the presence of persons and animals must be sized and installed so that no persons or animals can be touched by the barrier arm.

We recommend using safety laser scanners as a safety device.

2.1.4 Non-Intended use

Use of the barriers in the public rail transport system for shutting off rail-bound vehicles is not permitted.

The barriers are not approved for pedestrian traffic, bicycles or animals.

The barriers must not be used in explosive environments.

All uses not described as intended use are prohibited.

No accessories must be connected or installed if they are not specified expressly according to quantity and characteristics and approved by Magnetic Autocontrol.

⚠ WARNING

Non-intended use is dangerous!

Every non-intended use can lead to dangerous situations.

– Only use barrier as intended.
– 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 Operator's responsibility

The operator must comply with the statutory obligations regarding work safety.

In addition to the work safety notes in these operating instructions, the safety, accident prevention and environmental provisions applicable for the area the barrier is used in must be complied with.

In particular, the operator must:

- gather information on applicable work protection provisions.
- determine additional dangers in a risk assessment.
- implement the required method of operation of the barrier on site from the operating instructions.
- regularly verify throughout the barrier's time of use that the operating instructions drawn up by him comply with the current state of the regulations.
- adapt the operating instructions to any new provisions, standards and usage conditions - where required.
- clearly determine the responsibilities for installation, operation, maintenance and cleaning of the barrier.
- ensure that all employees that are working at or with the barrier have read and understood the operating instructions.
- Furthermore, the operator must train personnel regarding the use of the barrier at regular intervals and provide information on possible dangers.

Furthermore, the operator is responsible for:

- keeping the barrier in perfect technical order and condition at all times.
- maintaining the barrier according to the maintenance intervals and performing the safety inspections as stipulated.
- checking all protective facilities for completeness and proper function at regular intervals.

The operator is also responsible that the danger area of the barrier arm cannot be accessed by any unauthorised persons, and in particular not by children, under any circumstances, in systems used only for vehicle traffic.

2.3 Changes and modifications

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

A written authorisation of the manufacturer is required before executing any technical changes and extensions on the barrier.

2.4 Specialists and operating personnel

2.4.1 Requirements

⚠ WARNING

Risk of injury in case of inadequate qualification!

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

– 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**
  are able, due their technical training, knowledge and experience as well as their knowledge of the pertinent regulations able to carry out the work assigned to it and to independently recognize 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 recognize possible hazards.
  In Germany, the electrical specialist must comply with the provisions of accident prevention regulation BGV A3 (e.g. master electrical fitter). Appropriate regulations apply in other countries. The regulations valid there must be observed.
  The installation is to be made by a professional installer according to NFPA 70 National Electrical Code and Local Code.
- **MHTM^{TM} MicroDrive service experts**
  comply with the requirements of the electricians named here. Additionally, these electricians are trained and authorised by MAGNETIC to perform special repair and service work on MHTM^{TM} MicroDrive barriers.

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, must not be used. Furthermore, the age and profession-specific regulations valid at the operating location must be observed when selecting personnel.

2.5 Personal protective equipment

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

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

2.6 Occupational safety and special dangers

The remaining risks resulting from the risk 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.

2.6.1 Danger symbols on the MHTM™ MicroDrive barrier

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

Electric voltage

⚠ DANGER

Mortal danger by electric voltage!

... indicates life threatening situations caused by electric voltage. 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 component:

– Assembly plate in the barrier housing.

⚠ WARNING

Danger of crushing!

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

This pictogram is fixed on the following component:

– At the access points for the lever system on the front and rear of the top assembly plate.
– At the access point for the flanged shaft on the front and rear of the top assembly plate.

Safety

Hot surfaces

⚠ CAUTION	
	**Danger of burns!** … indicates the presence of a hot surface. Non-observance of the safety instructions can lead to minor injuries. This pictogram is fixed on the following component: – Motor in the barrier housing. – Heating (optional) in the barrier housing.

2.6.2 Hazard notes and occupational safety

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

Electric voltage

⚠ DANGER	
	**Mortal danger by electric voltage!** Touching live parts can be lethal. Damage to the insulation or to individual components can be lethal. – 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. – Switch off power supply and secure against re-activation before performing any work. Test for absence of voltage! – Never bypass or deactivate fuses. – When replacing fuses observe the correct amperage specification. – Keep moisture and dust away from live parts. Moisture or dust may cause a short circuit. If the electrical connection is established during precipitation, e.g. rain or snow, penetration of moisture must be prevented by suitable measures, such as a protective cover.

Safety

Electric voltage – missing protective facilities

⚠ DANGER

Mortal danger by electric voltage!

The safety installations that are required according to regional and local regulations must be provided by the customer. Usually these are:

– Ground fault circuit interrupter (GFCI)
– Circuit-breaker
– Appropriate listed 2-pole main switch.

Thunderstorm, lightning, electric voltage

⚠ DANGER

Mortal danger from lightning and electrical voltage!

If lightning strikes the barrier, contact to the barrier components and direct proximity to the barrier includes mortal danger.

– Never install the barrier housing and barrier arm during thunderstorms.
– Protect yourself in buildings or vehicles.

Improper operation

⚠ WARNING

Danger from improper operation of the barrier!

Improper operation of the barrier can cause severe or lethal injuries!

– Only additions to the barrier housing or arm that are permitted by the manufacturer may be installed.
– Keep barrier area free from objects.
– Do not use the barrier arm as a lifting device.
– Never climb over or crawl under arm.
– Never sit on the barrier housing or climb over it.
– Do not sit or have yourself lifted by the arm.
– Never open or stop the arm manually.

Safety

Entering the danger area of the barrier – pedestrian traffic possible

⚠ CAUTION

Danger from entering the danger area!

The MHTM™ MicroDrive Traffic type barriers are solely intended for temporarily blocking the access with vehicles and on foot to specific public or industrial areas and leaving of these areas by specific motor vehicles and/or persons, or to temporarily lock lanes or paths. Entering the danger area can cause injuries!

Therefore, the operator must take the following measures:

- Ensure that the swivel range of the barrier arm is monitored with a contact-free safety device such as a safety scanner. The safety device for recognition of the presence of persons and animals must be sized and installed so that no persons or animals can be touched by the barrier arm.
- Observe country-specific laws and regulations.
- Mark the danger area with notice signs etc.
- Before any movement of the barrier arm, such as closing and opening, persons and the flowing traffic must be stopped by the corresponding signals such as traffic lights.
- A movement of the barrier arm such as closing and opening must be announced with the corresponding signals such as traffic lights.

Entering the danger area of the barrier – pedestrian traffic impossible

⚠ WARNING

Danger from entering the danger area!

The MHTM™ MicroDrive Traffic type barriers are solely intended for temporarily blocking the access with vehicles and on foot to specific public or industrial areas and leaving of these areas by specific motor vehicles and/or persons, or to temporarily lock lanes or paths. Entering the danger area can cause severe or lethal injuries!

Therefore, the operator must take the following measures:

- Observe country-specific laws and regulations.
- Mark the danger area with notice signs etc.
- Presence of persons and animals must be excluded.
- If required, set up barriers such as fences and railings.
- If required, set up separate passageway for persons and bicycles.
- Before any movement of the barrier arm, such as closing and opening, persons and the flowing traffic must be stopped by the corresponding signals such as traffic lights.
- A movement of the barrier arm such as closing and opening must be announced with the corresponding signals such as traffic lights.

Lever system – crushing and shearing danger

⚠ WARNING

Crushing and shearing danger from the lever system!

The lever system can severely injure a person!

- Switch off power supply and secure against re-activation before performing any work.
- When working in the area of the lever system, ensure that the barrier does not start up unexpectedly, e.g. by a control command or due to wind.
- Secure the barrier arm so that unexpected movement of the barrier arm e.g. by wind or human force is not possible.

Safety

Improper transport

⚠ WARNING

Danger from improper transport of the barrier arm and housing!

The weight of the barrier arm or housing can severely injure a person!

- Have them transported by specialists only.
- Use lifting gear or forklift with a suitable pallet.
- Use suitable lifting gear (loops, etc.) for lifting the barrier arm and barrier housing. The lifting gear must be designed for the respective weights.
- Carrying and lifting the barrier arm and housing from the pallet should be done by at least two people.

Heavy weight

⚠ WARNING

Risk of injury when lifting heavy objects alone!

The weight of heavy objects can severely injure a person!

- Lifting and carrying the barrier arm and housing from the pallet should be done by a minimum of two people.

Falling components

⚠ WARNING

Risk of injury from falling components!

Falling components such as the barrier arm can cause severe injury!

- Only place the barrier arm horizontally.
- Only install the barrier arm when there is no or little wind.
- Secure the barrier housing against tilting before assembly.
- Install the barrier housing correctly.

Insufficient fixing

⚠ WARNING

Risk of injury at insufficient fixing!

Insufficient fixing of individual components such as barrier housing, barrier arm and additions permitted by the manufacturer can cause severe injury!

– Only qualified and skilled personnel are allowed to assemble the barrier and the appropriate components.
– Check the foundation anchors fit tightly before starting the barrier.
– Check the firm fixing of all screws according to maintenance schedule.

Danger of crushing, barrier arm and flange

⚠ WARNING

Danger of crushing between barrier arm and barrier housing!

Moving parts may cause serious crushing injuries!

– Only skilled personnel are allowed to work on the barrier housing and barrier arm.
– Only work at the barrier housing when the power supply is turned off.
– For assembly of the barrier arm, strictly observe the descriptions in chapter 9.

Illegible signage

⚠ CAUTION

Risk of injury by illegible symbols!

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

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

Safety

2.7 Danger area

Danger of crushing and shearing, barrier arm

⚠ WARNING

Danger of crushing and shearing when the barrier opens or closes!

When a barrier opens or closes, the barrier arm may lead to severe crushing or injury!

– Keep a distance of at least 2 ft (610 mm) between the barrier arm and other objects, such as walls, masonry or houses.
– Install the barrier system only when all exposed pinch points are eliminated or guarded.

A: min. 2 ft (610 mm)

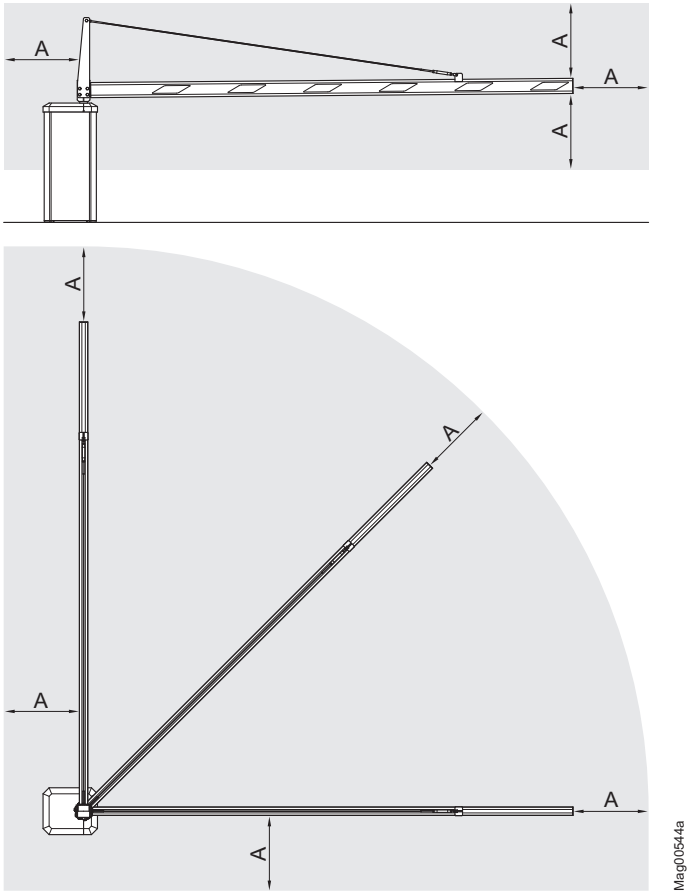


Fig. 4: Danger area

A Danger area of at least 2 ft (610 mm)

3 Identification

3.1 Type plate

The type plate is provided inside at the barrier housing, next to the hood attachment.

