

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

SCHATZ®
ADVANCED QUALITY



- Measurement ranges M6 (20 kN) ... M24 (400 kN)
- Service temperature range -10°C ... +70°C
- Very small dimensions
- SCHATZ®-AUTOCODE

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 gages 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 two protective washers. Those have a drilled-hole region in order to accommodate the transition from the bolt head to the bolt shaft. The washers have the task of ensuring that the transfer of fastener forces into the sensor is as plain-parallel as possible.

Fastener Force Sensor

for Incorporation into Bolted Joints

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Technical data	5413-19xx						
Model No.	-1906	-1908	-1910	-1912	-1916	-1920	1924
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	$\leq \pm 1\%$ in unchanged mounting position ... $\leq \pm 10\%$ in various mounting positions						
Breaking load	1,2 x measuring range (20 % over load)						
Bridge resistance	input 560 \pm 190 Ω , output 350 \pm 5 Ω						
Calibration resistance	45,97 k Ω						
Nominal sensitivity	1,7 ... 2,3 mV/V depending on mounting position						
Nominal sensor supply volt. range	1 ... 5 V						
Max. sensor supply voltage	6 V						
Nominal temperature range	-10 ... +70°C						
Service temperature range	- 10 ... +70°C						
Storage temperature range	-30 ... +85°C						
Creep error more than 30 min.	$\leq \pm 2\%$						

Dimensions / connection dimensions							
Connecting cable	permanently connected, 1,5 m long						
Plug	ODU						
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

