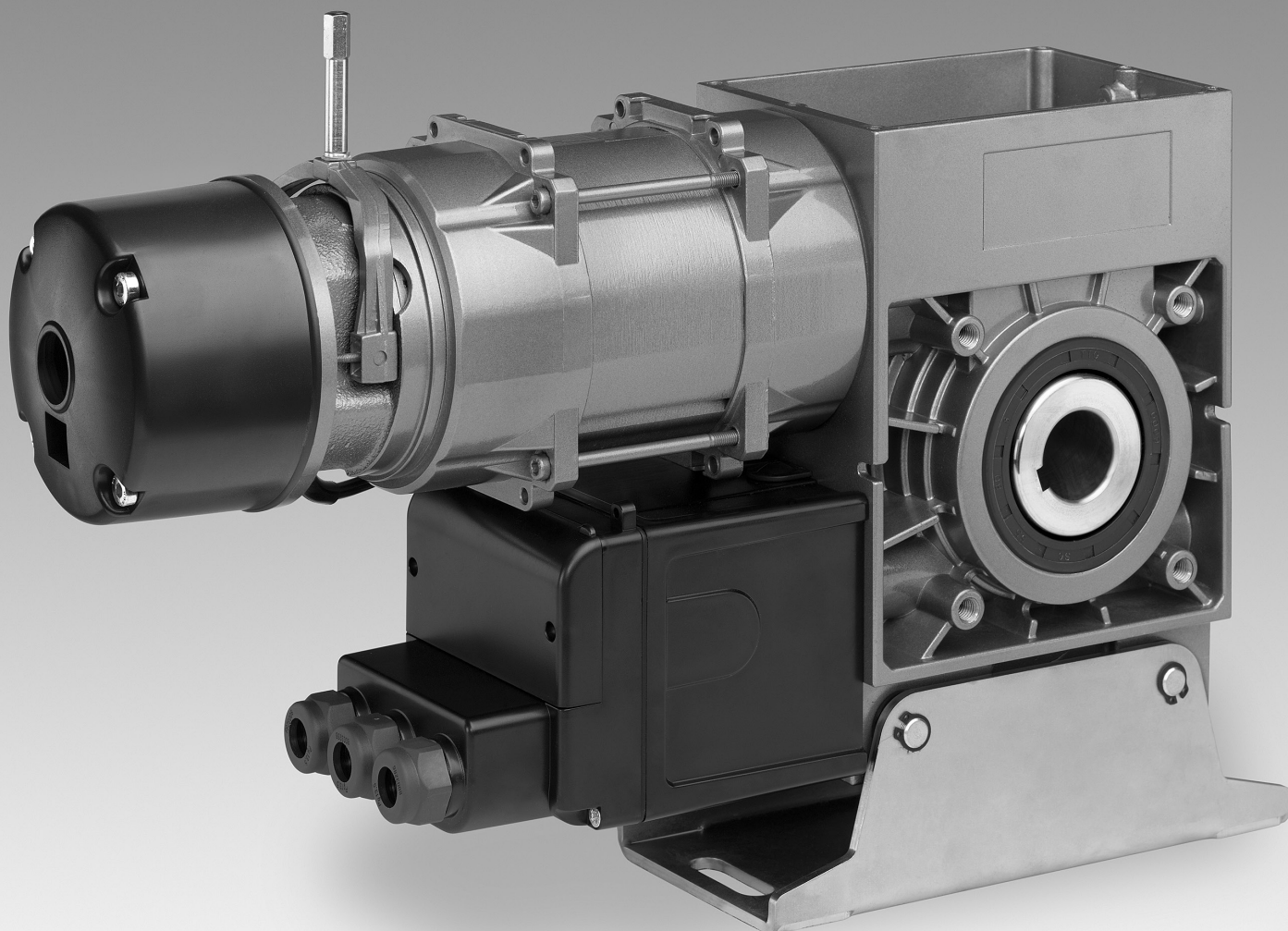

Assembly Instructions

Operating Instructions for MTZ High Speed Door Drives



1. Contents

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2. Information in this document

Original assembly instructions

- Copyright.
- No part of these instructions may be reproduced without our prior approval.
- Subject to alterations in the interest of technical progress.
- All dimensions given in mm.
- The diagrams in this manual are not to scale.

Key to symbols

DANGER!

Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING!

Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION!

Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates an imminent danger of damage or destruction.

CHECK

Indicates a check to be performed.

REFERENCE

Reference to separate documents which must be complied with.

Action request


- List, itemisation

→ Reference to other sections of this document

3. General safety instructions

DANGER!

Failure to observe the instructions in this document can result in mortal danger!

 Observe all safety information contained in this document.

Warranty

The function and safety of the equipment is only guaranteed if the warning and safety instructions included in these operating instructions are adhered to.

The manufacturer is not liable for personal injury or damage to property if these occur as a result of the warnings and safety advice being disregarded.

The manufacturer does not accept any liability or warranty for damage due to the use of non-approved spare parts and accessories.

Intended use

Drives in the MTZ range are designed exclusively for opening and closing high speed doors (such as flexible doors).

Target group

Only qualified and trained specialists are permitted to install and carry out mechanical maintenance of the drive.

Qualified and trained professionals fulfil the following requirements:

- Have knowledge of the general and specific safety and accident prevention regulations,
- Have knowledge of the relevant regulations,
- Be trained in the use and care of appropriate safety equipment,
- Be capable of recognising the dangers associated with installation.

Only qualified and trained electricians are permitted to connect and carry out mechanical maintenance of the drive.

Qualified and trained electricians must meet the following requirements:

- Have knowledge of the general and specific safety and accident prevention regulations,
- Have knowledge of the relevant electrical regulation,
- Be trained in the use and care of appropriate safety equipment,
- Be capable of recognising the dangers associated with electricity.

Instructions regarding installation and connection

- The control must be disconnected from the electricity supply before carrying out electrical works. It must be ensured that the electricity supply remains disconnected for the duration of the works.
- Local protective regulations must be complied with.
- Mains cables and control cables must be laid separately.

Regulations and bases for testing

For connecting, programming and servicing, the following regulations must be observed (the list is not exhaustive).

