

THE COMPLETE SUPPORT FOR YOUR INSPECTION. **MARTOOL**



The latest information on MARTOOL products can be found on our website:

www.mahr.com, WebCode 10436-5062

► | MarTool measuring and inspection equipment are indispensable aids for dimensional metrology. Their simple handling make them the most versatile instruments for daily use in either the inspection room or the workshop; whether measuring an angle on a work piece or inspecting the surface plate for a height measuring instrument with the outstanding quality from MarTool you cannot go wrong.



► | MarTool. Measuring and Inspection Equipment

MarTool 104

Knife-edge Straight Edges

12- 2

MarTool 105 / 105 F /105 Y /105 Z

Set Squares

12- 2

MarTool 106 UF / 106 ES

Universal Bevel Protractor

12- 4

MarTool 107 AG /107 Us /107 Ug

Granite Surface Plates, Accessories

12- 6

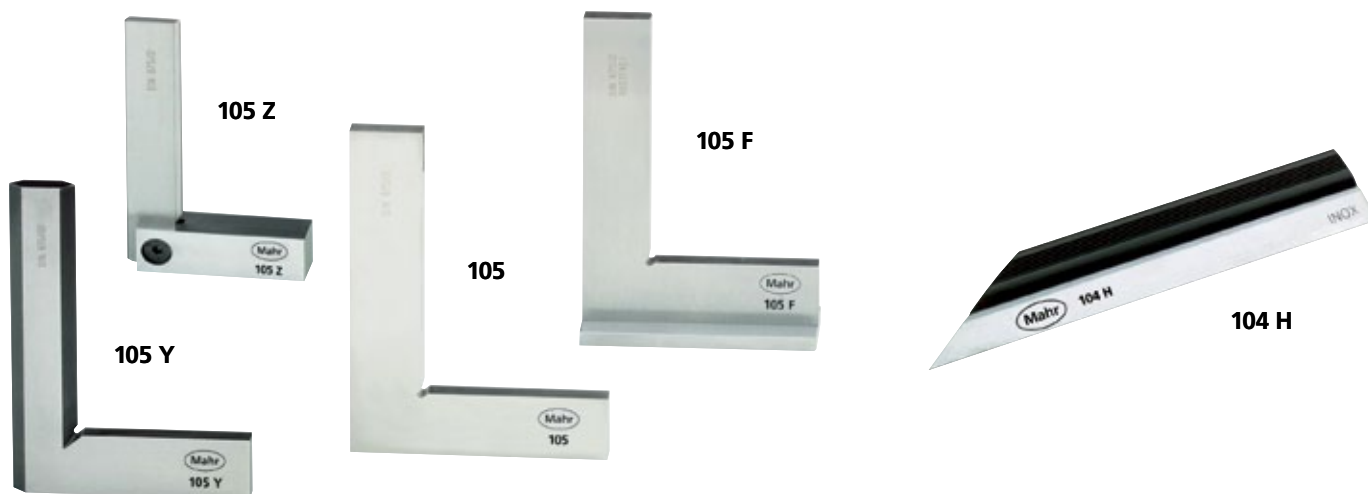
MarTool 107 MH / 107 V

Magnetic V-Blocks

12- 9

MarTool. Measuring and Inspection Equipment

OVERVIEW STRAIGHT EDGES AND SQUARES



Knife-edge Straight Edge 104 H

Features

- Stainless steel, hardened throughout and ground
- Heat insulators
- One end has a pointed tip
- Supplied with:
Carton

Accuracy

according to **DIN 874**, sheet 2

To determine the straightness tolerance t of the knife edge use the following formula:

$$t = 2 + \frac{l}{250} \mu\text{m}$$

Length l in mm

Technical Data

Length		Cross section	Weight	Order no.
mm	(inch)	mm	kg	
75	(3")	22 x 6	0.05	4205000
100	(4")	22 x 6	0.07	4205001
125	(5")	22 x 6	0.09	4205002
150	(6")	22 x 6	0.11	4205003
200	(8")	22 x 6	0.15	4205004
300	(12")	30 x 7	0.25	4205005
400	(16")	40 x 7	0.75	4205007
500	(20")	40 x 7	0.91	4205006

