

HYDROKOMP®

Hydraulische Komponenten GmbH

Technology that connects

MAIN CATALOG 2026



Workholding Technology

Coupling Technology

Rotary Couplings

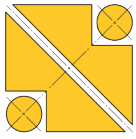
Accessories

Hydraulic Elements

Pneumatic Elements

Customized Designs

Ideas and quality right from the start



HYDROKOMP

Hydraulische Komponenten GmbH



HYDROKOMP Managing Directors

Foto: f.l.t.r. Dr. Friedrich Freund, Dipl.-Ing (FH) Karl-Heinz Freund and M.A. Felix Freund

Partner for mechanical engineering and fixture construction

Brand products and top service

Founded 1998, HYDROKOMP designs, manufactures and distributes hydraulic components, coupling systems and clamping technology for mechanical engineering, fixture construction, tooling and many other branches of industry also for different operating conditions.

Constructive ideas and customer-specific designs are our particular strengths. Our qualified employees and our modern CNC machinery ensure high flexibility, product variety and quality according to DIN EN ISO 9001.



Consulting, development, manufacturing

Beginning with the consultation, over to product training and up to complete development of customer specific solutions, our applications engineers and design engineers are available to support and assist you.

Consistent accuracy

HYDROKOMP products are designed for longlasting application in rough industrial daily routine. Our customers can surely trust that the process will flow smoothly.

Each HYDROKOMP product is developed and manufactured according to the highest quality standards. With modern CAD systems we design new solutions. After that, current procedures of precision manufacture and quality assurance are next in process.

Before a product is released, it has to prove its quality with an endurance test. The result:
Ideas and quality right from the start.

Proven many times in practice

Hydraulic elements and coupling systems by HYDROKOMP are already in use very successfully in the most various industrial branches.

These are for example:

- ✘ Agricultural technology
- ✘ Machinery installations
- ✘ Resources
- ✘ Production engineering
- ✘ Molds and tools
- ✘ Handling technology
- ✘ Machinery
- ✘ Fixtures
- ✘ Packaging machinery
- ✘ Machine tools

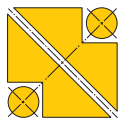
References



Production



Administration



Recommendations & Specifications

for hydraulic equipment and facilities

Issue: 10/2022

General

Specifications	In accordance with VDI 3267 to 3284	
Terms and symbols	In accordance with DIN ISO 1219	
Units	SI-units as per ISO 1000	
Dimensions without tolerances	DIN 7168-m	
Connection thread	Whitworth®/British standard pipe thread, type X as DIN 3852, data sheet 2, (for cylindrical screwed plugs)	
Fittings	As per DIN 2353, screwed plugs type B as per DIN 3852, sealing by knife edge or elastic-sealing. Do not use additional sealing materials (e.g. Teflon ribbon) or tapered connection thread (e.g. NPT-thread).	
Recommended oils	Oil temperature °C	Designation as per DIN 51524
	10 - 40	HLP 22
	15 - 50	HLP 32
	20 - 60	HLP 46
Sealing material	- NBR (Acrylnitril-Butadien-Caoutchouc, e.g. Perbunan®), - FKM (Fluorine-Caoutchouc, e.g. VITON®), - PTFE (alone or with additional materials), PU, special materials in accordance with function requirements	

Clamping Elements

Mounting position	Any, if not otherwise stated
Operating pressure	see product-specific data sheet
Ambient temperature	-10 °C up to +60 °C
Piston transverse forces	max. 5% of the nominal piston force
Admissible piston stroke speed	max. 0,25 m/s (attention to product-specific data sheet indications)
Operating method	- single-acting, without or with spring reset of the piston (Reset times cannot be defined) - double-acting
Temperature influence	All media expand differently when temperatures rise. The hydraulic oil also tries to expand. Similarly a fall in temperature leads to a decrease in pressure. Generally one can assume that change of 1°C alters the pressure by approx. 10 bar. For that reason fixtures that are uncoupled from the power unit should be equipped with a pressure accumulator in order to reduce the influence of temperature.
Lifetime	In the case of single-acting cylinders with spring reset, it is essential to prevent the ingress of fluids and dirt particles into the spring chamber.
Accident prevention regulations	Always comply with the applicable accident prevention regulations. In particular avoid risks of trapping or squashing fingers etc. During strokes of the cylinder (DIN 31001, section 1).
Commissioning & Maintenance	Take care to ensure scrupulous cleanliness when assembling hydraulic components. Use only clean, specified pressure medium. Bleed the hydraulic system before putting into operation. Adhere to the manufacturer's instructions and maintenance intervals.

Rotary Couplings

Installation conditions	Rotary couplings may be fixed (screwed) only on one side. The opposite side may be secured against twisting. It is to be avoided that no bending moment is effected on the standing or rotating element. Only the firmly bolted side may be piped. The other side should be supplied with pressurized oil via flexible hoses only.
Operating pressure, Ambient temperature, Max. rotary speed	For these data refer to the relevant data sheet and/or the respective built-in drawing.
Commissioning & Maintenance	Take care to ensure scrupulous cleanliness when assembling hydraulic components. Use only clean, specified pressure mediums. Bleed the hydraulic system before putting into operation. Rotary couplings are not subject to regular maintenance intervals.

New products and highlights



Mini work support, with threaded body

piston diameter 7 mm,
piston stroke 4 mm,
actuation with hydraulic,
contact by spring force

[Find out more...](#)

p. 147



New!

Pneumatic swing clamp cylinders

with magnetic sensors, upper flange,
double-acting, pmax. 7 bar

Clamping arms and magnetic sensors
are available as accessories

[Find out more...](#)

p.115



Sequence valves with integrated check valve

New!

threaded type or valve combination
various adjustment ranges
from 15 to 500 bar

[Find out more... p.199](#)



Rotary lever clamps

hydraulically single- and double-acting,
pneumatically double-acting

[Find out more...](#)

p.125



New!

Rotary linear clamp

hydraulically double-acting,
pneumatic position control

[Find out more...](#)

p.139



Coupling elements

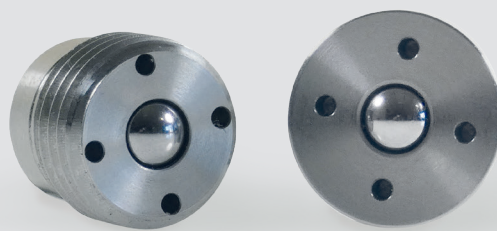
built-in and threaded body designs,
nominal diameters 3/5/8/12,
HT-Variant up to 200°C

[Find out more...](#)

p.17



HT-Variant **New!**

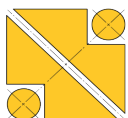


New!

Ball coupling elements

threaded body design,
nominal diameter 3, pmax = 350 bar

[Find out more... p. 29](#)

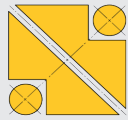


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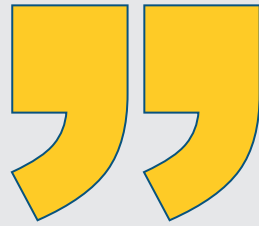
For customized
modifications and special designs we will
be pleased to support you.



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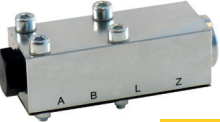
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HYDROKOMP offers a wide range of hydraulic functional elements, in order to optimize customer benefits in the best possible way. We are continuously expanding our range of components. We also offer hydraulic and pneumatic special solutions.



Product overview

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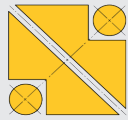


Important notice for designers:

The data sheets are product information. We update the data sheets as needed. If you would like to use the dimensions for your design purposes, please download the current data sheet as PDF from our website first.

We are also providing freely downloadable CAD files for many assemblies.

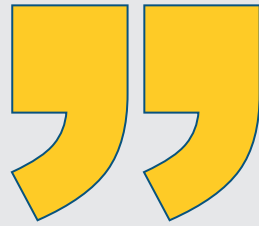
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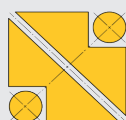
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„How long is the lifetime of the couplings?”

“Between one actuation and 2,000,000 actuations.
Depending on how clean the couplings are kept.
Chips and dirt endanger the functionality.”





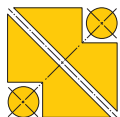
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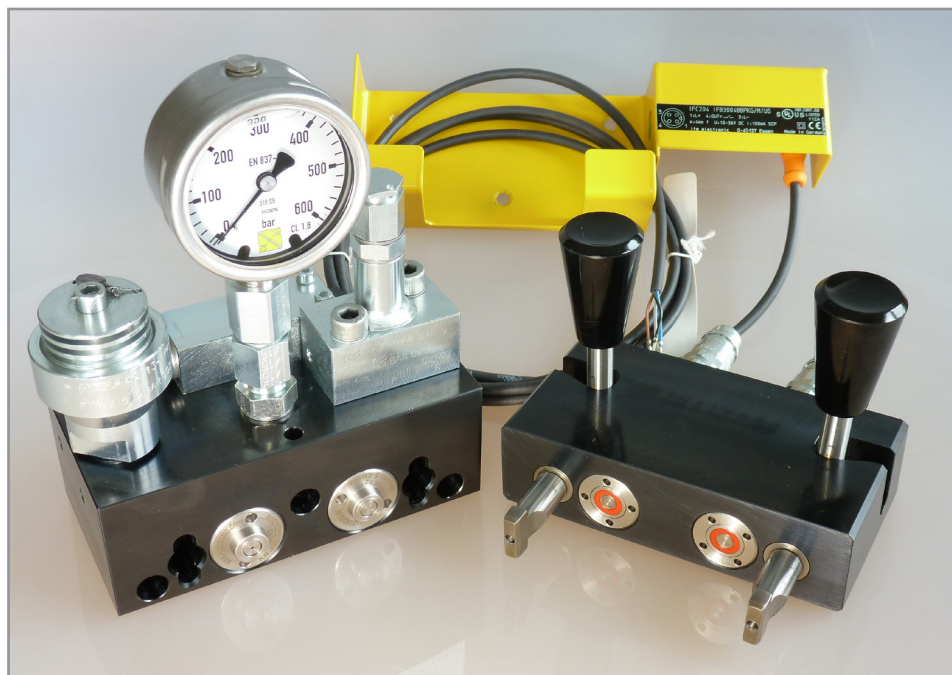
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Manual coupling systems

with levers or ball valve, single- and double-acting, pmax. 500 bar

100-2
Issue: 10/2022



Double-acting coupling nipple unit with 13 cm³ hydraulic accumulator (l.), coupling mechanism board (r.) and safety holder for coupling mechanism board with proximity switch (b.).

Description:

Manual coupling systems are applied with machine tools that operate with hydraulic fixtures but do not have a standard equipment of a hydraulic interface for oil supply to the fixture pallet.

The operating personnel take care of coupling and decoupling. In contrast to quick locking couplings, manual couplings do not bear the danger of mixing up pressure line and tank line. Also, the coupling process is made much faster.

After clamping the workpiece it is easy to unclamp the system without effort by the use of a hydraulically piloted check valve. Also the system pressure remains.

To unclamp the system, the T-port must be pressurized. At the single-acting coupling system the ball valve takes this feature (see page 4).

Required safety elements are already integrated. These include one hydraulic accumulator one check valve and one pressure relief valve which protects the hydraulic accumulator from a pressure rise over 10%.

The coupling unit can be equipped with two different hydraulic accumulators. HYDROKOMP recommends the accumulator with 13 cm³ nominal volume up to an oil volume of approx. 100 cm³ in the fixture. When the required oil volume is larger, the hydraulic accumulator with 40 cm³ nominal volume should be applied. The hydraulic accumulators are subject to technical rules for pressure vessels (see data sheet 600-20).

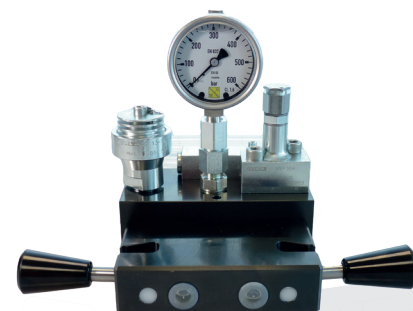
Installation instruction:

As standard the manual coupling systems are equipped with manifold and G1/4 threaded ports for oil supply. All flange-on surfaces have O-ring counterbores on the bottom and on the rear side, which also allow oil supply without pipes through drilled ducts.

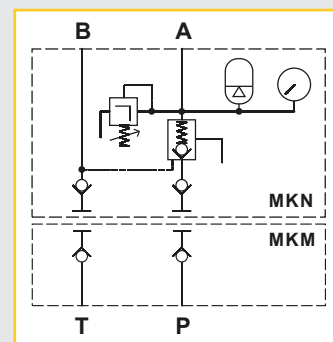
Safety information:

A safety holder with an inductive proximity switch is optional available for the double-acting coupling system. The safety retainer keeps the coupling mechanism board in the decoupled state in a parking station (see page 3).

Through the integrated proximity switch the safety holder can be directly connected with the machine control. With that, the pallet transport is only permitted in decoupled state. With the help of a equalizer valve in the coupling nipple of the T-port the pressure rise is limited to about 5 bar in decoupled state, e. g. when a leakage in the system occurs. For coupling and uncoupling of the coupling nipple unit and the coupling mechanism board both hydraulic lines must be depressurized by the hydraulic valves.



Webcode: 010002



Advantages:

- ✘ Oil supply by manifold or G1/4 threaded port connection
- ✘ Versatile mounting options
- ✘ Safety elements integrated
- ✘ Two hydraulic accumulators choosable
- ✘ No mixing up of pressure line and tank line
- ✘ Quick and easy coupling
- ✘ System pressure remain during coupling

We also design and manufacture customized variants!



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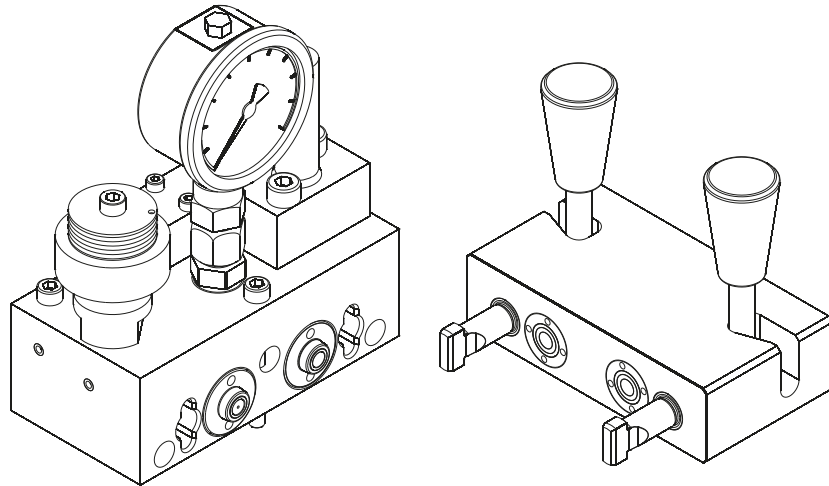
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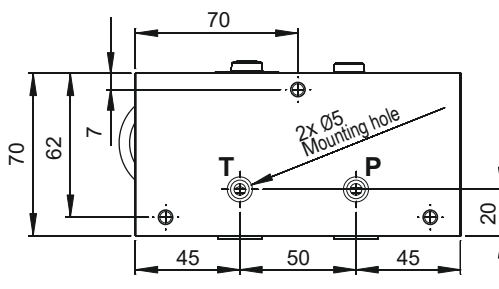
Manual coupling system

Manual coupling system, consisting of coupling nipple unit, coupling mechanism board and optional safety holder with inductive proximity switch (page 2 and 3).



Coupling nipple unit:

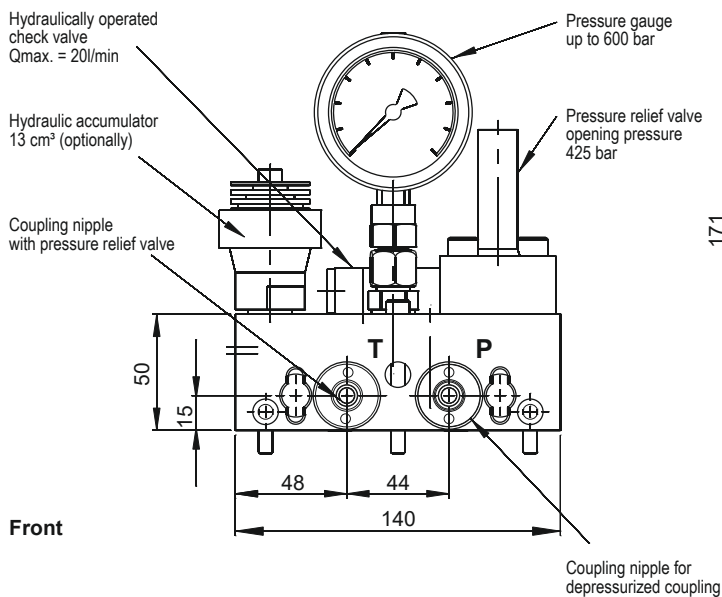
Bottom



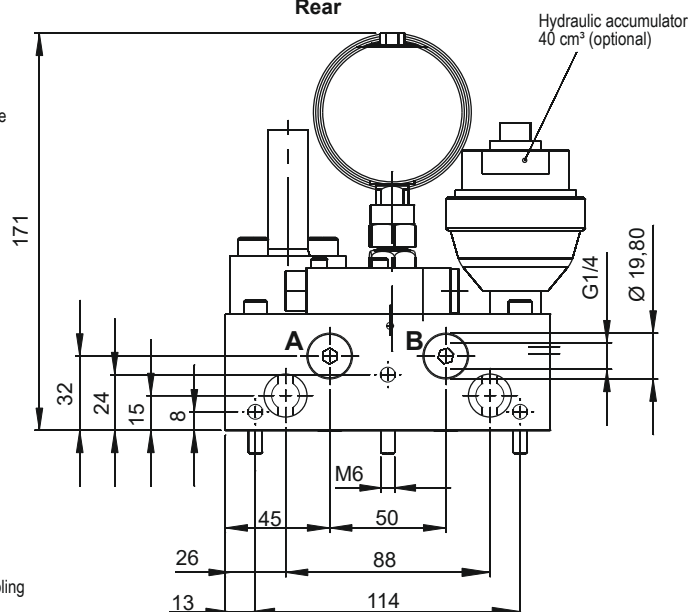
The flange-on surfaces for bottom or rear manifold connection must have a surface accuracy of at least $Ra = 1.6$.

For rear flange connection the O-rings are included.

Weight of the coupling mechanism board approx. 3,8 kg



Rear



Order numbers:

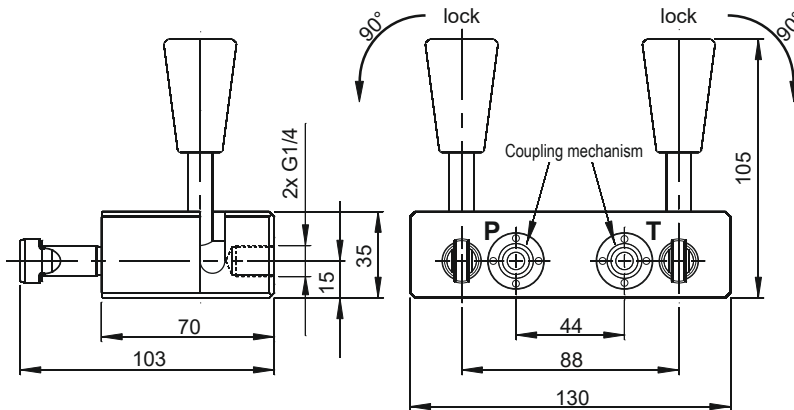
Part:	Comment:	Order number:
Coupling nipple unit (manifold connection, bottom-side)	accumulator volume 13 cm³	MKN-460-5-011
Coupling nipple unit (manifold connection, bottom-side)	accumulator volume 40 cm³	MKN-460-5-009
Coupling nipple unit (manifold connection, rear-side)	accumulator volume 13 cm³	MKN-460-5-013
Coupling nipple unit (manifold connection, rear-side)	accumulator volume 40 cm³	MKN-460-5-015
Coupling nipple unit (G1/4 threaded port)	accumulator volume 13 cm³	MKN-460-5-012
Coupling nipple unit (G1/4 threaded port)	accumulator volume 40 cm³	MKN-460-5-014
O-rings FKM, 16x2, for manifold connection	(spare part)	6020-001
Pressure gauge, 0 - 600 bar	(spare part)	8200-000
Pressure relief valve, opening pressure 425 bar	(spare part)	8000-003
Check valve, hydraulic, pilot operated	(spare part)	ERSV-500-5-003
Coupling nipple DN 5, depressurized coupling	(spare part)	KN-460-5-EG004
Coupling nipple DN 5, with pressure relief function	(spare part)	KN-460-5-EG006
Hydraulic accumulator 13 cm³	(spare part)	8200-001
Hydraulic accumulator 40 cm³	(spare part)	8200-002



Coupling mechanism board:

Coupling mechanism board, which locks both components for pressure transfer.

Both tension rods are inserted into the bayonet catch. Then the levers are turned to the side by 90°. Through two integrated drafts the tension rods are shortened and the coupling process is executed. The locking stroke is 5 mm, weight approx. 2,4 kg.

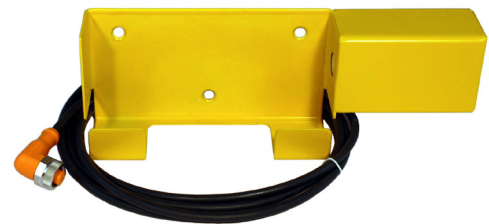
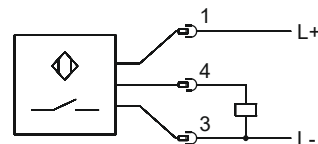
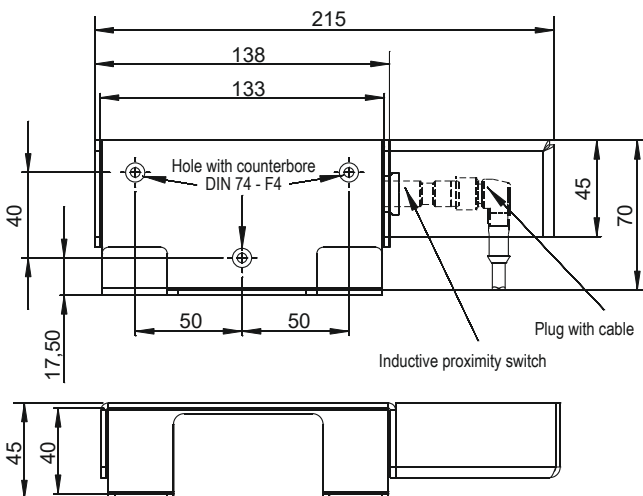


Order numbers:

Part:	Order number:
Coupling mechanism board	MKM-460-5-100
Coupling mechanism (spare part)	KM-460-5-EG008
Mounting tool for seal replacement ⁽¹⁾	9000-010
Seal, red, (spare part, unit 10 pcs.)	D-460-5-001

⁽¹⁾Accessory, for details see data sheet 100-5.

Safety holder (accessory):

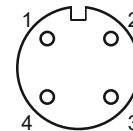


Safety holder with inductive proximity switch and plug (cable length 3 m). The safety holder takes up the uncoupled coupling board into a parking station.

Through the integrated proximity switch the safety holder can be directly connected to the machine control. So, the pallet transport is only permitted in uncoupled state.

Pin configuration:

BK black
BN brown
BU blue
WH white



1 BN
2 WH
3 BU
4 BK

Inductive proximity switch

Electrical type	DC PNP
Initial function	N.O. contact
Operating voltage [V]	10...36 DC
Current rating [mA]	100
Reverse polarity protection	yes
Overload protected	yes
Voltage drop [V]	< 2,5
Power input [mA]	< 10 (24 V)
Protection grade/class	IP 68 (Coolant), II
Connection	M12 connecting insert, contacts gold-coated
Accessory (supplied)	2 fixing nuts

Plug with cable

Operating voltage [V]	250 AC / 300 DC
Current rating [A]	4
Version	angled
Ambient temperature [degree]	-25°...90°C
Protection grade/class	IP 67
Connection	PUR-cable/3 m, 4x0,34 mm ²
Cable length [m]	3

Order numbers:

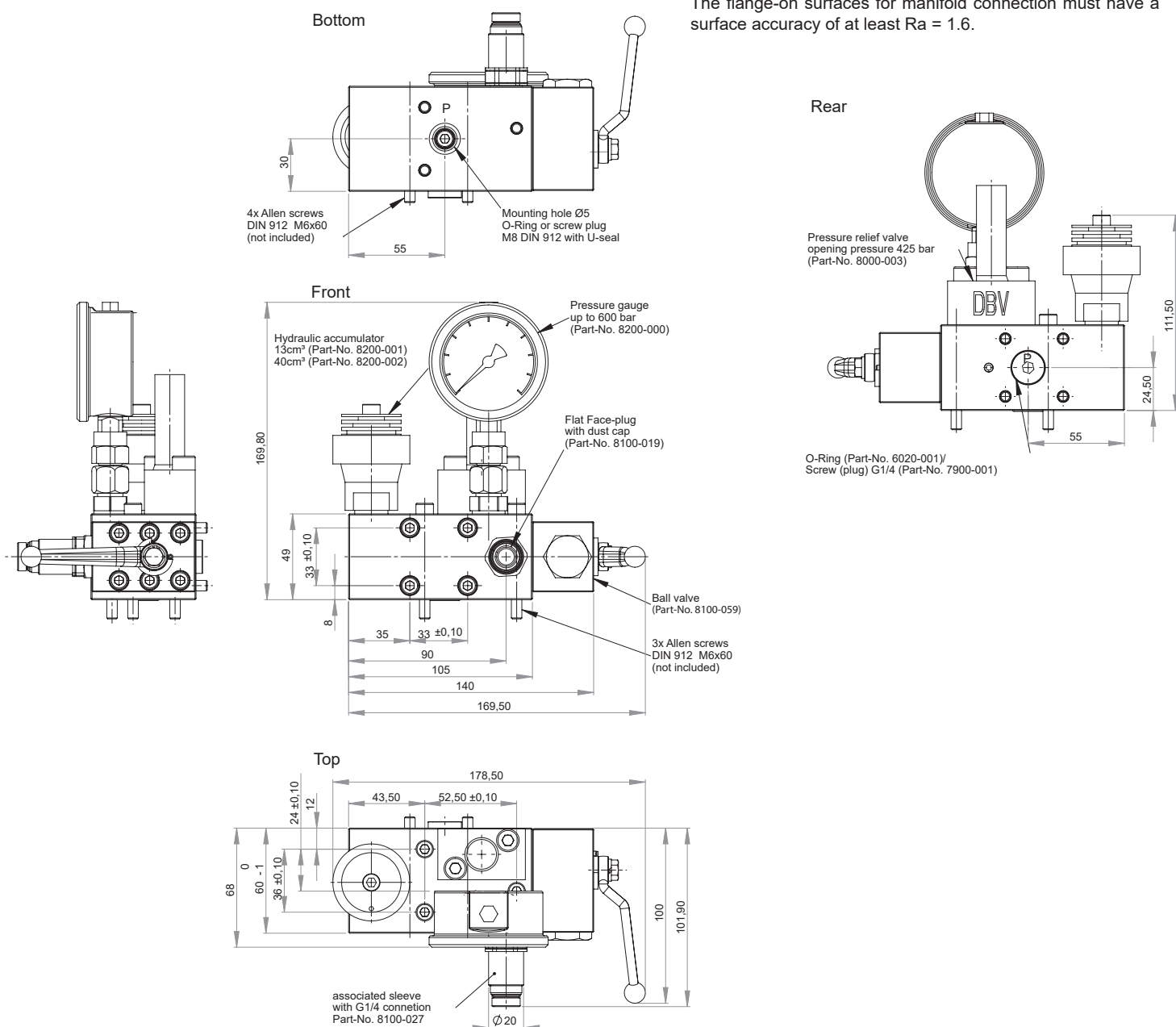
Safety holder completely	MKS-5-001
Plug with 3 m cable (spare part)	8500-032
Inductive proximity switch (spare part)	8500-031
Holder frame (spare part)	9000-101



Coupling unit:

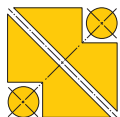
The coupling unit can be connected optional at factory by flange-bottom, flange-rear or rear threaded port.

The flange-on surfaces for manifold connection must have a surface accuracy of at least $Ra = 1.6$.



Order numbers:

Part:	Comment:	Order number:
Coupling unit (manifold connection, bottom-side)	accumulator volume 13 cm³	MK-5-001
Coupling unit (manifold connection, bottom-side)	accumulator volume 40 cm³	MK-5-002
Pressure relief valve, opening pressure 425 bar	(spare part)	8000-003
Flat face plug with dust cover	(spare part)	8100-019
Hydraulic accumulator 13 cm³	(spare part)	8200-001
Hydraulic accumulator 40 cm³	(spare part)	8200-002
Ball valve	(spare part)	8100-059
Pressure gauge, 0 - 600 bar	(spare part)	8200-000
Coupling joint with G1/4 threaded port	(spare part)	8100-027
O-ring FKM, 16x2 for manifold connection	(spare part)	6020-001
O-ring for manifold connection, bottom-side	(spare part)	6014-002
U-seal	(spare part)	6006-003
Screw plug G1/4	(spare part)	7900-001
Screw plug M6 DIN 912	(spare part)	7006-022



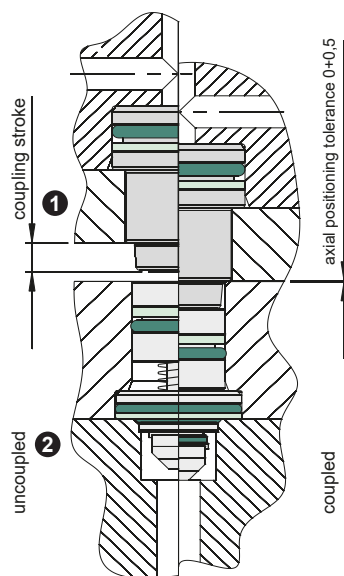
Coupling elements

built-in and threaded body designs, nominal diameters 3/5/8/12, „HT“ up to 200°C

NEW!

100-3

Issue: 05/2025



- ① Coupling nipple
- ② Coupling mechanism

Description:

Coupling elements of HYDROKOMP are made of stainless materials. This enables the elements to be used for all fluids and gases, that are not aggressive. Special designs e.g. for water steam or other media are available on request.

HYDROKOMP offers coupling elements for two different operating modes depressurized coupling ● or pressurized coupling ○. The elements for depressurized coupling can be coupled pressurized with up to 25 bar, if the specified volume flow is not exceeded. When using higher operating pressure there occurs a risk of damaging the soft seal in the check valve as the result of high flow velocities of the fluid. This means for coupling of air up to 10 bar there should be always used the coupling elements for depressurized coupling. This also applies when the coupling process is initiated pressurized. The elements which can be coupled pressurized may be coupled up to the maximum specified operating pressure on one side and / or on both sides.

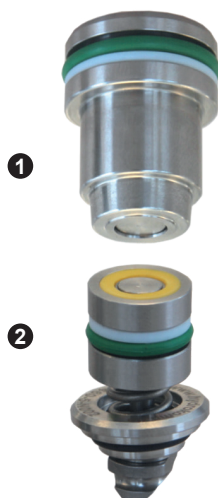
In the HYDROKOMP „HT“-Variant, all depressurized couplings can be used at a temperature of up to 200°C.

- For depressurized hydraulic coupling und pneumatic in all nominal diameter. ND3 and ND5 are also suitable for vacuum. ND8 and ND12 available for vacuum upon request.
- For pressurized hydraulic coupling.

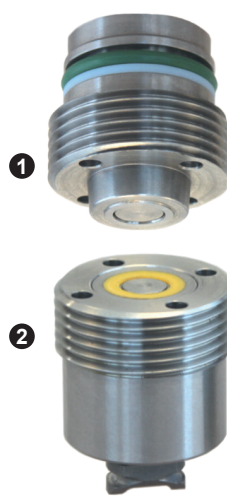
Technical data:

Nominal diameter:	3	5	8	12
Operating pressure max. [bar]	350	500	300	250
Flow max./minute [l]	8	12	25	50
Operating temperature 80°C	Order-Nr. Standard			
Operating temperature 200°C	Order-Nr. additional „-HT“ (only for depressurized coupling)			
Coupling stroke [mm]	4,5	4,5	7,0	10,0
Coupling force min. at 0 bar [N]	94	98	110	169
Axial coupling force pressurized per coupling position	$F[N]=9,4 \times p[bar]$	$F[N]=15,4 \times p[bar]$	$F[N]=31,4 \times p[bar]$	$F[N]=70,7 \times p[bar]$
Axial positioning tolerance [mm]	+ 0,5	+ 0,5	+ 0,5	+ 0,5
Radial positioning tolerance [mm]	± 0,3	± 0,3	± 0,3	± 0,5
Permitted angle tolerance	± 1°	± 1°	± 1°	± 1°

Built-in



Threaded body



Webcode: 010003

Operating conditions:

Coupling nipple and coupling mechanism must face coaxially each other before the coupling process.

The base plates of both elements must be guided about 2 to 3 mm before contact of the sealing surfaces within the radial positioning tolerance.

The coupling force between coupling nipple and coupling mechanism resulting from hydraulic pressure according to the formula has to be compensated positively from the outside.

The axially acting front seal areas must be protected from contamination. Good results can be achieved by rinsing and following blowing-off with compressed air. The sealing of the mechanism is done in the drill base of the mounting hole. The required surface quality in the drawing has to be kept.

Advantages:

- Space-saving installation in individual receiving housing possible
- Transmission of liquid and gaseous mediums and vacuum
- Vacuum for ND3 and ND5 (ND8 and ND12 on request)
- Pressurized ○ or depressurized coupling ●
- HT-Variant up to 200°C **New!**
- Special variants on request:
 - reduced spring force **Special!**
 - reduced coupling stroke
 - including cleaning nozzle
 - pressure relief valve included
 - suitable for usage with steam

We also design and manufacture customized variants!



HYDROKOMP®

Hydraulische Komponenten GmbH

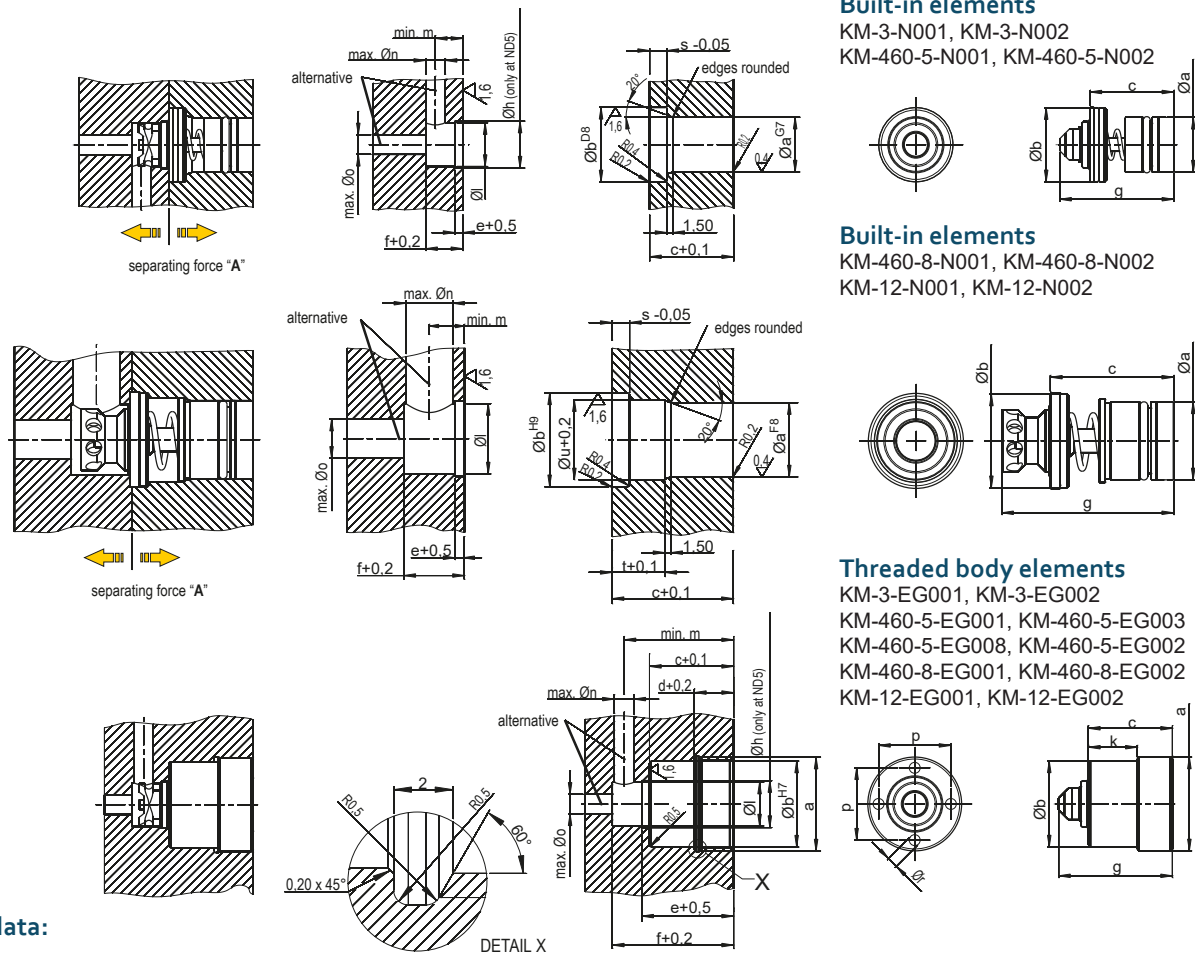
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Technology that connects

**Built-in elements**

KM-3-N001, KM-3-N002
KM-460-5-N001, KM-460-5-N002

Built-in elements

KM-460-8-N001, KM-460-8-N002
KM-12-N001, KM-12-N002

Threaded body elements

KM-3-EG001, KM-3-EG002
KM-460-5-EG001, KM-460-5-EG003
KM-460-5-EG008, KM-460-5-EG002
KM-460-8-EG001, KM-460-8-EG002
KM-12-EG001, KM-12-EG002

Technical data:

Nominal diameter:	3			5			8		12	
Type	built-in	thread. body		built-in	thread. body	thread. body	built-in	thread. body	built-in	thread. body
Separating force "A" [N]	15,4 x p [bar]	—		28,4 x p [bar]	—	—	45,2 x p [bar]	—	96,2 x p [bar]	—
Tightening torque [Nm]	—	15		—	20	25	—	32	—	41
a [mm]	11	M20x1,5		14	M24x1,5	M30x1,5	20	M36x1,5	30	M45x1,5
b [mm]	14	18		19	22	25	24	30	34,7	40
c [mm]	21,5	21,5		21,5	21,5	21,5	31	31	41	41
d [mm]	—	10		—	10	10	—	13	—	18
e [mm]	—	—		2	23,5	23,5	—	—	—	—
f [mm]	9,5	31		9,5	31	31	15,5	46,5	16,5	57,5
g [mm]	29	29		29	29	29	44	44	53,1	53,1
h +0,1 [mm]	—	—		12	12	12	—	—	—	—
k [mm]	—	13		—	12,5	12,5	—	19,5	—	24,6
l +0,1 [mm]	11,2	11,2		11,2	11,2	11,2	18	18	22	22
m [mm]	7	28		7	28	28	9	40	9	50
n [mm]	5	5		5	5	5	12	12	12	12
o [mm]	7	7		7	7	7	10	10	12	12
p [mm]	—	15,5		—	18,5	22	—	28	—	37
r [mm]	—	2x2,6		—	4x2,8	2x4,5	—	2x4,5	—	2x4,5
s [mm]	4,5	—		4,5	—	—	4,5	—	6	—
t [mm]	—	—		—	—	—	13,5	—	18,5	—
u [mm]	—	—		—	—	—	21,6	—	31,5	—
Order number:	KM-3...			KM-460-5...			KM-460-8...		KM-12...	
depressurized coupling	...N001	...EG001		...N001	...EG008	...EG001	...N001	...EG001	...N001	...EG001
pressurized coupling	...N002	...EG002		...N002	...EG002	...EG003	...N002	...EG002	...N002	...EG002
Screw-in tool ⁽¹⁾	—	9000-057		—	9000-007	—	—	9000-058	—	9000-252
Mounting tool ⁽²⁾	9000-011	9000-011		9000-010	9000-010	9000-010	9000-013	9000-013	—	—
System seal, red ⁽³⁾	D-3-001			D-460-5-001			D-460-8-001		D-12-001	
System seal, yellow ⁽³⁾	D-3-002			D-460-5-002			D-460-8-002		D-12-002	

For the 200°C version, add "-HT" to the order number. For example: KM-460-5-EG008-HT.

The HT-Version (light blue seal) is for depressurized couplings only.

● For depressurized hydraulic coupling, pneumatic and vacuum. NW8 and NW12 available for vacuum upon request.

● For pressurized hydraulic coupling.

⁽¹⁾Accessories: for screwing the coupling mechanisms into the receiving housing (see page 4)

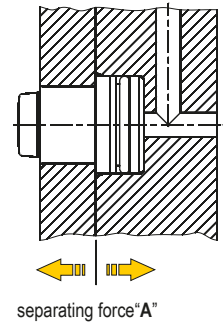
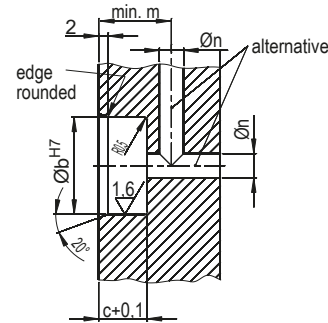
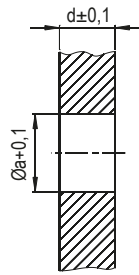
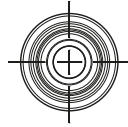
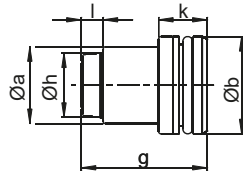
⁽²⁾Accessories: for the replacement of the system seal at coupling mechanisms (see page 4)

⁽³⁾Spare parts: System seal red = depressurized coupling, yellow = pressurized coupling, only for replacement orders, packing unit = 10 pieces

New!

HT-Variant
up to 200°C
(only depressurized coupling)

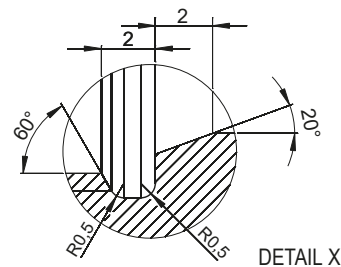
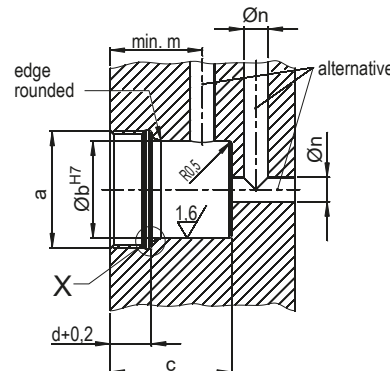
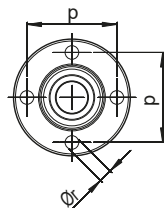
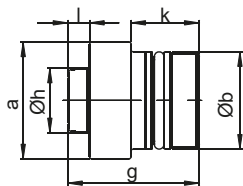


**Built-in elements**

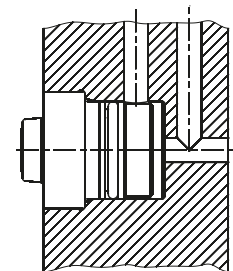
KN-3-S001K, KN-3-S002K,
KN-460-5-S001L, KN-460-5-S003L,
KN-460-5-S001K, KN-460-5-S003K,
KN-460-8-S001, KN-460-8-S002,
KN-12-S001, KN-12-S002

Threaded body elements

KN-3-EG001, KN-3-EG002,
KN-460-5-EG001, KN-460-5-EG004,
KN-460-5-EG002, KN-460-5-EG003,
KN-460-5-EG006,
KN-460-8-EG001, KN-460-8-EG002,
KN-12-EG001, KN-12-EG002



DETAIL X

**Technical data:**

Nominal diameter	3		5					8		12	
Type	built-in	thread. body	built-in	built-in	thread. body	thread. body	thread. body ⁽⁴⁾	built-in	thread. body	built-in	thread. body
Separating force "A" [N]	20,1 x p [bar]	–	31,5 x p [bar]	31,5 x p [bar]	–	–	–	45,2 x p [bar]	–	96,2 x p [bar]	–
Tightening torque [Nm]	–	15	–	–	20	25	25	–	25	–	41
a [mm]	13	M20x1,5	16	16	M24x1,5	M28x1	M28x1	21	M30x1,5	31	M45x1,5
b H7 [mm]	16	16	20	20	20	20	20	24	25	35	35
c [mm]	10	23	10	16,5	25	25	34	9	26	12	32
d [mm]	11,4	8,4	11,4	17	8,5	8,5	8,5	15	8,5	15,4	13,4
g [mm]	25,9	25,9	26	38,1	27	27	37	31,4	29,9	37,4	40
h [mm]	9,8	9,8	13,5	13,5	13,5	13,5	13,5	18,5	18,5	28,5	28,5
k [mm]	10	13	10	16,5	14	14	19,5	9	14	12	16,6
l [mm]	4,5	4,5	4,5	4,5	4,5	4,5	4,5	7,4	7,4	10	10
m [mm]	15	19	15	22	19	19	19	15	22,5	21	31
n [mm]	5	5	5	5	5	5	5	10	10	12	12
p [mm]	–	15,5	–	–	18,5	20	20	–	24	–	37
r [mm]	–	2x2,6	–	–	4x2,8	2x4,2	2x4,2	–	4x3,5	–	2x4,5
Order number:	KN-3...		KN-460-5...					KN-460-8...		KN-12...	
depressurized coupling 	...-S001K	...-EG001	...-S001K	...-S001L	...-EG003	...-EG004	...-EG006	...-S001	...-EG001	...-S001	...-EG001
pressurized coupling 	...-S002K	...-EG002	...-S003K	...-S003L	...-EG002	...-EG001	–	...-S002	...-EG002	...-S002	...-EG002
Screw-in tool ⁽⁵⁾	–	9000-057	–	–	9000-007	9000-012	9000-012	–	9000-173	–	9000-252

All depressurized coupling variants can be used up to 200°C.

● For depressurized hydraulic coupling, pneumatic and vacuum. NW8 and NW12 available for vacuum upon request.

● For pressurized hydraulic coupling.

⁽⁴⁾ This coupling nipple has a pressure relief function in the uncoupled state. It may only be installed into the tank line. There, it prevents a pressure build-up at any faulty piston seals. The opening pressure is approx. 3 - 5 bar.

⁽⁵⁾ Accessories: for screwing the coupling nipples into the receiving housing (see page 4).

**Mounting tools:**

Coupling mechanisms of HYDROKOMP are designed in a way that the front system seal is replaceable.

The system seal wears in daily use by contamination and metal chips. If the coupling mechanism itself does not show any damage, the system seal can be replaced separately.

Order numbers for mounting tools and system seals are listed on page 2. For more information, see data sheet 100-5.

Webcode: 010005

**Screw-in tools:**

These tools are used to screw the coupling mechanisms and coupling nipples secure into the housing. The screw-in tool can be tightened for example by a cordless powered screwdriver or wrench.

There are different screw-in tools for coupling mechanisms and coupling nipples available. They differ in their pin assignment and various nominal diameters.

Order numbers for screw-in tools see charts on page 2 and 3.

**Applications:**

The built-in elements are particularly suitable for installation in plates of single and multiple coupling systems. Threaded body elements can be directly screwed into the fixture body, for example of a tool change system. There, they are ideal suitable as an interface for medium transfer.



Single coupling system with cleaning nozzle, (ND 5) depressurized coupling, housing according to customer's requirements

f.l. Coupling nipple plate:
coupling nipple threaded-body type

f.r. Coupling mechanism plate with cleaning
nozzle: coupling mechanism built-in type



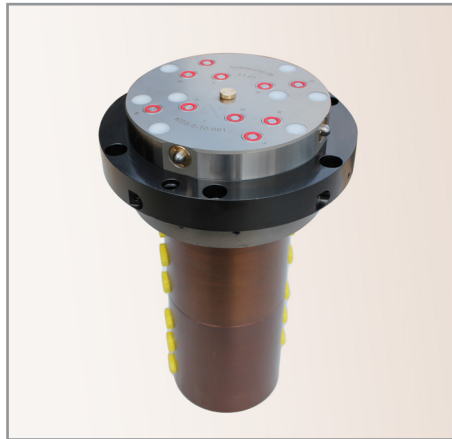
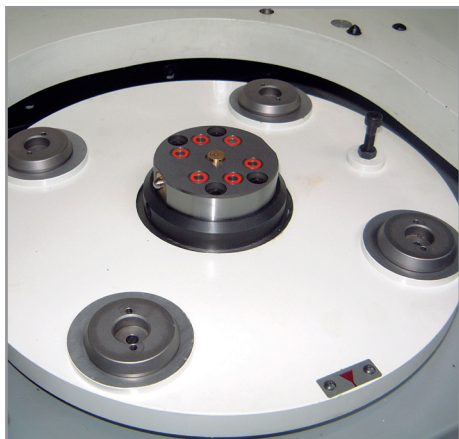
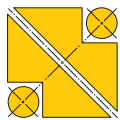
Single coupling system, (ND 3) depressurized coupling, housing according to customer's requirements

f.l. Coupling mechanism plate:
coupling mechanism threaded body type

f.r. Coupling nipple plate:
coupling nipple threaded body type



In these systems different coupling elements can be combined. Also rotary couplings can be integrated as well as additional functions e.g. hydro mechanical locking and cleaning nozzle etc.



Application example:

Six-fold coupling system with self-locking, two pairs of lines are each pressurized double-acting and two lines are used for pneumatics. The fixture pallet does not have to be clamped in the loading station in order to absorb the coupling forces. For this purpose, the system has the self-locking function.

Description:

Multiple coupling systems are predominantly used in machine tools, where they serve as the interface for media transmission between the fixture pallet and the loading and unloading station, or the machining station.

Applications have been successfully carried out in other areas of engineering, such as handling technology, robotics and in the construction of moulds and dies.

The design of the coupling systems is based on the built-in coupling elements according to data sheet 100-3. These are integrated into a common plate in a very compact and functional manner.

We provide standardized subassemblies or design and manufacture customer specific coupling systems.

Functioning:

The coupling elements required for the transmission of media are built into common base plates. The coupling mechanism plates are fitted in the operating and machining station, and the coupling nipple plates in the fixture pallets.

Depending on the design, various additional functions can be integrated into the coupling plates.

The spring-loaded blast nozzle built into the coupling mechanism plate can be designed in such a way that the jet of air in the coupled state can, for example, be passed on for system monitoring of the workpieces.

In order to avoid the clamping of the device pallet and the associated absorption of coupling forces, the coupling systems can be equipped with a self-locking system that saves on additional, expensive clamping elements in the operating station.

The coupling elements themselves are all made of stainless materials. This means that not only hydraulic fluids but also air or vacuum can be transmitted with no difficulty. Coupling elements of different nominal diameters can be combined in a multiple coupling system.

Combinations with rotary couplings in the operating station permit the fixture pallet to be turned through 360°, thus providing easy access to the fixture.

Operating conditions:

The coupling elements can be coupled either only when depressurized or when pressurized up to maximum operating pressure, whichever is chosen.

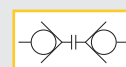
If systems are used that can be coupled under pressure, it is, for example, possible to effect a pressure change to the clamping pressure during machining, which is not possible when pilot-controlled check valves are used in the clamping line.

General technical data:

Nominal diameter:	3	5	8	12
Max. operating pressure [bar]	350	500	300	250
Max. flow/minute [l]	8	12	25	50
Coupling stroke [mm]	4,5	4,5	7,0	10,0
Min. coupling force at 0 bar [N]	94	98	98	169
Axial coupling force under pressure each coupling point	$F[N]=9,4xp[bar]$	$F[N]=15,4xp[bar]$	$F[N]=31,4xp[bar]$	$F[N]=70,7xp[bar]$
Axial positioning tolerance [mm]	+ 0,5	+ 0,5	+ 0,5	+ 0,5
Radial positioning tolerance [mm]	± 0,3	± 0,3	± 0,3	± 0,5
Permitted angle tolerance	± 1°	± 1°	± 1°	± 1°



Webcode: 010004



Advantages:

- ✘ Different coupling elements can be combined
- ✘ Can be combined with rotary couplings
- ✘ Additional functions can be integrated
- ✘ Depressurized or pressurized coupling
- ✘ Varied with four nominal diameters
- ✘ Transfer of liquid, gaseous media and vacuum

We also design and manufacture customized variants!



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Rotary coupling system for a machine tool with fourfold coupling interface and integrated six-fold rotary coupling

- l. Coupling mechanism plate, depressurized coupling
- r. Coupling nipple plate with blast nozzle and integrated rotary coupling with hydro-mechanical locking



Docking station with six coupling points, pressurized coupling; in order to dock the coupling plate, it is raised by an integrated hydraulic cylinder.

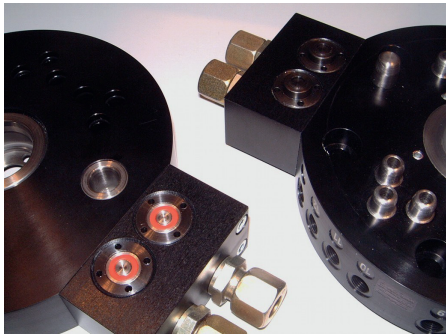
An electronic sensor queries the position.

The positioning of the counter-couplings is realized by two bolts.

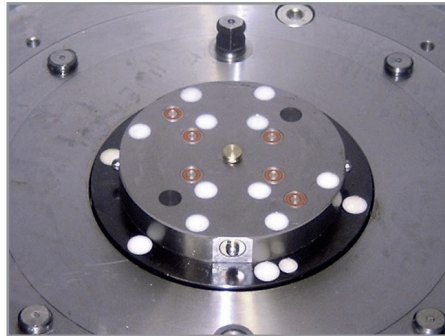


Coupling system with hydro-mechanical locking and two coupling points:

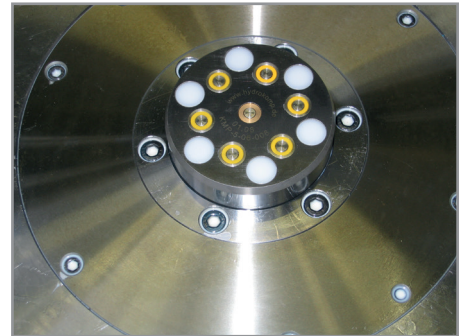
- l. Coupling mechanism plate without locking for the machining station
- h. Coupling nipple plate with integrated rotary coupling and locking bolts for the loading station
- r. Coupling nipple plate for mounting into the fixture



Coupling system for extrem low leakage hydraulic oil fed in tool changing modules of a robot. Therefore two hydraulic lines are coupled by threaded-body coupling elements (M24x1,5).



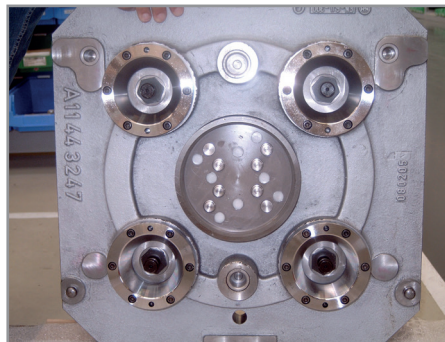
Docking system in the loading and unloading station of a machine tool. In order to allow 360° rotation of the hydraulic clamping fixture the system is equipped with a rotary coupling.



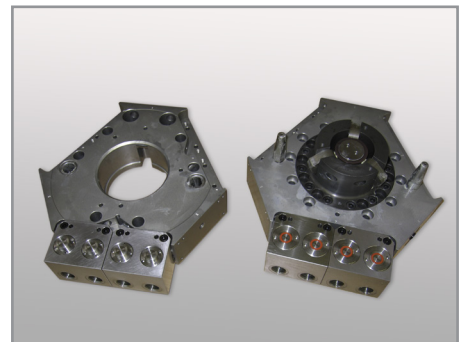
Coupling plate used for the transmission of hydraulic oil in the loading and unloading station of a fixture plate. The six coupling elements are coupled pressurized.



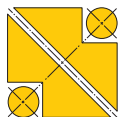
Triple coupling system for hydraulic oil fed of the fixture plate in a machine tool. The connection in the loading and unloading station is realized through the lowering of the fixture plate.



Coupling nipple plate in the fixture plate of a machine tool. The nipple plate is docked to the docking unit (figure above) and hydro-mechanical locked.



Tool-change system for a handling unit in a robot with four coupling elements (nominal diameter 8) as the interface for a hydraulically operated cutting tool.



Mounting tools

for replacement of system seals at coupling mechanisms

100-5

Issue: 10/2022



Mounting tool with inserted system seal prior to pressing into the coupling mechanism.

Innovation starts in detail:

Coupling mechanisms by HYDROKOMP are designed in such a way that the front system seal can be replaced.

This seal is subject to wear in daily use as a result of contamination and metal fillings.

If the coupling mechanism itself shows no damage the system seal can be replaced separately.

This can be done by the user or external service personnel.

HYDROKOMP has developed a suitable mounting tool to realise the replacement of the system seal simply and safe.

Replacing the system seal:

Pull out the old damaged system seal from the pilot groove by a scribe.

Insert the new system seal into the peak of the mounting tool manually and set the tool to position above the coupling mechanism.

Through manual pressure insert the system seal exactly and in correct bearing position into the axial groove of the coupling mechanism.

Its replacement is simple to handle and can be done in only a few minutes to make the coupling mechanism ready for the next use.



Webcode: 010005

Advantages:

- ✗ Cost-reducing equipment
- ✗ Long service life of the coupling mechanisms
- ✗ Minimised machine down time
Higher availability of machine tools
- ✗ Preventive maintenance possible
- ✗ Appropriate system seals available
- ✗ Dimensions:
max. Ø 30 mm, length 77 mm

We also design and manufacture customized variants!



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Order numbers:

Nominal diameter:	3	5	8	12
Mounting tool	9000-011	9000-010	9000-013	request
System seal, red ⁽¹⁾	D-3-001	D-460-5-001	D-460-8-001	D-12-001
System seal, yellow ⁽¹⁾	D-3-002	D-460-5-002	D-460-8-002	D-12-002

⁽¹⁾ System seal red = for coupling without pressure, yellow = for coupling under pressure
Packaging unit = 10 pcs.



Screw-in tools:

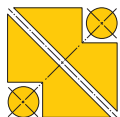
These tools are used to screw the coupling mechanisms and coupling nipples secure into the housing.

The screw-in tool can be tightened for example by a cordless powered screwdriver or wrench.

There are different screw-in tools for coupling mechanisms and coupling nipples available. They differ in their pin assignment and various nominal diameters.

Order numbers:

Tool	Nominal diameter	Coupling element	Order numbers
for coupling mechanism	3	KM-3-EG001	9000-057
		KM-3-EG002	
	5	KM-460-5-EG002	9000-007
		KM-460-5-EG008	
	8	KM-460-8-EG001	9000-058
		KM-460-8-EG002	
	12	KM-12-EG001	9000-252
		KM-12-EG002	
for coupling nipple	3	KN-3-EG001	9000-057
		KN-3-EG002	
	5	KN-460-5-EG002	9000-007
		KN-460-5-EG003	
		KN-460-5-EG001	9000-012
		KN-460-5-EG004	
		KN-460-5-EG006	
	8	KN-460-8-EG001	9000-173
		KN-460-8-EG002	
	12	KN-12-EG001	9000-252
		KN-12-EG002	



Automatic coupling systems

ND 5/8, hydraulic pmax. 350/300 bar, pneumatic 3,5 to 10 bar, vacuum, double-acting

100-6

Issue: 05/2025

Description:

If there is no coupling stroke required or possible, this coupling system can be coupled separately by a control pressure.

The gap between the coupling mechanism and coupling nipple can be 0.6 - 1.0 mm.

Operating:

The coupling surfaces of AKN and AKM are frontally flat so that the user can position them in any axial and / or radial positions for coupling in accordance with the positioning tolerance.

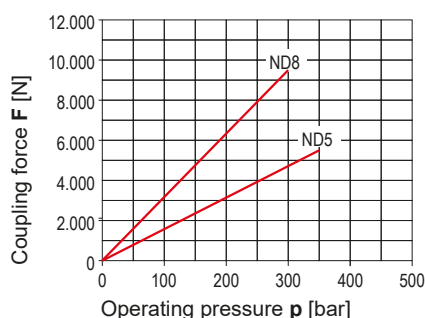
An integrated control piston **A** initiates the clamping stroke. It is possible to control individual couplings specifically. The control pressure **A** is to be supplied with the same pressure as the media pressure **P**.

When the control port **A** is not pressurized, the AKM is set into the basic position. The maximum operating pressure is 350 bar.

The AKM can be operated single-acting (only hydraulically) or double-acting. If the AKM should operate single-acting, the port **B** must be used for housing ventilation. In order to increase the operational safety, the double-acting operation method is preferable.

The coupling force between coupling nipple and coupling mechanism has to be compensated positively from the outside. The axially acting front seal surfaces must be protected from contamination.

Coupling force:

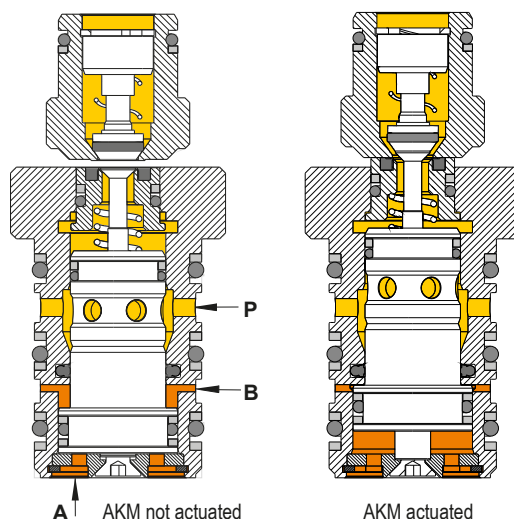


$$\text{ND 5} = F \text{ [N]} = 15,4 \times p \text{ [bar]}$$

$$\text{ND 8} = F \text{ [N]} = 31,4 \times p \text{ [bar]}$$

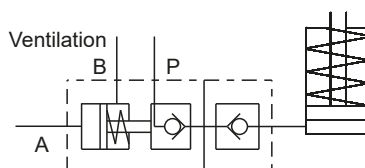
Functional scheme:

1. Positioning the coupling nipple to the coupling mechanism in accordance with the positioning tolerance
2. Control pressure **A**: the connection to the coupling nipple side is initiated.
3. Operating pressure at port **P**

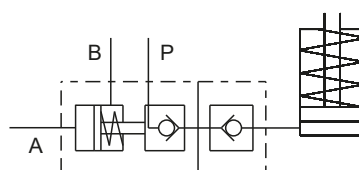


Application examples:

single-acting,
only hydraulically
with 1 separate control line **A**

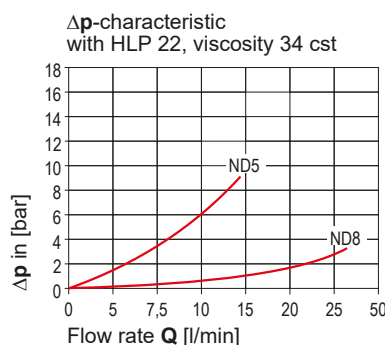


double-acting,
hydraulically or pneumatically
with 2 separate control lines
A and **B**



A= Control pressure
B= Control pressure
P= Media pressure

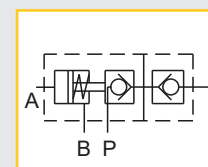
Flow resistance:



Δp-characteristic
with HLP 22, viscosity 34 cst



Webcode: 010006



Designs:

- ✗ - Screw-in system
- ✗ - Plug-in system

Advantages:

- ✗ no additional stroke required for coupling
- ✗ enable depressurised coupling
- ✗ selective control of individual couplings is possible
- ✗ coupling elements made of stainless materials
- ✗ single-acting only hydraulically
- ✗ Pneumatically double-acting
- ✗ Medium vacuum → control pneumatically

We also design and manufacture customized variants!



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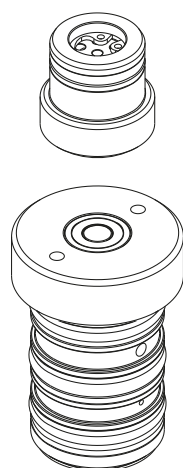
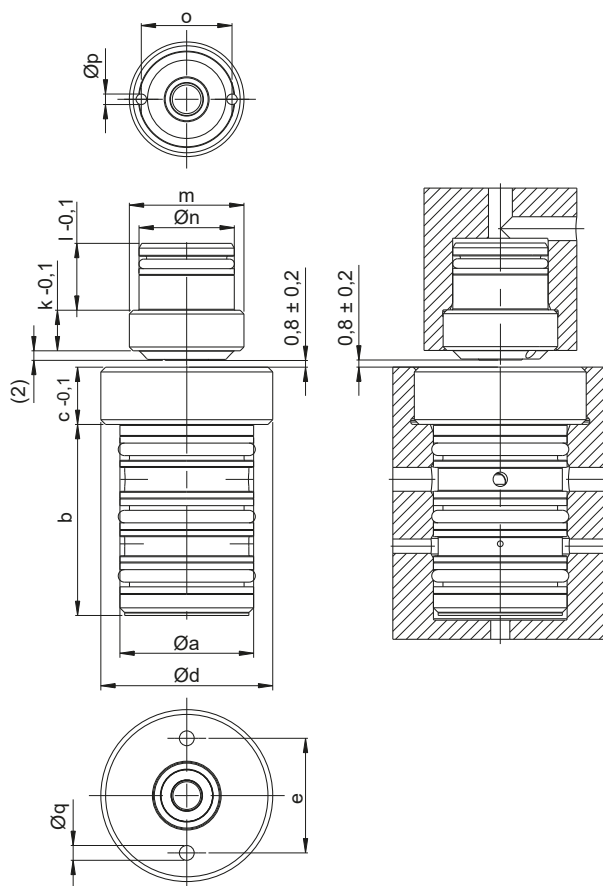
+49 6401 225999-0

sales@hydrokomp.de

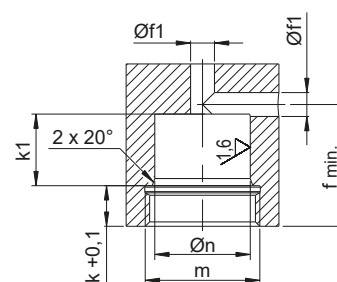
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35325 Mücke (Germany)

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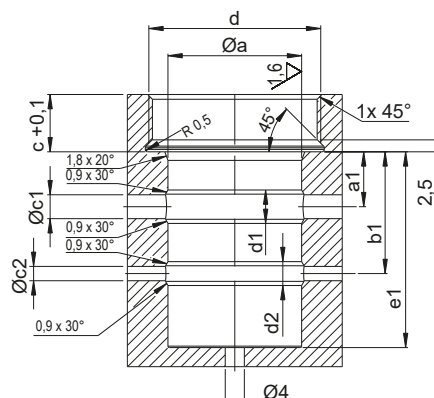
Technology that connects

Coupling nipple
(AKN)Coupling mechanism
(AKM)

Installation contour for AKN



Installation contour for AKM



Dimensions:

N. diameter:	5	8
Øa [mm]	28 H7/f7	42 H7/f7
a1 [mm]	11,5	23
b [mm]	40	65
b1 [mm]	25,5	45
c [mm]	12	15
Øc1 [mm]	5	8
Øc2 [mm]	3	4
d [mm]	M36x1,5	M50x2
d1 [mm]	7	11,5
d2 [mm]	5	7,5
e [mm]	24	37
e1 [mm]	> 41	> 66
f min. [mm]	25	30
Øf1 [mm]	5	8
k [mm]	8,5	10
k1 [mm]	15	19
l [mm]	14	17
m [mm]	M24x1,5	M32x1,5
n [mm]	20 H7/f7	25 H7/f7
o [mm]	19	24
p [mm]	2,1	3,5
q [mm]	3,1	4,5

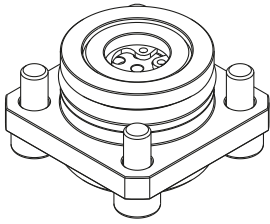
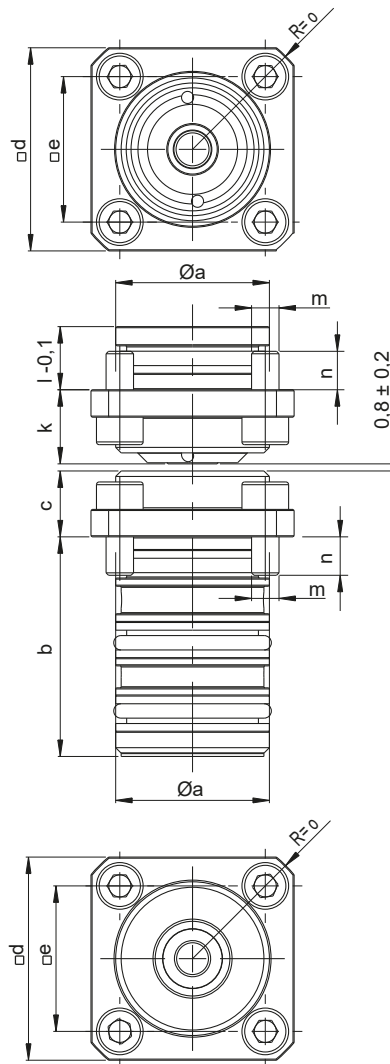
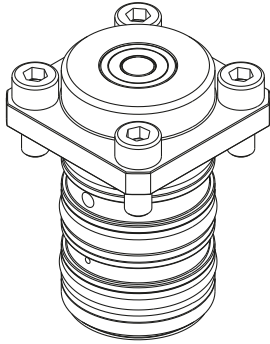
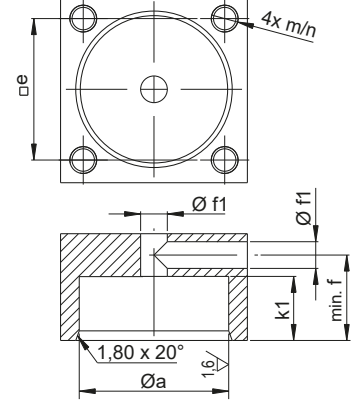
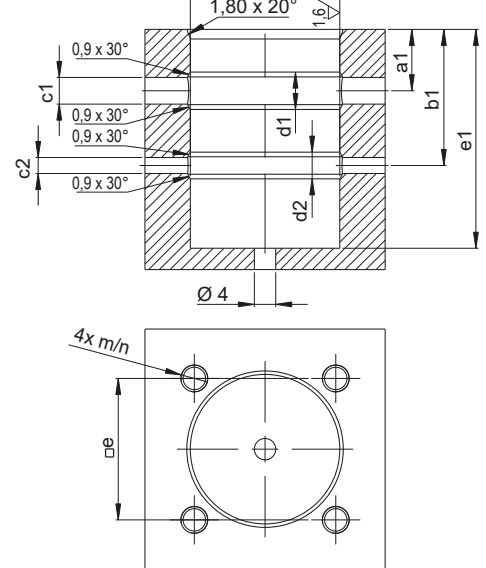
Technical data hydraulic:

Nominal diameter:	5	8
Hydraulic operating pressure max.	[bar] 350	300
Flow max./minute	[l/min.] 12	25
Gap nipple/mechanism min.	[mm] 0,6	0,6
Gap nipple/mechanism max.	[mm] 1,0	1,0
Axial coupling force (Pressure spring) coupled	[N] 130	-
Axial coupling force pressurized	[N] F[N]=15,4 x p[bar]	F[N]=31,4 x p[bar]
Radial positioning tolerance	[mm] ± 0,2	± 0,2

Technical data pneumatic and vacuum - 0.9 bar:

Nominal diameter:	5	8 (on request)
Pneumatic operating pressure min./max.	[bar] 3,5 to 10	-
Flow max./minute	[l/min.] -	-
Gap nipple/mechanism min.	[mm] 0,6	0,6
Gap nipple/mechanism max.	[mm] 1,0	1,0
Axial coupling force (Pressure spring) coupled	[N] 45	-
Axial coupling force pressurized	[N] F[N]=15,4 x p[bar]	F[N]=31,4 x p[bar]
Radial positioning tolerance	[mm] ± 0,2	± 0,2

Order number (hydraulic):	ND 5	ND 8
Coupling nipple (AKN) depressurized coupling	AKN-5-EG001	AKN-8-EG001
Coupling mechanism (AKM) depressurized coupling	AKM-5-01-DW-001	AKM-8-01-DW-001
Coupling mechanism (AKM) depressurized coupling, without housing (only available on request)	AKM-5-01-DW-003	AKM-8-01-DW-003
Coupling nipple (AKN) pressurized coupling	AKN-5-EG004	AKN-8-EG002
Coupling mechanism (AKM) pressurized coupling	AKM-5-01-DW-004	AKM-8-01-DW-004
Coupling mechanism (AKM) pressurized coupling, without housing (only available on request)	AKM-5-01-DW-006	AKM-8-01-DW-006
Order number (pneumatic):		
Coupling nipple (AKN) depressurized or pressurized coupling	AKN-5-EG005	-
Coupling mechanism (AKM) depressurized or pressurized coupling	AKM-5-01-DW-010	-
Coupling mechanism (AKM) depressurized or pressurized coupling, without housing (only available on request)	AKM-5-01-DW-011	-
Accessories:		
Screw-in tool for AKN	9000-199	on request
Screw-in tool for AKM	9000-198	on request

Coupling nipple
(AKN)Coupling mechanism
(AKM)Installation
contour for AKNInstallation
contour for AKM

Dimensions:

N. diameter:	5	8
Øa [mm]	28 H7/f7	42 H7/f7
a1 [mm]	11,5	23
b [mm]	40	65
b1 [mm]	25,5	45
c [mm]	13,5	15
Øc1 [mm]	5	8
Øc2 [mm]	3	4
d [mm]	37	60
d1 [mm]	7	10
d2 [mm]	5	6
e [mm]	26,5	40
e1 [mm]	> 41	>66
f min. [mm]	16	20
Øf1 [mm]	5	8
k [mm]	13,5	17
k1 [mm]	12	13,5
l [mm]	11,5	13
m [mm]	M5	M8
n [mm]	7	13,5
o [mm]	24	37,5

Technical data hydraulic:

Nominal diameter:	5	8
Hydraulic operating pressure max. [bar]	350	300
Flow max./minute [l/min.]	12	25
Gap nipple/mechanism min. [mm]	0,6	0,6
Gap nipple/mechanism max. [mm]	1,0	1,0
Axial coupling force (Pressure spring) coupled [N]	130	-
Axial coupling force pressurized [N]	F[N]=15,4 x p[bar]	F[N]=31,4 x p[bar]
Radial positioning tolerance [mm]	± 0,2	± 0,2

Technical data pneumatic and vacuum - 0.9 bar:

Nominal diameter:	5	8 (on request)
Pneumatic operating pressure min./max. [bar]	3,5 to 10	-
Flow max./minute [l/min.]	-	-
Gap nipple/mechanism min. [mm]	0,6	0,6
Gap nipple/mechanism max. [mm]	1,0	1,0
Axial coupling force (Pressure spring) coupled [N]	45	-
Axial coupling force pressurized [N]	F[N]=15,4 x p[bar]	F[N]=31,4 x p[bar]
Radial positioning tolerance [mm]	± 0,2	± 0,2

Order number (hydraulic):	ND 5	ND 8
Coupling nipple (AKN) depressurized coupling	AKN-5-S001	AKN-8-S001
Coupling mechanism (AKM) depressurized coupling	AKM-5-01-DW-002	AKM-8-01-DW-002
Coupling nipple (AKN) pressurized coupling	AKN-5-S004	AKN-8-S002
Coupling mechanism (AKM) pressurized coupling	AKM-5-01-DW-005	AKM-8-01-DW-005
Order number (pneumatic):		
Coupling nipple (AKN) depressurized or pressurized coupling	AKN-5-S003	-
Coupling mechanism (AKM) depressurized or pressurized coupling	AKM-5-01-DW-012	-



Automatic coupling mechanisms (AKM)

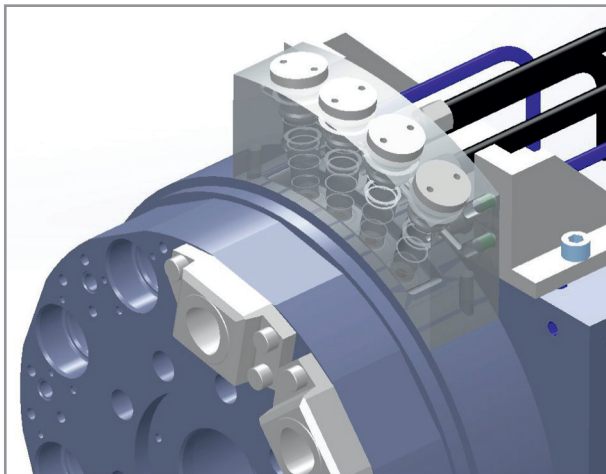
The patented AKM of the system combines the coupling parts or components without additional stroke. The hydraulically activated system spares, for example on rotary tables of tool machines, the otherwise necessary lifting equipment. Changing tables or pallets can be coupled with the rotary table by radial pushing alone.

For the AKM a gap is sufficient between the coupling elements. It allows the desired rotational movement in the decoupled state and can be from 0.6 up to 1.0 millimetres.

Both coupling surfaces are level faced, so that the user can control it from any desired axial and radial positions for coupling. Finally the stroke guides an internal moving piston out by the control pressure **A**. It is possible to control individual couplings specifically. The control pressure **A** is to be supplied with the same pressure as the media pressure **P**. When the control port **A** is not pressurized, the AKM is set into the basic position. The AKM can be operated single-acting or double-acting. If the AKM should operate single-acting, the port **B** must be used for housing ventilation.



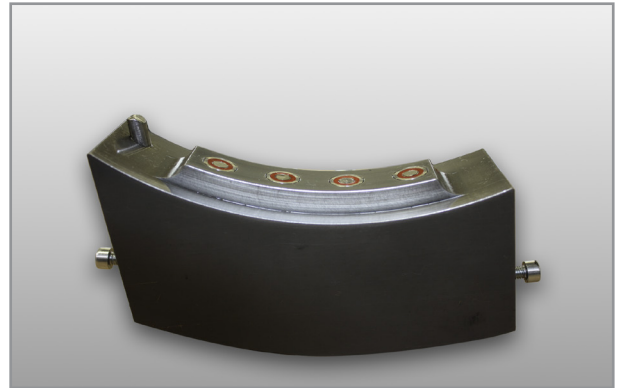
Automatic coupling mechanism and coupling nipple, nominal diameter 5, screw-in system, pneumatic.



Application example of a tool changer: Revolver fixture for nine tools with 4 AKM each.

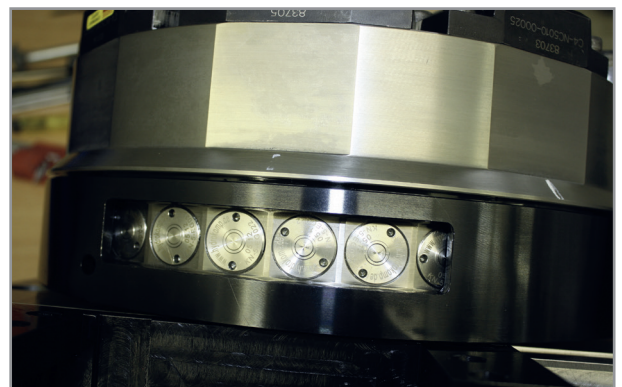
Tool clamping fixture increases productivity continually

The industrial users confirm useful value of the AKM far above other couplings. Heckert, for example, uses a hydraulic double-acting AKM in a special support of the HED large machining centre 1000 to 1800. It couples the tool axis in standstill, to apply hydraulic fluid on it or the tool. This means that the gap of approx. 1mm safely allows the rotation even during machining.

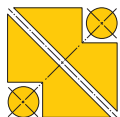


Fixture block with automatic coupling mechanisms.

Before use of the AKM the experts in Chemnitz laboriously generated the coupling function using an additional moved axis with a stroke of 5 mm. Alternatively they had thought about a multi-channel rotating bush. However, the realisation of this idea was somewhat problematic, firstly, due to the high rotational speed and secondly because the required installation space was not available. Support with the AKM functions reliably according to their test since 2014.



The revolver with a total of 36 coupling nipples.

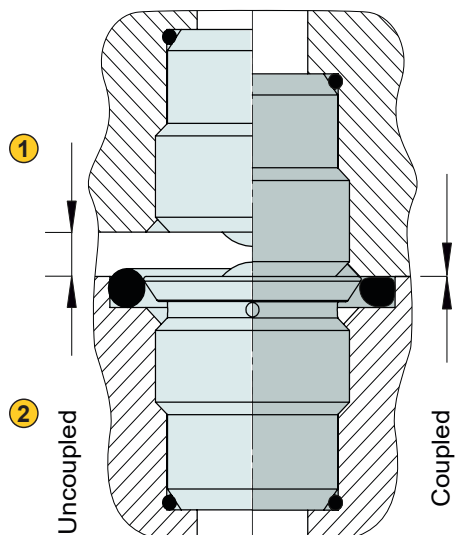


Ball coupling elements

threaded body design, nominal diameter 3, pmax = 350 bar

100-7

Issue: 08/2025



- ① KNK-3-EG001
- ② KMK-3-EG001

Description:

Ball coupling elements from HYDROKOMP are manufactured from stainless materials. This enables the elements to be used for all fluids and gases, that are non-aggressive.

The ball coupling elements should be used in situations with limited spaces and low coupling intervals. In case of higher coupling intervals our standard coupling elements (datasheet 100-3) should be used, because they have no leakage during the coupling action.

The coupling action must be performed while the system is not under pressure, as the system seal must be compressed before pressurizing the canals.

Important to note is that the single elements can be pressurized, for instance in a closed circuit, but not during the coupling action.

Operating conditions:

Coupling nipple and coupling mechanism must face each other coaxially before the coupling process starts. The base plates of both elements must be guided about 0-1mm before the contact of the two balls. The radial positioning tolerance shall not be exceeded.

Technical data:

Nominal diameter:	3
Operating pressure max. [bar]	350
Flow max./minute [l]	5
Operating temperature [°C]	-10 bis +80
Coupling stroke [mm]	2
Min. coupling force at 0 bar [N]	83,6
Axial coupling force under pressure per coupling point	$F[N]=26xp[bar]$
Axial positioning tolerance [mm]	+0,1
Radial positioning tolerance [mm]	±0,2
Permitted angular tolerance [°]	±1
Order number:	
KNK-3-EG001	
KMK-3-EG001	



Webcode: 0100007

Sealing type:

- ☒ system sealed with NBR O-Rings, operating temperature -10° bis +80°C
- ☒ Sealed with ball

Advantages:

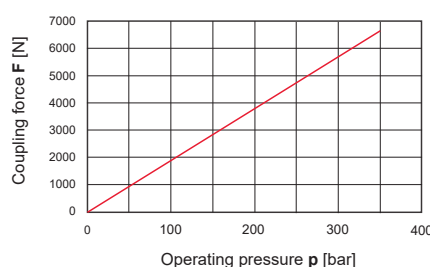
- ☒ space-saving installation
- ☒ flat profile
- ☒ close to no contamination in the system because of system seal
- ☒ the frontal contour enables easy cleaning, failures due to contamination are minimal.

The coupling force between coupling nipple and coupling mechanism, resulting from the hydraulic or fluid pressure, has to be compensated positively from the outside.

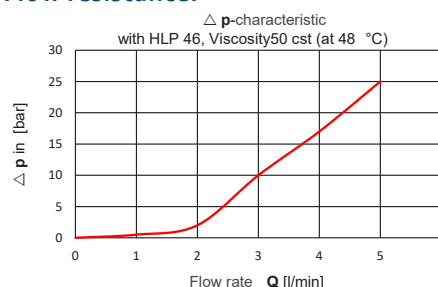
The axially placed O-ring acting as a front seal, protects the system from contamination. Keeping the face surfaces in a clean state is critical. Water or air can be used for cleaning.

The single elements are sealed with a POM insert, which holds the ball in place. Moreover, an O-ring has to be placed on the bottom of the bore to ensure fluid tightness. The surface quality of the bore is a key factor for the elements to be leak free.

Coupling force:



Flow resistance:



Spare Parts:	Order number:
O-ring 11x1,0 for hole bottom	6011-021
O-ring 15,54x2,62 for Anspiegung	6016-050
Accessories:	Order number:
Screw-in tool	9000-288

We also design and manufacture customized variants!



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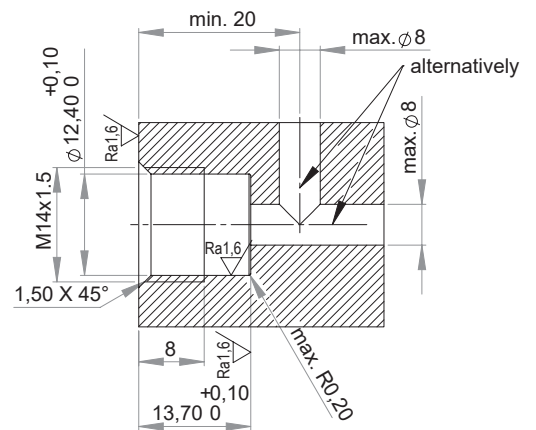
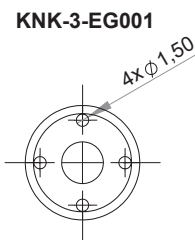
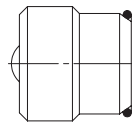
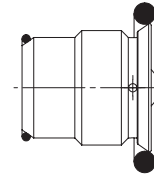
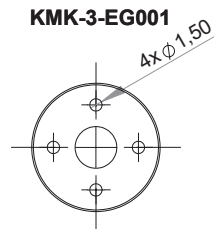
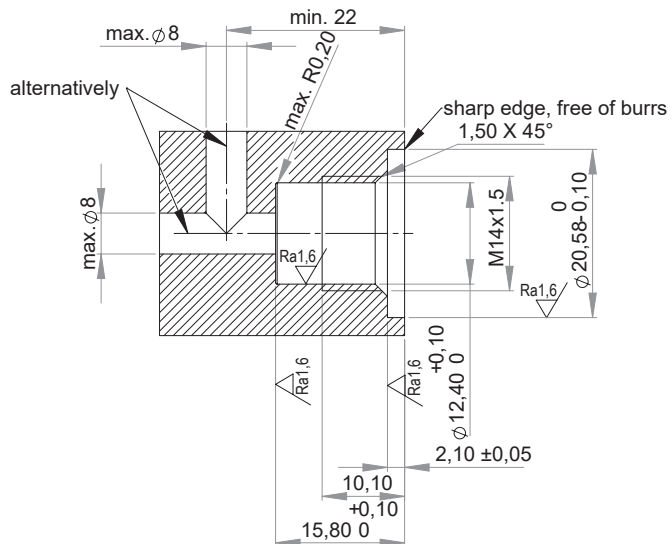
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Technology that connects

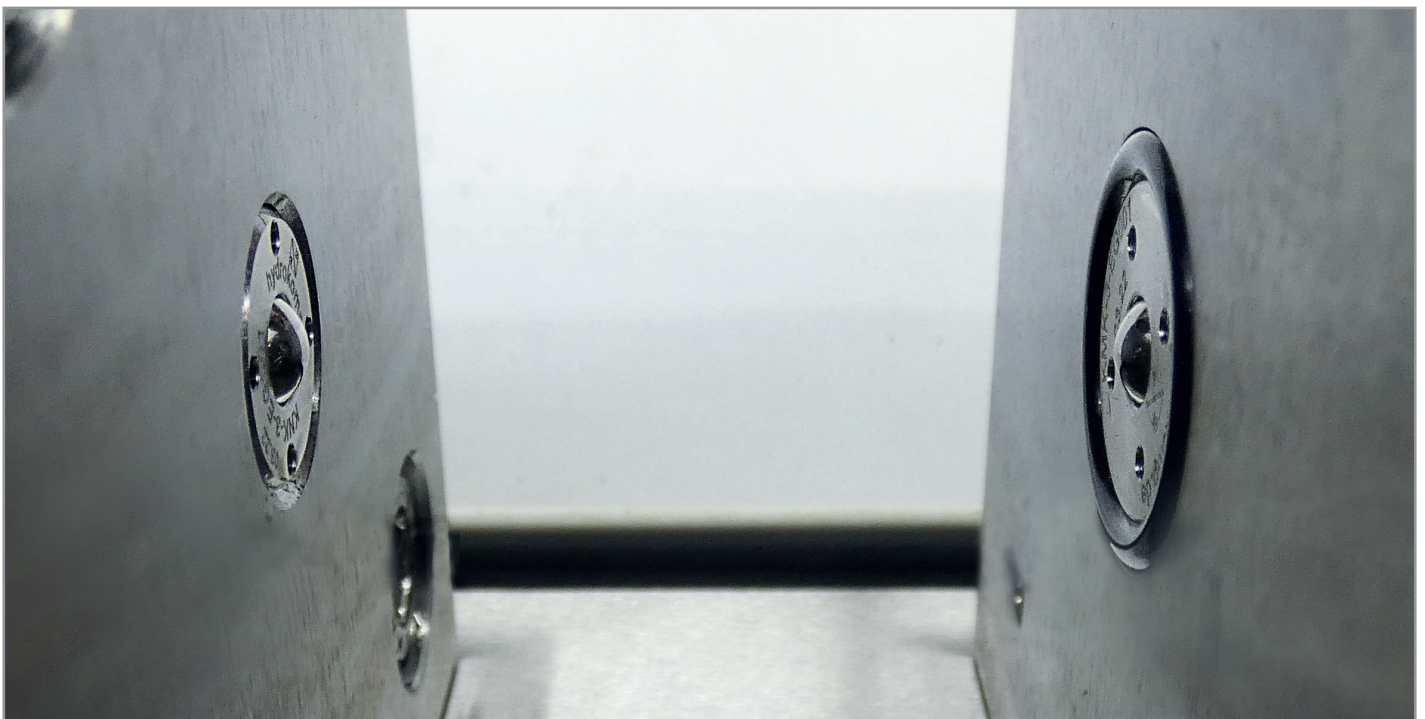
Screw-in elements:

KMK-3-EG001,
KNK-3-EG001

Dimensions and installation contour:

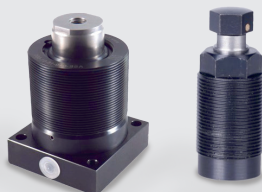


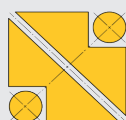
Application Example:



Clamping elements Workholding

200





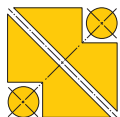
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Hydraulische Komponenten GmbH

Technology that connects

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280-4	Work supports , M26x1.5, threaded body, hydraulic extension, contact by spring force	151
280-10	Work supports , threaded body with bottom flange plate	153
280-70	Work supports 70 bar , threaded body, plunger advance hydraulically or by spring	155



Threaded body cylinders

with metal wiper, double-acting, pmax. 500 bar

200-2
Issue: 08/2025

Description:

This cylinder with double acting function saves space when built into fixture plates or into plates of plastic injection moulds.

The double acting function makes cycledependent strokes possible when retracting and extending the piston. The operation times can be calculated from the possible flow rate of the power unit and the operated piston or ring area volume. Unlike with single acting cylinders both stroke directions are power operated.

On the piston rod end the cylinders are equipped with a retractable wiper made of NBR/FKM and an additional metal wiper.

The metal wiper prevents the penetration of chips into the soft wiper and in this way the piston is prevented from jamming. This preventive measure protects the seals and increases the life of the cylinder.

Operating conditions:

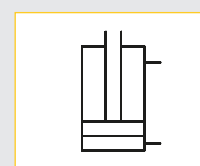
Oil is fed to the inside of the fixture body by means of drilled oilways. Meticulous cleanliness is extremely important since drilling chips may damage the seals and cause leakage and the failure of the installation.

The cylinder is sealed by means of an O-ring / support ring combination. Due to the compact design the threaded body cylinder does not have an internal stop for the return stroke, but uses the bore bottom of the assembly bore. For that reason the dimension "g" for the installation depth must be adhered to absolutely.

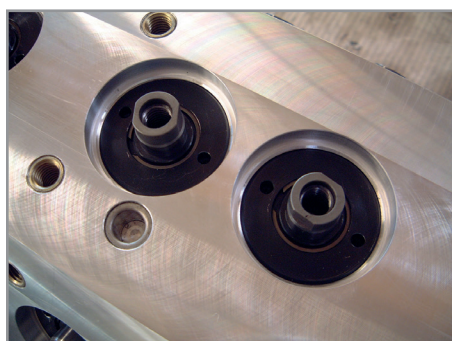
The diagonal feeds and cross-bores for the oil supply must be well rounded in order to prevent the seals from being damaged during installation.



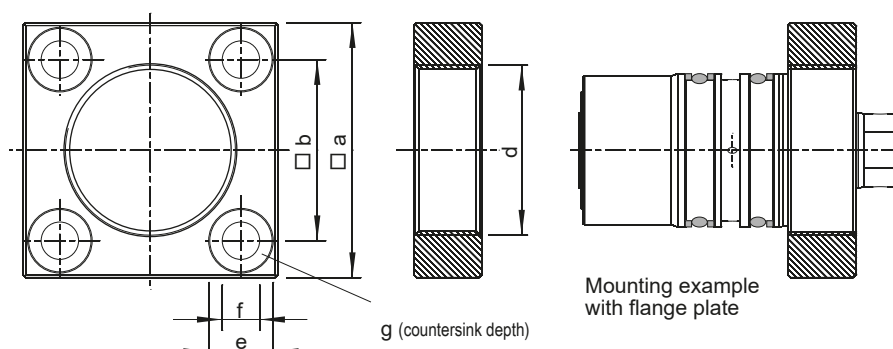
Webcode: 020002



Application example.



Flange plates (Accessories):



The flange plate makes it is easy to mount the cylinder with four screws. The thread (page 2, measure "c") inside the mounting housing is not necessary. The mounting dimension is less the dimension "i" (see table on page 2).

Technical data:

for cylinder with Piston Ø	[mm]	16	20	25	32	40	50
a	[mm]	45	60	65	80	90	105
b	[mm]	32	41	45	57	64	75
c	[mm]	12	12	12	14,5	16,5	18,5
d	[mm]	M30x1,5	M36x1,5	M42x1,5	M56x2	M64x2	M72x3
e	[mm]	11	15	15	18	20	20
f	[mm]	6,6	9	9	11	13,5	13,5
g	[mm]	6,5	8,3	8,3	10,5	12,6	12,6
4 Screws DIN 912, 8.8	(in scope of supply)	M6x16	M8x16	M8x16	M10x20	M12x25	M12x25
Order no.	MP-EZY...	...DW-16	...DW-20	...DW-25	...DW-32	...DW-40	...DW-50

Seal material:

- ✗ NBR, Operating temperature: -10° up to +80°C
- ✗ FKM, Operating temperature: up to 150°C

Advantages:

- ✗ No ingress of chips due integrated metal wiper
- ✗ Space-saving positioning possible
- ✗ Fully retractable housing
- ✗ Oil supply without pipe
- ✗ Varied for manifold application options

General operating conditions and other information can be found on the catalog page "Recommendations & General Characteristics" or at www.hydrokomp.de.

We also design and manufacture customized variants!



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Hydraulische Komponenten GmbH

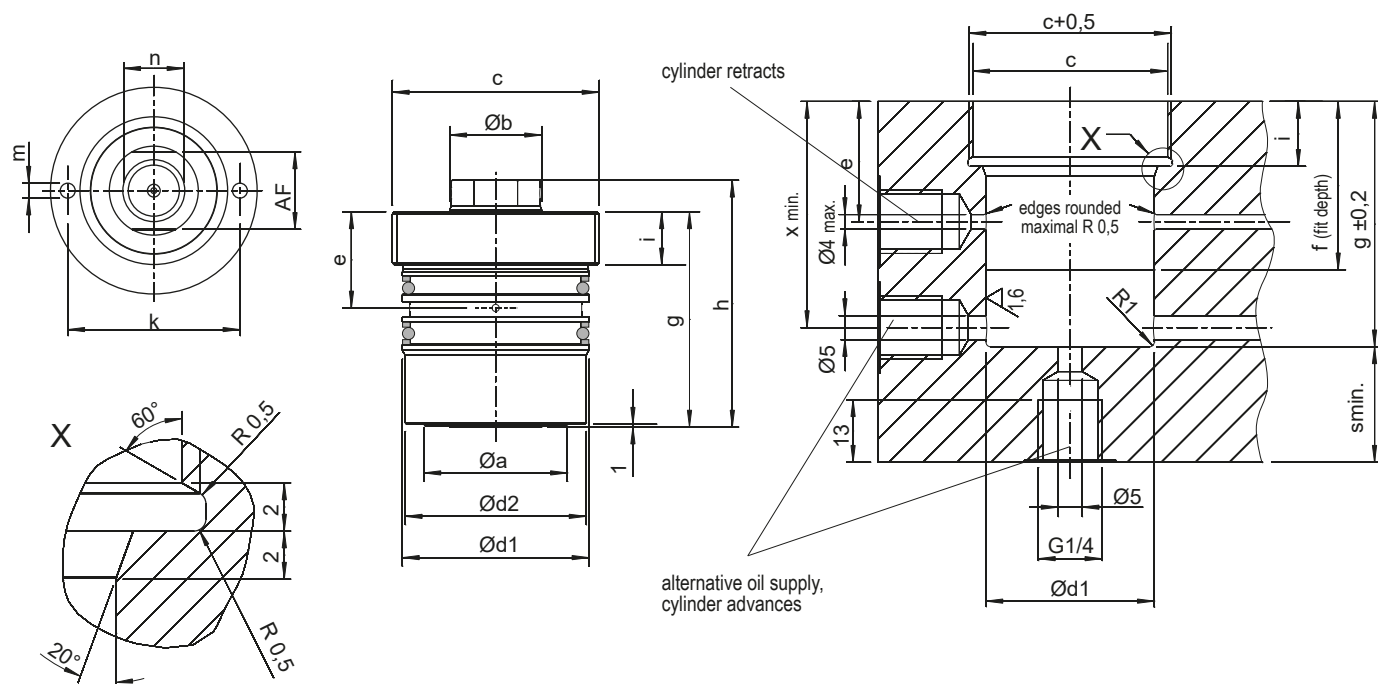
+49 6401 225999-0

sales@hydrokomp.de

Siemenstr. 16
35325 Mücke (Germany)

www.hydrokomp.de

Technology that connects



Technical data (threaded body cylinders)

a Piston Ø ⁽¹⁾	[mm]	16	20	25	32	40	50
b Rod Ø	[mm]	10	12	16	20	25	32
Push force at 100 bar	[kN]	2,00	3,14	4,91	8,04	12,57	19,64
Pull force at 100 bar	[kN]	1,22	2,02	2,90	4,90	7,66	11,59
Push force at 500 bar	[kN]	10,00	15,70	24,50	40,20	62,80	98,50
Pull force at 500 bar	[kN]	6,10	10,00	14,50	24,50	38,30	57,90
Oil req./10 mm advance stroke	[cm³]	2,00	3,14	4,91	8,04	12,57	19,46
Oil req./10 mm back stroke	[cm³]	1,22	2,02	2,90	4,90	7,66	11,59
c	[mm]	M30x1,5	M36x1,5	M42x1,5	M56x2	M64x2	M72x3
d1 H7/f7	[mm]	22	28	35	45	55	65
d2	[mm]	20	26	33	43	53	63
e	[mm]	24	25	25	28	30	34
f +1 (Fit depth in the housing)	[mm]	38	40	40	41	46	50
i	[mm]	12	12	12	14,5	16,5	18,5
k	[mm]	23	28	30	40	50	60
m	[mm]	3,5	4,2	4,2	5,2	5,2	5,2
n x thread depth	[mm]	M6x15	M8x16	M10x17	M12x18	M16x27	M20x32
s min.	[mm]	8	10	11	13	16	20
AF	[mm]	8	10	13	17	22	27
x min.	[mm]	45	46	46	49	51	55
Stroke ⁽²⁾ ±1	[mm]	16	16	20	25	25	25
g	[mm]	50	51	56	64	68	75
h	[mm]	56	57	63	74	78	86
Order no.	EZY-DW...	...-16-16-00X	...-20-16-00X	...-25-20-00X	...-32-25-00X	...-40-25-00X	...-50-25-00X
Stroke ⁽²⁾ ±1	[mm]	32	32	-	-	-	-
g	[mm]	66	67	-	-	-	-
h	[mm]	72	73	-	-	-	-
Order no.	EZY-DW...	...-16-32-00X	...-20-32-00X	-	-	-	-
Stroke ⁽²⁾ ±1	[mm]	50	50	50	50	50	50
g	[mm]	84	85	86	89	93	100
h	[mm]	90	91	93	99	103	111
Order no.	EZY-DW...	...-16-50-00X	...-20-50-00X	...-25-50-00X	...-32-50-00X	...-40-50-00X	...-50-50-00X
Stroke ⁽²⁾ ±1	[mm]	-	-	100	100	100	100
g	[mm]	-	-	136	139	143	150
h	[mm]	-	-	143	149	153	161
Order no.	EZY-DW...	-	-	...-25-100-00X	...-32-100-00X	...-40-100-00X	...-50-100-00X
Stroke ⁽²⁾ ±1	[mm]	-	-	-	160	160	160
g	[mm]	-	-	-	199	203	210
h	[mm]	-	-	-	209	213	221
Order no.	EZY-DW...	-	-	-	...-32-160-00X	...-40-160-00X	...-50-160-00X

Choose the correct order number:

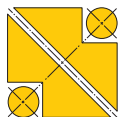
EZY-DW-[Piston Ø-Stroke]-00X

replace X with seal material: NBR = 1, FKM = 2

Example: EZY-DW-20-16-002

⁽¹⁾Other piston diameters are available on request.

⁽²⁾Other strokes are available on request.

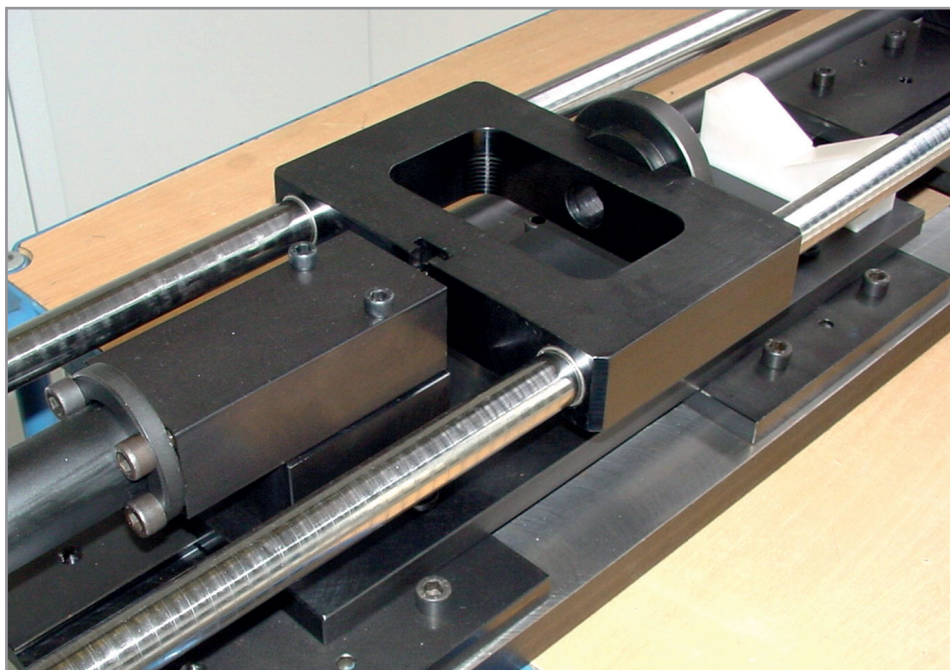


Block cylinders

with metal wiper, single-/double-acting, pmax. 500 bar, piston with inner thread

200-3

Issue: 07/2026



Application:

The picture shows a press-in fixture that mounts bearings on shafts. The block cylinder used has a stroke of 100 mm, in order to bridge the distances involved. Because of the wide variety of tools, the carriage can be ranged appropriately with the block cylinder. Supports of various lengths are mounted axially behind the block cylinder for this purpose. This results in only minimal bending forces being passed to the overall structure.

One special feature of the device lies in the pressure lowering function of the manual compressor. After the bearings have been preassembled they are secured mechanically under pre-tension. For this purpose the assembly pressure is released to approx. 60 bar by means of a manual ball valve and a downstream pressure limiting valve.

Flexible functional module:

- Plant construction
- Molt construction
- Mechanical engineering
- Fixture construction
- Toolmaking
- Moving
- Fixing
- Positioning
- Clamping
- Supporting
- single-acting without reset spring
- single-acting with reset spring
- double-acting

Wide range of strokes:

- various standard stroke lengths from 8 mm up to 200 mm
- special stroke lengths on request

Power range:

- from 2 kN with piston Ø 16 mm at 100 bar
- up to 392 kN with piston Ø 100 mm at 500 bar

Description:

Block cylinders are popular design elements in all areas where very powerful short strokes are required. Block cylinders have internal piston rod threads for secure screw-in contact bolts. (see page 4).

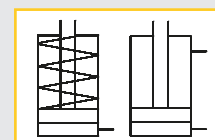
Their compact cubic shape facilitates attachment and guarantees high operating pressures. Various versions of hydraulic oil feed cover the whole range of applications.

The HYDROKOMP block cylinders offer technical advantages in the area of the seal at the piston-rod end. A double hydraulic seal is used here as standard, guaranteeing extremely low leakage in continuous operation.

All block cylinders are also equipped with a metal wiper ring, which prevents any metal shavings from penetrating into the flexible wiper ring.



Webcode: 020003



Oil supply:

- ☒ G1/4 / G1/2 threaded port
- ☒ Manifold with O-ring bottom side, rod side or broadside

Sealing:

- ☒ NBR, Operating temperature: -10° up to max. +80°C
- ☒ FKM, Operating temperature: up to max. 150°C

Advantages:

- ☒ Ideal for continuous operation with extremely low leakage
- ☒ Space-saving installation
- ☒ Four mounting options
- ☒ Metal wiper as standard

We also design and manufacture customized variants!



HYDROKOMP®

Hydraulische Komponenten GmbH

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sales@hydrokomp.de

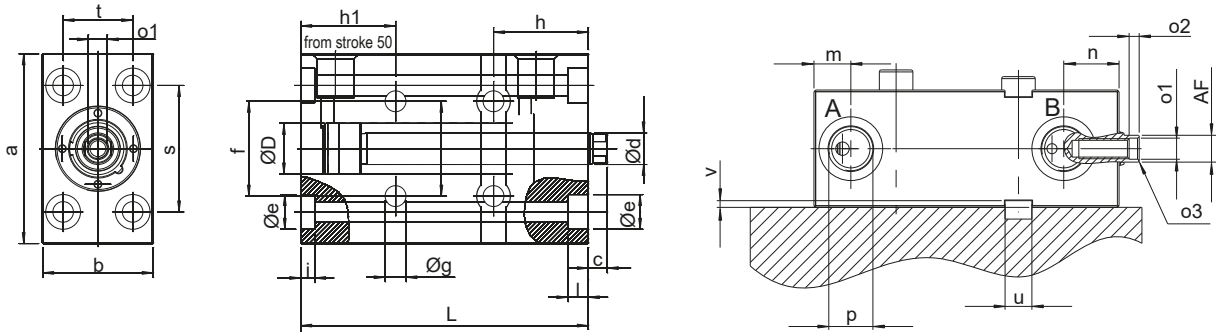
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35325 Mücke (Germany)

www.hydrokomp.de

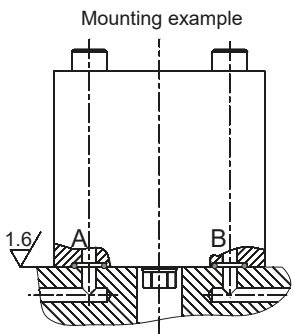
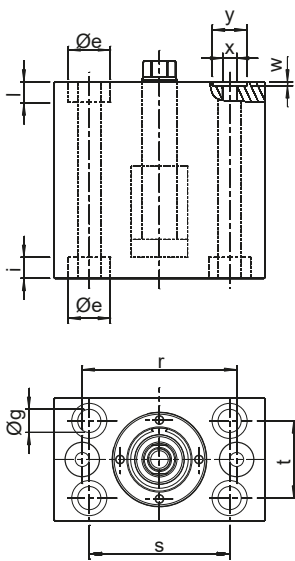
Technology that connects



A threaded port, bleeder and cross bores

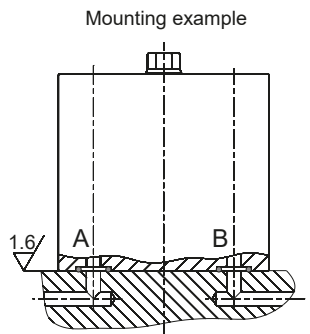
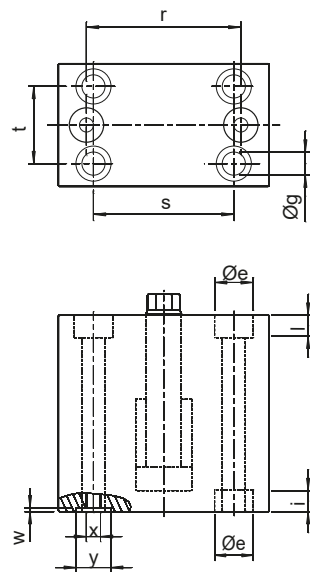


C
manifold with O-ring, rod side

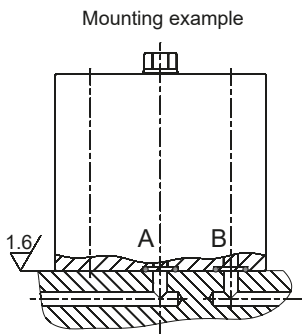
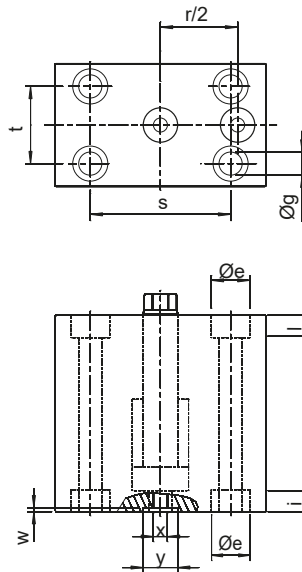


D
manifold with O-ring, bottom side

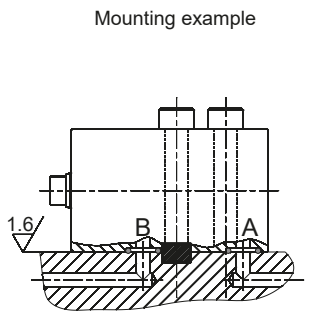
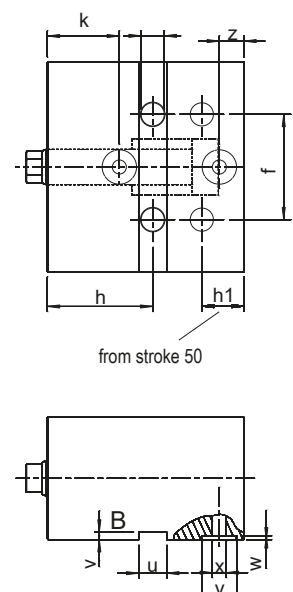
Design D, standard



Design D, centered bore⁽⁴⁾



E
manifold with O-ring, broadside



Order number key:

Example: **BZY** - **032** - **100** - **AP001**

Scope of supply includes the O-rings.

Piston Ø [mm]: 016, 020, 025, 032, 040, 050, 063, 080, 100

Order numbers for spare parts see page 4.

Stroke [mm]: (see table on page 3)

Design: **A, C, D, E** (see above)

Sealing: **NBR = P, FKM = V**

Functioning: double-acting = **001**, (optional centered bore at design D, double-acting = **011**)

single-acting without spring reset = **002**

single-acting with spring reset = **003**

⁽⁴⁾for Design **D**, centered bore, replace **001** with **011**.



