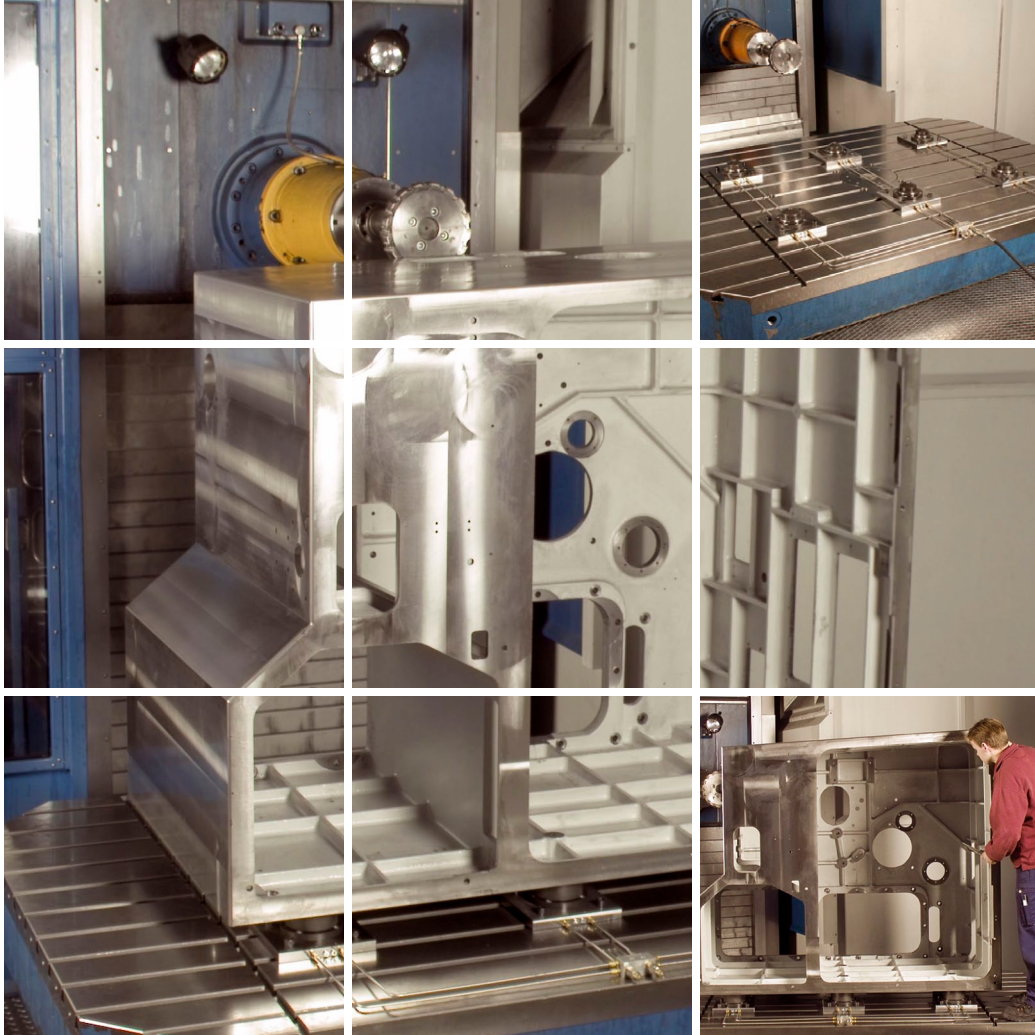


DELPHIN *BIG*



The modular clamping system
for large part manufacturing

Delphin *BIG* for large part manufacturing

The newest member of the Delphin family ventures into new dimensions.

The modular Delphin BIG zero-point clamping system allows the machine table to be equipped with position-determining chucks.

This opens up entirely new approaches for production of large workpieces or production of large moulds.

Delphin BIG allows the workpiece to be clamped outside the machine, thus offering major cost savings from reduced set-up times and enhanced flexibility.

