

Torque Measuring System

Thread tightening testing machine BTT1220

Outline

This testing machine measures the tightening torque during thread tightening, axial tension, and the torque on the thread part to analyze the features of tightening from various aspects.



Specifications

1. Applicable bolt and nut sizes

The applicable hexagonal bolt and hexagonal nut sizes for this machine are shown in Table 1.

Screw size	M8	M10	M12
Width across flat on hexagonal part [mm]	13	17	19
Min. tightening length [mm]	23	28	33
Max. bolt length below head [mm]	86	90	v94
Max. bolt overall length [mm]	120		

The tightening length is set by the thickness of the spacer provided.

Ex.: In case of M10

Because the minimum tightening length is 23mm, by inserting a 10mm spacer the total tightening length would become 33mm.

2. Contents of measurement

Table 2. Shows the measurement contents.

A torque strain gauge type converter measures the total torque value, threaded portion torque and axial tension of Table 2, while the rotation angle is measured with an encoder. The converters for measuring the axial tension and the thread portion torque are based on a common structure of the strain generating part.

Table 2 Measurement contents of BTT1220

Item	Measurement range ²⁾	Permissible overload of converter
Torque	(1) All torque Max. 200N·m (CW, CCW) (2) Threaded portion torque Max. 150N·m (CW, CCW)	120% FS
Axial tension	Max. 150kN	
Rotation angle	Max. 1080° (CW, CCW, 3 rotations of output shaft)	—

3. Calibration

Calibration is not possible while the converters are installed in the thread tightening tester. Take out the total torque converter and axial tension/screw torque converter from the machine and calibrate using each converter separately. As the rotation angle and rotation speed for the tightening drive are obtained by counting the pulses from the encoder, calibration of the rotation angle and rotation speed is not possible.

4. Tightening drive unit

Table 3 shows the setting conditions of the drive part of the tester.

Table 3 Condition of driving part

	Rotation speed setting [rpm]
Tightness loosening speed during the test	2~20
Manual inching speed	

Final drive preload automatic adjustment machine

Outline

This adjustment machine fixes the companion flange of the medium sized pinion final assembly in the work fixture, tightens the lock nut at the same time, and detects the preload torque. When the set preload torque value or tightening torque value is reached, the machine automatically stops the lock nut tightening, rotates the work, verifies the change of preload torque, and respectively judges whether the preload torque value and tightening torque value is OK or NG. During verification, if the preload torque value is judged as LO-NG, the machine automatically tightens the lock nut one more time and carries out the above operation.

Composition

- 1) Electric Nutrunner
- 2) Power supply
- 3) Power part with torque sensor
- 4) Sensor for preload measurement
- 5) Torque display unit
- 6) Control panel
- 7) Operation panel
- 8) Area sensor part
- 9) Work set fixture
- 10) Stand part



Torque Gauge

Torque Meter

Torque Sensor

Calibration Kit

Torque Measuring System

- ATGE-G
- BTGE-G
- ATG/BTG(-S)
- TME2
- TM
- 5TM
- TCF
- TCR