

## Pneumatic fastening clamps

STANDARD MACHINE ELEMENTS WORLDWIDE

# elesa®

# Pneumatic fastening clamp features

## General information

The pneumatic fastening clamps (Misati patent) are used for locking mechanical parts to be processed or handled on jigs and brackets.

The main features of the pneumatic fastening clamps are:

- high clamping force;
- reduced size;
- low consumption of compressed air;
- reduced weight.

The fastening clamps are characterised by “a double effect” pneumatic cylinder which transmits a rotating movement to the clamping arm.

In the drawings on the right the specific working principle is illustrated:

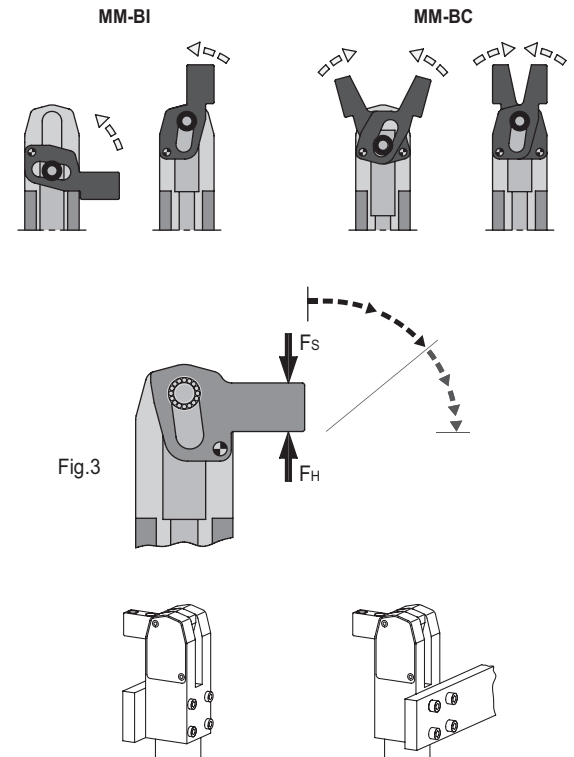
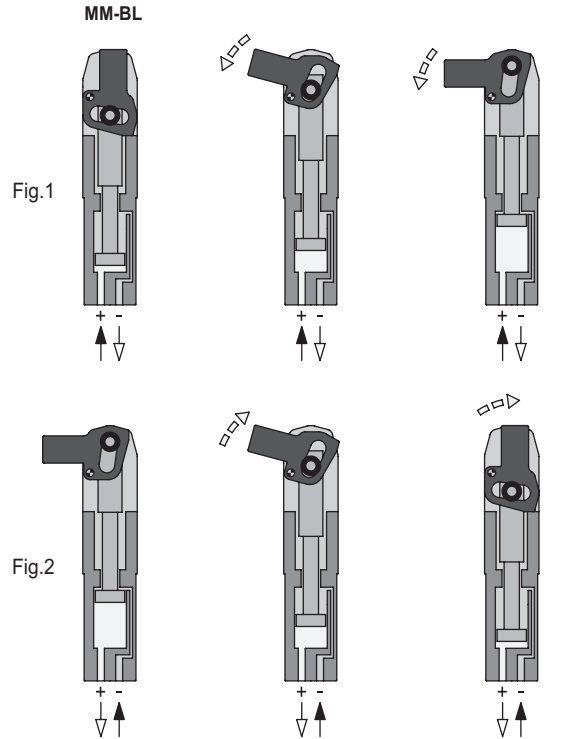
- **Compressed air passage:** when activated through the hole marked by the symbol “+”, the cylinder slides upwards thus reaching the locking position of the clamping arm (Fig. 1). When activated through the hole marked by the symbol “-”, the cylinder slides downwards thus reaching the rest position of the clamping arm (Fig. 2).

- **Tightening momentum:** the cylinders of diameter 20, 32, 40, 50 mm develop a tightening momentum between 60 Nm and 475 Nm, values higher than similar products on the market.

Under specific stress resistance tests, these fastening clamps showed constant performance for more than 20 million cycles.

## Features

- **The clamping arm movement** has been designed so that, once the locking position (clamping force  $F_S$ ) is reached, a self-maintenance situation (holding force  $F_H$ ) is obtained.
- **The clamping arm stroke** is fast initially but then slows down prior to final clamping (Fig. 3) ; so, usually, the installation of a pneumatic cushioning is not required. However, in case the standard accessories supplied do not satisfy the application requirements, it is possible to provide the fastening clamp with a cushioning as a special execution on request.
- **The clamping mechanism** consists of two rolling bearings ensuring optimal clamping torques and minimal wear.
- **The hole positions for the pneumatic connections** are at the base of the cylinder to keep connecting tubes clear of the work area.
- **The position of the mounting holes** made on the monobloc body of the pneumatic fastening clamps has been provided so as to allow installation directly on threaded holes or alternatively on plain pass-through holes by means of bolts.



## Standard accessories

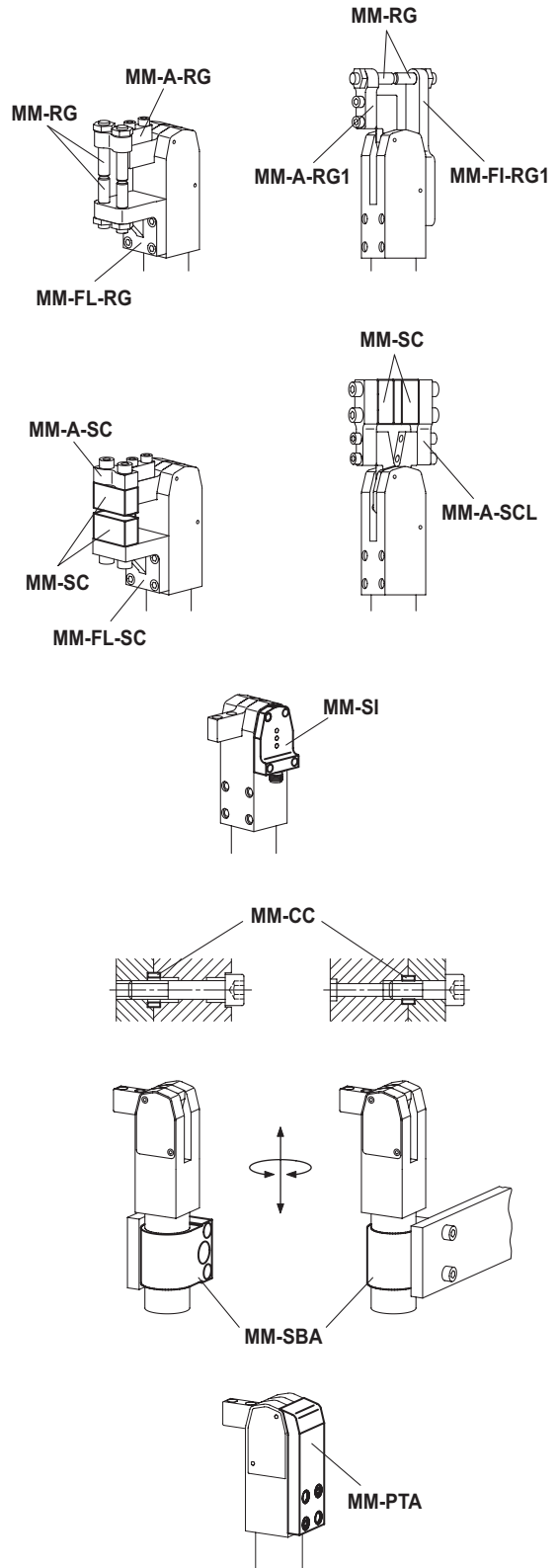
The drawings on the right show some of the possible applications of the standard accessories.

- **Brackets, screws and jaw blocks:** required for effectively clamping mechanical parts to be machined or handled. For more details see technical data sheets MM-BL (page 6), MM-BI (page 68) and MM-BC (page 10).
- **Proximity switches MM-SI** (page 27): they have the function of monitoring the position of the clamping arm.
- **Centering bushings MM-CC** (page 29): in addition to ensuring precise alignment, they also have the function of keeping the correct axially of the loads during the clamping of the workpieces, thus avoiding unnecessary overload on the screws.
- **Mounting brackets MM-SBA** (page 30): they allow a quick and effective assembly of the pneumatic fastening clamps.
- **Rear protections MM-PTA** (page 31): compatible only with the fastening clamps MM-BL (page 6). Used to avoid the input of the powder or foreign objects that compromise the correct functioning like in the applications requiring welding.

## Special executions on request

- Teflon coating for the resistance to high temperatures and corrosion (Fig. 4).
- FKM packing ring for maximum working temperature up to 270°C.
- Rotary movement of the clamping arm with block in the position at 20°.
- Rotary movement of the clamping arm with block in the position at 45°.

