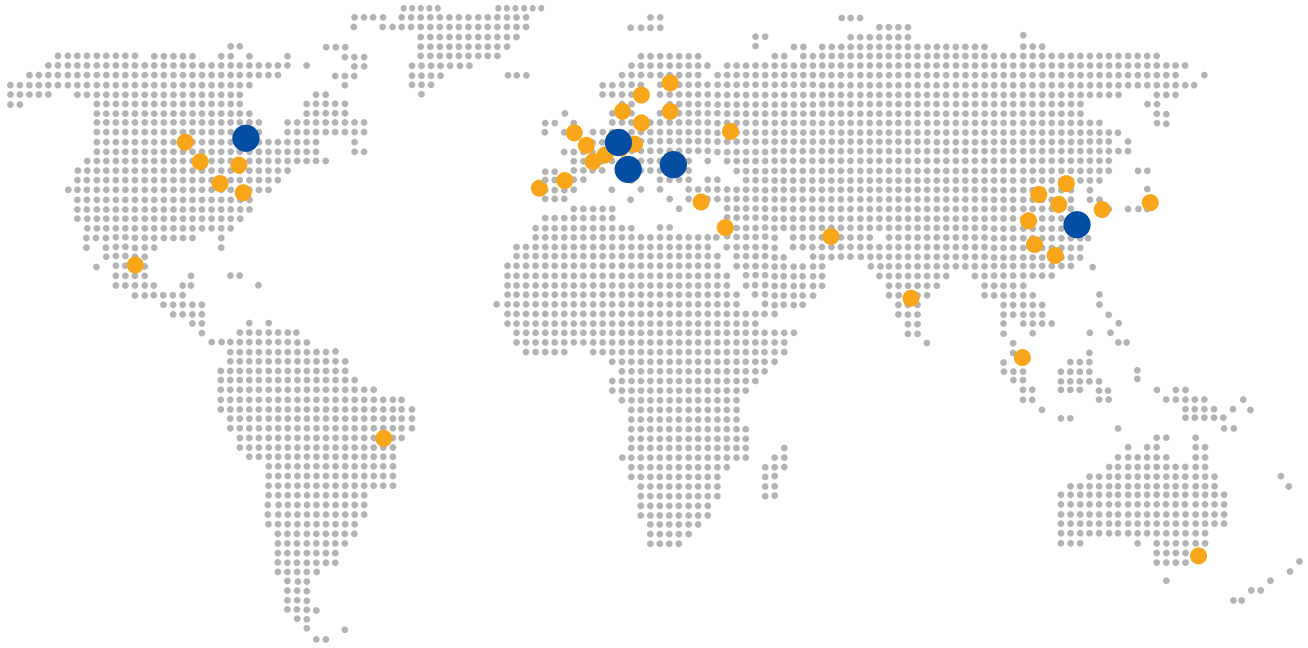
HEMA

HEMA
MASCHINEN- UND
APPARATESCHUTZ GMBH

Clamping Systems

RotoClamp
DiskClamp
LinClamp
MClamp
PClamp

WE ARE THERE FOR YOU WORLDWIDE



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Content

Product finder

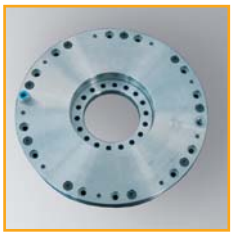
RotoClamp/DiskClamp

RotoClamp Inside
4 or 6 Bar

- RotoClamp (Attivo) Clamping with air
  - RotoClamp Single/tandem version
    - RotoClamp XSA, SA, NA, LA, YA
- RotoClamp Opening with air
  - RotoClamp Single/tandem version
    - RotoClamp XS, S, N, L, Y

RotoClamp Outside
4 or 6 Bar

- RotoClamp A (Attivo) Clamping with air
  - RotoClamp Single/tandem version
    - RotoClamp XSA, SA, NA, XLA
- RotoClamp Opening with air
  - RotoClamp Single/tandem version
    - RotoClamp XS, S, N, XL



DiskClamp
4 up to 10 bar

- Clamping with air
- Opening with air

DiskClamp
more than 10 bar

- Clamping with hydraulic
- Opening with hydraulic

Check list for product selection

Select the solution best suited to you from our wide range of products. The HEMA clamping systems provide an innovative and above all fast and compact solution for the most important applications. When making your selection, please consider whether you want to actively clamp or release using the applied compressed air based on the model. The operating pressure you select decides on the possible clamping force and is important when selecting the model. Tandem versions are available to increase holding forces.

RotoClamp

RotoClamp is ideal for rotary position clamping in axes, tables and swivel heads of machines. Two versions – Inside and Outside – allow various directions of the clamping function.

DiskClamp

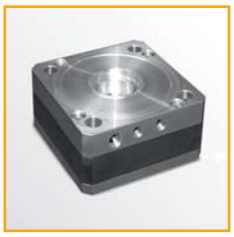
DiskClamp is a security clamping system with emergency brake, to be specified on particular parameters.

LinClamp

LinClamp
4 or 6 Bar

- LinClamp
  Clamping with air
  - LinClamp
    Rail clamping
    - LinClamp SA
- LinClamp
  Opening with air
  - LinClamp
    Rail clamping
    - LinClamp S
    - LinClamp SK
      Compact rail clamping

PClamp



PClamp
4 or 6 Bar

- PClamp
  Opening with air
  - PClamp N, ISO
    in modular design
  - PClamp E

LinClamp

For single linear applications in which you do not want to exclude emergency braking, the LinClamp systems with sinter linings are recommended. Of course, you can also use LinClamp for almost all types of linear guide system for fast and safe clamping (steel coverings).

MClamp

For manual clamping.

PClamp

PClamp clamps and brakes rod loads safely and quickly. It can be adapted to standard systems such as pneumatic cylinders from leading manufacturers (e.g. SMC, Festo) or to individual solutions. Rotary clamping can also be achieved with PClamp. Certified systems from Employer's Liability Insurance Associations can be realised.

RotoClamp/DiskClamp

RotoClamp Inside

RotoClamp Outside

DiskClamp

Advantages

1. Pneumatic clamping with high forces
2. Safety clamping RotoClamp Standard – If the air supply fails then system clamps
3. The values of hydraulic clamping are reached and exceeded
4. Low system costs in comparison to hydraulics
5. Simple installation
6. Compact design
7. Suitable for all shaft sizes

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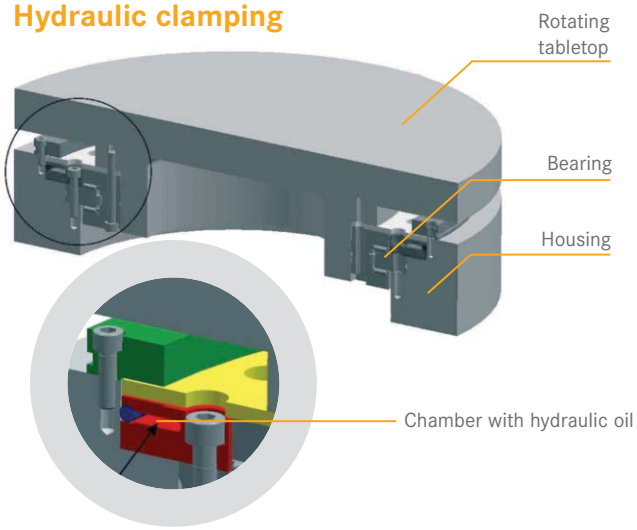
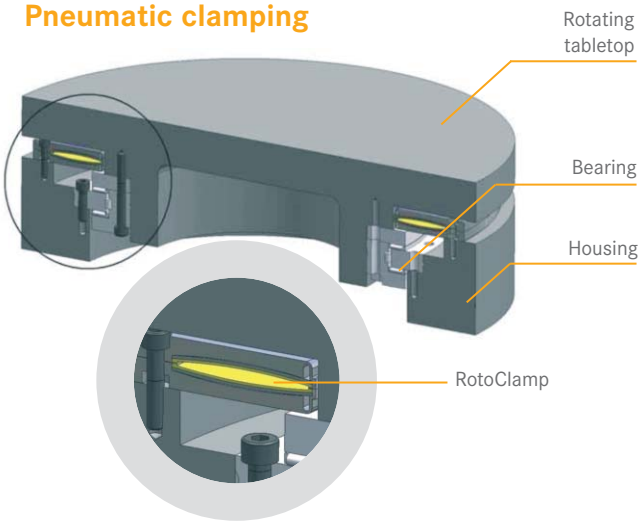
LinClamp MClamp 36
PClamp 50

Comparison of operating principles

Hydraulic clamping



Pneumatic clamping



Operating principle of hydraulic clamping

Function The chamber formed by the expansion ring and the O-ring is supplied with hydraulic oil. The upper ring of the expansion ring is pressed upwards and away elastically and clamps the rotating brake disk between the fixed expansion and counter rings. Standard table sizes with 500 x 500 mm pallets achieve approx. 3000 to 4000 Nm holding torque at 80 to 120 Bar hydraulic pressure.

Safety No safety clamping. If there is a power loss then this axis is no longer clamped.

Reaction times Long and short times with high effort can be achieved.

Costs Precisely manufactured mechanical parts, expensive hydraulic valves, hydraulic piping incl. assembly times, assembly and matching of the mechanical parts; replaceable in part. Safety clamping can only be realised at great effort. Extra material costs of hydraulic vis-à-vis pneumatic. (hydraulic valves, flexible hydraulic lines, piping and screwed joints, relays due to higher rate of power consumption).

Cleanliness hydraulic.

Operating principle of the RotoClamp

Function Clamps with spring actuator. Depressurizing the inner spring diaphragm chamber and ventilating the outer spring diaphragm chamber relaxes the diaphragm and presses on the radial contact surfaces at the inner and outer diameter of the spring. The clamping element is reformed elastically in the area of the clamping surface and presses on the shaft. Adding pressurized air to the inner spring diaphragm chamber (4 or 6 Bar) and venting the outer spring diaphragm chamber bends the diaphragm and the distance between the two radial contact surfaces at the inner and outer diameter of the spring is shortened: The clamping surface lifts off from the shaft. You have the optional possibility of increasing the clamping force by extra loading of the outer spring diaphragm chamber with compressed air when clamped (4 or 6 Bar).

Safety Safety clamping by spring actuator. In case of a power loss, the axis is immediately clamped.

Reaction times Very short due to pneumatics. With quick air-vent valve and quick-acting gate valve attached directly to the clamping mechanism, you can realise extremely short clamping times.

Costs Low costs (in comparison to hydraulics), pneumatic valves and pneumatic piping, low installation costs, no cost for matching, easily replaceable, including safety clamp.

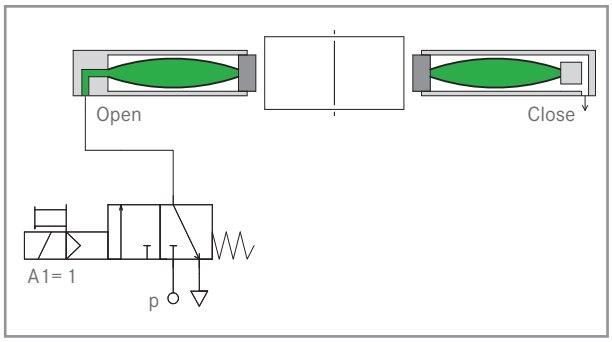
Cleanliness Very clean due to pneumatics.

Materials Clamping-body housing hardened and tempered in tool steel, optional

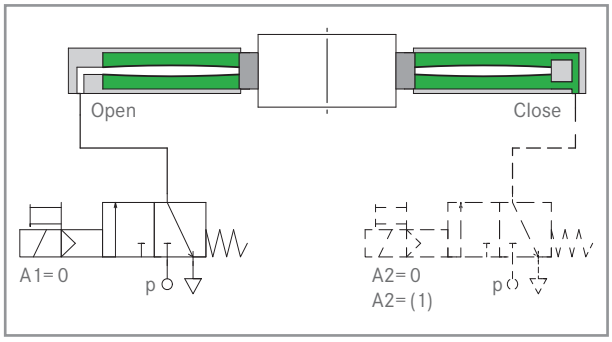
- supported flange joint hardened with case-hardening steel,
- steel coated, alternative lining procedure possible.

Operating principle of the RotoClamp Inside

Function of the RotoClamp Inside



RotoClamp Inside standard, opening the spring actuator



RotoClamp Inside standard, clamping spring actuator and secondary air (optional)

Release RotoClamp Inside

Adding pressurized air to the inner spring diaphragm chamber (open, 4 or 6 Bar) and venting the outer spring diaphragm chamber (close) bends the diaphragm and the distance between the two radial contact surfaces at the inner and outer diameter of the spring is shortened: The clamping element is opened in this state.

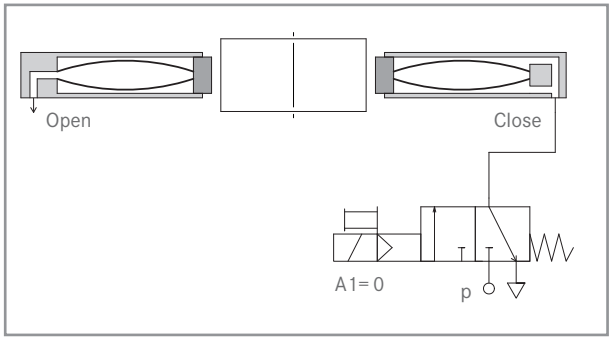
Clamping RotoClamp Inside

Depressurizing the inner spring diaphragm chamber (open) and venting the outer spring diaphragm chamber (close) relaxes the diaphragm and presses on the radial contact surfaces at the inner and outer diameter of the spring. The clamping element is reformed in the area of the clamping surface. The clamping element is closed in this state.

RotoClamp Inside with secondary air

You have the optional possibility of increasing the clamping force by extra loading of the outer spring diaphragm chamber (close) with compressed air (4 or 6 Bar). The clamping element is closed in this state.

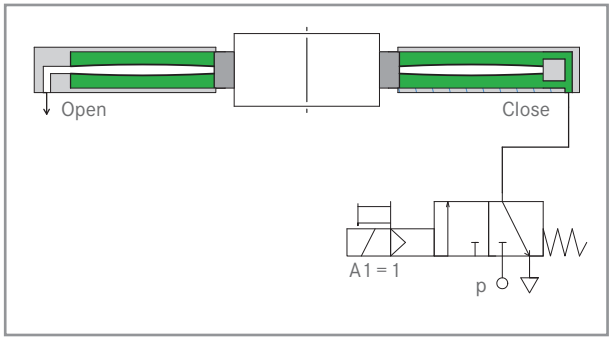
Function of the RotoClamp Inside Active



RotoClamp Inside aktive, opened

Release RotoClamp Inside

The spring diaphragm is bent on assembly and the distance between the two radial contact surfaces at the inner and outer diameter of the spring is reduced. The clamping element is opened in this state.



RotoClamp Inside aktive, clamping with secondary air

Clamping RotoClamp Inside

Depressurizing the inner spring diaphragm chamber (open) and venting the outer spring diaphragm chamber (close, 4 or 6 Bar) reforms the diaphragm and presses on the radial contact surfaces at the inner and outer diameter of the spring. The clamping element is reformed in the area of the clamping surface. The clamping element is closed in this state.

Compressed air

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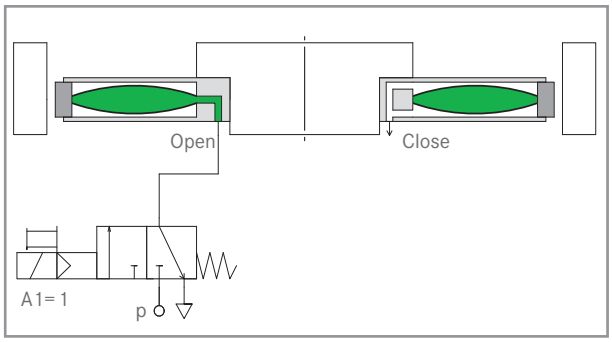
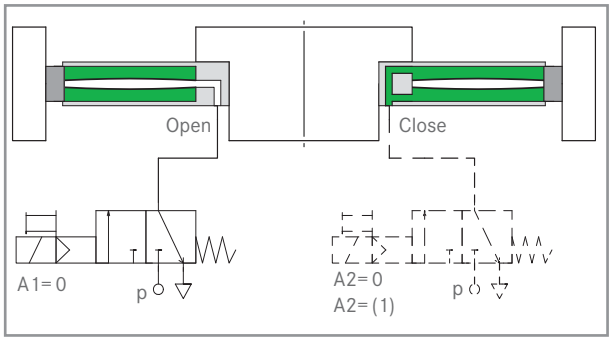
OPERATING PRINCIPLE OF THE ROTOCLAMP OUTSIDE

Function of the RotoClamp Outside



RotoClamp Outside standard, opening the spring actuator



RotoClamp Outside standard, clamping optional with spring actuator and secondary air

Release RotoClamp Outside

Adding pressurized air to the inner spring diaphragm chamber (open, 4 or 6 Bar) and venting the outer spring diaphragm chamber (close) bends the diaphragm and the distance between the two radial contact surfaces at the inner and outer diameter of the spring is shortened. The clamping element is opened in this state.

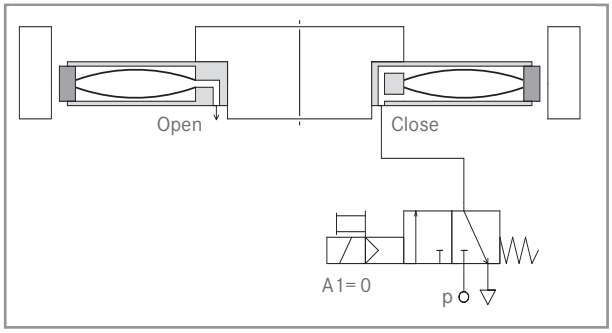
Release (open) RotoClamp Outside

Depressurizing the inner spring diaphragm chamber (open) and venting the outer spring diaphragm chamber (close) relaxes the diaphragm and presses on the radial contact surfaces at the inner and outer diameter of the spring. The clamping element is reformed in the area of the clamping surface. The clamping element is closed in this state.

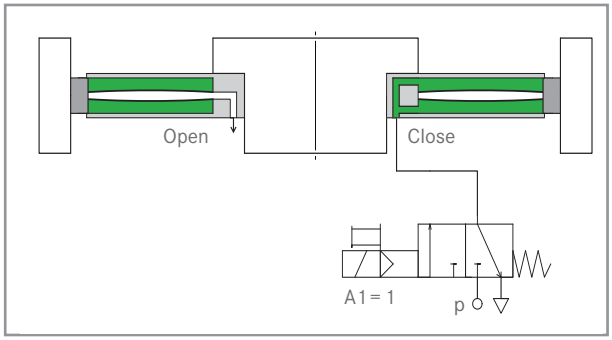
Clamping RotoClamp Outside with secondary air

You have the possibility of increasing the clamping force by extra loading of the outer spring diaphragm chamber (close) with compressed air (4 or 6 Bar). The clamping element is closed in this state.

Funktion RotoClamp Outside Active



RotoClamp Outside Active, opened



RotoClamp Outside Active, clamping with secondary air

Release RotoClamp Outside

The spring diaphragm is bent on assembly and the distance between the two radial contact surfaces at the inner and outer diameter of the spring is reduced. The clamping element is opened in this state.

Clamping (close) RotoClamp Outside

Depressurizing the inner spring diaphragm chamber (open) and venting the outer spring diaphragm chamber (close) with compressed air (4 or 6 Bar) reforms the diaphragm and presses on the radial contact surfaces at the inner and outer diameter of the spring. The clamping element is reformed in the area of the clamping surface. The clamping element is closed in this state.

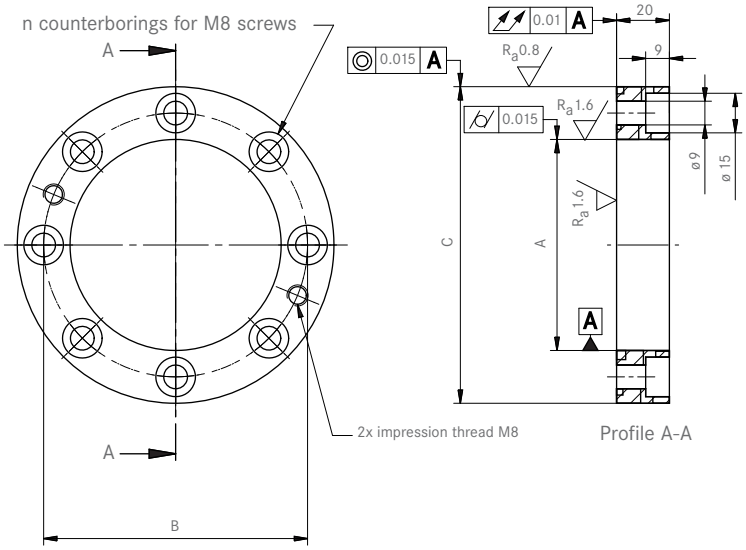
Compressed air

Options/Installation

RotoClamp with optional shaft flange

RotoClamp can also be delivered as a complete solution with the shaft flange manufactured to your specifications using various materials. The optional clamping flange is available in the following qualities: hardened with case-hardened steel or plasma-coated steel.

Size	Ø A	Ø B	Ø C	n counter-sinkings
Tolerance	H7	±0.1 mm	- 0.010 - 0.030	
100	60	80	100	8
120	80	100	120	8
140	100	120	140	8
160	110	136	160	12
180	130	156	180	12
200	150	176	200	12
220	170	196	220	12
240	190	216	240	12
260	210	236	260	12
280	230	256	280	12
300	250	276	300	12
320	270	296	320	12



Installation and assembly

General

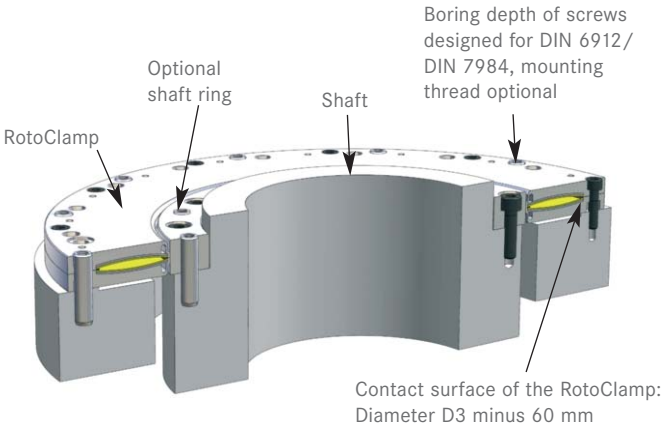
- To transfer the maximum clamping forces, the connection to the machine structure should be as rigid as possible.
- The characteristics indicated for the clamping elements can only be achieved by correct construction, manufacturing, assembly and use of the system.

Assembly instructions of the shaft flange

- The seating at the shaft should be a g6-fit. The shaft flange is placed on the flat machined side, screwed down lightly and then aligned for smooth running.
- The required tightening torque for the tightening screws M8/12.9 is 44 Nm in order to transfer the maximum torque.

Assembly instructions of the RotoClamp

- Compressed air is applied to the RotoClamp and it is opened. Clamping can then be initiated via the shaft. The RotoClamp is then placed on the flat matching side and screwed down with a reduced torque.
- The compressed air is then reduced to 0 Bar, thereby activating the clamping. This procedure centres the clamping mechanism relative to the shaft The RotoClamp must be free at the outer diameter (>1 mm) to ensure safe function.
- After the RotoClamp is centred in the intended position, the fixing screws are tightened cross-wise in several phases to the defined torque.
- After fixing, the clamping mechanism is opened and a check is made whether the shaft can be turned freely. Only this ensures correct function.



Make sure that there is a rigid connection and correct attachment to transmit the forces!

