

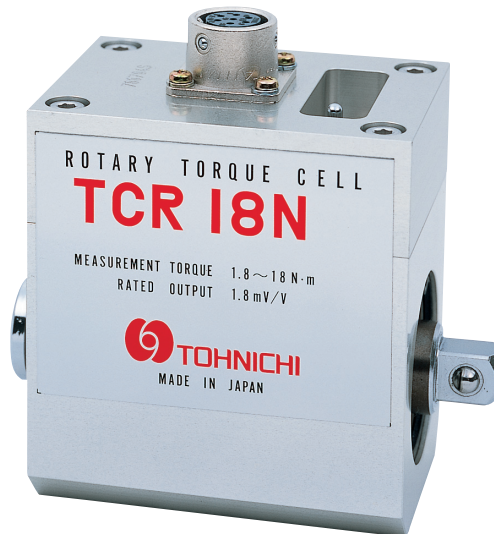
ROTARY TYPE TORQUE SENSOR

MODEL **TCR**

OPERATING INSTRUCTION

To Users

To use this product properly and safely, please read this operating instruction carefully before use. If you have any question about the product and its operations, please contact your nearest distributor or TOHNICHI MFG. CO., LTD. This operating instruction should be stored in a safe place.



Safety Precautions

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The safety alert symbol

This symbol means Attention! become alert! Your safety is involed.


Take preventive measures in this manual and performing "safety use and appropriate management."

Signal Words

The signal words are the headers which indicate the level of hazard that should be known for human safety in handling devices. The signal words for safety are "Danger", "Warning" and "Caution" depending on the level of hazard to human. The signal words are used with the safety symbol to indicate the following situations.

"  Danger" : Imminent danger acting as a serious obstacle.

"  Warnings" : A potential risk of becoming a serious obstacle.

"  Cautions" : A potential risk of becoming an obstacle although it does not result seriously.

Danger

Care should be taken not to have a cable connected to the TCR entangled around the rotating body. - When the torque of the rotating body is high, the cable may be swung around, resulting in damage, accident or injury.

Warnings

(1) Be aware of the surroundings of the workplace.

Do not use the product in the rain or in a moist/wet place. Failure to observe this may result in an electric shock or smoking. Illuminate the workplace fully. Working in a dark place may result in an accident.

Do not use the product in a place exposed to a combustible liquid or gas. Failure to observe this may cause an explosion or a fire, leading to an accident.

Cautions

(1) Use below the allowable rpm.

The TCR picks out a torque value by a slip ring. Use below the allowable rpm.

Using above the allowable value may affect torque accuracy or deteriorate endurance.

(2) Use the specified accessories and options.

Use only the specified accessories and options mentioned in the operating instruction.

Failure to observe this may cause an accident or an injury.

(3) Check for any damaged part.

Prior to using the product, check a case, plug, cord, and other parts fully for any damage.

Check whether they work properly and perform their predetermined functions.

Check also whether the parts are free from damage and properly attached, and whether all the parts affecting your work are defectless. Failure to observe this may cause an electric shock or a short-circuit, resulting in ignition.

Precautions for Use

- (1) When continuously using this product for a nutrunner, use the nutrunner with a torque sensor.
- (2) Calibrate periodically.
- (3) Insert a pin into an inlet drive on the torque tool side and fix with a drop preventive O-ring.
- (4) Use within the rated capacity (torque measurement limits) in the specifications list. Using beyond the limits may result in measurement accuracy failure or damage if the upper limit is exceeded.
- (5) Use below the allowable rpm in the specifications list. Using beyond the allowable value may deteriorate measurement accuracy or durability performance.

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1. Features

- (1) "Rotary type torque sensor" capable of measuring rotary torque in such as tightening screws.
- (2) Capable of directly measuring a torque value by attaching between the square drive and the socket of a torque tool, etc.
- (3) Use of the slip ring mechanism for torque detection prevents the case from being rotated.

2. Components

- (1) Main unit
 - (2) Connecting cable (2 m)
 - (3) Operating instruction
- * 1 piece/copy each.

3. Names of Parts and Descriptions

- ① Case
- ② Connector: Connector type PRC-03-21A10-7F (made by TAJIMI ELECTRONICS CO., LTD.)
- ③ Square drive (convex) on the socket side
- ④ Inlet drive (concave) on the torque tool side
- ⑤ Check switch
In the figure below, about 1 m V/V is output by shifting down the switch, allowing you to easily check for snapping of a connecting cable between an indicator and the TCR.
- ⑥ Gain control switch
The rated output can be varied (controlled) by about $\pm 10\%$ by rotating the switch.

Caution:

To control the gain, connect to an optional indicator (for example, CD5) and conduct actual load calibration, using an optional calibration kit (TCL). Careless gain control may cause accuracy failure.

