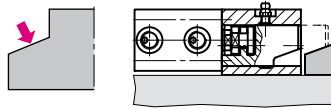


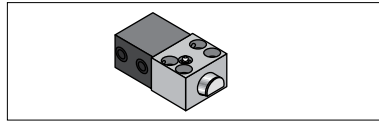
Wedge clamps



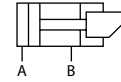
Wedge clamps for dies with tapered clamping edge



Without position monitoring

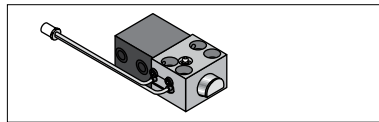


up to 160°C*

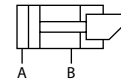


2.24000

With position monitoring lateral fastening

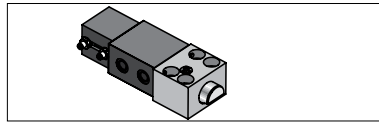


up to 100°C**

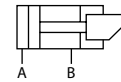


2.24001

With position monitoring rear side fastening

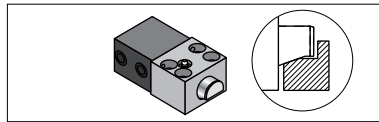


up to 120°C**

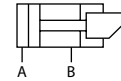


2.24002

With safety step

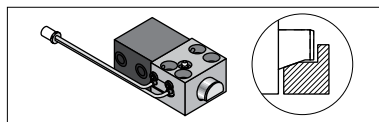


up to 160°C*

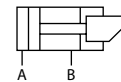


2.24003

With safety step + position monitoring

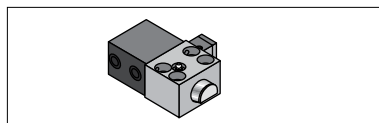


up to 100°C**

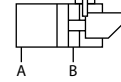


2.24004

With locking bolt

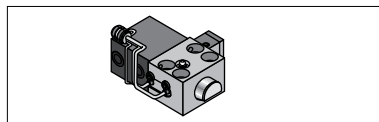


up to 160°C*

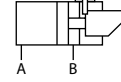


2.24005

With locking bolt + position monitoring

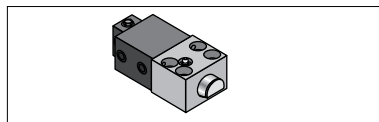


up to 100°C**

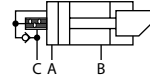


2.24006

With sequence valve control

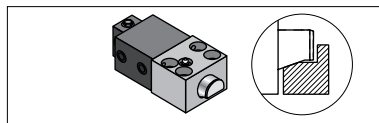


up to 160°C*

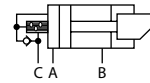


2.24007

With sequence valve control + safety step

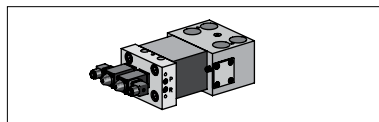


up to 160°C*

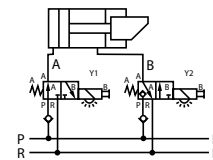


2.24008

With flanged directional seat valves

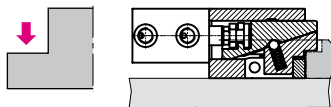


up to 100°C**



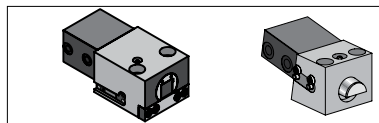
2.24009

Wedge clamps for dies with flat clamping edge

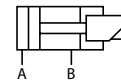


(*250°C on request)

Without position monitoring

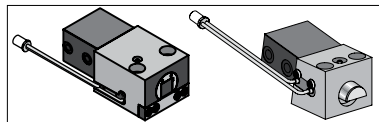


up to 160°C

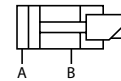


2.2451

With position monitoring



up to 100°C**

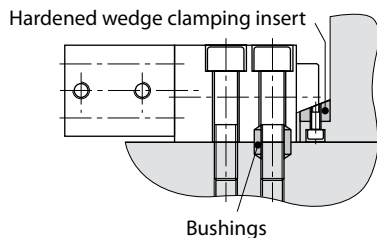
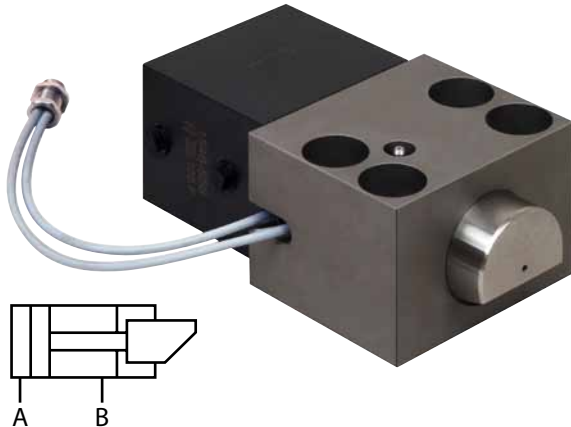


2.2460

(** 120°C for 1000 working hours)



Wedge clamp, double-acting for dies with tapered clamping edge



Retrofit: In many cases, existing dies can be standardised by adding **wedge inserts**. Max. hardness: 50 HRC.

The occurring transverse forces must be absorbed by **bushings** to be drilled into the fixture plate (see table for accessories)

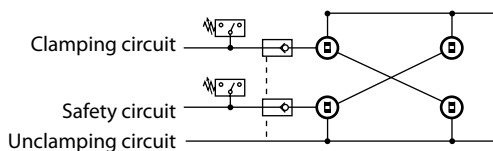
Please note:

In case of incorrect operation of the wedge clamping element, the clamping bolt may fully retract into the guide housing and thus cause the upper die falling off the slide.

The greasing intervals (high-temperature grease) should be scheduled in accordance with the operating conditions. **Greasing of the clamping bolt should only be made with the elements being retracted.**

Clamping elements with wedge clamping bolt must be protected against dirt, scale, swarf, coolant, etc. by means of a suitable covering. Dies clamped by means of wedge clamping elements are subject to transverse forces which may be strong enough to displace them. Therefore, location pins or suitable limit stops should be provided, in order to keep the dies in their correct position.

When using wedge clamping elements on the press slide, it is recommended that multiple-circuit hydraulic supply of the clamping elements and pilot-controlled check valves are used in the clamping lines for securing hydraulic clamping.



Application:

- safe clamping of dies with a tapered clamping edge
- for clamping of dies on a press bed and slide
- for clamping of dies in injection moulding machines

Design:

Double-acting wedge clamp for clamping dies on a press bed or slide or for clamping dies in injection moulding machines.

The wedge clamp consists of a hydraulic block cylinder and a piston guided in a housing.

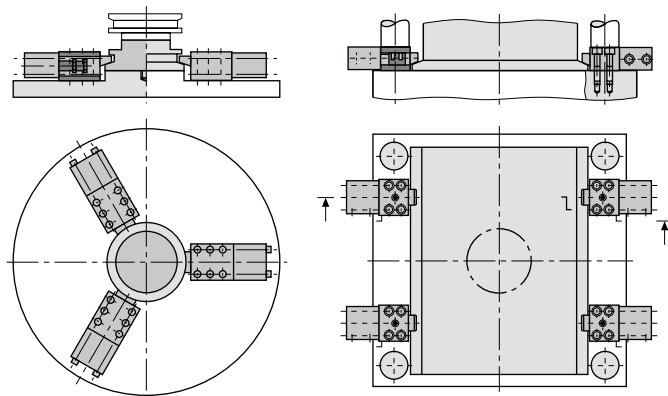
The clamping bolt is provided with 20° bevel to clamp on the tapered clamping surface of the die.

Based on the internal design of the wedge clamp and the 20° clamping bevel the system is providing internal friction. For reasons of safety and in order to comply with the specifications of the 'Machinery' directive no. ML98/37/EC, hydraulic pressure must always be maintained.

When upper dies are clamped by wedge clamps, they must be secured mechanically when maintenance work is carried out.

Special features:

- ◆ available in sizes between 25 kN and 1250 kN
- ◆ high functional reliability ensured by position monitoring and an automatic cycle
- ◆ rugged and well-proven clamping element with high degree of safety and long service life



Principle of die clamping

In general, dies with round geometry are clamped using three clamping elements for each half, whereas dies with square or rectangular geometry are clamped using four clamping elements for each half.