Details of construction

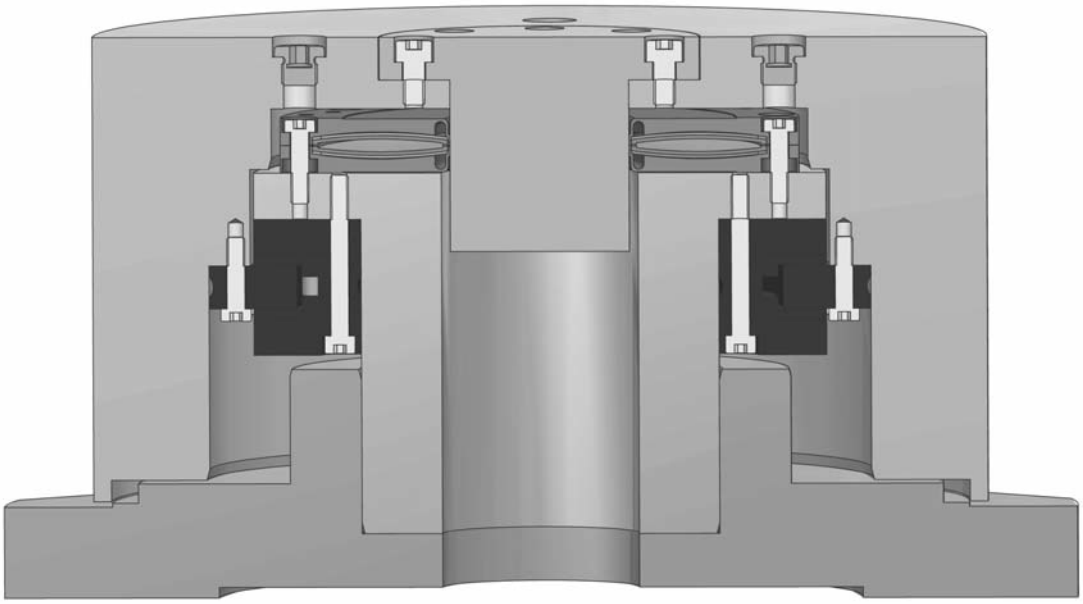
Design recommendations

- The accuracy of the clamping surface is established by matching the precision ground inside diameter to the flat machined mounting surface of the RotoClamp. The total running tolerance of the clamping surface to the defined flat matching surface is smaller than 0.02 mm.
- The contact width of the clamping surface is between 2.5 and 4 mm, depending on the gap width. In this area, compressive stresses up to ca. 180 N/mm² arise at the clamping diameter when using the secondary air function.
- Transferable torque (example): When using 12.9 M8 screws and at a prestressing force of 30700 N for each screw and a coefficient of friction of μ=0.1 and a radius of 100 mm, a transferable torque of 307 Nm is achieved for each screw.
- The roundness and radial eccentricity of the shaft in assembled state should be < 0.02 mm.
- The total running tolerance of the plane surface to the shaft for attaching the clamping mechanism should be < 0.02 mm.
- The flat attachment should not be wider than D3 ± 60 mm.
- The RotoClamp must be free at the outer diameter (RotoClamp Inside) or at the inside diameter (RotoClamp Outside) to be able to centre itself.

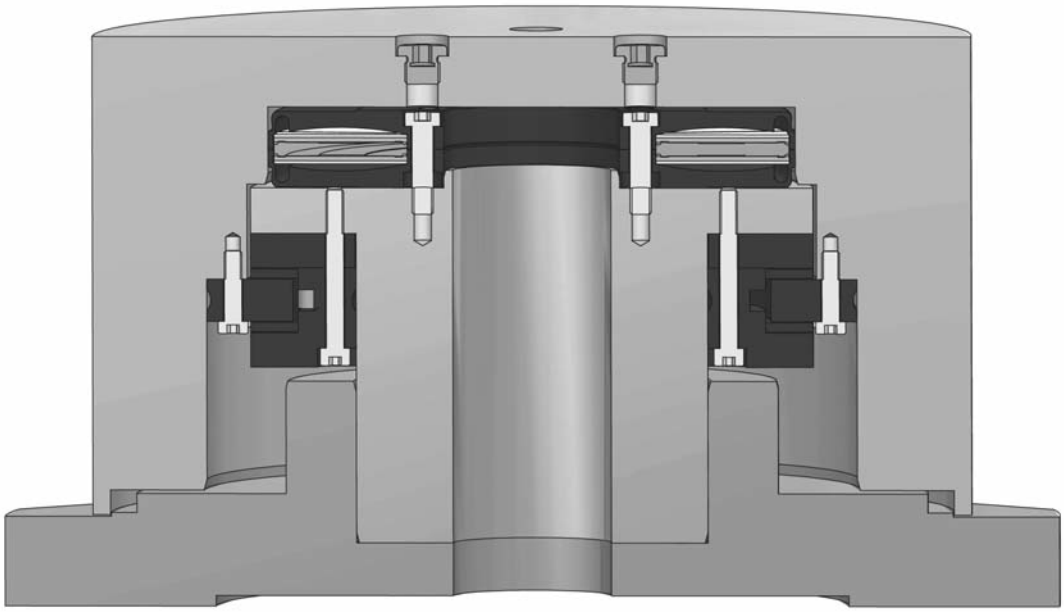
Design recommendations on RotoClamp Inside

- The precision of the clamping surface is machined to the specified dimensions with internal cylindrical grinders. The clamping surface's overall running tolerance to the screw-on surface (plane contact) is less than 0.020 mm.
- The width of the theoretical clamping surface is approx 7 mm. Based on the function and the radial clearances, clamping may be expected to take effect in the 2–4 mm range.
- During operations with additional air, the max compressive stresses at the RotoClamp Inside's clamping lip are as high as 180 N/mm². Please bear this in mind when designing the shaft. HEMA always recommend that the shaft should be process hardened (HRc 58 +4, Eht 0.8 mm, Ra = 0.4).
- The link must be rigid if it is to transfer the high clamping torques.
- The geometrical precision of the plane contact on the shaft must also remain less than 0.02 mm during the clamping process. The RotoClamp's radial expansion must be less than 0.01 mm at the external diameter.
- Transferable torque (example) – With M8 12.9 screws, each pretightened at 30,700 N, a coefficient of friction μ of 0.1, and a radius of 100 mm, each screw can transfer a torque of 307 Nm. Please make sure that your system exhibits adequate torsional stability.
- The circularity and concentricity of the clamped component when installed should be less than 10 μm.
- Your design should take into account the clamps' alignment and installation.
- In principle, RotoClamp components can also function properly when there are slight leaks in the system. Possible leaks when the clamp is opened, also with a pressure loss in excess of 2.5 bar/min, are offset by the replenishing pneumatic system, and the defined opening dimension is still reached.
  Possible leaks during additional air booster operations (CLOSE), also with a pressure loss in excess of 2.5 bar/min, are offset by the replenishing pneumatic system, and the defined retaining torque is still reached.
  The internal HEMA acceptance test allows a max pressure loss of 0.5 bar/min for OPEN and CLOSE, based on the operating pressure.
- Contact and fretting corrosion between the shaft and clamping surface can be minimised only with suitable measures on the shaft.
- B10 values: The safety components HEMA RotoClamp Inside Standard are designed to clamp rotating machine elements when stationary. The purpose and primary function of the HEMA clamping elements is to retain and clamp in one position. When used properly and complying with the technical rules and the instructions and data defined in the operating instructions for the project planning, application, and assembly, these components exhibit at 0 bar opening pressure a safety function defined by the spring accumulator. This safety function was retained when all known, intended applications complied with all known information and data irrespectively of the number of cycles and time of use.

Details of construction



View: RotoClamp Inside in mounting position (suggestion)



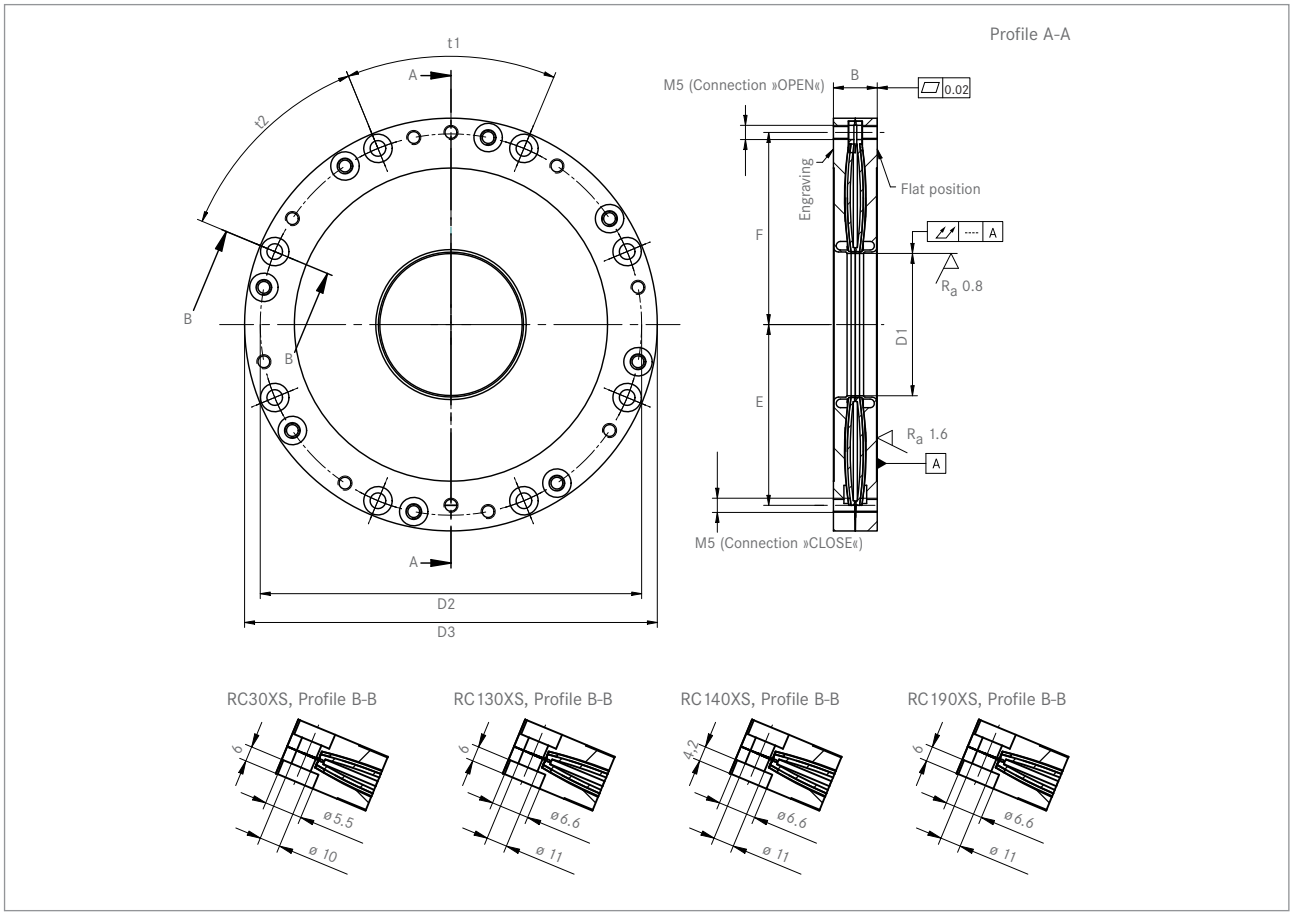
View: RotoClamp Outside in mounting position (suggestion)

Technical Data

Technical Data of the RotoClamp XS

Size	D1 opened at rated pressure Pn = 4 or 6 Bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at 0 bar Pn = 6 bar	Elastic holding torque with secondary at 6 bar Pn =6 bar	Elastic holding torque at 0 bar Pn = 4 bar	Elastic holding torque with secondary at 4 bar Pn = 4 bar	Mass max.	Air require-ment per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.01/+0.02	-0.01/-0.02	± 0.1		+0.4												
Roundness	0.01	0.01															
Surface finish	R_a 0.8 µm	R_a 0.8 µm															
RC 30 XS	30	30	109	120	22	54.5	55	8xM5	6	45	45	30	50	20	35	1,5	20
Tolerance	+0.03/+0.05	-0.01/-0.025															
Roundness	0.01	0.01															
Surface finish	R_a 0.8 µm	R_a 0.8 µm															
RC 130 XS	130	130	213	226	20	104.5	105	16xM6	6	30	15	400	720	250	450	3	20
RC 140 XS	140	140	227	240	17	111	111	16xM6	4	30	15	450	820	300	550	3	20
Tolerance	+0.04/+0.06	-0.01/-0.025															
Roundness	0.01	0.01															
Surface finish	R_a 0.8 µm	R_a 0.8 µm															
RC 190 XS	190	190	275	288	20	135	135	16xM6	6	30	15	600	1100	400	730	4.5	20

Specification valid for RotoClamp Inside XS only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

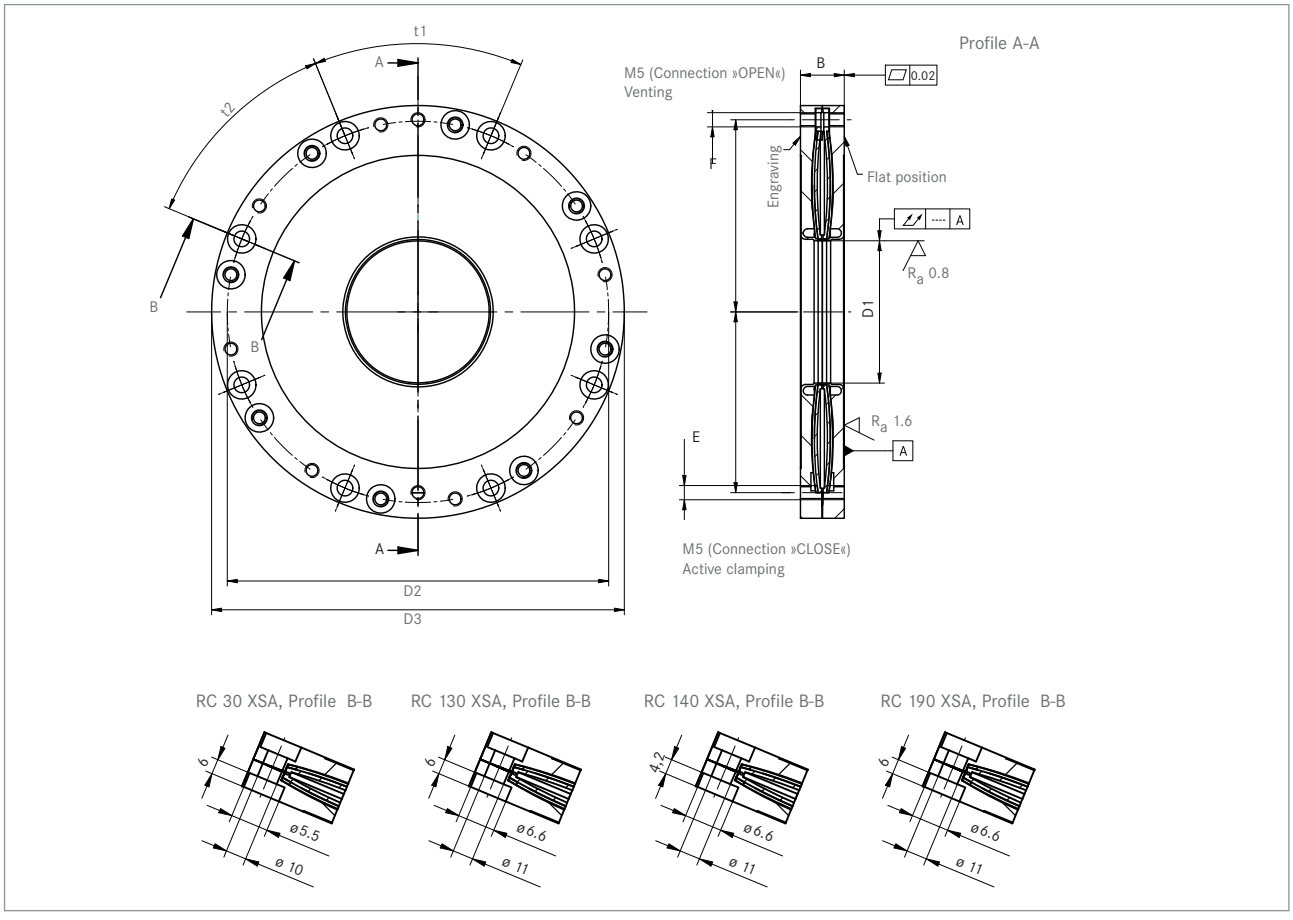


Technical Data

Technical Data of the RotoClamp XSA

Size	D1 opened at rated pressure Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding force Pn = 6 bar	Elastic holding force Pn = 4 bar	Mass max.	Air require-ment per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.01/+0.02	-0.01/-0.02	± 0.1		+0.4										
Roundness	0.01	0.01													
Surface finish	R_a 0.8 µm	R_a 0.8 µm													
RC 30 XSA	30	30	109	120	22	54.5	55	8xM5	6	45	45	30	20	1.5	20
Tolerance	+0.03/+0.05	-0.01/-0.025													
Roundness	0.01	0.01													
Surface finish	R_a 0.8 µm	R_a 0.8 µm													
RC 130 XSA	130	130	213	226	20	104.5	105	16xM6	6	30	15	400	250	3	20
RC 140 XSA	140	140	227	240	17	111	111	16xM6	4	30	15	450	300	3	20
Tolerance	+0.04/+0.06	-0.01/-0.025													
Roundness	0.01	0.01													
Surface finish	R_a 0.8 µm	R_a 0.8 µm													
RC 190 XSA	190	190	275	288	20	135	135	16xM6	6	30	15	600	400	4.5	20

Specification valid for RotoClamp Inside XSA only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

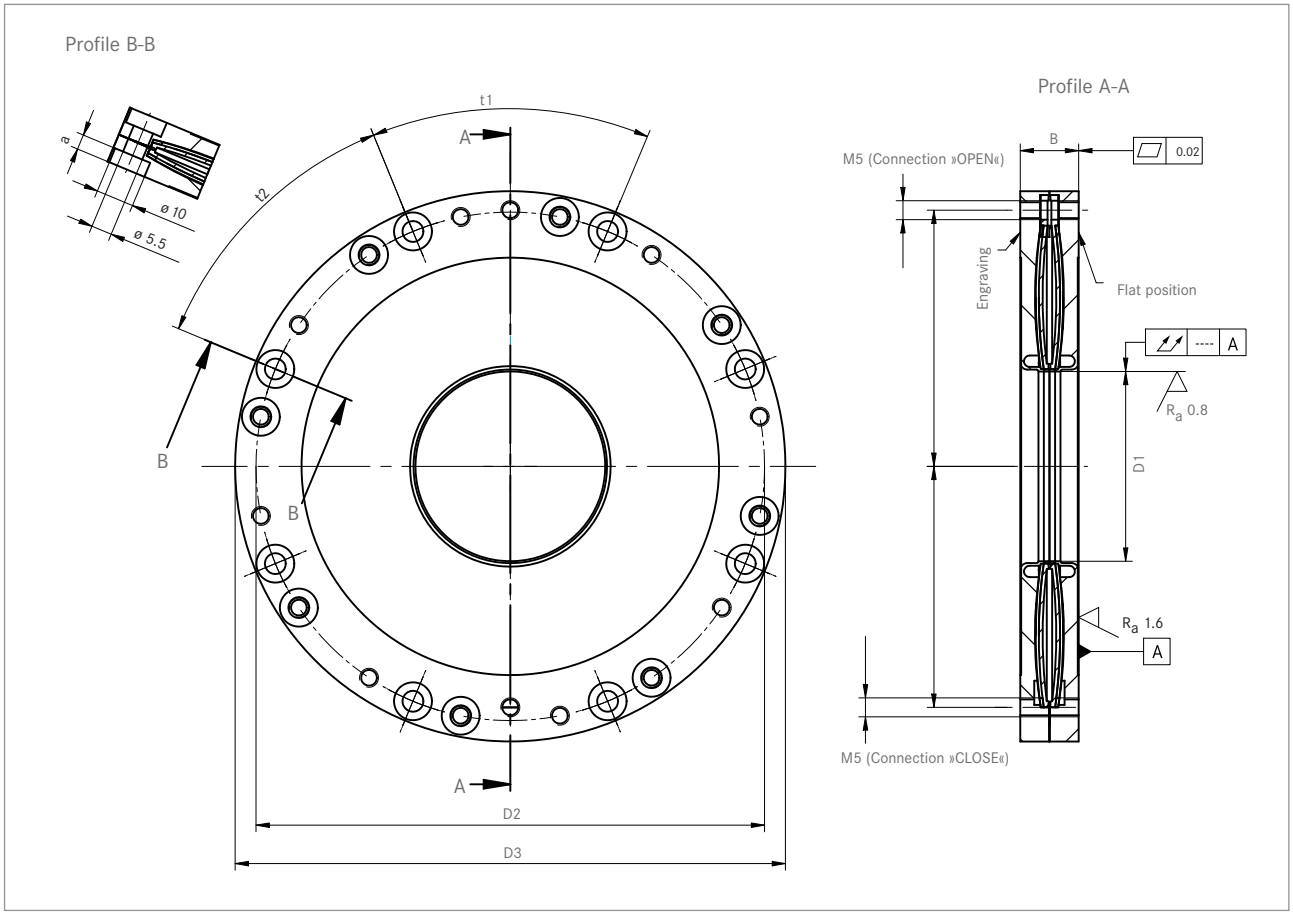


TECHNICAL DATA

Technical Data of the RotoClamp S

Size	D1 opened at rated pressure Pn = 4/6 Bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws M5	a	t1	t2	Elastic holding torque at 0 bar Pn = 6 bar	Elastic holding torque with secondary air at 6 bar Pn = 6 bar	Elastic holding torque at 0 bar Pn = 4 bar	Elastic holding torque with secondary air at 4 bar Pn = 4 bar	Max. mass	Air requirements per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.03/+0.05	-0.01/-0.025	± 0.1		+0.4												
Roundness	0.01	0,01															
Surface finish	R_a 0.8 µm	R_a 0.8 µm															
RC 50 S	50	50	134	145	15	63.5	67.5	8xM5	4	45	45	60	108	42	76	1.7	20
RC 60 S	60	60	144	155	15	68.5	72.5	8xM5	4	45	45	84	153	59	107	1.9	20
RC 70 S	70	70	154	165	15	73.5	77.5	12xM5	4	30	30	114	210	80	147	2.1	20
RC 80 S	80	80	164	175	15	78.5	82.5	12xM5	4	30	30	150	270	105	189	2.3	20
RC 90 S	90	90	174	185	15	83.5	87.5	12xM5	4	30	30	189	342	132	239	2.5	20

Specification valid for RotoClamp Inside S only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

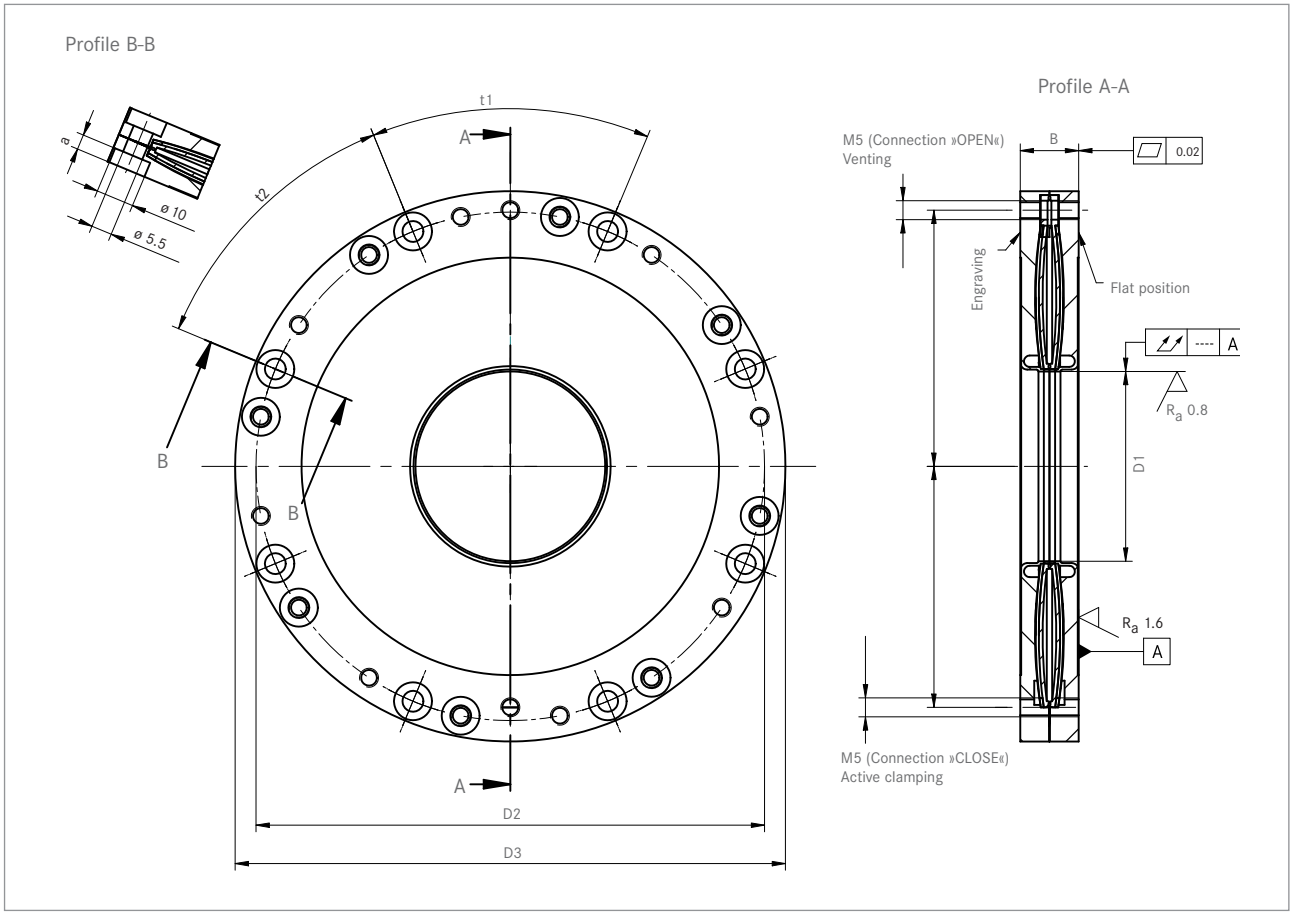


Technical Data

Technical Data of the RotoClamp Inside SA

Size	D1 opened at rated pressure Pn = Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque Pn = 6 Bar	Elastic holding torque Pn = 4Bar	Max. mass	Air require-ments per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.025/+0.04	-0.01/-0.025	± 0.1		+0.4										
Round-ness	0.01	0.01													
Surface finish	R_a 0.8 µm	R_a 0.8 µm													
RC 50 SA	50	50	134	145	15	63.5	67.5	8xM5	4	45	45	60	42	1.7	20
RC 60 SA	60	60	144	155	15	68.5	72.5	8xM5	4	45	45	84	59	1.9	20
RC 70 SA	70	70	154	165	15	73.5	77.5	12xM5	4	30	30	114	80	2.1	20
RC 80 SA	80	80	164	175	15	78.5	82.5	12xM5	4	30	30	150	105	2.3	20
RC 90 SA	90	90	174	185	15	83.5	87.5	12xM5	4	30	30	189	132	2.5	20

