Safety Clutches

Overload Protection using Torque Limitation
We safeguard the movements of this world

Specialists for power transmission for more than a century

mayr® power transmission is one of the most traditional and yet highly innovative German companies in the field of power transmission. From modest beginnings in the year 1897, the family enterprise from the Allgäu region has developed into world market leaders. Today, 550 employees work at the headquarters in Mauerstetten; more than 1000 employees work for the company worldwide.

Unsurpassed - our standard range

mayr® power transmission offers an extensive variety of torque limiters, safety brakes, backlash-free shaft misalignment compensation couplings and high-quality DC drives. Also when it comes to customer-specific requirements, the company possesses the expertise to develop customized and economical solutions. This is why numerous renowned machine manufacturers trust in holistic solutions by mayr® power transmission.

Available worldwide

With eight subsidiaries in Germany, sales offices in the USA, France, Great Britain, Italy, Singapore and Switzerland as well as 36 additional country representatives, mayr® is available in all important industrial areas, guaranteeing optimum customer service around the globe.

Tradition and innovation – the best of both worlds

Tradition and innovation do not contradict each other - on the contrary. They are the two supporting pillars which have guaranteed stability and reliability for generations. Long-term stability, independence as well as a good reputation and satisfied customers are important values for a family enterprise rich in tradition.

Therefore, we place emphasis on:

- Tested product quality
- Optimum customer service
- Comprehensive know-how
- Global presence
- Successful innovations and
- Effective cost management

Following our own objective of always offering our customers the technologically most advanced and economical solution, we have been able to gain the trust of many leading industrial companies from all branches and from all over the world as a reliable partner.

Place your trust in our know-how and our more than 50 years of experience in torque limiters, safety brakes and shaft couplings.
mayr® products are subject to meticulous quality inspections. These include quality assurance measures during the construction process and a comprehensive final inspection. Only the best, tested quality leaves our factory. All products are rigorously tested on calibrated test stands, and adjusted precisely to the requested values. An electronic database in which the measurements values are archived together with the associated serial numbers guarantees 100 % traceability. On request, we confirm the product characteristics with a test protocol.

The certification of our quality management according to DIN EN ISO 9001:2000 confirms the quality-consciousness of our colleagues at every level of the company.

 Tested quality and reliability

never compromise on safety

We do not make compromises where safety is concerned. Only top products of a perfect quality guarantee that no people are injured or machines damaged in case of operational malfunctions, collisions and other hazardous situations. The safety of your employees and machines is our motivation to always provide the best and most reliable clutches, couplings or brakes.

mayr® power transmission holds numerous ground-breaking patents, and are the global market or technological leaders for

• application-optimised safety brakes, for example for passenger elevators, stage technology and gravity loaded axes
• torque limiters to protect against expensive overload damage and production losses and
• backlash-free servo couplings.
Situation

The input and output sides are connected firmly to each other (material-locking) in the drive line. There are no frictionally-locking or positive-locking connections which could give way without destruction on overload. Current changes in the motor cannot be monitored or processed.

Speed and Torque Paths

After a collision, the torque increases very rapidly to values which can be much higher than the operating torque. This overload leads to breaks in the drive line. The motor continues to run; the machine speed falls to 0.

Risk of Damage

Collisions without overload protection usually lead to the machine being completely damaged. The weakest link in the drive line breaks. The machine is no longer operational and downtime will last until the repairs have been carried out.

Dimensioning

Heavy, solid and slow-running constructions with high safety factors are necessary in order to keep collision factors as low as possible.

Costs

- Expensive replacement parts
- Complicated repairs
- Long downtimes

Situation

EAS®-clutches combine input and output-sides using positive locking and limit the torque accurately to the set value. These clutches work with an extremely high setting and repeating accuracy.

Speed and Torque Paths

On overload, the clutch disengages and separates input and output as quickly as possible. The stored rotary energy is disconnected and runs free. A limit switch registers clutch disengagement and switches off the drive.

Risk of Damage

The high accuracy and exact torque limitation mean that the drive line is not damaged. All components remain within the elastic deformation range.

Dimensioning

Small and light constructions are possible due to accurate torque limiting and exact predictions on component load.

Costs

Costs incurred due to damage or wear are no longer to be expected. After a short downtime to remove the overload, the system can be re-started.
Why is it worth using EAS®-safety clutches?

Advantages for the Machine Manufacturer
Safety clutches ensure that the load on the components does not exceed the permitted values due to exact torque limitation. This means that the modern demands on the machine construction can be fulfilled without risk.