Wedge clamp, double-acting without position monitoring

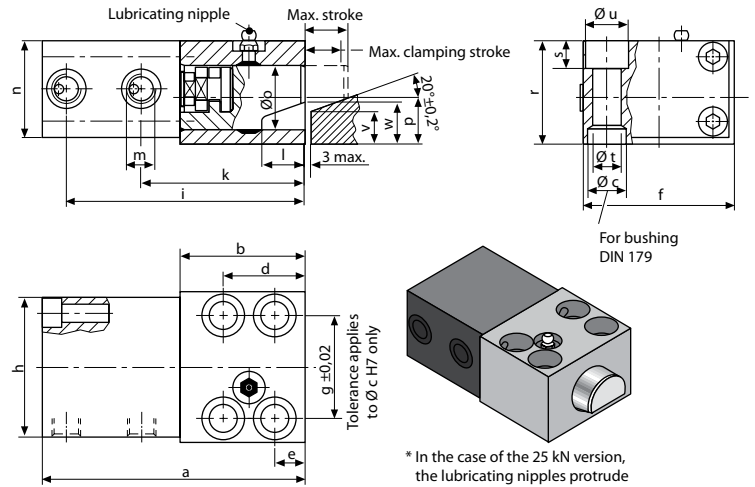
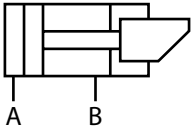


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Wedge clamp, double-acting for dies with tapered clamping edge

Clamping bolt with 20° bevel, design without proximity switch

Resistant to temperatures of up to 160°C (for higher temperatures, please consult us)



* Clamping force

This is the force that the clamping element applies to the workpiece at maximum operating pressure. The die is clamped on the fixture plate by means of this force. Under normal conditions, the external forces acting on the die (i.e. the ejecting force or die cushion force) shall not exceed the totality of the clamping forces of the elements.

** Perm. retention force

This is the holding power of clamping element and fastener (screw property class 8.8). The above data is based on the condition that the appropriate tightening torque has been applied, and that material and geometry of the fixtures are suitable for the purpose. It must be ensured that in cases of emergency, e.g. workpiece jammed in the die, the totality of the retention forces of the elements is not exceeded.

Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. retention force** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (from/to) (mm)	15 - 18	18 - 22	19 - 22	23 - 27	24 - 29	30 - 36	30 - 36
Max. oil consumption (cm ³)	10	31	49	94	161	314	491
a (mm)	122	157	190	227	267	310	375
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	G ¼	G ¼	G ¼	G ½	G ½	G ½	G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	19,5	23,5	30,5	37	38	60	70
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	2,4	5,8	10,6	21	40	74	125
Part no.	4604 620	4604 621	4604 622	4604 623	4604 634	4604 635	4604 636
Accessories							
Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

Subject to technical modification

Carr Lane Roemheld Mfg Co.

16345 Westwoods Business Park Dr., Ellisville MO 63021

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2.24000



Wedge clamp, double-acting with position monitoring (lateral fastening)

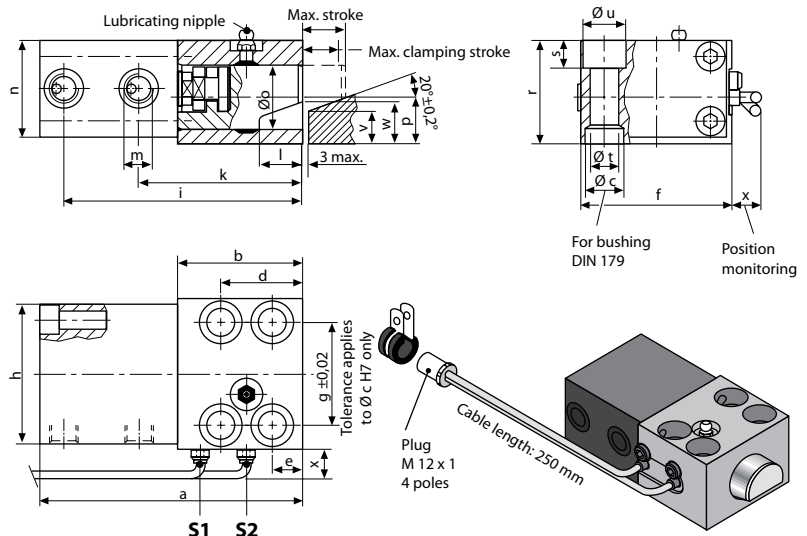
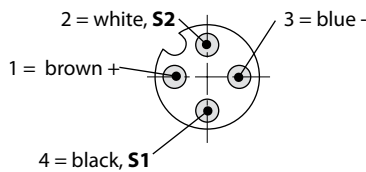
The inductive proximity switches are installed in the guide housing. They are activated by the clamping bolt. The contact areas are designed in such a way that one signal each is provided for the bolt in its initial position and in the clamping position.

Resistant to temperatures of up to 100°C,
120°C for 1000 working hours.

Cable length: 250 mm

4-pole plug

Pin assignment:



* In the case of the 25 kN version, the lubricating nipples protrude by 5 mm and are offset by 9.5 mm

Connecting lead with screw coupling:
cable length 5 m **part no. 5700013**
cable length 10 m **part no. 5700014**

* **Clamping force** ** **Permissible retention force** (for details, please see 2.2400, page 2)

	25	50	100	160	250	400	630
Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. retention force** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (from/to) (mm)	15 - 18	18 - 22	19 - 22	23 - 27	24 - 29	30 - 36	30 - 36
Max. oil consumption (cm ³)	10	31	49	94	161	314	491
a (mm)	122	157	190	227	267	310	375
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	G ¼	G ¼	G ¼	G ½	G ½	G ½	G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	19,5	23,5	30,5	37	38	60	70
x (mm)	12	5	0	0	0	0	0
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	2,4	5,8	10,6	21	40	74	125
Part no.	8.2403.0500	8.2404.0500	8.2405.0500	8.2406.0500	8.2407.0500	8.2408.0500	8.2409.0500
Accessories Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

Wedge clamp, with position monitoring (rear side fastening)



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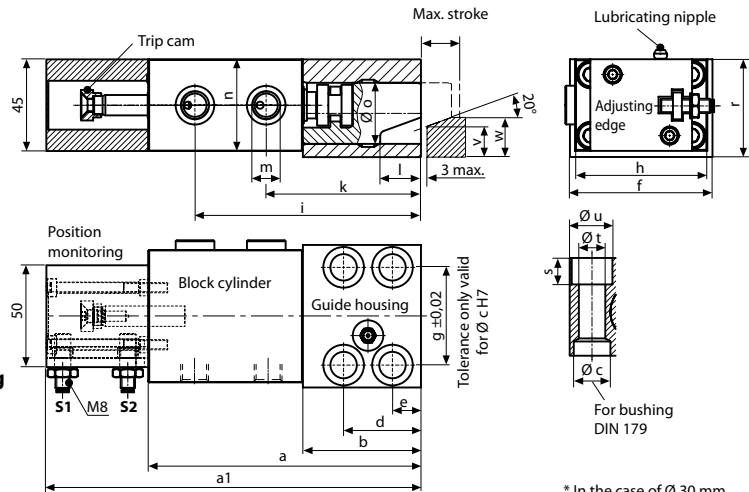
Wedge clamp with adjustable electronic position monitoring, rear side fastening.

Inductive proximity switches installed in the flanged housing. The proximity switches are activated by a trip cam which is connected to the piston rod.

The switches can be displaced in a slot. The housing can be turned through 180°.

Position monitoring is available in 3 versions:

- as a compact version for M8 plug
- as a rugged long version for M12 plug
- as a version for high temperatures up to 120°C with fitted cable (L = 5 m).

