SWING CLAMPS – THE SOLUTION FOR COST-EFFECTIVE HYDRAULIC CLAMPING OF WORKPIECES!

DESIGN:

Burnished body, hardened and ground piston rod. Swing clamps are delivered without clamping arm.

APPLICATION:

Swing clamps are used in fixtures of all kinds, especially in applications where workpieces must be freely accessible and loaded from above. Workpieces with complex geometries can be clamped using special clamping arms (available upon request).

FEATURES:

Design variants: > **thread flange**

The swing motion is realized by a patented ball-guide mechanism. Standard swivel angle is 90°.

The newly designed clamping-arm mount prevents the induction of forces into the swing mechanism during assembly.

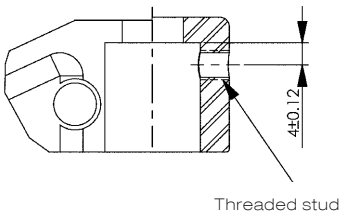
IMPORTANT NOTE:

Clamping arm length, max. permissible flow rate Q max. and clamping arm weight must be observed! In case of a larger flow rates, a throttle/check valve must be connected upstream.

The motion of the swing clamp must not be obstructed. Clamping must only be done in the vertical stroke area.

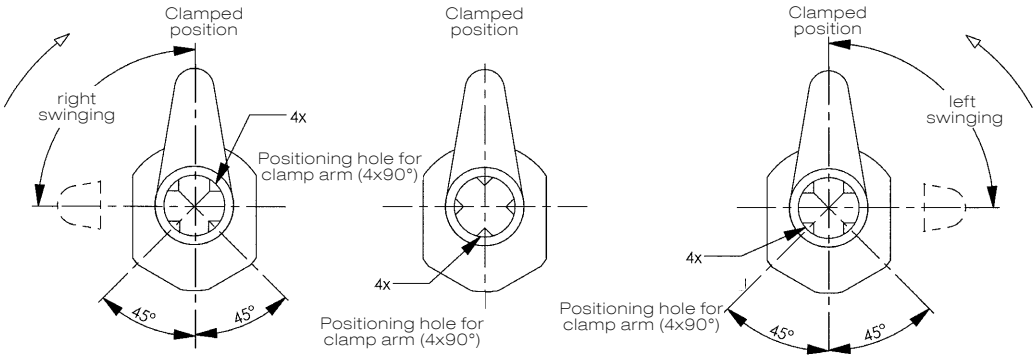
POSITIONING:

Positioning hole for clamp arm 6951G:



SWING DIRECTIONS:

Positioning hole for clamp arm:



CODE OF TYPES:

Type 11 = single acting, right swinging
Type 12 = single acting, left swinging

Type 21 = double acting, right swinging
Type22 = double acting, left swinging

Type 210 = double acting, right swinging, extended stroke
Type 220 = double acting, left swinging, extended stroke

CLAMPING TIME AND Q OF THE SWING CLAMP 6951G

	Clamp arm, standard		Clamp arm, long	
Swing clamp clamping force [kN]	Min. allowed clamping time [sec.]	Q max. [l/min.]	Min. allowed clamping time [sec.]	Q max. [l/min.]
2	0,4	0,138	0,9	0,061
5	0,6	0,382	1,2	0,191
11	0,6	1,19	1,4	0,51

Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

SWING CLAMPS FOR DEMANDING CLAMPING APPLICATIONS

> clamping force 2 bis 11 kN
> operating pressure 350 bar
> easy change of swing direction (version 2 - 11 kN)
> hardened piston rod
> nitrided body
> oil supply via threaded port
> optimal size-to-clamping-force ratio

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 force [kN]	Clamping stroke [mm]	Total stroke [mm]	Threaded flange	Operating mode
6951G	2	6,0	14,5	●	single or double-acting
6951G	5	8,0 19,0	20,0 31,0	●	single or double-acting
6951G	11	13,0 34,0	29,5 51,0	●	single or double-acting

PRODUCT EXAMPLES:

NO. 6951G

> piston tensile force: 2,2 - 13,9 kN
> connection type: threaded port

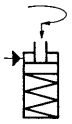
NO. 6951G

> piston tensile force: 2,2 - 13,9 kN
> connection type: threaded port

No. 6951G

Swing Clamp, thread-flange-mounting

Single-acting, with spring return,
max. operating pressure 350 bar,
min. operating pressure 52 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping stroke M [mm]	Total stroke N [mm]	Vol. Sp [cm³]	eff. piston area Sp [cm²]	Q max. [l/min]	Weight [g]
68619	6951G-02-11	2	6	14,5	0,92	0,63	0,165	308
68635	6951G-02-12	2	6	14,5	0,92	0,63	0,165	308
68692	6951G-05-11	5	8	20,0	3,82	1,90	0,400	771
68718	6951G-05-12	5	8	20,0	3,82	1,90	0,400	771
68429	6951G-11-11	11	13	29,5	11,90	4,04	1,640	1424
68445	6951G-11-12	11	13	29,5	11,90	4,04	1,640	1424

Sp = clamp, Lo = unclamp
* Clamping forces with short clamping arm.

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod case hardened and chrome plated. Piston rod with internal thread and clamping arm positioning. Wiper at piston rod. Single acting version with return spring from stainless steel. Supply scope does not include clamping arm. Oil supply via threaded port.

Application:

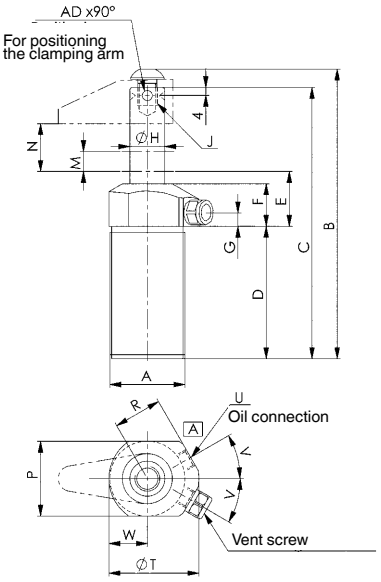
Swing clamps are used particularly in fixtures in which the workpiece must be freely accessible and placed from above. Workpieces with difficult shapes can also be clamped using special clamp arms (available on request).

Features:

Each cylinder size is available for single or double-acting operation. The swing motion employs a patented ball guide mechanism.

Note:

The piston is guided, and so the max. permissable oil flow rate Q max. as well as the clamping arm length and weight must be observed. When mounting accessories at the piston, no force may be applied to the piston. For single-acting cylinders, there is risk of sucking in coolant through the breather port. In such cases the breather port has to be moved to a clean protected area via a connection line. When installing, ensure that all air is bled from the system. Grooved nuts DIN 70852 can also be used for attachment.
Other swivel angles are available on request.



A = clamp

Dimensions:

Order no.	Article no.	A	B	C	D	E	F	G	dia. H	J	P	R	dia. T	U	V	W	AD
68619	6951G-02-11	M28x1,5	108,0	102,0	44,0	30,5	25,5	13	11,13	M6	32,0	20,5	38,0	G1/8	25°	14,0	3,2
68635	6951G-02-12	M28x1,5	108,0	102,0	44,0	30,5	25,5	13	11,13	M6	32,0	20,5	38,0	G1/8	25°	14,0	3,2
68692	6951G-05-11	M38x1,5	143,0	134,0	60,0	36,0	31,0	13	15,88	M10	38,0	26,0	47,5	G1/8	35°	19,5	4,8
68718	6951G-05-12	M38x1,5	143,0	134,0	60,0	36,0	31,0	13	15,88	M10	38,0	26,0	47,5	G1/8	35°	19,5	4,8
68429	6951G-11-11	M48x1,5	185,0	172,0	79,0	38,0	32,0	13	22,23	M12	47,5	31,5	60,0	G1/4	30°	25,5	4,8
68445	6951G-11-12	M48x1,5	185,0	172,0	79,0	38,0	32,0	13	22,23	M12	47,5	31,5	60,0	G1/4	30°	25,5	4,8

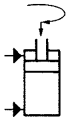
Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

No. 6951G

Swing Clamp, thread-flange-mounting

Double-acting,
max. operating pressure 350 bar,
min. operating pressure 35 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping force at 350 bar Lo* [kN]	Clamping stroke M [mm]	Total stroke N [mm]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Q max. [l/min]	Weight [g]
68650	6951G-02-21	2	5,6	6	14,5	0,92	2,3	0,63	1,60	0,165	300
68676	6951G-02-22	2	5,6	6	14,5	0,92	2,3	0,63	1,60	0,165	300
68734	6951G-05-21	5	13,5	8	20,0	3,82	7,8	1,90	3,88	0,400	744
68759	6951G-05-22	5	13,5	8	20,0	3,82	7,8	1,90	3,88	0,400	744
68452	6951G-05-210	5	13,5	19	31,0	5,90	11,9	1,90	3,88	0,400	850
68478	6951G-05-220	5	13,5	19	31,0	5,90	11,9	1,90	3,88	0,400	850
68460	6951G-11-21	11	27,7	13	29,5	11,90	23,0	4,04	7,92	1,640	1379
68486	6951G-11-22	11	27,7	13	29,5	11,90	23,0	4,04	7,92	1,640	1379
68502	6951G-11-210	11	27,7	34	51,0	20,50	40,0	4,04	7,92	1,640	1941
68627	6951G-11-220	11	27,7	34	51,0	20,50	40,0	4,04	7,92	1,640	1941

Sp = clamp, Lo = unclamp
* Clamping forces with short clamping arm.

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod hardened and chrome plated. Piston rod with internal thread and clamping arm positioning. Wiper at piston rod. Single acting version with return spring from stainless steel. Supply scope does not include clamping arm. Oil supply via threaded port.

Application:

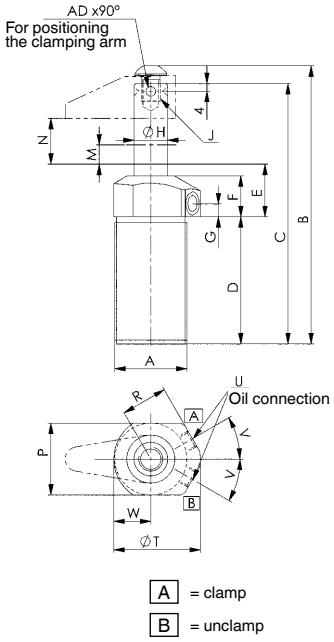
Swing clamps are used particularly in fixtures in which the workpiece must be freely accessible and placed from above. Workpieces with difficult shapes can also be clamped using special clamp arms (available on request).

Features:

Each cylinder size is available for single or double-acting operation. The swing motion employs a patented ball guide mechanism.

Note:

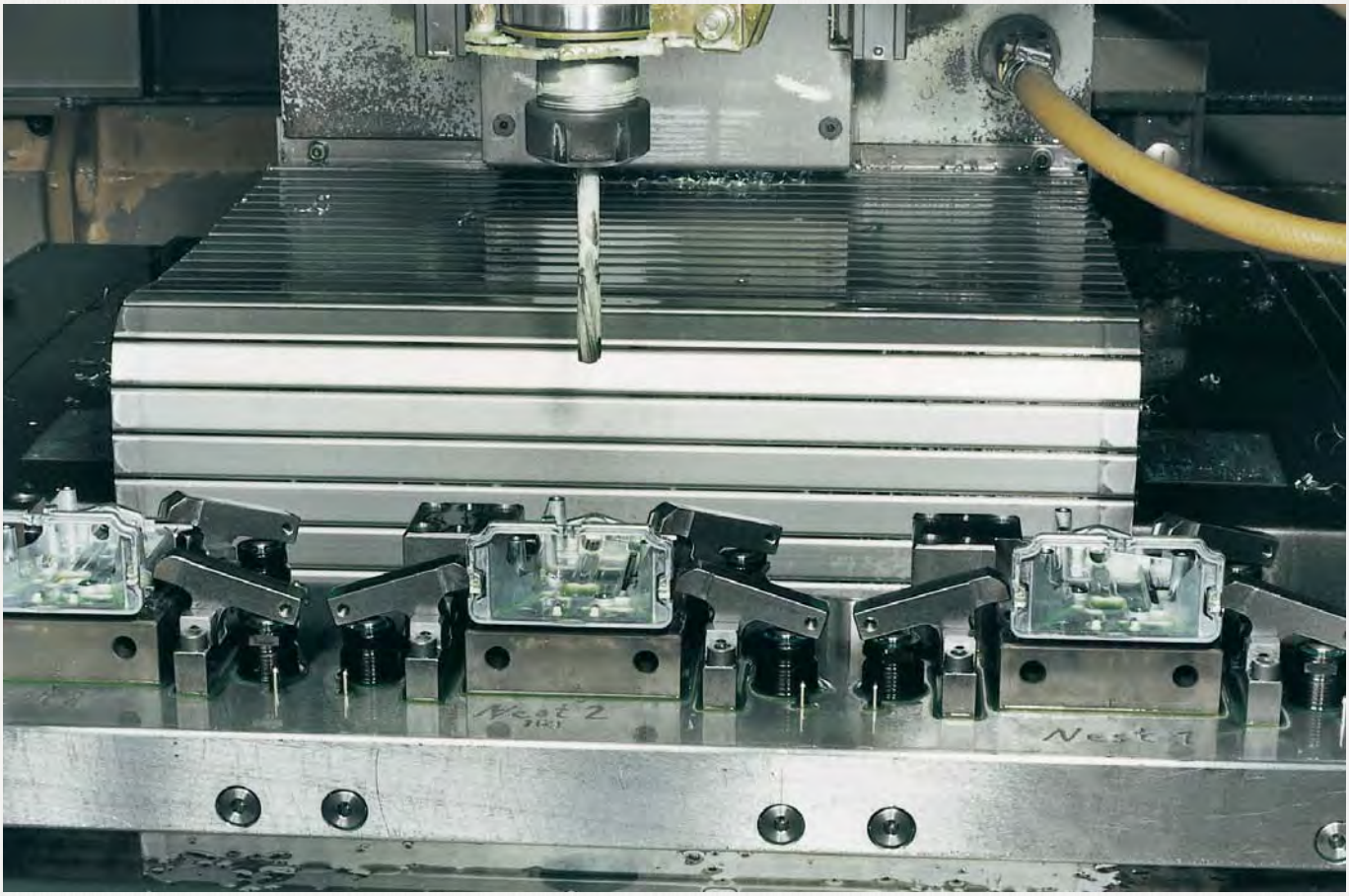
The piston is guided, and so the max. permissable oil flow rate Q max. as well as the clamping arm length and weight must be observed. When mounting accessories at the piston, no force may be applied to the piston. For single-acting cylinders, there is risk of sucking in coolant through the breather port. In such cases the breather port has to be moved to a clean protected area via a connection line. When installing, ensure that all air is bled from the system. Grooved nuts DIN 70852 can also be used for attachment.
Other swivel angles are available on request.

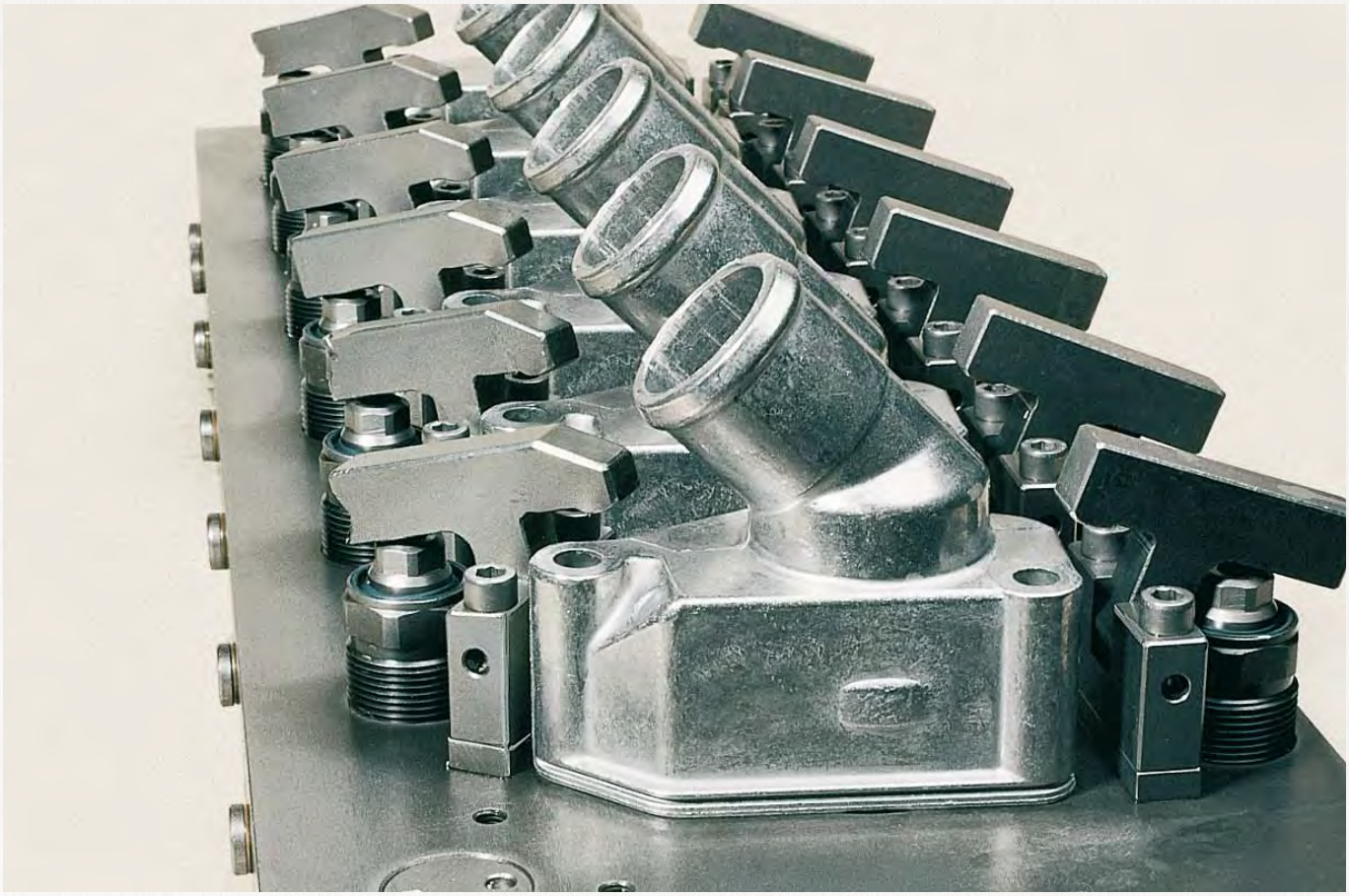


Dimensions:

