

# **Installation Instructions for the Manufacturer of the End Product**

MEGAMAT 4  
Drive System



# MEGAMAT 4

## Contents

	page
General Information.....	2
Designated Use.....	3
Prerequisites.....	3
Getting to Know the System.....	3
Fitting.....	6
Operation.....	11
Maintenance and Repairs.....	12
Type Plate and Seal.....	13
Trouble-Shooter's Guide.....	14
Cleaning and Care.....	15
Manufacturer's Declaration, Declarations of Conformity, Additional Information.....	16

## General Information

**These instructions are intended for the manufacturer of the end product** and are not designed for passing on to the operator of the end product. With regard to the specialist information contained herein, these instructions can well serve as a basis for drawing up the instructions for the end products.

**It is essential to note the information contained in these instructions!** In doing so, you can prevent mistakes being made in installing or connecting the system which could result in

- **injury and accidents as well as**
- **damage** to the drive system or the end product.

### **Use only DEWERT drive control units!**

The DEWERT drive control unit incorporate an earth-free circuit which is isolated from the supply mains by reinforced insulation or double insulation.

DEWERT **accepts no liability** for damage caused as a result of ...

- non-observance of these instructions,
- alterations to the product not approved by DEWERT or ...
- the use of spare parts not manufactured or approved by DEWERT- these may not ensure adequate safety!

Due to the policy of ongoing product improvement, DEWERT reserves the right to carry out technical changes at any time without prior notification!



## 1. Designated Use

The **MEGAMAT 4** drive system is **designed for installing in end products...**

- or the motorized adjustment of movable furniture parts **using suitable fittings/ mountings or mechanics.**

The **MEGAMAT 4** drive system is **not intended for use...**

- in an environment where **inflammable** or **explosive** gases or vapours (e.g. anaesthetics) are likely to occur,
- in a damp environment, i.e. outdoor,
- by small children or fragile persons,
- in the immediate vicinity of young children.

## 2. Prerequisites

The installation steps described in these instructions must be performed by a **suitable qualified or trained person.**

- This being the case, you should never carry out this work by **yourself** unless you are a **suitable trained person** or
- you should **entrust** this work to a **suitable qualified, skilled or trained person only.**

Conformity in accordance with EC Directives

The drive system is supplied ex factory as a **machine not ready for use** in accordance with the EC "Machinery" Directive. In other words, you may not put the drive system into operation until you have met the **safety** objectives of the "Machinery" Directive and issued a corresponding **Declaration of Conformity!**

The drive system with DEWERT controls meets the safety objectives of the EC Directives concerning "**Low Voltage**" and "**Electromagnetic Compatibility (EMC)**".

The drive is **not a medical product** if you install it into a medical device, manufacture in **conformity** with the EC Directive for "Medical Products" or other regulations it is the responsibility of the **manufacturer of the end product**. For this purpose, DEWERT has additionally applied, fully or partially, a number of standards from the medical products sector, in order to facilitate use in medical products (see page 18, Additional Information).

## 3. Getting to Know the System

The **MEGAMAT 4** drive system is intended for the German market and complies with the Law applicable in Germany in implementation of relevant EC Directives.

With regard to other variation options contact your after-sales service or take a look at the current catalogue. We will be happy to assist you with any special requests you may have.

# MEGAMAT 4

## b) Technical Data

Rated voltage.....	24 V DC
Power consumption with rated load.....	max. 4,0 A DC (depending on application)
permissible push force.....	max. 7000 N (depending on application)
permissible pull force.....	max. 4000 N (depending on application)
Operating mode <sup>1)</sup> with max. rated load.....	Intermittent duty (AB) 2 min. ON /18 min. OFF
Protection classification.....	III
Noise level.....	65 dB(A)
Drive type.....	Single drive
Type of load.....	Push; pull
Stroke <sup>2)</sup> .....	< 500 mm
Adjustment Speed <sup>3)</sup> .....	to 4,7 mm/s (depending on application)
Protection category.....	IP20; IP44 and IP54
Colours.....	grey; black
Quick release "GQR".....	to 3000 N (only for push or pull drives)
Cable versions.....	Cable for permanent mains installation or cable with attached plug

## Dimensions and Weights

Length x width x height of the drive.....	min. 190 x 171,5 x 92 mm min. 236 x 171,5 x 92 mm (with "GQR")
Weight.....	approx. 2,5 kg (depending on application)