Construction product standards

- EN 13241-1 (Products without fire resistance or smoke control characteristics)
- EN 12445 (Safety in use of power operated doors - Test methods)
- EN 12453 (Safety in use of power operated doors - Test methods)
- DIN EN 12604 (Doors and gates - Mechanical aspects - Requirements)
- EN 12635 (Industrial, commercial and garage doors and gates - Installation and use.)
- EN 12978 (Safety devices for power operated doors and gates - Requirements and test methods)

EMC

- EN 55014-1 (Radio disturbance, household appliances)
- EN 61000-3-2 (Disturbances in supply systems - harmonic currents)
- EN 61000-3-3 (Disturbances in supply systems - voltage fluctuations)
- DIN EN 61000-6-2 (Electromagnetic compatibility (EMC) - Part 6-2: Generic standards – Immunity for industrial environments)
- DIN EN 61000-6-3 (Electromagnetic compatibility (EMC) - Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments)

Machinery Directive

- EN 60204-1 (Safety of machinery, electrical equipment of machines, part 1: general requirements)
- EN ISO 12100 (Safety of machinery – general principles for design - risk assessment and risk reduction)

General safety instructions

Low voltage

- DIN EN 60335-1 (Household and similar electrical appliances - Safety - Part 1: general requirements)
- DIN EN 60335-2-103 (Household and similar electrical appliances - Safety - Part 2-103: Particular requirements for drives for gates, doors and windows)

Committee for Workplaces (ASTA)

- Workplace regulation ASR A1.7 ("Doors and gates")

4. Product overview

4.1 Safety catch device as a safety feature

The MTZ high speed door drive is a slip-on drive with a safety catch device incorporated in the drive unit. The safety catch device is entrained load-free and wear-free.

If the drive unit fails, the safety catch device is automatically triggered. The load moved by the drive is then smoothly brought to a standstill in the position concerned. The power transmission between the motor and the door shaft is interrupted after the drive unit fails.

The drive is no longer usable after the safety catch device has been triggered and must be replaced.

The safety catch device in the drive unit is distinguished by the following features:

- Protection against worm shaft and worm gear failure
- Independent of the rotational speed
- Independent of the direction of rotation
- Can be mounted in any position
- Unsusceptible to vibrations
- Maintenance-free
- Self-controlling
- Excellent damping properties when safety catch device is triggered

4.2 Different models

The following package options are available for the MTZ drive:

MTZ-S - for inversion relay control

MTZ-FU - for frequency converter control

In sizes:

MTZ05

MTZ20

MTZ30

MTZ50

5. Assembly

5.1 Preparation

WARNING!

Incorrect installation of the drive can result in serious injury!

- The drive must be installed free of any tension.
- The drive must not move on the shaft.
- The design and subsurface of all components must be suitable for the forces encountered.
- Installation must only be carried out from a safe standing position (e. g. scaffolding).

NOTICE

Incorrect installation of the drive can result in damage to property!

To avoid damage to the drive and the door, the drive must only be fitted if

- the drive is undamaged,
- the ambient temperature is -20 °C to +60 °C.,
- the altitude of the location does not exceed 1,000 m,
- a suitable protection type has been selected.

 Before installation, ensure that

- the drive is not blocked,
- the drive has been newly prepared after a lengthy storage period,
- all connections have been carried out correctly
- the direction of rotation of the drive motor is correct,
- all motor protective devices are active
- no other sources of danger exist,
- the installation site has been cordoned off over a wide area.

5.2 Slip-on assembly

NOTICE

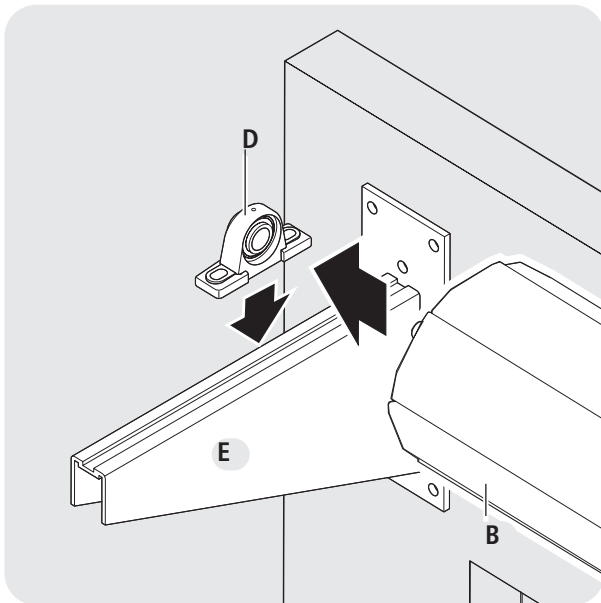
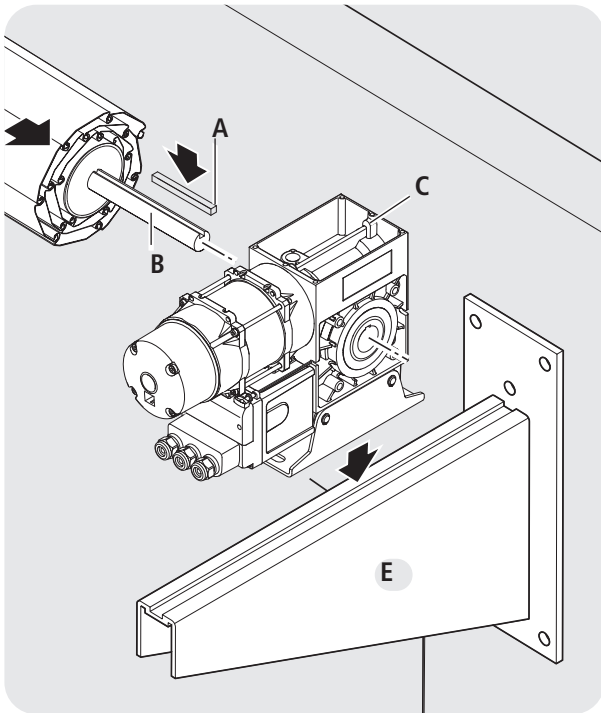
Damage due to improper installation of the drive!

To avoid damage to the drive and to the door, the drive must be mounted on a bracket with a pendulum foot or a torque support bracket so that it is vibration dampened.

REFERENCE

The relevant instructions for the door must be observed when fitting the drive to the door.

