fischer

Operating instructions
SensorDisc FCM-D

Product description

The fischer SensorDisc is a washer with integrated measuring and transmission technology, with which the current effective force level of a screw connection, that is equipped with it, can be recorded relative to the installation pre-tensioning force. The readout process takes place wirelessly at touch distance via NFC transmission to a readout device (e.g. smartphone), the data is archived and made available in the cloud. The SensorDisc works energy-autonomously and passively; the energy for the measurement and transmission process is provided inductively by the NFC field of the readout device. This means that no external power connection or built-in energy storage is provided or necessary. Accordingly, however, the measurements always represent only a snapshot, permanent monitoring or long-term measurement is not possible.

Requirements for correct operation:

For the fischer Sensor Disc to optimally fulfil its function of checking the preload force of screw connections, the following points must be observed:

- The SensorDisc is intended for use in metric bolted joints loaded predominantly with axial tensile loads.
- The bolt forces (primarily pre-tensioning and operating force) must be checked against the specified limit values of the SensorDisc before use.
- It must be ensured that the installation of the SensorDisc (e.g. through the changed clamping length of the screws) has no negative influence on the performance and stability of the overall system.
- For a reliable readout of the SensorDisc, the following are required:
- A smartphone with internet connection, installed fischer PRO App[1)] and easily accessible NFC transponder (e.g. Apple iPhone) OR a Bluetooth NFC reader[2)] as well as a smartphone with installed fischer PRO App[1)] and Bluetooth functionality
  - A myfischer account (log in or register here)
  - A sufficient number of free licences to use the SensorDisc

Installation:

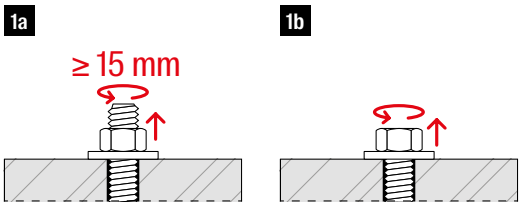
The SensorDisc can be used as original equipment or as a retrofit in existing bolt connections. In the case of a retrofit, it must be ensured that

- the general condition of the fixing is good enough to ensure safe tightening
- sufficient free thread length is available to install the SensorDisc with a thickness of 14.5 mm
- when installed, the NFC transponder in the reader can be brought within touching distance of the sloped surface of the SensorDisc

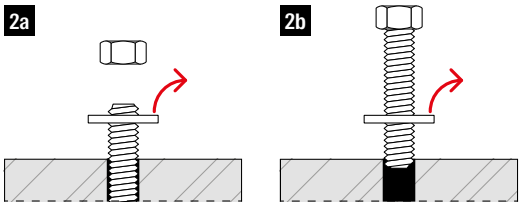
For optimum quality of the measurement results, the SensorDisc should be loaded as purely axially and centrically as possible. The supporting surface must have sufficient load-bearing capacity, ensure that the SensorDisc is supported over its entire surface, and that it is perpendicular to the bolt axis. If this is not the case (e.g. due to angular deviations in the of the bore), compensation can be achieved by using spherical washers and tapered cups according to DIN 6319. If the angular deviation between the screw axis and the vertical is the vertical is greater than approx. 1°, the compensating elements must be located between the SensorDisc and the mounting part; in the case of smaller deviations, installation above the SensorDisc is possible.

If necessary, it should be noted that additional free thread length is required for installation of the compensating elements. Installation and commissioning are carried out according to the following procedure:

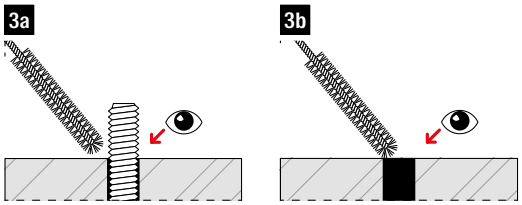
1. Completely loosen the bolt connection (if already present).



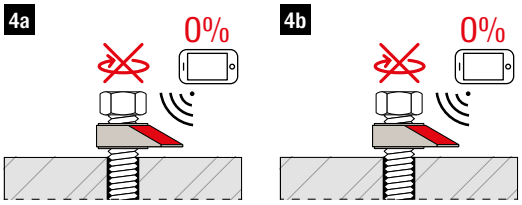
2. Remove the washer (if present), this can be replaced by the SensorDisc. If required for the specific application, the washer can be inserted between the SensorDisc and bolt head or nut.



