



Installation Instructions

A-Series

Compact aluminum force measuring bearing

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**Diese Bedienungsanleitung ist auch in Deutsch erhältlich.
Bitte kontaktieren Sie Ihre nächstgelegene FMS Vertretung.**

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2 Safety instructions

All safety related regulations, local codes and instructions that appear in the manual or on equipment must be observed to ensure personal safety and to prevent damage to the equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Do not stress the equipment over the specification limits neither during assembly nor operation. To do so can be potentially harmful to persons or equipment in the event of a fault to the equipment.

2.1 Presentation of safety information

The following safety symbols appear in this manual.

2.1.1 Danger that could result in minor or moderate injuries



Danger, warning, caution

Failure to follow wiring instructions in this manual may result in equipment damage or personal injury.

2.1.2 Note regarding proper function



Note

Note regarding proper operation
Simplification of operation
Ensuring function

2.2 General safety information



The Force Measuring Rollers may not be stressed over the specification limits neither during assembly nor operation. The unit's overload protection value may not be exceeded.



The attachment points for the Force Measuring Rollers on the machine frame must be properly designed. The bearings need to be appropriately mounted.



For proper installation and operation, follow the electrical wiring diagram and instructions in this manual.

3 Product information

3.1 Product description

The A-Series force measuring sensor offers compact dimensions and flexible installation options and is designed for the measurement of tension on continuous material processing lines where live shaft idler rolls are utilized. This feature minimizes the space required at installation. The compact dimensions and the simple installation with only one screw allow new assembly options in machines with tight installation space.

3.2 Functional description

The A-Series force measuring sensor combines the bearing seat and the force sensor within the same housing, thus minimizing the required installation space. The substantial overload protection translates to eliminated / minimized calibration issues due to machine upset conditions. The design includes dual bending beams, and this serves to eliminate the load specific influence of torque. The movement of the bending beams, which is proportional to the applied force, is detected by strain gauges arranged in a full bridge circuit and then converted into an electrical signal. This simple measurement principle delivers precise results even with low material tension and small web wrap angles. The Red Point, as located on the sensor body, should be aligned with the direction of the resultant force due to web tension.

3.3 Order code

A-Series : Order code			
A	203	.500	.17
			Shaft diameter in mm
			Nominal force rating in N
			Size
			Series

Figure 1: order code

Datasheet_A-Series.indd

3.4 Scope of delivery

Included

Force sensor, clip ring

Not included

Connecting cable and connector, screws, washers

Accessories

2 m (6.5 ft.) cable with straight connector, 5 m (16.4 ft.) cable with straight connector

10 m (32.8 ft.) cable with straight connector, 2 m (6.5 ft.) cable with right-angle connector, 5 m (16.4 ft.) cable with right-angle connector, 10 m (32.8 ft.) cable with right-angle connector, bearing

4 Installation

The Force Measuring Roller are defined as “partly completed machinery” according to the Directives 2006/42/EC, article 2. In order to assure a proper functionality of the parts and assure the essential safety requirements of operators working with it, the following conditions for the assembly must be met:



The Force Measuring Rollers may not be stressed over the specification limits neither during assembly nor operation. The unit's overload protection value may not be exceeded.



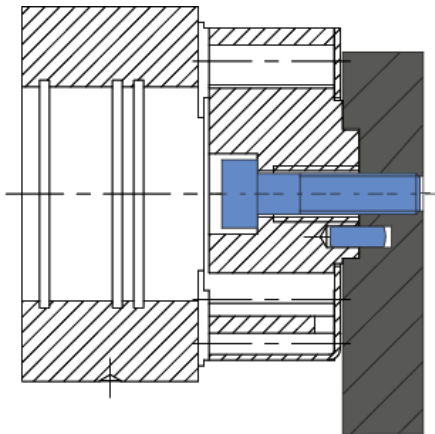
The mounting points for the Force Measuring Rollers on the machine frame must be properly designed. The bearings need to be appropriately mounted.



For proper installation and operation, follow the electrical wiring diagram and instructions in this manual.

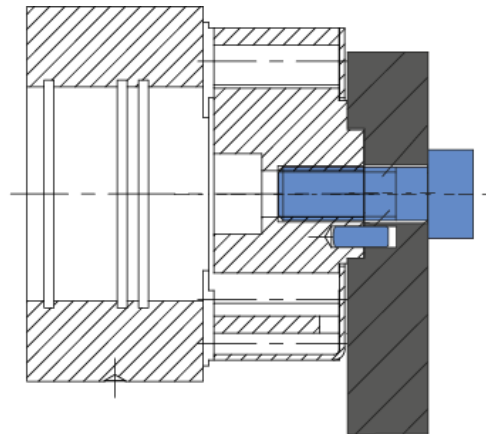
4.1 Installation options

The force sensors of the A-series can be installed in two different ways.



