Installation Instructions

DEWERT OKIN
A DewertOkin Technology Group Company

MEGAMAT 4

Installation Instructions

(Translation of the original Installation instructions)

Produktion überwacht
Bauart geprüft

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MEGAMAT 4

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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 DewertOkin drive control units!

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

DewertOkin **accepts no liability** for damage caused as a result of …

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

Due to the policy of ongoing product improvement, DewertOkin 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**…

- for 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,
- in appliances used by small children or fragile persons,
- in the immediate vicinity of young children.

2. Prerequisites

The installation steps descriped 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 DewertOkin 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, DewertOkin 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.

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b) Technical Data

Rated voltage	24 - 29 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[1] 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[2]	< 500 mm
Adjustment Speed[3]	to 4.7 mm/s (depending on application)
Protection category	IP20; IPX4
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

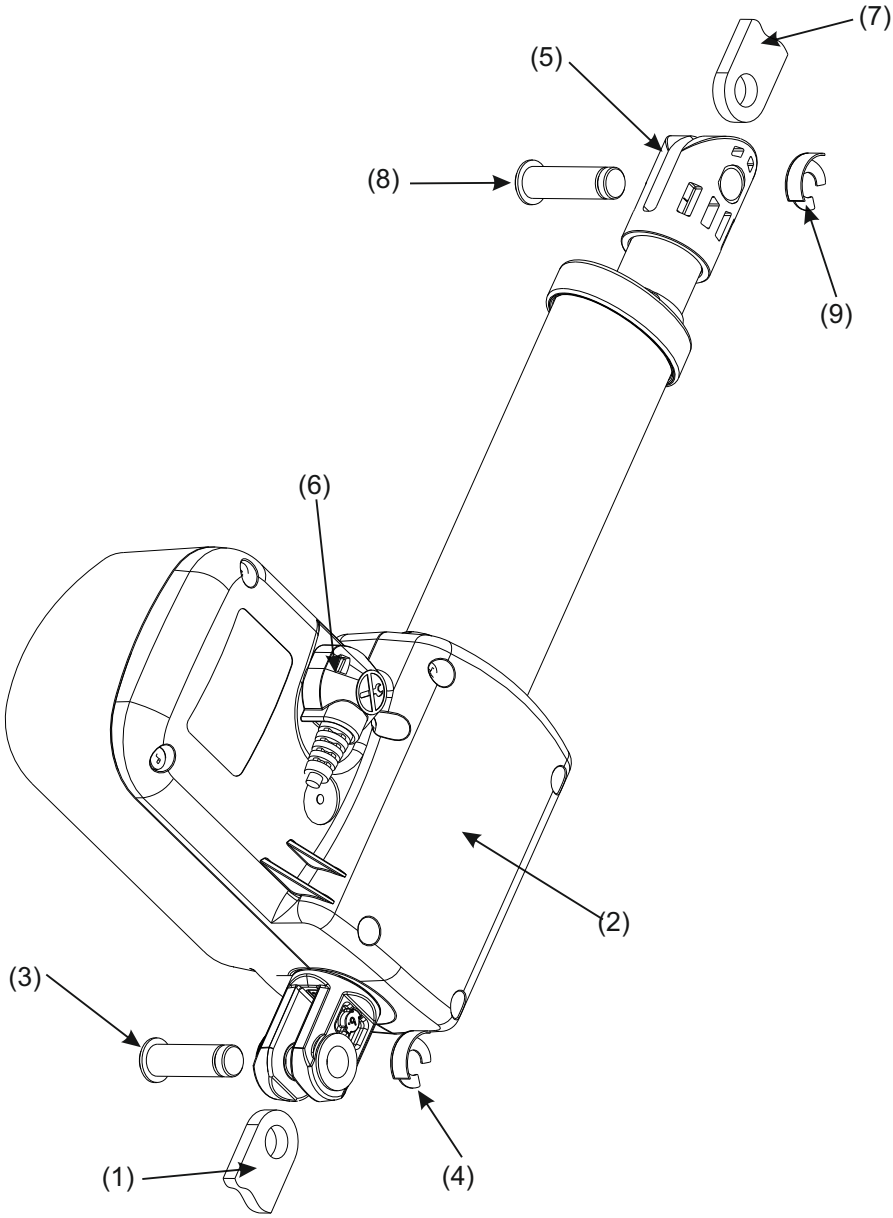
Transport / storage temperature	from -20 °C to +50 °C from -4 °F to +122 °F
Operating temperature	from +10 °C to +40 °C from +50 °F to +104 °F
Relative humidity	from 30% to 75%
Air pressure	from 800 hPa to 1060 hPa
Altitude	< 2000m

[1] Mode of operation: intermittent duty 2 min./18 min. This means that after the unit is operated with ist rated load for up to two minutes it must then be paused for 18 minutes. The system can malfunction if this pause is not observed!

