
TF Torque Flange sensor quick start guide



IMPORTANT IN ORDER TO MINIMIZE RISKS, IT IS OF UTMOST IMPORTANCE TO RESPECT THE CURRENT SAFETY STANDARDS WHEN PLANNING, CONFIGURING AND OPERATING THE TORQUE MEASUREMENT DRIVE TRAIN. OPERATE THE TF SERIES TORQUE FLANGE SENSOR WITH GREAT CAUTION! THE SENSOR MAY BE IRREVERSIBLY DAMAGED IF IMPACTED MECHANICALLY (FALL), CHEMICALLY (ACIDS) OR THERMALLY (HOT AIR, VAPOR).

1.0 OVERVIEW OF SYSTEM CONFIGURATION

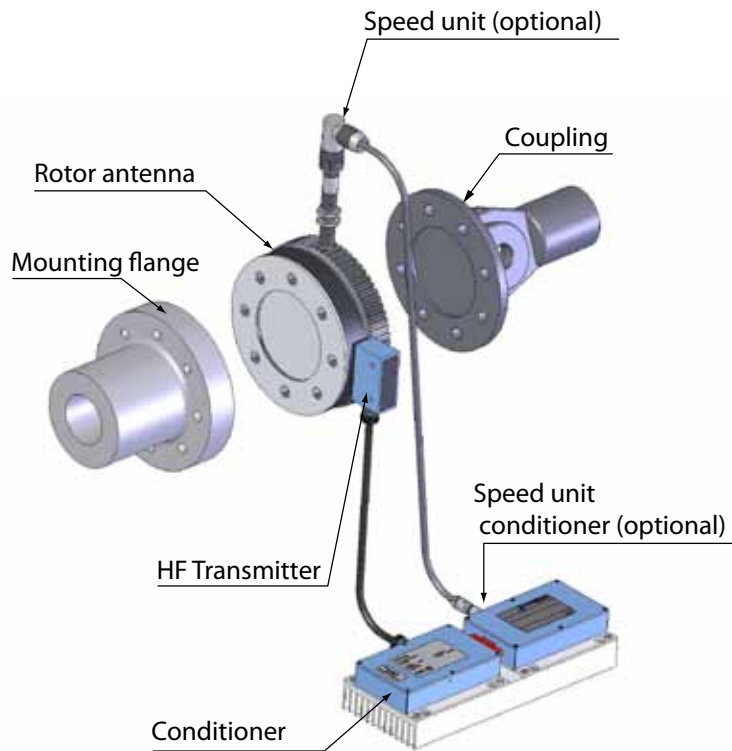


Figure 1.1. System configuration

The telemetry system will not work properly if the size of the mounting flange is too big or if the HF Transmitter vibrates too much. See <http://www.magtrol.com/manuals/tfmanual.pdf> under Mounting Considerations for further information.



Note : Before completing the assembly and mounting. It is advised to first power up the system (see Section 3.1 of the TF manual) in order to check the signal transmission.

2.0 ALIGNMENT

The TF Series Torque Flange Sensors are easy to install according to *figure 1-1*. However, it is important to achieve the best possible alignment of the various components of the measurement drive train. Angular and radial misalignments (as illustrated below) must be avoided.

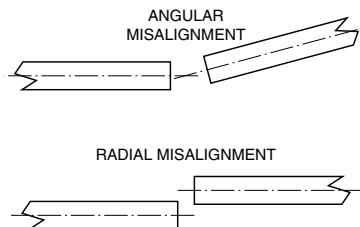


Figure 2-1 Angular and Radial Misalignment

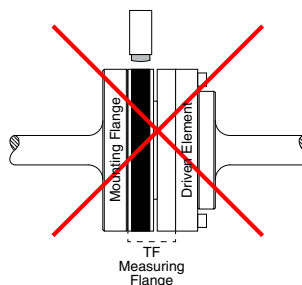


Figure 2-2 Incorrect Mounting

2.1 COUPLINGS FOR RADIAL MISALIGNMENT

If the shaft mounting shows a slight radial misalignment, a two-piece lamella coupling, double cardan shaft or bellows coupling may be used. These elements provide the system with two degrees of freedom in order to compensate for a slight radial misalignment.

