Installation Instructions RMGZ9M-Series

Small cantilever force measuring roller in standard sizes with short delivery times

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

1 Table of contents

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 roper 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 RMGZ9M-Series force measuring rollers are designed as self-contained cantilever mount sensors that minimize machine space requirements in continuous material processing applications. They can be mounted horizontally or vertically directly to the machine frame. Force measuring rollers of the RMGZ9M-Series can be delivered off the shelf.

3.2 Functional description

The force measuring rollers of the RMGZ9M-Series combine force sensor and roller. The RMGZ9M-Series design, incorporating dual bending beams, eliminates the load-specific influences of torque and ensures accurate measurement at any position on the roller while maintaining the parallel position of the material and eliminating angular deflection. The movement of the bending beams is detected by a set of strain gages arranged in a full bridge circuit. The resulting electrical signal, which is proportional to the applied force, is then amplified for use in monitoring or controlling web tension. With the superior performance of the RMGZ9M-Series, accurate tension readings are obtained even with low web wrap angles and low material tension.

3.3 Overview and designation

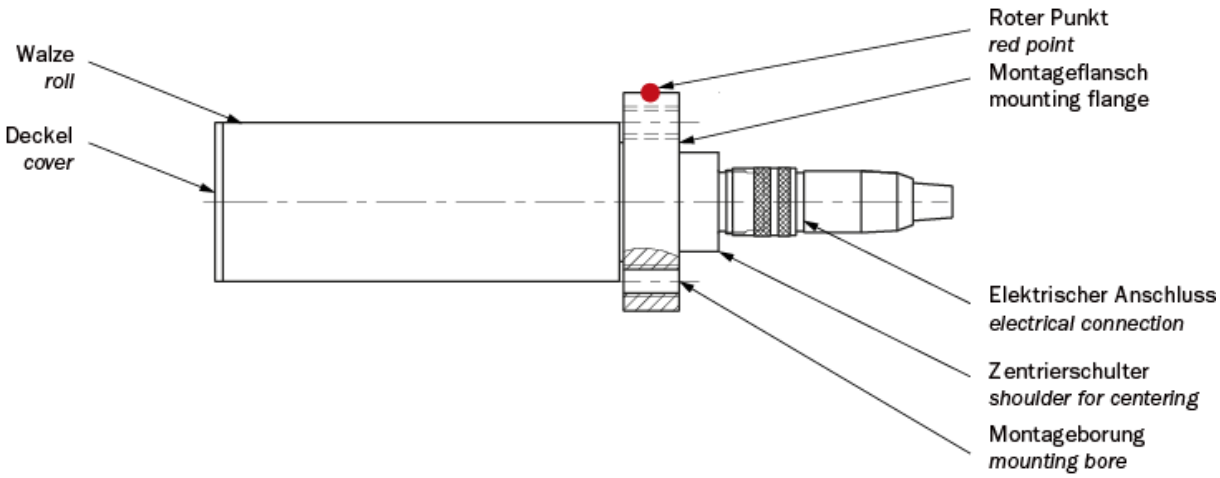


Figure 1: Overview and designation *RMGZ9M_BA_Manual.ai*

3.4 Order code

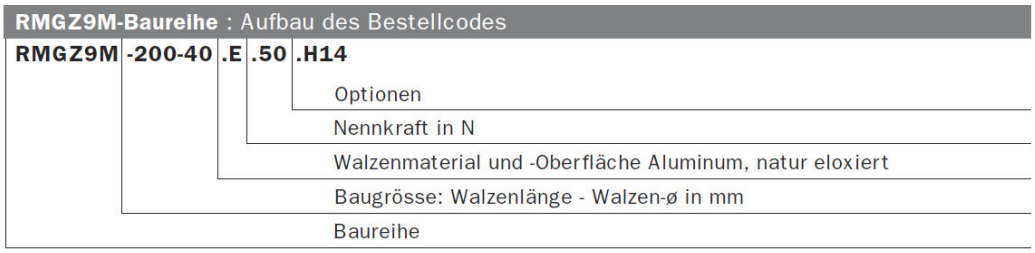


Figure 2: order code *DB_RMGZ9M.indd*

3.5 Scope of delivery

Included in scope of delivery

Force sensor, straight connector (female)

Options

H14 right-angle connector in scope of supply, replaces straight connector

H31 for vacuum applications to 10-7 hPa , 10-5 Torr, connector conditionally suitable for vacuum; temperature range up to 120 °C (248 °F)

Accessories

Prefabricated cable (specify length) with connector (straight or right-angle)

4 Installation

4.1 Installation conditions

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.

4.2 Machine frame

For force sensors of the RMGZ9M-series are directly bolted to the machine frame.

