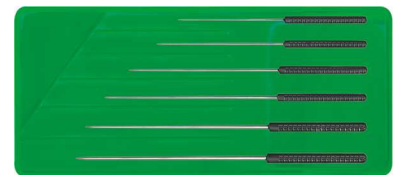


# 02



PIN VICES

02 - 2

CUTTING BROACHES

02 - 9

ASSORTMENT OF CUTTING BROACHES

02 - 11

SMOOTHING BROACHES

02 - 12

## PIN VICES

Pin vices are used to firmly hold items such as winding stems, cutting and smoothing broaches, drills, taps, wires, screws, etc.

Choosing a square or hexagonal head model will assure you a tighter fit.



MSA	Tightening	Length	Kg
02.001-01	0...1.50 mm	70 mm	0.022
02.001-02 *	0...1.80 mm	80 mm	0.025
02.001-03	0...2.30 mm	90 mm	0.030
02.001-04 *	0...2.80 mm	100 mm	0.040
02.001-05	0...3.00 mm	110 mm	0.050
02.001-06 *	0...3.50 mm	120 mm	0.060
02.001-07	0...4.00 mm	130 mm	0.080
02.001-08 *	0...5.00 mm	140 mm	0.094

Pin vice with fluted hollow brass handle and square head to prevent rolling on bench.

Delivered with 2 steel chucks.

\* In assortments MSA02.026 and MSA02.027



### ASSORTMENT

MSA	Kg
02.026	0.212

Assortment of 4 pin vices MSA02.001-02, -04, -06 and -08.

Delivered in 1 plastic pouch.



MSA	Kg
02.027	0.422

Assortment of 5 brass pin vices, 4 with square head (MSA02.001-02 /-04 /-06 /-08) and 1 with round head (MSA02.021).

Delivered in 1 wooden box.



MSA	Tightening	Length	Kg
02.015-01	0...1.50 mm	70 mm	0.022
02.015-02	0...1.80 mm	80 mm	0.022
02.015-03	0...2.30 mm	90 mm	0.030
02.015-04	0...2.80 mm	100 mm	0.040
02.015-05	0...3.00 mm	110 mm	0.040
02.015-06	0...3.50 mm	120 mm	0.040
02.015-07	0...4.00 mm	130 mm	0.080
02.015-08	0...5.00 mm	140 mm	0.094

Pin vice with fluted hollow nickel-plated handle and square head to prevent rolling on bench.

Provided with 2 steel chucks.



MSA	Tightening	Length	Kg
02.002-01	0...1.50 mm	70 mm	0.020
02.002-02	0...1.80 mm	80 mm	0.020
02.002-03	0...2.30 mm	90 mm	0.030
02.002-04	0...2.80 mm	100 mm	0.040
02.002-05	0...3.00 mm	110 mm	0.045
02.002-06	0...3.50 mm	120 mm	0.060
02.002-07	0...4.00 mm	130 mm	0.070
02.002-08	0...5.00 mm	140 mm	0.093

Pin vice with fluted hollow brass handle and round head.  
Provided with 2 steel chucks.



MSA	Tightening	Length	Kg
02.003-01	0...0.80 mm	80 mm	0.012
02.003-02	0...0.80 mm	90 mm	0.015
02.003-03	0...0.80 mm	100 mm	0.015
02.003-04	0...0.80 mm	110 mm	0.015
02.003-05	0...0.80 mm	120 mm	0.017

Pin vice with fluted hollow brass, thin handle Ø 5 mm and round head.  
Provided with 1 steel chuck.



MSA	Tightening	Length	Kg
02.014-02	0.00...0.80 mm	80 mm	0.013
02.014-04	0.00...1.00 mm	100 mm	0.025
02.014-06	1.40...2.50 mm	120 mm	0.025

Pin vice with fluted hollow brass handle and round head.  
Delivered with 1 steel chuck.



