TECHNIPHARM®
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iDAIRY®

# COWBRUSH

## BROUWERS ANGLE E BRUSH

# INSTRUCTIONS

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# COWBRUSH

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# 1 Preface

## 1.1 About this Manual

This manual is supplied with the product.

- It is modular in design and relates only to the mentioned product. For details on components pertaining to the product, please refer to the relevant manuals. This applies in particular to the safety instructions!
- It should be kept close at hand and remain at all times with the equipment even if the equipment is sold.
- It is not subject to subsequent amendments. To obtain a copy of the latest version or any most recent updates, please contact your technical dealer or the manufacturer directly.

The manufacturer reserves the right to make changes due to technical developments in the data and images given in this manual.

Reproductions, translations and copies of any kind, even of extracts, require written authorization from the manufacturer.

Abbreviations, units, specialist terms, special names or specialist terminology are explained in more detail in the "Appendix".

### Pictograms used

This pictogram indicates information that will help towards a better understanding of the working processes.

This pictogram indicates a special tool required for installation.

This pictogram refers to another document or chapter.

### Document languages

If a manual is referenced with a number, the 4 center digits of the manual number indicate the language of the referenced document. See the following examples:

| | Language | | Language | | Language |
|---|---|---|---|---|---|
| -9000- | German | -9013- | Dutch | -9032- | Serbian |
| -9001- | English (Great Britain) | -9015- | English (America) | -9034- | Slovakian |
| -9002- | French (France) | -9016- | Polish | -9036- | Lithuanian |
| -9003- | Italian | -9021- | Danish | -9038- | Portuguese (Brazil) |
| -9004- | Romanian | -9022- | Hungarian | -9039- | French (Canada) |
| -9005- | Spanish | -9023- | Czech | -9040- | Latvian |
| -9007- | Swedish | -9024- | Finnish | -9041- | Estonian |
| -9008- | Norwegian | -9025- | Croatian | -9043- | Spanish (North America) |
| -9009- | Russian | -9027- | Bulgarian | | |
| -9010- | Greek | -9029- | Slovene | | |

**Note!**
Not all of the above languages may be available.

# 2 Safety

## 2.1 Owner's obligation of care

The product has been designed and constructed taking account of a potential risk analysis and after careful selection of the compliant harmonized standards and other technical specifications. It therefore ensures a maximum level of safety.

To maintain this level of saftey in practice (on the farm) it is vital that all necessary action is taken. It is part of the owner's obligation of care to plan these actions and check that they are performed.

**The owner must ensure that**

- Everyone who works with or performs activities in connection with the product carefully reads the instructions (especially the safety instructions and warnings) and signs to confirm that they have understood them and will act in accordance with them!
- A full set of legible instructions is always kept by the product.
- Anyone who has to carry out work on the product can look at the instructions at any time.
- The instructions in the section entitled "Basic safety instructions" are observed.
- The legal requirements are observed.
- Operating instructions are produced for the farm. These must be especially adapted to the conditions of the business, once again, expressly taking account of safety aspects.
- The product
  - Is only used for its intended purpose.
  - should only be operated when in perfect working order and particularly the safety equipment should be checked regularly to ensure it is working.
- The work to be carried out is performed by a sufficiently qualified person!

  In this respect, please also read the section on "Personnel Qualification".
- These personnel are regularly instructed in all relevant matters of safety at work and protection of the environment and be familiar with the manual, particularly the safety instructions it contains.
- Operating personnel who require training only work on the product under the supervision of an experienced person. The successful completion of training is to be confirmed in writing.
- Safety signs, plates and decals, which are attached to the product, must be replaced immediately if they become illegible or lost.
- All safety or warning instructions applied are not removed and remain legible.
- Escape routes are marked by means of signs in accordance with national regulations!
- The personal protective equipment required for personnel carrying out operation, maintenance and repairs is made available and used.
- Unauthorised persons (e.g. children) are not allowed in hazardous areas and do not have access to cleaning agents or disinfectants.

## 2.2 Explanation of safety symbols

Safety symbols draw attention to the importance of the adjacent text. The design of the warnings is based on ISO 3864-2 and ANSI535.6.

**Safety symbols and signaling word**

**WARNING!**
The word "Warning" signals danger to life or health of personnel. Death or serious injury may result if the danger is not avoided.

**Attention!**
The indication "Attention" signals important information on risks for the product or the environment.

**CAUTION!**
The indication "Caution" signals dangerous situations. Death or serious injury may result if the danger is not avoided.

**DANGER!**
The indication "Danger" signals immediate danger to life or health of personnel.
Death or serious injury will result if the danger is not avoided.

