



HEINRICH KIPP WERK



# HYDRAULIC CLAMPING ELEMENTS

Edition 2023





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## OVERVIEW

Technical information for hydraulic clamping elements 4

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## PRODUCTS

Support elements, hydraulic, screw-on	6
Swing clamps, hydraulic, compact	8
Selection aid Swing clamp hydraulic compact	11
Clamping arm for compact hydraulic swing clamps	14
Swing clamps, hydraulic	16
Selection aid swing clamps hydraulic	20
Clamping arm for hydraulic swing clamps	24
Rotary lever clamps, hydraulic	26
Tension levers for rotary lever clamps	30
Link clamp, hydraulic	32
Screw-in hydraulic cylinder	34
Block cylinder, hydraulic with metal wiper	38
Technical data block cylinder	43
Side clamps, hydraulic	44

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Reg. Nr. 002081 QM



## SERVICE HOURS (CET)

MONDAY-THURSDAY	7.00 am - 5.30 pm
FRIDAY	7.00 am - 3.30 pm

# Technical information for hydraulic clamping elements



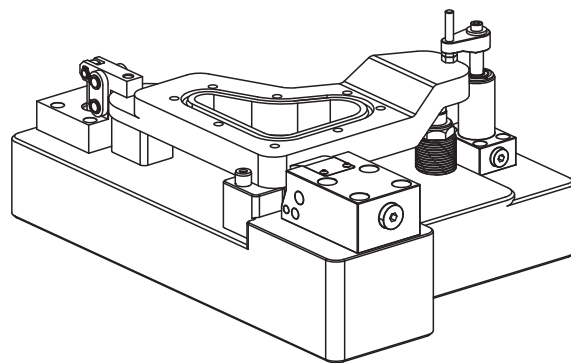
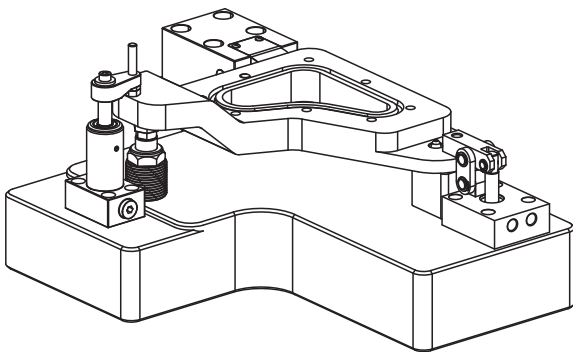
Hydraulic clamping elements are used on clamping fixtures where the generation and transmission of high forces through the use of small clamping elements is required. Furthermore, hydraulic clamping elements can be used to give good control and adjustability together with a long service life for a clamping fixture. The hydraulic clamping element product portfolio covers all support and clamping functions.

Thanks to the large hydraulic clamping element product range, any workpiece with any dimension in any batch size can be easily clamped with optimised set-up times.

Through having the choice between single-acting and double-acting clamping elements, the hydraulic clamping elements can be used in both automated and non-automated clamping fixtures.

## Advantages:

- Clamping sequences in automated procedures can be precisely defined.
- Calculable clamping forces for the clamping elements.
- High safety standards.
- Reduction of clamp and release times.
- Information transfer between machine and clamping element.



## General safety information for hydraulic clamping elements

### Oil recommendation:

Oil temperature in °C	Oil designations acc. to DIN 51524
• +10-40 °C	HLP 22
• +15-50 °C	HLP 32
• +20-60 °C	HLP 46

### Sealing materials:

NBR (acrylonitrile butadiene rubber).

PU (polyurethane).

Special materials to suit functional requirements.

### Mounting position:

If no specifications are made in the data sheets, the mounting position of the hydraulic clamping elements is arbitrary.

### Operating pressure:

Must be taken from the technical specifications of the product family and/or the individual articles.

### Ambient temperature:

-10 °C to +80 °C by standard versions. Versions for higher ambient temperatures available on request.

### Piston lateral forces:

Max. 5 % of the nominal piston force may act on the clamping element as lateral forces.

### Permitted stroke speed:

Max. 0.25 m/s.

### Permitted flow rate:

The permissible flow rates for the individual hydraulic clamping elements must be observed. The values given in the technical data refer to the shortest clamping time of one second. Throttle check valves should be employed where there is a higher quotient (pump flow / number of cylinders) in the clamping device than the permissible flow rate. To prevent pressure intensification, the throttle check valve should be connected to the inlet port of the hydraulic clamping element so that the outflow of hydraulic oil from the clamping element is not obstructed.

# Technical information for hydraulic clamping elements



## Operating principle of hydraulic clamping elements:

Single-acting hydraulic clamping elements with spring return pistons (return time cannot be defined).

Double-acting hydraulic clamping elements (return time can be defined).

## Influence of temperature:

An increase or decrease in temperature changes the volume of the enclosed oil. Here, a pressure change of ca. 10 bar per 1 °C can be assumed if there is no elastic oil volume. Hydraulic accumulators should be employed to prevent these physical influences in a clamping device.

Likewise, a pressure relief valve should be used if it is assumed that the permissible operating pressure could be exceeded.

## Service life:

For a long product life, with single-acting clamping elements with spring return care must be taken that no liquids can penetrate the spring chamber of the clamping element.

## Commissioning / Maintenance:

Installation information must be observed during the commissioning of hydraulic clamping elements.

When installing the clamping elements, pay attention to the cleanliness of the individual interfaces.

Only the specified, clean pressure media may be used for operation.

Every hydraulic system and hydraulic clamping element must be vented before commissioning is completed.

- Air pockets in the hydraulic oil significantly delay the clamping process. Therefore, venting must be carried out during commissioning:

Venting with screw connection:

1. Feed low oil pressure into the cylinder.
2. Lightly loosen the pipe fitting.
3. Maintain oil pressure until the oil comes out of the cylinder without bubbles.
4. Tighten the pipe fitting.

Venting with O-ring flange connection/drilled channels:

1. Feed low oil pressure into the cylinder.
2. Lightly loosen the screw plug.
3. Maintain oil pressure until the oil comes out of the cylinder without bubbles.
4. Tighten the screw plug.

- With single-acting clamping elements, the spring chamber must be vented to avoid malfunctions. The filter integrated into the vent port protects the spring chamber from contamination. To prevent liquids from penetrating, an additional vent line can be connected. The vent line should be routed to a protected location.

Maintenance intervals must be observed.

## Accident prevention regulations:

Extreme forces can be generated with hydraulic clamping elements. This increases the risk of injury during operation through pinching or crushing.

Use protective devices with locks or latches and observe the general accident prevention regulations.

With single-acting clamping elements, the housing cover must under no circumstances be removed. There is a high risk of injury from the the heavily tensioned springs shooting out. Loose fastening screws must be retightened immediately.

Observance of DIN 31001, part 1.

## Key figures and SI units:

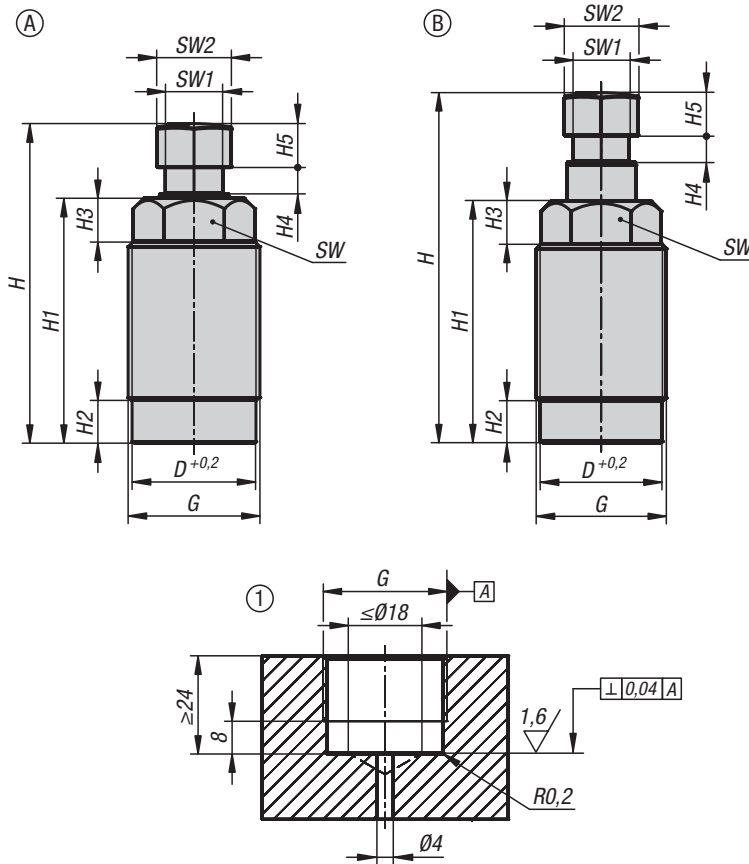
Area	A	m <sup>2</sup>	cm <sup>2</sup>	mm <sup>2</sup>
Force	F	N	1000 N=kN	
Mass	m	kg		
Volume	V	m <sup>3</sup>	cm <sup>3</sup>	mm <sup>3</sup>
Volume flow	Q	cm <sup>3</sup> /sec	l/min	
Distance	s	m	cm	mm
Time	t	s	min	
Speed	v	m/s		
Revolution	n	s <sup>-1</sup>	l/min	

## Basic formula of hydrostatics

Pressure	=	Force / Area
p	=	F / A

## Support elements, hydraulic, screw-on

single-acting with spring return



Support elements are used during machining to prevent vibrations and deflections on the workpiece. The screw-on support elements can be mounted horizontally or vertically. The two mounting options enable space-saving positioning in the clamping fixtures. Hydraulic locking can be used in combination or separately with hydraulic clamping.

**Material:**

Housing and piston steel.

**Version:**

Housing black oxidised.

Piston hardened.

**Sample order:**

K1854.160823062

**Note:**

Form A, engaged by hydraulics:

Clamping bolt retracted in initial position. Pin hydraulically extended and engaged by spring force.

Form B, engaged by spring force:

Clamping pin extended in initial position. Engaged by spring force

Permitted loading forces must be taken into account.

Follow safety instructions.

**Method of operation:**

Drilled channels.

**Assembly:**

See mounting contour.

**Advantages:**

- Integrated metal wiper.
- Always engaged by spring force.
- Low mounting dimensions.
- Horizontal/vertical mounting possible.
- Separate/combined locking and clamping process

**Supplied with:**

1 Kantseal square washer supplied.

**Technical data:**

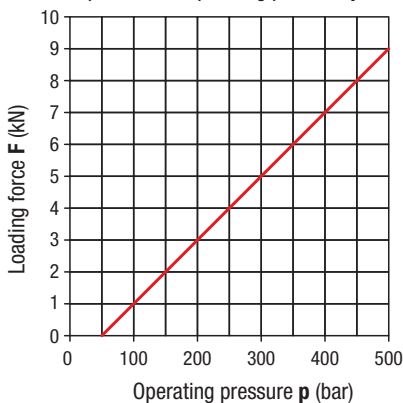
- Max. operating pressure: 500 bar.
- Permitted loading at 500 bar: 9 kN.
- Min. oil pressure: 100 bar.
- Max. tightening torque: 60 Nm.

**Drawing reference:**

1) Mounting contour

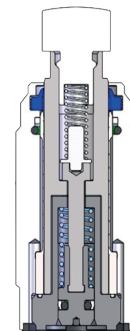
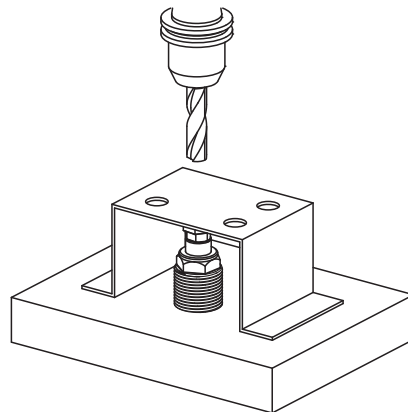
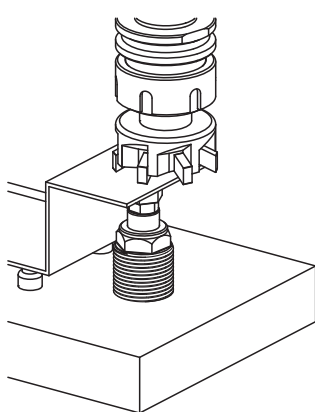
**Clamping force diagram**

Permitted loading force **F**  
dependent on operating pressure **p**

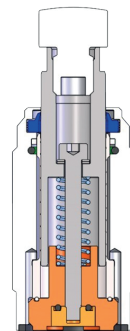


## Support elements, hydraulic, screw-on

single-acting with spring return



Engaged by hydraulics



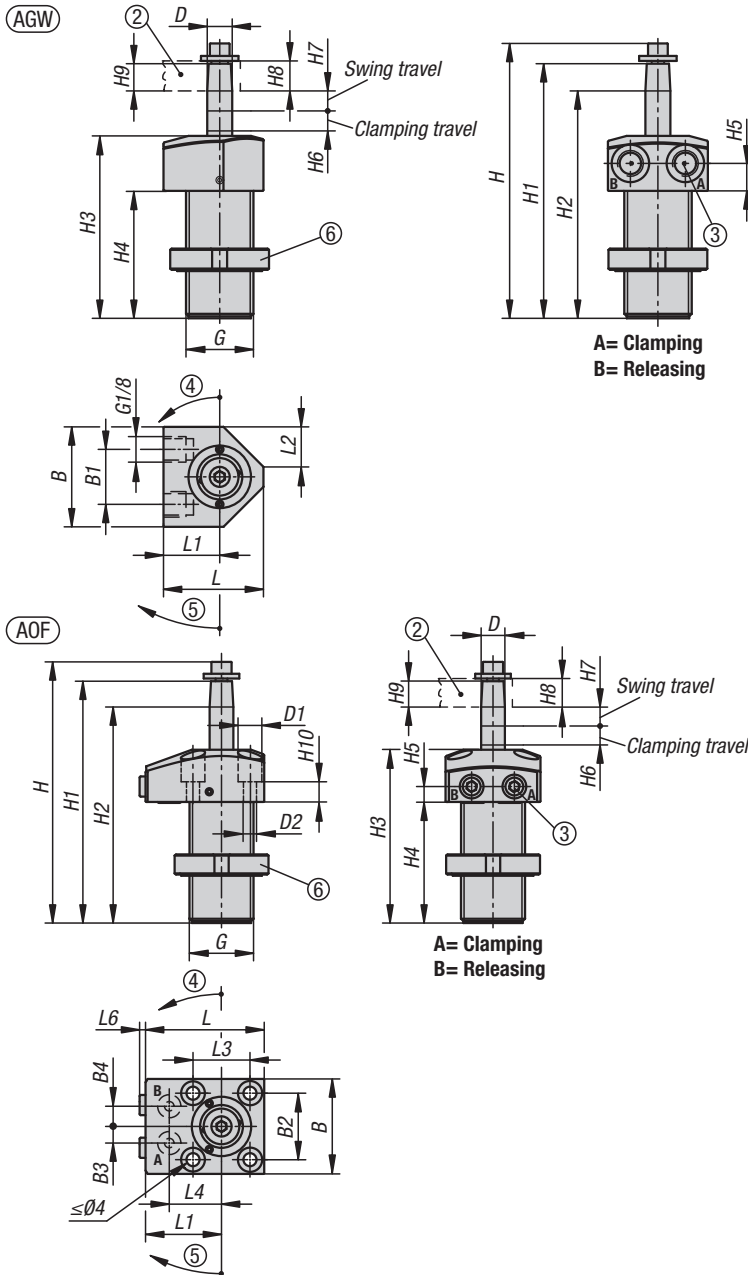
Engaged by spring force

### KIPP Support elements, hydraulic, screw-on

Order No.	Form	Piston Ø	travel	Connection type	D	G	H	H1	H2	H3	H4	H5	SW	SW1	SW2	Spring force min. (N)	Spring force F approx. (N)	Flow rate max. (cm <sup>3</sup> /s)
K1854.160823061	A	16	8	drilled channels	28,2	M30x1,5	72,5	55,5	9,5	10	6	10	24	13	17	10	23	25
K1854.160823062	B	16	8	drilled channels	28,2	M30x1,5	80,5	55,5	9,5	10	6	10	24	13	17	8	13	-

## Swing clamps, hydraulic, compact

double / single-acting with spring return



Compact swing clamps are designed for clamping fixtures where the clamping points must be clear during workpiece removal or placement. They are also suitable for confined installation conditions. These compact swing clamps operate as single-acting or double-acting traction cylinders. There is a choice of three housing types for the compact swing clamps as well as various actuation methods. The clamping movement is initiated by a combined swivel and stroke motion. The actual clamping travel occurs with a linear movement. A wide range of variants with a left or right swivel angle of 90° are available.

**Material:**  
Housing and piston steel.  
Seal NBR

**Version:**  
Housing black oxidised.  
Piston hardened.

**Sample order:**  
K1862.14081204190100

**Note:**  
If the permissible volume flow on the swing clamp could be exceeded, an intermediate throttle check valve must be installed. The permissible operating pressure of the swing clamps depends on the clamping arm length. The clamping arms must be restrained when being mounted so that the ball guide of the swing clamps is not damaged. Depending on the vent connection, the sinter filter of the single-acting swing clamps must be replaced by a screw plug.

The clamping arm of the compact swing clamp is not supplied.

Follow safety instructions.

**Method of operation:**  
- Thread connection.  
- O-ring flange connection.  
- Drilled channels.

**Assembly:**  
See mounting contour.

**Advantages:**  
- Compact design  
- Many types.  
- Collision-free accessibility to the workpiece.

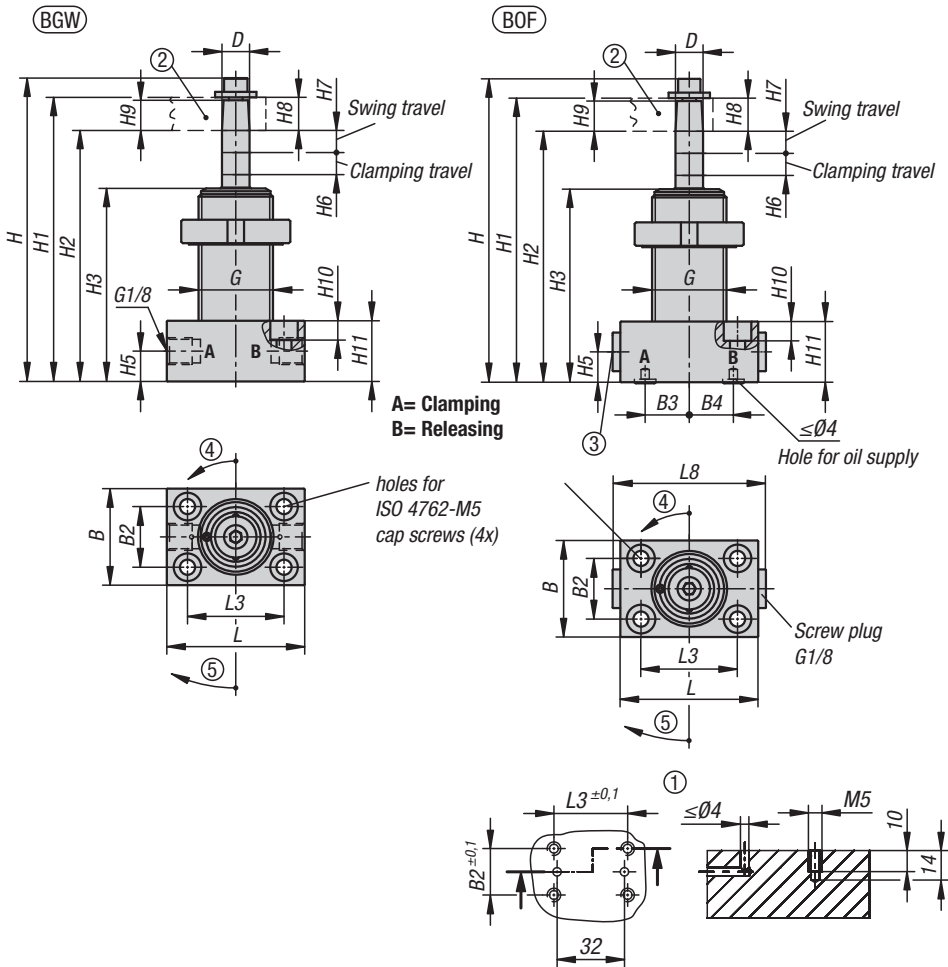
**On request:**  
Larger piston diameters and longer strokes, other swivel angles, various clamping arm mounts, with position control.

