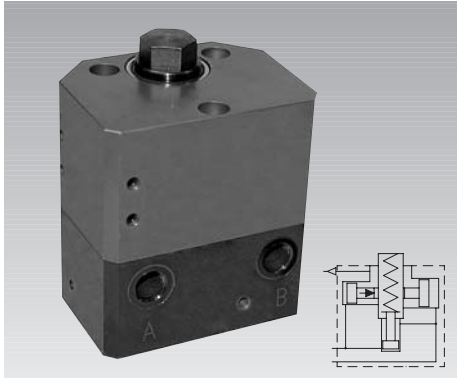


Work Support, Self-Locking with pneumatic position monitoring, double acting, max. operating pressure 500 bar



Application

Hydraulic work supports are used to provide a self-adjusting rest for the workpiece during the machining operations. They compensate the workpiece surface irregularities, also vibration and deflection under machining loads.

Hydraulic locking is made together with hydraulic clamping of the workpiece, or independently.

Due to the self-locking function of the support plunger, these work supports are particularly suitable for:

- Manufacturing systems with pallet store
- Clamping fixtures with workpiece loading via handling systems
- Transfer lines
- Automatic manufacturing systems
- Assembly lines
- Indexing machines
- Special machine tools

Important notes

If there is any danger of fluids being sucked into the filter, a vent hose has to be connected at the bleeding port (M5).

The standard contact bolt in the support plunger protects the interior against contamination. All versions, except 1933-025, are equipped with a pressure spring below the contact bolt. Please ask for installation dimensions, if you will use self-manufactured contact bolts.

To unlock the support plunger the min. unclamping pressure as per diagram, page 2, is required.

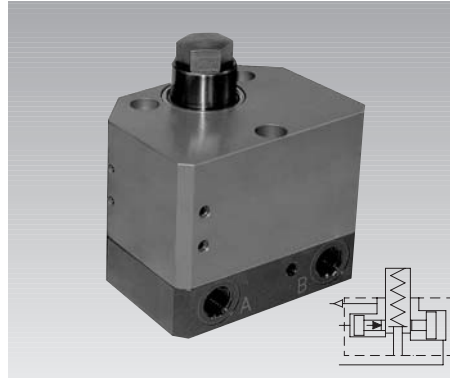
Support and clamping forces have to be coordinated to provide the work support with a sufficient force reserve for absorption of machining forces.

Thumb rule:

Support force $\geq 2 \times$ clamping force

The self-locking is not form-fit. The introduction of impact machining forces has to be avoided. Max. retention force see diagram.

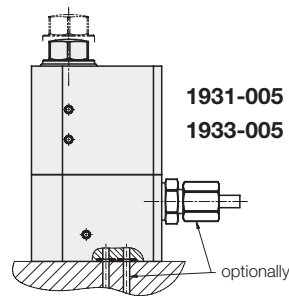
Operating conditions, tolerances and other data see data sheet A 0.100.



Function

There are two variations of plunger actuation:

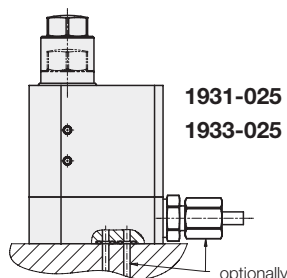
1. Off-position retracted



When pressurising the element, the support plunger moves forward with a light spring force against the workpiece. Then locking is automatically effected.

Advantage: Unimpeded loading and unloading of the clamping fixture!

2. Off-position extended



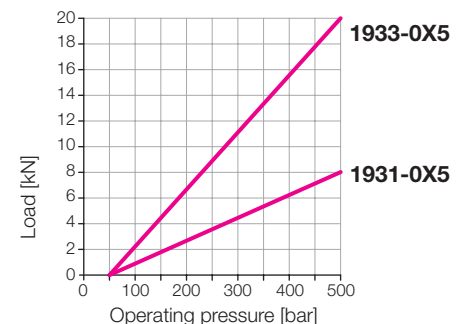
When loading the fixture, the support plunger is pushed back by the workpiece and contacts the workpiece by spring force. Then hydraulic locking can be effected. During unclamping the support plunger will be unlocked and moved forward by a little spring force when unloading the workpiece.