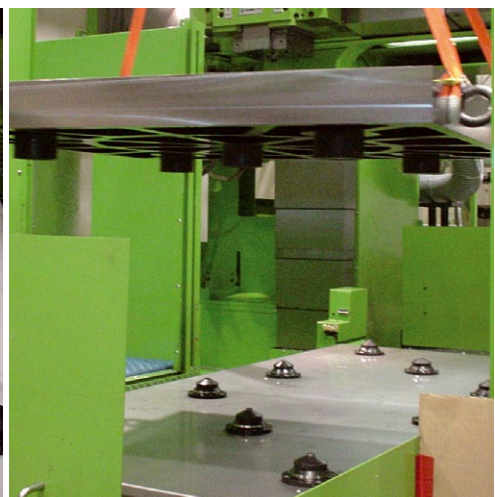
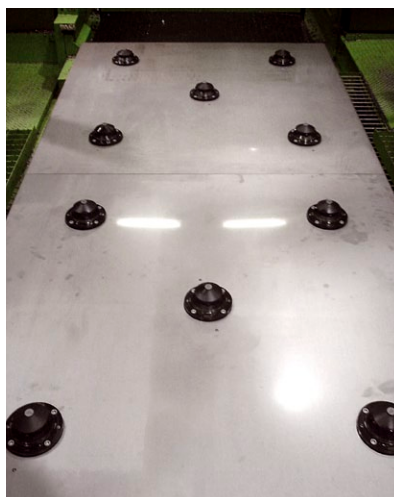
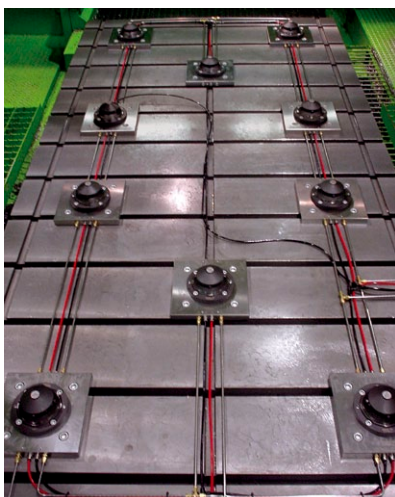
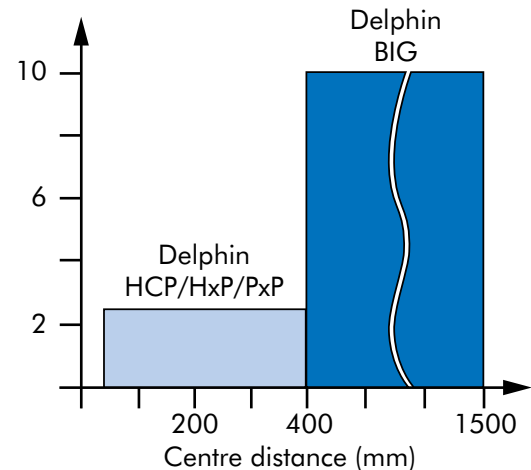
Delphin BIG is suitable for manual and automated applications.