[2] Data deviating from these standard values can be established after consultation and depending on the application and force.

[3] Adjustment speed: the speed at which the clevis can move under no load (the speed varies depending on the load).

Assembly of the MEGAMAT 4 Single Drive



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 **DewertOkin control unit**. **Secure cable (6) to prevent it from being pulled out** (please also refer to the Installation Instructions supplied with the DewertOkin control units).

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

Attention!

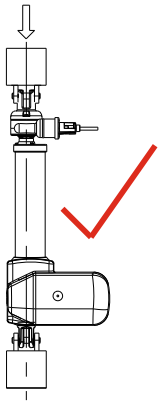
- For technical reasons or to save costs, mechanical limit stops are not always provided. In safety-critical drives we therefore recommend using an additional safety limit switch which in the event of a defective top limit switch protects against dangerous excess travel and failure. The safety limit switch puts the drive permanently out of action as soon as any over-shooting 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.

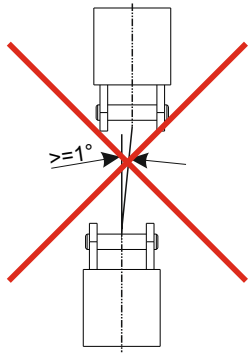
b) Recommended installation position of the MEGAMAT 4 with GQR (quick release)

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 bringt 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° and more. A fitting position of almost 0° is ideal.

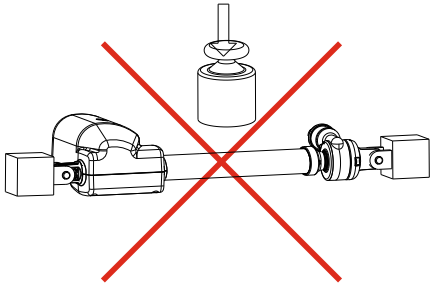




Effects of the fitting position

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.

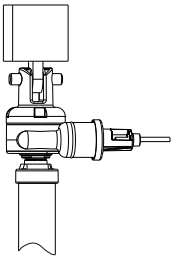


Recommended arrangement of the fittings

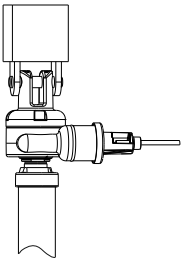
Besides precise alignment of the fittings, we recommend using only one fixing bracket **(a)** at either side of the fittings. This measure reduces the risk of a misalignment of the two fixing brackets which would cause the drive unit to tilt. The actuator must always be fixed, so that it is restrained, 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.

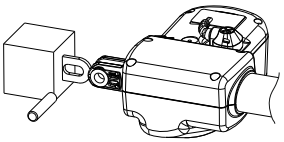
(a)



(b)



(c)



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.

