



# BRAKES & CLUTCHES

PRODUCT PORTFOLIO MAGNET TECHNOLOGY  
EN

**Proven standard** version  
or individually adapted to the  
customer's requirements

The KEB logo is a red square with the letters 'KEB' in white. It is positioned in the lower-left area of the image, partially overlapping the rows of motor components.

**KEB**

## RELIABLE BRAKES AND CLUTCHES FOR YOUR DRIVE

KEB's success story began over 50 years ago in the field of brakes and clutches, and the safety and reliability of our products have been impressing customers around the world ever since.

In addition to our standard range of safety brakes, safety clutches and corresponding electronic accessories, we work with you to adapt the products to your requirements and needs.

In the process, we manufacture the products in accordance with the valid ISO 9001 quality guidelines and, for our automotive customers, also in accordance with IATF 16949.

### IIoT



### CONTROL HARDWARE

Visualisation



HMI

Engineering



Control Software

Remote Control



Router

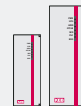
### CONTROL HARDWARE



Web HMI



Embedded Control



IPC



I/O



Safety PLC

### DRIVES



Inverter



Servo Drive



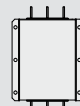
Drive Controller



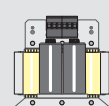
Pitch Drive



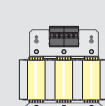
eMobility Drive



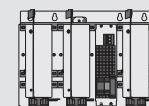
EMC & THD Filter



Sine Wave Filter



Motor Choke



Sine Wave EMC Filter

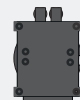
### MOTORS



AC Motor



PM Motor



PM Gear Motor



AC Gear Motor

### BRAKES AND CLUTCHES



Permanent Magnet  
Brake



Spring Applied  
Brake



Electromagnetic  
Brake



Electromagnetic  
Clutch

## PRODUCT OVERVIEW

### SPRING-APPLIED BRAKES (Power-off safety brakes)



**COMBISTOP 08**  
**Mini brake 0.3 - 2 Nm**  
For dynamic and static applications

from page 6



**COMBISTOP 28**  
**Sealed brake (IP66) 3 - 2,000 Nm**  
For dynamic and static applications with enhanced sealing requirements or tough ambient conditions

from page 8



**COMBISTOP 38**  
**Standard spring-applied brake with modular system 3 – 2,000 Nm**  
For dynamic and static applications with varied standard options

from page 10



**COMBISTOP 38D**  
**Redundant double brake 2x3 – 2x2,000 Nm**  
For dynamic and static applications with the requirement of redundancy respectively double safety

from page 12



**COMBISTOP S1**  
**High performance holding brake 0.5 – 60 Nm**  
Holding brake with emergency stop function especially for servo applications

from page 14

## PERMANENT MAGNET BRAKES AND CLUTCHES (Power-off brakes and clutches)



### COMBIPERM P1

**Standard permanent magnet brake 0.15 – 194 Nm**  
Backlash-free brake for static applications with emergency stop function

from page 18

**NEW**



### COMBIPERM P2

**High performance permanent magnet brake 3 – 75 Nm**  
Backlash-free brake with improved emergency stop function and temperatures up to -40°C

from page 20



### COMBIPERM PC

**permanent magnet clutch 1.5 – 120 Nm**  
Safety clutch: In case of an emergency the drive and output are coupled

from page 22

## ELEKTROMAGNETIC BRAKES AND CLUTCHES (Power-on brakes and clutches)



### COMBINORM B

**Electromagnetic brake 0.5 – 1,250 Nm**  
For precise positioning and reliable holding

from page 24



### COMBINORM C

**Electromagnetic clutch 0.5 – 1,250 Nm**  
For simple controlled switching on and off of functional parts in synchronised processes

from page 26



### COMBINORM T

**Electromagnetic tooth clutch 31 – 390 Nm**  
For torsional backlash-free and positive transmission of torque

from page 32

## ACCESSORIES AND TOOLS



### COMBITRON 91

**Rectifier up to 720V**

from page 34



### COMBITRON 98

**POWERBOX ECO / fast-acting rectifier up to 94% energy saving**

from page 35

## CUSTOMIZED SOLUTIONS

Individual designs **and customized development, testing and production from a single source**

from page 36

## COMBISTOP 08 - MINI BRAKE

The COMBISTOP 08 is KEB's mini-series of closed-current spring-applied brakes. This brake solution is characterised by a particularly compact construction, and is designed for small loads.

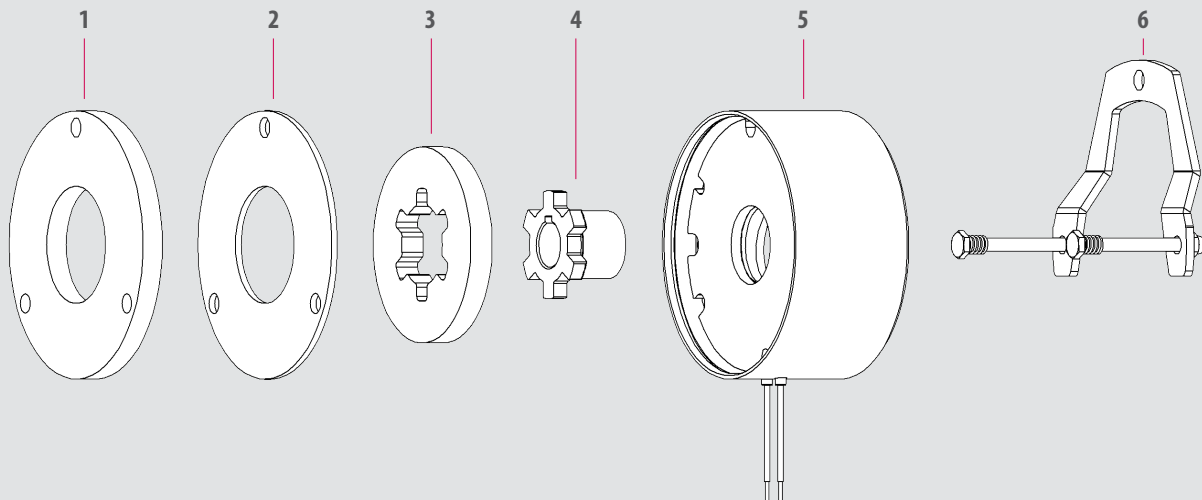
The 08 can be used as a service brake for dynamic applications, and as a holding brake with an emergency stop function for static applications.

### OPTIONS:

- Manual release
- Flange
- Sealing plug
- CCV - Cold Climate Version (-40 to +60°)
- Modified braking torque
- Customized voltages
- Connector assembly
- Certificate 2.1 / acceptance test certificate 3.1



**AREAS OF APPLICATION:** SERVO MOTORS | MEDICAL TECHNOLOGY | ROBOTICS AND AUTOMATION | INDUSTRIAL TRUCKS & AGVS  
MATERIAL HANDLING | DOOR AND GATE OPERATORS | E-MOBILITY



1. Flange 2. Friction plate 3. Friction lining 4. Hub 5. Magnet system 6. Manual release



### HIGHLIGHTS

- Two sizes
- Ready to install, adjusted air gap
- Used as a service brake or holding brake
- Iso class B in accordance with VDE 0580
- CSA/CUS-certified
- Designed for S1 operation or 100 % duty cycle
- Standard voltages 24 / 105 / 180 / 205V

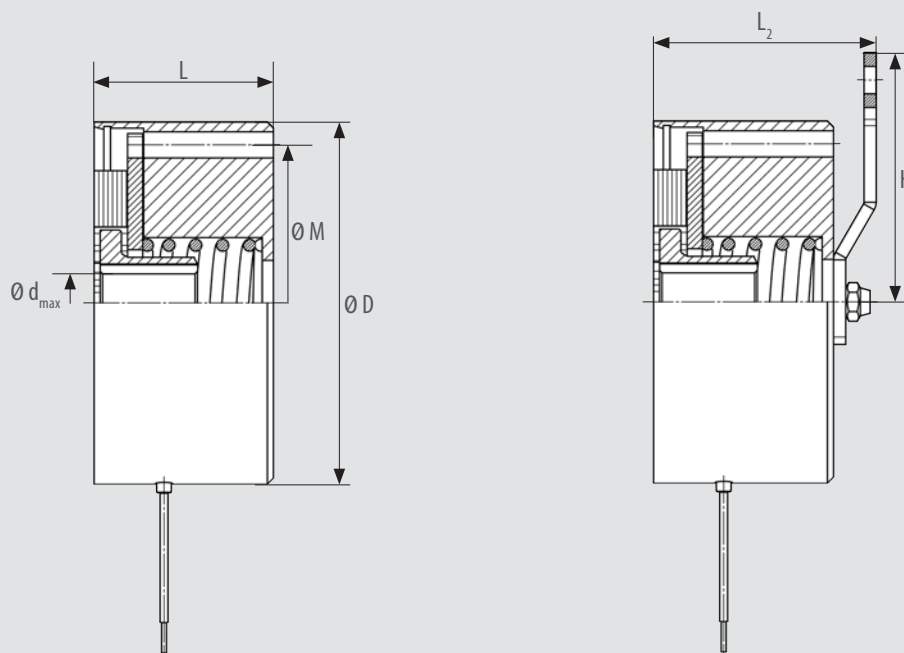
| SIZE | Reduced torque<br>[Nm] | Rated torque<br>$M_2$<br>[Nm] | Increased torque*<br>[Nm] | Standard power<br>P [W] | D<br>[mm] | H<br>[mm] | M<br>[mm] | L<br>[mm] | $L_2$<br>[mm] | $d_{max}$<br>[mm] |
|------|------------------------|-------------------------------|---------------------------|-------------------------|-----------|-----------|-----------|-----------|---------------|-------------------|
| 0B   | -                      | 0.3                           | -                         | 6                       | 40        | -         | 34        | 23        | -             | 8                 |
| 00   | 0.5                    | 1                             | 2                         | 11 - 15                 | 59.5      | 41        | 52        | 29.5      | 39.7          | 10                |

Rated torque is reached after pairing conditioning of the friction partners

\*Holding brake with emergency stop function

| Assembly situation                        | Without options | With shaft sealing ring* or sealing plug | Customized solution |
|-------------------------------------------|-----------------|------------------------------------------|---------------------|
| Uncovered machine side                    | IP11            | IP55                                     | on request          |
| Under the fan cowl without manual release | IP54            | IP55                                     | on request          |
| Under the fan cowl with manual release    | IP22            | IP55                                     | on request          |

\*The protection class of the shaft sealing ring depends on the respective of the manufacturer



Download 3D models here and view further technical data

## COMBISTOP 28 – SEALED BRAKE

The brake can be used as a service brake for dynamic applications, and as a holding brake with an emergency stop function for static applications. Thanks to its modular system, the COMBISTOP can be easily assembled according to individual requirements.

Even project solutions for implementing specific requirements that go beyond the standard can be achieved thanks to our in-house development and production.

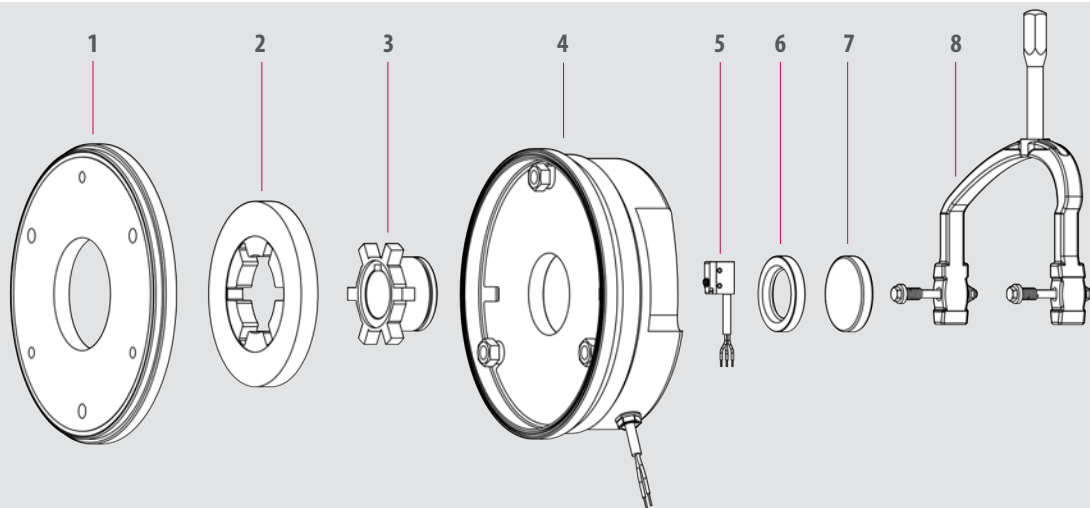
### OPTIONS:

- Manual release
- Microswitch to monitor performance or wear and tear\*
- Flange / centering flange
- Shaft sealing ring / sealing plug
- CCV - Cold Climate Version (-40 to +60 °C)
- Threaded holes on the back for encoder attachment
- Modified braking torque
- Flat design
- Customized voltages
- Connector assembly
- Certificate 2.1 / acceptance test certificate 3.1
- Corrosion protection class up to C4

\* From size 03 upwards



**AREAS OF APPLICATION:** CRANES AND HOISTS | MEDICAL TECHNOLOGY | WIND ENERGY | INDUSTRIAL TRUCKS & AGVS  
MATERIAL HANDLING | AGRICULTURE | MINING AND MUNICIPAL MACHINERY



1. Flange 2. Friction lining 3. Hub 4. Magnet system 5. Micro switch 6. Shaft sealing ring 7. Sealing plug 8. Manual release



