

OPERATING INSTRUCTIONS

ROTOCLAMP INSIDE XS/XSA
ROTOCLAMP INSIDE S/SA
ROTOCLAMP INSIDE N/NA
ROTOCLAMP INSIDE L/LA
ROTOCLAMP INSIDE Y/YA



OPERATING INSTRUCTIONS

Last revised: 12/04/2016, Version 5.3

Language of original version: German

Specifications subject to modification without prior notice. Errors excepted.

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CONTENTS

	Page
1. Important information	4
2. General description	4
3. Model variants	5
4. Controls and connections	5
5. Use	6
6. Improper use/warnings	6
7. Residual risks	6
8. Warranty	6
9. Transport/storage/intermediate storage	8
10. Type designation	8
11. Installation notes	8
12. Installed state	9
13. Installing the RotoClamp Inside Standard XS/S/N/L/Y	9
14. Installing the RotoClamp Inside Active XSA/SA/NA/LA/YA	14
15. Final examinations and information	16
16. RotoClamp Inside features	17
17. Tightening torques for screws	18
18. Commissioning	18
19. Maintenance and care	18
20. CE marking	19
21. EC declaration of conformity	19
21. Causes of faults - solutions	20
22. RotoClamp XS, specifications and drawing	22
22. RotoClamp XSA, specifications and drawing	24
22. RotoClamp S, specifications and drawing	26
23. RotoClamp SA, specifications and drawing	27
24. RotoClamp L, specifications and drawing	28
25. RotoClamp LA, specifications and drawing	30
26. RotoClamp N, specifications and drawing	32
27. RotoClamp NA, specifications and drawing	34
28. RotoClamp Y, specifications and drawing	36
29. RotoClamp YA, specifications and drawing	38

1. IMPORTANT INFORMATION

These operating instructions describe how to use the RotoClamp Inside properly. Warranty claims are valid only when these instructions have been observed. It is therefore imperative that you please read these instructions before using the safety clamp.

- It is imperative that you observe the thresholds (e.g. for pressures, forces, torques, and temperatures) and tolerance ranges for the clamping pair specified in these instructions.
- Make sure that the supplied compressed air has been properly treated. Once selected, the medium's composition must be maintained over the whole service life.
- Consider the prevailing operating conditions.
- Observe the rules and regulations issued by the professional associations and the technical safety inspectorate TÜV, and the pertinent national, international, and European terms and conditions.
- Before installing for the first time, please remove all transport locks and guards like paper, foil, etc. Each of these materials must be introduced to the legally prescribed disposal cycle (recycling containers).
- The product may be installed and commissioned only by qualified, specialised personnel in accordance with these operating instructions.

Symbols used



Warning



Note

2. GENERAL DESCRIPTION

- The clamping elements of the RotoClamp Inside series open pneumatically and generate their clamping force via a spring accumulator at 0 bar. Optionally, the clamping force can be boosted with the additional air function (operating pressure).
- The clamping elements of the RotoClamp Inside Active series close pneumatically and generate their clamping force via the deformation of a prestressed spring at the operating pressure.
- The clamping force is exerted by the frictional contact between the shaft's external diameter and the vertically applied surfaces of the clamp's internal diameter.

RotoClamp Inside Standard

- Disengaging - When compressed air at 4 bar (+0.5/-0.3 bar) or 6 bar (+0.5/-0.3 bar) is applied to the internal spring diaphragm chamber (OPEN), and air is drawn out of the external spring diaphragm chamber (CLOSE), the diaphragm deflects, reducing the distance between the two radial contacting surfaces on the spring's internal and external diameters. In this state, the clamping element is open.
- Clamping - When air is drawn out of the internal spring diaphragm chamber (OPEN) and supplied to the external spring diaphragm chamber (CLOSE), the diaphragm relaxes and presses against the radial contacting surfaces on the spring's internal and external diameters. The clamping element deforms at the clamped surface. In this state, the clamping element is closed.

- Clamping with additional air - Optionally, the clamping force can be boosted when the external spring diaphragm chamber (CLOSE) is pressurised additionally with compressed air at 4 bar (+0.5/-0.3 bar) or 6 bar (+0.5/-0.3 bar). In this state the clamping element is closed.

RotoClamp Inside Active (clamping with air)

- Disengaging - In the installed state, the spring diaphragm is bent, reducing the distance between the two radial contacting surfaces on the spring's internal and external diameters. In this state, the clamping element is open.
- Clamping - When air is drawn out of the internal spring diaphragm chamber (OPEN) and the external spring diaphragm chamber (CLOSE) is pressurised with compressed air at 4 bar (-0.3 bar) to 6 bar (+0.5 bar), the diaphragm deflects and presses against the radial contacting surfaces of the spring's internal and external diameters. The clamping element deforms at the clamped surface. In this state, the clamping element is closed.


3. MODEL VARIANTS

- RotoClamp Inside is available in the model versions XS, S, N, L, Y, as a standard or active version (clamping with air), and for a working pressure of 4 bar (+0.5/-0.3 bar) or 6 bar (+0.5/-0.3 bar).
- Rotoclamp Inside is also possible and available in customised special sizes.
- RotoClamp Inside is also possible as a special version with other operating pressures (+0.5/-0.3 bar).




4. CONTROLS AND CONNECTIONS

- 👉 ■ Fastening options depending on version:
 - through holes in the RotoClamp Inside's housing
 - female thread in the RotoClamp Inside's housing (option)The fastening screws must be able to take the max retaining torques.
- 👉 ■ Compressed air connections »OPEN« and »CLOSE« on both sides of the housing:
 - G1/8" connections on RotoClamp Inside N, L, and Y types
 - M3/M5 connections on RotoClamp Inside XS types
 - M5 connections on RotoClamp Inside S types
- 👉 ■ **IMPORTANT:** On the RotoClamp Inside Standard without additional air mode, the connection »CLOSE« must always be open for drawing out air.
- Plugs for sealing the unused connections (red) are included in delivery.
- 👉 ■ **IMPORTANT:** Unused air connections must be sealed tightly.