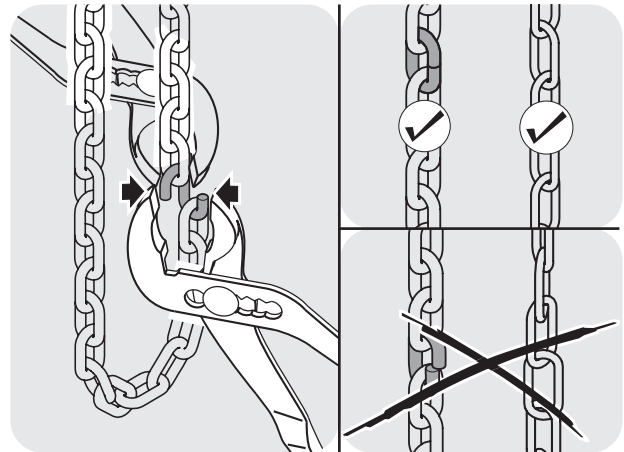
Assembly



- ✎ Insert the feather key (A) into the shaft (B).
- ✎ Slide the drive (C) onto the shaft (B).
- ✎ Slide the counter bearing (D) onto the shaft (B).
- ✎ Fix the shaft (B) with the drive (C) and counter bearing (D) to the brackets (E).

5.3 Installation of the emergency hand chain (only for drives with emergency hand chain)

To ensure that they work correctly, the chain links must not be twisted.



- ✎ Join the ends of the emergency hand chain together with the chain connecting link.

NOTICE

Incorrect operation of the drive can result in damage to property!


To avoid damage to the drive and the door, the emergency hand chain must be secured while the door is operated electrically.

6. Initial operation

6.1 Preparation

DANGER!

Danger of fatal electric shock!

-  Before commencing cabling works, you **MUST** disconnect the drive system from the mains supply. Ensure that the electricity supply remains disconnected throughout the cabling works.

NOTICE

Damage due to improper installation of the drive!

To avoid damage to the drive, the following points must be observed:

- The types of cable and their diameters must be selected according to current regulations.
- The nominal currents and the type of connection must correspond to those on the motor type plate.
- The drive details must agree with the connected loads.
- MTZ-S drives must only be operated with a contactor control.
- MTZ-S drives must only be operated with a frequency converter.


REFERENCE

When operated with electronic control units, the corresponding start-up instructions and circuit diagrams must be complied with.

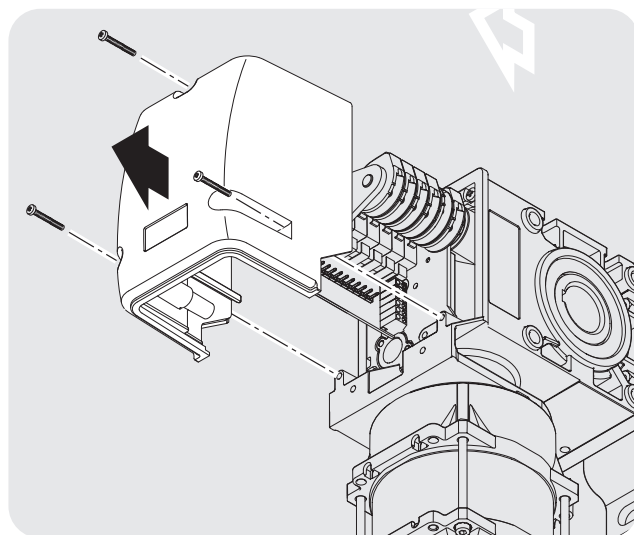
6.2 Open the drive



DANGER!

Danger of fatal electric shock!

-  Before commencing cabling works, you **MUST** disconnect the drive system from the mains supply. Ensure that the electricity supply remains disconnected throughout the cabling works.

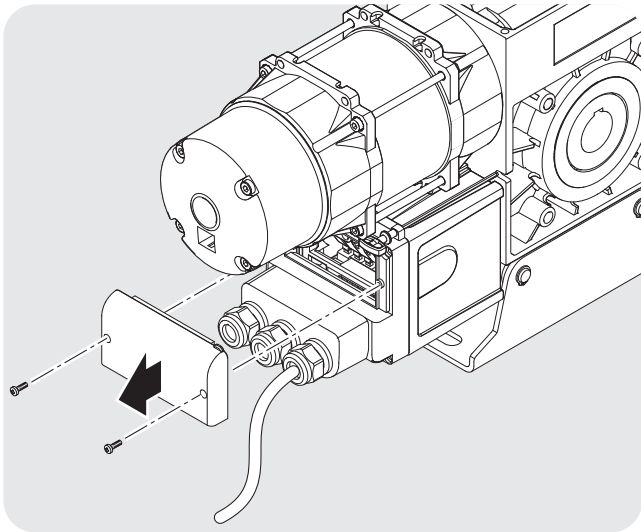
Model MTZ 05



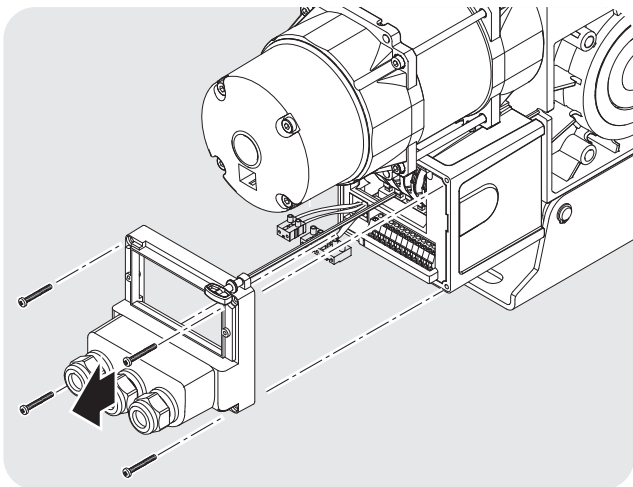
-  Remove the cover screws.
-  Take the cover off the drive.

Initial operation

Model MTZ 20 and subsequent models



- ✎ Remove the screws from the adjustment cover.
- ✎ Take the adjustment cover off the limit switch cover.



- ✎ Remove the screws from the limit switch cover.
- ✎ Lift the limit switch cover off the limit switch box.

