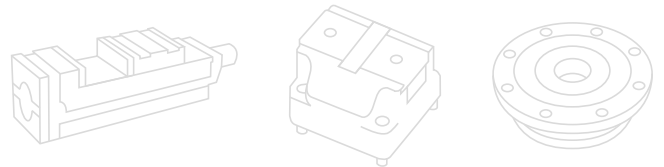
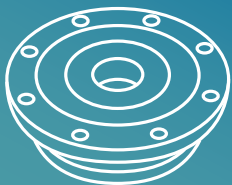




O-MAK — ZERO POINT SYSTEM



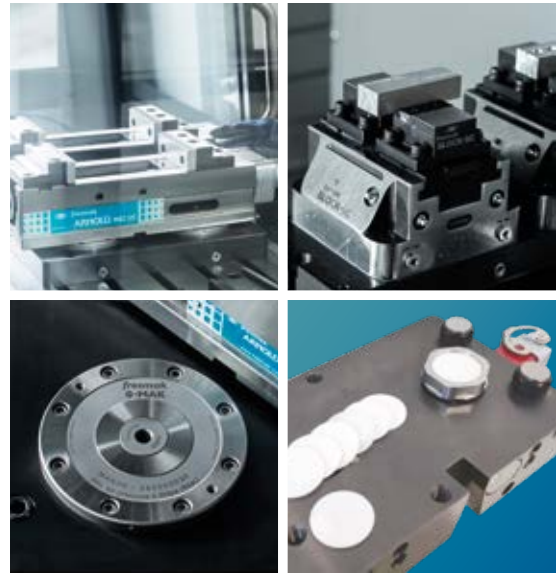
fresmak

AT FRESMAK INNOVATION IS NOT AN OPTION IT IS OUR ATTITUDE

Fresmak was founded in 1967 focused on manufacturing high pressure vices.

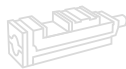
Nowadays, it has a wide range of clamping solutions and exports to over 50 countries worldwide.

Above all, Fresmak are people. Highly trained professionals with a constant attitude to improve and innovate in all processes; from planning right up to its implementation at customers facilities.



SPECIALIST IN CLAMPING SOLUTIONS

ARNOLD



BLOCK-SC



0-MAK



A STRATEGIC LOCATION FOR A FAST AND EFFICIENT SERVICE



Germany · Argentina · Australia · Austria · Belgium · Brazil · Canada
Chile · Colombia · Denmark · USA · Slovakia · Slovenia · Spain · Estonia · France · Finland · Greece
Holland · Hungary · India · Iceland · Ireland · Italy · Luxembourg · Mexico · Norway · Peru · Poland
Portugal · United Kingdom · Czech Republic · Dominican Republic · Romania · Russia · Singapore
Sweden · Taiwan · Turkey · Ukraine · Venezuela

EXPERIENCE

Fresmak is the first high pressure vice manufacturer in the world, focused ever since exclusively on clamping through a constant feedback from its clients.

This has allowed Fresmak to acquire a degree of knowledge and experience that guarantees its customers the **best solution** for clamping their workpieces.



SPECIALIZATION

Fresmak has a wide and **complete range** of clamping solutions, both standard and tailor made.

The company is constantly investing in R + D + i and is involved in innovation projects, both nationally and internationally, where it is considered a specialist in clamping.

SERVICE

Fresmak offers a **direct and individual attention** to all its customer.

It also answers quickly and flexibly to offers as well as to orders.

Repair and maintenance service are also available for customers.



KEYS THAT HELP FRESMAK BECOME A WORLDREFERENCE IN CLAMPING SOLUTIONS

- Absolute expertise in the product.
- A team of highly qualified and experienced people.
- Latest technology.
- Constant R & D investment.

0-MAK
—
**ZERO
POINT
SYSTEM**



INDEX



Fresmak: Smart Clamping

1-2



0-MAK: Zero-Point System

5

The system

5

Benefits

6

Advantages

7

Technology behind the 0-MAK

9

Parts and accessories

11



Cylinders

11



4x90° Cylinders

13



Nipples

15



Base plates and tombstones

17



Base plates and nipples

18



O-MAK

FRESMAK ZERO-POINT

POSITIONING AND CLAMPING SYSTEM

» EASY

Easy to mount on a base plate. A H7 slot has to be machined on the base plate to accommodate the O-MAK cylinder.

