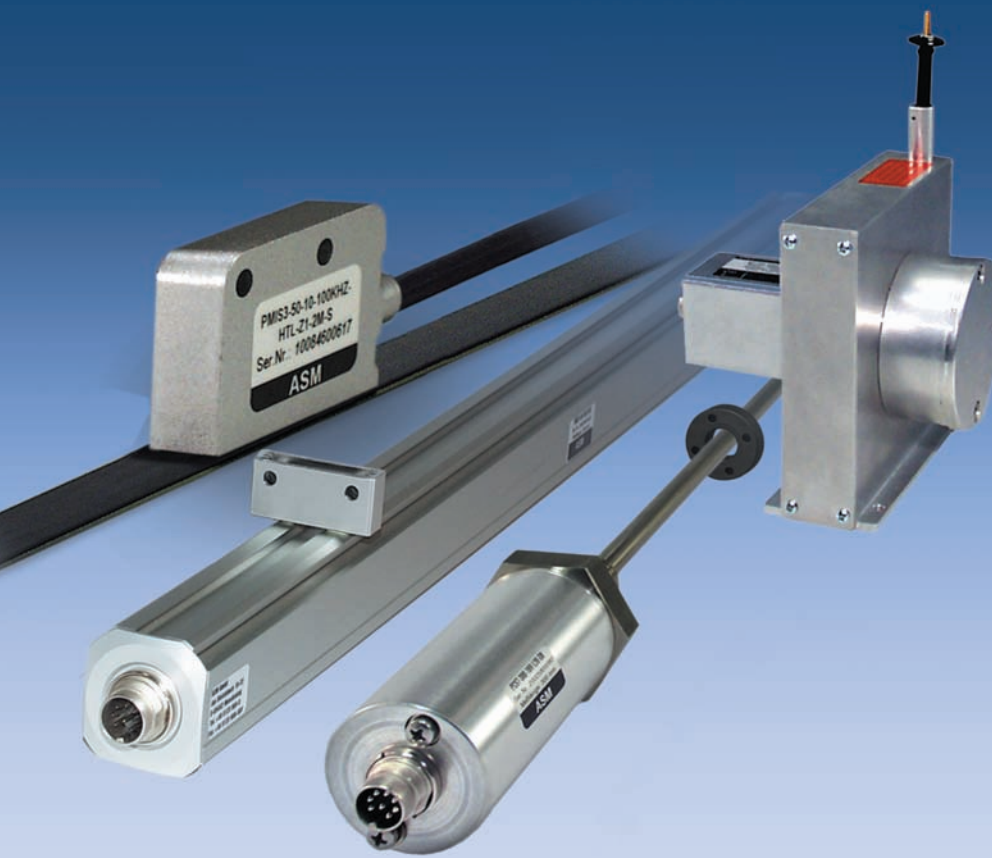




perfect in sensors.

3 strong Position
Sensor principles
made by ASM



POSICHRON[®]
Magnetostrictive Position Sensors

SERIES WS
Cable Actuated Position Sensors

POSIMAG[®]
Magnetic Scale Position Sensors





The company and the products

ASM has played an active role in the manufacture of position sensors for 25 years.

In order to solve all kinds of linear and angular measurement tasks in industry and research, ASM currently offers three different types of positional sensor technology:

- **POSICHRON®**: magnetostrictive principle (Time of Flight)

The areas of application for POSICHRON® positional sensors are wide and varied. They are used in e.g. injection-moulding equipment, dosing and mixing systems, die-casting machines, road vehicle tests, tunnel-boring equipment, wind power plants, patient beds, hydraulic cylinders and presses, fill-level measuring equipment etc.

- **WS**: Cable Actuated Position Sensors

WS position sensors ensure reliable operation in many sectors of automation, process engineering, industry and research, e.g. in handling systems, circular saws, printing presses, aircraft testing, automobile testing, elevator technology, conveyor belt technology, warehousing technology, local transportation vehicles, tunnel-boring machinery, wind power plants, rehabilitation technology, medical engineering, patient beds, etc.

