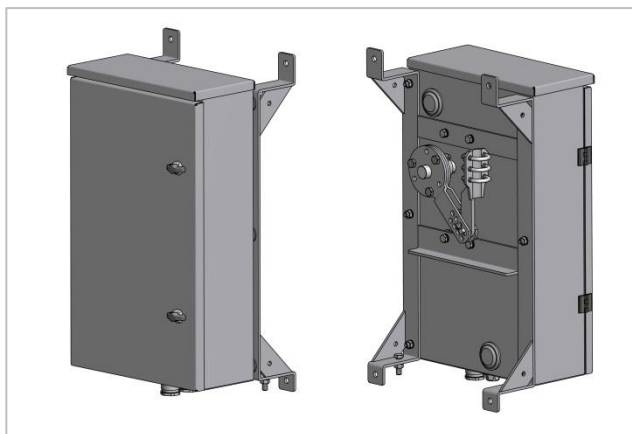


B776.90

Operating and Maintenance Instructions

**Outdoor – motor drive
UM 90**



**ELEKTROTECHNISCHE WERKE
FRITZ DRIESCHER & SÖHNE GMBH**

D-85366 MOOSBURG • TEL. +49 87 61 6 81-0 • FAX +49 87 61 68 12 30
<http://www.driescher.com> infoservice@driescher.de



Table of Contents

1	INTRODUCTION	4
1.1	Notes on this manual.....	4
1.1.1	General note	4
1.1.2	Use of symbols / legend	4
1.2	Product description... ..	4
1.2.1	General	4
1.2.2	Assemblies and functional elements	5
2	SAFETY	6
2.1	Intended use / guarantee.....	6
2.2	Personnel selection and necessary qualifications.	6
2.3	Organisational safety	6
2.4	Dangers caused by the switching device	7
2.4.1	Danger due to moving parts	7
2.4.2	Danger due to electrical supply voltage	7
2.4.3	Danger due to falling emergency hand crank	7
2.5	Safety installations.....	8
2.5.1	Electrical safety installations	8
2.6	Checking the safety installations	9
2.5.1	Checking the electrical safety installations	9
2.5.1	Checking the mechanical safety installations	9
3	OPERATING ELEMENTS	10
4	COMMISSIONING	11
4.1	Transport and storage	11
4.2	Mounting the motor drive	11
4.2.1	Attachment	11
4.2.2	Establishing the earthing potential connection	11
4.2.3	Connecting the motor drive and auxiliary switch	12
4.2.4	Functional check	12

5	OPERATION	11
5.1	Work station	13
5.2	Visual check	13
5.2.1	Commissioning	13
5.2.2	Temporary decommissioning	13
5.2.3	Decommissioning	13
6	MAINTENANCE	14
6.1	Maintenance Intervals	14
6.2	Service address	15
7	TECHNICAL DATA	16
7.1	Required lubricants	16
7.2	Current consumption and operating time	16
7.3	Cable dimensioning	17
8	DISPOSAL	17
9	DRAWING	18
10	CIRCUIT DIAGRAM, SAMPLE	19

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 90 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.com

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 its 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 is used to actuate outdoor switching devices and it is generating a max. torque of 350 Nm during its actuating angle of 90°. Two types of housings are available, one with depth 190 mm and one with 250 mm. Several motor and control supply voltages are available 24 V DC; 48 - 60 V DC; 110 V DC; 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 connecting situation between the UM 90 and switch is described in the operating manual shift linkage.