🕒 QUICK

Once the nipples are placed, positioning and clamping are achieved in seconds. Ready to work in seconds.

🎯 PRECISE

Aligns and holds at the same time. The system has a holding power up to 55kN and high repeatability within a tolerance of 0.005 mm.



Clamping elements such as vices, blocks, fixtures as well as work-pieces can be mounted by simply using nipples at the bottom so that they can be quickly changed and at a low cost.

O-MAK BENEFITS

Fresmak O-MAK zero-point system is the perfect way to optimize work-piece or fixture change.

- High centering repeatability ≤ 0.005 mm
- Reduces to minimum work-piece or fixture change time
- Increases machine working time
- Its high clamping power and the way it is applied, avoids vibrations while machining
- Extends tooling life
- Multipurpose interface capable of adapting to the different areas of the production process



SET-UP TIME

The O-MAK system is a quick and accurate system for changing of clamping elements that reduces work-piece as well as fixture set-up time, increasing machine running time.

This is an ideal method to save time and costs. Not only minimizes deadlines and stocks, but also provides quickness and precision when changing clamping systems.



COST SAVING EXAMPLE WITH O-MAK ZERO-POINT SYSTEM

	Machine Costs	Set-ups per 8h shift	Set-up time	Set-up time per 8h shift	Set-up costs per 8h shift	Annual cost (212 workdays)
CONVENTIONAL SET-UPS	120€/h	3	35 min	105 min	210 €	44.520 €
USING O-MAK	120€/h	3	3 min	9 min	18 €	3.816 €

Annual savings per shift 40.704 €



**SET-UP SAVINGS
+ 90%**

0-MAK ADVANTAGES

Mechanically actuated, without turbo

When clamped, it achieves a descending holding power between 10kN and 20kN and a side retaining power of 25kN and 55kN. Pneumatically operated for the opening process for loading the workpiece and releasing it once the machining process is over. Needs 6 bar pressure.



Optimized power transmission

Optimized power transmission caused by the contact of every ball in just three points within one of each of the inclined surfaces that generate the clamping power.



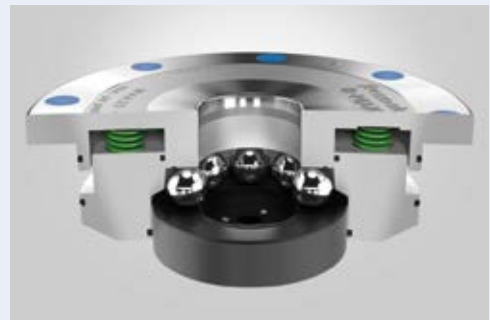
Easy to fit together

The geometry of the nipple, together with the chamfer in the center hole provides an easy run in and out of the nipple.



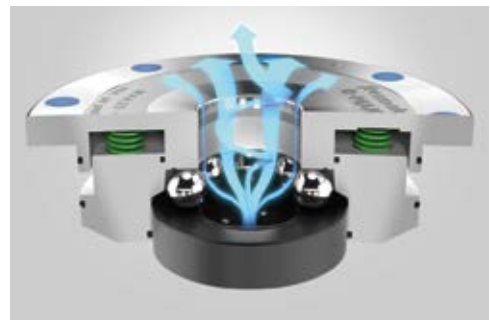
Without obstruction problems

Balls are free inside their cavity. This prevents snagging in case of dirt.



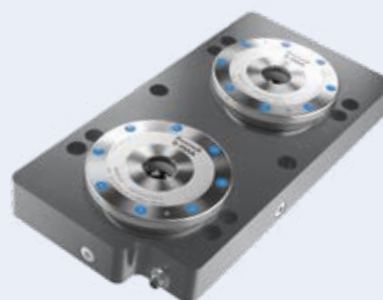
Integrated cleaning system

Integrated cleaning system by blowing air. The air is supplied through the normal connection for the opening operation.



Compact

Compact design and low profile do not detract Z-travel, what allows the machining of high workpieces.



Accessibility to 5 sides

5 sides machining can be performed without any collision risk.



Keynuts option

Four cross keynuts at 90° for single use as well as for positioning work-pieces at 90°.



Full protection

O-MAK is a closed system. Clamping through spring assembly and unclamping by means of compressed air. Absolutely irreversible. This feature provides safety while machining.