3. Check the contact surface and bolt head or nut for cleanliness and clean if necessary. In particular, no chips, grains of sand or similar hard foreign bodies must remain on the contact surfaces.



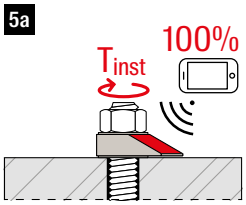
4. Loosely insert the SensorDisc and, if necessary, the spherical washer and taper cup in the bolt connection and start the SensorDisc setup process in the fischer PRO App.
   - Call up „Construction Monitoring“
   - Enter login data if necessary
   - Select or create building and floor
   - (Optional: add floor plan)
   - Select SensorDisc icon in title bar
   - Tap the "Plus"-icon to add a new SensorDisc
   - Follow the instructions in the app to read out the SensorDisc for the first time in an unloaded state (set 0% reference value)



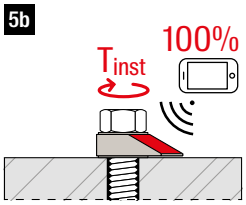
1) Sources of supply and compatibility information: for Android smartphones or Apple iPhone: fischer Professional advisor
2) Currently supported model: socketmobile

5. Complete the SensorDisc setup process in the fischer PRO App
- Tighten the bolt connection to the nominal torque. To prevent the SensorDisc from turning, hold it in position by hand. Holding or forcibly turning with tongs or a spanner can lead to damage or destruction of the SensorDisc!
- Scan the SensorDisc again according to the instructions in the fischer PRO App, to set the 100% reference add additional information if necessary:
  - Naming
  - Recognition image
  - Description text
  - Positioning on the site plan (if available)
  - Applied installation torque
- Complete the process by tapping on "Save“

5a



5b



Operation of the SensorDisc

The measured value history can be viewed in the "Construction Monitoring" module in the myfischer portal or in the fischer PRO App.

There are two options for selecting the desired SensorDisc:

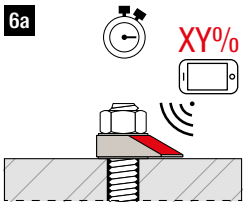
Navigation through the buildings / floor hierarchy in the “Construction Monitoring” context

Application of the "product scanner" functionality to the SensorDisc on on site (only possible in the app!)

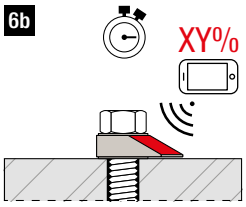
The measured values are available either in graphical or tabular form. By selecting an individual measured value, details can be displayed and edited.

6. To record a new measured value, the SensorDisc must be read out on site. To do this, the disc must first be selected in the fischer PRO App (see above) and then the scanning process can be started by tapping on "Scan current value". The measured value is then read out according to the instructions in the in the app by tapping it with the smartphone or reader.

6a



6b



The measured value is output as a percentage of the axial force acting on the device. If the bolt connection is retightened or re-set with the SensorDisc installed, the indicated force level can deviate significantly from 100% under certain circumstances, even if the applied torque corresponds to the original installation torque. This is due to the principally indeterminable influence of friction during the tightening process and the change in relative alignment of the fastener and SensorDisc and does not constitute a defect.
For this reason however, the upper reference value should be reset after each tightening to avoid implausible results. To do this, select the SensorDisc in in the fischer PRO App (see above) and select the corresponding menu item "Reset reference value" in the three-point menu. Then, read out the SensorDisc to save the current status as a 100% value.

www.fischer-international.com

fischer stands for

Fixing Systems
Automotive
fischertechnik
Consulting
Electronic Solutions

fischerwerke GmbH & Co. KG
Klaus-Fischer-Straße 1 · 72178 Waldachtal
Germany
P +49 7443 12 - 0
www.fischer-international.com · info@fischer.de

XXXXXXXX (0) · 03/2024 · V-MB · Printed in Germany · Subject to technical changes.