

Notch Broaching Machine KRME

rational notch broaching impact test specimens ISO 148, ASTM E23, ASTM A370-NIST

The conventional production of specimens for notched bar impact tests involves considerable effort: The milled specimens must be aligned very precisely (extremely time-consuming), clamped and, depending on the specimen thickness (notch depth or residual thickness), milled exactly for precise milling of the notch.

A notch is inserted much faster (and much less expensively) with this notch-broaching machine. In addition, a higher precision of the notch is usually achieved. The notch depth plays an important role here. The notch angle, the radius in the notch base and the right angle to the specimen axis also must be ensured.

Especially when not hundreds of specimens are produced (which can then be processed simultaneously in packages - see our notch milling machine metal: Simultaneous milling and cutting of 24 notch impact specimens < 30 seconds), the notch broaching machine KRME is the better alternative: The entire setup time is eliminated: Insert specimen, clamp, start within seconds!

The KRME is very popular with service providers in materials testing, among others, since it is precisely here that the cost-effective, precise production of specimens is important. Also in industry, the cost optimization of specimen production should be reconsidered.

Now broaching work can be carried out by anyone (without prior knowledge of milling machines / machining) in their own laboratory.

For education purposes in universities, technical colleges and vocational schools, suitable specimens for didactic purposes can be produced very inexpensively from e.g. standard square material (DIY market).

By means of the illustrated notch broaching machine, the effort is reduced to a minimum since the notch to be inserted is basically not dependent on the thickness of the specimen. With the machine, the distance to the broach is set up by means of a gauge block so that the remaining specimen cross-section corresponds exactly to the standard.





The machine broaches V- + U-notches within 30 sec. (steel) or 15 sec. (plastic) incl. loading

The machine is mounted in a free-standing housing. The broach is guided by a precision linear rail. The speed can be selected very easily and steplessly on the motor controller by a rotary potentiometer. A significant advantage is that the machine operates with conventional power supply 230V/50Hz (other currency possible - no high voltage power supply). The desired notch depth can be set on the machine. The work piece holder is equipped with a metric calibration scale. Limit switches limit stroke the of the broach.

Only operating keys:

↑ / ↓ Manual / Auto Main switch + emergency stop

Extract from comparative tests of SIEMENS AG Kraftwerk Union KWU (notch broached / milled samples) "The results of the impact tests on specimens with broached notch (impact energy, toughness fraction, also of the instrumented test) agree well with the results of the specimens with milled notch. Notch broaching machines are suitable for producing standard-compliant notches of ISO-V specimens."

SIEMENS AG	Notch Radius	Notch Angle	Notch ground height	Remark				
Test-No. Set point	0,25 +/- 0,025	45° +/- 2°	8,0 mm +/- 0,075					
1	+	+	8,00	fulfilled				
2	+	+	8,01	fulfilled				
3	+	+	8,02	fulfilled				
4	+	+	8,01	fulfilled				
5	+	+	7,99	fulfilled				
6	+	+	8,01	fulfilled				
7	+	+	8,02	fulfilled				
8	+	+	8,01	fulfilled				
9	+	+	8,02	fulfilled				

Number of specimens that can be produced until re-sharpening/replacement of the broach

For alloys with high strength / hardness (max. 40 HRC), the use of titanium coated (TIN) broaches is required. However, this coating also significantly increases the service life of standard steels. The service lives given below are approximate guide values, as the grades of the steels can vary considerably due to alloying constituents. The service lives cannot be guaranteed - broaches are considered wear parts -.

Testing material made of	Tensile strength Rm MPa	Standard-broaching tool	Titan coated broaching tool
ST52	490 - 630 6.500 Proben		10.000 Proben
42 CrMo4 V	750 - 860	3.000 Proben	6.500 Proben
34 CrNiMo 6V	700 – 1.200	xxx	1.000 Proben
VA (18/10)	700 – 1.300	xxx	1.000 Proben
1.4548	1.200	xxx	1.000 Proben
1.3901 (24-28% Ni)		xxx	1.000 Proben
1.4986 WK	650 - 850	xxx	1.000 Proben
Titan		xxx	<u><</u> 200 Proben
Plastic		Hardly any wear	Not required

TIN-Coating

Standard-broaching tool

Machine data	
Machine type	: KRME 240 (240 mm broaching tool)
Specimen approximate	: 80 specimen / hour
Dimension width / depth / height ca. mm	: 500 / 310 / 1.050 broaching tool down / 1.290 up
Required space ca. mm	: 800 / 600 / 1.400
Weight ca. kg	: 90
Motor 230V	: 0,55 kW, 2.840 – 3.450 UPM, 120 stroke / hour
	Speed adjusting by potentiometer adjustment
Standard power supply : 230V/50 Hz 1,5 A / 230V-Schutzkontakt-Stecker	
Special power supply	: on request (110V/60Hz etc.)

speeds depending on material	Speed m / min. (from – to)		Position	
Stainless steel, Inconel	0,5	0,8	2	
Aluminum / Titanium	1,1	1,3	4	and the state of t
Carbon steel	1,6	1,9	6	H
Cast iron	2,1	2,4	8	
GRP / CFRP plastic	2,7	2,7	10	
Clean a	nd lubricate the hr	oach every stroke		

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https://www.youtube.com/watch?app=desktop&v=nALrp7VS0d8