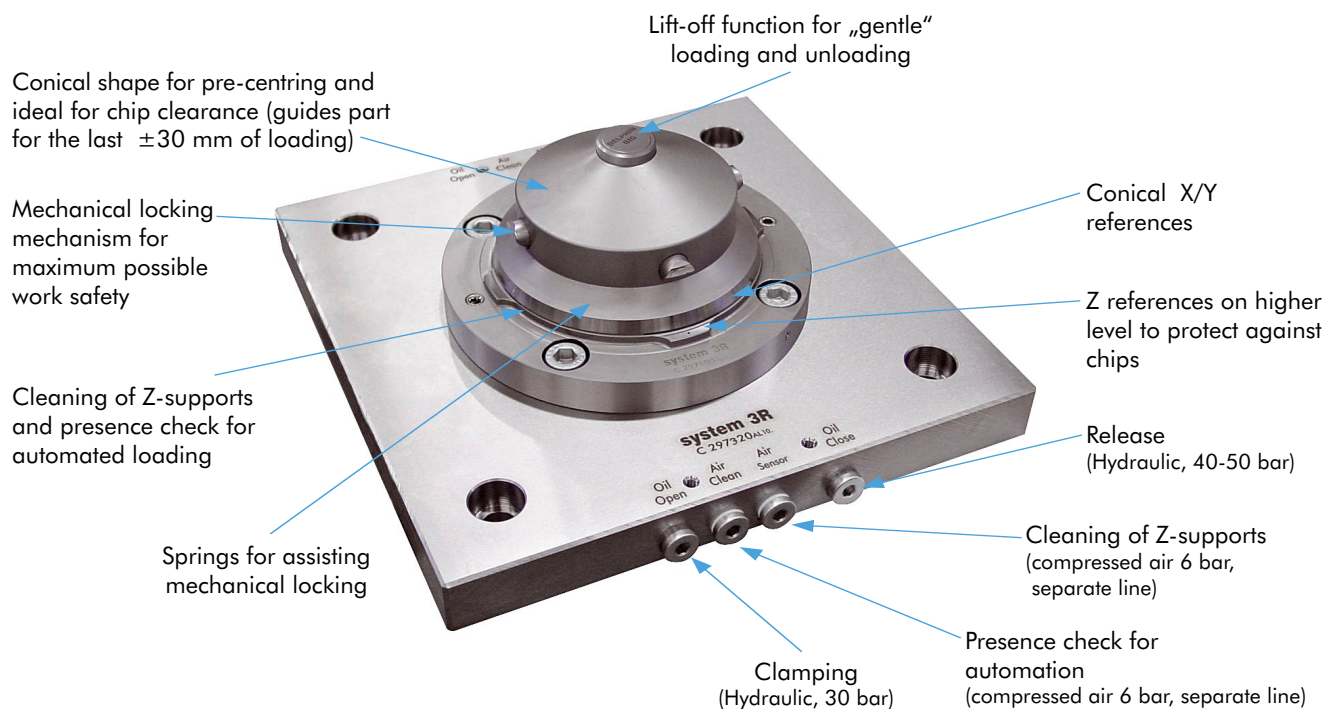
Your advantages

- ✓ Can be used for large workpieces
- ✓ Maximize machining times thanks to reduction of set-up times by up to 90%
- ✓ Unmanned production option thanks to automation
- ✓ Universal palletisation for metal-cutting manufacturing and measurement processes
- ✓ Simple loading thanks integrated pre-centring
- ✓ Thermal expansion of the workpieces of up to ± 0.4 mm can be accommodated
- ✓ High clamping forces for high-performance machining

Workpiece weight
(metric tons)



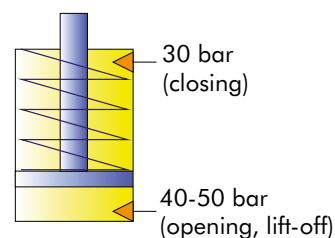
Delphin BIG Chuck



Technical data

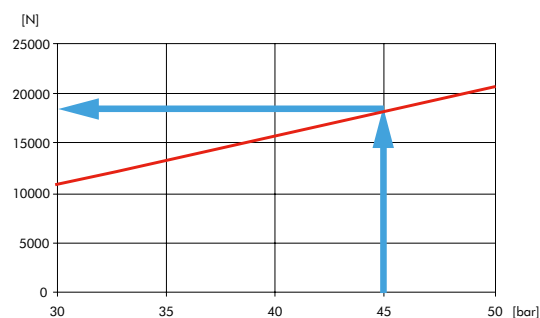
Workpiece weight (recommended)	<10'000 kg
Centre distance (recommended)	400 - 1000 mm
Clamping force	50 kN
Holding force	200 kN
Presence control	yes
Lift-off function	yes, 2 mm
Max. lift-off weight per chuck	pressure-dependent (see diagram)
Releasing	hydraulic 40-50 bar
Clamping	hydraulic 30 bar, locked mechanically
Material	steel, hardened
Repetition accuracy	± 0.005 mm
Compressed air	6 bar
Recommendation	at least 4 chucks per application

Hydraulic



Closing: must be 30 bar
 Opening: Recommendation 40-50 bar
Can also be 30 bar, if the workpiece is not heavier than 4000 kg. So the same pressure can be used as for closing.

Max. lift-off weight per chuck



How to read the diagram:
 A chuck can raise a weight of 18000 N at an hydraulic pressure of 45 bar.
 With 4 chucks, this results in a total workpiece weight of 72000 N.

