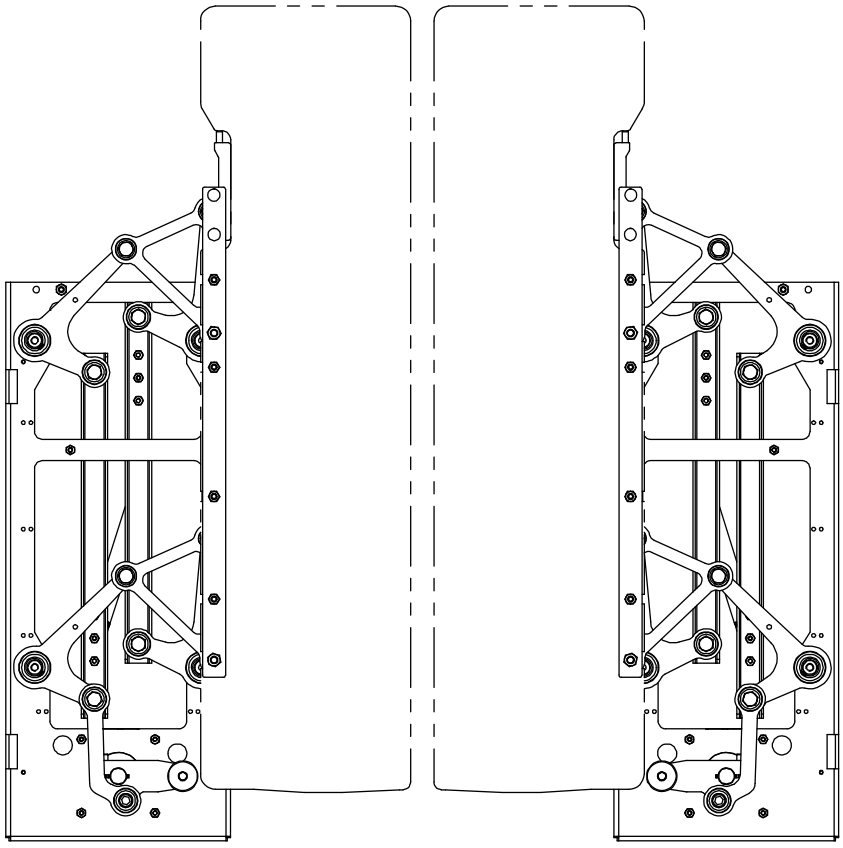
Installation and Operating Instructions
MAGNETIC Kit Set
Pedestrian High Door
Type KPH-111 / 121



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1. General

1.1 Information regarding the operating instructions

The design of MAGNETIC KPH-111 and KPH-121 Kit Sets complies with the state of the art and they are manufactured and tested to ensure safe, reliable operation and that they leave our works in perfect condition. Nevertheless, the system can give rise to dangers to persons and goods if it is improperly used.

These operating instructions provide important information on how to deal with the Kit Sets. Prerequisite for safe working is the observance of all specified safety notes and instructions.

In addition, the local accident prevention regulations valid at the Kit Set‘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 Kit Sets, well accessible to the personnel at all times.

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

1.2 Pictogram explanation

The following warning and instruction symbols indicate either situations which could give rise to potential hazards for persons or goods, or important instructions relating to operation of the barrier.

The text passages to which these symbols relate must be read and observed without fail.

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

CAUTION!

This symbol accompanied by the word "CAUTION" indicates a situation which could entail a danger to life and limb.

The measures stated to avoid this hazard must be strictly observed.

ATTENTION!

This symbol accompanied by the word "ATTENTION" indicates a situation in which there could be a danger of material damage.

The measures given to avoid this hazard must be strictly observed.

IMPORTANT NOTE!

This symbol accompanied by the words "IMPORTANT NOTE" indicates text containing important information,

These sections contain specific instructions on installation, application, and maintenance.

RECYCLING!

When the barrier is taken out of service at the end of its useful life, it must be disposed of in accordance with local laws and regulations.

The materials used must be sorted and disposed of separately.

Similarly, the regulations concerning the disposal of lubricants (oil and grease) and other auxiliary materials must be observed.

1.3 Limitation of liability

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

The manufacturer is not liable for damages caused by:

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

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

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

Warranty

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

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

Wear parts

Wear parts are all components coming into immediate contact with the material to be processed (e.g. bearings, shaft sealing rings, oil pumps, rotor vanes, etc.).

These components are excluded from the warranty and any claims for defects as far as wear and tear damage is concerned.

1.4 Copyright protection

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

NOTE!

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

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

1.5 Warranty conditions

The manufacturer reserves the right to make technical changes and modifications without prior notice.

Subject to the condition that the operating instructions are observed, and that no inadmissible operations are carried out on the technical equipment, and that the installation has suffered no mechanical damage, MAGNETIC guarantees all mechanical and electrical components for:

- 3 years after delivery
- 2 years after commissioning

1.6 Scope of supply

2 x Drive mechanism with MHTM® motor

2 x Motor controller MMC-120

1 x Logic controller MBC-110

1 x Transformer power supply

2 x Set of motor and resolver cables

2 x CAN bus connection cable

1 x Documentation

Note: Glass wings are not part of the scope of supply.

1.7 Spare parts and accessories

Only original spare parts and accessories from MAGNETIC may be used.

Exploded drawings with details of spare parts and their part numbers will be supplied on request.

1.8 Customer service

If a fault occurs during operation that cannot be rectified by a qualified electrician, contact your authorised contractual partner.

IMPORTANT NOTE!

Before making a telephone call, please note the data on the type plate, such as type, serial number, version etc.

1.9 Manufacturer's declaration

Manufacturer's declaration (pursuant to EC Machinery Directive 2004/42/EG) refers to Kit Set KPH.

2. Safety

2.1 Intended use

The MAGNETIC KPH Kit Sets may only be installed and used in pedestrian barriers to provide controlled access for pedestrians who wish to enter a restricted-access zone.

Controllers MBC and MMC may be used only to control operation of the KPH Kit Sets. Changes and modifications to the products or controllers require the manufacturer's approval.

IMPORTANT NOTE!

MAGNETIC is not responsible for any type of material damage, injury to persons, or other faults or accidents that arise from failing to observe the conditions for proper use!

2.2 Occupational safety and special dangers

- When working on the barrier, all external command units (remote controls, control panel etc.) must be switched off.
- Before commissioning, make sure the barrier is adequately fastened to a secure foundation.
- A double-pole lockable main switch must be installed.
- A residual current device (RCD) must be installed.
- These operating instructions and all other accompanying documents must be stored so that they are accessible for operating and maintenance personnel at any time.
- Before commissioning, all electrical and mechanical functions must be checked.
- The electrical installation must be carried out in accordance with the accompanying schematic diagrams.
- The electrical installation must be carried out by trained specialist personnel.
- Covers on mains plugs, power supplies, and electric wiring may only be removed by trained specialist personnel.
- Before maintenance work or troubleshooting for electrical faults, the main switch must be turned off without fail and safeguarded against unintentional restarting.
- When the unit is switched on, or when power returns after a power failure, the barrier automatically becomes operative again.

2.3 Safety measures

- Closing force limited to comply with the requirements of the relevant door and gate standards.

- Impact detection with a choice of reactions.

WARNING!

Closing glass wings can cause injuries to persons and damage to objects.

The customer must therefore install a safety light barrier on both the left and right sides of the glass wings. Suitable safety logic must be employed to prevent the glass wings closing again when one of these safety light barriers is interrupted.

2.4 Safeguarding against unintentional restarting

Always turn the power supply off and safeguard against unintentional restarting before maintenance, cleaning, and repair work.

2.5 Environmental protection

The instruction in section 11 must be followed.

3. Technical Data

3.1 Type code

K P H - 1 1 1 C - A 1 0 0 - MF000

Software Version no.
000

Manufacturer / customer
MF = for standard MPH
OE = OEM version

Stroke width
00 = 235 mm stroke width for 300mm housing
01 = 205 mm stroke width for 300mm housing

10 = 430 mm stroke width for 520mm housing
11 = 402,5 mm stroke width for 520mm housing

Not used
1

Voltage
A = 230V 50Hz
C = 115V 60Hz

Version
C= right hand version

Controllers
0 = none
1 = MBC / MMC (Logic / motor controller)
2 = MMC (Motor controller)
3 = MTC / MMC (Logic / motor controller)

Housing width
1 = 300 mm
2 = 520 mm

5 = customer-specific

Generation

Product type
H = High Door (wing gate)

Product group
P = Pedestrian

Product classification
K = Magnetic Kit Set

3.2 Technical Data

TECHNICAL DATA	UNIT	MODEL		
		KPH-111*-*1**	KPH-121*-*2**	
Voltage	VAC	110-240	110-240	
Frequency	Hz	50-60	50-60	
Barrier open power / current draw	W / A			
Barrier closed power / current draw	W / A			
Peak values in operation (30 ms)	W / A			
Duty cycle	%	100	100	
Degree of protection	IP	00	00	
Opening time	ms			
Closing time	ms			
Length	mm			
Width	mm			
Height	mm			

Fig. 3-1 Table of technical data

The data given in the table may change as a result of technical changes! All electrical values relate to a mains voltage of 240 V.

3.3 Weight of the components

Weight	Component				
	Drive mechanism KPH-111 with motor	Drive mechanism KPH-121 with motor	Controller MBC-110	Controller MMC-120	Transformer power supply
in kg	22	38	0,7	1,0	8,7

Fig. 3-2 Weight table components

3.4 Type plate

Fehlt noch

4. Configuration and functional description

4.1 Functional description

The MAGNETIC KPH (Kit Set Pedestrian High Door) is suitable for installation in either a standard or a customer-specific housing.

Typical applications are, for example, pedestrian barriers for AFC (Automatic Fare Collection), immigration or access controls.

The Kit Set is based on our patented direct drive MHTM® motor (Magnetic High Torque Motor). In combination with a sine-wave linkage, this system provides high reliability and almost maintenance-free operation.

The direct drive system requires no reduction gearing or clutches. There is thus no wear and no lubrication is required. The MHTM® motor is maintenance-free.

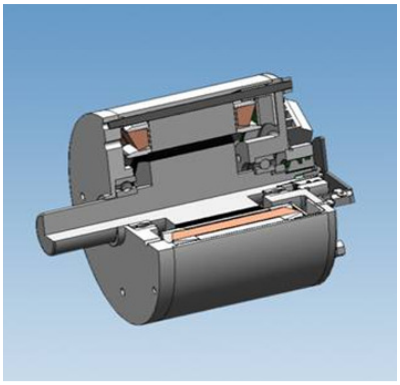

Fig. 4-1 Motor MHTM

An important component of the KPH is its MBC-110 logic controller with multi-functional software. These are designed for communication with a higher level control system. In combination with the two MMC-120 motor controllers this system fulfils most of the demands made of a drive unit for a pedestrian barrier.

The motor controllers ensure optimum motion of the glass wings. To achieve a good balance between opening and closing times, and (dynamic) impact forces, a unique set of motor parameters is employed for each type of barrier.

4.2 Configuration

4.2.1 Configuration KPH-111

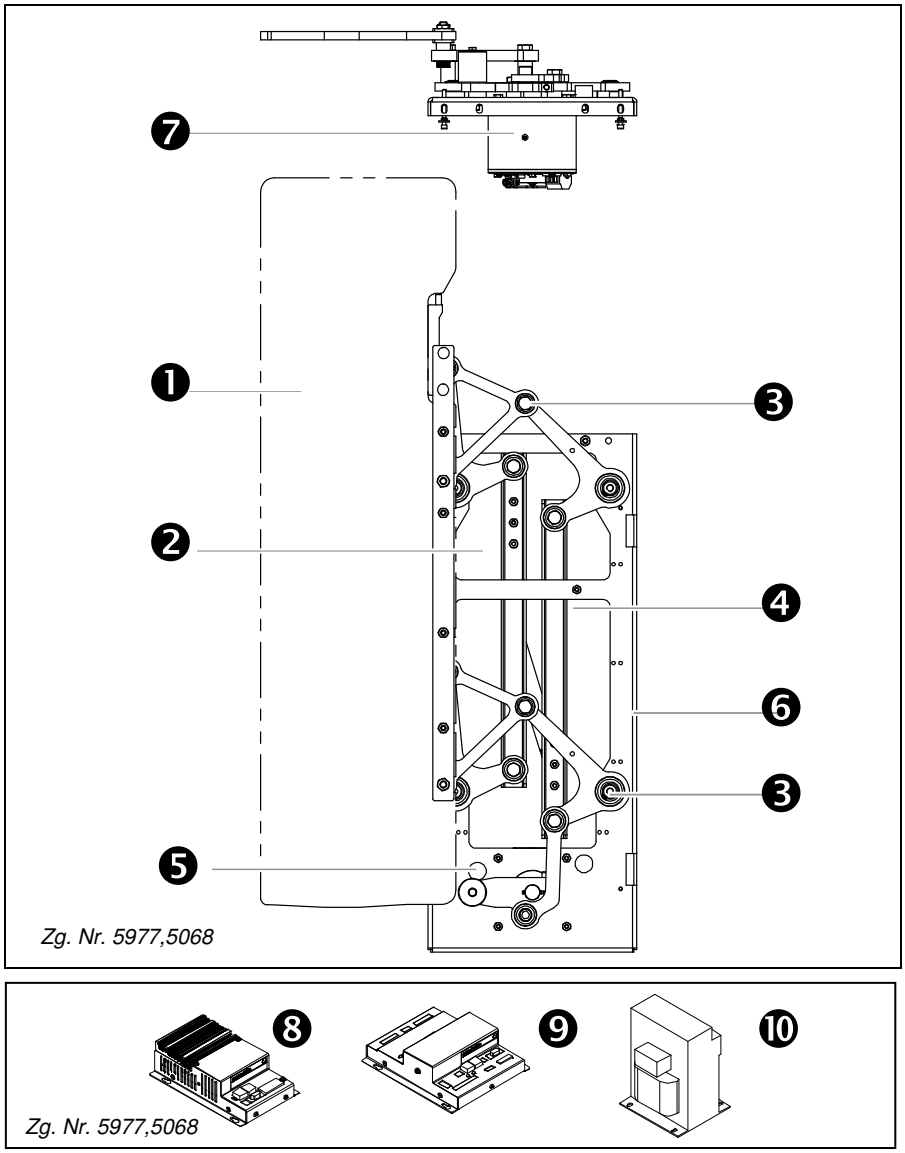

Fig. 4-2 Main components KPH-111

1 Glass wing
2 Clamping strip for glass wing
3 Bearing
4 Lever mechanism
5 Rubber buffer
6 Drive unit frame
7 MAGNETIC High Torque Motor (MHTM) with resolver
8 Motor controller MMC-120
9 Logic controller MBC-110
10 Transformer power supply