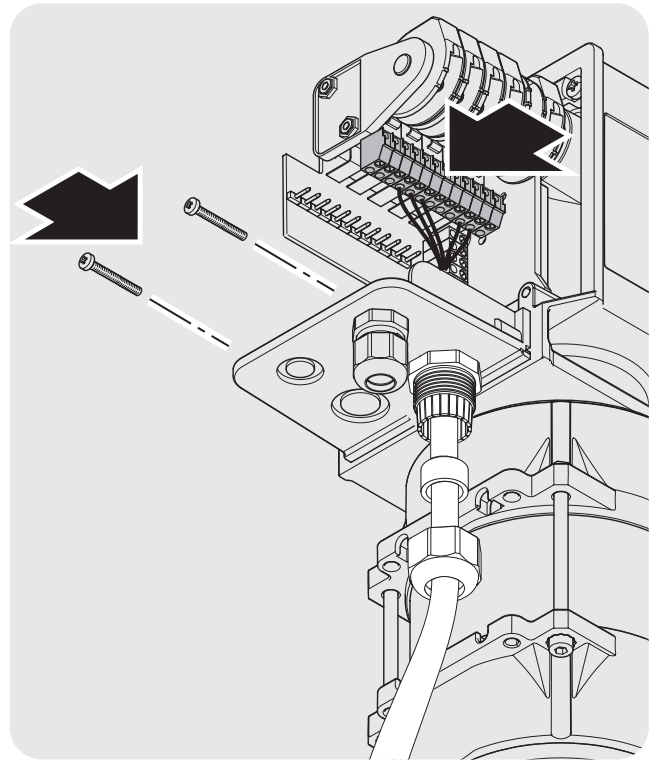
6.3 Insert and attach the cable

! DANGER!

Danger of fatal electric shock!

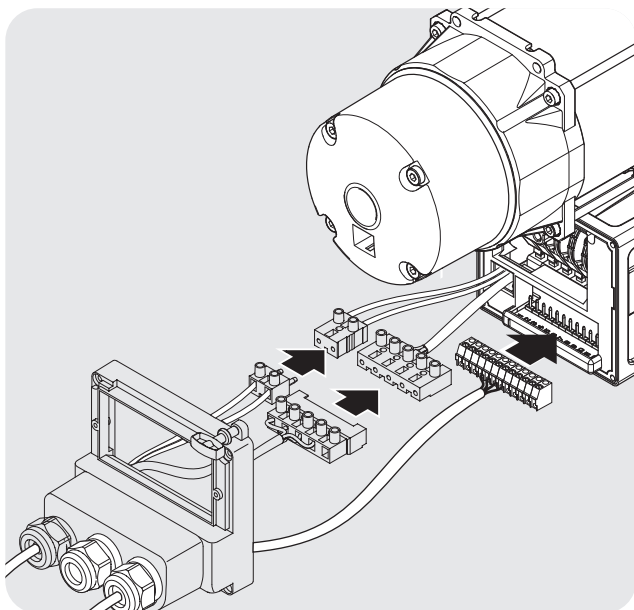
- ✎ Before commencing cabling works, you **MUST** disconnect the drive system from the mains supply. Ensure that the electricity supply remains disconnected throughout the cabling works.

Model MTZ 05



- ✎ Screw on the cable set holding plate.
- ✎ Insert the plug into the circuit board.
- ✎ Connect up the control, if required, according to the electrical wiring diagrams below.
- "6.4 Connection options"

Model MTZ 20 and subsequent models



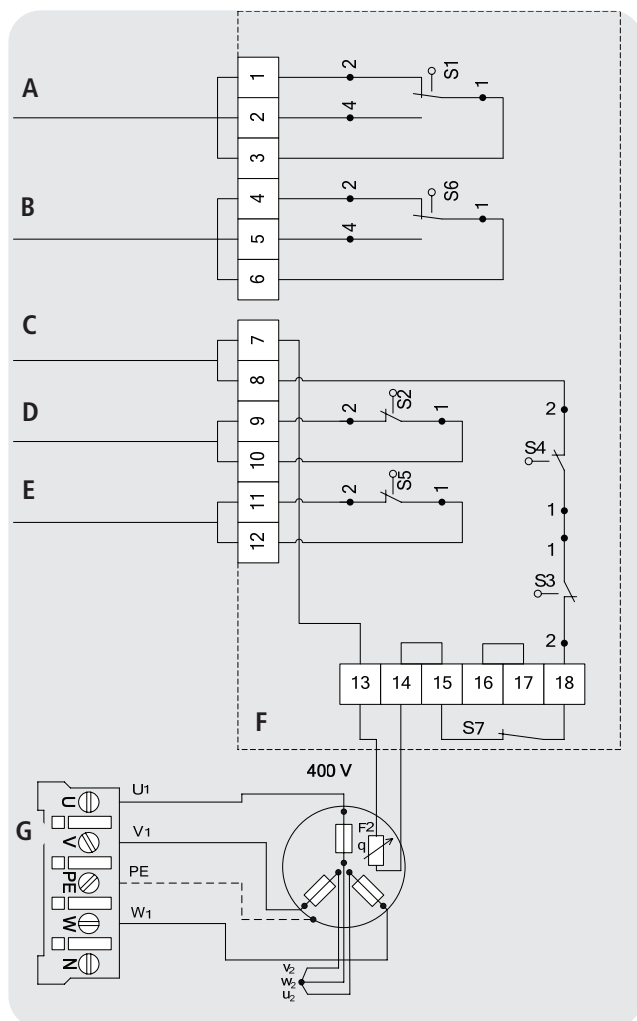
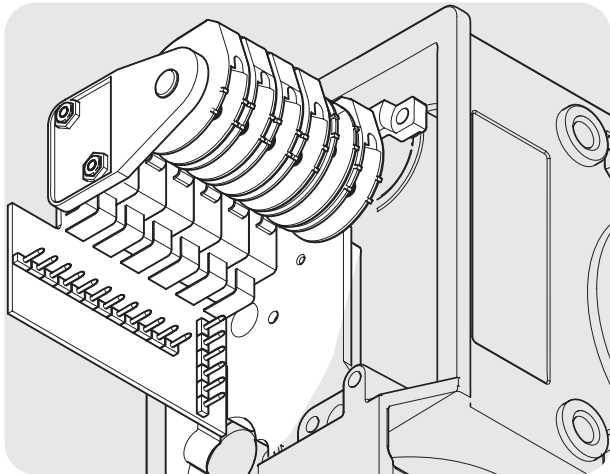
- Insert the cable set plug into the limit switch circuit board.
- Connect up the control, if required, according to the electrical wiring diagrams below.

Initial operation

6.4 Connection options

3 x 400 V star connection (standard, pluggable)

The motor is factory-wired for connection to a 3 x 400 V mains supply in star connection.