Order no.	Article no.	A	B	C	D	E	F	G	dia. H	J	P	R	dia. T	U	V	W	AD
68650	6951G-02-21	M28x1,5	108,0	102,0	44,0	30,5	25,5	13	11,13	M6	32,0	20,5	38,0	G1/8	25°	14,0	3,2
68676	6951G-02-22	M28x1,5	108,0	102,0	44,0	30,5	25,5	13	11,13	M6	32,0	20,5	38,0	G1/8	25°	14,0	3,2
68734	6951G-05-21	M38x1,5	143,0	134,0	60,0	36,0	31,0	13	15,88	M10	38,0	26,0	47,5	G1/8	35°	19,5	4,8
68759	6951G-05-22	M38x1,5	143,0	134,0	60,0	36,0	31,0	13	15,88	M10	38,0	26,0	47,5	G1/8	35°	19,5	4,8
68452	6951G-05-210	M38x1,5	176,5	167,0	82,5	35,5	31,0	13	15,88	M10	38,0	26,0	47,5	G1/8	35°	19,5	4,8
68478	6951G-05-220	M38x1,5	176,5	167,0	82,5	35,5	31,0	13	15,88	M10	38,0	26,0	47,5	G1/8	35°	19,5	4,8
68460	6951G-11-21	M48x1,5	185,0	172,0	79,0	38,0	32,0	13	22,23	M12	47,5	31,5	60,0	G1/4	30°	25,5	4,8
68486	6951G-11-22	M48x1,5	185,0	172,0	79,0	38,0	32,0	13	22,23	M12	47,5	31,5	60,0	G1/4	30°	25,5	4,8
68502	6951G-11-210	M48x1,5	249,0	235,5	121,5	38,0	32,0	13	22,23	M12	47,5	31,5	60,0	G1/4	30°	25,5	4,8
68627	6951G-11-220	M48x1,5	249,0	235,5	121,5	38,0	32,0	13	22,23	M12	47,5	31,5	60,0	G1/4	30°	25,5	4,8

Subject to technical alterations.





Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

SWING CLAMPS FOR DEMANDING CLAMPING APPLICATIONS

> clamping force 2,0 to 33 kN
> operating pressure 350 bar
> precise swivel angle of 90°
> hardened piston rod
> nitrided body
> oil supply via threaded port and/or O-ring-sealed ports
> optimal size-to-clamping-force ratio
> position-repeatable clamping arm mounting

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 force [kN]	Clamping stroke [mm]	Total stroke [mm]	Top flange	Base flange	Cartridge flange	Plug-in mounting	Operating mode
6952EP	2	6,0	14,5	-	-	●	-	double acting
6952CP	6 - 15	12 - 15	23 - 30	-	-	-	●	double acting
6951FP 6951KP	2,0	5,5	14,5	●	●	-	-	single or double-acting
6951FP 6951KP	4,9	8,0	20,0	●	●	-	-	single or double-acting
6951FP 6951KP	11,6	13,0	29,5	●	●	-	-	single or double-acting
6951FP 6951KP	22,0	14,5 32,0	28,0 45,5	●	●	-	-	single or double-acting double acting
6951FP 6951KP	33,0	16,0 32,0	30,0 46,0	●	●	-	-	single or double-acting double acting

PRODUCT EXAMPLES:

NO. 6952EP

> piston tensile force: 2,0 kN
> connection type: drilled oil channels

NO. 6952CP

> piston tensile force: 6,0 - 15 kN
> connection type: drilled oil channels

NO. 6951FP AND 6951KP

> piston tensile force: 2,0 - 33 kN
> connection type: O-ring or threaded port

SWING CLAMPS – THE SOLUTION FOR COST-EFFECTIVE HYDRAULIC CLAMPING OF WORKPIECES!

DESIGN:

Burnished body, hardened and ground piston rod. Swing clamps are delivered without clamping arm.

APPLICATION:

Swing clamps are used in fixtures of all kinds, especially in applications where workpieces must be freely accessible and loaded from above. Workpieces with complex geometries can be clamped using special clamping arms (available upon request).

FEATURES:

Design variants: > **top flange** > **base flange** > **cartridge flange** > **plug-in mounting**

Top and base-flange models accommodate O-ring as well as threaded hydraulic connections.

There are also designs for drilled oil channels. The swing motion is realized by a rigid 3-way ball-guide mechanism.

Standard swivel angle is 90°. The newly designed clamping-arm mount prevents the induction of forces into the swing mechanism during assembly.

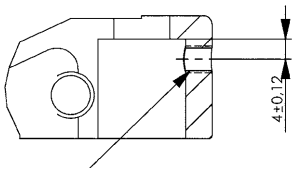
IMPORTANT NOTE:

Clamping arm length, max. permissible flow rate Q max. and clamping arm weight must be observed! In case of a larger flow rates, a throttle/check valve must be connected upstream.

The motion of the swing clamp must not be obstructed. Clamping must only be done in the vertical stroke area.

POSITIONING:

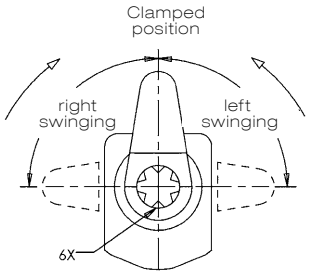
Positioning hole for clamp arm:



Threaded stud

SWING DIRECTIONS:

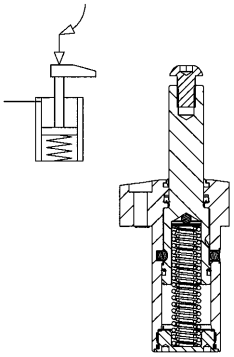
Positioning hole for clamp arm:



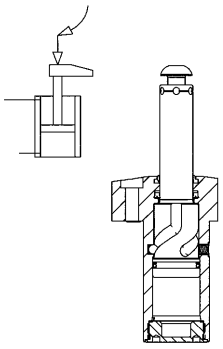
Positioning hole for clamp arm (6x60°)

DESIGNS:

Single acting cylinder



Double acting cylinder

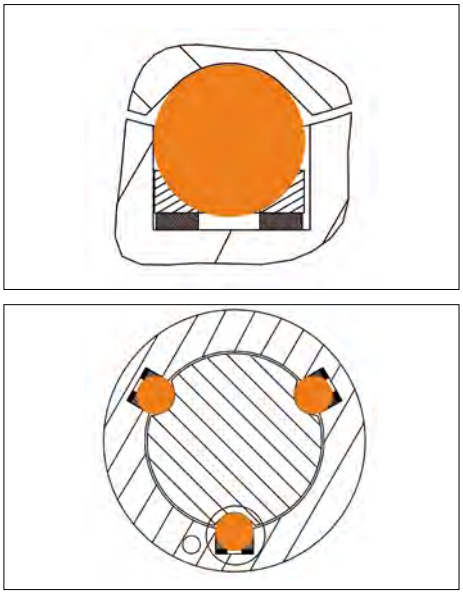


Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

BENEFITS:

- Increase in the number of balls and grooves to 3 to achieve a higher positioning accuracy and repetition accuracy. This also extends the service life.
- Precise swivel angle of 90°.
- Increases pressing force of the balls in the swivel slot, which ensures a very precise swivel angle over a long period of use.
- Improved radius transition from straight to swivel stroke.
- The simple-acting models receive a stronger spring force to ensure a better return stroke.
- In addition, all models receive a position-repeatable clamping arm mounting.
- New materials for extending the service life of piston rod and swivel mechanism.



CODE OF TYPES:

Type 11 = single acting, right swinging
Type 12 = single acting, left swinging
Type 21 = double acting, right swinging
Type 22 = double acting, left swinging

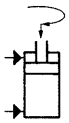
CLAMPING TIME AND Q OF THE SWING CLAMPS 6951EP, 6951CP, 6952FP, 6952KP

	Clamp arm, standard		Clamp arm, long		
Swing clamp clamping force [kN]	Min. allowed clamping time [sec.]	Q max. [l/min.]	Min. allowed clamping time [sec.]	Q max. [l/min.]	Clamping arm length [mm]
2,0	0,20	0,276	0,50	0,1100	82,5
4,9	0,30	0,764	0,70	0,327	136,5
6,0	0,35	1,000	1,10	0,300	136,0
8,0	0,32	1,300	1,18	0,470	145,0
11,6	0,40	1,785	0,80	0,893	162,0
15,0	0,49	2,500	1,36	1,250	160,0

No. 6952EP

Swing clamp, cartridge flange, precision design

double acting,
max. operating pressure 350 bar,
min. operating pressure 40 bar.



NEW!

CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Md max. [Nm]	Clamping stroke M [mm]	Total stroke N [mm]	Q max. * [l/min]	Weight [g]
554491	6952EP-02-21	2	0,92	2,46	0,63	1,7	100	6	14,5	0,165	370
554492	6952EP-02-22	2	0,92	2,46	0,63	1,7	100	6	14,5	0,165	370

Sp = clamping, Lo = unclamp
* Specifications with clamping arm, standard

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod case hardened and chrome plated. Piston rod with internal thread. Wiper at piston rod. Supply scope does not include clamping arm. Oil supply via oil channel in fixture body.

Application:

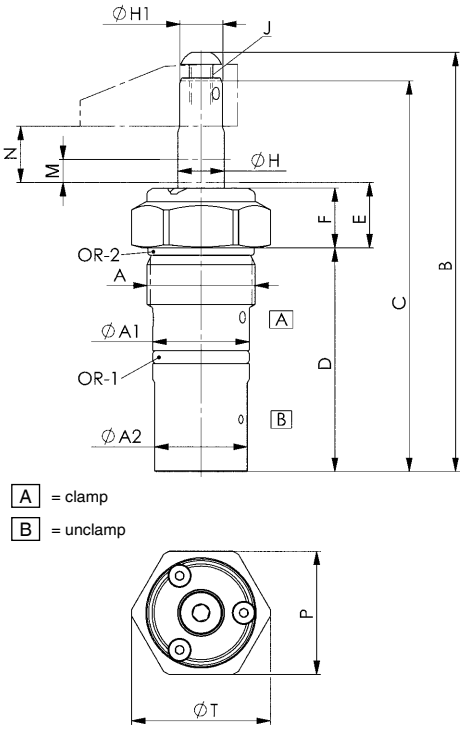
The swing clamp is used particularly in fixtures in which the workpieces must be freely accessible and placed from above. Workpieces with dedicated shapes can also be clamped using special clamp arms (available on request).

Features:

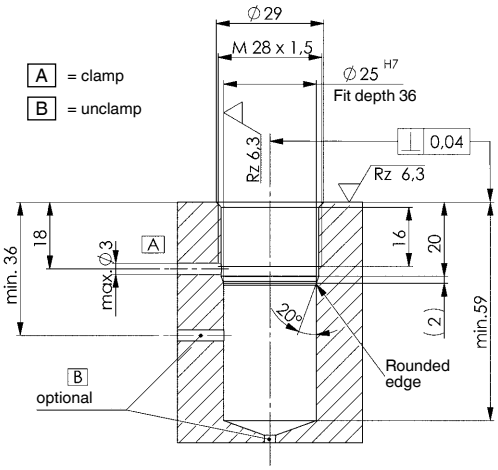
The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

Note:

The piston stoke is executed with spheres, so volume flow Q max. must be complied with. Clamping arm length and clamping arm weight must be strictly observed. No force may be applied to the piston when mounting accessories to it. When placing into operation, ensure that all air is bled from the system.



Installation dimensions:

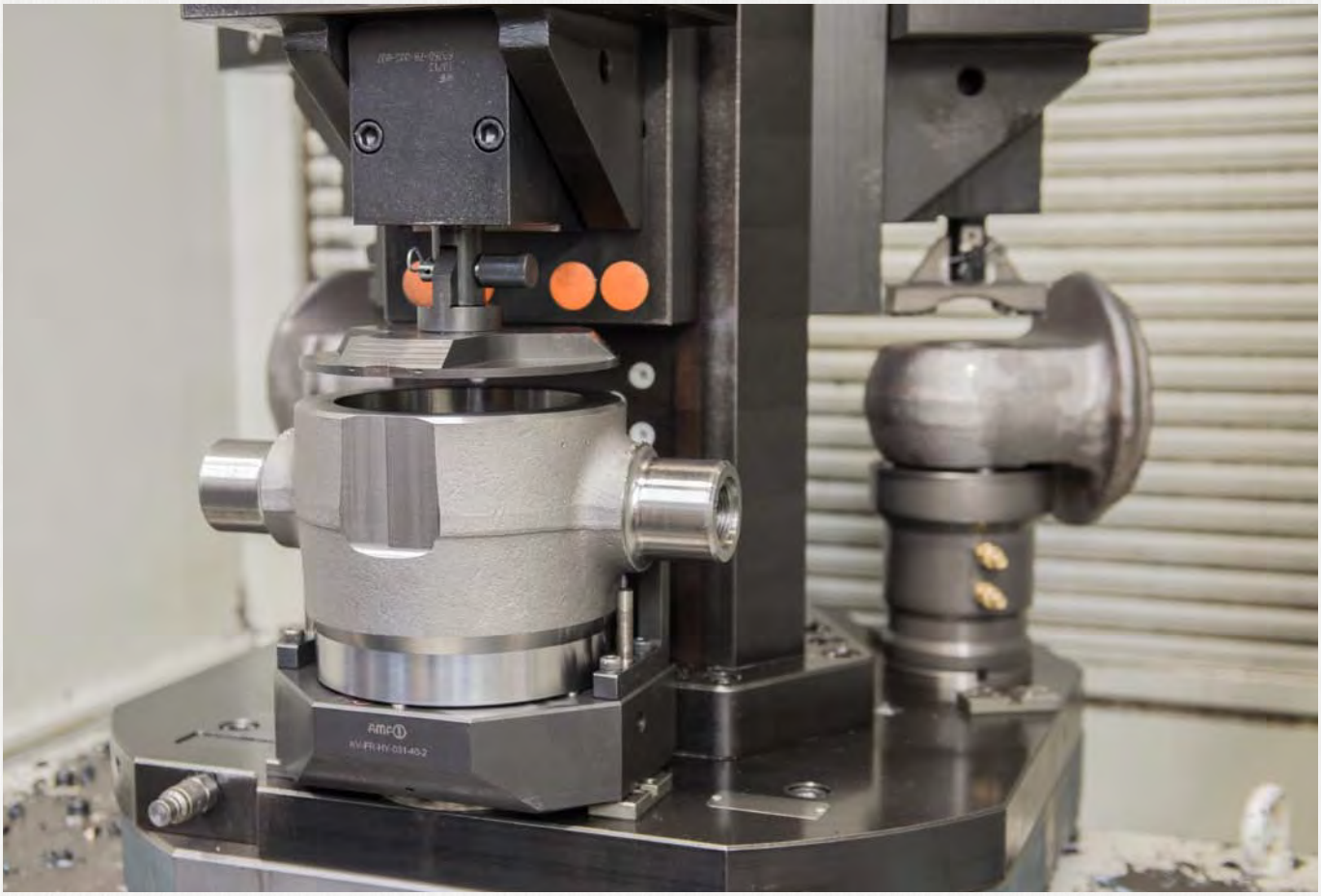


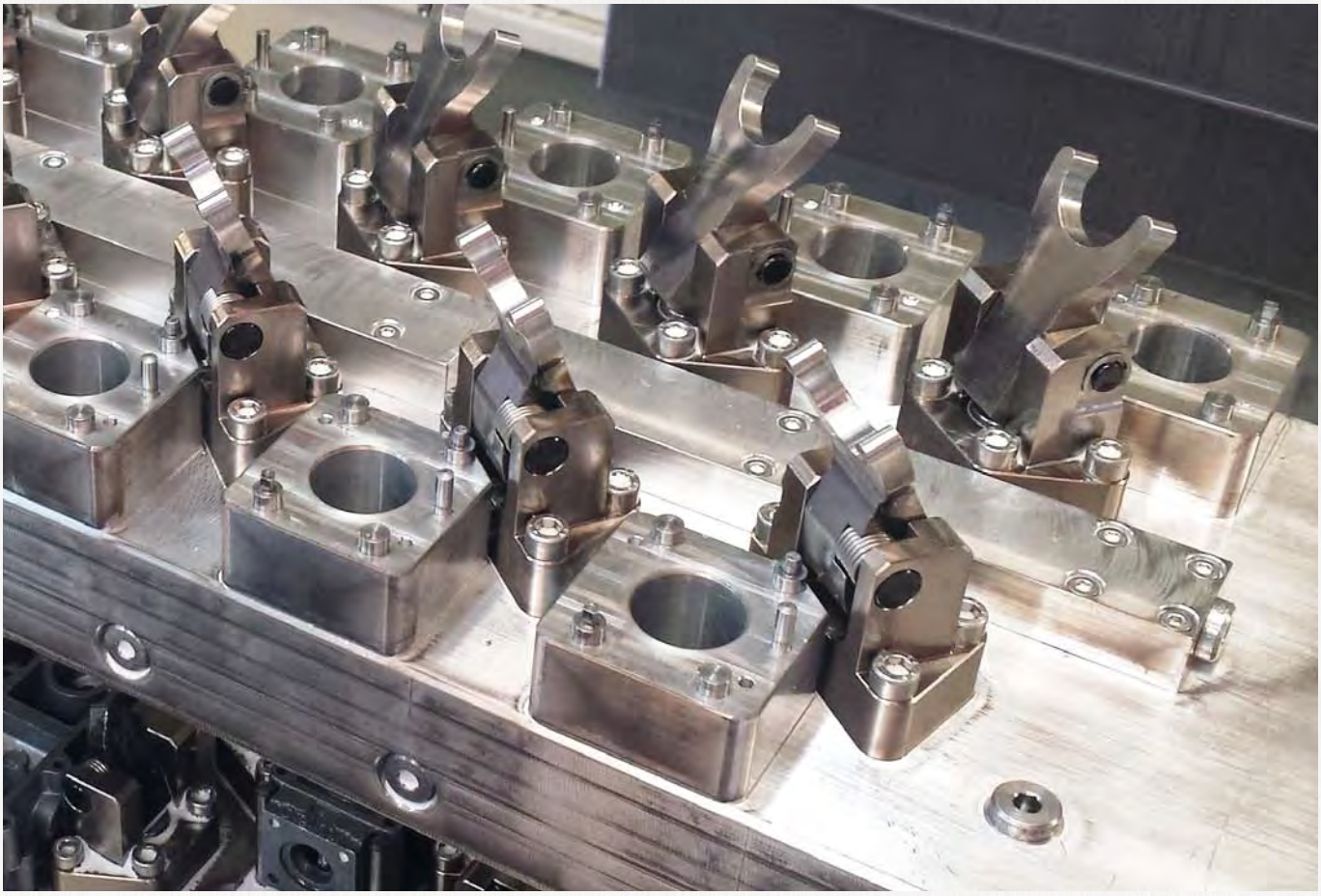
Dimensions:

Order no.	Article no.	A	dia. A1	dia. A2	B	C	D	E	F	dia. H	dia. H1	J	P	dia. T	OR-1 O-ring Order No.	OR-2 O-ring Order No.
554491	6952EP-02-21	M28x1,5	25 f7	24	108,5	101,5	58	17	15,5	12	11,13	M6	SW32	36	409664	321166
554492	6952EP-02-22	M28x1,5	25 f7	24	108,5	101,5	58	17	15,5	12	11,13	M6	SW32	36	409664	321166

Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de



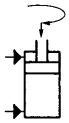


Subject to technical alterations.