**Supplied with:**  
- 1x slotted round nut M27x1.5 (only with compact swivel clamps K1862.14081104190100, K1862.14081104190200, K1862.14062104190100, K1862.14062104190200).  
- 1x screw or nut for clamping arm mount.



## Swing clamps, hydraulic, compact

double / single-acting with spring return



**Accessories:**

Clamping arm for compact swing clamp K1863.

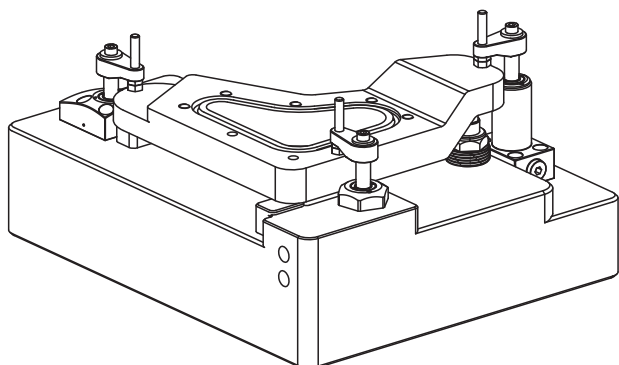
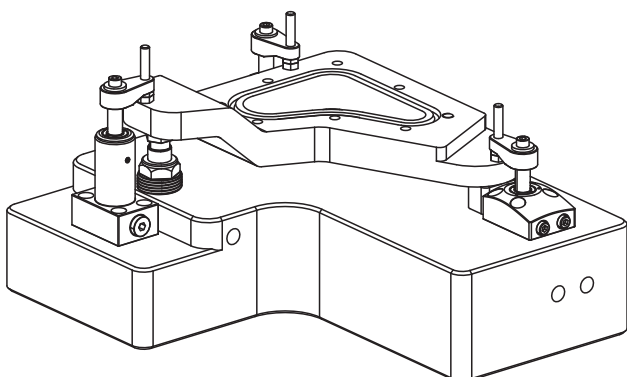
**Technical data:**

Max. operating pressure: 350 bar.

**Drawing reference:**

- Form AGW: Flange top, Screw connection
- Form AOF: Flange top, O-ring flange connection
- Form BGW: Flange under, Screw connection
- Form BOF: Flange under, O-ring flange connection
- Form C: Screw-on thread

- 1) Mounting contour
- 2) See accessories
- 3) By the single-acting cylinders, the port is equipped with a built-in sinter filter.
- 4) Left swivel
- 5) Right swivel
- 6) Included in delivery



## Swing clamps, hydraulic, compact

double / single-acting with spring return



### KIPP Swing clamp, hydraulic, compact

Order No. double-acting	Order No. single-acting	Form	Connection type	Swivel direction	Piston Ø	travel	B	B1	B2	B3	B4	D	D1	D2	G	H	H1	H2	H3
K1862.14081104190100	K1862.14062104190100	A	screw connection	ght	14	6/8	40	22	-	-	-	10	-	-	M27x1,5	110	103	91	73
K1862.14081204190100	K1862.14062204190100	A	o-ring flange connection	ght	14	6/8	40	-	28	7	8,5	10	10	5,5	M27x1,5	110	103	91	73
K1862.14081104190200	K1862.14062104190200	A	screw connection	left	14	6/8	40	22	-	-	-	10	-	-	M27x1,5	110	103	91	73
K1862.14081204190200	K1862.14062204190200	A	o-ring flange connection	left	14	6/8	40	-	28	7	8,5	10	10	5,5	M27x1,5	110	103	91	73

Order No. double-acting	Order No. single-acting	Form	H4	H5	H6	H7	H8	H9	H10	L	L1	L2	L3	L4	L6	Flow rate max. (cm³/s)	Oil requirement / stroke (cm³)
K1862.14081104190100	K1862.14062104190100	A	51	11	6/8	8/10	12	11,5	-	40	22,5	16x45°	-	-	-	2,5	1,2
K1862.14081104190200	K1862.14062104190200	A	51	11	6/8	8/10	12	11,5	-	40	22,5	16x45°	-	-	-	2,5	1,2
K1862.14081204190100	K1862.14062204190100	A	51	6,5	6/8	8/10	12	11,5	8,5	50	32	-	24	22	2,5	2,5	1,2
K1862.14081204190200	K1862.14062204190200	A	51	6,5	6/8	8/10	12	11,5	8,5	50	32	-	24	22	2,5	2,5	1,2

Order No. double-acting	Order No. single-acting	Form	Connection type	Swivel direction	Piston Ø	travel	B	B2	B3	B4	D	G	H	H2	H3
K1862.14081105190100	K1862.14062105190100	B	screw connection	ght	14	8/6	35	22	-	-	10	M27x1,5	110	91	70
K1862.14081205190100	K1862.14062205190100	B	o-ring flange connection	ght	14	8/6	35	22	16	16	10	M27x1,5	110	91	70
K1862.14081105190200	K1862.14062105190200	B	screw connection	left	14	8/6	35	22	-	-	10	M27x1,5	110	91	70
K1862.14081205190200	K1862.14062205190200	B	o-ring flange connection	left	14	8/6	35	22	16	16	10	M27x1,5	110	91	70

Order No. double-acting	Order No. single-acting	Form	H5	H6	H7	H8	H9	H10	H11	L	L3	L8	Flow rate max. (cm³/s)	Oil requirement / stroke (cm³)
K1862.14081105190100	K1862.14062105190100	B	11	8/6	8/10	12	11,5	7	22	50	35	-/58	2,5	1,2
K1862.14081205190100	K1862.14062205190100	B	11	8/6	8/10	12	11,5	7	22	50	35	-/58	2,5	1,2
K1862.14081105190200	K1862.14062105190200	B	11	8/6	8/10	12	11,5	7	22	50	35	-/58	2,5	1,2
K1862.14081205190200	K1862.14062205190200	B	11	8/6	8/10	12	11,5	7	22	50	35	-/58	2,5	1,2

Order No. double-acting	Order No. single-acting	Form	Connection type	Swivel direction	Piston Ø	travel	D	D3	D4	G	H	H2	H3	H6	H7	H8	H9	L8	Flow rate max. (cm³/s)	Oil requirement / stroke (cm³)
K1862.14081306190100	K1862.14062306190100	C	drilled channels	ght	14	6/8	10	24,5	25	M28x1,5	110	109	1706/88/10	1211,5	536	2,5	1,2			
K1862.14081306190200	K1862.14062306190200	C	drilled channels	left	14	6/8	10	24,5	25	M28x1,5	110	109	1706/88/10	1211,5	536	2,5	1,2			

# Selection guide for hydraulic, compact swing clamps:



## 1. Piston diameter:

Example:

..... **14081204190100**

## 3. Mode of operation selection:

Example:

..... **14081204190100**

1 = double-acting

2 = single-acting with spring return

## 2. Travel:

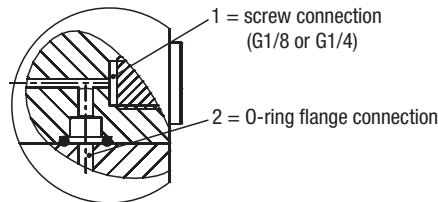
Example:

..... **14081204190100**

## 4. Selection of oil supply connection type:

Example:

..... **14081204190100**



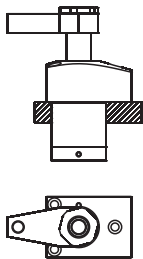
3 = Pressurised oil supply through drilled ducts

Please note:  
The mounting contour of the respective swing clamps.

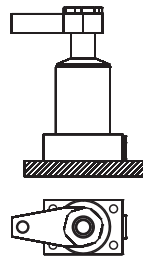
## 5. Selection of the housing design:

Example:

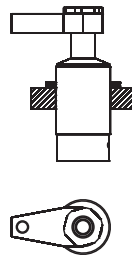
..... **14081204190100**



04 = Flange on top



05 = Flange under



06 = Screw-on thread with drilled channels

## 6. Selection of seal type:

Example:

..... **14081204190100**

1 = NBR seal

## 7. Selection of swivel angle:

Example:

..... **14081204190100**

90 = 90°

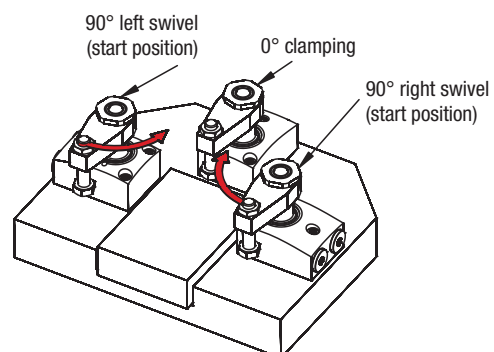
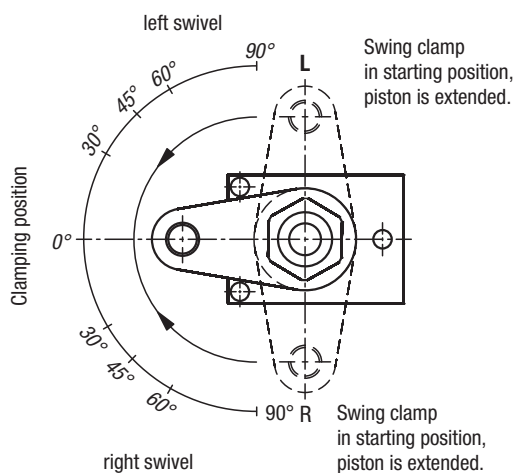
## 8. Selection of swivel direction:

Example:

..... **14081204190100**

1 = Right swivel

2 = Left swivel



# Selection guide for hydraulic, compact swing clamps:



## 9. Selection of overload protection:

Example:

..... 14081204190100

0 = Overload protection

## 10. Selection of metal wiper:

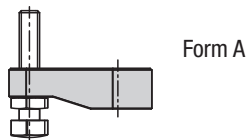
Example:

..... 14081204190100

0 = Metal wiper

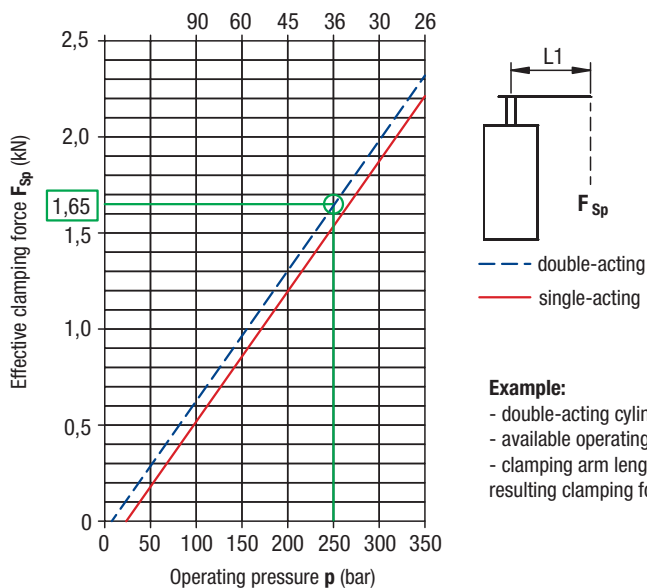
## 11. Selection of clamping arm for swing clamp:

- Swing clamps are supplied with a taper mount with fastening nut.
- Clamping arms for swing clamps must be ordered separately.



clamping force diagram

Max. clamping arm length L1 must be observed.



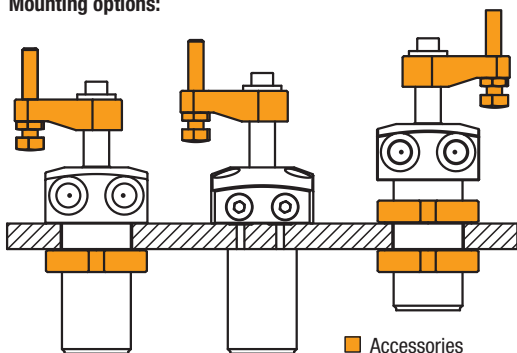
**Example:**  
 - double-acting cylinder  
 - available operating pressure  $p = 250$  bar  
 - clamping arm length  $L1 = 36$  mm  
 resulting clamping force  $F_{sp} \sim 1.65$  kN

The counteracting spring return force by the single-acting swivel clamps reduces the clamping force slightly. To achieve the same clamping force as with the double-acting swing clamps, the operating pressure must be increased slightly.

## Mounting and application examples:

### Form A:

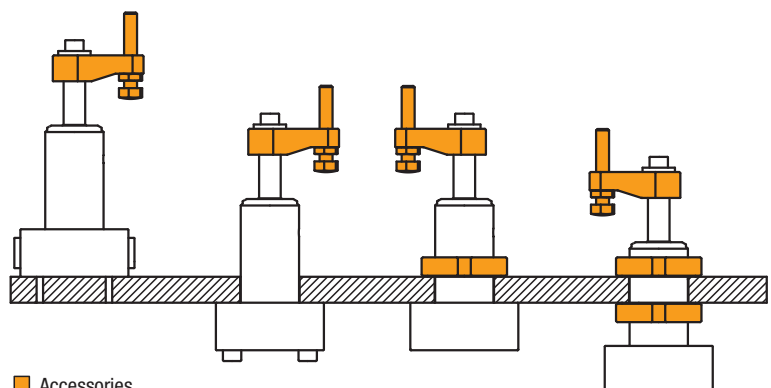
Mounting options:



Accessories

### Form B:

Mounting options:

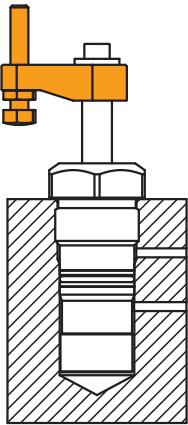


Accessories

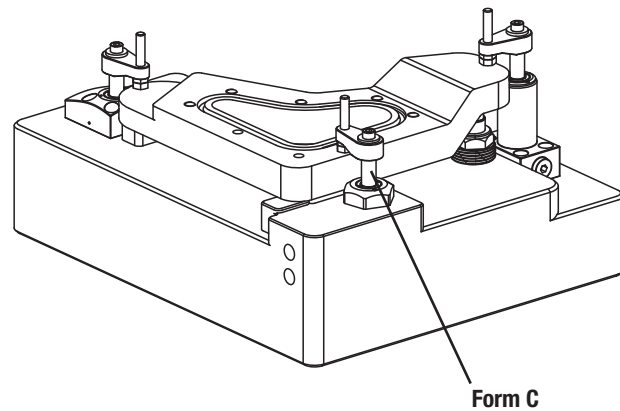
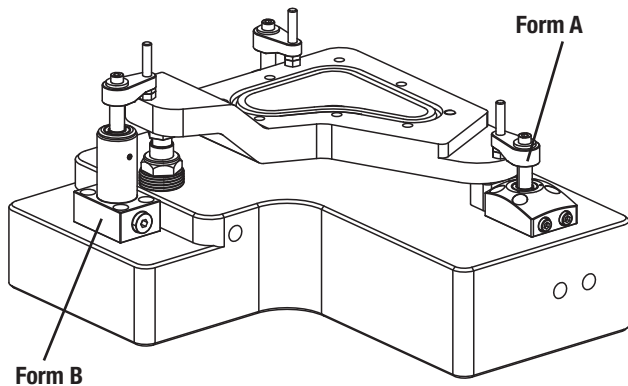
**Mounting and application examples:**



**Form C:**



■ Accessories



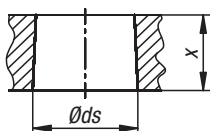
**Mounting/Removing the clamping arm:**

When mounting or removing the clamping arms, make sure that no torques are transmitted to the piston rod of the swing clamp. This can be prevented by holding the arm in place when tightening or loosening the fastening screw.

1. If the swing clamp is equipped with an overload protection, the first step is to check it by turning the piston until the overload protection can be felt to engage. A swing clamp has three engagement points at 120° intervals.
2. The installation of the clamping arms is normally carried out when the clamp is not under pressure. After the clamping arm is positioned on the piston rod, the screw or nut can be tightened. However, if an exact clamping position of the clamping arm is required, the piston of the swing clamp must be retracted under pressure. The clamping arm can then be mounted in the desired position.
3. After attaching the clamping arm, the clamping process of the swing clamp should be checked several times for correct clamping point and clamping travel.
4. After changing the clamping arm, the torque of the fastening screw should be checked again after a few clamping cycles and, if necessary, retightened.

**Connection dimensions for in-house production of clamping arms:**

**Tapered mount**



Piston $\varnothing$	(mm)	14
$\varnothing ds$	(mm)	10
x	(mm)	12
Taper ratio		1:10

## Clamping arm

for compact hydraulic swing clamps



**Single clamping arm for compact swing clamps K1862. The fastening material is supplied with the compact swing clamps.**

**Material:**  
Steel.

**Version:**  
Black oxidised.

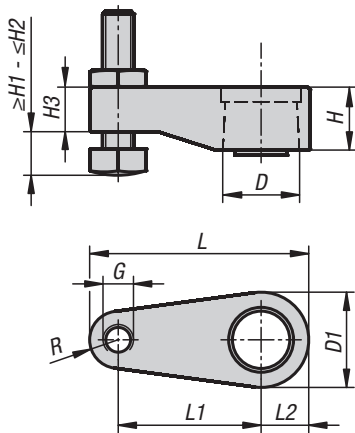
**Sample order:**  
K1863.14262

**Note:**  
Information on the clamping arm mountings as well as the effective clamping force depending on the operating pressure must be considered individually for each swing clamp.

The clamping force diagrams for the swing clamps are decisive for the dimensioning of the clamping arms. The specified operating pressure must not be exceeded and must be adjusted if necessary. The swivel movement of the clamping arms must not be hindered. The actual workpiece clamping process may only take place after the swing travel of the swing clamp is completed. The thrust pieces should be so defined that contact with the workpiece only occurs after the swivel movement has been completed. To prevent torques from being applied to the piston rod, the clamping arms must be held in place firmly during assembly.

Avoid encroachment in the swivel path. This could lead to pinching injury to the hands or other body parts.

Follow safety instructions.

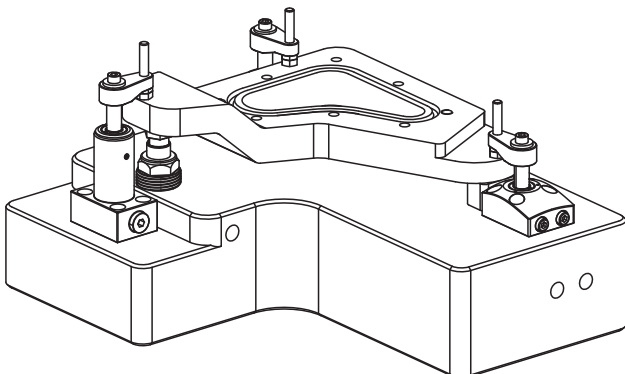
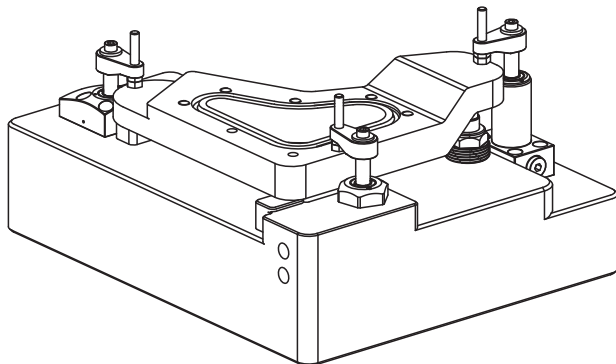


### KIPP Clamping arm for compact hydraulic swing clamps

Order No.	For piston Ø	D	D1	G	H	H1	H2	H3	L	L1	L2	L4	R
K1863.14262	14	10	10	M6	12	3,5	40	8	42	26	10	6	6

# Clamping arm

for compact hydraulic swing clamps



### Assembly:

When mounting or removing the clamping arms, make sure that no torques are transmitted to the piston rod of the swing clamp. This can be prevented by holding the arm in place when tightening or loosening the fastening screw.