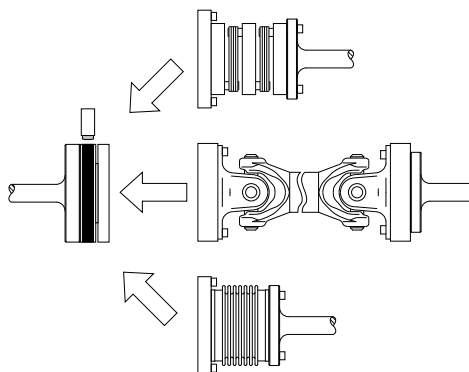


Figure 2-3 Angular and Radial Misalignment



CAUTION

PLEASE CHECK THE MAXIMUM SPEED CAPACITY OF THE COUPLINGS. A STANDARD BALANCING CARDAN SHAFT IS FOR A MAXIMUM SPEED OF 2000 RPM

3.0 CENTERING

The use of centering washer or centering hole is mandatory !!

Check the lengths of the screws and be sure to avoid any contact between the screws and the opposite part of the measuring flange.

Contact between the screws and the measuring flange will damage the TF.

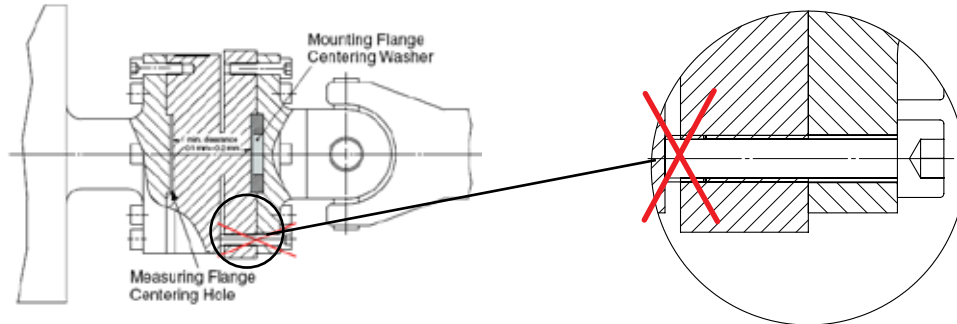


Figure 3-1 Mounted TF

3.1 MOUNTING SCREWS

The measuring flange must be mounted with 8.8/10.9/12.9 quality screws applying the specific fastening torque listed in the following table.

TF Sensor Model	Fastening Screw Size	Screw Class	Fastening Torque [N·m]	
			Friction Coefficient $\mu = 0.10$	Friction Coefficient $\mu = 0.14$
TF 209	M6	8.8	9.0	11.3
TF 210				
TF 211	M6	10.9	13.2	16.5
TF 212				
TF 213	M10	10.9	63	79
TF 214				
TF 215	M12	10.9	108	137
TF 216	M14	12.9	201	255
TF 217	M16	12.9	309	395
TF 218	M30	10.9	1775	2274
TF 219				
TF 220	M30	10.9	1775	2274

The mounting screws must be tightened in the following order.

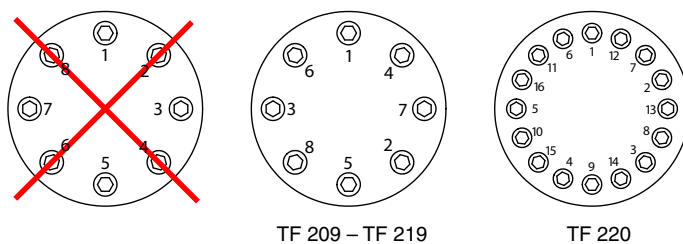


Figure 3-2 Screw Tightening Order



Note: When faced with alternating loads, secure the screws in their threads with thread locker in order to avoid any loss of preload. Be sure to prevent the thread locker from spilling over.