Flat Square 105/0

Features

- Hardened stainless steel
- Supplied with:
Carton

Accuracy

Grade **0** **DIN 875**

Technical Data

Length		Cross section	Weight	Order no.
mm	(inch)	mm	kg	
50 x 40	(2 x 1.6")	14 x 4	0.04	4207008
75 x 50	(3 x 2")	15 x 4	0.05	4207009
100 x 70	(4 x 3")	20 x 5	0.11	4207000
150 x 100	(6 x 4")	25 x 6	0.22	4207001
200 x 130	(8 x 5.1")	30 x 7	0.54	4207002
300 x 200	(12 x 8")	40 x 8	1.12	4207004

Flanged Beam Square 105 F/0

Features

Accuracy

Grade **0 DIN 875**

To determine the right angle tolerance t of the test surface use the following formula:

$$t = 5 + \frac{l}{50} \mu\text{m}$$

(Length l is the longer beam in mm)

Technical Data

Length of beams			Cross section	Weight	Order no.
mm		(inch)	mm	kg	
50 x	40	(2 x 1.6")	13.5 x 5	0.05	4208008
75 x	50	(3 x 2")	15 x 4	0.08	4208009
100 x	70	(4 x 3")	20 x 5	0.20	4208000
150 x	100	(6 x 4")	25 x 6	0.46	4208001
200 x	130	(8 x 5.1")	30 x 7	0.75	4208002
300 x	200	(12 x 8")	40 x 8	1.68	4208004

Knife-edge Square 105 Y

Features

- Hardened stainless steel
- Supplied with:
Carton

Accuracy

Grade **00 DIN 875**

Technical Data

Length of beams			Cross section	Weight	Order no.
mm		(inch)	mm	kg	
50 x	40	(2 x 1.6")	14 x 4	0.03	4210000
75 x	50	(3 x 2")	16 x 4	0.05	4210001
100 x	70	(4 x 3")	20 x 5	0.10	4210002
150 x	100	(6 x 4")	25 x 6	0.26	4210003
200 x	130	(8 x 5.1")	30 x 7	0.43	4210004
300 x	200	(12 x 8")	40 x 8	0.96	4210005

Square 105 Z

Features

- Hardened stainless steel
- Precision ground narrow beam and a wide beam
- Without a knife edge
- Supplied with:
Carton

Accuracy

Grade **0 DIN 875**

To determine the right angle tolerance t of the test surface use the following formula:

$$t = 5 + \frac{l}{50} \mu\text{m}$$

(Length l is the longer beam in mm)

Technical Data

Length of beams			Cross section		Weight	Order no.
			narrow beam	wide beam		
mm		(inch)	mm	mm	kg	
50 x	40	(2 x 1.6")	16 x 2	14 x 10	0.05	4211005
75 x	50	(3 x 2")	16 x 2	14 x 10	0.06	4211000
100 x	70	(4 x 3")	20 x 3	18 x 12	0.13	4211001
150 x	100	(6 x 4")	26 x 3	24 x 14	0.32	4211002
200 x	130	(8 x 5.1")	30 x 4	28 x 16	0.75	4211003
300 x	200	(12 x 8")	40 x 6	38 x 20	1.60	4211004

Universal Bevel Protractor 106 UF



Features

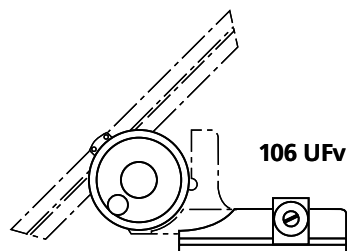
- With fine adjustment
- Stainless steel
- Vernier scale and main scale both have a satin chrome finish to prevent glare and to enable parallax free reading on the same plane
- Knurled screw for clamping the interchangeable beam into position
- Supplied with:
Magnifying reading lens, interchangeable beam and case

Technical Data

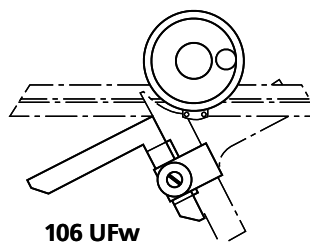
Blade length mm	Range degrees	Readings minutes	Deviation minutes	Order no.
150	360°	5'	5'	4214050
200	360°	5'	5'	4214051
300	360°	5'	5'	4214052

Accessories

	Order no.
Interchangeable Beams	106 Us
Stainless steel, hardened (standard accessories)	
beam length	150 mm / 6" 4214010
	200 mm / 8" 4214011
	300 mm / 12" 4214012
Additional Accessories	
Stand	106 UFv
Featuring flat and V-surface for dia. 5 – 30 mm length 90 mm, width 25 mm	4214061
Acute Angle Attachment	106 UFw
for particularly small acute angles, screws onto the beam	4214062