1.2.2 Assemblies and functional elements

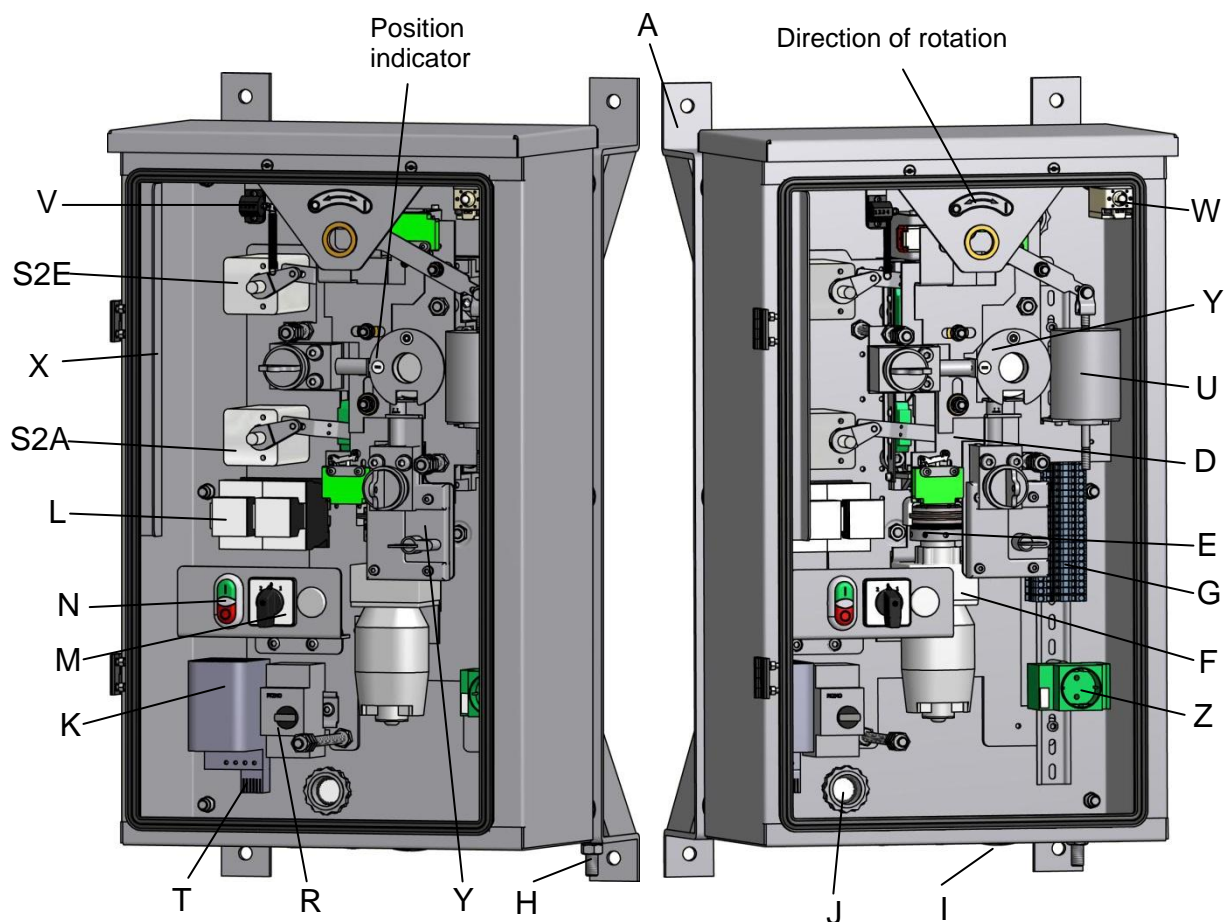


Fig. 1: without cover and door

A	Support frame	M	Change over switch Local/Remote
B	Head of the clamping rod (for linkage pipe 1"), see page 8	N	Local ON/OFF push buttons ¹
C	Emergency hand crank, see page 8	R	Protective motor switch ¹
D	Main gear box	S2A	Pilot switch motor drive position "OFF"
E	Friction clutch	S2E	Pilot switch motor drive position "ON"
F	Motor with gear box	T	Thermostat ¹
G	Terminal connections	U	Solenoid interlocking ¹
H	Earthing terminal	V	Counting mechanism ¹
I	Cable entry max. 4x M25, 2x M32	W	Door interlock switch ¹
J	Ventilation	X	Indoor lighting ¹
K	Heating	Y	Key Interlocking system ^{*1}
L	Control contactor	Z	Socket ¹

¹ As Option

^{*} Housing with 250 mm depth needed

2 Safety

2.1 Intended use / guarantee

This motor drive is intended for use under the conditions outlined in the section *Technical data*, on page 16.