Fig.4



## Photographic index

### MM-BL

Pneumatic fastening clamps  
*For side locking*



page 6

### MM-BI

Pneumatic fastening clamps  
*For axial locking*



page 8

### MM-BC

Pneumatic fastening clamps  
*For axial locking with central fixing*



page 10

### MM-A-RG

Y-shaped brackets for clamping screws  
*Steel*



page 12

### MM-A-RG1

I-shaped brackets for clamping screw  
*Steel*



page 13

### MM-A-SC

Y-shaped brackets for jaw block  
*Steel*



page 14

### MM-A-SCL

I-shaped brackets for jaw block  
*Steel*



page 15

### MM-FL-RG

Lower brackets for clamping screws  
*Steel*



page 16

### MM-FL-RG1

Lower brackets for clamping screw  
*Steel*



page 17

### MM-FL-SC

Lower brackets for jaw block  
*Steel*



page 18

### MM-FL-SCL

I-shaped lower brackets for jaw block  
*Steel*



page 19

### MM-FI-RG

Long Y-shaped brackets for clamping screws  
*Steel*



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## Photographic index

### MM-FI-RG1

Long I-shaped brackets  
for clamping screws

Steel



page 21

### MM-FI-SC

Long Y-shaped brackets  
or jaw block

Steel



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### MM-FI-SCL

Long I-shaped brackets  
for jaw blocks

Steel



page 23

### MM-RG

Clamping screws

Ball terminal, steel



page 24

### MM-SC

Jaw blocks

Steel



page 25

### MM-GBK

Shim Kit

For jaw blocks



page 26

### MM-SI

Proximity switches  
for pneumatic fastening clamps

Inductive sensor



page 27

### MM-CS

Cable with connector M12x1

For proximity switch MM-SI



page 28

### MM-CC

Centering bushings

Steel



page 29

### MM-SBA

Mounting brackets

for pneumatic fastening clamps



page 30

### MM-PTA

Rear protections

for pneumatic fastening clamps

MM-BL



page 31

# MM-BL | Pneumatic fastening clamps

For side locking



## MATERIAL

Black-oxide steel.

## MAXIMUM WORKING PRESSURE

10 bar.

## FEATURES

MM-BL pneumatic fastening clamps are characterised by a "double effect" pneumatic cylinder which transmits a rotating movement to the clamping arm.

The maximum locking momentum is achieved when the clamping arm arrives at the stroke end and through pneumatic actuation only.

Under specific tests the pneumatic fastening clamps showed constant performances for more than 20 million cycles.

See Pneumatic fastening clamp features (on page 2).

## SPECIAL EXECUTIONS ON REQUEST

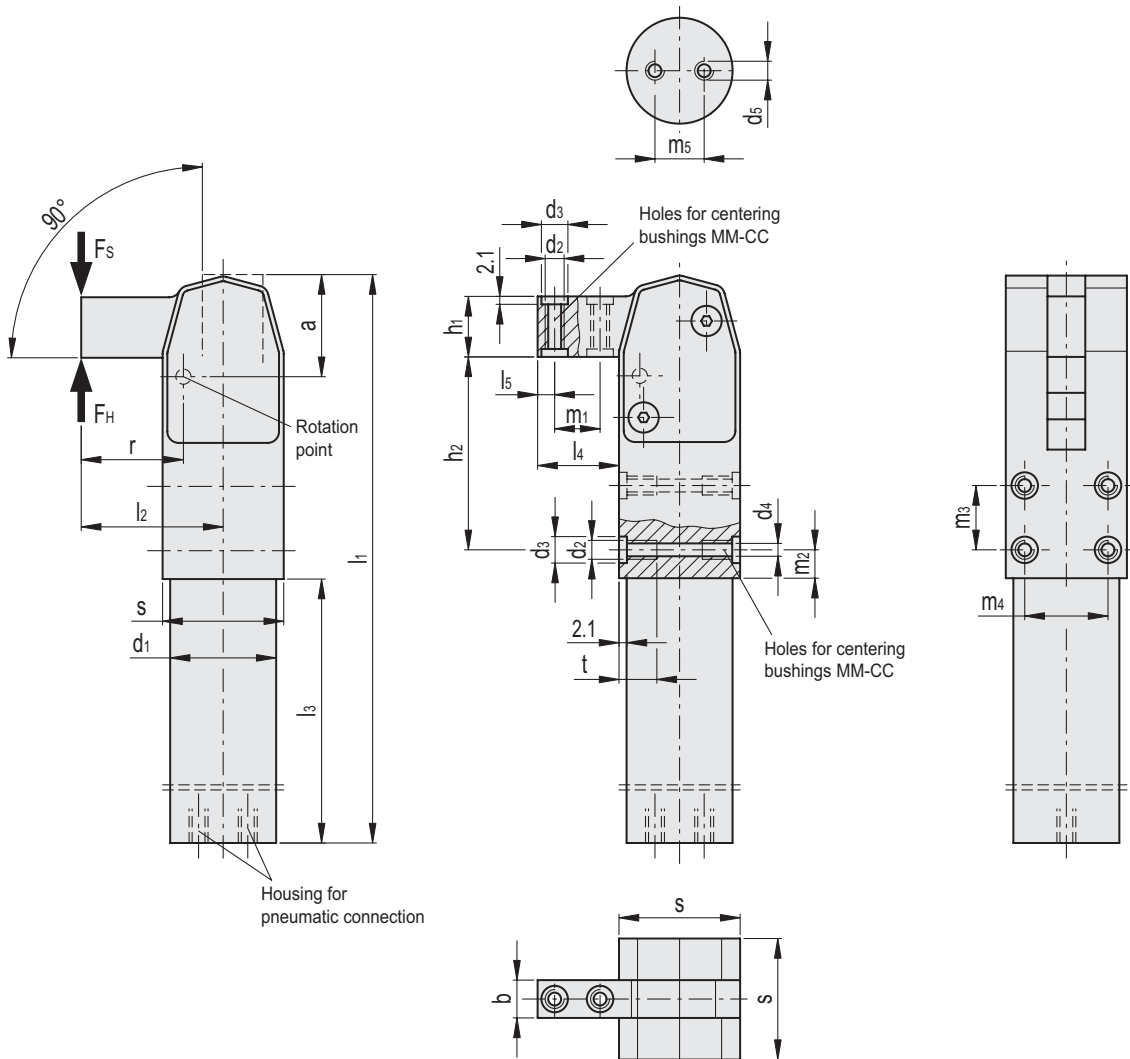
- Fastening clamps with Teflon coating for high temperature and corrosion applications.
- Fastening clamps with FKM sealing gasket resistant to max working temperatures up to 270°C.
- Fastening clamps with arm rotating movement and locking in the 20° position.
- Fastening clamps with arm rotating movement and locking in the 45° position.

## ACCESSORIES ON REQUEST

Brackets, fixing elements and sensors (see table of possible configurations).



Possible configurations of pneumatic fastening clamp MM-BL			
<p>1 x MM-A-RG-NK</p>		<p>1 x MM-A-RG1-NK</p>	
<p>1 x MM-FL-RG-NK</p>		<p>1 x MM-FL-RG1-NK</p>	
<p>1 x MM-SI</p>		<p>1 x MM-SI</p>	
<p>4 x MM-RG</p>		<p>2 x MM-RG</p>	
<p>1 x MM-A-SC-NK</p>		<p>1 x MM-A-SCL-NK</p>	
<p>1 x MM-FL-SC-NK</p>		<p>1 x MM-FL-SCL-NK</p>	
<p>1 x MM-SI</p>		<p>1 x MM-SI</p>	
<p>2 x MM-SC</p>		<p>2 x MM-SC</p>	
<p>2 x MM-GBK</p>		<p>2 x MM-GBK</p>	



Code	Description	a	b	d1	d2	d3	d4	d5	h1	h2	l1-0.5	l2	l3	l4	l5	s	m1	m2	m3	m4	m5	r	t	FH	Fs	M#	⚖
			-0.2	h8	H8												±0.01	±0.01	±0.01				N	N			
MM.14020	MM-BL-20	27	10	28	M5	7	4.2	M5	16	51	150	37.5	70	21.5	4.5	32	12	7.5	17	22	13	27	13	4070	2220	60	640
MM.14032	MM-BL-32	36.5	12	40	M6	9	5	G 1/8	21	75.5	206	52	91	31	6	42	18	10	25	30	22	36.5	15	5620	4110	150	1500
MM.14040	MM-BL-40	44.5	16	50	M8	11	6.8	G 1/8	26	91.5	244	63	104	37	7.5	52	22	13	30	37	25	44.5	18	7530	6740	300	2820
MM.14050	MM-BL-50	52.5	18	60	M10	13	8.5	G 1/8	31	114	279	72.5	110.5	41.5	8	62	27	12	47	44	35	52.5	21	13300	9000	475	3800

# Maximum tightening moment at 6 bar.

# MM-BI | Pneumatic fastening clamps

For axial locking



## MATERIAL

Black-oxide steel.

## MAXIMUM WORKING PRESSURE

10 bar.

## FEATURES

MM-BI pneumatic fastening clamps are characterized by a "double effect" pneumatic cylinder which transmits a rotating movement to the clamping arm

The maximum locking momentum is achieved when the clamping arm arrives at the stroke end and through pneumatic actuation only.

Under specific tests the pneumatic fastening clamps showed constant performances for more than 20 million cycles.

See Pneumatic fastening clamp features (on page 2).

## SPECIAL EXECUTIONS ON REQUEST

- Fastening clamps with Teflon coating for high temperature and corrosion applications.
- Fastening clamps with FKM sealing gasket resistant to max working temperatures up to 270°C.
- Fastening clamps with arm rotating movement and locking in the 20° position.
- Fastening clamps with arm rotating movement and locking in the 45° position.

