Small Tensile Testers for universal usage

Z3, Z5

Z10

Z20, Z50

Standard Machines

for tension and compression

made of massive Aluminum and stainless steel ball bearings and ball screws
bellows to protect guides
microprocessor controlled standalone (working without external computer)
Interface USB
2 line LCD shows force and distance for Standalone Modus
measuring length with Encoder
Accuracy to be seen on LCD 0.01 mm (internal 0.0001 mm)
Standard load cell: 0.03% linearity with calibration certification

Guaranteed Resolution with a standard load cell ±100 000 parts 50 Hz per second

Resolution with 50 measures per second (10kN/200000 = 0.05N or 0.011lbf)
If it is necessary resolution can be switched up to 2 000 000 with less speed 6.25 values per second – useful only with special high precision load cell. OR we can increase speed up to 3000 values/sec with less resolution

Optional we can add a second channel for a second load cell or an extensometer

Scope of delivery
Machine, Load cell, 220 Volt cable, USB cable, Software on CD, Description ,CE conformity declaration, packing

(10kN = 2248 pound)

Software (intern) for Stand Alone Usage

The basic version of the machine includes a program to determine the maximum Force and way
A routine to determine the max. Breaking force and Distance
This simple measurements are possible without a PC.

During the experiment force and displacement values are send via the USB interface
After the end these values are visible in the display.
In addition, the machine can be operated in the constant force mode.
Here, a preset force is maintained over a defined period
The program in the machine is changeable via USB

Languages: German, English, Spanish, French, Danish, Italian

Variants
Z3-X500 3 kN small universal tester 500mm Hub, free traverse distance 66mm
Z5-X500 5kN dto but 5kN
Z3-X1200 dto but 1200mm Travel
Z5-X1200 5kN dto but 5kN.
Z10 ..Z100 higher stiffness 2 column Version
Z10-X700 2 10 kN Version 700 mm, free traverse distance 400mm
Z10-X700-W600 dto, free traverse distance 600mm
Z10-X700-W800 dto, free traverse distance 800mm
Z10-X1200 but 1200 mm travel
Z10-X1200-W600 dto, free traverse distance 600mm
Z10-X1200-W800 dto, free traverse distance 800mm
Z20-X700, X1200 Z20, Z50-X700, X1200-Z50, Z100-X1200 two-spindle design with 700mm or 1200mm traverse 20, 50 or 100 kN AC servo drive system

	Z3		Z5		Z10		Z20		Z50		Z100	
Max Force [kN]	3		5		10		20		50		100	
Max speed [mm/Min]	700		700		600		1050		1050		600	
Min speed [mm/Min]	0.025		0.025		0.025		0.033		0.033		0.033	
Smallest distance to Adapter [mm]	66		66		200		212		212		228	
Adapter Size [mm]	15.9		15.9		15.9		31.8		31.8		40/12	
Motor [watt]	50		90		170		800		1600		2400	
Voltage [~V]	220/110V		220/110V		220/110V		380V		380V		380V (min 260V)	
Ampere	1A		2A		2A		10A		10A		10A	
Noise	55dBA		55dBA		57dBA		55dBA		55dBA		55dBA	
Motor type Producer	AC-Servo		AC-Servo		AC-servo		AC-Servo Stöber		AC-Servo Stöber		AC-Servo Stöber	
Stiffness [N/mm]	2700				12000							
Movement [mm]	500	1200	500	1200	700	1200	700	1200	700	1200	700	1200
Weight [kg]	36	55	37	56	80	105	235	260	245	270	380	420
Dimensions [mm]	1036 390 300	1677 390 300	1036 390 300	1677 390 300	1226 *640 *240	1726 640 240	1317 1071 433	1837 1071 433	1317 1071 433	1837 1071 433	1450 1090 590	2050 1090 590
Packing Dimensions [mm]	1150 *500 *400	1800 *500 *400	1150 *500 *400	1800 *500 *400	1315 *740 *400	1916 740 400	1900 1200 800	1900 1200 800	1900 1200 800	1900 1200 800	1600 1200 800	2100 1200 800

DMS AD converter

Resolution: 24 bits at 6:35 conversions per second
21 bits at 50 measurements per second

Guaranteed displayed resolution: ± 200 000. Share with about 50 measurements per second
(Setting for standard delivery)

If necessary, the measurement speed can be changed.

