



Test stand technology



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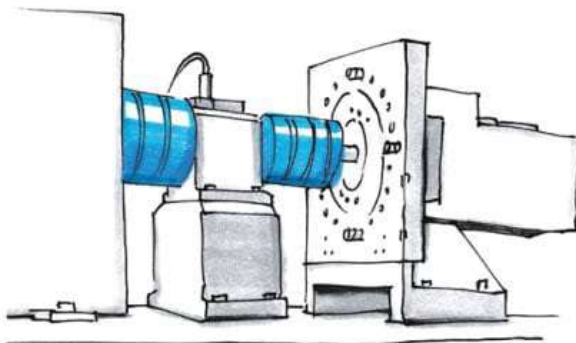


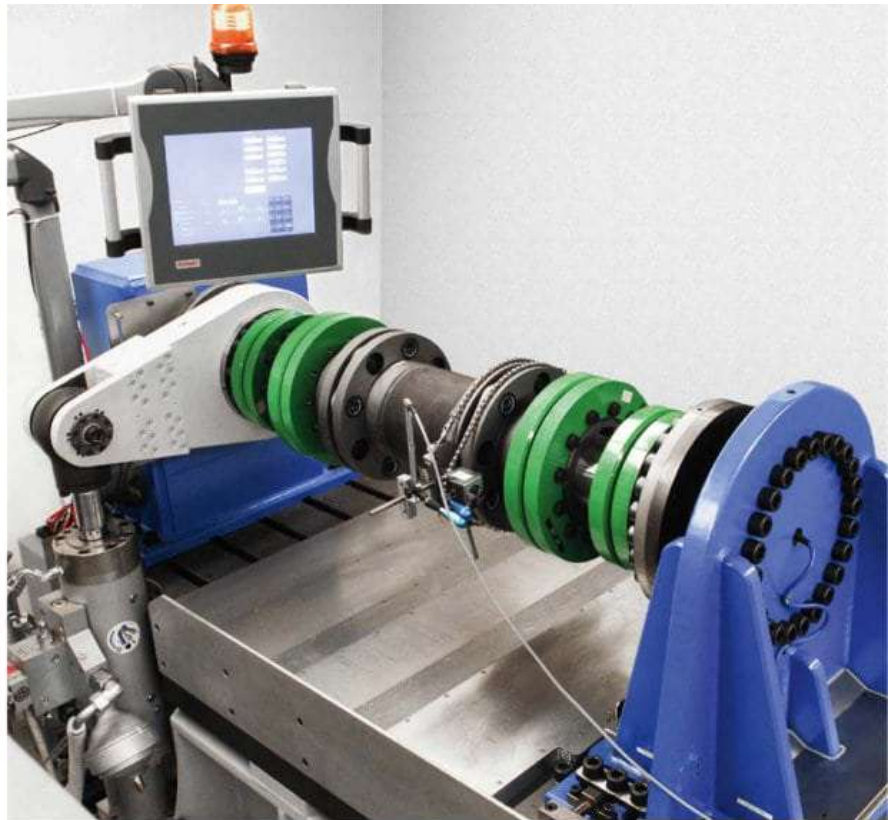
High-precision couplings for accurate measuring results

For more than 100 years, the company *mayr*[®] power transmission has stood for innovations and premium quality. The family-run company from the Allgäu region can rely on decades of experience in development, manufacture and application, and still has a major influence on power transmission today with its path-breaking products.

For the field of test stand technology, a branch which is permanently subject to advancements, *mayr*[®] power transmission develops solutions capable of growing with the increasingly complex concepts being developed.

The high-speed torque limiters, which protect expensive test objects and sensitive measuring units against overload damage, have been especially tailored to the requirements of test stand technology and work reliably and accurately also at very high speeds. One essential accessory part – not only for measuring flanges – is the high-precision shaft coupling, which compensates for any occurring misalignments. It protects the bearings installed in the shaft train against unwanted loads, and therefore against unnecessary downtimes and costs, and ensures reliable and accurate measurement results.





Expert know-how in development and design

As the technological leader, *mayr*[®] power transmission focuses on continuous further development. Today, highly qualified engineers and technicians work on tomorrow's innovations using the most up-to-date tools. The years of experience and countless tests at the Development and Testing Department at the Mauerstetten Headquarters form the basis of conscientious lifetime dimensioning.