1. If the swing clamp is equipped with an overload protection, the first step is to check it by turning the piston until the overload protection can be felt to engage. A swing clamp has three engagement points at 120° intervals.
2. The installation of the clamping arms is normally carried out when the clamp is not under pressure. After the clamping arm is positioned on the piston rod, the screw or nut can be tightened. However, if an exact clamping position of the clamping arm is required, the piston of the swing clamp must be retracted under pressure. The clamping arm can then be mounted in the desired position.
3. After attaching the clamping arm, the clamping process of the swing clamp should be checked several times for correct clamping point and clamping travel.
4. After changing the clamping arm, the torque of the fastening screw should be checked again after a few clamping cycles and, if necessary, retightened.

### On request:

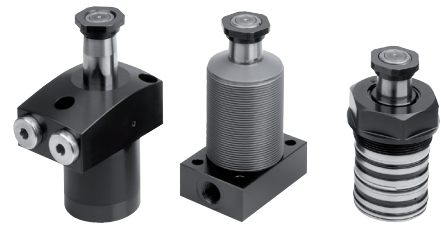
Other sizes and types.

### Accessories:

- Rest pads K0307.
- Self-aligning pads K0282, K0302, K1164, K0287, K0288.
- Gripper screws, hexagonal K0386.

## Swing clamps, hydraulic

double / single-acting with spring return



Swing clamps are designed for clamping fixtures where the clamping points must be clear during workpiece removal or placement. These swing clamps operate as single-acting or double-acting traction cylinders. There is a choice of three housing types for the swing clamps as well as various actuation methods. The clamping movement is initiated by a combined swivel and stroke motion. The actual clamping travel then occurs with a linear movement. A wide range of variants with a left or right swivel angle of 90° are available. The swing clamps are very durable because they have a metal wiper which protects against swarf. In addition, an overload protection protects the swing mechanism from damage if the swing process is blocked.

**Material:**  
Housing and piston steel.  
Seal NBR

**Version:**  
Housing black oxidised.  
Piston hardened.

**Sample order:**  
K1864.25101404190111

**Note:**  
If the permissible volume flow on the swing clamp could be exceeded, an intermediate throttle check valve must be installed. The permissible operating pressure of the swing clamps depends on the clamping arm length. The clamping arms must be restrained when being mounted so that the ball guide of the swing clamps is not damaged. Depending on the vent connection, the sinter filter of the single-acting swing clamps must be replaced by a screw plug.

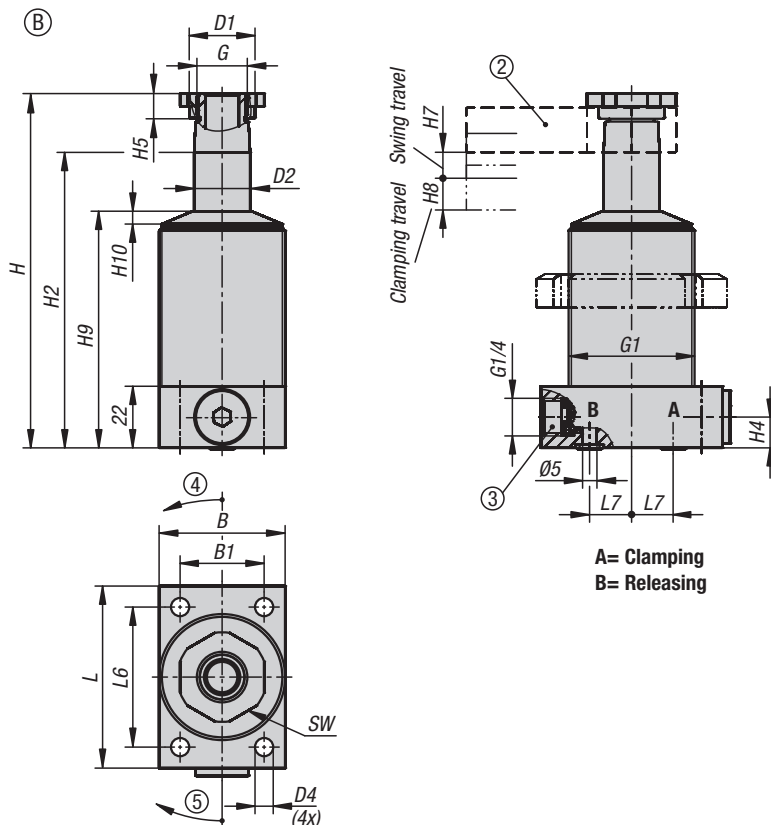
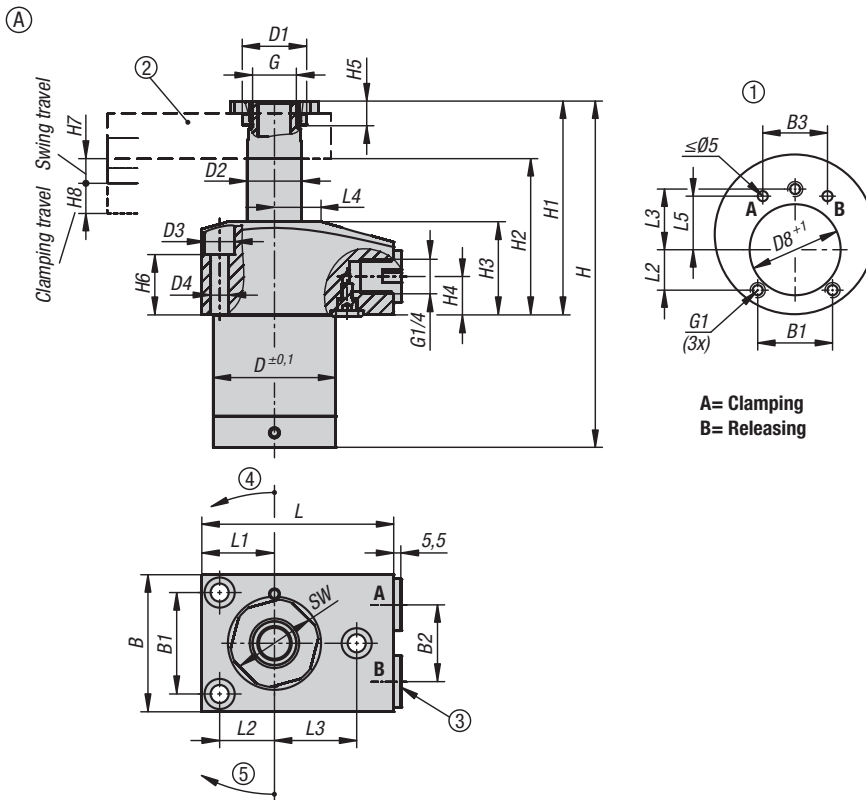
The clamping arm of the swing clamp is not supplied.

Follow safety instructions.

**Method of operation:**  
- Thread connection.  
- O-ring flange connection.  
- Drilled channels.

**Assembly:**  
See mounting contour.

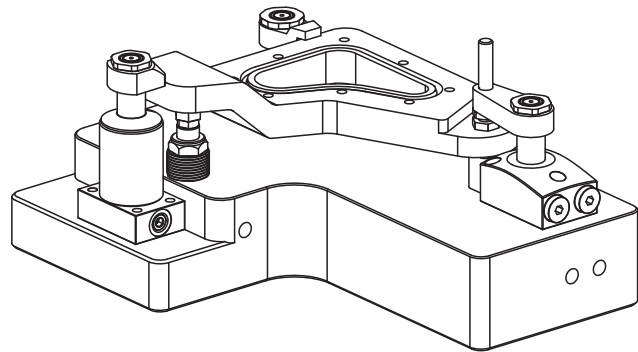
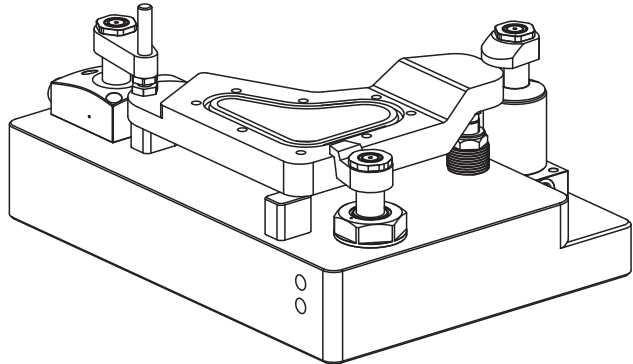
**Advantages:**  
- Integrated metal wiper.  
- Integrated overload protection.  
- Collision-free accessibility to the workpiece.  
- Many types.  
- Pressure supplied over diverse connection possibilities.





## Swing clamps, hydraulic

double / single-acting with spring return



**On request:**

Larger piston diameters and longer strokes, other swivel angles, various clamping arm mounts, with position control.

**Supplied with:**

Supplied with 1 screw or nut for mounting the clamping arm.

**Accessories:**

Clamping arm for swing clamp K1865.

**Technical data:**

Max. operating pressure: 500 bar.

**Drawing reference:**

- Form A: Flange top
- Form B: Flange under
- Form C: Screw-on thread

- 1) Mounting contour
- 2) See accessories
- 3) By the single-acting cylinders, the port is equipped with a built-in sinter filter.
- 4) Left swivel
- 5) Right swivel
- 6) clamp
- 7) release or vent by single acting cylinders

### KIPP Swing clamps, hydraulic

Order No. double-acting	Order No. single-acting	Form	Connection type	Swivel direction	Piston Ø	travel	B	B1	B2	B3	D	D1	D2	D3	D4	D8	G	G1
K1864.25101404190211	K1864.25102404190211	A	Thread and O-ring connection	left	25	10	50	37	28	32	44,8	23,5	20	11	6,6	45	M18x1,5	M6
K1864.25101404190111	K1864.25102404190111	A	Thread and O-ring connection	ght	25	10	50	37	28	32	44,8	23,5	20	11	6,6	45	M18x1,5	M6
K1864.25251404190211	-	A	Thread and O-ring connection	left	25	25	50	37	28	32	44,8	23,5	20	11	6,6	45	M18x1,5	M6
K1864.25251404190111	-	A	Thread and O-ring connection	ght	25	25	50	37	28	32	44,8	23,5	20	11	6,6	45	M18x1,5	M6
K1864.40131404190211	K1864.40132404190211	A	Thread and O-ring connection	left	40	13	63	48	41	46	59,8	33,5	32	15	9	60	M28x1,5	M8
K1864.40131404190111	K1864.40132404190111	A	Thread and O-ring connection	ght	40	13	63	48	41	46	59,8	33,5	32	15	9	60	M28x1,5	M8
K1864.40251404190111	-	A	Thread and O-ring connection	ght	40	25	63	48	41	46	59,8	33,5	32	15	9	60	M28x1,5	M8
K1864.40251404190211	-	A	Thread and O-ring connection	left	40	25	63	48	41	46	59,8	33,5	32	15	9	60	M28x1,5	M8

Order No. double-acting	Order No. single-acting	Form	H	H1	H2	H3	H4	H5	H6	H7	H8	L	L1	L2	L3	L4	L5	SW	Flow rate max. (cm³/s)	Oil requirement / stroke (cm³)	Oil requirement / return stroke (cm³)
K1864.25101404190211	K1864.25102404190111	A	126,5	78	57	34	14	9	18	8	10	70	26,5	20	30	17	26,5	27	3,2	3,2	8,8/-
K1864.25101404190111	K1864.25102404190211	A	126,5	78	57	34	14	9	18	8	10	70	26,5	20	30	17	26,5	27	3,2	3,2	8,8/-
K1864.25251404190211	-	A	158,5	94	73	34	14	9	18	10	25	70	26,5	20	30	17	26,5	27	3,2	6	17
K1864.25251404190111	-	A	158,5	94	73	34	14	9	18	10	25	70	26,5	20	30	17	26,5	27	3,2	6	17
K1864.40131404190211	K1864.40132404190111	A	147,5	94	66	40	14	10	19	9	13	85	34,5	27	38	24	31	40	10	10	27,7/-
K1864.40131404190111	K1864.40132404190211	A	147,5	94	66	40	14	10	19	9	13	85	34,5	27	38	24	31	40	10	10	27,7/-
K1864.40251404190111	-	A	173,5	107	79	40	14	10	19	10	25	85	34,5	27	38	24	31	40	10	16	44
K1864.40251404190211	-	A	173,5	107	79	40	14	10	19	10	25	85	34,5	27	38	24	31	40	10	16	44

## Swing clamps, hydraulic

double / single-acting with spring return



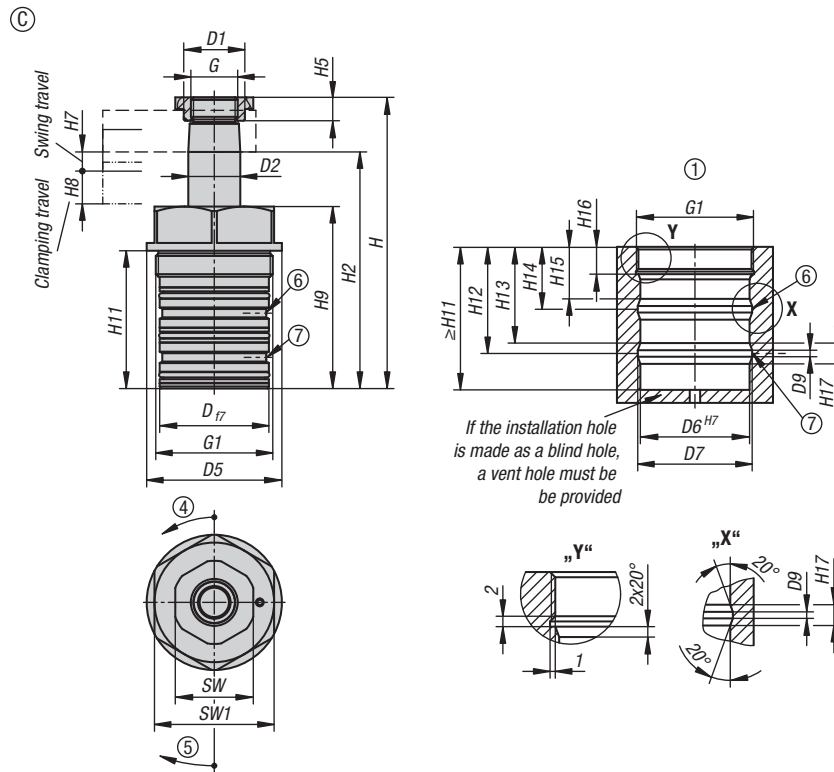
Order No. double-acting	Order No. single-acting	Form	Connection type	Swivel direction	Piston Ø	travel	B	B1	D1	D2	D4	G	G1
K1864.25101105190211	K1864.25102105190211	B	screw connection	left	25	10	45	30	23,5	20	6,5	M18x1,5	M45x1,5
K1864.25101105190111	K1864.25102105190111	B	screw connection	ght	25	10	45	30	23,5	20	6,5	M18x1,5	M45x1,5
K1864.25101205190211	K1864.25102205190211	B	o-ring flange connection	left	25	10	45	30	23,5	20	6,5	M18x1,5	M45x1,5
K1864.25101205190111	K1864.25102205190111	B	o-ring flange connection	ght	25	10	45	30	23,5	20	6,5	M18x1,5	M45x1,5
K1864.25251105190111	-	B	screw connection	ght	25	25	45	30	23,5	20	6,5	M18x1,5	M45x1,5
K1864.25251105190211	-	B	screw connection	left	25	25	45	30	23,5	20	6,5	M18x1,5	M45x1,5
K1864.25251205190111	-	B	o-ring flange connection	ght	25	25	45	30	23,5	20	6,5	M18x1,5	M45x1,5
K1864.25251205190211	-	B	o-ring flange connection	left	25	25	45	30	23,5	20	6,5	M18x1,5	M45x1,5
K1864.40131105190211	K1864.40132105190211	B	screw connection	left	40	13	63	44	33,5	32	8,5	M28x1,5	M60x1,5
K1864.40131105190111	K1864.40132105190111	B	screw connection	ght	40	13	63	44	33,5	32	8,5	M28x1,5	M60x1,5
K1864.40131205190111	K1864.40132205190111	B	o-ring flange connection	ght	40	13	63	44	33,5	32	8,5	M28x1,5	M60x1,5
K1864.40131205190211	K1864.40132205190211	B	o-ring flange connection	left	40	13	63	44	33,5	32	8,5	M28x1,5	M60x1,5
K1864.40251105190111	-	B	screw connection	ght	40	25	63	44	33,5	32	8,5	M28x1,5	M60x1,5
K1864.40251105190211	-	B	screw connection	left	40	25	63	44	33,5	32	8,5	M28x1,5	M60x1,5
K1864.40251205190111	-	B	o-ring flange connection	ght	40	25	63	44	33,5	32	8,5	M28x1,5	M60x1,5
K1864.40251205190211	-	B	o-ring flange connection	left	40	25	63	44	33,5	32	8,5	M28x1,5	M60x1,5

Order No. double-acting	Order No. single-acting	Form	H	H2	H4	H5	H7	H8	H9	H10	L	L6	L7	SW	Flow rate max. (cm <sup>3</sup> /s)	Oil requirement / stroke (cm <sup>3</sup> )	Oil requirement / return stroke (cm <sup>3</sup> )
K1864.25101105190211	K1864.25102105190111	B	126,5	105,5	11	9	8	10	84,5	5	65	50	15	27	3,2	3,2	8,8/-
K1864.25101105190111	K1864.25102105190211	B	126,5	105,5	11	9	8	10	84,5	5	65	50	15	27	3,2	3,2	8,8/-
K1864.25101205190211	K1864.25102205190111	B	126,5	105,5	11	9	8	10	84,5	5	65	50	15	27	3,2	3,2	8,8/-
K1864.25101205190111	K1864.25102205190211	B	126,5	105,5	11	9	8	10	84,5	5	65	50	15	27	3,2	3,2	8,8/-
K1864.25251105190111	-	B	158,5	137,5	11	9	10	25	100,5	5	65	50	15	27	3,2	6	17
K1864.25251105190211	-	B	158,5	137,5	11	9	10	25	100,5	5	65	50	15	27	3,2	6	17
K1864.25251205190111	-	B	158,5	137,5	11	9	10	25	100,5	5	65	50	15	27	3,2	6	17
K1864.25251205190211	-	B	158,5	137,5	11	9	10	25	100,5	5	65	50	15	27	3,2	6	17
K1864.40131105190211	K1864.40132105190111	B	147,5	119,5	11	10	9	13	94,5	6	85	65	28	40	10	10	27,7/-
K1864.40131105190111	K1864.40132105190211	B	147,5	119,5	11	10	9	13	94,5	6	85	65	28	40	10	10	27,7/-
K1864.40131205190111	K1864.40132205190111	B	147,5	119,5	11	10	9	13	94,5	6	85	65	28	40	10	10	27,7/-
K1864.40131205190211	K1864.40132205190211	B	147,5	119,5	11	10	9	13	94,5	6	85	65	28	40	10	10	27,7/-
K1864.40251105190111	-	B	173,5	145,5	11	10	10	25	107,5	6	85	65	28	40	10	16	44
K1864.40251105190211	-	B	173,5	145,5	11	10	10	25	107,5	6	85	65	28	40	10	16	44
K1864.40251205190111	-	B	173,5	145,5	11	10	10	25	107,5	6	85	65	28	40	10	16	44
K1864.40251205190211	-	B	173,5	145,5	11	10	10	25	107,5	6	85	65	28	40	10	16	44

