Swinging

Clamping



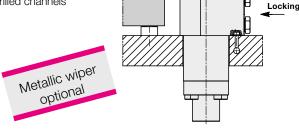
#### Swing Clamp with Piston Rod Locking

Top flange, reinforced swing mechanism, position monitoring optional, double acting, max. operating pressure 250 bar



#### **Advantages**

- High process safety
- Self-locking patented piston rod locking
- Reinforced swing mechanism
- Optional position monitoring electrical or pneumatic
- Compact design
- Alternatively pipe thread or drilled channels
- Standard FKM wiper
- Metallic wiper optional



#### **Application**

Hydraulic swing clamps are used for clamping of workpieces, when it is essential to keep the clamping area free of straps and clamping components for unrestricted workpiece loading and unloading.

The version with piston rod locking maintains the clamping force also after a pressure drop.

This series is particularly suited for

- Pallet changing systems
- Transfer lines
- Workpiece change with handling systems
- Automatic manufacturing systems
- Assembly lines
- Test systems for motors, gears, axis ...

#### Special features

### Self-locking piston rod locking

The patented piston rod locking is made by friction locking by a separately-controllable double-acting wedge-shaped piston with self-locking. In the case of a pressure drop or complete pressure reduction, the clamping force will be maintained.

#### Reinforced swing mechanism

Connecting possibilities

Pipe thread

The reinforced swing mechanism without overload protection device endures a collision with the workpiece during clamping up to a pressure of 100 bar.

#### **Accessory - Position monitoring**

As an option, the swing clamps are available with an extended switch rod at the cylinder bottom. Here a control cam can be fixed to control the clamping and unclamping position. As accessories pneumatic and electrical position monitorings are available.

#### Option: metallic wiper

**Drilled channels** 

The optionally available metallic wiper protects the FKM wiper against mechanical damage.

#### **Function**

The hydraulic swing clamp is a pull-type cylinder where a part of the total stroke is used to swing the piston. The piston rod locking is made by a separately-controlled double-acting wedge-shaped piston.

Clamping: 1. Swinging and clamping

2. Locking

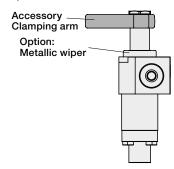
Unclamping: 1. Release locking

2. Unclamping and swinging

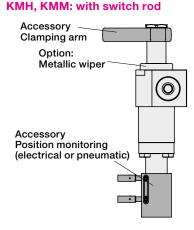
back

#### **Versions**

#### KDH, KDM: without switch rod



#### KNALL KNANA, with awitch word



#### Self-locking

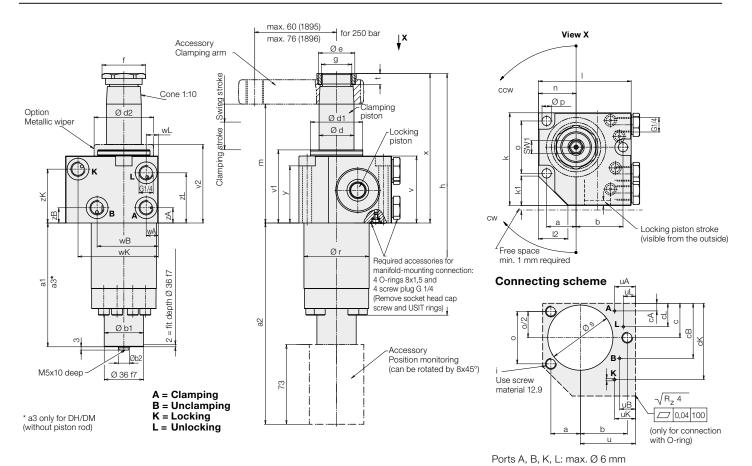
The wedge-shaped piston is designed as a self-locking piston so that the swing clamp can be depressurised after clamping. The previously generated clamping force will be maintained.

Conditions: Before depressurising, the locking pressure must be available at least for 3 seconds.

#### Control and important notes

See page 4.