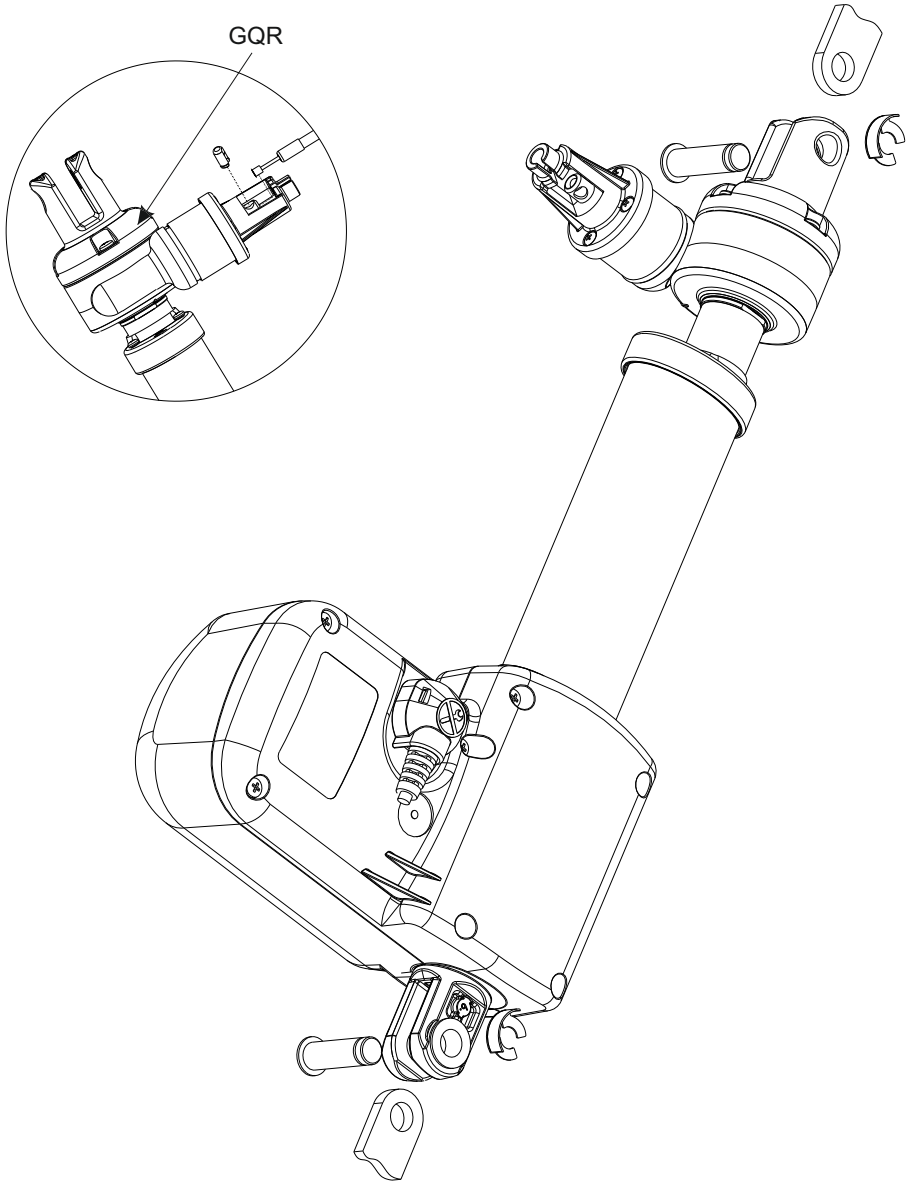
Make sure that the cables, in particular the **connection lead**, are fastened to the end product with adequate **strain relief** and **kink protection** and that suitable constructional measures prevent the **connection lead from trailing on the floor** when the end product is being **moved**.

D) Dismantling

Operate the furniture to travel to the starting position, then isolate **drive (2)** from the DewertOkin 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.



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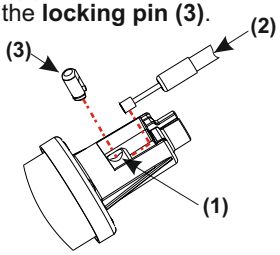
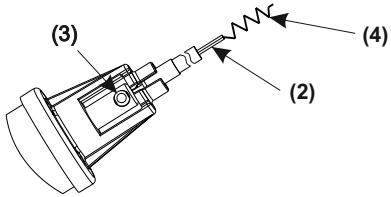
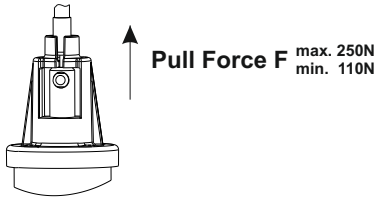
Please note:

- 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 DewertOkin 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.

c) Maintenance and Repairs

At regular intervals carry out the inspections. 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 DewertOkin 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:

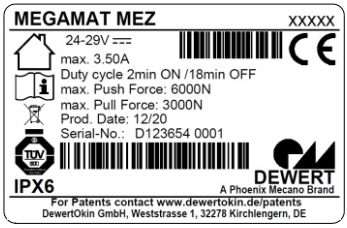
- After installing the **MEGAMAT 4** make sure that no shearing or trap/crush zones are accessible from the outside.

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 Label (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**.



MEGAMAT MEZ	Article type designation
Xxxxx	Article number
24-29V	Input voltage
Max. 3.50A	Current consumption
Duty cycle 2min ON / 18 min OFF	Intermittent operations: 2 minutes / 18 minutes
Max. Push Force	Push force
Max. Pull Force	Pull force
Prod.Date	Week / Year
Serial-No.	Serial number
IPX6	Protection category
	Use in dry rooms only!
	Follow all special disposal instructions!
CE	Mark of CE conformity

7. Troubleshooting

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.