- **POSIMAG®**: magnetic measuring strip with magnetoresistive sensor head

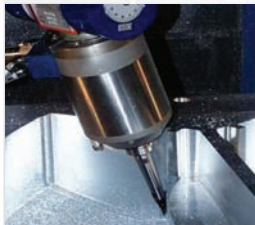
Thanks to its special properties, POSIMAG® is ideal for many industrial applications in the production of machinery, plants and precision equipment as well as research. For example:

- Metal and wood processing
- Manual tasks in handling systems
- PCB manufacture, insertion and checking
- Positional checks for linear units
- Quality-control systems for sheet metal
- Punches and presses

POSIMAG® is suitable for linear, angular and speed measurements. The magnetic strip can also be applied to uneven surfaces.

ASM Position Sensors offer superlative quality and precision. Ongoing research and development in our laboratories, coupled with comprehensive quality management, facilitate and safeguard these high standards. Position Sensors from ASM are used wherever path, distance, position or length measurements need to be automated, checked, tested or monitored. The customer base includes users from all sectors of government, industry and research.

With around 80 employees at its headquarters in Moosinning near Munich, the company manufactures both standard products and customised, specialist solutions. Thanks to the sales offices in Great Britain, Germany, France and a worldwide network of representatives, sales engineers for ASM products are never far away and will be delighted to demonstrate ASM's range of position sensors at customer premises.





POSICHRON® – the functional principle

POSICHRON® is an absolute, contact-free and wear-free position measuring system. It is extremely sturdy making it suitable even for applications where other measuring principles would fail. The availability of various constructions - rod, square profile and ultra-flat profile - means that the system can be adapted to suit all kinds of installation conditions.

The POSICHRON® linear measuring system consists of a magnetostrictive wave guide and a movable magnet for determining position. The measuring principle of POSICHRON® position sensors is based on two physical effects: the Wiedemann effect and the Villary effect.

To create the Wiedemann effect, a current impulse is sent through the POSICHRON® positional sensor's wave guide. This current impulse generates a circular magnetic field which propagates at the speed of light around the wave guide. If this circular magnetic field makes contact with the magnetic field of the position magnet which is moved lengthways, a torsional mechanical-elastic density wave is triggered at the overlap area of the two magnetic fields as a result of magnetostriction. This wave propagates in the POSICHRON® positional sensor at ultrasonic speed.

The sensor head of the POSICHRON® position sensor contains a detector which detects the arrival of this wave. The magneto-elastic Villary effect is used as the method of detection. The position between the detector coil and the magnet which can be moved lengthways along the POSICHRON® sensor is determined by measuring the time difference between the electrical induction current impulse and the voltage pulse generated via the Villary effect in the detector coil (time-of-flight principle).

This time difference can be converted using various well-known methods into analogue or digital output signals. The time-of-flight signals can however also be evaluated directly by commonly-available interface modules or counter and time-measuring devices.

Technical advantages:

- Absolute measuring principle
- Totally wear- and maintenance-free
- Resistant to dirt, humidity and dust
- Protection category to IP68
- Highly resistant to vibration and shock
- Resolution is virtually unlimited
- Linearity of up to 0.01%
- No energy feed for positional magnets
- Measuring lengths of up to 5,750 mm

WS Position Sensors – the functional principle

WS position sensors capture position measurement either absolutely or incrementally, using measuring cables made from stainless steel. Using different constructions, and with measuring lengths of up to 60,000 mm, the ultra-simple, sturdy, space-saving designs make these sensors the ideal basic solution for many length and positional measuring tasks.

