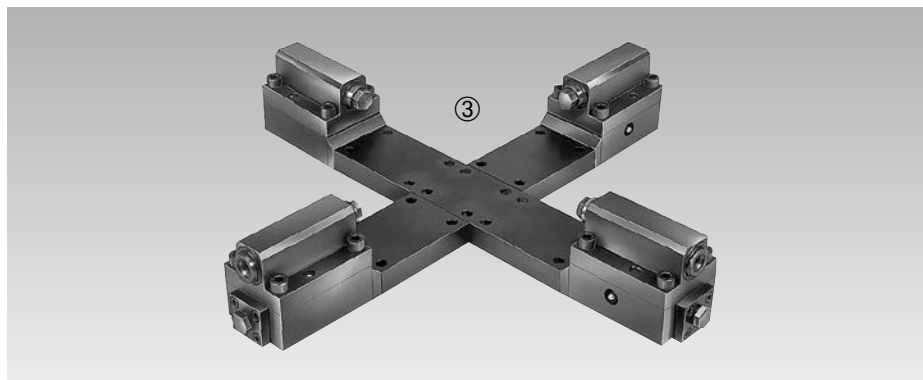




Concentric Positioning and Clamping Elements

with variable range of clamping, hydraulically operated double acting, max. operating pressure 500 bar



Figures

- ① Double clamping element for concentric interior clamping
- ② Double clamping element with prolonged connecting bar for exterior clamping
- ③ By means of the double clamping elements modular fixtures can be composed which position and clamp concentrically in several dimensions, e.g. in direction of the x- and y-axis.

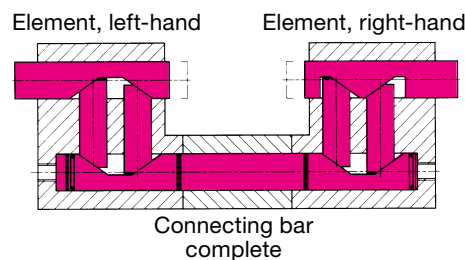
Description

Concentric positioning and clamping with two or three-jaw chucks on stationary fixtures is nothing new. In many applications, however, it is not possible to place the relatively large chuck bodies on the fixture. Often the smaller clamping strokes are an additional obstacle.

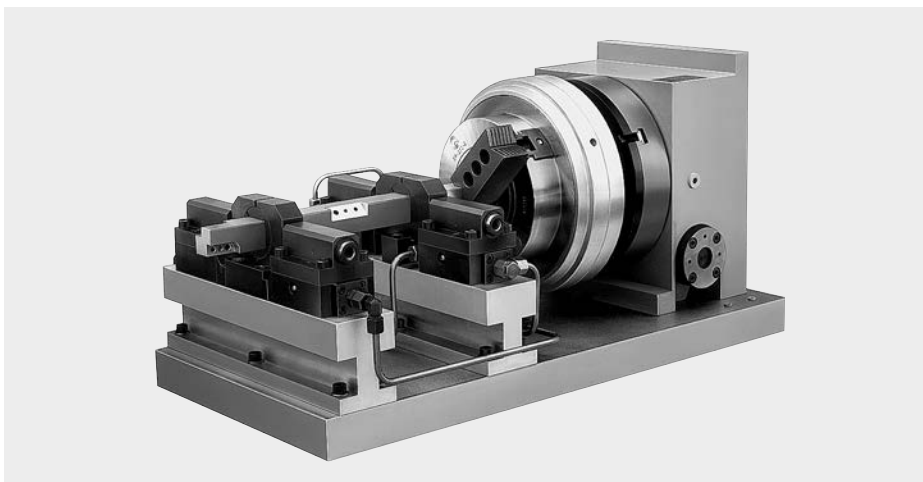
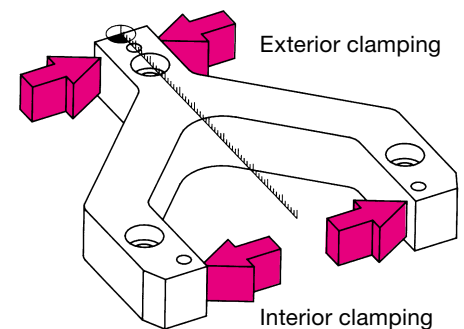
In our development, the individual parts can be connected to a two or multiple-element version. In the multiple-jaw version, each pair of jaws clamps independently of the remaining ones, thereby concentric clamping is obtained.