4.2.2 Configuration KPH-121

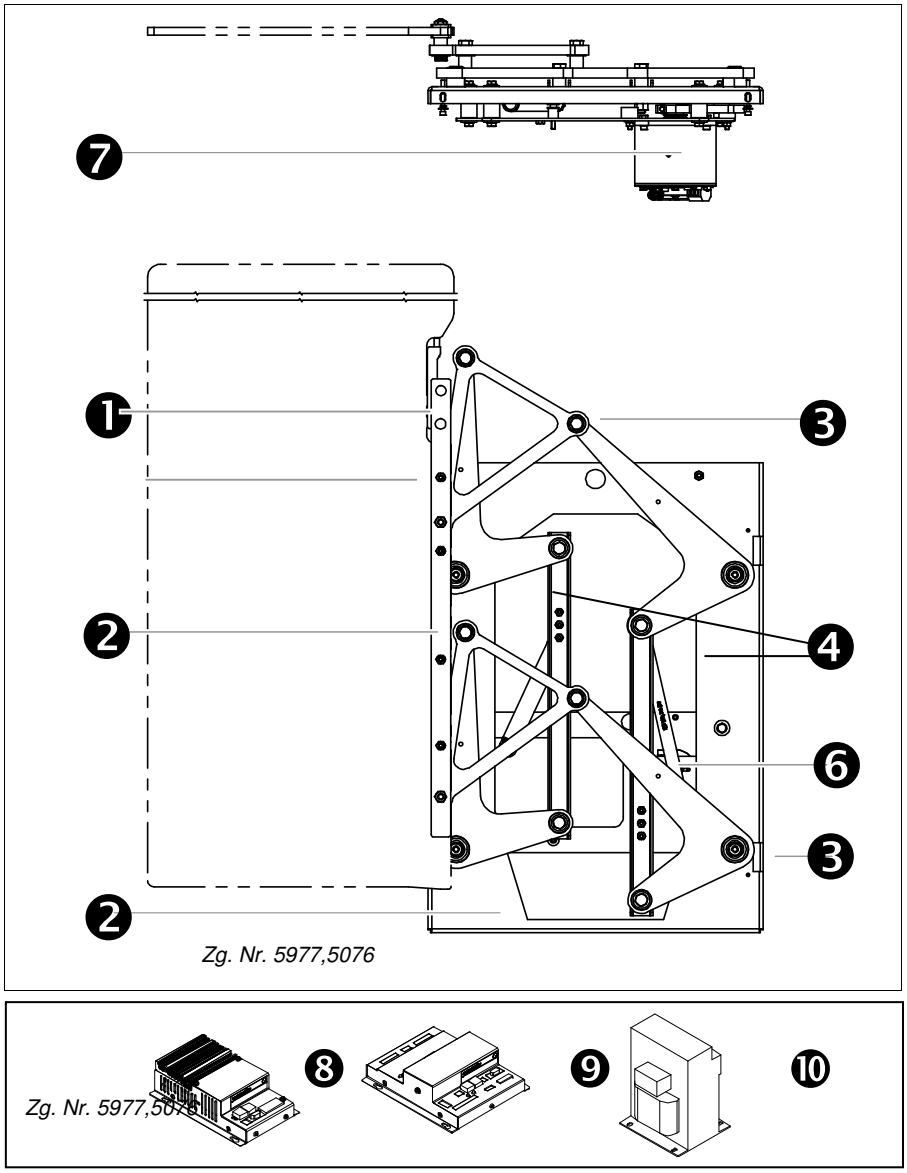

Fig. 4-3 Main components KPH-121

1 Glass wing
2 Clamping strip for glass wing
3 Bearing
4 Lever mechanism
5 Rubber buffer
6 Drive unit frame
7 MAGNETIC High Torque Motor (MHTM) with resolver
8 Motor controller MMC-120
9 Logic controller MBC-110
10 Transformer power supply

4.2.3 Optional components KPH-111

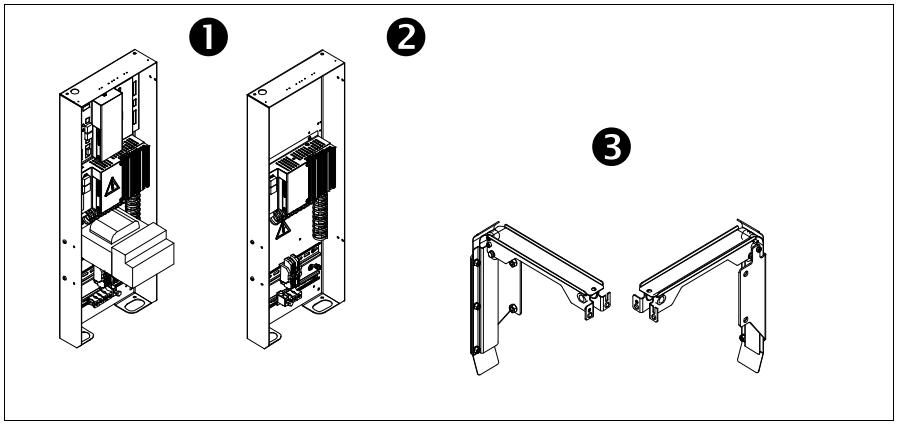

Fig. 4-4 Optional components KPH-111

1 Mounting panel master
2 Mounting panel slave
3 Slot cover kit

4.2.4 Optional components KPH-121

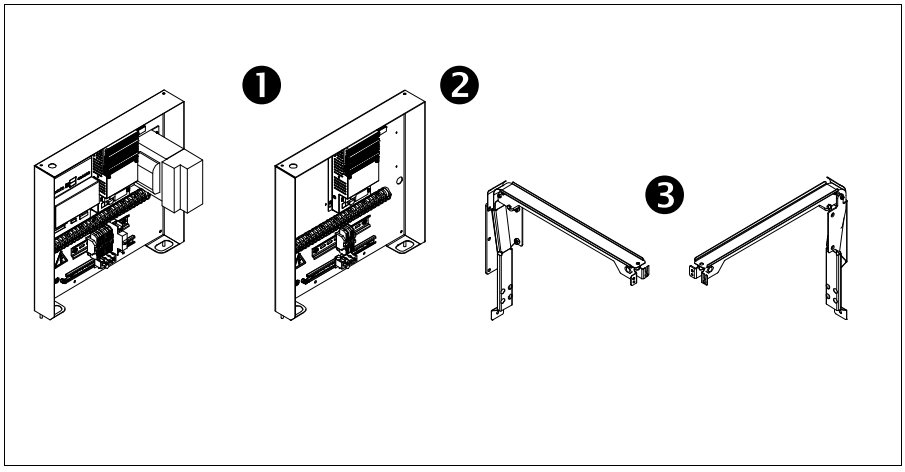

Fig. 4-5 Optional components KPH-121

1 Mounting panel master
2 Mounting panel slave
3 Slot cover kit

4.3 Housing and lane widths

MAGNETIC recommends a housing 300mm wide for Kit Set KPH-111, and 520 mm wide for Kit Set KPH-121.

The lane width depends on the size of the gap between the extended glass wings, and is calculated as follows:

Definition of lane width (LW):

IMPORTANT NOTE!

The lane width (LW) is calculated as follows:

LW = (2 x extended glass wing width) + (gap between glass wings)

4.4 Glass wing heights

KPH-111 and KPH-121 Kit Sets are designed for glass wing heights of 1200 mm, 1500 mm, or 1800 mm. The program that must be loaded into the MBC-110 controller is specific to the glass wing height.

Both Kit Sets are available with two different stroke widths (distance the barrier wing extends).

Other stroke widths are available on request. Both the lever mechanism and the associated software must be modified when the stroke width is changed.

Kit Set	Glass wing height in mm	Stroke width in mm
KPH - 111	1200 / 1500 / 1800	235 / 205
KPH - 121	1200 / 1500 / 1800	402,5 / 430

5. Transport and storage

5.1 Safety

5.2 Symbols on packaging

5.3 Transport inspection

5.4 Transport

5.5 Packaging

5.6 Storage

6. Installation and assembly

6.1 Safety

WARNING!

Moving parts can cause serious injury.

Before maintenance and repair work, the pedestrian barrier must be switched off at the main switch and the switch secured against switching on again.

Make sure the levers are blocked.

6.2 Installation

The design of the housing must ensure good access to the drive unit. This is essential so that installation and maintenance work can be carried out without difficulty.

6.2.1 Mounting points for the drive unit

In the illustrations below, the arrows indicate the mounting points. The frame has seven slots, any of which can be used for mounting. The four vertical mounting points on each side are sufficient.

At the bottom there are two mounting slots.

The slots enable precise alignment of the drive unit and glass wings in relation to the housing gap. For fastening to the housing, we recommend M6 screws or welded studs.

For installation dimensions, please see drawings, 5517,5141 for KPH - 111 or 5517,5189 for KPH - 121 which are included in the documentation supplied.

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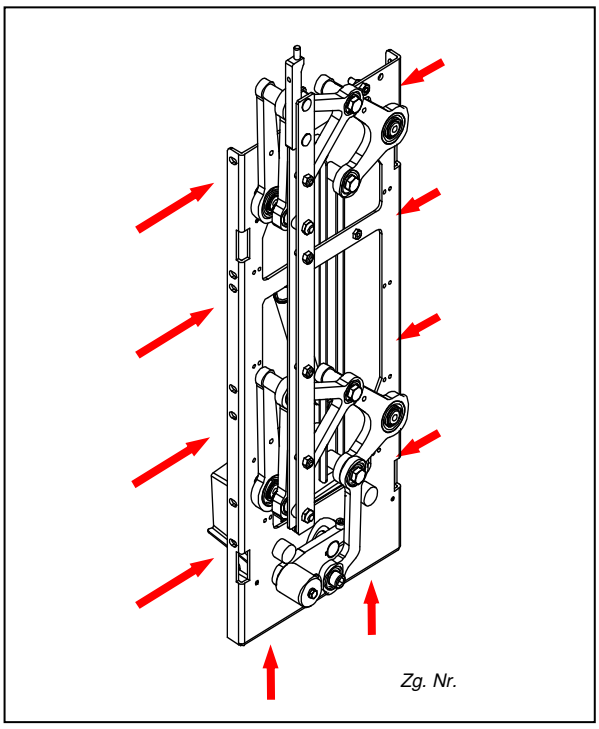

Fig. 6-1 Mounting points for KPH -111

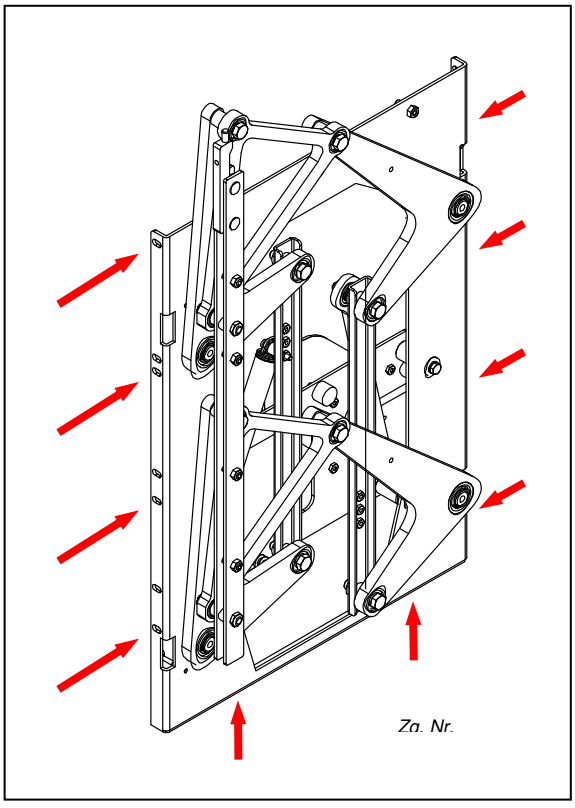

Fig. 6-2 Mounting points for KPH - 121

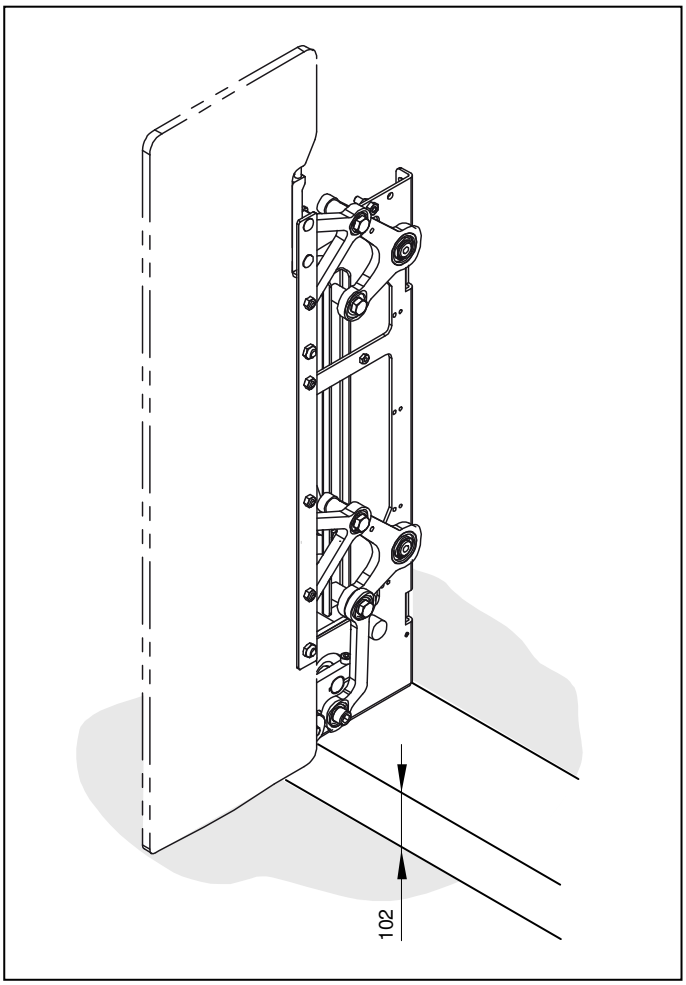

Fig. 6-3 Recommended distance from floor to frame

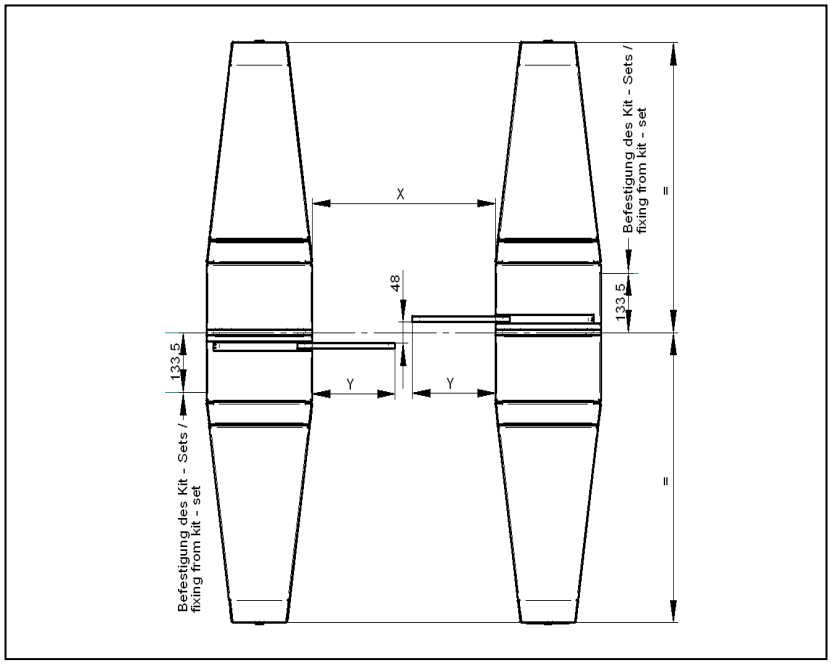

Fig. 6-4 KPH – 111, position in housing

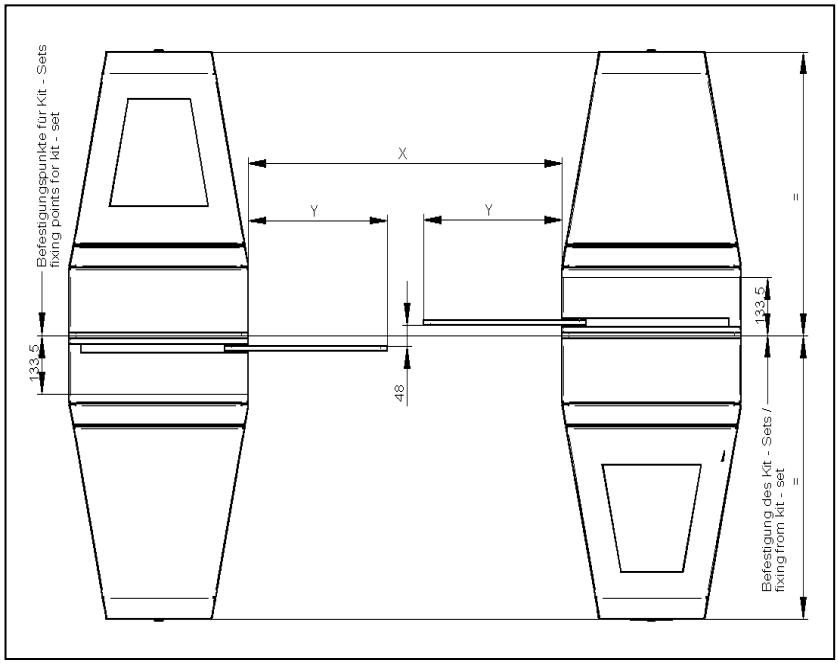

Fig. 6-5 KPH – 121, position in housing

6.2.2 Slot in housing for glass wing

For the correct operation of glass wing and drive unit, it is essential that the slot in the housing is big enough. The clearance between the glass wing and the sheet metal of the housing should be 4mm on each side.