No. 6952CP

Swing clamp, plug-in mounting

Double-acting,
max. operating pressure 350 bar,
min. operating pressure 40 bar.



NEW!

CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping stroke M [mm]	Total stroke N [mm]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	min. permitted clamping time * [s]	Q max. * [l/min]	Piston mass moment of inertia JK [kgm²]	Weight [g]
556954	6952CP-06-21	6,0	12	23	5,7	10,3	2,51	4,52	0,35	0,7	0,000012193	725
556955	6952CP-06-22	6,0	12	23	5,7	10,3	2,51	4,52	0,35	0,7	0,000012193	725
556956	6952CP-08-21	8,0	12	24	7,2	14,7	3,01	6,15	0,32	1,0	0,000025865	1200
556957	6952CP-08-22	8,0	12	24	7,2	14,7	3,01	6,15	0,32	1,0	0,000025865	1200
556958	6952CP-15-21	15,0	15	30	15,8	30,5	5,27	10,17	0,49	2,0	0,000088178	2150
556959	6952CP-15-22	15,0	15	30	15,8	30,5	5,27	10,17	0,49	2,0	0,000088178	2150

Sp = clamping, Lo = unclamp
* Specifications with clamping arm, standard

Design:

Cylinder barrel made of steel, hardened and burnished. Piston rod hardened. Piston rod with internal thread and clamp arm positioning. Wiper at the piston rod. Clamp arm not supplied as standard. Oil supply via oil channel in fixture body.

Application:

The swivel clamp is used in fixtures in which the workpiece must be freely accessible and inserted from above. Even workpieces with difficult shapes can be clamped using special clamp arms (available on request).

Features:

The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

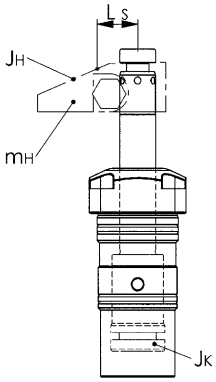
Note:

The piston stoke is executed with spheres, so volume flow Q max. must be complied with. Clamping arm length and clamping arm weight must be strictly observed.
No force may be applied to the piston when mounting accessories to it. To equalise height differences on the workpiece, the vertical clamping path must be 50% of the clamping stroke. When placing into operation, ensure that all air is bled from the system. To control the oil feed, the throttle/check valve no. 6916-12-01 can be optionally used with G1/8 and 6916-12-04 with G1/4 . Other swivel angles are available on request.

Formula to determine the total mass moment of inertia and the volume flow:
total mass moment of inertia Jges. [kgm²]
Clamp arm mass moment of inertia JH [kgm²]
Piston mass moment of inertia JK [kgm²]
Clamp arm load mH [kg]
Centre of gravity distance Ls [m]
Jges. = JK + JH + mH x Ls² [kgm²]

Volume flow Qmax. [cm³/s]
Volume clamp Vol.sp [cm³]
Minimum permitted clamp time tmin. [s]
Qmax. = Vol.sp / tmin. [cm³/s]

Suitable clamp arms are 6951-XX.



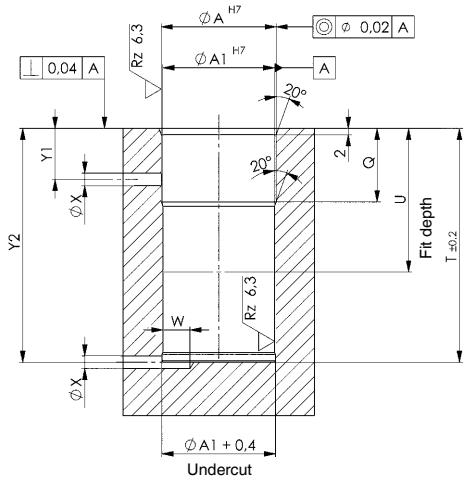
Subject to technical alterations.

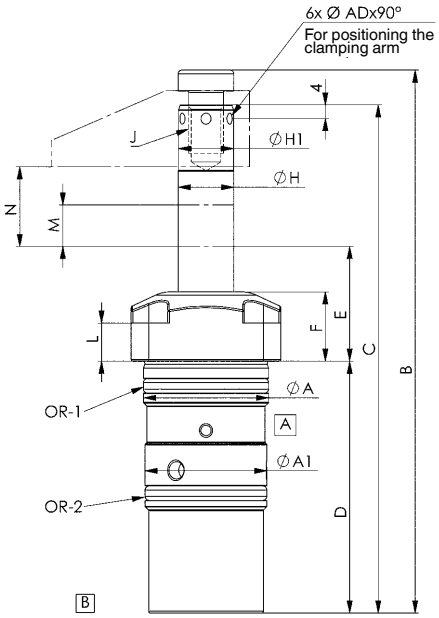
ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

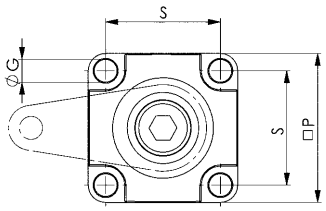
Dimensions:

Order no.	Article no.	dia. A	dia. A1	B	C	D	E	F	dia. G	dia. H	dia. H1	J x depth	L	M	N	P	Q	U	S	T	W	dia. X	Y1	Y2	ØAD	OR-1 O-ring Order No.	OR-2 O-ring Order No.
556954	6952CP-06-21	36	35	156,7	146,7	72,7	33,0	20	6,6	16	15,88	M10 x 14	11	12	23	43	23	45	33	73,3	8	4	16	73,3	3,2	321018	321018
556955	6952CP-06-22	36	35	156,7	146,7	72,7	33,0	20	6,6	16	15,88	M10 x 14	11	12	23	43	23	45	33	73,3	8	4	16	73,3	3,2	321018	321018
556956	6952CP-08-21	44	42	168,4	157,4	77,7	33,7	23	8,5	20	20,0	M10 x 14	10	12	24	54	27	50	40	78,3	9	4	16	78,3	4,8	409748	557639
556957	6952CP-08-22	44	42	168,4	157,4	77,7	33,7	23	8,5	20	20,0	M10 x 14	10	12	24	54	27	50	40	78,3	9	4	16	78,3	4,8	409748	557639
556958	6952CP-15-21	55	52	204,2	189,2	88,5	40,2	28	10,5	25	25,0	M12 x 14	14	15	30	67	25	53	50	89,3	10	4	20	89,3	4,8	321174	557640
556959	6952CP-15-22	55	52	204,2	189,2	88,5	40,2	28	10,5	25	25,0	M12 x 14	14	15	30	67	25	53	50	89,3	10	4	20	89,3	4,8	321174	557640

Installation dimensions:





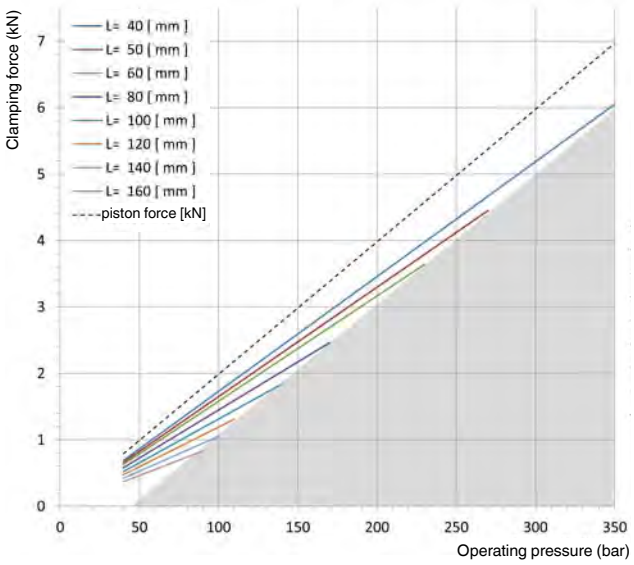


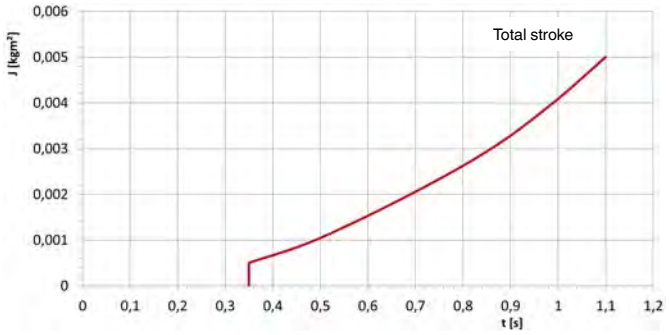
A = clamp
B = unclamp

Subject to technical alterations.

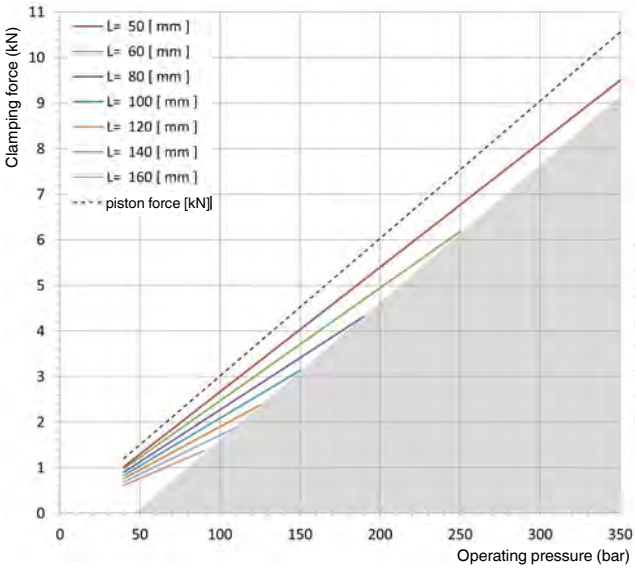
Diagrams:

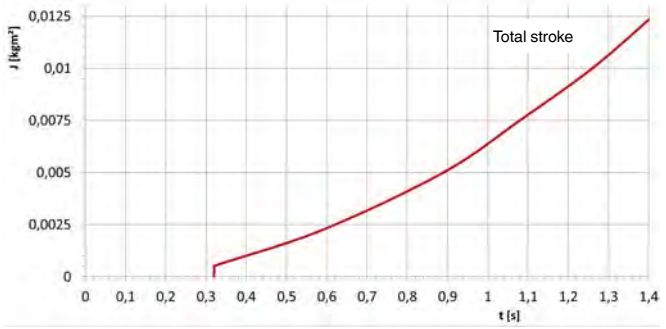
6952CP-06



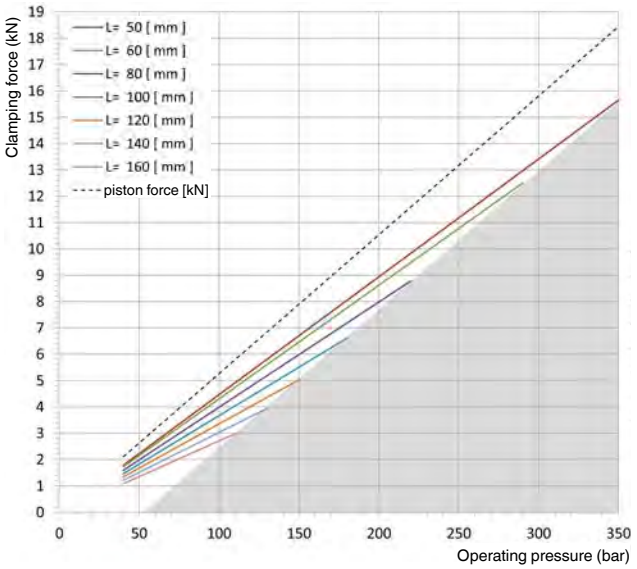


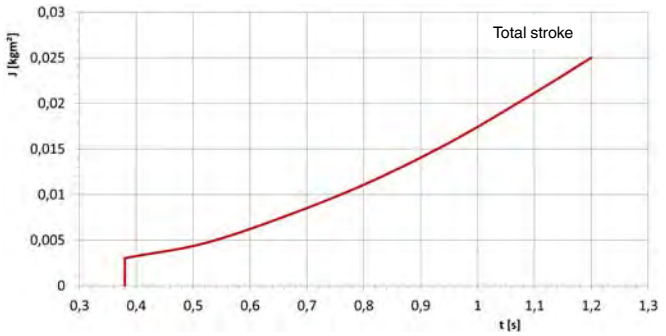
6952CP-08





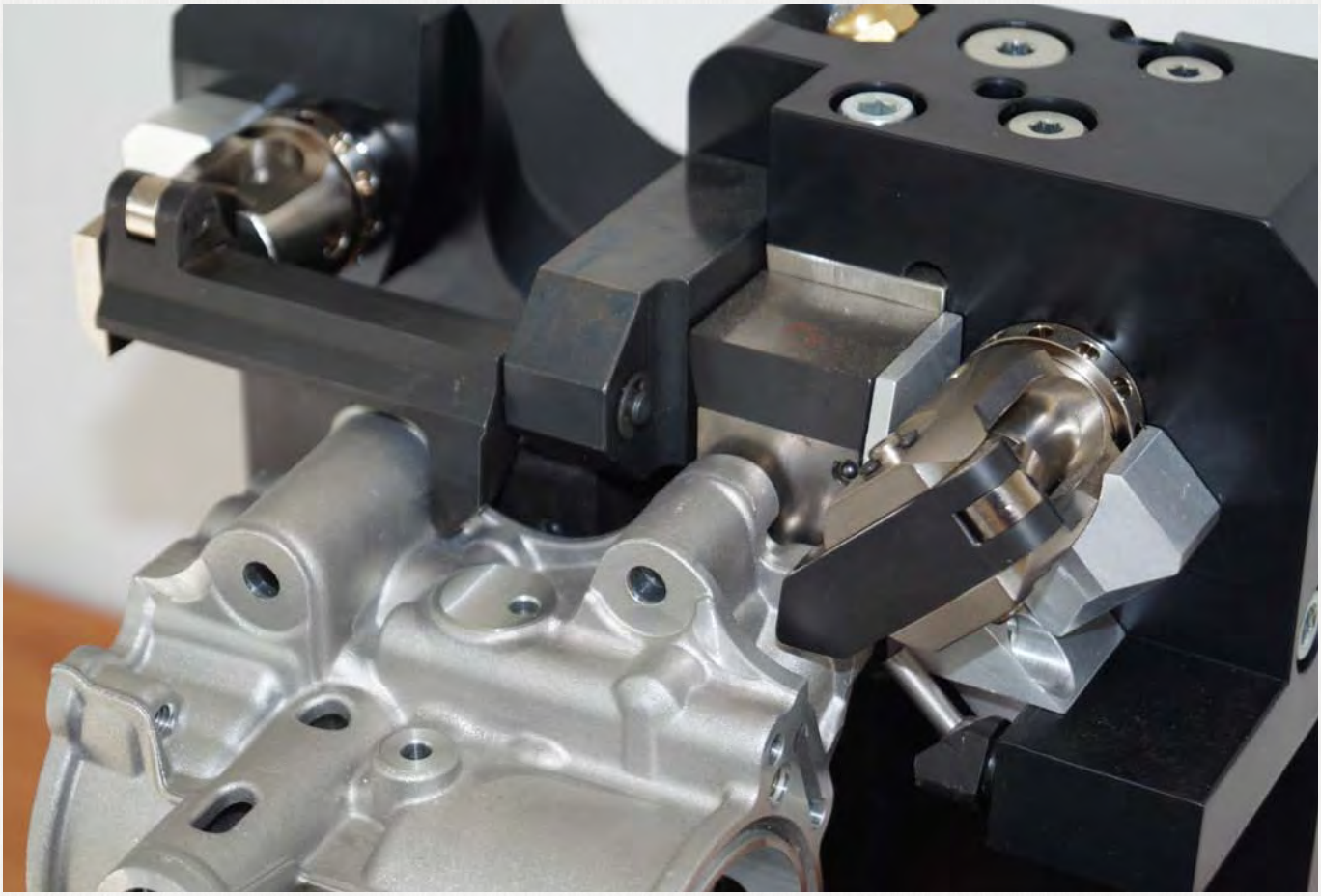
6952CP-15





Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

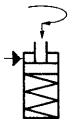


Subject to technical alterations.