### HIGHLIGHTS

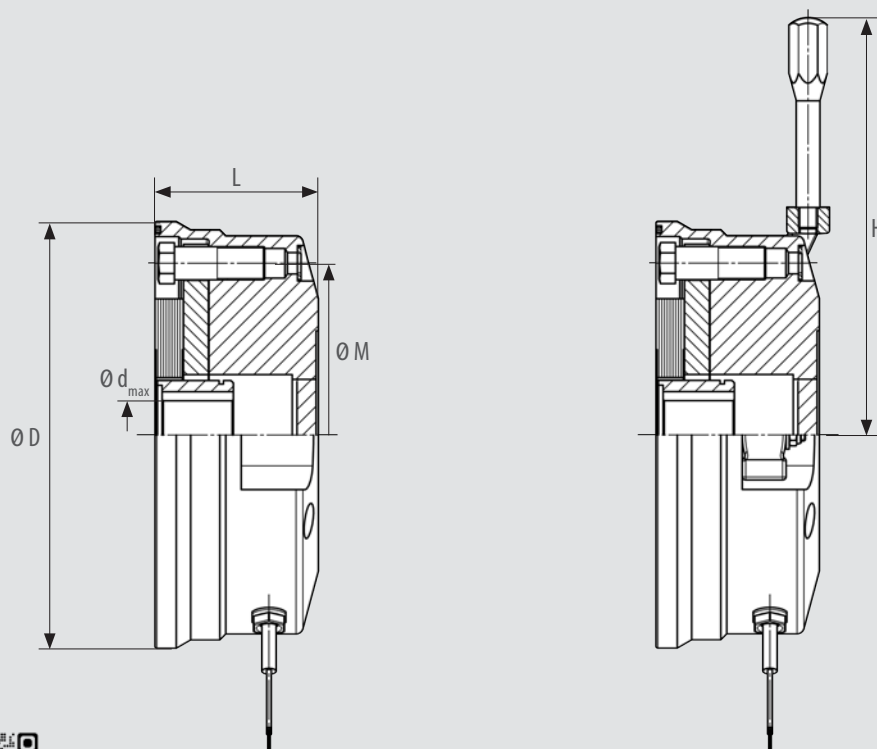
- Ten sizes
- Ready to install, adjusted air gap
- Used as a service brake or holding brake
- Up to Iso class H in accordance with VDE 0580
- CSA / CUS-certified
- Protection class up to IP67
- Designed for S1 operation or 100 % duty cycle
- Up to 7 million switching cycles as standard
- Standard voltages 24 / 105 / 180 / 205V

| SIZE | Reduced torque<br>[Nm] | Rated torque<br>M <sub>2</sub><br>[Nm] | Increased torque*<br>[Nm] | Standard power<br>P [W] | D<br>[mm]  | H<br>[mm] | M<br>[mm] | L<br>[mm]  | d <sub>max</sub><br>[mm] |
|------|------------------------|----------------------------------------|---------------------------|-------------------------|------------|-----------|-----------|------------|--------------------------|
| 02   | 3                      | 6.5                                    | 10                        | 25                      | 98         | 105.5     | 72        | 39         | 15                       |
| 03   | 4                      | 13                                     | 20                        | 30                      | 118        | 114       | 90        | 42.8       | 20                       |
| 04   | 8                      | 25                                     | 40                        | 30                      | 143        | 128       | 112       | 52.8       | 25                       |
| 05   | 15                     | 45                                     | 65                        | 48                      | 165        | 166       | 132       | 58.3       | 30                       |
| 06   | 33                     | 90                                     | 120                       | 62                      | 180        | 176       | 145       | 68.8       | 35                       |
| 07   | 65                     | 130                                    | 200                       | 65                      | 210        | 225       | 170       | 74.2       | 45                       |
| 08   | 75                     | 200                                    | 300                       | 75                      | 240        | 235       | 196       | 86.5       | 60                       |
| 09   | 120                    | 330                                    | 500                       | 80                      | 276        | 256       | 230       | 102        | 60                       |
| 10** | 165                    | 665                                    | 1000                      | 130                     | 328        | 335       | 278       | 118        | 75                       |
| 11** | 445                    | 1335                                   | 2000                      | 180                     | on request |           | 325       | on request |                          |

Braking torque tolerance  $\pm 25\%$  after pairing conditioning of the friction partners \*Holding brake with emergency stop function \*\*Quantity dependent project solution

| Assembly situation                            | Without options | Customized solution |
|-----------------------------------------------|-----------------|---------------------|
| Uncovered machine side without manual release | IP66            | up to IP67          |
| Uncovered machine side with manual release    | IP65            | up to IP67          |
| Under the fan cowl without manual release     | IP66            | up to IP67          |
| Under the fan cowl with manual release        | IP66            | up to IP67          |

\*The protection class of the shaft sealing ring depends on the respective of the manufacturer



Download 3D models here and view further technical data

## COMBISTOP 38 – STANDARD SPRING-APPLIED BRAKE

The brake can be used both as a service brake for dynamic applications, and as a holding brake with an emergency stop function for static applications. Thanks to its modular system, the COMBISTOP can be easily assembled according to individual requirements in terms of braking torque and varied options.

Even project solutions for implementing specific requirements that go beyond the standard can be achieved thanks to our in-house development and production.

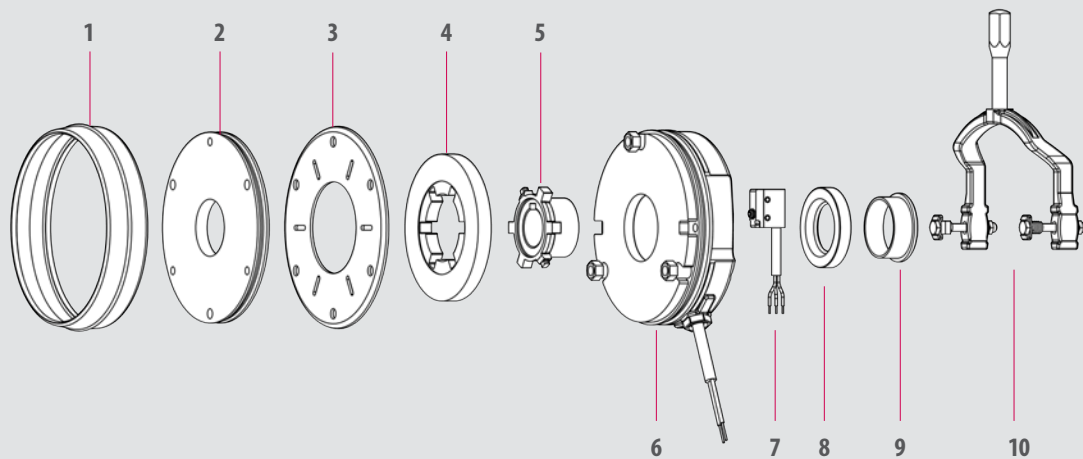
### OPTIONS:

- Manual release
- Microswitch to monitor performance or wear and tear\*
- Flange / friction disc
- Dust protection ring
- Shaft sealing ring / sealing plug
- CCV - Cold Climate Version (-40 to +60 °C)
- Threaded holes on the back for encoder attachment
- Modified braking torque
- Flat design
- Customized voltages
- Connector assembly
- Certificate 2.1 / acceptance test certificate 3.1

\* From size 03 upwards



**AREAS OF APPLICATION:** MATERIAL HANDLING | WIND ENERGY | MEDICAL TECHNOLOGY | ROBOTIC AND AUTOMATION  
INDUSTRIAL TRUCKS & AGVS | CRANES AND HOISTS



1. Dust protection ring 2. Flange 3. Friction disc 4. Friction lining 5. Hub 6. Magnet system  
7. Micro switch 8. Shaft sealing ring 9. Sealing plug 10. Manual release



### HIGHLIGHTS

- Ten sizes
- Ready to install, adjusted air gap
- Used as a service brake or holding brake
- Up to Iso class H in accordance with VDE 0580
- CSA/CUS-certified
- Protection class up to IP54
- Designed for S1 operation or 100 % duty cycle
- Up to 7 million switching cycles as standard
- Standard voltages 24 / 105 / 180 / 205V

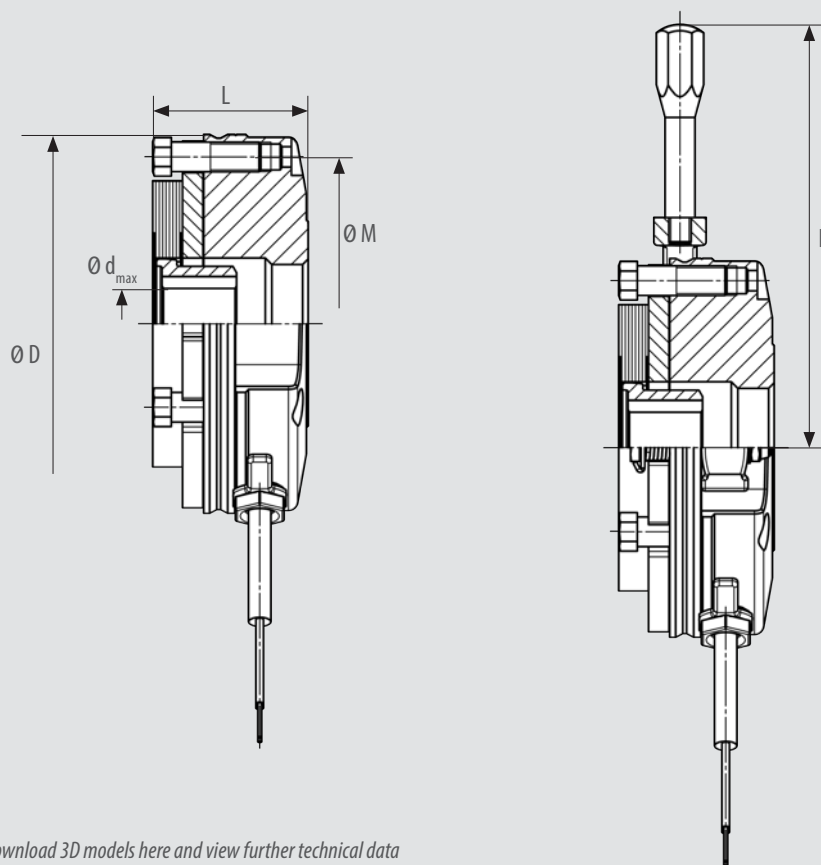
| SIZE | Reduced torque<br>[Nm] | Rated torque<br>M <sub>2</sub><br>[Nm] | Increased torque*<br>[Nm] | Standard power<br>P [W] | D<br>[mm] | H<br>[mm]  | M<br>[mm] | L<br>[mm] | d <sub>max</sub><br>[mm] |
|------|------------------------|----------------------------------------|---------------------------|-------------------------|-----------|------------|-----------|-----------|--------------------------|
| 02   | 3                      | 6.5                                    | 10                        | 25                      | 85        | 105.5      | 72        | 37.7      | 15                       |
| 03   | 4                      | 13                                     | 20                        | 30                      | 102       | 114        | 90        | 41.7      | 20                       |
| 04   | 8                      | 25                                     | 40                        | 30                      | 127       | 128        | 112       | 51.7      | 25                       |
| 05   | 15                     | 45                                     | 65                        | 48                      | 147       | 166        | 132       | 57.7      | 30                       |
| 06   | 33                     | 90                                     | 120                       | 62                      | 164       | 176        | 145       | 68.8      | 35                       |
| 07   | 65                     | 130                                    | 200                       | 65                      | 190       | 225        | 170       | 75.5      | 45                       |
| 08   | 75                     | 200                                    | 300                       | 75                      | 218       | 235        | 196       | 87.4      | 60                       |
| 09   | 120                    | 330                                    | 500                       | 80                      | 253       | 256        | 230       | 101.7     | 60                       |
| 10   | 165                    | 665                                    | 1000                      | 130                     | 307       | 335        | 278       | 110.8     | 75                       |
| 11   | 445                    | 1335                                   | 2000                      | 180                     | 363       | on request | 325       | 134.5     | 90                       |

Braking torque tolerance  $\pm 25\%$  after pairing conditioning of the friction partners

\*Holding brake with emergency stop function

| Assembly situation                        | Without options | With dust protection ring and shaft sealing ring* or sealing plug |
|-------------------------------------------|-----------------|-------------------------------------------------------------------|
| Uncovered machine side                    | IP00            | IP54                                                              |
| Under the fan cowl without manual release | IP54            | IP55                                                              |
| Under the fan cowl with manual release    | IP22            | IP55                                                              |

\*The protection class of the shaft sealing ring depends on the respective of the manufacturer



Download 3D models here and view further technical data

## COMBISTOP 38D – REDUNDANT DOUBLE BRAKE

The 38D double brake doubles the safety level and covers a range that is prepared for tasks with redundant brake circuits.

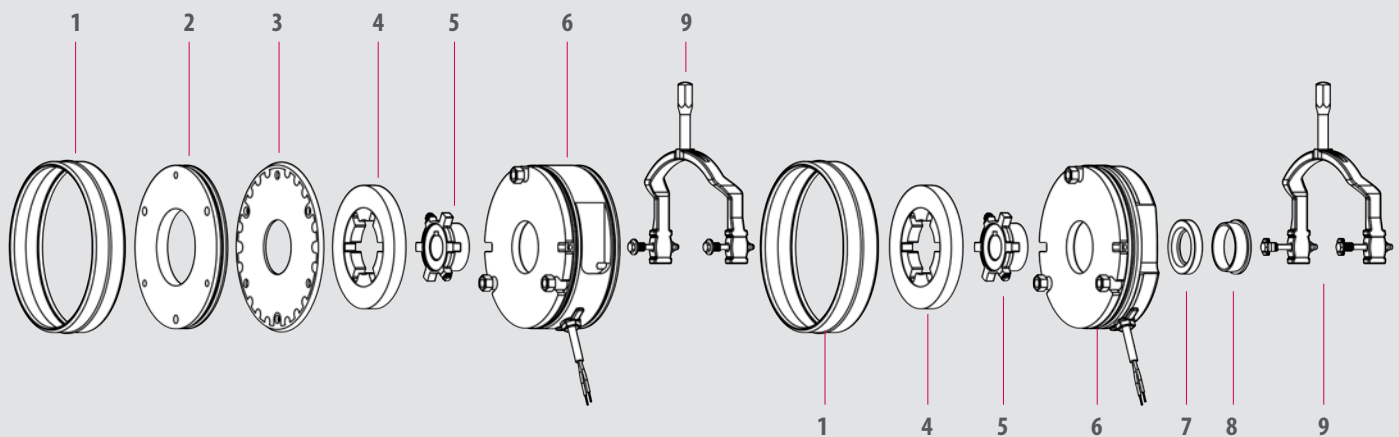
The mechanical design with two safety spring-applied brakes, which are completely independent of each other, meets the requirements according to DIN 56950 (BGV C1). The redundant brake system is delivered ready for use and adjusted by KEB.