## Ambient conditions for operation, storage and transport

Transport / storage temperature.....	from -20 °C to +50 °C from -4 °F to +122 °F
Operating temperature.....	from +10 °C to +40 °C from +50 °F to +104 °F
Relative humidity.....	from 30% to 75%
Air pressure.....	from 700 hPa to 1060 hPa
Altitude.....	< 2000m

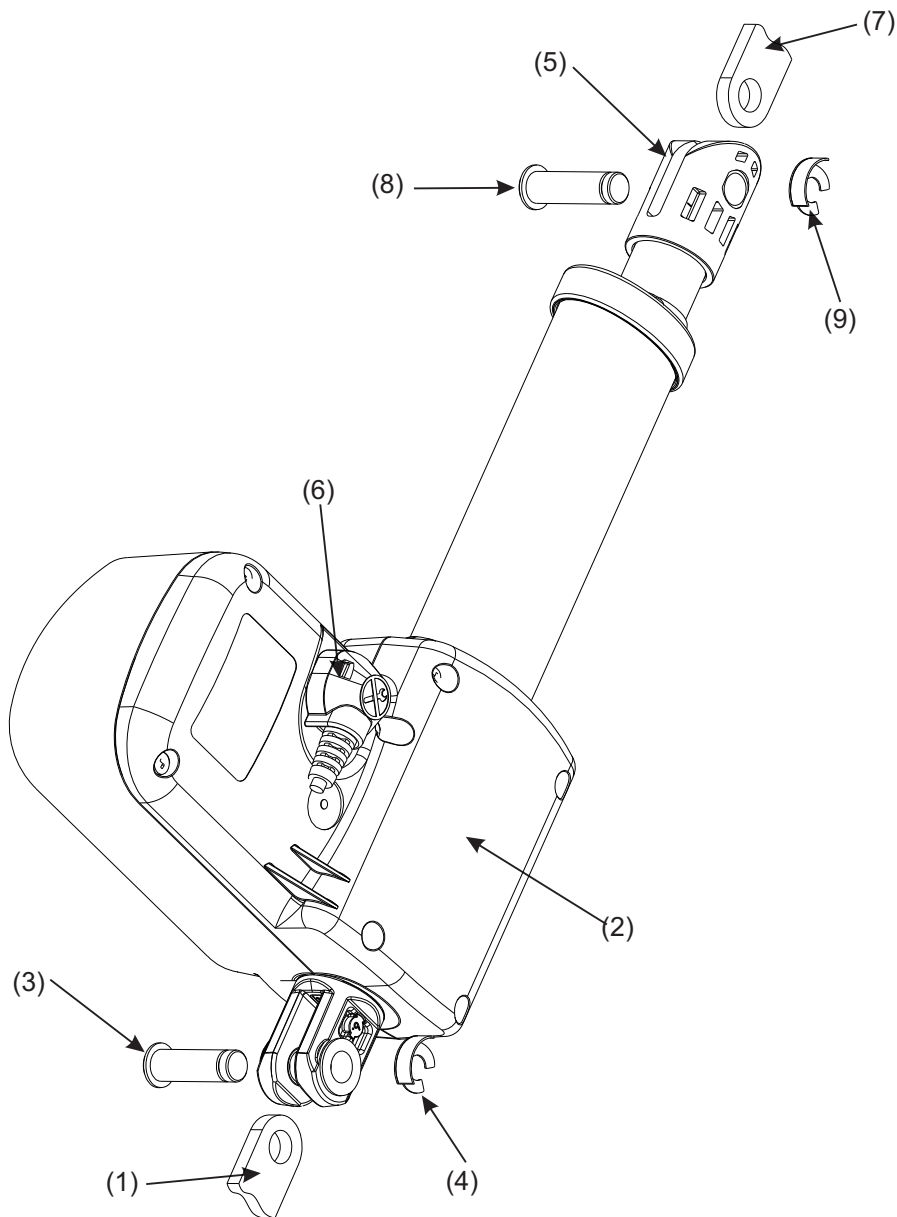
<sup>1)</sup> Operating mode = **intermittent duty (AB) 2 min. ON /18 min. OFF**, i.e. run for a maximum of 2 min. under rated load, then observe a **rest period** of 18 min. Operational failure could otherwise result.

<sup>2)</sup> Data deviating from these standard values can be established after consultation and depending on the application and force.

<sup>3)</sup> Adjustment speed = **speed** at which the clevis travels **without load** (speed varies according to the load).



# Assembly of the MEGAMAT 4 Single Drive



# MEGAMAT 4

## 4. Fitting

### a) Installation (see illustration)

### Caution!

Only ever connect or disconnect electrical components when they are voltage-free.

