Swing sink clamping element double-acting





For power units please see product group 7

For accessories please see product group 11

Applications:

- integrated in press rams
- integrated in press beds
- in machine tools and equipment
- when the available space is limited
- when temperatures may reach 70° C

Design:

Double-acting swing sink clamp with 90° swing angle. The piston is guided by a guide pin in such a manner that during part of the stroke a 45° rotation is carried out. Unclamping, change-over and clamping are monitored by inductive proximity switches.

The swing mechanism is protected by a spring-loaded overload protection and equipped with emergency hand operation. The tie rod, piston and swing mechanism are hardened.

Special features:

- ideal power transmission
- compact design
- clamping force of between 60 and 164 kN
- position monitoring, emergency hand operation and overload protection combine to ensure high functional safety
- compensates for large clamping edge tolerances (± 1.5 mm)
- no colliding edges, smooth die positioning
- optimum use of ram and bed surfaces
- die clamping in barely accessible positions



Swing sink clamps fastened in a double column press. The tie rod is extended (swing position). Easy feeding of dies by hydraulic roller bars installed in the T-slots and lateral stops

Subject to technical modification





Swing sink clamping element double-acting

Clamping force at 400 has (KN)	60	104	164
Clamping force at 400 bar (KN)	15	26	/1
Diston (a c (mm)	54	20	41
Piston rod (1 d (mm)	27	70	50
Swing stroke i (mm)	12	40	21
Clamping Llowering stroke h (mm)	12	54	65
Oil consumption clamping (cm ³)	42	210	620
Oil consumption unclamping (cm ³)	130	256	512
Max volume flow (cm ³ /c)	120	230	512
Max. volume now (cm /s)	13	160	102
a (11111)	120	107	192
D (IIIII)	130	197	242
c (mm)	02 M 24 x 1 F	104 M 20 x 1 5	120 M 26 y 1 5
I (IIIII)	IVI 24 X 1,5	IVI 50 X 1,5	IVI 30 X 1,3
g k (mm)	G %	17	G %
K (11111)	13	70	21
n (clamping adga) (mm)	10	70	0/
n (clamping edge) (mm)	10	23	20
n (mm)	20	00	22
0 (IIIII)	20	20	33
p (mm)	15	10	52
q (IIIII)	54	42	52
r (mm)	70	00	95
s (11111)	104	120	105
t (mm)	104	150	150
u (mm)	50	50	45
v (mm)	30	47	72
w (mm)	50	4/	59
X (11111)	5,5	0	0
y (1111)	70	00	105
(Emergency hand exerction) SW(1 (mm)	21	24	29
(Emergency hand operation) SW1 (mm)	12	14	19
(Emergency ridiu operation) SW2 (mm)	7.4	0	10
with pipe connection	7,4	14,/	25
with pipe connection	2154-160	2155-160	2156-160
with flanged connection	2134-100	2155-100	2130-100
Part no.	2154-200	2155-200	2156-200

max. operating pressure 400 bar

Other sizes and special versions are available on request.

Swing sink clamping element for clamping edge m = 50 mm

m (mm)	50	50	50
h (mm)	74	81	87
b (mm)	190	224	264
n (mm)	85	95	107
l (mm)	87	97	109
Oil consumption clamping (cm ³)	222	420	764
Oil consumption unclamping (cm ³)	174	342	601
with pipe connection			
Part no.	8.2154.8059	8.2155.8047	8.2156.8023
with flanged connection			
Part no.	8.2154.8082	8.2155.8050	8.2156.8027

Please note!

Access to one of the two emergency hand controls SW1 or SW 2 is essential.





4.2150

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Subject to technical modification





Function

The piston is guided by a guide pin in such a manner that during part of the stroke a 45° rotation is carried out just before reaching and just after leaving the piston upper end position. The rotation is always anti-clockwise, no matter whether the piston extends or retracts.



1. Unclamping position

The piston is completely retracted. This permits an easy die change, as no parts project over the bed level. Proximity switch 2S1 monitors this position.



2. Change-over position for clamping

Valves Y1 and Y2 are energised, and pressure is applied to piston side B. The tie rod passes through the slot of the clamping point and is then rotated by 45°. Proximity switch 2S2 monitors this position.



3. Clamping position

Valves Y1 and Y2 are de-energised, and pressure is applied to piston rod side A. The tie rod makes a further 45° rotation and is now transversely above the clamping point. *The die is clamped.* Proximity switch 2S3 monitors this position. Once the clamping pressure has been reached the power unit will be switched off by pressure switch 1S2. In the event of a fall in pressure, the power unit is switched on by the pressure switch and builds up to the required clamping pressure.



4. Change-over position for unclamping

Valves Y1 and Y2 are energised, and pressure is applied to piston side B. The tie rod is extended and then again rotated by 45°. Proximity switch 2S2 monitors this position.