### OPTIONS:

- Manual release
- Microswitch to monitor performance or wear and tear
- Flange / friction disc
- Dust protection ring
- Shaft sealing ring / sealing plug
- CCV - Cold Climate Version (-40 to +60 °C)
- Threaded holes on the back for encoder attachment
- Modified braking torque
- Flat design
- Customized voltages
- Connector assembly
- Certificate 2.1 / acceptance test certificate 3.1



**AREAS OF APPLICATION:** MEDICAL TECHNOLOGY | CRANES AND HOISTS | MATERIAL HANDLING  
AGRICULTURE | MINING AND MUNICIPAL MACHINERY



1. Dust protection ring 2. Flange 3. Friction disc 4. Friction lining 5. Hub 6. Magnet system 7. Shaft sealing ring 8. Sealing plug 9. Manual release



### HIGHLIGHTS

- Ten sizes
- Two redundant brake circuits
- Ready to install, adjusted air gap
- Used as a service brake or holding brake
- Up to Iso class H in accordance with VDE 0580
- CSA/CUS-certified
- Protection class up to IP67
- Designed for S1 operation or 100 % duty cycle
- Up to 7 million switching cycles as standard
- Standard voltages 24 / 105 / 180 / 205V

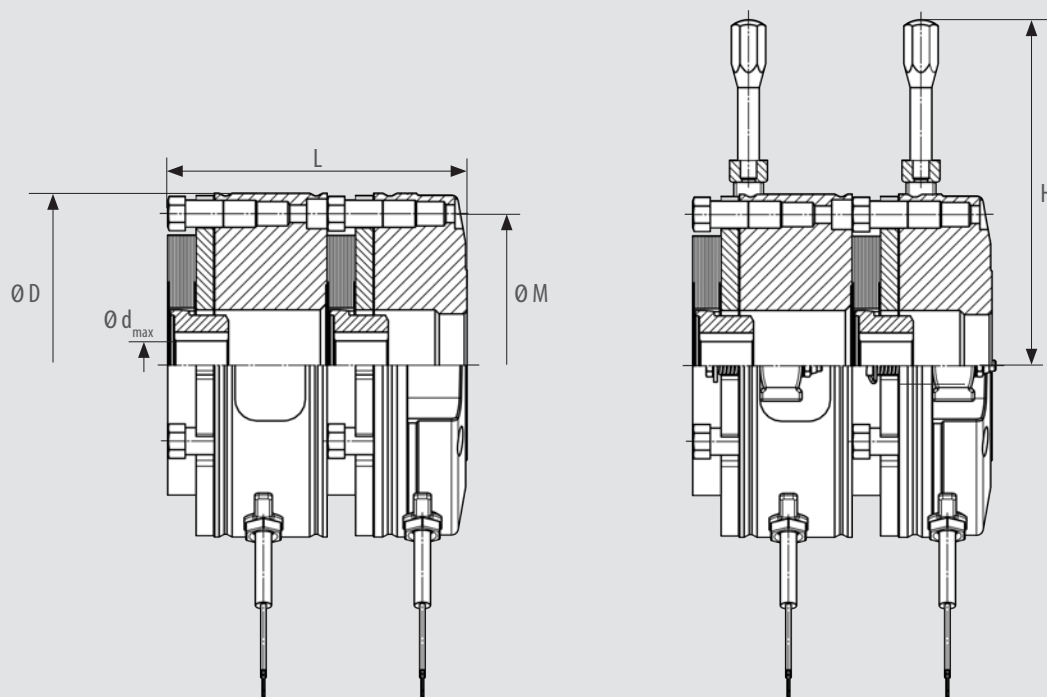
| SIZE | Reduced torque<br>[Nm] | Rated torque<br>M <sub>2</sub><br>[Nm]* | Increased torque*<br>[Nm] | Standard power<br>P [W] | D<br>[mm] | H<br>[mm]  | M<br>[mm] | L<br>[mm]  | d <sub>max</sub><br>[mm] |
|------|------------------------|-----------------------------------------|---------------------------|-------------------------|-----------|------------|-----------|------------|--------------------------|
| 02   | 2 x 3                  | 2 x 6,5                                 | 2 x 10                    | 2 x 25                  | 85        | 105.5      | 72        | 84         | 15                       |
| 03   | 2 x 4                  | 2 x 13                                  | 2 x 20                    | 2 x 30                  | 102       | 114        | 90        | 96         | 20                       |
| 04   | 2 x 8                  | 2 x 25                                  | 2 x 40                    | 2 x 30                  | 127       | 128        | 112       | 111        | 25                       |
| 05   | 2 x 15                 | 2 x 45                                  | 2 x 65                    | 2 x 48                  | 147       | 166        | 132       | 124        | 30                       |
| 06   | 2 x 33                 | 2 x 90                                  | 2 x 120                   | 2 x 62                  | 164       | 176        | 145       | 144        | 35                       |
| 07   | 2 x 65                 | 2 x 130                                 | 2 x 200                   | 2 x 65                  | 190       | 225        | 170       | 165        | 45                       |
| 08   | 2 x 75                 | 2 x 200                                 | 2 x 300                   | 2 x 75                  | 218       | 235        | 196       | 177.5      | 60                       |
| 09   | 2 x 120                | 2 x 330                                 | 2 x 500                   | 2 x 80                  | 253       | 256        | 230       | 206.5      | 60                       |
| 10   | 2 x 165                | 2 x 665                                 | 2 x 1000                  | 2 x 130                 | 307       | 335        | 278       | 224        | 75                       |
| 11   | 2 x 445                | 2 x 1335                                | 2 x 2000                  | 2 x 180                 | 363       | On request | 325       | On request | 90                       |

Braking torque tolerance ±25% after pairing conditioning of the friction partners

\*Holding brake with emergency stop function

| Assembly situation                        | Without options | With dust protection ring and shaft sealing ring* or sealing plug | Customized solution |
|-------------------------------------------|-----------------|-------------------------------------------------------------------|---------------------|
| Uncovered machine side                    | IP00            | IP54                                                              | up to IP67          |
| Under the fan cowl without manual release | IP54            | IP55                                                              | up to IP67          |
| Under the fan cowl with manual release    | IP22            | IP55                                                              | up to IP67          |

\*The protection class of the shaft sealing ring depends on the respective of the manufacturer



Download 3D models here and view further technical data

## COMBISTOP S1 – HIGH PERFORMANCE HOLDING BRAKE

The new S1 high-performance holding brake impresses with a new, patented friction system. This results in a significantly higher braking torque compared to conventional spring-applied brakes.

This is particularly suitable for servo applications with increased safety requirements. Thanks to the plug & play system, this series is also easy to assemble.

### OPTIONS:

- Felt ring
- CCV - Cold Climate Version (-40 to +60 °C)
- Modified braking torque
- Customized voltages
- Connector assembly
- Certificate 2.1 / acceptance test certificate 3.1

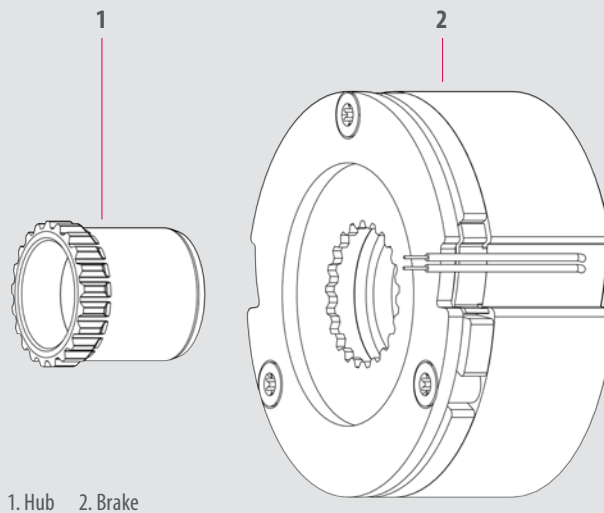
**NEW**

Braking torque on par with PM brakes



*Available on request*

**AREAS OF APPLICATION:** SERVO MOTORS | MEDICAL TECHNOLOGY | ROBOTICS AND AUTOMATION | INDUSTRIAL TRUCKS & AGVS  
E-MOBILITY | MATERIAL HANDLING



1. Hub 2. Brake



### HIGHLIGHTS

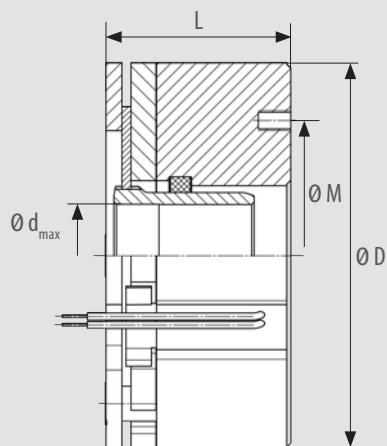
- Eight sizes
- High permissible emergency stop friction energy
- Stable brake torque
- High temperature resistance
- Ready to install, adjusted air gap
- Used as a service brake or holding brake
- Integrated cable slots
- Up to Iso class H in accordance with VDE 0580
- Designed for S1 operation or 100 % duty cycle
- Standard voltage 24V

| SIZE | Rated torque<br>$M_2$<br>[Nm] | $M_{4min120}$<br>[Nm] | Standard<br>power<br>P [W] | D<br>[mm] | M*<br>[mm] | L<br>[mm] | d <sub>max</sub><br>[mm] |
|------|-------------------------------|-----------------------|----------------------------|-----------|------------|-----------|--------------------------|
| 01   | 0.5                           | 0.3                   | 6.1                        | 35        | 24.5       | 30        | 9                        |
| 02   | 1                             | 0.6                   | 7.5                        | 41        | 28.8       | 30        | 10.5                     |
| 03   | 1.9                           | 1.1                   | 9.4                        | 48        | 33.7       | 31        | 12.5                     |
| 04   | 3.9                           | 2.3                   | 11.8                       | 56        | 39.3       | 32        | 15.5                     |
| 05   | 7.5                           | 4.5                   | 15.3                       | 66        | 46.3       | 34        | 17.5                     |
| 06   | 15                            | 9                     | 20                         | 77        | 54         | 37        | 20.5                     |
| 07   | 30                            | 18                    | 26                         | 90        | 63.1       | 39        | 24                       |
| 08   | 60                            | 36                    | 33.8                       | 102       | 73.6       | 42        | 28                       |

Rated torque is reached after pairing conditioning of the friction partners

\*Standard mounting diameter, further diameters on request

| Assembly situation                        | Without options |
|-------------------------------------------|-----------------|
| Uncovered machine side                    | IP00            |
| Under the fan cowl without manual release | IP54            |



Download 3D models here and view further technical data

## WE START WHERE OTHERS STOP

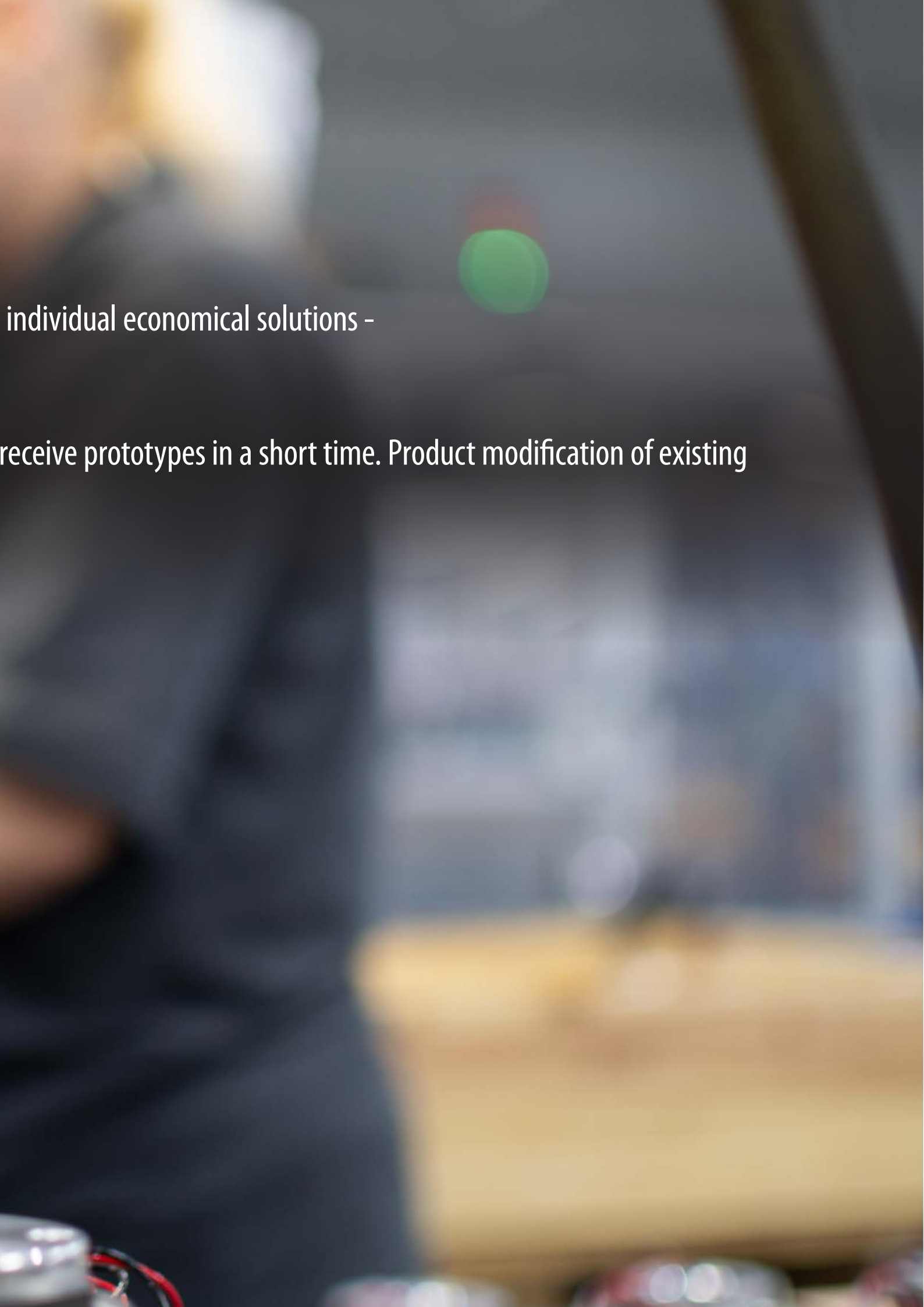
In addition to our standard products, we develop and produce based on technical customer specifications.

