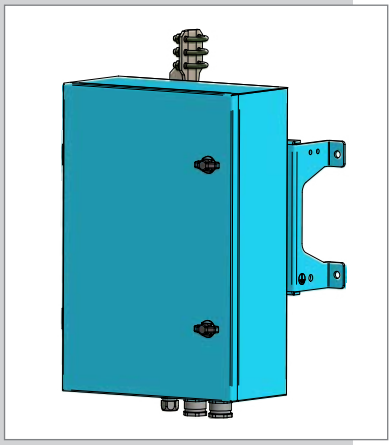
Operating and Maintenance Instructions

Outdoor - motor drive

UM*Plus*



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1 Introduction

Thank you for choosing one of our products. We hope it gives you many hours of successful and problem-free operation.
The Outdoor motor drive UM*Plus* has been specially designed and manufactured to meet your requirements.
Do you have any questions you would like to ask us? We look forward to hearing from you.
www.driescher.de

1.1 Notes on this manual

1.1.1 General note

This operating and maintenance manual contains all information and descriptions required to operate the motor drive. This document was created with the utmost care. Any suggestions or comments would be gratefully received.
To make the instructions in this manual easier to follow, the descriptions are accompanied by figures and schematic diagrams of the switching device or it assemblies.

1.1.2 Use of symbols / legend

The following symbols are used in this manual in addition to the warning notices outlined in the chapter *Safety*:

WARNING: Warns of danger to people. Failure to comply with the warning indicated by this symbol will result in severe injuries.

CAUTION: Failure to comply with the warning indicated by this symbol could result in injuries.

ATTENTION: Warns of possible material damage or malfunctions. Technical information requiring particular attention.

1.2 Product description

1.2.1 General

The motor drive UMPlus is used to actuate outdoor switching devices and it is generating a max. torque of 350 Nm and a stroke of approx. 200 mm during it's actuating angle of 90°.

Several motor and control supply voltages are available: 110/220 V DC and 230 V AC. The motor operating time depends on the upcoming torque at the operating shaft. In case of a power supply breakdown it is possible to operate by means of an emergency hand crank. The door can be locked with a padlock.

The mechanical life-time is 10000 switching cycles.

! With delivery of the motor drive UM*Plus*, the operating crank with the head of clamping crank is not mounted, the assembly on site, is depending on the mounting situation, *see chapter "Commissioning"*.

! **The connecting situation between the UM*Plus* and switch is described in the "operating manual shift linkage"**.