## Dimensions Position monitoring



## Accessory - Position monitoring Pneumatic position monitoring

# G 1/8 Unclamped G 1/8 Clamped

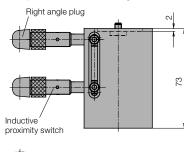


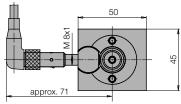


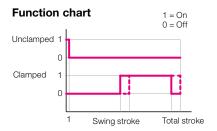
Part no.	for 1895	for 1896
	0353808	0353809

For the evaluation of the pneumatic position monitoring we recommend a differential pressure switch, which allows a parallel connection of max. 8 swing clamps.

#### **Electrical position monitoring**







Part no.	for 1895	for 1896
without switch	0353815	0353813
with standard switches	0353814	0353811

#### Technical data for proximity switches

Operating voltage	1030 V DC
Residual ripple max.	15 %
Constant current max.	200 mA
Switching function	interlock
Output	PNP
Body material	stainless steel
Code class	IP 67
Environmental temperature	-25+70°C
Connection type	Plug
Length of cable	5 m
LED Function display	Yes
Protected against short circuits	s Yes

#### **Delivery**

The position monitorings are not delivered mounted at the swing clamp.

The housings can be mounted rotated by 8x45°. Fixing screws and signal sleeve are included in the delivery.

Electrical position monitorings with standard switches are delivered with 2 inductive proximity switches and 2 right angle plugs.