The opening can be determined by means of a connecting bar. The clamping strokes of the several sizes are designed such that manual or automatic loading and unloading can be effected to clamp blanks with large tolerances. Also single-acting elements are available on request.

Active principle



Clamping possibilities



Application example

The flexible clamping unit is used to clamp bars which can be machined in every position, e.g. drilled, milled, threaded, etc.

In conjunction with a pneumatic two-jaw chuck the rotary indexing table is used to determine the machining position of the workpiece.

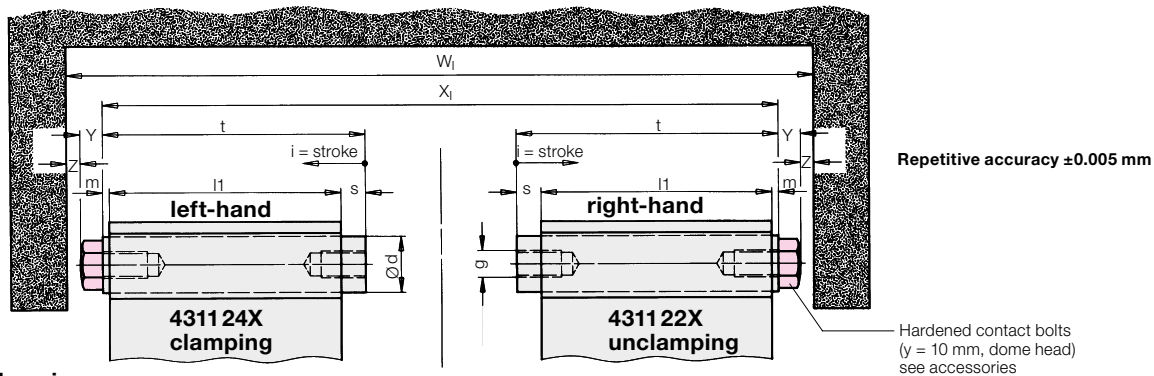
The two-jaw chuck and the right-hand concentric clamping element keep the bars in the exact working position.

The floating clamping element in the centre supports the bar. For this purpose it must work in a floating way, that means without centring function, what can be obtained by omitting the connecting bar.

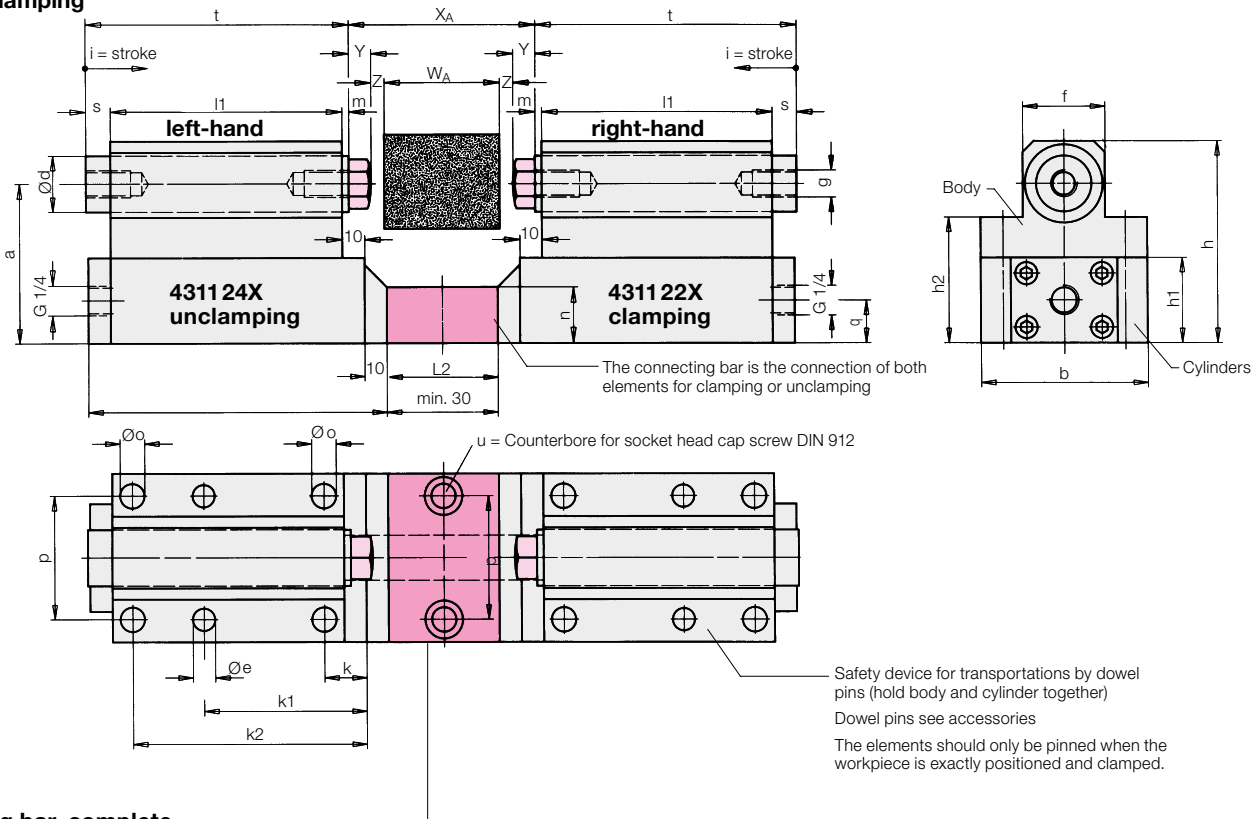
(Available on request)