1.2.2 Assemblies and functional elements

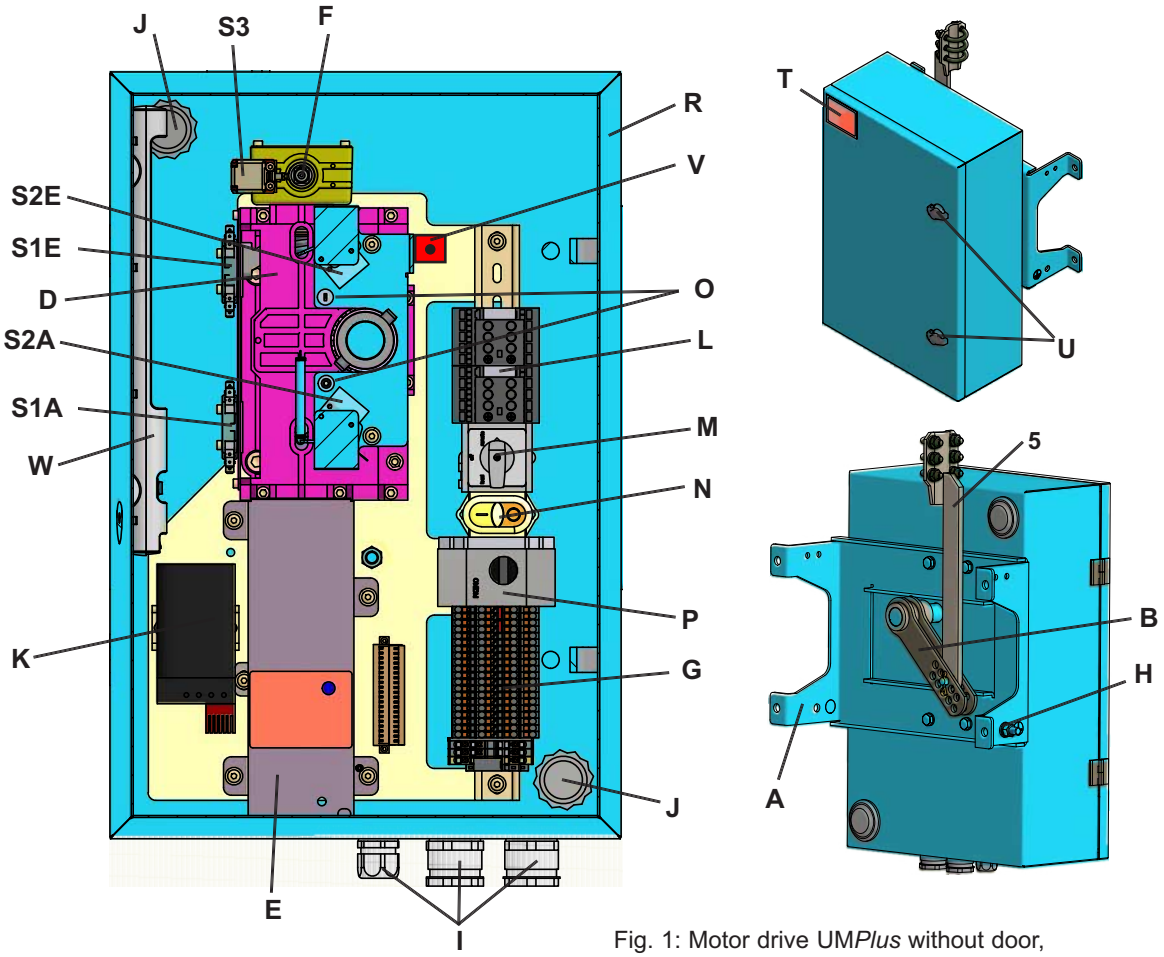


Fig. 1: Motor drive UM*Plus* without door, top right: with door, on the bottom right: reverse side with operating crank

A	Support frame
B	Operating crank with head of clampling crank (5), (for linkage pipe 1“), not mounted *,see page 10*
C	Emergency hand crank[1], *see page 10*
D	Main gear box
E	Cover Motor Motor with Friction clutch
F	Connecting emergency hand crank
G	Terminal connections
H	Earthing terminal M12
I	Cable entry (1 x M25, 2 x M32)
J	Ventilation
K	Heating with Thermostat
L	Control contactor
M	Change over switch Local/OFF/Remote
N	Local ON / OFF push bottons
O	Position indicator ON / OFF
P	Protective motor switch
R	Stainless steel housing
S2A	Pilot switch motor drive position „OFF“
S2E	Pilot switch motor drive position „ON“
S3	Safety switch for emergency hand crank
T	Type plate
U	Door latch, lockable
V	Safety pilot switch door
W	Indoor lighting

[1] as option

2 Safety

2.1 Intended use / guarantee

This motor drive is intended for use under the conditions outlined in the section *7 Technical data*.

Any use other than those outlined in this section is classed as an unintended use.
It is prohibited to use the product in explosion environments.

Any of the following carried out without express written approval from the manufacturer:

- alterations or extensions
- using non-genuine spare parts
- repairs carried out by companies or persons not authorised by the manufacturer

could result in the guarantee becoming null and void.

2.2 Personnel selection and necessary qualifications

Persons working with the motor drive must

- be at least 18 years of age.
- have received sufficient training for the relevant tasks.
- be familiar and comply with the current valid rules and safety regulations.

The owner decides on the necessary qualifications for

- operators
- maintenance personnel
- repair personnel

The owner must ensure that only authorised personnel work on the motor drive.

Personnel learning to use or being introduced to the device, or operating the device as part of training may only work on the motor drive when supervised by an experienced member of staff!

All work on the motor drive may only be carried out by trained specialist personnel and in compliance with all valid regulations specified in the accident prevention regulations (UVVen).

2.3 Organisational safety

The owner must ensure that this operating and maintenance manual is always in the immediate vicinity of the persons responsible for assembling, operating and carrying out maintenance work on the motor drive..

2.4 Dangers caused by the motor drive

The possible danger sources of the motor drive are outlined below. Thorough introductory sessions and training for operators help minimise the danger to both people and equipment.
Carrying out regular checks on the knowledge levels and compliance with safety regulations contributes significantly to accident-free operation over the long term.

2.4.1 Danger due to moving parts

WARNING: The motor drive has moving components, some of which can be moved remotely (electrical and/or mechanically) with significant force. Touching these parts poses a risk of personal injury or material damage.

Before starting work, it is important to ensure that there is no danger from moving part.

During maintenance work, components moved electromechanically must be shut down by switching OFF the operating voltage.

2.4.2 Danger due to electrical supply voltage

WARNING: When operating electrical switching devices, components in the immediate vicinity are applied with dangerous voltage. Touching these parts poses a risk of personal injury or material damage.

The danger zone of the switching device may only be accessed by persons who are aware of the electrical dangers thanks to specialist training, knowledge and experience and can implement the necessary occupational health and safety measures.
Other people may only enter the danger zone when accompanied by the persons listed above.

2.4.3 Danger due to emergency hand crank

CAUTION: If the emergency hand crank is not pressed against the spring pressure onto the emergency hand crank connection, it falls down and could cause personal injury or material damage. To help prevent personal injury and material damage, the emergency hand crank must be removed from the emergency hand crank connection after every use.

ATTENTION: The emergency hand crank must be operated with both hands when used.

2.5 Safety installations

For the protection of both personnel and the product, safety installation help prevent accidents or material damage caused by moving parts and assemblies.

The operator must ensure that trained personnel

- check all safety installations regulary
- remove any problems on the safety installations immediately
- secure the switching device against being switched ON if not all safety installations

are present and working.