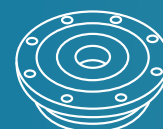


Safety system

It has a mechanical safety release system in case of binding.

High quality material

All the work-pieces are constructed of stainless Steel at 60 HRC.



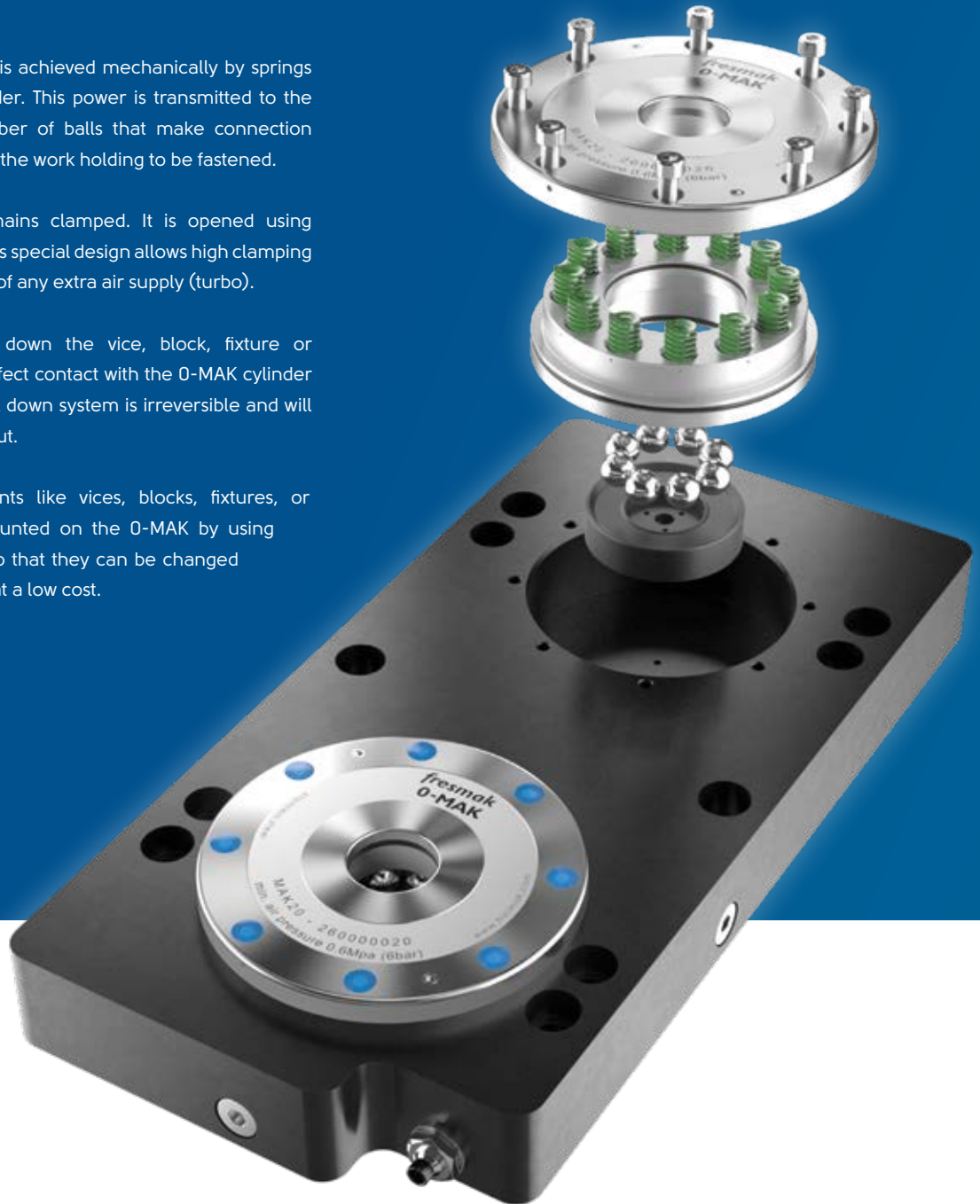
TECHNOLOGY BEHIND THE O-MAK

O-MAK clamping power is achieved mechanically by springs located inside the cylinder. This power is transmitted to the nipples through a number of balls that make connection between the O-MAK and the work holding to be fastened.