Part no. O-ring (spare part)	
Proximity switch	3829077
Right angle plug	3829088

Further proximity switches see data sheet B 1.552

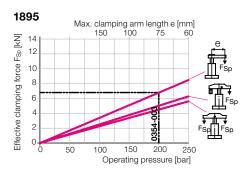
#### Dimensions Technical data

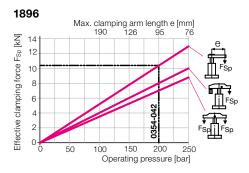
Swing stroke	Max. force to pull at 250 bar Effective clamping force	[kN] [kN]	11.3 see dia	17.6	
Total stroke					
Min. operating pressure   Dar   30   30   30   30   30   30   30   3	Swing stroke	[mm]			
Min. operating pressure   Dar   30   30   30   30   30   30   30   3	Total stroke	[mm]	35 +0,4	36 +0,3	
Max. flow rate         (cm/s)         20         36           Oil volume/max.stroke         [cm²]         18.4         29.8           Oil volume/max. return stroke         [cm²]         44.4         72.9           at         [cm²]         14.4         72.9           at         [cm²]         14.5         200           a2         [cm²]         14.3         55           b         [cm²]         14.3         55           Øb1         [cm²]         36         45           Øb2         [cm²]         15.5         40           Øb2         [cm²]         15.5         40           g         [cm²]         15.5         25           g         [ck]         [ck]         [ck]         [ck]           d         [ck]         [ck]         [ck]         [ck]           d         [ck]         [ck]         [ck]         [ck]           d					
Oil volume/max. return stroke   cm3					
a1 only MH/MM	Oil volume/max.stroke	[cm <sup>3</sup> ]	18.4	29.8	
at only MH/MM	Oil volume/max. return stroke	[cm <sup>3</sup> ]		72.9	
Ba2	a	[mm]	27		
a3° only DH/DM	a1 only MH/MM	[mm]			
b         mm         43         55           Ø b1         mm         36         45           Ø b2 f7         mm         10         12           c         mm         31.5         40.5           cA         mm         7         9.5           cB         mm         50.5         72           cK         mm         70         89.5           CL         mm         70         89.5           CL         mm         32         40           Ø d         mm         32         40           Ø d1         mm         32         40           Ø d2         mm         54.5         75           Ø e         [mm]         43         65           f         mm         40         55           g         [mm]         M 28x1.5         M 35x1.5         45           f         [mm]         M 28x1.5         M 35x1.5         45           g         [mm]         M 28x1.5         M 35x1.5         45           f         [mm]         M 22t.5         25x8.8         10           g         [mm]         M 22t.5         25x8.8         <					
Dit					
Decirity   Decirity					
c A         [mm]         31.5         40.5           c B         [mm]         7         9.5           c B         [mm]         50.5         72           c K         [mm]         70         89.5           c L         [mm]         70         89.5           d C         [mm]         32         40           D C         [mm]         48.5         60           D C         [mm]         48.5         45         45           f P         [mm]         M 28x1.5         M 38x1.5         45           f P         [mm]         M 22x1.5         253.8         45           f P         [mm]         M 22x1.5         253.8         10.5           g P         [mm]         M 22x1.5         253.8         110.8           k I         [mm]         22x1.5         253.8         110.8					
cA         [mm]         7         9.5           cB         [mm]         50.5         72           cK         [mm]         70         89.5           cL         [mm]         70         89.5           cL         [mm]         21.5         25           Ø d         [mm]         21.5         25           Ø d         [mm]         32         40           Ø d2         [mm]         48         60           Ø e         [mm]         33.5         45           g         [mm]         40         55           g         [mm]         40         55           g         [mm]         M 28x1.5         M 35x1.5         M 35x1.5           h         [mm]         221.5         253.8         i           i         [mm]         221.5         221.5         35         10.5         i           m ±1         [mm]         34.5         47         o					
CB         [mm]         50.5         72           CK         [mm]         70         89.5           CL         [mm]         71.5         25           Ød         [mm]         21.5         25           Ød         [mm]         48         60           Ød2         [mm]         54.5         75           Øe         [mm]         33.5         45           f         [mm]         40         555           g         [mm]         40         555           g         [mm]         40         555           g         [mm]         40         555           g         [mm]         M 28x1.5         M 35x1.5         45           h         [mm]         40         555         45           g         [mm]         M 221.5         253.8         10           h         [mm]         221.5         253.8         M 10           k         [mm]         221.5         253.8         M 10           k         [mm]         221.5         253.8         M 10           k         [mm]         221.5         253.8         110           k					
ck         [mm]         70         89.5           cl.         [mm]         21.5         25           Ø d         [mm]         32         40           Ø d1         [mm]         48         60           Ø d2         [mm]         54.5         75           Ø e         [mm]         33.5         45           f         [mm]         40         55           g         [mm]         M28x1.5         M 35x1.5         253.8           i         [mm]         40         55         553.8         i           i         [mm]         40         55         553.8         i         M 35x1.5         253.8         i         M 35x1.5         253.8         i         M 35x1.5         253.8         i         M 30x1.5         M 35x1.5         253.8         i         M 30x1.5         M 30x1.					