The values upheld by our traditional, family-run company also include long-term stability, independence as well as a good reputation and satisfied customers.

Therefore, we place emphasis on:

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

Tested quality and reliability

mayr[®] brakes and couplings are subject to meticulous quality inspections. These include quality assurance measures during the construction process as well as 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 measurement 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 9001:2008 confirms the quality-consciousness of our colleagues at every level of the company.

Specialists for power transmission for more than a century

mayr® power transmission is one of the most traditional and yet most innovative companies in the field of power transmission. From modest beginnings in the year 1897, the family enterprise has developed into world market leader. Worldwide, the company employs more than 1000 people.

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. Numerous renowned machine manufacturers trust in 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.

Never compromise on safety

We make no compromises where safety is concerned. Only top products of a perfect quality guarantee that no people are injured or machines damaged in case of 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 is the global market or technological leader 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**.

Strongly positioned

mayr® sets standards in power transmission with economically viable solutions. For maximum competitiveness of your machines and systems, we always aim for the best possible cost efficiency, starting during the development of your clutch/coupling or brake right up to delivery of the finished and inspected product. For cost-efficient production, our factories in Poland and China represent the perfect supplement to the headquarters in Germany.



mayr®-headquarters in Mauerstetten



Subsidiary with production department — *mayr*®-China



Subsidiary with production department — *mayr*®-Poland

High-speed torque limiters

The airbag for your test stands

Torque limiters by *mayr*® power transmission protect test stands reliably against expensive overload damages. They save costs and increase productivity.

In comparison to standard torque limiters on the market, the EAS®-HSC and EAS®-HSE test stand clutches feature numerous special technical details. What can be seen at first glance is the exceptionally compact design of the clutches. A high performance density reduces the rotating masses and has a positive effect on the running smoothness and machine dynamics.

The basic prerequisite for the use of a torque limiter in high-speed applications is amongst other things the high balance quality of each individual component, in order to achieve optimum running smoothness of the drive line.

Torque limiters consist of many individual parts, which must not change their positions within the clutch when the clutch is mounted and after overload occurrence. Design measures ensure that this is the case. In addition, the clutch is balanced in completely-assembled condition to a balance quality of G 2.5 – reference speed 3000 rpm.





Perfect for all fast-running drives

Due to their excellent characteristics, EAS®-HSC and EAS®-HSE torque limiters are the best choice not only for test stands, but also for other fast-running drives.

- 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 12.000 rpm (up to 20.000 rpm possible as special design)



EAS®-HSC torque limiting clutch
Torque range: 5 Nm – 1.000 Nm
Speeds of up to 12000 rpm



EAS®-HSE torque limiting clutch
Torque range: 100 Nm – 8.400 Nm
Speeds of up to 12.000 rpm (up to 20.000 rpm possible as special design)

Product Catalogue

The detailed Product Catalogue **K.4090.V** with all constructional designs, technical data and dimensions is available for download on our website www.mayr.com.

We are also happy to send you a printed catalogue.