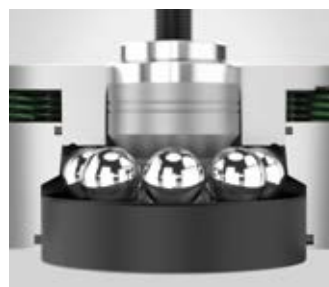
The system always remains clamped. It is opened using compressed air (6 bar). Its special design allows high clamping power without the need of any extra air supply (turbo).

Clamping power pulls down the vice, block, fixture or workpiece making a perfect contact with the O-MAK cylinder ground surface. This pull down system is irreversible and will not allow the nipple fly out.

Other clamping elements like vices, blocks, fixtures, or workpieces, can be mounted on the O-MAK by using nipples at the bottom, so that they can be changed repeatedly, quickly and at a low cost.



Multiplication of power with springs



Precision balls

Nipple



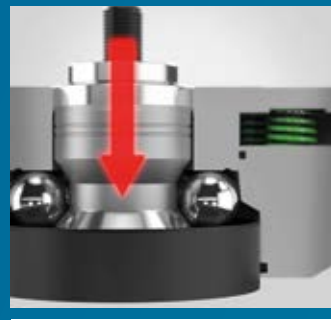
0-MAK stand by



Pull-in power



Holding power



Contact with ground surface



Clamping elements



PARTS AND ACCESSORIES

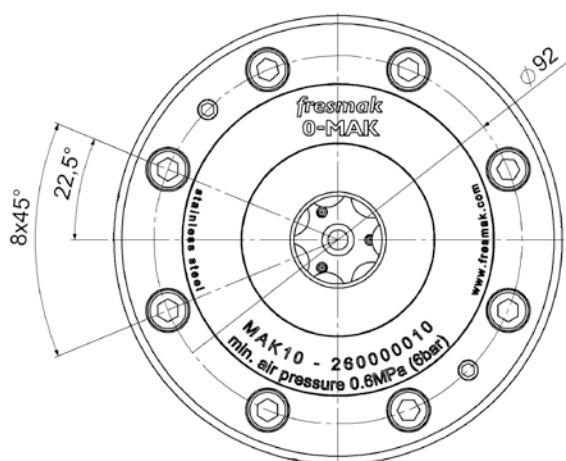
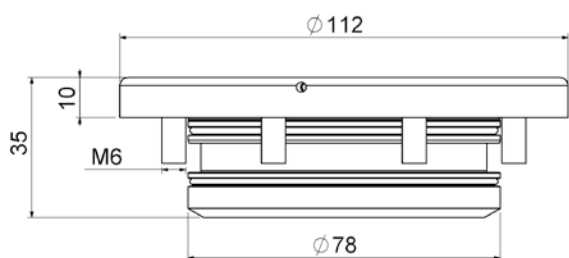
CYLINDER | MAK10



FEATURES

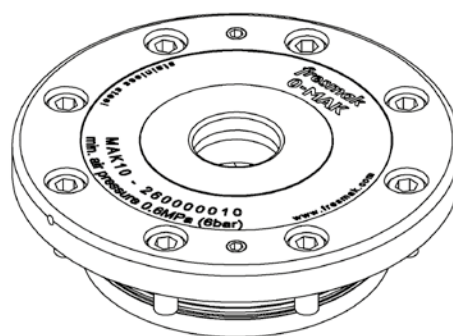
- > Pneumatic opening.
- > Mechanical clamping effect through compressed springs.
- > Transmission of power through precision balls.
- > No turbo needed.
- > Air blowing for inside cleaning as standard.
- > Repeatability <0.005mm
- > Working pressure: 6 Bar.

DIMENSIONS



SET SUPPLIED

- Cylinder
- 8 bolts
- 5 allen-set screws
- 1 o-ring
- 8 caps for protecting screws
- Brochure



Size	Code	Holding power (kN)	Retaining power (kN)	Working pressure (Bar)	Repeatability (mm)	Weight (Kg)
MAK10	260000010	10	25	6	< 0.005	1.1

