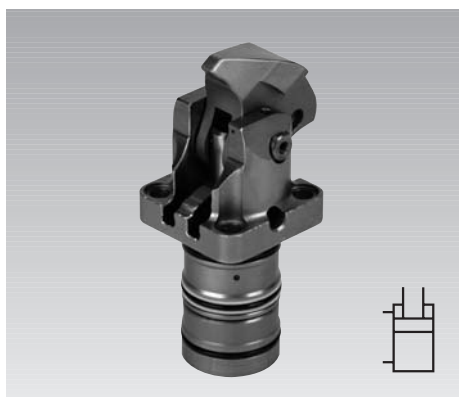


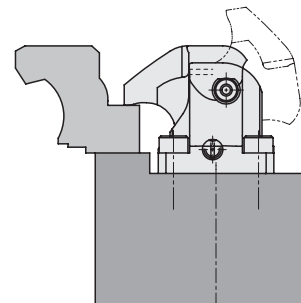


Compact Clamps cartridge type with pneumatic clamping monitoring double acting, max. operating pressure 250 bar



Advantages

- Minimum dimensions
- Body partially immersed
- Metallic wiper edge for piston rod
- Pneumatic clamping monitoring of the clamping position as standard
- Installation without pipes
- Clamping lever can be swivelled into small recesses
- Workpiece clamping without side loads
- Unimpeded loading and unloading of the clamping fixture
- 4 sizes with and without cover available
- Two different clamping levers are available
- Long clamping levers adaptable to the workpiece
- All components nitrated
- Mounting position: variable



Application

Compact clamps are designed for application in hydraulic clamping fixtures where oil supply is effected through drilled channels in the fixture body.

Due to the minimum space required the compact clamp is especially suitable for clamping fixtures with little space for the installation of hydraulic clamping elements.

A clamping recess in the workpiece a little bit wider than the clamping lever is sufficient as clamping surface. Typical applications are:

- Rotary indexing fixtures in horizontal and vertical machining centres
- Clamping fixtures for machining of several sides and complete machining
- Multiple clamping fixtures with many workpieces that are closely arranged
- Test systems for motors, gears, etc.
- Assembly lines

Description

The hydraulic compact clamp is a double-acting pull-type cylinder where a part of the linear stroke is used to swing the clamping lever onto the workpiece.

In unclamping position the clamping lever is swung up so that the workpiece can be unloaded without problems.

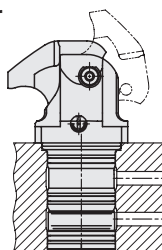
In the clamping area, the clamping lever slides downwards at two nitrated surfaces of the body. In one of these surfaces there is a small bore hole for the standard pneumatic clamping monitoring. In the clamping area, this bore hole is closed by the clamping lever as soon as the lever gets in contact with the workpiece and the clamping force exceeds a minimum value. The version with cover is inserted in open bore holes and enables the smallest possible building height.

The version without cover requires a closed pocket hole.

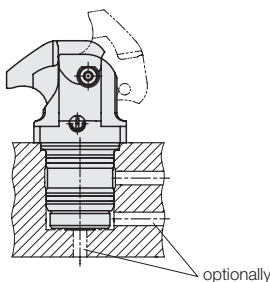
Beside the short clamping lever, also a long clamping lever is available, that is provided for reworking to the desired length and contour.

Installation and connecting possibilities

Drilled channels with cover

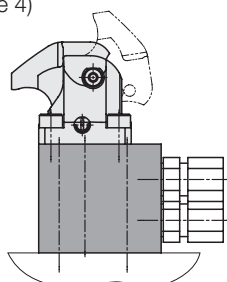


without cover



Pipe thread

with accessory mounting body (see page 4)

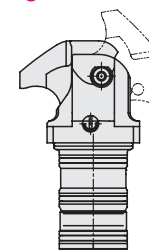


Important notes

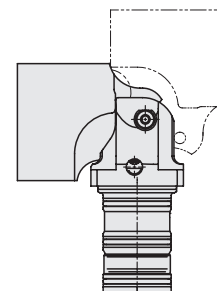
(see page 3)