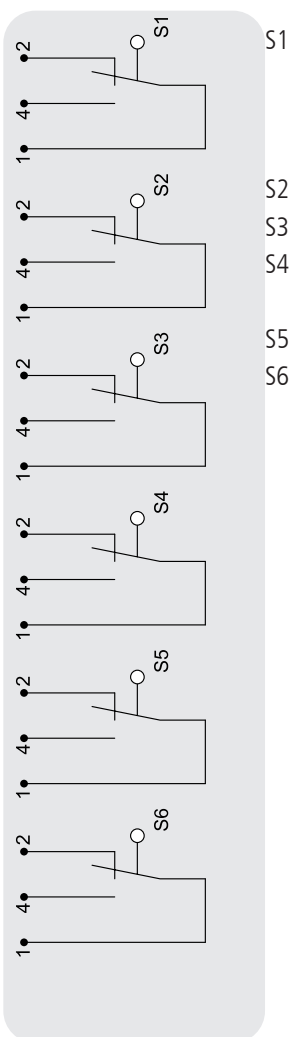
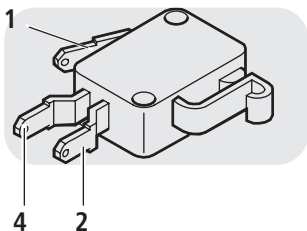


☞ Connect all the cables required.

Identification of wires

U1	Red
V1	Blue
W1	White
V2	Black
W2	Brown
U2	Green
A	Potential-free connection OPEN
B	Potential-free connection CLOSE
C	Switch off safety circuit
D	Switch off OPEN end position
E	Switch off CLOSED end position
F	Internal safety circuit
G	Drive
S1	Additional limit switch, OPEN (standard only for drives without integrated control unit)
S2	Limit switch, OPEN
S3	Safety limit switch, OPEN
S4	Safety limit switch, CLOSED
S5	Limit switch, CLOSED
S6	Additional limit switch, CLOSED (standard only for drives without integrated control unit)
S7	Safety limit switch for emergency manual operation
F2	Thermal overload protection for motor

3 x 400 V star connection



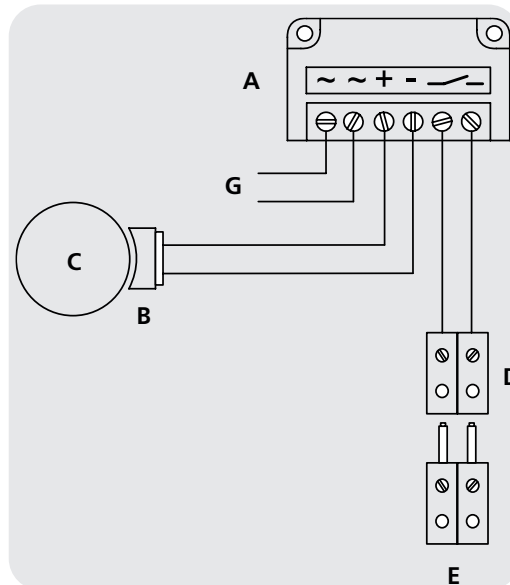
- S1 OPEN additional limit switch (standard only in the case of drives without integrated control unit)
- S2 Limit switch, OPEN
- S3 Safety limit switch, OPEN
- S4 Safety limit switch, CLOSED
- S5 Limit switch, CLOSED
- S6 Additional limit switch, CLOSED (standard only for drives without integrated control unit)

3 x 230 V delta connection

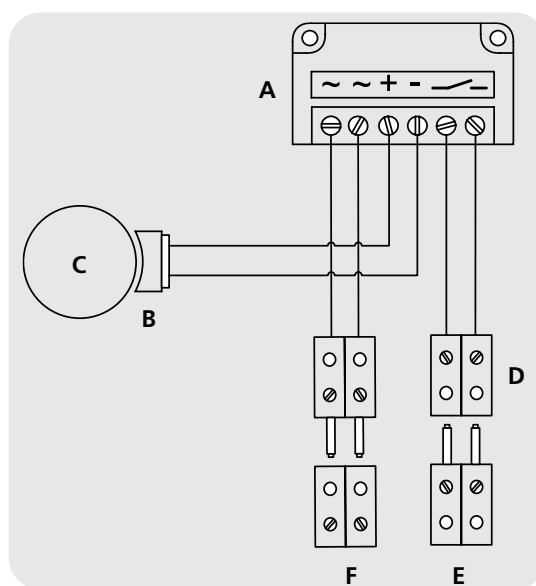
To connect the drive to a 3 x 230 V mains supply, please consult the manufacturer.

Brake rectifier connection

Connection of MTZ-S:



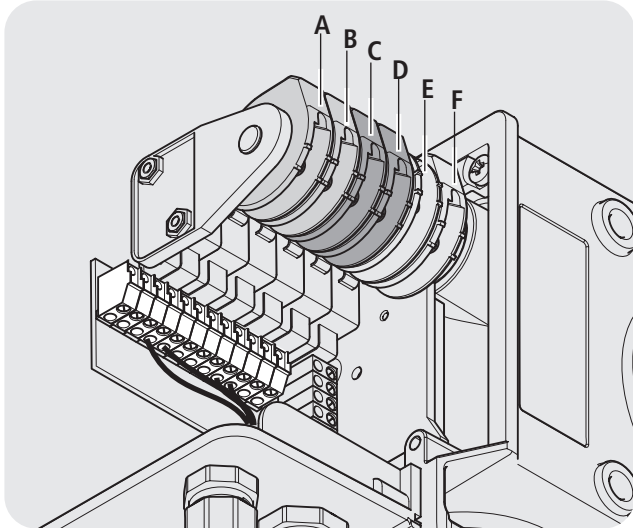
Connection of MTZ-FU or operating current (SB):



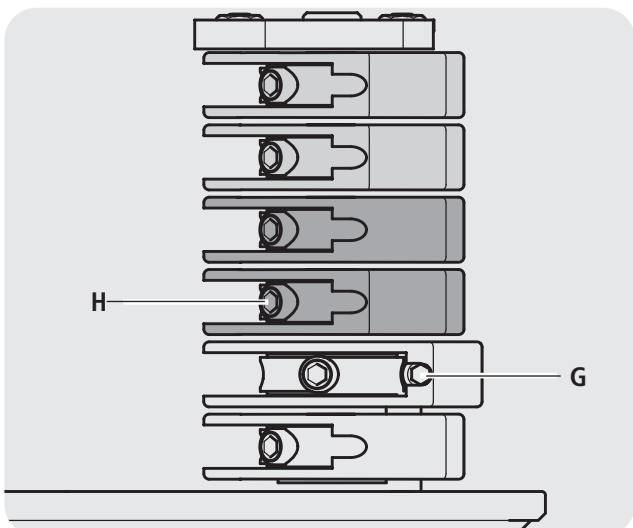
- A Brake rectifier
- B Motor brake
- C Motor
- D Brake contact socket
- E Brake contact plug
- F Brake voltage
- G Brake voltage (pre-wired)

Initial operation

6.5 Manual settings for model MTZ 05



- A Control cam for additional limit switch, OPEN (green)
- B Control cam for limit switch, OPEN (green)
- C Control cam for safety limit switch, OPEN (red)
- D Control cam for safety limit switch, CLOSED (red)
- E Control cam for limit switch, CLOSED (white)
- F Control cam for additional limit switch, CLOSED (white)



- G Fine adjustment screw
- H Locking screw

Each control cam has a locking screw (H) and a fine adjustment screw (G).