PARTS AND ACCESSORIES

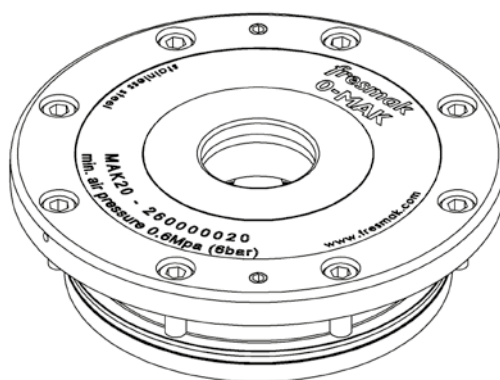
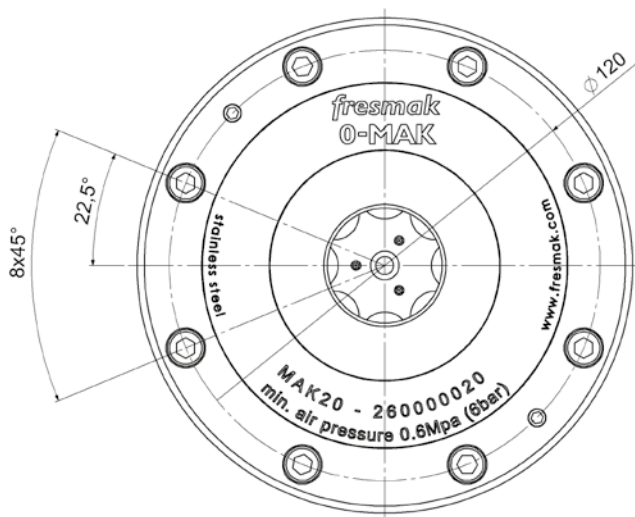
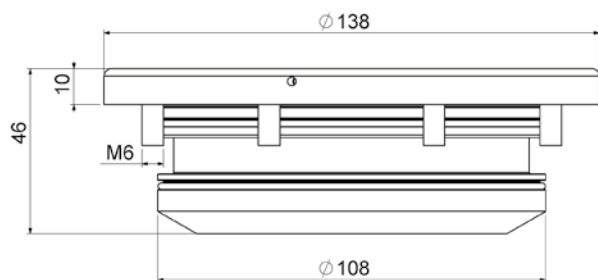
CYLINDER | MAK20



FEATURES

- > Pneumatic opening.
- > Mechanical clamping effect through compressed springs.
- > Transmission of power through precision balls.
- > No turbo needed.
- > Air blowing for inside cleaning as standard.
- > Repeatability <0.005mm
- > Working pressure: 6 Bar.

DIMENSIONS



SET SUPPLIED

- Cylinder
- 8 bolts
- 5 allen-set screws
- 1 o-ring
- 8 caps for protecting screws
- Brochure

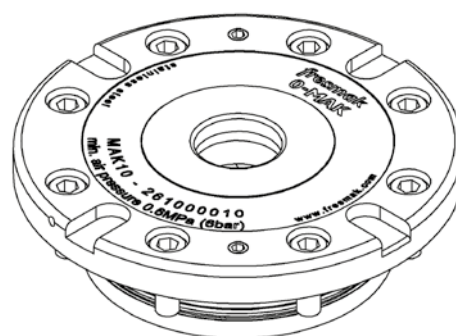
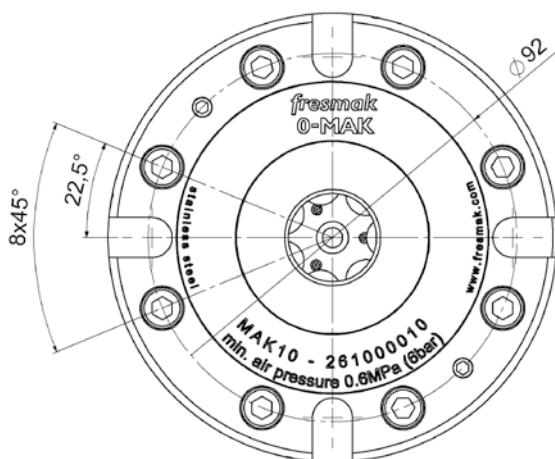
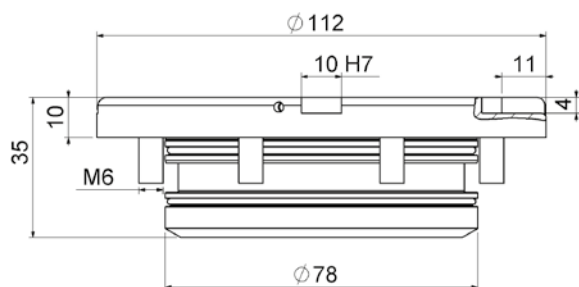
Size	Code	Holding power (kN)	Retaining power (kN)	Working pressure (Bar)	Repeatability (mm)	Weight (Kg)
MAK20	260000020	20	55	6	< 0.005	2.4