## ACCESSORIES ON REQUEST

Brackets, fixing elements and sensors (see table of possible configurations).



Possible configurations of pneumatic fastening clamp MM-BI			
<p>1 x MM-A-RG-NK</p>		<p>1 x MM-A-RG1-NK</p>	
<p>1 x MM-FI-RG-NK</p>		<p>1 x MM-FI-RG1-NK</p>	
<p>1x MM-SI</p>		<p>1x MM-SI</p>	
<p>4 x MM-RG</p>		<p>2 x MM-RG</p>	
<p>1 x MM-A-SC-NK</p>		<p>1 x MM-A-SCL-NK</p>	
<p>1 x MM-FI-SC-NK</p>		<p>1 x MM-FI-SCL-NK</p>	
<p>1 x MM-SI</p>		<p>1 x MM-SI</p>	
<p>2 x MM-SC</p>		<p>2 x MM-SC</p>	
<p>2 x MM-GBK</p>		<p>2 x MM-GBK</p>	



**MATERIAL**

Black-oxide steel.

**MAXIMUM WORKING PRESSURE**

10 bar.

**FEATURES**

MM-BC pneumatic fastening clamps are characterised by a "double effect" pneumatic cylinder which transmits a rotating movement to the clamping arms.

The maximum locking momentum is achieved when the clamping arm arrives at the stroke end and through pneumatic actuation only.

Under specific tests the pneumatic fastening clamps showed constant performances for more than 20 million cycles.

See Pneumatic fastening clamp features (on page 2).

**SPECIAL EXECUTIONS ON REQUEST**

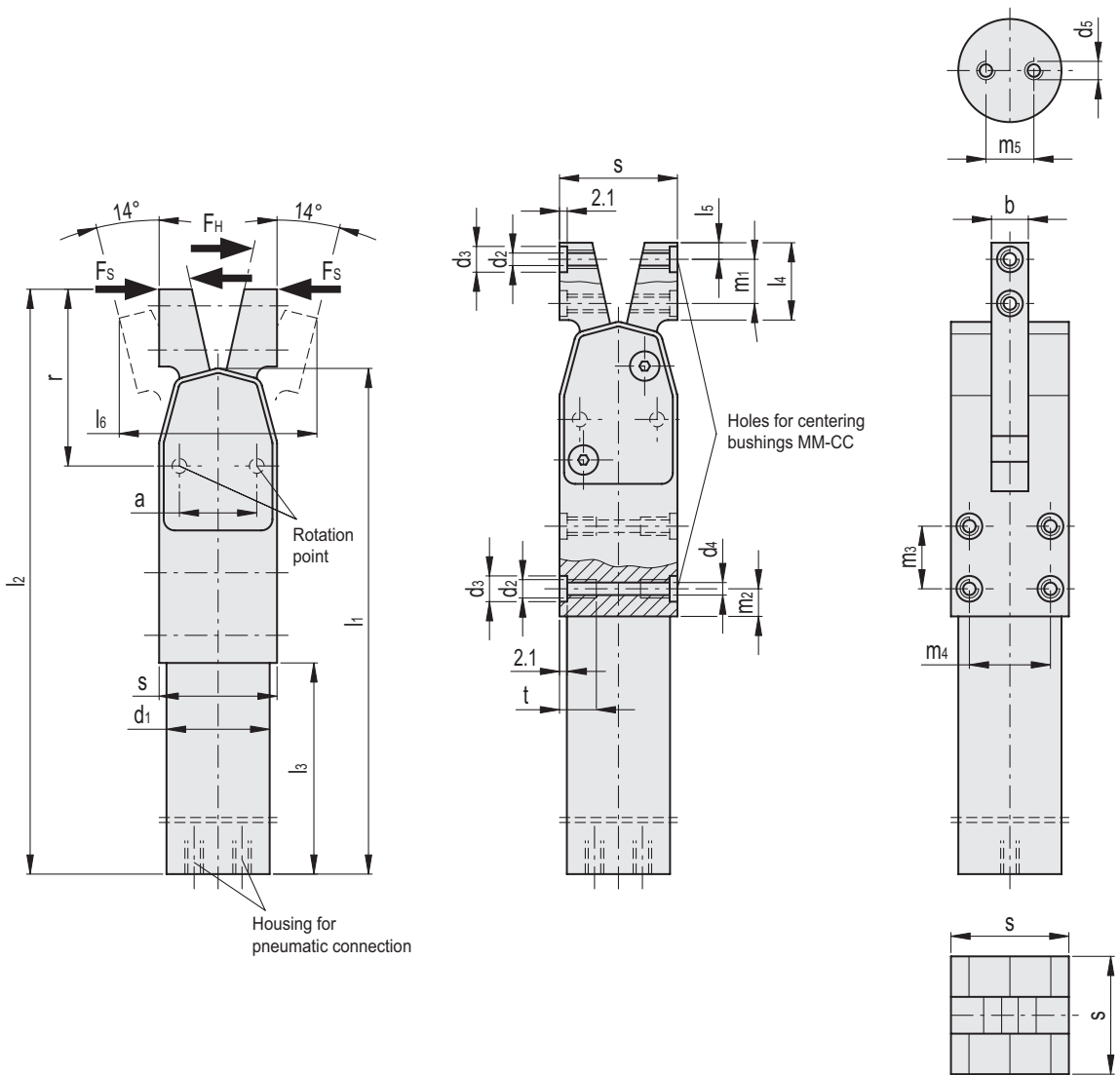
- Fastening clamps with Teflon coating for high temperature and corrosion applications.
- Fastening clamps with FKM sealing gasket resistant to max working temperatures up to 270°C.
- Fastening clamps with arm rotating movement and locking in the 20° position.
- Fastening clamps with arm rotating movement and locking in the 45° position.

**ACCESSORIES ON REQUEST**

Brackets, fixing elements and sensors (see table of possible configurations).



Possible configurations of pneumatic fastening clamp MM-BC			
<p>2 x MM-A-RG-NK</p>		<p>2 x MM-A-RG1-NK</p>	
<p>1 x MM-SI</p>		<p>1 x MM-SI</p>	
<p>4 x MM-RG</p>		<p>2 x MM-RG</p>	
<p>2 x MM-A-SC-NK</p>		<p>2 x MM-A-SCL-NK</p>	
<p>1 x MM-SI</p>		<p>1 x MM-SI</p>	
<p>2 x MM-SC</p>		<p>2 x MM-SC</p>	
<p>2 x MM-GBK</p>		<p>2 x MM-GBK</p>	



Code	Description	a	b	d1	d2	d3	d4	d5	l1	l2	l3	l4	l5	l6	s	m1	m2	m3	m4	m5	r	t	FH	FS	M#	ΔL
		-0.2		h8		H8			-0.5	-0.5					±0.01	±0.01	±0.01					N	N	[Nm]		
MM.05020	MM-BC-20	21	10	28	M5	7	4.2	M5	150	171	70	21	4.5	45	32	12	7.5	17	22	13	48	13	1150	630	60	650
MM.05032	MM-BC-32	31	12	40	M6	9	5	G 1/8	206	237	91	31	6	72.5	42	18	10	25	30	22	67.5	15	1520	1110	150	1400
MM.05040	MM-BC-40	37	16	50	M8	11	6.8	G 1/8	244	282	104	38	7.5	89.5	52	22	13	30	37	25	82.5	18	2000	1800	300	2900

# Maximum tightening moment at 6 bar.

**MATERIAL**

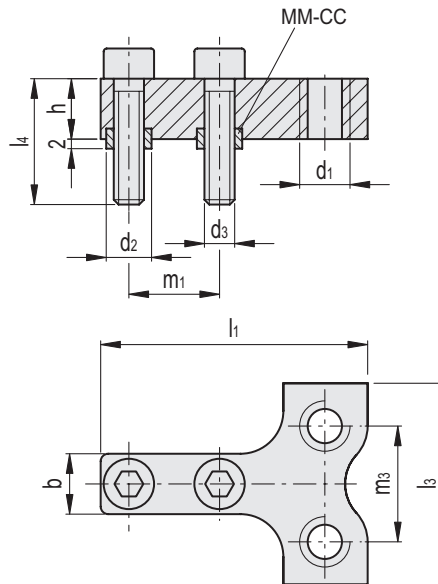
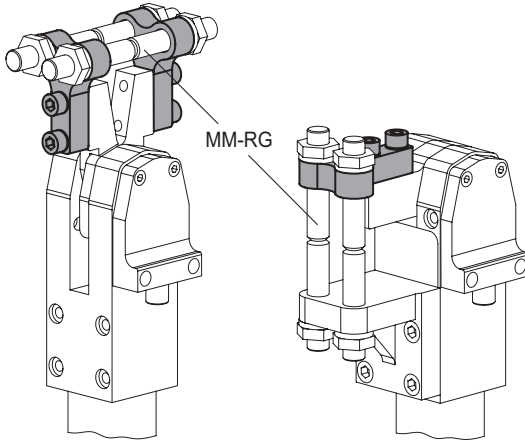
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

**FEATURES**

Y-shaped brackets are compatible with pneumatic fastening clamps MM-BL (see page 6), MM-BI (see page 8) or MM-BC (see page 10).

**ACCESSORIES ON REQUEST**

Clamping screws with ball terminal MM-RG (see page 24).



