

GB  
 08

**KOPAL®**





## MODULAR VICES

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22 kN with rectified jaws	05
10 kN with rectified jaws	08
<b>Double vice</b>	
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<b>Standard Vice with fast clamping</b>	
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# KOPAL



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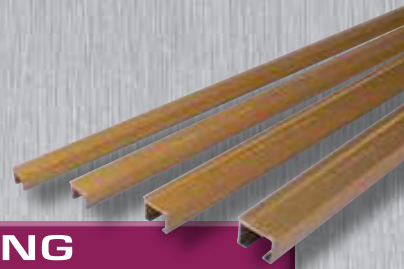






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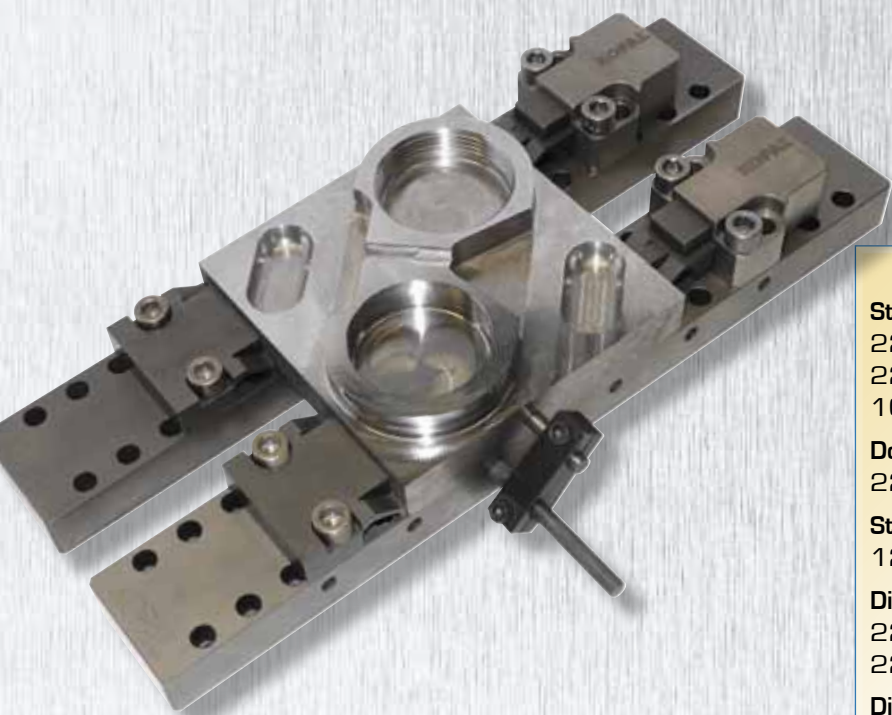
# KOPAL®







# Modular Vices System KOPAL®



Presentation	02 - 03
<b>Standard Vices</b>	
22 kN with serrated jaws	04
22 kN with rectified jaws	05
10 kN with rectified jaws	08
<b>Double vice</b>	
22 kN with rectified jaws	06
<b>Standard Vice with fast clamping</b>	
12 kN with rectified jaws	07
<b>Divided Vices</b>	
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<b>Fixing - Locators</b>	12
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**KOPAL®**

**KOPAL 01**

MODULAR VICE



# MODULAR VICE

Capacity : **280 mm**  
Clamping force : **22000 N.**  
**Serrated jaws**  
with thrust screw  
Ref. **09-005**



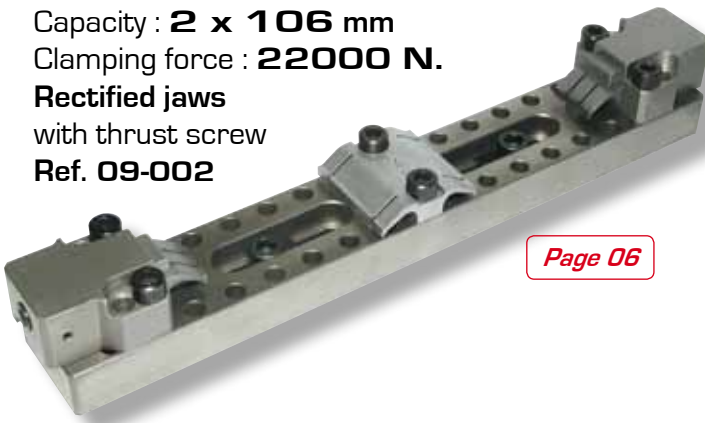
*Page 04*

Capacity : **280 mm**  
Clamping force : **22000 N.**  
**Rectified jaws**  
with thrust screw  
Ref. **09-004**



*Page 05*

Capacity : **2 x 106 mm**  
Clamping force : **22000 N.**  
**Rectified jaws**  
with thrust screw  
Ref. **09-002**



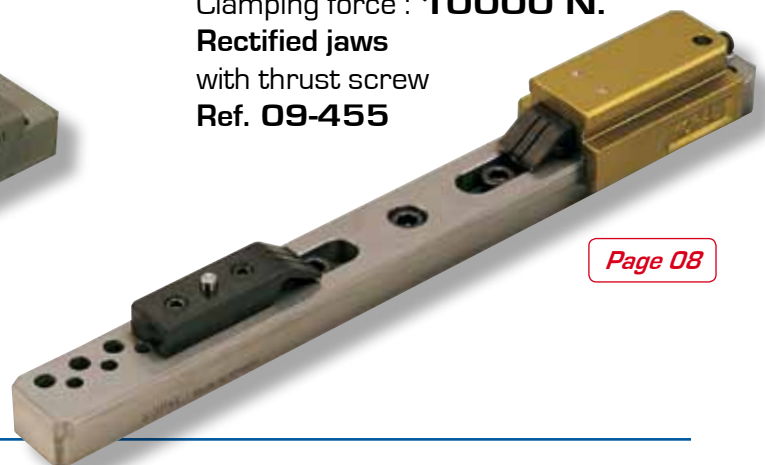
*Page 06*

Capacity : **280 mm**  
Clamping force : **12000 N.**  
**Rectified jaws**  
with clamping eccentric  
Ref. **09-010**

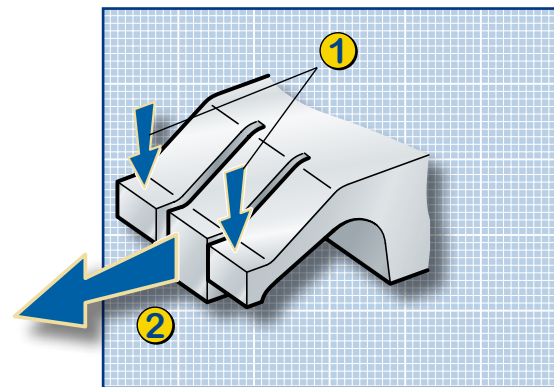


*Page 07*

Capacity : **232 mm**  
Clamping force : **10000 N.**  
**Rectified jaws**  
with thrust screw  
Ref. **09-455**



*Page 08*





# MODULAR VICE



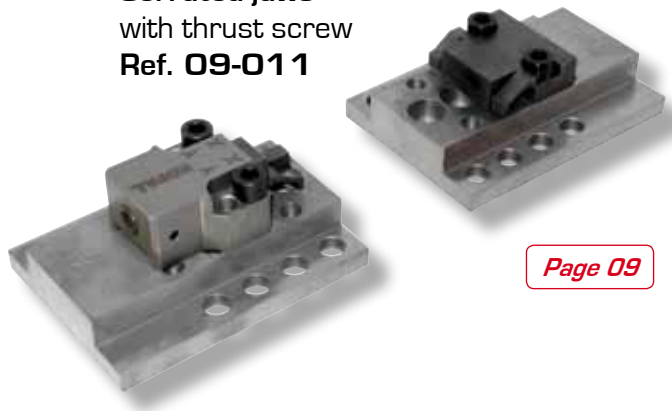
The clamping elements are fixed with rectified screws providing high accuracy of assembly and a perfect repositioning.



## KOPAL

- High capacity Vice
- Compact system
- High clamping force
- Simple, quick and precise installation

Capacity : adapts to workpiece  
Clamping force : **22000 N.**  
**Serrated jaws**  
with thrust screw  
Ref. **09-011**



Page 09

Capacity : adapts to workpiece  
Clamping force : **22000 N.**  
**Rectified jaws**  
with thrust screw  
Ref. **09-006**



Page 10

The clamping action ensures the **PUSHING DOWN** and **CLAMPING** of the workpiece to be machined..

- 1 **PUSHING DOWN :**  
the flexible parts clamp the workpiece, pressing it down until it makes contact with the rigid part.
- 2 **CLAMPING AND POSITIONING :**  
the rigid part clamps and positions the workpiece in place.

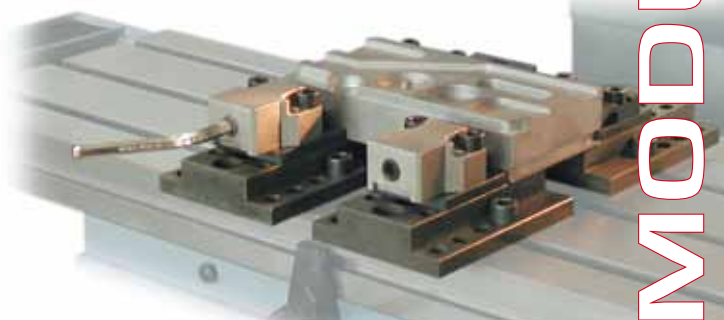
Capacity : adapts to workpiece  
Clamping force : **12000 N.**  
**Rectified jaws**  
with clamping eccentric  
Ref. **09-014**



Page 11

Modular Parts

Page 18



KOPAL 03

MODULAR VICE



# 22000 N.

## Standard Vice

Ref.

Capacity : one workpiece **280 mm max.** **09-005**

Including :

- ① 1 base plate : 09-015  
length 400 mm, height 28 mm
- ② 1 movable indexable jaw : 09-027  
clamping range 16 mm
- ③ 1 fixed indexable jaw : 09-081  
width 60 mm

*With M 12 clamping screws  
and clamping key.*



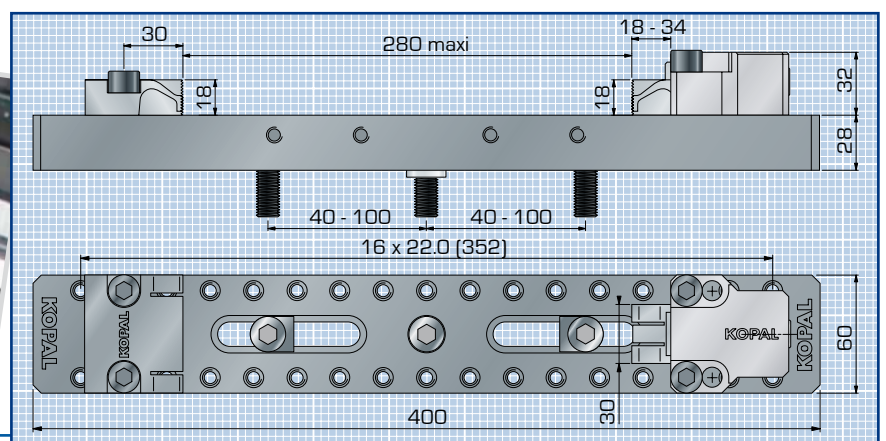
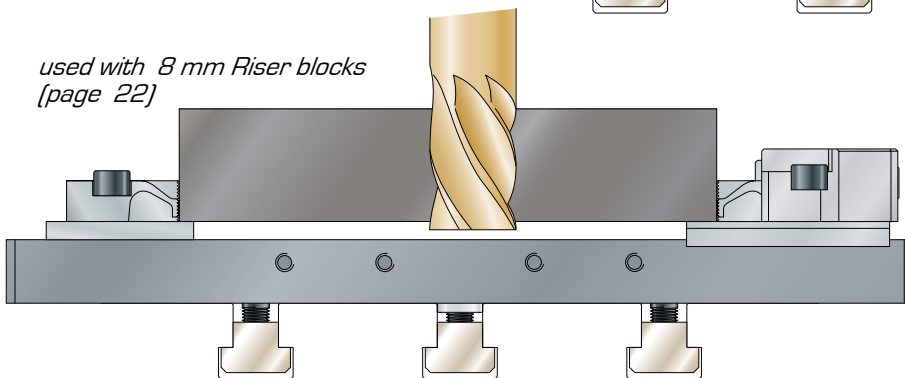
**Serrated  
jaws** 

**KOPAL**

Clamping force : **22000 N.**  
Clamping torque : 50 N.m  
Clamping range : **16 mm**  
Positioning : 22 mm



*used with 8 mm Riser blocks  
(page 22)*



**04 KOPAL**

**MODULAR VICE**



## Standard Vice

Ref.

09-004

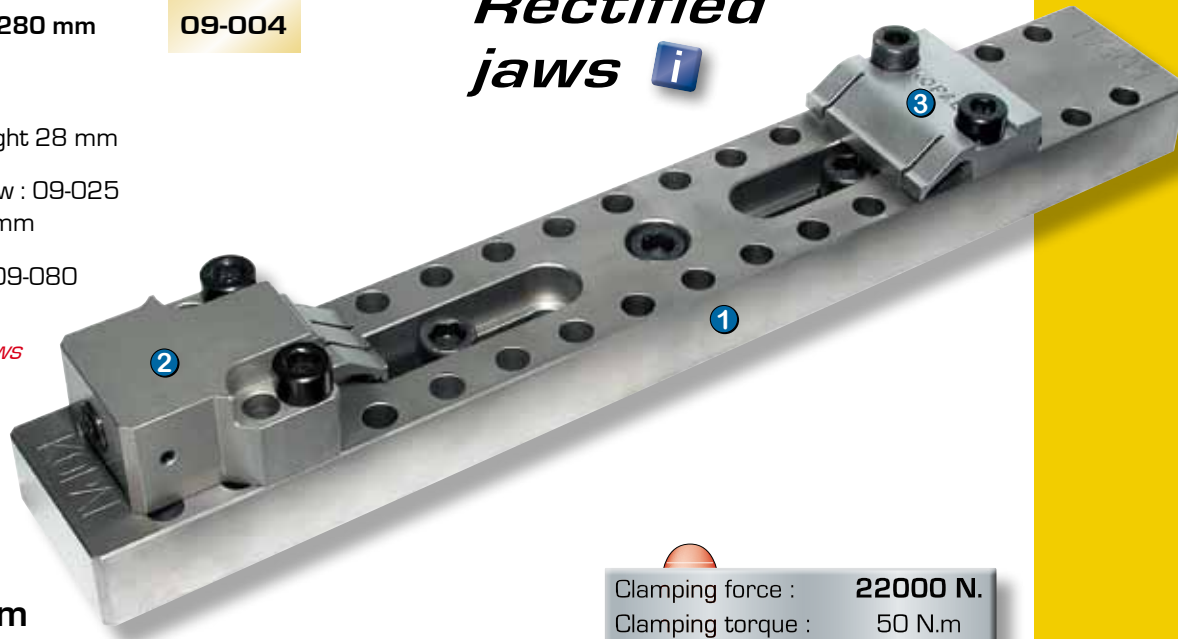
Capacity : one workpiece 280 mm

Including :

- ① 1 base plate : 09-015  
length 400 mm, height 28 mm
- ② 1 movable indexable jaw : 09-025  
clamping range 16 mm
- ③ 1 fixed indexable jaw : 09-080  
width 60 mm

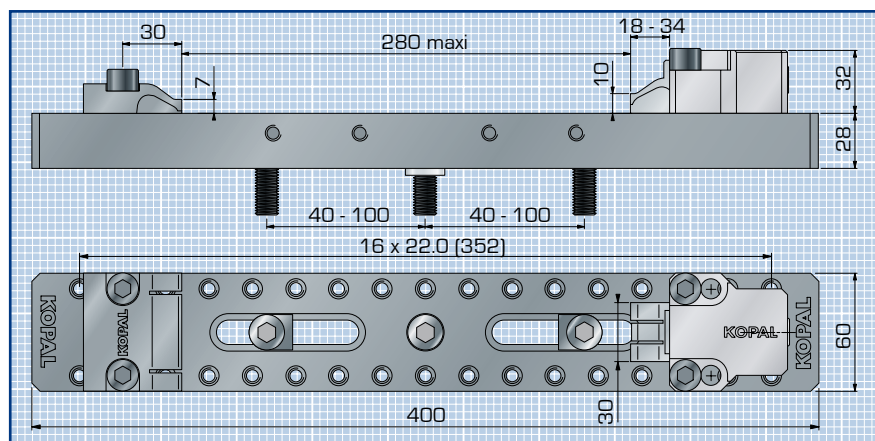
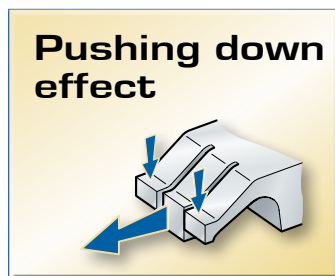
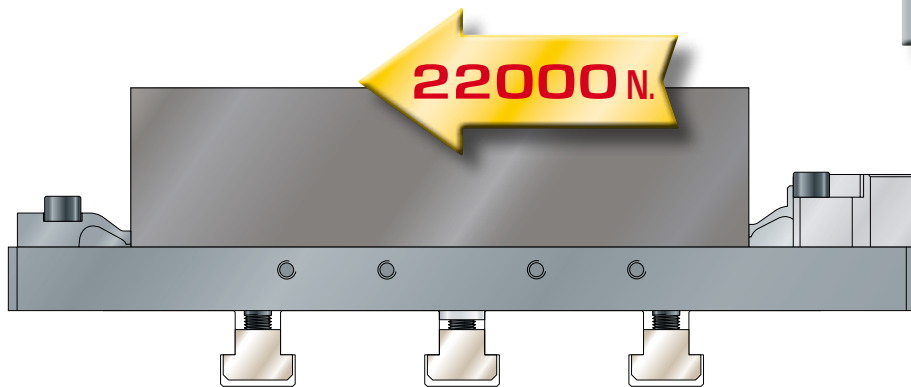
*with M 12 clamping screws  
and clamping key.*

## Rectified jaws

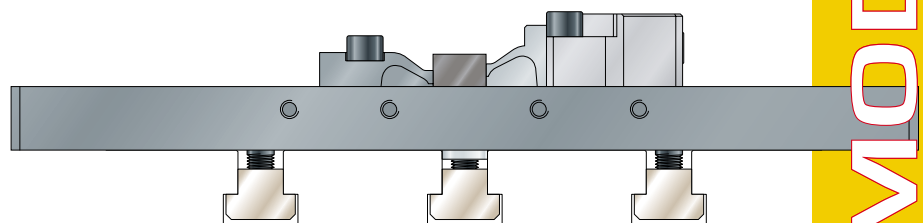


Capacity  
up to 280 mm

Clamping force :	<b>22000 N.</b>
Clamping torque :	50 N.m
Clamping range :	16 mm
Positioning :	22 mm



Modular parts  
page 18



**KOPAL 05**



# 22000 N.

## Double Vice

Ref.

Capacity : 2 workpieces **106 mm maxi** **09-002**

Including :

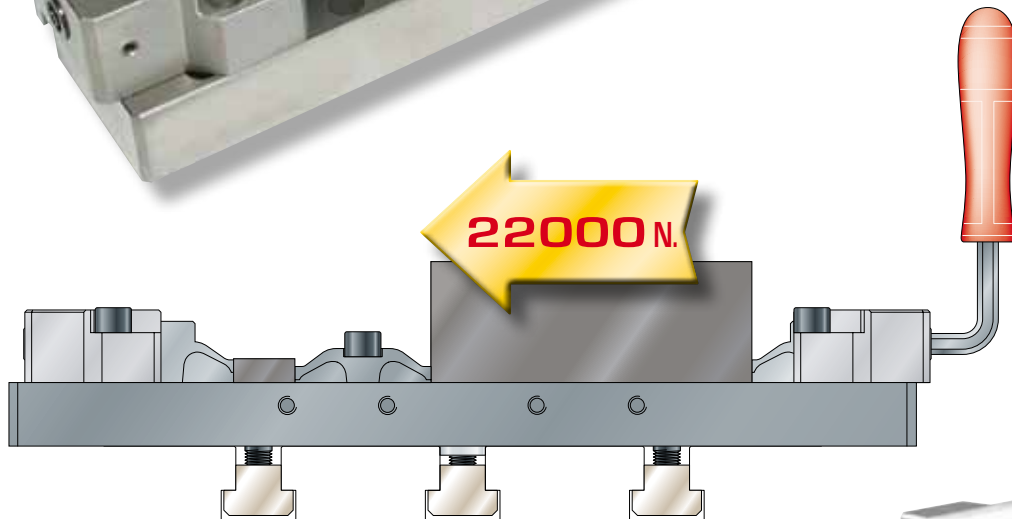
- ① 1 base plate : 09-015  
length 400 mm, height 28 mm
- ② 2 movable indexable jaw : 09-025  
clamping range 16 mm
- ③ 1 fixed indexable jaw : 09-082  
width 60 mm

*with M 12 clamping screws  
and clamping key.*

**Double  
your production**

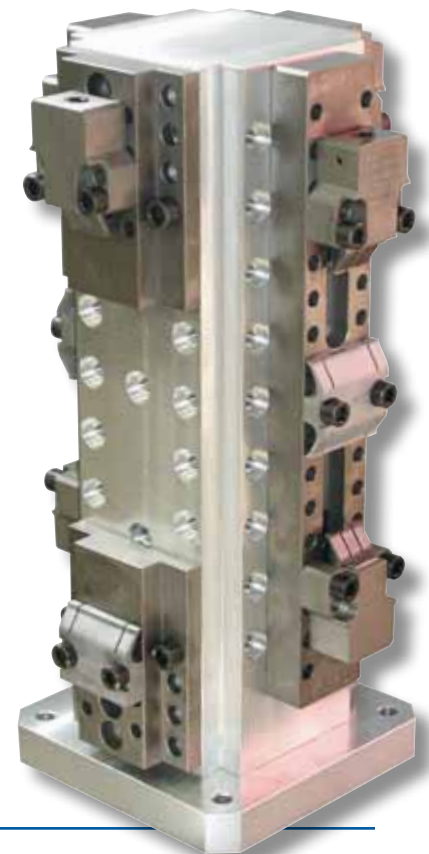
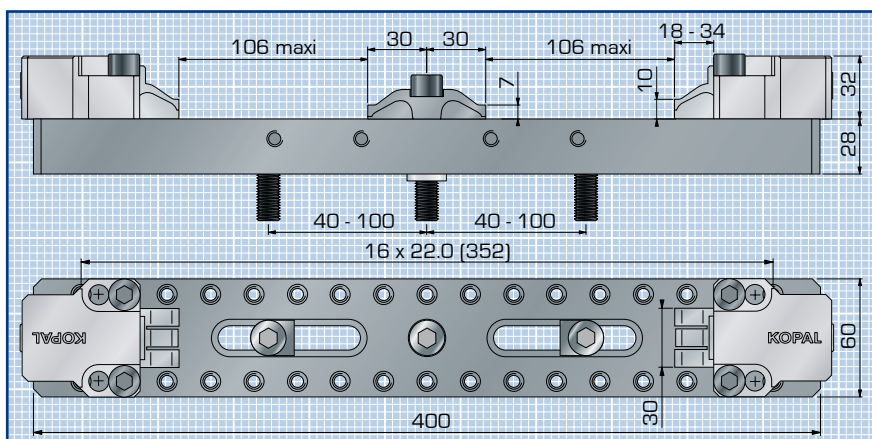


**Rectified  
jaws** 



# KOPAL

Clamping force :	<b>22000 N.</b>
Clamping torque :	50 N.m
Clamping range :	16 mm
Positioning :	22 mm



**06 KOPAL**

**MODULAR VICE**

## Vice with fast clamping

Ref.

**09-010**

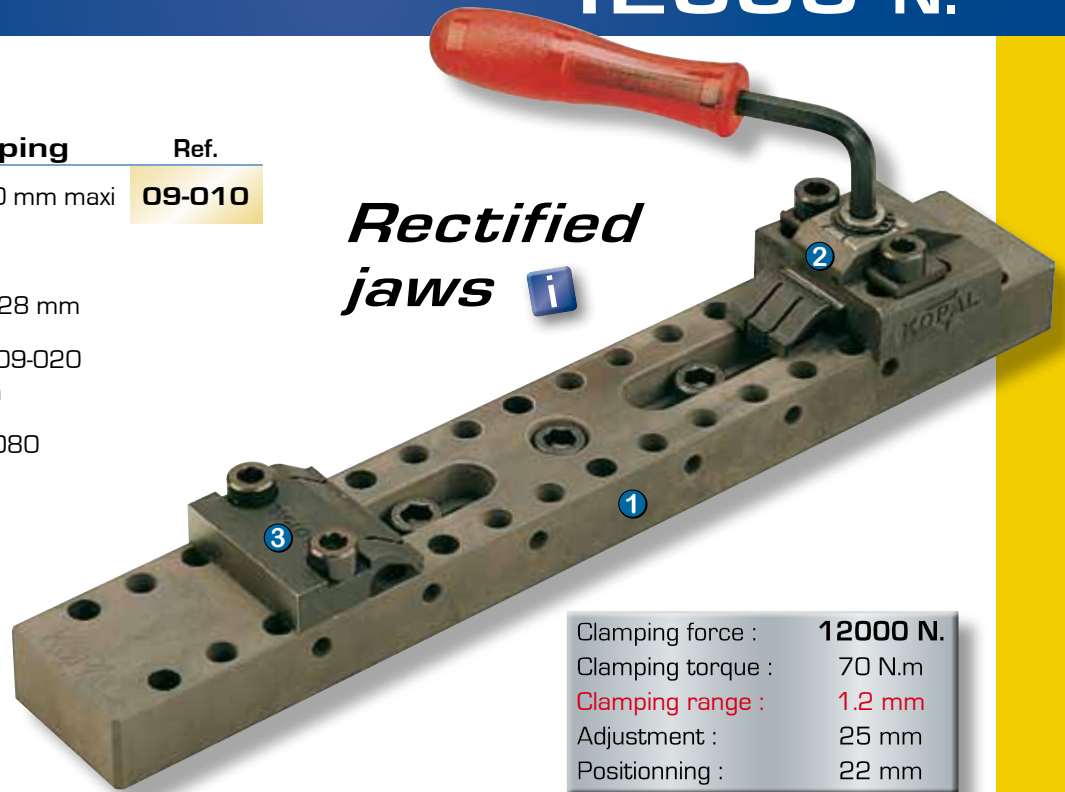
Capacity : one workpiece 280 mm maxi

Including :

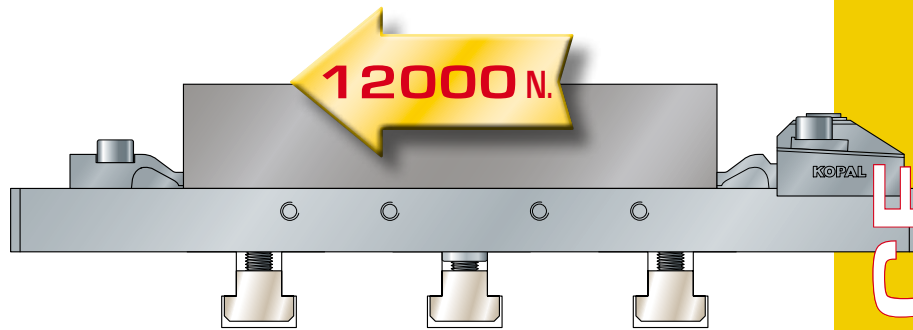
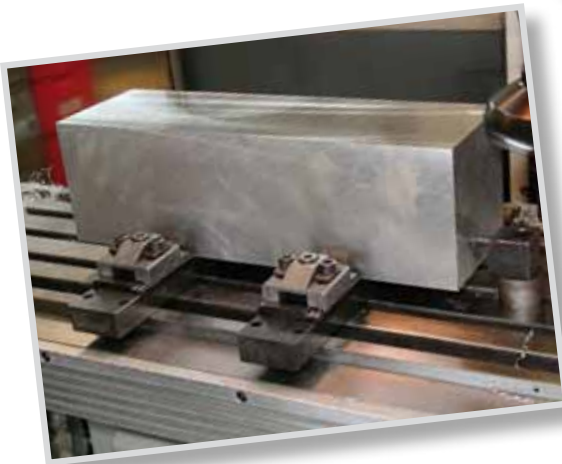
- ① 1 base plate : 09-015  
length 400 mm, height 28 mm
- ② 1 movable indexable jaw : 09-020  
clamping range 1.2 mm
- ③ 1 fixed indexable jaw : 09-080  
width 60 mm

*With M 12 clamping screws  
and clamping key.*

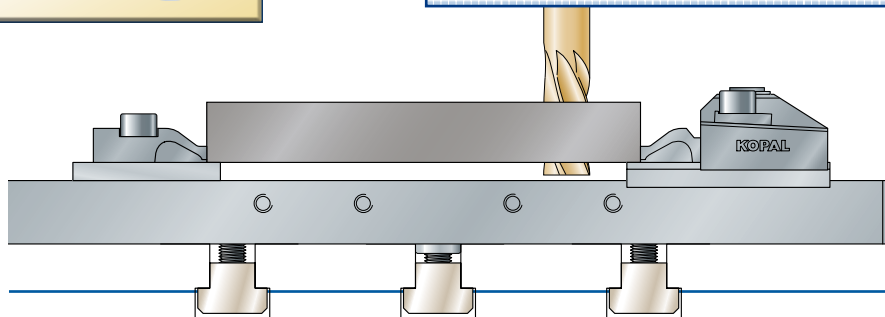
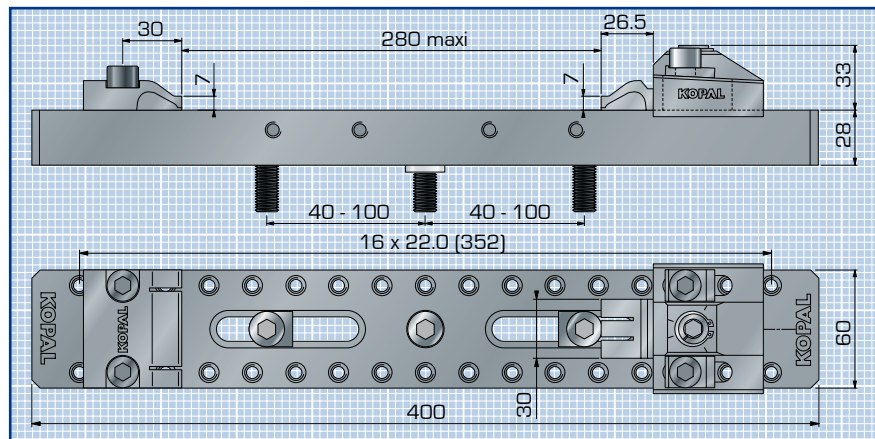
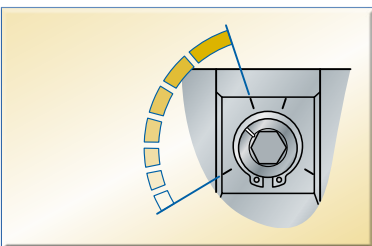
## Rectified jaws



Clamping force :	<b>12000 N.</b>
Clamping torque :	70 N.m
Clamping range :	<b>1.2 mm</b>
Adjustment :	25 mm
Positioning :	22 mm



**Fast clamping  
1/4 turn**



*used with 8 mm  
Riser blocks  
(page 22)*



# 10000 N.

## Standard Vice

Ref.

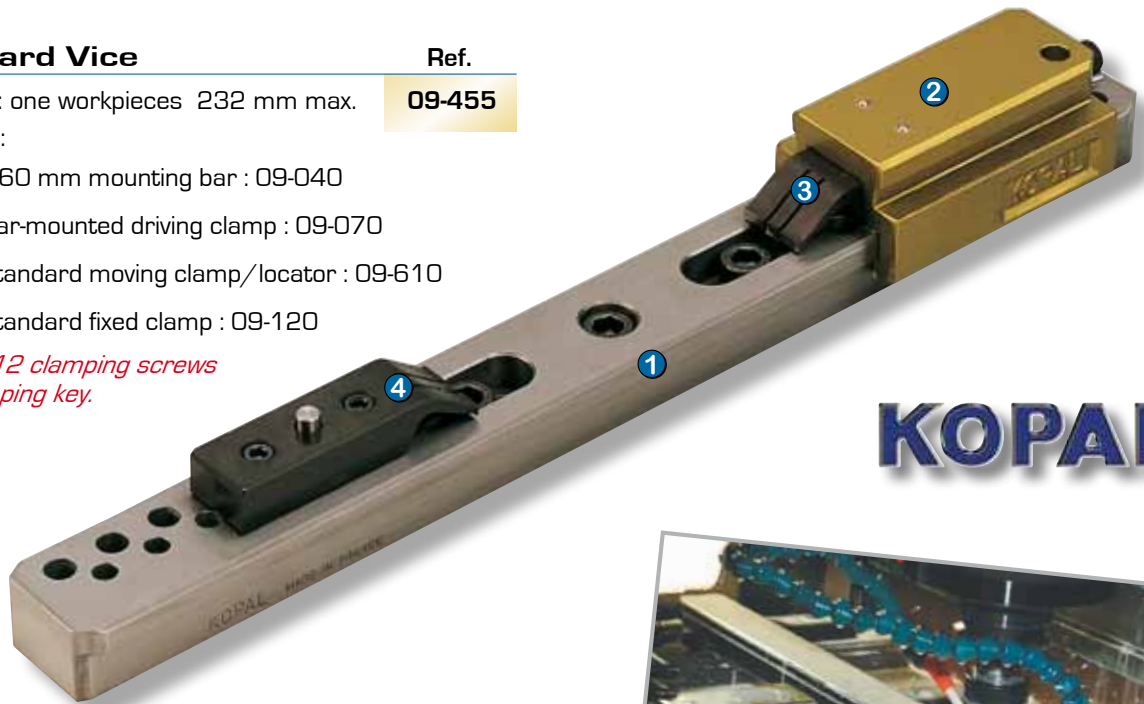
Capacity : one workpieces 232 mm max.

**09-455**

Including :

- ① 1 460 mm mounting bar : 09-040
- ② 1 bar-mounted driving clamp : 09-070
- ③ 1 standard moving clamp/locator : 09-610
- ④ 1 standard fixed clamp : 09-120

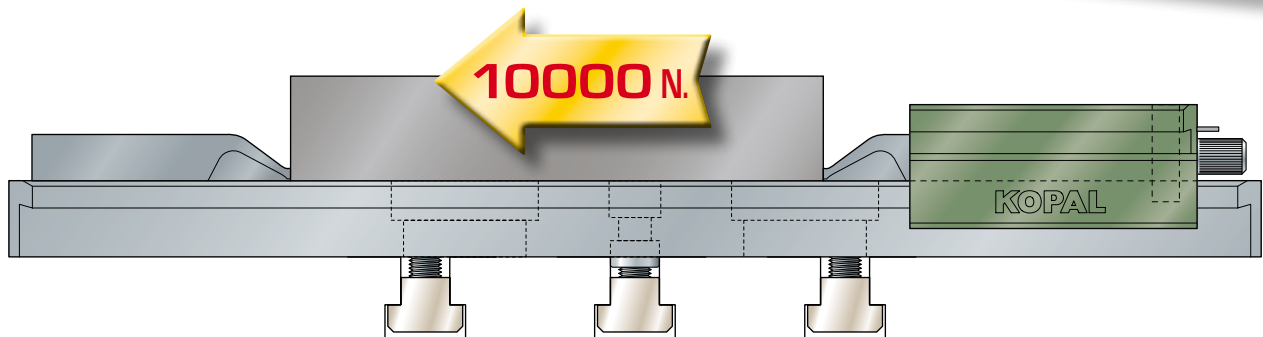
*With M 12 clamping screws  
and clamping key.*



# KOPAL

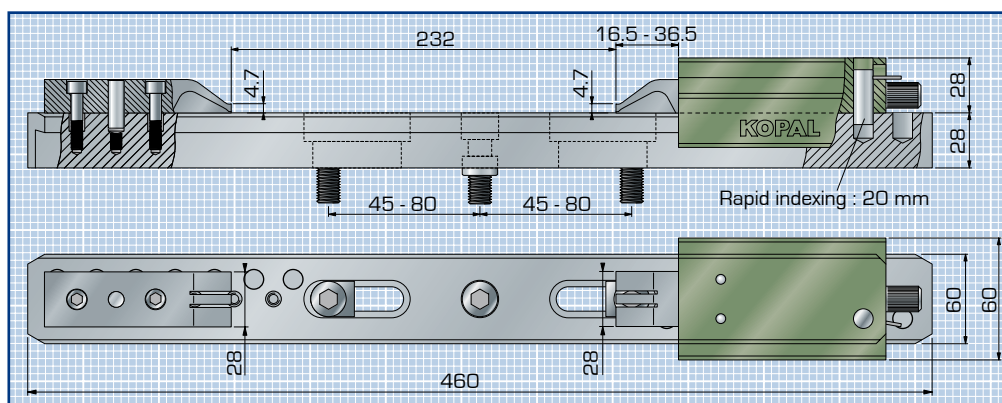
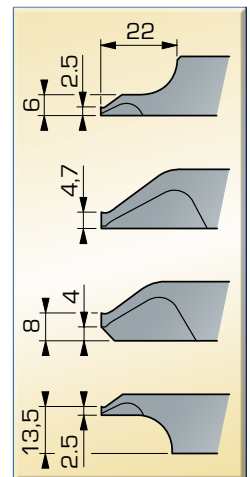


- Complete surfacing
- Through-hole machining



Clamping force : **10000 N.**  
Clamping torque : 12 N.m  
Clamping range : **20 mm**

**Clamping heights**



## 08 KOPAL

MODULAR VICE

**Divided Vice**

Ref.