** A max. Is the resolution of 2 million parts with a precision load cells sense all values are approximate values

For a supplement, 2nd input for a DMS encoder or a 2nd load cell is possible
Load cell: 0.03% linearity (with certificate)

Minimum range	25%	b) service load	100%
Combined error	<+/- 0.04%	c) max. permissible load	120%
Nono repeatability fs	<+/- 0.01%	d) breaking load	>300%
Creep % fs 30 min: 20 min	<+/- 0.03	e) max. side load	100%
Temperature effect 10°c		Protection class 50..kN	IP64
On zero	<+/- 0.05%	2kN … 100kN	IP65
On span	<+/- 0.1%	Potted and seal	50N ... 5000N
Normal sensitivity +/-0.01	3mV/Volt	Potted and metal seal	10kN … 200kN
Input resistance	385 +/- 10 Ohm	Nominal temp… Range	-10/+40°C
Output resistance	350 +/- 3 Ohm	Service temp… Range	-20/+70 °C
Zero balance fs	+/- 1.0%	Cell material (nickel plated)	Tool steel
Supply voltage	5V – 15 Volt	Cable	Ø 5 X 5 meter

Sound

28 dBA without load
41 dBA with a speed of 100mm/min
56 dBA with a speed of 500mm/min

The machine series, Z3-Z10 are provided with transformers for 110/220V.
We deliver a voltage selector for Z3 and Z10 to work on 110-115V and 220-240V with 50-60Hz net.
Standard machines are configured to work in 220V mode

Windows Program

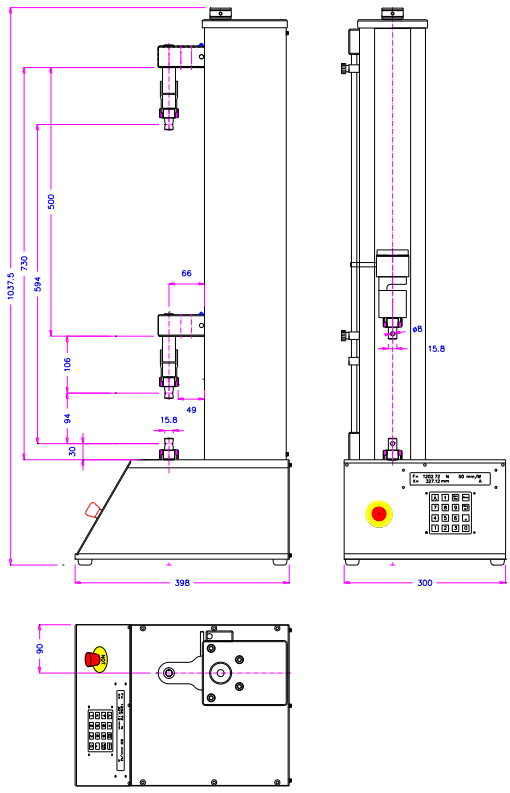
The package includes a windows program for controlling, recording, display and saving data.
Through this programme, the force and distances will be presented, compared and stored.

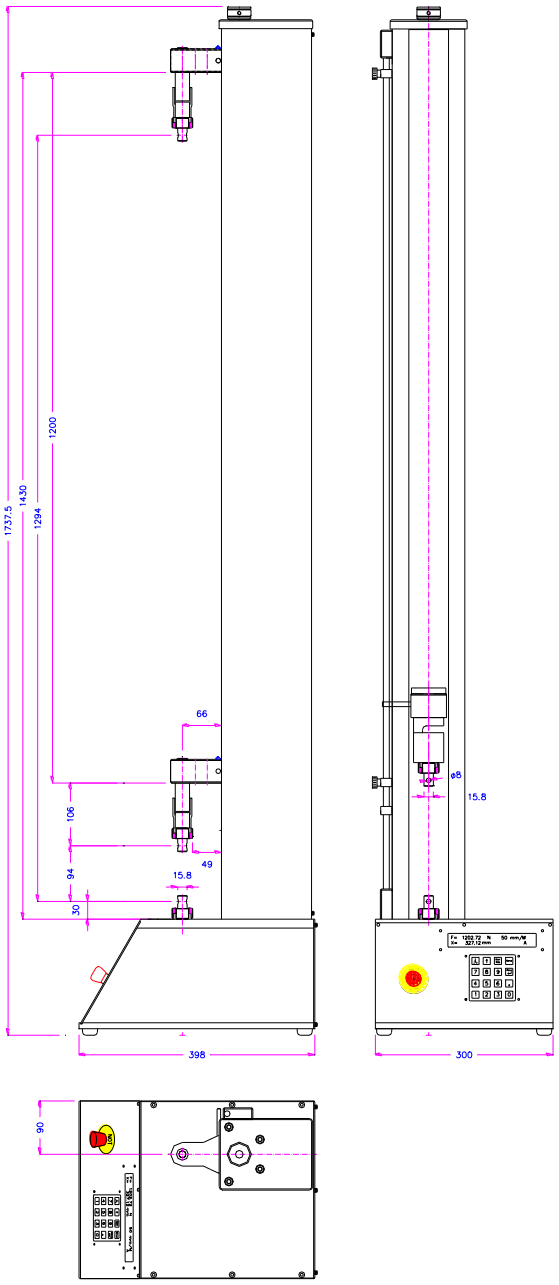
- Graphic prints single or multiple traces
- Statistics of the maximum values (average and standard deviation)
- Export function for excel, text format
- Force-displacement diagram, stress-strain diagram
- individual values can be selected and displayed mouse controlled.
- Parts of the curve can be shown greatly enlarged by a zoom function.
- Curves can be shifted so that they intersect at a force value.
- Several curves can be stored loaded and compared