cL         [mm]         21.5         25           Ø d1         [mm]         32         40           Ø d2         [mm]         54.5         75           Ø e         [mm]         33.5         45           f         [mm]         40         55           g         [mm]         40         55           g         [mm]         M 28x1.5         M 35x1.5           h         [mm]         221.5         253.8           i         [mm]         221.5         253.8           i         [mm]         M 8         M 10           k         [mm]         85         110           k1         [mm]         27         35           l         [mm]         27         35           l         [mm]         27         35           m±1         [mm]         19.4         117.9           n         [mm]         34.5         47           o         [mm]         48         65           Øp         [mm]         48         66           Øp         [mm]         48         66           Øp         [mm]         60         80 <td></td> <td></td> <td></td> <td></td>					
Ød         [mm]         32         40           Ød1         [mm]         48         60           Ød2         [mm]         54.5         75           Øe         [mm]         33.5         45           f         [mm]         40         555           g         [mm]         M 281.5         M 35x1.5           h         [mm]         M 221.5         253.8           i         [mm]         M 88.1.5         M 35x1.5           h         [mm]         M 88.5         110           k         [mm]         M 85         110           k1         [mm]         27         35           l         [mm]         27         35           l         [mm]         27         35           m±1         [mm]         27         35           m±1         [mm]         10.4         117.9           n         [mm]         34.5         47           o         [mm]         34.5         47           o         [mm]         34.5         47           o         [mm]         34.5         46           o         p         [mm]					
Ød1         [mm]         48         60           Ød2         [mm]         54.5         75           Øe         [mm]         33.5         45           f         [mm]         40         55           g         [mm]         48         Mos         110           k1         [mm]         85         110         111         12         17         35         110         12         17         35         110         12         12         12         12         14         11         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12 <td></td> <td></td> <td></td> <td></td>					
Mathematical Color					
Øe         [mm]         33.5         45           f         [mm]         40         55           g         [mm]         40         55.5           h         [mm]         48x1.5         M35x1.5           h         [mm]         221.5         253.8           i         [mm]         221.5         253.8           i         [mm]         M8         M10           k         [mm]         M8         M10           k         [mm]         M8         M10           k         [mm]         B5         110           k         [mm]         27         35           l         [mm]         34.5         47           o         [mm]         34.5         47           o         [mm]         34.5         47 <tr< td=""><td></td><td></td><td></td><td></td></tr<>					
f         [mm]         40         55           g         [mm]         M 28x1.5         M 35x1.5           h         [mm]         221.5         253.8           i         [mm]         221.5         253.8           i         [mm]         M8         M 10           k         [mm]         M8         M 10           k         [mm]         M8         M 10           k1         [mm]         M8         110           k1         [mm]         85         110           k2         [mm]         27         35           m±1         [mm]         109.4         117.9           n         [mm]         109.4         117.9           n         [mm]         34.5         47.9           n         [mm]         34.5         47.9           n         [mm]         34.5         47.9           o         [mm]         34.5         10.5           Øp         [mm]         34.5         10.5           Ør -0.1         [mm]         8.5         10.5           Ør -0.1         [mm]         60         80           t         [mm]         <					
mm					
mm					
i [mm] M8 M10 k [mm] 85 110 k1 [mm] 27 35 l [mm] 85 110 l2 [mm] 27 35 m±1 [mm] 109.4 117.9 n [mm] 34.5 47 o [mm] 48 65 Øp [mm] 48 65 Øp [mm] 48 65 Øp [mm] 8.5 10.5 Ør -0.1 [mm] 59.8 79.8 Øs +1 [mm] 60 80 t [mm] 50.5 63 uA [mm] 19 23 uB [mm] 14.5 12.5 uK [mm] 19 23 uB [mm] 14.5 12.5 uK [mm] 11 12.5 v [mm] 61.4 66.4 v1 [mm] 67 72 v2 [mm] 71.9 76.9 wA [mm] 11 13 wB [mm] 11 13 wB [mm] 11 13 wB [mm] 137 151 x max.* [mm] 139 153.6 y [mm] 14 55.5 zK [mm] 14 55.5 zK [mm] 14 55.5 zK [mm] 14 55.5 zK [mm] 46 41 SW1 [mm] 50.4 55.5 zL [mm] 46 41 SW1 [mm] 47 55.5 zK [mm] 50.4 55.5 zL [mm] 46 41 SW1 [mm] 50.4 55.5 zL [mm] 46 41 SW1 [mm] 46 41 SW1 [mm] 50.4 55.5 zL [mm] 50.4 55.5 zL [mm] 46 41 SW1 [mm] 50.4 55.5 zL [mm] 46 41 SW1 [mm] 50.4 55.5 zL [mm] 48 59304KXX35 1896404KXX36 *Upper edge nut	h				