Due to our high vertical range of manufacture, our customers series products can also be implemented quickly.

The KEB logo consists of a solid red square followed by the letters "KEB" in a bold, white, sans-serif font.

**KEB**





individual economical solutions -

receive prototypes in a short time. Product modification of existing

## COMBIPERM P1 – STANDARD PERMANENT MAGNET BRAKE

The COMBIPERM P1 is a powerful permanent magnet brake with a frictionally engaged, backlash-free effect. In the energised state, the magnetic field of the permanent magnet is cancelled and the connected component can rotate without residual torque. In the event of an emergency stop or if the power is switched off, the safety brake engages, brakes and holds the drive safely in position.

Thanks to the short switching times and the compact design, these brakes are ideal for servo motors and the medical industry.

### OPTIONS:

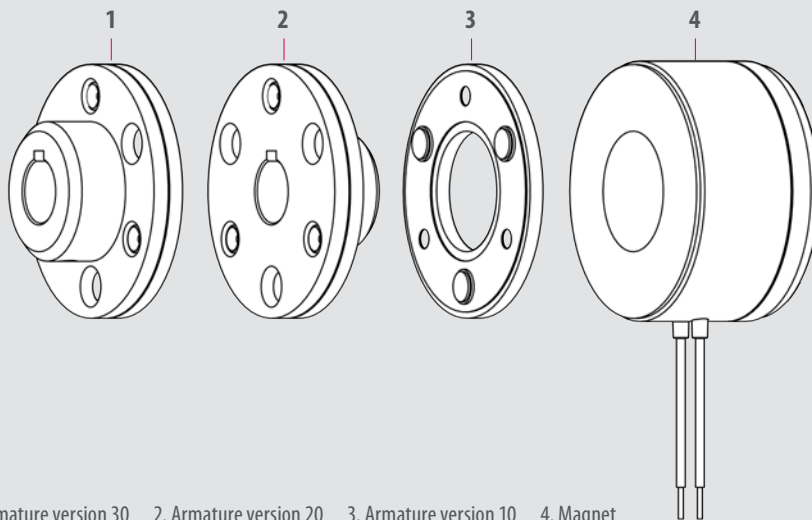
- VdS- monitoring
- Cable protection plate
- Felt ring
- Customized flange
- Customized voltage
- Customized plug
- Certificate 2.1 / acceptance test certificate 3.1



**AREAS OF APPLICATION:** SERVO MOTORS | MEDICAL TECHNOLOGY | ROBOTIC AND AUTOMATION | INDUSTRIAL TRUCKS & AGV'S  
ELECTROMOBILITY | INTRALOGISTICS



*Download 3D models here and view further technical data*



1. Armature version 30   2. Armature version 20   3. Armature version 10   4. Magnet



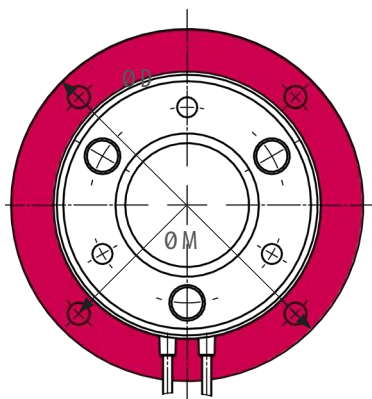
### HIGHLIGHTS

- Eleven sizes
- Backlash free
- Frictional engagement
- Release without residual torque
- ISO class F in accordance with VDE 0580
- CSA/CUS certification
- Designed for S1 operation or 100% duty cycle
- Up to ten million switching cycles as standard
- Up to 10,000 rpm
- Standard voltage 24V

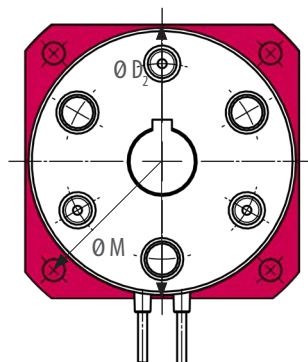
| SIZE | Rated torque<br>$M_2$<br>[Nm] | $M_{4min 120}$<br>[Nm] | Standard<br>power<br>P [W] | D<br>[mm] | D <sub>2</sub><br>[mm] | D <sub>3</sub><br>[mm] | M*<br>[mm] | M <sub>2</sub> *<br>[mm] | L<br>[mm] | L <sub>2</sub><br>[mm] | L <sub>3</sub><br>[mm] | d <sub>max</sub><br>[mm] |
|------|-------------------------------|------------------------|----------------------------|-----------|------------------------|------------------------|------------|--------------------------|-----------|------------------------|------------------------|--------------------------|
| 0A   | 0.15                          | 0.1                    | 3                          | -         | -                      | 18                     | 15.2       | -                        | -         | -                      | 20.75                  | 3                        |
| 01   | 0.5                           | 0.3                    | 8                          | 39        | 32                     | 28                     | 33.5       | 22                       | 21.9      | 23.9                   | 28.9                   | 6                        |
| 02   | 1.4                           | 0.8                    | 10                         | 45        | 34                     | 32,2                   | 38         | 23                       | 23.75     | 25.75                  | 33.75                  | 8                        |
| 03   | 2.7                           | 1.8                    | 11                         | 54        | 42                     | 41                     | 47         | 28.5                     | 25.25     | 27.85                  | 37.25                  | 12                       |
| 04   | 3.5                           | 2.8                    | 11                         | 60        | 45                     | 42                     | 52         | 34                       | 28.6      | 32.1                   | 40.9                   | 12                       |
| 05   | 6.1                           | 4                      | 12                         | 65        | 53                     | 51.5                   | 58         | 40                       | 31.7      | 34.7                   | 43.7                   | 15                       |
| 06   | 12                            | 8                      | 18                         | 80        | 66                     | 64                     | 72         | 49                       | 31        | 34.5                   | 46                     | 18                       |
| 07   | 24                            | 15                     | 24                         | 100       | 83                     | 80.8                   | 90         | 63                       | 34.7      | 38.7                   | 54.7                   | 25                       |
| 08   | 49                            | 32                     | 26                         | 125       | 103                    | 101                    | 112        | 78                       | 40.45     | 45.45                  | 65.45                  | 30                       |
| 09   | 96                            | 65                     | 40                         | 150       | 128                    | 126                    | 137        | 106                      | 45.5      | 51.5                   | 75.5                   | 40                       |
| 10   | 194                           | 115                    | 50                         | 190       | 163                    | 161                    | 175        | 135                      | 52.5      | 59.5                   | 90.5                   | 50                       |

Rated torque is reached after pairing conditioning of the friction partners \*Standard screw connection, customized screw connection on request

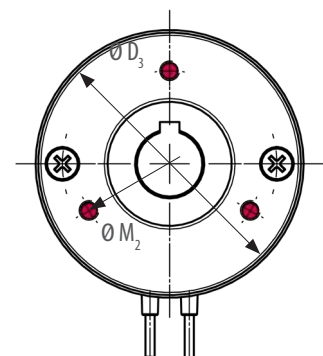
## OVERVIEW OF VARIANTS



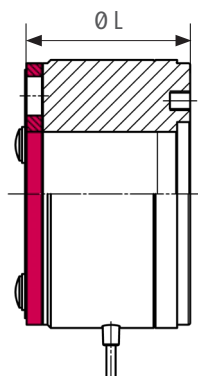
**Round flange**  
(Variant 100)



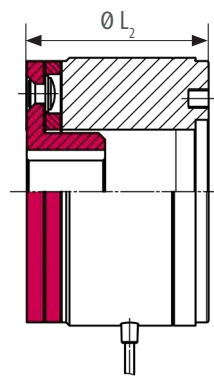
**Rectangular flange**  
(Variant 200)



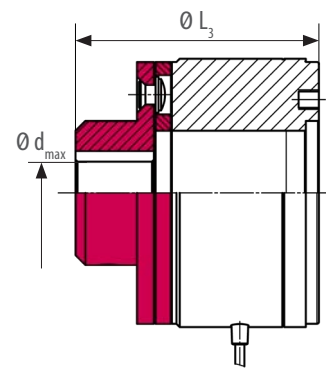
**Screw connection in the back**  
(Variant 300)



**Without hub**  
(Version 10)



**Hub in the magnet**  
(Version 20)



**Hub on the outside**  
(Version 30)

## COMBIPERM P2 – HIGH-PERFORMANCE PERMANENT MAGNET BRAKE

The COMBIPERM P2 is a very compact and powerful permanent magnet brake with frictionally engaged, backlash-free action.

Compared to the COMBIPERM P1, the brake is smaller in the installation space and requires less power with increased performance. In addition, due to its design, it can be used down to -40°C.

### OPTIONS:

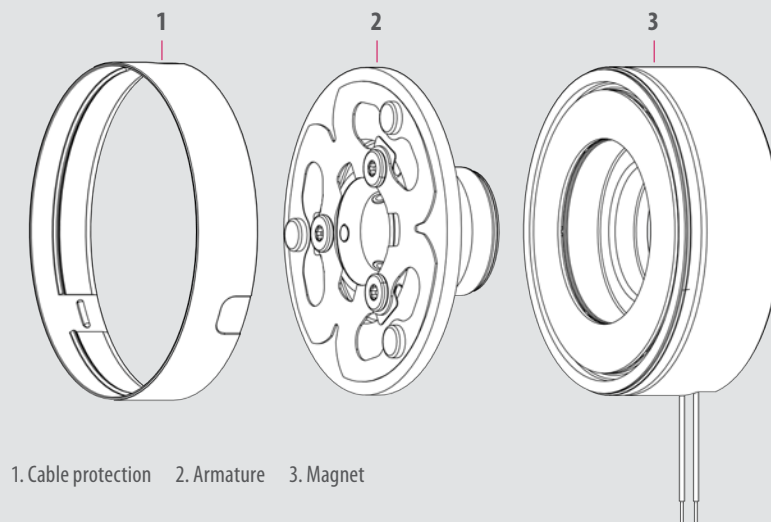
- Cable-protection
- Customized flange and hub
- Customised storage process
- Customized bolt circle
- Customized plugs
- Certificate 2.1 / acceptance test certificate 3.1

NEW

up to -40°C



**AREAS OF APPLICATION:** SERVO MOTORS | MEDICAL TECHNOLOGY | ROBOTIC AND AUTOMATION | INDUSTRIAL TRUCKS & AGV'S  
ELECTROMOBILITY | INTRALOGISTICS



1. Cable protection 2. Armature 3. Magnet

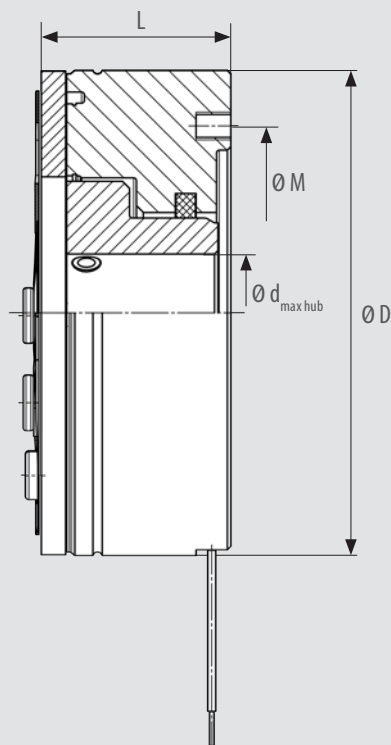


### HIGHLIGHTS

- Eight sizes
- Backlash free
- Frictional engagement
- Release without residual torque
- ISO class F in accordance with VDE 0580
- Designed for S1 operation or 100% duty cycle
- Up to ten million switching cycles as standard
- Up to 10,000 rpm
- Felt ring integrated
- Operation temperature -40°C - 120°C
- Standard voltage 24V

| SIZE | Rated torque<br>$M_2$<br>[Nm] | $M_{4min 120}$<br>[Nm] | Standard<br>power<br>P [W] | D<br>[mm] | $M^*$<br>[mm] | L<br>[mm] | $d_{max Hub}$<br>[mm] |
|------|-------------------------------|------------------------|----------------------------|-----------|---------------|-----------|-----------------------|
| 03   | 3                             | 2.5                    | 8                          | 40        | 31            | 26        | 12                    |
| 04   | 6                             | 5                      | 10                         | 53        | 42            | 27        | 17                    |
| 05   | 11                            | 9                      | 12                         | 63        | 48            | 29        | 20                    |
| 06   | 16                            | 13                     | 14                         | 70        | 54            | 30        | 22                    |
| 07   | 20                            | 16                     | 17                         | 80        | 62            | 35        | 25                    |
| 08   | 30                            | 24.5                   | 18                         | 90        | 72            | 37.5      | 30                    |
| 09   | 45                            | 36                     | 22                         | 100       | 83            | 38        | 36                    |
| 10   | 75                            | 60                     | 22                         | 120       | 106           | 43        | 48                    |

Rated torque after running in process    \*Standard screw connection, customized screw connection on request



Download 3D models here and view further technical data

## COMBIPERM PC – PERMANENT MAGNET CLUTCH

Our COMBIPERM PC is a permanent magnet clutch that transmits torque frictionally when de-energised. High torques can thus be reliably transmitted in a small installation space.