Code	Description	b -0.2	d1	d2 H8 / h6	d3	h	l1	l3	l4	m1	m2	m3	⚖
MM.26020	MM-A-RG-20	10	M8	7	M5	10	37	30	19.5	12	14.5	17	30
MM.26032	MM-A-RG-32	12	M10	9	M6	12	53	40	29.5	18	20.9	23	120
MM.26040	MM-A-RG-40	16	M12	11	M8	14	63	50	34	22	23.5	30	180
MM.26050	MM-A-RG-50	18	M12	13	M10	16	73	60	34	27	28.5	40	190

**MATERIAL**

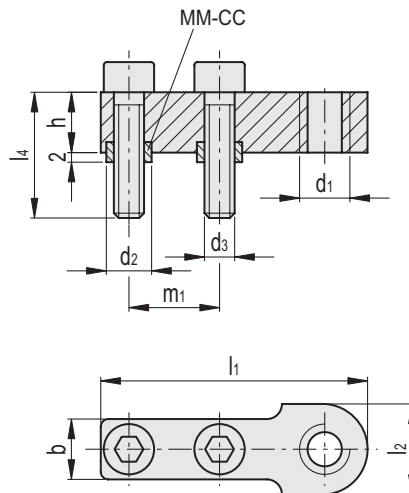
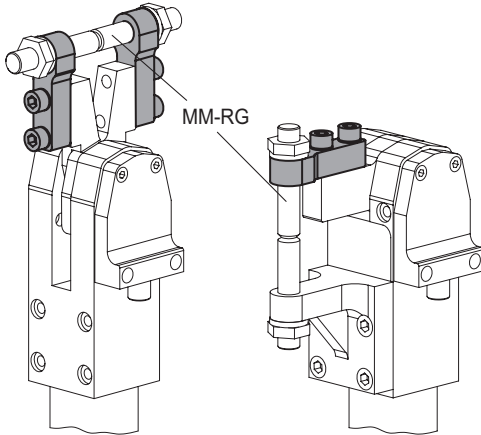
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

**FEATURES**

I-shaped brackets are compatible with pneumatic fastening clamps MM-BL (see page 6), MM-BI (see page 8) or MM-BC (see page 10).

**ACCESSORIES ON REQUEST**

Clamping screws with ball terminal MM-RG (see page 24).



Code	Description	b -0.2	d1	d2 H8 / h6	d3	h	l1	l2	l4	m1	m2	△△
MM.27020	MM-A-RG1-20	10	M8	7	M5	10	37	13	19.5	12	14.5	20
MM.27032	MM-A-RG1-32	12	M10	9	M6	12	53	17	29.5	18	20.9	90
MM.27040	MM-A-RG1-40	16	M12	11	M8	14	63	20	34	22	23.5	110
MM.27050	MM-A-RG1-50	18	M12	13	M10	16	73	20	34	27	28.5	130

# MM-A-SC | Y-shaped brackets for jaw block

Steel



## MATERIAL

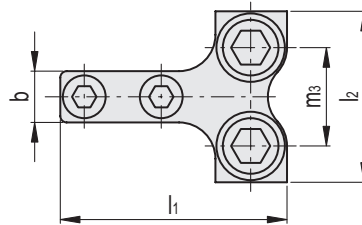
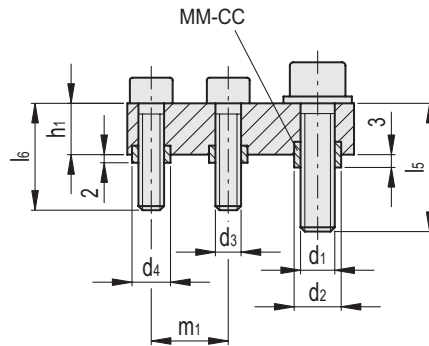
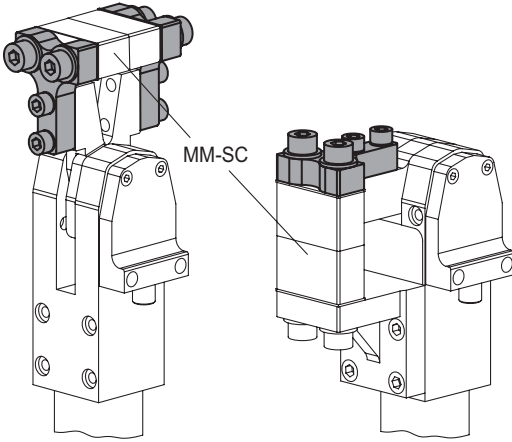
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

## FEATURES

Y-shaped brackets are compatible with pneumatic fastening clamps MM-BL (see page 6), MM-BI (see page 8) or MM-BC (see page 10).

## ACCESSORIES ON REQUEST

Jaw blocks MM-SC (see page 25).



Code	Description	b -0.2	d1	d2 H8 / h6	d3	d4 H8 / h6	h1	l1	l2	l5	l6	m1	m2	m3	△
MM.21020	MM-A-SC-20	10	M6	9	M5	7	10	37	30	18.5	19.5	12	14.5	17	33
MM.21032	MM-A-SC-32	12	M8	11	M6	9	12	53	40	23.5	29.5	18	20.9	23	120
MM.21040	MM-A-SC-40	16	M10	13	M8	11	14	63	50	28	34	22	23.5	30	190
MM.21050	MM-A-SC-50	18	M10	13	M10	13	16	73	60	28	34	27	28.5	40	200

**MATERIAL**

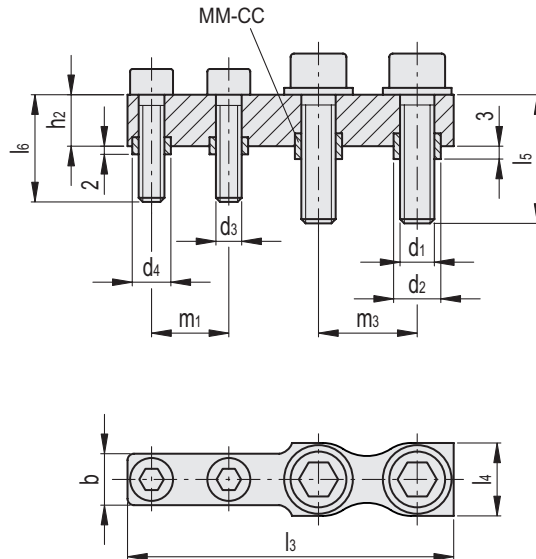
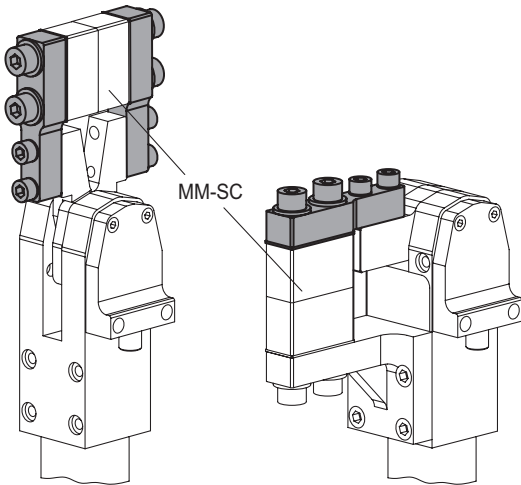
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

**FEATURES**

I-shaped brackets are compatible with pneumatic fastening clamps MM-BL (see page 6), MM-BI (see page 8) or MM-BC (see page 10).

**ACCESSORIES ON REQUEST**

Jaw blocks MM-SC (see page 25).



Code	Description	b-0.2	d1	d2 H8 / h6	d3	d4 H8 / h6	h2	l3	l4	l5	l6	m1	m2	m3	△
MM.35020	MM-A-SCL-20	10	M6	9	M5	7	10	54	13	18.5	19.5	12	14.5	17	30
MM.35032	MM-A-SCL-32	12	M8	11	M6	9	14	76	17	23.5	29.5	18	20.9	23	80
MM.35040	MM-A-SCL-40	16	M10	13	M8	11	16	93	20	28	34	22	23.5	30	170
MM.35050	MM-A-SCL-50	18	M10	13	M10	13	18	113	20	28	34	27	28.5	40	250

**MATERIAL**

Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

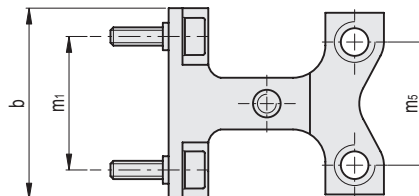
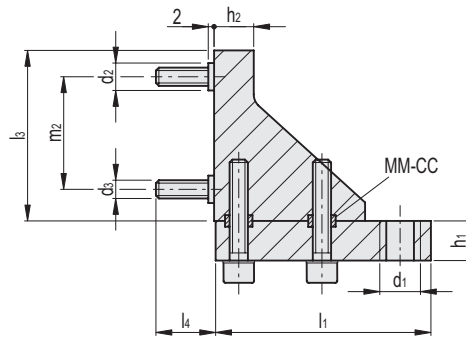
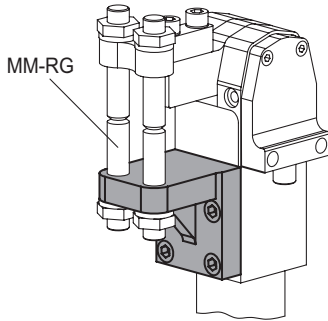
**FEATURES AND APPLICATIONS**

The brackets are compatible with the pneumatic fastening clamps MM-BL (see page 6).