k         [mm]         85         110           k1         [mm]         27         35           I         [mm]         85         110           I2         [mm]         27         35           m ±1         [mm]         27         35           m ±1         [mm]         109.4         117.9           n         [mm]         109.4         117.9           n         [mm]         109.4         117.9           n         [mm]         34.5         47           o         [mm]         34.5         47           o         [mm]         48         65           Øp         [mm]         48         65           Øp         [mm]         48         65           Øp         [mm]         48         66           Øp         [mm]         60         80           Øp         [mm]         60         80           B         [mm]         10         11           U         [mm]         11         12.5           V         [mm]         61.4         66.4           V1         [mm]         61.4         66.4 </td <td></td> <td></td> <td></td> <td></td>					
k1         [mm]         27         35           I         [mm]         85         110           Iz         [mm]         27         35           m ±1         [mm]         109.4         117.9           n         [mm]         109.4         117.9           n         [mm]         34.5         47           o         [mm]         48         65           Øp         [mm]         60         80           t         [mm]         50.5         63           t         [mm]         10         11           u         [mm]         19         23           uB         [mm]         14.5         12.5           uK         [mm]         11         12.5           v         [mm]         61.4         66.4					
12	k1				
m ±1         [mm]         109.4         117.9           n         [mm]         34.5         47           o         [mm]         48         65           Ø p         [mm]         8.5         10.5           Ø r -0.1         [mm]         59.8         79.8           Ø s +1         [mm]         60         80           t         [mm]         10         11           u         [mm]         10         11           u         [mm]         50.5         63           uA         [mm]         19         23           uB         [mm]         14.5         12.5           uK         [mm]         19         23           uB         [mm]         14.5         12.5           uK         [mm]         19         21           uL         [mm]         11         12.5           v         [mm]         61.4         66.4           v1         [mm]         67         72           v2         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         16 <td< td=""><td>1</td><td></td><td>85</td><td>110</td></td<>	1		85	110	
n	12	[mm]	27	35	
O p         [mm]         48         65           Ø p         [mm]         8.5         10.5           Ø r         -0.1         [mm]         59.8         79.8           Ø s         +1         [mm]         60         80           t         [mm]         10         11         11           u         [mm]         10         11         11         12         12.5           uA         [mm]         11         12.5	m ±1	[mm]	109.4	117.9	
Ø p         [mm]         8.5         10.5           Ø r -0.1         [mm]         59.8         79.8           Ø s +1         [mm]         60         80           t         [mm]         10         11           u         [mm]         10         11           u         [mm]         50.5         63           uA         [mm]         19         23           uB         [mm]         14.5         12.5           uK         [mm]         19         21           uL         [mm]         19         21           uL         [mm]         11         12.5           uK         [mm]         61.4         66.4           v1         [mm]         61.4         66.4           v2         [mm]         71.9         76.9           wA         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         137         151           x max.*         [mm]         137	n	[mm]			
Ør -0.1         [mm]         59.8         79.8           Øs +1         [mm]         60         80           t         [mm]         10         11           u         [mm]         10         11           u         [mm]         50.5         63           uA         [mm]         19         23           uB         [mm]         14.5         12.5           uK         [mm]         19         21           uL         [mm]         11         12.5           v         [mm]         61.4         66.4           v1         [mm]         67         72           v2         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         137         151           x max.*         [mm]         137         151           x max.*         [mm]         139         153.6           y         [mm]         52.4         55.5           zK         [mm]         14		[mm]			
Ø s         +1         [mm]         60         80           t         [mm]         10         11           u         [mm]         50.5         63           uA         [mm]         19         23           uB         [mm]         14.5         12.5           uK         [mm]         19         21           uL         [mm]         11         12.5           v         [mm]         61.4         66.4           v1         [mm]         67         72           v2         [mm]         71.9         76.9           wA         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         11         13           x + 0.6         [mm]         137         151           x max.*         [mm]         137         153.6           y         [mm]         52.4         55.4           zA         [mm]         14         12           zB         [mm]         1					
t					
u         [mm]         50.5         63           uA         [mm]         19         23           uB         [mm]         14.5         12.5           uK         [mm]         14.5         12.5           uK         [mm]         19         21           uL         [mm]         11         12.5           v         [mm]         61.4         66.4           v1         [mm]         67         72           v2         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         137         151           x max.*         [mm]         137         151           x max.*         [mm]         139         153.6           y         [mm]         52.4         55.4           zA         [mm]         14         12           zB         [mm]         50.4         55.5           zL         [mm]         46         41           SW1         [mm]         46					