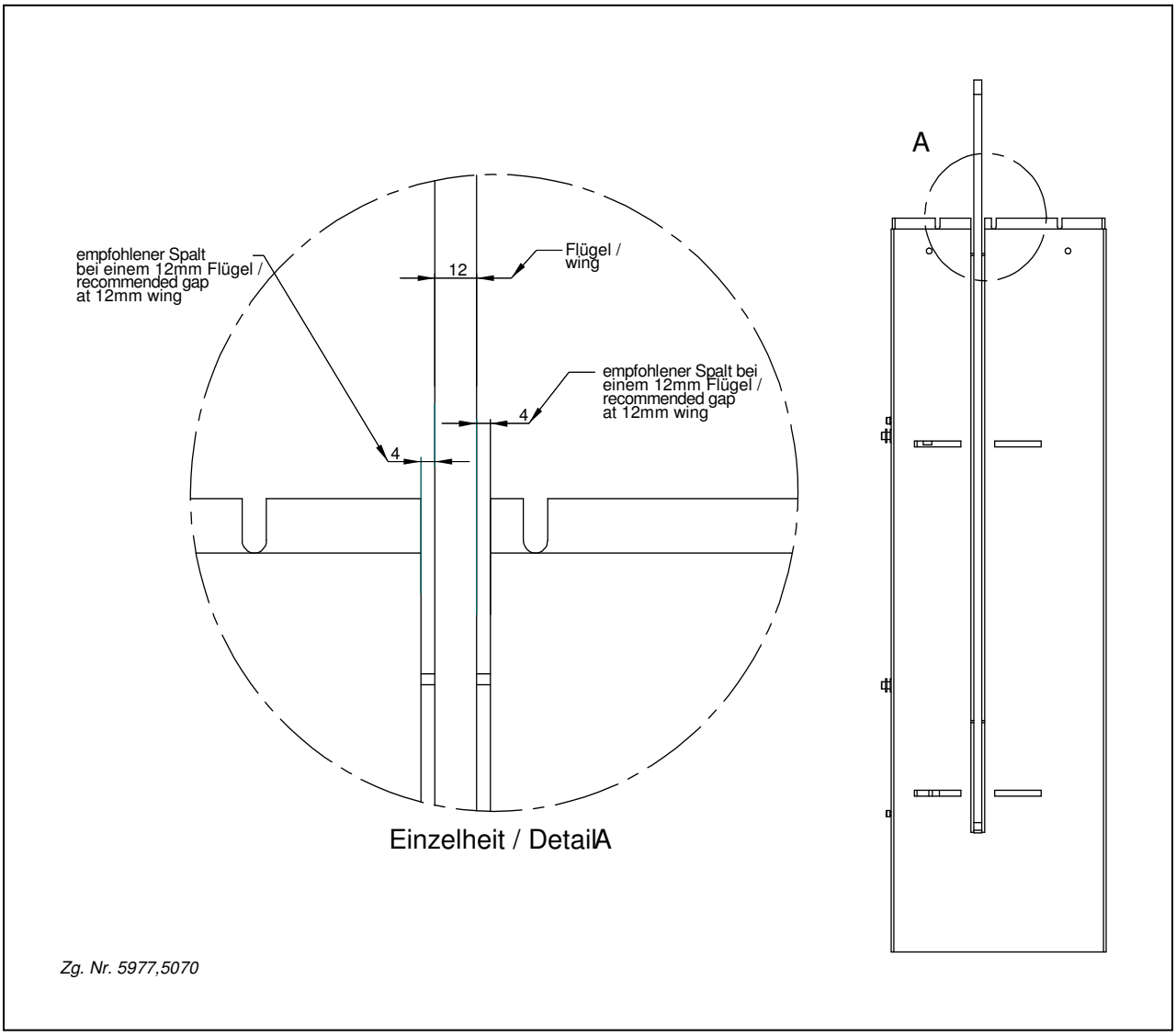

Fig. 6-6 Slot width in housing for glass wing

6.2.3 Mounting instructions for optional slot cover

Fig. 6-7 shows the six points for mounting the slot cover on the housing.

The points A are for mounting to the housing.

Point A1 is the connection between the guide plate and the mounting plate.

The points B and C are also for mounting to the housing.

For secure location, additional centring buttons are provided which require 10mm dia. holes.

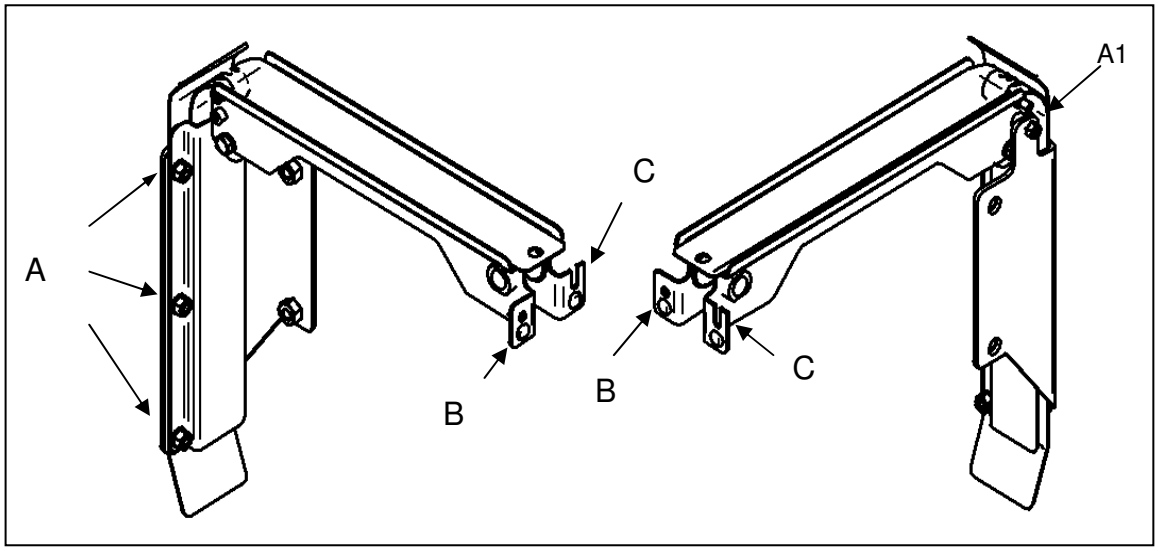

Fig. 6-7 Slot cover mounting points, KPH - 111

For A mounting points, we recommend M6 screws, and for B and C points M5 screws. Use the M5 socket cap screws supplied for point A1.

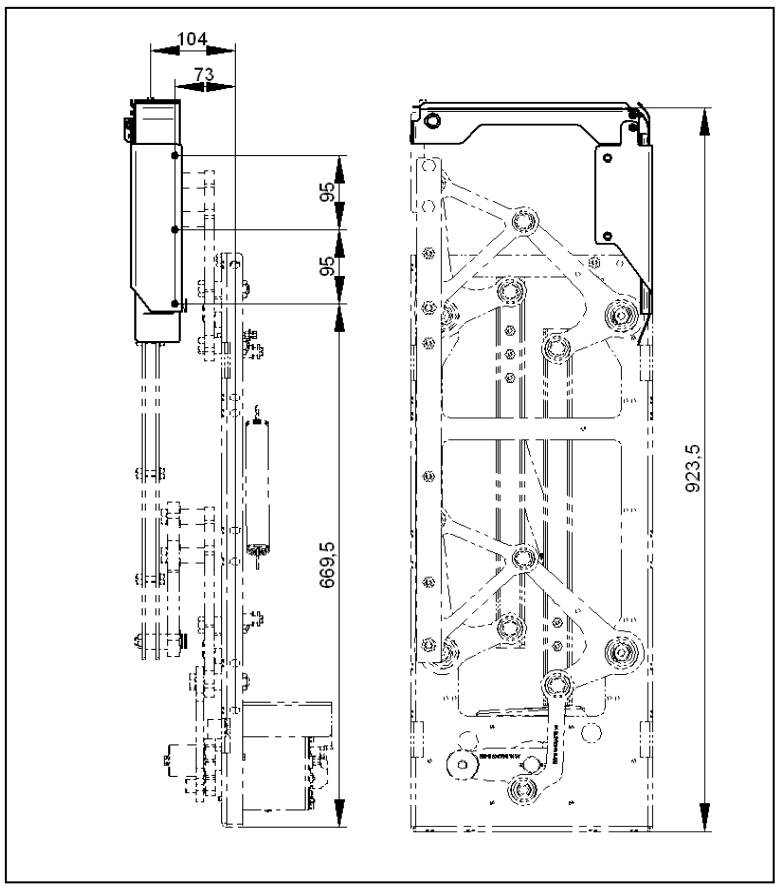

Fig. 6-8 Installation position for slot cover on KPH - 111

The installation position is shown in the above drawing. The drive unit is shown in the extended position. In the right-hand view, you can see that the mounting plate and the frame of the drive unit must both lie flush against the housing wall. The recommended installed height is 923.5 mm from base of the frame to the the slot cover.

The left-hand view shows the position of the slot cover in relation to the drive unit. It is exactly on the centreline of the glass wing. The dimension 73 mm is the distance from the mounting points to the drive unit frame.

The dimension 104 mm is the distance from the mounting points of the frame to the centreline of the guide or the centreline of the glass wing. The heights, 669.5 mm and 95 mm, are the distances from the base of the frame to the mounting points of the mounting plate.

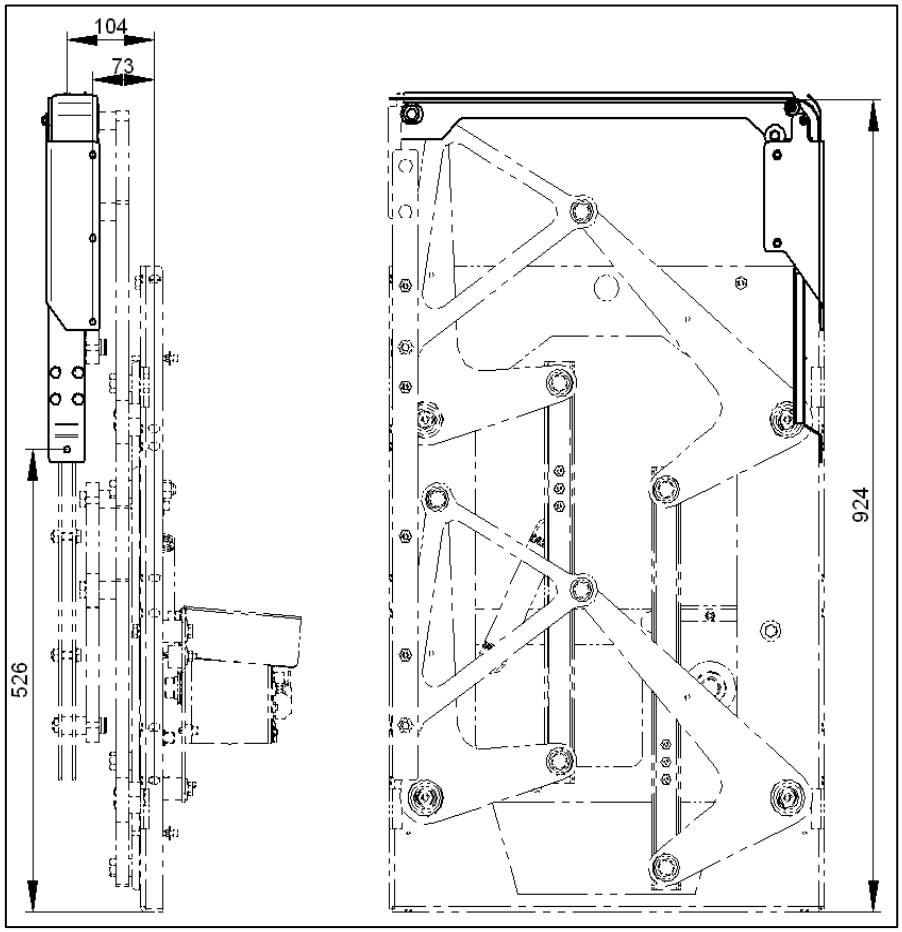

Fig. 6-9 Installation position for slot cover on KPH - 121

The above drawing shows the installation position of the slot cover for the KPH -121.

For further design information, please see documents 5517,5191 for KPH - 111 and 5517,5192 for KPH - 121 in the documentation supplied.

6.2.4 Self-constructing the slot cover guide

When the optional slot cover is not employed, there are several parameters that must be observed if you design your own slot cover guide.

Failure to comply with these requirements can result in different frictional characteristics for the cover strip. Correct operation of the motor and motor controller with the preset motor parameters is then no longer assured.

The sketches below indicate the form that the guide must take. The guides should follow the outer surface as accurately as possible. The slot is for the glass wing so, naturally, the guide must be interrupted at this point.

For more detailed design information, please see drawings 5517,5229 and 5517,5228 in the documentation supplied.

To reduce friction in the guide, a special anti-friction tape must be applied to the horizontal sliding surfaces. Magnetic Autocontrol recommends PE tape 9 x 0.125mm.

At the bend, on the outer sliding surface, it is best to use a self-adhesive fleece tape such as that from a Velcro combination.

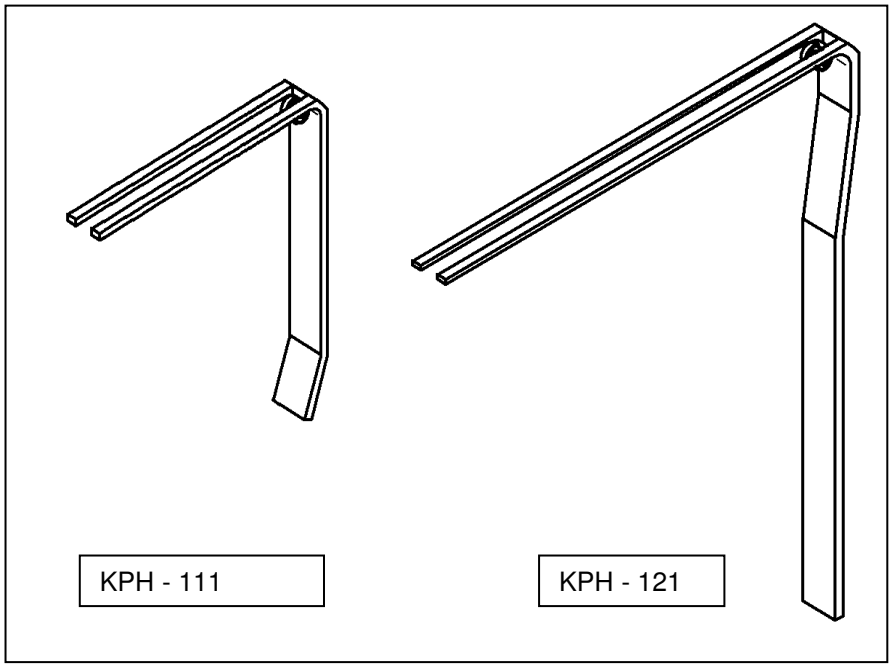

Fig. 6-10 Forms for slot guides

6.2.5 Installing the glass wing

WARNING!

Moving parts can cause serious injury.

When carrying out assembly work on the drive unit, it is essential that the power supply is first switched off. Make sure the levers are blocked.

ATTENTION!

There is a danger of breaking glass wings when they are being installed.

When fitting a glass wing to or removing it from the clamping strip, make sure you do not cant it or twist it.

Make sure the glass wing is free of mechanical strain when it is installed.