2.5.1 Electrical safety installations

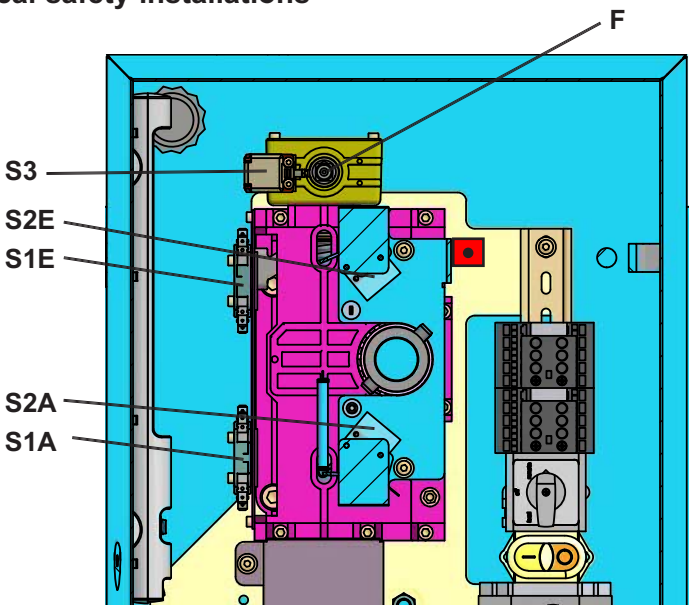


Fig. 2

	Component / assembly	Function
S1E	Signaling contact „EIN“	Contact for command „ON“
S1A	Signaling contact „AUS“	Contact for command „OFF“
S2E	Auxiliary switch „ON“	Reports the end position „ON“
S2A	Auxiliary switch „OFF“	Reports the end position „OFF“
S3	Emergency hand crank[1] safety switch	Interrupts the power supply to the motor, when the emergency hand crank is inserted

2.5.2 Mechanical safety installations

	Component / assembly	Function
F	Emergency hand crank[1] pressing-off fixture[1]	Presses an inserted emergency hand crank[1] off the emergency hand crank connection (F) using spring pressure if the emergency hand crank is not activated (pressed in).

[1] as option

2.6 Checking the safety installations

2.6.1 Checking the electrical safety installations

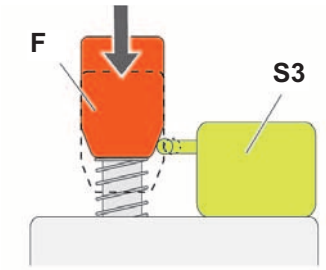


Fig. 3

S3 Emergency hand crank[1] switch *(Fig. 2, 3, 4 and 10)*

- Move the sliding sleeve (F) on the emergency hand crank connection against the spring pressure and hold, the safety switch (S3) switches.
- Apply the switch signal on the switching device (change the switch position), the motor drive must not start.
- Switch off the switch signal
- Release the sliding sleeve (F), it moves into its start position with the help of the springs
- Apply the switch signal on the motor drive (change the switch position), the motor drive must start up.

S2A and S2E Auxiliary switch motor drive *(Fig. 2)*
Proceed as described under *chapter 4 - Functional check*.

2.6.2 Checking the mechanical safety installations

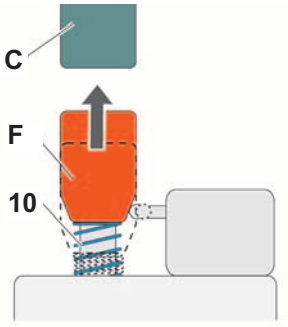


Fig. 4

Emergency hand crank[1] pressing-off fixture *(Fig. 2, 3, 4 and 10)*
If the inserted emergency hand crank (C) is released, it is pressed off the emergency hand crank connection by the sliding sleeve (F) via spring pressure (10).
Ensure that the emergency hand crank cannot be left inserted on the emergency hand crank connection.

[1] as option

3 Operating elements

• Emergency hand crank[1] (C) for inserting on the emergency hand crank connection (F)

ATTENTION: The emergency hand crank must be operated with both hands when used.

• Local ON / OFF push bottons (N)

• Change over switch Local/OFF/Remote (M)