Specification valid for RotoClamp Inside SA only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

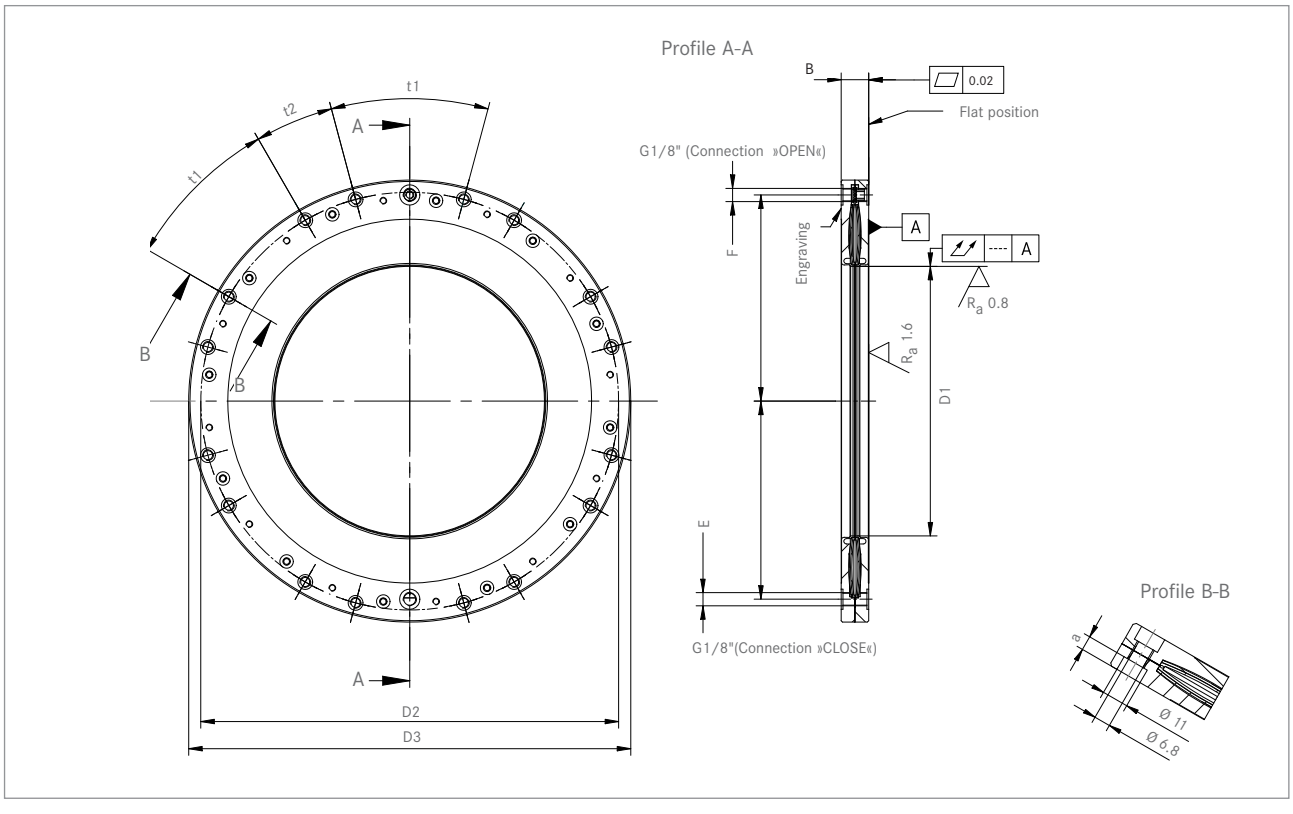


TECHNICAL DATA

Technical Data of the RotoClamp N

Size	D1 opened at rated pressure Pn = 4/ 6 Bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws M6	a	t1	t2	Elastic holding torque at 0 Bar Pn = 6 Bar	Elastic holding torque with secondary air at 6 Bar Pn = 6 Bar	Elastic holding torque at 0 Bar Pn = 4 Bar	Elastic holding torque with secondary air at 4 Bar Pn = 4 Bar	Max. mass	Air requirements per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.04/+0.06	-0.01/-0.025	± 0.1		+0.4												
Roundness	0.01	0.01															
Surface finish	R_a 0.8 µm	R_a 0.8 µm															
RC 100 N	100	100	210	228	16	103	103	12	4	40	20	240	420	168	294	4.1	60
RC 120 N	120	120	230	248	16	113	113	12	4	40	20	336	600	235	420	4.6	60
RC 140 N	140	140	250	268	16	123	123	12	4	40	20	456	840	319	588	5.1	60
RC 160 N	160	160	270	288	16	133	133	12	4	40	20	600	1080	420	756	5.6	60
RC 180 N	180	180	290	308	20	137	143	16	6	30	15	750	1380	525	966	7.7	90
Tolerance	+0.05/+0.07	-0.01/-0.03	± 0.2		+0.4												
Roundness	0.015	0.015															
RC 200 N	200	200	310	328	20	147	153	16	6	30	15	930	1680	651	1176	8,3	90
RC 220 N	220	220	330	348	20	157	163	16	6	30	15	1110	2040	777	1428	8.9	90
RC 240 N	240	240	350	368	20	167	173	24	6	20	10	1350	2400	945	1680	9.5	90
RC 260 N	260	260	370	388	22	177	183	24	6	20	10	1560	2820	1092	1974	11.2	120
RC 280 N	280	280	390	408	22	187	193	24	6	20	10	1800	3240	1260	2268	11.9	120
RC 300 N	300	300	410	428	22	197	203	24	6	20	10	2100	3720	1470	2604	12.6	120
RC 320 N	320	320	430	448	22	207	213	24	6	20	10	2340	4200	1638	2940	13.3	120
RC 340 N	340	340	450	468	22	217	223	24	6	20	10	2580	4680	1806	3276	14	120

Specification valid for RotoClamp Inside N only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

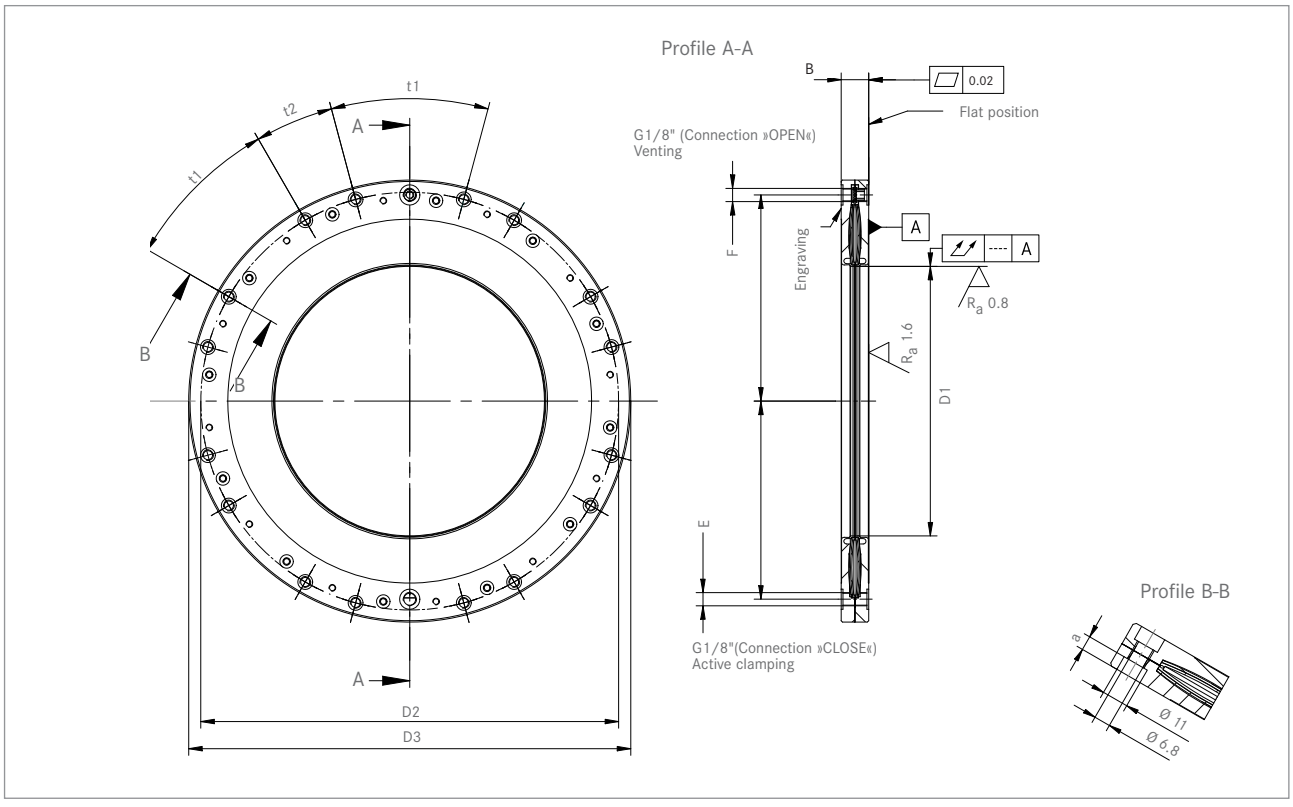


Technical Data

Technical Data of the RotoClamp Inside NA

Size	D1 opened at rated pressure Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque Pn = 6 bar	Elastic holding torque Pn = 4 bar	Mass max.	Air require-ments per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.035/+0.05	-0.01/-0.025	± 0.1		+0.4										
Round-ness	0,01	0.01													
Surface finish	R_a 0.8 µm	R_a 0.8 µm													
RC 100 NA	100	100	210	228	16	103	103	12xM6	4	40	20	240	168	4.1	60
RC 120 NA	120	120	230	248	16	113	113	12xM6	4	40	20	336	235	4.6	60
RC 140 NA	140	140	250	268	16	123	123	12xM6	4	40	20	456	319	5.1	60
RC 160 NA	160	160	270	288	16	133	133	12xM6	4	40	20	600	420	5.6	60
RC 180 NA	180	180	290	308	20	137	143	16xM6	6	30	15	750	525	7.7	90
Tolerance	+0.045/+0.06	-0.01/-0.03	± 0.2		+0.4										
Round-ness	0.015	0.015													
RC 200 NA	200	200	310	328	20	147	153	16xM6	6	30	15	930	651	8.3	90
RC 220 NA	220	220	330	348	20	157	163	16xM6	6	30	15	1110	777	8.9	90
RC 240 NA	240	240	350	368	20	167	173	24xM6	6	20	10	1350	945	9.5	90
RC 260 NA	260	260	370	388	22	177	183	24xM6	6	20	10	1560	1092	11.2	120
RC 280 NA	280	280	390	408	22	187	193	24xM6	6	20	10	1800	1260	11.9	120
RC 300 NA	300	300	410	428	22	197	203	24xM6	6	20	10	2100	1470	12.6	120
RC 320 NA	320	320	430	448	22	207	213	24xM6	6	20	10	2340	1638	13.3	120
RC 340 NA	340	340	450	468	22	217	223	24xM6	6	20	10	2580	1806	14	120

Specification valid for RotoClamp Inside NA only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

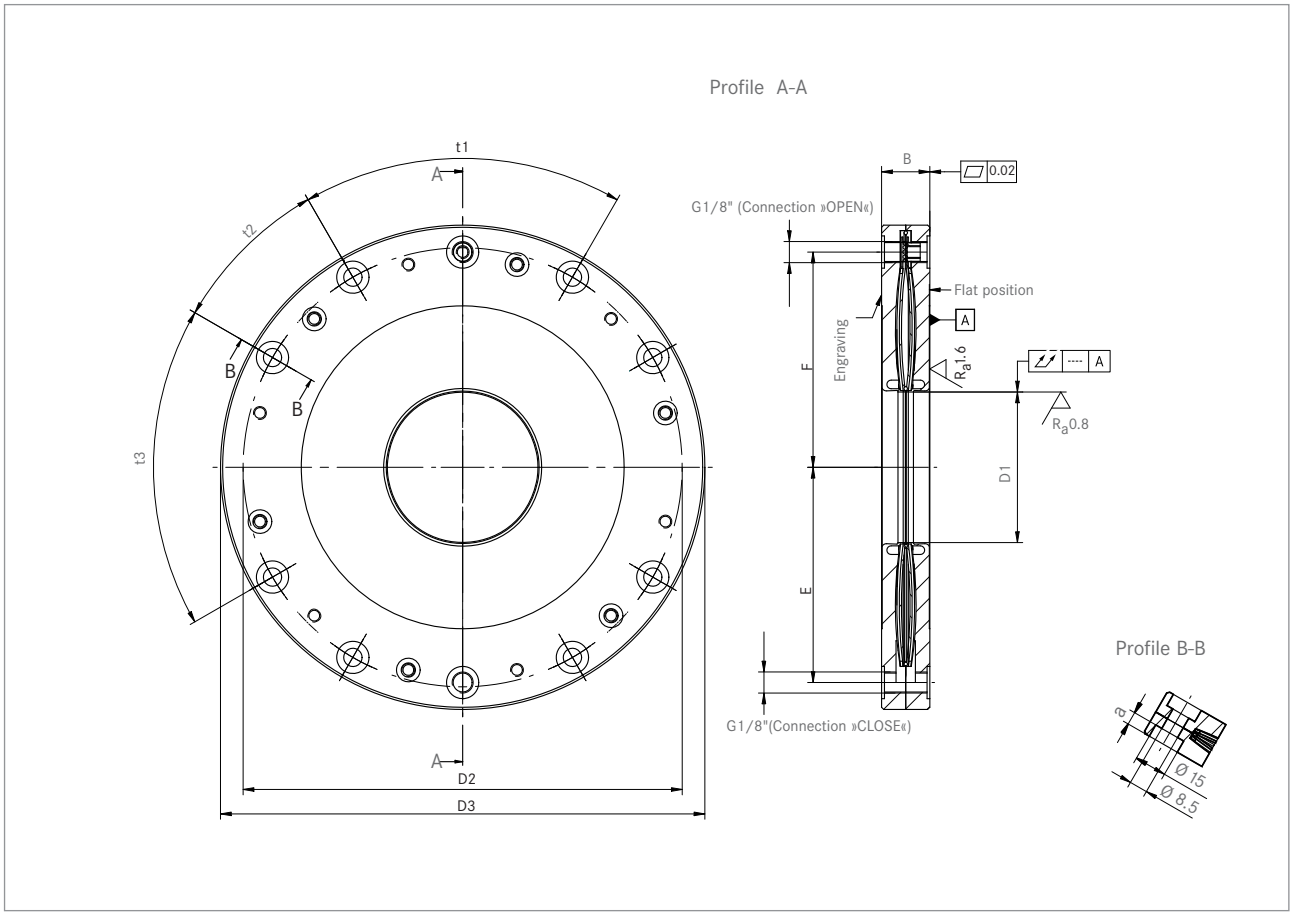


Technical Data

Technical Data of the RotoClamp L

Size	D1 opened at rated pressure Pn = 4 Bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	t3	Elastic holding torque at 0 bar Pn = 4 bar	Elastic holding torque with secondary air at 4 bar Pn = 4 bar	Max. mass	Air requirements per max. stroke.
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.04/+0.06	-0.01/-0.025	± 0.1		+0.4											
Roundness	0.01	0.01														
Surface finish	R_a 0.8 µm	R_a 0.8 µm														
RC 70 L	70	70	204	225	22	100	100	8xM8	6	60	30	60	114	210	6.2	50
RC 140 L	140	140	274	295	22	135	135	16xM8	6	30	15	30	456	840	9.1	100
RC 180 L	180	180	314	335	22	155	155	22xM8	6	30	15	15	750	1380	10.8	100
Tolerance	+0.05/+0.07	-0.01/-0.03	± 0.2		+0.4											
Roundness	0.015	0.015														
RC 200 L	200	200	334	355	22	165	165	22xM8	6	30	15	15	930	1680	11.7	100
RC 240 L	240	240	374	395	22	185	185	34xM8	6	20	10	10	1350	2400	13.3	150
RC 280 L	280	280	414	435	22	205	205	34xM8	6	20	10	10	1800	3240	14.9	150
RC 320 L	320	320	454	475	22	225	225	34xM8	6	20	10	10	2340	4200	16.7	150
RC 340 L	340	340	474	495	22	235	235	34xM8	6	20	10	10	2580	4680	17.5	150

Specification valid for RotoClamp Inside L only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

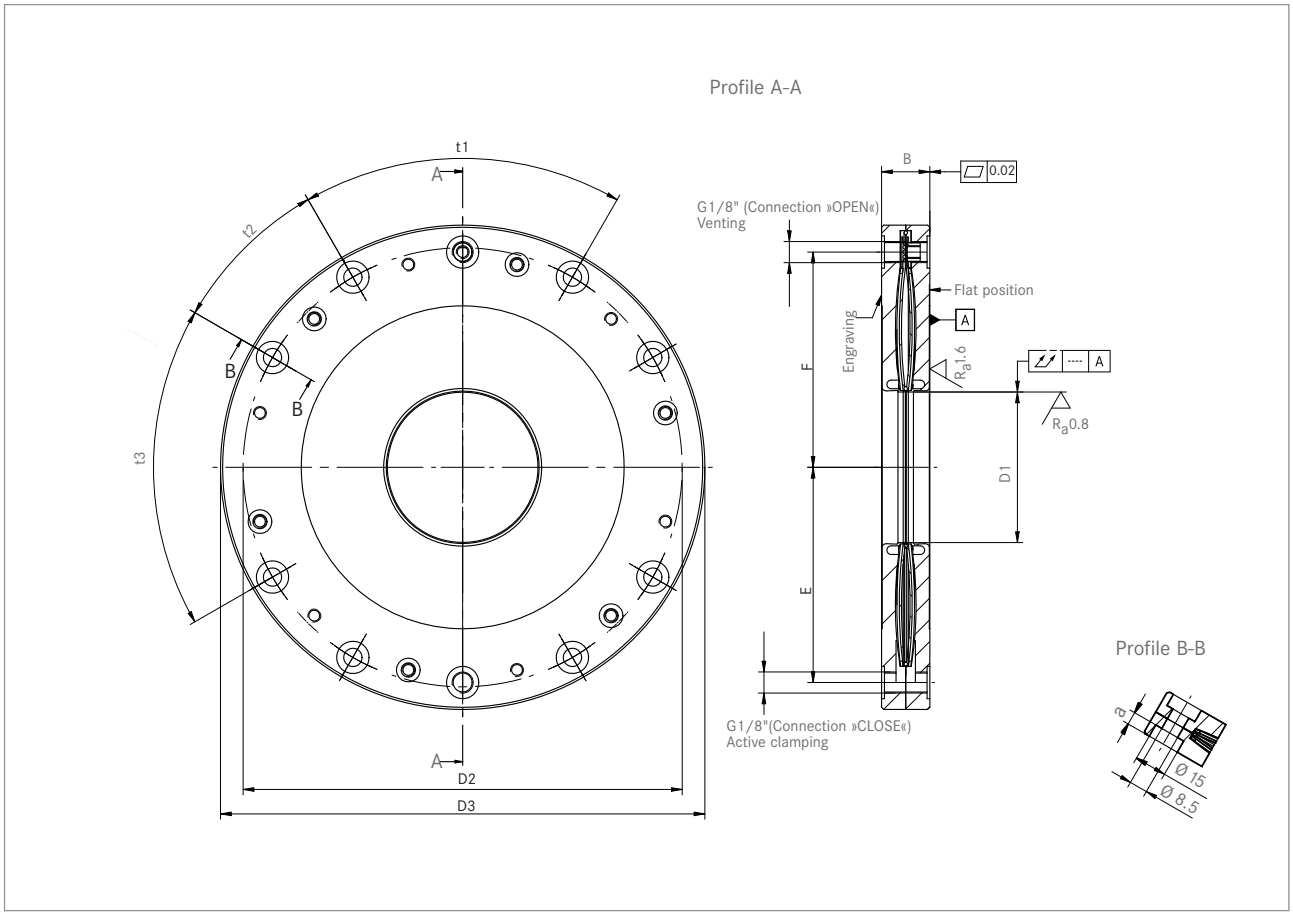


Technical Data

Technical Data of the RotoClamp LA

Tipo	D1 opened at rated pressure Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	t3	Elastic holding torque Pn = 6 bar	Elastic holding torque Pn = 4 bar	Mass max.	Air require-ments per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.035/+0.05	-0.01/-0.025	± 0.1		+0.4											
Round-ness	0.01	0.01														
Surface finish	R_a 0.8 µm	R_a 0.8 µm														
RC 70 LA	70	70	204	225	22	100	100	8xM8	6	60	30	60	160	114	6.2	50
RC 140 LA	140	140	274	295	22	135	135	16xM8	6	30	15	30	630	456	9.1	100
RC 180 LA	180	180	314	335	22	155	155	22xM8	6	30	15	15	1050	750	10.8	100
Tolerance	+0.045/+0.06	-0.01/-0.03	± 0.2		+0.4											
Round-ness	0.015	0.015														
RC 200 LA	200	200	334	355	22	165	165	22xM8	6	30	15	15	1300	930	11.7	100
RC 240 LA	240	240	374	395	22	185	185	34xM8	6	20	10	10	1850	1350	13.3	150
RC 280 LA	280	280	414	435	22	205	205	34xM8	6	20	10	10	2500	1800	14.9	150
RC 320 LA	320	320	454	475	22	225	225	34xM8	6	20	10	10	3200	2340	16.7	150
RC 340 LA	340	340	474	495	22	235	235	34xM8	6	20	10	10	3550	2580	17.5	150

Specification valid for RotoClamp Inside LA only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