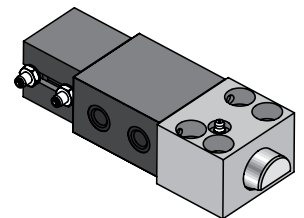


**Standard:
Version A
Compact
version
for M8 plug**

**Version B
Rugged long
version, sensor
for M12 plug**

**Version C
For high
temperatures
up to 120 °C
with fitted
cable
(L = 5 m)**

The position monitoring unit can be turned through 180° (90° on request)
The block cylinder can be turned through 180°



Technical data for position monitoring

Operating voltage:	10 ... 30 V DC
Constant current:	200 mA
Tripping function:	NO
Type:	PNP
Nominal tripping distance:	1.5 mm
Ambient temperature:	-25 +70°C
Version C	up to +120°C
Protective system:	IP 67

* **Clamping force** ** **Permissible retention force** (Explanations see 2.2400 page 2)

	25	50	100	160	250	400	630
Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. retention force** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (mm)	15-18	18-22	19-22	23-27	24-29	30-36	30-36
a (mm)	134	168	200	235	270	310	375
a1 (mm)	184	218	250	285	330	370	435
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	(4x) G ¼	(4x) G ¼	(4x) G ¼	(4x) G ½	(2x) G ½	(2x) G ½	(2x) G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	19,5	23,5	30,5	37	38	60	70
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	3,0	6,5	11,4	21,7	41	74,7	126
Part no.	4604 670	4604 671	4604 672	4604 673	4604 674	4604 675	4604 676
	Always add the desired sensor version to the part no., e.g., 4604 670 B						
Accessories Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

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2.24002



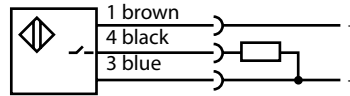
Description

The position monitoring unit is fixed to the cylinder bottom by means of screws. It can be fastened in a position turned by 180°. Various versions are available to suit different applications. The trip cam for activating the proximity switches is positioned on the continuous piston rod. The tripping position is adjusted by displacing the proximity switches in the lateral slot. The proximity switches are activated by the trip cam within a stroke of approx. 6 mm. The minimum distance of the tripping positions depends on the type of switch and is indicated in the table.

Function

1. Function message of the unclamped position, i.e. the piston rod has retracted.
2. Message of the clamped position, i.e. the piston rod has extended and is in the clamping range.

Wiring diagram



Important information

The position monitoring unit is not suitable for use in areas with coolant. Also, additional covers must be provided to protect the system from any swarf.

Planning - Conditions of application - Protective measures

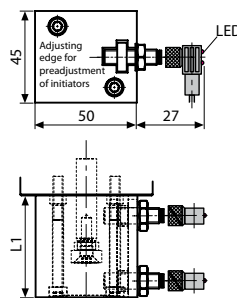
Careful planning is of great importance. The conditions of application and the protective measures must be taken into consideration and ensured.

Please contact us for more detailed information.

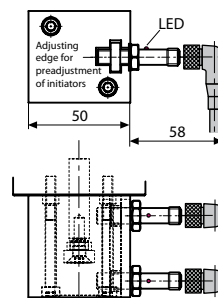
Technical data of inductive proximity switches

Operating voltage:	10 ... 30 V DC
Residual ripple:	max. 15%
Tripping function:	NO
Type:	PNP
Material of housing:	corrosion-proof steel
Protective system (DIN 40050):	IP 67

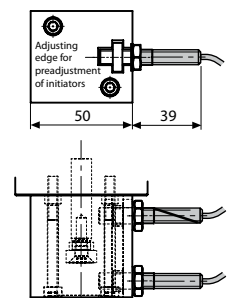
Version A (standard)
Compact version M8



Version B
Long version M12



Version C
High ambient temperatures



Ambient temperature TA	-25° ... +70°C	-25° ... +70°C	-25° ... +120°C
Min. distance of tripping position (mm)	8	13	8
Type of connection	plug	plug	Teflon cable 3 x 0,14 mm ²
LED visualisation of function	in the plug	yes	no
Max. constant current (mA)	200	200	200 - (from 70°C) 100
Nominal tripping distance (mm)	1,5	1,5	2
Short-circuit proof	yes	yes	no
Connecting cable (m)	5	5	3
Proximity switch Part no.	6.3829.0980	2.5012.0064	6.3829.0870
Plug with cable Part no.	3829099	2.0975.0024	fixed
L1 complete (mm)	50	50	50
Position monitoring up to 30 mm total stroke Part no. (without a plug) up to type 4604 673	7.6282.0010 A	7.6282.0010 B	7.6282.0010 C
L1 complete (mm)	60	60	60
Position monitoring up to 50 mm total stroke Part no. (without a plug) from type 4604 674	7.6282.0011 A	7.6282.0011 B	7.6282.0011 C

Wedge clamp with safety step



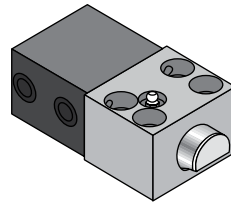
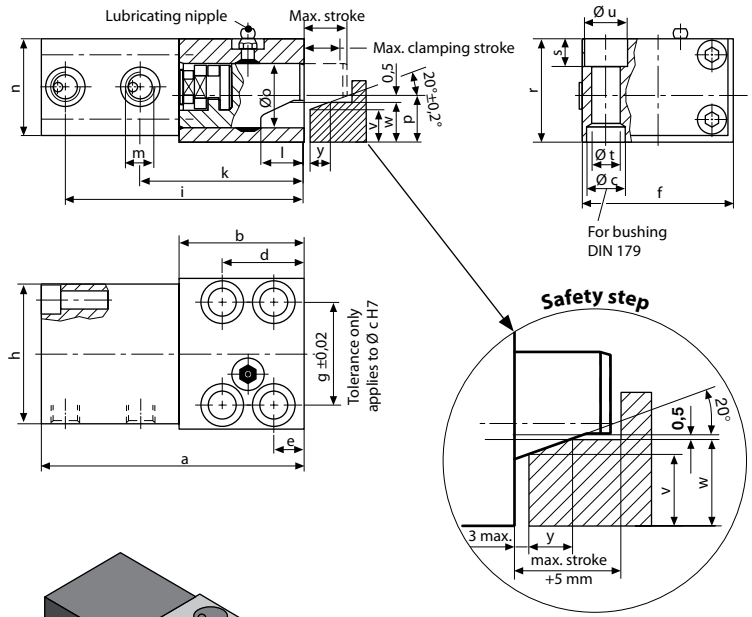
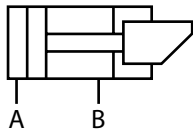
ROEMHELD
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A high degree of safety:

This design features a clamping bolt with an additional accommodation surface, which is parallel to the clamping edge.

Should the pressure drop (machine failure or standstill), the upper die will lower onto the safety step where it is safely held in position.

Resistant to temperatures of up to 160°C
(higher temperatures on request)



Preferably to be used on the slide

* In the case of the 25 kN version, the lubricating nipples protrude by 5 mm and are offset by 9.5 mm

*Clamping force **Permissible retention force (for details, see 2-2400, page 2)

	25	50	100	160	250	400	630
Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. retention force** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (from/to) (mm)	15 - 18	18 - 22	19 - 22	23 - 27	24 - 29	30 - 36	30 - 36
Max. oil consumption (cm ³)	10	31	49	94	161	314	491
a (mm)	122	157	190	227	267	310	375
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	G ¼	G ¼	G ¼	G ½	G ½	G ½	G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	17,5	21,2	28,2	34,7	35,3	57,3	67,3
y (mm)	7	9	10	14	14	20	21
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	2,4	5,8	10,6	21	40	74	125
Part no.	8.2403.1000	8.2404.1000	8.2405.1000	8.2406.1000	8.2407.1000	8.2408.1000	8.2409.1000
Accessories Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

Subject to technical modification

Carr Lane Roemheld Mfg Co.