These brackets are used in applications where it is necessary to effectively block a metal sheet

**ACCESSORIES ON REQUEST**

Clamping screws with ball terminal MM-RG (see page 24).



Code	Description	b -0.2	d1	d2 H8 / h6	d3	h1	h2	l1	l3	l4	m1	m2	m3	m4	m5	△△
MM.43020	MM-FL-RG-20	32	M8	7	M5	10	10	38	37	7.5	22	17	15	31.5	17	152
MM.43032	MM-FL-RG-32	42	M10	9	M6	12	12	54.5	50.5	10	30	25	19.5	45.9	23	380
MM.43040	MM-FL-RG-40	52	M12	11	M8	14	14	63	61	13.5	37	30	23.5	53	30	655
MM.43050	MM-FL-RG-50	62	M12	13	M10	16	16	73.5	83	13.5	44	47	27	63.5	40	864

**MATERIAL**

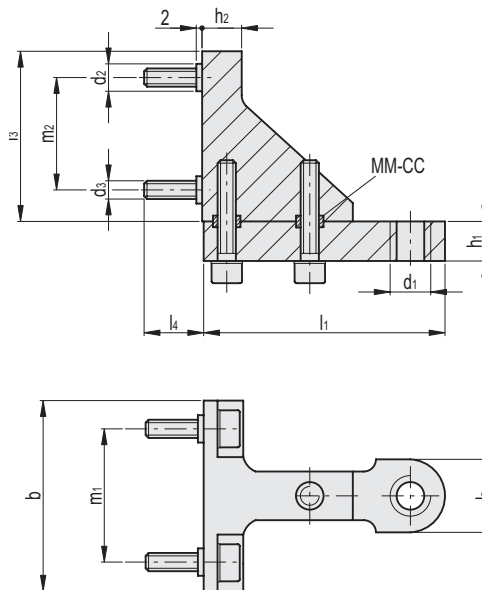
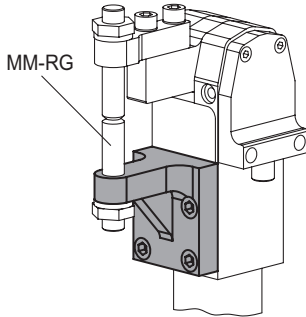
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

**FEATURES**

The brackets are compatible with the pneumatic fastening clamps MM-BL (see page 6).

**ACCESSORIES ON REQUEST**

Clamping screws with ball terminal MM-RG (see page 24).



Code	Description	b-0.2	d1	d2 H8 / h6	d3	h1	h2	l1	l2	l3	l4	m1	m2	m3	m4	⚖
MM.44020	MM-FL-RG1-20	32	M8	7	M5	10	10	38	17	37	7.5	22	17	15	31.5	120
MM.44032	MM-FL-RG1-32	42	M10	9	M6	12	12	54.5	17	50.5	10	30	25	19.5	45.9	295
MM.44044	MM-FL-RG1-40	52	M12	11	M8	14	14	63	17	61	13.5	37	30	23.5	53	500
MM.44050	MM-FL-RG1-50	62	M12	13	M10	16	16	73.5	20	83	13.5	44	47	27	63.5	670

**MATERIAL**

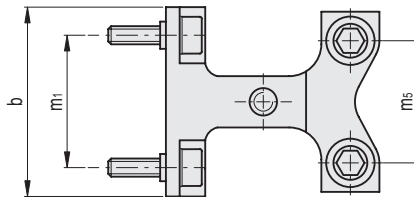
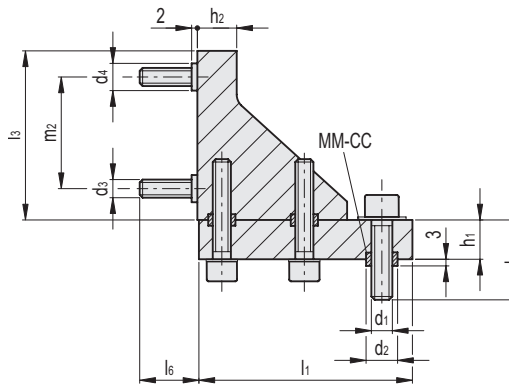
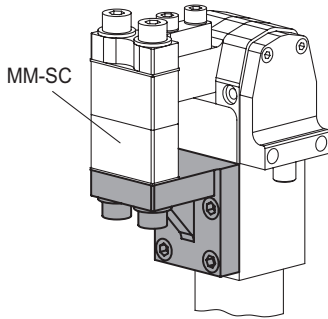
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

**FEATURES**

The brackets are compatible with the pneumatic fastening clamps MM-BL (see page 6).

**ACCESSORIES ON REQUEST**

Jaw blocks MM-SC (see page 25).



Code	Description	b-0.2	d1	d2 H8 / h6	d3	d4 H8 / h6	h1	h2	l1	l3	l5	l6	m1	m2	m3	m4	m5	Δ <sub>Δ</sub>
MM.40020	MM-FL-SC-20	32	M6	9	M5	7	10	10	38	37	18.5	7.5	22	17	15	31.5	17	170
MM.40032	MM-FL-SC-32	42	M8	11	M6	9	12	12	54.5	50.5	23.5	10	30	25	19.5	45.9	23	360
MM.40040	MM-FL-SC-40	52	M10	13	M8	11	14	14	63	61	28	13.5	37	30	23.5	53	30	650
MM.40050	MM-FL-SC-50	62	M10	13	M10	13	16	16	73.5	83.5	27	13.5	44	47	27	62.5	40	730

**MATERIAL**

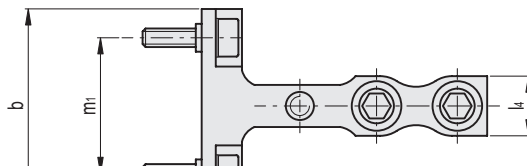
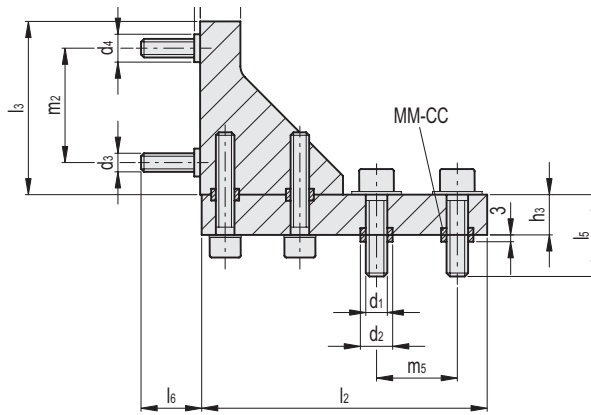
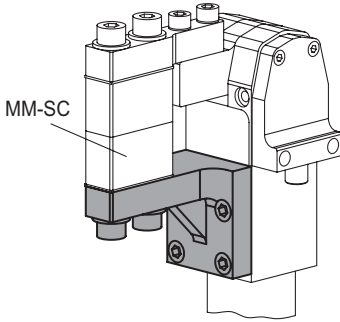
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

**FEATURES**

The brackets are compatible with the pneumatic fastening clamps MM-BL (see page 6).

**ACCESSORIES ON REQUEST**

Jaw blocks MM-SC (see page 25).



Code	Description	b-0.2	d1	d2 H8 / h6	d3	d4 H8 / h6	h2	h3	l2	l3	l4	l5	l6	m1	m2	m3	m4	m5	ΔΔ
MM.52020	MM-FL-SCL-20	32	M6	9	M5	7	10	10	55	37	13	18.5	7.5	22	17	15	31.5	17	190
MM.52032	MM-FL-SCL-32	42	M8	11	M6	9	12	14	77.5	50.5	17	23.5	10	30	25	19.5	45.9	23	280
MM.52040	MM-FL-SCL-40	52	M10	13	M8	11	14	16	93	61	20	28	13.5	37	30	23.5	53	30	450
MM.52050	MM-FL-SCL-50	62	M10	13	M10	13	16	18	113.5	85.5	20	29	13.5	44	47	27	62.5	40	780

**MATERIAL**

Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

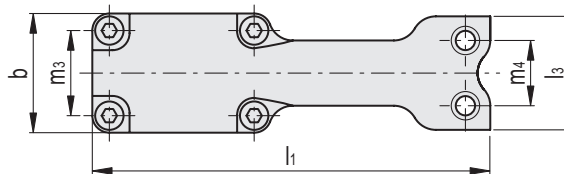
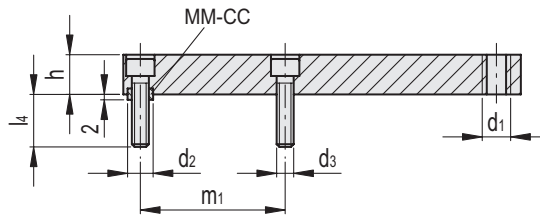
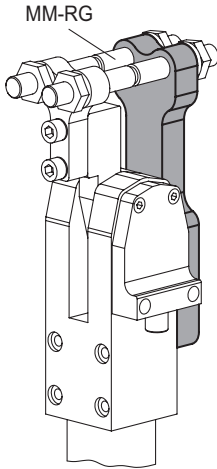
**FEATURES AND APPLICATIONS**

The brackets are compatible with the pneumatic fastening clamps MM-BI (see page 8).