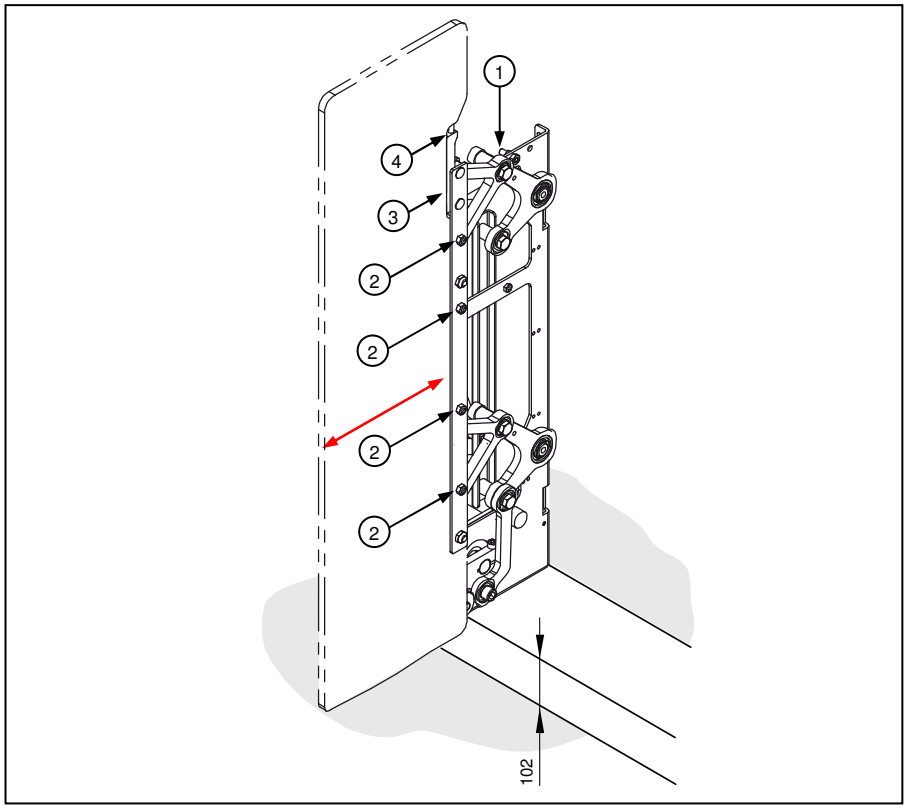

Fig. 6-11 Mounting a glass wing

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Bring the drive unit to the blocking point. Block the drive unit with fixing screw (1). Make sure that the screw is aligned with the hole in the L-lever and engages. Then secure the screw with a locknut so that the drive unit is blocked with a minimum of play.

Loosen the screws (2) on the clamping strip, but do not remove them.

Loosen the nuts (3) for the cover strip carrier.

Insert the glass wing carefully between the clamping strips without canting it.

IMPORTANT NOTE!

When adjusting the glass wing, set the distance between the edge of the glass wing and the clamping strip to the dimension given below (see double arrow in Fig. 6-11):

KPH – 111: 244 mm

KPH – 121: 437 mm

Tighten the clamping screws (2) progressively and alternately to a torque of ca. 15 Nm.

Manufacturing tolerances may give rise to differences. It is therefore recommended that you unblock the drive unit and check that the edge of the glass wing is flush with the housing when the barrier is open. If it is not, repeat the adjustment so as to correct the difference you have observed.

Engage the cover strip (4) with the carrier and push the latter upwards as far as it will go, so that the cylindrical pin contacts the edge towards the panel. When tightening the nuts to secure it, take care that the carrier is in contact with the edge of the glass wing. Unblock the drive unit.

6.3 Installing the controllers

When installing the transformer power supply and the controllers, the points below must be observed.

6.3.1 Transformer power supply

The transformer power supply must be installed so that there is free access to the connection terminals and to the two fuses on the front panel.

Make sure there is a stable mounting adequate for the weight of the transformer power supply. There are four slots in the baseplate for mounting it.

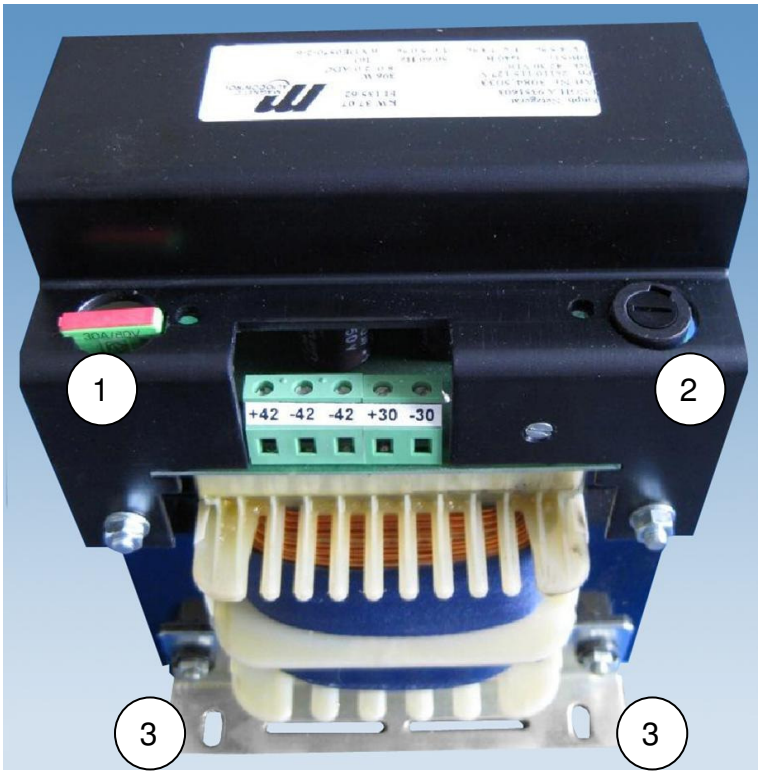
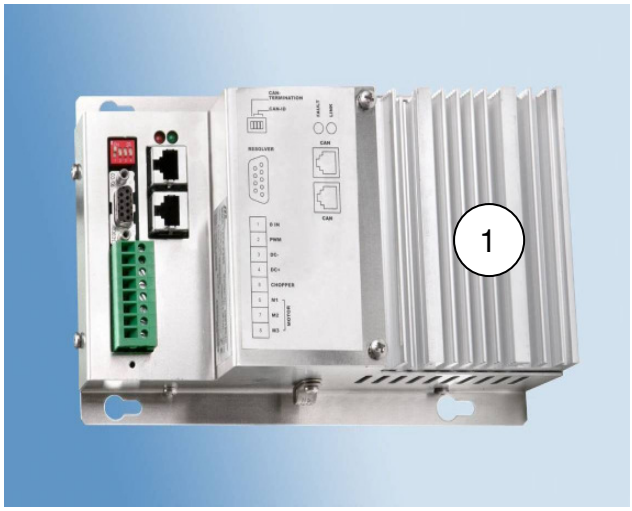


Fig. 6-12 Transformer power supply

1 – Fuse 42V
2 - Fuse 30V
3 - Slots for mounting

6.3.2 Motor controller MMC-120

The two motor controllers must be installed so that the fins on their heat sinks are vertical.



1 – Fins on heat sinks

Fig. 6-13 Motor controller MMC-120

If several units are installed one above the other, they must be spaced vertically so that they are at least 150 mm apart.

There must be space above the controller for warm air to escape so that there is no heat build up. There must be a space of at least 150 mm to the top of the barrier housing.

IMPORTANT NOTE!

Horizontal installation of the controller is not permitted, because it would result in inadequate air circulation.

Each motor controller should be installed as close as possible to its motor, so that both the motor and the resolver cables are as short as practical.

IMPORTANT NOTE!

Long motor cables can result in high interference emissions.

6.3.3 Logic controller MBC-110

When installing the MBC-110 logic controller, make sure the markings on it are easy to read. In addition, the 7-segment display should be easy to read and not inverted. These measures make for easier troubleshooting.

The photo below shows the best orientation for the controller.

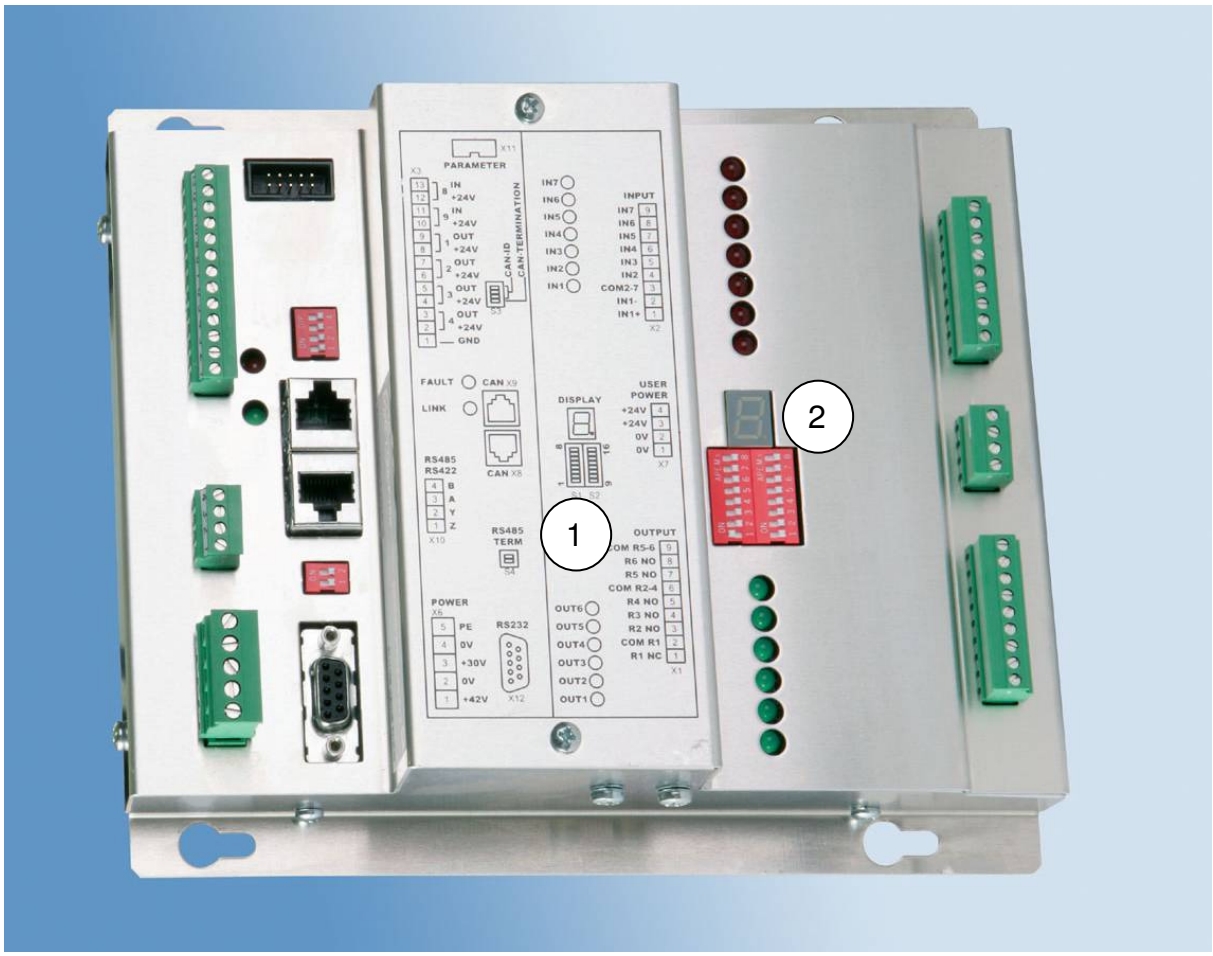


Fig. 6-14 Logic controller MBC-110

1 – Silk screen MBC-110
2 – 7-segment display

6.4 Electrical connection

6.4.1 Safety

CAUTION!

Connections of electrical wiring, in particular mains connections, may only be carried out by a trained and qualified electrician.

6.4.1 Block diagram

The block diagram below gives an overview of the electrical system of the KPH Kit Set.

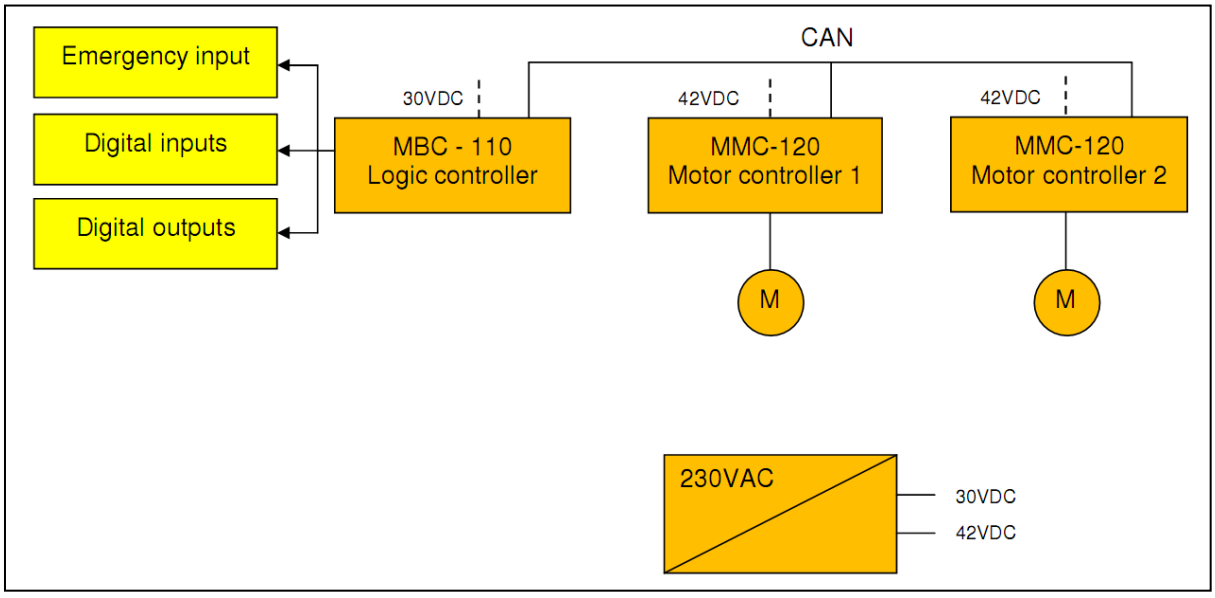


Fig. 6-15 Block diagram for control system

The wiring between the controllers and from the controllers to the customer side is described in the schematic diagrams which are supplied as a separate document.

6.4.2 Connection of the power supply

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

On the primary side the transformer has two separate windings with several outputs each. Both windings can be connected in parallel or in series to adapt the transformer to the local mains voltage. This is done by moving the wire jumpers.

Possible primary voltages are:

110V, 115V, 127V, 220V, 230V, 242V, 254V

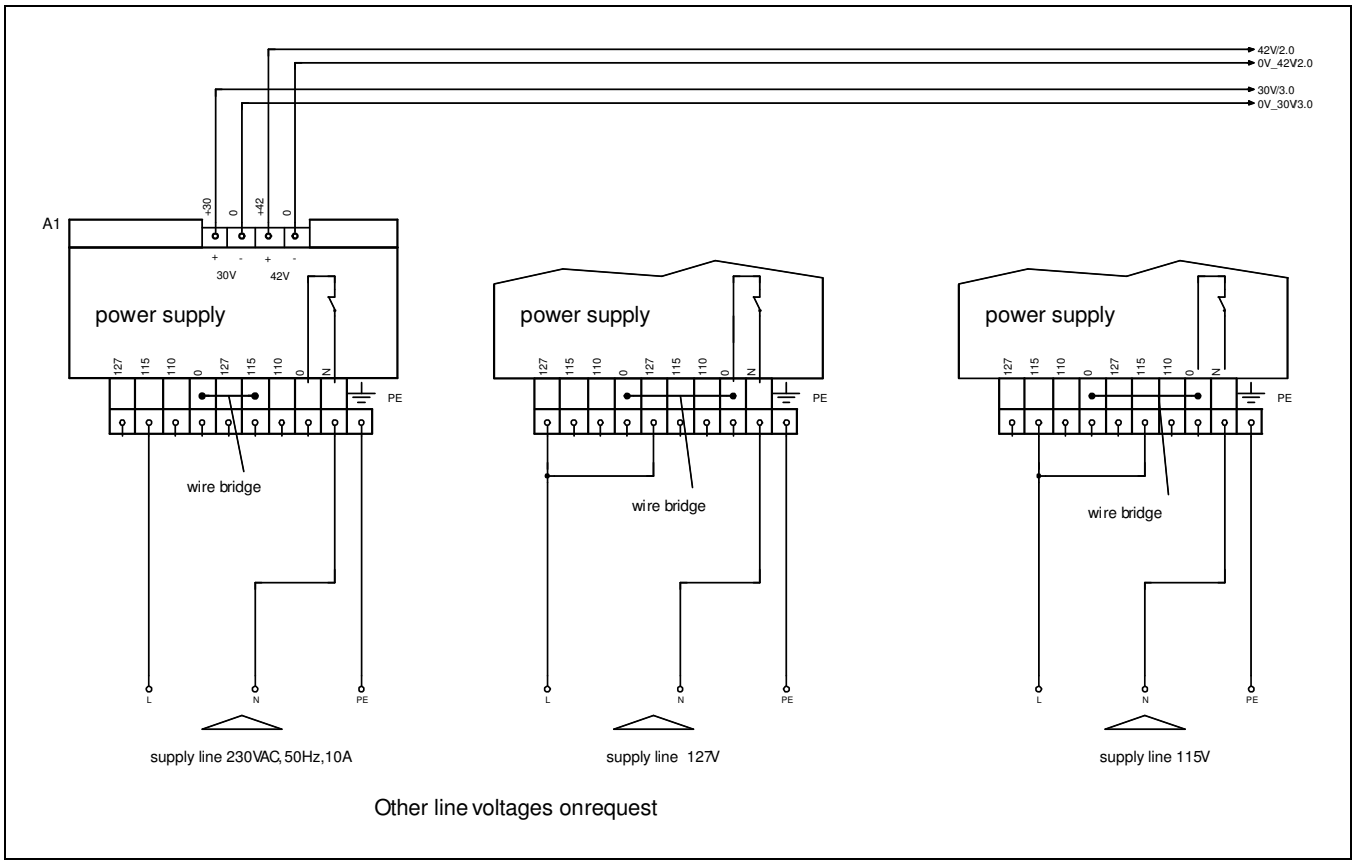
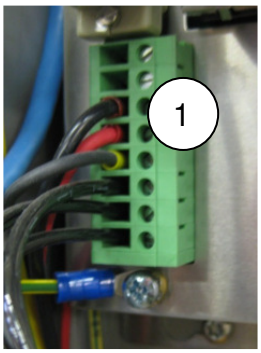


Fig. 6-16 Connection of the power supply

6.4.3 Connection of the controller power supply

The transformer power supply has two output voltages, 42 VDC and 30 VDC.