The frictional connection is opened by applying a voltage so that the force effect of the permanent magnets is eliminated.

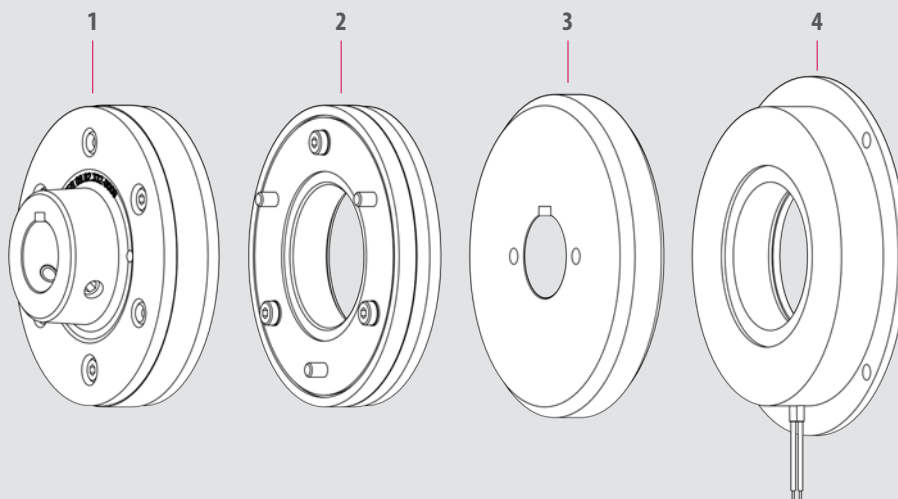
### OPTIONS:

- Customized flange
- CSA / CUS Certificate customized voltage
- Customized plugs
- Connector assembly
- Certificate 2.1 / acceptance test certificate 3.1



### AREAS OF APPLICATION:

MEDICAL TECHNOLOGY | WOOD WORKING MACHINES | ELECTROMOBILITY | INTRALOGISTICS  
PLASTIC TECHNOLOGY | PACKAGING MACHINES AND FOOD TECHNOLOGY



1. Armature version 30   2. Armature version 10   3. Rotor   4. Magnet



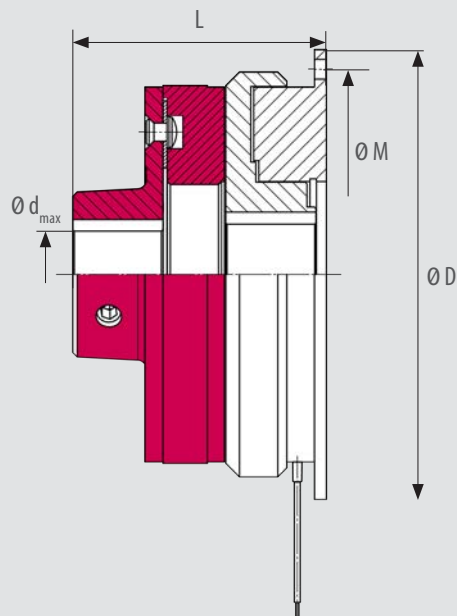
### HIGHLIGHTS

- Seven sizes
- Frictional engagement
- ISO class F in accordance with VDE 0580
- Designed for S1 operation or 100% duty cycle
- Standard voltage 24V

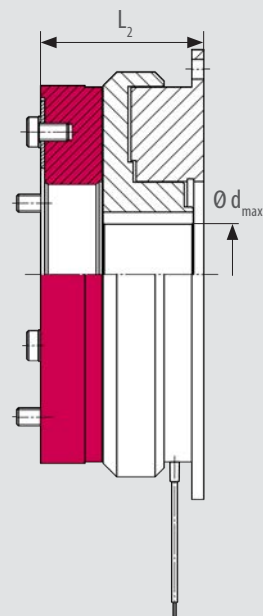
| SIZE | Rated torque<br>$M_2$<br>[Nm] | Standard power<br>$P$ [W] | D<br>[mm] | M<br>[mm] | L<br>[mm] | $L_2$<br>[mm] | $d_{\max \text{ Rotor}}$<br>[mm] | $d_{\max \text{ Hub}}$<br>[mm] |
|------|-------------------------------|---------------------------|-----------|-----------|-----------|---------------|----------------------------------|--------------------------------|
| 03*  | 1.5                           | 13                        | 54        | 47        | 47.55     | 35.55         | 10                               | 10                             |
| 05*  | 3                             | 10                        | 65        | 58        | 51.2      | 39.2          | 15                               | 15                             |
| 06   | 6                             | 18                        | 80        | 72        | 51.8      | 36.8          | 20                               | 18                             |
| 07   | 12                            | 24                        | 100       | 90        | 60.8      | 40.8          | 25                               | 22                             |
| 08   | 24                            | 28                        | 125       | 112       | 73.35     | 48.35         | 30                               | 30                             |
| 09   | 50                            | 35                        | 150       | 137       | 84.4      | 54.4          | 35                               | 35                             |
| 10   | 120                           | 80                        | 190       | 175       | 100       | 62            | 50                               | 45                             |

Rated torque is reached after pairing conditioning of the friction partners

\* Quantity dependent project solution



**Hub on the outside**  
(Variant 130)



**Without hub**  
(Variant 110)



Download 3D models here and view further technical data

## COMBINORM B – ELECTROMAGNETIC BRAKE

The operating current brake COMBINORM B opens when the power supply is switched off or in the event of a power failure. The electromagnetic brake is particularly suitable for precise positioning and reliable holding.

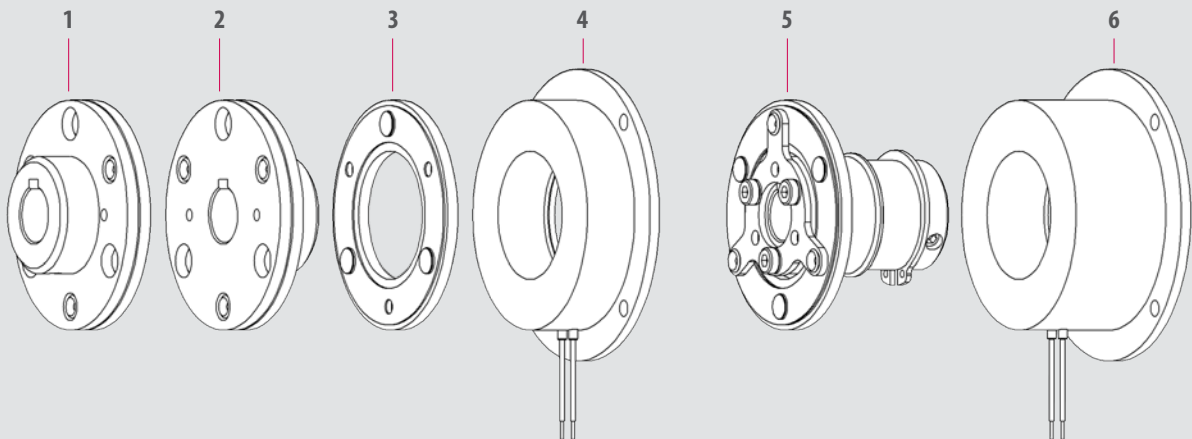
It is also used in safety and access technology, e.g. in the area of access barriers or fire doors. The electromagnetic brake is designed for a 100 % duty cycle and can optionally be certified to VdS. The electromagnetic brake has a torque range of 0.5 to 500 Nm.

### OPTIONS:

- Customized flange
- CSA / CUS Certification
- Customized voltage
- Customized plug
- Certificate 2.1 / acceptance test certificate 3.1
- Anti-remnance
- Interlocking toothed version for torque increase



**AREAS OF APPLICATION:** MEDICAL TECHNOLOGY | DOOR AND GATE OPERATOR | WOOD WORKING MACHINES  
ELECTROMOBILITY | ROBOTIC AND AUTOMATION | PACKAGING MACHINES AND FOOD TECHNOLOGY  
AGRAR- MINING- AND MUNICIPAL MACHINERY



1. Armature version 30   2. Armature version 20   3. Armature version 10   4. Magnet flange mounted   5. Armature shaft mounted   6. Magnet shaft mounted



### HIGHLIGHTS

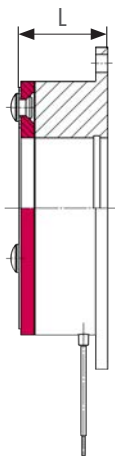
- Thirteen sizes
- Short switching times
- Positioning accuracy and functional reliability
- Designed for S1 operation or 100% duty cycle
- ISO class B in accordance with VDE 0580
- Wide temperature and voltage range
- Continuously adjustable torque
- Standard voltage 24V

| SIZE | Rated torque<br>$M_2$<br>[Nm] | Standard<br>power<br>$P$ [W] | D<br>[mm] | M<br>[mm] | L<br>[mm] | $L_2$<br>[mm] | $L_3$<br>[mm] | $L_4$<br>[mm] | $d_{max}$<br>[mm] |
|------|-------------------------------|------------------------------|-----------|-----------|-----------|---------------|---------------|---------------|-------------------|
| 01   | 0.5                           | 6                            | 39        | 33.5      | 16.1      | 18.1          | 23.1          | -             | 6                 |
| 02   | 0.75                          | 6                            | 45        | 38        | 19.25     | 21.25         | 29.25         | -             | 8                 |
| 03   | 1.5                           | 8                            | 54        | 47        | 22.85     | 25.45         | 34.85         | -             | 10                |
| 05   | 3                             | 10                           | 65        | 58        | 25.2      | 28.2          | 37.2          | -             | 15                |
| 06   | 7                             | 12                           | 80        | 72        | 22        | 25.5          | 37            | 37.7          | 20                |
| 07   | 15                            | 16                           | 100       | 90        | 24.5      | 28.5          | 44.5          | 41.3          | 22                |
| 08   | 30                            | 21                           | 125       | 112       | 28.2      | 33.2          | 53.2          | 47.5          | 30                |
| 09   | 65                            | 28                           | 150       | 137       | 31.2      | 37.2          | 61.2          | 51.2          | 35                |
| 10   | 130                           | 38                           | 190       | 175       | 35.2      | 42.2          | 73.2          | 60.7          | 45                |
| 11   | 250                           | 50                           | 230       | 215       | 41.6      | 50.6          | 89.6          | -             | 60                |
| 12   | 500                           | 65                           | 290       | 270       | 48.4      | 59.4          | 103.4         | -             | 70                |
| 13*  | 750                           | 80                           | 355       | 335       | 60.4      | 73            | 124           | -             | 90                |
| 14*  | 1250                          | 100                          | 440       | 420       | 75.5      | 92.5          | 151.5         | -             | 100               |

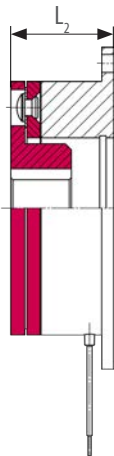
Rated torque is reached after pairing conditioning of the friction partners

\* Quantity dependent project solution

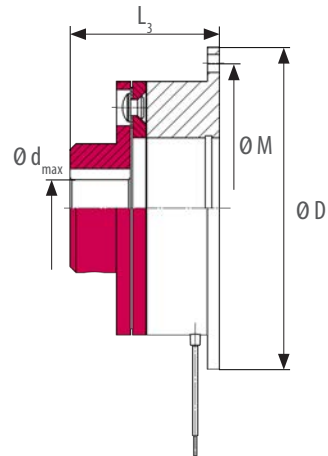
#### FLANGE MOUNTED VERSION:



Without hub  
(Variant 110)

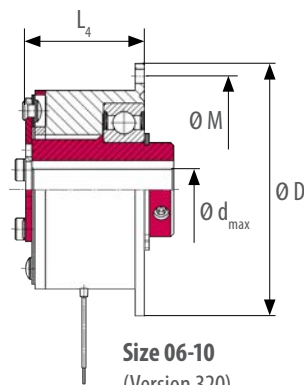


Hub in the magnet  
(Variant 120)



Hub on the outside  
(Variant 130)

#### SHAFT MOUNTED BRAKE:



Size 06-10  
(Version 320)



Download 3D models here and view further technical data

## COMBINORM C – ELECTROMAGNETIC CLUTCH

The operating current clutch COMBINORM C provides clutch engagement when electrically powered. As a result it enables particularly simple controlled switching on and off of functional parts.

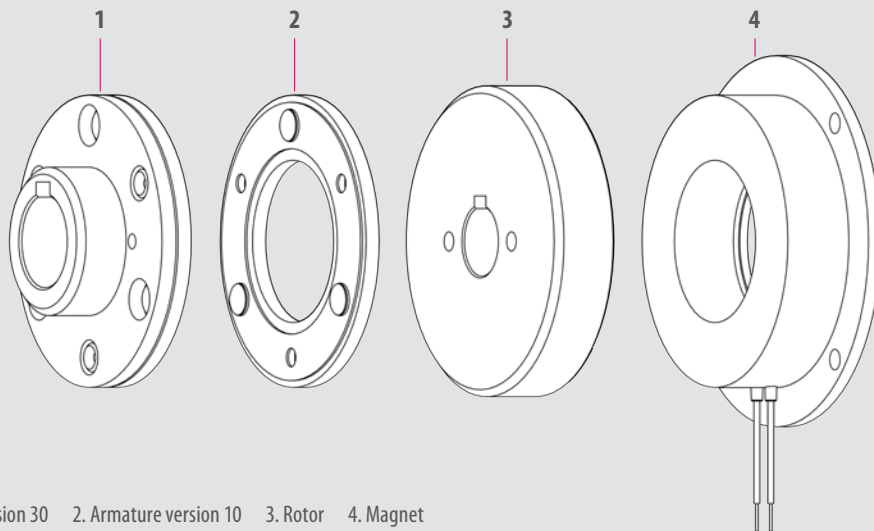
The electromagnetic clutch is suitable for reliable positioning and torque transmission of switchable shaft connections in synchronised processes. The electromagnetic clutch has a torque range of 0.5 to 500 Nm.