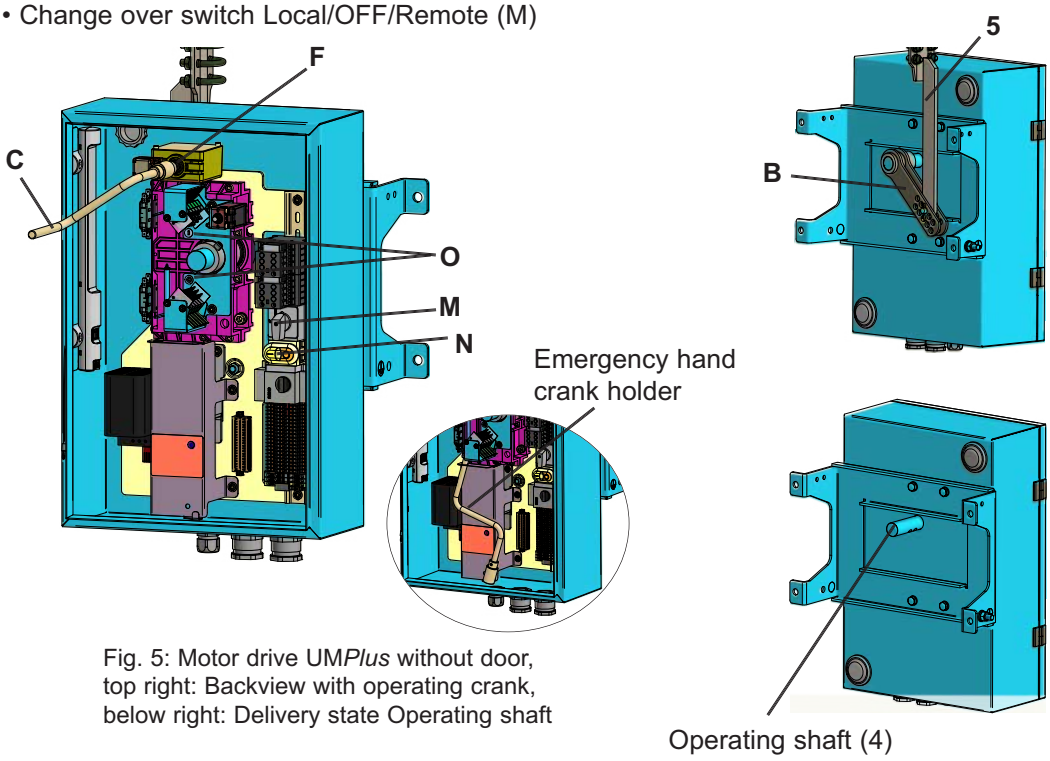


Fig. 5: Motor drive UM*Plus* without door,
top right: Backview with operating crank,
below right: Delivery state Operating shaft

B Operating crank with head of clampling crank (5), (for linkage pipe 1“)
Connection to shift linkage, mountable acc. to **mounting situation A or B**
C Emergency hand crank[1]
F Connection for emergency hand crank
M Change over switch Local/OFF/Remote
N Local ON / OFF push bottons
O Position indicator ON / OFF

[1] as option

4 Commissioning

4.1 Transport and storage

Once you have received the delivery please carefully unpack the motor drive and check for any transportation damage. Should you determine any damage please report this immediately and indicate the carrier. After unpacking, clean the motor drive and accessories to remove any contamination from pakking material and protect against moisture and contamination prior to installation. To transport the motor drive only hold at the frame (A). Thoroughly clean the motor drive prior to putting into operation to remove dust with a clean dry cloth. Until they have been placed, keep the motor drive in a dry place and protected against the elements. The motor drive has to be stored vertical in installation position.

4.2 Mounting the motor drive

4.2.1 Mounting the operating crank

ATTENTION: The operating crank of the motor drive UM*Plus* has to be adjusted corresponding to the-mounting situation on site, therefore insert the bolt (3) into the operating crank (4) (use outer drill hole, operating crank flush-mounted with operating shaft) and secure with the splint (ø 3,2 x 2 mm) gesichert.

- Mounting situation A: Operating crank (B) 45° upwards mounted - upon command ON, the operating crank rotate 90° in **downward** direction, to actuate the switch in position ON *(see Fig.: 6)*.

- Mounting situation B: Operating crank (B) 45° downwards mounted - upon command ON, the operating crank rotate 90° in **upward** direction, to actuate the switch in position ON *(see Fig.: 6)*.

- Connect the head of clamping crank (5) with the operating crank (B), attachment point 142 mm. Therefore mount the bolt (6) with the sleeve (7) and the both washers (8) and secure with the two splints (ø 4 x 25 mm) *(see Fig. : 7)*.