## 2.3 Basic safety instructions

- There are risks involved in the operation and maintenance of equipment for dairy farms. For your own safety, read and follow the operating manual carefully!
- The chapter "Technical data" gives the permissible working conditions (pressure ranges, temperature ranges, airflow quantities etc.) and these must be observed!
- Do not open or dismantle devices (risk of injury)!
- Do not remove any protective devices (risk of injury)!
- When working with cleaning and disinfecting agents observe the notes on dangers and protective measures (risk of caustic burns)!
- When working with products from other manufacturers always observe the warnings from the safety data sheets and operating instructions from the product manufacturer!
- Observe measures on protection against noise!
- Do not stand underneath suspended loads.
- Always keep the control cabinet, all electricity supply units, and electrical control units closed. Access is only permitted to authorized personnel with a key or special tool.
- Protect live and high-voltage components against moisture. Under no circumstances may water jets or high-pressure cleaners be directed at these!

## 2.4 Cow brush saftey

Please read the following general safety regulations.

1. Do not let children or adults unable to provide for their own safety come near the cow brush without being accompanied by adults able to operate the cow brush.
2. Do not let persons wearing loose clothes and/or with loose long hair come near the cow brush because they might risk injury.
3. Never carry out cleaning, lubrication, service or repairs to the cow brush without disconnecting and locking the main switch.
4. Never use the cow brush for other purposes than the intended purpose: brushing cattle.
5. Never install stronger fuses in electric installations than specified.
6. Electric installations and electrical repairs **must** be carried out by a registered electrician or authorized GEA service staff with the appropriate qualification.
7. Machine modifications must only be carried out by persons authorized by GEA to assess the modifications and their conformity with the requirements in the EC Declaration of Conformity for this machine and, if necessary, capable of drawing up an EC Declaration of Conformity.

## 2.5 Personnel qualification

Personnel performing work on or working with the product must read and understand the instructions and act accordingly!

**Note!**
If the work requires special qualifications, these are described in the corresponding chapters!

- Participation in corresponding product training is necessary.
- All work on electrical equipment and electrical connection work should only be performed by trained electricians.

In addition, special qualifications are required for the following activities:

- Maintenance / servicing
- Troubleshooting
- Repairs

## 3 Product Description

The M-Brush is developed to increase animal welfare in the cow house. The robust, simple and reliable design results in low maintenance costs. It is to be mounted and used indoors only.

The M-Brush is characterized by its special brush design. The brushes are of different diameter, ensuring a perfect fit to the animal body. This design keeps the animals clean and healthy and reduces the risk of scab.

### 3.1 Use

The M-Brush is not to be used for animals younger than 1 year and aninals with long hair.

To start brush rotation the cow lifts the brush with her head or body and in the process activates a switch connected to a gear motor, and the brush begins to rotate. The brush rotates for about 60 seconds after switch activation. When next activated the brush changes rotary direction to ensure a uniform wear on the brushes (with uniform rotary direction the brush bristles would fall flat).

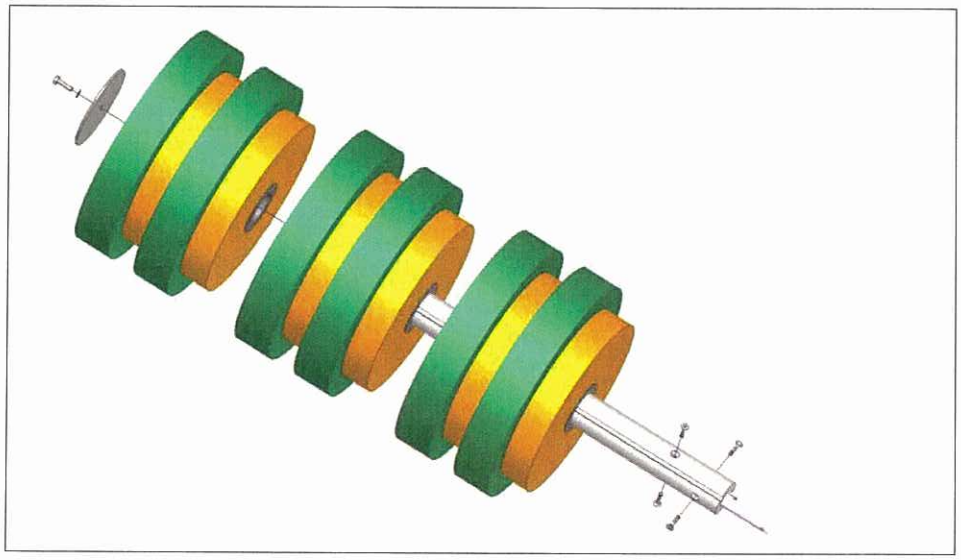
In case of overload, for instance if the cow leans too hard on the brush or if something gets entangled in the brush, the brush changes its rotary direction for about 2 seconds before the gear motor stops completely. When activated again, the brush rotates again as in normal operation.