Order No. double-acting	Order No. single-acting	Form	Connection type	Swivel direction	Piston Ø	travel	D	D1	D2	D5	D6	D7	D9	G	G1
K1864.25101306190111	K1864.25102306190111	C	drilled channels	ght	25	10	42	23,5	20	52	42	44	5	M18x1,5	M45x1,5
K1864.25101306190211	K1864.25102306190211	C	drilled channels	left	25	10	42	23,5	20	52	42	44	5	M18x1,5	M45x1,5
K1864.40131306190111	K1864.40132306190111	C	drilled channels	ght	40	13	55	33,5	32	64	55	57	5	M28x1,5	M60x1,5
K1864.40131306190211	K1864.40132306190211	C	drilled channels	left	40	13	55	33,5	32	64	55	57	5	M28x1,5	M60x1,5

## Swing clamps, hydraulic

double / single-acting with spring return



Order No. double-acting	Order No. single-acting	Form	H	H2	H5	H7	H8	H9	H11	H12	H13	H14	H15	H16	H17	SW	SW1	Flow rate max. (cm <sup>3</sup> /s)	Oil requirement / stroke (cm <sup>3</sup> )	Oil requirement / return stroke / stroke (cm <sup>3</sup> )
K1864.25101306190111	K1864.25102306190111	C	112	91	9	8	10	70	53	41	37	24	20	10,5	8	27	46	3,2	3,2	8,8/-
K1864.25101306190211	K1864.25102306190211	C	112	91	9	8	10	70	53	41	37	24	20	10,5	8	27	46	3,2	3,2	8,8/-
K1864.40131306190111	K1864.40132306190111	C	152	124	10	9	13	99	66	46,5	41,5	29	24	12,5	10	40	55	10	10	27,7/-
K1864.40131306190211	K1864.40132306190211	C	152	124	10	9	13	99	66	46,5	41,5	29	24	12,5	10	40	55	10	10	27,7/-

# Selection guide for hydraulic swing clamps:



## 1. Piston diameter:

Example:

..... **25**101205190111

## 3. Mode of operation selection:

Example:

..... **25101**205190111

1 = double-acting

2 = single-acting with spring return

## 2. Travel:

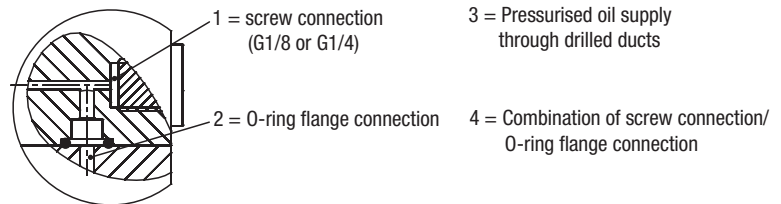
Example:

..... **2510**1205190111

## 4. Selection of oil supply connection type:

Example:

..... **251012**05190111

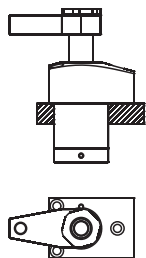


Please note:  
The mounting contour of the respective swing clamps.

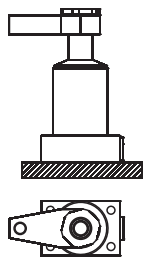
## 5. Selection of the housing design:

Example:

..... **25101205**190111



04 = Flange on top



05 = Flange under



06 = Screw-on thread with drilled channels

## 6. Selection of seal type:

Example:

..... **251012051**90111

1 = NBR seal

## 7. Selection of swivel angle:

Example:

..... **25101205190**111

90 = 90°

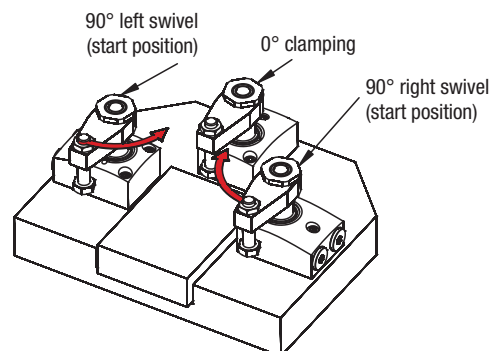
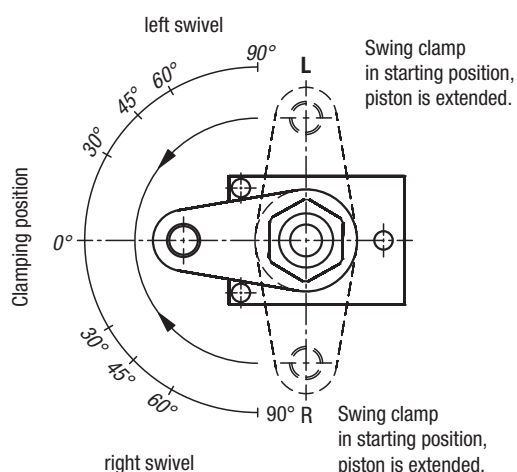
## 8. Selection of swivel direction:

Example:

..... **251012051901**11

1 = Right swivel

2 = Left swivel



# Selection guide for hydraulic swing clamps:



## 9. Selection of overload protection:

Example:

..... 25101205190111

1 = Overload protection

## 10. Selection of metal wiper:

Example:

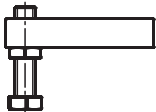
..... 25101205190111

1 = Metal wiper

## 11. Selection of clamping arm for swing clamp:

- Swing clamps are supplied with a taper mount with fastening nut.
- Clamping arms for swing clamps must be ordered separately.

Form A



Form B



Form C



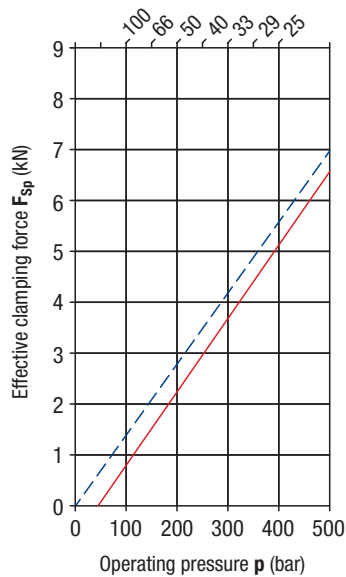
Form D



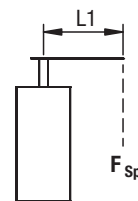
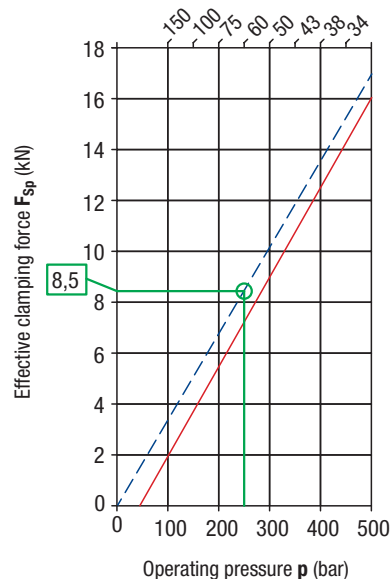
### clamping force diagram

Max. clamping arm length L1 must be observed.

Piston Ø 25 mm



Piston Ø 40 mm



- - - double-acting
- single-acting

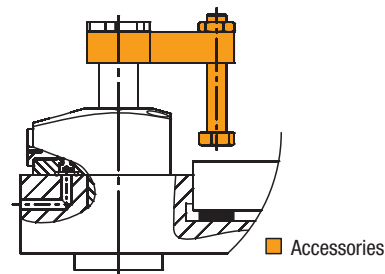
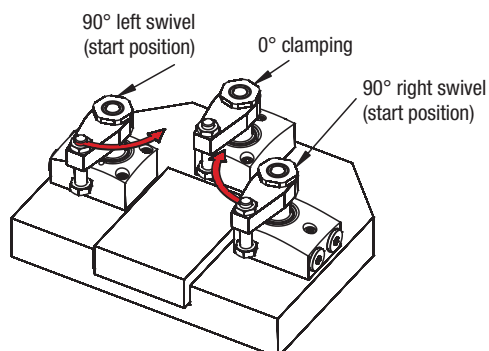
### Example:

- double-acting cylinder, piston Ø 40 mm
- available operating pressure  $p = 250$  bar
- Form A clamping arm length  $L1 = 60$  mm
- resulting clamping force  $F_{Sp} \sim 8.5$  kN

The counteracting spring return force by the single-acting swivel clamps reduces the clamping force slightly. To achieve the same clamping force as with the double-acting swing clamps, the operating pressure must be increased slightly.

## Mounting and application examples:

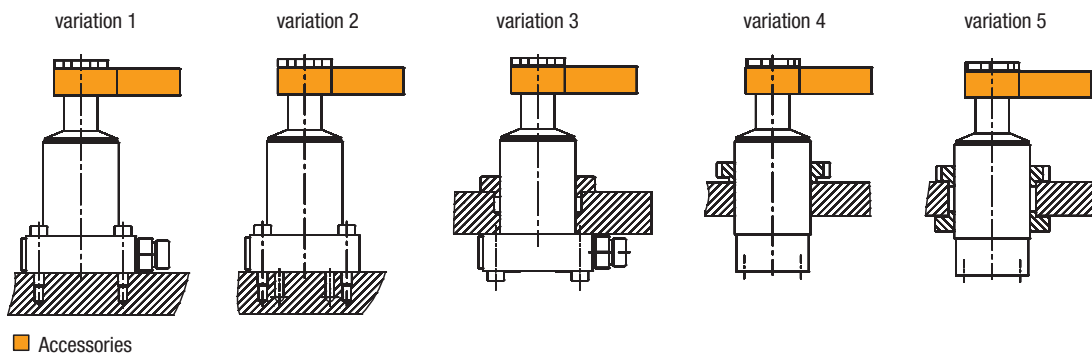
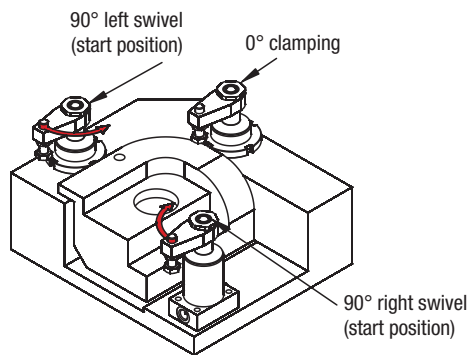
### Form A:



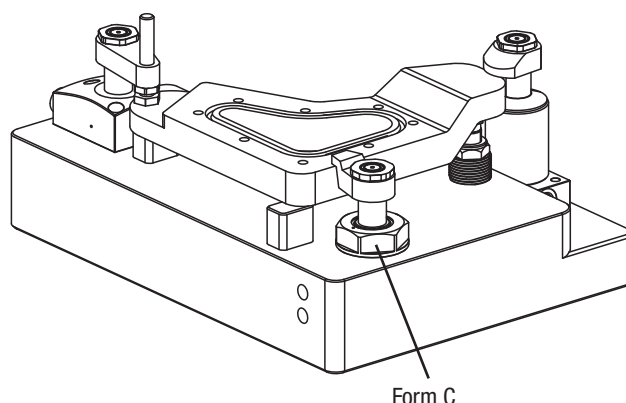
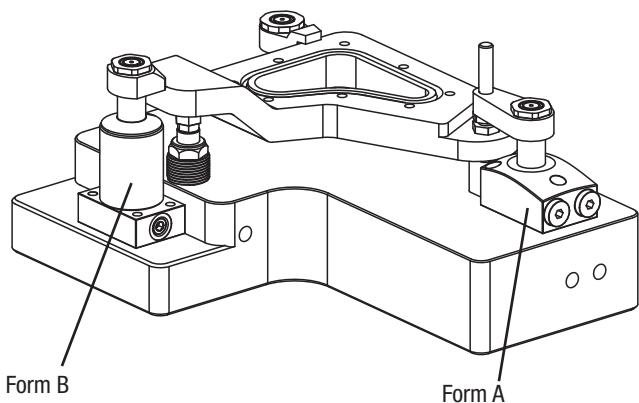
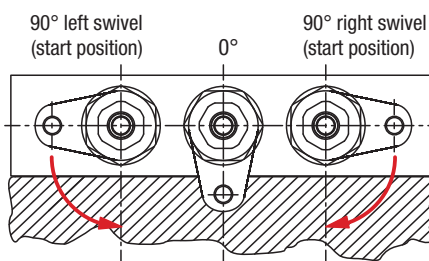
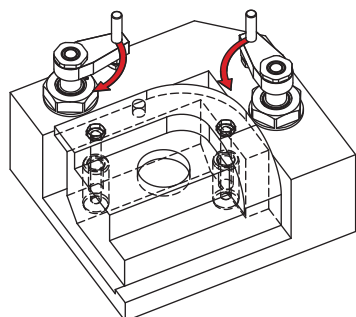
A pipe thread connection or O-ring flange connection can be used depending on the application.

**Mounting and application examples:**

**Form B:**



**Form C:**



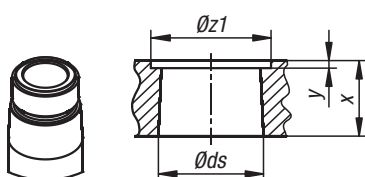
### **Mounting/Removing the clamping arm:**

When mounting or removing the clamping arms, make sure that no torques are transmitted to the piston rod of the swing clamp. This can be prevented by holding the arm in place when tightening or loosening the fastening screw.

1. If the swing clamp is equipped with an overload protection, the first step is to check it by turning the piston until the overload protection can be felt to engage. A swing clamp has three engagement points at 120° intervals.
2. The installation of the clamping arms is normally carried out when the clamp is not under pressure. After the clamping arm is positioned on the piston rod, the screw or nut can be tightened. However, if an exact clamping position of the clamping arm is required, the piston of the swing clamp must be retracted under pressure. The clamping arm can then be mounted in the desired position.
3. After attaching the clamping arm, the clamping process of the swing clamp should be checked several times for correct clamping point and clamping travel.
4. After changing the clamping arm, the torque of the fastening screw should be checked again after a few clamping cycles and, if necessary, retightened.

### **Connection dimensions for in-house production of clamping arms:**

#### **Tapered mount**



Piston $\varnothing$	(mm)	25	40
$\varnothing ds$	(mm)	20	32
$\varnothing z1$	(mm)	24	34
x	(mm)	16	23
y	(mm)	4	5
Taper ratio		1:10	1:10

Attention: Observe protruding edges of the housing.

## Clamping arm

for hydraulic swing clamps



**Single clamping arms for the swing clamp K1864. Different clamping situations can be realised with the different clamping arm designs. Fastening materials are supplied with the clamping arms.**

**Material:**  
Steel.

**Version:**  
Black oxidised.

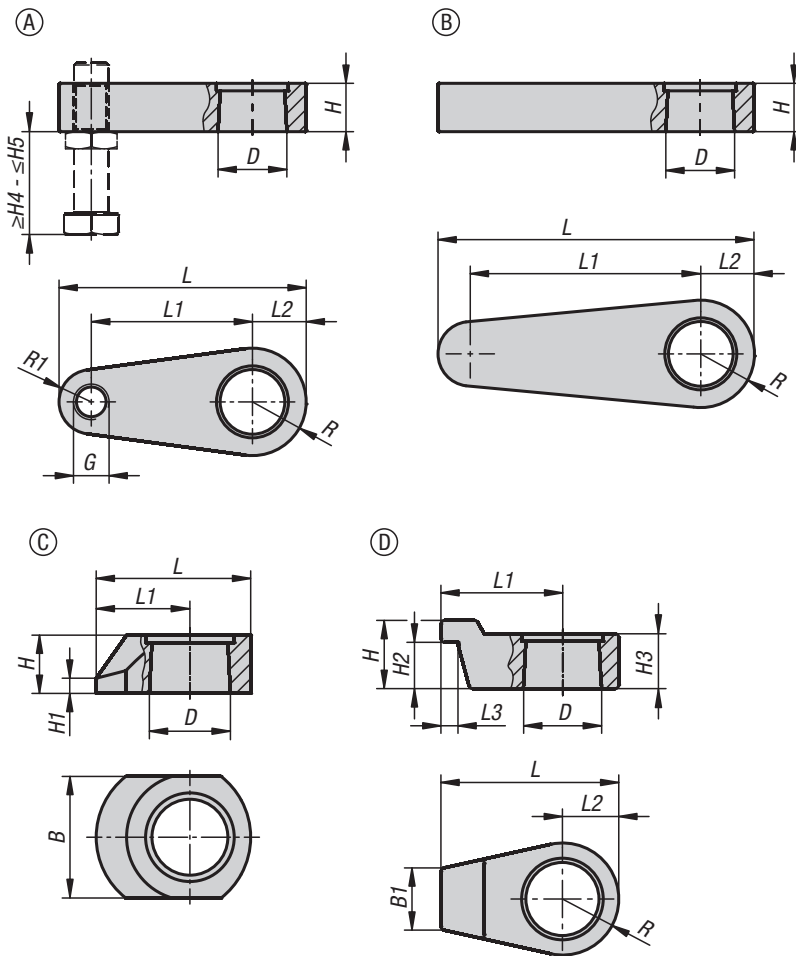
**Sample order:**  
K1865.25501

**Note:**  
Information on the clamping arm mountings as well as the effective clamping force depending on the operating pressure must be considered individually for each swing clamp.

The clamping force diagrams for the swing clamps are decisive for the dimensioning of the clamping arms. The specified operating pressure must not be exceeded and must be adjusted if necessary. The swivel movement of the clamping arms must not be hindered. The actual workpiece clamping process may only take place after the swing travel of the swing clamp is completed. The thrust pieces should be so defined that contact with the workpiece only occurs after the swivel movement has been completed. To prevent torques from being applied to the piston rod, the clamping arms must be held in place firmly during assembly.

Avoid encroachment in the swivel path. This could lead to pinching injury to the hands or other body parts.

Follow safety instructions.



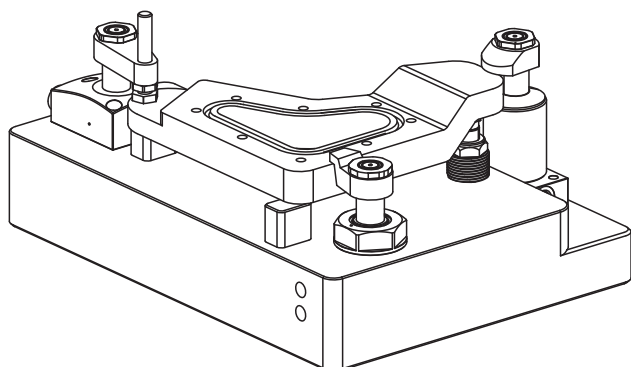
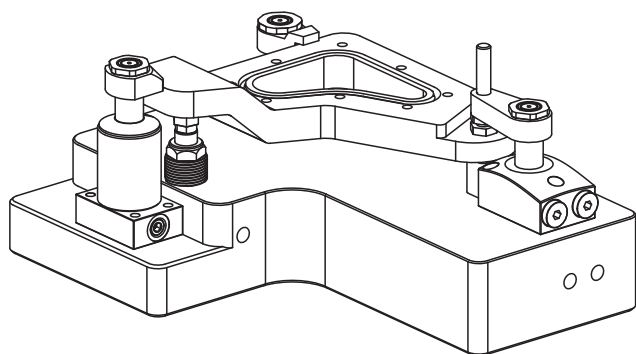
### KIPP Clamping arm for hydraulic swing clamps

Order No.	Form	Form-Type	For piston Ø	B	B1	D	H	H1	H2	H3	H4	H5	L	L1	L2	L3	R	R1
K1865.25502	A	Thread with thrust screw	25	-	-	20	16	-	-	-	10	64	75	50	16	-	16	9
K1865.40752	A	Thread with thrust screw	40	-	-	32	23	-	-	-	15	79	115	75	25	-	25	15
K1865.25501	B	without thread	25	-	-	20	16	-	-	-	-	-	75	50	16	-	16	-
K1865.40751	B	without thread	40	-	-	32	23	-	-	-	-	-	115	75	25	-	25	-
K1865.25253	C	-	25	32	-	20	16	6	-	-	-	-	41	25	-	-	-	-
K1865.40373	C	-	40	48	-	32	23	6	-	-	-	-	61	37	-	-	-	-
K1865.25334	D	-	25	-	14	20	21	-	14,5	15,5	-	-	51,5	35,5	16	7	16	-
K1865.40504	D	-	40	-	25	32	28	-	19	22,5	-	-	76	53	23	7	23	-



# Clamping arm

for hydraulic swing clamps



### Assembly:

When mounting or removing the clamping arms, make sure that no torques are transmitted to the piston rod of the swing clamp. This can be prevented by holding the arm in place when tightening or loosening the fastening screw.