- 1) Push **drive (2) into mounting (1)** and fasten it there using **BEK bolt (3)** and secure with **security clip (4)**.
- 2) Now **fasten stroke pipe clevis (5)** with **BEK bolt (8)** and **security clip (9)** onto **mounting (7)**.
- 3) Now connect the drive to the **DEWERT control unit. Secure cable (6) to prevent it from being pulled out** (please also refer to the Installation Instructions supplied with the DEWERT control units).



**Recommendation:** Please bear in mind that installing mechanical limit stops into your end product considerably increases the safety standard.



### Attention!

- For technical reasons or to save costs, mechanical limit stops are not always provided. In safety-critical drives we therefore recommend using an additional safety limit switch which in the event of a defective top limit switch protects against dangerous excess travel and failure. The safety limit switch puts the drive permanently out of action as soon as any overshooting of the regular limit switch takes place. The safety limit switch is integrated directly into the drive and does not require any additional fitting. However this can increase the fitting dimension of the drive by 23 mm.
- In conjunction with the **release** (“GQR“, „ER“ versions), it is absolutely imperative that mechanical limit stops are installed in your end product at the **top and bottom end-of-travel positions**, in order to prevent mechanical damage to the drive system.
- The mechanical end stops and/or stroke travel limits of the application **must** be set to the dimensions of the extended and retracted positions of the actuator. Ensure that the mechanical end stops **are not reached before** the actuator is completely extended or retracted.
- The version of the **MEGAMAT 4** drive system with loose nut seat **requires** a fixed mechanical stop in the end product in order to prevent the stroke tube from being pulled out. This could otherwise damage the drive system.

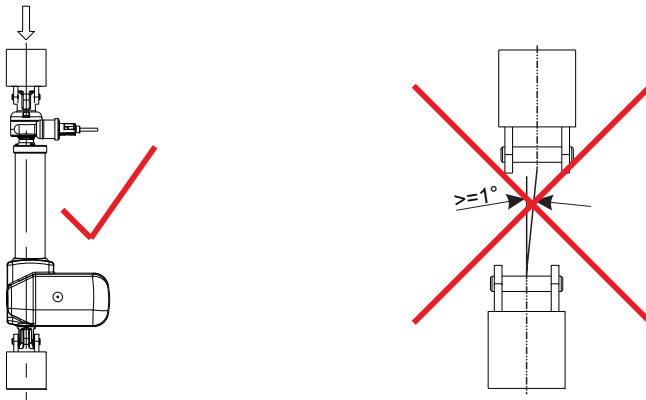


## b) Recommended installation position of the MEGAMAT 4 with GQR (quick release)

Installation errors - e.g. as a result of tolerances in the fitting - can have a considerable effect on the disengagement forces of the GQR. Incorrect installation can bring about a significant increase in the disengagement forces, thereby causing them to considerably exceed the specification.

### Justify the fitting

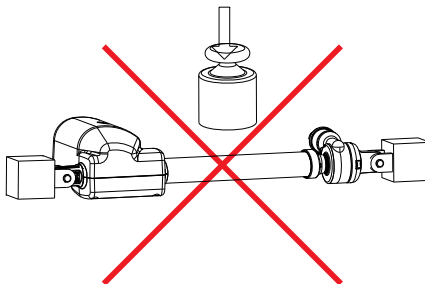
The retainer for accepting the fittings of clevises **must be in justify with each other**. If this is not the case, additional lateral forces act on the drive unit. A significant increase in the withdrawal forces can occur as a result of the fittings being misaligned by  $1^\circ$  and more. A fitting position of almost  $0^\circ$  is ideal.



### Effects of the fitting position

The disengagement force increases, and can exceed the specification quite considerably, if, for e.g., the drive unit is subjected to a shear force from other attachments.