Block cylinders with metal wiper / Order numbers

Technology that connects

D Piston Ø ⁽²⁾	[mm]	16	20	25	32	40	50	63	80	100	-
d Rod Ø	[mm]	10	12	16	20	25	32	40	50	63	-
Effective piston area	[cm ²]	2,0	3,1	4,9	8,0	12,5	19,6	31,1	50,3	78,4	-
Pressure force at 100 bar	[kN]	2,0	3,1	4,9	8,0	12,6	19,6	31,2	50,3	78,4	-
Tensile force at 100 bar	[kN]	1,2	2,0	2,9	4,9	7,7	11,6	18,6	30,6	47,4	-
a	[mm]	60	60	65	75	85	100	125	160	200	-
b	[mm]	35	35	45	55	63	75	95	120	150	-
c	[mm]	6	7	7	10	10	10	14	14	15	-
e Ø	[mm]	11	11	14	18	18	20	26	33	40	-
f	[mm]	30	40	50	55	63	76	95	120	158	-
g Ø	[mm]	6,5	6,5	8,5	10,5	10,5	13	17	21	25	-
h	[mm]	30	30	33	38	40	44	50	60	64	-
h1 (from stroke 50)	[mm]	24,5	24,5	26	27	27	30	41	47	54	-
i	[mm]	4,4	4,4	6,4	7,6	10,6	12,6	16,6	20,6	24,8	-
k	[mm]	20,5	20	21	25	27	29	32	39	40	-
l	[mm]	6,4	6,4	8,6	10,6	10,6	12,6	16,6	20,6	24,8	-
m	[mm]	11	11	11	11	11	13	17	21	25	-
n	[mm]	16,5	16,5	18	22	24	27	26	34	35	-
o1 = thread x depth	[mm]	M6x15	M8x16	M10x17	M12x18	M16x27	M20x32	M27x40	M30x40	M42x60	-
o2 = Ø x depth		Ø6,3x3	Ø8,5x3	Ø10,5x4	Ø12,5x4	Ø16,5x7	Ø21,0x8	Ø27,5x8	Ø30,5x8	Ø43,0x8	-
o3 = chamfer		0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	-
p		G1/4	G1/4	G1/4	G1/4	G1/4	G1/4	G1/2	G1/2	G1/2	-
r	[mm]	40	44	50	55	63	76	95	120	158	-
s	[mm]	40	40	50	55	63	76	95	120	158	-
AF		8	10	13	17	22	27	34	46	55	-
t	[mm]	22	22	30	35	40	45	65	80	108	-
u	[mm]	8	8	10	12	12	16	20	24	28	-
v	[mm]	2	2	2	3	3	5	5	7	7	-
w	[mm]	1,1	1,1	1,1	1,1	1,1	1,1	1,5	1,5	1,5	-
x Ø	[mm]	4	4	4	5	5	6	8	8	8	-
y Ø	[mm]	8,8	8,8	9,8	9,8	9,8	10,8	13,8	13,8	13,8	-
z	[mm]	7	7,5	7,5	10	10	13	16	21	25	-

single-acting with spring reset

Stroke ⁽³⁾ ±0,6	[mm]	8	8	8	10	10	12	12	12	12	-
Housing length L ±0,5	[mm]	56	61	64	75	79	90	102	117	130	-
Spring return force	[N]	57	90	145	222	276	387	429	760	1200	-
Order number	BZY...	-016-008-	-020-008-	-025-008-	-032-010-	-040-010-	-050-012-	-063-012-	-080-012-	-100-012-	...XY003
Stroke ⁽³⁾ ±0,6	[mm]	20	20	20	20	20	20	25	32	32	-
Housing length L ±0,5	[mm]	91	95	94	100	104	115	135	165	190	-
Spring return force	[N]	48	84	160	228	276	450	470	720	1230	-
Order number	BZY...	-016-020-	-020-020-	-025-020-	-032-020-	-040-020-	-050-020-	-063-025-	-080-032-	-100-032-	...XY003

single-acting without spring reset

Stroke ⁽³⁾ ±0,6	[mm]	16	16	20	-	-	-	-	-	-	-
Housing length L ±0,5	[mm]	56	61	64	-	-	-	-	-	-	-
Order number	BZY...	-016-016-	-020-016-	-025-020-	-	-	-	-	-	-	...XY002
Stroke ⁽³⁾ ±0,6	[mm]	32	32	-	25	25	25	30	32	40	-
Housing length L ±0,5	[mm]	73	77	-	75	79	90	102	117	130	-
Order number	BZY...	-016-032-	-020-032-	-	-032-025-	-040-025-	-050-025-	-063-030-	-080-032-	-100-040-	...XY002
Stroke ⁽³⁾ ±0,6	[mm]	50	50	50	50	50	50	63	80	-	-
Housing length L ±0,5	[mm]	91	95	94	100	104	115	135	165	-	-
Order number	BZY...	-016-050-	-020-050-	-025-050-	-032-050-	-040-050-	-050-050-	-063-063-	-080-080-	-	...XY002
Stroke ⁽³⁾ ±0,6	[mm]	-	-	100	100	100	100	100	100	100	-
Housing length L ±0,5	[mm]	-	-	144	150	154	165	172	185	190	-
Order number	BZY...	-	-	-025-100-	-032-100-	-040-100-	-050-100-	-063-100-	-080-100-	-100-100-	...XY002
Stroke ⁽³⁾ ±0,6	[mm]	-	-	-	160	160	160	160	160	160	-
Housing length L ±0,5	[mm]	-	-	-	213	217	228	236	249	254	-
Order number	BZY...	-	-	-	-032-160-	-040-160-	-050-160-	-063-160-	-080-160-	-100-160-	...XY002
Stroke ⁽³⁾ ±0,6	[mm]	-	-	-	-	-	-	200	200	200	-
Housing length L ±0,5	[mm]	-	-	-	-	-	-	276	289	294	-
Order number	BZY...	-	-	-	-	-	-	-063-200-	-080-200-	-100-200-	...XY002

double-acting

Stroke ⁽³⁾ ±0,6	[mm]	16	16	20	-	-	-	-	-	-	-
Housing length L ±0,5	[mm]	56	61	64	-	-	-	-	-	-	-
Order number	BZY...	-016-016-	-020-016-	-025-020-	-	-	-	-	-	-	...XY001 ⁽⁴⁾
Stroke ⁽³⁾ ±0,6	[mm]	32	32	-	25	25	25	30	32	40	-
Housing length L ±0,5	[mm]	73	77	-	75	79	90	102	117	130	-
Order number	BZY...	-016-032-	-020-032-	-	-032-025-	-040-025-	-050-025-	-063-030-	-080-032-	-100-040-	...XY001 ⁽⁴⁾
Stroke ⁽³⁾ ±0,6	[mm]	50	50	50	50	50	50	63	80	-	-
Housing length L ±0,5	[mm]	91	95	94	100	104	115	135	165	-	-
Order number	BZY...	-016-050-	-020-050-	-025-050-	-032-050-	-040-050-	-050-050-	-063-063-	-080-080-	-	...XY001 ⁽⁴⁾
Stroke ⁽³⁾ ±0,6	[mm]	-	-	100	100	100	100	100	100	100	-
Housing length L ±0,5	[mm]	-	-	144	150	154	165	172	185	190	-
Order number	BZY...	-	-	-025-100-	-032-100-	-040-100-	-050-100-	-063-100-	-080-100-	-100-100-	...XY001 ⁽⁴⁾
Stroke ⁽³⁾ ±0,6	[mm]	-	-	-	160	160	160	160	160	160	-
Housing length L ±0,5	[mm]	-	-	-	213	217	228	236	249	254	-
Order number	BZY...	-	-	-	-032-160-	-040-160-	-050-160-	-063-160-	-080-160-	-100-160-	...XY001 ⁽⁴⁾
Stroke ⁽³⁾ ±0,6	[mm]	-	-	-	-	-	-	200	200	200	-
Housing length L ±0,5	[mm]	-	-	-	-	-	-	276	289	294	-
Order number	BZY...	-	-	-	-	-	-	-063-200-	-080-200-	-100-200-	...XY001 ⁽⁴⁾

Select the correct order number:

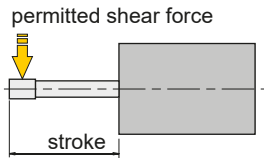
X replace by design (A, C, D oder E)

Y replace by sealing (P = NBR oder V = FKM)

⁽²⁾Other piston diameters and ⁽³⁾strokes are available on request.

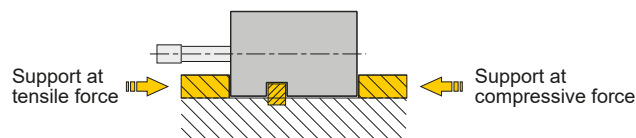
⁽⁴⁾at design D, centered bore, replace 001 by 011.

Example: BZY-032-100-DP011



Permitted shear force with extracted piston rod

As far as possible avoid shear forces to guarantee sealing as well as longer lifetime of the piston and rod guide. For strokes up to 50 mm the shear force may not exceed 3% of the nominal cylinder force. For longer strokes the shear forces are to be reduced towards 0%. If transverse forces can not be avoided, guide housings need to be positioned correspondingly. Please contact us!



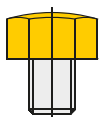
Supporting the block cylinder

If the block cylinder is to be fastened diagonally to the cylinder axis, we recommend to support the cylinder. When using as pressure cylinder, the support shall be at the bottom side, as tensile cylinder the support shall be at the rod side.

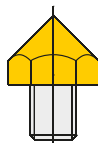
Alternatively the block cylinder can be supported by the transverse groove which is placed by default in the housing. In doing so, a fitting key is fastened on the mounting surface, absorbing the pressure or the force.

Contact bolts (accessories):

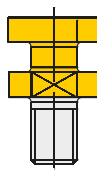
We offer contact bolts in various designs as accessories for the block cylinders. These are screwed into the inner thread of the piston rods. For dimensions and technical special features see datasheet 1000-1.



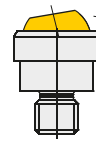
Design 1:
contact bolt,
dome head



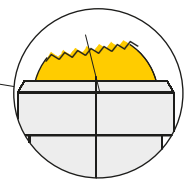
Design 2:
contact bolt,
cone head



Design 3:
contact bolt,
with coupling pin



Design 4:
swivel contact bolt,
flat contact face

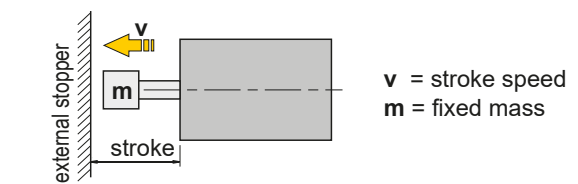


Design 5:
swivel contact bolt,
serrated contact face

Piston Ø [mm]	Order no.	Order no.	Order no.	Order no.	Order no.
16	7006-049	7006-050	-	7006-051	7006-052
20	7008-071	7008-072	-	7008-073	7008-074
25	7010-012	7010-013	7010-014	7010-015	7010-016
32	7012-041	7012-042	7012-043	7012-044	7012-045
40	7016-003	7016-004	7016-005	7016-006	7016-007
50	7020-002	7020-003	7020-004	-	-
63	7027-001	7027-002	7027-003	-	-
80	7030-006	7030-007	7030-008	-	-
100	7042-002	7042-003	-	-	-

O-rings (spare parts):

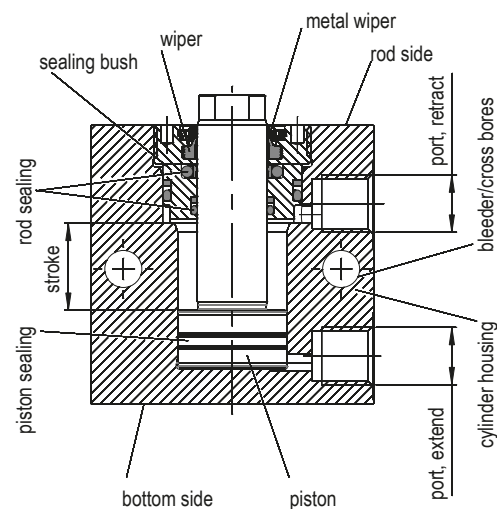
Item:	Material: NBR	Material: FKM
	Order no.	Order no.
O-ring 6x1,5	6006-001	6006-020
O-ring 7x1,5	6010-002	6010-020
O-ring 8x1,5	6011-002	6011-011
O-ring 10x2	6010-003	6010-011



Permitted dynamic load with piston forward stroke

Block cylinders customarily do not have shock absorbing action. With the forward stroke the piston strikes the fixed body with undamped stroke speed against the sealing bush (cylinder stop position). The sealing bush could be overstressed by that. Operational safety would be impaired. In order to prevent that, the piston should always have an opponent external stopper.

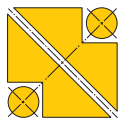
Design of a block cylinder:



Sealing kits (spare parts):

There are sealing kits for all block cylinders available. The order number for a sealing kit is derived from the suffix **DS** in combination with the order number of the block cylinder.

Example: DS-BZY-032-100-AP001



Built-in piston

with threaded bushing, double-acting, pmax. 500 bar

200-4

Issue: 04/2026

Description:

The built-in piston consists of a piston and a threaded bushing and it includes all seals.

The built-in piston is a subassembly, which has to be integrated directly into the housing body. The housing body has the features of the cylinder housing. The advantage of this design is the minimized space requirement of the clamping or operating cylinders.

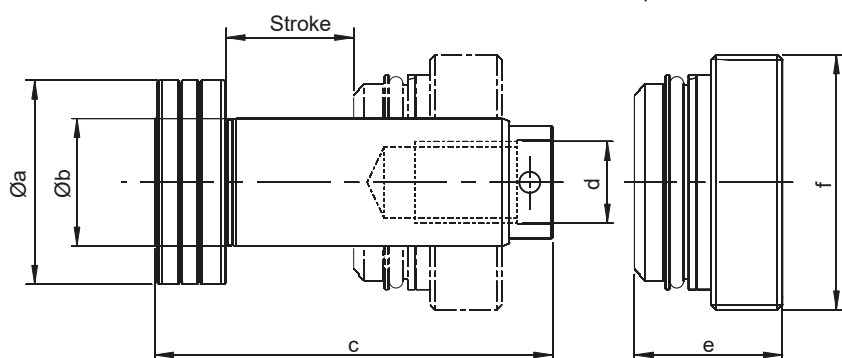
The threaded bushing is equipped as standard with a metal wiper as well as a soft wiper. The hydraulic oil is fed through drilled channels.

Operating conditions:

The built-in piston operates hydraulically double-acting. This enables retraction forces as well as extraction forces to be generated. Use appropriate seals according to the temperature conditions.

The dimensions for manufacturing and the tolerances for surface and dimensions must be complied according to the HYDROKOMP drawings.

After tightening the threaded bushing, it is necessary to secure it by using the supplied threaded pin. For this, a small thread must be fitted into the threaded bore of the bushing into which the threaded pin is screwed.



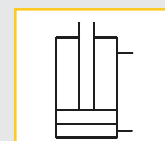
The measurements chart is only for orientation the maximum dimensions. All subassemblies are available as CAD models (2D and 3D) on our website hydrokomp.de

Piston						Threaded bushing		
Øa	Øb	c	d	Stroke	Order no. ⁽¹⁾	e	f	Order no. ⁽¹⁾
[mm]	[mm]	[mm]		[mm]				
16	10	56	M6x15	16	EBK-016-016-00X	22	M27x1,5	GB-016-00X
		72		32	EBK-016-032-00X			
		90		50	EBK-016-050-00X			
20	12	57	M8x16	16	EBK-020-016-00X	22	M32x1,5	GB-020-00X
		73		32	EBK-020-032-00X			
		91		50	EBK-020-050-00X			
25	16	63	M10x17	20	EBK-025-020-00X	22,5	M36x1,5	GB-025-00X
		93		50	EBK-025-050-00X			
		143		100	EBK-025-100-00X			
32	20	74	M12x18	25	EBK-032-025-00X	27	M42x1,5	GB-032-00X
		99		50	EBK-032-050-00X			
		149		100	EBK-032-100-00X			
		209		160	EBK-032-160-00X			
40	25	78	M16x27	25	EBK-040-025-00X	29	M50x1,5	GB-040-00X
		103		50	EBK-040-050-00X			
		153		100	EBK-040-100-00X			
		213		160	EBK-040-160-00X			
50	32	86	M20x32	25	EBK-050-025-00X	35	M62x1,5	GB-050-00X
		111		50	EBK-050-050-00X			
		161		100	EBK-050-100-00X			
		221		160	EBK-050-160-00X			
63	40	99	M27x40	30	EBK-063-030-00X	35	M72x1,5	GB-063-00X
		132		63	EBK-063-063-00X			
		169		100	EBK-063-100-00X			
		233		160	EBK-063-160-00X			
80	50	109	M30x40	32	EBK-080-032-00X	43	M95x2	GB-080-00X
		157		80	EBK-080-080-00X			
		177		100	EBK-080-100-00X			
		237		160	EBK-080-160-00X			
100	63	119		40	EBK-100-040-00X	44	M115x2	GB-100-00X
		179		100	EBK-100-100-00X			
		243		160	EBK-100-160-00X			

⁽¹⁾Select the correct order number:
replace X by sealing NBR = 001, FKM = 002.



Webcode: 020004



Sealing:

- ☒ NBR, operating pressure: -10° up to +80°C
- ☒ FKM, operating pressure: up to max. 150°C

Power range:

- ☒ from 2 kN at piston Ø 16 mm, at 100 bar operating pressure
- ☒ from 392 kN at piston Ø 100 mm, at 500 bar operating pressure

Stroke range:

- ☒ from 16 mm up to 160 mm
special strokes available on request

Special features:

- ☒ space-saving installation options
- ☒ installation directly into the housing body
- ☒ with soft wiper and metal wiper as standard
- ☒ oil supply through drilled channels

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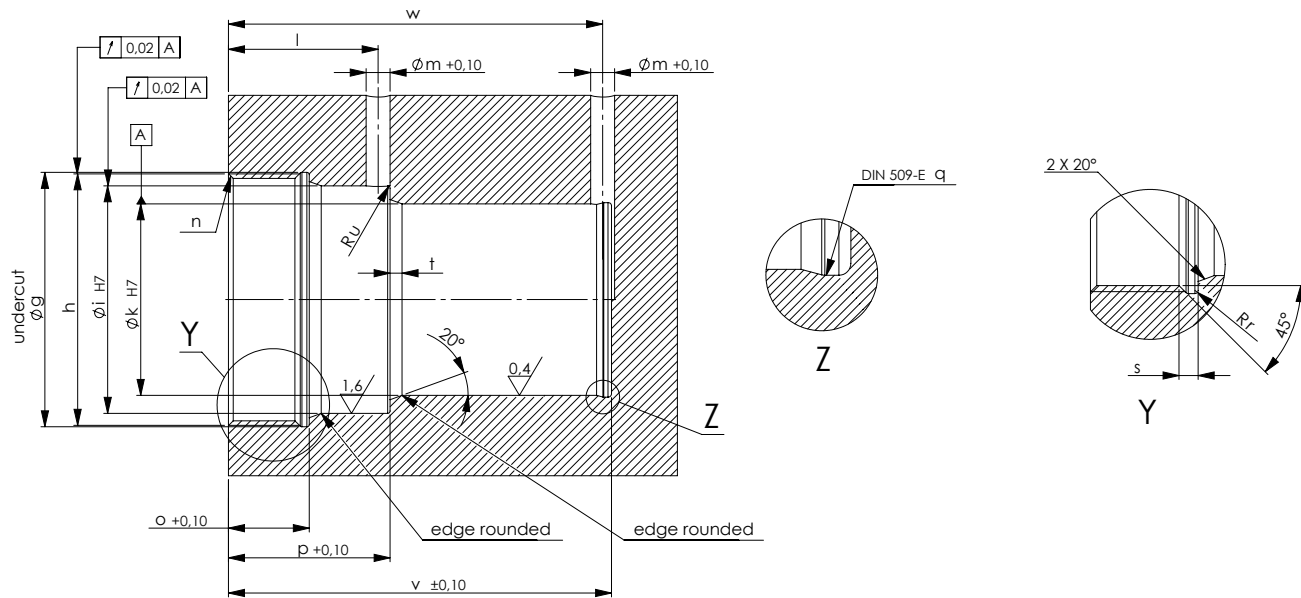


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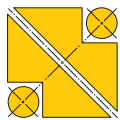
Technology that connects



Technical Data:

a Piston Ø	[mm]	16	20	25	32	40	50	63	80	100
g Ø	[mm]	27,5	32,5	36,5	42,5	50,5	63	73	96	116,5
h	[mm]	M27x1,5	M32x1,5	M36x1,5	M42x1,5	M50x1,5	M62x1,5	M72x1,5	M95x2	M115x2
i Ø	[mm]	22	25	32	38	42	52	65	85	105
k Ø	[mm]	16	20	25	32	40	50	63	80	100
l	[mm]	20	20	20,5	25	26	31	32	39	40
m Ø	[mm]	4	4	4	4	5,5	5,5	8	8	8
n	[mm]	0,9x45°	0,8x45°	0,8x45°	0,8x45°	0,8x45°	1,1x45°	1x45°	1,3x45°	1,3x45°
o	[mm]	9,5	9,5	9,5	13,5	14	17	18	24	24
p	[mm]	22	22	22,5	27	29	35	36	43	44
q (DIN 509-E)	[mm]	0,6x0,2	0,6x0,2	0,6x0,2	0,6x0,2	0,6x0,2	0,6x0,2	0,6x0,2	0,6x0,3	1x0,3
r	[mm]	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	1
s	[mm]	2	2	2	2,4	2,3	2,6	2,6	2,8	4,5
t	[mm]	2	2	2	2	2	2,5	2,5	2	2
u	[mm]	0,4	0,4	0,4	0,4	0,4	-	-	0,4	0,4
Stroke max.	[mm]	16	16	20	25	25	25	30	32	40
v	[mm]	50	50	56	64	68	76	85	95	104
w	[mm]	48,5	48,5	54,5	62,5	66,5	75,5	84,5	96	105
Stroke max.	[mm]	32	32	50	50	50	50	63	80	100
v	[mm]	66	66	86	89	93	101	118	143	164
w	[mm]	64,5	64,5	84,5	87,5	91,5	100,5	117,5	144	165
Stroke max.	[mm]	50	50	100	100	100	100	100	100	160
v	[mm]	84	84	136	139	143	151	155	163	228
w	[mm]	82,5	82,5	134,5	137,5	141,5	150,5	154,5	164	229
Stroke max.	[mm]	-	-	-	160	160	160	160	160	-
v	[mm]				199	203	211	219	227	
w	[mm]				198,5	210,5	210,5	218,5	228	



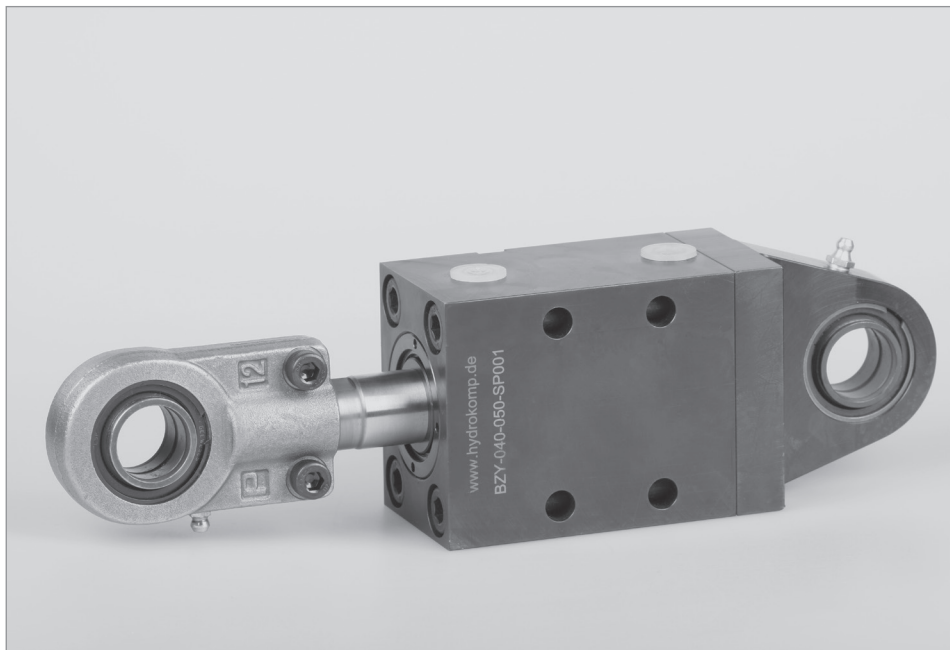


Block cylinders

piston with outer thread, double-acting, pmax. 500 bar

200-5

Issue: 10/2022



The image shows a block cylinder with external threaded piston together with accessories joint head and bearing support. The bearing support is supplied with 4 cylinder head screws and mounted to the cylinder through bleeder bores.

Description:

Where linear movements are hydraulically created and exact strokes are essential, this double-acting block cylinder is ideal for application.

Block cylinders are typically used in plant engineering, moldmaking, general mechanical engineering, fixture construction and toolmaking.

The compact cubic design and the transverse groove make assembly easy and guarantee service under high operating pressure.

HYDROKOMP offers various versions of oil supply.

Apart from the double sealing at the rod diameter, block cylinders are equipped with an additional metal wiper.

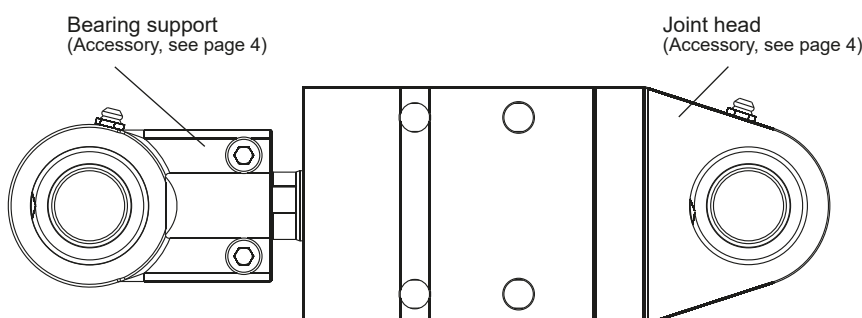
The metal wiper prevents ingress of metallic filings into the soft wiper and ensures continuous operation with little leakage.

The piston rods of the block cylinders have an outer thread. This enables mounting of joint heads for example and other fastening elements.

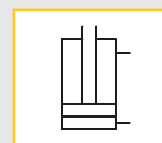
For more information see page 4.

As standard, HYDROKOMP offers the block cylinder in five sizes. Special designs and other strokes are available.

Mounting example:



Webcode: 020005



Designs:

- ✘ Threaded port
- ✘ Manifold connection with O-ring
- ✘ Bleeder bores
- ✘ Transverse bores

Sealing:

- ✘ NBR, Operating temperature: -10° up to +80°C
- ✘ FKM, Operating temperature: up to max. 150°C

Advantages:

- ✘ Continuous operation with little leakage
- ✘ Allows exact strokes
- ✘ 4 mounting options
- ✘ Outer thread for accessories
- ✘ Metal wiper as standard
- ✘ Double hydraulic sealing

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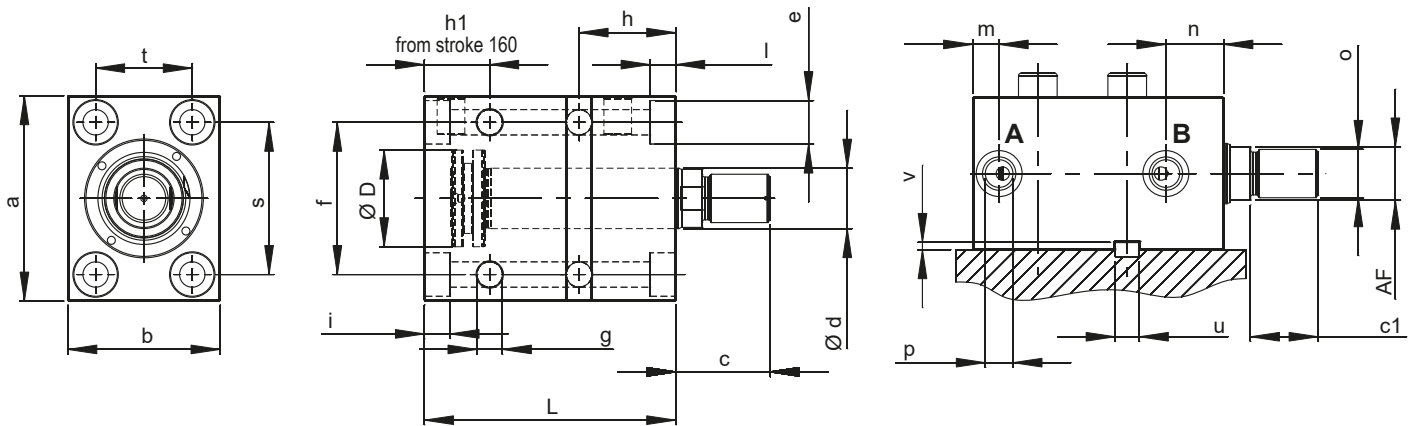
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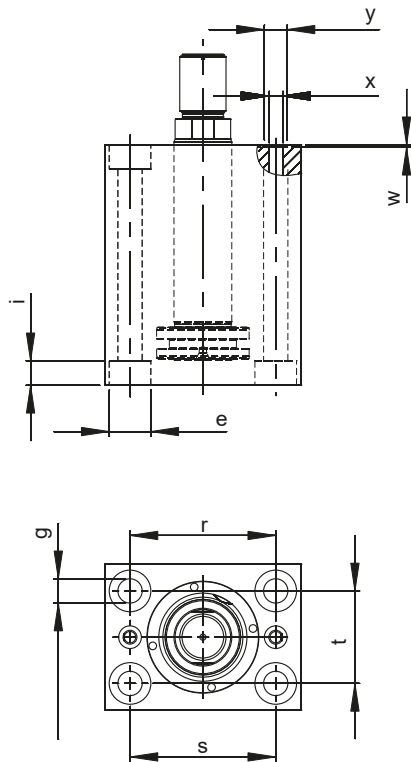
Technology that connects



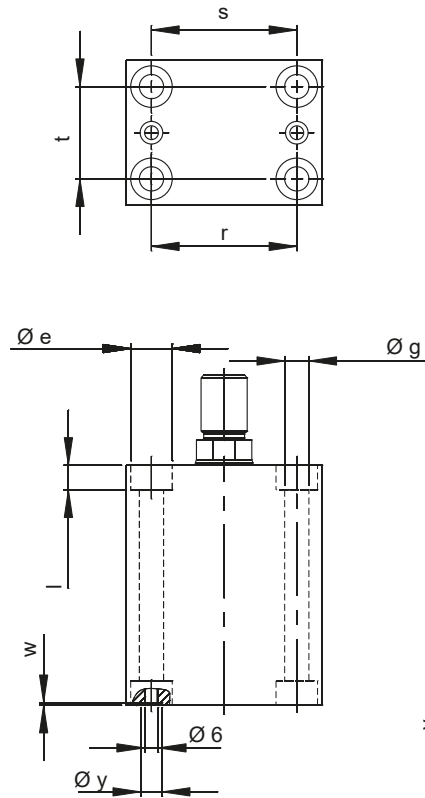
A threaded port, bleeder bores and transverse bores



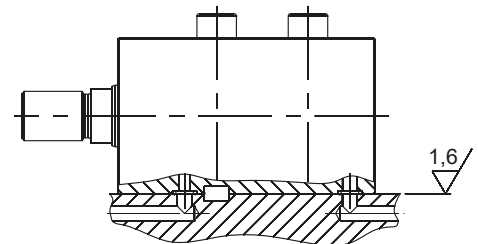
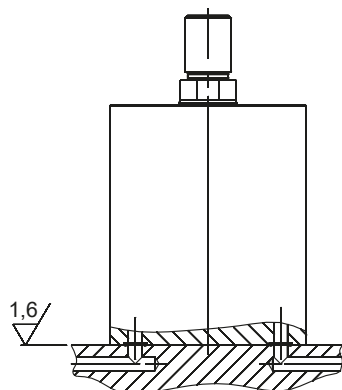
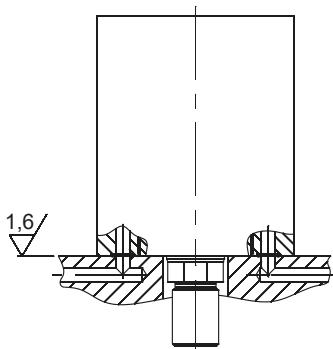
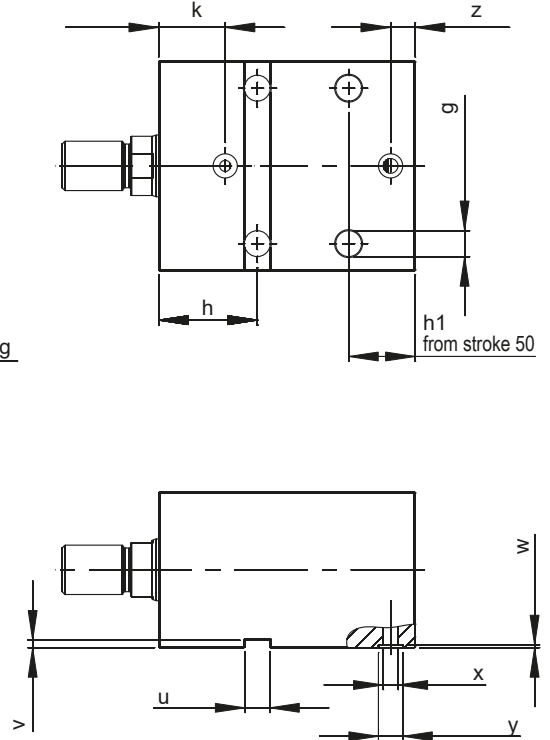
C manifold connection with O-rings, rod-side mounting



D manifold connection with O-rings, bottom-side mounting



E manifold connection with O-rings, broadside mounting



**Order numbers:**

D Piston Ø ⁽¹⁾	[mm]	25	32	40	50	63
d Rod Ø	[mm]	16	20	25	32	40
Stroke ⁽²⁾ ±1	[mm]	50	50	50	50	63
Pressure force at 100 bar	[kN]	4,9	8,0	12,6	19,6	31,2
Tension force at 100 bar	[kN]	2,9	4,9	7,7	11,6	18,6
Oil requ./10 mm supply	[cm³]	4,9	8,0	12,6	19,6	31,0
Oil requ./10 mm return flow	[cm³]	2,9	4,9	7,7	11,6	18,6
a	[mm]	65	75	85	100	125
b	[mm]	45	55	63	75	95
c	[mm]	26	33	39	47	63
c1	[mm]	18	22	28	36	45
Ø e	[mm]	14	18	18	20	26
f	[mm]	50	55	63	76	95
Ø g	[mm]	8,5	10,5	10,5	13	17
h	[mm]	33	38	40	44	50
h1	[mm]	26	27	27	30	41
i	[mm]	6,4	7,6	10,6	12,6	16,6
k	[mm]	21	25	27	29,5	32
l	[mm]	8,6	10,6	10,6	12,6	16,6
L	[mm]	94	100	104	115	135
m	[mm]	11	11	11	13	17
n	[mm]	18	22	24	27	26
o		M14x1,5	M16x1,5	M20x1,5	M27x2	M33x2
p		G1/4	G1/4	G1/4	G1/4	G1/2
r	[mm]	50	55	63	76	95
s	[mm]	50	55	63	76	95
AF	[mm]	13	17	22	27	36
t	[mm]	30	35	40	45	65
u	[mm]	10	12	12	15	20
v	[mm]	2	3	3	5	5
w	[mm]	1,1	1,1	1,1	1,1	1,5
Ø x	[mm]	4	5	6	6	8
Ø y	[mm]	9,8	9,8	9,8	10,8	13,8
z	[mm]	7,5	10	10	13	16

Design A (threaded port, bleeder bores and transverse bores)

Sealing:						
NBR	BZY...	025-050-AP-G001	032-050-AP-G001	040-050-AP-G001	050-050-AP-G001	063-063-AP-G001
FKM	BZY...	025-050-AV-G001	032-050-AV-G001	040-050-AV-G001	050-050-AV-G001	063-063-AV-G001

Design C (manifold connection with O-rings, rod-side mounting)

Sealing:						
NBR	BZY...	025-050-CP-G001	032-050-CP-G001	040-050-CP-G001	050-050-CP-G001	063-063-CP-G001
FKM	BZY...	025-050-CV-G001	032-050-CV-G001	040-050-CV-G001	050-050-CV-G001	063-063-CV-G001

Design D (manifold connection with O-rings, bottom-side mounting)

Sealing:						
NBR	BZY...	025-050-DP-G001	032-050-DP-G001	040-050-DP-G001	050-050-DP-G001	063-063-DP-G001
FKM	BZY...	025-050-DV-G001	032-050-DV-G001	040-050-DV-G001	050-050-DV-G001	063-063-DV-G001

Design E (manifold connection with O-rings, broadside mounting)

Sealing:						
NBR	BZY...	025-050-EP-G001	032-050-EP-G001	040-050-EP-G001	050-050-EP-G001	063-063-EP-G001
FKM	BZY...	025-050-EV-G001	032-050-EV-G001	040-050-EV-G001	050-050-EV-G001	063-063-EV-G001

Accessories (see page 4)

Bearing support	8700-006	8700-009	8700-003	8700-012	8700-015
Joint head	8700-005	8700-008	8700-002	8700-011	8700-014

⁽¹⁾ Special piston diameters available on request.⁽²⁾ Special stroke lengths available on request.

Scope of supply includes the O-rings.



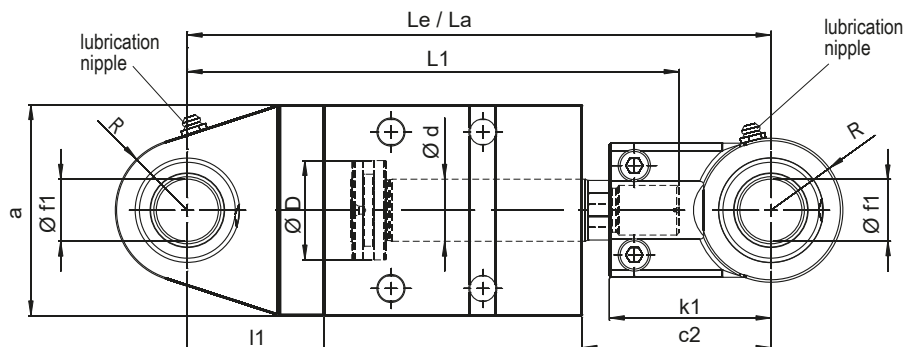
Description:

The piston rods of the block cylinders are equipped with an outer thread. This way joint heads for example and other fastening elements can be mounted. For the cylinder bottom we offer a bearing support which is mounted with cylinder screws.

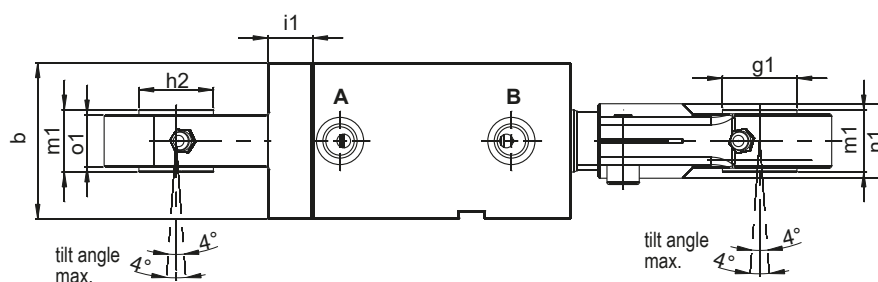
When mounting the joint head it is important to make sure that it is tightly fastened with the piston rod shoulder and jammed by screwing with the piston rod.

Lubrication nipples enable relubrication of joint head and bearing support.

Bearing support:



Joint head: (including fastening screws)

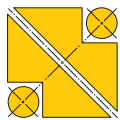


Technical Data:

D Piston Ø ⁽³⁾	[mm]	25	32	40	50	63
d Rod Ø	[mm]	16	20	25	32	40
Stroke ⁽⁴⁾ ±1	[mm]	50	50	50	50	63
Pressure force at 100 bar	[kN]	4,9	8,0	12,6	19,6	31,2
Tensile force at 100 bar	[kN]	2,9	4,9	7,7	11,6	18,6
Oil requirement/10 mm supply	[cm³]	4,9	8,0	12,6	19,6	31,0
Oil requirement/10 mm return flow	[cm³]	2,9	4,9	7,7	11,6	18,6
a	[mm]	65	75	85	100	125
b	[mm]	45	55	63	75	95
c2	[mm]	52	63	76	91	115
Ø f1 H7	[mm]	16	20	25	32	40
Ø g1	[mm]	20	25	30	38	46
Ø h2	[mm]	20	25	30	38	46
i1	[mm]	12	12	18	20	25
k1	[mm]	44	52	65	80	97
l1	[mm]	37	42	55	65	80
m1	[mm]	16	20	25	32	40
n1	[mm]	21	25	30	38	47
o1	[mm]	13	17	21	27	32
R	[mm]	20	23,5	29	35,5	45
Length cylinder L1	[mm]	157	175	198	227	278
Length retracted Le	[mm]	183	205	235	271	330
Length extracted La	[mm]	233	255	285	321	393
Weight approx.	[kg]	2,45	3,75	5,6	7,9	11,3

⁽³⁾Special piston diameters available on request.

⁽⁴⁾Special stroke lengths available on request.



Pull cylinders

with spring reset, single-acting, pmax. 500 bar

200-6

Issue: 10/2022

Description:

This single-acting pull cylinder is suitable for smaller plants which are tact-independent.

The built-in reset spring only serves for bringing the piston into the retracted position. The reset time depends on several conditions. So, an exact reset time can not be calculated.

If feed and reset are to act tact-dependent and/or force loaded in a set interval, we recommend to use our double-acting block cylinders (refer to datasheet 200-3).

The pull cylinder is available in various designs with threaded port or manifold connection with O-rings.

Mounting instruction:

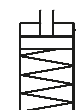
When mounting the pull cylinder, for example through the cross holes, it is important to have the cylinder to the front form-closed supported starting with an operating pressure of 250 bar and up, in so far as the mounting is made transverse to the force direction.

The user also has to prevent foreign particles and liquids from ingress into the spring chamber of the pull cylinder by a cover or preventive cylinder arrangement.

If desired, a vent line can be additionally connected at the threaded port or manifold connection.



Webcode: 020006



D Piston Ø ⁽¹⁾	[mm]	16	20	25	32	40	50	63	80	100
d Rod Ø	[mm]	10	12	16	20	25	32	40	50	63
Stroke±1 ⁽²⁾	[mm]	8	8	8	10	10	12	12	12	12
Pull force 100 bar	[kN]	1,1	1,5	2,7	4,6	7,3	11,0	17,9	29,2	45,6
Pull force 500 bar	[kN]	6,0	8,2	14,3	24,2	37,0	57,3	92,3	151,8	235,0
Min. reset force	[N]	40	95	140	195	270	440	430	760	1200
Oil req./10mm Stroke	[cm³]	1,22	1,9	2,9	4,9	7,65	11,6	18,6	30,63	47,36
a	[mm]	60	60	65	75	85	100	125	160	200
b	[mm]	35	35	45	55	63	75	95	120	150
c	[mm]	22	23	27	35	35	35	44	46	55
Ø e	[mm]	11	11	14	18	18	20	26	33	40
f	[mm]	30	40	50	55	63	76	95	120	158
g Ø	[mm]	6,5	6,5	8,5	10,5	10,5	13	17	21	25
h	[mm]	30	30	33	38	40	44	50	60	64
i	[mm]	4,4	4,4	6,4	7,6	10,6	12,6	16,6	20,6	24,8
k	[mm]	20,5	20,5	21	25	27	29,5	32	39	40
l	[mm]	6,4	6,4	8,6	10,6	10,6	12,6	16,6	20,6	24,8
L	[mm]	56	61	64	75	79	90	102	117	130
m	[mm]	11	11	11	11	11	13	17	21	25
n	[mm]	16,5	17	18	22	24	27	26	34	35
o1 = thread x depth	[mm]	M6x15	M8x16	M10x17	M12x18	M16x27	M20x32	M27x40	M30x40	M42x60
o2 = Ø x depth	[mm]	6,3x3	8,5x3	10,5x4	12,5x4	16,5x7	21,0x8	27,5x8	30,5x8	43,0x8
p	[mm]	G1/4	G1/4	G1/4	G1/4	G1/4	G1/4	G1/2	G1/2	G1/2
r	[mm]	40	44	50	55	63	76	95	120	158
s	[mm]	40	40	50	55	63	76	95	120	158
AF	[mm]	8	10	13	17	22	27	36	46	55
t	[mm]	22	22	30	35	40	45	65	80	108
u	[mm]	8	8	10	12	12	16	20	24	28
v	[mm]	2	2	2	3	3	5	5	7	7
w	[mm]	1,1	1,1	1,1	1,1	1,1	1,1	1,5	1,5	1,5
x Ø	[mm]	4	4	4	5	6	6	8	8	8
y Ø	[mm]	8,8	8,8	9,8	9,8	9,8	10,8	13,8	13,8	13,8
z	[mm]	7	7	7,5	10	10	13	16	21	25
Weight approx.	[Kg]	0,8	1,0	1,2	1,8	2,6	3,8	6,7	12,8	24

⁽¹⁾Other diameters and ⁽²⁾strokes on request.

Scope of supply includes O-rings.

Order number key:

Example: **ZZY** - **040** - **010** - **AV** - **I002**

Piston Ø [mm]: **016, 020, 025, 032, 040, 050, 063, 080, 100**

Piston [mm]: **008, 010, 012**

Design: **A, C, D, E**, (see page 2)

Sealing: NBR = **P**, FKM = **V**

Thread: inner thread = **I**

Functioning: single-acting = **002**

Connections:

- ☒ G1/4, G1/2 threaded port
- ☒ Manifold with O-ring bottom side, rod side or broadside

Sealings:

- ☒ NBR, Operating temperature: -10°C up to max +80°C
- ☒ FKM, Operating temperature: up to max. 150°C

Advantages:

- ☒ Ideal for smaller plants
- ☒ Space-saving installation
- ☒ Various mounting options
- ☒ Protecting metal wiper
- ☒ Vent line connectable

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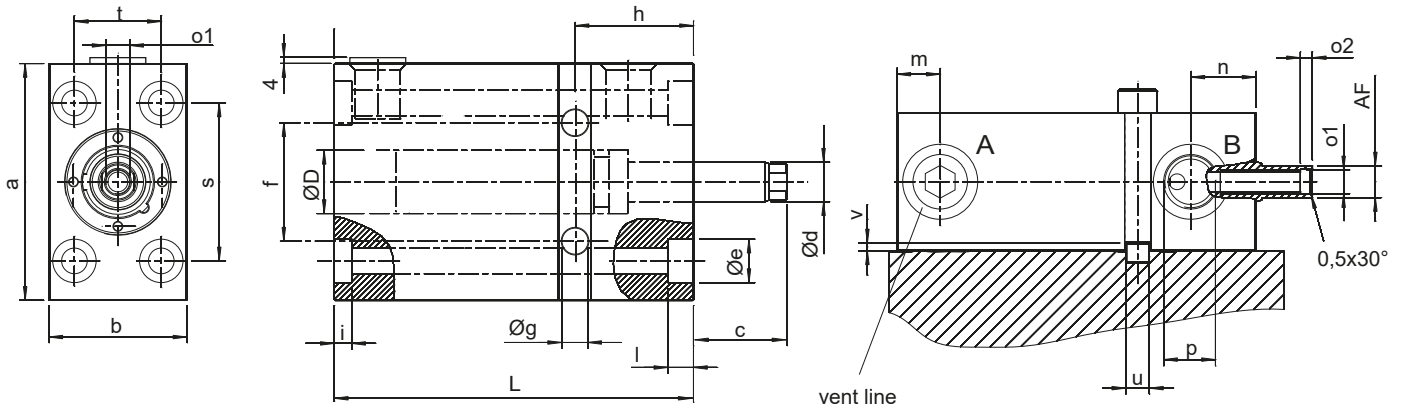
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Technology that connects



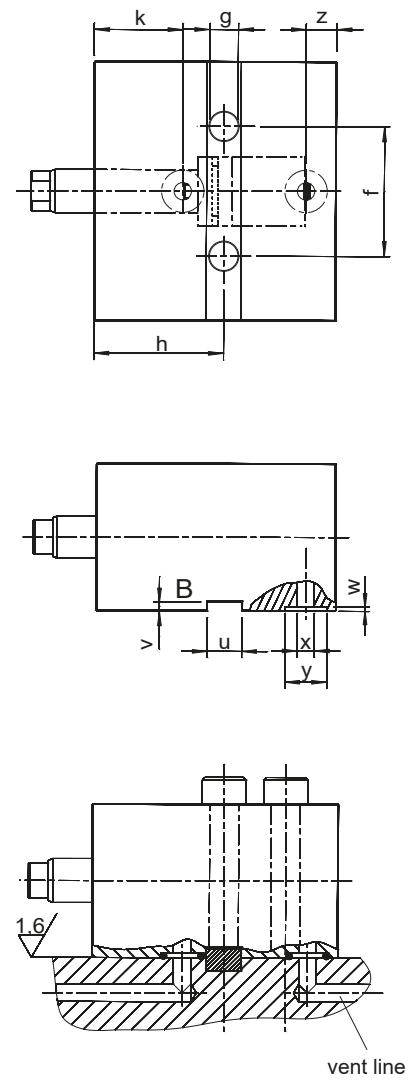
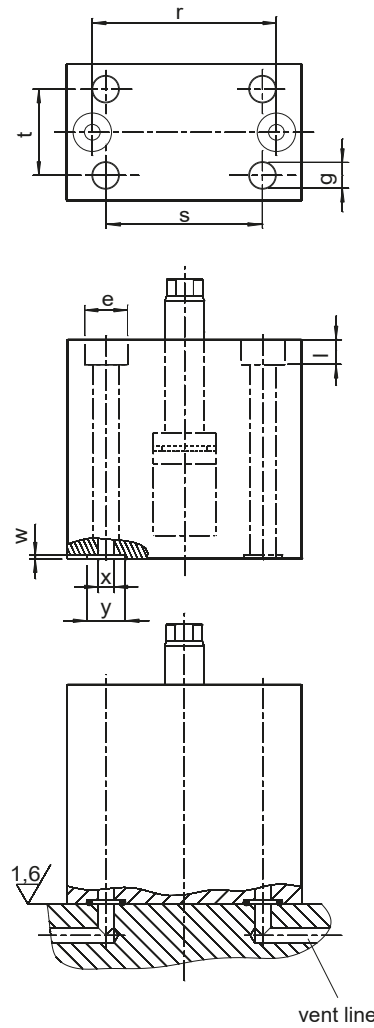
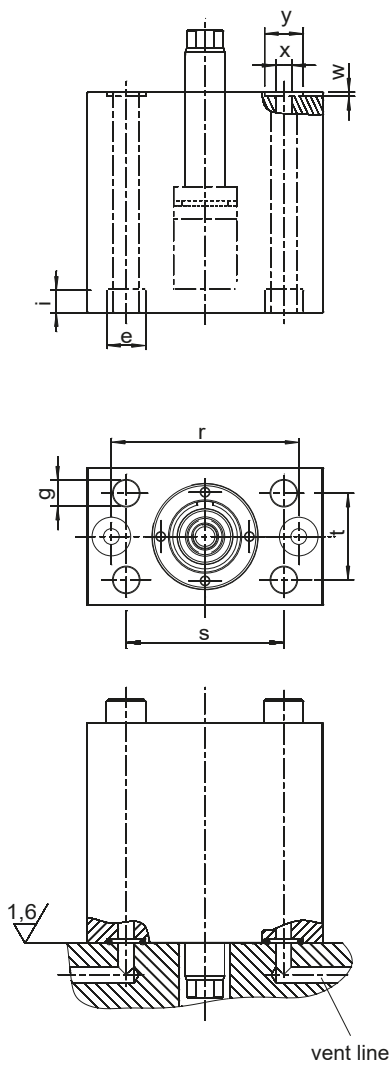
A G1/4, G1/2 threaded port, bleeder and cross bores



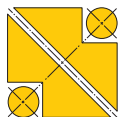
C
manifold with O-ring, rod side

D
manifold with O-ring, bottom side

E
manifold with O-ring, broadside



ATTENTION: It is important to prevent the spring chamber from ingress of particles and liquids!



Block cylinders

with end position control, double-acting, pmax. 500 bar

200-10

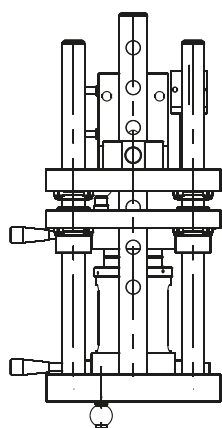
Issue: 10/2022



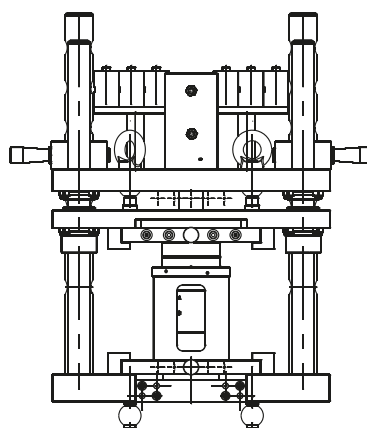
Application:

HYDROKOMP developed the above shown test fixture for coupling systems. On the lower fixture plate the coupling plates to be tested are plugged hydraulically. On the upper fixture plate the coupling nipple plates are fastened. The block cylinder descends the upper fixture plate and left up both systems.

The link-up process of the cylinder piston is controlled by the inductive sensors. Once the piston is completely protracted and the coupling process is therefore completed, the system is pressurized and checked for proper operation.



Test fixture for coupling systems



Description:

When time or tact dependent clamp/release processes are essential, the advantages of this block cylinder with end position control become effective. It is ideal for the application in automated plants.

The position of the cylinder head is read through the end position control. To do so, the block cylinder has two inductive sensors. These are located in the housing, in the end position of the piston.

Assembly instruction:

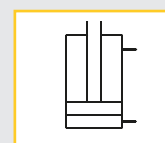
In order to avoid damages through transport the inductive cylinders are mounted shortly before use of the block cylinder.

For that, please refer to the assembly instructions on page 4, "Inductive Sensor".

The block cylinder with end position check is suitable for maximum ambient temperature between -25°C...+120°C.



Webcode: 020010



Connections:

- ✗ G1/4 / G1/2 threaded port
- ✗ Manifold with O-ring bottom side or broadside

Advantages:

- ✗ Ideal for automated plants
- ✗ Space-saving installation
- ✗ 3 mounting options
- ✗ Metal wiper as standard
- ✗ FKM sealing as standard
- ✗ High monitoring precision

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Technology that connects



Piston ⁽¹⁾ Ø	[mm]	16	20	25	32	40	50	63	80	100
Rod Ø	[mm]	10	12	16	20	25	32	40	50	63
Pressure force at 100 bar	[kN]	2,0	3,1	4,9	8,0	12,6	19,6	31,2	50,3	78,5
Pressure force at 500 bar	[kN]	10,1	15,7	24,5	40,2	62,8	98,2	155,9	251,3	392,7
Tensile force at 100 bar	[kN]	1,2	2,0	2,9	4,9	7,7	11,6	18,6	30,6	47,4
Tensile force at 500 bar	[kN]	6,1	8	14,5	24,5	38,3	57,9	93	153,2	236,8
Oil req./10 mm stroke, for. flow	[cm³]	2,01	3,14	4,91	8,04	12,57	19,63	31,17	50,27	78,54
Oil req./10 mm stroke, ret. flow	[cm³]	1,23	2,01	2,90	4,90	7,66	11,59	18,61	30,63	47,37
a	[mm]	60	60	65	75	85	100	125	160	200
b	[mm]	35	35	45	55	63	75	95	120	150
c	[mm]	6	7	7	10	10	10	14	14	15
e Ø	[mm]	10,5	10,5	14	18	18	20	26	33	40
f	[mm]	30	40	50	55	63	76	95	120	158
g Ø	[mm]	6,5	6,5	8,5	10,5	10,5	13	17	21	25
h	[mm]	40	38	38	45	45	49	52	62	64
h1 (from stroke 50)	[mm]	24,5	24,5	26	27	27	30	41	47	54
i	[mm]	4,4	4,4	6,4	7,6	10,6	12,6	16,6	20,6	24,8
k	[mm]	20,5	20,5	21	25	27	29,5	32	39	40
l	[mm]	6,4	6,4	8,6	10,6	10,6	12,6	16,6	20,6	24,8
m	[mm]	11	11	11	11	11	13	17	21	25
n	[mm]	16,5	17	18	22	24	27	26	34	35
o1 = thread x depth	[mm]	M6x15	M8x16	M10x17	M12x18	M16x27	M20x32	M27x40	M30x40	M42x60
o2 = Ø x depth		Ø6,3x3	Ø8,5x3	Ø10,5x4	Ø12,5x4	Ø16,5x7	Ø21,0x8	Ø27,5x8	Ø30,5x8	Ø43,0x8
o3 = chamfer		0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°	0,5x30°
p		G1/4	G1/4	G1/4	G1/4	G1/4	G1/4	G1/2	G1/2	G1/2
P-j Ø	[mm]	M12x1	M12x1	M12x1	M12x1	M12x1	M12x1	M12x1	M12x1	M12x1
P-l	[mm]	28	28	24,5	30,5	30	33	34,5	41,5	42,5
P-m	[mm]	11	11	12,7	14,5	13	17,5	21	26	30
p-k	[mm]	32	34	34	32,5	31,5	29	45	36	26
r	[mm]	20	22	25	22,5	31,5	38	47,5	60	79
s	[mm]	40	40	50	55	63	76	95	120	158
AF		8	10	13	17	-	-	-	-	-
t	[mm]	22	22	30	35	40	45	65	80	108
w	[mm]	1,1	1,1	1,1	1,1	1,1	1,1	1,5	1,5	1,5
x Ø	[mm]	4	4	4	5	6	6	8	8	8
y Ø	[mm]	9,8	9,8	9,8	9,8	9,8	9,8	10,8	13,8	13,8
z	[mm]	7	7	7,5	10	10	13	16	21	25
Stroke ⁽²⁾ ±1	[mm]	16	16	20	25	25	25	30	32	40
Housing length L ±1	[mm]	75	80	81	92	94	99	112	127	141
Weight approx.	[kg]	1,12	1,19	1,67	2,65	3,50	5,15	9,20	16,54	29,18
Stroke ⁽²⁾ ±1	[mm]	32	32	50	50	50	50	63	80	100
Housing length L ±1	[mm]	91	96	111	117	119	124	145	175	201
Weight approx.	[kg]	1,35	1,41	2,24	3,31	4,33	6,30	11,59	22,01	40,13
Stroke ⁽²⁾ ±1	[mm]	50	50	100	100	100	100	100	100	160
Housing length L ±1	[mm]	109	114	161	167	169	174	182	195	265
Weight approx.	[kg]	1,61	1,66	3,19	4,62	5,98	8,59	14,27	24,29	51,94

(1) Other piston diameters available on request.

Scope of supply includes the O-rings.

(2) Other strokes available on request.

Order number key, block cylinders:

Example: **BZP1** - **063** - **100** - **AV001**Piston Ø [mm]: **016, 020, 025, 032, 040, 050, 063, 080, 100**

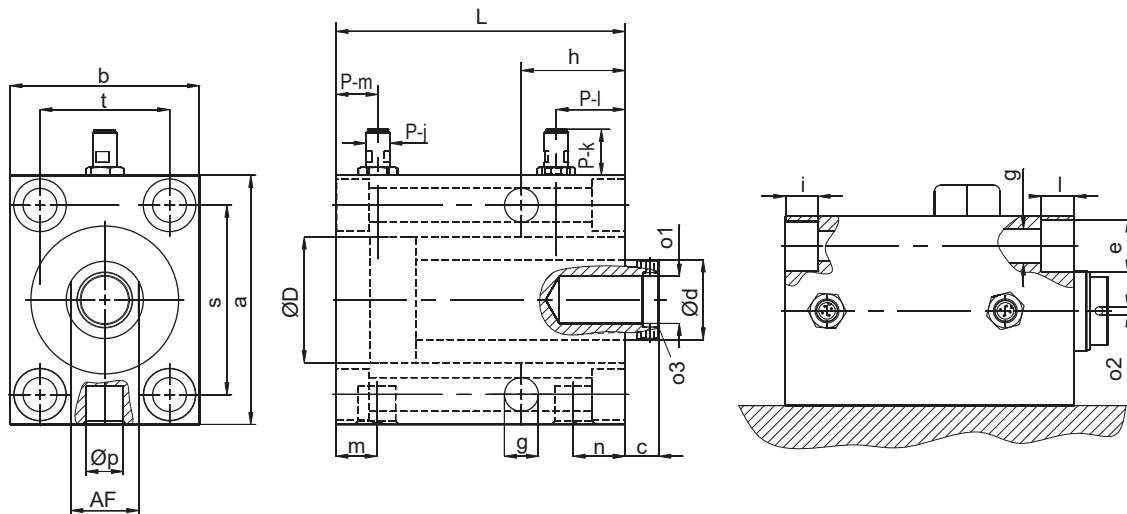
Stroke [mm]: (see table above)

Design: **A, D, E** (see table above)
 Sealing: as standard at this cylinder type FKM = **V**
 Sealing: double-acting = **001**

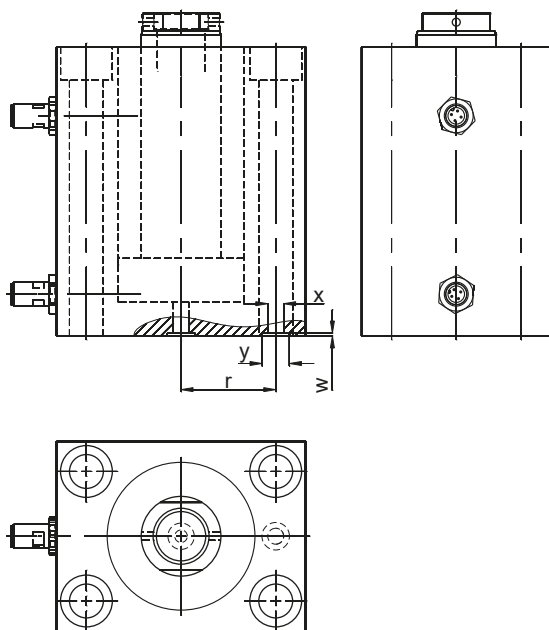
Inductive sensors and plugs are available separately as accessories. For order numbers see page 4.



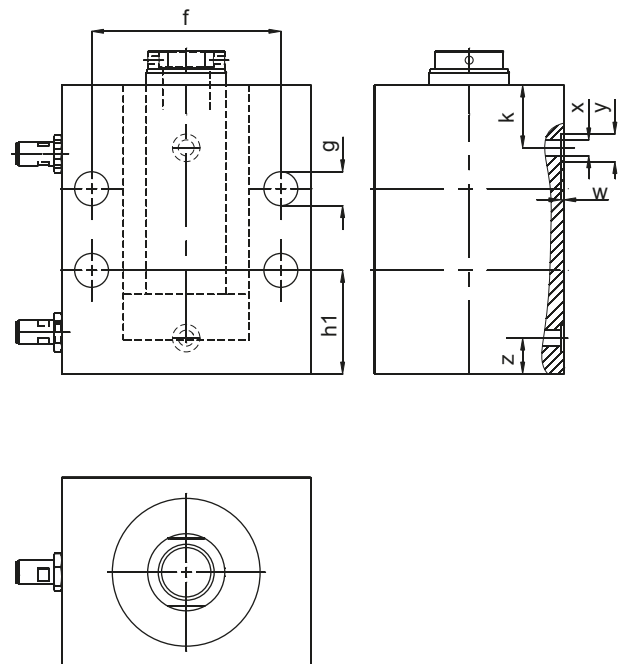
A threaded port, bleeder and cross bores



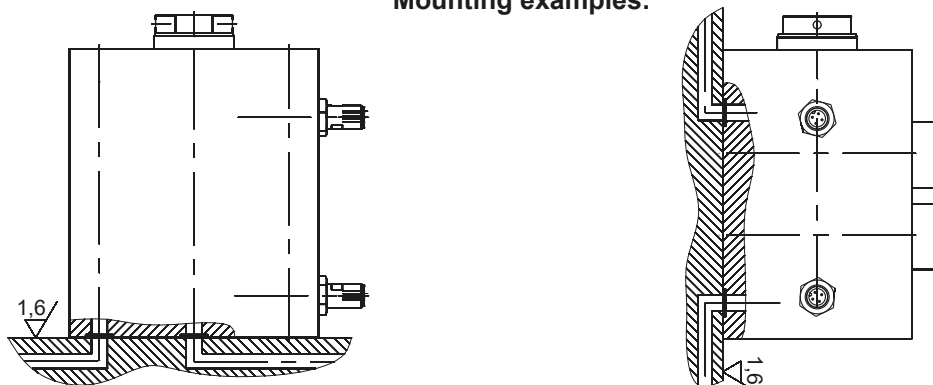
D
manifold with O-ring, rod side)

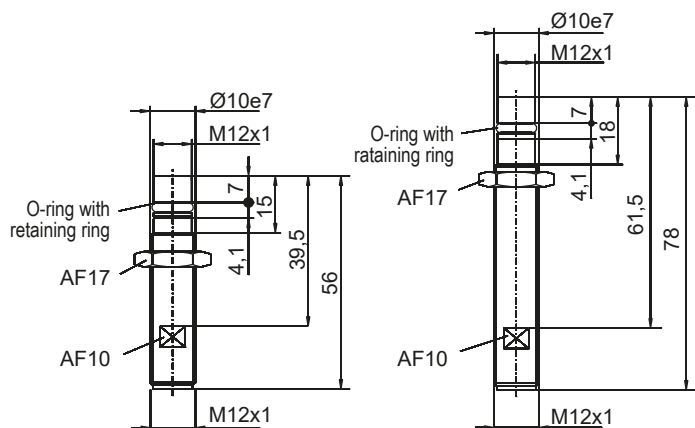


E
manifold with O-ring, broadside



Mounting examples:



**Mounting instructions:****Sensor, front**

1. Protract the piston completely.
2. Carefully screw the sensor up to the stop at the piston, into the housing.
3. Turn back the sensor as follow in order to set-up the switch point (S.P.) before the end position (E.P.).
1/4 rotation S.P. approx. 4 mm before E.P.
1 1/4 rotations S.P. approx. 1 mm before E.P.

4. Fix the sensor in the position with the counter nut.
5. Connect the switch and check its function.

Sensor, back

1. Completely retract the piston.
2. Proceed with mounting and set-up analog the front sensor.

LED (not for all plugs):

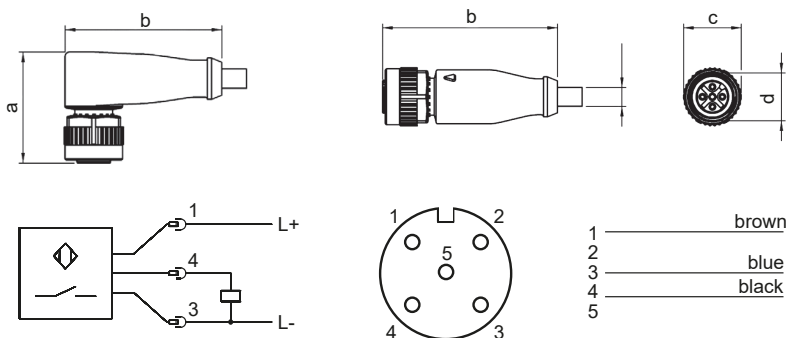
● = Operating voltage ● = Functional display

Technical data sensor:

for cylinders with Piston Ø	[mm]	16, 20, 25, 32, 40, 50	63, 80, 100
Ambient temperature	[°C]	-25...+80	-25...+120
Switching distance, nominal	[mm]	1,5	1,5
Switching distance, assured	[mm]	0...1,2	0...2,0
Repeatability	[%]	≤ 5	≤ 5
Hysteresis max.	[%]	15	15
Dimensions DxT	[mm]	M12x1x56	M12x1x78
Material, housing		1.4104	1.4104
Material, active area		Duroplast	Ceramics
Protection grade	[IP]	68 (BWN Pr20)	68 (BWN Pr20)
Connection, plug		S4 (M12)	S4 (M12)
Electrical type		DC	DC
Wiring		3 pins	3 pins
Switch function		switch (NO)	switch (NO)
Output circuit		PNP	PNP
Rated voltage	[V]	24 DC	24 DC
Rated current	[mA]	200	200
Operating voltage	[V]	10...30 DC	10...30 DC
Residual ripple max.	[%]	15	15
Switching frequency	[Hz]	1000	1000
No-load current	[mA]	≤ 10	≤ 8
Voltage drop max.	[mV]	1,5	2,5
Protection, short circuit		yes	yes
Protection, reverse polarity		yes	yes
Torque	[Nm]	25	25
Order number		8500-044	8500-048

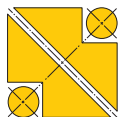
O-Ring for sensor FKM⁽⁴⁾**6007-008**Retaining ring for sensor⁽⁴⁾**6007-007**⁽⁴⁾ Within scope of supply, order number only applies for spare part order.

Plugs must be ordered separately.



Sensor accessories	a [mm]	b [mm]	c [mm]	Thread	Protection	Ambient temperature	LED	Order no:
Plug PNP, angular	25	39	32	M12x1	IP 68	-25...+ 80 C°	yes	8500-047
Plug PNP, straight	-	41	46	M12x1	IP 68	-25...+ 80 C°	yes	8500-051
Plug PNP, angular	31,5	38	66	M12x1	IP 68	-25...+ 120 C°	no	8500-052
Plug PNP, straight	-	35,5	75	M12x1	IP 68	-25...+ 120 C°	no	8500-053

All plugs are equipped with 2 m connection cable.



Threaded body cylinders

with internal stroke limiter, without/with wiper, single-acting, pmax. 500 bar

210-1

Issue: 10/2022

Description:

These screw-in cylinders are a space saving solution as clamping and gripping cylinders. Suitable as a construction module for a wide variety of tasks. This cylinder is for example also ideally suited for press clamping devices.

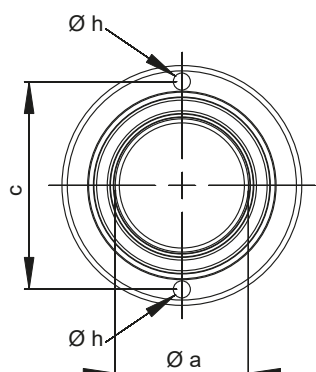
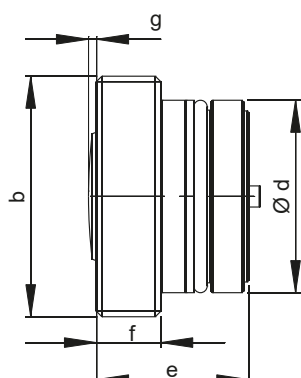
The cylinder distinguishes by its compact construction. Due to the internal stroke limiter, the cylinder can also be operated without counter clamping. The piston rod end is crowned.

Operating conditions:

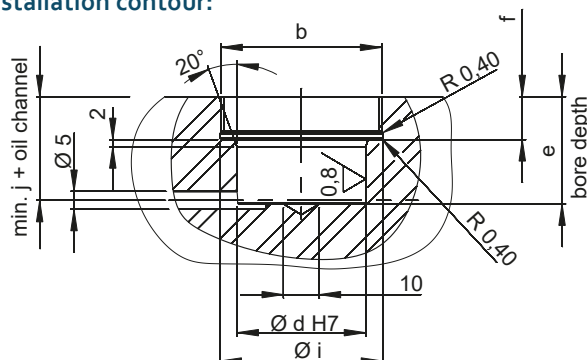
The screw-in cylinder operates hydraulically only single-acting. As a result, only definite extraction times are given.

The reset is effected by means of a built-in compression spring. For that reason, the reset time cannot be precisely determined.

Hydraulic oil is supplied through drilled channels.



Installation contour:



Notice:

After the cylinder has been installed, it is to be secured in the thread M45x1.5 by means of a threaded pin M4x6.

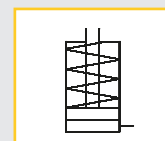
The scope of supply includes this threaded pin with internal hexagon and chamfer point.

Technical data:

a Piston Ø:	[mm]	20	25	32
Clamping force 100 bar	[kN]	3,1	4,9	8
Clamping force 500 bar	[kN]	15,7	24,5	40,2
Maximum oil capacity	[cm³]	1,25	1,95	6,45
Stroke	[mm]	4	4	8
b		M38x1,5	M45x1,5	M56x1,5
c (with wiper)	[mm]	34	39	48
c (without wiper)	[mm]	30	35	44
d Ø	[mm]	30	36	44
e	[mm]	25	30	42
f	[mm]	10	12	12
g (with wiper)	[mm]	1,5	1,5	1,5
g (without wiper)	[mm]	-	-	-
h Ø	[mm]	2x 2,5	2x 3,5	2x 4,0
i Ø	[mm]	38,5	45,5	56,5
j	[mm]	24,5	29,5	41,5
Order no.				
without wiper	EZY-EM...	-20-004-AP-100	-25-004-AP-100	-32-008-AP-100
with NBR ⁽¹⁾ wiper	EZY-EM...	-20-004-AP-200	-25-004-AP-200	-32-008-AP-200
with FKM ⁽¹⁾ wiper	EZY-EM...	-20-004-AV-200	-25-004-AV-200	-32-008-AV-200
Threaded pin M4x6	7004-005			

⁽¹⁾Operating temperature: NBR -10°C up to +80°C, FKM up to max. 150°C

Webcode: 021001

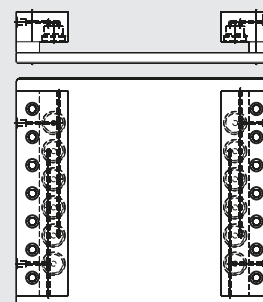


Advantages:

- Fully retractable housing
- With internal stroke limiter
- With or without wiper
- Oil supply without piping

Application example:

A hydraulic quick-acting clamping fixture with 12 threaded body cylinders. This is clamped onto a standardized clamping edge thickness of 20 mm. The clamping bars are supplied by a dual-circuit hydraulic clamping system. This means that in the event of a pressure drop in one clamping circuit, the clamping effect is maintained by the second clamping circuit until the machine stops. Each of the clamping circuits must be secured by a hydraulically releasable check valve.



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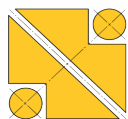


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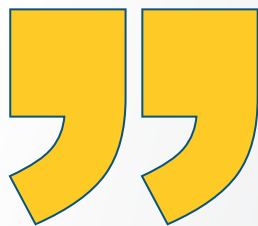
Technology that connects



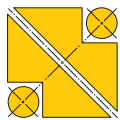
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Technology that connects



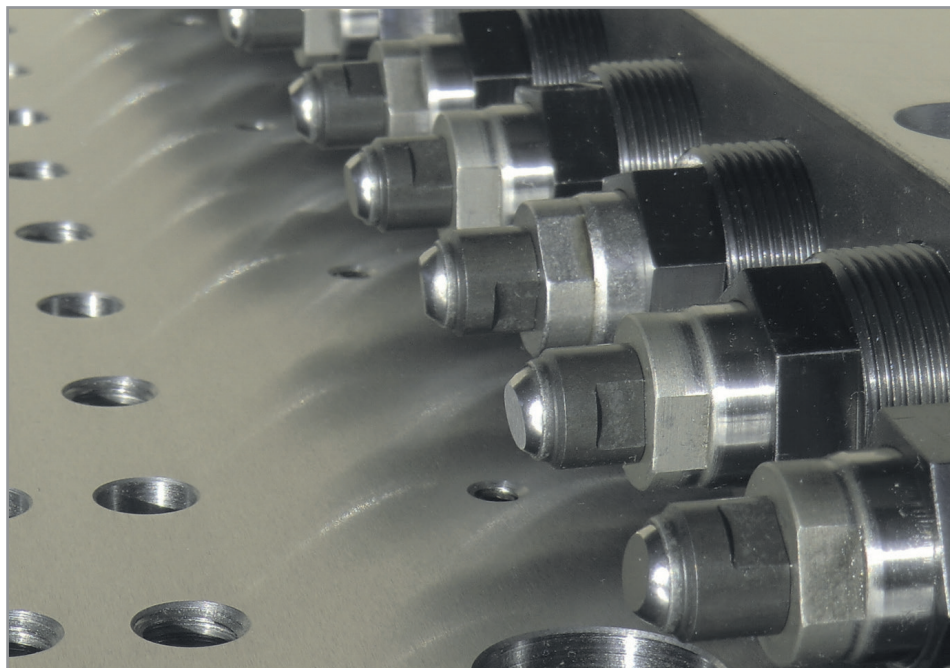
„Compact design, ideal for multiple clamping.
Effective and economical.“



Threaded body cylinders

with spring reset, single-acting, pmax. 400 bar

210-2
Issue: 01/2024



Application example: Multiple clamping fixture for the mass production of different workpieces (e. g. flange plates). The fixture is used in a rotary table. The clamping length is 600 mm. There are 48 pieces threaded body cylinders EZY-EM-020-015 and one rotary valve coupling DRG-5-EW-06-002 in use.

Description

These threaded body cylinders are used as space-saving clamping cylinders and are notable for their compact design.

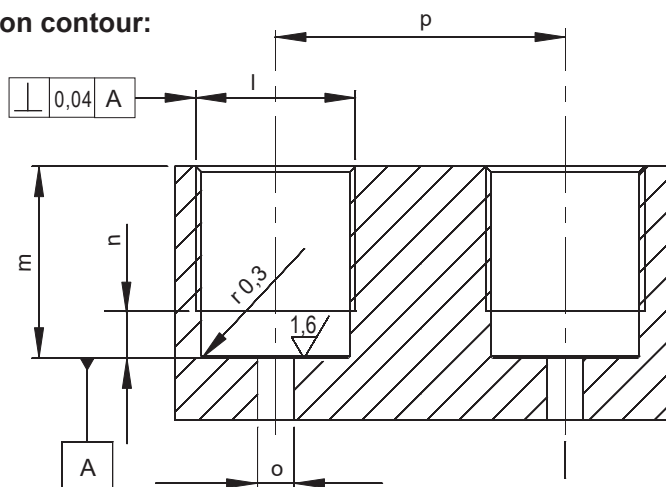
By the internal stroke limiters, the cylinder can also be operated even without a counter clamp surface. The use of the double wiper ring reduces dynamic leakage.

Operating conditions:

The threaded body cylinder is hydraulically operated, single-acting. Return is by means of a build-in spring. The hydraulic oil is fed through drilled holes.

The cylinder is sealed against the base of the screw-in hole by means of a ring seal. As a result of the plunger design, bleeding of the piston rod space is unnecessary.

Installation contour:

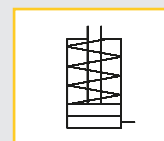


Technical data:

a Piston Ø	[mm]	12	16	20	25	32
r	[mm]	25	35	50	70	100
l	[mm]	M22x1,5	M26x1,5	M30x1,5	M38x1,5	M48x1,5
m (min./max.)	[mm]	15/26,5	19/33,5	23/42,5	26,5/45	40/71
n	[mm]	6	7	7	10	11
o max. Ø	[mm]	6	6	7	7	8
p min. without/with double wiper		25/31	30/34	35/40	43/52	55/62



Webcode: 021002



Important instruction:

The cylinder can be loaded up to the maximum clamping force in the retracted position.

Protect the cylinders against the direct influences of aggressive abrasives and coolants.

For general operating conditions and other information, read the catalogue page "Recommendations & Specifications".

Sealing:

- ☒ **NBR, Operating temperature:** -10°C up to +80°C
- ☒ **FKM, Operating temperature:** up to max. 150°C

Advantages:

- ☒ **Space-saving installation**
- ☒ **Suitable without counter clamping surface**
- ☒ **Also retracted fully loadable**
- ☒ **Extremely low leakage**
- ☒ **Ventilation connection unnecessary**

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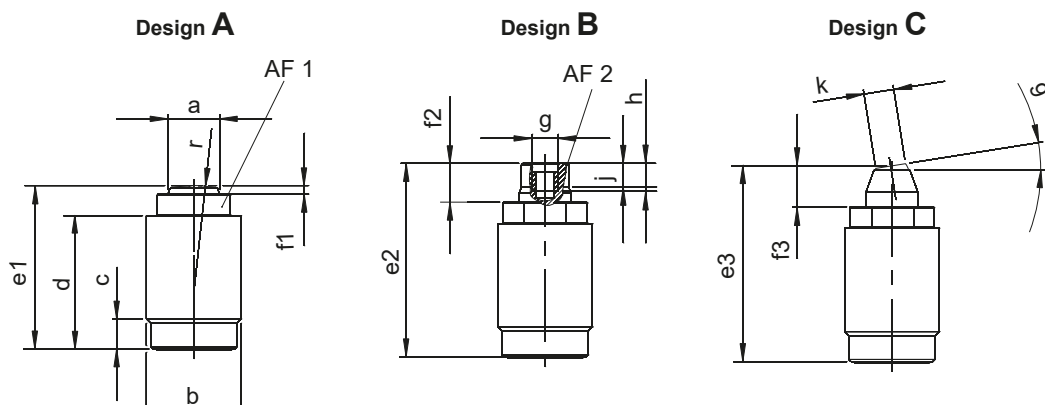
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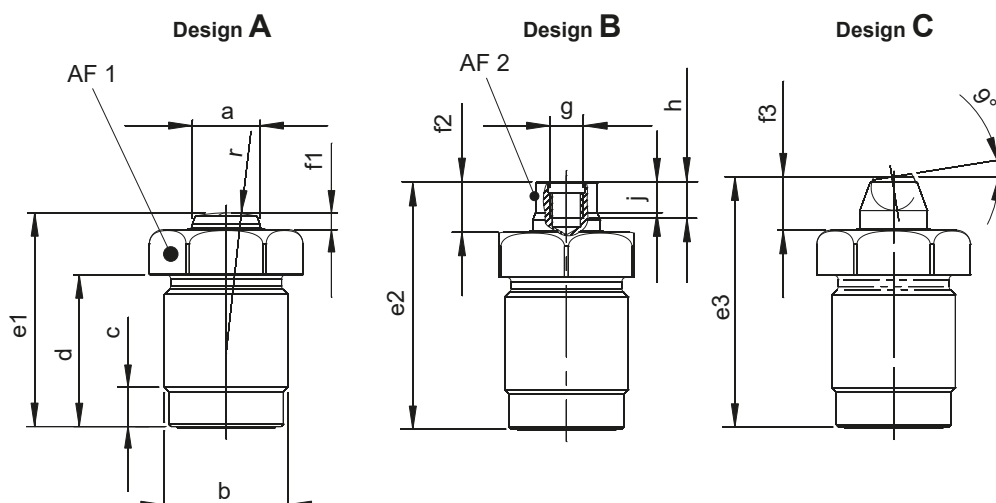
Technology that connects



Threaded body cylinder
with spring reset

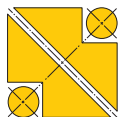


Threaded body cylinder
with spring reset
and double wiper



a Piston Ø	[mm]	12	16	20	25	32
Stroke	[mm]	10	12	15	16	20
Clamping force at 100 bar	[kN]	1,1	2	3,1	4,9	8
Clamping force at 400 bar	[kN]	4,5	8	12,5	19,6	32
Spring reset load min.	[N]	30	50	75	125	200
Oil requirement/10 mm stroke	[cm³]	1,13	2,01	3,14	4,91	8,04
b	[mm]	M22x1,5	M26x1,5	M30x1,5	M38x1,5	M48x1,5
c	[mm]	7	8	8	11	12
d without/with double wiper	[mm]	31/27	35/34	44,5/43	45/45,5	72,5/71,5
e1	[mm]	38	46,5	56	59,5	87
e2	[mm]	45	52,5	65,5	68,5	98
e3	[mm]	45,5	54	69,5	72,5	100
f1 without/with double wiper	[mm]	2/3	2,5/3	2,5/4	3,5/5	3,5/7
f2 without/with double wiper	[mm]	9/10	7,5/9	12/13,5	12,5/14	14,5/18
f3 without/with double wiper	[mm]	9,5/10,5	9/11	16/17,5	16,5/18	16,5/20
g	[mm]	M6	M6	M8	M8	M12
h	[mm]	6,5	6,5	8	8	12
j	[mm]	5,5	5,5	6	7	9
k Ø	[mm]	7	7	10,5	10,5	20
AF 1 without/with double wiper	[mm]	17/24	22/27	24/32	32/41	41/50
AF 2	[mm]	10	13	17	19	24
r	[mm]	25	35	50	70	100
Mounting torque	[Nm]	40	50	60	80	225
Weight	[kg]	0,08	0,15	0,22	0,38	0,97
Order number:						
without double wiper		EZY-EM-				
Design A		...12-10-AX001	...16-12-AX001	...20-15-AX001	...25-16-AX001	...32-20-AX001
Design B		...12-10-BX001	...16-12-BX001	...20-15-BX001	...25-16-BX001	...32-20-BX001
Design C		...12-10-CX001	...16-12-CX001	...20-15-CX001	...25-16-CX001	...32-20-CX001
with double wiper		EZY-EM-				
Design A		...12-10-AX002	...16-12-AX002	...20-15-AX002	...25-16-AX002	...32-20-AX002
Design B		...12-10-BX002	...16-12-BX002	...20-15-BX002	...25-16-BX002	...32-20-BX002
Design C		...12-10-CX002	...16-12-CX002	...20-15-CX002	...25-16-CX002	...32-20-CX002
Bottom seal NBR (Spare part, 1 pce)		6014-011	6022-004	6025-026	6030-008	6042-003
Bottom seal FKM (Spare part, 1 pce)		6014-013	6022-006	6025-034	6030-009	6042-004

Sealing material: Replace the X in the order number by a P for NBR or a V for FKM. (Example: EZY-EM-20-15-BV001)



Threaded body cylinders

with wiper, single-acting, pmax. 500 bar

210-3

Issue: 10/2022

Description:

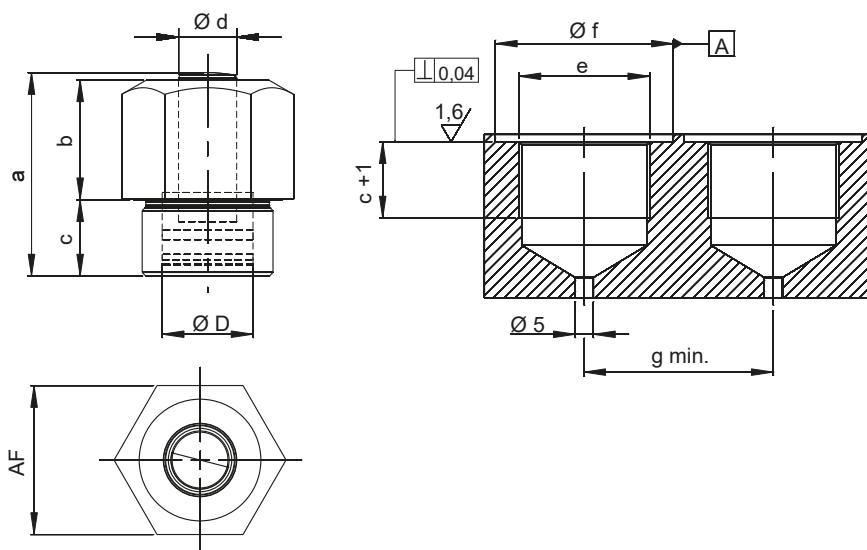
Single-acting threaded body cylinders have to be screwed-in right into the fixture body. Threaded body cylinders have been designed for a maximum operating pressure of up to 500 bar. As standard, they are equipped with a wiper and a reset spring.

The crowned piston rod in combination with the compact design guarantees space-saving installation in the fixture.

Bores allow for easy feed of the pressure medium without exposed feed lines and external screwed connections.

An integrated reset spring pulls the piston back into the non-pressure initial condition.

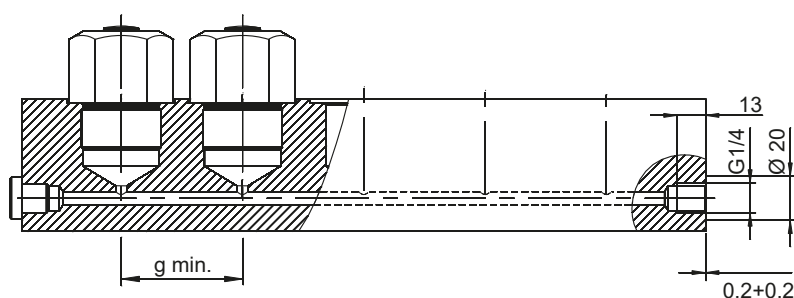
With retracted pistons the threaded body cylinders can not be charged.



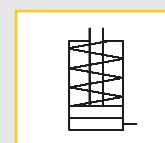
Technical data:

D Piston Ø	[mm]	8	12	16	25	32
d Rod Ø	[mm]	5	8	10	16	20
Stroke	[mm]	4	4	6	12	16
Clamping force 100 bar	[kN]	0,5	1,1	2,0	4,9	8
Clamping force 500 bar	[kN]	2,5	5,6	10,0	24,5	40
Spring reset force min.	[N]	25	32	56	151	183
Oil req./10 mm stroke	[cm³]	0,50	1,13	2,01	4,91	8,04
a ± 0,5	[mm]	27	27	37	56	67
b	[mm]	15	14	21	33	40
c	[mm]	12	12	14	21	25
e	[mm]	M16x1,5	M20x1,5	M24x1,5	M36x1,5	M42x1,5
f Ø	[mm]	23	29	33	49	65
g min.	[mm]	24	30	34	50	66
AF	[mm]	19	24	27	41	55
Torque max.	[Nm]	80	90	110	130	200
Weight approx	[kg]	0,065	0,10	0,17	0,40	0,90
Order number						
with NBR wiper	EZY-EM-...	08-04-DP001	12-04-DP001	16-06-DP001	25-12-DP001	32-16-DP001
with FKM wiper	EZY-EM-...	08-04-DV001	12-04-DV001	16-06-DV001	25-12-DV001	32-16-DV001

Application example:



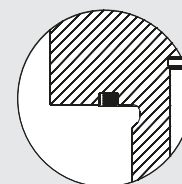
Webcode: 021003



Advantages:

- Space-saving installation
- With integrated wiper
- Oil feed without piping
- As standard in five sizes available
- High clamping forces and force density

Sealing:



Threaded body cylinders by HYDROKOMP are metallically sealed by the sealing edge profiled to the cylinder. For that, a rectangular face grinded mount surface within the fixture body is absolutely essential.

Threaded body cylinders with a piston Ø of 32 mm are sealed by an edge sealing (see image below).

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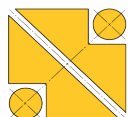
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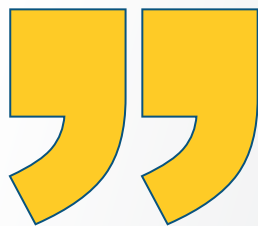
Technology that connects



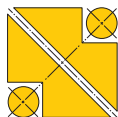
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Technology that connects



„Small in diameter, more space for workpieces.“

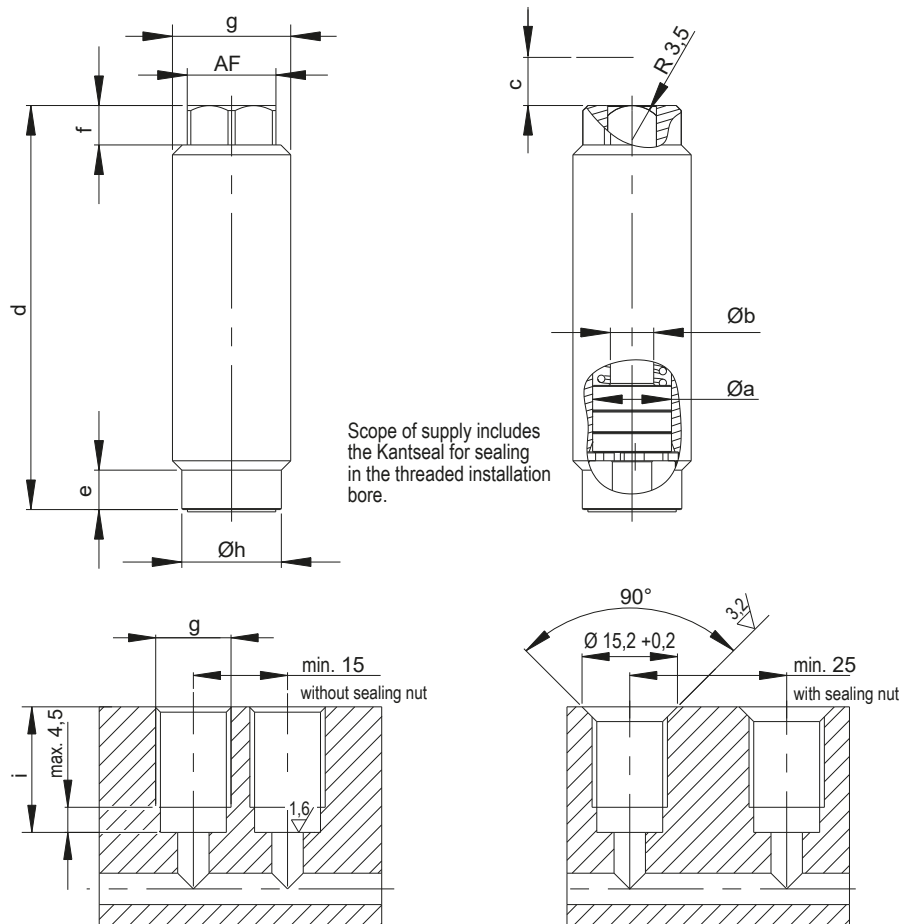


Threaded body cylinders

small-format design, single-acting with reset spring, p_{max}. 500 bar

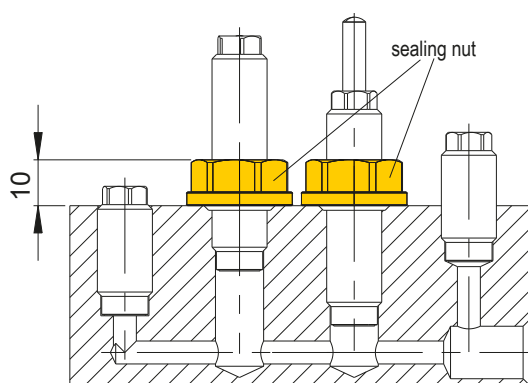
210-4

Issue: 08/2024



Technical data:

a Piston Ø	[mm]	8	8	8
b Piston rod Ø	[mm]	5	5	5
c Stroke	[mm]	5	10	16
Piston surface	[cm²]	0,5	0,5	0,5
Coupling force at 100 bar	[kN]	0,5	0,5	0,5
Coupling force at 500 bar	[kN]	2,5	2,5	2,5
Actuating pressure min.	[bar]	5	5	5
Reset force min.	[N]	15	15	15
Oil req./10 mm stroke	[cm³]	0,5	0,5	0,5
Tightening torque max.	[Nm]	10	10	10
Weight	[g]	16	24	28
d	[mm]	28	41	51
e	[mm]	4	4	4
f	[mm]	4	4	4
g	[mm]	M12x1,5	M12x1,5	M12x1,5
h	[mm]	10,1	10,1	10,1
i min./max.	[mm]	11/24	11/37	11/47
AF		9	9	9
Order number	EZY-EM-	...08-05-BP001	...08-10-BP001	...08-16-BP001



The sealing nut is available as accessory.

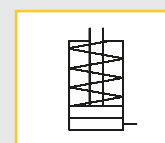
Accessories:

Sealing nut
(tightening torque max. 25 Nm)
Order No: 7012-056

Kantseal
(spare part)
Order No: 6005-010



Webcode: 021004



Description:

These single-acting threaded body cylinders are ideal for clamping small workpieces because of their small-format design.

With a small cylinder spacing as low as 15 mm, the threaded body cylinders can be screwed into multi-clamping fixtures to save space.

The pressure oil supply is realized through drilled channels. The cylinder is sealed against the ground in the threaded installation hole by the supplied Kantseal.

Workpiece tolerances of more than 20 mm can be compensated by means of a sealing nut (accessory). The sealing nut allows a continuous adjustment of the screwing depth of the cylinder. Thereby it also seals the cylinder at the upper edge of the threaded installation bore against leakage.

Important note:

The threaded body cylinder with reset spring is not load-bearing in the declamped and retracted state.

Protect the cylinders from direct exposure to aggressive cutting fluids and coolants. General operating conditions and other information can be found in the catalog or in the Internet on page:

"Recommendations & Specifications"

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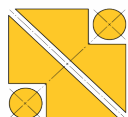
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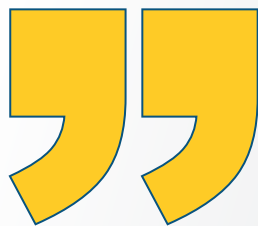
Technology that connects



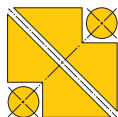
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„Variability with different workpiece sizes, single-acting.“



Universal cylinders

with spring reset, single-acting, pmax. 500 (200) bar

220-2

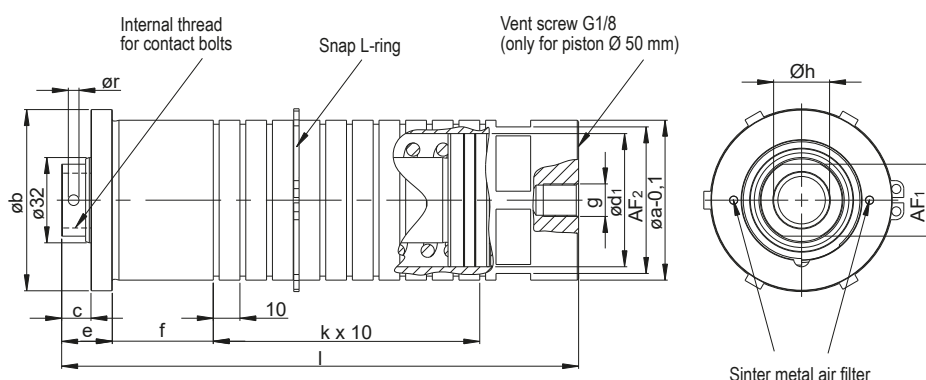
Issue: 10/2022

Description:

The universal cylinder is suitable to process changing work pieces with variable sizes in one clamping fixture. They are equipped with support ring and plug-in disk. Thus the cylinder can be directly installed into the fixture body. The design makes it possible to adjust the built-in depth in 10 mm increments. The universal cylinder with piston Ø 50 mm has a G1/8 ventilation screw.

Important notice:

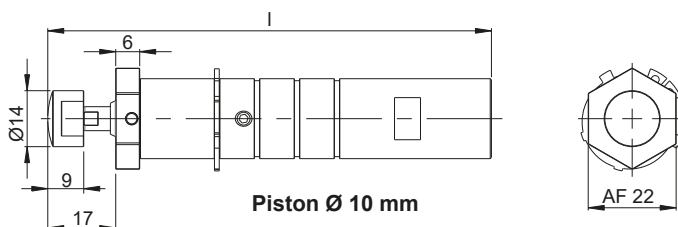
The cylinder must be protected from ingress of any coolants or cutting fluids into the spring chamber. The arrangement of the cylinders must be realized in a way that the ingress of liquids through the sintered metal air filter is prevented. Alternatively, the protection can be done by appropriate protective measures. Seal kits including fasteners are available as spare parts.



The universal cylinder with piston Ø 10 mm will be supplied including the contact bolt.

Contact bolts for other cylinder variations on data sheet 1000-1.

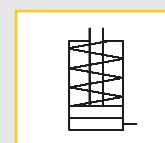
Order number: 7004-036 (spare part)



Technical data:

d1 Piston Ø	[mm]	10	25	40	50
d2 Piston rod Ø	[mm]	6	16	25	32
Stroke ± 1	[mm]	20	20	22	50
Clamping force at 100 bar	[kN]	0,7	4,9	12,6	19,5
Clamping force at pmax.	[kN]	3,7	24,5	62,8	78
Max. op. pressure pmax.	[bar]	500	500	500	200
Max. spring reset	[N]	28	140	270	390
Oil capacity/10 mm Stroke	[cm³]	0,78	4,91	12,56	19,63
a Ø	[mm]	20	35	60	60
b	[mm]	–	40	68	68
c	[mm]	–	9	11	11
e	[mm]	–	16	19	19
f	[mm]	18,7	28,4	37,9	37,9
g		G1/4	G1/4	G1/4	G1/4
h x thread depth	[mm]	M4x10	M10x15	M16x25	M20x30
k		4x	5x	5x	11x
l ± 0,5	[mm]	111	123	138	194
r	[mm]	–	–	4	4
AF 1	[mm]	–	13	–	–
AF 2	[mm]	17	32	55	55
Weight approx.	[kg]	0,4	1,1	2,3	3,2
Order No.	UZY-EW...	-010-020-003	-025-020-003	-040-022-003	-050-050-003
Seal kit (spare part):	DS-UZY-EW...	-010-020-003	-025-020-003	-040-022-003	-050-050-003

Webcode: 022002



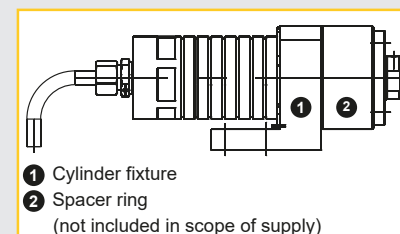
Materials:

- ✗ Housing: machining steel, burnished
- ✗ Piston: hardened steel
- ✗ Piston seal: NBR

Advantages:

- ✗ Suitable for changing workpiece sizes
- ✗ Any installation position possible
- ✗ Adjustable build-in depth
- ✗ Easy to replace
- ✗ Protecting metal wiper

Application example:



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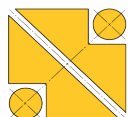
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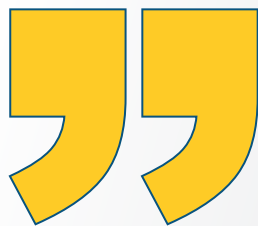
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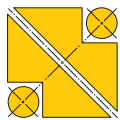
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"Variability with different workpiece sizes, double-acting."



Universal cylinders

double-acting, pmax. 500 bar

220-3
Issue: 10/2022

Description:

With the double-acting universal cylinder, variable work piece sizes can be processed in one fixture. Because of the design, this cylinder can be used either as a stroke cylinder or a clamping cylinder.

The universal cylinder is equipped with a stable safety ring. It can thus be installed into a through-bore of the fixture body. The mouthing depth can thereby be adjusted in two stages.

For the purpose of supplying pressure oil, the double-acting cylinder is equipped with thread-ports. The connection can be either axial or

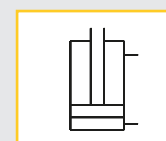
radial. Depending on the type of connection, the locking screws may need to be exchanged.

In order to prevent the penetration of shavings and liquids, the piston glides through a soft wiper made of polyurethane. Contact bolts, for instance, may be attached to the internal thread of the piston.

The universal cylinder is suitable for temperatures between -40°C and +80°C.



Webcode: 022003



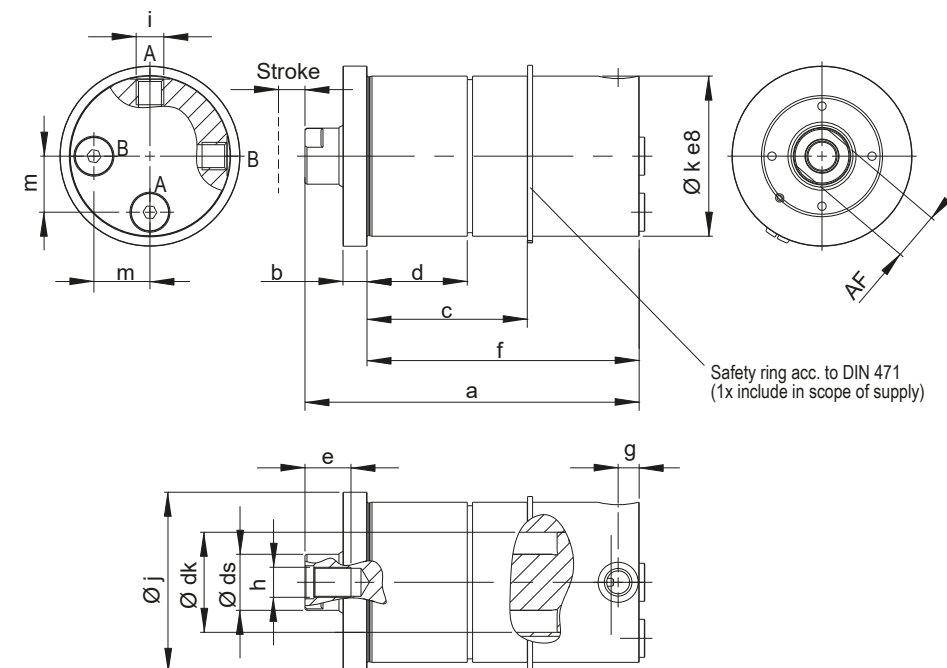
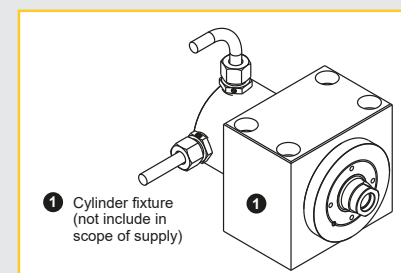
Materials:

- ✘ Housing: machining steel, burnished
- ✘ Piston: hardened steel
- ✘ Sealings: PTFE/bronze, PU, NBR

Advantages:

- ✘ Threaded connections, axial and radial
- ✘ Suitable for changing workpieces sizes
- ✘ Any installation position possible
- ✘ Adjustable built-in depth
- ✘ Easy to replace

Application example:



Technical data:

dk Ø Piston	[mm]	25	32	40	50	63
ds Ø Rod	[mm]	14	18	22	28	36
Stroke ± 1	[mm]	32	40	50	64	64
Clamping force at 100 bar	[kN]	4,9	8	12,5	19,6	31,1
Clamping force at pmax.	[kN]	19,6	32	50	78,4	124,4
Tensile force at 100 bar	[kN]	3,3	5,5	8,7	13,5	21
Tensile force at pmax.	[kN]	13,2	22	34,8	54	84
Oil req./mm stroke, piston	[cm³]	0,5	0,8	1,3	2,0	3,1
Oil req./mm stroke, rod	[cm³]	0,4	0,6	0,9	1,4	2,1
a	[mm]	122	133	147	167	186
b	[mm]	10	10	12	12	15
c	[mm]	65,1	70,1	80,1	80,1	100,1
d	[mm]	45,1	45,1	50,1	50,1	60,1
e	[mm]	12	16	18	20	20
f	[mm]	100	110	120	136	150
g	[mm]	12,5	12,5	10,5	10,5	13
h	[mm]	M8	M10	M12	M16	M20
i	[mm]	G1/4	G1/4	G1/4	G1/4	G3/8
j Ø	[mm]	56	66	76	90	105
k Ø	[mm]	50	58	68	80	95
m	[mm]	14,5	18	23	28	34
AF		11	15	19	24	30
Weight approx.	[kg]	1,7	2,4	3,6	5,7	8,7
Order number:	UZY-DW...	-025-032-003	-032-040-003	-040-050-003	-050-064-003	-063-064-003
Seal kit (spare part)	DS-UZY-DW...	-025-032-003	-032-040-003	-040-050-003	-050-064-003	-063-064-003
Safety ring (spare part)		7050-001	7058-001	7068-001	7080-001	7095-001

Contact bolts for universal cylinders can be found as an accessory on the data sheet 1000-1.

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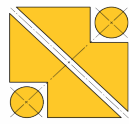
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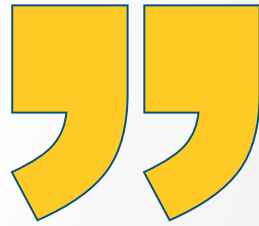
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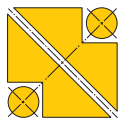
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„Through bore hole for special applications,
is often used as a pulling cylinder.“



Hollow piston cylinders

with internal piston thread, single- and double-acting, pmax. 500 bar

220-6

Issue: 10/2022

Description:

Hollow piston cylinders are used in combination with mechanical clamping elements in hydraulic clamping fixtures as traction and pressure cylinders.

The piston has a threaded through-bore which can, for example, be used to screw in the tensile rods.

The integrated metal wiper prevents the piston from being damaged by metal shavings, thus increasing the availability and service life of the cylinders.

The external thread of the housing allows versatile installation options, including using lock nuts. HYDROKOMP offers single-acting (with spring reset) and double-acting hollow piston cylinders. For the purpose of supplying oil, the hollow piston cylinders are equipped with G1/4 threaded ports.

Operating conditions:

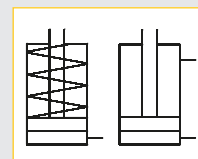
For single-acting hollow piston cylinders, the penetration of foreign objects and liquids into the spring cavity must be prevented via preventive cylinder arrangement or by covering. If required, a vent line can also be connected.

In order to prevent the threading from becoming damaged during use, the grooved nuts must always be tightened according to the load.

The user must ensure that the tensile rods and screws are made of a material with a strength class of at least 10.9. This is especially applicable for maximal operating pressures between 350 and 500 bar.



Webcode: 0200006



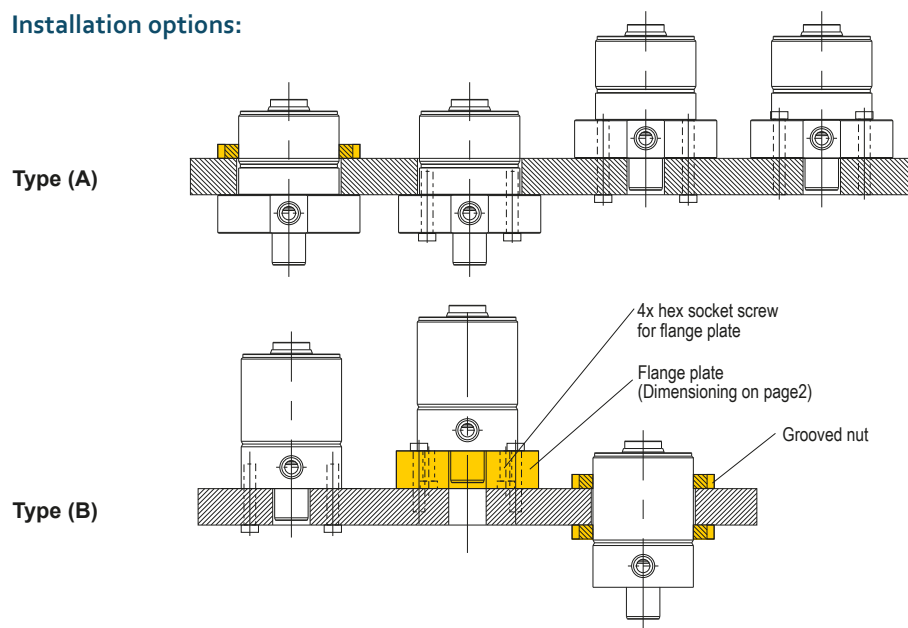
Sealing:

- ✗ NBR, Operating temperature: -10° C up to +80°C

Advantages:

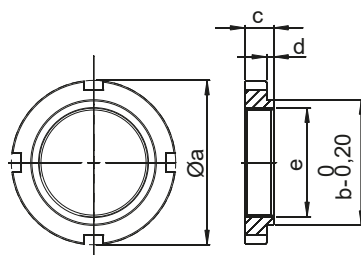
- ✗ Suitable as traction or pressure cylinder
- ✗ Pistons with through-bore
- ✗ Use of tensile rods possible
- ✗ Various installation options
- ✗ Protection against shavings via integrated metal wiper

Installation options:



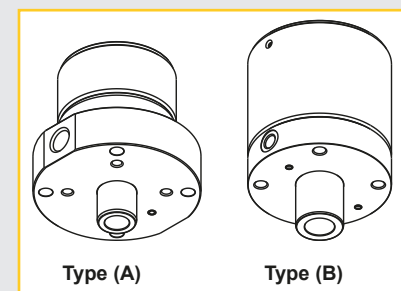
Grooved nut: (DIN 1804, accessory)

	Piston Ø	Øa	b	c	d	e
(A)	20 mm	36	30	8	0,5	M40x1,5
(A)	32 mm	75	67	13	0,5	M48x1,5
(A)	40 mm	90	80	13	0,5	M60x1,5
(B)	50 mm	110	100	14	0,5	M75x1,5
(B)	63 mm	130	120	16	1	M90x2
(B)	80 mm	165	150	18	1	M120x2



Accessories: (Order numbers)

Type (A)			
for piston Ø [mm]	20	32	40
Grooved nut	7040-006	7048-002	7060-007
Type (B)			
for piston Ø [mm]	50	63	80
Grooved nut	7075-005	7090-003	7120-003
Flange plate	4105-012	4125-007	4160-015
Hex socket screw for flange plate	7008-021	7010-005	7012-006



General operating conditions and other information can be found in the catalogue under "Recommendations and Specifications" or at www.hydrokomp.de.

