

HIGH PRESSURE VICES



fresmak
ARNOLD



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At Fresmak INNOVATION is not an option, it is an >> ATTITUDE <<



- Fresmak was founded in 1967 focused on manufacturing **high pressure vices**.
- Nowadays Fresmak has a wide range of clamping solutions and export to over **50 countries worldwide**.
- Its specialization in vices and clamping devices, its team of **highly qualified people**. The latest manufacturing technology and a constant investment in **R & D** has placed Fresmak as a world leader in vice manufacture.
- Above all, Fresmak are **people**. Highly **trained professionals** with a constant attitude to improve and innovate in all processes; from planning right up to implementation at the customers facilities.

A strategic LOCATION for a fast and efficient service




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VALUES that make us different

EXPERIENCE



Fresmak is the **first high pressure vice manufacturer** in the world, focused exclusively on clamping solutions.

Through interactive relationships with our customers, Fresmak has acquired 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 customized.

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 **direct and individual attention** to all its customer.

Fresmak can offer quick and flexible deliveries as **95% of our standard product** range is kept in stock.

Repair and Maintenance services are also available.

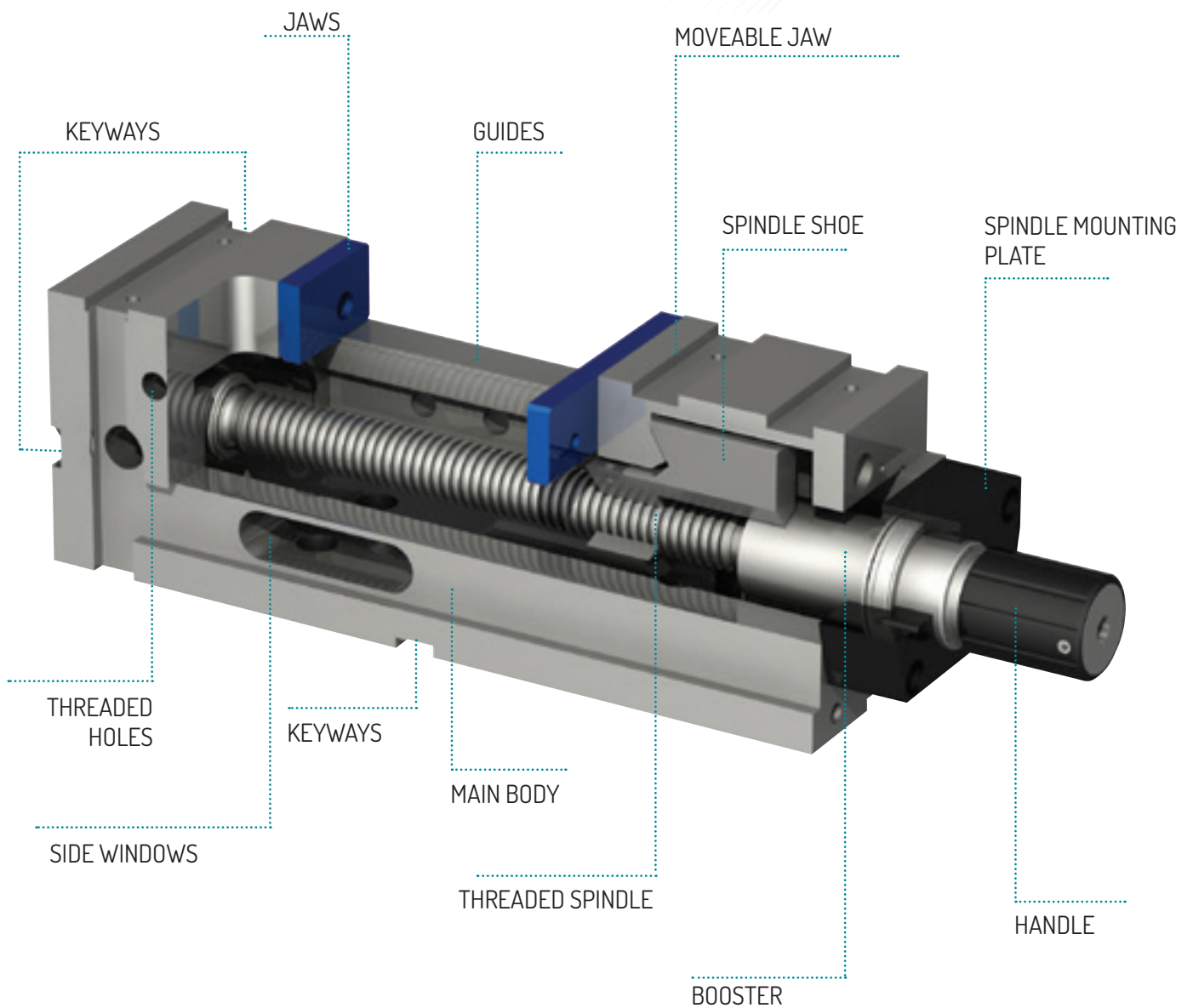
KEYS that help Fresmak become a world reference in clamping systems



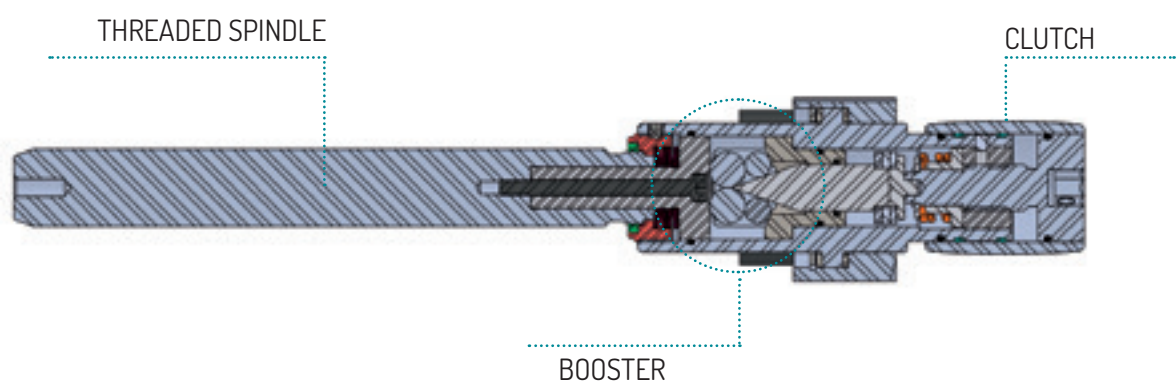
- Absolute expertise in the product.
- A team of highly qualified and experienced people.
- Latest technology.
- Constant R & D investment.

VICE AND SPINDLE

VICE



SPINDLE



COMMON FEATURES AND MATERIALS

Features



Vices are identified by a serial number where their real dimensions are documented, which allows for identical vices to be manufactured.

The main bodies, on their side, have threaded holes for placing adjustable stops and, at the base, two longitudinal and two transverse keyways (20H7).

Keyways are machined and perpendicular to each other which allow for :

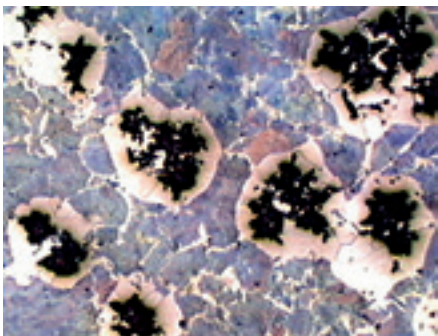
- Quick installation on worktables.
- Vices to be perfectly aligned in parallel.

Jaws have a ground surface.

The guides are induction hardened and ground:

- Improves the positioning of the workpiece and the sliding of the moveable jaw.
- Provides hardness.
- Resistant to heavy duty machining, swarf, acids and cutting fluids.

MATERIALS



Material under a microscope: GGG70 perlitic nodular cast iron.

The main body, the movable jaw and the shoe are produced in GGG70* perlitic nodular cast iron.

Features of the material:

- Resistance to breakage and fatigue.
- Absorbs vibrations.
- It helps to maintain the geometry of the vices for more than twenty years.

*IZ and SC vices are made of steel

The jaws of the vices are made from F-5220 (90MnCrV8) steel and hardened at 60HRC.

Features of the material:

- It withstands high pressure without deformation.
- Swarf proof.

>> HIGH PRESSURE << A technology full of ADVANTAGES

POWER

- Deepercut.
- Higher cutting speed.
- Higher chip removal.

REPEATABILITY

- Constant clamping force regardless the operator.
- Accuracy of 0.01 mm in clamping repeatability.

DURABILITY

- The force is carried out by axial movement of the pressure pin, keeping the parts of the vice and the spindle away from wear, extending the life of the vice.



ADVANTAGES

- > Higher CLAMPING FORCE
- > Higher ACCURACY
- > Greater SAVINGS

video



RESULTS

- > Increase in PRODUCTIVITY
- > SAVINGS in costs
- > QUALITY improvement
 - > Greater WORK SAFETY
 - > Access to NEW CLIENTS

HOW TO CHOOSE A VICE

The following table works as a guide to choose the vice that matches specific needs.

Both the type of piece and manufacturing processes as well as the type of machine should be taking into consideration when choosing a vice.

For further information and election of the vice please contact Fresmak at **fresmak@fresmak.com** or **+34.943.834.250**.

TYPE OF VICE		Pag.	TYPE OF WORKPIECE/MACHINING										MACHINE									
			clamping of 1 workpiece	clamping of 2 workpieces	big workpieces	large workpieces	soft metal workpieces	hard metal workpieces	slender workpieces	mass production	automated work	milling machine	drilling machine	tapping machine	grinding machine	boring machine	vertical machine	horizontal machining centre	5 axis machining centre			
ARNOLD MAT																						
 Mechanical with/without regulator	12																					
 Hydraulic with/without regulator	14																					
 Prox	16																					
 Oleo-dynamic	18																					
 Pneumo-hydraulic	20																					
 Automat	22																					
ARNOLD MB2																						
 Mechanical with/without regulator	26																					
 Durmak with/without regulator	28																					
 Oleo-dynamic	30																					
ARNOLD CLASSIC																						
 Mechanical with/without regulator	34																					
 Hydraulic with/without regulator	36																					
 Oleo-dynamic	38																					
 Pneumo-hydraulic	40																					
ARNOLD TWIN																						
 Mechanical with/without regulator	44																					
 Oleo-dynamic	46																					
 Pneumo-hydraulic	48																					
ARNOLD IZ																						
 Hydraulic	52																					
ARNOLD 5X																						
 5X M	54																					
 5X L	54																					
ARNOLD SC																						
 SC	58																					
 SC 5X	60																					

 **MANUAL**
vices

 **AUTOMATIC**
vices

 **IDEAL**

 **SUITABLE**

 **SUITABLE WITH RESERVATIONS**

ARNOLD

High pressure ARNOLD MAT vices maintain their length irrespective of the size of the part, for which they are especially ideal for machining centres (vertical and horizontal).

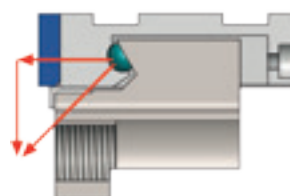
- Accuracy of 0.01 mm in clamping repeatability.
- Monoblock design avoids deformations due to high pressure and offers great rigidity and robustness.
- Ideal for working in horizontal and vertical machining centres.
- Grinding of all surfaces with a parallelism and perpendicularity of 0.02 mm.
- Possible working positions: supported on the base, on the side or on the head vertically.
- Side windows for quick cleaning of the inside of the vices.
- May be clamped to the table either by the four standard clamps supplied or by using four screws located in the body.
- Clamping force is 25/40/50 kN, depending on the model.

SPECIAL JAWS



Possibility of working with machined soft jaws according to the shape of the work piece.

SEMI-SPHERE



The ARNOLD MAT has a descending clamp system to avoid that the clamped part lifts up. This is a semi-sphere installed between the moveable jaw and the spindle shoe. When the clamping force is carried out by the spindle, this pressure is divided in two directions, one of which pulls down on the work-piece.

MAT Vices



MANUAL vices

- Mechanical vice



Size
090
125
160
200

- Mechanical vice with regulator



Size
125
160
200

pag. 12

- Hydraulic vice



Size
090
125
160
200

- Hydraulic vice with regulator



Size
125
160
200

pag. 14

- Prox-hydraulic



Size
125
160
200

pag. 16



AUTOMATIC vices

- Oleo-dynamic



Size
090
125
160
200

pag. 18

- Automat



Size
125
160
200

pag. 20

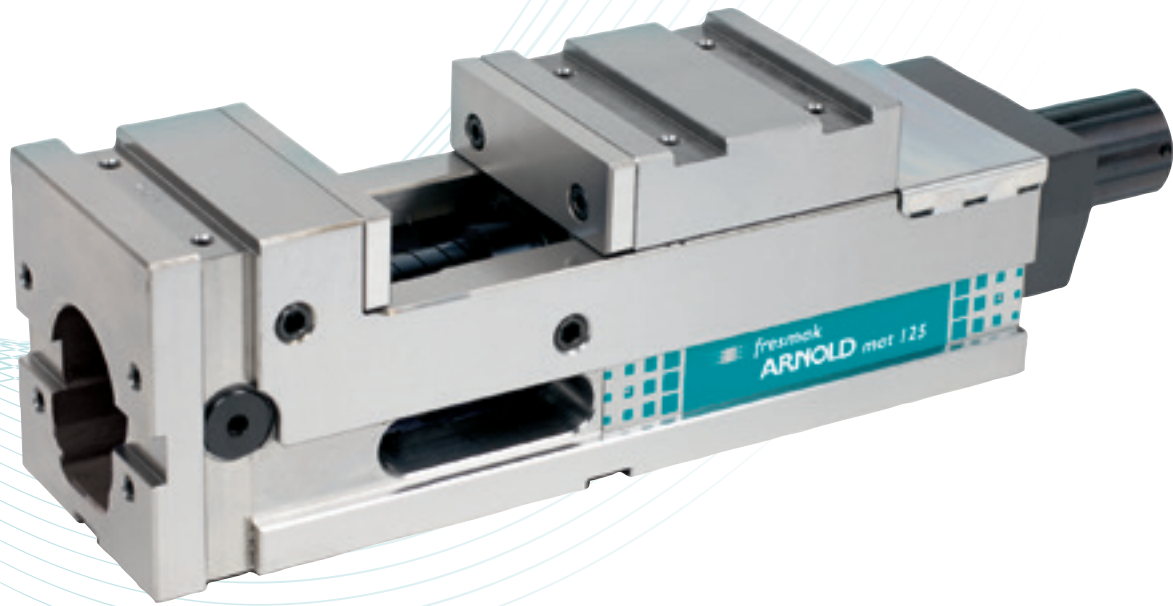
- Pneumo-hydraulic



Size
090
125
160
200

pag. 22

ARNOLD MAT Mechanic



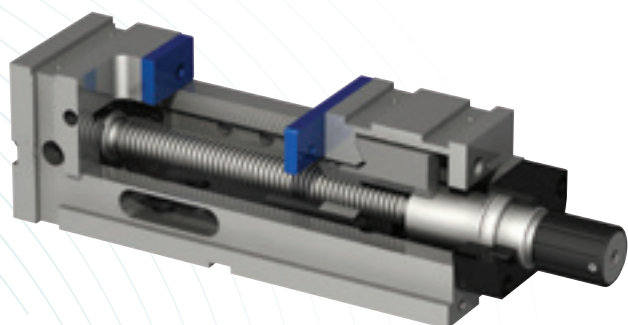
- Two clamping possibilities of the work piece, either towards the fixed head or in reverse direction.
- Fitted with a high pressure mechanical intensifier.
- Power regulator optional.
- Angle driver for handle clearance upon request.
- **Common features page 10.**

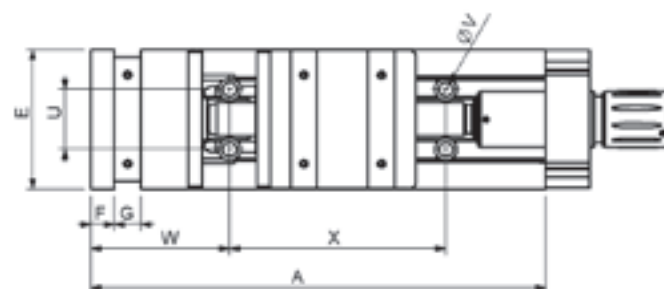
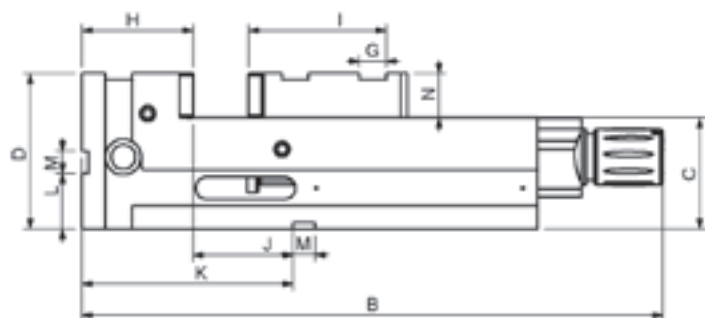
TIPS FOR USE

- Should reverse clamping be needed, just place the spindle at the rear part of the fixed head, clamped by four screws. Then rotate the spindle shoe and the moveable jaw.

SET SUPPLIED

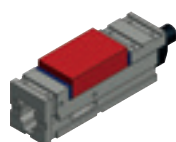
- Base body
- Mechanical spindle
- 1 set of plain jaws
- 1 handle
- 4 end clamps
- Instruction manual



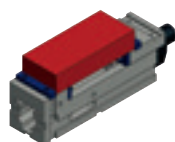


Size	90	125	160	200
ARNOLD MAT Mechanical	020 120 090	020 120 125	020 120 160	020 120 200
ARNOLD MAT Mechanical with regulator		020 130 125	020 130 160	020 130 200
Clamping force (kN)	25	40	50	50
A	300	410	570	570
B	387	524	679	679
B (with regulator)		551	706	706
C - 0,02	75	100	110	110
D	115	140	160	173
E	91	126	161	201
F	21	21	21	21
G H7	20	24	24	24
H	70	100	115	119
I	67	124	128	132
J + 0,02	40	90	115	111
K	110	190	230	230
L	40	50	60	60
M H7	20	20	20	20
N	40	40	50	63
U	38	54	68	68
V	11	13	13	13
W	90	125	140	140
X	150	195	300	300
Weight (kg)	16	35	70	93
Clampings	90	125	160	200
Clamping field O1	0-128	0-200	0-310	0-302
Clamping field O2	76-204	80-285	106-416	114-416
Clamping field O3		155-355	174-484	182-484
Clamping field O4	118-172	122-191	165-334	169-334
Clamping field O5		192-261	233-402	237-402

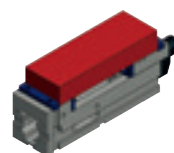
Clamping possibilities



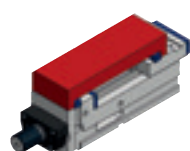
Clamping field O1



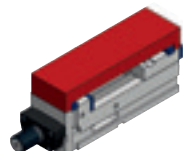
Clamping field O2



Clamping field O3



Interior clamping field O4



Interior clamping field O5

+ info

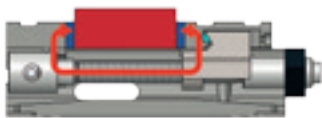


ARNOLD MAT Hydraulic



- Fitted with a high pressure hydraulic intensifier which does not require any external supply.
- Power regulator optional.
- Angle driver for handle clearance upon request.
- **Common features page 10.**

COMPENSATED CLAMP

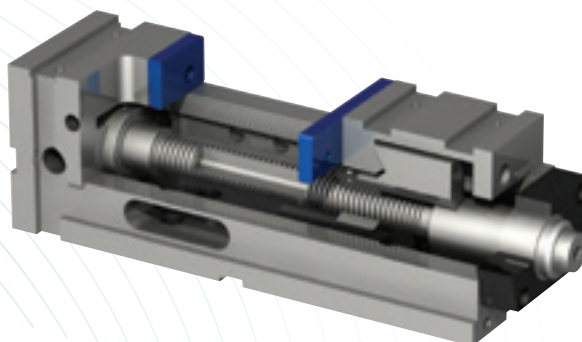


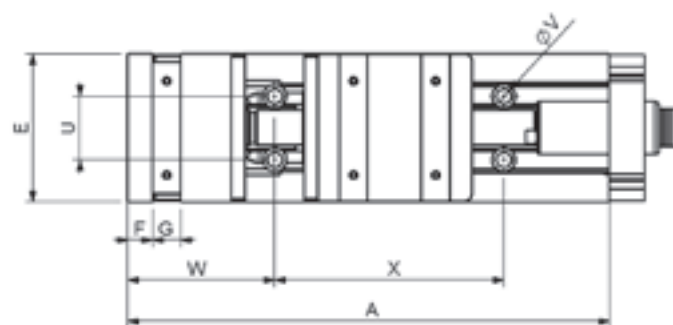
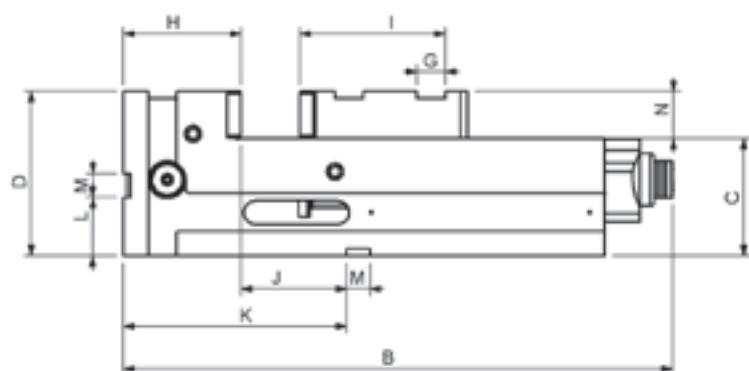
These vices provide an enveloping clamp. The spindle does not push the moveable jaw from the end clamp, but it pulls it from the head.

This effect means that the head of the vice and the work-piece suffer less deformation stress with high pressure.

SET SUPPLIED

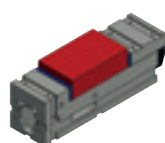
- Base body
- Hydraulic spindle
- 1 set of plain jaws
- 1 handle
- 4 end clamps
- Instruction manual



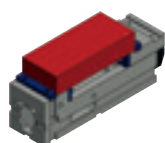


Size	090	125	160	200
ARNOLD MAT Hydraulic	020 200 090	020 200 125	020 200 160	020 200 200
ARNOLD MAT Hydraulic with regulator		020 210 125	020 210 160	020 210 200
Clamping force (kN)	25	40	50	50
A	300	410	570	570
B	360	468	628	628
B (with regulator)		528	687	687
C - 0,02	75	100	110	110
D	115	140	160	173
E	91	126	161	201
F	21	21	21	21
G H7	20	24	24	24
H	70	100	115	119
I	67	124	128	132
J + 0,02	40	90	115	111
K	110	190	230	230
L	40	50	60	60
M H7	20	20	20	20
N	40	40	50	63
U	38	54	68	68
V	11	13	13	13
W	90	125	140	140
X	150	195	300	300
Weight (kg)	16	35	70	93
Clampings	90	125	160	200
Clamping field O1	0-135	0-200	0-310	0-302
Clamping field O2	76-211	80-285	106-416	114-416
Clamping field O3		155-355	174-484	182-484

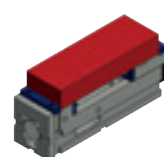
Clamping possibilities



Clamping field O1



Clamping field O2

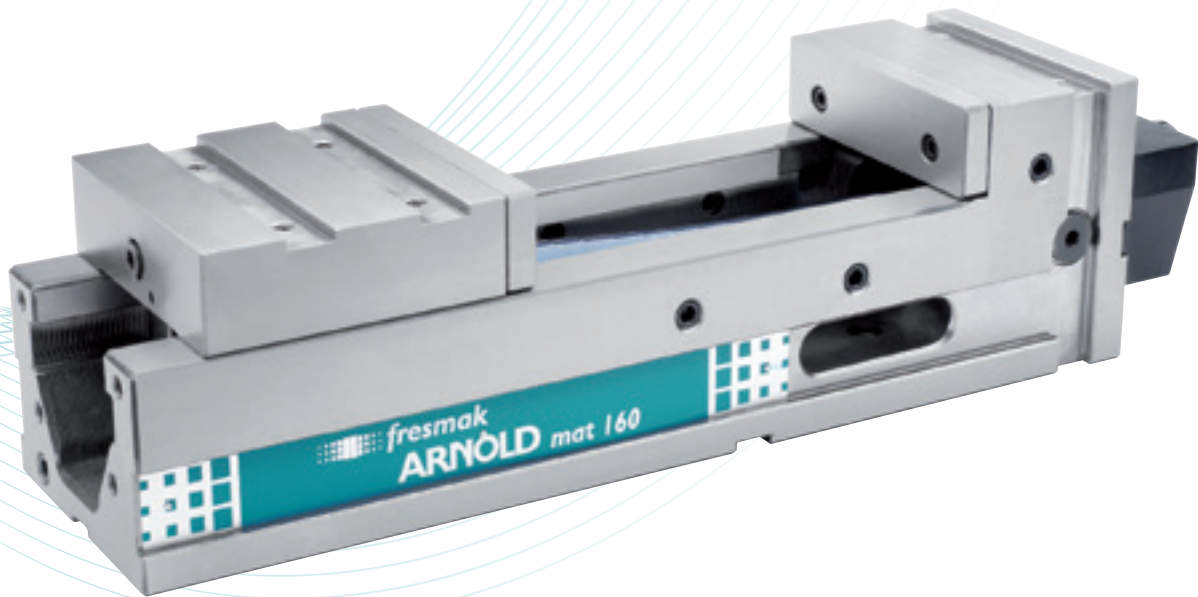


Clamping field O3

+ info



ARNOLD MAT Prox-hydraulic



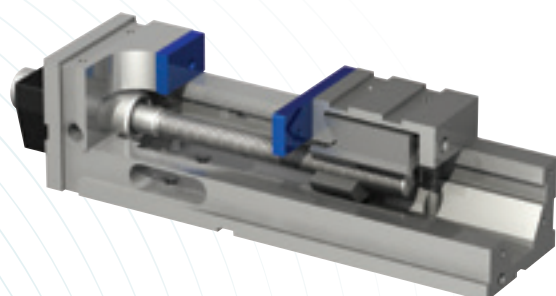
- Clamping towards the operator for an easier load and unload operation for heavy or oversized workpieces.
- Two clamping possibilities of the work piece, either towards the movable jaw or in reverse direction.
- The spindle operates at the rear part of the fixed vice head.
- Comes with a high pressure hydraulic intensifier.
- Angle driver for handle clearance upon request.
- **Common features page 10.**

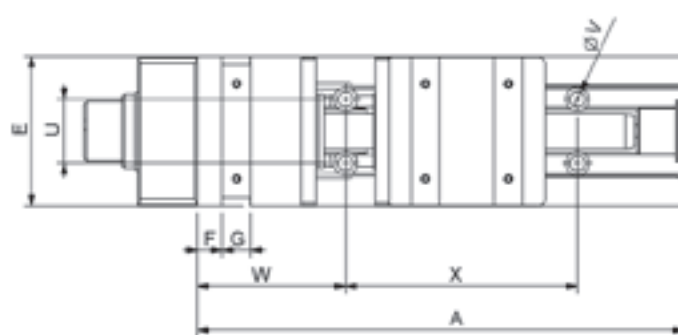
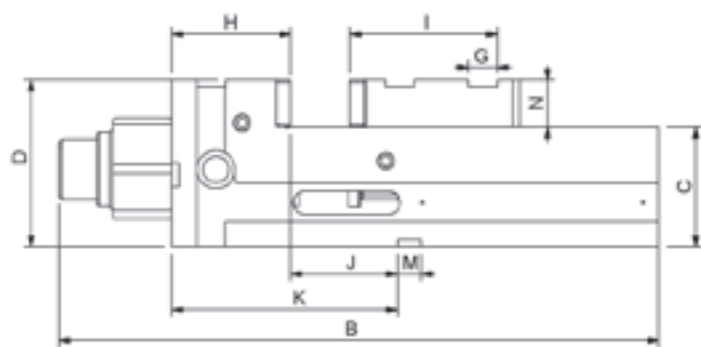
TIPS FOR USE

- Should reverse clamping be needed, just place the spindle at the opposite part of the fixed head, clamped by four screws. Then rotate the spindle shoe and the moveable jaw.

SET SUPPLIED

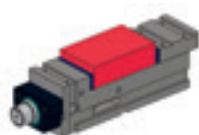
- Base body
- Hydraulic spindle
- 1 set of plain jaws
- 1 handle
- 4 end clamps
- Instruction manual



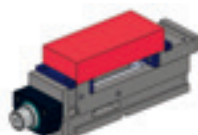


Size	125	160	200
ARNOLD MAT Prox	080 200 125	080 200 160	080 200 200
Clamping force (kN)	40	50	50
A	410	570	570
B	506	666	666
C - 0,02	100	110	110
D	140	160	173
E	126	161	201
F	21	21	21
G	24	24	24
H	100	115	119
I	124	128	132
J + 0,02	90	115	111
K	190	230	230
M H7	20	20	20
N	40	50	63
U	54	68	68
V	13	13	13
W	125	140	140
X	195	300	300
Weight (kg)	35	70	93
Clampings	125	160	200
Clamping field O1	0-200	0-310	0-302
Clamping field O2	80-285	106-416	114-416
Clamping field O3	155-355	174-484	182-484
Clamping field O4	122-191	165-334	169-334
Clamping field O5	192-261	233-402	237-402

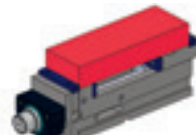
Clamping possibilities



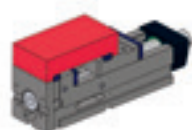
Clamping field O1



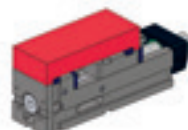
Clamping field O2



Clamping field O3



Interior clamping field O4



Interior clamping field O5

+ info



ARNOLD MAT Oleo-dynamic



- Designed to automate processes and robotize them .
- Two clamping possibilities, either towards the fixed head or in reverse direction. Normal clamping is towards the fixed head.
- Fitted with a single acting oleo-dynamic spindle, with spring push-back effect.
- Rotary connection at the inlet and the outlet for oil.
- 4 mm. automatic stroke for closing and opening.
- Adjustable clamping force and directly proportional to oil pressure input (see manual).
- **Common features page 10.**

TIPS FOR USE

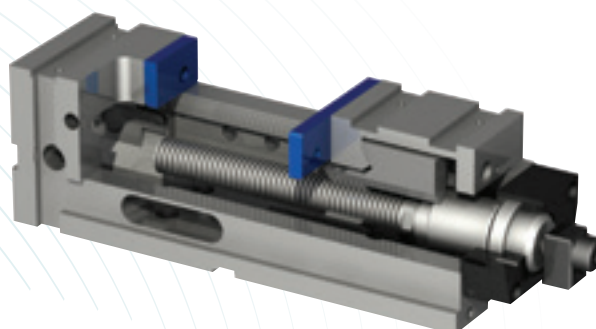
- Should reverse clamping be needed, just place the spindle at the rear part of the fixed head, clamped by four screws. Then rotate the spindle shoe and the moveable jaw.

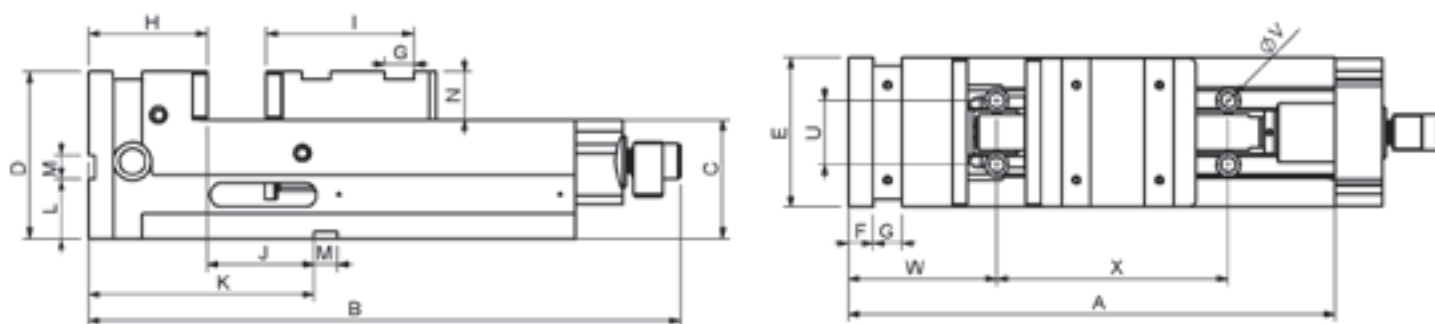
ELEMENTS REQUIRED

- Hydraulic unit or single acting 500 bar pneumo-hydraulic pump with vice unit connection hose, pressure control switch, safety valve integrated into the unit and ON-OFF switch.
- Pressure gauge.

SET SUPPLIED

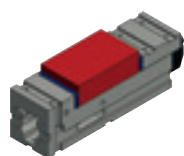
- Base body
- Oleo-dynamic spindle
- Rotary connection
- 1 set of plain jaws
- 1 handle
- 4 end clamps
- Instruction manual



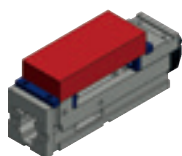


Size	090	125	160	200
Arnold Mat Oleo-Dynamic	020 140 090	020 140 125	020 140 160	020 140 200
Clamping force (kN)	25	40	40	40
A	300	410	570	570
B	384	499	654	654
C - 0,02	75	100	110	110
D	115	140	160	173
E	91	126	161	201
F	21	21	21	21
G	20	24	24	24
H	70	100	115	119
I	67	124	128	132
J + 0,02	40	90	115	111
K	110	190	230	230
L	40	50	60	60
M H7	20	20	20	20
N	40	40	50	63
U	38	54	68	68
V	11	13	13	13
W	90	125	140	140
X	150	195	300	300
Weight (kg)	16	35	70	93
Clampings	90	125	160	200
Clamping field O1	0 - 130	0 - 200	0 - 310	0 - 302
Clamping field O2	76 - 206	85 - 285	106 - 416	114 - 416
Clamping field O3		155 - 355	174 - 484	182 - 484
Clamping field O4	118 - 172	122 - 191	165 - 334	169 - 334
Clamping field O5		192 - 261	233 - 402	237 - 402

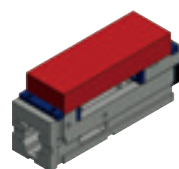
Clamping possibilities



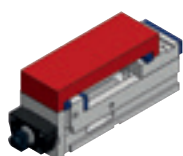
Clamping field O1



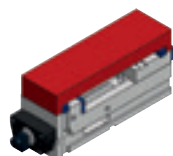
Clamping field O2



Clamping field O3



Interior clamping field O4



Interior clamping field O5

+ info



ARNOLD MAT Automat



- Designed to automate processes and robotize them.
- Two clamping possibilities, either towards the fixed head or the opposite direction. Normal clamping is towards the fixed head.
- Fitted with a high pressure double acting oleo-dynamic spindle, with spring push-back effect.
- 4 mm. automatic stroke for closing and opening.
- Adjustable clamping force and directly proportional to oil pressure input (see manual).
- **Common features page 10.**

TIPS FOR USE

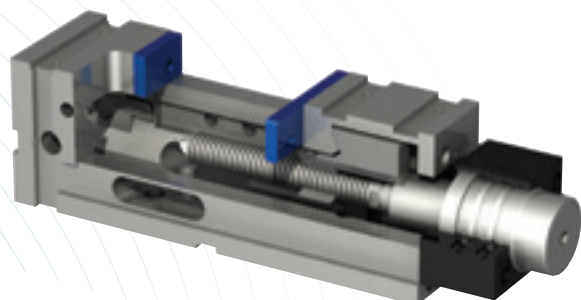
- Should reverse clamping be needed, just place the spindle at the rear part of the fixed head, clamped by four screws. Then rotate the spindle shoe and the moveable jaw.