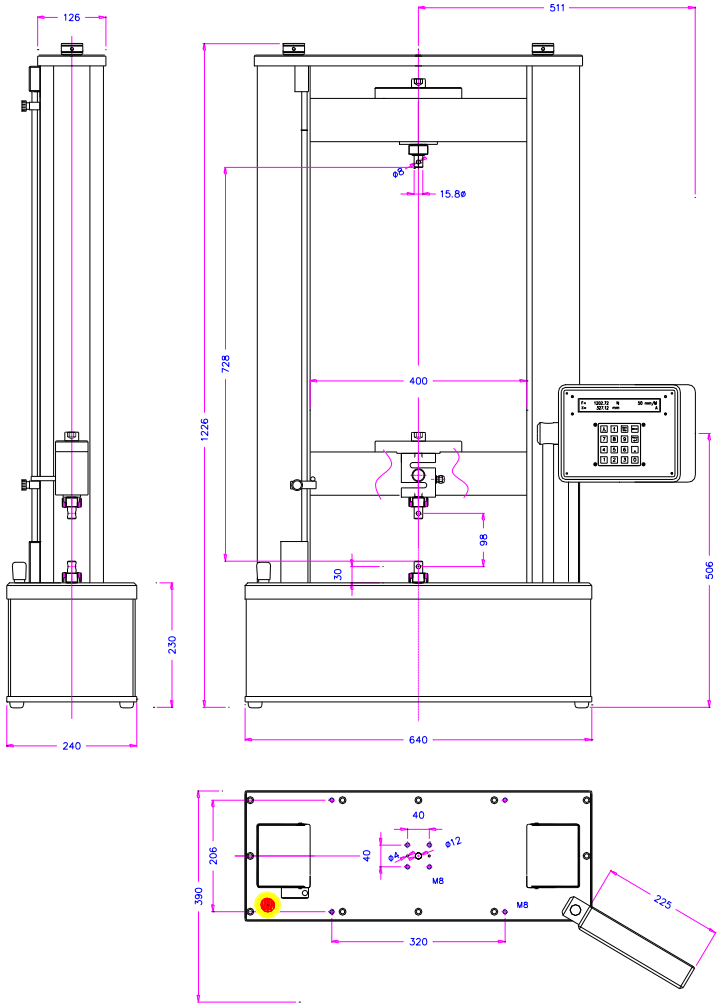
Operating system: Win XP (32-bit version only), Vista, Win 7, Win 8, Win 10