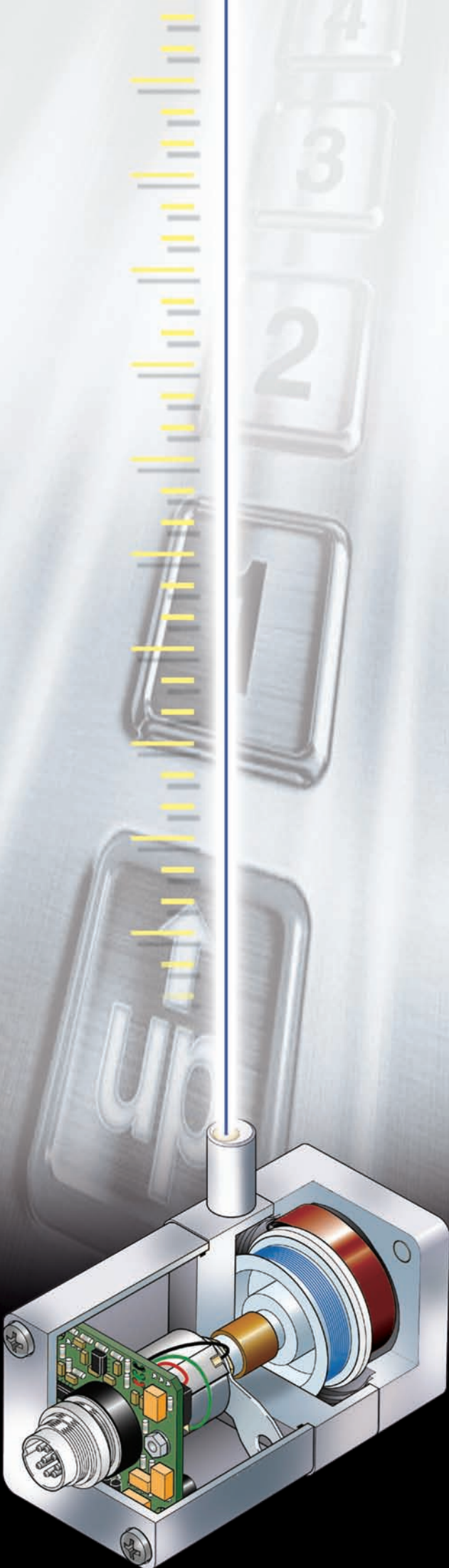
- WS position sensors comprise the following components:
- A precisely-calibrated measuring cable
- A measuring cable drum
- A measurement shaft
- A spring motor
- An angle sensor element
- Optional sensor electronics.