The appropriate control cam is locked in the required position with the locking screw (H). More precise adjustment can be obtained with the fine adjustment screw (G).

Set the CLOSED end position

- Drive the door to the CLOSED end position.
- Set the control cam so that the CLOSED limit switch (E) is actuated.
- Tighten the locking screw (H).

The CLOSED safety limit switch (D) must be set in such a way that it switches immediately when the CLOSED limit switch (E) is passed over.

- Adjust the CLOSED safety limit switch (D).

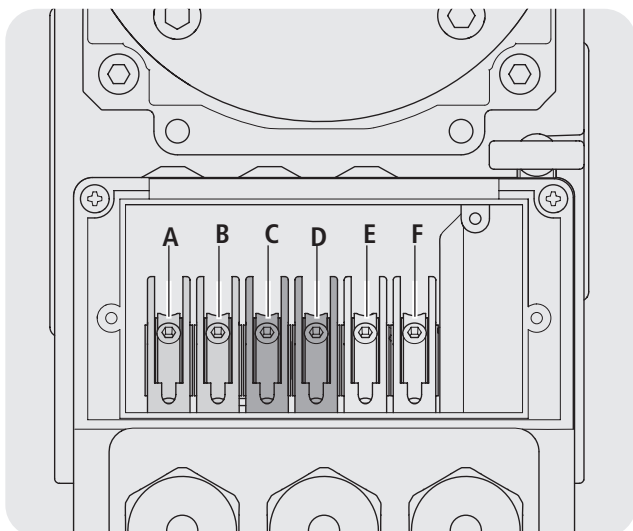
Set the OPEN end position

- Drive the door to the OPEN end position.
- Set the control cam so that the OPEN limit switch (B) is actuated.
- Tighten the locking screw (H).

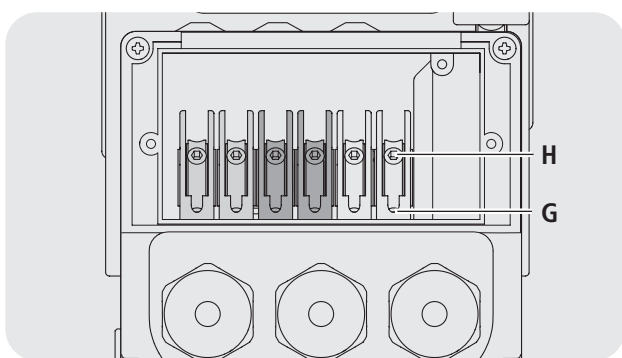
The OPEN safety limit switch (C) must be set in such a way that it switches immediately when the OPEN limit switch (B) is passed over.

- Adjust the OPEN safety limit switch (C).

6.6 Manual settings of model MTZ 20 and subsequent models



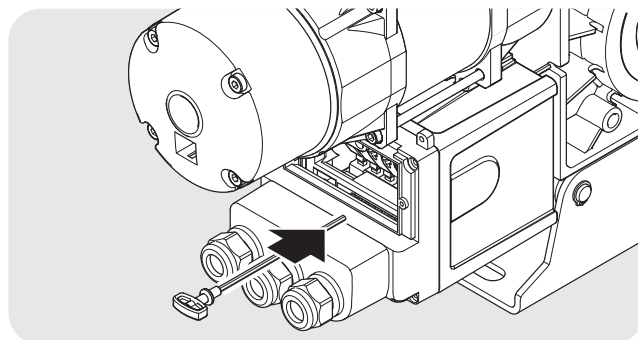
- A Control cam for additional limit switch, OPEN (green)
- B Control cam for limit switch, OPEN (green)
- C Control cam for safety limit switch, OPEN (red)
- D Control cam for safety limit switch, CLOSED (red)
- E Control cam for limit switch, CLOSED (white)
- F Control cam for additional limit switch, CLOSED (white)



- G Fine adjustment screw
- H Locking screw

Each control cam has a locking screw (H) and a fine adjustment screw (G).

The appropriate control cam is locked in the required position with the locking screw (H). More precise adjustment can be obtained with the fine adjustment screw (G).



Use the adjusting tool (I) to tune the fine adjustment screw and the locking screw.

Set the CLOSED end position

- Drive the door to the CLOSED end position.
- Set the control cam so that the CLOSED limit switch (E) is actuated.
- Tighten the locking screw (H).

The CLOSED safety limit switch (D) must be set in such a way that it switches immediately when the CLOSED limit switch (E) is passed over.

- Adjust the CLOSED safety limit switch (D).

Set the OPEN end position

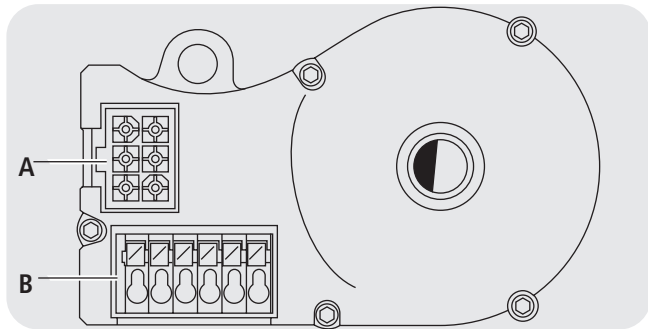
- Drive the door to the OPEN end position.
- Set the control cam so that the OPEN limit switch (B) is actuated.
- Tighten the locking screw (H).

The OPEN safety limit switch (C) must be set in such a way that it switches immediately when the OPEN limit switch (B) is passed over.

- Adjust the OPEN safety limit switch (C).