**Capacity : adapts to workpiece**

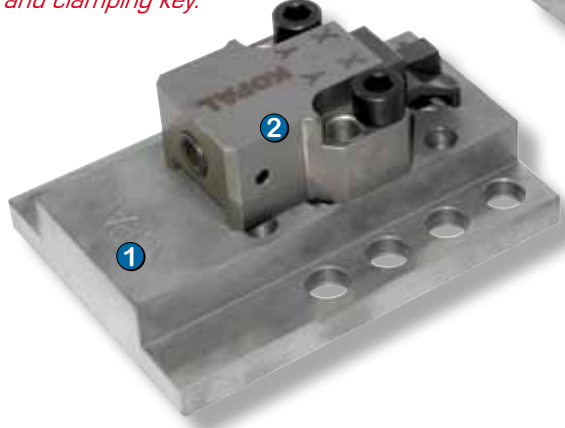
**09-011**

Including :

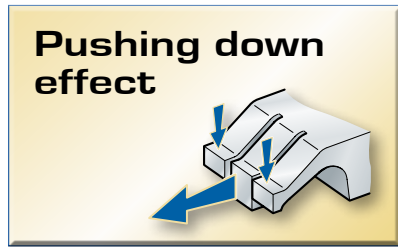
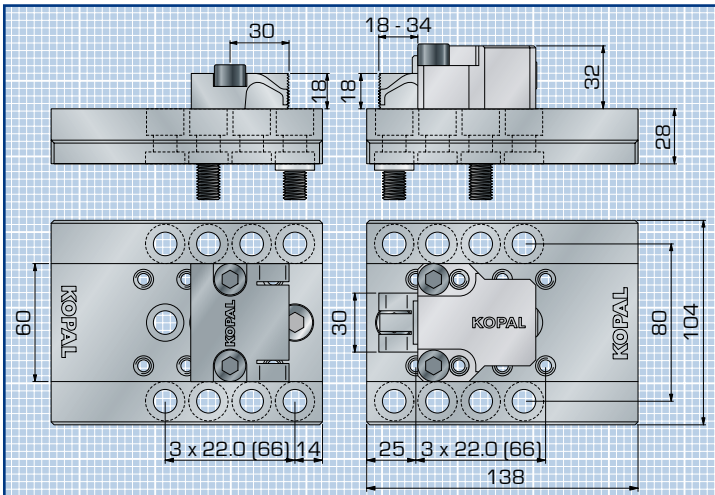
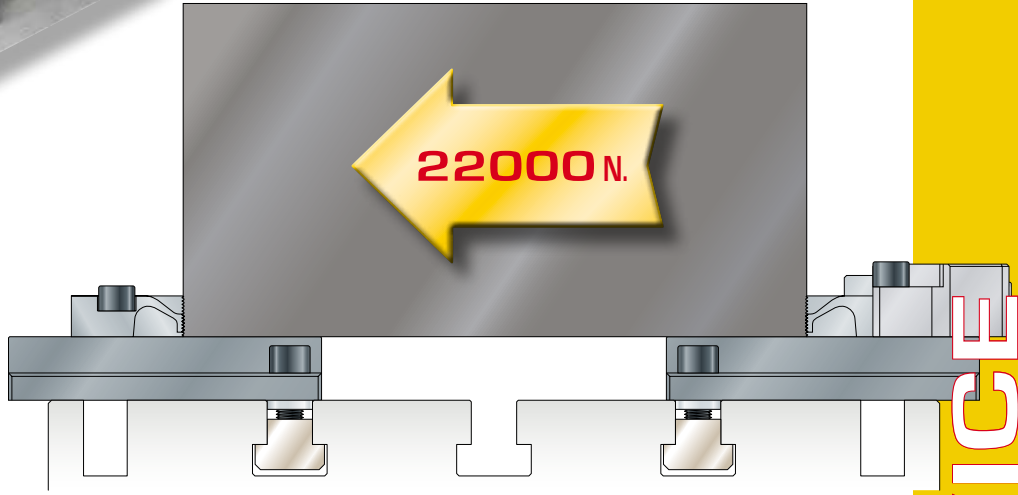
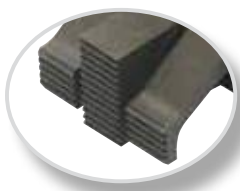
- ① 2 multiple supports : 09-016  
height 28 mm
- ② 1 movable indexable jaw : 09-027  
clamping range 16 mm
- ③ 1 fixed indexable jaw : 09-081  
width 60 mm

*With M 12 clamping screws  
and clamping key.*

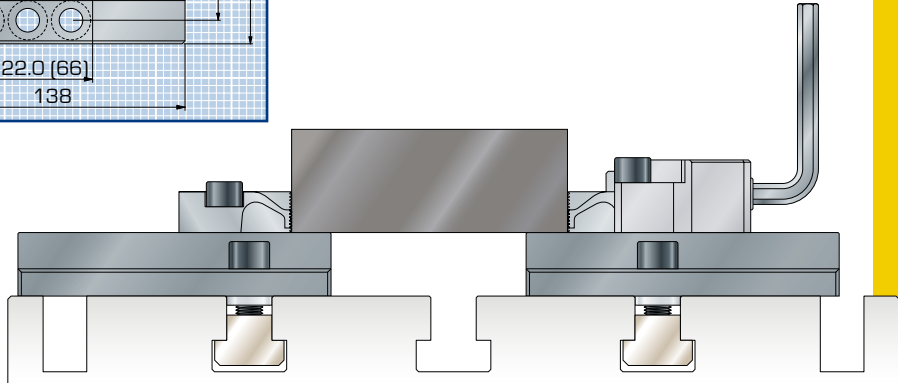
Clamping force :	<b>22000 N.</b>
Clamping torque :	50 N.m
Clamping range :	<b>16 mm</b>
Positioning :	22 mm



**Serrated jaws**



**For large workpieces**





# 22000 N.

## Divided Vice

Capacity : adapts to workpiece

Including :

- ① 2 multiple supports : 09-016  
height 28 mm
- ② 1 movable indexable jaw : 09-025  
clamping range 16 mm
- ③ 1 fixed indexable jaw : 09-080  
width 60 mm

*With M 12 clamping screws  
and clamping key.*

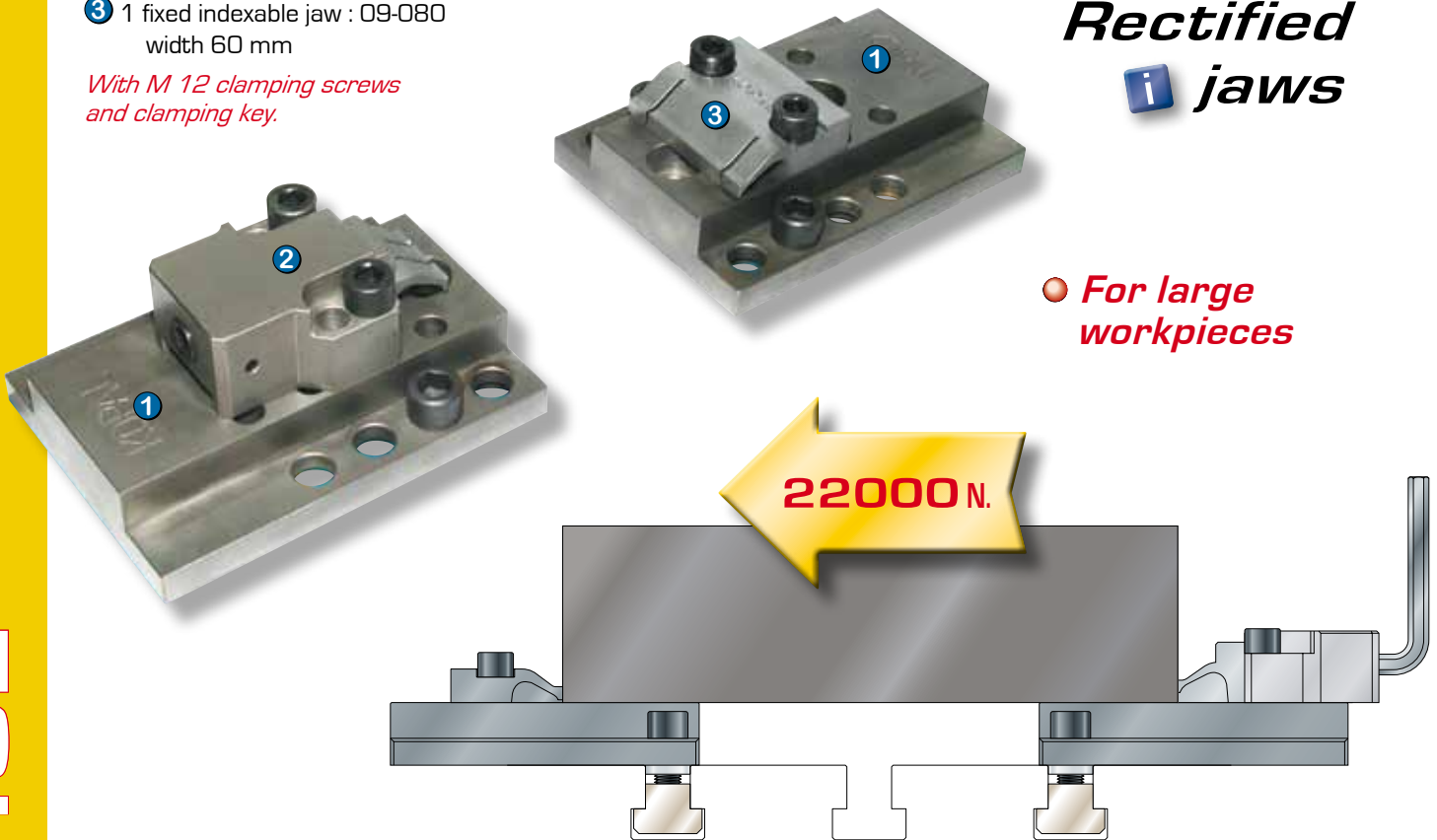
Ref.

**09-006**

Clamping force :	<b>22000 N.</b>
Clamping torque :	50 N.m
Clamping range :	<b>16 mm</b>
Positioning :	22 mm

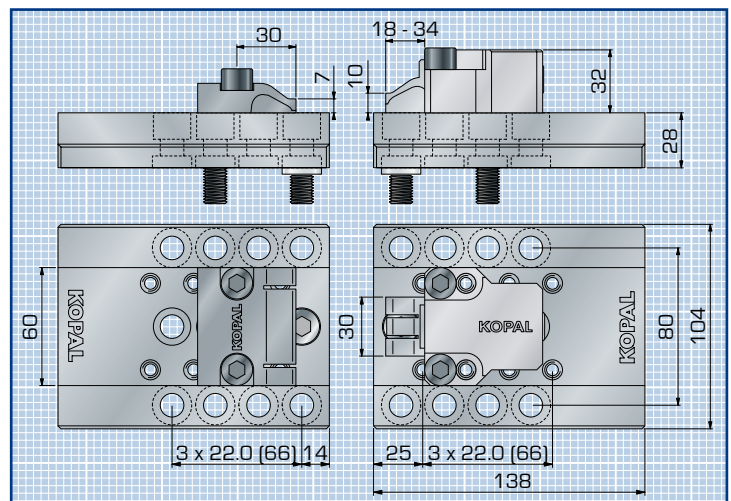
**Rectified  
i jaws**

**For large  
workpieces**



# KOPAL

Modular parts  
page 18



**MODULAR VICE**

**10 KOPAL**

## Divided Vice with fast clamping

Ref.

**09-014**

Capacity : adapts to workpiece

Including :

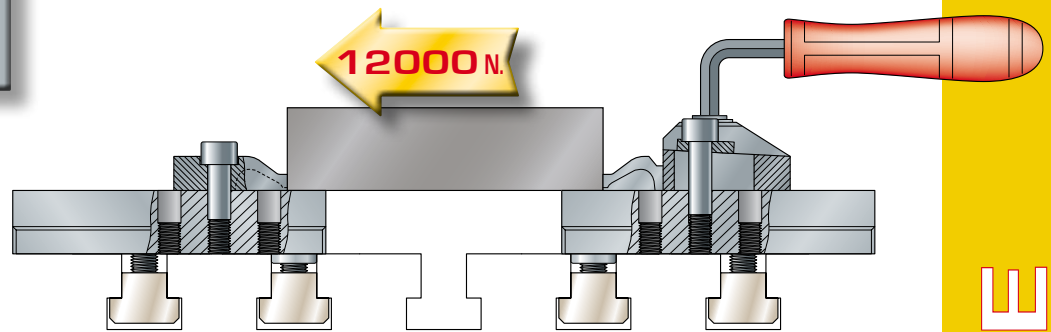
- ① 2 multiple supports : 09-016 height 28 mm
- ② 1 movable indexable jaw : 09-020 clamping range 1.2 mm
- ③ 1 fixed indexable jaw : 09-080 width 60 mm

*With M 12 clamping screws and clamping key.*

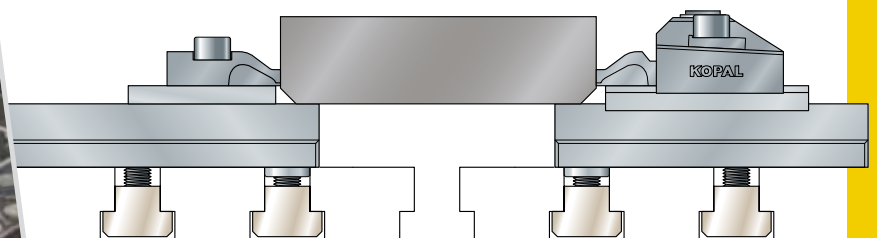
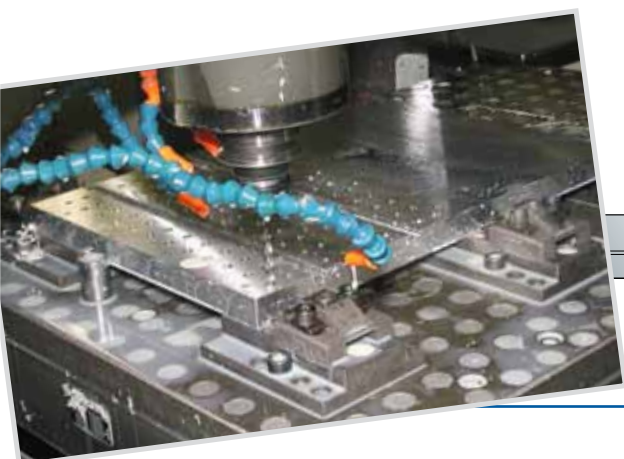
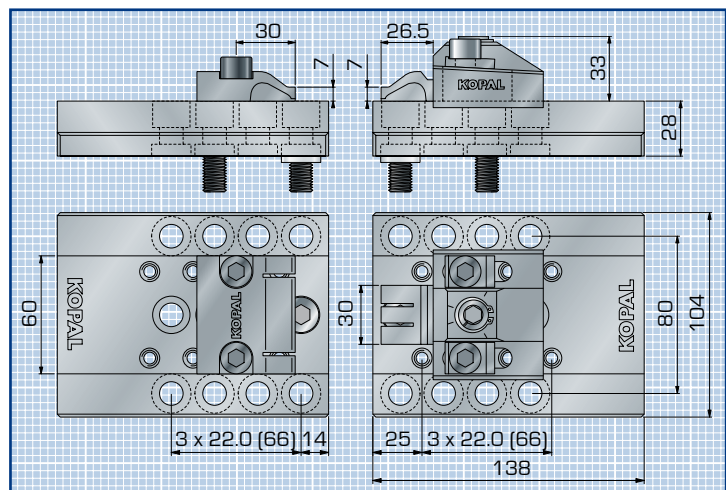
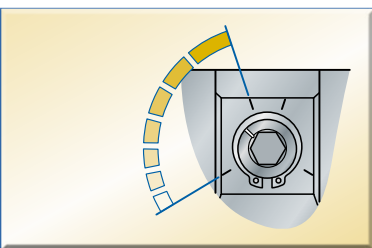


**Rectified jaws**

Clamping force :	<b>12000 N.</b>
Clamping torque :	70 N.m
Clamping range :	<b>1.2 mm</b>
Adjustment :	25 mm
Positioning :	22 mm

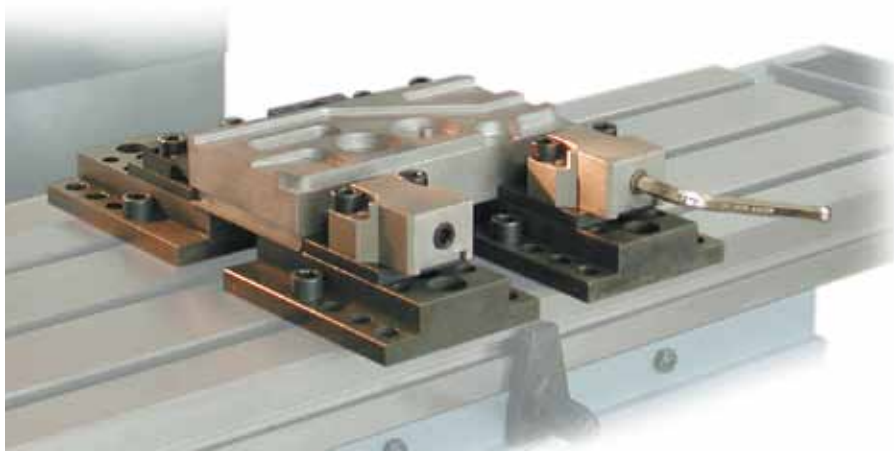


**Fast clamping 1/4 turn**





# Fixing - Locators



# KOPAL®

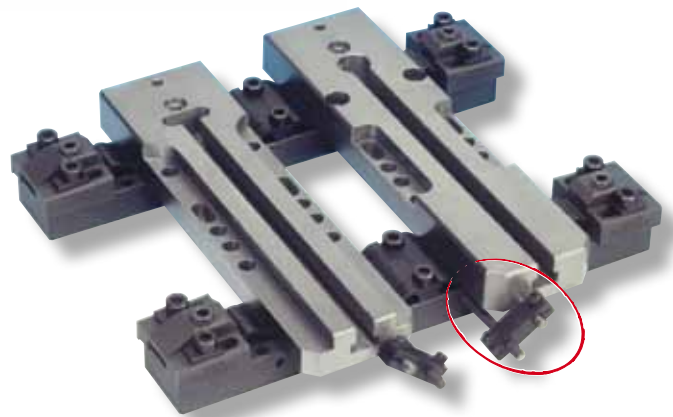


## Lateral stop

Ref.

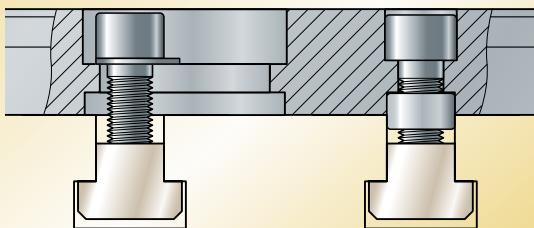
The lateral stop is positioned in 6 x M 8 points on the side of the mounting bar. It is adjustable in height and length. 8 mm fulcrum rod.

09-086



**Rigid  
Compact**

These locators enable quick and precise alignment of mounting bars and supports.



## Locators

### 12000 N. and 22000 N.

For slot size or diameter

Ref.

16 mm	09-886
18 mm	09-888
20 mm	09-890
22 mm	09-892
24 mm	09-894
26 mm	09-896
28 mm	09-898



## Locators 10000 N.

For slot size or diameter

Ref.

12 mm	09-220
14 mm	09-225
16 mm	09-230
18 mm	09-215
20 mm	09-235
22 mm	09-240



## T-nuts for T-slots M 12

Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
14 mm	16 mm	18 mm	20 mm	22 mm	24 mm	28 mm
90-150	90-155	90-160	90-165	90-170	90-175	90-180



# Horizontal clamping System KOPAL®



## KOPAL®



Presentation	14 - 15
<b>22000 N. - 12000 N.</b>	
Clamping equipments	16 - 17
Modular parts	18 - 24
Fixing - Locators	23
<b>10000 N.</b>	
Clamping equipments	26 - 27
Modular parts	28 - 33
Fixing - Locators	27
<b>6500 N.</b>	
Clamping equipments	34
Modular parts	34 - 35
<b>4000 N. Mini-clamp</b>	
Modular parts	36 - 37
Clamp-slot for table T-slot	38

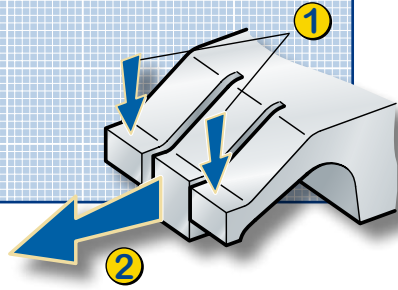


# Principle

## Clamping system with horizontal pressure System "with KOPAL moving clamps ©"

The clamping action ensures the **PUSHING DOWN** and **CLAMPING** of the workpiece to be machined..

- ① **PUSHING DOWN** : the flexible parts clamp the workpiece, pressing it down until it makes contact with the rigid part.
- ② **CLAMPING AND POSITIONING** : the rigid part clamps and positions the workpiece in place.



KOPAL horizontal clamping system; the precision and simplicity of a vice, the size of a clamp, and the holding down effect is a bonus!

# KOPAL®

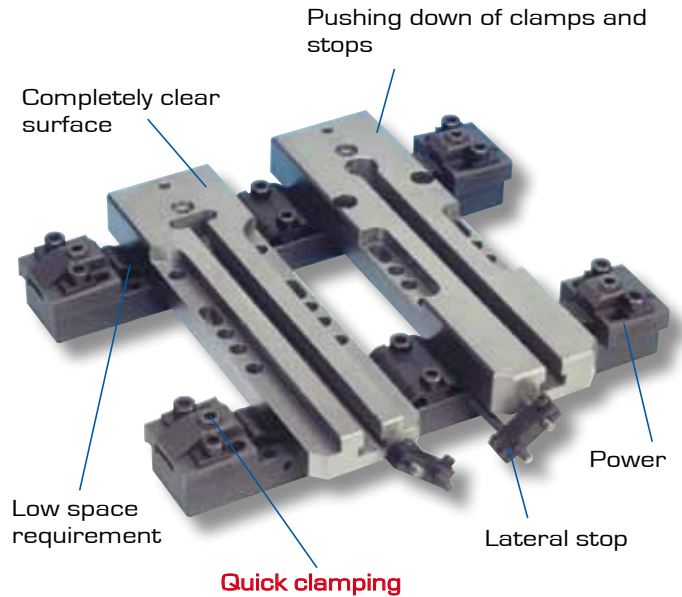
Horizontal clamping systems can be adapted to all types of T-slot or modular tables, and provide a clamping force of up to 22000 N.

The system leaves the top surface of the workpiece completely clear, thus allowing machining over the entire surface of the workpiece and ensuring there is no risk of interference with tool movement.

The use of this horizontal system with supports simplifies set-up and reduces adjustment time.

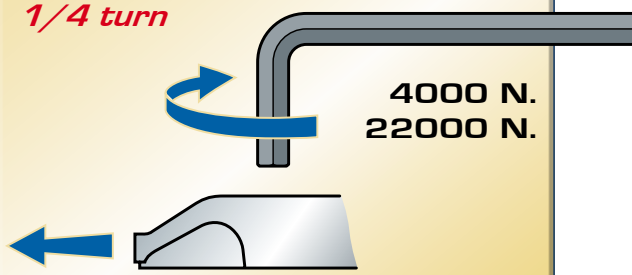


The clamps ensure that mounting is stable, robust and fast, and reduces workpiece changeover time.



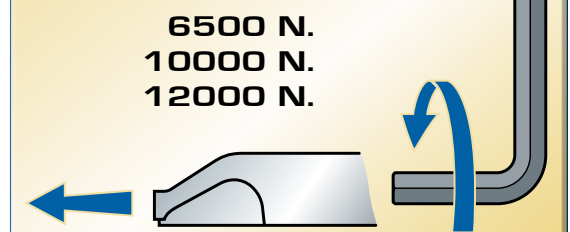
### Quick clamping with Eccentric

*1/4 turn*



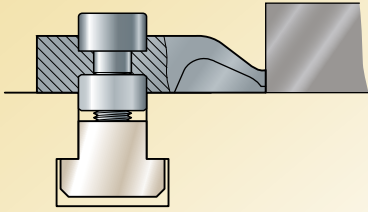
### Clamping via thrust screw

*long stroke*

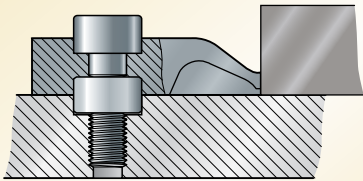


# Presentation

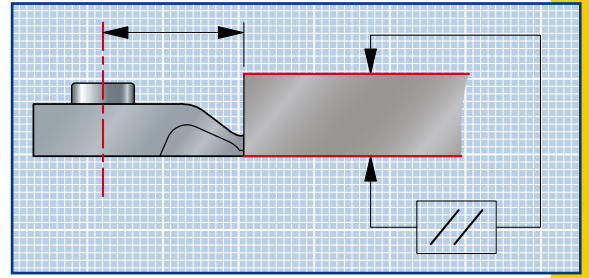
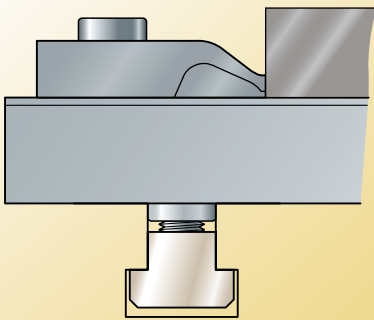
**T-slot table**



**Special machining set-up**



**Modular Support for T-slot table for Modular plate**



**22000 N.**  
Machining set-ups  
Support

*page 16*



**12000 N.**  
Machining set-ups  
Support

*page 16*



**10000 N.**  
T-slot table  
Machining set-ups  
Support

*page 26*



**6500 N.**  
Machining set-ups

*page 34*

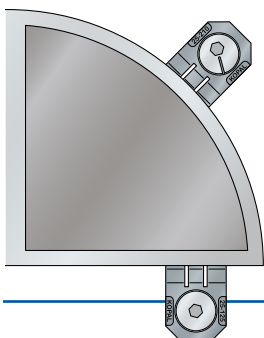


**4000 N.**  
T-slot table  
Machining set-ups

*page 36*



Some references in the 4000 Newton Horizontal Clamping System range are available on request with grounded radii for clamping workpieces with convex radii.





# 22000 and 12000 Newton

## Clamping equipment 22000 N. with rectified jaws for machining set-up

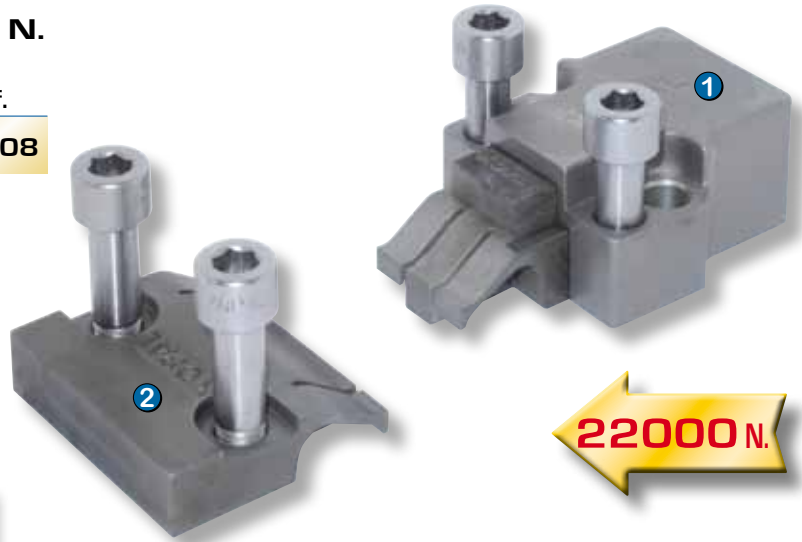
Ref.  
**09-008**

including :

- ① 1 Clamping element : 09-025  
clamping height 10 mm
- ② 1 Fixed clamps : 09-080  
width 60 mm

*With fixing screws and Clamping key*

Clamping force :	<b>22000 N.</b>
Clamping torque :	50 N.m
Clamping range :	16 mm



**22000 N.**

Hardened steel body and moving spring-steel clamp which pushes down and clamps the workpiece

# KOPAL

## Clamping equipment 22000 N. with serrated jaws for machining set-up

Ref.  
**09-003**

including :

- ① 1 Clamping element : 09-027  
clamping height 16 mm
- ② 1 Fixed clamps : 09-081  
width 60 mm

*With fixing screws and Clamping key*



**12000 N.**

## Clamping equipment 12000 N. with rectified jaws for machining set-up

Ref.  
**09-012**

including :

- ① 1 Clamping element : 09-021  
clamping height 7 mm
- ② 1 Fixed clamps : 09-080  
width 60 mm

*With fixing screws and Clamping key*



**Fast clamping  
1/4 turn**

Clamping force :	<b>12000 N.</b>
Clamping torque :	70 N.m
Clamping range :	1.2 mm
Adjustment :	25 mm

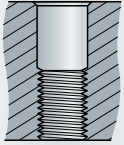
Eccentric with 8 mm hexagonal socket  
clamping with left or right turn or left

# 22000 and 12000 Newton

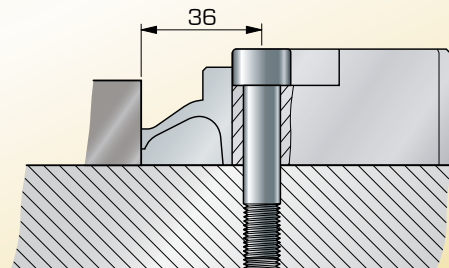
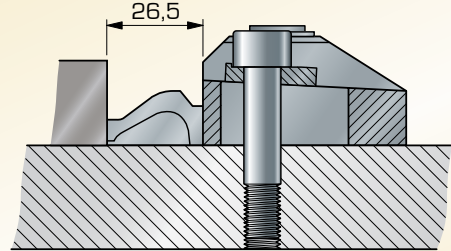
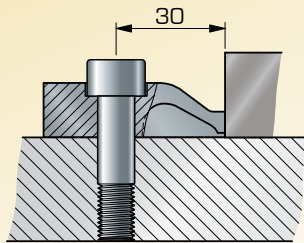
## MOUNTING

Drill 2 holes :  
Centre distance  
**44.00 ± 0.005**

M 10 depth 28 mm  
Ø 10,2 H 6  
depth 14 mm

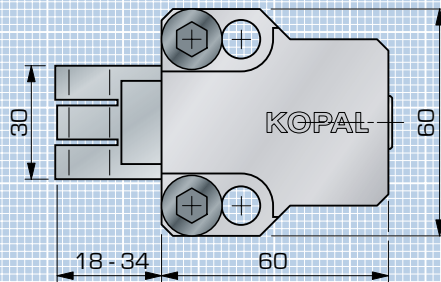
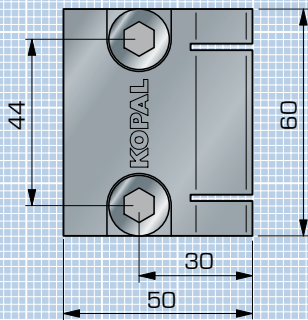


● Machining assembly is carried out according to workpiece dimensions

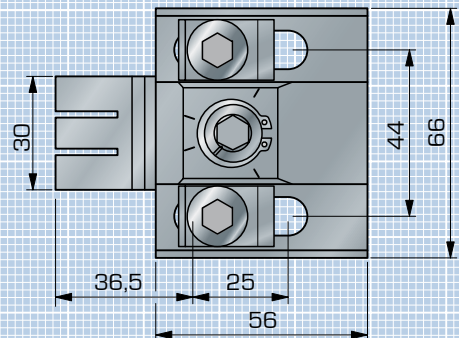
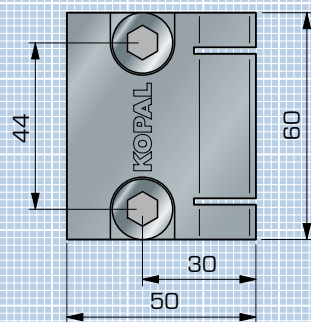


Mount the elements with 2 rectified screws  
Ø 10.2 - M 10.  
The diameter of 10.2 mm allows precise  
positioning of stops

22000 N. - 09-008 - 09-003



12000 N. - 09-012



HORIZONTAL CLAMPING



# 22000 and 12000 Newton

## Clamping element

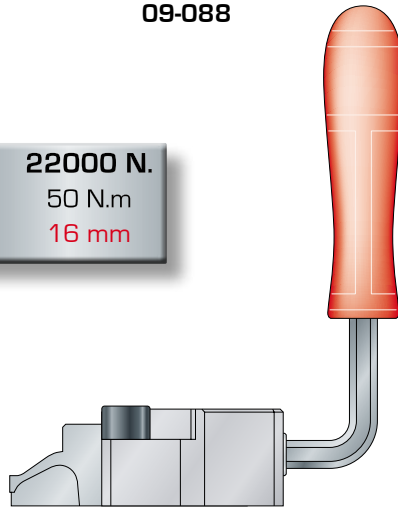
Hardened steel body with clamping eccentric and moving spring-steel clamp which pushes down and clamps the workpiece.

*With fixing screws and Clamping key*

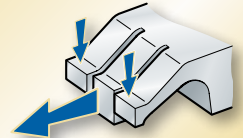
Clamping element 22000 N.	Ref.
<b>Rectified jaws</b> clamping height 10 mm	09-020
<b>Serrated jaws</b> clamping height 18 mm	09-027
Clamping key (8 SW)	09-088



Clamping force : **22000 N.**  
Clamping torque : 50 N.m  
Clamping range : 16 mm



**Pushing down effect**



Mount the elements with 2 rectified screws  $\varnothing 10.2 - M 10$ .  
The diameter of 10.2 mm allows precise positioning of stops



## Clamping element with fast clamping

Hardened steel body with clamping eccentric and moving spring-steel clamp which pushes down and clamps the workpiece.

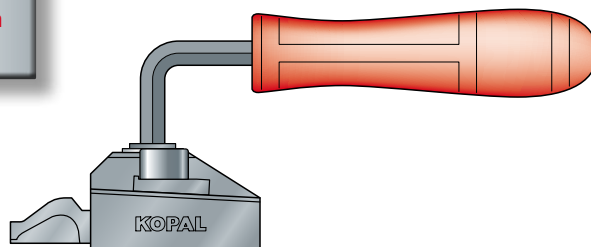
*With fixing screws, washers and Clamping key*

Clamping element 12000 N.	Ref.
<b>Rectified jaws</b> clamping height 7 mm	09-021
Clamping key (8 SW)	09-088

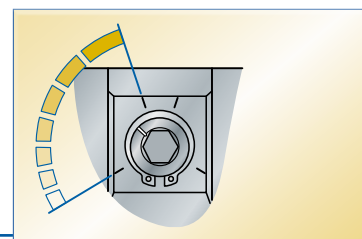


**KOPAL**

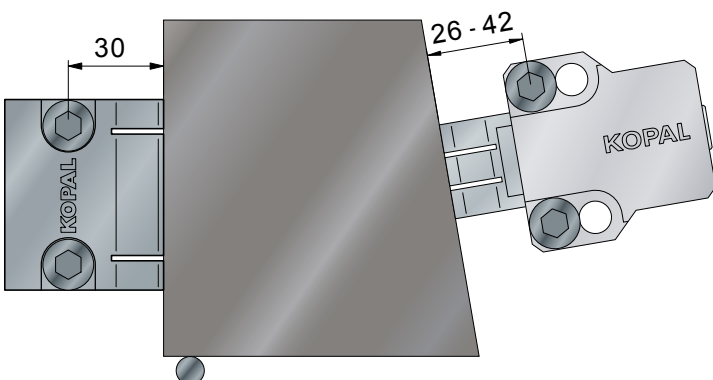
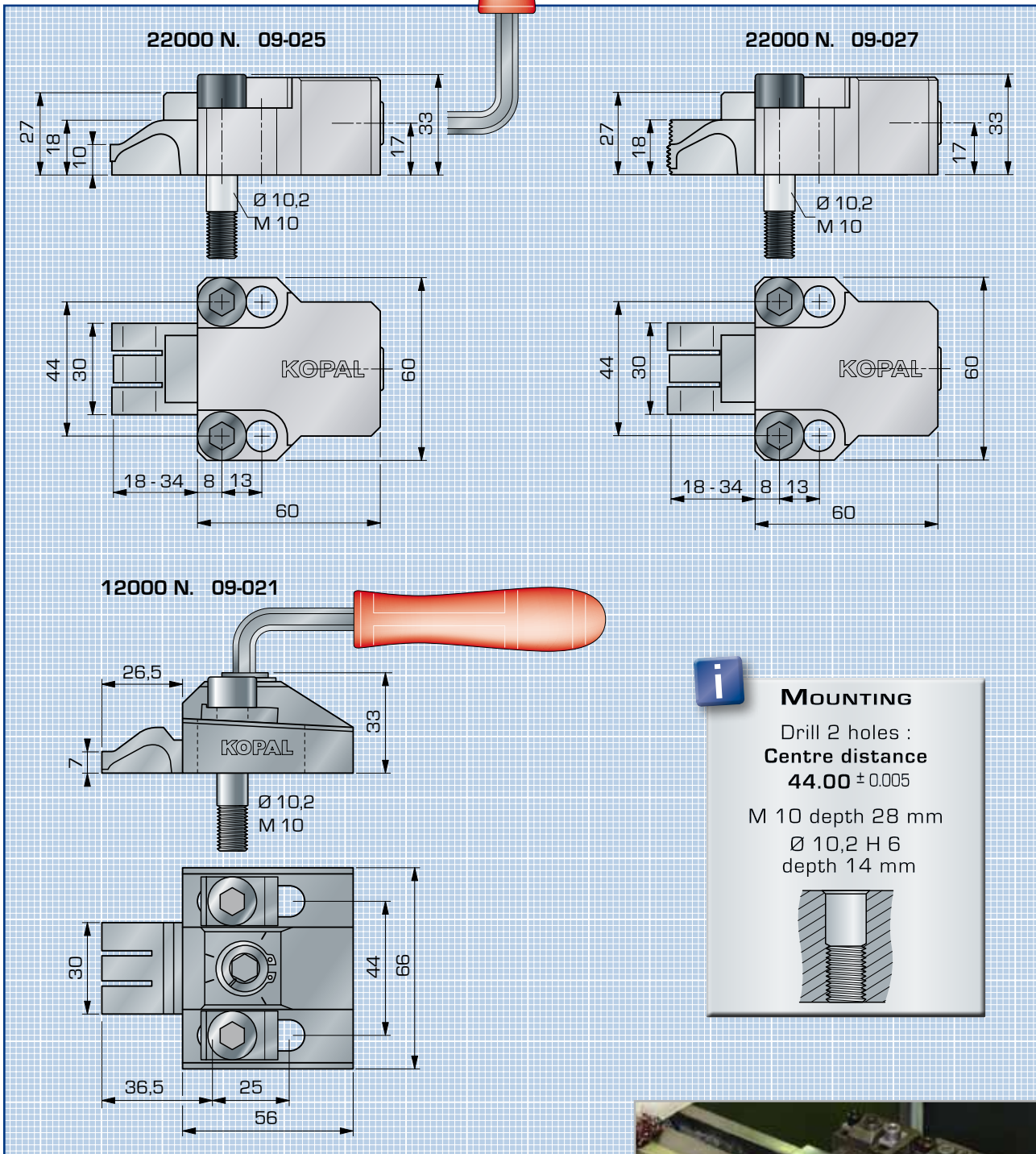
Clamping force : **12000 N.**  
Clamping torque : 70 N.m  
Clamping range : 1.2 mm  
Adjustment : 25 mm



**Fast clamping  
1/4 turn**



# 22000 and 12000 Newton



HORIZONTAL CLAMPING



# 22000 and 12000 Newton

## Fixed Rectified jaws (Stops)

Spring-steel clamp / locator

*With fixing screws*

**Stop with pushing down effect**      Ref.

clamping height 7 mm

**Standard clamp / locator**      09-080

**Double fixed clamp / locator**      09-082

For clamping 2 facing workpieces



## Fixed Serrated jaw (Stop)

Spring-steel clamp / locator

*With fixing screws*

**Stop with pushing down effect**      Ref.

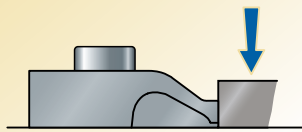
clamping height 18 mm

**Fixed clamp / locator**      09-081

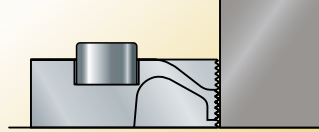
For raw piece



09-080 - 09-082  
height 7 mm



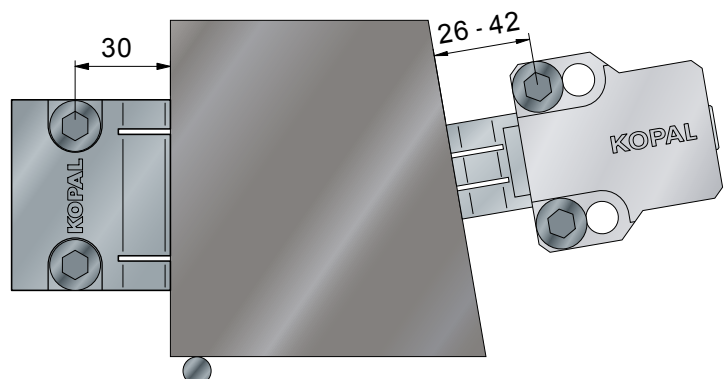
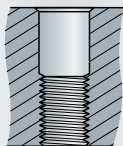
09-081  
height 18 mm



### MOUNTING

Drill 2 holes :  
Centre distance  
44.00 ± 0.005

M 10 depth 28 mm  
Ø 10,2 H 6  
depth 14 mm



# 22000 and 12000 Newton

## Rectified centring screws

Ref.