Clamping lever options

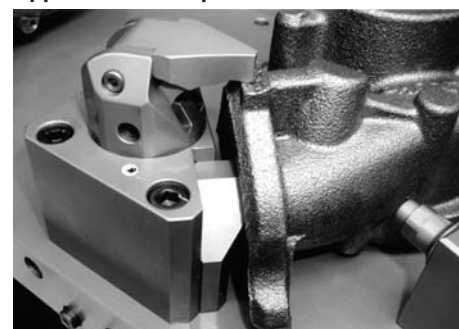
Short clamping lever



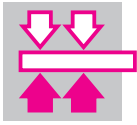
Long clamping lever (blank)



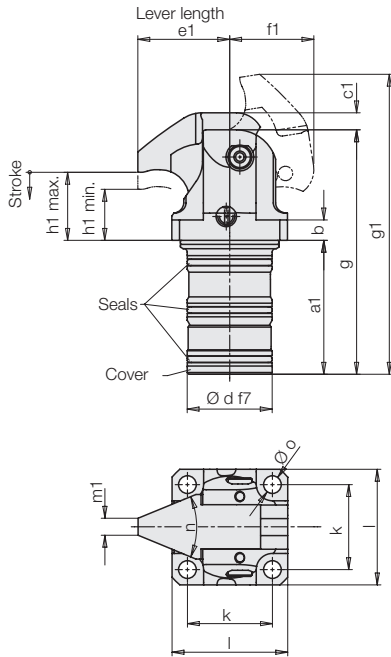
Application example



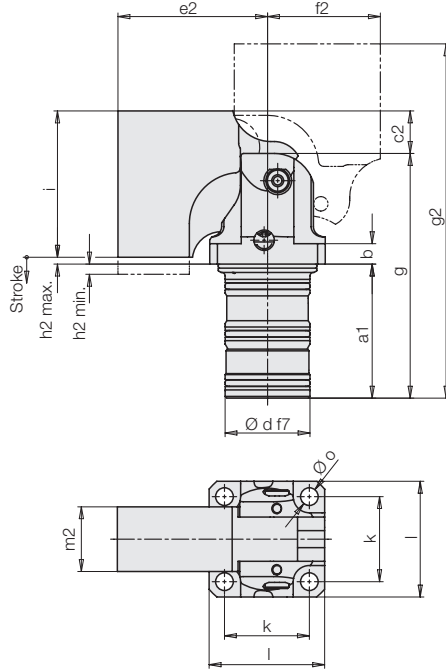
Clamping of a cast part



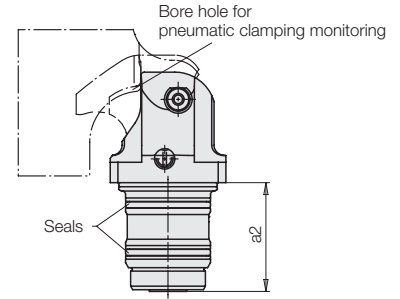
With cover Short clamping lever



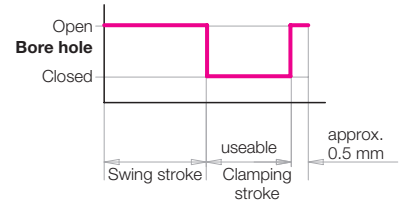
Long clamping lever (blank)