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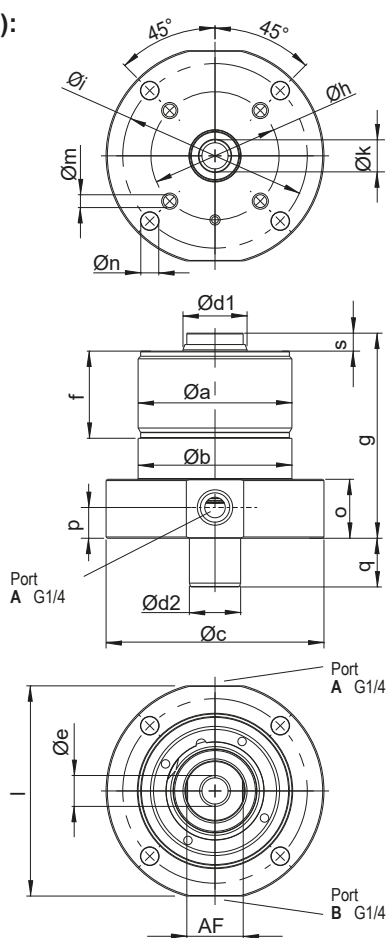
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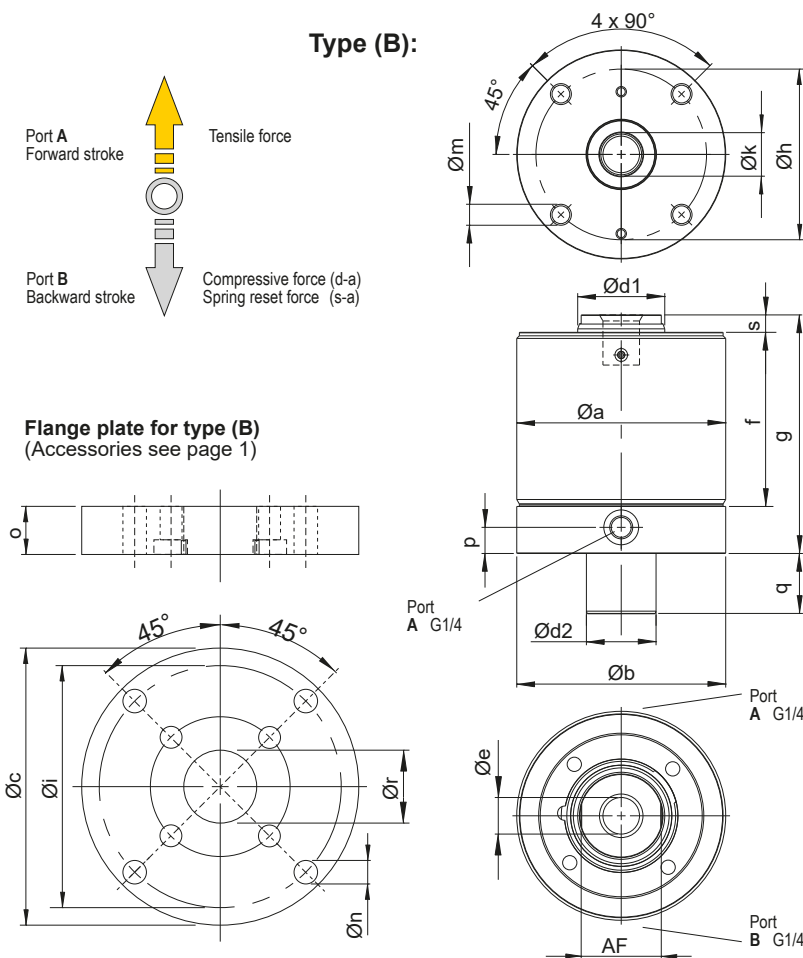
Technology that connects



Type (A):



Type (B):



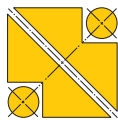
Type:		A	A	A	B	B	B
Piston Ø	[mm]	20	32	40	50	63	80
Compressive force at 100 bar	[kN]	2	4,8	7,6	11,9	18,6	30,6
Tensile force at 100 bar	[kN]	2	6	9,4	14,7	23,1	37,7
Compressive force at 500 bar	[kN]	10	24	38	57,9	93	153
Tensile force at 500 bar	[kN]	10	30	47	73,6	115,6	188,5
Spring reset force (at s-a)	[kN]	0,09	0,2	0,27	0,38	0,47	0,95
Piston area, effective, forward stroke	[cm²]	2,01	6,03	9,42	14,73	23,13	37,7
Piston area, effective, backward stroke	[cm²]	2,01	4,89	7,65	11,58	18,6	30,61
Oil requirement/10 mm forward stroke	[cm³]	2,01	6,03	9,42	14,73	23,13	37,7
Oil requirement/10 mm backward stroke	[cm³]	2,01	4,89	7,65	11,58	18,6	30,61
a Ø	[mm]	M40x1,5	M48x1,5	M60x1,5	M75x1,5	M90x2	M120x2
b Ø	[mm]	-	48	60	75	90	120
c Ø	[mm]	65	72	85	105	125	160
d1 Ø	[mm]	12	20	25	32	40	50
d2 Ø	[mm]	12	16	20	25	32	40
e Ø x thread depth	[mm]	M6x8	M10x12	M12x15	M16x20	M20x25	M24x30
f	[mm]	30	28	34	60	72	100
g	[mm]	58	68	80	94	116	137
h Ø	[mm]	30	40	50	60	70	98
i Ø	[mm]	52	60	72	90	108	140
k Ø	[mm]	6,5	10,5	12,5	16,5	21	25
l	[mm]	60	68	82	72	87	117
m Ø x thread depth	[mm]	M6x8	M6x8	M6x10	M8x10	M10x14	M12x15
n Ø	[mm]	7	7	7	9	11,0	13,5
o	[mm]	23	23	23	20	22	25
p	[mm]	12	12	12	12	15	15
q	[mm]	12	14	19	23	35	43
r Ø	[mm]	-	-	-	28	35	43
s	[mm]	5	6	7	9	10	10
AF		10	17	22	27	36	46
Weight approx.	[kg]	0,8	1,1	1,8	2,5	4,4	9,7

single-acting with spring reset (sa)

Stroke ±1	[mm]	6	8	10	12	16	20
Order number	HKZY...	-020-006-002	-032-008-002	-040-010-002	-EW-050-012-001	-EW-063-016-001	-EW-080-020-001

double-acting (da)

Stroke ±1	[mm]	10	12	16	20	32	40
Order number	HKZY...	-020-010-001	-032-012-001	-040-016-001	-DW-050-020-001	-DW-063-032-001	-DW-080-040-001



Low-block clamping cylinders

hydraulic, with spring reset, single-acting, pmax. 500 bar

230-1
Issue: 06/2024

Description:

Low-block clamping cylinders are used, if the clamping force has to be applied to the work-piece laterally.

Regarding the force application, the design requires horizontal and vertical components of force with stroke-dependended magnitudes.

The magnitude of the vertical (F_v) component of force cannot exceed approx. 25% of the clamping force (F_{sp}) magnitude. This force presses the workpiece against the support.

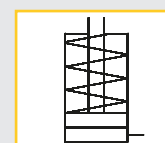
The horizontal (F_h) component of force magnitude drops to a minimum of 95% of the initial force magnitude, depending on the stroke.

The pressurised oil can be supplied either via a G1/4 threaded port or via manifold connection with O-ring.

The clamping piston has an internal stroke limiter. The piston and the pressure piece are returned to their home position after the pressure has been released via a spring. The cylinders must be protected against ingress of coolants and cutting lubricants.



Webcode: 023001



Connections:

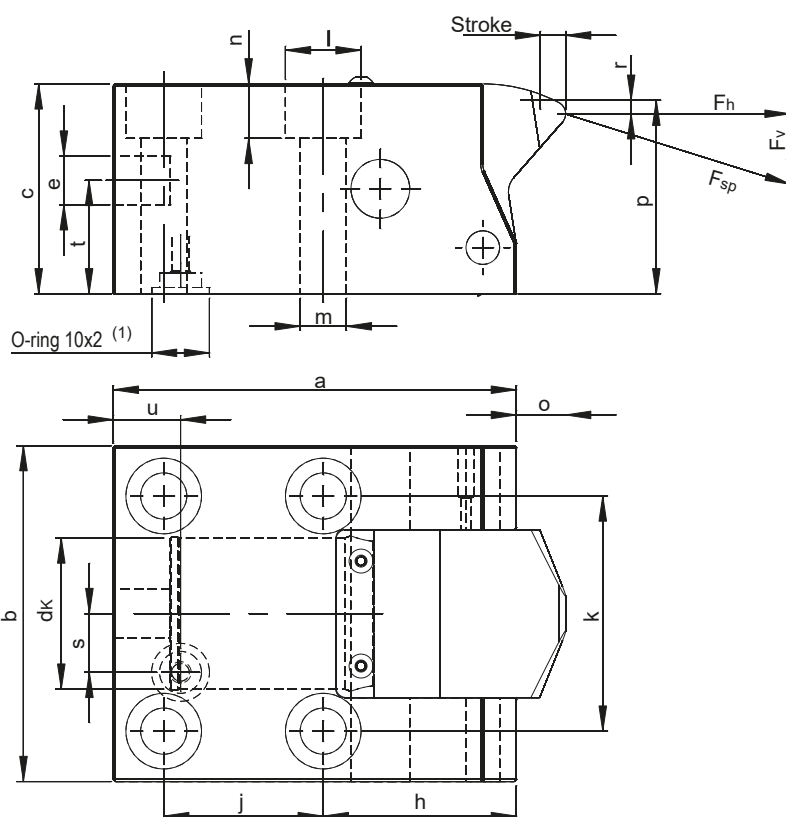
- Threaded port G1/4
- Manifold connection with O-ring

Materials:

- Housing: burnished steel
- Piston: case-hardened steel
- Pressure piece: case-hardened steel

Spare parts:

- | | |
|---|--|
| <ul style="list-style-type: none"> O-ring 10x2
all Piston Ø | Order numbers:
6010-003 |
| <ul style="list-style-type: none"> Seal ring
all Piston Ø | 6005-004 |
| <ul style="list-style-type: none"> Torsion springs
Piston Ø 16, 25
Piston Ø 36 | 2006-004
2008-024 |
| <ul style="list-style-type: none"> Seal kits
Piston Ø 16
Piston Ø 25
Piston Ø 36 | DS-TBZY-016
DS-TBZY-025
DS-TBZY-036 |



dK Piston Ø:	[mm]	16	25	36
Stroke	[mm]	8	10	10
Clamping force at 100 bar	[kN]	1,7	4	8
Clamping force at 500 bar	[kN]	8,5	20	40
Oil requ./10 mm stroke	[cm³]	2	4,9	10,2
a	[mm]	68	90	96
b	[mm]	50	60	80
c	[mm]	32	40	50
e		G1/4	G1/4	G1/4
h	[mm]	32	42	46
j	[mm]	27	38	38
k	[mm]	32	40	56
l	[mm]	13,5	15	18
m	[mm]	8,5	9	11
n	[mm]	8,5	9	11
o	[mm]	2	-	2
p	[mm]	31	39	49
r	[mm]	4	4	4
s	[mm]	-	-	14
t	[mm]	19	23	27
u	[mm]	13	14	16
Weight	[kg]	0,9	1,4	2,1
Order numbers:		TBZY-016-001	TBZY-025-001	TBZY-036-001

(1) Scope of supply includes the O-ring.

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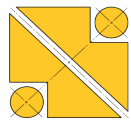
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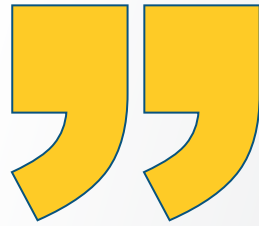
Technology that connects



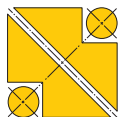
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„The simple solution for clamping, braking and holding.“



Locking cylinders

hydraulic, without spring reset, single-acting, pmax. 500 bar

230-2

Issue: 10/2022

Description:

The single-acting locking cylinder is suitable for locking of movable machine tables. It is equipped with either one or two pistons.

The loading of the piston is done hydraulically via a centralized pressure system connected to a G1/4 threaded port. Each piston has its separate port.

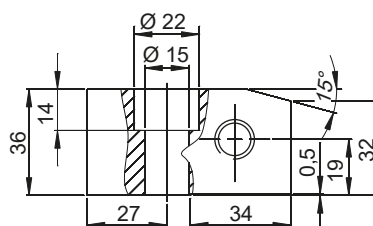
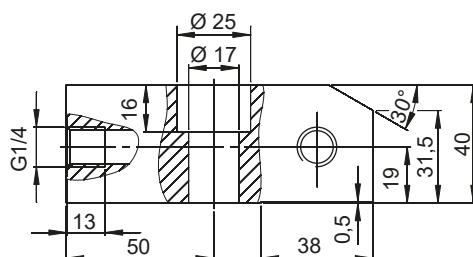
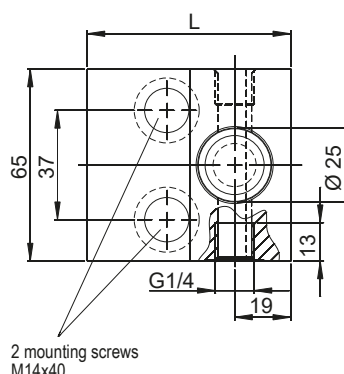
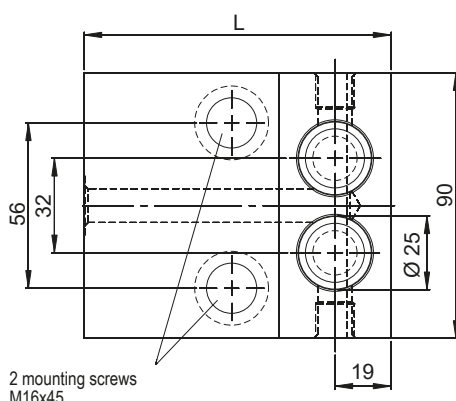
Various locking cylinders can be integrated into the machine control system. The relief of the piston is effected by the pressure reduction in the pressure system.

Important notice:

The locking cylinder does not have any safety device to prevent the piston from falling out of the housing. It is not allowed to pressurise the locking cylinder if there is no counter surface for the piston.



Webcode: 023002



Technical data:

with 2 pistons

Max. piston stroke	[mm]	2
Locking force 100 bar	[kN]	9.8
Locking force 500 bar	[kN]	49.0

Order numbers:

Lock. cylinder L= 104	[mm]	KZYL-5-02-001
Lock. cylinder L= 119	[mm]	KZYL-5-02-002
Piston seal (spare part)		6025-010
Locking screw G1/4 (spare part)		7900-001
Mounting screw M16x45, 10.9 ⁽¹⁾		7016-025

with 1 piston

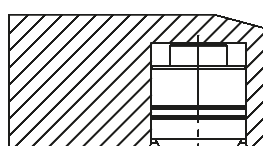
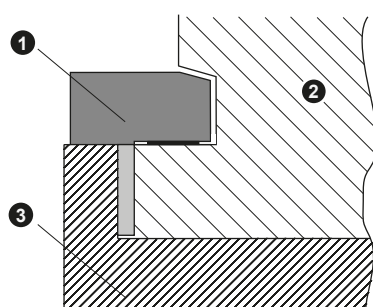
Max. piston stroke	[mm]	5
Locking force 100 bar	[kN]	4.9
Locking force 500 bar	[kN]	24.5

Order numbers:

Lock. cylinder L= 69	[mm]	KZYL-5-01-001
Lock. cylinder L= 83	[mm]	KZYL-5-01-002
Piston seal (spare part)		6025-010
Locking screw G1/4 (spare part)		7900-001
Mounting screw M14x40, 8.8 ⁽¹⁾		7014-011

⁽¹⁾Available as accessories.

Application example:



- ❶ Locking cylinder
- ❷ Machine table
- ❸ Machine base

Materials:

- ✘ Housing: free-cutting steel, burnished
- ✘ Piston: red brass
- ✘ Piston seal: NBR

Advantages:

- ✘ Compact design
- ✘ High locking forces
- ✘ Locking pressure can be monitored
- ✘ Full use of pressure

Safety instructions:

To increase the operational safety during the application of locking cylinders, we recommend the installation of pressure monitoring elements in each hydraulic circuit. If possible, the locking cylinder should be connected via two separate hydraulic circuits. Each should be secured by a check valve (e.g. see data sheet 700-10).

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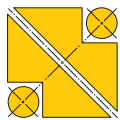
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"Metal wiper included."



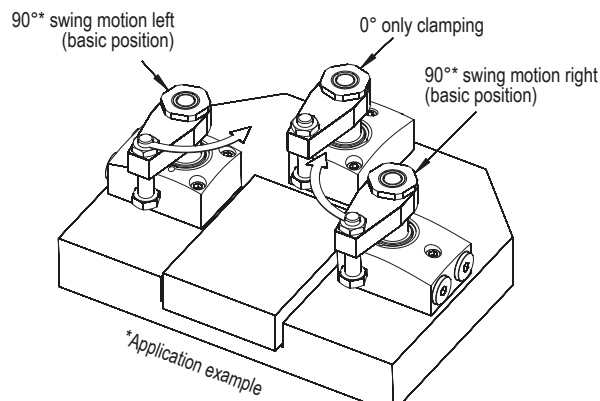
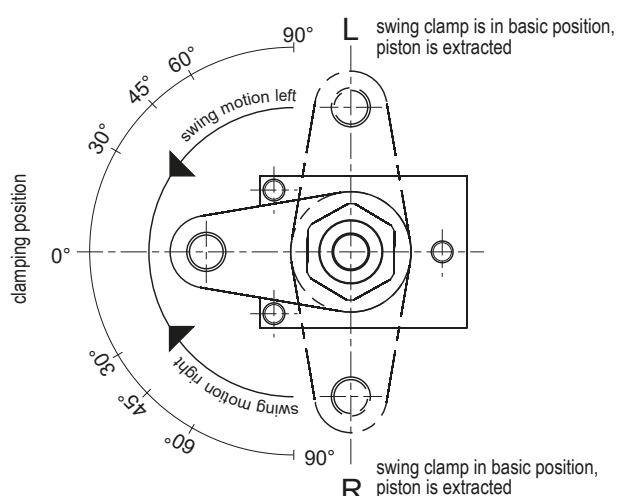
Swing clamp cylinders

Selection guide

Issue: 10/2022

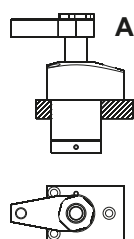
Overview of the functions for generating an order number by using the order number key:

1 Information about swing motion and operating method:

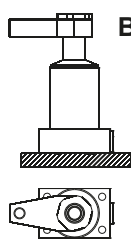


Options for the operating method:
E = single-acting with spring reset
D = double-acting

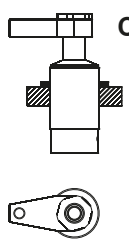
2 Information about design, piston and stroke:



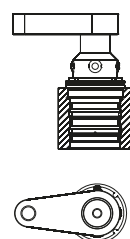
upper flange



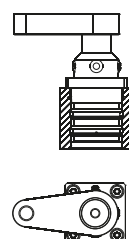
lower flange



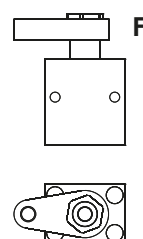
threaded body



threaded body
with drilled channels



cartridge design
with drilled channels

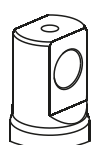


block housing

3 Information about clamp arm holder and additional features:



Taper
(SPK)



Pendulum
(SPP)



Clevis
(SPG)



Cylindrical holder
(SPZ)

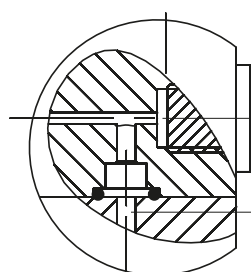
SPK = taper with fastening nut
SPP = pendulum for double clamp arms
SPG = clevis with pin and circlips
SPZ = Cylindrical holder for low pressure

Position control: The electrical or pneumatic position control monitors the clamp and unclamp position of the cylinder.

Overload protection: The overload protection protects the swing mechanism from damage due to blockage of the rotation or improper assembly of the clamp arm.

Position control and overload protection are optional functions. Availability according to the data sheet of the respective swing clamp cylinder.

4 Information about the type of connection for pressure oil supply:



001 = threaded port
(G1/8 or G1/4)

002 = manifold connection with O-ring

003 = connection for pressure oil supply
via drilled channels

Note the installation contour
on the data sheet of the respective
swing clamp cylinder.



Handling the order number key:

Important: Our swing clamp cylinders offer a different range of functions. Generate an order number exclusively using the order number key on the data sheet of the respective swing clamp cylinder.

Functions:

Options:

Example:

SSZY - **LD60** - **B2525** - **K10** - **001**

1

1. Swing motion:
2. Operating method:
3. Swing angle [degree]:

neutral 0° = **N**, left t° = **L**, right = **R**,
single-acting = **E**, double-acting = **D**
standard = **0**, **30**, **45**, **60**, **90**

2

4. Housing design:
5. Piston Ø [mm]:
6. Clamping stroke [mm]:

see information on page 1
according to the data sheet of the swing clamp cylinder
according to the data sheet of the swing clamp cylinder

3

7. Clamp arm holder:
8. Overload:
9. Position control:

clevis = **G**, taper = **K**, pendulum = **P**, cylindrical holder = **Z**
without = **0**, with = **1**, with reinforced swing mechanism = **V**
without = **0**, inductive = **1**, pneumatic = **2**

4

10. Oil supply:

Threaded port = **001**, manifold with O-ring = **002**, drilled channels = **003**

Swing clamp cylinders, standard variations:

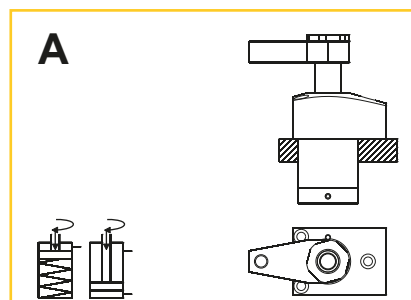


Data sheet: **240-1**
Webcode: **024001**

1. Swing motion: neutral / left / right
2. Operating method: single-acting / double-acting
3. Swing angle: 0° / 45° / 60° / 90°
4. Housing design: A = upper flange
5. Piston Ø: 14 mm
6. Clamping stroke: sa. 6 mm / da. 8 mm
7. Clamp arm holder: taper
8. Overload: without
9. Position control: without
10. Oil supply: threaded port / manifold with O-ring

Pressure range:

pmin. 25 bar / pmax. 350 bar

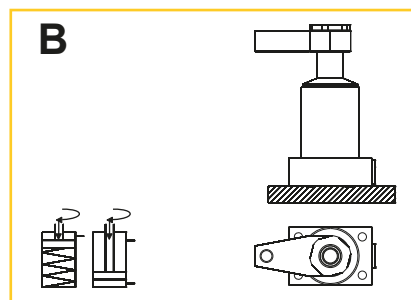


Data sheet: **240-2**
Webcode: **024002**

1. Swing motion: neutral / left / right
2. Operating method: single-acting / double-acting
3. Swing angle: 0° / 45° / 60° / 90°
4. Housing design: B = lower flange
5. Piston Ø: 14 mm
6. Clamping stroke: sa. 6 mm / da. 8 mm
7. Clamp arm holder: taper
8. Overload: without
9. Position control: without
10. Oil supply: threaded port / manifold with O-ring

Pressure range:

min. 25 bar / pmax. 350 bar

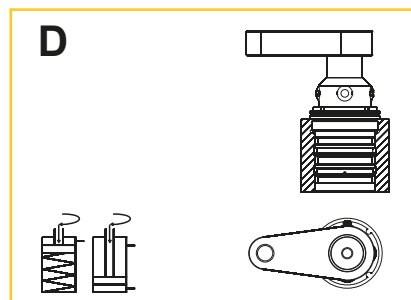


Data sheet: **240-3**
Webcode: **024003**

1. Swing motion: neutral / left / right
2. Operating method: single-acting / double-acting
3. Swing angle: 0° / 45° / 60° / 90°
4. Housing design: D = threaded body
5. Piston Ø: 14 mm
6. Clamping stroke: sa. 6 mm / da. 8 mm
7. Clamp arm holder: taper
8. Overload: without
9. Position control: without
10. Oil supply: drilled channels

Pressure range:

pmin. 25 bar / pmax. 350 bar

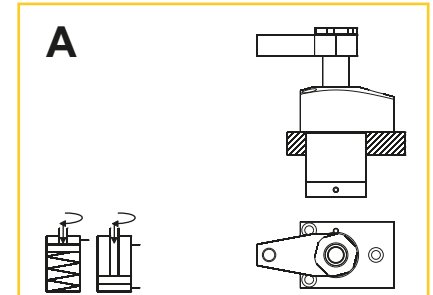




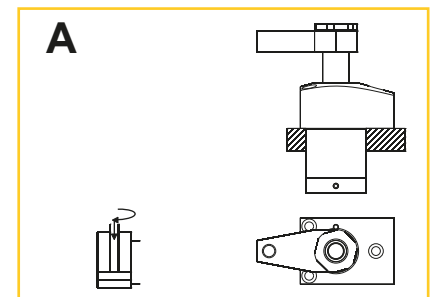
Swing clamp cylinders, standard variations:



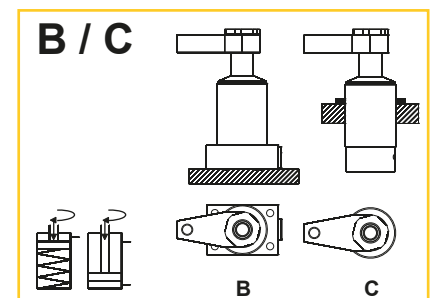
- | | |
|------------------------|--------------------------------------|
| 1. Swing motion: | neutral / left / right |
| 2. Operating method: | single-acting / double-acting |
| 3. Swing angle: | 0° / 30° / 45° / 60° / 90° |
| 4. Housing design: | A = upper flange |
| 5. Piston Ø: | 25 / 40 / 50 / 63 mm |
| 6. Clamping stroke: | 10, 13, 15, 25 or 50 mm |
| 7. Clamp arm holder: | taper |
| 8. Overload: | with |
| 9. Position control: | without |
| 10. Oil supply: | threaded port / manifold with O-ring |
| Pressure range: | pmin. 30 bar / pmax. 500 bar |



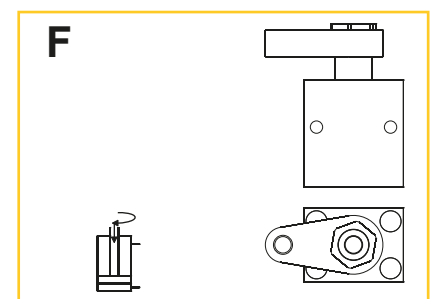
- | | |
|------------------------|---|
| 1. Swing motion: | neutral / left / right |
| 2. Operating method: | double-acting |
| 3. Swing angle: | 0° / 30° / 45° / 60° / 90° |
| 4. Housing design: | A = upper flange |
| 5. Piston Ø: | 25 or 40 mm |
| 6. Clamping stroke: | 25 or 22 mm |
| 7. Clamp arm holder: | clevis / pendulum |
| 8. Overload: | without / with reinforced swing mechanism |
| 9. Position control: | without / inductive / pneumatic |
| 10. Oil supply: | threaded port / manifold with O-ring |
| Pressure range: | 25 pmin. 30 bar / pmax. 500 bar |



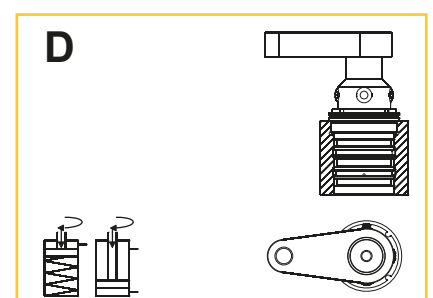
- | | |
|------------------------|-------------------------------------|
| 1. Swing motion: | neutral / left / right |
| 2. Operating method: | single-acting / double-acting |
| 3. Swing angle: | 0° / 30° / 45° / 60° / 90° |
| 4. Housing design: | B = lower flange, C = threaded body |
| 5. Piston Ø: | 25 / 40 / 50 / 63 |
| 6. Clamping stroke: | 10, 13, 15, 25 or 50 mm |
| 7. Clamp arm holder: | taper |
| 8. Overload: | without / with |
| 9. Position control: | without |
| 10. Oil supply: | drilled channels |
| Pressure range: | pmin. 30 bar / pmax. 500 bar |



- | | |
|------------------------|--------------------------------------|
| 1. Swing motion: | neutral / left / right |
| 2. Operating method: | single-acting / double-acting |
| 3. Swing angle: | 0° / 30° / 45° / 60° / 90° |
| 4. Housing design: | F = block housing |
| 5. Piston Ø: | 25 / 40 / 63 mm |
| 6. Clamping stroke: | 7, 8, or 11 mm |
| 7. Clamp arm holder: | taper |
| 8. Overload: | with |
| 9. Position control: | without |
| 10. Oil supply: | threaded port / manifold with O-ring |
| Pressure range: | pmin. 30 bar / pmax. 500 bar |



- | | |
|------------------------|-------------------------------------|
| 1. Swing motion: | neutral / left / right |
| 2. Operating method: | single-acting / double-acting |
| 3. Swing angle: | 0° / 30° / 45° / 60° / 90° |
| 4. Housing design: | D = threaded body |
| 5. Piston Ø: | 25 / 40 / 63 |
| 6. Clamping stroke: | 10, 13 or 14 mm |
| 7. Clamp arm holder: | taper |
| 8. Overload: | with |
| 9. Position control: | without |
| 10. Oil supply: | drilled channels |
| Pressure range: | pmin. 30 bar / pmax. 500 bar |





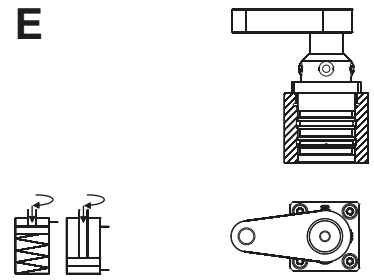
Swing clamp cylinders, standard variations:



Data sheet: **240-60**
Webcode: **024060**

- | | |
|------------------------|-------------------------------------|
| 1. Swing motion: | neutral / left / right |
| 2. Operating method: | double-acting |
| 3. Swing angle: | 0° / 30° / 45° / 60° / 90° |
| 4. Housing design: | E = cartridge design |
| 5. Piston Ø: | 25 / 40 / 50 / 63 mm |
| 6. Clamping stroke: | 11, 14, 15 or 25 mm |
| 7. Clamp arm holder: | taper |
| 8. Overload: | with |
| 9. Position control: | without |
| 10. Oil supply: | drilled channels |
| Pressure range: | pmin. 30 bar / pmax. 500 bar |

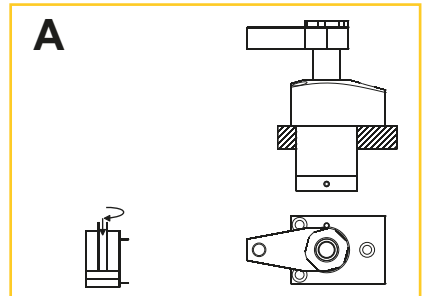
E

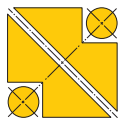


Data sheet: **240-70**
Webcode: **024070**

- | | |
|------------------------|--------------------------------------|
| 1. Swing motion: | neutral / left / right |
| 2. Operating method: | double-acting |
| 3. Swing angle: | 0° / 30° / 45° / 60° / 90° |
| 4. Housing design: | A = upper flange |
| 5. Piston Ø: | 37 / 44 or 51 mm |
| 6. Clamping stroke: | 8 or 10 mm |
| 7. Clamp arm holder: | cylindrical holder |
| 8. Overload: | without |
| 9. Position control: | without |
| 10. Oil supply: | threaded port / manifold with O-ring |
| Pressure range: | pmin. 15 bar / pmax. 70 bar |

A





1. Risk of injury

Swing clamp cylinders can generate great forces. Thus, considerable risks of injury by pinching or crushing are constantly present within the swing area during operation. Injuries are to be prevented by using appropriate protective devices with interlock. Above that, accident prevention regulations in force have to be adhered to.

DANGER!

When you use single-acting swing clamp cylinders, do not remove the cover from the housing under any circumstances. Otherwise high risk of injury by jumping out of the heavily preloaded springs threatens. Loosened mounting screws must be tightened immediately.

2. Volume flow and overload protection

You will find information about the maximum permissible volume flow on the data sheet of the selected swing clamp cylinder. These data relate to the shortest clamping time of 1 second. When the quotient (pump flow : number of cylinders) is larger than the volume flow, a throttle check valve has to be interposed. In order to prevent pressure intensification, the throttle check valve has to be connected to the feed line of the swing

clamp cylinder. The throttle check valve may not impede run-off of the hydraulic oil. In order to prevent excess swinging of the clamping arm, it is recommended for single-acting cylinders to principally reduce the volume flow for clamping (for throttle check valves, see data sheet 700-15).

3. Application of special clamp arms

To dimension special clamp arms it is important to keep with the clamping force, indicated on the data sheet of the selected swing clamp cylinder. The assigned operating pressures may not be exceeded. Once the length

of standard clamping arms is to be exceeded, operating pressure and volume flow have to be reduced according to the data in the diagram on the data sheet.

4. Assembly and disassembly of clamping arms

During assembly of the clamping arms, always pay attention to not transfer torques to the piston rod. To do so, counter-hold the clamping arm when tightening or loosening the fastening screw. You can find information about suitable clamping arms on the data sheet of the selected swing clamp cylinder and on the information sheet "Swing Clamp Cylinders - Clamping Arms".

Picture (1) = incorrect assembly Picture (2) = correct assembly



5. Assembly and disassembly of contact bolts

Contact bolts are to be assembled to provide contact to the workpiece after completion of the swing motion. Counter-hold the clamp arm when

tightening or loosening the counter nut in order to prevent torque transfer to the piston rod (for contact bolts see data sheet 1000-1).

6. Interference-free swing motion

During mounting of the cylinder always pay attention to guarantee free swing motions.

The workpiece may only be clamped once the swing stroke is completed.

7. Aeration with single-acting swing clamp cylinders

In order to prevent malfunctions for this model of cylinder, the spring chamber has to be ventilated. The integrated filter protects the spring chamber from external pollution.

An additional ventilation line can be connected to prevent ingress of fluids. This charge should be placed to a protected position.

8. Ventilation prior to operation

Entrapped air sensibly delays the clamping process. Results of that are malfunctions which can be prevented by ventilation of the swing clamp cylinder before starting the operation.

The ventilation can be carried out by a central ventilation screw in the system or directly at the cylinder.

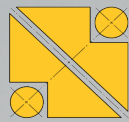
Ventilation with threaded port:

1. conduct low oil pressure into the cylinder,
2. slightly loosen screwed pipe joint,
3. hold oil pressure until the oil comes out of the cylinder free from bubbles,
4. tighten screwed pipe joint.

Ventilation with manifold connection:

1. conduct low oil pressure into the cylinder,
2. slightly loosen locking screw,
3. hold oil pressure until the oils comes out of the cylinder free from bubbles,
4. tighten locking screw.

Also pay attention to the data sheet "Recommendations & Specifications for hydraulic equipment and facilities". You can find this in our catalog or on our website at www.hydrokomp.de.



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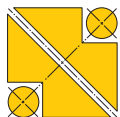
Hydraulische Komponenten GmbH

Technology that connects



"Follow the lever principles.

The length of the clamping arm has to be adjusted.".



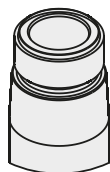
Clamp arms

for swing clamp cylinders, standard variants and blanks

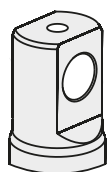
240-0

Issue: 10/2022

Clamp arm fixtures:



Taper
(SPK)



Pendulum
(SPP)



Clevis
(SPG)

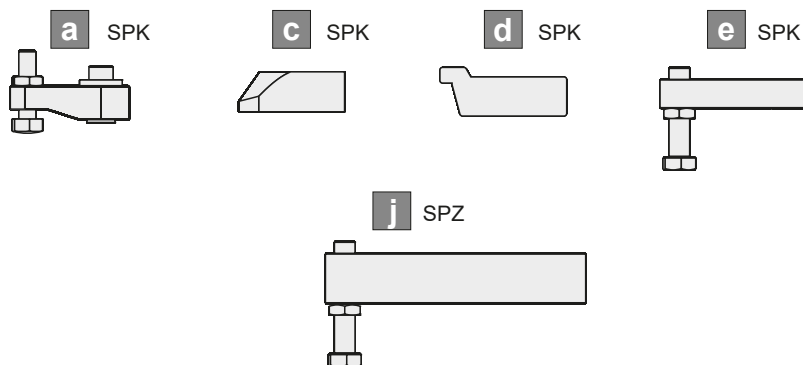


Cylindrical holder
(SPZ)

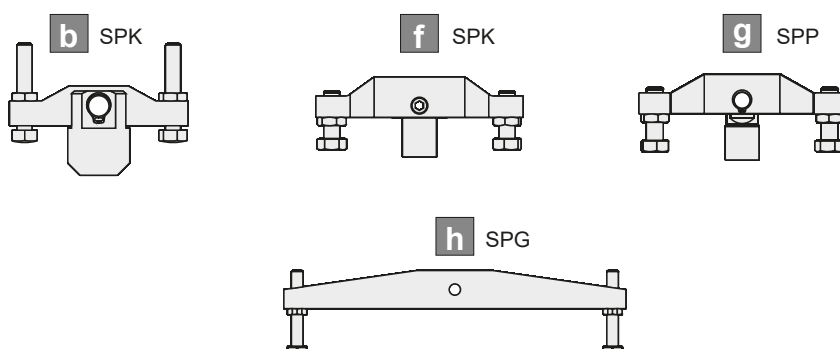
Which clamp arm for which swing clamp cylinder?

Note the information about the clamp arm holder and the effective clamping force depending from operating pressure on the data sheet of the selected swing clamp cylinder.

Single clamp arms:



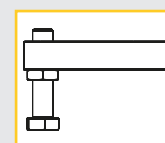
Double clamp arms:



Housing design cylinder:	Data sheet:	Webcode:	Suitable clamp arms:									
			a	b	c	d	e	f	g	h	j	
A	240-1	024001	x	x	-	-	-	-	-	-		
B	240-2	024002	x	x	-	-	-	-	-	-		
D	240-3	024003	x	x	-	-	-	-	-	-		
A	240-10	024010	-	-	x	x	x	x	-	-		
A	240-20	024020	-	-	-	-	-	-	x	x		
B and C	240-30	024030	-	-	x	x	x	x	-	-		
F	240-40	024040	-	-	x	x	x	x	-	-		
D	240-50	024050	-	-	x	x	x	x	-	-		
E	240-60	024060	-	-	x	x	x	x	-	-		
A	240-70	024070	-	-	-	-	-	-	-	x		



Webcode: 024000



Additional information:

in our catalog or at www.hydrokomp.de

- Swing clamp cylinders
- Selection guide
- Safety instructions

Application of special clamp arms:

Special clamp arms are available on request.

To dimension special clamp arms it is important to keep with the clamping force, indicated on the data sheet of the selected swing clamp cylinder. The assigned operating pressures may not be exceeded. Once the length of standard clamp arms is to be exceeded, operating pressure and volume flow have to be reduced according to the data in the diagram on the data sheet.

We also design and manufacture customized variants!



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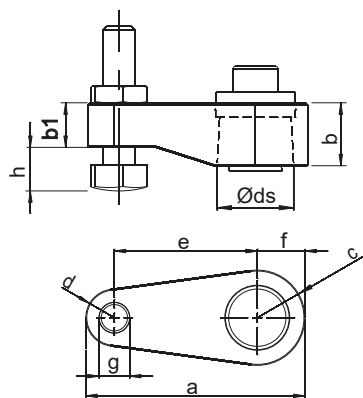
+49 6401 225999-0

sales@hydrokomp.de

Siemenstr. 16
35325 Mücke (Germany)

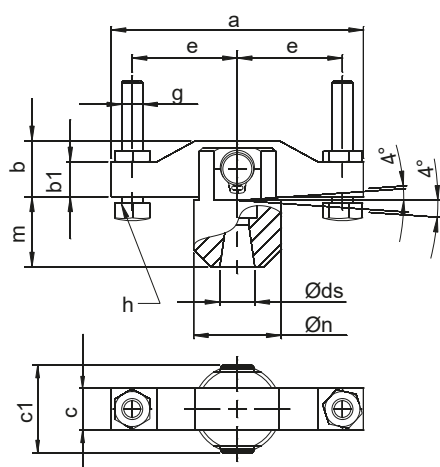
www.hydrokomp.de

Technology that connects



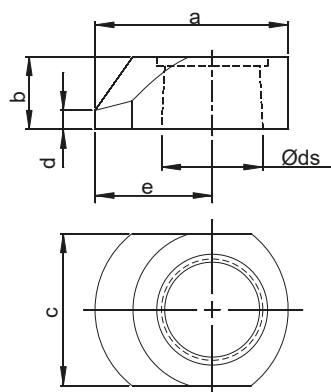
a Single clamp arm for taper, pmax. 350 bar

for piston Ø	[mm]	14
rod Øds	[mm]	10
a	[mm]	42
b	[mm]	12
b1	[mm]	8
c	[mm]	10
d	[mm]	6
e	[mm]	26
f	[mm]	10
g		M6
hmin.	[mm]	3,5
hmax.	[mm]	40
Weight	[kg]	0,05
Order no.:	SPK-A10-026-002	



b Double clamp arm for taper, pmax. 350 bar

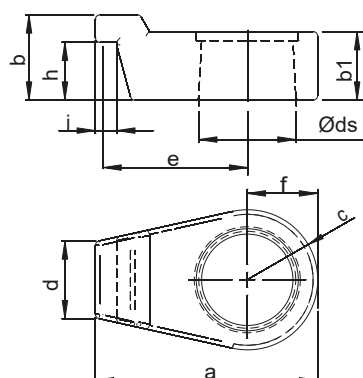
for piston Ø	[mm]	14
rod Øds	[mm]	10
a	[mm]	72
b	[mm]	16
b1	[mm]	10
c	[mm]	12
c1	[mm]	25
e	[mm]	30
g		M6
hmin.	[mm]	3,5
hmax.	[mm]	40
m	[mm]	20
Øn	[mm]	25
Weight	[kg]	0,18
Order no.:	SPK-B10-030-002	



c Single clamp arm for taper, pmax. 500 bar

for piston Ø	[mm]	25	40	50	63
rod Øds	[mm]	20	32	40	50
a	[mm]	41	61	76	90
b	[mm]	16	23	28	34
c	[mm]	32	48	60	78
d	[mm]	6	6	11	14
e	[mm]	25	37	45	52
Weight	[kg]	0,08	0,23	0,5	0,88
Order no.:	SPK...→	-C20-025-001	-C32-037-001	-C40-045-001	-C50-052-001

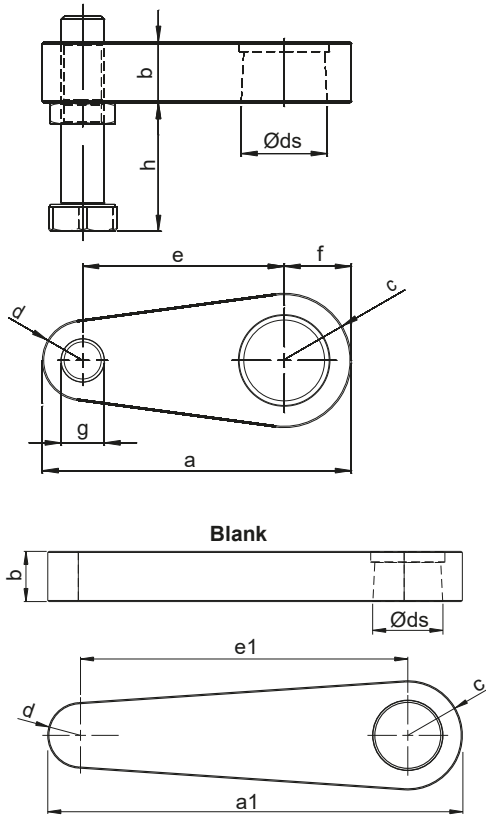
The order number starts with SPK to be completed. Example: SPK-C20-025-001



d Single clamp arm for taper, pmax. 300 bar

for piston Ø	[mm]	25	40	50	63
rod Øds	[mm]	20	32	40	50
a	[mm]	51,5	76	100	123
b	[mm]	21	28	34	40
b1	[mm]	15,5	22,5	28	34
c	[mm]	16	23	33	37,5
d	[mm]	14	25	39	39
e	[mm]	33,5	50	64	82,5
f	[mm]	16	23	33	37,5
h	[mm]	14,5	19	23	27
i	[mm]	7	7	7	8
Weight	[kg]	0,11	0,3	0,84	1,3
Order no.:	SPK...→	-D20-033-001	-D32-050-001	-D40-064-001	-D50-082-001

The order number starts with SPK to be completed. Example: SPK-D20-033-001



e Single clamp arm for taper, pmax. 200 bar

for piston Ø	[mm]	25	40	50	63
rod Øds	[mm]	20	32	40	50
a	[mm]	75	115	140	178
a1	[mm]	125	190	235	298
b	[mm]	16	23	28	34
c	[mm]	16	25	30	39
d	[mm]	9	15	15	19
e	[mm]	50	75	95	120
e1	[mm]	100	150	190	240
f	[mm]	16	25	30	40
g	[mm]	M10	M16	M16	M20
hmin.	[mm]	10	15	15	19
hmax.	[mm]	64	79	79	98

without thread

Weight	[kg]	0,18	0,65	1,85	2,3
Order no.:	SPK... →	-E20-050-001	-E32-075-001	-E40-095-001	-E50-120-001

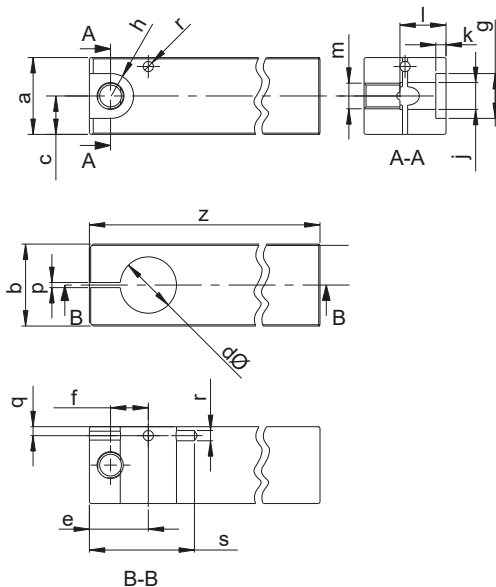
with thread and contact bolt

Weight	[kg]	0,2	0,7	1,03	2,55
Order no.:	SPK... →	-E20-050-002	-E32-075-002	-E40-095-002	-E50-120-002

Blank without contact bolt

Weight	[kg]	0,34	1,19	2,01	4,01
Order no.:	SPK... →	-E20-100-003	-E32-150-003	-E40-190-003	-E50-240-003

The order number starts with SPK to be completed. Example: SPK-E20-050-001

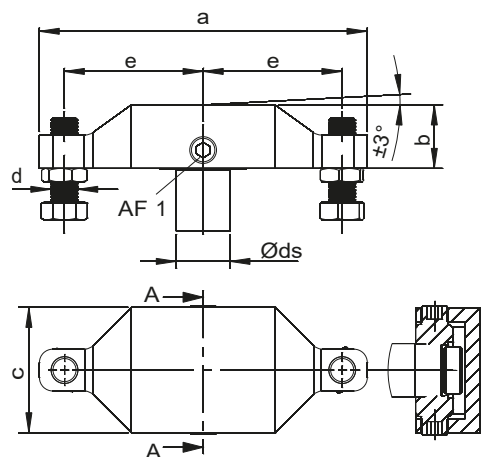


j Single clamp arm for cylindrical holder, pmax. 70 bar

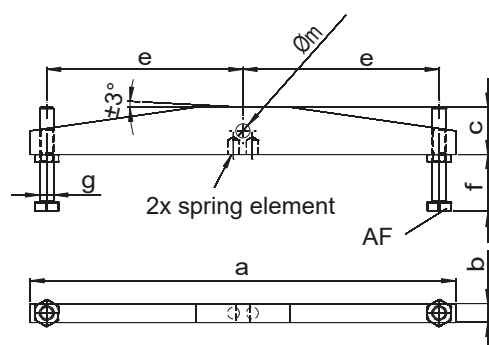
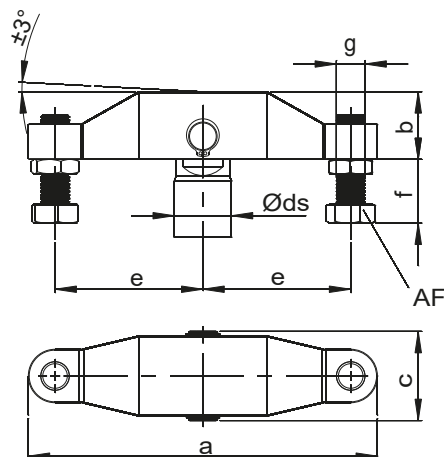
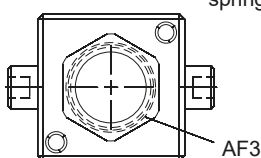
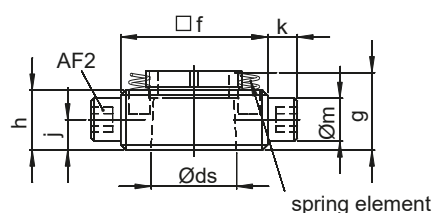
for piston Ø	[mm]	37	44	51
rod Ød	[mm]	22	25	30
a	[mm]	30	34	40
b	[mm]	32	36	45
c	[mm]	15	17	20
e	[mm]	23	26,5	31,5
f	[mm]	14,75	17	20
g	[mm]	17,5	20	23
h	[mm]	R8,75	R10	R11,5
j	[mm]	10,5	12,5	14,5
k	[mm]	4	4	4
l	[mm]	18	20	25,5
m	[mm]	M10	M12	M14
p	[mm]	2	2	2
q	[mm]	3,5	4	5,5
r	[mm]	4	4	6
s	[mm]	41	46	56
z	[mm]	160	170	175

Order no.: SPZ... → J22-137-001 J25-143-001 J30-143-001

The order number starts with SPK to be completed. Example: SPZ-J22-137-001



Carrier



f Double clamp arm for taper, pmax. 500 bar

for piston Ø [mm]	25	40	50	63
rod Øds [mm]	20	32	40	50
a [mm]	138	196	216	236
b [mm]	28,5	38	47	56
c [mm]	59	75	85	105
d [mm]	M10	M16	M16	M20
e [mm]	60	83	92	100
f [mm]	43	55	63	77
g [mm]	21,5	29	35	41
h [mm]	16	23	28	34
j [mm]	7,5	11	15	17
k [mm]	9	11	12	15
Øm [mm]	10	16	18	20
AF1 [mm]	17	24	24	30
AF2 [mm]	5	8	8	8
AF3 [mm]	30	36	55	68

Double clamp arm with contact bolt

Weight [kg]	0,83	2,11	3,17	5,24
Order no.: SPK... →	-F20-060-002	-F32-083-002	-F40-092-002	-F50-100-002

Carrier with threaded bolt and spring element

Weight [kg]	0,32	0,45	0,53	0,68
Order no.:	SPT-F20-001	SPT-F32-001	SPT-F40-001	SPT-F50-001

The order number starts with SPK to be completed. Example: SPK-F20-060-002

g Double clamp arm for pendulum, pmax. 500 bar

for piston Ø [mm]	25	40
rod Øds [mm]	20	32
a [mm]	139	200
b [mm]	30	42
c [mm]	28	45
e [mm]	60	83
fmin. [mm]	10	15
fmax. [mm]	64	79
g [mm]	M10	M16
AF [mm]	17	24
Weight [kg]	0,83	2,11
Order no.:	SPP-G20-060-002	SPP-G32-083-002

h Double clamp arm for clevis, pmax. 160 bar

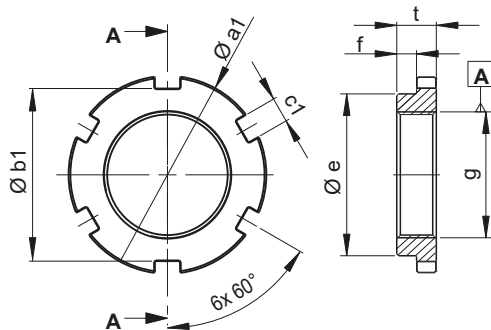
for piston Ø [mm]	25	40
rod Øds [mm]	20	32
a [mm]	180	200
b [mm]	8	12
c [mm]	20	30
e [mm]	83	93
fmin. [mm]	20	20
fmax. [mm]	30	40
g [mm]	M5	M8
Øm [mm]	6	10
AF [mm]	8	13
Weight [kg]	0,2	0,51
Order no.:	SPG-H20-083-002	SPG-H32-093-002



Fixing elements for clamp arms:

The swing clamp cylinders with taper are supplied with screws or nuts for fixing the clamp arms.

Design:	Data sheet:	Webcode:	Fixing elements according to the piston Ø [mm]:					Other:
			Hexagon socket head screw	Hexagon nut		Slotted nut		
			M5	M18x1,5	M28x1,5	M35x1,5	M45x1,5	
A	240-1	024001	14	-	-	-	-	-
B	240-2	024002	14	-	-	-	-	-
D	240-3	024003	14	-	-	-	-	-
A	240-10	024010	-	25	40	50	63	-
A	240-20	024020	-	-	-	-	-	clevis / pendulum
B and C	240-30	024030	-	25	40	50	63	
F	240-40	024040	-	25	40	-	63	-
D	240-50	024050	-	25	40	-	63	-
E	240-60	024060	-	25	40	50	63	-
A	240-70	024070	-	-	-	-	-	cylindrical holder



Slotted nut:

for piston Ø [mm]	50	63
a1 Ø [mm]	5,5	6,5
b1 Ø [mm]	48	60
c1 [mm]	7	8
e Ø [mm]	45-0,2	55,5-0,2
f [mm]	5,5	6,5
g	M35x1,5	M45x1,5
t [mm]	11	12

Instruction for assembly/disassembly a clamp arm:

During the mounting of the clamp arm, make sure that torques are transferred in the piston rod. Hold against the clamp arm when you tighten or loosen the tightening screw (see figure).

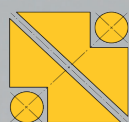
- For swing clamps with overload protection, the function must first be tested. To do this, turn the piston until you feel the overload protection engage. The swing clamp has three ratchet points spaced at 120° intervals.
- Normally the mounting of the clamp arm is done in the depressurised state, as described in.
- However if the clamp arm must be positioned in a precise clamping position, the swing clamp must be applied with pressure at connection A and the piston retracted. Finally position the clamp arm in the intended clamping position on the clamp arm holder. After positioning the clamp arm on the holder, tighten the fastening screws by hand. Then, tighten the fixing screws with a suitable tool.
- Carry out the clamping process several times to check if the clamping point and the clamping stroke agree as intended.
- After several clamping cycles the torque must be checked again at the fastening screws. This prevents the clamp arm from loosening.



Risk of injury:

If the swing clamp is pressurized, there is a high risk in the swing area for injuries due to crushing the hands and other body parts.

Avoid reaching into the swing area.

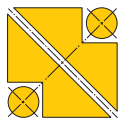


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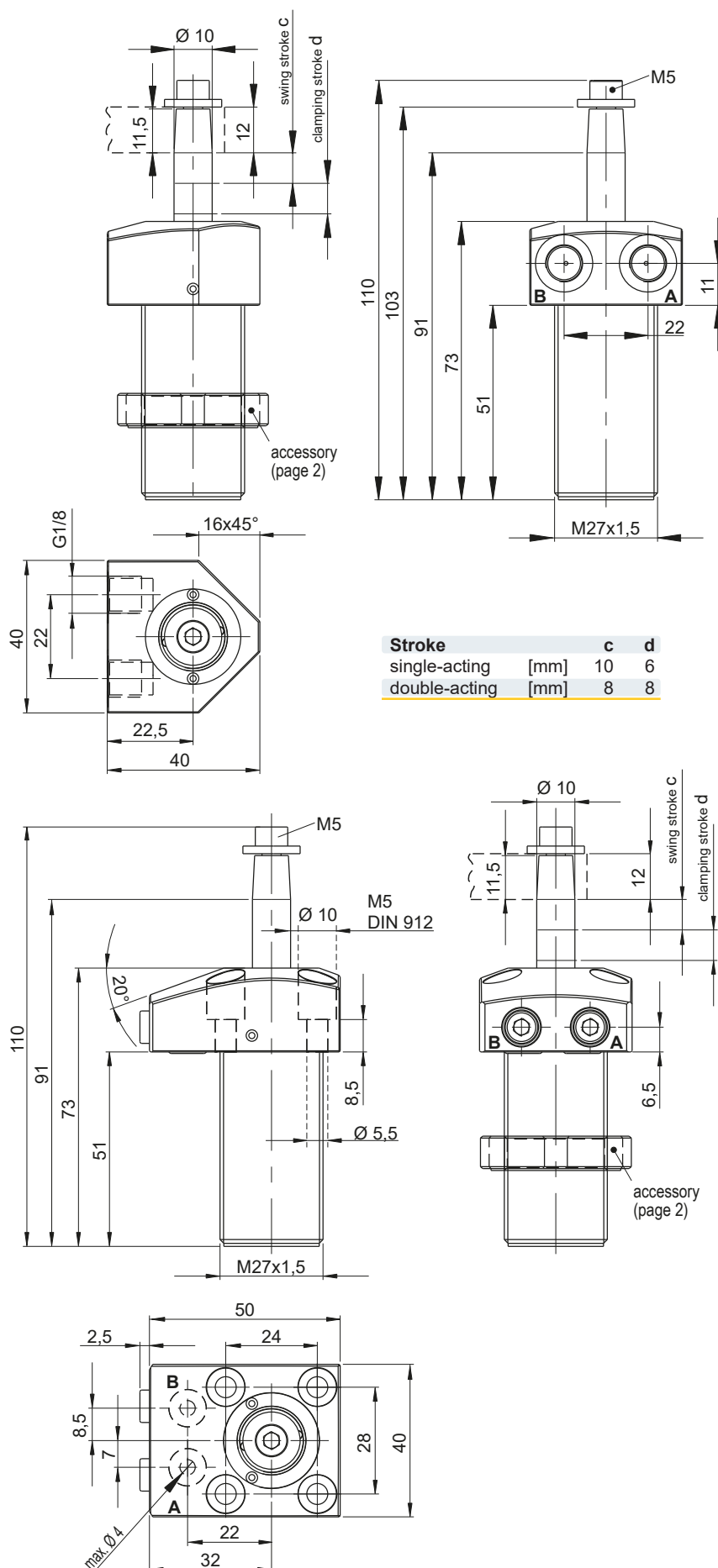


Swing clamp cylinders, compact

upper flange, single-/double-acting, pmax. 350 bar

240-1

Issue: 11/2023

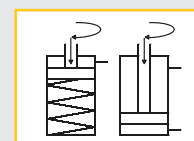


Stroke		c	d
single-acting	[mm]	10	6
double-acting	[mm]	8	8



A

Webcode: 024001



Housing design:

☒ Type A (upper flange)

Description:

Swing clamp cylinders operate single-acting with spring reset or double-acting hydraulically. The hydraulic oil supply can be connected by G1/8 threaded port or by manifold connection with O-ring.

For any risk of exceeding the permitted volume flow a throttle check valve must be interposed into the oil supply line (see data sheet 700-15). Counter-hold the clamp arm when tightening or loosening the counter nut in order to prevent torque transfer to the piston rod and to avoid damage to the ball guide.

The clamping motion is initiated with a superimposed swing and stroke movement. After that, a linear clamping stroke follows.

Cylinders with swing angles 0°, 45°, 60°, 90° are available as standard. The clamping force is depending from the clamp arm length.

Except for the standard clamp arm also special clamp arms can be assembled. The maximum operating pressure of 350 bar only applies to clamp arms with a maximum length of 26 mm..

The safety instructions for swing clamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered.

We also design and manufacture customized variants!



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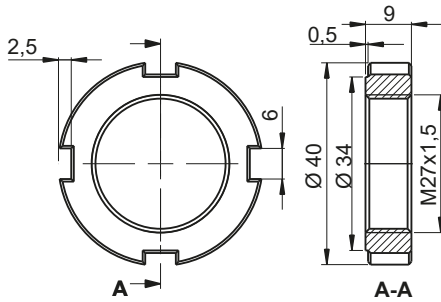


Accessories:

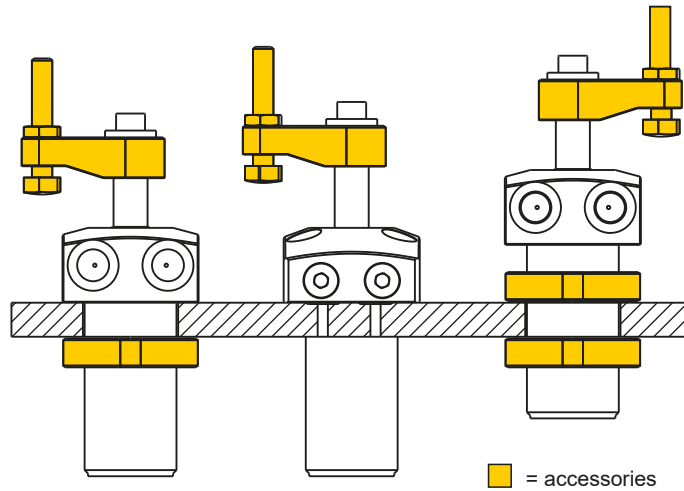
Clamp arms and contact bolts are not included in scope of supply. They are available as accessories (see page 2).

Slotted nut

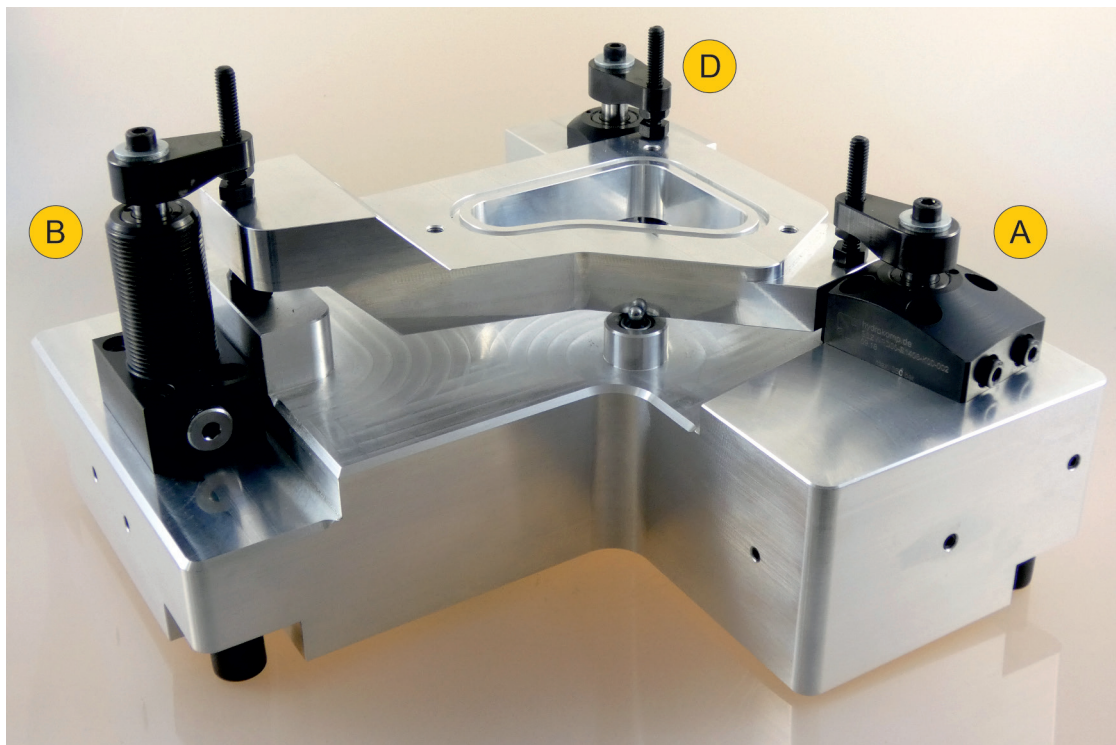
Order number: 4040-086
(see installation options)



Installation options:



Application example (workholding fixture):



- A** = Swing clamp cylinder, upper flange (type A), manifold connection with O-ring Data sheet 240-1
- B** = Swing clamp cylinder, lower flange (type B), manifold connection with O-ring Data sheet 240-2
- D** = Swing clamp cylinder, threaded body (type D), drilled channels Data sheet 240-3



Technical data:

Piston Ø	[mm]	14
Piston rod Ø	[mm]	10
Oil requirement/stroke	[cm³]	1,2
Max. volume flow	[cm³]	2,5
Swing stroke (single-acting)	[mm]	10
Clamping stroke (single-acting)	[mm]	6
Swing stroke (double-acting)	[mm]	8
Clamping stroke (double-acting)	[mm]	8
Min. operating pressure ⁽¹⁾	[bar]	25
Max. operating pressure ⁽¹⁾	[bar]	350
Clamping force at 100 bar	[kN]	0,5
Clamping force at 350 bar	[kN]	2,2

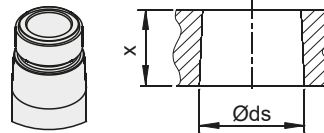
⁽¹⁾ Value only valid with single clamp arm L = 26 mm,
(pictures on page 1) **Order no. SPK-A10-026-002**

Clamp arms:

For these swing clamp cylinders, standard clamp arms are available as accessories. All necessary information about this can be found on the **data sheet 240-0 «Clamp arms»** in the catalogue or at www.hydrokomp.de.

Compatible clamp arms: **a** **b**

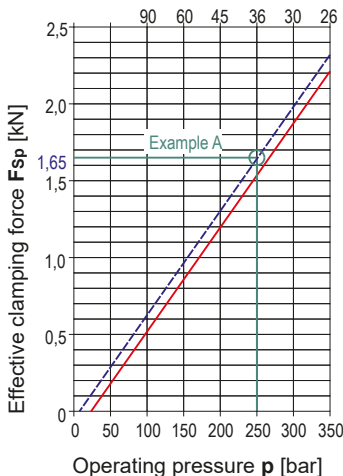
Taper (SPK):



Piston Ø	[mm]	14
Ø ds	[mm]	10
x	[mm]	12
Taper ratio		1:10

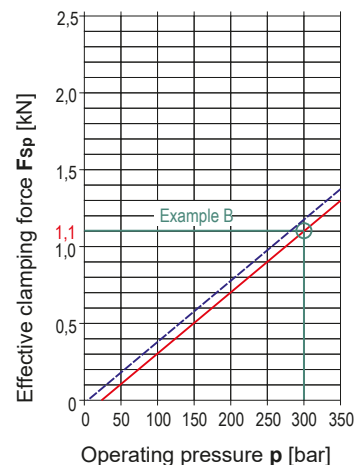
Effective clamping force F_{Sp} depending from operating pressure p :

Max. length of the clamp arm e [mm] only relevant for clamp arms of this type.



Example A:

- double-acting cylinder
- present operating pressure $p = 250$ bar
- clamp arm length $e = 36$ mm
- resulting clamping force $F_{Sp} \sim 1,65$ kN



Example B:

- single-acting cylinder
- present operating pressure $p = 300$ bar
- resulting clamping force $F_{Sp} \sim 1,10$ kN

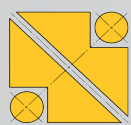
The retraction force of the spring in single-acting swing clamp cylinders reduces the clamping force slightly. To achieve the same clamping force as with double-acting cylinders, the operating pressure must be increased slightly.

Order number key:

Example: **SSZY** - **RD60** - **A1408** - **K00** - **002**

- | | | |
|----------|---|--|
| 1 | Swing motion:
Operating method:
Swing angle [degree]: | right = R , left = L , neutral 0° = N
single-acting = E , double-acting = D
standard = 0 , 45 , 60 , 90 |
| 2 | Housing design:
Piston Ø [mm]:
Clamping stroke [mm]: | upper flange = A
standard = 14
single-acting 6 = 06 , double-acting 8 = 08 |
| 3 | Clamp arm holder:
Overload protection:
Position control: | taper = K
without = 0
without = 0 |
| 4 | Oil supply: | G1/8 threaded port = 001 , manifold with O-ring = 002 |

For additional help in model selection, see data sheet «Swing Clamp Cylinders - Selection Guide».



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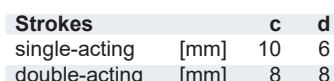
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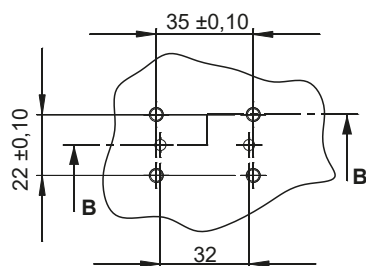




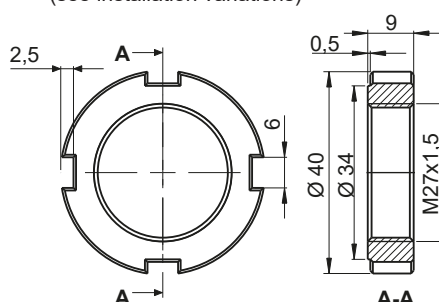
Issue: 11/2023



Technical drawing of a mechanical part showing dimensions and tolerances. The part is a rectangular block with a width of 16 and a height of 14. A hole with a diameter of max. Ø4 and a depth of 10 is shown. The hole is located at a distance of 10 from the right edge. The drawing includes a section line labeled 'R.R.' and a tolerance of 1.6.

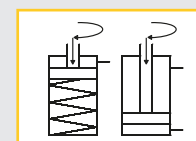


(see installation variations)



Installation variations:

■ = Accessories



www.hydrokomp.de



Technical Data:

Piston Ø	[mm]	14
Rod Ø	[mm]	10
Oil requirement clamping stroke	[cm³]	1,2
Max. volume flow	[cm³]	2,5
Swing stroke (single-acting)	[mm]	10
Clamping stroke (single-acting)	[mm]	6
Swing stroke (double-acting)	[mm]	8
Clamping stroke (double-acting)	[mm]	8
Min. operating pressure ⁽¹⁾	[bar]	25
Max. operating pressure ⁽¹⁾	[bar]	350
Clamping force at 100 bar	[kN]	0,5
Clamping force at 350 bar	[kN]	2,2

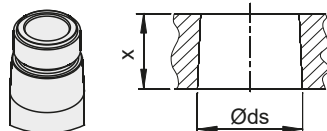
⁽¹⁾ Value only valid with single clamp arm L = 26 mm, (pictures on page 1) **Order no. SPK-A10-026-002**

Clamp arms

For these swing clamp cylinders, standard clamp arms are available as accessories. All necessary information about this can be found on the **data sheet 240-0 «Clamp arms»** in the catalogue or at www.hydrokomp.de.
Special clamp arms are available on request

Compatible clamp arms: **a b**

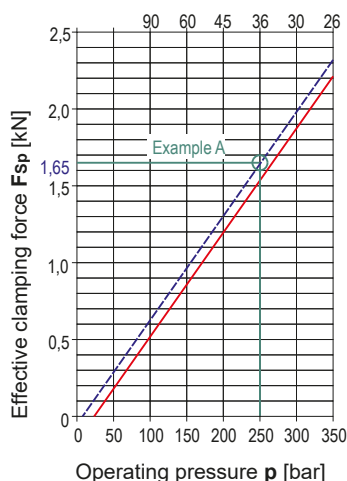
Taper (SPK):



Piston Ø	[mm]	14
Ø ds	[mm]	10
x	[mm]	12
Taper ratio		1:10

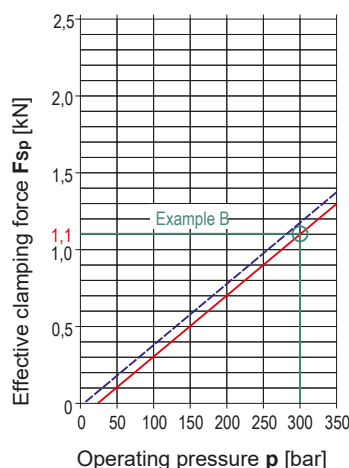
Effective clamping force F_{Sp} depending from operating pressure p:

Max. clamp arm length e [mm] only relevant for clamp arms of this type.



Example A:

- double-acting cylinder
- present operating pressure $p = 250$ bar
- clamp arm length $e = 36$ mm
- resulting clamping force $F_{Sp} \sim 1,65$ kN



Example B:

- single-acting cylinder
- present operating pressure $p = 300$ bar
- resulting clamping force $F_{Sp} \sim 1,10$ kN

The retraction force of the spring in single-acting swing clamp cylinders reduces the clamping force slightly.
To achieve the same clamping force as with double-acting cylinders, the operating pressure must be increased slightly.

Order number key:

Example: **SSZY - RE45 - B1406 - K00 - 001**

1

Swing motion: right turning = **R**, left turning = **L**, neutral $0^\circ = \mathbf{N}$
Operating method: single-acting = **E**, double-acting = **D**
Swing angle [degree]: standard = **0, 45, 60, 90**

2

Housing design: Lower flange = **B**
Piston Ø [mm]: Standard = **14**
Clamping stroke [mm]: single-acting 6 = **06**, double-acting 8 = **08**

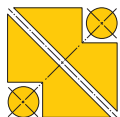
3

Clamp arm holder: taper = **K**
Overload protection: without = **0**
Position control: without = **0**

4

Connection type: G1/8 threaded port = **001**, manifold with O-ring = **002**

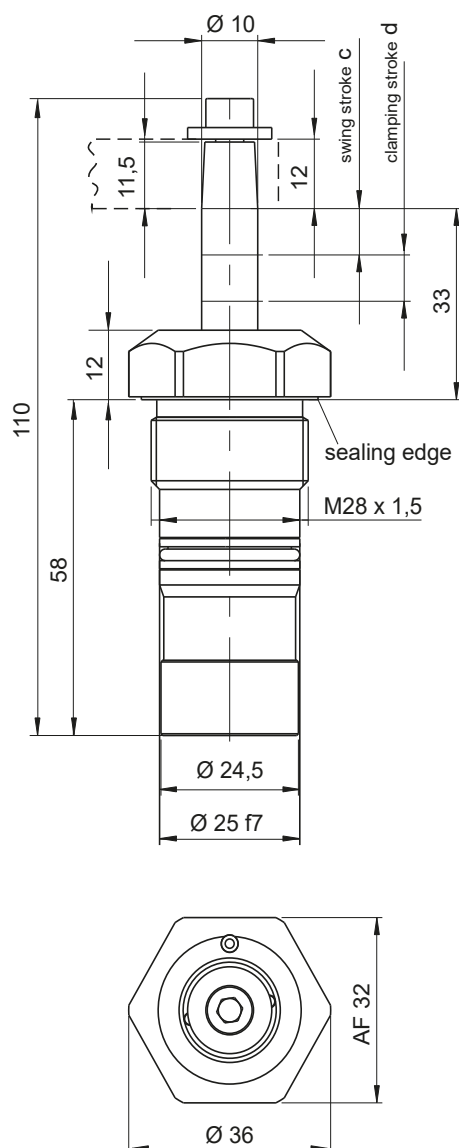
For additional help in model selection, see **data sheet «Swing Clamp Cylinders - Selection Guide»**.



Swing clamp cylinders, compact

threaded body, single-acting/double-acting, pmax. 350 bar

240-3
Issue: 11/2023



Important notice:

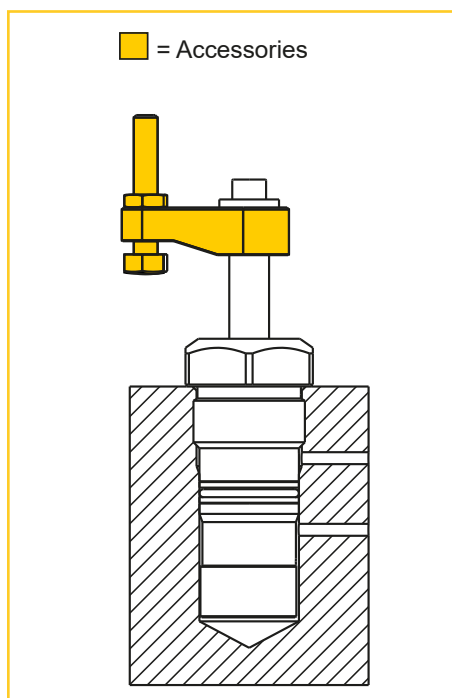
When installing the cylinder into the fixture plate the ventilation channel must be protected from ingress of liquids and dirt. If the swing clamp cylinder is screwed into a blind bore, the ventilation must be guaranteed through a protected bore. Before initial operation the swing clamp cylinder must be fully ventilated.

Accessories:

Clamp arms and contact bolts are not included in scope of supply. They're sold separately as accessories (see page 2).

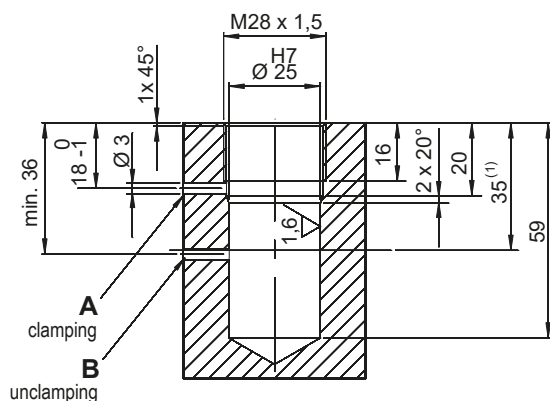
Strokes		c	d
single-acting	[mm]	10	6
double-acting	[mm]	8	8

Installation variation:



Installation contour:

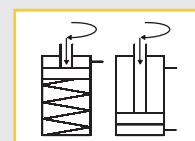
⁽¹⁾ Plate thickness at least 35 mm for single-acting types and depth of the fit diameter



D



Webcode: 024003



Housing design:

Type D
(threaded body with drilled channels)

Description:

These swing clamp cylinders operate single-acting with spring reset or double-acting hydraulically. The hydraulic oil supply can be done by drilled channels in the fixture body.

For any risk of exceeding the permitted volume flow a throttle check valve must be interposed into the oil supply line (see data sheet 700-15). Counter-hold the clamp arm when tightening or loosening the counter nut in order to prevent torque transfer to the piston rod and to avoid damage to the ball guide.

The clamping motion is initiated with a superimposed swing and stroke movement. After that, a linear clamping stroke follows.

Cylinders with swing angles 0°, 45°, 60°, 90° are available as standard. The clamping force is depending from the clamp arm length.

Except from standard clamp arms also special clamp arms can be assembled. The maximum operating pressure of 350 bar applies only at a maximum of 26 mm clamp arm length.

The safety instructions for swing clamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered

We also design and manufacture customized variants!

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Technical data:

Piston Ø	[mm]	14
Rod Ø	[mm]	10
Oil requirement clamping stroke	[cm³]	1,2
Max. volume flow	[cm³]	2,5
Swing stroke (single-acting)	[mm]	10
Clamping stroke (single-acting)	[mm]	6
Swing stroke (double-acting)	[mm]	8
Clamping stroke (double-acting)	[mm]	8
Min. operating pressure ⁽¹⁾	[bar]	25
Max. operating pressure ⁽¹⁾	[bar]	350
Clamping force at 100 bar	[kN]	0,5
Clamping force at 350 bar	[kN]	2,2

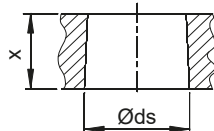
⁽¹⁾ Value only valid with single clamp arm L = 26 mm,
(pictures on page 1) **Order no. SPK-A10-026-002**

Clamp arms:

For these swing clamp cylinders, standard clamp arms are available as accessories.
All necessary information about this can be found on the **data sheet 240-0 «Clamp arms»**
in the catalogue or at www.hydrokomp.de.
Special clamp arms are available on request.

Compatible clamp arms: **a b**

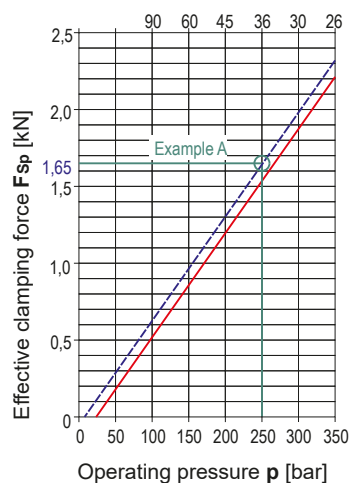
Taper (SPK):



Piston Ø	[mm]	14
Ø ds	[mm]	10
x	[mm]	12
Taper ratio		1:10

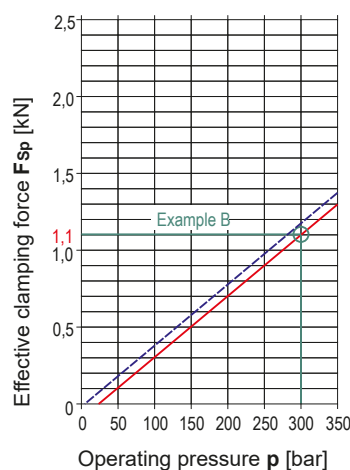
Effective clamping force F_{Sp} depending from operating pressure p:

Max. clamp arm length e [mm] only relevant for clamp arms of this type.



Example A:

- double-acting cylinder
- present operating pressure p = 250 bar
- clamp arm length e = 36 mm
- resulting clamping force F_{Sp} ~ 1,65 kN



Example B:

- single-acting cylinder
- present operating pressure p = 300 bar
- resulting clamping force F_{Sp} ~ 1,10 kN

The retraction force of the spring in single-acting swing clamp cylinders reduces the clamping force slightly.
To achieve the same clamping force as with double-acting cylinders, the operating pressure must be increased slightly.

Order number key:

Example: **SSZY** - **LD60** - **D1408** - **K00** - **003**

1

Swing motion: right turning = **R**, left turning = **L**, neutral 0° = **N**
Operating method: single-acting = **E**, double-acting = **D**
Swing angle [degree]: standard = **0, 45, 60, 90**

2

Housing design: threaded body = **D**
Piston Ø [mm]: Standard = **14**
Clamping stroke [mm]: single-acting 6 = **06**, double-acting 8 = **08**

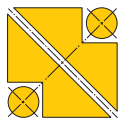
3

Clamp arm holder: taper = **K**
Overload protection: without = **0**
Position control: without = **0**

4

Oil supply: drilled channels = **003**

For additional help in model selection, see **data sheet «Swing Clamp Cylinders - Selection Guide»**.

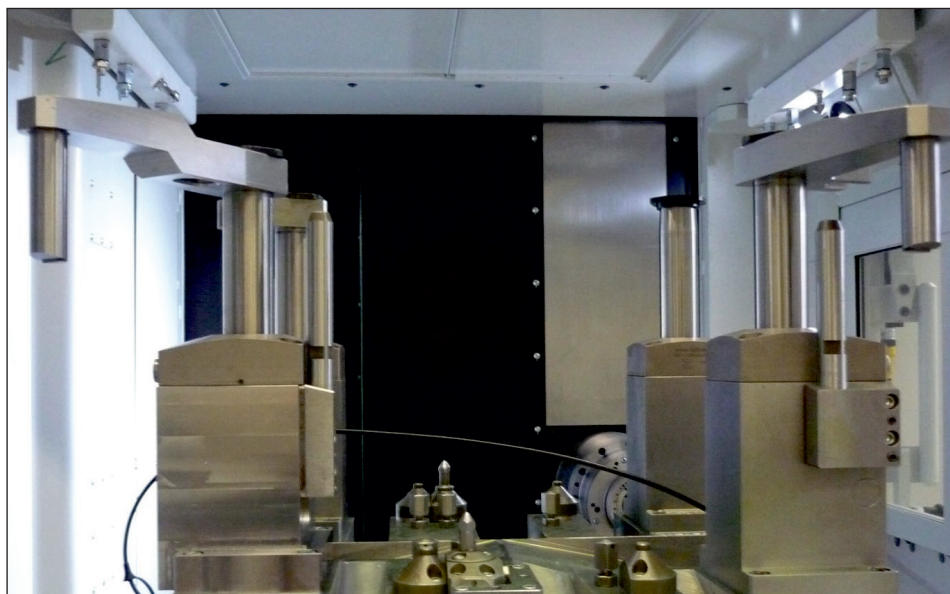


Swing clamp cylinders

upper flange, with overload protection, single-/double-acting, pmax. 500 bar

240-10

Issue: 10/2022



Description:

Swing clamp cylinders release the clamping point on the workpiece. With this, it is easy to change the workpiece.

This hydraulic swing clamp cylinder operates as single-acting or double-acting pull cylinder, whereas part of the stroke is used to rotate the piston. The model with 0° swing angle operates only vertical as pull cylinder.

To guarantee a long lifetime the cylinders have an integrated metal wiper as standard.

For oil supply, the cylinders are equipped with threaded port and manifold connection with O-ring for drilled channels.

You can select between right or left turning models with various standardized swing angles.

The integrated overload protection protects the swing mechanism from damage due to blockage of the rotation or improper assembly of the clamp arm.

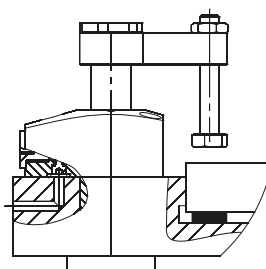
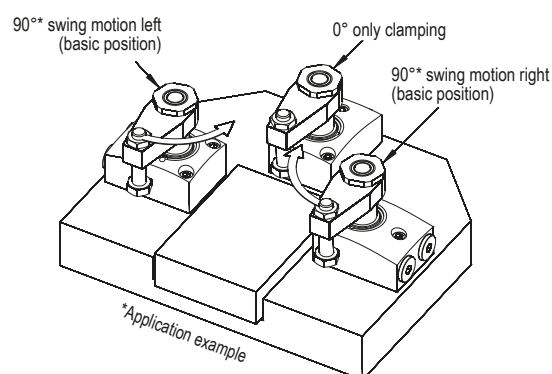
Operating conditions:

For any risk of exceeding the permitted volume flow a throttle check valve must be interposed into the oil supply line (see data sheet 700-15). Counter-hold the clamp arm when tightening or loosening the counter nut in order to prevent torque transfer to the piston rod and to avoid damage to the ball guide.

Variations with 0°, 30°, 45°, 60° and 90° swing angles are available. The permitted operating pressure is depending from the clamp arm length.

Except from standard clamp arms also special clamp arms can be assembled. The maximum operating pressure of 500 bar does not apply for each clamp arm length. For details about the permitted operating pressure, see page 3.

The safety instructions for swing clamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered.

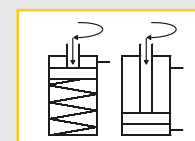


The threaded port connection or the manifold connection with O-ring can be used application-specific.



A

Webcode: 024010



Housing design:

- ✗ **Type A**
(see SSZY Selection guide)

Connections:

- ✗ **G1/4 threaded port**
- ✗ **Manifold with O-ring**

Advantages:

- ✗ **Protecting metal wiper**
- ✗ **Integrated overload protection**
- ✗ **Oil supply through drilled channels or threaded port connection**
- ✗ **Fixture can be easily loaded and unloaded**
- ✗ **Easy to assemble with self designed clamp arms**
- ✗ **Standard and special clamp arms are available (see page 3)**
- ✗ **Various contact bolts available (see data sheet 1000-1)**

We also design and manufacture customized variants!



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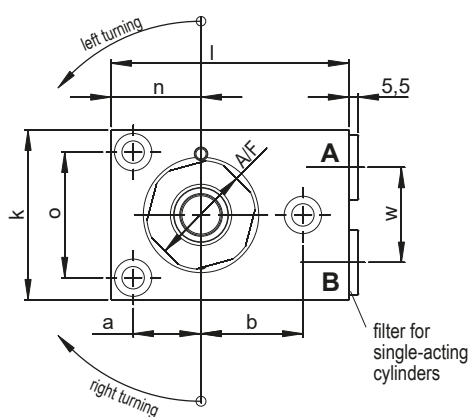
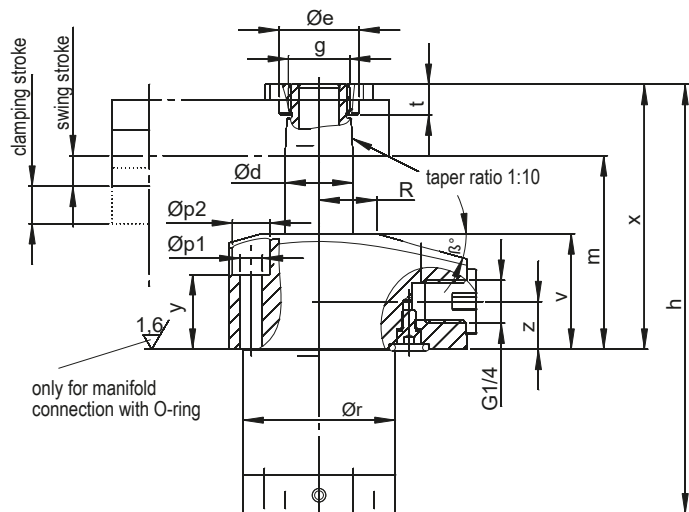
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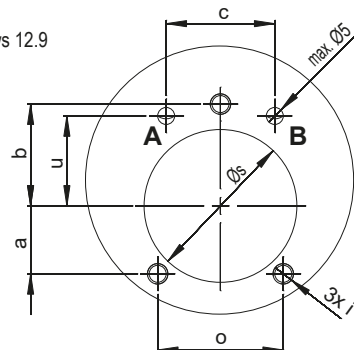
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Installation contour:

use screws 12.9



Connection of a vent line:

The spring chamber of single-acting swing clamp cylinders must be ventilated. This can be done by a vent line at a protected area in the system.

Before you can install the vent line at the threaded port B, you must remove the integrated filter.

Accessories for ports:

Order number:

G1/4-locking screw 7900-001

O-Ring, 8x2 6012-001

Technical data:

Piston Ø:	[mm]	25			40			50			63		
Clamping stroke	[mm]	10	25	50	13	25	50	15	25	50	13	25	50
Swing stroke	[mm]	8	10	10	9	10	10	11	11	11	12	13	13
Total stroke	[mm]	18	35	60	22	35	60	26	36	61	25	38	63
Min. operating pressure	[bar]	30	30	30	30	30	30	30	30	30	30	30	30
Max. volume flow	[cm³/s]	3,2	3,2	3,2	10	10	10	18,4	18,4	18,4	27,7	27,7	27,7
Oil requirement/stroke	[cm³]	3,2	6	10,5	10	16	27,2	18,4	25,5	43,2	27,7	43	72
Oil require./return	[cm³]	8,8	17	29	27,7	44	76	51	71	120	75	116	194
β	[degree]	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6	15,6
a	[mm]	20	20	20	27	27	27	37	37	37	42	42	42
b	[mm]	30	30	30	38	38	38	50	50	50	55	55	55
c	[mm]	32	32	32	46	46	46	62	62	62	75	75	75
d Ø	[mm]	20	20	20	32	32	32	40	40	40	50	50	50
e Ø	[mm]	23,5	23,5	23,5	33,5	33,5	33,5	45	45	45	55,5	55,5	55,5
SW	[mm]	27	27	27	40	40	40	55	55	55	68	68	68
g	[mm]	M18x1,5	M18x1,5	M18x1,5	M28x1,5	M28x1,5	M28x1,5	M35x1,5	M35x1,5	M35x1,5	M45x1,5	M45x1,5	M45x1,5
h	[mm]	126,5	158,5	208,5	147,5	173,5	223,5	172	192	242	183	209	259
i	[mm]	M6	M6	M6	M8	M8	M8	M10	M10	M10	M12	M12	M12
k	[mm]	50	50	50	63	63	63	85	85	85	95	95	95
l	[mm]	70	70	70	85	85	85	110	110	110	125	125	125
m	[mm]	57	73	98	66	79	104	70	80	105	69	82	107
n	[mm]	26,5	26,5	26,5	34,5	34,5	34,5	47	47	47	55	55	55
o	[mm]	37	37	37	48	48	48	65	65	65	72	72	72
p Ø	[mm]	6,6	6,6	6,6	9	9	9	11	11	11	14	14	14
r Ø ±0,1	[mm]	44,8	44,8	44,8	59,8	59,8	59,8	79,8	79,8	79,8	89,8	89,8	89,8
R	[mm]	17	17	17	24	24	24	29,5	29,5	29,5	33,5	33,5	33,5
s Ø +1	[mm]	45	45	45	60	60	60	80	80	80	90	90	90
t	[mm]	9	9	9	10	10	10	11	11	11	12	12	12
u	[mm]	26,5	26,5	26,5	31	31	31	40	40	40	45	45	45
v	[mm]	34	34	34	40	40	40	40	40	40	40	40	40
w	[mm]	28	28	28	41	41	41	55	55	55	70	70	70
x	[mm]	78	94	119	94	107	132	104	114	139	109	122	147
y	[mm]	18	18	18	19	19	19	15	15	15	14	14	14
z	[mm]	14	14	14	14	14	14	12	12	12	12	12	12
available as single-acting type		yes	no	no	yes	no	no	yes	no	no	yes	no	no
available as double-acting type		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

**Clamp arms:**

For these swing clamps, standard clamp arms are available as accessories.

See **data sheet 240-0 «Clamp arms»** (Webcode 024000).

Special clamp arms are available on request.

Dimensions for in-house production of clamp arms:

Piston Ø [mm]	25	40	50	63
Ø ds [mm]	20	32	40	50
x [mm]	16	23	28	34
y [mm]	4	5	5	6
Ø z1 [mm]	24	34	46	56

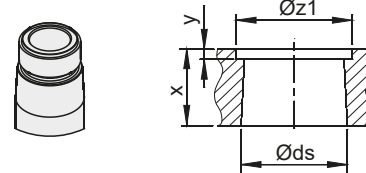
Attention: consider the interference contour for the housing.

Compatible clamp arms:

c d e f

Taper holder (SPK)

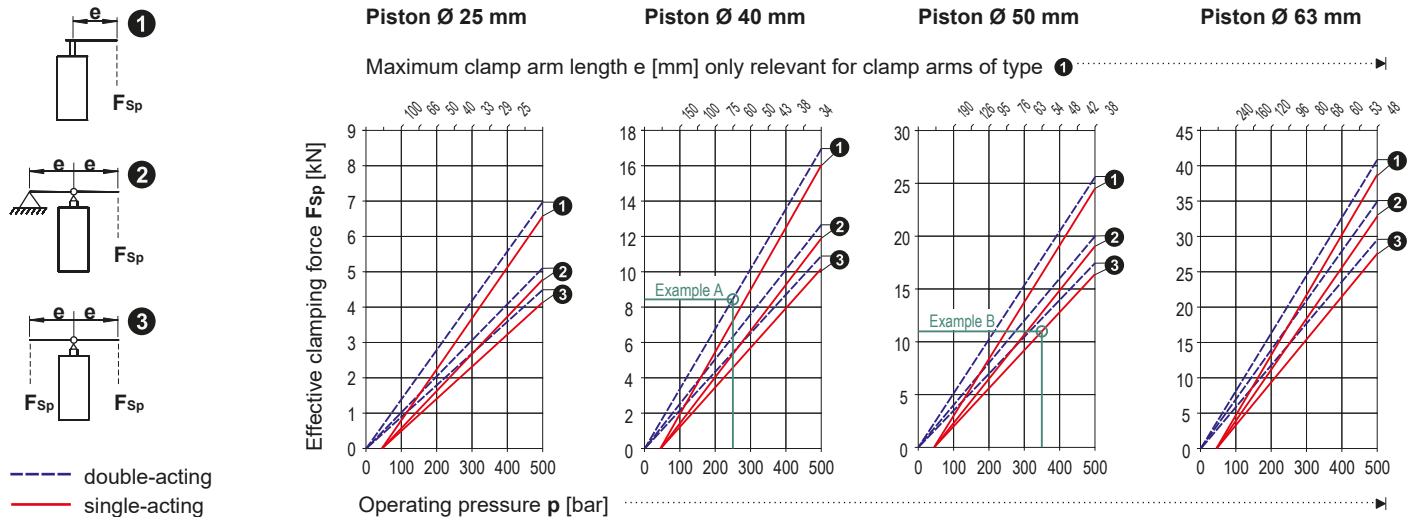
taper ratio 1:10



To fix the clamp arms, the swing clamp cylinders are equipped with a hexagon nut.

From a piston Ø of 50 mm, scope of supply includes a slotted nut instead.

See information sheet **«Assembly / disassembly of the clamp arms»**.

Effective clamping force F_{Sp} depending from operating pressure p :**Example A:**

- double-acting cylinder, piston Ø 40 mm
- present operating pressure $p = 250$ bar
- clamp arm type 1 length $e = 60$ mm
- resulting clamping force $F_{Sp} \sim 8,5$ kN

Example B:

- single-acting cylinder, piston Ø 50 mm
- present operating pressure $p = 350$ bar
- clamp arm version length $e = 54$ mm
- resulting clamping force $F_{Sp} \sim 11$ kN

The retraction force of the spring in single-acting swing clamp cylinders reduces the clamping force slightly. To achieve the same clamping force as with double-acting cylinders, the operating pressure must be increased slightly.

Order number key:

Example **SSZY** - **LD60** - **A2510** - **K10** - **002**

1

Swing motion:
Operating method:
Swing angle [degree]:

right turning = **R**, left turning = **L**, neutral 0° = **N**
single-acting = **E**, double-acting = **D**
standard = **0**, **30**, **45**, **60**, **90**

2

Housing design:
Piston Ø [mm]:
Clamping stroke [mm]:

upper flange = **A**
see dimension table on page 2
see dimension table on page 2

3

Clamp arm holder:
Overload protection:
Position control:

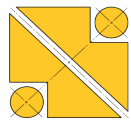
taper = **K**
with = **1**
without = **0**

4

Connection type:

G1/4 threaded port = **001**, manifold with O-ring = **002**

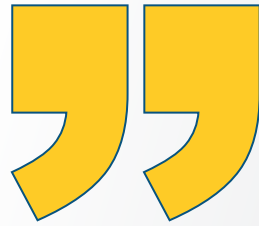
For additional help in model selection, see data sheet **«Swing Clamp Cylinders - Selection Guide»**.



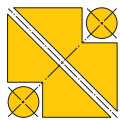
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The individualist among swing clamps.”**



Swing clamp cylinders with reinforced swing mechanism

upper flange, without/with position control, double-acting, pmax. 500 bar

240-20
Issue: 05/2025

Description:

Swing clamp cylinders release the clamping point on the workpiece. With this, it is easy to change the workpiece.

This hydraulic swing clamp cylinder operates as single-acting or double-acting pull cylinder, whereas part of the stroke is used to rotate the piston. The model with 0° swing angle operates only vertical as pull cylinder.

You can select between right or left turning versions with various standardized swing angles.



Mounting example

For oil supply, the cylinders are equipped with threaded port and manifold connection with O-ring for drilled channels.

To guarantee a long lifetime the cylinders have an integrated metal wiper as standard.

The swing clamp cylinder can be optionally supplied with an inductive or pneumatic position control. This feature controls the clamp and unclamp position of the cylinder. The position control is not included in the scope of supply of the standard cylinder. For position controls, refer to page 3.

For any risk of exceeding the permitted volume flow a throttle check valve must be interposed into the oil supply line (see data sheet 700-15). Counter-hold the clamp arm when tightening or loosening the counter nut in order to prevent torque transfer to the piston rod and to avoid damage to the ball guide.

Operating conditions:

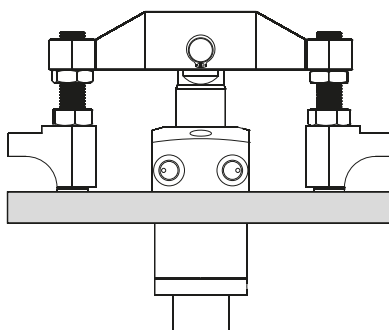
The clamping motion is initiated by a superimposed swing and stroke motion. After that, a linear clamping stroke follows.

Variants with 0°, 30°, 45°, 60° and 90° swing angles are available. The permitted operating pressure is depending from the clamp arm length.

For retaining clamp arms, the piston rod is optionally available with different holders. You can select between pendulum and clevis. The pendulum allows to retain double clamp arms. With this feature it is possible e.g. to clamp two workpieces at the same time or to create a support on one side during the clamping process.

These swing clamp cylinders are equipped with a reinforced swing mechanism. Thereby an overload protection is unnecessary. The reinforced swing mechanism compensates, for example the higher loads if double clamp arms should be used.

When using self designed double clamp arms it is recommended to insert a carrier with spring elements to guarantee the neutral position (see page 3).



Application example for a double clamp arm

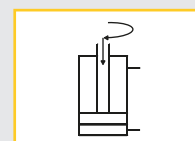
During the mounting of the clamping arm, make sure that torques are transferred in the piston rod. Hold against the clamping arm when you tighten or loosen the tightening screw.

The safety instructions for swing clamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered.



A

Webcode: 024020



Design:

- ☒ **Type A**
(upper flange)

Connections:

- ☒ **G1/4 threaded port**
- ☒ **Manifold with O-ring**

Advantages:

- ☒ **Reinforced swing mechanism**
- ☒ **Protective metal wiper**
- ☒ **Inductive or pneumatic position control** (see page 2)
- ☒ **Standard and special clamp arms** available (see page 3)

We also design and manufacture customized variants!



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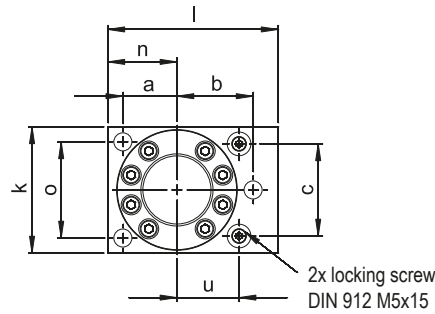
+49 6401 225999-0

sales@hydrokomp.de

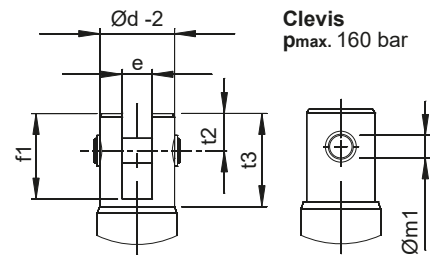
Siemenstr. 16
35325 Mücke (Germany)

www.hydrokomp.de

Technology that connects

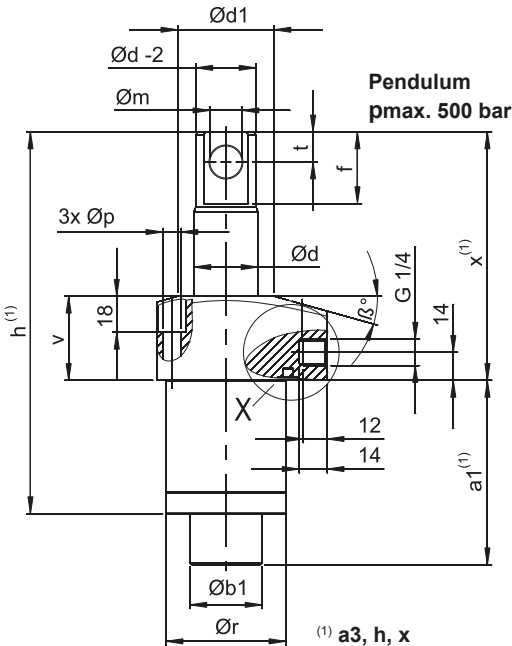
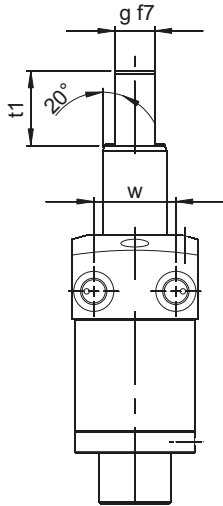
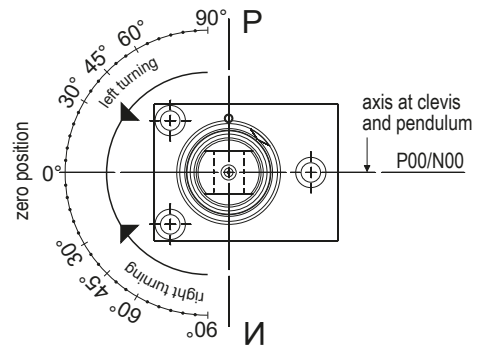


Clamp arm holder:



Starting position:

Swing clamp cylinder in basic position, the piston is extended.



⁽¹⁾ a3, h, x
For larger clamping strokes the difference to the standard clamping stroke must be added.

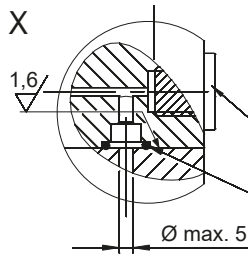
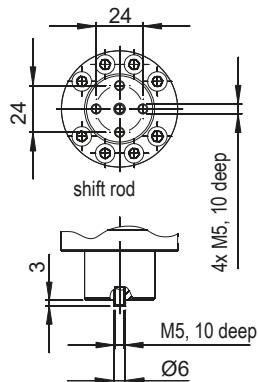
Required accessories for manifold connection:

Accessories:
2x G1/4-locking screw
Order number: 7900-001
2x O-Ring, 8x2
Order number: 6012-001

Angle position of the axis
of clevis or pendulum
in relation to the zero position

P = positive
N = negative

The swing angle is indicated in the order number key between 0° and 90° in the sense of positive or negative in 5° steps freely selectable.



Position controls:

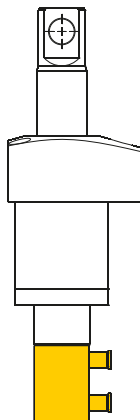
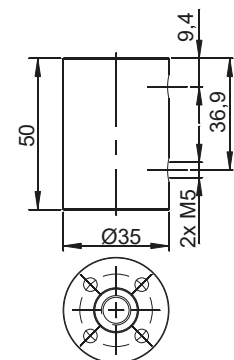
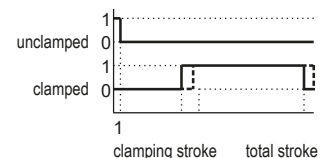
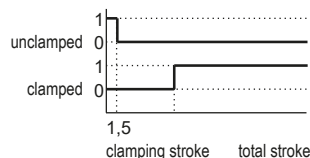
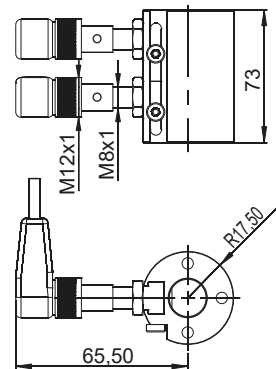
Position controls can be ordered separately. The position control has to be assembled with the included fastening screws on the lower side of the cylinder.

Pneumatic:
Order number: PKP-001

Inductive:

Order number: PKE-001

Size	M8x1
Operating voltage	12...30 V DC
Rated switching distance	1,5 mm
Assured switching distance	0...1,2 mm
Rated operating current	100 mA
Switching function	Closing switch
Output	PNP
Housing material	CuZn plated
Protection grade	IP 67
Ambient temperature	-25...70°C
Type of connection	Plug
Cable length	5 m
LED display	Yes
Short-circuit protected	Yes
Supplied with two sensors and two angle plugs.	





Technical data:

Piston Ø:	[mm]	25	40
Clamping stroke	[mm]	25	22
Swing stroke	[mm]	9	13
Total stroke	[mm]	34	35
Operating pressure, min.	[bar]	30	30
Volume flow, max.	[cm³/s]	8	20
Active piston area, clamping	[cm²]	1,76	4,52
Active piston area, unclamping	[cm²]	4,9	12,56
Oil requirement/stroke	[cm³]	6	15,8
Oil requirement/reset	[cm³]	16,7	44
β	[degree]	15,6	15,6
a	[mm]	20	27
a1	[mm]	84	92
b	[mm]	30	38
b1 Ø	[mm]	22	36
c	[mm]	32	46
d Ø	[mm]	20	32
d1 Ø	[mm]	36	45,3
e +0,1	[mm]	8	12
f	[mm]	20	32
f1	[mm]	26	37
g f7	[mm]	12	20
h	[mm]	182	195
k	[mm]	50	63
l	[mm]	70	85
m H7 Ø	[mm]	10	16
m1 Ø	[mm]	6	10
n	[mm]	26,5	34,5
o	[mm]	37	48
p Ø	[mm]	6,6	9
r Ø -0,1	[mm]	44,8	59,8
t	[mm]	9	15
t1	[mm]	21	33
t2	[mm]	10	15
t3	[mm]	29	40
u	[mm]	26,5	31
v	[mm]	36	42
w	[mm]	28	41
x	[mm]	104,5	124
y	[mm]	18	19

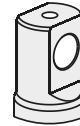
Clamp arms:

For these swing clamp cylinders, standard clamp arms are available as accessories. All necessary information about this can be found on the **data sheet 240-0 «Clamp arms»** in the catalogue or at www.hydrokomp.de. Special clamp arms are available on request.

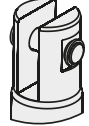
Compatible clamp arms:

g h

Clamp arm holders:

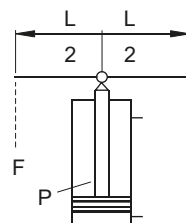


Pendulum (SPP)



Clevis (SPG)

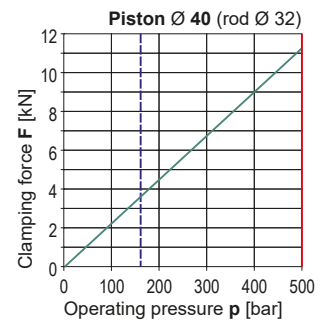
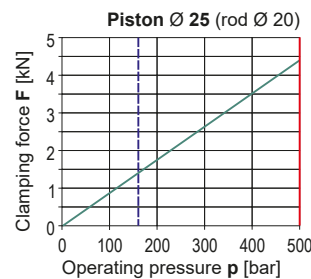
Clamping force F depending from operating pressure p:



— with clevis $p_{max.} = 160 \text{ bar}$
— with pendulum $p_{max.} = 500 \text{ bar}$

Example:

- Piston Ø 25 mm (rod Ø 20 mm)
 - Clamp arm holder pendulum
 - Present operating pressure $p = 300 \text{ bar}$
- Resulting clamping force $F \sim 2,6 \text{ kN}$



Order number key:

Example: **SSZY** - **LD60** - **A4022** - **PV0** - **N20** - **001**

1

Swing motion:
Operating method:
Swing angle [degree]:

right= **R**, left = **L**, neutral 0° = **N**
double-acting = **D**
standard = **0, 30, 45, 60, 90**

2

Housing design:
Piston Ø [mm]:
Clamping stroke [mm]:

upper flange = **A**
see dimension table, page 2
see dimension table, page 2

3

Clamp arm holder:
Overload protection:
Position control:

clevis = **G**, pendulum = **P**
with reinforced swing mechanism = **V**
without = **0**, shift rod = **1**

Starting position:
Angle position [degree]:

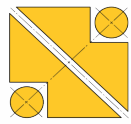
negative = **N**, positive = **P**
angle position in relation to the zero position
(see page 2)

4

Connection type:

threaded port= **001**, manifold with O-ring = **002**

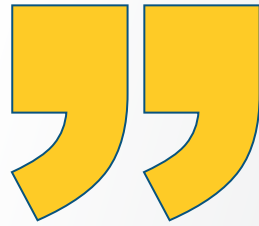
For additional help in model selection, see data sheet «Swing Clamp Cylinders - Selection Guide».



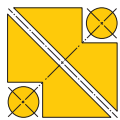
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"Limit the volume flow to protect swing clamps."



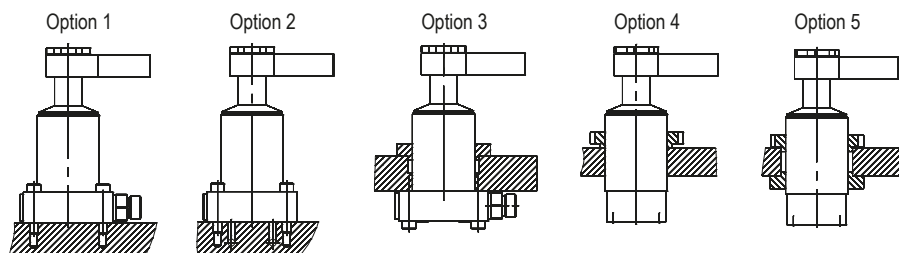
Swing clamp cylinders

with thread/flange, overload protection, single-/double-acting, pmax. 500 bar

240-30

Issue: 10/2022

Mounting options:



Option:	Housing design:	Mounting via:	Oil connection via:
1	B	flange	G1/4 threaded port lateral
2	B	flange	manifold with O-ring lower
3	B	flange/built-in	G1/4 threaded port lateral
4	C	built-in	G1/4 threaded port lower
5	C	built-in	G1/4 threaded port lower

Description:

Swing clamp cylinders release the clamping point on the workpiece. With this, it is easy to change the workpiece.

This hydraulic swing clamp cylinder operates as single-acting or double-acting pull cylinder, whereas part of the stroke is used to rotate the piston. The model with 0° swing angle operates only vertical as pull cylinder.

To guarantee a long lifetime the cylinders have an integrated metal wiper as standard.

For oil supply, the cylinders are equipped with threaded port and manifold connection with O-ring for drilled channels.

You can select between right or left turning models with various standardized swing angles.

The integrated overload protection protects the swing mechanism from damage due to blockage of the rotation or improper assembly of the clamp arm.