16345 Westwoods Business Park Dr., Ellisville MO 63021
Phone (636) 386-8022 Fax (636) 386-8034 www.crlr.com/hilma

2.24003

12/2011



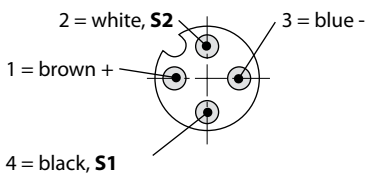
Wedge clamp with safety step + position monitoring

A high degree of safety:

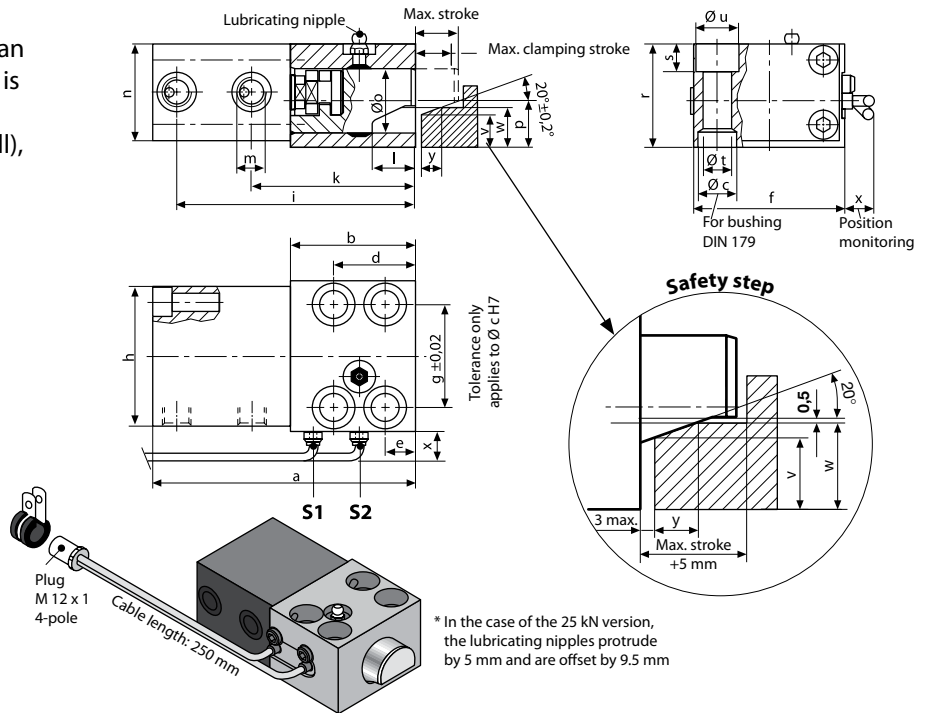
This design features a clamping bolt with an additional accommodating surface which is parallel to the clamping edge. Should the pressure drop (machine failure or standstill), the upper die will lower onto the safety step where it is safely held in position.

Resistant to temperatures of up to 100°C,
120°C for 1000 working hours
Cable length: 250 mm
4-pole plug

Pin assignment:



Connecting lead with screw coupling:
Cable length 5 m - **part no. 5700013**
Cable length 10 m - **part no. 5700014**



* In the case of the 25 kN version, the lubricating nipples protrude by 5 mm and are offset by 9.5 mm

*Clamping force **Permissible retention force (for details, see 2.2400, page 2)

	25	50	100	160	250	400	630
Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. retention force** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (from/to) (mm)	15 - 18	18 - 22	19 - 22	23 - 27	24 - 29	30 - 36	30 - 36
Max. oil consumption (cm ³)	10	31	49	94	161	314	491
a (mm)	122	157	190	227	267	310	375
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	G ¼	G ¼	G ¼	G ½	G ½	G ½	G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	17,5	21,2	28,2	34,7	35,3	57,3	67,3
x Position monitoring (mm)	12	5	0	0	0	0	0
y (mm)	7	9	10	14	14	20	21
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	2,4	5,8	10,6	21	40	74	125
Part no.	8.2403.2000	8.2404.2000	8.2405.2000	8.2406.2000	8.2407.2000	8.2408.2000	8.2409.2000
Accessories Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

Wedge clamps with locking bolt

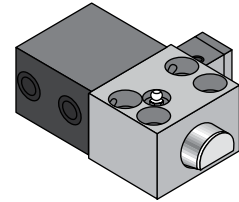
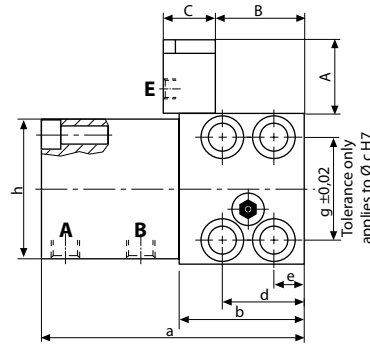
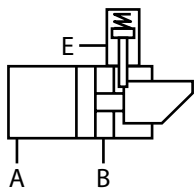
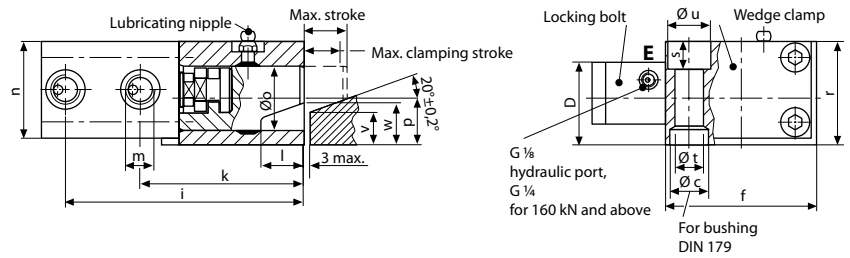


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Wedge clamps for maximum safety:

The locking bolt of the wedge clamp is prevented from retracting using an additional locking cylinder. Only after the locking bolt has been unlocked can the clamping position be used.

Resistant to temperatures of up to 160°C (higher temperatures on request)



* In the case of the 25 kN version, the lubricating nipples protrude by 5 mm and are offset by 9.5 mm

*Clamping force **Permissible retention force (for details, see 2.2400, page 2)

Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. operating pressure** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (from/to) (mm)	15 - 18	18 - 22	19 - 22	23 - 27	24 - 29	30 - 36	30 - 36
Oil consumption clamping/unlocking (cm ³)	10/3	31/3	49/3	94/2,5	161/2,5	314/2,5	491/2,5
a (mm)	122	157	190	227	267	310	375
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	G ¼	G ¼	G ¼	G ½	G ½	G ½	G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	19,5	23,5	30,5	37,0	38,0	60	70,0
A (mm)	57,5	57,5	57,5	60	60	65	65
B (mm)	27	44	66	94	119	144,5	189,5
C (mm)	40	40	40	45	45	40	40
D (mm)	48	58	67	89	95	110	120
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	3,0	6,5	11,4	21,7	41	74,7	126
Part no.	8.2403.1500	8.2404.1500	8.2405.1500	8.2406.1500	8.2407.1500	8.2408.1500	8.2409.1500
Accessories Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

Subject to technical modification

Carr Lane Roemheld Mfg Co.

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2.24005

05/2011



Wedge clamp with locking bolt + position monitoring

Wedge clamps for maximum safety:

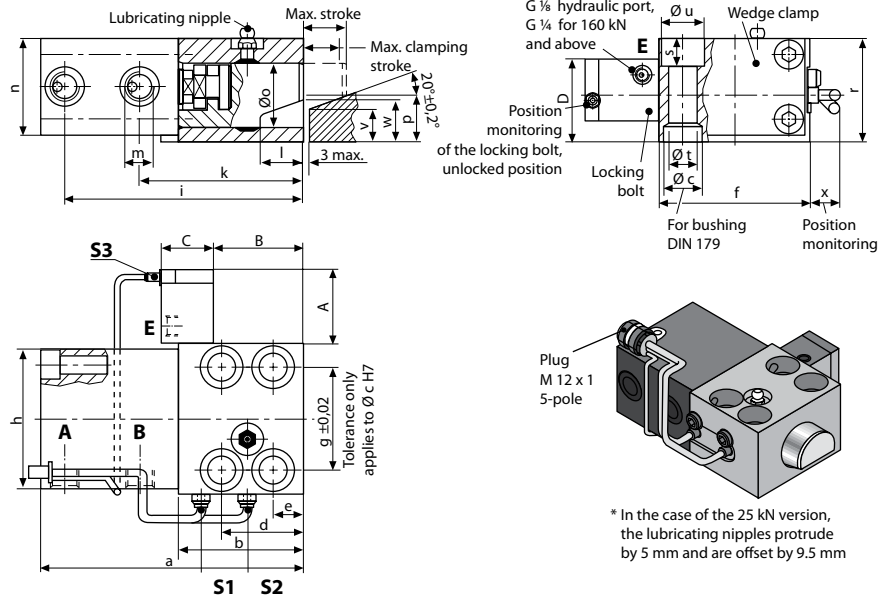
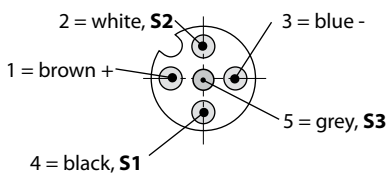
The locking bolt of the wedge clamp is prevented from retracting using an additional locking cylinder. Only after the locking bolt has been unlocked can the clamping position be used.