**Illustration:** a horizontally fitted drive unit subjected to a shear force.

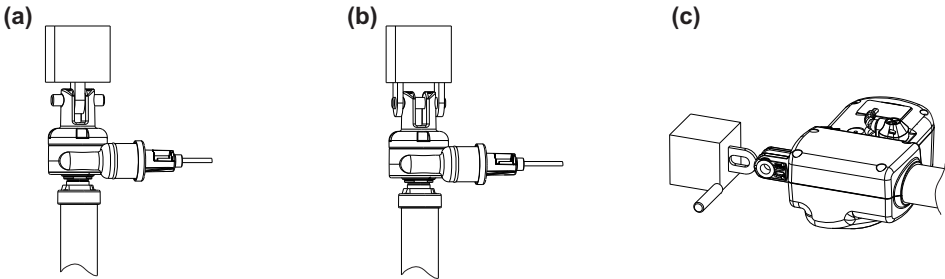


# MEGAMAT 4

## Recommended arrangement of the fittings

Besides precise alignment of the fittings, we recommend using only one fixing bracket **(a)** at either side of the fittings. This measure reduces the risk of a misalignment of the two fixing brackets which would cause the drive unit to tilt. The actuator must always be fixed, so that it is restrained, but adequate free to move on its mountings. The actuator must be fixed in such a way that it is protected from twisting and deformation in all positions. Fittings with two fixing brackets **(b)** can be used, but these must be precisely aligned to ensure that the withdrawal force does not increase.

Fix the bracket on the one side to utilize the elongated hole. This permits any possible differences in length between the fitting dimension of the drive and your application to be appropriately adjusted. **Recommendation:** the elongated hole (c) should offer at least 2mm play.



## c) Electrical Connection

In the **Operating Instructions** to be issued by you, point out to the operator that if leads, in particular the **connection lead**, are **driven over** they could sustain damage. **Mechanical** loads should also be avoided.

When routing the leads **make sure** that they...

- cannot get caught up or trapped,
- are not subjected to mechanical loads (i.e. do not pull, apply pressure or bend),
- cannot get damaged in any other way.

Make sure that the cables, in particular the **connection lead**, are fastened to the end product with adequate **strain relief** and **kink protection** and that suitable constructional measures prevent the **connection lead from trailing on the floor** when the end product is being **moved**.

## d) Dismantling

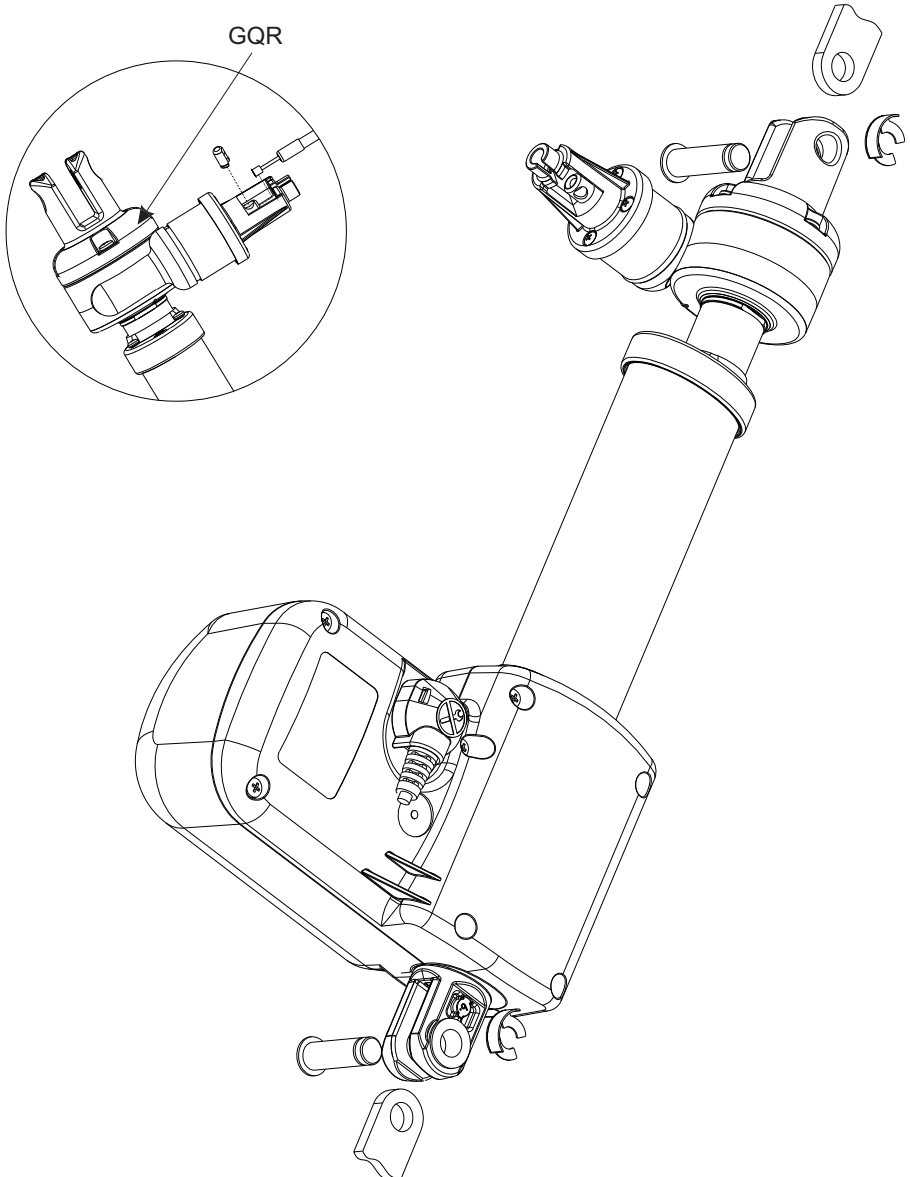
Operate the furniture to travel to the starting position, then isolate **drive (2)** from the DEWERT controls. When removing **security clip (4, 9)** and **BEK bolts (3, 8)**, it is important to **support drive (2)**, as this is released instantly!