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

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 regularly.
- 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

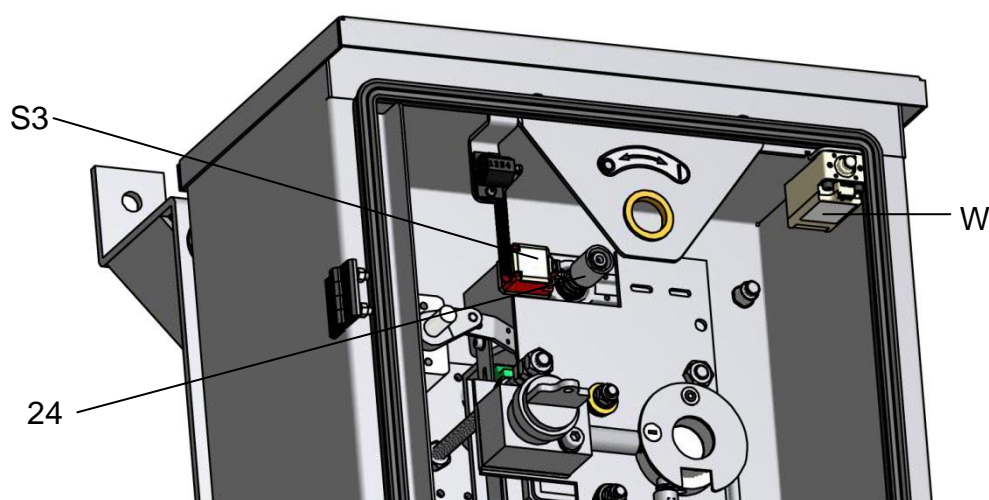


Fig. 2: without cover and door

	<u>Component / assembly</u>	<u>Function</u>
W	Door interlock switch	Reports the door position "OPEN" - "CLOSED"
S3	Emergency hand crank safety switch	Interrupts the power supply to the motor, when the emergency hand crank is inserted

2.6 Checking the safety installations

2.6.1 Checking the electrical safety installations

S3 emergency hand crank switch (Fig. 2, 3, 4 and 8)

- Disconnect the switch cables from the power supply.
- Move the sliding sleeve (24) 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 (24), 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.

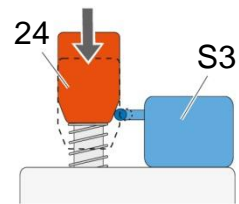


Fig. 3

S2A and S2E pilot switch motor drive (Fig. 2 and 8)

Proceed as described under *Functional check*, on Page 12.

2.6.2 Checking the mechanical safety installations

Emergency hand crank pressing-off fixture (Fig. 2, 3, and 8)

If the inserted emergency hand crank (C) is released, it is pressed off the emergency hand crank connection by the sliding sleeve (24) via spring pressure (10).

Ensure that the emergency hand crank cannot be left inserted on the emergency hand crank connection.

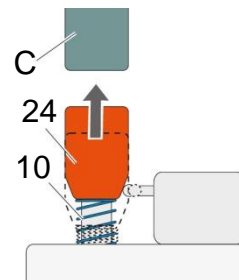


Fig. 4

3 Operating elements

Emergency hand crank (C) for inserting on the emergency hand crank connection.