PARTS AND ACCESSORIES

CYLINDER | MAK10 4x90°



DIMENSIONS



FEATURES

- > Pneumatic opening.
- > Mechanical clamping effect through compressed springs.
- > Transmission of power through precision balls.
- > No turbo needed.
- > Air blowing for inside cleaning as standard.
- > Repeatability <math><0.005\text{mm}</math>
- > Working pressure: 6 Bar.
- > 4x90° Keynuts for exact positioning at 90°.
- > Anti-turning system.

SET SUPPLIED

- Cylinder
- 8 bolts
- 5 allen-set screws
- 1 o-ring
- 8 caps for protecting screws
- Brochure

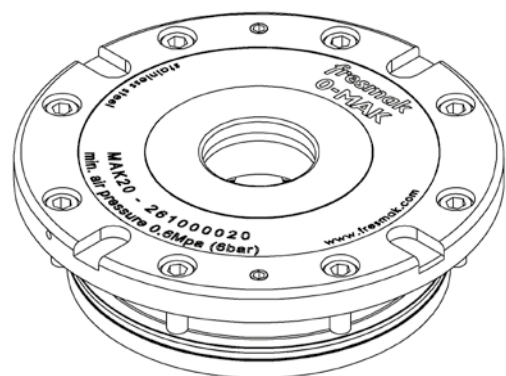
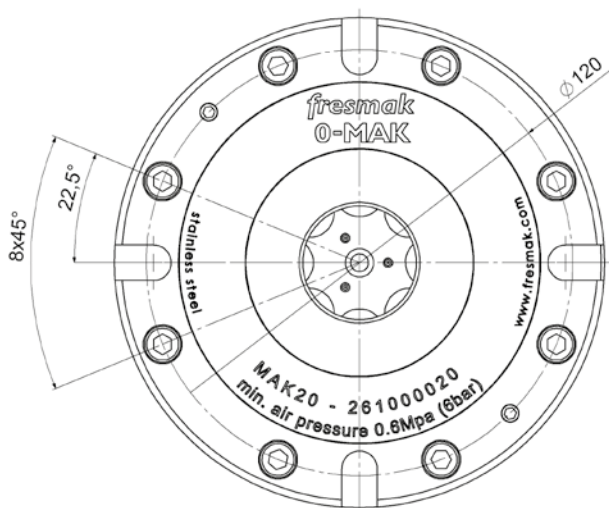
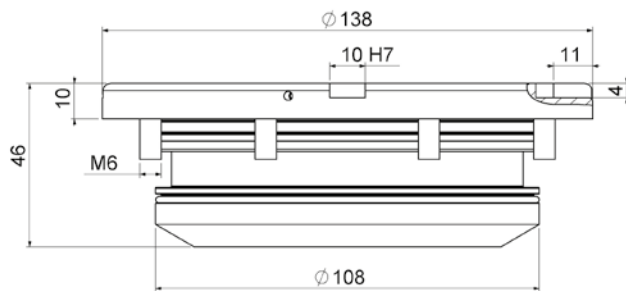
Size	Code	Holding power (kN)	Retaining power (kN)	Working pressure (Bar)	Repeatability (mm)	Weight (Kg)
MAK10 4x90°	261000010	10	25	6	<math><0.005</math>	1.1

PARTS AND ACCESSORIES

CYLINDER | MAK20 4X90°



DIMENSIONS



FEATURES

- > Pneumatic opening.
- > Mechanical clamping effect through compressed springs.
- > Transmission of power through precision balls.
- > No turbo needed.
- > Air blowing for inside cleaning as standard.
- > Repeatability <0.005mm
- > Working pressure: 6 Bar.
- > 4x90° Keynuts for exact positioning at 90°.
- > Anti-turning system.

SET SUPPLIED

- Cylinder
- 8 bolts
- 5 allen-set screws
- 1 o-ring
- 8 caps for protecting screws
- Brochure

Size	Code	Holding power (kN)	Retaining power (kN)	Working pressure (Bar)	Repeatability (mm)	Weight (Kg)
MAK20 4x90°	261000020	20	55	6	< 0.005	2.4

PARTS AND ACCESSORIES

NIPPLES

The positioning of the work-piece is achieved by using stainless steel hardened nipples. There are 4 different types:



Centering nipple

Used for centering and clamping.