5. USE



-  ■ The clamping elements of the RotoClamp Inside series are designed to clamp rotating elements during machining operations and are manufactured for the fits specified in the technical documentation/catalogues.
- The task and functional characteristic of HEMA clamping systems are to retain and clamp components in the one position.
- RotoClamp Inside is designed to be used indoors and confined spaces with dry atmosphere.

6. IMPROPER USE / WARNINGS

-  ■ RotoClamp clamping systems are not designed to secure suspended loads when machines or machine parts are being manufactured, transported, assembled, installed, commissioned, used, cleaned, subjected to troubleshooting, shut down, disassembled, or disposed of in personal danger areas without redundant safety systems
- RotoClamp clamping systems cannot be used as bearings for supporting shafts and axles.
-  ■ RotoClamp clamping systems cannot be used as brakes.
-  ■ RotoClamp clamping systems cannot be used as axial clamps.

7. RESIDUAL RISKS

RotoClamp clamping systems are not fitted with a second safety circuit. When the system is actuated intentionally or by accident, the RotoClamp opens and therefore releases its retaining force - and the retained mass - on the shaft. As a consequence, during all operating modes and lifecycle phases without a redundant system, there are mechanical dangers in the form of:

-  ■ crushing, cutting, shearing, abrasion, or puncturing during installation from:
 - unsecured connected structures, disruptions in the compressed air supply (e.g. pressure fluctuations)
 - human error (e.g. inadequate experience or qualifications, stress, fatigue, "convenient shortcuts")
- failure to observe the information and warning signs during installation and commissioning
-  ■ wrong use of the RotoClamp inside (see Section 6)
- impacts, abrasion, cutting as a consequence of inadequate compressed air connections or loose compressed air lines or fastening screws

8. WARRANTY

- The design peculiar to the RotoClamp Inside requires that the tolerance range (dimensional, shape, and positional tolerances) between the shaft and clamp lie within the thresholds defined in the annexed tables. A discrepancy can cause damage to the housing or diaphragm in continuous operation. Failure to observe the tolerance ranges will lead to the loss of warranty.

- Rigidity of the surrounding structure - The clamping process always generates outwardly directed radial forces that are transferred to the surrounding structure via all of the fastening screws and that prevent the RotoClamp from expanding.
- All of the provided screw points must be used. In particular for the booster function, the radial forces may affect the geometrical precision of the plane contact between the contacting surfaces and the shaft when the surrounding structure exhibits inadequate rigidity. A change in geometry often leads to asymmetrical loads inside the RotoClamp and therefore to undesired deformations during this fast, dynamic clamping process. Detrimental effects on the spring diaphragms' service life can therefore not be ruled out. The geometrical precision of the plane contact on the shaft must also remain less than 0.02 mm during the clamping process, and the RotoClamp's radial expansion must be less than 0.01 mm at the external diameter.
- Operating conditions - Ambient temperature min 10°C and max 45°C, pneumatic operating pressure 4 bar (+0.5/-0.3 bar), 6 bar (+0.5/-0.3 bar), mainly operation with dry, filtered air (particles: Class 4, condensate: Class 4, oil content: Class 3) according to ISO 8573-1:2010.
- RotoClamp Inside Standard »4 bar« versions may be operated with 4 bar (+0.5/-0.3 bar) only, »6 bar« versions with 6 bar (+0.5/-0.3 bar) only. Too high an operating pressure causes damage to the spring diaphragms and sealing problems. Too low an operating pressure causes opening problems.
- Rotoclamp Inside Active versions are appropriate for a operating pressure range of 4 bar (-0.3 bar/+0.5 bar) L types, all other types from 4 bar (-0.3 bar) up to 6 bar (+0.5 bar).
- Safety clamping systems of the RotoClamp Inside Standard type come with a warranty of twelve months following delivery, but not in excess of one million clamping cycles (no emergency or braking clampings). When submitting a warranty claim, the customer must present suitable verification of the actual number of clampings.
- Safety clamping systems of the RotoClamp Inside Active type come with a warranty of twelve months following delivery, but not in excess of 500,000 clamping cycles (no braking clampings). When submitting a warranty claim, the customer must present suitable verification of the actual number of clampings.
- Before leaving the factory, the RotoClamp Inside clamping elements are machined with internal cylindrical grinders to their respective internal size based on the defined plane contact.
- Only completely assembled RotoClamp Inside units are covered by the warranty. Removing, dismantling, or remachining the RotoClamp Inside without prior consent issued in writing by HEMA reduces the operating safety and renders the warranty void.
- The specified retaining torques are obtained when the shaft and clamp are dry and unlubricated. The use of greasy lubricants may cause a considerable reduction in retaining torque (> 50%) or failure of the clamping element.
- Before mounting the RotoClamp, the clamping area should be cleaned of sealing compounds and oils using a solvent (such as Weicon Reiniger »S«).
- Activating of the booster function is only permitted after installation. For active clamps activating the clamping function is also critical. Activating the clamps without resistance can cause damages housing and seals

- The clamping elements are used properly only when they are used in full compliance with the technical specifications. Any other use will exempt HEMA Maschinen- und Apparateschutz GmbH from providing any other services.

9. TRANSPORT/STORAGE/INTERMEDIATE STORAGE

- ☞ ■ The clamping elements are transported in the prestressed state without locks.
- The clamping elements should be placed in storage or interim storage in the preserved state and in the packaging selected by HEMA.
- The clamping elements are made of materials that can corrode when treated incorrectly. Warranty claims on these grounds will not be acknowledged.
- Before mounting the RotoClamp, the clamping area should be cleaned of sealing compounds and oils using a solvent (such as Weicon Reiniger »S«).