These brackets are used in applications where it is necessary to effectively block a metal sheet.

**ACCESSORIES ON REQUEST**

Clamping screws with ball terminal MM-RG (see page 24).



Code	Description	b	d1	d2 H8 / h6	d3	h	l1	l3	l4	m1	m2	m3	m4	⚖
MM.42020	MM-FI-RG-20	32	M8	7	M5	10	98.5	30	8	34	53	22	17	150
MM.42032	MM-FI-RG-32	42	M10	9	M6	14	140	40	8.5	51	74.4	30	23	410
MM.42040	MM-FI-RG-40	52	M12	11	M8	16	168	50	12.5	62	88.5	37	30	900
MM.42050	MM-FI-RG-50	62	M12	13	M10	18	192.5	60	12.5	71.5	102	44	40	1020

**MATERIAL**

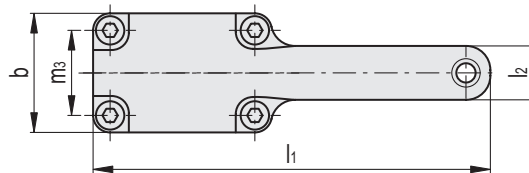
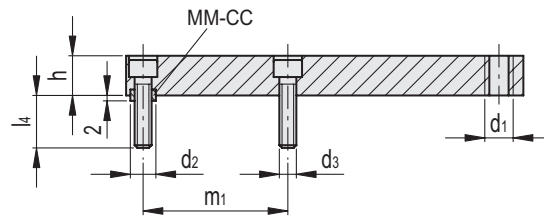
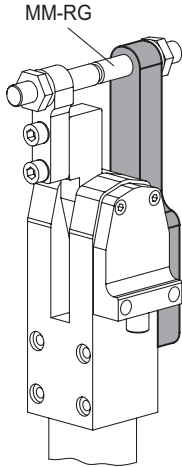
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

**FEATURES**

The brackets are compatible with the pneumatic fastening clamps MM-BI (see page 8).

**ACCESSORIES ON REQUEST**

Clamping screws with ball terminal MM-RG (see page 24).



Code	Description	b	d1	d2 H8 / h6	d3	h	l1	l2	l4	m1	m2	m3	$\Delta_{\pm}$
MM.41020	MM-FI-RG1-20	32	M8	7	M5	10	98.5	15	8	34	53	22	130
MM.41032	MM-FI-RG1-32	42	M10	9	M6	14	140	19	8.5	51	74.4	30	220
MM.41040	MM-FI-RG1-40	52	M12	11	M8	16	168	22	12.5	62	88.5	37	380
MM.41050	MM-FI-RG1-50	62	M12	13	M10	18	192.5	22	12.5	71.5	102	44	690

# MM-FI-SC | Long Y-shaped brackets for jaw block

Steel



## MATERIAL

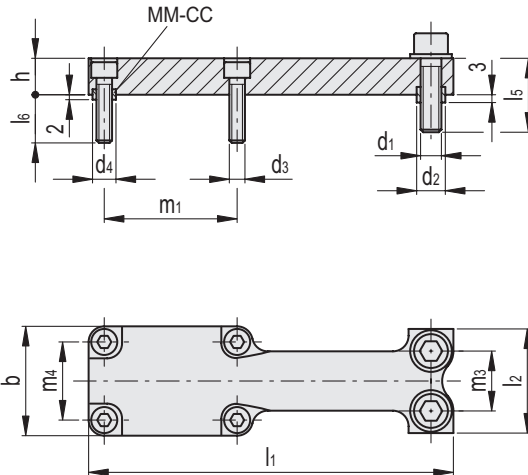
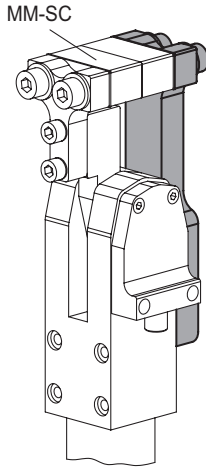
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

## FEATURES

The brackets are compatible with the pneumatic fastening clamps MM-BI (see page 8).

## ACCESSORIES ON REQUEST

Jaw blocks MM-SC (see page 25).



Code	Description	b-0.2	d1	d2 H8 / h6	d3	d4 H8 / h6	h	l1	l2	l5	l6	m1	m2	m3	m4	△
MM.37020	MM-FI-SC-20	32	M6	9	M5	7	10	98.5	30	18.5	8	34	53	17	22	150
MM.37032	MM-FI-SC-32	42	M8	11	M6	9	14	140	40	23.5	8.5	51	74.4	23	30	400
MM.37040	MM-FI-SC-40	52	M10	13	M8	11	16	168	50	28	12.5	62	88.5	30	37	900
MM.37050	MM-FI-SC-50	62	M10	13	M10	13	18	192.5	60	28	12.5	71.5	102	40	44	1030

**MATERIAL**

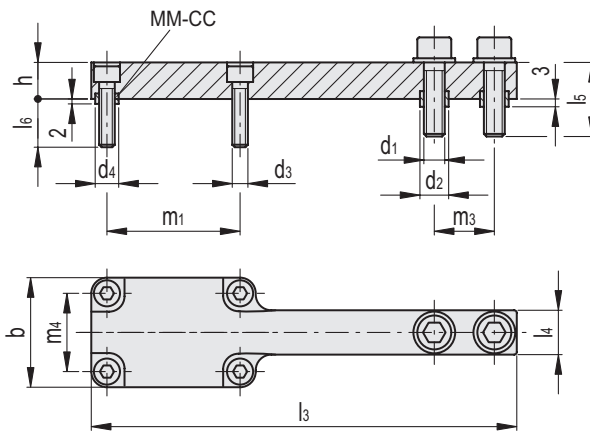
Bracket, screws and centering bushings MM-CC (see page 29) in black-oxide steel.

**FEATURES**

The brackets are compatible with the pneumatic fastening clamps MM-BI (see page 8).

**ACCESSORIES ON REQUEST**

Jaw blocks MM-SC (see page 25).



Code	Description	b-0.2	d1	d2 H8 / h6	d3	d4 H8 / h6	h	l3	l4	l5	l6	m1	m2	m3	m4	⚖
MM.49020	MM-FI-SCL-20	32	M6	9	M5	7	10	115.5	13	18.5	8	34	53	17	22	150
MM.49032	MM-FI-SCL-32	42	M8	11	M6	9	14	163	17	23.5	8.5	51	74.4	23	30	370
MM.49040	MM-FI-SCL-40	52	M10	13	M8	11	16	198	20	28	12.5	62	88.5	30	37	720
MM.49050	MM-FI-SCL-50	62	M10	13	M10	13	18	232.5	20	28	12.5	71.5	102	40	44	770

**MATERIAL**

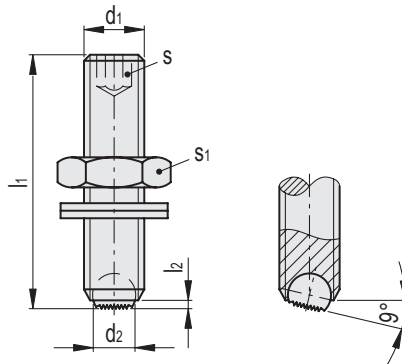
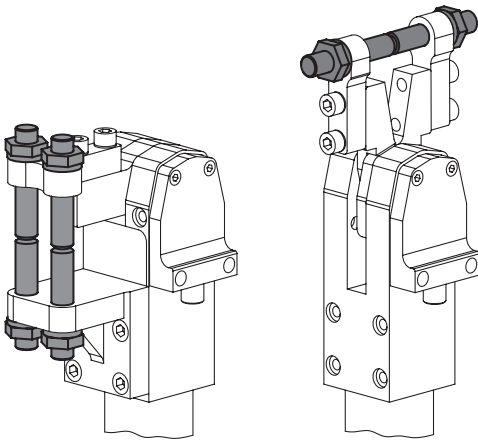
Black-oxide steel screw and nut.  
 Zinc-plated steel washers.  
 Hardened steel knurled flat-faced ball, non-reversible.

**FEATURES**

The clamping screws are suitable for clamping workpieces. They are compatible with arms and brackets which are themselves compatible with the pneumatic fastening clamps MM-BL (see page 6), MM-BI (see page 8) or MM-BC (see page 10).

**SPECIAL EXECUTIONS ON REQUEST**

- Acetal resin based (Delrin) technopolymer screws with flat-faced ball.
- Screws with thrust pad.