Advantage: Compact design.

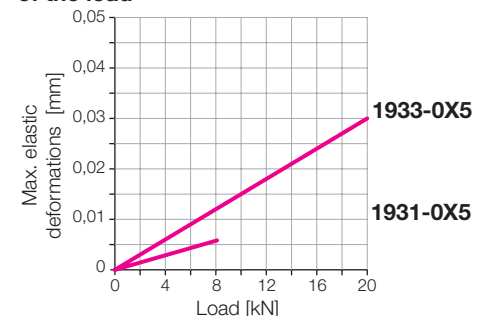
Advantages

- No yielding at the workpiece, even if pressure drops, due to patented locking with self-locking function.
- Very little elasticity of the support plunger (see diagram).
- No axial displacement of the support plunger during locking.
- Compensation of side loads, if a clamping element clamps directly onto the workpiece (see application example).
- Optimum adaptation to the workpiece due to asymmetrical shape of the body.
- Little contact force to the workpiece due to spring force.
- Oil supply optionally via fittings or drilled channels
- Higher process safety due to integrated pneumatic position monitoring as well as hydraulic retraction of the support bolt.
- Mounting position: any
- Standard FKM seals

Admissible load as function of the operating pressure

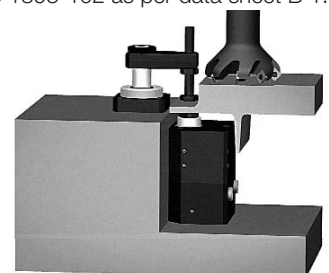


Max. elastic deformations as a function of the load



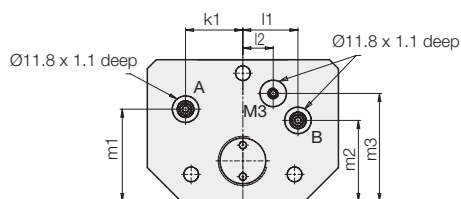
Application example

Manifold-mounted work support with swing clamp 1893-102 as per data sheet B 1.8803.

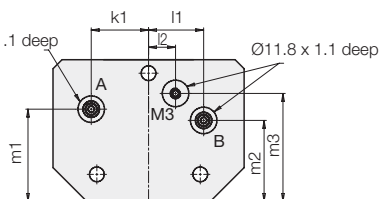




Off-position retracted 1931-005 1933-005



Off-position extended 1931-025 1933-025



A = Extending and locking
B = Unlocking and retracting

Notes:

1. Manifold mounting

For manifold mounting remove screw with sealing (see bottom) and insert O-ring 9x1.5 (part-no. 3001-305) into the counterbore.

Connecting hole max. Ø 7 mm. Screw in plug G 1/4 or G 1/8 (part-no. 3610-006 or 3610-008).

2. Pneumatic position monitoring

To operate the position monitoring, remove the set screws (M5) and screw in insertion nipple fitting (part-no. 3890-091) or L-type insertion nipple fitting (part-no. 3890-094).

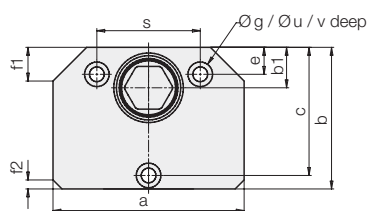
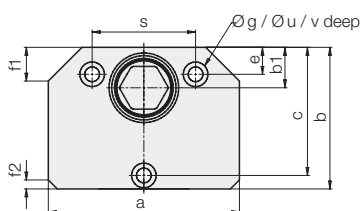
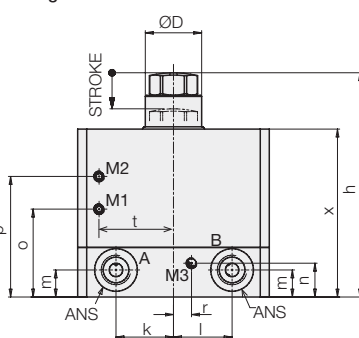
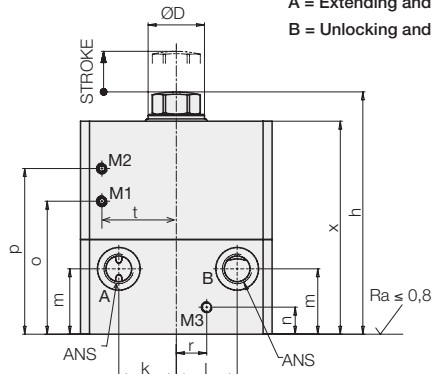
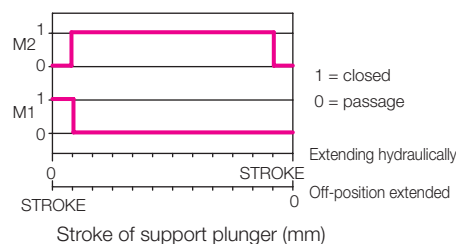
M1 – support plunger retracted, thread M5.

