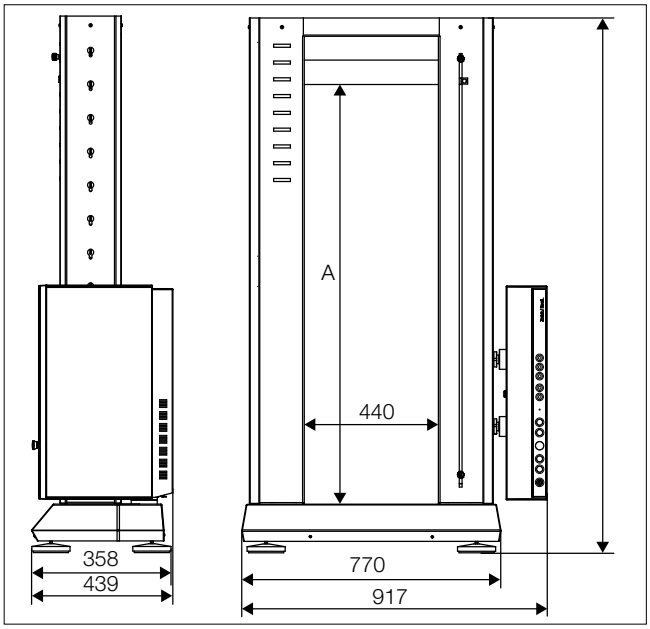
Zwick / Roell

Zwick
Materials Testing

Product Information

ProLine table-top testing machines Z005 up to Z100

ProLine Z050TN



Principle drawing of the ProLine Z030/Z050 TN

Range of application

The ProLine materials testing machine product group was primarily developed for standardized tests on materials and components. Used in conjunction with the intuitive testXpert II software, ProLine materials testing machines are fast and very easy to operate.

Made in Germany

ProLine, including all mechanical, electronic and software components, together with the extensive range of accessories are developed and produced at Zwick Roell's production facility in Germany and are therefore ideally matched to each other. This means that zwickiLine is an extremely high-quality product and also allows Zwick to offer the best possible support.

Powerful drives

Extremely low minimum speeds can be set, combined with excellent speed-constancy. The drive also delivers high crosshead travel resolution; this is important in tests on components requiring a high degree of travel-precision and in tests on specimens with high levels of stiffness and low travel, for example.

The high test speed range can be used without restriction. In addition, test loads up to 110% of the machine nominal load are permissible to compensate for heavy combinations of test fixtures, accessories etc.

The faster return speeds reduce cycle times and increase test throughput, with AC drive technology ensuring that the motor is maintenance-free.

Precision crosshead guides

ProLine's moving crosshead is guided very accurately via two steel columns, enabling precise force application to the specimen. This is advantageous for flexure, tests, compression tests, precision tests on components etc.

Exclusively from Zwick: Xforce load cells

ProLine materials testing machines are equipped with Xforce load cells developed and manufactured in the Zwick Roell Group. The effect of parasitic influences (such as temperature and transverse forces) on test results is significantly less than with other, comparable load cells. In addition, Xforce loads cells are very stable and less sensitive to transverse forces in compression and flexure tests, for example.

Short delivery times

The very short delivery time of 2 weeks for ProLine materials testing machines means that pending tests can quickly be tackled without losing valuable time.

Safety for you and the entire testing system

Features ensuring safety include the 2-channel (= double safeguard) safety circuit, operating-mode selector-switch, Drive Off switch and motor holding brake.

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Powerful, innovative testControl II electronics

zwickiLine is equipped with testControl II digital measurement and control electronics, mounted vertically on the load frame for better protection against ingress of liquids or conductive particles.

testXpert II – intelligent and reliable

testXpert II testing software and testControl II electronics are perfectly matched, ensuring safe, efficient, reliable operation of the testing machine. testXpert II offers the optimum solution for any testing requirement.

Eco mode

testControl II automatically switches to eco mode when not in use, saving energy.

Built-in safety in accordance with EC Machinery Directive

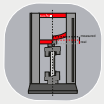
The statutory safety requirements of the EC Machinery Directive are implemented in all Zwick machines, which are accompanied by an EC Declaration of Conformity on delivery. Only the latest safety technologies and proven industrial components are used. A very high level of safety is guaranteed for user, test results, specimen material and testing system.

Ergonomic remote control with display

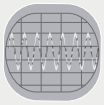
The entire test can be performed via the display-equipped remote control unit, independently of the PC. In addition, rapid, high-precision positioning is possible via the rocker switch with integrated thumbwheel.

Overview of key advantages of testControl II electronics

Flexibility through modularity
testControl II provides 6 flexible, time-synchronized slots, enabling several sensors to be in use at the same time, with monitoring and protection, regardless of use.