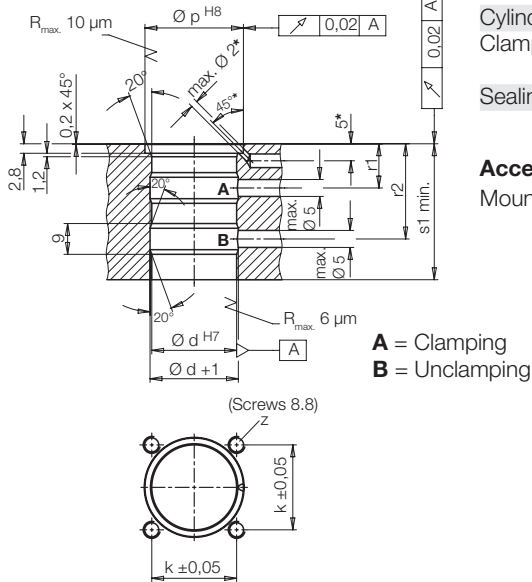
Without cover



Pneumatic clamping monitoring Function chart



Bore hole open



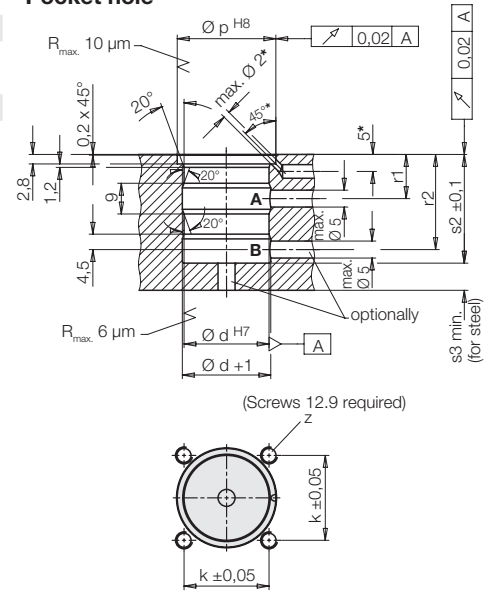
Material

Cylinder body: nitrated
Clamping lever: X37 Cr Mo V 5-1 hardened (HRC 40) and nitrated
Sealings: NBR and PUR (max. 80°)

Accessories

Mounting body (see page 4)

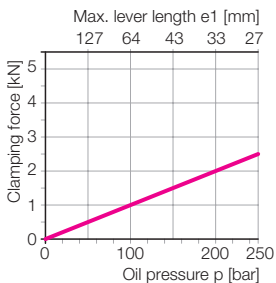
Pocket hole



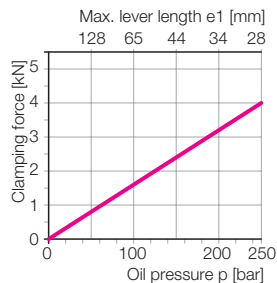
* for pneumatic clamping monitoring

Effective clamping force and max. lever length e1 as a function of the operating pressure p

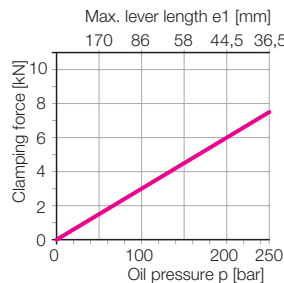
Size 1



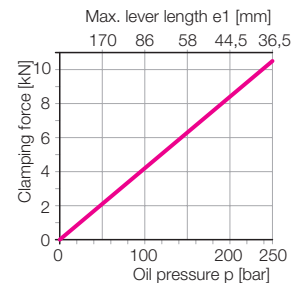
Size 2



Size 3



Size 4





Size		1	2	3	4
Clamping force at 250 bar and short clamping lever	[kN]	2.5	4.0	7.5	10.5
Max. stroke	[mm]	5	5	7.5	9
Clamping stroke, useable	[mm]	4.5	4.5	7	8.5
Piston Ø	[mm]	18	22	28	33
Rod Ø	[mm]	11	14	17	19
Oil volume clamping	[cm ³]	0.8	1.2	2.4	5.2
Oil volume unclamping	[cm ³]	1.3	1.9	3.8	7.8
Max. oil flow rate	[cm ³ /s]	4	5.5	11	25
Min. operating pressure without clamping monitoring	[bar]	20	20	20	20
with clamping monitoring	[bar]	70	70	70	70
Min. air pressure	[bar]	4	4	4	4
a1	[mm]	39.4	43	48.5	50.5
a2	[mm]	31.5	33.5	40.1	40.5
b	[mm]	6	7	10	10
c1	[mm]	5	5	7.5	9
c2	[mm]	14	12	6	9
Ød H7/f7	[mm]	25	32	40	45
e1	[mm]	27	28	36.5	36.5
e2	[mm]	44	44	52.5	52.5
f1	[mm]	25	26	32	35
f2	[mm]	32	34	32	35
g	[mm]	71.9	79.5	91.5	96.5
g1	[mm]	89	92	112	116
g2	[mm]	109	109	134	140
h1 max.	[mm]	20	20	22.5	24
h1 min.	[mm]	15.5	15.5	15.5	15.5
h2 max.	[mm]	3.5	2.5	6	7.5
h2 min.	[mm]	1	2	1	1
i	[mm]	43	46	44.5	47.5
k	[mm]	25	31	36.5	41
l	[mm]	34	42	48	55
m1	[mm]	5	6	8	8
m2	[mm]	19	24	32	35
n	[°]	45	56	56	62
Ø o	[mm]	5.2	6.2	6.2	8.2
Ø p H8	[mm]	29	36	44	49
r1	[mm]	13	13	14	14
r2	[mm]	28	28	31	31
s1 min.	[mm]	40	43.5	49	51
s2 ±0.1	[mm]	31.6	33.6	40.2	40.6
s3 min.	[mm]	6	7	9	10
z	[mm]	M5	M6	M6	M8