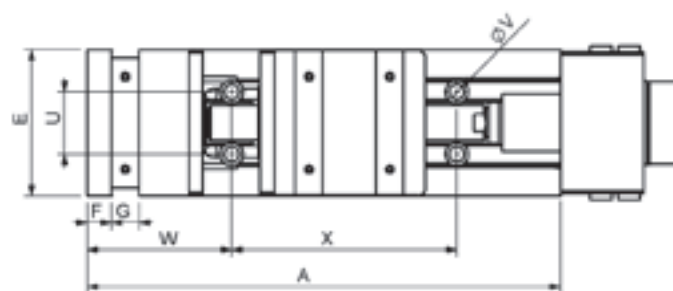
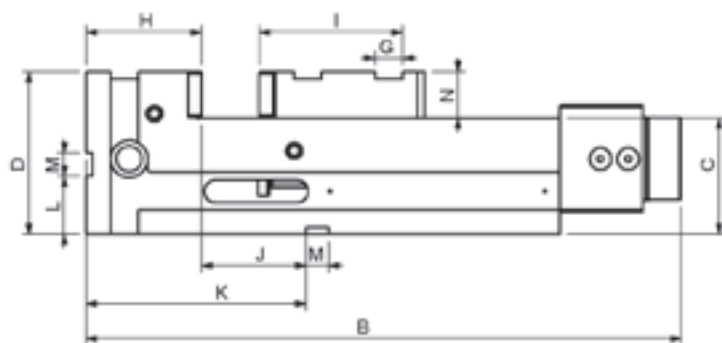
ELEMENTS NEEDED

- Hydraulic unit or double effect 70 bar pneumo-hydraulic pump with vice unit connection hose, pressure control switch, safety valve integrated into the unit and ON-OFF switch.
- Gauge.

SET SUPPLIED

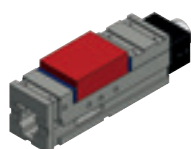
- Base body
- Automat spindle
- 1 set of plain jaws
- 1 handle
- 4 end clamps
- Instruction manual



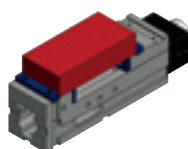


Size	125	160	200
ARNOLD MAT Automat	070 200 125	070 200 160	070 200 200
Clamping force (kN)	40	50	50
A	410	570	570
B	515	675	675
C - 0,02	100	110	110
D	140	160	173
E	126	161	201
F	21	21	21
G	24	24	24
H	100	115	119
I	124	128	132
J + 0,02	90	115	111
K	190	230	230
L	50	60	60
M H7	20	20	20
N	40	50	63
U	54	68	68
V	13	13	13
W	125	140	140
X	195	300	300
Weight (kg)	35	70	93
Clampings	125	160	200
Clamping field O1	0-167	0-282	0-274
Clamping field O2	85-252	106-388	114-388
Clamping field O3	155-322	174-456	182-456
Clamping field O4	122-191	165-334	169-334
Clamping field O5	192-261	233-402	237-402

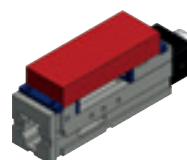
Clamping possibilities



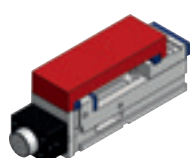
Clamping field O1



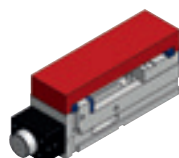
Clamping field O2



Clamping field O3



Interior clamping field O4



Interior clamping field O5

+ info



ARNOLD MAT Pneumo-hydraulic



- Designed to automate processes and robotize them.
- Pneumo-hydraulic high pressure single acting intensifier, supplied by compressed air at 6 bars.
- Clamping force adjustable by the air pressure (see manual).
- Automatic stroke for closing and opening up to 3 mm.
- The vice operation may be manual (used with a valve unit sent with the vice) or by using a pedal situated near the machine or may be controlled by CNC by using a solenoid valve.
- **Common features page 10.**

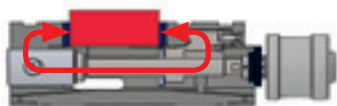
TIPS FOR USE

- The air must be filtered (dry air).
- Should control pedal be used, the set of valves supplied with the vice must be placed between the compressor and the pedal, not between the pedal and the vice.

ELEMENTS NEEDED

- Connection of the compressor to the vice.
- Filter unit, gauge and lubricator of the air inlet.

COMPENSATED CLAMP

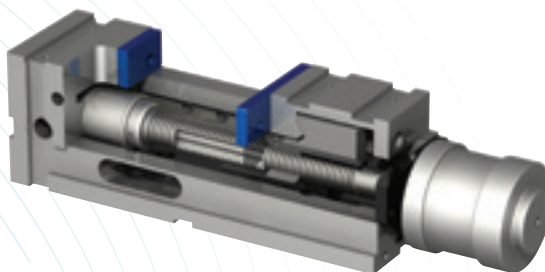


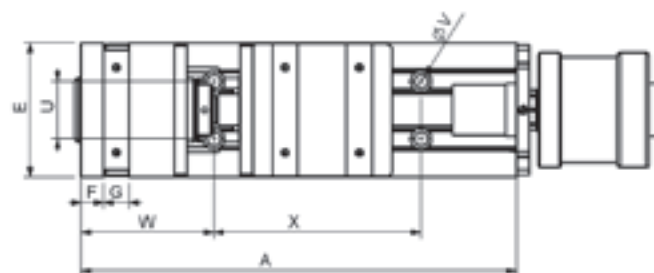
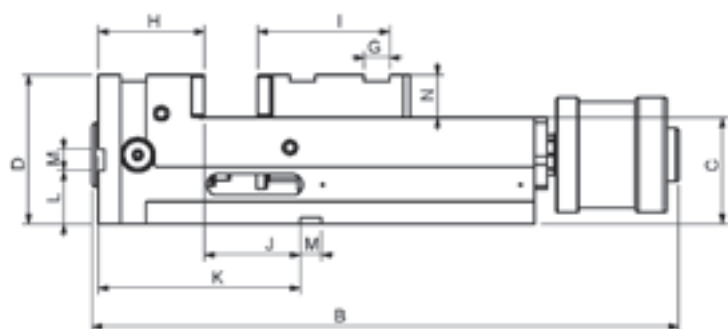
These vices provide an enveloping clamp. The spindle does not push the moveable jaw from the end clamp, but it pulls it from the head.

This effect means that the head of the vice and the work-piece suffer less deformation stress with high pressure.

SET SUPPLIED

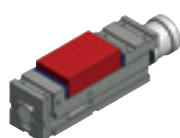
- Base body
- Pneumo-hydraulic spindle
- Valve assembly
- 1 set of plain jaws
- 4 end clamps
- Instruction manual



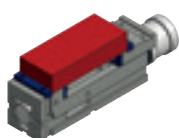


Size	90	125	160	200
ARNOLD MAT Pneumo-Hydraulic	020 600 090	020 600 125	020 600 160	020 600 200
Clamping force (kN)	25	40	50	50
A	300	410	570	570
B	446	552	719	719
C - 0,02	75	100	110	110
D	115	140	160	173
E	91	126	161	201
F	21	21	21	21
G H7	20	24	24	24
H	70	100	115	119
I	67	124	128	132
J + 0,02	40	90	115	111
K	110	190	230	230
L	40	50	60	60
M H7	20	20	20	20
N	40	40	50	63
U	38	54	68	68
V	11	13	13	13
W	90	125	140	140
X	150	195	300	300
Weight (kg)	16	35	70	93
Clampings	90	125	160	200
Clamping field O1	0 - 132	0 - 181	0 - 300	0 - 287
Clamping field O2	76 - 208	85 - 266	106 - 406	114 - 401
Clamping field O3		155 - 336	174 - 474	182 - 469

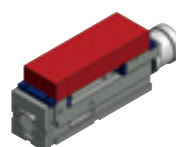
Clamping possibilities



Clamping field O1



Clamping field O2

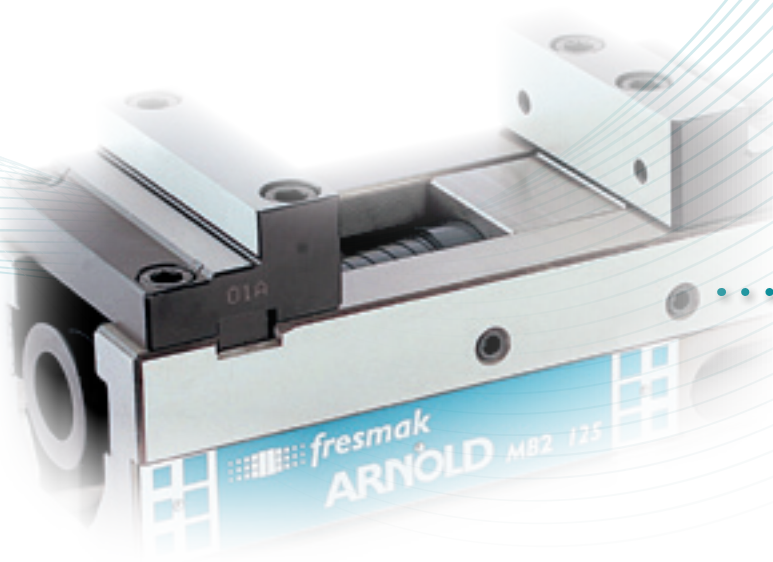


Clamping field O3

+ info



ARNOLD



High Pressure ARNOLD MB2 vices are the most flexible vices. They also maintain their constant length irrespective of the size of the workpiece.

- Accuracy of 0.01 mm in clamping repeatability.
- May be clamped to the table either by the four standard clamps supplied or by using four screws within the body.
- Suitable for working in horizontal and vertical machining centres.
- Flexible Design: All the jaws of the MB2 vices are interchangeable.
- Side windows for quick cleaning.
- Clamping force is 40/50 kN depending on the model.
- Power regulator optional.
- Angle driver for handle clearance optional.
- Split vice for clamping larger work-pieces optional.

SPECIAL JAWS



Possibility of working with machined soft jaws according to the shape of the workpiece.

MB2 Vices



MANUAL vices

- Mechanical vice



Size
125
160

- Mechanical vice with regulator



Size
125
160

pag. 26

- Durmak



Size
125
160

- Durmak vice with regulator



Size
125
160

pag. 28



AUTOMATIC vices

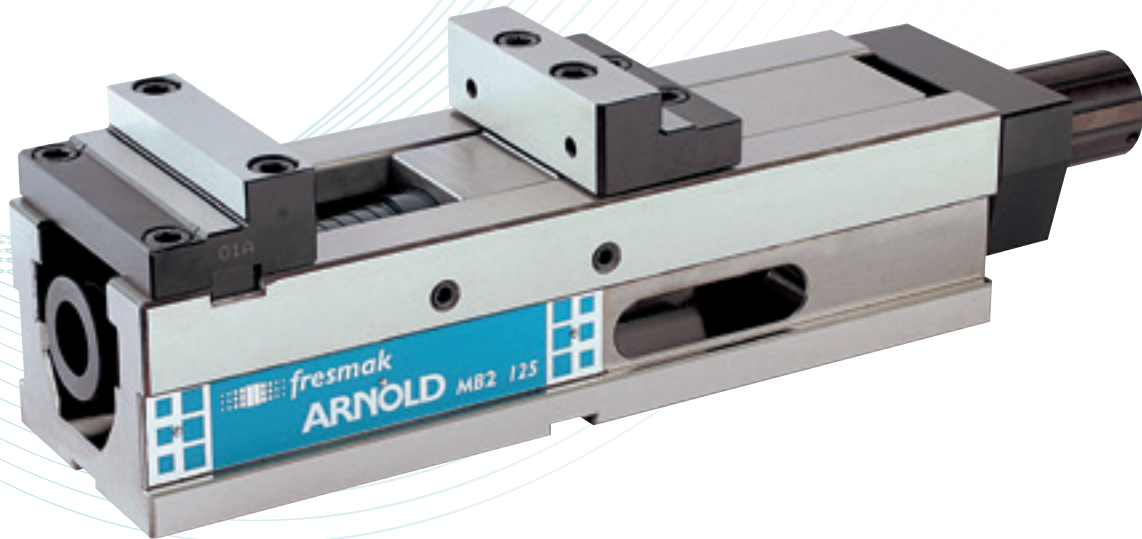
- Oleo-dynamic



Size
125
160

pag. 30

ARNOLD MB2 Mechanic



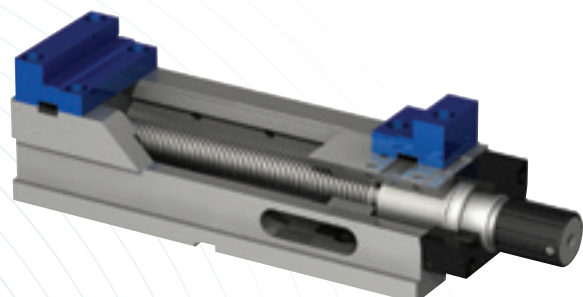
- Fitted with a high pressure mechanical intensifier.
- Power regulator optional.
- Angle driver for handle clearance upon request.
- Split vice as standard item available.
- **Common features page 24.**

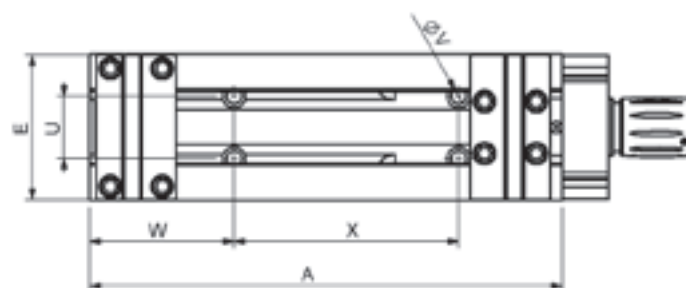
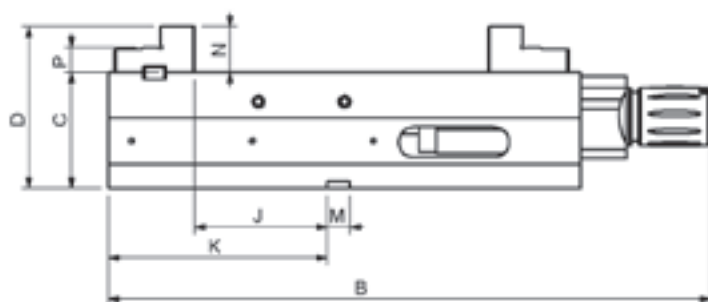
VICE IN 2 PARTS



SET SUPPLIED

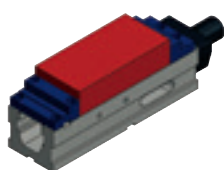
- Base body
- Mechanical spindle
- 1 set of stepped jaws
- 1 handle
- 4 end clamps
- Instruction manual



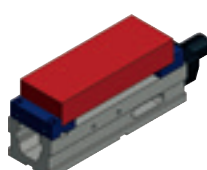


Size	125	160
ARNOLD MB2 Mechanical	060 121 125	060 121 160
ARNOLD MB2 Mechanical with regulator	060 131 125	060 131 160
ARNOLD MB2 Mechanical in 2 parts	060 123 125	060 123 160
ARNOLD MB2 Mechanical in 2 parts with regulator	060 133 125	060 133 160
Clamping force (kN)	40	50
A	410	530
B	524	639
B (with regulator)	551	666
C -0.02	100	115
D	140	165
E	126	161
J +0.02	115	123
K	190	230
M H7	20	20
N	40	50
P	22	30
U	54	68
V	13	13
W	125	140
X	195	300
Weight (kg)	35	61
Clampings	125	160
Clamping field O1	0 - 254	0 - 310
Clamping field O2	80 - 334	120 - 430

Clamping possibilities



Clamping field O1

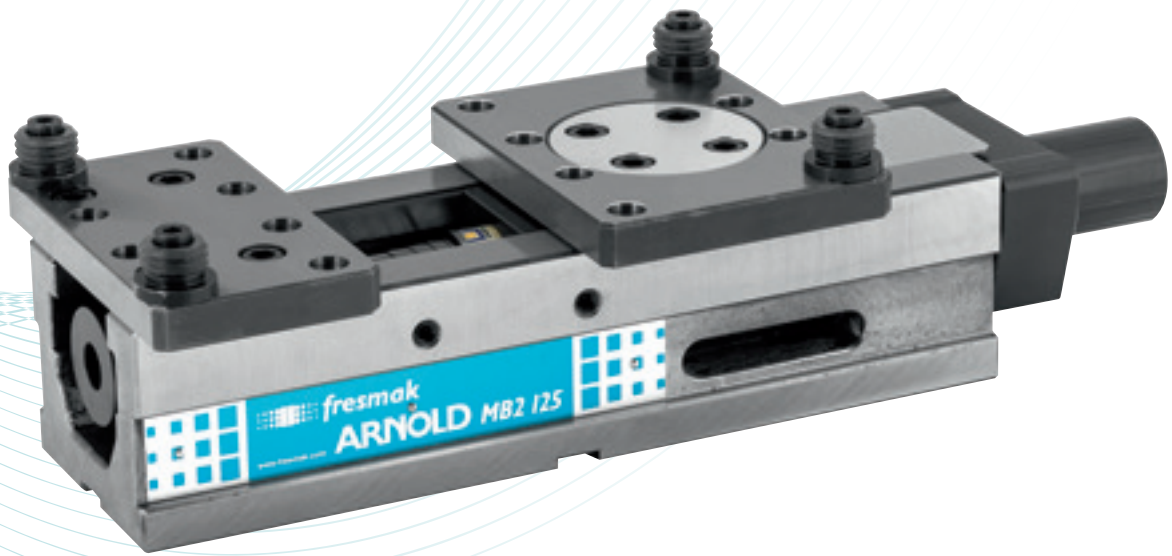


Clamping field O2

+ info



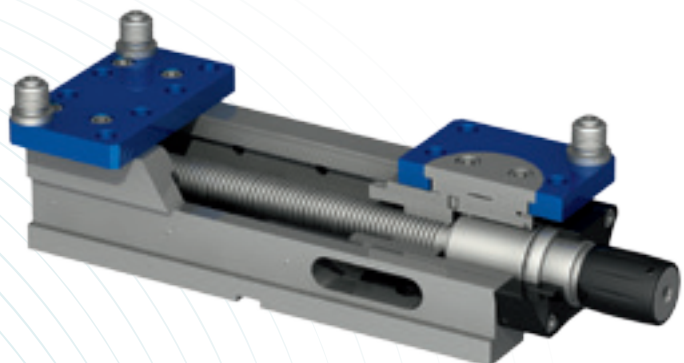
ARNOLD MB2 Durmak

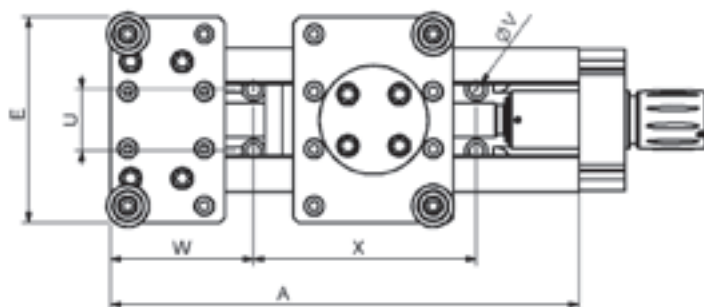
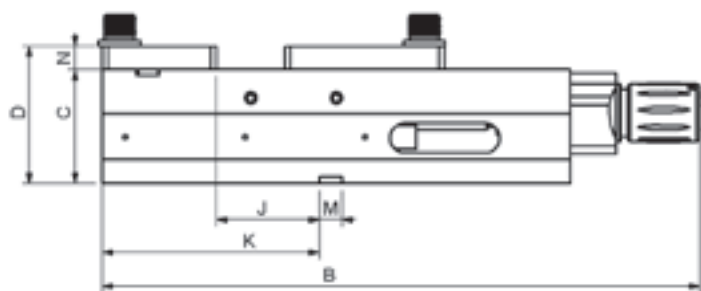


- Suitable for working with hardened inserts. The positioning of the inserts determines the clamping capacity of the vice.
- Fixed jaw with several insert settings. Movable swinging jaw with several insert settings.
- Fitted with a high pressure mechanical intensifier.
- Power regulator optional.
- Angle driver for handle clearance optional.
- Split option upon request.
- **Common features page 24.**

SET SUPPLIED

- Base body
- Mechanical spindle
- 1 set of durmak jaws
- Choice of 1 set of inserts, 4 units
- 1 handle
- 4 end clamps
- Service manual





Size	125	160
ARNOLD MB2 Durmak	060 122 125	060 122 160
ARNOLD MB2 Durmak with regulator	060 132 125	060 132 160
Clamping force (kN)	40	50
A	410	530
B	524	639
B (with regulator)	551	666
C -0.02	100	115
D	120	145
E	186	230
J +0.02	90	108
K	190	230
M H7	20	20
N	26	35
U	54	68
V	13	13
W	125	140
X	195	300
Weight (kg)	35	61
Clampings	125	160
Clamping field O1	8-198	10-265
Clamping field O2	186 - 376	230-485

SET OF INSERTS



WITHOUT BASE M

961 241 125
961 241 160



WITHOUT BASE L

961 242 125
961 242 160



WITH BASE M

961 251 125
961 251 160

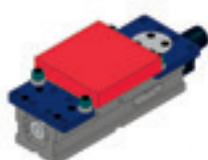


WITH BASE L

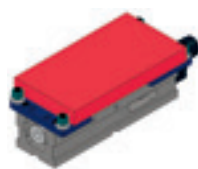
961 252 125
961 252 160

For more information on sets inserts go to page 67

Clamping possibilities



Clamping field O1

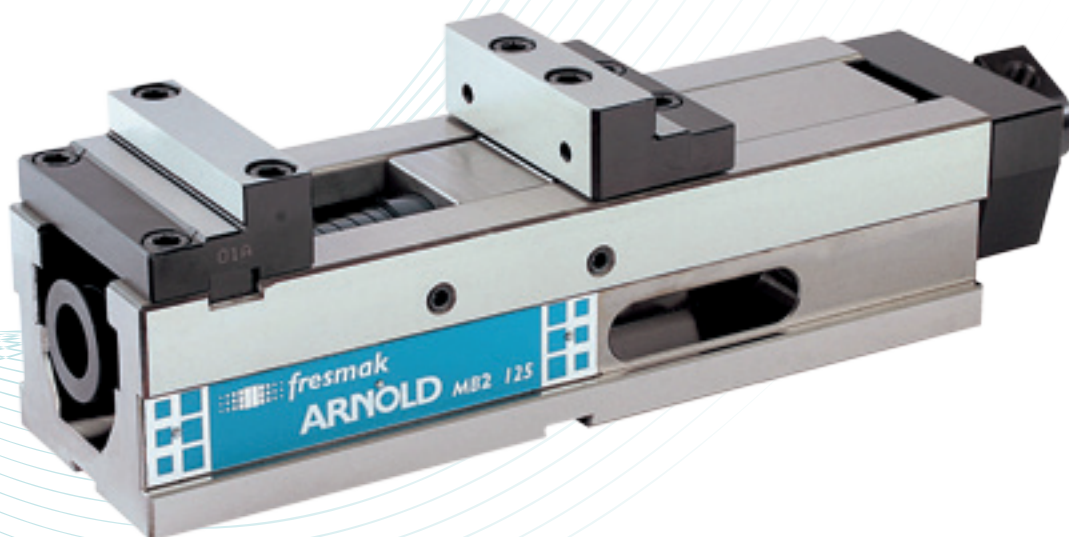


Clamping field O2

+ info



ARNOLD MB2 Oleo-dynamic



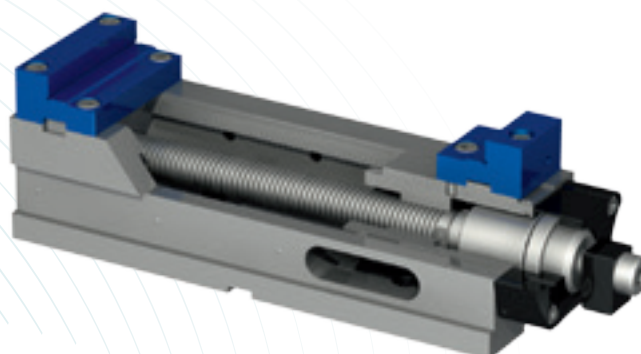
- Designed to automate processes and robotize them.
- Fitted with a high pressure single acting oleo-dynamic spindle.
- Rotary connection at the inlet and the outlet for oil.
- 4 mm. automatic stroke for closing and opening.
- Adjustable clamping force directly proportional to the oil pressure input (see manual).
- **Common features page 24.**

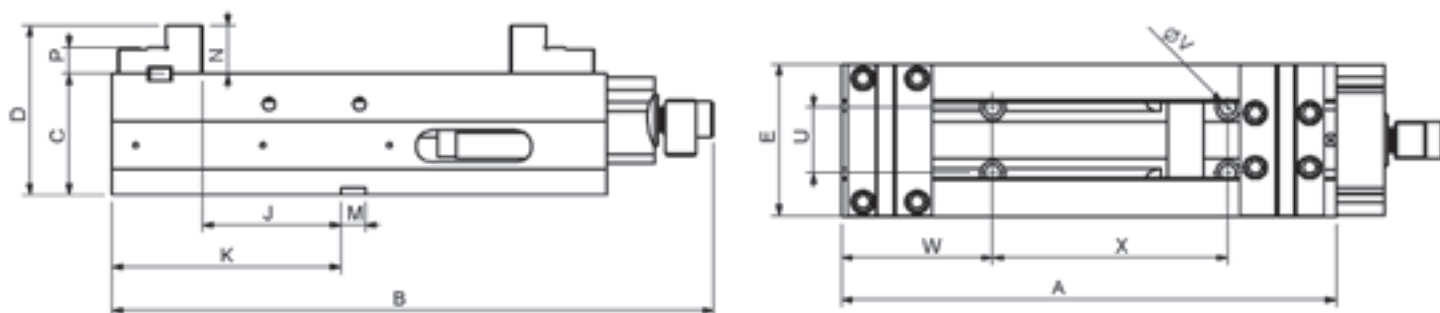
ELEMENTS REQUIRED

- Hydraulic unit or single acting 500 bar pneumo-hydraulic pump with vice unit connection hose, pressure control switch, safety valve integrated into the unit and ON-OFF switch.
- Pressure gauge.

SET SUPPLIED

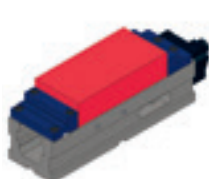
- Base body
- Oleodynamic spindle
- Rotary connection
- 1 set of hard jaws
- 1 handle
- 4 end clamps
- Service manual



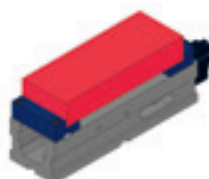


Size	125	160
ARNOLD MB2 Oleo-dynamic	060 141 125	060 141 160
Clamping force (kN)	45	45
A	410	530
B	499	614
C -0.02	100	115
D	140	165
E	126	161
J +0.02	115	123
K	190	230
M H7	20	20
N	40	50
P	22	30
U	54	68
V	13	13
W	125	140
X	195	300
Weight (kg)	35	61
Clampings	125	125
Clamping field O1	0 - 254	0 - 310
Clamping field O2	80 - 334	120 - 430

Clamping possibilities



Clamping field O1



Clamping field O2

+ info

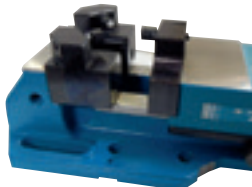


ARNOLD

High pressure ARNOLD CLASSIC vices achieve a clamping force of up to 80 kN.

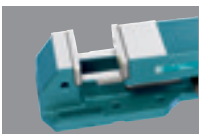
- Accuracy of 0.01 mm in clamping repeatability.
- Monoblock design avoids deformations due to high pressure and offers great rigidity and robustness.
- The force applied by the high pressure spindle is transmitted to the work-piece right in the centre of the clamping jaw.
- Large aperture up to 375 mm and 845 mm if the body is in two parts.
- Clamping force is 25/40/50/80 kN, depending on the model.
- ARNOLD CLASSIC spindles can be used independently from the vice as a power clamping element in a workholding set up.

SPECIAL JAWS



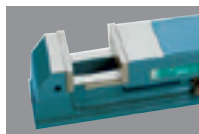
Possibility of working with machined soft jaws according to the shape of the work piece.

VERSIONS



STANDARD

Clamping to the machine table can be achieved through the holes and the slots on the side of the vice.
It can be supplied with a rotary base.



STRAIGHT

Its narrowness makes it easy for it to be placed jointly parallel to another vice, thereby allowing for a large clamping unit for large workpieces.



TWO PART STRAIGHT

Ideal for large work-pieces.
It clamps the work-pieces on top of the guides or on top of the table.
An inner tie-rod joins both parts of the vice.

CLASSIC Vices



MANUAL vices

- Mechanical vice



Size
090
125
160
200

- Mechanical vice with regulator



Size
125
160

pag. 34

- Hydraulic vice



Size
090
125
160
200

- Hydraulic vice with regulator



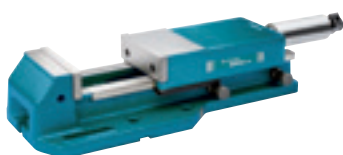
Size
125
160
200

pag. 36



AUTOMATIC vices

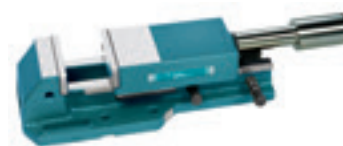
- Oleo-dynamic



Size
125
160
200

pag. 38

- Pneumo-hydraulic



Size
125
160
200

pag. 40

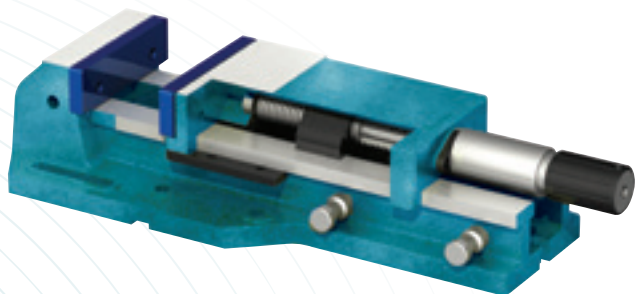
ARNOLD CLASSIC Mechanical

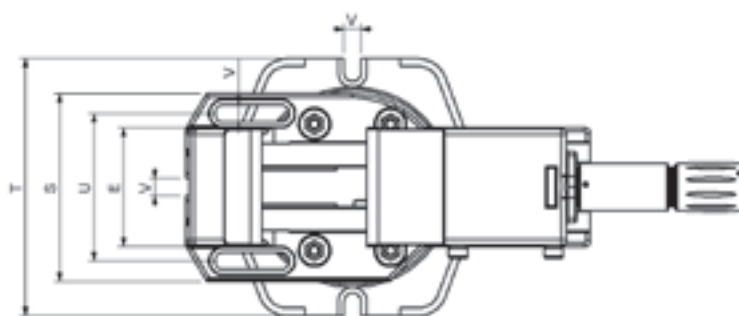
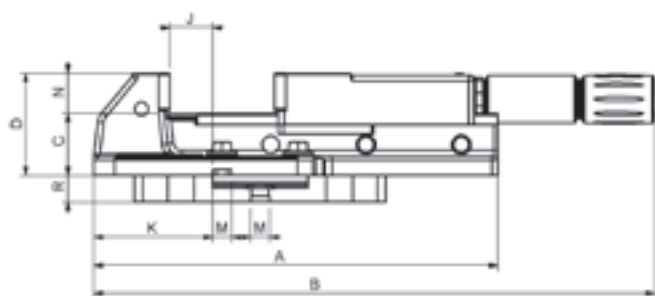


- Fitted with a high pressure mechanical intensifier.
- Power regulator optional.
- Two part straight vice option available.
- **Common features page 32.**

SET SUPPLIED

- Base body
- Mechanical spindle
- 1 set of plain jaws
- 1 handle
- Straight vice: + 4 end clamps.
- In 2 parts: + 8 end clamps
- Service manual.