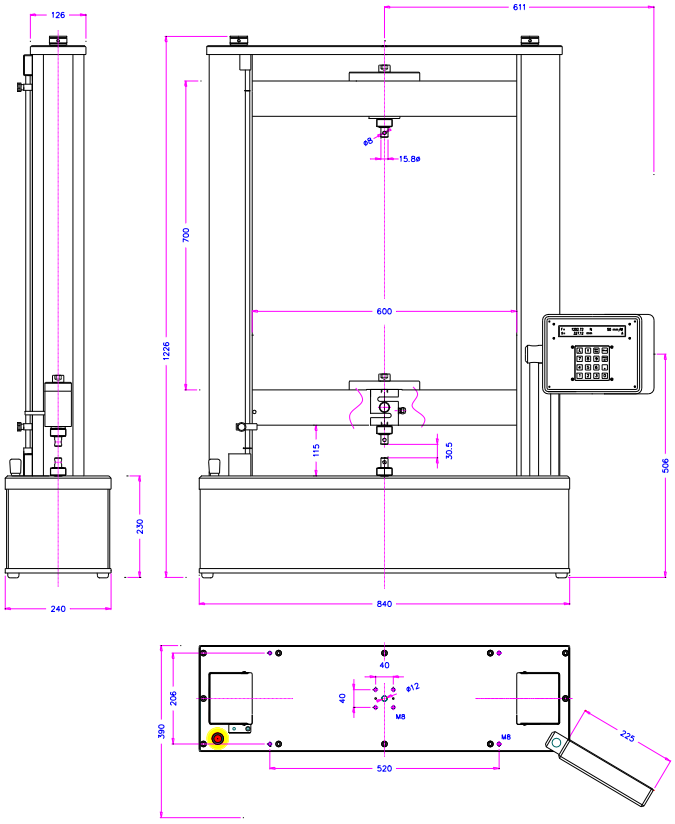
Hardware Requirements for PC

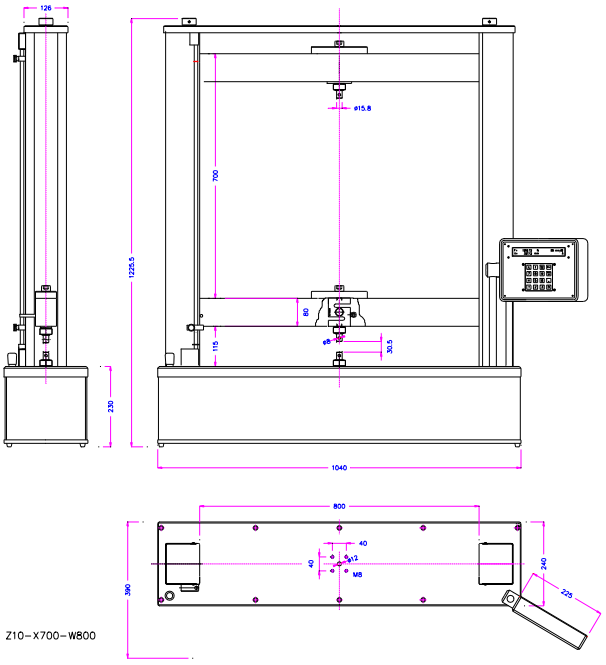
1. USB 2.0 communication port.
2. CPU: Dual Core 1.6 GHz or higher
3. RAM: 2 GB or higher
4. 1024x768 screen resolution or higher
5. Mouse or touch-pad (notebooks)
6. Keyboard

Z3-X500 Z5-X500 3kN, 5 KN version	500mm movement small universal tensile tester
	 Z3−X500 Z5−X500

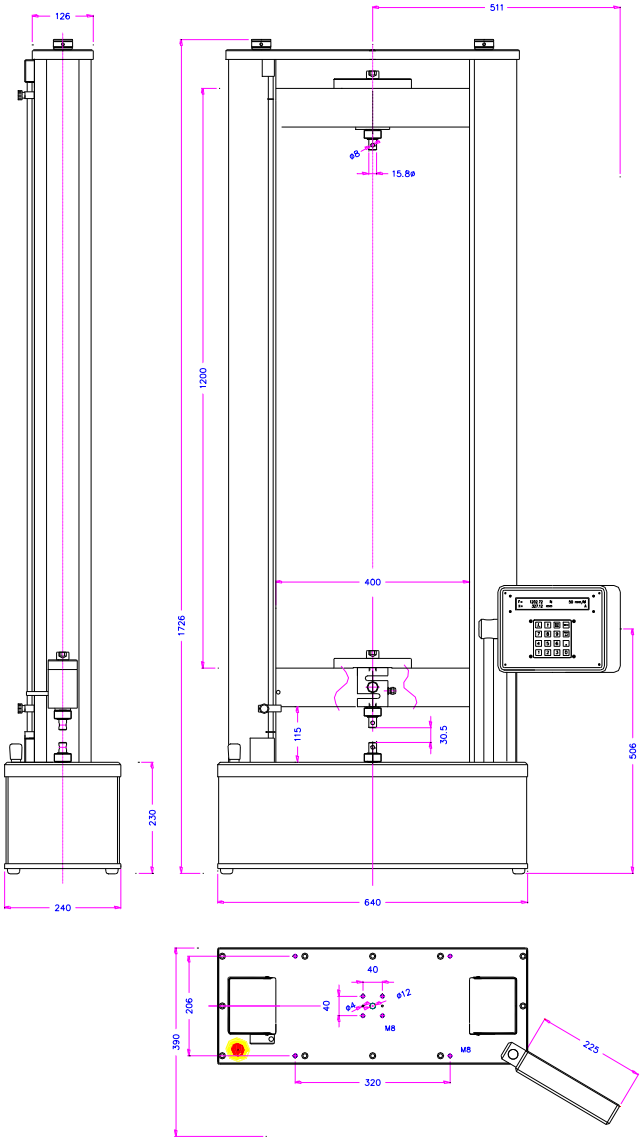
Z3-X1200 Z5-X1200 1200mm	3kN, 5 KN version movement 1200mm
	 Z3−X1200 Z5−X1200
	Z3-103-55 to increase distance of free space for single column tester from 66mm to 121mm