uA       [mm]       19       23         uB       [mm]       14.5       12.5         uK       [mm]       19       21         uL       [mm]       11       12.5         v       [mm]       61.4       66.4         v1       [mm]       67       72         v2       [mm]       71.9       76.9         wA       [mm]       11       13         wB       [mm]       11       13         wK       [mm]       56       66.5         wK       [mm]       66       89.5         wL       [mm]       137       151         x max.*       [mm]       137       151         x max.*       [mm]       139       153.6         y       [mm]       52.4       55.4         zA       [mm]       14       12         zB       [mm]       14       12         zK       [mm]       50.4       55.5         zL       [mm]       46       41         SW1       [mm]       12       17         Part no.       Part no.       Part no.         Clockwise rotation 90					
uB         [mm]         14.5         12.5           uK         [mm]         19         21           uL         [mm]         11         12.5           v         [mm]         61.4         66.4           v1         [mm]         67         72           v2         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         11         13           x + 0.6 / 0.5         [mm]         11         13           x + 0.6 / 0.5         [mm]         137         151           x max.*         [mm]         139         153.6           y         [mm]         52.4         55.4           zA         [mm]         14         12           zB         [mm]         14         55.5           zL         [mm]         50.4         55.5           zL         [mm]         46         41           SW1         [mm]         12         17           Part no. <td colspa<="" td=""><td></td><td></td><td></td><td></td></td>	<td></td> <td></td> <td></td> <td></td>				
uK         [mm]         19         21           uL         [mm]         11         12.5           v         [mm]         61.4         66.4           v1         [mm]         67         72           v2         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         11         13           x + 0.6 \\ -0.5 \\ (mm)         [mm]         137         151           x max.*         [mm]         139         153.6           y         [mm]         52.4         55.4           zA         [mm]         14         12           zB         [mm]         14         55.5           zK         [mm]         50.4         55.5           zL         [mm]         46         41           SW1         [mm]         12         17           Part no.           Clockwise rotation 90°         1895304KXX35         1896304KXX36           0 degree         1895404KXX35         1896404					
uL         [mm]         11         12.5           V         [mm]         61.4         66.4           V1         [mm]         67         72           V2         [mm]         71.9         76.9           WA         [mm]         11         13           WB         [mm]         56         66.5           WK         [mm]         66         89.5           WL         [mm]         11         13           X + 0.6 / -0.5         [mm]         137         151           X max.*         [mm]         139         153.6           Y         [mm]         52.4         55.4           zA         [mm]         52.4         55.4           zB         [mm]         14         12           zB         [mm]         46         41           SW1         [mm]         46         41           SW1         [mm]         12         17           Part no.           Clockwise rotation 90°         1895304KXX35         1896304KXX36           Counterclockwise rotation 90°         1895404KXX35         1896404KXX36           VUpper edge nut					
v         [mm]         61.4         66.4           v1         [mm]         67         72           v2         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         11         13           x +0.6         [mm]         137         151           x max.*         [mm]         139         153.6           y         [mm]         52.4         55.4           zA         [mm]         52.4         55.4           zB         [mm]         14         12           zB         [mm]         50.4         55.5           zL         [mm]         46         41           SW1         [mm]         12         17           Part no.           Clockwise rotation 90°         1895304KXX35         1896304KXX36           Counterclockwise rotation 90°         1895404KXX35         1896404KXX36           V Upper edge nut         1895404KXX35         1896404KXX36					
v1         [mm]         67         72           v2         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         11         13           x + 0.6					
v2         [mm]         71.9         76.9           wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         11         13           x * 0.6					
wA         [mm]         11         13           wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         11         13           x * *0.6 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5 - 0.5         [mm]         137         151           x max.*         [mm]         139         153.6           y         [mm]         52.4         55.4           zA         [mm]         14         12           zB         [mm]         14         55.5           zK         [mm]         50.4         55.5           zL         [mm]         46         41           SW1         [mm]         12         17           Part no.           Clockwise rotation 90°         1895304KXX35         1896304KXX36           Counterclockwise rotation 90°         1895404KXX35         1896404KXX36           Vupper edge nut         1895444KXX35         1896444KXX36					