See also Chapter "Technical Data".

### 3.2 Safety Feature

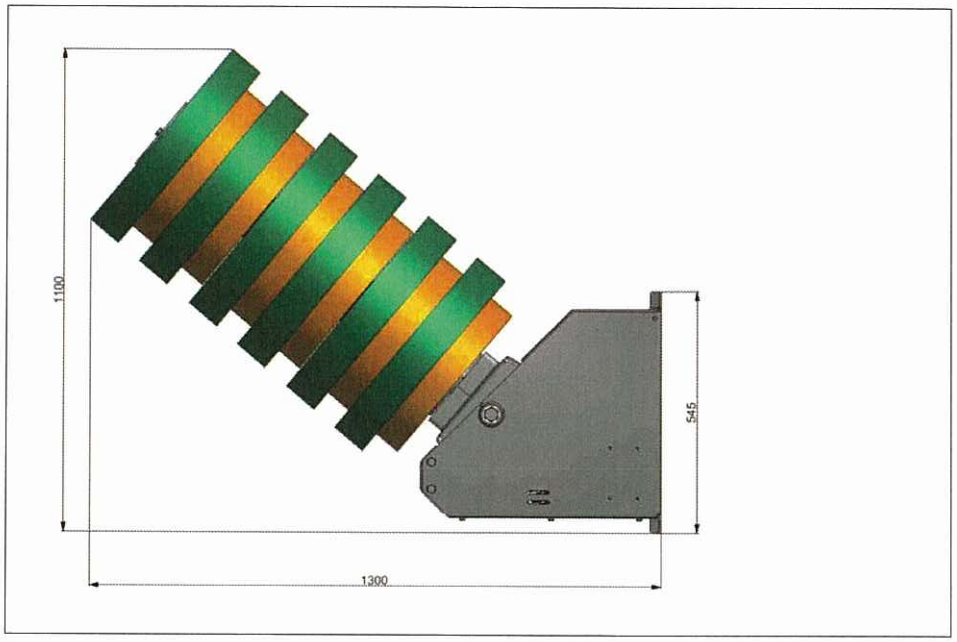
As an additionally built-in safety measure, the shaft carrying the brushes is produced in PVC, resulting in break of the shaft instead of injury to animals or machine parts. The shaft is therefore not covered by any guarantee and the factory does not compensate for damages caused by a broken shaft.

See also Chapter "Safety".



# COWBRUSH

## 4 Technical Data




### 4.1 Design and Dimensions

The M-Brush is delivered with the following dimensions:

| | | |
|---|---|---|
| 1. | Gear motor | 0.37 kW, nmotor = 1400rpm, nud= 35omdr/min. |
| 2. | Voltage | 230v/50Hz |
| 3. | Torque | 68 Nm |
| 4. | Weight | 80 kg |
| 5. | Brush diameter | 400 and 500 mm |

### 4.2 Performance

**Attention!**
Please bear the following in mind.

1. The M-Brush is only to be used for cows in free stall barns.
2. The M-Brush is suitable for grooming a herd of about 50 cows.
3. The M-Brush is not suitable for bulls and cattle in heat.
4. The animals' hair must be kept short.
5. The animals' long tail hair must be trimmed as otherwise long tail hair may get entangled in the brushes.
6. The animals must not wear a halter or neck strap.
7. The animals must be dehorned.

# 5 Transport

## 5.1 Saftey Instructions for Transport

Do not use load suspension devices other than indicated below to prevent serious damage to property and/or life-threatening injury to people.

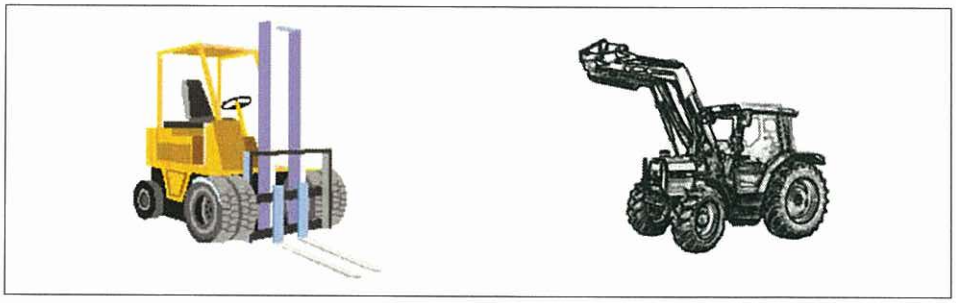
See also Chapter "Safety".