MSA	Tightening	Length	Kg
02.021 *	0...0.70 mm	110 mm	0.015

Thin pin vice with conical and fluted brass handle and round head.  
Provided with 1 steel chuck.

\* In assortment MSA02.027



MSA	Tightening	Length	Kg
02.005	0...2.50 mm	100 mm	0.033

Double-ended pin vice with fluted nickel-plated handle and 2 round heads.  
Provided with 2 steel 4-lip chucks.



MSA	Tightening	Length	Kg
02.012	0...2.80 mm	110 mm	0.038

Double-ended pin vice with fluted hollow nickel-plated handle and 2 knurled round heads.  
Provided with 2 steel 4-lip chucks.

## PIN VICES



MSA	Tightening	Length	Kg
02.016 *	0...0.70 mm	110 mm	0.015

Thin pin vice with conical fluted nickel-plated handle and round head.  
Provided with 1 steel chuck.

\* See assortment MSA02.025



MSA	Tightening	Length	Kg
02.020-01	0...1.50 mm	70 mm	0.020
02.020-02	0...1.80 mm	80 mm	0.020
02.020-03 *	0...2.30 mm	90 mm	0.025
02.020-04 *	0...2.80 mm	100 mm	0.030
02.020-05	0...3.00 mm	110 mm	0.045
02.020-06	0...3.50 mm	120 mm	0.050
02.020-08	0...5.00 mm	140 mm	0.096

Pin vice with fluted hollow nickel-plated handle and round head.  
Provided with 2 steel chucks.

\* See assortment MSA02.025



### ASSORTMENT

MSA	Kg
02.025	0.088

Assortment of 3 pin vices with fluted hollow nickel-plated handles and round heads.

Contents : MSA02.016, 02.020-03 and 02.020-04.

Delivered in 1 plastic pouch.

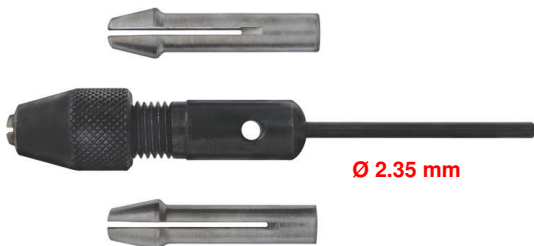


Ø 2.35 mm

MSA	Tightening	Length	Kg
02.035	0...1.20 mm	55 mm	0.005

Pin vice with black finished adapter and round head. For manual use on a lathe or a drilling machine.

Provided with 1 steel chuck.



Ø 2.35 mm

MSA	Model	Tightening	Length	Kg
02.036	Medium	0.00...1.00 - 0.90...1.60 - 1.50...2.40 mm	80 mm	0.028
02.037	Large	0.00...1.30 - 1.10...2.30 - 1.70...3.00 mm	80 mm	0.028

Pin vice with black finished adapter and round head. For manual use on a lathe or a drilling machine.

Delivered with 3 interchangeable steel chucks.



MSA	Tightening	Length	Kg
02.099	0...0.90 mm	50 mm	0.008

Mini cutting broaches holder pin vice with fluted hollow handle made of aluminium.

Provided with 1 steel chuck.



MSA	Ø crowns	Model	Length	Kg
02.008-01	3...5 mm	<b>Small</b>	75 mm	0.031
02.008-02	4...6 mm	<b>Medium</b>	75 mm	0.031
02.008-03	5...7 mm	<b>Large</b>	75 mm	0.031

Winding crowns pin vice with knurled nickel-plated handle. Specially made for winding watches.



MSA	Tightening	Length	Kg
02.098	0...1.10 mm	60 mm	0.013

Mini cutting broaches holder pin vice with knurled hollow handle made of black steel and round head. Provided with 1 steel chuck.



MSA	Tightening	Length	Kg
02.004	0...2.80 mm	110 mm	0.040

Double-ended pin vice with fluted hollow nickel-plated handle and 2 hexagonal heads to prevent rolling on bench. Provided with 2 steel 4-lip chucks.