Operating conditions:

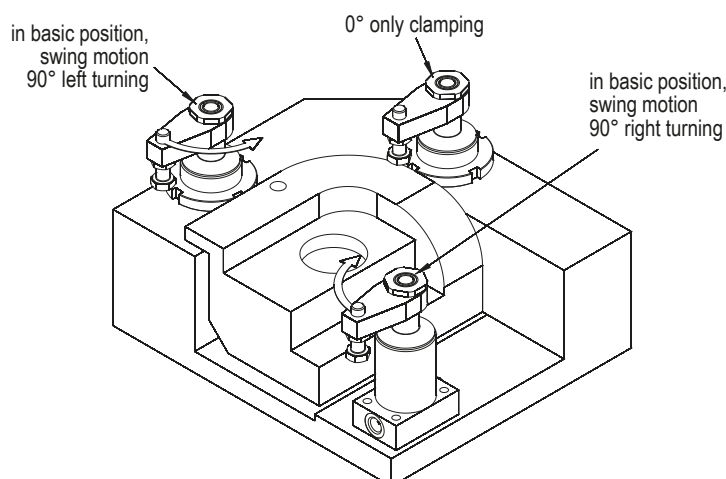
For any risk of exceeding the permitted volume flow a throttle check valve must be interposed into the oil supply line (see data sheet 700-15). Counter-hold the clamp arm when tightening or loosening the counter nut in order to prevent torque transfer to the piston rod and to avoid damage to the ball guide.

Variations with 0°, 30°, 45°, 60° and 90° swing angles are available. The permitted operating pressure is depending from the clamp arm length.

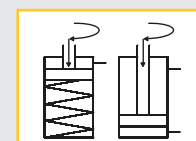
Except from standard clamp arms also special clamp arms can be assembled. The maximum operating pressure of 500 bar does not apply for each clamp arm length. For details about the permitted operating pressure, refer to page 4.

The safety instructions for swing clamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered.

Application example:



Webcode: 024030



Housing designs:

- ☒ Type B or C (lower flange or threaded body)

Connection types:

- ☒ G1/4 threaded port
- ☒ Manifold with O-ring

Advantages:

- ☒ Protecting metal wiper
- ☒ Integrated overload protection
- ☒ Easy to assemble with self designed clamp arms
- ☒ Standard and special clamp arms available (see page 3)

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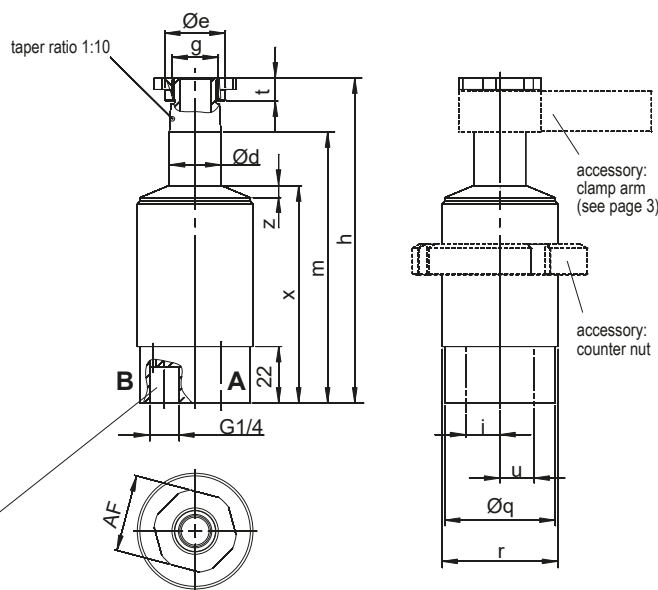
Siemenstr. 16
35325 Mücke (Germany)

www.hydrokomp.de

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Housing design C



Installation instructions:

The swing clamp cylinders will be delivered ready for connection. If a modification of the threaded ports on manifold ports become necessary, proceed as follows:

single-/double-acting:

- insert G1/4 locking screws into the threaded ports **A**
- remove the cap screws with seals out of the manifold connection ports **A**
- insert the O-rings 7x1,5 into the countersink of the manifold connection ports **A**

For the application of single-acting cylinders it is important to note, if the ventilation of the spring chamber should be realized by the manifold connection port you must replace the filter at port **B** with a G1/4 locking screw.

Accessories for ports:

Accessories for ports:	Order no.
G1/4 locking screw	7900-001
O-Ring, 7x1,5	6010-002

Counter nut:
DIN 1804
(accessory)

Piston Ø	Øa	Øb	c	d	e	Order no.
25 mm	68	60	12	0,5	M45x1,5	7045-008
40 mm	90	80	13	0,5	M60x1,5	7060-007
50 mm	115	105	16	1	M80x2	7080-005
63 mm	130	120	16	1	M90x2	7090-003

Technical data:

[illegible]



Clamp arms:

For these swing clamps, standard clamp arms are available as accessories. See **data sheet 240-0 «Clamp arms»** (Webcode 024000).

Special clamp arms are available on request.

Dimensions for in-house production of clamp arms:

Piston Ø [mm]	25	40	50	63
Ø ds [mm]	20	32	40	50
x [mm]	16	23	28	34
y [mm]	4	5	5	6
Ø z1 [mm]	24	34	46	56

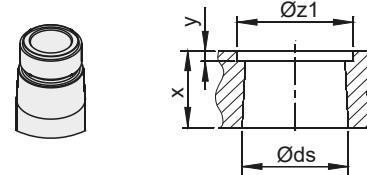
Attention: consider the interference contour for the housing.

Compatible clamp arms

c d e f

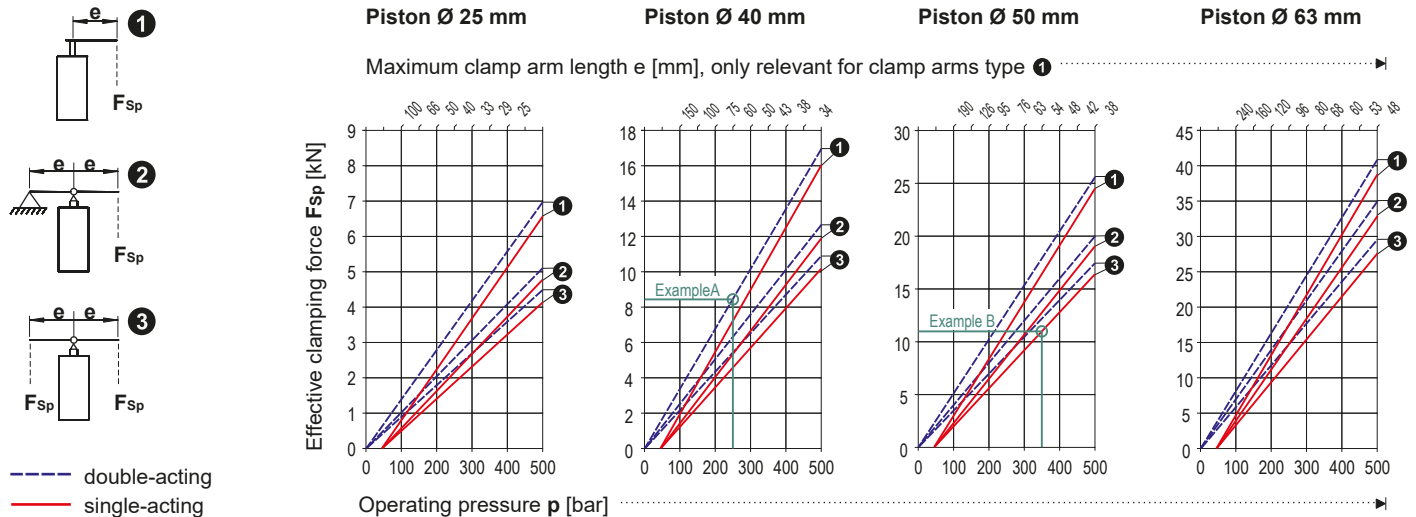
Taper holder (SPK)

Taper holder 1:10



To fix the clamp arms, the swing clamp cylinders are equipped with a hexagon nut. From a piston Ø of 50 mm, scope of supply includes a slotted nut instead. See information sheet **«Assembly / disassembly of the clamp arms»**.

Effective clamping force F_{Sp} depending from operating pressure p :



Example A:

- double-acting cylinder, piston Ø 40 mm
- present operating pressure $p = 250$ bar
- clamp arm type 1, length $e = 60$ mm
- resulting clamping force $F_{Sp} \sim 8,5$ kN

Example B:

- single-acting cylinder, piston Ø 50 mm
- present operating pressure $p = 350$ bar
- clamp arm type 3, length $e = 54$ mm
- resulting clamping force $F_{Sp} \sim 11$ kN

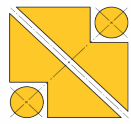
The retraction force of the spring in single-acting swing clamp cylinders reduces the clamping force slightly. To achieve the same clamping force as with double-acting cylinders, the operating pressure must be increased slightly.

Order number key:

Example **SSZY - RE90 - B5015 - K10 - 002**

- Swing motion:** Right turning = **R**, Left = **L**, Neutral 0° = **N**
Operating method: single-acting = **E**, double-acting = **D**
Swing angle [degree]: Standard = **0**, **30**, **45**, **60**, **90**
- Housing design:** Lower flange = **B**, Built-in housing = **C** (see page 1)
Piston Ø [mm]: see dimension table on page 2
Clamping stroke [mm]: see dimension table on page 2
- Clamp arm holder:** Taper = **K**
Overload protection: with = **1**
Position control: without = **0**
- Connection type:** Threaded port = **001**, Manifold with O-ring = **002**

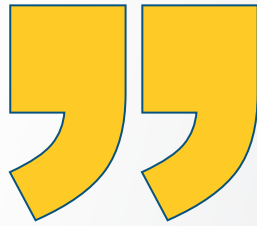
For additional help in model selection, see **data sheet «Swing Clamp Cylinders - Selection Guide»**.



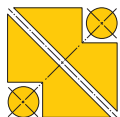
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"Prolong swing clamp lifetime by limiting the volume flow".



Swing clamp cylinders

block housing, with overload protection, double-acting, pmax. 500 bar

240-40

Issue: 12/2023

Description:

This hydraulic swing clamp cylinder operates as double-acting pull cylinder, whereas part of the stroke is used to rotate the piston.

The model with 0° swing angle operates only vertical as pull cylinder. To guarantee a long lifetime the cylinders have an integrated metal wiper as standard.

For hydraulic oil supply, the cylinders are equipped with threaded port and manifold connection with O-ring for drilled channels. You can select between right or left turning models with various standardized swing angles.

The integrated overload protection protects the swing mechanism from damage due blockage of the rotation or improper assembly of the clamp arm.

Operating conditions:

For any risk of exceeding the permitted volume flow a throttle check valve must be interposed into the oil supply line (see data sheet 700-15).

Counter-hold the clamp arm when tightening or loosening the counter nut in order to prevent torque transfer to the piston rod and to avoid damage to the ball guide.

Models with 0°, 30°, 45°, 60° and 90° swing angles are available. The permitted operating pressure is depending from the clamp arm length. Models with other swing angles can be supplied as special designs Except from standard clamp arms also special clamp arms can be assembled.

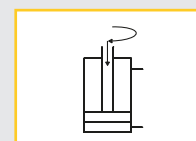
The maximum operating pressure of 500 bar does not apply for each clamp arm length. For details about the permitted operating pressure see the diagrams below.

The safety instructions for swing clamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered.



F

Webcode: 024040



Housing design:

- ✗ **Type F**
(block housing)

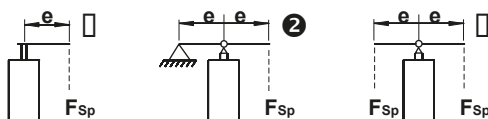
Connections:

- ✗ threaded port G1/4
- ✗ manifold with O-ring

Advantages:

- ✗ Protecting metal wiper
- ✗ Integrated overload protection
- ✗ Oil supply through drilled channels or threaded port connection
- ✗ Fixture can be easily loaded and unloaded
- ✗ Easy to assemble with self designed clamp arms
- ✗ Standard and special clamp arms available (See Data sheet 240-0, Page 2)

Effective clamping force F_{Sp} depending from operating pressure p :

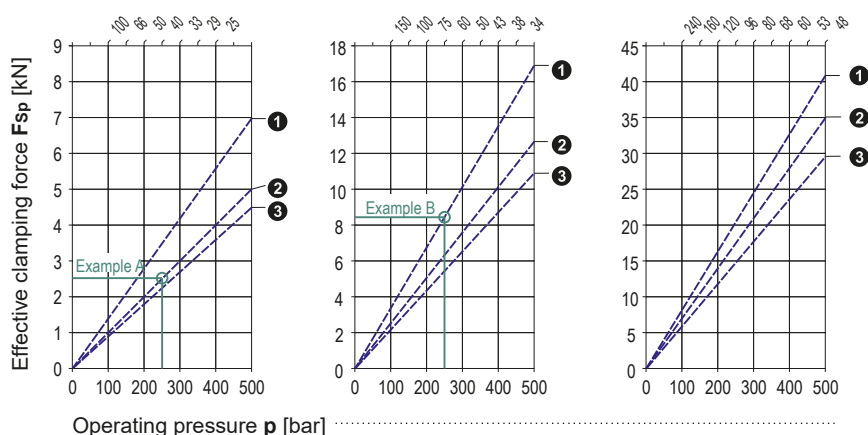


Piston Ø 25 mm

Piston Ø 40 mm

Piston Ø 63 mm

Maximum clamp arm length e [mm], only relevant for clamp arms type ①



Example A:

- cylinder with piston Ø 25 mm
- present operating pressure $p = 250$ bar
- clamp arm type 2, length 40 mm
- resulting clamping force $F_{Sp} \sim 2,5$ kN

Example B:

- cylinder with piston Ø 40 mm
- present operating pressure $p = 250$ bar
- clamp arm type 1, length $e = 60$ mm
- resulting clamping force $F_{Sp} \sim 8,5$ kN

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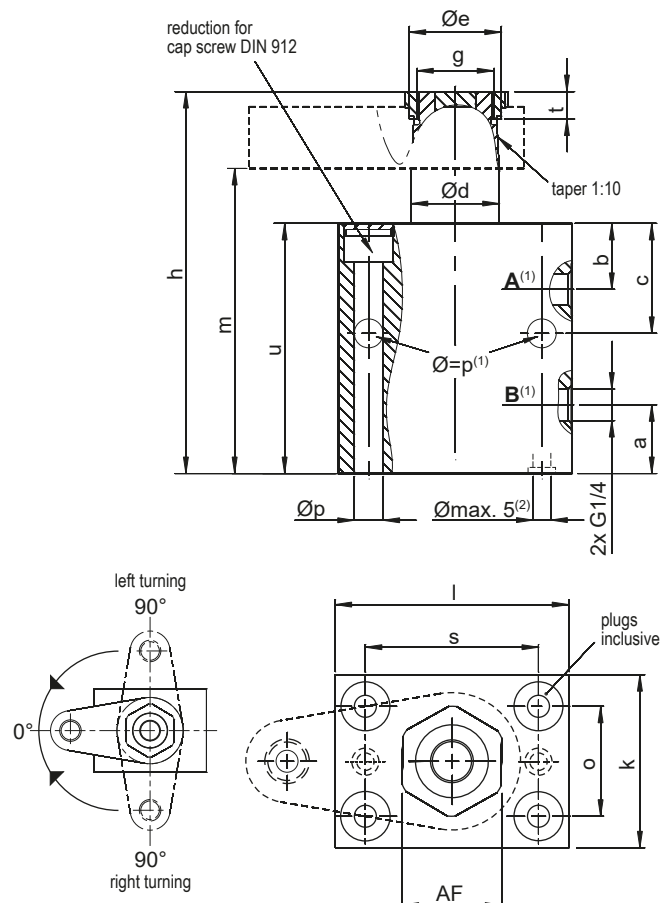
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Technical data:

Piston Ø	[mm]	25	40	63
Clamping stroke	[mm]	8	8	11
Swing stroke	[mm]	8	9	12
Total stroke	[mm]	16	17	23
Min. operating pressure	[bar]	30	30	30
Max. volume flow	[cm³/s]	3,2	10	27,7
Oil requirement/stroke	[cm³]	2,5	7,3	23
Oil requirement/reset	[cm³]	6,8	20	62
a	[mm]	22	25	26
b	[mm]	18	24	30
c	[mm]	33	40	50
d Ø	[mm]	20	32	50
e Ø	[mm]	23,5	33,5	55,5
AF	[mm]	27	36	68
g	[mm]	M18x1,5	M28x1,5	M45x1,5
h	[mm]	110	139	174
k	[mm]	45	63	95
l	[mm]	65	85	125
m	[mm]	89	111	134
o	[mm]	30	40	65
p Ø	[mm]	8,5	10,5	17
s	[mm]	50	63	95
t	[mm]	9	10	12
u	[mm]	71	91	110

(1) With the flange design, the two threaded ports A/B and the two cross holes are omitted.

(2) Only relevant for bottom flange design.

Accessories for ports:

Order number:

G1/4-locking screw.....

7900-001

O-Ring, 8x2

6012-001

Clamp arms:

For these swing clamps, standard clamp arms are available as accessories. See **data sheet 240-0 «Clamp arms»** (Webcode 024000).

Special clamp arms are available on request.

Dimensions for in-house production of clamp arms:

Piston Ø	[mm]	25	40	63
Ø ds	[mm]	20	32	50
x	[mm]	16	23	34
y	[mm]	4	5	6
Ø z1	[mm]	24	34	56

Attention: consider the interference contour for the housing.

To fix the clamp arms, the swing clamp cylinders are equipped with a hexagon nut.

From a piston Ø of 63 mm, scope of supply includes a slotted nut instead.

See information sheet **«Assembly / disassembly of the clamp arms»**.

Order number key:

Example: **SSZY** - **RD45** - **F6311** - **K10** - **002**

1

Swing motion:

Operating method:

Swing angle [degree]:

right turning = **R**, Left turning = **L**, Neutral 0° = **N**

double-acting = **D**

standard = **0, 30, 45, 60, 90**

2

Housing design:

Piston Ø [mm]:

Clamping stroke [mm]:

block housing = **F**

see dimension table on page 2

see dimension table on page 2

3

Clamp arm holder:

Overload:

Position control:

Taper = **K**

with = **1**

without = **0**

4

Oil supply:

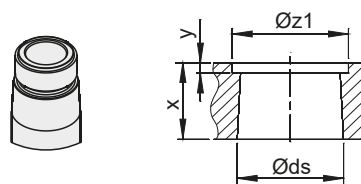
Threaded port = **001**, manifold with O-ring = **002**

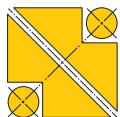
Compatible clamp arms:

c d e f

Taper holder (SPK)

taper ratio 1:10





Swing clamp cylinders

threaded body, with overload protection, single-/double-acting, pmax. 500 bar

240-50

Issue: 10/2022



Description:

This hydraulic swing clamp cylinder operates as single-acting or double-acting pull cylinder, whereas part of the stroke is used to rotate the piston. The model with 0° swing angle operates only vertical as pull cylinder.

To guarantee a long lifetime the cylinders have an integrated metal wiper as standard.

The oil supply is made through drilled channels. The seal takes place directly in the mounting hole.

You can select between right or left turning models with various standardized swing angles.

The integrated overload protection protects the swing mechanism from damage due blockage of the rotation or improper assembly of the clamp arm.

Operating method:

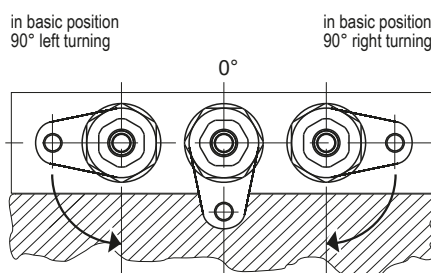
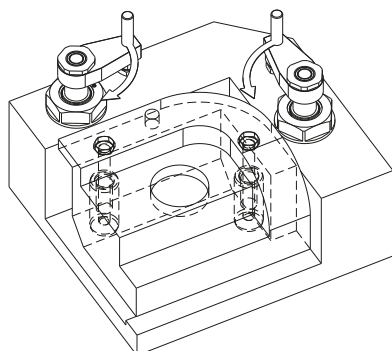
For any risk of exceeding the permitted volume flow a throttle check valve must be interposed into the oil supply line (see data sheet 700-15). Counter-hold the clamp arm when tightening or loosening the counter nut in order to prevent torque transfer to the piston rod and to avoid damage to the ball guide.

Variations with 0°, 30°, 45°, 60° and 90° swing angles are available. The permitted operating pressure is depending from the clamp arm length.

Except from standard clamp arms also special clamp arms can be assembled. The maximum operating pressure of 500 bar does not apply for each clamp arm length. For details about the permitted operating pressure, refer to page 3.

When installing the cylinder pay attention on cleanness in the oil passages.

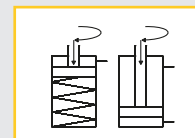
Application example:



D



Webcode: 024050



Housing design:

- ✕ **Type D**
(threaded body)

Connections:

- ✕ **Drilled channels**

Advantages:

- ✕ **Protecting metal wiper**
- ✕ **Integrated overload protection**
- ✕ **Easy to assemble with self designed clamp arms**
- ✕ **Standard and special clamp arms available (see page 3)**

The safety instructions for swing clamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered.

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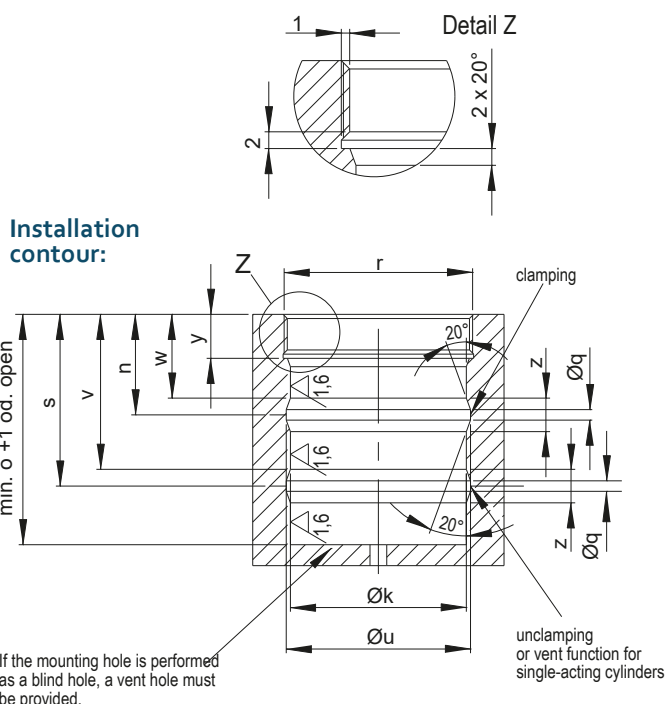
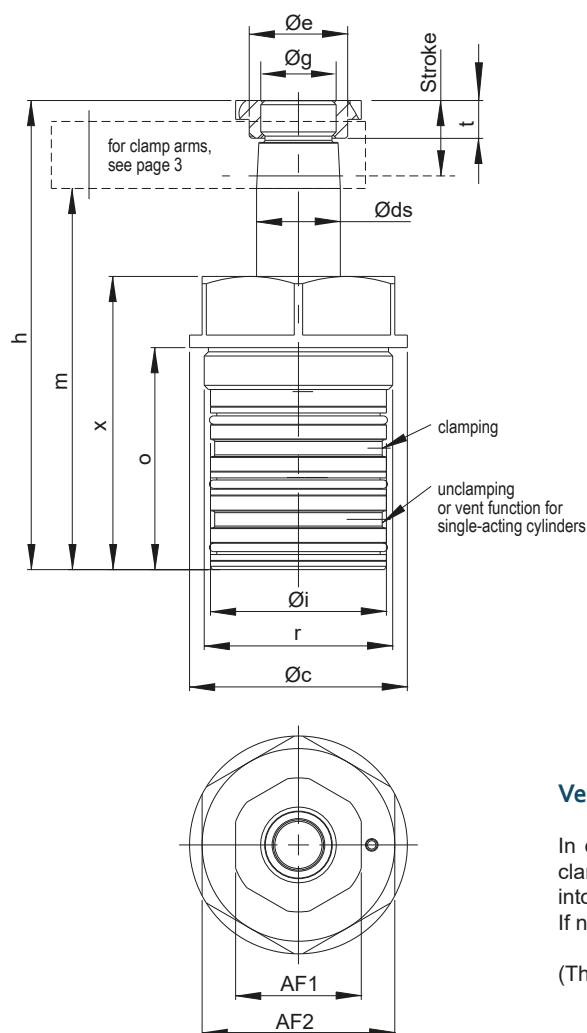
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Ventilation for single-acting swing clamp cylinders:

In order to avoid malfunctions, the spring chamber of the single-acting swing clamp cylinder must be vented. The penetration of foreign particles and liquids into the spring chamber must be prevented e. g. by a sintered metal filter. If necessary, an additional vent line can be connected.

(The sintered metal filter and the vent line are not included.)

Technical data:

Piston Ø:	[mm]	25	40	63
Clamping stroke	[mm]	10	13	14
Swing stroke	[mm]	8	9	10
Total stroke	[mm]	18	22	24
Operating pressure, min.	[bar]	30	30	30
Volume flow, max.	[cm³/s]	3,2	10	27,7
Oil requirement/forward stroke	[cm³]	3,2	10,0	27,7
Oil requirement/back-ward stroke	[mm]	8,8	27,7	74,8
c Ø	[mm]	52	64	100
ds Ø	[mm]	20	32	50
e Ø	[mm]	23,5	33,5	55,5
g Ø	[mm]	M18x1,5	M28x1,5	M45x1,5
h	[mm]	112	152	182
i Ø (f7)	[mm]	42	55	85
k Ø (H7)	[mm]	42	55	85
mno	[mm]	91-1	124-1	142-1
q Ø	[mm]	24	29	41
r	[mm]	53	66	96
s	[mm]	5	5	6
AF 1	[mm]	M45x1,5	M60x1,5	M90x1,5
AF 2	[mm]	41	46,5	64
t	[mm]	30	40	68
u Ø	[mm]	46	55	95
v	[mm]	9	10	12
w	[mm]	44	57	87
x	[mm]	37	41,5	59
y	[mm]	20	24	36
z	[mm]	70	99	116
	[mm]	10,5	12,5	20,5
	[mm]	8	10	10



Clamp arms:

For these swing clamps, standard clamp arms are available as accessories. See **data sheet 240-0 «Clamp arms»** (Webcode 024000).

Special clamp arms are available on request.

Dimensions for in-house production of clamp arms:

Piston Ø [mm]	25	40	63
Ø ds [mm]	20	32	50
x [mm]	16	23	34
y [mm]	4	5	6
Ø z1 [mm]	24	34	56

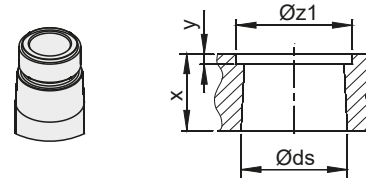
Attention: consider the interference contour for the housing.

To fix the clamp arms, the swing clamp cylinders are equipped with a hexagon nut. From a piston Ø of 63 mm, scope of supply includes a slotted nut instead. See information sheet **«Assembly / disassembly of the clamp arms»**.

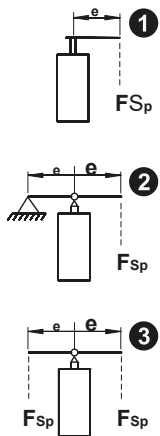
Compatible clamp arms:

c d e f

Taper holder (SPK) taper ratio 1:10



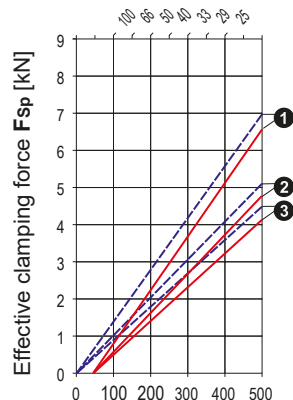
Effective clamping force F_{Sp} depending from operating pressure p :



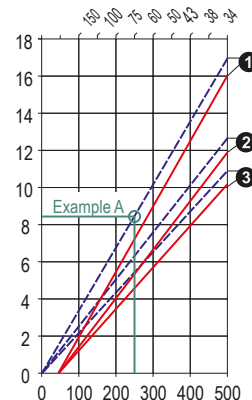
--- double-acting
— single-acting

Piston Ø 25 mm

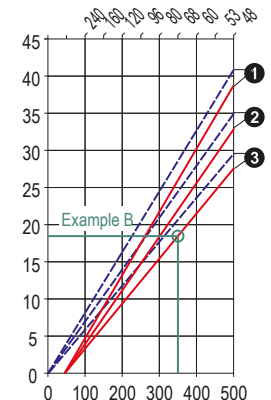
Maximum clamp arm length e [mm], only relevant for clamp arms type 1



Piston Ø 40 mm



Piston Ø 63 mm



Example A:

- double-acting cylinder, piston Ø 40 mm
- present operating pressure $p = 250$ bar
- clamp arm type 1, length $e = 60$ mm
- resulting clamping force $F_{Sp} \sim 8,5$ kN

Example B:

- single-acting cylinder, piston Ø 63 mm
- present operating pressure $p = 350$ bar
- clamp arm type 3, length $e = 27$ mm
- resulting clamping force $F_{Sp} \sim 18$ kN

The retraction force of the spring in single-acting swing clamp cylinders reduces the clamping force slightly. To achieve the same clamping force as with double-acting cylinders, the operating pressure must be increased slightly.

Order number key:

Example: **SSZY** - **RE90** - **D4013** - **K10** - **003**

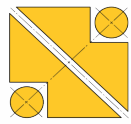
1 Swing motion: right turning = **R**, left turning = **L**, neutral 0° = **N**
Operating method: single-acting = **E**, double-acting = **D**
Swing angle [degree]: Standard = **0**, **30**, **45**, **60**, **90**

2 Housing design: threaded body = **D**
Piston Ø [mm]: see dimension table on page 2
Clamping stroke [mm]: see dimension table on page 2

3 Clamp arm holder: taper = **K**
Overload protection: with = **1**
Position control: without = **0**

4 Oil supply: drilled channels = **003**

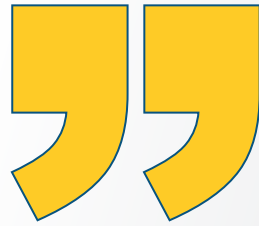
For additional help in model selection, see data sheet **«Swing Clamp Cylinders - Selection Guide»**.



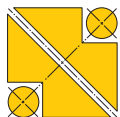
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„Too high flow rates have to be throttled.
Throttle check valves can be found on data sheet 700-15.“

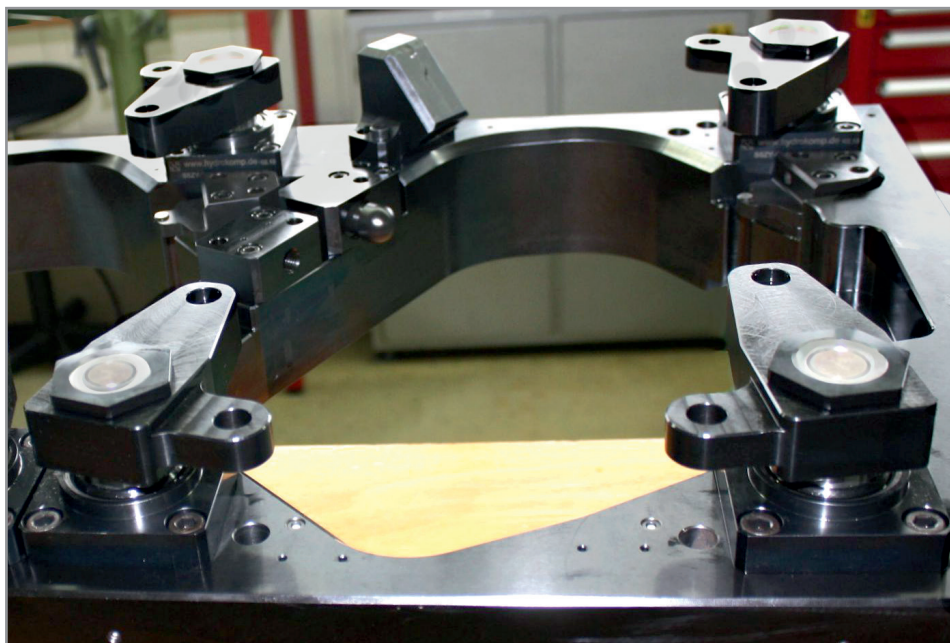


Swing clamp cylinders

cartridge design, with overload protection, double-acting, pmax. 500 bar

240-60

Issue: 10/2022



Description:

This hydraulic swing clamp cylinder operates as double-acting pull cylinder, whereas part of the stroke is used to rotate the piston. The model with 0° swing angle operates only vertical as pull cylinder.

To guarantee a long lifetime the cylinders have an integrated metal wiper as standard.

For oil supply, the cylinders are equipped with threaded port and manifold connection with O-ring for drilled channels.

You can select between right or left turning models with various standardized swing angles.

The integrated overload protection protects the swing mechanism from damage due blockage of the rotation or improper assembly of the clamp arm.

Operating conditions:

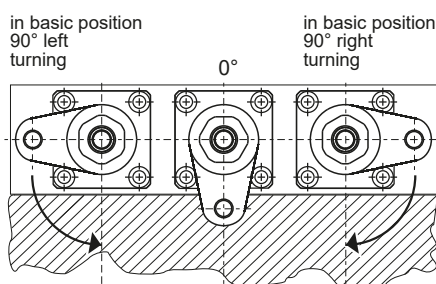
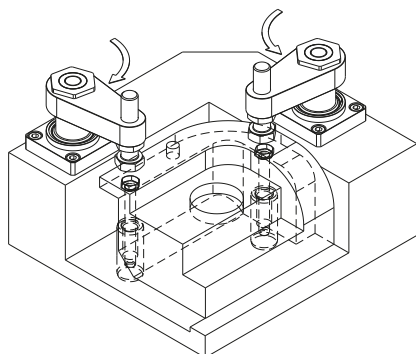
For any risk of exceeding the permitted volume flow a throttle check valve must be interposed into the oil supply line (see data sheet 700-15). Counter-hold the clamp arm when tightening or loosening the counter nut in order to prevent torque transfer to the piston rod and to avoid damage to the ball guide.

Variations with 0°, 30°, 45°, 60° and 90° swing angles are available. The permitted operating pressure is depending from the clamp arm length.

Except from standard clamp arms also special clamp arms can be assembled. The maximum operating pressure of 500 bar does not apply for each clamp arm length. For details about the permitted operating pressure, refer to page 3.

Pay attention to cleanliness in the bore and oil channels during installation.

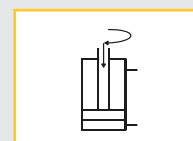
Application example:



E



Webcode: 024060



Housing design:

- ✗ **Type E**
(cartridge design)

Connections:

- ✗ **Drilled channels**

Advantages:

- ✗ **Protective metal wiper**
- ✗ **Integrated overload protection**
- ✗ **Easy loading and unloading of the fixture**
- ✗ **Self made clamp arms mountable**
- ✗ **Standard and special clamp arms available (see page 3)**

The safety instructions for swing lamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered.

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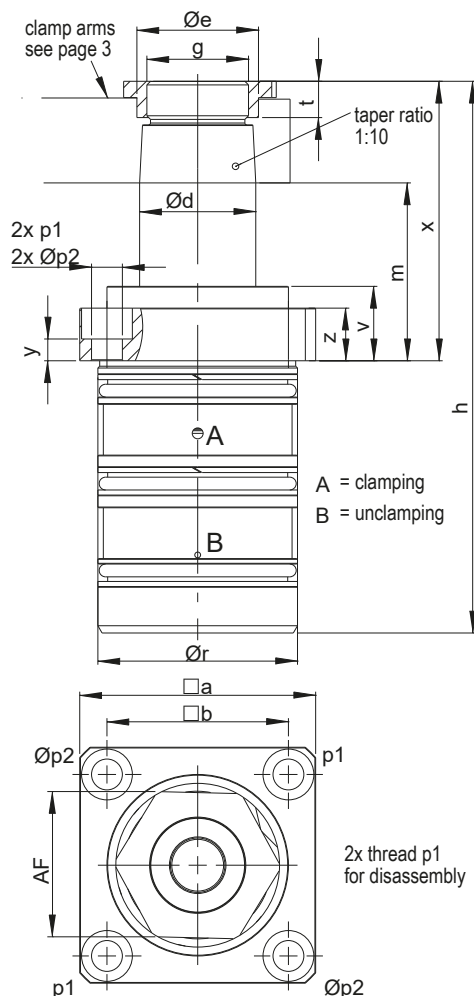
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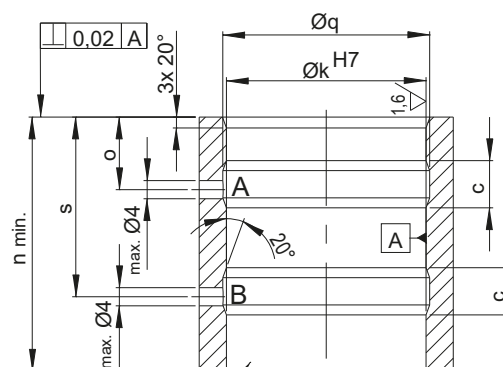
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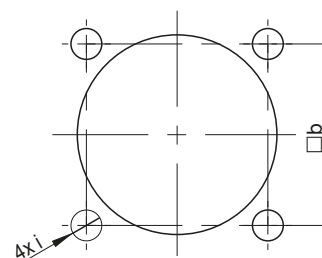


Installation contour



If the mounting hole is designed as a blind hole, a vent hole must be provided.

Bore pattern



Technical data:

Piston Ø:	[mm]	25		40		50		63	
Clamping stroke	[mm]	10	25	13	25	15	25	13	25
Swing clamp	[mm]	8	10	9	10	11	11	12	13
Total stroke	[mm]	18	34	22	35	26	36	25	38
Operating pressure, min.	[bar]	30	30	30	30	30	30	30	30
Volume flow, max.	[cm³/s]	3,2	3,2	10	10	18,4	18,4	27,7	27,7
Oil requirement/stroke	[cm³]	3,2	6	10	16	18,4	25,5	27,7	43
Oil requirement/back stroke	[cm³]	8,8	17	27,7	44	51	71	75	116
a	[mm]	55	55	65	65	85	85	100	100
b	[mm]	40	40	50	50	65	65	75	75
c	[mm]	10	10	10	10	12	12	12	12
d Ø	[mm]	20	20	32	32	40	40	75	116
e Ø	[mm]	23,5	23,5	33,5	33,5	45	45	55,5	55,5
AF	[mm]	27	27	40	40	slotted nut	slotted nut	slotted nut	slotted nut
g		M18x1,5	M18x1,5	M28x1,5	M28x1,5	M35x1,5	M35x1,5	M45x1,5	M45x1,5
h	[mm]	125,5	157,5	152	178	172	192	183	209
i	[mm]	M6	M6	M8	M8	M10	M10	M12	M12
k Ø (H7)	[mm]	42	42	55	55	70	70	85	85
l ± 3	[mm]	17,5	17,5	18,5	18,5	21	21	24	24
m -1	[mm]	43	59	49	62	60	70	62	75
n min.	[mm]	60	76	66	79	72	82	76	89
o ± 1,5	[mm]	17,5	17,5	18,5	18,5	21	21	24	24
p1	[mm]	M8	M8	M10	M10	M12	M12	M16	M16
p2 Ø	[mm]	6,6	6,6	9	9	11	11	14	14
q Ø	[mm]	44	44	57	57	72	72	87	87
r Ø	[mm]	42	42	55	55	70	70	85	85
s ± 1,5	[mm]	43	43	48	48	51,5	51,5	54	54
t	[mm]	9	9	10	10	11	11	12	12
u Ø	[mm]	5	5	5	5	6	6	6	6
v	[mm]	18	18	20	20	24	24	28	28
w ± 3	[mm]	43	43	48	48	51,5	51,5	54	54
x	[mm]	64	80	77	90	94	104	102	115
y	[mm]	6,5	6,5	6	6	8,5	8,5	10,5	10,5
z	[mm]	13,5	13,5	14,5	14,5	19,5	19,5	23,5	23,5
Overload torque	[Nm]	3,5	3,5	11	11	17	17	30	30



Clamp arms:

For these swing clamps, standard clamp arms are available as accessories.

See data sheet **240-0 «Clamp arms»** (Webcode 024000).

Special clamp arms are available on request.

Dimensions for in-house production of clamp arms:

Piston Ø [mm]	25	40	50	63
Ø ds [mm]	20	32	40	50
x [mm]	16	23	28	34
y [mm]	4	5	5	6
Ø z1 [mm]	24	34	46	56

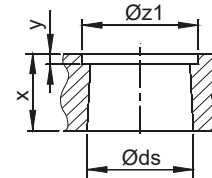
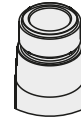
Attention: consider the interference contour for the housing.

Compatible clamp arms:

c d e f

Taper holder (SPK)

taper ratio 1:10

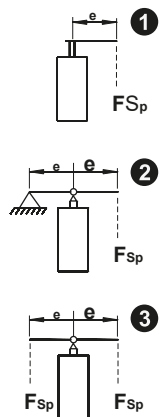


To fix the clamp arms, the swing clamp cylinders are equipped with a hexagon nut.

From a piston Ø of 50 mm, scope of supply includes a slotted nut instead.

See information sheet **«Assembly / disassembly of the clamp arms»**.

Effective clamping force F_{Sp} depending from operating pressure p :



--- double-acting

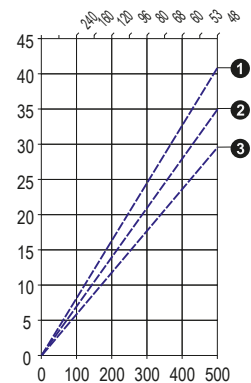
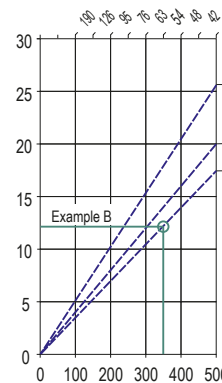
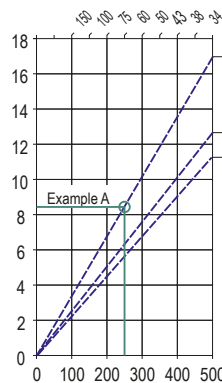
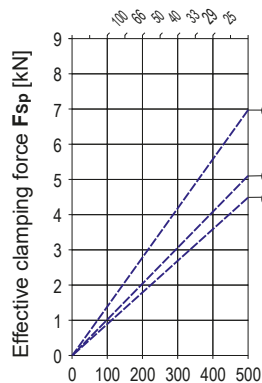
Piston Ø 25 mm

Piston Ø 40 mm

Piston Ø 50 mm

Piston Ø 63 mm

Maximum clamp arm length e [mm], only relevant for single clamp arms type 1



Example A:

- double-acting cylinder, piston Ø 40 mm
 - present operating pressure $p = 250$ bar
 - clamp arm type 1, length $e = 60$ mm
- resulting clamping force $F_{Sp} \sim 8,5$ kN

Example B:

- double-acting cylinder, piston Ø 50 mm
 - present operating pressure $p = 350$ bar
 - clamp arm type 3, length $e = 54$ mm
- resulting clamping force $F_{Sp} \sim 12,6$ kN

Order number key:

Example: **SSZY** - **RD45** - **E4013** - **K10** - **003**

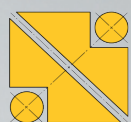
- 1** Swing motion: right turning = **R**, left turning = **L**, neutral 0° = **N**
 Operating method: double-acting = **D**
 Swing angle [degree]: standard = **0, 30, 45, 60, 90**

- 2** Housing design: cartridge design = **E**
 Piston Ø [mm]: see dimension table on page 2
 Clamping stroke [mm]: see dimension table on page 2

- 3** Clamp arm holder: Taper = **K**
 Overload protection: with = **1**
 Position control: without = **0**

- 4** Oil supply: drilled channels = **003**

For additional help in model selection, see data sheet **«Swing Clamp Cylinders - Selection Guide»**.

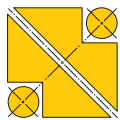


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Swing clamp cylinders

double-acting, for low pressure, pmax. 70 bar

240-70
Issue: 10/2022

Description:

This hydraulic swing clamp cylinder operates as single-acting or double-acting pull cylinder, whereas part of the stroke is used to rotate the piston. The model with 0° swing angle operates only vertical as a pull cylinder.

The swing clamp cylinders are equipped with a reinforced swing mechanism. To guarantee a long lifetime the cylinders have an integrated metal wiper as standard.

For oil supply, the cylinders are equipped with threaded port and manifold connection with O-rings for drilled channels.

Right or left swinging models with 0° and 90° swing angle are available as standard. The special swing angles 30°, 45° and 60° are available on request. The allowed operating pressure is depending on the length of the clamp arm.

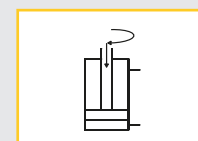
Except from standard clamp arms also custom-designed clamp arms can be assembled. The maximum operating pressure of 70 bar does not apply for each clamp arm length. For details about the allowed operating pressure, see page 3.

The safety instructions for swing clamp cylinders in our catalogue or on our website and the current accident prevention regulations must be considered.

A



Webcode: 024070



Housing design:

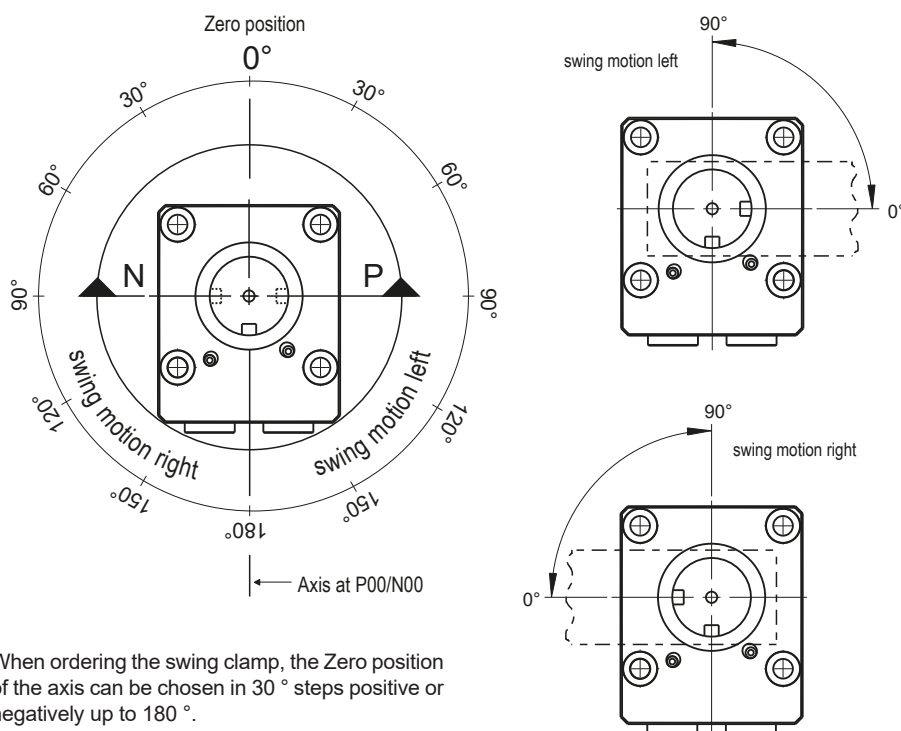
- ✗ **Type A**
(upper flange)

Connections:

- ✗ **G1/4 threaded port**
- ✗ **Manifold with O-ring**

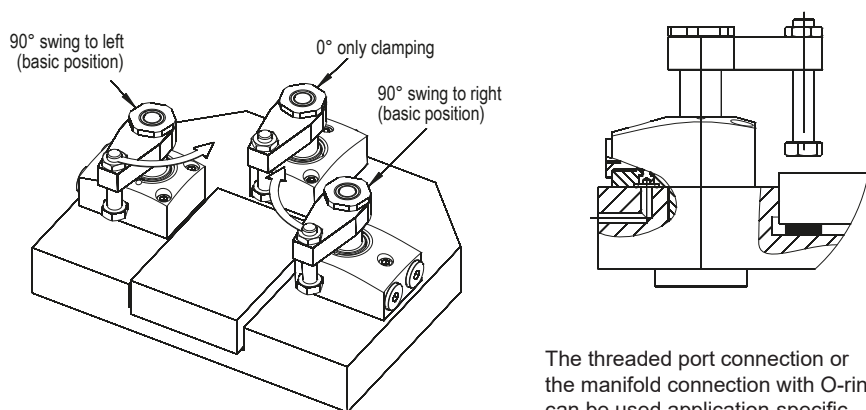
Advantages:

- ✗ **Reinforced swing mechanism**
- ✗ **Compact design**
- ✗ **Long life of the seals**
- ✗ **Easy mounting of clamp arms**
- ✗ **Cost effective and efficient**



When ordering the swing clamp, the Zero position of the axis can be chosen in 30° steps positive or negatively up to 180°.

Application examples:



The threaded port connection or the manifold connection with O-ring can be used application-specific.

We also design and manufacture customized variants!



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35325 Mücke (Germany)

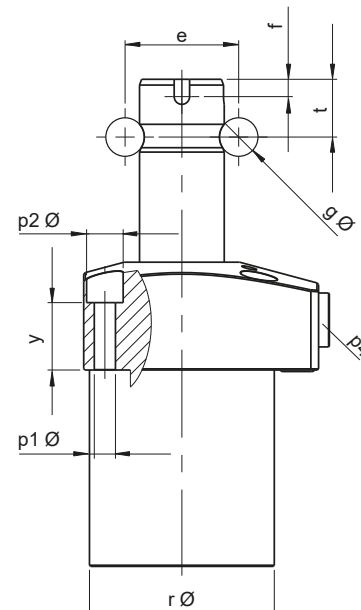
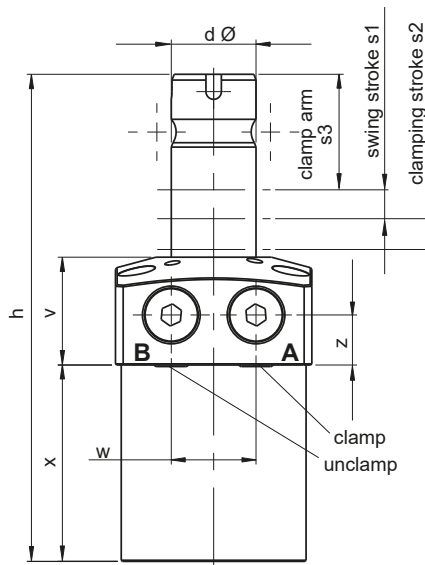
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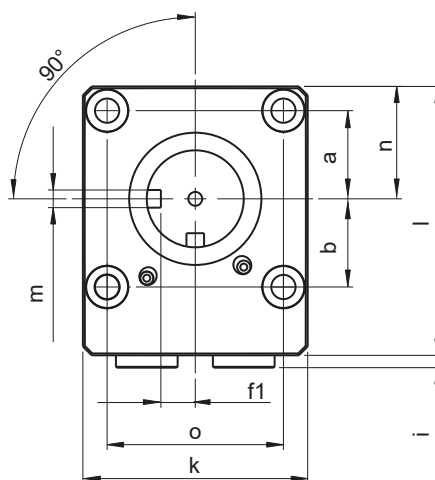
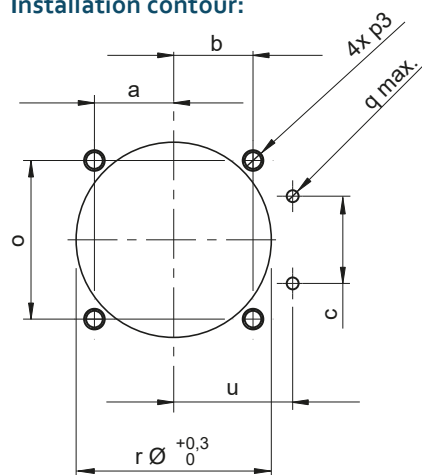


Technical data:

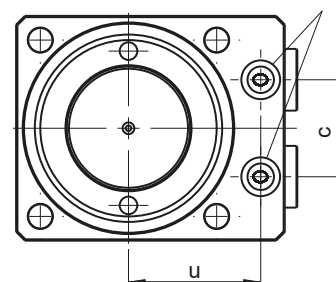
Piston Ø [mm]	37	44	51
Clamping stroke [mm]	8	10	10
a [mm]	20	23,5	27,5
b [mm]	20	23,5	27,5
c [mm]	22	24	30
d Ø [mm]	22	25	30
e [mm]	29,5	34	40
f [mm]	4,5	5	6,5
f1 [mm]	7,8	9	10
g Ø [mm]	10	12	14
h [mm]	126,5	143,5	156
i [mm]	3,0	3	5,5
k [mm]	51	60	70
l [mm]	61	69	81
m [mm]	4 H8	4 H8	6 H8
n [mm]	25,5	30	35
o [mm]	40	47	55
p1 Ø [mm]	5,5	6,8	6,8
p2 Ø [mm]	9,5	11	11
p3	M5	M6	M6
p4	G1/8	G1/8	G1/4
q max. [mm]	3	3	5
r Ø [mm]	48	55	65
s1 [mm]	7,5	8,5	10
s2 [mm]	8	10	10
s3 [mm]	30	34	40
t [mm]	15	17	20
u [mm]	30	33,5	39,5
v [mm]	28	30	31
w [mm]	22	24	30
x [mm]	51	59	63
y [mm]	17,5	17	17
z [mm]	13	12	13



Installation contour:



Piston Ø	O-Ring
37 mm	6x1,5
44 mm	6x1,5
51 mm	7x1,5



Clamp arms:

For these swing clamp cylinders, standard clamp arms are available as accessories. All necessary information about this can be found on the data sheet **240-0 «Clamp arms»** in the catalogue or at www.hydrokomp.de.

Dimensions for in-house production of clamp arms:

Piston Ø [mm]	37	44	51
g Ø [mm]	10	12	14
e [mm]	29,5	34	40
f [mm]	4,5	5	6,5
m [mm]	4H8	4H8	6H8
t [mm]	15	17	20

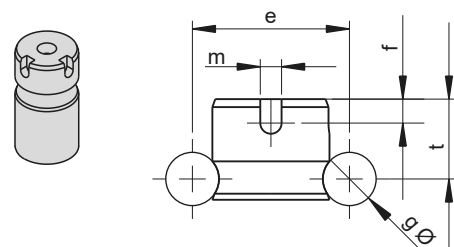
Attention: consider the interference contour for the housing.

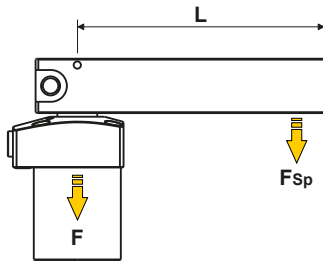
Compatible clamp arms:



Special clamp arms are available on request.

Cylindrical holder (SPZ):



**Piston Ø 37 mm**

Example 1:
predetermined operating pressure
p = 50 bar
required length of clamp arm
L = 120 mm
resulting effective clamping force
F_{Sp} = 2,7 kN

Effective clamping force F_{Sp} in relation to operating pressure p and length of the clamping arm L:

Operating pressure p [bar]	Clamping force, cylinder F [kN]	effective clamping force F _{Sp} [kN] relation to the length of the clamping arm L [mm]							
		50	60	80	100	120	140	160	200
70	4,87	4,3	4,2	4	3,9	3,7	3,6	-	-
65	4,52	4	3,9	3,7	3,6	3,4	3,3	-	-
60	4,17	3,7	3,6	3,5	3,3	3,2	3,1	2,9	-
55	3,82	3,4	3,3	3,2	3	2,9	2,8	2,7	2,5
50	3,48	3,1	3	2,9	2,8	2,7	2,6	2,5	2,3
45	3,13	2,8	2,7	2,6	2,5	2,4	2,3	2,2	2
40	2,78	2,5	2,4	2,3	2,2	2,1	2,1	2	1,8
35	2,43	2,2	2,1	2	2	1,9	1,8	1,7	1,6
30	2,09	1,9	1,8	1,7	1,7	1,6	1,6	1,5	1,4
25	1,74	1,6	1,5	1,5	1,4	1,4	1,3	1,2	1,2
20	1,39	1,3	1,2	1,2	1,1	1,1	1	1	0,9
15	1,04	1	0,9	0,9	0,9	0,8	0,8	0,8	0,7
Maximum operating pressure p _{max.} [bar]		7	7	7	7	7	7	6,6	5,7

Piston Ø 44 mm

Example 2:
required effective clamping force
F_{Sp} > 4,2 kN
required length of clamp arm
L = 60 mm
resulting min. operating pressure.
p_{min.} = 50 bar

Operating pressure p [bar]	Clamping force, cylinder F [kN]	effective clamping force F _{Sp} [kN] relation to the length of the clamping arm L [mm]							
		50	60	80	100	120	140	160	200
70	7,21	6,3	6,2	5,9	5,6	5,4	5,2	-	-
65	6,69	5,8	5,7	5,5	5,2	5	4,8	-	-
60	6,18	5,4	5,3	5,1	4,8	4,6	4,4	4,2	-
55	5,66	5	4,8	4,6	4,4	4,2	4,1	3,9	3,6
50	5,15	4,5	4,4	4,2	4	3,9	3,7	3,5	3,2
45	4,63	4,1	4	3,8	3,6	3,5	3,3	3,2	2,9
40	4,12	3,6	3,5	3,4	3,2	3,1	3	2,8	2,6
35	3,60	3,2	3,1	3	2,8	2,7	2,6	2,5	2,3
30	3,09	2,7	2,7	2,6	2,4	2,3	2,2	2,1	2
25	2,57	2,3	2,2	2,1	2	2	1,9	1,8	1,6
20	2,06	1,8	1,8	1,7	1,6	1,6	1,5	1,4	1,3
15	1,54	1,4	1,4	1,3	1,2	1,2	1,1	1,1	1
Maximum operating pressure p _{max.} [bar]		7	7	7	7	7	7	6,4	5,6

Piston Ø 51 mm

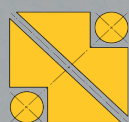
Example 3:
predetermined operating pressure
p = 70 bar
required effective clamping force
F_{Sp} > 7,5 kN
resulting max. length of clamp arm
L_{max.} = 80 mm

Operating pressure p [bar]	Clamping force, cylinder F [kN]	effective clamping force F _{Sp} [kN] relation to the length of the clamping arm L [mm]							
		50	60	80	100	120	140	160	200
70	9,35	8,1	7,9	7,6	7,3	-	-	-	-
65	8,68	7,5	7,3	7,0	6,7	6,5	-	-	-
60	8,02	6,9	6,8	6,5	6,2	6,0	5,7	-	-
55	7,35	6,4	6,2	6	5,7	5,5	5,3	5	-
50	6,68	5,8	5,7	5,4	5,2	5	4,8	4,6	-
45	6,01	5,2	5,1	4,9	4,7	4,5	4,3	4,1	3,8
40	5,34	4,6	4,5	4,4	4,2	4	3,8	3,7	3,4
35	4,68	4,1	4	3,8	3,7	3,5	3,4	3,2	3
30	4,01	3,5	3,4	3,3	3,1	3	2,9	2,8	2,5
25	3,34	2,9	2,9	2,7	2,6	2,5	2,4	2,3	2,1
20	2,67	2,3	2,3	2,2	2,1	2	1,9	1,9	1,7
15	2	1,8	1,7	1,7	1,6	1,5	1,5	1,4	1,3
Maximum operating pressure p _{max.} [bar]		7	7	7	7	7	7	5,6	4,8

Order number key:Example: **SSZY** - **RD90** - **A3708** - **Z70** - **P030** - **002**

- 1** **Swing motion:** right turning = **R**, left turning = **L**, neutral 0° = **N**
Operating method: double-acting = **D**
Swing angle [degree]: standard 0° = **00**, 90° = **90**
- 2** **Housing design:** upper flange = **A**
Piston Ø [mm]: standard = **37, 44, 51**
Clamping stroke [mm]: standard = **08, 10** (according to the dimension table on page 2)
- 3** **Clamp arm holder:** cylindrical holder = **Z**
Operating pressure [bar]: p_{max.} = **70**
- 4** **Basic position:** negative = **N**, positive = **P**
Angular position [degree] angular position in relation to the Zero position of the axis (see page 1)
- Oil supply:** threaded port = **001**, manifold with O-ring = **002**

For additional help in model selection, see data sheet «Swing Clamp Cylinders - Selection Guide».

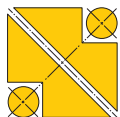


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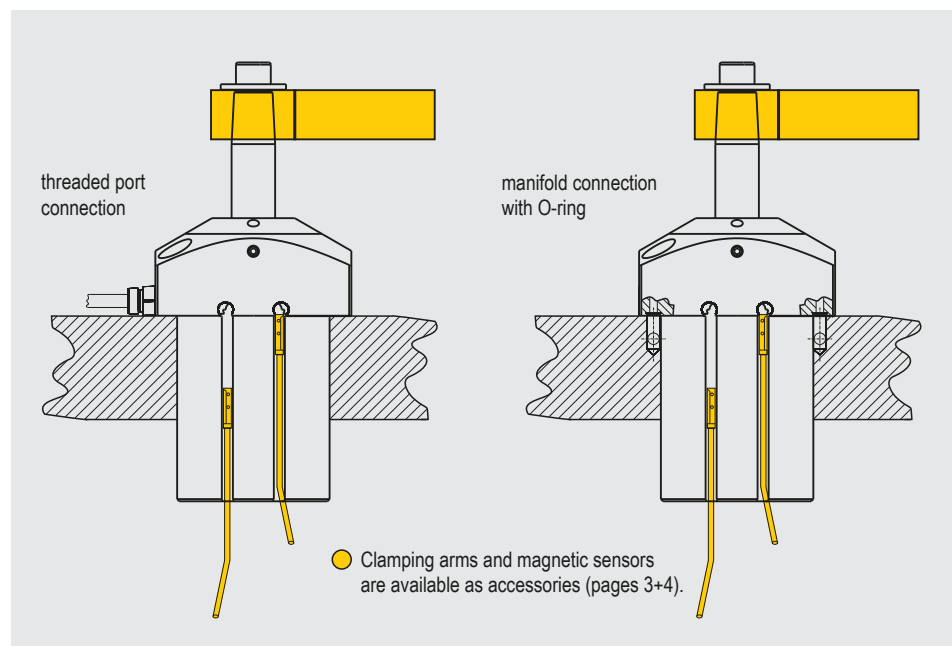
Pneumatic swing clamp cylinders

for magnetic sensors, upper flange, double-acting, pmax. 7 bar

240-80

Issue: 10/2022

Installation examples:



Description:

Swing clamps of this design are used as pull-type cylinders. Pressure is applied to the annular surface of the piston for tensioning. During the linear movement, the piston also moves rotationally determined by the selected swing curve at a defined angle. Only after the linear and rotational movements are completed, the piston will move linearly in the clamping area. It is important that the swing movement of the mounted clamping arm is not hindered, because an overload or collision protection is not included in the design. Overload protection can be found in many Hydrokomp hydraulic swing clamps.

The pneumatic swing clamps are equipped with a permanent magnet on the piston. With the magnetic sensors available as accessories, positions of the piston can be measured and confirmed. This allows, for example, monitoring the open and clamped position of the piston for automated loading and unloading of the machine fixture.

Operation:

The clamping force of these cylinders is dependent on the pressure applied. It is very important that compressed air is supplied via a suitable pneumatic maintenance unit in order to ensure the necessary condition of the compressed air: The speed of the clamping process can be influenced via throttle valves if necessary. The general operating conditions for pneumatic systems must be complied with.

Operating conditions:

The maximum operating temperature of the pneumatic swing clamp cylinders and the magnetic sensors must not exceed 80°C.

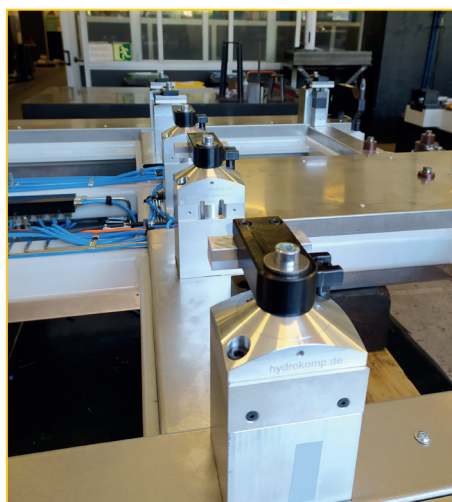
Special notes:

The magnetic sensors react to the permanent magnet inside the cylinder. Steel chips from machining or other outside influences can impact the magnetic field, therefore the switching point can change.

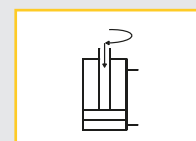
For this reason steel materials should not come close to the cylinder. A minimum distance of 30 mm should be maintained.

The safety instructions for swing clamp cylinders (in the catalog or on the web) and the applicable accident prevention regulations must be followed.

Application example:



Webcode: 024080



Housing design:

- ✗ **Type A**
(upper flange)

Connection types:

- ✗ Threaded port
- ✗ Manifold with O-rings

Advantages:

- ✗ Monitoring of piston position
- ✗ Low component height after installation
- ✗ Compressed air supply through drilled channels or threaded ports
- ✗ Fixture can be easily loaded and unloaded
- ✗ Easy to assemble with self designed clamping arms
- ✗ Standard and special clamping arms are available (see page 3)

We also design and manufacture customized variants!



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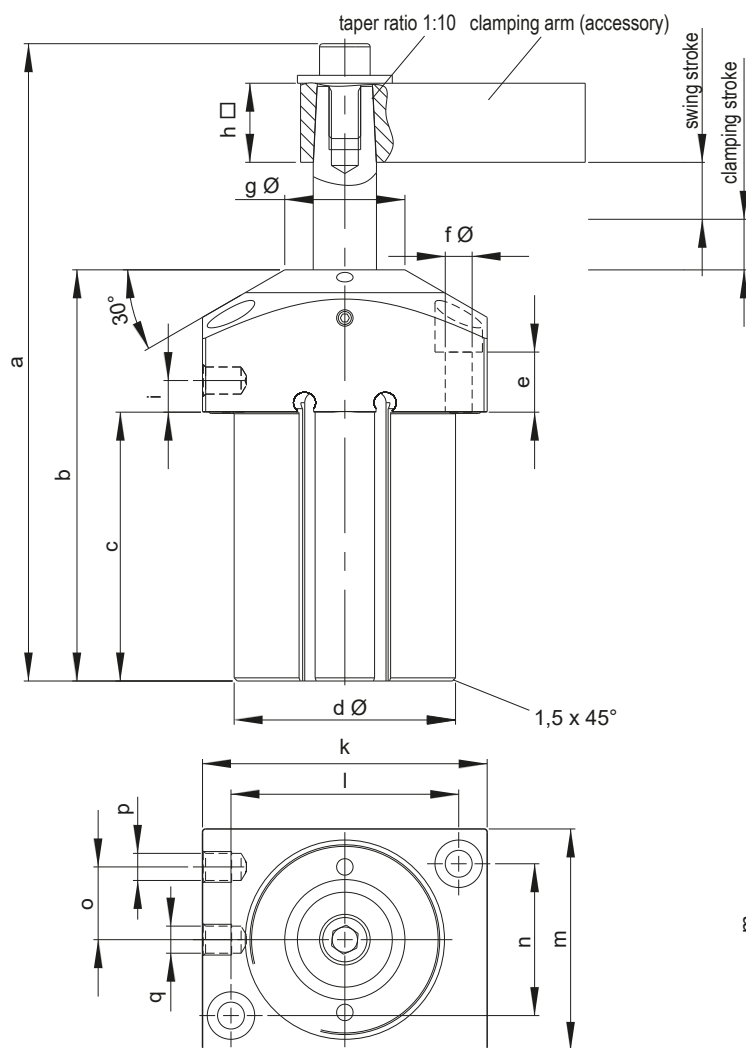
+49 6401 225999-0

sales@hydrokomp.de

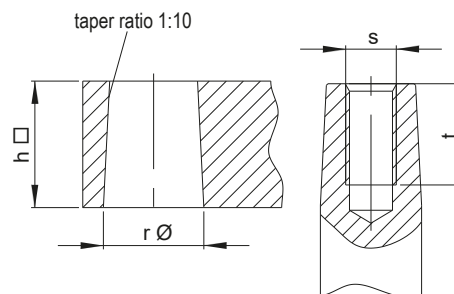
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35325 Mücke (Germany)

www.hydrokomp.de

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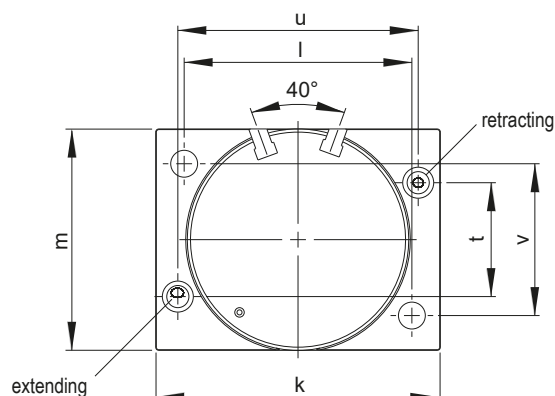


Clamp arm holder SPK



Flange type

O-rings are included.



Technical data:

Piston Ø:	[mm]	20	32	40	50	63
Rod Ø	[mm]	8	12	16	20	25
Swing stroke	[mm]	7,5	9,5	17	18	23
Clamping stroke	[mm]	7	9	15	15	18
Total stroke	[mm]	14,5	18,5	32	33	41
Tractive force at 4 bar	[N]	105,5	246,4	422,2	659,7	1050,5
Tractive force at 5 bar	[N]	131,9	345,5	527,7	824,6	1313,1
Tractive force at 6 bar	[N]	158,3	414,6	633,3	989,6	1575,8
Operating pressure, min.	[bar]	3	3	3	3	3
Operating pressure, max.	[bar]	7	7	7	7	7
Swing angle	[degree]	90° ± 2°	90° ± 2°	90° ± 2°	90° ± 2°	90° ± 2°
a	[mm]	120	143	189	202	239,5
b	[mm]	76	94,5	120,5	130	150
c	[mm]	48	61	84	85	91
d Ø -0,20	[mm]	40	52	60	70	85
e	[mm]	7,5	11	15	19	27
f Ø	[mm]	5,5	6,5	6,5	8,5	8,5
g Ø	[mm]	14	24	30	38	42
h □	[mm]	12	16	20	25	30
i	[mm]	6	6,5	8,5	10	13
k	[mm]	60	68	80	90	106
l	[mm]	44	54	62	72	86
m	[mm]	40	52	60	70	85
n	[mm]	25	36	42	48	66
o	[mm]	12,8	15	22	23	30,3
p	[mm]	M5	M5	G1/8	G1/8	G1/4
q	[mm]	M5	M5	G1/8	G1/8	G1/4
r Ø +0,05	[mm]	7,85	11,85	15,85	19,85	24,85
s	[mm]	M4	M6	M8	M10	M12
t	[mm]	9	15	18	19	25
u	[mm]	47	56	67	76	90
v	[mm]	25	36	42	48	66
O-ring for flange type		4,5x1,5	4,5x1,5	4,5x1,5	7x1,5	7x1,5
Weight	[kg]	0,5	0,8	1,2	1,7	2,8



Order number key:

Example **SSZYP** – **LD90** – **A2007** – **K00** – **001**

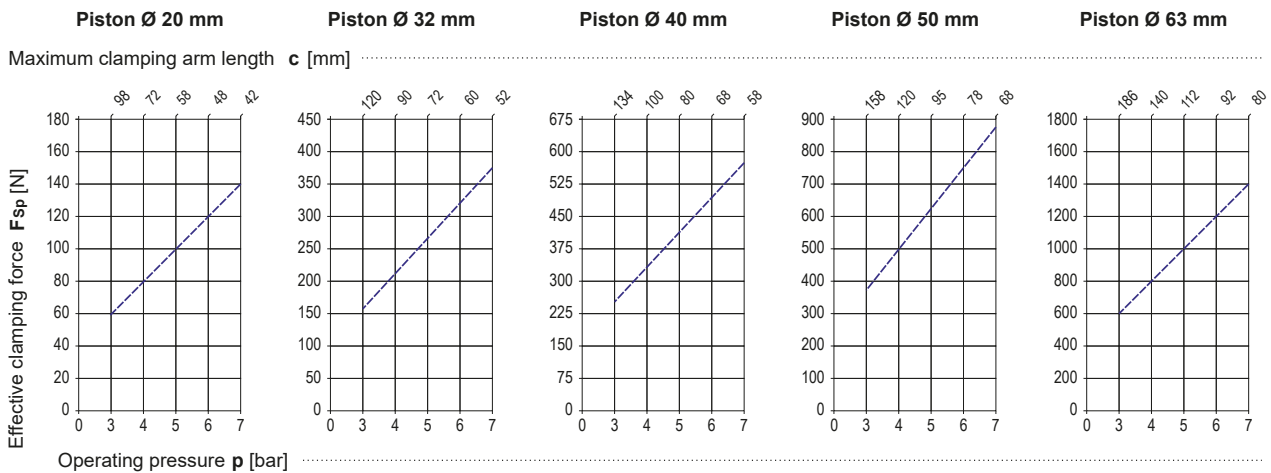
1 Swing motion: right turning = **R**, left turning = **L**
Operating method: double-acting = **D**
Swing angle [degree]: standard = **90**

2 Housing design: upper flange = **A**
Piston Ø [mm]: see dimension table on page 2
Clamping stroke [mm]: see dimension table on page 2

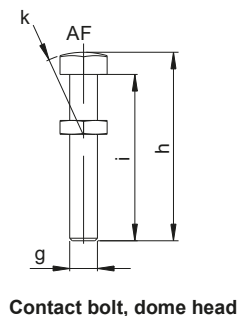
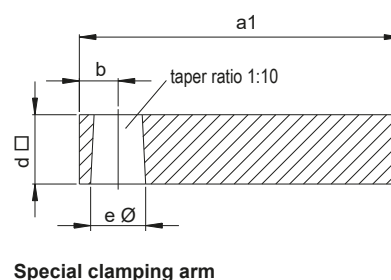
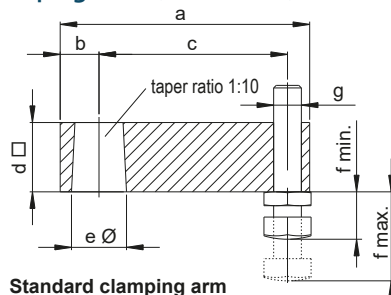
3 Clamp arm holder: taper = **K**
Overload protection: without = **0**
Position control: without = **0**

4 Connection type: threaded port = **001**, Manifold with O-ring = **002**

Effective clamping force P_{sp} depending from operating pressure p :



Clamping arms (accessories):

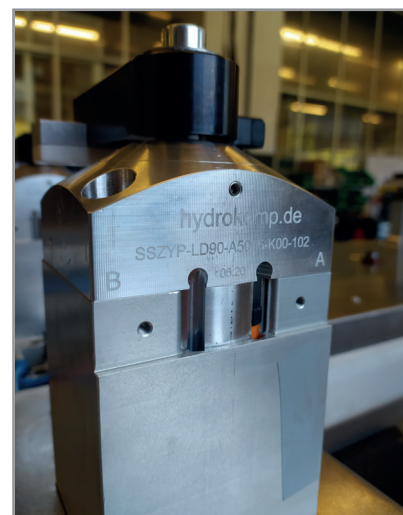
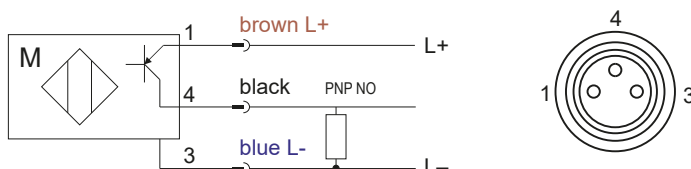


for SSZYP with Piston Ø: [mm]	20	32	40	50	63
a	54	68	78	90	10
a1	62	72	95	116	143
b	7	10	12	14	18
c	42	52	58	68	80
d	12	16	20	25	30
e Ø +0,05	7,85	11,85	15,85	19,85	24,85
f min.	8	12	12	15	19
f max.	28	27	42	42	56
g	M4	M6	M6	M8	M10
h	32,5	33,5	48,5	50	66,5
i	30	30	45	45	60
k	15	20	20	20	35
AF	7	10	10	13	17
Order numbers:					
Standard clamping arm	SPK-K08-042-002	SPK-K12-052-002	SPK-K16-058-002	SPK-K20-068-002	SPK-K25-080-002
Special clamping arm	SPK-K08-062-003	SPK-K12-072-003	SPK-K16-095-003	SPK-K25-116-003	SPK-K25-143-003
Contact bolt, dome head	7004 – 057	7006-105	7006-106	7008-134	7010-072



Technical drawing of the LED cable assembly showing dimensions in mm:

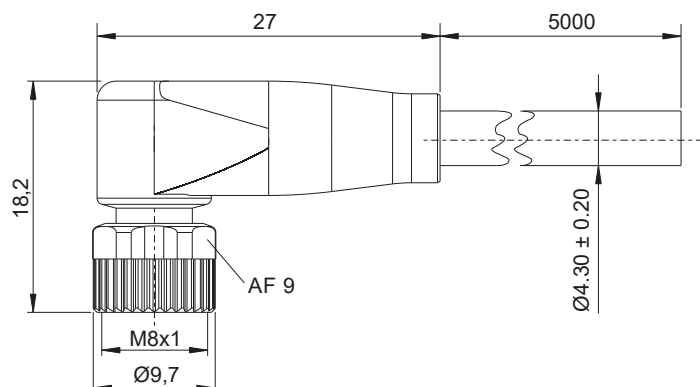
- LED head length: 27
- LED head width: 23,5
- LED head height: 5,5
- Cable body diameter: Ø2,5
- Cable body length: 300
- Connector length: 41,5 max.
- Connector thread: M8x1
- Connector outer diameter: max. Ø10



Technical data:

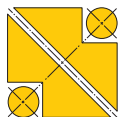
Dimension	23.5 x 5 x 5.5 mm
Connection	M8x1-Male, 3-pin
Cable	PUR, 0.3 m
Cable diameter	2.5 mm
Short-circuit protection	yes
Polarity reversal protected	yes
Function indicator	LED
Mounting	can be installed in T-slot from above
Housing material	PA 12
Switching output	PNP normally open (NO)
Switching frequency	3000 Hz
Operating voltage U_b	10...30 VDC
Ambient temperature	-25...85 °C
IP rating	IP67
Approval/Conformity	CE, cULus, EAC, WEEE
Order number	8500-095

Cordset with angular plug:



Technical data:

Connection	M8x1-Female, right-angle, 3-pin, A-coded
Cable	PUR black, 5.0 m, Drag chain compatible
Number of conductors	3
Conductor cross-section	0.34 mm²
Cable temperature, fixed routing	-50...90 °C
Cable temperature, flexible routing	-25...90 °C
Operating voltage U _b	60 VDC / 60 VAC
Rated current (40° C)	4.0 A
IP rating	IP67, IP69K
Approval/Conformity	CE, cULus, EAC, WEEE
Order number	8500-096

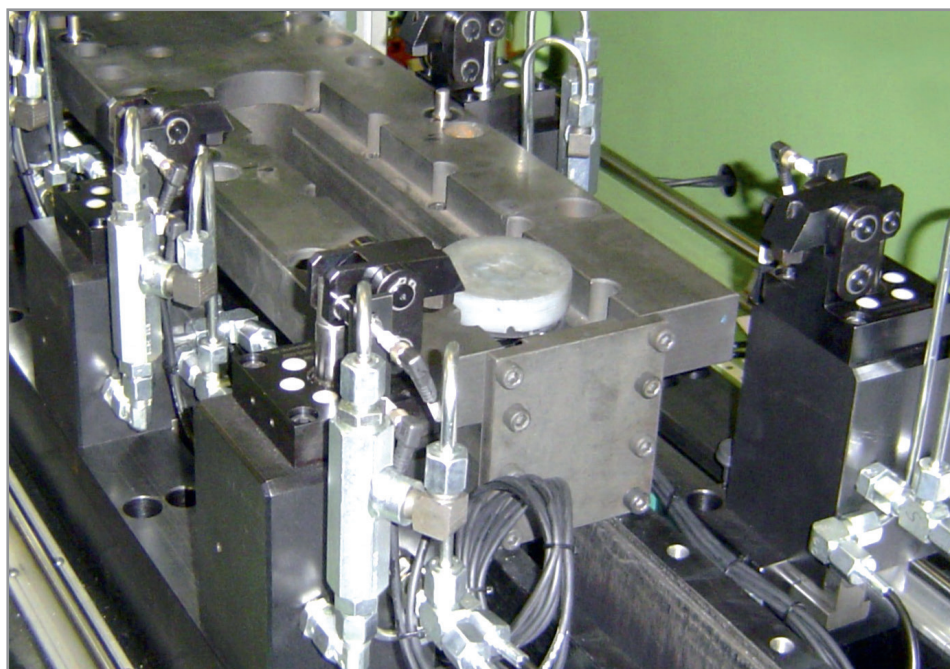


Lever clamp cylinders

without/with position control, double-acting pmax. 350 bar

250-1

Issue: 10/2022



Application example break test bench:

Various workpieces are clamped by various adapters. Test specimens are changed every five minutes. Six lever clamp cylinders operate with two clamping circuits. Additional protection is provided by piloted check valves. Originally, the workpieces were fastened with screws. It used to take one minute to change a workpiece. With the lever clamp cylinders from HYDROKOMP it takes only five seconds to change one workpiece.

Description:

Lever clamp cylinders are primarily meant for individual cases, where the clamping position needs to be free for handling when the workpiece is unclamped.

Compared to swing clamp cylinders, lever clamp cylinders have a more compact design and higher clamping load.

Lever clamp cylinders are especially meant for those cases, where bothering contours make the use of swing clamp cylinders unsuitable.

Through a piston the high force density is induced into the clamp lever.

Since the clamp lever has a movable position, the clamping point can be fully released. Besides the standard clamp lever also special clamp levers can be mounted. The resulting clamping load can be determined through the chart on page 6.

Operating conditions:

The lever clamp cylinder is only double-acting, hydraulic. Therefore, clear clamping times and unclamping times are given.

For hydraulic oil supply G1/8 resp. G1/4 threaded port or manifold connection with O-ring can be used optional.

In horizontal position the clamp lever provides its optimal clamping load. Workpiece tolerances with a position deviation of appr. $\pm 8.5^\circ$ can be compensated easily.

Position control (optional):

The lever clamp cylinder can be equipped with full-length piston rod. The survey can be made through inductive or pneumatic proximity switch.

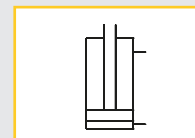
On our website www.hydrokomp.de you can download 2D and 3D files of our lever clamp cylinders.

General technical data:

Piston Ø	[mm]	16	25	40
Maximum operating pressure	[bar]	350	350	200
Clamping force at 100 bar	[kN]	1,5	3,9	9,5
Clamping force at max. operating pressure	[kN]	5,2	13,8	19,0



Webcode: 025001



Connections:

- ✗ G1/8 or G1/4 threaded port
- ✗ Manifold connection with O-ring
- ✗ Built-in version

Advantages:

- ✗ Protecting metal wiper
- ✗ Partly retractable housing
- ✗ Oil supply through drilled channels or threaded ports
- ✗ Various installation options
- ✗ Fixture can be easily loaded and unloaded
- ✗ Clamp arms can be optimized on workpiece (see page 6)
- ✗ Inductive or pneumatic position control available (see page 5)

We also design and manufacture customized variants!



HYDROKOMP®

Hydraulische Komponenten GmbH

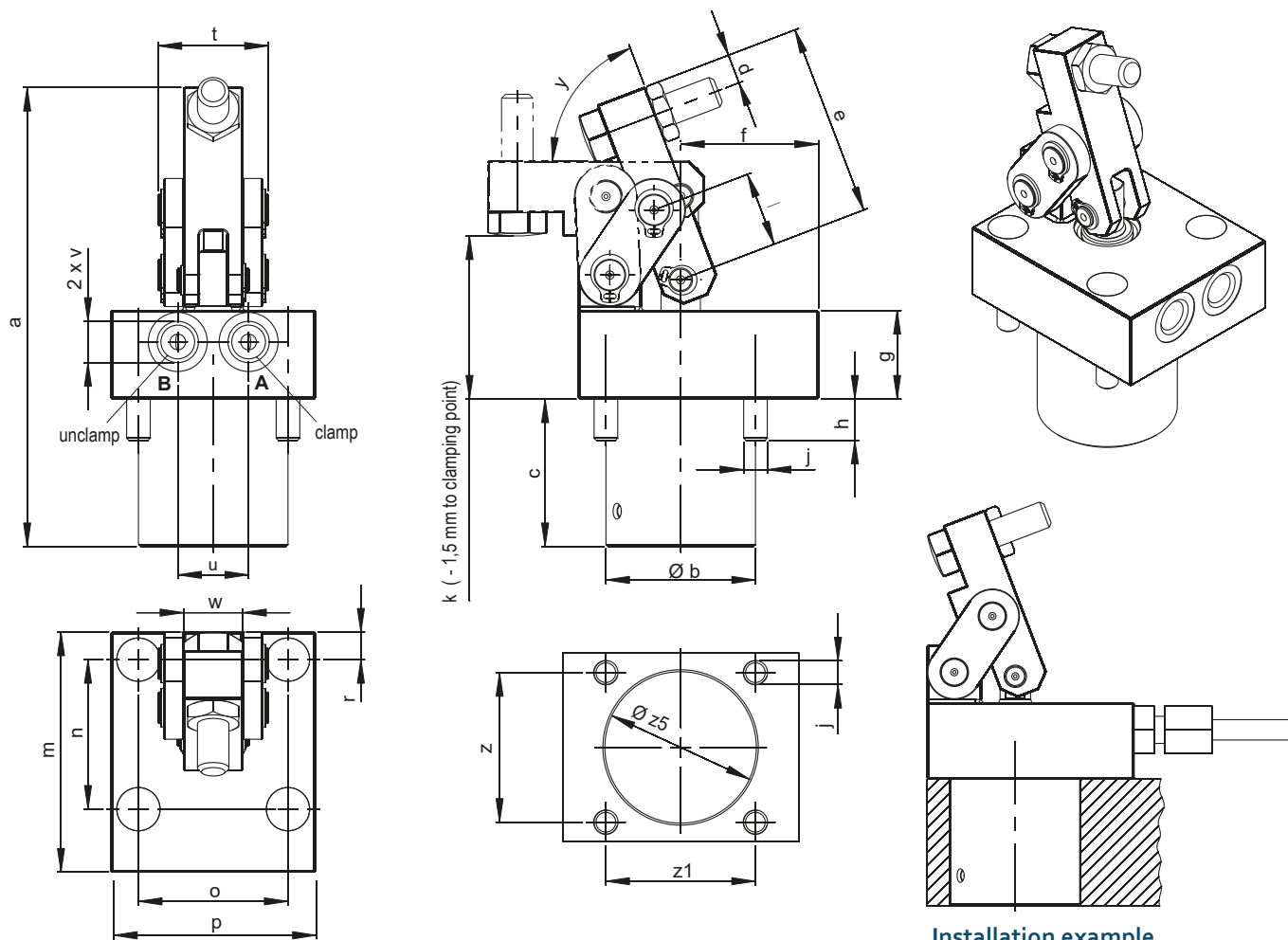
+49 6401 225999-0

sales@hydrokomp.de

Siemenstr. 16
35325 Mücke (Germany)

www.hydrokomp.de

Technology that connects



Installation example

Technical data:

Piston Ø	[mm]	16	25	40
Max. operating pressure (pmax.)	[bar]	350	350	200
Clamping force at 100 bar	[kN]	1,5	3,9	9,5
Clamping force at pmax.	[kN]	5,2	13,8	19
a	[mm]	117	156	191
b Ø	[mm]	38	50	70
c	[mm]	37,5	54	67,7
d	[mm]	7,5	10	10
e	[mm]	49	63,5	82,5
f	[mm]	35	44	40,5
g	[mm]	22,5	22	25
h	[mm]	10,5	19	20
j	[mm]	M6, 12 deep	M8, 22 deep	M10, 22 deep
k	[mm]	41,5	50	65
l	[mm]	19	24	31,5
m	[mm]	61	80	85
n	[mm]	38	56	62
o	[mm]	38	56	78
p	[mm]	52	72	100
q	[mm]	-	-	-
r	[mm]	7	8	13,5
s	[mm]	-	-	-
t	[mm]	28	44	66
u	[mm]	18	25	32
v	[mm]	G1/8	G1/4	G1/4
w	[mm]	15	24	36
x	[mm]	-	-	-
y	[degrees]	69	65	65
z	[mm]	38	56	78
z1	[mm]	38	56	62
z2	[mm]	-	-	-
z3	[mm]	-	-	-
z4	[mm]	-	-	-
z5 Ø	[mm]	38,5	50,5	70,5
Order no.		HSZY-016-001	HSZY-025-001	HSZY-040-001

Scope of supply includes:

- 4 pce mounting screws
- 4 pce plastic covers

Spare parts:

✘ Clamp arms (standard)

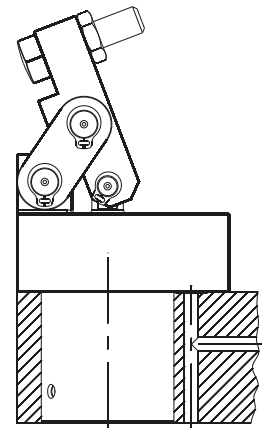
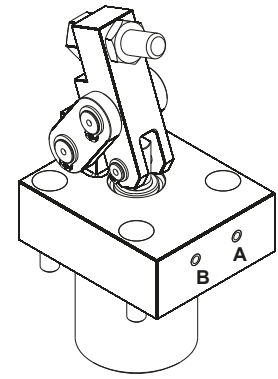
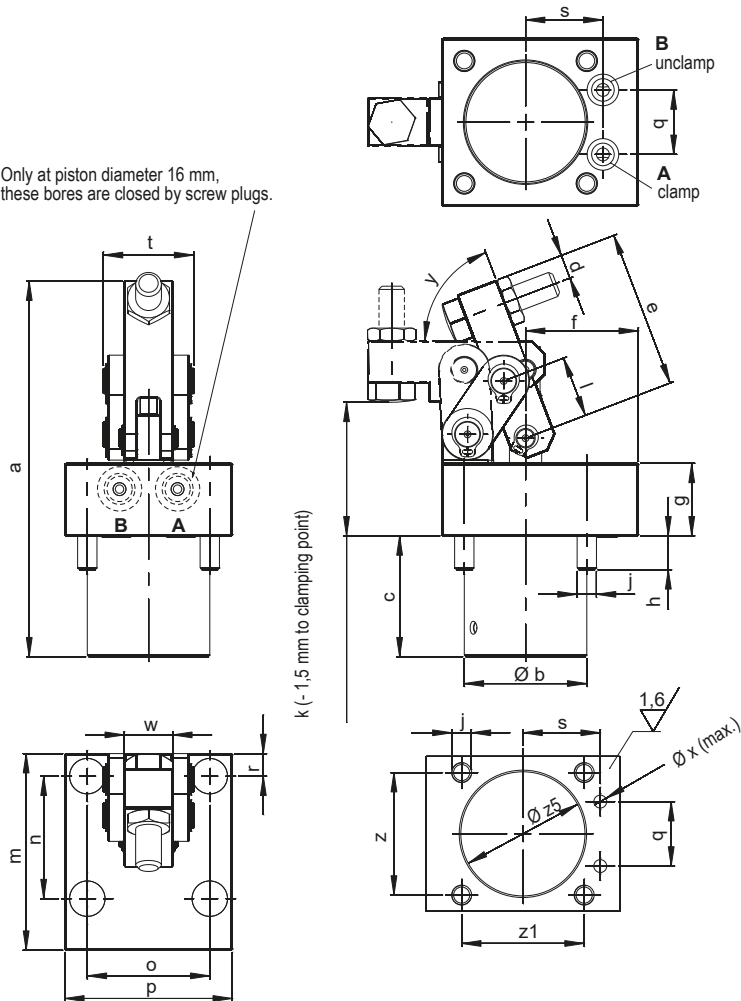
for piston Ø	Order no.
16 mm	5016-001
25 mm	5024-001
40 mm	5036-001

✘ Contact bolts

for piston Ø	Order no.
16 mm	7013-002
25 mm	7017-001
40 mm	7017-001



Only at piston diameter 16 mm,
these bores are closed by screw plugs.



Installation example

Technical data:

Piston Ø	[mm]	16	25	40
Max. operating pressure (pmax.)	[bar]	350	350	200
Clamping force at 100 bar	[kN]	1,5	3,9	9,5
Clamping force at pmax.	[kN]	5,2	13,8	19
a	[mm]	117	156	191
b Ø	[mm]	38	50	70
c	[mm]	37,5	54	67,7
d	[mm]	7,5	10	10
e	[mm]	49	63,5	82,5
f	[mm]	35	36	50,5
g	[mm]	22,5	22	25
h	[mm]	10,5	19	20
j	[mm]	M6, 12 deep	M8, 22 deep	M10, 22 deep
k = optimal clamping point	[mm]	41,5	50	65
l	[mm]	19	24	31,5
m	[mm]	61	72	95
n	[mm]	38	56	62
o	[mm]	38	56	78
p	[mm]	52	72	100
q	[mm]	20	27	29
r	[mm]	7	8	13,5
s	[mm]	24	28,1	42
t	[mm]	28	44	66
u	[mm]	-	-	-
v	[mm]	-	-	-
w	[mm]	15	24	36
x Ø	[mm]	4	4	5
y	[degree]	69	65	65
z	[mm]	38	56	78
z1	[mm]	38	56	62
z2	[mm]	-	-	-
z3	[mm]	-	-	-
z4	[mm]	-	-	-
z5 Ø	[mm]	38,5	50,5	70,5
Order no.		HSZY-016-002	HSZY-025-002	HSZY-040-002

Scope of supply includes:

4 pce mounting screws
4 pce plastic covers
2 pce O-rings

Spare parts:

Clamp arms (standard)

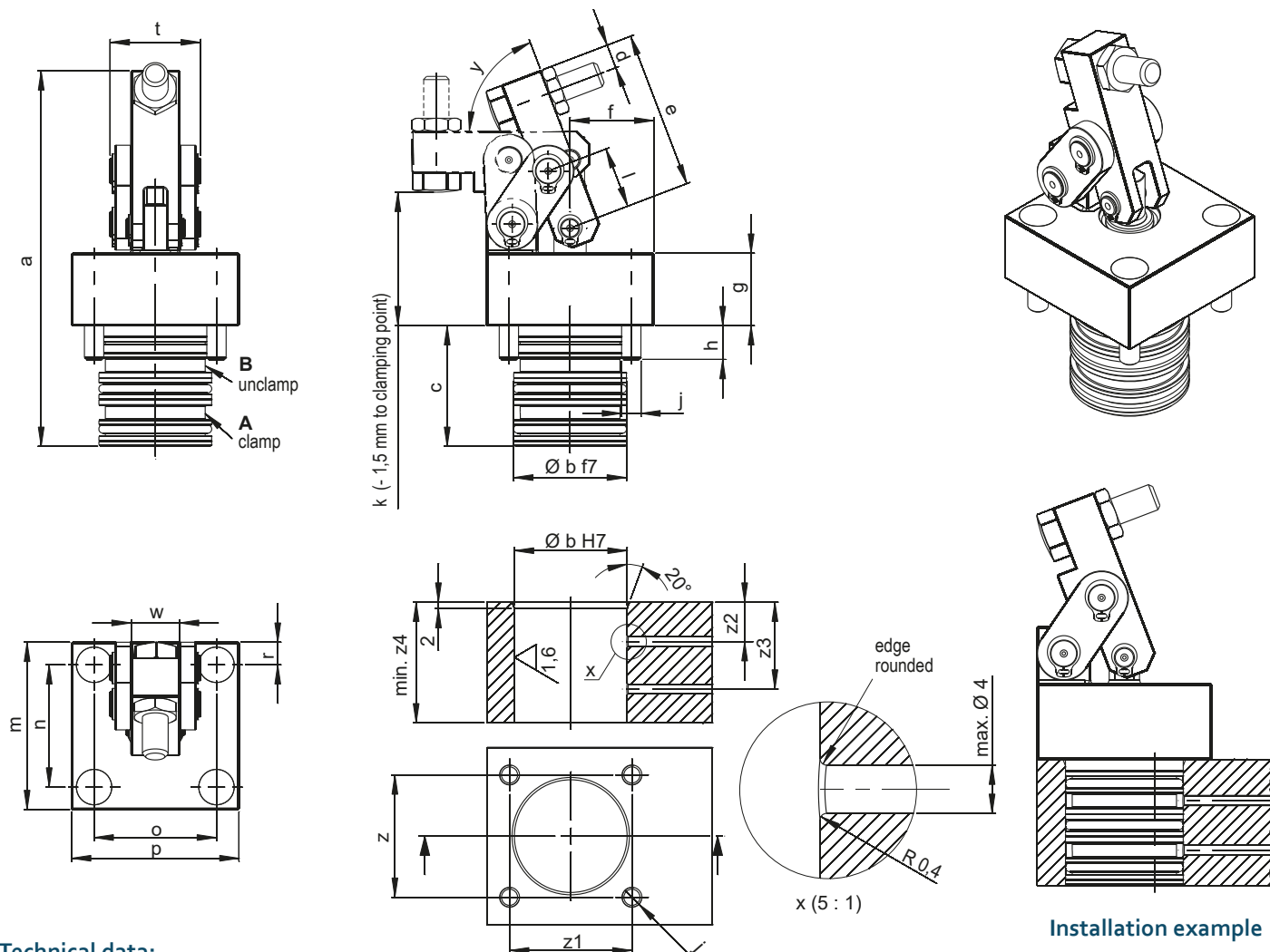
for piston Ø	Order no.
16 mm	5016-001
25 mm	5024-001
40 mm	5036-001

Contact bolts

for piston Ø	Order no.
16 mm	7013-002
25 mm	7017-001
40 mm	7017-001

O-Rings Manifold connection

for piston Ø	Order no.
16 mm	6009-011
25 mm	6010-020
40 mm	6010-020



Technical data:

Piston Ø	[mm]	16	25	40
Max. operating pressure (pmax.)	[bar]	350	350	200
Clamping force at 100 bar	[kN]	1,5	3,9	9,5
Clamping force at pmax.	[kN]	5,2	13,8	19
a	[mm]	117	156	191
b Ø	[mm]	35 H7/f7	50 H7/f7	70 H7/f7
c	[mm]	37,5	54	67,7
d	[mm]	7,5	10	10
e	[mm]	49	63,5	82,5
f	[mm]	26	36	40,5
g	[mm]	22,5	22	25
h	[mm]	10,5	19	20
j	[mm]	M6, 12 deep	M8, 22 deep	M10/22 deep
k	[mm]	41,5	50	65
l	[mm]	19	24	31,5
m	[mm]	52	72	85
n	[mm]	38	56	62
o	[mm]	38	56	78
p	[mm]	52	72	100
q	[mm]	-	-	-
r	[mm]	7	8	13,5
s	[mm]	-	-	-
t	[mm]	28	44	66
u	[mm]	-	-	-
v	[mm]	-	-	-
w	[mm]	15	24	36
x	[mm]	-	-	-
y	[degree]	69	65	65
z	[mm]	38	56	78
z1	[mm]	38	56	62
z2	[mm]	12,25	25,2	22 - 25
z3	[mm]	27	41,8	44 - 53
z4	[mm]	38	55	68
z5	[mm]	-	-	-
Order no.		HSZY-016-003	HSZY-025-003	HSZY-040-003

Installation example

Scope of supply includes:

- 4 pce mounting screws
- 4 pce plastic covers

Spare parts:

✖ Clamp arms (standard)

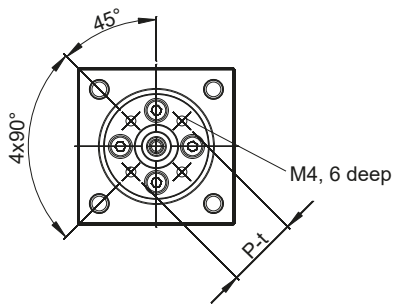
for piston Ø	Order no.
16 mm	5016-001
25 mm	5024-001
40 mm	5036-001

✖ Contact bolts

for piston Ø	Order no.
16 mm	7013-002
25 mm	7017-001
40 mm	7017-001

✖ Seal kits (outside)

for piston Ø	Order no.
16 mm	DS-HSZY-016-003
25 mm	DS-HSZY-025-003
40 mm	DS-HSZY-040-003



Inductive position control:

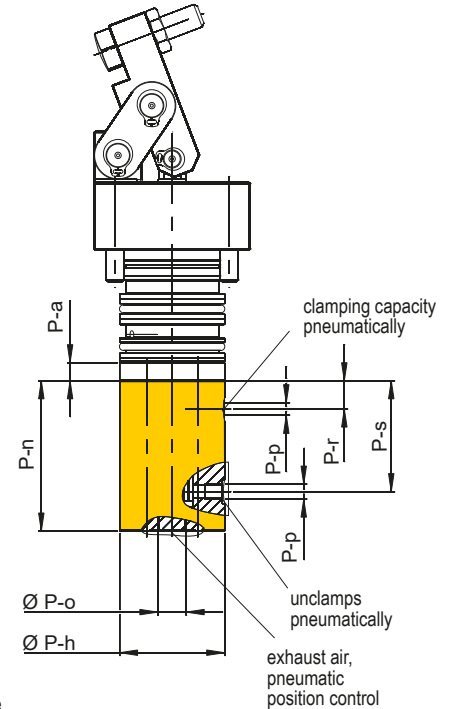
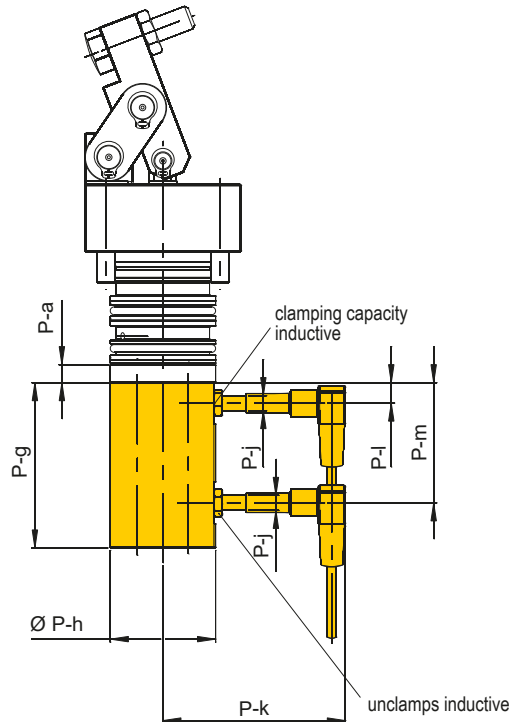
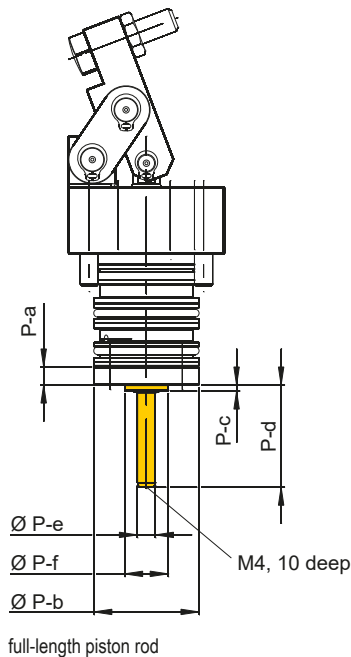
Housing 4 x 90°, rotatable

Accessories / Spare parts:

Proximity switch	Order no. 8500-035
Plug with cable (length 5 m)	Order no. 8500-036

Pneumatic position control:

Housing 4 x 90°, rotatable



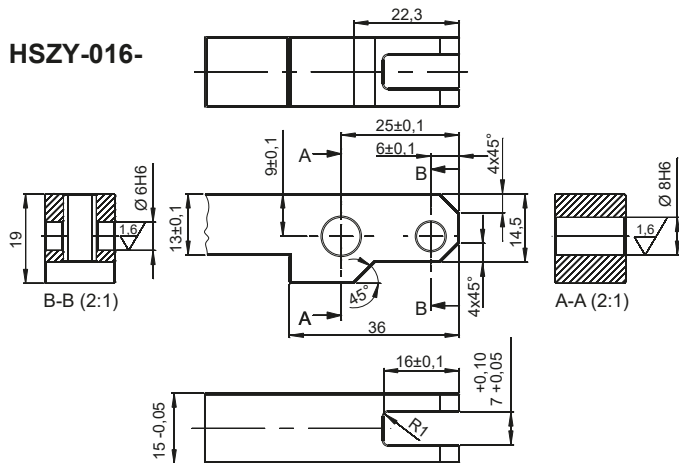
Design		Threaded port			Manifold connection			Built-in cylinder		
Piston Ø	[mm]	16	25	40	16	25	40	16	25	40
P-a	[mm]	6	6	request	6	6	request	6	6	request
P-b Ø	[mm]	35	50	//	35	50	//	35	50	//
P-c	[mm]	2	2	//	2	2	//	2	2	//
P-d	[mm]	34	34	//	34	34	//	34	34	//
P-e Ø	[mm]	6	6	//	6	6	//	6	6	//
P-f Ø	[mm]	14,5	14,5	//	14,5	14,5	//	14,5	14,5	//
P-g	[mm]	55	55	//	55	55	//	55	55	//
P-h Ø	[mm]	35	35	//	35	35	//	35	35	//
P-j	[mm]	M5x0,5	M5x0,5	//	M5x0,5	M5x0,5	//	M5x0,5	M5x0,5	//
P-k	[mm]	ca. 60	ca. 60	//	ca. 60	ca. 60	//	ca. 60	ca. 60	//
P-l	[mm]	6,8	6,8	//	6,8	6,8	//	6,8	6,8	//
P-m	[mm]	40	40	//	40	40	//	40	40	//
P-n	[mm]	50	50	//	50	50	//	50	50	//
P-o Ø	[mm]	G1/8	G1/8	//	G1/8	G1/8	//	G1/8	G1/8	//
P-p	[mm]	M5	M5	//	M5	M5	//	M5	M5	//
P-r	[mm]	9,4	9,4	//	9,4	9,4	//	9,4	9,4	//
P-s	[mm]	36,9	36,9	//	36,9	36,9	//	36,9	36,9	//
P-s	[mm]	24	24	//	24	24	//	24	24	//

Order numbers:

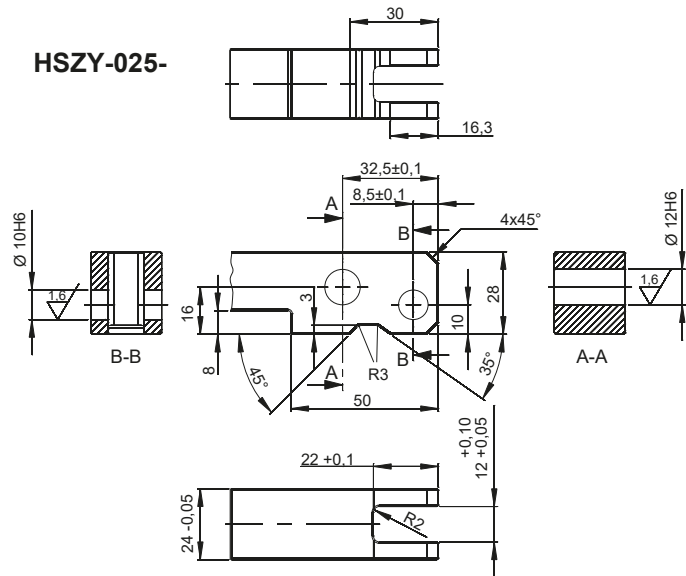
with full-length piston rod	HSZY...	016-001-P1	025-001-P1	040-001-P1	016-002-P1	025-002-P1	040-002-P1	016-003-P1	025-003-P1	040-003-P1
with inductive position control	HSZY...	016-001-P2	025-001-P2	040-001-P2	016-002-P2	025-002-P2	040-002-P2	016-003-P2	025-003-P2	040-003-P2
with pneumatic position control	HSZY...	016-001-P3	025-001-P3	040-001-P3	016-002-P3	025-002-P3	040-002-P3	016-003-P3	025-003-P3	040-003-P3



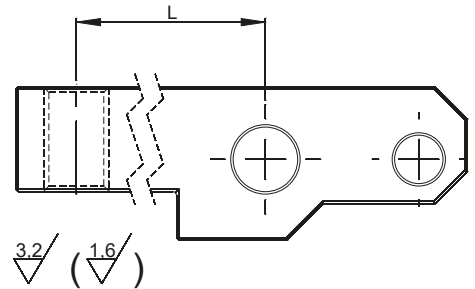
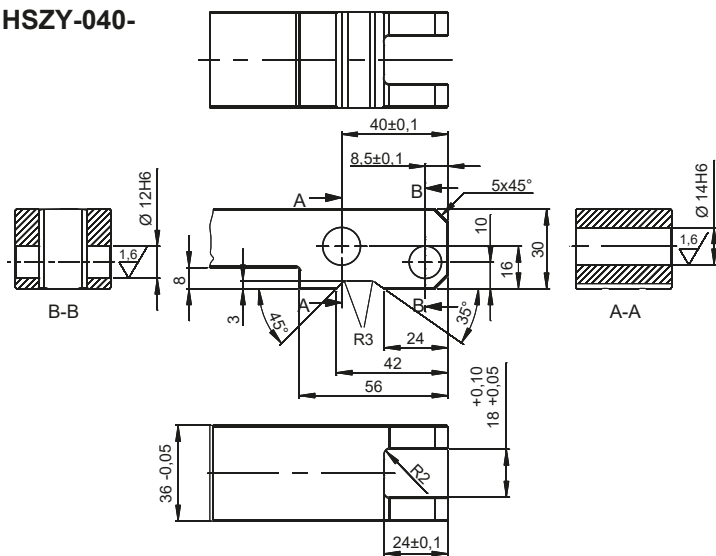
HSZY-016-



HSZY-025-



HSZY-040-



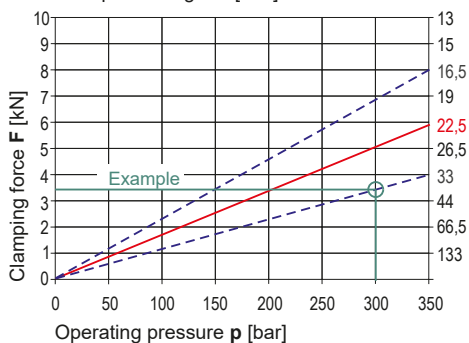
Materials and technical data:

material 42 CrMo 4 browned
tempered to 1.000 N/mm²
all edges 0,3 x 45°
bores 0,2 x 45

Clamping force F depending from clamp arm length L and operating pressure load p:

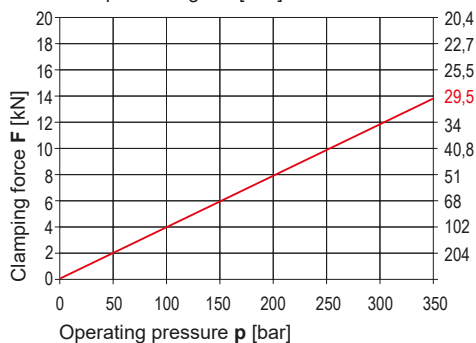
HSZY-016-

Clamp arm length L [mm]



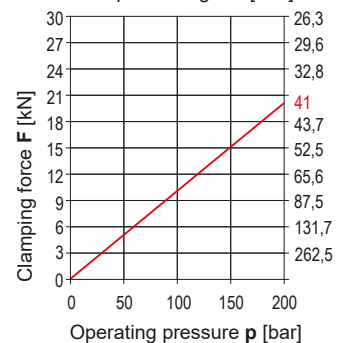
HSZY-025-

Clamp arm length L [mm]



HSZY-040-

Clamp arm length L [mm]



--- Clamp arm (standard)
— Drawing example

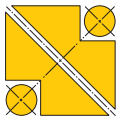
Example:

values from diagram

max. operating pressure $p_{max.} = 350$ bar
 $F_{max.}$ at $p_{max.}$ $F_{max.} = 4$ kN
clamp arm length $L = 33$ mm
operating pressure $p = 300$ bar
resulting clamping force $F = 3,43$ kN

Calculation:

$$\text{Clamping force } F = F_{max.} \times \frac{p}{p_{max.}} = 4 \text{ kN} \times \frac{300 \text{ bar}}{350 \text{ bar}} = 3,43 \text{ kN}$$

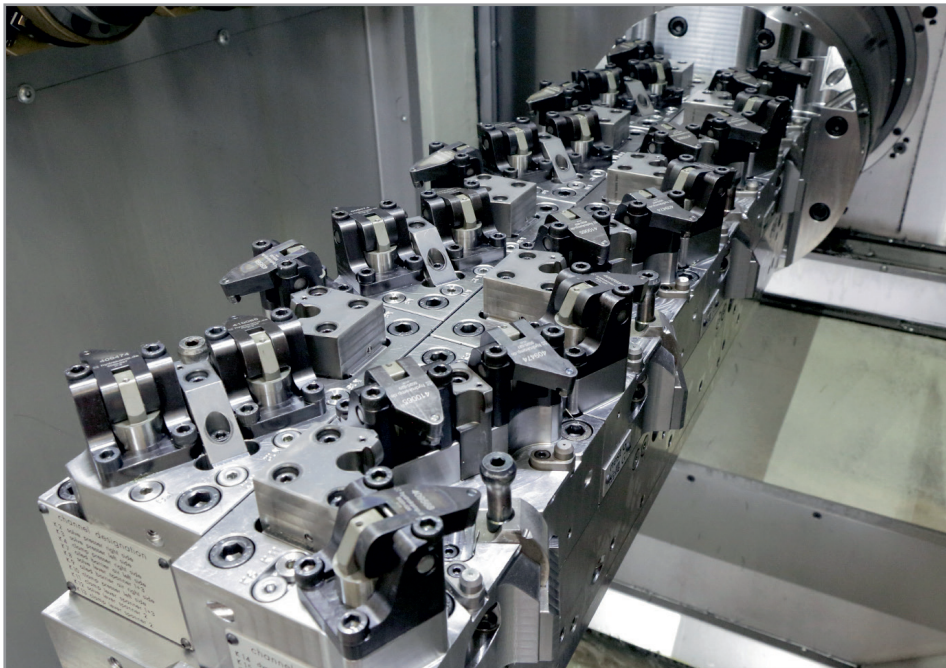


Rotary lever clamps

hydraulically single- and double-acting, pneumatically double-acting

250-10

Issue: 02/2026



Application example:

Multiple clamping fixture with 24 double-acting rotary lever clamps

Description:

This type of cylinder is especially suited for clamping fixtures with only little space for the installation of clamping elements. Its construction and compact design allows flexible solutions at various installation conditions.