Code	Description	d1	d2	l1	l2	s	s1	⚖️
MM.25203	MM-RG-20-30	M8	4.8	30	0.5	4	13	12
MM.25020	MM-RG-20	M8	4.8	40	0.5	4	13	16
MM.25032	MM-RG-32	M10	6.4	50	0.7	5	17	25
MM.25040	MM-RG-40	M12	8.2	50	0.9	6	19	30
MM.25050	MM-RG-50	M12	8.2	60	0.9	6	19	36

**MATERIAL**

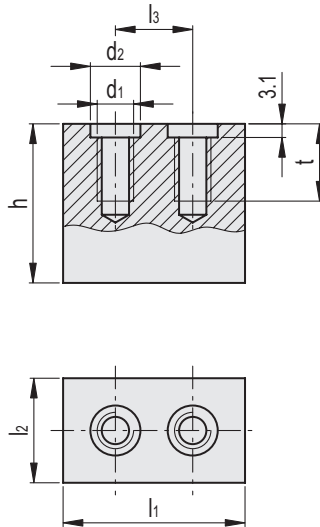
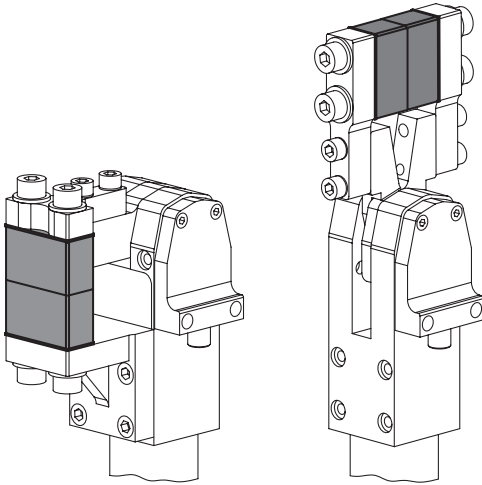
Black-oxide steel.

**FEATURES**

The jaw blocks are compatible with the brackets which are themselves compatible with the pneumatic fastening clamps MM-BL (see page 6), MM-BI (see page 8) or MM-BC (see page 10).

**ACCESSORIES ON REQUEST**

Centering bushings MM-CC (see page 29).



Code	Description	d1	d2 H8 / h6	h	l1	l2	l3 ±0.01	t	ΔΔ
MM.23020	MM-SC-A-20	M6	9	25	30	13	17	8	80
MM.23032	MM-SC-A-32	M8	11	35	40	17	23	12	180
MM.23040	MM-SC-A-40	M10	13	45	50	20	30	15	350
MM.23050	MM-SC-A-50	M10	13	50	60	20	40	15	470
MM.34020	MM-SC-AL-20	M6	9	50	30	13	17	8	150
MM.34032	MM-SC-AL-32	M8	11	70	40	17	23	12	370
MM.34040	MM-SC-AL-40	M10	13	80	50	20	30	15	620
MM.34050	MM-SC-AL-50	M10	13	85	60	20	40	15	800

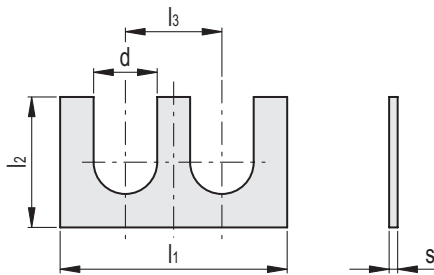
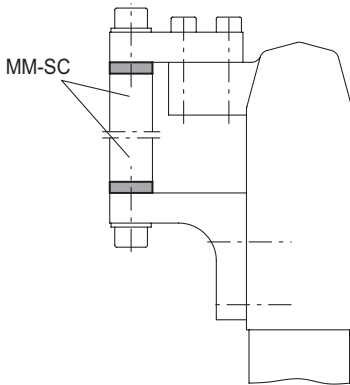
**MATERIAL**

Steel.

**FEATURES**

The shims are used to correct any misalignments and facilitate the correct positioning of the jaw blocks MM-SC (see page 25), thus maximising the clamping force.

For each code a kit of 5 shims of different "s" sizes is supplied.



Code	Description	d	l1	l2	l3	s	⚖️
MM.20020	MM-GBK-20	9.2	30	13	17	0.1 - 0.2 - 0.3 - 0.5 - 1	1
MM.20032	MM-GBK-32	11.2	40	17	23	0.1 - 0.2 - 0.3 - 0.5 - 1	1
MM.20040	MM-GBK-40	13.2	50	20	30	0.1 - 0.2 - 0.3 - 0.5 - 1	2
MM.20050	MM-GBK-50	13.2	60	20	40	0.1 - 0.2 - 0.3 - 0.5 - 1	4

**MATERIAL**

Polyamide based (PA) technopolymer body, polyurethane (PUR) connector, thermoplastic polyurethane cable (TPU) and nickel-plated brass nut.

**FEATURES**

Proximity switches can be fitted to pneumatic fastening clamps MM-BL (see page 6), MM-BI (see page 8) or MM-BC (see page 10) to induce controlled signals that have as their output the lighting of 3 LEDs providing the arm position.

Proximity switches can be screwed directly onto the clamps and can be assembled on both sides.

**TECHNICAL DATA**

LED indicators:

- Green: the sensor is correctly connected and ready to transmit the signal.
- Red: the arm is in the locked position.
- Yellow: the arm is in the rest position.

Output	PNP
Power supply	10 – 30 Vdc
Max load	100 mA
Voltage drop	≤ 2 V
Temperature	0 ÷ 50 °C
Protection class	IP65

**SPECIAL EXECUTION ON REQUEST**

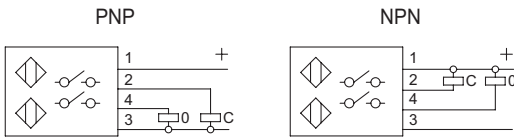
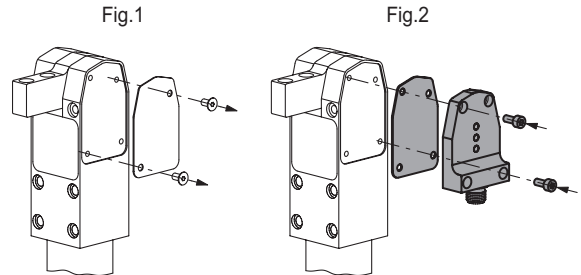
Proximity switch with NPN output

**ACCESSORIES ON REQUEST**

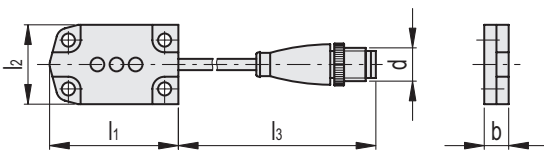
Cable with M12 connector MM-CS (see page 28).

**ASSEMBLY INSTRUCTIONS**

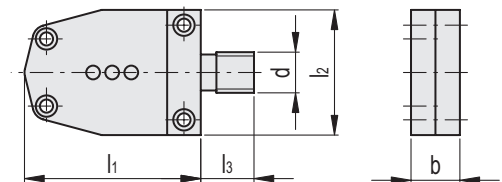
1. Remove the screws and the metal plate from the fastening clamps Fig.1
2. Assemble the thermosetting plastic plate, the proximity sensor and the two M4 screws in black-oxide steel (included in the supply) Fig.2.



MM-SI-20



MM-SI-32  
MM-SI-40  
MM-SI-50



Code	Description	b	d	l1-0.2	l2	l3	For	Δ
MM.28020	MM-SI-20	8	M12 x 1	42	26	110	MM-BL-20 / MM-BI-20 / MM-BC-20	20
MM.28032	MM-SI-32	16	M12 x 1	57.5	41	10	MM-BL-32 / MM-BI-32 / MM-BC-32	26
MM.28040	MM-SI-40	16	M12 x 1	73	48	10	MM-BL-40 / MM-BI-40 / MM-BC-40	31
MM.28050	MM-SI-50	16	M12 x 1	73	48	10	MM-BL-50 / MM-BI-50	31

**MATERIAL**

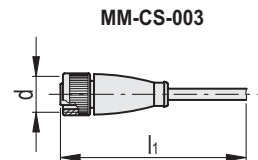
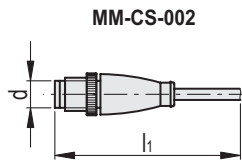
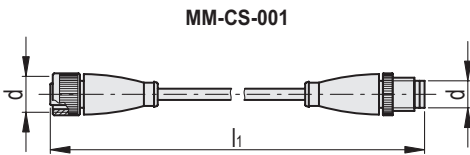
Polyurethane (PUR) connector, black colour, thermoplastic (TPU) polyurethane cable, orange colour and nickel-plated brass nut.

**FEATURES**

Connector with housing and contact holder 4 pole M12x1. IP67 protection class and cables compatible with aggressive environments.

**COMPATIBILITY**

Proximity switch MM-SI (see page 27).



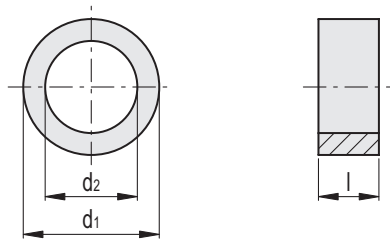
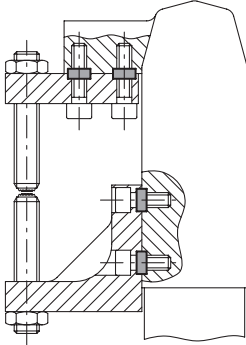
Code	Description	d	l1	⚖️
MM.22106	MM-CS-001/600	M12 x 1	600	48
MM.22110	MM-CS-001/1000	M12 x 1	1000	60
MM.22120	MM-CS-001/2000	M12 x 1	2000	81
MM.22220	MM-CS-002/2000	M12 x 1	2000	64
MM.22320	MM-CS-003/2000	M12 x 1	2000	64

**MATERIAL**

Black-oxide steel.