e) Quick release „GQR“ (optional)

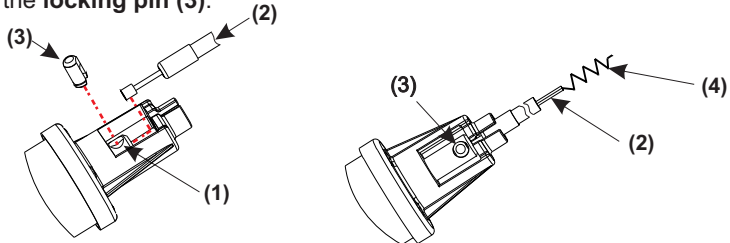
In the event of a power failure the drive can be reset via the optional quick release. Actuating the quick release causes the drive to travel back to the starting position.



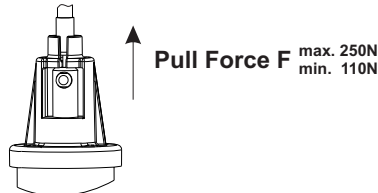
# MEGAMAT 4

## Please note:

- GQR (Quick Release) features a high quality gear system which can be actuated at any time, also in the loaded state.
- To allow actuation, a suitable commercially available **Bowden cable (2)** is provided. This is fastened in the **Bowden cable receptacle (1)** (not part of the supply package).
- Thread the Bowden cable fully through the groove in the **Bowden cable receptacle (1)** and into the cable bolt at the top, then secure the Bowden cable in place with the **locking pin (3)**.



- The tension of the Bowden cable should **not** be too tight, otherwise this could result in unintentional disengagement or cause the clutch in the GQR's gear system to slip which in turn can lead to damage.
- The **Bowden cable fixture (1)** must be pulled until it meets the end stop (all the way up) in order to ensure that the GQR functions properly. The clutch on the GQR opens with a pull force of 110 N or greater. The pull force must not exceed 250 N; otherwise the GQR can be damaged.
- A **spring (4)** must be built into the Bowden cable mechanism to prevent damage to the GQR and to ensure proper function.



- The Bowden cable must now be tested to ensure that it is in perfect working order.

## Attention!

The GQR system is designed as a standard feature to be used for applications in the **drive's push direction**. When actuating the GQR, it is therefore important to ensure that the manual adjustment takes place in the **intended direction only**.

**Non-observance can cause the GQR to sustain damage.**

Moreover, another standard feature of the GQR is the trap protection for emergencies.

**Non-designated actuation of the trap protection (operating the quick release without actuating the Bowden cable in the opposite direction to the designated direction) leads to increased wear and premature failure of the system.**

**Please draw attention to this in your operating instructions.**

## 5. Operation

For drawing up the Operating Instructions for the end product, you can use the specialist information described herein. Please bear in mind that these instructions are intended for you as a specialist and not for the possibly non-technically trained operator of the end product.

### Attention!

- **The electric adjustment drive is not intended for use by small children or the unsupervised infirm.**
- **The electric adjustment drive is not a toy for children to play with.**

#### a) Prerequisites

The **MEGAMAT 4 drive system** is only intended for use with corresponding DEWERT control units.

In this connection please also follow the installation instructions supplied with the accompanying control unit.

#### b) Quick release “GQR”

If you have acquired a **MEGAMAT 4** drive system with **quick release „GQR“**, please note the following:

- To ensure that the function of the “**mechanical quick release, GQR**” is reliable and remains in the same constant quality, the actuator has to be completely clean. We therefore recommend an optical check (see chapter 5b) or eventually cleaning including a final check of the quick release and the integration in the service plan of the application.
- A **quick release „GQR“** enables you to move the drive manually in an emergency.
- Actuate the **quick release „GQR“** and move the drive into the desired position.