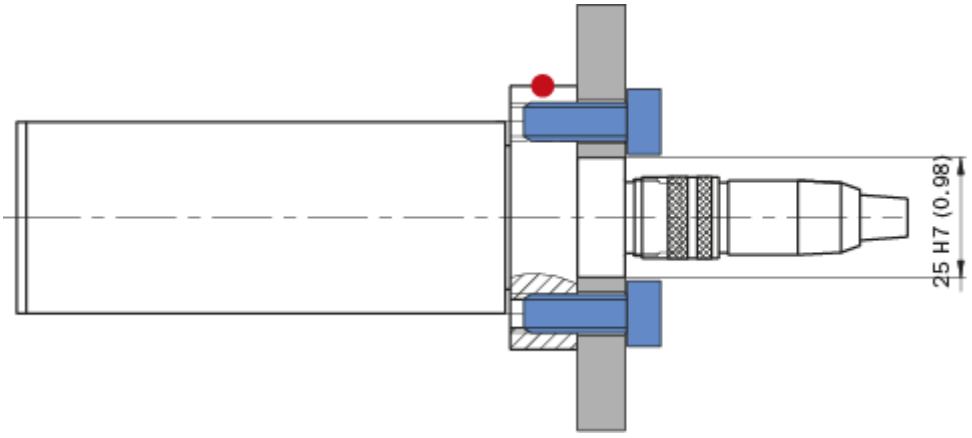
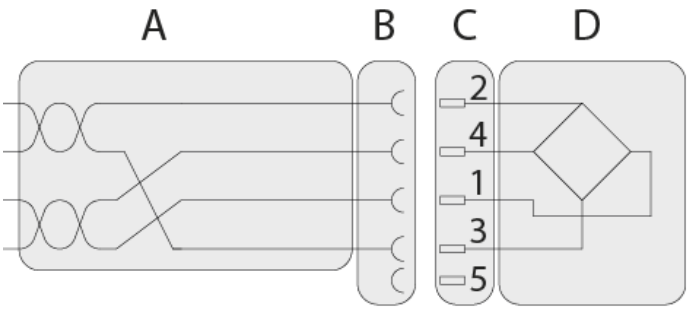


Figure 3: machine frame *RMGZ9M_BA_Manual.ai*

4.3 Electrical connections

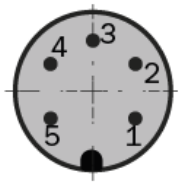
Connection between force sensor and measuring amplifier is realized by means of a 2 x 2 x 0.25mm² shielded, twisted-pair cable. The cable must be installed separate from power lines.

Connect the shielding only on the side of the measuring amplifier.

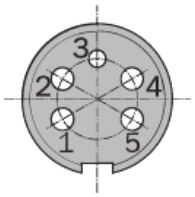


Pin	DE	EN	IEC 60757
3	Speisung +	Excitation +	XX
4	Signal -	Signal -	XX
2	Speisung -	Excitation -	XX
1	Signal +	Signal +	XX
5	nicht angeschl.	not connected	

	DE	EN
D	Kraftaufnehmer	Force Sensor
C	Stecker	Plug (male)
B	Buchse	Socket (female)
A	Kabel	Cable



Polbild, Draufsicht Stift-/ Steckerseite
Pin assignment, top view male connector



Polbild, Rückansicht, Anschluss-/ Buchsenseite
Pin assignment, rear view female contact insert

Figure 4: pin assignment M14 x 1, 5-pole
Pin_Assignment_Sensorkabel_Farben_Stecker.ai

5 Maintenance

The included bearings are lifetime lubricated. The force sensor is maintenance-free. If any maintenance should be necessary, we recommend contacting FMS customer service and to send the unit FMS for maintenance.

WARNING

The measuring body and the roll are delicate parts and may be damaged by improper handling!

Maintenance must be carried out by trained service personal only.

6 Technical data

Technical data	
Sensitivity	1.8 mV/ V
Tolerance of sensitivity	< ± 0.2 %
Accuracy class	± 0.3 % (F_{Nom})
Measuring range	30:1
Temperature coefficient	± 0.1 % / 10 K
Temperature range	–10 bis +60 °C (14 to 140 F)
Protection class	IP42
Input resistance	350 Ω
Power supply	1 bis 12 VDC
Overload protection	10-times nominal force
Material main body	Stainless steel
Electrical connection	Male flange connector M14 x 1, 5-pole