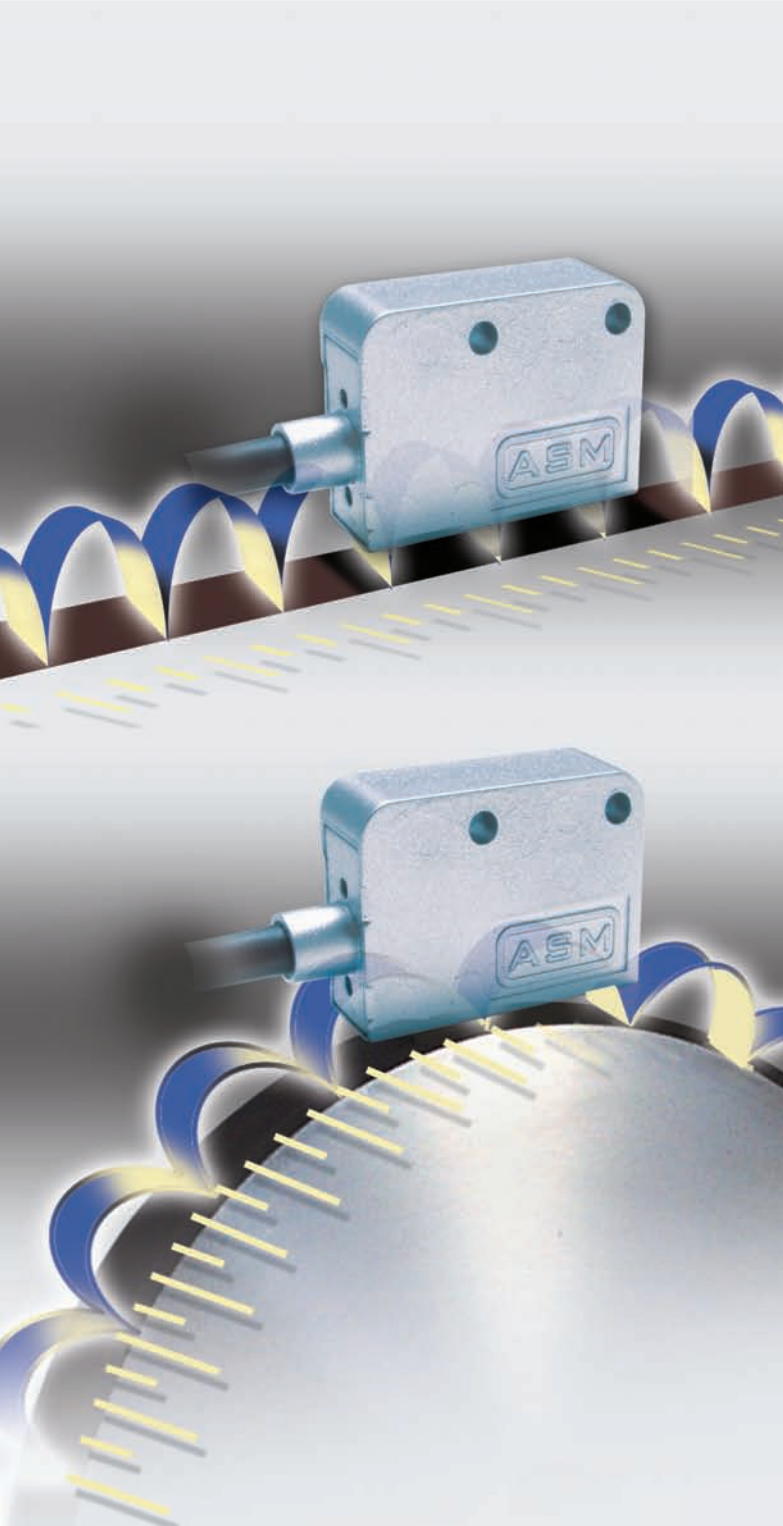
The measuring cable is first wound in tight spiral layers round the drum. To determine the position, the measuring cable is then unwound from the drum against the return force of the spring motor. The unwinding process from the drum converts the linear movement of the measuring cable into an angular movement. This angular movement is then captured using angle sensor elements (encoders or potentiometers) and converted into an electrical output signal.

Analogue output types include potentiometer, 0-10 V, 4-20 mA, analogue derived SSI or a programmable version with span and offset adjustment. Digital outputs include incremental encoder, absolute encoder, SSI, CANopen, Profibus, Interbus-S or RS-232.

Technical advantages:

- Fast and easy to assemble
- Only minimal linear guidance required
- Compact design
- Resistant to vibration and shock
- High protection category to IP67
- Linearity of up to 0.01%
- High measuring speed up to 20 m/s
- Measuring lengths of up to 60,000 mm
- Many output types