No. 6951KP

Swing clamp, top-flange-mounting, precision design

Single-acting, with spring return,
max. operating pressure 350 bar,
min. operating pressure 52 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping stroke M [mm]	Total stroke N [mm]	Vol. Sp [cm³]	eff. piston area Sp [cm²]	Q max. * [l/min]	Weight [g]
327734	6951KP-02-11	2,0	5,5	14,0	0,92	0,63	0,276	372
327759	6951KP-02-12	2,0	5,5	14,0	0,92	0,63	0,276	372
327767	6951KP-05-11	4,9	8,0	20,0	3,82	1,90	0,764	903
327783	6951KP-05-12	4,9	8,0	20,0	3,82	1,90	0,764	903
327809	6951KP-11-11	11,6	13,0	29,5	11,90	4,04	1,785	1520
327825	6951KP-11-12	11,6	13,0	29,5	11,90	4,04	1,785	1520

Sp = clamping, Lo = unclamp
* Specifications with clamping arm, standard

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod hardened and chrome plated.
Piston rod with internal thread and clamping arm positioning. O-ring for flange seal.
Wiper at piston rod. Single acting version with return spring from stainless steel. Supply scope does not include clamping arm. Oil supply via threaded connection or oil channel in the fixture body.

Application:

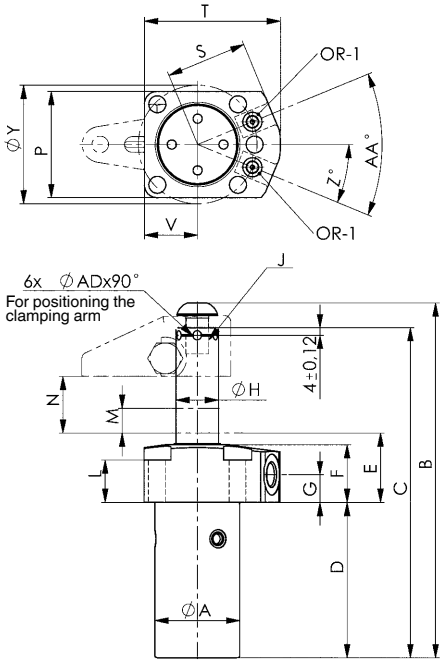
The swivel clamp is used in fixtures in which the workpiece must be freely accessible and inserted from above. Even workpieces with difficult shapes can be clamped using special clamp arms (available on request).

Features:

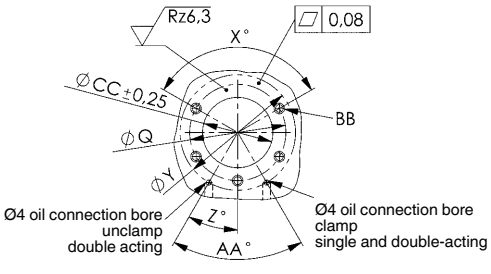
The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

Note:

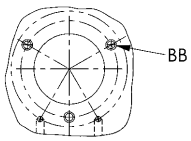
The piston stoke is executed with balls, respect Q max. volume flow. Clamping arm length and clamping arm weight must be strictly observed. When mounting accessories at the piston, no force may be applied to the piston. To equalise height differences on the workpiece, the vertical clamping path must be 50% of the clamping stroke. For single-acting cylinders, there is a risk of coolant being sucked through the breather port. In such cases the breather port has to be moved to a clean protected area via a connection line. When placing into operation, ensure that all air is bled from the system. Optionally, throttle non-return valve no. 6916-12-01 with G1/8 and 6916-12-04 with G1/4 can be used to throttle the oil supply. Other swivel angles are available on request.



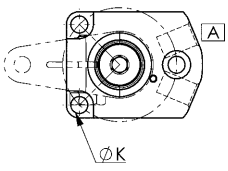
Drilling template device:



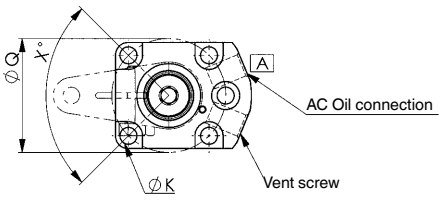
Size 11



Size 02, 05



Size 02, 05



Size 11

A = clamp

Dimensions:

Order no.	Article no.	dia. A	B	C	D	E	F	G	dia. H	J x depth	dia. K	L	M	N	P	dia. Q	S	T	V	X°	dia. Y	Z°	AA°	AC	ØAD	BB	dia. CC	OR-1 O-ring Order No.
327734	6951KP-02-11	25,2	108	101,5	44,0	31,0	26	13,0	11,13	M6x7	6	18,0	5,5	14,0	45,0	40,0	31,0	47	15,5	120	42	30,0	60	G1/8	3,2	M5	25,5	183608
327759	6951KP-02-12	25,2	108	101,5	44,0	31,0	26	13,0	11,13	M6x7	6	18,0	5,5	14,0	45,0	40,0	31,0	47	15,5	120	42	30,0	60	G1/8	3,2	M5	25,5	183608
327767	6951KP-05-11	36,3	143	134,0	64,5	31,5	27	13,0	15,88	M10x12	7	17,8	8,0	20,0	57,0	50,0	33,5	54	19,0	120	50	55,0	110	G1/8	4,8	M6	36,6	183608
327783	6951KP-05-12	36,3	143	134,0	64,5	31,5	27	13,0	15,88	M10x12	7	17,8	8,0	20,0	57,0	50,0	33,5	54	19,0	120	50	55,0	110	G1/8	4,8	M6	36,6	183608
327809	6951KP-11-11	44,2	185	172,0	81,0	36,0	30	14,5	22,23	M12x13	9	22,1	13,0	29,5	55,5	59,5	42,0	71	27,5	90	62	22,5	45	G1/4	4,8	M8	44,5	173096
327825	6951KP-11-12	44,2	185	172,0	81,0	36,0	30	14,5	22,23	M12x13	9	22,1	13,0	29,5	55,5	59,5	42,0	71	27,5	90	62	22,5	45	G1/4	4,8	M8	44,5	173096

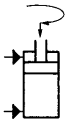
Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

No. 6951KP

Swing clamp, top-flange-mounting, precision design

Double-acting,
max. operating pressure 350 bar,
min. operating pressure 35 bar.



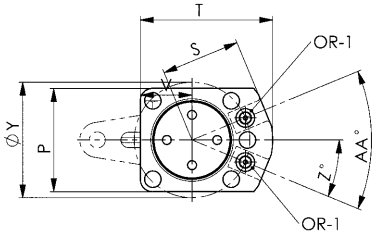
CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping force at 350 bar Lo* [kN]	Clamping stroke M [mm]	Total stroke N [mm]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Q max. * [l/min]	Weight [g]
327841	6951KP-02-21	2,0	5,1	5,5	14,0	0,92	2,3	0,63	1,60	0,276	358
327866	6951KP-02-22	2,0	5,1	5,5	14,0	0,92	2,3	0,63	1,60	0,276	358
327882	6951KP-05-21	4,9	10,0	8,0	20,0	3,82	7,8	1,90	3,88	0,764	871
327908	6951KP-05-22	4,9	10,0	8,0	20,0	3,82	7,8	1,90	3,88	0,764	871
327924	6951KP-11-21	11,6	18,2	13,0	29,5	11,90	23,0	4,04	7,92	1,785	1465
327940	6951KP-11-22	11,6	18,2	13,0	29,5	11,90	23,0	4,04	7,92	1,785	1465

Sp = clamping, Lo = unclamp
* Specifications with clamping arm, standard

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod case hardened and chrome plated.
Piston rod with internal thread and clamping arm positioning. O-ring for flange seal.
Wiper at piston rod. Single acting version with return spring from stainless steel. Supply scope does not include clamping arm. Oil supply via threaded connection or oil channel in the fixture body.

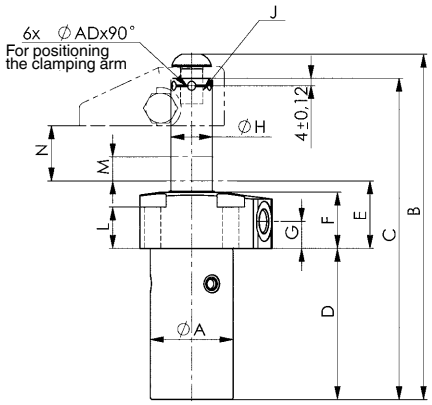


Application:

The swivel clamp is used in fixtures in which the workpiece must be freely accessible and inserted from above. Even workpieces with difficult shapes can be clamped using special clamp arms (available on request).

Features:

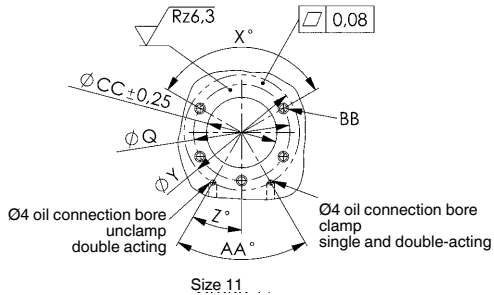
The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.



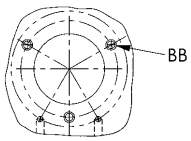
Note:

The piston stoke is executed with balls, respect Q max. volume flow. Clamping arm length and clamping arm weight must be strictly observed. When mounting accessories at the piston, no force may be applied to the piston. To equalise height differences on the workpiece, the vertical clamping path must be 50% of the clamping stroke. For single-acting cylinders, there is a risk of coolant being sucked through the breather port. In such cases the breather port has to be moved to a clean protected area via a connection line. When placing into operation, ensure that all air is bled from the system. Optionally, throttle non-return valve no. 6916-12-01 with G1/8 and 6916-12-04 with G1/4 can be used to throttle the oil supply. Other swivel angles are available on request.

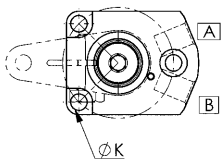
Drilling template device:



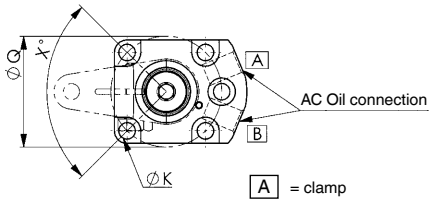
Size 11



Size 02, 05



Size 02, 05



Size 11

A = clamp
B = unclamp

Dimensions:

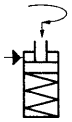
Order no.	Article no.	dia. A	B	C	D	E	F	G	dia. H	J x depth	dia. K	L	M	N	P	dia. Q	S	T	V	X°	dia. Y	Z°	AA°	AC	BB	ØAD	dia. CC	OR-1 O-ring Order No.
327841	6951KP-02-21	25,2	108	101,5	44,0	31,0	26	13,0	11,13	M6x7	6	18,0	5,5	14,0	45,0	40,0	31,0	47	15,5	120	42	30,0	60	G1/8	M5	3,2	25,5	183608
327866	6951KP-02-22	25,2	108	101,5	44,0	31,0	26	13,0	11,13	M6x7	6	18,0	5,5	14,0	45,0	40,0	31,0	47	15,5	120	42	30,0	60	G1/8	M5	3,2	25,5	183608
327882	6951KP-05-21	36,3	143	134,0	64,5	31,5	27	13,0	15,88	M10x12	7	17,8	8,0	20,0	57,0	50,0	33,5	54	19,0	120	50	55,0	110	G1/8	M6	4,8	36,5	183608
327908	6951KP-05-22	36,3	143	134,0	64,5	31,5	27	13,0	15,88	M10x12	7	17,8	8,0	20,0	57,0	50,0	33,5	54	19,0	120	50	55,0	110	G1/8	M6	4,8	36,5	183608
327924	6951KP-11-21	44,2	185	172,0	81,0	36,0	30	14,5	22,23	M12x13	9	22,1	13,0	29,5	55,5	59,4	42,0	71	27,5	90	62	22,5	45	G1/4	M8	4,8	44,5	173096
327940	6951KP-11-22	44,2	185	172,0	81,0	36,0	30	14,5	22,23	M12x13	9	22,1	13,0	29,5	55,5	59,4	42,0	71	27,5	90	62	22,5	45	G1/4	M8	4,8	44,5	173096

Subject to technical alterations.

No. 6951FP

Swing clamp, base-flange-mounting, precision design

Single-acting, with spring return,
max. operating pressure 350 bar,
min. operating pressure 52 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping stroke M [mm]	Total stroke N [mm]	Vol. Sp [cm³]	eff. piston area Sp [cm²]	Q max. * [l/min]	Weight [g]
327775	6951FP-02-11	2,0	5,5	14,0	0,92	0,63	0,276	372
327791	6951FP-02-12	2,0	5,5	14,0	0,92	0,63	0,276	372
327817	6951FP-05-11	4,9	8,0	20,0	3,82	1,90	0,764	903
327833	6951FP-05-12	4,9	8,0	20,0	3,82	1,90	0,764	903
327858	6951FP-11-11	11,6	13,0	29,5	11,90	4,04	1,785	1520
327874	6951FP-11-12	11,6	13,0	29,5	11,90	4,04	1,785	1520

Sp = clamping, Lo = unclamp
* Specifications with clamping arm, standard

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod case hardened and chrome plated.
Piston rod with internal thread and clamping arm positioning. O-ring for flange seal.
Wiper at piston rod. Single acting version with return spring from stainless steel. Supply scope does not include clamping arm. Oil supply via threaded connection or oil channel in the fixture body.

Application:

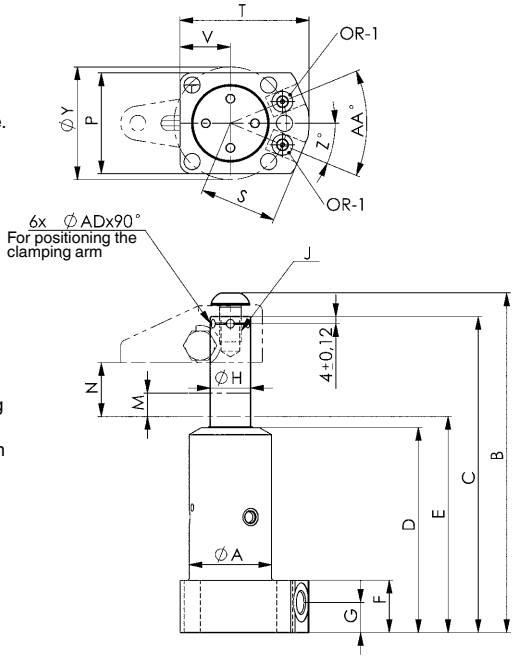
The swivel clamp is used in fixtures in which the workpiece must be freely accessible and inserted from above. Even workpieces with difficult shapes can be clamped using special clamp arms (available on request).

Features:

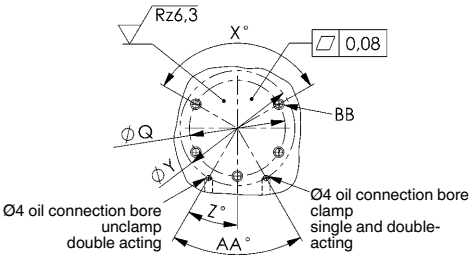
The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

Note:

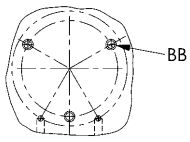
The piston stoke is executed with balls, respect Q max. volume flow. Clamping arm length and clamping arm weight must be strictly observed. When mounting accessories at the piston, no force may be applied to the piston. To equalise height differences on the workpiece, the vertical clamping path must be 50% of the clamping stroke. For single-acting cylinders, there is a risk of coolant being sucked through the breather port. In such cases the breather port has to be moved to a clean protected area via a connection line. When placing into operation, ensure that all air is bled from the system. Optionally, throttle non-return valve no. 6916-12-01 with G1/8 and 6916-12-04 with G1/4 can be used to throttle the oil supply. Other swivel angles are available on request.