10. TYPE DESIGNATION

- ☞ ■ The engraved type designation can be found on the top panel of the RotoClamp housing. With all standard parts, this side is not plane ground and does not serve as a plane contact.

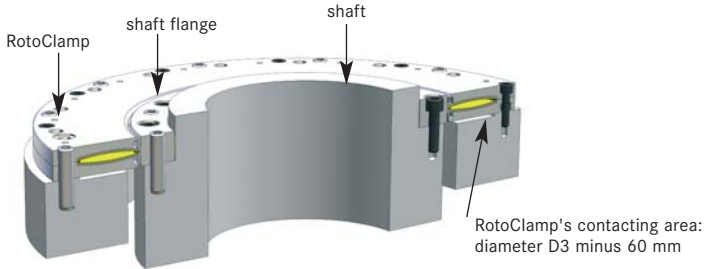


- The engraved type designation serves to identify and track the clamping element. The clamping element's serial number (SN) is important. It is unique for every clamping element and therefore absolutely essential for tracking purposes. So never obliterate the type engraving with chemical and/mechanical means. The type designation must be legible at all times. Removing or obliterating the type designation renders all warranty claims void. The type designation describes the type and the size.
- HEMA clamping systems function in accordance with the specifications and performance data and undergo a full, individual final inspection with retaining torque measurement. The components receive an individual marking and are documented internally.

11. INSTALLATION NOTES

- Check that the type designation on the RotoClamp Inside agrees with the RotoClamp variant you want to install. Handle the RotoClamp so that it cannot sustain damage. This will reduce the operating safety and render the warranty void.
- ☞ ■ Make sure that the installation is free of torsion and the max loads in the catalogue cannot be exceeded. Screws of property class 12.9 must be used to secure the RotoClamp Inside.
- Tighten the fastening screws with the prescribed torque (see Section 17).

12. INSTALLED STATE



Installing the shaft flange

The shaft seat should be a g6 fit. The shaft flange is preinstalled with the plane contacting side, aligned for concentricity, and then secured in position with the max possible torque.

13. INSTALLING THE ROTOCLAMP INSIDE STANDARD

- Make sure that the fastening and clamping surfaces are clean and plane. Before mounting the RotoClamp, the clamping area should be cleaned of sealing compound and oils using a solvent (such as Weicon Reiniger »S«).
- Make the compressed air connections.
- The RotoClamp Inside Standard must be pressurised at the »OPEN« connection and opened with compressed air at 4 bar (+0.5 bar) or 6 bar (+0.5 bar). Then it can be inserted over the shaft.
- Afterwards the RotoClamp Inside is aligned to the planned contacting position and screwed in place with a reduced tightening torque.
- After installing the RotoClamp Inside, reduce the air pressure to 0 bar until the RotoClamp Inside has centred on the shaft. This step should be repeated at different angular positions of the rotating part.
- Reliable centring requires a radial clearance of about 1 mm at the RotoClamp Inside's external diameter. The internal and external diameters are not concentric.
- The RotoClamp Inside Standard has only one defined plane contacting side opposite the engraved side.
- Once the RotoClamp Inside has centred at the planned position, the fastening screws are fully tightened with the defined tightening torque (Table 1, page 17) applied crosswise over two to three circuits.

Step by step procedure for installing the RotoClamp Inside Standard



- Remove the red plugs from the connections »OPEN« and »CLOSE».
 - Should the **air connection be from the side opposite the engraving**, then please first **start with steps I to IV** (page 12), then continue as described.
 - Please make sure that all RotoClamp Inside units are screwed with their plane ground housing sides (the opposite sides without the serial number) to the planned, treated contacting surface on the machine.
 - Connect compressed air to the »OPEN« connection, and set the rated pressure to 4 bar (+0.5 bar) or 6 bar (+0.5 bar), depending on the version ordered.
 - When installing the RotoClamp, a maximum operating pressure of 4.5 bar or 6.5 bar is recommended for 4 and 6 bar models respectively.
 - NOTE: The Y types have two »OPEN« and two »CLOSE« connections.



- Please bear in mind that the RotoClamp Inside Standard **cannot be installed without operating pressure**.
 - The RotoClamp Inside Standard **can be installed only with operating pressure at 4 bar (+0.5 bar) or 6 bar (+0.5 bar)**.
 - Position and align the RotoClamp Inside Standard until plane, then turn in the screws of property class 12.9, and tighten by hand until they sit correctly. Please note that 12.9 screws must be used without fail. See Table 1, page 17 for tightening torques.



- Remove the pressure: the system centres itself. Now tighten the screws with the calculated torque, proceeding crosswise over several circuits with defined end values, e.g. first 20 Nm, then 50 Nm, then 70 Nm.
- Apply the operating pressure, and check that the shaft can rotate freely. If necessary, repeat the steps for installation.



- **IMPORTANT:** RotoClamp Inside with additional air option (booster) - Connect compressed air to the »CLOSE« connection, and examine tightness and correct functioning.

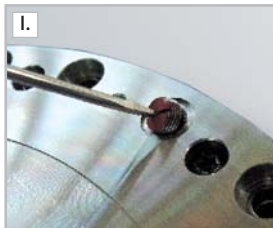


- Tandem variants (two RotoClamps) are installed analogously to the above description with consideration to the air passage, the tightening torques, and their sequence.

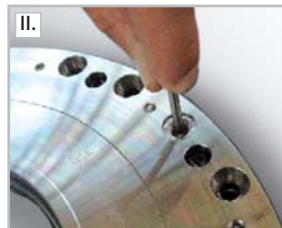
Additional steps for changed air supply

IMPORTANT: The following additional steps are necessary only when a changed air supply is needed from the opposite side of the engraving. In this case, please order separately the parts set (see page 13 for details).