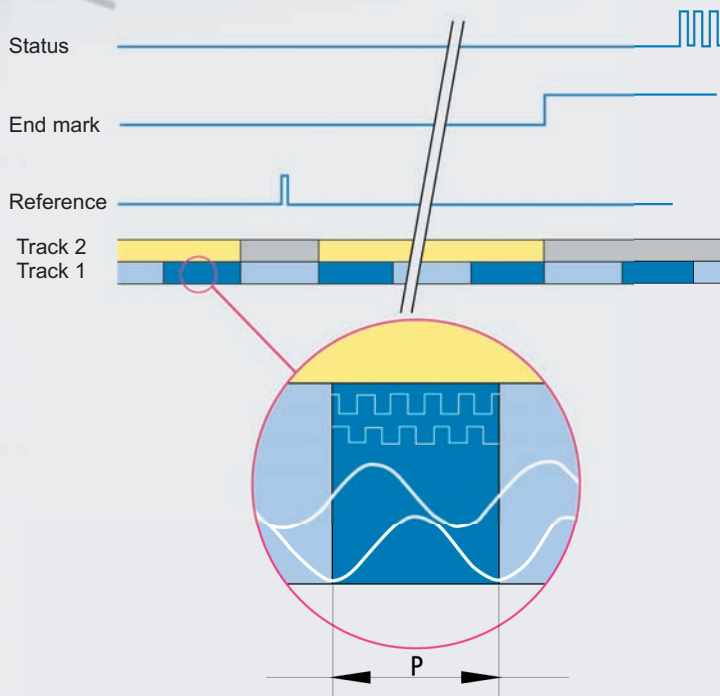


POSIMAG® – the functional principle

POSIMAG® is a contact-free, high-resolution magnetic position measuring system for measuring lengths of up to approx. 30 metres. Because of its sturdiness and resistance to dirt, together with the system's exceptional resistance to wear and tear, POSIMAG® is also suitable for use under challenging environmental conditions.

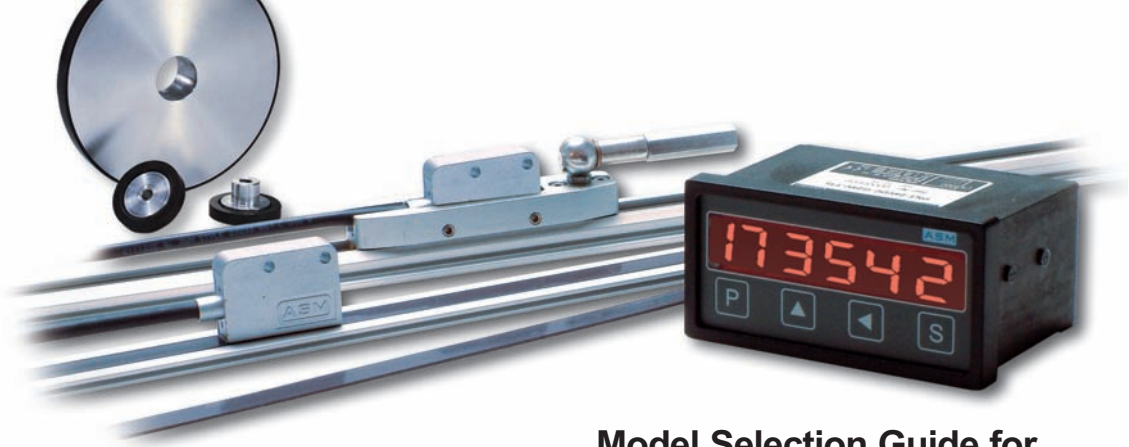
POSIMAG® consists of a magnetoresistive (MR) scanning head, and a magnetic measuring strip that consists of a flexible steel strip with a magnetic carrier layer laminated on top. This is magnetised at regular intervals with magnetic north and south poles. The measuring strip can be fastened in position using special adhesive fixing tape or also using pre-produced assembly rails with fastening straps. To protect against external mechanical influences, the magnetic strip has a covering laminate layer made from a thin, stainless steel strip.

To capture a position, the magnetoresistive (MR) sensor head samples sinusoidal magnetic fields above the magnetic measuring strip in such a way that the process is contact-free and avoids wear and tear. The distance of the MR sensor head to the surface of the magnetic strip can be up to 2 mm in the case of a strip with a 5 mm magnetic spacing. The sine-cosine signals generated in the sensor head, which are displaced by 90°, are output without any time delay as RS422-compatible impulse signals via the integrated interpolation electronics working in conjunction with the reference signal. Resolutions of up to 5 µm are available as standard. The signals can then be processed by all common industrial control units with suitable signal processing speeds, or displayed directly using a digital display unit from ASM's PRODIS series.

