

# Model 1913/1993 Static Torque Transducers

## Features

- strain gauge technology
- range from 30 Nm to 300 Nm
- accuracy up to 0.1 %fs
- mild steel with nickel plated treatment (1913)  
17-4PH construction (1993)
- protection grade IP 66

## Applications

- torque wrench and torsion measurement of shaft



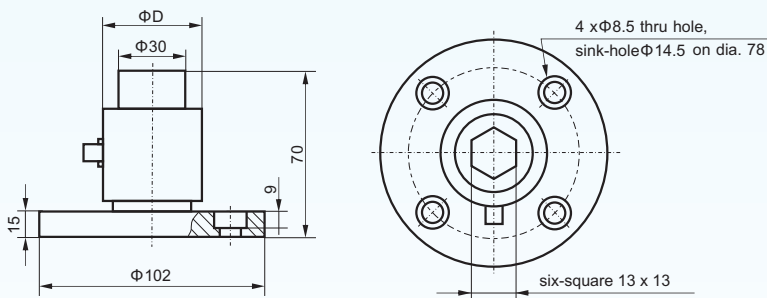
## Description

Based on BCM's advanced strain gauge technology, 1913/1993 static torque transducers are made from either alloy steel (1913) or stainless steel (1993) and sealed to IP 66 protection grade. 1913/1993 static torque transducers are operated in the following way: one side of the transducer is fixed as the stationary part, while the other side is as motion part which intends to have torsion shift corresponding to the stationary part. These transducers are designed for symmetric use, i.e., use in measuring torques in both directions: clockwise (positive torque) and anti-clockwise (negative torque).

1913/1993 torque transducers can measure torque ranges from 30 Nm to 300 Nm with an accuracy up to 0.1%fs. On request, these transducers can be supplied as transmitters with conditioned signals such as 0~5 V can be obtained by integrating a signal conditioner PCB in the torque body.

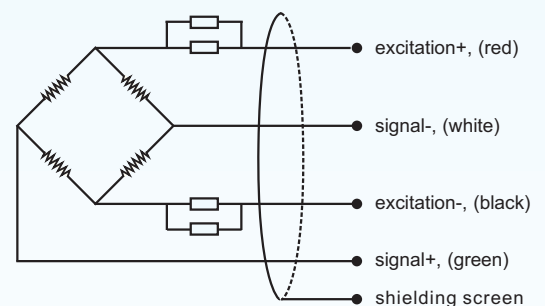
1913/1993 torque transducers are widely used in torque wrench and torsion measurement of shaft.

## Dimensions



capacity (N.m.)	30	50	60	80	100	200	300
D	44	44	44	44	44	52	52

## Electrical Connection



# Model 1913/1993

## Static Torque Transducers



### Technical Data

parameters	units	specifications		
measuring range	Nm	30, 50, 70, 100, 200, 300		
safe load limit	%fs	120		
ultimate overload	%fs	150		
output sensitivity at full scale*	mV/V	1.5~2		
zero unbalance	%fso	± 1		
non-linearity	%fs	± 0.1	± 0.2	± 0.3
hysteresis	%fs	± 0.1	± 0.2	± 0.3
repeatability	%fs	± 0.1	± 0.2	± 0.3
error of asymmetry	%fs	± 0.1	± 0.2	± 0.3
excitation (supply voltage)	Vdc	10		
max. excitation voltage	Vdc	15		
input resistance	Ω	390 ± 30 (standard), 740 ± 30		
output resistance	Ω	350 ± 10 (standard), 700 ± 30		
insulation resistance	MΩ	≥1000@50 Vdc		
storage temp. range	°C	-35 ~ +80		
operating temp. range	°C	-20 ~ +65		
compensated temp. range	°C	-10 ~ +40		
temp. coefficient of sensitivity	%fs/°C	± 0.01	± 0.02	± 0.03
temp. coefficient of zero	%fs/°C	± 0.01	± 0.02	± 0.03
load cell body material		mild steel (1913), 17-4PH stainless steel (1993)		
sealing		potted		
mechanical interface		refer to the dimensions on the datasheets		
electrical interface		Φ5 mm, 4-conductor shielded cable, PVC jacket, 1 m		
environment protection		IP 66		
unit weight	g	to be confirmed when order		

The listed specifications and dimensions are subject to change without prior notice.

\*: On request, model 1913/1993 can be supplied as transmitter with conditioned output of 0~5 Vdc.

Since torques in both clockwise and anti-clockwise can be measured, the zero-torque state of the torque transmitters can be set at 0 Vdc or 2.5 Vdc. In case the "zero output" is set to 2.5 Vdc, a asymmetric O/P can be obtained from the transmitter: the full scale O/P of the maximum positive torque will be 5 Vdc while the full scale O/P of the maximum negative torque is 0 Vdc. If the "zero output" is set to 0V, a symmetric O/P will be obtained for positive and negative torques, e.g., the set full scale O/P will be set to ±5 Vdc.

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## Ordering Information

position (pos.) 1: model									
1913: made from mild steel 1993: made from 17-4PH stainless steel									
pos. 2: capacities									
30 Nm      100 Nm 50 Nm      200 Nm 70 Nm      300 Nm									
pos. 3: output sensitivity									
1.5 mV/V*: 1.5~2 mV/V, to be confirmed when order.									
pos. 4: non-linearity or accuracy class									
0.1 %fs 0.2 %fs (standard) 0.3 %fs									
pos. 5: bridge resistance									
350 Ω (Rin = 390±30 Ω, Rout = 350±10 Ω) 700 Ω (Rin = 740±30 Ω, Rout = 700±10 Ω)									
pos. 6: mechanical interface									
Refer to the dimensions on the datasheets. Pos. 6 can be omitted from the ordering code.									
pos. 7: electrical interface									
cable, code = diameter(Φ)/number of conductors/cable jacket/cable length 5/4/PVC/1 = Φ5 mm, 4-conductors shielded, PVC, length = 1**m									
pos. 8: environment protection									
IP 66									
pos. 9: accessories for installation									
N = NA***. In case of "NA", pos.9 can be omitted.									
pos. 10: customized spec's									
When any customized spec's are required, the customer needs to add "C" as the last parameter in the ordering code, and specifies the wished spec's on his order clearly.  The customized spec's needs to be confirmed in advance by BCM's sales representative.  Code "C" can be omitted if no customized spec's are required.									
pos.1	pos. 2	pos. 3	pos. 4	pos. 5	pos. 6	pos. 7	pos. 8	pos. 9	pos. 10

\*: On request, model 1913/1993 can be supplied as transmitter with conditioned output of 0~5 Vdc:  
In case the "zero output" is set to 2.5 Vdc, code = 0/5Vasym  
In case the "zero output" is set to 0V, code = ±5Vsym

\*\* : This value can also be a customized value.

\*\*\* : NA = not available or not applicable

**example:** 1993-100Nm-1.5mV/V-0.2%fs-350Ω-5/4/PVC/1-IP66-C

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