wB         [mm]         56         66.5           wK         [mm]         66         89.5           wL         [mm]         11         13           x * * * * * * * * * * * * * * * * * * *					
wK         [mm]         66         89.5           wL         [mm]         11         13           x + 0.6 - (.5)         [mm]         137         151           x max.*         [mm]         139         153.6           y         [mm]         52.4         55.4           zA         [mm]         14         12           zB         [mm]         14         55.5           zL         [mm]         50.4         55.5           zL         [mm]         46         41           SW1         [mm]         12         17           Part no.           Clockwise rotation 90°         1895304KXX35         1896304KXX36           Counterclockwise rotation 90°         1895404KXX35         1896404KXX36           V Upper edge nut         1895444KXX35         1896444KXX36					
wL       [mm]       11       13         x + 0.6 = 0.70,5       [mm]       137       151         x max.*       [mm]       139       153.6         y       [mm]       52.4       55.4         zA       [mm]       14       12         zB       [mm]       14       55.5         zL       [mm]       50.4       55.5         zL       [mm]       46       41         SW1       [mm]       12       17         Part no.         Clockwise rotation 90°       1895304KXX35       1896304KXX36         Counterclockwise rotation 90°       1895404KXX35       1896404KXX36         0 degree       1895444KXX35       1896444KXX36					
x +0.6 c y max.*       [mm]       137       151         x max.*       [mm]       139       153.6         y [mm]       52.4       55.4         zA [mm]       14       12         zB [mm]       14       55.5         zK [mm]       50.4       55.5         zL [mm]       46       41         SW1       [mm]       12       17         Part no.       Part no.         Clockwise rotation 90°       1895304KXX35       1896304KXX36         Counterclockwise rotation 90°       1895404KXX35       1896404KXX36         0 degree       1895444KXX35       1896444KXX36					
x max.*     [mm]     139     153.6       y     [mm]     52.4     55.4       zA     [mm]     14     12       zB     [mm]     14     55.5       zK     [mm]     50.4     55.5       zL     [mm]     46     41       SW1     [mm]     12     17       Part no.       Clockwise rotation 90°     1895304KXX35     1896304KXX36       Counterclockwise rotation 90°     1895404KXX35     1896404KXX36       0 degree     1895444KXX35     1896444KXX36       * Upper edge nut					
y         [mm]         52.4         55.4           zA         [mm]         14         12           zB         [mm]         14         55.5           zK         [mm]         50.4         55.5           zL         [mm]         46         41           SW1         [mm]         12         17           Part no.         Part no.           Clockwise rotation 90°         1895304KXX35         1896304KXX36           Counterclockwise rotation 90°         1895404KXX35         1896404KXX36           0 degree         1895444KXX35         1896444KXX36					
zA     [mm]     14     12       zB     [mm]     14     55.5       zK     [mm]     50.4     55.5       zL     [mm]     46     41       SW1     [mm]     12     17       Part no.     Part no.       Clockwise rotation 90°     1895304KXX35     1896304KXX36       Counterclockwise rotation 90°     1895404KXX35     1896404KXX36       0 degree     1895444KXX35     1896444KXX36       * Upper edge nut					
zB     [mm]     14     55.5       zK     [mm]     50.4     55.5       zL     [mm]     46     41       SW1     [mm]     12     17       Part no.     Part no.       Clockwise rotation 90°     1895304KXX35     1896304KXX36       Counterclockwise rotation 90°     1895404KXX35     1896404KXX36       0 degree     1895444KXX35     1896444KXX36       * Upper edge nut					
zK         [mm]         50.4         55.5           zL         [mm]         46         41           SW1         [mm]         12         17           Part no.         Part no.           Clockwise rotation 90°         1895304KXX35         1896304KXX36           Counterclockwise rotation 90°         1895404KXX35         1896404KXX36           0 degree         1895444KXX35         1896444KXX36           * Upper edge nut         * Upper edge nut					
zL     [mm]     46     41       SW1     [mm]     12     17       Part no.       Clockwise rotation 90°     1895304KXX35     1896304KXX36       Counterclockwise rotation 90°     1895404KXX35     1896404KXX36       0 degree     1895444KXX35     1896444KXX36       * Upper edge nut					
SW1         [mm]         12         17           Part no.         Part no.           Clockwise rotation 90°         1895304KXX35         1896304KXX36           Counterclockwise rotation 90°         1895404KXX35         1896404KXX36           0 degree         1895444KXX35         1896444KXX36           * Upper edge nut         * Upper edge nut					
Part no.   Part no.   Clockwise rotation 90°   1895304KXX35   1896304KXX36   Counterclockwise rotation 90°   1895404KXX35   1896404KXX36					
Clockwise rotation 90°       1895304KXX35       1896304KXX36         Counterclockwise rotation 90°       1895404KXX35       1896404KXX36         0 degree       1895444KXX35       1896444KXX36         * Upper edge nut		[]			
Counterclockwise rotation 90°       1895404 KXX35       1896404 KXX36         0 degree       1895444 KXX35       1896444 KXX36         * Upper edge nut	Clockwise rotation 90°				
0 degree 1895444 KXX35 1896444 KXX36 * Upper edge nut					
* Upper edge nut					
	* Upper edge nut				