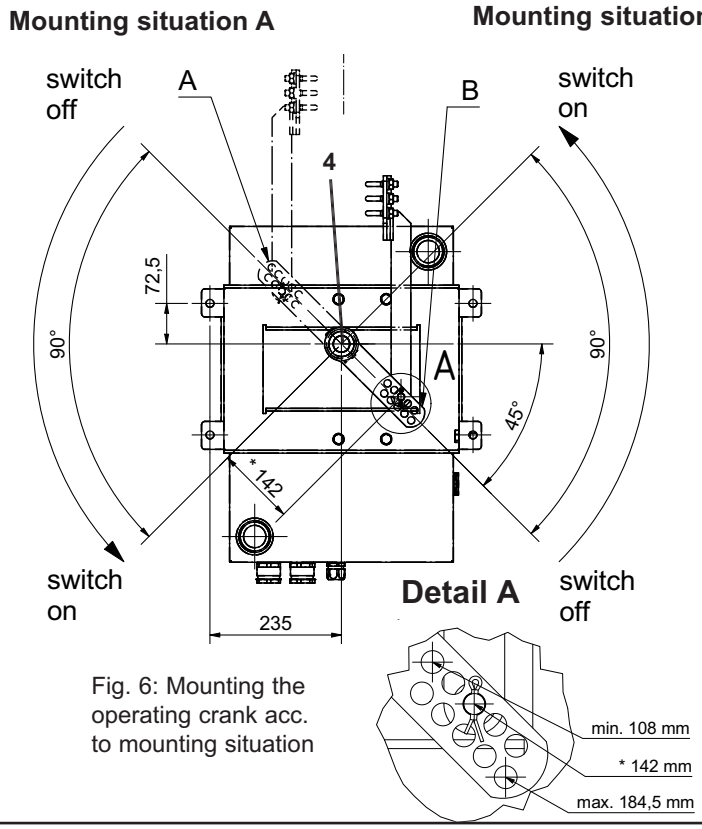


Fig. 6: Mounting the operating crank acc. to mounting situation

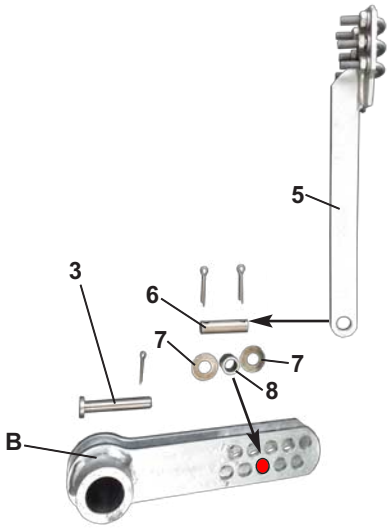


Fig. 7: Mounting the head of clamping crank

Stroke at 90° actuating (45°/45°)	
(min. 108 mm):	**177 mm**
(max. 184,5 mm):	**261 mm**
***(142 mm):**	**200 mm**

4.2.2 Attachment

ATTENTION: We recommend carrying out the assembly on a precisely aligned assembly system.
Stresses on the motor drive can lead to malfunctions. It is recommended to use 4 pcs. M10 (minimum) screws (x) for tightening on the base frame (A).
The motor drive is intended for vertical mounting position.
Tightening torque 32 Nm.

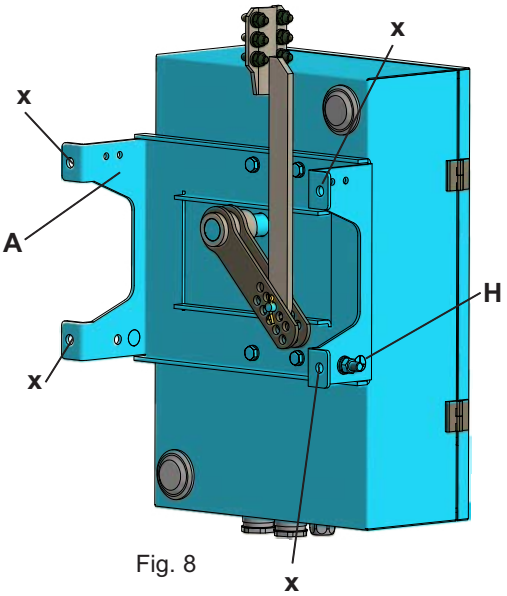


Fig. 8

4.2.3 Establishing the earthing potential connection

Connect the cable to the earthing potential (H) on the screw connection (M 12).
Tightening torque 75 Nm.

4.2.4 Connecting the motor drive

• Establish the motor drive power supply on the terminal connections (G*).

* In accordance with circuit diagram (inside the door)

ATTENTION: We recommend monitoring the switch operating time via the operator control. The max. operating time should be less than 6 seconds between switch position ON and OFF.

ATTENTION: Design 220V DC according diagram EM3J 066A C111 19D
In stage of delivery, the motor and control voltage are always in common. The jumpers at terminal -X1, 11-12 and 13-14 are stukked.
For separate motor and control voltage, the jumpers at terminal -X1, 11-12 and 13-14 must be removed!

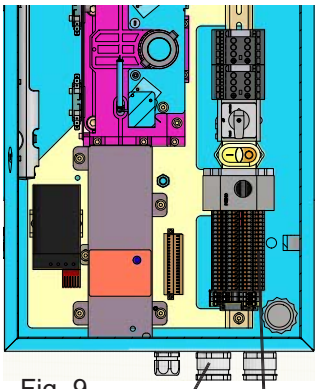


Fig. 9

4.2.5 Functional check

Carrying out test switching cycles
Carry out 5 test switching cycles with the power supply disconnected.

• Carry out a functional check by using the emergency hand crank to move the switching device several times from switch position ON to its switch position OFF and back again. The drive components must reach their relevant end positions without problems and free from play.

Checking the auxiliary switches (S2A/S2E)

- Have the emergency hand crank ready.
- Bring the motor drive in a position between the end switching points ON and OFF (approx. half way).
- Bring the motor drive in switch position ON. The ON contact of the auxiliary switch to be checked must be switched.
- Bring the motor drive in switch position OFF. The OFF contact of the auxiliary switch to be checked must be switched.

5 Operation

5.1 Work station

The owner must ensure that the work station complies with all valid regulations and has sufficient lighting.

5.2 Visual check

WARNING: Missing or loose components could result in personal injury or material damage. Check that all mechanical components are complete and secured in place. If faulty or loose mounting parts are detected on the motor drive, it may only be commissioned again after it has been repaired by an expert.
A check must be carried out to ensure that the safety installations are complete and functional *(see chapter 2.5)* prior to commissioning.

5.2.1 Commissioning

Once the entire assembly and successful functional check are complete, the motor drive is ready for use.