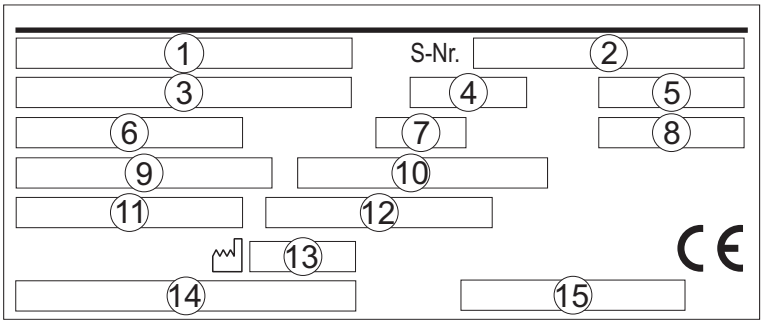


Fig. 5: Type plate

1 Type code
2 Serial number
3 Power supply, Frequency
4 Nominal current consumption (max. peak current consumption) + additional current consumption when using the service socket
5 Power consumption
6 Operating time (Opening time/closing time)
7 Protection class
8 Duty cycle
9 –
10 –
11 –
12 –
13 Manufacturing year and month
14 Bar code for type code
15 Bar code for serial number

4 Technical data

4.1 Dimensions and weight

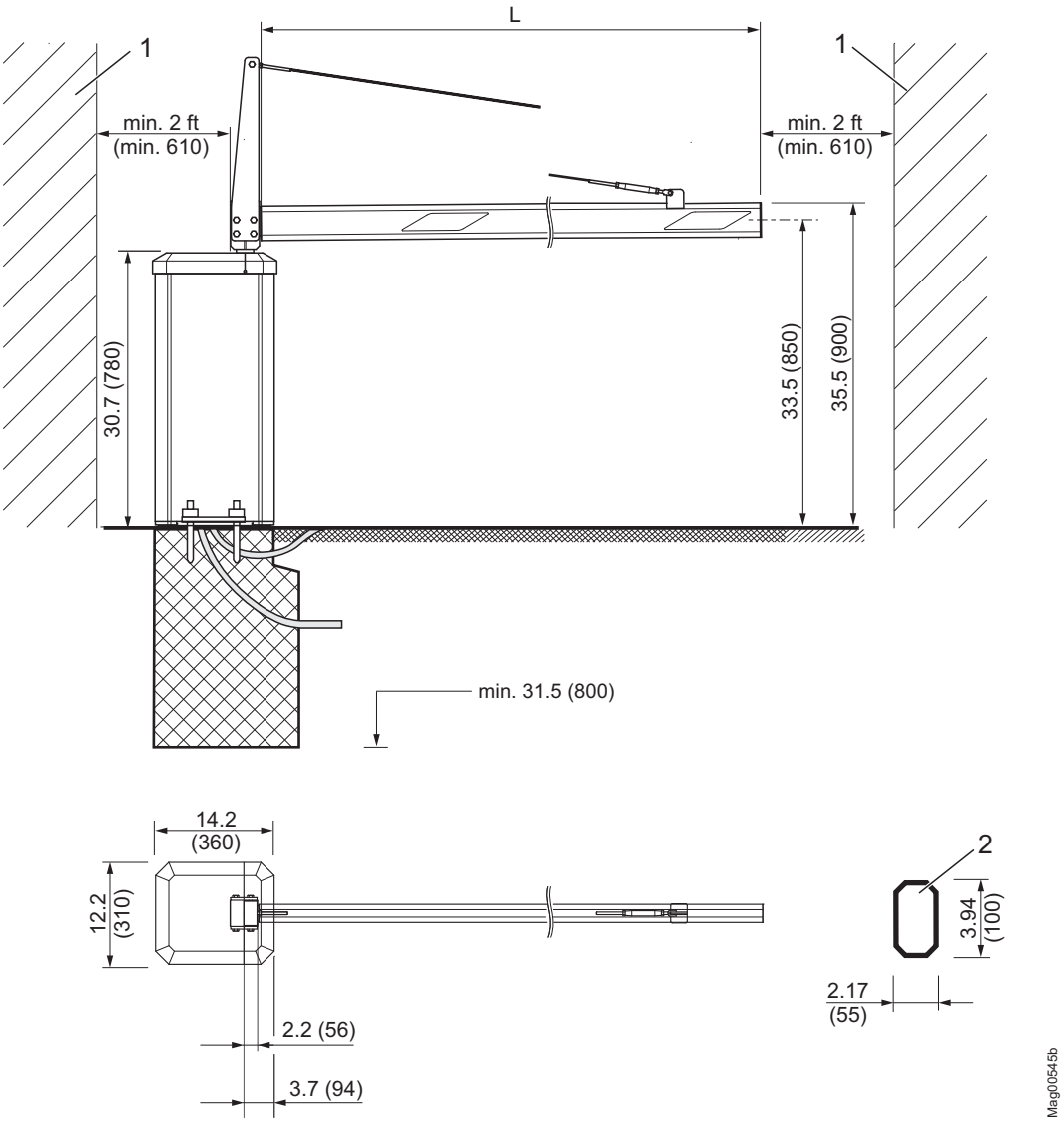


Fig. 6: Dimensions barrier system and barrier arm profile – "Dimensions in inch or feet are without parenthesis. Dimensions in mm are in parenthesis.

1 Object such as wall, building, etc.
2 MicroBoom (barrier arm) with octagon arm profile

L Barrier arm length
→ See page 29, Table 1.

Designation	Unit	Traffic H1S	Traffic H1L
Barrier arm length	ft (m)	Up to 12 (approx. 3.5)	Up to 20 (approx. 6.0)
Barrier housing (width x depth x height)	in (mm)	→ See page 28, Fig. 6.	
Weight barrier housing	lbs (kg)	101 (46)	

Table 1: Dimensions and weight – "Traffic" series

4.1.1 Electrical connection

Designation	Unit	Traffic H1S	Traffic H1L
Supply voltage	V AC	85 to 264	
Frequency	Hz	50 / 60	
Nominal current consumption [1)]	A	1.0	0.5
Nominal power consumption [1)]	W	100	40
Duty cycle	%	100	

1) The values refer to a power supply of 120 V AC / 60 Hz and without accessories.

Table 2: Electrical connection – "Traffic" series

4.1.2 Operating conditions

Designation	Unit	Traffic H1S	Traffic H1L
Ambient temperature	°F (°C)	–22 to +131 (–30 to +55)	
Storage temperature	°F (°C)	–22 to +158 (–30 to +70)	
Relative humidity	%	max. 95 %, non-condensing	
Wind force	Bft (Beaufort)	max. 10	
Protection class barrier housing	–	IP 54	

Table 3: Operating conditions – "Traffic" series

4.1.3 Operating times

Designation	Unit	Traffic H1S	Traffic H1L
Opening time/ Closing time	s	1.8	4

Table 4: Operating times – "Traffic" series

Technical data

4.2 Control unit

Designation		Unit	MGC (MAGNETIC Gate Controller)
Supply voltage		V DC	24
Current consumption		–	max. 1 A, max. 300 mA + current consumption of the different plug-in modules
Power consumption		–	max 24 W, Max. 7.2 W + power consumption of the different plug-in modules
Control unit safety		–	1 A T
Output clamp X2	Output voltage	V DC	24
	Max. output current	mA	300
Digital inputs	Number	–	8
	Input voltage	V DC	24 ± 10 %
	Input current	–	< 10 mA per input
	Max. line length without overvoltage module [1)]	ft (m)	100 (30)
Digital outputs	Number	–	4 (open collector)
	Switching voltage	V DC	24 ± 10 %
	Max. switching current	mA	100
	Max. line length without overvoltage module [1)]	ft (m)	100 (30)
Output relay	Number	–	3 normally-open contact and 3 change-over contacts, isolated
	Max. switching voltage	V AC / DC	30
	Switching current	mA	10 mA to 1 A
	Max. line length without overvoltage module [1)]	ft (m)	100 (30)
Display		–	Graphics display, 128 x 65 Pixel
Language display		–	Selectable: German, English, French, Spanish, Italian, Portuguese, Swedish, Finnish, Norwegian, Danish, Estonian, Dutch
Number of slots for plug-in modules		–	5

1) For line lengths exceeding 30 m, overvoltage modules must be installed in front of the terminal clamps.

Table 5: Control unit

4.3 Plug-in module "Detector A–B"

Designation	Unit	Plug-in module "Detector A–B"
Current consumption	mA	50
Number of loop detectors	–	2 (A and B)
Inductance range	µH	70 to 500
Number of induction loop sensitivity levels	–	10 levels
Response sensitivity induction loop	%	Selectable: 0.01 to 2.0

Table 6: Plug-in module "Detector A–B"

4.4 Plug-in module "Radio"

Designation	Unit	Plug-in module "Radio"
Current consumption	mA	20
Frequency hand transmitter	MHz	433
HF-Modulation	–	FM/AM (depending on region)
Grant of equipment authorization (Certificate)	–	FCC Identifier: QV2-SMD-53200RX FCC 02-157 → See page 89, chapter 15.

Table 7: Plug-in module "Radio"

5 Design and function

5.1 Design

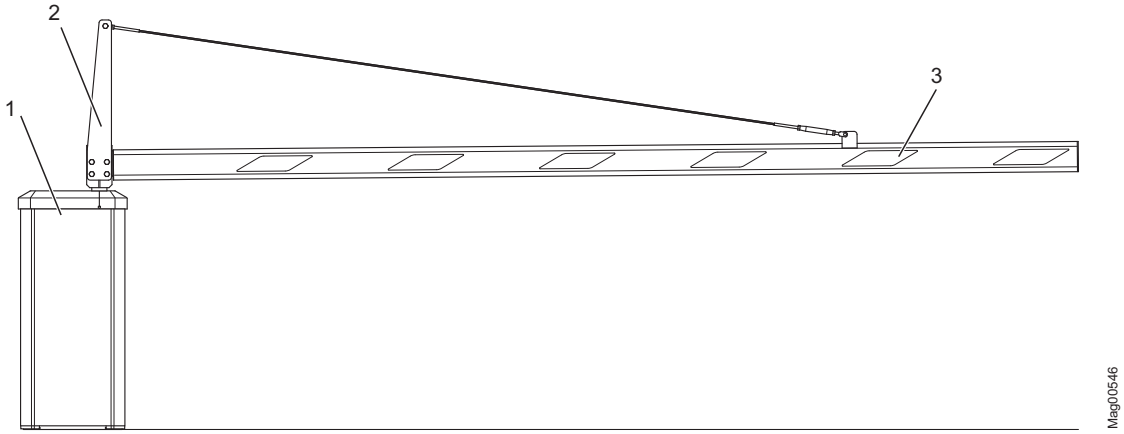


Fig. 7: Barrier system design series "Traffic"

1 Barrier housing
2 Anchor support (accessory), required from 11.5 ft (3.5 m) onwards
3 Barrier arm

5.2 Function

The barrier consists of a barrier housing with drive system and a barrier arm.

The drive system consists of an electric motor, control unit, and the lever system. The lever system locks the barrier arm in both end positions. In case of power outage, the barrier arm can easily be moved by hand.

Sensors integrated in the motor supply exact data on every correct position of the barrier arm and thus serve the control unit to control the best acceleration and deceleration.

Safety facilities like induction loops or safety scanners must be installed on site in all cases. The safety installations must ensure that the barrier closes only after the vehicle has passed through. Safety installations, such as induction loops can be purchased from MAGNETIC.

6 Transport and storage

6.1 Safety

Improper transport

⚠ WARNING

Danger from improper transport of the barrier arm and housing!

The weight of the barrier arm or housing can severely injure a person!

– Have transport performed by specialists only.
– Use lifting gear or forklift with a suitable pallet.
– Use suitable lifting gear (loops, etc.) for lifting the barrier arm and barrier housing. The lifting gear must be designed for the respective weights.
– Lifting and carrying the barrier arm and housing from the pallet should be done by a minimum of two people.

Heavy weight

⚠ WARNING

Risk of injury when lifting heavy objects alone!

The weight of heavy objects can severely injure a person!

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

Improper transport

NOTICE

The barrier system can be damaged by improper transport!

Substantial material damages can result from improper transport.

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

Transport and storage

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 recognized. Compensation claims can only be submitted within the valid complaint periods.

6.3 Transport

Barrier housing and barrier arm are delivered separately.

The lifting gear must be designed for the weight of the barrier housing and barrier arm.

For transport barrier modules refer to the safety notes on page 33, chapter 6.1.

For future transports:

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

6.4 Storage

Store the barrier 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: –22 to +158 °F (–30 to +70 °C)
- Relative humidity: max. 95 %, non-condensing
- Check the general condition of all components and packaging regularly, if they are stored for longer periods than 3 months.

7 Assembly and installation

7.1 Safety

→ See also safety notes on page 19, chapter 2.6 "Occupational safety and special dangers".

General

⚠ WARNING

Danger by inappropriate installation!

Inappropriate installation can cause severe injuries!

- Only specialist personnel or electrical specialists must perform any assembly and installation 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.
- Comply with specifications for foundations and reinforcement.
- Ensure correct arrangement and fit on all assemblies and components.
- Install the indicated fastening elements correctly.

Personal protective equipment

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

- Work clothes
- Protective gloves
- Safety shoes.