- Reduction of constructional safety factors
- Optimum machine dimensions
- Low mass moment of inertia
- Smaller drive motors and gearbox
- Material and cost reductions
- High rigidity and vibration-free transmission

Advantages for Productional Operation
No machine is safe from collisions. They occur due to incorrect operation, control software and hardware malfunctions or ambient influences such as foreign objects. Safety clutches provide reliable protection and ensure:

- Low operational costs
- Minimum repair time expenditure
- High system availability
- High productivity
- Punctual production
- Good delivery image for customers

Classification of mayr®-safety clutches

<table>
<thead>
<tr>
<th>Load holding safety clutches</th>
<th>Torque limiting</th>
<th>Force limiting</th>
<th>Frictionally-locking</th>
<th>Positive-locking</th>
<th>Magnetic</th>
<th>Ratcheting</th>
<th>Disengaging</th>
<th>Pneum. switchable + controllable</th>
<th>Electr. switchable + controllable</th>
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Load separating safety clutches

| EAS®-Compact® / EAS®-NC       | x             | x             | x                  | x                |         |            |             |                               |                               |          |                   | 11           |
| EAS®-Compact® rustproof      | x             | x             | x                  | x                |         |            |             |                               |                               |          |                   | 12           |
| EAS®-smartic®                | x             | x             | x                  | x                |         |            |             |                               |                               |          |                   | 13           |
| EAS®-HTL                     | x             | x             | x                  | x                |         |            |             |                               |                               |          |                   | 14           |
| EAS®-HSC                     | x             | x             | x                  | x                |         |            |             |                               |                               |          |                   | 15           |
| EAS®-Compact® overload clutch | x             | x             | x                  |                 |         |            |             |                               |                               |          |                   | 16           |
| EAS®-elements                | x             | x             | x                  |                 |         |            |             |                               |                               |          |                   | 17           |
| EAS®-HT                      | x             | x             | x                  |                 |         |            |             |                               |                               |          |                   | 18           |
| EAS®-HSE                     | x             | x             | x                  |                 |         |            |             |                               |                               |          |                   | 20           |
| EAS®-dutytorque              | x             | x             | x                  |                 |         |            |             |                               |                               |          |                   | 21           |
| EAS®-Sp                      | x             | x             | x                  | x                |         |            |             |                               |                               |          |                   | 22           |
| EAS®-Sm / EAS®-Zr            | x             | x             | x                  | x                |         |            |             |                               |                               |          |                   | 23           |
| EAS®-axial                   | x             | x             | x                  |                 |         |            |             |                               |                               |          |                   | 24           |

Limit Switch 25
Load holding safety clutches

Example 1: Torque and speed paths of a load holding frictionally-locking safety clutch

Example 2: Torque and speed paths of a load separating ratchetting safety clutch

Load separating safety clutches
ROBA®-slip hub
the load holding frictionally-locking safety clutch

Performance Characteristics

- Slipping on overload. The device can continue operation immediately after elimination of the overload
- Torque transmission due to frictional locking
- Simple to install and handle
- Torque can be adjusted easily and steplessly using adjustment tables
- High-quality friction materials provide lowest-possible wear
- Low friction value tolerance due to optimized construction and materials
- Excellent repeat accuracy

Designs

- Standard design for narrow drive elements e.g. single-row chain sprockets
- ROBA®-max for very wide drive elements and for elements with a small diameter
- With rustproof friction linings for operation outside, in humid conditions or longer downtimes
- With a clamping hub for fast, cost-saving installation
- With a needle bearing for drive elements with high radial loads, a high slipping frequency and high demands on the shaft run-out accuracy
- With a flexible or torsionally rigid coupling for connection of two shafts and to compensate for shaft misalignment

Applications

- Test stands
- Crusher
- Extruder
- General mechanical engineering
- Conveyor technology
- Filling plants

Technical Data, Dimensions

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For detailed technical data and dimensions, please see catalogue ROBA®-slip hubs: K.123.V__ _ _
EAS®-torque sensor / EAS®-Compact®-torque sensor
the load holding positive-locking safety clutch

Performance Characteristics

● Emits a signal immediately on overload, but does not separate the masses (no mechanical overload protection) — ideal for vertical applications
● Connects the input and the output via positive locking in all operating conditions fail-safe
● Torque can be adjusted easily and steplessly using the scaled adjusting nut

Designs

❒ Flange design for mounting bearing-supported drive elements such as chain sprockets, toothed wheels and pulleys
❒ Design with integrated bearing for simple symmetrical and narrow drive elements. Simple, ready-to-mount clutch
❒ Design with a long hub for wide drive elements (see Installation Example)
❒ Designs with flexible couplings for connection of two shafts and to compensate for shaft misalignment

Applications

❒ Vertical drives
❒ Hoists
❒ All drives in which separation of the shafts is not permitted

Technical Data and Dimensions

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For detailed technical data and dimensions, please see catalogue EAS®-standard: K.407.V_ _ _
ROBA®-contitorque
the load holding, magnetic safety clutch

Performance Characteristics

- Long-term continuous torque due to magnetic hysteresis principle
- Wear and maintenance-free
- Torques are transmitted contactlessly and synchronously via magnetic forces
- Precise torque limiting on overload
- Torque can be adjusted easily and steplessly using the scale marked with torque values
- Can be used as a clutch or brake
- Low weight and mass moment of inertia

Installation Example

The clutch is secured directly onto the motor shaft and the pulley is bearing-mounted separately using the deep groove ball bearing (used as a clutch for torque limitation).