MSA	Tightening	Length	Kg
02.050	1.40...2.80 mm	107 mm	0.039

Double-ended pin vice with fluted hollow nickel-plated handle and 2 knurled round heads. Provided with 2 identical steel chucks with 4 cutters.



MSA	Length	Kg
02.007	110 mm	0.015

Forked pin vice with knurled nickel-plated handle. Provided with a sliding locker for an easy and quick tightening with one hand.

## PIN VICES



MSA	Tightening	Length	Kg
02.030	0...1.50 mm	110 mm	0.031

Crown pin vice with knurled hollow nickel-plated handle.  
Provided with a sliding locker for an easy and quick tightening with one hand.



MSA	Ø	Length	Kg
02.022-075	0.75 mm	120 mm	0.048
02.022-080	0.80 mm	120 mm	0.048
02.022-090	0.90 mm	120 mm	0.048
02.022-100	1.00 mm	120 mm	0.048
02.022-120	1.20 mm	120 mm	0.048
02.022-125	1.25 mm	120 mm	0.048
02.022-130	1.30 mm	120 mm	0.048
02.022-140	1.40 mm	120 mm	0.048
02.022-145	1.45 mm	120 mm	0.048
02.022-150	1.50 mm	120 mm	0.048
02.022-160	1.60 mm	120 mm	0.048
02.022-170	1.70 mm	120 mm	0.048
02.022-175	1.75 mm	120 mm	0.048
02.022-180	1.80 mm	120 mm	0.048
02.022-200	2.00 mm	120 mm	0.048
02.022-220	2.20 mm	120 mm	0.048
02.022-250	2.50 mm	120 mm	0.048
02.022-300	3.00 mm	120 mm	0.048
02.022-350	3.50 mm	120 mm	0.048

Pin vice for barrel staff with hollow nickel-plated hexagonal handle.  
Provided with a sliding locker for an easy and quick tightening with one hand.



MSA	Ø	Length	Kg
02.006-020	0.20 mm	115 mm	0.017
02.006-025	0.25 mm	115 mm	0.017
02.006-030	0.30 mm	115 mm	0.017
02.006-035	0.35 mm	115 mm	0.017
02.006-040	0.40 mm	115 mm	0.017
02.006-045	0.45 mm	115 mm	0.017
02.006-050	0.50 mm	115 mm	0.017
02.006-055	0.55 mm	115 mm	0.017
02.006-060	0.60 mm	115 mm	0.017
02.006-065	0.65 mm	115 mm	0.017
02.006-070	0.70 mm	115 mm	0.017
02.006-075	0.75 mm	115 mm	0.017
02.006-080	0.80 mm	115 mm	0.017
02.006-085	0.85 mm	115 mm	0.017
02.006-090	0.90 mm	115 mm	0.017
02.006-095	0.95 mm	115 mm	0.017
02.006-100	1.00 mm	115 mm	0.017
02.006-110	1.10 mm	115 mm	0.017
02.006-120	1.20 mm	115 mm	0.017

Balance screws hardened steel pin vice, knurled nickel-plated handle.  
Provided with a sliding locker for an easy and quick tightening with one hand.

**Knurled broaches.**



MSA	Ø	Length	Kg
02.024	8 mm	100 mm	0.047

Knurled steel broach, handle Ø 8.00 mm.

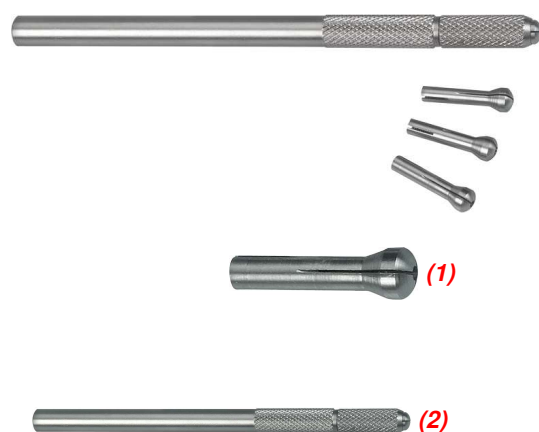
Delivered with 4 tightening chucks P 4.5 type Ø 1.00 - 1.60 - 2.35 - 3.00 mm (MSA03.875-100 - MSA03.875-160 - MSA03.875-235 - MSA03.875-300).