**Caution:** Depending on version, it is possible that the application could lower itself under its own weight. If application is not possible to sink down with own weight, you must press down the right side of application.

- When restarting the drive system following actuation of the **quick release „GQR“**, this automatically re-engages. The drive system is now ready for operation.

# MEGAMAT 4

## c) Maintenance and Repairs

At regular intervals carry out the inspections in accordance with the BGV A3 (Instruction of the Professional Trade Association). The inspections must be performed by an electrical specialist.

The recommended inspection period is: **6 months**

In addition to the above, the following checks should be carried out at shorter intervals:

- **Regular visual checks** for damage of all kinds  
Check the housing for **cracks** and **fractures** and the connection lead for signs of **pinching** and **shearing-off**. Also check the **strain relief** with **kink protection**, in particular after each case of mechanical loading. Any **damaged connection leads** of equipment must be replaced by **the manufacturer or persons qualified** to do so (see page 3) in order to exclude hazards.
- **Regular functional testing of the “quick release, GQR”** by actuating the Bowden cable, as described on page 9, 10 and 11.
- **Regular visual checks of the “Quick Release, GQR”** through check for completeness and correct seating of the seals to be found in the GQR.
- **Regular visual checks of the “Quick Release, GQR”**, to ensure that the function is reliable and remains in the same constant quality, the actuator has to be completely clean. We therefore recommend an optical check or eventually cleaning including a final check of the quick release and the integration in the service plan of the application.
- **Regular checks** of the Bowden cable of the "GQR quick release" at intervals to ensure that it is functioning correctly. If necessary, re-adjust!

Check the limit switches by using the DEWERT control unit to make the drive travel to the end-of-travel positions.

### **Caution!** **For Your Own Safety!**

**Shutdown in an emergency is achieved by pulling the mains plug out of the drive controls!**

The **mains plug** must therefore be accessible **at all times** when the system is in operation to ensure it can be quickly **pulled out of the wall socket** in an emergency.

Movement of the drive takes place via a stroke pipe. Please bear this in mind when designing your product:

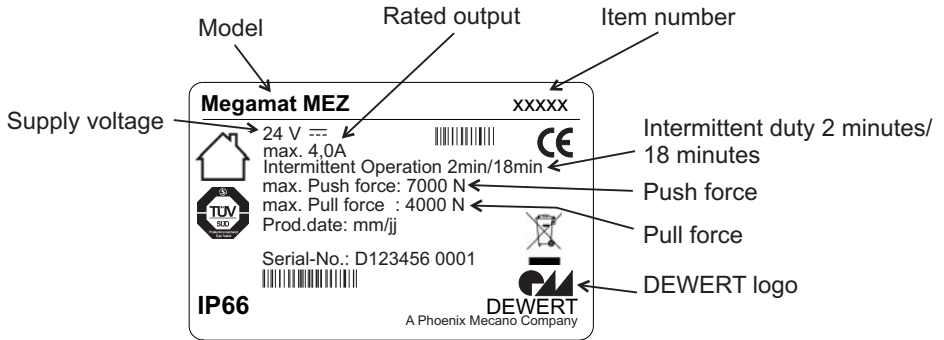
- After installing the **MEGAMAT 4** make sure that no shearing or trap/crush zones are accessible from the outside.

In the Operating Instructions to be drawn up by yourselves, it is essential that you draw the operator's attention to the points mentioned here.

## 6. Type Plate and Seal (example)

Each drive component carries an identification plate giving the exact model, item number and technical specifications (see following figure as an example).

The **MEGAMAT 4** is designated on the type plate as **MEGAMAT MEZ**.



### Graphical Symbols



Conformity mark

**IP54**

Protection category



Use in dry rooms only!



Do not dispose in your household waste!



In order to guarantee the safety of DEWERT products, a seal is attached to all DEWERT products. Opening the product damages the seal, thereby indicating that the drive has been altered or tampered with. The drive may only be opened by specialist personnel holding the qualifications as described on page 3.

# MEGAMAT 4

## 7. Trouble-shooter's Guide to Detect and Eliminate Common Faults and Errors

The following table has been developed to help you detect and eliminate common faults and errors. If you come across a fault/error that is not listed here, please contact your supplier. All of these faults/errors may only be investigated and rectified by specialists holding the qualifications as described on page 3.