### OPTIONS:

- Customized flange
- CSA / CUS certificate
- Customized voltage
- Customized plugs
- Certificate 2.1 / acceptance test certificate 3.1



**AREAS OF APPLICATION:** MEDICAL TECHNOLOGY | DOOR AND GATE OPERATOR | WOOD WORKING MACHINES  
ELECTROMOBILITY | ROBOTIC AND AUTOMATION | PACKAGING MACHINES AND FOOD TECHNOLOGY  
AGRAR- MINING- AND MUNICIPAL MACHINERY



1. Armature version 30   2. Armature version 10   3. Rotor   4. Magnet



### HIGHLIGHTS

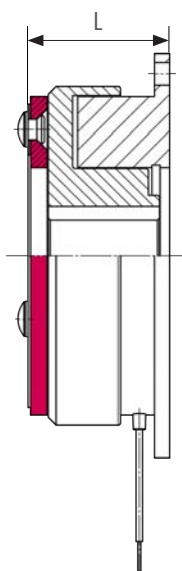
- Thirteen sizes
- Short switching times
- Positioning accuracy and functional reliability
- Designed for S1 operation or 100% duty cycle
- ISO class B in accordance with VDE 0580
- Wide temperature and voltage range
- Continuously adjustable torque
- Standard voltage 24V

| SIZE | Rated torque<br>$M_2$<br>[Nm] | Standard<br>power<br>$P$ [W] | D<br>[mm] | M<br>[mm] | L<br>[mm]  | $L_2$<br>[mm] | $d_{\max \text{ Rotor}}$<br>[mm] | $d_{\max \text{ Hub}}$<br>[mm] |
|------|-------------------------------|------------------------------|-----------|-----------|------------|---------------|----------------------------------|--------------------------------|
| 01   | 0.5                           | 6                            | 39        | 33.5      | 20.4       | 27.4          | 6                                | 6                              |
| 02   | 0.75                          | 6                            | 45        | 38        | 24.45      | 34.45         | 8                                | 8                              |
| 03   | 1.5                           | 8                            | 54        | 47        | 28.25      | 40.25         | 10                               | 10                             |
| 05   | 3                             | 10                           | 65        | 58        | 31.3       | 43.3          | 17                               | 15                             |
| 06   | 7                             | 15                           | 80        | 72        | 28         | 43            | 20                               | 18                             |
| 07   | 15                            | 20                           | 100       | 90        | 31         | 51            | 25                               | 22                             |
| 08   | 30                            | 28                           | 125       | 112       | 36.2       | 61.2          | 30                               | 30                             |
| 09   | 65                            | 35                           | 150       | 137       | 40.7       | 70.7          | 35                               | 35                             |
| 10   | 130                           | 50                           | 190       | 175       | 46.7       | 84.7          | 50                               | 45                             |
| 11   | 250                           | 68                           | 230       | 215       | 55.6       | 103.6         | 65                               | 60                             |
| 12*  | 500                           | 85                           | 290       | 270       | 64.4       | 119.4         | 80                               | 70                             |
| 13*  | 750                           | On request                   | 355       | 335       | 78         | 127           | 90                               | 90                             |
| 14*  | 1250                          | On request                   | 440       | 420       | On request |               |                                  |                                |

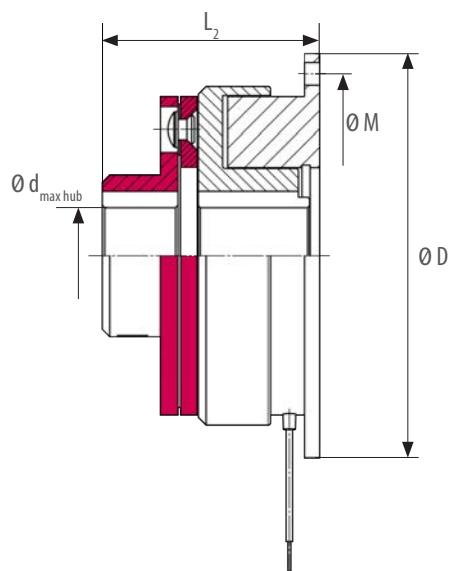
Rated torque is reached after pairing conditioning of the friction partners

\*Quantity dependent project solution

### FLANGE MOUNTED VERSION:



**Without hub**  
(Variant 110)



**Hub on the outside**  
(Variant 130)



Download 3D models here and view further technical data

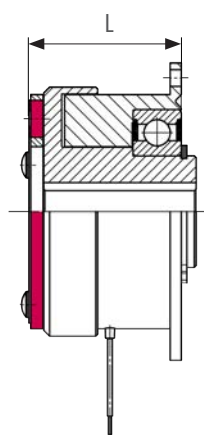
## COMBINORM C – VARIANTS 210 / 230 / 810

| SIZE | Rated torque<br>$M_2$<br>[Nm] | Standard power<br>$P$ [W] | D<br>[mm] | M<br>[mm] | L<br>[mm] | $L_2$<br>[mm] | $L_3$<br>[mm] | $d_{\max \text{ Rotor}}^*$<br>[mm] | $d_{\max \text{ Hub}}$<br>[mm] |
|------|-------------------------------|---------------------------|-----------|-----------|-----------|---------------|---------------|------------------------------------|--------------------------------|
| 06   | 7                             | 15                        | 80        | 72        | 45        | 60            | 80            | 17                                 | 18                             |
| 07   | 15                            | 20                        | 100       | 90        | 49.5      | 69.5          | 90            | 22                                 | 22                             |

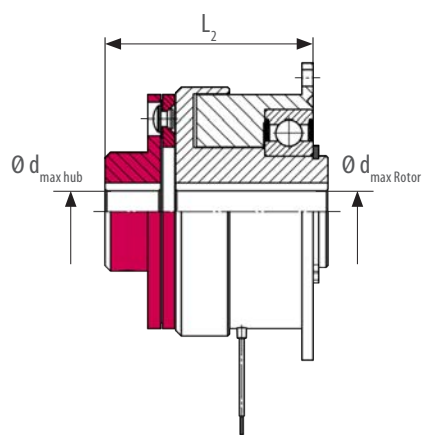
Rated torque is reached after pairing conditioning of the friction partners

\*More customized max. diameter on request

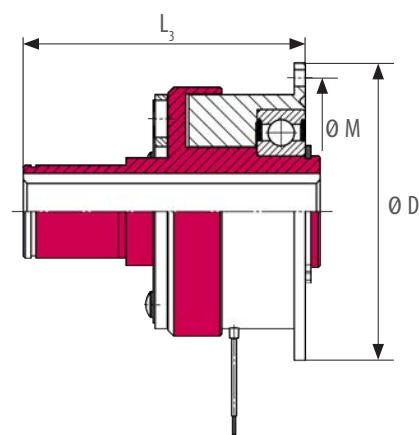
### FLANGE MOUNTED VERSIONS WITH BEARING MOUNTED ROTOR:



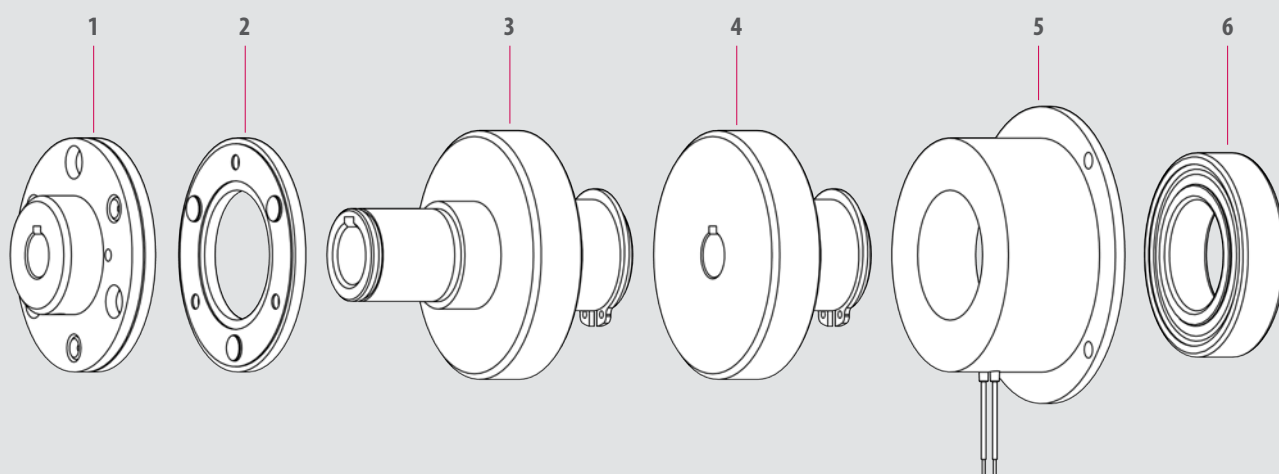
**Without hub**  
(Variant 210)



**Hub on the outside**  
(Variant 230)



**Rotor for bearing**  
(Variant 810)

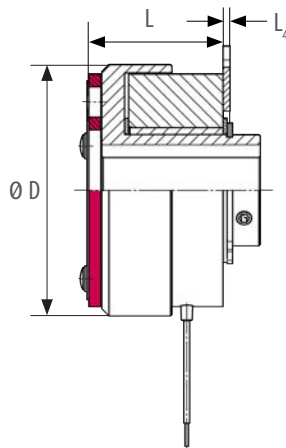


1. Armature version 30   2. Armature version 10   3. Rotor for bearing   4. Rotor   5. Magnet   6. Bearing

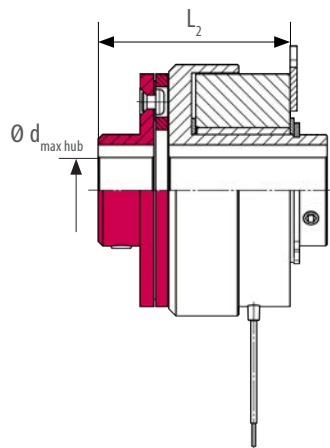
| SIZE | Rated torque<br>$M_2$<br>[Nm] | Standard<br>power<br>$P$ [W] | D<br>[mm] | M<br>[mm] | L<br>[mm] | $L_2$<br>[mm] | $L_3$<br>[mm] | $L_4$<br>[mm] | $d_{\max \text{ Rotor}}$<br>[mm] | $d_{\max \text{ Hub}}$<br>[mm] | $d_{\max \text{ Hub2}}$<br>[mm] |
|------|-------------------------------|------------------------------|-----------|-----------|-----------|---------------|---------------|---------------|----------------------------------|--------------------------------|---------------------------------|
| 01   | 0.5                           | 6                            | 31        | 16.8      | 19.7      | 26.7          | 26.7          | 1.5           | 6                                | 6                              | 6                               |
| 02   | 0.75                          | 6                            | 34        | 20        | 22.05     | 32.05         | 32.05         | 1.5           | 6                                | 8                              | 6                               |
| 03   | 1.5                           | 8                            | 43        | 23        | 25.85     | 37.85         | 37.85         | 1.5           | 10                               | 10                             | 10                              |
| 05   | 3                             | 10                           | 54        | 28        | 29.3      | 41.3          | 41.3          | 1.5           | 17                               | 15                             | 15                              |
| 06   | 7                             | 15                           | 67        | 36        | 28        | 43            | -             | 2.5           | 20                               | 18                             | -                               |
| 07   | 15                            | 20                           | 85        | 45        | 31        | 51            | -             | 2.5           | 25                               | 22                             | -                               |

Rated torque is reached after pairing conditioning of the friction partners

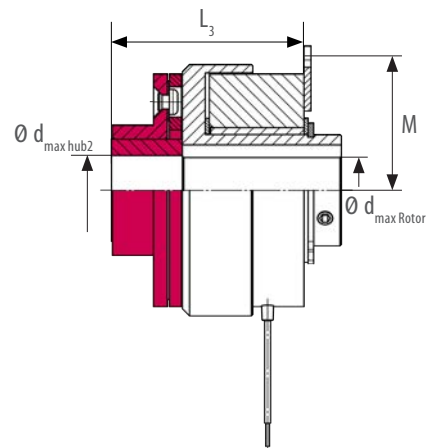
## SHAFT MOUNTED VERSIONS WITH PLAIN-BEARING FOR THE ROTOR:



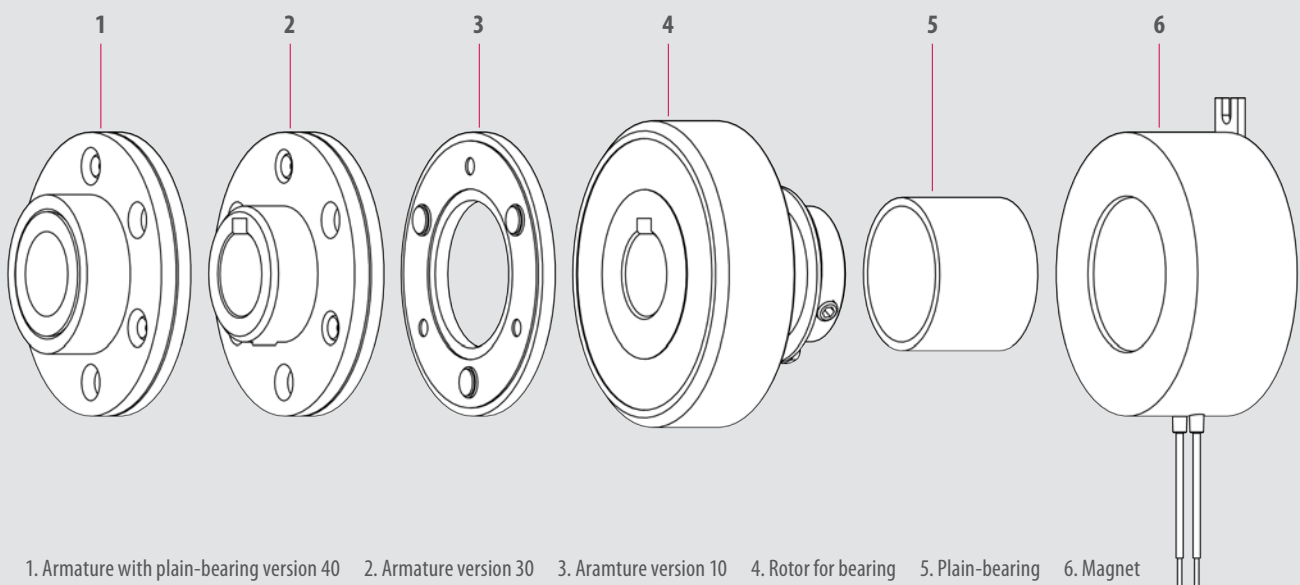
**Without hub**  
(Variant 610)



**Hub on the outside**  
(Variant 630)



**Hub with plain-bearing**  
(Variant 640)



1. Armature with plain-bearing version 40   2. Armature version 30   3. Armature version 10   4. Rotor for bearing   5. Plain-bearing   6. Magnet

## COMBINORM C – VARIANTS 710 / 730 / 810

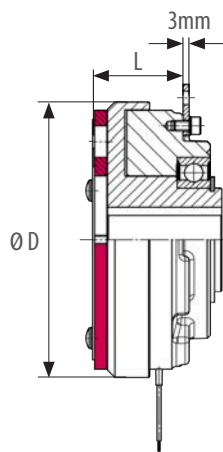
| SIZE | Rated torque<br>$M_2$<br>[Nm] | Standard<br>power<br>$P$ [W] | D<br>[mm] | M<br>[mm] | L<br>[mm] | $L_2$<br>[mm] | $L_3$<br>[mm] | $d_{\max \text{ Rotor}}^*$<br>[mm] | $d_{\max \text{ Hub}}^*$<br>[mm] |
|------|-------------------------------|------------------------------|-----------|-----------|-----------|---------------|---------------|------------------------------------|----------------------------------|
| 08   | 30                            | 28                           | 106       | 56        | 41.5      | 66.5          | 96            | 30                                 | 30                               |
| 09   | 65                            | 35                           | 133       | 68.5      | 43.5      | 73.5          | 103           | 35                                 | 35                               |
| 10   | 130                           | 50                           | 169       | 87.5      | 52.7      | 90.7          | 126           | 50                                 | 45                               |
| 11   | 250                           | 68                           | 212.5     | 107.5     | 59.45     | 107.4         | 134           | 50                                 | 60                               |
| 12** | 500                           | 85                           | 266       | 135       | 71.4      | 125.6         | 162           | 80                                 | 70                               |

Rated torque is reached after pairing conditioning of the friction partners

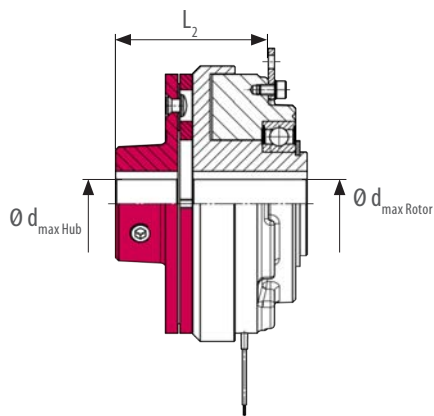
\*More customized max. diameter on request

\*\*Quantity dependent project solution

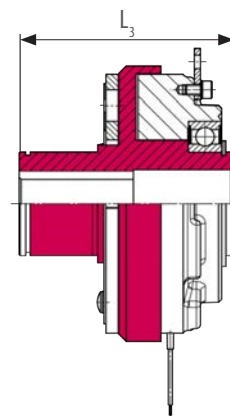
### SHAFT MOUNTED VERSIONS WITH BEARING MOUNTED ROTOR:



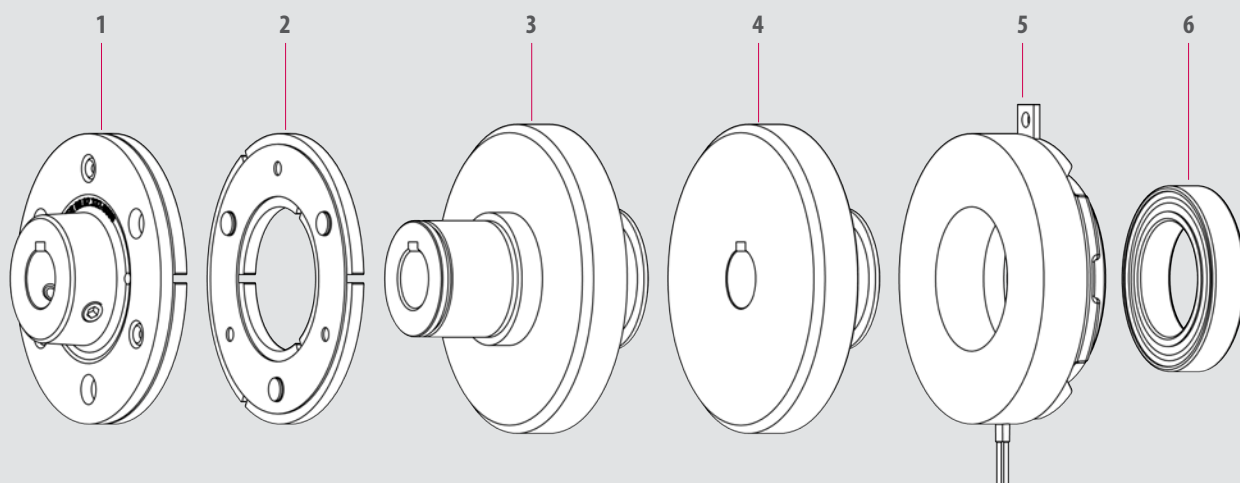
**Without hub**  
(Variant 710)



**Hub on the outside**  
(Variant 730)



**Rotor for bearing**  
(Variant 810)



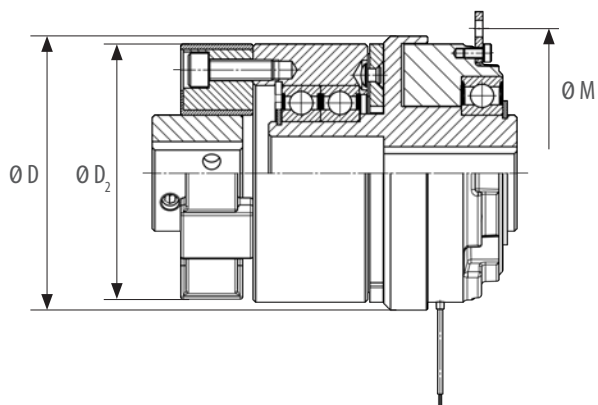
1. Armature version 30   2. Armature version 10   3. Rotor for bearing   4. Rotor   5. Magnet   6. Bearing

| SIZE | Rated torque<br>$M_2$<br>[Nm] | Standard<br>power<br>$P$ [W] | D<br>[mm]  | $D_2$<br>[mm] | M<br>[mm] | L<br>[mm] | $d_{\max \text{ Rotor}}$<br>[mm] | $d_{\max \text{ Hub}}$<br>[mm] |
|------|-------------------------------|------------------------------|------------|---------------|-----------|-----------|----------------------------------|--------------------------------|
| 06   | 7                             | 15                           | 67         | 56            | 72        | 117       | 20                               | 19                             |
| 07   | 15                            | 20                           | 85         | 85            | 90        | 129       | 25                               | 26                             |
| 08   | 30                            | 28                           | 106        | 100           | -         | 141       | 30                               | 30                             |
| 09   | 65                            | 35                           | 133        | 120           | -         | 160       | 35                               | 38                             |
| 10   | 130                           | 50                           | 169        | 170           | -         | 200       | 50                               | 55                             |
| 11   | 250                           | 68                           | 212.5      | 200           | -         | 217       | 65                               | 65                             |
| 12*  | 500                           | 85                           | on request |               |           |           |                                  |                                |

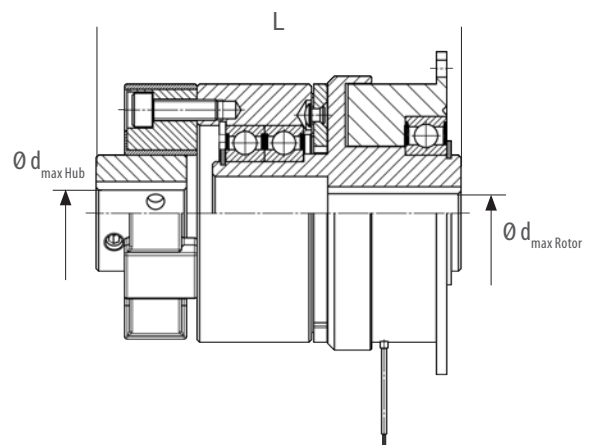
Rated torque is reached after pairing conditioning of the friction partners

\*\*Quantity dependent project solution

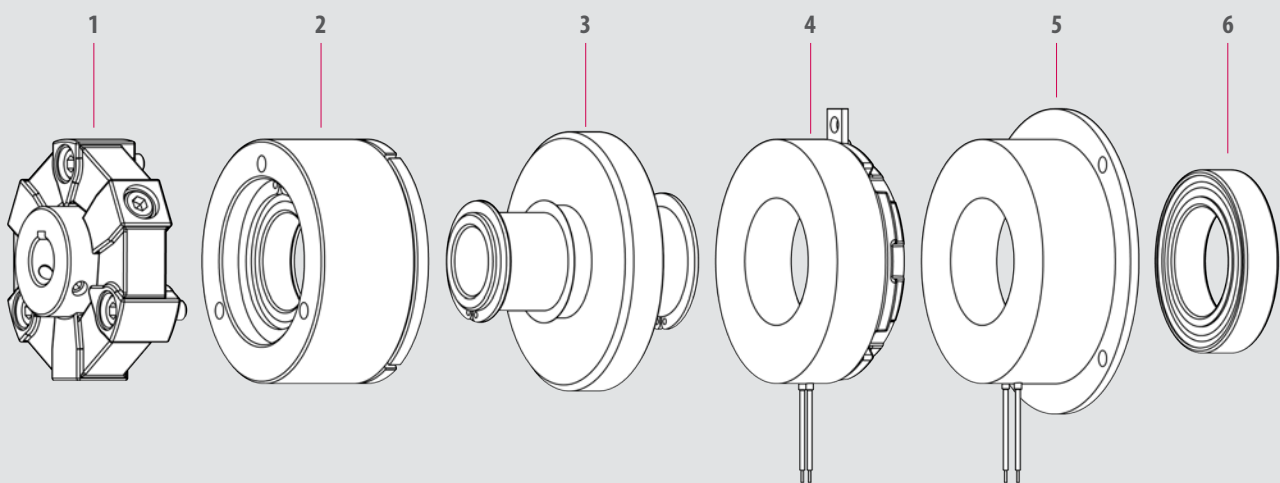
## SHAFT OR FLANGE MOUNTED VERSION WITH ELASTIC CLUTCH:



**Shaft-mounted**  
(Size 08-12)



**Flange-mounted**  
(Size 06-07)



1. Elastic clutch 2. Armature 3. Rotor 4. Magnet ( shaft-mounted size 08-12) 5. Magnet (Flange- mounted size 06-07) 6. Bearing

## COMBINORM T – ELECTROMAGNETIC TOOTH CLUTCH

Like the COMBINORM C, the operating current clutch COMBINORM T engages when electrically powered. However, this device is designed as an electromagnetically operated tooth clutch. Through the positive connection, particularly large torques are transmitted in both directions within a small space by restricting the speed of incidence.

In the process, torque is applied by the leading faces of hardened serrations and is backlash-free. The electromagnetic tooth clutch has a torque range of 21 to 390 Nm.