Positioning nipple

It is used for reference and clamping.



Locking nipple

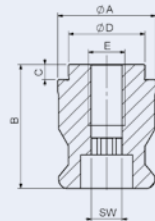
Used for clamping.



Protecting nipple

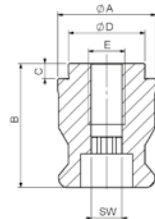
To protect the cylinder when is not being used.

→ Centering nipple



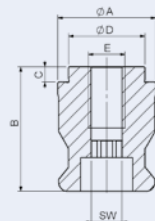
Size	Code	ØA	B	C	ØD	E	SW	Weight Kg
O-MAK 10	296004010	22	31	4	15	M8	8	0.1
O-MAK 20	296004020	32	40.6	5	25	M12	10	0.2

→ Positioning nipple



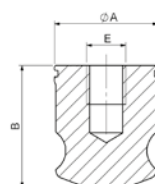
Size	Code	ØA	B	C	ØD	E	SW	Weight Kg
O-MAK 10	296005010	22	31	4	15	M8	8	0.1
O-MAK 20	296005020	32	40.6	5	25	M12	10	0.2

→ Locking nipple



Size	Code	ØA	B	C	ØD	E	SW	Weight Kg
O-MAK 10	296006010	21.7	31	4	15	M8	8	0.1
O-MAK 20	296006020	31.7	40.6	5	25	M12	10	0.2

→ Protecting nipple



Size	Code	ØA	B	C	ØD	E	SW	Weight Kg
O-MAK 10	296007010	21.8	28.5	-	-	M8	-	0.1
O-MAK 20	296007020	31.8	37.6	-	-	M12	-	0.2

PARTS AND ACCESSORIES

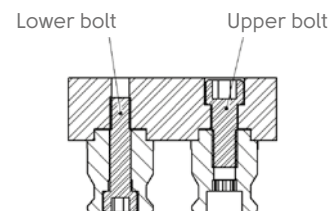
NIPPLES

→ LOCKING BOLTS



Size	Set up	Code	Top Screw	Weight Kg
MAK10	Lower	905210090	M6x35	0,01
	Upper		M8 *	
MAK20	Lower	996040125	M10x45	0,04
	Upper		M12 *	

* The length of the screw depends on the set up of the final user.

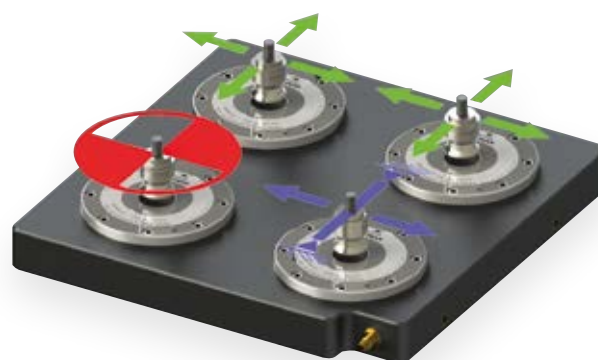


- DIN 912 quality 12.9 bolts:
- Upper bolt.
- Lower bolt.

→ NIPPLES COMBINATION:

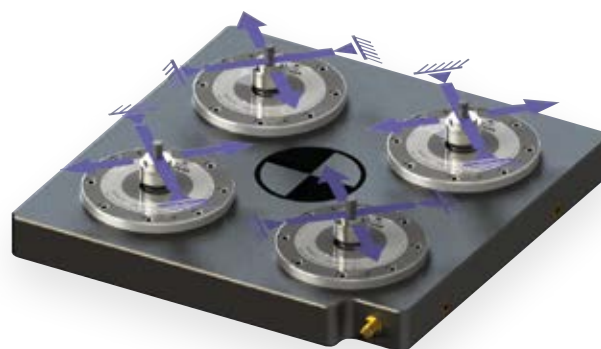
USUAL COMBINATION

- The usual combination for an optimal centering of the work piece is as follows.
- Red nipple is centering in 2 axis.
- Blue nipple is positioning in 1 axis.
- Green nipples are locking nipples.



COMBINATION FOR HEAVY MACHINING

- Just to avoid thermal deformations the use of 4 positioning nipples (blue) is very much recommendable. Reference will always remain in the center of the plate.