Version with cover

Weight	[kg]				
Part-no. - with short clamping lever		1801-110	1802-110	1803-110	1804-110
Weight	[kg]				
Part-no. - with long clamping lever (blank)		1801-120	1802-120	1803-120	1804-120

Version without cover*

Weight	[kg]				
Part-no. - with short clamping lever		1801-111	1802-111	1803-111**	1804-111
Weight	[kg]				
Part-no. - with long clamping lever (blank)		1801-121	1802-121	1803-121**	1804-121

* Use screw material 12.9; ** max. operating pressure 200 bar

Important notes!

Compact clamps must only be used for clamping of workpieces in industrial applications and may only be operated with hydraulic oil. Hydraulic clamping elements can generate considerable forces. The workpiece, the fixture or the machine must be in the position to compensate these forces.

In the effective area of the piston rod and the clamping arm there is the danger of crushing. The manufacturer of the fixture or the machine is obliged to provide effective protection devices. During loading and unloading of the fixture

and during clamping a collision with the clamping arm has to be avoided. Remedy: Mount position adaptor.

Due to the relatively small clamping stroke the height of the manifold surface of the compact clamp should be adapted to the workpiece height so that the clamping point is approximately in the centre of the useable clamping stroke.

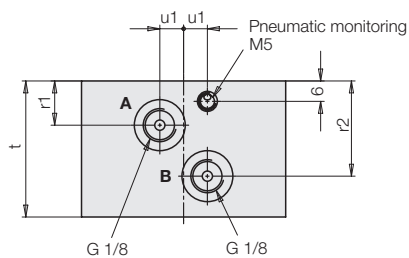
By doing so a sufficient reserve remains also in the case of larger workpiece tolerances. The compact clamp has to be checked regularly on

contamination by swarf and has to be cleaned, if required. In the case of increased swarf formation, the compact clamp must be included into the cleaning process with coolant. Operating conditions, tolerances and other data see data sheet A 0.100 and A 0.130.

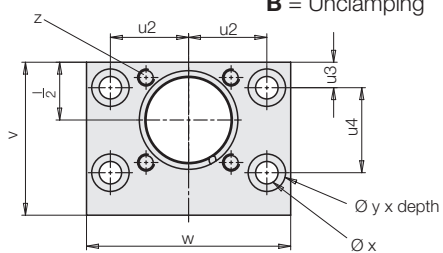


Mounting body

for pipe thread
for version with cover



A = Clamping
B = Unclamping



Size		1	2	3	4
l	[mm]	34	42	48	55
r1	[mm]	13	13	14	14
r2	[mm]	28	28	31	31
t	[mm]	40	44	50	52
u1	[mm]	7	7.5	10	10
u2	[mm]	23	26	31	34
u3	[mm]	7.5	7.5	8	8
u4	[mm]	25	28	34	38
v	[mm]	45	50	58	63
w	[mm]	60	65	78	85
Ø x	[mm]	6.6	6.6	8.5	8.5
Ø y x depth	[mm]	11 x 7	11 x 7	13.5 x 9	13.5 x 9
z	[mm]	M5	M6	M6	M8
Weight	[kg]				
Part-no.		3468-381	3468-382	3468-383	3468-384