Designs

- Two torque ranges per construction size for most accurate torque graduation
- Rustproof stainless steel design
- Sealed; can be used in foodstuffs plants
- Design with rustproof hysteresis-capping head: ROBA®-capping head

Applications

- In test stand technology, this device can simulate defined loads
- Can be used to screw on closing caps of any kind
- Force limitation for coiling and uncoiling procedures
- Torque limitation in different power transmission applications
- Rail / switch plate adjustments (railway)

Technical Data and Dimensions

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For detailed technical data and dimensions, please see catalogue ROBA®-contitorque: K.150.V
ROBA®-capping head: P.151000.V
EAS®-Compact® / EAS®-NC
the load separating ratchetting safety clutch

Performance Characteristics

- Separates immediately, re-engages automatically
- Transmits the torque backlash-free in normal operation
- Separates input and output in milliseconds on overload
- Electrical signal emittance on overload via limit switch
- High switch-off and repeat accuracy
- Torque can be adjusted easily and steplessly using adjustment tables
- Re-engagement every 15° or synchronously after 360°
- High rigidity

Installation Example

The EAS®-Compact® with a backlash-free, torsionally flexible and vibration-damping shaft coupling for the connection of two shafts. The coupling compensates for axial, radial and angular shaft misalignments.

Designs

- Flange clutches with single or double bearings for direct mounting onto drive elements such as pulleys, toothed wheels and chain sprockets
- Design with a long hub for mounting very wide drive elements. An additional bearing on the hub using a roller bearing or a plain bearing is possible
- Combinations with torsionally rigid or flexible couplings for the connection of two shafts; compensation of shaft misalignment

Applications

- General drive technology
- Automation technology
- Machine tools
- Packing machines
- Printing and paper machines
- Foodstuffs technology
- Conveyor technology
- Drink industry

Technical Data and Dimensions

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For detailed technical data and dimensions, please see catalogue EAS®-Compact®: K.490.V ___. 
EAS®-Compact® rustproof
the load separating ratchetting safety clutch

**Performance Characteristics**

- Separates immediately, re-engages automatically
- Transmits the torque backlash-free in normal operation
- Separates input and output in milliseconds on overload
- High switch-off and repeat accuracy
- Simple torque adjustment
- Re-engagement synchronously after 360°
- Long service lifetime due to hardened functional components
- Use of lubricants with approval for the food industry

**Designs**

- Rustproof, open design: EAS®-Compact®-R clutch, completely made of rustproof stainless steel; identical in design with the EAS®-Compact® standard
- Rustproof, sealed design: EAS®-Compact®-RA clutch, completely rustproof, enclosed due to rustproof seal; no penetration of cleaning liquids or any other media, no grease leakage
- Flange clutches with single bearings for direct mounting onto drive elements such as pulleys, toothed wheels and chain sprockets

**Applications**

- Foodstuffs technology
- Process engineering
- Chemical industry

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**Technical Data and Dimensions**

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For detailed technical data and dimensions, please see catalogue EAS®-Compact®-R: P.49A.V
EAS®-smartic®
the load separating ratchetting safety clutch

Performance Characteristics

- Separates immediately, re-engages automatically
- Very easy and quick installation via the clamping ring hub by tightening one single screw
- Permanent backlash-free torque transmission
- Good dynamic characteristics
- Economical and reliable
- Simple and safe torque adjustment via a graduation scale with a directly readable torque indication
- Highest possible transmission security due to keyway and clamping ring hub
- High torque range from 6 – 100 % of the maximum torque
- Adjustment of the different torques possible by re-layering the cup springs already installed without reducing/adding the number of springs

Designs

- Flange clutches for direct mounting onto drive elements such as pulleys, toothed wheels and chain sprockets
- Combinations with a backlash-free flexible coupling for the connection of two shafts; compensation of shaft misalignment and damping of critical vibrations
- Combinations with a backlash-free torsionally rigid coupling for the connection of two shafts; compensation of shaft misalignment and high torsional spring rigidity

Applications

- General drive technology
- Automation technology
- Machine tools
- Packing machines
- Printing and paper machines
- Foodstuffs technology
- Conveyor technology
- Drink industry

Technical Data and Dimensions

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For detailed technical data and dimensions, please see catalogue EAS®-smartic®: K.481.V_ _._ _
EAS®-HTL
the load separating, ratchetting or disengaging safety clutch

Performance Characteristics

• Separates immediately on overload
• Re-engage automatically (ratchetting and synchronous clutch design)
• Slows down freely (overload clutch design)
• EAS®-Compact® in a housing with IEC or NEMA flanges (housing protection IP53)
• Integrated limit switch for switch-off in case of overload
• Cost-effective, closed unit
• Easy installation due to standardised connection dimensions and short design
• Fail-safe and reliable due to protection against mechanical damage, corrosion, penetration of dirt and washing out of grease
• Solid housing
  Hanging loads can be attached to it
• Backlash-free torque transmission
• Torque adjustment possible

Designs

❑ Enclosed in an IEC or NEMA flanged housing
❑ Synchronous, ratchetting or overload clutch designs