Installation steps:



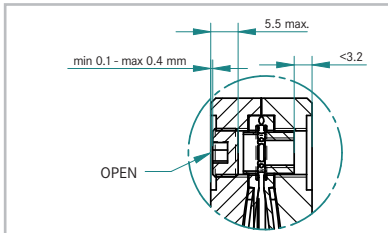
- Examine the installation kit for the RotoClamp Inside, and keep it ready. Remove the red storage protection caps from the »OPEN« and »CLOSE« connections on the RotoClamp Inside.
- N, L, Y series - Remove the setscrew with flat point (DIN EN 24766 M6 x 8) from the »OPEN« connection on the engraved side and the unpainted G1/8" screw plug from the »CLOSE« connection on the nonengraved side of the RotoClamp Inside
S series - Remove the M5 screw plugs from the »OPEN« and »CLOSE« connections on the nonengraved side.



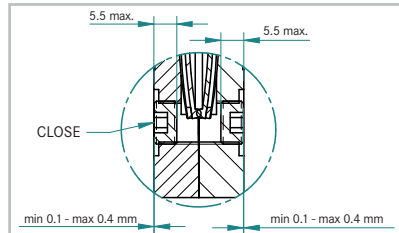
- Using the installation kit when installing for the first time and removing.
- **IMPORTANT!**: Bear in mind that the pneumatic connection for N/L types and the screw plugs must not be inserted by more than 5.5 mm (see pp 13 ff).




- From the engraved side, screw in the installation pin at the "OPEN" connection, and if necessary seal the thread. Screw a straight pneumatic connection (G1/8" thread) into the »OPEN« connection (engraved side), and afterwards insert a suitable hose.
- Pressurise the RotoClamp Inside with operating pressure (4 or 6 bar). Insert O rings at the »OPEN« and »CLOSE« connections between the RotoClamp Inside's plane contact and the attachment area. Install the RotoClamp at the desired position (towards the observer), then shut off the air supply. Afterwards, remove the pneumatic connection and the installation pin. Seal the »OPEN« and »CLOSE« connection with the protective screws marked red. The compressed air can now be supplied from the plane side.



Detail C



Detail D

 **To remove the RotoClamp, follow these steps in reverse order.** Continue the installation then with step 1, page 10.

Installation materials accessory kit, not included in delivery, please order separately by fax +49(0)6182 773-35:



Installation kit for S types

article no.: 10028159

installation pin

(St 37-2 as per drawing): 1 pce

O ring (70 Shore, 4 x 1.5): 2 pcs

plug screw (M5 x 4): 3 pcs



Installation kit for N, L and Y types

article no.: 10026841

installation pin

(St 37-2 as per drawing): 1 pce

O ring (70 Shore, 12 x 1.5): 2 pcs

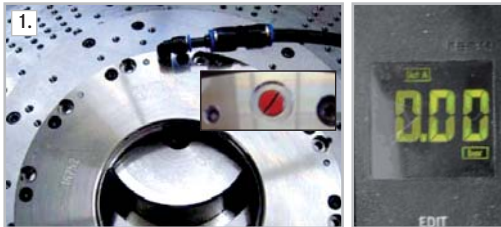
plug screw (G1/8" x 5): 3 pcs


Installation kit for XS types on request

14. INSTALLING THE ROTOCLAMP INSIDE ACTIVE

- Make sure that the fastening and clamping surfaces are clean and plane.
- RotoClamp Inside Active is open without compressed air and can therefore be inserted over the shaft without compressed air.
- Afterwards the RotoClamp Inside Active is aligned to the planned contacting position and screwed in place with a reduced torque.
- After installing the RotoClamp Inside Active, raise the air pressure to 4 bar (+0.5/-0.3 bar) or 6 bar (+0.5/-0.3 bar) (»CLOSE« connection) until the RotoClamp centres itself on the shaft. This step should be repeated at different angular positions of the rotating part.
- Reliable centring requires a radial clearance of about 1 mm at the RotoClamp Inside's external diameter. The internal and external diameters are not concentric. The RotoClamp Inside Active has only one defined plane contacting side opposite the engraved side.
- Once the RotoClamp Inside Active has centred at the planned position, the fastening screws are fully tightened with the defined tightening torque (Table 1, page 17) applied crosswise over two to three circuits.
- Make the G1/8" or M5 compressed air connections. Supply compressed 4 bar (-0.3 bar) up to 6 bar (+0.5 bar) to the air connection (on the RotoClamp Inside marked »CLOSE«). The clamping element is closed.

Step by step procedure for installing the RotoClamp Inside Active (clamping with air)



-  Remove the red plugs from the connections »OPEN« and »CLOSE«.
Please make sure that all RotoClamp Inside Active units are screwed with their plane ground housing sides (the opposite sides without the serial number) to the planned, treated contacting surface on the machine.



- NOTE: The RotoClamp Inside Active can be **installed only without operating pressure.**



- Position and align the RotoClamp Inside Active until plane, then turn in the screws (property class 12.9), and tighten by hand until they sit correctly. Please note that 12.9 screws must be used without fail.



- Apply the pressure: the system centres itself. Now tighten the screws with the calculated torque, proceeding crosswise over several circuits with defined end values (e.g. first 20 Nm, then 50 Nm, then 70 Nm).
- Remove the operating pressure, and check that the shaft can rotate freely. If necessary, repeat the steps for installation.



- Tandem variants (two RotoClamps) are installed analogously to the above description with consideration to the air passage, the tightening torques, and their sequence.