7.2 Required steps

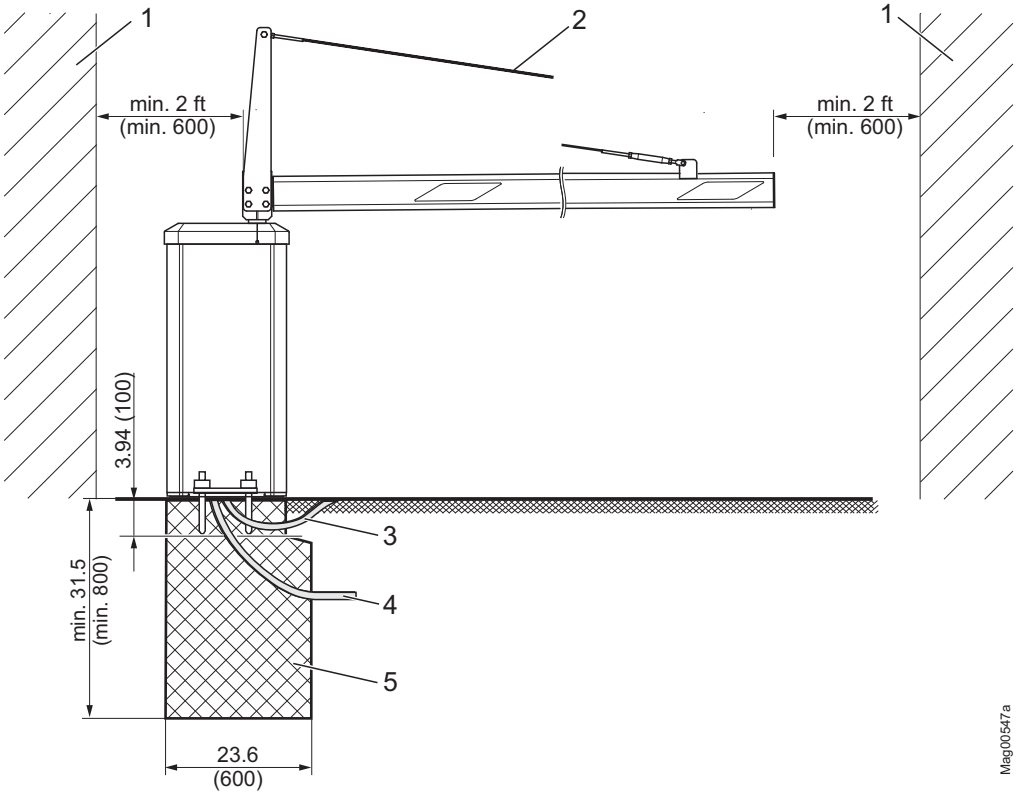
The following steps are to be completed prior to assembly and installation:

- Laying the foundation with reinforcement for the barrier and install empty conduits.
- Installing induction loops.

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

- Unpack barrier and accessories.
- Mount barrier housing on the foundation.
- Mount safety scanner.
- Assemble and install signalling device.
- Arrange electrical connections. → See page 47, chapter 8.
- Assembly flange and barrier arm. → See page 54, chapter 9.

7.3 Foundation and empty conduits



t t

Fig. 8: Assembly barrier system
Dimensions in inch or feet are without parenthesis.
Dimensions in mm are in parenthesis.

1 Object such as wall, building, etc.
Keep a safety distance of at least 2 ft (610 mm) between the barrier arm and other objects, such as walls, masonry or houses. → See page 26, chapter 2.7
2 Anchor support (accessory), required from 11.5 ft (3.5 m) onwards
3 Empty conduit for induction loop connection
4 One empty conduit each for mains cable and control lines
5 Foundation with reinforcement grid for barrier housing

Assembly and installation

7.3.1 Foundation and empty conduits for the barrier

Assembly site

The assembly site must meet the following requirements:

- The barrier must be visible from the operating person.
- The barrier must not be put up where there is a danger of flooding.
- Keep a safety distance of at least 2 ft (610 mm) between the barrier arm and objects such as walls, buildings, etc.
  → See page 26, chapter 2.7 and page 37, Fig. 8.

Foundation and reinforcement

The foundation must meet the following requirements:
→ See page page 37, Fig. 8 and page 39, Fig. 9.

- Have sufficient load-carrying capacity.
  (concrete foundations: C35/45 XD3 XF2)
- Water cement value: 0.5
- Foundation depth: at least 31.5 in (800 mm), frost-protected foundation depth to be adjusted to the local situation.
- Foundation section: 17.7 in x 23.6 in (450 mm x 600 mm)
- Reinforcing mesh as shown in figure Fig. 10.
- Surface has to be non-combustible material.

Empty conduits

The empty conduits must meet the following requirements:
→ See page 39, Fig. 9.

- Separate empty conduits for mains cable and control line
  Diameter: 1.14 ft (29 mm) each
- Optional empty conduit for induction loop.
  Diameter: 1.14 (29 mm) each
- Conduits have to be planned to a sufficient length.

NOTE!

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

Assembly and installation

Laying the foundation, Installing empty conduits

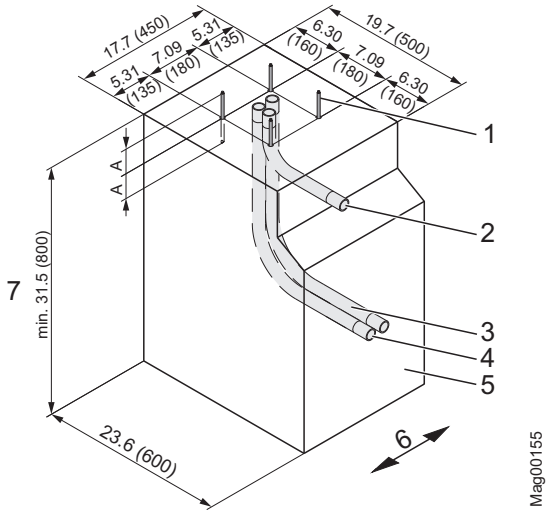


Fig. 9: Foundation plan
Dimensions in inch or feet are without parenthesis. Dimensions in mm are in parenthesis.

1 Foundation anchor (4 pcs.)
2 Optional when using loop connection; empty conduit for loop connection, diameter: 1.14 in (29 mm)
3 Empty conduit for induction loop, diameter: 1.14 in (29 mm)
4 Empty conduit for control lines, diameter: 1.14 (29 mm)
5 Concrete foundations (C35/45 XD3 XF2)
6 Roadway
7 Foundation depth: at least 31.5 in (800 mm), frost-protected foundation depth to be adjusted to the local situation.

1. Dig foundation hole pursuant to Fig. 8 and Fig. 9.

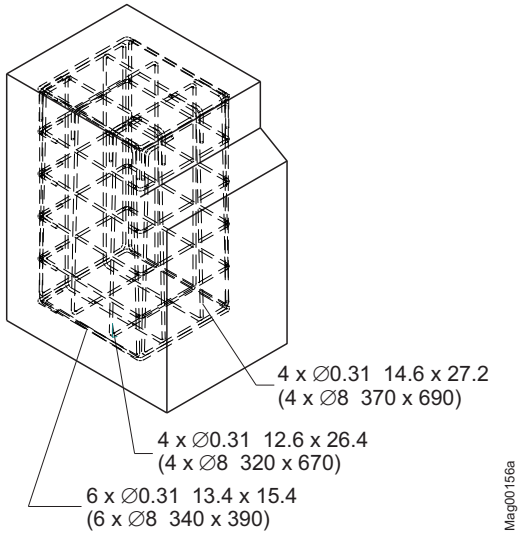


Fig. 10: Reinforcement grid
Dimensions in inch or feet are without parenthesis. Dimensions in mm are in parenthesis.

2. Place reinforcement grid pursuant to Fig. 10 in the foundation hole.
3. Place empty conduits pursuant to Fig. 9 in the foundation hole.
4. Close empty conduits to prevent water from entering.
5. Fill concrete foundation pursuant to Fig. 8.
6. Create flat line in the base area. The following requirements must be fulfilled:
   - Level and horizontal.
   - Surface deviation: max. 0.00732 in/ft^2 (2 mm/m^2)
7. Let concrete cure.
8. Apply moisture protection agent to concrete surface.

NOTE!

We recommend applying moisture protection either in the form of sealing sludges such as 1100 Hansit or ready-made solution such as Sikagard® 703 W or deepdry® to the concrete surface before housing assembly. Moisture protection prevents entering of moisture into the housing from the concrete floor.

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 barrier.
2. Set up barrier housing vertically.
3. Lay down barrier arm.
4. Unpack and lay out accessories.
5. Separate material according to type and size and recycle them after use.

7.5 Open barrier housing

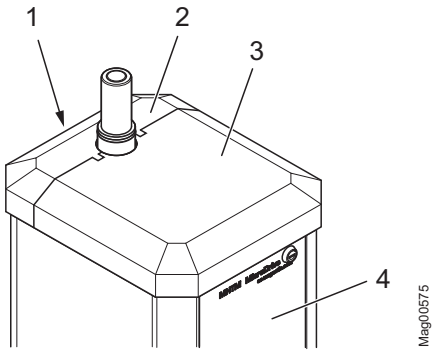


Fig. 11: Opening barrier housing

1 Front door
2 Front cover
3 Rear cover
4 Rear door

Drive system, connection terminals and control are protected by two hoods and two doors.

Rear cover and rear door

1. Unlock the lock at the rear door.
2. Fold the rear cover up and remove it.
3. Pull out the door upwards.

Front cover and front door

4. Unlock the lock at the front door.
5. Fold the front cover up and remove it.
6. Pull out the door upwards.

After any work

7. Install doors.
8. Attach and lock the covers.

Assembly and installation

7.6 Assemble housing

The barrier housing is attached by 4 foundation anchors via 2 mounting profiles. The mounting profiles are included in delivery.

Requirements mounting material

MAGNETIC Automation Corporation recommends using ∅ 3/8" anchor bolts. → Refer to the anchor bolt manufacturers installation requirements.

1. The foundation must have cured.

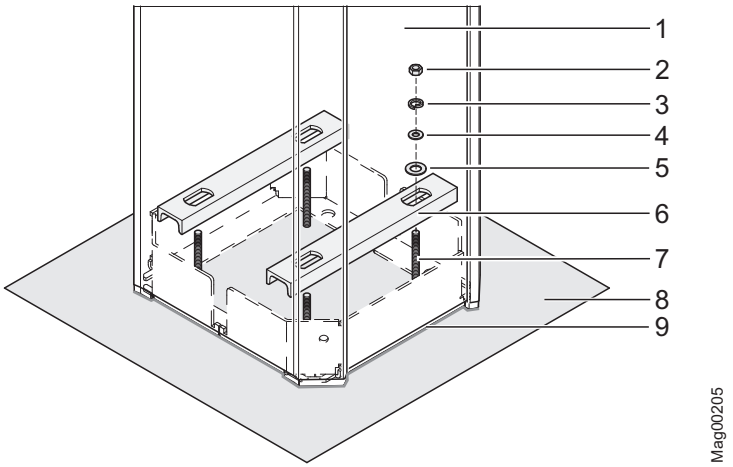


Fig. 12: Assemble housing

1 Barrier housing
2 Nut
3 Spring washer
4 Washer d8,4
5 Washer d13
6 Mounting profile
7 Foundation anchor
8 Foundation
9 Silicon sealant

2. Drill holes for the foundation anchors according to the foundation plan, page 39, Fig. 9 in compliance with the indicated sizes.
   - Drill-hole distance: 7.01 in (180 mm), square alignment
   - Depth: 3.15 in (80 mm)
     (At this drilling depth, a minimum tensile strength of 1.98 kpf (8.8 kN) must be guaranteed.)
3. Place four foundation anchors.
4. Set up barrier housing upright on foundation.
5. Barrier housing attached to mounting profile on the foundation with foundation anchors. Tighten nuts slightly for this.
6 Align barrier housing. Tighten nuts firmly.
7. Seal barrier housing with silicon sealant.

7.7 Check assembly and installation

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

- Are all foundation anchors firmly fixed?
- Are all screws firmly tightened
- Have all barrier housing covers been properly assembled?

8 Electrical connection

8.1 Safety

→ See also safety notes on page 19, chapter 2.6 "Occupational safety and special dangers".

Electric voltage – inadequate qualification

⚠ DANGER

Mortal danger by electric voltage!

Risk of injury in case of inadequate qualification!

– Only electrical specialists may carry out work on the electrical system.
  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 recognize possible hazards.
  In Germany, the electrical specialist must comply with the provisions of accident prevention regulation BGV A3 (e.g. master electrical fitter). Appropriate regulations apply in other countries. The regulations valid there must be observed.
  The installation is to be made by a professional installer according to NFPA 70 National Electrical Code and Local Code.