Montage von „innen“ mit M8
Empfehlung: Spannstift \varnothing 4 x 10 DIN 7346

*installation from „inside“ with M8
recommendation: spring pin \varnothing 4 x 10 DIN 7346*



Montage von „ausen“ mit M10
Empfehlung: Spannstift \varnothing 4 x 10 DIN 7346

*installation from „outside“ with M10
recommendation: spring pin \varnothing 4 x 10 DIN 7346*

Figure 2: mounting options

A_BA_Manual.ai



Screw and spring pin not included in scope of delivery

The required screws are not included as their length is depending on the individual machine design.

4.2 Bearings



Self-aligning bearings

If the installation bores on both sides of the machine's frames are not aligned properly, this will cause a preload of the roller and bearings. In this case the measuring result of the force sensors will be faulty.

We recommend to use self-aligning bearings

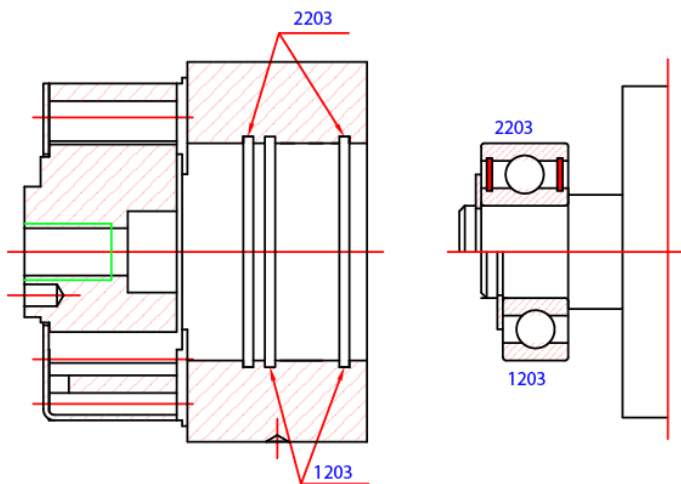


Figure 3: recess for bearings

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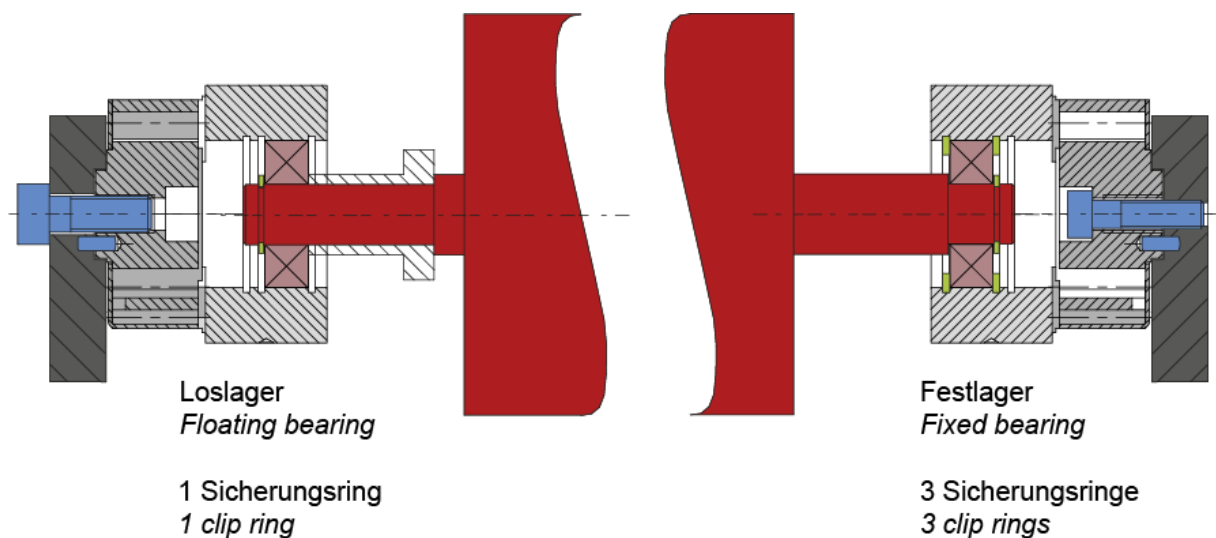
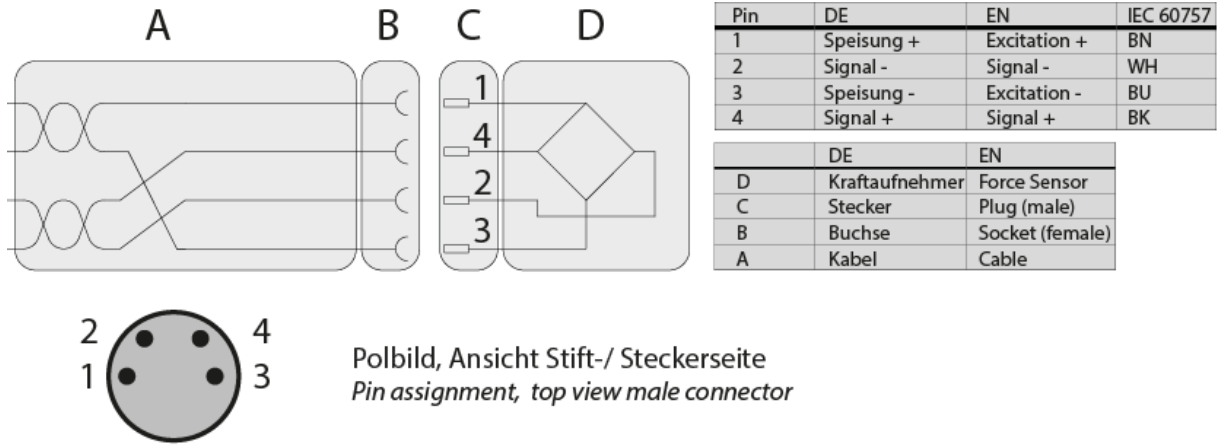