Size	90	125	160	200
ARNOLD CLASSIC Mechanical	010 200 090	010 200 125	010 200 160	010 200 200
ARNOLD CLASSIC Mechanical with regulator		010 210 125	010 210 160	
ARNOLD CLASSIC Mechanical with base	010 201 090	010 201 125	010 201 160	010 201 200
ARNOLD CLASSIC Mechanical with base and regulator		010 211 125	010 211 160	
ARNOLD CLASSIC Mechanical Straight	010 202 090	010 202 125	010 202 160	010 202 200
ARNOLD CLASSIC Mechanical Straight with regulator		010 212 125	010 212 160	
ARNOLD CLASSIC Mechanical in 2 parts			010 203 160	010 203 200
ARNOLD CLASSIC Mechanical in 2 parts with regulator			010 213 160	
Clamping force (kN)	25	40	50	80
A	355	425	570	680
B	391 - 548	480 - 690	570 - 875	723 - 1101
B (with regulator)		507 - 718	594 - 902	
B (in 2 parts)			566 - 1369	723 - 1576
B (in 2 parts with regulator)			594 - 1396	
C	52	65	80	97
C (Straight vice in 2 parts)	52	70	89	101
D	92,5	107,5	130,5	160,5
D (Straight vice in 2 parts)	92,5	112,5	139,5	164,5
E	90	125	160	200
J	25	45	85	105
K	95	125	175	225
M	20	20	20	20
N	40,5	42,5	50,5	63,5
S	162	197	252	302
U	126	155	200	250
V	14	18	18	22
Weight (kg)	13	26	51	94
Base	800 450 090	800 450 125	800 450 160	800 450 200
R	25	28	32	45
T	230	270	325	400
Weight (kg)	5	8	15	32
Clampings	90	125	160	200
Clamping field O1	0 - 80	0 - 105	0 - 155	0 - 205
Clamping field O2	75 - 154	100 - 205	150 - 305	165 - 370
Clamping field (in 2 parts) Omax			795	845

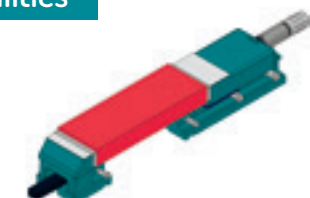
Clamping possibilities



Clamping field O1



Clamping field O2

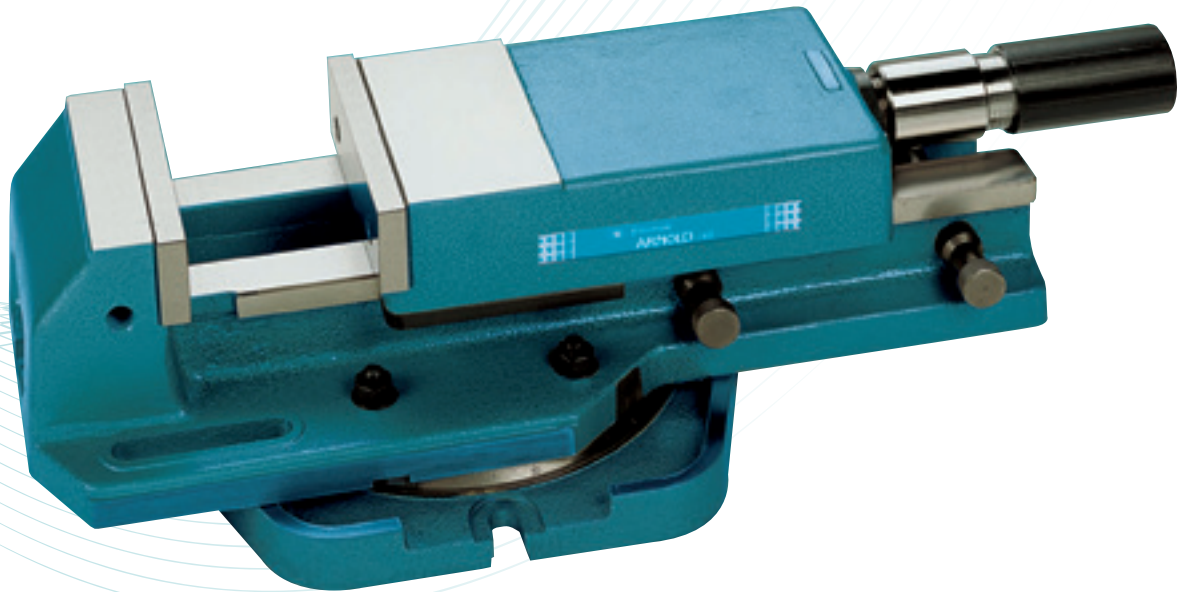


Clamping field (in 2 parts) Omax

+ info



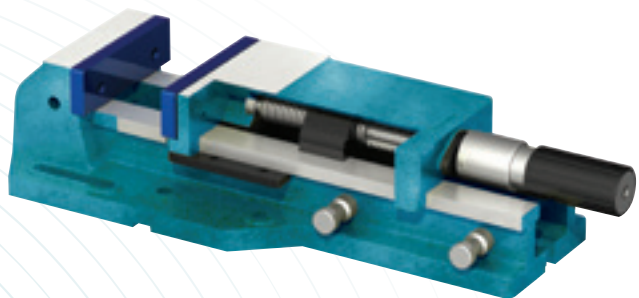
ARNOLD CLASSIC Hydraulic

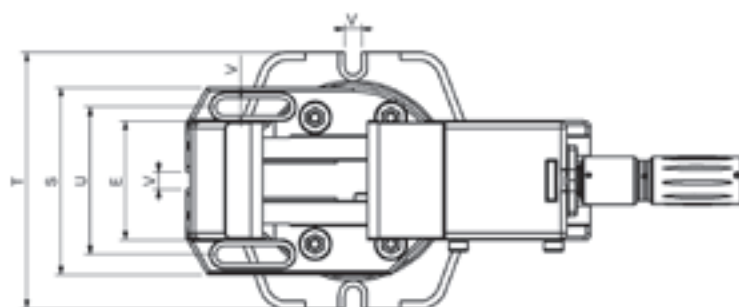
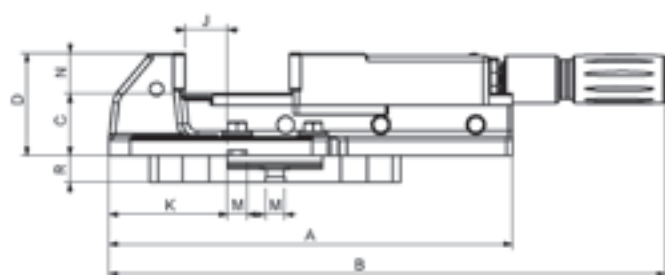


- Fitted with a high pressure hydraulic intensifier which does not require any external supply.
- Power regulator optional.
- Two part straight vice option available.
- **Common features page 32.**

SET SUPPLIED

- Base body
- Hydraulic spindle
- 1 set of plain jaws
- 1 handle
- Straight vice: + 4 end clamps.
- In 2 parts: + 8 end clamps
- Service manual



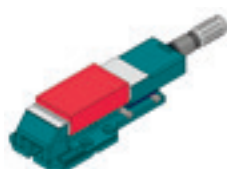


Size	90	125	160	200
ARNOLD CLASSIC Hydraulic	010 010 090	010 010 125	010 010 160	010 010 200
ARNOLD CLASSIC Hydraulic with regulator		010 110 125	010 110 160	010 110 200
ARNOLD CLASSIC Hydraulic with base	010 011 090	010 011 125	010 011 160	010 011 200
ARNOLD CLASSIC Hydraulic with base and regulator		010 111 125	010 111 160	010 012 200
ARNOLD CLASSIC Hydraulic Straight	010 012 090	010 012 125	010 012 160	010 012 200
ARNOLD CLASSIC Hydraulic Straight with regulator		010 112 125	010 112 160	010 112 200
ARNOLD CLASSIC Hydraulic in 2 parts			010 013 160	010 013 200
ARNOLD CLASSIC Hydraulic in 2 parts with regulator			010 113 160	010 113 200
Clamping force (kN)	25	40	50	80
A	355	425	570	680
B	417 - 574	477 - 687	570 - 872	716 - 1093
B (with regulator)		513 - 723	599 - 908	760 - 1137
B (in 2 parts)			564 - 1366	716 - 1568
B (in 2 parts with regulator)			599 - 1402	760 - 1612
C	52	65	80	97
C (Straight vice in 2 parts)	52	70	89	101
D	92,5	107,5	130,5	160,5
D (Straight vice in 2 parts)	92,5	112,5	139,5	164,5
E	90	125	160	200
J	25	45	85	105
K	95	125	175	225
M	20	20	20	20
N	40,5	42,5	50,5	63,5
S	162	197	252	302
U	126	155	200	250
V	14	18	18	22
Weight (kg)	13	26	51	94
Base	800 450 090	800 450 125	800 450 160	800 450 200
R	25	28	32	45
T	230	270	325	400
Weight (kg)	5	8	15	32
Clampings	90	125	160	200
Clamping field O1	0 - 80	0 - 105	0 - 155	0 - 205
Clamping field O2	75 - 154	100 - 205	150 - 305	165 - 370
Clamping field (in 2 parts) Omax			795	845

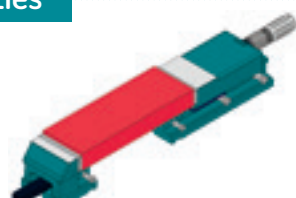
Clamping possibilities



Clamping field O1



Clamping field O2

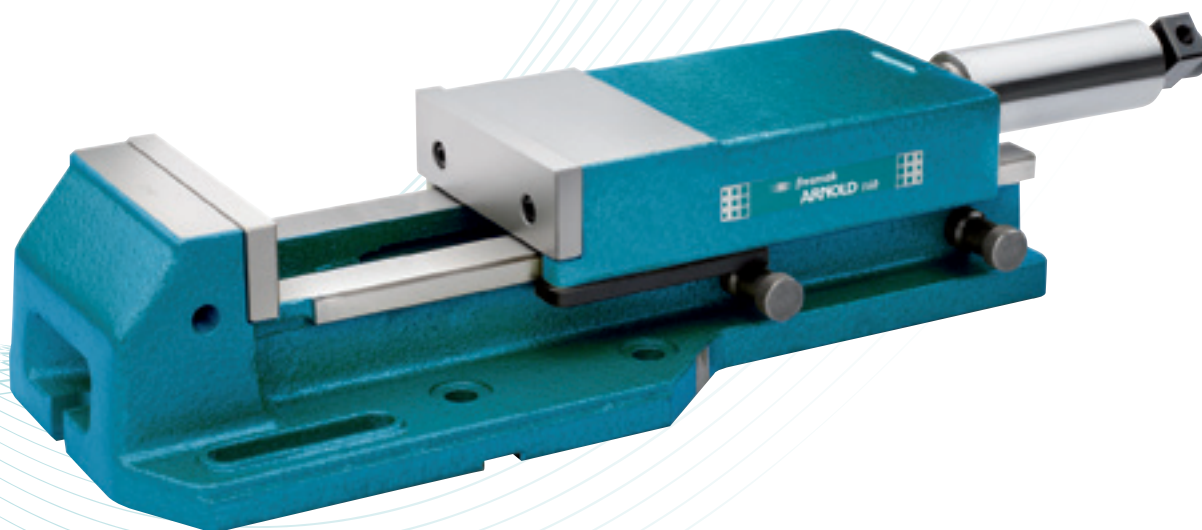


Clamping field (in 2 parts) Omax

+ info



ARNOLD CLASSIC Oleo-dynamic



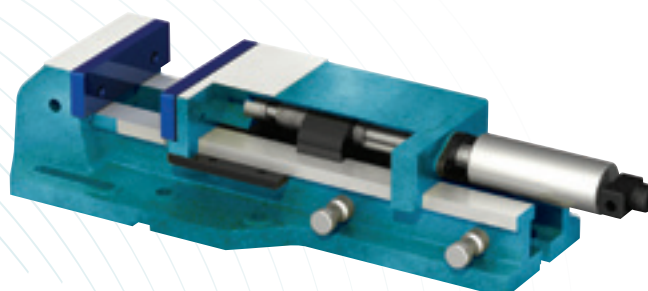
- Designed to automate processes and robotize them.
- Fitted with a single acting oleo-dynamic spindle, with spring push-back effect.
- Rotary connection at the inlet and the outlet for oil.
- Automatic stroke for closing and opening up to 4 mm.
- Adjustable clamping force and directly proportional to oil pressure input (see manual).
- Two part straight vice option upon request.
- **Common features page 32.**

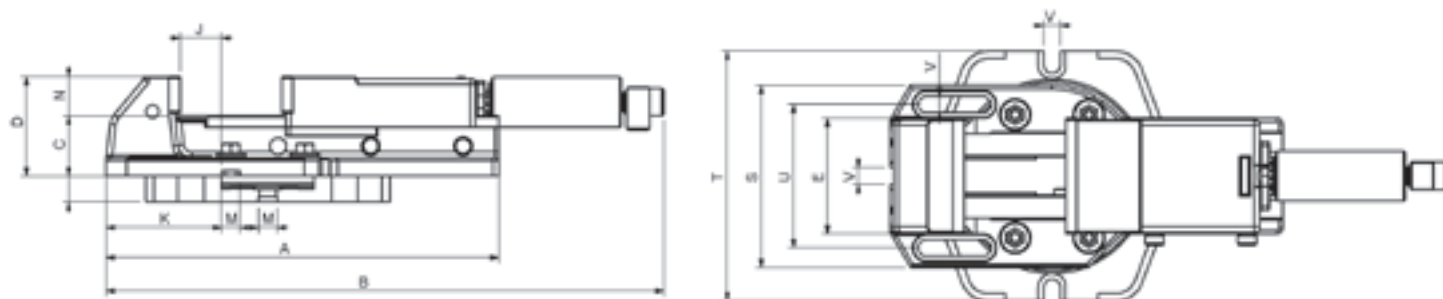
ELEMENTS REQUIRED

- Hydraulic unit or single acting 500 bar pneumo-hydraulic pump with vice unit connection hose, pressure control switch, safety valve integrated into the unit and ON-OFF switch.
- Pressure gauge.

SET SUPPLIED

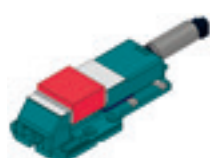
- Base body
- Oleo-dynamic spindle
- Rotary connection
- 1 set of plain jaws
- 1 handle
- Straight vice: + 4 end clamps
- Instruction manual



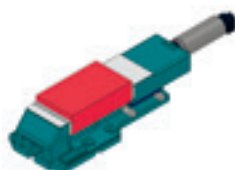


Size	125	160	200
ARNOLD CLASSIC Oleo-Dynamic	010 140 125	010 140 160	010 140 200
ARNOLD CLASSIC Oleo-Dynamic with base	010 141 125	010 141 160	010 141 200
ARNOLD CLASSIC Straight Oleo-Dynamic	010 142 125	010 142 160	010 142 200
Clamping force (kN)	40	50	80
A	425	570	680
B	494 - 704	580 - 888	680 - 1040
C	65	80	97
C (Straight vice)	70	89	101
D	107,5	130,5	160,5
D (Straight vice)	112,5	139,5	164,5
E	125	160	200
J	45	85	105
K	125	175	225
M	20	20	20
N	42,5	50,5	63,5
S	197	252	302
U	155	200	250
V	18	18	22
Weight (kg)	26	51	94
Base	800 450 125	800 450 160	800 450 200
R	28	32	45
T	270	325	400
Weight (kg)	8	15	32
Clampings	125	160	200
Clamping field O1	0 - 105	0 - 155	0 - 205
Clamping field O2	100 - 205	150 - 305	165 - 370

Clamping possibilities



Clamping field O1



Clamping field O2

+ info



ARNOLD CLASSIC Pneumo-hydraulic



- Designed to automate processes and robotize them .
- Pneumo-hydraulic high pressure single acting intensifier, supplied by compressed air at 6 bars.
- Clamping force adjustable by the air pressure (see manual).
- Automatic stroke for closing and opening up to 3 mm.
- The vice operation may be manual (used with a valve unit sent with the vice) or by using a pedal situated near the machine or may be controlled by CNC by using a solenoid valve.
- Two-parts straight vice option upon request.
- **Common features page 32.**

TIPS FOR USE

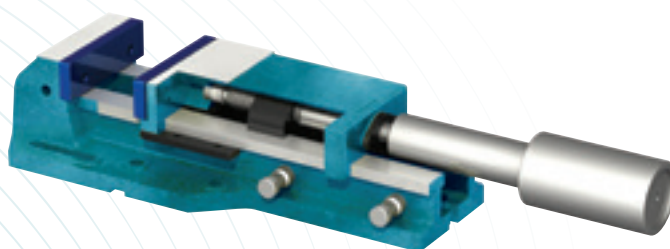
- The air must be filtered (dry air).
- Should control pedal be used: the set of valves supplied with the vice must be placed between the compressor and the pedal, not between the pedal and the vice.

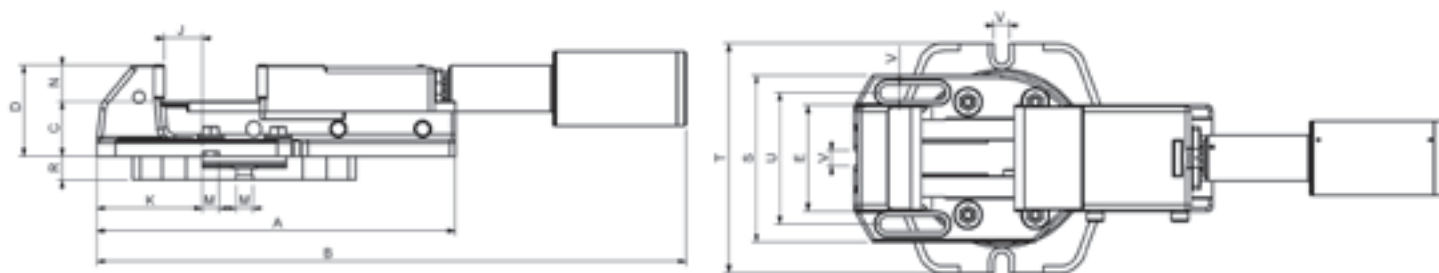
ELEMENTS NEEDED

- Connection of the compressor to the vice.
- Filter unit, gauge and lubricator of the air inlet.

SET SUPPLIED

- Base body
- Pneumohydraulic spindle
- Valve assembly
- 1 set of plain jaws
- Straight vice: + 4 end clamps
- Service manual



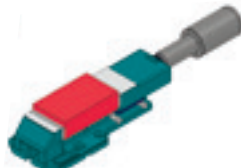


Size	125	160	200
ARNOLD CLASSIC Pneumo-Hydraulic	010 600 125	010 600 160	010 600 200
ARNOLD CLASSIC Hydraulic with base	010 601 125	010 601 160	010 601 200
ARNOLD CLASSIC Straight Pneumo-Hydraulic	010 602 125	010 602 160	010 602 200
Clamping force (kN)	40	50	80
A	425	570	680
B	589 - 799	732 - 1040	845 - 1222
C	65	80	97
C (Straight vice)	70	89	101
D	107,5	130,5	160,5
D (Straight vice)	112,5	139,5	164,5
E	125	160	200
J	45	85	105
K	125	175	225
M	20	20	20
N	42,5	50,5	63,5
S	197	252	302
U	155	200	250
V	18	18	22
Weight (kg)	26	51	94
Base	800 450 125	800 450 160	800 450 200
R	28	32	45
T	270	325	400
Weight (kg)	8	15	32
Clampings	125	160	200
Clamping field O1	0 - 105	0 - 155	0 - 205
Clamping field O2	100 - 205	150 - 305	165 - 370

Clamping possibilities



Clamping field O1



Clamping field O2

+ info



ARNOLD

High pressure ARNOLD TWIN vices are capable of clamping two pieces simultaneously.

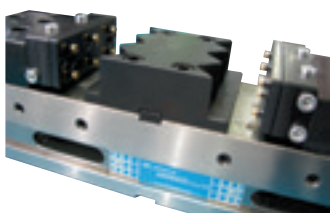
- Accuracy of 0.01 mm in clamping repeatability.
- Suitable for working in horizontal and vertical machining centres.
- Grinding of all surfaces with a parallelism and perpendicularity of 0.02 mm.
- Possible working positions: supported on the base, on the side or on the head vertically.
- Side windows for quick cleaning of the inside of the vices.
- Clamping force is 25/50 kN, depending on the size.

COMPENSATED CLAMP



The exterior clamping pressure towards the centre provides a dynamically compensated clamp and avoids deformation.

SPECIAL JAWS



Possibility of working with machined soft jaws according to the shape of the workpiece.

CLAMPING POSSIBILITIES

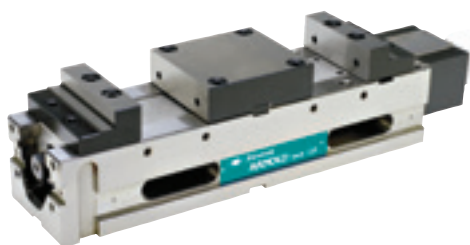
Two workpieces can be clamped at the same time, with a difference in size of 3mm. between them or just one workpiece.

TWIN Vices



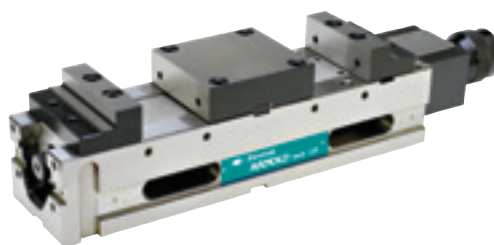
MANUAL vices

- Hydraulic vice



Size
090

- Hydraulic vice with regulator



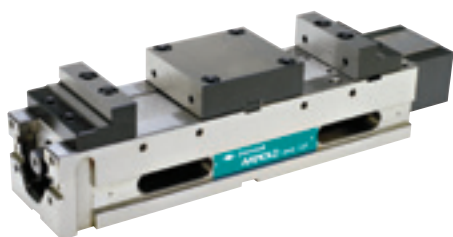
Size
125

pag. 44



AUTOMATIC vices

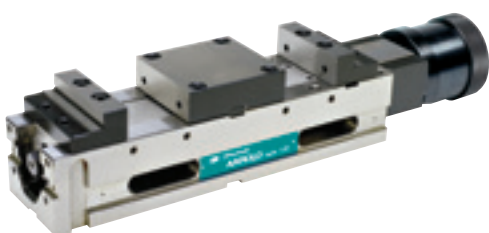
- Oleo-dynamic



Size
090
125

pag. 46

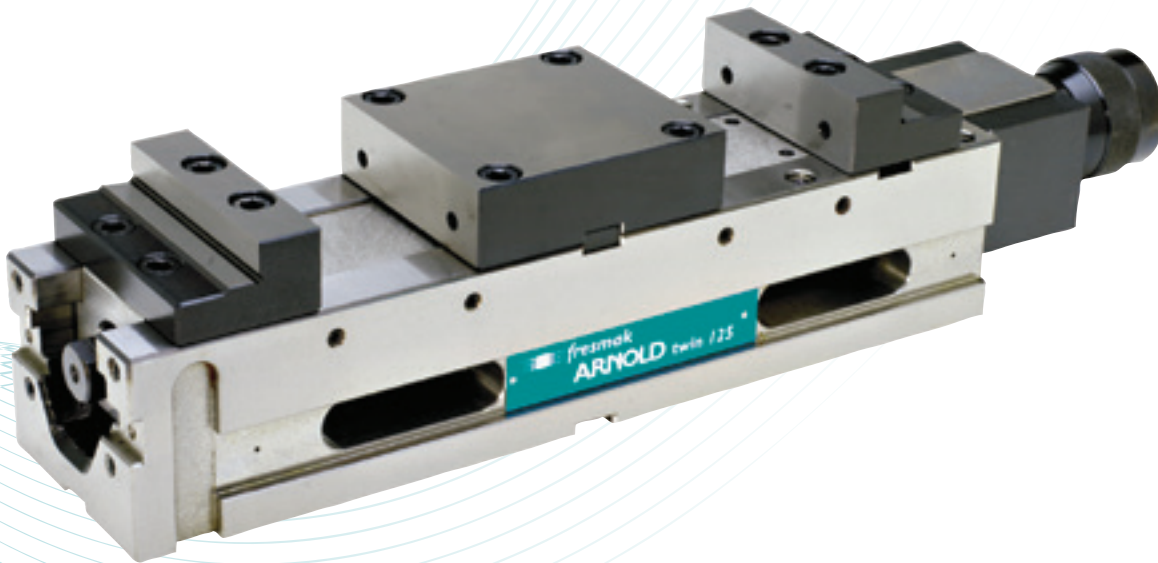
- Pneumo-hydraulic



Size
125

pag. 48

ARNOLD TWIN Hydraulic



- Fitted with a high pressure hydraulic intensifier which does not require any external supply.
- Angle driver for handle clearance upon request.
- 6 different clamping types, interchanging the position of standard jaws: either by rotating the side jaws and fitting the stepped jaw in the middle, or by fitting any of the central jaws on the side closets to the handle.
- To clamp a single workpiece, place it in Station II.
- **Common features page 42.**

3RD HAND MECHANISM

Function which permits first one work-piece to be clamped and then the other, enabling it to be fitted in the vertical position.

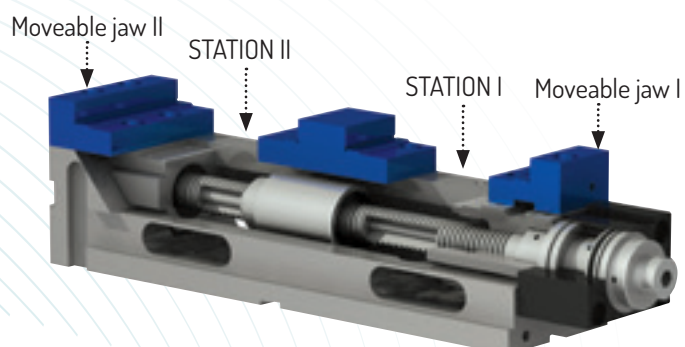
Operation of the 3rd Hand: By turning the handle bring the moveable jaw I towards the work-piece situated in station I until it is clamped.

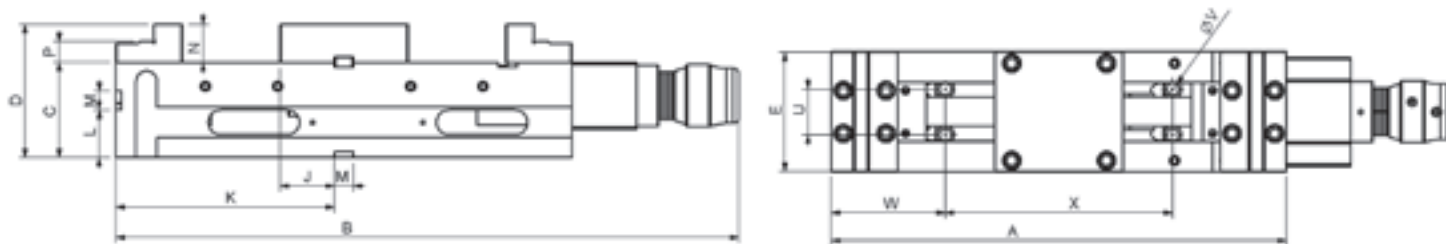
Maintaining the turn bring moveable jaw II towards the work-piece situated in station II until it is clamped.

Continuing with the turn, jumpstart the intensifier and start to clamp with high pressure.

SET SUPPLIED

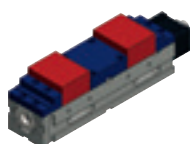
- Base body
- Hydraulic spindle
- 1 set of hard jaws
 - 2 x side jaws
 - 1 central jaw I (stepped)
 - 1 central jaw II (block)
- 1 handle
- 4 end clamps
- Instruction manual



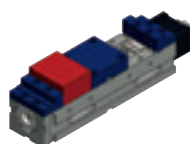


Size	90 without regulator	125 with regulator
ARNOLD TWIN Hydraulic	040 410 090	040 410 125
Clamping force (kN)	2 x 25	2 x 50
A	400	480
B	489	656
C -0.02	75	100
D	115	140
E	91	126
J +0.02	45	57,5
K	190	230
L	40	50
M H7	20	20
N	40	40
P	20	22
U	38	48
V	11	13
W	110	120
X	180	240
Weight (kg)	25	45
Clampings	90	125
Clamping field O1	0-80	0-101
Clamping field O2	0-92	0-116
Clamping field O3	66-145	83-183
Clamping field O4	66-157	83-198
Clamping field O5	140-221	180-288
Clamping field O6	198-286	262-370

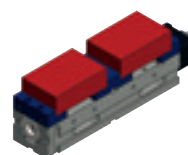
Clamping possibilities



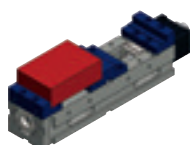
Clamping field O1



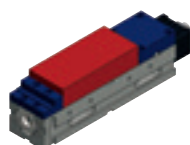
Clamping field O2



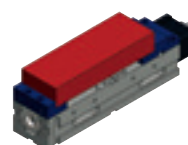
Clamping field O3



Clamping field O4



Clamping field O5

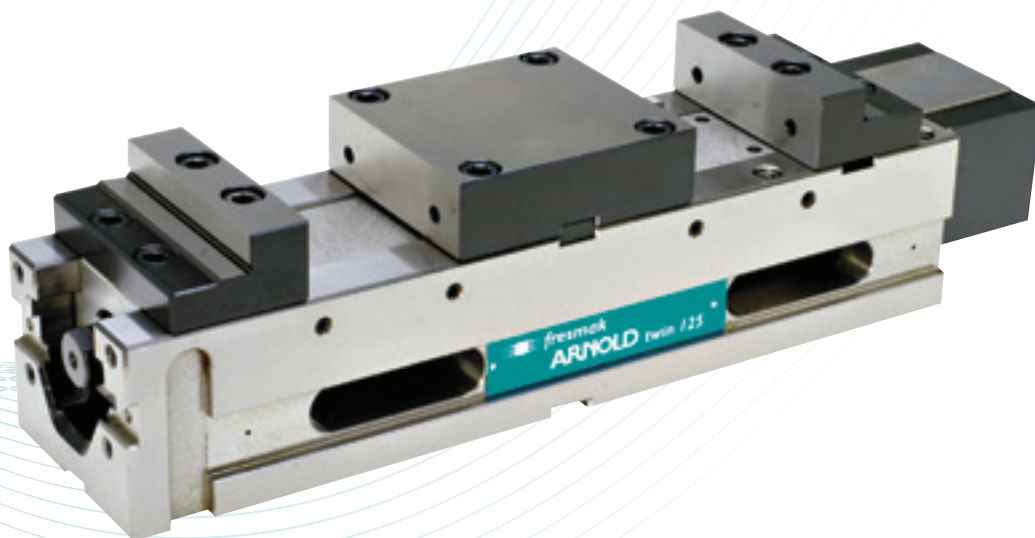


Clamping field O6

+ info



ARNOLD TWIN Oleo-dynamic



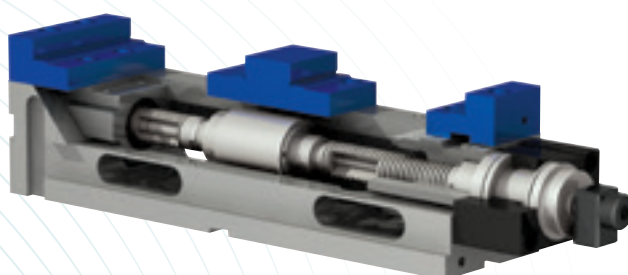
- Designed to automate processes and robotize them.
- Fitted with a high pressure single acting oleo-dynamic spindle, with spring push-back effect.
- Rotary connection at the inlet and the outlet for oil.
- Automatic stroke for closing and opening 4 mm.
- Adjustable clamping force directly proportional to the oil pressure input (see manual).
- **Common features page 42.**

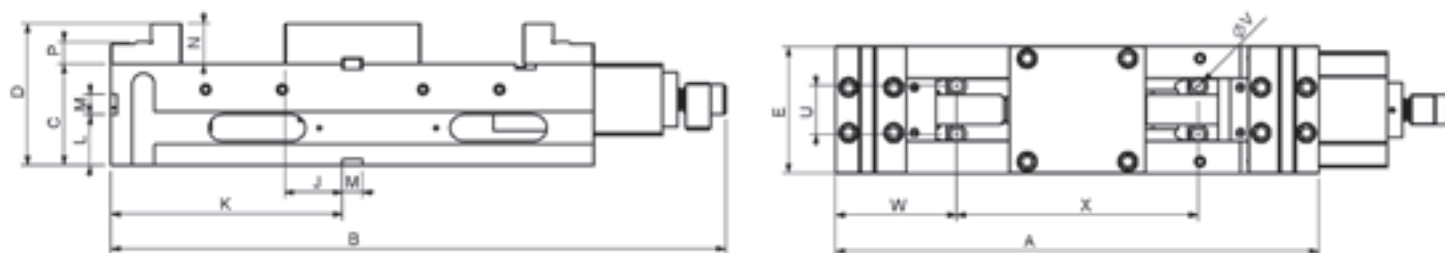
ELEMENTS REQUIRED

- Hydraulic unit or single acting 500 bar pneumo-hydraulic pump with vice unit connection hose, pressure control switch, safety valve integrated into the unit and ON-OFF switch.
- Pressure gauge.

SET SUPPLIED

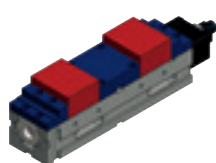
- Base body
- Oleodynamic spindle
- 1 rotary connection
- 1 set of jaw
 - 2 x side jaws
 - 1 central jaw I (stepped)
 - 1 central jaw II (block)
- 1 handle
- 4 end clamps
- Service manual.



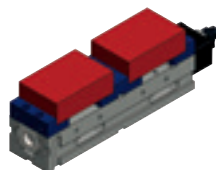


Size	90	125
ARNOLD TWIN Oleo-dynamic	040 140 090	040 140 125
Clamping force (kN)	2 x 25	2 x 40
A	400	480
B	525	611
C -0.02	75	100
D	115	140
E	91	126
J +0.02	45	57,5
K	190	230
L	40	50
M H7	20	20
N	40	40
P	20	22
U	38	48
V	11	13
W	110	120
X	180	240
Weight (kg)	25	45
Clampings	90	125
Clamping field O1	0 - 80	0 - 84
Clamping field O2	66-145	83-166

Clamping possibilities



Clamping field O1

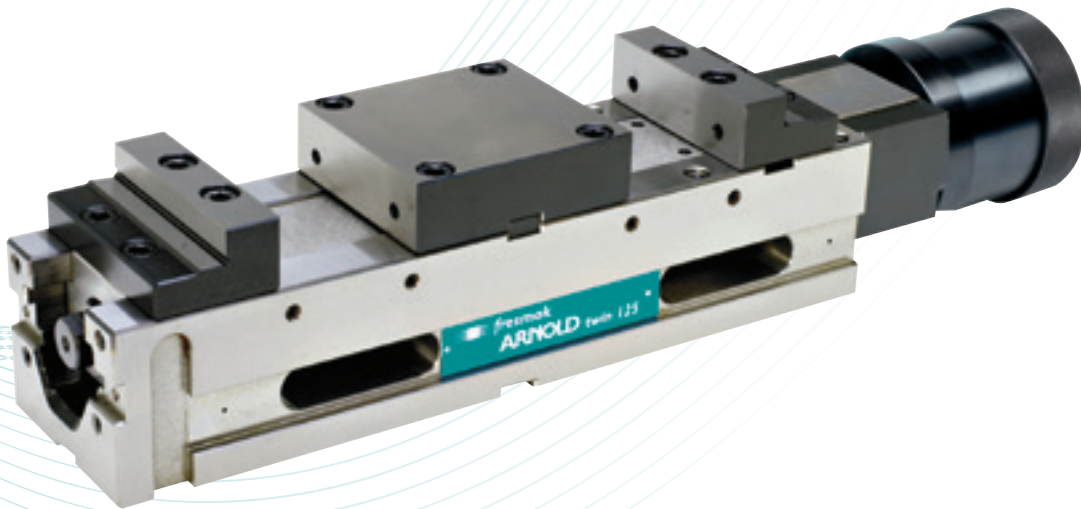


Clamping field O2

+ info



ARNOLD TWIN Pneumo-hydraulic



- Designed to automate processes and robotize them.
- Fitted with a pneumo-hydraulic high pressure single acting intensifier, fed by compressed air at 6 bars.
- Clamping force adjustable by air pressure input (see manual).
- Automatic stroke for closing and opening up to 4 mm.
- The vice operation may be manual (used with a valve unit supplied with the vice), by using a pedal located near the machine or may be controlled by CNC using a solenoid valve.
- **Common features page 42.**

USAGE TIPS

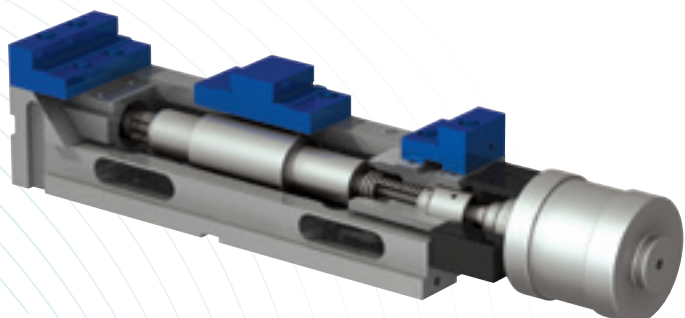
- The air must be filtered (dry air).
- Should the control pedal be used, the set of valves supplied with the vice must be placed between the compressor and the pedal, not between the pedal and the vice.

