

VERTICAL CLAMPS AND VERTICAL CLAMPS WITH LINEAR STROKE FOR DEMANDING TASKS

VERTICAL CLAMP

- > cartridge flange
- > piston force up to 17,5 kN
- > operating pressure 250 bar
- > 90° aperture angle
- > oil supply via oil channel in fixture body

VERTICAL CLAMP

- > piston force up to 20,1 kN
- > operating pressure up to 350 bar
- > oil supply via oil channel in fixture body

VERTICAL CLAMP WITH LINEAR STROKE

- > hydraulic force up to 5,7 kN
- > operating pressure 250 bar
- > oil supply via oil channel in fixture body

PRODUCT OVERVIEW:

Type	Hydraulic force, piston force [kN]	No. of models	Max. operating pressure [bar]	Operating mode
6958E	3,1 - 7,0	2	250	double acting
6958SU/ST	7,0	1	350	single acting
6958AU/AT	5,0 - 20,0	4	250	single acting
6958DU/DT	2,8 - 20,1	5	250	double acting
6958C	3,1 - 5,7	2	250	double acting

PRODUCT EXAMPLES:

NO. 6958E



- > piston force: 3,1 - 7,0 kN

NO. 6958DT



- > piston force: 2,8 - 20,1 kN

NO. 6958C

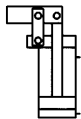


- > hydraulic force: 3,1 - 5,7 kN

No. 6958E-XX

Vertical clamp, cartridge flange

Double-acting,
max. operating pressure 250 bar,
min. operating pressure 15 bar



CAD

Order no.	Article no.	Piston force F5 at 100 bar [kN]	Piston force F5 at 250 bar [kN]	Vol. Sp [cm³]	Vol. Lo [cm³]	Piston dia. [mm]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Weight [g]
328013	6958E-20	3,1	7,8	6,6	2,3	20	3,1	1,10	350
328039	6958E-30	7,0	17,5	22,6	7,8	30	7,0	2,54	1100

Sp = clamp, Lo = unclamp

Design:

Housing made of steel, outside surface nickel-plated, piston rod hardened.
Housing with two holes for connection of anti-twist protection.
One cylinder pin for anti-twist protection is enclosed loose. Oil supply via oil channel in fixture body.

Application:

Vertical clamp is especially suited for clamping fixtures in which oil is supplied through conduits drilled in the fixture body. Insert for clamping fixtures with limited space. Installation of the vertical clamp can be adjusted 360°.

Features:

Large clamping force in the smallest installation space. Clamping lever opens 90°, resulting in easy loading or removal of the workpieces, manually or by robots.

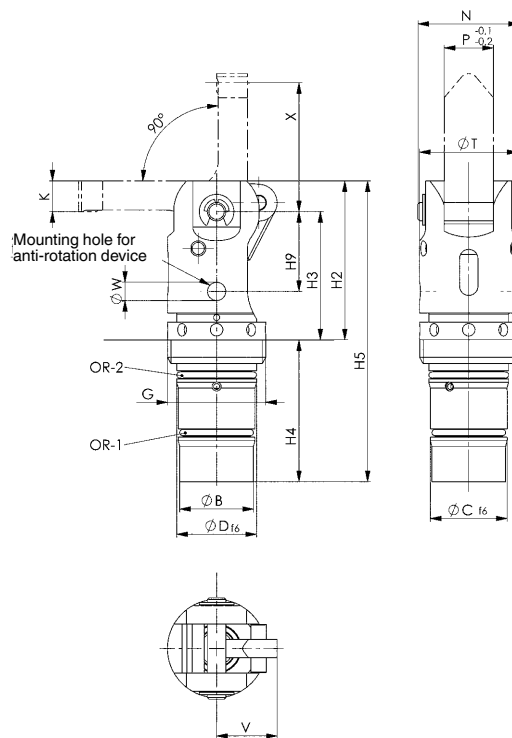
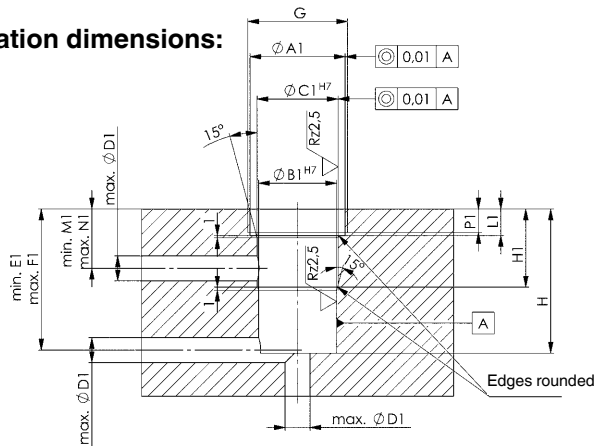
Note:

The insertion bevels for the seals must not have any sharp transitions.
Mill the thread up to the flat. Lubricate housing for mounting.
For installation, use hook spanner for size 20 = order no. 54916 and for size 30 = order no. 54940.

On request:

Other sizes available on request.

Installation dimensions:



Dimensions:

Order no.	Article no.	dia. B	dia. C	dia. D	G	H2	H3	H4	H5	H9	N	P	K	dia. T	V	dia. W
328013	6958E-20	24	25	26	M32x1,5	51,8	41,8	46,2	98	26	33,0	22	10	32	19,69	6
328039	6958E-30	36	37	38	M48x1,5	77,0	62,0	69,0	146	38	49,5	32	15	48	29,54	8

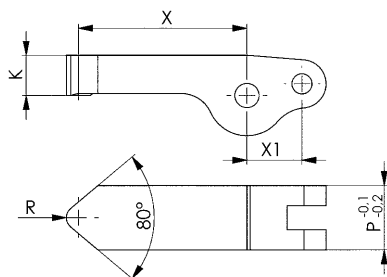
Installation dimensions:

Order no.	Article no.	dia. A1	B1 H7	dia. C1 H7	dia. D1	min. E1	max. F1	G	H	H1	L1	min. M1	max. N1	P1	OR-1 O-ring Order No.	OR-2 O-ring Order No.
328013	6958E-20	30,5	25	26	8	45,2	47,2	M32x1,5	46,2	25	8,5	19,0	21,0	7,5	554575	554576
328039	6958E-30	46,5	37	38	10	68,0	70,0	M48x1,5	69,0	35	12,0	27,5	29,5	10,0	554577	554578

Subject to technical alterations.

No. 6958E-XX-0X

Clamping arm out of steel



Order no.	Article no.	Clamping force at 100 bar [kN]	Clamping force at 250 bar [kN]	X	X1*	K	P	R	Weight [g]
328054	6958E-20-00-01	1,38	3,46	28	14	10	16	3	66
328070	6958E-20-00-02	1,11	2,72	35	14	10	16	3	74
328096	6958E-20-00-03	0,92	2,30	42	14	10	16	3	82
328062	6858E-30-00-01	3,19	7,96	41	21	15	24	5	215
328088	6958E-30-00-02	2,56	6,40	51	21	15	24	5	242
328104	6958E-30-00-03	2,14	5,35	61	21	15	24	5	270

*X1 = Lever length at 90°

Design:

Case-hardening steel, case-hardened.

Application:

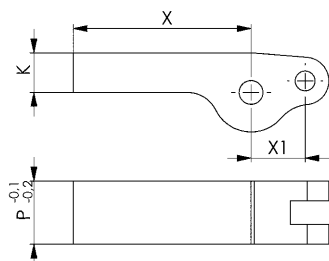
For vertical clamps 6958E.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.

No. 6958ER-XX-00

Clamping arm blank from steel



Order no.	Article no.	X	X1*	K	P	Weight [g]
328112	6958E-20-00	45	14	10	16	88
328120	6958E-30-00	66	21	15	24	287

*X1 = Lever length at 90°

Design:

Case-hardened steel, unhardened.

Application:

For vertical clamps 6958E.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.

No. 6958E-XX-00-00

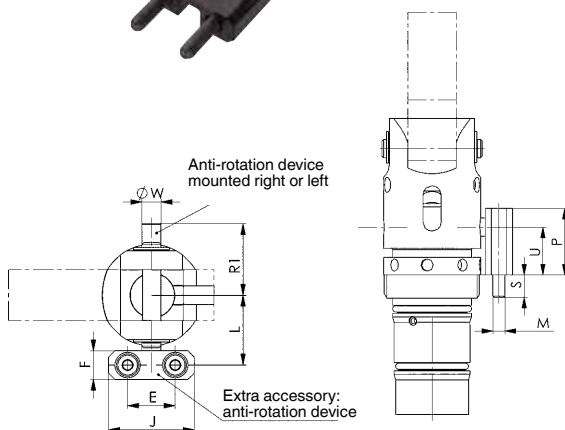
Anti-rotation device



Order no.	Article no.	E	F	J	L	M	P	S	U	R1	dia. W	Weight [g]
328963	6958E-20-00-00	15	9	27	22,0	M4	22	7	15,8	22,5	6	40
328989	6958E-30-00-00	25	15	40	31,5	M6	32	10	24,0	33,0	8	145

Design:

Made of aluminium, black anodised.

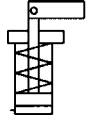


Subject to technical alterations.

No. 6958Sx-16

Vertical Clamp

Single-acting, with spring return,
max. operating pressure 350 bar,
min. operating pressure 40 bar.



6958SU-16 / 322248



6958ST-16 / 322255

Order no.	Article no.	Piston force at 100 bar [kN]	Piston force at 350 bar [kN]	Vol. [cm³]	Piston dia. [mm]	Piston area [cm²]	OR-1 O-ring Order No.	Weight [g]
322248	6958SU-16	2,0	7,0	1,9	16	2	334821	280
322255	6958ST-16	2,0	7,0	1,9	16	2	334821	290

Design:

Cylinder body from steel, burnished. Piston rod nitrided. Wiper at piston rod. Built-in return spring. Supply scope includes clamping lever pin, but not clamping lever. Oil supply via oil channel in fixture body.

Application:

This vertical clamp can be used for clamping in cavities or in very tight spaces.

Features:

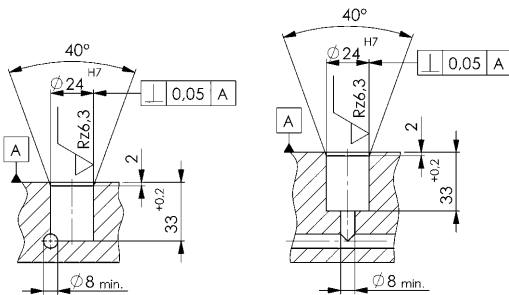
Small dimensions, can be installed closely spaced side-by-side. The clamping levers can be exchanged easily in the installed position.

Note:

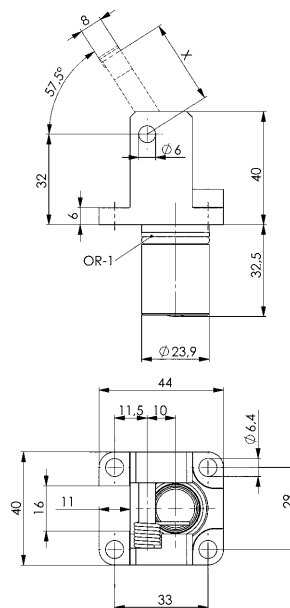
Screws according to ISO4762 M6, strength class 12.9, lightly oiled, tightening torque $M_d = 18 \text{ Nm}$ not supplied as standard.

During unclamping, the vertical clamp allows a **max. dynamic pressure of 3 bar**, which must be strictly taken into account when using control valves.

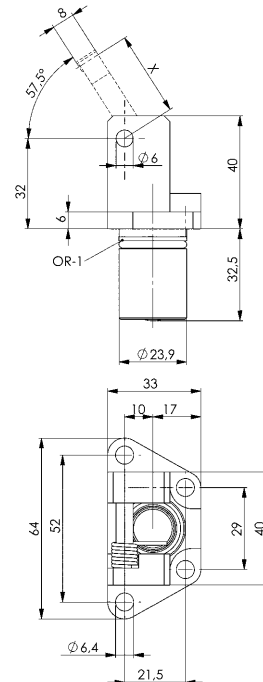
Installation dimensions:



6958SU-16 / 322248



6958ST-16 / 322255



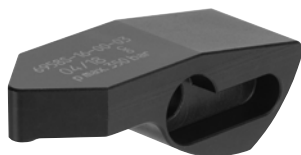
CAD



Subject to technical alterations.

No. 6958S-16

Clamping arm out of steel



Order no.	Article no.	X	X1*	Clamping force at 100 bar [kN]	Clamping force at 250 bar [kN]	Clamping force at 350 bar [kN]	Weight [g]
320218	6958S-16-00-01	12	12	2,0	5,0	7,0	52
320234	6958S-16-00-02	18	12	1,3	3,3	4,6	60
320259	6958S-16-00-03	24	12	1,0	2,5	3,5	66
320275	6958S-16-00-04	30	12	0,8	2,0	2,8	72
322438	6958S-16-00-05**	-	12	-	-	-	74

* X1 = level length at 90°

**Clamp arm blank, unhardened

Design:

Case-hardening steel, case-hardened.

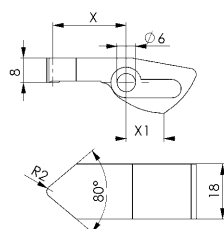
Application:

For vertical clamp 6958SU-16 and 6958ST-16.

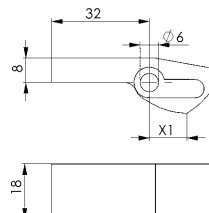
Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.

Clamping arm



Clamping arm blank

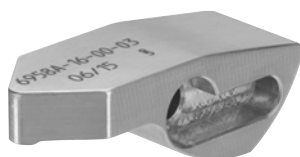


CAD



No. 6958A-16

Clamping arm out of aluminium



Order no.	Article no.	X	X1*	Clamping force at 100 bar [kN]	Weight [g]
320242	6958A-16-00-02	18	12	1,3	21
320267	6958A-16-00-03	24	12	1,0	23
320283	6958A-16-00-04	30	12	0,8	25
322453	6958A-16-00-05**	-	12	-	26

* X1 = level length at 90°

** Clamp arm blank

Design:

Aluminium.

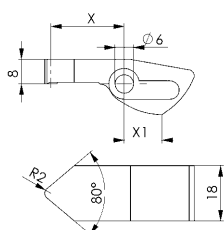
Application:

For vertical clamp 6958SU-16 and 6958ST-16.