HYDROKOMP offers hydraulic clamps which are single-acting as well double-acting. They are used in clamping fixtures whose oil supply is made through drilled channels.

To swing down the clamp arm, the linear motion is used pro rata which clamps the workpiece. To unclamp, the clamp arm swings back to where the workpiece can be safely taken out.

You can order standard clamp arms from different materials and various lengths as accessories. The cylinder can also be assembled with special and self made clamp arms (see page 5). The clamping force depends on the length of the clamp arm.

Installation note:

The rotary lever clamp is basically suitable for any mounting position. However, it must be ensured that the chosen installation position does not enable the accumulation of metal shavings in the swing range of the clamp arm during the operation (see picture).

1. suitable installation position
 2. unsuitable installation position,
- metal shavings could be accumulated.

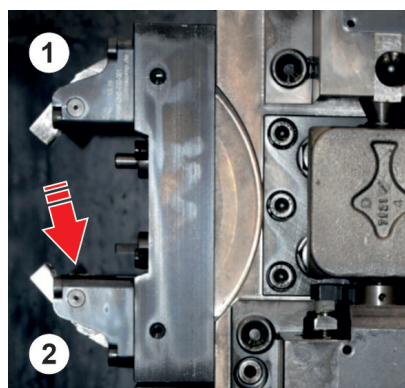
Operating conditions:

The clamp arm is coupled with the piston rod. In single-acting cylinders the clamp arm is opened through the reset spring. In double-acting cylinders this is done through the pressure medium. When installing a rotary lever clamp, the flange face should be adapted to the height of the workpiece. With that, the clamping point should be horizontally. Despite the short clamping stroke, workpiece tolerances can be optimally compensated. The rotary lever clamp is suited for any installation positions. For the hydraulic version we recommend hydraulic oils according to DIN 51524 (HL, HLP) as pressure medium.

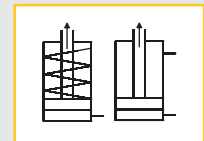
Safety instructions:

Rotary lever clamps can generate high forces. Workpieces and fixtures must be designed for this. During operation, danger of crushing is given. **Accident prevention regulations** must be observed.

The rotary lever clamps must regularly be checked for contamination and cleaned when necessary.



Webcode: 025010



Connections:

- ☒ Drilled channels

Designs:

- ☒ DHSP hydraulic (Operating pressure max. 300 bar)
 - single-acting
 - double-acting

Recommended hydraulic oils according to DIN 51524 (HL, HLP)

- ☒ DHSP pneumatic
 - double-acting

Advantages:

- ☒ Clamping without shear forces
- ☒ Tubeless oil supply
- ☒ Partial retractable housing
- ☒ Individual clamp arms mountable
- ☒ Easy loading and unloading of the fixture
- ☒ Position control optionally available

We also design and manufacture customized variants!



HYDROKOMP®

Hydraulische Komponenten GmbH



+49 6401 225999-0



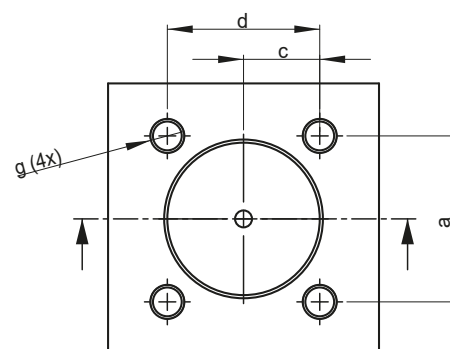
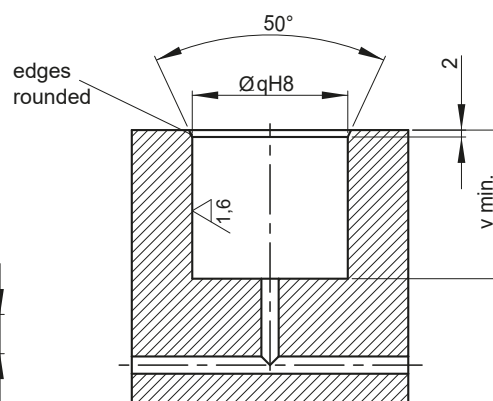
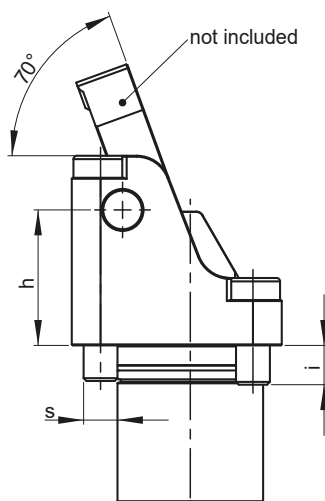
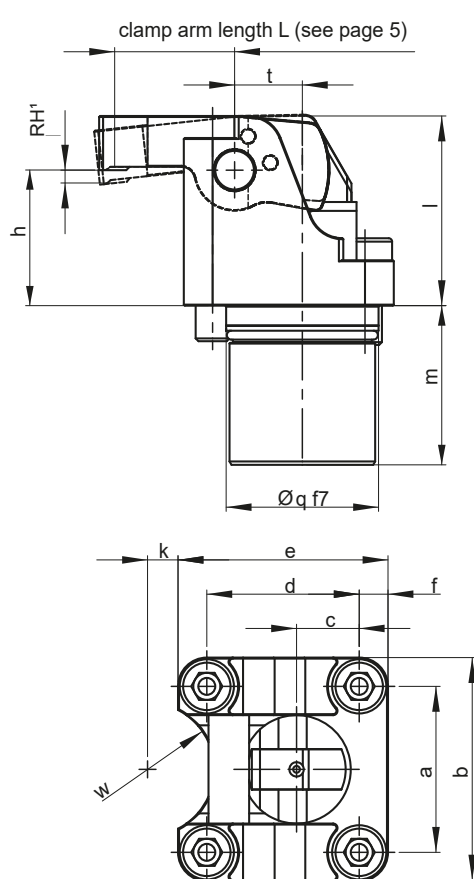
sales@hydrokomp.de



Siemenstr. 16
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Clamp arm:

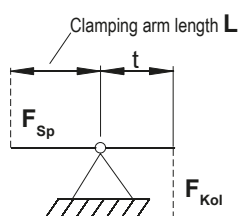
Clamp arms are not included in scope of supply. (see accessories on page 5)
RH' Dimensions for the residual stroke, see table on page 5

Material:

housing made of steel,
 piston rod tempered steel

Size		12	16	20	25	32	40	50
Piston force at 100 bar	[kN]	1,1	1,9	3	4,7	7,8	12,3	19,3
Piston force at pmax. 300 bar	[kN]	3,3	5,7	9	14,1	23,4	36,9	57,9
Effective piston surface	[cm²]	1,13	2,01	3,14	4,91	8,04	12,57	19,63
Oil demand clamping	[cm³]	1,1	2,1	4,1	7,5	15,2	32,1	57,5
Permissible volume flow	[cm³/s]	2,0	4	7	13	30	60	115
Minimum pressure	[bar]	20	20	20	20	20	30	30
Max. pressure in the return flow	[bar]	0,5	0,5	0,5	0,5	0,5	0,5	0,5
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	8,75	9,5	13,5	14,75	18,5	21,5	25,75
d	[mm]	18,5	23	30	35,5	45	55	68
e	[mm]	26	32	40	49	62	74	92
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4	M5	M6	M8	M10	M12	M16
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	7,5	10,5	9	11,5	11,5	17,5	22,5
k	[mm]	7,5	10	11	11	9	12	14,5
l	[mm]	21	28	35	43,75	56	70	87,5
m	[mm]	23	26	32,5	37	47	55	62,5
q Ø	[mm]	20	24	30	36	45	55	66
s (acc to DIN 6912)	[mm]	M4	M5	M6	M8	M10	M12	M16
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
v	[mm]	23,5	26,5	33	38	48	56	63,5
w Radius	[mm]	10,6	14,2	15,7	18,7	19,7	24,7	31
Weight	[kg]	0,11	0,2	0,405	0,7	1,4	2,46	5,07
Order number:	→ DHSP...	-EHS-012-001	-EHS-016-001	-EHS-020-001	-EHS-025-001	-EHS-032-001	-EHS-040-001	-EHS-050-001
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-037	6016-038	6020-065	6025-077	6032-059	6040-023	6050-017

The order number starts with DHSP to be completed. Example: DHSP-EHS-020-001



Effective clamping force F_{Sp} depending from piston force F_{Kol} and clamp arm length L

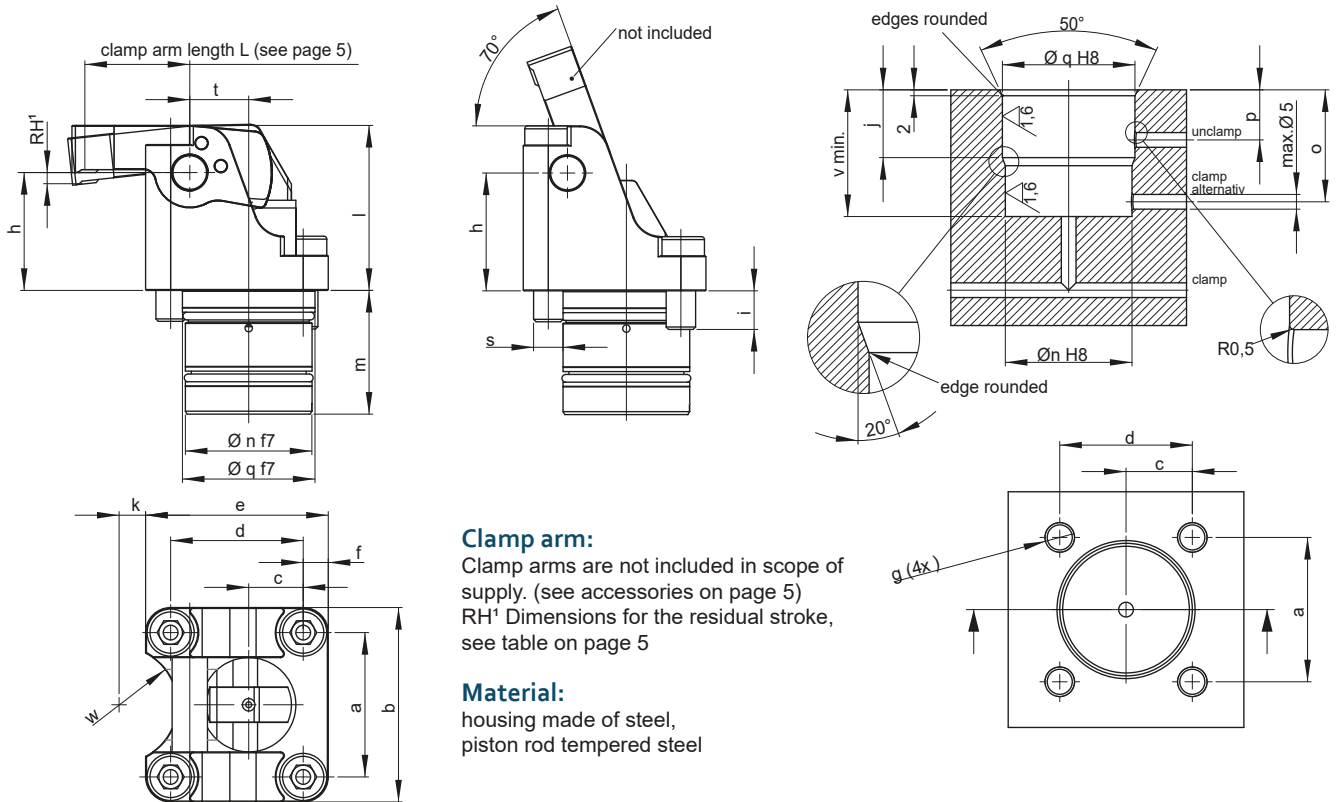
Example:

Rotary lever clamp size 32
 Operating pressure 300 bar
 Piston force F_{Kol} at 300 bar = 23,4 kN
 Measure t acc. chart = 20 mm
 Clamping arm length L (page 5) = 48 mm
 Resulting effective clamping force F_{Sp} = 9,75 kN

Calculation:

$$\text{r.e. clamp. force } F_{Sp} = \frac{F_{Kol} \times t}{L}$$

$$\text{r.e. clamp. force } F_{Sp} = \frac{23,4 \text{ kN} \times 20 \text{ mm}}{48 \text{ mm}} = 9,75 \text{ kN}$$



Clamp arm:

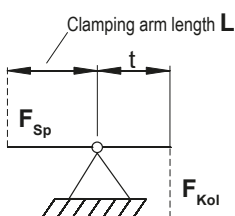
Clamp arms are not included in scope of supply. (see accessories on page 5)
RH¹ Dimensions for the residual stroke, see table on page 5

Material:

housing made of steel,
piston rod tempered steel

Size		12	16	20	25	32	40	50
Piston force at 100 bar	[kN]	1,7	2,8	4,5	6,15	10,1	15,9	23,7
Piston force at pmax. 300 bar	[kN]	5,1	8,4	13,5	18,5	30,3	47,7	71,1
Effective piston surface	[cm²]	1,77	2,83	4,52	6,15	10,17	15,9	23,75
Oil demand clamping	[cm³]	1,35	2,4	5,4	8,6	20,3	39,8	71,3
Oil demand unclamping	[cm³]	0,45	0,7	1,6	1,8	4,0	7,7	11,8
Permissible volume flow	[cm³/s]	2,5	5	10	17	40	80	140
Minimum pressure	[bar]	20	20	20	20	20	30	30
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	8,75	9,5	13,5	14,75	18,5	21,5	25,75
d	[mm]	18,5	23	30	35,5	45	55	68
e	[mm]	26	32	40	49	62	74	92
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4	M5	M6	M8	M10	M12	M16
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	7,5	10,5	9	11,5	13	17,5	22,5
j	[mm]	14	17	17	20	23	25	30
k	[mm]	7,5	10	11	11	9	12	14,5
l	[mm]	21	28	35	43,75	56	70	87,5
m	[mm]	21	26	32,5	37	42	47	57,5
n Ø	[mm]	19,4	23	29	35	43	53	64
o	[mm]	23	26	31	33	38	40	53
p	[mm]	11	13	14	15	17	19	24
q Ø	[mm]	20	24	30	36	45	55	66
s (acc to DIN 6912)	[mm]	M4	M5	M6	M8	M10	M12	M16
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
v	[mm]	21,5	26,5	33	38	43	48	58,5
w Radius	[mm]	10,6	14,2	15,7	18,7	19,7	24,7	31
Weight	[kg]	0,12	0,27	0,55	0,86	1,76	2,63	5,33
Order number:	→ DHSP...	-DHS-012-001	-DHS-016-001	-DHS-020-001	-DHS-025-001	-DHS-032-001	-DHS-040-001	-DHS-050-001
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-037	6016-038	6020-065	6025-077	6032-059	6040-023	6050-017

The order number starts with DHSP to be completed. Example: DHSP-DHS-040-001



Effective clamping force FSp depending from piston force FKol and clamp arm length L

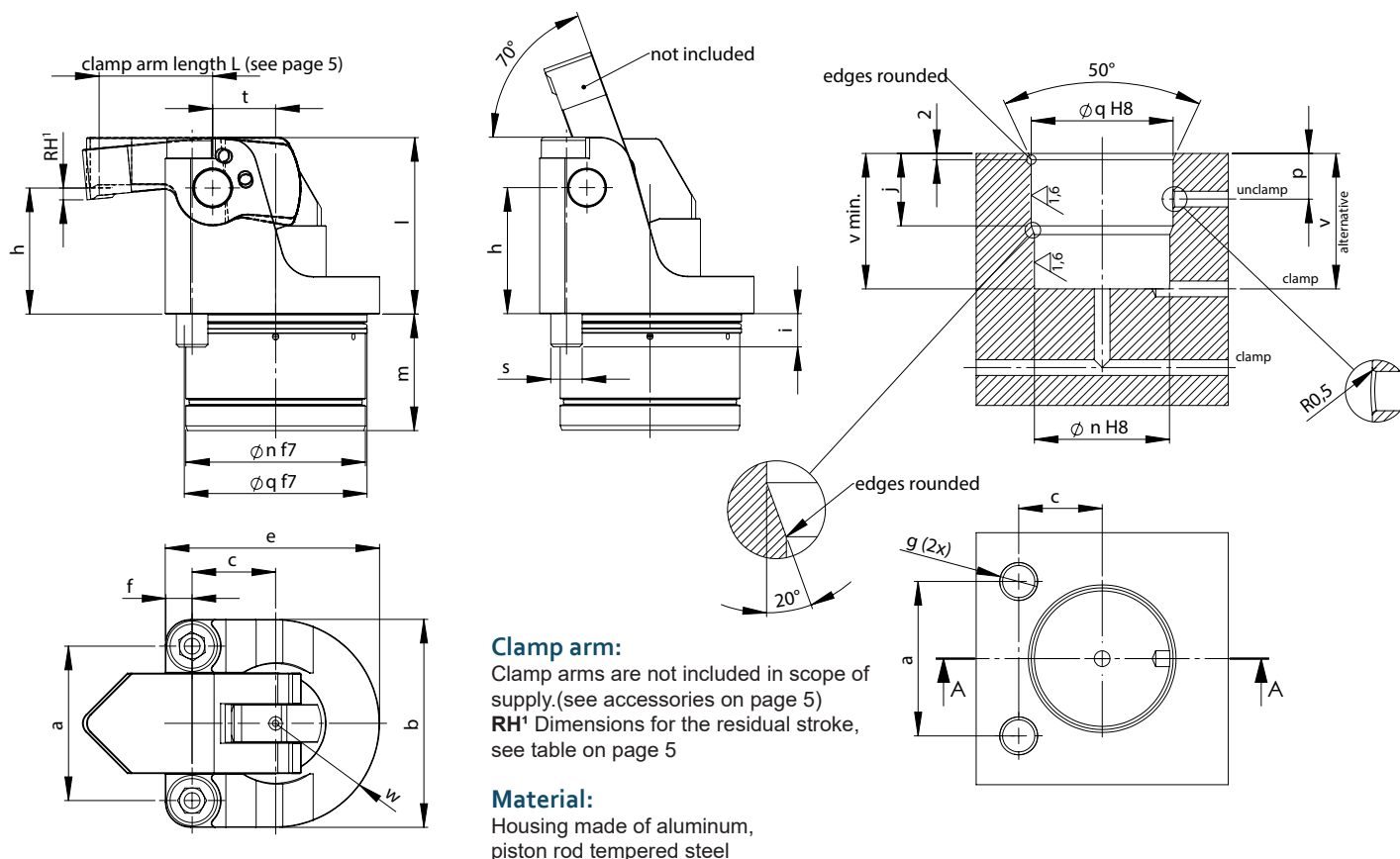
Example:

Rotary lever clamp size 16
Operating pressure 100 bar
Piston force FKol at 100 bar = 2,5 kN
Measure t acc. chart = 10 mm
Clamping arm length L (page 5) = 18 mm
Resulting effective clamping force FSp = 1,39 kN

Calculation:

$$\text{r.e. clamp. force } F_{Sp} = \frac{F_{Kol} \times t}{L}$$

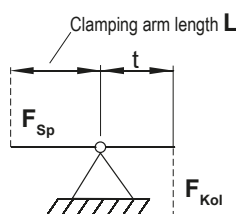
$$\text{r.e. clamp. force } F_{Sp} = \frac{2,5 \text{ kN} \times 10 \text{ mm}}{18 \text{ mm}} = 1,39 \text{ kN}$$



Size		12	16	20	25	32	40	50
Piston force at 6 bar	[kN]	0,14	0,27	0,42	0,68	1,27	1,99	3,01
Effective piston surface	[cm²]	2,27	4,52	7,06	11,34	21,23	33,18	50,26
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	9,75	13,5	16,5	20,75	26,5	33,5	42,25
e	[mm]	27	35	41,5	53,5	68	82	103,25
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4	M5	M6	M8	M10	M12	M16
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	7	10,5	9	11,5	10,5	17,5	22,5
j	[mm]	12	13	15	19	21	28	35
l	[mm]	21	28	35	43,75	56	70	87,5
m	[mm]	22	24	27,5	32	37	46	55
n Ø	[mm]	20	27	34	43	57	71	89
p	[mm]	9,5	10	11	13	14,5	18,5	22,5
q Ø	[mm]	21	28	35	44	58	72	90
s (acc to DIN 6912)	[mm]	M4	M5	M6	M8	M10	M12	M16
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
v	[mm]	22,5	24,5	28	33	38	47	56
w Radius	[mm]	13,5	17	20	26	33	39	49
Weight	[kg]	0,06	0,12	0,22	0,41	0,82	1,5	3
Order number:	→ DHSP...	-DPA-012-001	-DPA-016-001	-DPA-020-001	-DPA-025-001	-DPA-032-001	-DPA-040-001	-DPA-050-001
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-014	6015-017	6020-024	6025-024	6032-025	6040-053	6050-046

The order number starts with DHSP to be completed. Example: DHSP-DPA-016-001

Effective clamping force F_{Sp} depending from piston force F_{Kol} and clamp arm length L



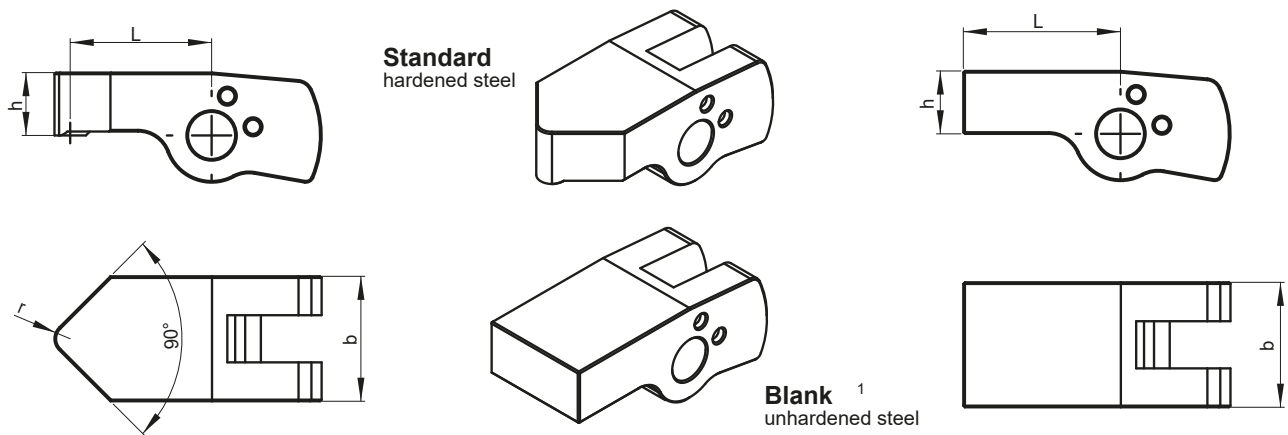
Example:

Rotary lever clamp size 50
Operating pressure 6 bar
Piston force F_{Kol} at 6 bar = 3,010 kN
Measure t acc. chart = 31,25 mm
Clamping arm length L (page 5) = 56 mm
Resulting effective clamping force F_{Sp} = 1,68 kN

Calculation:

$$\text{r.e. clamp. force } F_{Sp} = \frac{F_{Kol} \times t}{L}$$

$$\text{r.e. clamp. force } F_{Sp} = \frac{3,010 \text{ kN} \times 31,25 \text{ mm}}{56 \text{ mm}} = 1,68 \text{ kN}$$

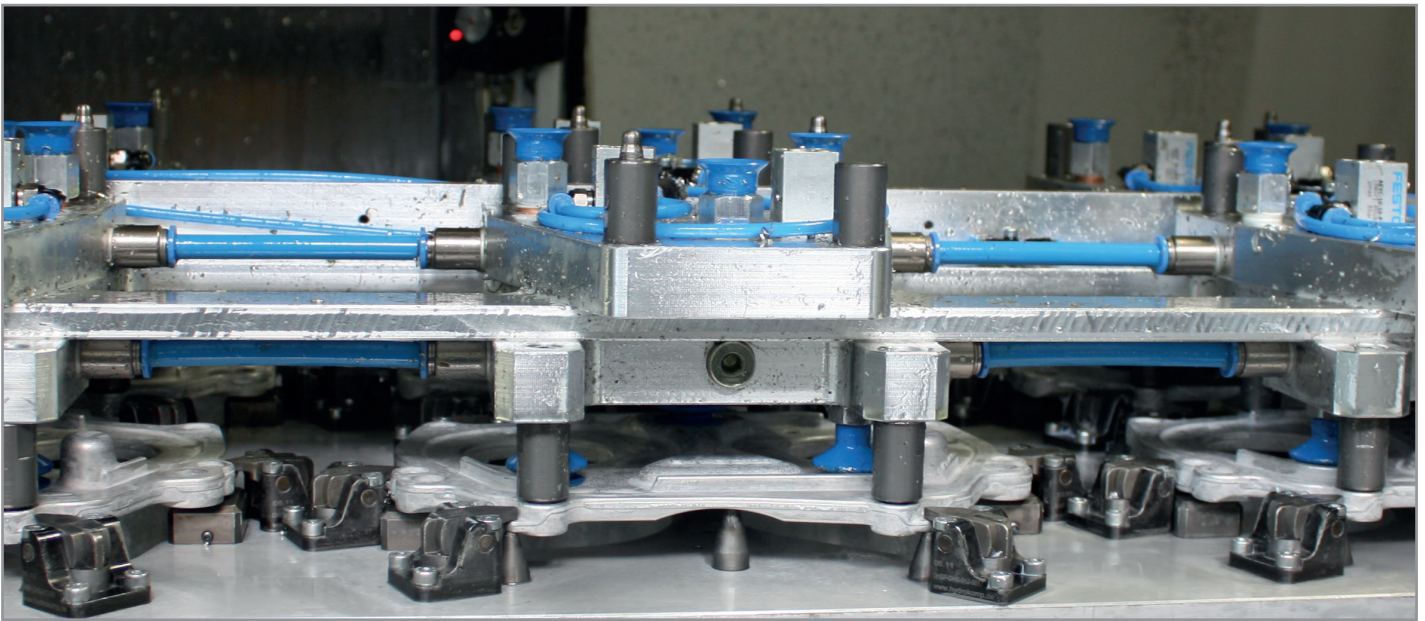
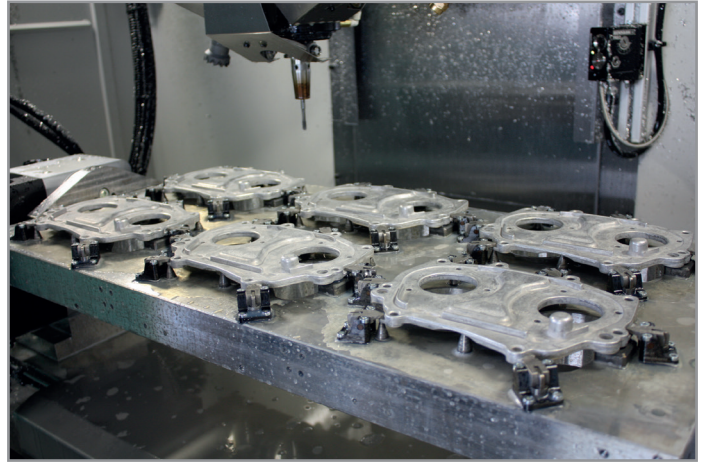


(1) For easier handling, the blanks are made of unhardened steel. To prevent deformation during the operation, the clamp arms must be case-hardened by the customer after completion. (hardening depth: 0,3 +0,2, hardening: HRC 50 +/-2)

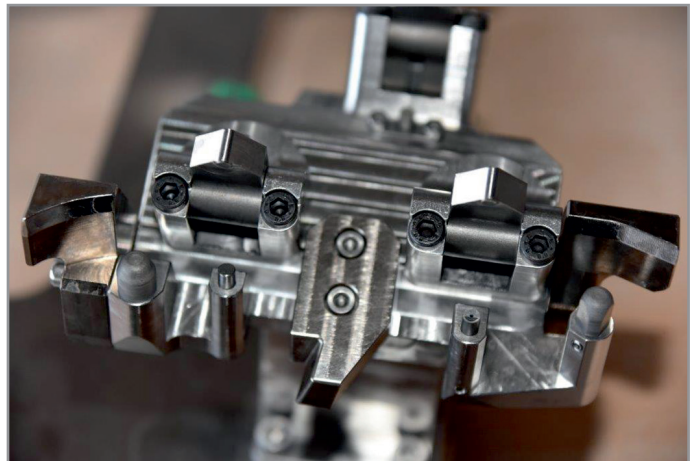
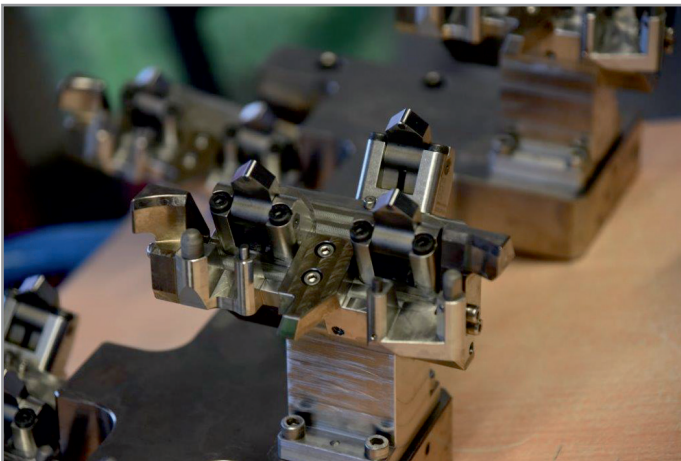
Values are valid for double-acting cylinders

for Size	Type	Clamping force at 6 bar pneumatic	Clamping force at 100 bar hydraulic	Clamping force at 300 bar hydraulic	Residual stroke	b	h	L	r	Order No.
12	Standard	0,112 kN	1,416 kN	4,250 kN	0,98 mm	12	6,0	9,0	1,5	5012-003
	Standard	0,075 kN	0,944 kN	2,830 kN	1,12 mm	12	6,0	13,5	1,5	5012-004
	Standard	0,056 kN	0,708 kN	2,130 kN	1,97 mm	12	6,0	18,0	1,5	5012-005
	Standard	0,045 kN	0,566 kN	1,700 kN	2,45 mm	12	6,0	22,5	1,5	5012-006
	Blank	–	–	–	1,64 mm	12	6,0	15,0	–	5012-001
	Blank	–	–	–	2,62 mm	12	6,0	24,0	–	5012-002
16	Standard	0,225 kN	2,333 kN	7,000 kN	0,78 mm	16	8,0	12,0	2,0	5016-006
	Standard	0,150 kN	1,555 kN	4,660 kN	1,16 mm	16	8,0	18,0	2,0	5016-007
	Standard	0,112 kN	1,166 kN	3,500 kN	1,6 mm	16	8,0	24,0	2,0	5016-008
	Standard	0,090 kN	0,933 kN	2,800 kN	1,94 mm	16	8,0	30,0	2,0	5016-009
	Blank	–	–	–	1,29 mm	16	8,0	20,0	–	5016-004
	Blank	–	–	–	2,07 mm	16	8,0	32,0	–	5016-005
20	Standard	0,350 kN	3,750 kN	11,250 kN	1,48 mm	20	10,0	15,0	2,5	5020-006
	Standard	0,233 kN	2,500 kN	7,500 kN	2,21 mm	20	10,0	22,5	2,5	5020-007
	Standard	0,175 kN	1,875 kN	5,620 kN	2,95 mm	20	10,0	30,0	2,5	5020-008
	Standard	0,140 kN	1,500 kN	4,500 kN	3,68 mm	20	10,0	37,5	2,5	5020-009
	Blank	–	–	–	2,45 mm	20	10,0	25,0	–	5020-004
	Blank	–	–	–	3,92 mm	20	10,0	40,0	–	5020-005
25	Standard	0,558 kN	5,058 kN	15,200 kN	1,26 mm	25	12,5	19,0	3,0	5025-006
	Standard	0,379 kN	3,432 kN	10,300 kN	1,86 mm	25	12,5	28,0	3,0	5025-007
	Standard	0,279 kN	2,529 kN	7,600 kN	2,52 mm	25	12,5	38,0	3,0	5025-008
	Standard	0,225 kN	2,045 kN	6,150 kN	3,12 mm	25	12,5	47,0	3,0	5025-009
	Blank	–	–	–	2,1 mm	25	12,5	31,0	–	5025-004
	Blank	–	–	–	3,32 mm	25	12,5	50,0	–	5025-005
32	Standard	1,058 kN	8,416 kN	25,250 kN	2,56 mm	32	16,0	24,0	4,0	5032-006
	Standard	0,705 kN	5,611 kN	16,800 kN	3,85 mm	32	16,0	36,0	4,0	5032-007
	Standard	0,529 kN	4,208 kN	12,620 kN	5,13 mm	32	16,0	48,0	4,0	5032-008
	Standard	0,423 kN	3,366 kN	10,100 kN	6,4 mm	32	16,0	60,0	4,0	5032-009
	Blank	–	–	–	4,28 mm	32	16,0	40,0	–	5032-004
	Blank	–	–	–	6,84 mm	32	16,0	64,0	–	5032-005
40	Standard	1,658 kN	13,250 kN	39,750 kN	3,05 mm	40	20,0	30,0	5,0	5040-011
	Standard	1,105 kN	8,833 kN	26,500 kN	4,6 mm	40	20,0	45,0	5,0	5040-012
	Standard	0,829 kN	6,625 kN	19,870 kN	6,1 mm	40	20,0	60,0	5,0	5040-013
	Standard	0,663 kN	5,300 kN	15,900 kN	7,6 mm	40	20,0	75,0	5,0	5040-014
	Blank	–	–	–	5,08 mm	40	20,0	50,0	–	5040-009
	Blank	–	–	–	8,1 mm	40	20,0	80,0	–	5040-010
50	Standard	2,475 kN	19,490 kN	58,500 kN	3,46 mm	50	25,0	38,0	6,0	5050-010
	Standard	1,679 kN	13,225 kN	39,700 kN	5,1 mm	50	25,0	56,0	6,0	5050-011
	Standard	1,254 kN	9,874 kN	29,630 kN	6,83 mm	50	25,0	75,0	6,0	5050-012
	Standard	0,839 kN	6,612 kN	19,840 kN	10,19 mm	50	25,0	112,0	6,0	5050-013
	Blank	–	–	–	5,64 mm	50	25,0	62,0	–	5050-008
	Blank	–	–	–	10,74 mm	50	25,0	118,0	–	5050-009

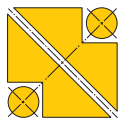
Special sizes and designs are available on request.



Multiple workholding fixture with double-acting rotary lever clamps (piston Ø 12 mm) for two-sided machining, even through the fixture plate. The workholding fixture has six clamp sets, each with six rotary lever clamps. Respectively with three elements, the clamping operation takes place sequentially controlled by a sequence valve. The loading and unloading is done by a robot, which also positions the workpieces. This ensures the collision-free clamping operation.



Pneumatically operated rotary lever clamps in double-acting function with partially cranked special clamp arms.



Rotary lever clamps with control

hydraulically/pneumatically, double-acting, with pneumatic position control

250-20

Issue: 03/2026

Description:

The rotary lever clamp with pneumatic position control is especially suited for clamping fixtures with only little space for the installation of work-holding elements. Its construction and compact design allows flexible solutions at various installation conditions.

The double-acting rotary lever clamps are used in clamping fixtures whose oil supply is made through drilled channels.

To swing down the clamping lever, the linear motion is used pro rata which clamps the work-piece. To unclamp, the clamping lever swings back to where the workpiece can be safely taken out.

Clamping levers are not included in scope of supply! You can order standard clamping levers from different materials and various lengths as accessories. The rotary lever clamp can also be assembled with special and self made clamping levers (see page 4). The clamping force depends on the length of the clamping lever.

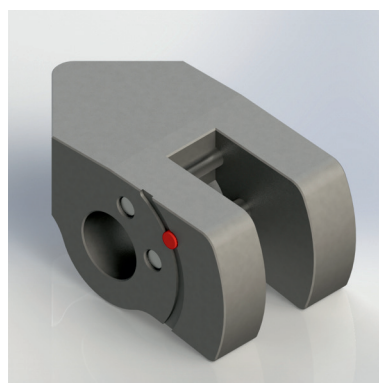
The rotary lever clamps with position control are similar to the double-acting rotary lever clamps on data sheet 250-10. Both differently operating variants are interchangeable due the same installation dimensions.

Pneumatic position control:

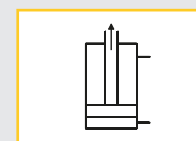
The clamping levers are equipped with elastic sealing plugs on both sides.

There are two drilled channels in the rotary lever clamp, into which compressed air can be introduced into the clamping lever guide of the housing. The bore holes are arranged in a way that they are sealed in the clamping position or in the declamping position by the sealing plug of the clamping lever. This generates a pressure increase in the pneumatic line, which can be monitored by using standard pneumatic pressure switches in the respective position.

The pressure switch registers the pneumatic pressure rise and generates an electrical signal which is forwarded to the connected control unit.



Webcode: 025020



Connections:

- Drilled channels

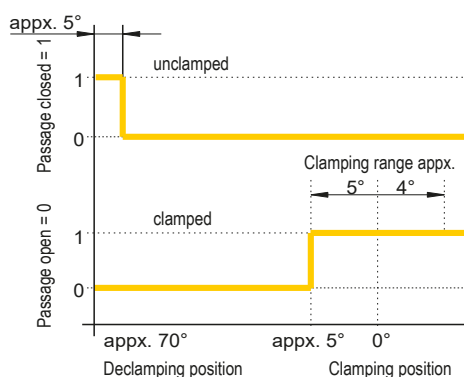
Advantages:

- Clamping without shear forces
- Pipeless oil supply
- Partial retractable housing
- Individual clamping levers mountable
- Control of the clamping lever position

Operating conditions:

The clamping lever is coupled with the piston rod. On the double-acting rotary lever clamps, the clamping lever is unclamped by the pressure medium.

When installing the rotary lever clamps, the flange surface should be adjusted to the height of the workpiece. The clamping point should be in a horizontal position. Workpiece tolerances can be compensated in spite of the short clamping stroke.



Safety instructions:

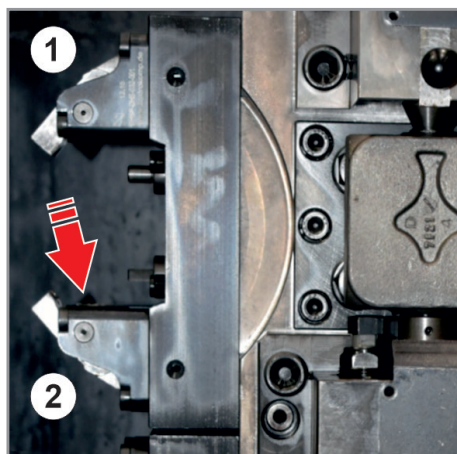
Rotary lever clamps can generate high forces. Workpieces and fixtures must be designed for such loads. During operation, danger of crushing is given.

The accident prevention regulations must be observed. The rotary lever clamps must regularly be checked for contamination and cleaned when necessary.

Installation note:

The rotary lever clamp is basically suitable for any mounting position. However, it must be ensured that the chosen installation position does not enable the accumulation of metal shavings in the swing range of the clamp arm during the operation (see picture).

- suitable installation position
- unsuitable installation position, metal shavings could be accumulated.



We also design and manufacture customized variants!



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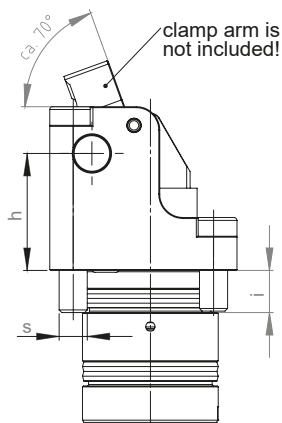
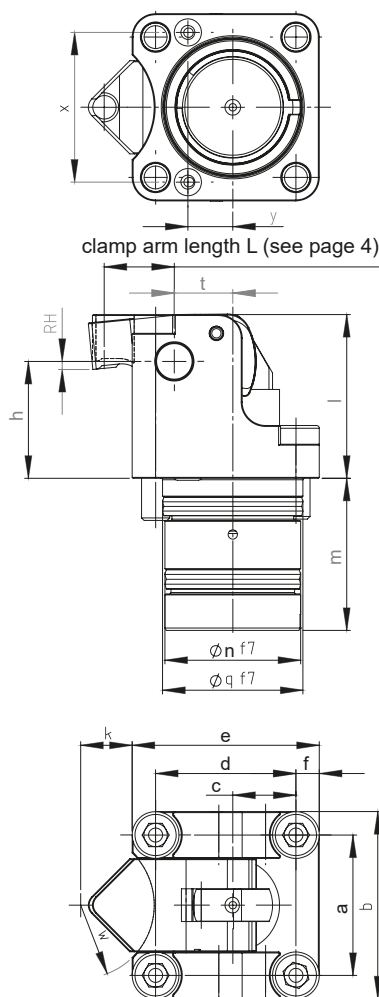


Siemenstr. 16
35325 Mücke (Germany)

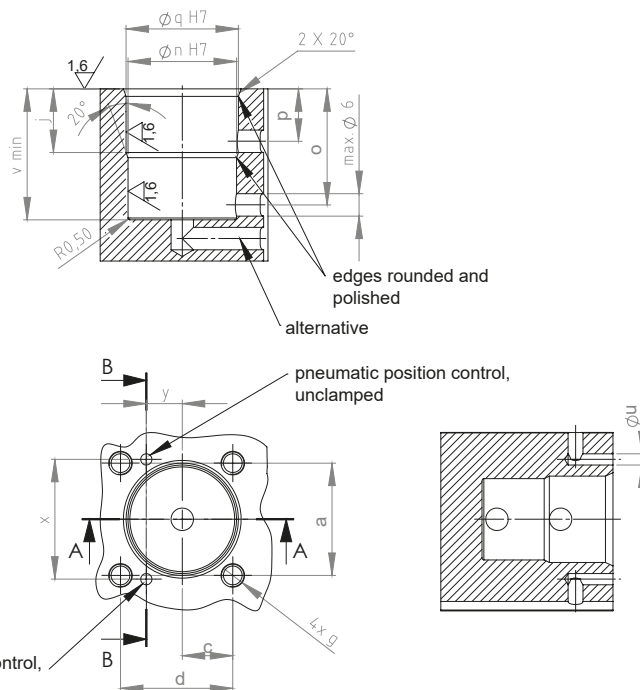


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Technology that connects



pneumatic position control, clamped



Clamping levers
are available as accessories.

RH = dimensions for residual stroke (see page 4)

Materials:
housing made of burnished steel
piston made of tempered steel

Effective clamping force F_{Sp} in relation to piston force F_{Kol} and length of the clamping lever L

Length of the clamping lever L

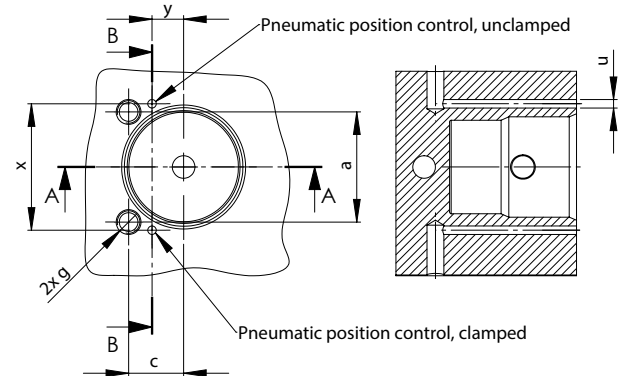
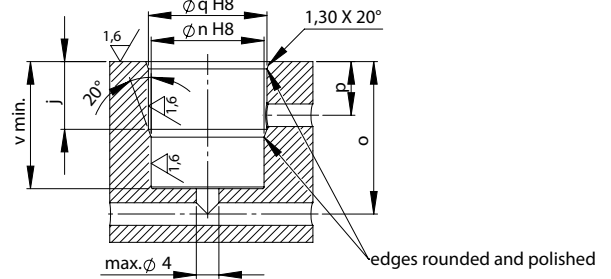
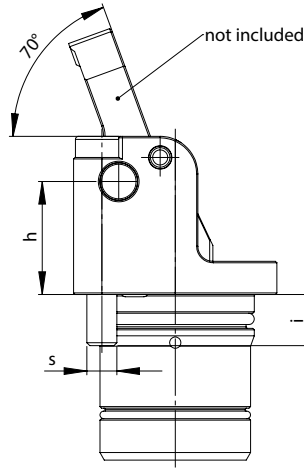
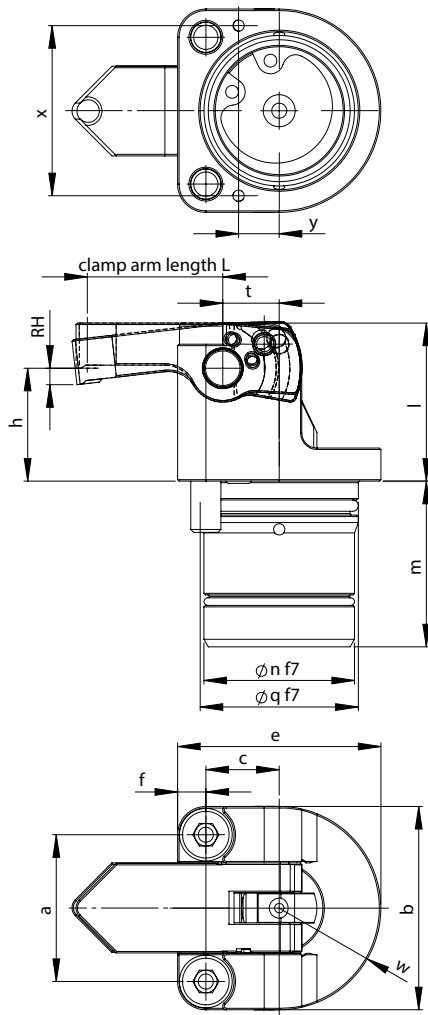
Calculation:

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

Example: $F_{Sp} = \frac{2,5 \text{ kN} \times 10 \text{ mm}}{18 \text{ mm}} = 1,39 \text{ kN}$

Size		12	16	20	25	32	40	50
Piston force at 100 bar	[kN]	1,7	2,8	4,5	6,15	10,1	15,9	23,7
Piston force at pmax. 300 bar	[kN]	5,1	8,4	13,5	18,5	30,3	47,7	71,1
Effective piston surface	[cm ²]	1,77	2,83	4,52	6,15	10,17	15,9	23,75
Oil demand clamping	[cm ³]	1,35	2,4	5,4	8,6	20,3	39,8	71,3
Oil demand unclamping	[cm ³]	0,45	0,7	1,6	1,8	4,0	7,7	11,8
Permissible volume flow	[cm ³ /s]	2,5	5	10	17	40	80	140
Minimum pressure	[bar]	20	20	20	20	20	30	30
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	8,75	9,5	13,5	14,75	18,5	21,5	25,75
d	[mm]	18,5	23	30	35,5	45	55	68
e	[mm]	26	32	40	49	62	74	92
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4	M5	M6	M8	M10	M12	M16
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	8	11	10	12	12	18	23
j	[mm]	14	17	17	20	23	25	30
k	[mm]	7,5	10	11	11	9	12	14,5
l	[mm]	21	28	35	43,75	56	70	87,5
m	[mm]	21	26	32,5	37	42	47	57,5
n Ø	[mm]	19,4	23	29	35	43	53	64
o	[mm]	23	26	31	33	38	40	53
p	[mm]	11	13	14	15	17	19	24
q Ø	[mm]	20	24	30	36	45	55	66
s (acc. to DIN 6912)	[mm]	M4	M5	M6	M8	M10	M12	M16
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
u Ø	[mm]	1,5	3	3	3	5	5	5
v	[mm]	21,5	26,5	33	38	43	48	58,5
w Radius	[mm]	10,6	14,2	15,7	18,7	19,7	24,7	31
x	[mm]	22,6	27	32	42	53	64	80
y	[mm]	5,4	7,2	9,6	11	13	14	17,5
Weight	[kg]	0,12	0,27	0,55	0,86	1,76	2,63	5,33
Order no.:	DHSP-DHS...	-012-001-P	-016-001-P	-020-001-P	-025-001-P	-032-001-P	-040-001-P	-050-001-P
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-037	6016-038	6020-065	6025-077	6032-059	6040-023	6050-043

The order number begins with DHSP-DHS to be completed. Example: DHSP-DHS-012-001-P

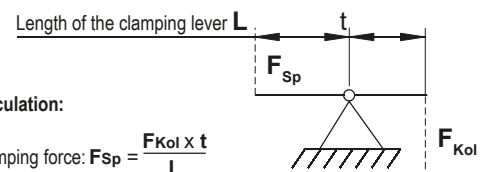


Clamping levers
are available as accessories.

RH = dimensions for residual stroke (see page4)

Materials:
housing made of burnished steel
piston made of tempered steel

Effective clamping force F_{Sp} in relation to piston force F_{Kol} and length of the clamping lever L



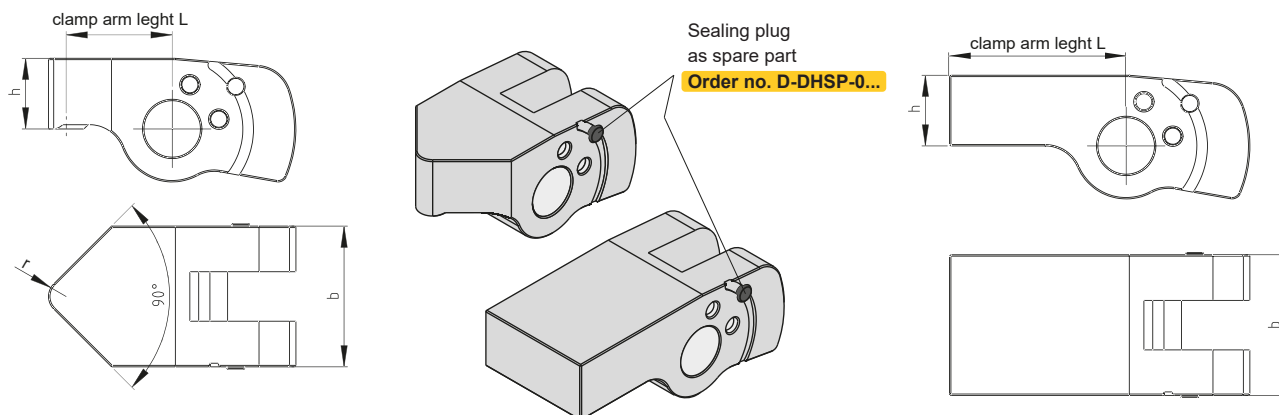
Calculation:

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

$$\text{Example: } F_{Sp} = \frac{3,010 \text{ kN} \times 31,25 \text{ mm}}{56 \text{ mm}} = 1,68 \text{ kN}$$

Size		12	16	20	25	32	40	50
Piston force at 6 bar	[kN]	0,14	0,27	0,42	0,68	1,27	1,99	3,01
Effective piston surface	[cm ²]	2,27	4,52	7,06	11,34	21,23	33,18	50,26
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	9,75	13,5	16,5	20,75	26,5	33,5	42,25
e	[mm]	27	35	41,5	53,5	68	82	103,25
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4	M5	M6	M8	M10	M12	M16
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	7	10,5	9	11,5	10,5	17,5	22,5
j	[mm]	12	13	15	19	21	28	35
l	[mm]	21	28	35	43,75	56	70	87,5
m	[mm]	22	24	27,5	32	37	46	55
n Ø	[mm]	20	27	34	43	57	71	89
o	[mm]	26,5	28,5	32	37	42	51	60
p	[mm]	9,5	10	11	13	14,5	18,5	22,5
q Ø	[mm]	21	28	35	44	58	72	90
s (acc. to DIN 6912)	[mm]	M4	M5	M6	M8	M10	M12	M16
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
u Ø	[mm]	1,5	1,5	1,5	3	3	3	3
v	[mm]	22,5	24,5	28	33	38	47	56
w Radius	[mm]	13,5	17	20	26	33	39	49
x	[mm]	22,6	29	35	44	57	68	85
y	[mm]	5,4	7,2	9,6	13	17	22,5	28
Weight	[kg]	0,06	0,12	0,22	0,41	0,82	1,5	3
Order no.:	DHSP-DPA... →	-012-001-P	-016-001-P	-020-001-P	-025-001-P	-032-001-P	-040-001-P	-050-001-P
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-014	6015-017	6020-024	6025-024	6032-025	6040-053	6050-046

The order number begins with DHSP-DPA to be completed. Example: DHSP-DPA-012-001-P



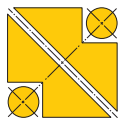
(1) For easier handling, the blanks are made of unhardened steel.
To prevent deformation during the operation, the clamp arms

must be case-hardened by the customer after completion.
(hardening depth: 0,3 +0,2, hardening: HRC 50 +/-2)

Values are valid for double-acting cylinders

for Size	Type	Clamping force at 6 bar pneumatically	Clamping force at 100 bar hydraulically	Clamping force at 300 bar hydraulically	Residual stroke RH	b	h	L	r	Sealing plugs as spare part	Order No.
12	Standard	0,112 kN	1,416 kN	4,200 kN	0,98 mm	12	6,0	9,0	1,5	D-DHSP-012	5012-013
	Standard	0,075 kN	0,944 kN	2,830 kN	1,12 mm	12	6,0	13,5	1,5	"	5012-014
	Standard	0,056 kN	0,708 kN	2,130 kN	1,97 mm	12	6,0	18,0	1,5	"	5012-011
	Standard	0,045 kN	0,566 kN	1,700 kN	2,45 mm	12	6,0	22,5	1,5	"	5012-015
	Blank	–	–	–	1,64 mm	12	6,0	15,0	–	"	5012-016
	Blank	–	–	–	2,62 mm	12	6,0	24,0	–	"	5012-017
16	Standard	0,225 kN	2,333 kN	7,000 kN	0,78 mm	16	8,0	12,0	2,0	D-DHSP-016	5016-016
	Standard	0,150 kN	1,555 kN	4,660 kN	1,16 mm	16	8,0	18,0	2,0	"	5016-017
	Standard	0,112 kN	1,166 kN	3,500 kN	1,6 mm	16	8,0	24,0	2,0	"	5016-018
	Standard	0,090 kN	0,933 kN	2,800 kN	1,94 mm	16	8,0	30,0	2,0	"	5016-019
	Blank	–	–	–	1,29 mm	16	8,0	20,0	–	"	5016-020
	Blank	–	–	–	2,07 mm	16	8,0	32,0	–	"	5016-021
20	Standard	0,350 kN	3,750 kN	11,250 kN	1,48 mm	20	10,0	15,0	2,5	D-DHSP-020	5020-038
	Standard	0,233 kN	2,500 kN	7,500 kN	2,21 mm	20	10,0	22,5	2,5	"	5020-039
	Standard	0,175 kN	1,875 kN	5,620 kN	2,95 mm	20	10,0	30,0	2,5	"	5020-040
	Standard	0,140 kN	1,500 kN	4,500 kN	3,68 mm	20	10,0	37,5	2,5	"	5020-041
	Blank	–	–	–	2,45 mm	20	10,0	25,0	–	"	5020-042
	Blank	–	–	–	3,92 mm	20	10,0	40,0	–	"	5020-043
25	Standard	0,558 kN	5,058 kN	15,200 kN	1,26 mm	25	12,5	19,0	3,0	D-DHSP-025	5025-017
	Standard	0,379 kN	3,432 kN	10,300 kN	1,86 mm	25	12,5	28,0	3,0	"	5025-018
	Standard	0,279 kN	2,529 kN	7,600 kN	2,52 mm	25	12,5	38,0	3,0	"	5025-019
	Standard	0,225 kN	2,045 kN	6,150 kN	3,12 mm	25	12,5	47,0	3,0	"	5025-020
	Blank	–	–	–	2,1 mm	25	12,5	31,0	–	"	5025-021
	Blank	–	–	–	3,32 mm	25	12,5	50,0	–	"	5025-022
32	Standard	1,058 kN	8,416 kN	25,250 kN	2,56 mm	32	16,0	24,0	4,0	D-DHSP-032	5032-020
	Standard	0,705 kN	5,611 kN	16,800 kN	3,85 mm	32	16,0	36,0	4,0	"	5032-021
	Standard	0,529 kN	4,208 kN	12,620 kN	5,13 mm	32	16,0	48,0	4,0	"	5032-022
	Standard	0,423 kN	3,366 kN	10,100 kN	6,4 mm	32	16,0	60,0	4,0	"	5032-023
	Blank	–	–	–	4,28 mm	32	16,0	40,0	–	"	5032-024
	Blank	–	–	–	6,84 mm	32	16,0	64,0	–	"	5032-025
40	Standard	1,658 kN	13,250 kN	39,750 kN	3,05 mm	40	20,0	30,0	5,0	D-DHSP-040	5040-036
	Standard	1,105 kN	8,833 kN	26,500 kN	4,6 mm	40	20,0	45,0	5,0	"	5040-037
	Standard	0,829 kN	6,625 kN	19,870 kN	6,1 mm	40	20,0	60,0	5,0	"	5040-038
	Standard	0,663 kN	5,300 kN	15,900 kN	7,6 mm	40	20,0	75,0	5,0	"	5040-039
	Blank	–	–	–	5,08 mm	40	20,0	50,0	–	"	5040-040
	Blank	–	–	–	8,1 mm	40	20,0	80,0	–	"	5040-041
50	Standard	2,475 kN	19,490 kN	58,500 kN	3,46 mm	50	25,0	38,0	6,0	D-DHSP-050	5050-035
	Standard	1,679 kN	13,225 kN	39,700 kN	5,1 mm	50	25,0	56,0	6,0	"	5050-036
	Standard	1,254 kN	9,874 kN	29,630 kN	6,83 mm	50	25,0	75,0	6,0	"	5050-037
	Standard	0,839 kN	6,612 kN	19,840 kN	10,19 mm	50	25,0	112,0	6,0	"	5050-038
	Blank	–	–	–	5,64 mm	50	25,0	62,0	–	"	5050-039
	Blank	–	–	–	10,74 mm	50	25,0	118,0	–	"	5050-040

Special sizes and designs are available on request.



Rotary lever clamps enclosed with control

hydraulically, double-acting, pneumatic position control, positive air pressure protection, pmax 300 bar

250-30

Issue: 03/2026

Description:

The enclosed rotary lever clamp with pneumatic position control is particularly suitable for clamping fixtures where there is limited space for the installation of workholding elements and where a very large amount of chips is produced. The clamping lever is designed so that the chips are scraped off at the front and top by a metal wiper. There is also an internal soft wiper and a positive air pressure connection. The construction and compact design of the rotary lever clamps provide flexible solutions for a wide range of installation conditions.

The double-acting rotary lever clamps are used in clamping fixtures whose oil supply is made through drilled channels.

To swing down the clamping lever, the linear motion is used pro rata which clamps the workpiece. To unclamp, the clamping lever swings back to where the workpiece can be safely taken out.

Clamping levers are not included in scope of supply! You can order standard clamping levers from different materials and various lengths as accessories. The rotary lever clamp can also be assembled with special and self made clamping levers (see page 3). The clamping force depends on the length of the clamping lever.

The enclosed rotary lever clamps have the same mounting dimensions as the double-acting rotary lever clamps on data sheet 250-10/250-20 and are therefore interchangeable.

Operating conditions:

The clamping lever is coupled with the piston rod. On the double-acting rotary lever clamps, the clamping lever is unclamped by the pressure medium.

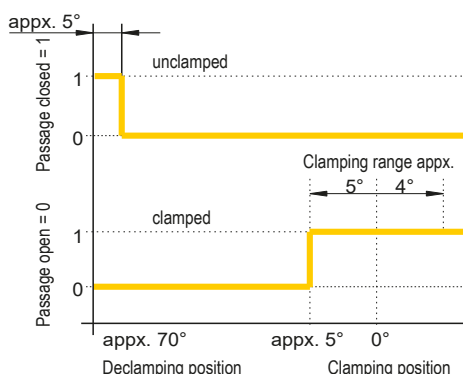
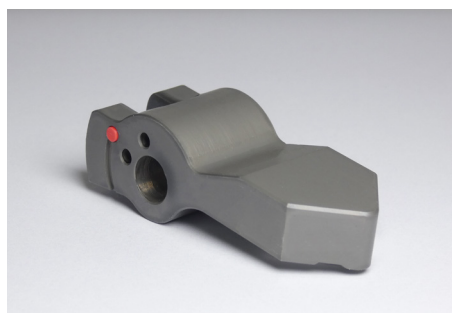
When installing the rotary lever clamps, the flange surface should be adjusted to the height of the workpiece. The clamping point should be in a horizontal position. Workpiece tolerances can be compensated in spite of the short clamping stroke.

Pneumatic position control:

The clamping levers are equipped with elastic sealing plugs on both sides.

There are two drilled channels in the rotary lever clamp, into which compressed air can be introduced into the clamping lever guide of the housing. The bore holes are arranged in a way that they are sealed in the clamping position or in the declamping position by the sealing plug of the clamping lever. This generates a pressure increase in the pneumatic line, which can be monitored by using standard pneumatic pressure switches in the respective position.

The pressure switch registers the pneumatic pressure rise and generates an electrical signal which is forwarded to the connected control unit.

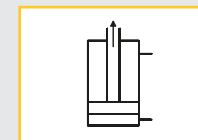


Installation note:

The rotary lever clamp is suitable for any mounting position.



Webcode: 025030



Connections:

- ✗ Drilled channels

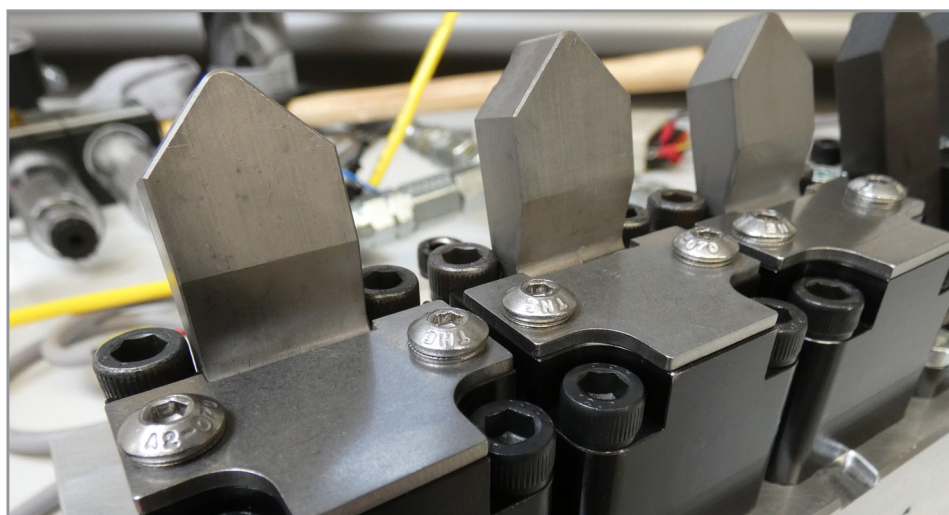
Advantages:

- ✗ Clamping without shear forces
- ✗ Pipeless oil supply
- ✗ Partial retractable housing
- ✗ Individual clamping levers mountable
- ✗ Control position unclamped/clamped
- ✗ Optimum chips protection
- ✗ Operating temperature -10°C to +80°C

Safety instructions:

Rotary lever clamps can generate high forces. Workpieces and fixtures must be designed for such loads. During operation, danger of crushing is given.

The **accident prevention regulations** must be observed. The rotary lever clamps must regularly be checked for contamination and cleaned when necessary.



We also design and manufacture customized variants!



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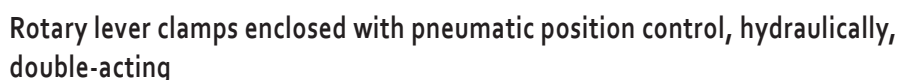
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Siemenstr. 16
35325 Mücke (Germany)

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Technology that connects

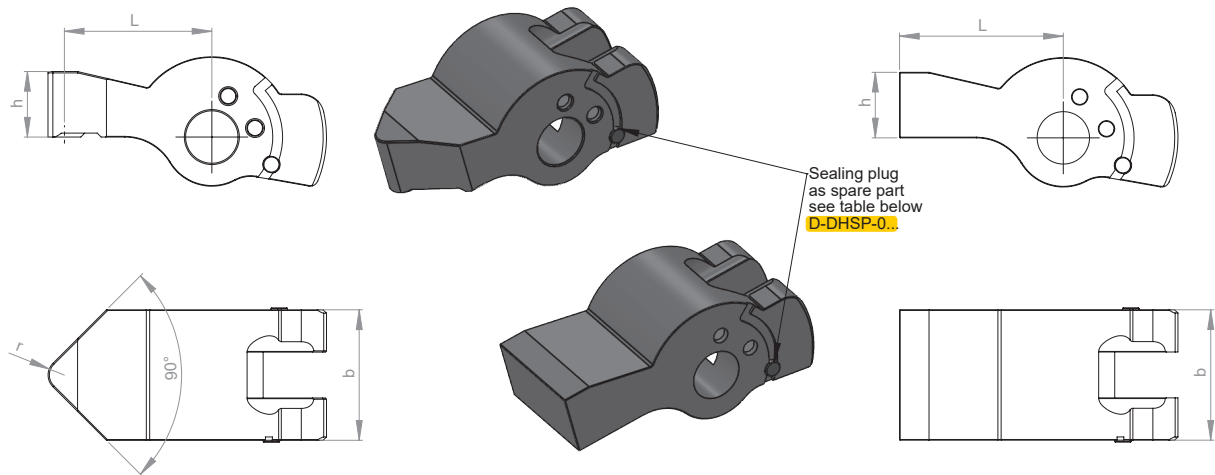


The technical drawings illustrate the 3000 series pneumatic cylinder with the following details:

- Top View:** Shows dimensions w , k , y , and t . The clamp arm length L is referenced to page 3.
- Front View:** Shows dimensions n , RH , l , m , $\phi n f7$, and $\phi q f7$.
- Side View:** Shows dimensions h , s , i , and a clamp arm angle of $ca. 69^\circ$. A note states "clamp arm is not included".
- Bottom View:** Shows dimensions e , d , f , c , a , and b .
- Section A-A:** A longitudinal cross-section showing internal components like the piston and seal. Dimensions include 20° , $\phi q H7$, $\phi n H7$, $2 \times 20^\circ$, 1.6 , $v \min$, j , p , o , $\max \phi 6$, and $R0.50$. Notes indicate "edges rounded and polished" and an "alternative" design.
- Section B-B:** A transverse cross-section showing the cylinder bore and mounting flange. Dimensions include ϕu .
- Section C-C:** Another transverse cross-section showing internal details.
- Positioning:** Arrows indicate "pneumatic position control unclamped" and "pneumatic position control clamped". A note mentions "positive air pressure protection".

Size		12	16	20	25	32	40	50
Piston force at 100 bar	[kN]	1,7	2,8	4,5	6,15	10,1	15,9	23,7
Piston force at pmax. 300 bar	[kN]	5,1	8,4	13,5	18,5	30,3	47,7	71,1
Effective piston surface	[cm²]	1,77	2,83	4,52	6,15	10,17	15,9	23,75
Oil demand clamping	[cm³]	1,35	2,4	5,4	8,6	20,3	39,8	71,3
Oil demand unclamping	[cm³]	0,45	0,7	1,6	1,8	4,0	7,7	11,8
Permissible volume flow	[cm³/s]	2,5	5	10	17	40	80	140
Minimum pressure	[bar]	20	20	20	20	20	30	30
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	8,75	9,5	13,5	14,75	18,5	21,5	25,75
d	[mm]	18,5	23	30	35,5	45	55	68
e	[mm]	26	32	40	49	62	74	92
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4	M5	M6	M8	M10	M12	M16
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	6	9	9	11	13	17	21
j	[mm]	14	17	17	20	23	25	30
k (positive air pressure protection)	[mm]	11,3	14,2	16,8	21	27	32	40
l	[mm]	27	35	42	51	66	80	102
m	[mm]	21	26	32,5	37	42	47	57,5
n Ø	[mm]	19,4	23	29	35	43	53	64
o	[mm]	23	26	31	33	38	40	53
p	[mm]	11	13	14	15	17	19	24
q Ø	[mm]	20	24	30	36	45	55	66
s (acc. to DIN 912)	[mm]	M4	M5	M6	M8	M10	M12	M16
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
u Ø	[mm]	1,5	3	3	3	5	5	5
v	[mm]	21,5	26,5	33	38	43	48	58,5
w (positive air pressure protection)	[mm]	4,7	4,3	7	7	8	10	10
x	[mm]	22,6	27	32	42	53	64	80
y	[mm]	5,4	7,2	9,6	11	13	14	17,5
Weight	[kg]	0,17	0,34	0,70	1,13	2,31	3,5	6,84
Order no.:	DHSP-DHG...→	-012-001-P	-016-001-P	-020-001-P	-025-001-P	-032-001-P	-040-001-P	-050-001-P
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-037	6016-037	6020-065	6025-055	6032-062	6040-056	6050-043

The order number begins with DHSP-DHG to be completed. Example: DHSP-DHG-012-001-P

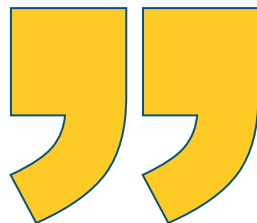


⁽¹⁾ For easier handling, the blanks are made of unhardened steel.
To prevent deformation during the operation, the clamp arms

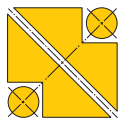
must be case-hardened by the customer after completion.
(hardening depth: 0,4 +0,2, hardening: HRC 52 +/-2)

for Size	Type	Clamping force at 100 bar hydraulically	Clamping force at 300 bar hydraulically	Residual stroke RH	b	h	l	r	Sealing plugs as spare part	Order No.
12	Standard	1,416 kN	3,640 kN	0,8 mm	12	6,0	10,5	1,5	D-DHSP-012	5012-026
	Standard	0,944 kN	2,830 kN	1,0 mm	12	6,0	13,5	1,5	"	5012-027
	Standard	0,708 kN	2,120 kN	1,4 mm	12	6,0	18,0	1,5	"	5012-028
	Standard	0,566 kN	1,700 kN	1,7 mm	12	6,0	22,5	1,5	"	5012-029
	Blank	–	–	–	12	6,0	15,0	–	"	5012-030
	Blank	–	–	–	12	6,0	24,0	–	"	5012-031
16	Standard	2,333 kN	6,720 kN	1,0 mm	16	8,0	12,5	2,0	D-DHSP-016	5016-041
	Standard	1,555 kN	4,660 kN	1,4 mm	16	8,0	18,0	2,0	"	5016-042
	Standard	1,166 kN	3,500 kN	1,8 mm	16	8,0	24,0	2,0	"	5016-043
	Standard	0,933 kN	2,800 kN	2,2 mm	16	8,0	30,0	2,0	"	5016-044
	Blank	–	–	–	16	8,0	20,0	–	"	5016-045
	Blank	–	–	–	16	8,0	32,0	–	"	5016-046
20	Standard	3,750 kN	10,540 kN	1,3 mm	20	10,0	16,0	2,5	D-DHSP-020	5020-053
	Standard	2,500 kN	7,500 kN	1,7 mm	20	10,0	22,5	2,5	"	5020-054
	Standard	1,875 kN	5,600 kN	2,2 mm	20	10,0	30,0	2,5	"	5020-055
	Standard	1,500 kN	4,500 kN	3,4 mm	20	10,0	37,5	2,5	"	5020-056
	Blank	–	–	–	20	10,0	25,0	–	"	5020-057
	Blank	–	–	–	20	10,0	40,0	–	"	5020-058
25	Standard	5,058 kN	14,450 kN	1,8 mm	25	12,5	20,0	3,0	D-DHSP-025	5025-030
	Standard	3,432 kN	10,320 kN	2,4 mm	25	12,5	28,0	3,0	"	5025-031
	Standard	2,529 kN	7,600 kN	3,2 mm	25	12,5	38,0	3,0	"	5025-032
	Standard	2,045 kN	6,150 kN	3,9 mm	25	12,5	47,0	3,0	"	5025-033
	Blank	–	–	–	25	12,5	31,0	–	"	5025-034
	Blank	–	–	–	25	12,5	50,0	–	"	5025-035
32	Standard	8,416 kN	21,640 kN	2,2 mm	32	16,0	28,0	4,0	D-DHSP-032	5032-031
	Standard	5,611 kN	16,830 kN	2,7 mm	32	16,0	36,0	4,0	"	5032-032
	Standard	4,208 kN	12,630 kN	3,5 mm	32	16,0	48,0	4,0	"	5032-033
	Standard	3,366 kN	10,100 kN	4,3 mm	32	16,0	60,0	4,0	"	5032-034
	Blank	–	–	–	32	16,0	40,0	–	"	5032-035
	Blank	–	–	–	32	16,0	64,0	–	"	5032-036
40	Standard	13,250 kN	37,260 kN	1,9 mm	40	20,0	32,0	5,0	D-DHSP-040	5040-071
	Standard	8,833 kN	26,500 kN	2,6 mm	40	20,0	45,0	5,0	"	5040-072
	Standard	6,625 kN	19,880 kN	3,4 mm	40	20,0	60,0	5,0	"	5040-073
	Standard	5,300 kN	15,900 kN	4,0 mm	40	20,0	75,0	5,0	"	5040-074
	Blank	–	–	–	40	20,0	50,0	–	"	5040-075
	Blank	–	–	–	40	20,0	80,0	–	"	5040-076
50	Standard	19,490 kN	50,500 kN	2,6 mm	50	25,0	44,0	6,0	D-DHSP-050	5050-051
	Standard	13,225 kN	39,680 kN	3,2 mm	50	25,0	56,0	6,0	"	5050-052
	Standard	9,874 kN	29,620 kN	4,2 mm	50	25,0	75,0	6,0	"	5050-053
	Standard	6,612 kN	19,840 kN	6,1 mm	50	25,0	112,0	6,0	"	5050-054
	Blank	–	–	–	50	25,0	62,0	–	"	5050-055
	Blank	–	–	–	50	25,0	118,0	–	"	5050-056

Special sizes and designs are available on request.



Rotary lever clamp for optimum chip protection!



Rotary linear clamp with pneum. control

hydraulically double-acting, pmax 250 bar, position control available in clamped and/or unclamped state

250-40

Issue: 05/2026

Description:

The rotary linear clamp with pneumatic position detection is particularly suitable for clamping devices that have limited space for the installation of clamping elements. The design and compact construction of the rotary linear clamps enable flexible solutions for a wide range of installation conditions.

The double-acting rotary linear clamps are pull cylinders and are used in clamping devices whose oil supply is provided via drilled channels.

The linear stroke is used proportionally to swing in the clamping lever, thereby securing the workpiece. This means that the linear stroke can also compensate workpiece tolerances. To release the clamp, the clamping lever swings back far enough to allow the workpiece to be removed without collision.

The clamping lever is coupled to the piston rod. In double-acting rotary linear clamps, the clamping lever is opened or closed by the pressure medium.

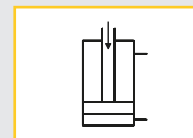
The version with cover is installed in open bores and ensures a minimum installation height. The version without cover requires a closed blind hole.

Pneumatic position control:

When querying the position, either the clamped position, the unclamped position or even both can be queried.



Webcode: 025040



Connections:

- Drilled channels

Advantages:

- Clamping without shear forces
- Pipeless oil supply
- Partial retractable housing
- Individual clamping levers mountable
- Control of the clamping lever position
- Any installation position
- Compact dimensions
- Metal wiper

We also design and manufacture customized variants!



HYDROKOMP®

Hydraulische Komponenten GmbH



+49 6401 225999-0



sales@hydrokomp.de



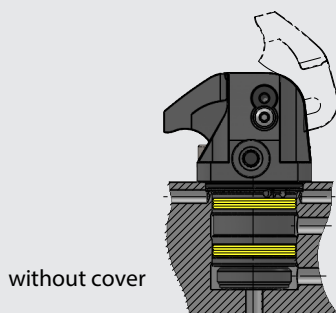
Siemenstr. 16
35325 Mücke (Germany)



www.hydrokomp.de

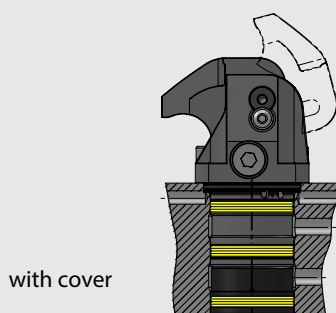
Technology that connects

Standard clamping lever



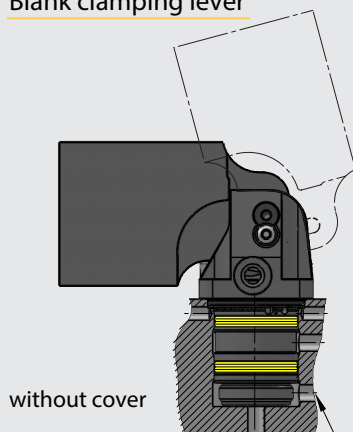
without cover

Standard clamping lever



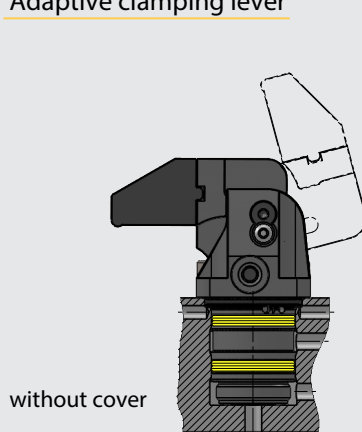
with cover

Blank clamping lever



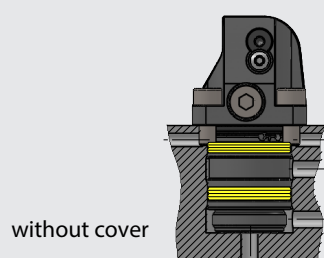
without cover

Adaptive clamping lever



without cover

without clamping lever

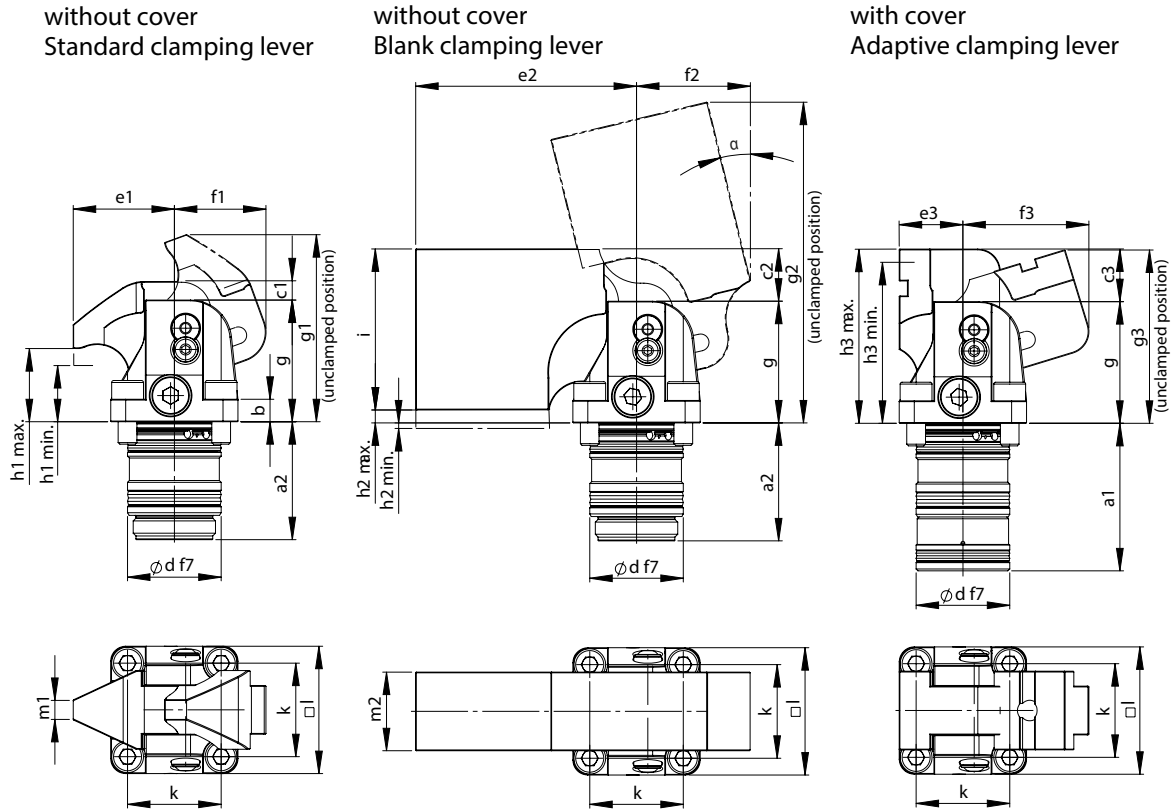


without cover

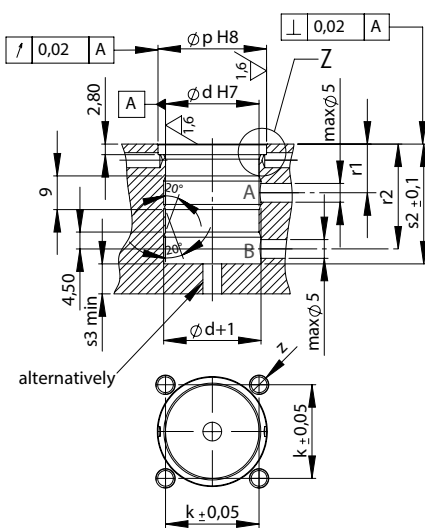
Connection options
unclamped

Special clamping lever

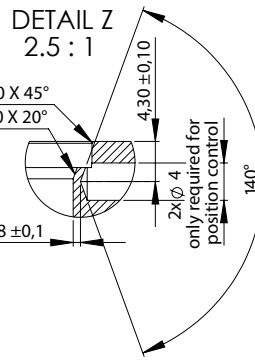
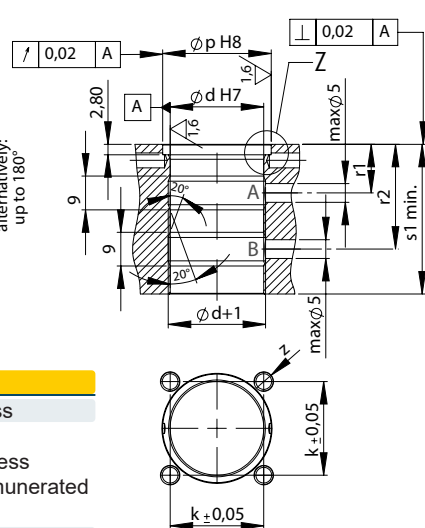
Quantity	% at standard price
3 - 5	+ 100%
6 - 15	+ 70%
from 16	+ 50%



Installation contour without cover

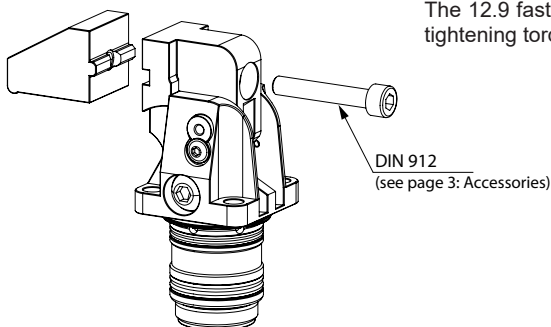


Installation contour with cover

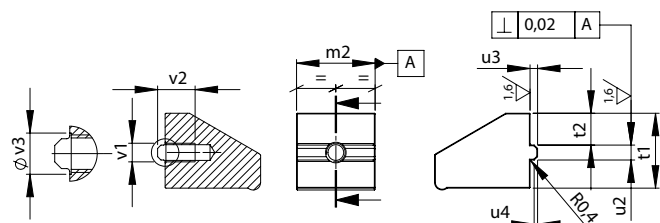


Materials	
housing	hardened, stainless
clamping lever:	
standard	HRC 48-55, stainless
blank	X37CrMoV5-1 remunerated
	HR 40, nitrided
seals	NBR and PUR (max. 80°C)

Adaptive clamping lever



Flange dimensions for adaptive clamping lever





Size / Piston Ø:		18	22	28	33
Clamping force at 250 bar (standard clamping lever)	[kN]	3,2	4,5	7,5	11,5
Max. stroke	[mm]	5	5	7	8,5
Usable clamping stroke	[mm]	4,5	4,5	6,5	8
Rod diameter	[mm]	11	14	17	19
Oil requirements clamping / unclamping	[cm ³]	2,3 / 3,6	3,2 / 5,4	6,4 / 10,2	10,5 / 15,7
Permissible volume flow	[cm ³ /s]	8	11	22	35
Minimum pressure without clamping control	[bar]	20	20	20	20
with clamping control	[bar]	70	70	70	70
with unclamping control	[bar]	20	20	20	20
Minimum air pressure	[bar]	0,5	0,5	0,5	0,5
α ± w1	[°]	13,5	10,5	14	16
a1	[mm]	39,4	43	48,5	50,5
a2	[mm]	32	34	40,6	40,8
b	[mm]	6	7	10	10
c1	[mm]	5	5	7	8,5
c2	[mm]	14	12	7	8,5
c3	[mm]	14	16	16	22,5
Ød H7 / f7	[mm]	25	32	40	45
e1	[mm]	27	28	36,5	36,5
e2	[mm]	59	60	67,5	67,5
e3	[mm]	17	20	22	22
f1	[mm]	24,7	25,9	31,3	33,8
f2	[mm]	30,7	30,5	31,3	33,8
f3	[mm]	34,3	37	40,4	48,1
g	[mm]	32,5	36,5	43	46
g1 max.*	[mm]	49,3	51	63	64,8
g2 min. / max.*	[mm]	85 / 87,5	86 / 89,5	97,7 / 99,7	100,9 / 103
g3	[mm]	44	47,2	55,4	60,6
h1 min. / h1 max.	[mm]	15,5 / 20	15,5 / 20	15,5 / 22	15,5 / 23,5
h2 min. / h2 max.	[mm]	1 / 3,5	2 / 2,5	1 / 5,5	1 / 7
h3 min. / h3 max.	[mm]	42 / 46,5	48 / 52,5	52,5 / 59	60,5 / 68,5
i	[mm]	43	46	44,5	47,5
k	[mm]	25	31	36,5	41
l	[mm]	34	42	48	55
m1	[mm]	5	6	8	8
m2	[mm]	21	26	32	35
n	[°]	50,4	55,8	56,1	62
Ø p H8	[mm]	29	36	44	49
r1	[mm]	13	13	14	14
r2	[mm]	28	28	31	31
s1 min.	[mm]	40	43,5	49	51
s2 ± 0,1	[mm]	32	34	40,6	40,8
s3 min.	[mm]	6	7	9	10
t1	[mm]	20	23	23	29
t2	[mm]	8,5	12	10	17
u2 - 0,05	[mm]	4	5	6	6
u3	[mm]	2	3	4	4
u4	[mm]	0,9x45°	1x45°	1,3x45°	1,3x45°
v1 x v2	[mm]	M5 x 10	M5 x 10	M8 x 17	M8 x 17
Ø v3	[mm]	5,5	5,5	8,5	8,5
z	[mm]	M5	M6	M6	M8

Variant without cover: A

Order no. - without clamping lever	DLSP-A1805-00X	DLSP-A2205-00X	DLSP-A2807-00X	DLSP-A3308-00X
Weight approx.	[kg] 0,19	0,33	0,55	0,70
Order no. - standard clamping lever	DLSP-A1805-01X	DLSP-A2205-01X	DLSP-A2807-01X	DLSP-A3308-01X
Weight approx.	[kg] 0,27	0,46	0,82	1,03
Order no. - blank clamping lever	DLSP-A1805-02X	DLSP-A2205-02X	DLSP-A2807-02X	DLSP-A3308-02X
Weight approx.	[kg] 0,54	0,82	1,3	1,56
Order no. - adaptive clamping lever	DLSP-A1805-03X	DLSP-A2205-03X	DLSP-A2807-03X	DLSP-A3308-03X
Weight approx.	[kg] 0,29	0,51	0,83	0,92

Variant with cover: B

Order no. - without clamping lever	DLSP-B1805-00X	DLSP-B2205-00X	DLSP-B2807-00X	DLSP-B3308-00X
Weight approx.	[kg] 0,21	0,4	0,65	0,84
Order no. - standard clamping lever	DLSP-B1805-01X	DLSP-B2205-01X	DLSP-B2807-01X	DLSP-B3308-01X
Weight approx.	[kg] 0,3	0,53	0,92	1,17
Order no. - blank clamping lever	DLSP-B1805-02X	DLSP-B2205-02X	DLSP-B2807-02X	DLSP-B3308-02X
Weight approx.	[kg] 0,57	0,88	1,4	1,7
Order no. - adaptive clamping lever	DLSP-B1805-03X	DLSP-B2205-03X	DLSP-B2807-03X	DLSP-B3308-03X
Weight approx.	[kg] 0,32	0,57	0,93	1,06

Pneumatic position control:

When placing your order, please replace the variable **X** in the order number with the corresponding number to obtain the desired position query..

- 0 without position control
- 1 clamped position control
- 2 unclamped position control
- 3 clamped and unclamped position control

Accessories

Order no. - standard clamping lever	SHS-18-001	SHS-22-001	SHS-28-001	SHS-33-001
Order no. - blank clamping lever	SHR-18-001	SHR-22-001	SHR-28-001	SHR-33-001
Order no. - adaptive clamping lever	SHA-18-001	SHA-22-001	SHA-28-001	SHA-33-001
Screw for adaptive clamping lever	[mm] M5 x 30 –12.9	M5 x 30 –12.9	M8 x 35 –12.9	M8 x 35 –12.9
Tightening torque	[Nm] 10	10	42	42
Order no.	7005-101	7005-101	7008-039	7008-039



Order number key:

Example: **DLSP** - **A** **1805** - **0** **1** **0**

Design: without cover = **A**
with cover = **B**

Piston Ø: **Linear stroke:**

18 → **05**
22 → **05**
28 → **07**
33 → **08**

Clamping lever: without clamping lever = **0**
standard = **1**
blank = **2**
adaptive = **3**

Position control: without position control = **0**
clamped position control = **1**
unclamped position control = **2**
clamped and unclamped position control = **3**

Position control:

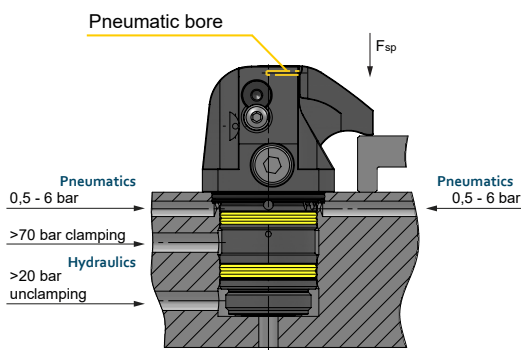
1. Pneumatic clamping control

In the clamping range, the clamping lever moves downwards along two hardened surfaces on the housing. One of these surfaces has a hole for the pneumatic clamped control.

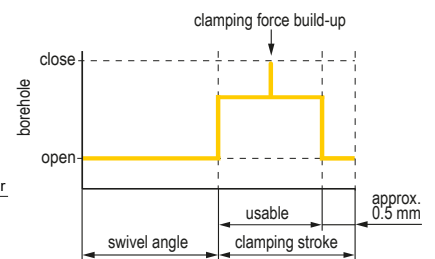
When moving over this hole, the clamping lever does not initially close it completely. Only when a workpiece is actually clamped in place does the lever rest against the sliding surface and the hole is securely closed.

The clamping control emits a signal when the clamping lever is within the functional clamping range and a workpiece is correctly clamped.

Example: clamped position



Function diagram:



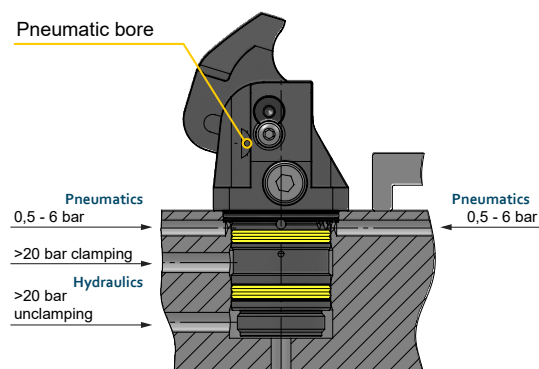
Important:

Minimum pressures required for clamping control: Pneumatics 0.5 bar
Hydraulics 70bar

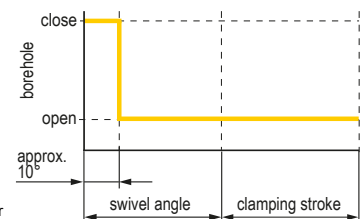
2. Pneumatic unclamping control

In the unclamping position, the clamping lever covers and closes a pneumatic bore.

Example: unclamped position



Function diagram:



Note:

The rotary linear clamp can be equipped with either a clamping or unclamping control, whereby it is also possible to monitor both positions in a rotary linear clamp.

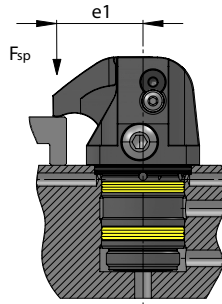
Control via pneumatic pressure switch

Standard pressure switches for pneumatics can be used to detect the pressure increase in the pneumatic line.

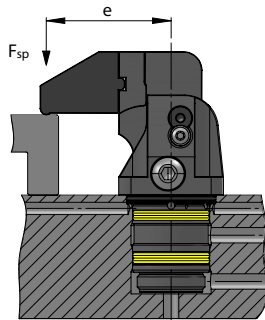


Clamping forces:

Standard clamping lever



Adaptive clamping lever



Clamping force calculations:

- Clamping lever length e is known
- Permissible clamping force as a function of clamping lever length e

$$F_{zul} = \frac{A}{e - B} \quad [\text{kN}]$$

- Permissible operating pressure

$$p_{zul} = \frac{F_{zul} * 100}{C} * \left(\frac{e - B}{D} + 1 \right) \quad [\text{bar}]$$

- Effective clamping force at other pressure p

- F_{zul} and p_{zul} are known

$$F_{sp} = F_{zul} \frac{p}{p_{zul}} \leq F_{zul} \quad [\text{kN}]$$

- In general, the following applies:

$$F_{sp} = \frac{C}{\left(\frac{e - B}{D} + 1 \right) * 100} * p \leq F_{zul} \quad [\text{kN}]$$

- Maximum clamping lever length depending on the available operating pressure

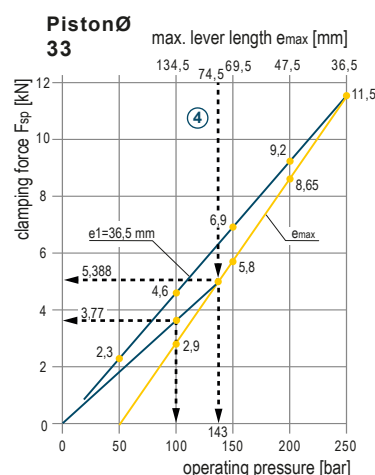
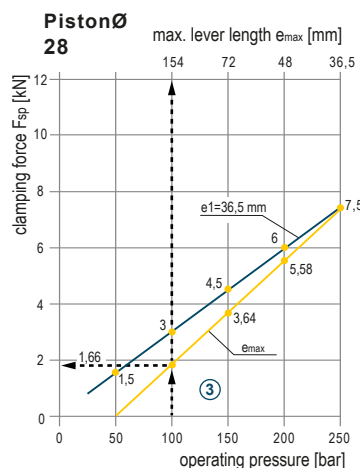
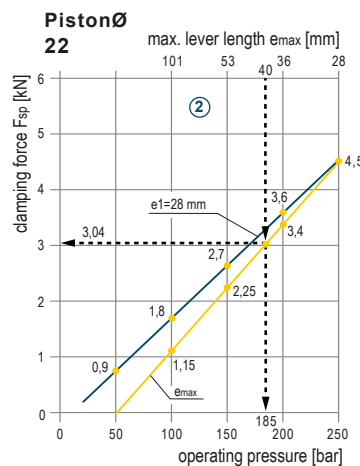
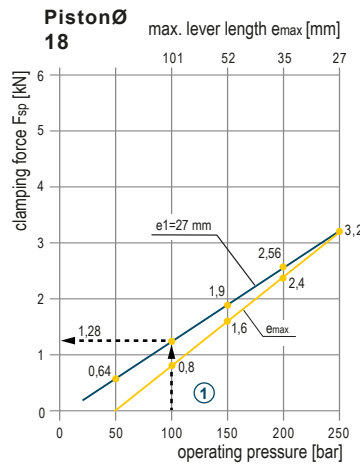
$$e_{max} = \frac{A}{(C * 0,01 * p) - E} + B \quad [\text{mm}]$$

F_{sp}, F_{zul} = clamping force [kN]
 $e, e1, e_{max}$ = clamping lever length [mm]
 p, p_{zul} = operating pressure [bar]
 $A...E$ = constants according to table

Enter the variables in the above units into the formulas.

Constants

PistonØ	18	22	28	33
A	80	112,5	251,3	385,3
B	2	3	3	3
C	1,594	2,262	3,888	5,718
D	101,7	97,62	113	138,1
E	0,787	1,152	2,224	2,789



Example 1: Rotary linear clamp Ø18

Standard clamping lever $e1 = 27$ mm; $F_{zul} = 3,2$ kN at $p_{zul} = 250$ bar; operating pressure $p = 100$ bar

Effective clamping force

$$F_{sp} = F_{zul} \frac{p}{p_{zul}} = 3,2 \frac{100}{250} = 1,28 \text{ kN}$$

alternative

$$F_{sp} = \frac{C}{\left(\frac{e - B}{D} + 1 \right) * 100} * p$$

$$F_{sp} = \frac{1,594}{\left(\frac{27 - 2}{101,7} + 1 \right) * 100} * 100$$

$$F_{sp} = 1,28 \text{ kN}$$

Example 2: Rotary linear clamp Ø22

Standard clamping lever $e = 40$ mm

Effective clamping force

$$F_{zul} = \frac{A}{e - B} = \frac{112,5}{40 - 3} = 3,04 \text{ kN}$$

Permissible operating pressure

$$p_{zul} = \frac{F_{zul} * 100}{C} * \left(\frac{e - B}{D} + 1 \right)$$

$$p_{zul} = \frac{3,04 * 100}{2,262} * \left(\frac{40 - 3}{97,62} + 1 \right)$$

$$p_{zul} = 185 \text{ bar}$$

Example 3: Rotary linear clamp Ø28

operating pressure $p = 100$ bar; Adaptive clamping lever

Maximum clamping lever length

$$e_{max} = \frac{A}{(C * 0,01 * p) - E} + B$$

$$e_{max} = \frac{3,888}{(3,888 * 0,01 * 100) - 2,224} + 3$$

$$e_{max} = 154,02 \text{ mm} \hat{=} 154 \text{ mm}$$

Maximum clamping force

$$F_{sp} = \frac{C}{\left(\frac{e - B}{D} + 1 \right) * 100} * p$$

$$F_{sp} = \frac{3,888}{\left(\frac{154 - 3}{113} + 1 \right) * 100} * 100$$

$$F_{sp} = 1,66 \text{ kN}$$

Example 4: Rotary linear clamp Ø33

Adaptive clamping lever $e = 74,5$ mm

Permissible clamping force

$$F_{zul} = \frac{A}{e - B} = \frac{385,3}{74,5 - 3} = 5,388 \text{ kN}$$

Permissible operating pressure

$$p_{zul} = \frac{F_{zul} * 100}{C} * \left(\frac{e - B}{D} + 1 \right)$$

$$p_{zul} = \frac{4,077 * 100}{5,718} * \left(\frac{74,5 - 3}{138,1} + 1 \right)$$

$$p_{zul} = 143 \text{ bar}$$

Effective clamping force at 100 bar

$$F_{sp} = \frac{C}{\left(\frac{e - B}{D} + 1 \right) * 100} * p$$

$$F_{sp} = \frac{5,718}{\left(\frac{74,5 - 3}{138,1} + 1 \right) * 100} * 100$$

$$F_{sp} = 3,77 \text{ kN}$$



Permissible volume flow:

The permissible volume flow specified in the table on page 3 refers to short-type clamping levers. In this case, the clamping time is approximately 0.6 seconds and the unclamping time is approximately 1 second.

When using longer clamping levers with a higher moment of inertia, the swivel mechanism is subjected to greater stress, which can lead to increased wear. The end stop is particularly critical when unclamping. Therefore, the volume flow should be reduced for longer clamping levers according to the following formula:

$$Q_L = Q_K \cdot \sqrt{\frac{J_K}{J_L}} \text{ cm}^3/\text{s}$$

Q_L = Permissible volume flow with longer special clamping lever

Q_K = Permissible volume flow with 'short' clamping lever according to table on page 3

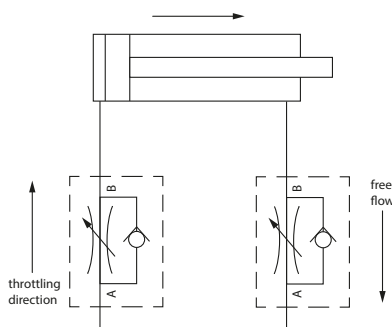
J_K = Moment of inertia of the 'short' special clamping lever (see table)

J_L = Moment of inertia of the longer special clamping lever

$$\text{clamping time } t_{sp} = \frac{\text{oil consumption range [cm}^3\text{]}}{\text{permissible volume flow [cm}^3\text{/s]}} \text{ [S]}$$

Throttling of the volume flow:

The volume flow must be throttled in the inlet, i.e. in the direction of the rotary linear clamp. This is the only way to avoid pressure transmission and thus pressures above 250 bar.

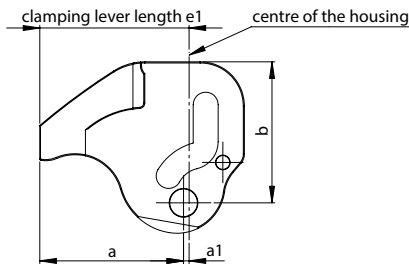


Important:

The clamping lever length **e** is always measured from the centre of the housing. As shown in the examples, the actual pivot axis for calculating the moment of inertia is offset by 1 to 2 mm. The exact position of the pivot axis can be determined precisely using coordinates **a** and **b**.

Standard clamping lever:

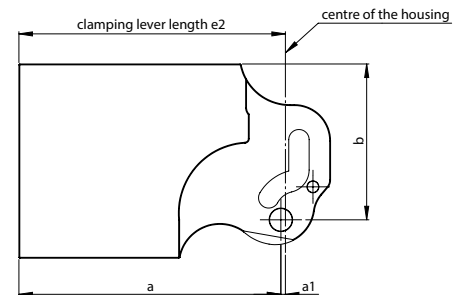
The moment of inertia specified in the table forms the basis for the maximum achievable volume flow and the minimum possible clamping time.



PistonØ		18	22	28	33
e1	[mm]	27	28	36,5	36,5
a	[mm]	26	26	34,5	34,5
a1	[mm]	1	2	2	2
b	[mm]	25,5	27,5	33	36
moment of inertia J_K	[kgmm ²]	22	34	98	125

Blank clamping lever:

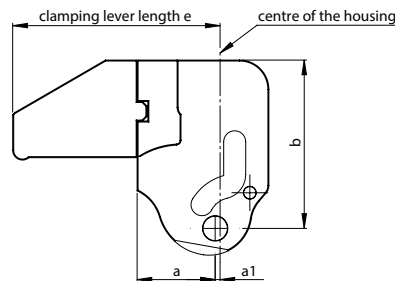
The blank does not represent a ready-to-use clamping lever. The table value indicates the maximum achievable moment of inertia.



PistonØ		18	22	28	33
e2	[mm]	59	60	67,5	67,5
a	[mm]	58	58	65,5	65,5
a1	[mm]	1	2	2	2
b	[mm]	34,5	34,5	33	36
moment of inertia J_L	[kgmm ²]	576	756	1234	1477

Adaptive clamping lever:

The Adaptive clamping lever is supplemented by a customer-supplied clamping iron and a fastening screw. To determine the moment of inertia, a CAD model should be created in the assembled state.



PistonØ		18	22	28	33
e	[mm]	customer requirement			
a	[mm]	16	18	20	20
a1	[mm]	1	2	2	2
b	[mm]	34,5	38,5	42	50
moment of inertia J_{L1}	[kgmm ²]	49	97	170	294
+ extension J_{L2}	[kgmm ²]	determine using CAD model			

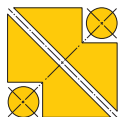
Safety information:

Rotary linear clamps are designed for industrial use for clamping workpieces.

Da hydraulische Spannelemente sehr hohe Hydraulische clamping elements can generate very high forces, the workpiece, fixture and machine must be designed to be sufficiently stable. There is a risk of crushing in the area of the clamping lever, which is why the manufacturer of the device is obliged to take appropriate protective measures. During loading and unloading, avoid colliding with the clamping lever. The flange height of the rotary linear clamp and the clamping surface of the workpiece should be adjusted so that the clamping height is in the middle of the usable clamping stroke.

Regular inspection and cleaning of the clamping system is necessary, especially when chips are produced.

In the case of dry machining, minimum quantity lubrication or fine particles, regular disassembly, cleaning and lubrication of the lever mechanism is also necessary.



Work supports

M30x1.5, threaded body, actuation with hydraulic, contact by spring force, pmax. 500 bar, positive air pressure upon request

280-1

Issue: 08/2026

Description:

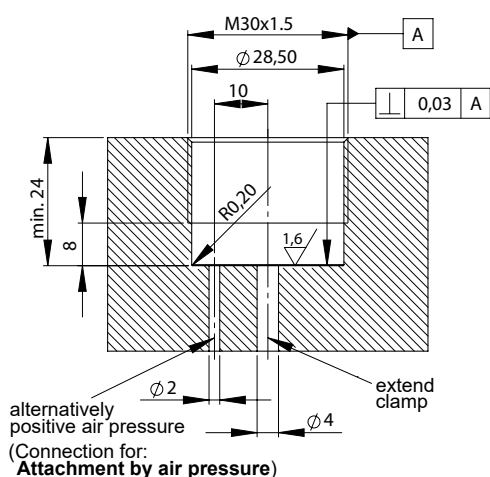
When it is about increasing machining accuracy, the work supports are ideal components to avoid vibrations and deflection while machining workpieces.

The threaded body models allow horizontal as well as vertical mounting into the clamping fixture. With this flexibility, compact fixture designs can be realized also in space-critical conditions.

The hydraulic fixing of the plunger can be combined with the hydraulic clamping of the workpiece or separated. There are three work support methods to advance the plunger:

1. Attachment by spring force
2. Attachment by air pressure
3. Attachment by hydraulics and spring force

Installation contour:



Combination with clamping elements:

When combining with clamping elements, the load and clamping forces must be coordinated so that the screw-in support element has sufficient force reserve to absorb the machining forces.

The following applies:

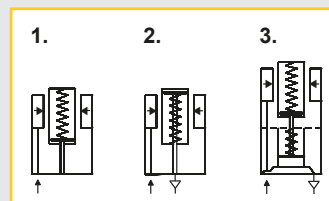
Dynamic support force $\geq 2 \times$ clamping force

Positive air pressure:

To provide better protection for the work support against liquid ingress, it is recommended to apply a maximum overpressure of 0.5 bar. The positive air pressure should only be switched on after the plunger has been extended and switched off again before it is retracted.



Webcode: 028001



Note:

Work supports are not designed to withstand lateral forces. Furthermore, the support bolt must not be subjected to tensile stress. The specified allowable load applies exclusively to static or uniformly varying loads.

During machining, vibrations may occur that briefly generate forces significantly exceeding the allowable load. To prevent failure, the safety factors should be increased or additional work supports should be used to distribute the load across multiple support points.

When machining with very fine chips, chip buildup may occur in the area of the metal scraper edge on the work support. To prevent this, this area must be cleaned regularly.