Problem	Possible Cause	Remedy
Handset or drive system without function	- Handset or drive system defective - No supply voltage	- Contact your supplier/dealer - Connect to mains
Drives suddenly no longer respond, no movement takes place	- Thermoswitch on transformer or in the DewertOkin controls has possibly been triggered - Temperature fuse in transformer has possibly been triggered - Instrument fuse has possibly been Triggered - No supply voltage - Lead (mains and/or handset/slave drives) interrupted	- Leave the drive system in the rest position for approx. 20-30 minutes - Contact your supplier/dealer - Connect mains cable - Check the lead, if necessary restoring contact[1)]
Actuator installation not possible or the actuator generates a click sound at the lower limit switch if it is retracted in the application.	- The fitting dimension from the application doesn't match with the corresponding actuator.	- Measure the mounting points in the application (e.g. with a distance gauge) and rework the mounting points if necessary.
The clutch disengagement is rough-running.	- The actuator fixing in the mounting points is too tight.	Please check: - Screws and Screws size - Clevis size and width size - Misalignment of latches - Rework the mounting points if necessary.
After some cycles, the actuator or the GQR function is faulty.	- The mechanical stops in the application do not exist, or are not in line with the fitting dimension of the actuator.	- Check the fitting dimension of the actuator matched to the fitting dimension of the application. Rework the mounting points if necessary.
Motor is running but the actuator does not move or the actuator is retracted by itself.	- The freewheel function has been permanently / daily used to adjust the application.	- Replace the actuator. (The internal freewheel function is destroyed, it is a protection function and not suitable for the adjustment.)

1) 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 to facilitate cleaning for the user, and this has been made even easier thanks to the large number of flat surfaces.
The **MEGAMAT 4** drive system should be cleaned with a household cleaning agent suitable for plastic using a damp cloth. Always note 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 IPX4.

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

9. Disposal

The **MEGAMAT 4** drive consists of electronic components, cables and metal and plastic parts. You should observe all corresponding national and regional environmental regulations when disposing of the **MEGAMAT** 4 drive.

The disposal of the product is regulated in Germany by Elektro-G, internationally by the EU Directive 2012/19/EC (WEEE), or by any applicable national laws and regulations

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

MEGAMAT 4

Declaration of Incorporation

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

The manufacturer:

DewertOkin GmbH
Weststraße 1
32278 Kirchlengern
Deutschland - Germany

declares that the incomplete machines described below

MEGAMAT MEZ, MEGAMAT ME(n)[1)]

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

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

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

For preparation of the technical documentation is authorized:

DewertOkin GmbH
Weststraße 1
32278 Kirchlengern
Tel.: 05223 979-0
Deutschland - Germany

Kirchlengern, Germany 24 March 2020

Dr.-Ing. Josef G. Groß
Geschäftsführer / Managing Director

[1)] (n) stands for 1 - 5

DEWERT OKIN
A Phoenix Mecano Company

EU Declaration of Conformity

In compliance with Appendix IV of the EMC-Directive 2014/30/EU

In compliance with Appendix IV of the LVD-Directive 2014/35/EU

In compliance with Appendix VI of the EU RoHS Directive 2011/65/EU (incl. Commission delegated Directive (EU) 2015/863)

The manufacturer:

DewertOkin GmbH
Weststraße 1
32278 Kirchlengern
Deutschland - Germany

declares that the following product

MEGAMAT MEZ, MEGAMAT ME(n)[1] with DewertOkin Control Unit

meets the requirements of the following EU directives:

Electromagnetic Compatibility Directive 2014/30/EU

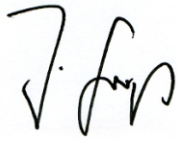
Low Voltage Directive 2014/35/EU

COMMISSION DELEGATED DIRECTIVE (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances.

Applied standards:

EN 60335-1:2012/A11:2014
EN 55014-1:2006/A1:2009/A2:2011
EN 55014-2:1997/A1:2001/A2:2008
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 62233:2008

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 24 March 2020

Dr.-Ing. Josef G. Groß
Managing Director

[1] (n) stands for 1 - 5

MEGAMAT 4

Additional information

MEGAMAT 4 (MEZ) drive system

The following standards and norms were used in the versions with at least IPX4 and higher in according to

- EN 60601-1:2006 + A1:2013, IEC 60601-1:2005 + A1:2012 (short description: Edition 3.1), Medical electrical equipment.
- EN 60601-1-2:2015, IEC 60601-2-2:2014 (short description: Edition 4.0), EMC

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	Protection against water ingress: only applied for at least IPX4
IEC/EN60601-2-52, Section 201.9.8.3.2	Static load

MEGAMAT 4

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