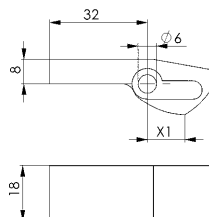
Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed. Max. operating pressure 100 bar.

Clamping arm



Clamping arm blank



CAD



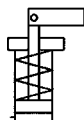
No. 6958AU

Vertical Clamp

Single-acting, with spring return,
max. operating pressure 250 bar,
min. operating pressure 40 bar.



CAD



Order no.	Article no.	Piston force at 100 bar [kN]	Piston force at 250 bar [kN]	Vol. [cm ³]	Piston dia. [mm]	effective piston area [cm ²]	Md max. [Nm]	Weight [g]
322404	6958AU-16	2	5	1,9	16	2,0	18	220
322446	6958AU-20	3	8	4,0	20	3,1	43	357
322487	6958AU-25	4	12	6,7	25	4,9	84	576
322529	6958AU-32	8	20	14,4	32	8,0	145	926

Design:

Cylinder body from steel, chemically nickel-plated. Piston rod nitrided. Wiper at piston rod. Built-in return spring. Supply scope includes clamping lever pin, but not clamping lever. Oil supply via oil channel in fixture body.

Application:

This vertical clamp can be used for clamping in cavities or in very tight spaces.

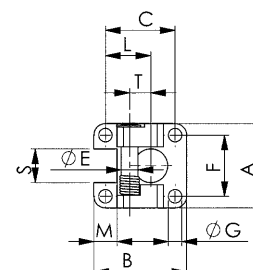
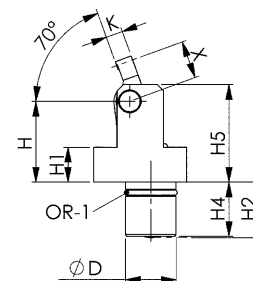
Features:

Small dimensions, can be installed closely spaced side-by-side. The clamping levers can be exchanged easily in the installed position.

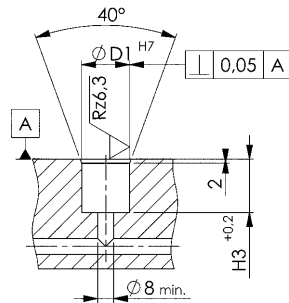
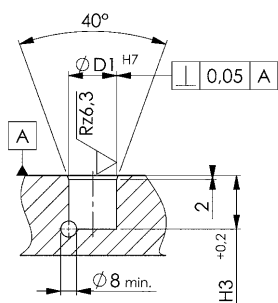
Note:

Screws according to ISO 4762, strength class 12.9, lightly oiled, are not supplied as standard.

During unclamping, the vertical clamp allows a **max. dynamic pressure of 3 bar**, which must be strictly taken into account when using control valves. Important: Please note the cross-section of the supply line.



Installation dimensions:



Dimensions:

Order no.	Article no.	A	B	C	dia. D	dia. D1 H7	L	F	dia. G	H	H1	H2	H3	H4	H5	T	M	dia. E	S	K	OR-1 O-ring Order No.
322404	6958AU-16	40	44	33	24	24	21,5	29	6,4	38,3	16,5	26,3	26,8	25,8	46,3	10	11	8	16	8	195347
322446	6958AU-20	46	53	40	30	30	26,0	33	8,5	49,0	20,3	32,7	34,0	-	59,0	11	13	10	20	10	195842
322487	6958AU-25	55	67	51	35	35	32,0	39	10,5	51,0	21,2	34,6	37,0	-	62,0	13	16	12	23	11	195909
322529	6958AU-32	66	76	58	42	42	36,0	48	12,5	60,0	24,1	56,7	59,5	-	76,0	15	18	15	30	16	195925

Dimension X, see clamping lever

Subject to technical alterations.

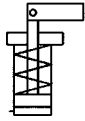
No. 6958AT

Vertical Clamp

Single-acting, with spring return,
max. operating pressure 250 bar,
min. operating pressure 40 bar.



CAD



Order no.	Article no.	Piston force at 100 bar [kN]	Piston force at 250 bar [kN]	Vol. [cm³]	Piston dia. [mm]	effective piston area [cm²]	Md max. [Nm]	Weight [g]
322420	6958AT-16	2	5	1,9	16	2,0	18	237
322461	6958AT-20	3	8	4,0	20	3,1	43	392
322503	6958AT-25	4	12	6,7	25	4,9	84	640
322545	6958AT-32	8	20	14,4	32	8,0	145	1014

Design:

Cylinder body made of steel, chemically nickel-plated. Piston rod nitrided. Wiper at piston rod. Built-in return spring. Scope of supply includes clamp arm pin, but clamp arm not included.

Application:

This vertical clamp can be used for clamping in cavities or in very tight spaces.

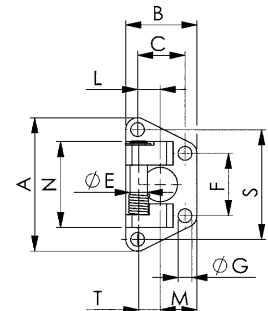
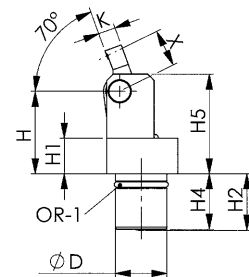
Features:

Small dimensions, can be installed closely spaced side-by-side. The clamping arms can be exchanged easily in the installed position.

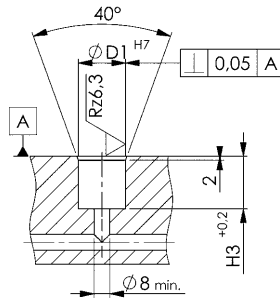
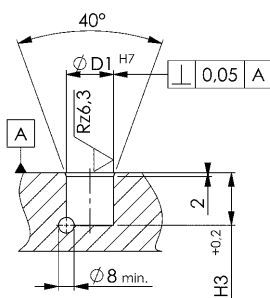
Note:

Screws according to ISO 4762, strength class 12.9, lightly oiled, are not supplied as standard.

During unclamping, the vertical clamp allows a **max. dynamic pressure of 3 bar**, which must be strictly taken into account when using control valves. Important: Please note the cross-section of the supply line.



Installation dimensions:



Dimensions:

Order no.	Article no.	A	B	C	dia. D	dia. D1 H7	L	F	dia. G	H	H1	H2	H3	H4	H5	T	M	N	dia. E	S	K	OR-1 O-ring Order No.
322420	6958AT-16	62	33	22	24	24	10,5	29	6,4	38,3	16,5	26,3	26,8	25,8	46,3	10	17,0	40	8	51	8	195347
322461	6958AT-20	72	40	27	30	30	13,0	33	8,5	49,0	20,3	32,7	34,0	-	59,0	11	20,5	46	10	59	10	195842
322503	6958AT-25	87	51	35	35	35	16,0	39	10,5	51,0	21,2	34,6	37,0	-	62,0	13	27,0	55	12	71	11	195909
322545	6958AT-32	102	58	40	42	42	18,0	48	12,5	60,0	24,1	56,7	59,5	-	76,0	15	31,0	66	15	84	16	195925

Dimension X, see clamping lever

Subject to technical alterations.

No. 6958S

Clamping arm out of steel



Order no.	Article no.	dia. E	R	K	P	X	X1*	Clamping force at 100 bar [kN]	Clamping force at 250 bar [kN]	Weight [g]
324186	6958S-16-01-02	8	2	8	18	18	12	1,3	3,3	60
324178	6958S-16-01-03	8	2	8	18	24	12	1,0	2,5	66
324194	6958S-16-01-04	8	2	8	18	30	12	0,8	2,0	72
322495	6958S-20-00-02	10	2	10	22	18	12	2,0	5,2	114
322511	6958S-20-00-03	10	2	10	22	24	12	1,5	3,9	125
322537	6958S-20-00-04	10	2	10	22	30	12	1,2	3,1	135
322693	6958S-25-00-02	12	4	11	27	24	16	2,6	8,2	171
322719	6958S-25-00-03	12	4	11	27	32	16	2,0	6,1	191
322735	6958S-25-00-04	12	4	11	27	40	16	1,6	4,9	211
322891	6958S-32-00-02	15	4	16	34	30	20	5,3	13,3	375
322917	6958S-32-00-03	15	4	16	34	40	20	4,0	10,0	417
322933	6958S-32-00-04	15	4	16	34	50	20	3,2	8,0	457

* X1 = level length at 90°

Design:

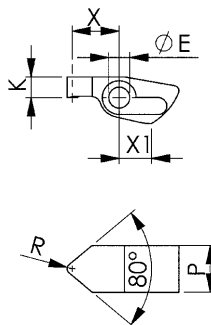
Case-hardening steel, case-hardened.

Application:

For vertical clamp 6958AU and 6958AT.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.

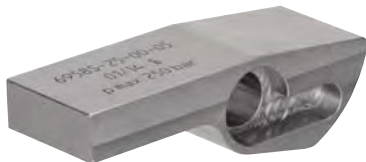


CAD



No. 6958S

Clamping arm blank from steel



Order no.	Article no.	dia. E	R	K	P	X	X1*	Weight [g]
324418	6958S-16-01-05	8	2	8	18	32	12	74
322552	6958S-20-00-05	10	2	10	22	32	12	141
322750	6958S-25-00-05	12	4	11	27	44	16	217
322958	6958S-32-00-05	15	4	16	34	54	20	476

* X1 = level length at 90°

Design:

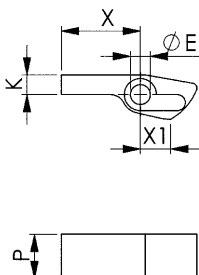
Case-hardened steel, unhardened.

Application:

For vertical clamp 6958AU and 6958AT.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.



CAD



Subject to technical alterations.

No. 6958A

Clamping arm out of aluminium



Order no.	Article no.	dia. E	R	K	P	X	X1*	Clamping force at 100 bar [kN]	Weight [g]
324434	6958A-16-01-02	8	2	8	18	18	12	1,3	21
324459	6958A-16-01-03	8	2	8	18	24	12	1,0	23
324475	6958A-16-01-04	8	2	8	18	30	12	0,8	25
322594	6958A-20-00-02	10	2	10	22	18	12	2,0	40
322610	6958A-20-00-03	10	2	10	22	24	12	1,5	43
322636	6958A-20-00-04	10	2	10	22	30	12	1,2	47
322792	6958A-25-00-02	12	4	11	27	24	16	2,6	59
322818	6958A-25-00-03	12	4	11	27	32	16	2,0	66
322834	6958A-25-00-04	12	4	11	27	40	16	1,6	73
322990	6958A-32-00-02	15	4	16	34	30	20	5,3	130
323014	6958A-32-00-03	15	4	16	34	40	20	4,0	144
323030	6958A-32-00-04	15	4	16	34	50	20	3,2	158

* X1 = level length at 90°

Design:

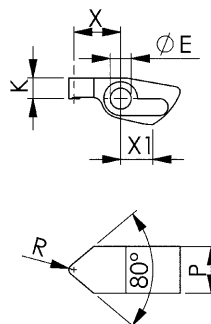
Aluminium.

Application:

For vertical clamp 6958AU and 6958AT.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.
Max. operating pressure 100 bar.



No. 6958A

Clamping arm blank from aluminium



Order no.	Article no.	dia. E	K	P	X	X1*	Weight [g]
324483	6958A-16-01-05	8	8	18	32	12	26
322651	6958A-20-00-05	10	10	22	32	12	49
322859	6958A-25-00-05	12	11	27	44	16	75
323055	6958A-32-00-05	15	16	34	54	20	165

* X1 = level length at 90°

Design:

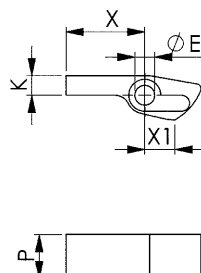
Aluminium.

Application:

For vertical clamp 6958AU and 6958AT.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.
Max. operating pressure 100 bar.



No. 6958AU

Surface-mounted block

with O-ring connection and threaded connection



Order no.	Article no.	A	A1	B	B1	C	C1	dia. D1	L	OR-1 O-ring Order No.	Weight [g]
322560	6958AU-16-10-01	40	29	44	33	17,0	11,5	6,5	50	321646	145
322586	6958AU-20-10-01	46	33	53	40	20,5	14,0	8,5	57	321646	229
322602	6958AU-25-10-01	55	39	67	51	27,0	19,0	10,5	60	321646	379
322628	6958AU-32-10-01	66	48	76	58	31,0	22,0	12,5	82	321646	653

Design:

Made of aluminium, red anodised.

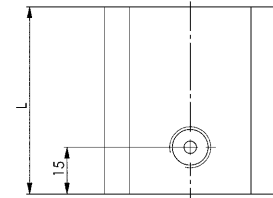
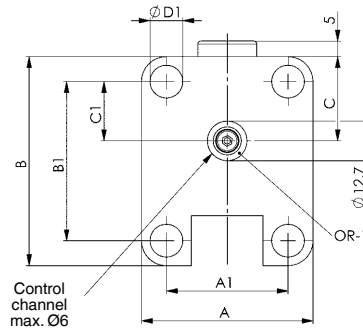
Supply scope includes O-ring dia.9x2, threaded plugs and fastening screws.

Application:

The surface-mounted block with O-ring connection from below and threaded connection can be flanged into the fixture as an adapter over the control channel without restriction for the cylindrical part of the vertical clamp or where the control oil supply to the vertical clamp has to be routed via external lines.

Note:

The flange surface on the fixture must be even, and must have a surface finish of Rz 6.3 in the area of the O-ring sealing surface. Other lengths are available on request.



CAD



No. 6958AT

Surface-mounted block

with O-ring connection and threaded connection



Order no.	Article no.	A	A1	A2	B	B1	C	C1	dia. D1	L	OR-1 O-ring Order No.	Weight [g]
323089	6958AT-16-10-01	62	29	51	33	22	17,0	11,5	6,5	50	321646	161
323105	6958AT-20-10-01	72	33	59	40	27	20,5	14,0	8,5	57	321646	263
323121	6958AT-25-10-01	87	39	71	51	35	27,0	19,0	10,5	60	321646	437
323147	6958AT-32-10-01	102	48	84	58	40	31,0	22,0	12,5	82	321646	756

Design:

Made of aluminium, red anodised.