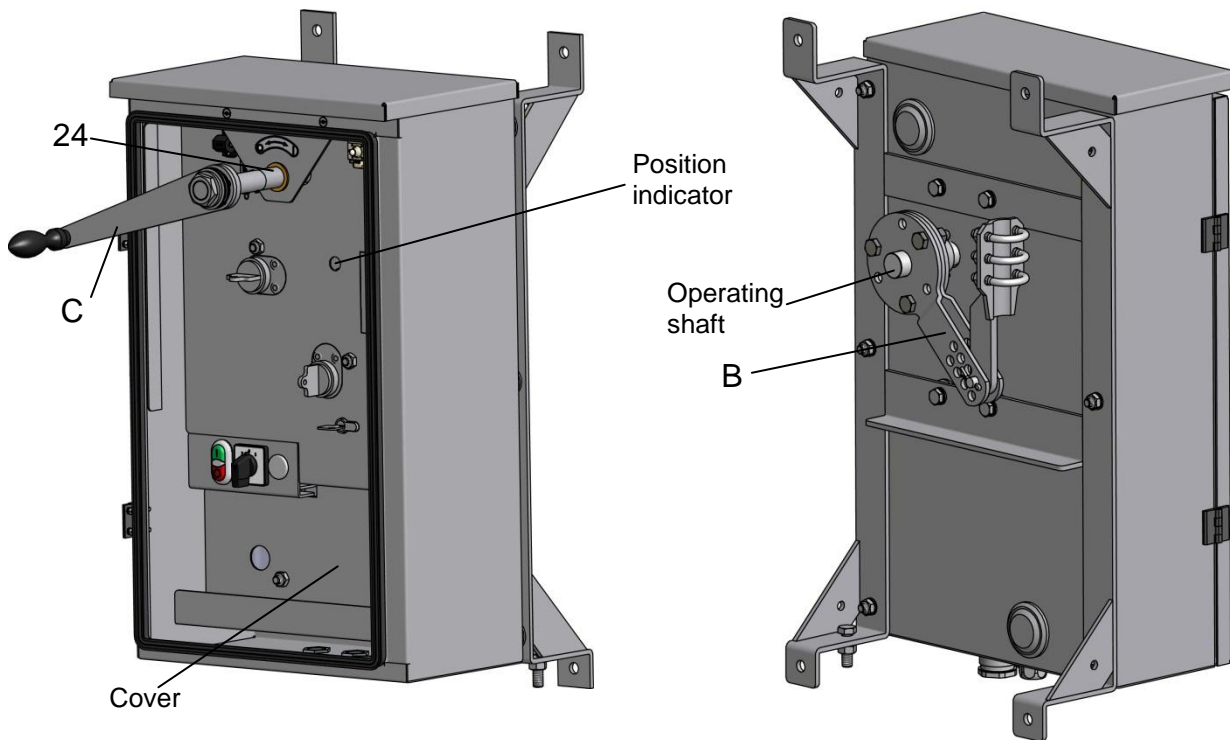


Fig. 5: Motor drive without door and back view

- B Head of clamping rod
- C Emergency hand crank

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 packing material and protect against moisture and contamination prior to installation. To transport the motor drive only hold at the frame. 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 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. M 10 (minimum) screws for tightening on the aligned assembly system.
The motor drive is intended for vertical mounting position.
Tightening torque M10 min 32 Nm.

4.2.2 Establishing the earthing potential connection

Connect the cable to the earthing potential (H) on the screw connection (M 12).

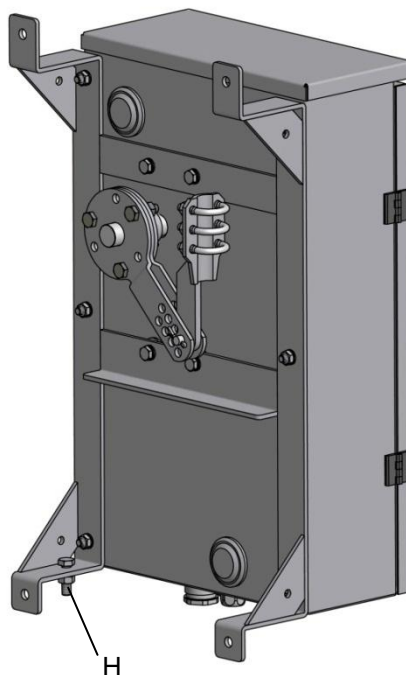


Fig. 6: Earthing potential connection

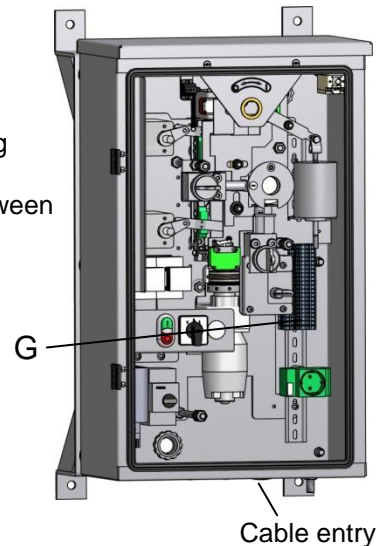
4.2.3 Connecting the motor drive and auxiliary switch

- Establish the motor drive power supply on the terminal connections (G*).
- ATTENTION: The electrical cables must be laid in such a way that damage by crushing, bending or pulling is excluded.

* In accordance with *circuit diagram*, chapter 10, Page 19.



ATTENTION: We recommend monitoring the switch operating time via the operator control.
The max. operating time should be less than 15 seconds between switch position ON and OFF.



4.2.4 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.