Ø 10,2 - M 10 screws for mounting clamping elements and stops.

**39 mm screw**

**09-874**

For mounting single fixed clamps

**47 mm screw**

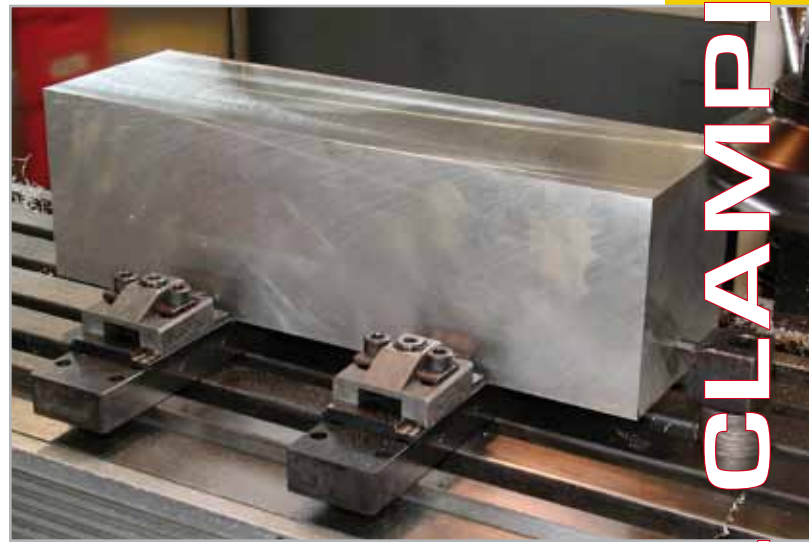
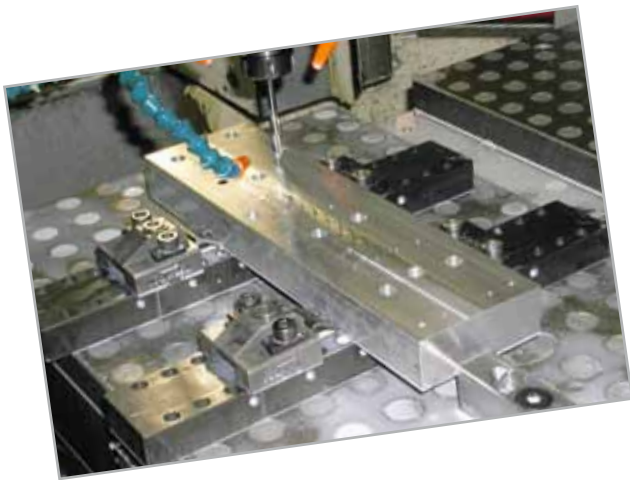
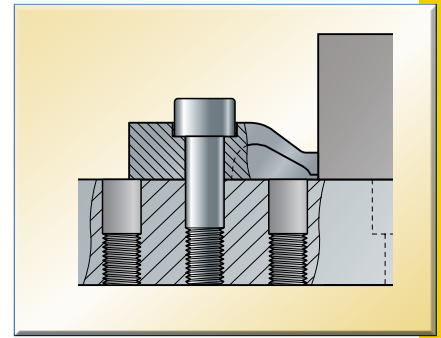
**09-876**

For mounting clamping elements and fixed clamps with riser blocks.

**55 mm screw**

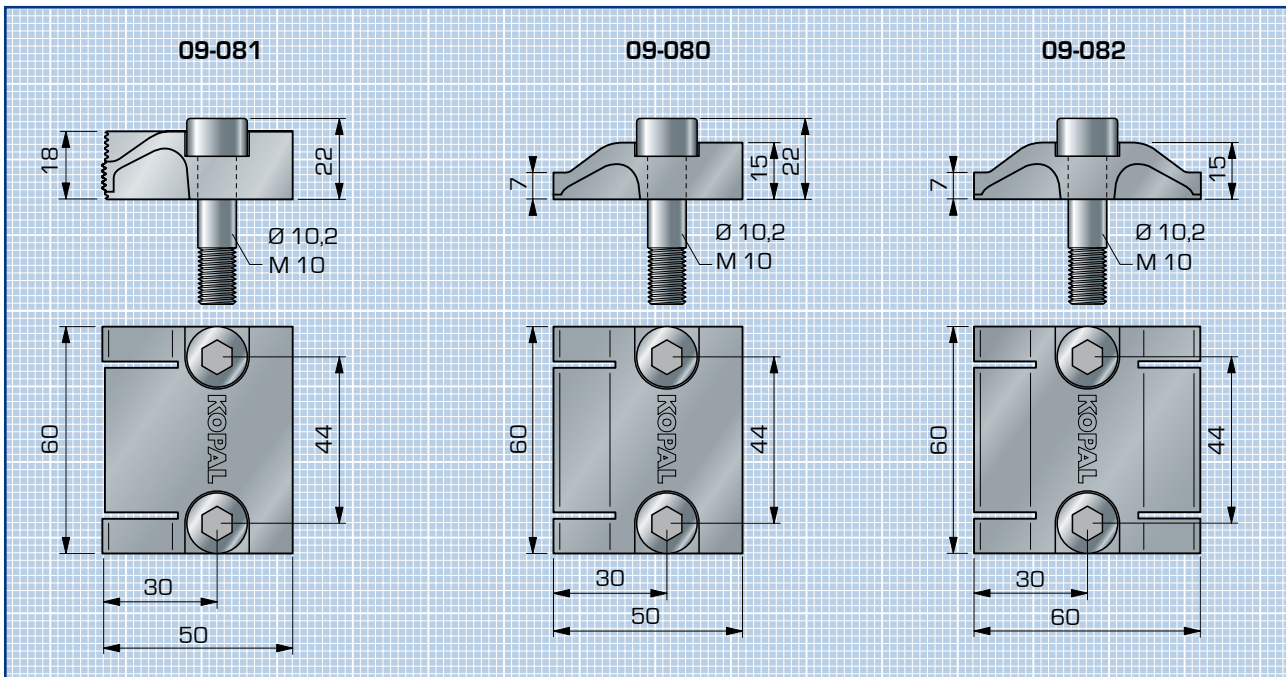
**09-878**

For mounting clamping elements with riser block.



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HORIZONTAL CLAMPING





# 22000 and 12000 Newton

## Support (mounting bar)

Hardened steel reference elements  
Rectified thickness.

2 rows of holes (H6) ensure that clamping components or fixed clamps / locators (stops) are precisely positioned in relation to the centring locator  $\varnothing$  16 - 28 mm, located under the lower side of the bar.

### 400 mm mounting bar **09-015**

Capacity (width of workpiece) :  
1 workpiece 260 mm max  
2 workpieces 120mm max

*With M12 fixing screws*



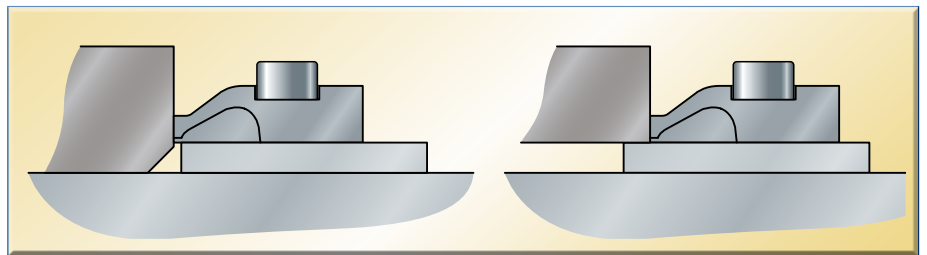
## Multiple support

For large workpieces

**09-016**

The workpiece can be clamped on the table or raised by 28 mm.

*With M12 fixing screws*



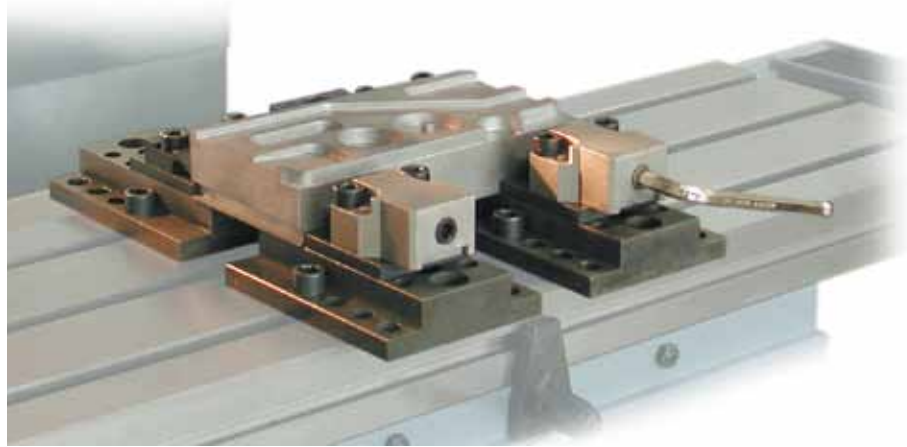
### 8 mm riser blocks

Ref.

Made from hardened steel with rectified thickness, they raise the clamping height or the workpiece by 8 mm

- |   |               |
|---|---------------|
| <b>1</b> Riser block for clamping element on mounting bar<br>Use 55 mm screws (09-878).             | <b>09-866</b> |
| <b>2</b> Riser block for clamping element on special machining set-up<br>Use 55 mm screws (09-878). | <b>09-867</b> |
| <b>3</b> Riser block for standard fixed clamp<br>Use 47 mm screws (09-876).                         | <b>09-868</b> |
| <b>4</b> Riser block for double-ended fixed clamp<br>Use 47 mm screws (09-876).                     | <b>09-870</b> |

# 22000 and 12000 Newton

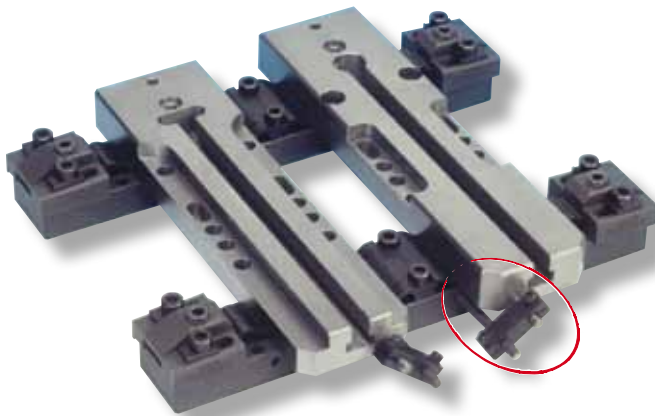


## Lateral stop

Ref.

The lateral stop is positioned in 6 x M 8 points on the side of the mounting bar. It is adjustable in height and length. 8 mm fulcrum rod.

09-086



**Rigid  
Compact**

## Locators

Ref.

Made from hardened rectified steel with M 14 internal screw thread for extraction.

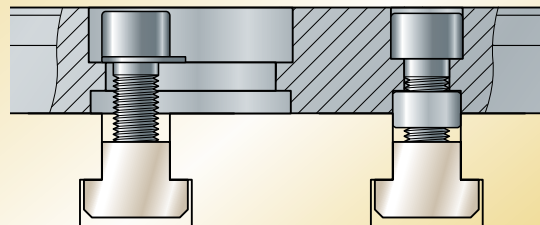
For slot size or diameter :

- 16 mm
- 18 mm
- 20 mm
- 22 mm
- 24 mm
- 26 mm
- 28 mm



- 09-886
- 09-888
- 09-890
- 09-892
- 09-894
- 09-896
- 09-898

These locators enable quick and precise alignment of mounting bars and supports..



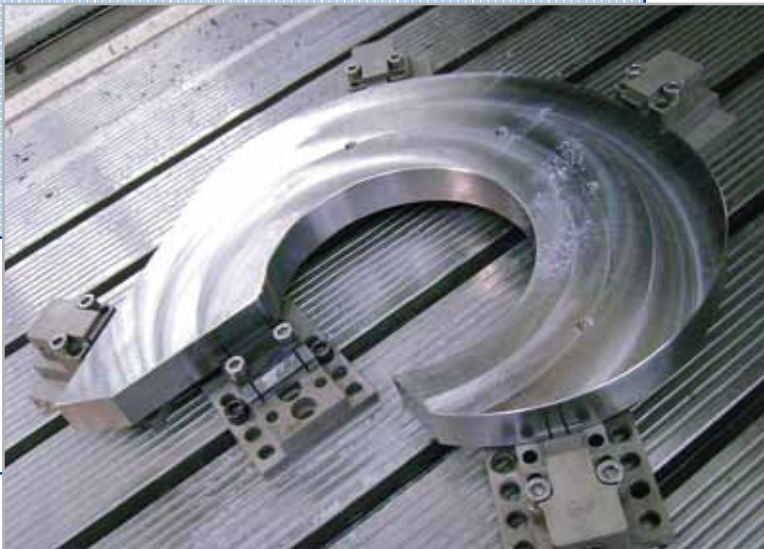
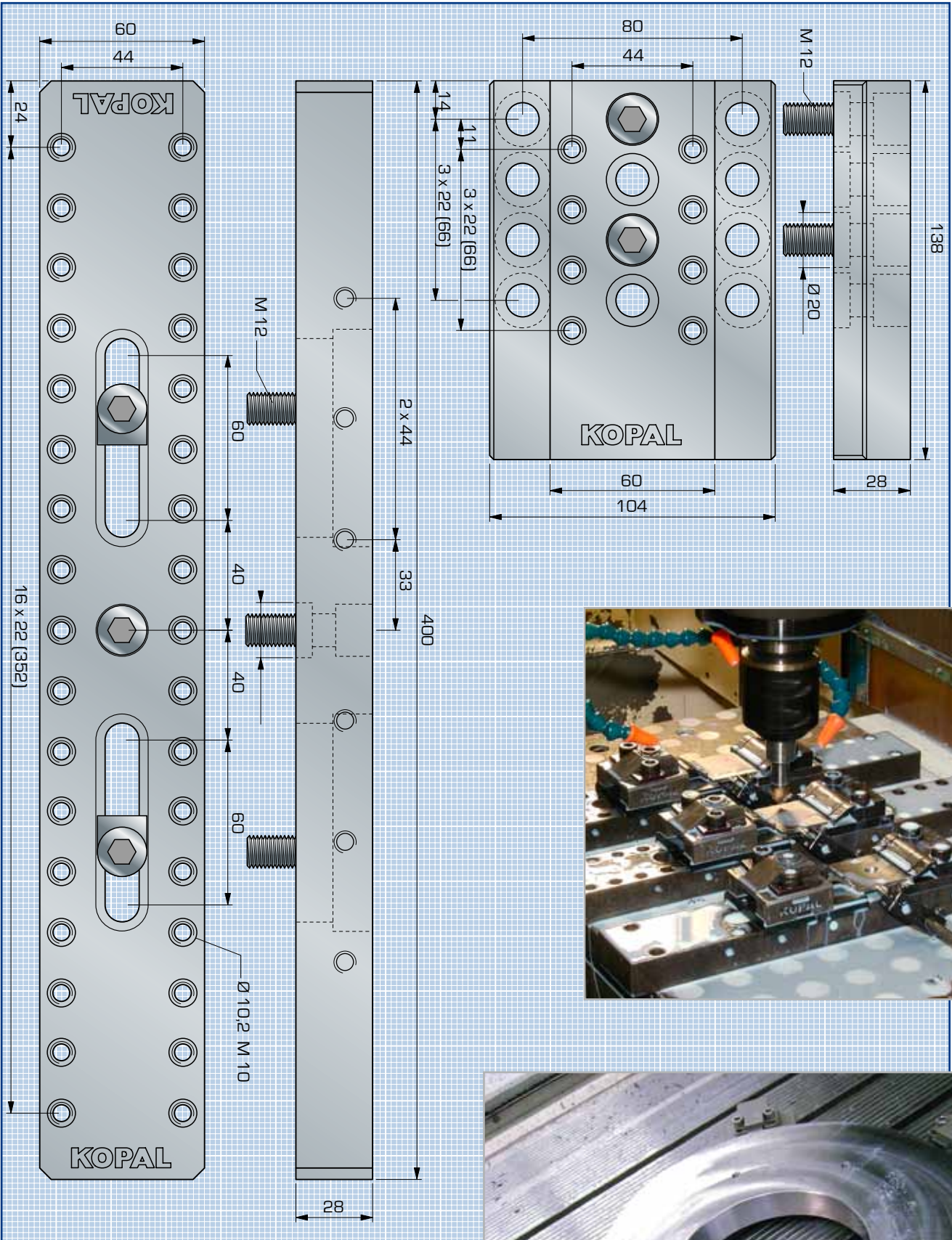
## T-nuts for T-slots M 12

Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
14 mm	16 mm	18 mm	20 mm	22 mm	24 mm	28 mm
90-150	90-155	90-160	90-165	90-170	90-175	90-180



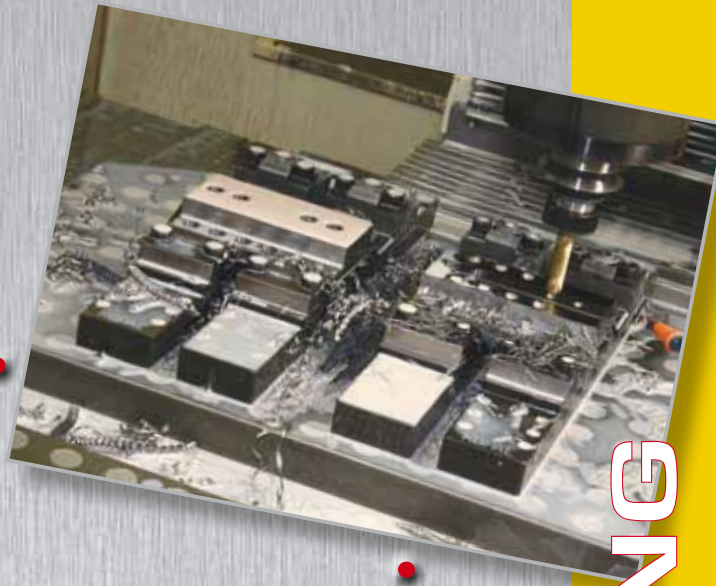
# 22000 and 12000 Newton

## HORIZONTAL CLAMPING



24 KOPAL





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**HORIZONTAL CLAMPING**



# 10000 Newton

## 10000 N. Equipment for T-slot table

With fixing screw and clamping key

### M 10 Equipment

Ref.

09-495

Including :

- ① 1 Driving clamp M 10 09-065
- ② 1 standard moving clamp 09-610
- ③ 1 standard M 10 clamp / locator 09-140

### M 12 Equipment

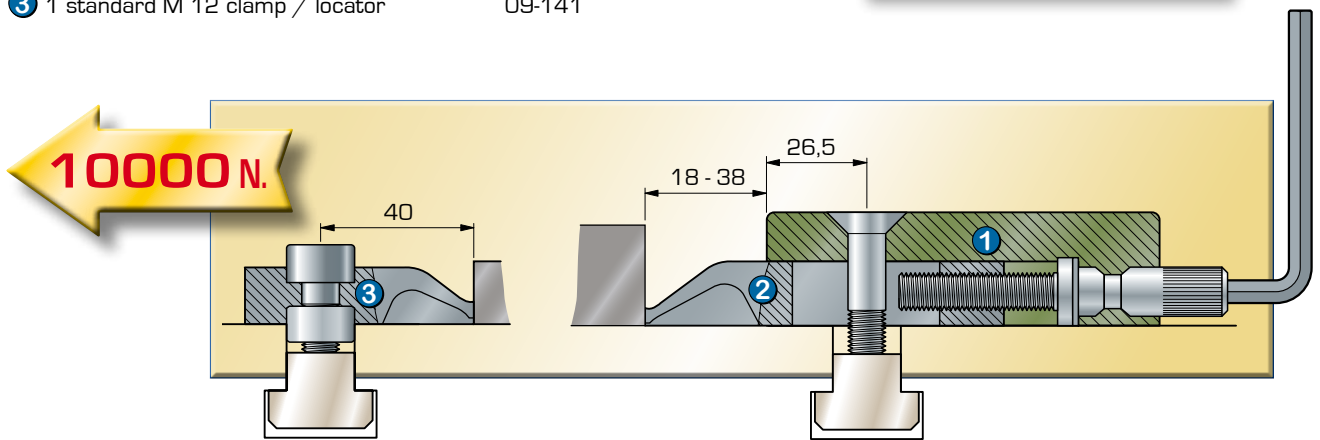
09-496

Including :

- ① 1 Driving clamp M 12 09-068
- ② 1 standard moving clamp 09-610
- ③ 1 standard M 12 clamp / locator 09-141



Clamping force : **10000 N.**  
 Clamping torque : 12 N.m  
 Clamping range : **20 mm**



Machining assembly is carried out according to workpiece dimensions

- Simple and compact assembly
- Quick clamping
- Multiple applications

## 10000 N. Equipment for Machining set-ups

With fixing screws and clamping key

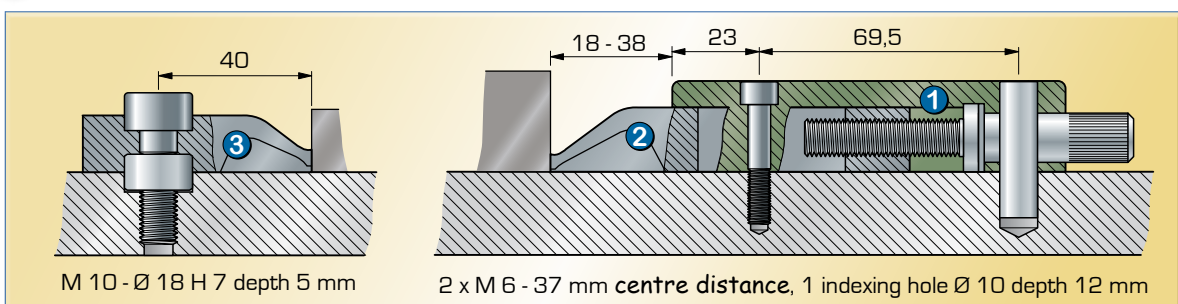
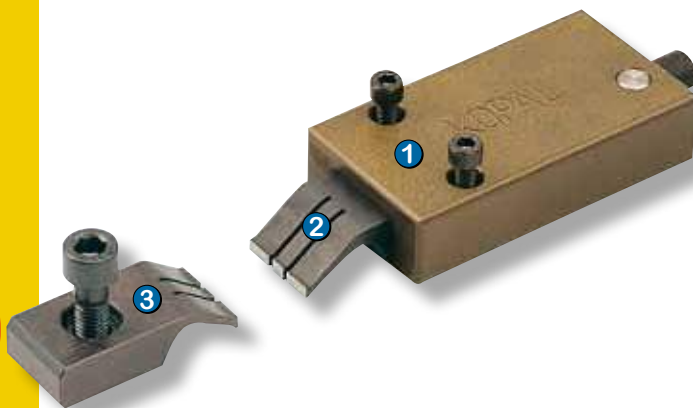
### Standard Equipment

Ref.

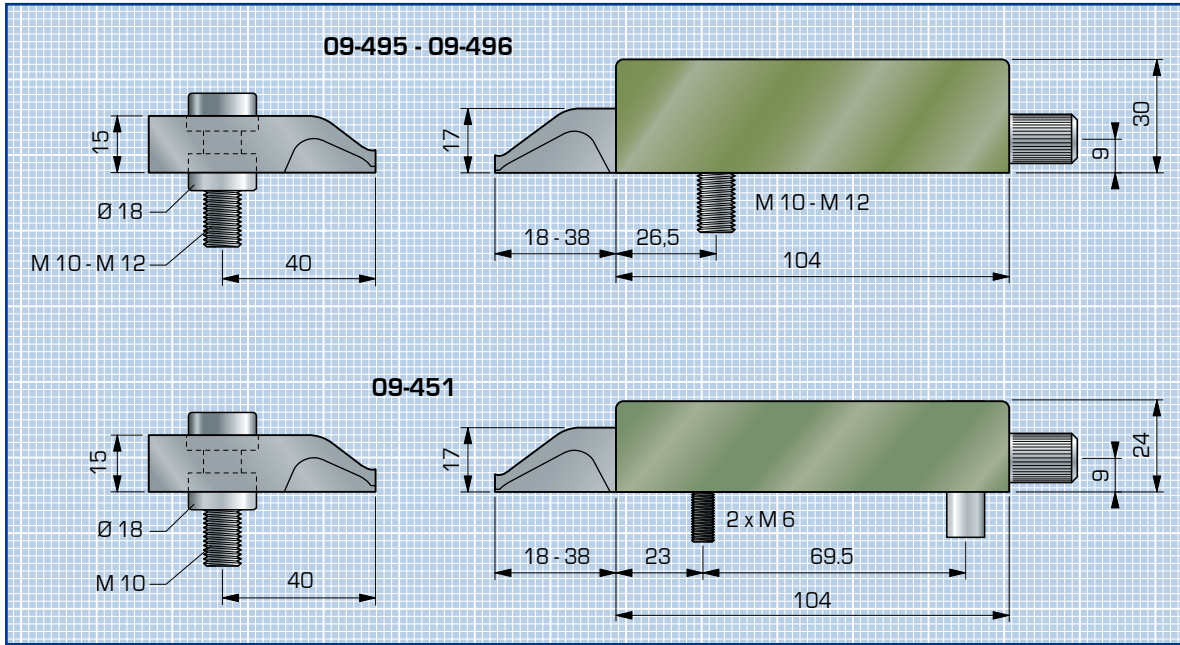
09-451

Including :

- ① 1 Driving clamp 09-090
- ② 1 standard moving clamp 09-610
- ③ 1 standard M 10 clamp / locator 09-140







## Fixing - Locators

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### Centring locators

Ref.

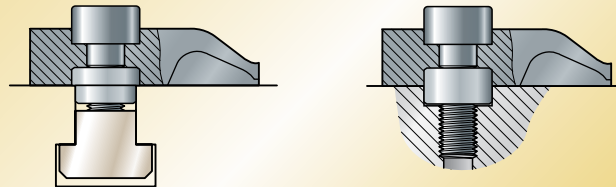
For slot sizes or diameters :

- 12 mm
- 14 mm
- 16 mm
- 18 mm
- 20 mm
- 22 mm

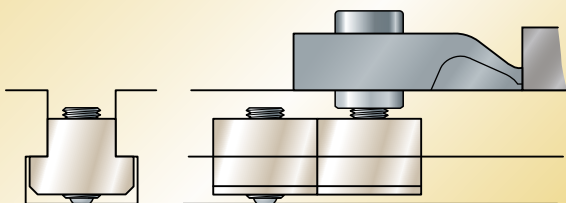


- 09-220
- 09-225
- 09-230
- 09-215
- 09-235
- 09-240

These locators allow immediate alignment of the stops and prevent the clamping components from sliding.



These T-nuts prevent the clamps and driving clamps from sliding during lengthwise slots use.



### Anti sliding T-nuts

Ref.

For slot sizes :

- 12 mm
- 14 mm
- 16 mm
- 18 mm
- 20 mm
- 22 mm



- 09-420
- 09-425
- 09-431
- 09-436
- 09-437
- 09-443



### T-nuts

	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	14 mm	16 mm	18 mm	20 mm	22 mm	24 mm	28 mm
M 10	90-105	90-110	90-115	90-120	90-125	90-130	90-135
M 12	90-150	90-155	90-160	90-165	90-170	90-175	90-180

# 10000 Newton

## Clamp body

Made in Aluminium, with pressure screw.

**for mounting bars or half-mounting bars**

**Moving clamp 09-610 to 09-625**

The body quickly indexes into position and can be placed over another clamping body and used as a 28 mm extra-raised component.

*With clamping key*



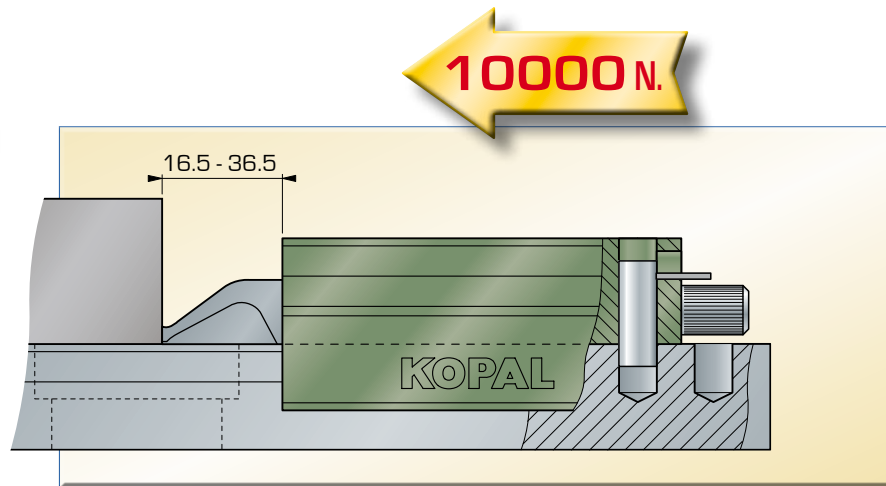
Ref.

Bar-mounted driving clamp

09-070



Clamping force : **10000 N.**  
Clamping torque : 12 N.m  
Clamping range : **20 mm**



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## Clamp body

Made in Aluminium, with pressure screw.

**for T-slot table**

**Moving clamp 09-610 to 09-625**

*With fixing screw and clamping key*

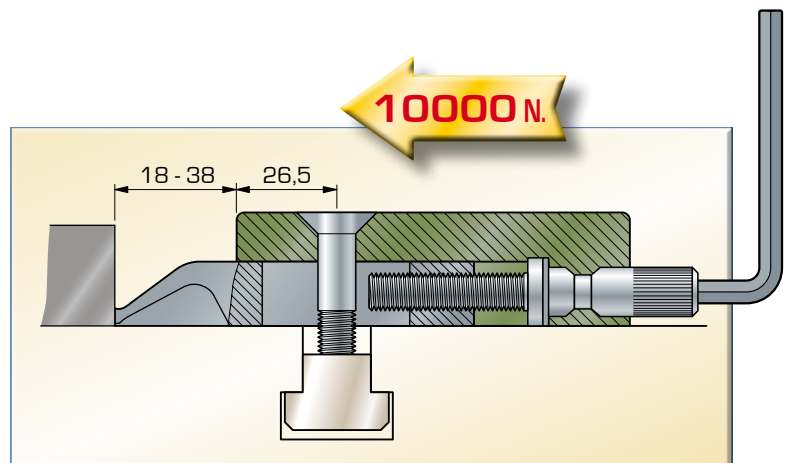
Ref.

M 10 driving clamp

09-065

M 12 driving clamp

09-068



HORIZONTAL CLAMPING



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# 10000 Newton

## Clamp body

Made in Aluminium, with pressure screw.

**for machining set-ups**

**Moving clamp 09-610 to 09-625**

*With fixing screws and clamping key*

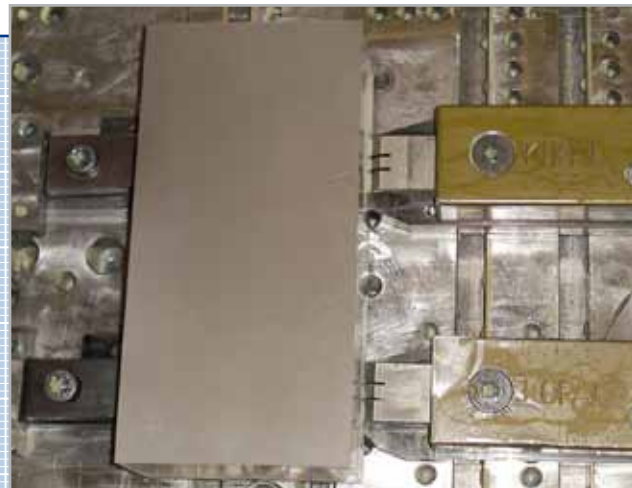
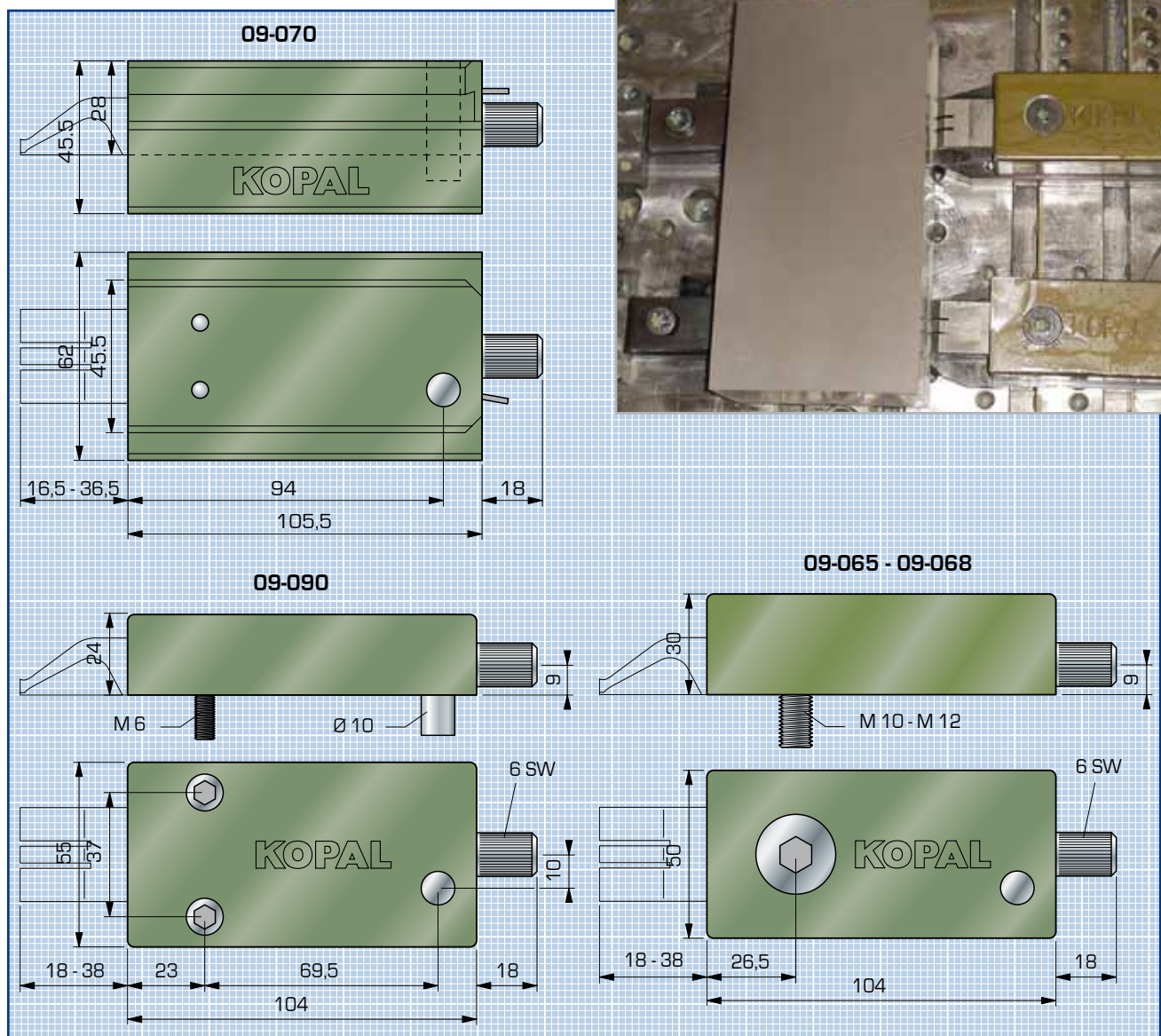
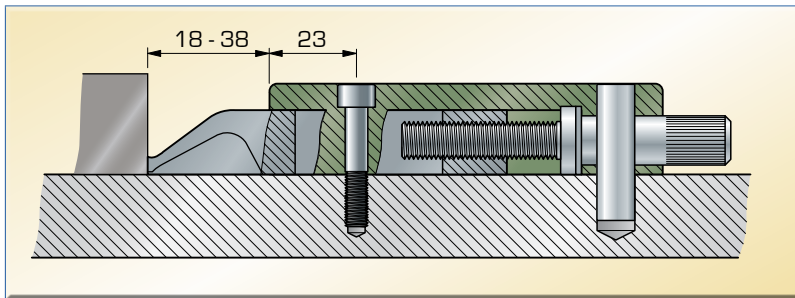


Ref.

**09-090**

## Table-mounted driving clamp

Fixed in place with 2 x M6 screws and  $\varnothing 10$  pinning



HORIZONTAL CLAMPING



# 10000 Newton

## Moving clamps

Clamps made of spring steel  
**for clamping body 09-065, 09-068, 09-070  
 and 09-090**  
 (work with the body pressure screw)

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**Low moving clamp**  
 clamping height 2,5 mm

Ref.  
**09-615**

**Standard moving clamp**  
 clamping height 4,7 mm

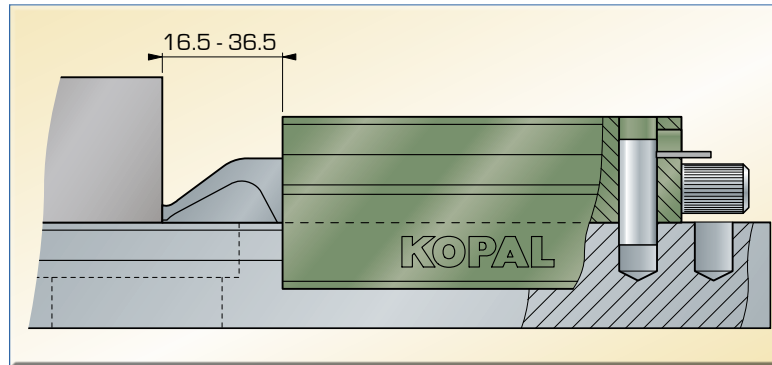
**09-610**

**Raised moving clamp**  
 clamping height 8 mm

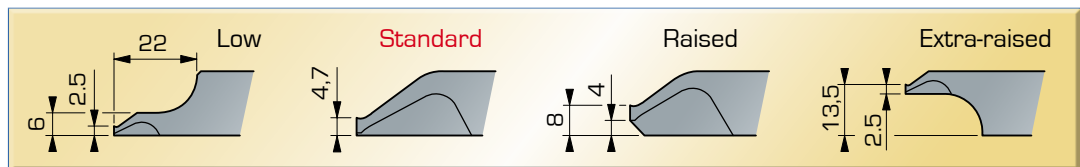
**09-620**

**Extra-raised moving clamp**  
 clamping height 13,5 mm

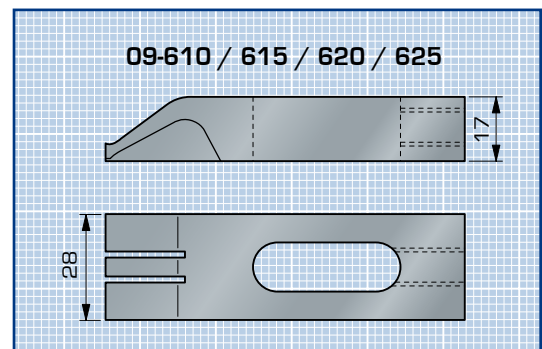
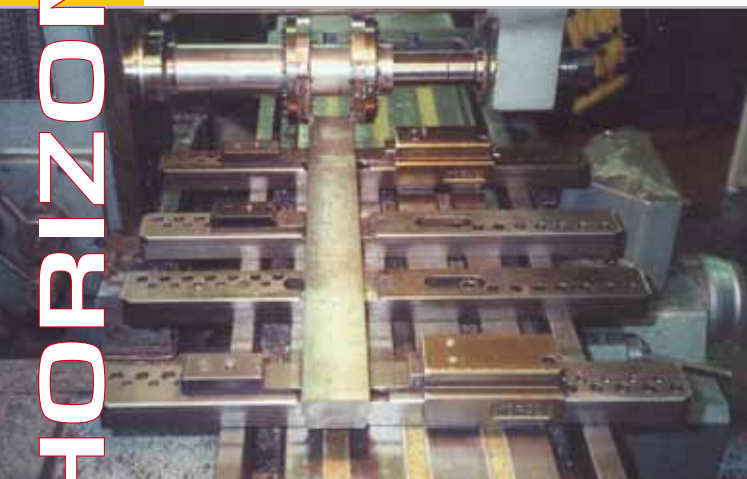
**09-625**



### Clamping heights



HORIZONTAL CLAMPING



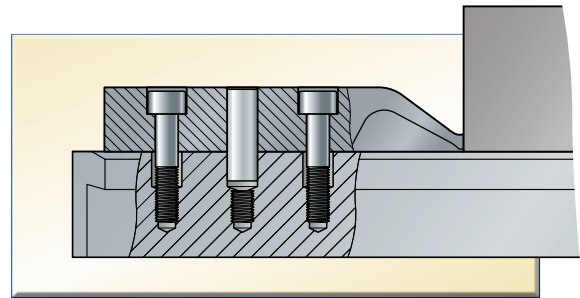
## Fixed clamps / locators

Made of spring steel

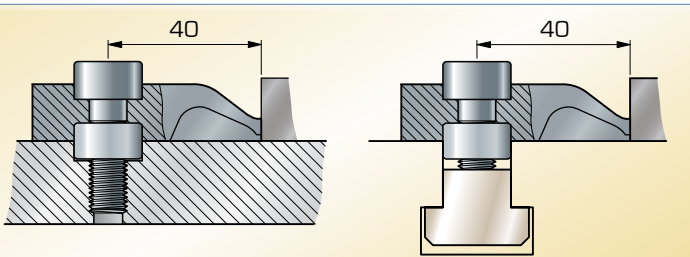
**for mounting bar and half-mounting bar**

(with M 6 clamping screws and positioning pin)

	Ref.
<b>Low fixed clamp / locator</b> clamping height 2,5 mm	09-125
<b>Standard fixed clamp / locator</b> clamping height 4,7 mm	09-120
<b>Raised fixed clamp / locator</b> clamping height 8 mm	09-130
<b>Extra-raised fixed clamp / locator</b> clamping height 13,5 mm	09-135



The contact side of the stops is machined in relation to the centring locator, thus ensuring the workpiece is correctly positioned.