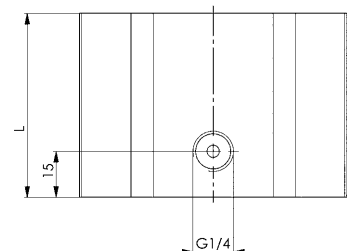
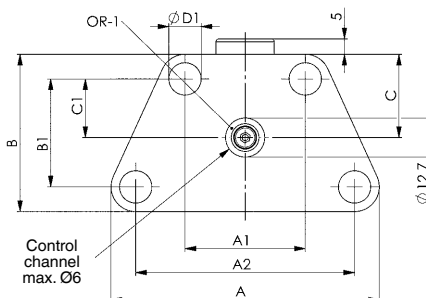
Supply scope includes O-ring dia.9x2, threaded plugs and fastening screws.

Application:

The surface-mounted block with O-ring connection from below and threaded connection can be flanged into the fixture as an adapter over the control channel without restriction for the cylindrical part of the vertical clamp or where the control oil supply to the vertical clamp has to be routed via external lines.

Note:

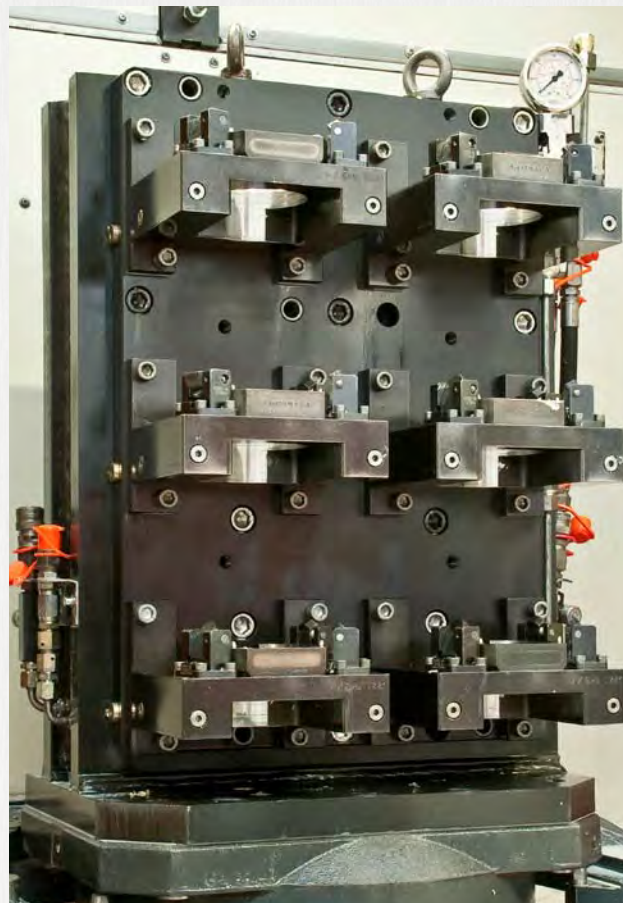
The flange surface on the fixture must be even, and must have a surface finish of Rz 6.3 in the area of the O-ring sealing surface. Other lengths are available on request.



CAD



Subject to technical alterations.



Subject to technical alterations.

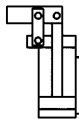
No. 6958DU

Vertical Clamp

Double-acting,
max. working pressure 250 bar,
min. operating pressure 25 bar.



CAD



Order no.	Article no.	Clamping force F1 at 100 bar [kN]	Clamping force F1 at 250 bar [kN]	Piston force F5 at 100 bar [kN]	Piston force F5 at 250 bar [kN]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Md max. [Nm]	Weight [g]
326272	6958DU-16	1,3	3,3	2,0	5,0	2,0	1,2	2,0	1,2	7,5	334
326314	6958DU-20	2,1	5,2	3,1	7,8	3,8	2,4	3,1	2,0	15,0	624
326371	6958DU-25	3,2	8,2	4,9	12,2	6,9	4,1	4,9	2,9	27,0	906
327536	6958DU-32	5,3	13,4	8,0	20,1	13,7	8,3	8,0	4,9	47,0	1920

Sp = clamp, Lo = unclamp

Design:

Hydraulic cylinder as a drop-in cartridge. Top mounting with four cylinder screws (resistance min. 10.9); these are supplied as standard. All components are made of hardened steel, tempered and burnished. Piston and pivot bolts are made from tempered steel, hardened and nitrided. Metal wiper to protect the dirt wiper is integrated into the housing. Compressed air nozzle for pneumatic clamping control. Pivot bolts, tensioning straps and compressed air nozzle are supplied as standard, but not clamping arms. Oil supply via oil channel in fixture body.

Application:

The double-acting vertical clamp is highly suited to clamping in clamping pockets. For clearly defined return movements.

Features:

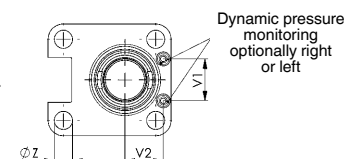
Small dimensions. Allows close side-by-side positioning. Clamping levers easy to change with built-in vertical clamp. The horizontal centre axis at the clamping lever and the pressure point on the workpiece lie in one plane. This prevents relative movement on the workpiece. To protect the O-rings sitting radially on the clamp, the cross channels at the installation hole must be rotated freely and equipped with insertion lead-ins. If the vertical clamp is closed, the compressed air that previously streamed out freely is blocked in the compressed air nozzle. The resulting back pressure can be used for clamping control with the help of a signal converter.

Note:

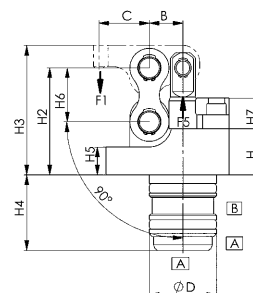
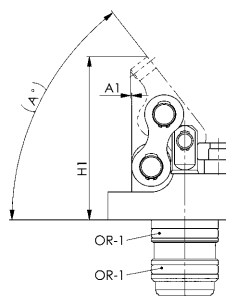
The signal converter is not included in the supply scope.

The lever ratio B to C is 1 to 1.5 for the standard levers!

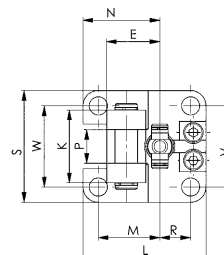
In preparing the blank levers, deviations that cause a higher clamping force are permitted only in exceptional cases.



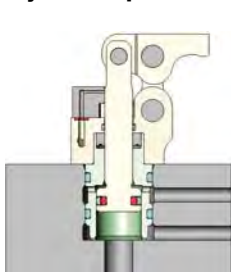
Dynamic pressure monitoring optionally right or left



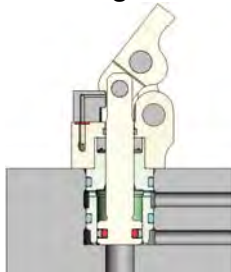
A = clamp
B = unclamp



Dynamic pressure monitoring:



closed: clamped



open: unclamped

Dimensions:

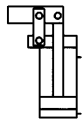
Order no.	Article no.	A	A1	B	C	E	dia. D	H	H1	H2	H3	H4	H5	H6	H7	K	L	M	N	P	R	S	V	V1	V2	W	ØZ	OR-1 O-ring Order No.
326272	6958DU-16	51,9	0,40	12	18,0	19,0	24	16,5	58,4	38,3	46,3	27,0	10	19,3	11	26	44	22	27,5	12	11	40	29	15	13,7	29	6,5	497461
326314	6958DU-20	54,0	1,25	14	21,0	23,0	30	20,3	73,2	49,0	59,0	34,0	10	25,0	16	32	53	26	32,5	16	14	46	33	15	17,5	33	8,5	490342
326371	6958DU-25	51,2	0,70	17	25,5	27,5	35	21,0	79,4	51,0	62,0	37,0	10	27,0	16	39	67	32	40,0	20	19	55	39	15	21,0	39	10,5	321018
327536	6958DU-32	53,4	-1,0	20	30,0	33,0	42	24,0	97,1	63,0	76,0	59,5	11	35,0	18	50	76	36	45,0	26	22	66	48	15	24,0	48	12,5	409748

Subject to technical alterations.

No. 6958DT

Vertical Clamp

Double-acting,
max. working pressure 250 bar,
min. operating pressure 25 bar.



CAD

Order no.	Article no.	Clamping force F1 at 100 bar [kN]	Clamping force F1 at 250 bar [kN]	Piston force F5 at 100 bar [kN]	Piston force F5 at 250 bar [kN]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Md max. [Nm]	Weight [g]
553427	6958DT-12	0,7	1,8	1,1	2,8	0,9	0,5	1,1	0,6	2,7	175
326231	6958DT-16	1,3	3,3	2,0	5,0	2,0	1,2	2,0	1,2	7,5	365
326298	6958DT-20	2,1	5,2	3,1	7,8	3,8	2,4	3,1	2,0	15,0	386
326397	6958DT-25	3,2	8,2	4,9	12,2	6,9	4,1	4,9	2,9	27,0	1015
327510	6958DT-32	5,3	13,4	8,0	20,1	13,7	8,3	8,0	4,9	47,0	1970

Sp = clamp, Lo = unclamp

Design:

Hydraulic cylinder as a drop-in cartridge. Top mounting with four cylinder screws (resistance min. 10.9); these are supplied as standard. All components are made from hardened, tempered and burnished steel. Piston and pivot bolts are made from tempered steel, hardened and nitrided. Metal wiper to protect the dirt wiper is integrated into the housing. Compressed air nozzle for pneumatic clamping control. Pivot bolts, tensioning straps and compressed air nozzle are supplied as standard, but not clamping arms. Oil supply via oil channel in fixture body.

Application:

The double-acting vertical clamp is highly suited to clamping in clamping pockets. For clearly defined return movements.

Features:

Small dimensions. Allows close side-by-side positioning. Clamping levers easy to change with built-in vertical clamp. The horizontal centre axis at the clamping lever and the pressure point on the workpiece lie in one plane. This prevents relative movement on the workpiece. To protect the O-rings sitting radially on the clamp, the cross channels at the installation hole must be rotated freely and equipped with insertion lead-ins. If the vertical clamp is closed, the compressed air that previously streamed out freely is blocked in the compressed air nozzle. The resulting back pressure can be used for clamping control with the help of a signal converter.

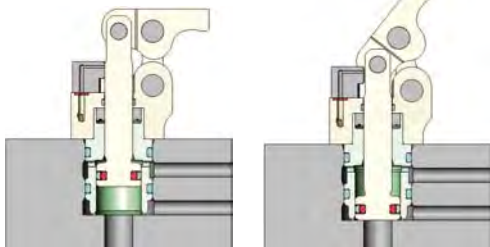
Note:

The signal converter is not included in the supply scope.

The lever ratio B to C is 1 to 1.5 for the standard levers!

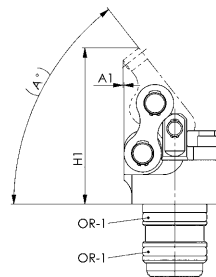
In preparing the blank levers, deviations that cause a higher clamping force are permitted only in exceptional cases.

Dynamic pressure monitoring:

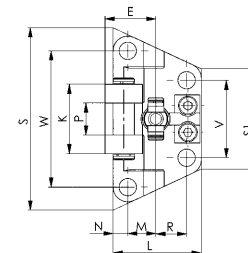
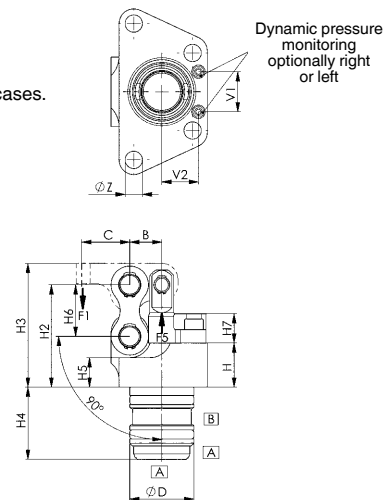


closed: clamped

open: unclamped



A = clamp
B = unclamp



Dimensions:

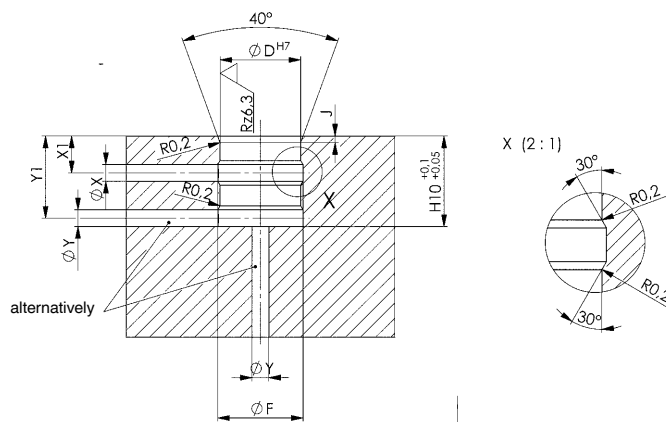
Order no.	Article no.	A	A1	B	C	E	dia. D	H	H1	H2	H3	H4	H5	H6	H7	K	L	M	N	P	R	S	S1	V	V1	V2	W	ØZ	OR-1 O-ring Order No.
553427	6958DT-12	49,5	0,13	10	15,0	17,0	18	13,5	47,7	31,0	38,0	22,0	7	16,0	12,2	20	28,5	10,0	4,5	10	8,5	50,1	23,55	20	7	11,4	36	4,5	409953
326231	6958DT-16	51,9	0,40	12	18,0	19,0	24	16,5	58,4	38,3	46,3	27,0	11	19,3	11	26	33	10,5	5,5	12	11,5	68,3	37,49	29	15	13,7	51	6,5	497461
326298	6958DT-20	54,0	1,25	14	21,0	23,0	30	20,3	73,2	49,0	59,0	34,0	14	25,0	16	32	40	13,0	6,0	16	14,0	78,9	41,60	33	15	17,5	59	8,5	490342
326397	6958DT-25	51,2	0,70	17	25,5	27,5	35	21,0	79,4	51,0	62,0	37,0	12	27,0	16	39	51	16,0	8,0	20	19,0	96,1	48,55	39	15	21,0	71	10,5	321018
327510	6958DT-32	53,4	-1,0	20	30,0	33,0	42	24,0	97,1	63,0	76,0	59,5	13	35,0	18	50	58	18,0	9,0	26	22,0	112,25	58,16	48	15	24,0	84	12,5	409748

Subject to technical alterations.