Delphin BIG Product Overview

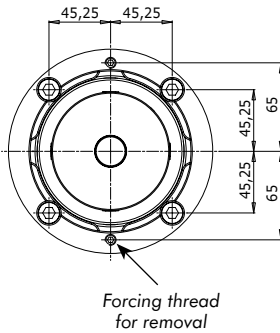
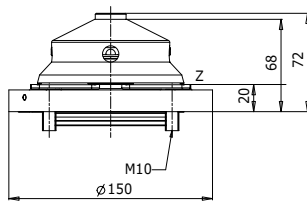
	<i>Item number without fixation holes</i>	<i>Item number with fixation holes</i>	<i>Page</i>
Chucks			
Built-in	C297 000		8
Built-up	C297 310	C297 320	8

	Item number	Page
Cover plates		
Cover plate type A	C287 300	10
Cover plate type B	C287 310	10
Cover plate set	C297 500	9
Hydraulic power pack	C297600	9
Connection block	C297 030	9
Connection equipment if using cover plate		
Connections for 4 chucks	S819 100	9
Cups / Rings	Centring	
Cup	in 2 axes	C298 000 8
Cup	in 1 axis	C298 100 8
Cup	without	C298 200 8
Ring	in 2 axes	C298 010 9
Ring	in 1 axis	C298 110 9
Ring	without	C298 210 9
Miscellaneous		
Indicator rotary holder, for horizontal machines	C288 060	10
Sets accessories fixation		
Set accessories fixation M12	C289 150	9
Set accessories fixation M10	C289 160	9
Set accessories fixation M16	C289 170	9
Spare parts	S850 000	11
Mounting case	S820 200	10

Installation and mounting dimensions

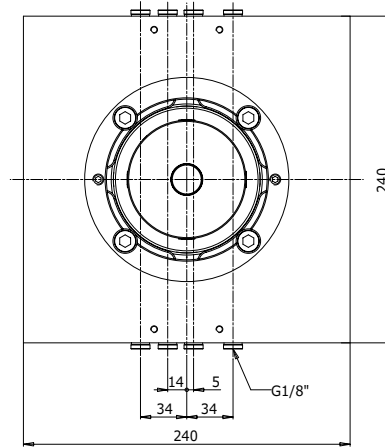
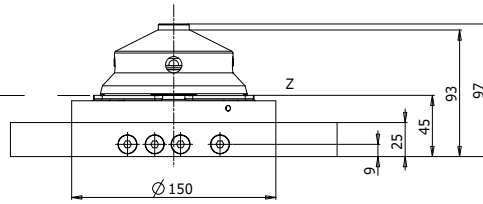
Chuck built-in

(in machine table)

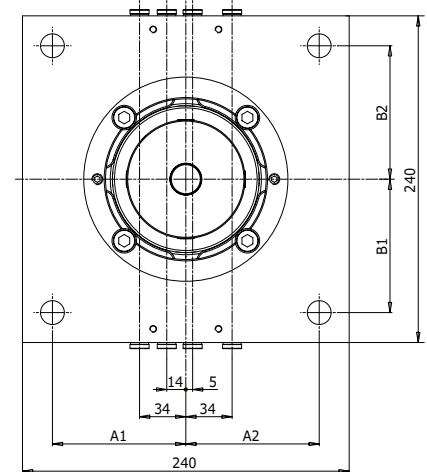


Chuck built-up

(on machine table)



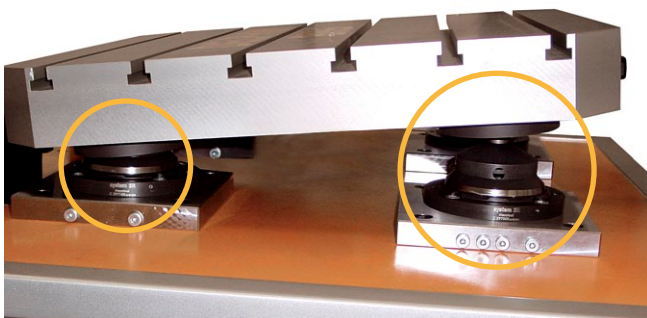
with fixation holes



Clamping non-symmetrical workpieces

In the case of non-symmetrical workpieces, it is frequently the case that they cannot be lifted straight. They are suspended at an angle on the frame. When clamping on conventional chucks, this inclined position poses major problems.