Concentric clamping elements hydraulically operated

- Interior clamping



- Exterior clamping



Connecting bar, complete

Part no. 0432XXX

Please specify when ordering:

1. Size

D16 / D25 / D32

2. Length of connecting bar L2 / L3 / L4 = ____ mm

After ordering a connecting bar, you will receive an installation drawing that shows the position of the fixing screws.

Calculation of the length of connecting bar L

Size	2 elements	3 elements + crossing for 3 elements	4 elements + crossing for 4 elements
D 16	$L2 = X2_{I/A} - X2_{\min_{I/A}} + 30$	$L3 = \frac{X3_{I/A} - X3_{\min_{I/A}}}{2} + 24.2$	$L4_{a/b} = \frac{X4_{I/A(a/b)} - X4_{\min_{I/A}}}{2} + 20$
D 25	$L2 = X2_{I/A} - X2_{\min_{I/A}} + 30$	$L3 = \frac{X3_{I/A} - X3_{\min_{I/A}}}{2} + 26$	$L4_{a/b} = \frac{X4_{I/A(a/b)} - X4_{\min_{I/A}}}{2} + 20$
D 32	$L2 = X2_{I/A} - X2_{\min_{I/A}} + 30$	$L3 = \frac{X3_{I/A} - X3_{\min_{I/A}}}{2} + 26$	$L4_{a/b} = \frac{X4_{I/A(a/b)} - X4_{\min_{I/A}}}{2} + 25$

Dimension X... for

Interior clamping $X2_I = W_I - 2Y - 2Z$

$X3_I = W_I - 2Y - 2Z$

$X4_{I(a/b)} = W_{I(a/b)} - 2Y - 2Z$

Exterior clamping $X2_A = W_A + 2Y + 2Z$

$X3_A = W_A + 2Y + 2Z$

$X4_{A(a/b)} = W_{A(a/b)} + 2Y + 2Z$

$W_I, W_{I(a/b)}$ = workpiece inside dimension

$W_A, W_{A(a/b)}$ = workpiece outside dimension

(a/b) = only applies to crossing for 4 elements

For rectangular section (a x b) two different lengths of connecting bars L_a and L_b are required

$X2_{\min_I}, X3_{\min_I}, X4_{\min_I}$ = minimum dimension interior clamping (chart)

$X2_{\min_A}, X3_{\min_A}, X4_{\min_A}$ = minimum dimension exterior clamping (chart)
(bolt retracted without contact bolt)

Y = height contact bolt

Z = ideal stroke per clamping bolt up to the workpiece (< clamping stroke)