**Special transport hazards**

- Sharp edges may cause injuries.
- Suspended loads can fall resulting in severe injuries or even death.

**Permissible devices and aids for transportation:**

Have suitable lifting and carrying equipment ready, such as a forklift truck or front loader.



**WARNING!**
Do not stand underneath suspended loads.
Suspended loads may fall, so there is a danger of death!

## 5.2 Disposing of Packing Material

After unpacking, the packing material is to be handled properly and disposed of carefully in accordance with the valid local regulations on waste disposal and utilization.

# 6 Installation

## 6.1 Preparation

Prior to installation and start-up check the M-Brush for any transport damage. Check the installation location for any potential dangers to the M-Brush operation such as hanging wires, cables, and ropes.

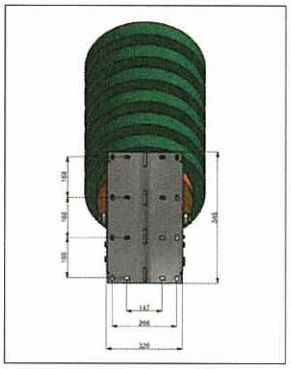
Furthermore the carrying capacity and stability of the wall must be checked before starting the installation.

## 6.2 Mounting

The M-Brush is designed to be bolted to a wall. It is recommended to use screw joints to prevent the M-Brush from being torn off by heavy loads.

The M-Brush should be bolted on a plane surface supporting the entire housing. Alternatively it is also possible to mount the M-Brush on a stanchion.

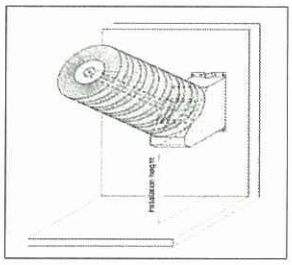
- Holes are indicated on the back panel for correct mounting of bolts, screws and anchors to the wall.



- Bolts and brackets for 70x70 mm stanchion or 2½" stanchion (ø76 mm) are included.

## 6.3 Height

- To achieve the best possible cleaning and scratching effect for all animals, the M-Brush should be installed in the appropriate height.
- The installation height depends on the height of the herd and is determined by the shoulder height of the smallest and the largest cow.



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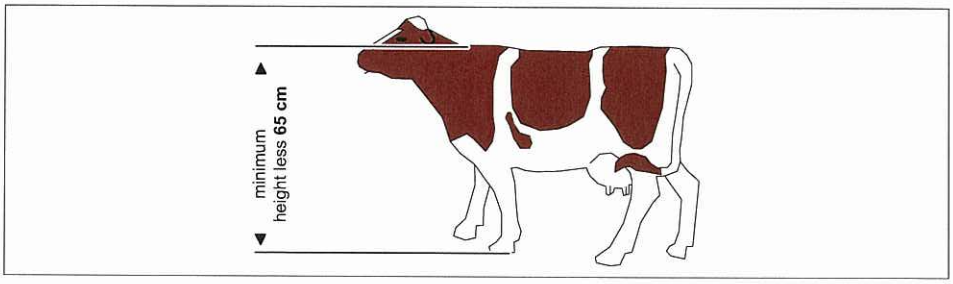
**Smallest cow**

If the difference in height between the largest and the smallest cow is **less** than 20 cm, the following installation height is to be observed:

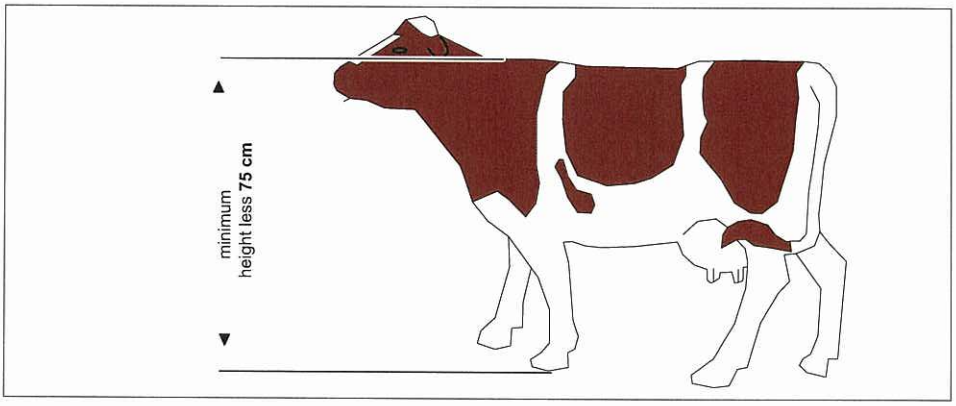
Installation height = shoulder height of smallest cow **less 65 cm**