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 switching device, 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 2.5, page 8) 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

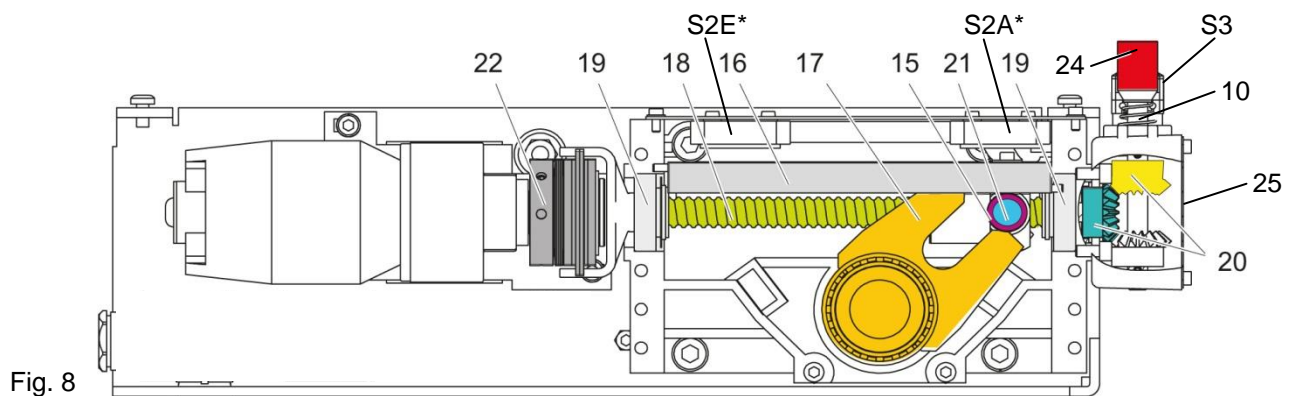
The motor drive can be decommissioned by disconnecting the power supply and all switch connections (switch cables and wires to the auxiliary switch).

6 Maintenance

6.1 Maintenance intervals (recommended)

Interval	Activities
Annual	<p>Visual check, inspection</p> <ul style="list-style-type: none"> • Remove soiling • General control of external damage. • Interior control of traces of corrosion. • Operability of the ventilation openings (J). • Control at ingress of humidity, small animals and so on • Complete control of the output crank (B) inclusive head of the clamping rod (B) and tightening check of the fasteners (e.g. split, pins, nuts,...)
After 10.000 switching cycles or 10 years	<p>Activities as described under <i>annual</i>.</p> <p>Lubricate the following components of the motor drive with the lubricant Isoflex NBU¹ (see 7.1) so that the interacting components are sufficiently lubricated:</p> <ul style="list-style-type: none"> • 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 <p>Function control of the pilot switches (S2A a. S2E, see fig. 1,2 and 8), protective motor switch (R), emergency switch (S3, see fig. 2), heating (K) and thermostat (T). Carry out a functional check (see 4.2.4).</p> <p>Attention: For the friction clutch (22) to work properly, it must not come into contact with lubricant.</p>
>10.000 switching cycles	<ul style="list-style-type: none"> • Maximum of mechanical life

¹ See lubricants under *Technical data*, on page 16.



* corresponding for sense of rotation "B"
(reverse for sense of rotation "A")

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 identification plates.

Phone	+49 (0) 87 61 6 81-0
E-Mail	service@driescher.de

7 Technical data

General

Dimensions (approx. LxWxH in mm)	796 x 434 x 331
Weight	approx.45 kg
Rated power supply voltage, (U _a),	24 VDC - 230 VAC
Rated power consumption	approx. 250 W
Maximum tightening torque	350 Nm
Degree of protection	up to IP 65
Mechanical life time	10.000 switching cycles
Operating movement	90°
Operating time (load-dependent)	max. 6 sec.
Emergency hand crank	yes

Operating ambient conditions

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

Storage conditions

Storage conditions	dry and dust-free -30 up to +60 °Celsius
--------------------	------------------------------------------

7.1 Required lubricants

Order no.: ¹	Lubricant 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		
24 V DC	4,9	26,6	6,2 s
48 V DC	3,6	16,2	5,5 s
60 V DC	3,4	22,4	4,1 s
110 V DC	2,5	13,2	4,6 s
220 V DC	0,9	7,4	4,3 s
125 V AC	2,7	15,8	3,7 s
230 V AC	1,2	6,4	4,4 s

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.