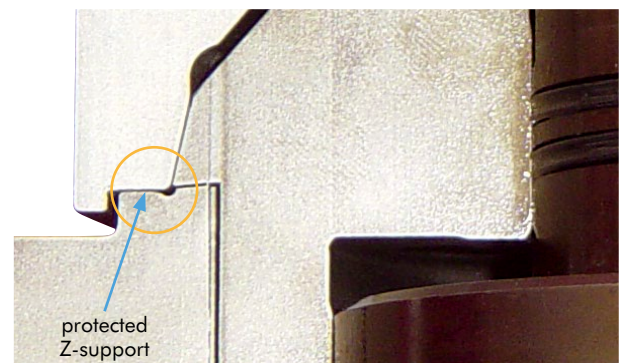
This is not the case on Delphin BIG. As shown by the illustration, the workpiece can still be clamped with no major problems even with major inclination.



Z-support guard

The Z-supports of Delphin BIG clamping bushings and rings are protected by an all-round ring: the Z-supports remain protected if the workpiece is placed on the floor.

If the workpiece moves into the chucks, the edge of the bushing strikes the cone of the chuck. These minor impacts may leave notches on the clamping bushing. There is a recess at the end of the cone (chuck) in order to prevent inaccuracies of the system, consequently ensuring constant accuracy.



Cup Delphin BIG

The cups are fitted directly to the device or workpiece.

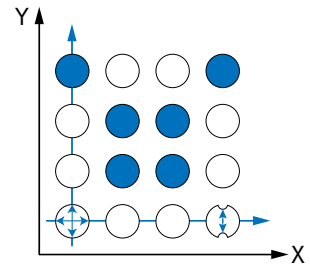
The Z-support is located inside the cup and is thus protected against damage and contamination.

Centring of the conical face of the centring and compensating cups without backlash achieves the high level of repeat accuracy.

Advantages

- Centring free of play
- Protected reference surfaces X, Y, Z
- Easy mounting to devices and workpieces
- Fixing to part or device from the top (45° offset) or bottom of the cups

Example arrangement



Cup, centred on X and Y axis



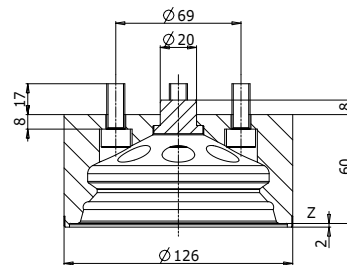
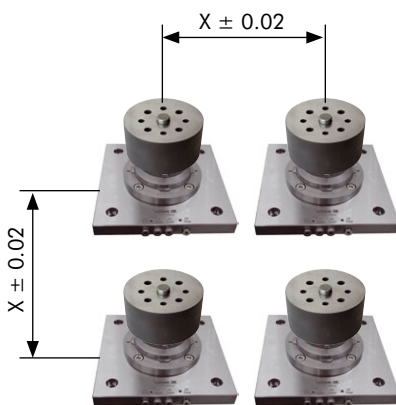
Cup, centred on X or Y axis



Cup without centring function

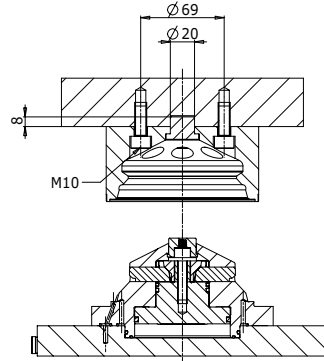
Positioning / installation / mounting dimensions

Positioning tolerance for cups and chucks

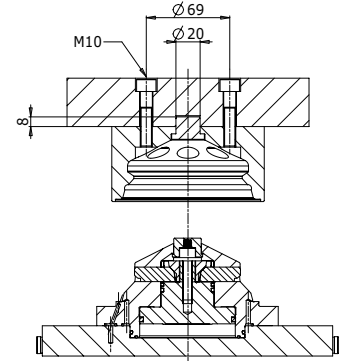


Installation of cups

shows screw connection from the bottom



shows screw connection from the top



Built-up and built-in can be screwed from the bottom or from the top.

Ring Delphin BIG

The rings are fitted directly to the device or workpiece.

The Z-support is located inside the ring and is thus protected against damage and contamination.