## Table-mounted clamps/locators

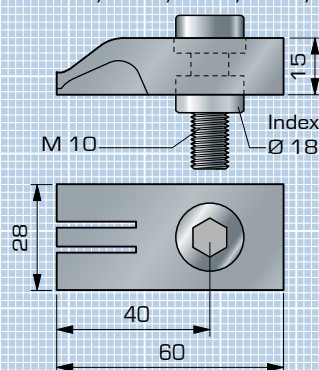
Made of spring steel

**for T-slot table and machining set-ups**

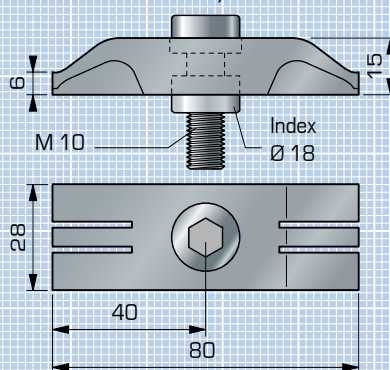
(with clamping screw and  $\varnothing$  18 mm locating)

	Ref.
<b>Low clamp/locator</b> clamping height 2,5 mm	
M 10	09-143
M 12	09-144
<b>Standard clamp/locator</b> clamping height 6 mm	
M 10	09-140
M 12	09-141
<b>Extra-raised clamp/locator</b> clamping height 13,5	
M 10	09-142
<b>Double-ended clamp</b> clamping height 6 mm	
M 10	09-145
M 12	09-147

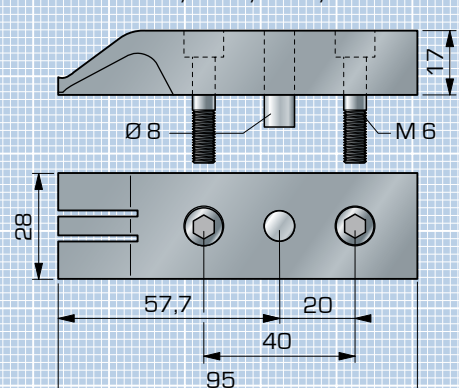
09-140 / 141 / 142 / 143 / 144



09-145 / 147



09-120 / 125 / 130 / 135



# 10000 Newton

## Support (mounting bar)

Rectified cast-iron mounting bar, raises the workpiece by 28 mm in order to perform through-hole machining. It is very simple to install and can be quickly adjusted.

*With M12 fixing screws*

**460 mm mounting bar 09-040**

For clamping elements and stops



Mounted with 3 x M 12 screws and special washers

## Support (1/2-mounting bar)

Rectified cast-iron half-mounting bars, raise the workpiece by 28 mm in order to perform through-hole machining.

*With M12 fixing screws*

**Half-mounting bar 225 mm 09-045**

For clamping elements (09-070) or stops (09-120 to 09-135)



Mounted with 2 x M 12 screws and special washer

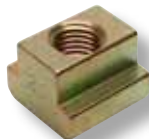
**Half-mounting bar 225 mm 09-046**

without holes

For clamping elements (09-070)



**Locators - Fixing**  
page 27

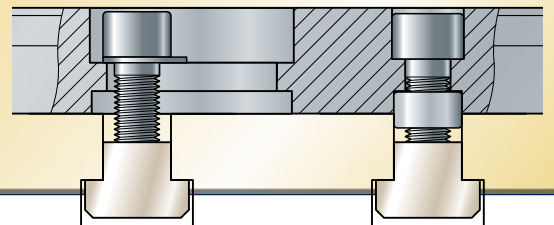


*Anti-vibration support*



Place the Lifter under the workpiece and turn the adjustment pin until contact is made

These locators enable quick and precise alignment of mounting bars and supports..



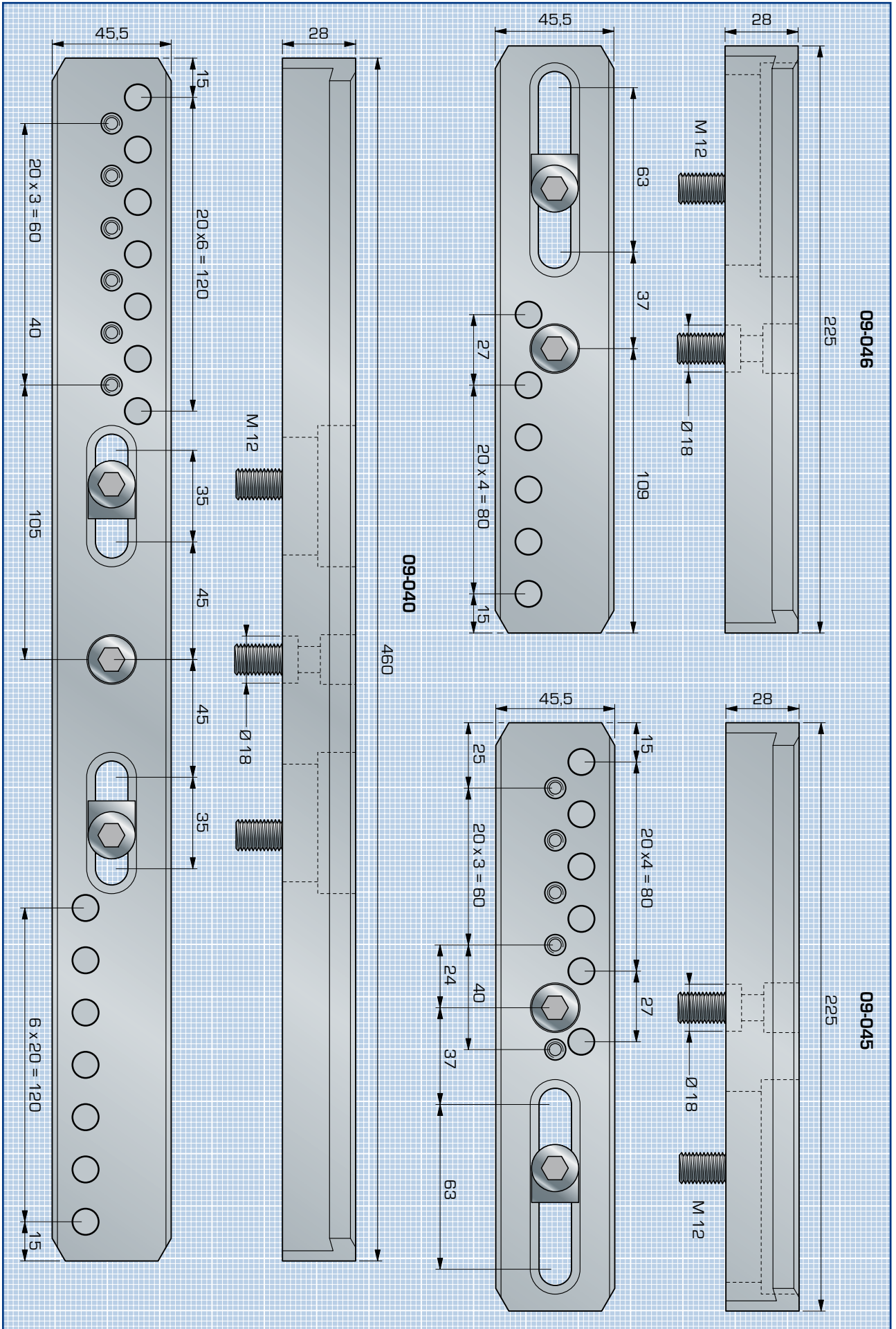
## Anti-vibration support (Lifter)

**28 mm workpiece support** preventing workpiece deformation and vibration during machining. Supporting force 1200 N

Lifter

**09-060**





# 6500 Newton

## 6500 Newton Clamping equipment for Machining set-ups

*With fixing screws and Clamping key*

Ref.

09-490

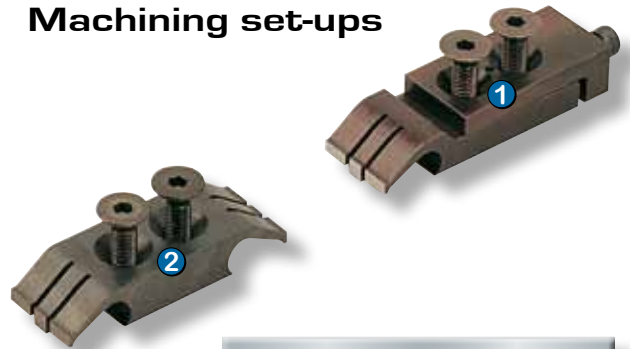
including :

- ① 2 Mini driving clamps 09-110
- ② 1 Mini fixed clamp / locator 09-150  
(with screw and index)

**6500 N.**



## Specific Machining set-ups



Clamping force : **6500 N.**  
Clamping torque : 6 N.m  
Clamping range : 7 mm

## Clamping elements

Ref.

Made of spring steel

*With fixing screws and Clamping key*

**Low mini driving clamp**  
clamping height 2,5 mm  
for low workpieces

09-111

**Standard mini driving clamp**  
clamping height 6 mm

09-110



# KOPAL



## Fixed clamps (Stops)

Ref.

Reversible clamps made of spring steel  
for clamping of facing workpieces

*With clamping screw and positioning index*

**Low mini reversible clamp/locator**  
clamping height 2,5 mm  
für Teile mit geringer Dicke

09-152

**Standard mini reversible clamp/locator**  
clamping height 6 mm

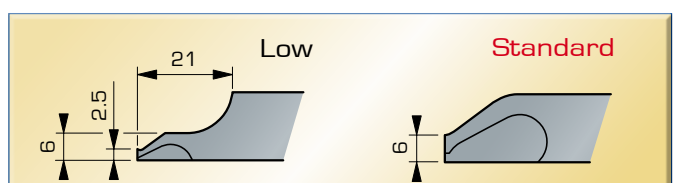
09-150

**Double ended mini reversible clamp/locator**  
clamping height 6 mm

09-151

With two rigid supports - can be used on its own for  
small workpieces of max. 40mm in width

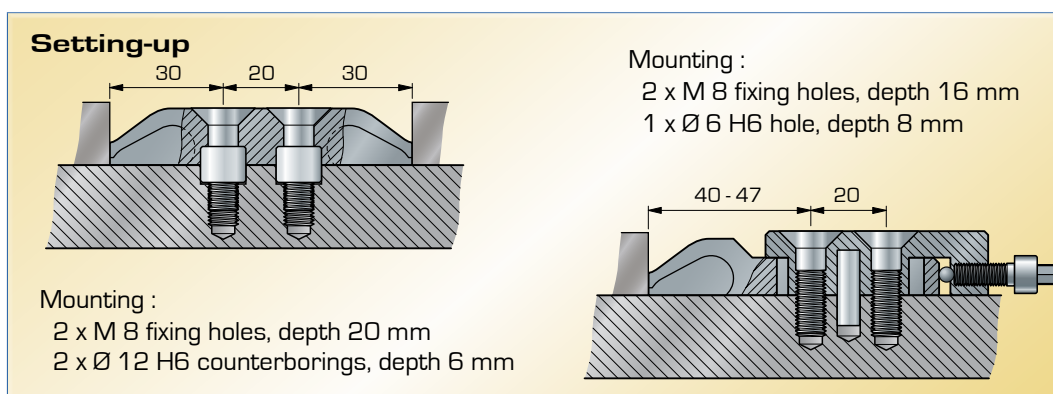
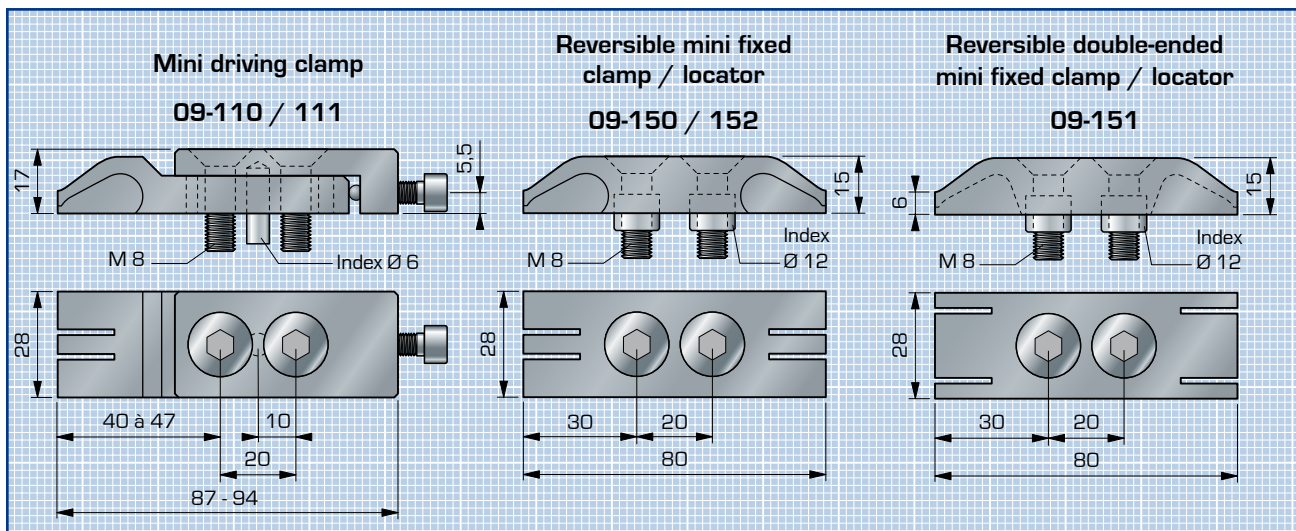
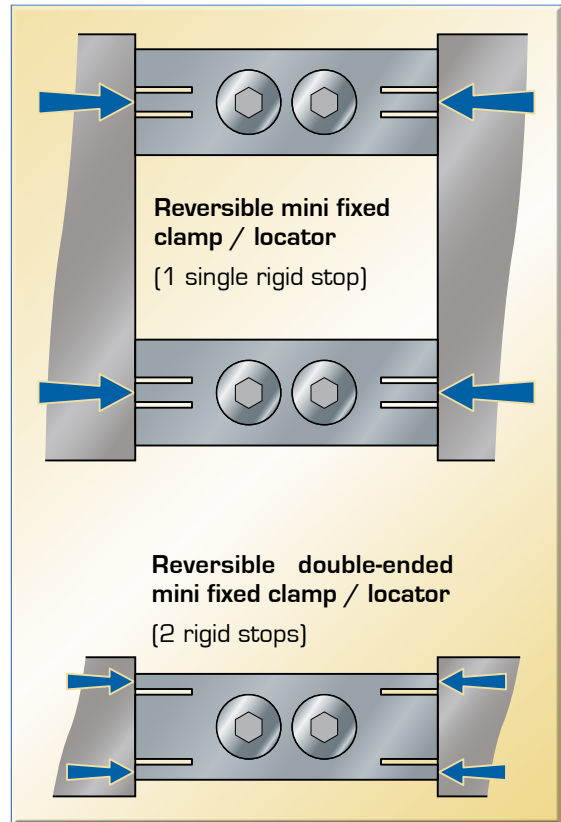
## Clamping heights



Machining assembly is carried out according to workpiece dimensions

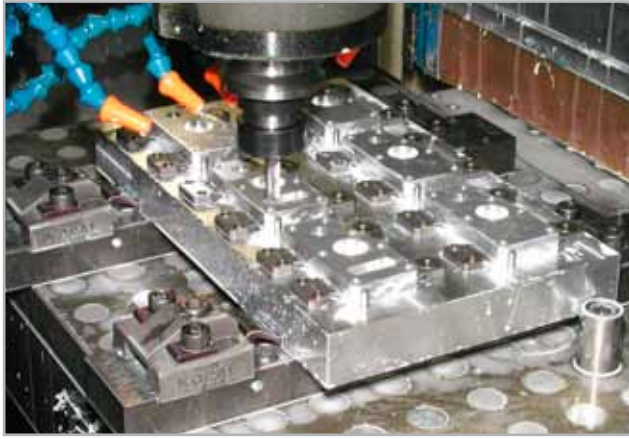


Machining of an aluminium plate with mini driving clamps on special supports

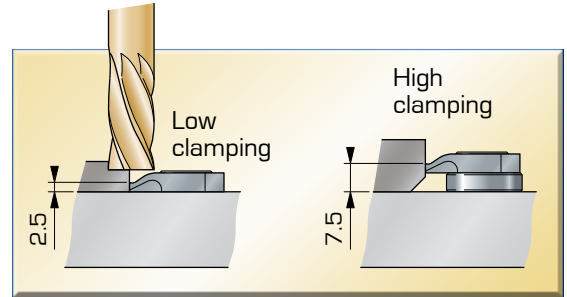




# 4000 Newton



## Mini-Clamp



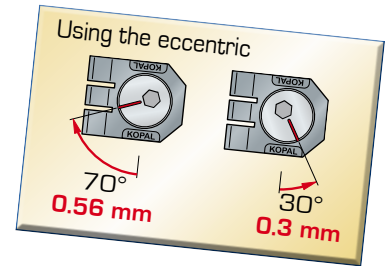
- Compact
- Ultra-quick clamping
- High clamping power
- Cylindrical parts

**4000 N.**

# KOPAL

### Mini-clamping for specific machining set-ups with eccentric

	Ref.
1 Pillar-type moving clamp/locator clamping height 2,5 mm	25-210
2 Raised pillar-type moving clamp/locator clamping height 7,5 mm	25-215
Clamping key (sold separately) T-shaped, 4mm hexagonal	25-980

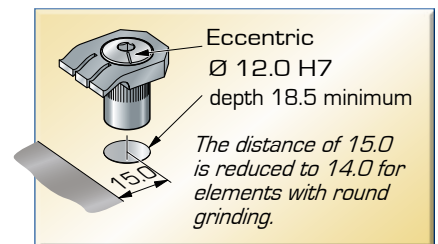
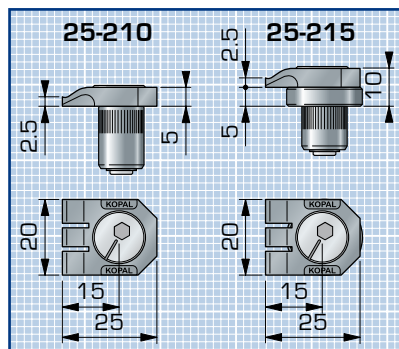
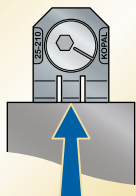


**Fast 1/4 turn clamping**



**i** The moving clamp/locators pivot around an eccentric axis, which carries out the clamping. They can clamp in all directions..

*Clamp (1 single rigid stop)  
Firmly presses the  
workpiece onto the stops.*



# 4000 Newton

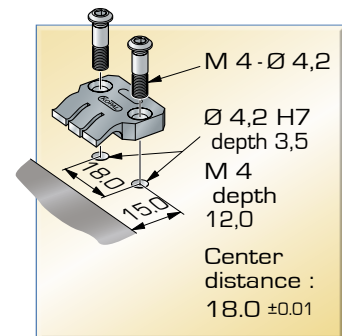
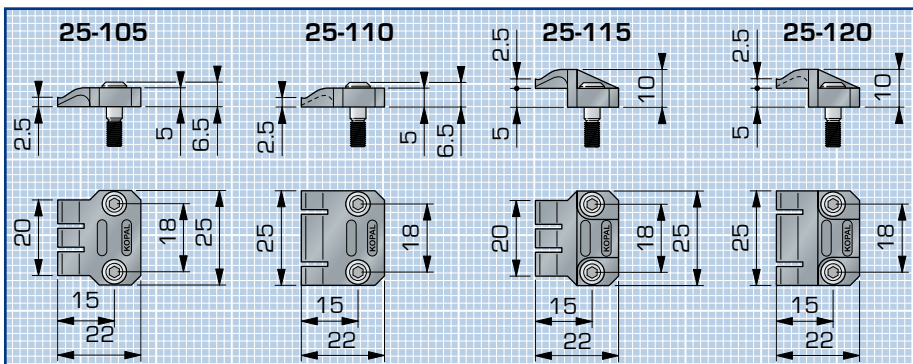
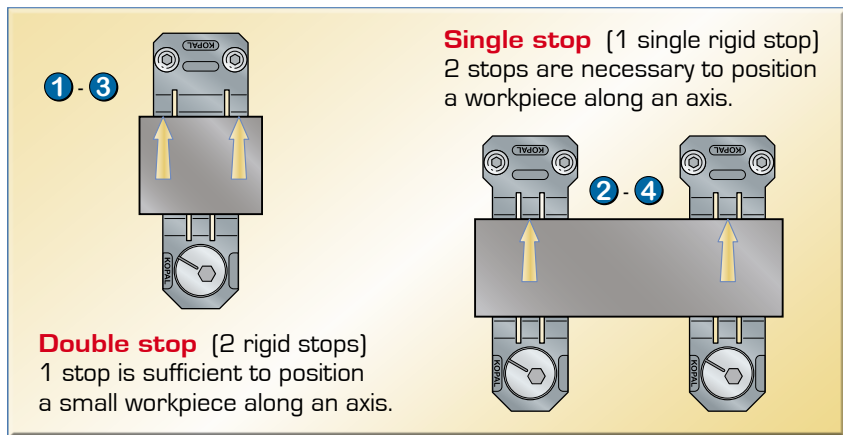
## Fixed stop

- |   | Ref.   |
|---|--------|
| <b>1</b> Fixed clamp/locator<br>clamping height 2,5 mm                    | 25-105 |
| <b>2</b> Double fixed clamp/locator<br>clamping height 2,5 mm             | 25-110 |
| <b>3</b> Raised fixed clamp / locator<br>clamping height 7,5 mm           | 25-115 |
| <b>4</b> Raised double<br>fixed clamp / locator<br>clamping height 7,5 mm | 25-120 |



*With fixing screws*

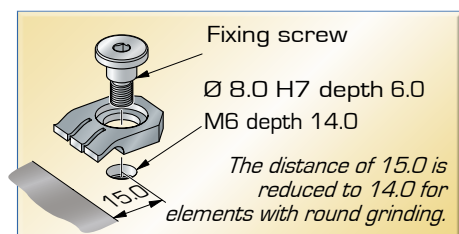
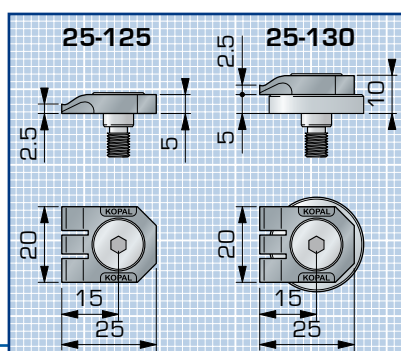
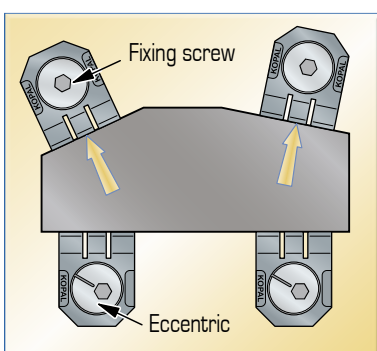
Ground fixed stops are fixed in position with special screws ensuring high precision mounting.



## Swivel stop

- |  | Ref.   |
|--|--------|
| <b>5</b> Swivel fixed clamp/locator<br>clamping height 2,5 mm          | 25-125 |
| <b>6</b> Raised swivel fixed clamp / locator<br>clamping height 7,5 mm | 25-130 |

*With fixing screw*



# 4000 Newton

## Clamp-slot for T-slot tables

# KOPAL

### Clamp-slot

Equipment includes :

1 clamping element

1 stop element

for slots :	A	B	Ref.
10 mm	46	18	25-260
12 mm	48	18	25-262
14 mm	52	22	25-264
16 mm	48	25	25-266
18 mm	48	25	25-268

### Clamping key

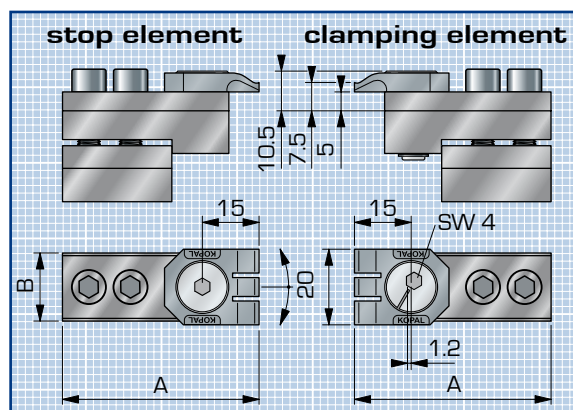
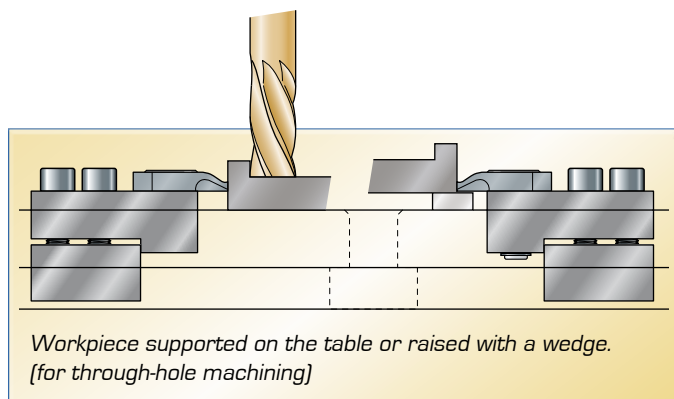
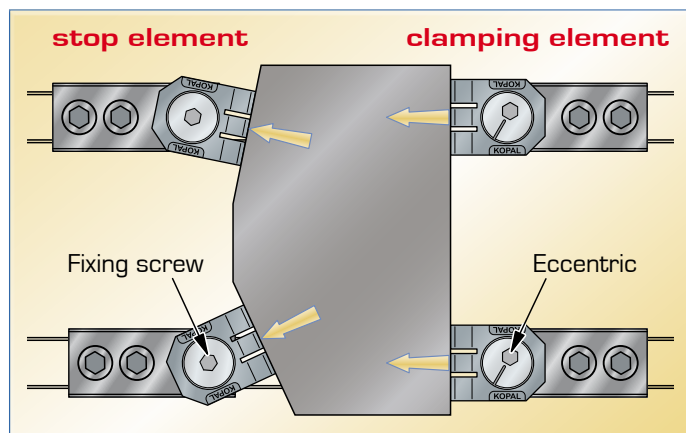
25-980

T-shaped, 4mm hexagonal

Clamping force : **4000 Newton**  
 Clamping torque : 9 N.m  
 Clamping range : **0.86**



HORIZONTAL CLAMPING







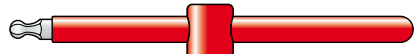
# Vertical clamping System KOPAL®

## KOPAL®

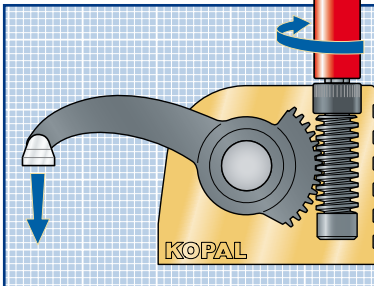


<b>KOPAL System</b>	
Principle - Presentation	40
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<b>Chain Clamping</b>	
16000 N	56 - 57
50000 N	58
Workpiece Support	59
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Terrific 11000 N	60 - 61
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<b>Fixing, T-nuts, screws</b>	65

# Presentation



## Clamping with vertical pressure System KOPAL®



- This system requires neither riser block nor adjustment and clamping height can be adjusted at any time with a simple turn of the clamping key while maintaining clamping force.
- It can be used with all types of machine-tool tables, electrical discharge machines and modular or T-slot-type press tables (depending on model).
- The clamps are "monobloc" type, ensuring stable and robust mounting and rapid setting-up and dismantling, with a clamping force of up to 50000 N.

Light machining  
EDM clamping  
6500 N.  
*page 42*



Clamping and lifting  
11000 N.  
*page 48*



All machining  
operations  
16000 N.  
*page 44*



Heavy machining  
40000 N.  
*page 52*



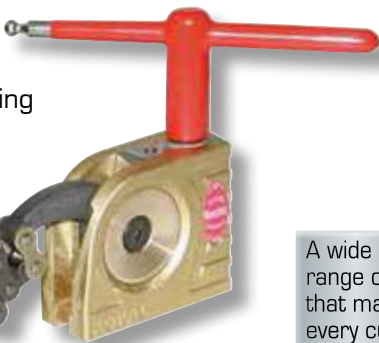
Clamping  
accessories  
*page 50*



Repetitive machining  
11000 N.  
*page 60*



Chain clamping  
16000 N.  
*page 56*



A wide and balanced  
range of clamps  
that matches  
every customer's  
requirements

Heavy machining  
35000 N.  
*page 62*



Chain clamping  
50000 N.  
*page 58*



Heavy machining  
Press clamping  
50000 N.  
*page 64*





# Boxed sets

<b>Piccolo</b>	Clamping Reach    Clamping Height*		Ref.
Clamping Force	54	118 mm	<b>07-100</b>
<b>6500 N.</b>			

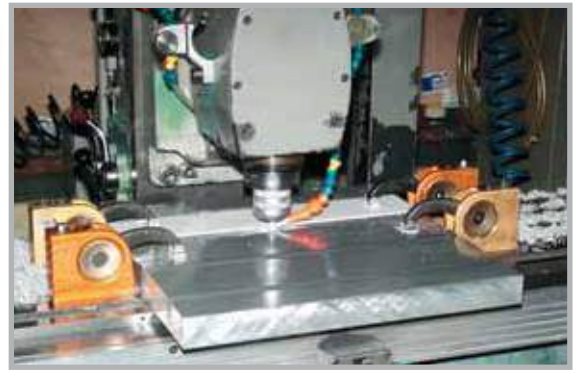
(\* with a riser block)

Contents :

- ① 2 Piccolo
- ② 2 x 60 mm riser blocks
- ③ 1 clamping key
- ④ 1 extra long arm
- ⑤ 1 set of 4 different shaped swivel shoes
- ⑥ 4 x M 8 screws
- ⑦ 6 M 8 T-nuts with spring  
(2 for each 12, 14 & 16 mm slot)



## KOPAL

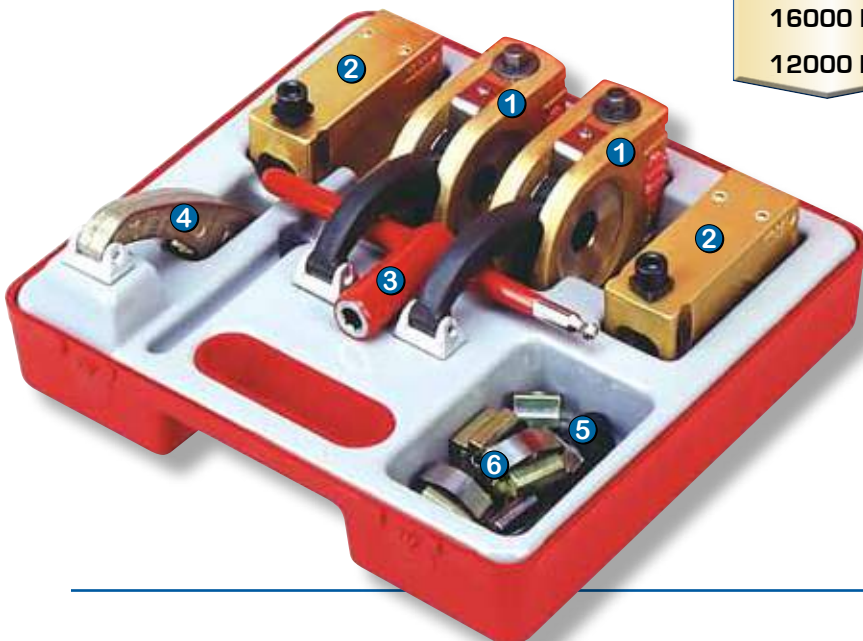


<b>Monobloc</b>	Clamping Reach    Clamping Height*		Ref.
Clamping Force	33	154 mm	<b>06-110</b>
<b>16000 N.</b>	61	176 mm	<b>06-100</b>
<b>12000 N.</b>			

(\* with a riser block)

Contents :

- ① 2 Monobloc
- ② 2 x 74mm riser blocks
- ③ 1 clamping key
- ④ 1 extra long arm
- ⑤ 4 x M 10 screws
- ⑥ 6 x M 10 T-nuts with spring  
(2 for each 14, 16 & 18mm slot)



VERTICAL CLAMPING



# Piccolo EDM

- Quick assembly
- Simple cleaning mechanism
- Large capacity



Piccolo	Clamping Force	Clamping		Clamp with clamping key Ref.	Clamp without clamping key Ref.
		Reach	Height		
Short arm	6000 N.	54	-15 to 58 mm	07-022	07-016
Long arm	4000 N.	100	-40 to 90 mm	07-023	07-018

**3 m/kg maximum clamping torque .**

aluminium bronze body, aluminium swivel shoe, steel arm.

With clamping key and M8 x 30 clamping screw 

Nickel-plated clamping key (standard)

**07-180**



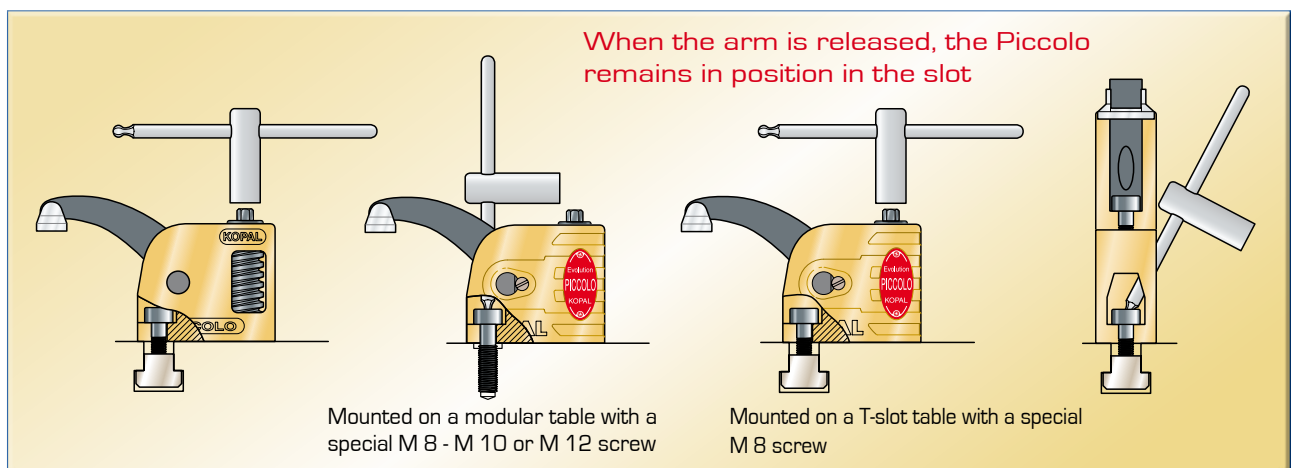
*The only rapid clamp specially designed for electrical discharge machining*



The body has a large opening to ensure the free flow of fluid. The operating mechanism is designed to avoid jamming. The clamp can be removed quickly without a tool, thus simplifying clamp cleaning operations.



## Assembly of standard and EDM Piccolo models



# Piccolo 6500 N.

- Numerous accessories
- Powerful clamping
- Compact



Piccolo	Clamping Force	Clamping Reach	Clamping Height
Short arm	6500 N.	54	-15 to 58
Long arm	4200 N.	100	-40 to 90

Clamp with clamping key Ref.
07-020
07-025

Clamp without clamping key Ref.
07-021
07-026

**3 m/kg maximum clamping torque .**

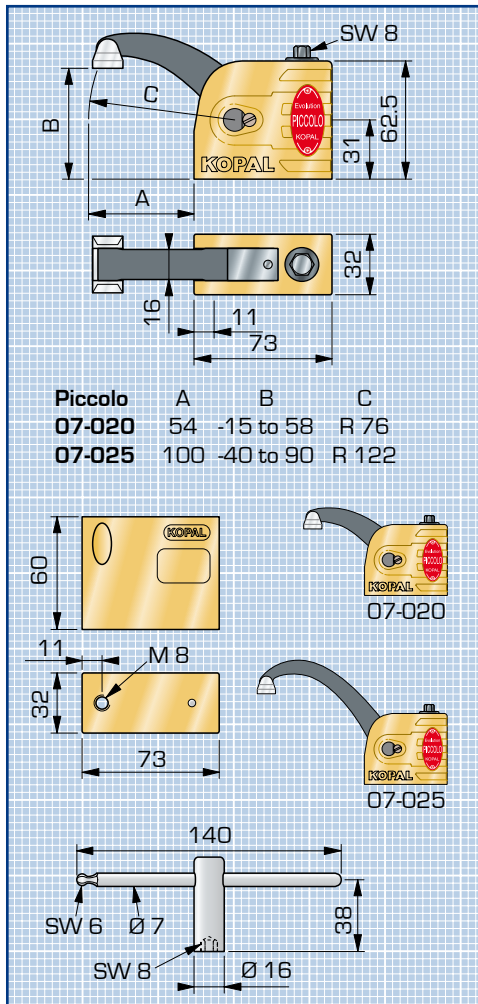
aluminium bronze body, aluminium swivel shoe, steel arm.