Applications

❑ Foodstuffs technology
❑ Process engineering
❑ Chemical industry

<table>
<thead>
<tr>
<th>Technical Data and Dimensions</th>
<th>Synchronous, ratchetting clutch</th>
<th>Overload clutch</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IEC 63 – 180</td>
<td>NEMA 56C – 256TC</td>
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<tr>
<td>Limit torques for overload</td>
<td>( M_g ) [Nm]</td>
<td></td>
</tr>
<tr>
<td>Maximum speed</td>
<td>( n_{max} ) [rpm]</td>
<td></td>
</tr>
<tr>
<td>Outer diameter</td>
<td>[mm]</td>
<td></td>
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<tr>
<td>Minimum bore</td>
<td>[mm]</td>
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<td>Maximum bore</td>
<td>[mm]</td>
<td></td>
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<tr>
<td>Length</td>
<td>[mm]</td>
<td></td>
</tr>
</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-HTL: P.HTL.V ...
EAS®-HSC
the load separating disengaging safety clutch

Performance Characteristics

- Separates immediately on overload
- Slows down freely
- Positive locking overload clutch
- Complete separation
- Synchronous re-engagement
- Balanced when completely installed
- Diverse mounting variations
- High torsional rigidity
- High performance density
- Low mass moment of inertia
- High speeds of up to 12000 rpm

Designs

- Flange design
- Combinations with a torsionally rigid misalignment-flexible all-steel coupling (ROBA®-DS coupling) for the connection of two shafts; compensation of shaft misalignment

Applications

- Test stands
- For high-speed applications

EAS®-HSC combined with the torsionally rigid disk pack coupling ROBA®-DS

Technical Data and Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Size 0</th>
<th>Size 1</th>
<th>Size 2</th>
<th>Size 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Limit torques for overload</strong></td>
<td>$M_o$ [Nm]</td>
<td>5 – 62,5</td>
<td>10 – 125</td>
<td>20 – 250</td>
</tr>
<tr>
<td><strong>Maximum speed</strong> (n_{max}) [rpm]</td>
<td>12000</td>
<td>10000</td>
<td>9000</td>
<td>7000</td>
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<tr>
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<td>115</td>
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<td><strong>Length</strong> Flange design [mm]</td>
<td>62</td>
<td>76</td>
<td>90</td>
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</tr>
</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-HSC/EAS®-HSE: P.4090.V_ _._ _
EAS®-Compact® overload clutch
the load separating disengaging safety clutch

Performance Characteristics

● Separates immediately on overload
● Slows down freely
● Exact and reproducible responses
● Re-engagement either by hand or via remote control
● Torque can be adjusted easily and steplessly using adjustment tables
● Operation possible with or without limit switch for overload recognition
● Transmits the torque backlash-free in normal operation

Installation Example

EAS®-Compact® overload clutch with a short hub: The clutch interrupts the transmission between the motor and the toothed belt pulley on overload and remains disengaged.

Designs

➢ Flange clutch with integrated ball bearing for direct mounting onto drive elements such as pulleys, toothed wheels and chain sprockets
➢ If requested, a device with a long hub and double mounting bearing for very wide drive elements is available
➢ Combinations with flexible couplings for the connection of two shafts; compensation of shaft misalignment
➢ Combinations with a backlash-free torsionally rigid coupling for the connection of two shafts; compensation of shaft misalignment and high torsional spring rigidity

Applications

➢ General drive technology
➢ Automation technology
➢ Machine tools
➢ Packing machines
➢ Printing and paper machines
➢ Foodstuffs technology
➢ Conveyor technology
➢ Drink industry

Technical Data and Dimensions

<table>
<thead>
<tr>
<th>Limit torques for overload</th>
<th>01</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Mₐ [Nm]</td>
<td>5 – 62.5</td>
<td>10 – 125</td>
<td>20 – 250</td>
<td>40 – 500</td>
<td>80 – 1000</td>
<td>120 – 1500</td>
<td>240 – 3000</td>
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<tr>
<td>Maximum speed nₘₐₓ [rpm]</td>
<td>8000</td>
<td>7000</td>
<td>6000</td>
<td>5000</td>
<td>4000</td>
<td>3500</td>
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<tr>
<td>Outer diameter [mm]</td>
<td>70</td>
<td>85</td>
<td>100</td>
<td>115</td>
<td>135</td>
<td>175</td>
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<td>Minimum bore [mm]</td>
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<td>15</td>
<td>22</td>
<td>32</td>
<td>35</td>
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<tr>
<td>Maximum bore [mm]</td>
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<td>25</td>
<td>35</td>
<td>45</td>
<td>55</td>
<td>65</td>
<td>85</td>
</tr>
<tr>
<td>Length [mm]</td>
<td>52</td>
<td>63</td>
<td>73</td>
<td>81</td>
<td>93</td>
<td>160</td>
<td>193</td>
</tr>
</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-Compact®: K.490.V__...
EAS®-elements
the load separating disengaging elements

Performance Characteristics

- Separates immediately on overload
- Slows down freely
- Maximum performance density
- Release forces can be adjusted easily and steplessly
- Simple and fast engagement
- Large number of disengagement actions
- On overload, the entire system can be stopped by a speed monitor

Designs
- EAS®-elements for installation in two bearing-supported flanges facing each other or for integration into existing constructions
- EAS®-HT safety clutch component
- For customer-specific constructions
- Rustproof design on request

Applications
- Conveyor belts
- Crushers
- Rolling mills
- Underground mining / mining
- Raw material extraction