Couplings for torque transducers

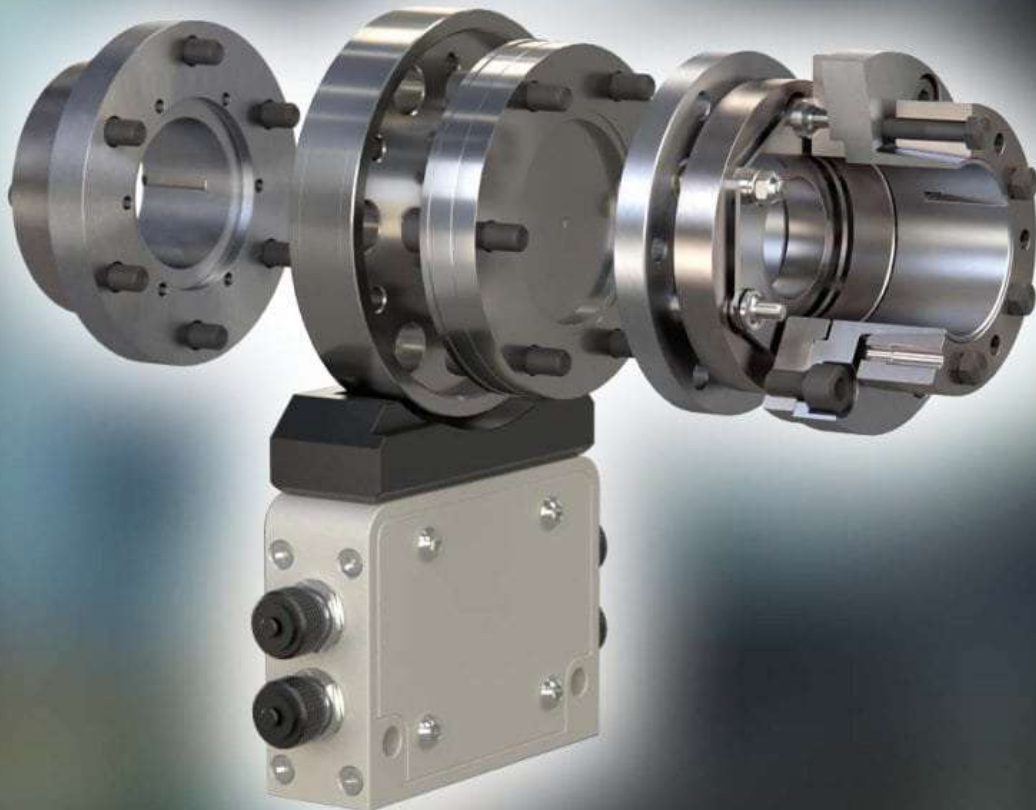
Backlash-free shaft coupling for accurate measuring results

Torque measuring flanges represent the heart of modern test stands. Even in high-performance and high-speed applications, they provide accurate and reliable data. However, the measurement result is only as good as the shaft misalignment compensation coupling used, as shaft couplings represent a decisively important component in order to minimise the interference parameters affecting the measuring flange.

Such interference parameters frequently occur due to alignment errors on the drive line. For this reason, shaft misalignments occur in almost all applications between the input and output sides. Even an as accurate as possible alignment of the shaft train with ultra-modern laser alignment devices frequently only provide a remedy to a certain extent. In addition, the misalignments cannot

be completely eliminated through existing tolerances in the size accuracy of the components used and through external influences, for example the temperature. *mayr*[®] power transmission therefore provides compensation couplings especially tailored to the requirements of modern measuring flanges.

The ROBA[®]-DS disk pack couplings transmit the torque backlash-free and compensate for radial, axial and angular shaft misalignments. They thus not only ensure accurate measuring results, but also protect the bearings in the drive line against unwanted loads. The robust couplings are compact and of a high performance density, and distinguish themselves in addition to their high running smoothness and the low mass moment of inertia through a high balance quality.





Tailored to the requirements of test stands

The couplings are particularly robust and resistant, and are characterised in addition to their high running smoothness and low mass moment of inertia through a high balance quality.

The connection of the ROBA®-DS couplings and the measuring flanges to the drive train generally takes place backlash-free via high-quality shrink disk hubs. Various standard and high-speed constructional designs especially tailored to the various test stand requirements and flexible combination possibilities permit the integration of measuring flanges in almost every test stand and drive constellation.

Standard constructional design

- Speeds: 8000 to 18,000 rpm (depending on the construction size)
- Balance quality G 2.5 (reference speed 3,000 rpm)

High-speed constructional design

- Individual parts with extremely high accuracy (quality IT5)
- Limited axial run-out and shaft run-out tolerances
- Speeds: up to 30,000 rpm
- Balance quality: G 2.5 (reference speed 5,000 rpm)



Product Catalogue

The detailed Product Catalogue **P.9110.V** _ _ _ with all constructional designs, technical data and dimensions is available for download on our website **www.mayr.com**.

We are also happy to send you a printed catalogue.

ROBA®-DS servo couplings

High performance in a compact package

Small dimensions, small installation space requirements, reduced weight and low mass moments of inertia – the ROBA®-DS servo couplings convince through their high performance density. They are able to transmit high torques even with a comparatively small diameter and are therefore the ideal shaft couplings for dynamic drive systems with high speeds. The basis for this extremely compact construction design is its execution in steel and high-strength aluminium alloys.

Through the elastic disk packs, the couplings compensate for radial, axial and angular shaft misalignment. In this way, they protect the bearings against unwanted loads and prevent unnecessary downtimes and costs. The ROBA®-DS disk pack couplings are robust and reliable. They are temperature-resistant, wear-free and maintenance-free, and are able to transmit the torque with a very high torsional rigidity. Therefore, they are particularly suitable for use in extreme ambient conditions.