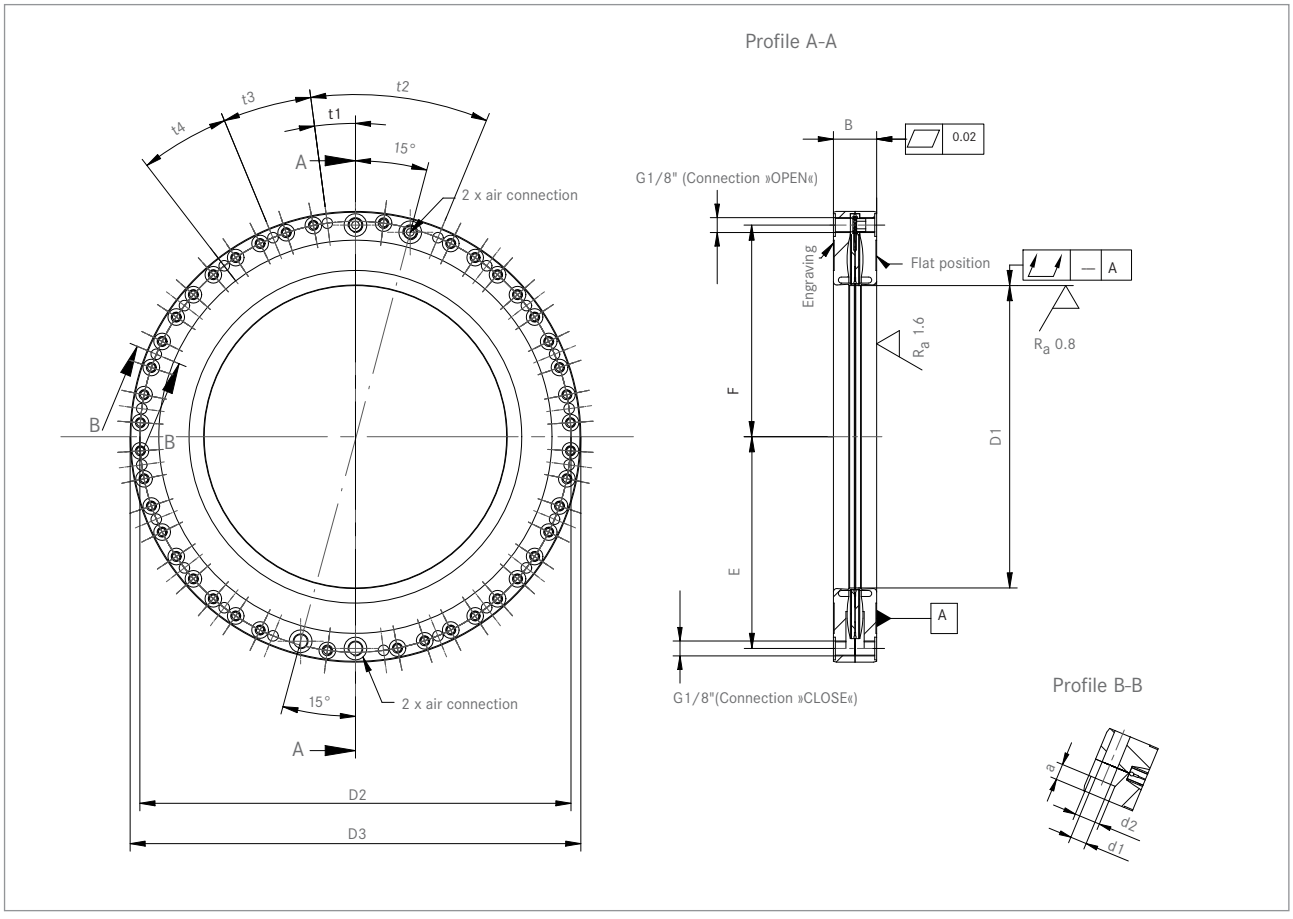


Technical Data

Technical Data of the RotoClamp Y

Size	D1 opened at rated pressure Pn = 4/6 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	d1	d2	t1	t2	t3	t4	Elastic holding torque at 0 bar Pn = 6 bar	Elastic holding torque with secondary air at 6 bar Pn = 6 bar	Elastic holding torque at 0 bar Pn = 4 bar	Elastic holding torque with secondary air at 4 bar Pn = 4 bar	Max. mass	Air requirements per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[mm]	[mm]	[°]	[°]	[°]	[°]	[Nm]	[Nm]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.05/+0.07	-0.01/-0.03	± 0.2		+0.4																
Roundness	0.015	0.015																			
Surface finish	R_a 0.8 µm	R_a 0.8 µm																			
RC 200 Y	200	200	285	298	28	140	140	22 x M6	6.8	7	11	7.5	30	15	15	600	1000	420	700	8.5	100
RC 260 Y	260	260	365	383	30	183	183	24 x M8	9	9	15	5	10	20	10	1600	2900	1120	2030	14.5	100
RC 325 Y	325	325	430	448	30	215	215	24 x M8	9	9	15	5	10	20	10	2300	4100	1610	2870	17.5	120
Tolerance	+0.05/+0.07	-0.01/-0.03	± 0.2		+0.4																
Roundness	0.020	0.015																			
RC 395 Y	395	395	505	523	36	252.5	252.5	48 x M8	9	9	15	3.75	7.5	7.5	7.5	3300	6100	2310	4270	26	160
Tolerance	+0.06/+0.08	-0.01/-0.03	± 0.2		+0.4																
Roundness	0.020	0.015																			
RC 460 Y	460	460	580	598	36	290	290	48 x M8	9	9	15	3.75	7.5	7.5	7.5	4600	8400	3220	5880	32	240

Specification valid for RotoClamp Inside Y only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

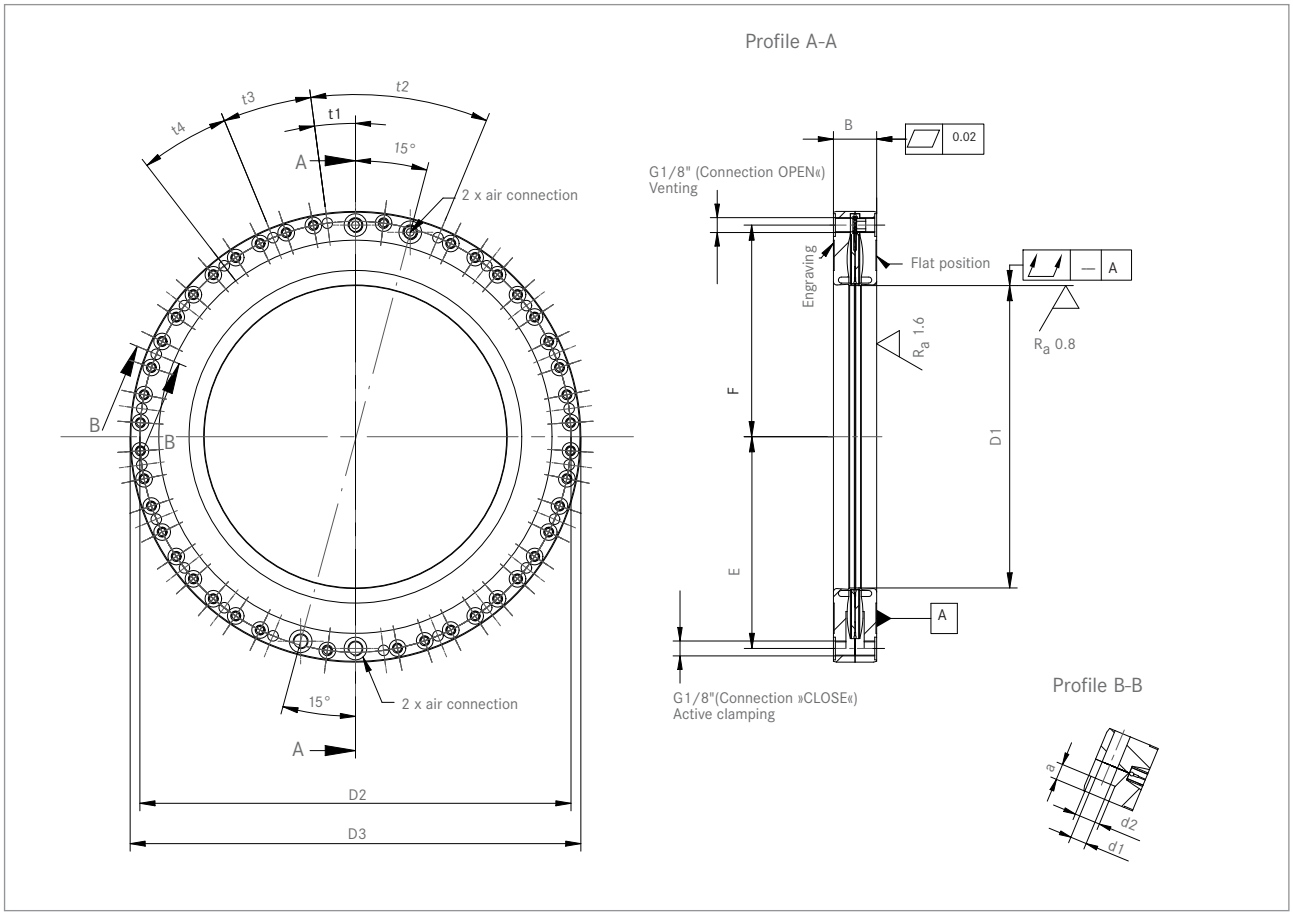


Technical Data

Technical Data of the RotoClamp YA

Size	D1 opened at rated pressure Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	d1	d2	t1	t2	t3	t4	Elastic holding torque Pn = 6 bar	Elastic holding torque Pn = 4 bar	Max. mass	Air require-ments per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[°]	[°]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.035/+0.05	-0.01/-0.03	± 0.2		+0.4														
Round-ness	0.015	0.015																	
Surface finish	R_a 0.8 µm	R_a 0.8 µm																	
RC 200 Y	200	200	285	298	28	140	140	22 x M6	6,8	7	11	7.5	30	15	15	600	420	8.5	100
RC 260 Y	260	260	365	383	30	183	183	24 x M8	9	9	15	5	10	20	10	1600	1120	14.5	100
RC 325 Y	325	325	430	448	30	215	215	24 x M8	9	9	15	5	10	20	10	2300	1610	17.5	120
Tolerance	+0.045/+0.06	-0.01/-0.03	± 0.2		+0.4														
Round-ness	0,020	0.015																	
RC 395 Y	395	395	505	523	36	252.5	252.5	48 x M8	9	9	15	3.75	3.75	7.5	7.5	3300	2310	26	160
Tolerance	+0.055/+0.07	-0.01/-0.03	± 0.2		+0.4														
Round-ness	0.020	0,015																	
RC 460 YA	460	460	580	598	36	290	290	48 x M8	9	9	15	3.75	3.75	7.5	7.5	4600	3220	32	240

Specification valid for RotoClamp Inside Y Active only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

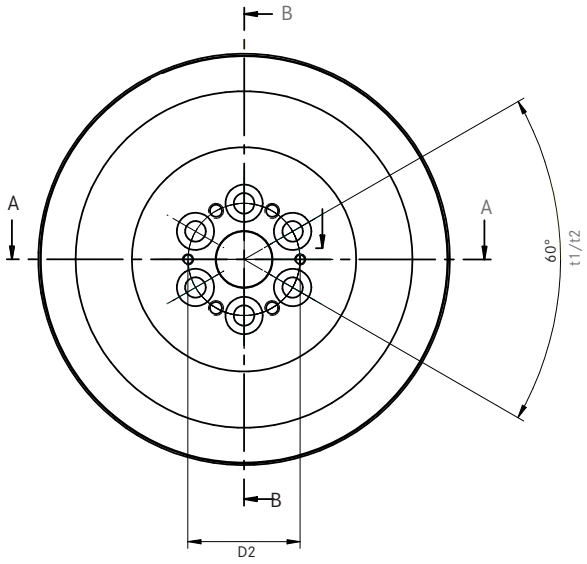


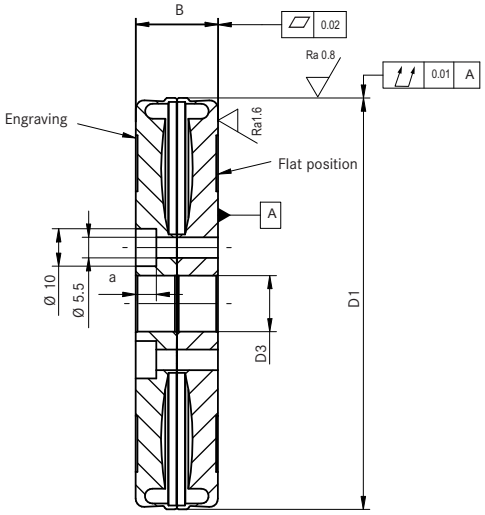
Technical Data

Technical Data of the RotoClamp Outside XS

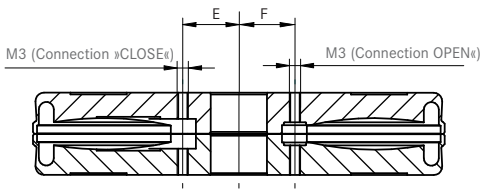
Size	D1 opened at rated pressure Pn = 4/6 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at 0 bar Pn = 6 bar	Elastic holding torque with second. air at 6 bar Pn = 6 bar	Elastic holding torque at 0 bar Pn = 4 bar	Elastic holding torque with second. air at 4 bar Pn = 4 bar	Max. mass	Air require-ments per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	-0.02/-0.03	+0.01/+0.025	± 0.1		+0.4												
Round-ness	0.01	0.01															
Surface finish	R_a 0.8 µm	R_a 0.8 µm															
RCO 110 XS	110	110	30	15	22	15	15	6 x M5	5.5	60	60	125	230	90	150	1.5	20

Specification valid for RotoClamp Outside XS only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.





Profile B-B



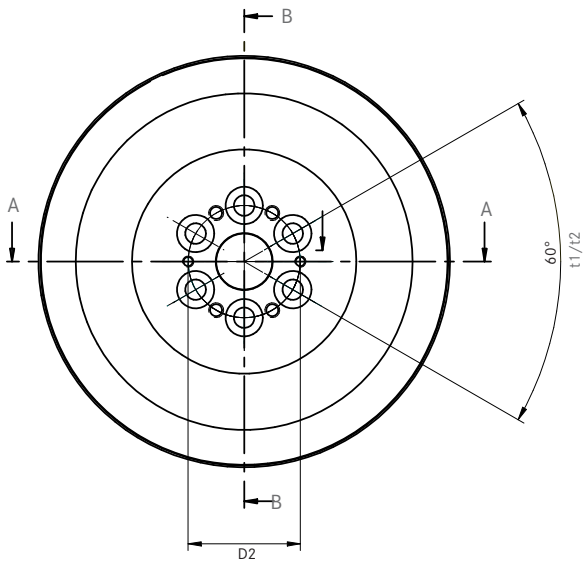
Profile A-A

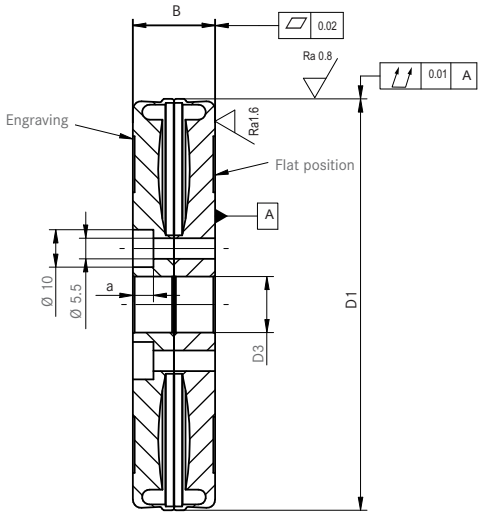
Technical Data

Technical Data of the RotoClamp Outside XSA

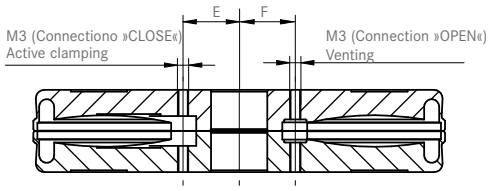
Size	D1 opened at rated pressure Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at Pn = 6 bar	Elastic holding torque at Pn = 4 bar	Max. mass	Air require-ments per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	-0.02/-0.03	+0.01/+0.025	± 0.1		+0.4										
Round-ness	0.01	0.01													
Surface finish	R_a 0.8 µm	R_a 0.8 µm													
RCO 110 XSA	110	110	30	15	22	15	15	6xM5	5.5	60	60	125	90	1.5	20

Specification valid for RotoClamp Outside XS Active only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.





Profile B-B



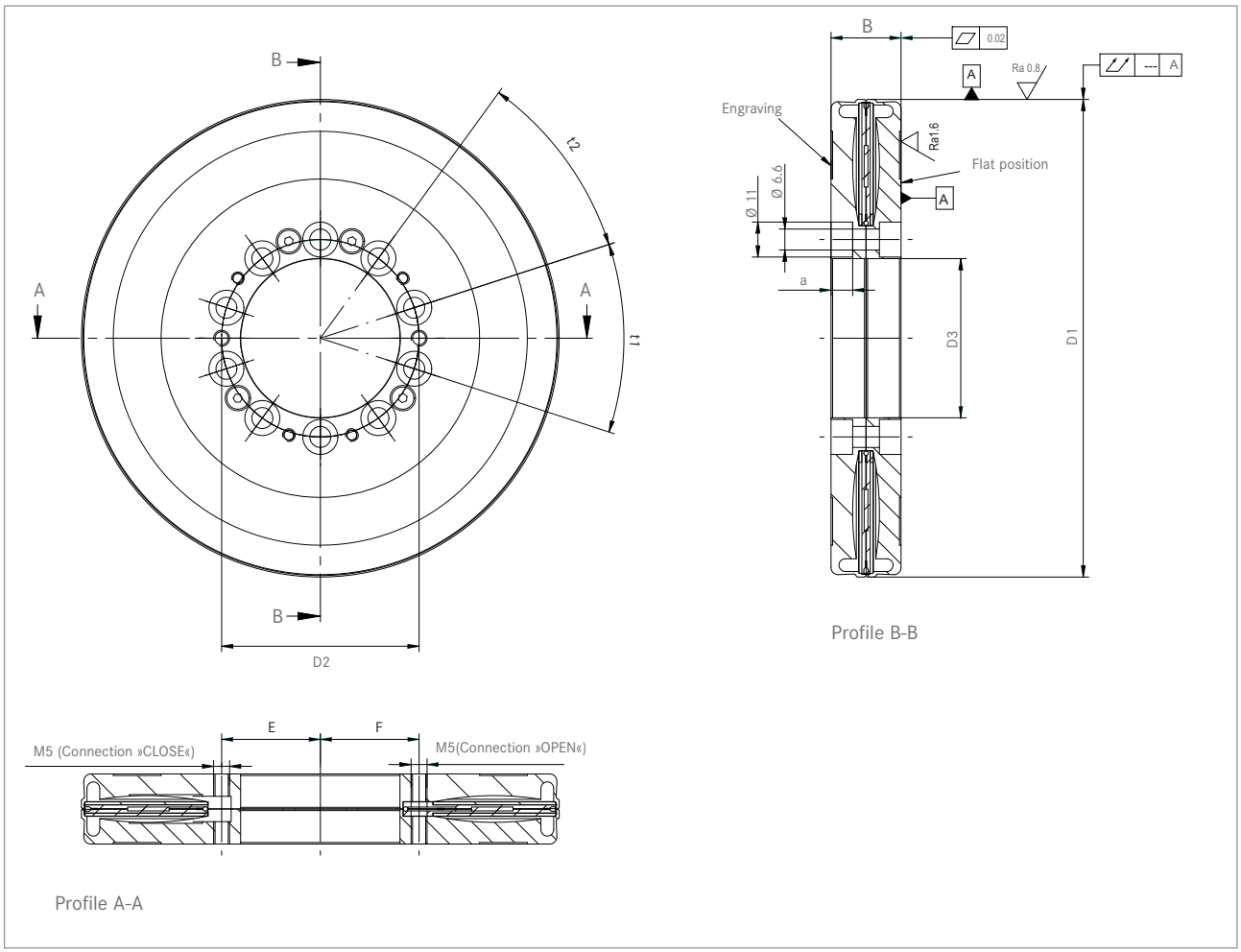
Profile A-A

Technical Data

Technical Data of the RotoClamp Outside S

Size	D1 opened at rated pressure Pn = 4/6 Bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at 0 bar Pn = 6 bar	Elastic holding torque with secondary air at 6 bar Pn = 6 bar	Elastic holding torque at 0 bar Pn = 4 bar	Elastic holding torque with secondary air at 4 bar Pn = 4 bar	Max. mass	Air require-ments per max stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	-0.035/-0.05	+0.01/+0.025	± 0.1		+0.4												
Round-ness	0.01	0.01															
Surface finish	R_a 0.8 µm	R_a 0.8 µm															
RCO 150 S	150	150	62	50	22	31	31	10 x M6	6.8	36	36	250	460	170	320	2	20
RCO 170 S	170	170	82	70	22	41	41	12 x M6	6.8	30	30	359	650	251	454	2.2	25

Specification valid for RotoClamp Outside S only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.



Profile B-B

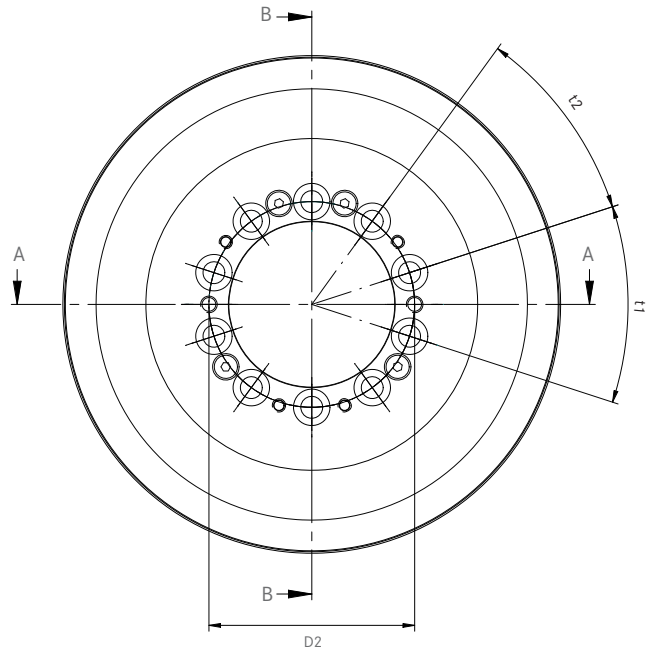
Profile A-A

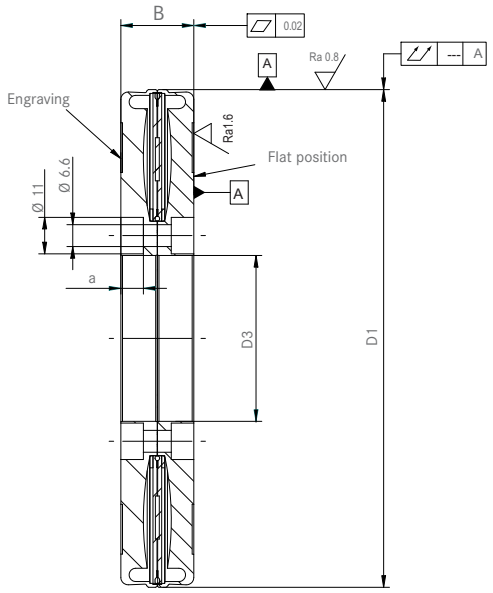
Technical Data

Technical Data of the RotoClamp Outside SA

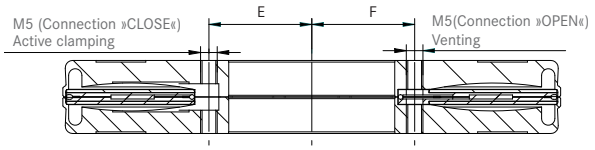
Size	D1 opened at rated pressure Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at Pn = 6 bar	Elastic holding torque at Pn = 4 bar	Max. mass	Air require-ments per max stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	-0.035/-0.05	+0.01/+0.025	± 0.1		+0.4										
Round-ness	0.01	0.01													
Surface finish	R_a 0.8 µm	R_a 0.8 µm													
RCO 150 SA	150	150	62	50	22	31	31	10xM6	6.8	36	36	250	170	2	20
RCO 170 SA	170	170	82	70	22	41	41	12xM6	6.8	30	30	360	250	2.2	25

Specification valid for RotoClamp Outside S Active only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.