15. FINAL EXAMINATIONS AND INFORMATION

- Examine the clamping gap between the shaft and the RotoClamp Inside. The tolerance ranges defined for the sizes XS, S, N, L, and Y can be taken from the annexed tables.
- Should you not obtain the clamping clearance needed for proper functioning and long service life, remove the RotoClamp Inside and examine all of the relevant measurements.
- In cases of doubt, consult HEMA.
- Bear in mind that the RotoClamp Inside's mating (contacting) surfaces must be plane machined. Also, the RotoClamp Inside is plane ground on the defined plane contacting side.
- The internal diameter of all RotoClamp Inside units is machined with internal cylindrical grinders when they are installed, open, and pressurised at the defined system pressure. The overall running precision is safeguarded only with respect to the defined plane contacting side and in the open state.
- Incorrectly installed RotoClamp Inside units cannot function reliably.
- Never install two RotoClamp Inside units in tandem on your own authority without first consulting HEMA. The systems must be matched to each other, and the contacting and reference surfaces machined accordingly before installation.
- Note the air passage on stacked clamps. HEMA must deliver stacked clamp solutions in the preassembled state. The plane ground side and plane contacting surface must be examined carefully.
- Please make sure that the operating pressure remains constant in the system. Pressure fluctuations (drops) during operation can cause irreparable damage to the system.
- After connecting the system, execute about 500 test cycles to verify correct functioning and eliminate any effects caused by transport. Examine the system for air noise or other irregularities.
- For the optimal fit of contact surfaces also a run in (gliding) in the range of 0.75 angular degree (Δ 2.700 angular sec.) with a feed of up to $0.01 \frac{1}{\text{min}}$ (Δ 3,6 $^{\circ}/\text{min}$) under the defined conditions is possible
- The embedded rubber bonded to metall components underlie a deterioration which can lead to leakage during the life expectancy.

16. ROTOCLAMP INSIDE FEATURES

- 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 μ m.
- 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 Outside 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.


17. TIGHTENING TORQUES FOR SCREWS

These apply to screw head supports of steel. On connecting structures of softer materials (e. g. aluminium), the tightening torque for the screws (property class 12.9) must be determined separately on the basis of the max transferred forces and max surface pressure under the screw bearing surface.


Recommended tightening torque

Property classes for screws ISO 4762, 12.9	Nm
M4	5,4
M5	10,7
M6	18,3
M8	44,1
M10	86,9
M12	151,0

Table 1 (with reference to VOI 2230, not binding)

 **NOTE:** Only screws of property class 12.9 may be used. Other property classes may have adverse effects on the clamping force and behaviour

18. COMMISSIONING

- Install the pneumatic valve (e.g. 3/2 or 5/3 way valve open at centre position, min rated size G1/8") near the clamping element, and connect a 6 or 8 mm hose.
-  ■ **IMPORTANT** The longer the line, the longer the response times.
- High speed or fast ventilation valves can reduce considerably the response times of the RotoClamp Inside!
- Once it has been installed properly, the RotoClamp Inside must be examined for its standby properties:
 - The clamping process must be tested with an attempt at manual turning.
 - When the clamping element is pressurised, all pneumatic connections must be examined for leakage.
- All fastening screws must be examined for their prescribed tightening torque. Owing to the paired fits configured at the factory, readjustments are not required after proper installation. Start a test run.

19. MAINTENANCE AND CARE

- Regularly remove dirt on and next to the clamping surfaces with a soft cloth or compressed air. Never use greasy or lubricant auxiliaries: these can reduce the clamping torques.
- Approved cleaning agents are all media that do not attack the materials.
- Remove dirt and oil residue at the open air connection on the RotoClamp Inside without additional air mode.
- Check that there is a uniform gap between the shaft and the open RotoClamp Inside.

20. CE MARKING

In the delivered state, the clamping elements RotoClamp Inside S, N, L, Y fulfil the requirements under the Machinery Directive 2006/42/EC and are marked with the CE symbol.

21. EC DECLARATION OF CONFORMITY

EN
19

In accordance with the Machinery Directive 2006/42/EC of 17 May 2006, Annex II A

We hereby declare that the design and type of the structurally identical safety components named in the following and the version we market comply with the fundamental safety and health requirements in the Machinery Directive 2006/42/EC. This declaration becomes void when any change is made without our consent to these safety components.

Manufacturer HEMA Maschinen- und Apparateschutz GmbH
Seligenstädter Straße 82
63500 Seligenstadt, Germany
Phone: +49(0)6182/773-0
Fax: +49(0)6182/773-35
www.hema-group.com

Description of the machine

Function: Clamping of stationary shafts and axles

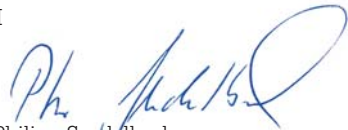
Type/model: RotoClamp Inside and Outside XS, S, N, L, Y, XS, XL

RotoClamp Inside and Outside XSA, SA, NA, LA, YA, XSA, XLA

HEMA Maschinen- und Apparateschutz GmbH



Steffen Walter
Managing Director



Philipp Sendelbach
CE authorized person

Seligenstädter Straße 82
63500 Seligenstadt

Seligenstadt, 31 January 2014

21. CAUSES OF FAULTS – SOLUTIONS

Malfunction	Possible cause	Remedy
Clamp not opening	■ Too little supplied air	Valve too small, line from valve to clamping element too long, or maintenance unit too small
	■ Too little exhaust air	Connections and holes for the exhaust air too small or clogged (on RotoClamp connections »CLOSE«)
	■ Too low a pressure	Pressure in upstream pressure reducer too low
	■ Storage and transport temperature outside of specifications	Temperatures under 10 °C can affect the rubber diaphragm. This then becomes hard and unsusceptible, and may leak temporarily.
	■ Diaphragm error	Check RotoClamp tightness and function, call HEMA services
Response times too long	■ Too little supplied air	Valve too small, line from valve to clamping element too long, or maintenance unit too small; lines leak
	■ Too little exhaust air	Connections and holes for the exhaust air too small or clogged (on RotoClamp hole under the clamping body)
	■ Too low a pressure	Pressure in upstream pressure reducer too low
	■ Storage and transport temperature outside of specifications	Temperatures under 10 °C can affect the rubber diaphragm. This then becomes hard and unsusceptible, and may leak temporarily.
Loud rattling	■ Undefined spring movement	Check RotoClamp tightness and function, call HEMA services
High temperatures at clamped area	■ Clamping friction caused by heavy soiling	Clean clamping surfaces (see »Maintenance and care«)
	■ Switching errors in controller (valve for clamping elements switches too early or late)	Adjust controller. Use valves with faster switching times.
Loud air and purging noise	■ Diaphragm error	Check RotoClamp tightness and function, call HEMA services
	■ Storage and transport temperature outside of specifications	Temperatures under 10 °C can affect the rubber diaphragm. This then becomes hard and unsusceptible, and may leak temporarily.
	■ Housing parts leak	Check RotoClamp tightness and function, call HEMA services

