

# Fastener Force Sensor for Incorporation into Bolted Joints SCHATZ®-INSPECT

**SCHATZ®**  
ADVANCED QUALITY



- Measurement ranges M6 (20 kN) ... M24 (400 kN)
- Accuracy Class 5
- Service temperature range -20°C ... +120°C
- Very small dimensions

## Application

The fastener force sensor is particularly suitable for measuring the clamping force in bolted joints on the test stand, during test drives or in driving service.

In long-term testing, it is possible to record subsequent setting behavior of the joint (for example due to permanent deformation of soft intermediate layers such as seals etc.) with or without change in load.

Tightening specifications and tolerance ranges can be laid down as a function of the friction coefficients by simultaneously measuring torque and angle.

## Description

The measurement head of the fastener force sensor is fitted with strain gauges and produced in the shape of a washer. The internal diameter of the washer is designed according to the bolt diameter, so that a specific sensor must be used for each diameter of bolt.

The sensor is fitted with one large and one small protective washer. The large protective washer has a drilled-hole region in order to accommodate the transition from the bolt head to the bolt shaft. Both washers have the task of ensuring that the transfer of fastener forces into the sensor is as plain-parallel as possible.

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Technical data	5413-19xx						
Model No.	-1906	-1908	-1910	-1912	-19..	-19..	19..
Capacity/kN	20	40	60	100	200	300	400
Bolt size	M 6	M 8	M 10	M 12	M 16	M 20	M 24
Accuracy class acc. to DIN 1319 P3	5						
Accuracy	+/- 1-4%						
Breaking load	1,2 x measuring range (20 % over load)						
Bridge resistance	120 Ω						
Calibration resistance	10 kΩ						
Nominal sensitivity	3 mV/V						
Nominal sensor supply volt. range	1 ... 5 V						
Max. sensor supply voltage	6 V						
Nominal temperature range	0 ... 65°C						
Service temperature range	- 20 ... 120°C						
Storage temperature range	-50 ... 120°C						

Dimensions / connection dimensions							
Connecting cable	permanently connected, 2,5 m long						
Plug	Amphenol MS 3106A-14A-6P						
Dimensions / mm A	17	21	24	26,5	31	37	46
Dimensions / mm B	6,5	8	10	12,7	16	21	25
Dimensions / mm C	-	-	-	19,75	25,5	31,5	38
Dimensions / mm D	6	6	8	10	10	10,5	12,5
Dimensions / mm E	9	13	16	-	-	-	-
Dimensions / mm F	3	3	4	5	6	6	8
Dimensions / mm G	0,5	0,5	0,5	-	-	-	-
Dimensions / mm R	-	-	-	6	8	9	10
Dimensions / mm SW	-	-	-	9	9	9	9

20 - 60 kN

100 - 400 kN