Electrical connection

Electric voltage

⚠ DANGER

Mortal danger by electric voltage!

Touching live parts can be lethal.

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

- 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.
- Switch off power supply and secure against reactivation before performing any work. Test for absence of voltage!
- Never bypass or deactivate fuses.
- When replacing fuses observe the correct amperage specification.
- Keep moisture and dust away from live parts. Moisture or dust may cause a short circuit. If the electrical connection is established during precipitation, e.g. rain or snow, penetration of moisture must be prevented by suitable measures, such as a protective cover.

General

⚠ WARNING

Danger by inappropriate installation!

Inappropriate installation can result in severe and lethal injuries.

- Only electrical specialists must perform any electrical installation tasks.
- Pay attention to tidiness and cleanness at the assembly site! Loosely stacked or lying around components and tools are accident sources.
- Tighten all screws correctly.

Hot surfaces

⚠ CAUTION

Danger of burns!

The motor surface may be hot. Touching this hot surface can lead to burns.

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

Electrical connection

Electromagnetic interference

NOTICE

Electromagnetic interferences may cause malfunctions of the barrier or adjacent devices!

The barrier is approved for industrial, residential, commercial and business use. Operation in other electro-magnetic environmental conditions may cause interferences or malfunctions.

– Place control lines and mains cables into separate conduits
– Use cables according to the electrical circuit plan.
– Only install and apply additional parts approved by MAGNETIC.
– The electrical and electronically additional parts must be EMC verified and must not exceed the indicated EMC limits.

Personal protective equipment

The following must be worn during all installation work:

- Work clothes
- Protective gloves
- Safety shoes.

8.2 Installing electrical protective devices

The safety installations that are required according to regional and local regulations must be provided by the customer. Usually these are:

- Ground fault circuit interrupter (GFCI)
- Circuit-breaker
- Appropriate listed 2-pole main switch.

8.3 Connecting the mains supply

Electrical voltage

⚠ DANGER

Danger to life from electric shock!

If the mains supply is not connected to the terminal clamps correctly, loosens from the terminal clamps and touches the housing or door, there is a direct danger to life from electric shock.

– Have work at the electrical system only performed by electricians.
– Connect mains supply according to the following description.
– Install electrical protective devices according to chapter 9.2, national and local codes.
– Perform proper grounding.

NOTE!

Cross-section of field wires used for mains line shall comply with requirements of National Electric Code (NFPA 70) and any applicable Local Codes.

DANGER!

Mortal danger by electric voltage!

Strip-off cable and core insulation – preparation of the wiring

1. Disconnect barrier system power supply. Ensure that the system is powered down. Secure against reactivation.
2. Strip-off mains supply and cores according to the following figure.

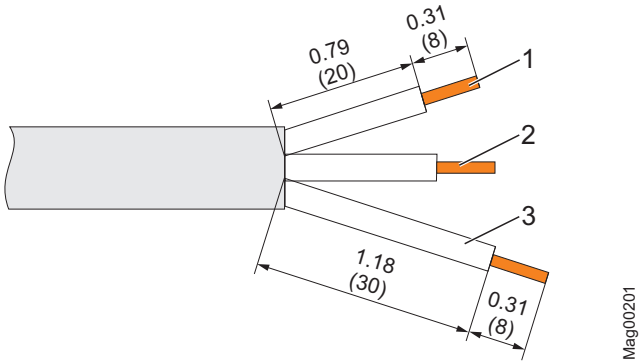


Fig. 13: Strip-off the mains supply
Dimensions in inch or feet are without parenthesis.
Dimensions in mm are in parenthesis

1 Phase
2 Neutral conductor
3 Ground conductor

Electrical connection

Mains supply placement

3. Connect mains supply to the provided terminal clamps (X1: L/N/PE) of the barrier housing according to the following figures. → See also page 91, chapter 16.1.
   - Place mains supply properly in the barrier housing. The line must be wired so that no damage could occur due to moving parts.
   - Attach mains supply to the metal tabs via 2 cable ties.

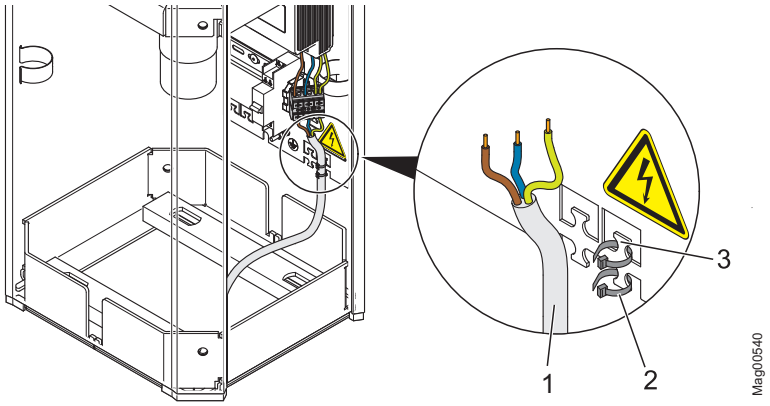


Fig. 14: Mains supply placement

1 Mains supply
2 Cable tie
3 Cable tie metal tabs

Connecting mains supply

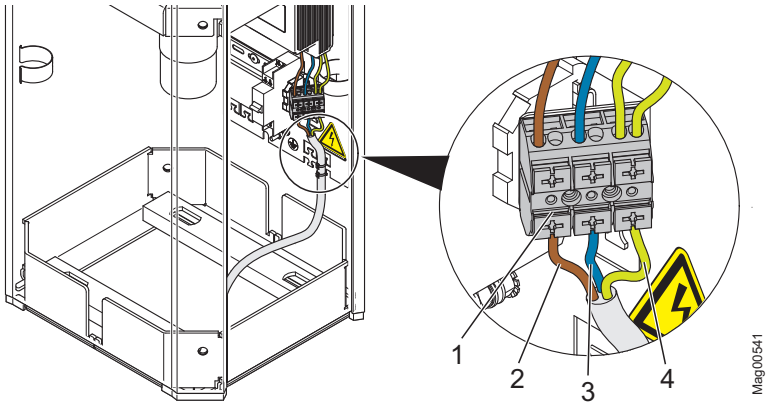


Fig. 15: Connecting the mains supply

1 Terminal clamps for mains supply
2 Phase L
3 Neutral conductor N
4 Ground conductor PE

8.4 Connect customer's control lines (signalling devices)

Lever system – crushing and shearing danger

⚠ WARNING

Crushing and shearing danger from the lever system!

The lever system can severely injure a person!

– Switch off power supply and secure against re-activation before performing any work.
– When working in the area of the lever system, ensure that the barrier does not start up unexpectedly, e.g. by a control command or due to wind.
– Secure the barrier arm so that unexpected movement of the barrier arm e.g. by wind or human force is not possible.

Placing the control lines

NOTE

Damage to the control lines!

Control lines that have been improperly placed and attached may be caught and damaged by the levers of the lever system.

– Place and attach control lines according to the following Figure (Fig. 16).

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

- 8 Digital inputs for controlling the barrier.
- 4 Digital outputs to feed back information.
- 6 Relays outputs to feed back information. 3 Relays are normally-open contacts (NO) and 3 relays are change-over contacts.

DANGER!

Mortal danger by electric voltage!

1. Disconnect barrier system supply voltage. Ensure that there is no voltage applied. Secure against reactivation.

WARNING!

Danger of crushing at the lever system!

2. Disassemble the safety plates in the area of the lever system and remove them.

Electrical connection

Connecting the control lines

3. Guide control lines into the connection space through the cable openings.
   - Place control lines properly in the barrier housing. The control lines must not get into moving components.
   - Attach control lines clamps and cable ties. The clamps can be removed from the rail by slight compression and relocated in the desired position. The cable ties can be attached to the metal tabs.
4. Connect control lines according to wiring diagram. Control lines must be wired so that no damage could occur due to moving parts.
   → See page 91, chapter 16.1 "Wiring diagrams".
5. Install the safety plates in the area of the lever system.

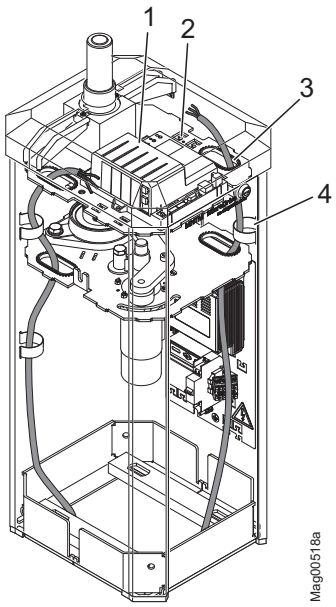


Fig. 16: Connecting the control lines

1 Control unit
2 Cable tie metal tabs
3 Cable opening
4 Cable clamps

8.4.1 Connecting safety loops and / or safety scanners

As safety devices, you must connect safety loops or safety scanner to the control unit. Safety loops must only be connected to monitor vehicles.

If you connect a safety loop, the barrier closes only after the safety loop is clear. If you connect a safety scanner, the barrier closes only after the safety scanner is clear.

The danger area of 2 ft (610 mm) as defined in chapter 2.7 must be maintained at any time, even in case additional safety devices are installed.

8.4.2 Connecting safety loop

The safety loop is connected to the plug-in module "Detector 1 (A-B)", clamps A or clamps B.
→ See page 91, chapter 16.1 "Wiring diagrams".

The clamp function parameters can be set in the menu "Detector 1 (A-B)" with the parameters "Mode A" or "Mode B". → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers".

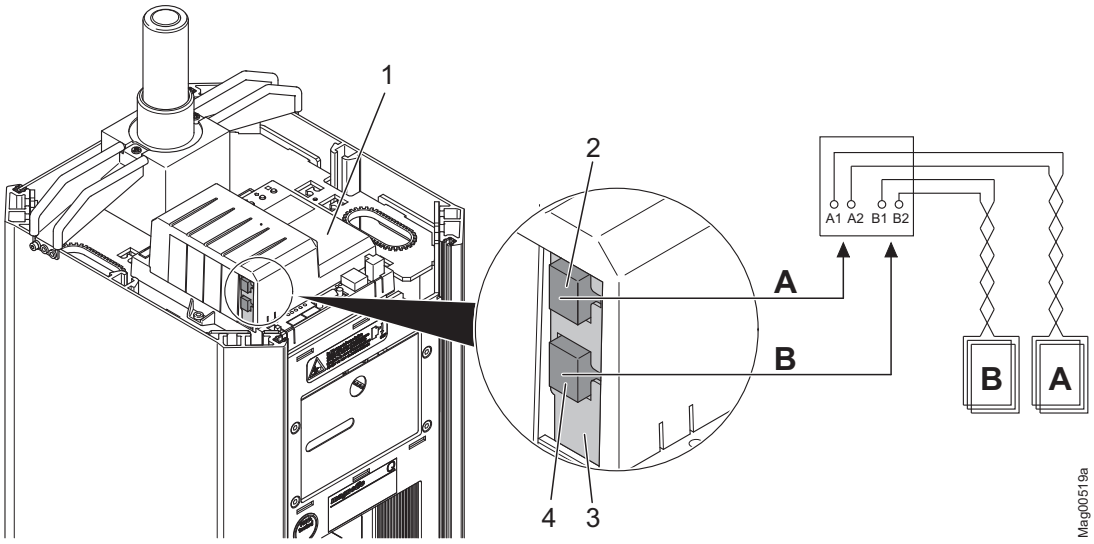


Fig. 17: Connecting safety loop

1 Control unit
2 Connection of induction loop A
3 Plug-in module "Detector 1 (A-B)"
4 Connection of induction loop B
A Induction loop A
B Induction loop B

NOTE!

If four induction loops must be supervised, you can connect another plug-in module with the "Detector" function into the control unit. This plug-in module registers as "Detector 2 (C-D)". To prevent mutual interference between the induction loops, we recommend using a plug-in module instead of an external detector.

Electrical connection

8.4.3 Connecting testable safety devices and test them

Connect the connection lines of the testable safety device to clamps X11 and X20.

By default, MAGNETIC installs a jumper between terminals X11 OUT and IN. When a testable safety device is connected, the jumper must be removed.

→ See page 91, chapter 16.1 "Wiring diagrams".

8.4.4 Connecting emergency opening contacts

Fire-fighter switch, emergency opening contacts, etc. are connected to the "Open high priority" input. When the signal is applied to this input, the barrier opens. While the signal is present, the barrier cannot be closed.

→ See page 91, chapter 16.1 "Wiring diagrams".

8.4.5 Digital inputs

Technical data

→ See page 30, chapter 4.2.