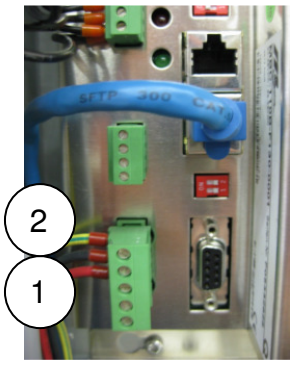
The MMC-120 controller requires +42 VDC. This must be connected at the terminals marked DC+ and DC-.



1 - 42 V / 0V connection

Fig. 6-17 42V connection to MMC-120

The MBC-110 controller requires +30 VDC. This must be connected to connector X6 at terminals 3 and 4. In addition, there must be a short connection to PE at terminal 5 (e.g. to the mounting panel). Terminals 1 and 2 are not used.



1 - 30 V / 0V connection
2 – PE connection

Fig. 6-18 30V connection to MBC-110

6.4.4 Connecting the motor and the resolver cable

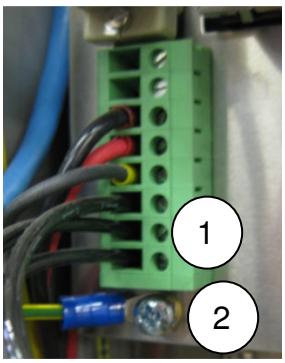
There are two leads to the MMC-120 motor controller from the MHTM motor.

The resolver cable must be plugged in at the 9-pin D-Sub socket on the MMC-120.

1 – Plug resolver cable in

Fig. 6-19 Resolver cable connection

The motor cable must be connected to the terminals marked M1 to M3 in the correct sequence for the three motor phases. The green/yellow lead of the motor cable must be connected to the earthing screw on the MMC-120.

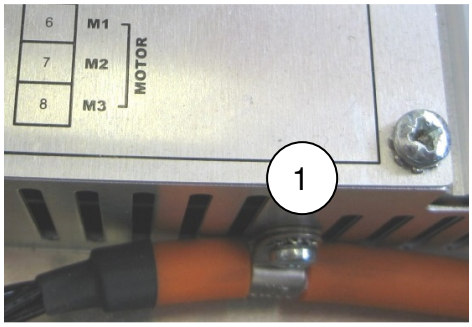


1 – Connection of motor phases 1-3

2 – Earthing screw

Fig. 6-20 Motor cable connection

The shield of the motor cable must be connected to the cable clamp on the side of the controller.



1 – Cable clamp

Fig. 6-21 Connection of motor cable shield

6.4.5 Braking resistor

When braking the glass wings at the end of their travel, energy is fed back into the DC bus of the MMC-120. If this energy is too large, the MMC-120 reacts with an overvoltage error and switches the end stage off.

To prevent this, a braking resistor must be connected to each MMC-120.

The braking resistor is connected at the terminals "Chopper" and +42V.

Fig. 6-22 Braking resistor for MMC-120

6.4.6 Connection of the CAN-Bus cable

The MBC-110 logic controller and the two MMC-120 motor controllers must be connected together by a CAN bus line.

An Ethernet Patch cable to Category 5E or higher must be used. The Kit Set includes two different lengths of Patch cable for connecting the three control systems. Should these cables not be long enough, you must obtain longer Patch cables.

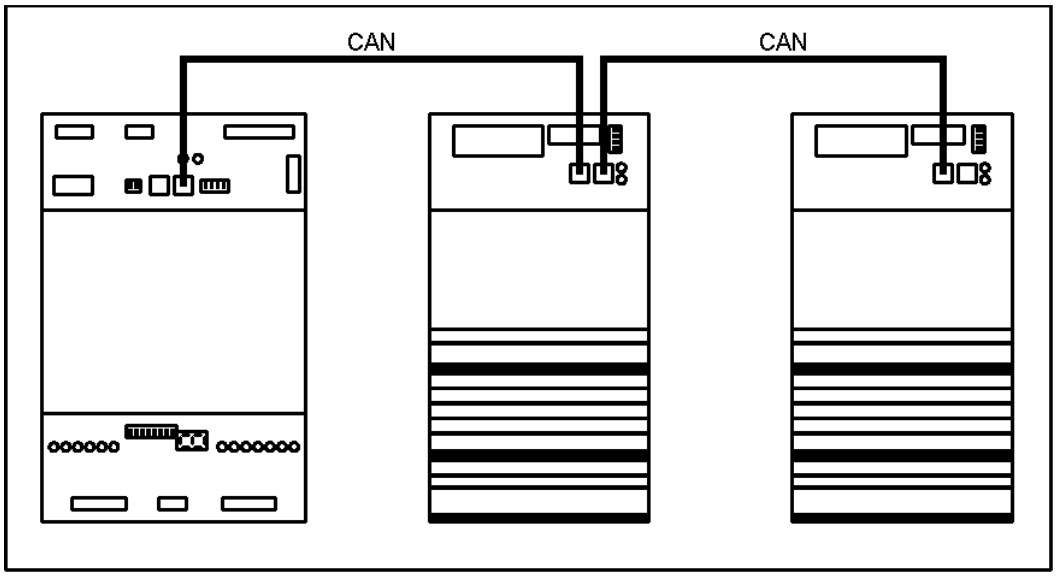


Fig. 6-23 CAN cable connections

6.4.7 Connecting customer's control wiring

Depending on how the pedestrian barrier is to be controlled, or on which feedback signals should be evaluated, it may be necessary for the customer to connect control wiring to the MBC-110 logic controller.

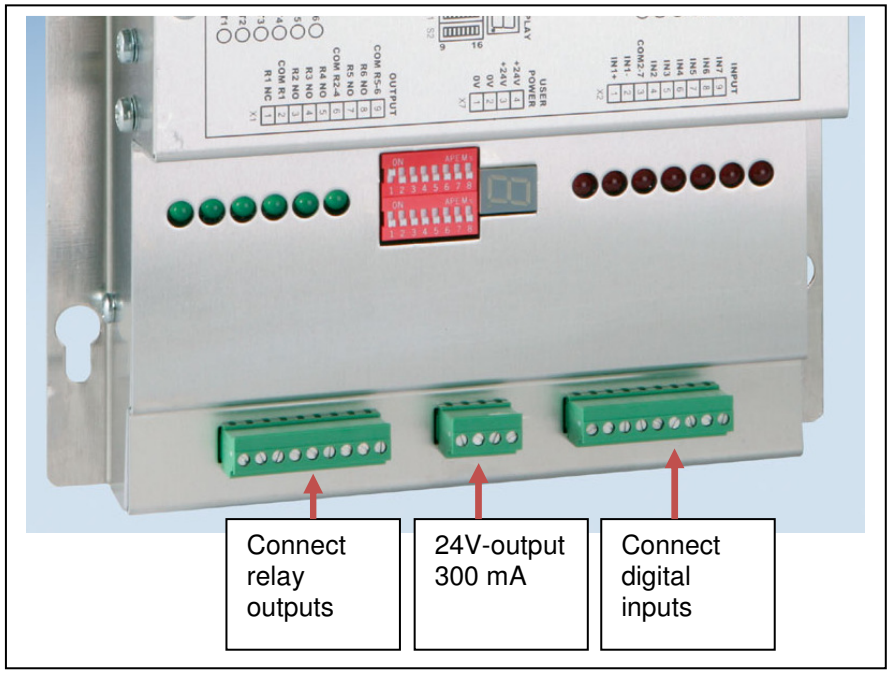


Fig. 6-24 Customer connections to MBC-110

Six digital inputs are available to the customer for controlling the pedestrian barrier, and a further 6 relay outputs are provided for evaluating information.

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IMPORTANT NOTE!

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

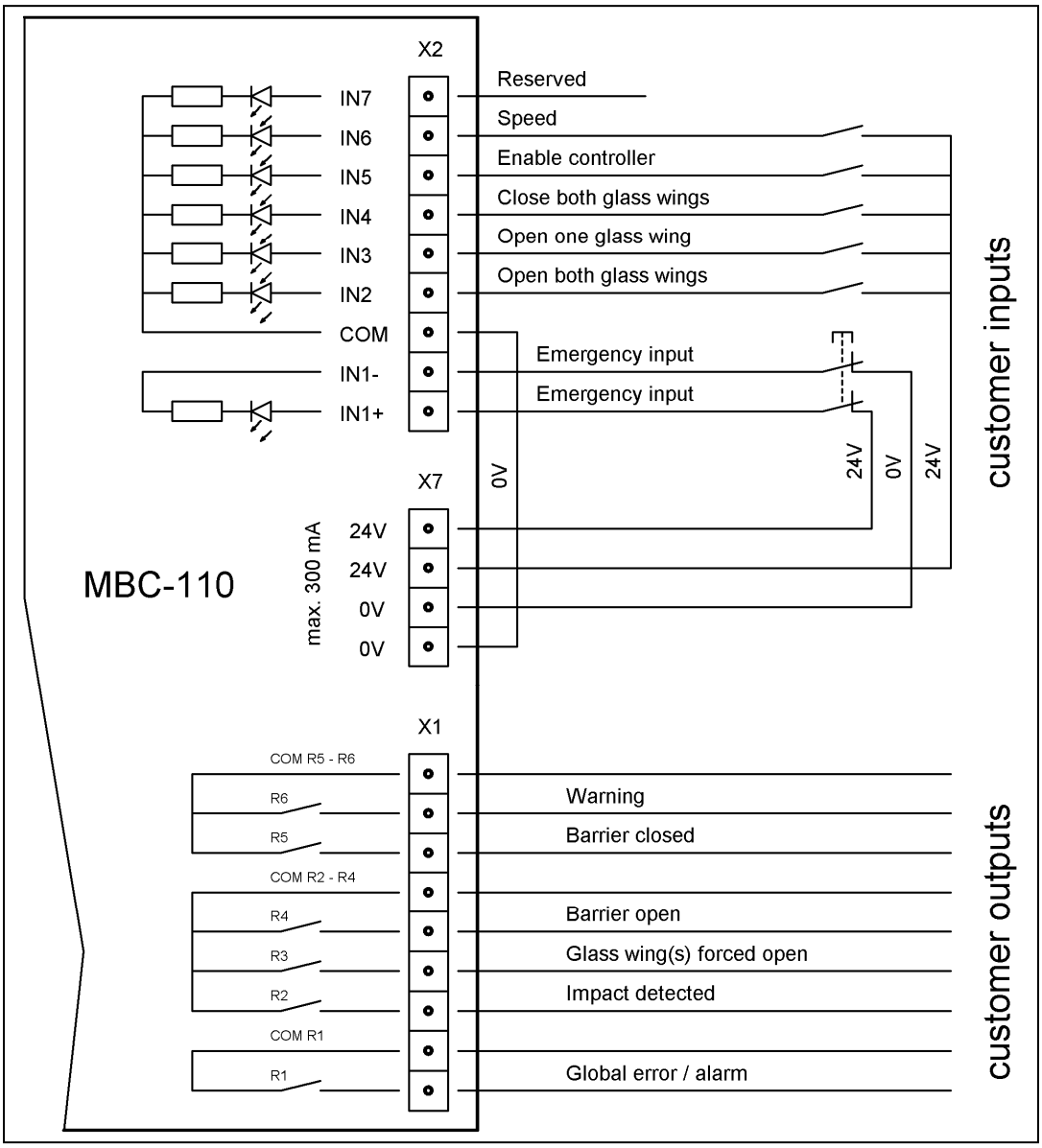

Fig. 6-25 Customer's connections to MBC-110

6.4.8 Hardware for digital inputs

Digital inputs 1 to 7, galvanically isolated by an optoelectronic coupler, are connected at a common terminal block. Inputs 2 to 7 have a common connection, COM2-7, which must be connected to 0 V.

Input 1 has 2 poles; it is thus independent of the other inputs and can be connected to an external potential.

The input is connected to the safety input of the motor controller. This controls the end stage of the motor amplifier directly and interrupts the power supply to the motor if there is no signal.

It is also possible to operate several barriers in parallel by supplying a common external signal to Input 1 of them all (e.g. a central emergency-stop switch).

In this case the inputs must be decoupled from each other by an external relay for each barrier unit to ensure that the voltage potentials are properly separated (see section 6.4.11).

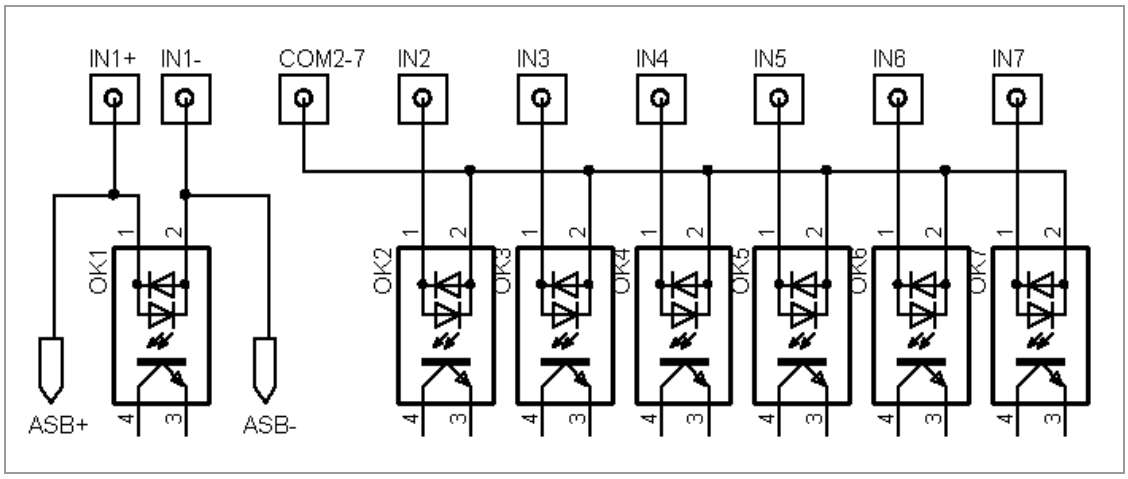

Fig. 6-26 Connection of inputs (simplified drawing)

6.4.9 Hardware for relay outputs

Relay outputs 1 to 6 are connected at a common terminal block. Some of these outputs are grouped together.

