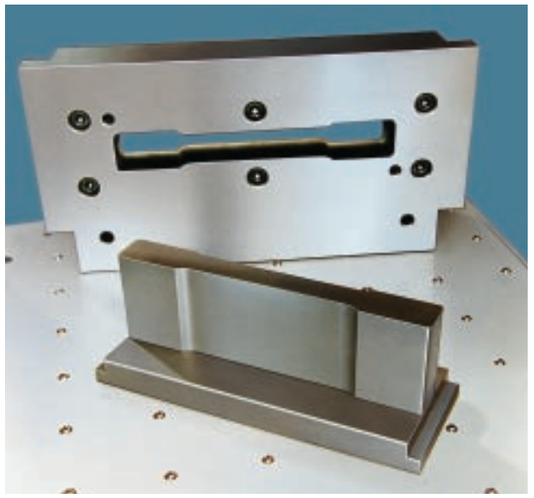
Product information

blanking machine (with enlarged table H08.7110.500)



blanking tool

Range of application

- blanking machines to cut out test pieces 0.2....6 mm thick, for cutting forces of 200/500 and 1000 kN
- blanking machine to cut out test pieces 0.2....8 mm thick for cutting forces of up to 1500 kN
- sample finishing machine for the removal of the strain hardened zone

Special characteristic features

- reliable production of test specimens from sheet metal by means of blanking tools corresponding exactly to the customer's specification
- economic production of test specimens due to a low cutting velocity and to the particular shape of the blanking tool
- the form of the blanking tool is determined by the customer
- the blanking tool to be selected depends on the specimen thickness. Thus, the optimum cut is obtained
- the guaranteed parallelism of the test pieces with the sample finishing machine is better than 0.02 mm
- long edge life of the blanking tools and possibility of repeated resharpening

Zwick / Materials Testing

Specimen preparation for metal
Zwick blanking and sample finishing machines 71XX

Principle
The appropriate and accurate extraction and preparation of the test pieces is the first step to precise test results. National and international standards as well as in-house specifications are determining the geometry and the dimensions of these test specimens. The way of their production depends on the basis material.

Blanking machines Zwick 7115, 7116, 7117, 7118
Test specimens from sheet metal and metallic films are nowadays economically and precisely produced by means of blanking machines. The current test standards, as e.g. DIN 50114, EN 10002, ASTM A 370, BS 18 however require that no alteration of the tested material by strain hardening the skin zone of the test piece should influence the test results. Contrary to the cutting techniques with eccentric blanking machines, where the strain hardened zone can be up to 35 % of the specimen thickness, the blanking machines Zwick 7115...7118 are leading to cuttings of a remarkably better quality. Even the milling is not suitable if you consider the prescribed standard surface roughness of 6.3 µm. Numerous structure examinations on sheet steel made evident that the strain hardened skin zone along the cutting line regularly does not exceed 10 % of the specimen thickness.
This result is achieved due to the low cutting velocity and due to the particular shape of the cutting tool.
It offers a great economical advantage for the consecutive finishing process by grinding the test piece.

Design and function
The blanking machines consist of a rigid, closed frame, a hydraulic system with power pack, requiring almost no maintenance, as well as hydraulic cylinder and piston with connecting- and control elements.

Blanking machine with C-frame
The open frame of blanking machine and blanking tool (C-frame) allows to blank out the test pieces from plates.

Blanking machine with closed frame
The closed version (O-frame) however requires precut strips of 70..80 mm width.
This blanking machine is already equipped with an enlarged table. Optionally it is possible to supply this enlarged table version with rollers also.

Use of several blanking tools
If several blanking tools are being used, the blanking machine can be ordered with enlarged table, table version with rollers, so that the blanking tools can be „deposited" if they are not needed.

Blanking tools
The blanking machines for cutting forces of 200/500/1000 kN are suitable for the following material thicknesses: 0,2.....1,2 mm; 1,2.....3 mm; 3....6 mm.
The blanking machine with a cutting force of 1500 kN can additionally be equipped with a blanking tool 6...8 mm.