**Largest cow**

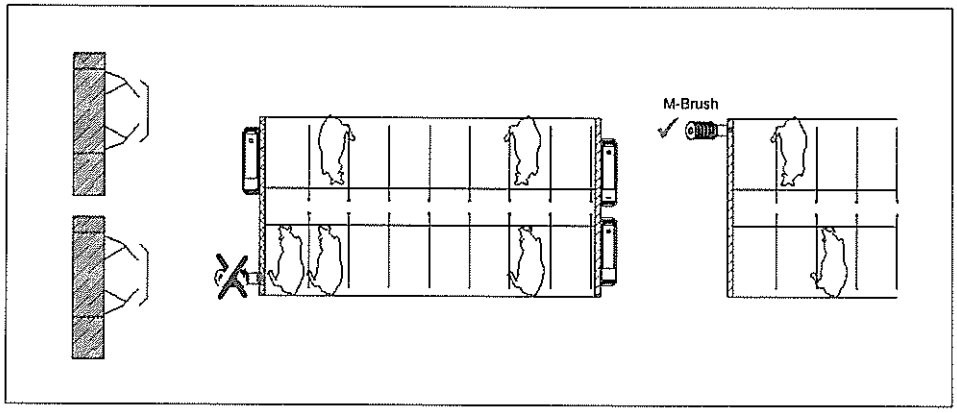
If the difference in height between the largest and the smallest cow **exceeds** 20 cm, the following installation height is to be observed:

Installation height = shoulder height of largest cow **less 75 cm**



## 6.4 Placing the M-Brush

It is recommended not to place the M-Brush in high traffic areas, (e.g. near milking machinery). Simple alleys are essential to provide optimum cow traffic and ample space for regular grooming.

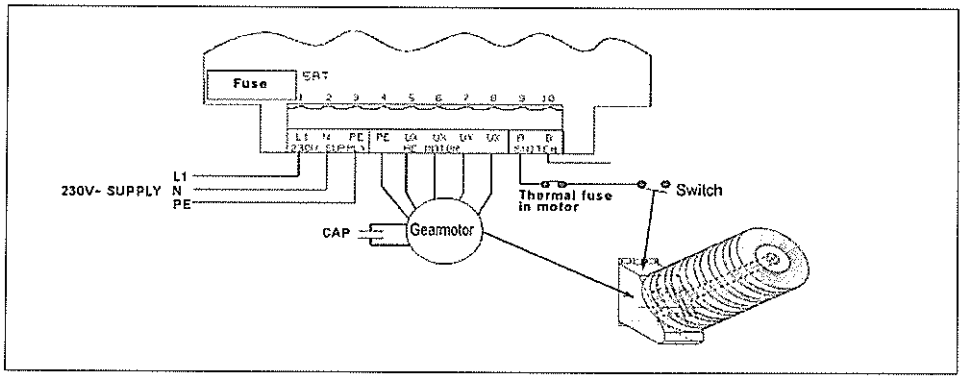



## 6.5 Electrical Connection

The M-Brush must be connected by a qualified electrician or a GEA service technician.

1. Voltage and frequency must be 230V/50Hz.
2. Connection requires a fuse of a minimum 10 ampere.
3. The M-Brush must be fitted with a lockable safety circuit breaker working directly on the gear motor.
4. According to IEC standards a residual current device (RCD) is required and the installation must comply with current guidelines.
5. The live wire from the M-Brush to the safety circuit breaker must be out of the cows' reach.
6. When connecting external power supply, the cable must be fastened in a secure manner to avoid the cows slipping on the cable.
7. Any damage caused by non-expert connection is not covered by GEA Farm Technologies.