**FEATURES**

In addition to ensuring the correct positioning of the jaw blocks, brackets and pneumatic fastening clamps, the centering bushings have also the function of maintaining the correct axially of the loads during the clamping of parts being processed.



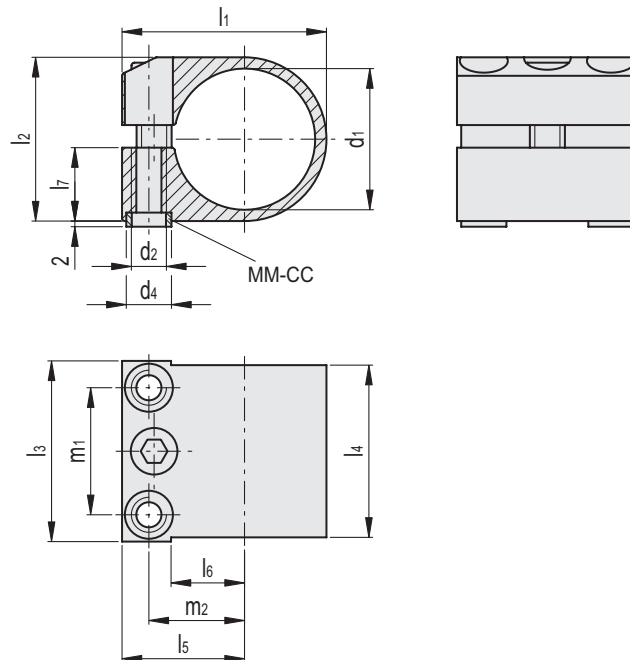
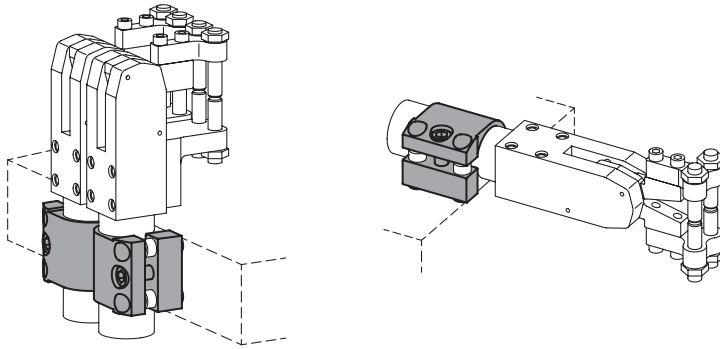
Code	Description	d1 h6	d2	l	△
MM.06020	MM-CC-20	7	5.1	4	1
MM.06032	MM-CC-32	9	6.1	4	1
MM.06040	MM-CC-40	11	8.1	4	1
MM.06050	MM-CC-50	13	10.1	4	2

**MATERIAL**

Anodised aluminium bracket, black colour.  
 Screw and centering bushings MM-CC (see page 29) in black-oxide steel.  
 Zinc-plated steel washers.

**FEATURES**

The mounting brackets allow a quick and effective assembly of the pneumatic fastening clamps MM-BL (see page 6), MM-BI (see page 8) or MM-BC (see page 10) for the different applications.  
 The bearings surface is used for the purpose of positioning the brackets precisely, while the centering bushings MM-CC (included in the supply) ensure the correct axially of the loads with respect to the bearing surface.



Code	Description	d1	d2	d4 H8 / h6	l1	l2	l3	l4	l5	l6	l7	m1	m2	⚖
MM.22020	MM-SBA-20	28	M8	11	51.35	38	39	36	35	16	16	26	25.85	200
MM.22032	MM-SBA-32	40	M10	13	61.35	48	54	51	39	21	21	38	29.35	560
MM.22040	MM-SBA-40	50	M12	16	72.35	58	64	61	47	26	26	45	33.85	800

**MATERIAL**

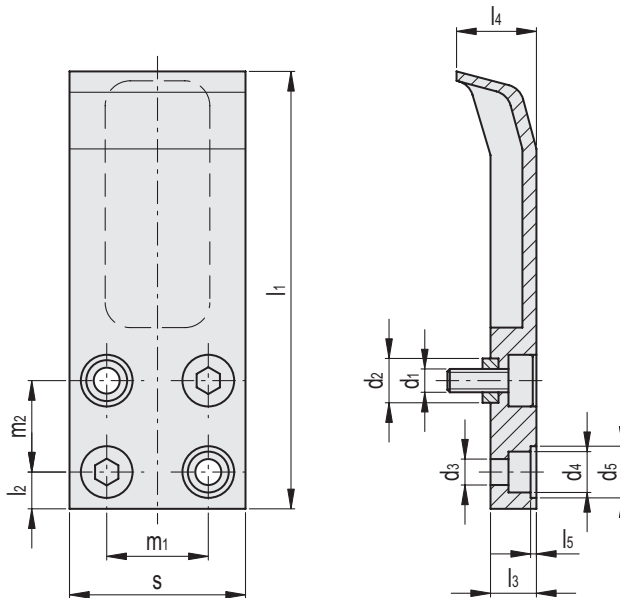
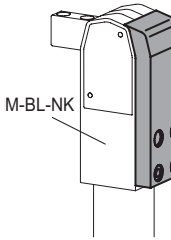
Black anodised aluminium.

**FEATURES**

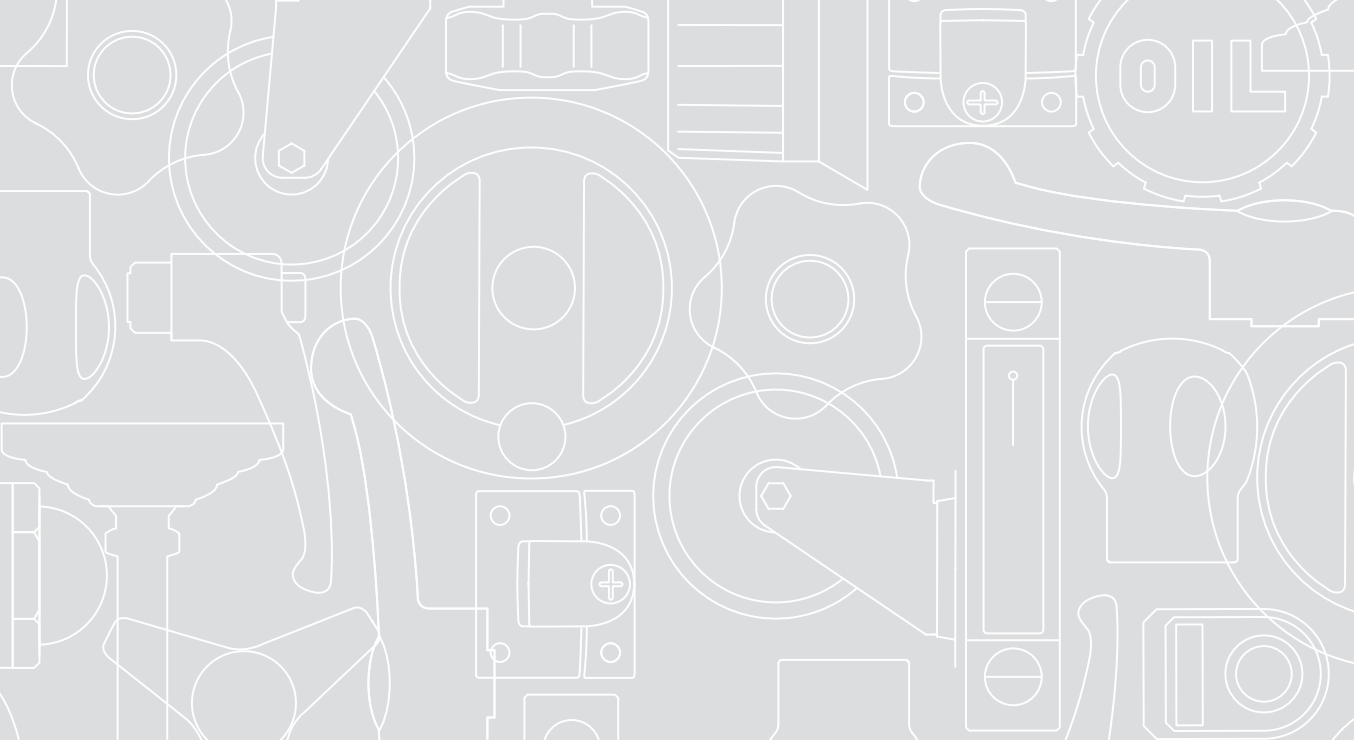
The rear protections prevent any processing residues or external bodies from penetrating inside the pneumatic fastening clamps MM-BL (see page 6).

**SPECIAL EXECUTION ON REQUEST**

Rear protection with Teflon coating.



Code	Description	d1	d2 H8 / h6	d3	d4	d5	l1	l2	l3	l4	l5	s	m1	m2	⚖
MM.36020	MM-PTA-20	M5	7	5.5	7	9	76	5	10	15.5	2.1	32	22	17	56
MM.36032	MM-PTA-32	M6	9	6.5	9	11	109	6.5	12	20	2.1	42	30	25	104
MM.36040	MM-PTA-40	M8	11	8.5	11	13	131	7.5	14	23	2.1	52	37	30	230
MM.36050	MM-PTA-50	M10	13	10.5	13	16	162	9	16	27	3.1	62	44	47	639



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