Profile B-B



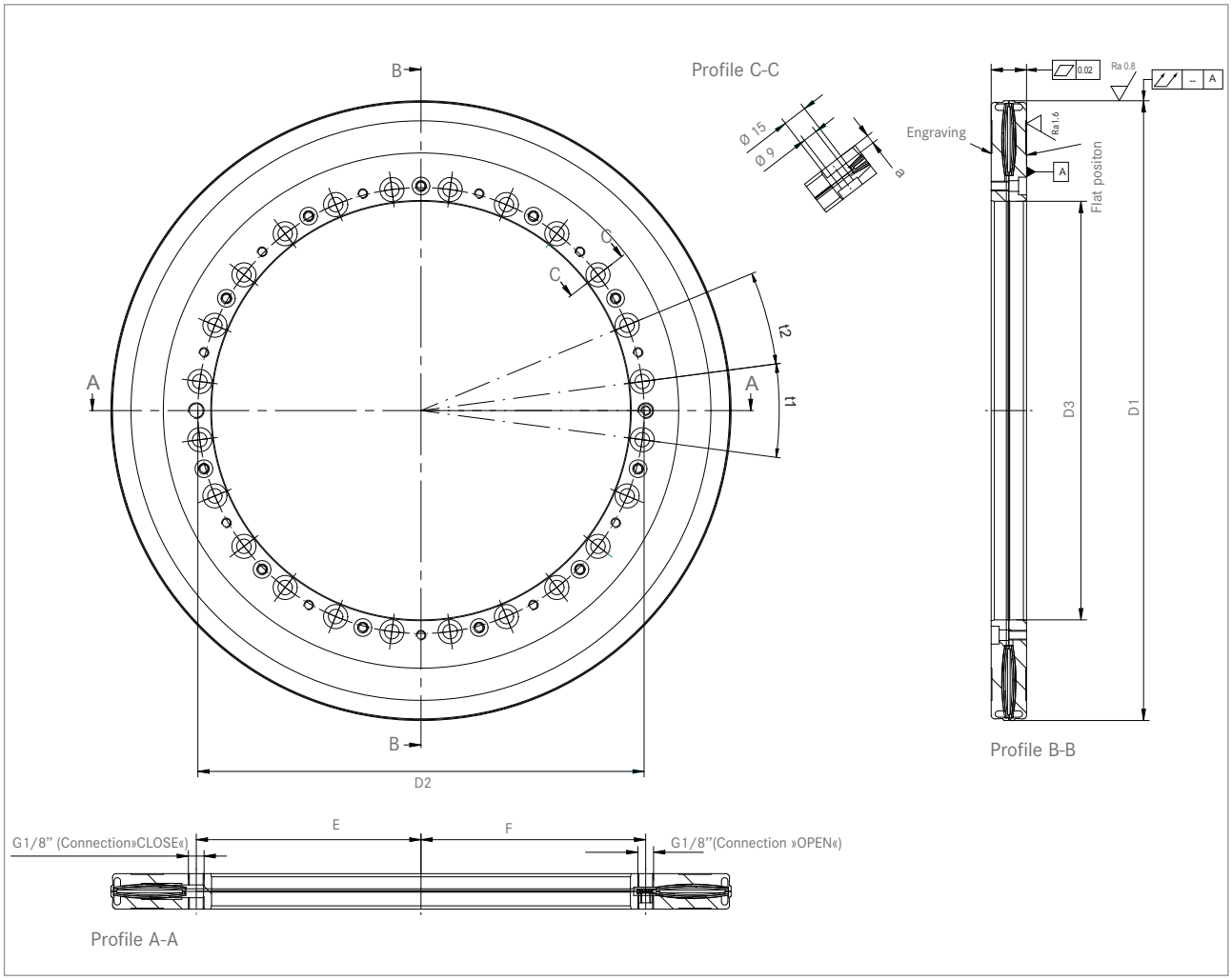
Profile A-A

Technical Data

Technical Data of the RotoClamp Outside N

Size	D1 opened at rated pressure Pn = 4/6 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at 0 bar Pn = 6 bar	Elastic holding torque with secondary air at 6 bar Pn = 6 bar	Elastic holding torque at 0 bar Pn = 4 bar	Elastic holding torque with secondary air at 4 bar Pn = 4 bar	Mase max.	Air require-ments per max stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	-0.045/-0.065	+0.01/+0.03	± 0.1		+0.4												
Round-ness	0.015	0.015															
Surface-finish	R_a 0.8 µm	R_a 0.8 µm															
RCO 195 N	195	195	87	70	22	44.5	44.5	10 x M8	5.5	36	36	456	819	328	573	3.1	60
RCO 255 N	255	255	147	130	22	74.5	74.5	16 x M8	5.5	22.5	22.5	1080	1944	756	1361	4.5	80
RCO 315 N	315	315	207	190	22	104.5	104.5	18 x M8	5.5	20	20	1887	3468	1321	2428	6.1	100
RCO 385 N	385	385	277	260	22	139.5	139.5	24 x M8	5.5	15	15	3100	5500	2100	3800	7	120

Specification valid for RotoClamp Outside N only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

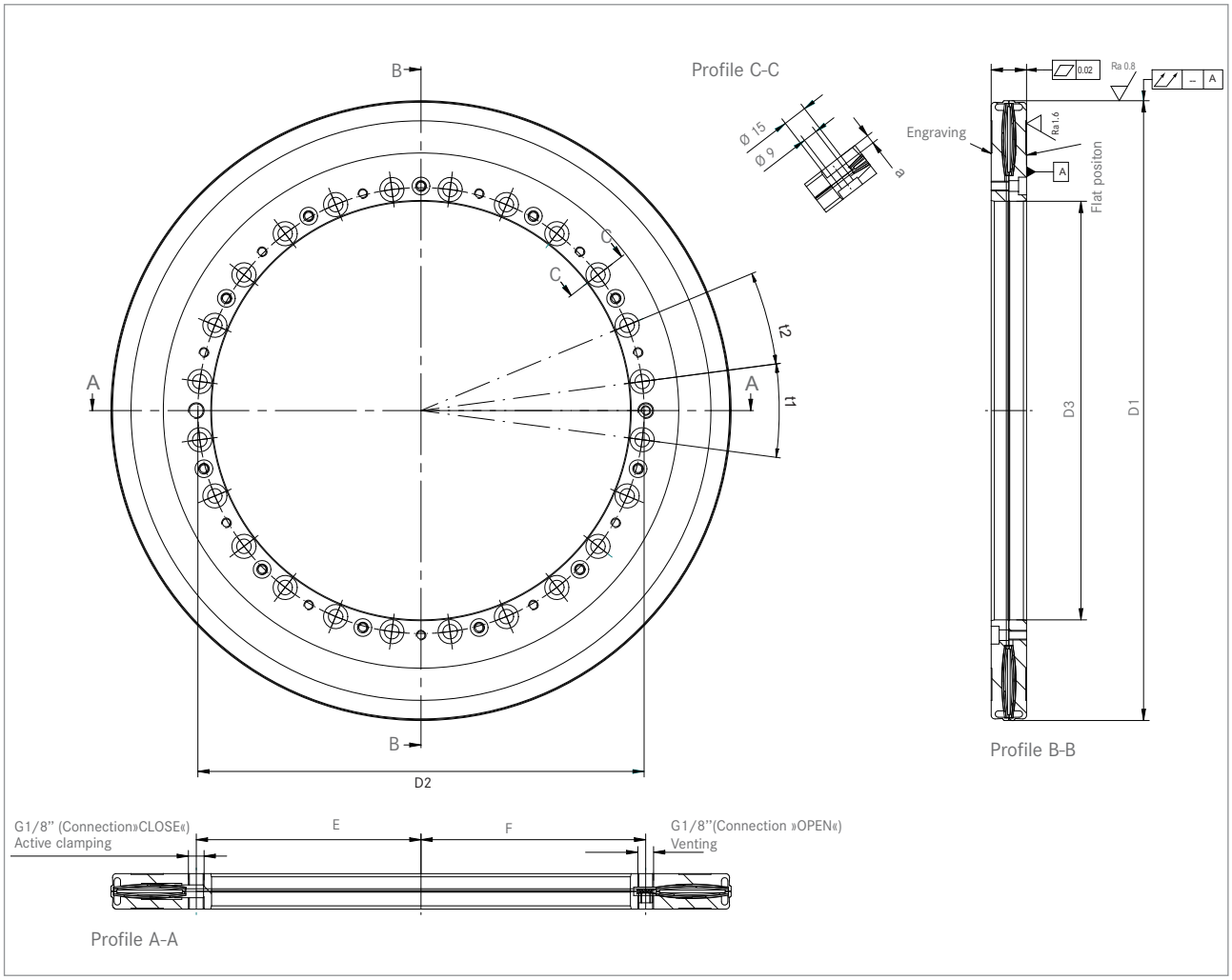


Technical Data

Technical Data of the RotoClamp Outside NA

Size	D1 opened at rated pressure Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at Pn = 6 bar	Elastic holding torque at Pn = 4 bar	Max. mass	Air require-ments per max stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	-0.04/-0.055	+0.01/+0.03	± 0.1		+0.4										
Round-ness	0.015	0.015													
Surface-finish	R_a 0.8 µm	R_a 0.8 µm													
RCO 195 NA	195	195	87	70	22	44.5	44.5	10 x M8	5.5	36	36	460	330	3.1	60
RCO 255 NA	255	255	147	130	22	44.5	44.5	16 x M8	5.5	22.5	22.5	1080	760	4.5	80
RCO 315 NA	315	315	207	190	22	104.5	104.5	18 x M8	5.5	20	20	1880	1320	6.1	100
RCO 385 NA	385	385	277	260	22	139.5	139.5	24 x M8	5.5	15	15	3100	2100	7	120

Specification valid for RotoClamp Outside N Active only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.



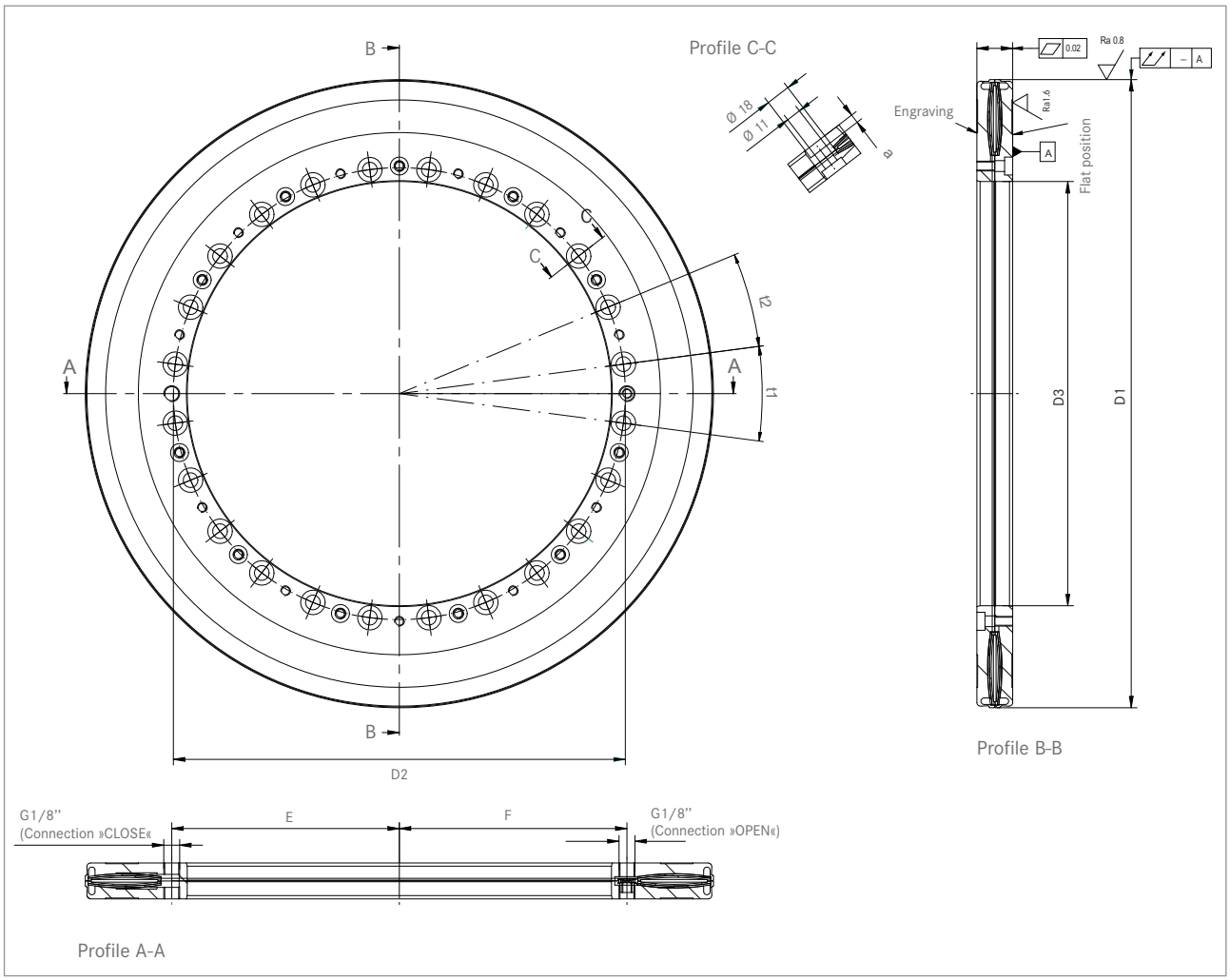
Content Product Finder 03
RotoClamp DiskClamp 29
LinClamp MClamp 36
PClamp 50

Technical Data

Technical Data of the RotoClamp Outside XL

Size	D1 opened at rated pressure Pn = 4 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at 0 bar Pn = 4 bar	Elastic holding torque with secondary air at 4 bar Pn = 4 bar	Mass max.	Air require-ments per max stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	-0.04/-0.055	+0.01/+0.03	± 0.1		+0.4										
Round-ness	0.02	0.02													
Surface finish	R_a 0.8 µm	R_a 0.8 µm													
RCO 520 XL	520	520	365	340	30	182.5	182.5	24 x M10	8	15	15	3900	6500	22	30

Specification valid for RotoClamp Outside XL only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.

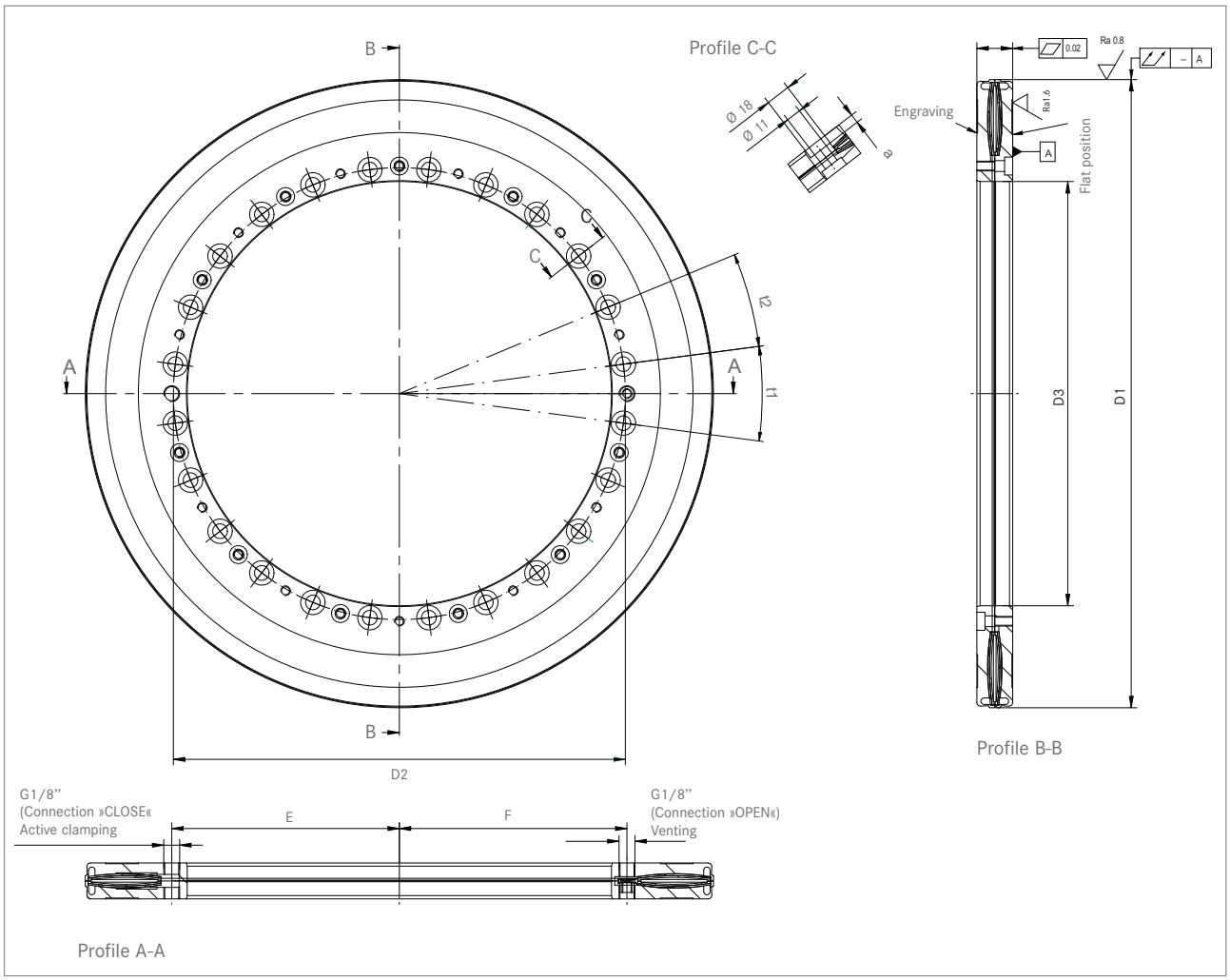


Technical Data

Technical Data of the RotoClamp Outside XLA

Size	D1 opened at rated pressure Pn = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at 6 bar Pn = 6 bar	Max. mass	Air requirements per max stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[kg]	[mL]
Tolerance	-0.04/-0.055	+0.01/+0.03	± 0.1		+0.4									
Round-ness	0.02	0.02												
Surface finish	R_a 0.8 µm	R_a 0.8 µm												
RCO 520 XLA	520	520	365	340	30	182.5	182.5	24xM10	8	15	15	3900	22	300

Specification valid for RotoClamp Outside XL Active only. Holding torque tandem version: Values factor 1.8. Subject to modifications. Errors excepted. Only the written order confirmation is valid.



Content Product Finder 03
RotoClamp DiskClamp 31
LinClamp MClamp 36
PClamp 50

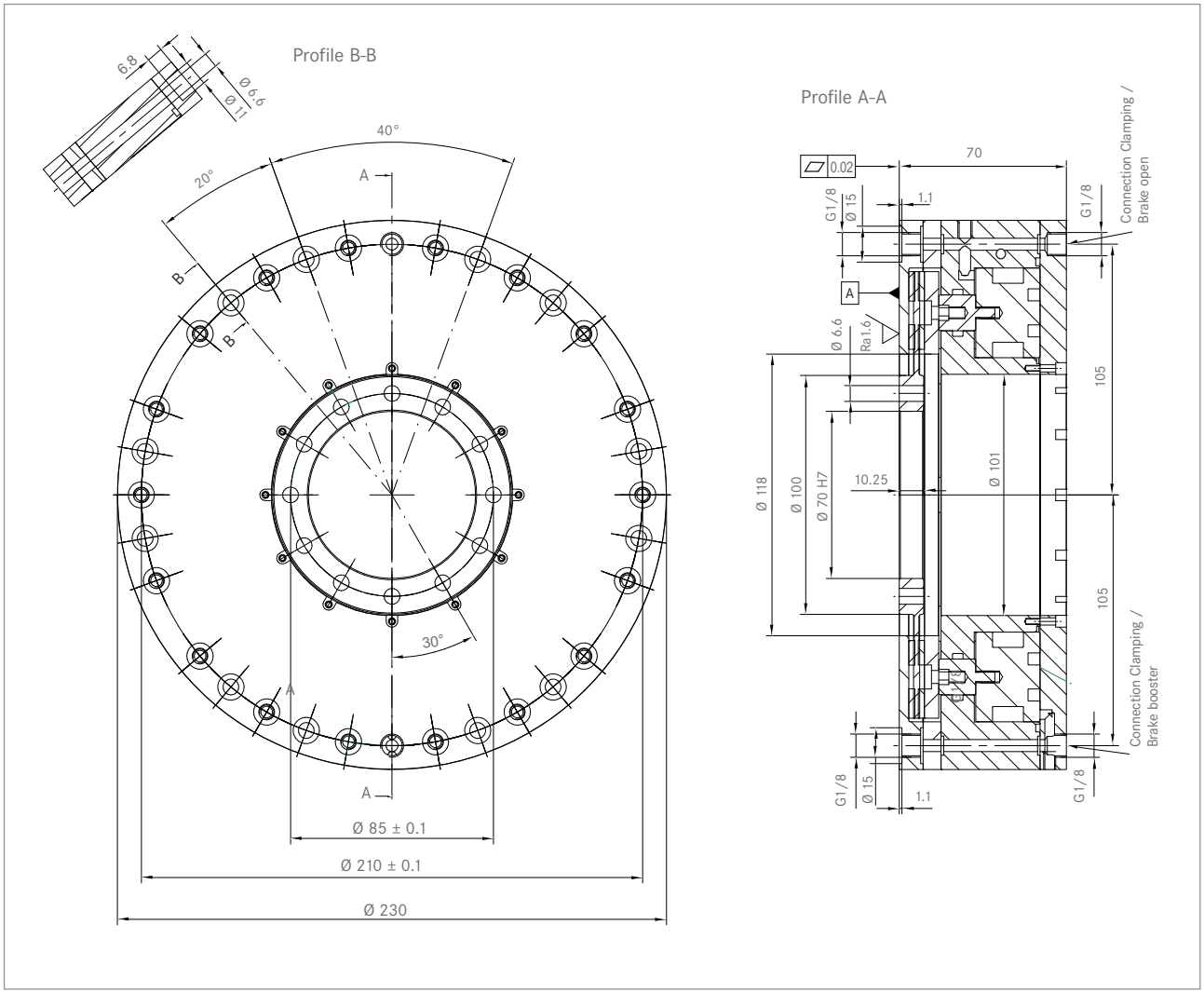
Technical Data

DiskClamp - Security clamping system with Emergency brake

Technical Data of the DiskClamp

Size	Brake clamping torque at 0 bar Pn = 6 bar	Brake clamping torque with booster at 6 bar Pn = 6 bar	Brake clamping torque at 0 bar Pn = 4 bar	Brake clamping torque with booster at 4 bar Pn = 4 bar	Mass Brake disk	Mass max.	Air requirements per max stroke
Unit	[Nm]	[Nm]	[Nm]	[Nm]	[kg]	[kg]	[mL]
DC 100	240	420	160	290	0.65	15	60

This technical data applies to the DiskClamp clamping with air. Data for hydraulic systems on request.



Request form

Please send by fax to +49 6182 773-35

Company name:

Address: Country/Zip/Location:

Contact: Area/Department:

Telephone: DID: Fax: Direct:

E-Mail: Internet:

RotoClamp systems can be adjusted for various applications. The following criteria decide on the configuration of the system. Please enter the information as completely and detailed as possible.

Model (please check):

☐ RotoClamp Outside (A = Active)

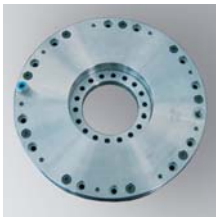
☐ XS ☐ S ☐ N ☐ XL

☐ XSA ☐ SA ☐ NA ☐ XLA

☐ RotoClamp Inside (A = Aktiv)

☐ XS ☐ S ☐ N ☐ L ☐ Y

☐ XSA ☐ SA ☐ NA ☐ LA ☐ YA



☐ DiskClamp

Type designation according to the table: _____

Clamping cycles: _____ per _____

special requirement: _____

_____

Clamping torque: _____ Nm

Planned connection pressure: _____

☐ 4 Bar ☐ 6 Bar

Dimensions:

Outer diameter D3: _____ mm

Inside diameter D1: _____ mm

Fixing diameter D2: _____ mm

Overall height: _____

Standard bore according to drawing:

☐ Yes ☐ No

In case of deviation, please enclose the drawing for the application or mail to info@hema-group.com.