Technical Data and Dimensions

<table>
<thead>
<tr>
<th></th>
<th>02</th>
<th>01</th>
<th>Size</th>
<th>1</th>
<th>2</th>
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</thead>
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<tr>
<td>Circumferential force $F_u$ [kN]</td>
<td>0,22 – 2,5</td>
<td>1 – 5</td>
<td>1,8 – 38</td>
<td>5 – 75</td>
<td>4 – 150</td>
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<tr>
<td>Axial force $F_{ax}$ [kN]</td>
<td>0,2 – 2,25</td>
<td>0,9 – 4,5</td>
<td>1,62 – 20</td>
<td>4,5 – 40</td>
<td>3,6 – 80</td>
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<tr>
<td>Outer diameter [mm]</td>
<td>31,2</td>
<td>41,6</td>
<td>85</td>
<td>110</td>
<td>150</td>
</tr>
<tr>
<td>Length [mm]</td>
<td>56</td>
<td>77,5</td>
<td>127</td>
<td>163</td>
<td>243</td>
</tr>
</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-HT: K.440.V_ _._ _
EAS®-HT, short bearing-supported hub
the load separating disengaging safety clutch

**Performance Characteristics**

- Separates immediately on overload
- Slows down freely
- Designed for high torques
- Robust, long service lifetime
- Individual constructional design according to the customer’s requests
- Re-engagement either by hand or via remote control
- Torque can be adjusted easily and steplessly using adjustment tables
- On overload, the entire system can be stopped by a speed monitor

**Designs**

- Short bearing-supported hub for direct mounting onto drive elements
- Combination with flexible coupling for the connection of two shafts; damping of impact loads
- Rustproof design on request
- Cold climate clutch design on request (special design, overload protection up to -48 °C)

**Technical Data and Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>EAS®-HT short bearing-supported hub</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Limit torques for overload $M_g$ [kNm]</td>
<td>1,3 – 8</td>
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<tr>
<td>Maximum speed $n_{max}$ [rpm]</td>
<td>3000</td>
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<tr>
<td>Outer diameter [mm]</td>
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<tr>
<td>Bore EAS®-hub side [mm]</td>
<td>90</td>
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<tr>
<td>Length [mm]</td>
<td>228</td>
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</table>
EAS®-HT, flange design
the load separating disengaging safety clutch

Designs
- The compact, ready for installation flange design can easily be integrated into the drive line
- Combination with flexible coupling for the connection of two shafts; damping of impact loads
- Combination with a curved-tooth coupling for the connection of two shafts; high misalignment compensation capability, temperature-resistant
- Combination with a backlash-free torsionally rigid coupling for the connection of two shafts; compensation of shaft misalignment and high torsional spring rigidity

Applications
Heavy duty applications; Used for example in
- shovel excavators
- dredgers
- turbine construction
- water lock drives
- rolling mills
- steel plants

<table>
<thead>
<tr>
<th>Technical Data and Dimensions</th>
<th>EAS®-HT flange design</th>
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<tbody>
<tr>
<td>Limit torques for overload</td>
<td>M₀ [kNm]</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>nₘₐₓ [rpm]</td>
</tr>
<tr>
<td>Outer diameter</td>
<td>[mm]</td>
</tr>
<tr>
<td>Bore</td>
<td>curved-tooth coupling</td>
</tr>
<tr>
<td>Length</td>
<td>[mm]</td>
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</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-HT: K.440.V_ _ _
EAS®-HSE
the load separating disengaging safety clutch

Performance Characteristics

● Separates immediately on overload
● Slows down freely
● Positive locking overload clutch
● Complete separation
● Synchronous re-engagement
● Balanced when completely installed
● Diverse mounting variations
● High torsional rigidity
● High performance density
● Low mass moment of inertia
● High speeds of up to 12000 rpm
  (up to 20000 rpm possible as special design)

Designs

❒ Combinations with a torsionally rigid misalignment-flexible all-steel coupling (ROBA®-DS coupling) for the connection of two shafts; compensation of shaft misalignment
❒ Flange design

Applications

❒ High-torque test stands
❒ For high-speed applications

<table>
<thead>
<tr>
<th>Technical Data and Dimensions</th>
<th>02</th>
<th>Size</th>
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</thead>
<tbody>
<tr>
<td>Limit torques for overload</td>
<td>M₀</td>
<td>[Nm]</td>
<td>100 – 1000</td>
<td>325 – 2500</td>
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<tr>
<td>Maximum speed</td>
<td>nₘₐₓ</td>
<td>[rpm]</td>
<td>12000</td>
<td>10000</td>
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<tr>
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<td>[mm]</td>
<td>125</td>
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<td>250</td>
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<tr>
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<td>Flange design</td>
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For detailed technical data and dimensions, please see catalogue EAS®-HSC/EAS®-HSE: P.4090.V___.

