

TENSION AND COMPRESSION TRANSDUCER



TENSION &
COMPRESSION

Type: **TCE**

- 350 kg TO 20 t
- TENSION AND COMPRESSION
- STAINLESS STEEL · IP67
- LINEARITY ≤ ± 0.03 %



ORDERING

Ø 57 mm	CTCE57350K5 (350 kg) · CTCE57500K5 (500 kg) · CTCE571T5 (1 t) · CTCE572T55 (2.5 t) · CTCE575T5 (5 t, in tension up to 2.5 t)
Ø 82 mm	CTCE825T5 (5 t) · CTCE827T55 (7.5 t) · CTCE8210T5 (10 t)
Ø 82 mm, long	CTCE8220T5 (20 t)
Output	standard 5 m cable · direct MIL6M connector CMIL6MF · direct M12 connector CONNM12MF
Calibration report	CRT — in compression or in tension

An octagon order code has not yet been defined; please state nominal load, size and output. For 5 t please state the size — the two codes are not equivalent.



OVERVIEW

The TCE is a cylindrical force transducer of stainless steel with a female thread at each end, for nominal loads from 350 kg to 20 t. It measures in both directions — pulled or pressed — and the thread takes a loading head, a spherical head or a knuckle joint, so that the force enters on the axis even when the structure is not perfectly aligned. Linearity and hysteresis are within $\pm 0.03\%$, repeatability within $\pm 0.01\%$, and the nominal output is 2 mV/V with a calibration tolerance of $\pm 0.1\%$. There are three sizes: $\varnothing 57$ mm with M20 $\times$ 1.5, $\varnothing 82$ mm with M30 $\times$ 2, and a longer $\varnothing 82$ mm with M42 $\times$ 3. Note that 5 t is available in the two smaller sizes; the $\varnothing 57$ mm cell is guaranteed in tension only up to 2.5 t.

MEASUREMENT AND ACCURACY

- Nominal load 350 kg ... 20 t
- Tension and compression in one body
- Linearity and hysteresis $\leq \pm 0.03\%$
- Repeatability $\leq \pm 0.01\%$
- Nominal output 2 mV/V $\pm 0.1\%$
- Input 440 $\Omega \pm 20 \Omega$, output 350 $\Omega \pm 2 \Omega$
- Temperature effect $\leq \pm 0.030\%$ per 10 °C
- Service temperature -20 ... +70 °C

MECHANICS, SEALING AND MOUNTING

- Stainless steel body, IP67 to EN 60529
- Service load 120 %, breaking load > 300 %
- Max. transverse load 50 % of nominal load
- Displacement ≤ 0.3 mm at nominal load
- $\varnothing 57$ mm or $\varnothing 82$ mm, M20, M30 or M42
- Weight about 1.5, 4.2 or 5 kg
- 5 m shielded cable, 10 m on request
- MIL6M or M12 connector on request



TECHNICAL DATA

ACCURACY

Nominal load	350, 500 kg · 1, 2.5, 5 t in Ø 57 · 5, 7.5, 10, 20 t in Ø 82
Nominal sensitivity	2 mV/V · calibration tolerance ± 0.1 %
Linearity	$\leq \pm 0.03$ %
Hysteresis	$\leq \pm 0.03$ %
Repeatability	$\leq \pm 0.01$ %
Temperature effect per 10 °C	on zero $\leq \pm 0.030$ % · on sensitivity $\leq \pm 0.011$ %
Note on the 5 t cell	the 5 t cell of Ø 57 mm is guaranteed in tension only up to 2.5 t — in Ø 82 mm the full 5 t hold

ELECTRICAL DATA

Input resistance	440 $\Omega \pm 20 \Omega$
Output resistance	350 $\Omega \pm 2 \Omega$
Insulation resistance	$> 5 G\Omega$
Zero balance	$\leq \pm 1$ %
Supply voltage	recommended 10 V · nominal 1 ... 15 V · maximum 18 V
Output	shielded PVC cable 105 °C, Ø 5.2 mm, 4 x 0.35 mm ² tinned · shield connected to the body
Connector options	direct MIL6M connector CMIL6MF · direct M12 connector CONNM12MF