6.7 Digital adjustments – Limit switches and safety circuit of drive

Electronic interface



- A: AVE (absolute value encoder) plug
- B: AVE (absolute value encoder) plug terminal

i REFERENCE

Please refer to the control unit operating manual for instructions on setting the end positions.

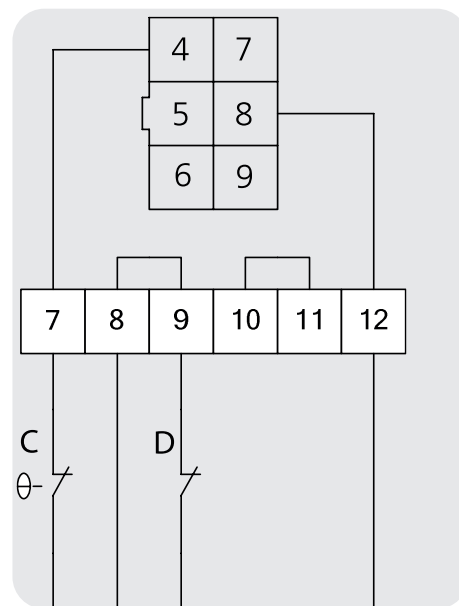
Wiring allocation, AVE (absolute value encoder) plug

4	7
5	8
6	9

The numbers on the plug are also the wire numbers.

- 4: Safety circuit input
- 5: RS 485 B
- 6: GND
- 7: RS485 A
- 8: Safety circuit output
- 9: 7...18V_{DC}

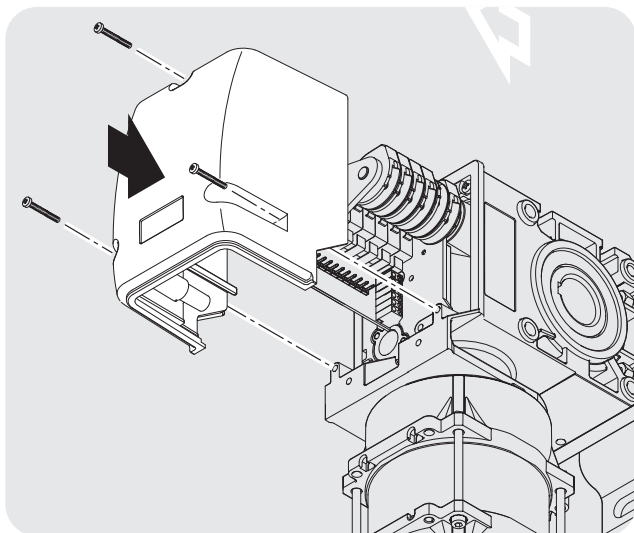
AVE (absolute value encoder) plug terminals (7-12)



- C: Thermal element in the drive
- D: Manual emergency control (emergency crank or emergency chain)

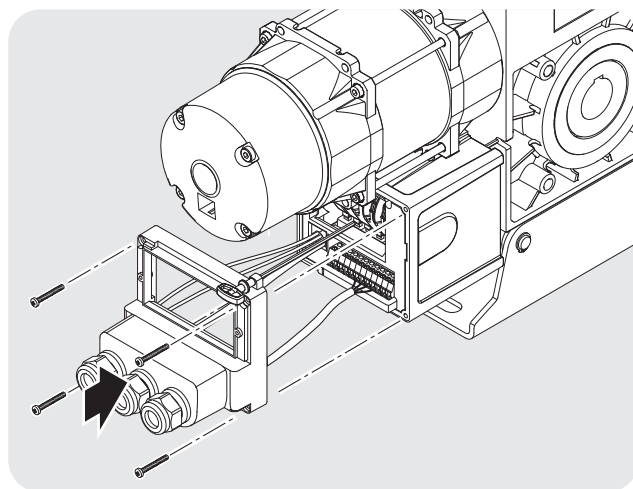
6.8 Close the drive

Model MTZ 05

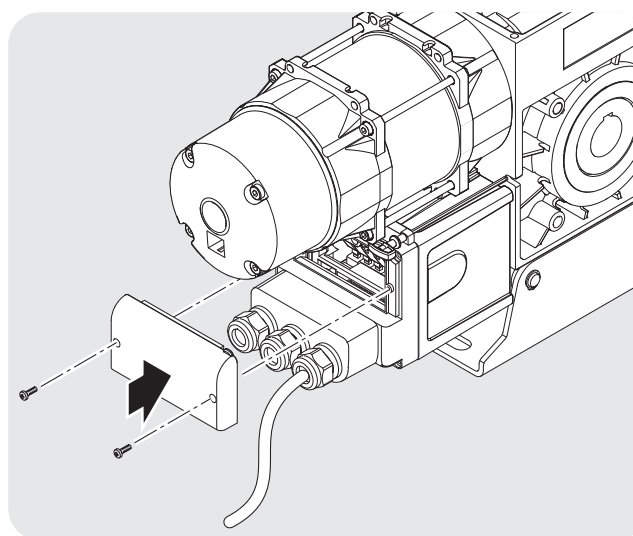


- Replace the cover over the drive.
- Tighten the cover screws.

Model MTZ 20 and subsequent models



- Place the limit switch cover onto the limit switch box.
- Tighten the screws on the limit switch cover plate.



- Place the adjustment cover onto the limit switch cover.
- Tighten the screws on the adjustment cover.

Initial operation

6.9 Check the system

Check the direction of travel

☞ Drive the door in the CLOSED direction.
The drive must close the door.

☞ Drive the door in the OPEN direction.
The drive must open the door.

If the direction of movement of the door does not match the button commands, change the direction of rotation.
The direction of movement must then be checked again.

REFERENCE

Please refer to the control unit operating manual for instructions on changing the direction of rotation.

Check the limit switch settings

☞ Drive the door to the CLOSED end position.
The drive must stop in the desired position.

☞ Drive the door to the OPEN end position.
The drive must stop in the desired position.

☞ Check the seat of the fixing screws.

Check the mechanical functions

After assembling and installing all components the functions of the system must be checked.

- ☞ Check all the functions of the system.
- ☞ Check that the drive runs smoothly.
- ☞ Check whether the drive is leaking oil.

If the drive makes unusual noises or leaks oil:

- The drive must be taken out of service immediately,
- The customer service must be informed.

7. Emergency operation

WARNING!

Improper use may result in serious injury!