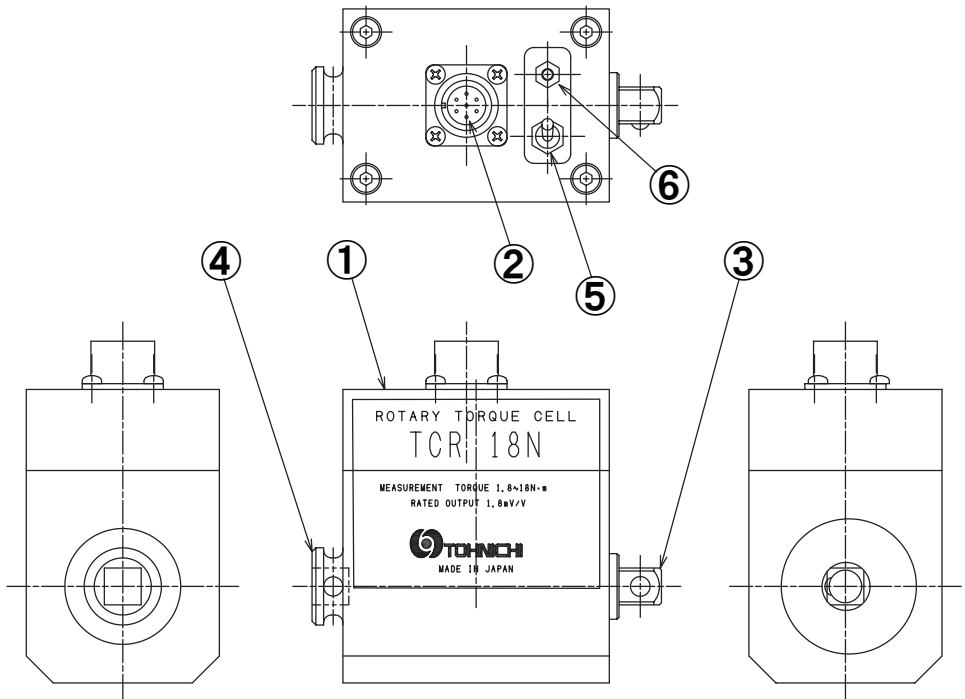


Fig. 1 Component Parts and Illustration of TCR

4. Installation

- Installing the TCR (TCR mounting direction)

There are no restrictions on a mounting position such as the vertical direction (crosswise direction in Fig. 1).

Ensure that no excessive force is applied to the connecting cable.

- Connecting the TCR, connecting cable, and indicator

Connect to the indicator (for example, CD5 * Option), using the accessory connecting cable. Insert until its connector is fully locked.

(If fully locked, there is a “click” feeling.)

- Connecting the TCR to the torque tool and the socket

Attach the square drive (④ in Fig. 1) on the torque tool, etc. to the TCR hole side.

Caution: Use an O-ring and a pin for the inlet drive hole side; the O-ring and the pin are not included.

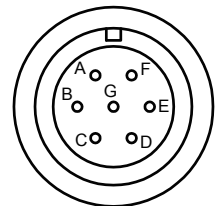
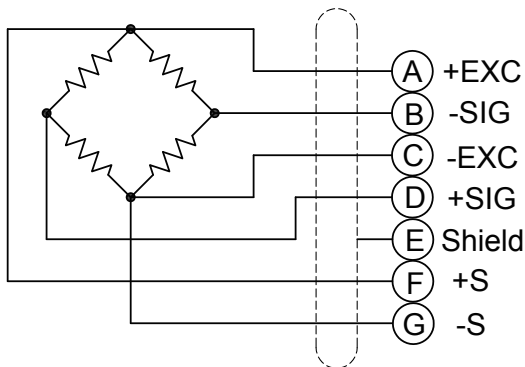
The square drive on the socket side (③ in Fig. 1) is provided with a steel ball for preventing the socket from dropping. Insert the socket deeply inside.

- Connecting to the indicator

Use an accessory connecting cable to connect to the indicator.

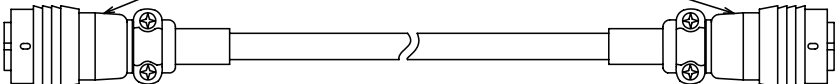
When connecting to the torque indicator CD5, connect to the connector INPUT on the back of the CD5.