With clamping key and M8 x 30 clamping screw

Nickel-plated clamping key (standard)

07-180

T-slot tables  
Modular tables



**Particularly in drilling applications,** you will appreciate the practicality of a clamp that provides exceptional power for such a compact size.

Clamping screws	Ref.
M 8 x 30 mm	07-720
M 10 x 35 mm	07-730
M 12 x 35 mm	07-735



**Riser block** 07-030  
These Aluminium 60 mm riser blocks can be stacked in order to clamp very high workpieces. Supplied with clamping screw.



## KOPAL

Piccolo Boxed set	Clamping Force	Clamping Reach	Clamping Height*	Ref.
Short arm	6500 N.	54	0 to 118	07-100

(\* with a riser block)



M 8 T-nuts	Ref.
Slot size 10 mm	90-050
12 mm	90-055
14 mm	90-060
16 mm	90-065
18 mm	90-070

# Monobloc 16000 N.

- Multi-purpose
- Ultra-quick clamping
- New ergonomic key
- High clamping power



The clamp is mounted using screws and remains in a fixed position



Monobloc (clamping arm)	Clamping Force	Clamping Reach	Clamping Height	Clamp with clamping key Ref.	Clamp without clamping key Ref.
Short arm	16000 N.	33	0 to 80	06-020	06-022
Long arm	12000 N.	61	- 8 to 102	06-030	06-032
XXL arm	800 N.	132	- 43 to 155	06-035	06-036



8 m/kg maximum clamping torque .

Aluminium swivel shoe and body, steel arm.

Fixing screws supplied separately 

Coated clamping key, height 58 mm (standard)

06-160

Nickel-plated clamping key, height 88mm (with XXL arm)

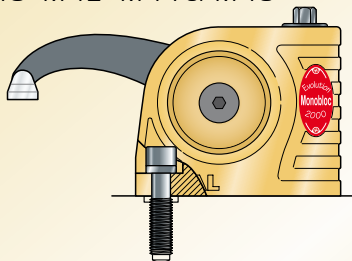
06-325

## KOPAL

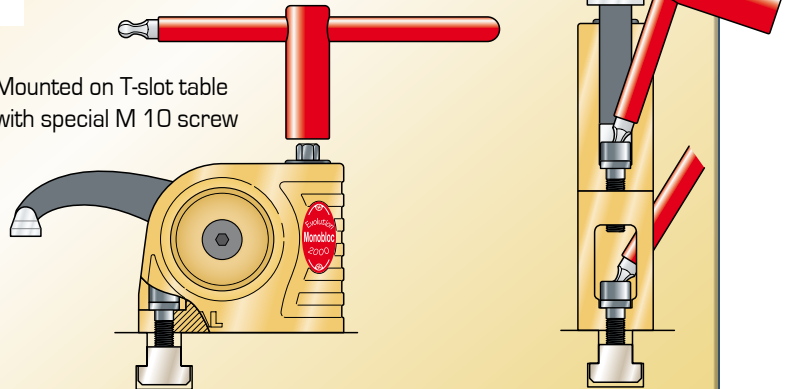
Why use the Monobloc   
 Tables with T-slots  
 Tables with tapped holes  
 When the arm released, the Monobloc remains fixed in position in the slot

- 1 Slide the T-nut and the screw into the slot.
- 2 Position and tighten the clamp onto the table using the clamping key provided.
- 3 Clamp the workpiece using the same key
- 4 Proceed with machining

Mounted on modular table with a special screw :  
 M10 - M 12 - M 14 or M 16



Mounted on T-slot table with special M 10 screw



Monobloc Box set	Clamping Force	Clamping Reach	Clamping Height*	Ref.
Short arm	16000 N.	33	0 to 154 mm	06-110
Long arm	12000 N.	61	- 8 to 176 mm	06-100

(\* with riser block) **Composition page 41**





# Monobloc 16000 N.

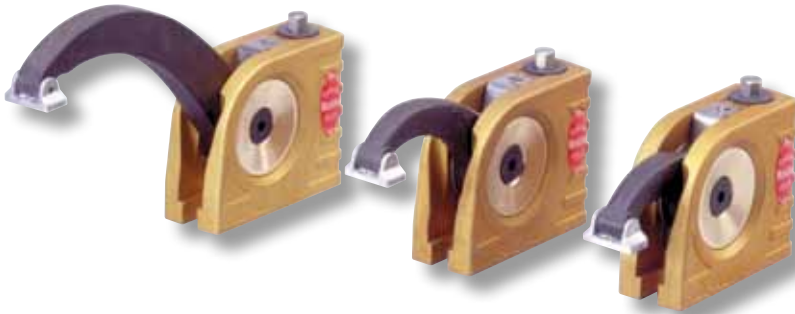
## Monobloc fittings

	Type	Ref.
<b>for slot sizes</b>		
M 10 x 35	12 and 14 mm	06-080
M 10 x 40	16 and 18 mm	06-085
M 10 x 45	20 and 22 mm	06-090
<b>for tapped holes</b>		
M 12 x 40	M 12	06-065
M 14 x 45	M 14	06-070
M 16 x 45	M 16	06-075



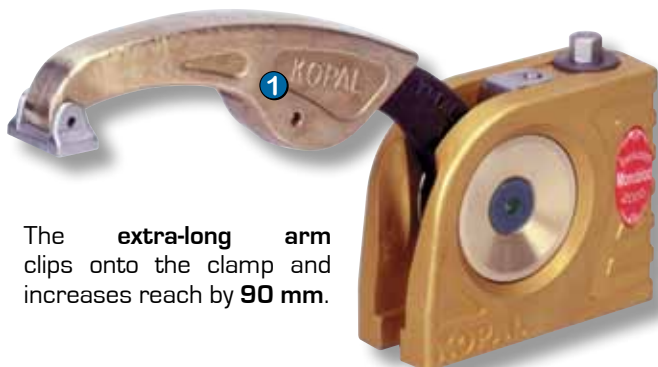
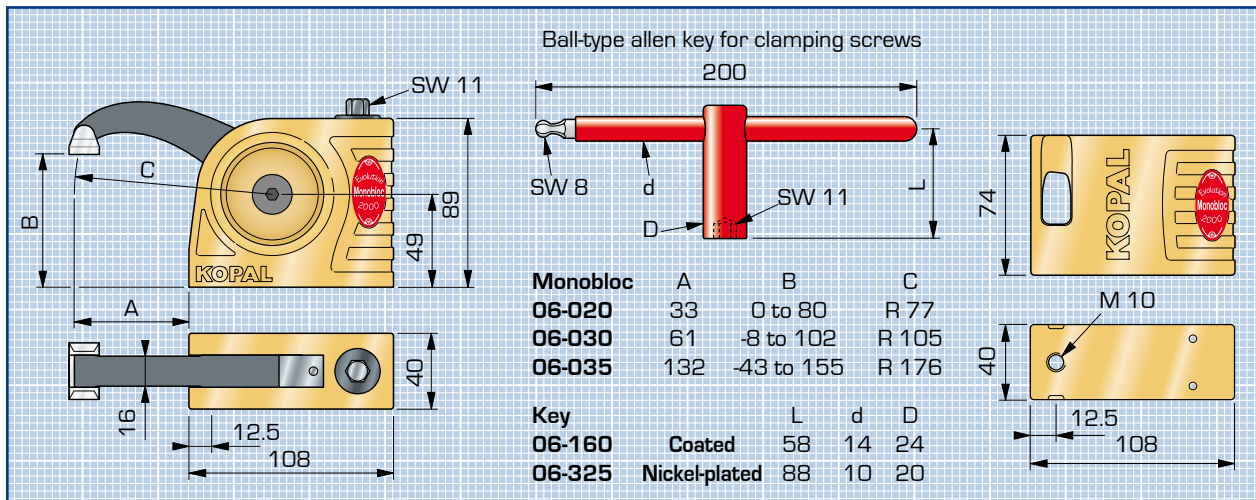
## Aluminium riser block

	Height	Ref.
These riser blocks can be stacked in order to clamp very high workpieces. Supplied with M 10 x 35 mm clamping screw	74 mm	06-050



## M 10 T-nuts

Slot size	Ref.
12 mm	90-100
14 mm	90-105
16 mm	90-110
18 mm	90-115
20 mm	90-120
22 mm	90-125
24 mm	90-130
28 mm	90-135



The extra-long arm clips onto the clamp and increases reach by 90 mm.

## Accessories

	Ref.
1 Extra-long arm	05-140
2 Set of 4 different shaped aluminium swivel shoes	06-150

## Accessories on page 50

Swivel shoe N°2  
Ref. 06-802



# Bloc Bride 16000 N.

- Multi-purpose
- Ultra-quick assembly and workpiece changeover
- Numerous accessories




Record installation and clamping time

Bloc Bride (clamping arm)	Clamping Force	Reach	Clamping Height	Clamp with clamping key Ref.	Clamp without clamping key Ref.
Short arm	16000 N.	1.3"	0 to 80 mm	05-020	05-021
Long arm	12000 N.	2.4"	- 8 to 102 mm	05-030	05-031
XXL arm	8000 N.	5.196"	- 43 to 155 mm	05-035	05-036



**8 m/kg maximum clamping torque .**

Aluminium swivel shoe and body, steel arm.

Remember to order the mounting set (T-nut and screws) corresponding to the width of your machine's slots 

Coated clamping key, height 58 mm (standard)

05-180

Nickel-plated clamping key, height 88 mm (with XXL arm)

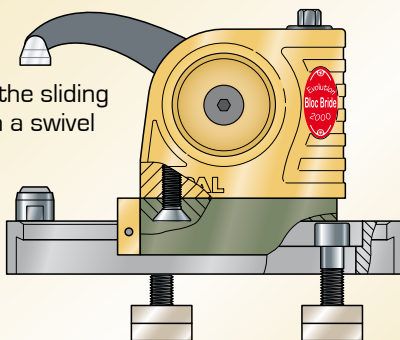
06-325

Safe clamping is an important factor in user safety

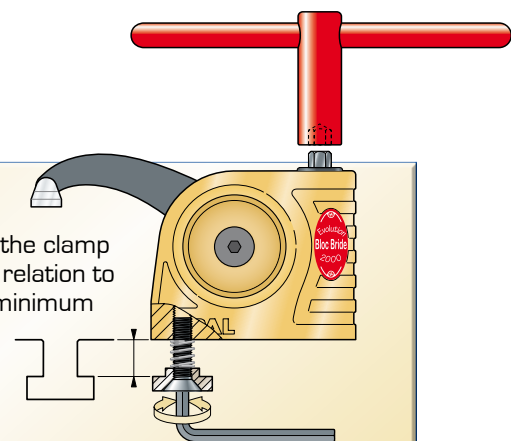
**Why choose the Bloc Bride**  
For tables with T-slots  
For boring / milling machines  
*When the arm is released, the Bloc Bride slides in the slot.*

- 1 Slide the clamp into the slot, in position for clamping the workpiece.
- 2 Clamp the workpiece directly using the clamping key provided.
- 3 Proceed with machining.

Assemble onto the sliding component with a swivel seat (09-456)

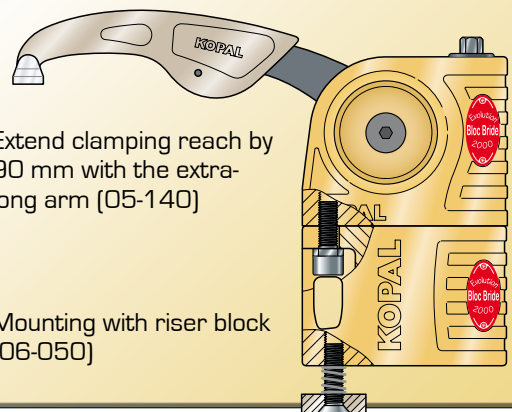


Adjust the position of the clamp or riser block T-nut in relation to slot height, leaving a minimum clearance height



Extend clamping reach by 90 mm with the extra-long arm (05-140)

Mounting with riser block (06-050)



# Bloc Bride 16000 N.

## Bloc Bride Mounting set Ref.

Special T-nuts, TF screws and springs

For slot sizes :

width 12 mm	05-200
width 14 mm	05-205
width 16 mm	05-210
width 18 mm	05-215
width 20 mm	05-220
width 22 mm	05-225

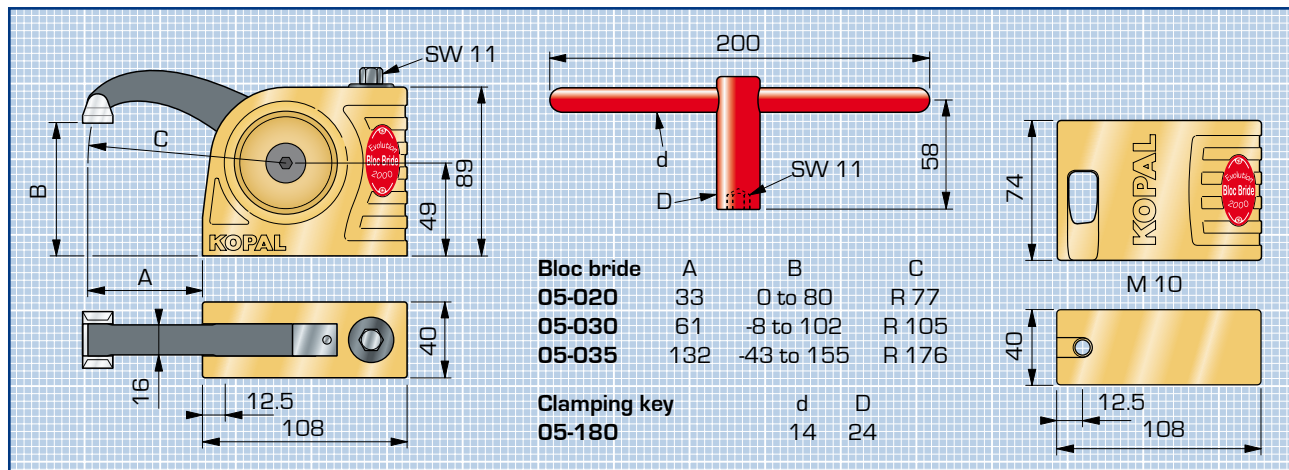
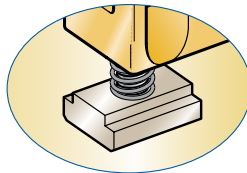


## 74 mm riser block Ref.

in Aluminium

06-050

These riser blocks can be stacked in order to clamp very high workpieces. Supplied with clamping screw. Use the clamp's special T-nut



## Accessories

Ref.

- ① Sliding element 09-456
- ② Set of 4 different shaped aluminium swivel shoes 06-150

Accessories on page 50



Swivel shoe N°4  
Ref. 06-804





# Duo 11000 N.

- Adjustable clamping range
- Lifting and Clamping
- 2 interchangeable arms of different shapes



DUO	Clamping Force	Reach	Clamping Height	Lifting Height	Clamp with clamping key Ref.	Clamp without clamping key Ref.
	11000 N.	46 to 91	0 to 129	4 to 142	21-020	21-022

**8 m/kg maximum clamping torque .**

Aluminium swivel shoe and body, steel arm.

With 2 arms, 1 clamping key and 1 clamping screw

74 mm aluminium riser block

Coated clamping key, height 58 mm [standard]

06-050

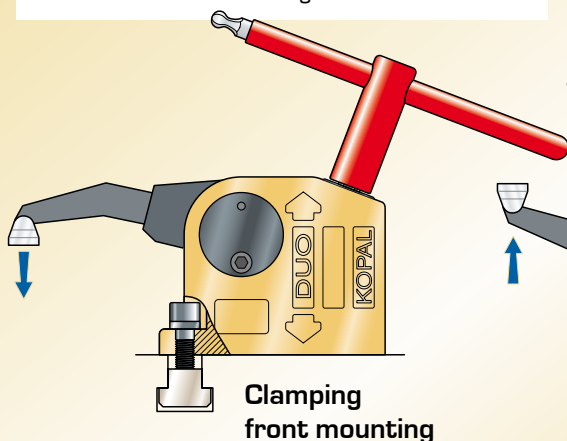
06-160



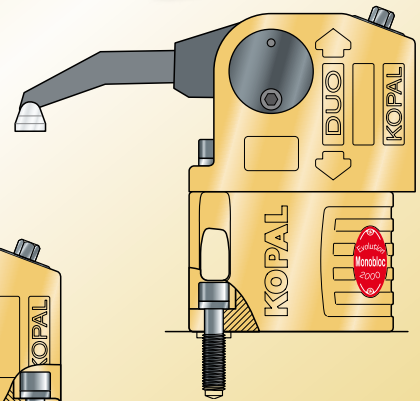
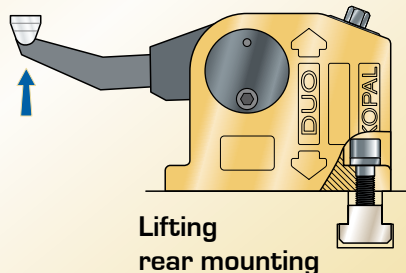
- Slide the T-nut and screw into the slot.
- Position the clamp and clamp it onto the table using the clamping key provided.
- Clamp the workpiece using the same key.
- Proceed with machining.

**When the arm released, the Monobloc remains fixed in position in the slot**

**Why use the Duo**  
Tables with T-slots  
Tables with tapped holes

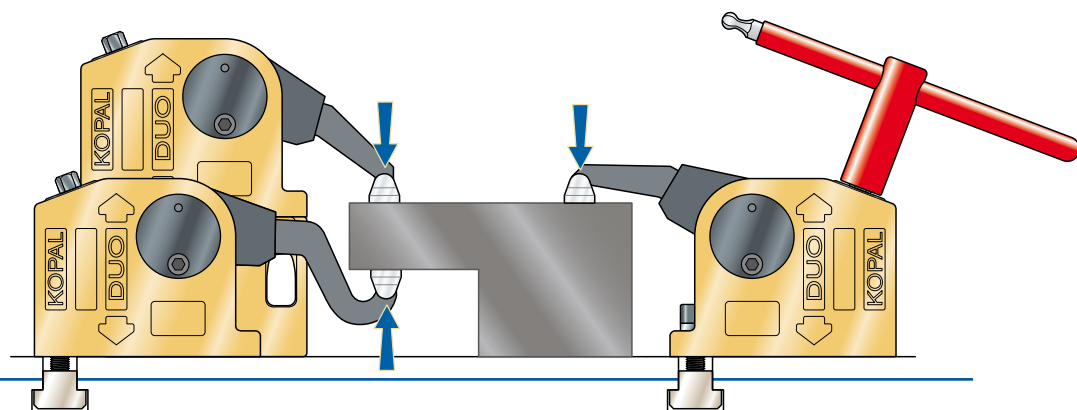


Mounting on T-slot table with special M10 screw



Mounting on modular table with special screw:  
M10 - M 12 - M 14 - M 16

**11000 N.**  
8 m/kg



**48 KOPAL**

**VERTICAL CLAMPING**

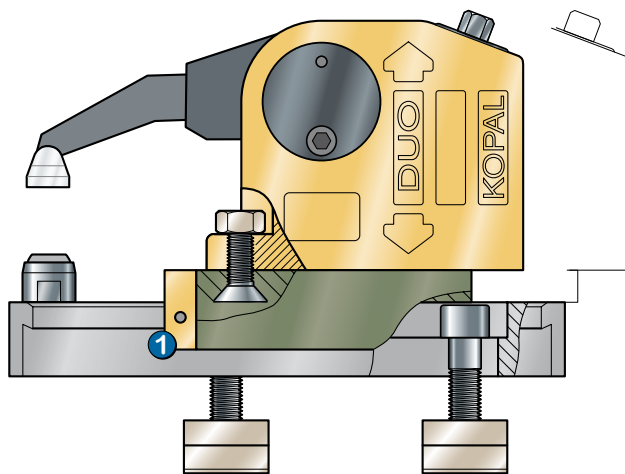
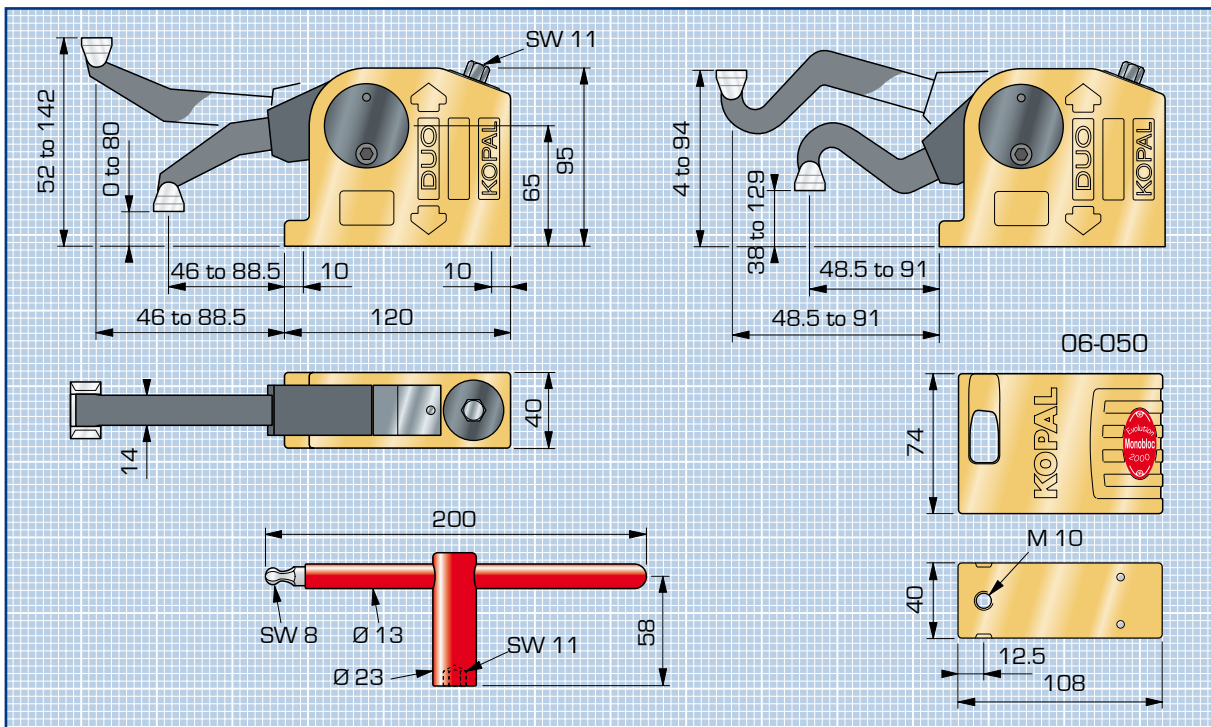
# Duo 11000 N.

## DUO fittings

	Type	Ref.
<b>for slot sizes</b>		
M 10 x 35	12 and 14 mm	06-080
M 10 x 40	16 and 18 mm	06-085
M 10 x 45	20 and 22 mm	06-090
<b>for tapped holes</b>		
M 12 x 40	M 12	06-065
M 14 x 45	M 14	06-070
M 16 x 45	M 16	06-075



**KOPAL**



**Sliding element**  
allows quick retraction of clamp  
(09-456).

### Accessories

	Ref.
1 Sliding element	09-456
2 Set of 4 different shaped aluminium swivel shoes	06-150

Accessories on  
page 50

### M 10 T-nuts

Slot size	Ref.
12 mm	90-100
14 mm	90-105
16 mm	90-110
18 mm	90-115
20 mm	90-120
22 mm	90-125
24 mm	90-130
28 mm	90-135



**KOPAL 49**

**VERTICAL CLAMPING**

# Accessories

Aluminium swivel shoes	Ref.
① Shoe N° 1 Standard by 5 pieces	05-565 06-152
② Shoe N° 2 Longitudinal	06-802
③ Shoe N° 3 Transverse	06-803
④ Shoe N° 4 Transverse V	06-804
⑤ Shoe N° 5 Longitudinal V	06-805
Set of 4 different shaped shoes N°2, N°3, N°4, N°5	06-150



Shoe N° 1  
Ref. 05-565



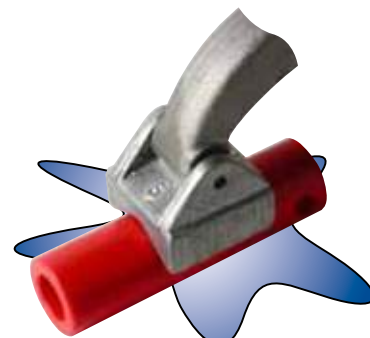
Shoe N° 2  
Ref. 06-802



Shoe N° 3  
Ref. 06-803



Shoe N° 4  
Ref. 06-804



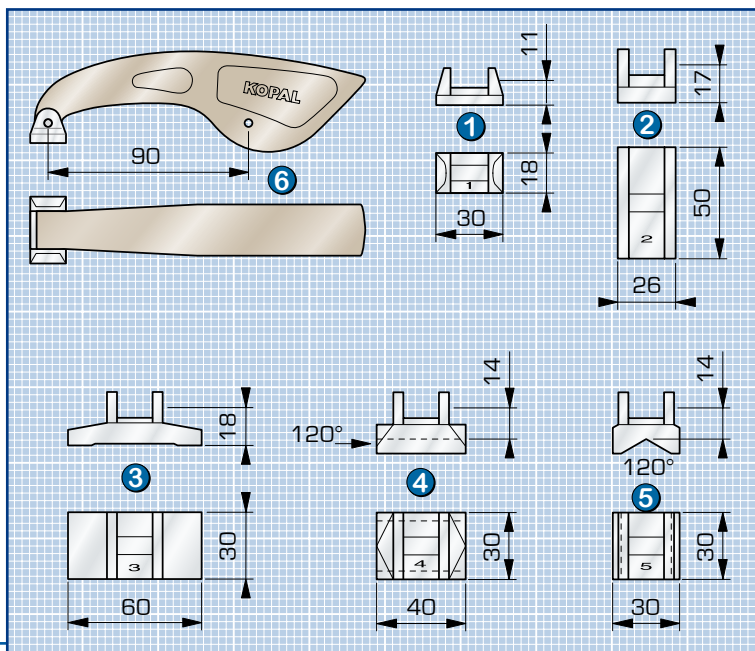
Shoe N° 5  
Ref. 06-805

## KOPAL



Same accessories for Piccolo, Monobloc, Bloc Bride and Duo ranges

Extra-long arm	Ref.
Retractable arm Increases clamping reach by 90 mm. Supply with N° 1 shoe.	05-140





# Accessories



**KOPAL**

for Piccolo, Monobloc,  
Bloc Bride and Duo



## Sliding element

Ref.

### Retracts the clamp quickly

09-456

Mounting with 2 x M 12 screws.

Includes :

#### Support

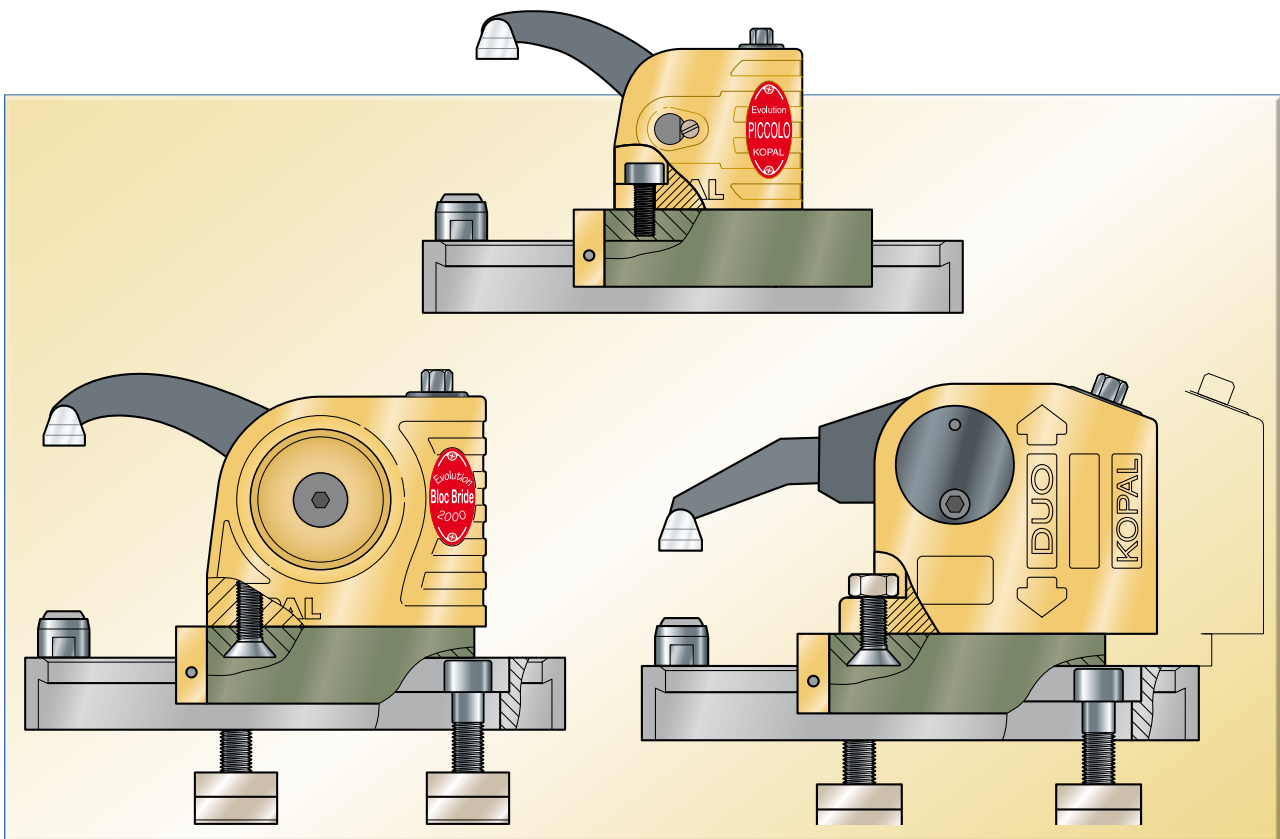
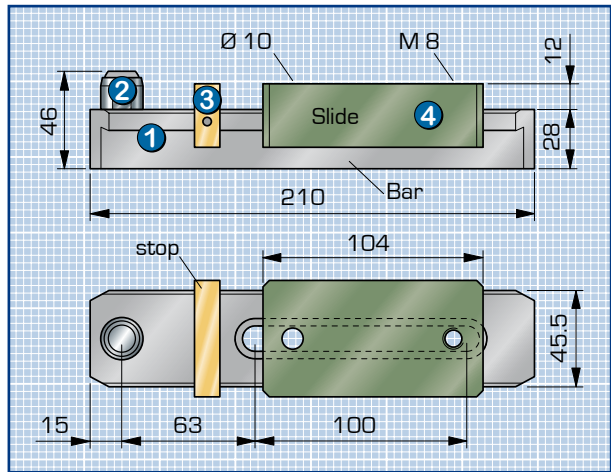
05-150

- 1 bar (made in cast iron)
- 2 swivel seat
- 3 adjustable stop

#### Slide

09-195

- 4 made in Aluminium
- With screw for mounting the clamp



# Big Block 40000 N.

- Very high clamping height
  - 4 different models
- Quick assembly**



**Big Block**  
Clamping Force

Reach Clamping Height

**Clamp with clamping key**  
Ref.

**Clamp without clamping key**  
Ref.

40000 N.	50	12 to 80 mm
28000 N.	95	- 12 to 100 mm
20000 N.	145	- 18 to 135 mm
14000 N.	245	- 50 to 155 mm

**08-020**  
**08-030**  
**08-035**  
**08-038**

**08-021**  
**08-031**  
**08-036**  
**08-039**

**40000 N.**  
7 m/kg

**7 m/kg maximum clamping torque .**

Aluminium swivel shoe and body, steel arm.

**With clamping key, swivel shoe and adaptor**

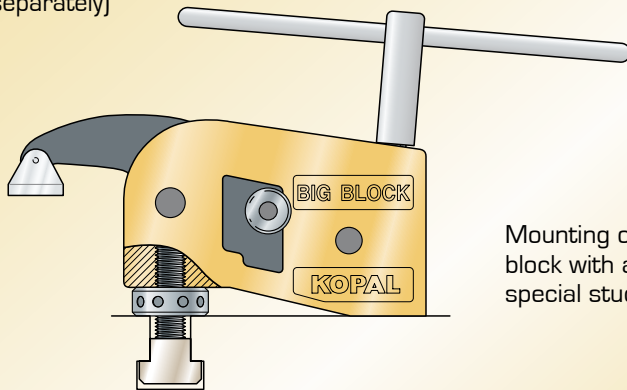
Clamping key

**08-160**

Use : T-slot tables  
Modular tables

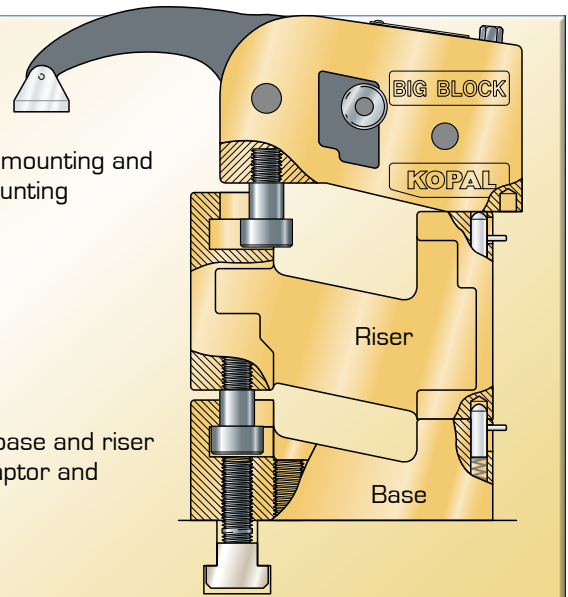
When the workpiece is released, the Big-block can either remain fixed in the slot, or slide in the slot.

Mounting directly on the table (without base or riser block), with a stud with cylinder (sold separately)

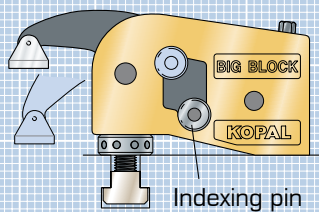


Quick mounting and dismounting

Mounting on base and riser block with adaptor and special stud



The arm can be indexed in 5 positions for quick clamping height adjustment.



# Big Block 40000 N.

## Studs with cylinder

Ref.

For mounting the Big Block directly onto the table

V2-C1	M 14 x 62 mm	08-060
V2-C1	M 14 x 82 mm	08-070
V2-C2	M 16 x 70 mm	08-080
V2-C2	M 16 x 80 mm	08-090



## Special studs

For mounting the base on the table

V2-1	M 14 x 60 mm	08-100
V2-1	M 14 x 80 mm	08-110
V2-2	M 16 x 65 mm	08-120
V2-2	M 16 x 85 mm	08-130

Riser block N°1 55 mm 08-045

Riser block N°2 110 mm 08-050

Riser block N°3 330 mm 08-055

With an adaptor

55 mm Base 08-040

made in Aluminium

With an M 16 x 65 mm mounting stud



## Swivel shoes

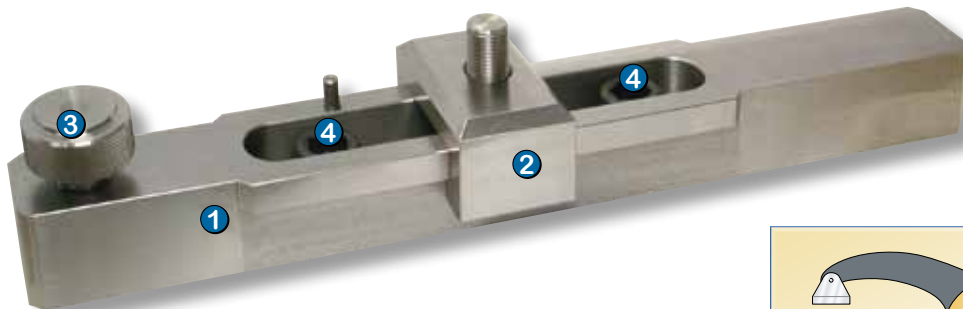
Standard aluminium shoe

08-330



T-nuts	M 14	M 16
Slot size	Ref.	Ref.
16 mm	90-200	
18 mm	90-205	90-250
20 mm	90-210	90-255
22 mm	90-215	90-260
24 mm	90-220	90-265
28 mm	90-225	90-270

# KOPAL

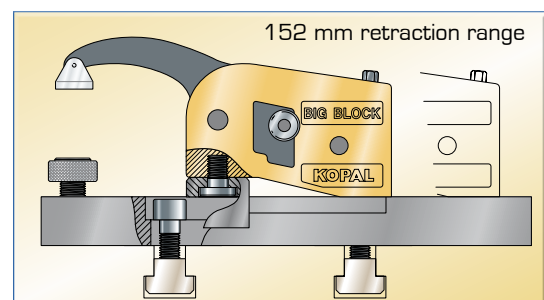


## Sliding equipment

Ref.