106 UFv



106 UFw

Digital Universal Bevel Protractor 106 ES



Features

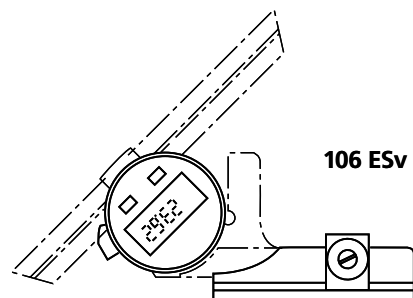
- Easy to read high contrast 8,5 mm high LCD
- Displays the angular degrees and angular minutes or decimal degrees
- Zero setting at any position of the measuring range
- Beam can be clamped with a push button
- Fine adjustment for easy setting of a desired angle
- Locking lever to prevent accidental adjustment
- Base plate and beam are made of stainless steel, the measuring edges hardened
- Data output: Opto RS232C
- Max. setting speed 3 rotations per second
- Capacitive measuring system, life of the battery ca. 2 years
- Supplied with: Battery, 300 mm beam and case

Technical Data

Range	Resolution switchable	Deviation	Order no.
1 x 360° or 2 x 180° or 4 x 90°	1 minutes or 0.01°	± 2 minutes	4214600

Accessories

	Order no.
Interchangeable Beams	106 ESs
Stainless steel, hardened beam length	
150 mm / 6"	4214620
200 mm / 8"	4214621
300 mm / 12"	4214622
Battery 3V, Type CR 2032	4102520
Data Connection Cable Opto RS232C (2 m), with SUB-D Jack 9 pin	16 ESv 4102510
Stand	106 ESv
Featuring flat and V-surface for dia. 5 – 30 mm, length 90 mm, width 25 mm	
Acute Angle Attachment	106 UFw
for particularly small acute angles, screws onto the beam	4214062



Surface Plate 107 G made from granite



Features

- For measuring tasks, layout work, for touching up and lapping precision parts
- Made of choice fine-grain black granite (Diabas)
- High density structure thus extremely homogeneous
- Hardness 6-7 on the Mohs' hardness scale
- Surface plate is lapped and has a satin matt finish to prevent glare
- 100 % corrosion-proof
- Non-magnetic and non-conductive
- Measuring instruments and test equipment are easy to slide over surface

Technical Data

Size of plates			Thickness of plate	Weight	Order no.*			Flatness tolerance t_f of the surface plate are derived from the following formulas:
mm			mm	kg	Grade	00 DIN 876	0 DIN 876	
400	x	250	60	18	4221500	4221520	4221540	Grade acc to DIN 876
400	x	400	60	29	4221501	4221521	4221541	
630	x	400	80	60	4221502	4221522	4221542	Flatness tolerance in μm
630	x	630	80	95	4221503	4221523	4221543	
800	x	500	100	120	4221504	4221524	4221544	$t_1 = 2 (1 + l/1000)$
1000	x	630	100	190	4221505	4221525	4221545	
1200	x	800	150	432	4221506	4221526	4221546	$t_1 = 4 (1 + l/1000)$
1500	x	1000	150	675	4221507	4221527	4221547	
2000	x	1000	200	1200	4221508	4221528	4221548	$t_1 = 10 (1 + l/1000)$

Length l in mm

Surface plates are available in other dimensions upon request

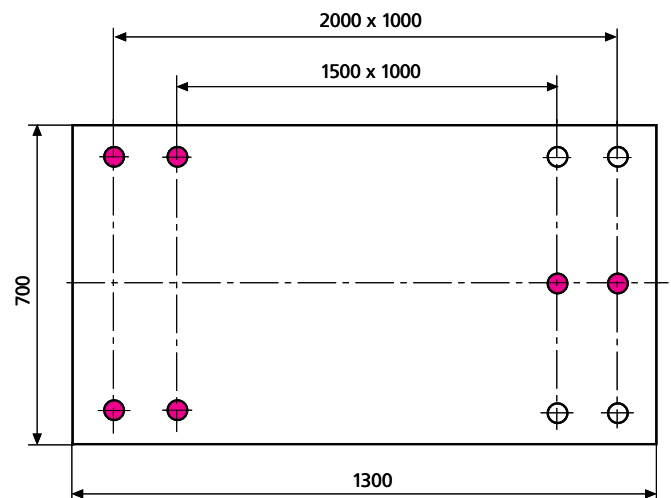
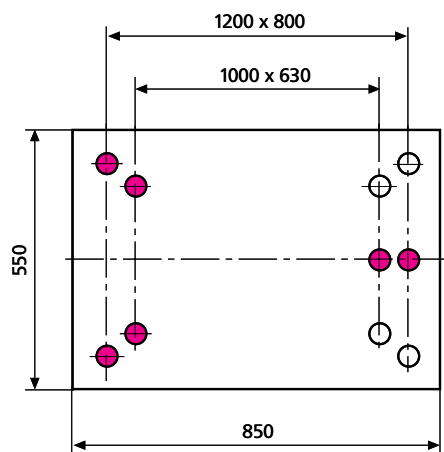
* Excludes stand with cabinet