NOTE!

The digital input functions can be freely parameterised. → For input parameterisation, see separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers".

Factory setting

Clamp	Description	Function
IN1	Input 1	Open low priority
IN2	Input 2	Open low priority
IN3	Input 3	Open high priority
IN4	Input 4	Open Service
IN5	Input 5	Close Service
IN6	Input 6	Close
IN7	Input 7	Close
IN8	Input 8	Blink signal light

Table 8: Factory settings "Digital inputs"

8.4.6 Digital outputs and output relays

Technical data

→See page 30, chapter 4.2.

NOTE!

The digital output functions can be freely parameterised. → For output parameterisation, see separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers".

Factory setting

Clamp	Description	Function
DO1	Digital output 1	Locking
DO2	Digital output 2	Impact detection
DO3	Digital output 3	Loop active A
DO4	Digital output 4	Loop active B
NO1	Relay 1	Open
NO2	Relay 2	Closed
NO3	Relay 3	Error
NO4/NC4	Relay 4	Boom angle 30 – 85°
NO5/NC5	Relay 5	Boom angle 60 – 85°
NO6/NC6	Relay 6	Service mode active

Table 9: Factory settings "Digital outputs" and "Relay outputs"

8.5 Checking the electrical connection

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

- Are the following electrical protective devices installed: 2-pole main switch, circuit breaker and ground fault circuit interrupter?
- Is the power cable connected to the terminal in compliance with chapter 8.3?
- Are the induction loops connected according to the wiring diagram?
- Are the control lines connected according to wiring diagram?
- Are the safety plates in the area of the lever system assembled?
- Have all barrier housing covers been properly assembled?

9 Assembling flange and barrier arm

9.1 Safety

→ See also safety notes on page 19, chapter 2.6 "Occupational safety and special dangers".

General

⚠ WARNING

Danger by inappropriate installation!

Inappropriate installation can cause severe injuries!

- Only specialist personnel or electrical specialists must perform any assembly and installation 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.
- Ensure correct arrangement and fit of all assemblies and components.
- Install the indicated fastening elements correctly.

Danger of crushing and shearing, barrier arm

⚠ WARNING

Danger of crushing and shearing if the safety distance between the barrier arm and other objects is too low!

A closing or opening barrier arm can cause severe injuries from crushing if the safety distance to other objects is too low!

- Keep a safety distance of at least 2 ft (610 mm) between the barrier arm and other objects, such as walls, masonry or houses. → See page 26, chapter 2.7.
- Assemble and install barrier system according to Figure Fig. 8.

Assembling flange and barrier arm

Horizontally moving barrier arm

⚠ WARNING

Risk of injury by the horizontally moving barrier arm!

The barrier arm moves horizontally. A closing or opening barrier arm can cause severe injuries or property damage!

– Observe the swivel range of the barrier arm.
– Ensure freedom of movement. Remove obstacles from the swivel range.

Do not move the end stop

⚠ WARNING

Danger of injury from moved end stop!

The end stop for the barrier arm is set to a swivel angle of 90° ex works. The barrier arm is locked at the ends at 90° only. At smaller swivel angles, the barrier arm may be pushed out, e.g., by wind, or no longer be kept in position at a power failure.
A moving barrier arm can cause severe injuries or property damage!

– Never move the end stop.
– If a smaller swivel angle than 90° is required, contact service.

Personal protective equipment

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

- Work clothes
- Protective gloves
- Safety shoes.

Assembling flange and barrier arm

9.2 Check swivel range, set close direction and mount flange

1. Secure barrier danger area e.g. with barrier tape.
2. Remove rear cover of the barrier housing.
   → See page 41, chapter 7.5.
3. Remove rear door of the barrier housing.
4. Switch on power supply.
5. Switch on the barrier if required.
   → See page 65, chapter 10.4.

Switch on Mode "Service "

6. Switch the "Service" switch on the control unit. The LED lights red. The display backlighting flashes.
   → See page 65, chapter 10.4.

Check the swivel range of the barrier arm

7. Opening and closing the barrier manually; Check the swivel range via the shaft.
   - Middle left button : Manually open the barrier.
   - Middle right button : Manually close the barrier.

Setting the close direction

8. If the close direction is incorrect, change the close direction via the parameter "Close direction". → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Close direction".

WARNING!

Danger of crushing between flange and barrier housing!

9. Switch off power supply. Ensure that the system is powered down. Secure against reactivation.

Assembling flange and barrier arm

Assemble flange at barrier arm

10. Loosen screws at the flange.
11. Push the flange onto the flange shaft and align it. Observe motion direction and freedom of movement.
12. Clamp the flange to the flange shaft using the screws.
    - Torque wrench: 8 AF
    - Tightening torque: 51.6 lbf ft (70 Nm)

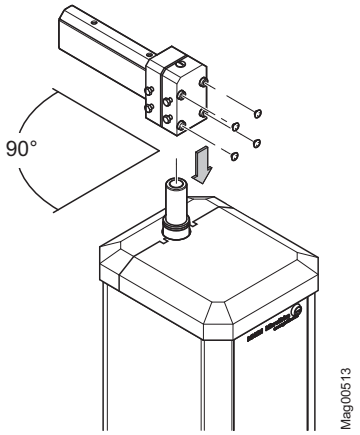


Fig. 18: Assembling flange

Check the swivel range of the barrier arm

13. Switch on power supply.
14. Switch the "Service" switch on the control unit. The LED lights red. The display backlighting flashes.
15. Opening and closing the barrier manually; Check the swivel range again via the flange.
    - Middle left button : Manually open the barrier.
    - Middle right button : Manually close the barrier.
16. If required, check the alignment of the flange.
17. Switch the "Service" switch on the control unit. The LED must light green.
18. Install the rear door of the barrier housing.
19. Install the rear cover of the barrier housing.
20. Lock the lock at the rear door.

Assembling flange and barrier arm

9.3 Mount the barrier arm and the anchor support

NOTE!

Depending on equipment of the barrier arm and its weight, we recommend installing the barrier arm with two people.

Prerequisites

- The danger area is secured with barrier tape.
- The flange is installed.
- The swivel range of the barrier arm is known.

WARNING!

Danger of crushing between barrier arm and barrier housing!

1. Switch off power supply. Ensure that the system is powered down. Secure against reactivation.

Mount barrier arm

2. Push the barrier arm onto the flange.
3. Mount the barrier arm on the flange via the screws.
   - Torque wrench: 8 AF
   - Tightening torque: 8.8 lbf ft (12 Nm)

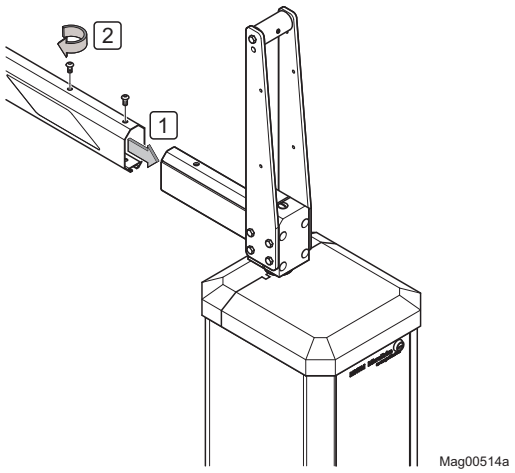


Fig. 19: Mounting the barrier arm

Assembling flange and barrier arm

Mount anchor support

Mount anchor support for barrier arms that are longer than 11.5 ft (3.5 m).

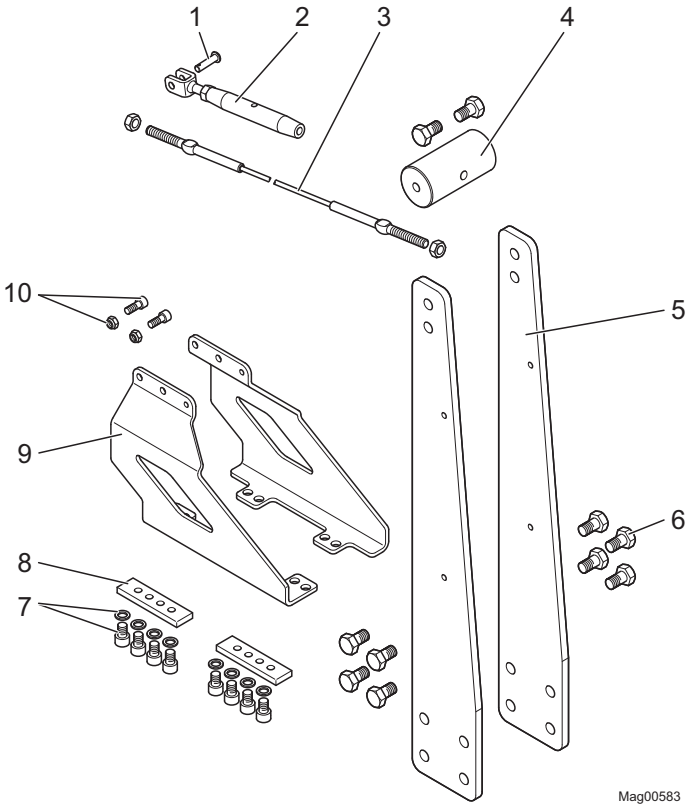


Fig. 20: Scope of delivery anchor support

1 Bolts
2 Turnbuckles
3 Spiral rope with thread terminal and counter nuts
4 Anchoring axle
5 Side parts (2)
6 Hexagon screws M10 (8)
7 Screws M8 with safety discs (8 each)
8 Slotted nuts (2)
9 Clamp holders (2)
10 Hexagon socket screws M6 with nuts (2 each)

Assembling flange and barrier arm

Mount anchor support

4. Mount the side parts at the flange. Install the anchoring axle.
   - Torque wrench: 16 AF
   - Tightening torque: 23.6 lbf ft (32 Nm)

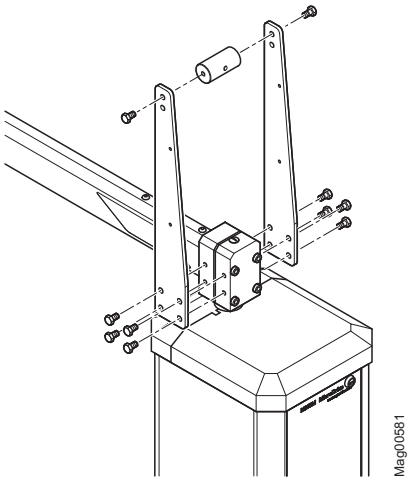


Fig. 21: Mounting the side parts and the anchoring axle

5. Mount anchor support on top. Proceed as follows for this:
   - Turn threaded terminal into the upper axle about half. NOTICE! To avoid destruction of the anchor support, turn the entire spiral rope.
   - Counter nuts.

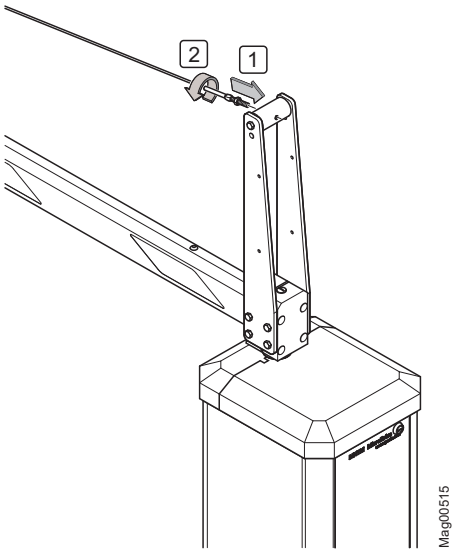


Fig. 22: Mounting the upper anchor support

Assembling flange and barrier arm

6. Mount the clamp holder with the two slotted nuts at the front of the barrier arm. Mount the clamp holder so that it can still be moved on the barrier arm.

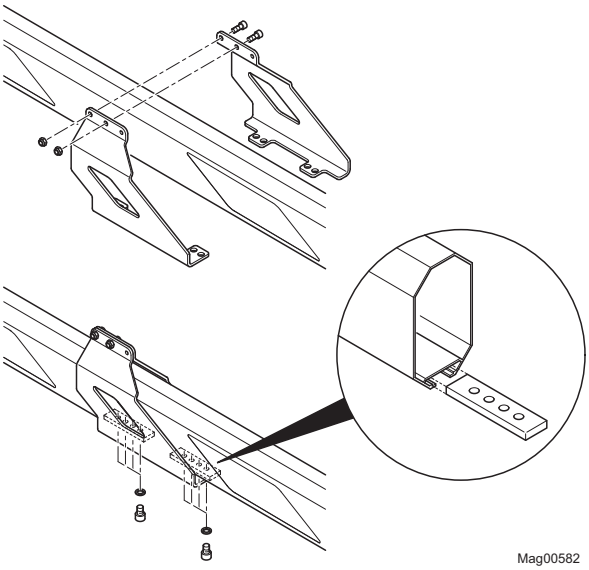


Fig. 23: Mounting the clamp holder

7. Turn out the threaded and fork terminal from the turnbuckle about halfway.
8. Mount the fork terminal on the clamp holder. For this, push the bolt through the bore and secure it with the safety pin.