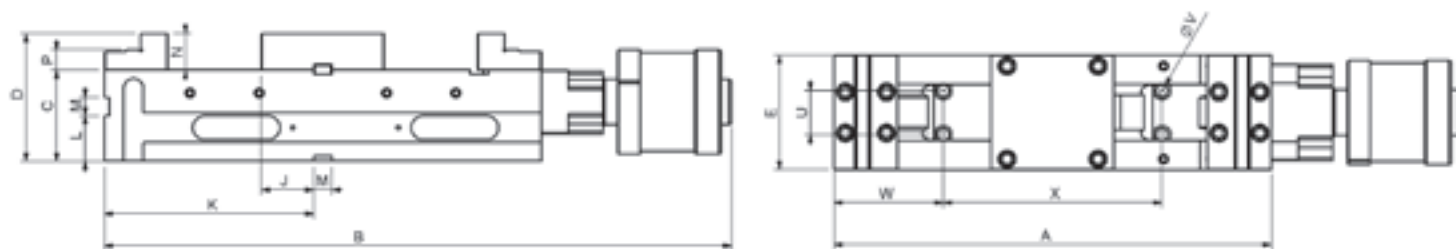
ELEMENTS NEEDED

- Connection of the compressor to the vice.
- Filter unit, gauge and lubricator of the air inlet.

SET SUPPLIED

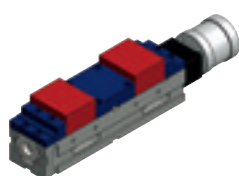
- Base body
- Pneumo-hydraulic spindle
- Valve assembly
- 1 set of jaw
 - 2 x side jaws
 - 1 central jaw I (stepped)
 - 1 central jaw II (block)
- 4 End clamps
- Service manual



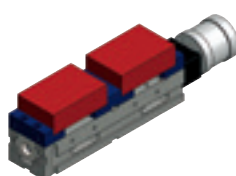


Size	125
ARNOLD TWIN Pneumo-hydraulic	040 600 125
Clamping force (kN)	2 x 40
A	480
B	689
C -0.02	100
D	140
E	126
J +0.02	57,5
K	230
L	50
M H7	20
N	40
P	22
U	48
V	13
W	120
X	240
Weight (kg)	48
Clampings	125
Clamping field O1	7 - 102
Clamping field O2	90 - 185

Clamping possibilities



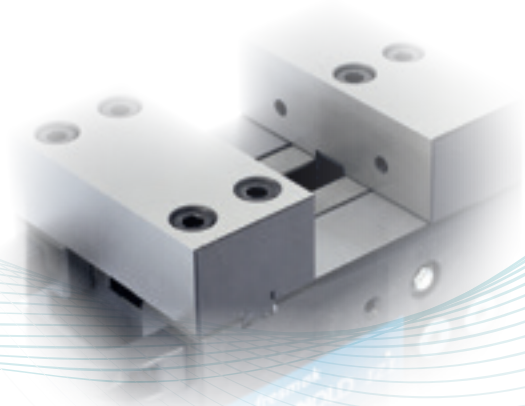
Clamping field O1



Clamping field O2

+ info

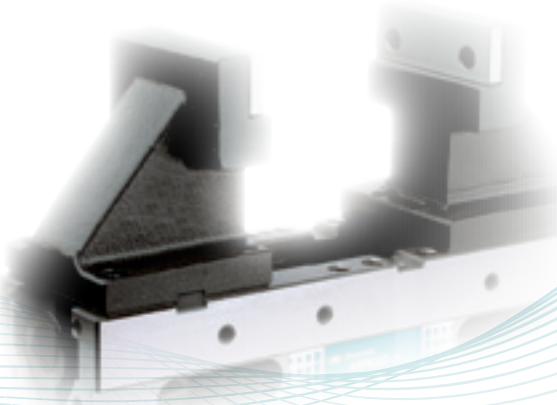




ARNOLD

ARNOLD IZI HYDRAULIC High Pressure vices, are compact automatic vices with long movement.

- Accuracy of 0.01 mm clamping repeatability.
- Specially designed for rapid clamp or robotised systems.
- Steel components.
- All components are tempered and ground.
- Suitable for working in horizontal and vertical machining centres.
- Adjustable clamping force directly proportional to the oil pressure input (see manual).
- Possibility of working with machined soft jaws according to the shape of the work piece.



ARNOLD

High Pressure ARNOLD 5X, are fitted with a clamp as far away as possible from the body and therefore the machine bench.

- Accuracy of 0.01 mm in clamping repeatability.
- Designed in two sizes M and L with an adjustable force of up to 3 kN in the uppermost part.
- Essential for highly specialized machining process such as titanium and aluminum, which requires totally different clamping forces.
- They maintain their constant length irrespective of the size of the work piece, being specially designed for the use in 5-axis machining centres.
- Exterior elements needed for achieving high pressure, which usually make 5X machining work difficult, are not required with this model.
- Power regulator available in M size.

IZ Vices



AUTOMATIC vices

- IZ1



Size
I 25

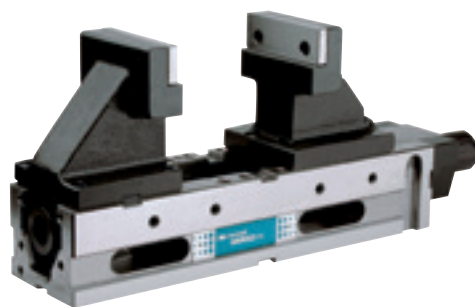
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5X Vices



MANUAL vices

- Mechanical 5 axis



Size
I 25 M
I 25 M with regulator
I 25 L with regulator

pag. 54

ARNOLD IZ1 Hydraulic



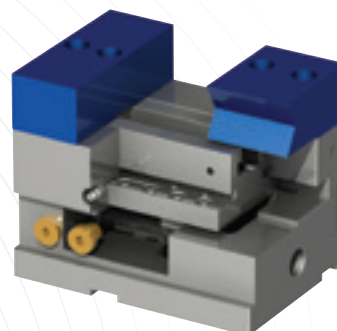
- Various clamps on one single base plate available, with a single oil input. In this way, a monoblock is obtained which can clamp a large number of small work-pieces taking up very little space.
- Fitted with a totally concealed double effect hydraulic cylinder.
- Moveable jaw guided by interior slides at the base of the vice to avoid upward movement of the work-piece and fixed jaw firmly clamped to the base body to maintain a secure reference.
- Totally consealed. No cleaning needed.
- Automatic 15 mm forward and backward movement.
- For 250 bar pressure, the resulting clamping force is 17,5 kN.
- **Common features page 50.**

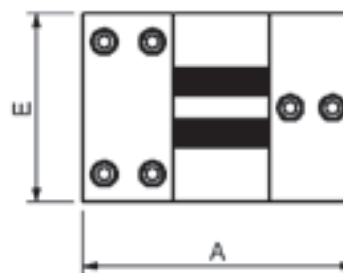
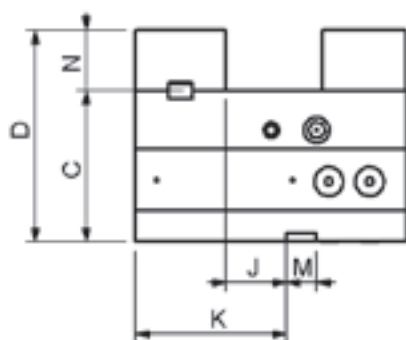
ELEMENTS REQUIRED

- Hydraulic unit or single acting with 300 bar pneumo-hydraulic pump with vice unit connection hose, pressure control switch, safety valve integrated into the unit and ON-OFF switch.
- Pressure gauge.

SET SUPPLIED

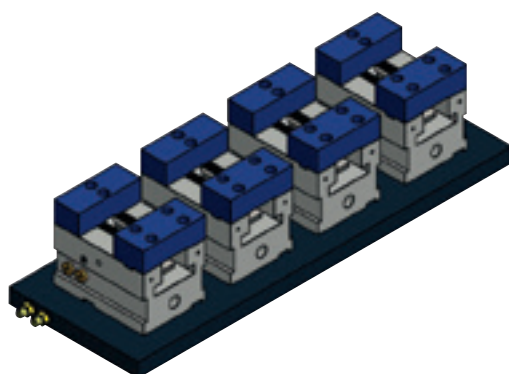
- Base body
- Hydraulic cylinder
- 1 set of jaws
- Instruction manual





Size	I25
ARNOLD IZ I	090 600 I25
Clamping force (kN)	17.5 kN / 250 bar
A	180
C -0.02	100
D	140
E	125
J +0.02	40
K	100
M H7	20
N	40
Weight (kg)	18
Clampings	I25
Clamping field	62 mm

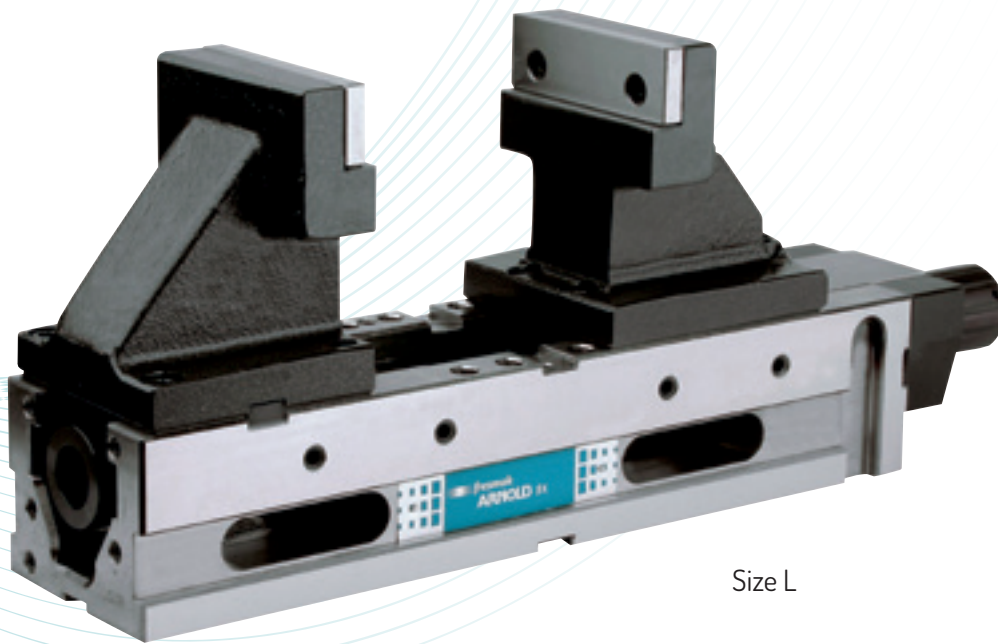
Clamping possibilities



+ info



ARNOLD 5X Mechanic



Size L

- Fitted with a high pressure mechanical intensifier.
- Side windows for quick cleaning and swarf removal.
- Customized jaws available according to the shape of the work-piece.
- **Common features page 50.**

SIZE M

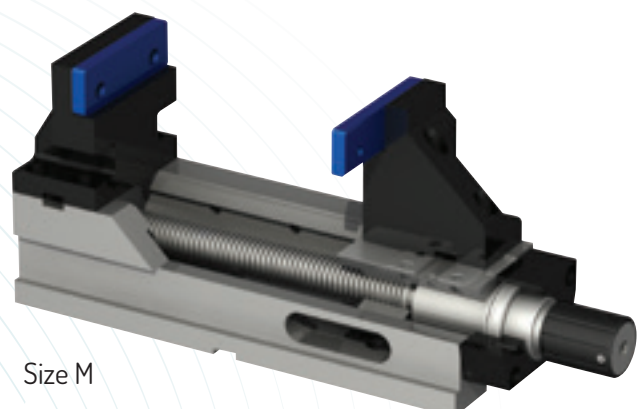
- Power regulator optional.

SIZE L

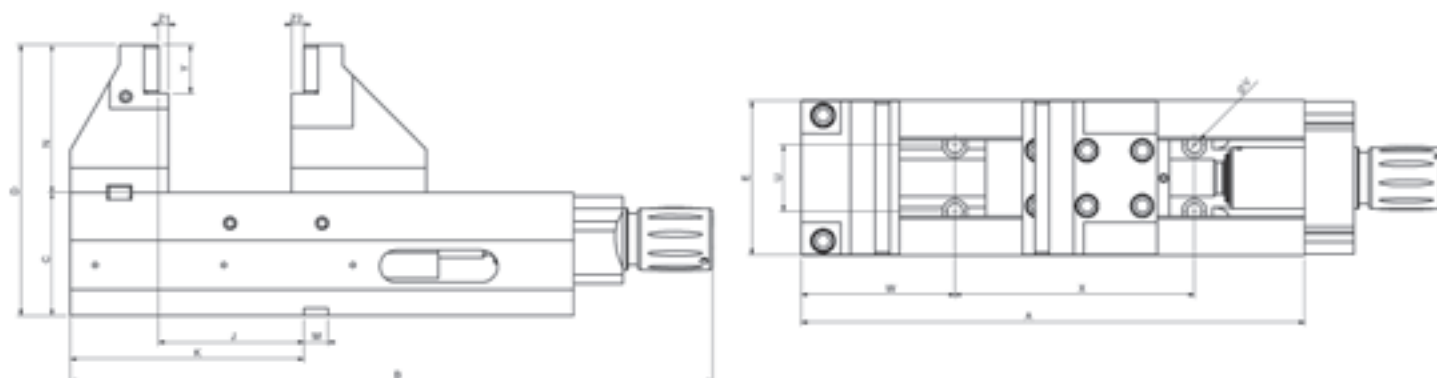
- With power regulator.
- Bigger clamping field than size M.

SET SUPPLIED

- Base body
- Mechanical spindle
- 1 set of high jaws
- 1 set of plain jaws
- 1 handle
- 4 end clamps
- Instruction manual

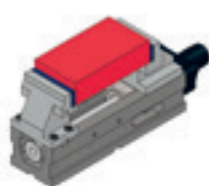


Size M

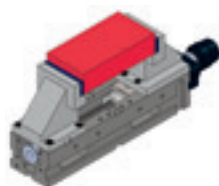


Size	125 M	125 L
ARNOLD 5X Mechanic	050 121 125	
ARNOLD 5X Mechanic with regulator	050 131 125	050 130 125
Clamping force (kN)	30	30
A	410	480
B	524	
B with regulator	551	621
C -0.02	100	100
D	220	250
E	126	126
J +0.02	118	107,5
K	190	230
M H7	20	20
N	120	150
U	54	48
V	13	13
W	125	120
X	195	240
Y	39,5	39,5
Z1	8	8
Z2	10	8
Weight (kg)	44	49
Clampings	125 M	125 L
Clamping field OI	18-228	38-240

Clamping possibilities



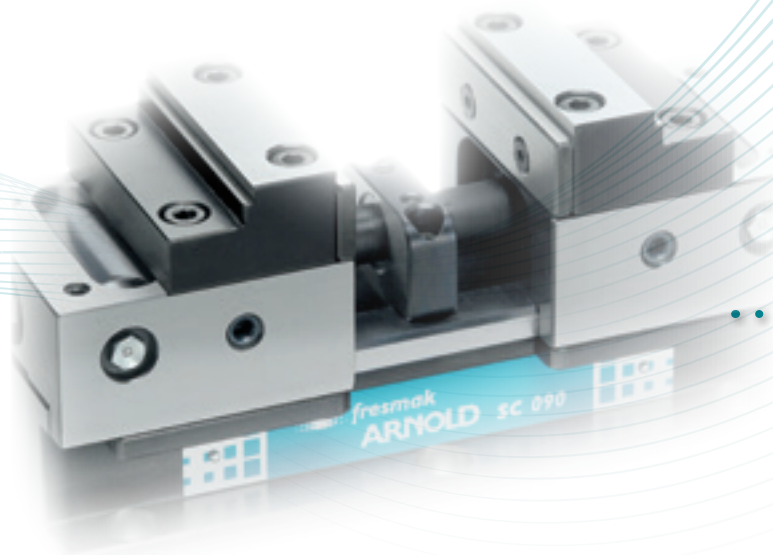
Size M



Size L

+ info





ARNOLD

ARNOLD SC vices are compact, high and self-centring and maintain constant length.

- Accuracy of 0,01 mm in clamping repeatability.
- Accuracy 0,02 mm in centring.
- Designed to work on machining centres with small tables, as well as, within 5 controlled axes machining centres.
- Compact design with exterior guides that avoid deformation as the clamping force is distributed throughout the width.
- Steel components.
- Consealed vice: Totally closed to prevent chips from getting in.
- Threaded right-left spindle which can be operated with a standard key.
- Clamping force ranging from 10 to 35 kN, depending on the model.
- Interchangeable jaws can reach a height of 125 mm, which means they can overcome the biggest obstacle for this type of work by avoiding collisions with the machine spindle or the rotation of the table.
- All standard jaws are may be used by adding soft jaws first.
- Suitable for clamping round work pieces.
- Base plate available for raising the vice available, see p. 71 .

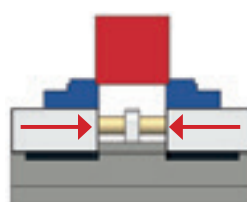


SPECIAL JAWS



Possibility of working with machined soft jaws according to the shape of the workpiece.

CLAMP CASING SYSTEM



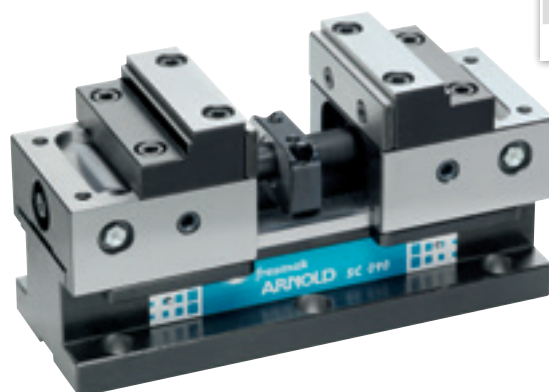
The spindle within the base jaws, just at the top of guide support, allows for applied force to be as close as possible to the piece to be machined. This means that the torque power is used to its fullest.

SC Vices



MANUAL vices

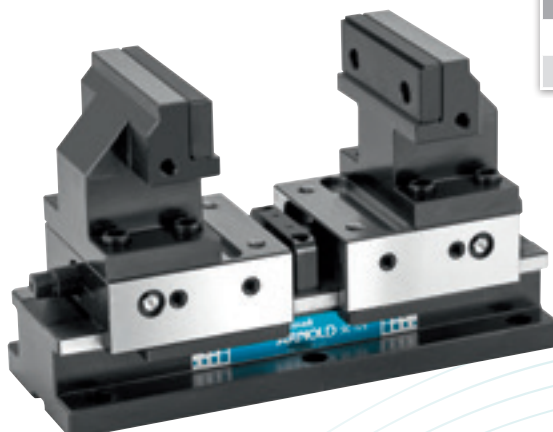
• SC



Size
070
090
125

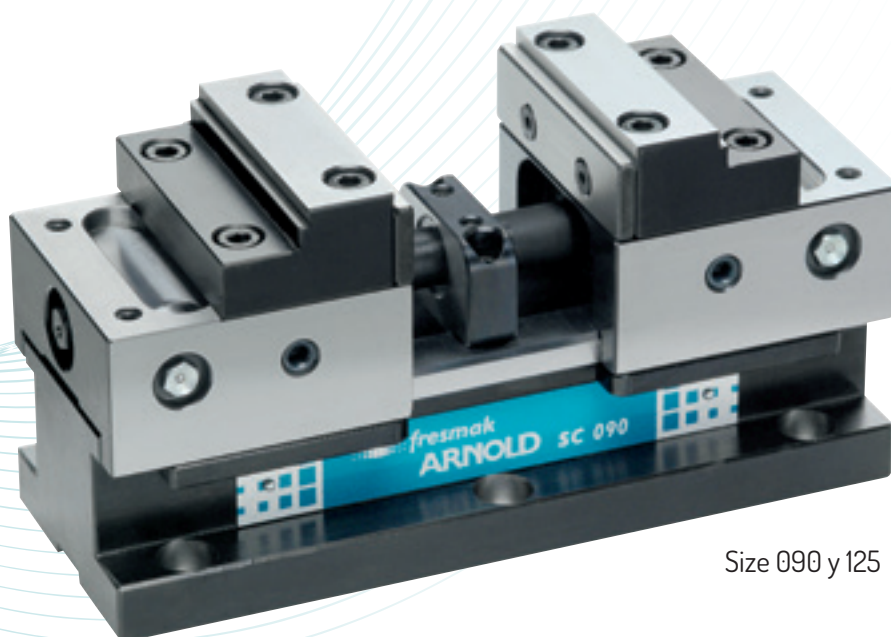
pag. 58

• SC 5X



Size
090
125

pag. 60



Size 090 y 125

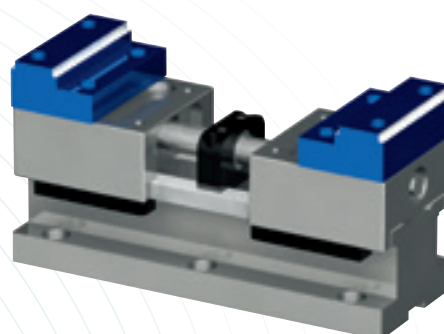
- Equipped with a mechanical spindle without high pressure.
- Jaws may be rotated: Large clamping field with 2 jaw positionings.
- Grease points allow for the vice to always be in optimal conditions for use.
- **Common features page 56.**

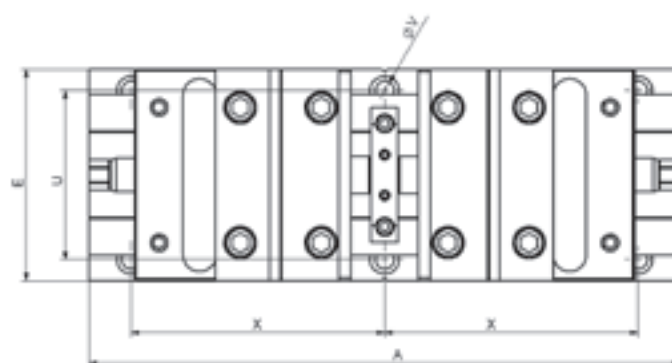
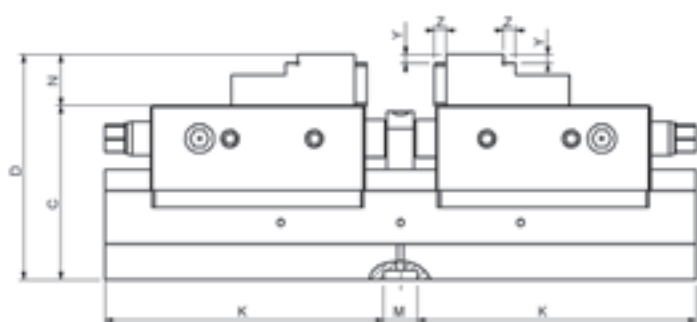


Size 070

SET SUPPLIED

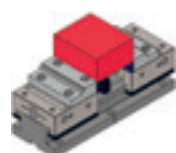
- Base body
- Mechanical spindle without high pressure
- 1 set of SC hard jaws
- 1 set of SC plain jaws
- 1 socket wrench
- 4 end clamps
- Service manual



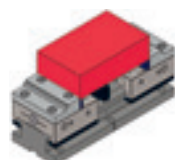


Size	70	90	125
ARNOLD SC	050 200 070	050 200 090	050 200 125
Clamping force (kN)	11 kN / 30 Nm	18 kN / 60 Nm	32 kN / 120 Nm
A	140	250	350
C	73	100	103
D	96	130	133
E	72	93	125
K	63	115	165
M H7	14	20	20
N	23	30	30
U	60	71	100
V	7	11	11
X	62	100	150
Y	3	5	5
Z	3	6	7
Weight (kg)	5	14,3	30
Clampings	70	90	125
Clamping field O1	6-36	12 - 77	14 - 108
Clamping field O2	46-76	79 - 145	108 - 204
Clamping field O3	35-65	59 - 125	82 - 178
Clamping field O4	75-105	127-193	178 - 274
Clamping field O5	43-73	64 - 129	82 - 176
Clamping field O6	83-113	131 - 197	176 - 272
Clamping field O7	72-102	111 - 177	150 - 246
Clamping field O8	112-142	179 - 245	246 - 342

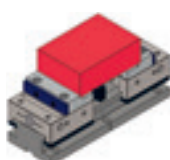
Clamping possibilities



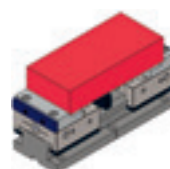
Clamping field O1



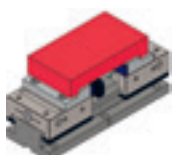
Clamping field O2



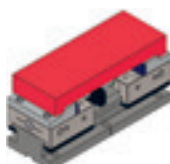
Clamping field O3



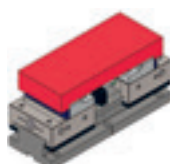
Clamping field O4



Clamping field O5



Clamping field O6



Clamping field O7

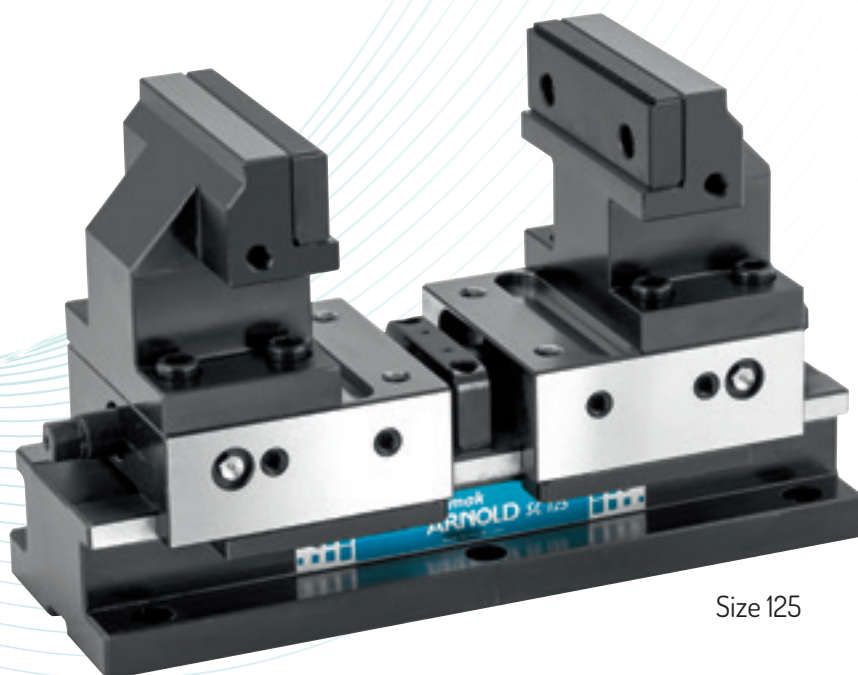


Clamping field O8

+ info



ARNOLD SC 5X



Size 125

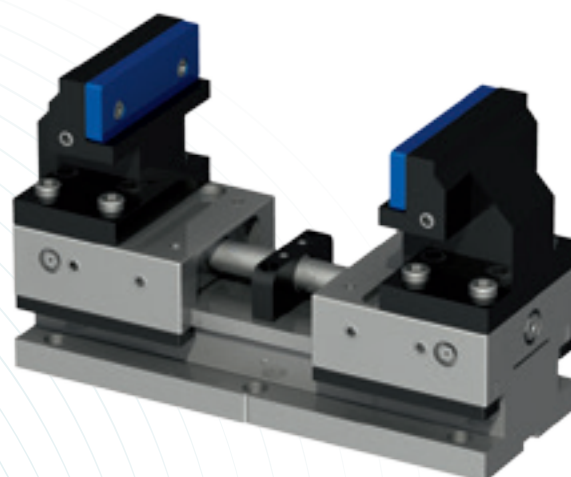
- Equipped with a mechanical spindle without high pressure.
- Supplied with high jaws specially designed for 5X machines, which avoid collisions of the spindle and allow for short tools to be used.
- Grease points allow for the vice to always be in optimal conditions for use.
- **Common features page 56.**

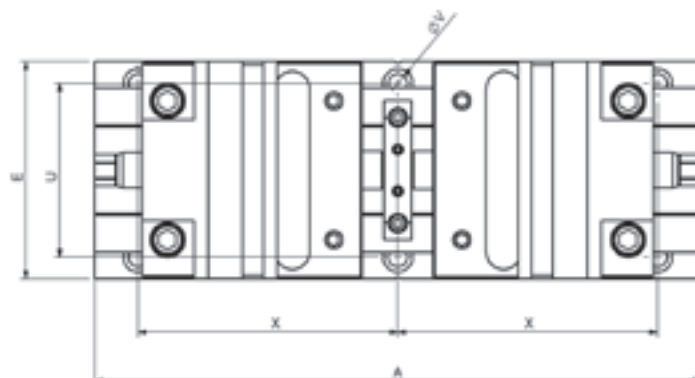
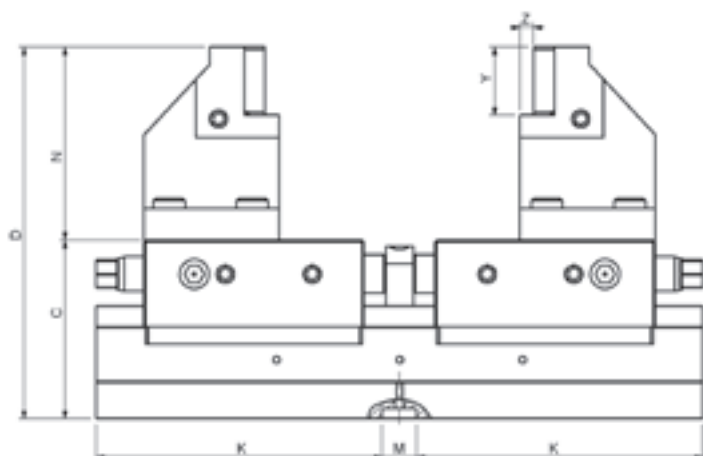


Size 090

SET SUPPLIED

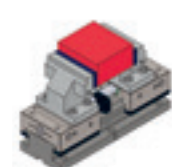
- Base body
- Mechanical spindle without high pressure
- 1 set of high jaws
- 1 set of plain jaws
- 1 socket wrench
- 4 end clamps
- Service manual



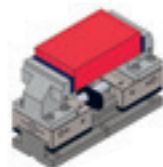


Size	90	125
ARNOLD SC 5X	050 210 090	050 210 125
Clamping force (kN)	16 kN / 60 Nm	26 kN / 120 Nm
A	250	350
C	100	103
D	155	214,5
E	90	125
K	115	165
M H7	20	20
N	55	111,5
U	71	100
V	11	11
X	100	150
Y	25	39,5
Z	5	8
Weight (kg)	17	37
Clampings	90	125
Clamping field O1	10-63	18-114
Clamping field O2	63-129	114-210
Clamping field O3	127-197	144-240
Clamping field O4	195-261	240-336

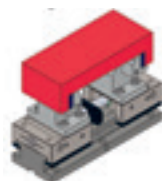
Clamping possibilities



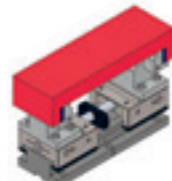
Clamping field O1



Clamping field O2



Clamping field O3



Clamping field O4

+ info

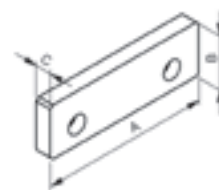


STANDARD jaws and accesories

PLAIN



- Standard Jaw.
- Universal clamping.
- Material: Hardened steel.



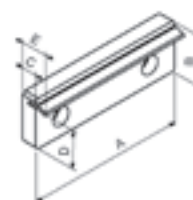
Code	900 360 090	900 360 125	900 360 160	900 360 200
Width (A)	90	125	160	200
B	39,5	39,5	49,5	62,5
C	12	12	16	20

SET SUPPLIED: 1 jaw with bolts.

HOLD DOWN JAW



- Designed for achieving a descendant clamping pull down jaws.
- Interchangeable spirals.
- Material: Steel with steel spring.



Code	900 361 090	900 361 125	900 361 160	900 361 200
Width (A)	90	125	160	200
B	39,5	39,5	49,5	62,5
C	12	12	16	20
D	32	32	41	53
E	21	21	23	27

SET SUPPLIED: 1 jaw with bolts.

SERRATED



- Designed in order to add gripping power.
- A safer clamping.
- Material: Hardened steel.



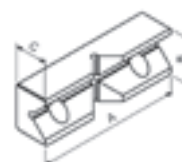
Code	900 362 090	900 362 125	900 362 160	900 362 200
Width (A)	90	125	160	200
B	39,5	39,5	49,5	62,5
C	12	12	16	20

SET SUPPLIED: 1 jaw with bolts.

PRISMÁTICA



- Specially designed for round workpieces.
- Material: Hardened steel.



Code	900 363 090	900 363 125	900 363 160	900 363 200
A	90	125	160	200
B	39,5	39,5	49,5	62,5
C	28	28	33	48
Ø	13 - 40	13 - 40	16 - 50	20 - 64

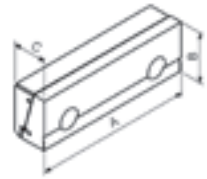
SET SUPPLIED: 1 jaw with bolts.

STANDARD jaws and accesories

PRECISION JAW



- Designed for a descendant and safe clamping pull down jaws.
- Universal clamping.
- Material: Hardened steel.



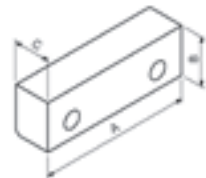
Code	900 364 125	900 364 160	900 364 200
Width (A)	125	160	200
B	39,5	49,5	62,5
C	27	30	33

SET SUPPLIED: 1 jaw with bolts.

SOFT JAW



- Machinable jaws.
- Can be hardened For special geometry parts.
- Material: 1140F (C45).



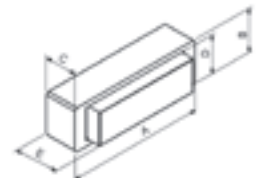
Code	901 360 090	901 360 125	901 360 160	901 360 200
Width (A)	90	125	160	200
B	39,5	39,5	49,5	62,5
C	30	30	40	40

SET SUPPLIED: 1 jaw with bolts.

PENDULAR JAW



- Designed for clamping non parallel work pieces.
- They compensate the unevenness of the faces.
- Material: Hardened steel.



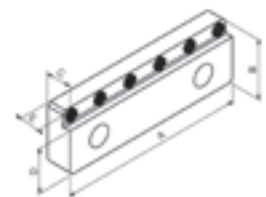
Code	800 366 090	800 366 125	800 366 160	800 366 200
Width (A)	90	125	160	200
B	39,5	39,5	49,5	62,5
C	26,5	29,5	39,5	44,5
D	35	35	45	55,5
E	34,5	41,5	53,5	58,5
α	10°	10°	9°	8°

SET SUPPLIED: 1 jaw with bolts.

INSERTS



- Designed for increasing aggressiveness in clamping.
- It consists of interchangeable inserts.
- It has a step to avoid cales or parallels.
- Material: Hardened steel.