5.2.2 Temporary decommissioning

The automatic switch function of the motor drive can be decommissioned by disconnecting the power supply. Operation via the emergency hand crank is still possible.

5.2.3 Decommissioning

The motor drive can be decommissioned by disconnecting the power supply and all switch connections (switch cables and wires to the auxiliary switch).

6 Maintenance

6.1 Maintenance intervals (recommended)

Interval	Activities
After 10000 switching cycles or 10 years	Lubricate the following components of the motor drive with the lubricant Isoflex NBU[2] (see chapter 7.1) so that the interacting components are sufficiently lubricated: • Guide rollers (15) on both sides, driver pin (21) inclusive guide rails (16) on both sides and connecting fork (17) • Ball and screw spindle drive (18) and both rolling-contact bearing (19) • Bevel gearing (20) and shifting sleeve (10) at the emergency manual drive (it is necessary to remove the covering (25)) • All moveable parts • Function check of the auxiliary switches *(S2A and S2E, see Fig.: 1)*, protective motor switch (P), Emergency hand pilot switch *(S3, see Fig.: 10)*, Heating with Thermostat (K) • Carry out a functional check *(see chapter 4.2.5)*. **Attention:** For the friction clutch (22) to work properly, it must not come into contact with lubricant.

[2] *See lubricants under chapter 7 Technical data*.

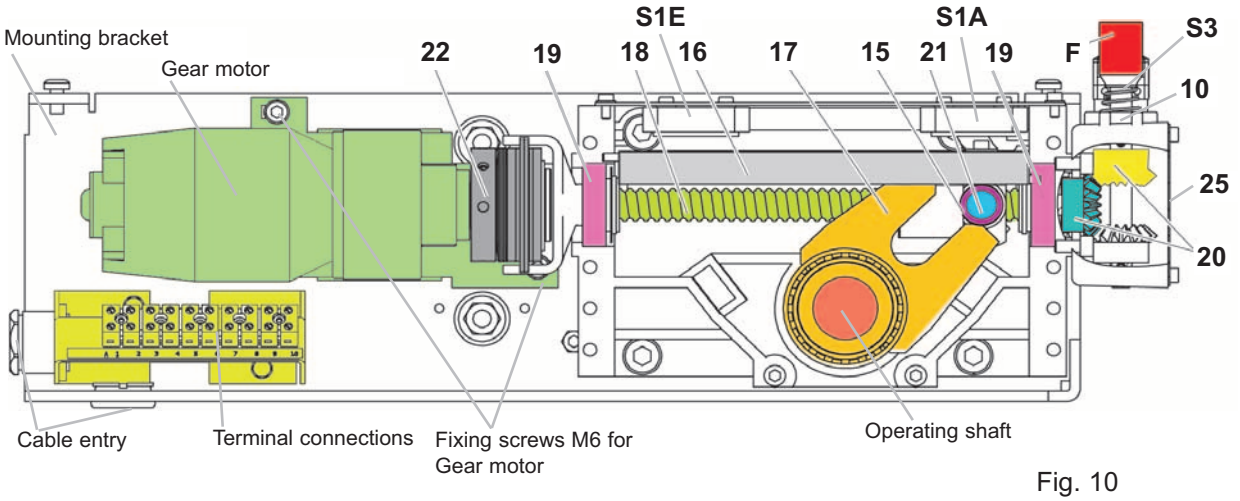


Fig. 10

6.2 Service address

Our specialist personnel can be contacted by telephone in the event of faults or to answer any questions you may have with regard to the compatibility, assembly or maintenance, including outside business hours.

Please always provide the information on the type plates.

Phone	+49 8761 681-0
E-mail	service@driescher.de
Internet	www.driescher.de

7 Technical data

General

Dimensions (approx. LxWxH in mm)	600 x 500 x 334
Weight	approx. 40 kg
Rated power supply voltage (U_a)	110/220 V DC or 230 V AC
Rated power consumption	250 W
Maximum tightening torque	350 Nm
Degree of protection	IP 55
Mechanical life time	10000 switching cycles
Operating movement	90°
Operating time (load-dependent)	max. 6 sec.
Emergency hand crank	as option

Operating ambient conditions

Temperature / maximum daily average	-30° up to +55° / +35° Celsius
Class according to DIN EN 62271-1	Minus 25 Outdoor

Storage conditions

Storage conditions	try and dust-free -30 up to +60 °Celsius vertical in installation position

7.1 Required lubricants

Order no: [1]	Lubricate name / type	Manufacturer
1-49007015	Isoflex NBU 15	Klüber Lubrication

[1] At DRIESCHER

7.2 Current consumption and operating time

The motor drives can be delivered optionally for alternating voltage or direct voltage. The motor drive work on short-time duty. The motor supply voltage may not differ.from the rated supply voltage from -15% to + 10%.

Operating voltage U_a	Average current consumption in dependence to Starting loading cases [A]	Starting current max. [A]	Motor operating time at M_d 350 Nm [s]
	150 Nm		
110 V DC	2.3	8.9	3.5
220 V DC	1.0	5.8	4.1
230 V AC	1.3	6.3	3.2

7.3 Cable dimensioning

In the table below you will find the maximum cable lengths of the motor supply voltages depending on the rated cross-section. The written values are valid for a maximum motor capacity of 150 Nm.