**Spare part :**

MSA	Item	Kg
02.024-B	Broach only	0.033
03.875-100	Tightening chuck P 4.5 type, Ø 1.00 mm	0.002
03.875-160	Tightening chuck P 4.5 type, Ø 1.60 mm	0.002
03.875-235	Tightening chuck P 4.5 type, Ø 2.35 mm	0.002
03.875-300	Tightening chuck P 4.5 type, Ø 3.00 mm	0.002

**Other tightening chucks P 4.5 type :**

MSA	Item	Kg
03.875-080	Tightening chuck P 4.5 type, Ø 0.80 mm	0.002
03.875-150	Tightening chuck P 4.5 type, Ø 1.50 mm	0.002
03.875-200	Tightening chuck P 4.5 type, Ø 2.00 mm	0.002
03.875-250	Tightening chuck P 4.5 type, Ø 2.50 mm	0.002
03.875-400	Tightening chuck P 4.5 type, Ø 4.00 mm	0.002



MSA	Ø	Length	Kg
02.019	6 mm	105 mm	0.026

Knurled steel broach for manual use or mounted on a lathe. Precise tightening and steady.

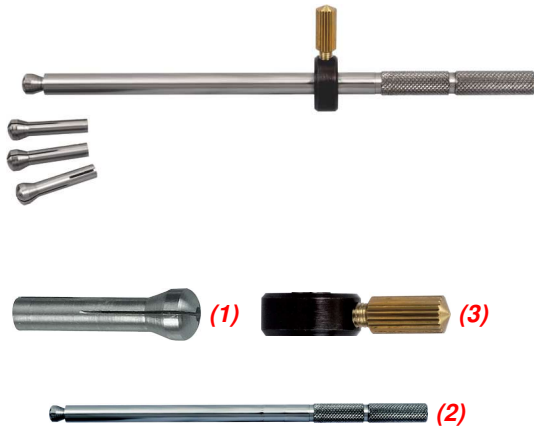
Delivered with 4 easily interchangeable tightening chucks Ø 0.80, 1.00, 1.20 and 1.50 mm.

**Spare parts :**

MSA	Item	Kg
02.019-080	(1) Tightening chuck Ø 0.80 mm	0.001
02.019-100	Tightening chuck Ø 1.00 mm	0.001
02.019-120	Tightening chuck Ø 1.20 mm	0.001
02.019-150	Tightening chuck Ø 1.50 mm	0.001
02.019-A	(2) Broach	0.020

**Accessories :**

MSA	Item	Kg
02.019-060	Tightening chuck Ø 0.60 mm	0.001
02.019-200	Tightening chuck Ø 2.00 mm	0.001



MSA	Ø	Length	Kg
02.029	4.70 mm	105 mm	0.020

Knurled steel broach for use with STAR staking tools.  
 Delivered with 1 adjustment ring and 4 easily interchangeable tightening chucks Ø 0.80, 1.00, 1.20 and 1.50 mm.

**Spare parts :**

MSA	Item	Kg
02.019-080	(1) Tightening chuck Ø 0.80 mm	0.001
02.019-100	Tightening chuck Ø 1.00 mm	0.001
02.019-120	Tightening chuck Ø 1.20 mm	0.001
02.019-150	Tightening chuck Ø 1.50 mm	0.001
02.029-B	(2) Broach	0.015
02.029-BG	(3) Adjusting ring	0.003

**Accessories :**

MSA	Item	Kg
02.019-060	Tightening chuck Ø 0.60 mm	0.001
02.019-200	Tightening chuck Ø 2.00 mm	0.001