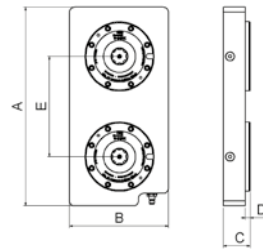


PARTS AND ACCESSORIES

BASE PLATES AND TOMBSTONES

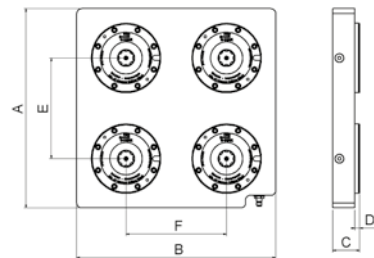
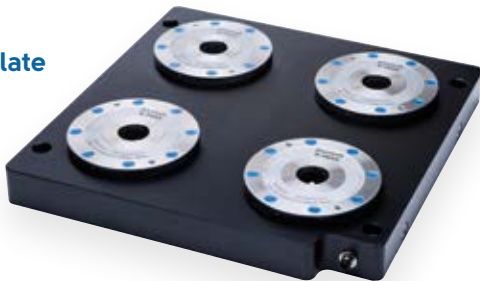
- > Base plate made out of Steel.
- > Repeatability 0,005 mm.
- > Infeed and connections for a quick pneumatic switch.
- > Designed with holes and k-slots for an easy assembly on the machine.
- > Plates and tombstones can be designed as per customers requirements on demand.

→ Double plate



Size	Code	A	B	C	D	E	Pull-in power kN	Holding power kN	Weight Kg
MAK10	286102010	396	196	40	10	200	2 x 10	2 x 25	17
MAK20	286102020	396	196	53	10	200	2 x 20	2 x 55	25

→ Quadruple plate



Size	Code	A	B	C	D	E	F	Pull-in power kN	Holding power kN	Weight Kg
MAK10	286104010	396	396	40	10	200	200	4 x 10	4 x 25	34
MAK20	286104020	396	396	53	10	200	200	4 x 20	4 x 55	50

→ Tailor made solutions

Surface clamping modules



Cube 4x6



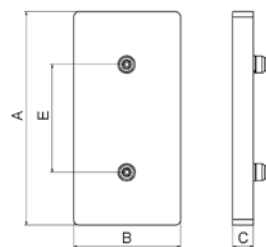
PARTS AND ACCESSORIES

ASSEMBLY PLATES FOR THE NIPPLES



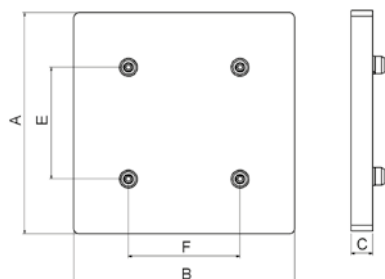
- > Base plates design to locate the nipples in one side and the fixture in the other side.
- > The distance between nipples according to the distances of the O-MAK on the base plate.
- > Made out of high resistance alluminum or Steel.
- > Tailor made. Other measures and structures upon request.

→ Double plate



Material	Size	Code	A	B	C	E	Weight Kg
Steel	O-MAK 10	286212010	396	196	28	200	17
	O-MAK 20	286212020	396	196	38	200	25
Alluminum	O-MAK 10	286222010	396	196	28	200	7
	O-MAK 20	286222020	396	196	38	200	9

→ Quadruple plate



Material	Size	Code	A	B	C	E	F	Weight Kg
Steel	O-MAK 10	286214010	396	396	28	200	200	34
	O-MAK 20	286214020	396	396	38	200	200	47
Alluminum	O-MAK 10	286224010	396	396	28	200	200	12
	O-MAK 20	286224020	396	396	38	200	200	17



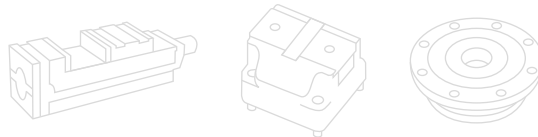
fresmak
0-MAK

www.fresmak.com



fresmak

CLAMPING SOLUTIONS



Fresmak S.A.
Araba Kalea, 45
20800 Zarautz (Gipuzkoa) · Spain

Tel.: (+34) 943 834 250
Fax: (+34) 943 830 225
fresmak@fresmak.com