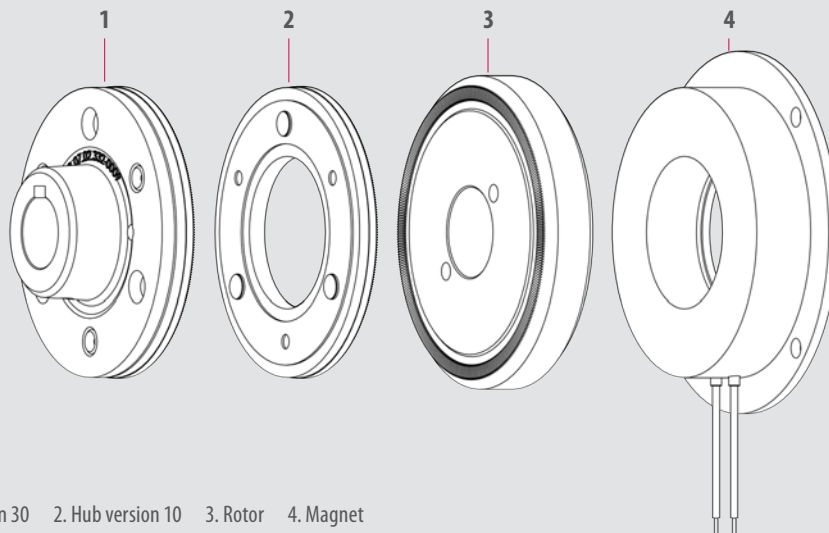
### OPTIONS:

- Customized flange
- CSA / CUS certificate
- Customized voltage
- Customized plugs
- Factory certificate 2.1 / inspection certificate 3.1



### AREAS OF APPLICATION:

MEDICAL TECHNOLOGY | DOOR AND GATE OPERATOR | WOOD WORKING MACHINES  
PACKAGING MACHINES AND FOOD TECHNOLOGY | INTRALOGISTICS



1. Armature version 30 2. Hub version 10 3. Rotor 4. Magnet

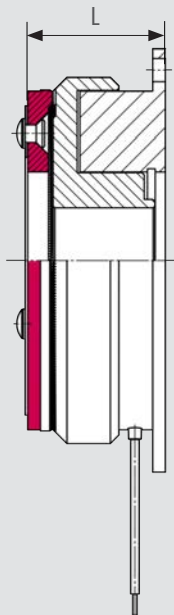


### HIGHLIGHTS

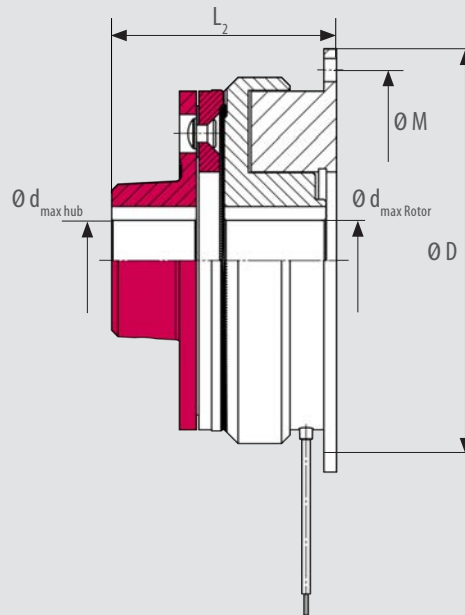
- Five sizes
- Backlash free
- Iso class B accordance with VDE 0580
- Designed for S1 operation or 100% duty cycle
- wide temperature and voltage range
- Standard voltage 24V

| SIZE | Rated torque<br>$M_2$<br>[Nm] | Standard<br>power<br>$P$ [W] | D<br>[mm] | M<br>[mm] | L<br>[mm] | $L_2$<br>[mm] | $L_3$<br>[mm] | $d_{\text{max Rotor}}$<br>[mm] | $d_{\text{max Hub}}$ |
|------|-------------------------------|------------------------------|-----------|-----------|-----------|---------------|---------------|--------------------------------|----------------------|
| 06   | 21                            | 15                           | 80        | 72        | 29.45     | 44.45         | 20            | 18                             | 18                   |
| 07   | 45                            | 20                           | 100       | 90        | 33.1      | 53.1          | 25            | 22                             | 22                   |
| 08   | 90                            | 28                           | 125       | 112       | 38.8      | 63.8          | 30            | 30                             | 30                   |
| 09   | 195                           | 35                           | 150       | 137       | 44.9      | 74.9          | 35            | 35                             | 35                   |
| 10   | 390                           | 50                           | 190       | 175       | 50.55     | 88.55         | 50            | 45                             | 45                   |

Rated torque is immediately reachable



**Without hub**  
(Variant 110)



**Hub on the outside**  
(Variant 130)



Download 3D models here and view further technical data

## COMBITRON 91 – RECTIFIER

COMBITRON 91 rectifiers are half-wave or bridge rectifiers for supplying electromagnets with a supply voltage of up to max. 720 V AC for DC or AC side switching in accordance with the 73/231/EEC Low Voltage Directive.

When switching electromagnetic clutches and brakes and other inductive DC consumers, harmful electromagnetic interference can occur.

Our half-wave rectifier with interference suppression limits the interference to class A in accordance with EN 55011.



| Input voltage<br>$U_{in}$ [V AC] | max. Input voltage<br>$U_{in max}$ [V AC] | max. Cut-off voltage<br>[V] | Switching mode                | Nominal voltage<br>magnet<br>[V DC]* | Type of rectifier |
|----------------------------------|-------------------------------------------|-----------------------------|-------------------------------|--------------------------------------|-------------------|
| 48                               | 275                                       | 450                         | Half wave                     | 20                                   | 0291010-CE07      |
|                                  |                                           |                             | Full wave                     | 42                                   | 0291020-CE07      |
| 110                              | 275                                       | 450                         | Full wave                     | 105                                  | 0291020-CE07      |
| 220 / 230                        | 275                                       | 450                         | Half wave                     | 105                                  | 0291010 - CE07    |
|                                  |                                           |                             | Full wave                     | 205                                  | 0291020 - CE07    |
|                                  |                                           |                             | Half wave with EMC protection | 105                                  | 0291010 - CEMV    |
| 380 / 400                        | 500                                       | 900                         | Half wave                     | 180                                  | 0491010 - CE07    |
|                                  |                                           |                             | Full wave                     | 380                                  | 0491020 - CE07    |
| 380 / 400                        | 600                                       | 1000                        | Half wave                     | on request                           | 0591010 - CE09    |
| 600 / 690                        | 720                                       | 1600                        | Half wave                     | on request                           | 0691010 - CE09    |

\* Half-wave rectifier:  $0,45 \cdot U_{in}$  Full wave:  $0,9 \cdot U_{in}$



Download 3D models here and view further technical data



### HIGHLIGHTS

- Half-wave or bridge rectifier
- Up to 720 V
- UL-certified
- Compact design in plastic housing
- DC-side and AC-side switching

With the COMBITRON 98, KEB offers a fast-acting rectifier with overexcitation for optimum activation or deactivation times for spring-applied brakes and electromagnets. Two powerbox designs in rigid housing for fitting on DIN rails or as a screw-on version complete the range.

The advantages of COMBITRON 98 become clear in practice, as faster switching times and the possibility of achieving significant energy savings make the fast-acting rectifier a highly sought-after “assistant”.



|                     | 9098210 - CE04                       | 9098200 - CE09 <sup>1)</sup>         |
|---------------------|--------------------------------------|--------------------------------------|
| Input voltage       | 24 V DC $\pm$ 20%                    | 180-300 V AC $\pm$ 0%                |
| Overexcitation time | 800 ms $\pm$ 15%                     | 350 ms $\pm$ 10%                     |
| Current $I_N$ 45°C  | 1.2 A continuous<br>7 A für 800 ms   | 1.2 A continuous<br>2.4 A für 350 ms |
| Current $I_N$ 75°C  | 0.6 A continuous<br>3.5 A für 800 ms | 0.7 A continuous<br>1.4 A für 350 ms |
| Temperature         | CCV -40° ... 75°                     | CCV -40° ... 75°                     |
| Switching rate      | max. 6 per minute at max. current    | max. 1 per minute at max. current    |

<sup>1)</sup> different values (U, A) when used under conditions of UL



Download 3D models here and view further technical data



## HIGHLIGHTS

- Two versions
- Up to 94 % power reduction
- Overexcitation possibility
- Up to 300 V
- UL-certified
- Compact design in plastic housing
- Low level of intrinsic heating
- DC-side and AC-side switching

# CUSTOMISED BRAKES AND CLUTCHES

## IF THE STANDARD VERSION DOES NOT DO WHAT YOU NEED, WE CAN DEVELOP A SOLUTION FOR YOU

Implementing customer-specific product solutions is one of KEB Automation's core competencies thanks to decades of experience, in-depth expertise and a high level of in-house vertical integration.

We work in partnership with you to develop high-quality, customised solutions in the area of spring-applied brakes, permanent magnet brakes and clutches, as well as electromagnetic clutches and brakes. By individually analysing your requirements and needs, we design the right product for your application.

### EXAMPLE MODIFICATIONS SPRING-APPLIED BRAKES

- Multi-surface and double rotor brakes
- Lockable hand release
- Customised brake torque tolerances
- Customised sizes/dimensions
- Bistable solutions for saving energy



**Double brake with additional single surface brake**



**Spring-applied brake with lockable hand release**



**Bistable spring applied brake for energy saving**



### HIGHLIGHTS

- 90 % in-house production possibility at KEB
- Magnetic flux simulation
- Strength analysis
- 3D rapid prototyping
- 100 % torque testing possible

### EXAMPLE MODIFICATIONS PERMANENT MAGNET BRAKES

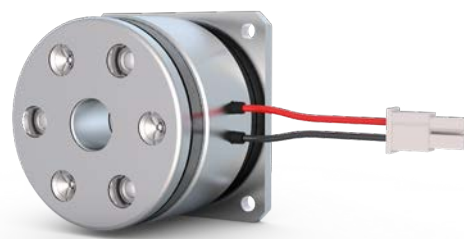
- Plug-and-play solutions
- Individual external dimensions and intermediate sizes
- Adapted temperature range
- Automated air gap adjustment
- Redundant coil and bistable brake solutions



**Plug&Play Permanent Magnet brake**



**Floating supported permanent magnet brake**



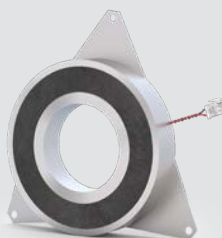
**Individual intermediate size**

### EXAMPLE MODIFICATIONS ELECTROMAGNETIC BRAKES AND CLUTCHES

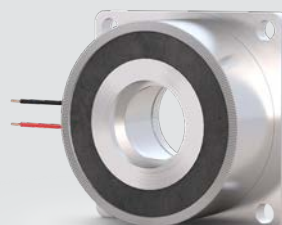
- Complete mounting units
- Integrated bearing
- Multipole solution for increased torque
- Anti-remanence function
- Narrow torque window



**Plug&Play unit for the automotive Sector**



**Holding magnet with spring plates**



**Toothed power brake**



## RELIABLE, SAFE AND ECONOMICAL

Electricity and magnetism cannot be separated from each other. Electromagnetism is considered one of the four elemental forces, through which one of the most important power transmissions in modern drive technology is available.

KEB uses this force sensibly and purposefully. Switching machine segments on and off, safely stopping and holding loads or dynamic positioning...

Electromagnetic assemblies offer the designer economical, robust, safe and reliable options for the individual solution.



### THE MAIN APPLICATIONS ARE:

- Gear and servo motors
- Medical technology
- Robotics and automation
- Cranes, hoists and trolleys
- Intralogistics
- Wind energy

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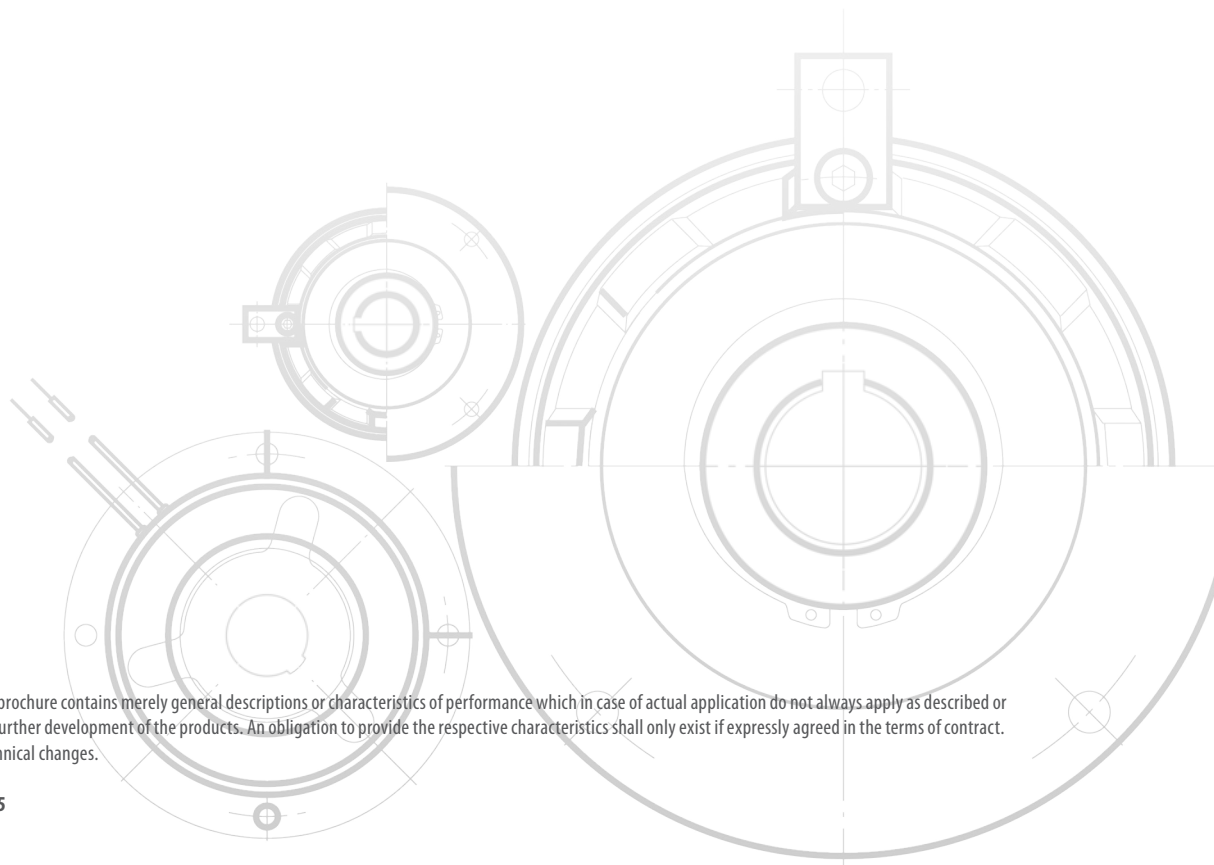
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KEB'S GLOBAL PARTNER NETWORK





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# Automation with Drive

# [keb-automation.com](http://keb-automation.com)

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