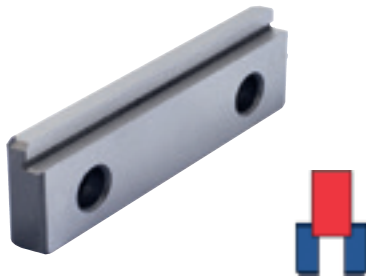


Code	801 364 090	801 364 125	801 364 160	801 364 200
Width (A)	90	125	160	200
B	39,5	39,5	49,5	62,5
C	17	17	17	19,5
D	29,5	29,5	39,5	50,5
E	13	13	13	13
N° Inserts	4	6	7	8

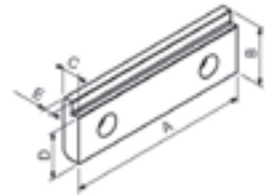
SET SUPPLIED: 1 jaw with bolts.

STANDARD jaws and accesories

STEPPED



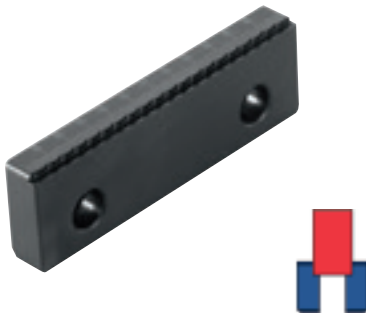
- Designed to clamp plates avoiding cales or parallel jaws.
- Material: Hardened steel.



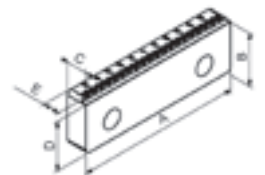
Code	901 362 090	901 362 125	901 362 160	901 362 200
Width (A)	90	125	160	200
B	39,5	39,5	49,5	62,5
C	12	12	16	20
D	33,5	31,5	41,5	52,5
E	9	7	11	14

SET SUPPLIED: 1 jaw with bolts.

CLAW SERRATED



- Designed to achieve a more aggressive clamping.
- Jaws get the most out of the material.
- Material: Hardened steel.



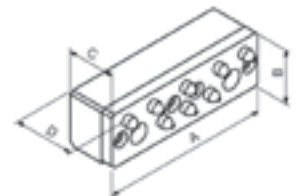
Code	901 365 090	901 365 125	901 365 160	901 365 200
Width (A)	90	125	160	200
B	39,5	39,5	49,5	62,5
C	14	16	18	20
D	37	37	47	60
E	11	13	15	17

SET SUPPLIED: 1 jaw with bolts.

HYDRAULIC



- Designed for clamping uneven work pieced without parallel faces.
- They consist of pins which compensate themselves with through an oil chamber.
- Material: Hardened steel.



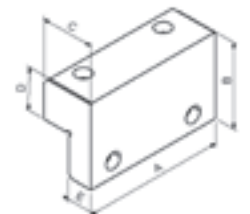
Code	800 365 125	800 365 160	800 365 200
Width (A)	125	160	200
B	39,5	49,5	62,5
C	36	36	40
D	45,5	45,5	46,5
Nº Embolos	8	12	22

SET SUPPLIED: 1 jaw with bolts.

HIGH PLAIN JAW FOR MAT AND CLASSIC



- Design for clamping bigger worpieces than the height of the standard jaws.
- Material: Hardened steel.



Code	901 361 125	901 361 160	901 361 200
Width (A)	125	160	200
B	75,5	95,5	109,5
C	47	47	70
D	37	37	48
E	14,5	19,5	24,5

SET SUPPLIED: 1 jaw with bolts.

STANDARD jaws and accesories

LARGE ADJUSTABLE STOP



- Designed for placing smaller work pieces on to the vice.

mm	Code
M12*	800 991 090
M16	800 991 125

*M12 for all 090, TWIN 125, SC125 and MB2 125.

SMALL ADJUSTABLE STOP



- Designed for placing bigger work pieces on to the vice.

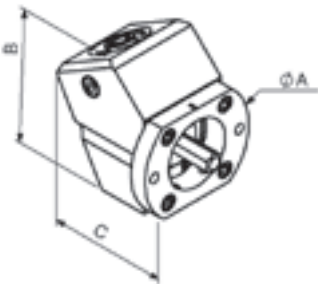
mm	Code
M12*	800 992 090
M16	800 992 125

*M12 for all 090, TWIN 125, SC125 and MB2 125.

ANGLE DRIVER



- Diversion system to drive the handle for preventing collisions with the machine table.



ANGLE DRIVER	
A	88
B	96
C	86,5

SET SUPPLIED: 1 Angle drive, 1 adapter.

	ARNOLD MAT MECHANISCH AND MB2	ARNOLD MAT HIDRAULISCH	ARNOLD TWIN	ARNOLD PROX
Width (A)	Code	Code	Code	Code
90	812 001 090	820 001 090	840 001 090	
125	812 001 125	820 001 125	840 001 125	880 001 125
160	812 001 160	820 001 160		
125*	813 001 125	820 201 125		
160*	813 001 160	820 201 160		

* With pressetting power control

SPECIFIC jaws and accesories

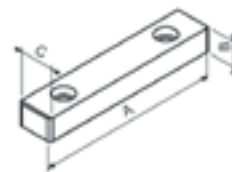
ARNOLD MAT

TOP JAW LOW PROFILE



SET SUPPLIED: 1 jaw with bolts.

- Designed for increasing the clamping field of the vice.
- Designed to tie large and thin pieces.
- Material: Hardened Steel.



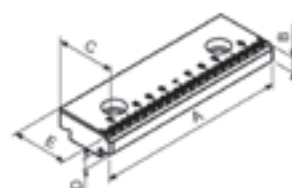
Code	910 560 090	910 560 125	910 560 160	910 560 200
Width (A)	90	125	160	200
B	17	17	17	17
C	20	24	24	24

TOP JAW REVERSIBLE SMOOTH-CLAW/SERRATED



SET SUPPLIED: 1 jaw with bolts.

- Designed for increasing the clamping field of the vice.
- Designed to clamp large and thin pieces.
- Its serrated part increases aggressiveness in clamping.
- Material: Hardened Steel.



Code	910 570 090*	910 570 125	910 570 160	910 570 200*
Width (A)	90	125	160	200
B	11	11	11	11
C	30	40	40	40
D	8,5	8,5	8,5	8,5
E	27	37	37	37

* Sizes 090 and 200 only smooth/serrated jaw available

ARNOLD MB2

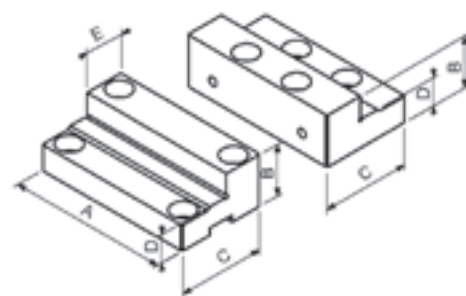
SET HARD JAWS



SET SUPPLIED: 1 Fixed jaw, 1 moveable jaw with bolts.

- Stepped Jaw.
- Universal clamping.
- Material: Hardened steel.

Code	861 181 125	861 181 160
Width (A)	125	160
B	40	50
C	70	100
D	22	30
E	30	40



HARD FIXED JAW



Width (A)	Code
125	961 181 125
160	961 181 160

SET SUPPLIED: 1 Fixed jaw with bolts.

HARD MOVEABLE JAW



Width (A)	Code
125	941 150 125
160	961 150 160

SET SUPPLIED: 1 moveable jaw with bolts.

SPECIFIC jaws and accesories

ARNOLD MB2

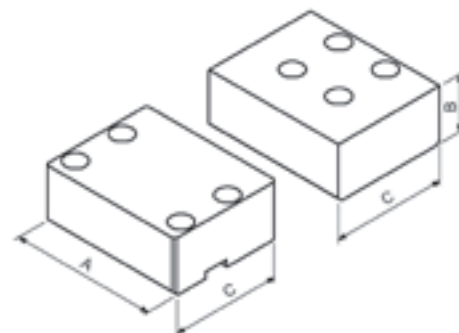
SET SOFT JAWS



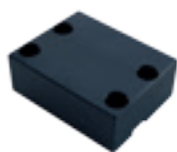
SET SUPPLIED: 1 fixed jaw, 1 moveable jaw with bolts.

- Designed for tiding pieces of difficult geometries.
- Can be machined and hardened.
- Material: F1140.

Code	861 081 125	861 081 160
Width (A)	125	160
B	48	65
C	98	146



SOFT FIXED JAW



Width (A)	Code
125	961 081 125
160	961 081 160

SET SUPPLIED: 1 fixed jaw with bolts

SOFT MOVEABLE JAW



Width (A)	Code
125	941 170 125
160	961 171 160

SET SUPPLIED: 1 moveable jaw with bolts.

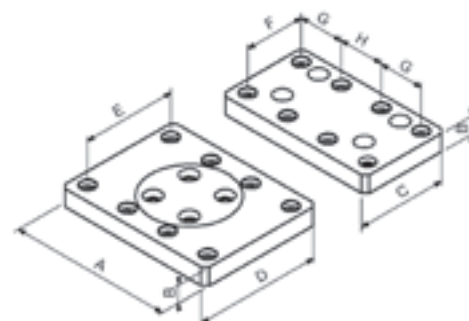
SET DURMAK JAWS



SET SUPPLIED: 1 fixed jaw, 1 pivot jaw and bolts.
(Inserts not included)

- Designed for clamping uneven work pieces.
- Able to compensate non-parallel clamping surfaces.
- Movable pendular Jaw.
- Interchangeable inserts.
- Material: Hardened steel.

Code	861 111 125	861 111 160
Width (A)	186	230
B	26	35
C	100	120
D	150	180
E	114	140
F	67	80
G	50	62
H	50	65



DURMAK INSERTS

- Designed for versatile clamping, adjustable to the geometry of the part .
- Material: hardened steel.
- Available in other materials upon request.



WITHOUT BASE M



WITHOUT BASE L



WITH BASE M



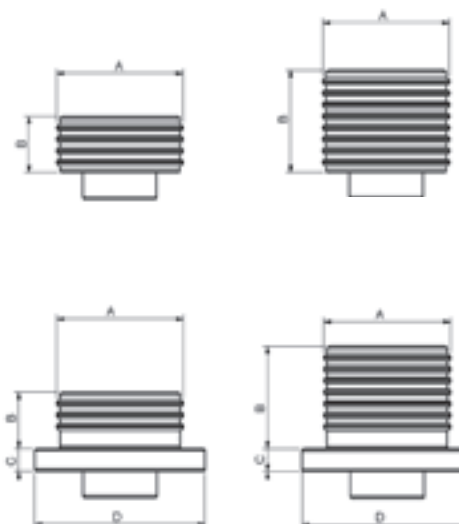
WITH BASE L

WITHOUT BASE M	961 241 125	961 241 160
Width (A)	27,5	29,5
B	12	14

WITHOUT BASE L	961 242 125	961 242 160
Width (A)	27,5	29,5
B	22	24

WITH BASE M	961 251 125	961 251 160
Width (A)	27,5	29,5
B	12	14
C	5	5
D	37	40

WITH BASE L	961 252 125	961 252 160
Width (A)	27,5	29,5
B	22	24
C	5	5
D	37	40



SPECIFIC jaws and accesories

ARNOLD TWIN

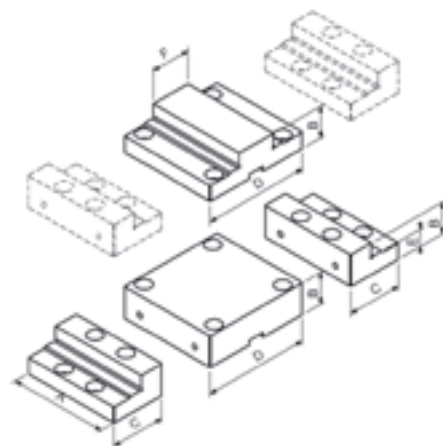
SET OF HARD JAWS



SET SUPPLIED: 2 side jaws, 1 central jaw block, 1 central jaw stepped and bolts.

- Stepped Jaw.
- Universal clamping.
- Material: Hardened steel.

Code	841 171 090	841 171 125
Width (A)	90	125
B	40	40
C	64	70
D	110	135
E	20	22
F	50	50



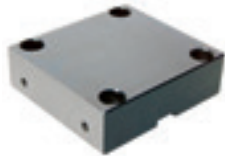
HARD MOVEABLE JAW



Width (A)	Code
90	941 150 090
125	941 150 125

SET SUPPLIED: 1 jaw with bolts.

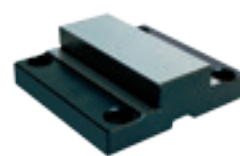
HARD CENTRAL BLOCK JAW



Width (A)	Code
90	941 311 090
125	941 311 125

SET SUPPLIED: 1 jaw with bolts.

HARD CENTRAL STEPPED JAW



Width (A)	Code
90	941 061 090
125	941 061 125

SET SUPPLIED: 1 jaw with bolts.

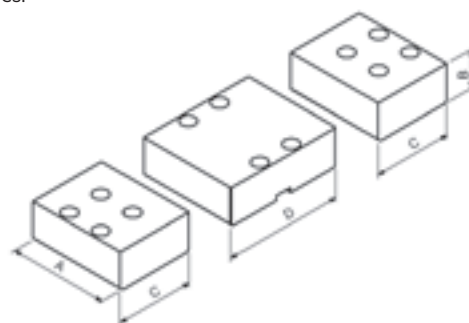
SET SOFT JAWS



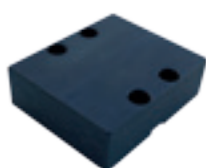
SET SUPPLIED: 2 side jaws, 1 central block jaw and bolts.

- Designed for clamping pieces of difficult geometries.
- Can be machined and hardened.
- Material: 1140F (C45).

Code	841 181 090	841 181 125
Width (A)	90	125
B	40	48
C	90	98
D	150	150



SOFT CENTRAL BLOCK JAW



Width (A)	Code
90	941 081 090
125	941 081 125

SET SUPPLIED: 1 jaw with bolts.

SOFT MOVEABLE JAW



Width (A)	Code
90	941 170 090
125	941 170 125

SET SUPPLIED: 1 jaw with bolts.

SPECIFIC jaws and accesories

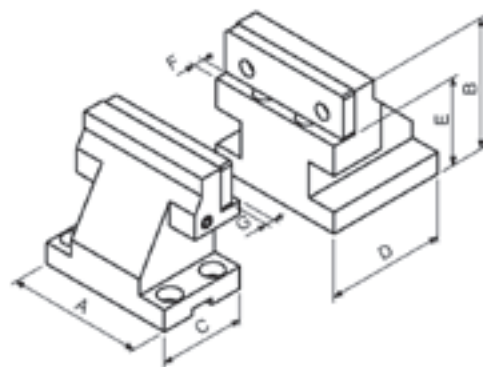
ARNOLD 5X

5X M JAWS

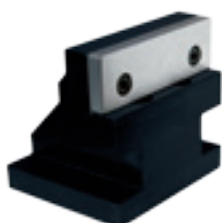


- Stepped Jaw.
- Universal clamping.
- Material: Hardened steel.

5X JAWS	M
Width (A)	125
B	120
C	80
D	110
E	80,5
F	10
G	8



5X MOVABLE + PLAIN JAW M



MOVEABLE JAW	
Size	Code
M	860 362 125

SET SUPPLIED: 1 moveable jaw, 1 plain jaw and bolts.

5X FIXED + PLAIN JAW M



FIXED JAW	
Size	Code
M	860 361 125

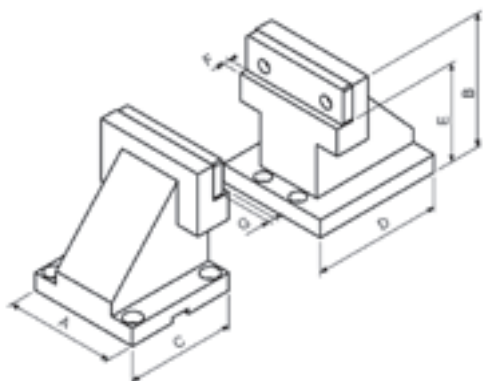
SET SUPPLIED: 1 fixed, 1 plain jaw and bolts.

5X L JAWS



- Stepped Jaw.
- Universal clamping.
- Material: Hardened steel.

5X JAWS	L
Width (A)	125
B	150
C	125
D	147
E	110,5
F	8
G	8



5X MOVABLE + PLAIN JAW L



MOVEABLE JAW	
Size	Code
L	850 362 125

SET SUPPLIED: 1 moveable jaw, 1 plain jaw and bolts.

5X FIXED + PLAIN JAW L



FIXED JAW	
Size	Code
L	850 361 125

SET SUPPLIED: 1 fixed, 1 plain jaw and bolts.

SPECIFIC jaws and accesories

ARNOLD SC

HARD + PLAIN JAW



For 090 and 125 sizes

SET SUPPLIED: 1 hard jaw, 1 soft jaw, 1 key nut and bolts.

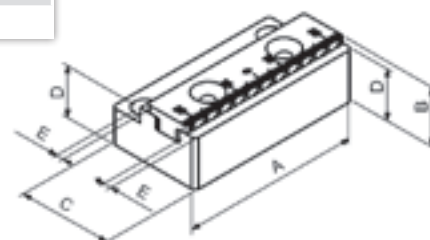
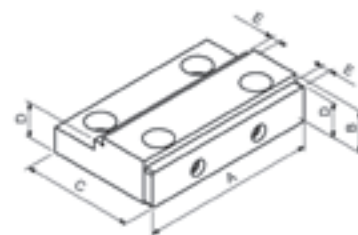


For 070 size

SET SUPPLIED: 1 hard jaw, 1 reversible smooth-claw/serrated jaw, 1 key nut and bolts.

- Stepped Jaw.
- Universal clamping.
- Material: Hardened steel.

Code	851 150 070	851 150 090	851 150 125
Width (A)	70	90	125
B	23	30	30
C	37	59	80
D	20	25	25
E	3	6	7



HARD JAW



For 090 and 125 sizes

SET SUPPLIED: 1 hard jaw, 1 key nut and bolts.

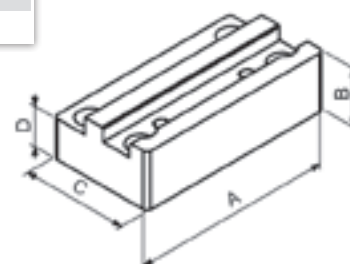
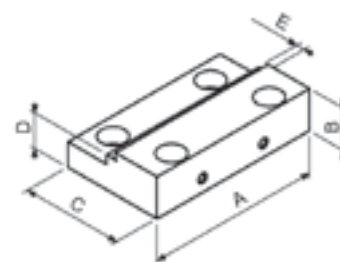


For 070 size

SET SUPPLIED: 1 hard jaw, 1 key nut and bolts.

- Stepped Jaw.
- Universal clamping.
- Material: Hardened steel.

Code	951 150 070	951 150 090	951 150 125
Width (A)	70	90	125
B	20	30	30
C	37	53	73
D	14	25	25
E		6	7



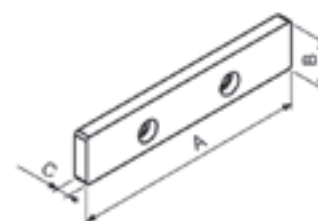
PLAIN JAW



For 090 and 125 sizes

- Standard Jaw.
- Universal clamping.
- Material: Hardened steel.

Code	951 050 090	951 050 125
Width (A)	90	125
B	25	25
C	6	7



SET SUPPLIED: 1 plain jaw nuts and bolts.

SPECIFIC jaws and accesories

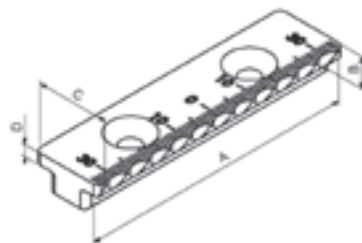
ARNOLD SC

REVERSIBLE SMOOTH-CLAW/SERRATED JAW



- Designed to achieve a more aggressive clamping.
- Smooth-claw jaws get the most out of the material.
- The serrated part adds grip to the clamping.
- Material: Hardened steel.

Code	951 160 070
Width (A)	70
B	8
C	18,5
D	3



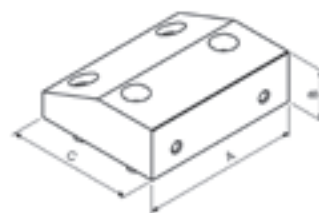
SET SUPPLIED: 1 jaw with bolts.

SOFT JAW



- Designed for tiding pieces of difficult geometries.
- Can be machined and hardened.
- Material: 1140F (C45).

Code	851 110 090	851 110 125
Width (A)	90	125
B	39,5	39,5
C	66	100



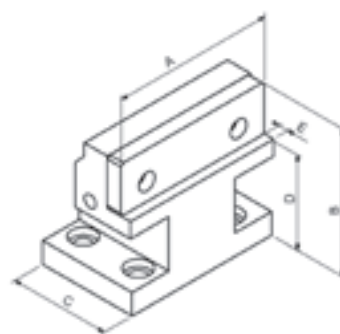
SET SUPPLIED: 1 soft jaw, 1 key nut and bolts.
THIS JAW IS NECESSARY TO USE THE STANDARD JAWS.

SC5X + PLAIN JAW



- Designed for lifting the work piece and avoid wrecks.
- Material: Hardened steel.

Code	851 120 090	851 120 125
Width (A)	90	125
B	55	111,5
C	66	78
D	30	72
E	5	8



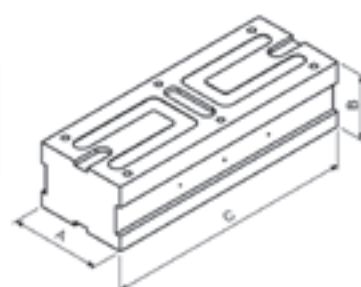
SET SUPPLIED: 1 fixed jaw, 1 plain jaw and bolts.

BASE PLATE



- Accesory for give more height to the vice.

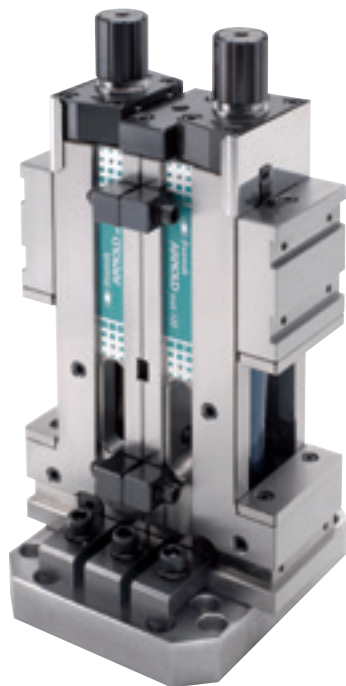
Code	850 410 070	850 410 090	850 410 125
Width (A)	72	91	126
B	70	90	90
C	142	250	350



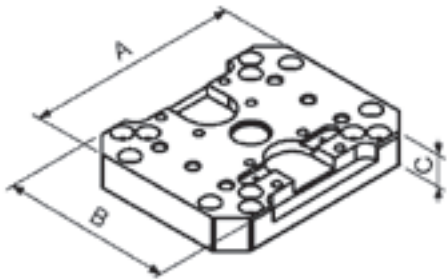
SET SUPPLIED: 1 base plate, 3 key nuts, 4 end clamps and bolts.

DUO

DUO MAT



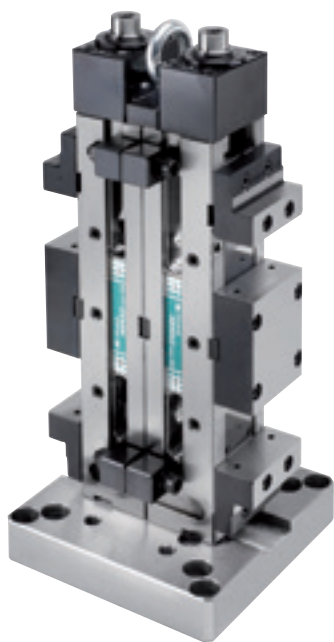
- **Support structure** for two back to back vices.
- The jaws should be clamped one into the other as well as to the base plate.
- Specially designed for horizontal machining centers.
- Contains the necessary elements for aligning and assembling two vices.
- With special drain for coolant and chip evacuation.



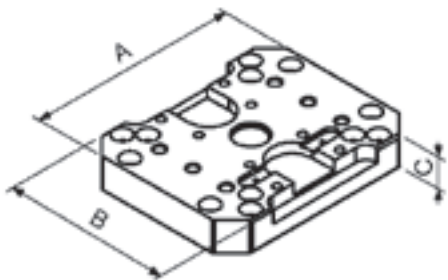
DUO	890 010 090	890 010 125	890 010 160	890 010 200
A	236	290	360	440
B	236	234	300	320
C	45	45	45	45
Weight (kg)	19	23	40	51

Do not include vices
SET SUPPLIED: Structure and clamping elements.

DUO TWIN



- **Support structure** for two back to back vices.
- The jaws should be clamped one into the other as well as to the base plate.
- Specially designed for horizontal machining centers.
- Contains the necessary elements for aligning and assembling two vices.
- With special drain for coolant and chip evacuation.

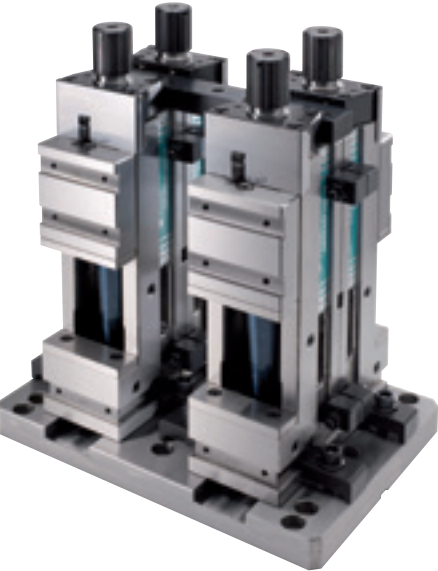


DUO	890 014 090	890 014 125
A	236	290
B	236	234
C	45	45
Weight (kg)	19	24

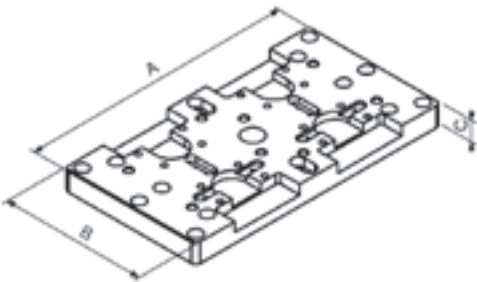
Do not include vices
SET SUPPLIED: Structure and clamping elements.

DOUBLE DUO Estruturas

DOUBLE DUO MAT



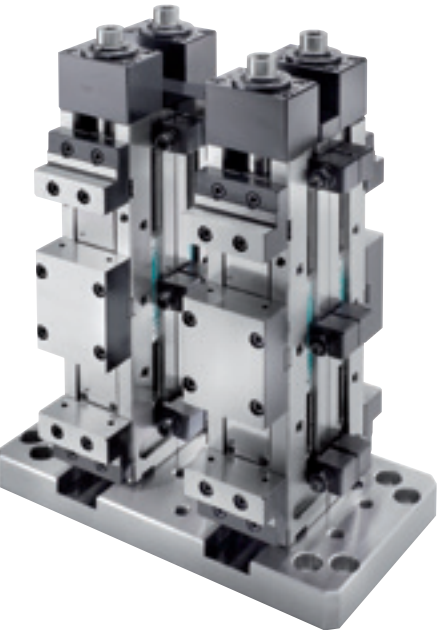
- **Support structure** for four back to back vices.
- The jaws should be clamped one into the other as well as to the base plate.
- Specially designed for horizontal machining centers.
- Contains the necessary elements for aligning and assembling two vices.
- With special drain for coolant and chip evacuation.



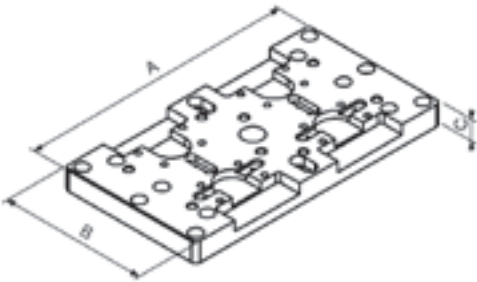
DOUBLE DUO	890 020 090	890 020 125	890 020 160	890 020 200
A	410	540	556	620
B	220	290	310	336
C	42	42	42	42
Weight (kg)	31	51	63	75

Do not include vices
SET SUPPLIED: Structure and clamping elements.

DOUBLE DUO TWIN



- **Support structure** for four back to back vices.
- The jaws should be clamped one into the other as well as to the base plate.
- Specially designed for horizontal machining centers.
- Contains the necessary elements for aligning and assembling two vices.
- With special drain for coolant and chip evacuation.



DOUBLE DUO	890 024 090	890 024 125
A	410	540
B	220	290
C	42	42
Weight (kg)	31	53

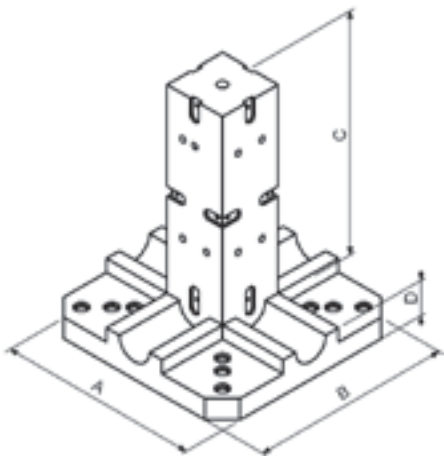
Do not include vices
SET SUPPLIED: Structure and clamping elements.

Tombstone 4 x 90°

TOMBSTONE MAT 4x90°



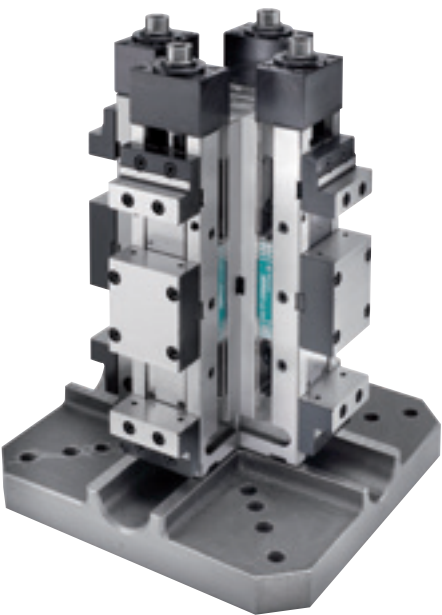
- **One-piece structure to support** four vices placed at 90 degrees.
- The jaws are fastened and aligned on the central hub.
- With special drain for coolant and chip evacuation.
- Contains the necessary elements for aligning and assembling four vices.
- Material: Ductile iron for stability in time and for absorbing vibration during the machining.



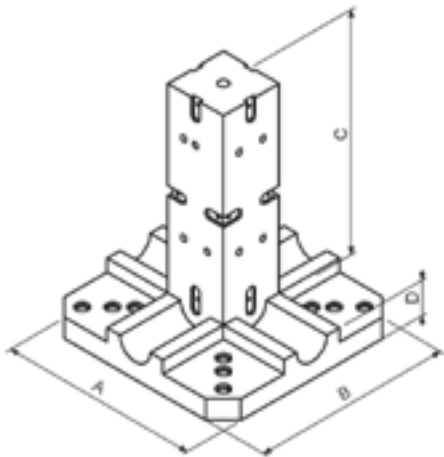
TOMBSTONE 4x90°	890 030 090	890 030 125	890 030 160	890 030 200
A	400	400	500	547
B	400	400	500	547
C	370	480	640	640
D	70	70	70	70
Weight (kg)	80	110	193	259

Do not include vices
SET SUPPLIED: Structure and clamping elements.

TOMBSTONE TWIN 4x90°



- **One-piece structure to support** four vices placed at 90 degrees.
- The jaws are fastened and aligned on the central hub.
- With special drain for coolant and chip evacuation.
- Contains the necessary elements for aligning and assembling four vices.
- Material: Ductile iron for stability in time and for absorbing vibration during the machining.

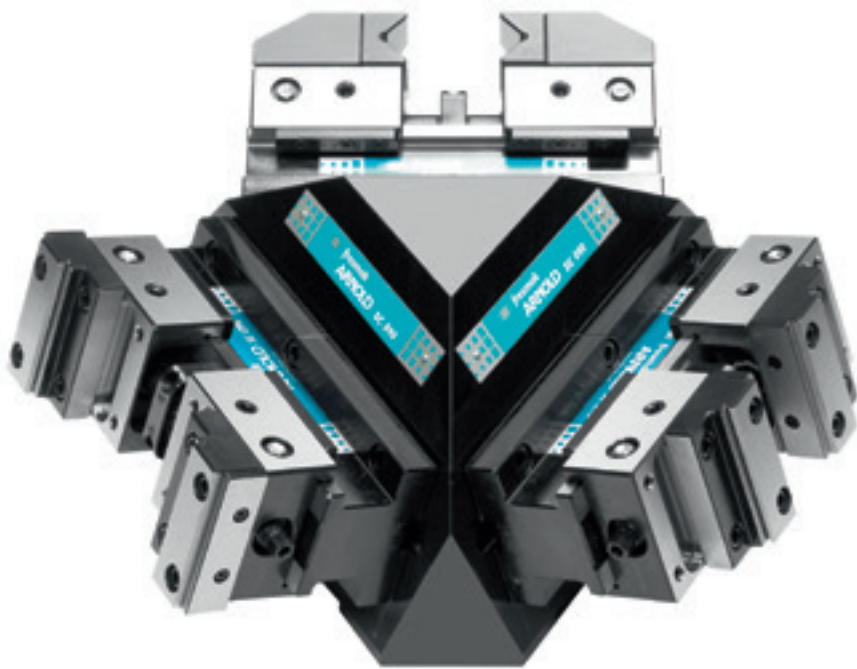


TOMBSTONE 4x90°	890 034 090	890 034 125
A	400	400
B	400	400
C	470	550
D	70	70
Weight (kg)	86	116

Do not include vices
SET SUPPLIED: Structure and clamping elements.

Pyramid

SC PYRAMID



- **Structure** for placing three SC vices in five axes machines.
- Designed for reaching angles that machine cannot usually access with a regular vice.
- Material: Steel.

Width (A)	Code
090	890 040 090
125	890 040 125

Do not include vices
SET SUPPLIED: Structure and clamping elements.