<b>Problem</b>	<b>Possible Cause</b>	<b>Remedy</b>
Handset or drive system without function	<ul style="list-style-type: none"> <li>- Handset or drive system defective</li> <li>- No supply voltage</li> </ul>	<ul style="list-style-type: none"> <li>- Contact your supplier/dealer</li> <li>- Connect to mains</li> </ul>
Drives suddenly no longer respond, no movement takes place	<ul style="list-style-type: none"> <li>- Thermoswitch on transformer or in the DEWERT controls has possibly been triggered</li> <li>- Temperature fuse in transformer has possibly been triggered</li> <li>- Instrument fuse has possibly been triggered</li> <li>- No supply voltage</li> <li>- Lead (mains and/or handset/slave drives) interrupted</li> </ul>	<ul style="list-style-type: none"> <li>- Leave the drive system in the rest position for approx. 20-30 minutes</li> <li>- Contact your supplier/dealer</li> <li>- Connect mains cable</li> <li>- Check the lead, if necessary restoring contact<sup>1)</sup></li> </ul>
Actuator installation not possible or the actuator generates a click sound at the lower limit switch if it is retracted in the application.	<ul style="list-style-type: none"> <li>- The fitting dimension from the application doesn't match with the corresponding actuator.</li> </ul>	<ul style="list-style-type: none"> <li>- Measure the mounting points in the application (e.g. with a distance gauge) and rework the mounting points if necessary.</li> </ul>
The clutch disengagement is rough-running.	<ul style="list-style-type: none"> <li>- The actuator fixing in the mounting points is too tight.</li> </ul>	Please check: <ul style="list-style-type: none"> <li>- Screws and Screws size</li> <li>- Clevis size and width size</li> <li>- Misalignment of latches</li> <li>- Rework the mounting points if necessary.</li> </ul>
After some cycles, the actuator or the GQR function is faulty.	<ul style="list-style-type: none"> <li>- The mechanical stops in the application do not exist, or are not in line with the fitting dimension of the actuator.</li> </ul>	<ul style="list-style-type: none"> <li>- Check the fitting dimension of the actuator matched to the fitting dimension of the application. Rework the mounting points if necessary.</li> </ul>
Motor is running but the actuator does not move or the actuator is retracted by itself.	<ul style="list-style-type: none"> <li>- The freewheel function has been permanently / daily used to adjust the application.</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the actuator. (The internal freewheel function is destroyed, it is a protection function and not suitable for the adjustment.)</li> </ul>

<sup>1)</sup> see page 11 Maintenance and Repairs

Problem	Possible Cause	Remedy
Motor is running, the actuator does not move, the actuator is retracted by itself. Not or rough-running release function is given.	- Actuator overloads by e.g. a collision with an obstacle.	- Check the free travel of the application. Replace the actuator on suspicion of a damage.
Motor is running but the drive does not move	- GQR Bowden cable is not at the starting position, too much pre-stressing on the Bowden cable.	- adjust Bowden cable

## 8. Cleaning

The **MEGAMAT 4** drive system has been designed for easy cleaning, assisted in addition by a large number of smooth surfaces.

The **MEGAMAT 4** drive system should be cleaned with a damp cloth using a proprietary cleaning agent suitable for **plastic**. Follow the instructions provided by the manufacturer of the respective cleaning agent used.

**Before cleaning, always pull out the mains plug of the controls!**

Never clean the drive system in a wash tunnel or with a **high-pressure cleaner nor spray liquids onto it**. You otherwise risk damaging the equipment!

When **cleaning** take care not to damage the drive system's **connection lead!**

In its basic version the drive system meets the requirements of the IP20 protection category. You have the option of upgrading the protection category up to IP54.

**Do not use any solvents** such as **benzene, alcohol** or similar substances.

## 9. Disposal

The **MEGAMAT 4** drive system contains electronic components, cables, metal, plastic etc. The **MEGAMAT 4** drive system should be disposed of in accordance with the environmental regulations applicable in the respective country. Information on this subject can also be obtained from:

Federal Association for  
Disposal Management BDE  
Behrenstraße 29  
10117 Berlin / Germany  
Phone: +49 (0) 30-59 00 33 5-0  
[www.bde-berlin.de](http://www.bde-berlin.de)

### Notes on environmental directives and legislation

- The product complies with the European Directive 2002/95/EC (RoHS as of 01.07.2006).
- The product is not subject to the European Directive 2002/96/EC (WEEE) and its amendment EU Directive 2003 / 108 / EC.