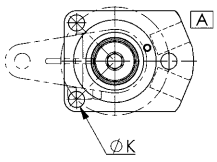
Drilling template device:



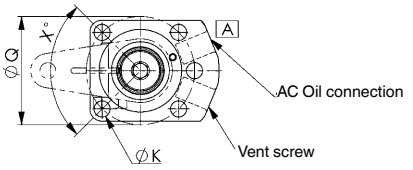
Size 11



Size 02, 05



Size 02, 05



Size 11

A = clamp

Dimensions:

Order no.	Article no.	dia. A	B	C	D	E	F	G	dia. H	J x depth	dia. K	M	N	P	dia. Q	S	T	V	X°	dia. Y	Z°	AA°	AC	ØAD	BB	OR-1 O-ring Order No.
327775	6951FP-02-11	26,5	109,5	103,0	71,0	76,0	26,5	13,5	11,13	M6x7	6	5,5	14,0	45	40,0	31,0	47	15,5	120	42	30,0	60	G1/8	3,2	M5	183608
327791	6951FP-02-12	26,5	109,5	103,0	71,0	76,0	26,5	13,5	11,13	M6x7	6	5,5	14,0	45	40,0	31,0	47	15,5	120	42	30,0	60	G1/8	3,2	M5	183608
327817	6951FP-05-11	38,0	145,0	135,5	92,5	97,5	25,0	15,0	15,88	M10x12	7	8,0	20,0	57	50,0	33,5	54	19,0	120	50	55,0	110	G1/8	4,8	M6	183608
327833	6951FP-05-12	38,0	145,0	135,5	92,5	97,5	25,0	15,0	15,88	M10x12	7	8,0	20,0	57	50,0	33,5	54	19,0	120	50	55,0	110	G1/8	4,8	M6	183608
327858	6951FP-11-11	45,5	186,5	173,5	112,5	118,5	28,5	16,5	22,23	M12x13	9	13,0	29,5	55	59,4	42,0	71	27,5	90	62	22,5	45	G1/4	4,8	M8	183608
327874	6951FP-11-12	45,5	186,5	173,5	112,5	118,5	28,5	16,5	22,23	M12x13	9	13,0	29,5	55	59,4	42,0	71	27,5	90	62	22,5	45	G1/4	4,8	M8	183608

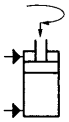
Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

No. 6951FP

Swing clamp, base-flange-mounting, precision design

Double-acting,
max. operating pressure 350 bar,
min. operating pressure 35 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping force at 350 bar Lo* [kN]	Clamping stroke M [mm]	Total stroke N [mm]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Q max. * [l/min]	Weight [g]
327890	6951FP-02-21	2,0	5,1	5,5	14,0	0,92	2,3	0,63	1,60	0,276	358
327916	6951FP-02-22	2,0	5,1	5,5	14,0	0,92	2,3	0,63	1,60	0,276	358
327932	6951FP-05-21	4,9	10,0	8,0	20,0	3,82	7,8	1,90	3,88	0,764	871
327957	6951FP-05-22	4,9	10,0	8,0	20,0	3,82	7,8	1,90	3,88	0,764	871
327973	6951FP-11-21	11,6	18,2	13,0	29,5	11,90	23,0	4,04	7,92	1,785	1465
327999	6951FP-11-22	11,6	18,2	13,0	29,5	11,90	23,0	4,04	7,92	1,785	1465

Sp = clamping, Lo = unclamp
* Specifications with clamping arm, standard

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod hardened and chrome plated.
Piston rod with internal thread and clamping arm positioning. O-ring for flange seal.
Wiper at piston rod. Single acting version with return spring from stainless steel. Supply scope does not include clamping arm. Oil supply via threaded connection or oil channel in the fixture body.

Application:

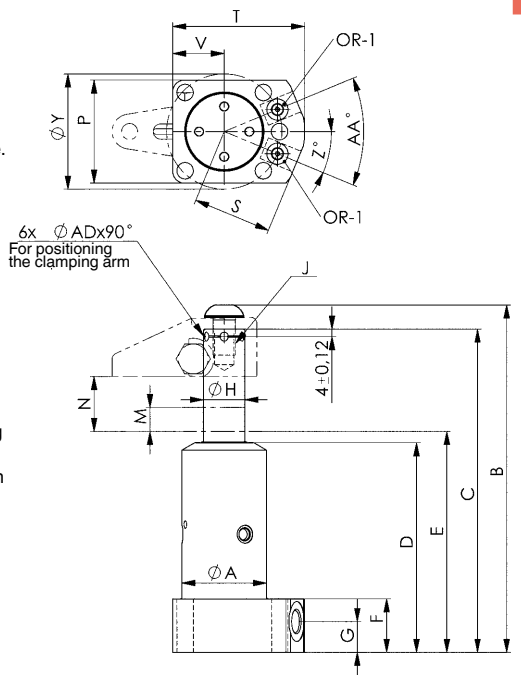
The swivel clamp is used in fixtures in which the workpiece must be freely accessible and inserted from above. Even workpieces with difficult shapes can be clamped using special clamp arms (available on request).

Features:

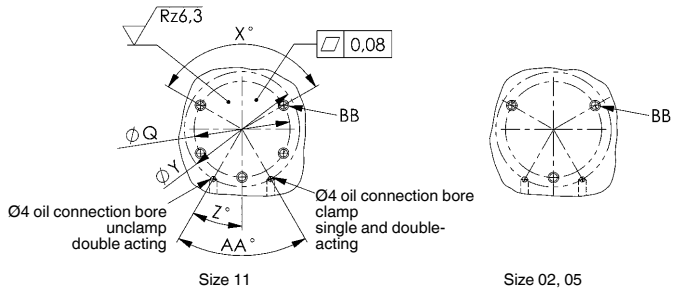
The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

Note:

The piston stoke is executed with balls, respect Q max. volume flow. Clamping arm length and clamping arm weight must be strictly observed. When mounting accessories at the piston, no force may be applied to the piston. To equalise height differences on the workpiece, the vertical clamping path must be 50% of the clamping stroke. For single-acting cylinders, there is a risk of coolant being sucked through the breather port. In such cases the breather port has to be moved to a clean protected area via a connection line. When placing into operation, ensure that all air is bled from the system. Optionally, throttle non-return valve no. 6916-12-01 with G1/8 and 6916-12-04 with G1/4 can be used to throttle the oil supply. Other swivel angles are available on request.



Drilling template device:



Dimensions:

Order no.	Article no.	dia. A	B	C	D	E	F	G	dia. H	J x depth	dia. K	M	N	P	dia. Q	S	T	V	X°	dia. Y	Z°	AA°	AC	ØAD	BB	OR-1 O-ring Order No.
327890	6951FP-02-21	26,5	109,5	103,0	71,0	76,0	26,5	13,5	11,13	M6x7	6	5,5	14,0	45	40,0	31,0	47	15,5	120	42	30,0	60	G1/8	3,2	M5	183608
327916	6951FP-02-22	26,5	109,5	103,0	71,0	76,0	26,5	13,5	11,13	M6x7	6	5,5	14,0	45	40,0	31,0	47	15,5	120	42	30,0	60	G1/8	3,2	M5	183608
327932	6951FP-05-21	38,0	145,0	135,5	92,5	97,5	25,0	15,0	15,88	M10x12	7	8,0	20,0	57	50,0	33,5	54	19,0	120	50	55,0	110	G1/8	4,8	M6	183608
327957	6951FP-05-22	38,0	145,0	135,5	92,5	97,5	25,0	15,0	15,88	M10x12	7	8,0	20,0	57	50,0	33,5	54	19,0	120	50	55,0	110	G1/8	4,8	M6	183608
327973	6951FP-11-21	45,5	186,5	173,5	112,5	118,5	28,5	16,5	22,23	M12x13	9	13,0	29,5	55	59,4	42,0	71	27,5	90	62	22,5	45	G1/4	4,8	M8	183608
327999	6951FP-11-22	45,5	186,5	173,5	112,5	118,5	28,5	16,5	22,23	M12x13	9	13,0	29,5	55	59,4	42,0	71	27,5	90	62	22,5	45	G1/4	4,8	M8	183608

Subject to technical alterations.

No. 6951

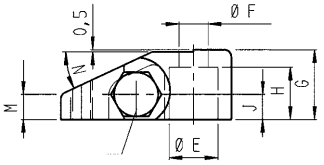
Swing Clamp Arm, standard

CAD

Order no.	Article no.	A	B	C	dia. E	dia. F	G	H	J	K	L	M	N	P	Weight [g]
68973	6951-02-27	27	9,5	4,5	11,13 +0,05	7,0	16,0	12,5	7,0	9,5	M6x1,00	6,5	22°	M6x1,00	44
559217	6951-04-47	47	14,5	8,0	18,00 ±0,02	10,5	27,0	22,0	8,0	14,7	M6x1,25	9,0	23,5°	M8x1,25	212
68999	6951-05-38	38	12,5	6,5	15,89 +0,05	10,5	22,0	18,0	8,0	12,7	M8x1,25	7,5	25°	M8x1,25	109
556974	6951-08-47	47	14,5	8,0	20,00 ±0,02	10,5	27,0	22,0	8,0	14,7	M6x1,25	9,0	23,5°	M8x1,25	212
69070	6951-11-51	51	17,5	9,5	22,24 +0,05	13,5	32,0	25,5	9,5	16,6	M10x1,25	12,0	25°	M10x1,50	299
556975	6951-15-50	50	17,5	11,0	25,00 ±0,02	12,5	38,5	30,5	11,0	23,2	M12x1,75	17,0	23,5°	M10x1,50	411

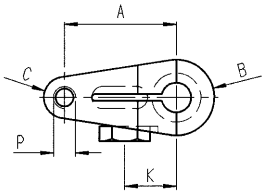
Design:

Tempered and blued steel.



Application:

For all swing clamps
order no. 68973 for sizes 6951xx-02-xx, 6952EP-02-xx
order no. 559217 for sizes 6941KP-04-xx
order no. 68999 for sizes 6951xx-05-xx, 6952CP-06-xx, 6941KP-03-xx
order no. 556974 for sizes 6952CP-08-xx
order no. 69070 for sizes 6951xx-11-xx, 6941KP-05-xx
order no. 556975 for sizes 6952CP-15-xx



Note:

Clamping pressure, flow volume and clamping arm weight must be observed. Special versions available on request.

No. 6951

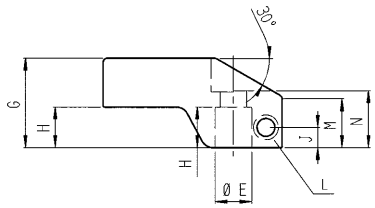
Swing Clamp Arm, upreach

CAD

Order no.	Article no.	A	B	C	D	dia. E	dia. F	G	H	J	K	L	M	N	P	Weight [g]
69112	6951-02-32	32,0	19,0	5,0	5,0	11,13 +0,05	7,0	25,5	12,5	6,5	9,5	M6x1,00	12,5	16	16	87
69138	6951-05-44	44,5	25,5	6,5	6,5	15,89 +0,05	10,5	35,0	18,0	8,0	12,5	M8x1,25	19,0	22	19	209
69153	6951-11-63	63,5	35,0	9,5	9,5	22,24 +0,05	13,5	51,0	25,5	9,5	16,5	M10x1,25	26,5	32	26	590

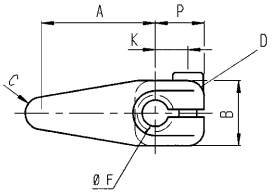
Design:

Tempered and blued steel.



Application:

For all swing clamps
order no. 69112 for sizes 6951xx-02-xx, 6952EP-02-xx
order no. 69138 for sizes 6951xx-05-xx, 6952CP-06-xx, 6941KP-03-xx
order no. 69153 for sizes 6951xx-11-xx, 6941KP-05-xx



Note:

Clamping pressure, flow volume and clamping arm weight must be observed. Special versions available on request.

Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

No. 6951

Swing Clamp Arm, long

CAD

Order no.	Article no.	A	B	C	D	dia. E	dia. F	G	H	J	K	L	Weight [g]
69229	6951-02-82	82,5	26,0	10,5	8,5	11,13 +0,05	7,0	16	12,5	7,0	9,5	M6x1,00	73
69245	6951-05-136	136,5	33,0	14,5	12,5	15,89 +0,05	10,5	22	18,0	8,0	12,7	M8x1,25	240
69260	6951-11-162	162,0	50,5	19,0	16,0	22,24 +0,05	13,5	32	25,5	9,5	16,6	M10x1,25	553

Design:

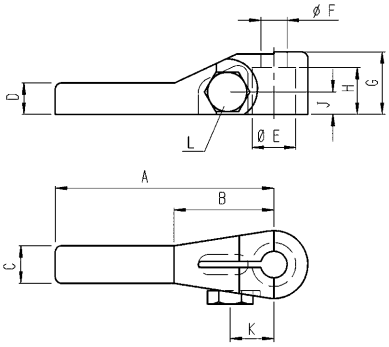
Tempered and blued steel.

Application:

For all swing clamps
order no. 69229 for sizes 6951xx-02-xx, 6952EP-02-xx
order no. 69245 for sizes 6951xx-05-xx, 6952CP-06-xx, 6941KP-03-xx
order no. 69260 for sizes 6951xx-11-xx, 6941KP-05-xx
Clamp arm can be shortened for your application.

Note:

Clamping pressure, flow volume and clamping arm weight must be observed. Special versions available on request.



No. 6951

Swing Clamp Arm, double ended

CAD

Order no.	Article no.	2A	B	C	D	dia. E	dia. F	G	H	J	K	L	Weight [g]
69252	6951-02-140	140	26,0	10,5	8,5	11,13 +0,05	7,0	16	12,5	7,0	9,5	M6x1,00	118
69278	6951-05-222	222	33,0	14,5	12,5	15,89 +0,05	10,5	22	18,0	8,0	12,7	M8x1,25	354
69294	6951-11-272	272	50,5	19,0	16,0	22,24 +0,05	13,5	32	25,5	9,5	16,6	M10x1,25	801

Design:

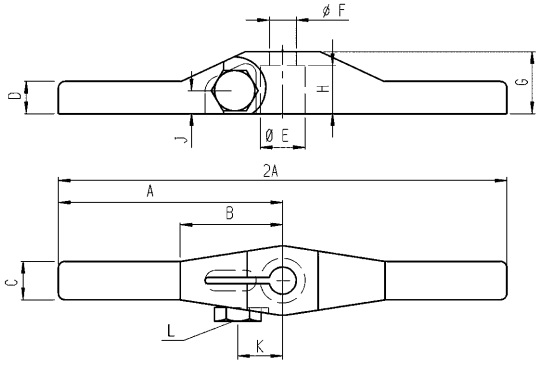
Tempered and blued steel.

Application:

For all swing clamps
order no. 69252 for sizes 6951xx-02-xx, 6952EP-02-xx
order no. 69278 for sizes 6951xx-05-xx, 6952CP-06-xx, 6941KP-03-xx
order no. 69294 for sizes 6951xx-11-xx, 6941KP-05-xx
Clamp arm can be shortened for your application.

Note:

Clamping pressure, flow volume and clamping arm weight must be observed. It is also essential that clamping or support heights in either side are identical. Special versions available on request.



Subject to technical alterations.

No. 6951WN

Swing Clamp arm, double-ended

pivoted

CAD

Order no.	Article no.	2A	B	C	D	dia. E	F	G	H	J	dia. K	L	M	N	W max.	Weight [g]
320457	6951WN-02-100	100	39	11	8	11,2	13	9	24	21,0	6	13,5	M4	M6	6°	150
320465	6951WN-05-150	150	52	16	12	15,9	19	15	35	31,0	8	19,5	M6	M10	6°	440
320473	6951WN-11-180	180	74	19	16	22,3	28	19	40	38,0	12	25,0	M6	M12	6°	880

Design:

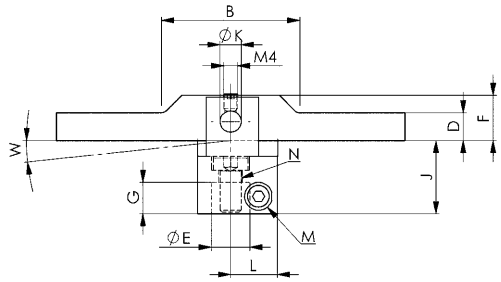
Steel, blued. Clamping arm tempered.

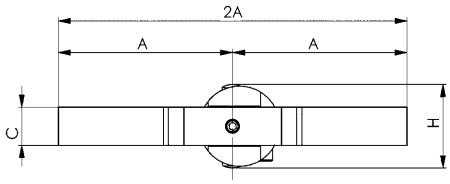
Application:

For all swing clamps
order no. 320457 for sizes 6951xx-02-xx, 6952EP-02-xx
order no. 320465 for sizes 6951xx-05-xx, 6952CP-06-xx, 6941KP-03-xx
order no. 320473 for sizes 6951xx-11-xx, 6941KP-05-xx
Used for clamping two workpieces with different heights.

Note:

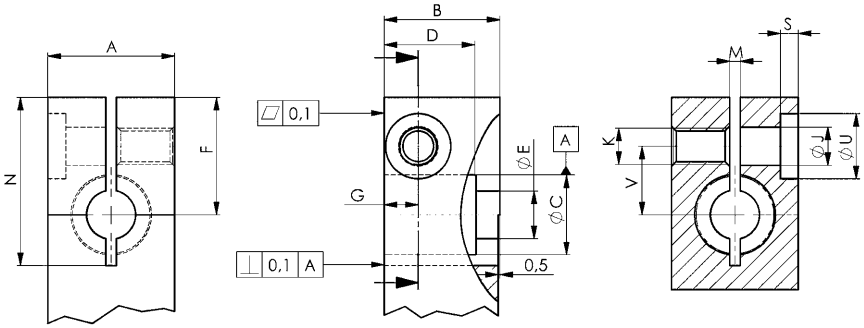
Clamping pressure and maximum tilt angle (W) must not be exceeded. Special versions are available on request.