EAS®-HSE combined with
the torsionally rigid disk pack coupling ROBA®-DS
EAS®-dutytorque
the load separating disengaging safety clutch

Performance Characteristics

- Separates immediately on overload
- Slows down freely
- High reliability due to robust mechanics
- High switch-off and repeat accuracy
- Simple and fast re-engagement
- Can be disassembled radially without moving the motor
- High balance quality
- Extensive adjustable torque ranges
- Large shaft bores
- Long service lifetime
- Separable shaft coupling
- Minimum maintenance requirements
- Compact design

The operating conditions for extruders place maximum demands on drive systems: Only special, optimised clutches for torque limitation, such as the EAS®-dutytorque, guarantee reliable protection in case of overload.

Performance Characteristics

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Technical Data and Dimensions

<table>
<thead>
<tr>
<th>Size</th>
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<tr>
<td>3</td>
<td>3500</td>
<td>3000</td>
<td>3000</td>
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<td>2500</td>
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<td>472</td>
<td>510.5</td>
<td>512.5</td>
<td>636</td>
<td>654.5</td>
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</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-dutytorque: K.4043.V_ _._ _
EAS®-Sp
the load separating switchable and controllable safety clutch

Performance Characteristics

- Separates immediately on overload at the controlled switch-off torque
- Pneumatically switchable and controllable
- Synchronous coupling after each full turn
- High switch-off and repeat accuracy
- Torque can be steplessly adjusted via compressed air
- Optimum torque adaptation possible in every production process phase
- Application-tailored switching and control devices for optimum use of function and performance range

Installation Example

EAS®-Sp clutch mounted onto the shaft end:
The clutch is axially secured via a cone bushing and allows a backlash-free torque connection from shaft to hub.

Designs

- Pneumatic clutch with steplessly adjustable torque using the amount of air pressure
- Flange clutches with two integrated ball bearings for direct mounting onto drive elements such as pulleys, toothed wheels and chain sprockets
- Combinations with a torsionally rigid flexible coupling for the connection of two shafts; compensation of shaft misalignment
- Designed for automated machines with changing operating conditions or changing cycle sequences and speeds

Applications

- Filling machines
- Printing machines
- Packing machines
- Conveyor technology

Technical Data and Dimensions

<table>
<thead>
<tr>
<th>Size</th>
<th>01</th>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>nₓ max [rpm]</td>
<td>5000</td>
<td>4000</td>
<td>2500</td>
<td>2000</td>
<td>2000</td>
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<tr>
<td>Outer diameter [mm]</td>
<td>76</td>
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<td>115</td>
<td>130</td>
<td>160</td>
<td>200</td>
<td>285</td>
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<tr>
<td>Minimum bore [mm]</td>
<td>10</td>
<td>12</td>
<td>15</td>
<td>20</td>
<td>20</td>
<td>25</td>
<td>38</td>
</tr>
<tr>
<td>Maximum bore Flange design, keyway [mm]</td>
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<td>22</td>
<td>35</td>
<td>42</td>
<td>50</td>
<td>65</td>
<td>95</td>
</tr>
<tr>
<td>Length [mm]</td>
<td>87</td>
<td>105</td>
<td>126</td>
<td>135</td>
<td>153</td>
<td>185</td>
<td>260</td>
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</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-Sp/EAS®-Sm/Zr: K.406.V ___
EAS®-Sm / EAS®-Zr
the load separating switchable and controllable safety clutch

Performance Characteristics

- Separates immediately on overload at the controlled switch-off torque
- Electrically switchable and controllable
- Synchronous coupling after each full turn on EAS®-Sm
- Coupling in 15°-steps on EAS®-Zr
- High switch-off and repeat accuracy
- Torque can be steplessly adjusted via current
- Optimum torque adaptation possible in every production process phase
- Application-tailored switching and control devices for optimum use of function and performance range

Installation Example

EAS®-Sm with torsionally rigid flexible all-steel coupling positioned between the motor and the gearbox. When the clutch disengages, the armature disk moves axially and operates the limit switch.

Designs

- Electromagnetic clutch with steplessly adjustable torque using the current
- Flange clutches with two integrated ball bearings for direct mounting onto drive elements such as pulleys, toothed wheels and chain sprockets
- Design with cover for dusty and dirty operation areas
- Combinations with a torsionally rigid flexible coupling for the connection of two shafts; compensation of shaft misalignment
- Designed for automated machines with changing operating conditions or changing cycle sequences and speeds

Applications

- Filling machines
- Printing machines
- Packing machines
- Conveyor technology

Technical Data and Dimensions

<table>
<thead>
<tr>
<th>Limit torques for overload</th>
<th>01</th>
<th>1</th>
<th>Size</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>( M_{a} ) [Nm]</td>
<td>6 – 25</td>
<td>12 – 50</td>
<td>25 – 100</td>
<td>50 – 200</td>
<td>100 – 375</td>
<td></td>
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<tr>
<td>Maximum speed ( n_{max} ) [rpm]</td>
<td>4000</td>
<td>3000</td>
<td>2500</td>
<td>2000</td>
<td>2000</td>
<td></td>
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<tr>
<td>Outer diameter [mm]</td>
<td>115</td>
<td>135</td>
<td>155</td>
<td>180</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Minimum bore [mm]</td>
<td>9</td>
<td>14</td>
<td>19</td>
<td>22</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Maximum bore [mm]</td>
<td>22</td>
<td>35</td>
<td>42</td>
<td>50</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Length [mm]</td>
<td>100</td>
<td>110</td>
<td>125</td>
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</tr>
</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-Sp/EAS®-Sm/Zr: K.406.V _._._ _
EAS®-axial
the load separating safety clutch for linear movements