Machine compliance correction
The high-quality drive technology and online machine compliance correction enable extremely accurate travel measurement and positioning.



High data transmission rate
High data transmission rate (2000 Hz) allows fast measurement combined with maximum reproducibility. This is highly advantageous for rapid tests, short brittle fracture events and for tear growth, adhesion and peel tests, for example.

System monitoring
Detailed information regarding current status and usage level of testing equipment greatly simplifies processes such as planning maintenance and spares/replacement procurement.

Fast, adaptive drive-controller
The high drive control frequency of 1000 Hz enables fast, precise force and strain control. Benefits include enabling components to be loaded very quickly and accurately with the specified force.

In addition, all control parameters required for fast, accurate approach to target positions are automatically set, enabling time and cost savings by eliminating the need for time-consuming pre-tests.

Maximum accuracy
High (24-bit) measured-value resolution for maximum test-result accuracy and reproducibility. This means for example that even minimal force changes on the specimen can be recorded and displayed accurately.

Innovative interfaces
E.g. time-synchronised EtherCat® bus system allows future-proof sensor integration to be taken for granted.

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Data	Value
Load frame	
Finish	RAL 7021 black grey, stainless steel metallic, RAL 3031 orientred
Ambient temperature	+10 ... +35 °C
Air humidity	20 ... 90 %
Conformity	ISO 9000 and CE
Drive system	
Motor	AC servo-motor
Input signal, set-value preset	digital (real-time Ethernet, EtherCAT®)
Controller / Cycle time	adaptive / 1000 Hz
Positioning, repetition accuracy	±2 µm
Permissible feedback energy	Up to 50 % machine utilization
Measurement and control electronics	
Number of slots available for measurement and control modules	2 synchronized module bus slots (expandable to 5)[1] 1 synchronised PCIe slots
Force measurement	grade 0.5 / 1 see load cell, to DIN EN ISO 7500-1, ASTM E4,
Measurement range	up to 165 % of F_N
Calculated resolution (e.g. in tensile / compression direction)	24 bits
Data acquisation rate, internal	400 kHz
Test data transmission rate to the PC	500 Hz (optional 2000 Hz)
Zero-point correction	automatically at measurement begin
Measurement signal runtime correction for all channels	yes
Interface for PC	Ethernet
Eco Mode	yes, power section automatically switched off (time adjustable)
CE conformity	yes, according to machine guidelines 2006/42/EG
Power ratings	
Electrical connections	230 VAC
Range of tolerance	± 10 %
Mains frequency	50/60 Hz

[1] A DCSC module is included in delivery (occupies one module bus slot).

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Type Item number	Z005TN 059008	Z010TN 059010	Z010TH[2] 059011	Z020TN 059012	Z030TN 059013	Z050TN 059021	Z100TN 059022	
Load frame								
Test load F_N in tensile/compr. direction	5	10	10	20	30	50	100	kN
Test area width	440	440	440	440	440	440	640	mm
Height of test area (dimension A)[1]	1070	1050	1450	1050	1370	1370	1360	mm
Max travel of moving crosshead[1]	1000	980	1380	980	1285	1285	1275	mm
Height	1331	1331	1731	1331	1743	1743	1829	mm
Width	770	770	770	770	850	850	1070	mm
Width with electronics console	917	917	917	917	1000	1000	1205	mm
Depth	358	358	358	358	456	456	602	mm
Depth with electronics console	439	439	439	439	462	462	645	mm
Total weight with electron. console	110	135	150	135	330	330	530	kg
Lower mounting stud dia. (included in scope of supply)	20	20	20	36	36	36	60	mm
Noise level measured at maximum test speed	59	57	57	58	68	69	71	dB (A)
Drive unit								
Crosshead speed v_{min} ... v_{Nenn}	0,0005 ... 1500	0,0005 ...1000	0,0005 ...1000	0,0005 ... 500	0,0005 ... 300	0,0005 ... 600	0,0005 ... 300	mm/min
Increased crosshead return speed (at reduced force)	2000	1500	1500	750	500	800	400	mm/min
Drive system's travel resolution	0.039	0.038	0.038	0.018	0.012	0.016	0.0081	µm
Positioning, repetition accuracy	± 2	± 2	± 2	± 2	± 2	± 2	± 2	µm
Power ratings								
Electrical connections (adjustable)	1 PH, N, PE							
Mains frequency	50/60	50/60	50/60	50/60	50/60	50/60	50/60	Hz
Power rating	0.8	0.8	0.8	0.8	0.8	1.2	1.2	kVA

[1] Without accessories
[2] At testing machine Z010 TH the maximum total weight of in the moving crosshead inserted specimen grips and tools is limited to 20 kg

All data at ambient temperature.