Optional shaft flange: _____

Required quantity: _____

Date of delivery: _____

☐ Please call back ☐ Please visit

Other: _____

_____

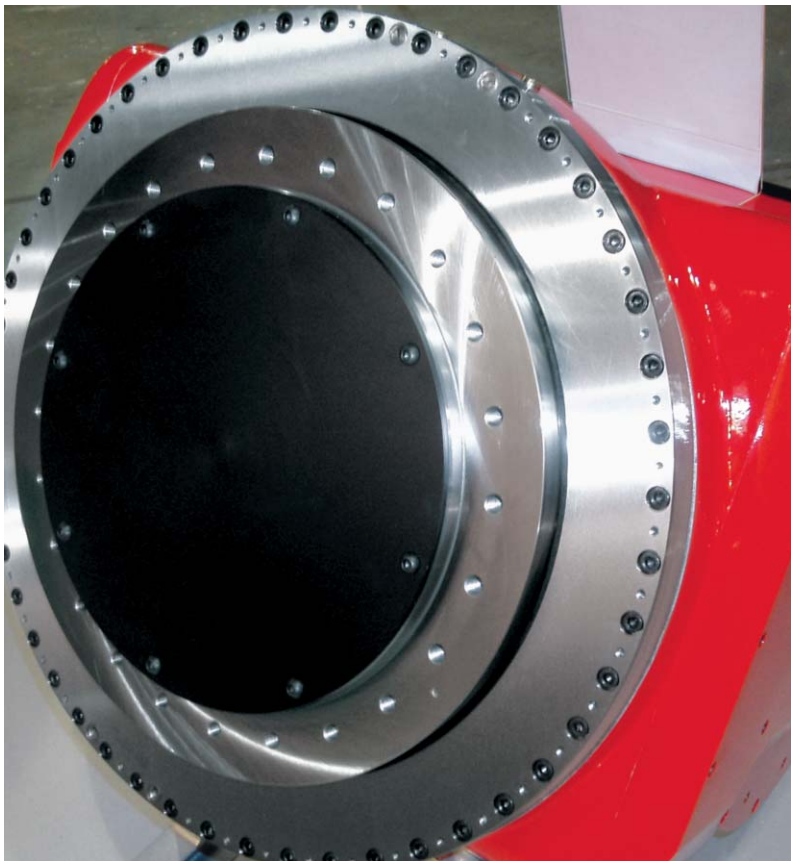
_____

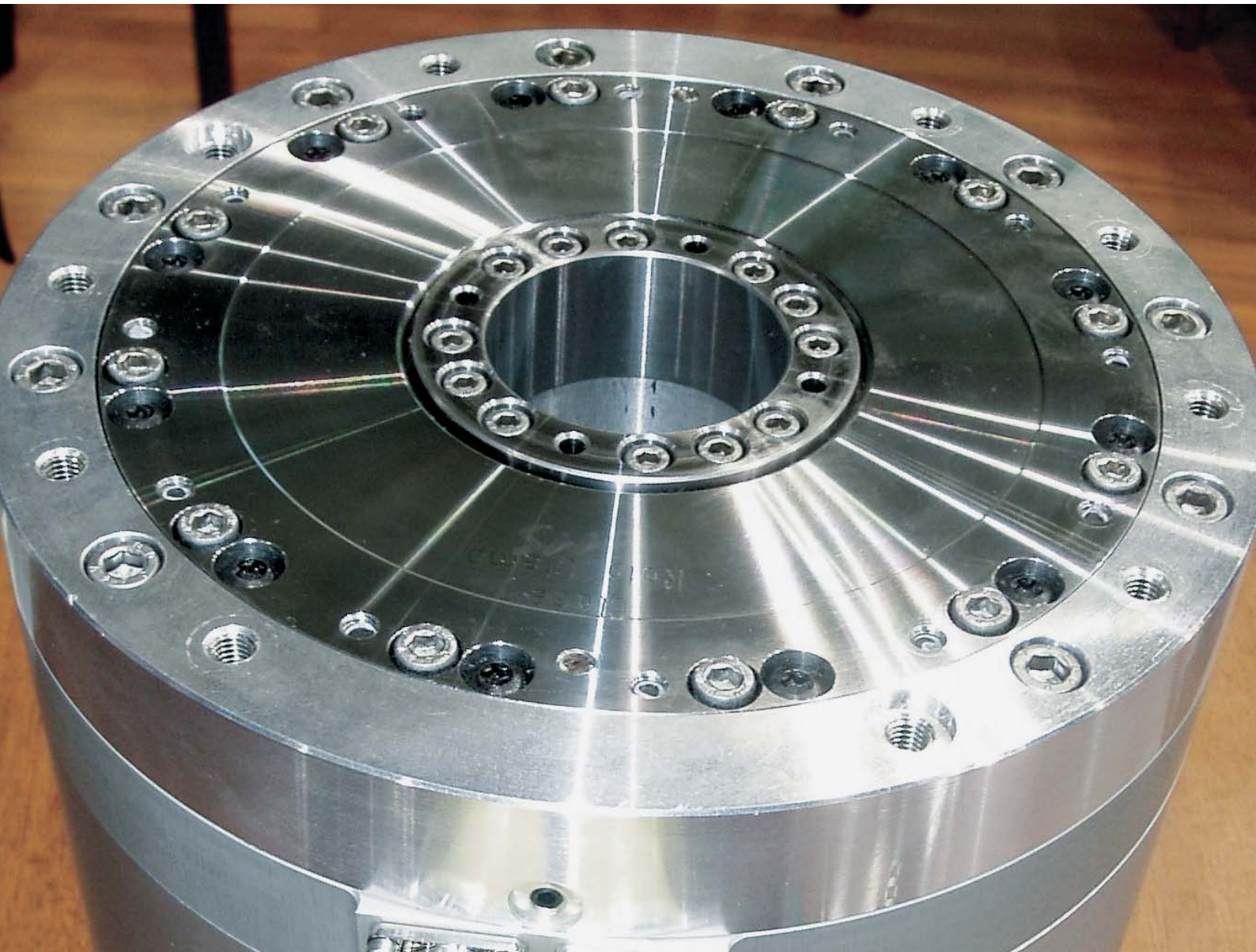
You can also download this form at:
www.hema-group.com

HEMA

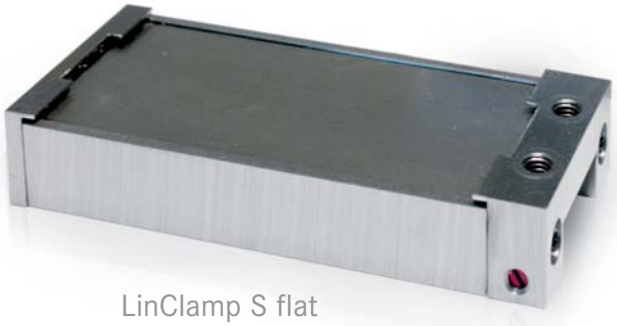
Clamping Systems

RotoClamp/DiskClamp





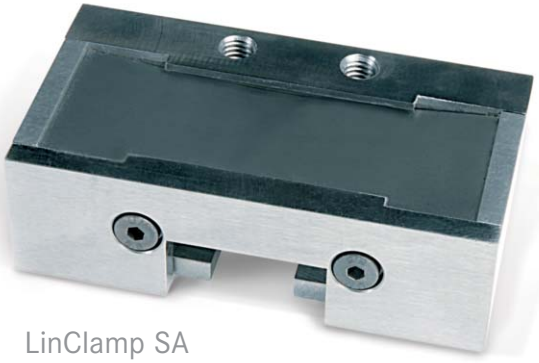
LinClamp



LinClamp S flat

LinClamp SK

LinClamp S



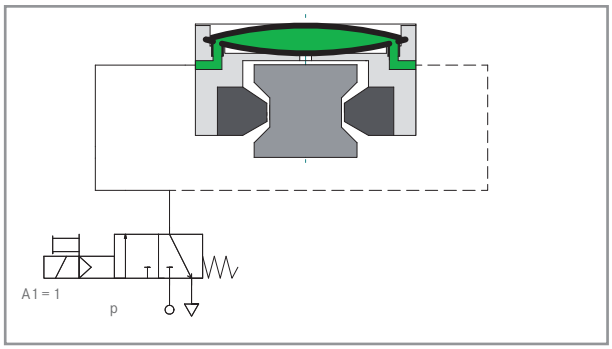
LinClamp SA

Advantages

1. Suitable for almost all sizes and manufacturers of linear guide systems
2. Compact design, suitable for high and low carriages, simple installation
3. Compatible to other rail clamping systems
4. Pneumatic clamping or braking of the highest forces
5. Optimum safety clamping, failure of pneumatics results in clamping
6. Low system costs in comparison to hydraulics and electronic solutions
7. Special linings for clamping without loss of holding power for linear guides with grease lubrication.

Operating principle of the LinClamp

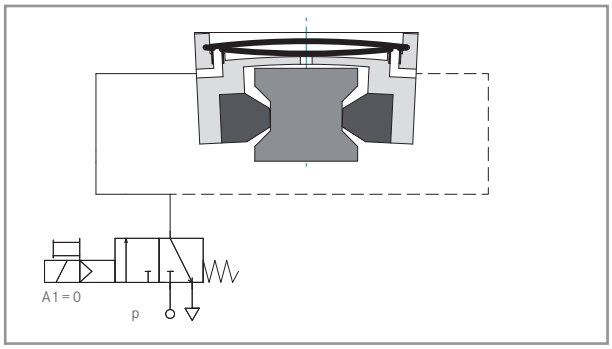
Function of the LinClamp S/SK



LinClamp S/ SK, opening with spring air

LinClamp S/SK released

Compressed air is applied to the chamber between the two spring steel diaphragms. This deforms the spring steel sheets elastically and shortens them in the horizontal direction. The clamp body is deformed in such a way that it contacts at the top with the spring steel sheets and expands at the bottom around the brake shoes. This lifts the brake shoes from the rail and it can be moved freely.

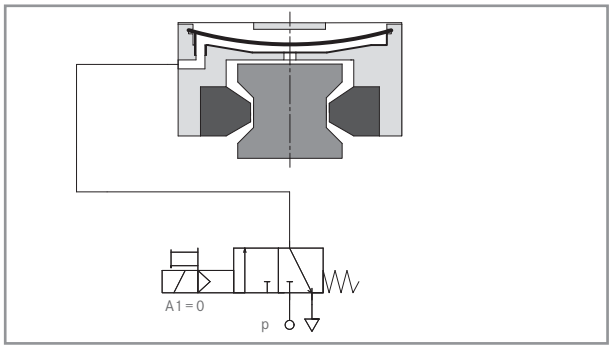


LinClamp S/SK, clamping with spring actuator

LinClamp S/SK clamped

The chamber between the two spring steel diaphragms is vented. The spring steel sheets spring back to their normal position and expand the upper part of the clamping body. However, this expansion at the top simultaneously leads to a narrowing at the bottom. This narrowing causes the brake shoes to press against the rail and to clamp it.

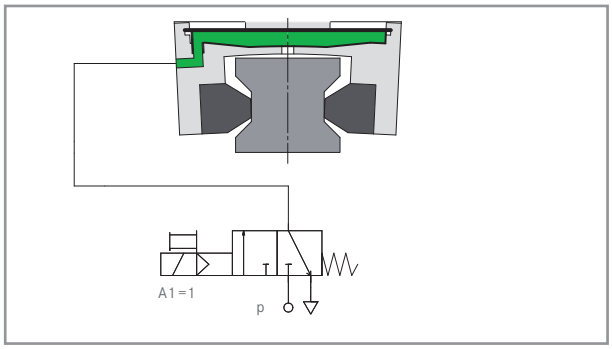
Function of the LinClamp SA



LinClamp SA, opening with spring actuator

LinClamp SA released

Venting causes the sheet to spring back and splays out the clamping body below the slide way. The base plate, which has previously been reformed elastically, now springs back to its starting position. It is thereby narrower above the cross web and wider beneath it. The brake shoes lift off from the rail. Operating pressure 4 to 6 Bar.



LinClamp SA, clamping with air

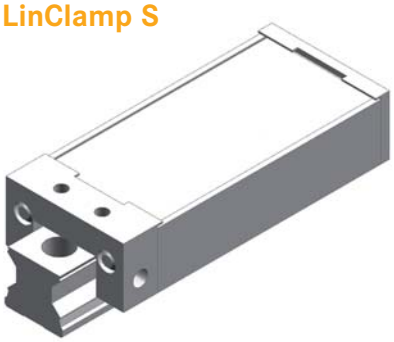
LinClamp SA clamped

To activate the clamping mechanism, the chamber below the spring steel sheet is filled with compressed air. The prestressed spring steel sheet is thereby pressed upwards and simultaneously stretched. Simultaneously, the lower part of the clamping body is narrower over the cross web as pivot point. This presses the brake shoes against the rail.

Compressed air

Product overview

LinClamp S

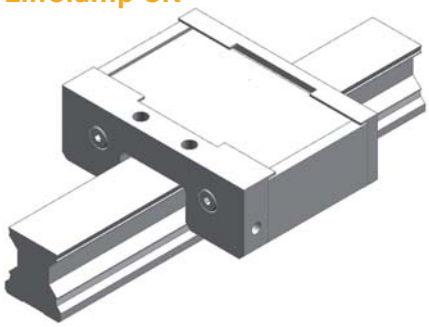


Applications directly over linear guides. Long, slender design, passive.

Consisting of a single-piece clamping body and two spring plates including air chamber, any adaptations on linear guide rails. Available as a clamp or brake for high or low linear guide carriages, for 4 or 6 Bar.

Sizes 15-65, retaining forces 540-10,000 N, special solutions like air connection from above or special screw attachment points on request.

LinClamp SK

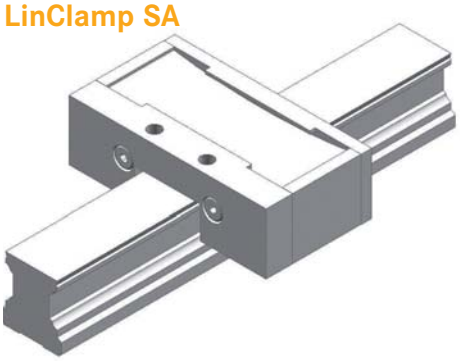


Applications directly over linear guides. Wide, short design, passive.

Consisting of a single-piece clamping body and two spring plates including air chamber, any adaptations on linear guide rails. Available as a clamp or brake for high or low linear guide carriages, for 4 or 6 Bar.

Sizes 15-55, retaining forces 300-2100 N, special solutions like air connection from above or special screw attachment points on request.

LinClamp SA



Applications directly over linear guides. Wide, short design, active.

Consisting of a single-piece clamping body and a spring plate including airbag, any adaptations on linear guide rails, available as a clamp or brake for high or low linear guide carriages, for 4 or 6 Bar.

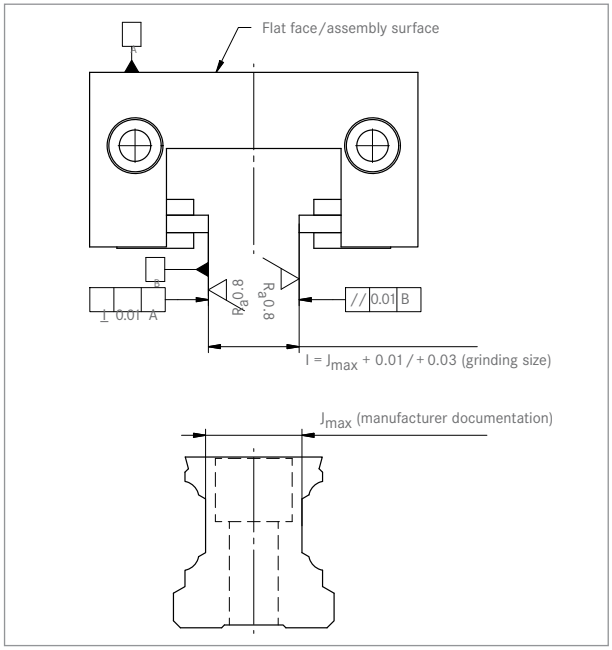
Sizes 20, 25, and 35, retaining forces 390-1250 N. Special solutions like air connection from above or special screw attachment points on request.

FEATURES LINCLAMP

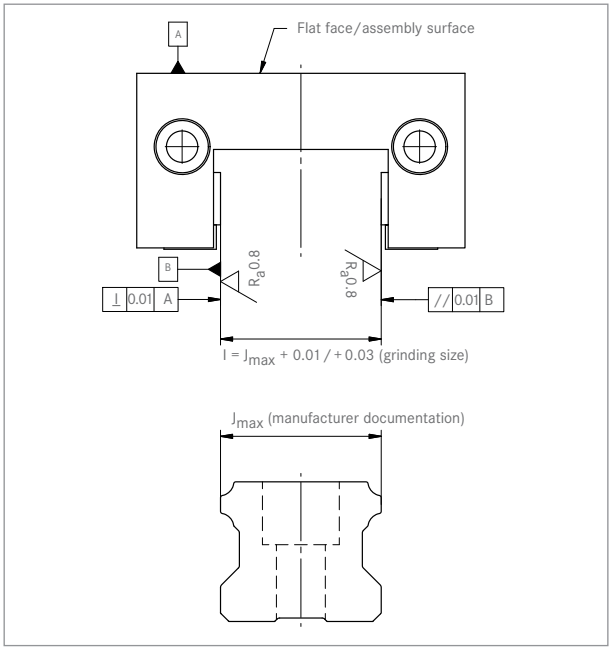
Gap width between brake and clamping faces and linear guide rails

The inner dimension I between the faces of each LinClamp is polished to an exact value. This is always 0.01 mm to 0.03 mm larger than the maximum size J_{max} from the manufacturer documentation of the respective linear guide rail (refer to the diagram). The greatest possible holding force is at J_{max}. In unfavourable cases, there are resulting losses of holding force of up to 30% (refer to the table).

Air gap bellows/linear guide rail (mm)	Loss in holding force (%)
0.01	5
0.03	10
0.05	20
0.07	30

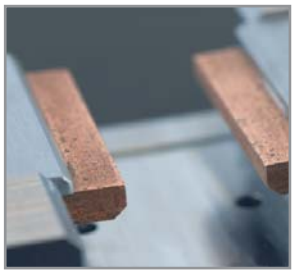


Clamping in the middle area of a linear guide rail



Example: Clamping in the upper area of a linear guide rail

Clamping- or Braking system



Braking

Clamping

Claming / Braking

All S, SK, and SA type LinClamps can be used both as brake and clamping elements.
Use as brake: Sintered metal brake lining.
Use as clamp: Clamp linings made of tool steel.

Carriages

LinClamp S for high carriages

LinClamp S for low carriages

Mounting of the carriages

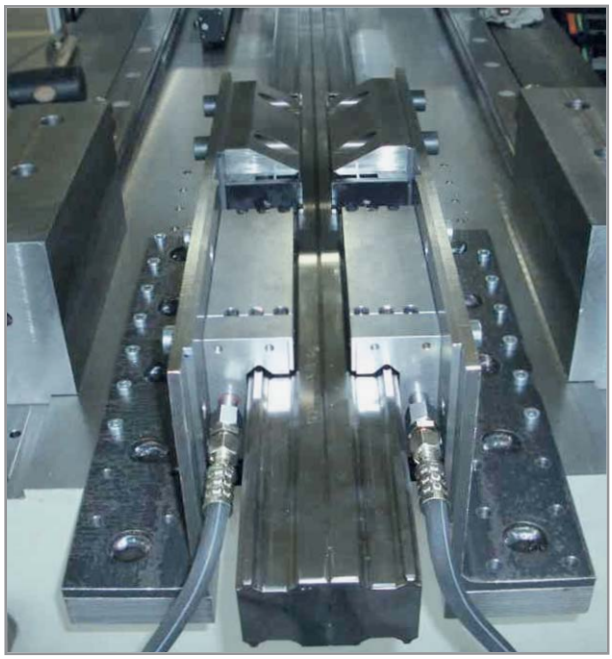
Comparison of higher/lower runner block LinClamp S:
In accordance to the configuration of the linear guide used, you can select between a high or a low fixing element.

Research results

Research results for pneumatically operated brake systems

Within the scope of a research project carried out by the VDW/VDMA (German Machinery Plant Manufacturer's Association), measurements were carried out at the Institut für Fertigungstechnik und Werkzeugmaschinen (IWF) at Hanover University, Germany over the course of two years to determine the braking distance of LinClamp brake systems using sintered metal in comparison to alternative products.

Comparative test of the braking distance



Test configuration

Institut für Fertigungstechnik und Werkzeugmaschinen (IWF) at Hanover University, Project "Fast braking" of the VDW/VDMA

Test object

LinClamp S 55

Rated values

6 kN holding force per element
Guide rails INA, air pressure min. 5.5 Bar

Measurements carried out

The measurements were made to determine the braking distance in comparison to alternative products

Parameter

60 and 120 m/min at 550 kg to 1550 kg
in 200-kg steps, 50 horizontal measurements,
air pressure 5.5 Bar

Results

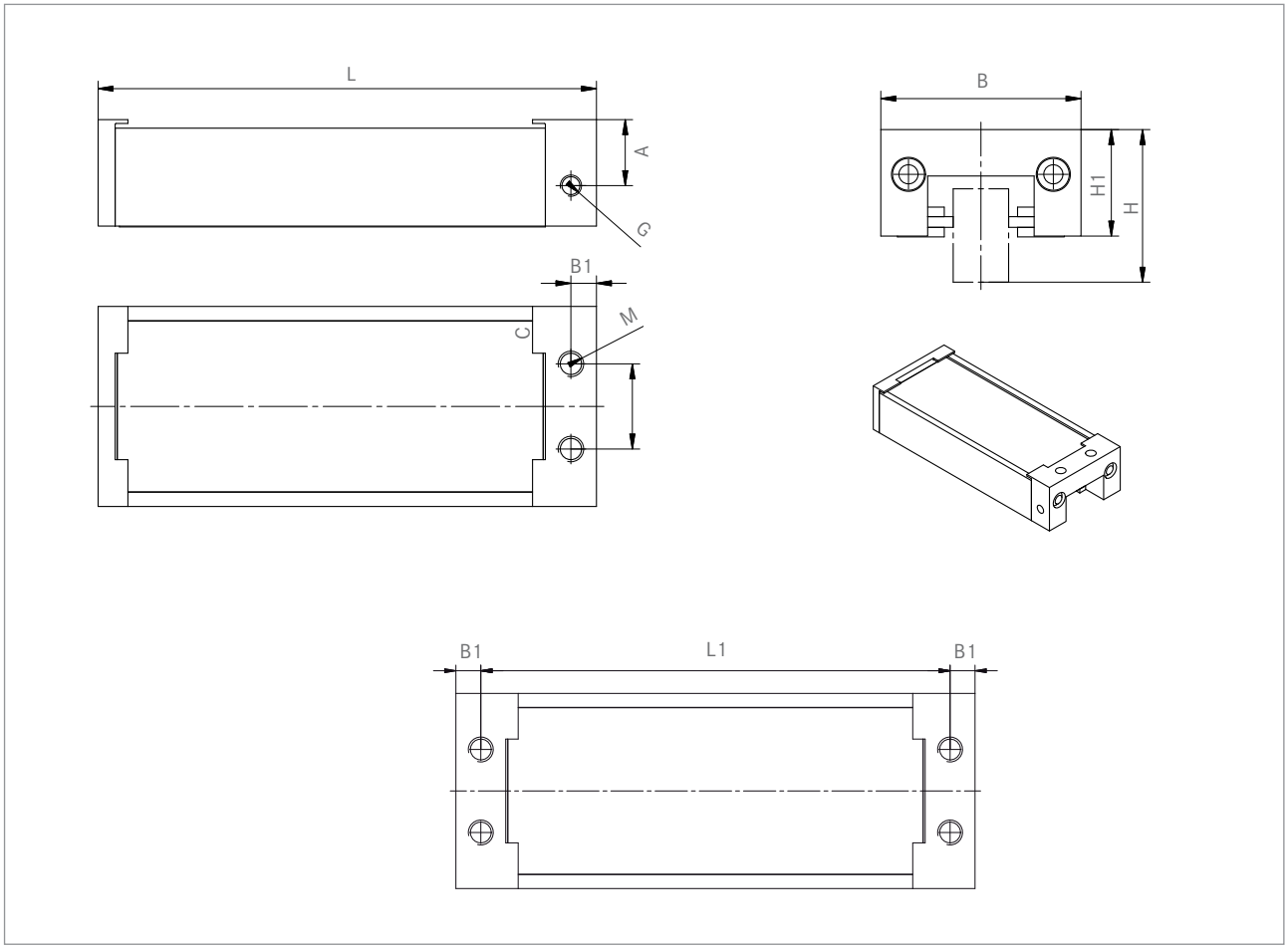
Test object	60 m/min, 1150 kg	60 m/min, 1350 kg	60 m/min, 1550 kg	120 m/min, 550 kg	120 m/min, 750 kg
Unit	[mm]	[mm]	[mm]	[mm]	[mm]
LinClamp S 55	62.7	65,2	69.9	121.8	144.5
Clamping alternative 1	66.9	81.2	89.3	151.4	179.9
Clamping alternative 2	87.9	96.2	101.9	145.8	173.4

Technical Data

Technical Data of the LinClamp S

	2 fixing holes	4 fixing holes			Low carriage			High carriage									
Rail size	L	L	L1	B	H	H1	A	H	H1	A	B1	C	G	M	Holding force at 6 bar	Holding force at 4 bar	Mass
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			[N]	[N]	[kg]
20	97.2	105.2	93.2	43	30	19.5	13.5	-	-	-	6	15	M5	M5	900	540	0.32
25	117	125	113	47	36	25	15.5	40	29	19.5	6	20	M5	M6	1200	780	0.5
30	126	141	121	59	42	29.5	17	45	32.5	20	10	24	M5	M8	1800	1100	0.9
35	156.2	171.2	151.2	69	48	35	22.5	55	42	29.5	10	24	G1/8	M8	2800	1800	1.26
45	176.2	191.2	171.2	80	60	42	26.5	70	52	36.5	10	26	G1/8	M10	4000	2400	2.3
55	202.2	221.2	196.2	98	70	49	28	80	59	38	12.5	30	G1/8	M12	6000	3600	3.9
65	259.2	281.2	251.2	120	90	64	38	100	74	48	15	40	G1/4	M12	10000	6000	5
25 flat	117	125	113	47	25	20	15.5	-	-	-	6	20	M5	M6	1200	780	0.45
20/40 wide 27 wide	-	159.2	145.2	69	27	23	18.5	-	-	-	7	24	M5	M8	1500	900	0.91
25/70 wide, 35 wide	-	221.2	196.2	98	35	31	23	-	-	-	12.5	30	G 1/8	M12	2000	1200	2.2

Errors excepted. Only the written order confirmation is valid.