1. If the swing clamp is equipped with an overload protection, the first step is to check it by turning the piston until the overload protection can be felt to engage. A swing clamp has three engagement points at 120° intervals.
2. The installation of the clamping arms is normally carried out when the clamp is not under pressure. After the clamping arm is positioned on the piston rod, the screw or nut can be tightened. However, if an exact clamping position of the clamping arm is required, the piston of the swing clamp must be retracted under pressure. The clamping arm can then be mounted in the desired position.
3. After attaching the clamping arm, the clamping process of the swing clamp should be checked several times for correct clamping point and clamping travel.
4. After changing the clamping arm, the torque of the fastening screw should be checked again after a few clamping cycles and, if necessary, retightened.

### On request:

Other sizes and types.

### Accessories:

- Rest pads K0307.
- Self-aligning pads K0302, K1164, K0287, K0288.
- Gripper screws, hexagonal K0386.

### Technical data:

- Max. operating pressure Form A and B: 200 bar.
- Max. operating pressure Form C: 500 bar.
- Max. operating pressure Form D: 300 bar.

# Rotary lever clamps, hydraulic

double / single-acting with spring return



Rotary lever clamps are highly suited for use in cramped conditions. Due to the compactness of the rotary lever clamps, they can be used in a variety of ways in clamping fixtures with little use of space and thus often enable flexible solutions.

**Material:**

Housing and piston steel.

**Version:**

Housing black oxidised.

Piston hardened.

**Sample order:**

K1856.201304

**Note:**

In the rotary lever clamps, the clamping lever is connected to the piston rod. The clamping lever is released and opened by means of spring tension for single-acting rotary lever clamps and by means of a pressure medium for double-acting clamps. The oil supply for the rotary lever clamps is via drilled channels.

When clamping with the rotary lever clamp, the clamping lever moves towards the workpiece with a straight stroke and clamps it. To release the workpiece, the clamping lever retracts so far that the workpiece can be removed vertically. The single stroke of a rotary lever clamp depends on the clamping lever selection.

The clamping elements must be checked regularly for dirt and cleaned if necessary.

When selecting the installation position, it must be ensured that no swarf nests can form in the swivel area of the lever of the rotary lever clamp.

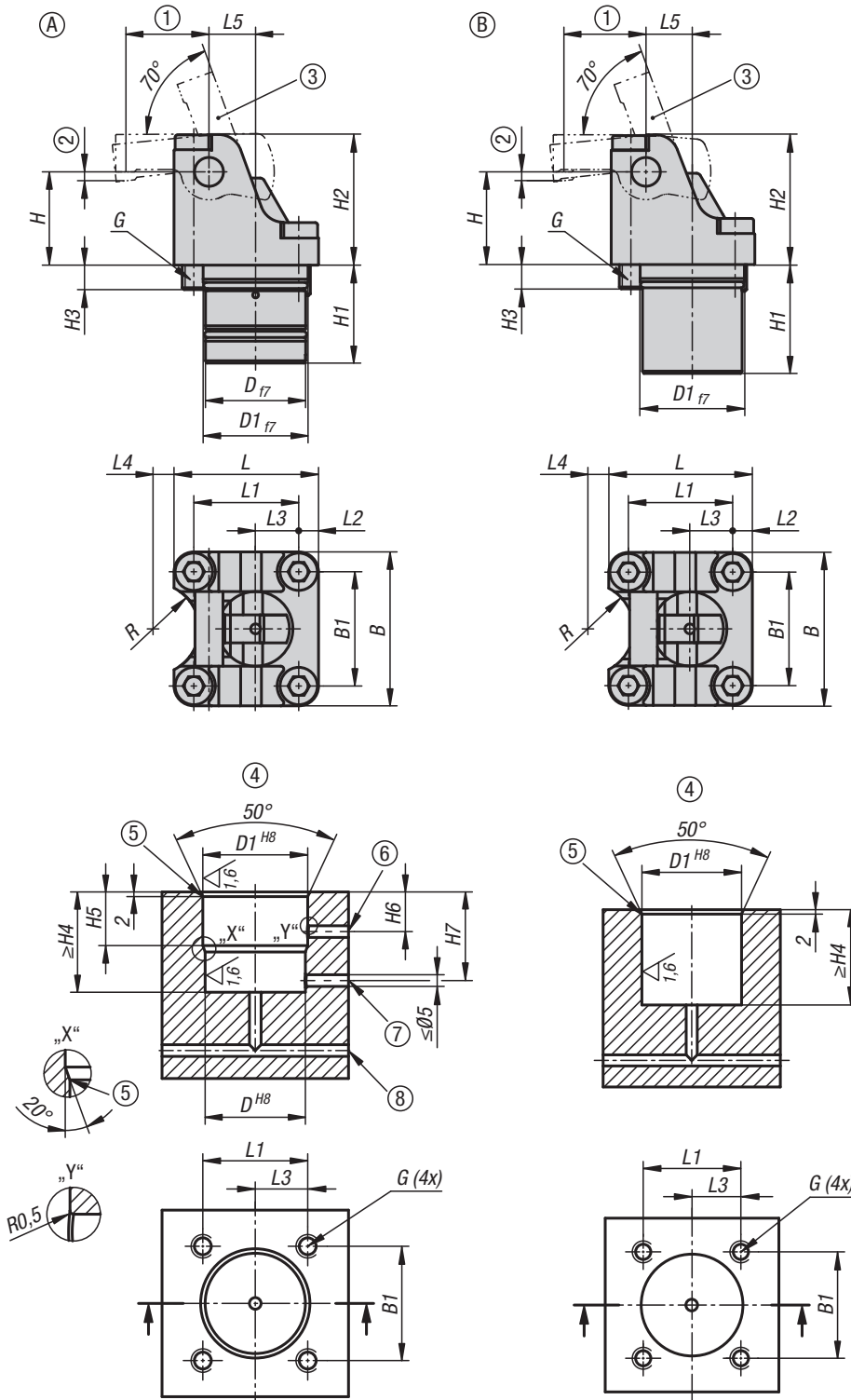
The flange surface of the rotary lever clamp should be adapted to the height of the workpiece during installation and a horizontal positioning of the clamping point should be available.

By positioning the rotary lever clamp correctly, workpiece tolerances can be optimally compensated for despite the short clamping lever.

Large forces can be generated with the rotary lever clamps. It must be ensured that the workpieces and clamping fixtures are designed for these loads.

Rotary lever clamps can be fitted with individual tension levers. The clamping force of a rotary lever clamp is dependent on the lever length.

The tension lever for the rotary lever clamp is not supplied.

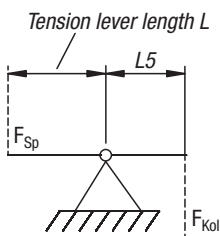


# Rotary lever clamps, hydraulic

double / single-acting with spring return



## Calculating the effective clamping force with hydraulic rotary lever clamps:



Effective clamping force  $F_{Sp}$  is dependent on piston force  $F_{Kol}$  and tension lever length  $L$

### Calculation:

$$\text{Clamping force } F_{Sp} = \frac{F_{Kol} \times L5}{L}$$

$$\text{Clamping force } F_{Sp} = \frac{2.5 \text{ kN} \times 10 \text{ mm}}{18 \text{ mm}} = 1.39 \text{ kN}$$

### Example:

Rotary lever clamp cylinder size 16

Operating pressure 100 bar

Piston force  $F_{Kol}$  at 100 bar = 2.5 kN

Dimension L5 acc. to table = 10 mm

Tension lever length  $L = 18 \text{ mm}$

Resulting effective clamping force  $F_{Sp} = 1.39 \text{ kN}$

Follow safety instructions.

### Method of operation:

Drilled channels.

### Assembly:

See mounting contour.

### Advantages:

- No lateral forces during clamping.
- Low mounting dimensions.
- Wide selection of levers.
- Collision-free accessibility to the workpiece.
- Lineless pressure supply.

### On request:

Larger piston diameters, longer strokes and with position control.

### Supplied with:

Supplied with 4 DIN EN ISO 4762 cap screws, grade 8.8.

### Accessories:

Tension levers for rotary lever clamps K1857.

### Technical data:

Max. operating pressure: 400 bar.

### Drawing reference:

- 1) Tension lever length (see K1857)
- 2) Travel (see K1857)
- 3) See accessories
- 4) Mounting contour
- 5) Rounded edges
- 6) Loosen
- 7) Clamping alternative
- 8) Clamping

## Rotary lever clamps, hydraulic

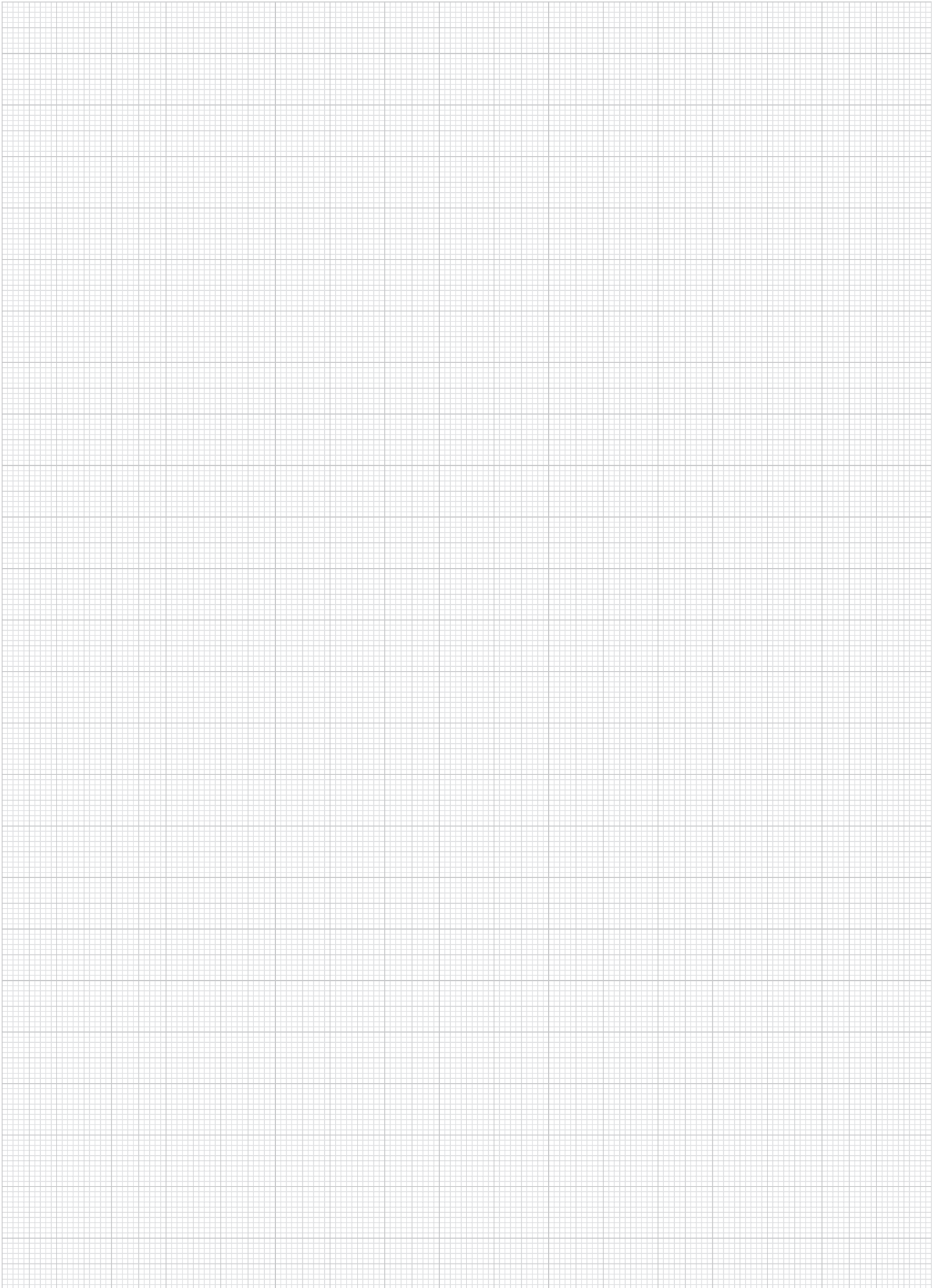
double / single-acting with spring return



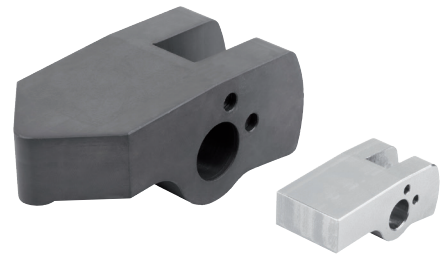
### KIPP Rotary lever clamps, hydraulic

Order No.	Form	Form-Type	Piston Ø	B	B1	D	D1	G	G1	H	H1	H2	H3	H4
K1856.121304	A	double-acting	12	27	19,5	19,4	20	M4	M4x8	15	21	21	7,5	21,5
K1856.161304	A	double-acting	16	34	25	23	24	M5	M5x12	20	26	28	10,5	26,5
K1856.201304	A	double-acting	20	40	30	29	30	M6	M6x10	25	32,5	35	9	33
K1856.251304	A	double-acting	25	52	38,5	35	36	M8	M8x12	31,25	37	43,75	11,5	38
K1856.321304	A	double-acting	32	66	49	43	45	M10	M10x15	40	42	56	13	43
K1856.401304	A	double-acting	40	78	59	53	55	M12	M12x18	50	47	70	17,5	48
K1856.122304	B	single-acting	12	27	19,5	-	20	M4	M4x8	15	23	21	7,5	23,5
K1856.162304	B	single-acting	16	34	25	-	24	M5	M5x12	20	26	28	10,5	26,5
K1856.202304	B	single-acting	20	40	30	-	30	M6	M6x10	25	32,5	35	9	33
K1856.252304	B	single-acting	25	52	38,5	-	36	M8	M8x12	31,25	37	43,75	11,5	38
K1856.322304	B	single-acting	32	66	49	-	45	M10	M10x15	40	47	56	11,5	48
K1856.402304	B	single-acting	40	78	59	-	55	M12	M12x18	50	55	70	17,5	56

Order No.	Form	H5	H6	H7	L	L1	L2	L3	L4	L5	R	Piston force at 100 bar (kN)	Piston force at 400 bar (kN)	Volume (cm <sup>3</sup> )	Effective piston area (cm <sup>2</sup> )
K1856.121304	A	14	11	23	26	18,5	3,75	8,75	7,5	7,5	10,6	1,7	7	1,06	1,77
K1856.161304	A	17	13	26	32	23	4,5	9,5	10	10	14,2	2,8	11,3	2,03	2,83
K1856.201304	A	17	14	31	40	30	5	13,5	11	12,5	15,7	4,5	18	4,52	4,52
K1856.251304	A	20	15	33	49	35,5	6,75	14,75	11	15,63	18,7	6,15	24,6	8,82	6,15
K1856.321304	A	23	17	38	62	45	8,5	18,5	9	20	19,7	10,1	40,6	16,27	10,17
K1856.401304	A	25	19	40	74	55	9,5	21,5	12	25	24,7	15,9	63,6	31,8	15,9
K1856.122304	B	-	-	-	26	18,5	3,75	8,75	7,5	7,5	10,6	1,1	4,4	0,68	1,13
K1856.162304	B	-	-	-	32	23	4,5	9,5	10	10	14,2	1,9	8	1,61	2,01
K1856.202304	B	-	-	-	40	30	5	13,5	13,5	12,5	15,7	3	12,4	3,14	3,14
K1856.252304	B	-	-	-	49	35,5	6,75	14,75	11	15,63	18,7	4,7	19,4	6,14	4,91
K1856.322304	B	-	-	-	62	45	8,5	18,5	9	20	19,7	7,8	32	12,9	8,04
K1856.402304	B	-	-	-	74	55	9,5	21,5	12	25	24,7	12,3	50	25,2	12,57



# Tension levers for rotary lever clamps



The tension lever can be used for the hydraulic rotary lever clamp K1856 or the pneumatic rotary lever clamp K1870. The "standard" tension lever or the „blank“ tension lever can be selected. The „standard“ tension lever is finish machined and can be mounted directly. The „blank“ tension lever can be individually machined to suit. The blank lever is made from unhardened steel for easier machining. After the individual contour has been machined, the tension levers must be annealed and hardened before mounting to prevent deformation of the levers during use.

**Material:**  
Standard and blank steel.

**Version:**  
Standard hardened.  
Blank not hardened.

**Sample order:**  
K1857.12131

**Note:**  
By positioning the rotary lever clamp correctly, workpiece tolerances can be optimally compensated for despite the short clamping lever.

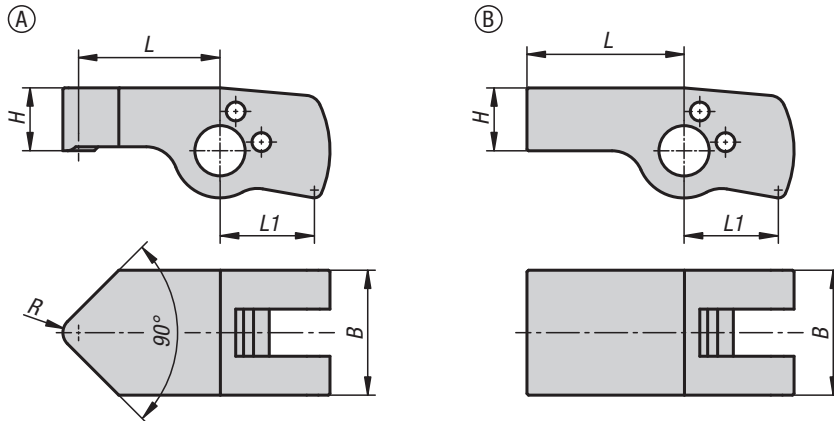
The clamping elements must be checked regularly for dirt and cleaned if necessary. The effective clamping force must be calculated for every tension lever. The optimum tension lever position is 90°. The following hardness grade must be achieved before a „blank“ tension lever is used: Hardened depth 0.3 + 0.2 HRC 50 +/- 2.

Follow safety instruction.

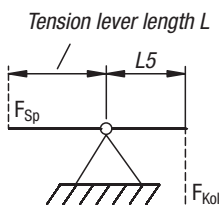
**Assembly:**  
The tension lever is attached to the piston of the rotary lever clamp and secured with a dowel pin. The tension lever is thus axially secured and secured against rotation.