Resistant to temperatures of up to 100°C,
120°C for 1000 working hours.

Cable length: 250 mm

5-pole plug

Pin assignment:



* In the case of the 25 kN version, the lubricating nipples protrude by 5 mm and are offset by 9.5 mm

*Clamping force **Permissible retention force (for details, see 2.2400, page 2)

	25	50	100	160	250	400	630
Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. retention force** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (from/to) (mm)	15 - 18	18 - 22	19 - 22	23 - 27	24 - 29	30 - 36	30 - 36
Oil consumption clamping/unlocking (cm ³)	10/3	31/3	49/3	94/2,5	161/2,5	314/2,5	491/2,5
a (mm)	122	157	190	227	267	310	375
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	G ¼	G ¼	G ¼	G ½	G ½	G ½	G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	19,5	23,5	30,5	37,0	38,0	60	70,0
x Position monitoring (mm)	12	5	0	0	0	0	0
A (mm)	57,5	57,5	57,5	60	60	65	65
B (mm)	27	44	66	94	119	144,5	189,5
C (mm)	40	40	40	45	45	40	40
D (mm)	48	58	67	89	95	110	120
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	3,0	6,5	11,4	21,7	41	74,7	126
Part no.	8.2403.3000	8.2404.3000	8.2405.3000	8.2406.3000	8.2407.3000	8.2408.3000	8.2409.3000
Accessories Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

Wedge clamp with sequence valve control

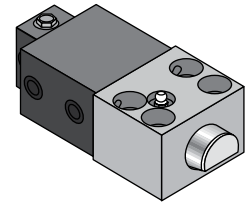
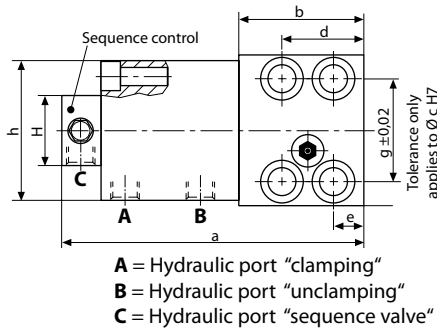
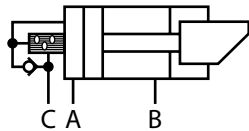
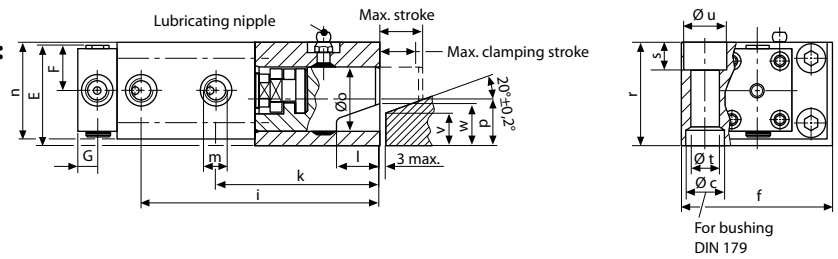


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Wedge clamps with hydraulic position monitoring, suitable for high temperatures:

An additional valve block on the standard wedge clamp enables hydraulic control of the clamping position. Only after the last wedge clamp has been clamped is the machine control released by a pressure switch on the pressure generator.

Resistant to temperatures of up to 160°C
(higher temperatures on request)



* In the case of the 25 kN version, the lubricating nipples protrude by 5 mm and are offset by 9.5 mm

*Clamping force **Permissible retention force (for details, see 2.2400, page 2)

	25	50	100	160	250	400	630
Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. retention force** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (from/to) (mm)	15 - 18	18 - 22	19 - 22	23 - 27	24 - 29	30 - 36	30 - 36
Max. oil consumption (cm ³)	10	31	49	94	161	314	491
Sequence control at (mm)	12	14	14	17	17	22	22
a (mm)	152	187	220	262	302	345	410
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	G ¼	G ¼	G ¼	G ½	G ½	G ½	G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	19,5	23,5	30,5	37,0	38,0	60	70,0
E (mm)	48	68	75	89	96,5	116,5	131,5
F (mm)	22,5	31,5	37,5	47,5	60	75	90
G (mm)	16	14	14	16	16	16	16
H (mm)	64	48	48	90	90	90	90
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	3,0	6,5	11,4	21,7	41	74,7	126
Part no.	8.2403.2500	8.2404.2500	8.2405.2500	8.2406.2500	8.2407.2500	8.2408.2500	8.2409.2500
Accessories Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

Subject to technical modification

Carr Lane Roemheld Mfg Co.

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2.24007

05/2011



Wedge clamp with sequence valve control + safety step

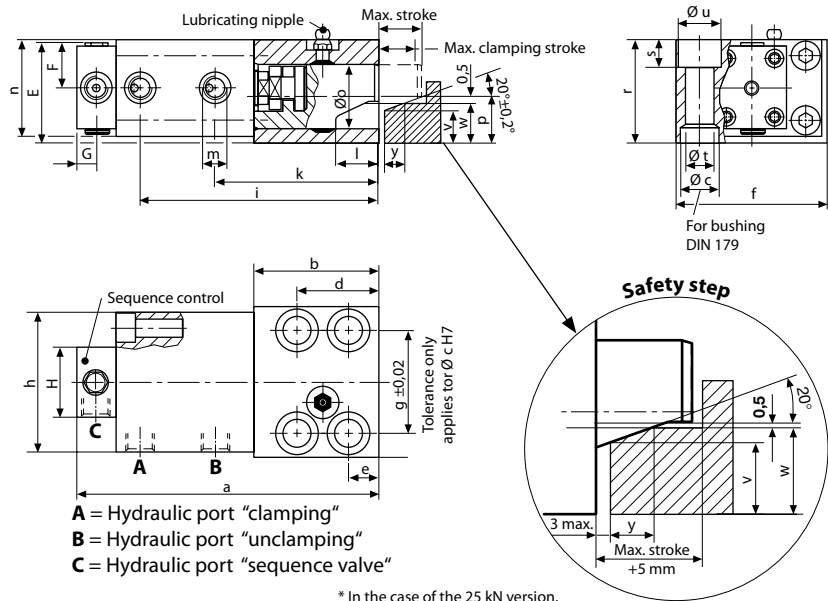
Wedge clamps with hydraulic position monitoring, suitable for high temperatures:

An additional valve block on the standard wedge clamp enables hydraulic control of the clamping position. Only after the last wedge clamp has been clamped is the machine control released by a pressure switch on the pressure generator.

A high degree of safety:

This design features a clamping bolt with an additional accommodation surface which is parallel to the clamping edge. Should the pressure drop (machine failure or standstill), the upper die will lower onto the safety step where it is safely held in position.

Resistant to temperatures of up to 160°C
(higher temperatures on request)



*Clamping force **Permissible retention force (for details, see 2.2400, page 2)