Form of blanking tools with the dimensions in mm:

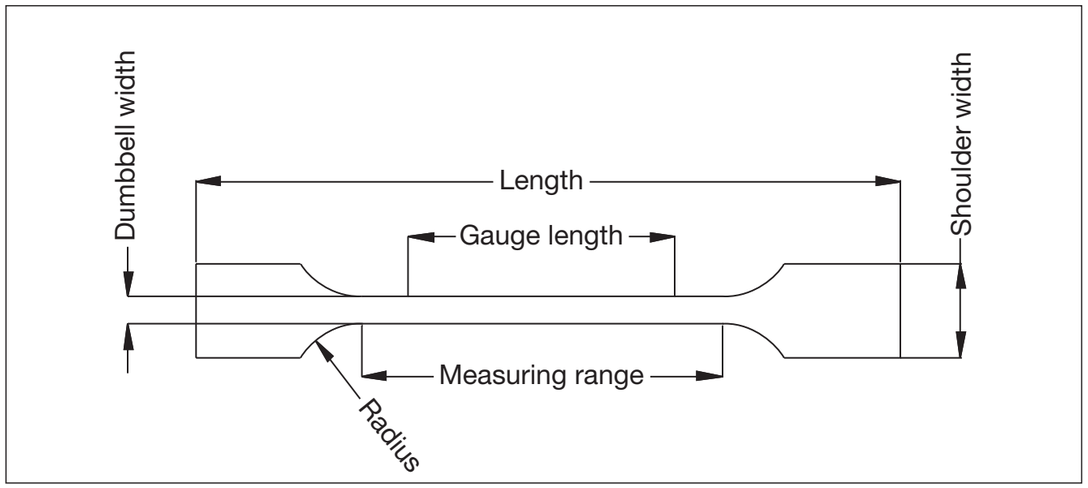
Standard	Length	Dumbbell width	Shoulder width	Gauge length	Measuring range	Radius
EN 10002 Form 1	250	12,5	20	50	75	20
EN 10002 Form 2	250	20	30	80	120	20
ASTM A 370	250	12,5	20	50	60	20
JIS Z 2201 No. 5	250	25	30	50	60	20
BS E 18 20 x 80	250	20	30	80	90	25
BS E 18 12,5 x 50	250	12,5	20	50	> 56,25	25
Strip specimen ASTM A 370	250	-	12,5	-	-	-
Strip specimen DIN 50114	250	-	20	-	-	-

Modifications have to be in written form using the enclosed drawing „tensile test bar" indicating the blanking measure per side

Formula for the calculation of the required cutting force

Cutting edge length (circumference) L	mm
Thickness of the sheet steel, So	mm
Strength of material, σB	N/mm^2
Cutting force, P	kN

$$P = \frac{L \times So \times 0{,}8 \times \sigma B \times 0{,}6}{1000}\ kN$$



Blanking machines Zwick 7115...7118 for exchangeable blanking tools

Model	Zwick 7115	Zwick 7116	Zwick 7117	Zwick 7118
Max. cutting force	200 kN	500 kN	1000 kN	1500 kN
Structural shape	C-shape	C-shape	O-shape	O-shape
Material to be cut	plates	plates	strips	strips
Piston stroke	28 mm	28 mm	40 mm	40 mm
Strokes per minute	6	8	6	6
Electrical consumption	0,75 kVA	4 kVA	4 kVA	10 kVA
Standard version				
Dimensions width	500 mm	500 mm	1500 mm	1500 mm
depth	530 mm	580 mm	960 mm	960 mm
height	1545 mm	1545 mm	1620 mm	1620 mm
Weight approx.	650 kg	780 kg	1500 kg	1800 kg
Item-No.	H08.7115.000	H08.7116.000	H08.7117.000	H08.7118.000
Enlarged table version			X	X
Enlarged table with rollers	H08.7110.500	H08.7110.500	H08.7117.500	H08.7117.500

The blanking machines Zwick 7115...7118 together with the sample finishing machine Zwick 7120 represent a system to produce test specimens to all current quality standards. The quality of these test specimen is easily reproducible at any time.
In addition to this, the system can be used in a very flexible way: individual test specimens can be produced without time-consuming preparations as well as quantities of 600 test specimens and more per day.

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Specimen preparation for metal
Zwick blanking and sample finishing machines 71XX

Sample finishing machine 7120
The strain hardened zone of the test specimens can be economically removed by belt grinding with the sample finishing machine Zwick 7120.
The high quality of the test specimens cannot be achieved with any other technique at considerable low effort.
The guaranteed parallelism of the test pieces is better than 0.02 mm, as recommended by the IDDRG. The grinding direction corresponds with the tensile direction. Therefore eventual processing traces have absolutely no influence on the test results.

sample finishing machine Zwick 7120

Design and function
For a proper functioning, a complete unit consists of the finishing machine with defined worktable (depending on the type of test specimen to be produced) and of the adapted template with specimen grip.
An abrasive belt which is available in various coarse graduations serves as the grinding tool.
The template with specimen grip is as the worktable to be chosen according to the desired shape of the test specimen. The specimen grip is manufactured so that it fits together with the indexing grooves of the guide carriage. Due to the index accuracy, a parallelism of the test specimen better than 0.02 mm is achieved.
The template can accept several test specimens at a time (up to an overall thickness of 12 mm) thus ensuring an economical work.
Optionally, a suction device for the dry- or wet suction of the grinding dust can be offered.