Figure 4: Fixed and floating bearing installation

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4.3 Electrical connections

Connection between the Force Measuring Rollers and machine controller is realized by means of a 5-pole cable with a cross-section of 0.25mm². The cable must be installed separate from power lines.



Farbangaben (IEC60757) und Codierung gelten nur für FMS Komponenten!
Color scheme (IEC60757) and pin codes are valid for FMS components, only!

Figure 5: pin assignment

Pin_Assignment_Sensorkabel_Farben_Stecker.ai

5 Technical data

Technical data	
Sensitivity	1.8 mV/V
Tolerance of sensitivity	$\pm 0.5\%$
Accuracy class	$\pm 0.5\%$
Temperature coefficient	$\pm 0.1\%/10K$
Temperature range	-10 to +60°C
Input resistance	350 Ω
Excitation voltage	1 to 12 VDC
Overload protection	10 times nominal force
Material	High-strength aluminum
Protection class	IP42
Electrical connection	Male connector M8, 4-pole
Measuring range	30:1

5.1 Dimensions

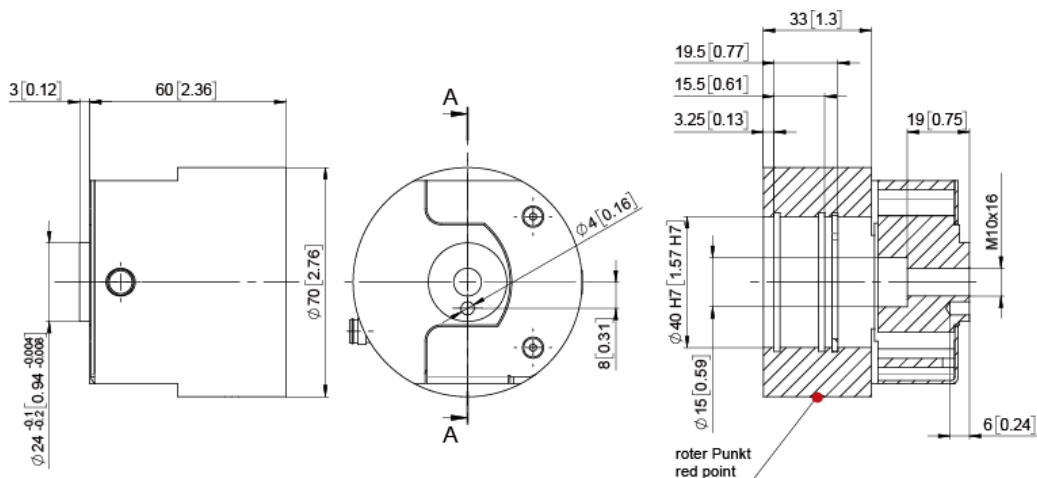


Figure 6: dimensions

A_Datenblatt.ai



FMS Force Measuring Systems AG
 Aspstrasse 6
 8154 Oberglatt (Switzerland)
 Tel. 0041 1 852 80 80
 Fax 0041 1 850 60 06
 info@fms-technology.com
 www.fms-technology.com

FMS USA, Inc.
 2155 Stonington Avenue Suite 119
 Hoffman Estates, IL 60169 (USA)
 Tel. +1 847 519 4400
 Fax +1 847 519 4401
 fmsusa@fms-technology.com

FMS (UK)
 Aspstrasse 6
 8154 Oberglatt (Switzerland)
 Tel. +44 (0)1767 221 303
 fmsuk@fms-technology.com

FMS (Italy)
 Aspstrasse 6
 8154 Oberglatt (Switzerland)
 Tel. +39 02 39487035
 fmsit@fms-technology.com