Z10-X700	10kN 700mm 400mm width
	

Z10-X700-W600 600mm width	10kN 700mm 600mm width
	 Z10−X700−W600

Z10-X700-W800 800mm width	10kN 700mm 800mm width
	 Z10−X700−W800

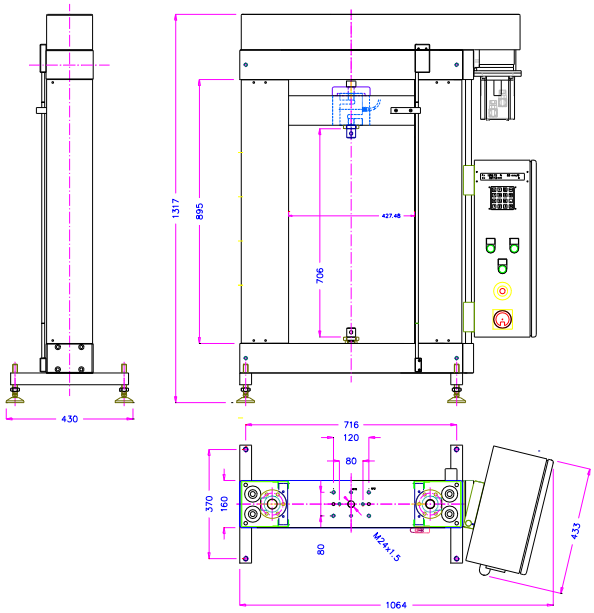
Z10-X1200



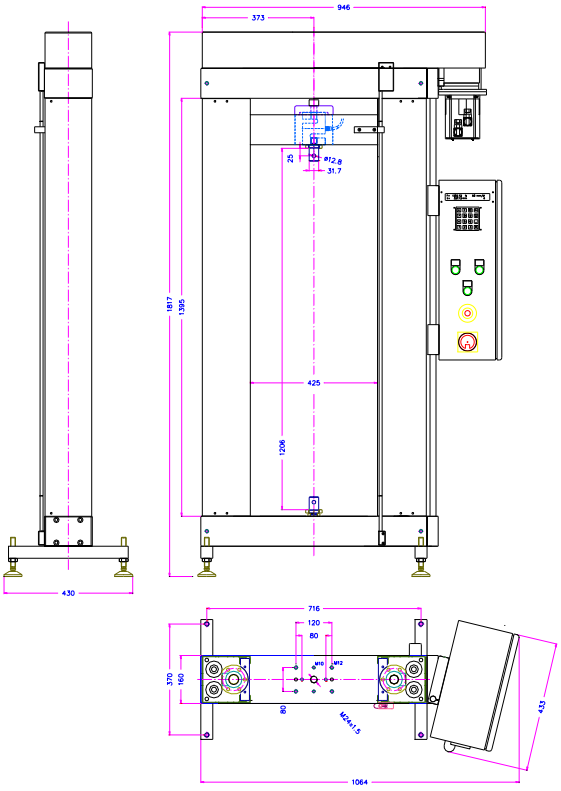
Z10−X1200

Z10-X1200-W1000

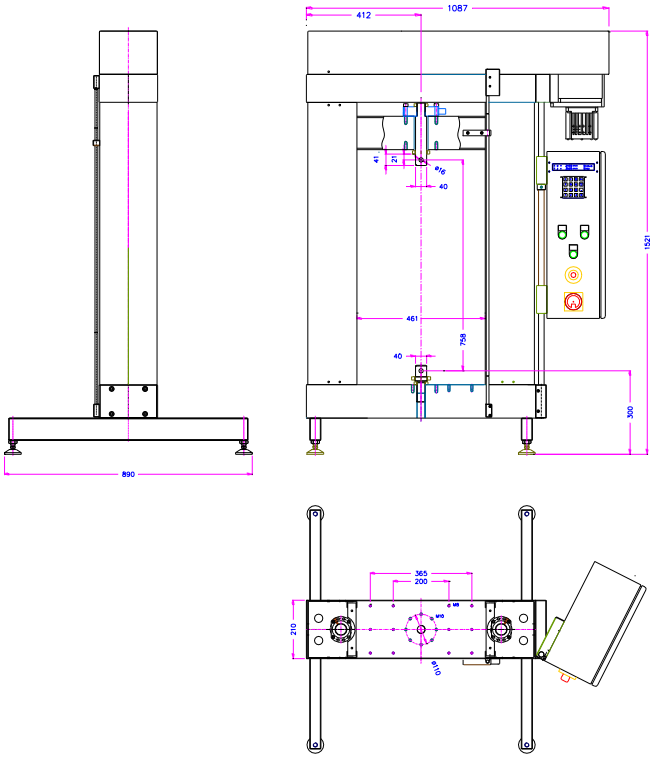
Z20-X700 Z50-X700



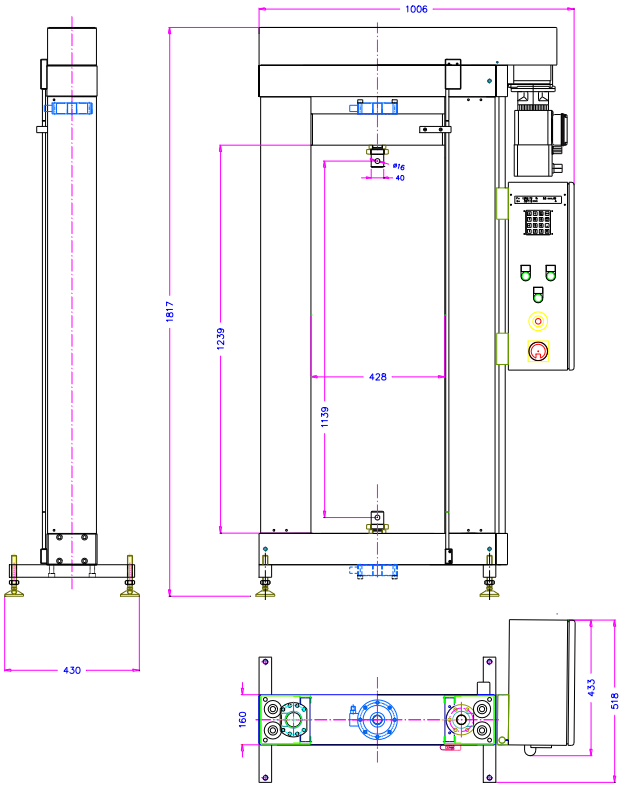
Z50-X1200 + TH175-50



Z100-X700

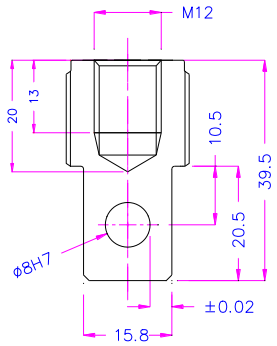


Z100-X1200



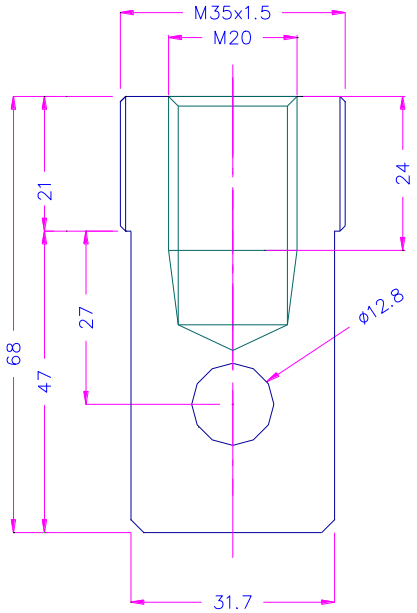
Adapter Options

Adapter Z3, Z5, Z10

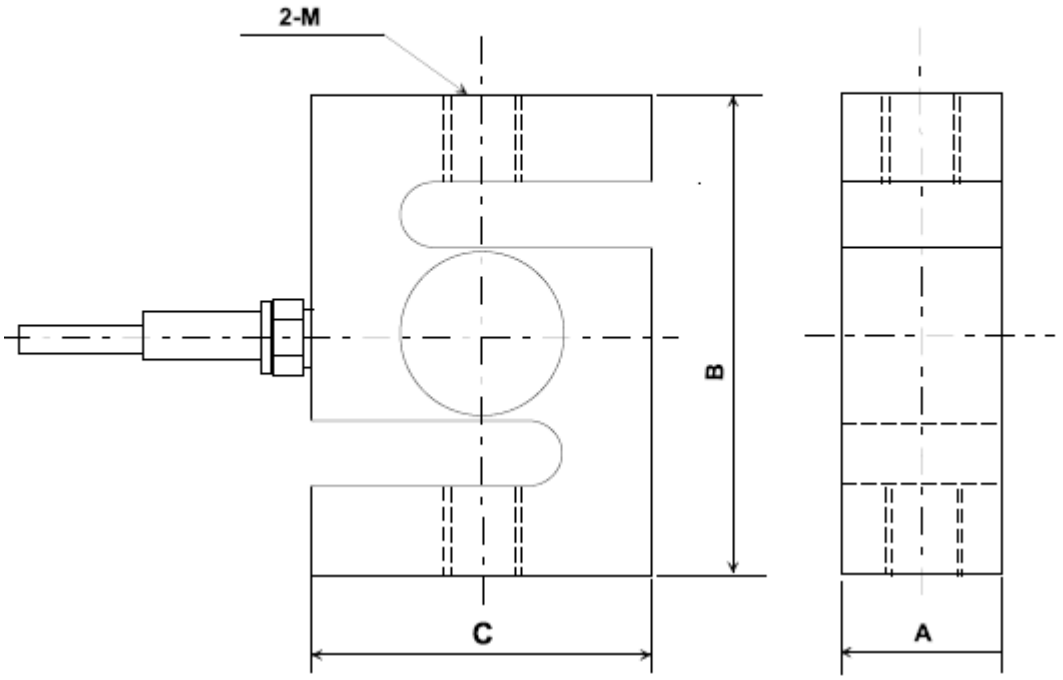


THS438–158–M12

Adapter Z20, Z50



THS438–317–M20



Capacity:	A	B	2-M	C
50N – 500N	12.7	64	M8*1.25	51
1kN – 5kN	19.1	76	M12*1.75	51
10kN - 1.5kN	25.4	76	M12*1.75	54
20kN**	25.4	82	M18*1.50	58
20kN - 30kN	25.4	108	M20*1.50	76
50kN	25.4	108	M20*1.50	76
100kN	51.0	178	M30*2.0	127

** 20kN can also be supplied same size as 30kN

Capacity: 50N - 100kN Tool Steel

Sensitivity	mV/V	3+/-0.01
Non linearity	%FS	+/-0.02
Hysteresis	%FS	+/-0.02
Repeatability	%FS	+/-0.01
Creep	%FS/30min	+/-0.02
Zero balance	%FS	+/-1
Zero temp. drift	%FS/10°C	+/-0.2