MECHANICAL LIMITS

Service load	120 % of the nominal load
Maximum permissible load	150 %
Breaking load	> 300 %
Maximum transverse load	50 %
Maximum dynamic load	50 %
Displacement at nominal load	≤ 0.3 mm
Cable routing	the weight of the cable can influence the measurement — lay it on the fixed side, opposite the load

TEMPERATURE AND SEALING

Reference temperature	+23 °C
Nominal temperature range	-10 ... +40 °C
Service temperature	-20 ... +70 °C
Storage temperature	-20 ... +80 °C
Protection class	IP67 to EN 60529
Material	stainless steel
Cable length	5 m, on request 10 m

SIZE, WEIGHT AND INSTALLATION

Size Ø 57 mm	350 kg ... 5 t · thread M20 x 1.5 · weight about 1.5 kg
Size Ø 82 mm	5 ... 10 t · thread M30 x 2 · weight about 4.2 kg
Size Ø 82 mm, long	20 t · thread M42 x 3 · weight about 5 kg
Installed length A	117 mm for 350 kg ... 5 t · 149 mm for 5 ... 10 t · 198 mm for 20 t — with the accessories
Installed length B	200 mm for 350 kg ... 2.5 t · 300 mm for 5 ... 10 t · about 420 mm for 20 t
Options	MIL6M or M12 connector · calibration report CRT in compression or in tension · WIMOD for wireless transmission



ELECTRICAL CONNECTION

Load cell	Cable	MIL6M	M12 × 1
Excitation +	red	A	1
Excitation –	black	B	3
Output +	white	D	2
Output –	yellow	C	4
Shield	shield	F	5

The standard output is a shielded PVC cable of 105 °C, Ø 5.2 mm, with four tinned conductors of 0.35 mm²; the shield is connected to the body of the transducer. Both connector options carry the same four signals on the pins given above.

ACCESSORIES

For Ø 57 mm, M20	loading head CTIC22 · spherical loading head CTS25M20 · knuckle joints CACCEM20
For Ø 82 mm, M30	loading head CTIC28 · spherical loading head CTS45M30 · knuckle joints CACCEM30
For Ø 82 mm, M42	loading head CTIC35 · spherical loading head CTS62M42 · knuckle joints CACCEM42
Connector and cable	CMIL6FV5 — female MIL6M with 5 m shielded cable · CONNM12FV5 — female M12 × 1 with 3 m moulded cable

Knuckle joints let the force enter on the axis when the structure is not perfectly aligned; a spherical head does the same for compression.

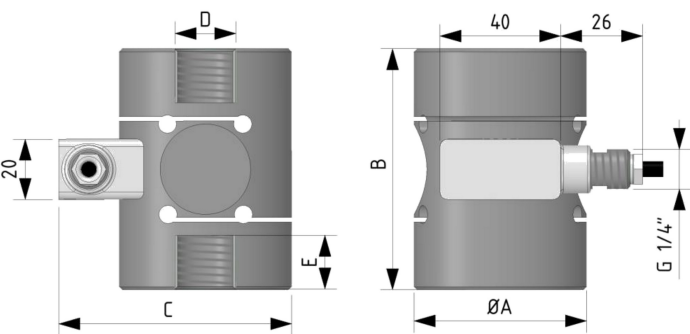
COMPLIANCE

 IP67	Sealing	IP67 to EN 60529
 Stainless Steel	Material	stainless steel body
 mV/V	Output	2 mV/V ± 0.1 % · supply 1 ... 15 V, maximum 18 V

The manufacturer states no OIML class for this transducer; linearity, hysteresis and repeatability stand in their place. The EAC certificate in the product folder covers the AEP load cells; please ask octogon before relying on a marking for a particular application.



DIMENSIONS (mm)



LOAD	ØA	B	C	D	E
350 kg ... 5 t	57	80	74,5	M20 x 1,5	17
5 ... 10 t	82	110	102	M30 x 2	20
20 t	82	150	102	M42 x 3	30

The drawing is the one of the manufacturer document; its letters are read in the table beside it, one row per size. D is the thread at both ends, E its depth.