No. 6951

Dimensions for proprietary manufacturing of clamping arms



Tolerance DIN ISO 2768 m

Important note:

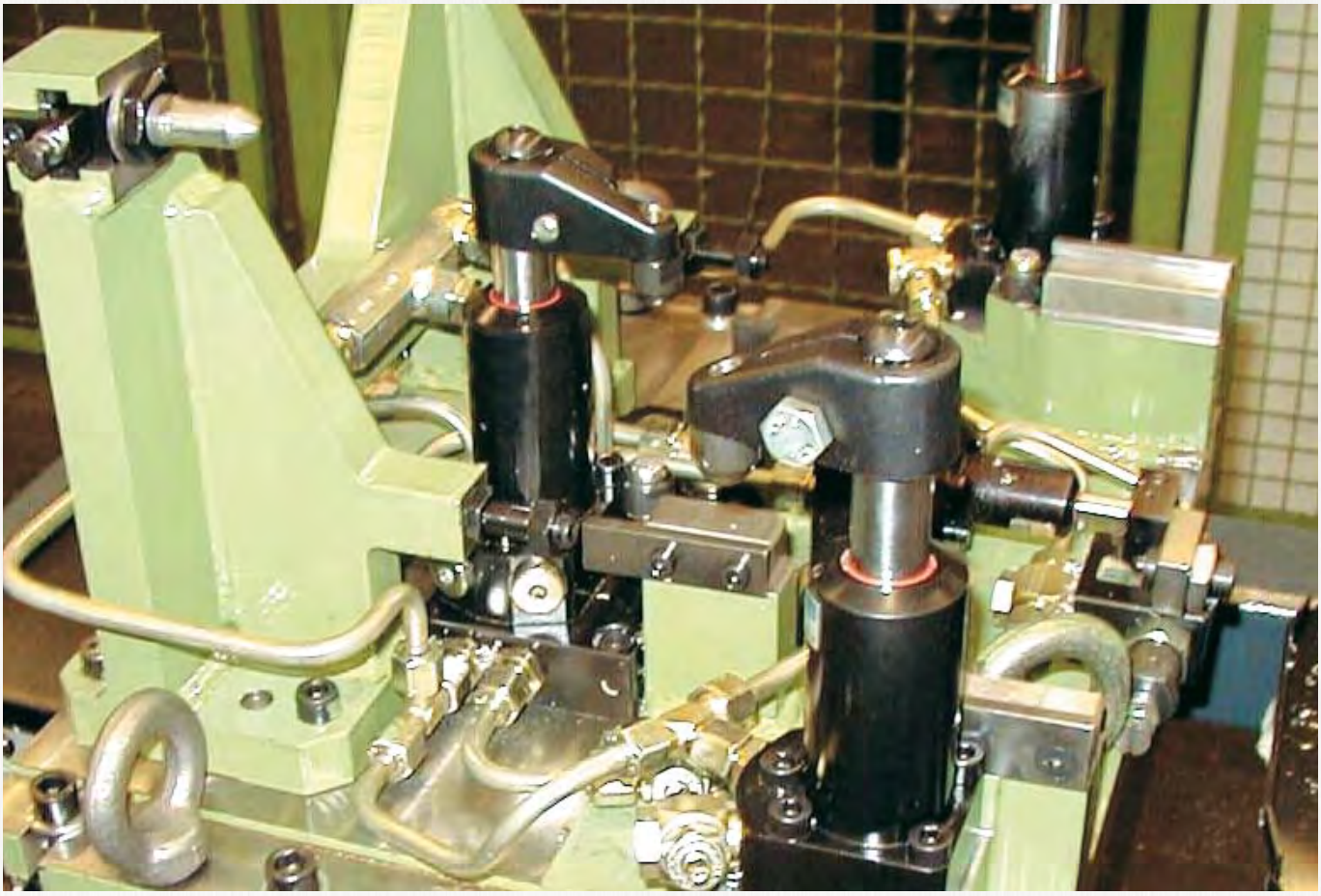
Lever lengths and lever weights (see no. 6951-xx above) must be observed!

Dimensions table (proprietary manufacture):

for size	A	B	ØC	D	ØE	F	G	ØJ	K	M	N	S	ØU	V
-02	19,0	16,0	11,151 +0,05	12,70	7,0	22,5	7,0	6,4	M6	2,4	30,0	2	11	9,5
-04	29,0	27,0	18,000 +0,02	22,00	11,0	31,5	8,0	8,5	M8	2,9	43,5	5	15	18,2
-05	25,5	22,0	15,913 +0,05	18,03	11,0	27,5	8,8	8,5	M8	2,9	38,5	5	15	17,0
-08	29,0	27,0	20,000 +0,02	22,00	11,0	31,5	8,0	8,5	M8	2,9	43,5	5	15	18,2
-11	35,0	32,0	22,263 +0,05	25,40	13,5	32,5	12,0	10,5	M10	2,9	46,5	5	18	19,0
-15	35,0	38,5	25,000 +0,02	30,50	12,5	42,5	11,0	12,5	M12	2,9	52,5	4	18	23,2

Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de



Subject to technical alterations.

SWING CLAMPS – THE SOLUTION FOR COST-EFFECTIVE HYDRAULIC CLAMPING OF WORKPIECES!

DESIGN:

Burnished body, hardened and ground piston rod. Swing clamps are delivered without clamping arm.

APPLICATION:

Swing clamps are used in fixtures of all kinds, especially in applications where workpieces must be freely accessible and loaded from above. Workpieces with complex geometries can be clamped using special clamping arms (available upon request).

FEATURES:

Design variants: > **top flange** > **base flange**

Top and base-flange models accommodate O-ring as well as threaded hydraulic connections.

The swing motion is realized by a rigid 3-way ball-guide mechanism. Standard swivel angle is 90°.

The newly designed clamping-arm mount prevents the induction of forces into the swing mechanism during assembly.

IMPORTANT NOTE:

Clamping arm length, max. permissible flow rate Q max. and clamping arm weight must be observed!

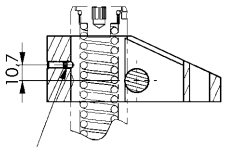
In case of a larger flow rates, a throttle/check valve must be connected upstream.

The motion of the swing clamp must not be obstructed. Clamping must only be done in the vertical stroke area.

POSITIONING:

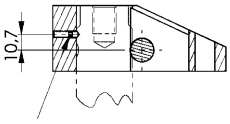
Positioning hole for clamp arm:

Single acting cylinder



Threaded stud

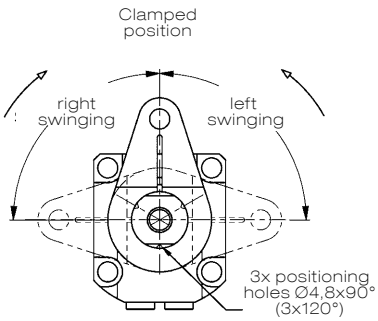
Double acting cylinder



Threaded stud

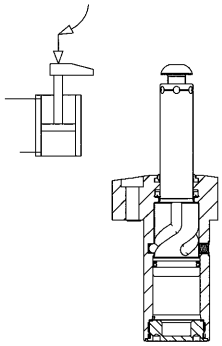
SWING DIRECTIONS:

Positioning hole for clamp arm:



DESIGN:

Double acting cylinder

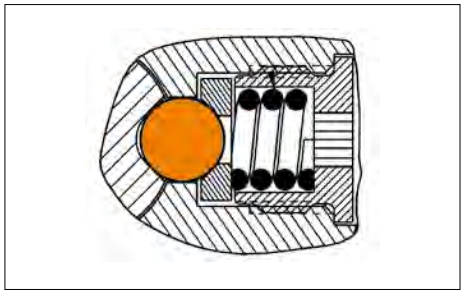


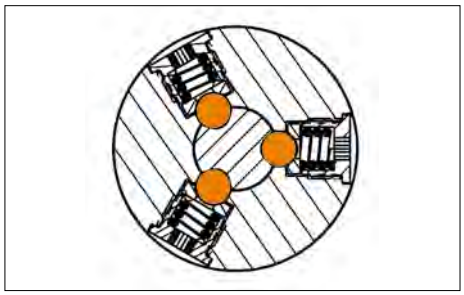
Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

BENEFITS:

- Increase in the number of balls and grooves to 3 to achieve a higher positioning accuracy and repetition accuracy. This also extends the service life.
- Precise swivel angle of 90°.
- Increases pressing force of the balls in the swivel slot, which ensures a very precise swivel angle over a long period of use.
- V-profile of the ball running groove ensures a deeper ball run in the slot wall than on the slot edge.
- Improved radius transition from straight to swivel stroke.
- The simple-acting models receive a stronger spring force to ensure a better return stroke.
- In addition, all models receive a position-repeatable clamping arm mounting.
- New materials for extending the service life of piston rod and swivel mechanism.



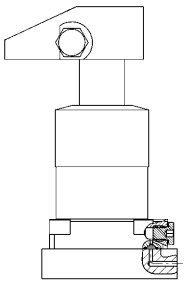


CODE OF TYPES:

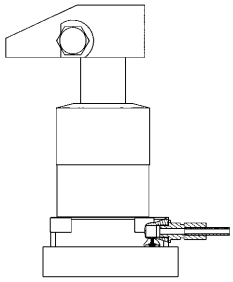
Type 21 = double acting, right swinging
Type 22 = double acting, left swinging
Type 210 = double acting, right swinging, extended stroke
Type 220 = double acting, left swinging, extended stroke

CONNECTION OPTIONS:

- O-ring connection



- threaded connection



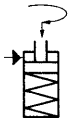
CLAMPING TIME AND Q OF THE SWING CLAMPS 6951KP AND FP

	Clamp arm, standard		Clamp arm, long	
Swing clamp clamping force [kN]	Min. allowed clamping time [sec.]	Q max. [l/min.]	Min. allowed clamping time [sec.]	Q max. [l/min.]
22,0	0,5	2,544	1,0	1,272
33,0	0,5	4,116	1,0	2,058

No. 6951KP

Swing clamp, top-flange-mounting, precision design

Single-acting, with spring return,
max. operating pressure 350 bar,
min. operating pressure 52 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar* [kN]	Clamping stroke K [mm]	Total stroke L [mm]	Oil capacity [cm³]	effective piston area [cm²]	Q max. [l/min]	Weight [g]
327155	6951KP-22-11	22	14,5	28	21,2	7,6	2,5	2550
327163	6951KP-22-12	22	14,5	28	21,2	7,6	2,5	2550
327171	6951KP-33-11	33	16,0	30	34,3	11,4	2,5	3992
327189	6951KP-33-12	33	16,0	30	34,3	11,4	2,5	3992

* Clamping forces with short clamping arm.

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod hardened and chrome plated. Wiper at piston rod. Return spring from stainless steel. Supply scope does not include clamping arm. Oil supply via threaded connection or oil channel in the fixture body.

Application:

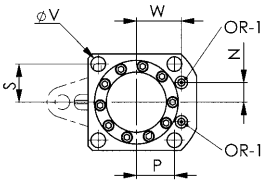
The swing clamp is used particularly in fixtures in which the workpiecesmust be freely accessible and placed from above. Workpieces with difficult shapes can also be clamped using special clamp arms (available on request).

Features:

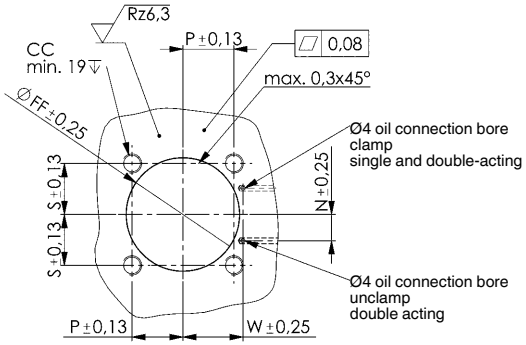
The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

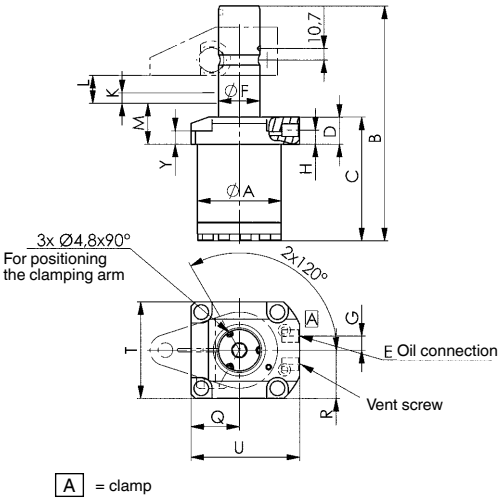
Note:

The piston is guided, and so the max. permissable oil flow rate Q max. as well as the clamping arm length and weight must be observed. When mounting accessories at the piston, no force may be applied to the piston. For single-acting cylinders, there is risk of sucking in coolant through the breather port. In such cases the breather port has to be moved to a clean protected area via a connection line. When installing, ensure that all air is bled from the system.
To control the oil feed, the throttle/check valve no. 6916-12-04 can be optionally used. Other swivel angles are available on request.



Drilling template device:





A = clamp

Dimensions:

Order no.	Article no.	dia. A	B	C	D	E	dia. F	G	H	K	L	M	N	P	Q	R	S	T	U	dia. V	W	Y	CC	dia. FF	OR-1 O-ring Order No.
327155	6951KP-22-11	62,8	196,0	104,5	25	G1/4	31,74	13	13	14,5	28	33,5	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M10	63,4	183608
327163	6951KP-22-12	62,8	196,0	104,5	25	G1/4	31,74	13	13	14,5	28	33,5	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M10	63,4	183608
327171	6951KP-33-11	77,0	216,5	114,0	25	G1/4	38,09	13	13	16,0	30	33,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M12	77,6	183608
327189	6951KP-33-12	77,0	216,5	114,0	25	G1/4	38,09	13	13	16,0	30	33,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M12	77,6	183608

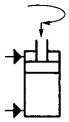
Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

No. 6951KP

Swing clamp, top-flange-mounting, precision design

double acting,
max. operating pressure 350 bar,
min. operating pressure 35 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping force at 350 bar Lo* [kN]	Clamping stroke K [mm]	Total stroke L [mm]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Q max. [l/min]	Weight [g]
327197	6951KP-22-21	22	54	14,5	28,0	21,2	43,3	7,6	15,5	2,5	2590
327205	6951KP-22-22	22	54	14,5	28,0	21,2	43,3	7,6	15,5	2,5	2590
327213	6951KP-22-210**	22	54	32,0	45,5	34,9	71,3	7,6	15,5	2,5	2948
327221	6951KP-22-220	22	54	32,0	45,5	34,9	71,3	7,6	15,5	2,5	2948
327239	6951KP-33-21	33	80	16,0	30,0	34,3	68,4	11,4	22,8	2,5	4355
327247	6951KP-33-22	33	80	16,0	30,0	34,3	68,4	11,4	22,8	2,5	4355
327254	6951KP-33-210**	33	80	32,0	46,0	52,6	105,0	11,4	22,8	2,5	4881
327262	6951KP-33-220**	33	80	32,0	46,0	52,6	105,0	11,4	22,8	2,5	4881

Sp = clamp, Lo = unclamp
* Clamping forces with short clamping arm. ** Not a stock item!

Design:

Hardened and burnished steel cylinder barrels. Piston rod hardened and chrome plated. Wiper at piston rod. Supply scope does not include clamping arm. Oil supply via threaded connection or oil channel in the fixture body.

Application:

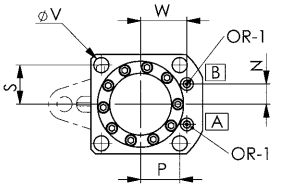
The swing clamp is used particularly in fixtures in which the workpiecesmust be freely accessible and placed from above. Workpieces with difficult shapes can also be clamped using special clamp arms (available on request).

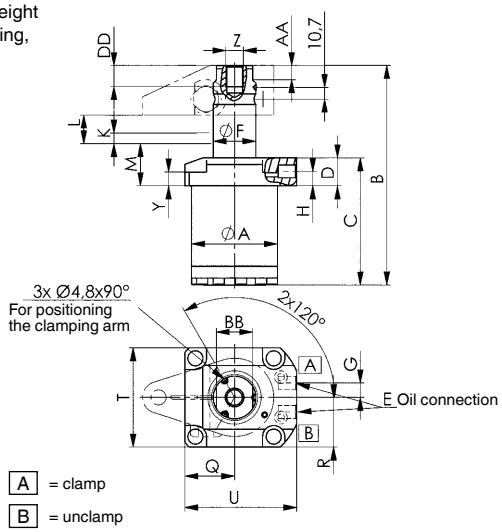
Features:

The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

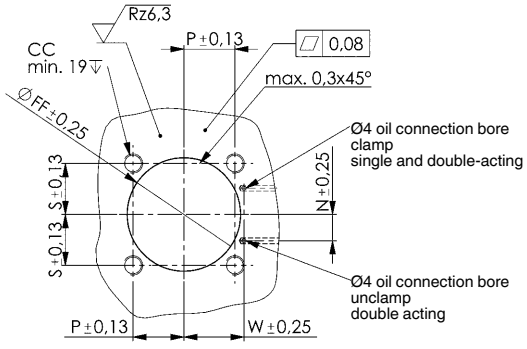
Note:

The piston is guided, and so the max. permissable oil flow rate Q max. as well as the clamping arm length and weight must be observed. When mounting accessories at the piston, no force may be applied to the piston. When installing, ensure that all air is bled from the system.
To control the oil feed, the throttle/check valve no. 6916-12-04 can be optionally used. Other swivel angles are available on request.





Drilling template device:



Dimensions:

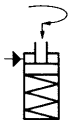
Order no.	Article no.	dia. A	B	C	D	E	dia. F	G	H	K	L	M	N	P	Q	R	S	T	U	dia. V	W	Y	Z	AA	BB	CC	DD	dia. FF	OR-1 O-ring Order No.
327197	6951KP-22-21	62,8	185,5	104,5	25	G1/4	31,74	13	13	14,5	28,0	33,5	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M16	12,5	26,5	M10	19	63,4	183608
327205	6951KP-22-22	62,8	185,5	104,5	25	G1/4	31,74	13	13	14,5	28,0	33,5	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M16	12,5	26,5	M10	19	63,4	183608
327213	6951KP-22-210**	62,8	220,5	122,0	25	G1/4	31,74	13	13	32,0	45,5	33,0	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M16	12,5	26,5	M10	19	63,4	183608
327221	6951KP-22-220	62,8	220,5	122,0	25	G1/4	31,74	13	13	32,0	45,5	33,0	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M16	12,5	26,5	M10	19	63,4	183608
327239	6951KP-33-21	77,0	196,5	114,0	25	G1/4	38,09	13	13	16,0	30,0	33,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M16	12,5	32,5	M12	19	77,6	183608
327247	6951KP-33-22	77,0	196,5	114,0	25	G1/4	38,09	13	13	16,0	30,0	33,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M16	12,5	32,5	M12	19	77,6	183608
327254	6951KP-33-210**	77,0	228,5	130,0	25	G1/4	38,09	13	13	32,0	46,0	33,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M16	12,5	32,5	M12	19	77,6	183608
327262	6951KP-33-220**	77,0	228,5	130,0	25	G1/4	38,09	13	13	32,0	46,0	33,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M16	12,5	32,5	M12	19	77,6	183608

Subject to technical alterations.