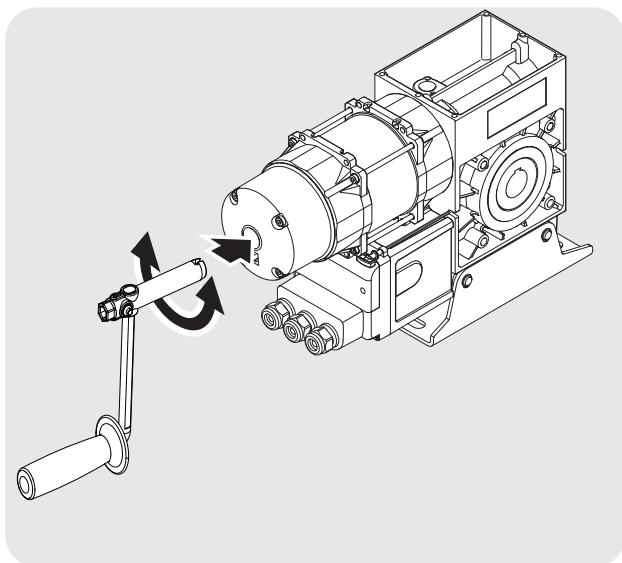
To avoid injury, the following points must be observed:

- Emergency operation must only be carried out from a safe standing position.
- Emergency operation must only be carried out when the motor is stationary.
- The system must be disconnected from the power supply during emergency operation.
- Ddrives with a spring brake must be actuated against the closed brake when opening or closing the door.
- For safety reasons, brakes in doors without a weight counterbalance must only be vented in the closed door position for testing purposes.
- Accidental venting of the brake must be rendered impossible by preventive measures at the installation site.

During maintenance works or in the case of an electrical fault, the door can be moved towards the OPEN or CLOSED positions with the help of the emergency operation equipment.

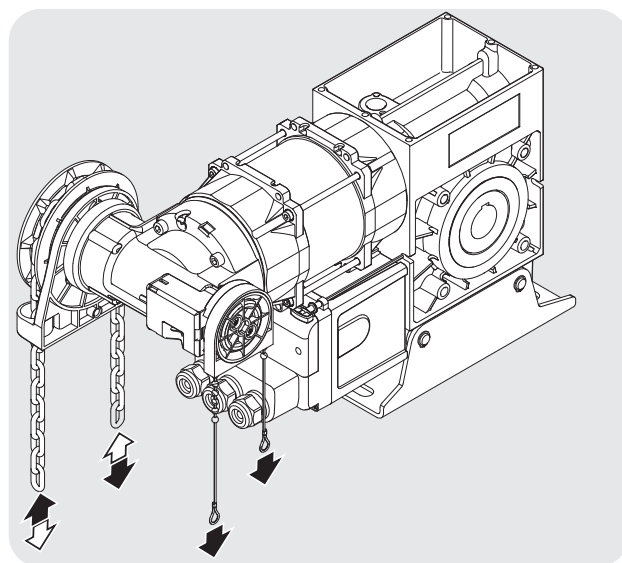
If the door is moved beyond the CLOSED or OPEN end positions, the drive can no longer be activated electrically.

Operation with emergency hand crank



- ☞ Push the emergency hand crank into the drive as far as it will go. The control voltage is interrupted and the door can no longer be electrically operated.
- ☞ Move the door in the OPEN or CLOSE direction by turning the emergency hand crank.
- ☞ Remove the emergency hand crank from the drive after completing emergency manual operation. The control voltage will be interrupted and the door can no longer be operated electrically.

Operation with emergency hand chain



Releasing

- ☞ Gently pull the chain with the red handle downwards as far as possible. The control voltage will be interrupted and the door can no longer be operated electrically
- ☞ Release the emergency hand chain from its fixing.
- ☞ Move the door in the OPEN or CLOSE direction by pulling on the emergency hand chain on the side concerned.

Locking

- ☞ Gently pull the chain with the green handle downwards as far as possible. The control voltage will be switched on again and the door can be operated electrically.
- ☞ Attach the emergency hand chain to its fixing. The door can now be moved with the drive.

8. Maintenance



NOTICE

Improper maintenance of the drive can result in property damage!

To avoid damage to the drive and door, the following points must be observed:

- Maintenance must only be carried out by authorized persons.
- Directive ASR A1.7 must be complied with.
- Worn or faulty parts must be replaced.
- Only approved parts must be installed.
- All maintenance work must be documented.

The drive unit has lifetime lubrication and is maintenance-free.

The hollow shaft must be kept rust-free.

☞ Check that all mountings have been securely tightened.

☞ Check the spring tension on the door.

The springs must be adjusted so that they are weight counter-balanced.

☞ Check the brake (if available).

☞ Check the limit switches and safety switches.

☞ Check for noises and oil leaks.

☞ Check the mounting of the drive for corrosion.

☞ Check the housing for damage.

Faulty parts that have been replaced must be disposed of properly in accordance with the regulations.

9. Technical data



REFERENCE

For the technical data, please refer to the attached technical data sheet.

10. EC Declaration of Incorporation

We hereby declare that the product described below:

MTZ high speed door drives

is in conformity with all essential requirements of the Machinery Directive 2006/42/EC.

In addition, the partly completed machinery is in conformity with all the provisions of the EU Construction Products Regulation No. 305/2011, the Electromagnetic Compatibility Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC).

The following standards were applied:

EN 60204-1

(Safety of machinery, electrical equipment of machines;
Part 1: General requirements)

EN ISO 12100

Safety of machinery – general principles for design -
risk assessment and risk reduction

DIN EN 12453

Safety in use of power operated doors - Requirements

DIN EN 12604

Doors and gates - Mechanical aspects - Requirements

DIN EN 61000-6-2

Electromagnetic compatibility (EMC) - Part 6-2:
Generic standards - Immunity for industrial environments

DIN EN 61000-6-3

Electromagnetic compatibility (EMC) - Part 6-3:
Generic standards - Emission - standard for residential,
commercial and light-industrial environments

DIN EN 60335-1

Household and similar electrical appliances - Safety -
Part 1: general requirements

DIN EN 60335-2-103

Household and similar electrical appliances - Safety -
Part 2-103: Particular requirements for drives for gates,
doors and windows

The relevant technical documentation is compiled in accordance with Annex VII(B) of the EU Machinery Directive 2006/42/EC. We undertake to transmit, in response to a reasoned request by the market surveillance authorities, this information in electronic form within a reasonable term.

Person authorised to compile the technical documentation is the signer.

The machinery is incomplete and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

Place / Date:

Legden, 01/02/2013

Manufacturer's signature



Dirk Wesseling

Position of signatory

Management