# \* Upper edge nut XX: Version DH/DM = without/with metallic wiper without switch rod MH/MM = without/with metallic wiper with switch rod

Accessory	Part no.	Part no.
Metallic wiper, complete (spare part)	0341 100	0341 101
O-ring 8x1.5	3000343	3000343
Screw plug G 1/4	3300821	3300821
Spare nut / tightening torque	<b>3527015</b> /90 Nm	<b>3527048</b> /160 Nm

## Effective clamping force $F_{Sp}$ as a function of the operating pressure p





#### Important note!

The clamping force diagrams are only valid, if "clamping" and "locking" are are controlled separately (see page 4).

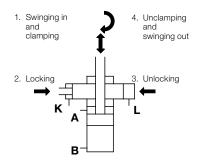
Clamping arms, accessories and special clamping arms see data sheet B 1.881.

#### Key for available angles of rotation

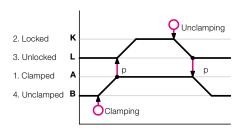
Angle of	rotation (±1°)	Part no.
90°		189XX <mark>0</mark> 4KXXXX
60°		189XX24KXXXX
45°		189XX34KXXXX

#### Function flow • Function chart Hydraulic control • Important notes

#### **Function sequence**



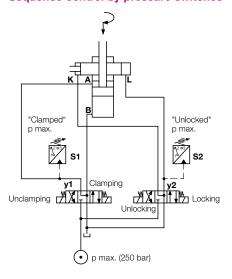
#### **Function chart**



#### Hydraulic control

The control is effected by two separate double-acting switching circuits.

#### Sequence control by pressure switches



#### Switching sequence

#### 1. Starting position

y1 and y2 de-energised or y1 "Unclamping"; y2 "Unlocking"

#### 2. Clamping

- → 1. y1 "Clamping"; y2 de-energised
- → 2. S1 = pmax → y2 "Locking"

#### 3. Depressurise (as required)

Before depressurising, the locking pressure must be available at least for 3 seconds.

→ y1 and y2 de-energised

#### 4. Unclamping

- → 1. y2 "Unlocking"
- → 2. S2 = pmax → y1 "Unclamping"

#### Important notes

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

In the effective area of piston rod and clamping arm there is the danger of crushing.

The manufacturer of the fixture or the machine is obliged to provide effective protection devices.

The swing clamp has no overload protection device. When mounting the clamping arm, the clamping arm or the hexagon socket in the piston have to be backed up for tightening and untightening the fixing nut.

During loading and unloading of the fixture and during clamping a collision with the clamping arm has to be avoided. Remedy: Mount position adaptor.

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