**On request:**  
Other sizes and types.

**Drawing reference:**  
Form A: Standard  
Form B: Blank



## Calculating the effective clamping force with hydraulic rotary lever clamps:



Effective clamping force  $F_{Sp}$  is dependent on piston force  $F_{Kol}$  and tension lever length  $L$

**Calculation:**

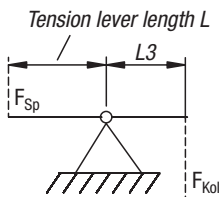
$$\text{Clamping force } F_{Sp} = \frac{F_{Kol} \times L5}{L}$$

$$\text{Clamping force } F_{Sp} = \frac{2.5 \text{ kN} \times 10 \text{ mm}}{18 \text{ mm}} = 1.39 \text{ kN}$$

**Example:**

- Rotary lever clamp cylinder size 16
- Operating pressure 100 bar
- Piston force  $F_{Kol}$  at 100 bar = 2.5 kN
- Dimension L5 acc. to table = 10 mm
- Tension lever length  $L$  = 18 mm
- Resulting effective clamping force  $F_{Sp}$  = 1.39 kN

## Calculating the effective clamping force with pneumatic rotary lever clamps:



Effective clamping force  $F_{Sp}$  is dependent on piston force  $F_{Kol}$  and tension lever length  $L$

**Calculation:**

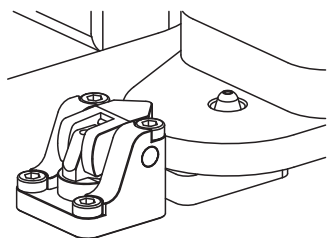
$$\text{Clamping force } F_{Sp} = \frac{F_{Kol} \times L3}{L}$$

$$\text{Clamping force } F_{Sp} = \frac{1.99 \text{ kN} \times 25 \text{ mm}}{45 \text{ mm}} = 1.11 \text{ kN}$$

**Example:**

- Rotary lever clamp cylinder size 40
- Operating pressure 6 bar
- Piston force  $F_{Kol}$  at 6 bar = 1.99 kN
- Dimension L3 acc. to table = 25 mm
- Tension lever length  $L$  = 45 mm
- Resulting effective clamping force  $F_{Sp}$  = 1.11 kN

## Tension levers for rotary lever clamps



### KIPP Tension levers for rotary lever clamps

Order No.	Form	Form-Type	For piston Ø	travel	B	H	L	L1	R
K1857.12091	A	standard	12	0,98	12	6	9	9	1,5
K1857.12131	A	standard	12	1,12	12	6	13,5	9	1,5
K1857.12181	A	standard	12	1,97	12	6	18	9	1,5
K1857.12221	A	standard	12	2,45	12	6	22,5	9	1,5
K1857.16121	A	standard	16	0,78	16	8	12	12	2
K1857.16181	A	standard	16	1,16	16	8	18	12	2
K1857.16241	A	standard	16	1,6	16	8	24	12	2
K1857.16301	A	standard	16	1,94	16	8	30	12	2
K1857.20151	A	standard	20	1,48	20	10	15	15	2,5
K1857.20221	A	standard	20	2,21	20	10	22,5	15	2,5
K1857.20301	A	standard	20	2,95	20	10	30	15	2,5
K1857.20371	A	standard	20	3,68	20	10	37,5	15	2,5
K1857.25191	A	standard	25	1,26	25	12,5	19	18,8	3
K1857.25281	A	standard	25	1,86	25	12,5	28	18,8	3
K1857.25381	A	standard	25	2,52	25	12,5	38	18,8	3
K1857.25471	A	standard	25	3,12	25	12,5	47	18,8	3
K1857.32241	A	standard	32	2,56	32	16	24	24	4
K1857.32361	A	standard	32	3,85	32	16	36	24	4
K1857.32481	A	standard	32	5,13	32	16	48	24	4
K1857.32601	A	standard	32	6,4	32	16	60	24	4
K1857.40301	A	standard	40	3,05	40	20	30	30	5
K1857.40451	A	standard	40	4,6	40	20	45	30	5
K1857.40601	A	standard	40	6,1	40	20	60	30	5
K1857.40751	A	standard	40	7,6	40	20	75	30	5
K1857.12152	B	blank	12	1,64	12	6	15	9	-
K1857.12242	B	blank	12	2,62	12	6	24	9	-
K1857.16202	B	blank	16	1,29	16	8	20	12	-
K1857.16322	B	blank	16	2,07	16	8	32	12	-
K1857.20252	B	blank	20	2,45	20	10	25	15	-
K1857.20402	B	blank	20	3,92	20	10	40	15	-
K1857.25312	B	blank	25	2,1	25	12,5	31	18,8	-
K1857.25502	B	blank	25	3,32	25	12,5	50	18,8	-
K1857.32402	B	blank	32	4,28	32	16	40	24	-
K1857.32642	B	blank	32	6,84	32	16	64	24	-
K1857.40502	B	blank	40	5,08	40	20	50	30	-
K1857.40802	B	blank	40	8,1	40	20	80	30	-

## Link clamps, hydraulic

double-acting



Link clamps are the optimal choice when, due to the clamping situation, the workpiece needs to be freely removed from above when unclamped. Due to the linear movement of the clamping lever when opening or closing the link clamp, it is particularly suitable for clamping situations where a lateral movement of the clamping element is not possible, e.g. due to interfering contours. The force is transferred to the tensioning lever of the link clamp via the piston. The opening and closing times are clearly defined due to the link clamps double-acting mode of operation.

**Material:**

Housing and piston steel.

**Version:**

Housing black oxidised.  
Piston hardened.

**Sample order:**

K1858.161104

**Note:**

The tensioning lever of the link clamp develops its optimum clamping force in the horizontal position.  
Workpiece tolerances are compensated for up to a position deviation of +/- 8.5°.  
The clamping force of a link clamp is dependent on the lever length.

Follow safety instructions.

**Method of operation:**

- Thread connection.
- O-ring flange connection.
- Drilled channels.

**Assembly:**

See mounting contour.

**Advantages:**

- Integrated metal wiper.
- Partially retractable housing.
- Collision-free accessibility to the workpiece.
- Lineless pressure supply.
- Versatile mounting possibilities.

**On request:**

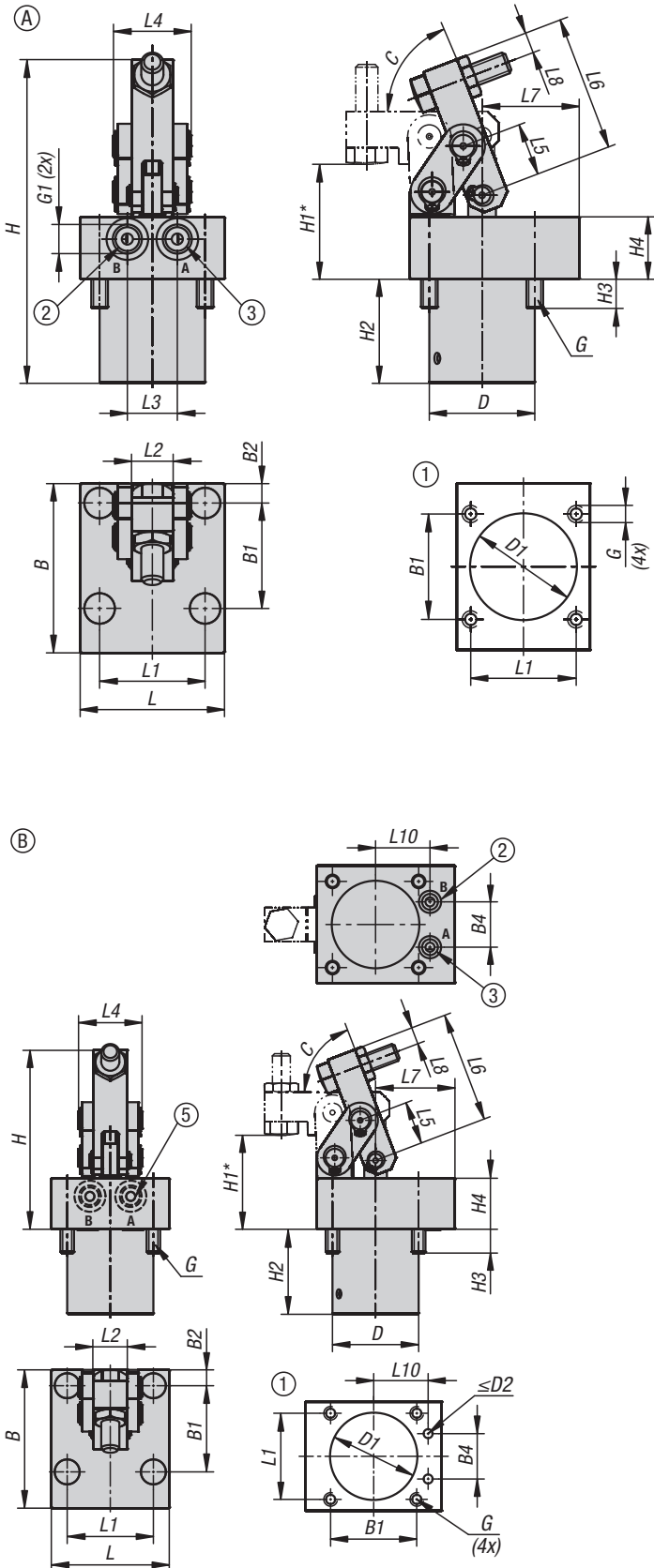
With position control.

**Supplied with:**

- 1x tension lever for link clamp.
- 4x DIN EN ISO 4762 cap screws grade 8.8.
- 4x Plastic caps.
- 2x O-rings 7x1.5 (for flange connection operating mode).

**Technical data:**

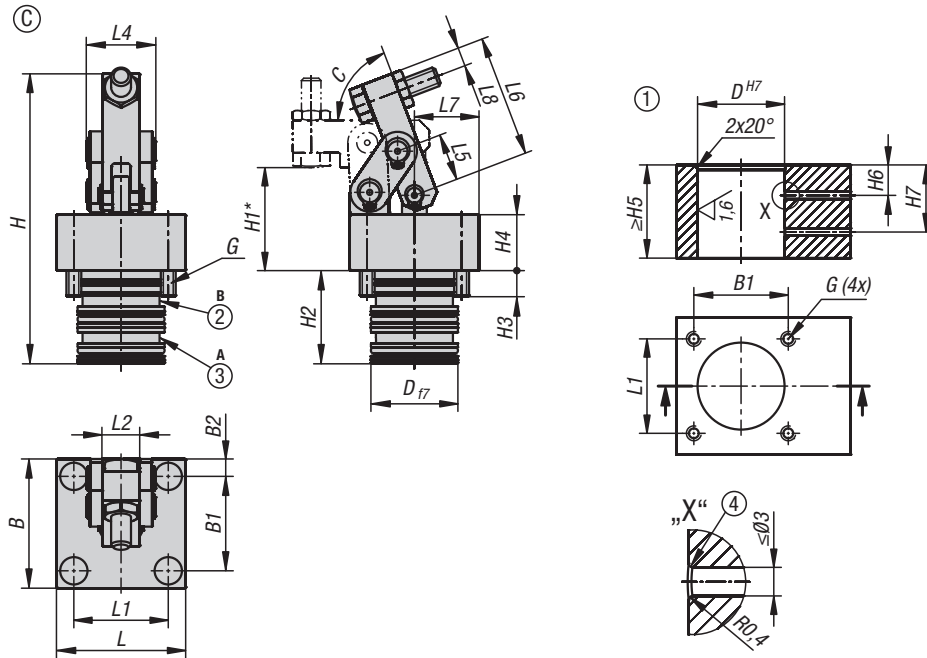
- Max. operating pressure for piston diameters 16 and 25: 350 bar.
- Max. operating pressure for piston diameter 40: 200 bar.





## Link clamps, hydraulic

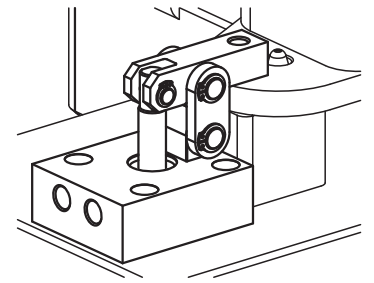
double-acting



**Drawing reference:**

H1\* = optimum clamping point; from -1.5mm until tension lever contact

- 1) Mounting contour
- 2) Loosen
- 3) Clamp
- 4) Rounded edges
- 5) These holes are only closed with screw plugs by piston diameter 16



**KIPP Link clamps, hydraulic, double-acting**

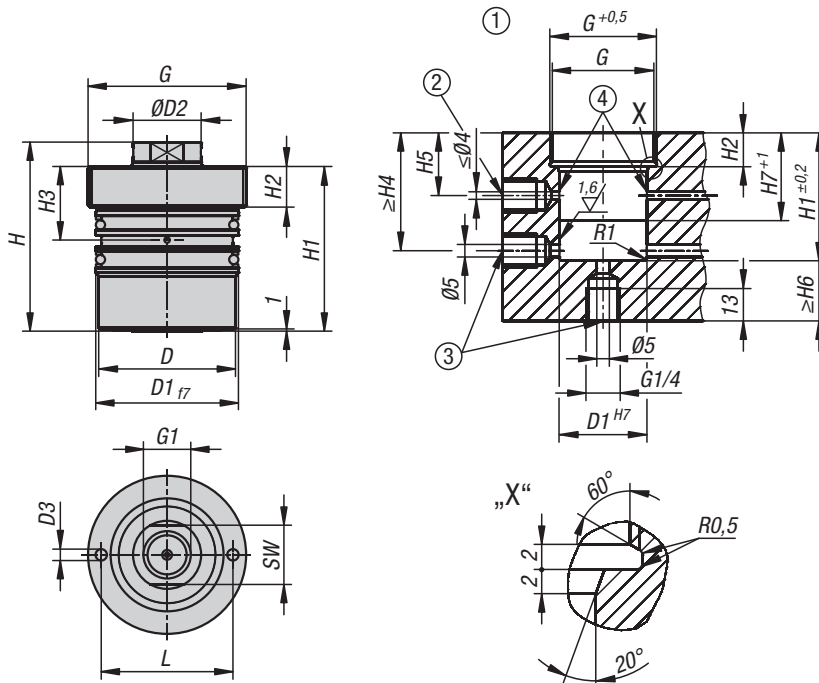
Order No.	Form	Piston Ø	B	B1	B2	B4	C	D	D1	D2	G	G1	H	H1	H2	H3	H4
K1858.161104	A	16	61	38	7	-	69	38	38,5	-	M6x12	G1/8	117	41,5	37,5	10,5	22,5
K1858.251104	A	25	80	56	8	-	65	50	50,5	-	M8x22	G1/4	156	50	54	19	22
K1858.401104	A	40	85	62	13,5	-	65	70	70,5	-	M10x22	G1/4	191	65	67,7	20	25
K1858.161204	B	16	61	38	7	20	69	38	38,5	4	M6x12	-	117	41,5	37,5	10,5	22,5
K1858.251204	B	25	72	56	8	27	65	50	50,5	4	M8x22	-	156	50	54	19	22
K1858.401204	B	40	95	62	13,5	29	65	70	70,5	5	M10x22	-	191	65	67,7	20	25
K1858.161304	C	16	52	38	7	-	69	35	-	-	M6x12	-	117	41,5	37,5	10,5	22,5
K1858.251304	C	25	72	56	8	-	65	50	-	-	M8x22	-	156	50	54	19	22
K1858.401304	C	40	85	62	13,5	-	65	70	-	-	M10x22	-	191	65	67,7	20	25

Order No.	Form	H5	H6	H7	L	L1	L2	L3	L4	L5	L6	L7	L8	L10	Clamping force at 100 bar (kN)	Clamping force at 200 bar (kN)	Clamping force at 350 bar (kN)
K1858.161104	A	-	-	-	52	38	15	18	28	19	49	35	7,5	-	1,5	-	5,2
K1858.251104	A	-	-	-	72	56	24	25	44	24	63,5	44	10	-	3,9	-	13,8
K1858.401104	A	-	-	-	100	78	36	32	66	31,5	82,5	40,5	10	-	9,5	19	-
K1858.161204	B	-	-	-	52	38	15	-	28	19	49	35	7,5	24	1,5	-	5,2
K1858.251204	B	-	-	-	72	56	24	-	44	24	63,5	36	10	28,1	3,9	-	13,8
K1858.401204	B	-	-	-	100	78	36	-	66	31,5	82,5	50,5	10	42	9,5	19	-
K1858.161304	C	37,5	12,25	27	52	38	15	-	28	19	49	26	7,5	-	1,5	-	5,2
K1858.251304	C	55	25,2	41,8	72	56	24	-	44	24	63,5	36	10	-	3,9	-	13,8
K1858.401304	C	68	22-25	44-53	100	78	36	-	66	31,5	82,5	40,5	10	-	9,5	19	-

## Screw-in hydraulic cylinders

double-acting



Cyclic-related, linear strokes are possible with the screw-in cylinders with double-acting function. Both travel directions are power actuated with the double-acting screw-in cylinders. Double-acting screw-in cylinders can be used as thrust or traction cylinders. These screw-in cylinders are often used on fixture plates and plates for plastic injection moulding tools. The integrated metal wiper prevents damage to the piston rod surface by preventing swarf getting into the screw-in cylinder. The protection given by the seal ensures the longevity of the products.

**Material:**  
Housing and piston steel.  
Seal NBR

**Version:**  
Housing black oxidised.  
Piston hardened.

**Sample order:**  
K1860.163213061

**Note:**  
Due to the compact design of these screw-in cylinders, no internal stop for the piston return stroke is installed. It must be ensured that the specified installation depth of the screw-in cylinders is adhered to, as these use the bottom of the mounting hole as a stop for the return stroke.

Care must be taken to ensure that no shavings remain in the drilled holes when producing the drilled channels for the screw-in cylinders. These can damage the seals of the screw-in cylinders, which can lead to leaks in the product. To avoid damage to the seals during installation, make sure that the lead-in chamfers as well as the transverse holes for the oil supply are well rounded.

Thrust pieces are not supplied.

Follow safety instructions.

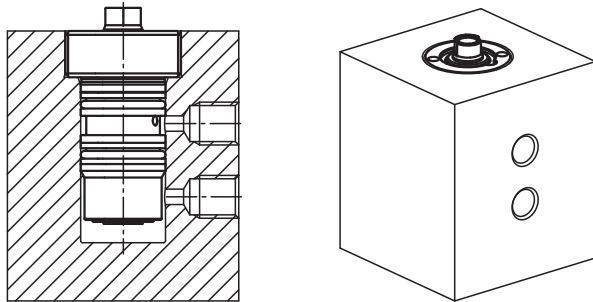
**Method of operation:**  
Drilled channels.

**Assembly:**  
See mounting contour.

**On request:**  
Larger piston diameters and longer strokes.

## Screw-in hydraulic cylinders

double-acting



### Accessories:

- Rest pads K0307.
- Self-aligning pads K0282, K0302, K1164, K0287, K0288.
- Gripper screws, hexagonal K0386.

### Technical data:

Max. operating pressure: 500 bar.