08-180

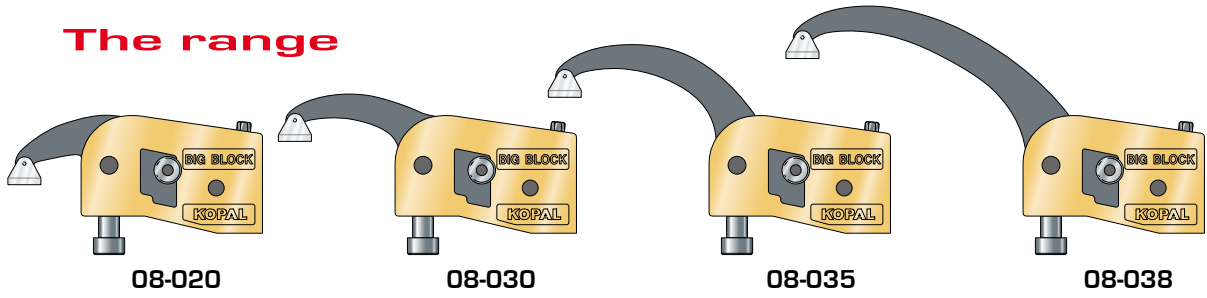
- ① 1 bar
- ② 1 slide
- ③ 1 adjustable workpiece support
- ④ 2 M16 mounting screws





# Big Block 40000 N.

## The range



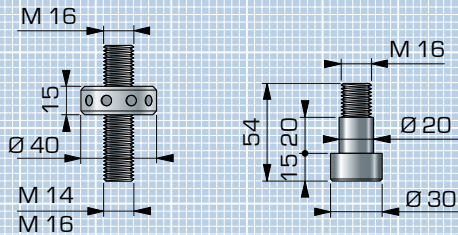
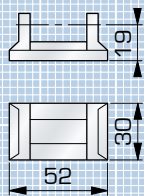
08-020

08-030

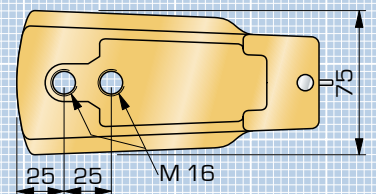
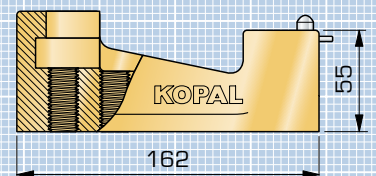
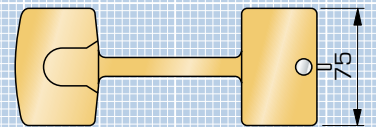
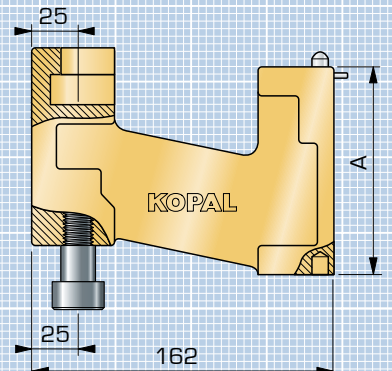
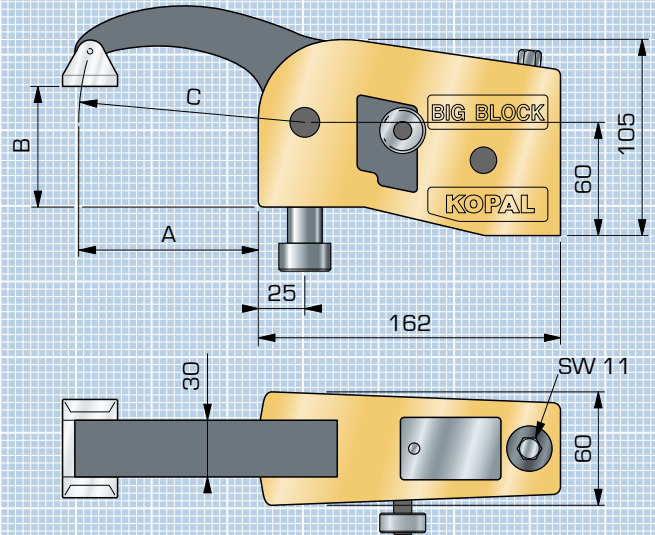
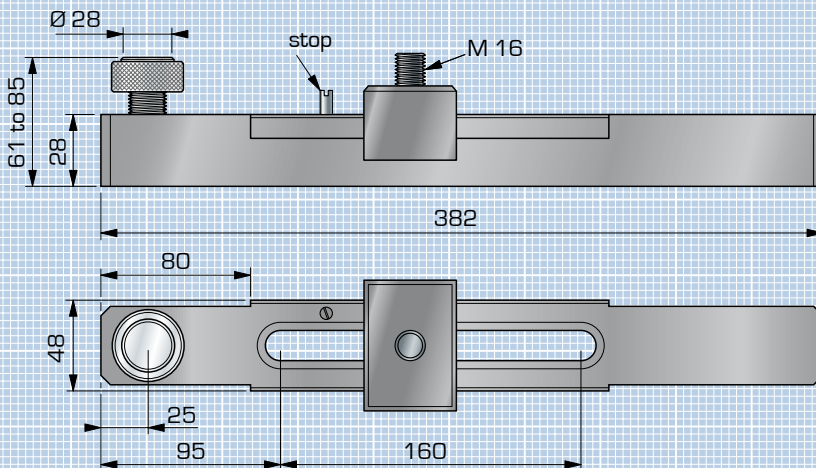
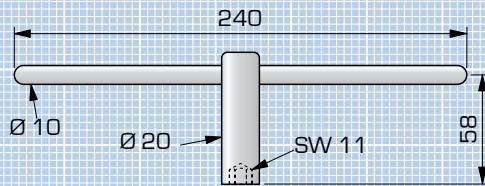
08-035

08-038

Big Block	A	B	C
08-020	50	12 to 80	R 75
08-030	95	-12 to 100	R 120
08-035	145	-18 to 135	R 170
08-038	245	-50 to 155	R 270



Riser blocks	A
08-045	55
08-050	110
08-055	330



VERTICAL CLAMPING

# Spare parts

## Piccolo

	Ref.
Worm screw 1 screw, 1 smooth ring	07-310
54 mm arm	07-315
100 mm arm	07-318
Clamping key	07-180
Swivel shoe	05-565



## Monobloc - Bloc Bride

Worm screw 1 screw, 1 smooth ring	05-310
33 mm arm	05-315
61 mm arm	05-320
132 mm arm	05-322
Monobloc Clamping key	06-160
Bloc Bride Clamping key	05-180
Swivel shoe	05-565



## Duo

Worm screw	21-310
Straight arm	21-330
Bent arm	21-335
Clamping key	06-160
Swivel shoe	05-565

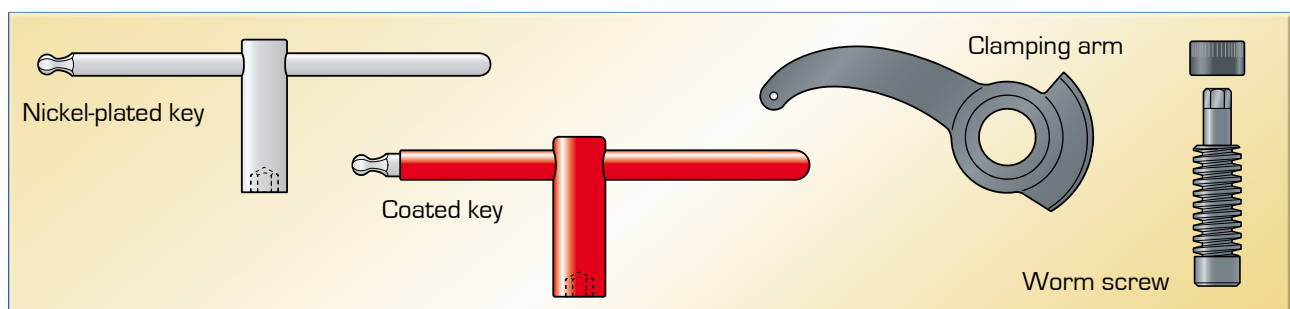


## Big Block

Worm screw 1 screw, 1 smooth ring	08-325
Positioning pin	08-150
50 mm arm	08-315
95 mm arm	08-320
145 mm arm	08-322
245 mm arm	08-323
Clamping key	08-160
Swivel shoe	08-330



**KOPAL**



**VERTICAL CLAMPING**

# Chain clamping 16000 N.

## Chain clamping Equipment

### with Standard chain

- Equipment with 0.99 M. chain
- Equipment with 1.981 M. chain
- Equipment with 2.971 M. chain

Ref.

06-040  
06-044  
06-043

**16000 N.**  
8 m/kg

### with Chain for protection clip

Protection clip supplied separately 

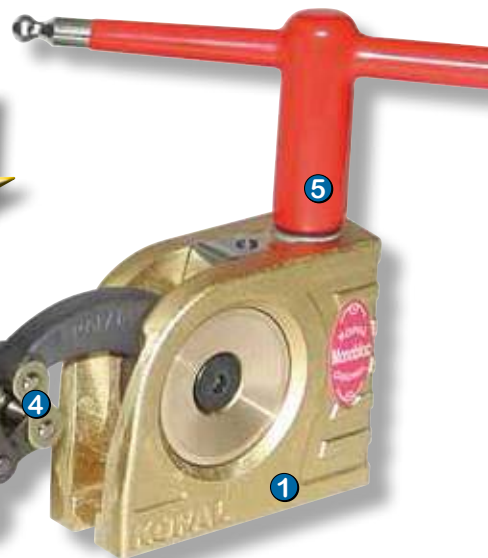
- Equipment with 0.99 M. chain
- Equipment with 1.981 M. chain
- Equipment with 2.971 M. chain

06-420  
06-422  
06-423

Includes :

- 1 Monobloc short arm 16000 N.
- 2 Chain (19.05)
- 3 Chain attachment block
- 4 Chain clip
- 5 Clamping key

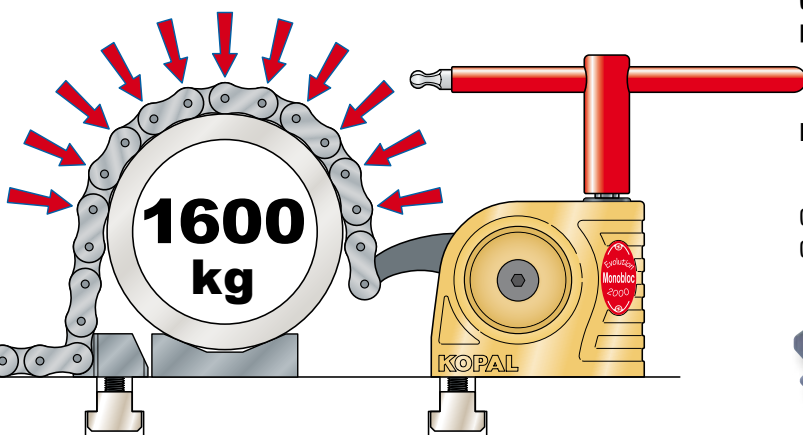
Fixing screws supplied separately 



## Components


Ref.

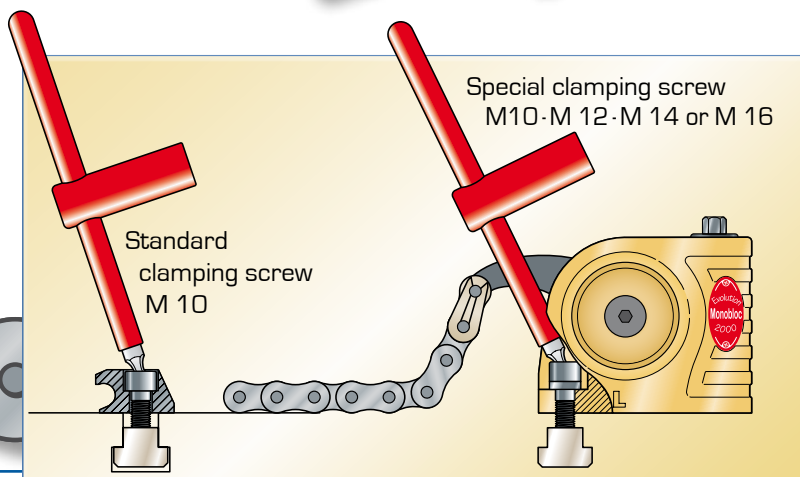
		Ref.
Standard Chain	0.971 M.	06-900
	1.962 M.	06-902
	2.952 M.	06-911
Chain for protection clip	0.971 M.	06-441
	1.962 M.	06-442
	2.952 M.	06-443
Protection clip	[1 piece]	06-430
	[set of 5 pieces]	06-435
	[set of 10 pieces]	06-437
Chain attachment block		06-910
Chain clip		06-905



 distribution of clamping force

 Clamping of very large workpieces

The chain length, up to 3 meters, **longer on request**,  means you can clamp very large workpieces.



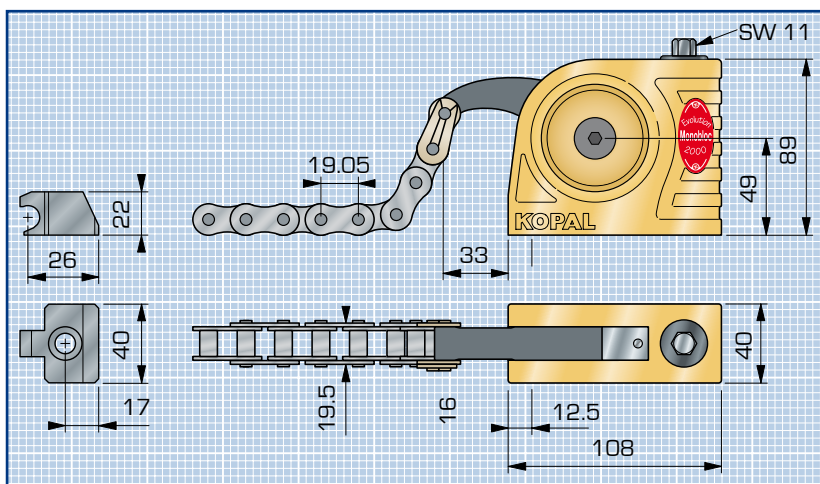
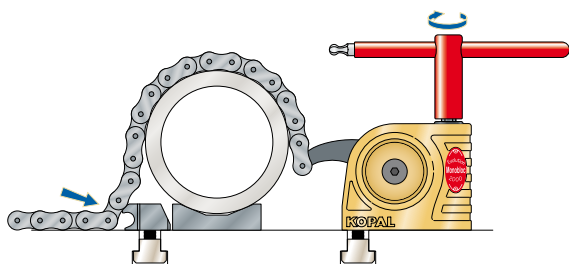


# Chain clamping 16000 N.

Distribution of clamping force over a large area to prevent workpiece distortion.

Quick chain locking via a compact chain attachment block with M10 mounting.

Powerful and quick clamping with a Monobloc 16000 Newton clamp. Clamp or unclamp the workpiece at the turn of a key - the chain can then clear the workpiece completely.



## Fittings screw

for Clamp	Ref.
M10 x 35	06-080
M10 x 40	06-085
M10 x 45	06-090

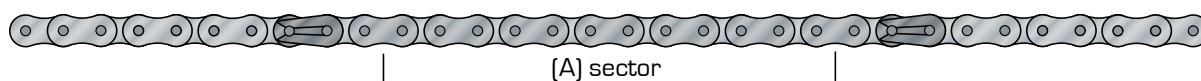
## for attachment block

M10 x 35	99-652
M10 x 40	99-653
M10 x 45	99-654



## T-nuts M10 Ref.

14 mm	90-105
16 mm	90-110
18 mm	90-115
20 mm	90-120
22 mm	90-125
24 mm	90-130
28 mm	90-135



## Information for use

The **protection clip** can be assembled on the **equipments** 06-420, 06-422, 06-423 on the **special chains** 06-441, 06-442, 06-443 in the center (A) sector of the chain.

*0.99 M. of chain : 40 clips maxi.*

*1.981 M. of chain : 49 clips maxi.*

*2.971 M. of chain : 69 clips maxi.*

## Examples of using

Diameter of workpiece	Number of Clip	Maximum torque	Clamping force
100 mm	4 clips	1.6 m/kg	3200 N.
150 mm	6 clips	2.35 m/kg	4800 N.
200 mm	9 clips	3.26 m/kg	7200 N.
250 mm	10 clips	3.57 m/kg	8000 N.
300 mm	13 clips	4.5 m/kg	10400 N.

*1 clip can support 800N.*



KOPAL 57

VERTICAL CLAMPING

# Chain clamping 50000 N.

## Chain clamping

Ref.

### Equipment

- with 3 Meter of Chain
- with 4 Meter of Chain
- with 5 Meter of Chain

- 08-346
- 08-347
- 08-348

Including :

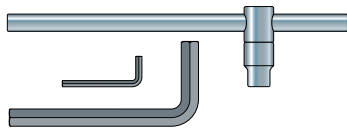
- 1 Blocapress 50000 N.
- 1 Chain 1" type
- 1 Chain attachment block

Fixing screws and clamping keys supplied separately

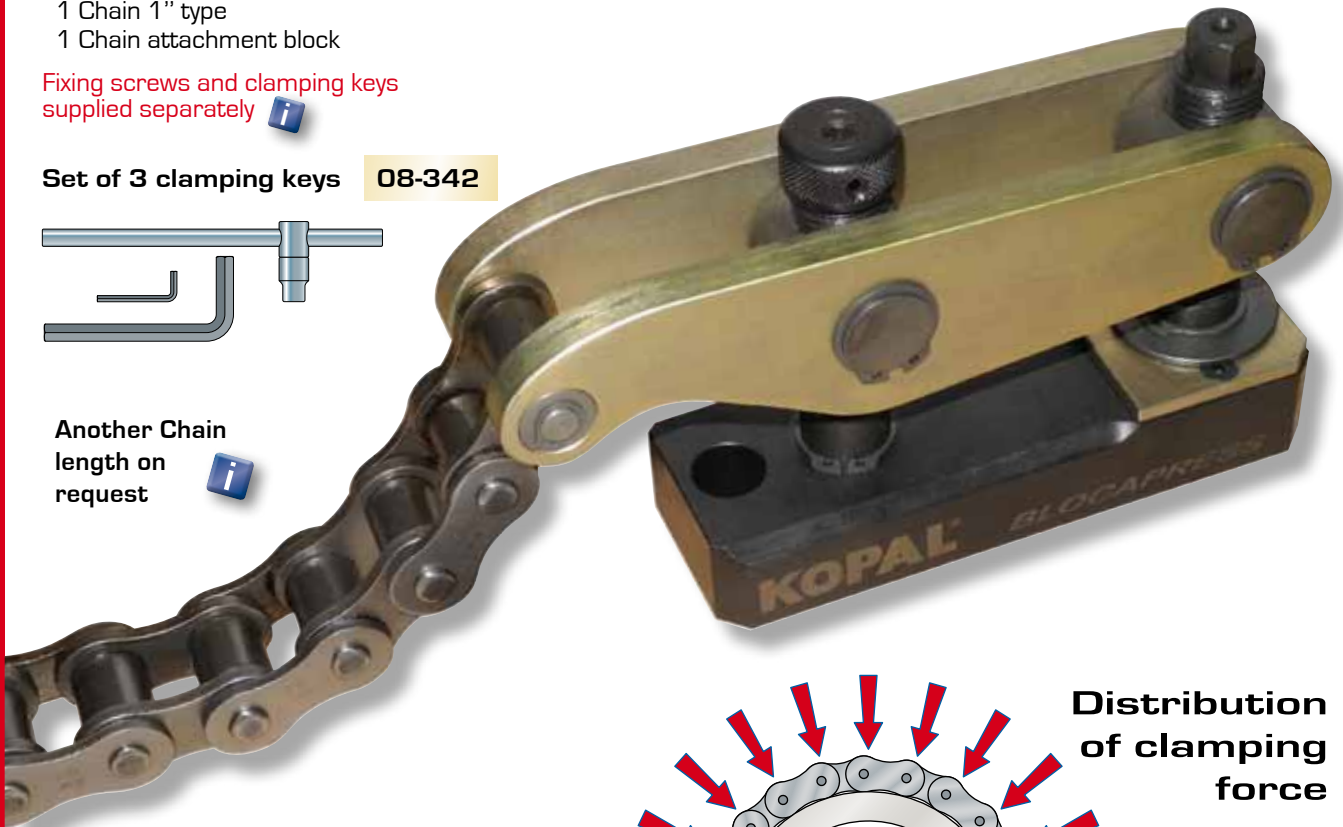
- 50000 Newton
- High length of chain
- M16 Fastening

### Set of 3 clamping keys

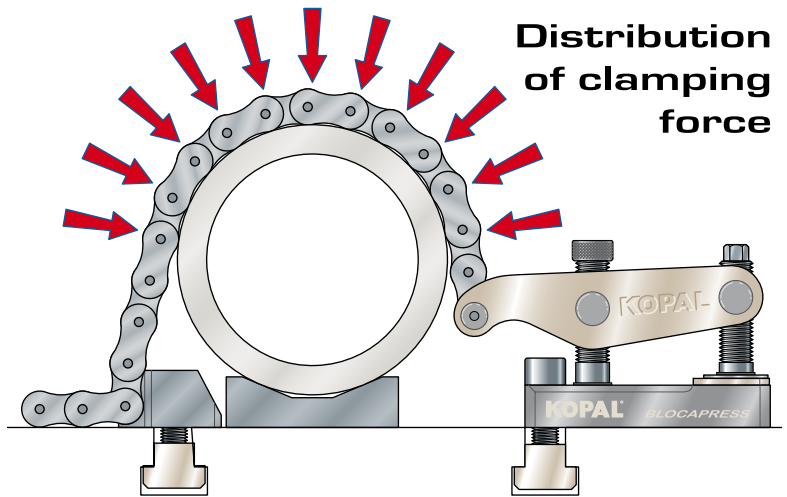
08-342



Another Chain length on request



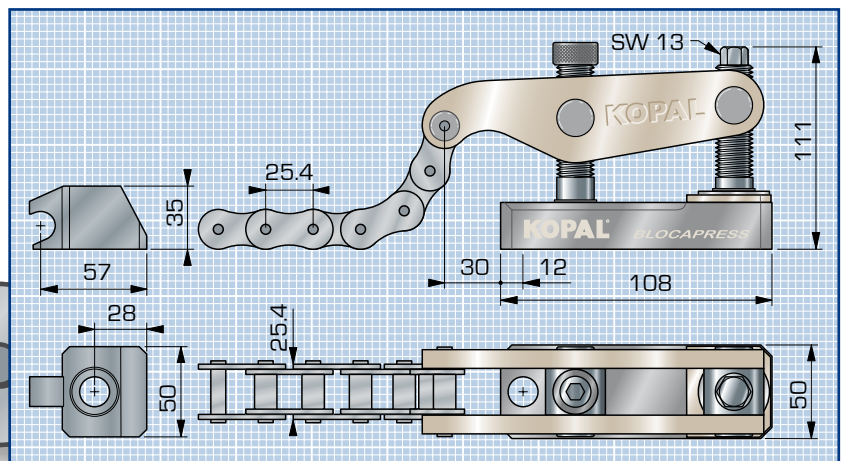
**5 tonnes**



### Mounting screw for clamp and attachment block

Ref.

- M16 x 60 99-682
- M16 x 80 99-684
- Class 12.9 (ISO-Standard)

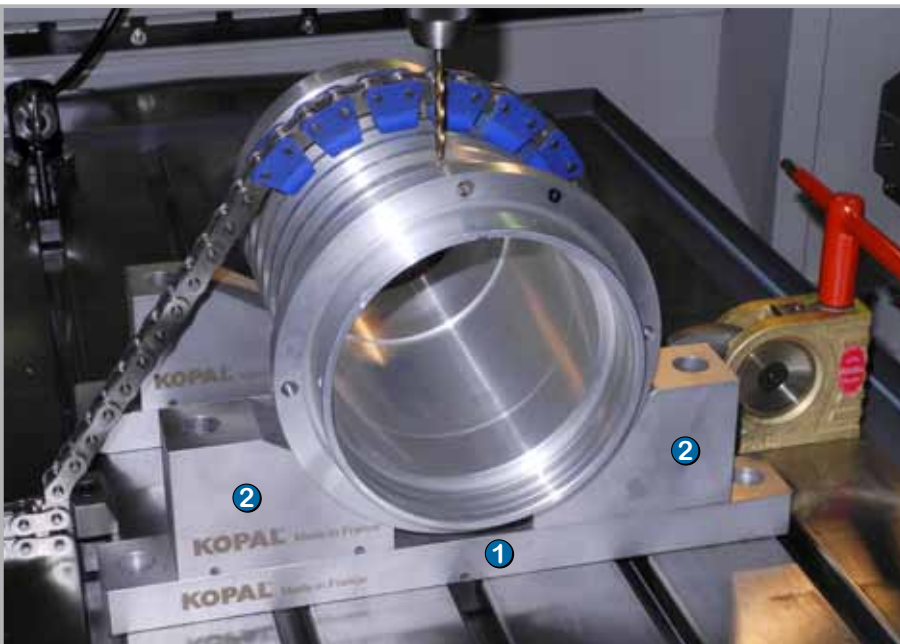


size : 1/1



# Workpiece Support

Used with Chain clamping 16000 and 50000 N.



## Equipment

Ref.

Including :

**06-470**

- ① 1 x Mounting bar 400 mm
- ② 2 x Indexable 1/2 Ve support made of hardened steel with locator and screws

Locator and fixing screws for bar sold separately (depending on your t-slot).

## Ve Support

Ref.

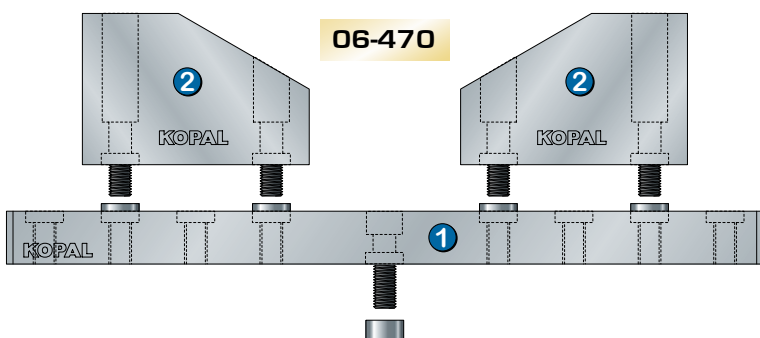
Including :

**06-472**

- ② 2 x Indexable 1/2 Ve support made of hardened steel.

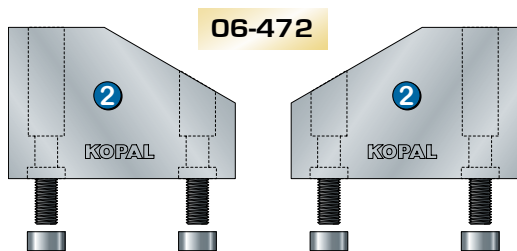
Locators and fixing screws sold separately (depending on your t-slot).

# KOPAL



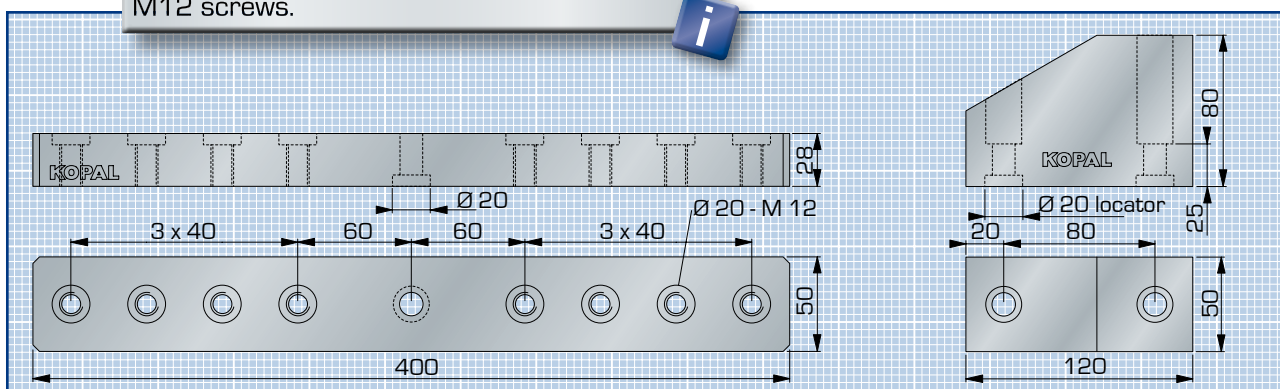
## Mounting screw

M12 x 45	99-672
M12 x 50	99-674
M12 x 60	99-675
class 12/9	



T-slots	T-nuts M 12 Ref.	Locator Ref.
14 mm	90-105	09-885
16 mm	90-110	09-886
18 mm	90-115	09-888
20 mm	90-120	09-890
22 mm	90-125	09-892
24 mm	90-130	09-894
28 mm	90-135	09-898

The Mounting bar and 1/2 ve support are fixed on table t-slot with special Locators and M12 screws.





# Terrific 11000 N.

## Clamp with retractable arm

- Extremely compact clamp
- Ultra-quick action
- Arm retraction

Record clamping and unclamping times



Terrific Clamping Force	Clamping		Clamp with clamping key	Clamp without clamping key
	Reach	Height	Ref.	Ref.
11000 N.	30	22 to 26 mm	23-020	23-021

2 m/kg maximum clamping torque .

With clamping key and M10 x 35 mm clamping screw

Clamping key

23-150

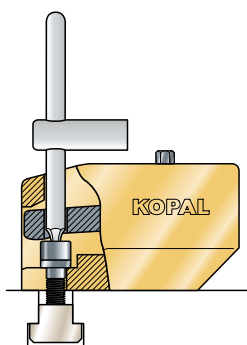
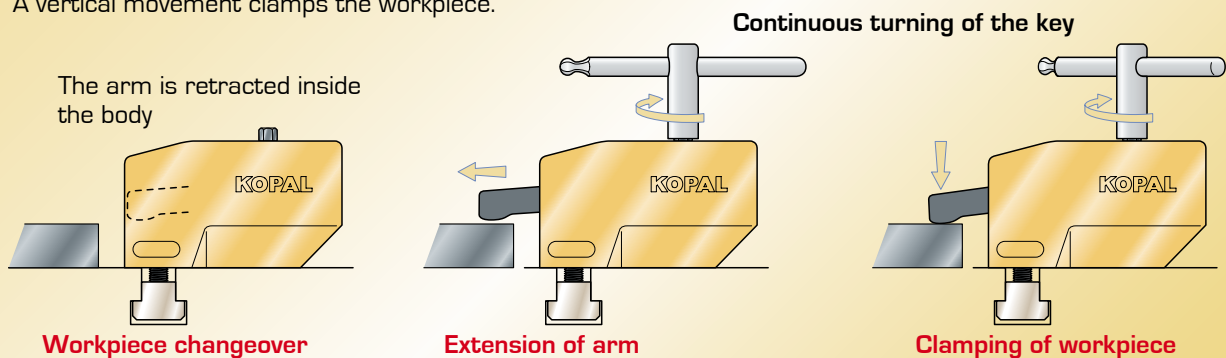
11000 N.  
2 m/kg

Use  
For series assembly

### Principle

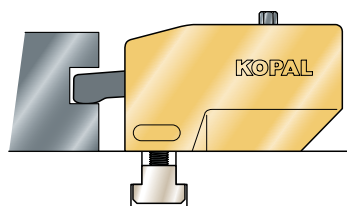
When the key is turned two movements are carried out consecutively :

- A horizontal movement places the clamping arm in position for clamping.
- A vertical movement clamps the workpiece.



Simple and quick mounting with M 10 screw (provided)

# KOPAL



Compact, space-saving clamp

A mechanical clamp, which is particularly suitable for series production requiring extremely quick workpiece changeover.

VERTICAL CLAMPING

60 KOPAL

# Terrific 11000 N.

## Terrific fittings

### Mounting screw

M 10 x 35

M 10 x 40

M 10 x 45

### Mounting screw

M 12 x 40

M 14 x 45

M 16 x 45

Type

### for slot sizes

12 and 14 mm

16 and 18 mm

20 and 22 mm

### for tapped holes

M 12

M 14

M 16

Ref.

06-080

06-085

06-090

06-065

06-070

06-075



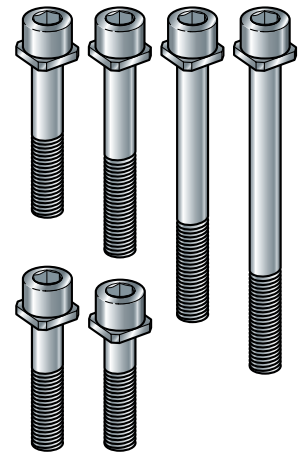
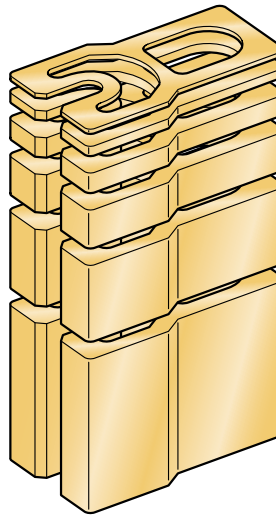
## Set of 6 riser blocks

23-080

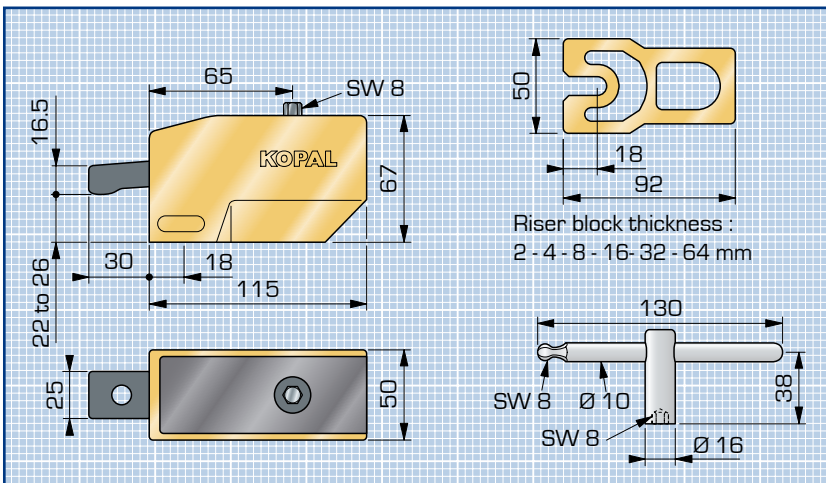
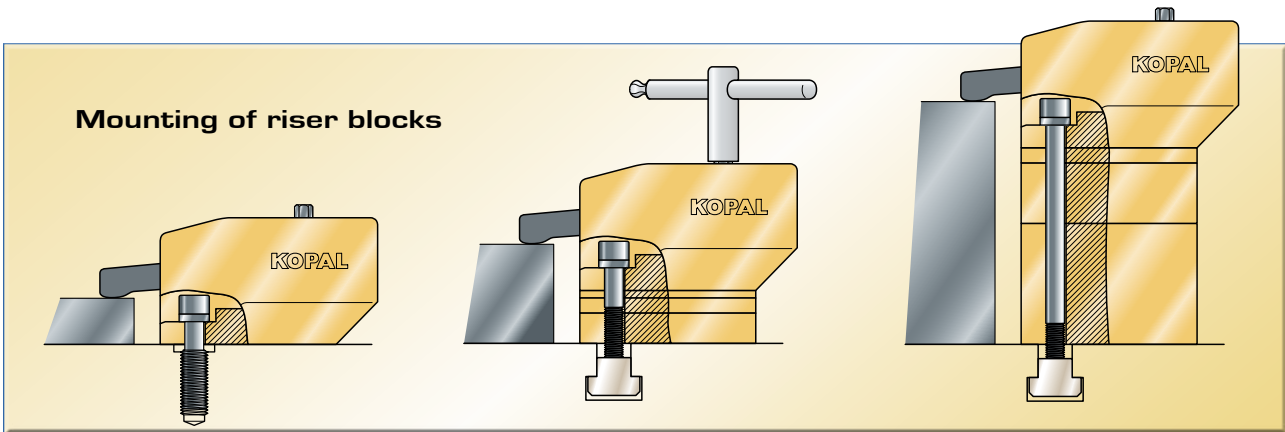
Aluminium riser blocks supplied with 6 x M10 screws of various lengths. These riser blocks can raise the clamping height of Terrific up to 126 mm

Riser block thicknesses : 2 - 4 - 8 - 16 - 32 - 64 mm.  
M 10 x : 45 - 50 - 60 - 75 - 100 - 120 mm.

Match the length of the screw to the height of the riser block used.



## Mounting of riser blocks



T-nuts M 10

Slot size	Ref.
12 mm	90-100
14 mm	90-105
16 mm	90-110
18 mm	90-115
20 mm	90-120
22 mm	90-125
24 mm	90-130
28 mm	90-135

**KOPAL 61**

**VERTICAL CLAMPING**

# Maxibloc 35000 N.

- Steel clamp for heavy machining
- Extremely compact clamp
- Powerful clamping

## Retractable arm




### Maxibloc

All parts in steel

Clamping Force	Clamping Reach	Clamping Height	Clamp with clamping key Ref.	Clamp without clamping key Ref.
35000 N.	50	0 to 86	06-310	06-311

7 m/kg maximum clamping torque .

With clamping key, extension key and special clamping screw M14 

Nickel-plated clamping key, height 88 mm

06-325

Extension key

06-726

**35000 N.**  
7 m/kg

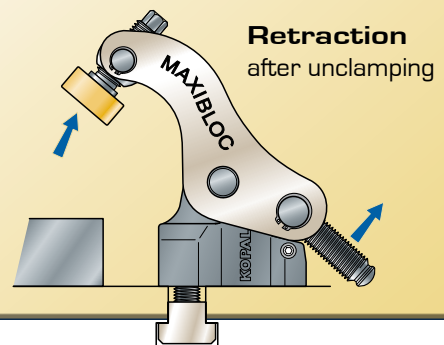
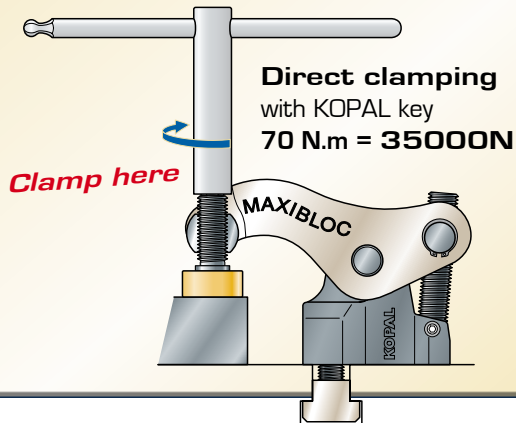
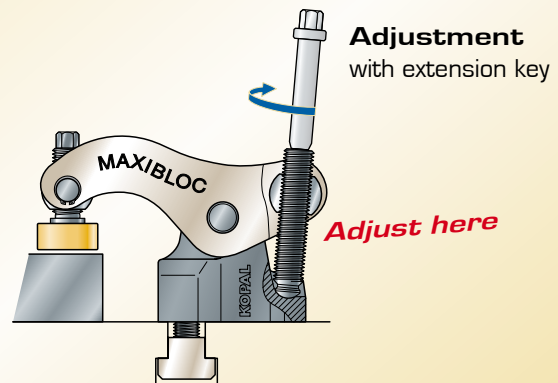
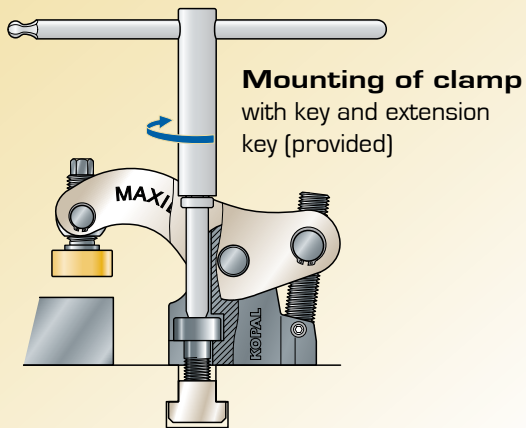
- For T-slot tables with slot size from 16 mm and M 14 and M 16 modular tables.

Mounting with 1 screw.

Compact clamp with direct workpiece clamping.

Very simple course adjustment and retraction of clamping arm.

## KOPAL



VERTICAL CLAMPING



# Maxibloc 35000 N.

## Mounting screws

Ref.