### Circuit Diagram



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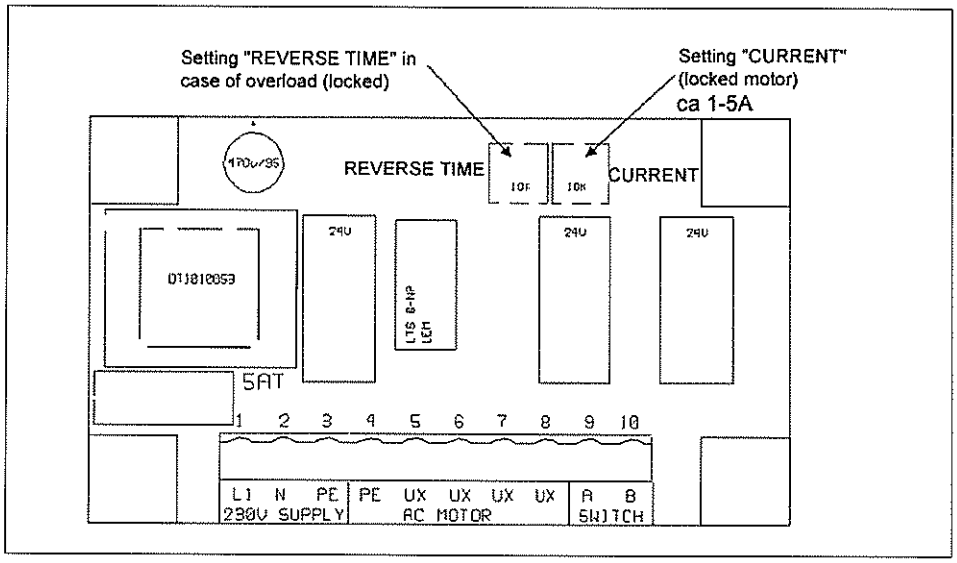
## 6.6 Motor Control

The purpose of the motor control is to steer the rotary direction of the brushes and to disconnect gear motor in case of overload.

The motor control box has a set screw marked CURRENT. It determines at what ampere consumption the motor control will disconnect the gear motor. The set screws have factory settings.



# 7 Service and Maintenance

The robust, simple and very reliable design of the M-Brush results in low maintenance costs. However, with moving parts wear can be expected. To extend service life considerably and to have a reliable M-Brush the following should be observed.

All components such as control unit, gear and switch are accessable to the service technician. The shielding can be demounted from the front side of the brush to lighten carrying out the service.

- Before service, maintenance, repairs or other work on the M-Brush the safety circuit breaker must be disconnected and locked.
- After 5-10 hours of operation the bolts must be tightened up.
- In case of defects, neglect of the described operation, maintenance and repair instructions given in this manual shall exclude GEA Farm Technologies from any liability whatsoever.

## 7.1 Qualification required for service and maintenance work

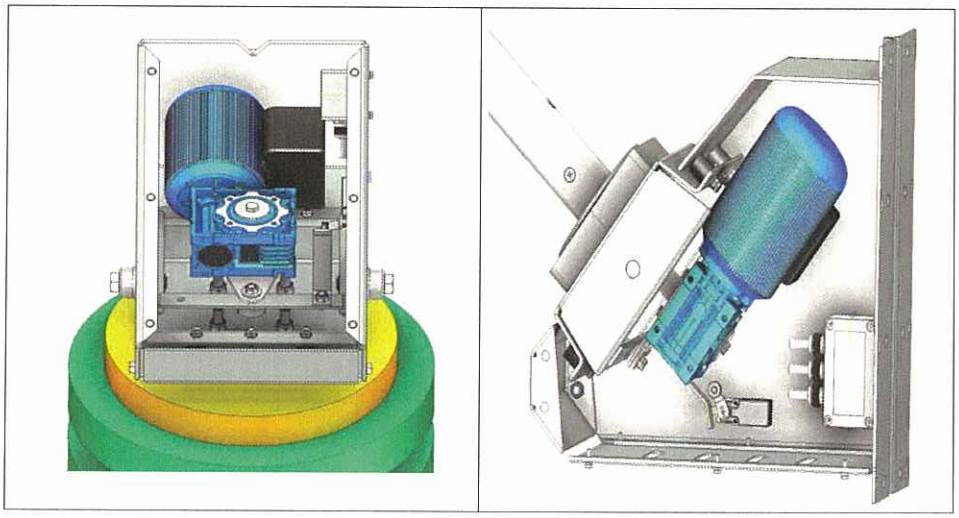
Maintenance work may only be performed by specially qualified personnel and according to the safety instructions.

If necessary, please contact your nearest authorized dealer.

## 7.2 Safety instructions for service and maintenance

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- Only use original spare parts / original wearing parts / original accessories. In the case of products by other manufacturers it cannot be ensured that they have been designed and produced from the point of view of loads and safety.