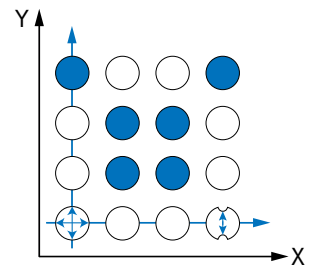
Centring of the conical face of the centring and compensating rings without backlash achieves the high level of repeat accuracy.

A bore (72 x 19.5) must be provided on the workpiece for the chuck.

Advantages

- Centring free of play
- Protected reference surfaces X, Y, Z
- Easy mounting to devices and workpieces
- Fixing to part or device from the top (45° offset) or bottom of the rings

Example arrangement



Ring, centred on X and Y axis



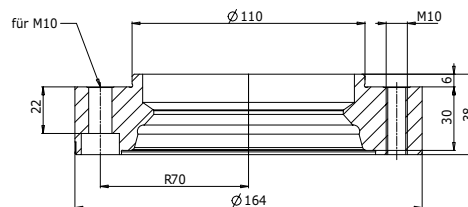
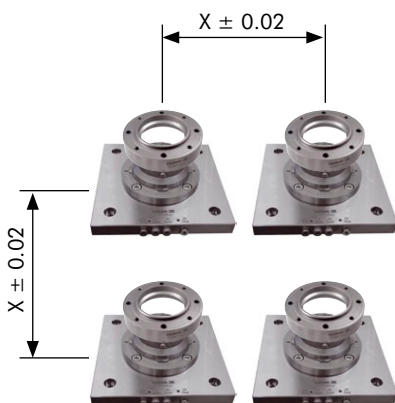
Ring, centred on X or Y axis



Ring without centring function

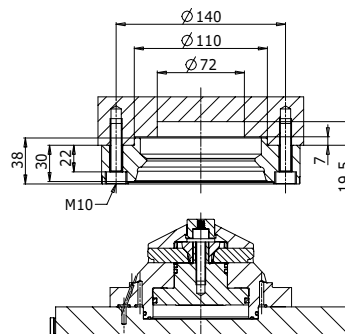
Positioning / installation / mounting dimensions

Positioning tolerance for rings and chucks

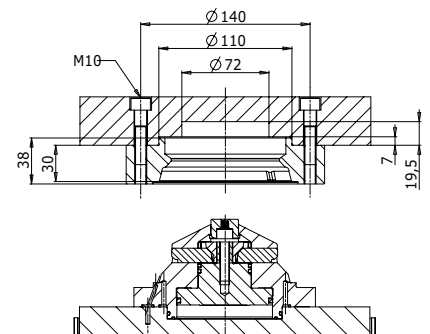


Installation of rings

shows screw connection from the bottom



shows screw connection from the top



Built-up and built-in can be screwed from the bottom or from the top.

Delphin BIG chuck built-in

C 297 000

For simple installation in the machine table.

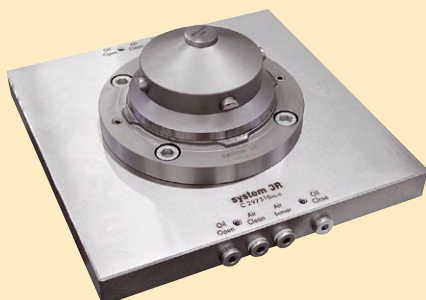


Delphin BIG chuck with flange, without fixation holes

C 297 310

Fixation holes can be made by customer

Recommendation: at least 4 chucks per application



Delphin BIG chuck with flange, with fixation holes

C 297 320

Please submit dimension diagram of the fixation holes

Recommendation: at least 4 chucks per application



Cup centring in 2 axes



C 298 000

including fixation screws



Cup centring in 1 axis



C 298 100

including fixation screws



Cup without centring



C 298 200

including fixation screws



Ring centring in 2 axes



C 298 010
including fixation screws



Ring centring in 1 axis



C 298 110
including fixation screws



Ring without centring



C 298 210
including fixation screws

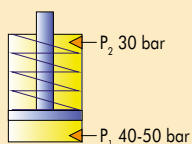


Hydraulic power pack

C 297 600

Including connection block and connection tubes.
Interface provided for machine signals.