5. Unclamping position

Valves Y1 and Y2 are de-energised, and pressure is applied to piston rod side A. The tie rod makes a further 45° rotation and passes through the slot of the clamping point as far as the end position. Proximity switch 2S1 monitors this position. *The die is unclamped*.

Functional diagra	ım	0 degrees	Linear stroke	Swing stroke	45 degrees	Swing stroke	Linear stroke	90 degrees	Linear stroke	Swing stroke	135 degrees	Swing stroke	Linear stroke	0 degrees
Swing sink clamp without a pilot controlled check valve	Change-over position Rotation Clamping position Unclamping position								1					
3/2 way valve	Y1 energised idle				/				1		/			
3/2 way valve	Y2 energised idle													
Pressure switch, clamping position	1S2 energised free				t						t			
Pressure switch, change-over position	1S1 energised free		(<u> </u>						*			ř		
Limit switch, unclamping position	2S1 1 0		r]								
Limit switch, change-over position	2S2 1 0					*]			ŕ		
Limit switch, clamping position	253 1 0								4					
								$\overline{}$						

Subject to technical modification







Recommended installation

In order to ensure ease of servicing, two alternatives are offered for connecting the swing sink clamps.

Flanged connection



Drilled hole

for flanged or pipe connection

Hydraulic oil is fed through the drilled holes in the bed and in the ram. There are no exposed conduits or screw fittings. O-rings supplied with the clamping element provide for tight fitting. Easy installation, ease of servicing.

Pipe connection



Pipes are recommended in applications where screw fittings are easily accessible and where pipes do not impede installation and dismantling of the swing sink clamps.



Connection of the monitoring system for clamping and unclamping position



Flanged connection requires a plain and neat surface. The drainage hole may be drilled in any position provided that spray and separating agent can drain off freely.

The three proximity switches are connected to the base of the swing sink clamp through a connecting lead with a screw coupling [IP 67]. The connecting lead is not supplied with the swing sink clamp and it has a separate part number, see page 6. Further installation may be carried out using a distribution block with an LED display.

4.2150





Accessories Flange

as a clamping point for installation in press dies

for clamping element type	2154-160	2155-160	2156-160
	2154-200	2155-200	2156-200
	2.0.200	2.00 200	2.00 200
a (mm)	128	160	192
k (mm)	13	17	21
l (mm)	55	70	87
m (mm)	18	23	28
o (mm)	20	26	33
p (mm)	13	18	22
s (mm)	70	86	103
t (mm)	104	130	156
w (mm)	38	47	59
y (mm)	70	86	103
Part no.	5700-016	5700-017	5700-018







Location hole





Subject to technical modification

for clamping element type	2154-160	2155-160	2156-160
	2154-200	2155-200	2156-200
a (mm)	128	160	192
k (mm)	13	17	21
l (mm)	55	70	87
m (mm)	18	23	28
o (mm)	20	26	33
p (mm)	13	18	22
s (mm)	70	86	103
t (mm)	104	130	156
w (mm)	38	47	59
y (mm)	70	86	103
Part no.	5700-019	5700-020	5700-021

Flange



Location hole



For more accessories, please see product group 11







Electrical installation

Pin assignment for three-wire proximity switches



Distribution block with LED display for connecting 4 clamping elements

Easy installation.

LED display of the unclamping, change-over and clamping position of each clamping element.

Scope of delivery: 1 distribution block 4 coupler plugs, 5 poles 1 coupler plug, 16 poles

Wiring of output plug:

	_		
Pin	1	= L+	
Pin	2	= L	
Pin	3	= 1L	
Pin	4	= 1U	
Pin	5	= 1S	
Pin	6	= 2L	
Pin	7	= 2U	
Pin	8	= 2S	L - Undowning position
Pin	9	= 3L	L = Change ever position
Pin	10	= 3U	0 = Change-over position
Pin	11	= 3S	S = Clamping position
Pin	12	= 4L	
Pin	13	= 4U	
Pin	14	= 4S	
Pin	15	= free	
Pin	16	= free	

Hydraulic installation

Read the operating instructions before commissioning the system.

Adjust the displacement of the power unit so that clamping and unclamping cycles between 10 and 30 seconds are obtained. In order to prevent the swing mechanism from premature wear, the dynamic pressure at port B should not exceed 50 bar while the tie rods retract through the slot.

Swing sink clamps which are grouped together should be connected to distribution blocks, in order to avoid series connection. Use pipes with larger diameter for connection to the power unit.

5-pole connecting lead with screw coupling



Cable length 5 m	
Cable length 10 m	

Part no. Part no.











5700-013

5700-014





If in doubt, please send the installation plan to be reviewed. Provide a pressure gauge connection in every hydraulic circuit for adjustment and to check operational data. Other parameters and recommendations for hydraulic installation of die clamping systems are given in chapter no. 1 "General information".

Please note

The full stroke of the piston must be realised, otherwise the swing mechanism may be damaged.