Application-optimised and flexibly configurable

Three different standard constructional designs and four different backlash-free hub versions can be combined as required

Standard constructional design

- Single-jointed coupling
- Short double-jointed coupling with connection plate
- Double-jointed coupling with variable length intermediate sleeve

Hub variants

- Clamping hub
- Hub with tapered bore
- Split clamping hub
- Shrink disk hub

Performance data

- construction sizes: 3 / 6 / 10 / 15
- Nominal torques: 35 to 150 Nm
- Bores: 10 to 45 mm

Product Catalogue

The detailed Product Catalogue **K.950.V** with all constructional designs, technical data and dimensions is available for download on our website www.mayr.com.

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ROBA®-DS disk pack couplings

High-performance shaft couplings for high torques

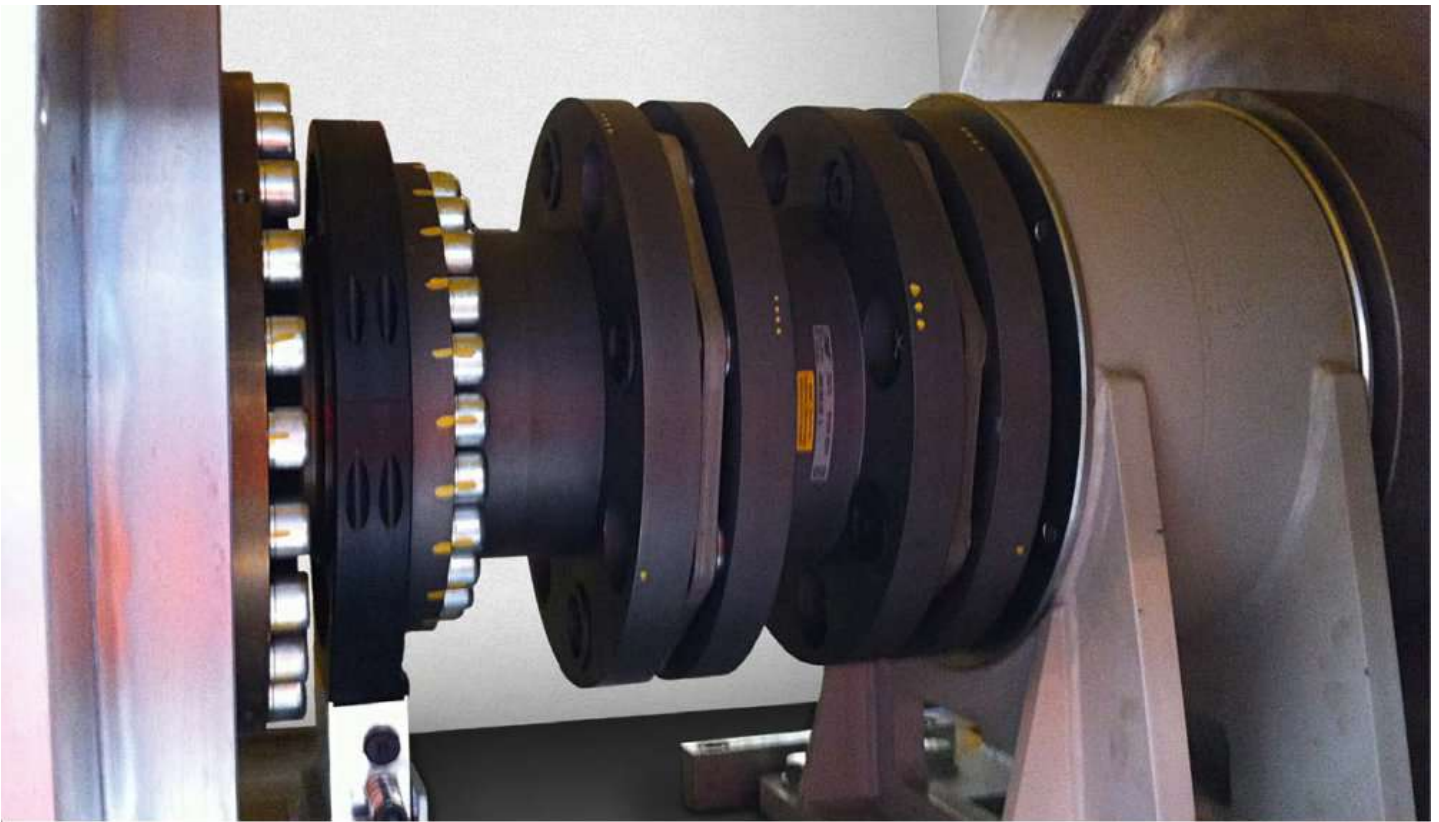
The ROBA®-DS disk pack couplings by *mayr*® power transmission are robust, reliable and temperature-resistant. They are therefore particularly suitable for use in extreme ambient conditions. In addition, the ROBA®-DS couplings are wear-free, meaning that they reduce the required maintenance effort to a minimum.