M2 – support plunger extended, thread M5.

M3 – do not close bleeding port, thread M5 (see important notes).

Function chart

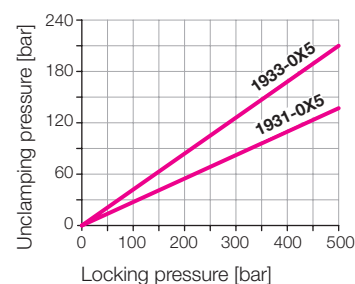
Pneumatic position monitoring



Load at 500 bar	[kN]	8	8	20	20
Support plunger ØD	[mm]	16	16	25	25
Stroke of support plunger STROKE	[mm]	8	8	12	12
a	[mm]	70	70	85	85
ANS port		G 1/8	G 1/8	G 1/4	G 1/4
b	[mm]	48	48	63	63
b1	[mm]	13	13	18	18
c	[mm]	42	42	57	57
e	[mm]	6	6	12	12
f1 x 45°	[mm]	10	10	15	15
f2 x 45°	[mm]	4	4	4	4
g	[mm]	5.5	5.5	6.6	6.6
h	[mm]	86.5	76.5	107.5	99.5
k	[mm]	22	22	25.5	25.5
k1	[mm]	22	22	25.5	25.5
l	[mm]	22	22	27	26
l1	[mm]	20	20	24.5	24.5
l2	[mm]	0	0	13.5	12.0
m	[mm]	30	14	29	12
m1	[mm]	36	36	41	41
m2	[mm]	22	22	36	36
m3	[mm]	31.5	31.5	48	48
n	[mm]	15	7	12	15
o	[mm]	46.5	28.5	58	38
p	[mm]	61	43	73.5	53.5
r	[mm]	14.5	6	13.5	9
s	[mm]	36	36	46	46
t	[mm]	26	26	33	33
u	[mm]	10	10	11	11
v	[mm]	11	11	15	15
x	[mm]	78	60	94.5	74.5
Contact/spring force	[N]	15 up to 22	15 up to 22	23 up to 50	23 up to 50
Recommended minimum pressure	[bar]	100	100	100	100
Max. oil volume stroke / locking	[cm ³]	1.8	0.2	7.3	4.9
Max. oil volume return stroke	[cm ³]	1.6	0.3	9.5	8.4
Max. flow rate	[cm ³ /s]	25	25	25	25
Weight	[kg]	1.8	1.4	3.5	2.8

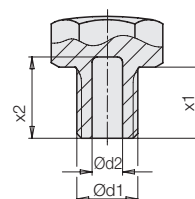
Part-no.	1931-005	1931-025	1933-005	1933-025
Accessories (not included in the delivery)				
Part-no. O-ring (FKM) 9 x 1.5	3001-305	3001-305	3001-305	3001-305
Part-no. plug	3610-008	3610-008	3610-006	3610-006

Min. unclamping pressure as a function of the locking pressure



Admissible load see diagram page 1.

Required dimensions for self-made contact bolts



Work support	Ød1	Ød2	x1	x2
1931-005	[mm]	M10	6	12
1931-025	[mm]	M10	6	12
1933-005	[mm]	M12	-	9
1933-025	[mm]	M12	-	9