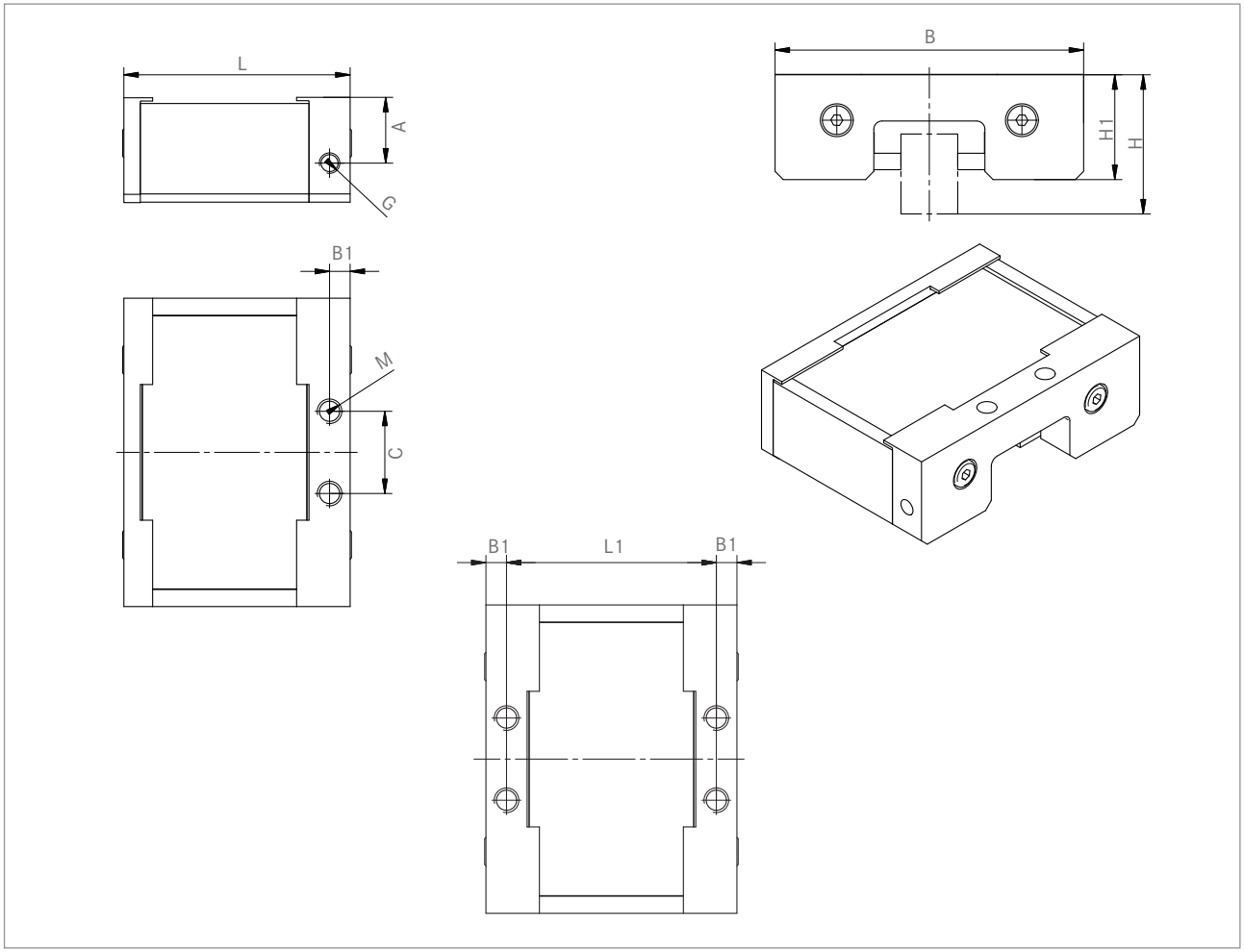


Technical Data

Technical data of the LinClamp SK

	2 fixing holes	4 fixing holes			Low carriage			High carriage									
Rail size	L	L	L1	B	H	H1	A	H	H1	A	B1	C	G	M	Holding force at 6 bar	Holding force at 4 bar	Mass
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			[N]	[N]	[kg]
15	55	61	51	45	24	18	14	-	-	14	5	15	M5	M4	450	300	0.5
20	55	61	51	54	30	22	16	-	-	16	5	20	M5	M6	650	430	0.6
25	55	61	51	75	36	25.5	16	40	29.5	20	5	20	M5	M6	800	530	0.7
30	66.5	76	58.5	82	42	30	21	45	33	24	8.75	22	M5	M8	1150	750	0.9
35	66.5	76	58.5	96	48	35	21.2	55	42	28.2	8.75	24	G1/8	M8	1250	820	1.27
45	80	92	72	116	60	45	27.5	70	55	37.5	10	26	G1/8	M10	1500	950	2
55	100	112	92	136	70	49	30.5	80	59	40.5	10	30	G1/8	M10	2100	1300	2.8

Errors excepted. Only the written order confirmation is valid.



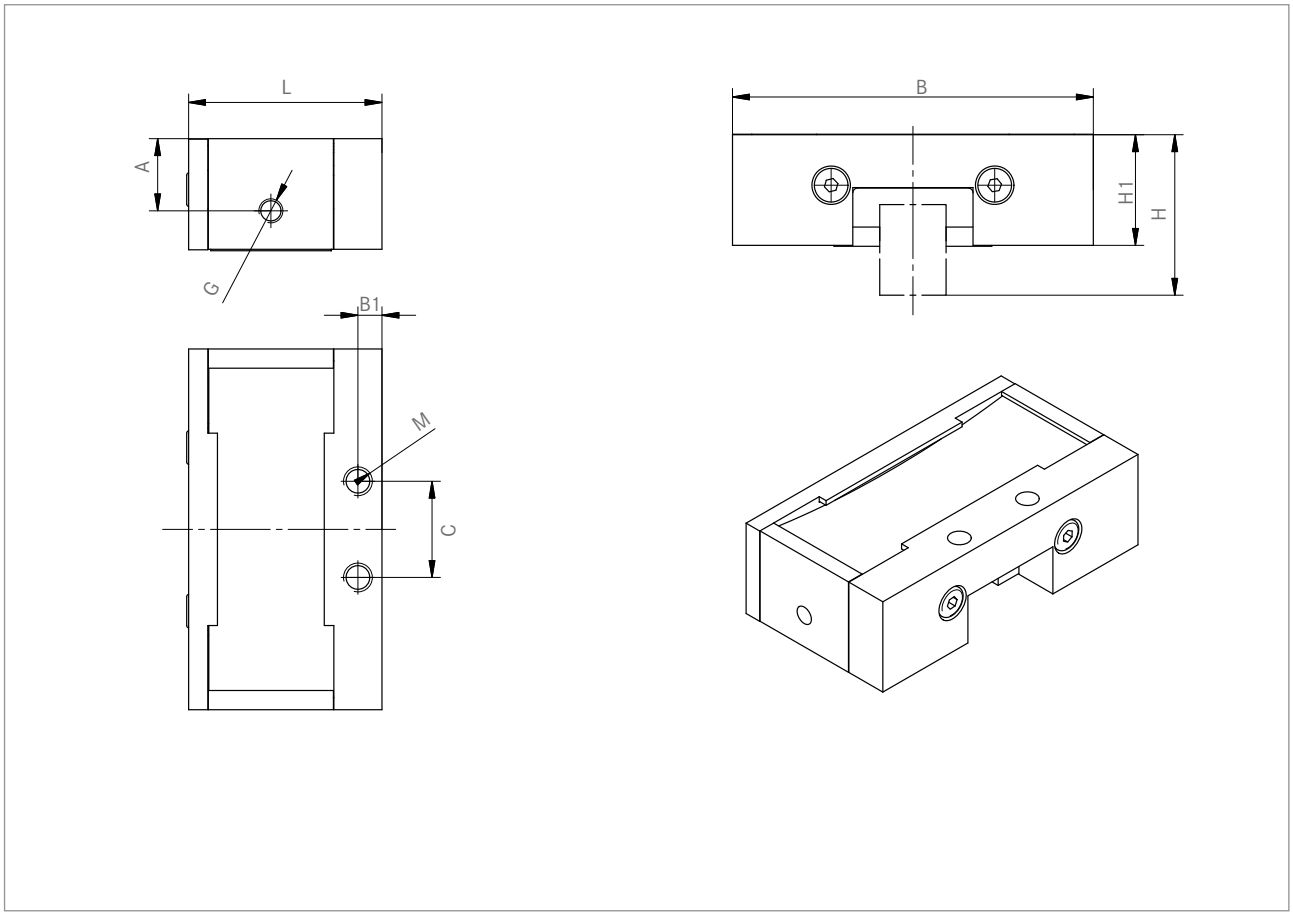
Technical Data

03 Content Product Finder
06 RotoClamp DiskClamp
44 LinClamp MoClamp
50 PClamp

Technical data of the LinClamp SA

	2 fixing holes		Low carriage			High carriage									
Rail size	L	B	H	H1	A	H	H1	A	B1	C	G	M	Holding force at 6 bar	Holding force at 4 bar	Mass
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[N]	[N]	[kg]
20	40	75	30	23	15	-	-	15	5	20	M5	M6	650	390	0.53
25	40	75	36	23	15	40	27	15	5	20	M5	M6	800	480	0.53
35	67	96	48	35	20	55	42	20	9	24	G1/8	M8	1250	750	1.14

Errors excepted. Only the written order confirmation is valid.



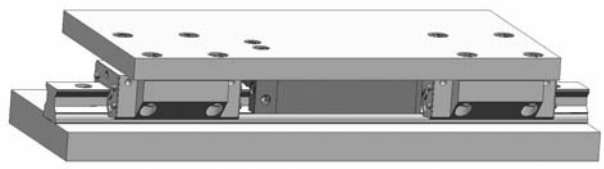
Recommendations/Installation/Warranty

General

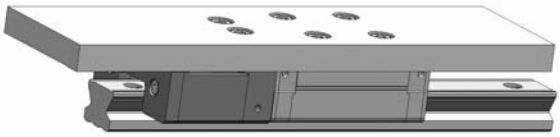
- To be able to transmit the indicated holding forces, the connection to the carriage(s) of the linear guide system used should be as rigid as possible.
- The mounting surface of the LinClamp is always at the same height as the mounting surfaces of the carriages (low or high) used in the linear guide due to the use of high or low fixing elements. Special heights of LinClamp as well as models adapted to lower rail sizes can be delivered on request.
- The mounting surface for fixing the LinClamp must be perfectly machined geometrically and must be flat.
- Check the air supply, line lengths and feeds and both check and test the valve selection.
- Braking element (brake linings) that are greased achieve approx. 60% of the holding forces.
- Clamping elements (steel linings) that are greased achieve 100% of the holding forces.
- If the combination of tolerances is unfavourable then there is a potential loss of holding force of up to 30% (due to the system).

Installation and assembly

- Air Pressure is applied to the LinClamp and it is opened (Type S, SK) or it is pushed over the rail without air pressure (Type SA) and then attached to the mounting surface via the fixing screws. The screws are only tightened by hand at first.
- The air pressure is now reduced to 0 Bar (Type S, SK) or increased to the required pressure (Type SA), thereby activating the clamping mechanism. This procedure centres the LinClamp relative to the rail.
- After the LinClamp has been centred in the intended position, the fixing screws are tightened in several steps up to the defined tightening torque.
- After assembly, a check is made whether the LinClamp can be freely moved over the rail when open. Only in this way is perfect function ensured.



View: LinClamp S in mounting position (suggestion)



View: LinClamp SK in mounting position (suggestion)

Request form

Please send by fax to +49 6182 773-35

Company name:

Address: Country/Zip/Location:

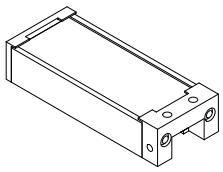
Contact: Area/Department:

Telephone: DID: Fax: Direct:

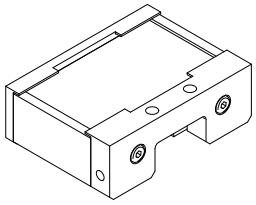
E-Mail: Internet:

LinClamp systems can be adjusted for various applications. The following criteria decide on the configuration of the system. Please enter the information as completely and detailed as possible.

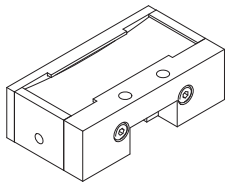
Model (please check):



☐ LinClamp S



☐ LinClamp SK



☐ LinClamp SA

Type designation according to the table: _____

Holding force: _____ N Air pressure: _____ Bar

☐ System should clamp with air
☐ System should open with air

☐ Horizontal operation
☐ Vertical operation
☐ Vertical operation (with free fall)

Use as:
☐ brake system
☐ emergency brake
☐ mechanical fall arrester
☐ clamping system
☐ process terminal

Clamping cycles _____ per _____

Surface operating conditions:
☐ dry ☐ oiled ☐ greased

Exact designation of the oil/grease: _____

Exact designation of linear guidance:

Manufacturer: _____

Type/Size: _____

Carriage type high/low: _____

Required quantity: _____

Date of delivery: _____

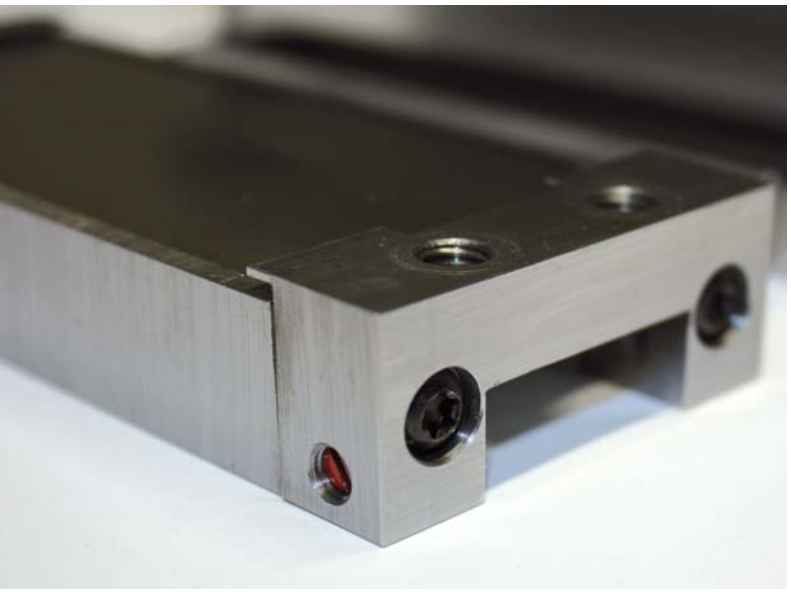
☐ Please call back

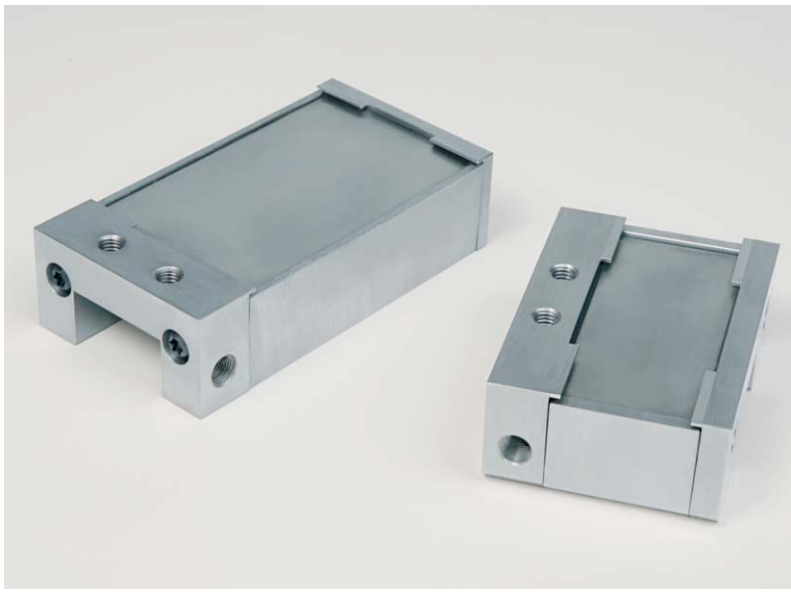
☐ Please visit

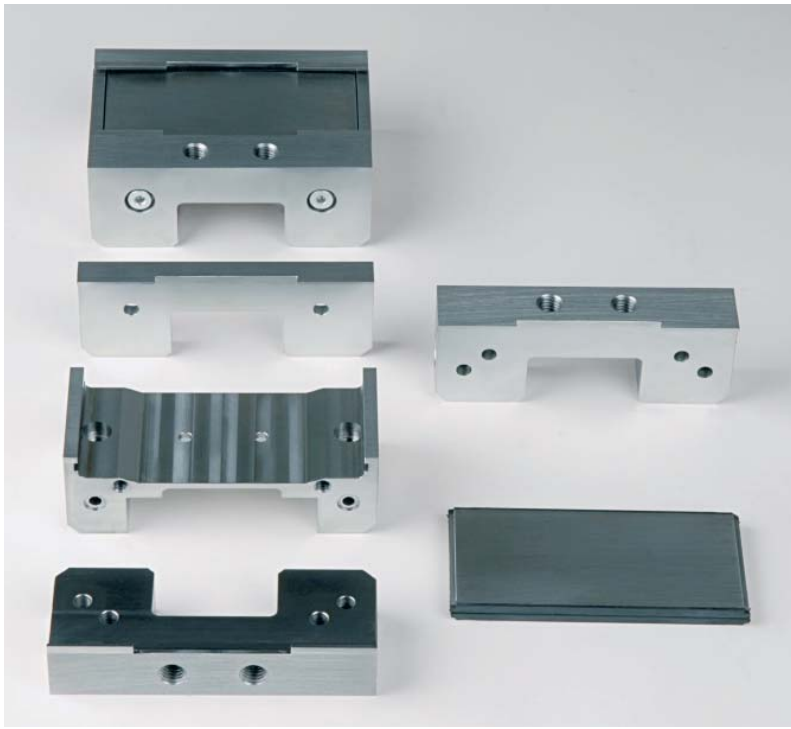
Other: _____

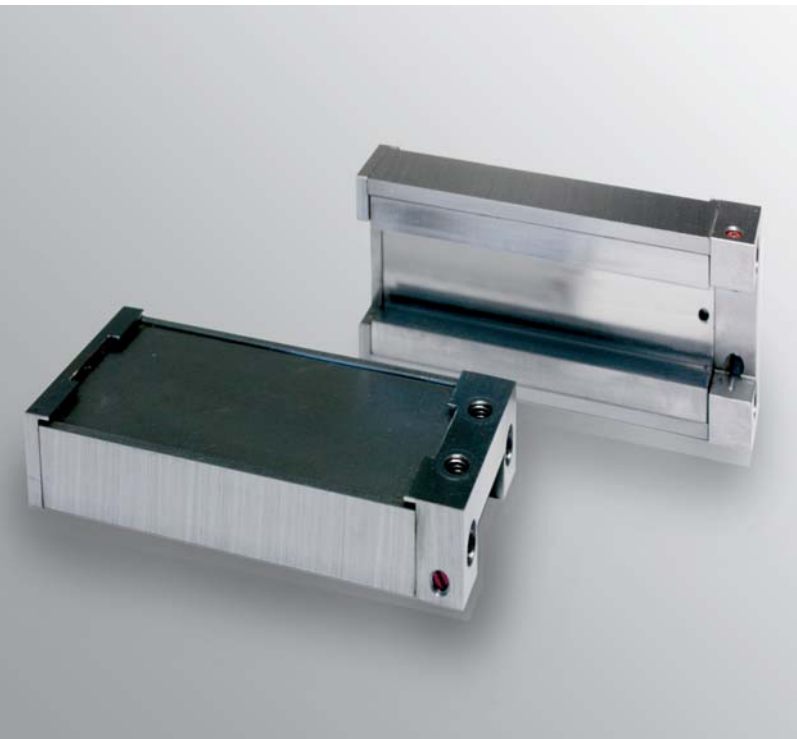
You can also download this form at:
www.hema-group.com.

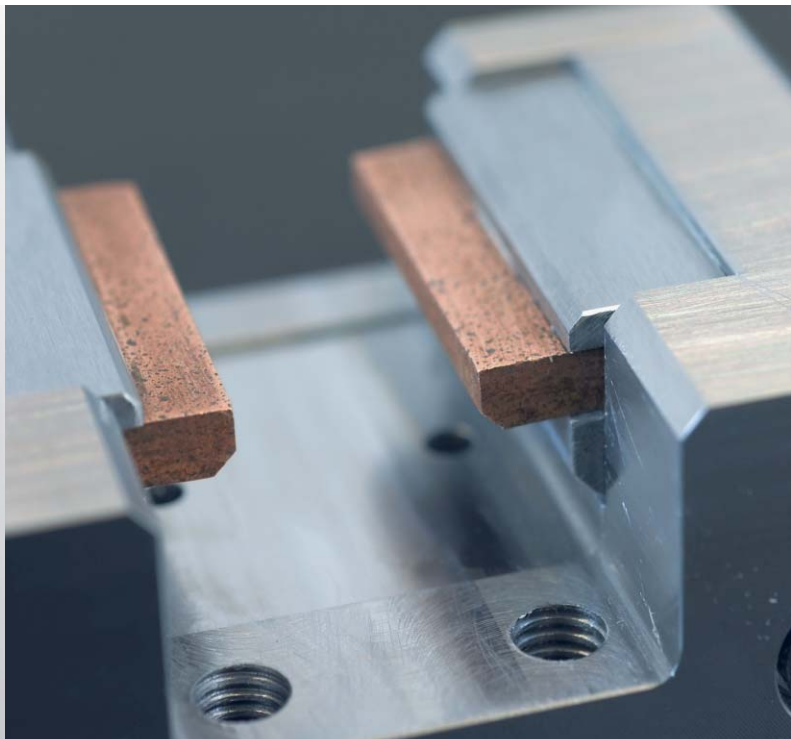
LinClamp / MClamp











MClamp Manual Clamping System

The MClamp supplements the HEMA pneumatic rail clamps with a manually operated clamping element with high retaining forces.
The H shaped cross section of the clamping body corresponds to the body of the HEMA LinClamp elements, i.e. the clamping function and the automatic return on release are based on the same principles as the LinClamp Series that has been tried and tested thousands of times. Four tapped holes enable easy fitting and universal compatibility.

Advantages of MClamp

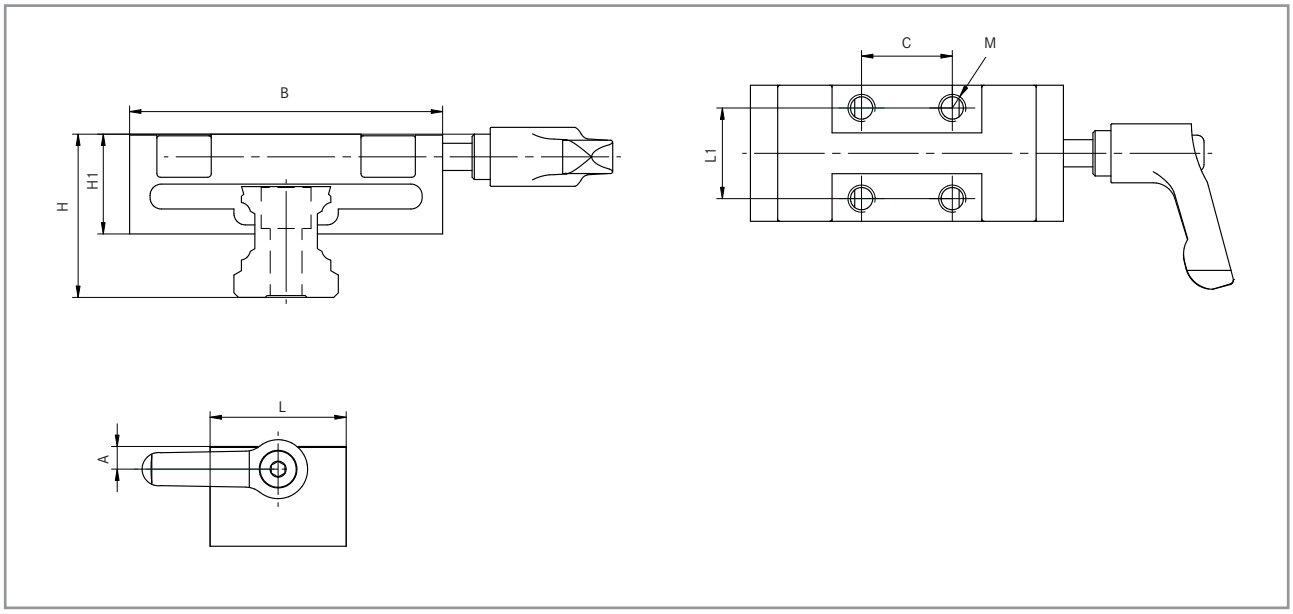
- low cost entry level rail clamp version
- 4 tapped holes for easy fitting, universally compatible
- high axial stiffness
- reliable clamping with max retaining forces of 2000 N
- suitable for all manual clamping jobs, e.g. for positioning against stops, transport locks, securing working positions at jigs and assembly stations, etc.
- precise positioning without affecting longitudinal or transverse forces on the rail; the clamping forces always act vertically to the rail axis and are transferred symmetrically
- extremely flexible applications - for virtually all rail and guide carriage types
- compact design, easy to install, easy to operate
- operated with Allen key and torque wrench or alternatively with a manual clamping lever

Manual clamping lever for MClamp

Technical Data

Sie	B	L	H*	H1	A	L1	C	M	max. tightening torque [Nm]	holding force [N]
MClamp 15	47	23	24	15	3.2	17	17	M4	3.5	900
MClamp 20	59	24	30	19	4	15	15	M6	4.5	1000
MClamp 25	69	30	36	22	5	20	20	M6	7.5	1100
MClamp 30	84	35	42	26	5.3	22	22	M6	10	1100
MClamp 35	96	35	48	31	6.5	24	24	M8	11	2000

*H corresponds to the rail manufacturer's low carriage; when higher ones are used, spacer plates must be provided. All dimensions in mm if not marked otherwise. Errors and omissions excepted.