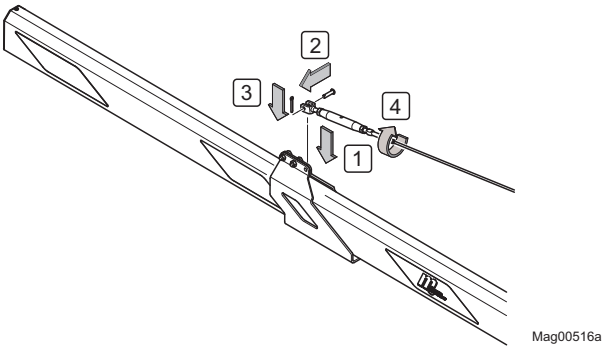


Fig. 24: Mounting the lower anchor support

9. Move the clamp holder until the spiral rope is slightly tensed.
10. Tighten the 8 screws of the clamp holder.
    - Torque wrench: 13 AF
    - Tightening torque: 11.8 lbf ft (16 Nm)
11. Turn the turnbuckle until the middle area of the barrier arm is horizontally aligned. Check alignment with spirit level.
    NOTICE! To avoid destruction of the anchor support, hold the threaded terminal with a fork wrench.

Switch on the barrier

12. Switch on power supply.

10 Start-up and operation

10.1 Safety

→ See also safety notes on page 19, chapter 2.6 "Occupational safety and special dangers".

General

⚠ WARNING

Danger by inappropriate start-up and operation!

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

– Commissioning and operation must be performed by specialists or electronics specialists.
– Always observe the radius of action of the barrier arm.
– Prior to start of works ensure that all housing covers are correctly mounted.

Wind forces over 10 Beaufort

⚠ WARNING

Risk of injury from breaking off barrier arms in case of high wind speeds!

In case of wind speeds exceeding 10 Beaufort, the barrier arm may break off from the wind load and cause severe injuries.

Therefore observe in case of storm warnings above 10 Beaufort:

– Disassemble barrier arm or secure it with suitable measures.
– Stop operating the barrier system.

Personal protective equipment

The following must be worn during start-up:

- Work clothes
- Protective gloves
- Safety shoes.

10.2 Commissioning

Check before to initial start-up

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

- Check electrical connections.
- Check barrier arm position.

Inspection during the first start-up

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

- Check swivel range of the barrier arm.
- Check program mode. → See separate document "Description of control units MGC and MGC Pro for MHTM^{TM} MicroDrive barriers", chapter "Select programme mode".
- Check parameterisation in connection with wiring.
- Testing and setting the operating frequency of the induction loops. → See separate document "Description of control units MGC and MGC Pro for MHTM^{TM} MicroDrive barriers", chapter "Detector 1 (A-B)".
- Check the function of the barrier, induction loops, safety scanner and the signalling devices.

Start-up and operation

10.3 Switching on and off the barrier

NOTICE

A too early mains voltage power up after a shut down can result in damage of the equipment!

– Wait for at least 10 seconds after shutting off the mains voltage before you switch the mains voltage on again.

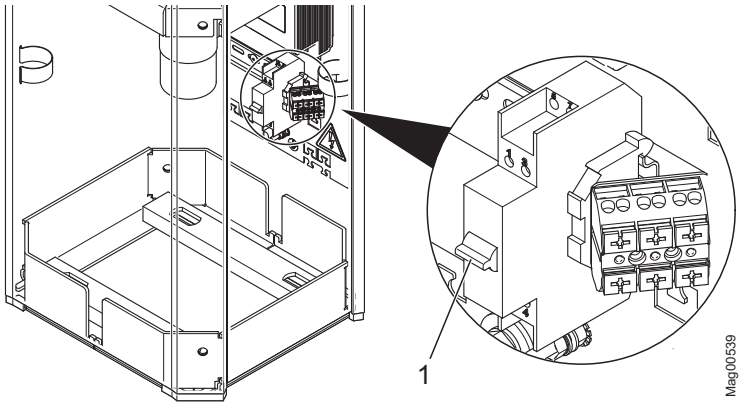


Fig. 25: Switching on and off the barrier

1 Double pole mains switch

Switching on

1. Remove rear cover of the barrier housing.
   → See page 41, chapter 7.5.
2. Remove rear door of the barrier housing.
3. Switch on the barrier via the double pole mains switch.
4. Depending on the settings in the "Start-up behaviour" menu, the barrier arm slowly moves into the end position (homing run) or stops.
5. Install the rear door.
6. Install the rear cover.
7. Lock the lock at the rear door.

Switching off

1. Remove rear cover of the barrier housing.
   → See page 41, chapter 7.5.
2. Remove rear door of the barrier housing.
3. Switch off the barrier via the double pole mains switch.
4. Install the rear door.
5. Install the rear cover.
6. Lock the lock at the rear door.

10.4 Opening and closing the barrier manually

You can only open and close the barrier manually in the "Service" mode.

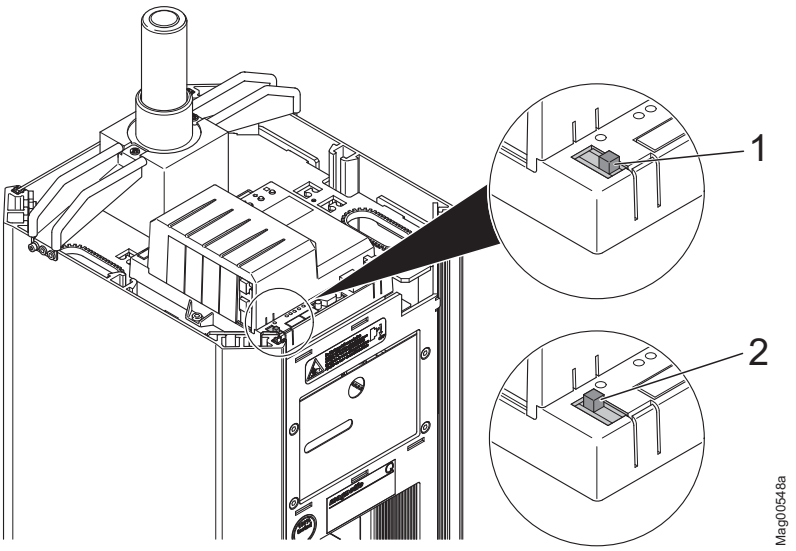


Fig. 26: Service switch

1 Mode "Service" on
2 Mode "Service" off

1. Switch the "Service" switch for the "Service" mode. The LED lights red. The display backlighting flashes.
2. Perform one of the following functions:
   - Push middle left button : Manually open the barrier.
   - Push middle right button: Manually close the barrier.
3. Switch "Service" switch. The LED must light green.

NOTE!

For reasons of safety, the first barrier arm motion after switching between programme mode and service mode is performed at slow speed.

Start-up and operation

10.5 Putting the barrier temporarily out of operation

High wind speeds

⚠ WARNING

Risk of injury from barrier arm in case of high wind speeds!

The barrier arm is no longer securely locked with the mains voltage off. At high wind speeds, the barrier arm can be pressed from its end position. The moving barrier arm can severely injure a person.

– Keep supplying the barrier with mains voltage.
– Remove the barrier arm if necessary.

NOTICE

Possible damage to the equipment by condensed water when mains voltage is switched off!

– Keep supplying the barrier with mains voltage.

If the barrier is put out of operation for a longer period, proceed as follows:

1. Switch off barrier. → See page 64, chapter 10.3.
2. Remove the barrier arm if necessary. → See page 85, chapter 13.2.
3. Protect the barrier from corrosion and contamination.
4. Switch on barrier. → See page 64, chapter 10.3.

11 Cleaning and maintenance

11.1 Safety

→ See also safety notes on page 19, chapter 2.6 "Occupational safety and special dangers".

General

⚠ WARNING

Danger by inappropriate cleaning and maintenance!

Inappropriate cleaning and maintenance can cause severe or lethal injuries.

– All maintenance work must be performed by specialists or electrical specialists.
– Any possibly present ground fault circuit interrupter (GFCI) must only be inspected by an electrician.
– 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.
– After completion of maintenance work, ensure that all covers are correctly mounted.
– Wear protective helmet.

Personal protective equipment

The following must be worn during maintenance work:

- Work clothes
- Protective gloves
- Safety shoes.

Maintenance book

In barriers where personal traffic cannot be excluded, a maintenance book must be maintained.

In any other barriers, maintenance of a test book is not mandatory. However, we recommend keeping a test book in such barriers as well, to properly document all maintenance work.

Cleaning and maintenance

11.2 Cleaning

The cleaning interval essentially depends on the environmental conditions and the climate.

Aggressive cleaning aids and substances

NOTICE

Unit damage possible!

Aggressive detergents and consumables may damage or destroy components, electric cables, or the coating of the barrier.

– Do not use cleaning agents with aggressive ingredients.

11.3 Cleaning from the outside

Clean the barrier housing and the barrier arm at regular intervals.

11.4 Clean barrier housing from the inside

Lever system –crushing and shearing danger

⚠ WARNING

Crushing and shearing danger from the lever system!

The lever system can severely injure a person!

– Switch off power supply and secure against re-activation before performing any work.
– When working in the area of the lever system, ensure that the barrier does not start up unexpectedly, e.g. by a control command or due to wind.
– Secure the barrier arm so that unexpected movement of the barrier arm e.g. by wind or human force is not possible.

Carrying out cleaning work:

1. Switch off power supply and secure against restarting.

DANGER!

Mortal danger by electric voltage!

- Keep moisture and dust away from live parts. Moisture or dust may cause a short circuit.
- Never clean the barrier housing and barrier arm with vapour or pressure-jet cleaners.

2. Remove contamination from the outside of the barrier housing properly using water with washing-up liquid and a square of cloth. Do not bring control units and electrical components in contact with moisture.
3. Remove dust inside the housing with a vacuum cleaner.
4. After cleaning work, check that all previously opened covers are closed again and that all safety equipment functions correctly.

11.5 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 (for service address, refer to page 2).

Interval	Maintenance work	To be carried out by
Monthly	Visual inspection of the housing, inside and out, for damage and corrosion. Clean the housing and repair paint damage as necessary. Remove corrosion damage.	Specialist
	Visual inspection of foundation anchors, mounting profiles and mounting material for corrosion. Remove corrosion damage.	Specialist
	Visual inspection of the barrier arm for damage and corrosion. Clean the barrier arm and repair paint damage as necessary. Remove corrosion damage.	Specialist
	Visual inspection of additional parts for damage and corrosion. Clean additional parts and repair paint damage. Remove corrosion damage.	Specialist
Every 6 months	Perform all monthly maintenance work.	Specialist
	Check function of the Ground fault circuit interrupter (GFCI).	Electrical specialist
	Check the barrier housing fastening screws for tight fit. If required, tighten the screws.	Specialist
	Check the barrier arm and flange fastening screws for tight fit. If required, tighten the screws.	Specialist
	Check the screws of the system parts for tight fit. If required, tighten the screws.	Specialist

Cleaning and maintenance

Interval	Maintenance work	To be carried out by
Every 12 months	Perform all monthly and semi-annual maintenance work.	Electrician / specialist
	Check the barrier's mechanics.	MHTM MicroDrive service specialist
	Check barrier arm position.	
	Visual inspection of the induction loops and the carriageway in the area of the loops for damage.	
	Check the induction loops' function. → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Detector 1 (A-B)".	
	Check the induction loops. Measure the contact resistance, insulation resistance, and inductivity of the induction loops.	
	Where they exist, check the function of additional safety equipment, such as safety scanners.	
	Check the barrier's function.	
	Check the barrier's locking in both end positions.	
	Check the advanced warning on barriers with the active function "Traffic lights lead".	
	Check electric cables for damages.	
	Check if all electrical connections are firm.	
	Check signs and labels for completeness and legibility.	

Table 10: Maintenance schedule

12 Malfunctions

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

Contact your dealer in case of malfunctions that cannot be repaired by means of the following information. Procure spare parts from your dealer or directly from the manufacturer. For the address, see invoice, delivery note or the reverse of these instructions.

12.1 Safety

→ See also safety notes on page 19, chapter 2.6 "Occupational safety and special dangers".

General

⚠ WARNING

Danger of injury from inappropriate troubleshooting!