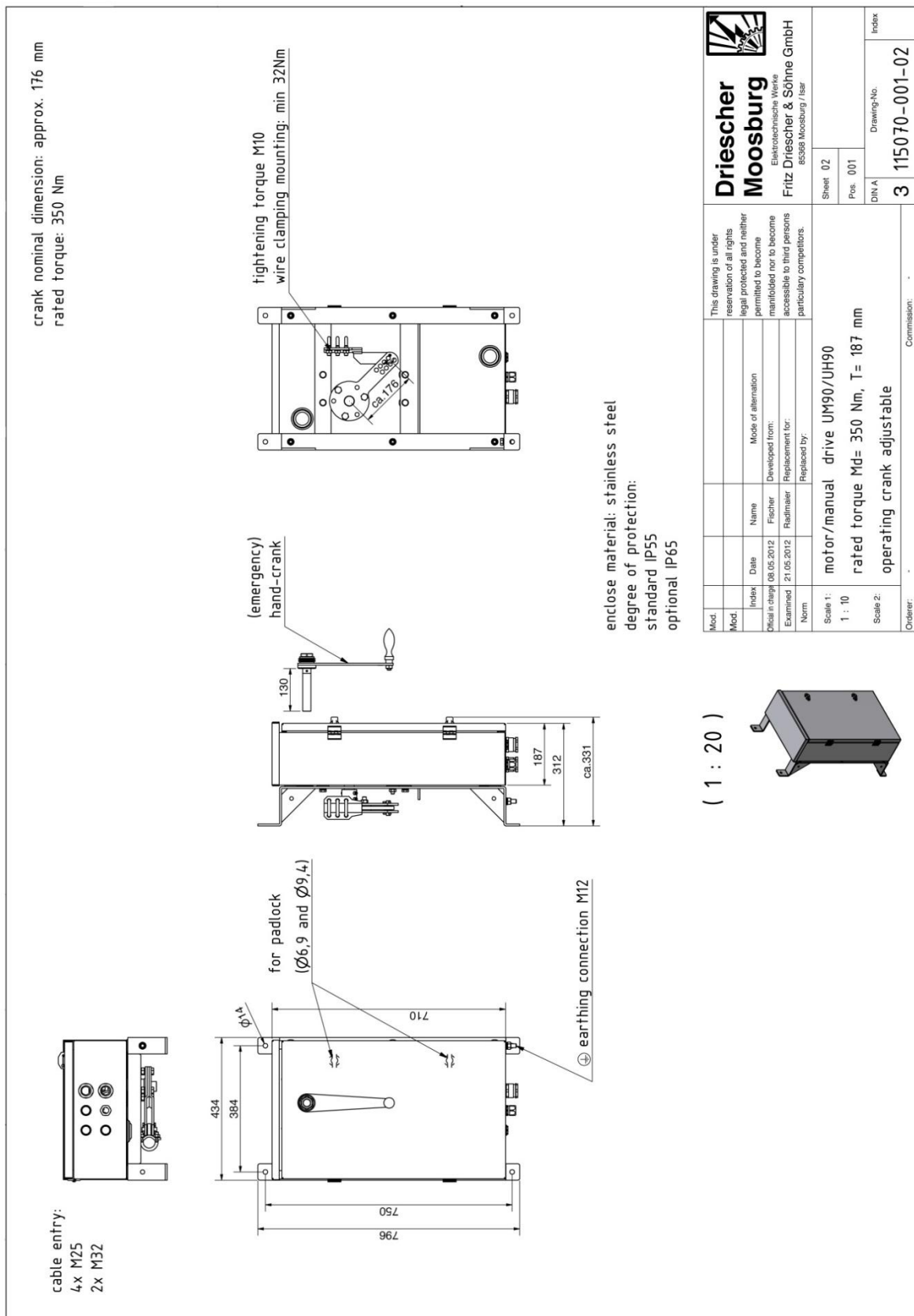
Cross section	0,75	1,0	1,5	2,5	4,0	6,0	10,0	[mm ²]
24 V DC	16	21	31	52	84	125	209	[m] cable length
48 V DC	41	55	82	137	220	330	550	[m] cable length
60 V DC	54	72	108	181	290	435	725	[m] cable length
110 V DC	132	177	266	443	709	1063	1772	[m] cable length
220 V DC	797	1063	1595	2658	4253	6380	10633	[m] cable length
125 V AC	145	194	291	485	776	1185	1941	[m] cable length
230 V AC	577	770	1154	1924	3078	4618	7696	[m] cable length

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 Drawing



10 Circuit diagram, sample