Table 1: technical data

7 Dimensions

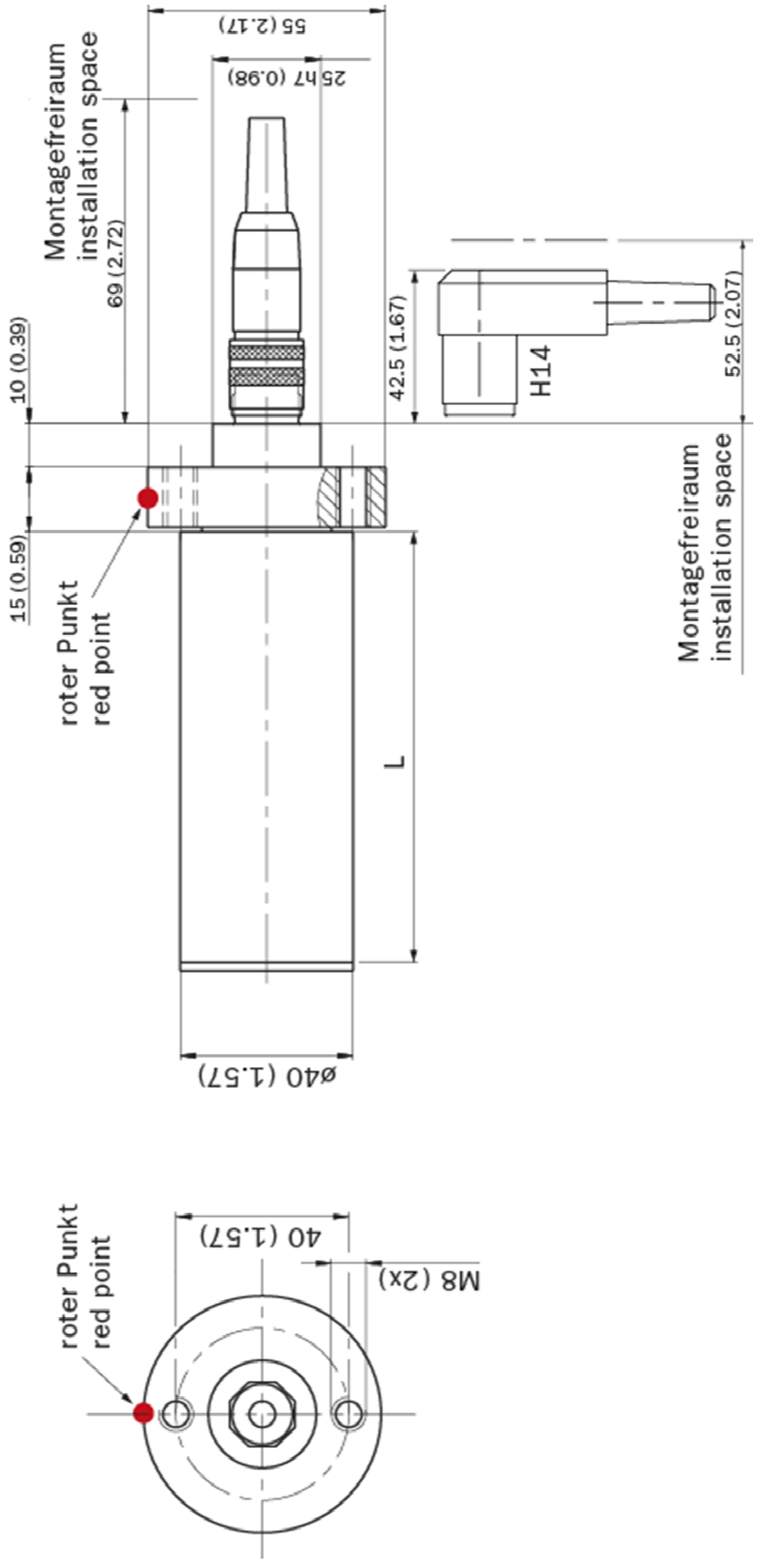


Figure 5: dimensions *RMGZ9M_BA_Manual.ai*

RMGZ9M-Series : Dimensions, Weight				
Size Type	**Dimensions** mm (.in) L		**Weight** kg (.lbs)	
RMGZ9M-100-40	100	(3.94)	0.8	(1.76)
RMGZ9M-150-40	150	(5.91)	0.9	(1.98)
RMGZ9M-200-40	200	(7.87)	1.0	(2.20)
RMGZ9M-250-40	250	(9.84)	1.1	(2.42)

RMGZ9M-Series : Nominal forces, Deflection				
Size Type	**Nominal force** N (.lbf)		**Deflection** mm (.in)	
RMGZ9M-100-40	20	(4.50)	0.15	(0.0059)
RMGZ9M-150-40	50	(11.24)	0.15	(0.0059)
RMGZ9M-200-40	100	(22.48)	0.13	(0.0051)
	200	(44.96)	0.16	(0.0063)
	500	(112.40)	0.15	(0.0059)
RMGZ9M-250-40	50	(11.24)	0.15	(0.0059)
	100	(22.48)	0.13	(0.0051)
	200	(44.96)	0.16	(0.0063)

Figure 6: dimensions *Datasheet_RMGZ9M_Baureihe.indd*

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