Span temp. drift	%FS/10°C	+/-0.2
Supply voltage	V	max. 15 (AC/DC)
Temp. compensation range		-10 - +50 °C
Input Impedance		385+/- 10 Ohms
Output Impedance		350+/- 3 Ohms
Safe overload	%FS	150

Cable mm Ø5 x 5000
4 wire
Input+ : Red, Input-: Black
Output+: Green, Output-: White
Cable screen is not connected to load cell body

Gauge area protected by metal plate and Potting protection in high quality.

Example for a local calibration

Willemsen Prüfservice

Kalibrierlaboratorium für Werkstoffprüfmaschine "Kraft"

Willemsen Prüfservice
Daimlerstrasse 47
D-76316 Malsch

Tel.: +49 / (0)7246 - 943 314
Fax: +49 / (0)7246 - 943 315
Email: Antonius.Willemsen.WPS@t-online.de

Kalibrierschein

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Kalibrierzeichen

2006
WPS
0261
08-06

Gegenstand: Machine Hersteller:	**Kraftaufnehmer 3 kN** TH2730-04-585-2006 **Nordic Transducer**
Typ:	**Z-Profil - PA610**
Seriennummer:	**51 61 48** (2.983 mV/V / KF=1.000)
Auftraggeber:	Thümler GmbH 90455 Nürberg
Standort:	Montage 1. Stock Rechts
Auftragsnummer:	125/2006/0260 (Abnahme)
Anzahl der Seiten des Kalibrierscheines:	3
Datum der Kalibrierung:	**31-08-2006**