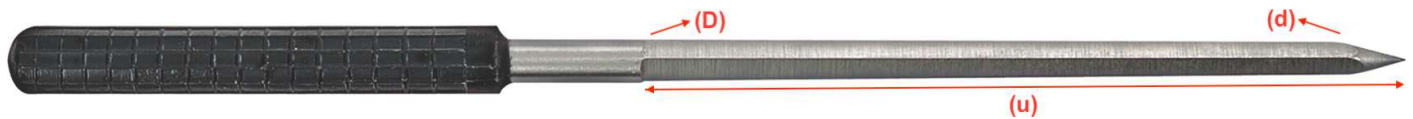
The cutting broaches are used for enlarging holes. They have a 5-sided tapered shaft (pentagonal section) with sharp cutting edges.



MSA	No.	Total length (L)	Useful length (u)	Ø (D)	Ø (d)	Kg
02.100-01	01	162 mm	107 mm	5.75 mm	4.80 mm	0.030
02.100-02	02	160 mm	105 mm	5.50 mm	4.50 mm	0.030
02.100-04	04	158 mm	104 mm	5.25 mm	4.30 mm	0.030
02.100-08	08	156 mm	103 mm	5.00 mm	4.10 mm	0.030
02.100-12	12	154 mm	102 mm	4.75 mm	3.80 mm	0.030
02.100-16	16	151 mm	100 mm	4.50 mm	3.60 mm	0.030
02.100-18	18	149 mm	99 mm	4.25 mm	3.40 mm	0.030
02.100-22	22	147 mm	98 mm	4.00 mm	3.10 mm	0.030
02.100-26	26	145 mm	97 mm	3.75 mm	2.70 mm	0.030
02.100-28	28	142 mm	96 mm	3.50 mm	2.60 mm	0.030
02.100-30	30	140 mm	95 mm	3.25 mm	2.40 mm	0.030
02.100-31	31	138 mm	93 mm	3.00 mm	2.20 mm	0.030
02.100-32	32	135 mm	91 mm	2.90 mm	2.10 mm	0.020
02.100-35	35	132 mm	89 mm	2.80 mm	2.05 mm	0.020
02.100-36	36	129 mm	87 mm	2.70 mm	2.00 mm	0.020
02.100-38	38	127 mm	85 mm	2.60 mm	1.90 mm	0.020
02.100-40	40	125 mm	82 mm	2.50 mm	1.80 mm	0.020
02.100-41	41	122 mm	80 mm	2.40 mm	1.75 mm	0.020
02.100-42	42	119 mm	78 mm	2.30 mm	1.70 mm	0.020
02.100-44	44	116 mm	76 mm	2.20 mm	1.60 mm	0.020
02.100-45	45	113 mm	74 mm	2.10 mm	1.50 mm	0.020
02.100-46	46	110 mm	72 mm	2.00 mm	1.40 mm	0.020
02.100-48	48	107 mm	70 mm	1.90 mm	1.30 mm	0.020
02.100-49	49	104 mm	68 mm	1.80 mm	1.20 mm	0.010
02.100-51	51	101 mm	65 mm	1.70 mm	1.15 mm	0.010
02.100-52	52	98 mm	63 mm	1.60 mm	1.10 mm	0.010
02.100-53	53	95 mm	61 mm	1.50 mm	1.00 mm	0.010
02.100-54	54	92 mm	59 mm	1.40 mm	0.90 mm	0.010
02.100-55	55	89 mm	57 mm	1.30 mm	0.80 mm	0.010
02.100-56	56	86 mm	54 mm	1.20 mm	0.70 mm	0.010
02.100-58	58	83 mm	52 mm	1.10 mm	0.63 mm	0.010
02.100-60	60	80 mm	50 mm	1.00 mm	0.57 mm	0.010
02.100-62	62	77.5 mm	48 mm	0.95 mm	0.54 mm	0.010
02.100-64	64	75 mm	47 mm	0.90 mm	0.50 mm	0.010
02.100-65	65	72.5 mm	46 mm	0.85 mm	0.48 mm	0.010
02.100-66	66	70.5 mm	44 mm	0.80 mm	0.45 mm	0.001
02.100-68	68	68 mm	42 mm	0.75 mm	0.41 mm	0.001
02.100-70	70	66 mm	41 mm	0.70 mm	0.37 mm	0.001
02.100-71	71	64 mm	40 mm	0.65 mm	0.34 mm	0.001
02.100-72	72	62 mm	38 mm	0.60 mm	0.30 mm	0.001
02.100-74	74	60 mm	37 mm	0.55 mm	0.28 mm	0.001
02.100-75	75	58 mm	36 mm	0.50 mm	0.25 mm	0.001
02.100-76	76	56 mm	34 mm	0.45 mm	0.20 mm	0.001
02.100-78	78	54 mm	33 mm	0.40 mm	0.15 mm	0.001
02.100-79	79	52 mm	32 mm	0.35 mm	0.13 mm	0.001
02.100-80	80	50 mm	31 mm	0.30 mm	0.10 mm	0.001