Sample finishing machine Zwick 7120

Max. specimen thickness (max. capacity of the template)		12 mm
Cutting velocity		15 m/s
Electrical consumption rotary current 230/400 V		0,75 kVA
Finishing		grey to RAL 7032
Dimensions	Height of table (working height)	1030 mm
	Width	650 mm
	Depth	450 mm
	Height	900 mm
Weight	approx.	150 kg
Item-No.	depends on the specimen shape	H08.7120.XXX

Test piece (Dumbbell type) to standard	Item-No.	Test piece (Strip type) to standard	Item-No.
EN 10002 Form 2	H08.7120.100	DIN 50114	H08.7120.160
EN 10002 Form 1	H08.7120.110	ASTM A 370	H08.7120.170
ASTM A 370	H08.7120.120		
BS E 18 20 x 80 mm	H08.7120.130		
BS E 18 12,5 x 50 mm	H08.7120.140		
JIA Z 2201 No. 5	H08.7120.150		

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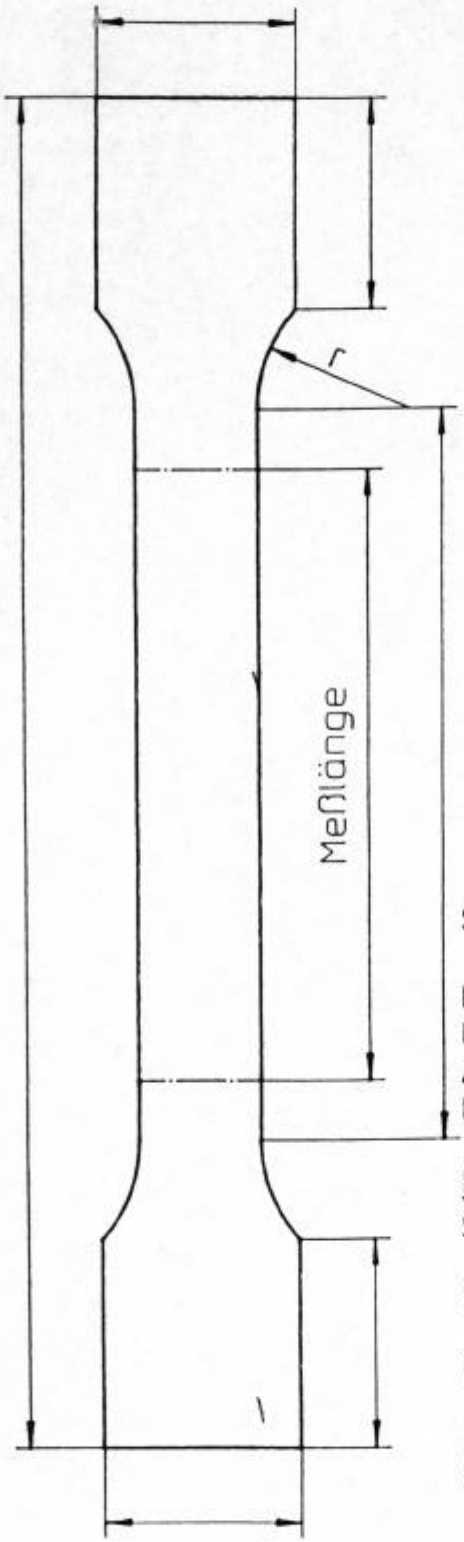

Zerreißstab

Blechdicke, So = _____ mm

Materialfestigkeit, σB = _____ N/mm²

Stanzaufmaß pro Seite = _____ mm

Stanzkraft, P = _____ kN

Formel zu Berechnung der Stanzkraft

$$P = \frac{L \times So \times 0{,}8 \times \sigma B \times 0{,}6}{1000} \quad \{kN\}$$

(L = Schnittkantenlänge in mm)

Specimen

Metal sheet thickness So = ... mm
Material strength δB = ...N/mm²
Added dimension, each side = ...mm
Punching force P = ... kN

Formula for the determination of the punching force

P =

(L = length of cutting edge)

(added dimension = required to remove the deformed edge due the punch, by grinding it)

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