Gültig bis:	Ende 08-2007

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums.

Stempel	Datum	Leiter des Laboratorium	Bearbeiter/Prüfer
W.P.S. Daimlerstr. 47 76316 MALSCH	31-08-2006	Antonius Willemsen	Antonius Willemsen

Willemsen Prüfservice Kalibrierschein "Kraft"

2006
WPS
0261
08-06

Seite 2 von 3

Kalibriereinrichtung:	5 kN 1110AF - DKD-K-15501-N 0904-05-10
Anschlussmessunsicherheit:	0,07 % der eingestellten Kraftstufe

Angaben zur Kalibrierung

Umgebungstemperatur:	22 °C

Angaben zum Aufnehmer

Nullsignal:	-0,00294 mV/V	Krafteinleitung:	DIN 376

Angaben zum Kabel

Länge:	3,15 m	Verlängerung:	Keine
Ausführung:	6 - adrig	Ausgeberanschluss:	6-Leiter

Angaben zum Ausgeber

Verstärkertyp:	USB-1	S. Nummer:	237
Messbereich:	+/- 7,5 mV/V	Messstelle:	Kanal 1
Speisespannung:	5V DC	Filter:	Keine
Kalibriersignal:	3,78397 mV/V	Anschlussart:	6-Leiter

Angaben zum Anzeiger

Anzeigertyp:	Notebook	Software:	ISO 7500

Kalibrierverfahren

-1- 3-malige Vorbelastung vor Kalibrierung in der jeweiligen Kraftrichtung mit 100 % der Nennkraft.

-2- Dokumentieren der Anzeigewerte bei zunehmender Kraft: Messreihe R1, R2 und R3.