5-sided conical cutting broach, without handle, made of tool steel. The taper is 1:100. The numbers correspond to the measurements from the English screw-plate (Stubs) and in mm. Size (D) is measured slightly below largest portion of cutting edges.

## CUTTING BROACHES



MSA	No.	Useful length (u)	Ø (D)	Ø (d)	Kg
02.170-01	01	107 mm	5.75 mm	4.80 mm	0.035
02.170-02	02	105 mm	5.50 mm	4.50 mm	0.025
02.170-04	04	104 mm	5.25 mm	4.30 mm	0.020
02.170-08	08	103 mm	5.00 mm	4.10 mm	0.020
02.170-12	12	102 mm	4.75 mm	3.80 mm	0.020
02.170-16	16	100 mm	4.50 mm	3.60 mm	0.015
02.170-18	18	99 mm	4.25 mm	3.40 mm	0.015
02.170-22	22	98 mm	4.00 mm	3.10 mm	0.010
02.170-26	26	97 mm	3.75 mm	2.70 mm	0.010
02.170-28	28	96 mm	3.50 mm	2.60 mm	0.010
02.170-30	30	95 mm	3.25 mm	2.40 mm	0.010
02.170-31	31	93 mm	3.00 mm	2.20 mm	0.005
02.170-32	32	91 mm	2.90 mm	2.10 mm	0.005
02.170-35	35	89 mm	2.80 mm	2.05 mm	0.005
02.170-36	36	87 mm	2.70 mm	2.00 mm	0.004
02.170-38	38	85 mm	2.60 mm	1.90 mm	0.004
02.170-40	40	82 mm	2.50 mm	1.80 mm	0.004
02.170-41	41	80 mm	2.40 mm	1.75 mm	0.003
02.170-42	42	78 mm	2.30 mm	1.70 mm	0.003
02.170-44	44	76 mm	2.20 mm	1.60 mm	0.003
02.170-45	45	74 mm	2.10 mm	1.50 mm	0.002
02.170-46	46	72 mm	2.00 mm	1.40 mm	0.002
02.170-48	48	70 mm	1.90 mm	1.30 mm	0.002
02.170-49	49	68 mm	1.80 mm	1.20 mm	0.001
02.170-51	51	65 mm	1.70 mm	1.15 mm	0.001
02.170-52	52	63 mm	1.60 mm	1.10 mm	0.001
02.170-53	53	61 mm	1.50 mm	1.00 mm	0.001
02.170-54	54	59 mm	1.40 mm	0.90 mm	0.001
02.170-55	55	57 mm	1.30 mm	0.80 mm	0.001
02.170-56	56	54 mm	1.20 mm	0.70 mm	0.001
02.170-58	58	52 mm	1.10 mm	0.63 mm	0.001
02.170-60	60	50 mm	1.00 mm	0.57 mm	0.001
02.170-64	64	47 mm	0.90 mm	0.50 mm	0.001
02.170-66	55	44 mm	0.80 mm	0.45 mm	0.001
02.170-70	70	41 mm	0.70 mm	0.37 mm	0.001
02.170-72	72	38 mm	0.60 mm	0.30 mm	0.001
02.170-75	75	36 mm	0.50 mm	0.25 mm	0.001
02.170-78	78	33 mm	0.40 mm	0.15 mm	0.001
02.170-80	80	31 mm	0.30 mm	0.10 mm	0.001
02.170-020	020	20 mm	0.20 mm	0.07 mm	0.001
02.170-015	015	18 mm	0.15 mm	0.05 mm	0.001
02.170-010	010	17 mm	0.10 mm	0.0 mm	0.001
02.170-008	008	16 mm	0.08 mm	0.03 mm	0.001
02.170-005	005	15 mm	0.05 mm	0.02 mm	0.001