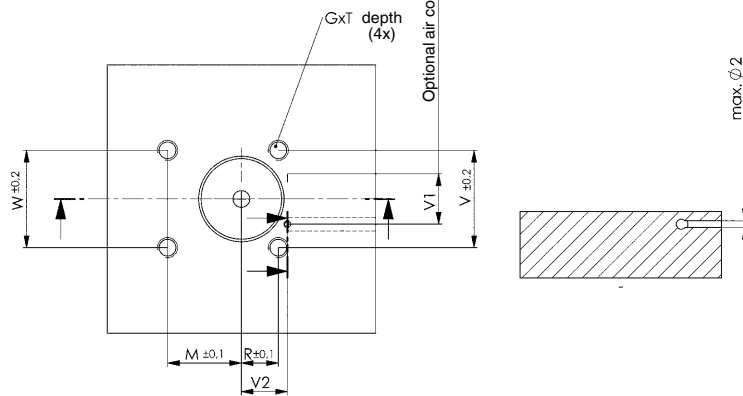
Installation dimensions:

Order no.	Article no.	dia. D H7	dia. F	G x T	H10	J	M	R	V	V1	V2	W	dia. X	X1	dia. Y	Y1
326272	6958DU-16	24	25,4	M6x15	27,0	2,0	22	11	29	15	13,7	29	5	11	5	24,5
326314	6958DU-20	30	31,4	M8x16	34,0	2,0	26	14	33	15	17,5	33	5	13	5	31,5
326371	6958DU-25	35	36,4	M10x20	37,0	2,0	32	19	39	15	21,0	39	5	14	5	34,5
327536	6958DU-32	42	43,4	M12x20	59,5	2,5	36	22	48	15	24,0	48	6	18	6	56,5

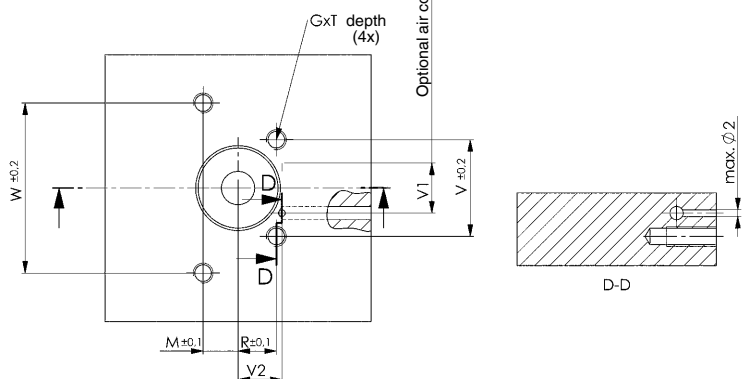
Order no.	Article no.	dia. D H7	dia. F	G x T	H10	J	M	R	V	V1	V2	W	dia. X	X1	dia. Y	Y1
553427	6958DT-12	18	19,4	M4x8	22,0	0,5	10,0	8,5	20	7	11,4	36	4	8	4	20,0
326231	6958DT-16	24	25,4	M6x15	27,0	2,0	10,5	11,5	29	15	13,7	51	5	11	5	24,5
326298	6958DT-20	30	31,4	M8x16	34,0	2,0	13,0	14,0	33	15	17,5	59	5	13	5	31,5
326397	6958DT-25	35	36,4	M10x20	37,0	2,0	16,0	19,0	39	15	21,0	71	5	14	5	34,5
327510	6958DT-32	42	43,4	M12x20	59,5	2,5	18,0	22,0	48	15	24,0	84	6	18	6	56,5



6958DU



6958DT



Subject to technical alterations.

No. 6958D-xx-04

Clamping arm



Order no.	Article no.	Clamping force F1 at 100 bar [kN]	Clamping force F1 at 250 bar [kN]	B	C	dia. D	dia. E	G	K	L	N	N1	P	R	R1	Weight [g]
553428	6958D-12-04	0,7	1,8	10	15,0	6	4	90	7	30,5	5,0	3,4	10	1,5	4,0	19
326215	6958D-16-04	1,3	3,3	12	18,0	8	6	90	8	38,0	5,0	4,5	12	2,0	5,0	31
326322	6958D-20-04	2,1	5,2	14	21,0	10	7	80	10	44,5	4,5	7,0	16	2,5	7,5	60
326413	6958D-25-04	2,6	8,2	17	25,5	12	9	80	11	53,5	7,0	7,0	20	3,0	7,5	94
327551	6958D-32-04	5,3	13,4	20	30,0	15	11	80	13	64,0	8,0	7,5	26	4,0	8,0	178

Design:

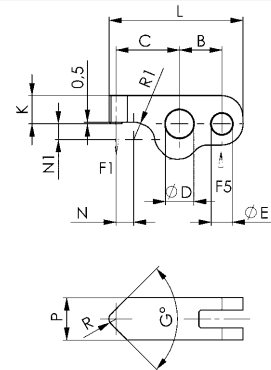
Hardened, tempered and burnished steel.

Application:

For vertical clamp 6958DU and 6958DT.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.



No. 6958DR

Clamping arm, blank



Order no.	Article no.	B	C	dia. D	dia. E	K	L	N	N1	P	R1	Weight [g]
553429	6958DR-12-04	10	26	6	4	7	40	16	3,6	10	4,0	25
326256	6958DR-16-04	12	32	8	6	8	50	20,0	5,0	12	5,0	42
326348	6958DR-20-04	14	40	10	7	10	61	23,5	7,5	16	7,5	86
326439	6958DR-25-04	17	50	12	9	11	75	31,5	7,5	20	7,5	140
327577	6958DR-32-04	20	58	15	11	13	88	36,0	8,0	26	8,0	258

Design:

Hardened, tempered and burnished steel.

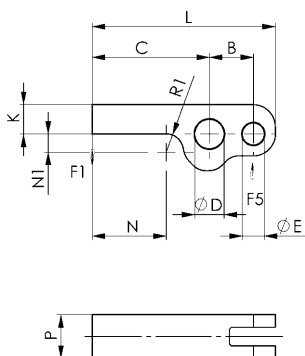
Application:

For vertical clamp 6958DU and 6958DT.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.

Formula to determine the clamping force F1:
 Clamping force = F1 [kN], piston force = F5 [kN],
 operating lever = B [mm], load lever = C [mm]
 $F1 = F5 \times B / C$

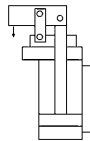


Subject to technical alterations.

No. 6958C

Vertical clamp with linear stroke

Double-acting,
max. operating pressure 250 bar,
min. operating pressure 35 bar.



NEW!



CAD

Order no.	Article no.	Clamping force at 250 bar Sp* [kN]	Clamping stroke H [mm]	Vol. Sp [cm³]	eff. piston area Sp [cm²]	Md [Nm]	Q max. * [l/min]	Weight [g]
556976	6958C-03	2,8	6	0,9	1,3	4,3	0,5	486
556977	6958C-04	5,0	6	1,6	2,3	8,0	0,9	744

Sp = clamping, Lo = unclamp

* Specifications with clamping arm, standard

Design:

Hydraulic clamp as drop-in cartridge with hardened running socket, which can be screwed into the fixture. Top mounting with four cylinder screws (resistance min. 12.9); these are supplied as standard. All components are made from hardened, tempered and burnished steel. Piston and pivot bolts are made from tempered steel, hardened and nitrided. Metal wiper to protect the dirt wiper is integrated into the housing. Compressed air nozzle for pneumatic clamping control. Pivot bolts, tensioning straps and compressed air nozzle are supplied as standard, but not clamping arms. Oil supply via oil channel in fixture body.

Application:

The double-acting vertical clamp is preferred for use in hydraulic fixtures in which there is very little installation space for a hydraulic clamping element. For complex workpieces, a small area is sufficient to clamp the workpiece. Through the oil supply in the fixture body, a very close array of the clamping elements is possible. Pneumatic release control permits monitoring of the clamp arm. Workpieces can be installed or removed automatically with handling devices.

Features:

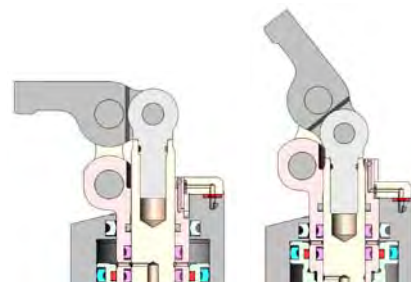
The double-acting vertical clamp permits a clearly defined movement of the clamp arm. After the rotary movement of the clamping arm, there follows a linear clamping stroke on the workpiece, which can compensate for large workpiece tolerances. There is no relative movement on the workpiece during its clamping. Very small dimensions, so workpieces can be installed closely spaced side-by-side. Due to the pneumatic release control, the clamp is used optimally in automated sequences.

Note:

Collision of the workpiece with the clamping arm must be avoided during loading and unloading of the clamping fixture. When designing the clamping fixture, the clamping position must be laid approximately in the middle of the clamping stroke in order to have enough reserve for workpiece tolerances. Soiling at the vertical clamp must be considered or avoided through inclusion in the cleaning process. The signal converter is not supplied as standard. The lever ratio must be observed when using special clamping levers.

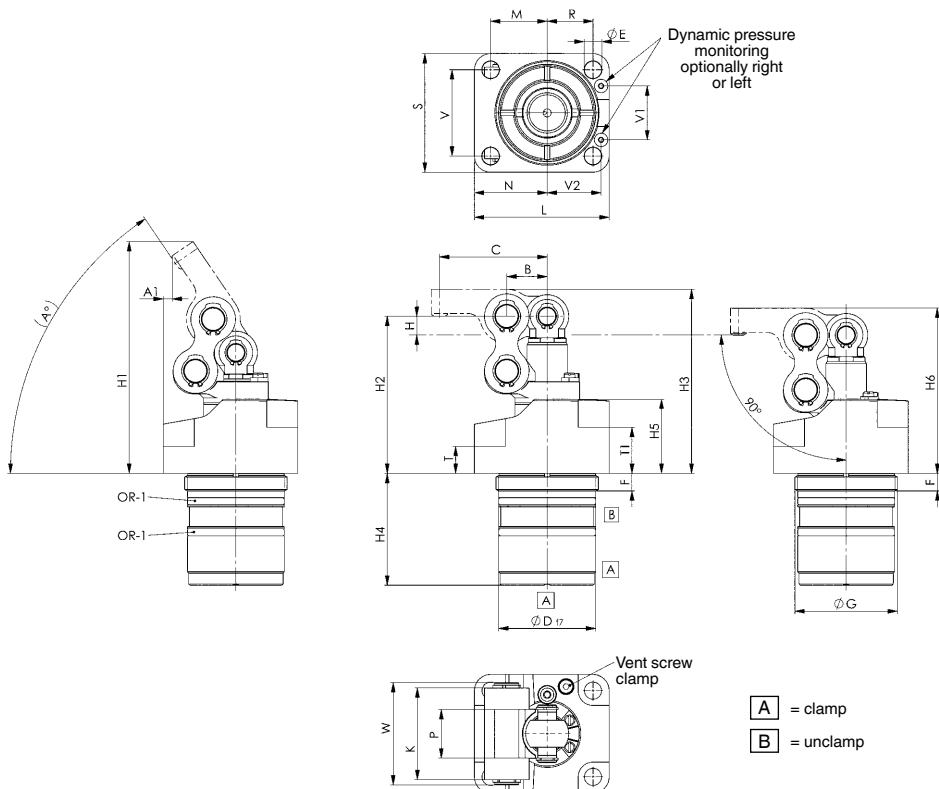
A screw-in tool 6958C-110-XX is required for installation.

Dynamic pressure monitoring:



closed: clamped

open: unclamped



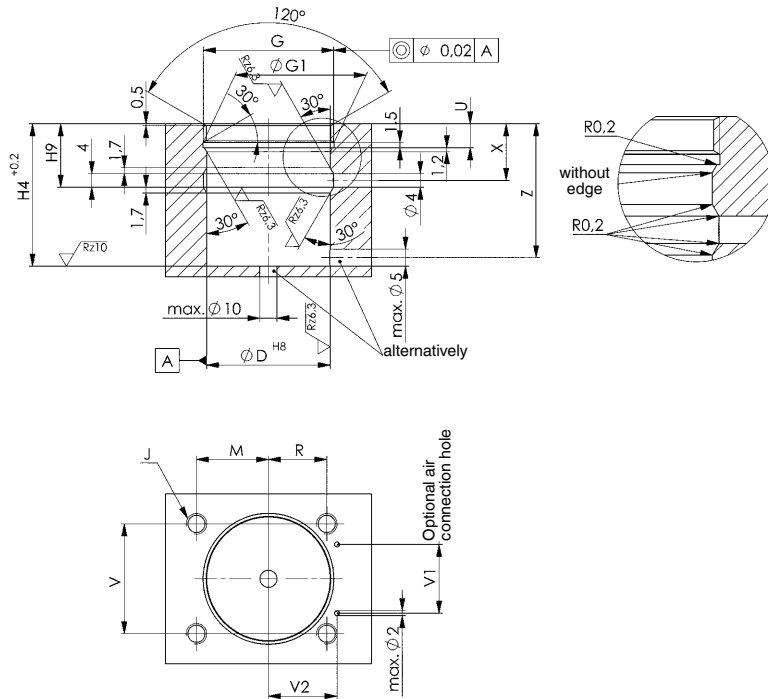
Dimensions:

Order no.	Article no.	A°	A1	B	C	ØD f7	dia. E	F	G	H	H1	H2	H3	H4	H5	H6	K	L	M	N	P	R	S	T	T1	V	V1	V2	W	OR-1 O-ring Order No.
556976	6958C-03	52	0,5	12	35	29	5,3	6,5	M32 x 1,5	6	80	54,3	63,3	36,0	27,5	57,3	29	42	17,4	22,5	15	14,4	37,5	10	18,0	27,3	17	16,8	33	321265
556977	6958C-04	56	3,4	15	40	36	6,4	6,5	M38 x 1,5	6	86	58,3	68,3	41,5	27,5	62,3	34	50	21,0	27,0	18	17,0	44,0	10	17,1	32,0	20	20,0	38	555899

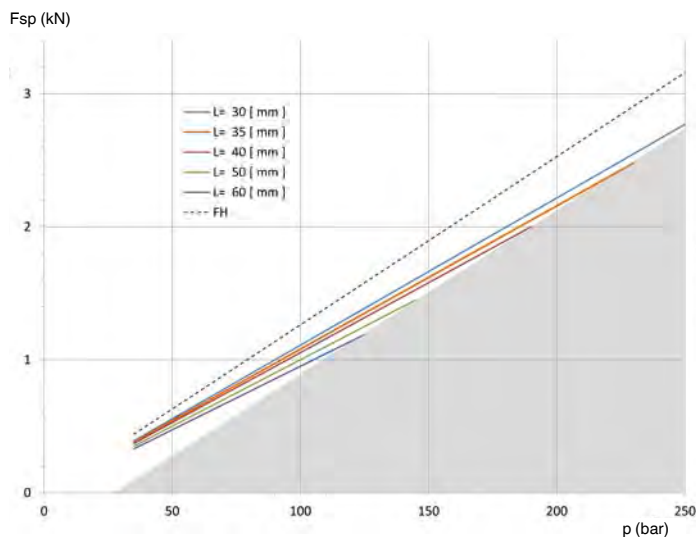
Subject to technical alterations.