No. 6951FP

Swing clamp, base-flange-mounting, precision design

Single-acting,, with spring return,
max. operating pressure 350 bar,
min. operating pressure 52 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar* [kN]	Clamping stroke K [mm]	Total stroke L [mm]	Oil capacity [cm³]	effective piston area [cm²]	Q max. [l/min]	Weight [g]
327270	6951FP-22-11	22	14,5	28	21,2	7,6	2,5	3030
327288	6951FP-22-12	22	14,5	28	21,2	7,6	2,5	3030
327296	6951FP-33-11	33	16,0	30	34,3	11,4	2,5	4854
327304	6951FP-33-12	33	16,0	30	34,3	11,4	2,5	4854

* Clamping forces with short clamping arm.

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod hardened and chrome plated. Wiper at piston rod. Return spring from stainless steel. Supply scope does not include clamping arm. Oil supply via threaded connection or oil channel in the fixture body.

Application:

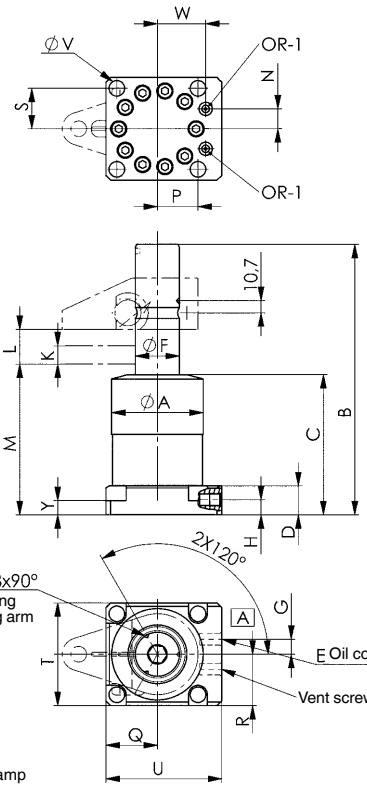
The swing clamp is used particularly in fixtures in which the workpiecesmust be freely accessible and placed from above. Workpieces with difficult shapes can also be clamped using special clamp arms (available on request).

Features:

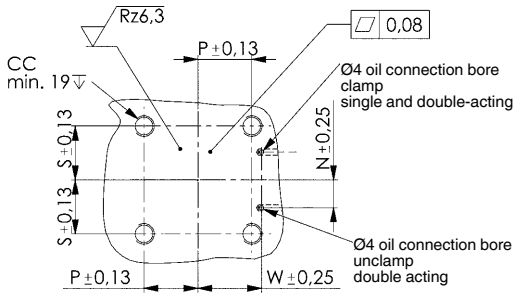
The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

Note:

The piston is guided, and so the max. permissable oil flow rate Q max. as well as the clamping arm length and weight must be observed. When mounting accessories at the piston, no force may be applied to the piston. For single-acting cylinders, there is risk of sucking in coolant through the breather port. In such cases the breather port has to be moved to a clean protected area via a connection line. When installing, ensure that all air is bled from the system.
To control the oil feed, the throttle/check valve no. 6916-12-04 can be optionally used. Other swivel angles are available on request.



Drilling template device:



Dimensions:

Order no.	Article no.	dia. A	B	C	D	E	dia. F	G	H	K	L	M	N	P	Q	R	S	T	U	dia. V	W	Y	CC	OR-1 O-ring Order No.
327270	6951FP-22-11	62,8	204,0	112,0	25	G1/4	31,74	13	12,5	14,5	28	121,0	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M10	183608
327288	6951FP-22-12	62,8	204,0	112,0	25	G1/4	31,74	13	12,5	14,5	28	121,0	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M10	183608
327296	6951FP-33-11	79,0	224,5	121,5	25	G1/4	38,09	13	13,0	16,0	30	130,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M12	183608
327304	6951FP-33-12	79,0	224,5	121,5	25	G1/4	38,09	13	13,0	16,0	30	130,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M12	183608

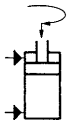
Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

No. 6951FP

Swing clamp, base-flange-mounting, precision design

double acting,
max. operating pressure 350 bar,
min. operating pressure 35 bar.



CAD

Order no.	Article no.	Clamping force at 350 bar Sp* [kN]	Clamping force at 350 bar Lo* [kN]	Clamping stroke K [mm]	Total stroke L [mm]	Vol. Sp [cm³]	Vol. Lo [cm³]	eff. piston area Sp [cm²]	eff. piston area Lo [cm²]	Q max. [l/min]	Weight [g]
327312	6951FP-22-21	22	54	14,5	28	21,2	43,3	7,6	15,5	2,5	3070
327320	6951FP-22-22	22	54	14,5	28	21,2	43,3	7,6	15,5	2,5	3070
327338	6951FP-33-21	33	80	16,0	30	34,3	68,4	11,4	22,8	2,5	4854
327346	6951FP-33-22	33	80	16,0	30	34,3	68,4	11,4	22,8	2,5	4854

Sp = clamp, Lo = unclamp
* Clamping forces with short clamping arm.

Design:

Cylinder barrel from steel, hardened and burnished. Piston rod case hardened and chrome plated. Wiper at piston rod. Supply scope does not include clamping arm. Oil supply via threaded connection or oil channel in the fixture body.

Application:

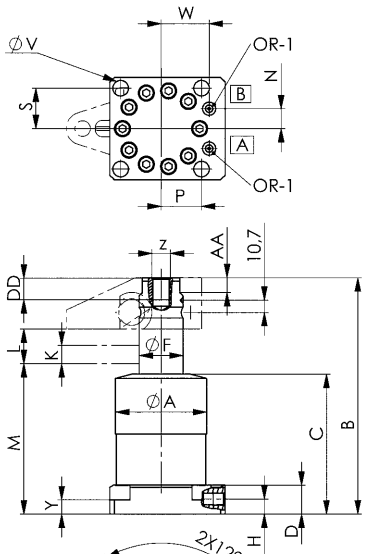
The swing clamp is used particularly in fixtures in which the workpiecesmust be freely accessible and placed from above. Workpieces with difficult shapes can also be clamped using special clamp arms (available on request).

Features:

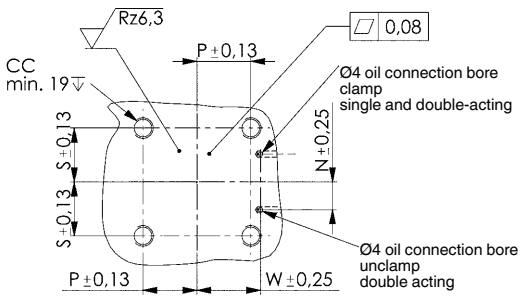
The swing motion is executed via three ball guides, thereby increasing positioning accuracy, repeat accuracy and service life.

Note:

The piston is guided, and so the max. permissable oil flow rate Q max. as well as the clamping arm length and weight must be observed. When mounting accessories at the piston, no force may be applied to the piston. When installing, ensure that all air is bled from the system.
To control the oil feed, the throttle/check valve no. 6916-12-04 can be optionally used.
Other swivel angles are available on request.



Drilling template device:



Dimensions:

Order no.	Article no.	dia. A	B	C	D	E	dia. F	G	H	K	L	M	N	P	Q	R	S	T	U	dia. V	W	Y	Z	AA	BB	CC	DD	OR-1 O-ring Order No.
327312	6951FP-22-21	62,8	194	112,0	25	G1/4	31,74	13	12,5	14,5	28	121,0	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M16	12,5	26,5	M10	19	183608
327320	6951FP-22-22	62,8	194	112,0	25	G1/4	31,74	13	12,5	14,5	28	121,0	14,5	27,4	35,5	35,5	27,4	71	85,5	10,7	35,1	13,0	M16	12,5	26,5	M10	19	183608
327338	6951FP-33-21	79,0	205	121,5	25	G1/4	38,09	13	13,0	16,0	30	130,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M16	12,5	32,5	M12	19	183608
327346	6951FP-33-22	79,0	205	121,5	25	G1/4	38,09	13	13,0	16,0	30	130,5	18,1	35,1	44,5	44,5	35,1	89	100,0	13,5	41,4	12,5	M16	12,5	32,5	M12	19	183608

Subject to technical alterations.

No. 6951N

Swing Clamp Arm, standard

CAD

Order no.	Article no.	A	B	C	dia. E	F	G	H	J	K	L	N	Z	Weight [g]
69146	6951N-22-63	63,5	25,5	14,5	31,75 +0,05	44,5	12,5	22,5	M16x1,5	16,0	25°	0,05	M12	801
60848	6951N-33-68	68,0	35,0	14,2	38,11 +0,05	44,5	14,2	25,6	M16x1,5	16,4	25°	-	M16	1134

Design:

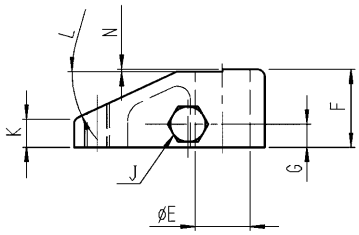
Tempered and blued steel.

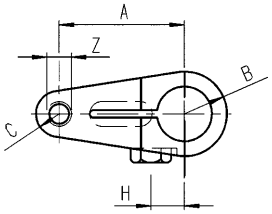
Application:

For swing clamps
order no. 69146 for sizes 6951xx-22-xx
order no. 60848 for sizes 6951xx-33-xx

Note:

Clamping pressure, flow volume and clamping arm weight must be observed. Special versions available on request.





No. 6951N

Swing Clamp Arm, upreach

CAD

Order no.	Article no.	A	B	C	D	dia. E	F	G	H	J	K	L	M	N	Weight [g]
69500	6951N-22-76	76	51	14,5	14,5	31,75 +0,05	70,0	36,5	13,5	22,5	M16x1,5	38	44,5	38,0	1580
61879	6951N-33-81	81	70	14,3	14,3	38,11 +0,05	76,2	39,6	13,5	25,6	M16x1,5	45	44,5	41,3	2313

Design:

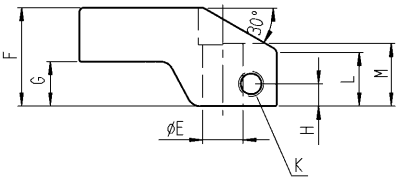
Tempered and blued steel.

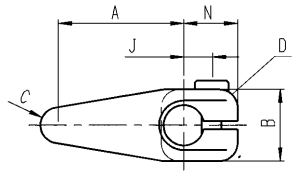
Application:

For swing clamps
order no. 69500 for sizes 6951xx-22-xx
order no. 61879 for sizes 6951xx-33-xx

Note:

Clamping pressure, flow volume and clamping arm weight must be observed. Special versions available on request.





Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

No. 6951N

Swing Clamp Arm, long

CAD

Order no.	Article no.	A	B	C	D	dia. E	F	G	H	J	N	L	Weight [g]
69161	6951N-22-165	165,0	70,5	28,5	19	31,75 +0,05	44,5	12,5	22,4	M16x1,5	0,05	25°	1161
60855	6951N-33-180	180,3	45,0	30,0	34	38,11 +0,05	44,5	14,2	25,5	M16x1,5	-	25°	1996

Design:

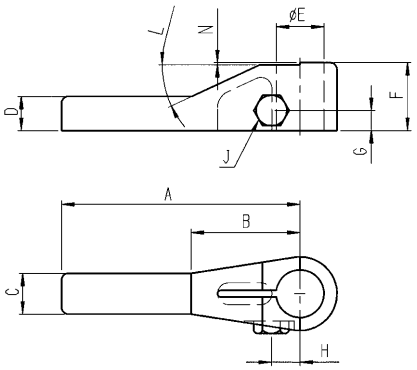
Tempered and blued steel.

Application:

For swing clamps
order no. 69161 for sizes 6951xx-22-xx
order no. 60855 for sizes 6951xx-33-xx

Note:

Clamping pressure, flow volume and clamping arm weight must be observed. Clamp arms can be shortened where necessary. Special versions available on request.



No. 6951N

Swing Clamp Arm, double ended

CAD

Order no.	Article no.	A	2A	B	C	D	dia. E	F	G	H	J	Weight [g]
69526	6951N-22-280	140,0	280,0	70,5	28,5	19	31,75 +0,05	44,5	12,5	22,4	M16x1,5	1869
60863	6951N-33-360	180,3	360,7	44,6	30,0	34	38,11 +0,05	44,5	14,2	25,5	M16x1,5	3311

Design:

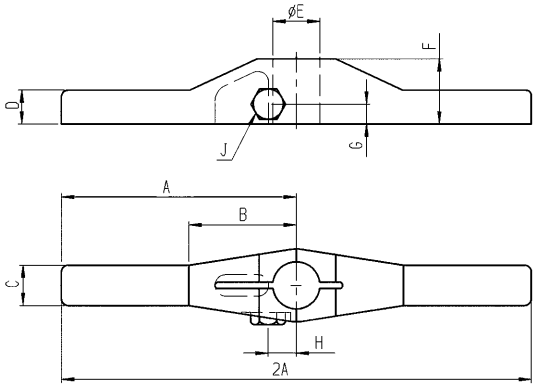
Tempered and blued steel.

Application:

For swing clamps
order no. 69526 for sizes 6951xx-22-xx
order no. 60863 for sizes 6951xx-33-xx

Note:

Clamping pressure, flow volume and clamping arm weight must be observed. Clamp arms can be shortened where necessary. It is also essential that clamping or support heights in either side are identical. Special versions available on request.



Subject to technical alterations.

No. 6951WN

Swing Clamp arm, double-ended

pivoted

CAD

Order no.	Article no.	2A	B	C	D	dia. E	F	G	H	J	dia. K	L	M	W max.	Weight [g]
320481	6951WN-22-200	200	107	25	20	31,8	35	10	55	57,5	16	30,5	M8	6°	1800
320499	6951WN-33-250	250	125	33	22	38,2	38	10	65	64,5	20	36,0	M10	6°	3100

Design:

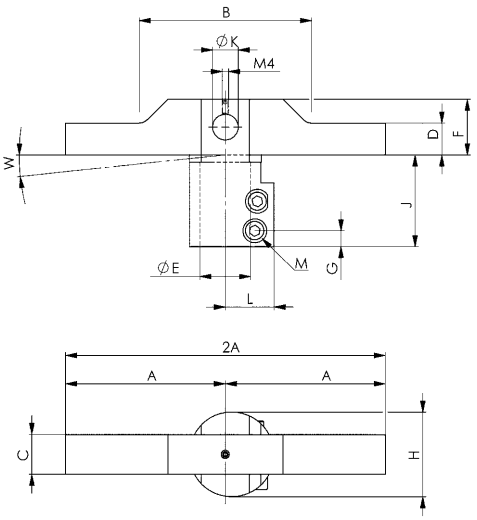
Steel, blued. Clamping arm tempered.

Application:

For all swing clamps
order no. 320481 for sizes 6951xx-22-xx
order no. 320499 for sizes 6951xx-33-xx
Used for clamping two workpieces with different heights.

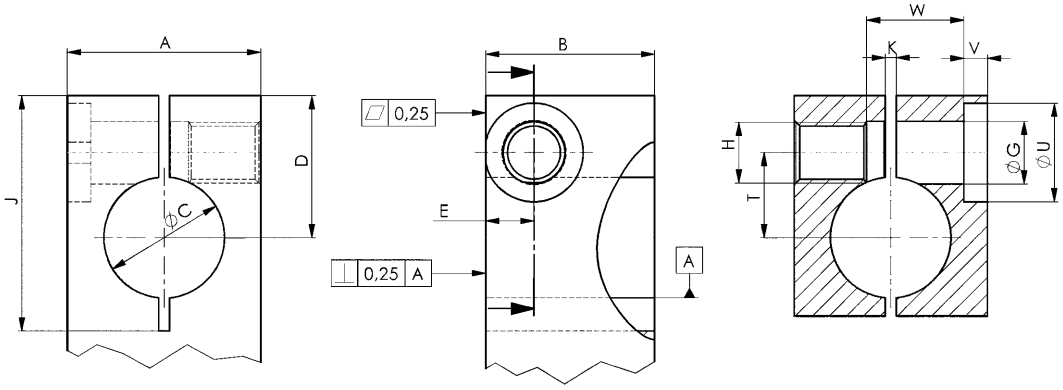
Note:

Clamping pressure and maximum tilt angle (W) must not be exceeded. Special versions are available on request.



No. 6951

Dimensions for proprietary manufacturing of clamping arms



Tolerance DIN ISO 2768 m

Importang note:

Lever lengths and lever weights must be observed!

Dimensions table (proprietary manufacture):

for size	A	B	ØC +0,025	D	E	ØG	H	J	K	T	U	V	W
-22	51	44,5	31,775	37,4	12,5	16,5	M16x1,50-6H	59	2,93	22,4	26	6,2	25,7
-33	70	44,5	38,138	40,4	14,2	16,5	M16x1,50-6H	65	3,23	25,5	26	9,6	35,5

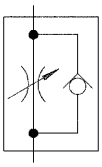
Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de

No. 6916-12

Throttle/Check Valve

cartridge flange
max. operating pressure 350 bar.