Inappropriate troubleshooting can cause severe or lethal injuries.

- All troubleshooting work must be performed by specialists or electronics specialists.
- Observe possible movements of the barrier arm. A defective control unit may lead to inadvertent movement of the barrier arm.
- 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.
- Deactivate the barrier if any components are damaged, e.g. the barrier arm.
- After completion of troubleshooting, ensure that all covers are correctly mounted.

Malfunctions

Danger of injury after lightning strike

⚠ WARNING

Danger of injury from total outage or barrier malfunction after lightning has hit the barrier!

If the barrier is struck by lightening, this may lead to total outage or malfunction of the barrier. The malfunction may cause unexpected barrier behaviour and thus lead to serious injury!

– If the barrier is struck by lightening, have an electrician check the barrier for damage and proper function. Repair barrier if required.
– Observe possible movements of the barrier arm. Defective control may lead to inadvertent movement of the barrier arm.

12.2 Malfunction table – barrier malfunctions

→ For requirements to the MHTM MicroDrive service specialist, see page 18, chapter 2.4.1.

Malfunction: Display is difficult or impossible to read.

Possible cause	Corrective action	Removal by
Display contact set too light or dark.	Correct display contact. → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Setting display contrast".	Electrical specialist

Malfunction: Barrier does not open.

Possible cause	Corrective action	Removal by
Power supply is not connected	■ Switch on power supply. ■ Check power supply.	Electrical specialist
Error present. The corresponding error message is displayed.	Depending on error message, check components, wiring, etc.	MHTM MicroDrive service specialist
Power supply is present. Control unit display does not light up.	Control unit defective. Replace the control unit. Contact service.	MHTM MicroDrive service specialist
Closing signal is active.	Remove closing signal	Electrical specialist
Too high trigger sensitivity set for the loop.	Check the response sensitivity of the loop and adjust if necessary.	MHTM MicroDrive service specialist

Malfunctions

Malfunction: Barrier does not close. The message "Waiting for release" appears on the display.

Possible cause	Corrective action	Removal by
The message appears after the power supply is switched on, after voltage returns and after reset.	The release signal can be given by an external closing signal or by pushing the left operating button at the control unit. → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Start-up settings".	Operator

Malfunction: Barrier does not close. The message "Waiting for passage" appears on the display.

Possible cause	Corrective action	Removal by
The message appears after the power supply is switched on, after voltage returns and after reset.	■ The barrier closes once a vehicle passes. → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Start-up settings". ■ Confirm message with the left button at the control unit.	Operator

Malfunction: Barrier does not close. The display shows: 

Possible cause	Corrective action	Removal by
Loop not connected.	Connect loop	MHTM MicroDrive service specialist
Detector mode incorrectly parameterised.	Check parameterisation of the detector module and correct if required. → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Detector 1 (A-B)".	MHTM MicroDrive service specialist
Loop defective.	Replace loop.	MHTM MicroDrive service specialist
Transfer resistance at the terminals	Cut connecting leads, strip and connect them again without end sleeves.	MHTM MicroDrive service specialist

Malfunctions

Malfunction: Barrier does not close.

Possible cause	Corrective action	Removal by
Opening command is active.	Cancel the opening command.	Electrical specialist
Induction loop reports engaged, although no vehicles are present.	■ Check and if necessary adjust loop frequencies. ■ Measure loops. Insulation resistance: > 1 Mohm contact resistance: 0.8 to 2.5 ohm Replace loop if the measured values differ from the specified values.	MHTM MicroDrive service specialist
Wire bridge between terminals X11 IN and OUT missing.	If no safety device is connected, a wire bridge must be installed between the clamps X11 OUT and IN. → See page 91, chapter 16.1.	MHTM MicroDrive service specialist

Malfunction: Barrier does not close immediately after through traffic, but only after the hold-open time.

Possible cause	Corrective action	Removal by
Opening signal is active for too long.	Shorten opening signal to max. 1 second.	Electrical specialist
Safety loop does not respond.	Check the response sensitivity of the safety loop. Adjust setting if necessary.	MHTM MicroDrive service specialist

Malfunction: Barrier does not close completely.

Possible cause	Corrective action	Removal by
Impact was recognised.	Wait several seconds, barrier closes if no obstacle is below the barrier arm anymore.	–

Malfunctions

Malfunction: Barrier closes, although a vehicle is standing on the safety loop.

Possible cause	Corrective action	Removal by
Option "Monitoring" for the parameters "Mode A" or "Mode B" not selected in the menu "Loop detector 1 (A-B)".	Select option "Monitoring".	MHTM MicroDrive service specialist
Cut off angle incorrectly parameterised.	Check and adjust the cut off angle.	MHTM MicroDrive service specialist
Too low trigger sensitivity set for the loop.	Check the response sensitivity of the loop and adjust if necessary.	MHTM MicroDrive service specialist
Unsuitable loop geometry installed.	Install appropriate loop geometry.	MHTM MicroDrive service specialist
Loop fault due to external loop detectors or other barriers in the proximity.	Check the operating frequency of the loops and adjust if necessary	MHTM MicroDrive service specialist
User misbehaviour e.g. driving into closing barrier, or following behind another vehicle.	Retrofit signal light, such as red/green signal light and parameterise lead time.	MHTM MicroDrive service specialist
	Upgrade signs.	Operator

Malfunction: Menu items of the plug-in modules, such as "Detector 1 (A-B) are displayed but cannot be operated.

Possible cause	Corrective action	Removal by
The SW version of the plug-in module is lower than 0.10. The SW version is displayed in the respective menu in the submenu "Information".	■ Use plug-in module with a SW version 0.10 and up. ■ Perform update to SW version 0.12.	MHTM MicroDrive service specialist

Malfunction: The menu language of the plug-in module is English although another language was set.

Possible cause	Corrective action	Removal by
The SW version of the plug-in module is 01.10. The SW version is displayed in the respective menu in the submenu "Information".	Perform update to SW version 0.12.	MHTM MicroDrive service specialist

Malfunctions

12.3 Warning and interference messages on the display

The control unit differentiates between events, warnings and errors. The corresponding message is displayed.

Event messages "INFO"

Event messages inform about events such as "switching to battery operation". The barrier continues to run normally. Event messages do not influence the outputs of the control unit.

Warning messages "WARNING"

Faults that could be reset by the control unit are displayed as warnings. Operation of the barrier is not or only briefly impaired.

If the function "Warning" has been chosen for an output, this output is deactivated at pending warnings (fail safe).

Error messages "ERROR"

Faults that cannot be reset by the control unit are displayed as errors. The barrier is shut down.

If the function "Error" has been chosen for an output, this output is deactivated at pending warnings (fail safe).

To take the barrier into operation again, the fault must be removed by an MHTM MicroDrive service specialist and a reset according to chapter 12.4 must be performed.
→ For requirements to the MHTM MicroDrive service specialist, see page 18, chapter 2.4.

NOTE!

With some messages, the control unit tries to reset the cause of the message. If the attempt was successful, the message is displayed as WARNING. If the attempt failed, the message is displayed as ERROR.

12.3.1 Event, warning and error messages – Logic control (Control unit)

Number	Description	Possible cause	Corrective action
FF01 WARNING	Error barrier mechanics	The first closing motion could not be performed completely.	■ If required, remove obstacle below the barrier arm. ■ Check barrier mechanics.
FF02 WARNING	Detector monitoring signal	Communication between logic control and detector module impaired.	■ Perform reset. → See page 81, chapter 12.4. ■ Check plug contacts. ■ Clean plug contacts with spirit. Observe ESD provisions. ■ Replace the control unit.

Malfunctions

Number	Description	Possible cause	Corrective action
FF06 WARNING	Vandalism	The barrier arm was either moved from one end position or stopped when closing.	In the closed position, check that the lever system latches.
FF07 INFO	Battery Backup active	The barrier is supplied with voltage via the battery backup.	Check and restore voltage supply.
FF08 INFO	Mains operation active again after battery mode	The barrier is supplied with mains voltage again.	–
FF09 INFO	Reduced opening angle	In some barrier types, the opening angle can be mechanically limited with attachments. The control unit performs the required parameter adjustments automatically.	Message appears although the opening angle has not been limited mechanically. ■ Remove obstacle to ensure that the lever system can lock in both end positions.
FF30 WARNING	Impact detection	Impact was recognised by the input "external impact contact".	■ Wait for a few seconds. The barrier closes if no obstacle is in the swivel range of the barrier arm anymore. ■ When no obstacle is present within the swivel range of the barrier arm, check input, e.g. contact strip.
3120 ERROR	Mains voltage fluctuations	Short-term mains outage was recognised	■ Check supply voltage/mains quality
5530 ERROR	EEPROM checksum	Check sum of the parameter incorrect	■ Re-set parameters to factory defaults. → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Factory settings". ■ Contact service if required.
6000 ERROR	Module update error	A firmware update was not performed correctly.	■ Restart the control unit ■ If the error continues to be present, perform the update again via the service module.
6102 ERROR	Software error system bus	Within the control, an error is pending in communication.	■ Check FW versions of all plug-in modules. If required, perform update via service module. ■ If all FW versions are up to date, contact service.
6105 ERROR	Error during homing	The barrier could not perform any reference run.	■ Check motor communication. ■ Check mechanics. ■ Perform reset. → See page 81, chapter 12.4.

Malfunctions

Number	Description	Possible cause	Corrective action
8130 WARNING	Note monitoring	Communication with a plug module was interrupted.	■ Check if all plugged modules are listed in the main menu. ■ Perform reset. → See page 81, chapter 12.4. ■ Contact service if required.

Table 11: Event, warning and error messages – logic control (control unit)

12.3.2 Event, warning and error messages – Motor GW

Number	Description	Possible cause	Corrective action
2220 WARNING	Overcurrent	Overcurrent was recognised	■ Warning may appear in connection with impact. ■ If no impact took place, check the cables. ■ Contact service if required.
3211 WARNING	Overvoltage	Overvoltage was recognised	■ Warning may appear in connection with impact. ■ If no impact took place, check the cables. ■ Contact service if required.
3221 WARNING	Undervoltage	Undervoltage was recognised	■ Check wiring. ■ Check if there is an overload of the 24 V DC-supply. Supply additional consumer via separate mains unit. ■ If required, contact Service.
4210 WARNING	Overtemperature	A high temperature was recognised.	■ Check motor temperature via display. The temperature must be below 100 °C. → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Motor GW". ■ Contact service if required.
4220 WARNING	Derating error	Motor power intake is reduced to avoid further temperature increase.	■ Remove impermissible attachments ■ Reduce speed of the barrier arm. ■ Contact service if required.

Malfunctions

Number	Description	Possible cause	Corrective action
FF30 WARNING	Impact detection	Current increase and speed deviation	■ Check safety devices. ■ Check setting of the parameter "Sensitivity" and adjust if required. → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Impact settings".
7510 ERROR	Motor communications error	Communication between motor and control impaired or interrupted	■ Verify cables ■ Contact service if required.
FF32 ERROR	HW-Enable-Test failed	–	Contact service.
FF33 ERROR	LS-Test failed	Test of the safety device failed	Check safety device and connection.
FF36 WARNING	Motor reset Homing is performed automatically.	A short overload or drop of the voltage supply of the motor controller has triggered a motor reset.	If required, remove heavy attachments from the barrier arm.
FF37 ERROR	Motor update failed	An error occurred when updating the software	■ Perform reset. → See page 81, chapter 12.4. ■ Contact service if required.
FF3A INFO	Motor update performed	This message is for information only.	–

Table 12: Event, warning and error messages – Motor GW

Malfunctions

12.3.3 Event, warning and error messages – Detector

The warning messages "FF4B" and "FF4C" are also reported through the output function "Error".

Number	Description	Possible cause	Corrective action
FF4A ERROR	Hardware error	Internal HW function test failed	■ Perform reset. → See page 81, chapter 12.4. ■ Contact service if required.
FF4B WARNING	Loop error A or C	Short circuit or idle loop A or C	■ Remove loop error and perform adjustment. ■ If no loop is connected, select the option "Inactive" in the menu "Detector".
FF4C WARNING	Loop error B or D	Short circuit or idle loop B or D	■ Remove loop error and perform adjustment. ■ If no loop is connected, select the option "Inactive" in the menu "Detector".

Table 13: Event, warning and error messages – Detector

12.3.4 Event, warning and error messages – All modules

Number	Description	Possible cause	Corrective action
6010 WARNING	Watchdog reset	SW error	Contact service if required.
8110 WARNING	Bus fault	Warning	Contact service if required.
8120 WARNING	Bus HW fault	Warning	■ Check DIP switch next to service interface (position ON) ■ Remove devices at service interface if required.