mayr® power transmission has equipped the large ROBA®-DS disk pack couplings for high torques, i.e. with a nominal torque range from 22,000 to 110,000 Nm, with an installation-friendly, positive locking conical connection. This conical connection acts as a power transmission and reduces the screw tightening torques to a fraction of their amount in comparison to conventional frictional-locking designs. This makes installation and de-installation

substantially easier. In addition, the drive units such as the motor and gears need not be displaced in order to install and deinstall the coupling.

The ROBA®-DS disk pack couplings by *mayr*® power transmission simultaneously unite high performance density with absolute backlash-free function: They transmit torques up to the nominal torque backlash-free and with a constant, high torsional rigidity. The specified shaft misalignments can be 100 % utilized without affecting the transmittable torque. The disk pack couplings compensate for the radial, axial and angular misalignments on shafts, and thus protect the bearings against inadvertent loads and therefore unnecessary failure times and costs.





Performance density combined with backlash-free function

The large ROBA®-DS disk pack couplings with conical connection are easy to handle.

- Low screw tightening torques
- Radial installation / de-installed possible
- Easy and quick installation / disassembly
- No hydraulic installation tools required; can be installed with a torque wrench
- Backlash-free torque transmission
- FEM-optimized disk shape
- High torsional rigidity
- High performance density
- Compensation of axial, angular and radial misalignments
- Wear and maintenance-free
- Flexibility through customer-specific hubs and sleeves
- Torque range > 100,000 Nm



For this backlash-free, positive locking connection, far lower screw tightening torques are required in comparison to standard frictionally locking connections. This makes installation substantially easier. The shape of the disks is FEM-optimised.