Installation dimensions:

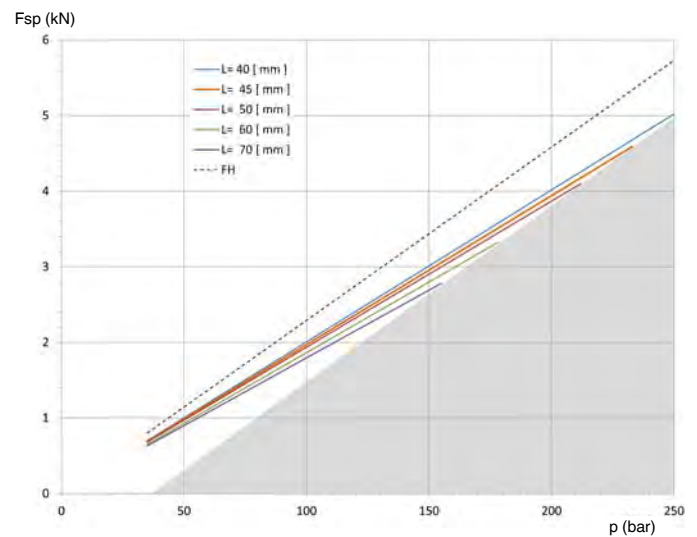
Order no.	Article no.	dia. D H8	G	ØG1	H4	H9	J x depth	M	R	V	V1	V2	U	X	Z
556976	6958C-03	29	M32 x 1,5	32,2	36,0	18,5	M5 x 12	17,4	14,4	27,3	17	16,8	7	16,5	33,5
556977	6958C-04	36	M38 x 1,5	38,2	41,5	18,5	M6 x 12	21,0	17,0	32,0	20	20,0	7	16,5	39,0



6958C-03



6958C-04



No. 6958C-110-XX

Mounting Tool

NEW!



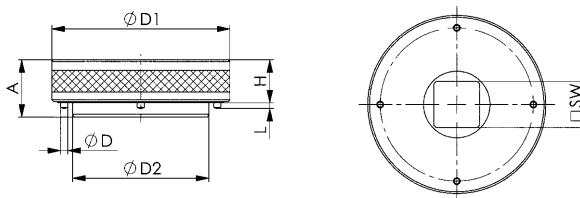
Order no.	Article no.	for size	SW [inch]	A	dia. D	dia. D1	dia. D2	H	L	Md max. [Nm]	Weight [g]
557875	6958C-110-03	03	1/2	16	2	35,0	23,9	12	1,5	25	80
557876	6958C-110-04	04	1/2	16	2	39,5	29,9	12	1,5	25	113

Application:

For vertical clamps 6958C and 6943C.

Features:

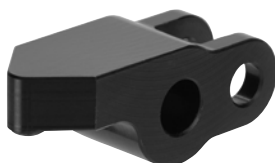
Always observe max. torque.



No. 6958C-XX-04

Clamping arm

NEW!



CAD

Order no.	Article no.	B	C	G°	K	L	N	P	R	R1	Weight [g]
556980	6958C-03-04	12	35	80	9	44,5	9,5	15	3	5	42
556981	6958C-04-04	15	40	80	10	50,5	10,5	18	3	5	64

Design:

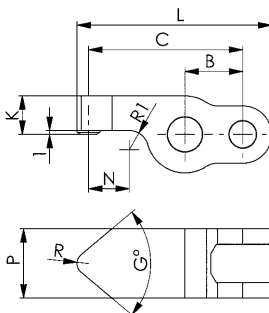
Hardened, tempered and burnished steel.

Application:

For vertical clamps 6958C and 6943C.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.



No. 6958CR-XX-04

Clamping arm, blank

NEW!



CAD

Order no.	Article no.	B	C	G	J	L	P	Weight [g]
556984	6958CR-03-04	12	50	18	9	56,5	15	92
556985	6958CR-04-04	15	60	20	10	67,5	18	147

Design:

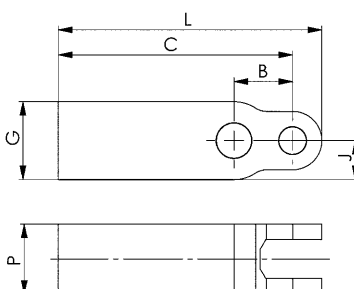
Hardened, tempered and burnished steel.

Application:

For vertical clamps 6958C and 6943C.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.



Subject to technical alterations.

LINK CLAMP FOR DEMANDING TASKS

LINK CLAMP

- > piston force up to 20,1 kN
- > operating pressure 250 bar
- > 90° aperture angle
- > oil supply via oil channel in fixture body

LINK CLAMP

- > piston force up to 44,0 kN
- > operating pressure 350 bar
- > oil supply via threaded port and/or O-ring-sealed ports

PRODUCT OVERVIEW:

Type	Piston force [kN]	No. of models	Max. operating pressure [bar]	Operating mode
6959C	2,8 - 20,1	5	250	double acting
6959KL	7,0 - 44,0	5	350	double acting
6959KB	7,0 - 28,1	4	350	double acting

PRODUCT EXAMPLES:

NO. 6959C



- > piston force: 2,8 - 20,1 kN

NO. 6959KL



- > piston force: 7,0 - 44,0 kN

NO. 6959KB

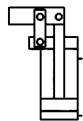


- > piston force: 7,0 - 28,1 kN

No. 6959C

Link clamp

double-acting
max. operating pressure 250 bar,
min. operating pressure 25 bar.



Order no.	Article no.	Clamping force F1 at 100 bar* [kN]	Clamping force F1 at 250 bar* [kN]	Piston force F5 at 100 bar [kN]	Piston force F5 at 250 bar [kN]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Md max. [Nm]	Weight [g]
325563	6959C-12	0,7	1,7	1,1	2,8	1,7	0,9	1,1	0,6	2,4	188
325019	6959C-16	1,2	3,1	2,0	5,0	3,2	1,4	2,0	0,9	3,6	350
324905	6959C-20	1,9	4,9	3,1	7,8	6,0	2,6	3,1	1,4	10,0	590
324657	6959C-25	3,2	8,0	4,9	12,2	10,3	3,7	4,9	1,8	21,0	1155
325589	6959C-32	5,2	12,9	8,0	20,1	21,7	9,5	8,0	3,5	43,0	2125

Sp = clamp, Lo = unclamp

* Clamping force when using standard clamping lever

Design:

Hydraulic cylinder as a drop-in cartridge. Top mounting with four cylinder screws (resistance min. 10.9), these are included in the supply scope. All components from hardened, tempered and burnished steel. Piston rod and hinge pins from hardened steel, tempered and nitrided. Additional bronze wiper for piston rod protection. Supply scope includes hinge pins and tension plates, but not clamping levers. Oil supply via oil channel in fixture body.

Application:

The double-acting link clamp is highly suited to clamping in clamping pockets.

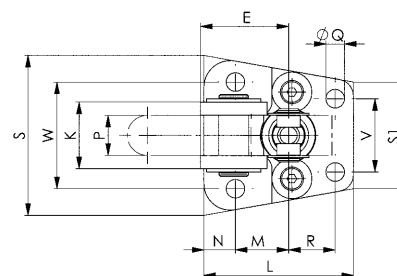
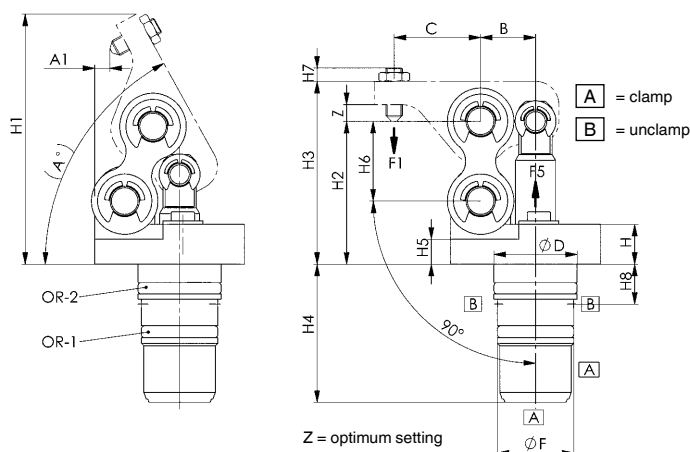
Features:

Small dimensions. Allows close side-by-side positioning. Clamping levers easy to change with link clamps mounted. The clamping lever centre axis and the pressure point on the workpiece are always in one plane at (Z). This prevents relative movement on the workpiece. The integrated cartridge is stepped. This prevents the radial O-rings from becoming damaged as they are installed in or removed from the cross channels.

Note:

With standard levers, the ratio of B to C is 1 to 1.5.

In preparing the blank lever, deviations that cause a higher clamping force F_1 are permitted only in exceptional cases.



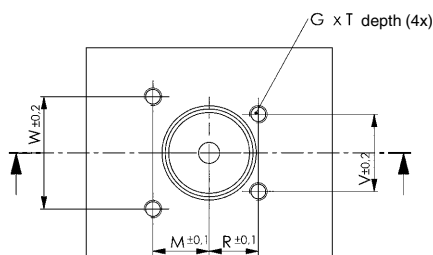
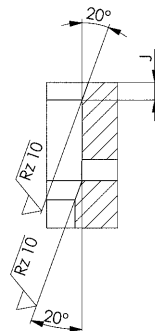
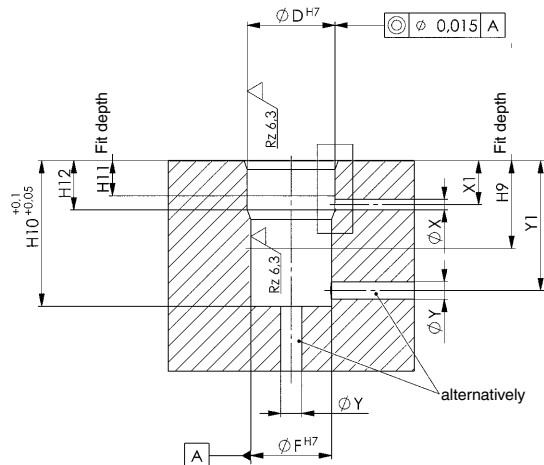
Dimensions:

Order no.	Article no.	A	A1	B	C	dia. D	E	dia. F	H	H1	H2	H3	H4	H5	H6	H7	H8	K	L	M	N	P	R	dia. Q	S	S1	V	W	Z	OR-1 O-ring Order No.	OR-2 O-ring Order No.
325563	6959C-12	60,0°	3,0	13,5	22	20	21,0	17	10,0	58,9	33	41,5	34,0	5,5	18	3,5	11,5	16	37,5	15,0	6,0	10	12,0	4,6	42	28	18	29	4	409953	339572
325019	6959C-16	61,0°	5,6	16,5	26	25	26,5	23	12,0	75,2	43	55,0	41,5	7,5	24	4,0	12,0	20	45,0	16,0	9,5	12	14,0	5,6	48	32	22	32	4	407148	409664
324905	6959C-20	60,8°	5,5	19,5	31	30	30,5	28	14,5	84,8	47	60,0	50,0	9,0	26	7,0	16,5	27	51,5	21,0	9,5	15	16,0	6,5	56	38	28	42	5	321570	490342
324657	6959C-25	54,3°	1,0	24,0	37	38	37,5	35	16,0	106,4	61	66,0	52,5	11,5	34	5,0	17,0	34	65,0	30,5	7,0	20	20,5	8,5	72	46	34	54	5	321018	492728
325589	6959C-32	53,9°	4,2	30,0	45	47	47,5	45	16,0	131,0	75	92,0	62,5	11,5	44	13,0	17,3	42	82,0	38,5	9,0	24	25,5	10,5	87	56	40	65	5	321190	321190

Subject to technical alterations.

Installation dimensions:

Order no.	Article no.	dia. D H7	dia. F H7	G x T	H9	H10	H11	H12	J	M	R	V	W	dia. X	X1	dia. Y	Y1
325563	6959C-12	20	17	M4x12	25	34,0	10	14	2,5	15,0	12,0	18	29	4	11,0-12	6	28-31
325019	6959C-16	25	23	M5x10	25	41,5	10	14	2,5	16,0	14,0	22	32	4	11,5-12	6	27-38
324905	6959C-20	30	28	M6x13	36	50,0	14	20	3,3	21,0	16,0	28	42	4	15,0-18	6	38-47
324657	6959C-25	38	35	M8x16	38	52,5	14	20	2,5	30,5	20,5	34	54	4	13,0-18	6	39-49
325589	6959C-32	47	45	M10x22	46,5	62,5	15	21	2,5	38,5	25,5	40	65	4	13,0-19	6	48-59



Subject to technical alterations.

No. 6959C-xx-30

Clamping arm, standard



CAD

Order no.	Article no.	Clamping force F1 at 100 bar [kN]	Clamping force F1 at 250 bar [kN]	B	C	dia. D	dia. E	G	H	K	L	N	O	P	R	SW1	SW2	Weight [g]
325522	6959C-12-30	0,67	1,7	13,5	22	7	5	50°	4,5	8,5	45,5	20,8	M4	10	5,0	7	2,0	35
325225	6959C-16-30	1,2	3,1	16,5	26	9	7	50°	7,0	12,0	55,5	26,7	M5	12	6,0	8	2,5	70
325233	6959C-20-30	1,9	4,9	19,5	31	10	8	50°	8,0	13,0	65,0	32,4	M6	15	7,5	10	3,0	106
325464	6959C-25-30	3,1	7,9	24,0	37	13	10	45°	10,0	15,0	80,0	37,0	M8	20	6,0	13	4,0	222
325274	6959C-32-30	5,2	12,9	30,0	45	17	13	45°	12,0	17,0	100,0	50,0	M10	24	2x8	17	5,0	395

Design:

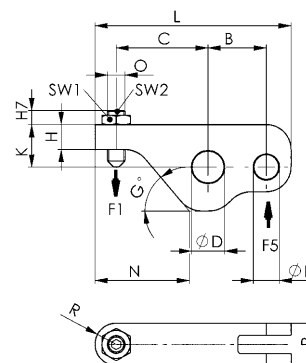
Hardened, tempered and burnished steel. Supply scope includes pressure screw.