Reference Chart

VICES

ARNOLD MAT	090	125	160	200
Mechanical	020 120 090	020 120 125	020 120 160	020 120 200
Spare spindle	812 000 090	812 000 125	812 000 160	812 000 160
Mechanical with regulator		020 130 125	020 130 160	020 130 200
Spare spindle		813 000 125	813 000 160	813 000 160
Hydraulic	020 200 090	020 200 125	020 200 160	020 200 200
Spare spindle	820 000 090	820 000 125	820 000 160	820 000 160
Hydraulic with regulator		020 210 125	020 210 160	020 210 200
Spare spindle		821 000 125	821 000 160	821 000 160
Prox-Hydraulic		080 200 125	080 200 160	080 200 200
Spare spindle		880 000 125	880 000 160	880 000 160
Oleo-dynamic	020 140 090	020 140 125	020 140 160	020 140 200
Spare spindle	814 000 090	814 000 125	814 000 160	814 000 160
Automat		070 200 125	070 200 160	070 200 200
Spare spindle		870 000 125	870 000 160	870 000 160
Pneumo-Hydraulic	020 600 090	020 600 125	020 600 160	020 600 200
Spare spindle	816 000 090	816 000 125	816 000 160	816 000 160

ARNOLD CLASSIC	090	125	160	200
Mechanical	010 200 090	010 200 125	010 200 160	010 200 200
Mechanical with swivel base	010 201 090	010 201 125	010 201 160	010 201 200
Mechanical straight	010 202 090	010 202 125	010 202 160	010 202 200
Mechanical straight in two parts			010 203 160	010 203 200
Spare spindle	800 200 090	800 200 125	800 200 160	800 200 200
Mechanical with regulator		010 210 125	010 210 160	
Mechanical with swivel base with regulator		010 211 125	010 211 160	
Mechanical straight with regulator		010 212 125	010 212 160	
Mechanical straight in two parts with regulator			010 213 160	
Spare spindle		800 210 125	800 210 160	
Hydraulic	010 010 090	010 010 125	010 010 160	010 010 200
Hydraulic with swivel base	010 011 090	010 011 125	010 011 160	010 011 200
Hydraulic straight	010 012 090	010 012 125	010 012 160	010 012 200
Hydraulic in two parts			010 013 160	010 013 200
Spare spindle	800 010 090	800 010 125	800 010 160	800 010 200
Hydraulic with regulator		010 110 125	010 110 160	010 110 200
Hydraulic with swivel base with regulator		010 111 125	010 111 160	010 111 200
Hydraulic straight with regulator		010 112 125	010 112 160	010 112 200
Hydraulic in two parts with regulator			010 113 160	010 113 200
Spare spindle		800 110 125	800 110 160	800 110 200
Oleo-dynamic		010 140 125	010 140 160	010 140 200
Oleo-dynamic with swivel base		010 141 125	010 141 160	010 141 200
Oleo-dynamic straight		010 142 125	010 142 160	010 142 200
Spare spindle		800 140 125	800 140 160	800 140 200
Pneumo-Hydraulic		010 600 125	010 600 160	010 600 200
Pneumo-Hydraulic with swivel base		010 601 125	010 601 160	010 601 200
Pneumo-Hydraulic straight		010 602 125	010 602 160	010 602 200
Spare spindle		800 600 125	800 600 160	800 600 200
Base	800 450 090	800 450 125	800 450 160	800 450 200

ARNOLD MB2	090	125	160
Mechanical		060 121 125	060 121 160
Spare spindle		812 006 125	812 006 160
Mechanical with regulator		060 131 125	060 131 160
Spare spindle		813 006 125	813 006 160
Mechanical in two parts		060 123 125	060 123 160
Spare spindle		812 016 125	812 016 160
Mechanical in two parts with regulator		060 133 125	060 133 160
Spare spindle		813 016 125	813 016 160
Mechanical Durmak		060 122 125	060 122 160
Spare spindle		812 006 125	812 006 160
Mechanical Durmak with regulator		060 132 125	060 132 160
Spare spindle		813 006 125	813 006 160
Oleo-dynamic		060 141 125	060 141 160
Spare spindle		814 006 125	814 006 160

ARNOLD TWIN	090	125	160
Hydraulic	040 410 090		
Spare spindle	841 000 090		
Hydraulic with regulator		040 410 125	
Spare spindle		841 000 125	
Oleo-dynamic	040 140 090	040 140 125	
Spare spindle	844 000 090	844 000 125	
Pneumo-Hydraulic		040 600 125	
Spare spindle		846 000 125	

ARNOLD IZ	090	125	160
Hydraulic		090 600 125	

ARNOLD 5X	090	125	160
5X M		050 121 125	
Spare spindle		800 205 125	
5X M with regulator		050 131 125	
Spare spindle		813 006 125	
5X L with regulator		050 130 125	
Spare spindle		813 005 125	

ARNOLD SC	070	090	125	160
SC	050 200 070	050 200 090	050 200 125	
Spare spindle	905 160 070	905 160 090	905 160 125	
SC 5X		050 210 090	050 210 125	
Spare spindle		905 160 090	905 160 125	

STANDARD jaws and accesories

JAWS	090	125	160	200
Soft	901 360 090	901 360 125	901 360 160	901 360 200
Claw serrated	901 365 090	901 365 125	901 365 160	901 365 200
Stepped	901 362 090	901 362 125	901 362 160	901 362 200
Serrated	900 362 090	900 362 125	900 362 160	900 362 200
Hold down jaw	900 361 090	900 361 125	900 361 160	900 361 200
with Inserts	801 364 090	801 364 125	801 364 160	801 364 200
Plain	900 360 090	900 360 125	900 360 160	900 360 200
Pendular	800 366 090	800 366 125	800 366 160	800 366 200
Prismatic	900 363 090	900 363 125	900 363 160	900 363 200
Precision jaw		900 364 125	900 364 160	900 364 200
Hydraulic		800 365 125	800 365 160	800 365 200
High plain jaw for MAT and CLASSIC		901 361 125	901 361 160	901 361 200

ACCESORIES	090	125	160	200
Small adjustable stop	(M12*) 800 991 090	(M16) 800 991 125		
Large adjustable stop	(M12*) 800 992 090	(M16) 800 992 125		
Angle driver				
ARNOLD MAT Hydraulic	820 001 090	820 001 125	820 001 160	
ARNOLD MAT Hydraulic with regulator		820 201 125	820 201 160	
ARNOLD MAT Mechanical, MB2 and COMPACT	812 001 090	812 001 125	812 001 160	
ARNOLD MAT Mechanical, MB2 and COMPACT with regulator		813 001 125	813 001 160	
ARNOLD TWIN	840 001 090	840 001 125		
ARNOLD PROX		880 001 125		

*M12 for all 090 vices, as well as, TWIN 125, SC125 and MB2 125

SPECIFIC jaws and accesories

ARNOLD MAT	090	125	160	200
Top jaw - low profile jaw	910 560 090	910 560 125	910 560 160	910 560 200
Top jaw - reversible smooth+claw/serrated	910 570 090*	910 570 125	910 570 160	910 570 200*

* Sizes 090 and 200 only smooth/serrated jaw available

MB2	090	125	160	200
Set of hard jaws		861 181 125	861 181 160	
Fixed hard jaw		961 181 125	961 181 160	
Movable hard jaw		941 150 125	961 150 160	
Set of soft jaws		861 081 125	861 081 160	
Fixed soft jaw		961 081 125	961 081 160	
Movable soft jaw		941 170 125	961 171 160	
Durmak jaws		861 111 125	861 111 160	
Durmak inserts				
Insert without base M		961 241 125	961 241 160	
Insert with base M		961 242 125	961 242 160	
Insert without base L		961 251 125	961 251 160	
Insert with base L		961 252 125	961 252 160	

TWIN	090	125	160	200
Set of hard jaws	841 171 090	841 171 125		
Movable hard jaw	941 150 090	941 150 125		
Hard central block jaw	941 311 090	941 311 125		
Soft central stepped jaw	941 061 090	941 061 125		
Set of soft jaws	841 181 090	841 181 125		
Movable soft jaw	941 170 090	941 170 125		
Soft central block jaw	941 081 090	941 081 125		

5X	090	125	160	200
Fixed jaw		(M) 860 361 125 (L) 850 361 125		
Movable jaw		(M) 860 362 125 (L) 850 362 125		

SC	070	090	125	160	200
Complete hard jaw	851 150 070	851 150 090	851 150 125		
Hard jaw	951 150 070	951 150 090	951 150 125		
Plain jaw		951 050 090	951 050 125		
Reversible smooth/serrated for SC70	951 160 070				
Soft jaw		851 110 090	851 110 125		
5X jaw		851 120 090	851 120 125		
Base plate	850 410 070	850 410 090	850 410 125		

STRUCTURES

MAT	090	125	160	200
Placa base Duo	890 010 090	890 010 125	890 010 160	890 010 200
Placa base Doble Duo	890 020 090	890 020 125	890 020 160	890 020 200
Placa base Cubo 4x90°	890 030 090	890 030 125	890 030 160	890 030 200

TWIN	090	125
Duo	890 014 090	890 014 125
Double Duo	890 024 090	890 024 125
Tombstobne 4x90°	890 034 090	890 034 125

SC	090	125
Pyramid	890 040 090	890 040 125

Sales terms and conditions

Article 1-Subject of the contract

This agreement regulates the relationship between the CUSTOMER and FRESMAK, S.A. (hereinafter FRESMAK) in regard to the procurement of products and services that the CUSTOMER contracts with FRESMAK.

Offers and quotations made by FRESMAK are not binding, understa as sales contract only when FRESMAK confirms an order in writing.

These sales conditions may be amended only by written agreement between the parties , thus the terms or conditions contained , printed or handwritten , in orders , letters or other documents issued by the Customer become invalid.

The amendment of these sale terms by FRESMAK shall not affect contracts already signed.

All future purchases of goods from the Customer, in the absence of an express agreement, shall be subject to these terms and conditions.

Article 2-Orders

1.- All supplies and services of FRESMAK are subject to the conditions expressed below. Any provision in any order from the CUSTOMER deviating from these conditions is explicitly rejected. Such provisions shall not be binding for FRESMAK unless they have been agreed upon and signed by both parties in writing.

2.- The sale is formalised when FRESMAK accepts the order by sending the corresponding Order Confirmation, either through fax or e-mail, according to the customer's preference. The sending of an order by the CUSTOMER does not constitute a contract, although FRESMAK has previously presented a quotation. Any supplementary agreement and any subsequent modifications requested by the CUSTOMER must be confirmed and shall not take effect until there is and express and written consent from FRESMAK.

3.- FRESMAK reserves the right to modify its products and make changes to technical data and performance characteristics insofar as these are for the purpose of technical progress.

Article 3 - Quotations

1.- All quotations are made on the understanding that the whole of the quantity quoted for will be ordered; otherwise FRESMAK reserves the right to revise the quotation.

Article 4.-Price

1.- FRESMAK provides to all its customers up-dated information about prices. FRESMAK can modify the prices at any time and without prior individualized communication, always subject to what may be mentioned in a particular contract with the CUSTOMER.

2.- In the case of orders with a net total value of the material less than 30 EUR (before taxes), FRESMAK will apply a supplement for administrative costs to increase its value up to that amount.

3.- The values stated in the FRESMAK price list do not include shipping, insurance and installation costs nor taxes.

4.- FRESMAK ensures the price included in the quotation until the deadline mentioned on the same.

5.- The costs to cover the integrated management systems of waste packaging and containers shall be borne by the CUSTOMER. To this end, the customer must fulfil the obligations set by Law 11/1997 of 24 April on packaging and packaging waste, or any other legislation replacing or applicable. In the event that pursuant to these regulations, FRESMAK is obliged to carry out a series of actions to reduce the environmental impact of packaging and management of packaging waste throughout their entire life it may affect the cost of complying with these obligations in the CUSTOMER, who accepts it by subscribing to the present conditions.

Article 5.- Payment conditions

1.- The payment of the invoiced price must be maximum 30 days from the date of issuance of the invoice, unless other conditions are specified on the invoice. If delivery of the goods or materials shall be prevented or delayed by the CUSTOMER, payment shall be made within 30 days of the date of delivery as if there had been no such prevention or delay.

2.- FRESMAK reserves the right to charge interest and cost of collection of any unpaid remaining invoice, in application of the law 15/2010 dated 5th of July, in which measures for combating late payment in commercial operations are established.

3.- If the Customer defaults in making payment on the due date agreed with FRESMAK, FRESMAK may suspend its pending deliveries.

4.- In the case of early termination of the contract for any reason, the CUSTOMER shall be obliged to pay immediately all the work performed and products delivered, as well as to pay the damages that occur to FRESMAK.

5.- If goods are returned through no fault of FRESMAK, FRESMAK reserves the right to make a handling charge.

6. If the payment s not made by the due date , the customer must pay interests on the value of the amount due , starting from the agreed due date, 6% over 12 months.

Article 6.- Delivery time

1.- FRESMAK undertakes to comply with all delivery times agreed with the CUSTOMER, however these may be changed by FRESMAK for reasons of production, and in such a case FRESMAK must communicate it to the customer with the utmost urgency. The CUSTOMER knows and accepts this situation, which will not generate any right to demand any penalty or the termination of the contract.

Article 7.- Transport

1.- The transport costs are not included in the price of the product and are payable by the customer.

2.- Once the supplied materials get out of their warehouses, FRESMAK will not be responsible for these or the duration of their shipment. FRESMAK will not accept responsibility for loss from package, damage, wrong delivery, discrepancies or short shipments unless a written complaint is made to FRESMAK within ten days after the delivery of the consignment and unless FRESMAK is given an opportunity of inspection

3.- If at the time of delivery readily-evident defects are detected on the package or the product itself, the CUSTOMER must execute it in writing in the delivery note signed to the carrier; otherwise claims for this concept are not accepted.

4.- If the shipping or delivery is delayed by will of the CUSTOMER for a period exceeding one month, counting from the date on which the material was ready, the CUSTOMER shall be liable to pay the storage charges until its effective delivery.

Article 8.- Quality and Performance Warranty

1.- FRESMAK exclusively guarantees that products will be in accordance with agreed specifications on the date of delivery.

2.- All products have a FRESMAK warranty for 24 months from receipt of the same, for which the delivery note of these will be taken into account.

3.- In the event that the CUSTOMER detects defective products, it must be notified to FRESMAK within a maximum period of fifteen days from their receipt, in writing and reliably, specifying at least the product serial number and a brief description of the defect.

4.- Once confirmed by FRESMAK the existence of defective products, these will be repaired or replaced, at the option of FRESMAK, free of charge, always within the stated warranty period. Excluded from this warranty are parts subject to normal wear and tear.

5.- Once reviewed a product, if it is determined that it is operating correctly or that the cause of the malfunction is unrelated to the product itself, it shall be returned to the CUSTOMER freight forward, along with a minimum charge of €20 and maximum 2 hours of workforce for handling and verification.

6.- Technical information and documentation of existing FRESMAK products can be downloaded by the CUSTOMER from the website FRESMAK.

7.- This warranty shall be not applied, if the customer or a third party had made modifications, repairs or manipulations on delivered products.

8.- Should products be modified, repaired or handled by the customer or a third party warranty shall not be applied.

Article 9.- Return Policy

1.- FRESMAK can accept product returns from the CUSTOMER provided that they meet the following criteria:

a) Only the return of standard products is accepted. Standard product means, one whose part number appears in the catalogue and is enough to define the product without adding more specifications, e.g. configurable, customised elements and spare parts.

b) Due to managing costs, returns will only be accepted when the net amount of all the material to be returned is higher than €100.

c) Returns are only accepted within thirty days from the receipt of the product, meaning the date of the delivery note issued by FRESMAK.

d) When applying for the return, the order number FRESMAK and / or delivery note number and / or invoice number with which the product was purchased shall be stated.

2.- If the acceptance criteria are met and the product is in its original sealed packaging, 100/% of its purchase price shall be paid. In any other situation, up to a maximum of 85% will be paid depending on its state.

3.- Subject to acceptance criteria, FRESMAK will send to the CUSTOMER a document which shall include the goods and quantities to return and the general return conditions. The CUSTOMER must sign this document as acceptance of the return conditions and attach it to the material returned.

4.- The CUSTOMER shall bear in all cases the costs caused by the return of the goods to FRESMAK.

5.- In those cases in which, once received the returned product, it is proved that the acceptance criteria are not met; FRESMAK shall return the product at the CUSTOMER's expense.

Article 10.- Limitation of Liability

1.- FRESMAK shall not be liable for any loss or damage caused as a result of factors or causes that are not attributable to FRESMAK.

2.- FRESMAK shall be liable for defects of goods provided that the customer had informed FRESMAK about the defects within the warranty periods specified above. The liability is limited to carry out the repairs in our facilities and/or to deliver alternative goods.

3.- FRESMAK shall not be liable for loss of profit or other consequential damages, irrespective of the cause thereof.

4.- If the goods are manufactured by FRESMAK according to the customer's design and/ or specifications, FRESMAK will not guarantee that such products are suitable for the use intended by the CUSTOMER.

Article 11.- Title and risk

1.- All goods shall be at the risk of the CUSTOMER from the time of delivery.

2.- All goods shall remain the property of FRESMAK, reserving its domain, until all debts owed by the CUSTOMER to FRESMAK are settled, and all amounts corresponding to the order are paid.

3.- If, once payment is overdue and not been paid to FRESMAK, the Customer sells the goods or part thereof to a third party, it is understood that such sale shall be as fiduciary agent of FRESMAK. The CUSTOMER shall hold the proceeds of any such sale on behalf of FRESMAK and shall keep such proceeds in a separate account, paying the amount obtained from such sale to FRESMAK immediately.

Article 12.- Health and Safety at work

1.- The CUSTOMER will ensure that the goods are properly and safely installed in accordance with any instructions that shall have been supplied by FRESMAK and with good trade practice and that they will be safe and without risk to health or safety when used. FRESMAK is not responsible for the breach by the CUSTOMER of this clause.

Article 13.- Industrial and intellectual property

1.- FRESMAK retains all copyrights, patents, and the right of legal protection of registered design in its drawing, documents and equipment.

2.- Drawings, specifications, documents, etc appended to quotations or forwarded to CUSTOMERS are for their personal use only. They may neither copied in whole or part or made accessible to third parties without FRESMAK's express written consent.

Article 14.- Data protection and confidentiality

1.- The CUSTOMER hereby authorizes FRESMAK to process the personal data included in this agreement and in subsequent documents thereof electronically, with the purposes deriving directly from the relationship established between them - among others, receiving advertising and information about services and products of the company by any means of communication - and all this with the limits arising from legislation in force.

2.- In accordance with Organic law 15/1999, on the Protection of Personal Data, your are duly informed that if you wish to exercise your rights of access, rectification and cancellation, granted by this law, you should address in

writing to the registered office of FRESMAK, located in Araba st. 45, 20800 Zarautz, Spain. For informational purposes, FRESMAK S.A. is appointed as responsible for the file, with registered office at the above address mentioned.

3.- FRESMAK warrants the CUSTOMER to maintain absolute confidentiality about any information, document or product owned by the CUSTOMER which is delivered within the development of the business relationship.

Article 15.- Responsibility for beyond circumstances

1.- FRESMAK will not be responsible for any failure to fulfil any term of this agreement if this is caused by any circumstance beyond FRESMAK.

Article 16.- Applicable law and jurisdiction

1.- This agreement, both for its application and interpretation shall be governed by the Spanish or Autonomous Community law appropriate under current regulations. The language will be Spanish.

2.- The parties undertake to resolve amicably any dispute that may arise on this agreement. In the case that an amicable solution may not be possible, resulting in judicial proceedings, both parties agree, with express waiver of any other jurisdiction that could correspond to them, to submit to the jurisdiction of the courts and tribunals of San Sebastian (Gipuzkoa-España).

ORDERS



Sales related with the products in this catalogue are made through distributors. You can ask Fresmak for the contact details of the distribution in your county.



MAINTENANCE AND REPAIRS



Fresmak guarantees maintenance and repair service for its vices and spindles in 4 working days (+delivery).

Moreover, should the product arrive at 10:30 a.m. a 24 hour express repair service for spindles is also with an additional cost of 20%.



WAREHOUSE



Almost all the products in this catalogue are on permanent stock, thus the delivery by FRESMAK is immediate.



ASSESSMENT AND INQUIRIES



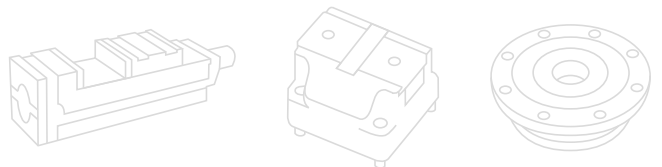
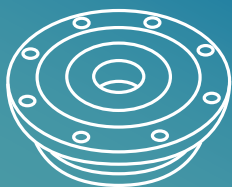
The sales and technical team of Fresmak is looking forward to clarify your doubts and inquiries related with Fresmak clamping systems. You can make your inquiry by email at **fresmak@fresmak.com** or calling at **+34 943 83 42 50**.

Further information and videos are also available at **www.fresmak.com**





0-MAK — ZERO POINT SYSTEM



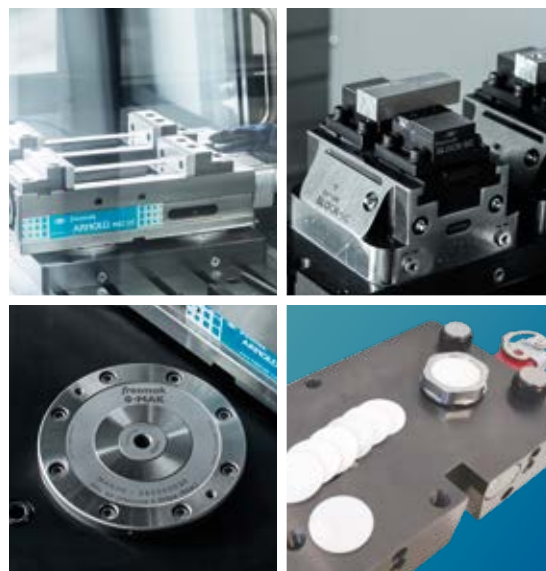
fresmak

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



O-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.

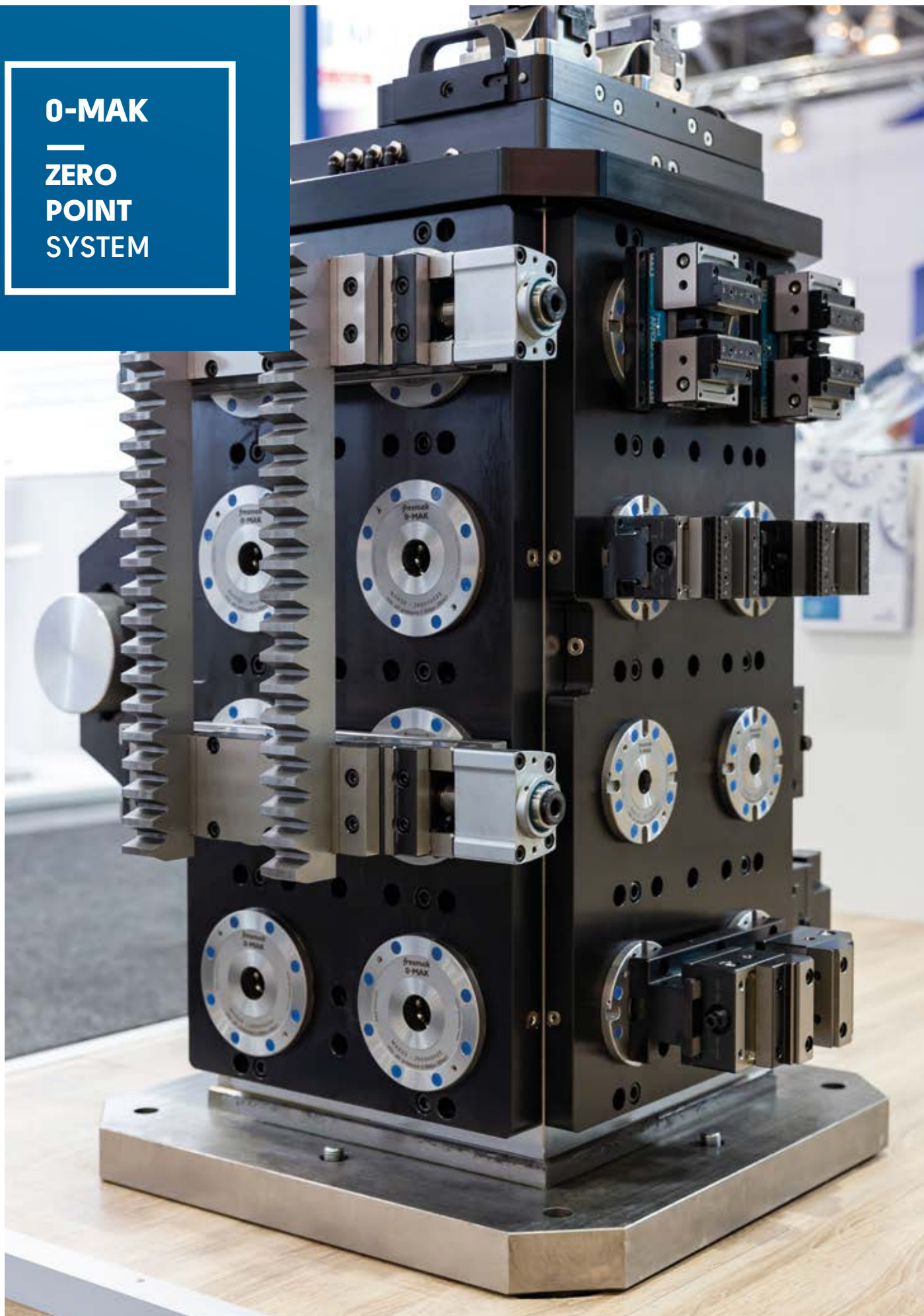
Repair and maintenance service are also available for customers.



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**



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Base plates and nipples

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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%**

O-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.



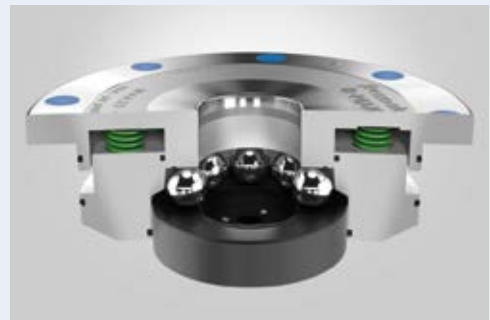
Easy to fit together

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



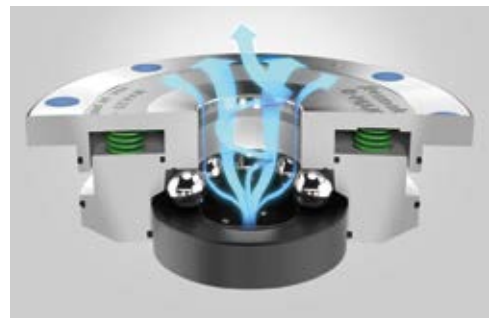
Without obstruction problems

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



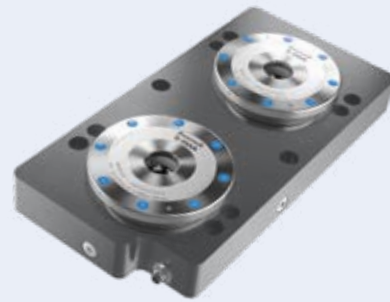
Integrated cleaning system

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.

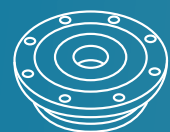


Safety system

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.



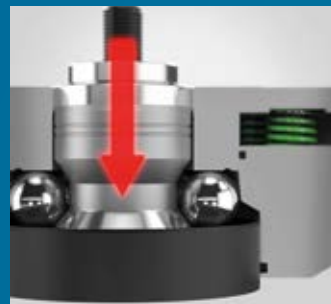
Multiplication of power with springs



Precision balls

Nipple



0-MAK stand by**Pull-in power****Holding power****Contact with ground surface****Clamping elements**

PARTS AND ACCESSORIES

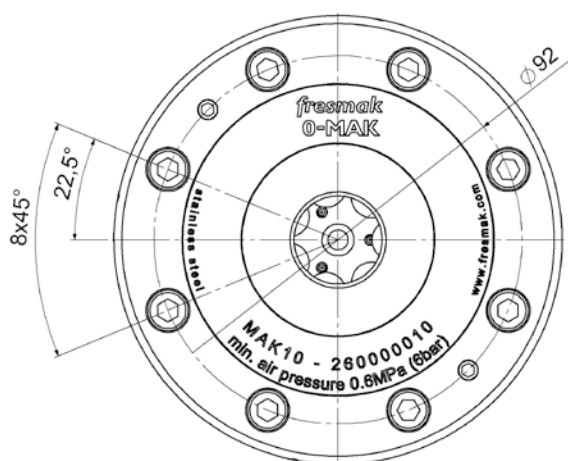
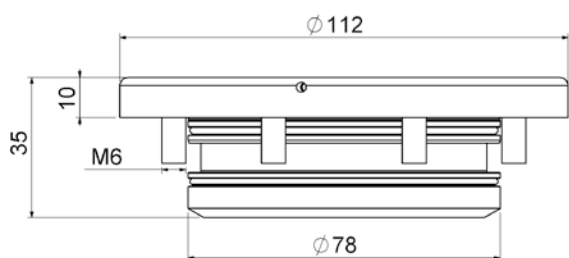
CYLINDER | MAK10



FEATURES

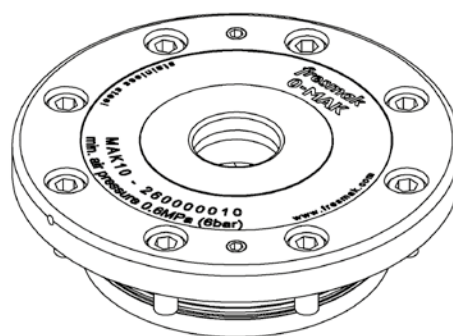
- > Pneumatic opening.
- > Mechanical clamping effect through compressed springs.
- > Transmission of power through precision balls.
- > No turbo needed.
- > Air blowing for inside cleaning as standard.
- > Repeatability <0.005mm
- > Working pressure: 6 Bar.

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

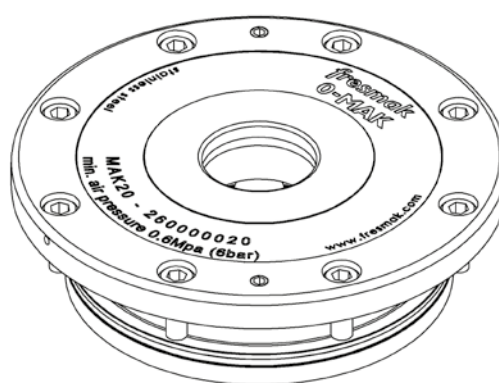
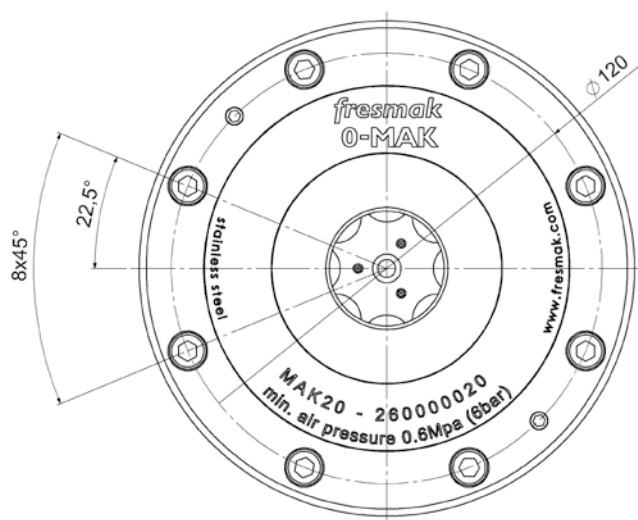
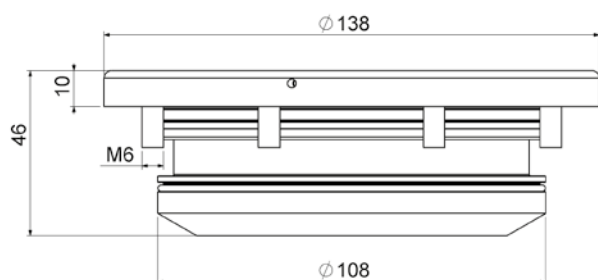
CYLINDER | MAK20



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

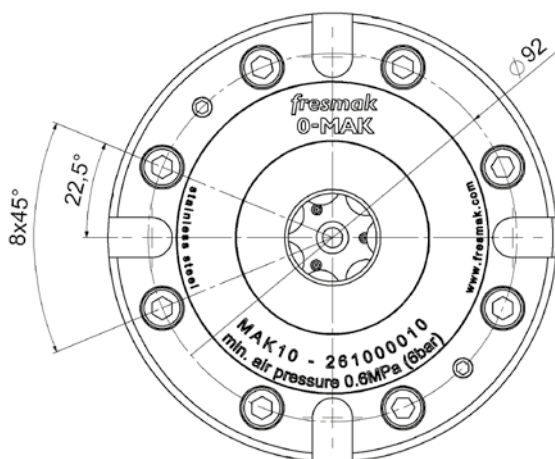
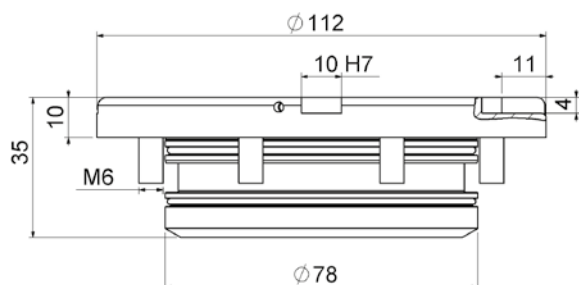
Size	Code	Holding power (kN)	Retaining power (kN)	Working pressure (Bar)	Repeatability (mm)	Weight (Kg)
MAK20	260000020	20	55	6	< 0.005	2.4

PARTS AND ACCESSORIES

CYLINDER | MAK10 4X90°



DIMENSIONS

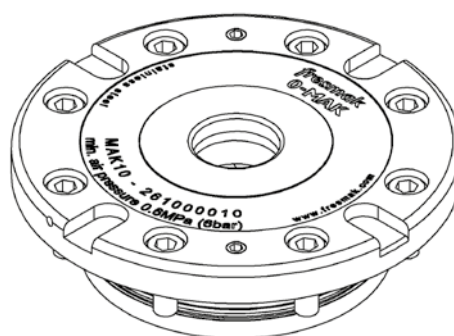


FEATURES

- > 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 <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



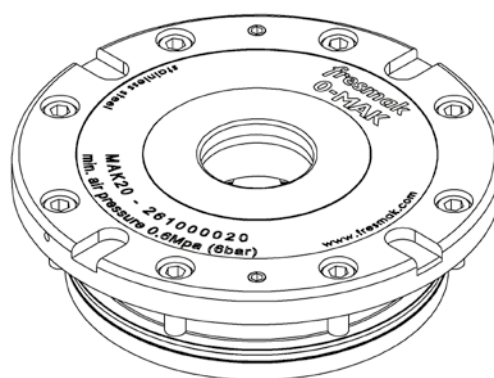
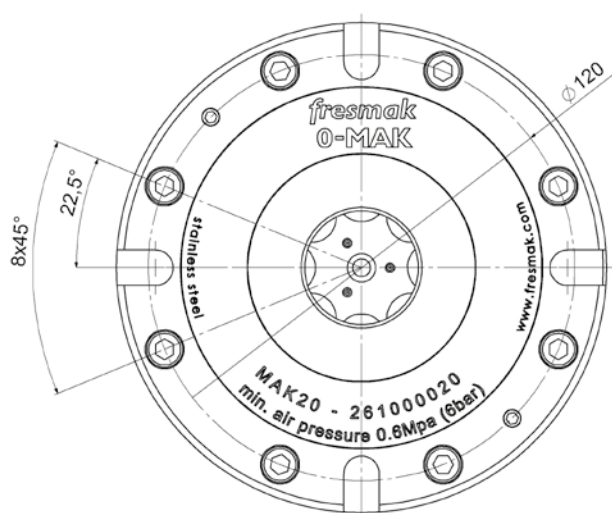
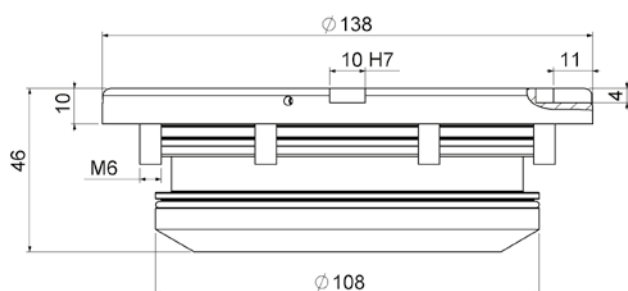
Size	Code	Holding power (kN)	Retaining power (kN)	Working pressure (Bar)	Repeatability (mm)	Weight (Kg)
MAK10 4x90°	261000010	10	25	6	< 0.005	1.1

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

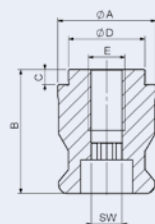
Used for clamping.