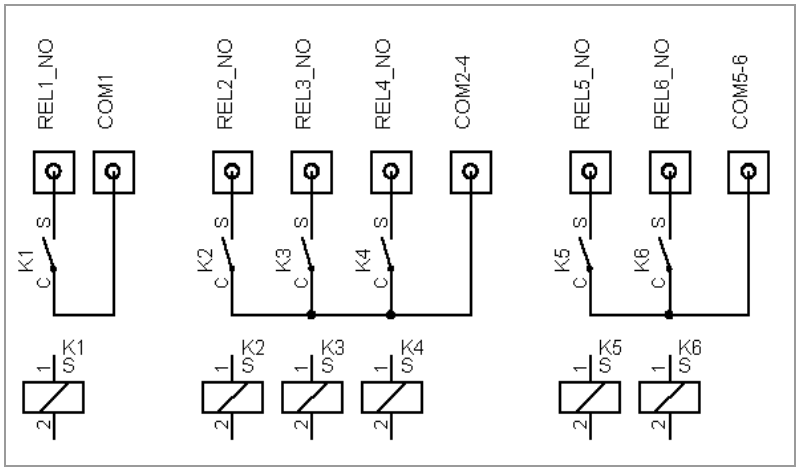

Fig. 6-27 Relay output connections (simplified drawing)

6.4.10 Hardware for internal inputs and outputs

The outputs are MOSFET drivers and the inputs are optically decoupled. One side of both inputs and outputs is at GND potential. There is a separate voltage regulator for each of the 4 outputs.

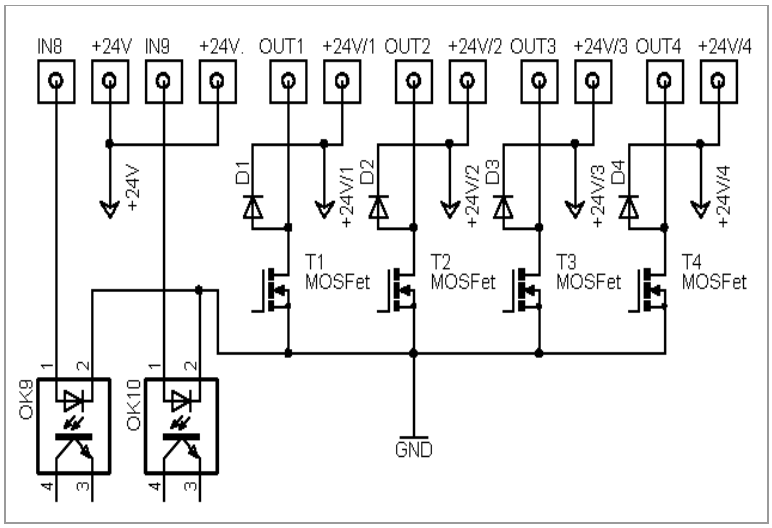

Fig. 6-28 Connections for additional inputs and outputs (simplified drawing)

6.4.11 Connecting an emergency input

When several pedestrian barriers are to be interrupted in parallel by a common emergency-stop switch, then an additional, external 2-pole relay must be fitted to each barrier to cut off the internal 24V supply individually.

An additional, external 24V power supply is then required to control the relay.

Where an emergency-stop switch is not required, wire jumpers must be installed to connect input terminal IN1+ to +24V and input terminal IN1- to 0V.

The input is connected to the safety input of the motor controllers. This controls the end stage of the motor amplifier directly and interrupts the power supply to the motors if there is no signal.

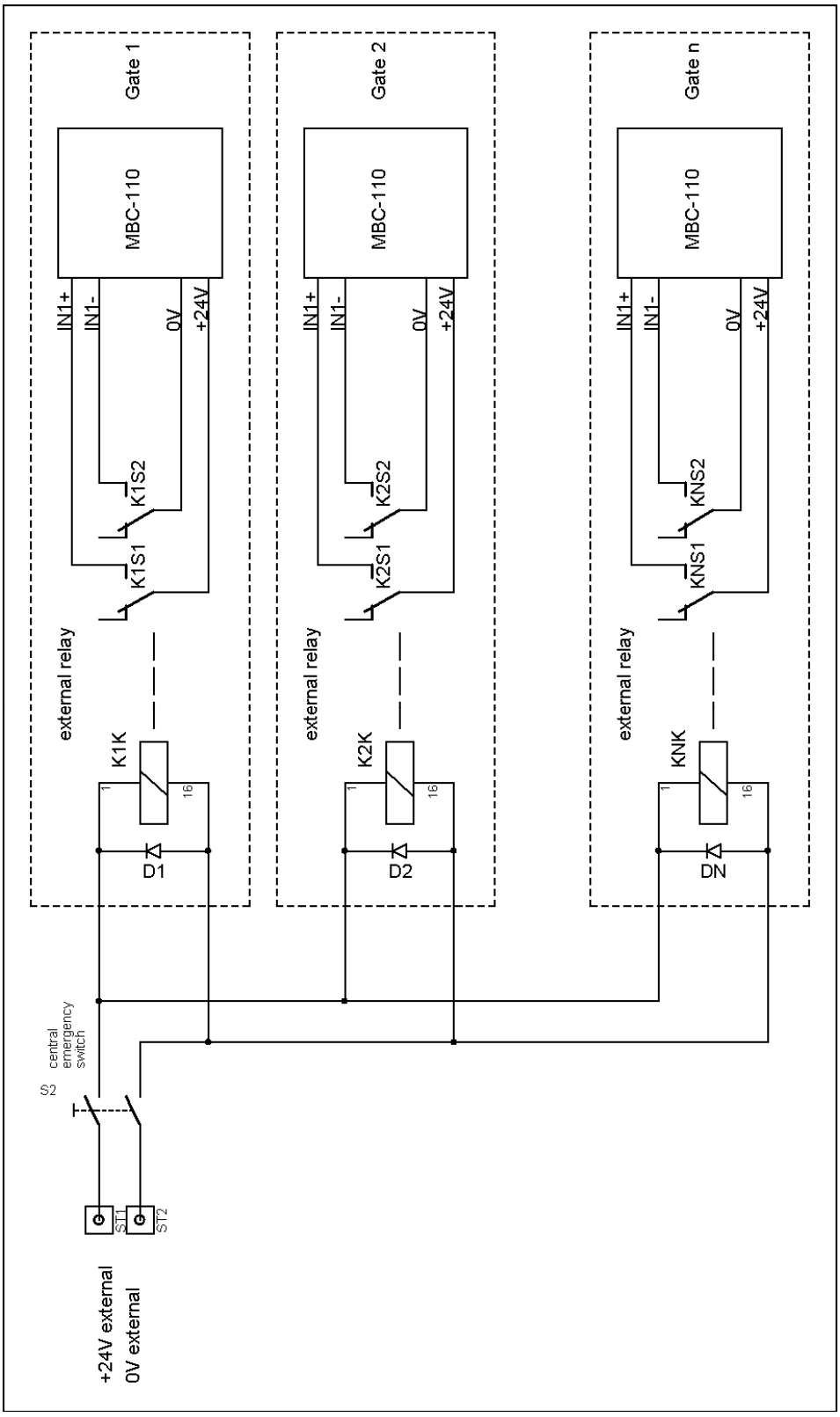

Fig. 6-29 Connecting an emergency input

7. Commissioning

7.1 General

On completion of the mechanical and electrical installation, the Kit Set can be taken into service.

CAUTION!

Before commissioning for the first time, make sure that all assembly and installation instructions have been followed and that the electrical connections have been correctly made.

Faulty installation or connections can cause malfunctions which could result in injuries.

The notes on assembly and installation in these operating instructions must be strictly observed.

Make sure that, when the power supply is switched on, there are no obstructions to operation of the barrier. (The access lane must be clear).

- Every time the power is switched on, the glass wings remain in the closed position until the first closing signal was given. The first closure takes place at reduced speed and serves as a reference run for the system to learn the end positions.
- There are three exceptions:
    - if an opening impulse is present.
    - when the input "Emergency" to controller MBC-110 is interrupted.
    - when the enable input IN5 to controller MBC-110 is interrupted.

7.2 Initial commissioning

During initial commissioning, the following points must without fail, be observed or checked. This ensures quick and trouble-free commissioning.

You will find details for the various points under the cross-references quoted.

7.2.1 Wiring the customer's digital inputs and outputs at the MBC-110 controller

Point 1: Check wiring of Emergency input IN1

Check if inputs IN1+ and IN1- on controller MBC-110 are correctly wired.

If no external protective device is connected, input terminal IN1+ must be connected to +24V and input terminal IN1- must be connected to 0V.

If the emergency input is connected to an external protective device, see Section 6.4.11.

For further details, see the schematic diagrams supplied with the Kit Set.

Point 2: Check wiring of enable input IN5

A permanent +24V signal must be applied to enable input IN5. Otherwise the Kit Set is out of operation.

7.2.2 Setting the required functions using DIP switches at controller MBC-110

IMPORTANT NOTE!

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

In particular the following functions must be determined respectively checked at initial commissioning:

Point 1: Selection of program mode 3 = KPH

Set program mode 3 using the two DIP switches S2.1 and S2.2 – see Section **Fehler! Verweisquelle konnte nicht gefunden werden.**.

CAUTION!

Setting the wrong program mode can result in the pedestrian barrier operating incorrectly! Before commissioning the pedestrian barrier, you must therefore ensure that the correct program mode is set at DIP switches S2.1 and S2.2.

Point 2: Behaviour following impact detection

Set pedestrian barrier behaviour after impact detection using DIP switch S1.4 and S1.5 – see Section **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Point 4: Checking CAN bus termination and addressing

You must check that the DIP switches for CAN bus termination and addressing are correctly set on all three controllers – see Section 7.2.3.

7.2.3 Setting the DIP switches for the CAN bus addresses and termination

The block of four DIP switches on each of the two controllers MMC-120 and on the MBC-110 controller must be set to the correct CAN address and termination.

IMPORTANT NOTE!

The setting of the DIP switches must be done before commissioning the Kit Set! Otherwise the download of the software to the motor controllers will not work.

The MBC-110 logic controller and the two MMC-120 motor controllers exchange data on a CAN bus line. Each of the three controllers must therefore have a fixed CAN address assigned to it.

In addition, a termination resistor must be activated at both ends of the bus to prevent interference.

The termination resistors can be set at the three controllers using DIP switch 1 on the 4-DIP-switch block in each case.

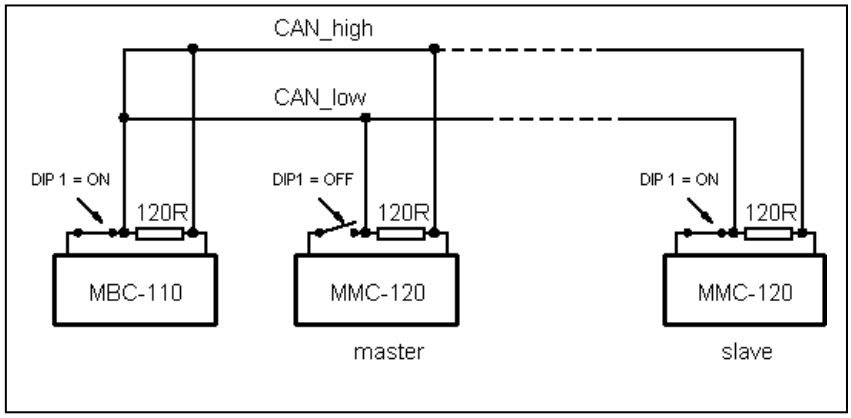

Fig. 7-1 CAN-Bus termination

The CAN addresses are set using three DIP switches on each of the three controllers. DIP switches 2 to 4 on the 4-DIP-switch block are used in each case.

The correct DIP switch settings are shown below:

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

Fig. 7-2 CAN address DIP switch settings

If a controller is replaced, e.g. during repairs, take care that the four DIP switches correctly are reset on each of the three controllers.

In particular, wrongly set termination DIP switches can result in faults during operation which are often hard to locate and occur only intermittently.

If two controllers accidentally have the same address, or if one has an inadmissible address, operation is not possible. In these cases an error code is displayed at MBC-110.

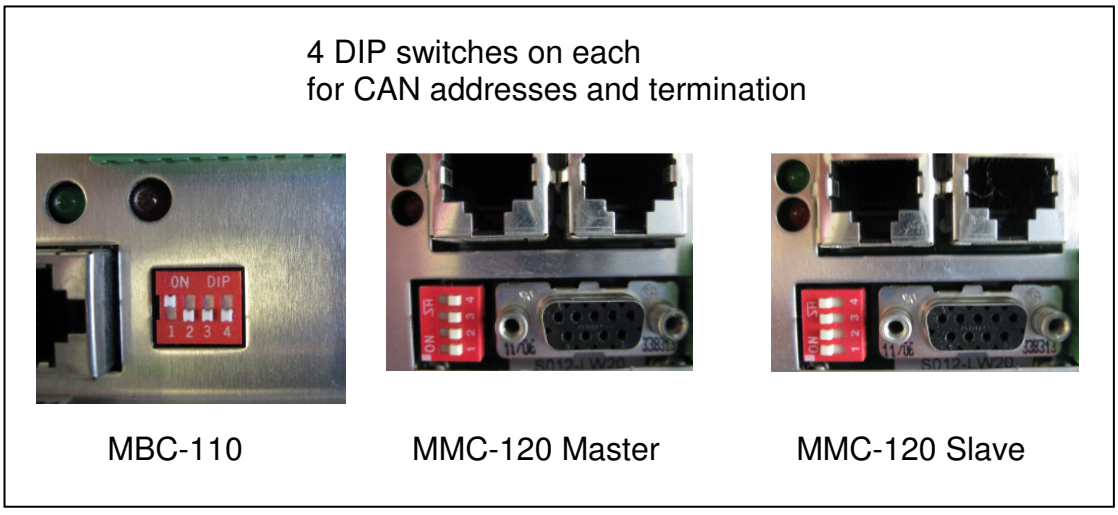

Fig. 7-3 Locations of DIP switches for CAN addresses and termination

7.3 Description of MBC-110 function

7.3.1 Functions of digital inputs

Input	Function
Input 1	Emergency input
Input 2	Opening both glass wings
Input 3	Opening one glass wing only
Input 4	Closing both glass wings
Input 5	Enable the controller
Input 6	Speed
Input 7	Reserved
Input 8	Reserved
Input 9	Reserved

Input 1 = Emergency input

This input permits free passage through the barrier in both directions in an emergency situation. The input is fail-safe, i.e. the pedestrian barrier is only operative when a continuous signal is present.

When the continuous signal fails, power to the motors is cut off, the glass wings are opened by springs, and the lane is completely clear for passage in both directions.

The input operates via a second channel directly on the end stage of the motor amplifier. It is assigned a higher ranking than all other inputs.

When several pedestrian barriers are to be opened in parallel by an external emergency-stop switch, the inputs must be galvanically isolated by an additional relay to prevent voltage coupling between the individual barriers.

Input 2 = Opening both glass wings

This input permits both glass wings to be opened simultaneously.

Input 3 = Opening one glass wing only

This input permits only one glass wing to be opened, the other remains in its closed end position. DIP S1.1 is used to select which glass wing is opened.

Input 4 = Closing both glass wings

This input permits both glass wings to be closed simultaneously.

Input 5 = Enable the controller

This input is used for enabling the control system; it is, however, not connected directly to the MMC-120 end stage like input 1. The control system will only go to operating mode when this input is activated.

Input 6 = Speed

When this input is activated, the barrier moves at full speed, otherwise the speed is reduced.

Inputs 7 to 9 = Reserved

These inputs are reserved for future applications.

7.3.2 Functions of digital outputs

Output	Function
Relay 1	Global error / alarm output
Relay 2	Impact detected
Relay 3	Barrier forced open
Relay 4	Barrier in open position
Relay 5	Barrier in closed position
Relay 6	Warning output
MOSFet output 1	Heartbeat, 1 Hz
MOSFet output 2	Reserved
MOSFet output 3	Reserved
MOSFet output 4	Reserved

Relay 1 = Global error / alarm output

When certain errors occur, an alarm is given at this output; it continues as long as the error persists.

Possible errors are:

- CAN communication with end stage is impaired
- Hardware fault in end stage
- Software error in end stage
- Power failure
- Wire breakage in alarm line

IMPORTANT NOTE!

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

Relay 2 = Impact detected

A signal is given at this output if an impact is detected.

This signal is reset as soon as a new closing command is recognised.

Relay 3 = Barrier forced open

A signal is given at this output if an attempt is detected to force the barrier wing out of its closed end position.

This signal is reset as soon as the barrier is closed again.

Relay 4 = Barrier in open position

A continuous signal is given at this output when the barrier is open regardless of whether one or both glass wings are open.

Relay 5 = Barrier in closed position

A continuous signal is given at this output when the barrier is closed.

Relay 6 = Warning output

A warning is given at this output when a fault is caused by the user.

- Emergency input IN1 is interrupted
- Enable signal at input IN5 is missing
- Impact detected
- Attempt to force open detected

IMPORTANT NOTE!