Advantages:

- ☒ Protecting metal wiper
- ☒ Compact fixture designs possible
- ☒ Horizontal and vertical mounting possible
- ☒ Positive air pressure upon request
- ☒ Operating temperature -10°C to +80°C

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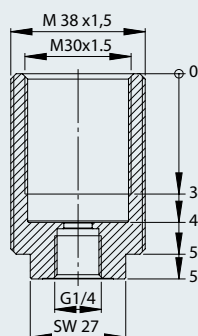
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Accessories:

Connection housing M38x1.5

Order no. NTP-132



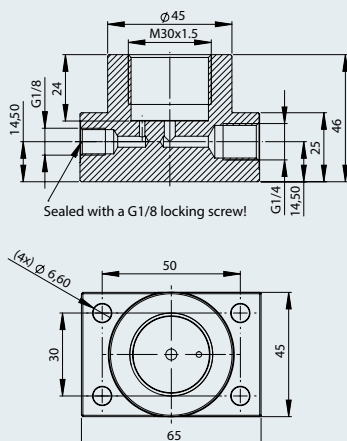
Accessories:

Nut Order no. 7038-010

Accessories:

Connection housing flange

Order no. NTP-133

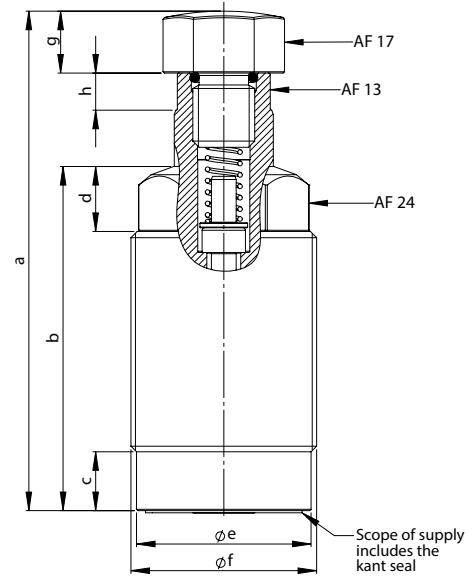




Attachment by spring force

Default position: Bolt extended
Engages via spring force

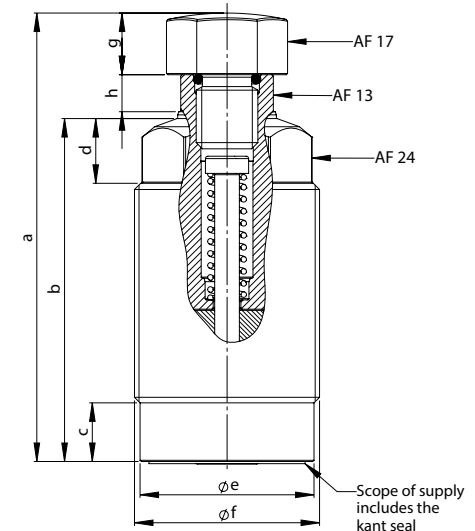
Max. support force at 500 bar	[kN]	7.5	10.5
Plunger Ø	[mm]	16	16
Plunger, stroke	[mm]	8	8
Min. oil pressure	[bar]	100	100
Tightening torque	[Nm]	60	60
Spring force, min.	[N]	12	12
Spring force, max.	[N]	28	28
a	[mm]	80.5	90.5
b	[mm]	55.5	65.5
c	[mm]	9.5	9.5
d	[mm]	10.5	10.5
e +0.2	[mm]	28	28
f	[mm]	M30x1.5	M30x1.5
g	[mm]	10	10
h	[mm]	6	6
Weight approx.	[kg]	0.25	0.28
Order no.		ASE-016-08-01-001	ASE-016-08-01-002



Attachment by air pressure

Default position: Bolt retracted
Extension and attachment with air pressure

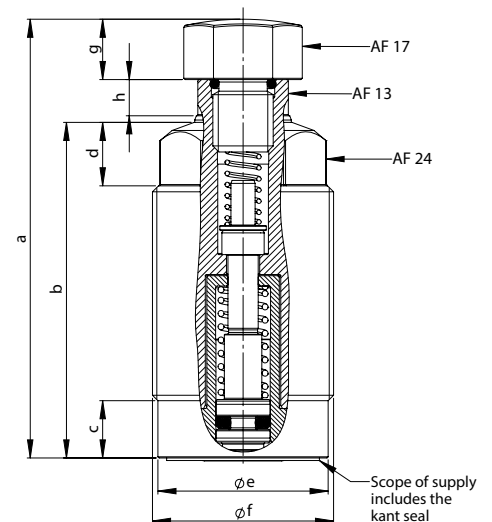
Max. support force at 500 bar	[kN]	7.5	10.5
Plunger Ø	[mm]	16	16
Plunger, stroke	[mm]	8	8
Min. oil pressure	[bar]	100	100
Tightening torque	[Nm]	60	60
Spring force, min.	[N]	21	21
Spring force, max.	[N]	36	36
Bolt clamping force at 1 bar air pressure minus spring force	[N]	20	20
a	[mm]	72.5	82.5
b	[mm]	55.5	65.5
c	[mm]	9.5	9.5
d	[mm]	10.5	10.5
e +0.2	[mm]	28	28
f	[mm]	M30x1.5	M30x1.5
g	[mm]	10	10
h	[mm]	6	6
Weight approx.	[kg]	0.25	0.28
Order no.		ASE-016-08-02-001	ASE-016-08-02-002

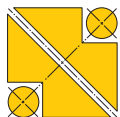


Attachment by hydraulics and spring force

Default position: Bolt retracted
Extension with Hydraulik and attachment with spring force

Max. support force at 500 bar	[kN]	Stroke 8 mm		Stroke 15 mm	
		7.5	10.5	7.5	10.5
Plunger Ø	[mm]	16	16	16	16
Plunger, stroke	[mm]	8	8	15	15
Min. oil pressure	[bar]	100	100	100	100
Oil requirement per stroke	[cm³]	0.5	0.5	1	1
Tightening torque	[Nm]	60	60	60	60
Spring force, min.	[N]	12	12	10	10
Spring force, max.	[N]	28	28	26	26
Volume flow, max.	[cm³/s]	25	25	25	25
a	[mm]	72.5	82.5	79.5	89.5
b	[mm]	55.5	65.5	62.5	72.5
c	[mm]	9.5	9.5	9.5	9.5
d	[mm]	10.5	10.5	10.5	10.5
e +0.2	[mm]	28	28	28	28
f	[mm]	M30x1.5	M30x1.5	M30x1.5	M30x1.5
g	[mm]	10	10	10	10
h	[mm]	6	6	6	6
Weight approx.	[kg]	0.25	0.28	0.27	0.31
Order no.		ASE-016-08-03-001	ASE-016-08-03-002	ASE-016-15-03-001	ASE-016-15-03-002



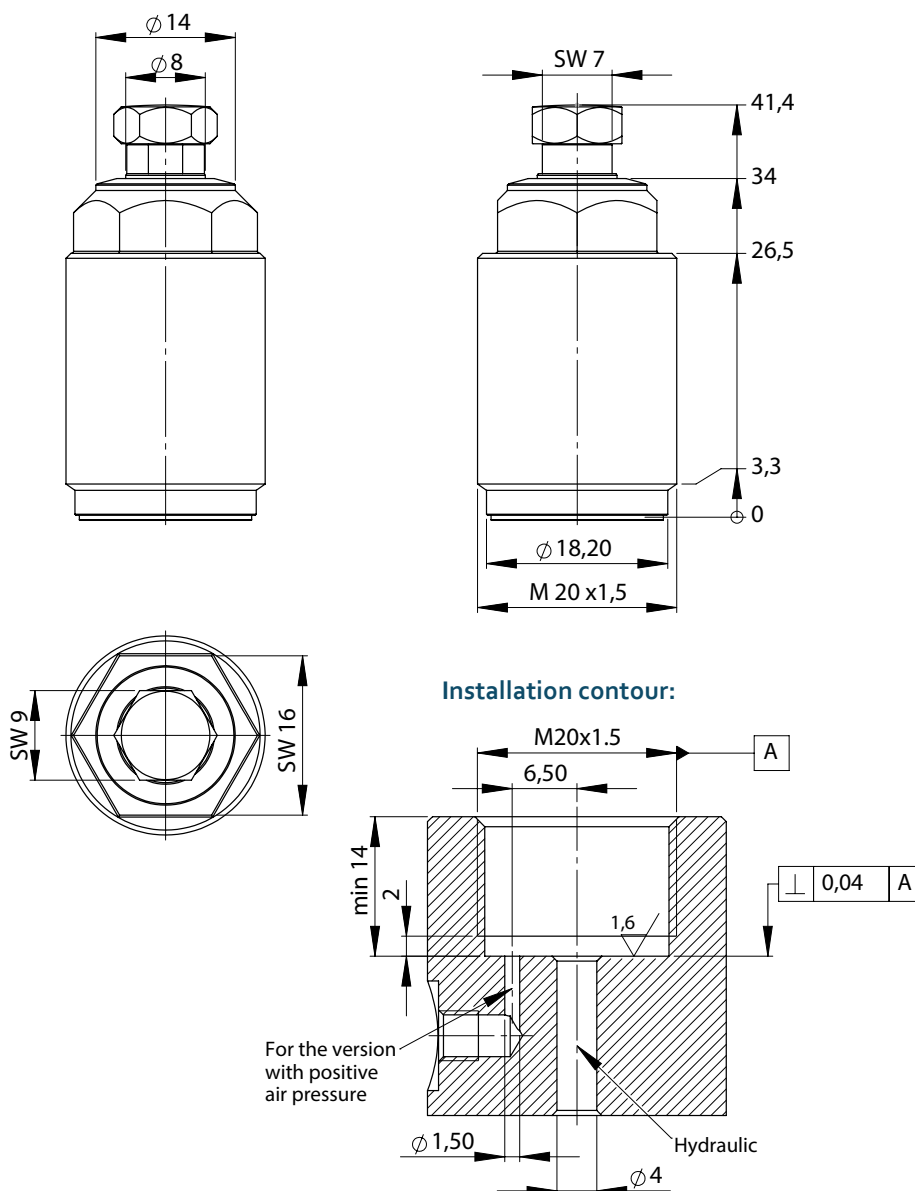


Mini work support

M20x1.5, threaded body, contact by spring force, actuation with hydraulic, with/without positive air pressure, pmax. 200 bar

280-2

Issue: 08/2026



Positive air pressure:

To provide better protection for the work support against liquid ingress, it is recommended to apply a maximum overpressure of 0.5 bar. The positive air pressure should only be switched on after the plunger has been extended and switched off again before it is retracted.

Support force:

Operating pressure	[bar]	Support force	[N]
pmin.	80	380	
	100	500	
	120	600	
	140	700	
	160	800	
	180	900	
pmax.	200	1000	

The sealing rings for sealing against the bottom of the installation hole are included.

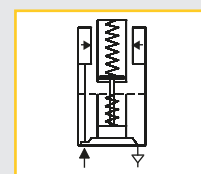
Order number for spare part:
DS-ASE-007

Technical data:

Plunger Ø:	[mm]	8
Plunger stroke	[mm]	4
Permissible load at 70 bar	[N]	1000
Tightening torque	[Nm]	20
Spring load, min.	[N]	5
Spring load, max.	[N]	10
Oil requirement per stroke	[cm³]	0.1
Permissible flow rate	[cm³/s]	15
Order number without positive air pressure		ASE-007-04-03-001
Order number with positive air pressure		ASE-007-04-03-004



Webcode: 028002



Description:

If vibration and deflection must be avoided while machining workpieces, these work support (ASE) is the optimal solution. The mini work support is ideal suitable for clamping fixtures on which are a high number of support points is needed on a small space.

Another application is in the field of processing small workpieces. The very compact threaded housing allows horizontal and vertical installation into the clamping fixture. As a result, space-saving arrangements can also be realized under combined installation conditions. Pressure oil supply if done via a drilled channel in the installation bore. The advance of the support plunger against the workpiece is done with a hydraulically preloaded spring. The basic position of the plunger is retracted. Plunger fixing can be combined with the hydraulic clamping of the workpiece or separately.

Advantages:

- ✗ Ideal for small workpieces
- ✗ Arrangements with a high number of support points are possible
- ✗ Space-saving installation horizontal/vertical possible
- ✗ with and without positive air pressure

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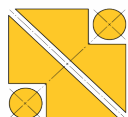
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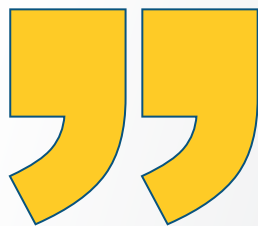
Technology that connects



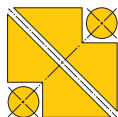
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Technology that connects



„Good clamping technology needs reliable support.“

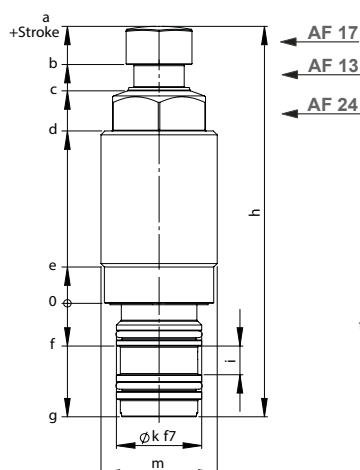


Work supports with threaded body

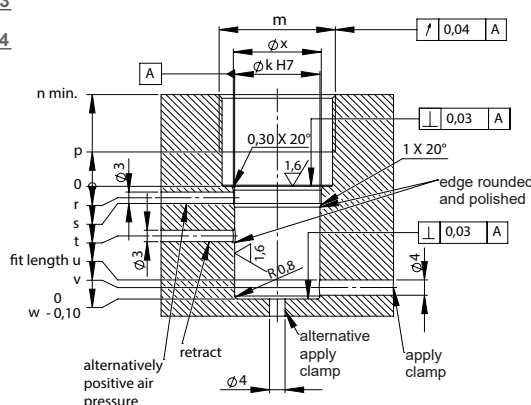
M30x1.5, actuation double acting hydraulically, contact by spring force, pmax. 500 bar, positive air pressure upon request

280-3

Issue: 08/2026



Installation contour



Webcode: 028003

Technical data:

		Stroke 8 mm		Stroke 15 mm	
		7.5	10.5	7.5	10.5
Perm. support load at 500 bar	[kN]				
Support bolt Ø	[mm]	16	16	16	16
Support bolt, stroke	[mm]	8	8	15	15
Oil pressure, min. (clamping)	[bar]	100	100	100	100
Oil pressure, min. (retract)	[bar]	20	20	20	20
Tightening torque	[Nm]	60	60	60	60
Spring force, min./max.	[N]	12/28	12/28	10/26	10/26
Oil requirement per stroke	[cm³]	0.6	0.6	1.2	1.2
perm. volume flow	[cm³/s]	25	25	25	25
Operating temperature, max.	[°C]	+80	+80	+80	+80
Elastic Length Change at load and 500 bar	[µm/kN]	4	4	4	4
a	[mm]	72.5	82.5	79.5	89.5
b	[mm]	62.5	72.5	69.5	79.5
c	[mm]	55.5	65.5	62.5	72.5
d	[mm]	45	55	52	62
e	[mm]	9.5	9.5	9.5	9.5
f	[mm]	11	11	10	10
g	[mm]	29.5	29.5	35	35
h	[mm]	102	112	114.5	124.5
i	[mm]	7.5	7.5	11.5	11.5
k H7	[mm]	22	22	22	22
m	[mm]	M30x1.5	M30x1.5	M30x1.5	M30x1.5
n min.	[mm]	24	24	24	24
p	[mm]	9	9	9	9
r	[mm]	3	3	3	3
s	[mm]	4.5	4.5	4.5	4.5
t	[mm]	13	13	14.5	14.5
u	[mm]	24.5	24.5	30	30
v	[mm]	26.5	26.5	32	32
w -0.10	[mm]	29.5	29.5	35	35
x	[mm]	22.5	22.5	22.5	22.5
Weight approx.	[kg]	0.32	0.36	0.36	0.40
Order no.		ASE-016-08-03-003	ASE-016-08-03-004	ASE-016-15-03-003	ASE-016-15-03-004

Kantseal included in the scope of delivery.

Mode of operation:

A spring is preloaded via a double-acting piston, which applies the support bolt to the workpiece. When the pressure rises, the support bolt is clamped. The support bolt is also retracted hydraulically.

Basic information:

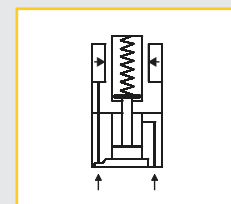
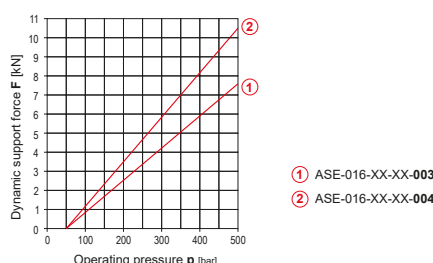
Support bolts must not be subjected to transverse or tensile forces at any time. Machining and clamping forces can add up and should not exceed the pressure-dependent support force. A safety factor of min. 1.5 is recommended.

Chip nests in the area of the support bolt compromise the safe function and must be avoided.

Positive air pressure:

To provide better protection for the work support against liquid ingress, it is recommended to apply a maximum overpressure of 0.5 bar. The positive air pressure should only be switched on after the plunger has been extended and switched off again before it is retracted.

Permissible support force F depending from operating pressure p



Description:

If vibration and deflection must be avoided while machining workpieces, these work supports are the ideal solution.

The threaded body elements allow horizontal and vertical mounting into the clamping fixture.

There for space-saving arrangements can be implemented even in cramped installation conditions.

Due to the double-acting function (apply/clamp and retract), which is performed with hydraulic oil via drilled channels, the retraction of the support bolt is performed quickly and safely.

Advantages:

- Application always via spring force
- protective metal wiper
- space-saving installation possibilities
- Installation possible horizontally/vertically
- More safety due to double acting function
- Supporting force up to 7.5 kN and 10.5 kN
- Positive air pressure upon request

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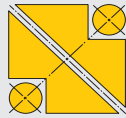
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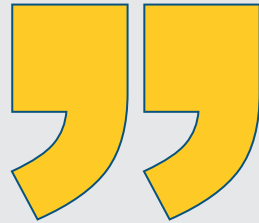
Technology that connects



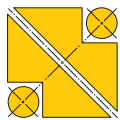
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Technik, die verbindet



**„Developed in response to a customer suggestion and
established as a reliable vibration compensation
solution for workpieces sensitive to deformation.“**



Work supports

M26x1.5, threaded body, contact by spring force, actuation with hydraulic, pmax. 350 bar

280-4

Ausgabe: 08/2026

Description:

When machining workpieces and it is important to prevent vibrations and deflection, these support elements provide the ideal support.

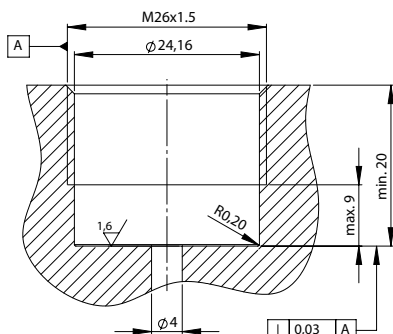
The screw-in version allows for horizontal and vertical mounting in the clamping device. This makes it possible to achieve space-saving configurations even in tight installation conditions.

The hydraulic oil is supplied through a drilled channel into the mounting hole. The support pin is pressed against the workpiece by a hydraulically preloaded spring. The pin's default position is retracted.

Function:

The support pin is held in its retracted home position by a spring. When hydraulic pressure is applied, the piston extends and positions the support pin against the already clamped workpiece using spring force. As the hydraulic pressure increases, the support pin is clamped in place, allowing it to reliably absorb axial forces.

Installation contour:



Max. support force at 350 bar	[kN]	4.5
Plunger Ø	[mm]	16
Plunger, stroke	[mm]	6.5
Min. oil pressure	[bar]	100
Oil requirement per stroke	[cm³]	0.4
Tightening torque	[Nm]	50
Spring force, min.	[N]	11
Spring force, max.	[N]	28
Volume flow, max.	[cm³/s]	25
a	[mm]	54.5
b	[mm]	44.5
c	[mm]	9.5
d	[mm]	10
e +0.2	[mm]	23.8
f	[mm]	M26x1.5
g	[mm]	3.5
h	[mm]	6
Weight approx.	[kg]	0.25
Order no.	ASE-016-06-03-001	

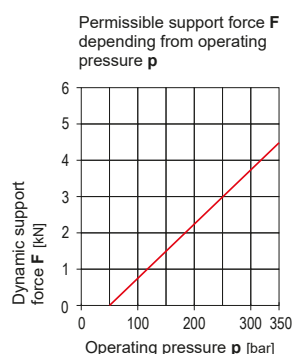
To release the support, the hydraulic pressure is reduced. The piston then returns to its home position under spring force, pulling the support pin into the retracted position.

Combination with clamping elements:

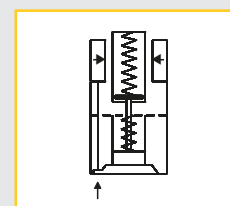
When combining with clamping elements, the load and clamping forces must be coordinated so that the screw-in support element has sufficient force reserve to absorb the machining forces.

The following applies:

Dynamic support force $\geq 2 \times$ clamping force



Webcode: 028004



Note:

Work supports are not designed to withstand lateral forces. Furthermore, the support bolt must not be subjected to tensile stress. The specified allowable load applies exclusively to static or uniformly varying loads.

During machining, vibrations may occur that briefly generate forces significantly exceeding the allowable load. To prevent failure, the safety factors should be increased or additional work supports should be used to distribute the load across multiple support points.

When machining with very fine chips, chip buildup may occur in the area of the metal scraper edge on the work support. To prevent this, this area must be cleaned regularly.

Advantages:

- ⊗ Always engaged via spring force
- ⊗ Protecting metal wiper
- ⊗ Compact fixture designs possible
- ⊗ Horizontal and vertical mounting possible
- ⊗ Minimum distance between support points: 30 mm
- ⊗ Operating temperature -10°C to +80°C

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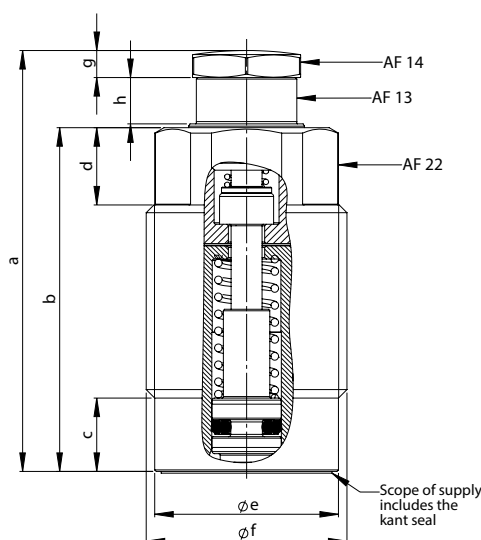
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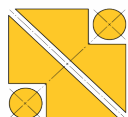
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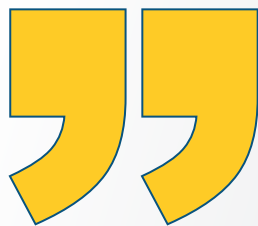




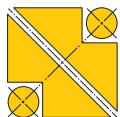
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„We support you in every situation.“

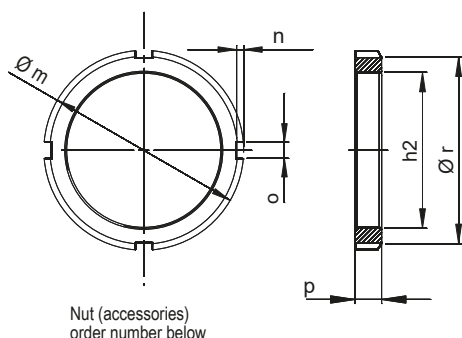


Work supports

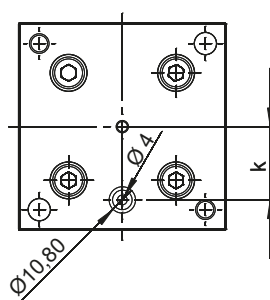
threaded body with lower flange plate, pmax. 500 bar

280-10

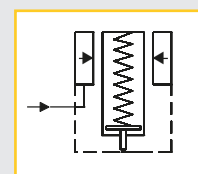
Issue: 10/2022



Nut (accessories)
order number below



Webcode: 028010



Description:

In these work supports a spring advance the plunger against the workpiece. The spring force can be adjusted by an integrated set screw. Ensure that the workpiece cannot be lifted by the adjusted spring force. A contact bolt (see data sheet 1000-1) can be screwed into the internal thread for height adjustment. Oil is supplied by a lateral G1/4 threaded port or a manifold connection in the lower flange plate. The hydraulic fixing of the plunger can be combined with the hydraulic clamping of the workpiece or separated.

- Recommended min. pressure: 100 bar
- Max. support force: 60 kN at 500 bar
- Advance force: 40-100 N, stroke depending
- Basic plunger position: extracted
- Plunger retraction: against spring force

Safety instructions:

Transverse forces cannot be absorbed by the work support. Always center load over work support. Clamping force and support force must be matched.

A ventilation line must be connected, if there is a risk of fluid ingress into the work support during machining.

The internal thread of the plunger has to be protected against contamination by a seal plug or screw-in element.

Screw-in elements with a large mass may affect the function of the work support.

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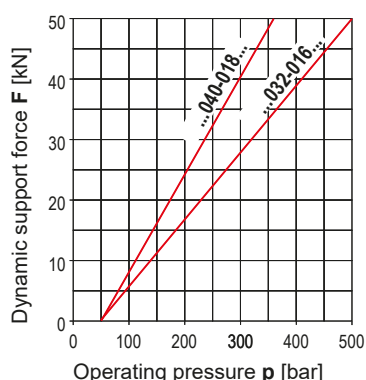
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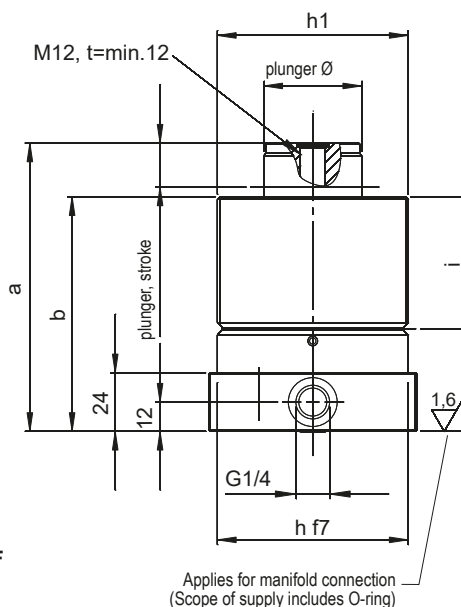
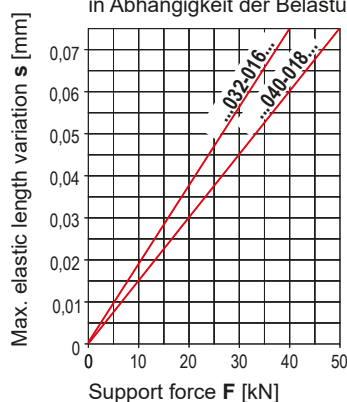
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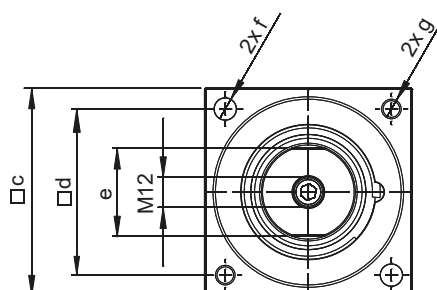
Permissible support force **F**
depending from operating pressure **p**



max. elastische Längenänderung **s**
in Abhängigkeit der Belastungskraft **F**



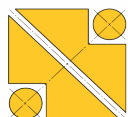
Applies for manifold connection
(Scope of supply includes O-ring)



Plunger Ø	[mm]	32	40
Plunger, stroke	[mm]	16	18
a	[mm]	112	118
b	[mm]	90	96
c	[mm]	75	85
d	[mm]	57±0,20	68±0,20
e		SW27	SW36
f Ø	[mm]	7	9
g	[mm]	M6	M8
h1	[mm]	M68x2	M78x2
i	[mm]	40	54
k	[mm]	25	30
m Ø	[mm]	85	98
n	[mm]	3	3,5
o	[mm]	7	8
p	[mm]	12	13
h2	[mm]	M68x2	M78x2
r Ø	[mm]	80	92
Weight approx.	[kg]	2,7	3,8

Order no.

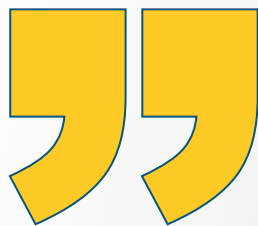
Connection G1/4 threaded port	ASE-032-16-01-001	ASE-040-18-01-001
Connection manifold with O-ring	ASE-032-16-01-002	ASE-040-18-01-002
Nutmutter (accessories)	4085-073	4098-001



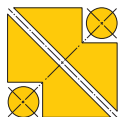
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„We also provide support in the low-pressure area.“



Work supports for low pressure

threaded body, actuation with hydraulic, contact by spring force, pmax. 70 bar

280-70

Issue: 10/2022

Description:

If vibration and deflection must be avoided while machining workpieces in low pressure range, these work supports (ASE) are the ideal solution.

The threaded body elements can be screwed into customer-specific threaded installation bores to save space. The sealing is done with two supplied sealing rings against the bottom of the installation bore. The Work supports can be arranged horizontally and vertically in the clamping fixture.

Plunger fixing can be combined with the hydraulic clamping of the workpiece or separately. Two functional methods are choosable for advancing the plunger.

Type 1: Plunger advances by spring load

Type 2: Plunger advances hydraulically

Functioning:

1. Plunger advances by spring load

Basic position of the plunger is extracted.

The integrated spring advances the support plunger against the workpiece.

After pressurization, the support plunger is fixed in position. Except from the spring load, no further forces act on the workpiece.

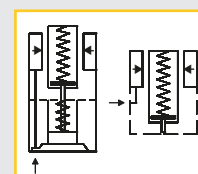
2. Plunger advances hydraulically

Basic position of the plunger is retracted.

The support plunger is held in the retracted position by a reset spring. When the pressurization initiates, the support plunger advances via spring force against the workpiece and be finally fixed in this position.



Webcode: 028070



Important notes:

It is necessary to select the work supports in a appropriate size to make sure that the support capacity is at least 1.5 times of the clamping force plus the corresponding processing force.

There must be no transverse forces acting on the support plunger. The max. operating pressure of 70 bar must not be exceeded.

If there is a risk of penetration with coolants and lubricants into the work supports during machining, a vent line must be connected.

We recommend the installation of the work supports only in a depth that the plunger contacts the workpiece already in the middle stroke position. In this way different heights of workpieces can be compensated during the processing.

Advantages:

- ✘ Space-saving installation options
- ✘ Horizontally and vertically installation possible
- ✘ Plunger fixing combined with clamping or separate possible
- ✘ Design allows only minimal friction of the plunger and prevents from penetration of metal chips

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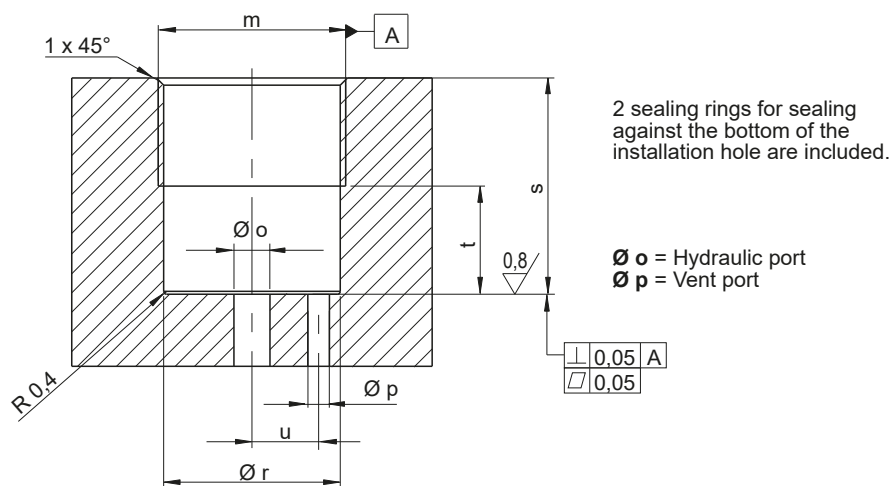
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Support capacity:

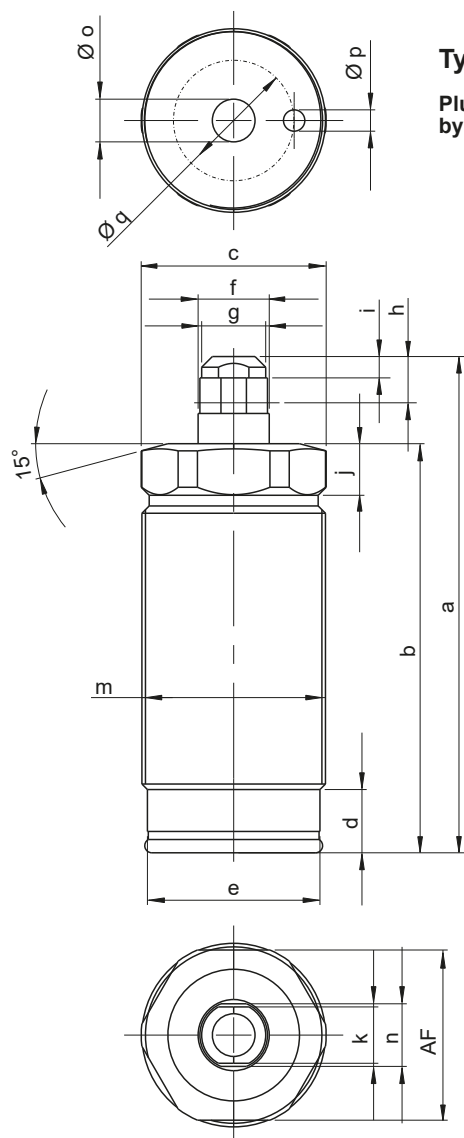
		Support capacities in kN			
Plunger Ø:	[mm]	10	12	15	16
Calculation formula		$(P-1) \times 0,500$	$(P-1) \times 0,667$	$(P-1) \times 0,917$	$(P-1) \times 1,667$
Operating pressure	25 bar	0,8	1,0	1,4	2,5
	30 bar	1,0	1,3	1,8	3,3
	35 bar	1,3	1,7	2,3	4,2
	40 bar	1,5	2,0	2,8	5,0
	45 bar	1,8	2,3	3,2	5,8
	50 bar	2,0	2,7	3,7	6,7
	55 bar	2,3	3,0	4,1	7,5
	60 bar	2,5	3,3	4,6	8,3
	65 bar	2,8	3,7	5,0	9,2
pmax.	70 bar	3,0	4,0	5,5	10,0



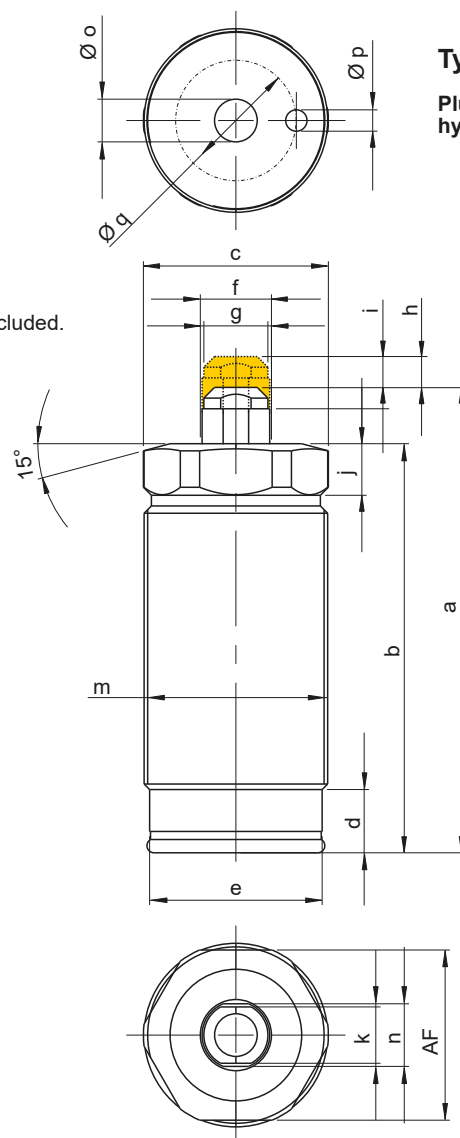
Installation contour:

for ASE70 with plunger Ø:	[mm]	10	12	15	16
m	[mm]	M26 x 1,5	M30 x 1,5	M36 x 1,5	M45 x 1,5
o Ø	[mm]	max. 7	max. 8	max. 10	max. 10
p Ø	[mm]	max. 3	max. 4	max. 4	max. 6
r Ø	[mm]	24,5	28,5	34,5	43,5
s	[mm]	min. 20	min. 20	min. 18	min. 20
t	[mm]	max. 8	max. 9	max. 9	max. 9
u	[mm]	9,25	10	12,25	15
Order No.					
Seal kit (spare part)	DS-ASE70... →	-010-001	-012-001	-015-001	-016-001

Example: Order number for seal kit DS-ASE70-012-001



Type 1
Plunger advances
by spring load



Type 2
Plunger advances
hydraulically

The contact bolt is included.

Technical data:

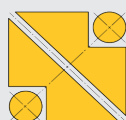
Plunger Ø:	[mm]	10	12	15	16
h Plunger stroke	[mm]	6,5	8	8	10
Permissible load at 70 bar	[kN]	3	4	5,5	10
Tightening torque	[Nm]	35	40	40	55
Spring load, min.	[N]	6,2	8,8	12,8	12,7
Spring load, max.	[N]	9	14,9	20,7	22,8
Permissible flow rate (Type 1)	[cm³/s]	0,3	0,4	0,39	0,7
Permissible flow rate (Type 2)	[cm³/s]	0,55	0,8	1,02	1,49
a (Type 1)	[mm]	72,5	81	77	92
a (Type 2)	[mm]	66	73	69	82
b	[mm]	57	62	58	71
c	[mm]	26	30	36	45
d	[mm]	8,4	9,4	9,4	9,4
e	[mm]	24,25	28,25	34,25	43,15
f	[mm]	10	12	15	16
g	[mm]	9	11,5	12,5	12,5
i	[mm]	3	4	4	4
j	[mm]	8,75	8,75	8,75	12,25
k	[mm]	8	10	11	11
m		M26 x 1,5	M30 x 1,5	M36 x 1,5	M45 x 1,5
n	[mm]	8	10	13	13
o Ø	[mm]	max. 7	max. 8	max. 10	max. 10
p Ø	[mm]	max. 3	max. 4	max. 4	max. 6
q Ø	[mm]	18,5	20	24,5	30
AF	[mm]	24	27	32	41
Order number spring load	ASE70... →	-010-01-001	-012-01-001	-015-01-001	-016-01-001
hydraulically		-010-03-001	-012-03-001	-015-03-001	-016-03-001

Examples: Order numbers for work supports ASE70-016-01-001 (Type 1) ASE70-012-03-001 (Type 2)

Pressure generators
Hydraulic intensifiers

400





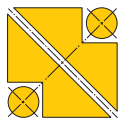
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This section contains:

Data sheet:	Products:	Page:
430-1	Pressure generators , air-hydraulic, single-acting and double-acting	159
430-2	Pressure intensifiers , cylindrical, hydraulically – hydraulically	161
430-3	Pressure intensifiers , block housing, hydraulically – hydraulically, single-acting	165
430-5	Screw pumps , with block housing or threaded body	167



Pressure pump

pneumatic – hydraulic, single- and double acting, pmax. 500 bar

430-1

Issue: 10/2022

Description:

These pneumatic hydraulic pressure pumps are suitable for application in simple clamping systems for actuating single-acting or double-acting clamping elements.

The pressure pumps convert a pneumatic inlet pressure into a hydraulic operating pressure. Pressure adjustment and compressed air treatment are done in an external maintenance unit.

The single-acting pressure pump clamps or unclamps the connected clamping elements by manual operation of the pedal.

The pressure pump supplies hydraulic oil until the desired operating pressure is reached. The integrated check valve keeps the oil pressure constantly. In cases of pressure loss e.g. through leakage, automatic replenishment is not given.

The pressure pump for double-acting clamping elements allows constant pressurization. Clamping and unclamping of the clamping elements is done by using the control lever of the 4/3 directional valve.

Depending on the position of the directional valve, the clamping elements will extend or retract by pressing the pedal on "PUMP".

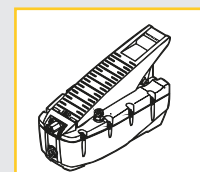
The pedal must be pressed until the clamping elements have reached their end position and the desired oil pressure is built up. The pedal can be fixed in position by the pedal lock.

After that, clamping and unclamping of the clamping elements can be done by using the control lever of the 4/3 directional valve.

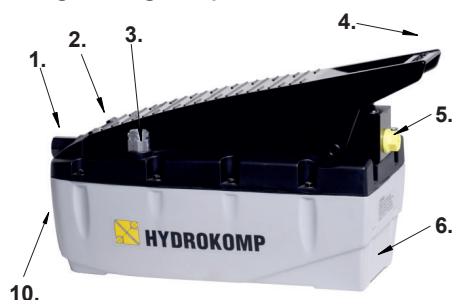
When the pedal is fixed, the double-acting pressure pump can compensate a low pressure loss automatically.



Webcode: 043001

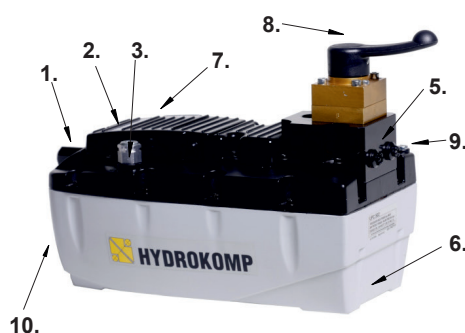


single-acting with pedal



1. Pressure inlet port
2. Pedal, "PUMP" (pressure build-up)
3. Filling and ventilation plug, at double-acting pressure pump: port for drain into reservoir
4. Pedal, "RELEASE" (pressure relief)
5. Ports for hydraulic hoses
single-acting: 1 port
double-acting: 2 ports
6. Pump body with reservoir
7. Pedal lock (not in picture)
8. 4/3 directional valve with control lever
9. Bleed screw
10. Oil level gauge (not in picture)

double-acting with 4/3 directional valve



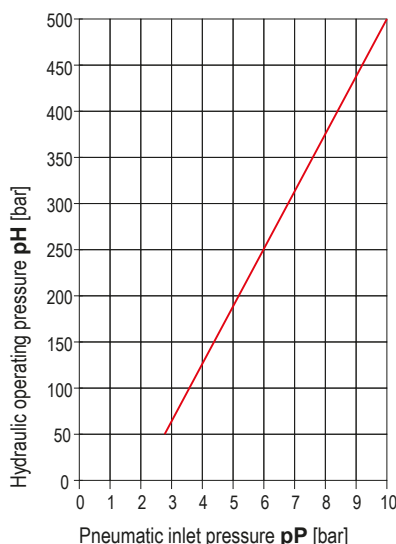
7. Pedal lock with locking pin



10. Oil level gauge



Operating pressure pH depending from pneumatic inlet pressure pP



Important notice:

Scope of supply includes an user's manual. The safety and maintenance instructions must be observed.

Hydraulic oil:

- Recommendation:
 - Hydraulic oil DIN 51524, HLP 22
 - Viscosity DIN 51519, ISO VG 22
- The pressure pumps are already filled with oil. They are supplied ready for connection. It is not necessary to use a mist oiler.

Advantages:

- Integrated pressure control valve up to 500 bar
- Low weight, easy to transport
- Suitable for mobile application
- Suitable for application in explosive hazardous areas

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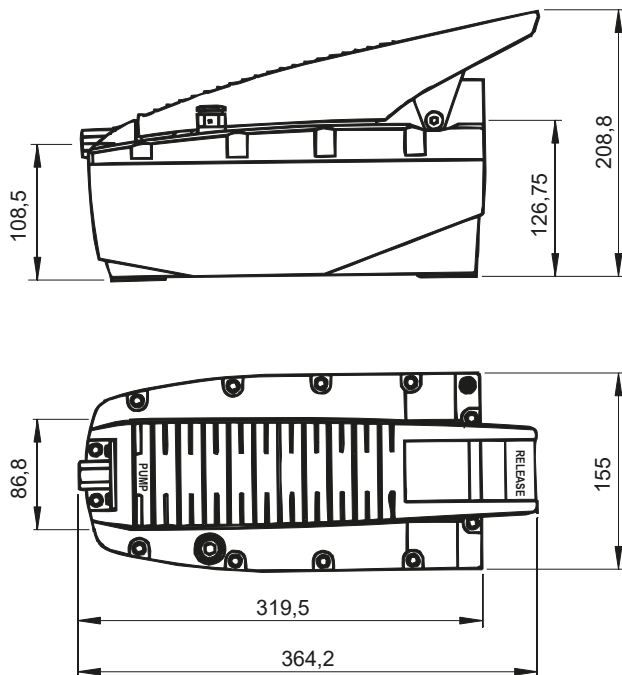


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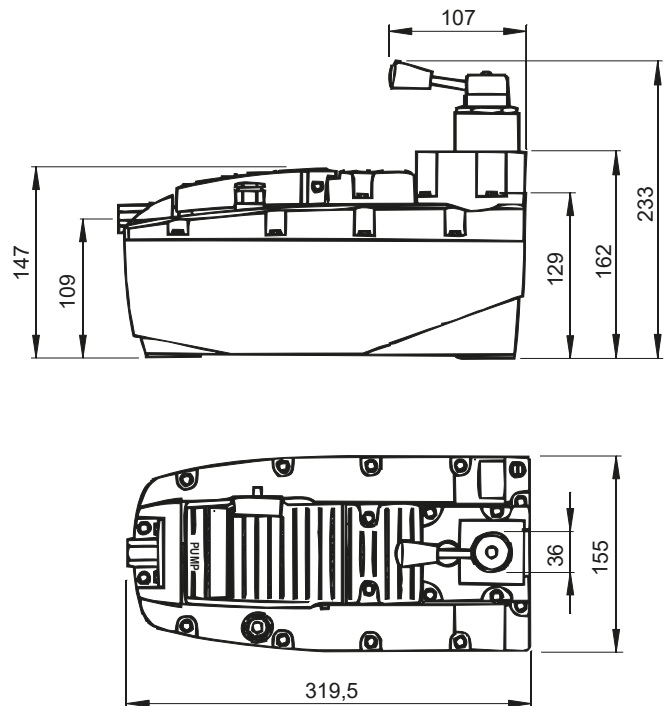
single-acting, with pedal



Technical data:

Pneumatic inlet pressure p_P	[bar]	2,8 - 10
Operating pressure p_H min.	[bar]	50
Operating pressure p_H max.	[bar]	500
Flow rate max. at 7 bar	[l/min]	1,4
Pneumatic port thread		G1/4
Air consumption max.	[Nl/min]	400
Hydraulic port thread		G1/4
Oil volume	[l]	2,3
Oil volume, useable	[l]	2,1
Weight, filled	[kg]	6,3
Noise level	[dB(A)/1m]	75
Order number		DLH-EW-500-001

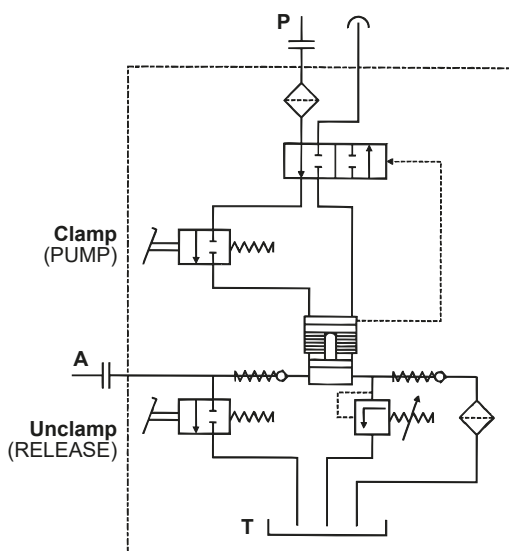
double-acting, with 4/3 directional valve



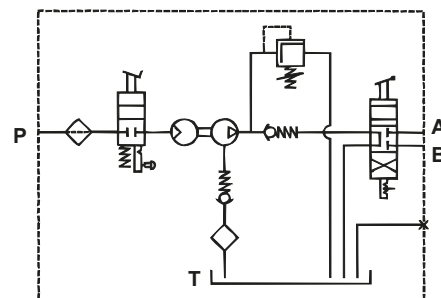
Technical data:

Pneumatic inlet pressure p_P	[bar]	2,8 - 10
Operating pressure p_H min.	[bar]	50
Operating pressure p_H max.	[bar]	500
Flow rate max. at 7 bar	[l/min]	1,4
Pneumatic port thread		G1/4
Air consumption max.	[Nl/min]	400
Hydraulic port thread		G1/4
Oil volume	[l]	2,3
Oil volume, usable	[l]	2,1
Weight, filled	[kg]	6,8
Noise level	[dB(A)/1m]	75
Order number		DLH-DW-500-002

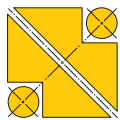
Circuit example, single-acting:



Circuit example, double-acting:



A = Hydraulic port
B = Hydraulic port
P = Pneumatic port
T = Oil reservoir



Description:

Hydraulic intensifiers increase hydraulic pressure by a fixed ratio. With this method it is possible, e.g. to use a low-pressure machine hydraulic system for consumers that can profitably benefit from a pressure that is multiple higher.

The intensification is achieved by means of a fixed ratio between two pistons surface areas. That means that the secondary pressure can be controlled by means of the input pressure.

A non-return by-pass valve is available for the rapid filling of the hydraulic consumer.

Intensification starts automatically at approx. 20 bar. The oscillating pump action starts automatically when there is a flow rate through the intensifier. The intensification ends automatically when the consumer no longer requires a flow rate and the high pressure has been achieved.

The flow rate on the high pressure side depends on the attainable high pressure.

The more highly attained high pressure, the smaller the flow rate.

Operating conditions:

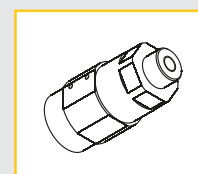
We recommend the use of a pressure filter with a filter mesh of max. 10 µm to guarantee optimal functioning (see data sheet 600-1).

As a result of structural design of this intensifier there is internal leakage, which is automatically drained off by means of the T-connection.

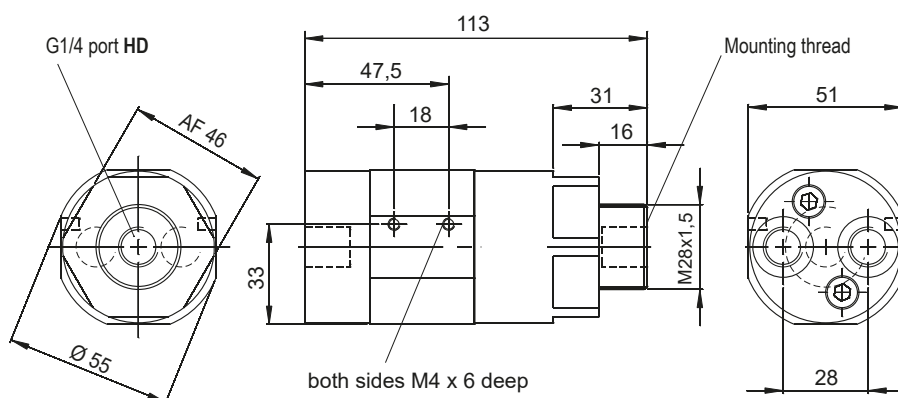
When consumers are uncoupled, it is recommended that an external pilot operated check valve (see data sheet 700-10) is installed between the intensifier and the consumer. This can be activated to open the T-line.



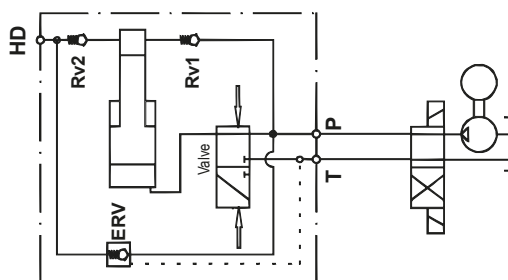
Webcode: 043002



Intensifier with threaded port:



Functional diagram:



Technical data:

Intensification ratio	1,5 : 1	2 : 1	3,4 : 1	4 : 1	5 : 1
Max. flow rate Q_P low-pressure inlet [l/min]	8	8	15	14	14
Max. flow rate Q_{HD} high-pressure, start - end [l/min]	0,8 - 0,2	0,8 - 0,2	2,2 - 0,5	1,8 - 0,4	1,4 - 0,3
Max. operating pressure P_P low-pressure inlet [bar]	200	200	200	200	160
Max. operating pressure P_{HD} high-pressure outlet [bar]	300	400	680	800	800
Threaded connection P/T/HD	G1/4	G1/4	G1/4	G1/4	G1/4
Weight [kg]	1,3	1,3	1,3	1,3	1,3
Order number	DUHH... ---15-5-001	---20-5-001	---34-5-001	---40-5-001	---50-5-001

Connections:

- ☒ G1/4 threaded port
- ☒ Manifold with O-ring
- ☒ CETOP NG 6 connection

Operating temperature:

- ☒ -40 °C up to +120 °C

Fluid media:

- ☒ Hydraulic oil to max. HLP 40
- ☒ HFC liquids with min. 5% Glycol

Important notice:

The life time of the hydraulic intensifiers is determined considerably by the filtration of the fluid media. A filtration grade of 10 µm must be ensured.
(For filters see data sheet 600-1)

Accessories:

	Order no.
☒ hydraulic filter 10 µm	DUF-10-5-001
☒ pilot operated check valve	ERSV-500-5-001

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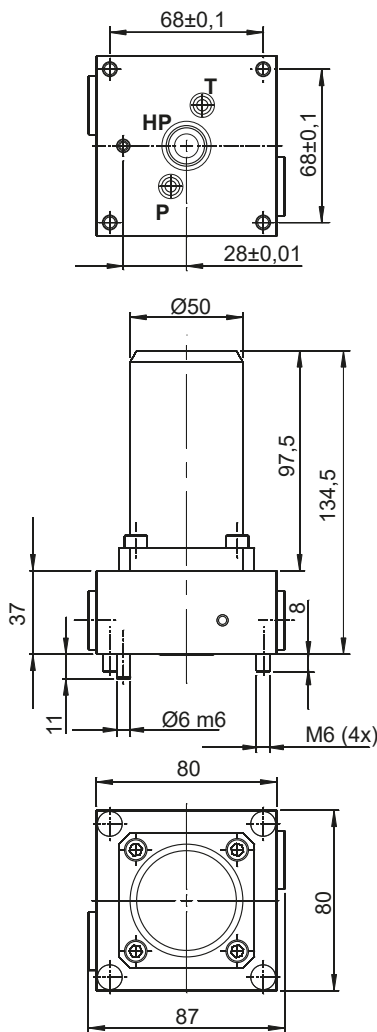
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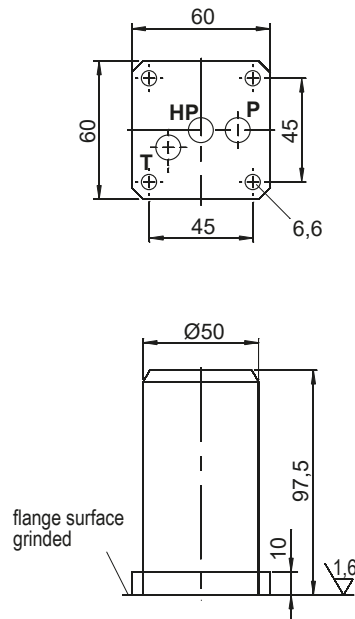
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Dimensions for DUHF



Dimensions for DUHH



Description:

The hydraulic intensifier for manifold connection with O-rings can be equipped with a filter plate. The integrated filter with 10 µm filters all hydraulic connections in the influx. This protects the hydraulic intensifier optimally against contamination.

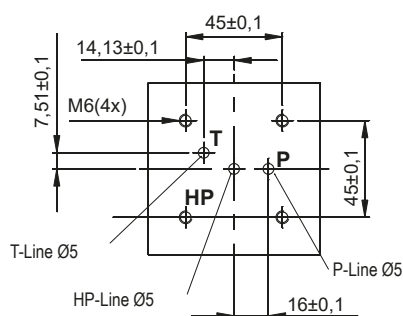
If the hydraulic intensifier should be installed on uncouplable hydraulic systems, an additional pilot operated check valve must be installed between the intensifier and the hydraulic consumer.

Spare parts:

- Filter for filter plate for DUHF (suitable for all sizes)

Order no.: DUF-10-5-003

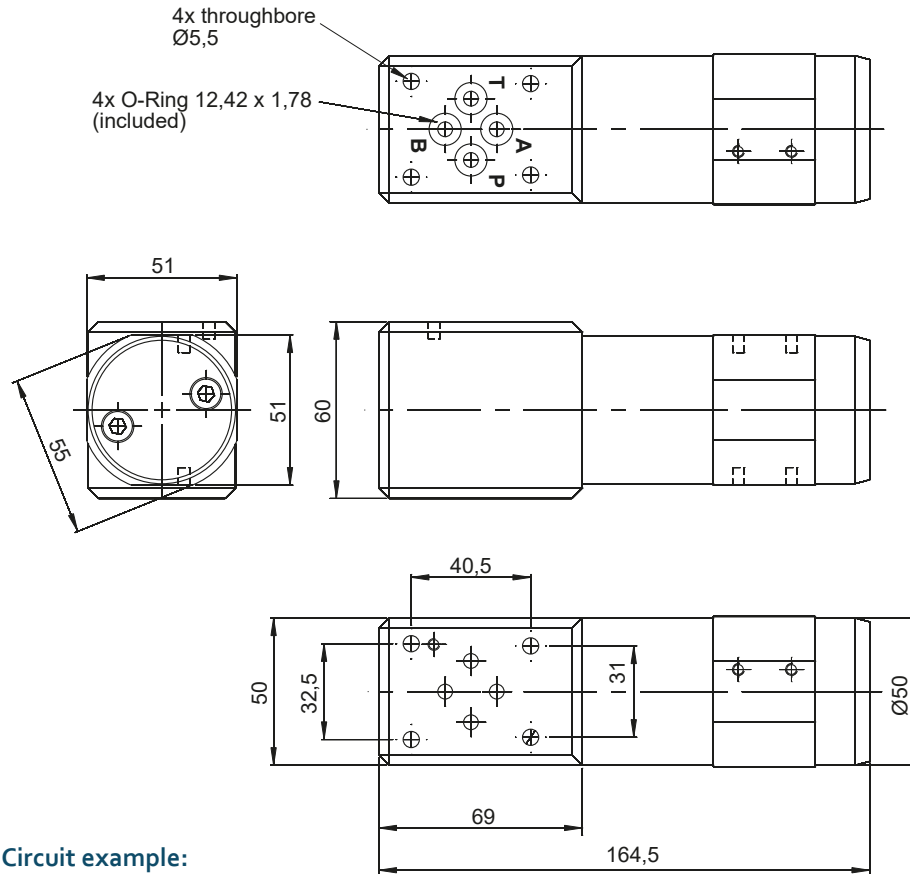
Connections:



Technical data:

Intensification ratio		2 : 1	3,4 : 1	4 : 1	5 : 1	7 : 1
Min. flow rate, low-pressure side Q _P	[l/min]	2	2	2	2	2
Max. flow rate, low-pressure side Q _P	[l/min]	8	15	14	14	13
Max. flow rate, high-pressure side Q _{HD} start - end ⁽¹⁾	[l/min]	0,8 - 0,2	2,2 - 0,5	1,8 - 0,4	1,4 - 0,3	1,1 - 0,2
Max. operating pressure, low-pressure side P _P	[bar]	200	200	175	140	100
Max. operating pressure, high-pressure side P _{HD}	[bar]	400	680	700	700	700
Order no. without filter plate		DUHH-20-5-002	DUHH-34-5-002	DUHH-40-5-002	DUHH-50-5-002	DUHH-70-5-002
Weight	[kg]	1,5	1,5	1,5	1,5	1,5
Order no. with filter plate		DUHF-20-5-003	DUHF-34-5-003	DUHF-40-5-003	DUHF-50-5-003	DUHF-70-5-003
Weight	[kg]	3,0	3,0	3,0	3,0	3,0

⁽¹⁾ The flow rate on the high pressure side depends on the attainable high pressure. The more highly attained high pressure, the smaller the flow rate.



Description:

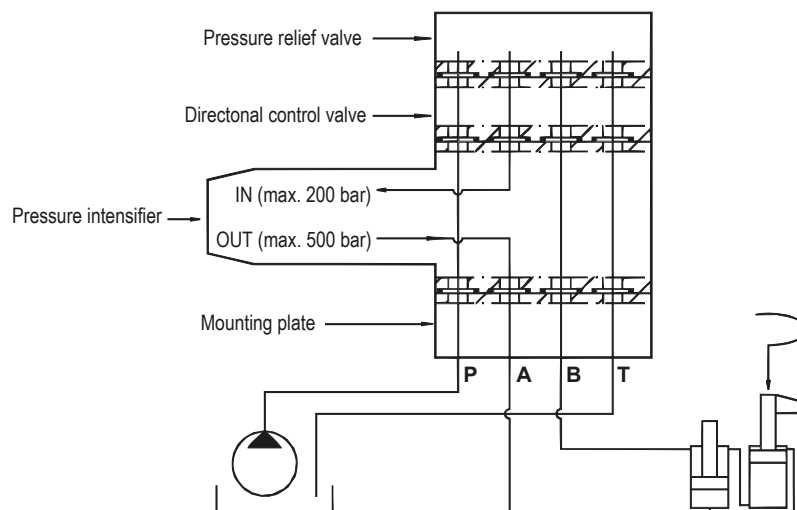
These hydraulic intensifiers are designed for the mounting between the plates in a NG 6 hydraulic system and increase the supplied low pressure according the intensification to max. 500 bar.

The control of these hydraulic intensifiers takes place via a NG 6 valve, which is installed on the supply side (circuit example).

All further valve functions, inclusive pilot operated check valve, are integrated in the housing of the hydraulic intensifier.

Spare parts:

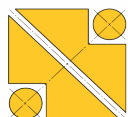
- ⊗ O-Ring 12,42 x 1,78 (suitable for all sizes)
Order no.: 6012-007



Technical data:

Intensification ratio	1,5 : 1	2 : 1	3,4 : 1	4 : 1	5 : 1	7 : 1	9 : 1
Min. flow rate Q_P low-pressure side [l/min]	2	2	2	2	2	2	2
Max. flow rate Q_P low-pressure side [l/min]	8	8	15	14	14	13	13
Max. flow rate Q_{HD} high-pressure, start - end ⁽²⁾ [l/min]	0,8 - 0,2	0,8 - 0,2	2,2 - 0,5	1,8 - 0,4	1,4 - 0,3	1,1 - 0,2	0,7 - 0,1
Max. low pressure P_P [bar]	200	200	147	125	100	71	56
Max. high pressure P_{HD} [bar]	300	400	500	500	500	500	500
Weight [kg]	2,65	2,65	2,65	2,65	2,65	2,65	2,65
Order number	DUHH... 15-NG6-001	20-NG6-001	34-NG6-001	40-NG6-001	50-NG6-001	70-NG6-001	90-NG6-001

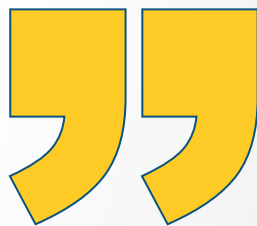
⁽²⁾ The flow rate on the high pressure side depends on the attainable high pressure. The more highly attained high pressure, the smaller the flow rate.



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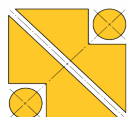
Technik, die verbindet



"With high pressure on the matter."



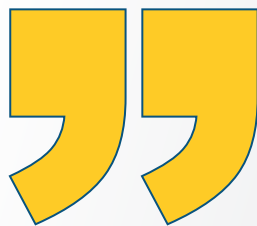
Issue: 10/2023



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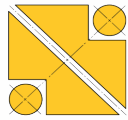
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Technik, die verbindet



**"Intended for small, manual clamping systems and
made as an ideal pressure generation."**

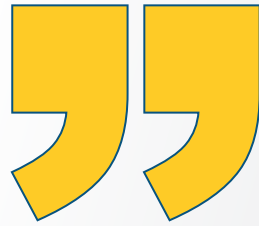




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Technik, die verbindet

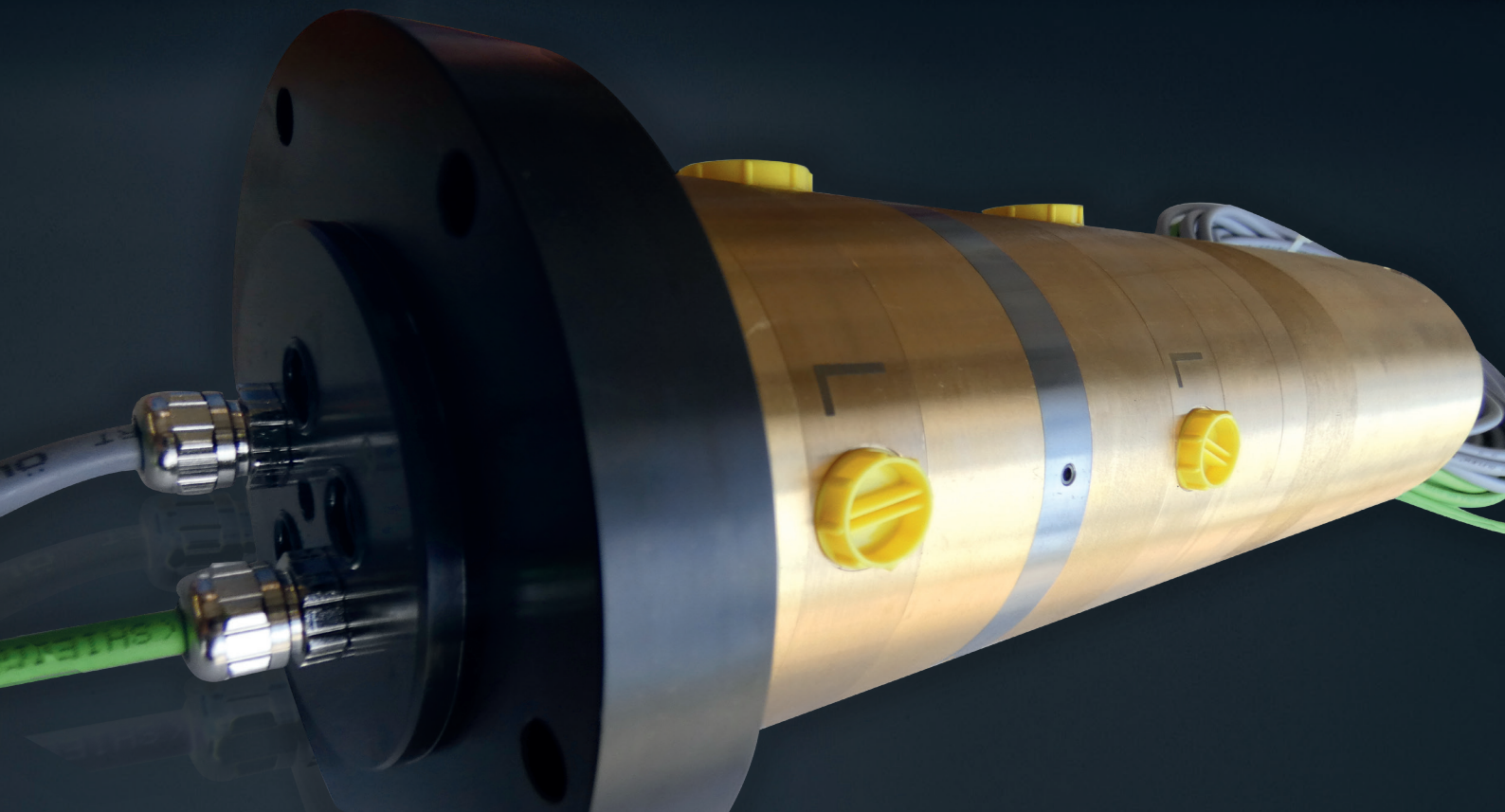


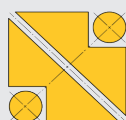
**"We offer rotating unions in many variants for oil, water,
air and also electronics in all combinations.
Ask us about customised solutions."**



Rotary couplings

500





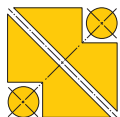
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Technology that connects

This section contains:

Data sheet:	Products:	Page:
500-3	Rotary couplings , single-passage/multiple-passage, without/with leak oil recirculation	171
500-4	Rotary valve couplings , ND5, for single-acting and double-acting workholding elements	179

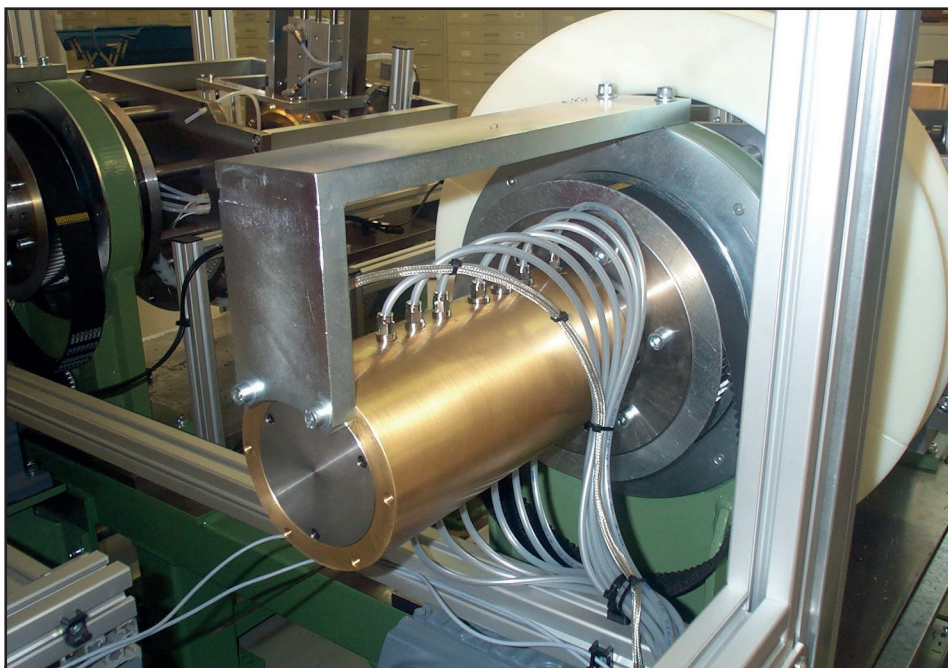


Rotary couplings

without/with leak oil recirculation, nominal diameters 5/10, pmax. 400/350 bar

500-3

Issue: 10/2022



Application example: 13-pass rotary coupling with 6 connections for compressed air, 6 connections for cooling water, 1 connection for forming gas; with electronic slip ring 12 x 24V, 2A per line. For more examples refer to our catalogue or to www.hydrokomp.de.

Important operating instruction:

For the operating circumstances, operating pressure and torque must be aligned. Please see the diagrams on page 3 and 4. Operating temperature range: -10°C to +60°C

Mounting:

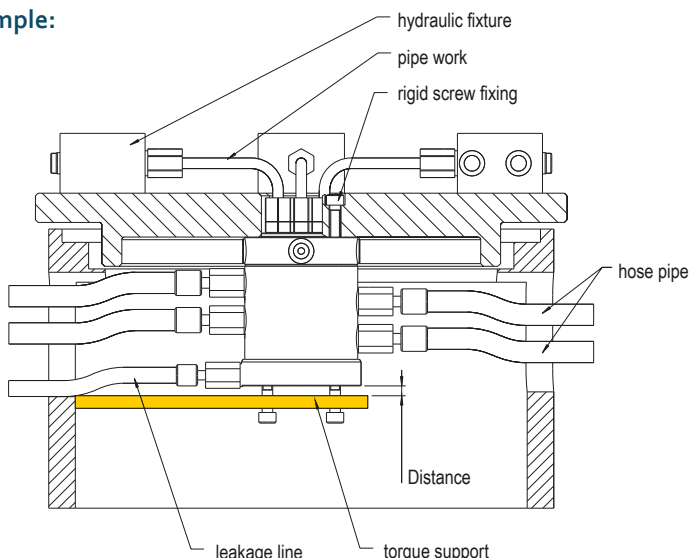
The rotary coupling must be mounted in a way that no transverse moment is effected on the standing or rotating element. It has proven to be best to screw the standing housing with its ports towards the clamping fixture and to protect the rotating piston only against twisting (no initiation of bearing forces).

The line connection from the torque support to the rotating piston should be done via hoses only to avoid the initiation of torque into the housing.

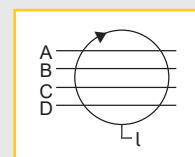
The rotary coupling may only be taken into operation when all junction levels are connected to the power unit in order to guarantee the necessary seal lubrication.

The multiple passage rotary couplings have axial and radial G1/4 threaded ports in the rotating piston. In addition, they can be connected axially at the rotating piston with O-rings 16 x 2. In this case, please calculate the necessary screw forces of the fixing screws imperatively.

Mounting example:



Webcode: 050003



General information:

Rotary couplings transfer hydraulic oil from a fixed to a rotating machine part. The assembly is done in the rotation axis of the subassembly. Depending on the number of junction levels several single or double acting hydraulic elements can be connected.

On principle, the rotary coupling is only suitable for hydraulic oil. If pneumatic shall be transferred, the catalogued elements can be used providing that the air is filtered and lubricated to guarantee seal greasing and corrosion protection.

In the design stage it needs to be considered that the rotation movement is obstructed by the seal friction. This frictional drag is pressure dependant and must be considered for the drive torque of the rotary table.

Corresponding information can be found in the reling diagrams which show the starting torques existing while all junction-levels are pressurised.

Order information:

When placing an enquiry or an order, the operating circumstances should be stated. These are for example operating pressure, medium, functionality (single/double acting) and cycle time.

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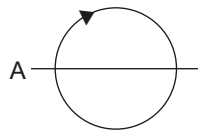
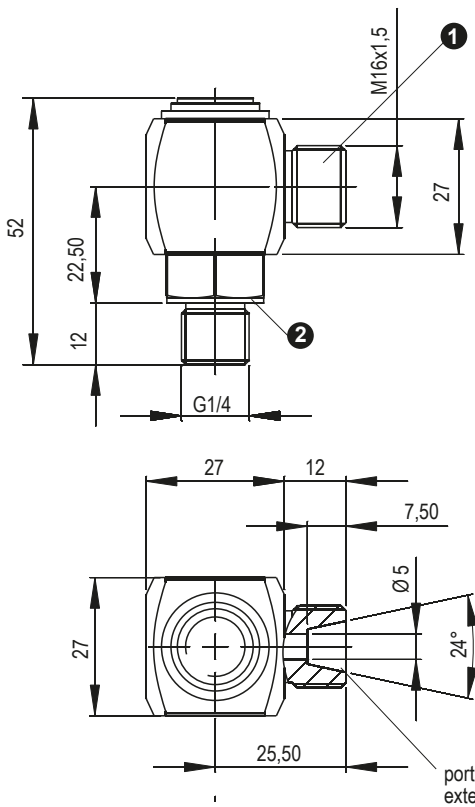


Angle rotary joint:

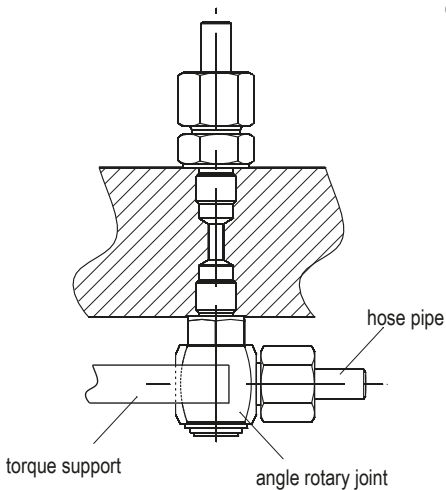


Rotary couplings are used to connect pressure-retaining lines from stationary positions to rotating or swivelling machine parts. Their function is to prevent torsion and bends at a tight radius of moveable lines.

Range of operating temperature:
-10° up to 60°C

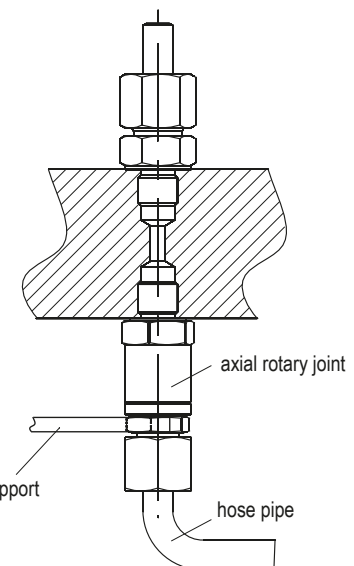
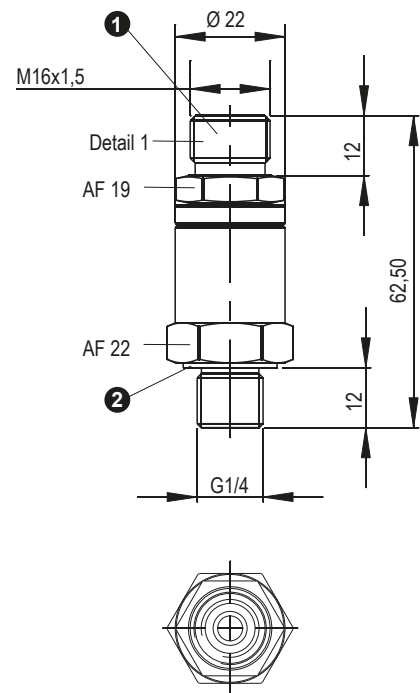


- ❶ Port for cutting ring screw joint 8S
- ❷ Port for connection with elastic seal, according to DIN 3852 B max. 60 Nm



Angle rotary joint	
Passages	1
Nominal diameter	5
Range of operating pressure	0-500 bar
Rotation speed, max.	20 1/min
Weight	0,18 kg
Order number	DR-010-5-002

Axial rotary joint:

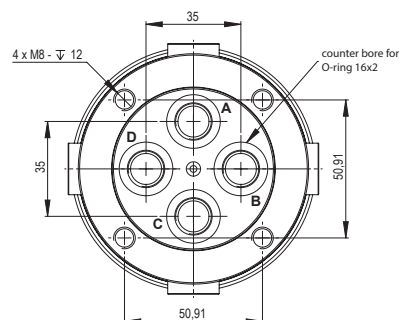
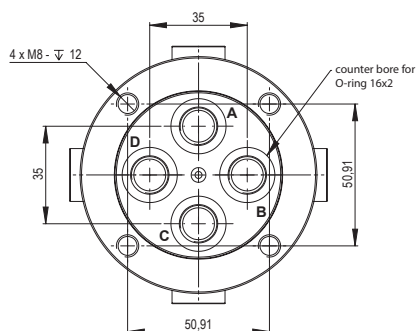
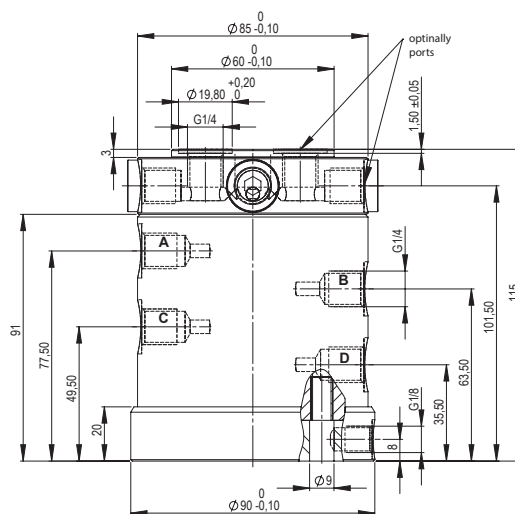
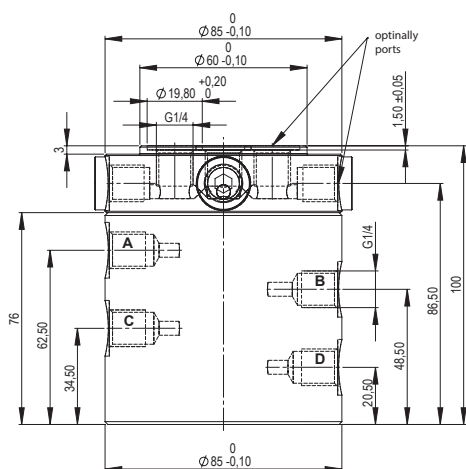
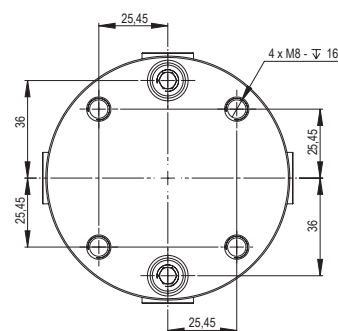
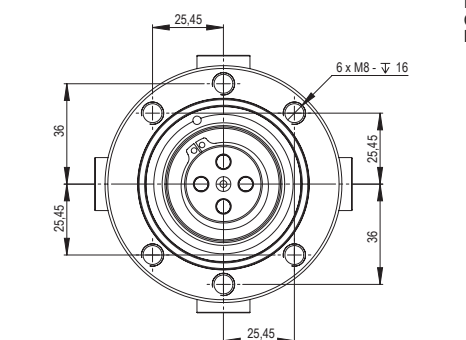
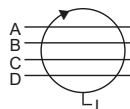
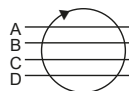
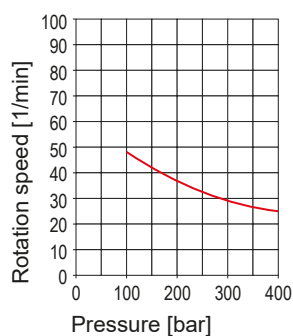
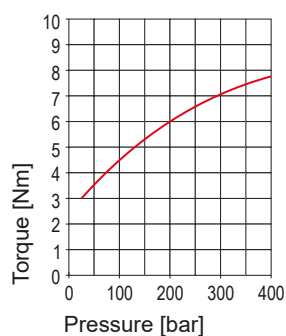


Axial rotary joint	
Passages	1
Nominal diameter	5
Range of operating pressure	0-500 bar
max. Rotation speed	20 1/min
Weight	0,11 kg
Order number	DR-010-5-001



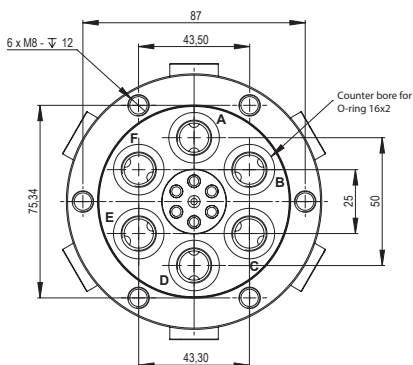
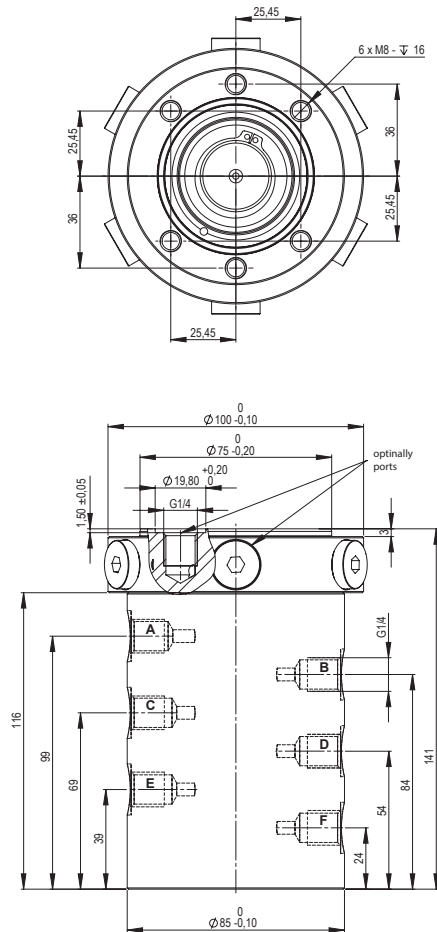
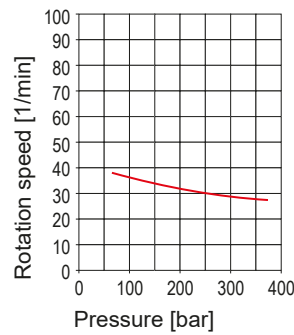
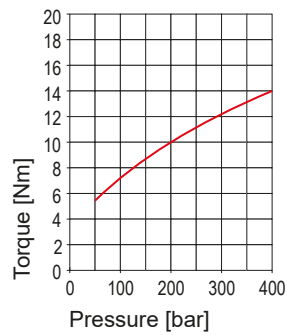


Technology that connects



Passages	4
Nominal diameter	5
Range of operating pressure	0-400 bar
max. Leakage	50 ccm/100h
Weight	3,8 kg

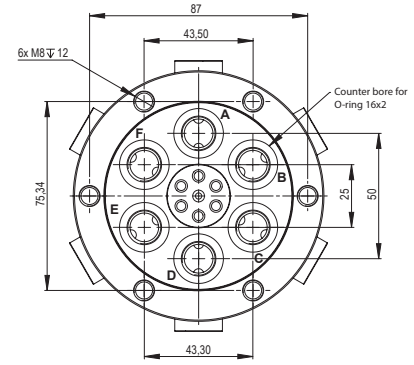
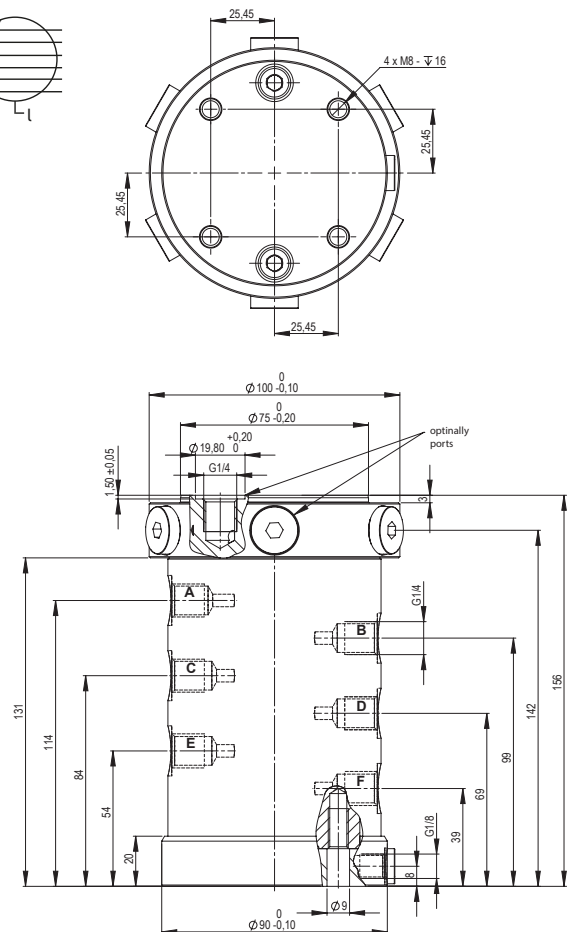
Passages	4
Nominal diameter	5
Range of operating pressure	0-400 bar
max. Leakage	-
Weight	4,2 kg
Order number	DR-040-5-003



six-passage without leak oil recirculation

Passages	6
Nominal diameter	5
Range of operating pressure	0-400 bar
max. Leakage	60 ccm/100h
Weight	5,8 kg

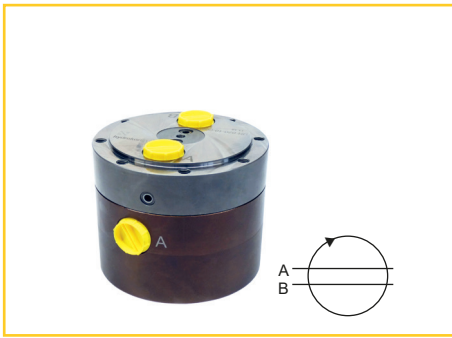
Order number DR-060-5-001



six-passage with leak oil recirculation

Passages	6
Nominal diameter	5
Range of operating pressure	0-400 bar
max. Leakage	-
Weight	6,2 kg

Order number DR-060-5-005

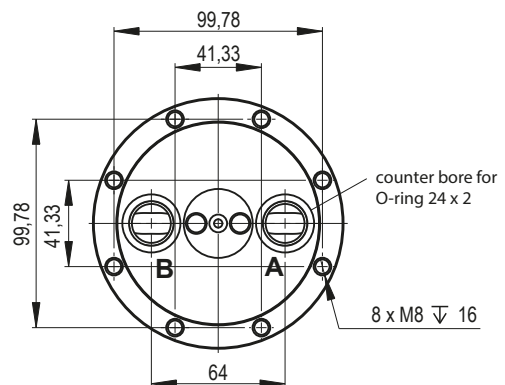
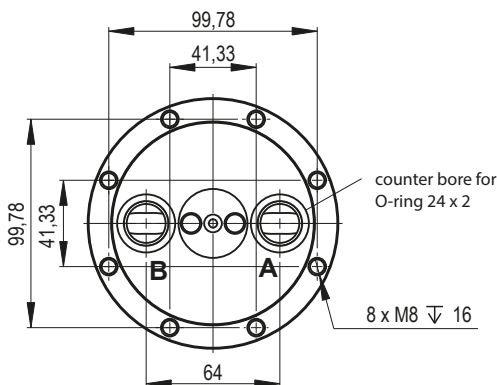
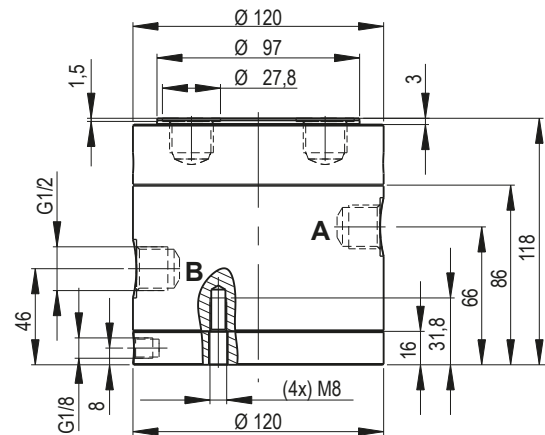
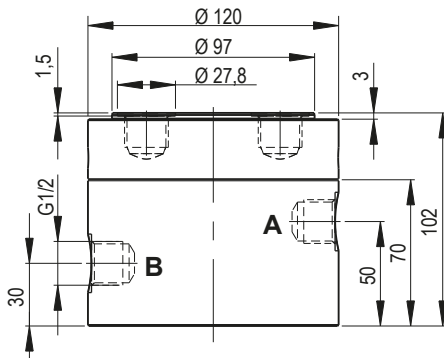
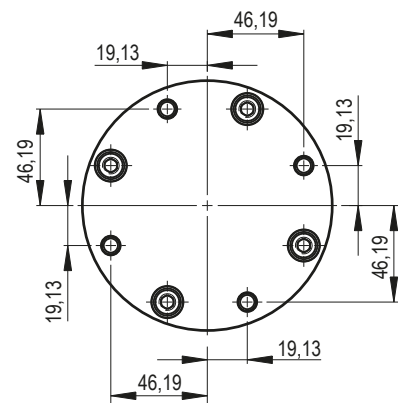
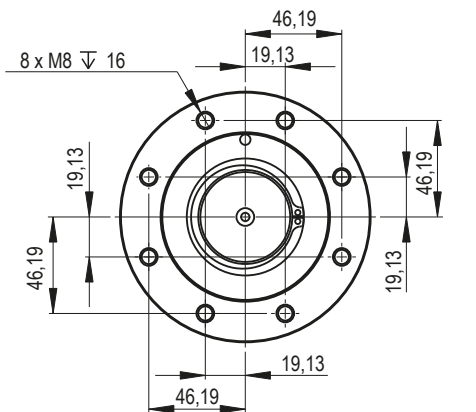


Ports:

in the housing
radial G1/2

axially in the rotary piston
G1/2 and manifold with
O-ring 24x2

leakage port
radial G1/8



two-passage without leak oil recirculation

Passages	2
Nominal diameter	10
Range of operating pressure	0-350 bar
Starting torque, depressurized	16 Nm
Rotation speed at 50 bar	40 1/min
Rotation speed at 350 bar	20 1/min
Weight	8 kg

Order No. DR-020-10-005

two-passage with leak oil recirculation

Passages	2
Nominal diameter	10
Range of operating pressure	0-350 bar
Starting torque, depressurized	16 Nm
Rotation speed at 50 bar	40 1/min
Rotation speed at 350 bar	20 1/min
Weight	9.5 kg

Order No. DR-020-10-004

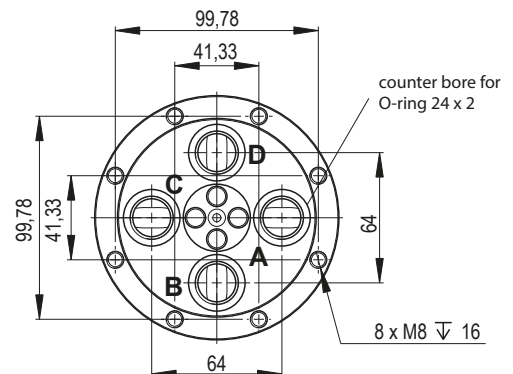
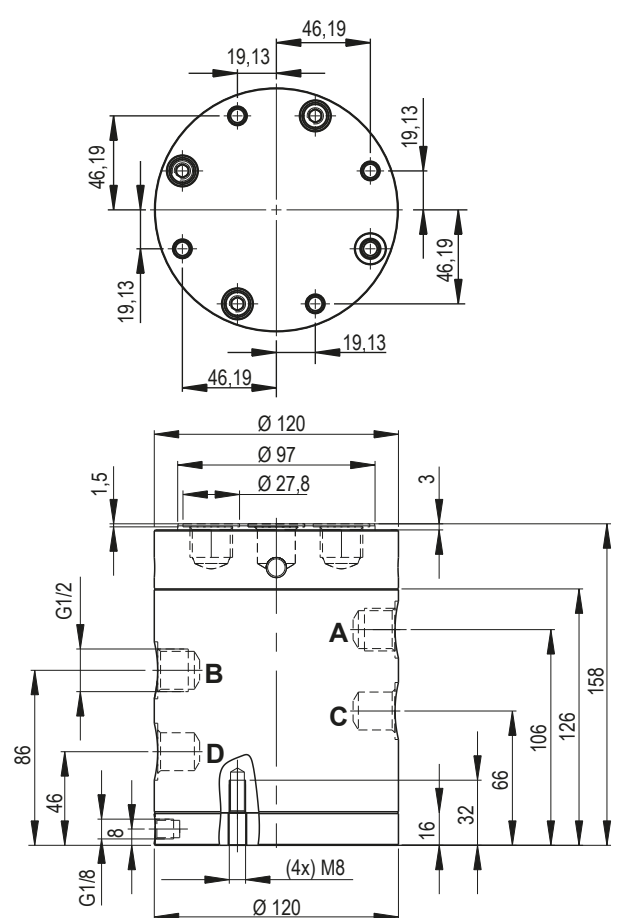
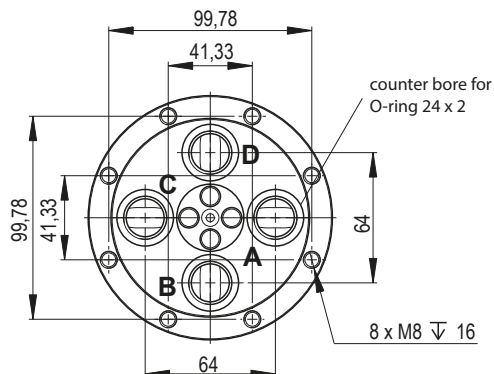
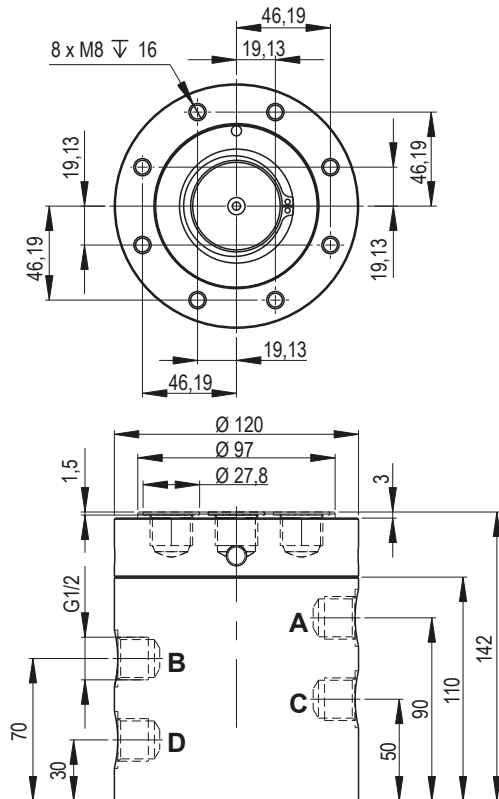


Ports:

in the housing
radial G1/2

axially in the rotary piston
G1/2 and manifold with
O-ring 24x2

leakage port
radial G1/8



four-passage without leak oil recirculation

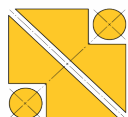
Passages	4
Nominal diameter	10
Range of operating pressure	0-350 bar
Starting torque, depressurized	25 Nm
Rotation speed at 50 bar	30 1/min
Rotation speed at 350 bar	15 1/min
Weight	11 kg

Order No. DR-040-10-005

four-passage with leak oil recirculation

Passages	4
Nominal diameter	10
Range of operating pressure	0-350 bar
Starting torque, depressurized	25 Nm
Rotation speed at 50 bar	30 1/min
Rotation speed at 350 bar	15 1/min
Weight	12,5 kg

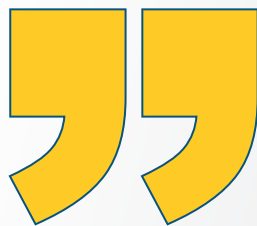
Order No. DR-040-10-004



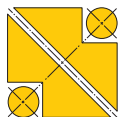
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Technik, die verbindet



"Rotary couplings can be customized to your specific requirements."

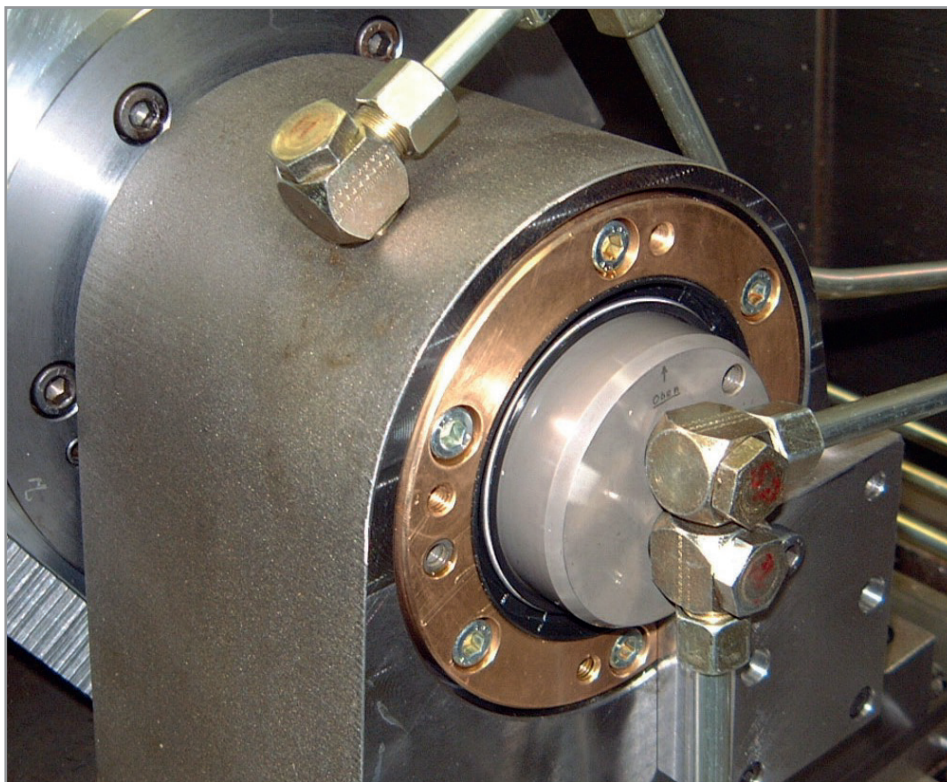


Rotary valve couplings

nominal diameter 5, for single/double acting clamping elements, pmax. 350 bar

500-4

Issue: 10/2022



Application example: Rotary valve coupling built into the support bearing of a reversible clamping fixture. The design of the rotary valve coupling only permits loading and unloading when the device is turned to a predefined position. This means that it is impossible for the item to become unclamped in the machining positions. Installation in the thrust bearing is extremely compact, saving valuable machining space for the clamping of workpieces.

Important operating instructions:

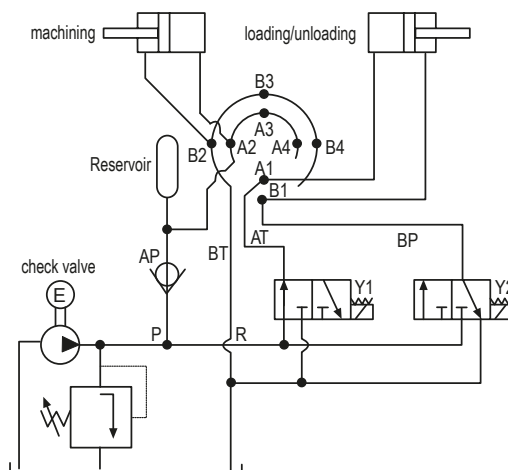
The rotary valve coupling must only be operated with hydraulic fluid. All levels must be connected to the pressure generator in order to guarantee lubrication of the seals. Operation must only be carried out with the screw connections fitted. Rotary valve couplings should only be used for phased operation.

The Rotary Valve Coupling must be fitted in such a way that no bending moment is exerted on either the stationary or the rotating component. It has proven effective to bolt the rotating housing with the connectors to the clamping devices and merely to secure the standing piston against twisting (prevent initiation of bearing forces).

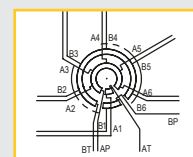
Only hoses should be used for the pipe connection between the torque brace and the rotary piston.

At an operating pressure of about 200 bar and above, it is recommended that a hydraulic reservoir with a storage-safety device be fitted between the check valve and connector level A (permanent pressure area). This reservoir is for the purpose of compensating for minor fluid loss through leakage, when the machine is at rest in the loading and unloading station. You are recommended to use only directional valves to control the rotary valve coupling (see specimen circuit).

Specimen circuit:



Webcode: 050004



General information:

Rotary valve couplings transmit hydraulic fluid to revolving tables. The structure is designed as a rotary slide valve, which permits several hydraulic devices to be supplied simultaneously with hydraulic fluid under pressure, and independently of that, a loading and unloading station to clamped or unclamped by means of distributing valves (see specimen circuit).

Technical data:

- ☒ **Max. operating pressure:** 350 bar
- ☒ **Operating temperature:** -10° C up to +60° C
- ☒ **Max. flow rate in AT and BP:** 133 cm³/s (8 l/min)
- ☒ **Hydraulic oil connection:**
 - G 1/4 threaded port in the housing and rotary piston, radial
 - manifold with O-ring in the rotary piston, axial

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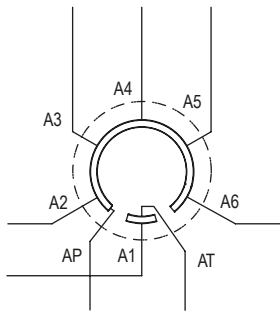
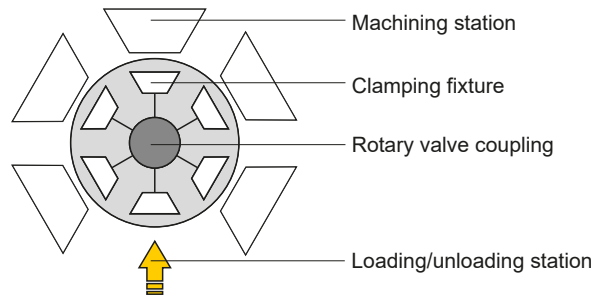
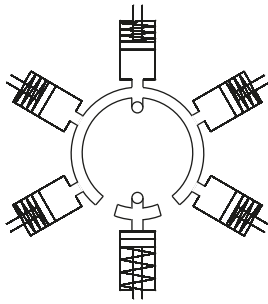
Hydraulische Komponenten GmbH

+49 6401 225999-0

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35325 Mücke (Germany)

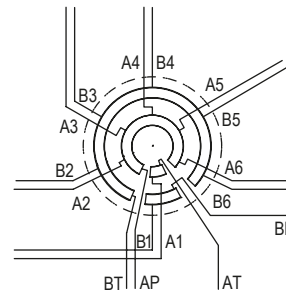
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**Single-acting,
1 station (loading/unloading)**

Circuit description:

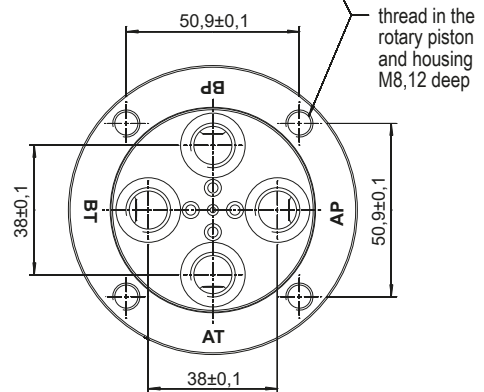
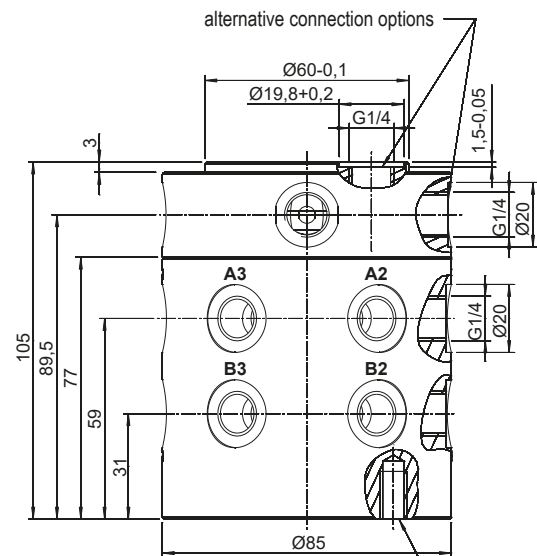
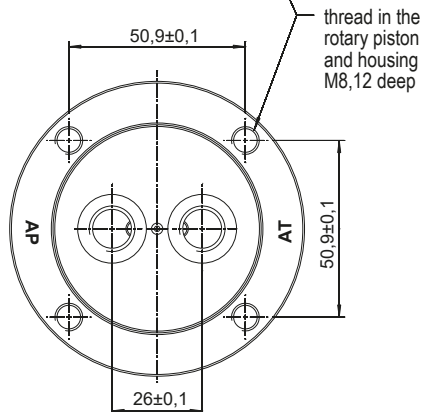
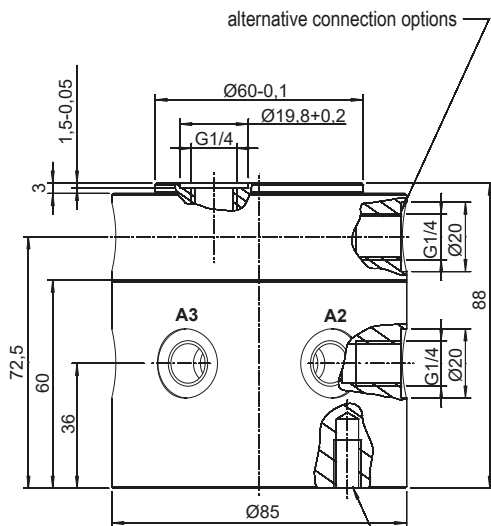
**AT to A1
AP to A2 – An**



**Double-acting,
1 station (loading/unloading)**

Circuit description:

**AT to A1
AP to A2 – An
BP to B1
BT to B2 – Bn**

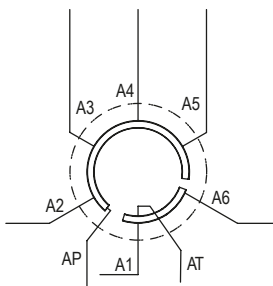
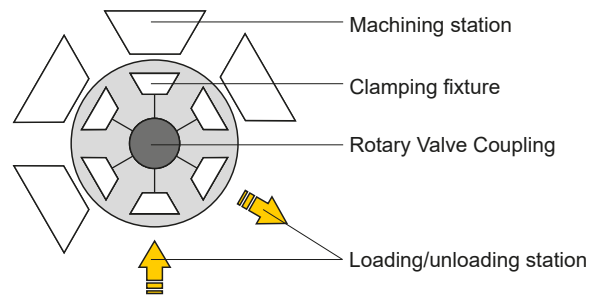
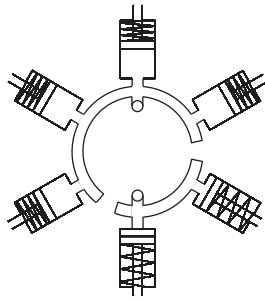


for single acting clamping elements

Stations:	Order number:
6	DRG-5-EW6-001
8	DRG-5-EW8-001
10	DRG-5-EW10-001
1 Station loading/unloading	

for double acting clamping elements

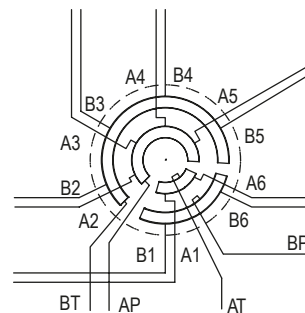
Stations:	Order number:
6	DRG-5-DW6-001
8	DRG-5-DW8-001
10	DRG-5-DW10-001
1 Station loading/unloading	



**Single-acting,
2 stations (loading/unloading)
triggered simultaneously**

Circuit description:

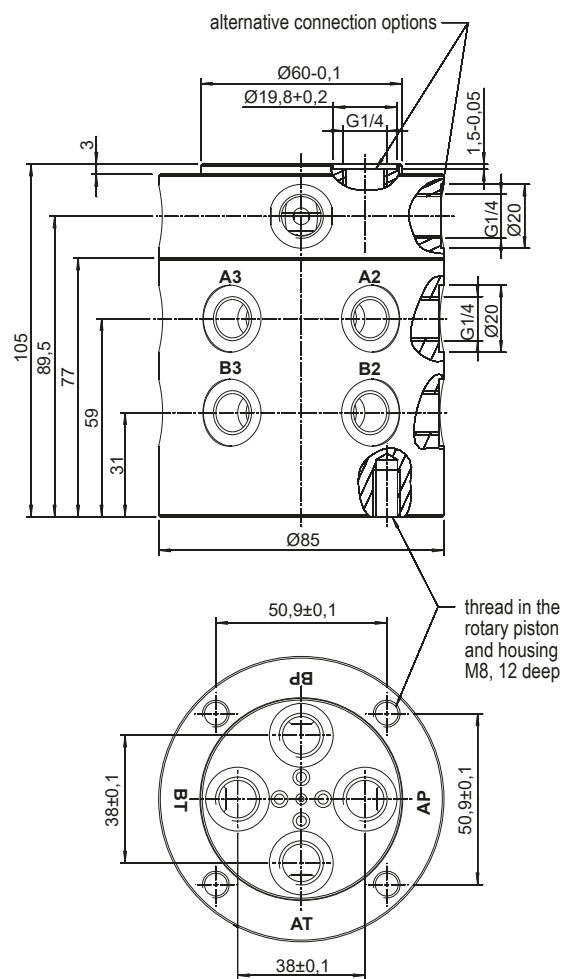
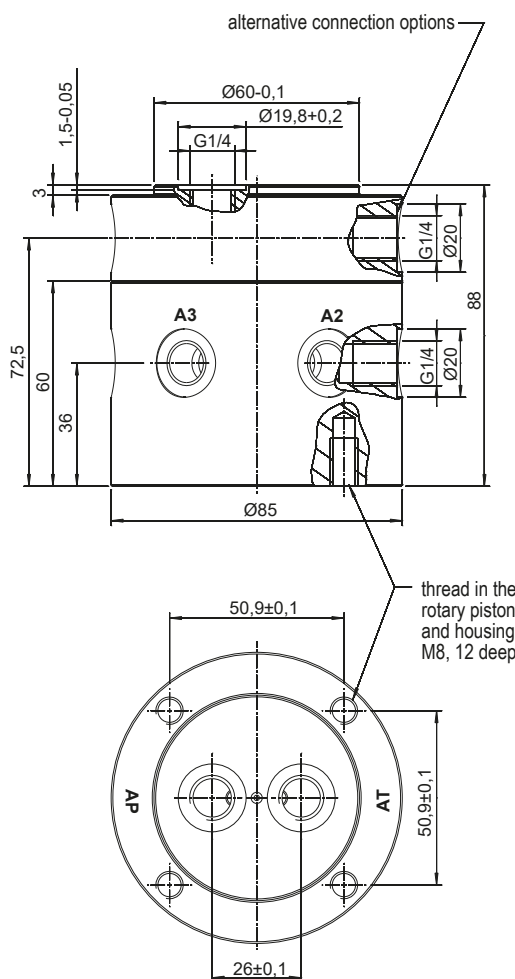
AT to A1 + An
AP to A2 – An-1
BP to B1 – Bn
BT to B2 – Bn-1



**Double-acting,
2 stations (loading/unloading)
triggered simultaneously**

Circuit description:

AT to A1 + An
AP to A2 – An-1
BP to B1 – Bn
BT to B2 – Bn-1



for single acting clamping elements

Stations:

6

8

10

Order number:

DRG-5-EW6-002

DRG-5-EW8-002

DRG-5-EW10-002

2 Stations loading/unloading, triggered simultaneously

for double acting clamping elements

Stations:

6

8

10

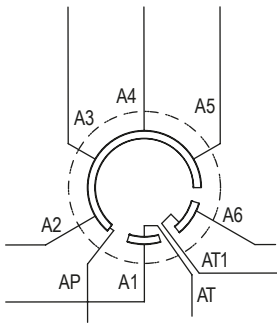
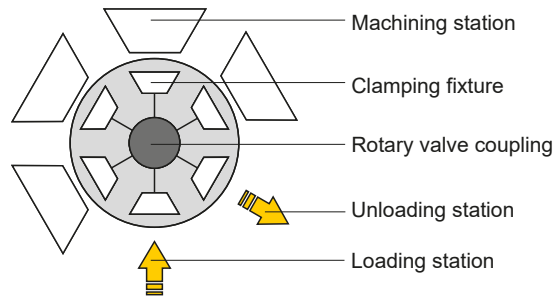
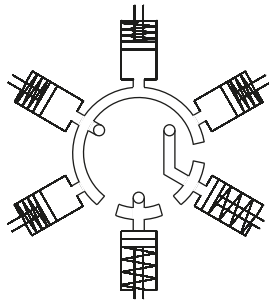
Order number:

DRG-5-DW6-002

DRG-5-DW8-002

DRG-5-DW10-002

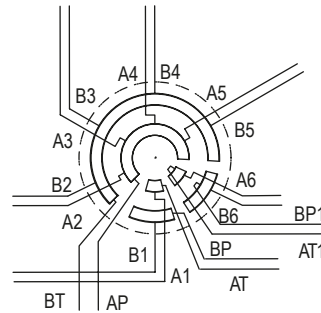
2 Stations loading/unloading, triggered simultaneously



Single-acting,
2 stations (loading/unloading)
triggered separately

Circuit description:

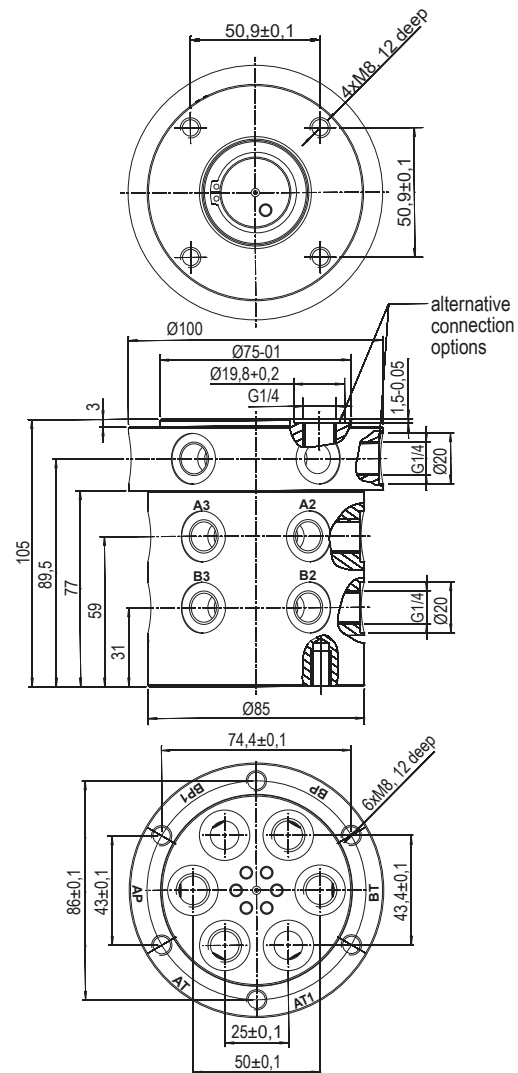
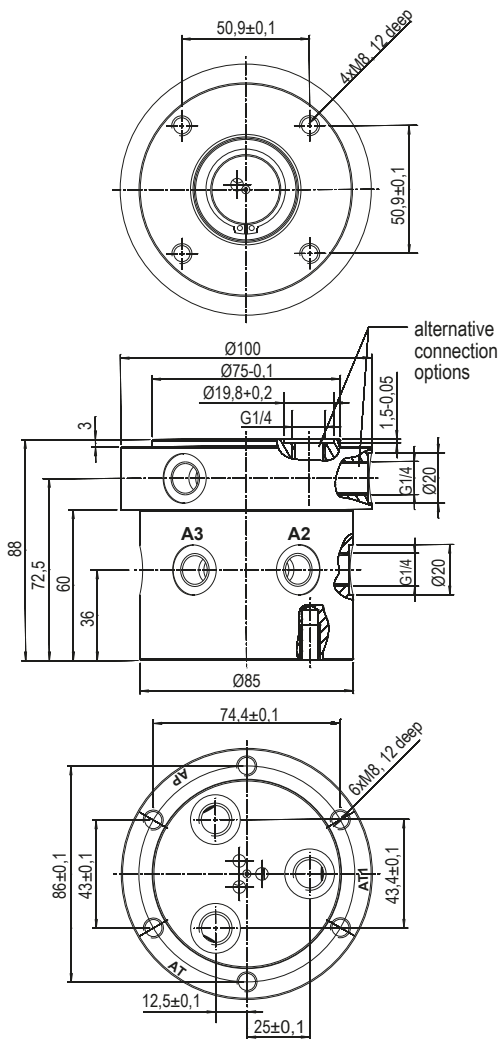
AT to A1
AT1 to An
AP to A2 – An-1



Double-acting,
2 stations (loading/unloading)
triggered separately

Circuit description:

AT to A1
AT1 to An
AP to A2 – An-1
BP to B1
BP1 to Bn
BT to B2 – Bn-1

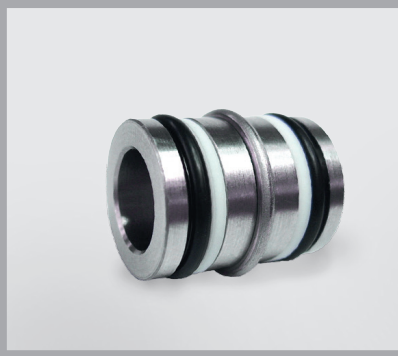


for single acting clamping elements

Stations:	Order number:
6	DRG-5-EW6-003
8	DRG-5-EW8-003
10	DRG-5-EW10-003
2 Stations loading/unloading, triggered separately	

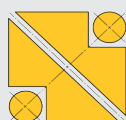
for double acting clamping elements

Stationen:	Order number:
6	DRG-5-DW6-003
8	DRG-5-DW8-003
10	DRG-5-DW10-003
2 Stations loading/unloading, triggered separately	



Hydraulic
elements

600



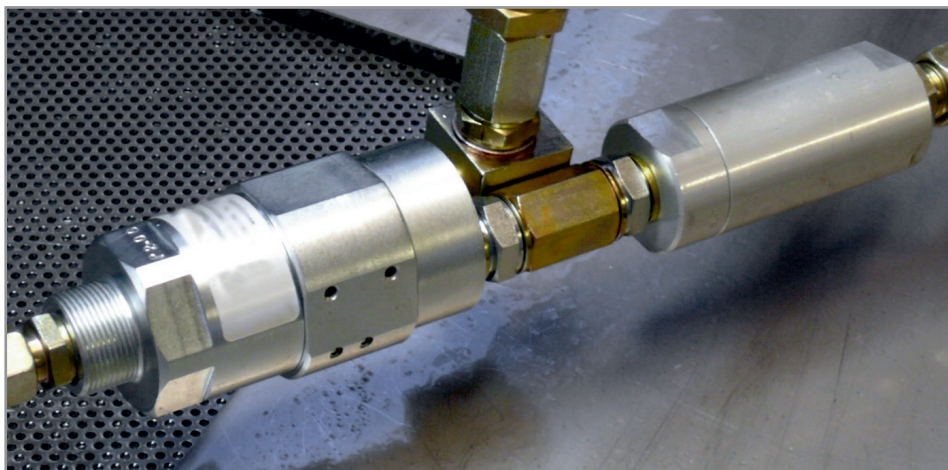
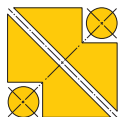
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Technology that connects

This section contains:

Data sheet:	Product:	Page:
600-1	Filters for hydraulic oil , in-line	185
600-2	Connecting inserts , ND 5/8/10/12/16/20	187
600-3	Pressure gauges , with glycerin filling and locking screw	189
600-5	Pressure monitoring cylinders , hydraulically	191
600-20	Hydraulic accumulators , nominal volume 13, 40 and 75 cm ³	193



The hydraulic filter is used to protect a hydraulic/hydraulic pressure booster against contamination. The filter is fitted in the feed line to a hydraulic fixture and filters the incoming hydraulic oil. It is also advisable to clean the emerging hydraulic oil with a second filter in order to protect valves and other hydraulic control devices.