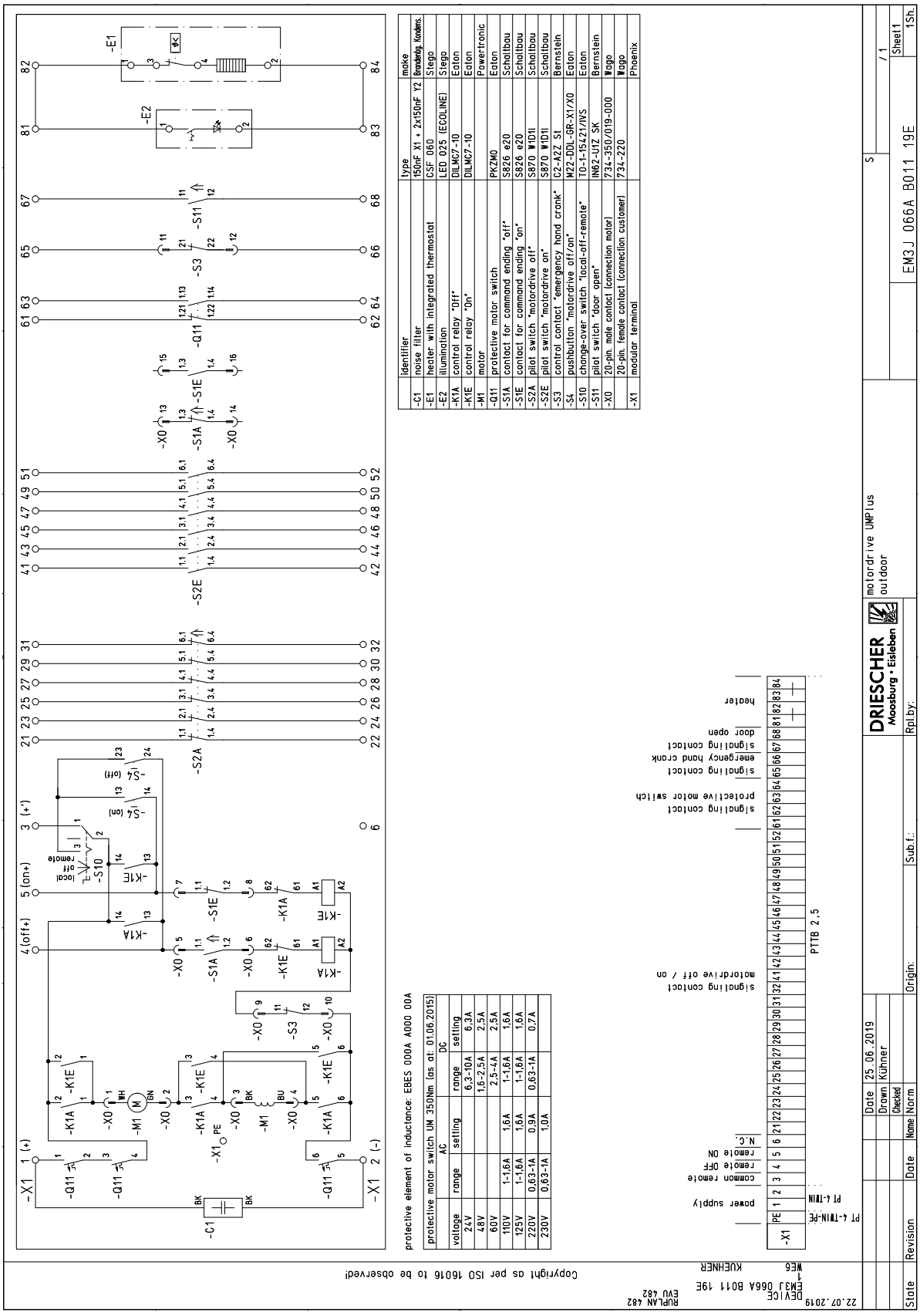
Cross section	0.75	1.0	1.5	2.5	4.0	6.0	10.0	[mm²]
U_a 110 V DC	132	177	266	443	709	1063	1772	[m] Cable length
U_a 220 V DC / 230 V AC	577	770	1154	1924	3078	4618	7696	[m] Cable length