Dimensions • Part numbers **Crossing for 3 elements • Crossing for 4 elements**

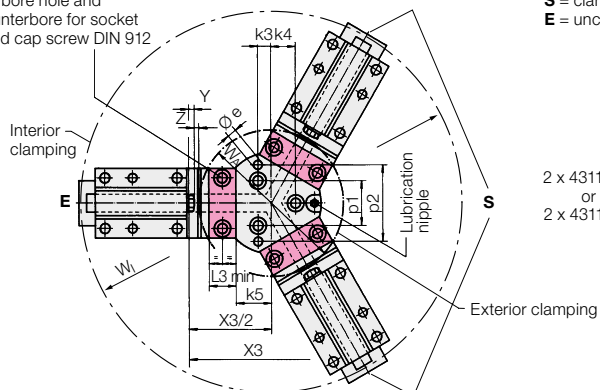
Size		D 16	D 25	D 32
Clamping force per pair of elements	[kN]	5	12	20
at max. operating pressure	[bar]	500	500	500
A centre height	[mm]	52	71	87
		Larger centre height on request		
b	[mm]	62	75	86
Piston/bolt Ø d	[mm]	16	25	32
E Ø pin hole	[mm]	8 H7	10 H7	12 H7
f	[mm]	28	37	45
g	[mm]	M 8 x 18	M 12 x 30	M 16 x 22
h	[mm]	66	90	111
h1	[mm]	27	38	47
h2	[mm]	41	56	72
i clamping stroke	[mm]	6	8	8
k	[mm]	18.5	19	22.5
k1 ±0.05	[mm]	58.5	73	81.5
k2	[mm]	83.5	105	117.5
k3	[mm]	12	15	18
k4	[mm]	22	30	35
k5	[mm]	32	40	50
l	[mm]	117	134	152
l1	[mm]	82	104	120
m	[mm]	2	3	3
n	[mm]	20	25	30
o Ø	[mm]	9	11	13
p ±0.02 (only Ø e)	[mm]	45	55	65
p1	[mm]	40	52	60
p2	[mm]	68	86	100
q	[mm]	14	19	24
s	[mm]	8	11	11
t	[mm]	92	118	134
u (counterbore for)	[mm]	M 8	M 10	M 12
X2 min. / X2 min. A	[mm]	238/66	284/64	316/64
X3 min. / X3 min. A	[mm]	320.4/148.4	386/166	438/186
X4 min. / X4 min. A	[mm]	310/138	369/149	422/170
L2 min.	[mm]	30	30	30
L3 min.	[mm]	24.2	26	26
L4 min.	[mm]	20	20	25
Weight	[kg]	2.2	4.5	9
Element, right-hand	Part no.	4311 221	4311 222	4311 223
Element, left-hand	Part no.	4311 241	4311 242	4311 243
Crossing for 3 elements	Part no.	0432 300	0432 301	0432 302
Crossing for 4 elements	Part no.	0432 400	0432 401	0432 402

Accessories

Contact bolt (y = 10 mm)	Part no.	3614 001	3614 028	3614 003
Dowel pin DIN 6325	Part no.	3300 313	3300 489	3300 617

Crossing for 3 elements

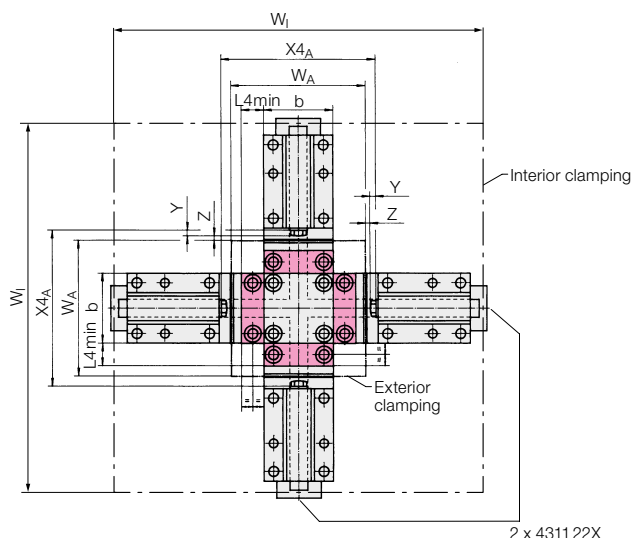
u = bore hole and counterbore for socket head cap screw DIN 912



S = clamping
E = unclamping

2 x 4311 22X
or
2 x 4311 24X

Crossing for 4 elements



2 x 4311 22X
S for exterior clamping
E for interior clamping

Required elements for

Exterior clamping

2 elements	4311 22X	1 element	4311 22X
1 element	4311 24X	2 elements	4311 24X
1 crossing for 3 elements	0432 30X	1 crossing for 3 elements	0432 30X
3 connecting bars L3	0432 XXX	3 connecting bars L3	0432 XXX

The 3 connecting bars must have the same length.

Interior clamping

Required elements for

Exterior or interior clamping

2 elements	4311 22X
2 element	4311 24X
1 crossing for 4 elements	0432 40X
4 connecting bar L4(a/b)	0432 XXX

For a rectangular section, always 2 connecting bars have the same length.

Clamping possibilities