Product Catalogue

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Metal bellows couplings

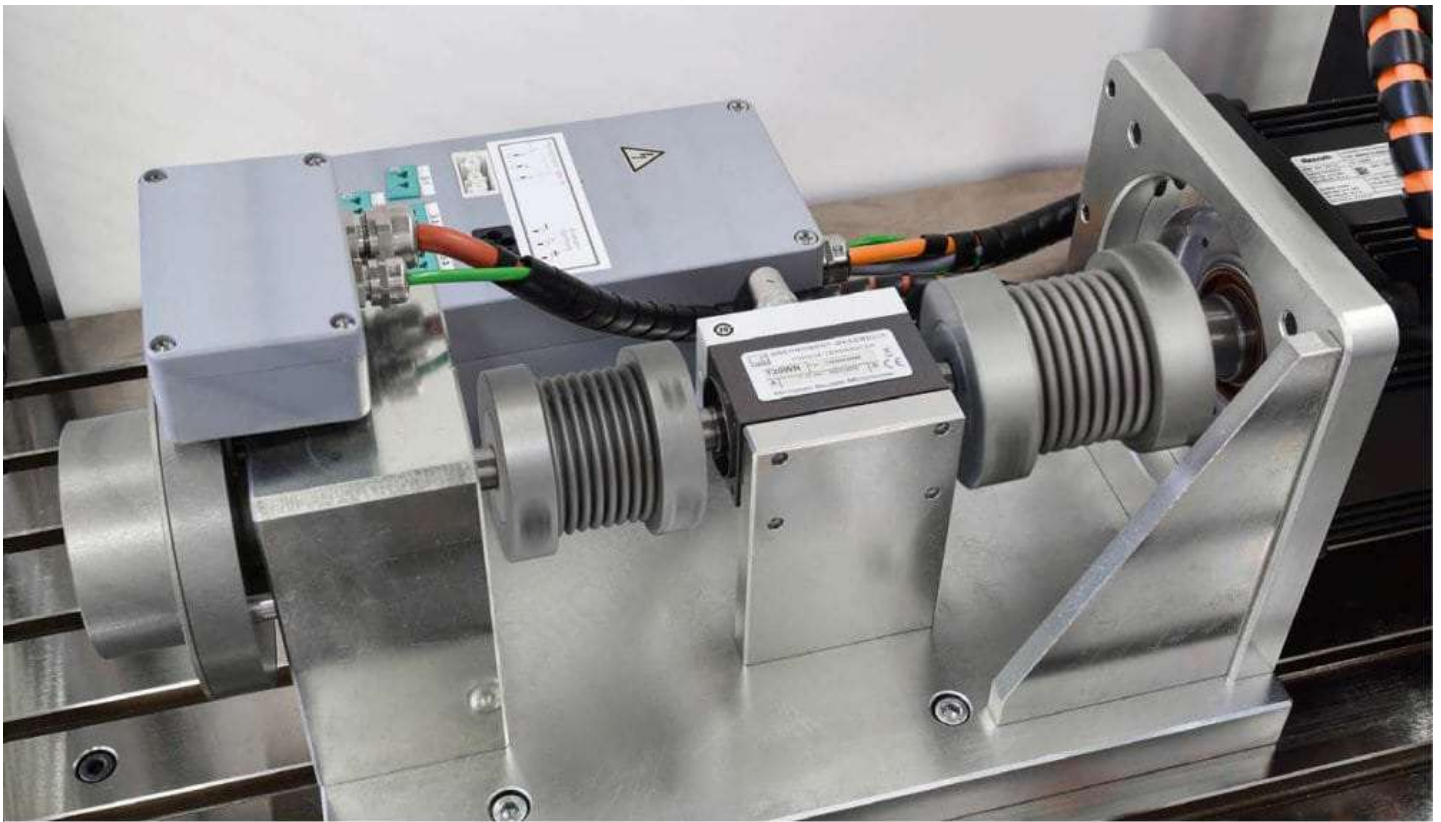
Accuracy due to ingenious design

The metal bellows couplings by *mayr*[®] power transmission stand for precise and absolute backlash-free torque transmission: For example, the *smartflex*[®] coupling has been designed with a multi-layer steel bellows which provides it with high torsional spring rigidity. In servoaxes, this ensures high positioning and run-out accuracies even under difficult conditions and guarantees the absolute backlash-free and therefore error-free torque transmission between the two shafts. In addition, the multi-layer bellows design permits a much higher misalignment compensation capacity in comparison to single-layer bellows. Higher misalignment compensation capacities also mean higher reliability, operating safety and service lifetime.

The *smartflex*[®] couplings are also distinguished by a clamping connection unique on the market, located between the shaft, hub and steel bellows – i.e. through a robust, force locking connection. Through the clamping connection, the couplings can be easily and flexibly assembled according to the modular principle and can easily be adapted to altered shaft diameters or different shaft distances.

In addition to the *smartflex*[®], *mayr*[®] power transmission offers with its *primeflex*[®] steel bellows coupling an extremely cost-effective, plug-in solution for easy assembly or disassembly. Even after longer periods of operation, the *primeflex*[®] coupling can be safely dismantled without putting the steel bellows at risk.





Accurate and completely backlash-free

The steel bellows couplings by **mayr®** power transmission are reliable and flexible, and guarantee permanently backlash-free torque transmission. They compensate for axial, radial and angular shaft misalignments.

- Excellent misalignment compensation capability
- Backlash-free torque transmission
- Minimum mass moment of Inertia
- Very high torsional rigidity
- High availability through flexible modular system
- Simple and fast fastening via one screw
- Favourable price/performance ratio
- Torque range from 16 to 700 Nm (smartflex®)
- Torque range from 24 to 120 Nm (smartflex®)



The pluggable **primeflex®** steel bellows coupling is backlash-free, exceptionally compact and with a high performance density. It is easily and quickly installed via clamping and shrink disk connections and can be quickly installed onto the shafts.

Product Catalogue

The detailed Product Catalogues **K.932.V** and **P.933.V** with all the constructional designs, technical data and dimensions is available for download on our website **www.mayr.com**.

We are also happy to send you a printed catalogue.



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You can find the complete address for the representative responsible for your area under www.mayr.com in the internet.