Malfunction	Possible cause	Remedy
Clamping force inadequate	■ Dirt or grease on clamping surface	Remove any soiling; check paired materials with HEMA services
	■ Check the plane contact between clamp and screw-on surface	Plane grind the contacting surfaces on surfaces on the opposite side.
	■ Check tightening torques; make sure forces are transferred correctly via screws	Check screws and tightening torques, and the order in which the screws are tightened.
	■ Shaft diameter too small	Make sure the shaft has correct diameter.
Screw plug M6x4 in the air cage »OPEN« cannot be removed	■ Threaded seal hardened	Request additional document »Lösen der Verschlusschraube« (»Removing the screw plug«) email info@hema-group.com

22. ROTOCLAMP INSIDE XS

Specifications

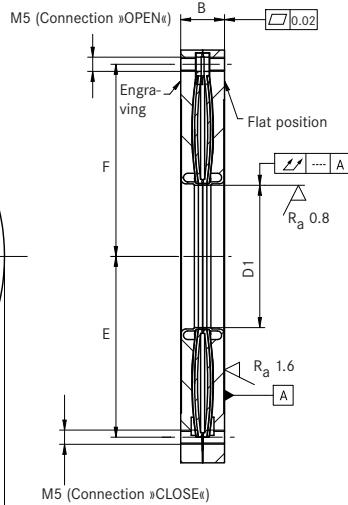
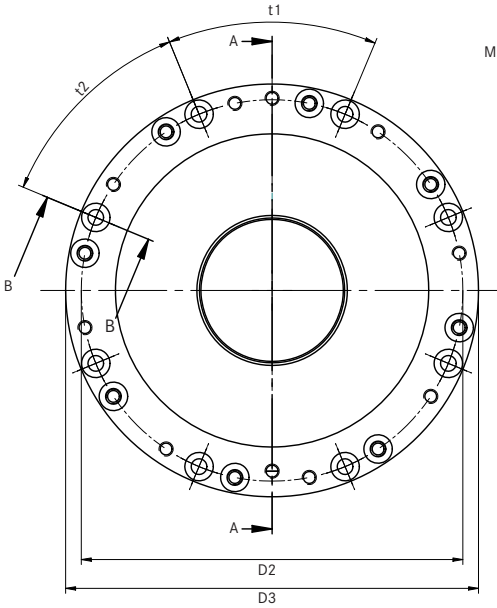
Size	D1 opened at rated pressure Pn= 4/6 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at 0 bar Pn = 6 bar	Elastic hold. torque w. secondary air at 6 bar Pn = 6 bar	Elastic holding torque at 0 bar Pn = 4 bar	Elastic hold. torque w. secondary air at 4 bar Pn = 4 bar	Mass max.	Air require- ment p. max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quant.	[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	3.0	20
RC 140 XS	140	140	227	240	17	111	111	16xM6	4	30	15	450	820	300	550	3.0	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.

ROTOCLAMP INSIDE XS

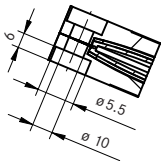
Drawing

Profile A-A

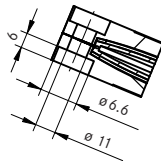


EN
23

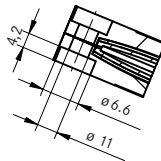
RC 30 XS, Profile B-B



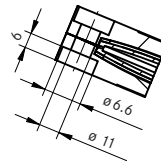
RC 130 XS, Profile B-B



RC 140 XS, Profile B-B



RC 190 XS, Profile B-B



22. ROTOCLAMP INSIDE XSA

Specifications

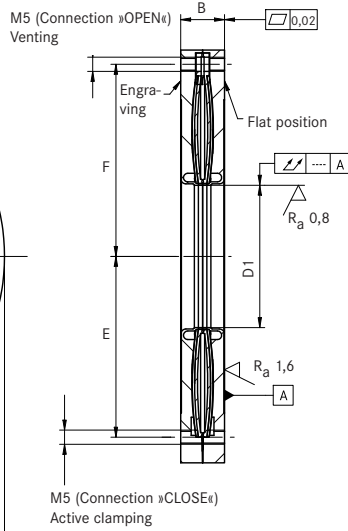
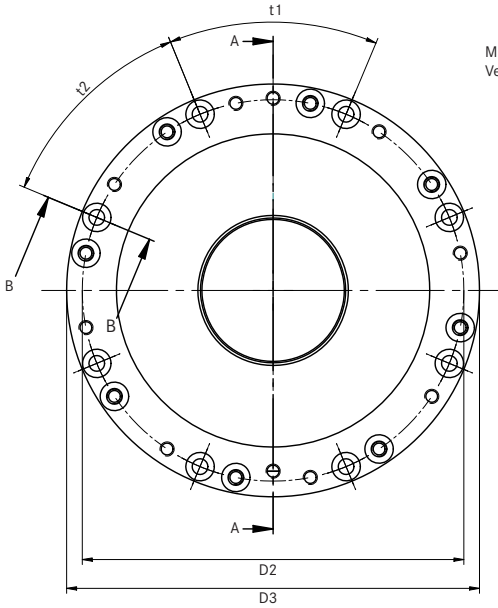
Size	D1 opened at rated pressure P _n = 0 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque P _n = 6 bar	Elastic holding torque P _n = 4 bar	Mass max.	Air require- ment per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quant.	[mm]	[°]	[°]	[Nm]	[Nm]	[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
Toleranz	+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	3.0	20
RC 140 XSA	140	140	227	240	17	111	111	16xM6	4	30	15	450	300	3.0	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.

