

Product Information

Torsion drives for table-top testing machines

CTA: 98424 234957



Table-top testing machine with torsion drive on top crosshead



Table-top testing machine with torsion drive on moving crosshead

Applications

Torsion drives can be installed in table-top testing machines to carry out uniaxial and multi-axis load tests (tensile or compression combined with torsion) as part of materials and components testing.

In case of hazardous specimens and/or high rotational speeds an optional CE-compliant safety device can be used. The factory sets a limit of 20 rotations per minute on torsion drives without safety device, if the nominal rotation speed is higher.

The system consists of

- Table-top testing machine in a force range of 5 kN to 150 kN from our standard product portfolio. Available in different load frame heights and widths
- Torsion drive on the moving crosshead or top crosshead
- Precise load cells and torque transducers
- testControl II measurement and control electronics

Advantages and Features

- The modular design allows retrofitting of torsion drives on existing table-top testing machines whenever required.
- Operation with standard PC or laptop (no additional interface card required) and testXpert III testing software
- High-resolution rotation angle and travel measurement
- Easy handling and user-friendly operation for maximum flexibility
- Synchronization of the two test axes
- The modular design allows for the use of a number of components from the ZwickRoell standard products portfolio, including specimen grips, test tools, temperature chambers and more

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Torsion drives with flange connection

Item No.	1020233	1023835	1027734	1027737	3005980	
Nominal torque M_{nom}	2	20	100	200	200	Nm
Permissible axial force	2.5	5	5	50	50	kN
Drive						
Rotational speeds	0.01 ... 80 ¹⁾ 0.01...20 ²⁾	0.01...80 ¹⁾ 0.01...20 ²⁾	0.002...60 ¹⁾ 0.002...20 ²⁾	0.002...20	0.005...50 ¹⁾ 0.005...20 ²⁾	rpm
Pitch circle connection flange \varnothing	40/75	40/75	75	75/115	75/115	mm
Electrical power specifications	230 V AC, 50/60 Hz, 1Ph/PE/N	230 V AC, 50/60 Hz, 1Ph/PE/N	230 V AC, 50/60 Hz, 1Ph/PE/N	230 V AC, 50/60 Hz, 1Ph/PE/N	400 V AC, 50/60 Hz, 3Ph/PE/N	
Power consumption	0.5	0.8	2.3	2.3	5	kVA

1) Maximum speed. Only in conjunction with a safety device

2) Reduced speed when operating without a safety device

Load cell with two-sided flange connection

For a combination of force and torque transducer it is important to make sure that the load cell permits the occurring torque.

Nominal force F_{nom} [kN]	Permissible torque [Nm]	Load cell type	Pitch circle connection flange \varnothing [mm]	Accuracy Class 1 [N]	Item No.
0.01	2	Xforce HP	40/75	≥ 0.02	3005926
0.02	5	Xforce HP	40/75	≥ 0.04	1001897
0.05	5	Xforce HP	40/75	≥ 0.1	085849
0.1	5	Xforce HP	40/75	≥ 0.2	069525
0.2	5	Xforce HP	40/75	≥ 0.4	077002
0.5	5	Xforce HP	40/75	≥ 1.0	069529
1	10	Xforce HP	40/75	≥ 2.0	069531
2.5	20	Xforce HP	40/75	≥ 5.0	069532
5	100	Xforce K	40/75	≥ 10.0	059533
10	250	Xforce K	115	≥ 20.0	3006020
20	250	Xforce K	115	≥ 40.0	3010037
30	250	Xforce K	115	≥ 60.0	3010155
50	900	Xforce K	115	≥ 100.0	3009454
100	27500	Xforce K	115	≥ 400.0	068922 ¹⁾

1) Flange interface with 70 mm centering gauge instead of mounting stud, for combination with the alignment fixture (Item No. 068902) and hydraulic grip type 8594 "body-over-wedge" (Item No. 072865 and 072869). Design and technical data as for Item No. 068918.

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Torque transducer with two-sided flange connection

For a combination of force and torque transducer it is important to make sure that the torque transducer permits the occurring axial force.

Nominal torque M_{nom} [Nm]	Permissible axial force [kN]	Torque trans- ducer type	Pitch circle connection flange \varnothing [mm]	Accuracy Class 1 [Nm]	Item No.
2	5	Type M	40	≥ 0.02	069536
5	10	Type M	40	≥ 0.1	069538
10	10	Type M	40	≥ 0.2	069539
20	10	Type M	75	≥ 0.2	069542
50	20	Type M	75/115	≥ 0.5	3010041
100	50	Type M	75	≥ 1	3006624
100	50	Type M	75/115	≥ 1	3010057
200	50	Type M	75/115	≥ 2	3010040

Accessories

Top crossheads for mounting of the torsion drive

To mount the torsion drive on the top crosshead, an additional top crosshead with corresponding through bore-hole to accommodate the torsion drive, is required. When mounting the torsion drive on the top crosshead, the testing machine can be operated with two test areas, one on top of the other: an upper test area above the moving crosshead for tensile/compression torsion tests; a lower testing area below the moving crosshead for tensile/compression tests. This reduces the need for extra setup efforts in case of frequently changing tests.

	Torsion drives 2 Nm/20 Nm/100 Nm	Torsion drive 200 Nm
Table-top testing machine 5-20 kN Test area width 440 mm	010996	3003313
Table-top testing machine 5-20 kN Test area width 640 mm	1044932	1045443
Table-top testing machine 30-50 kN Test area width 440 mm	3006660	3006283
Table-top testing machine 30-50 kN Test area width 640 mm	-	3006284
Table-top testing machine 100-150 kN Test area width 640 mm	-	3006285

Moving crossheads for mounting of the torsion drive

To mount the torsion drive on the moving crosshead, an additional moving crosshead that can accommodate the torsion drive, is required.

	Torsion drives 2 Nm/20 Nm/100 Nm	Torsion drive 200 Nm
Table-top testing machine 5-20 kN Test area width 440 mm	x ¹⁾	3005449
Table-top testing machine 5-20 kN Test area width 640 mm	x ¹⁾	3005467
Table-top testing machine 30-50 kN	-	3005468

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	Torsion drives 2 Nm/20 Nm/100 Nm	Torsion drive 200 Nm
Test area width 440 mm		
Table-top testing machine 30-50 kN Test area width 640 mm	-	3005469
Table-top testing machine 100-150 kN Test area width 640 mm	-	3005470

1) The torsion drive can be mounted on the factory installed moving crosshead

Additional accessories

Description	Item number
Emergency stop link¹⁾ Connection box for emergency stop link from several testControl II (slave) systems to one system.	1023870
Ethernet switch for 10/100/1000 Mbit Ethernet hub for connection of both electronics units. This way only one Ethernet connection is needed on the PC.	1026425
Safety door link²⁾ Extension of tCII emergency stop link to include safety door functionality.	1041273
Increase to maximum permissible rotation speed of the torsion drive³⁾	063785
Display-equipped remote control For the testing machine	057984
Display-equipped remote control For the torsion drive	1025350

1) Mandatory requirement (2x)

2) Mandatory requirement in conjunction with a safety door (2x)

3) Only permitted in conjunction with a safety device