Application:

For link clamp 6959C.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.



No. 6959CR-xx-04

Clamping arm, blank



CAD

Order no.	Article no.	B	C	dia. D	dia. E	G	K	L	N	P	Weight [g]
325548	6959CR-12-04	13,5	34,0	7	5	50°	8,5	53,0	30,5	10	41
325035	6959CR-16-04	16,5	42,5	9	7	50°	12,0	66,0	37,2	12	85
324996	6959CR-20-04	19,5	50,0	10	8	50°	13,0	77,5	45,0	15	134
325506	6959CR-25-04	24,0	63,5	13	10	45°	15,0	98,0	57,0	20	272
325258	6959CR-32-04	30,0	76,0	17	13	45°	17,0	120,0	70,0	24	464

Design:

Hardened, tempered and burnished steel.

Application:

For link clamp 6959C.

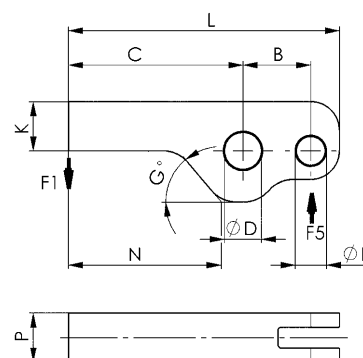
Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.

Formula to determine the clamping force F1:

Clamping force = F1 [kN], piston force = F5 [kN], operating lever = B [mm], load lever = C [mm]

$F1 = F5 \times B / C$



No. 6959C-xx-15-01

Surface-mounted block

with O-ring and threaded connection



Order no.	Article no.	Screws for each size	A	B	C	dia. D	E	F	G	H	K	L	M	N	O	P	R	S	T	dia. U	dia. W	OR-1 O-ring Order No.	Weight [g]
325290	6959C-12-15-01	2x M4x70, 2x M4x65	39,1	50,0	6,0	4,5	27	21,0	G1/8	29	4	50	25	11,5	18	12,0	2,5	1,0	23,0	6	6	321646	505
324632	6959C-16-15-01	2x M5x75, 2x M5x70	44,9	60,0	9,5	5,5	30	25,5	G1/4	32	5	54	30	11,0	22	15,5	3,0	1,0	26,5	6	6	321646	750
324640	6959C-20-15-01	2x M6x85, 2x M6x80	53,0	68,5	9,5	7,0	37	30,5	G1/4	42	5	60	30	13,0	28	20,0	5,0	0,0	32,0	6	6	321646	1100
325480	6959C-25-15-01	2x M8x95, 2x M8x90	69,0	78,0	7,0	8,5	51	37,5	G1/4	54	5	65	31	15,0	34	27,0	8,0	5,0	41,0	6	6	321646	1685
325316	6959C-32-15-01	2x M10x105, 2x M10x110	87,0	92,5	9,0	10,5	64	47,5	G1/4	65	5	75	38	17,5	40	32,5	-	-	52,0	6	6	321646	3050

Design:

Steel, burnished.

Supply scope includes O-ring dia.9x2, threaded plugs and fastening screws.

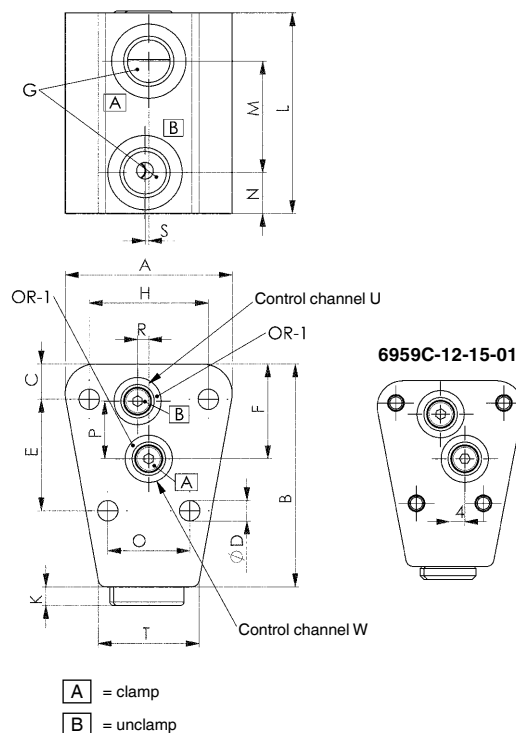
Application:

The surface-mounted block can be flange-mounted as an adapter via the control channels in the fixture. It can also be arranged on the fixture and used there when the control oil supply has to be routed to the link clamps via external lines.

Note:

The flange surface on the fixture must be even for using the O-ring connection and must have a surface finish of Rz 6.3 around the O-ring sealing surface. The flange surface on the fixture must be even for using the threaded connections.

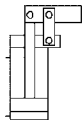
Other lengths available on request.



No. 6959KL

Link Clamp

double-acting
max. operating pressure 350 bar,
min. operating pressure 25 bar.



CAD

Order no.	Article no.	Clamping force at 100 bar * [kN]	Clamping force at 350 bar* [kN]	Piston force at 100 bar [kN]	Piston force at 350 bar [kN]	Stroke [mm]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Md max. [Nm]	Piston rod dia. [mm]	Piston dia. [mm]	Weight [g]
321695	6959KL-160	1,5	5,4	2,0	7,0	17,0	7,4	1,5	2,0	0,9	6,3	12	16	755
322057	6959KL-200	2,4	8,4	3,1	11,0	23,0	7,2	3,2	3,1	1,4	12,0	15	20	1876
321711	6959KL-250	3,8	13,2	4,9	17,2	26,5	13,0	6,3	4,9	2,4	25,0	18	25	2390
322032	6959KL-320	6,2	21,6	8,0	28,1	34,0	27,3	10,7	8,0	3,1	50,0	25	32	5320
322040	6959KL-400	9,7	33,8	12,6	44,0	43,0	54,0	27,6	12,6	6,4	95,0	28	40	8820

Sp = clamp, Lo = unclamp

* Clamping force when using standard clamping lever

Design:

Cylinder housing from hardened steel, tempered. Top mounting with four cylinder screws (resistance min. 12.9), these are included in the supply scope. Pistons and bolts from hardened steel, tempered, ground and nitrided. All parts nickel plated.

Supply scope includes hinge pins and tension plates, but not clamping levers. Oil supply via threaded port or oil channel in fixture body.

Application:

Link clamps are used in clamping fixtures in which workpieces must be freely accessible and loaded from above. Particularly suitable for clamping in clamping pockets.

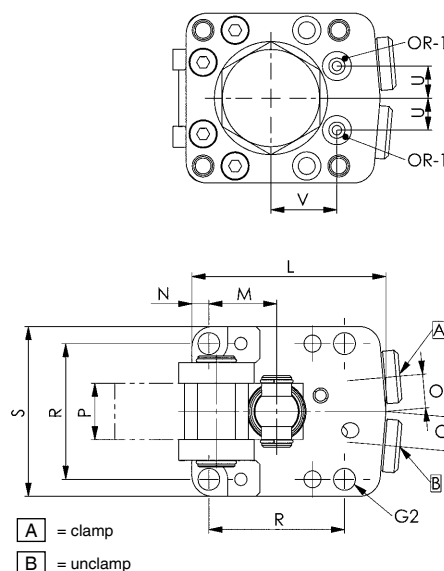
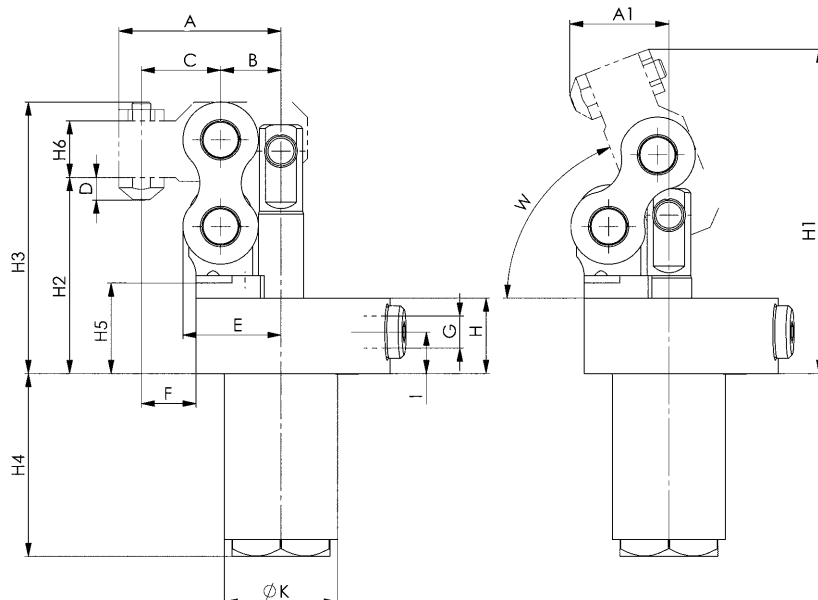
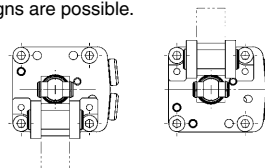
Features:

Top flange version, lever mechanism can be turned in the range of 180° in 90° steps. Special designs are possible.

Note:

Maximum speed of operation 0.5 m/s.

Proximity switch and electrical pressure-point monitoring can be supplied on request.



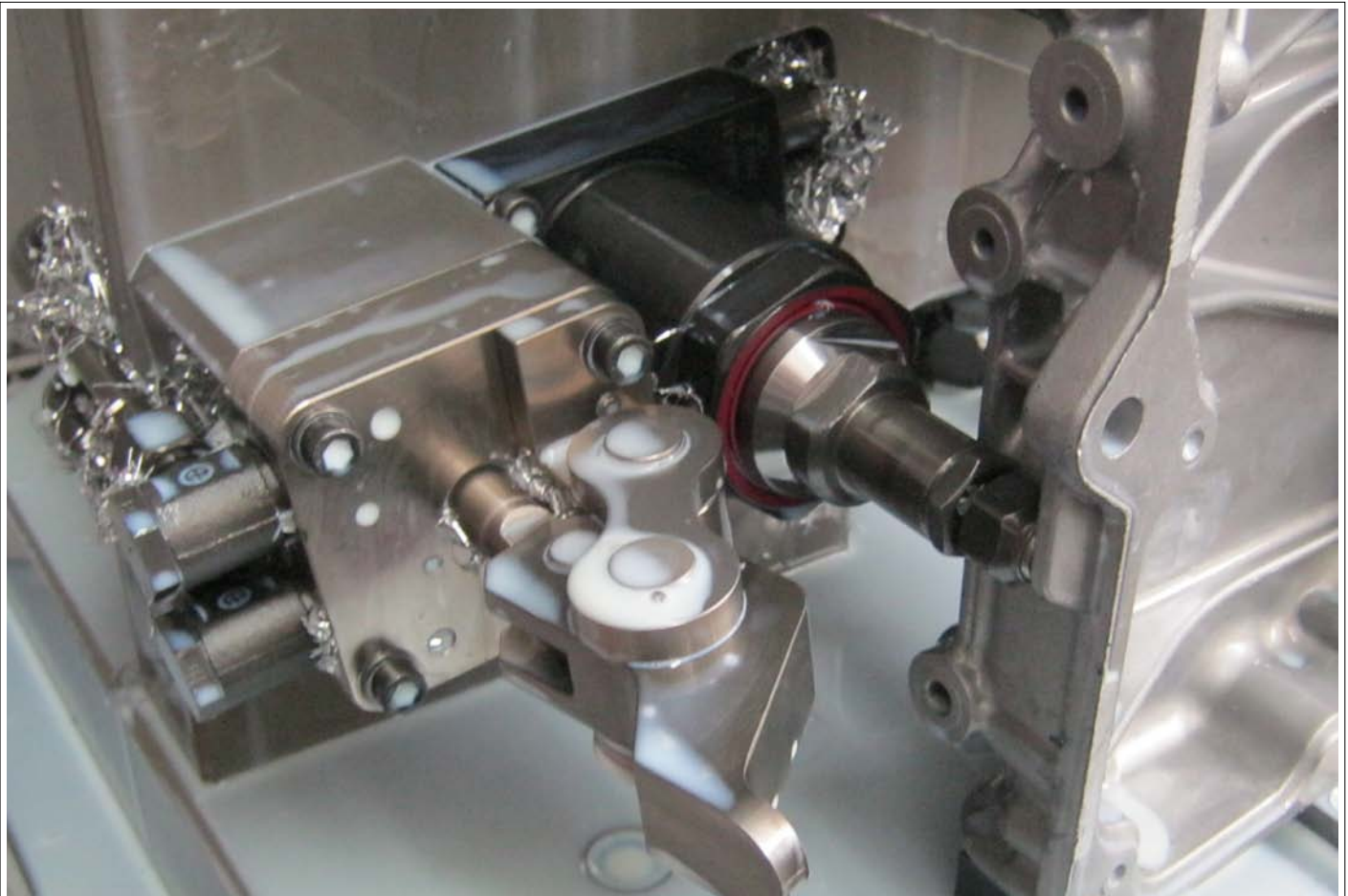
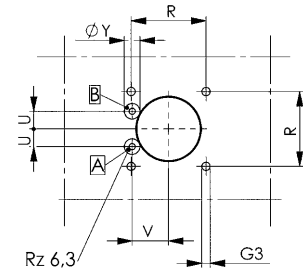
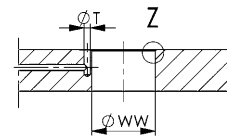
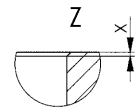
Dimensions:

Order no.	Article no.	A	A1	B	C	D	E	F	G	H	H1	H2	H3	H4	H5	H6	I	dia. K	L	M	N	P	O	R	S	W	ØG2	U	V	OR-1 O-ring Order No.
321695	6959KL-160	43,0	26,3	16,0	21,0	6,0	26,0	14,5	G1/8	20	86,0	52	72	48,5	24	15	11,0	30	51,5	18	4,5	15	9	36	45	68,6°	5,8	8,5	17,5	161802
322057	6959KL-200	56,5	33,0	21,0	27,5	6,0	35,0	13,5	G1/4	26	120,5	72	103	61,5	34	25	14,0	38	70,0	27	8,0	20	14	54	70	74,4°	6,5	15,0	21,5	321646
321711	6959KL-250	63,5	40,3	24,0	31,5	8,0	40,0	18,5	G1/4	27	129,3	75	110	65,0	37	27	14,0	42	74,0	30	7,0	24	14	60	74	73,7°	8,5	16,0	23,5	321646
322032	6959KL-320	82,0	51,0	32,0	42,0	8,0	52,0	24,0	G1/4	35	167,5	103	145	81,5	47	27	15,0	52	100,0	39	11,0	30	14	78	100	70,5°	10,5	16,0	30,0	321646
322040	6959KL-400	101,0	61,5	39,5	51,5	8,0	65,5	28,5	G1/4	35	193,0	113	169	94,5	50	27	17,5	63	125,0	50	12,5	35	18	100	125	72,2°	12,5	18,0	38,0	321646

Subject to technical alterations.