ROTOCLAMP INSIDE XSA

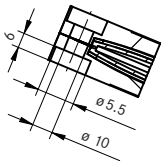
Drawing

Profile A-A

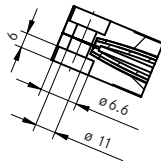


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25

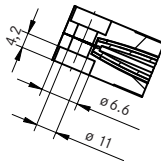
RC 30 XSA, Profile B-B



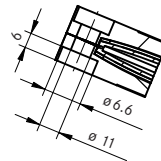
RC 130 XSA, Profile B-B



RC 140 XSA, Profile B-B



RC 190 XSA, Profile B-B



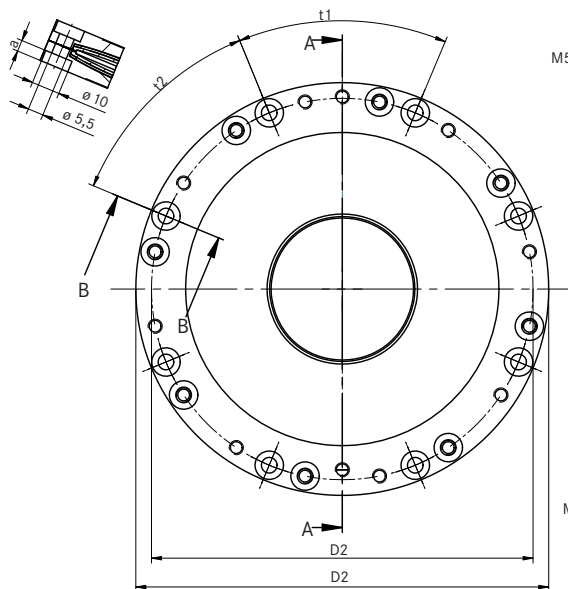
22. ROTOCLAMP INSIDE S

Specifications and drawing

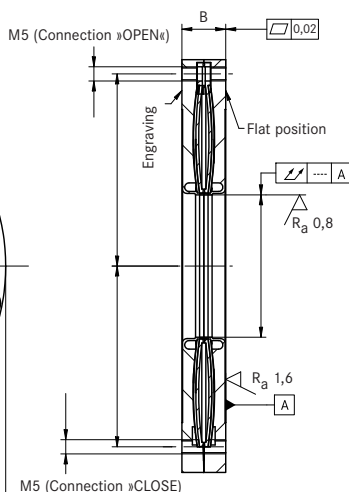
Size	D1 opened at rated pressure Pn= 4/6 bar	Required shaft diameter	D2	D3	B	E	F	n number of fixing screws	a	t1	t2	Elastic holding torque at 0 bar Pn = 6 bar	Elastic holding torque with secondary air at 6 bar Pn = 6 bar	Elastic holding torque bei 0 bar Pn = 4 bar	Elastic holding torque with secondary air 4 bar Pn = 4 bar	Max. mass	Air requirement per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quant.	[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 Standard 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



23. ROTOCLAMP INSIDE SA

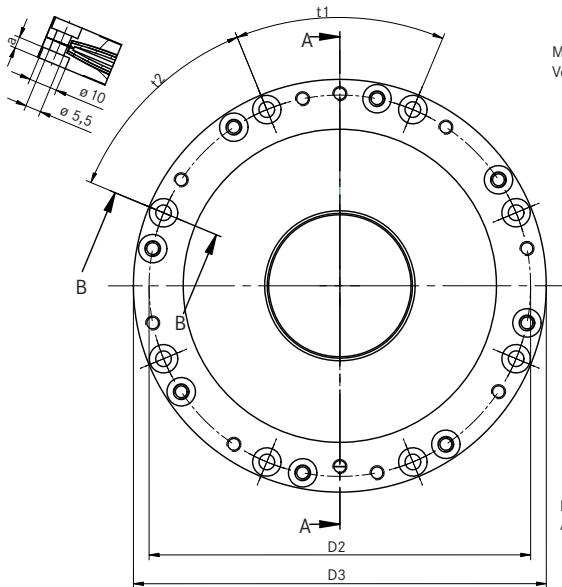
Specifications and drawing

Size	D1 opened at rated pressure 0 bar	Required shaft diameter	D2	D3	B	E	F	n Number of fixing screws	a	t1	t2	Elastic holding torque at 6 bar	Elastic holding torque at 4 bar	Max. mass	Air requirement 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										
Roundness	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

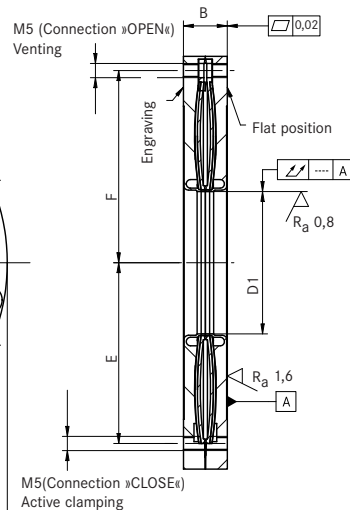
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27

Specification valid for RotoClamp Inside 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