Relay 6 operation is fail-safe, i.e. a power failure or a wire breakage at the relay output is also indicated at the global error output. This means that the relay contact pair is closed as long as there is no warning. As soon as one of the warnings described above occurs, the relay contacts open.

MOSFET output 1 = Heartbeat 1 Hz

This output changes its state every 500 milliseconds as long as the control system main program is running. It can, thus, be recognised by a higher level control system if the control system program has "got stuck".

MOSFET outputs 2 to 4 = Reserved

These outputs are reserved for future applications.

7.3.3 Functions of the diagnosis display

There is a 7-segment display for diagnosis purposes. It shows various operating states and errors.

Normal operation

In normal operation, as long as there is no fault, the status of the glass wings is displayed.

When the barrier is closed, the letter "C" (closed) is displayed. While the barrier is closing, the letter "C" blinks (closing).

When the barrier is open, the letter "O" (open) is displayed. While the barrier is opening, the letter "O" blinks (opening).

Display of software version status

First the letter "u" is displayed, then the first figure (with decimal point), then the second figure, followed by a pause. Then the cycle begins again. The display time for each state is 2 s.

Example: version status 1.4

u1.4, pause, u1.4, pause, etc.

Display of error codes

First the letter "E" (Error) is displayed, then the first figure of the error code, then the second figure (with decimal point), followed by a pause. Then the cycle begins again. The display time for each state is 2 s.

Example: Error code 05

E05., pause, E05., pause, E05., etc.

The list of possible errors that can be displayed is in Section **Fehler! Verweisquelle konnte nicht gefunden werden.**.

7.4 Function and parameter settings

Several functions and parameters of the pedestrian barrier can be set at the two blocks of 8 DIP switches.

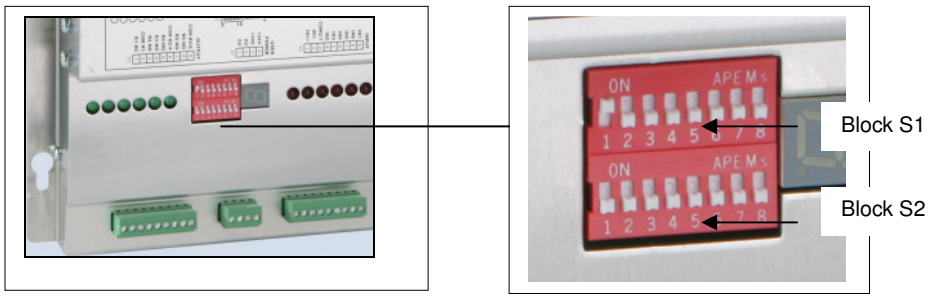

Fig. 7-4 DIP switches for setting parameters

IMPORTANT NOTE!

Changes to DIP switch settings only become effective after power supply has been switched off and on again (S1.7 is the exception).

7.4.1 DIP switch block S1

DIP S1.x	Function
1	Opening of one glass wing
2	Force to open glass wings
3	Force to open glass wings
4	Behaviour when impact detected
5	Behaviour when impact detected
6	Reserved
7	Query software version status
8	Reserved

7.4.1 DIP switch block S2

DIP S2.x	Function
1	Program mode
2	Program mode
3	Reserved
4	Reserved
5	Reserved
6	Reserved
7	Reserved
8	Reserved

7.4.1 DIP switch S1.1: Opening of one glass wing

If only one glass wing is to be opened using input 3, this DIP switch selects which of the two wings opens. The other wing remains closed.

DIP S1.1	Opening a barrier
OFF	Right glass wing is opened
ON	Left glass wing is opened

7.4.2 DIP switches S1.2 and S1.3: Force to open wings

This pair of DIP switches is used to set the force required to open the glass wings from their closed position. The force is set indirectly using the opening angle. In position 0 the linkage is at its dead-centre position and the wings cannot be forced open.

DIP S1.2	DIP S1.3	Force to open barrier
OFF	OFF	Barrier blocked because linkage is at dead-centre
ON	OFF	Large force required to force glass wings open
OFF	ON	Medium force required to force glass wings open
ON	ON	Low force required to force glass wings open

7.4.1 DIP switches S1.4 and S1.5: Behaviour when impact detected

This DIP switch determines the behaviour of the barrier after a glass wing has contacted a person or a piece of luggage.

DIP S1.3	DIP S1.4	Behaviour when impact detected
OFF	OFF	Alarm only, glass wings continue to press
ON	OFF	Alarm output, glass wing(s) open(s) immediately
OFF	ON	Alarm output, glass wing(s) open(s) only a few degrees
ON	ON	Not used, function as OFF / OFF

7.4.2 DIP switch S1.6: Reserved

This DIP switch is available for future extensions.

7.4.3 DIP switch S1.7: Query software version status

If this function is activated during operation, the version status of the software is displayed cyclically on the 7-segment display.

DIP S1.7	Query software version status
OFF	Normal operating display
ON	Version status of software is displayed

7.4.1 DIP switch S1.8: Reserved

This DIP switch is available for future extensions.

7.4.2 DIP switches S2.1 and S2.2: Program mode

The program mode determines which control program is used when power to the barrier is switched on.

DIP S2.1	DIP S2.2	Program mode
OFF	OFF	Mode 1 = not valid
ON	OFF	Mode 2 = MPH
OFF	ON	Mode 3 = KPH
ON	ON	Mode 4 = not valid

IMPORTANT NOTE!

In these operating instructions, only Program Mode 3 = KPH is described!

For Mode 2 = MPH, there are separate operating instructions.

Program modes 1 and 4 are not valid for operation of the pedestrian barrier.

7.4.1 DIP switches S2.3 to S2.8: Reserved

These DIP switches are available for future extensions.

7.5 Description of KPH program mode

Mode 3 is the KPH program mode for Kit Sets KPH-111 and KPH-121.

7.5.1 Power-off state

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

7.5.2 Reference run (homing)

The system learns the two end positions, i.e. a reference run is carried out.

During a reference run, following voltage reversal, the motor runs first to the inner rubber buffers to determine the open end position. On receipt of the first closing request from a higher level control system, the motor runs at reduced speed (as if Input 6 = off) to the outer rubber buffers to determine the closed end position. From the next closing motion onwards, the barrier will run at the selected speed unless the reference run was interrupted by an opening command. In that case, on the next closing command, the motor will run at reduced speed to the closed end position.

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

7.5.3 Normal motions

When the emergency input IN1 and the enable input IN5 are both set, the barrier is in normal operation.

Using opening input IN2, both glass wings can be opened together. Using opening input IN3 only the wing selected at DIP switch S1.1 is opened; the other wing remains closed.

At closing input IN4, both glass wings are closed.

The speed during opening and closing is set at input IN6. If this input is set, the motion is carried out at full speed. If the input is not set, the glass wings move at reduced speed.

The customer can, thus, decide whether to reduce speed for safety reasons if a problem is detected (e.g. if an impact is detected). If there is a wire breakage at input IN6, the slower speed is automatically selected.

Messages about the status of the Kit Set are given at the relay outputs.

7.6 Special cases

7.6.1 Impact detection

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

The behaviour of the barrier when an impact is detected depends on how DIP switches S1.4 and S1.5 are set.

When an impact is detected, a warning is given at relay 6.

7.6.2 Attempted break-in

Depending on the force setting, the glass wings are blocked in their end position (linkage at dead centre), or they can be forced open using a selected degree of force. The force is selected at DIP switches S1.2 and S1.3.

When an attempted break-in is detected, a warning is given at relay 6.

7.6.3 Emergency situation

If the input IN1 "emergency" is interrupted during operation, the pedestrian barrier goes immediately to a safe condition, i.e. power to the motors is cut off and springs pull the glass wings to the open position. The lane is thus free for passage in both directions.

The control system returns to operation when there is again voltage at the input IN1 "emergency".

7.6.4 Control system enable signal withdrawn

If the enable signal is withdrawn at input IN5 during operation, the barrier will open immediately and remain open until an enable signal is present again. In this way the customer's control system can put the KPH control system out of operation.

However, in contrast to input IN1, this input does not act directly on the end stage of the motor amplifier. Because current continues to be applied to the motors, they can open the glass wings normally.

8. Maintenance

8.1 Safety

WARNING!

Moving parts can cause serious injury.

Before maintenance and repair work, the pedestrian barrier must be switched off at the main switch and the switch secured against switching on again.

Make sure the levers are blocked.

8.2 Cleaning

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8.3 Maintenance schedule

The maintenance work described below is essential to ensure optimum, trouble-free operation. Maintenance periods must be observed.

If increased wear of individual components or functional groups is observed during regular inspections, the operating authority must shorten the maintenance periods in accordance with the observations.

If questions arise regarding maintenance work and periods, please contact the manufacturer.

Maintenance period	Maintenance work	To be carried out by
Weekly	Check operation of the Kit Set	
Weekly	Visual inspection of the glass wings and their mountings	
Every six months	Check the rubber buffers and replace if necessary	
Once a year	Check that warning signs and labels are legible and replace if necessary	

Fig. 8-1 Maintenance schedule

9. Troubleshooting

To simplify troubleshooting on the pedestrian barrier, there are several diagnosis functions.

9.1 LEDs at inputs and outputs of the MBC-110

The customer interface inputs and outputs of the MBC-110 have light-emitting diodes (LEDs) to indicate their switching status.

You can see when an input is activated. The associated red LED is illuminated.

Please note that the Emergency input IN1 must be activated for normal operation, i.e. its red LED must be illuminated.

Similarly the switching status of the relay outputs can be checked. When the relay is activated (contacts closed), the associated green LED is illuminated.

Please note that the global error relay is activated in normal operation. Only when there is an error is the relay switched off and the green LED extinguished.

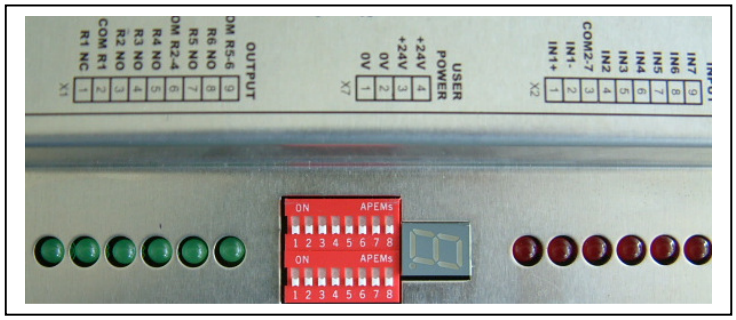


Fig. 9-1 LEDs at inputs and outputs of the MBC-110

9.2 Display of error codes at the MBC-110

Error codes can be shown in the 7-segment display of the MBC-110.

First the letter "E" (Error) is displayed, then the first figure of the error code, then the second figure (with decimal point), followed by a pause, and so on.

Example: Error code 05

E05., pause, E05., pause, E05., etc.

Error codes for the pedestrian barrier are as follows:

Error code MBC-110	Error description and corrective measures	Self-resetting?
02	**Emergency input IN1 is interrupted:** the signal at IN1+ or IN1- has been interrupted, e.g. by an external emergency-stop switch.	Yes, when signal is restored at IN1+ and IN1-
04	**Attempted break-in:** someone has attempted to force one or both glass wings out of its closed end position.	Yes
05	**Impact detection:** an impact has been detected.	Yes
07	**MBC-110 reset by Watchdog:** the MBC-110 has detected a program sequence error and has been restarted by Watchdog.	Yes
08	**Enable input IN5 is interrupted:** the signal at IN5 has been interrupted	Yes
20	**Checksum error in program memory:** it has been found that the program in the memory no longer agrees with the checksum. → try to reprogram the unit, or → send the unit to MAGNETIC for repair.	No
21	**MMC-120 detected with wrong software:** at least one MMC-120 has been found to have the wrong application software. → Download MBC-110 to MMC-120 required	No
22	**MMC-120 detected with wrong software version:** at least one MMC-120 has been found to have the wrong application software version. → Download MBC-110 to MMC-120 required	No
30	**Error downloading from MBC-110 to MMC-120:** software in the MMC-120 could not be deleted. → Repeat download several times if necessary	No
31	**Error downloading from MBC-110 to MMC-120:** no communication with MMC-120 bootloader. → Repeat download several times if necessary	No
32	**Error downloading from MBC-110 to MMC-120:** re-programming of MMC-120 does not work. → Repeat download several times if necessary	No
33	**Error downloading from MBC-110 to MMC-120:** error activating new MMC-120 software. → Repeat download several times if necessary	No
40	**Minimum angle not achieved on reference run:** during a reference run (homing), the glass wing mechanism must move through a minimum angle, otherwise the reference run cannot be completed. → Check whether the glass wings have been blocked by an obstacle.	No
41	**Invalid program mode set:** DIP switches S2.1 and S2.2 are set to an invalid program mode.	No
42	**MMC-120 cannot be activated when starting:** at least one MMC-120 cannot be activated by the CAN bus during a program start.	No

	→ CAN communication between MBC-110 and MMC-120 is malfunctioning, error at MMC-120	
43	**Error in MMC-120 detected during operation:** at least one MMC-120 has detected an internal error. → Read error code on MMC-120 LEDs and look for cause.	No
60	**Error when initialising CAN protocol stack:** internal software error in MBC-110	No
61	**Error when initialising CAN bus:** CAN bus is blocked, e.g. by a short circuit in the CAN cable.	No
62	**No communication with MMC-120 in operation:** possible causes: CAN cable broken or plug not correctly inserted, wrong CAN address set, termination resistors not correctly set, old firmware on MMC-120 (-> download MBC-110 to MMC-120 required)	No
64	**MMC-120 does not answer during operation:** see Error 62 for possible causes	No
65	**EEPROM error in MBC-110:** the EEPROM memory in MBC-110 could not be read or written in. → Possibly hardware error in MBC-110	No
66	**Checksum error in parameter memory:** it has been found that the program in the parameter memory no longer agrees with the checksum. → Hardware defect, send the unit to MAGNETIC for repair.	No

Self-resetting errors are shown for not more than 10 seconds after elimination of the error. However as long as the error persists, the error code will be displayed.

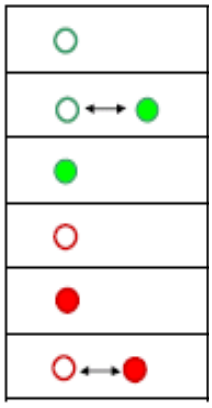
When there is an non-self-resetting error, the pedestrian barrier will go out of service. The error code will be displayed permanently until it is eliminated.

9.3 Display of error codes at the MMC-120

On each MMC-120 motor controller, there is one green and one red LED to indicate operating and error states.

The green LED shows the status of the power supply and the safety input (IN1 of MBC-110 is internally connected to the motor controllers via the CAN cable).

When the green LED blinks, the safety input signal is missing, i.e. the motor controllers will not operate. The fault can be a missing signal at emergency input IN1 of MBC-110, or a defective CAN connection between MBC-110 and MMC-120.



OFF	No power supply
Flashes	Power supply is present, safety input signal missing
ON	Normal operation
OFF	No error code
ON	External error with emergency stop
Flashes	Error, number of blink impulses = error code

The red LED is for error diagnosis. The number of blink impulses gives the error code (e.g. red LED blinks twice = error code 2).

Possible error codes at the MMC-120:

No.	Brief description	Possible causes
2	Resolver error	Plug not properly inserted, short circuit
4	Motor phase error	Motor cable not connected, broken wire
5	Lifeguarding CAN	CAN communication with MBC-110 interrupted
6	Short circuit to ground	Short circuit between motor phase and ground
7	Motor phases shorted	Short circuit between two motor phases
8	Overvoltage DC bus	DC bus voltage too high, > 56 V
9	Undervoltage DC bus	DC bus voltage too low, < 17 V
11	Over-temperature end-stage	Heatsink temperature too high, > 80°C
20	I^2t surveillance motor	Motor overloaded

9.4 Fault table

Description of fault	Check	Corrective measures
The glass wings move too slowly	Motor is overheated I^2t surveillance has reduced speed to protect the motor	As soon as the motor has cooled down, the speed will return to normal.
	Check if speed input IN6 is activated.	Check if the red LED at IN6 of MBC-110 is illuminated. If not, check if the speed input has been interrupted.
One or both glass wings do not move	Check if there is a mechanical obstruction	Switch off the power supply to the barrier and check that the glass wings can be moved by hand.
	Check that the green LEDs on both MMC-120s are continuously illuminated	Green LED is switched off: - check that there is +42V between terminals DC+ and DC-. If not, check the wiring and power supply. Green LED blinks: - Safety input signal is missing: Check that there is 24V at input IN1 of MBC-110 (red LED on IN1 must be illuminated). - Check that the CAN cable between the two MMC-120s and the MBC-110 is not damaged. - Check that the CAN addresses on both MMC-120s are correctly set. - Check that the termination resistors on all three controllers are correctly set.
	Check if one or both MMC-120s are showing an error	The error code will be shown on the red LED: - Count the number of blink impulses and look up the error code in the table.
	Check if the MBC-110 display is showing an error	Read the error code in the display: - Look up the error code in the table.
	Check if there is a signal at emergency input IN1 of MBC-110.	Check if the red LED at IN1 of MBC-110 is illuminated. If not, check if the emergency input has been interrupted.