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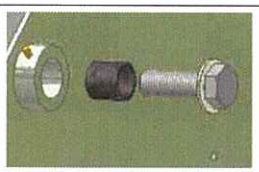
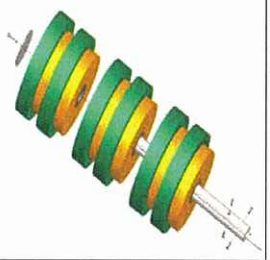
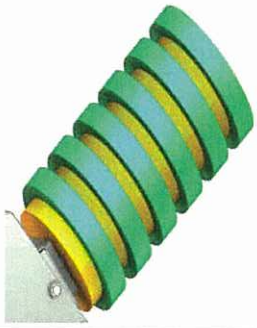
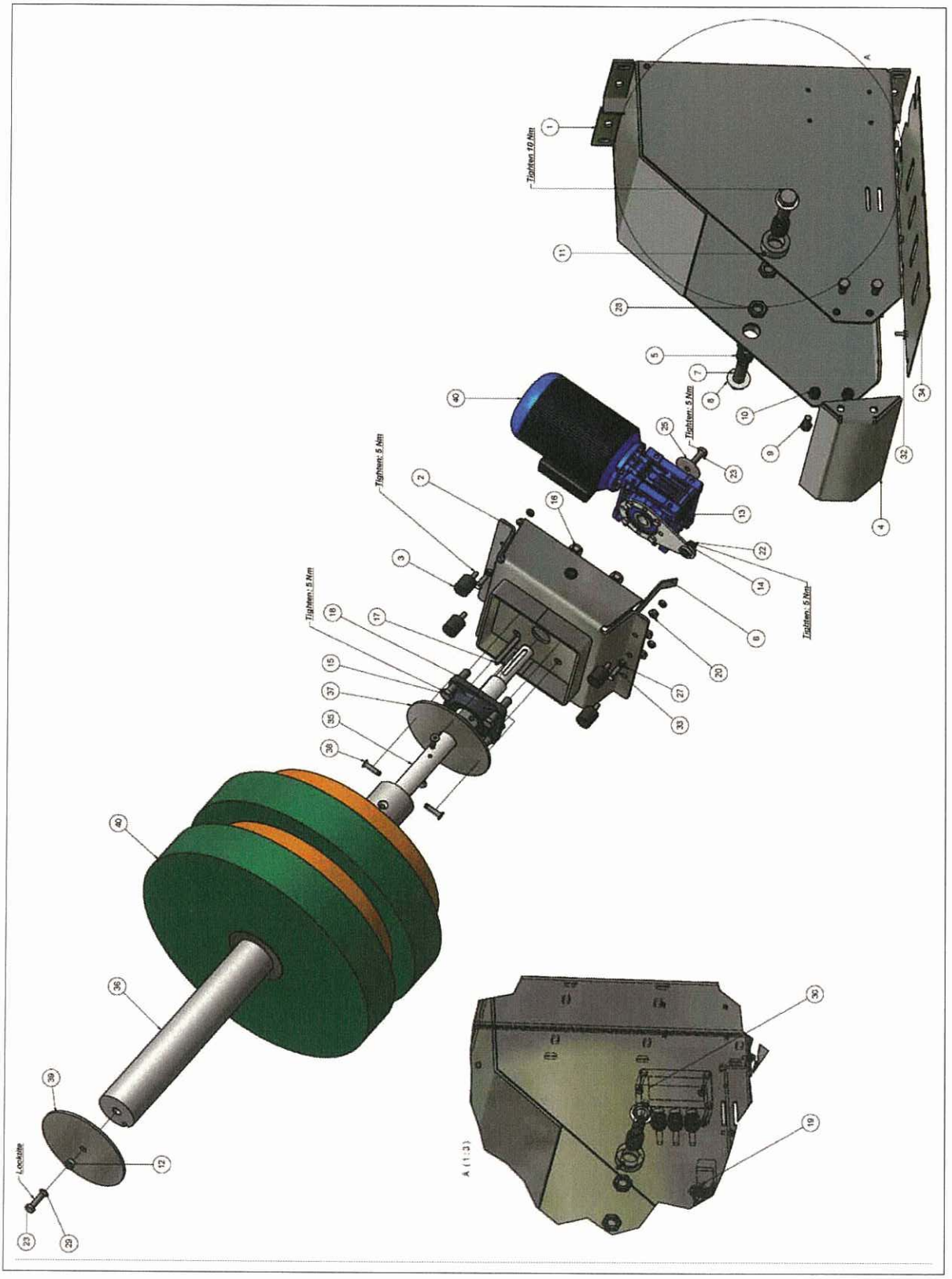
| | | | |
|---|---|---|---|
| 1. | Greasing |  | On each side of the main housing a bearing bushing is placed with a grease nipple.<br>Both bearings must be greased at least once a month. |
| 2. | Brushes |  | The brushes must be checked regularly for wear.<br>As brushes are wearing parts, they must be replaced when they are worn down. |
| 3. | Cleaning brushes |  | With time the brushes may become dirty and will therefore operate with reduced effect.<br>Cleaning at regular intervals is recommended, if possible with high-pressure cleaner. |
| 4. | Gear and motor | | The gear is maintenance-free. In other words, the bearings and the gear wheels are filled with lubricant/bearing-grease to last a lifetime.<br>It is not necessary to re-fill lubricant /bearing-grease.<br>Clean motor air bleeds and radiating fins regularly with compressed air. The motor bearings are fully greased to last a lifetime. |
| 5. | Switch and arm | | Make sure the switch arm impacts correctly to the switch.<br>If required, the arm can fine-tuned. |