PClamp

PClamp N

PClamp E

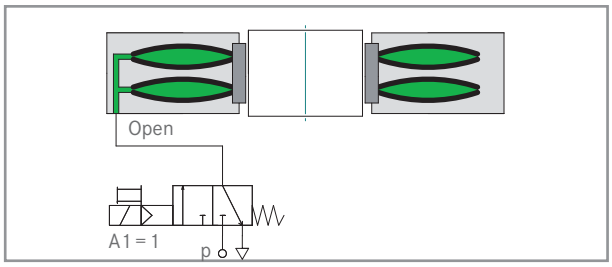
Advantages

1. Pneumatic clamping with high forces
2. Optimum safety clamping – pneumatic failure locks the system
3. The performance of hydraulic clamps will be achieved and exceeded
4. Low system costs in comparison to hydraulics
5. Simple installation
6. Compact design
7. Wide range for many shaft sizes can be delivered

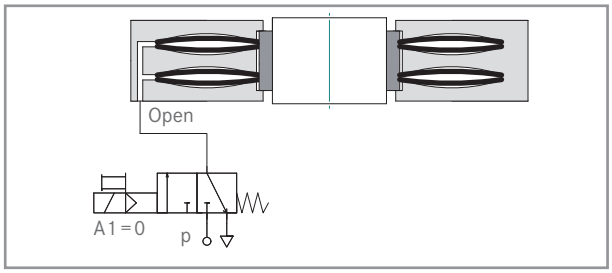
Content Product Finder 03
RotoClamp DiskClamp 06
LinClamp 36
PClamp 51

OPERATING PRINCIPLE OF THE PCLAMP

Funktion PClamp N



PClamp Standard, opening the spring actuator



PClamp Standard, clamping with spring actuator

Compressed air

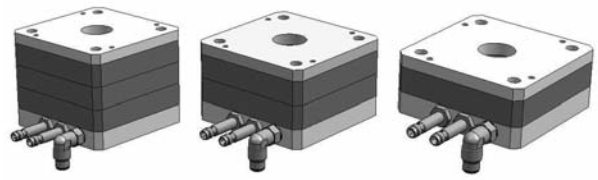
PClamp N released

Pressure is applied to the air chambers between the spring steel sheets. The spring steel sheets bend outwards, reducing their radial width. The clamping collet can therefore expand, releasing the rod.

PClamp N clamped

The air chambers between the spring steel sheets are vented, the elastic spring steel sheets return to their original position, thereby clamping the collet against the rod. In this condition, the PClamp N is able to hold both rotary motion as well axial forces.

Increasing power



The building block system – more power by stacking up to four PClamp modules

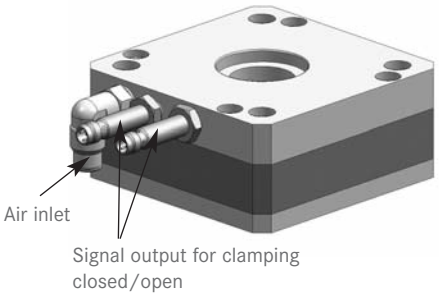
Intelligent modular concept PClamp stacking

The easiest method of increasing the clamping force by stacking several clamping units. The clamping forces can be increased by arranging up to three clamping units between the base plate and the surface plate.

PClamp is suitable for clamping rods with diameters of 12 mm to 40 mm. The flange dimension as well as the outside dimensions are matched to those of standard cylinders ISO 6431. The lengths vary depending on the clamping force required. Additional data for special solutions are available on request.

Product overview

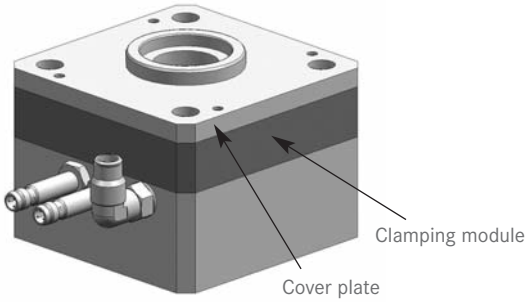
PClamp N



Standard version

Comprising the standard cover plate, one to four clamping units and base plate with connections for initiators as well as air inlet. Suitable for linear and rotary loads.

PClamp ISO



Version for ISO pneumatic cylinder

Cover plate and base plate are matched to the flange dimension of the ISO cylinder. Due to the integrated attachments in the housing, the ISO version is ideal for use with standard cylinders. The clamping unit is identical to versions N and X.

PClamp E

Compact version for lower clamping forces

PClamp E has a lower overall height – ideal for applications with limited installation space or operating ranges in which lower holding forces are required. Sensors can not be used. The clamping unit has a different outward appearance than Version N, X and ISO, although the active principle is identical.

Technical Data

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06 RotoClamp DiskClamp
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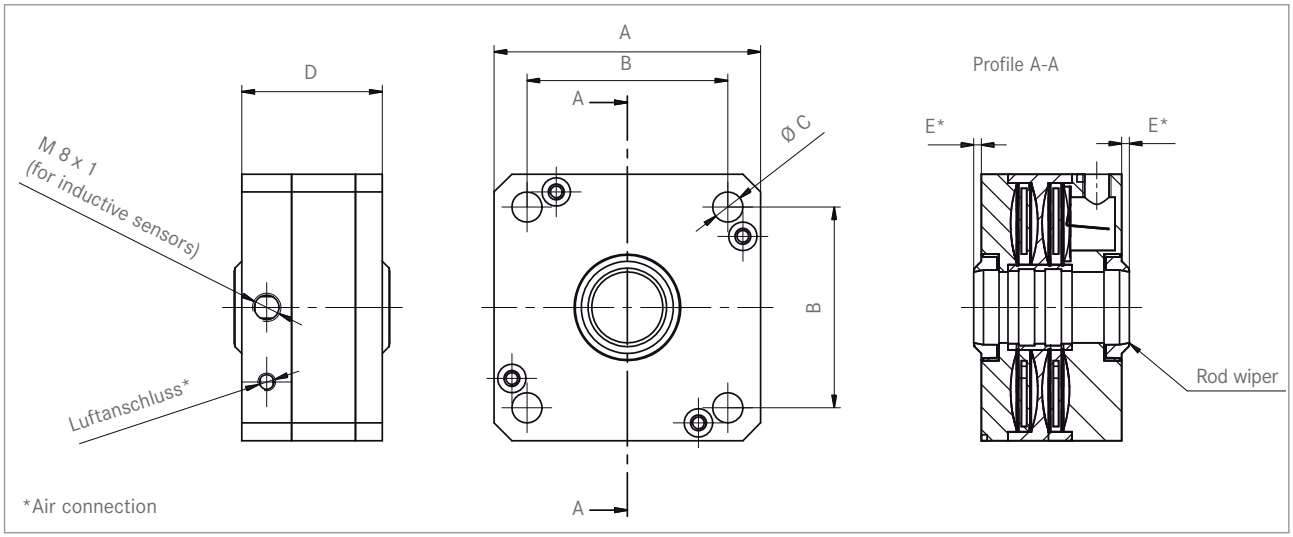
Technical Data of the PClamp N

Size	A	B	C	D	E	Air connection	Holding force Version 4 bar	Holding force Version 6 bar	Holding torque Version 4 bar	Holding torque Version 6 bar	Standard rod	Mass
Unit	[mm]	[mm]	[mm]	[mm]	[mm]		[N]	[N]	[Nm]	[Nm]	[mm]	[kg]
PC 63-20-1	75	56.5	8.5	41.5	2.1	M5	1400	2000	15	20	20	0.7
PC 63-20-2	75	56.5	8.5	59.5	2.1	M5	2520	3600	25	35	20	1.13
PC 63-20-3	75	56.5	8.5	77.5	2.1	M5	3780	5400	35	50	20	1.56
PC 80-25-1	96	72	10.5	43.5	2.14	G 1/8	2100	3000	25	35	25	1.3
PC 80-25-2	96	72	10.5	63.5	2.14	G 1/8	3780	5400	40	60	25	2.2
PC 80-25-3	96	72	10.5	83.5	2.14	G 1/8	5670	8100	65	95	25	3.1
PC 125-40-1	145	110	13	51.6	3	G 1/8	7000	10000	140	200	40	3.65
PC 125-40-2	145	110	13	75.2	3	G 1/8	12600	18000	250	360	40	5.85
PC 125-40-3	145	110	13	98.8	3	G 1/8	18900	27000	375	540	40	8.05
PC 125-40-4	145	110	13	122.4	3	G 1/8	25200	36000	500	720	40	10.25

Errors excepted. Only the written order confirmation is valid.



Example of tabulation

- PC 63-20-1: PClamp suitable for ISO cylinders, size 63, rod diameter 20 mm, one clamping module.
- Sizes A, B, C, D and E are geometric data (refer to the drawing).
- Air connection M5: Connecting thread for hose connector.
- Holding force Version 4 Bar: 1400N/holding force Version 6 Bar: 2000 N. The versions for various pressure ranges achieve different holding forces.
- Holding torque Version 4 Bar: 15 Nm/holding torque version 6 Bar: 20 Nm. Like before, there are different holding torques at different pressures.
- Standard rod diameter starting from the standard value, you can get versions with reduced diameter. Available diameter and corresponding holding forces on request.

Safety note for construction

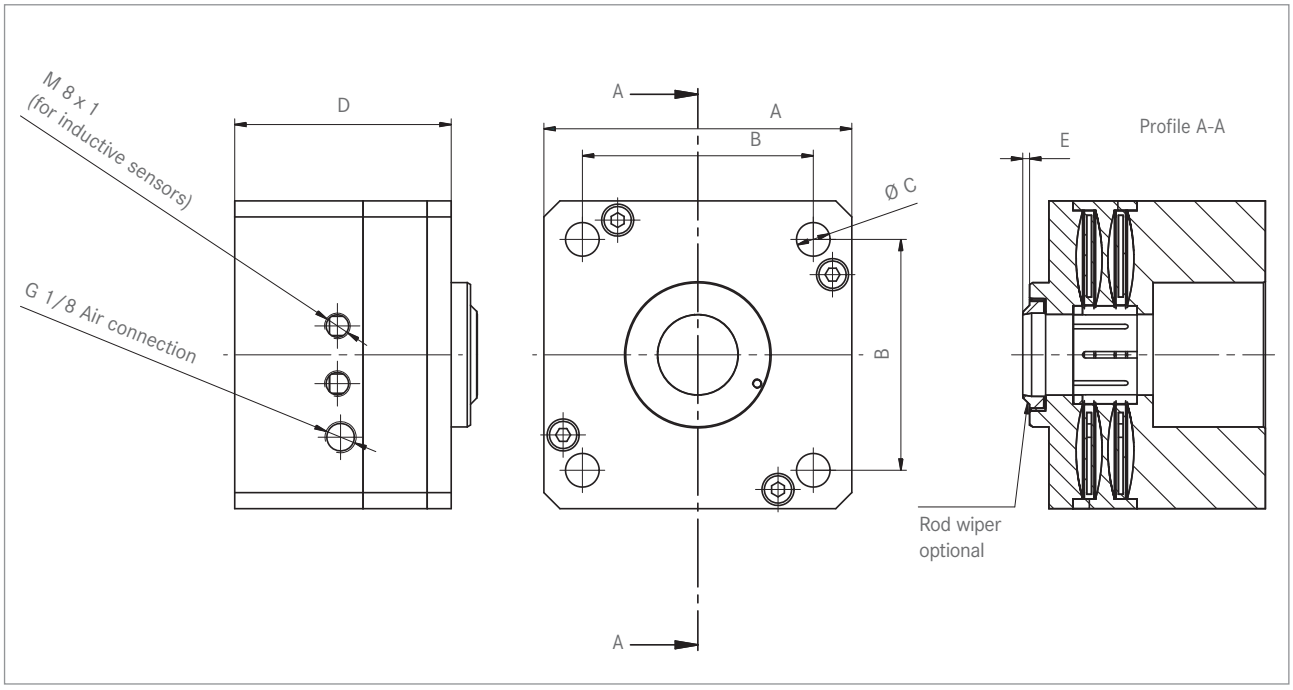
The holding forces specified can be achieved under optimal conditions; we recommend a safety factor of >10%. Please consider that the surface, material, and cleanliness of the rod as well as wear and the use of wipers leads to changed holding forces. For new or safety applications, check the clamp by testing it in its environment and measure the actual values. Plan regular functional checks and functional monitoring. Please indicate these intervals as safety instructions for the end user. The axis/shaft must be designed at least with an h9 fit. Expect reduced holding forces if using the entire range of tolerances. To achieve optimum holding force, machine the fit as closely as possible to the nominal size.

Technical Data

Technical Data of the PClamp ISO

Size	A	B	C	D	E	Air connectio	Holding force Version 4 bar	Holding force Version 6 bar	Holding torque Version 4 bar	Holding torque Version 6 bar	Standard rod	Mass
Unit	[mm]	[mm]	[mm]	[mm]	[mm]		[N]	[N]	[Nm]	[Nm]	[mm]	[kg]
PC 63-20-1	75	56.5	8.5	69.5	2.1	M5	1400	2000	15	20	20	1
PC 63-20-2	75	56.5	8.5	87.5	2.1	M5	2520	3600	25	35	20	1.43
PC 63-20-3	75	56.5	8.5	105.5	2.1	M5	3780	5400	35	50	20	1.86
PC 80-25-1	96	72	10.5	67.5	2.14	G 1/8	2100	3000	25	35	25	1.8
PC 80-25-2	96	72	10.5	87.5	2.14	G 1/8	3780	5400	40	60	25	2.7
PC 80-25-3	96	72	10.5	107.5	2.14	G 1/8	5670	8100	65	95	25	5.6
PC 125-40-1	145	110	13	95.6	3	G 1/8	7000	10000	140	200	40	5.65
PC 125-40-2	145	110	13	119.2	3	G 1/8	12600	18000	250	360	40	7.85
PC 125-40-3	145	110	13	142.8	3	G 1/8	18900	27000	375	540	40	10.05
PC 125-40-4	145	110	13	166.,4	3	G 1/8	25200	36000	500	720	40	12.25

Errors excepted. Only the written order confirmation is valid.

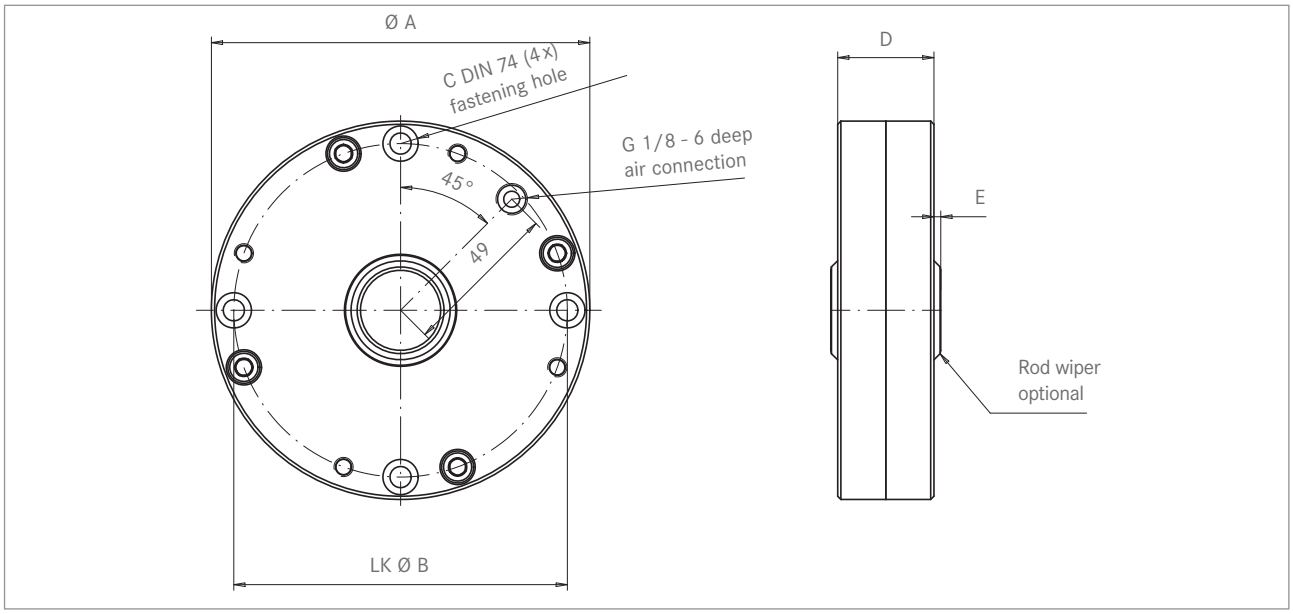


Technical Data

Technical Data of the PClamp E

Size	A	B	C	D	E	Air connection	Holding force Version 4 bar	Holding force Version 6 bar	Holding torque Version 4 bar	Holding torque Version 6 bar	Standard rod	Mass
Unit	[mm]	[mm]		[mm]	[mm]		[N]	[N]	[Nm]	[Nm]	[mm]	[kg]
PC 63-20 E	92	80	M5	28	2.1	G 1/8	700	1000	7	10	20	1.15
PC 80-25 E	118	104	M6	30	2.14	G 1/8	1050	1500	12	17	25	2.1
PC 125-40 E	168	152	M6	34	3	G 1/8	3500	5000	70	100	40	4.9

Errors excepted. Only the written order confirmation is valid.



Request form

Please send by fax to +49 6182 773-35

Content Product Finder 03
RotoClamp DiskClamp 06
LinClamp MClamp 36
PClamp 57

Company name:

Address: Country/Zip/Location:

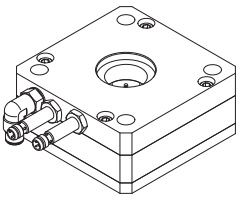
Contact: Area/Department:

Telephone: DID: Fax: Direct:

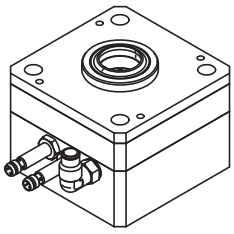
E-Mail: Internet:

PClamp systems are suited to for various applications. The following criteria decide on the configuration of the system. Please enter the information as completely and detailed as possible.

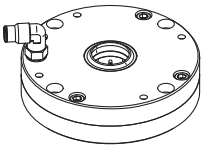
Model (please check):



☐ PClamp N



☐ PClamp ISO



☐ PClamp E

Type designation according to the table: _____

Required holding force: _____ N

Required holding torque: _____ Nm

System can only open with air:

☐ 4 Bar compressed air

☐ 6 Bar compressed air

☐ Horizontal operation

☐ Vertical operation

☐ Vertical operation (with free fall)

Use as:

☐ brake system

☐ clamping system

☐ translatory

☐ rotary

Clamping cycles: _____ for each _____

Surface operating conditions:

☐ dry ☐ oiled ☐ greased

Exact designation of the oil/grease: _____

Piston diameter: _____ mm

Required quantity: _____

Date of delivery: _____

☐ Please call back

☐ Please visit

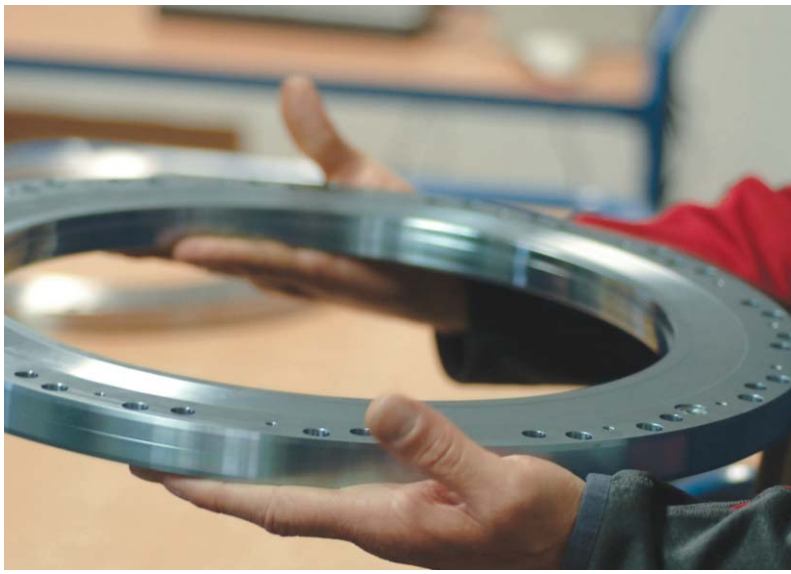
Other: _____

You can also download this form at:
www.hema-group.com

HEMA

Clamping Systems

Quality by HEMA

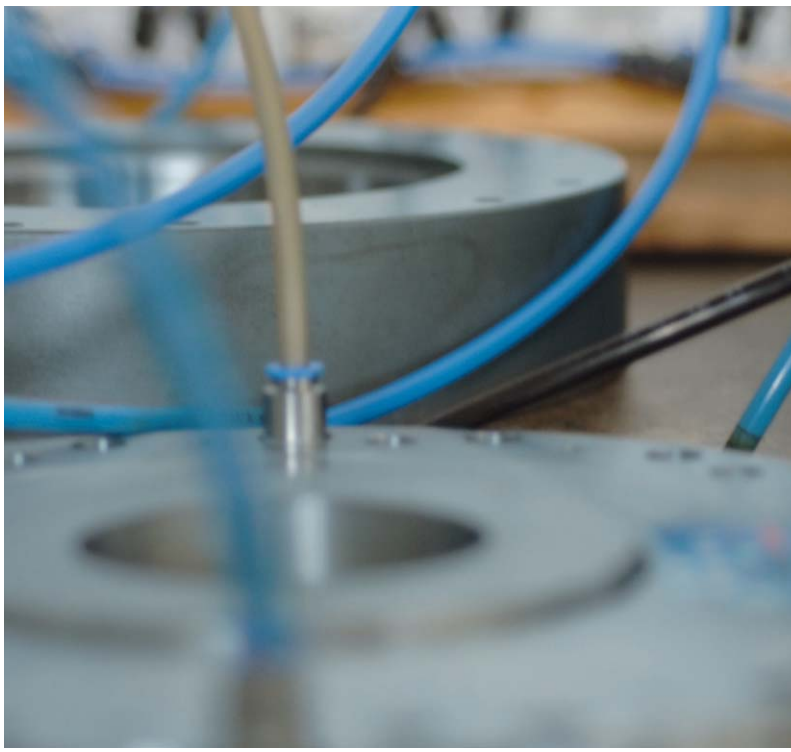


Quality at HEMA

All clamping systems are subject to the most stringent quality requirements according to the HEMA ISO 9001 System. A 100% check of components at all stages of production ensures absolute quality.

The most modern 3D measuring machines and our own, specially developed testing machines ensure high quality on delivery and continuous performance data.

A batch number system allows for unique identification of all performance data for the clamping system delivered in each case. Detailed operating instructions supplement the high-performance systems.



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MASCHINEN- UND APPARATESCHUTZ GMBH

Our range of service

Protection systems

Clamping and braking systems

Machine safety windows
Spin windows
LED Lighting systems

Service, logistics and maintenance

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