	25	50	100	160	250	400	630
Max. clamping force * (kN)	25	50	100	160	250	400	630
Perm. retention force** (kN)	35	65	130	210	320	520	820
Screw property class 8.8							
Max. operating pressure (bar)	350	275	350	350	350	350	350
Cylinder-Ø (mm)	25	40	50	63	80	100	125
Max. stroke (mm)	20	25	25	30	32	40	40
Clamping stroke (from/to) (mm)	15 - 18	18 - 22	19 - 22	23 - 27	24 - 29	30 - 36	30 - 36
Max. oil consumption (cm ³)	10	31	49	94	161	314	491
Sequence control at (mm)	12	14	14	17	17	22	22
a (mm)	152	187	220	262	302	345	410
b (mm)	58	78	100	125	150	180	225
Ø c H7 x depth (mm)	18/7	26/9	30/11	35/11	48/13	55/16	62/16
d (mm)	38	46	58	75	78	95	108
e (mm)	14	16	20	25	26	32	38
f (mm)	70	95	120	150	200	240	280
g (mm)	48	65	85	106	140	180	210
h (mm)	65	85	100	125	160	200	230
i (mm)	111	146	177	210	246	285	344
k (mm)	76	102	127	151	184	215	272
l (mm)	20	25	26	32	40	45	50
m	G ¼	G ¼	G ¼	G ½	G ½	G ½	G ½
n (mm)	45	63	75	95	120	150	180
Ø o (mm)	30	40	55	70	80	100	125
p (mm)	21,5	28	37	49	55	75	85
r (mm)	48	65	80	105	125	160	190
s (mm)	13	18	20	26	32	38	44
Ø t (mm)	13	17	21	26	33	39	45
Ø u (mm)	20	26	32	40	48	57	66
v (mm)	15	18	25	30	30	50	60
w (mm)	17,5	21,2	28,2	34,7	35,3	57,3	67,3
y (mm)	7	9	10	14	14	20	21
E (mm)	48	68	75	89	96,5	116,5	131,5
F (mm)	22,5	31,5	37,5	47,5	60	75	90
G (mm)	16	14	14	16	16	16	16
H (mm)	64	48	48	90	90	90	90
Screw DIN 912-8.8 (4 pieces)	M 12	M 16	M 20	M 24	M 30	M 36	M 42
Tightening torque (Nm)	86	210	410	710	1450	2520	4050
Weight (kg)	3,0	6,5	11,4	21,7	41	74,7	126
Part no.	8.2403.3500	8.2404.3500	8.2405.3500	8.2406.3500	8.2407.3500	8.2408.3500	8.2409.3500
Accessories Bushings DIN 179	12 x 12	17 x 16	21 x 20	26 x 20	32 x 25	38 x 30	44 x 30
Part no.	3300 285	3300 287	3300 288	3300 289	3300 420	3300 430	3300 440

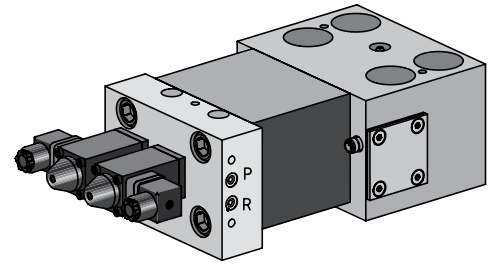


Wedge clamp with flanged single valve control

Wedge clamps with directional seat valves flanged to the rear serving as control valves for an individual activation of all clamps

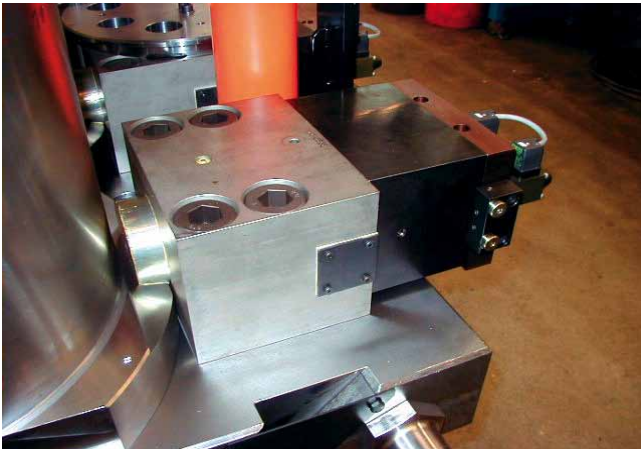
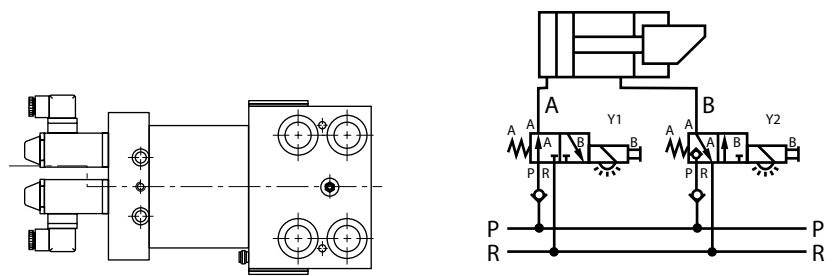
Benefits:

- Each element can be individually activated
- Single dies can be clamped
- Little installation work as a result of a plug-type closed hydraulic circuit
- Suitable for BUS systems
- High degree of operational safety thanks to integral position monitoring and check valves.
On request available with a safety step.
- Very rugged clamp with a high standard of safety and a long service life



Resistant to temperatures of up to 100°C,
120°C for 1000 working hours
Clamping force from 100 to 630 kN
Operating pressure 350 bar
Valve voltage 24 V DC

**Dimensions, interfaces
and other technical details
will be defined in the planning phase.**



5-stage drop forging press equipped with wedge clamps with directional seat valves to activate the different stages



Use of wedge clamps with sequence valve control in a forging press

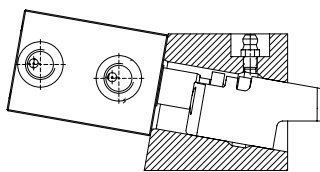
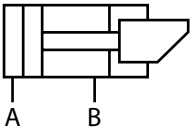


Wedge clamps with flanged directional seat valves. Clamping and unclamping positions are electrically controlled. Little installation work as a result of plug-type connections between the clamps.

Wedge clamp, double-acting, type A for dies with flat clamping edge

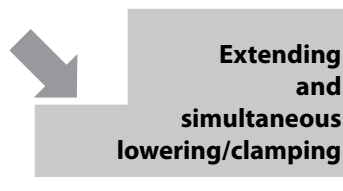


Type A - Clamping force axially applied to the clamping edge



Clamping operation

**Unclamping stroke
200 bar**



**Extending
and
simultaneous
lowering/clamping**

Please note

In case of incorrect operation of the wedge clamping element, the clamping bolt may fully retract into the guide housing and thus cause the upper die to fall off the slide.

When using wedge clamping elements on press slides or vertical presses it is recommended that multiple-circuit hydraulic supply of the clamping elements and pilot-controlled check valves are used in the clamping lines for securing hydraulic clamping.

The greasing intervals (high-temperature grease) should be scheduled in accordance with the operating conditions (at least once a week). **Greasing of the clamping bolt should only be made with the elements being retracted.**

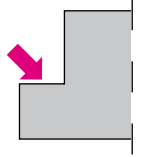
Position monitoring

The integrated position monitoring system is coupled to the clamping bolt and signals:

1. Clamping bolt in home position
2. Clamping bolt in extended position

Application:

- safe clamping of dies with flat clamping edge
- for clamping of dies in injection moulding machines
- for clamping of dies on press bed and slide



Design:

Double-acting wedge clamp for clamping dies on the press bed or slide or for clamping dies in injection moulding machines according to Euromap standard.

The wedge clamp consists of a hydraulic block cylinder connected with a clamping bolt in a floating manner. Clamping cycle: the clamping bolt which is inclined by 5° performs an idle stroke and simultaneously a clamping stroke. The clamping bolt is lowered axially onto the clamping edge. The 5° angle of the housing has been determined so as to ensure that despite frictional engagement on the clamping edge the hydraulic pressure required for unclamping is sufficient.

Since the clamping force is vertically transmitted to the clamping point, only low transverse forces occur. The wedge clamp is available with or without position monitoring.