5-sided conical cutting broach, with plastic handle, made of tool steel. The taper is 1:100. The numbers correspond to the measurements from the English screw-plate (Stubs) and in mm. Size (D) is measured slightly below largest portion of cutting edges.



MSA	Packaging size	Kg
<b>02.155</b>	60 x 44 mm	0.010

Assortment of 12 extra thin cutting broaches with plastic handle.  
*Contents : Ø 0.05, 0.08, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50 and 0.55 mm.*



MSA	Packaging size	Kg
<b>02.151</b>	133 x 60 mm	0.010

Assortment of 6 5-sided cutting broaches with plastic handle.  
*Contents : Ø 0.40, 0.60, 0.80, 1.00, 1.20 and 1.40 mm.*



MSA	Packaging size	Kg
<b>02.150</b>	133 x 60 mm	0.013

Assortment of 6 5-sided cutting broaches with plastic handle.  
*Contents : Ø 0.60, 0.80, 1.00, 1.30, 1.60 and 2.00 mm.*



MSA	Packaging size	Kg
<b>02.152</b>	152 x 15 x 15 mm	0.029

Assortment of 6 5-sided cutting broaches with plastic handle.  
*Contents : Ø 0.70, 1.00, 1.50, 2.00, 2.50 and 3.00 mm.*



MSA	Packaging size	Kg
<b>02.153</b>	152 x 15 x 15 mm	0.030

Assortment of 6 5-sided cutting broaches with plastic handle.  
*Contents : Ø 1.20, 1.50, 1.80, 2.20, 2.50 and 3.00 mm.*



MSA	Packaging size	Kg
<b>02.161</b>	205 x 65 mm	0.112

Assortment of 6 5-sided cutting broaches with plastic handle. Large models for watches, alarm clocks and clocks.  
*Contents : Ø 1.50, 2.20, 3.00, 4.00, 5.50 and 7.00 mm.*



MSA	Packaging size	Kg
<b>02.160</b>	205 x 65 mm	0.110

Assortment of 6 5-sided cutting broaches with plastic handle. Large models for alarm clocks and clocks.  
*Contents : Ø 2.20, 2.50, 3.00, 4.00, 5.00 and 6.00 mm.*



MSA	Packaging size	Kg
<b>02.162</b>	250 x 75 mm	0.330

Assortment of 4 5-sided cutting broaches with plastic handle. Large models for alarm clocks and clocks.  
*Contents : Ø 7.00, 8.00, 9.25 and 10.50 mm.*

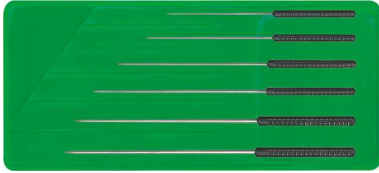
## SMOOTHING BROACHES

Smoothing broaches are used for polishing the holes.