Performance Characteristics

● Separates immediately on overload
● Re-engages synchronously
● Transmits the forces backlash-free up to the adjusted release force
● High axial rigidity
● Reliably limits tensile and compressive forces
● Re-engages automatically exactly at the place of disengagement
● Free stroke in both tensile and compressive direction can be defined by the user
● Release force can be steplessly adjusted

Designs

✎ Flexible modular form for optimum adaptation of the protective elements to the respective application

Applications

✎ In cam-controlled feed drives
✎ As a torque support for shaft-mounted gearboxes
✎ As a force limiter in a crank drive

Installation Example
EAS®-axial in a box packaging machine

Technical Data and Dimensions

<table>
<thead>
<tr>
<th>Release forces</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>F_A [kN]</td>
<td>0.075 – 0.8</td>
<td>0.2 – 2</td>
<td>0.3 – 5</td>
<td>0.6 – 12</td>
<td>3 – 30</td>
<td>6 – 70</td>
<td>12 – 150</td>
<td>30 – 300</td>
</tr>
<tr>
<td>Free stroke (in tensile and/or compressive direction) [mm]</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>Outer diameter [mm]</td>
<td>30</td>
<td>37</td>
<td>48</td>
<td>68</td>
<td>95</td>
<td>120</td>
<td>160</td>
<td>240</td>
</tr>
<tr>
<td>Length Basic element [mm]</td>
<td>52</td>
<td>75</td>
<td>95</td>
<td>130</td>
<td>190</td>
<td>230</td>
<td>350</td>
<td>460</td>
</tr>
</tbody>
</table>

For detailed technical data and dimensions, please see catalogue EAS®-axial: K.403.C.V. . . .
Limit Switch

Type 055.00_.5

**Characteristics**
- Registration of axial and radial disengagement movements
- Either internal or external NAMUR sensor
- Floating contacts
- Adjustable zero point
- Robust light metal housing

**Detail drawing**

![Detail drawing for Type 055.00_.5](image)

* Switch distances on engaged clutch acc. Installation and Operational Instructions

**Approvals**

- CE
- UL Listed

Type 055.012.6

**Characteristics**
- Registration of axial disengagement movements
- PNP NO contact
- Cost-effective

**Detail drawing**

![Detail drawing for Type 055.012.6](image)

* Switch distances on engaged clutch acc. Installation and Operational Instructions

**Approvals**

- CE
- UL Listed

Installation example
Limit Switch

**Type 055.000.5**

**mechanical actuation**

**Characteristics**
- Registration of axial and radial disengagement movements
- Adjustable zero point
- Robust light metal housing

**Detail drawing**

**Installation example**

* Switch distances on engaged clutch acc. Installation and Operational Instructions

**Approvals**

CE

**Type 055.010.6**

**mechanical actuation, multi-directional**

**Characteristics**
- Registration of axial and radial disengagement movements
- Positive opening contacts

**Detail drawing**

**Installation example**

* Switch distances on engaged clutch acc. Installation and Operational Instructions

**Approvals**

CE

UL Ind.Cont.Eq. LISTED 1B68
Product Summary

Safety Clutches/Overload Clutches

- **EAS®-Compact®/EAS®-NC**
  Positive locking and completely backlash-free torque limiting clutches
- **EAS®-smartic®**
  Cost-effective torque limiting clutches, quick installation
- **EAS®-element clutch/EAS®-elements**
  Load-disconnecting protection against high torques
- **EAS®-axial**
  Exact limitation of tensile and compressive forces
- **EAS®-Sp/EAS®-Sm/EAS®-Zr**
  Load-disconnecting torque limiting clutches with switching function
- **ROBA®-slip hub**
  Load-holding, frictionally locked torque limiting clutches
- **ROBA®-contitorque**
  Magnetic continuous slip clutches
- **EAS®-HSC/EAS®-HSE**
  High-speed safety clutches for high-speed applications

Shaft Couplings

- **smartflex®/primeflex®**
  Perfect precision couplings for servo and stepping motors
- **ROBA®-ES**
  Backlash-free and damping for vibration-sensitive drives
- **ROBA®-DS/ROBA®-D**
  Backlash-free, torsionally rigid all-steel couplings
- **ROBA®-DSM**
  Cost-effective torque-measuring couplings

Electromagnetic Brakes/Clutches

- **ROBA-stop® standard**
  Multifunctional all-round safety brakes
- **ROBA-stop®-M motor brakes**
  Robust, cost-effective motor brakes
- **ROBA-stop®-S**
  Water-proof, robust monoblock brakes
- **ROBA-stop®-Z/ROBA-stop®-silenzio®**
  Doubly safe elevator brakes
- **ROBA®-diskstop®**
  Compact, very quiet disk brakes
- **ROBA®-topstop®**
  Brake systems for gravity loaded axes
- **ROBA®-linearstop**
  Backlash-free brake systems for linear motor axes
- **ROBA®-guidestop**
  Backlash-free holding brake for profiled rail guides
- **ROBATIC®/ROBA®-quick/ROBA®-takt**
  Electromagnetic clutches and brakes, clutch brake units