**The MEGAMAT 4 drive system may not be disposed of with the normal household waste!**



# MEGAMAT 4

## Declaration of Incorporation/Installation

According to Appendix II of the EU Machinery Directive 2006/42/EC

The manufacturer:

**DEWERT**  
**Antriebs- und Systemtechnik GmbH**  
**Weststr. 1**  
**32278 Kirchlengern**  
**Germany**

declares that the incomplete machine described below

**MEGAMAT MEZ, MEGAMAT ME(n)<sup>1)</sup>**

complies with the following basic requirements of the Machinery Directive (2006/42/EC):

Sections: 1.1.3; 1.3.3; 1.3.4; 1.3.7; 1.5.1; 1.5.2; 1.5.5; 1.5.6;  
1.5.7; 1.5.8; 1.5.9; 1.5.10; 1.5.13; 1.6.3

You may only operate this machine after you have confirmed that the end product (into which this drive will be installed) complies with the Machinery Directive 2006/42/EC.

On request, the manufacturer is obliged to send the special documentation accompanying the partially completed machinery electronically to the appropriate national institution. The special technical documents corresponding to the machine have been created according to Appendix VII, part B.

The following person is responsible for the technical documentation: Hartmut Klimm,

Address cited above.

Tel: 05223 979150

Kirchlengern, Germany. February 21, 2012



Sascha Koltzenburg  
Head of R & D

<sup>1)</sup> (n) stands for 1-5



## EU Declaration of Conformity

In compliance with Appendix IV of the EU EMC Directive 2004/108/EC

In compliance with Appendix III of the EU Low Voltage Directive 2006/95/EC

The manufacturer:

**DEWERT**  
**Antriebs- und Systemtechnik GmbH**  
**Weststr. 1**  
**32278 Kirchlengern**  
**Germany**

declares that the following product

**MEGAMAT MEZ, MEGAMAT ME(n)<sup>1</sup> with DEWERT control unit**

meets the requirements of the following EU directives:

**Electromagnetic Compatibility Directive 2004/108/EC**

**Low Voltage Directive 2006/95/EC**

Applied Standards:

- **EN 60335-1/A13:2008**
- **EN 55014-1:2006 + A1:2009**
- **EN 55014-2/A2:2008**
- **EN 61000-3-2:2006**
- **EN 61000-3-3:2008**

This declaration of conformity is no longer valid if constructional changes are made which significantly change the drive system (i.e., which influence the technical specifications found in the instructions or the intended use)!

Kirchlengern, Germany. February 21, 2012



Sascha Koltzenburg  
Head of R & D

<sup>1)</sup> (n) stands for 1-5

# MEGAMAT 4

## Additional Information

### Megamat 4 (MEZ) drive system

The following standards were applied in the IP54 versions with DEWERT CARE/HOSP control unit.

Based on EN 60601-1:1990 +A1:1993 +A2:1995, Electromedical Equipment

EN60601-1, main section 2	Environmental Conditions
EN60601-1, main section 3	Protection against Electrical Shock Hazard
EN60601-1, section 21	Mechanical Strength
EN60601-1, main section 7	Protection against Excessive Temperatures
EN60601-1, main section 9	Non-designated Operation and Cases of Faults
EN60601-1, main section 10	Constructional Requirements
EN60601-1, section 56.8	But without power supply indicator
EN60601-1, section 36	Electromagnetic Compatibility
EN60601-1-2	Electromagnetic Compatibility

### For marking on the type label

The following standards have been used at least to IPX4 - according to IEC/EN 60601-1, 3rd edition, medical electrical equipment.

IEC/EN60601-1, Section 4	General requirements
IEC/EN60601-1, Section 6	Classification
IEC/EN60601-1, Section 7.1	Labelling – general
IEC/EN60601-1, Section 7.2	Labelling – inscriptions
IEC/EN60601-1, Section 8	Protection against electrical danger
IEC/EN60601-1, Section 11.1	Overheating protection
IEC/EN60601-1, Section 11.2	Fire prevention
IEC/EN60601-1, Section 11.3	Design requirements for fire-resistant housing
IEC/EN60601-1, Section 13	Dangerous situations and error conditions
IEC/EN60601-1, Section 16.6	Leakage current
IEC/EN60601-1, Section 17	Electromagnetic compatibility
IEC/EN60601-2-52, Section 201.11.6.5.101	Waterproof protection: only for >= IPX4
IEC/EN60601-2-52, Section 201.9.8.3.2	Static load



Notes



PHOENIX MECANO

DEWERT  
Antriebs- und Systemtechnik GmbH  
Weststraße 1  
32278 Kirchlengern  
Tel: +49 (0)5223/979-0  
Fax: +49 (0)5223/75182  
<http://www.dewert.de>  
[Info@dewert.de](mailto:Info@dewert.de)