



# **Installation Manual**

## **JG205**

Force Measuring Journal with Protection Class IP68  
For dedicated use in aggressive media in the textile industry

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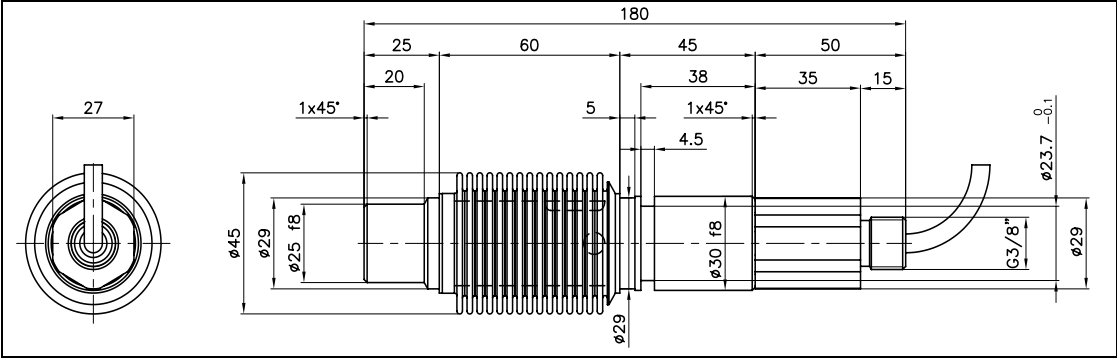
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# 1 General Data

## 1.1 Dimensions



**Fig 1: Outline drawing JG205 Force Measuring Journal** JG00001

Order Code FMS	Subtype	Nominal Force	Weight	
			[kg]	[lbs]
JG205.1500	Temperature compensation	1500	0.70	[1.54]

For further nominal forces please contact your local sales representative.

## 1.2 Scope of Delivery

For the purpose of the device protection the force measuring journal uses a highly sealing PG-gland as an electrical connector. The cable length can be determined by the customer. If not specified the sensor is delivered with a 5.0 m cable. Mounting screws and other mounting devices are not in the scope of delivery

## 2 Assembly Preparations

The force measuring journals of the JG205 Series undertake the tension measurement in all kinds of continuous material processing applications. The sensors are utilized with rollers that have an internal bearing with a bearing seat of 25 mm. The bearing mounts to the bearing seat of the load cell and fits inside the roller. This results in a compact and highly protected tension measuring roller saving machine mounting space. The red point at the connector indicates the positive measuring direction

### 2.1 Assembly Conditions

The Force Measuring Journal JG205 is 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 of JG205 must be met:



#### **Caution**

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



#### **Caution**

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



#### **Caution**

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

### 2.2 Preparing the Machine Frame

The force measuring journal is supported by a shaft of 23.7 mm <sup>0/-0.1</sup> diameter. The machine frame must therefore be prepared to accept this shaft diameter. If the force acts in the direction of the red point, a positive force reading will be reflected by the measuring amplifier output.

## 3 Mounting the Force Measuring Sensors

After having prepared the machine frame for the force measuring roller, the assembly is carried out in the follow steps:

1. Have your mounting material (screws and washers) ready
2. Determine the assembly points and prepare for a fixing-floating-arrangement
3. Mount the fixed bearing side of the roller
4. Mount the floating bearing side of the roller
5. Assembly the roller into machine
6. Connect the force measuring journals to the amplifier

### 3.1 Mounting the fixed bearing side

Clean the shaft and bearing seat of Force Measuring Journal and grease it slightly. Mount your bearing system on it. On this side of the measuring roller the bearing can be fixed avoiding lateral movement.

### 3.2 Mounting the floating bearing side

Clean the shaft and bearing seat of Force Measuring Journal and grease it slightly. Mount your bearing system on it. The bearing on the floating side may not be fixed. The bearing must be allowed to move laterally to avoid restrain, angular deflection and load dependent torque effects

### 3.3 Mount the roller into the machine

Mount the roller into the machine. Make sure you seal and protect the Measuring Journal accordingly.

### 3.4 Wiring

Connection between the Force Measuring Journal and amplifier or controller is done by means of a  $2 \times 2 \times 0.25 \text{mm}^2$  [AWG 23] shielded twisted-pair cable. This cable must be installed away from power cables. The wiring must be realised according to diagram in Fig.4. The current sensors are wired with following colour/signal combination:

**A (brown) = +signal**                      **B (green) = -excitation**  
**C (yellow) = +excitation**              **D (white) = -signal**

The shield should be connected only to the measuring amplifier. Consult also the wiring instructions of your Force Measuring Amplifier.

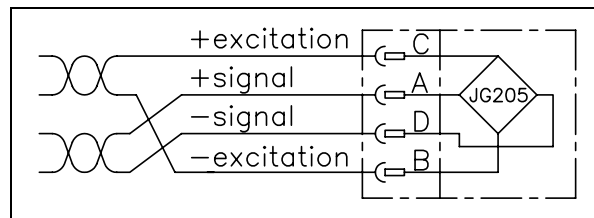


Fig. 4: Wiring diagram

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## 4 Maintenance / Disassembly

### 4.1 Maintenance

All FMS Force Measuring Sensors are maintenance-free. Depending on the type of bearing used, it may be necessary to periodically lubricate the bearings.

### 4.2 Disassembly

The disassembly of the Force Measuring Sensors is done by reversing the order of the assembly procedure.



#### *Note*

*Despite of all reasonable precautions the self-aligning ball bearings could be damaged when pulled-off from the shaft. This could occur specially after a long service time. FMS therefore recommends the replacement of bearings whenever they are removed.*

## 5 Functional Description

Foil type strain gauges mounted in a full Wheatstone bridge configuration in each sensor perform the actual tension measurement. The dual flexion beam design eliminates angular deflection and load dependent torque effects. It ensures tension measurement with the highest accuracy and reliability under the most stringent requirements. A built in mechanical hard-stop provides high overload protection and ensures that frequent calibration is not required.

This sensor owes its high protection class (IP68) to a hermetically soldered stainless steel gaiter and a glass sealed PG-gland. It is therefore ideally suited to work in difficult ambient conditions, where the exposure to cooling water, rolling oils high temperatures and humidity is a factor.

### 5.1 Technical Data

Sensitivity	1.8mV/V
Tolerance of sensitivity	< ±0.2%
Accuracy class	±0.5%
Temperature coefficient	±0.1% / 10K [±0.0055% / °F]
Temperature range	-10...+60°C [14°F...140°F]
Input resistance	350Ω
Electrical connector	PG-gland
Supply voltage	1...12VDC
Material	Stainless Steel
Protection class	IP68



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