# COWBRUSH

## 7.3 Spare Parts



# COWBRUSH

**Service and Maintenance**
Spare Parts

| Pos. | Part No. | Description | Pcs. |
|---|---|---|---|
| 1 | 5580-5502-001 | Housing complete | 1 |
| 2 | 5580-5502-002 | Gear box complete | 1 |
| 3 | 5580-5502-003 | Vibration absorber | 4 |
| 4 | 5580-5502-006 | Bottom plate | 1 |
| 5 | 5580-5502-008 | Bushing | 2 |
| 6 | 5580-5502-009 | Mounting plate | 1 |
| 7 | 5580-5502-011 | M20x65 Bolt | 2 |
| 8 | 5580-5502-012 | 3/4" washer | 2 |
| 9 | 5580-5502-013 | M12x25 Hardened set screw el.z | 4 |
| 10 | 5580-5502-014 | M12 locking nut | 4 |
| 11 | 5580-5502-014 | Grease nipple M6 | 2 |
| 12 | - | Press bushing M10<br>(included with the shaft pos. 36) | 1 |
| 13 | 5580-5502-016 | Gear NMRV 050 | 1 |
| 14 | 5580-5502-017 | Lever arm | 1 |
| 15 | 5580-5502-018 | Hex bolt M14 x 60 | 4 |
| 16 | 5580-5502-019 | Lock nut M14 | 4 |
| 17 | 5580-5502-020 | Shaft key 8 x 7 x 70 | 1 |
| 18 | 5580-5502-021 | ø35 flange bearing housing | 1 |
| 19 | 5580-5502-022 | Switch | 1 |
| 20 | 5580-5502-023 | M8 flanged nut with teeth el.z. | 6 |
| 21 | 5580-5502-024 | M10x20 Hardened set screw el.z | 1 |
| 22 | 5580-5502-025 | M10 locknut | 2 |
| 23 | 5580-5502-026 | M10x35 Hardened set screw el.z | 3 |
| 24 | 5580-5502-027 | Washer 12 mm HFC1895 | 2 |
| 25 | 5580-5502-028 | Washer Ø50 | 1 |
| 26 | 5580-5502-029 | M8x20 hardened set screw FZB | 4 |
| 27 | 5580-5502-030 | M8 steel nut | 6 |
| 28 | 5580-5502-031 | M20 lock nut | 2 |
| 29 | 5580-5502-032 | M10 washer type A | 1 |
| 30 | 5580-5502-033 | control cowbrush | 1 |
| 31 | 5580-5502-034 | cable adapter | 3 |
| 32 | 5580-5502-035 | M6x16 Taptite with flange | 10 |
| 33 | 5580-5502-036 | M8x25 hardened set screw el.z | 2 |
| 34 | 5580-5502-010 | bottom cover | 1 |
| 35 | 5580-5502-005 | shaft | 1 |
| 36 | 5580-5502-004 | Plastic shaft L=870mm | 1 |
| 37 | 5580-5502-038 | Disk Ø180 | 1 |
| 38 | 5580-5502-043 | M8x35 with Locktite | 4 |
| 39 | 5580-5502-007 | Disk Ø180 | 1 |
| 40 | 5580-5502-037 | Motor 0,37kW | 1 |
| | **5580-5502-039** | **Shaft Set synthetic part** | |
| | **5580-5502-040** | **Brush set elements - green, organge** | |

# 8 Appendix

## 8.1 Abbreviations

| Units | |
|---|---|
| A | Amp (current) |
| AC | Alternating Current |
| V | volt (voltage) |
| Ω | ohm (resistance) |
| Ø | diameter |
| " (in) | inch (= 25.4 mm) |
| cm | centimeters |
| Hex | Hexagonal |
| Hz | Herz |
| IEC | International Electrotechnical Commission |
| kW | kilowatt |
| m | meter |
| min | minute |
| mm | millimeters |
| mol | amount of substance |
| Nm | Newton meter |
| rpm | revolutions per minute |
| s | second |