DC Drives

- **tendo®-PM**
  Permanent magnet-excited DC motors
Service Germany

Baden-Württemberg
Esslinger Straße 7
70771 Leinfelden-Echterdingen
Tel.: 07 11/45 96 01 0
Fax: 07 11/45 96 01 10

Bavaria
Eichenstraße 1
87665 Mauerstetten
Tel.: 0 83 41/80 41 04
Fax: 0 83 41/80 44 23

Chemnitz
Bornarstraße 205
09114 Chemnitz
Tel.: 03 71/4 74 18 96
Fax: 03 71/4 74 18 95

Franken
Unterer Markt 9
91217 Hersbruck
Tel.: 0 91 51/81 48 64
Fax: 0 91 51/81 62 45

Hagen
Im Langenstein 6
58093 Hagen
Tel.: 0 23 31/78 03 0
Fax: 0 23 31/78 03 25

Kamen
Lünenerringe Straße 211
59174 Kamen
Tel.: 0 23 07/23 63 85
Fax: 0 23 07/24 26 74

North
Schierer Brink 8
32699 Extertal
Tel.: 0 57 54/9 20 77
Fax: 0 57 54/9 20 78

Rhine-Main
Hans-Böckler-Straße 6
64823 Groß-Umstadt
Tel.: 0 60 78/72 53 37
Fax: 0 60 78/72 53 37

Branch office

China
Mayr Zhangjiagang
Power Transmission Co., Ltd.
Fuxin Road No.7, Yangshe Town
215637 Zhangjiagang
Tel.: 05 12/58 91-75 67
Fax: 05 12/58 91-75 66
info@mayr-ptc.cn

Great Britain
Mayr Transmissions Ltd.
Valley Road, Business Park
Keighley, BD21 4LZ
West Yorkshire
Tel.: 0 15 35/66 39 00
Fax: 0 15 35/66 32 61
sales@mayr.co.uk

France
Mayr France S.A.S.
Z.A.L. du Minopole
Rue Nungesser et Coli
62160 Bullly-Les-Mines
Tel.: 03.21.72.91.91
Fax: 03.21.29.71.77
contact@mayr.fr

Italy
Mayr Italia S.r.l.
Viale Veneto, 3
35020 Saonara (PD)
Tel.: 0498/79 10 22
Fax: 0498/79 10 22
info@mayr-italia.it

Singapore
Mayr Transmission (S) PTE Ltd.
No. 8 Boon Lay Way Unit 03-06,
TradeHub 21
Singapore 609964
Tel.: 00 65/65 60 12 30
Fax: 00 65/65 60 10 00
info@mayr.com.sg

Switzerland
Swarzer Kupplungen AG
Tobeläckerstraßen 11
8212 Neuhausen am Rheinfall
Tel.: 0 52/6 74 08 70
Fax: 0 52/6 74 08 75
info@mayr.ch

USA
Mayr Corporation
10 Industrial Avenue
Mahwah
NJ 07430
Tel.: 2 01/4 45-72 10
Fax: 2 01/4 45-80 19
info@mayrcorp.com

Representatives

Australia
Regal Beloit Australia Pty Ltd.
19 Corporate Ave
03178 Rowville, Victoria
Australien
Tel.: 0 3/92 37 40 00
Fax: 0 3/92 37 40 80
salesAUvic@regalbeloit.com

Poland
Wamex Sp. z o.o.
ut Pozaryskiego, 28
04-703 Warszawa
Tel.: 0 22/15 90 80
Fax: 0 22/15 61 80
wamex@wamex.com.pl

India
National Engineering
Company (NENCO)
J-225, M.I.D.C.
Bhosari Pune 411026
Tel.: 0 20/27 13 02 29
Fax: 0 20/27 13 02 29
nenco@nenco.org

South Korea
Mayr Korea Co. Ltd.
Room No.1002, 10th floor,
Nex Zone, SK TECHNOVAPARK,
77-1, SungSan-Dong,
SungSan-Gu, Changwon, Korea
Tel.: 0 55/2 62-40 24
Fax: 0 55/2 62-40 25
info@mayrkorea.com

Japan
MATSUI Corporation
2-4-7 Azabudai
Minato-ku
Tokyo 106-8641
Tel.: 03/35 86-41 41
Fax: 03/32 24 24 10
k.goto@matsui-corp.co.jp

Taiwan
German Tech Auto Co., Ltd.
No. 28, Fenggang Zhong Road,
Shengang Dist.,
Taichung City 429, Taiwan R.O.C.
Tel.: 04/25 15 05 66
Fax: 04/25 15 24 13
abby@zfgta.com.tw

More representatives:
Austria, Belgium, Brazil, Canada, Denmark, Finland, Greece, Hongkong, Hungary, Indonesia, Israel,
Luxembourg, Malaysia, New Zealand, Norway, Philippines, Romania, Russia, Slovakia, Slovenia,
South Africa, Spain, Sweden, Thailand, Turkey

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