Special large-head, SW 8 mm

M 14 x 40 mm

06-720

M 16 x 44 mm

06-721

M 16 x 60 mm

06-723

## Riser block

Steel stackable riser block, supplied with a M 14 mounting screw

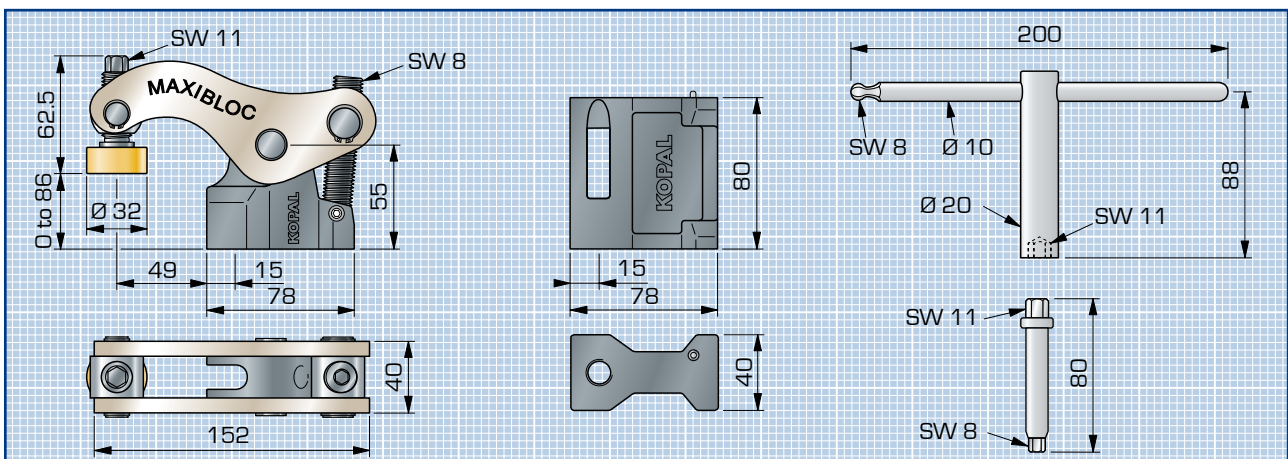
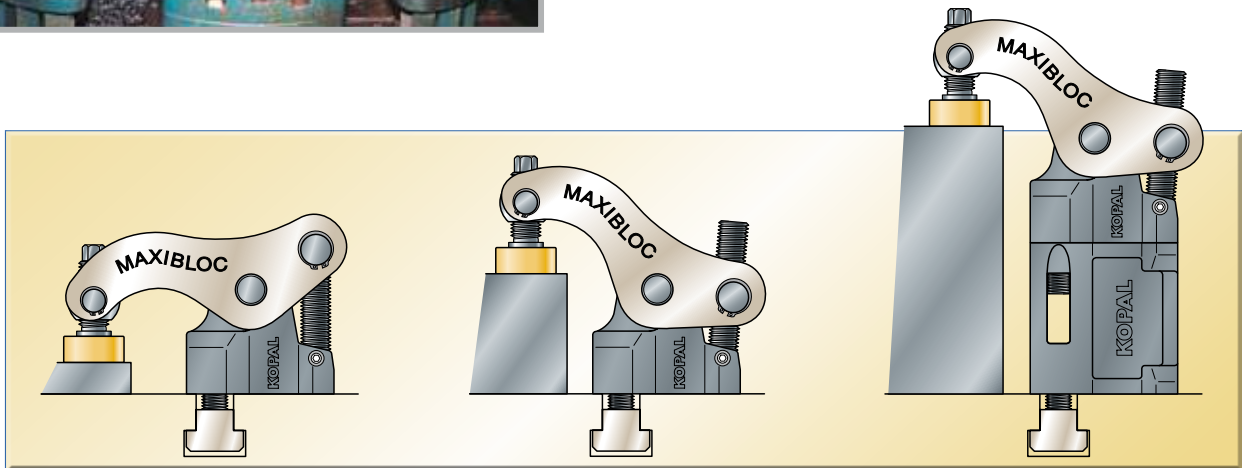
80 mm riser block

06-320



T-nuts Slot size	M 14 Ref.	M 16 Ref.
16 mm	90-202 *	
18 mm	90-205	90-250
20 mm	90-210	90-255
22 mm	90-215	90-260
24 mm	90-220	90-265
28 mm	90-225	90-270

\* long T-nut



# Blocapress 50000 N.

- Extremely high mechanical strength
- Entirely made from hardened steel
- For very powerful presses



Blocapress			Clamp with clamping key Ref.	Clamp without clamping key Ref.
Clamping Force	Clamping Reach	Clamping Height		
50000 N.	30	14 to 92	08-341	08-340

9 m/kg maximum clamping torque.

Clamping keys and screws sold separately

## KOPAL

Mounting on T-slot table using a high strength M16 screw

Course adjustment with  $\varnothing 24$  adjusting wheel or 5mm hexagonal key

Clamping with 13mm socket key

**50000 N.**  
9 m/kg

*for Press tools*

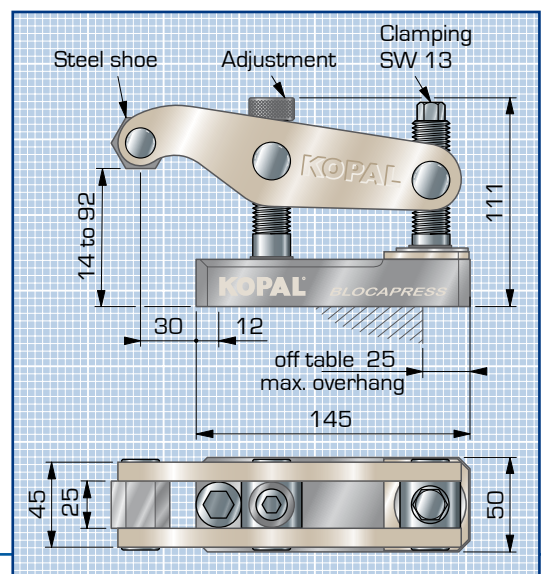
The unique mounting point makes it possible to swivel

Ref. **08-342**

**Set of 3 clamping keys**  
Including :  
1 sliding handle (1/2" square)  
1 hexagonal socket 13 mm  
2 male hexagonal keys : 5 and 14mm

M 16 mounting screw  
Class 12.9 (ISO-Standard)

M 16 x 60 mm screw **99-682**  
M 16 x 60 mm screw **99-684**



## Screw for Monobloc - Duo

		Ref.
M 10 x 35	12 and 14 mm	06-080
M 10 x 40	16 and 18 mm	06-085
M 10 x 45	20 and 22 mm	06-090
M 12 x 40	M 12	06-065
M 14 x 45	M 14	06-070
M 16 x 45	M 16	06-075



**Important**  
Always use special  
KOPAL screws

## Fixture for Bloc Bride

	Ref.
Special T-nuts, screws and spring	
slot 12 mm	05-200
slot 14 mm	05-205
slot 16 mm	05-210
slot 18 mm	05-215
slot 20 mm	05-220
slot 22 mm	05-225



## Screw for Piccolo

	Ref.
M 8 x 30 mm	07-720
M 10 x 35 mm	07-730
M 12 x 35 mm	07-735



## Fixture for Big Block

	Ref.
<b>Special studs with cylinder</b> mounting of Big Block on table	
V2-C1 M 14 x 62 mm	08-060
V2-C1 M 14 x 82 mm	08-070
V2-C2 M 16 x 70 mm	08-080
V2-C2 M 16 x 80 mm	08-090



## Screw for Maxibloc

	Ref.
M 14 x 40 mm	06-720
M 16 x 44 mm	06-721
M 16 x 60 mm	06-723



## Special studs

	Ref.
mounting of base on table	
V2-1 M 14 x 60 mm	08-100
V2-1 M 14 x 80 mm	08-110
V2-2 M 16 x 65 mm	08-120
V2-2 M 16 x 85 mm	08-130



## Adapter

Mounts the Big Block onto riser blocks and the base	08-140
---	--------



T-slot covers  
page 70



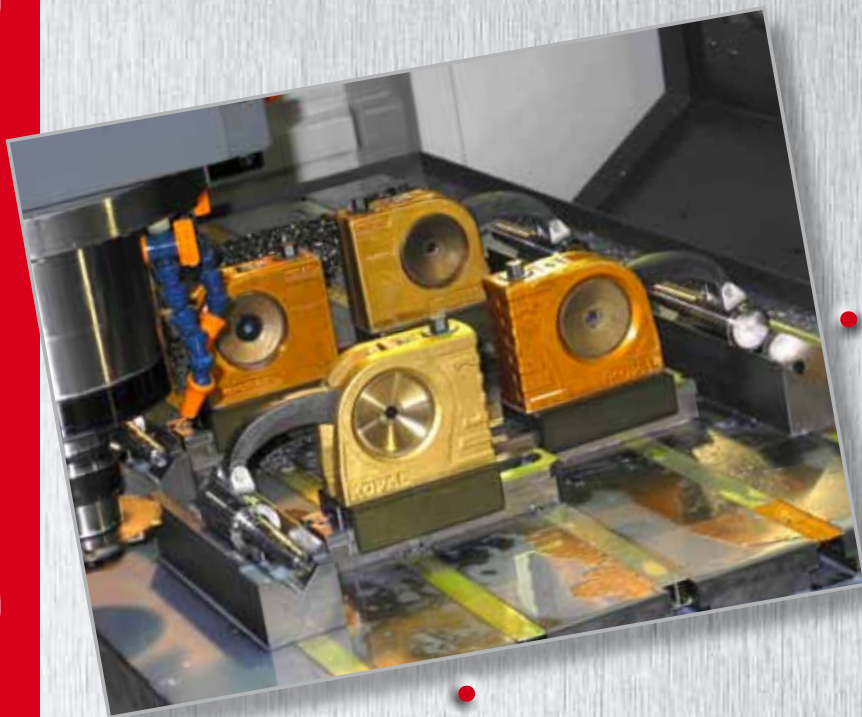
## T-nuts for T-slots



Slot size	M 8 Ref.	M 10 Ref.	M 12 Ref.	M 14 Ref.	M 16 Ref.
10 mm	90-050				
12 mm	90-055	90-100			
14 mm	90-060	90-105	90-150		
16 mm	90-065	90-110	90-155	90-200	
18 mm	90-070	90-115	90-160	90-205	90-250
20 mm		90-120	90-165	90-210	90-255
22 mm		90-125	90-170	90-215	90-260
24 mm		90-130	90-175	90-220	90-265
28 mm		90-135	90-180	90-225	90-270



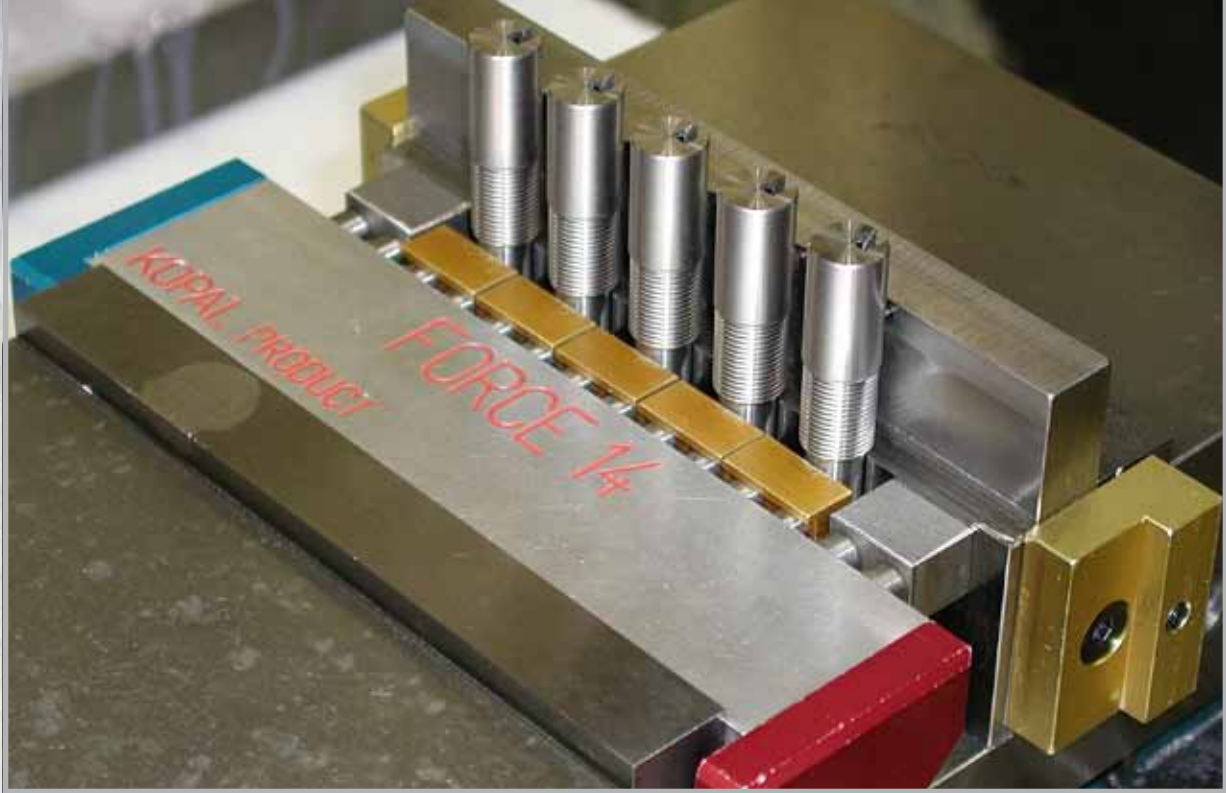
**VERTICAL CLAMPING**



**KOPAL**







# Power regulators for vices

# KOPAL®



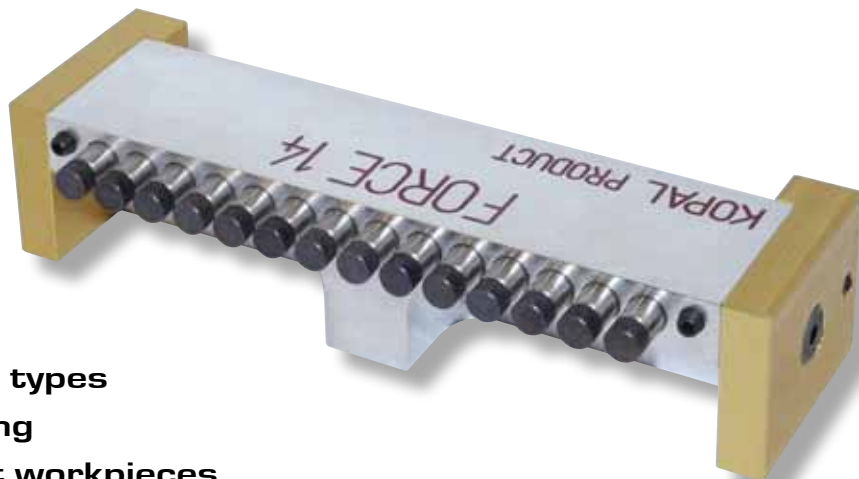
Power regulators <b>FORCE</b>	68 - 69
Interchangeable tips	69
Fixed jaws with V-guides	70

**KOPAL 67**

**REGULATORS FOR VICES**

# Force

Allows simultaneous clamping of several workpieces of different sizes or shapes in the same vice.



- Adapts to all vice types
- Multiple clamping
- Curved or cast workpieces
- Cylindrical workpieces

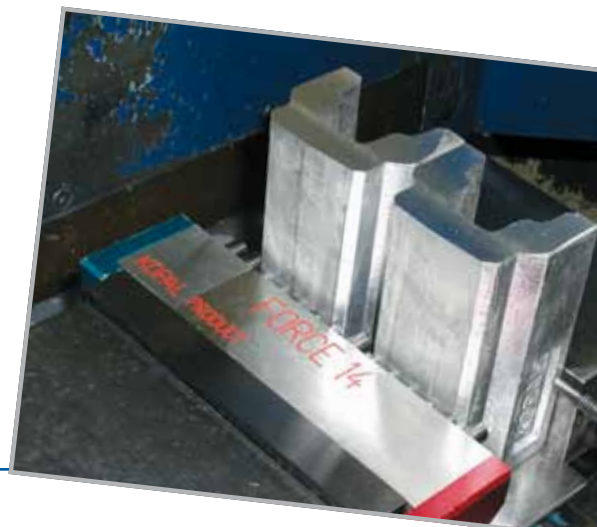
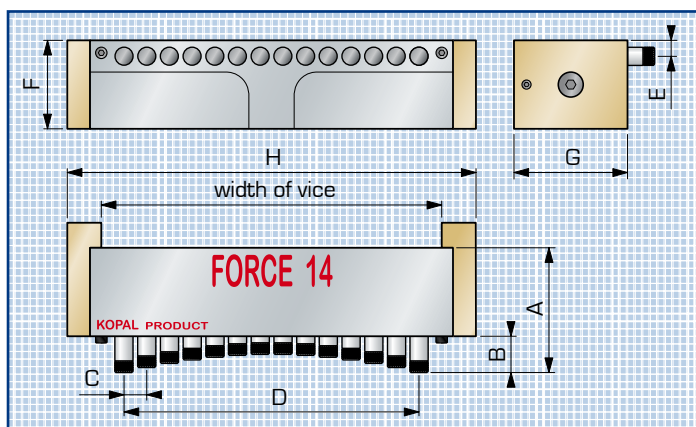
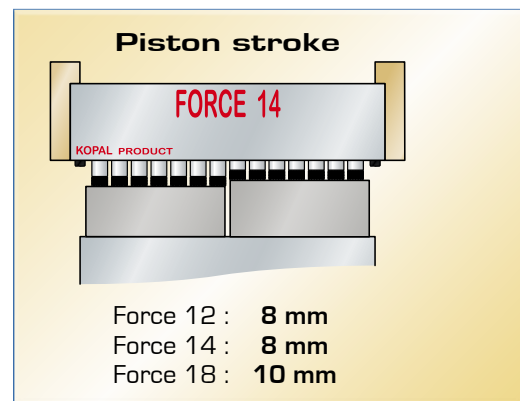
## KOPAL

Regulator Force	Vice width	Number of pistons	A	B	C	D	E	F	G	H	Ref.
F 12 with tips	100 to 135	12 Ø 8	41 - 49	3 - 11	10	110	7	39	49	156	27-313
F 12			46 - 54	8 - 16							27-312
F 14 with tips	125 to 160	14 Ø 8	41 - 49	3 - 11	10	130	7	39	49	181	27-315
F 14			46 - 54	8 - 16							27-314
F 18 with tips	175 to 200	12 Ø 12	52 - 62	3 - 13	16	176	10	49.5	61.5	230	27-319
F 18			57 - 67	8 - 18							27-318

FORCE can be adapted in seconds to any type of vice (from 100 to 200 mm) and is the ideal accessory for all types of mechanical, pneumatic or hydraulic vices.



The long stroke and multiple points of contact of the pistons ensure powerful and effective clamping.





## Principle

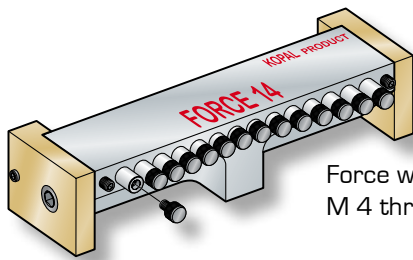
The clamping pistons are linked together via a closed hydraulic circuit.

The degree to which each piston is retracted doesn't matter - the clamping force exerted by each of the pistons is identical.

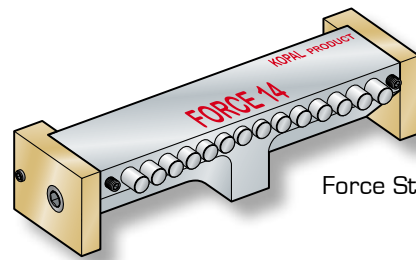


### Maximum recommended vice force in Newton (vice power)

	Force 12			Force 14			Force 18			
	Nb. of pistons used	12	10	8	14	12	10	12	10	8
Maximum force	42000	35000	28000	49000	42000	35000	92000	77000	61000	



Force with M 4 threaded pistons



Force Standard

### Interchangeable tips

The tapped pistons allow you to fit the appropriate tips for different shaped workpieces.

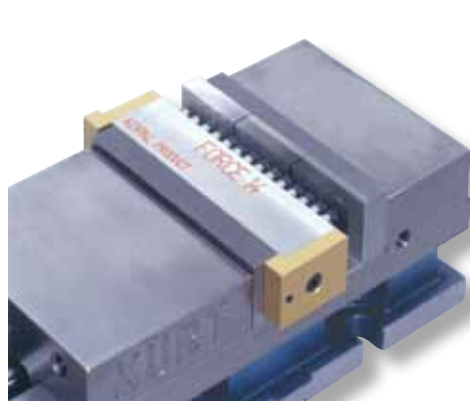
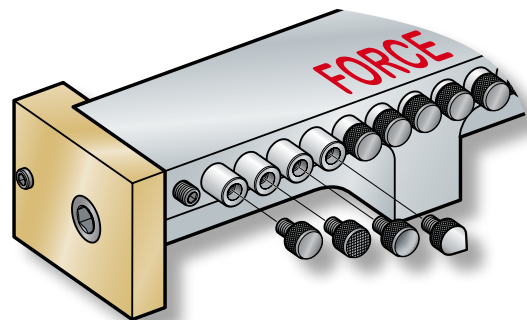
**Flat tips** for finished workpieces

**Grooved tips** for raw workpieces

**Ball-ended tips** for curved workpieces

**Pointed tips**

*for Force with tapped pistons*



Set of tips for :

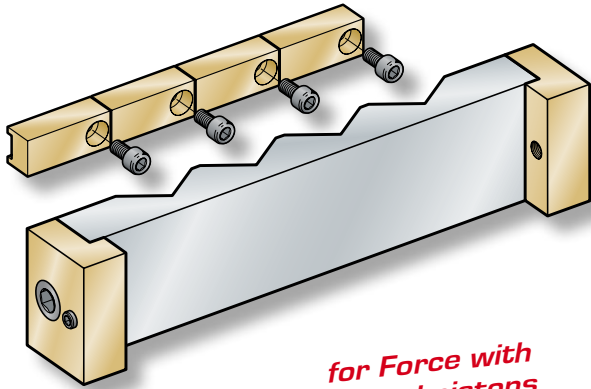
**Force 12**  
Ø 8 x 12 tips  
Ref.

**Force 14**  
Ø 8 x 14 tips  
Ref.

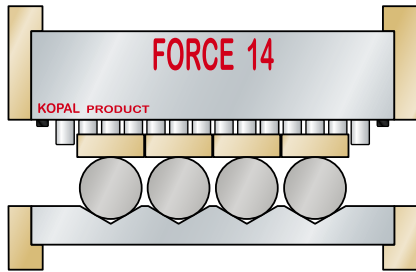
**Force 18**  
Ø 12 x 12 tips  
Ref.

Flat tips	27-411	27-421	27-431
Grooved tips	27-414	27-424	27-434
Ball-ended tips	27-412	27-422	27-432
Pointed tips	27-413	27-423	27-433

# Force



*for Force with  
tapped pistons*

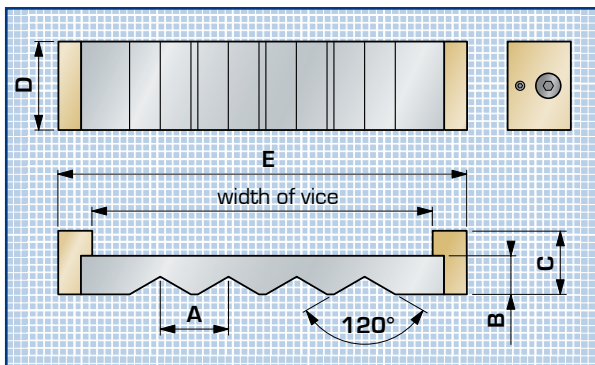


## Fixed jaws with V-guides

For vertical clamping of cylindrical workpieces. Fixed jaws with mounting flanges and blocks linking the pistons.



Fixed jaws	Vice width	Number of V	Number					Ref.
			A	B	C	D	E	
for Force 12	100 to 135	12	10					27-351
		6	20	17	30	40	156	27-352
		4	30					27-353
for Force 14	125 to 160	14	10					27-361
		7	20	17	30	40	181	27-362
		4	30					27-363
for Force 18	175 to 200	12	16					27-371
		6	32	20	30	50	230	27-372
		4	48					27-373







# Chamfering devices system KOPAL®



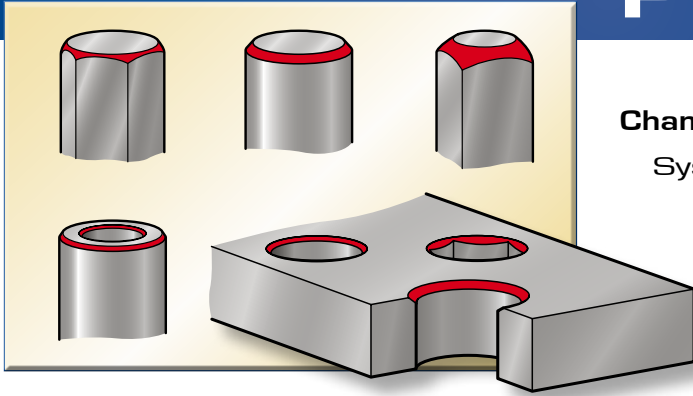
## KOPAL®



Presentation	80
<b>Inner devices</b>	81
Inner devices Slim Line	82
<b>Outer devices</b>	83
Devices for Tubes (Inner and Outer)	84
Spare parts	85
<b>Cutting blades</b>	86 - 87



# Principle



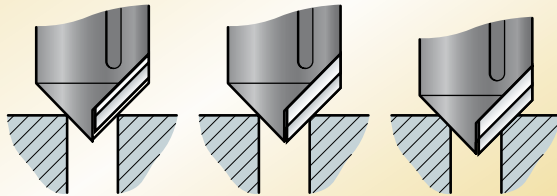
Chamfering devices mainly for drills  
Système KOPAL®

- Concentric chamfer
- Excellent surface quality
- No risk of cutting into the workpiece
- Controlled machining torque

This device works as a carpenter's plane.

The output adjusting of the blade controls the thickness of the chip and not the value of the chamfer.

Ex. : blade output of 0.1 mm  
the device will make 10 turns  
for cut 1 mm.



When the spindle is lowered, the pilot cone centres the workpiece, retracts and allows the blade to come out.

## KOPAL®



**i** Lubricate with cutting fluid or oil to ensure long life for the blade's cutting edge and slow down erosion of the pilot cone.



● **Devices with standard treatment of pilot and HSS blade**

Suitable to most usual materials and small series.



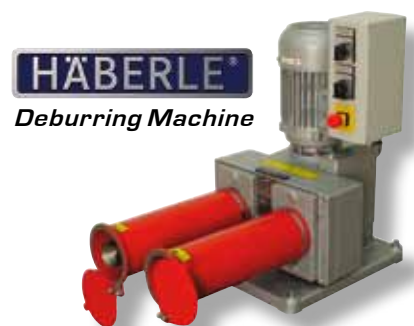
● **Devices with standard treatment of pilot and TIN coating HSS blade**

Suitable to materials difficult to machine. Stainless steel, Inconel, Titanium and small series.



● **Devices with CRN treatment of pilot and TIN coating HSS blade**

Suitable to materials difficult to machine. Stainless steel, Inconel, Titanium and important series.



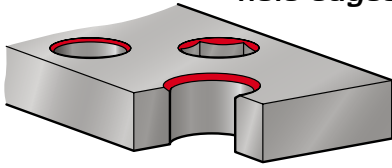
**Recommended cutting speed**  
between 10 and 20 m/min.

example : Ø 10 mm	320 to 640 rpm
Ø 15 mm	210 to 420 rpm
Ø 20 mm	160 to 320 rpm
Ø 30 mm	110 to 220 rpm
Ø 40 mm	80 to 160 rpm
Ø 60 mm	55 to 110 rpm

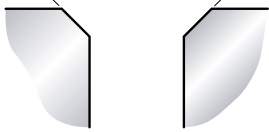
$$Rpm = \frac{\text{cutting speed} \times 1000}{\text{Diameter} \times 3.14}$$

# Inner Devices

Chamfers any cylindrical, polygonal, or interrupted hole edges at 90°.



Chamfering angle  
60°, 82°, 90° and 120°



## Inner Devices

Without cutting blade

Hole diameter to chamfer	Model	Attach.	A	B	C 60°/90°	Type of cone pilot						
						Standard		CRN		Standard		
						60° Ref.	90° Ref.	60° Ref.	90° Ref.	82° Ref.	120° Ref.	
4 to 17	2-18	Ø 10 MK 1	Ø 18	Ø 26	64/55	01-030	01-010	1W030B	1W010B	01-050	01-080	
						01-035	01-015	1W035B	1W015B			
5 to 41	2-42	Ø 10/16 Ø 12.7 MK 1 MK 2 MK 3 weld on Ø19	Ø 42	Ø 65	108/85	01-120	01-095	1W120B	1W095B	01-150	01-141	01-191
						01-125	01-100	1W125B	1W100B			
						01-115	01-090	1W115B	1W090B			
						01-116	01-091	1W116B	1W091B			
						01-117	01-092	1W117B	1W092B			
						01-215	01-210					
21 to 59	20-60	MK 2	Ø 60	Ø 70	106/94	01-230	01-225					
						01-231	01-226					
42 to 77	40-80	MK 2 MK 3	Ø 80	Ø 90	114/100		01-241					
							01-256					
62 to 97	60-100	MK 3	Ø 100	Ø 110	104							
82 to 117	80-120	MK 3	Ø 120	Ø 130	104							

# KOPAL

HSS blades  
0°, 14°, 20° and 25° cutting angle

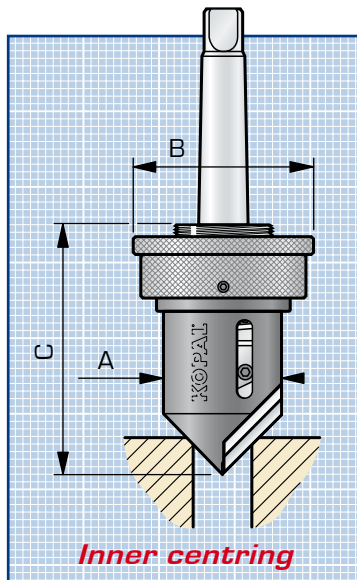
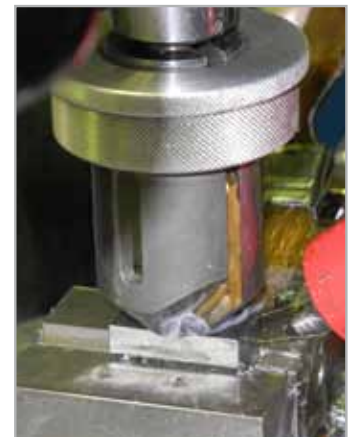
TIN coating HSS blades  
20° cutting angle

Carbide blade  
0° cutting angle



Models and information

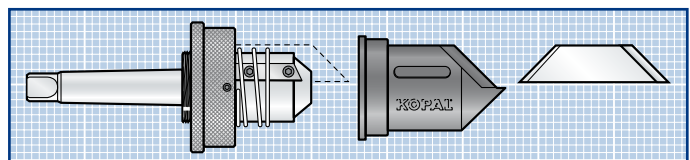
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Inner centring



Inner compact devices available

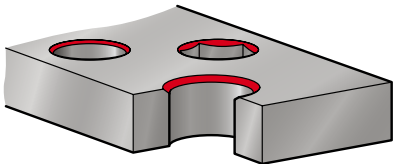


## KOPAL 81

# CHAMFERING

# Inner compact Devices

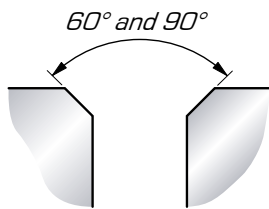
Chamfers any cylindrical, polygonal, or interrupted hole edges at 90°.



**SLIM LINE**  
compact devices



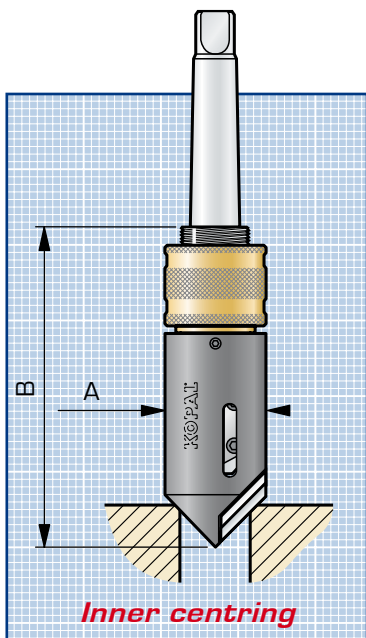
## KOPAL



### Inner Devices - SLIM LINE

Without cutting blade

Hole diameter to chamfer	Model	Attach.	A	B 60°/90°	Standard	
					60° Ref.	90° Ref.
4 to 17	2 - 18	Ø 10 6 WS 6.35	Ø 19.5	78/68	03-015	03-010 03-011
11 to 30	10 - 30	MK 1	Ø 32	112/100	03-035	03-020
		MK 2			03-036	03-021
		Ø 12			03-040	03-025
5 to 40	4 - 42	MK 2 Weldon Ø 20 Ø 12.7	Ø 44	135		03-051 03-053 03-055

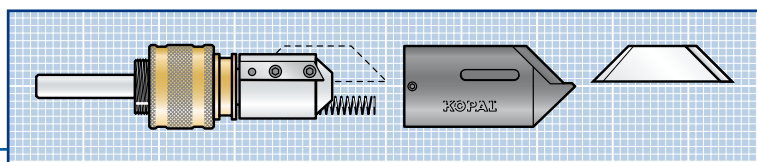
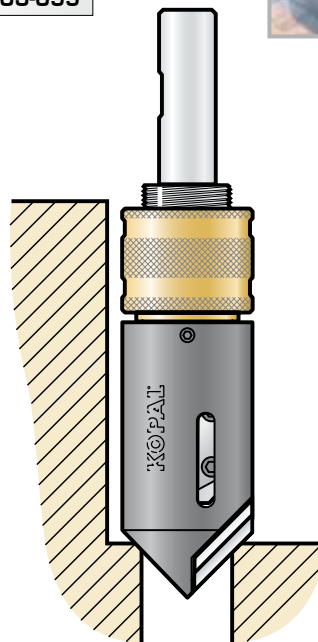


**HSS blades**  
0°, 14°, 20° and 25° cutting angle

**Carbide blade**  
0° cutting angle

Models and information

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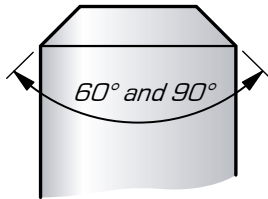
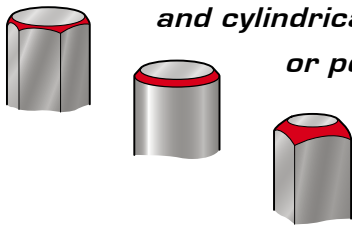


# Outer Devices

Chamfers all tube ends

and cylindrical

or polygonal bar ends



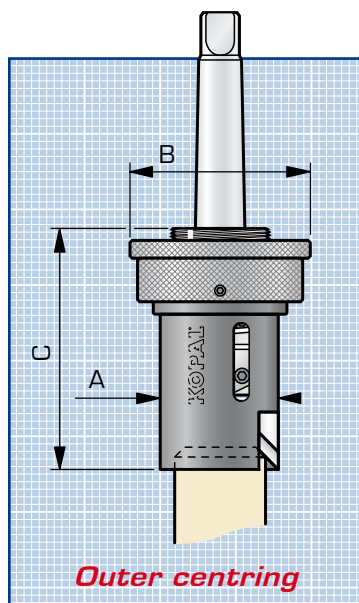
## KOPAL

### Outer Devices

Without cutting blade

Type of cone pilot  
Standard CRN

Diameter to chamfer	Model	Attach.	A	B	C 60°/90°	Standard		CRN	
						60° Ref.	90° Ref.	60° Ref.	90° Ref.
4 to 17	2 - 18	Ø 10 MK 1	Ø 18	Ø 26	54	02-020	02-010	2W020B	2W010B
						02-025	02-015	2W025B	2W015B
4 to 37	2 - 36	Ø 10/16 MK 2	Ø 42	Ø 65	105/85	02-055	02-035	2W055B	2W035B
						02-050	02-030	2W050B	2W030B
10 to 45	10 - 46	Ø 10/16 MK 2	Ø 48	Ø 65	109/85	02-110	02-095		
21 to 57	20 - 60	MK 2	Ø 60	Ø 70	108/85	02-105	02-090		
41 to 77	40 - 80	MK 2 MK 3	Ø 80	Ø 90	118/95	02-140	02-135		
						02-155	02-150		
60 to 97	60 - 100	MK 3	Ø 100	Ø 110	107	02-156	02-151		
80 to 117	80 - 120	MK 3	Ø 120	Ø 130	110		02-166		
							02-181		



Outer centring

**HSS blades**

0°, 14°, 20° and 25° cutting angle

**TIN coating HSS blades**

20° cutting angle

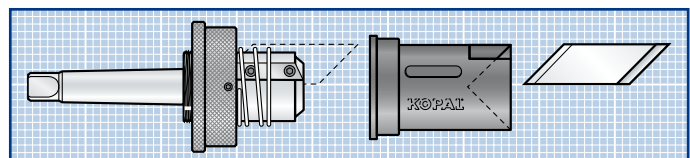
**Carbide blade**

0° cutting angle



Models and information

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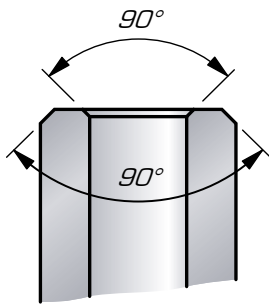


## KOPAL 83

CHAMFERING

# Inner / Outer Devices

Simultaneously chamfers  
the **Inside and Outside**  
of tube ends



## KOPAL TUBE



### KOPAL TUBE Devices

Without cutting blade

Standard pilot

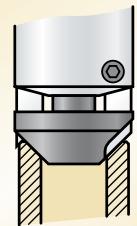
Tube diameter Inner	Outer	Model	Attach.	A	B	90° Ref.
12 to 24	14 to 24	K 1	Ø 12.7 MK 2	Ø 46	90	04-060 04-050
15 à 27	18 to 30	K 2	Ø 12.7 MK 2	Ø 58	105	04-080 04-070
20 to 30	24 to 36	K 3	Ø 12.7 MK 2	Ø 61	110	04-100 04-090
29 to 40	34 to 45	K 4	Ø 12.7 MK 2	Ø 67	112	04-120 04-110
40 to 48	46 to 56	K 5	Ø 12.7 MK 2	Ø 82	120	04-140 04-130

#### Use

These units are supplied with  
2 removable pilot cones

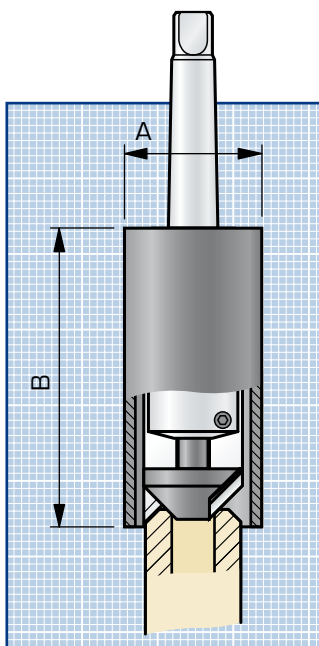
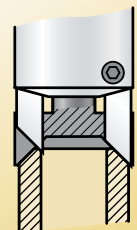
Larger inner  
chamfer than  
outer chamfer.

Use the inner cone  
to centre the  
workpiece.



Larger outer  
chamfer than  
inner chamfer.

Use the outer cone  
to centre the  
workpiece.