Installation dimensions:

Order no.	Article no.	G3 x depth	R ±0,2	dia. T	U	V	ØWW	X	dia. Y x max. depth
321695	6959KL-160	M5 x 11	36	3,0	8,5	17,5	30,5	0,5 x 45°	8 x 0,1
322057	6959KL-200	M6 x 18	54	5,0	15,0	21,5	38,5	0,5 x 45°	13 x 0,1
321711	6959KL-250	M8 x 16	60	5,0	16,0	23,5	42,5	0,5 x 45°	13 x 0,1
322032	6959KL-320	M10x16	78	5,0	16,0	30,0	52,5	0,5 x 45°	13 x 0,1
322040	6959KL-400	M12x18	100	5,6	18,0	38,0	63,5	0,5 x 45°	13 x 0,1



Subject to technical alterations.

No. 6959KL-xx-30

Clamping arm, standard



CAD

Order no.	Article no.	Clamping force F1 at 100 bar [kN]	Clamping force F1 at 350 bar [kN]	B	C	dia. D	dia. E	H	H1	H2	H3	H4	H5	K	L	P	SW1	SW2	Weight [g]
325241	6959KL-16-30	1,5	5,4	16,0	21,0	10	8	21	15	2	8	3	5	21	50	15	11	11	65
325266	6959KL-20-30	2,4	8,4	21,0	27,5	14	10	31	25	6	15	3	5	31	68	20	11	11	203
325282	6959KL-25-30	3,8	13,2	24,0	31,5	16	12	35	27	6	17	3	8	35	76	24	11	13	286
325308	6959KL-32-30	6,2	21,6	32,0	42,0	20	16	42	27	6	19	3	15	35	95	30	11	13	522
325324	6959KL-40-30	9,7	33,8	39,5	51,5	26	20	52	27	10	27	3	25	35	117	35	11	17	867

Design:

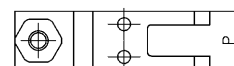
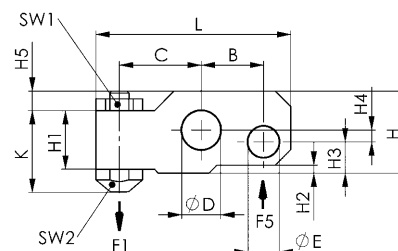
Hardened, tempered and nickel-plated steel. Scope of supply includes pressure screw.

Application:

For link clamp 6959KL.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.



No. 6959KR-xx-04

Clamping arm, blank



CAD

Order no.	Article no.	B	C	dia. D	dia. E	K	H2	H3	H4	L	P	Weight [g]
400267	6959KR-16-04	16,0	34	10	8	21	2	8	3	57,0	15	104
401299	6959KR-20-04	21,0	42	14	10	31	6	15	3	74,5	20	261
400283	6959KR-25-04	24,0	48	16	12	35	6	17	3	84,5	24	399
400309	6959KR-32-04	32,0	64	20	16	42	6	19	3	109,0	30	778
400325	6959KR-40-04	39,5	79	26	20	52	10	27	3	134,5	35	1372

Design:

Hardened, tempered and burnished steel.

Application:

For link clamp 6959KL and 6959KB.

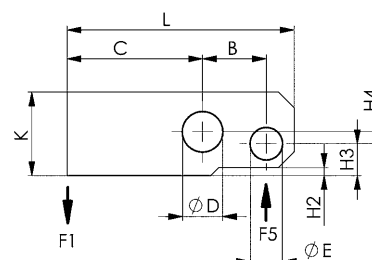
Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.

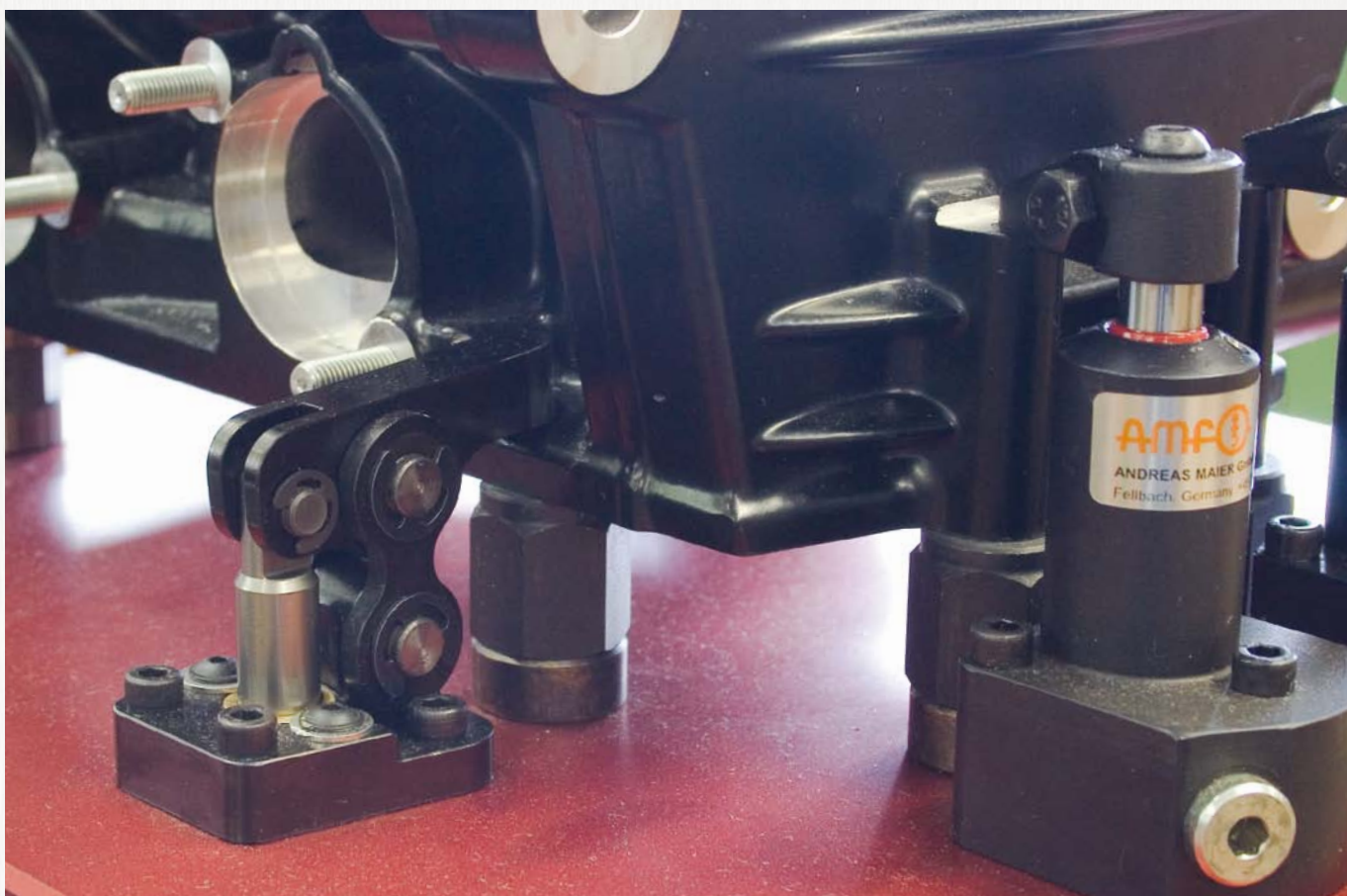
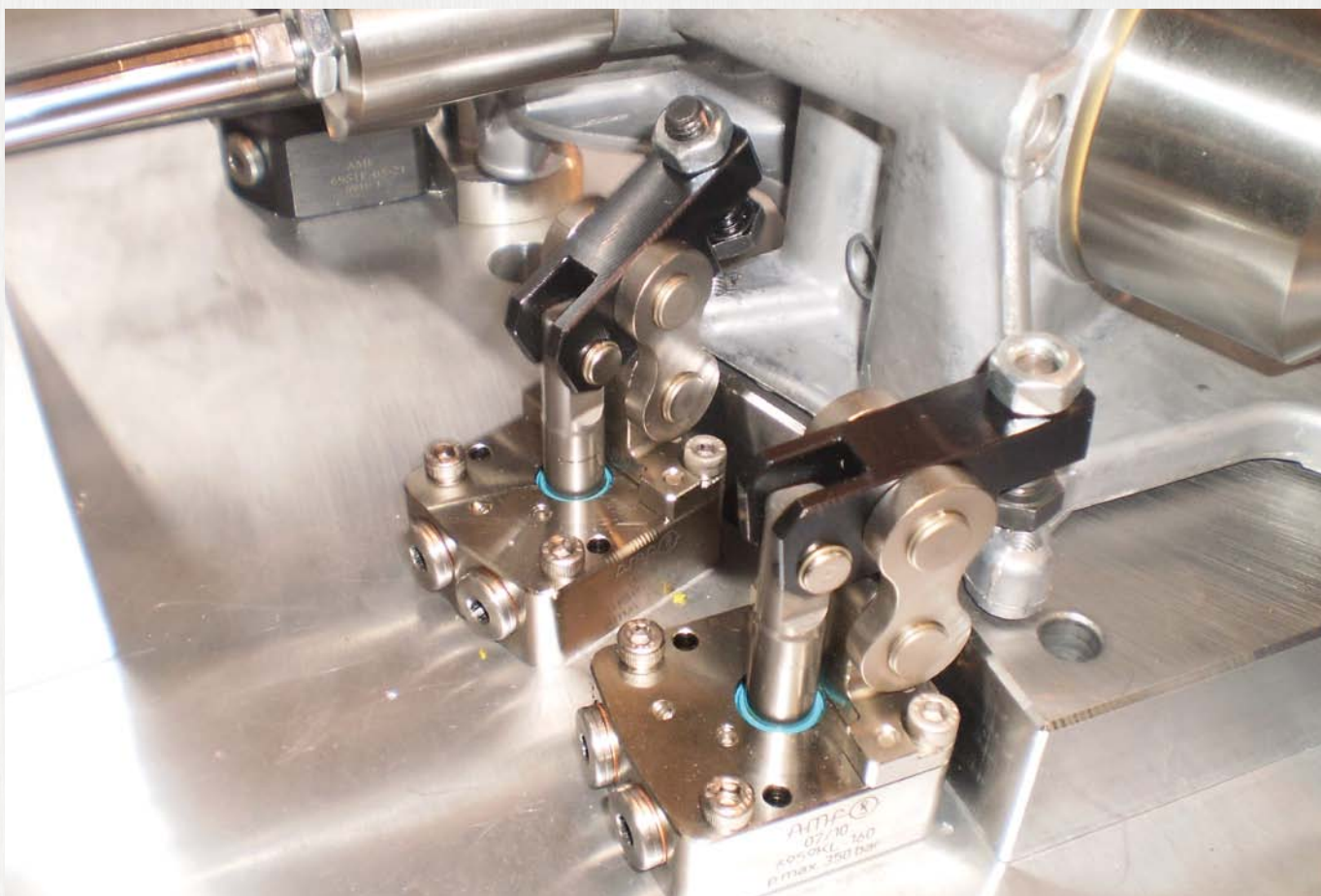
Formula to determine the clamping force F1:

Clamping force = F1 [kN], piston force = F5 [kN], operating lever = B [mm], load lever = C [mm]

$F1 = F5 \times B / C$



Subject to technical alterations.



Subject to technical alterations.

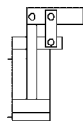
No. 6959KB

Link Clamp

double-acting
max. operating pressure 350 bar,
min. operating pressure 25 bar.



CAD



Order no.	Article no.	Clamping force at 100 bar * [kN]	Clamping force at 350 bar* [kN]	Piston force at 100 bar [kN]	Piston force at 350 bar [kN]	Stroke [mm]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Md max. [Nm]	Piston rod dia. [mm]	Piston dia. [mm]	Weight [g]
554667	6959KB-16	1,5	5,4	2,0	7,0	17,0	7,4	1,5	2,0	0,9	6,3	12	16	755
554668	6959KB-20	2,4	8,4	3,1	11,0	23,0	7,2	3,2	3,1	1,4	12,0	15	20	1876
554669	6959KB-25	3,8	13,2	4,9	17,2	26,5	13,0	6,3	4,9	2,4	25,0	18	25	2390
554670	6959KB-32	6,2	21,6	8,0	28,1	34,0	27,3	10,7	8,0	3,1	50,0	25	32	5320

Sp = clamp, Lo = unclamp

* Clamping force when using standard clamping lever

Design:

Cylinder housing made from tempered steel, tempered and burnished. Top mounting with four cylinder screws (resistance min. 12.9), these are supplied as standard.

Pistons and bolts from hardened steel, tempered, ground and nitrided.

Hinge pins and tension plates are supplied as standard, but not clamping levers. Oil supply via threaded port or oil channel in fixture body.

Application:

Link clamps are used in clamping fixtures in which workpieces must be freely accessible and loaded from above. Particularly suitable for clamping in clamping pockets.