Willemsen Prüfservice Kalibrierschein "Kraft"

2006
WPS
0261
08-06

Tabelle 1 — Anzeigewerte in Richtung: Druck in N

unveränderte Einbaulage

Kraft in N	R1	R2	R3	Mittelw.	Anz. Abw. in %	rel. Spannw. in +/-%
0	0,0	0,0	0,0	0,0	0,0	0,00
300	300,290	299,900	300,040	300,077	0,03	0,13
600	600,800	600,060	600,400	600,420	0,07	0,12
1.200	1.199,600	1.199,000	1.198,400	1.199,000	-0,08	0,10
2.000	1.998,000	1.999,400	1.999,400	1.998,933	-0,05	0,07
3.000	2.997,000	2.997,500	2.998,000	2.997,500	-0,08	0,03
0	0,000	0,000	0,000	0,000		

Tabelle 2 — Relative Restanzeigen bezogen auf Kalibrierhöchstkraft.

R1	R2	R3	Mittelw.
0,00	0,00	0,00	0,00

Ergebnisse sind auf 0,01 % gerundet

Tabelle 3 — Anzeigewerte in Richtung: Zug in N

unveränderte Einbaulage

Kraft in N	R1	R2	R3	Mittelw.	Anz. Abw. in %	rel. Spannw. in +/-%
0	0,0	0,0	0,0	0,0	0,0	0,00
300	299,700	299,000	299,400	299,367	-0,21	0,23
600	598,600	598,000	597,200	597,933	-0,34	0,23
1.200	1.195,600	1.196,600	1.197,000	1.196,400	-0,30	0,12
2.000	1.994,000	1.994,000	1.994,400	1.994,133	-0,29	0,02
3.000	2.991,100	2.991,100	2.991,500	2.991,233	-0,29	0,01
0	0,000	0,000	0,000	0,000		

Tabelle 4 — Relative Restanzeigen bezogen auf Kalibrierhöchstkraft.

R1	R2	R3	Mittelw.
0,00	0,00	0,00	0,00

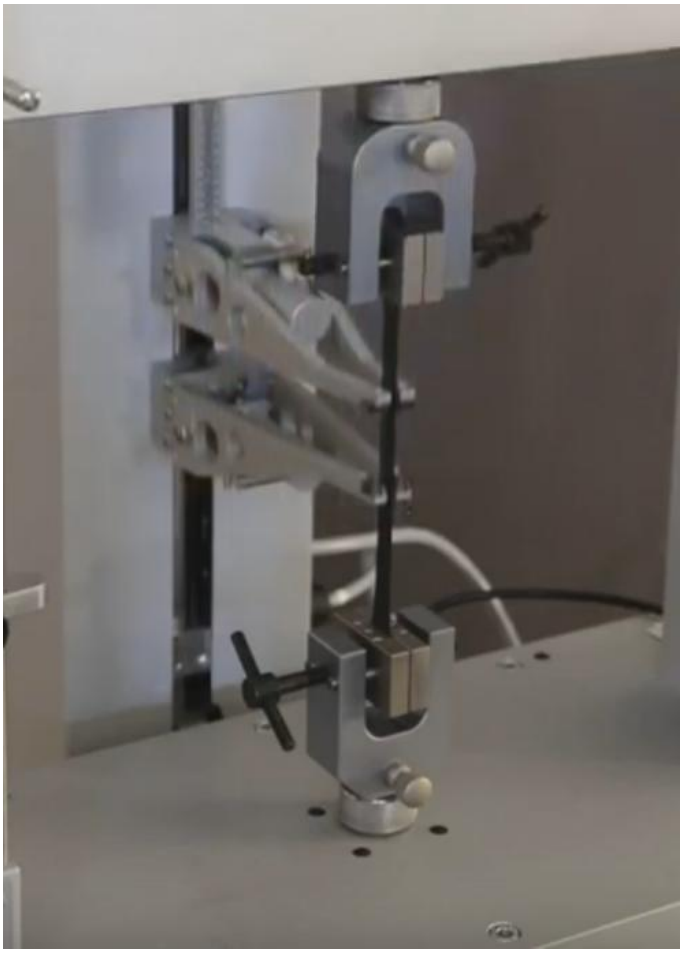
Ergebnisse sind auf 0,01 % gerundet

Videos on youtube	
http://youtu.be/vCEDAM73lG0	Z10 fix grip and sample
http://youtu.be/7Rm7jjNw0aM	Z10 a test with the tensile tester
http://youtu.be/xHcOG2hYQLQ	Z10 tensile test of a rope Windows Program
http://youtu.be/rfBVbZLSV9I	Z10 Menu
http://youtu.be/H2-3eP7H3JU	Z10 set constant force regulation

Special versions	
Z3-x500 90° TH4300	
	
Z20-X3500-W800-pdr	Extra-long version with door
	

Z10-x1200 with MFE900
long way extensometer

https://youtu.be/sEcUyzkL7fc



30.9.2019 mt