#### HSS Blades

14° and 20° cutting angles

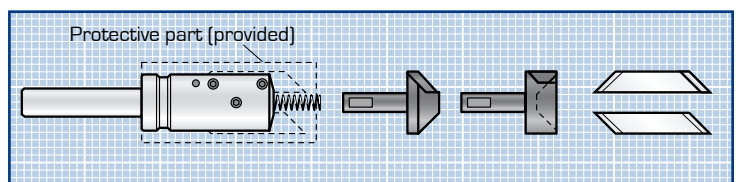
Models and information

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Blades can be adjusted independently  
so **the chamfers can therefore have  
different values.**

# KOPAL



# Spare Parts

## Pilot

for **Inner**  
device model

	Ref.
2-18 90°	01-510
2-18 60°	01-520
2-18 82°	01-530
2-42 90°	01-550
2-42 60°	01-555
2-42 82°	01-560
2-42 120°	01-570
20-60 90°	01-575
20-60 60°	01-580
40-80 90°	01-590
40-80 60°	01-595
60-100 90°	01-605
80-120 90°	01-620

for **Inner**  
device **Slim Line** model

3-19 90°	03-510
3-19 60°	03-515
10-30 90°	03-520
10-30 60°	03-525
4-42 90°	03-530

for **Outer**  
device model

2-18 90°	02-510
2-18 60°	02-515
2-36 90°	02-520
2-36 60°	02-525
10-46 90°	02-535
10-46 60°	02-540
20-60 90°	02-550
20-60 60°	02-555
40-80 90°	02-565
40-80 60°	02-570
60-100 90°	02-580
80-120 90°	02-595

## Nut

for **Inner** and **Outer**  
device model

	Ref.
2-18	01-750
2-42	01-760
20-60	01-770
40-80	01-775
60-100	01-780
80-120	01-785

for **Inner Slim Line** model

3-19	03-610
10-30	03-615
4-42	03-620

## Lock nut

for **Inner** and **Outer**  
device model

2-18	01-755
2-42	01-765
20-60	

for **Inner Slim Line** model

3-19	03-611
------	--------

## Spring

for **Inner** and **Outer**  
device model

2-18	01-820
2-42	01-825
20-60	01-830
40-80	01-835
60-100	01-837

for **Inner Slim Line** model

4-42	03-645
10-30	03-640

## Body

for **Inner**  
device model

	Ref.
2-18 90° Attach. Cyl. 10	01-630
2-18 90° Attach. MK 1	01-635
2-18 60° Attach. Cyl. 10	01-640
2-18 60° Attach. MK 1	01-645
2-42 90° Attach. MK 1	01-650
2-42 90° Attach. MK 2	01-651
2-42 90° Attach. MK 3	01-652
2-42 90° Attach. Ø 10-16	01-655
2-42 90° Attach. Ø 1/2"	01-660
2-42 60° Attach. MK 2	01-676
2-42 60° Attach. MK 3	01-677
2-42 60° Attach. Ø 1/2"	01-685
20-60 90° Attach. MK 2	01-690
20-60 60° Attach. MK 2	01-695

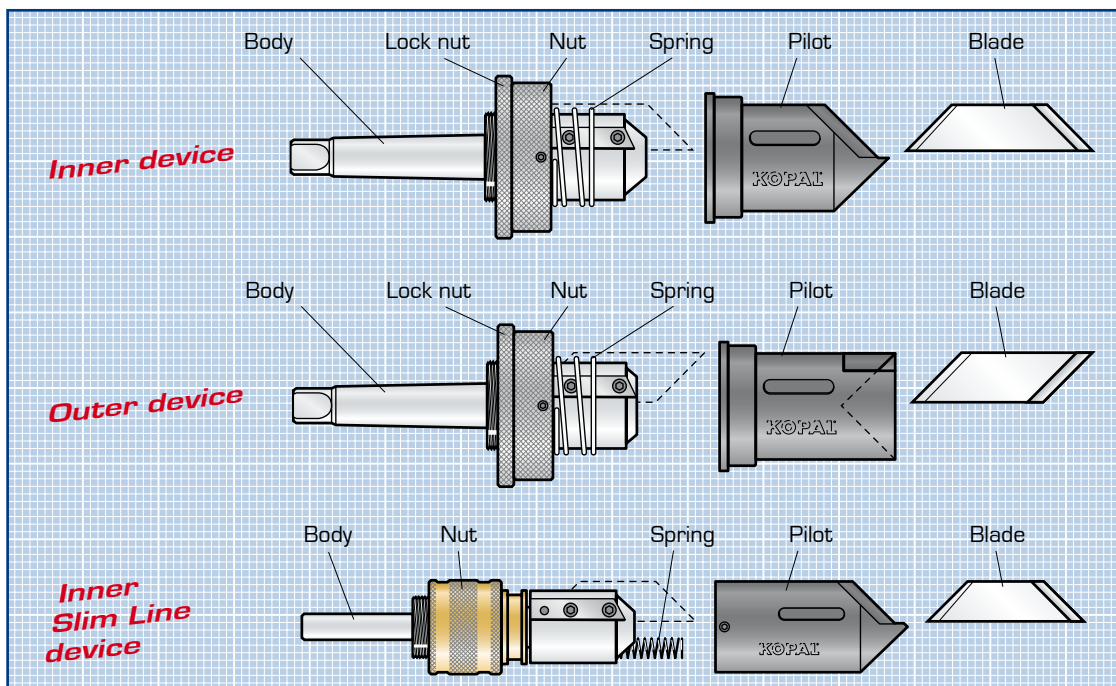
for **Inner**  
device **Slim Line** model

3-19 90°	03-555
3-19 60° Attach. Ø 10	
10-30 90°	03-561
10-30 60° Attach. MK 2	
4-42 90° Attach. MK 2	03-576

for **Outer**  
device model

2-36 90° Attach. MK 2	02-610
2-36 90° Attach. Ø 10-16	02-615
10-46 90° Attach. MK 2	02-630
10-46 90° Attach. Ø .10-16	02-635
10-46 90° Attach. Ø 1/2"	02-640
20-60 90° Attach. MK 2	02-645

 **Blades**  
pages 86 and 87





# Cutting blades

## Blade for inner chamfering device

0° cutting angle for device model :	Ch.60°	Ch.90°	Ch.82°	Ch.120°	Ch.60°	Ch.90°
	HSS				Carbide	
2 - 18	01-303	01-323		01-334		
2 - 42	01-343	01-353	01-336	01-364		
20 - 60 to 80 - 120	01-363	01-373			01-341	01-351

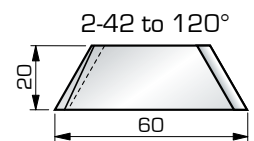
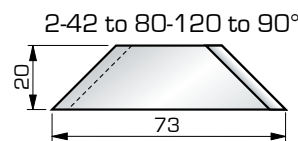
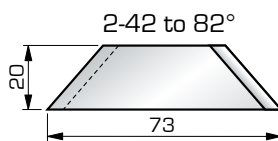
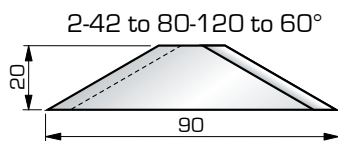
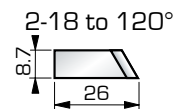
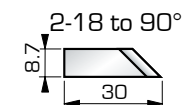
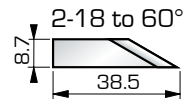
14° cutting angle for device model :	Ch.60°	Ch.90°	Ch.82°	Ch.120°
	HSS			
2 - 18	01-305	01-320		01-335
2 - 42	01-340	01-350	01-345	01-360
20 - 60 to 80 - 120	01-365	01-370		

20° cutting angle for device model :	Ch.60°	Ch.90°	Ch.82°	Ch.120°	Ch.60°	Ch.90°
	HSS				TIN	
2 - 18	01-308	01-328		01-338	1T305B	1T320B
2 - 42	01-348	01-358	01-342	01-368	1T340B	1T350B
20 - 60 to 80 - 120	01-361	01-378				

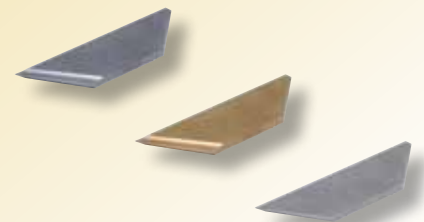
25° cutting angle for device model :	Ch.60°	Ch.90°	Ch.82°	Ch.120°
	HSS			
2 - 18	01-309	01-329		01-339
2 - 42	01-349	01-359	01-344	01-369
20 - 60 to 80 - 120	01-362	01-379		



Devices  
page 81



- **HSS blade - 0° to 25°**  
for most usual materials
- **TIN coating HSS blade - 20°**  
for materials difficult to machine :  
Stainless steel, Inconel, Titanium
- **Carbide blade - 0°**  
for hard materials



Devices  
page 83

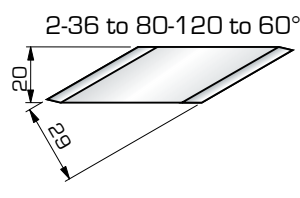
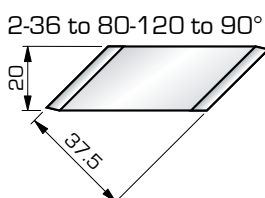
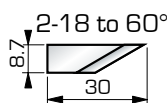
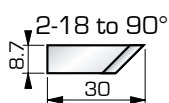
## Blade for outer chamfering device

0° cutting angle for device model :	60°	90°
	HSS	
2 - 18	02-303	02-304
2 - 36 to 80 - 120	02-317	02-312

14° cutting angle for device model :	60°	90°
	HSS	
2 - 18	02-305	02-300
2 - 36 to 80 - 120	02-315	02-310

20° cutting angle for device model :	60°	90°	60°	90°
	HSS		TIN	
2 - 18	02-308	02-302	2T305B	2T300B
2 - 36 to 80 - 120	02-318	02-313	2T315B	2T310B

25° cutting angle for device model :	60°	90°
	HSS	
2 - 18	02-307	02-306
2 - 36 to 80 - 120	02-319	02-314



# Cutting blades

## Blade for inner chamfering device *Slim Line*

0° cutting angle for device model :	Ch.60° HSS	Ch.90° HSS	Ch.90° Carbide
3 - 19	03-312	03-322	
10 - 30	03-302	03-321	
4 - 42		03-352	01-351

14° cutting angle for device model :	Ch.60° HSS	Ch.90° HSS
3 - 19	03-310	03-320
10 - 30	03-305	03-300
4 - 42		03-350

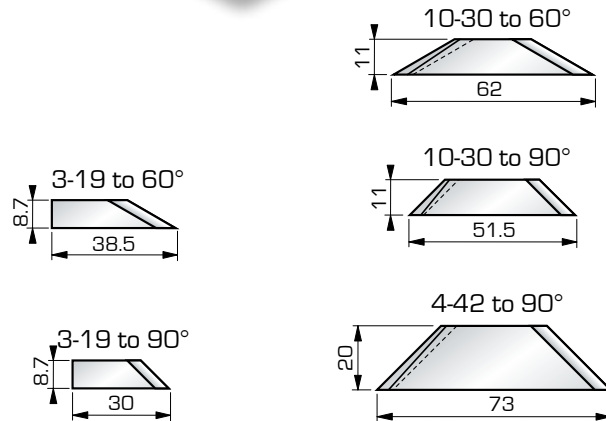
  

20° cutting angle for device model :	Ch.60° HSS	Ch.90° HSS
3 - 19	03-313	03-323
10 - 30	03-308	03-328
4 - 42		03-358

25° cutting angle for device model :	Ch.60° HSS	Ch.90° HSS
3 - 19	03-314	03-324
10 - 30	03-309	03-329
4 - 42		03-359

Devices  
page 82



# KOPAL

Material	Brass Bronze Cast iron Heat-resistant stainless steel	Steel Special bronze Perspex	Soft steel Copper AU 4 G Plastic Stainless steel	Aluminium Soft iron Sheet metal
Cutting angle	0° HSS Carbure	14° HSS	20° HSS	25° HSS

This devices works as a  
carpenter's plane.

The output adjusting of the blade  
controls the thickness of the chip  
and not the value of the chamfer.

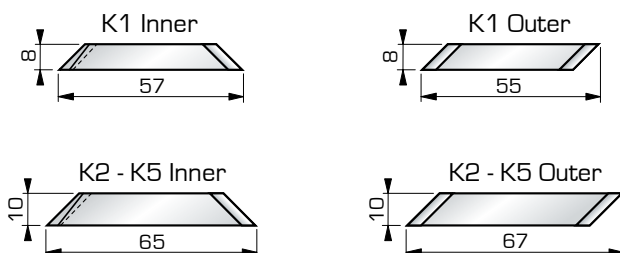
Ex. : blade output of 0.1mm  
the device will make 10 turns  
for cut 1mm chamfer.

Recommended cutting speed  
between 10 and 20m/min.

exemple : Ø 10mm	320 to 640 rpm
Ø 15mm	210 to 420 rpm
Ø 20mm	160 to 320 rpm
Ø 30mm	110 to 220 rpm
Ø 40mm	80 to 160 rpm
Ø 60mm	55 to 110 rpm

$$Rpm = \frac{\text{cutting speed} \times 1000}{\text{Diameter} \times 3.14}$$

Devices  
page 84



## Blade for KOPAL Tube

14° cutting angle for device model :	Inner HSS	Outer HSS
K 1	04-300	04-310
K 2 to K 5	04-320	04-330

20° cutting angle for device model :	Inner HSS	Outer HSS
K 1	04-303	04-313
K 2 to K 5	04-323	04-333



# CHAMFERING



**KOPAL**





# Chamfering Carriers and Machines

## KOPAL®



Chamfering carrier <i>Azimut</i>	90
Contouring carrier	91
Cutters and components	92
<b>Electric Motor <i>RM 500</i></b> with flexible transmission	93
Machine for straight chamfer <i>LM 300</i>	94
Contouring machine <i>CM 300</i>	95

# Chamfering carrier

- Chamfer consistency and quality
- Quick tool changeover
- Chamfering on straight or curved cutting edges

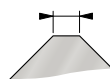
## AZIMUT

For KOPAL Motor RM 500  
with flexible transmission  
ref. AZ0430 - AZ0431




### AZIMUT EVOLUTION Including cutter

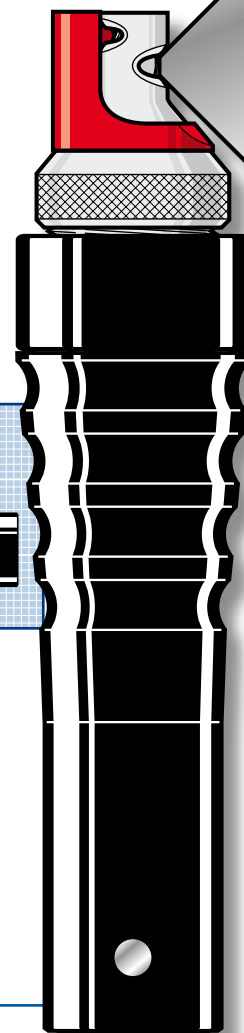
	capacity	Milling Cutter for all materials	Ref.
Chamfer	0.3 and 0.6 mm	Ø 3mm	AZ0212
	0.5 and 1 mm		AZ0210
	1 and 2 mm	Ø 6 mm	AZ0225
Radius	1 and 1.5 mm	Ø 9 mm	AZ0255



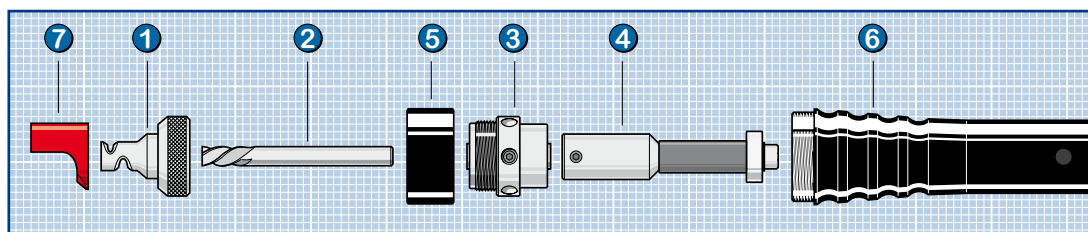
## KOPAL

Motor and chamfering carrier supplied separately. 

Chamfer value on a flat surface



### AZIMUT EVOLUTION [with quick coupling handle]



- 1 Interchangeable guide defining chamfer value
- 2 Carbide cutter, Ø 6mm shank
- 3 Carrier bearing (2 rolling bearings) : AZ-202
- 4 Cutter drive : AZ0305
- 5 Attachment ring : AZ0736
- 6 Quick coupling handle : AZ0310
- 7 Removable chip deflector

Scale : 1/1

90 KOPAL

CHAMFERING



# Contouring carrier

- Precise and uniform chamfers
- Chamfering of complex inner and outer shapes

CONTOURING CARRIER Ref.

**Complete carrier** **AZ0070**  
Including 45° carbide cutter and guide bearing Ø 9 mm

Spare parts Ref.

45° carbide cutter **AZ-660**

Guide bearing Ø 9 mm **AZ-714**

*Other sizes of guide bearing page 92*



**For KOPAL Motor with flexible transmission RM 500** ref. AZ0430 - AZ0431

## Principle

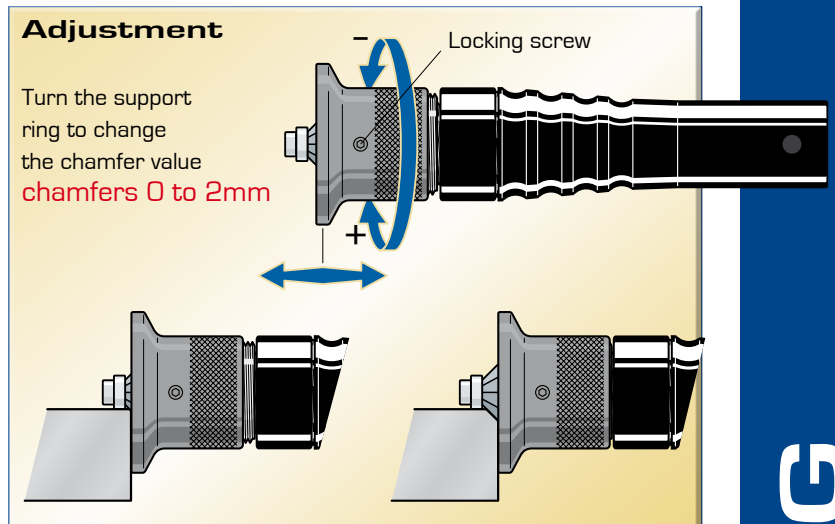
The cutter, driven directly by the flexible coupling, rotates inside a rolling bearing. The opening width of the guide placed on this bearing defines the chamfer or radius value to be performed. The cutter can be replaced after wear and tear.

Motor and chamfering carrier supplied separately.



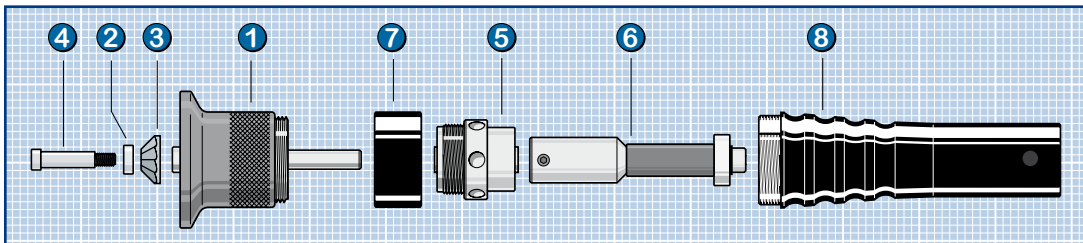
## Adjustment

Turn the support ring to change the chamfer value  
**chamfers 0 to 2mm**



## CONTOURING CARRIER

(with quick coupling handle)



- 1 Contouring head
- 2 Guide bearing Ø 9mm : AZ-714
- 3 Carbide cutter : AZ-660
- 4 Centring screw for cutter : AZ-748
- 5 Carrier bearing [2 rolling bearings] : AZ-202
- 6 Cutter drive : AZ0305
- 7 Attachment ring : AZ0736
- 8 Quick coupling handle : AZ0310






KOPAL 91



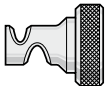
# Cutters and components

## Guide

All Azimut models





Chamfer		Ref.
0.3 and 0.6		AZ-512
0.5 and 1		AZ-510
1 and 2		AZ-520

Radius Ref.

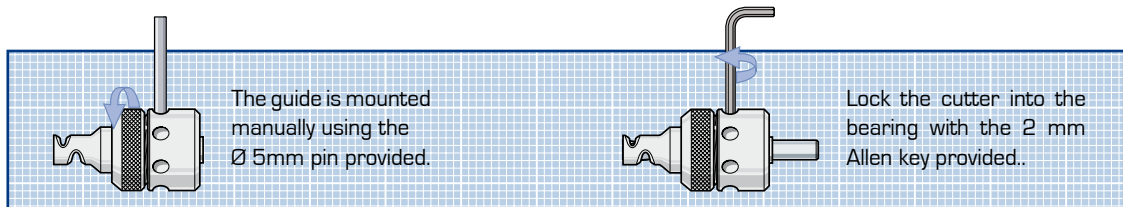
1 and 1.5		AZ-545
-----------	---	--------

## Carbide cutters for all materials

All Azimut models



Chamfer		Ref.
0.3 and 0.6	$\varnothing 3 / 3$ teeth 	AZ-610
0.5 and 1	$\varnothing 3 / 3$ teeth 	AZ-610
1 and 2	$\varnothing 6 / 4$ teeth 	AZ-625
Radius		Ref.
1 and 1.5	$\varnothing 9 / 6$ teeth 	AZ-645

Carbide cutters, left helix,  $\varnothing 6$  attach. 60 length





## KOPAL


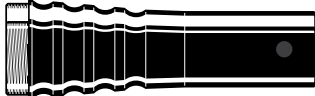

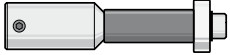
### Protection

Chip deflector		Ref.
for Azimut Ch. 0.3 to 2mm		AZ-595
for Azimut Radius 1 to 1.5		AZ-596

### Components

Contouring carrier and machine		Ref.
Carbide cutter $\varnothing 15 - 90^\circ$		AZ-660
Guide bearing		
$\varnothing 8$		AZ-713
$\varnothing 9$		AZ-714
$\varnothing 10$		AZ-717
$\varnothing 11$		AZ-718

### Components

Azimut Evolution, chamfering, Contouring		Ref.
Carrier (double bearing) $\varnothing 25$ mm		AZ-202
Aluminium quick coupling handle		AZ0310
Knurled attachment ring		AZ0736
Cutter drive		AZ0305



# Chamfering Machine

## Motor with flexible transmission



# RM 500

**Motor and carrier supplied separately**

- Noise-reducing flexible coupling
- Quick changeover with Azimut tools

### Machine RM 500 Ref.

including : Motor 500 W  
and 1.2 meter of flexible length

Motor 230 V (Europe plug)	<b>AZ0430</b>
Motor 110 V (US - Asia plug)	<b>AZ0431</b>

### Spare parts Ref.

Complete transmission 1.2 m	AZ0505
Cable drive (inner part)	AZ0515

### Can be used with

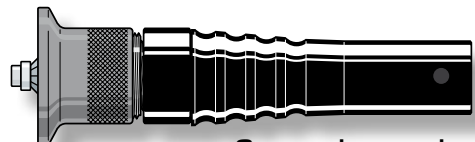
**Chamfering and contouring carrier**  
0.3 up to 2 mm chamfers - page 90 - 91

**Collet carrier AZ0350**  
with Ø 6 mm collet

The transmission unit is designed to work with KOPAL chamfering carriers.  
It can be equipped with various accessories for sanding, polishing, engraving, etc...



Chamfering carrier



Contouring carrier



Collet carrier

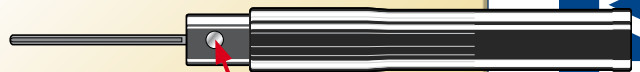


### Technical data :

Motor 500 W  
110 V or 230 V.  
Speed rotation  
11000 to 25000 rpm  
Weight : 2.3 kg  
flexible transmission : 1.2 meter



### Flexible rapid coupling :

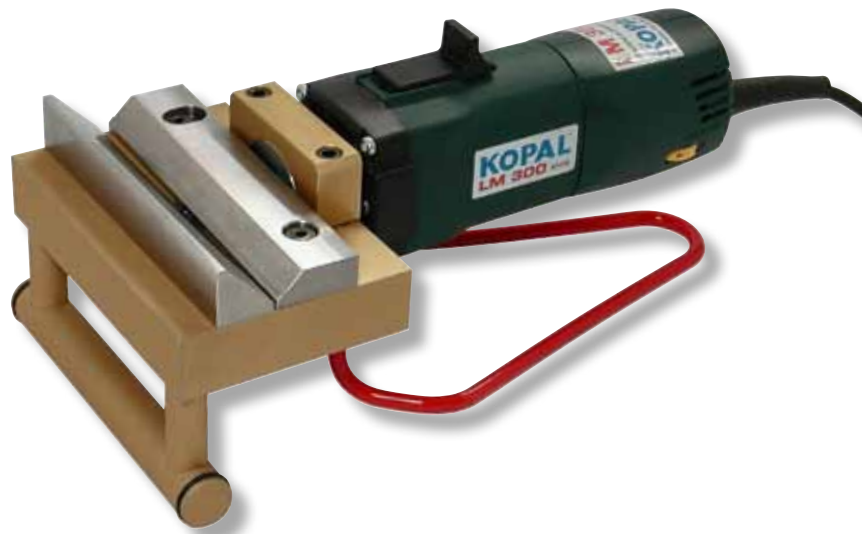


Press the locking axis  
Put the carrier  
= 5 secondes

# Chamfering Machine

## LM 300

Two steel base plates ensure that the workpieces to be chamfered are correctly guided and simplify the adjustment of the chamfer value..



**Machine LM 300** Ref. **AZ-415**  
including :

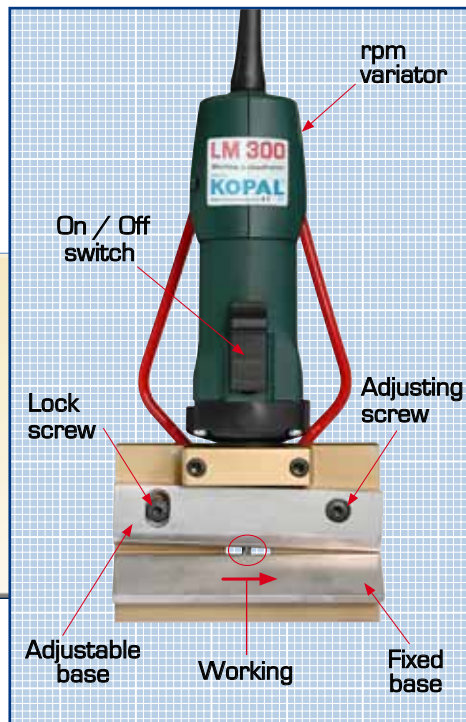
- 1 Carbide cutter Ø 6 x 47 mm
- 1 Ø 6 mm collet

**Spare parts and Optional components** Ref.

- Carbide cutter : Ø 6 x 47 mm AZ-627
- Ø 6 mm collet AZ-947

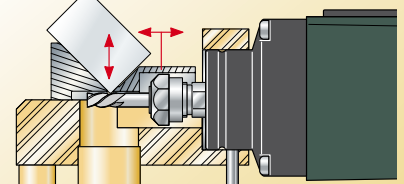
- Portable or workbench use
- Long cutter service-life

**Technical data :**  
**Chamfer : 0 to 2 mm**  
 Carbide cutter : Ø 6mm  
 Motor : 710 W - 230 V.  
 Speed rotation  
 10000 to 27000 tr/min  
 Weight : 4 kg  
 length of guide : 150 mm

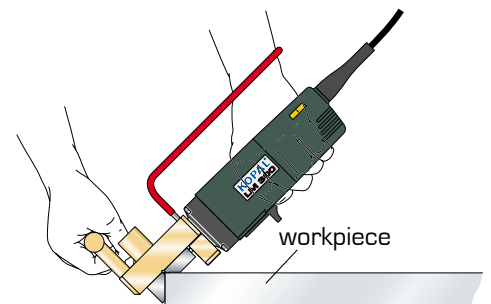
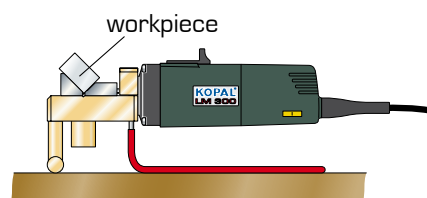


# KOPAL

### Chamfer adjustment :



Move the position of the adjustable base for change the value of the chamfer.





# Chamfering Machine

## CM 300



**Machine CM 300 Ref.**  
**AZ-420**

including :  
 1 x 45° Carbide cutter, 1 Ball bearing Ø 9 mm  
 1 x Protection screen 190 x 250  
 1 x Chip aspiration (Venturi system)

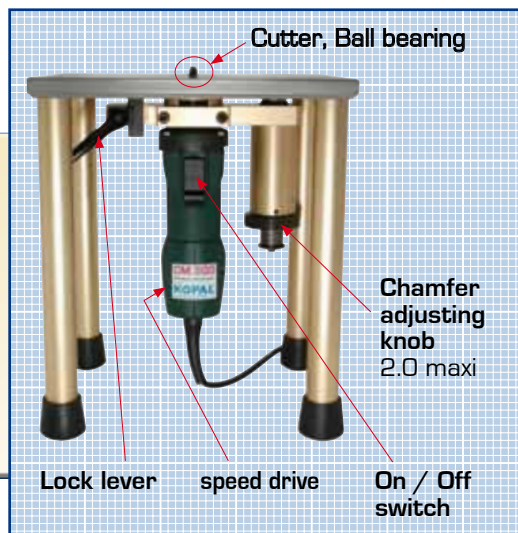
**Spare parts and Optional components Ref.**

**Carbide cutter : 45° Ø 15 AZ-660**  
 Double carbide cutter : 45° AZ-658  
 Contouring carbide cutter AZ-670  
**Ø 9 Ball bearing AZ-714**  
*Other sizes of guide bearing page 92*  
**Bar guide AZ-422**

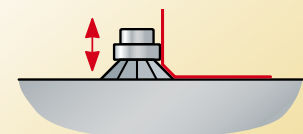
# KOPAL



**Technical data :**  
 Chamfer : 0 to 2 mm  
 Carbide cutter : 45°  
 Motor : 710 W - 230 V.  
 Speed rotation  
 10000 à 27000 tr/min  
 Weight : 15 kg  
 Table : 280 x 240 mm,  
 Table height : 330 mm

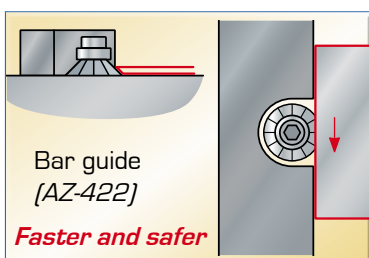


**Chamfer adjustment :**

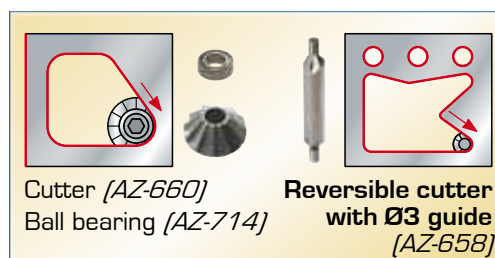


Release the lever  
 turn the adjusting knob  
 1 mark = 0.2 mm.  
 Block the lever

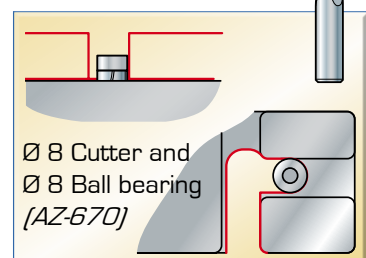
**For straight workpieces or thin sheet metal.**



**For all type of workpieces.**



**For pieces with complex shapes.**



# CHAMFERING



**KOPAL**







# Hooks, Pincers and Cutters for chips



## KOPAL®



Chip Hooks	98
Pincers and Cutters for chips	99



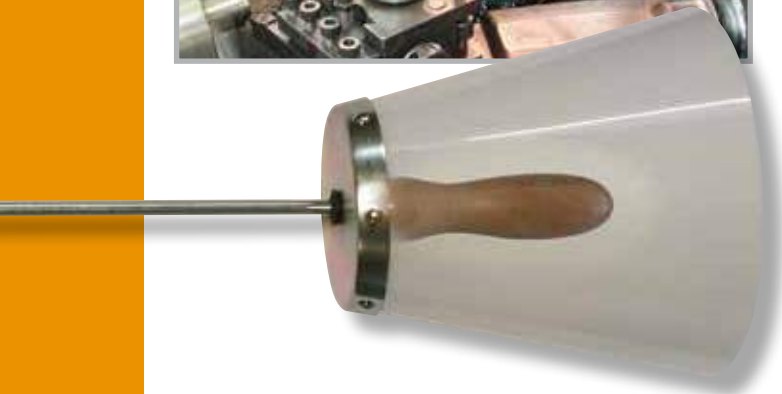
# Chip Hooks



## Safety

A work-related accident can happen very easily.

Always use a chip hook to clear away annoying chips and empty the chip trays on your machines.



### Traditional hooks

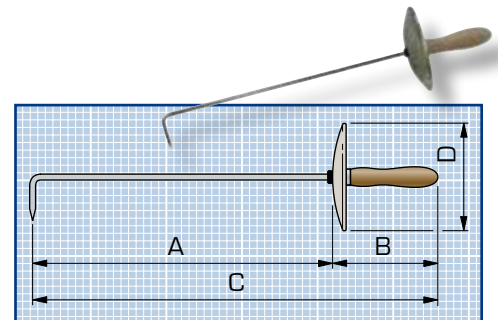
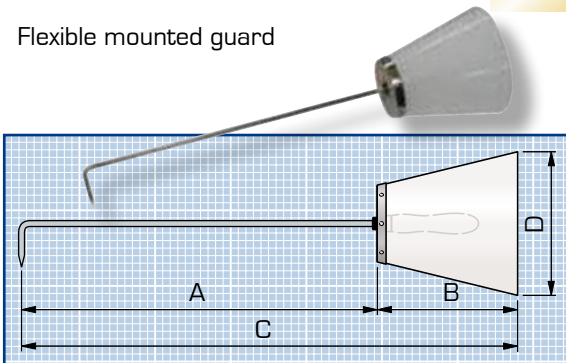
Model	Ø	A	B	C	D	Ref.
A	5	180	125	305	130	12-020
B	6	300	130	410	130	12-030
C	6	400	130	530	130	12-040
C*	6	400	130	530	130	12-050
C+*	6	550	130	680	130	12-051

Brazed-soldered guard plate on model C\* and C+\*

### Hooks with protecting hilt single handle (held in one hand)

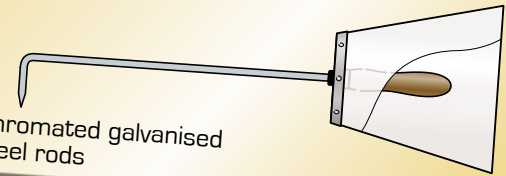
Model	Ø	A	B	C	D	Ref.
D	6	400	180	570	180	12-060
E	7	500	180	670	180	12-070

Flexible mounted guard



Metal protective guard plate or polyethylene protecting hilt. The wooden handles ensure a firm grip.

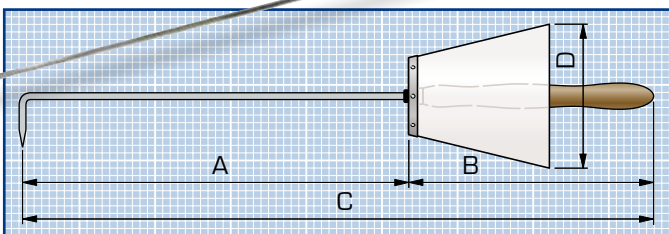
Chromated galvanised steel rods



### Hooks with protecting hilt double handle (held in two hands)

Model	Ø	A	B	C	D	Ref.
F	7	500	320	820	180	12-080
G	8	800	320	1120	180	12-090
H	8	1000	320	1320	180	12-100

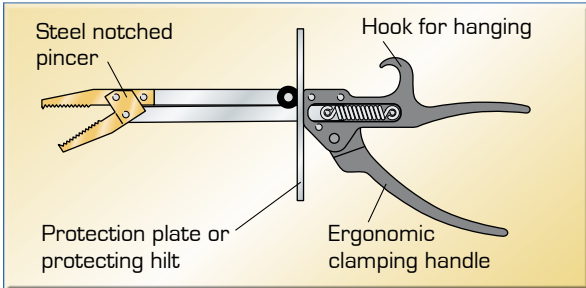
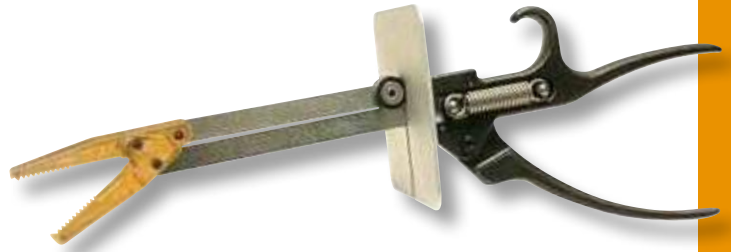
Flexible mounted guard



# Pincers and Cutters for chips

Due to their high clamping force, the cutters and pincers make it possible to cut chips and to clean tools in complete safety.

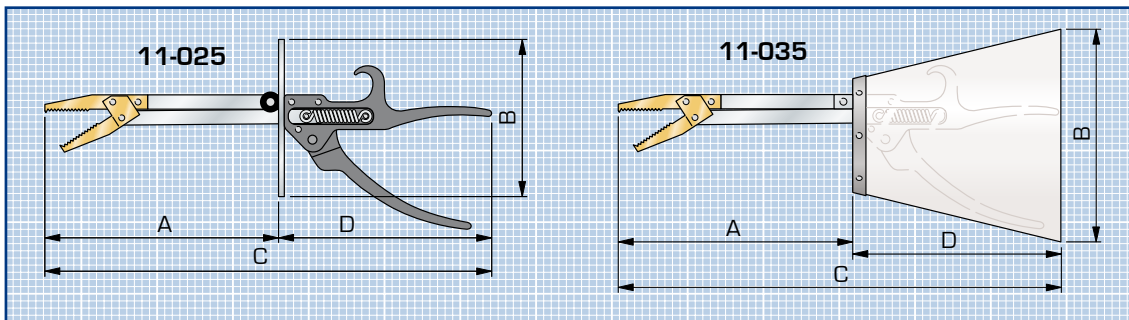
They are available with a square-shaped aluminium protection plate or with a polyethylene protecting hilt, for complete hand protection.



## Chip pincers

For powerful grip and chip handling.

A	B	C	D	Ref.
175	85 x 85	330	155	11-025
With aluminium protection plate				
175	∅ 180	355	180	11-035
With protecting hilt				



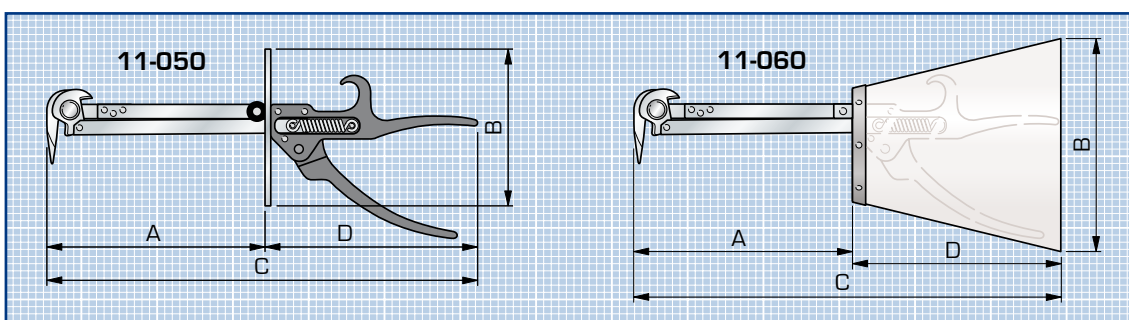
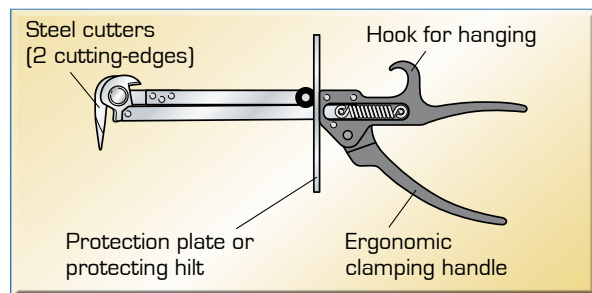
## Chip cutters

For chip cutting :  
1.5 mm<sup>2</sup> maxi. (ex : 0.25 x 6 mm)

A	B	C	D	Ref.
165	85 x 85	320	155	11-050
With aluminium protection plate				
165	∅ 180	345	180	11-060
With protecting hilt				



**Safety**







**KOPAL**



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**SAFETY**