Protecting nipple

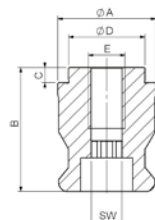
To protect the cylinder when is not being used.

→ Centering nipple



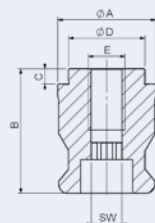
Size	Code	ØA	B	C	ØD	E	SW	Weight Kg
O-MAK 10	296004010	22	31	4	15	M8	8	0.1
O-MAK 20	296004020	32	40.6	5	25	M12	10	0.2

→ Positioning nipple



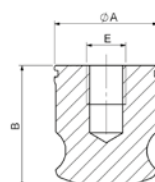
Size	Code	ØA	B	C	ØD	E	SW	Weight Kg
O-MAK 10	296005010	22	31	4	15	M8	8	0.1
O-MAK 20	296005020	32	40.6	5	25	M12	10	0.2

→ 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

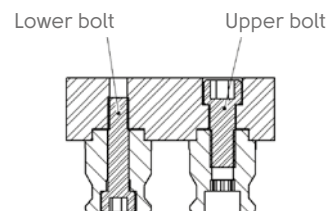
NIPPLES

→ 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.

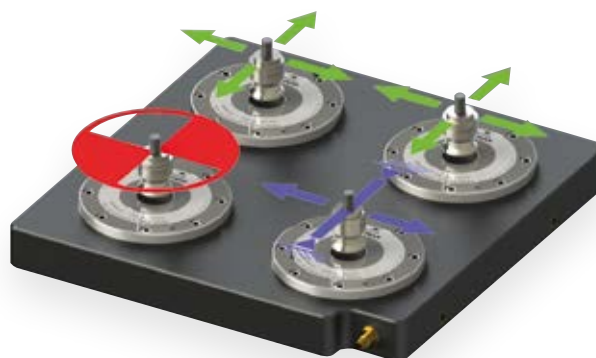


- DIN 912 quality 12.9 bolts:
- Upper bolt.
- Lower bolt.

→ NIPPLES COMBINATION:

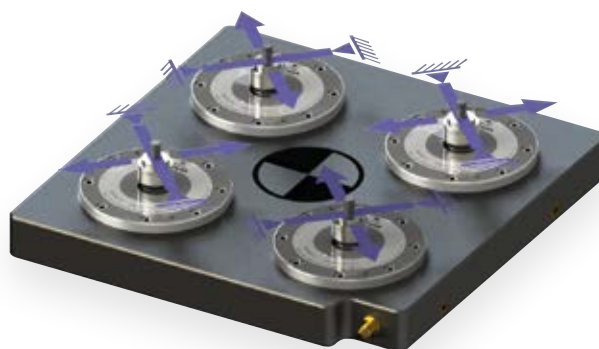
USUAL COMBINATION

- 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.



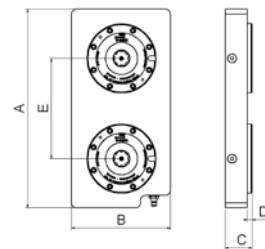


PARTS AND ACCESSORIES

BASE PLATES AND TOMBSTONES

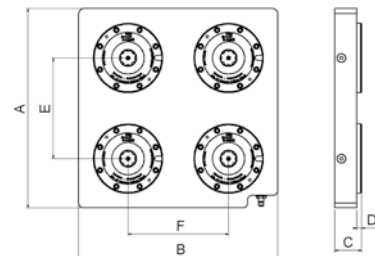
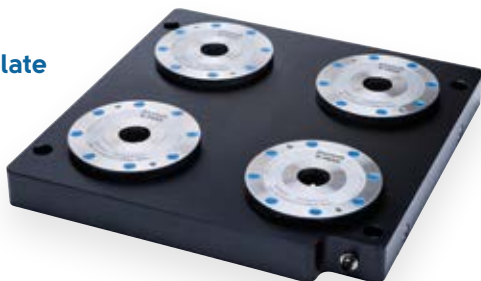
- > Base plate made out of Steel.
- > Repeatability 0,005 mm.
- > Infeed and connections for a quick pneumatic switch.
- > Designed with holes and k-slots for an easy assembly on the machine.
- > Plates and tombstones can be designed as per customers requirements on demand.

→ 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

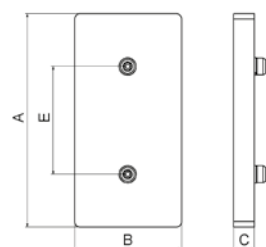


PARTS AND ACCESSORIES

ASSEMBLY PLATES FOR THE NIPPLES

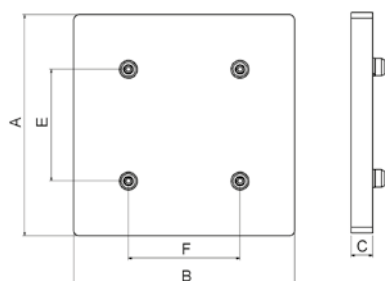
- > Base plates design to locate the nipples in one side and the fixture in the other side.
- > The distance between nipples according to the distances of the O-MAK on the base plate.
- > Made out of high resistance alluminum or Steel.
- > Tailor made. Other measures and structures upon request.

→ 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



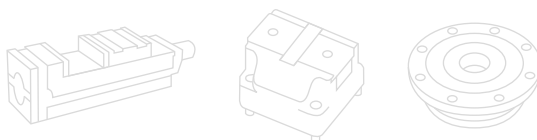
Material	Size	Code	A	B	C	E	F	Weight Kg
Steel	O-MAK 10	286214010	396	396	28	200	200	34
	O-MAK 20	286214020	396	396	38	200	200	47
Alluminum	O-MAK 10	286224010	396	396	28	200	200	12
	O-MAK 20	286224020	396	396	38	200	200	17



www.fresmak.com

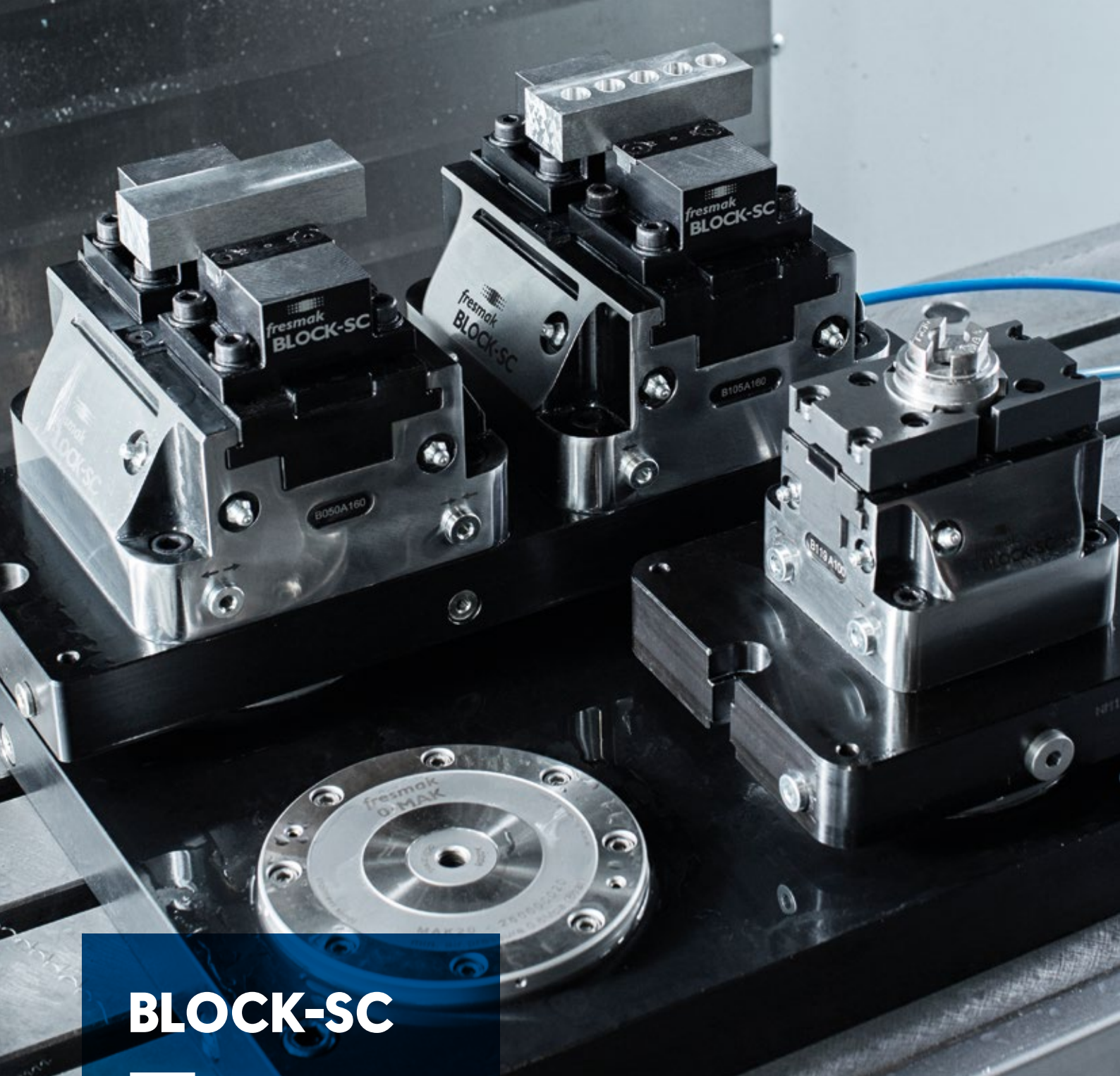


CLAMPING SOLUTIONS



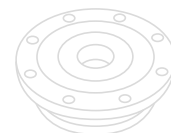
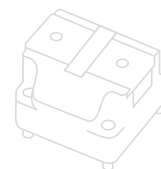
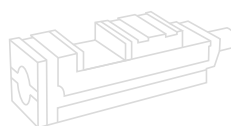
Fresmak S.A.
Araba Kalea, 45
20800 Zarautz (Gipuzkoa) · Spain

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



BLOCK-SC

SELF-CENTERING
STATIC
BLOCKS



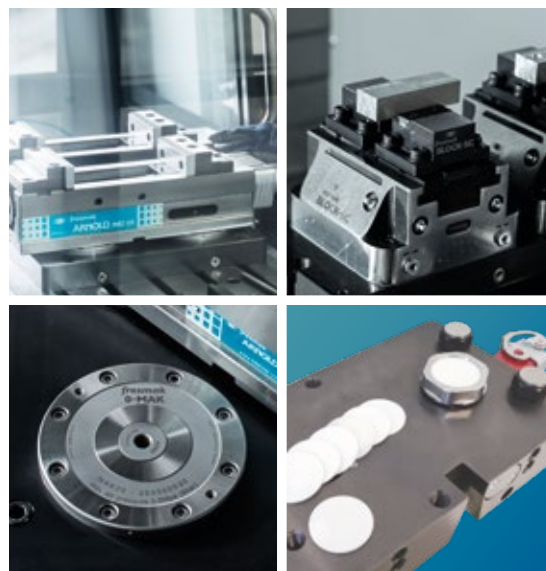
fresmak

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



O-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.

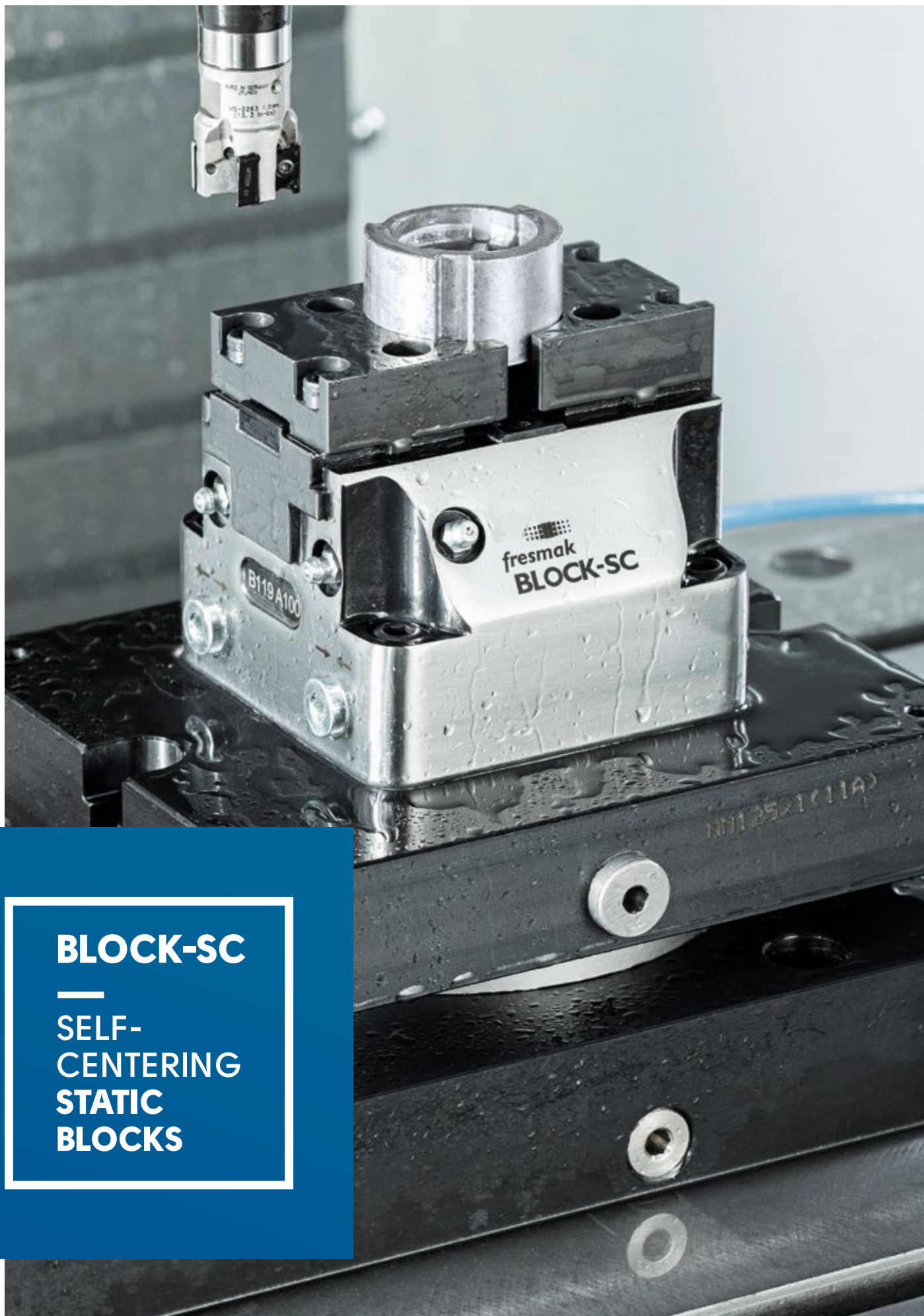
It also answers quickly and flexibly to offers as well as to orders.

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.



BLOCK-SC

—
**SELF-
CENTERING
STATIC
BLOCKS**

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BLOCK-SC

SELF-CENTERING STATIC BLOCKS

THE BEST CLAMPING
SOLUTION FOR
YOUR 5X OR
TRANSFER MACHINE

» AUTOMATIC CLAMPING

When machining short series, as well as for medium and long batches in confined spaces through an automatic clamping, the use of self centering clamping chucks is very much recommended.

RESISTANT

Constructed in high strength steel, its hermetic structure is watertight to chips and coolants.

OPTIMUM DESIGN

Due to its compact design, allows optimum use in multi axis machines with total access to all sides of the part, making possible the use of short tools. A number of BLOCK-SCs can be assembled one next to the other using minimum space. This allows to optimize the use of the table.



BLOCK-SC FEATURES

- | | |
|---------------|----------|
| 1 Cover plate | 5 Body |
| 2 Wedge | 6 Piston |
| 3 Key | 7 Cover |
| 4 Guide jaw | |

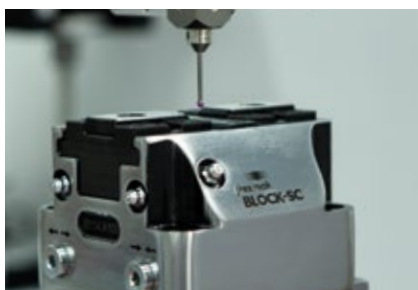
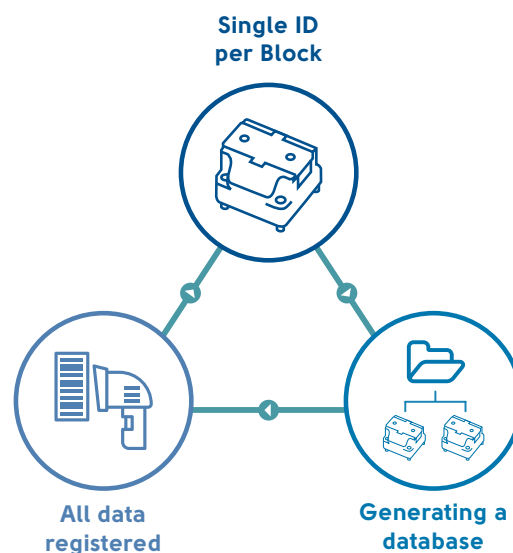
QUICK

These blocks combine clamping strength with a long automatic advance and return stroke for a faster change of the work-piece. BLOCK-SC guarantees thousands of clamps without any misshape and assuring the highest precision in positioning and repeatability. This makes it suitable for medium and large batches.

CONTROL AND VERIFICATION

Each unit of BLOCK-SC has a single identification number that contains all the data of the product, such as dimensions, tolerances, batch and serial numbers, as well as, production date. The data collection is made through a dimensional control, which is later recorded within the database of Fresmak.

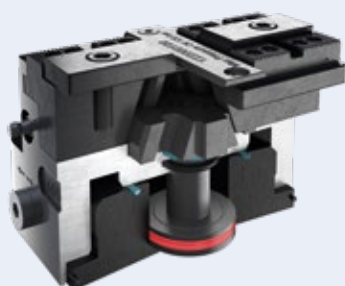
Finally, they are individually verified either with oil or air, depending on the model.



TYPES: HYDRAULIC AND PNEUMATIC

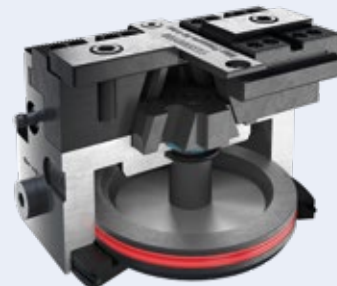
At Fresmak there are two types of BLOCK-SC, pneumatic and hydraulic, both with double effect actuating.

BLOCK-SC Hydraulic



HYDRAULIC BLOCK-SC are oil actuated with an infeed power of up to 120 bar and designed for reaching a pressure up to 40 KN.

BLOCK-SC Pneumatic



PNEUMATIC BLOCK-SC are air actuated with an infeed power of up to 9 bar and designed for reaching a pressure up to 20 KN.

BLOCK-SC FUNCTIONING

1 Infeed

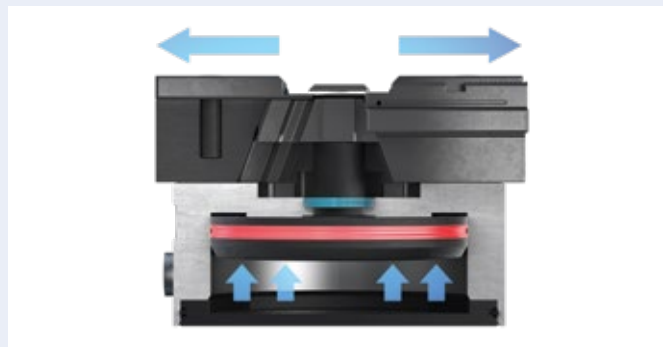
It is fed through the base or side holes.

○ Feed holes



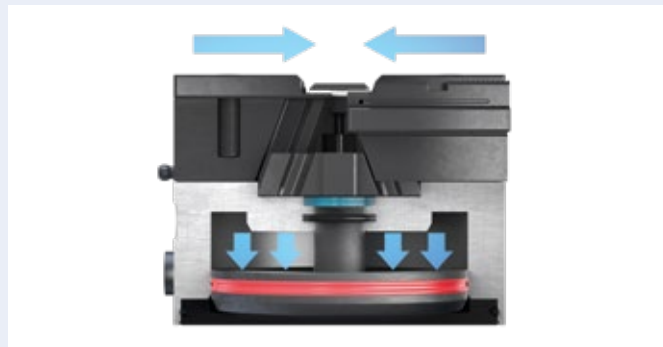
2 Opening

When the wedge moves upwards guide jaws are opened.



3 Closing

When the wedge moves downwards guide jaws are closed.



The BLOCK-SC allows external as well as internal clamping.



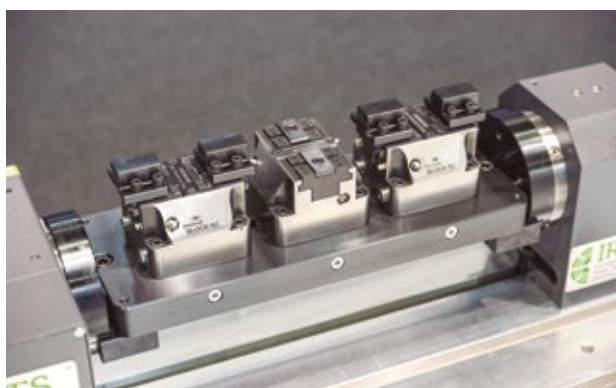
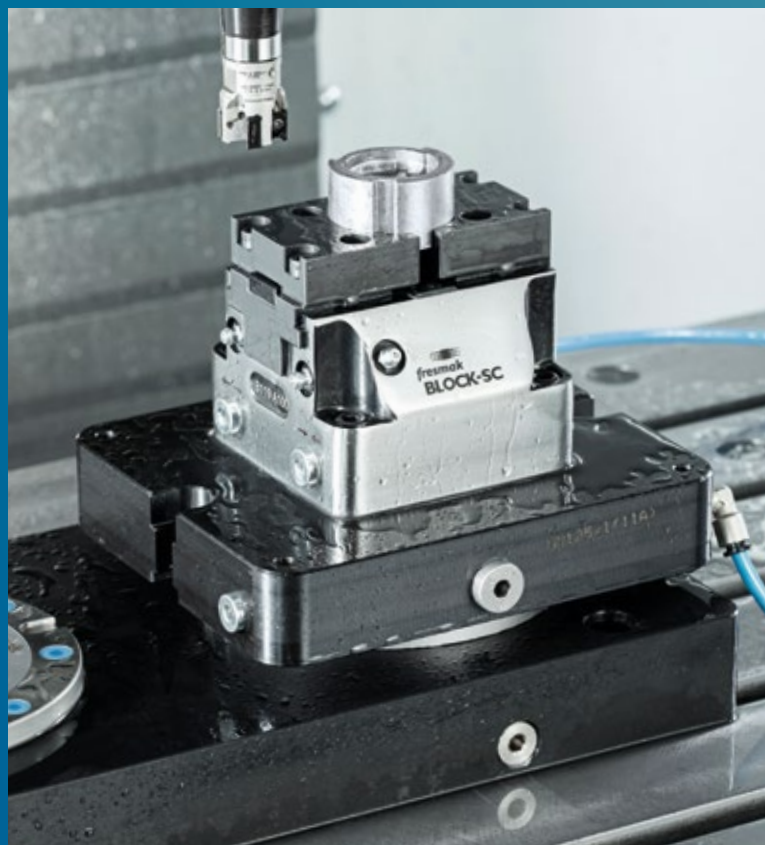
Lubrication

○ Lubrication points

Applications

When machining in a transfer machine, several plates can be placed covering the table and allowing us to save machine downtime, since the BLOCK-SCs can clamp a large number of parts.

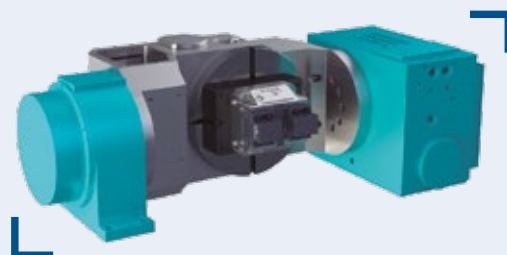
BLOCK-SC ARE SPECIALLY AIMED AT MASS PRODUCTION OF SMALL WORKPIECES



Another common application is in vertical machining centers to which we can add a fourth axis. Normally, by using a rotary table and a plate with some BLOCK-SCs in both faces, saving machine downtime.



Also 5 axis machines have taken a leading role since we can clamp a part with very little clamping surface, allowing full access to all sides, with short tools, being the part finished with a single clamp.



BLOCK-SC Hydraulic



Hydraulic **BLOCK-SC** static blocks reach a pressure up to 40 KN with an infeed power of 120 bar.

SET SUPPLIED

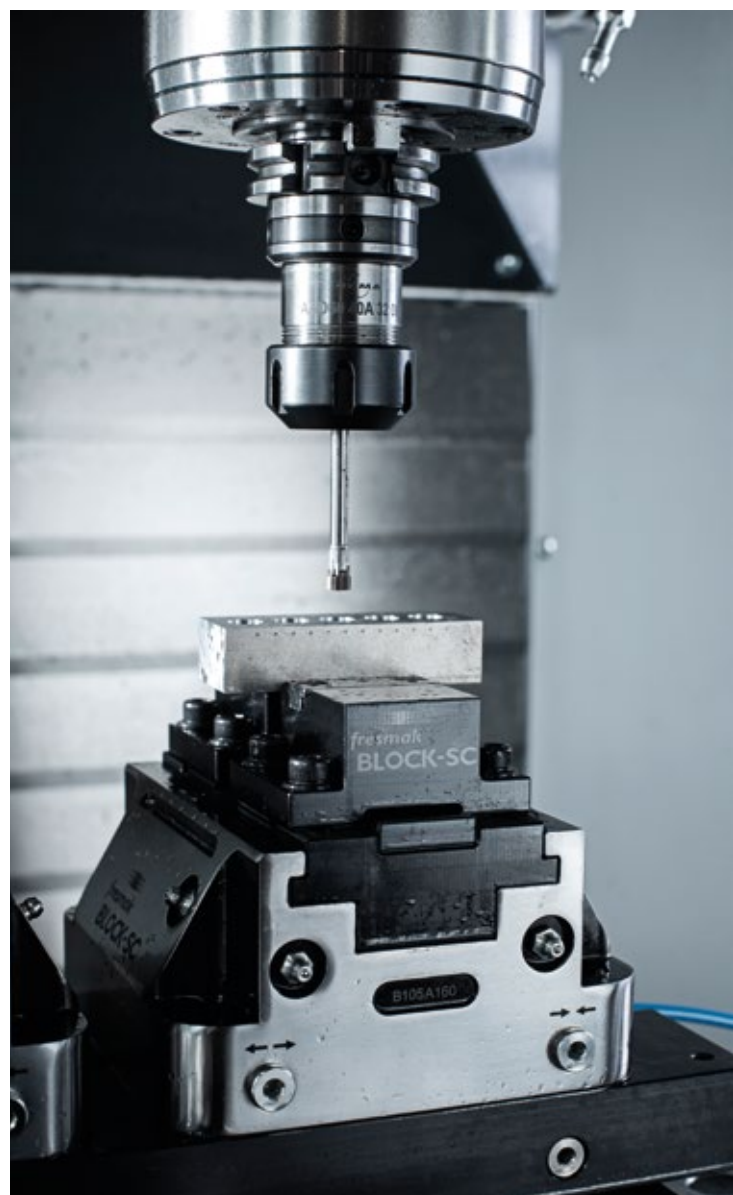
- Body
- 2 body dowel pins
- 4 screws
- Service manual

FUNCTIONING

→ Hydraulically driven wedge clamping system: the multiplication of the hydraulic force is performed by actioning the wedge.

FEATURES

- > Stroke range of 6 and 8mm.
- > Double effect actinoning.
- > Long guides.
- > All basic components are hardened.
- > Basic surfaces are ground.
- > Entirely compact and fully protected against chips.
- > Total lubrication system. Greasing channels within the base jaw and base body.
- > The oil supply for machining and lubrication can be performed from the sides or the base of the body.
- > Hydraulic supply up to 120 bar.



Size	Code	Gripping force kN	Max. operating pressure bar	Jaw stroke mm	Repeatability mm	Max. jaw height mm	Oil consumption cm ³	Weight Kg
HYDRAULIC 100	122000100	16	120	6	0,01	60	30	5
HYDRAULIC 160	122000160	40	120	8	0,02	60	90	14

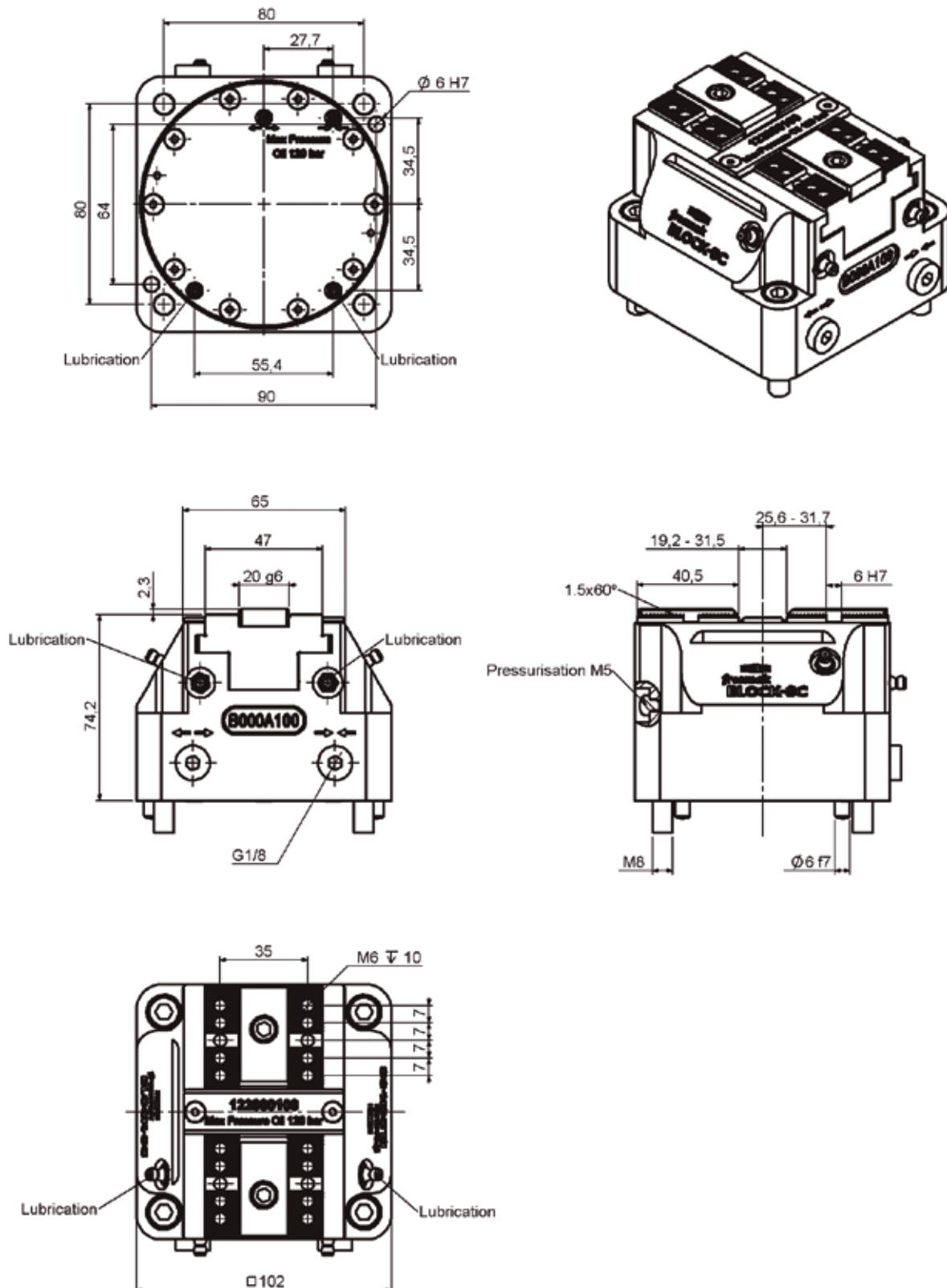
* The total clamping strength of BLOCK-SC is the sum of the individual strengths of each jaw.