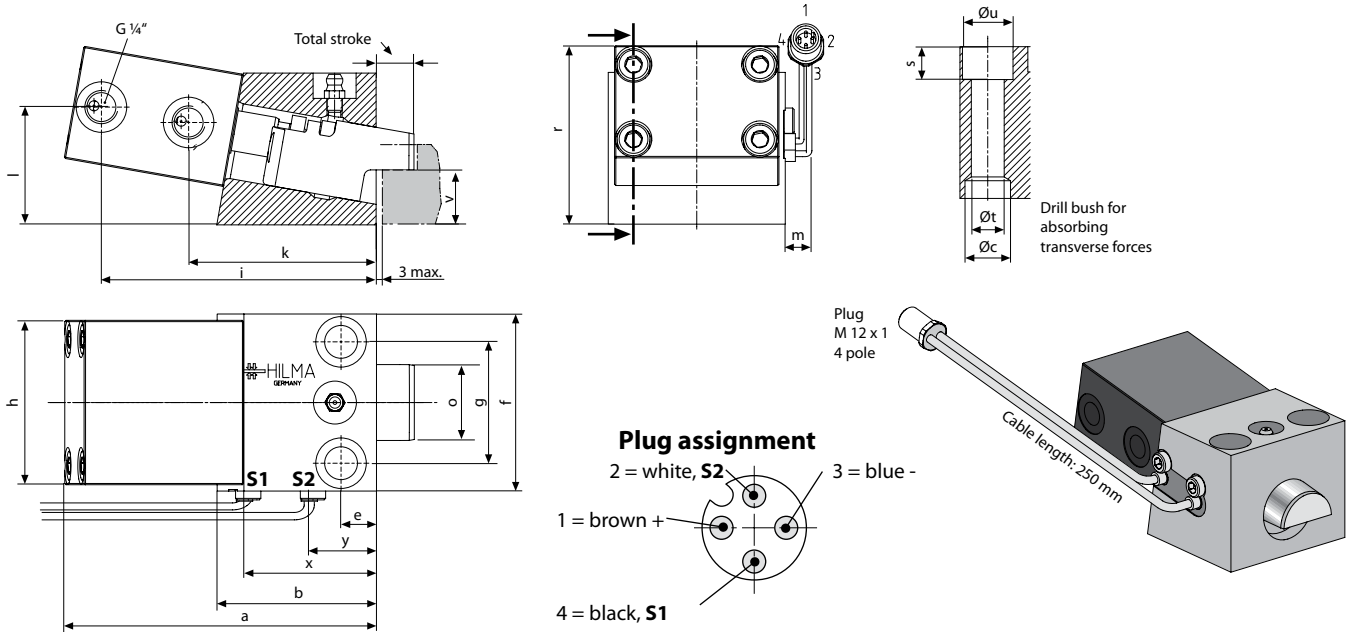
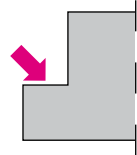
Special features:

- ◆ transverse forces are absorbed by drill bushes; high functional reliability is ensured by position monitoring and automatic cycle
- ◆ rugged and compact design
- ◆ well-proven clamping element with high degree of safety and long service life
- ◆ retracting clamping bolt ensures unrestricted die change
- ◆ clamping and unclamping pressures are different





Wedge clamp, double-acting
Type A - Clamping force axially applied to the clamping edge



Standard mounting grid

(comparable to wedge clamp 2.2400)

Euromap mounting grid

(comparable to wedge clamp 2.2460)

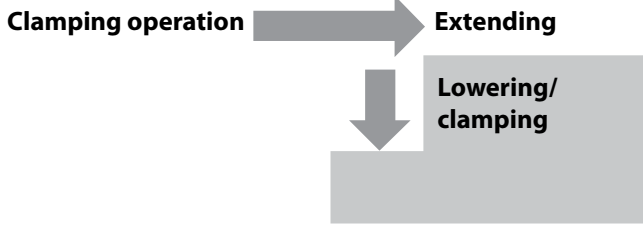
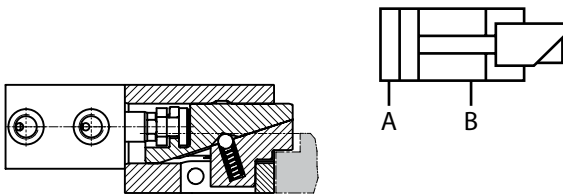
Max. clamping force * (kN)	16	40	60	16	40	60
Perm. retention force** (kN)	35	60	120	35	60	120
Screw property class 8.8						
Max. clamping pressure (bar)	120	120	120	120	120	120
Max. unclamping pressure (bar)	200	200	200	200	200	200
Cylinder-Ø (mm)	25	40	50	25	40	50
Total stroke (mm)	20	25	25	20	25	25
Max. oil consumption (cm³)	10	32	50	10	32	50
Clamping stroke (mm)	12	16	17	12	16	17
a (mm)	123	160	197	123	176	197
Ø c H7 x depth (mm)	18H7 x 7	26H7 x 9	30H7 x 11	18H7 x 7	26H7 x 9	30H7 x 11
b (mm)	60	78	109	60	95	109
e (mm)	14	16	20	15	33	32
f (mm)	70	95	120	95	100	140
g (± 0,2 mm)	48	65	85	70	70	105
h (mm)	65	85	100	65	85	100
i (mm)	109	142	180	109	158	180
k (mm)	75	99	131	75	115	131
l (mm)	36	50	65	36	50	65
m (mm)	12	5	0	0	0	0
Ø o (mm)	30	40	55	30	40	55
r (mm)	60	81	103	60	81	103
s (mm)	13	17	20	13	17	20
Ø t (mm)	13	17	21	13	17	21
Ø u (mm)	20	26	32	20	26	32
v** (± 0,1) (mm)	22	25	35	22	25	35
x (mm)	52	68	100	52	85	100
y (mm)	27	29	75	27	45	75
Weight (kg)	2,5	6,0	11,0	2,5	6,0	11,0
with position monitoring						
Part no. up to 100°C*	8.2403.5120	8.2404.5120	8.2405.5120	8.2403.5130	8.2404.5130	8.2405.5130
without position monitoring						
Part no. up to 160°C*	8.2403.5020	8.2404.5020	8.2405.5020	8.2403.5030	8.2404.5030	8.2405.5030
Accessories Drill bushes DIN 179						
Part no.	3300 285	3300 287	3300 288	3300 285	3300 287	3300 288

* Temperatures up to 250°C on request ** Clamping edge height: on request to Euromap standard, tolerance ± 0.1 mm

Wedge clamp, double-acting, type V for dies with flat clamping edge



Type V - Clamping force vertically applied to the clamping edge



Please note:

In case of incorrect operation of the wedge clamping element, the clamping bolt may fully retract into the guide housing and thus cause the upper die falling off the slide.

When using wedge clamping elements on the press slide, it is recommended that multiple-circuit hydraulic supply of the clamping elements and pilot-controlled check valves are used for securing hydraulic clamping.

The greasing intervals (high-temperature grease) should be scheduled in accordance with the operating conditions (at least once a week). **Greasing of the clamping bolt should only be made with the elements being retracted.**

Clamping elements with a wedge clamping bolt must be protected against dirt, scale, swarf, coolant, etc. by means of a suitable covering. If penetration of such foreign matters cannot be prevented, this type of element should not be used.

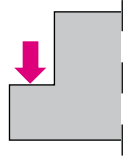
Position monitoring

The integral position monitoring system is connected to the thrust pad and signals the following conditions:

1. Thrust pad in initial position
2. Thrust pad in extended position

Application:

- safe clamping of dies with flat clamping edge, even in case of pressure loss
- for clamping of dies in injection moulding machines
- for clamping of dies on press bed and slide



Design:

Double-acting wedge clamp for clamping dies on the press bed or slide or for clamping dies in injection moulding machines.

The wedge clamp consists of a hydraulic block cylinder and a two-piece thrust pad.

Clamping cycle: the bolt with the thrust pad first performs a defined idle stroke. When the inner stop is reached, the thrust pad is lowered onto the clamping edge.

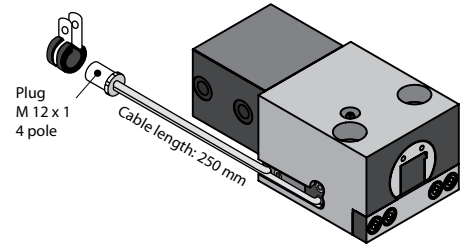
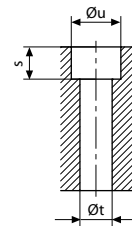
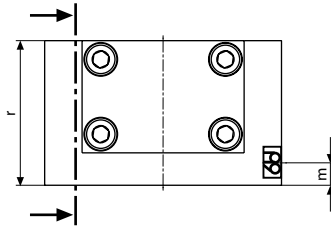
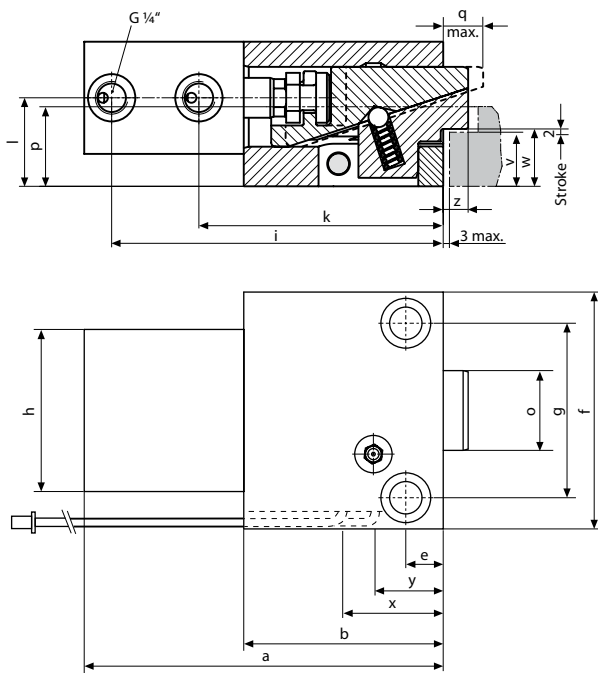
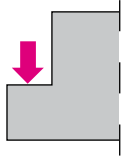
The angle of the thrust pad has been determined to ensure that despite self-locking the oil pressure required for unclamping is not higher than that required for clamping.