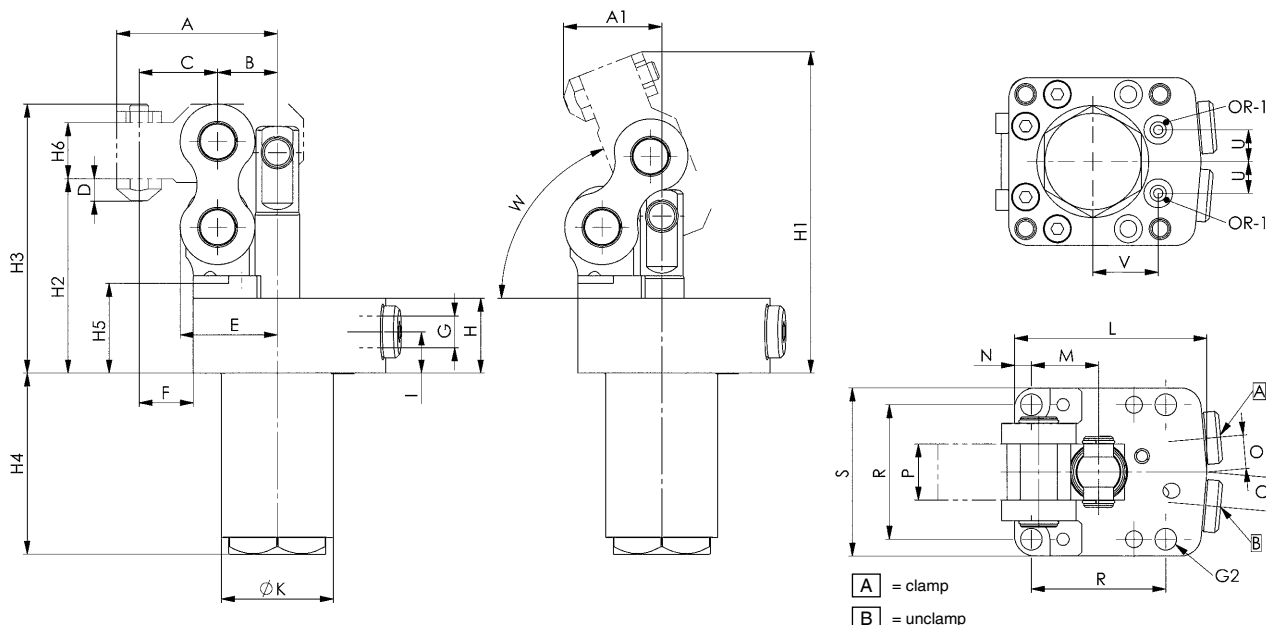
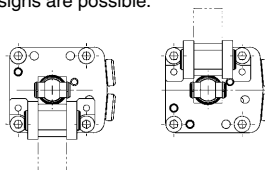
Features:

Top flange version, lever mechanism can be turned in the range of 180° in 90° steps. Special designs are possible.

Note:

Maximum speed of operation 0.5 m/s.

Proximity switch and electrical pressure-point monitoring can be supplied on request.



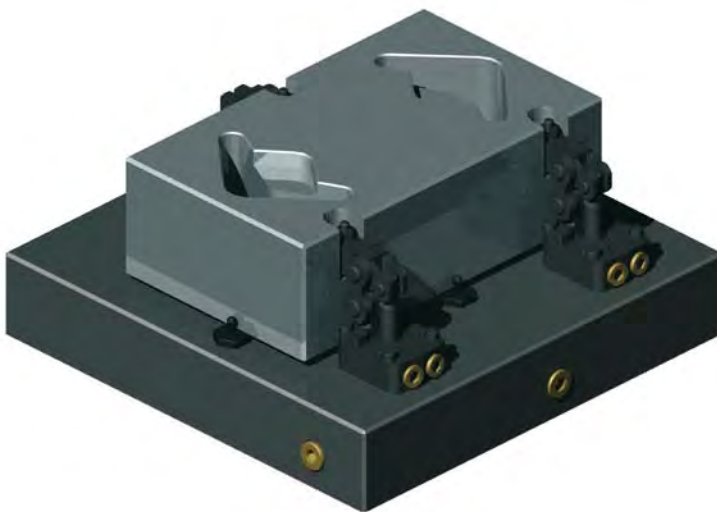
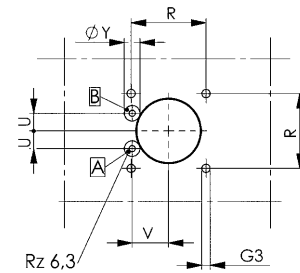
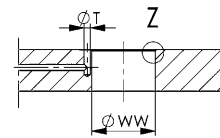
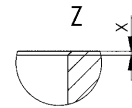
Dimensions:

Order no.	Article no.	A	A1	B	C	D	E	F	G	H	H1	H2	H3	H4	H5	H6	I	dia. K	L	M	N	P	O	R	S	W	ØG2	U	V	OR-1 O-ring Order No.
554667	6959KB-16	43,0	26,3	16,0	21,0	6,0	26,0	14,5	G1/8	20	86,0	52	72	48,5	24	15	11,0	30	51,5	18	4,5	15	9	36	45	68,6°	5,8	8,5	17,5	161802
554668	6959KB-20	56,5	33,0	21,0	27,5	6,0	35,0	13,5	G1/4	26	120,5	72	103	61,5	34	25	14,0	38	70,0	27	8,0	20	14	54	70	74,4°	6,5	15,0	21,5	321646
554669	6959KB-25	63,5	40,3	24,0	31,5	8,0	40,0	18,5	G1/4	27	129,3	75	110	65,0	37	27	14,0	42	74,0	30	7,0	24	14	60	74	73,7°	8,5	16,0	23,5	321646
554670	6959KB-32	82,0	51,0	32,0	42,0	8,0	52,0	24,0	G1/4	35	167,5	103	145	81,5	47	27	15,0	52	100,0	39	11,0	30	14	78	100	70,5°	10,5	16,0	30,0	321646

Subject to technical alterations.

Installation dimensions:

Order no.	Article no.	G3 x depth	R ±0,2	dia. T	U	V	ØWW	X	dia. Y x max. depth
554667	6959KB-16	M5 x 11	36	3,0	8,5	17,5	30,5	0,5 x 45°	8 x 0,1
554668	6959KB-20	M6 x 18	54	5,0	15,0	21,5	38,5	0,5 x 45°	13 x 0,1
554669	6959KB-25	M8 x 16	60	5,0	16,0	23,5	42,5	0,5 x 45°	13 x 0,1
554670	6959KB-32	M10 x 16	78	5,0	16,0	30,0	52,5	0,5 x 45°	13 x 0,1



Subject to technical alterations.

No. 6959KB-xx-30

Clamping arm, standard



CAD

Order no.	Article no.	Clamping force F1 at 100 bar [kN]	Clamping force F1 at 350 bar [kN]	B	C	dia. D	dia. E	H	H1	H2	H3	H4	H5	K	L	P	SW1	SW2	Weight [g]
554671	6959KB-16-30	1,5	5,4	16,0	21,0	10	8	21	15	2	8	3	5	21	50	15	11	11	65
554673	6959KB-20-30	2,4	8,4	21,0	27,5	14	10	31	25	6	15	3	5	31	68	20	11	11	203
554674	6959KB-25-30	3,8	13,2	24,0	31,5	16	12	35	27	6	17	3	8	35	76	24	11	13	286
554675	6959KB-32-30	6,2	21,6	32,0	42,0	20	16	42	27	6	19	3	15	35	95	30	11	13	522

Design:

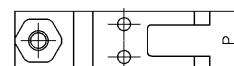
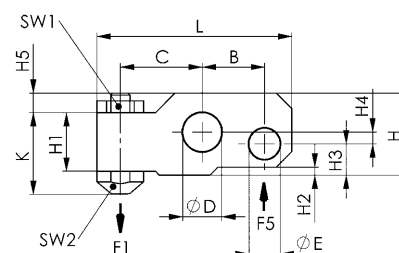
Tempered steel, tempered and burnished. Scope of supply includes pressure screw.

Application:

For link clamp 6959KB.

Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.



No. 6959KR-xx-04

Clamping arm, blank



CAD

Order no.	Article no.	B	C	dia. D	dia. E	K	H2	H3	H4	L	P	Weight [g]
400267	6959KR-16-04	16,0	34	10	8	21	2	8	3	57,0	15	104
401299	6959KR-20-04	21,0	42	14	10	31	6	15	3	74,5	20	261
400283	6959KR-25-04	24,0	48	16	12	35	6	17	3	84,5	24	399
400309	6959KR-32-04	32,0	64	20	16	42	6	19	3	109,0	30	778
400325	6959KR-40-04	39,5	79	26	20	52	10	27	3	134,5	35	1372

Design:

Hardened, tempered and burnished steel.

Application:

For link clamp 6959KL and 6959KB.

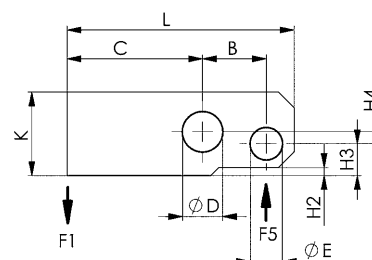
Note:

Clamping pressure, leverage, flow volume and clamp arm weight must always be observed.

Formula to determine the clamping force F1:

Clamping force = F1 [kN], piston force = F5 [kN], operating lever = B [mm], load lever = C [mm]

$F1 = F5 \times B / C$



Subject to technical alterations.

TOGGLE JOINT CLAMPS FOR UNIVERSAL USE

- > operating pressure 250 bar
- > hardened and chrome-plated piston rod
- > heat-treated bolts
- > PTFE bearings
- > safe clamping or locking by clamp moving beyond deadcentre
- > oil supply via threaded port

At continuous pressures below 80 bar, this must be stated on ordering as a different seal combination may need to be selected.

PRODUCT OVERVIEW:

Type	Clamping height [mm]	Clamping force [kN]	No. of models	Operating mode
6960C	57 - 86	6 - 22,7	3	double acting

PRODUCT EXAMPLE:

NO. 6960C

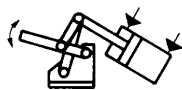


- > clamping force: 6 - 22,7 kN
- > connection type: threaded port
- > available upon request

No. 6960C

Toggle joint clamp, hydraulic

double acting,
max. operating pressure 250 bar.



CAD

Order no.	Article no.	Clamping force* F1=F3 [kN]	Clamping force* F2=F5 [kN]	Clamping force* F5 [kN]	p max. [bar]	pD max. ** [bar]	Cylinder stroke [mm]	Piston area A1 [cm ²]	Piston ring-surface A2 [cm ²]	Oil capacity forward [cm ³]	Oil capacity backward [cm ³]	Weight [g]
66647	6960C-4	6	9	3	100	250	80	3,14	2,0	25	15	5400
66654	6960C-6	12	18	5	100	250	90	4,90	2,9	44	26	9600
66662	6960C-8	18	27	8	100	250	120	8,00	4,9	96	59	18900

* at p max. or pD max.

** pD = pressure during differential switching

Design:

Hardened steel, burnished, with hydraulic cylinder mounted ready for connection to standard double circuit (see circuit Fig. 1) or differential circuit (see circuit Fig. 2). Oil supply via threaded port.

Application:

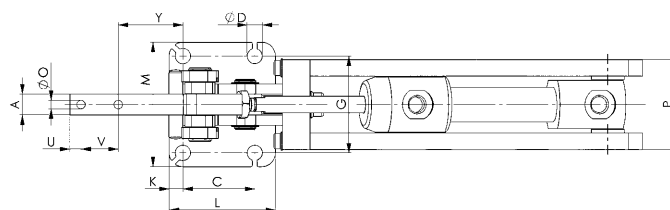
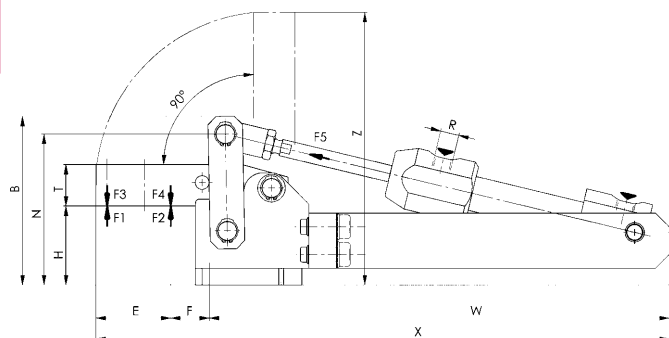
The clamp is particularly suitable for use in transfer and special-purpose machines. Any thrust pieces can be attached to the sturdy holding arm. With the differential circuit (see Fig. 2 below) the differential piston area A2 of the cylinder is directly connected to P of the pressure generator, while the full piston area is connected by a 3/2-way seat valve.

Features:

The clamp, of machine quality, is maintenance-free thanks to its tempered and ground shafts which run in Teflon bearings. As a result of the hydraulic cylinder operation the possible clamping force is the same as the permissible holding force. The large aperture enables unhindered workpiece handling.

Note:

Please urgently observe the maximum pressure values in the table above.



Dimensions:

Order no.	Article no.	Piston dia. [mm]	Piston rod dia. [mm]	A	B	C	dia. D	E	F	G	H	K	L	M	N	dia. O	P	R	S	T	U	V	W	X	Y	Z
66647	6960C-4	20	12	15	122	52	11	54	20	70	57	10,0	77,0	90	109	6,2	65	G1/4	38	30	8	27	308,0	415,0	47,0	197
66654	6960C-6	25	16	20	147	55	11	60	21	83	61	11,0	85,0	105	129	8,2	81	G1/4	41	40	12	26	353,0	466,5	52,5	216
66662	6960C-8	32	20	30	196	80	13	95	22	111	86	12,5	112,5	136	176	13,2	94	G1/4	46	60	18	40	423,5	576,0	69,5	309

Hydraulic diagrams:

Switching position a = clamp
Switching position b = unclamp

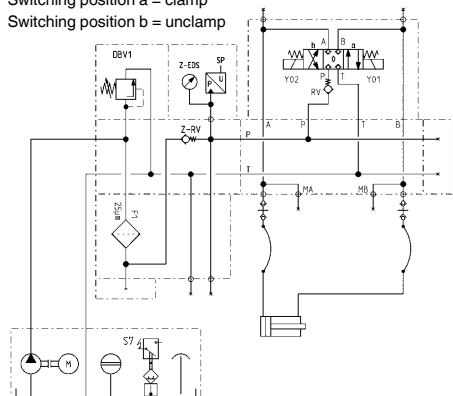


fig. 1

Switching position 0 = clamp with differential switching
Switching position a = unclamp

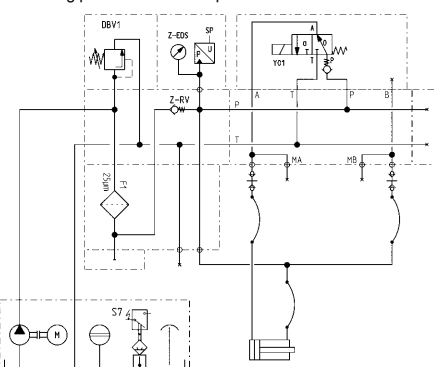


fig. 2

Subject to technical alterations.