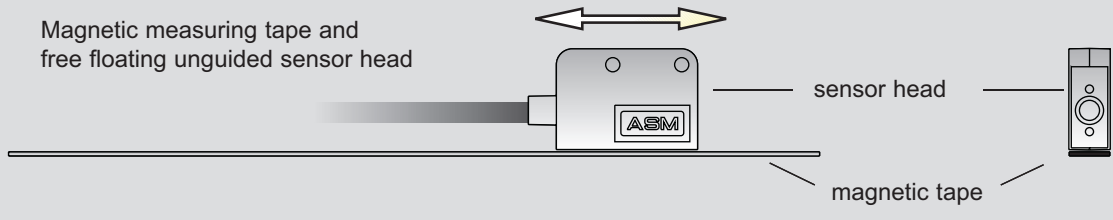


Technical advantages:

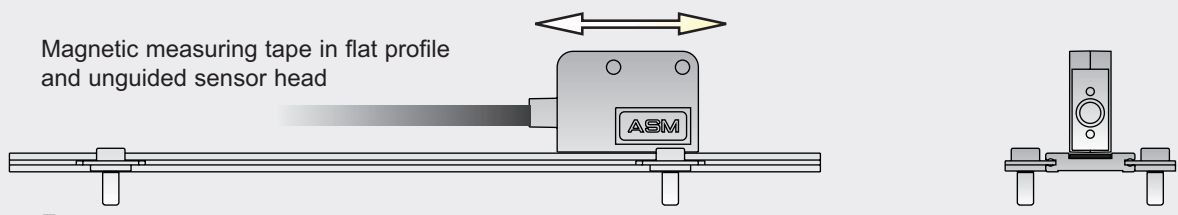
- Sturdy construction
- Contact-free and wear-free
- Shielded metal housing
- Resistant to dirt
- Protection category up to IP67
- Simple assembly and adjustment
- Signal processing as standard with encoders
- Distance between the MR sensor head and the magnetic strip up to 2 mm
- Reference and terminal position signals
- Measuring lengths of up to 30,000 mm



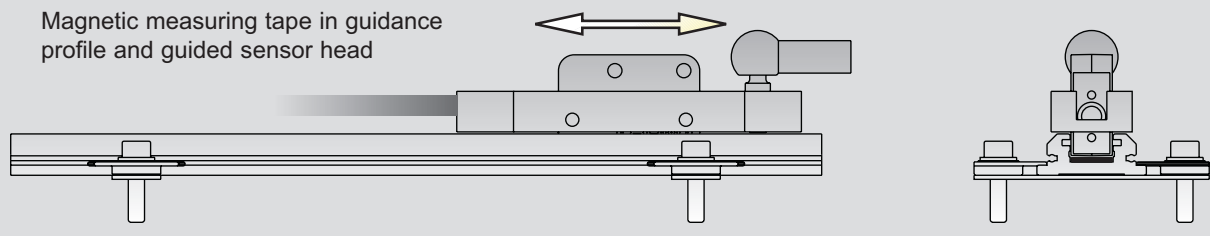
Model Selection Guide for POSIMAG® Position Sensors



For direct adhesive backing – the cost-effective mounting method

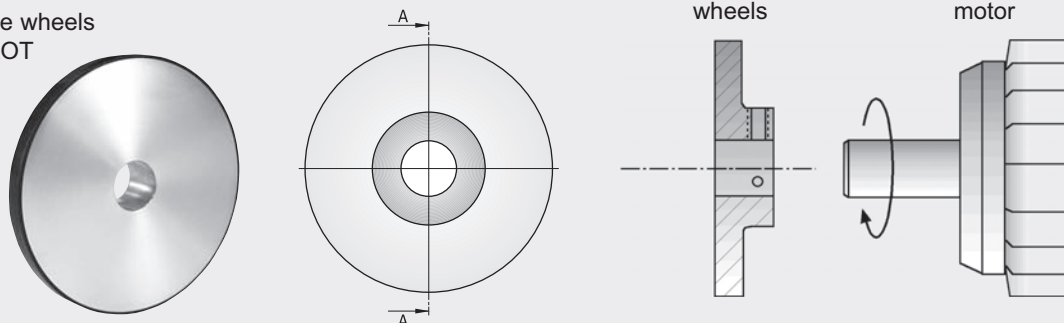


Easy to mount.
Adjustment on site possible.
Can be stacked by 3 m units up to 30 m length.



Provides integral linear guidance for applications without own linear guidance by system.

Magnetic pole wheels
POSIMAG-ROT



Pole wheels with different diameters are available for angular and/or revolution measurement.