Description of fault	Check	Corrective measures
	Check if there is a signal at enable input IN5 of MBC-110.	Check if the red LED at IN5 of MBC-110 is illuminated. If not, check if the enable input has been interrupted.

9.1 Diagnosis program MBC_Diag

For further diagnosis options, the diagnosis program MBC_Diag is available. By connecting a PC at the RS232 interface of the MBC-110, the error statuses of the three controllers can be read out.

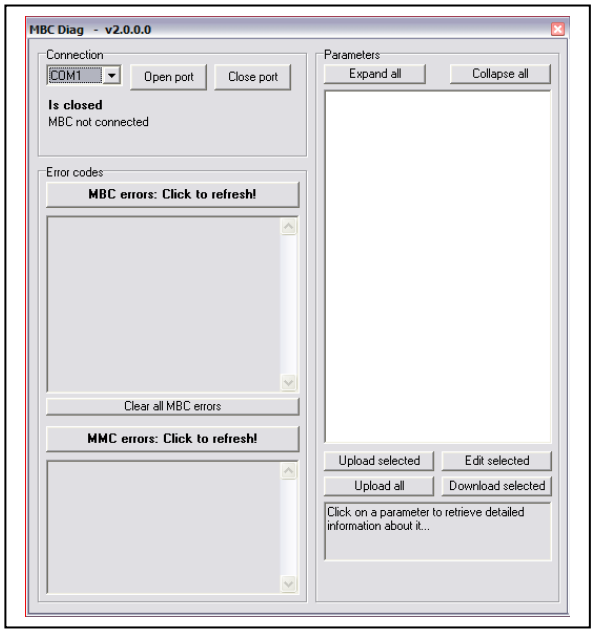


Fig. 9-2 Diagnosis program MBC_Diag

10. Repair work

WARNING!

Moving parts can cause serious injury.

Before maintenance and repair work, the pedestrian barrier must be switched off at the main switch and the switch secured against switching on again.

Make sure the levers are blocked.

ATTENTION!

There is a danger of breaking the glass wings when installing or removing them.

When fitting a glass wing to or removing it from the clamping strip, make sure you do not cant it or twist it.

Make sure the glass wing is free of mechanical strain when it is installed.

10.1 Installing the glass wing

First open the appropriate service doors and openings in the housing to provide good access to the drive unit.

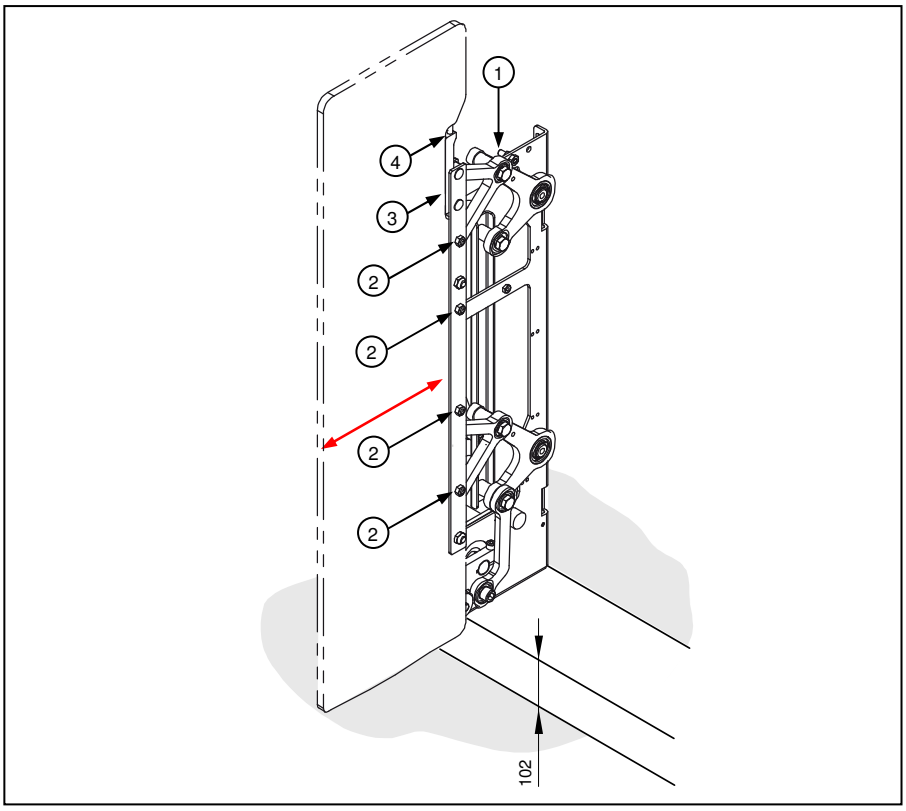


Fig. 10-1 Installing the glass wing

Bring the drive unit to the blocking point. Block the drive unit with fixing screw (1). Make sure that the screw is aligned with the hole in the L-lever and engages. Then secure the screw with a locknut so that the drive unit is blocked with a minimum of play.

Secure the glass wing so that it cannot fall out.

Loosen the screws (2) on the clamping strip, but do not remove them.

Loosen the nuts (3) for the cover strip carrier.

Remove the glass wing.

Fit the new glass wing carefully without canting it and secure it so that it cannot fall out.

IMPORTANT NOTE!

When adjusting the glass wing, set the distance between the edge of the barrier and the clamping strip to the dimension given below (see double arrow in Fig. 6-11):

KPH – 111: 244 mm

KPH – 121: 437 mm

Tighten the clamping screws (2) progressively and alternately to a torque of ca. 15 Nm.

Manufacturing tolerances may give rise to differences. It is therefore recommended that you unblock the drive unit and check that the edge of the glass wing is flush with the housing when the barrier is open. If it is not, repeat the adjustment so as to correct the difference you have observed.

Engage the cover strip (4) with the carrier and push the latter upwards as far as it will go, so that the cylindrical pin contacts the edge towards the panel. When tightening the nuts to secure it, take care that the carrier is in contact with the edge of the glass wing. Unblock the drive unit.

10.2 Changing the motor

When it is necessary to change the MHT motor (1) (MAGNETIC High Torque Motor), proceed as follows:

First open the appropriate service doors and openings in the housing to provide good access to the drive unit.

WARNING!

Moving parts can cause serious injury.

When carrying out assembly work on the drive unit, it is essential that the power supply is first switched off. Make sure the levers are blocked.

Undo screw (1) clamping the motor lever on the motor shaft.

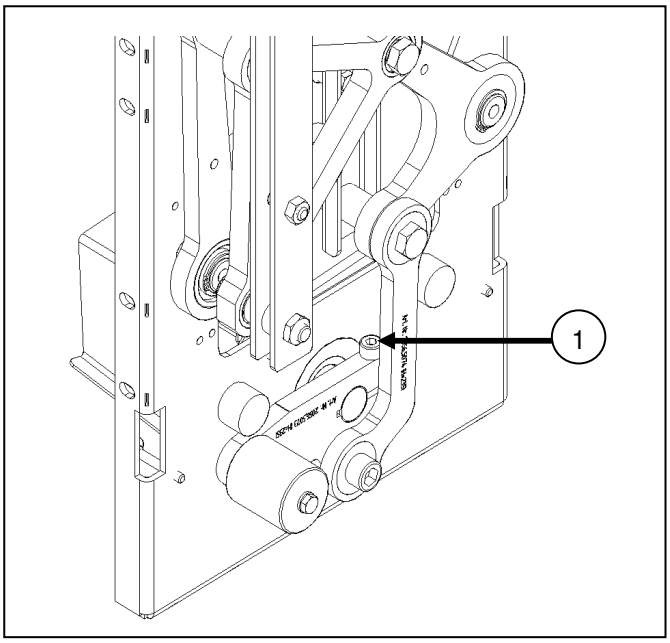


Fig. 10-2 View of drive unit showing motor lever

Block the drive unit with fixing screw (3).

Disconnect all wiring and connectors from the rear end of the motor (1).

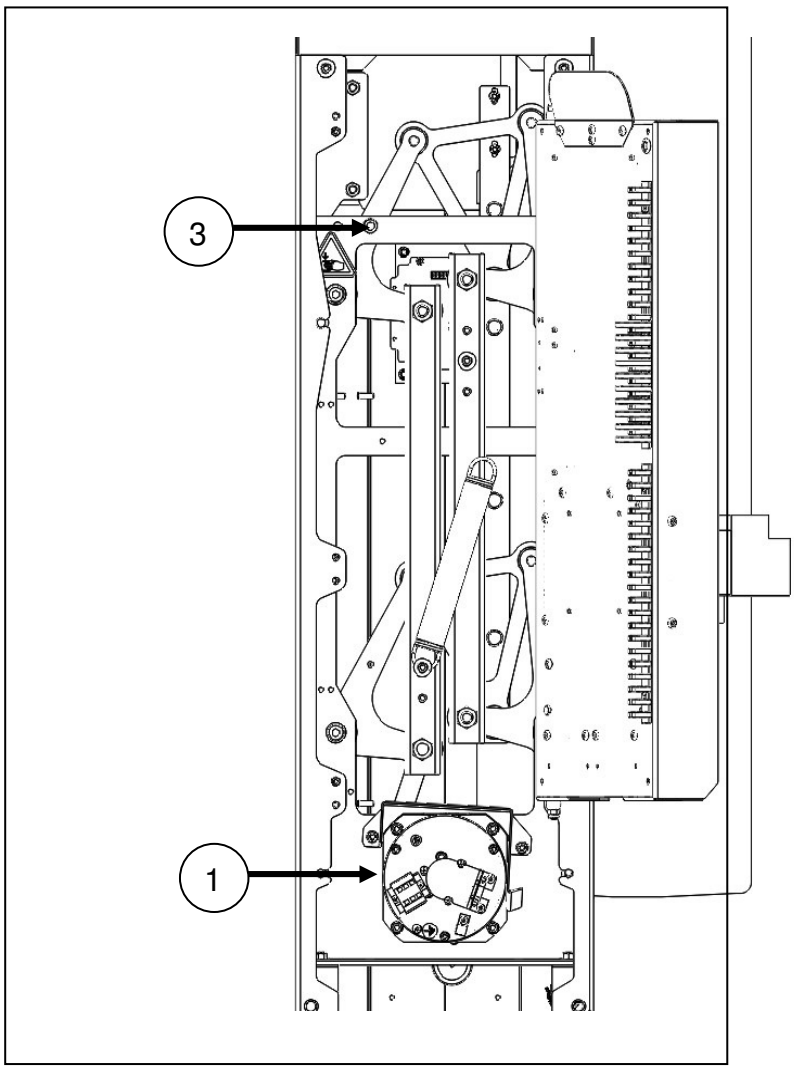


Fig. 10-3 View showing drive unit in central housing

Remove the four screws (4) holding the motor.

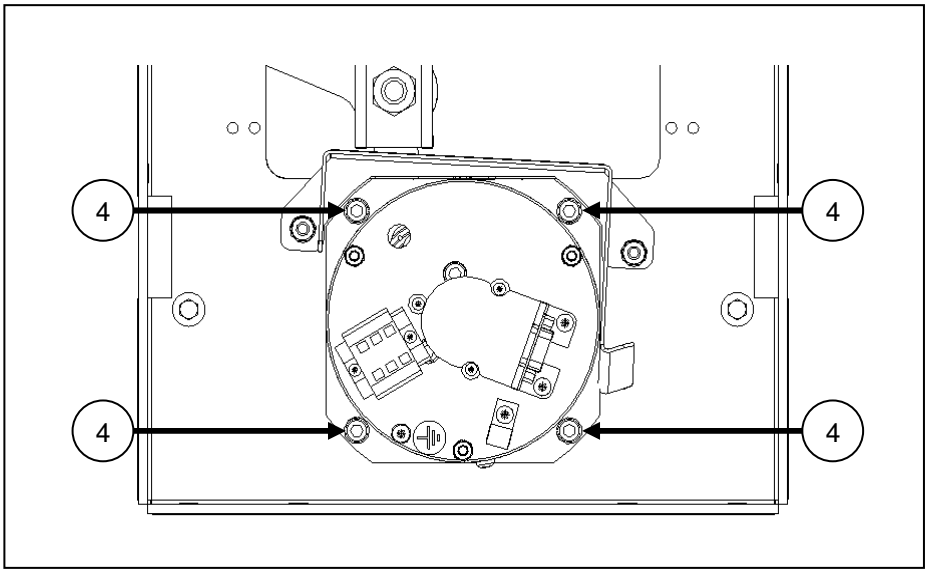


Fig. 10-4 View of rear of the drive unit, motor mounting screws

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

When replacing the motor, proceed in the reverse order. Tighten the motor lever screw (2) to a torque of 25 Nm.

IMPORTANT NOTE!

The resolver is mounted on the rear end of the motor. It cannot be changed separately, only as a complete unit with the motor. The resolver must be specially calibrated!

10.3 Replacing controllers

The replacement of a controller (e.g. during repairs) must always be coordinated with our works and requires our approval. In the event of replacement without approval from our works the warranty is invalidated and no claims for goodwill will be entertained.

10.4 Downloading software (updates)

The software for the MBC-110 and MMC-120 can be replaced by downloading. In this process, the existing software is overwritten by a new version.

The first step is to load the software to the MBC-110 controller, and, in a second step, it is downloaded to the MMC-120s. Thus, the software for the MBC-110 also contains the software for the MMC-120.

The Windows program MBC-Flasher is used for programming the controller.

There are separate instructions explaining how to use this program.

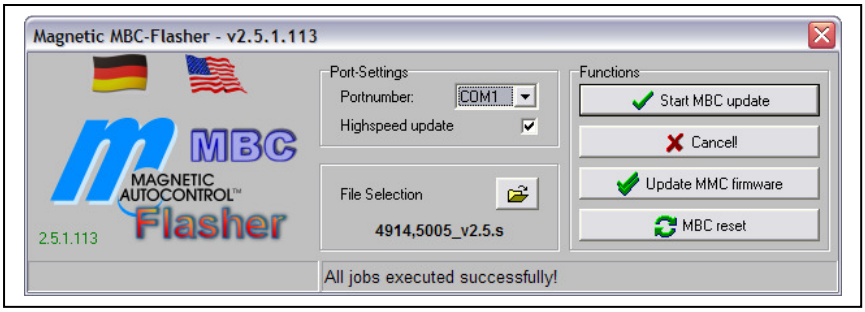


Fig. 10-5 Display of MBC-Flasher program

Errors during downloading

If a problem occurs while downloading, try again to make the download. To do this, you must switch of the power supply and start from the beginning again.

11. Taking out of service

RECYCLING!

The relevant regional regulations and laws covering the disposal of substances, materials, and machine parts must be observed. Materials that can be recycled must be handed over to specialised disposal partners.

In the interests of a clean environment, you must ensure the responsible handling, use and disposal of all materials.

Packaging material

When the barrier and its accessories have been unpacked, the packaging materials must be sorted and separated for disposal.

Barrier

When disposing of a barrier or parts of a barrier, the materials must be sorted and recycled separately.

Electrical and electronic components

The materials used in electrical and electronic components must be disposed of separately. They may contain plastics and toxic substances.

IMPORTANT NOTE!

To ensure proper disposal of electrical and electronic components, you can consult MAGNETIC or a competent electrician.

Lubricants and auxiliary substances

Lubricants and auxiliary substances (e.g. oils, greases etc.) must be properly stored and must not be allowed to enter the environment in an uncontrolled fashion.

CAUTION!

It is forbidden to dispose of combustible or inflammable materials together with normal rubbish.

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12. Schematic diagrams

The schematic diagrams for the Kit Sets are supplied as a separate document.

13. List of illustrations

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