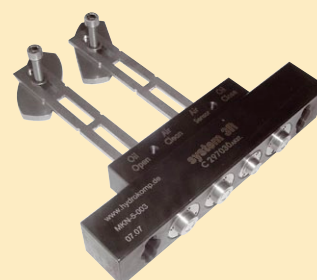
- Oil tank 2 l
- Oil pressure $P_1 = 40-50$ bar $P_2 = 30$ bar
- Air pressure 6 bar
- Power 0.75 kW
- Oil DIN 51524/2



Connection block

C 297 030

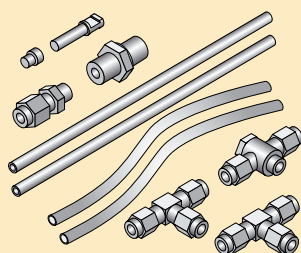
- Material: Steel
- Dimensions: 170x30x50 mm
- Scope of delivery:
fixation material (T-nuts)



Set connection equipment for 4 chucks

S 819 100

Scope of delivery: hydraulic pipes
and air hoses and fittings



Set fixation M12

C 289 150

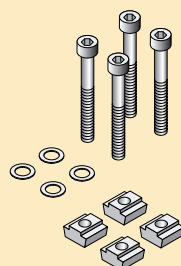
Set fixation M10

C 289 160

Set fixation M16

C 289 170

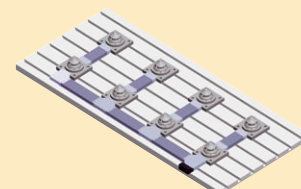
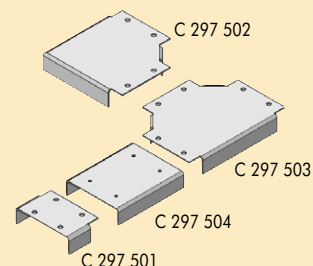
For fixing on machine table



Cover plate

C 297 500

For the protection of the connecting tubes



Cover plate type A

Dimensions in the range 1500 x 1500 mm

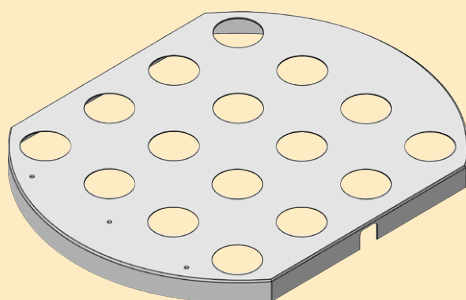
C 287 300

Scope of delivery

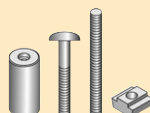
1x	cover plate, approx. 1500x1500 mm
16x	C 286 033 supports
16x	E 000 974 screws M8x60
16x	E 005 156 setscrew (mounting aid)
16x	E 111 111* T-nuts of your choice

To be defined optionally:

16x	E 040 020 T-nuts M8x12
16x	E 040 021 T-nuts M8x14 (standard)
16x	E 040 022 T-nuts M8x16
16x	E 040 023 T-nuts M8x18



16 each:



Cover plate type B

Dimensions in the range 1150 x 1150 mm

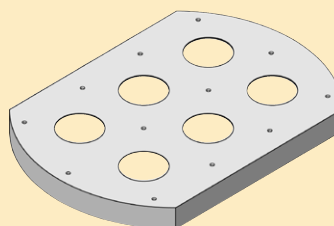
C 287 310

Scope of delivery

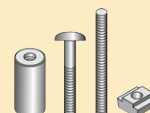
1x	cover plate, approx. 1150x1150 mm
12x	C 286 033 supports
12x	E 000 974 screws M8x60
12x	E 005 156 setscrew (mounting aid)
12x	E 111 111* T-nuts of your choice

To be defined optionally:

12x	E 040 020 T-nuts M8x12
12x	E 040 021 T-nuts M8x14 (standard)
12x	E 040 022 T-nuts M8x16
12x	E 040 023 T-nuts M8x18



12 each:



Indicator, rotary holder

C 288 060

For positioning of chucks on horizontal machine table.