Since the clamping force is vertically transmitted to the clamping point, no transverse forces occur.

The wedge clamp is available with or without position monitoring.

Special features:

- ◆ the clamping piston does not retract in the case of pressure drop
- ◆ available in sizes of 25 kN, 50 kN and 100 kN
- ◆ high functional reliability ensured by position monitoring and automatic cycle
- ◆ rugged and compact design
- ◆ special versions available on request
- ◆ well-proven clamping element with high degree of safety and long service life
- ◆ retracting clamping bolt ensures unrestricted die change



Connecting lead with screw coupling:
cable length 5 m **part no. 5700013**
cable length 10 m **part no. 5700014**

Proximity switch (Twin Set):
part no. 2.5012.0073 (spare part)

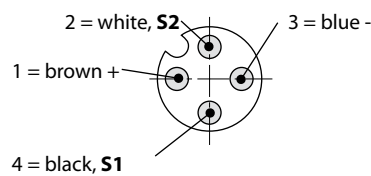
Technical data - Position monitoring

Tripping function	N/O contact
Type	PNP
Nom. tripping cycle S_n	1 mm
Ambient temperature T_A	-25°C ... + 100°C * Ambient temperature 120° for 1000 working hours.
Operating voltage U_B	10 ... 30 V DC
Residual ripple/supply frequency	≤ 15% (SS)
Max. constant current	100 mA
Unit power consumption	≤ 10 mA
Voltage drop U_D at I max.	≤ 1,5 V
Output resistance R_A	4,7 kΩ
Material of housing	corrosion-proof steel
Type of connection *2	plug on the right side
Protective system acc. to DIN 40050	IP 67

Cable length: 250 mm

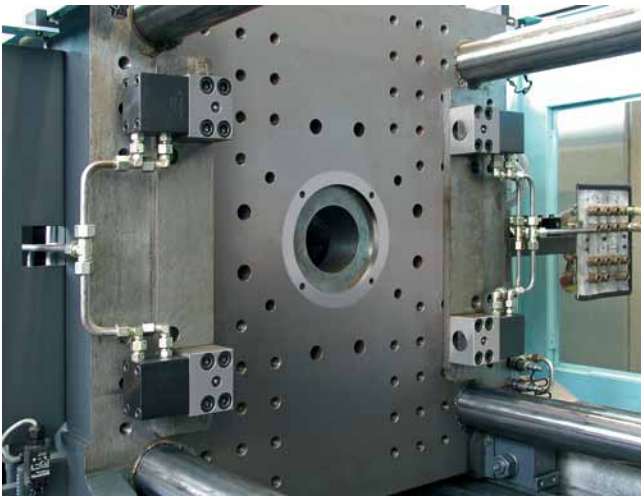
* A design to withstand higher temperatures is available on request

Pin assignment:



Max. clamping force (kN)	25	50	100
Perm. retention force (kN)			
Schraube DIN 912 8.8	35	65	130
Screw DIN 912 12.9	45	75	145
Max. operating pressure (bar)	250	250	250
Cylinder-Ø (mm)	25	40	50
Max. stroke	2	2	2
Max. oil consumption (cm ³)	10	31	49
Clamping stroke (mm)	1	1	1
a (mm)	144	196	240
b (mm)	80	117	150
e (mm)	15	33	32
f (mm)	95	100	140
g (± 0,2 mm)	70	70	105
h (mm)	65	85	100
i (mm)	133	185	227
k (mm)	98	141	177
l (mm)	35,5	48,5	62,5
m (mm)	9	9	17
Ø o (mm)	32	50	60
p (mm)	32	43	56
q max. (mm)	17	24	24
r (mm)	58	80	100
s (mm)	13	16	22
Ø t (mm)	13	17	21
Ø u (mm)	20	26	32
v** (± 0,3) (mm)	22	25	35
w (mm)	23	26	36
x (mm)	39	65	85
y (mm)	26	47	50
z (mm)	10	17	17
Weight (kg)	4,28	9,55	15,20
with position monitoring			
up to 100°C Part no.	8.2403.6601	8.2404.6611	8.2405.6621
without position monitoring			
up to 160°C Part no.	8.2403.6800	8.2404.6810	8.2405.6820

**Clamping edge height: on request to Euromap standard, tolerance ±0.3 mm



Wedge clamp on a Demag Ergotech 250/630 injection moulding machine



Wedge clamp with check valve on a Krauss Maffei KM 575 injection moulding machine



Wedge clamp in a forging die
Temperatures up to 250°C



Wedge clamp with 160 kN clamping force on a Windsor W 550



Safety requirements are defined by safety regulations and manufacturing technology.

In accordance with up to date practice hydraulic die clamping systems are divided into 3 safety levels.

1st safety level:

Preferably used in connection with post-guided dies.

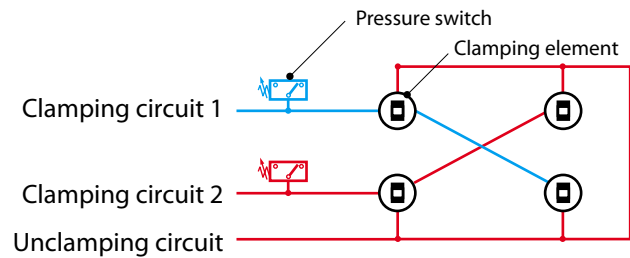
Pressure switches in each clamping circuit for clamping force control as machine safety.

Two hydraulic circuits independent of each other.

Clamping circuit 1 = 50% of the clamping elements in the bed and the slide, respectively

Clamping circuit 2 = 50% of the clamping elements in the bed and the slide, respectively

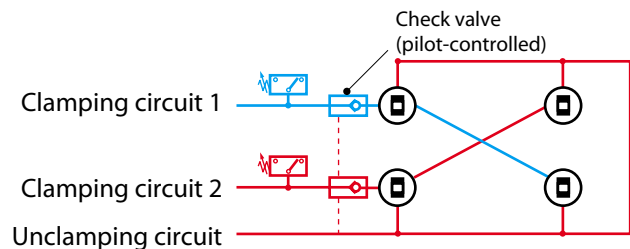
If one circuit fails, the upper or lower die is still clamped with 50% of the total clamping force. Thus, the 2nd clamping circuit becomes a safety circuit.



2nd safety level:

Used in connection with dies that are not post-guided.

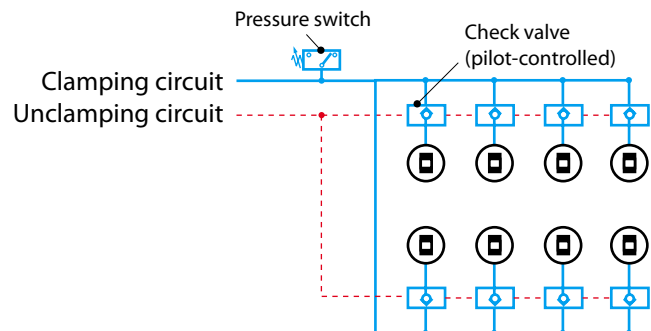
A check valve (pilot-controlled) keeps pressure in the clamping and safety circuit when pressure drops in the remaining system.



3rd safety level:

Used in connection with dies on power presses and car body presses that are not post-guided.

All clamping elements are secured by pilot-controlled check valves. In the event of pressure drop > 20% of the operating pressure, the press is switched off by a pressure switch. The check valves ensure that the clamping force is maintained over many days.



For this safety level, **wedge clamps with locking bolts and valve sequence controls are used.**

Maximum safety by standard wedge clamps.