Table 14: Event, warning and error messages – All modules

12.4 Reset the barrier

Control unit reset is performed as follows:

- Switch of power supply and switch it on again after 10 seconds.

or

- Press the two middle operating buttons on the control unit display for 5 seconds.

NOTICE	
	**Damage to the unit by too-short switching intervals of the mains voltage!** – To avoid damage to the equipment the power must remain shut off for at least 10 seconds.

Malfunctions

12.5 Moving the barrier arm in case of power failure

Horizontally moving barrier arm

⚠ WARNING

Risk of injury by the horizontally moving barrier arm!

The barrier arm moves horizontally. A closing or opening barrier arm can cause severe injuries or property damage!

– Observe the swivel range of the barrier arm.
– Ensure freedom of movement. Remove obstacles from the swivel range.

Lever system – crushing and shearing danger

⚠ WARNING

Crushing and shearing danger from the lever system!

The lever system can severely injure a person!

– Switch off power supply and secure against re-activation before performing any work.
– When working in the area of the lever system, ensure that the barrier does not start up unexpectedly, e.g. by a control command or due to wind.
– Secure the barrier arm so that unexpected movement of the barrier arm e.g. by wind or human force is not possible.

In case of power failure, the barrier arm may be at one of its dead points. This means that the barrier arm can no longer be easily moved by hand. In this case, proceed as follows:

1. Remove rear cover of the barrier housing.
   → See page 41, chapter 7.5.
2. Remove rear door of the barrier housing.
3. Use a screwdriver through the slit of the safety sheet to push the coupling lever from the dead point against the motor shaft.
4. Install the rear door.
5. Install the rear cover.
6. Lock the lock at the rear door.

Malfunctions

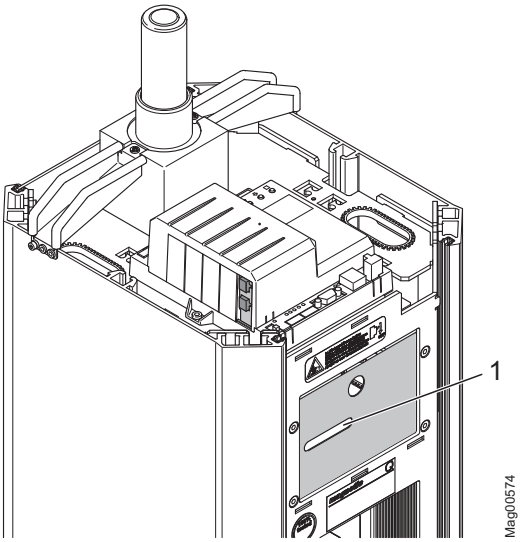


Fig. 27: Push the lever system from the dead point

1 Slit in the safety sheet for long tools such as screwdrivers

13 Repair

13.1 Safety

→ See also safety notes on page 19, chapter 2.6 "Occupational safety and special dangers".

General

⚠ WARNING

Danger by inappropriate repair!

Inappropriate repair can cause severe or lethal injuries.

– All repair work must only be performed by authorised MHTM service specialists.
– 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.
– Only use original spare parts or spare parts approved of by MAGNETIC. Procure spare parts from your dealer or directly from the manufacturer. For the address, see invoice, delivery note or the reverse of these instructions.
– After completion of repair work, ensure that all covers are correctly mounted.

Lever system –crushing and shearing danger

⚠ WARNING

Crushing and shearing danger from the lever system!

The lever system can severely injure a person!

– Switch off power supply and secure against re-activation before performing any work.
– When working in the area of the lever system, ensure that the barrier does not start up unexpectedly, e.g. by a control command or due to wind.
– Secure the barrier arm so that unexpected movement of the barrier arm e.g. by wind or human force is not possible.

Personal protective equipment

The following must be worn during all repair work:

- Work clothes
- Protective gloves
- Safety shoes.

13.2 Spare parts

⚠ 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.

– Use only the manufacturer's original spare parts.

Procure spare parts from your dealer or directly from the manufacturer. For the address, see invoice, delivery note or the reverse of these instructions.

Spare part lists can be obtained on request.

13.3 Replacing the barrier arm

Observe the movement radius of the barrier arm.

⚠ WARNING

The barrier arm moves horizontally. A closing or opening barrier arm can cause severe injuries or property damage!

– Observe the movement radius of the barrier arm.

– Ensure freedom of movement. Remove obstacles from the movement range.

NOTE!

Depending on equipment of the barrier arm and its weight, we recommend installing the barrier arm with two people.

Switch off power supply

1. Secure barrier danger area e.g. with barrier tape.
2. Remove rear cover of the barrier housing.
   → See page 41, chapter 7.5.
3. Remove rear door of the barrier housing.

WARNING!

Danger of crushing between barrier arm and barrier housing!

4. Switch off power supply. Ensure that the system is powered down. Secure against reactivation.

Repair

Remove anchor support and barrier arm

5. If present, remove anchor support. For this, proceed in the reverse order as for mounting. → See page 58, chapter 9.3.
6. Disassemble the barrier arm. For this, proceed in the reverse order as for mounting. → See page 58, chapter 9.3.

Mount barrier arm

7. Push the new barrier arm onto the flange.
8. Attach the barrier arm to the flange using the screws.
   - Torque wrench: 8 AF
   - Tightening torque: 12 Nm

Check the swivel range of the barrier arm

9. Switch on power supply.
10. Switch the "Service" switch on the control unit. The LED lights red. The display backlighting flashes.
11. Open and close the barrier manually to check the swivel range.
    - Middle left button : Manually open the barrier.
    - Middle right button : Manually close the barrier.

Sett close direction

12. If the close direction is incorrect, change the close direction via the parameter "Close direction". → See separate document "Description of control units MGC and MGC Pro for MHTM™ MicroDrive barriers", chapter "Close direction".
13. Switch the "Service" switch on the control unit. The LED must light green.
14. Switch off power supply.

Mount anchor support

15. If present, mount anchor support. → See page 58, chapter 9.3.
16. Install the rear door of the barrier housing.
17. Install the rear cover of the barrier housing.
18. Lock the lock at the rear door.

14 Decommissioning, disassembly and disposal

A barrier 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, disassembly and disposal of the barrier may only be carried out by specialised staff.
- Disassemble the barrier in reverse order from assembly.
- The barrier has to be disposed of in accordance with the respective country-specific regulations.

NOTE!

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

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TCB

GRANT OF EQUIPMENT AUTHORIZATION

TCB

Certification

Issued Under the Authority of the

Federal Communications Commission

By:

EMCC Dr. Rasek
Moggast
D-91320 Ebermannstadt,
Germany

Date of Grant: 10/08/2003

Application Dated: 10/08/2003

SMD-Funksteuerungs GmbH
Hans-Boeckler-Strasse 5
Rodgau, 63110
Germany

Attention: Ulf Nordlander , Managing Director

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: QV2-SMD-53200RX
Name of Grantee: SMD-Funksteuerungs GmbH
Equipment Class: Communications Receiver used w/Pt 15 Transmitter
Notes: Radio Receiver Module 433 MHz AM

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
CE	15B	433.92 - 433.92			

CE: This device has shown compliance with the conducted emissions limits in 15.107, 15.207, or 18.307 adopted under FCC 02-157 (ET Docket 98-80). The device may be marketed after July 11, 2005, and is not affected by the 15.37(j) or 18.123 transition provisions.

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16 Appendix

16.1 Wiring diagrams

Following wiring diagrams apply to standard barriers.
Observe the customer specific wire diagrams for customer specific barriers if applicable.

Appendix

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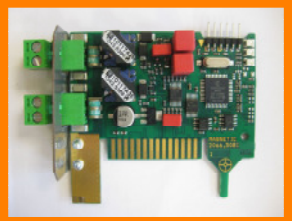
Steuerung

Motor + Getriebe

Anschlussplatte



Schleifen

Option

Traffic H1 Swing Gate Horizontal Barrier

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2020,5280

1 / 6.0

Spannungsversorgung Steuerung

Spannungsversorgung Motor

-M1

M

2

1

Motor Interface Kabel

MIK

M_I_K / 6.0

GN
WH
YE
BN
GY

BN
BU
BK

-T1
3084,5046

X6
1 2 3
4 5 6
GN/YE

X5

X3
L N PE

Netzteil

2020,5282
W4
BN BU YE/GN

Hauptschalter
3460,5024
-S1
1 3
2 4

2020,5290
W3
BN BU YE/GN

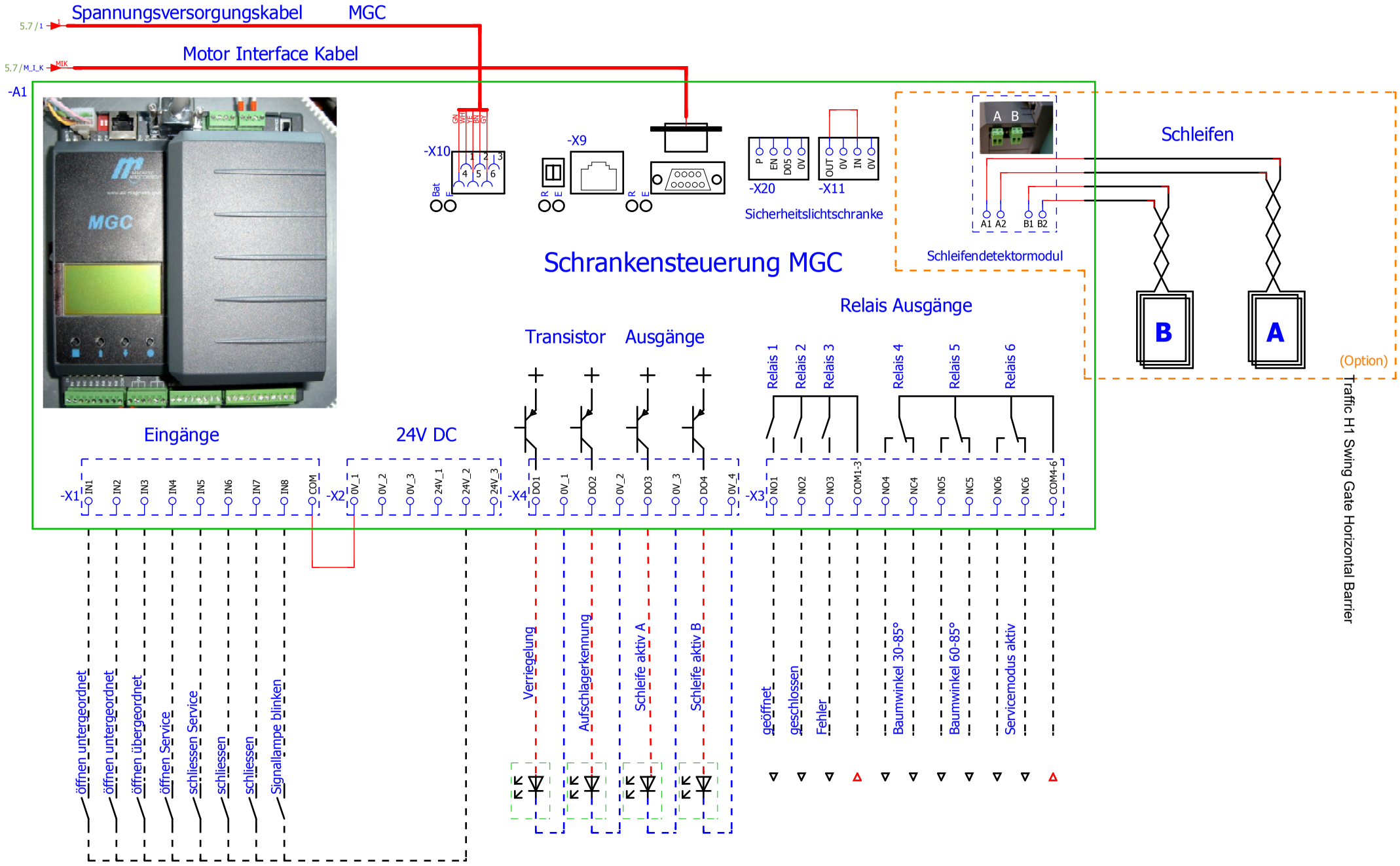
Hauptanschlussklemmen
-X1
L L N N PE PE
L L N N PE PE

PE

Zuleitung

Traffic H1 Swing Gate Horizontal Barrier

				01.08.2014	MicroDrive Standard		=
				gp			+
01	03.12.14	5K14528	gp			5526,6477	Blatt 5
Version	Datum	Änderungsprojekt	Name	00 5K14518			Von 6



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				01.08.2014	MicroDrive Standard	
				gp		
01	03.12.14	5K14528	gp			5526,6477
Version	Datum	Änderungsprojekt	Name	00 5K14518		Blatt 6 Von 6

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