BLOCK-SC HYDRAULIC

Hydraulic 100

Code 122 000 100

DIMENSIONS

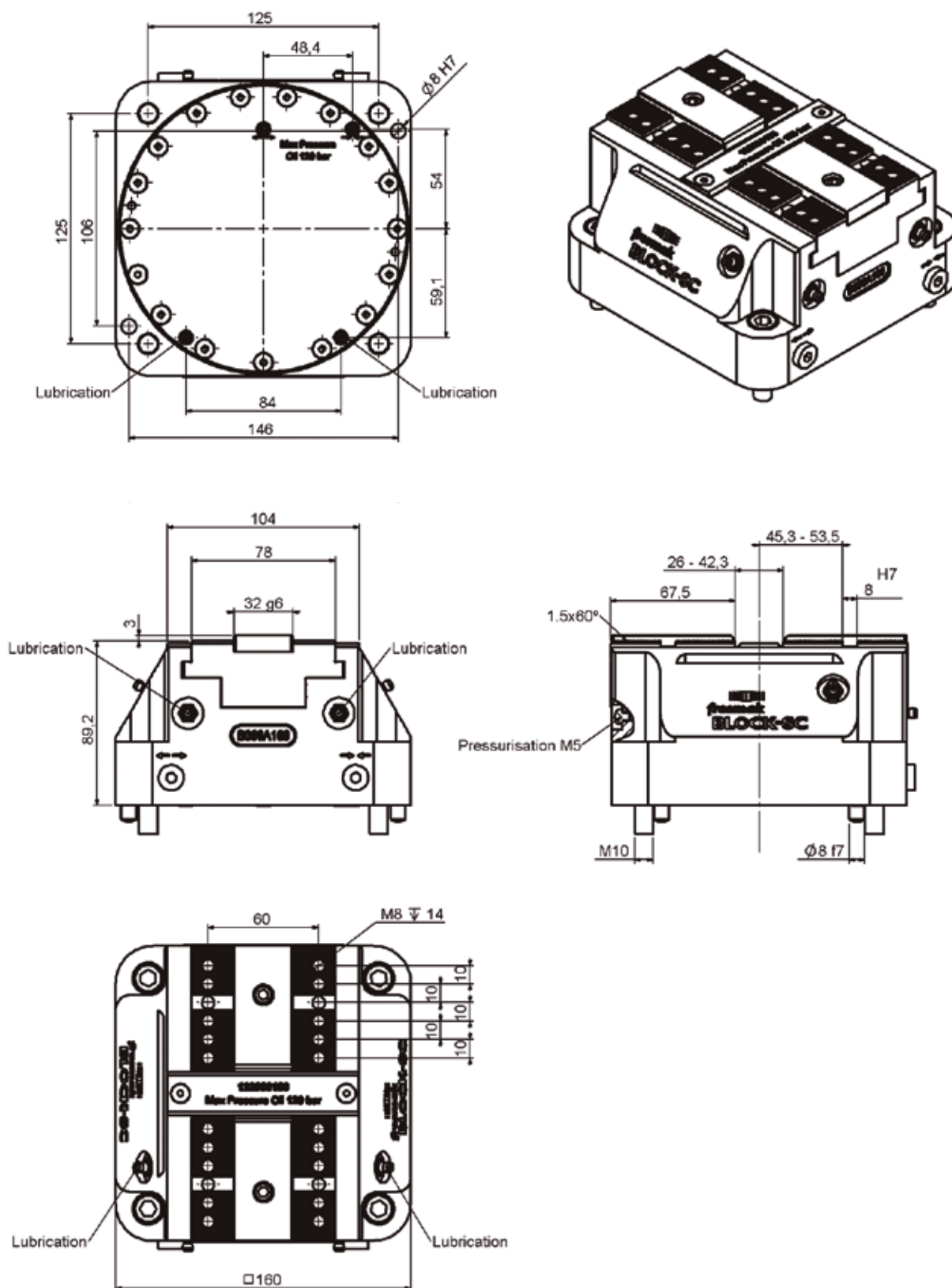


BLOCK-SC HYDRAULIC

Hydraulic 160

Code 122 000 160

DIMENSIONS



BLOCK-SC Pneumatic



Pneumatic **BLOCK-SC** static blocks reach a pressure up to 20 kN with an infeed power of 9 bar.

SET SUPPLIED

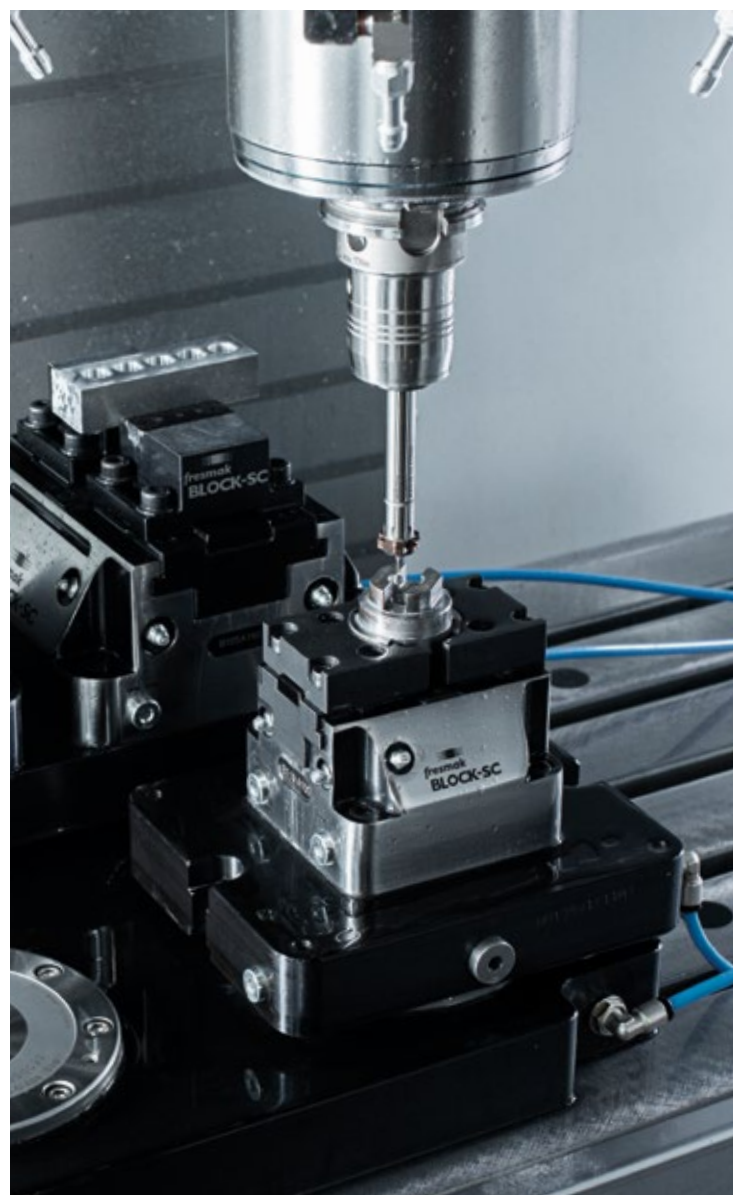
- Body
- 2 body dowel pins
- 4 screws
- Service manual

FUNCTIONING

→ Pneumatically driven wedge clamping system: the multiplication of the pneumatic force is performed by actioning the wedge.

FEATURES

- > Stroke range of 6 and 8mm.
- > Double effect actinoning.
- > Long guides.
- > All basic components are hardened.
- > Basic surfaces are ground.
- > Entirely compact and fully protected against chips.
- > Total lubrication system. Greasing channels within the base jaw and base body.
- > The air supply for machining and lubrication can be performed from the sides or the base of the body.
- > Pneumatic supply up to 9 bar.



Size	Code	Gripping force kN	Max. operating pressure bar	Jaw stroke mm	Repeatability mm	Max. jaw height mm	Oil consumption cm ³	Weight Kg
PNEUMATIC 100	162000100	8	9	6	0,01	150	160	4,5
PNEUMATIC 160	162000160	20	9	8	0,02	200	500	12,5

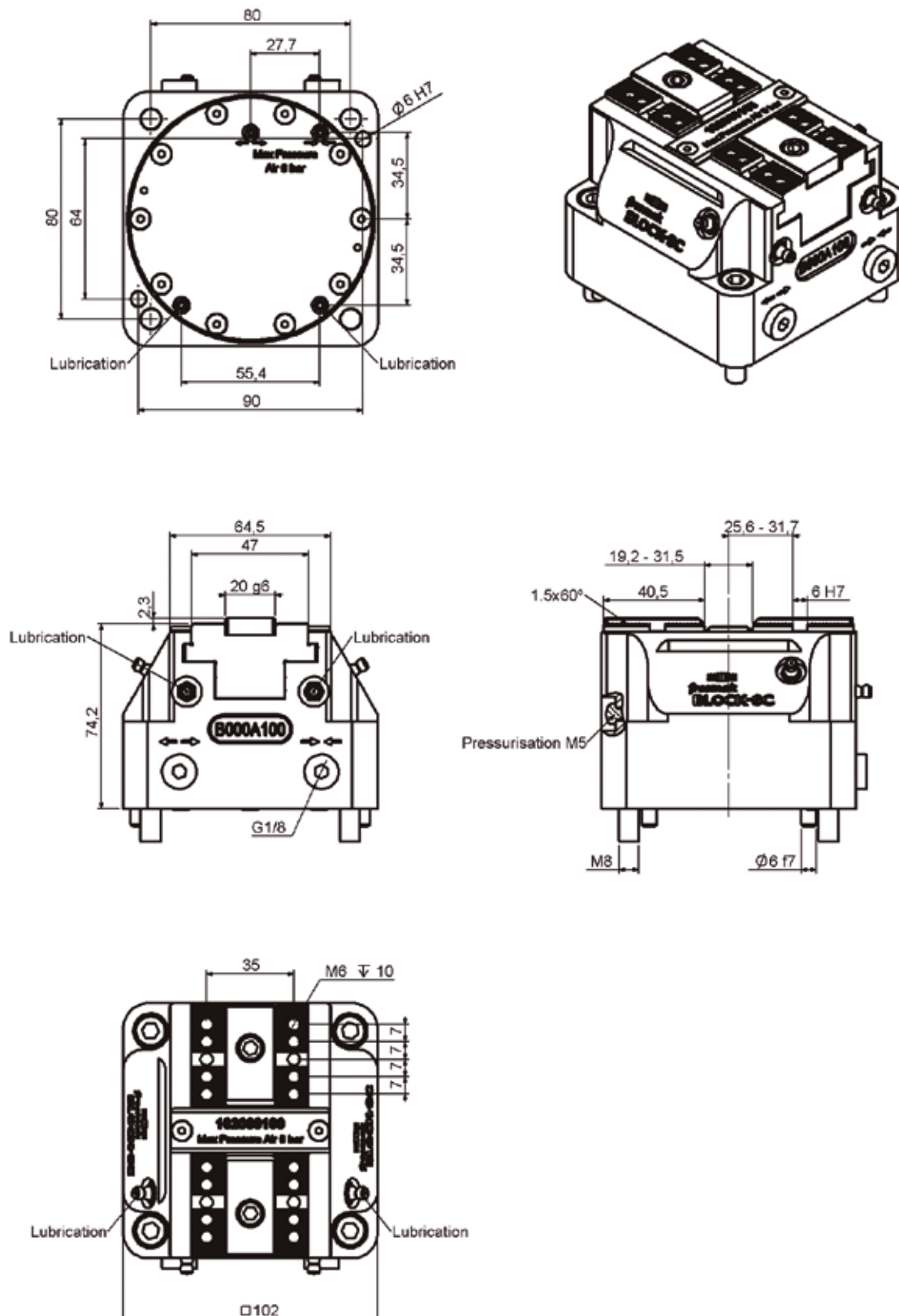
* The total clamping strength of BLOCK-SC is the sum of the individual strengths of each jaw.

BLOCK-SC PNEUMATIC

Pneumatic 100

Code 162 000 100

DIMENSIONS

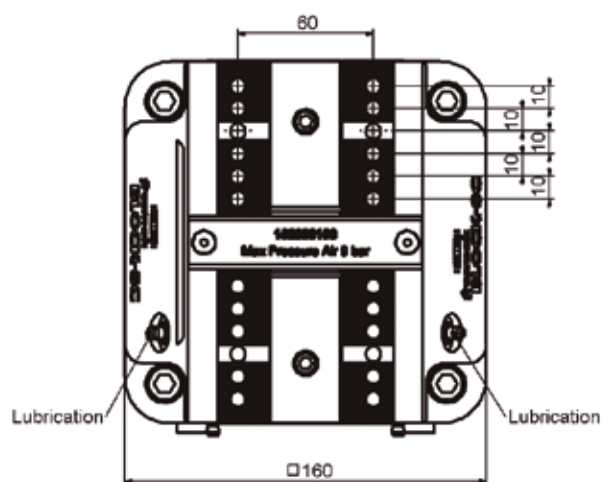
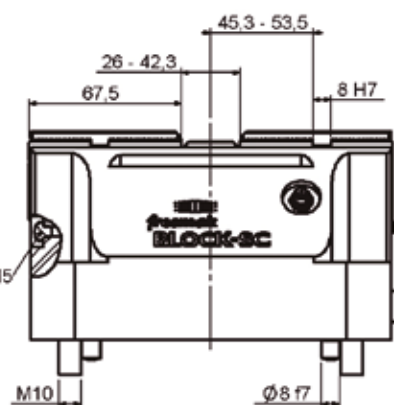
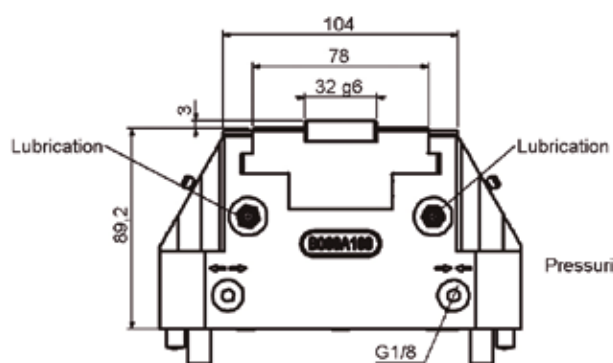
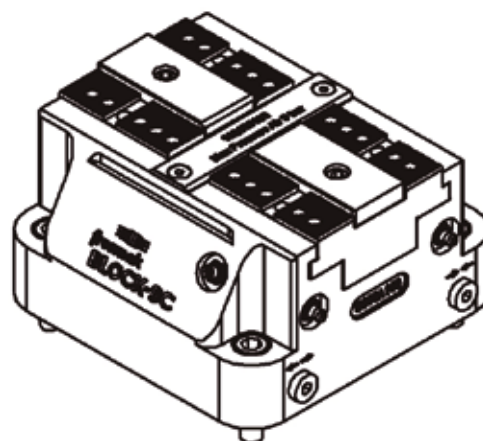
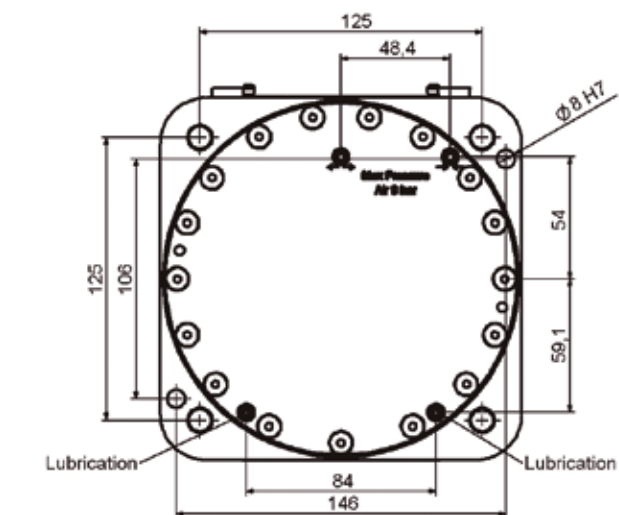


BLOCK-SC PNEUMATIC

Pneumatic 160

Code 162 000 160

DIMENSIONS

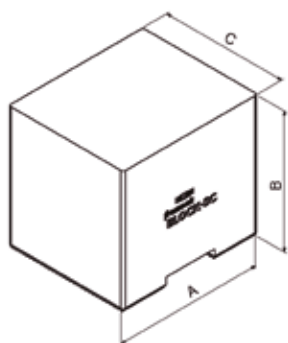


PARTS AND ACCESSORIES

JAWS

- > 3 sets of jaws for each model of BLOCK-SC available, designed to be machined according to the geometry of the work piece.
- > Fast and accurate change of jaws.
- > Carved or with keyways within the jaws (depending on the jaw).
- > Different work pieces can be clamped just by changing the jaws.

→ Wide jaw

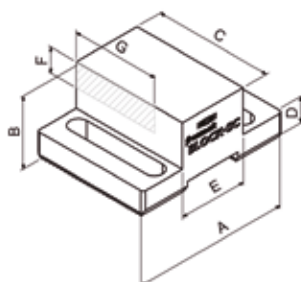


FEATURES

- > **Jaw** Soft jaw
- > **Material** F-1550 (18crMoS4)
Can be hardened
- > **Assembly** Carved 1.5 x 60°

Code	A	B	C
192231100	55	50	47
192231160	80	80	76

→ Narrow jaw



FEATURES

- > **Jaw** Soft jaw, slotted
- > **Material** F-1550 (18crMoS4)
Can be hardened
- > **Assembly** Carved 1.5 x 60°

Code	A	B	C	D	E	F	G
192230100	55	25	42	9	24	9	31
192230160	80	40	60	12	45	19	40

PARTS AND ACCESSORIES

JAWS

→ Jaw with keyways



FEATURES

- > **Jaw** Soft jaw with fixing holes
- > **Material** F-1550 (18crMoS4)
Can be hardened
- > **Assembly** Keyways

Code	A	B	C	D	E	F	G	H	I
192232100	55	48	47	9	50,6	43	32	14	35
192232160	80	77,5	80	12	80,5	70	57	28	51

CUSTOMIZED JAWS

> Tailor made jaws upon request.





PARTS AND ACCESSORIES

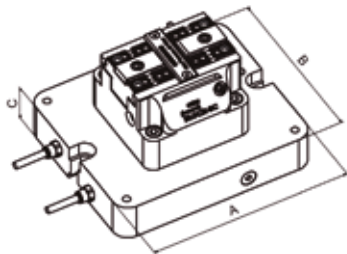
PLATES

The BLOCK-SC can be fed from the side or from the base.

When being fed by the base, it is necessary to place the BLOCK-SCs on an auxiliary plate that supports them and allows to drill holes inside to drive the oil or air.

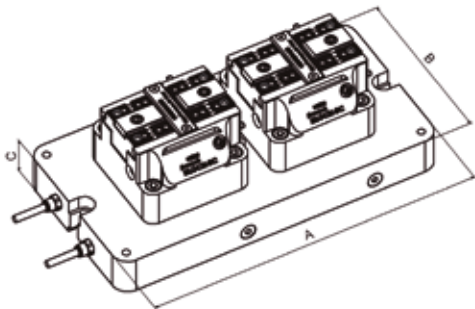
These plates can be used for one, two or three BLOCK-SC side by side; more units under request. This type of internal feed enables placing as many BLOCK-SCs as possible in the smallest space, which increases the productivity of this clamping system.

Plates for Hydraulic BLOCK-SC



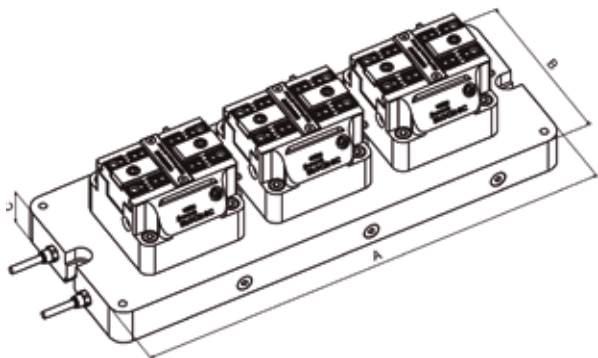
→ Single

Code	A	B	C
182001100	190	160	36
182001160	240	160	36



→ Double

Code	A	B	C
182002100	315	160	36
182002160	420	160	36

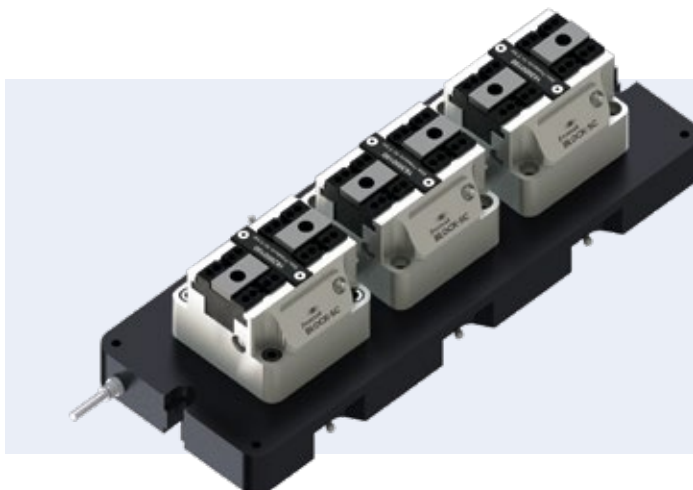


→ Triple

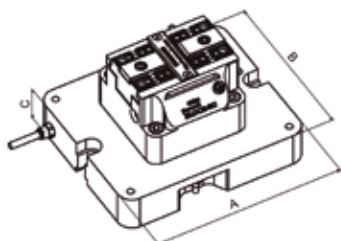
Code	A	B	C
182003100	440	160	36
182003160	600	160	36

PARTS AND ACCESSORIES

PLATES

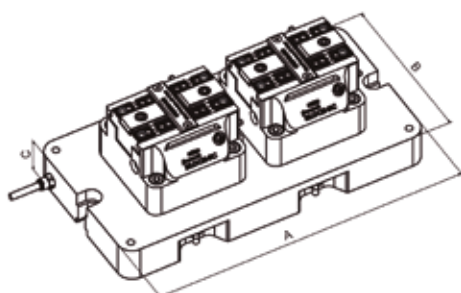


Plates for Pneumatic BLOCK-SC



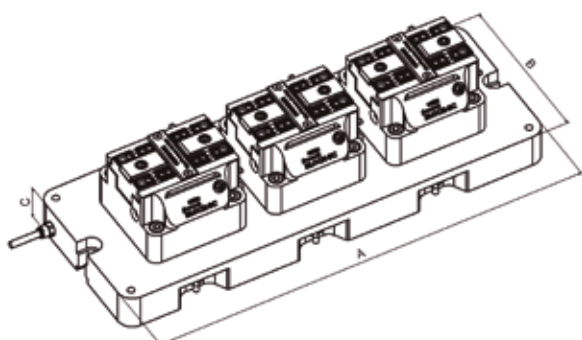
→ Single

Code	A	B	C
186001100	190	160	36
186001160	240	160	36



→ Double

Code	A	B	C
186002100	315	160	36
186002160	420	160	36



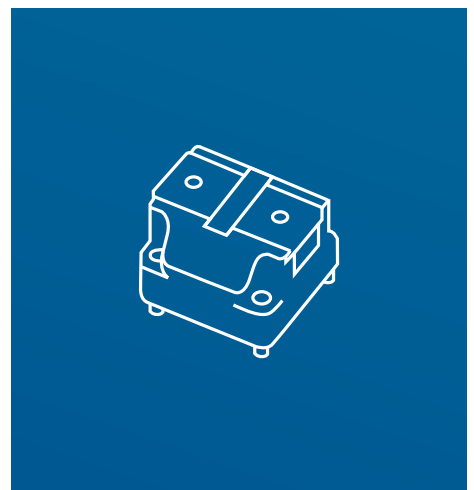
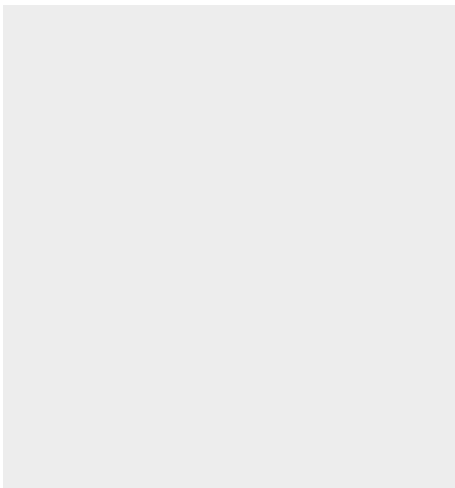
→ Triple

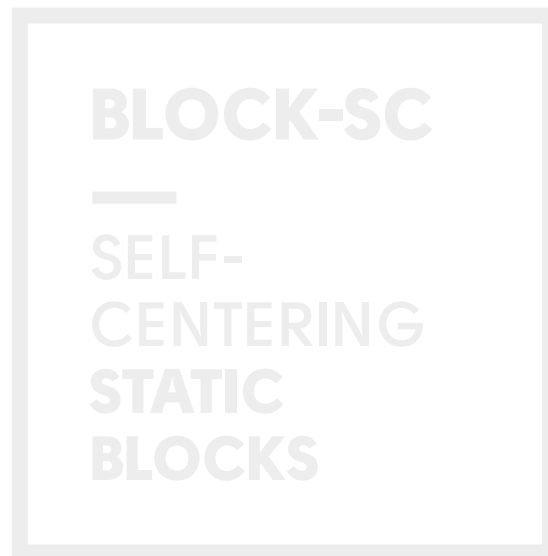
Code	A	B	C
186003100	440	160	36
186003160	600	160	36

PARTS AND ACCESSORIES

TAILOR MADE

- > Available upon request.
- > BLOCK-SC can be equipped with additional accessories such as non-return valves.



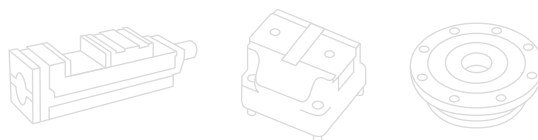


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BLOCK-SC

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CLAMPING SOLUTIONS



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BLOCK-SC

4.0



BLOCK-SC 4.0:
Smart clamping



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 the customers facilities.



Specialist in clamping solutions



Values that make us different

Experience



Specialization



Service



Keys that help Fresmak become
a worldreference in clamping systems



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

The **BLOCK-SC 4.0** consists of a **real time monitored and sensorized clamping system**, that allows detecting **wirelessly** and precisely the correct or incorrect **position** of the clamping jaws and the **pressure** in the system.

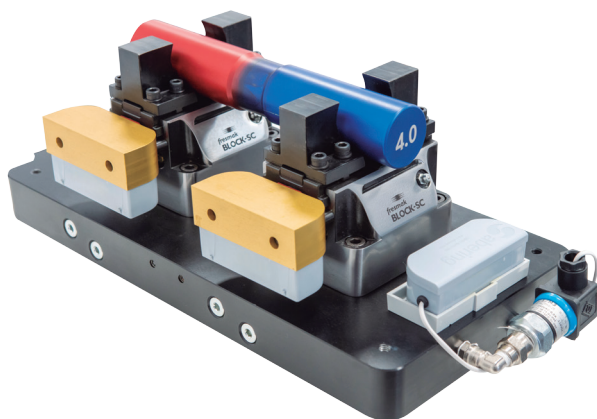
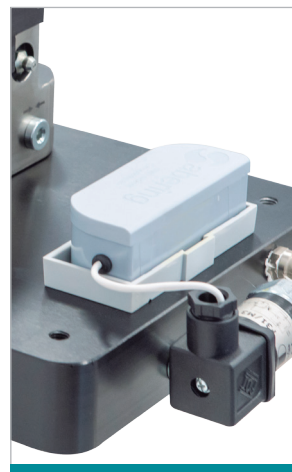
The system has a **user-friendly, wireless and inexpensive set of components** that allow the detection, **visualization and management** of the **clamping** conditions of the work-piece at any time, avoiding automatically unnecessary machining in case of wrong placement of work-pieces.



The BLOCK-SC 4.0 system

Designed for **working in hostile environments** (high temperatures, chips, cutting fluids, turning tables, moving tooling, etc.) it is fitted with a **potentiometer** that **accurately measures the position of the jaws**. When the work-piece is changed, **it is not necessary to manually modify the position** of the potentiometer in order to detect the new position.

A **pressure switch** detects the **pressure in the system**. Pressure over the work-piece must be ensured in addition to having the work-piece clamped by the jaws.

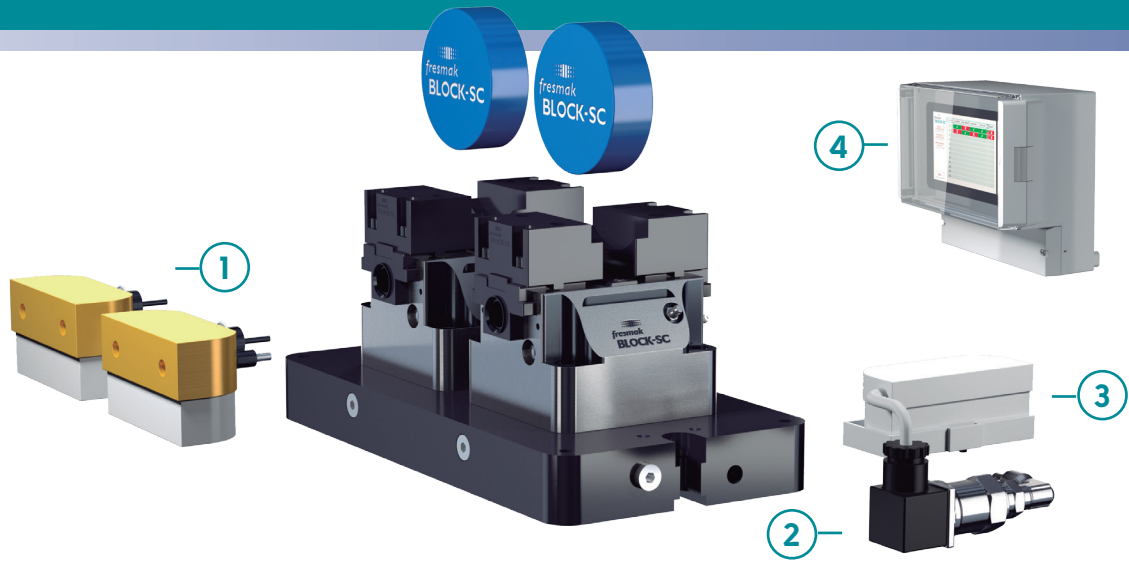


The **wireless communication system**, based on wireless sensorization and monitoring, is a key element. Due to the working environment of clamping systems, wired communication between sensors and the control unit or robot is not feasible.

All these elements are essential to **avoid machining of incorrect work-pieces**, which in many cases cause disruptions in the production process.



Elements of the system



1 Potenciometer

Positioning or displacement sensor.

2 Pressure switch

Pressure sensor.

3 Communication

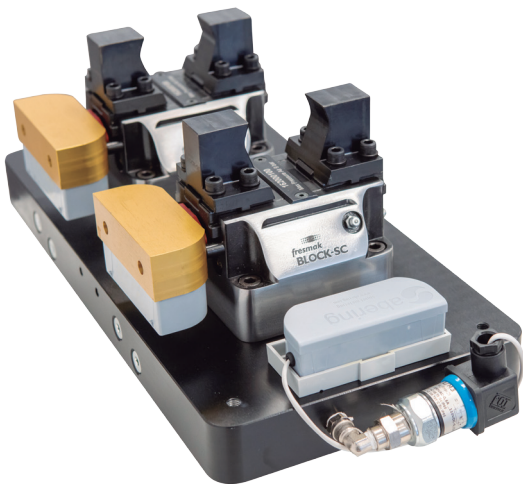
An RF transceiver allows wireless transmission of information captured by the sensors and processed by a microprocessor.

4 Control unit

It collects, processes and displays the information sent by position and pressure detecting sensors and generates relevant performance signals.



Characteristics of the system



- > **Simple, reliable and lasting** coupling to the BLOCK-SC.
- > Extremely **compact**.
- > Completely **watertight**, IP67 water ingress protection standard.
- > **Resistant** to elements such as chips and coolants.
- > It **sends information** of the position of the jaws **wirelessly** through RF with a maximum latency of 3 seconds.
- > There is **no electrical connection** with the outside.
- > Equipped with **long-lasting batteries**.



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Control unit

It is equipped with a **touch screen** that allows both **monitorization** of each block as well as configuration of the different units. Small in size, it shows clear and intuitive information that allows the user to navigate through the existing menus in an user friendly way.

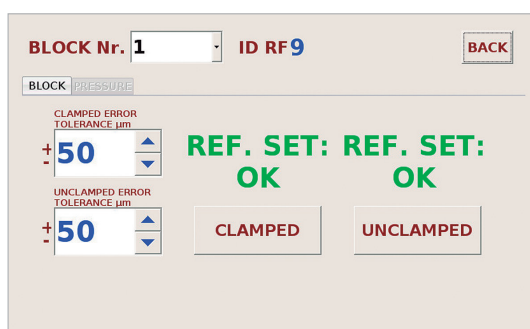
Provided with access rights in order to limit certain actions to defined users.

It can receive information from a maximum of 12 blocks, each of them related to a specific pressure and position sensor.



The touch screen shows the **status of each block**, if the work-piece is clamped or not, if the clamping is done properly and whether there is pressure. In addition, it also contains several configuration tabs that allow:

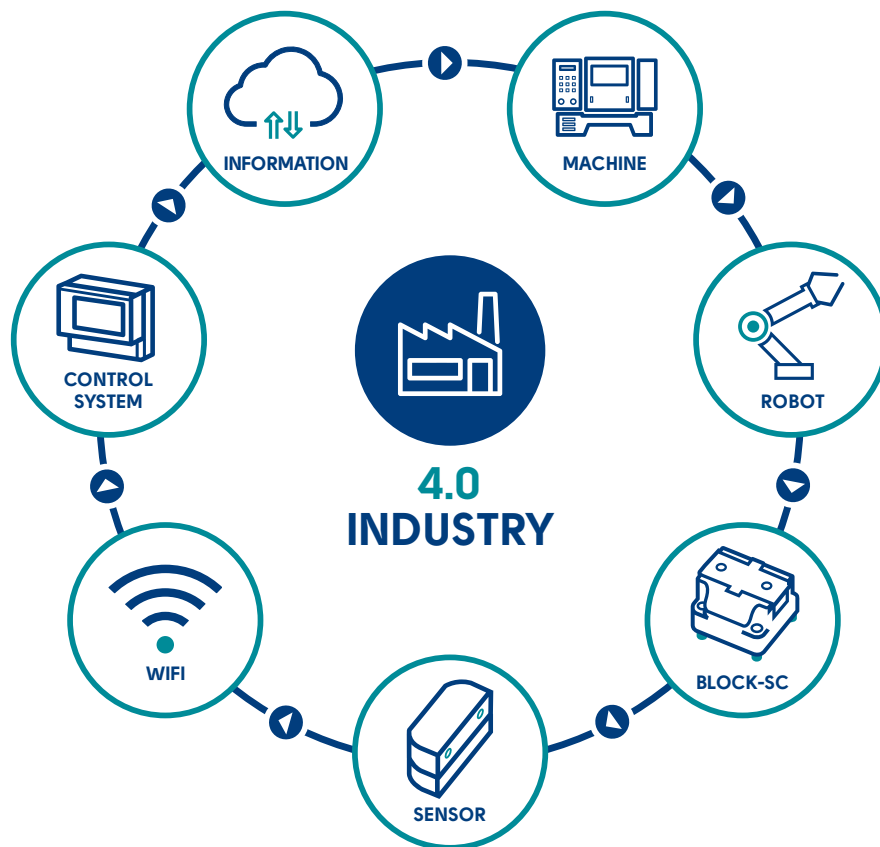
- **Assign** each BLOCK the position and pressure detection unit.
- **Wireless calibration** of position and pressure detection units.
- **Define** the correct clamping position and the unclamped position for each block and type of work-piece to be machined.



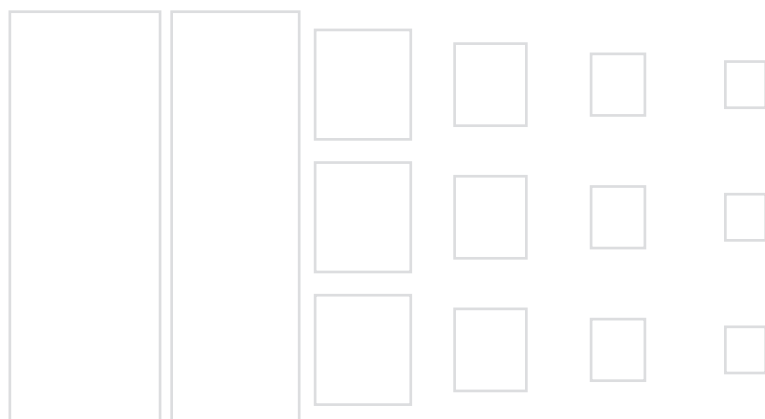
The display screen is **protected by a housing** that guarantees correct operation in an industrial environment. It has potential free relay outputs for accessing and machining signals that make possible a connection with a robot or similar, offering a complete electrical insulation.



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