3.2 MOUNTING OF THE TF

3.2.1 Mounting of TF 209 to TF 212 and TF 220 Sensors

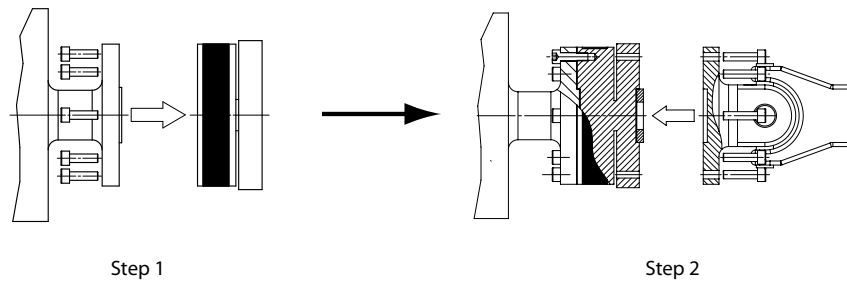


Figure 3-3 Mounting of TF 209 to TF 212 and TF 220 Sensors

3.2.2 Mounting of TF 213 to TF 219 Sensors

Example 1

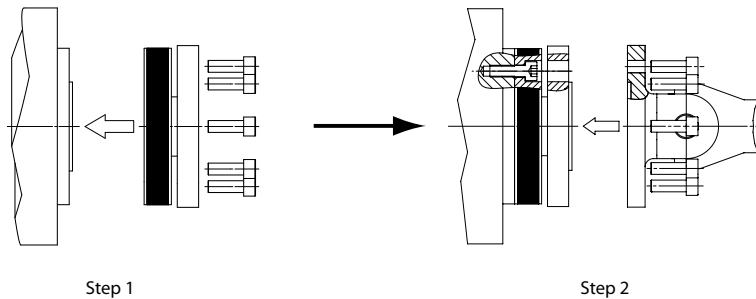


Figure 3-4 Example 1 mounting of TF 213 to TF 219 Sensors

Example 2

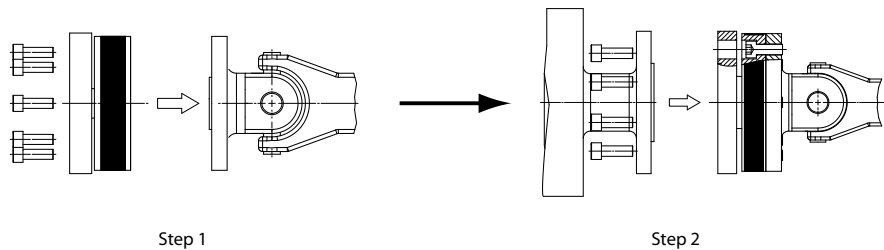


Figure 3-5 Example 2 mounting of TF 213 to TF 219 Sensors

Important parameters on the drive train:

- Use only components that are well balanced.
- Check the speed capacity for any elements mounted on the train (cardan shaft i.e.)
- Check the alignment and run-out before running.
- Reduce the vibration level as much as possible
- The maximum limits for relative shaft vibration (peak-peak) should fall within the range of ISO 7919-3.

$$\text{Zone boundary A/B } S_{(p-p)} = \frac{4800}{\sqrt{n}}$$

$S_{(p-p)}$ in μm

n is the rotational speed of the shaft expressed in RPM

3.3 DISMOUNTING THE MEASURING FLANGE

When dismantling the measuring flange from the drive train, make sure that all mounting screws are removed including those which are not visible from outside.



CAUTION: NEVER USE THE MEASURING FLANGE FOR LEVERAGE WHEN DISMOUNTING THE SENSOR.



Figure 3-6 Improper Dismounting



Note :

IF ANY POINTS IN THIS GUIDE ARE NOT CLEAR REFER TO THE COMPLETE USER MANUAL INCLUDED WITH THE TF TORQUE FLANGE SENSOR OR AVAILABLE ONLINE. (<http://www.magtrol.com/manuals/tfmanual.pdf>)

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Due to the continual development of our products, we reserve the right to modify specifications without forewarning.



www.magtrol.com

MAGTROL INC

70 Gardenville Parkway
Buffalo, New York 14224 USA
Phone: +1 716 668 5555
Fax: +1 716 668 8705
E-mail: magtrol@magtrol.com

MAGTROL SA

Route de Montena 77
1728 Rossens/Fribourg, Switzerland
Phone: +41 (0)26 407 3000
Fax: +41 (0)26 407 3001
E-mail: magtrol@magtrol.ch

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