6-core Shielding Wire Diagram



Pin Assignment

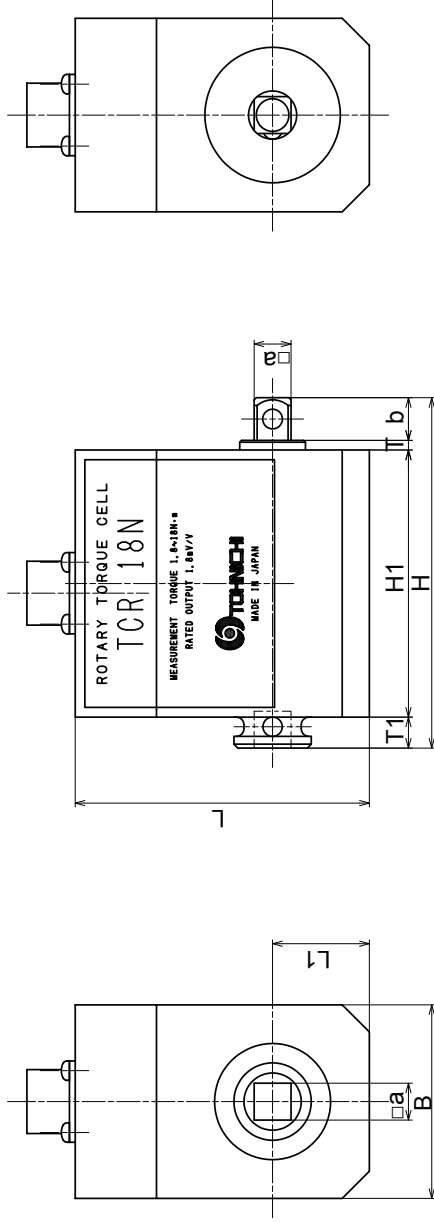
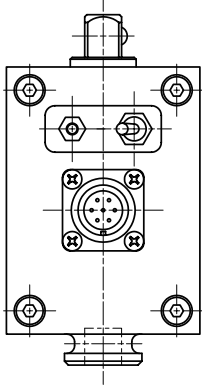
Connecting Cable (Reference) **PRC03-12A10-7M10.5**
(Made by TAJIMI
ELECTRONICS CO., LTD.)



5. Specifications

Specifications

Model		TCR			
Rated Capacity	N · m	1.8	180	700	1800
Rated Output	mV/V	1.8		1.4	1.8
Non-linearity	%	0.25			
Hysteresis	%	0.25			
Applied Voltage	V	5			
Output Resistance	Ω	350±1%			
Insulation Resistance	Ω	minimum2000MΩ			
Working Temperature Range	°C	0 to 40°C, no dew condensation			
Allowable Overload	%	150		125	
Allowable rpm	r.p.m	2000		1000	
Cable		3 m-long 6-core shielding cable included			
Weight	kg	0.9	1.3	2	3.6



仕様 Specifications

型式 MODEL	トルク測定範囲 CAPACITY [N·m]	許容トルクオーバー CAPACITY [%]	定格出力 OUTPUT [mV/V]	抵抗 RESISTANCE [Ω]	印加電圧 APPLIED VOLTAGE [V]	許容回転数 MAX SPEED [r.p.m.]	寸法 DIMENSION [mm]										質量約 WEIGHT [kg]	
							H	H1	B	L	L1	T	T1	差込角 SQUARE DRIVE				
	最小~最大 MIN~MAX												□	a	b			
TCR18N	18~18	150	1.8	350	5	2000	90.5	69	50	76	25	2.5	8	9.53	11	0.9		
TCR180N	18~180	125	1.4			104	76	68	83	34	12	12.7	14	1.3	12	12.7	14	1.3
TCR700N	70~700		1.8			118.5	80	75	95	40	2	16	19.05	20.5	2	25	25.4	26.5
TCR1800N	180~1800						138.5	85	96	110	45							

(2) Torque indicator CD5

When the TCF and the CD5 are ordered as a set,
we will conduct actual load calibration for free.
(Calibration Certificate provided)



(3) Printer EPP16M2



(4) Connecting cable

Catalog No. 382 (CD5 <=> EPP16M2)

Catalog No. 383 (CD5 <=> PC * D-DUB 9 pin female on the cable side)

(5) Calibration kit TCL



Calibration Kit for TCL/LC2/ST2/TCR

MODEL	DESCRIPTION	APPLICABLE MODELS
TCL50N	Calibration lever, Wire, Scale holder (1kg),Scale pan (100g)	TCF10N- 40N, TCR18N, LC200N2, ST100N2- 50N2
TCL200N	Calibration lever, Wire, Scale holder (1kg)	TCF100N- 200N, TCR180N, LC200N2, ST100N2- 200N2
TCL800N	Calibration lever, Wire, Scale holder (10kg)	TCF400N, TCR700N, ST500N2
TCL1000N	Calibration lever, Wire, Scale holder (5kg)	TCF1000N, ST1000N2, LC1000N2
TCL2000N	Calibration lever, Wire, Scale holder (10kg)	TCF2000N, TCR1800N

Note
TCL1000N and TCL2000N is supplied upon request.
#271 is required when calibrating ST10N2



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