Order no.	Article no.	A max.	C	D	dia. E	SW	Md max. [Nm]	G	Weight [g]
326579	6916-12-01	20,7	11,1	15,16	15,9	14	27	G1/8	47
326611	6916-12-04	20,9	11,2	18,72	21,0	19	47	G1/4	47

Design:

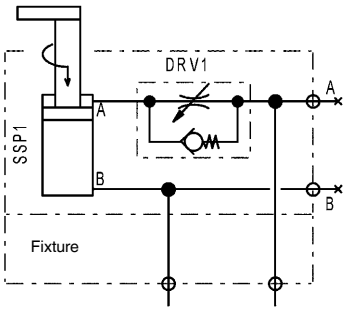
Housing made of steel, hardened and blued. Compact size.

Application:

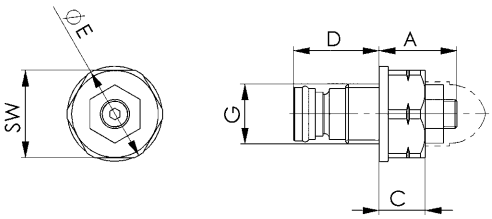
For single and double-acting loads. The traversing speed can be set by controlling the flow.

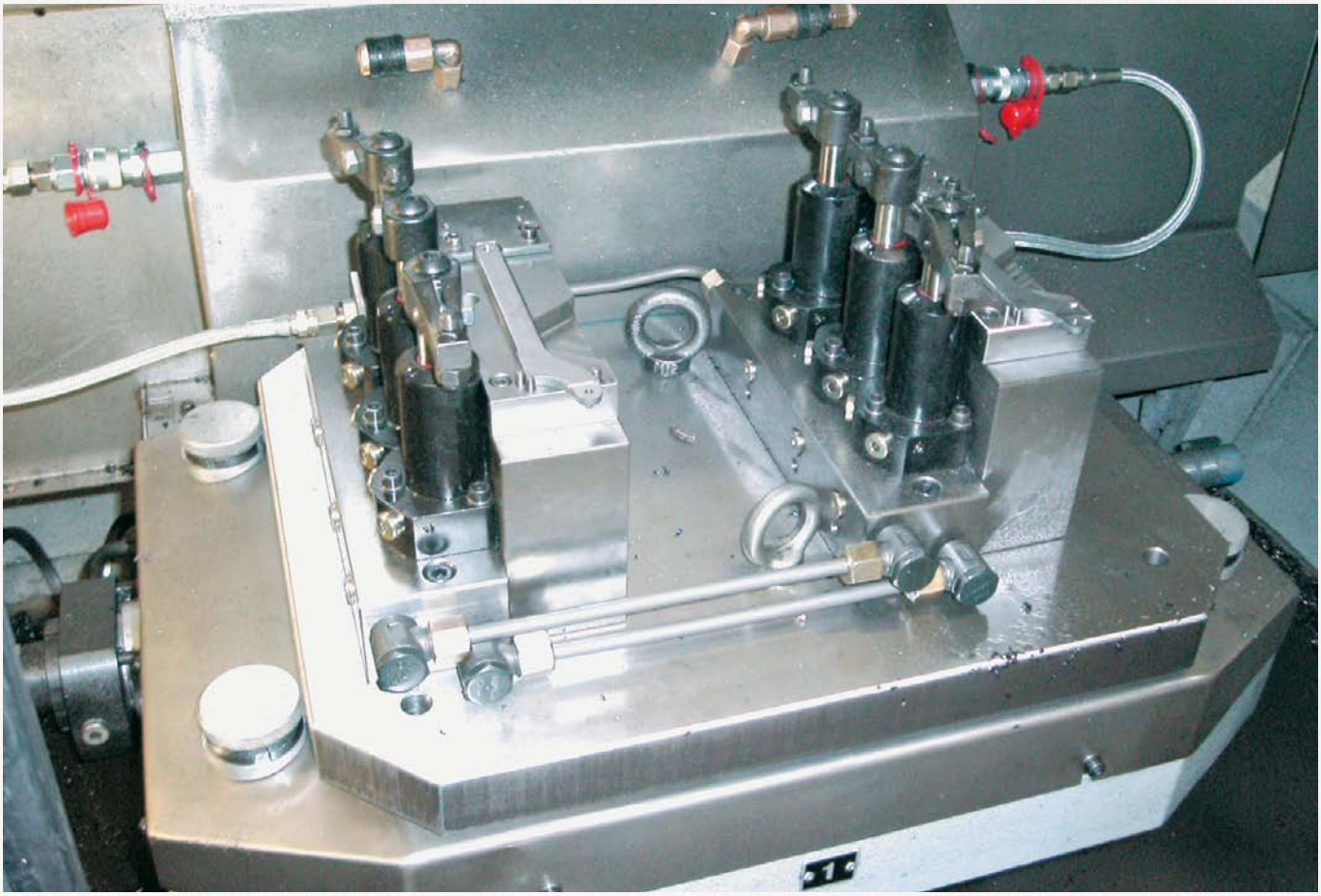
Note:

The screw-in throttle check valve is screwed into the installation bore.
The upstream pressure relief valve in the hydraulic control guarantees to drain the surplus volume.
The throttle check valves should preferably be used for feed control.
Return flow control poses the risk of excess pressure.



CAD





Subject to technical alterations.

Size 02				
Clamping arm length	mm	27	51	76
Max. clamping pressure	bar	350	183	122
Clamping force	kN	2	0,8	0,44
Output flow	l/min.	0,165	0,1	0,1
Max. clamping-arm weight **	g	118		
Spring force*	N	78		

* single-acting version
** 6951 and 6952EP

Size 05				
Clamping arm length	mm	38	76	127
Max. clamping pressure	bar	350	176	107
Clamping force	kN	5	2,2	0,88
Output flow	l/min.	0,4	0,35	0,35
Max. clamping-arm weight **	g	354		
Spring force*	N	210		

* single-acting version
** 6951

Size 11				
Clamping arm length	mm	51	101,5	152
Max. clamping pressure	bar	350	177	119
Clamping force	kN	11	5,1	3,0
Output flow	l/min.	1,64	1,3	1,3
Max. clamping-arm weight **	g	807		
Spring force*	N	696		

* single-acting version
** 6951

Size 22				
Clamping arm length	mm	63,5	101,5	152
Max. clamping pressure	bar	350	192	138
Clamping force	kN	22	10	6,7
Output flow	l/min.	2,5	1,8	1,8
Max. clamping-arm weight **	g	1869		
Spring force*	N	943		

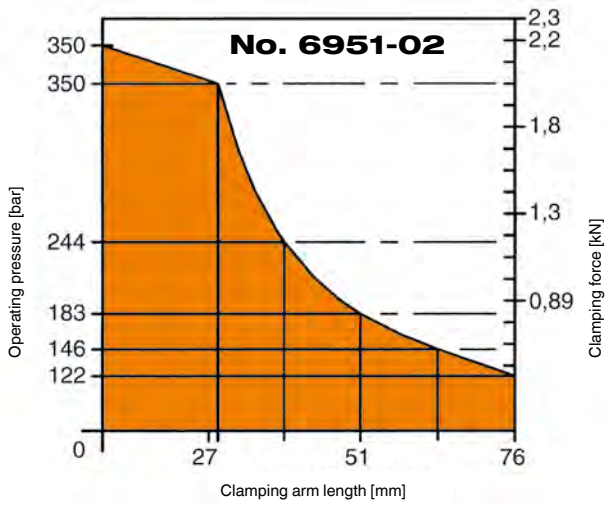
* single-acting version
** 6951

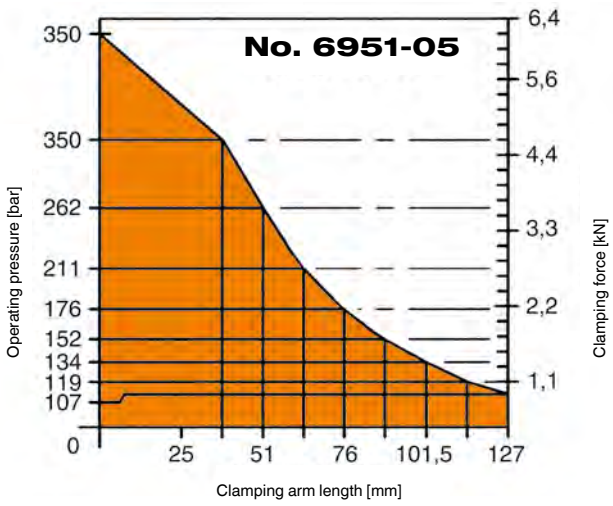
Size 33				
Clamping arm length	mm	68	101,5	178
Max. clamping pressure	bar	350	233	133
Clamping force	kN	33,4	22,2	12
Output flow	l/min.	2,5	1,7	1,0
Max. clamping-arm weight **	g	3311		
Spring force*	N	1188		

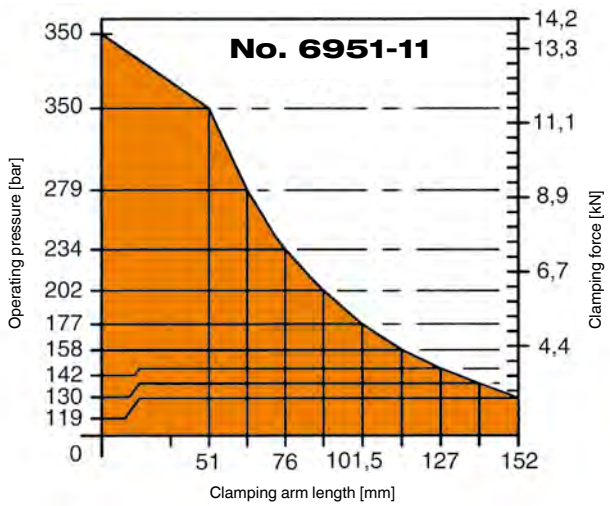
* single-acting version
** 6951

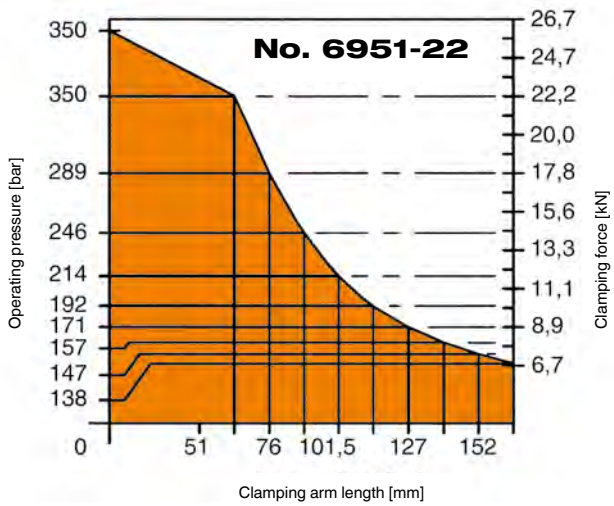
DIAGRAM DESCRIPTION:

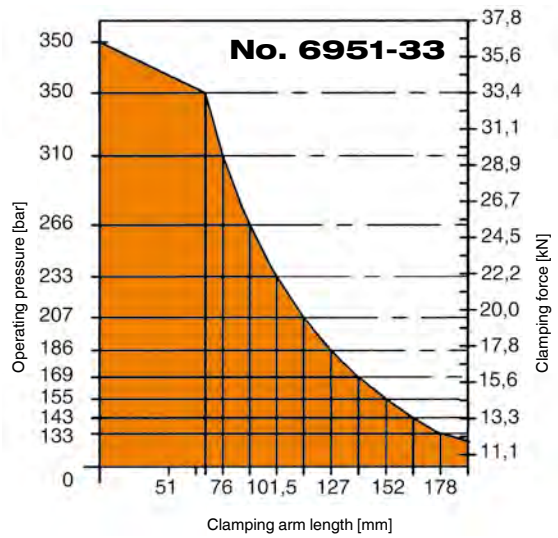
The diagrams show the maximum operating pressure in relation to the clamping arm length and the resulting clamping force.



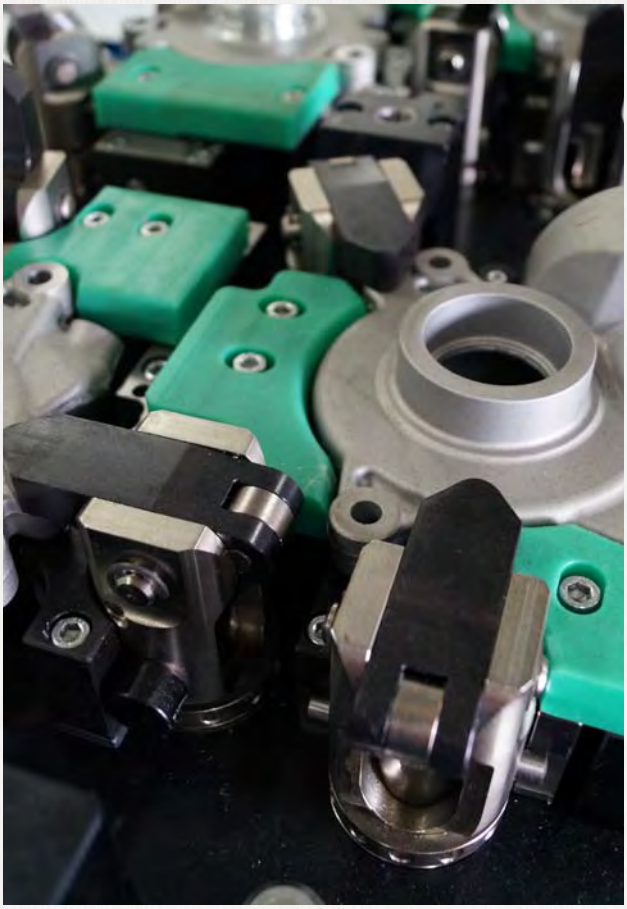


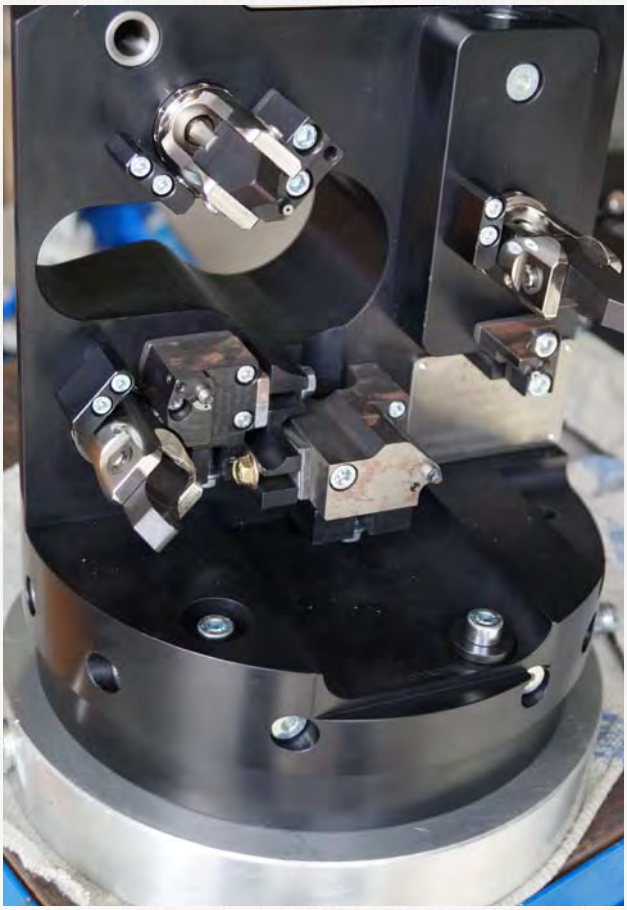


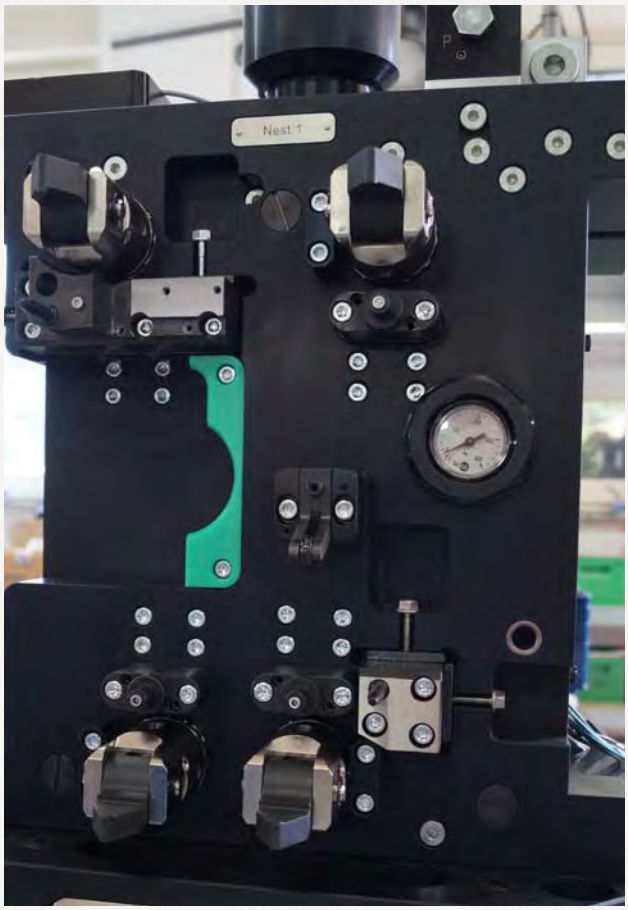




Subject to technical alterations.







Subject to technical alterations.

ANDREAS MAIER GmbH & Co. KG · Phone: +49 711 5766-196 · Web: www.amf.de