Description:

The filtration of hydraulic media plays a very important role for the availability and reliability of hydraulic systems. The complexity of the hydraulic system is of no particular significance in this respect. Even the simplest hydraulic systems are influenced by inadmissible contamination in the hydraulic medium.

Premature wear or malfunctions are the consequence. Practical experience shows that many malfunctions when starting up hydraulic systems can be attributed to inadequate cleaning of pipes and oil-ways.

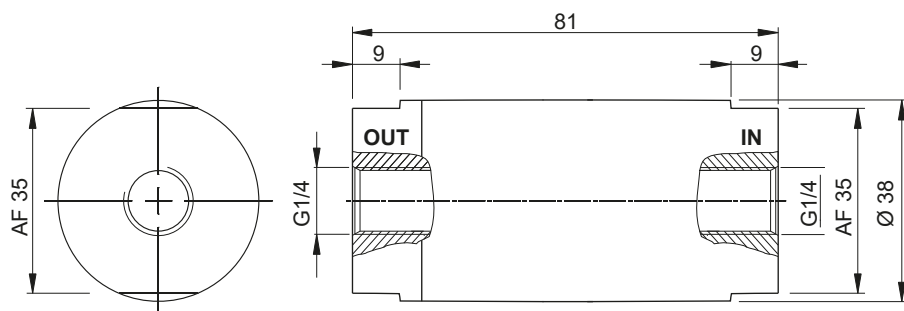
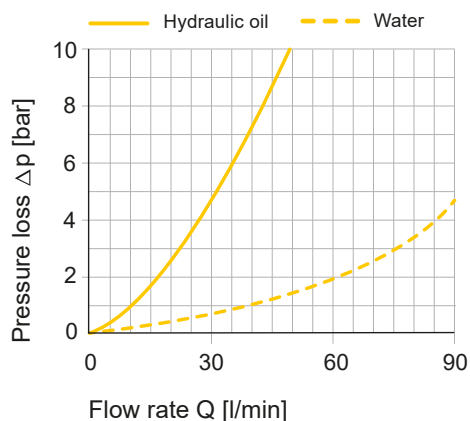
Hydraulic filters in the feed line and if necessary also in the return line of hydraulic systems prevent the failure of the system.

Operating method:

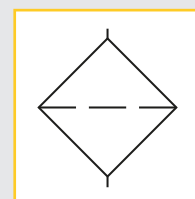
The hydraulic filters consists of a threaded aluminium housing in which the replaceable filter cartridge is fitted.

The flow direction is marked "IN" and "OUT" on the filter housing, and this should be adhered to in use. As a result of the use of high-strength aluminium for the housing, only pipe connectors with elastic seals must be used.

Flow curve:



Webcode: 060001



Connection:

- ☒ G1/4 threaded port

Advantages:

- ☒ Protects the entire hydraulic system
- ☒ Mounting directly into the hydraulic line
- ☒ Replaceable filter cartridge
- ☒ Max. operating pressure 210 bar
- ☒ Stainless aluminium housing



Filter cartridge (spare part)

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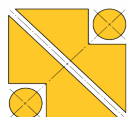
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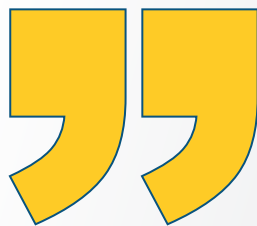
Designation:	Filter mesh:	Order no.:
Hydraulic filter	10 µm	DUF-10-5-001
Hydraulic filter	25 µm	DUF-25-5-002
Filter cartridge (spare part)	10 µm	F-10-5-003
Filter cartridge (spare part)	25 µm	F-25-5-004



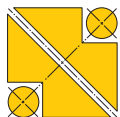
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"The ideal way to connect components over short distances."



Connecting inserts

nominal diameters 3 / 5 / 8 / 10 / 12 / 16 / 20, pmax. 500 bar

600-2

Issue: 10/2022

Description:

The connecting inserts are mounted into the standardized bores on both sides. The round wire snap ring prevents the sleeve from shifting, if professionally mounted. Various nominal diameters are available.

The disconnecting force has to be considered when dimensioning the connecting bolts.

In order to provide a wide range of application, all sealings are made of FKM and the housing is made of stainless steel.

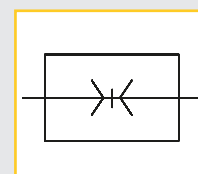
Application:

Connecting inserts are used, when two construction units on short distance shall be connected without standard screw connections.

Connecting inserts are especially designed for hydraulic oil-channel connections without pipe or screw connection.

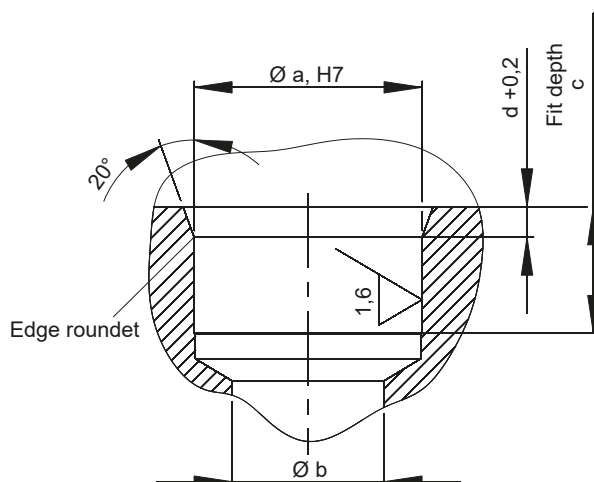


Webcode: 060002

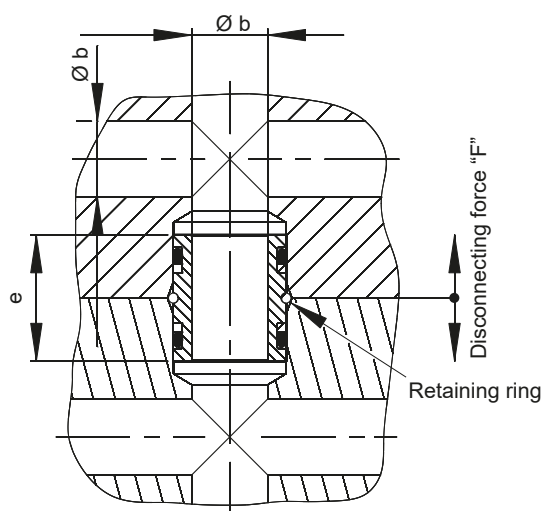


Operating conditions:

- ☒ Max. operating pressure: 500 bar
- ☒ Nominal diameters: (see table)
- ☒ Max. operating temperature: 150° C
- ☒ Sealing material: FKM
- ☒ Housing material: stainless steel



Application example:



Nominal diameter:	ND 3	ND 5	ND 8	ND 10	ND 12	ND 16	ND 20
Ø a [mm]	8	10	14	16	18	22	28
Ø b [mm]	3	5	8	10	12	16	20
c min. [mm]	6	7	8	10	10	11	13
d [mm]	1,5	1,5	1,5	2,4	2,4	3,2	3,2
e [mm]	12	14	16	20	20	22	26
Disconnecting force F [N]	=4,3xp ⁽¹⁾	=5,9xp ⁽¹⁾	=10,4xp ⁽¹⁾	=12,3xp ⁽¹⁾	=14,2xp ⁽¹⁾	=17,9xp ⁽¹⁾	=30,1xp ⁽¹⁾
Order no.:	SV-500-... ...03-001	...05-001	...08-001	...10-001	...12-001	...16-001	...20-001

⁽¹⁾ [bar]

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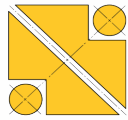


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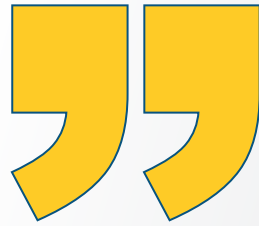
Technology that connects



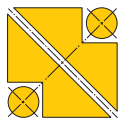
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Technology that connects



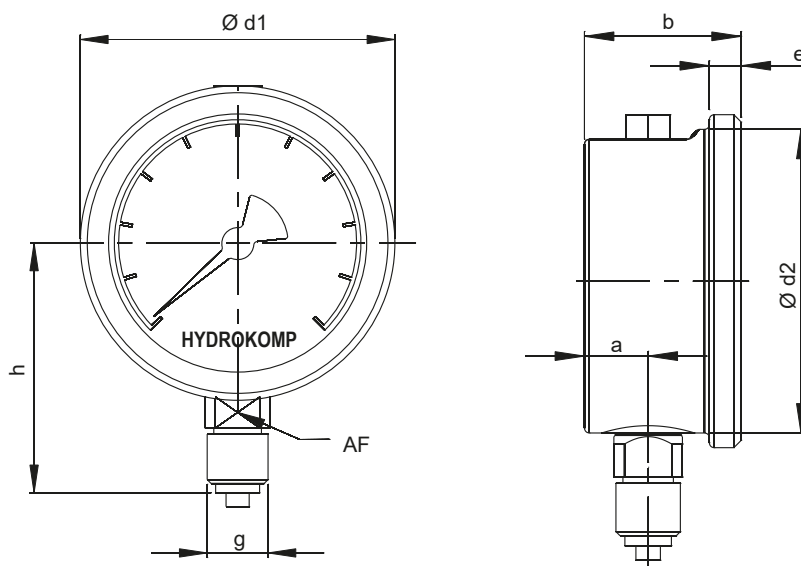
"The pressure gauge: from the ancient Greek μανός manós "thin" and μέτρον métron "measure", "scale". A useful helper in hydraulics."



Pressure gauges

with glycerin filling and screw plug

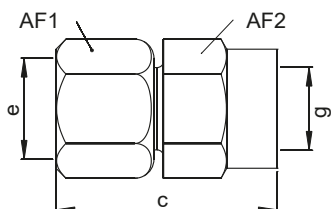
600-3
Issue: 10/2022



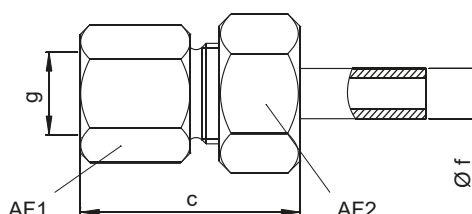
Pressure gauges with glycerin filling and screw plug M6 x 0,75

Measuring range:	a	b	Ø d1	Ø d2	g	h±1	AF	Order no.:
0-250 bar	13	32	68	62	G1/4	54	14	8200-008
0-400 bar	13	32	68	62	G1/4	54	14	8200-007
0-600 bar	13	32	68	62	G1/4	54	14	8200-000

Thread connection

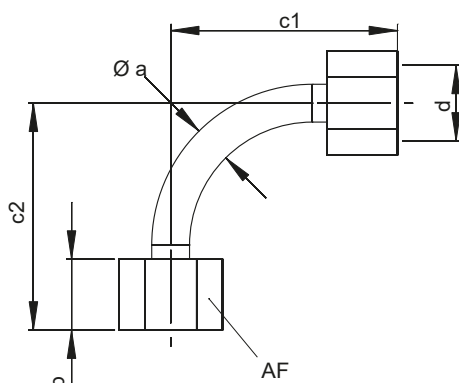


Pipe connection



Gauge screw connections

Connection:	Pressure:	c	e	Ø f	g	AF1	AF2	Order no.:
Thread	0-250 bar	35,5	M16x1,5	-	G1/4	19	17	7900-012
Thread	0-500 bar	35,5	M16x1,5	-	G1/4	19	19	7900-019
Pipe	0-250 bar	39,0	-	8	G1/4	19	17	7900-020
Pipe	0-500 bar	41,0	-	8	G1/4	19	19	7900-021

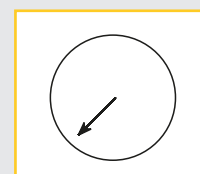


Pipe bends

Pressure range:	Ø a	b	c1	c2	d	AF	Order no.:
0-250 bar	8	15	48	48	M14 x 1,5	17	7900-022
0-500 bar	8	16	48	76	M16 x 1,5	19	7900-023



Webcode: 060003



Description:

The stationary screw plug within the housing of the pressure gauge prevents the ingress of other fluids and therefore offers high safety for reading purposes and functioning.

The pressure gauges are applicable for measuring points with high dynamic compressive loads and vibrations within the hydraulic.

Features:

- ✗ Type: EN 837-1
- ✗ Accuracy class: 1.6
- ✗ Operating temp.: -20° up to +60° C
- ✗ Protection grade: IP 65 according to EN 60529/IEC 529
- ✗ Damping fluid: glycerin 99,7 %
- ✗ Display: plastics, crystal clear
- ✗ Display range: (see table)
- ✗ Vibration and shock resistant

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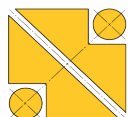


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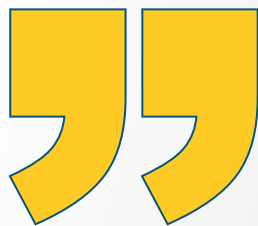
Technology that connects



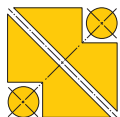
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**"Get help monitoring your clamping system
if it is not connected to the pressure generator."**



Pressure monitoring cylinders

hydraulic, pmax. 500 bar

600-5

Issue: 10/2022

Description:

Pressure monitoring cylinders convert a hydraulic signal (test pressure/pressure loss) into a mechanical signal that can be evaluated by means of electrical or pneumatic switch units. They are used predominantly in hydraulic systems that are not connected to a pressure generator e.g. fixed clamping systems.

Operating conditions:

The pressure monitoring cylinders are equipped with three compression springs which can measure any pressure between 15 and 500 bar depending on their combination and adjustable pretensioning.

When the preset pressure is reached, the piston moves through a stroke of 2,5 mm. This can be detected by means of a limit switch, an inductive proximity switch or pneumatic/electric booster relay.

The particular advantage of this pressure monitoring cylinder lies in the fact, that after just minimal pressure loss (max. 15 %) the piston returns to its starting position, so generating a signal that can e.g. stop the production process.

Installation instructions:

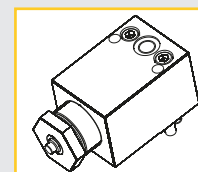
Dismount the springs which are not necessary for the test pressure so that only the springs according to the table "Setting ranges" remain in the cylinder. Fine adjustments are made on the front adjustment nut.

Adjust the signal element that is to be operated by the DUZ in extracted position of the piston. Assemble all supplied fastening elements. Thus, the switching point is reversible.

When using the drilled channels in the cylinder with manifold connection, the connection bore must show a maximum diameter of 6 mm.



Webcode: 060005

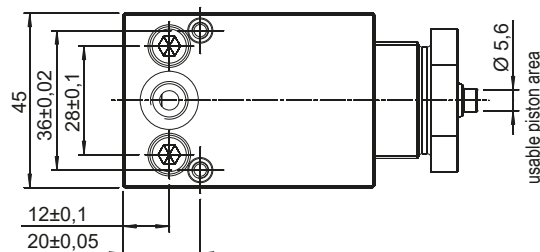
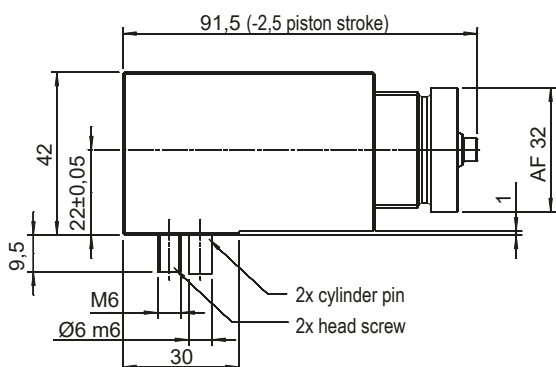
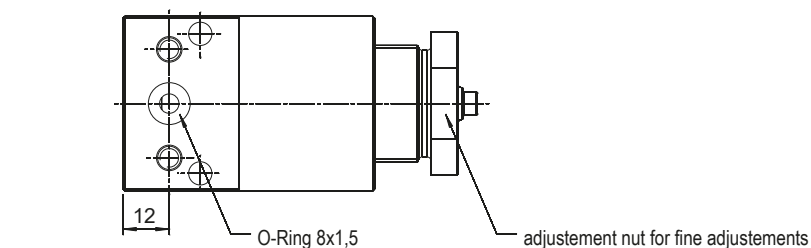


Connections:

- ☒ G1/8 threaded port, back side
- ☒ Manifold connection with O-ring, bottom side

Setting ranges:

Spring selection:	Setting:
spring 1	15 - 80 bar
spring 2	80 - 180 bar
spring 3	140 - 200 bar
spring 1+2	90 - 260 bar
spring 1+3	160 - 300 bar
spring 2+3	210 - 400 bar
spring 1+2+3	250 - 500 bar



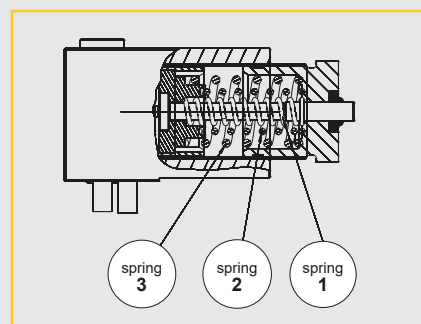
Scope of supply includes:

- ☒ Manifold connection with O-ring

1 pce. O-ring 8x1,5
2 pce. cylinder pin Ø6 m6
2 pce. head screw M6
1 pce. screw plug G1/8

- ☒ G1/8 threaded port

2 pce. cylinder pin Ø6 m6
2 pce. head screw M6
manifold connection sealed



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Pressure monitoring cylinder:

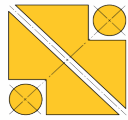
Manifold connection with O-ring, bottom side
G1/8 threaded port, back side
O-ring 8x1,5 (spare part)

Order number:

DUZ-500-001

DUZ-500-002

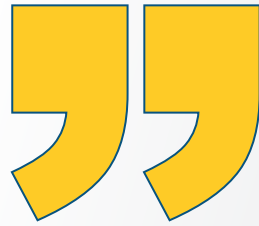
6011-002



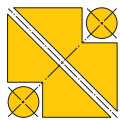
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"Accumulators are primarily used for pressure compensation in the event of temperature fluctuations or internal system leaks, but not to compensate for oil loss in the event of leaks, as this loss is undefined."



Hydraulic accumulators

volumes nominal 13, 40 and 75 cm³, pmax. 500 bar

600-20

Issue: 10/2022

Description:

When using hydraulic clamping systems, internal leaks and volume changes (e.g. because of temperature fluctuations) must be balanced. These tasks are performed by the hydraulic accumulator.

In intermittent applications, the attached pressure generator fills the hydraulic accumulator during the interruptions. As a result, a short-term high volume flow is achieved, which can be used, as required, to reduce power at the pressure generator.

As volume storage, the hydraulic accumulators are also suitable as a source of pressure oil upon failure of the pressure oil supply at the hydraulic pump.

When using hydraulic accumulators, the system must be equipped with additional security elements (see safety information).

Only qualified personnel may work on the hydraulic accumulator.

Applications:

Balancing internal system leaks

In hydraulic clamping systems, the pressure generator usually operates in off mode. A pressure switch thereby controls the switching operations of the drive motor.

If elements that cause a leak due to their construction are connected to the system (e.g. rotary valve coupling), this causes frequent switching. The hydraulic accumulator substantially reduces the on and off cycles of the drive motor, thus saving energy and reducing wear and tear.

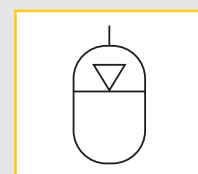
Balancing volume changes

In uncoupled clamping systems, temperature fluctuations may arise. These will inevitably lead to substantial changes in the clamping pressure (± 10 bar at $\pm 1^\circ$ C).

The installation of a hydraulic accumulator in the system equalizes volume, thus preventing undesirable fluctuations in pressure.



Webcode: 060020



Design:

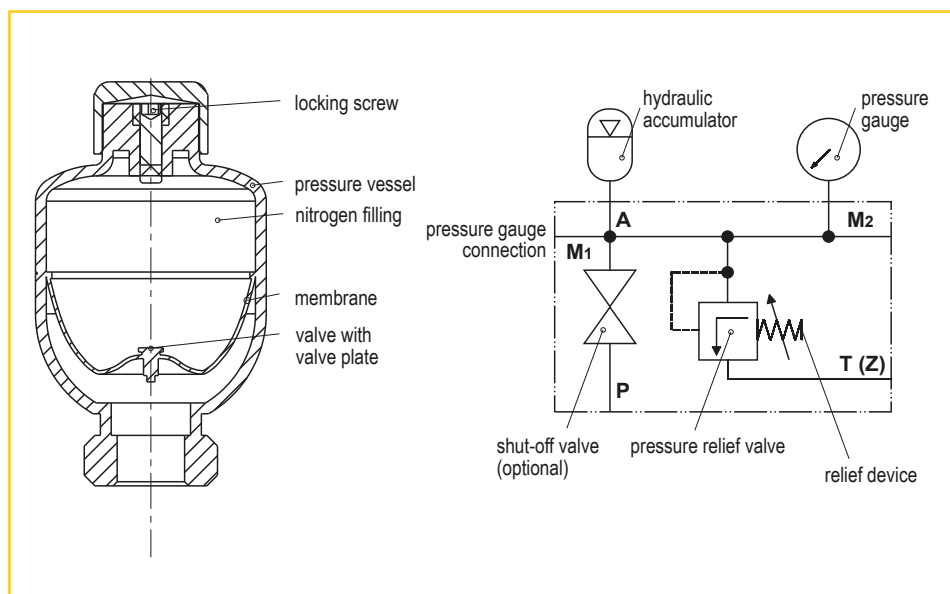
- Membrane accumulator with filling gas nitrogen (min 99.8%)

Connection:

- Threaded ports
G1/4 G 1/2 M14x1,5

Advantages:

- Robust construction
- Available in three standard sizes
- Can be mounted in any position
- Discharge of hydraulic components for pressure fluctuations/surges
- Helps to conserve energy
- Reduces wear



Functioning:

The membrane is pressurized with nitrogen. The integrated valve plate closes the opening of the oil inlet, thus preventing damage to the membrane.

At minimal operating pressure, a small amount of pressure oil must remain in the vessel so that the membrane does not close during discharge due to the pressure on the valve plate; p_0 must therefore always be set lower than p_1 .

The stored amount of liquid corresponds to the volume change ΔV between the position at minimum and maximum operating pressure.

Safety instructions:

In Germany, hydraulic accumulators are subject to the rules and regulations of the TRB (Technische Regeln Druckbehälter / technical rules for pressure vessels). Accordingly, the following supplementary equipment is required when using hydraulic accumulators:

- pressure gauge
- relief device
- pressure relief valve
- shut-off valve (optional)
- test pressure gauge connection

Outside of Germany, the national rules and regulations on the use of pressure vessels of the respective country apply.

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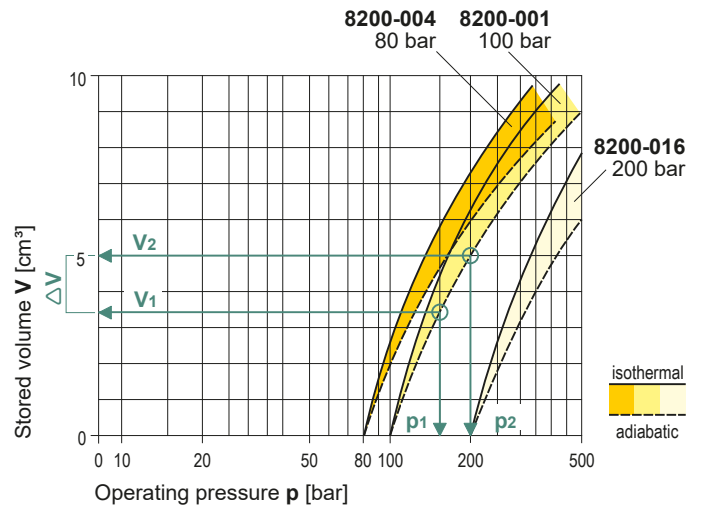
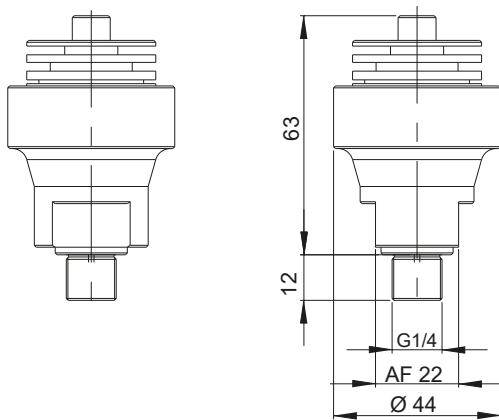
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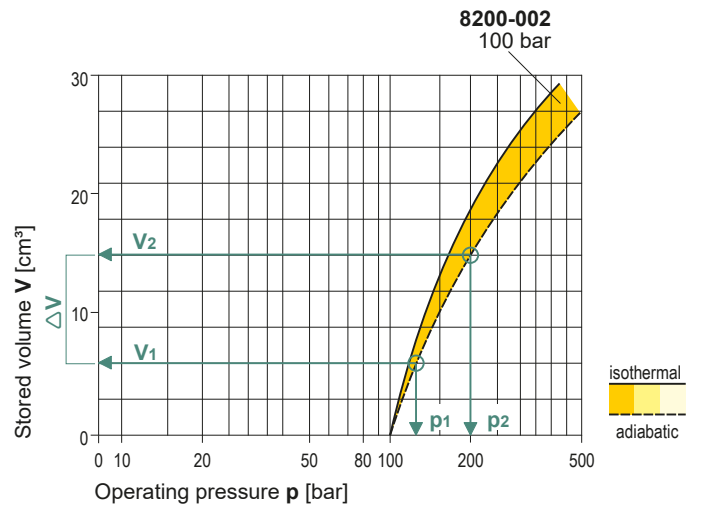
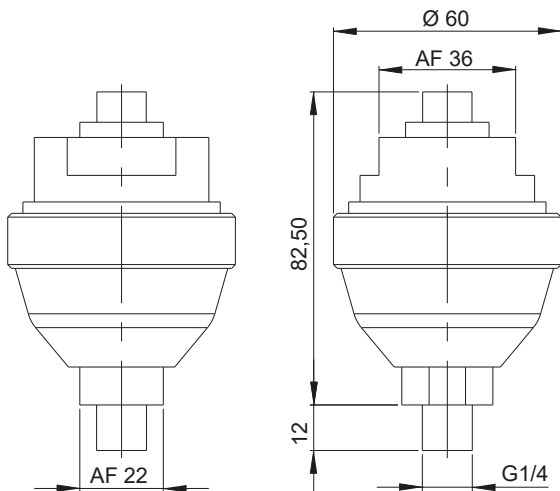
Technology that connects



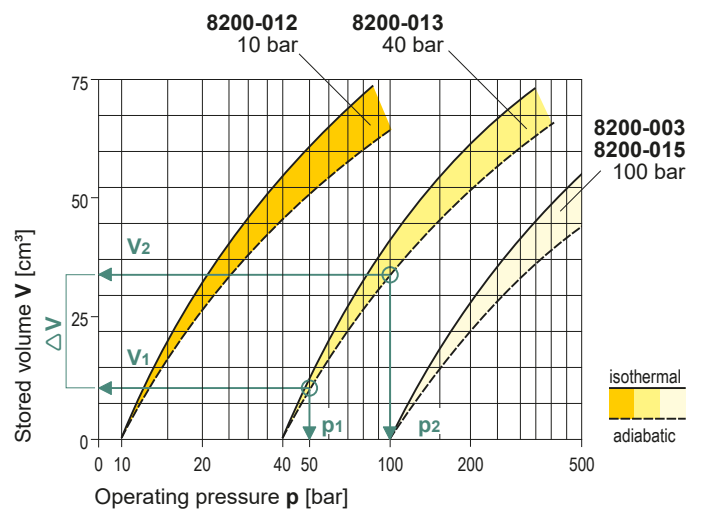
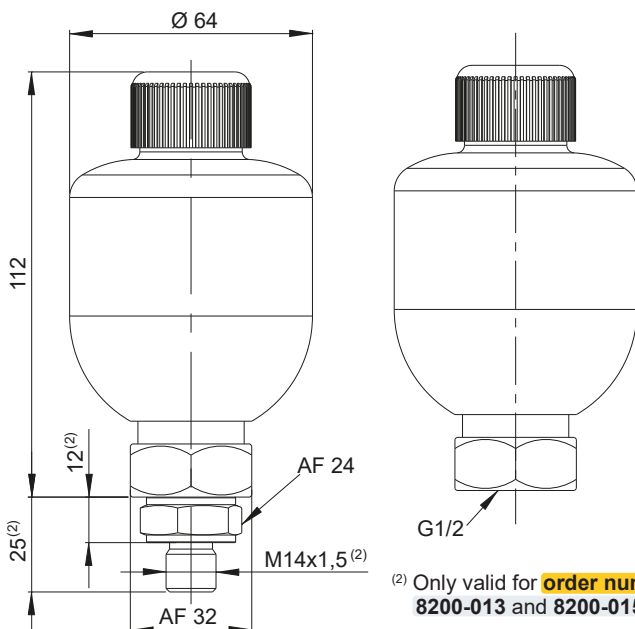
Hydraulic accumulator V = 13 cm³



Hydraulic accumulator V = 40 cm³



Hydraulic accumulator V = 75 cm³



Hydraulic accumulator V = 13 cm³

Nominal value ⁽¹⁾	p _{max.}	Preload pressure p ₀ ⁽²⁾	Thread	Stored volume	Order no.
13 cm ³	500 bar	100 bar	G1/4	9,2 cm ³	8200-001
13 cm ³	500 bar	80 bar	G1/4	9,8 cm ³	8200-004
13 cm ³	500 bar	200 bar	G1/4	8,6 cm ³	8200-016
13 cm ³	500 bar	20 bar	G1/4	8,6 cm ³	8200-019

⁽¹⁾at 22° C and max. operating pressure p_{max.}

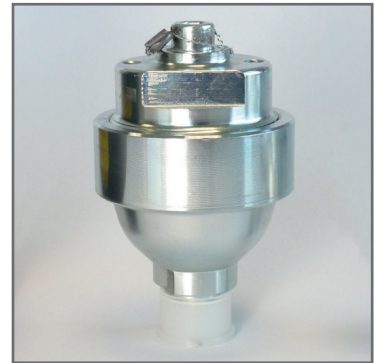
⁽²⁾These type of hydraulic accumulator is also available with other preload pressure on request.

Hydraulic accumulator V = 40 cm³

Nominal value ⁽¹⁾	p _{max.}	Preload pressure p ₀ ⁽²⁾	Thread	Stored volume	Order no.
40 cm ³	400 bar	100 bar	G 1/4	28,8 cm ³	8200-002

⁽¹⁾at 22° C and max. operating pressure p_{max.}

⁽²⁾These type of hydraulic accumulator is also available with other preload pressure on request.

Hydraulic accumulator V = 75 cm³

Nominal value ⁽¹⁾	p _{max.}	Preload pressure p ₀ ⁽²⁾	Thread	Stored volume	Order no.
75 cm ³	250 bar	100 bar	G 1/2	45,0 cm ³	8200-003
75 cm ³	50 bar	10 bar	G 1/2	70,0 cm ³	8200-012
75 cm ³	250 bar	40 bar	M14x1,5	62,0 cm ³	8200-013
75 cm ³	250 bar	100 bar	M14x1,5	45,0 cm ³	8200-015

⁽¹⁾at 22° C and max. operating pressure p_{max.}

⁽²⁾These type of hydraulic accumulator is also available with other preload pressure on request.

**Note on the curves** (page 2):

The curves are understood to be theoretical directivity limits. The stored volume ΔV is calculated from the appropriate preload pressure p₀ at the two operating pressures, minimum operating pressure p₁ and maximum operating pressure p₂.

$$\Delta V = V_2 - V_1$$

isothermal

(solid curve)



Through the slow charging/discharging of the hydraulic accumulator, the temperature is completely equalized. The clamping pressure remains nearly constant

adiabatic

(dashed curve)



Through the fast charging/discharging, the hydraulic accumulator is subject to strong temperature fluctuations. Complete temperature equalization is not possible. This results in an increase in temperature. This leads to substantial changes in the clamping pressure (± 10 bar bei ± 1° C).



Application example:

Clamping fixture in a processing palette equipped with swing clamp cylinders.

The hydraulic accumulator with a nominal value of 40 cm³ was installed in a manual coupling system.

The pressure oil is supplied via the coupling mechanism board.

In addition to the integrated check valve, the coupling system includes all other safeguards required for the operation of the hydraulic accumulator.

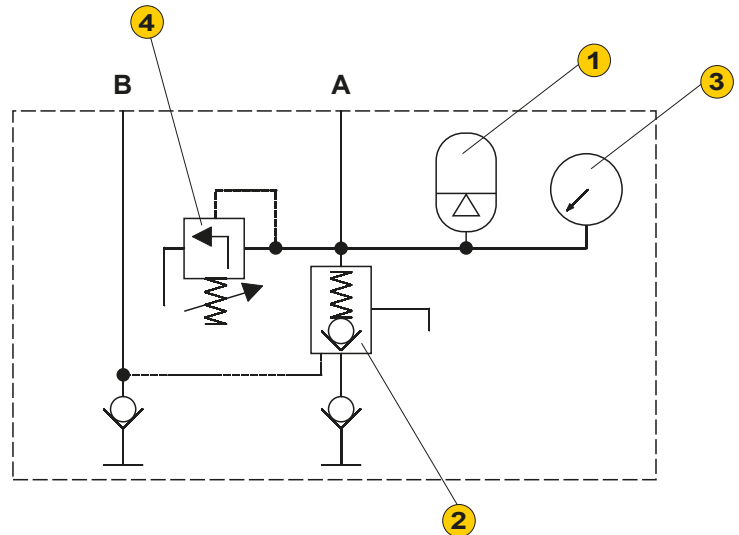
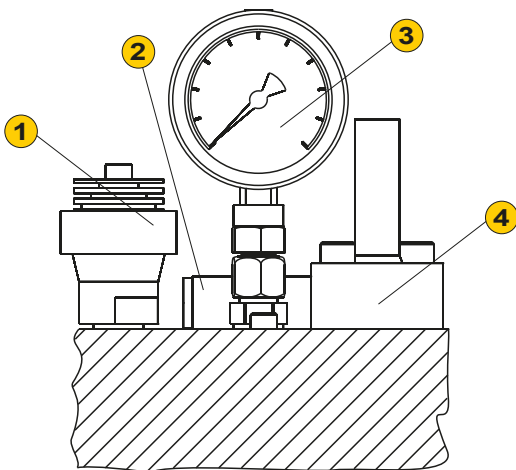
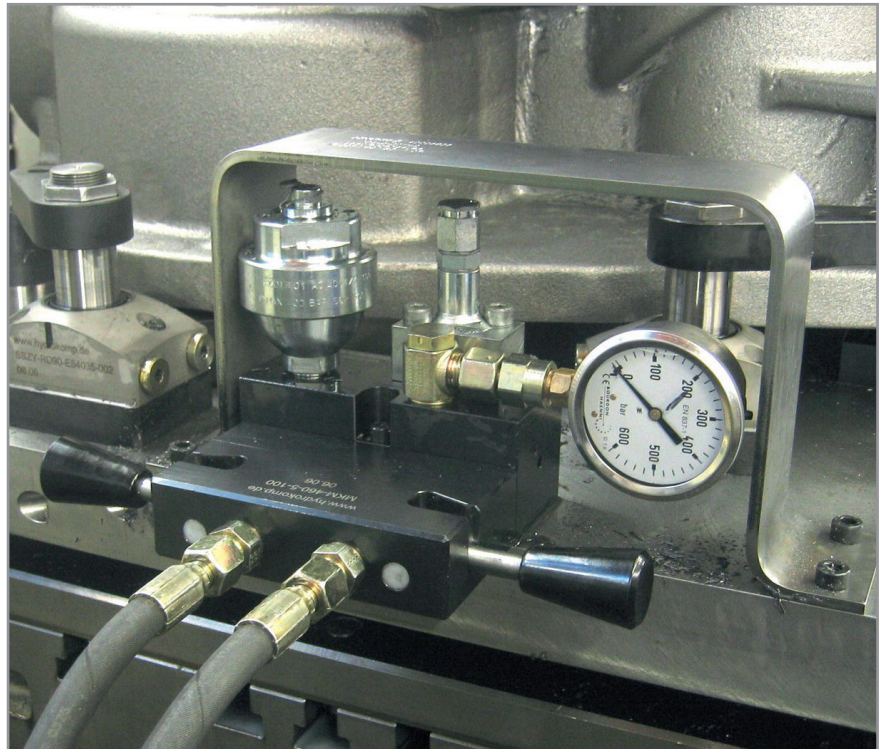
Pressure gauge:

installed in the supply line of the clamping system to monitor the actual pressure

Pressure relief valve:

Function of the relief device, protects the hydraulic accumulator from a pressure increase of more than 10% of the maximum operating pressure.

Component:	Data sheet:
Manual coupling systems	100-2
Swing clamp cylinders	240-10
Pressure gauges with glycerin filling	600-3
Check valve, hydr. pilot operated	700-11

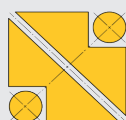


- 1 Hydraulic accumulator
- 2 Check valve, hydraulically pilot operated
- 3 Pressure gauge with glycerine filling
- 4 Pressure relief valve with relief device



Hydraulic valves

700



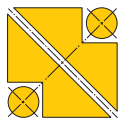
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Technology that connects

This section contains:

Data sheet:	Product:	Page:
700-2	Sequence valves , ND4	199
700-10	Check valves , hydraulically pilot operated	205
700-11	Check valves , without/with pilot control	207
700-15	Throttle check valves , single valve with pipe connecting port	209
700-30	Pressure reducing valves , without leak oil recirculation	211
700-40	Directional valves , mechanical or manual actuation, ND 4	213



Sequence valves

Nominal diameter 4, pmax. 500 bar, with integrated check valve

700-2

Issue: 08/2026

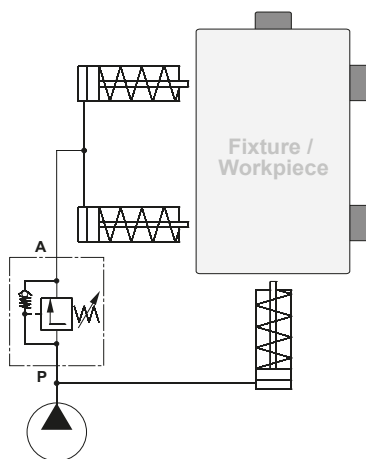
Description:

The sequence valves are used in the clamping hydraulics as a directly controlled sequence valve.

The compact design allows space-saving installation directly in the fixture. The sequence valve is a poppet valve which operates without leakage oil compared to a spool valve. The inlet and outlet pressures of the sequence valves are always identical. As a result this type of valve is ideal for use in sequence control systems.

With single-acting cylinders, only one supply line from the pressure supplier (see data sheet 430-1) is required for operation.

The design allows valve combinations that can be flanged together to form a block using a common P-connection and standard parts.



Application example:

The drawing shows symbolically a clamping device as it can be used e.g. in manufacturing. When pressure is applied, the single-acting cylinder [1] clamps.

When the set opening pressure has been reached, the inlet valve [A1] opens and actuates the swing clamp [2].

Pressure medium:

Hydraulic oil according to DIN 51524 TI.1 to 3; ISO VG 10 to 68 according to DIN 51519

Valve combinations:

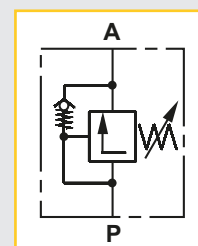
Combinations of sequence valves are assembled from an inlet valve (P) and a maximum of four flange-mounted series valves. These are supplied with pressure oil through holes. Sealing between the valve housings is provided by O-rings. In order to ensure proper functioning with sequence controls (Parallel connection), there should be a certain minimum pressure difference from valve to valve.

This should be set higher for the different versions:

- 25 bar for the → ZSV-160... version
- 35 bar for the → ZSV-315... version
- 50 bar for the → ZSV-500... version



Webcode: 070002



Advantages:

- ✘ space-saving installation options
- ✘ quick installation due to flange
- ✘ ideal for pressure sequence control
- ✘ operation with one supply line possible
- ✘ valve combinations parallel connection
- ✘ valve combinations series connection
- ✘ Integrated check valve

Accessoires (optional):

Designation: **Order Nr.**

Threaded rods:

M5 x 072 (für 2 valves)	7005-024
M5 x 102 (für 3 valves)	7005-025
M5 x 132 (für 4 valves)	7005-026
M5 x 162 (für 5 valves)	7005-027

Sealing rings:

O-Ring 7 x 1,5	6010-002
O-Ring 8 x 1,5	6011-002
U-seal 7,3 x 10,2	6006-003

Screws:

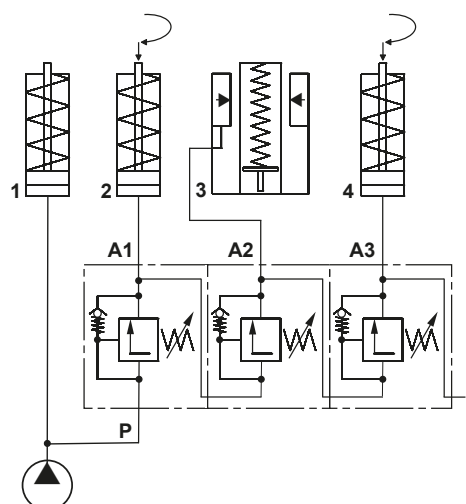
Cylinder head screw	
M6 x 12, DIN 912	7006-022

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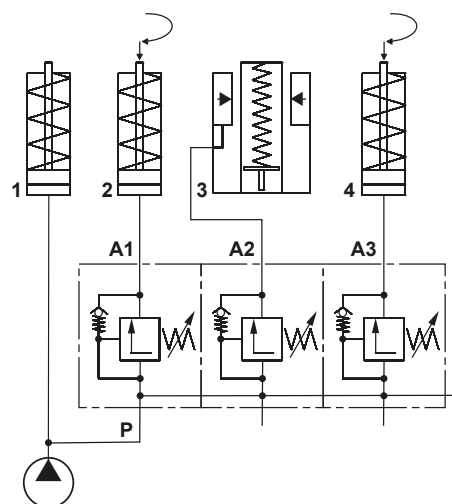


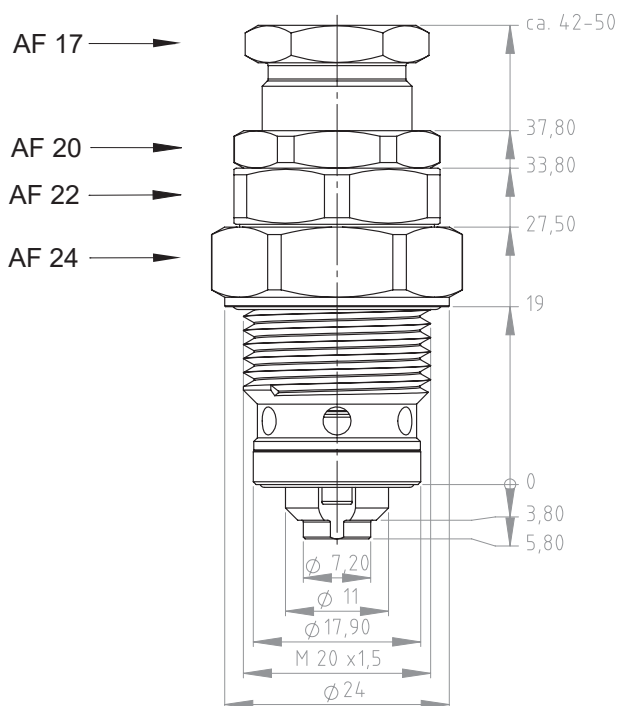
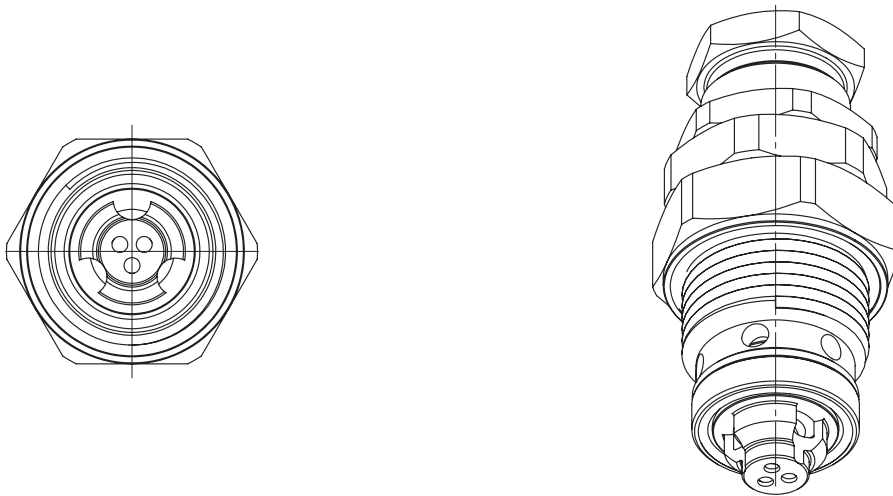
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Series connection:

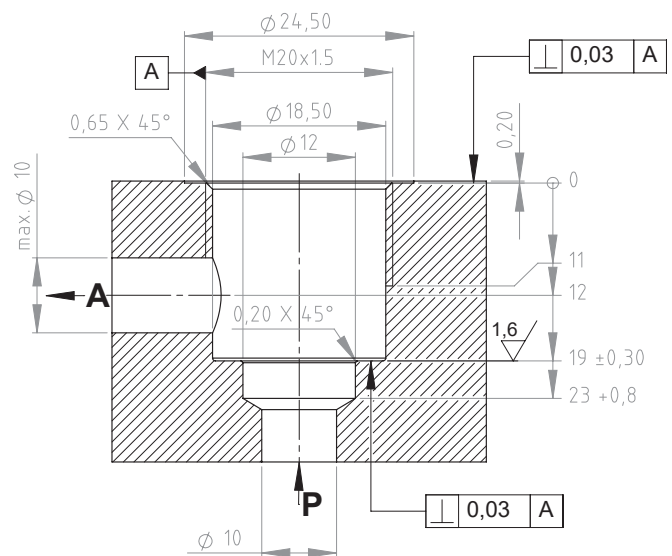


Parallel connection:





Installation contour:



Assembly instructions:

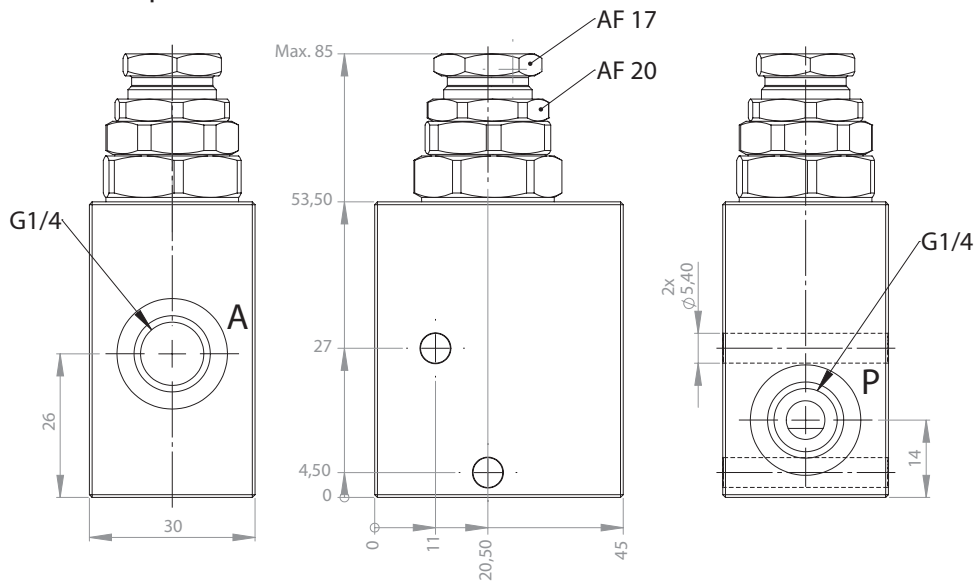
Before screwing in the sequence valve, the sealing nut (AF24) must be turned fully upwards. Then screw the sequence valve into the device (AF22) and tighten to **50 Nm**. Tighten the sealing nut (AF24) to **40 Nm**.

Technical data:

Directly controlled sequence valve, threaded type				
max. Operating pressure	[bar]	500	500	500
max. Volume flow	[l/min]	12	12	12
Adjusting range	[bar]	15-80	30-160	60-315
Pressure change per revolution	[bar]	9	15	32
Weight approx.	[kg]	0,1	0,1	0,1
Order number		ZSV-080-5-009	ZSV-160-5-009	ZSV-315-5-009



Threaded port G1/4

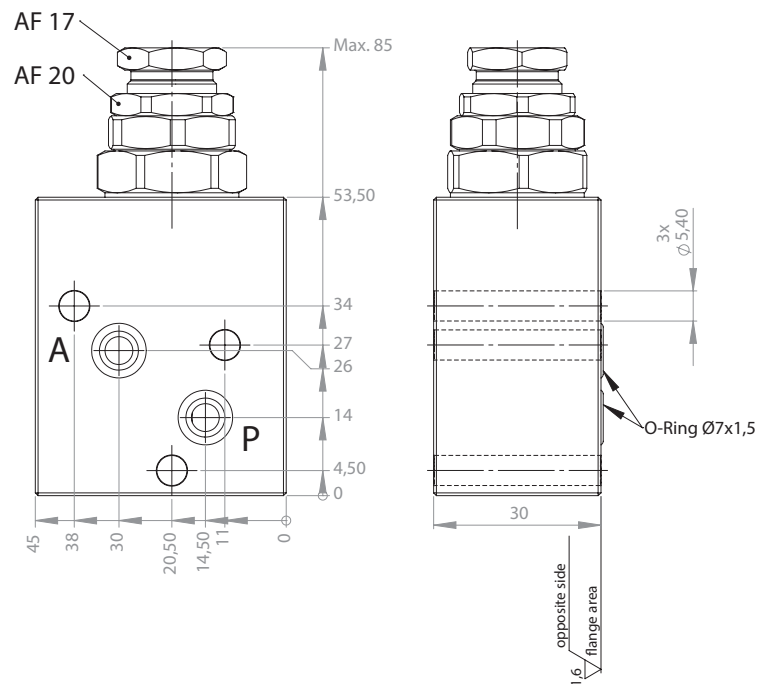


Technical data:

Directly controlled sequence valves with threaded connection

max. Operating pressure	[bar]	500	500	500	500
max. Volume flow	[l/min]	12	12	12	12
Adjusting range	[bar]	15-80	30-160	60-315	100-500
Pressure change per revolution	[bar]	9	15	32	49
Weight approx.	[kg]	0,60	0,60	0,60	0,60
Order number		ZSV-080-5-021	ZSV-160-5-021	ZSV-315-5-021	ZSV-500-5-021

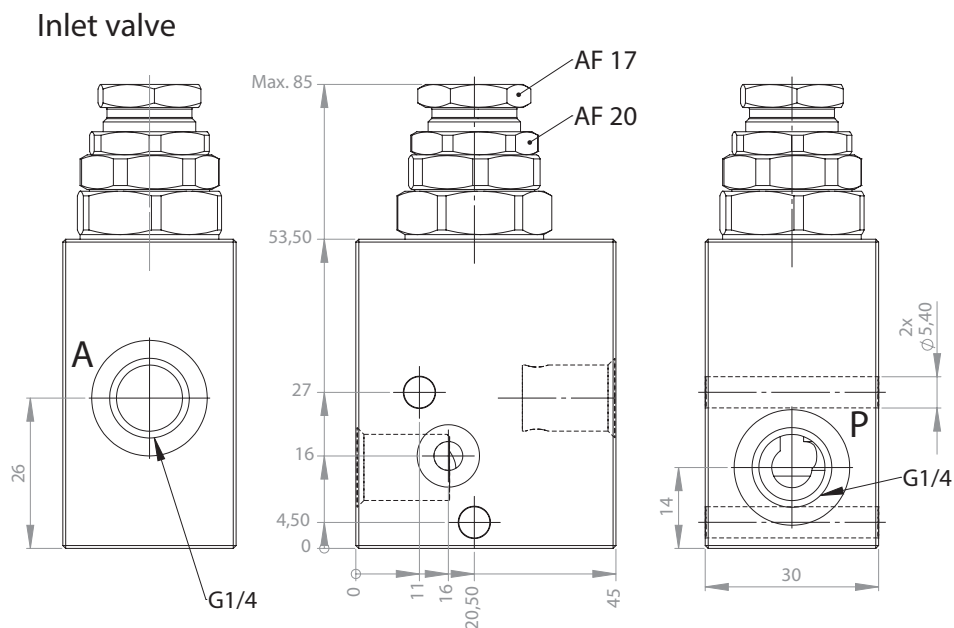
Manifold connection with O-ring



Technical data:

Directly controlled sequence valves for manifold connection with O-ring

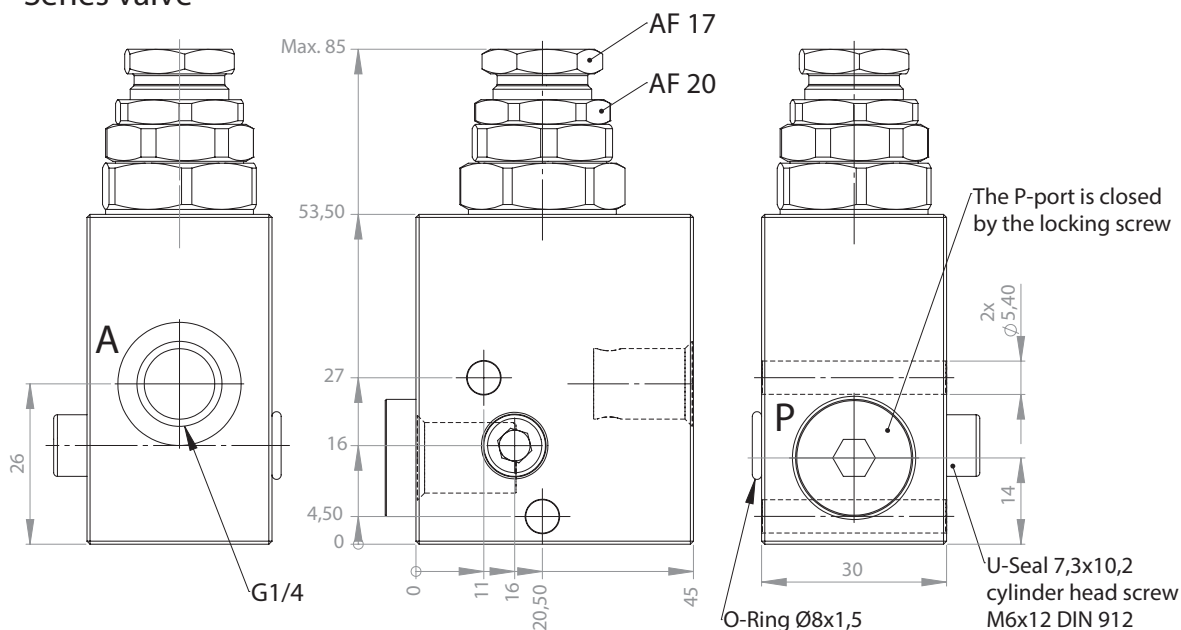
max. Operating pressure	[bar]	500	500	500	500
max. Volume flow	[l/min]	12	12	12	12
Adjusting range	[bar]	15-80	30-160	60-315	100-500
Pressure change per revolution	[bar]	9	15	32	49
Weight approx.	[kg]	0,60	0,60	0,60	0,60
Order number		ZSV-080-5-022	ZSV-160-5-022	ZSV-315-5-022	ZSV-500-5-022



Technical data:

Inlet valve with threaded connection				
max. Operating pressure	[l/min]	500	500	500
max. Volume flow	[bar]	12	12	12
Adjusting range	[bar]	15-80	30-160	60-315
Pressure change per revolution	[kg]	9	15	32
Weight approx.		0,60	0,60	0,60
Order number		ZSV-080-5-023	ZSV-160-5-023	ZSV-315-5-023

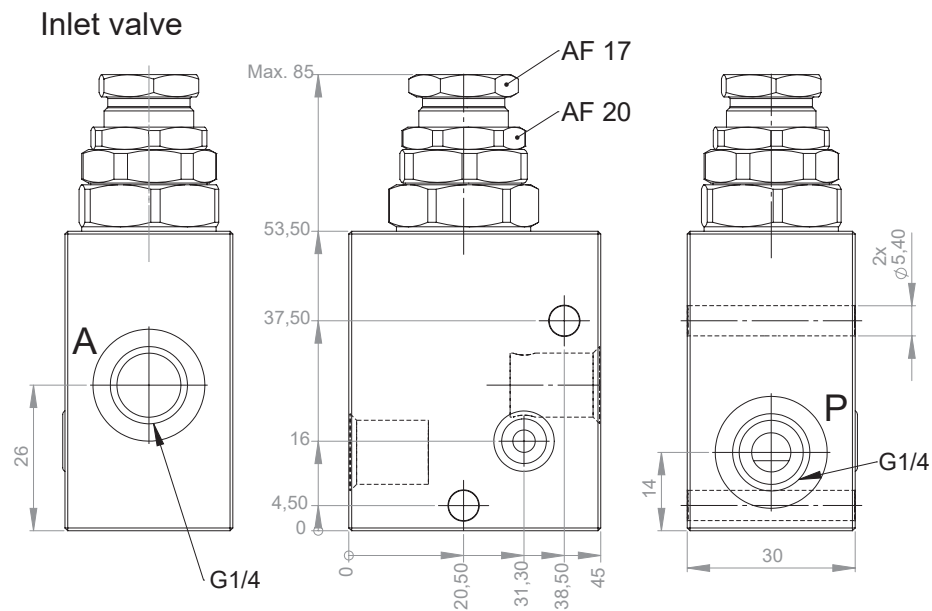
Series valve



Screw plugs and sealing rings are included in the scope of delivery.

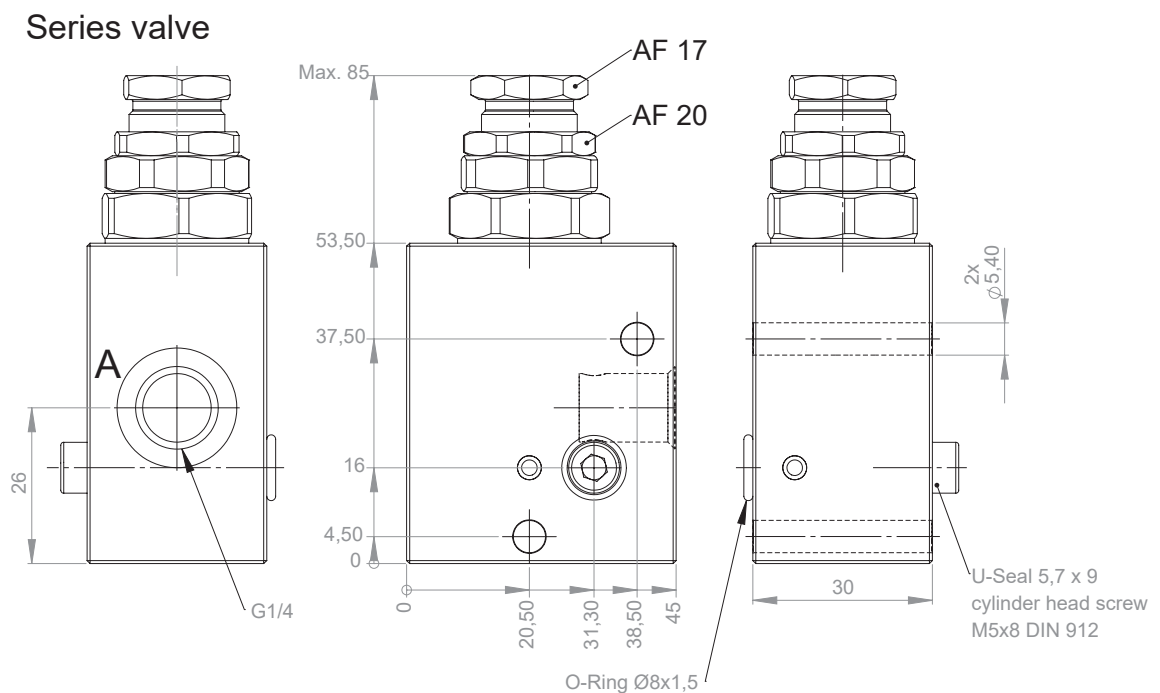
Technical data:

Series valves with threaded connection				
max. Operating pressure	[bar]	500	500	500
max. Volume flow	[l/min]	30	30	30
Adjusting range	[bar]	15-80	30-160	60-315
Pressure change per revolution	[bar]	9	15	32
Weight approx.	[kg]	0,60	0,60	0,60
Order number		ZSV-080-5-024	ZSV-160-5-024	ZSV-315-5-024



Technical data:

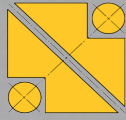
Inlet valve with threaded connection				
max. Operating pressure	[l/min]	500	500	500
max. Volume flow	[bar]	12	12	12
Adjusting range	[bar]	15-80	30-160	60-315
Pressure change per revolution	[kg]	9	15	32
Weight approx.		0,60	0,60	0,60
Order number		ZSV-080-5-025	ZSV-160-5-025	ZSV-315-5-025
				ZSV-500-5-025



Screw plugs and sealing rings are included in the scope of delivery.

Technical data:

Series valves with threaded connection				
max. Operating pressure	[bar]	500	500	500
max. Volume flow	[l/min]	30	30	30
Adjusting range	[bar]	15-80	30-160	60-315
Pressure change per revolution	[bar]	9	15	32
Weight approx.	[kg]	0,60	0,60	0,60
Order number		ZSV-080-5-026	ZSV-160-5-026	ZSV-315-5-026
				ZSV-500-5-026

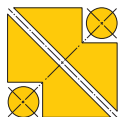


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Check valves

for pipeline installation, hydraulic pilot operated, pmax. 500 bar

700-10

Issue: 10/2022

Description:

These hydraulic check valves are part of the shut-off valves according to DIN ISO 1219. With a hydraulic inlet in the connection **Z** the blocked flow **A→B** can be opened. The flow **B→A** is permanently open.

Pressure medium: Hydraulic oil 10 68 mm²/s, (ISO VG 10 to 68 according to DIN 51 519).

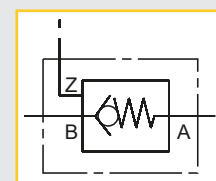
The check valves without pilot control feature a ball as a valve element.

The valve version with pilot control contains a spherical grinded valve piston with an integrated ball check valve. Already when opening the valve piston a throttle opening is released during the unlocking process. This dampens the pilot opening movement of the unlocking piston. Pressure surges in the load volume are suppressed by that.

The pilot control ensures a lower opening pressure which is suitable especially for swing clamp cylinders.



Webcode: 070010



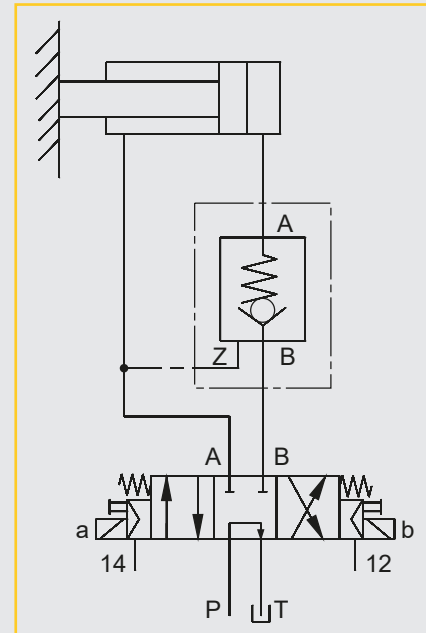
Application:

The check valves serve for blocking the supply line in the application of hydraulic cylinders.

The check valve with pilot control is ideal for high operating pressure and high consumer volume.

Technical data:

Type	Spring-loaded poppet valve, leakage free		
Connection	Pipeline	Pipeline	Pipeline
Installation position	any	any	any
Pilot control	without	without	with
Main passage A, B	G1/4	G1/2	G1/2
Control port Z	G1/4	G1/4	G1/4
Control volume [cm ³]	0,15	0,40	0,40
Operating pressure p _{max.} [bar]	500	500	500
Volume flow Q _{max.} [l/min]	15	55	55
c [mm]	84	100	100
d [mm]	31,5	36,5	36,5
e [mm]	27	31	31
AF	24	32	32
Weight approx. [kg]	0,4	0,6	0,6
Order number	ERSV-500-5-001	ERSV-500-5-004	ERSV-500-5-002



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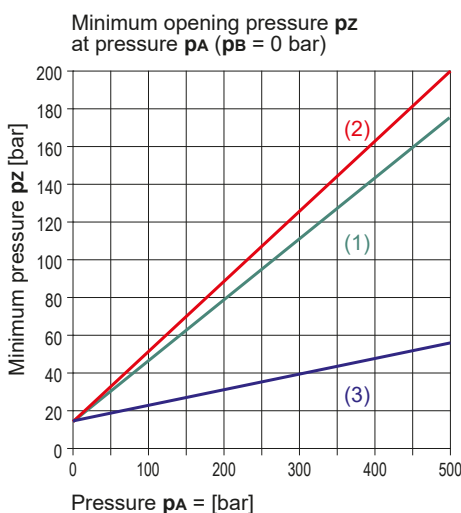
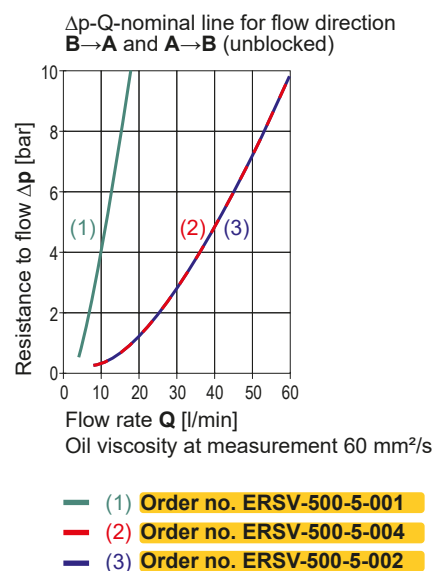
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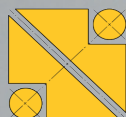
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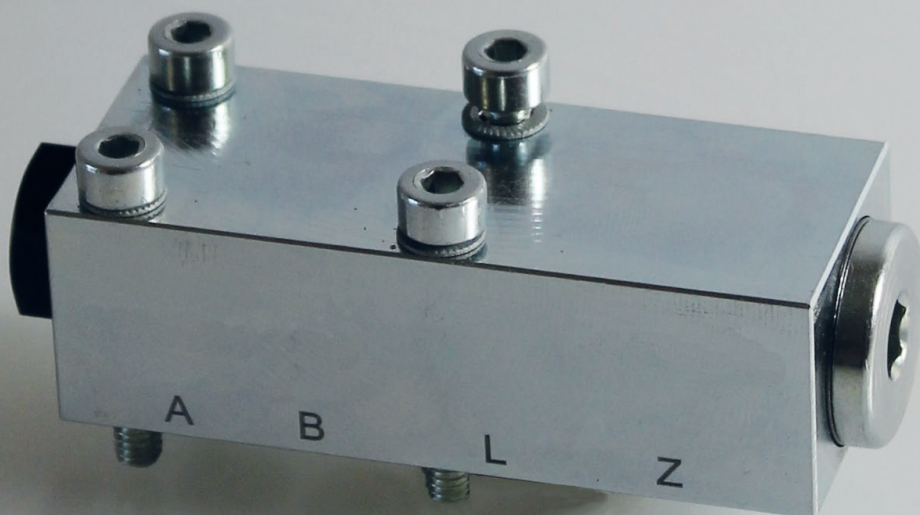


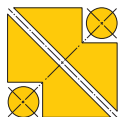


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Check valves

without/with pilot control, hydraulically pilot operated, pmax. 500 bar

700-11

Issue: 10/2022

Description:

These hydraulic check valves are part of the spring loaded shut-off valves. The check valves serve for blocking the supply line in the application of leak-free hydraulic cylinders in combination with low leaking directional valves.

Functionality:

The flow B→A is permanently open. In the opposite direction A→B the flow is locked. It can be unlocked by pressurizing the control port Z. The minimum pressure for that depends on the pressure load at port A. The check valve with a capacity of 20 l/min is not equipped with a pilot control.

The valve with a capacity of 50 l/min is optional available without or with pilot control. In application with higher pressure and volume flow we recommend check valves with pilot control.

The pilot control is effected by unlocking a seat valve in the main valve piston. Thereby a lesser control pressure is required to unlock the flow.

By using a pilot control also clamping cylinders with unfavorable area ratio can be used.

The pressure drop in the consumer line takes place gradually. This prevents from decompression shocks and preserves the connected hydraulic elements.

Operating conditions:

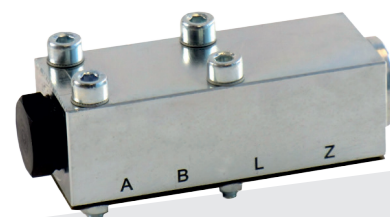
By their design with manifold connection the check valves without/with pilot control facilitate fixtures without piping.

Uncoupled machine parts e.g. pallet systems can be kept pressurized by using these shut-off valves.

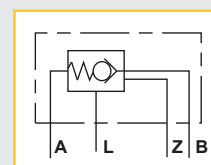
Important notice:

Faults can occur in the pressure ratio if the pressure load is too low to unlock the valve. This can effect dangerous malfunctions when decompressing swing clamp cylinders and pull cylinders.

Such clamping cylinders must be operated with check valves equipped with pilot control. These valve types are designed for a much lower control pressure. To relieve the piston chamber, a drain connection is required. This must be protected from ingress of dirt and liquids.



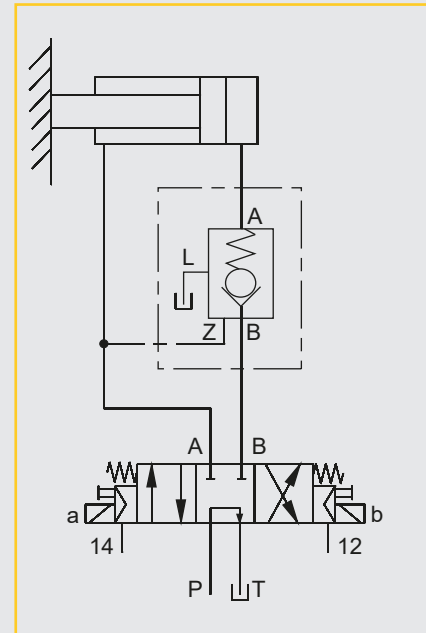
Webcode: 070011



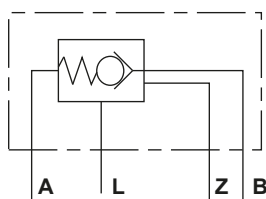
Advantages:

- ✘ Installation without piping
- ✘ Pilot control prevents from decompression shocks
- ✘ Allows pressure maintenance at uncoupled machine parts

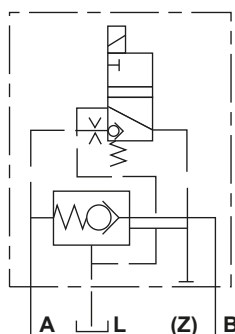
Application example:



Schematic symbols:

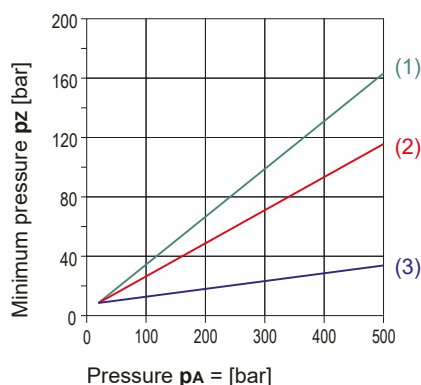


Without pilot control

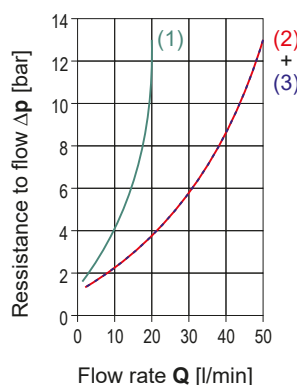


With pilot control

Minimum pressure **p_Z** to unlock at pressure **p_A** (**p_B** = 0 bar)



Δp-Q nominal line



- (1) **Order no. ERSV-500-5-003**
- (2) **Order no. ERSV-500-8-001**
- (3) **Order no. ERSV-500-8-002 (with pilot control)**

Oil viscosity at measurement
60 mm²/s

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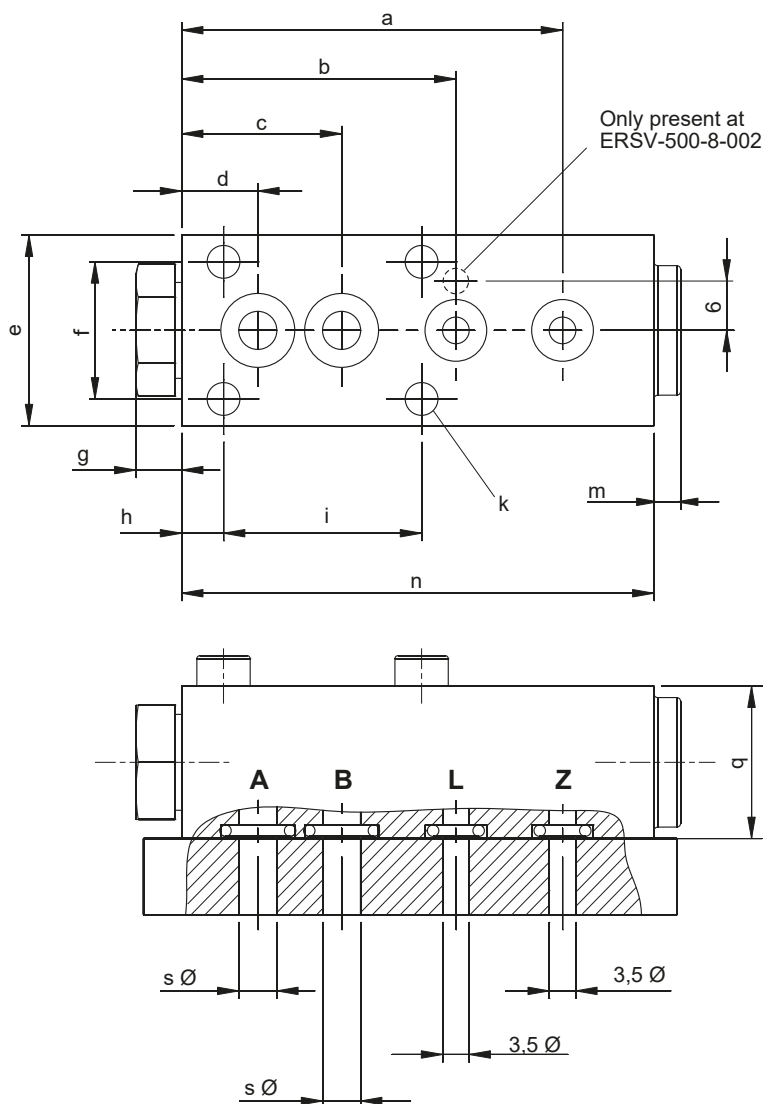
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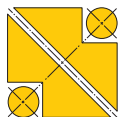
Technology that connects



Technical data:

Type	Without pilot control	Without pilot control	With pilot control
Max. volume flow ($Q_{\max.}$) [l/min]	20	50	50
Max. operating pressure (A, B, Z) [bar]	500	500	500
Anschluss (L)	depressurized	depressurized	depressurized
Control volume [cm ³]	0,2	0,5	0,5
Control pressure pz ($p_B = 0$) [bar]	$(0,32 \times p_A) + 4$	$(0,22 \times p_A) + 4$	$(0,05 \times p_A) + 4$
Unlock ratio (p_A/p_z)	1 : 2,9	1 : 4,3	1 : 4,3
Mounting screws ⁽¹⁾ [4 pce.]	M4x25	M6x40	M6x40
Tightening torque [N/m]	2,6	9	9
a [mm]	50	56	56
b [mm]	36	42	42
c [mm]	21	31	31
d [mm]	10	13	13
e [mm]	25	35	35
f [mm]	18	25	25
g [mm]	9	9	9
h [mm]	5,5	9	9
i [mm]	26	26	26
k [mm]	M4x5 deep	M6x10 deep	M6x10 deep
m [mm]	3,5	4	4
n [mm]	62	70	70
q [mm]	20	35	35
s Ø [mm]	5	9	9
O-rings ⁽¹⁾ (A, B) [mm]	6,07 x 1,78	9,19 x 2,62	9,19 x 2,62
O-rings ⁽¹⁾ (L, Z) [mm]	4,47 x 1,78	4,47 x 1,78	4,47 x 1,78
Weight approx. [kg]	0,30	0,70	0,70
Order no.:	● ERSV-500-5-003	● ERSV-500-8-001	● ERSV-500-8-002

⁽¹⁾Scope of supply includes mounting screws and O-rings.

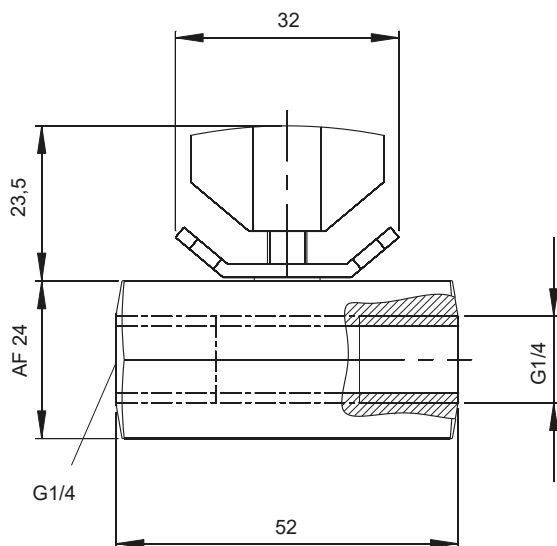


Throttle check valves

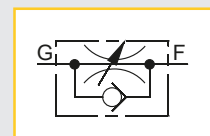
single valve for threaded pipe connection, p_{max.} 500 bar

700-15

Issue: 10/2022



Webcode: 070015

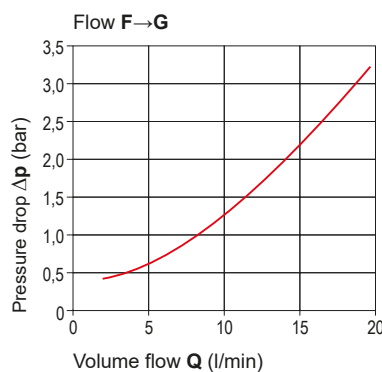
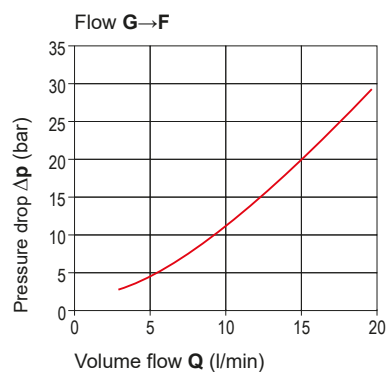


Technical data:

Type	Throttle check valve	
Variation	Single valve for threaded pipe connection	
Adjustability	Can be adjusted manually	
Max. operating pressure (p _{max.})	[bar]	500
Max. volume flow ⁽¹⁾ (Q _{max.})	[l/min]	15
Weight approx.	[kg]	0,18
Order no.	DRV-500-5-001	

⁽¹⁾Value applies to a fully opened valve and a resistance to flow of approx. 50 bar in throttled direction.

Δp -Q-nominal lines (guide values) for kinematic oil viscosity during the measurements $36 \times 10^{-6} \text{ m}^2/\text{s}$., throttle fully opened.



Description:

The throttle check valve belongs to the flow control valves. The throttle check valve is used with single- and double-acting consumers. Herewith, it affects the volume flow.

- Throttled flow from G→F
- Free flow from Flow F→G

Advantages:

- ✘ Easy adjustable by hand throttle
- ✘ Easy installation by threaded connections
- ✘ Installation without additional fastening materials possible
- ✘ Suitable for single-acting and double-acting consumers

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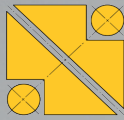
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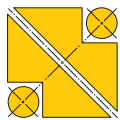


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Pressure reducing valves

without leak-oil connection, pmax. 500 bar

700-30

Issue: 10/2022

General information:

Pressure reducing valves are ideal for the application in static leak-oil free clamping systems, which are decoupled by a pressure pump unit.

The function of the pressure reducing valve is to maintain the outlet pressure **A** on the consumer also with variable, always higher supply pressure **P** constant.

Function:

Once the supply pressure equals the adjusted outlet pressure, a check valve completely blocks the oil flow. Therefore, the pressure can not increase any more. Until the adjusted outlet pressure is acquired, the hydraulic oil can easily flow from **P**→**A** through the valve.

A pressure spring opens the oil flow against the supply pressure, as soon as the outlet pressure, e.g. due to the consumer, decreases. This makes the hydraulic oil flow until the initial pressure is acquired again.

Important information:

Since this pressure reducing valve does not have a leak-oil port, an supply pressure rise might not be compensated.

Reasons for such an unwanted pressure rise can be for example: warming, external influences, effects by foreign matter (chips) in the valve seat etc.

Overload balance is not possible due to this pressure reducing valve version.

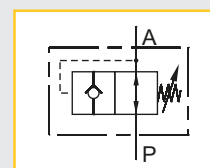
HYDROKOMP recommends installing a pressure reducing valve between the valve and the consumer.

The opening pressure adjusted for the pressure reducing valve may not exceed the max. permissible operating pressure of the consumer. If possible, it should be approx. 10% above the outlet pressure.

The outlet pressure can be adjusted by a pressure gauge which also allows the visual control of the outlet pressure.



Webcode: 070030



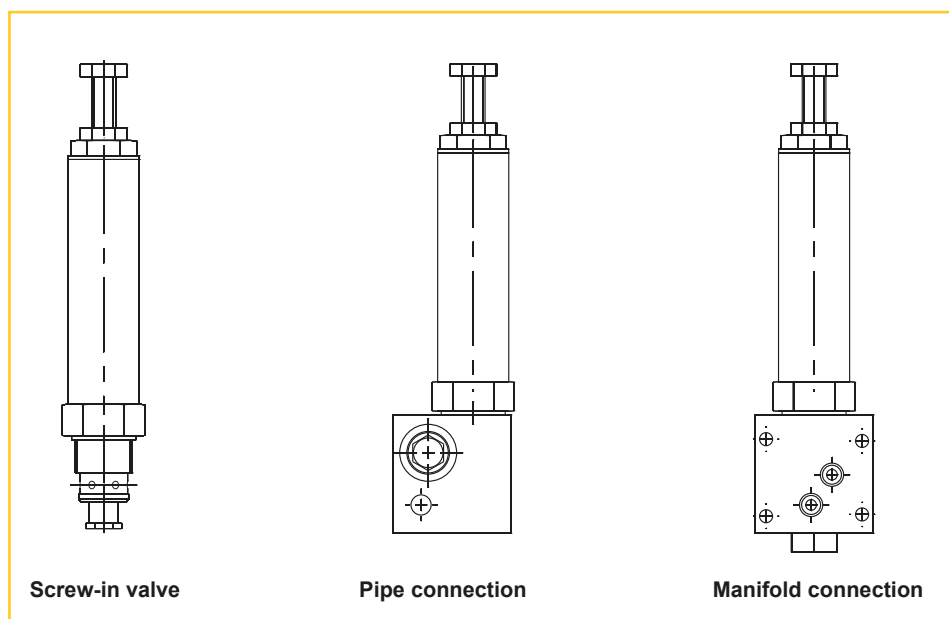
Advantages:

- ✗ Optimal use of clamping force with cylinders and cylinder groups
- ✗ Automatic adjustment for outlet pressure
- ✗ Ideal for static clamp systems
- ✗ No leak-oil tubes
- ✗ Housing with pressure gauge port
- ✗ Varied settings possible

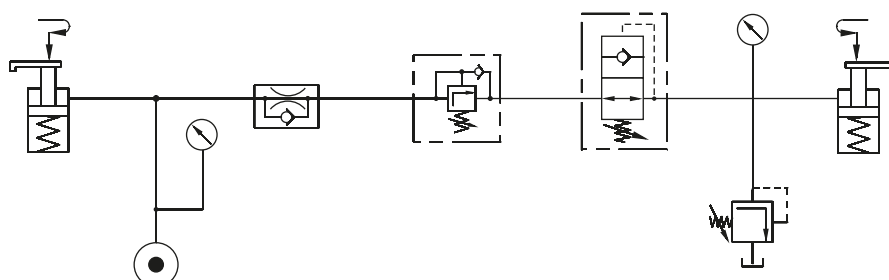
Installation screw-in valve:

For illustration see page 2

1. Turn back the counter- and sealing nut right to the end position.
2. Now screw in the valve housing and fasten it with 70 Nm.
(metal sealing to 118° counter bore)
3. Fasten the counter- and sealing nut with 60 Nm. The sealing is made with support of the enclosed edge seal on the 30-mm countersink diameter
4. For dismantling please proceed in the opposite order.



Application example:



If throttle check valves and sequence valves are to be combined in sequence with the pressure reducing valve, the order described in the example must be considered.

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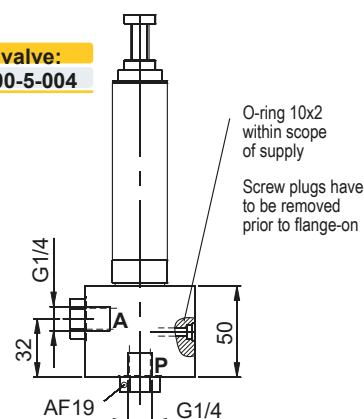
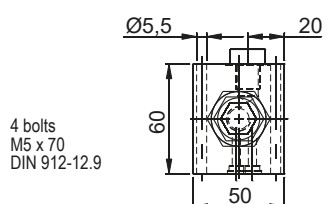
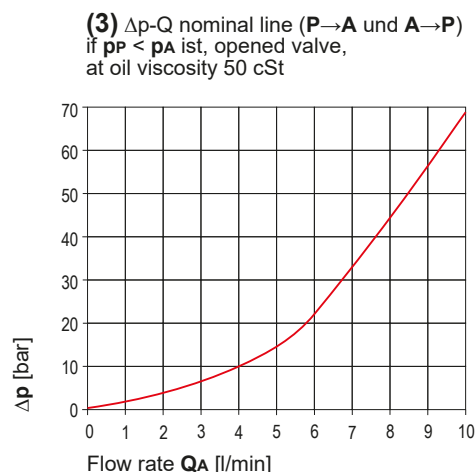


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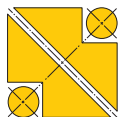
Technology that connects



Design		2-way poppet valve		
Installation position	arbitrary			
Port, inlet P	G1/4			
Port, consumer A	G1/4			
Port, pressure gauge M	G1/4			
Operating/Supply pressure p_{max}	500 bar			
Adjustment range outlet pressure	according to diagram (1) up to 380 bar			
Possible outlet pressure drop	according to diagram (2)			
Volume flow Q_{max}	10 l/min			
Pressure drop	according to diagram (3)			
Hydraulic oil	HLP 22, DIN 51524, ISO VG 10...68 DIN 51519			
Viscosity range	Recommendations 10...50 mm²/s			
Ambient temperature	-40...+80°C			
Connection	Screw-in	Pipe	Manifold or Pipe	
Weight approx.	0,7 kg	1,3 kg	1,5 kg	
Order no.	DRSVE-500-5-001	DRSVE-500-5-002	DRSVE-500-5-004	



A pressure gauge can be connected to port A (see data sheet 600-3).

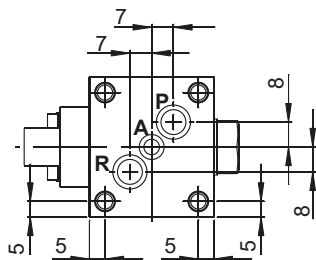


Directional valves

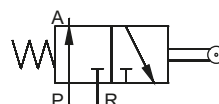
mechanical or manual actuation, ND4, pmax. 500 bar

700-40

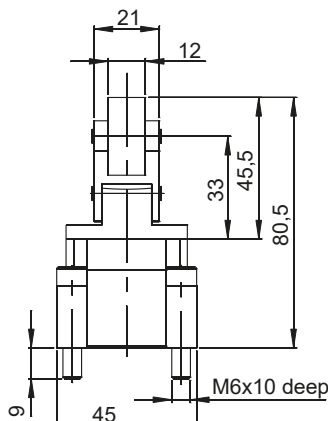
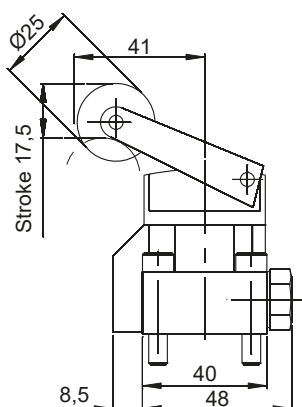
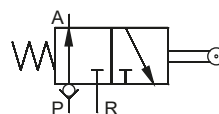
Issue: 10/2022



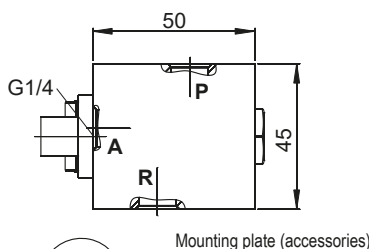
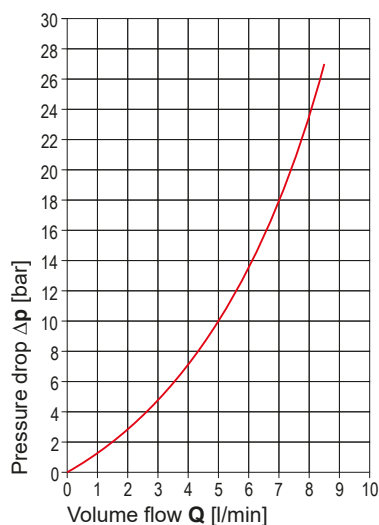
3/2 directional valve
without
check valve



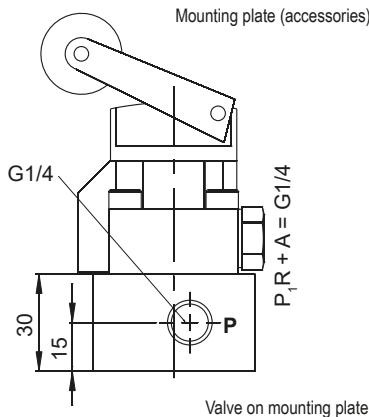
3/2 directional valve
with
check valve



Δp -Q nominal line for kinematic viscosity
of 53x10⁻⁶ m²/s (HLP 22 at 20° C)



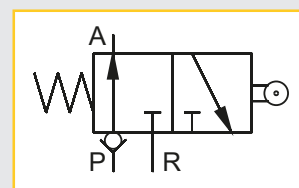
Mounting plate (accessories)



Valve on mounting plate



Webcode: 070040



General information:

Directional valves are based on an almost leak oil-free poppet valve.

The switch position of the mechanical valve is regulated by a sensing roller lever in the operating mechanism.

In the manual valve with rotary handle, the switch position in the operating mechanism is regulated by angle lever and tappet (see page 2).

Directional valves are available as 2/2- and 3/2 designs. With a combination of several valves on a valve plate also 3/3-, 4/3-, 4/2 directional valves can be realized.

In case the directional valves are to be inserted into piping systems, connection blocks can be flanged on. By that, the application range of this series can be expanded by functions like for example pressure control valve or bypass check valve. A combination of several parallel-switched valves is possible.

Single-acting valve combinations are especially suited for multiple clamping systems for the operation of individual clamping spots.

Directional valves with mechanical actuation:

Type	3/2 without check valve	3/2 with check valve
Switching force [N]	25...80	25...80
Switching range [mm]	10,5...30	10,5...30
Max. pressure [bar]	500	500
Max. flow rate [l/min]	8	8
Flow direction	Arrow	Arrow
Medium	HLP 22	HLP 22
Connection type	Mounting plate	Mounting plate
Connection size	G 1/4	G 1/4
Actuation type	mechanical	mechanical
Actuation torque	0,63	0,63
Weight approx. [kg]	0,4	0,4
Order no.	WV-32-500-5-050	WV-32-500-5-051
O-ring Ø 5x1,5 (Spare part for port A)	6008-002	6008-002
O-ring Ø 8x1,5 (Spare part for port P & R)	6011-002	6011-002
Mounting plate (Accessories)	8000-024	8000-024

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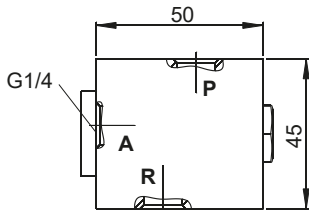
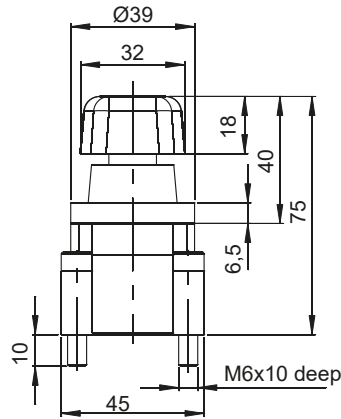
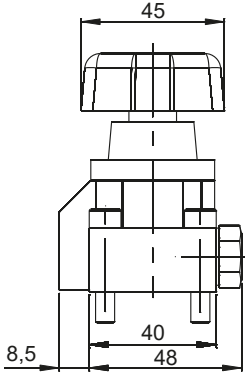
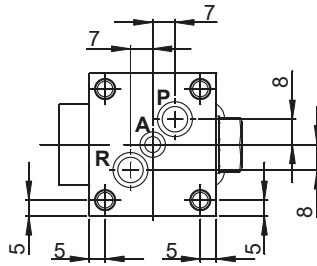
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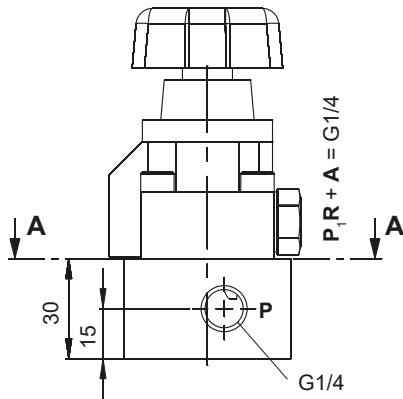
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Technology that connects

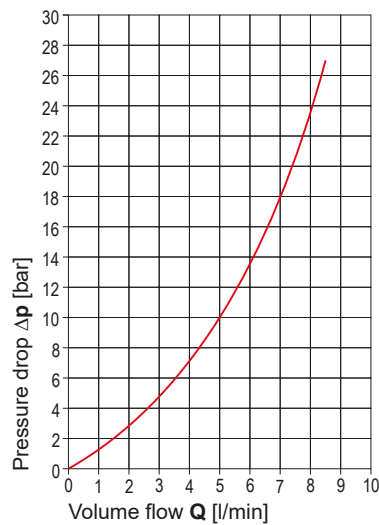


Mounting plate (Accessories)

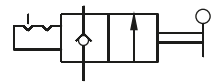


Valve on mounting plate

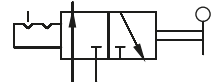
Δp -Q nominal line for kinematic viscosity of $53 \times 10^{-6} \text{ m}^2/\text{s}$ (HLP 22 at 20° C)



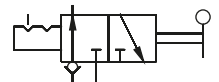
2/2 directional valve
without
check valve



3/2 directional valve
without
check valve



3/2 directional valve
with
check valve



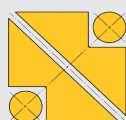
Directional valves with manual actuation

Type	2/2 without check valve	3/2 without check valve	3/2 with check valve
Switching torque [Ncm]	45...98	45...98	45...98
Max. pressure [bar]	500	500	500
Max. flow rate [l/min]	8	8	8
Flow direction	Arrow	Arrow	Arrow
Medium	HLP 22	HLP 22	HLP 22
Connection type	Mounting plate	Mounting plate	Mounting plate
Connection size	G 1/4	G 1/4	G 1/4
Actuation type	manual	manual	manual
Actuation torque	0,63	0,63	0,63
Weight approx. [kg]	0,4	0,4	0,4
Order no.	WV-22-500-5-001	WV-32-500-5-002	WV-32-500-5-003
O-ring Ø 5x1,5 (Spare part for port A)	6008-002	6008-002	6008-002
O-ring Ø 8x1,5 (Spare part for port P & R)	6011-002	6011-002	6011-002
Mounting plate (Accessories)	8000-024	8000-024	8000-024



Pneumatic
components

800



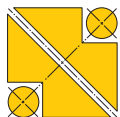
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Technology that connects

This section contains:

Data sheet:	Product:	Page:
800-1	Rotary couplings for pneumatics, without/with electrical passage, ND 3	217

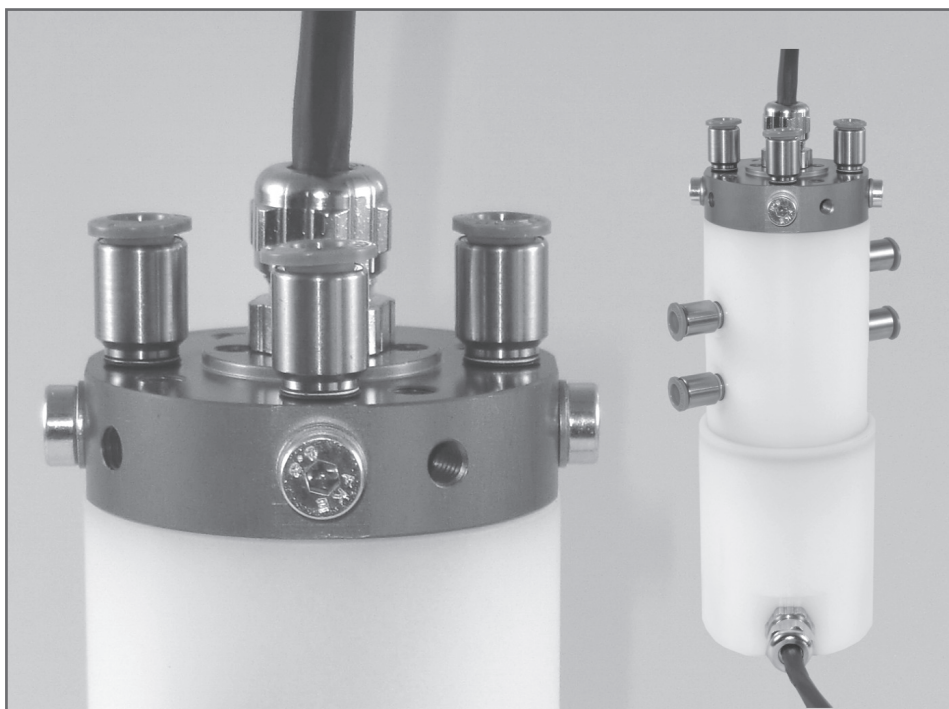


Rotary couplings for pneumatics

without/with electronical rotary connection, nominal diameter 3, pmax. 10 bar

800-1

Issue: 10/2022



Application example: four passage rotary coupling with electronical rotary connection. Special design with housing completely made of durable plastics.

Description:

Rotary couplings for pneumatics transfer compressed air from a stationary to a rotating machine part. The mounting is made in the rotational axis of the component. For that, we offer versions with single, twin and four passages.

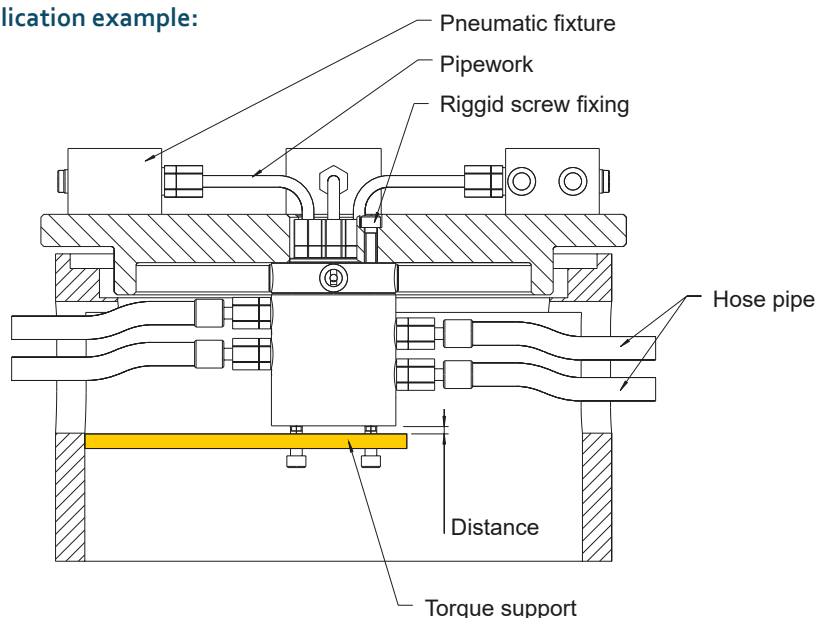
The rotary couplings for pneumatics can be combined with electronical rotary connections by slip rings for 6, 12, 18 or 24 strands at 24 Vdc and 2A.

Installation instructions:

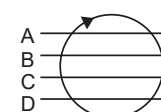
The rotary coupling has to be mounted in a way to not apply bending moment to the stationary or the rotating component.

It has proven effective to screw the (rotating) rotary piston with the connections together with the pneumatic devices and to secure the standing housing only against twisting (do not initiate bearing forces).