Mounting of Surface Plates 107 G up to 2000 x 1000 mm

Distortion of the surface plates is minimized if supported at the support points A.

For plates with edge lengths over 1000 mm it is advised to provide anti-tilt elements at the B support points.

Support points A (Bessel points, $0.22 \times l$ or w from the edge of the plate). Support points B are for the anti-tilt elements.



● Support point A

○ Support point B

Accessories

	Quantity	Order no.
Adjustable Plate Supports 107 Asa For mounting the surface plates upon work benches or cabinets; three plates are for support and two plates are to prevent tilting	1 piece	4221069

Stand with Cabinet 107 Us



Features

- Extremely sturdy design due to the rectangular tubes, covered with sheet metal
- With three height adjustable supports
- For plates sizes that are greater than 1000 mm, two additional height adjustable supports are required to prevent tilting
- All 4 corners have a support to prevent slipping and to protect against a collision
- Doors can be locked

Technical Data

For plate sizes mm	Height mm	Order no.*
630 x 400	900 - 1000	4221560
630 x 630		4221561
800 x 500		4221562
1000 x 630		4221563
1200 x 800		4221564
1500 x 1000		4221565
2000 x 1000		4221566

* Excludes surface plate

Stand 107 Ug



Features

- Extremely sturdy design due to the rectangular tubes
- With three height adjustable supports
- For plates sizes that are greater than 1000 mm, two additional height adjustable supports are required to prevent tilting
- All 4 corners have a support to prevent slipping and to protect against a collision

Technical Data

For plate sizes mm	Height mm	Order no.*
630 x 400	900 - 1000	4221570
630 x 630		4221571
800 x 500		4221572
1000 x 630		4221573
1200 x 800		4221574
1500 x 1000		4221575
2000 x 1000		4221576

* Excludes surface plate

Magnetic V-Blocks 107 MH



Features

- To used in an inspection room and workshop for both measuring and scribing
- To clamp work pieces during drilling, grinding and light milling work
- Integrated magnetic system, protected against the intrusion of moisture
- Constant magnetic force
- With the switch the upper, lower and opposite face are all simultaneously magnetized
- Surfaces and measuring faces and both hardened and ground
- Available individually or as a matched pair

Technical Data

Accuracy (deviation):	
Flatness and parallelism	$\leq 5 \mu\text{m}$
Angle between front and side faces respectively the V-slots	$\leq 5 \mu\text{m}$
Symmetry of the V-slots	$\leq 5 \mu\text{m}$
Height difference of the V-slots of pairs	$\leq 5 \mu\text{m}$
Length x Width x Height	100 x 70 x 95 mm
For shaft dia.	5 - 65 mm
V-angle	90°
Weight per piece	4 kg
Magnetic force on a flat surface	$\approx 1000 \text{ N}$ (100 kp)
Magnetic force of V-block	$\approx 750 \text{ N}$ (75 kp)

Order no. V-block	4230000
Order no. pair of V-blocks	4230001

Accessories

Wooden case (for 1 V-block)

Order no.

4230005

V-Block 107 V



Features

- For testing of small cylindrical work pieces for there ovality and polygon error
- With 108° V-slot
- Made from special hardened and ground steel
- Available individually or as a matched pair

Technical Data

Accuracy (deviation):	
Parallelism of the V-slot to the underside of the base	$\leq 2 \mu\text{m}$
Height difference of the V-slots of pairs	$\leq 5 \mu\text{m}$
Length x Width x Height	30 x 30 x 30 mm
For shaft dia.	2 - 25 mm
V-angle	108°
Weight per piece	0.2 kg

Order no. V-block	4229000
Order no. pair of V-blocks	4229001