U_a = Motor supply voltage

8 Disposal

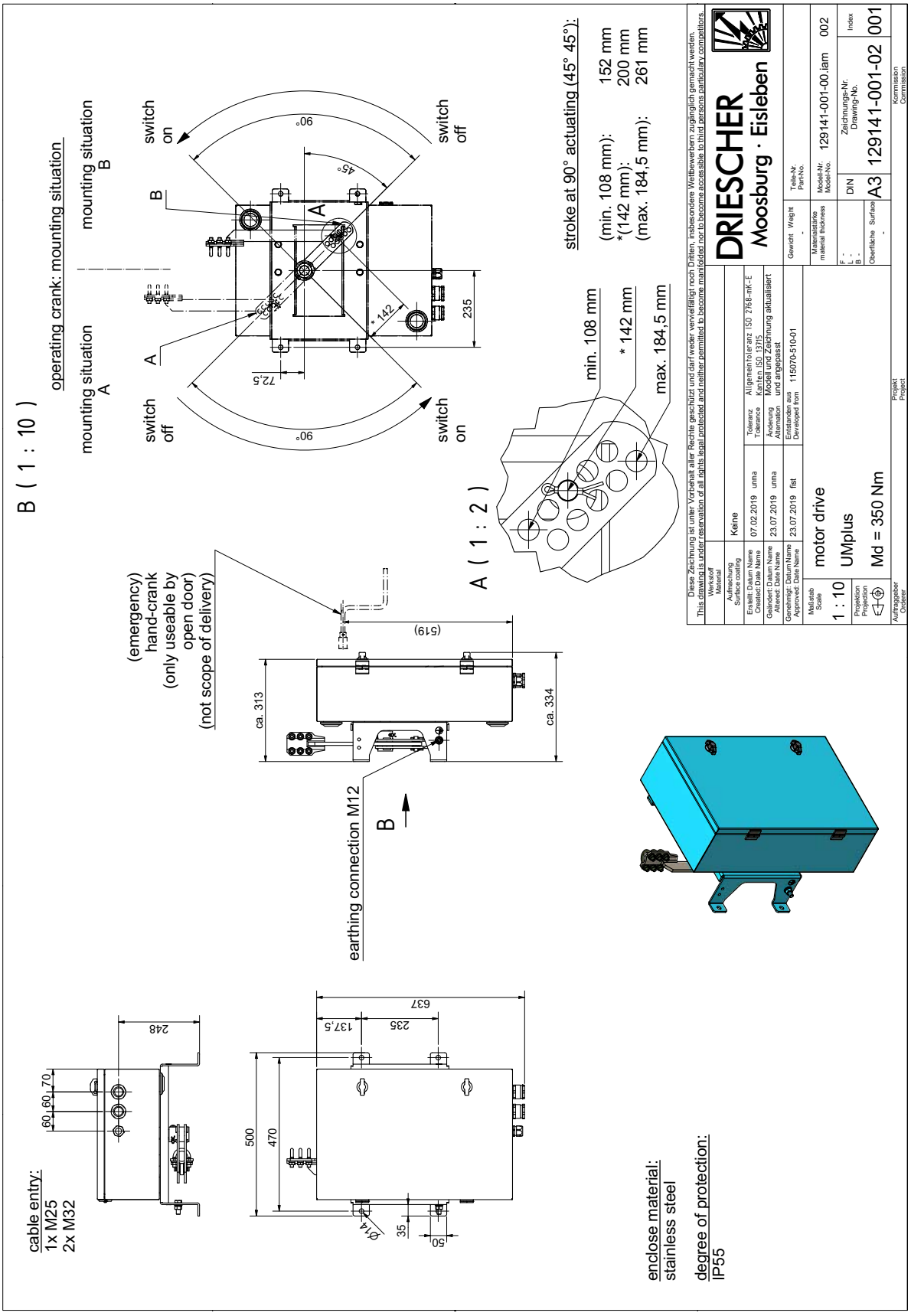
The switching device must be dismantled by qualified personnel.
It must be disposed of in an environmentally-friendly manner. Electrical components must not be disposed of as household waste. 2002/96/EC (WEEE)

9 Circuit diagram, sample



	identifier	type	make
-C1	noise filter	150nF X1 + 2x150nF Y2	Brandenbg. Kondens.
-E1	heater with integrated thermostat	CSF 060	Stego
-E2	illumination	LED 025 (ECOLINE)	Stego
-K1A	control relay "Off"	DILMC7-10	Eaton
-K1E	control relay "On"	DILMC7-10	Eaton
-M1	motor		Powertronic
-Q11	protective motor switch	PKZM0	Eaton
-S1A	contact for command ending "off"	S826 e20	Schaltbau
-S1E	contact for command ending "on"	S826 e20	Schaltbau
-S2A	pilot switch "motordrive off"	S870 WID11	Schaltbau
-S2E	pilot switch "motordrive on"	S870 WID11	Schaltbau
-S3	control contact "emergency hand crank"	C2-A2Z S1	Bernstein
-S4	pushbutton "motordrive off/on"	M22-DDL-GR-X1/X0	Eaton
-S10	change-over switch "local-off-remote"	T0-1-15421/IVS	Eaton
-S11	pilot switch "door open"	IN62-U1Z SK	Bernstein
-X0	20-pin. male contact (connection motor)	734-350/019-000	Wago
	20-pin. female contact (connection customer)	734-220	Wago
-X1	modular terminal		Phoenix

10 Drawing


B (1 : 10)
operating crank: mounting situation
mounting situation A
mounting situation B
switch on
switch off
A (1 : 2)
stroke at 90° actuating (45° 45°):
(min. 108 mm): 152 mm
*(142 mm): 200 mm
(max. 184,5 mm): 261 mm
min. 108 mm
* 142 mm
max. 184,5 mm
(emergency) hand-crank (only useable by open door) (not scope of delivery)
earthing connection M12
ca. 313
ca. 334
(519)
cable entry:
1x M25
2x M32
enclose material:
stainless steel
degree of protection:
IP55
motor drive
UMplus
Md = 350 Nm
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Notes