Application example:



Webcode: 080001



Type of connection:

- ✘ **Threaded port M5**
radial within the housing,
radial or axial within the piston

Operating pressure:

- ✘ **Maximum up to 10 bar**

Operating temperature:

- ✘ **-10°C up to +60°C**

Advantages:

- ✘ **Housing**
made of high-strength aluminium
(Slip ring housing made of durable plastics)
- ✘ **Rotary piston**
made of high-strength aluminium
- ✘ **Light weight**
- ✘ **Rotary connection**
pneumatics and electronics combinable
- ✘ **With ball bearings**

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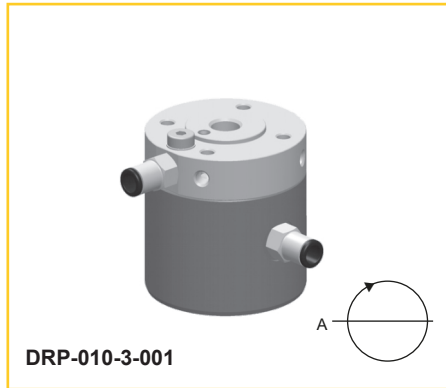
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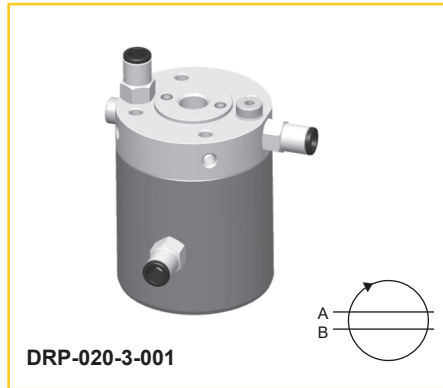
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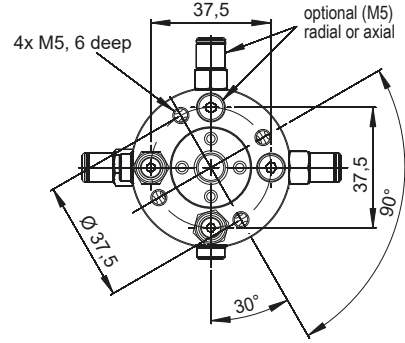
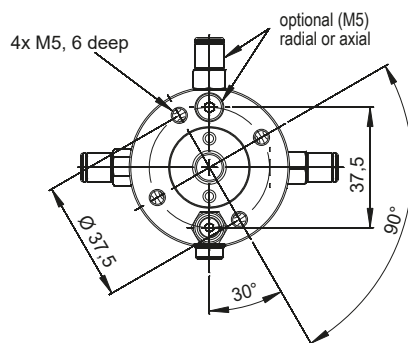
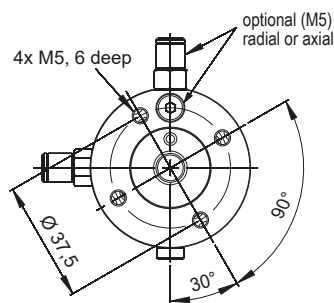
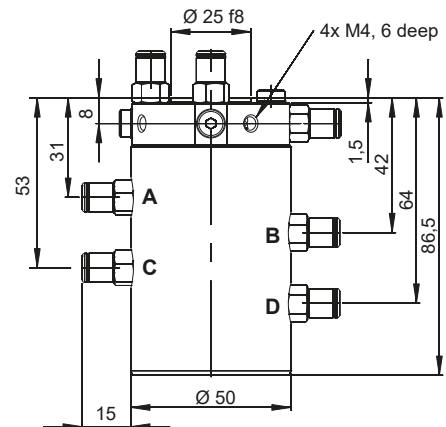
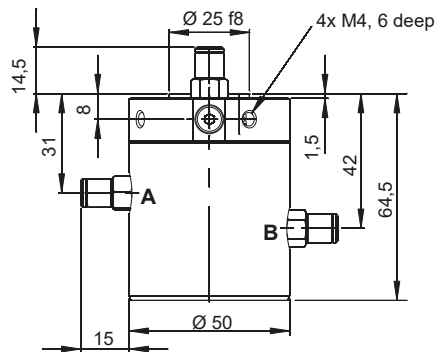
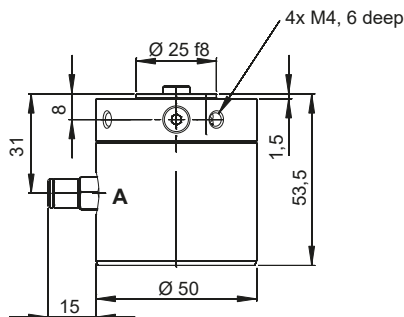
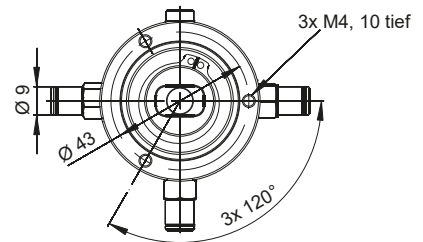
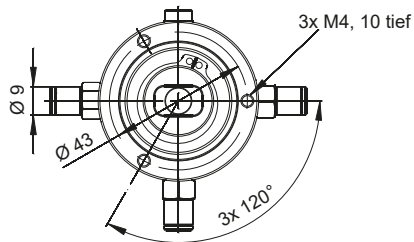
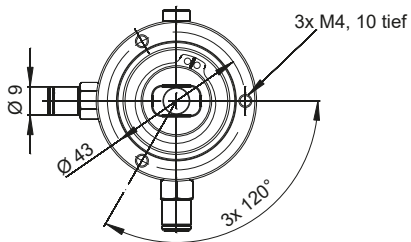
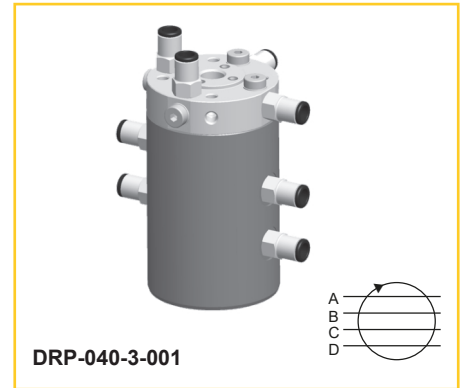
Single passage



Twin passage



Four passage



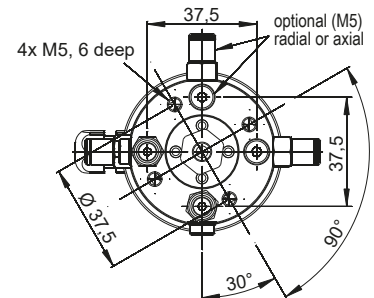
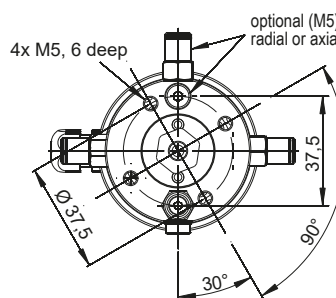
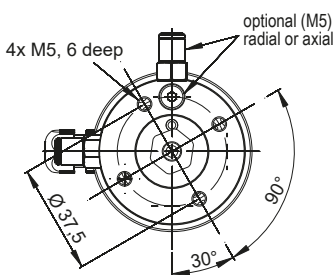
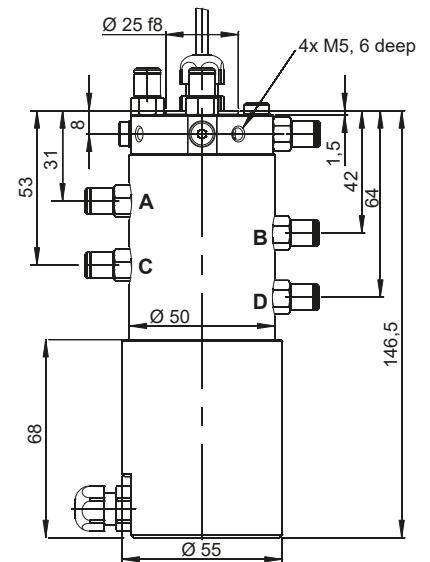
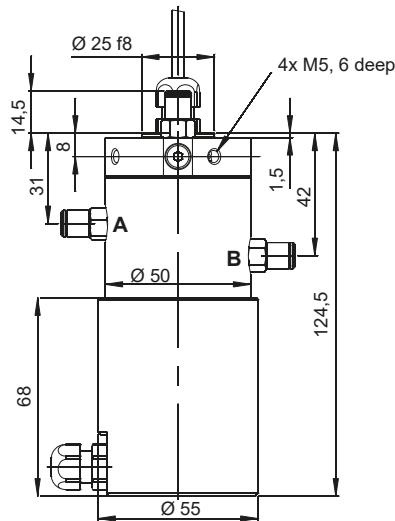
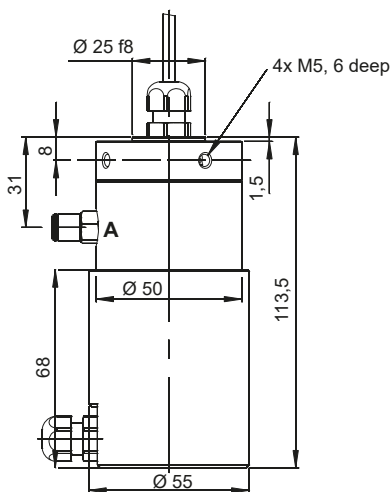
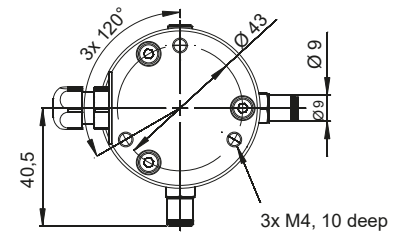
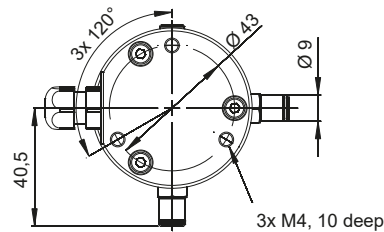
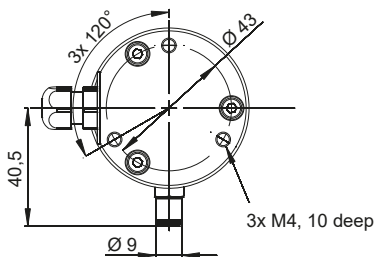
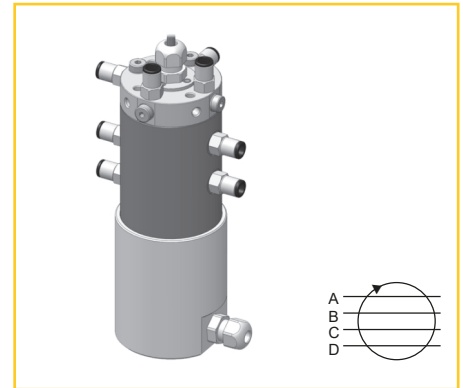
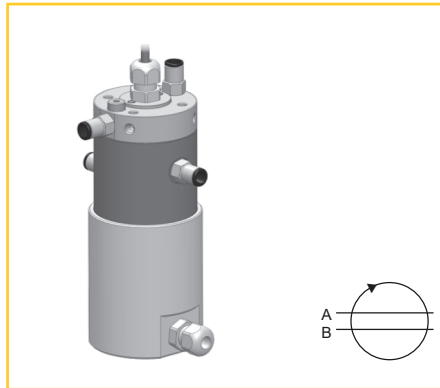
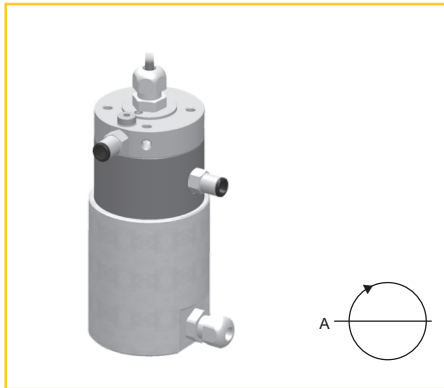
Connections pneumatics	Single passage	Twin passage	Four passage
Nominal diameter	3	3	3
Operating pressure [bar]	0-10	0-10	0-10
Starting torque [Nm]	0,4	0,4	1
Rotational speed, max. [1/min]	60	60	60
Weight approx. [kg]	0,3	0,37	0,49
Order number:	DRP-010-3-001	DRP-020-3-001	DRP-040-3-001



Single passage+elect. rotary connection

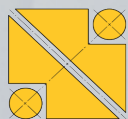
Twin passage+elect. rotary connection

Four passage+elect. rotary connection



Connections pneumatics	Single passage	Twin passage	Four passage
Electr. connection, each strand	2 A, 24 VDC	2 A, 24 VDC	2 A, 24 VDC
Protection grade	IP 51	IP 51	IP 51
Cable length, each approx. [mm]	300	300	300
Nominal diameter	3	3	3
Operating pressure [bar]	0-10	0-10	0-10
Starting torque [Nm]	0,5	0,7	1,1
Rotational speed, max. [1/min]	60	60	60

Connections electrics	Weight [kg]	Order number:	Weight [kg]	Order number:	Weight [kg]	Order number:
6 Strands	0,54	DRP-010-3-002	0,62	DRP-020-3-002	0,74	DRP-040-3-002
12 Strands	0,58	DRP-010-3-003	0,66	DRP-020-3-003	0,78	DRP-040-3-003
18 Strands	0,53	DRP-010-3-004	0,7	DRP-020-3-004	0,82	DRP-040-3-004
24 Strands	0,66	DRP-010-3-005	0,74	DRP-020-3-005	0,86	DRP-040-3-005

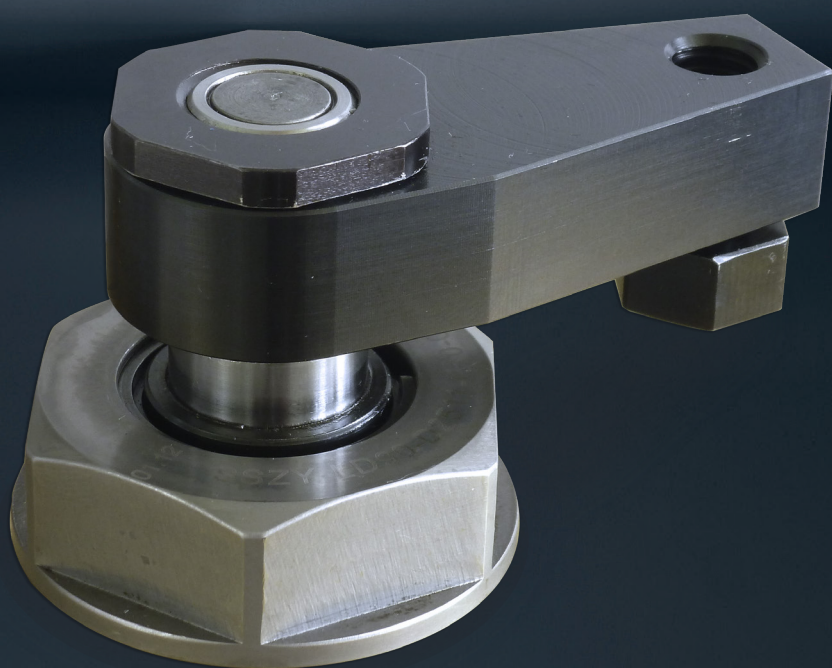


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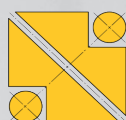
Technology that connects





Mechanical
accessories

1000



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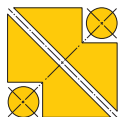
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Technology that connects

This section contains:

Data sheet:	Product:	Page:
1000-1	Contact bolts , for clamping cylinders and worksupports	223

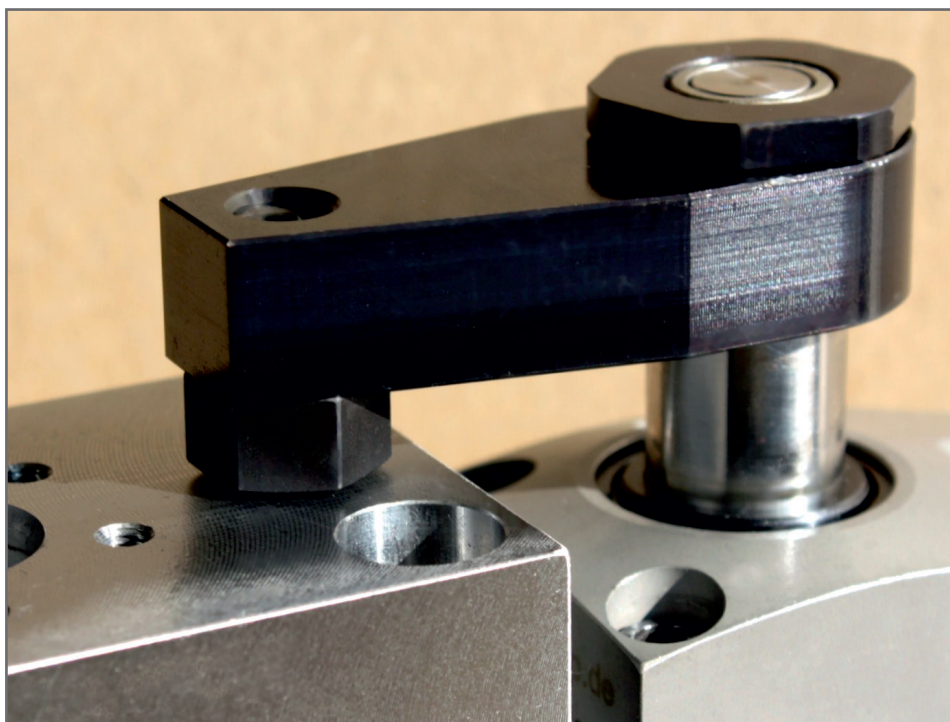




Contact bolts

for clamping elements

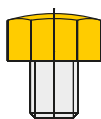
1000-1
Issue: 05/2025



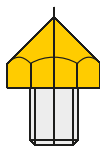
Application example:

Contact bolt **design 1**, dome head, in a clamp arm of a swing clamp cylinder

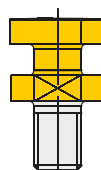
Contact bolts, designs:



Design 1:
contact bolt,
dome head

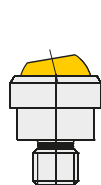


Design 2:
contact bolt,
cone head

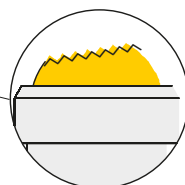


Design 3:
contact bolt,
with coupling pin

for piston Ø	Order no.	Order no.	Order no.
10 mm	7004-036	–	–
16 mm	7006-118	–	–
16 mm	7006-049	7006-050	–
20 mm	7008-071	7008-072	–
25 mm	7010-012	7010-013	7010-014
32 mm	7012-041	7012-042	7012-043
40 mm	7016-003	7016-004	7016-005
50 mm	7020-002	7020-003	7020-004
63 mm	7027-001	7027-002	7027-003
80 mm	7030-006	7030-007	7030-008
100 mm	7042-002	7042-003	–



Design 4:
swivel contact bolt,
plan contact face

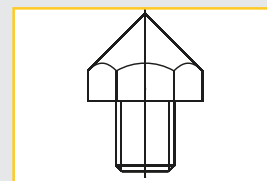


Design 5:
swivel contact bolt,
serrated contact face

for piston Ø	Order no.	Order no.
16 mm	7006-051	7006-052
20 mm	7008-073	7008-074
25 mm	7010-015	7010-016
32 mm	7012-044	7012-045
40 mm	7016-006	7016-007



Webcode: 100001



Description:

Contact bolts can be screwed directly into the inner thread of the piston rod of a clamping element or into separately available clamp arms.

Hydrokomp offers the contact bolts in various designs as accessories for the following clamping elements:

- ☒ Work supports
- ☒ Block cylinders
- ☒ Lever clamp cylinders
- ☒ Swing clamp cylinders
- ☒ Universal cylinders

Material:

- Steel, burnished
- Thread, soft
- Contact face, hardened

We also design and manufacture customized variants!



HYDROKOMP®
Hydraulische Komponenten GmbH

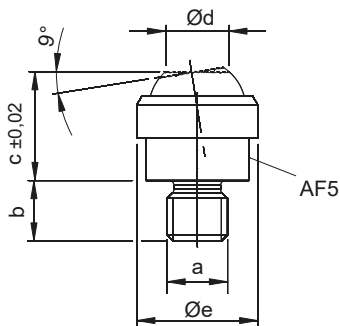
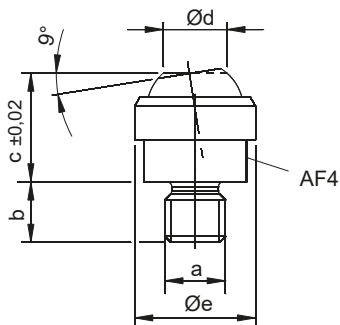
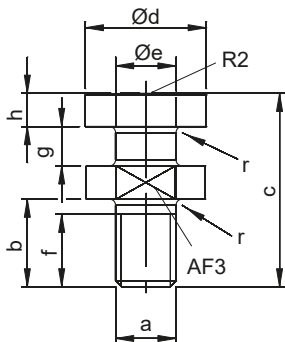
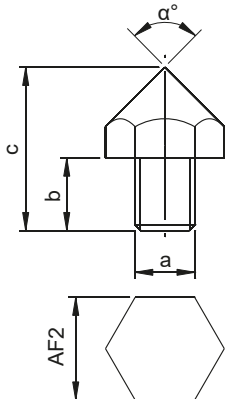
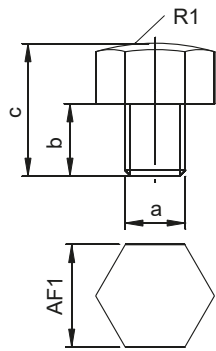
☎ +49 6401 225999-0

✉ sales@hydrokomp.de

📍 **Siemenstr. 16**
35325 Mücke (Germany)

🌐 www.hydrokomp.de

Technology that connects



Design 1: contact bolt, dome head

Piston Ø	a	b	c	R1	AF1
10	M4	8,0	17	20	11
16	M6	6,0	16	20	10
16	M6	10,0	20	20	10
20	M8	8,0	13	25	13
25	M10	12,0	22	35	17
32	M12	12,0	22	45	19
40	M16	20,0	30	60	24
50	M20	25,0	35	60	30
63	M27	30,0	47	100	41
80	M30	35,0	54	100	46
100	M42	45,0	71	140	65

Design 2: contact bolt, cone head

Piston Ø	a	b	c	α°	AF2
16	M6	10,0	22	90	10
20	M8	8,0	22	90	13
25	M10	12,0	27	90	17
32	M12	12,0	25	120	19
40	M16	20,0	35	120	24
50	M20	25,0	40	120	30
63	M27	30,0	50	120	41
80	M30	35,0	60	120	46
100	M42	45,0	77	120	65

Design 3: contact bolt with coupling pin, pmax. tractive 350 bar

Piston Ø	a	b	c	Ød	Øe	f	g	h	r	r2	AF3
16	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-
25	M10	14,5	32	20	10	12	6,5	5,5	1,0	320	17
32	M12	14,5	32	20	10	12	6,5	5,5	1,0	320	17
40	M16	20,0	40	25	14	14	7,0	6,0	1,5	400	22
50	M20	28,0	56	32	17	22	10,0	10,0	1,5	500	27
63	M27	39,0	75	40	23	32	12,0	12,0	2,0	630	36
80	M30	35,0	89	52	28	25	19,0	19,0	2,5	800	46
100	-	-	-	-	-	-	-	-	-	-	-

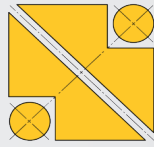
Design 4: swivel contact bolt, spherical, plan contact face

Piston Ø	a	b	c ±0,02	Ød	Øe	AF4
16	M6	8,0	13	7,2	13	11
20	M8	8,0	13	7,2	13	11
25	M10	10,0	18	10,5	20	17
32	M12	12,0	18	10,5	20	17
40	M16	16,0	27	20,0	30	27
50	-	-	-	-	-	-
63	-	-	-	-	-	-
80	-	-	-	-	-	-
100	-	-	-	-	-	-

Design 5: swivel contact bolt, spherical, serrated contact face

Piston Ø	a	b	c ±0,02	Ød	Øe	AF5
16	M6	8,0	13	7,2	13	11
20	M8	8,0	13	7,2	13	11
25	M10	10,0	18	10,5	20	17
32	M12	12,0	18	10,5	20	17
40	M16	16,0	27	20,0	30	27
50	-	-	-	-	-	-
63	-	-	-	-	-	-
80	-	-	-	-	-	-
100	-	-	-	-	-	-

Maße in [mm], Bestellnummern siehe Seite 1.

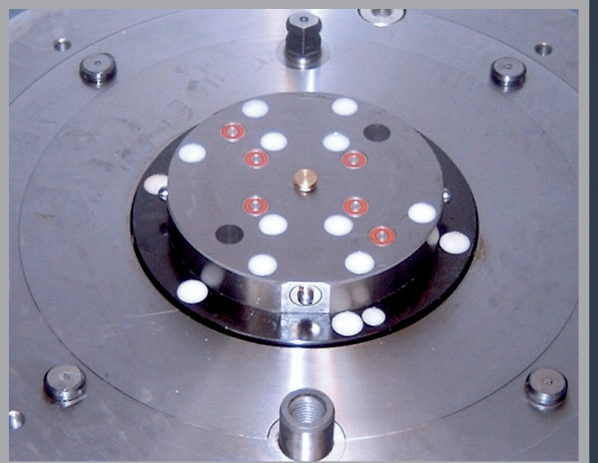
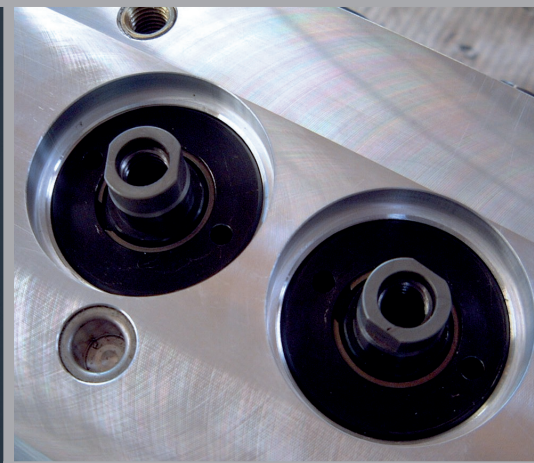
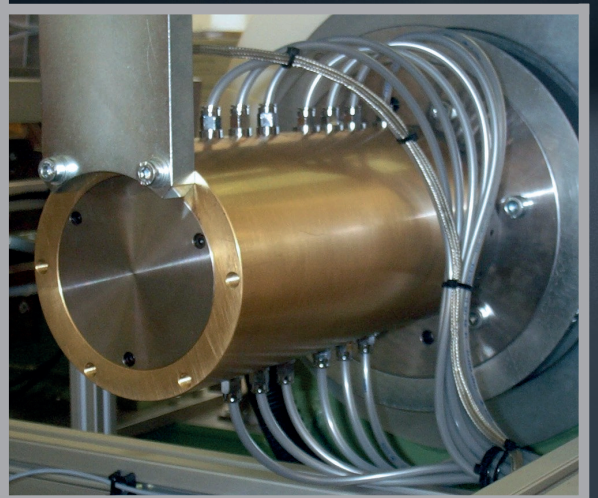
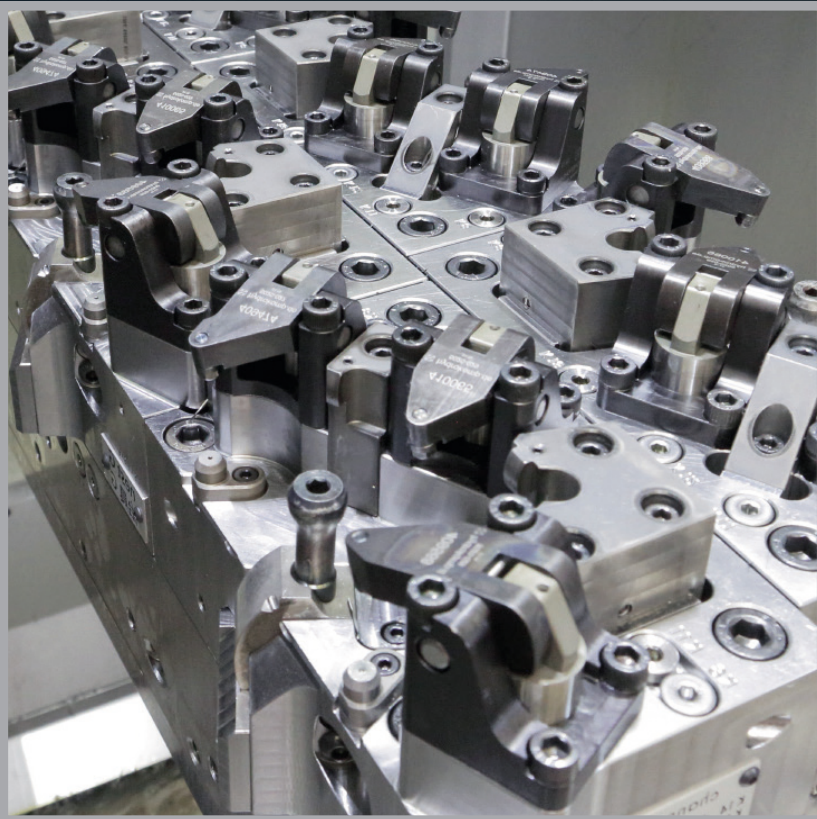


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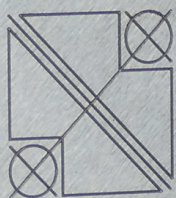
Hydraulische Komponenten GmbH

Technology that connects

Application Examples



The application of hydraulic components



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KMP-5-03-009

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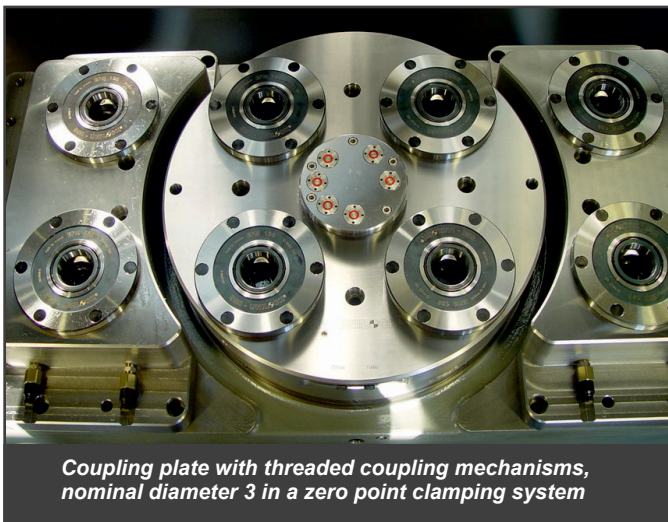


Save time and parts with integrated hydraulic couplings

Integrated media couplings open up the potential for more efficiency in machining centres. Among other things, they can replace some components, whose jobs they additionally take over.

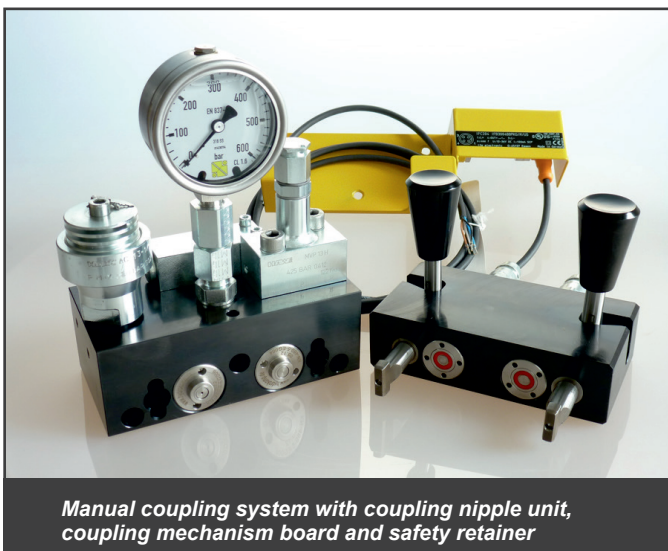
Integrated media couplings contribute to more efficiency and economy. Thus they carry fluids and vacuum almost without losses, unlike simple hose and quick couplings. Furthermore modern media couplings in machining centres can take on additional functions: When setting up in the loading and unloading station they lock the coupling halves, for example, and allow turning movements in the desired work position. This is seen, for example, in the machining.

One method to increase the productivity in machining is to reduce the downtimes, especially the set up times. These can be reduced when the machine operator already prepares the workpieces parallel to the main time on a separate workpiece carrier and substitutes each one for machining.



Coupling plate with threaded coupling mechanisms, nominal diameter 3 in a zero point clamping system

Then only the times for these changes occur. Now it must be determined whether the pallet is equipped with hydraulic or with mechanical clamping fixtures. In mechanical clamping fixtures the forces, with which the workpieces are clamped, can only be precisely controlled with special technology. The handling is complex and requires long downtimes. Especially in industrial series production this lengthens the cycle times and presents an impediment for the automation.



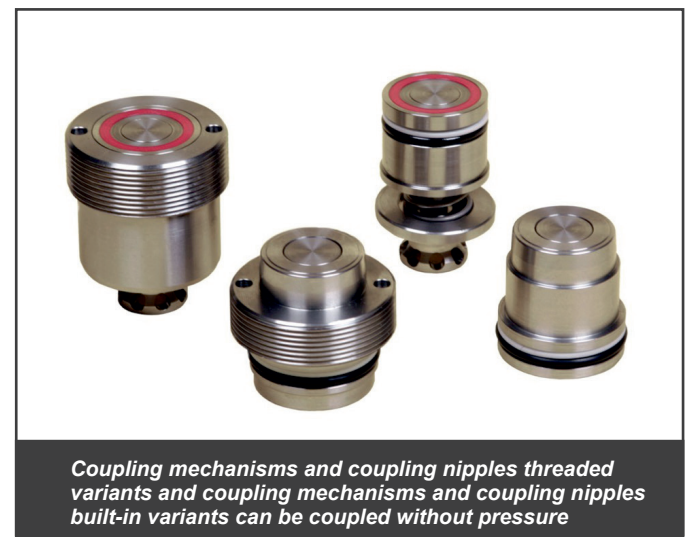
Manual coupling system with coupling nipple unit, coupling mechanism board and safety retainer

Here hydraulic clamping fixtures offer advantages, however the hydraulic oil of the fixture must remain under pressure during the change, and the work space of the machine must be connected with the pressure system of the fixture. If the machine is fed via conventional hydraulic lines/hoses with mechanical couplings, the change times are extended. In addition the unavoidable oil losses contaminate the machine and the environment. Integrated media couplings prevent these negative effects. HYDROKOMP offers standardized and individual components for manual or automated coupling; under pressure or not.

Selection of the coupling connections

The application gives the amount of the required clamping forces during the selection of the media coupling. The operating pressures of the hydraulic oil and the nominal width as measure for the size of the coupling elements are taken by the designer from the tables of the respective data sheet. A second, important criterion is the number of connections, which depends on the type of clamping functions on the work pieces and the valve technology. It is normal to accommodate each of the three translational and rotational degrees of freedom of a workpiece with a total of six fixed points.

The desired clamping sequence on the workpiece influences the selection of the valves and pressures. Thus it can be technically practical for pretensioning the workpiece to give a lower pressure and then after final positioning for fixing the workpiece to go to a higher value. The number of the coupling connections depends on the valve technology. If the valves are arranged on the workpiece carrier, two connections can be sufficient. If they are installed permanently between media coupling and pressure booster, two connections are required per valve circuit. However, since they are stationary outside of the work process, better design and access possibilities result. It relieves the workpiece carrier of weight and reduces the interference contours.



Coupling mechanisms and coupling nipples threaded variants and coupling mechanisms and coupling nipples built-in variants can be coupled without pressure

Additional information:

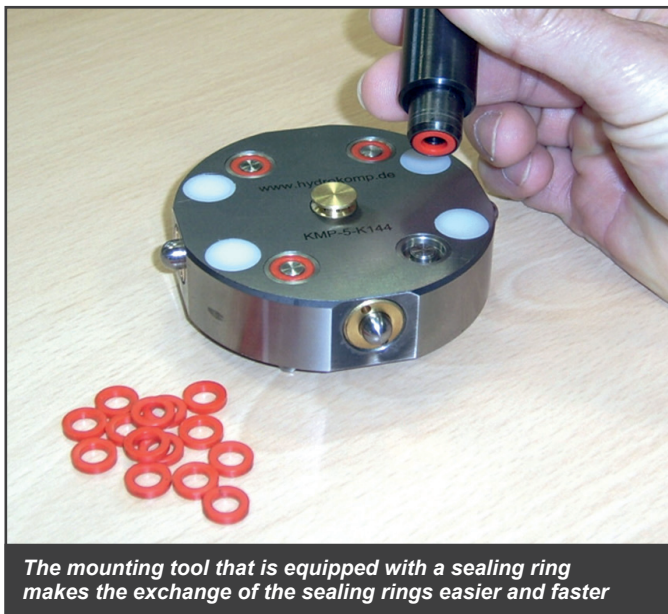
Subject	Data sheet	Webcode
✕ Coupling elements	100-3	010003
✕ Multiple coupling systems	100-4	010004
✕ Mounting tools	100-5	010005
✕ Automatic coupling mechanisms	100-6	010006
✕ Rotary couplings	500-3	050003



Save time and parts with integrated hydraulic couplings

Additional functions replace components

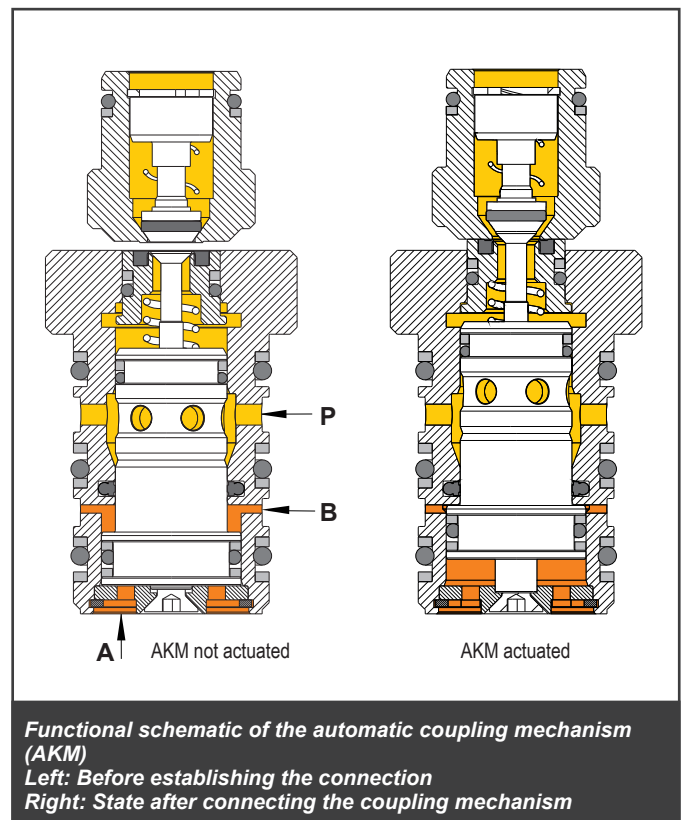
When setting up in the loading and unloading station, the pallets or the workpiece carriers must be fixed. Normally clamping elements are required for this. This job can alternatively be done with a lock in the media coupling. The clamping elements are then omitted. Especially in the production of series production parts in machining centres it is usual for economic reasons to clamp as many workpieces as possible on one carrier. For this the fixture contains several vertical machining levels with horizontal tool spindles. For simpler setup, the workpiece carrier in the loading and unloading station can then be turned to the desired position. This movement including positioning can additionally take over a rotating bush of the media coupling.



Automatic coupling mechanisms (AKM)

Coupling system for tools

In principle the media couplings for tools are like those for the workpiece carrier. They mainly transfer cooling lubricant or oil for control purposes. The interior channels of milling heads and tool carriers, such as revolver fixtures, feed the lubricant to the tool blade, for example. For these coupling jobs the automatic coupling mechanism systems (AKM systems) from HYDROKOMP are suitable: The coupling elements for liquid and gaseous media consist of rust resistant materials. They can be installed in the individual fixtures, for example, for multiple coupling systems. Depending on the sealing material, they are suitable for pressureless couplings or for coupling under pressure.



Simplifying service

The system seals on the pistons of the coupling mechanism wear out after time due to contamination and shavings. As a rule the service personnel remove the coupling mechanism to change the seals in the coupling elements, replace the seal and reinstall the coupling mechanism. This can certainly last half of a working day.

Therefore for their coupling mechanisms HYDROKOMP designed and implemented a changing system that simplifies changing the system seals. In addition we have developed a special mounting tool, with which the service employee can replace a seal with a few hand movements in only a few minutes.



Automatic coupling mechanisms (AKM)

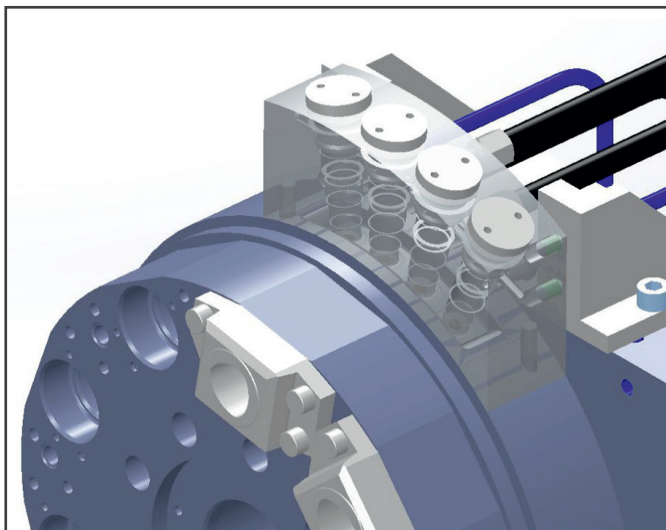
The patented AKM of the system combines the coupling parts or components without additional stroke. The hydraulically activated system spares, for example on rotary tables of tool machines, the otherwise necessary lifting equipment. Changing tables or pallets can be coupled with the rotary table by radial pushing alone.

For the AKM a gap is sufficient between the coupling elements. It allows the desired rotational movement in the decoupled state and can be from 0.2 up to 1.4 millimetres.

Both coupling surfaces are level faced, so that the user can control it from any desired axial and radial positions for coupling. Finally the stroke guides an internal moving piston out by the control pressure **A**. It is possible to control individual couplings specifically. The control pressure **A** is to be supplied with the same pressure as the media pressure **P**. When the control port **A** is not pressurized, the AKM is set into the basic position. The AKM can be operated single-acting or double-acting. If the AKM should operate single-acting, the port **B** must be used for housing ventilation.



Automatic coupling mechanism and coupling nipple, coupled without pressure, nominal diameter 5, screw-in system



Application example of a tool changer:
Revolver fixture for nine tools with 4 AKM each

Tool clamping fixture increases productivity continually

The industrial users confirm useful value of the AKM far above other couplings. Heckert, for example, uses a hydraulic double-acting AKM in a special support of the HED large machining centre 1000 to 1800. It couples the tool axis in standstill, to apply hydraulic fluid on it or the tool. This means that the gap of approx. 1mm safely allows the rotation even during machining.



Fixture block with automatic coupling mechanisms

Before use of the AKM the experts in Chemnitz laboriously generated the coupling function using an additional moved axis with a stroke of 5 mm. Alternatively they had thought about a multi-channel rotating bush. However, the realization of this idea was somewhat problematic, firstly, due to the high rotational speed and secondly because the required installation space was not available. Support with the AKM functions reliably according to their test since 2014.



The revolver with a total of 36 coupling nipples

Additional information:

Subject	Data sheet	Webcode
✕ Coupling elements	100-3	010003
✕ Automatic coupling mechanisms	100-6	010006



Tool clamping fixture increases productivity continually

For machining body elements a tool machine manufacturer had the concept of a rotary indexing machining centre (BAF).

The well-known Tier 1 automotive supplier used it to machine 4500 right and left mirror-image elements per shift. In addition to the drilling and milling machining that determined the main time, the clamping fixtures from HYDROKOMP contributed a significant portion to achieving the high productivity.

The BAF consists of one loading, four working and one unloading stations. An identical change fixture is installed in each of the six stations. It picks up the workpiece and implements the basic functions: positioning, clamping and supporting. Each of the four hydraulic clamping components must securely fix the workpiece during the machining in the four stations, in the loading and loading stations on the other hand, release for change or reclamp.

The cycle time is only 8 seconds. This requires in the 3-shift operation maximum availability of all participating components and a high degree of professionalism and reliability from the manufacturers. For this reason HYDROKOMP developed a combined hydraulic-pneumatic rotating bush. The controlled hydraulics functions according to the rotary slide principle. It supplies the four machining stations with the continuous pressure required during the main time for secure clamping.

The designers selected swing clamping elements due to the accessibility to the clamping area. To compensate for the workpiece tolerances, their custom clamp arms are partially equipped with pendulum thrust pieces.

For the loading and unloading stations valves control the opening and closing of the oil supply for the clamping elements in synchronized time. The rotating bush contains a six more uncontrolled cycles for the pneumatics. It monitors the placing of the workpieces in the 6 stations according to the dynamic pressure principle.



Rotary indexing machining centres with change fixtures for efficient clamping of the body elements in the six stations



The base body of the change fixture contains coupling for automatic opening and closing of the hydraulic supply during the loading and unloading processes

In every shift the rotary indexing BAF produces both different automotive parts. Thus the worker changes the complete six fixtures in the stations.

The fast and safe changeover of the hydraulics and with it the fixture change support HYDROKOMP couplings. They open and close automatically during the fixture change. Couplings with 12 l/min flow rate (nominal width 5) are sufficient, laid out according to the clamping elements.

Additional information:

Subject	Data sheet	Webcode
⊗ Coupling elements	100-3	010003
⊗ Multiple coupling systems	100-4	010004
⊗ Mounting tools	100-5	010005
⊗ Rotary couplings	500-3	050003



Pressure oil transfer at tool changers on robots

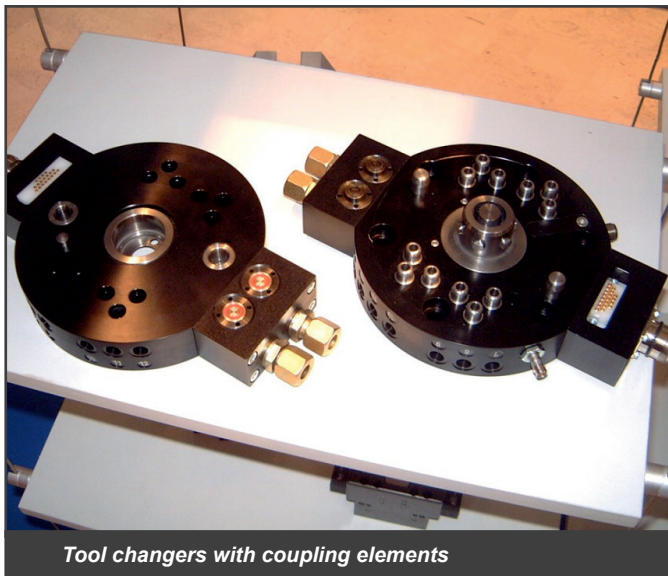
In complex assembly-, automatic assembling- or production processes tool changers allow the exchange of follow-on tools.

Depending on the corresponding force density to the tool either pneumatics or hydraulics are applied. For both media it is economical, for hydraulics it is absolutely essential, that the coupling elements operate leakage-free in coupled or uncoupled state.

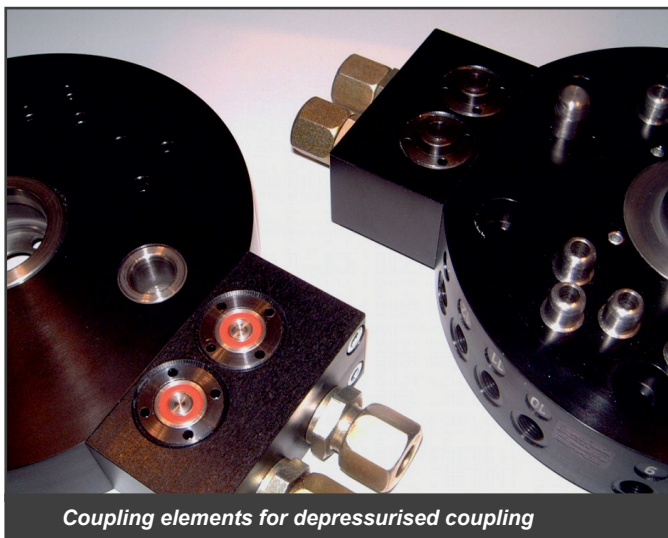
The constructive design of the HYDROKOMP elements guarantees these fundamental valve functions. The special axial sealing function of the coupling elements provides full flow at a stroke of only 4.5 mm. This construction shows, that the coupling elements are very compact and can easily be integrated into existing constructions.

Another advantage of the axial system sealing is that between both coupling components a radial positioning tolerance of ± 0.2 mm is allowed.

The photos show tool change modules where two hydraulic lines are coupled through screw-in couplings (M24x1.5) by HYDROKOMP.



Tool changers with coupling elements

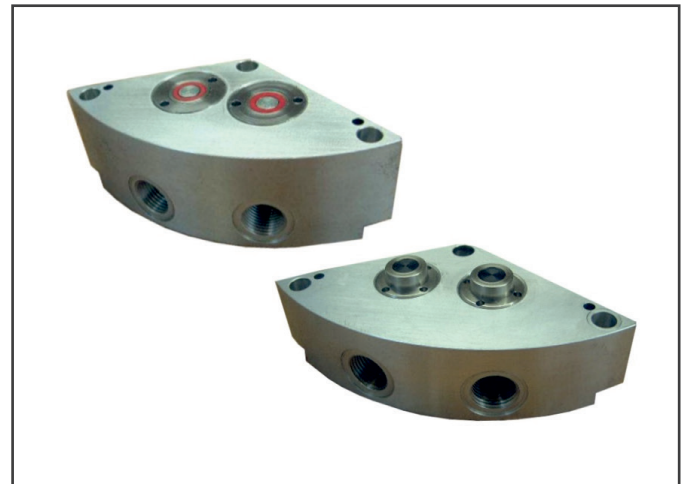


Coupling elements for depressurised coupling

Coupling connection blocks for robot-changing fixture

Components: coupling elements, nominal diameter 8, Operating pressure max. 250 bar, Qmax 25 l/min.

Volume supplied by HYDROKOMP were the complete connection housings from aluminium with mounted and tested coupling elements.

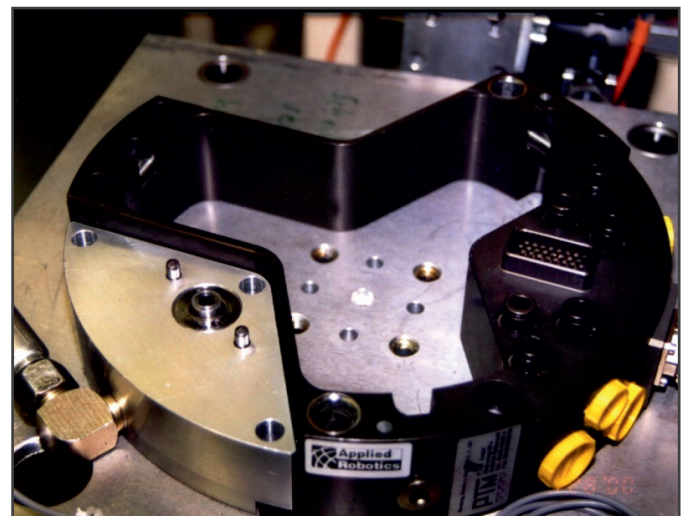


Interface for changing devices at a flanging fixture

Coupling elements as a pressure oil interface for a robot's changing tool. In total the system consists of three changing tools which are used for non-cutting moulding in the car spare parts production.

The hydraulic pressure is 250 bar max. and in every action a tool is pulsed approx. 300 times to max. operating pressure. Per shift (2-shift-operation) the tools are changed approx. 60 times.

Since the workpieces are painted after being machined, the user put a main emphasis on a low leakage rate.



Additional information:

Subject	Data sheet	Webcode
☒ Coupling elements	100-3	010003
☒ Mounting tools	100-5	010005



Hydraulic interface to support the efficiency of fabrication

Our customer Honsberg-Lamb GmbH uses coupling technique by HYDROKOMP for the pressure oil supply of their fixture pallets. In the loading and unloading station the connection to the threefold-coupling is achieved by lowering the pallet.

The guided movement happens in the admitted tolerance area of the coupling of $\pm 0,2$ mm.

The cleaning by a spring-weighed blast pipe is supported by the plain surface of the coupling elements. The long life of the coupling elements supports the high availability of the machine.

If necessary, advised operating personal can change the seal elements locally and quickly.

Assembled coupling elements:

- Coupling mechanism plate KMP-460-5-K013
- Coupling nipple plate KNP-460-5-K013k

HYDROKOMP has developed a suitable mounting tool to change the seals of the coupling mechanisms simply and safely.



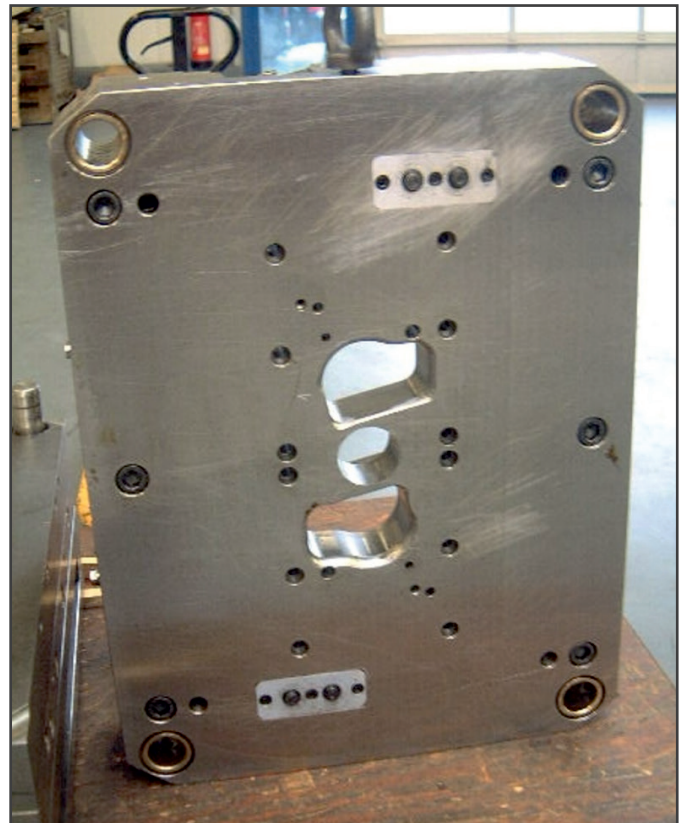
Coupling elements in plastics-injection moulding tools

An application in a two-component-plastics-injection moulding tool. To mould a workpiece from two plastics components the front tool plate is reversed by 180° between both moulding procedures. In the shown construction hydraulic hoses were used for oil supply of the hydraulic core pull. At the swinging process these have been destroyed many times and leaking hydraulic oil has caused great damage.

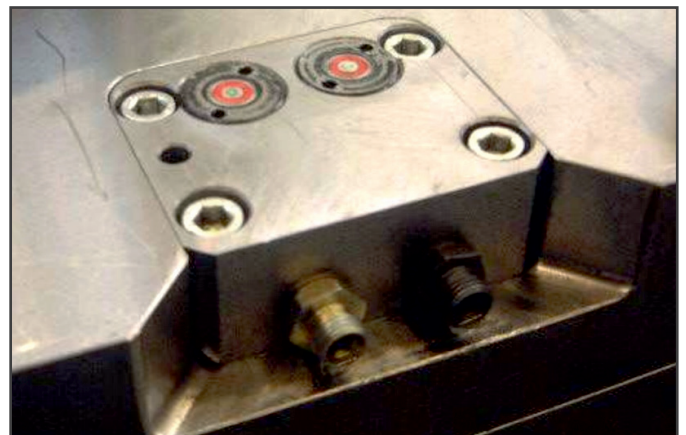
With the solution concept by HYDROKOMP the coupling elements disconnect and connect the oil supply at every swinging process in this application in pressureless state. Besides the improved production process also safe operation and the reject rate have been substantially improved.

Assembled coupling elements:

- Coupling mechanisms KM-460-5-EG001
- Coupling nipples KN-460-5-S001k



Front tool plate, rotation-symmetrical positioning of coupling nipples for 0° - respectively 180° setting



Additional information:

Subject	Data sheet	Webcode
☒ Coupling elements	100-3	010003
☒ Multiple coupling systems	100-4	010004
☒ Mounting tools	100-5	010005



Two-fold coupling plate in the loading and unloading station of a machine tool

For pressure oil transfer in the loading and unloading station the fixture plate will be supplied over two coupling elements with pressure oil.

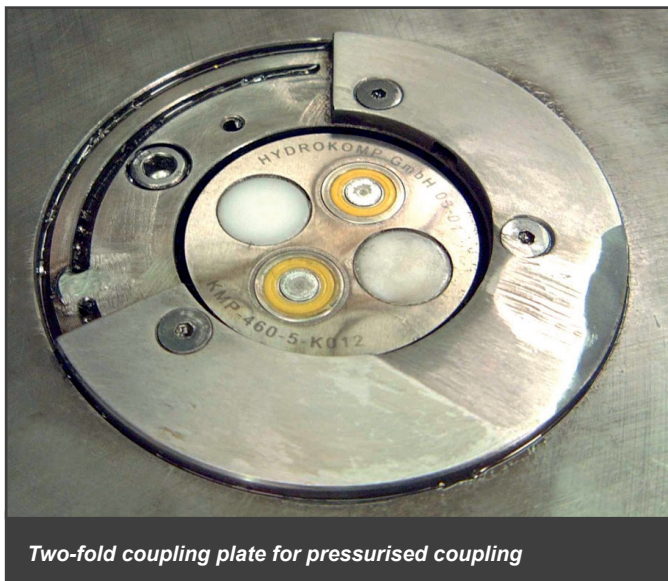
With this coupling plate, a pressure and a tank line can be connected together. Standardized coupling elements with three, four, five, seven and eight lines are available.

The cleaning by a blast pipe is supported by the plain surface of the coupling elements. For optimal improvement on the surface, e.g. it is possible to close the counter-bores with plastic plugs. As counter-elements, it is possible to use coupling nipples with different designs. Beside the complete nipple plates you can use the threaded-body or build-in elements.

HYDROKOMP coupling mechanisms are designed in such a way that the front system seal can be replaced. This seal is subject to wear out in everyday use as a result of contamination and metal filings.

If the coupling mechanism itself shows no damage, the system seal can be replaced on its own. This can be accomplished by the user or by external service personnel.

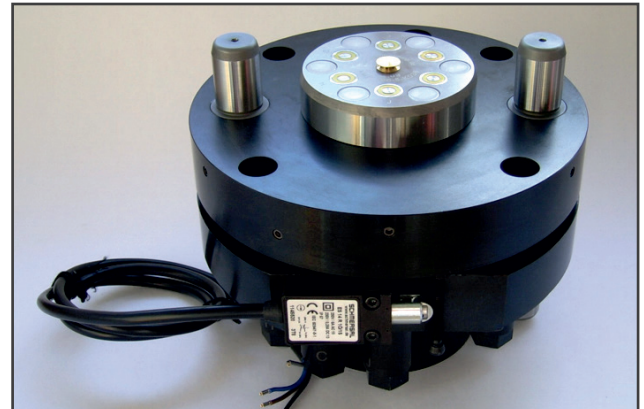
HYDROKOMP has developed a suitable installation tool to accomplish this seal replacement simply and safely.



Two-fold coupling plate for pressurised coupling

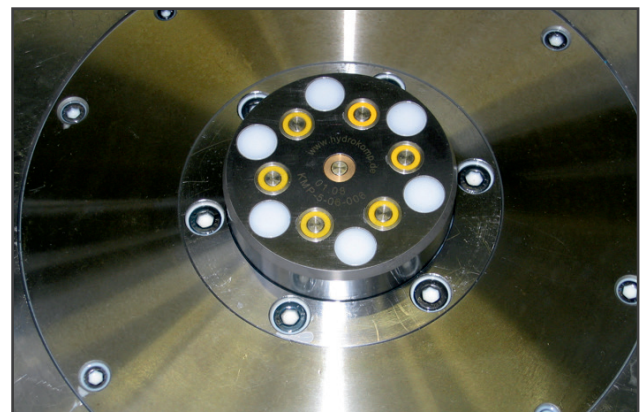
Docking station with six coupling points

For pressurized coupling; in order to dock the coupling plate, it is raised by an integrated hydraulic cylinder. An electronic sensor queries the position. The positioning of the counter-couplings is realized by two bolts.



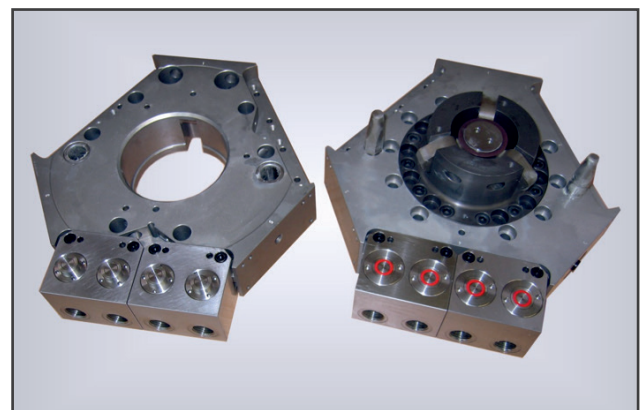
Coupling plate for transmission of hydraulic oil

In the loading and unloading station of a fixture plate. The six coupling elements are coupled pressurized.



Tool-change system for a handling unit in a robot

With four coupling elements (nominal diameter 8) as interface for a hydraulically operated cutting tool



Additional information:

Subject	Data sheet	Webcode
 Coupling elements	100-3	010003
 Multiple coupling systems	100-4	010004
 Mounting tools	100-5	010005



Docking system in machine tool BlueStar®

Coupling system with hydro-mechanical locking in the loading and unloading station. In such projects it is crucial for an innovative solution that the partner enterprises are included at an early stage in the brainstorming process relating to the design concepts.

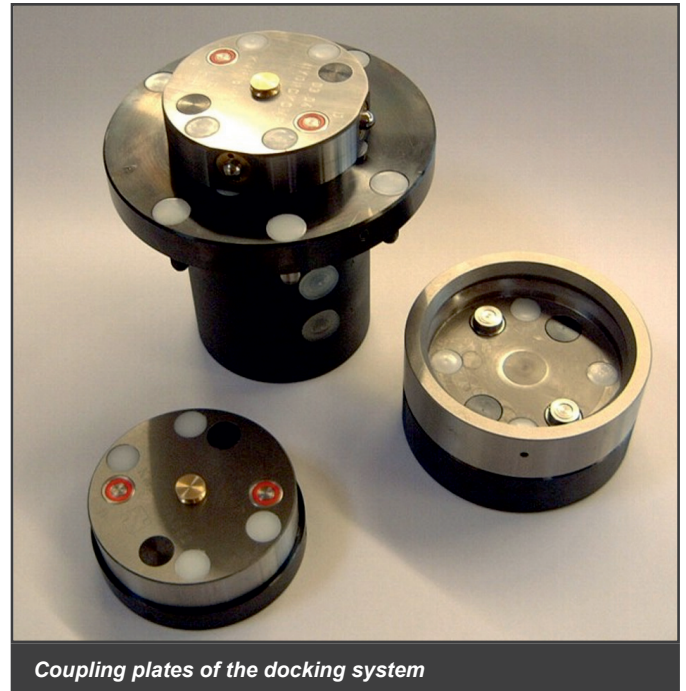
The result for the BlueStar5® is a coupling design that accommodates the fitting of two, four, six or eight media connections in the loading and unloading station.

Bearing in mind the objective that the machine is to be marketed as a cost-effective option, HYDROKOMP was also obliged to take this aspect into account.

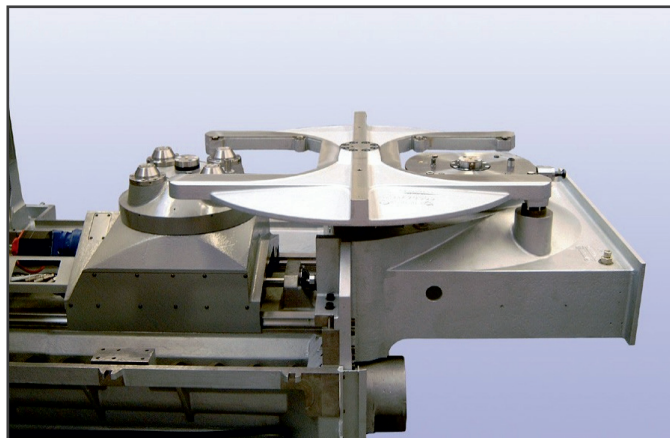
HYDROKOMP's approach to this solution consisted of offering a docking system in which the jig pallets in the loading and unloading station are not clamped by means of the clamping cones in order to absorb the coupling forces that arise. This function is undertaken by the docking system itself.

In all the designs a separable connection is achieved between the lower, stationary and the upper, mobile halves of the coupling by means of hydro-mechanical locking pins.

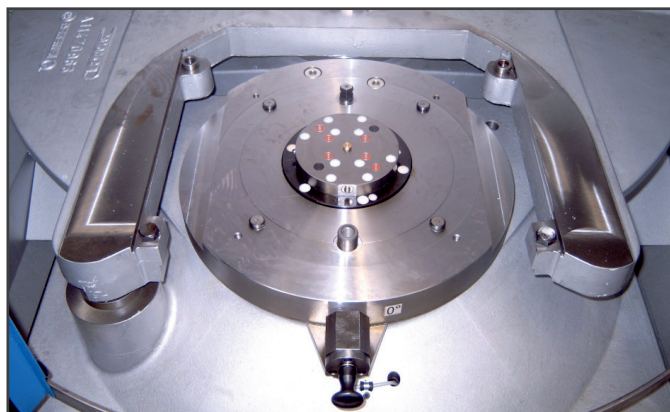
In the machining station this locking function is once more taken over by means of the clamping cones. Here a coupling plate is fitted with two connections, connecting the pressure lines of the hydraulic clamping jig during machining, thus enabling pressure monitoring.



Coupling plates of the docking system



Tool changer of the BlueStar5®



Docking unit in the loading/unloading station

The docking unit in the loading and unloading unit is equipped with a rotary coupling, which permits rotation of the hydraulic clamping jig through 360°.

The media connections within the sub-assembly are effected by means of drilled channels. Installation of the coupling sub-assemblies is always carried out directly, making them easy to install and service.

The illustrations show that the configuration principle of the docking systems is designed to meet the particular requirements of a machine tool. In addition to their compact design, other points worth mentioning are the ease with which they can be kept clean and maintained.

The smooth surfaces and the centre, spring-mounted air-jet help to maintain cleanliness. It can be demonstrated that the level of contamination of the couplings has a direct effect on their service life.

For that reason it is important to exploit all the design options when configuring machines and jigs, in order to reduce contamination of the docking systems.

In the area of maintenance, HYDROKOMP supplies an installation tool with which the frontal system seals can be very rapidly replaced without dismantling the coupling elements.

With its unequaled expertise in this area, HYDROKOMP is setting future trends with this family of docking systems. We will be happy to demonstrate to you that our strengths include not only our engineering solutions but also quality and delivery reliability.

Additional information:

Subject	Data sheet	Webcode
✘ Coupling elements	100-3	010003
✘ Multiple coupling systems	100-4	010004
✘ Mounting tools	100-5	010005
✘ Rotary couplings	500-3	050003



Innovative docking system for pallets and other change systems

We call our innovative docking system simply KDS for coupling rotation system (German abbreviation). Our designers solved the task of now clamping pallets in the loading and unloading station with the rotating bush expanded to the coupling instead of clamping tapers supplied hydraulically.

The docking system created in this manner enables tool machine manufacturers and other machine builders to realise more economical change system with the same degree of clamping safety, for example for workpiece pallets.

Customers such as DMG, Heckert, Heller, MAG and Makino spoke to us about saving-possibilities with the pallet change systems. The starting point is our experience and solutions with hydraulic couplings. The result is the innovative docking system. It establishes a detachable connection with hydraulically actuated locking pins in the locking and unloading station. They connect coupling half fixed below in the station mechanically with the one fastened on the pallet and with its movable upper coupling half. During setup and removing the workpieces the pallet can be rotated 360°.

The clamping tapers common up to now including their hydraulic supply are now completely gone in the loading and unloading station. This results in a significant cost reduction. It has several times the amount of the additional cost of the KDS in comparison to the normal rotating bush. This coupling principle is suitable for changing tools, grippers or also other components on machines, e.g. punching robots.



Because the coupling half in the loading and unloading station during the clamping operation can contaminate, a specially formed blow jet is integrated. It is arranged in the centre and connected to the compressed air supply. To guarantee universal use, the developmental elements are made of rust resistant stainless steel. That means, they can also carry aggressive coolant and gases. Up to 16 applications are normal.

The standard design for the KDS is for pallets up to 1600 x 1600 mm. The system pressure can be up to 200 bar. The coupling rotation systems can be selected for 8 to 50 l/min depending on the application conditions. Depending on the design the diameters of the KDS are 40 to 200 mm. Due to the competency and flexibility in the design and production, HYDROKOMP meets customer demands for custom solutions, usually on short notice.



Additional information:

Subject	Data sheet	Webcode
✘ Coupling elements	100-3	010003
✘ Multiple coupling systems	100-4	010004
✘ Rotary couplings	500-3	050003

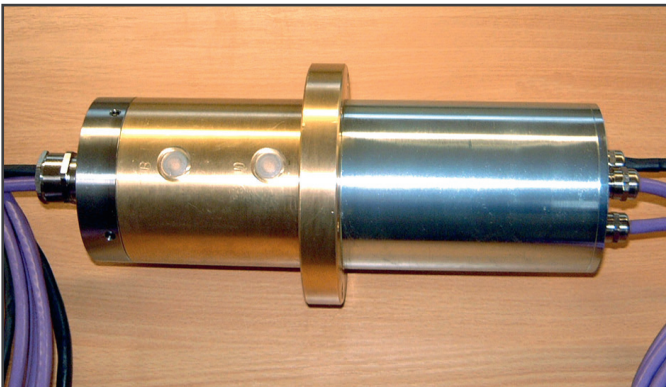


Multifunctional rotating bush transfers fluid media and control signals

HYDROKOMP is forming a space saving and labour saving path. Independent of the number of clamping stations, the multi-functional rotary coupling MFD transfers the pressure and return of a fluid medium via only two channels.

In addition it delivers electronic control signals to the fixture. More media lines, e.g. for air or water, are optionally available for the user.

Hydraulically driven fixtures on rotary tables are normally activated directly over the rotary couplings. In addition every clamping station requires one or more hydraulic lines. The length and installation space of the rotary couplings are increased corresponding on the number of clamping stations.



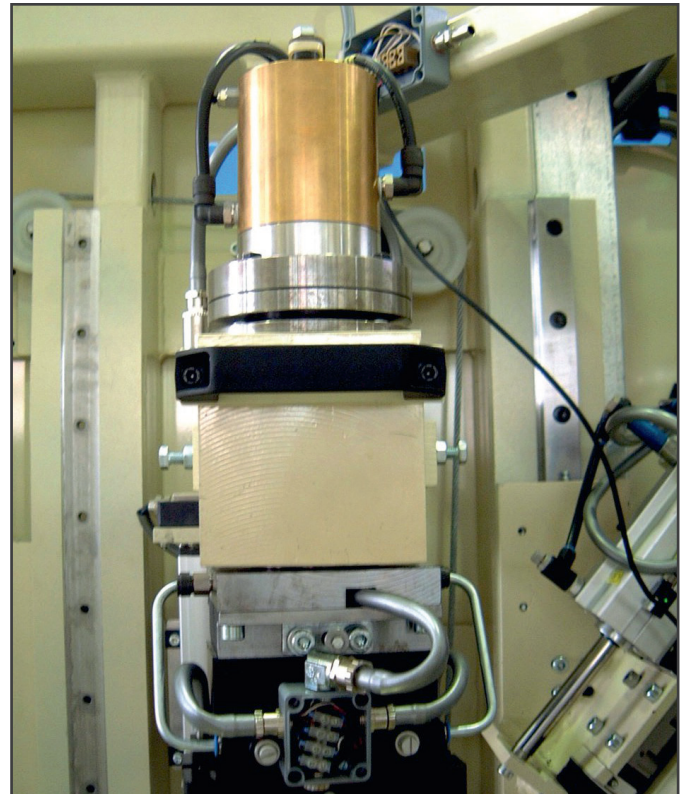
Electrical slip ring transmitter instead of many fluid lines

With the HYDROKOMP solution an electrical slip ring transmitter replaces to a large extent the fluid lines. The work table or the fixture accepts the valve block for the clamping equipment. Instead of 6 to 24 lines, with the MFD only two lines supply all valve blocks. To control the valve blocks or the clamping stations, the slip ring transmits the electronic control signals. Their amperage can be up to 2 A and voltages up to 24 V. In this way the user saves installation space and line and leak labour. On customer request the rotary couplings can also be produced for Profibus and other applications.

HYDROKOMP produces mainly MFD rotary couplings with nominal diameters between 40 mm and 200 mm. The hydraulic pressure can be up to 500 bar and the gas or air pressure 10 bar.

The rotary couplings are manufactured out of corrosion protective materials such as brass or corresponding steels.

Typical applications are welding of lorry and construction machine parts, mechanical processing of large components in rotary indexing machines or surface treatment and cleaning in several work stations. The small installation length of the rotary coupling MFD makes it easier to convey application-specific other media, e.g. purging gas during welding or coolant lubrication during the machining process.



Other application examples for MFD



Rotary coupling, 3-lead, compressed air, hydraulic oil and Profibus 24 VDC.



Rotary coupling, 1-lead, compressed air

Additional information:

Subject	Data sheet	Webcode
 Rotary couplings	500-3	050003
 Rotary valve couplings	500-4	050004



Rotary valve coupling for hydraulics, pneumatics, water and electrical energy

The rotary coupling shown below transmits two cores hydraulics with max. 240 bar, four cores pneumatics (10 bar) and has an electrical rotary connection which transmits 6 times 24 V with 2 A.

The electrical rotary connector controls hydraulic distribution valves through which several clamping elements clamp the workpiece hydraulically.

The max. rotational speed of the version is determined by the hydraulic pressure, the diameter of the sealing and the number of stressed sealings. The value of the friction force resulting from these parameters is the limiting factor. In the mentioned case the max. rotational speed is 25 1/min.

The photo below shows the electrical rotary connection mounted into the lid. To the side and the front the cables are made moistureproof through cable fittings. Through a double sealing package a leakage connection is provided between the individual media.

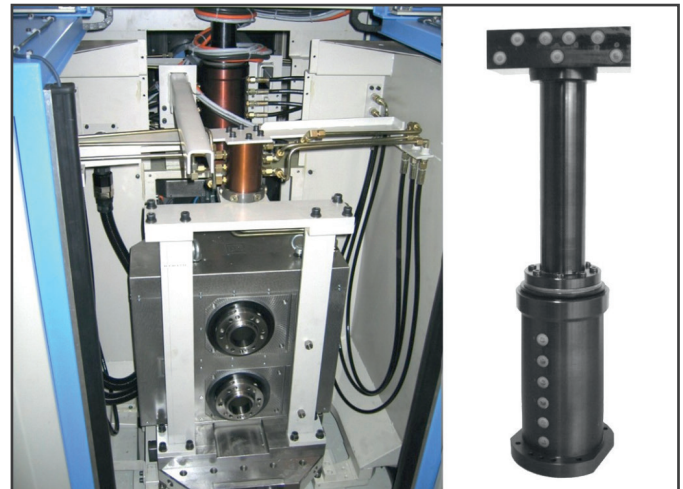


6 fold rotary coupling for hydraulic oil and electrical energy

12 and 6 passage rotary coupling, nominal diameter 5

Provide two fixtures with pressurized oil. The 180° pallet changer swifels both fixtures between the loading-/unloading station and the work station.

Both six passage rotary couplings rotate 360°. The twelve passage rotary coupling was designed with special seal elements to produce an insignificant torque.

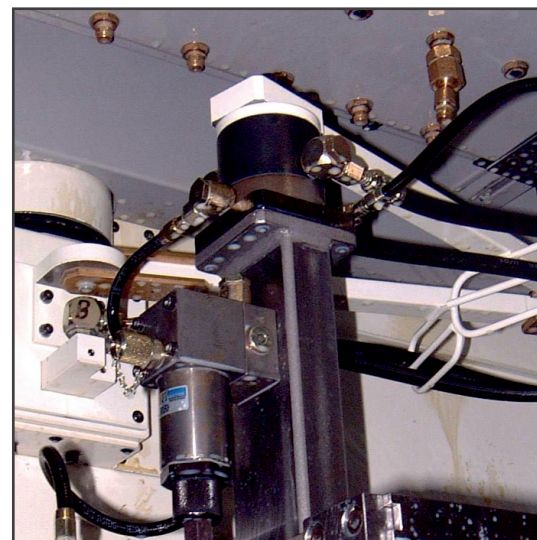


12 and 6 fold rotary couplings

Twin passage rotary coupling

Mounted in an articulated bracket construction on a 2-pallet tool machine. One rotary coupling each is mounted in the rotating axis of the two fixture pallets and allows the rotation of 360°.

The pressure supply in the rotating axis of the 180° pallet changer is done by hoses. Utilized operating pressure = 240 bar, nominal diameter 5.



2 fold rotary coupling

Additional information:

Subject	Data sheet	Webcode
Rotary couplings	500-3	050003
Rotary valve couplings	500-4	050004
Pneumatic rotary coupling	800-1	080001





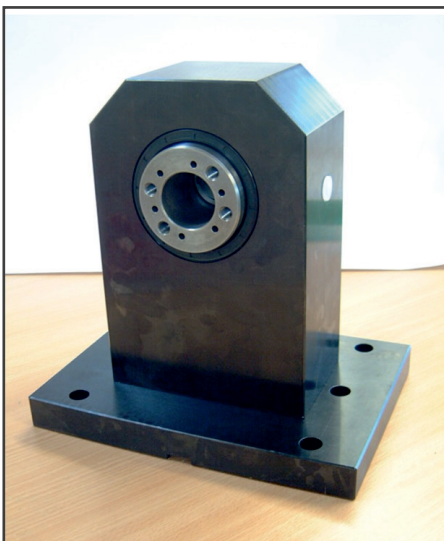
Steady bearing with integrated rotary valve coupling

Besides the possibility to make multi side machining also multiple clampings can be realized (depending on the workpiece). For that, due to clamping quality and effectiveness hydraulic elements should be applied.

For oil supply HYDROKOMP has developed a steady bearing which combines bearing, bearing clamping and rotary valve. Above that the rotary valve is equipped with a control function which allows clamping and releasing only in a defined position.

Another advantage is the characteristic that the bearing clamping can be supplied with the same hydraulic pressure as the clamping elements. That way it is not required to reduce pressure at the hydraulic aggregate.

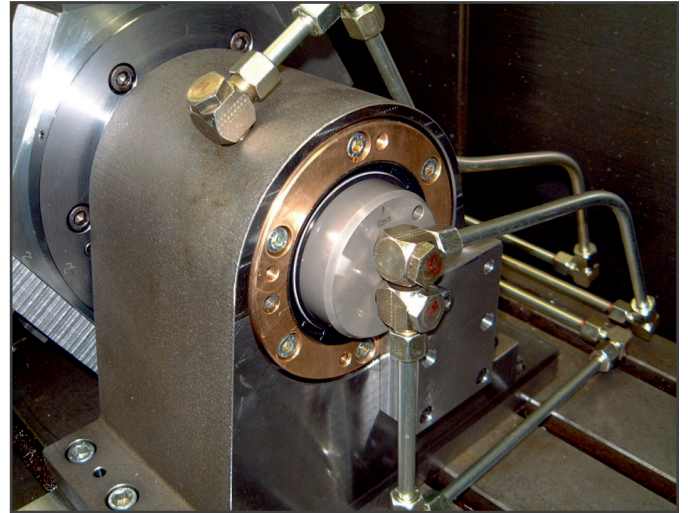
With this construction the space requirement for the clamping device can be maximized, the one for the steady bearing can be minimized and the costs for hydraulic and electrical controls can be optimized.



Rotary valve coupling in a support bearing of a reversible clamping device

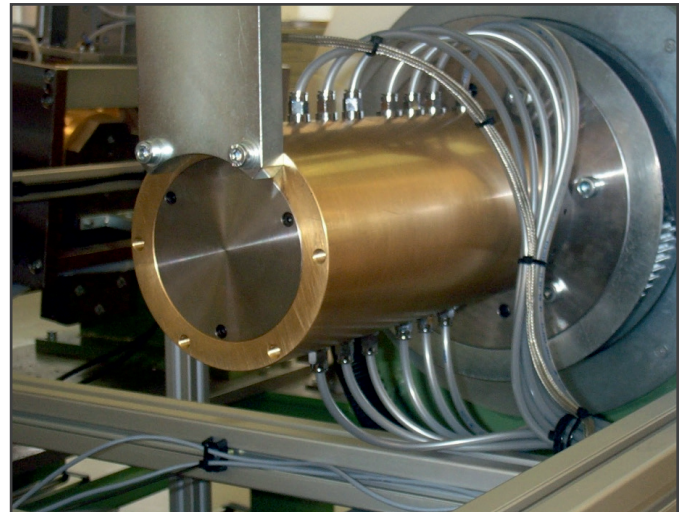
The design of the rotary valve coupling only permits loading and unloading when the device is turned to a predefined position.

This means that it is impossible for the item to become unclamped in the machining positions. Installation in the thrust bearing is extremely compact, saving valuable machining space for the clamping of workpieces.



13 passage rotary coupling

With 6 connections for compressed air, 6 connections for cooling water, 1 connection for forming gas, electronic slip rings 12 x 24V, 2A per line.



Additional information:

Subject	Data sheet	Webcode
 Rotary couplings	500-3	050003
 Rotary valve couplings	500-4	050004
 Pneumatic rotary couplings	800-1	080001



Universal, practical, flexible and secure clamping

Complete program of hydraulic swing clamp cylinders (SSZY)

For fast, precise and secure clamping and releasing of workpieces, HYDROKOMP offers an application-oriented hydraulic swing clamp cylinder program. It covers both the standardized and the customer-specific solutions. Thus the user can select single- or double-acting pull cylinders, various swing angles between 0 and 90° right or left, standard or special clamp arms or his own fabrication.

A special feature of the swing clamp cylinders are the standard integrated metal wipers. They increase the service life of the cylinder significantly.

With up to 500 bar operating pressure the cylinders generate effective clamping forces of maximum 40 kN. An integrated overload protection protects the swing mechanics from damage, if during the swing process a block occurs or the clamp arm is not mounted correctly.

In double-acting cylinders the hydraulic moves the cylinder both to clamp and to release. The function of releasing is done by a pressure spring for the single-acting cylinder. For fixing the clamp arms there are three designs available:

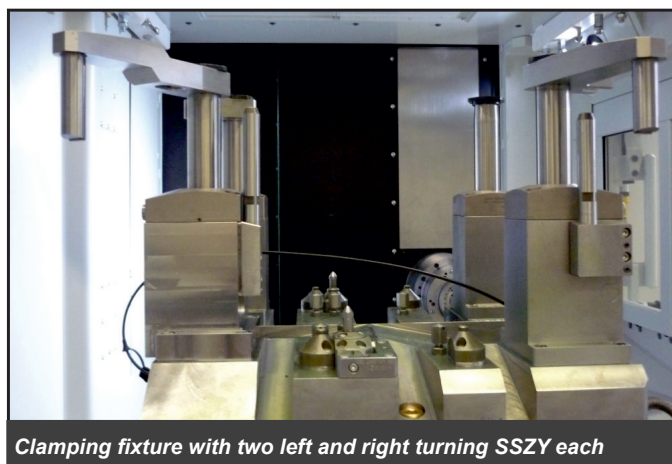
- Clevis with pin and safety rings
- Tapered fixture with fastening nut
- Pendulum eye

The user selects the type of housing according to the fixture. With six variants for each size, HYDROKOMP offers the correct solution for conventional installation and for the working situations. Swing clamp cylinders according to customer request are also designed and produced.

The pressure oil is supplied by pipe threads, flange with O-ring or drilled channels.

The piston diameters are 25, 32, 40 or 63 mm and the clamping stroke 10, 13 or 14 mm.

For all sizes the minimum actuating pressure is 30 bar, the maximum volume flows vary from 3.2 over 10 to 27.7 cm³/s.



Additional information:

Subject	Data sheet	Webcode
✘ SSZY, Selection guide	-	-
✘ SSZY, Safety Instructions	-	-
✘ SSZY, Clamping arms	240-0	024000
✘ SSZY, lower flange	240-2	024002
✘ SSZY, threaded body housing	240-3	024003
✘ SSZY, upper flange	240-10	024010
✘ SSZY, upper flange	240-20	024020
✘ SSZY, lower flange/thread	240-30	024030
✘ SSZY, Block housing	240-40	024040
✘ SSZY, threaded body housing	240-50	024050

Hydraulic multiple rotary clamping fixture

Cost pressure, time pressure, flexibility, quality standards, reduction in non-productive time, set-up time, all catchwords with which a production company is confronted in everyday operations and terms that formulate objectives. In this case a high number of items were to be machined annually, in production batches of 60 in one clamping.

The most useful clamping solution was a multiple rotary clamping fixture, which permits both multilateral machining of the workpieces and multiple clamping. This solution was substantially determined by the use of the existing machine tools with a vertical spindle.



Base unit with threaded body cylinders

HYDROKOMP was commissioned as a manufacturer of hydraulic clamping elements to design this device. For this purpose a clamping concept was developed in advance, together with production planning.

A rotary valve coupling is installed in the counter bearing, so that only the upwardly facing side of the fixture can ever be clamped or unclamped.

Advantages of many types are offered by this design principle. Using normal rotary couplings, it would be necessary to employ a six-way rotary coupling. This requires more space and generates more kinetic torque as a result of the necessary seals.

There are additional costs because each connection plane must be fed by means of a hydraulic distribution valve including electrical control unit. This makes it possible to provide five sides of the fixture with constant pressure and to clamp and unclamp hydraulically only the sixth side facing upwards.

The individual clamping nests are designed in such a way that a total of three different workpieces of a parts family can be clamped. It is merely necessary to turn the lateral stop through 180°. All other positioning and clamping points remain in place.

The bar fitted between the two clamps is to prevent the clamps from twisting. For the optimum transfer of clamping force there are hardened balls fitted in the clamping tips of the clamps, which press into the workpieces and thus create a positive fit.

The lower support points are level. The threaded body cylinders are designed as single-acting pull cylinders with spring reset and are built into the base unit.

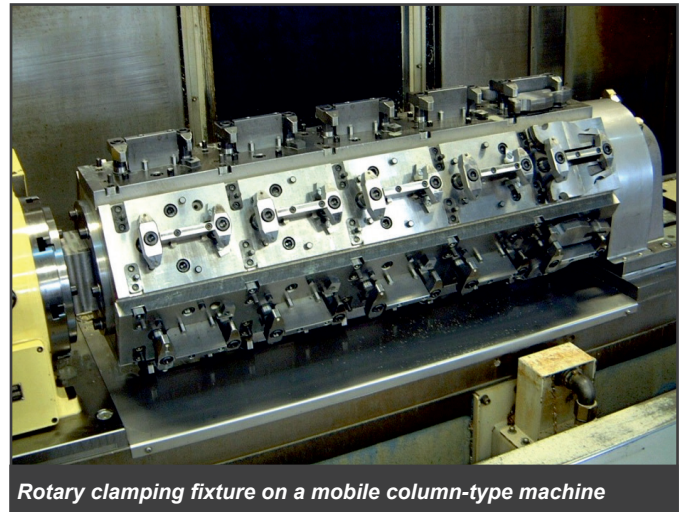
All HYDROKOMP cylinders have two wiper elements on the connecting rod side. In addition to the soft wiper ring there is a metal wiper ring fitted, which wipes off even the smallest pieces of swarf. The supply of hydraulic oil takes place inside the fixture, via drilled oil channels only. As the overall length is 880 mm, oil channels 5 mm in diameter have been inserted from both sides. The aim of this design variation is for the entire device to be universally applicable by exchanging the top, workpiece-specific fixture plate.

There is a small pump unit acting as a pressure generator, with two single-acting clamping circuits, with one of the clamping circuits being equipped with a pressure reducing stage, which limits the operating pressure for clamping the counter bearing to 60 bar.

The control units of the machine tool, of the NC divider and of the hydraulic unit are thus linked together in such a way that mutual enquiries take place before the next step of the programme takes place. In this way all the safety regulations that are necessary for sustained and responsible operation are met.

To sum up, it can be said that hydraulic rotary clamping fixtures offer tremendous economic benefits for the machining of workelements in mass production. The hydraulic clamping elements guarantee consistent and secure clamping. Some advantages:

- Multilateral machining of the workpieces
- Reduced tool-changeover times
- Reduced workpiece-changeover times
- High clamping security and clamping quality
- Increased machine running time



Rotary clamping fixture on a mobile column-type machine

Additional information:

Subject	Data sheet	Webcode
 Threaded body cylinders	200-2	020002



HYDROKOMP®

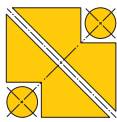
Hydraulische Komponenten GmbH

Technology that connects

GDPR

Data protection declaration
According to European General
Data Protection Regulation (GDPR)





Data protection declaration

According to European General Data Protection Regulation (GDPR)

Issue: 10/2022

1. Hydrokomp data privacy statement

At Hydrokomp Hydraulische Komponenten GmbH (HYDROKOMP) the protection of your personal data has a high priority. Therefore, we collect and process personal data only to a minimal extent of running international business activity properly. The quantity of data used will depend on the type of services we are providing to our customer.

Personal data is information about a natural person, which allows direct or indirect conclusions about their identity, personal or factual circumstances. Attributes in that matter are a name, a pseudonym, an identifier or specific location information that can be assigned to a natural person. Further detailed information is available in Art. 4 GDPR.

With this privacy data protection declaration, we inform you about the nature, basis, scope and purpose of the personal data processed by HYDROKOMP. We clarify your rights and name the responsible authorities and contact persons.

2. Responsible personal for data protection

Responsible for compliance with the EU General Data Protection Regulation:

HYDROKOMP Hydraulische Komponenten GmbH
represented by the managing director
Mr. Karl-Heinz Freund
Siemensstr. 16
35325 Muecke (Germany)
Phone: +49 6401 225999-11
Fax: +49 6401 225999-50
E-mail: kh.freund@hydrokomp.de

If you have specific questions about protecting your privacy, please contact our data protection officer:

Mr. Jannik Dechert
Phone: +49 172 3484560
E-mail: info@itkom-hessen.de

Cooperation agreements and contract processing according to Art. 28 GDPR has been concluded with Internet service providers:

QualityHosting AG
Uferweg 40-42
63571 Gelnhausen (Germany)
Phone: +49 6051 916 44 10
E-mail: info@qualityhosting.de
Web: qualityhosting.de

Alfahosting GmbH
Ankerstr. 3b
06108 Halle/Saale (Germany)
Phone: +49 345 279 58 0
E-mail: info@alfahosting.de
Web: alfahosting.de

Sepia GmbH & Co. KG
Ernst-Gnoss-Str. 22
40219 Duesseldorf (Germany)
Phone: +49 211 51 419 75
E-Mail: info@sepia.de
Web: sepia.de

3. Data processing after using our website

For the operation of our website it is necessary to collect and exchange pseudonymised access data. By using our website, your IP address is transmitted to our Internet service providers. Only in this way the web servers can determine the address for the requested data transfer. Each IP address is unique. This enables you to be traced back. In addition to the IP address, further access data is exchanged between your browser and the web servers:

- Date and time of the page view
- Internet provider and its server location
- End device used
- Operating system used
- Browser type
- Referrer URL (website from which our Online offer was linked)
- accessed files
- Volume of data transmission
- Time spent on the website

The access data is stored beyond the website use in "server log files" on the web servers of our Internet service providers. As a rule, there is no link to other databases. After 7 days the data is deleted automatically. In accordance with Art. 6, Para. 1 lit. e) GDPR, we have a legitimate interest in evaluating the access data. This data is required for legal and criminal prosecution in cases of misuse. Should data be needed for reasons of proof, they shall be excluded from deletion until the incident has been fully resolved. Furthermore, the evaluation is used to optimize our online offers.

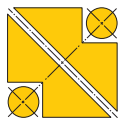
4. Use of cookies on our website

The use of cookies is based on Art. 6, Paragraph. 1 lit. e) GDPR. Cookies are small data parameters that are used on your device. Your browser accesses this information and exchanges it with the Web servers. Cookies help to individualize our website for the user, e.g. in terms of language, font size and design. Furthermore, the small data packages can be used for pseudonymised range measurement. Cookies in general increase the user-friendliness of our website.

Some functions on our website require the use of a session cookie. A random identification code is generated and temporarily stored on your device as a session ID. Only with session cookies we can provide functions such as the product configurator and the inquiry list. After using the website, the session ID loses its validity. HYDROKOMP does not make any further use of the session cookie.

Use of cookies on our website

If you do not want cookies to be stored on your device, you can deactivate this function in the settings of the most common browsers. Existing cookies can also be removed manually or automatically on these browsers. If you reject cookies, we cannot guarantee that all functions on our website are unrestrictedly usable. Should malfunctions occur, you can temporarily activate the cookie function for the duration of the website usage.



Data protection declaration

According to European General Data Protection Regulation (GDPR)

Issue: 10/2022

5. Collection and processing of personal data

Depending on the type of contact, we collect various personal data in accordance with Art. 6, Paragraph. 1 (e.g. *company/institution, VAT number, branch, department, function in the company, first name, surname, street and house number, telephone/fax numbers, e-mail addresses, Internet addresses*).

Personal data will only be stored and processed in our internal data processing system if a contractual relationship between you and us exists, or if this contractual relationship is to be established, expanded or changed. Only data that is necessary for these purposes will be processed. Contact can be made personally, by letter, telephone, fax, e-mail or Online form.

Data security:

Despite all the protective measures that have been taken, security gaps can still be detected, especially in Internet-based data transmission via telephone, fax, e-mail or Online forms. It cannot be completely ruled out that third parties may gain unauthorized knowledge of the content of data transmission or telephone conversations. Therefore, absolute protection cannot be guaranteed. Each person is free to send personal data alternatively by letter.

5.1 Personal contact:

For personal contact (e.g. at trade fairs) we use a printed form, which is used for taking notes of the contents of the conversation. In addition to your personal data (usually presented as a business card), we note your provided information on the form. In accordance with Art. 6, para. 1 lit. a) GDPR, we submit the form to you for signature. With the signature you grant us your express and revocable consent to the storage and processing of your data.

5.2 Telephone contact:

You have the possibility to inquire about product features, place orders or obtain information about business transactions by telephone. In order to process your request, we need personal data and information. The scope of this information is determined by the facts of the case. If your request makes this necessary, we store and process your data in our internal data processing system. HYDROKOMP does not record telephone conversations.

5.3 Contact via fax or letter:

When you send us a fax or write a letter, we store and process your personal data as well as the information provided in the document. Fax printouts and letters are archived in accordance with the legal requirements and, after the expiry of certain deadlines, sent to a certified service provider for data protection-compliant document destruction.

5.4 Contact via e-mail:

When sending e-mails, your terminal device or server sends data via the Internet to the servers of our Internet service providers. From there, the data is forwarded to us. When exchanging data via the Internet, there is always the risk that unauthorized third parties may gain access to your data.

HYDROKOMP uses e-mail addresses for both personal and shared access. Characteristic for our e-mail addresses is the ending ...@hydrokomp.de. If you choose this form of contact, in addition to your voluntary details in the text, your e-mail address and any other personal data from the signature and file attachments will also be transmitted to us. HYDROKOMP stores and processes your transmitted data. Your e-mail messages will be archived within the framework of statutory provisions on our e-mail servers.

If you contact us by e-mail, the IP addresses of the servers involved as well as other technical information will also be provided to us. Such data will only be evaluated and traced in case of misuse. They are removed from the e-mail server when the e-mail is deleted.

5.5 Contact via Online form:

When contacting us via the Online form, your data is transmitted to us in encrypted form via the web servers of our Internet service providers. Without the first name, surname and e-mail address, it will not be possible to process your request. Depending on the purpose of the form, further personal data may be collected. The scope of this data is specified in the respective Online form.

If you would like us to send you an offer, you must provide additional product-related information in the Online form, which is: Order numbers, quantities and desired delivery date. The transmission of personal data via the Online form as well as the subsequent processing in our internal EDP system only takes place after your express consent in accordance with Art. 6 Para. 1 lit. a) GDPR by means of a corresponding confirmation before sending the Online form.

6. Passing on personal data to third parties

6.1 Third parties involved:

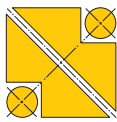
Third parties involved are natural and legal persons who contribute to the fulfilment of our business purpose and the contractual obligations towards you or with whom we have concluded an agreement for order processing in accordance with Art. 28 GDPR. This includes, for example, Internet service providers, customer advisors, transport companies and mail carriers.

HYDROKOMP has built up an international network of customer consultants. The client advisors act as independent entrepreneurs. They are local contact persons for establishing contacts and providing advice in the respective national language. If a customer consultant is responsible for your location, we exchange personal data with the company. The extent of this exchange is determined by the contact information: Salutation, title, first name, surname, street and house number, postal code and city, telephone numbers, e-mail addresses, Internet address, country, company/institution and department if applicable. Our customer advisors are also obliged to protect data in accordance with the GDPR. You are free to contact HYDROKOMP directly with your request.

In order to deliver the goods to you in accordance with the contract we must collect and transfer your personal data to transport companies or mail carriers. Data is usually transmitted via the Internet. Your Contact information: Salutation, title, first name, surname, street and house number, postcode and city, if applicable telephone number, country, Company/institution and department. Your data will also be stored and processed by the commissioned shipping service provider.

6.2 Non-participating third parties:

Non-participating third parties are natural and legal persons as well as institutions and authorities that do not contribute to the fulfilment of contractual services and with whom we have not concluded an agreement on order processing (Art. 28 GDPR). In individual cases, the government may order the linking of personal data with other databases for legal and criminal prosecution purposes. In such cases, HYDROKOMP may be obliged to surrender the data to the competent authorities. HYDROKOMP does not pass on personal data to other uninvolved third parties (e.g. address dealers).



Data protection declaration

According to European General Data Protection Regulation (GDPR)

Issue: 10/2022

7. Processing of personal data for the supply of information

7.1 Distribution of an e-mail newsletter:

HYDROKOMP occasionally sends text and image information with topics about the company, products and services in the form of an e-mail newsletter. If you have subscribed to our newsletter, we use the following personal data for its delivery:

e-mail address, title, name and the customer number assigned by us. The newsletter is sent exclusively on the basis of our legitimate interest pursuant to Art. 6 Para. 1 lit. a) GDPR. You can object to the sending of the newsletter at any time. The newsletter is created and sent by HYDROKOMP itself. Your personal data will not be passed on in this context.

7.2 Distribution of print media and data carriers

HYDROKOMP provides free information carriers in printed form (e.g. catalogues, brochures, leaflets) and on data carriers (e.g. USB sticks). If you have expressly consented to this when contacting us pursuant to Art. 6 para. 1 lit. a) GDPR, we will store and process your personal data in our internal data processing system. This affects your contact information: Salutation, title, first name, surname, street and house number, postal code and city, if applicable telephone number, country, company/institution and department. For the purpose of delivery, we must forward your personal data to the dispatch service provider commissioned by us. Your data will also be stored and processed there. If you object to this, it is not possible to send the information.

8. Your rights

You have the right to request information about your personal data stored by us and its use free of charge and without giving reasons. At the same time, you can correct, block or delete this data. You can object to further use at any time. A deletion of your personal data is only possible, however, if all contractual claims have been settled on both sides and the tax and legal deadlines have been met. If a deletion cannot be carried out for the reasons mentioned, your data will be blocked for all other purposes.

If you have given us your express consent to the storage and processing of your personal data in accordance with Art. 6, Para. 1 lit. a) GDPR, you may revoke it at any time for the respective purpose. Until receipt of your revocation, the legality of the storage and processing on the basis of your consent continues to exist. For reasons of verifiability, we recommend that you submit your objection in writing.

If the legal requirements are met, you can assert your right to data transfer to us. This provides that we make the personal data transmitted by you available in a suitable format on data carriers or transmit to another provider.

8.1 The individual pieces of legislation are regulated in:

- Art. 15 GDPR: Right of access
- Art. 16 GDPR: Right to rectification
- Art. 17 GDPR: Right to rectification and cancellation
- Art. 18 GDPR: Right to limitation of processing
- Art. 20 GDPR: Right to data transferability
- Art. 21 GDPR: Right to object the collection, processing and/or use

If you have the impression that your data has been processed unlawfully by us, we ask you to contact us. According to the GDPR, you also have the right to complain. This enables you to file a complaint with the responsible supervisory authority for your country. For Germany this is: "Federal Commissioner for Data Protection and Freedom of Information".

Our contact details for revocation or complaints can be found on page 1: „Responsible personal for data protection“

9. Hyperlinks to external online services

Our website and print media also contains hyperlinks or printed internet addresses to external online services.

Hyperlinks are usually specially marked. We have no influence on the

extent to which the providers comply with the applicable data protection regulations. Please inform yourself in advance on the linked websites in the local privacy policy.



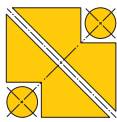
HYDROKOMP®

Hydraulische Komponenten GmbH

Technology that connects

General conditions of sale and supply





General conditions of sale and supply

for products of HYDROKOMP Hydraulische Komponenten GmbH, valid after Sep. 2009

Issue: 10/2022

1. General

1.1 These conditions of sale and supply shall apply exclusively. They shall also apply for all future transactions with the customer, even if they are not expressly agreed again. Any conditions on the part of the customer that conflict with or deviate from these conditions of sale shall not be recognized, unless the supplier has expressly approved of their validity in writing. These conditions of sale shall also apply in the event that the supplier carries out delivery to the customer unconditionally, being aware of conditions on the part of the customer that conflict with or deviate from these conditions of sale.

1.2 All agreements that are made between the supplier and the customer for the purpose of the execution of this contract are set out in writing in this contract. Any supplementary agreements and alterations require the written confirmation of the supplier.

Our conditions of sale shall only apply in relation to entrepreneurs, legal entities in public law, or separate estates in public law in accordance with § 310 section 1 BGB [the German Civil Code].

2. Offer, Scope of Supply

2.1 The documents associated with this offer such as illustrations, drawings, specified weights and dimensions, shall only be considered approximate, in so far as they are not expressly described as binding. The supplier reserves all rights of ownership and copyright to any estimates, drawings or other documents. They must not be made available to any third party without the written consent of the supplier. The supplier shall not be entitled to make any of the customers' plans designated by the latter as confidential available to any third party without the consent of the customer. The customer is to be responsible for ensuring that any design drawings

presented by him/her do not intrude upon the property rights of any third party. However, should any claims be asserted against the supplier on grounds of breach of copyright of third parties, the customer is to indemnify the supplier completely.

2.2 The written confirmation of the order by the supplier shall be definitive for the scope of supply. In the case of an offer by the supplier associated with a deadline, and timely acceptance of this offer, the offer shall be definitive in the event that no confirmation of the order arrives in time.

3. Price and Payment

3.1 The prices shall apply ex works in the absence of any special agreement, including loading at the factory but excluding packaging. Value Added Tax at the appropriate statutory rate must be added to the prices.

3.2 The purchase price shall become due 30 days after the invoice date. Any deductions of discounts require special written agreement. No deduction of discount shall be permitted as long as there are any outstanding unsettled purchase price claims on the basis of older, overdue bills.

3.3 Payment instructions, cheques and discountable bills of exchange are only accepted for payment. Collection charges and any other costs shall be chargeable to the customer.

3.4 Should the customer fall into arrears with payments, the supplier shall be entitled to demand interest on arrears amounting to 8 percentage points per annum above the current base rate at the time, in accordance with § 247 of the BGB. If the supplier is in a position to prove a higher level

of damages arising from payment arrears, it shall be entitled to assert these claims.

3.5 The customer shall only have the right to offset if his/her counterclaims are uncontested, have been legally confirmed, or acknowledged by the supplier. In addition to which, he/she shall be authorized to execute a right of retention to the extent that his/her counterclaim is based on the same contractual relationship.

3.6 The supplier shall retain the right to alter prices to a reasonable extent, if following conclusion of the contract any cost reductions or increases occur, particularly as a result of wage agreements or materials price changes. Evidence of these is to be demonstrated to the customer on request.

3.7 The least order value amounts net to € 50,-. Orders under this value are accepted by the supplier only provisory.

4. Delivery Time

4.1 The delivery period begins with dispatch of the order confirmation, but not before the documents, approvals and authorizations to be procured by the customer are produced, or before any agreed advance payment is made. Adherence to the delivery period is dependent on the fulfillment of the customer's contractual obligations.

4.2 The delivery deadline shall be deemed to have been met if the item to be delivered has left the factory by that date, or if the customer has been informed that it is ready for delivery.

4.3 The delivery period shall be extended to a reasonable extent for measures taken in the context of industrial disputes, in particular strikes and lock-outs and in the event of unforeseen obstacles that lie outside the influence of the supplier, in so far as such obstacles can be shown to have a significant influence on the production or dispatch of the item to be supplied. This shall also apply if these circumstances arise at the subcontractors'. Nor is the supplier to be held responsible for the circumstances described above if they arise in the course of an already existing delay.

In important cases the supplier will inform the customer as soon as possible of the beginning and end of hindrances of this type.

4.4 If the customer incurs damages as a result of a delay that has arisen through the supplier's own fault, the customer may demand compensation for any demonstrable damages. This shall not apply in the event that the supplier is only guilty of simple or minor negligence.

4.5 If dispatch is delayed at the request of the customer, he/she shall be liable for any costs arising from storage, beginning one month after the goods are ready for delivery. In the event of storage at the supplier's premises, at least half a percent of the invoiced amount shall be charged for each month, unless the customer can show that lower costs were incurred. The supplier shall furthermore be entitled to dispose of the goods to be supplied otherwise after an appropriate deadline has been set and expired to no effect, and to supply goods to the customer within a suitably extended delivery period.

5. Transfer of Risk and Acceptance

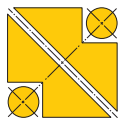
5.1 The risk shall transfer to the customer at latest on dispatch of the goods to be supplied, and indeed even if partial deliveries are made, or if the supplier has undertaken to provide other goods and services, such as carriage costs or delivery and set-up. At the request of the customer, and at his/her expense, the shipment can be insured through the supplier against theft, breakage, damage in transit, fire and water damage and other insurable risks.

5.2 If dispatch is delayed as a result of circumstances for which the cus-

tomers is responsible, the risk shall transfer to the customer from the day on which the goods are ready for delivery. The supplier shall, however, be obliged to effect any insurance cover that the customer requires, at the request and expense of the latter.

5.3 Items supplied are to be accepted by the customer even if there is evidence of minor faults, regardless of the rights arising from section 7.

5.4 Partial deliveries shall be permissible.



General conditions of sale and supply

for products of HYDROKOMP Hydraulische Komponenten GmbH, valid after Sep. 2009

Issue: 10/2022

5. Transfer of Risk and Acceptance

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5.3 Items supplied are to be accepted by the customer even if there is evidence of minor faults, regardless of the rights arising from section 7.

5.4 Partial deliveries shall be permissible.

6. Reservation of Proprietary Rights

6.1 The supplier reserves the proprietary rights to the goods supplied until all the existing claims against the customer at the time of delivery have been settled by the latter. In the case of payment by cheque or bill of exchange, the payment shall not have been completed until they have been properly cleared.

6.2 This reservation of property rights shall be extended to include all claims of the customer that the latter acquires against third parties from the resale of the goods supplied. These claims shall be assigned at the level of the gross invoiced amount. The customer shall assign these claims to the supplier as security as and when they arise. The supplier shall accept this assignment.

6.3. The customer shall not be permitted to mortgage the goods supplied, nor to make them over to third parties as security. In the event of distraint or seizure or any other possession proceedings by third parties, the customer is to inform the supplier immediately.

6.4. If the customer processes the goods supplied and the reserved property rights lapse as a result, this processing is to be carried out for the supplier in such a way that the supplier shall acquire proportionate joint property rights to the new item amounting to the purchase value of the goods supplied in proportion to the other goods processed at the time of processing. This processing clause shall extend to cover all claims that the customer shall in future acquire as a result of the resale of the items that are subject to this processing clause. The customer shall assign to the supplier the claims arising from the resale of this item, amounting to

the value of the supplied goods processed. The supplier shall accept this assignment.

6.5. The security interests of the supplier shall not prevent the customer from utilising the goods belonging to the supplier or the claims assigned to the supplier for the purpose of security, in the normal course of business. The customer shall not be entitled to other rights of possession over the reserved goods. Normal business operations shall be deemed to have ceased if the customer falls into arrears with his/her payment obligations, if bills of exchange are disputed, if payments are stopped or if a bankruptcy application is made. In this case the customer shall be obliged at the request of the supplier to inform his/her customers of the assignment, to refrain from collecting the claim, and to permit its collection by the supplier. The customer shall be obliged to inform the supplier of the addresses of third-party customers at the first time of asking.

6.6. The supplier undertakes to release at the request of the customer securities of its own choice to which it is entitled, to the extent that the realisable value of these securities exceeds the claims to be secured by more than 20 %. The realisable value of the securities is calculated as follows: Items are to be included at their current purchase price; claims are included at 80 % of their nominal value.

6.7. In the event of conduct by the customer that constitutes a breach of contract, particularly in terms of payment arrears, the supplier shall be entitled to recover goods following a reminder, and the customer shall be obliged to hand them over.

7. Liability for Faults or Defects

7.1. Any claims by the customer relating to faults or defects require the customer to have properly fulfilled his/her obligations according to § 377 of the HGB [German Commercial Code] in terms of examining the goods and lodging a complaint.

7.2. In so far as there is a fault or defect in the purchased item, the customer shall be entitled to have the situation remedied by means of correction of the fault, or the supply of a new item free of faults or defects. In the case of correction of faults or defects, the supplier shall be obliged to cover all expenditure required for the purpose of correcting the fault or defect, and in particular the costs of transport, travel, work done and materials used, provided that these costs are not increased by the fact that the purchased item has been moved to a location other than the place of fulfilment.

7.3. If the remedial action fails, the customer shall be entitled to demand withdrawal from the contract or a reduction in price. The right of withdrawal shall be excluded in the case of minor faults.

7.4. The supplier shall be liable in accordance with the statutory provisions in so far as the customer asserts claims for compensation that are based on intent or gross negligence, including the intent or gross negligence of representatives or vicarious agents of the supplier. Provided that the supplier is not charged with any intentional breach of contract, compensation liability shall be limited to foreseeable, typically occurring damages.

7.5. The supplier shall be liable in accordance with the statutory provisions in so far as it is guilty of breaching a fundamental contractual obligation. In this case, however, compensation liability shall be limited to foreseeable, typically occurring damage.

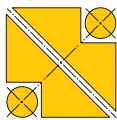
7.6. In so far as the customer is entitled to compensation for damage in place of the goods or services, the liability shall also be limited as in subsection 7.3. to compensation for foreseeable, typically occurring damage.

7.7. Liability for culpable injury to life and limb or health remains unaffected. This also applies to mandatory liability in accordance with the Product Liability Act.

7.8. Unless otherwise provided for in the above, all liability shall be excluded.

7.9. The limitation period for claims for faults and defects is 12 months, calculated from the date of transfer of risk.

7.10. The limitation period in the case of redress for inadequate delivery according to §§ 478, 479 BGB remains unaffected. It is five years, calculated from the date of delivery of the faulty item.



General conditions of sale and supply

for products of HYDROKOMP Hydraulische Komponenten GmbH, valid after Sep. 2009

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8. Further Liability

(8.1.) Further liability for damages going beyond the provisions of section 7 shall be excluded – irrespective of the legal nature of the asserted claim. This shall apply in particular to claims for damages resulting from fault on conclusion of the contract, from other breaches of duty or from criminal claims for compensation for damage to property in accordance with § 823 BGB.

(8.2.) The limitation in accordance with subsection 8.1. shall also apply in do far as the customer demands the replacement of unusable applications in place of the goods or services instead making a claim for damages.

(8.3.) In so far as compensation liability in relation to the supplier is excluded or limited, this shall also apply with regard to the personal compensation liability of its employees, representatives and vicarious agents.

9. Withdrawal

(9.1.) The customer may withdraw from the contract if delivery of goods and services becomes completely impossible for the supplier before transfer of risk. The customer may also withdraw from the contract if in the case of an order for items of the same type it becomes impossible to complete a part of the delivery in the numbers required, and the customer has a justified interest in rejecting a partial delivery. If this is not the case, the customer shall also be able to reduce his/her payments or services in return accordingly.

If the supplier only becomes aware that the customer is in an unfavorable financial situation after the contract has been concluded, the supplier may, giving adequate notice, demand security such as is recognized in business for the payments due from the customer. If the required security is not presented to the supplier within the set period, it shall be entitled to withdraw from the contract and/or to demand compensation.

(9.2.) If delivery of goods and services is delayed as set out in section 4 of the conditions of supply, and if the customer grants the supplier that has

fallen into arrears an appropriately extended deadline, and if this deadline is not met, then the customer shall be entitled to withdraw.

(9.3.) If the inability to supply occurs in the course of delayed acceptance or through the fault of the customer, the latter shall remain obliged to make payment.

(9.4.) Furthermore, the customer shall have a right of withdrawal if the supplier allows a reasonably extended deadline for the correction of a fault or defect for which it is responsible in terms of the conditions of supply to pass to no effect through its own fault.

The customer's right of withdrawal shall also apply in other cases where remedial action or the supply of a replacement by the supplier fails.

(9.5.) All further claims by the customer shall be excluded, and in particular for termination or price reduction, and for compensation for damages of whatever type, including for such damage as has been caused to items other than the supplied item itself. Section 7.8. shall apply accordingly.

10. Court of Jurisdiction

For all disputes arising from the contractual relationship, if the customer is an entrepreneur, a legal entity in public law or a separate estate in public law, proceedings are to be instituted at the court that has jurisdiction at the location of the supplier's the head office.

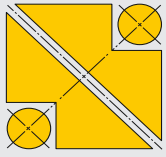
The supplier shall also be entitled to institute proceedings at the location of the customer's head office.

11. Concluding Provisions

(11.1.) In so far as the customer is an entrepreneur, a legal entity in public law or a separate estate in public law, the supplier's head office shall be considered the place of fulfilment.

(11.2.) German law shall apply for all contractual and other legal relationships between supplier and customer, to the exclusion of the UN Convention on Contracts for the International Sale of Goods.

(11.3.) Should any provision in these conditions of supply be or become invalid in the context of other agreements, the remaining sections shall remain binding. The parties undertake to reach an agreement in place of the invalid clause, which corresponds as closely as possible to the commercial purpose of the invalid clause.



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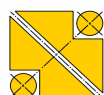
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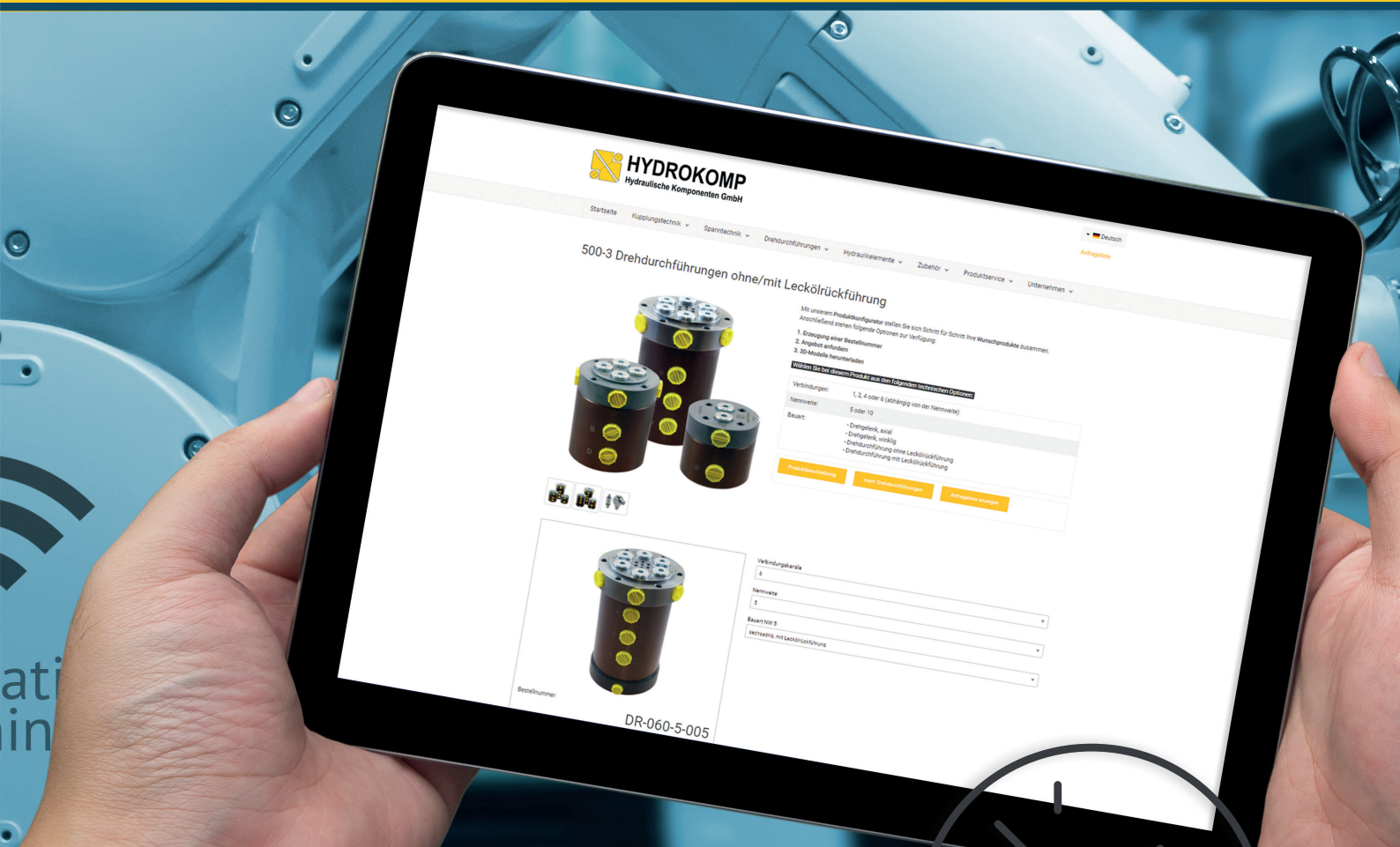
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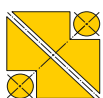
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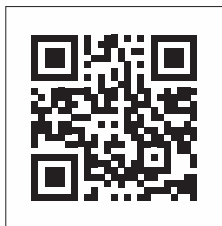


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