- Material: steel, stainless, hardened and ground



Mounting case

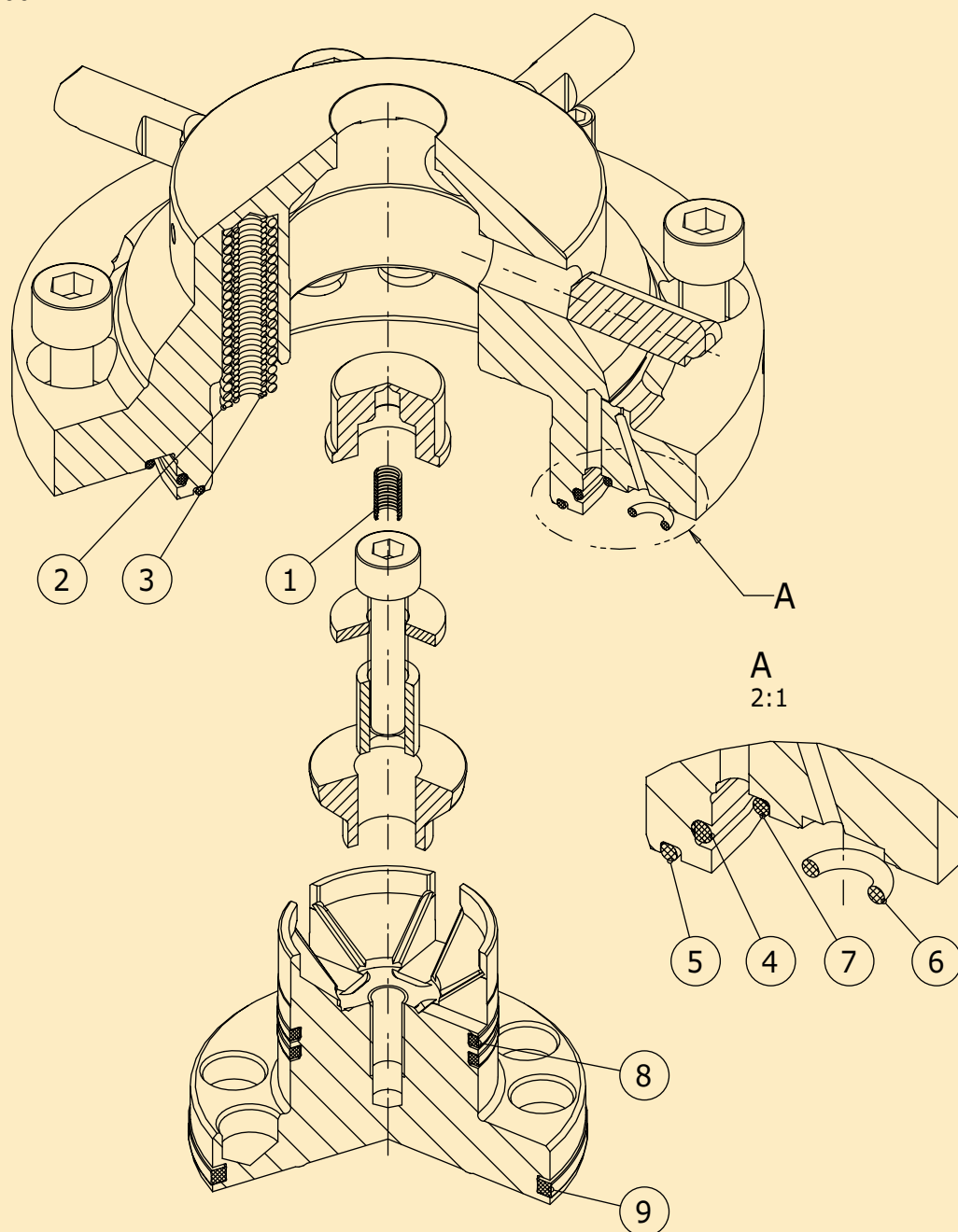
S 820 200

Required tools for installation are combined in a tool case. (Contents include torque wrench and dial gauge) Installation hardware, such as connecting pipes and screw unions, must be ordered separately. (See Chapter Connection hardware page 37.)



Spare parts

S 850 000



Pos	Qty	Item Nr	Description
1	1	E010328	Spring
2	8	E010335	Spring
3	8	E010336	Spring left-winding
4	1	E020314	O-Ring
5	1	E020367	O-Ring
6	2	E020381	O-Ring
7	1	E020426	O-Ring
8	2	E020990	X-Ring
9	1	E020991	X-Ring

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