MSA	No.	Useful length (u)	Ø (D)	Ø (d)	Kg
02.250-01	01	107 mm	5.75 mm	4.80 mm	0.035
02.250-02	02	105 mm	5.50 mm	4.50 mm	0.035
02.250-04	04	104 mm	5.25 mm	4.30 mm	0.035
02.250-08	08	103 mm	5.00 mm	4.10 mm	0.035
02.250-12	12	102 mm	4.75 mm	3.80 mm	0.035
02.250-16	16	100 mm	4.50 mm	3.60 mm	0.030
02.250-18	18	99 mm	4.25 mm	3.40 mm	0.030
02.250-22	22	98 mm	4.00 mm	3.10 mm	0.030
02.250-26	26	97 mm	3.75 mm	2.70 mm	0.030
02.250-28	28	96 mm	3.50 mm	2.60 mm	0.030
02.250-30	30	95 mm	3.25 mm	2.40 mm	0.025
02.250-31	31	93 mm	3.00 mm	2.20 mm	0.025
02.250-32	32	91 mm	2.90 mm	2.10 mm	0.025
02.250-35	35	89 mm	2.80 mm	2.05 mm	0.025
02.250-36	36	87 mm	2.70 mm	2.00 mm	0.025
02.250-38	38	85 mm	2.60 mm	1.90 mm	0.020
02.250-40	40	82 mm	2.50 mm	1.80 mm	0.020
02.250-41	41	80 mm	2.40 mm	1.75 mm	0.020
02.250-42	42	78 mm	2.30 mm	1.70 mm	0.020
02.250-44	44	76 mm	2.20 mm	1.60 mm	0.020
02.250-45	45	74 mm	2.10 mm	1.50 mm	0.015
02.250-46	46	72 mm	2.00 mm	1.40 mm	0.015
02.250-48	48	70 mm	1.90 mm	1.30 mm	0.015
02.250-49	49	68 mm	1.80 mm	1.20 mm	0.015
02.250-51	51	65 mm	1.70 mm	1.15 mm	0.015
02.250-52	52	63 mm	1.60 mm	1.10 mm	0.010
02.250-53	53	61 mm	1.50 mm	1.00 mm	0.010
02.250-54	54	59 mm	1.40 mm	0.90 mm	0.010
02.250-55	55	57 mm	1.30 mm	0.80 mm	0.010
02.250-56	56	54 mm	1.20 mm	0.70 mm	0.010
02.250-58	58	52 mm	1.10 mm	0.63 mm	0.001
02.250-60	60	50 mm	1.00 mm	0.57 mm	0.001
02.250-64	64	47 mm	0.90 mm	0.50 mm	0.001
02.250-66	66	44 mm	0.80 mm	0.45 mm	0.001
02.250-70	70	41 mm	0.70 mm	0.37 mm	0.001
02.250-72	72	38 mm	0.60 mm	0.30 mm	0.001
02.250-75	75	36 mm	0.50 mm	0.25 mm	0.001
02.250-78	78	33 mm	0.40 mm	0.15 mm	0.001
02.250-80	80	31 mm	0.30 mm	0.10 mm	0.001

Smoothing broach, with plastic handle, made of tool steel. The taper is 1:100. The numbers correspond to the measurements from the English screw-plate (Stubs) and in mm. Size (D) is measured slightly below largest portion of cutting edges.

**ASSORTMENT**

MSA	Packaging size	Kg
<b>02.221</b>	133 x 60 mm	0.010

Assortment of 6 smoothing broaches with plastic handle.  
 Contents : Ø 0.40, 0.60, 0.80, 1.00, 1.20 and 1.40 mm.

**ASSORTMENT**

MSA	Packaging size	Kg
<b>02.220</b>	133 x 60 mm	0.013

Assortment of 6 smoothing broaches with plastic handle.  
 Contents : Ø 0.60, 0.80, 1.00, 1.30, 1.60 and 2.00 mm.

**Assortments of smoothing broaches in wooden box.****MSA22.567****See chapter 22.****MSA22.571****See chapter 22.**

NOTES

Lined area for notes with horizontal lines.