### Drawing reference:

- 1) Mounting contour
- 2) Retract cylinder
- 3) Alternative oil supply, extend cylinder
- 4) Rounded edges, max. R0.5

### KIPP Screw-in hydraulic cylinders, double-acting

Order No.	Piston Ø	travel	D	D1	D2	D3	G	G1	H	H1	H2	H3	H4	H5	H6	H7	L	SW
K1860.161613061	16	16	20	22	10	3,5	M30x1,5	M6x15	56	50	12	24	41	24	8	38	23	8
K1860.163213061	16	32	20	22	10	3,5	M30x1,5	M6x15	72	66	12	24	41	24	8	38	23	8
K1860.165013061	16	50	20	22	10	3,5	M30x1,5	M6x15	90	84	12	24	41	24	8	38	23	8
K1860.201613061	20	16	26	28	12	4,2	M36x1,5	M8x16	57	51	12	25	43	25	10	40	28	10
K1860.203213061	20	32	26	28	12	4,2	M36x1,5	M8x16	73	67	12	25	43	25	10	40	28	10
K1860.205013061	20	50	26	28	12	4,2	M36x1,5	M8x16	91	85	12	25	43	25	10	40	28	10
K1860.252013061	25	20	33	35	16	5,2	M42x1,5	M10x17	63	56	12	25	43	25	11	40	30	13
K1860.255013061	25	50	33	35	16	5,2	M42x1,5	M10x17	93	86	12	25	43	25	11	40	30	13
K1860.322513061	32	25	43	45	20	5,2	M56x2	M12x18	74	64	14,5	28	44	28	13	41	40	17
K1860.325013061	32	50	43	45	20	5,2	M56x2	M12x18	99	89	14,5	28	44	28	13	41	40	17
K1860.402513061	40	25	53	55	25	5,2	M64x2	M16x27	78	68	16,5	30	49	30	16	46	50	22
K1860.405013061	40	50	53	55	25	5,2	M64x2	M16x27	103	93	16,5	30	49	30	16	46	50	22

Order No.	Piston Ø	travel	Compressive force at 100 bar (kN)	Tractive force at 100 bar (kN)	Compressive force at 500 bar (kN)	Tractive force at 500 bar (kN)	Oil requirement / 10mm travel (cm <sup>3</sup> )	Oil requirement / 10mm return stroke (cm <sup>3</sup> )
K1860.161613061	16	16	2	1,22	10	6,10	2	1,22
K1860.163213061	16	32	2	1,22	10	6,10	2	1,22
K1860.165013061	16	50	2	1,22	10	6,10	2	1,22
K1860.201613061	20	16	3,14	2,02	15,70	10	3,14	2,02
K1860.203213061	20	32	3,14	2,02	15,70	10	3,14	2,02
K1860.205013061	20	50	3,14	2,02	15,70	10	3,14	2,02
K1860.252013061	25	20	4,91	2,9	24,50	14,50	4,91	2,90
K1860.255013061	25	50	4,91	2,9	24,50	14,50	4,91	2,90
K1860.322513061	32	25	8,04	4,9	40,20	24,50	8,04	4,90
K1860.325013061	32	50	8,04	4,9	40,20	24,50	8,04	4,90
K1860.402513061	40	25	12,57	7,66	62,80	38,30	12,57	7,66
K1860.405013061	40	50	12,57	7,66	62,80	38,30	12,57	7,66

## Screw-in hydraulic cylinders

single-acting with spring return

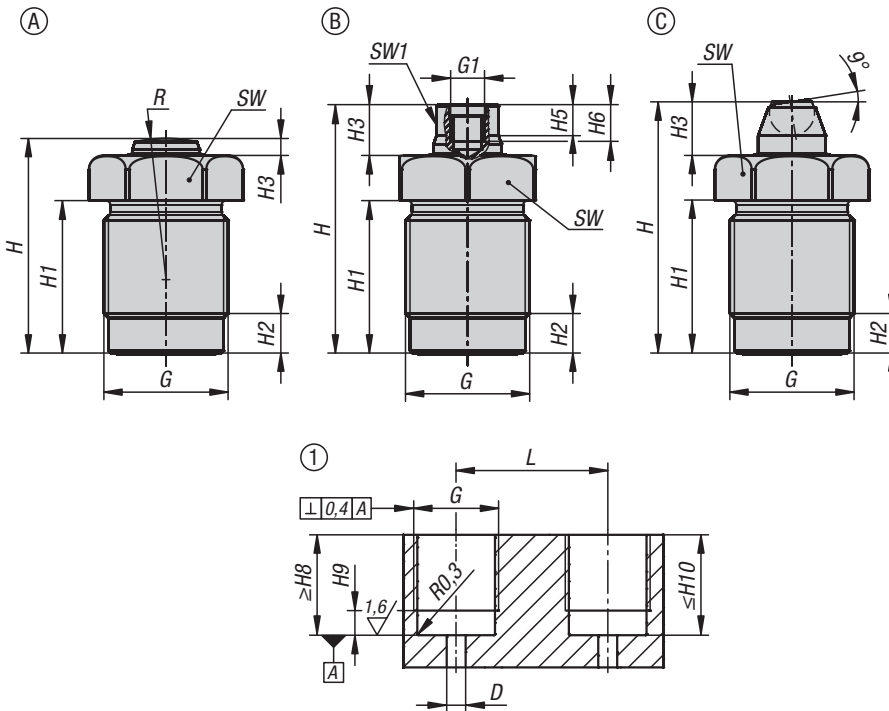


The single-acting screw-in cylinders with spring return are characterised by their compact design and are therefore often used as clamping cylinders. They can be positioned very close to each other. Due to the internal stroke limitation, these screw-in cylinders can be operated without an opposing clamping face. The double wipers installed as standard prevent dynamic leakage and thus increase the service life of the screw-in cylinders. The piston is reset to the initial position by means of an integrated spring.

**Material:**  
Housing and piston steel.  
Seal NBR

**Version:**  
Housing black oxidised.  
Piston hardened.

**Sample order:**  
K1861.1210230711



### KIPP Screw-in hydraulic cylinders, single-acting with spring return

Order No. Form A	Order No. Form B	Order No. Form C	Piston Ø	travel	D	G	G1	H	H1	H2	H3	H5	H6	H8
K1861.1210230711	K1861.1210230811	K1861.1210230911	12	10	6	M22x1,5	-/M6/-	38/45/45,5	27	7	3/10/10,5	-/5,5/-	-/6,5/-	15
K1861.1612230711	K1861.1612230811	K1861.1612230911	16	12	6	M26x1,5	-/M6/-	45,5/51,5/53	34	8	3/9/11	-/5,5/-	-/6,5/-	19
K1861.2015230711	K1861.2015230811	K1861.2015230911	20	15	7	M30x1,5	-/M8/-	56/65,5/69,5	43	8	4/13,5/17,5	-/6/-	-/8/-	23
K1861.2516230711	K1861.2516230811	K1861.2516230911	25	16	7	M38x1,5	-/M8/-	59,5/68,5/72,5	45,5	11	5/14/18	-/7/-	-/8/-	26,5
K1861.3220230711	K1861.3220230811	K1861.3220230911	32	20	8	M48x1,5	-/M12/-	87/98/100	71,5	12	7/18/20	-/9/-	-/12/-	40

Order No. Form A	Order No. Form B	Order No. Form C	Piston Ø	H9	H10	L	R	SW	SW1	Clamping force at 100 bar (kN)	Clamping force at 400 bar (kN)	Spring return force min. (N)	Oil requirement 10mm travel (cm³)	Tightening torque max. Nm
K1861.1210230711	K1861.1210230811	K1861.1210230911	12	6	26,5	31	25/-/	24/24/24	-/10/-	1,1	4,5	30	1,13	40
K1861.1612230711	K1861.1612230811	K1861.1612230911	16	7	33,5	34	35/-/	27/27/27	-/13/-	2	8	50	2,01	50
K1861.2015230711	K1861.2015230811	K1861.2015230911	20	7	42,5	40	50/-/	32/32/32	-/17/-	3,1	12,5	75	3,14	60
K1861.2516230711	K1861.2516230811	K1861.2516230911	25	10	45	52	70/-/	41/41/41	-/19/-	4,9	19,6	125	4,91	80
K1861.3220230711	K1861.3220230811	K1861.3220230911	32	11	71	62	100/-/	50/50/50	-/24/-	8	32	200	8,04	225

# Screw-in hydraulic cylinders

single-acting with spring return



### Note:

The screw-in cylinders can withstand maximum loads in both the tensioned and untensioned state. To avoid damage to the seals during installation, make sure that the lead-in chamfers as well as the transverse holes for the oil supply are well rounded. A sealing ring at the bottom of the screw-in hole seals the screw-in cylinder. Due to the plunger design, no venting of the rod space is required.

The screw-in cylinders should be protected from aggressive cutting and cooling agents.

Thrust pieces for Form B are not supplied.

Follow safety instructions.

### Method of operation:

Drilled channels.

### Assembly:

See mounting contour.

### Advantages:

- Integrated metal wiper.
- Low mounting dimensions.
- Can be used without opposing clamping face.
- Loads in retracted position possible.
- Lineless pressure supply.

### Accessories:

Form B:

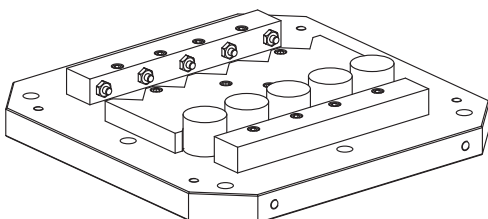
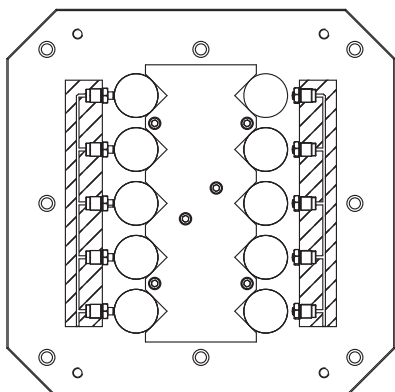
- Rest pads K0307.
- Self-aligning pads K0282, K0302, K1164, K0287, K0288.
- Gripper screws, hexagonal K0386.

### Technical data:

Max. operating pressure: 400 bar.

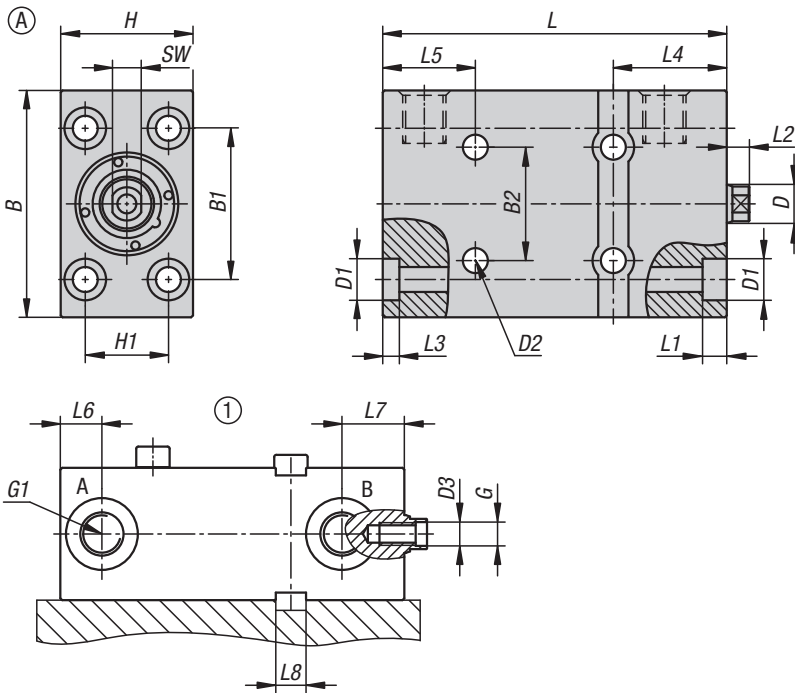
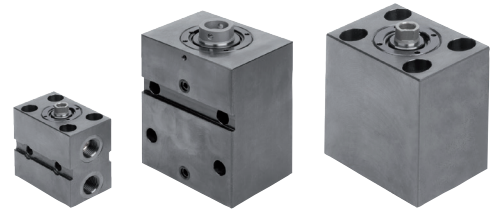
### Drawing reference:

- 1) Mounting contour



# Block cylinders, hydraulic with metal wiper

double / single acting with spring return



Block cylinders with female piston rod thread are ideally suited for clamping situations where short travel with high forces is required. Block cylinders can be used as thrust or traction cylinders. Various thrust pieces can be screwed into the female threads of the piston rods. The block cylinders ensure a high operating pressure and are easy to fasten using cap screws due to their compact, cubic housing design. A double hydraulic seal is installed in the block cylinders as standard. This creates technical advantages for the rod-side seal for low-leakage continuous operation. Metal wipers are also installed in the block cylinders as standard to prevent the ingress of swarf.

**Material:**

Housing and piston steel.  
Seal NBR

**Version:**

Housing black oxidised.  
Piston hardened.

**Sample order:**

K1859.200821011

**Note:**

Transverse forces on the block cylinders should be avoided.

If the block cylinder is mounted transversely to the cylinder axis, additional support for the block cylinder is recommended. If the block cylinder is used as a thrust cylinder, the support should be on the underside; if it is used as a traction cylinder, it should be on the rod side.

Permissible dynamic loads during the piston advance stroke must be observed.

A vent port is required for the single-acting block cylinders.

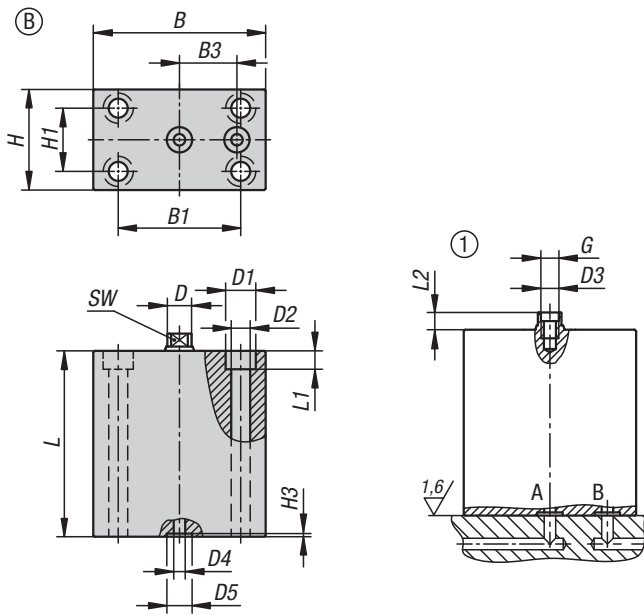
Penetration of cutting and cooling fluids into the cylinder must be prevented.

Thrust pieces are not supplied.

Follow safety instructions.

# Block cylinders, hydraulic with metal wiper

double / single acting with spring return



**Method of operation:**

- Thread connection.
- O-ring flange connection.

**Assembly:**

See mounting contour.

**Advantages:**

- Integrated metal wiper.
- Versatile mounting possibilities.
- Wide travel range of 8 mm to 200 mm.
- Large force range of 2 kN to 392 kN.
- Low mounting dimensions.
- Double hydraulic seals installed.

**Supplied with:**

2x O-rings (for flange connection operating mode) supplied.

**Accessories:**

- Rest pads K0307.
- Self-aligning pads K0282, K0302, K1164, K0287, K0288.
- Gripper screws, hexagonal K0386.

**Technical data:**

Max. operating pressure: 500 bar.

**Drawing reference:**

- Form A: Longitudinal and transverse holes, screwed connection
- Form B: Underside, centre hole, O-ring flange connection
- Form C: Wide side, O-ring- flange connection

1) Mounting contour

## Block cylinder, hydraulic with metal wiper

double / single acting with spring return



Order No.	Form	Form-Type	Piston Ø	travel	B	B1	B2	D	D1	D2	D3	G	G1	H	H1	H2
K1859.160821011	A	single-acting	16	8	60	40	30	10	11	6,5	6,3x3	M6x15	G1/4	35	22	2
K1859.162021011	A	single-acting	16	20	60	40	30	10	11	6,5	6,3x3	M6x15	G1/4	35	22	2
K1859.200821011	A	single-acting	20	8	60	40	40	12	11	6,5	8,5x3	M8x16	G1/4	35	22	2
K1859.202021011	A	single-acting	20	20	60	40	40	12	11	6,5	8,5x3	M8x16	G1/4	35	22	2
K1859.250821011	A	single-acting	25	8	65	50	50	16	14	8,5	10,5x4	M10x17	G1/4	45	30	2
K1859.252021011	A	single-acting	25	20	65	50	50	16	14	8,5	10,5x4	M10x17	G1/4	45	30	2
K1859.321021011	A	single-acting	32	10	75	55	55	20	18	10,5	12,5x4	M12x18	G1/4	55	35	3
K1859.322021011	A	single-acting	32	20	75	55	55	20	18	10,5	12,5x4	M12x18	G1/4	55	35	3
K1859.401021011	A	single-acting	40	10	85	63	63	25	18	10,5	16,5x7	M16x27	G1/4	63	40	3
K1859.402021011	A	single-acting	40	20	85	63	63	25	18	10,5	16,5x7	M16x27	G1/4	63	40	3
K1859.161611011	A	double-acting	16	16	60	40	30	10	11	6,5	6,3x3	M6x15	G1/4	35	22	2
K1859.163211011	A	double-acting	16	32	60	40	30	10	11	6,5	6,3x3	M6x15	G1/4	35	22	2
K1859.165011011	A	double-acting	16	50	60	40	30	10	11	6,5	6,3x3	M6x15	G1/4	35	22	2
K1859.201611011	A	double-acting	20	16	60	40	40	12	11	6,5	8,5x3	M8x16	G1/4	35	22	2
K1859.203211011	A	double-acting	20	32	60	40	40	12	11	6,5	8,5x3	M8x16	G1/4	35	22	2
K1859.205011011	A	double-acting	20	50	60	40	40	12	11	6,5	8,5x3	M8x16	G1/4	35	22	2
K1859.252011011	A	double-acting	25	20	65	50	50	16	14	8,5	10,5x4	M10x17	G1/4	45	30	2
K1859.255011011	A	double-acting	25	50	65	50	50	16	14	8,5	10,5x4	M10x17	G1/4	45	30	2
K1859.322511011	A	double-acting	32	25	75	55	55	20	18	10,5	12,5x4	M12x18	G1/4	55	35	3
K1859.325011011	A	double-acting	32	50	75	55	55	20	18	10,5	12,5x4	M12x18	G1/4	55	35	3
K1859.402511011	A	double-acting	40	25	85	63	63	25	18	10,5	16,5x7	M16x27	G1/4	63	40	3
K1859.405011011	A	double-acting	40	50	85	63	63	25	18	10,5	16,5x7	M16x27	G1/4	63	40	3

Order No.	Form	Form-Type	travel	L	L1	L2	L3	L4	L5	L6	L7	L8	SW	Effective piston area (cm <sup>2</sup> )	Compressive force at 100 bar (kN)	Tractive force at 100 bar (kN)
K1859.160821011	A	single-acting	8	56	6,4	6	4,4	30	-	11	16,5	8	8	2	2	-
K1859.162021011	A	single-acting	20	91	6,4	6	4,4	30	-	11	16,5	8	8	2	2	-
K1859.200821011	A	single-acting	8	61	6,4	7	4,4	30	-	11	16,5	8	10	3,1	3,1	-
K1859.202021011	A	single-acting	20	95	6,4	7	4,4	30	-	11	16,5	8	10	3,1	3,1	-
K1859.250821011	A	single-acting	8	64	8,6	7	6,4	33	-	11	18	10	13	4,9	4,9	-
K1859.252021011	A	single-acting	20	94	8,6	7	6,4	33	-	11	18	10	13	4,9	4,9	-
K1859.321021011	A	single-acting	10	75	10,6	10	7,6	38	-	11	22	12	17	8	8	-
K1859.322021011	A	single-acting	20	100	10,6	10	7,6	38	-	11	22	12	17	8	8	-
K1859.401021011	A	single-acting	10	79	10,6	10	10,6	40	-	11	24	12	22	12,5	12,6	-
K1859.402021011	A	single-acting	20	104	10,6	10	10,6	40	-	11	24	12	22	12,5	12,6	-
K1859.161611011	A	double-acting	16	56	6,4	6	4,4	30	-	11	16,5	8	8	2	2	1,2
K1859.163211011	A	double-acting	32	73	6,4	6	4,4	30	-	11	16,5	8	8	2	2	1,2
K1859.165011011	A	double-acting	50	91	6,4	6	4,4	30	24,5	11	16,5	8	8	2	2	1,2
K1859.201611011	A	double-acting	16	61	6,4	7	4,4	30	-	11	16,5	8	10	3,1	3,1	2
K1859.203211011	A	double-acting	32	77	6,4	7	4,4	30	-	11	16,5	8	10	3,1	3,1	2
K1859.205011011	A	double-acting	50	95	6,4	7	4,4	30	24,5	11	16,5	8	10	3,1	3,1	2
K1859.252011011	A	double-acting	20	64	8,6	7	6,4	33	-	11	18	10	13	4,9	4,9	2,9
K1859.255011011	A	double-acting	50	94	8,6	7	6,4	33	26	11	18	10	13	4,9	4,9	2,9
K1859.322511011	A	double-acting	25	75	10,6	10	7,6	38	-	11	22	12	17	8	8	4,9
K1859.325011011	A	double-acting	50	100	10,6	10	7,6	38	27	11	22	12	17	8	8	4,9
K1859.402511011	A	double-acting	25	79	10,6	10	10,6	40	-	11	24	12	22	12,5	12,6	7,7
K1859.405011011	A	double-acting	50	104	10,6	10	10,6	40	27	11	24	12	22	12,5	12,6	7,7



## Block cylinder, hydraulic with metal wiper

double / single acting with spring return



Order No.	Form	Form-Type	Piston Ø	travel	B	B1	B3	D	D1	D2	D3	D4	D5	G
K1859.160822021	B	single-acting	16	8	60	40	20	10	11	6,5	6,3x3	4	8,8	M6x15
K1859.162022021	B	single-acting	16	20	60	40	20	10	11	6,5	6,3x3	4	8,8	M6x15
K1859.200822021	B	single-acting	20	8	60	40	22	12	11	6,5	8,5x3	4	8,8	M8x16
K1859.202022021	B	single-acting	20	20	60	40	22	12	11	6,5	8,5x3	4	8,8	M8x16
K1859.250822021	B	single-acting	25	8	65	50	25	16	14	8,5	10,5x4	4	9,8	M10x17
K1859.252022021	B	single-acting	25	20	65	50	25	16	14	8,5	10,5x4	4	9,8	M10x17
K1859.321022021	B	single-acting	32	10	75	55	27,5	20	18	10,5	12,5x4	5	9,8	M12x18
K1859.322022021	B	single-acting	32	20	75	55	27,5	20	18	10,5	12,5x4	5	9,8	M12x18
K1859.401022021	B	single-acting	40	10	85	63	31,5	25	18	10,5	16,5x7	5	9,8	M16x27
K1859.402022021	B	single-acting	40	20	85	63	31,5	25	18	10,5	16,5x7	5	9,8	M16x27
K1859.161612021	B	double-acting	16	16	60	40	20	10	11	6,5	6,3x3	4	8,8	M6x15
K1859.163212021	B	double-acting	16	32	60	40	20	10	11	6,5	6,3x3	4	8,8	M6x15
K1859.165012021	B	double-acting	16	50	60	40	20	10	11	6,5	6,3x3	4	8,8	M6x15
K1859.201612021	B	double-acting	20	16	60	40	22	12	11	6,5	8,5x3	4	8,8	M8x16
K1859.203212021	B	double-acting	20	32	60	40	22	12	11	6,5	8,5x3	4	8,8	M8x16
K1859.205012021	B	double-acting	20	50	60	40	22	12	11	6,5	8,5x3	4	8,8	M8x16
K1859.252012021	B	double-acting	25	20	65	50	25	16	14	8,5	10,5x4	4	9,8	M10x17
K1859.255012021	B	double-acting	25	50	65	50	25	16	14	8,5	10,5x4	4	9,8	M10x17
K1859.322512021	B	double-acting	32	25	75	55	27,5	20	18	10,5	12,5x4	5	9,8	M12x18
K1859.325012021	B	double-acting	32	50	75	55	27,5	20	18	10,5	12,5x4	5	9,8	M12x18
K1859.402512021	B	double-acting	40	25	85	63	31,5	25	18	10,5	16,5x7	5	9,8	M16x27
K1859.405012021	B	double-acting	40	50	85	63	31,5	25	18	10,5	16,5x7	5	9,8	M16x27

Order No.	Form	Form-Type	travel	H	H1	H3	L	L1	L2	SW	Effective piston area (cm <sup>2</sup> )	Compressive force at 100 bar (kN)	Tractive force at 100 bar (kN)
K1859.160822021	B	single-acting	8	35	22	1,1	56	6,4	6	8	2	2	-
K1859.162022021	B	single-acting	20	35	22	1,1	91	6,4	6	8	2	2	-
K1859.200822021	B	single-acting	8	35	22	1,1	61	6,4	7	10	3,1	3,1	-
K1859.202022021	B	single-acting	20	35	22	1,1	95	6,4	7	10	3,1	3,1	-
K1859.250822021	B	single-acting	8	45	30	1,1	64	8,6	7	13	4,9	4,9	-
K1859.252022021	B	single-acting	20	45	30	1,1	94	8,6	7	13	4,9	4,9	-
K1859.321022021	B	single-acting	10	55	35	1,1	75	10,6	10	17	8	8	-
K1859.322022021	B	single-acting	20	55	35	1,1	100	10,6	10	17	8	8	-
K1859.401022021	B	single-acting	10	63	40	1,1	79	10,6	10	22	12,5	12,6	-
K1859.402022021	B	single-acting	20	63	40	1,1	104	10,6	10	22	12,5	12,6	-
K1859.161612021	B	double-acting	16	35	22	1,1	56	6,4	6	8	2	2	1,2
K1859.163212021	B	double-acting	32	35	22	1,1	73	6,4	6	8	2	2	1,2
K1859.165012021	B	double-acting	50	35	22	1,1	91	6,4	6	8	2	2	1,2
K1859.201612021	B	double-acting	16	35	22	1,1	61	6,4	7	10	3,1	3,1	2
K1859.203212021	B	double-acting	32	35	22	1,1	77	6,4	7	10	3,1	3,1	2
K1859.205012021	B	double-acting	50	35	22	1,1	95	6,4	7	10	3,1	3,1	2
K1859.252012021	B	double-acting	20	45	30	1,1	64	8,6	7	13	4,9	4,9	2,9
K1859.255012021	B	double-acting	50	45	30	1,1	94	8,6	7	13	4,9	4,9	2,9
K1859.322512021	B	double-acting	25	55	35	1,1	75	10,6	10	17	8	8	4,9
K1859.325012021	B	double-acting	50	55	35	1,1	100	10,6	10	17	8	8	4,9
K1859.402512021	B	double-acting	25	63	40	1,1	79	10,6	10	22	12,5	12,6	7,7
K1859.405012021	B	double-acting	50	63	40	1,1	104	10,6	10	22	12,5	12,6	7,7

## Block cylinder, hydraulic with metal wiper

double / single acting with spring return



Order No.	Form	Form-Type	Piston Ø	travel	B	B2	D	D2	D3	D4	D5	G	H	H2	H3
K1859.160822031	C	single-acting	16	8	60	30	10	6,5	6,3x3	4	8,8	M6x15	35	2	1,1
K1859.162022031	C	single-acting	16	20	60	30	10	6,5	6,3x3	4	8,8	M6x15	35	2	1,1
K1859.200822031	C	single-acting	20	8	60	40	12	6,5	8,5x3	4	8,8	M8x16	35	2	1,1
K1859.202022031	C	single-acting	20	20	60	40	12	6,5	8,5x3	4	8,8	M8x16	35	2	1,1
K1859.250822031	C	single-acting	25	8	65	50	16	8,5	10,5x4	4	9,8	M10x17	45	2	1,1
K1859.252022031	C	single-acting	25	20	65	50	16	8,5	10,5x4	4	9,8	M10x17	45	2	1,1
K1859.321022031	C	single-acting	32	10	75	55	20	10,5	12,5x4	5	9,8	M12x18	55	3	1,1
K1859.322022031	C	single-acting	32	20	75	55	20	10,5	12,5x4	5	9,8	M12x18	55	3	1,1
K1859.401022031	C	single-acting	40	10	85	63	25	10,5	16,5x7	5	9,8	M16x27	63	3	1,1
K1859.402022031	C	single-acting	40	20	85	63	25	10,5	16,5x7	5	9,8	M16x27	63	3	1,1
K1859.161612031	C	double-acting	16	16	60	30	10	6,5	6,3x3	4	8,8	M6x15	35	2	1,1
K1859.163212031	C	double-acting	16	32	60	30	10	6,5	6,3x3	4	8,8	M6x15	35	2	1,1
K1859.165012031	C	double-acting	16	50	60	30	10	6,5	6,3x3	4	8,8	M6x15	35	2	1,1
K1859.201612031	C	double-acting	20	16	60	40	12	6,5	8,5x3	4	8,8	M8x16	35	2	1,1
K1859.203212031	C	double-acting	20	32	60	40	12	6,5	8,5x3	4	8,8	M8x16	35	2	1,1
K1859.205012031	C	double-acting	20	50	60	40	12	6,5	8,5x3	4	8,8	M8x16	35	2	1,1
K1859.252012031	C	double-acting	25	20	65	50	16	8,5	10,5x4	4	9,8	M10x17	45	2	1,1
K1859.255012031	C	double-acting	25	50	65	50	16	8,5	10,5x4	4	9,8	M10x17	45	2	1,1
K1859.322512031	C	double-acting	32	25	75	55	20	10,5	12,5x4	5	9,8	M12x18	55	3	1,1
K1859.325012031	C	double-acting	32	50	75	55	20	10,5	12,5x4	5	9,8	M12x18	55	3	1,1
K1859.402512031	C	double-acting	40	25	85	63	25	10,5	16,5x7	5	9,8	M16x27	63	3	1,1
K1859.405012031	C	double-acting	40	50	85	63	25	10,5	16,5x7	5	9,8	M16x27	63	3	1,1

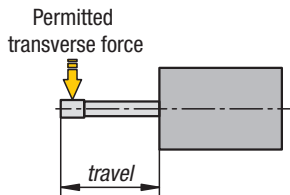
Order No.	Form	Form-Type	travel	L	L4	L5	L8	L9	L10	SW	Effective piston area (cm <sup>2</sup> )	Compressive force at 100 bar (kN)	Tractive force at 100 bar (kN)
K1859.160822031	C	single-acting	8	56	30	-	8	20,5	7	8	2	2	-
K1859.162022031	C	single-acting	20	91	30	-	8	20,5	7	8	2	2	-
K1859.200822031	C	single-acting	8	61	30	-	8	20	7,5	10	3,1	3,1	-
K1859.202022031	C	single-acting	20	95	30	-	8	20	7,5	10	3,1	3,1	-
K1859.250822031	C	single-acting	8	64	33	-	10	21	7,5	13	4,9	4,9	-
K1859.252022031	C	single-acting	20	94	33	-	10	21	7,5	13	4,9	4,9	-
K1859.321022031	C	single-acting	10	75	38	-	12	25	10	17	8	8	-
K1859.322022031	C	single-acting	20	100	38	-	12	25	10	17	8	8	-
K1859.401022031	C	single-acting	10	79	40	-	12	27	10	22	12,5	12,6	-
K1859.402022031	C	single-acting	20	104	40	-	12	27	10	22	12,5	12,6	-
K1859.161612031	C	double-acting	16	56	30	-	8	20,5	7	8	2	2	1,2
K1859.163212031	C	double-acting	32	73	30	-	8	20,5	7	8	2	2	1,2
K1859.165012031	C	double-acting	50	91	30	24,5	8	20,5	7	8	2	2	1,2
K1859.201612031	C	double-acting	16	61	30	-	8	20	7,5	10	3,1	3,1	2
K1859.203212031	C	double-acting	32	77	30	-	8	20	7,5	10	3,1	3,1	2
K1859.205012031	C	double-acting	50	95	30	24,5	8	20	7,5	10	3,1	3,1	2
K1859.252012031	C	double-acting	20	64	33	-	10	21	7,5	13	4,9	4,9	2,9
K1859.255012031	C	double-acting	50	94	33	26	10	21	7,5	13	4,9	4,9	2,9
K1859.322512031	C	double-acting	25	75	38	-	12	25	10	17	8	8	4,9
K1859.325012031	C	double-acting	50	100	38	27	12	25	10	17	8	8	4,9
K1859.402512031	C	double-acting	25	79	40	-	12	27	10	22	12,5	12,6	7,7
K1859.405012031	C	double-acting	50	104	40	27	12	27	10	22	12,5	12,6	7,7

# Technical data:



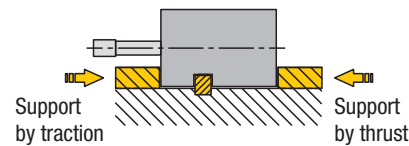
## Permitted transverse force by extended piston rod.

To ensure sealing and guarantee long service life for the piston and rod guide, transverse forces on the block cylinders should be avoided where possible. Up to travel lengths of 50 mm, a transverse force of 3 % of the nominal cylinder force must not be exceeded. The transverse forces should be moving towards 0 % as the travel length increases.



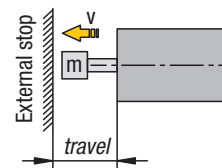
## Supports for block cylinder:

If the cylinder is fastened at right angles to the cylinder axis, the block cylinders must be supported. When used as a thrust cylinder, the support should be on the under side, when used as a traction cylinder, it should be on the rod side (see illustration). As standard, the block cylinders also have transverse slots in the housing which can be used for support. In this case, a parallel key, which absorbs the compressive or tensile force is fitted to the screw-on face.



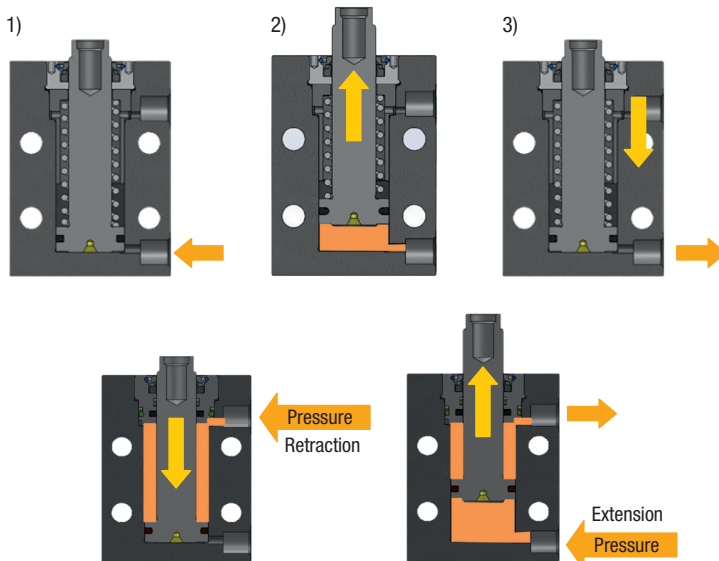
## Permissible dynamic loads during the piston advance stroke:

As standard, the block cylinders have no end position damping. Due to the advance stroke, the piston thrusts the attached mass against the sealing bush of the block cylinder with unrestrained stroke speed. The sealing bush acts as a stop in the cylinder. The functional capability of the block cylinder is impaired if this is overloaded. This problem can be prevented by always having an external stop available for the block cylinder piston (see illustration).

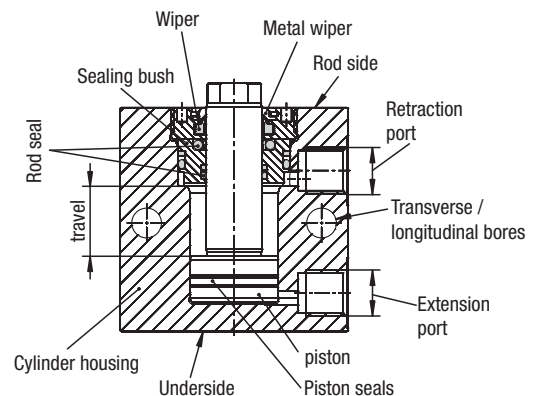


v = stroke speed  
m = attached mass

## Operating principle of a block cylinder:

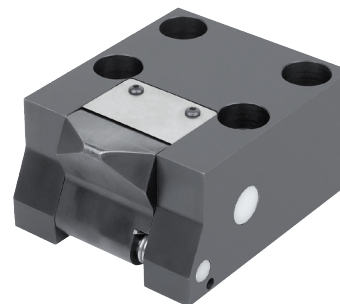


## Construction of a block cylinder:



## Side clamps, hydraulic

single-acting with spring return



Side clamps are used to apply the clamping force to the side of a workpiece. Side clamps are particularly suitable for clamping situations in which clamping from above cannot be carried out or is not required.

After the pressure has been released, the piston and the thrust pad are returned to the initial position with the aid of springs.

**Material:**

Housing and piston steel.

**Version:**

Housing black oxidised.

Piston hardened.

**Sample order:**

K1855.25102404

**Note:**

With the clamping force applied from the side, both a horizontal and a vertical force component are generated. The size of the force components depends on the travel respectively. An applied vertical force component can be max. 25 % of the clamping force. With this force, the workpiece is pushed down onto the seating face. The horizontal force component drops to min. 95 % of the initial force depending on the travel.

The clamping piston in side clamps has an integrated travel limiter.

Penetration of cutting and cooling fluids into the cylinder must be prevented.

Observe safety instructions.

**Method of operation:**

- Thread connection.
- O-ring flange connection.

**Advantages:**

- Low installation height.
- Integrated travel limit on the clamping piston.

**Supplied with:**

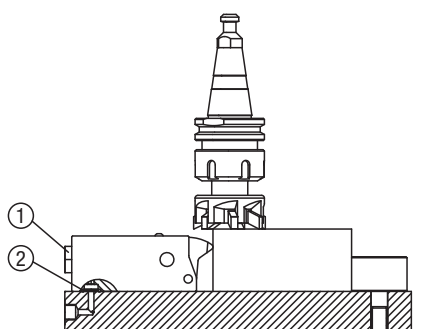
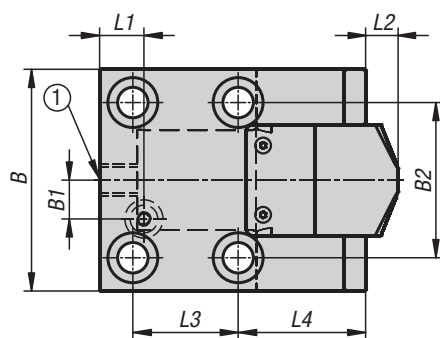
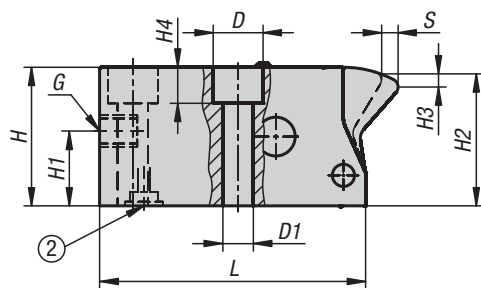
1 O-ring 10x2 (for flange connection operating mode) supplied.

**Technical data:**

Max. operating pressure: 500 bar.

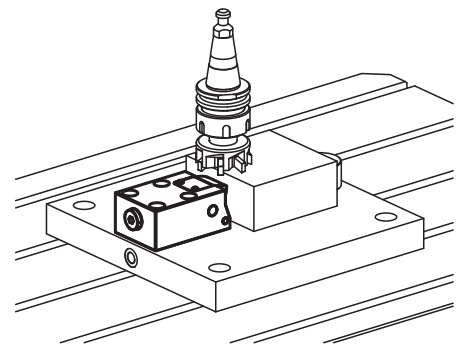
**Drawing reference:**

- 1) screw plug
- 2) O-ring



## Side clamps, hydraulic

single-acting with spring return



### KIPP Side clamps hydraulic

Order No.	Piston Ø	Travel S	B	B1	B2	D	D1	G	H	H1	H2	H3	H4	L	L1	L2	L3	L4
K1855.16082404	16	8	50	-	32	13,5	8,5	1/4	32	19	31	4	8,5	68	13	2	27	32
K1855.25102404	25	10	60	-	40	15	9	1/4	40	23	39	4	9	90	14	2,5	38	42
K1855.36102404	36	10	80	14	56	18	11	1/4	50	27	49	4	11	96	16	2	38	46

Order No.	Piston Ø	Clamping force at 100 bar (kN)	Clamping force at 500 bar (kN)	Oil requirement / 10mm travel (cm <sup>3</sup> )
K1855.16082404	16	1,7	8,5	2
K1855.25102404	25	4	20	4,9
K1855.36102404	36	8	40	10,2





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