24. ROTOCLAMP INSIDE N

Specifications

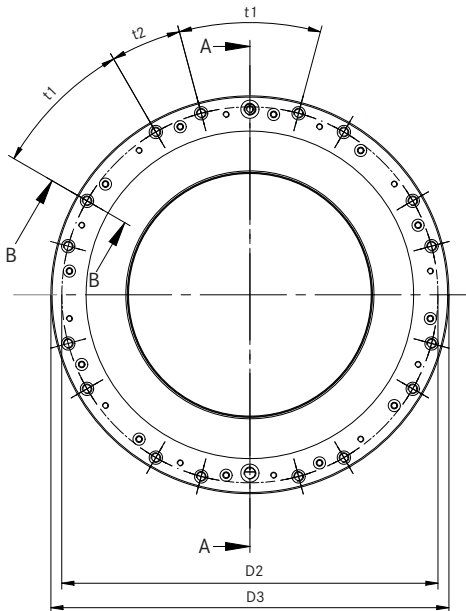
EN
28

Size	D1 opened at rated pressure P _N = 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 P _N = 6 bar	Elastic holding torque with secondary air at 6 bar P _N = 6 bar	Elastic holding torque at 0 bar P _N = 4 bar	Elastic holding torque with secondary air at 4 bar P _N = 4 bar	Max. mass	Air require- ment 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	12xM6	4	40	20	240	420	168	294	4.1	60
RC 120 N	120	120	230	248	16	113	113	12xM6	4	40	20	336	600	235	420	4.6	60
RC 140 N	140	140	250	268	16	123	123	12xM6	4	40	20	456	840	319	588	5.1	60
RC 160 N	160	160	270	288	16	133	133	12xM6	4	40	20	600	1080	420	756	5.6	60
RC 180 N	180	180	290	308	20	137	143	16xM6	6	30	15	750	1380	525	966	7.7	90
Tolerance	+0.05/+0.07	- 0.01/- 0.03	± 0.2		+0.4												
Roundness	0.020	0.015															
RC 200 N	200	200	310	328	20	147	153	16xM6	6	30	15	930	1680	651	1176	8.3	90
RC 220 N	220	220	330	348	20	157	163	16xM6	6	30	15	1110	2040	777	1428	8.9	90
RC 240 N	240	240	350	368	20	167	173	24xM6	6	20	10	1350	2400	945	1680	9.5	90
RC 260 N	260	260	370	388	22	177	183	24xM6	6	20	10	1560	2820	1092	1974	11.2	120
RC 280 N	280	280	390	408	22	187	193	24xM6	6	20	10	1800	3240	1260	2268	11.9	120
RC 300 N	300	300	410	428	22	197	203	24xM6	6	20	10	2100	3720	1470	2604	12.6	120
RC 320 N	320	320	430	448	22	207	213	24xM6	6	20	10	2340	4200	1638	2940	13.3	120
RC 340 N	340	340	450	468	22	217	223	24xM6	6	20	10	2580	4680	1806	3276	14.0	120

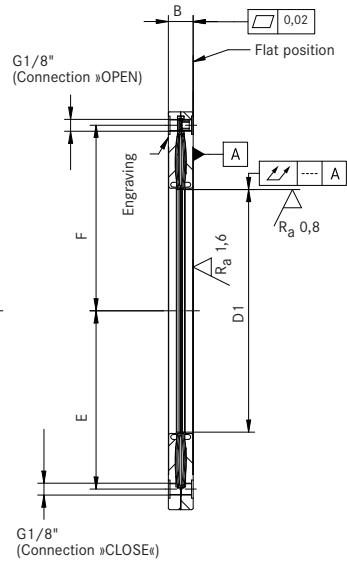
Specification valid for RotoClamp Inside N Standard only. Holding torque tandem version: Values factor 1.8.
Subject to modifications. Errors excepted. Only the written order confirmation is valid.

ROTOCLAMP INSIDE N

Drawing

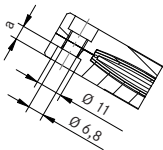


Profile A-A



EN
29

Profile B-B



25. ROTOCLAMP INSIDE NA

Specification

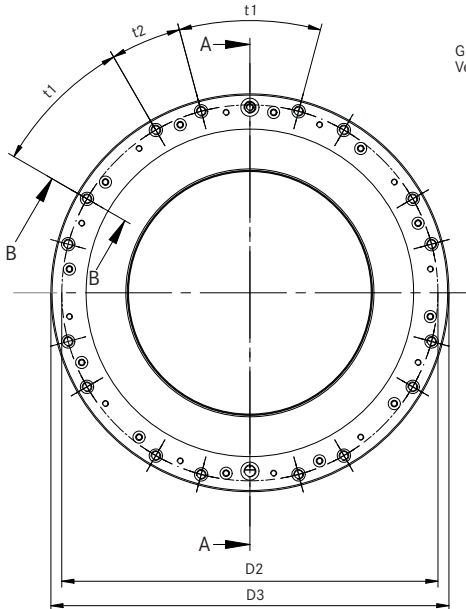
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30

Size	D1 opened at 0 bar	Required shaft diameter	D2	D3	B	E	F	n Number of fixing screws	a	t1	t2	Elastic holding torque at 6 bar	Elastic holding torque at 4 bar	Max. mass	Air requirements per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.035/+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 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										
Roundness	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	14.0	120

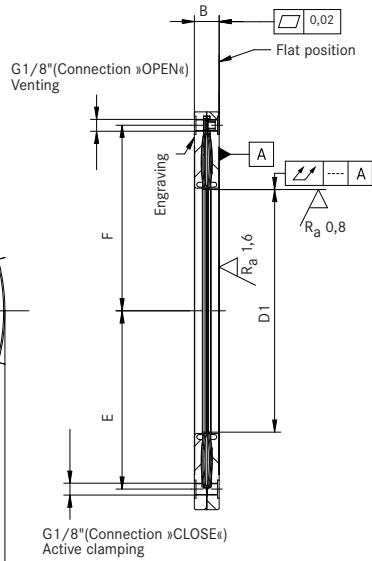
Specification valid for RotoClamp Inside N Active Standard only. Holding torque tandem version: Values factor 1.8.
Subject to modifications. Errors excepted. Only the written order confirmation is valid.

ROTOCLAMP INSIDE NA

Drawing

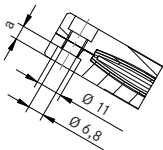


Profile A-A



EN
31

Profile B-B



26. ROTOCLAMP INSIDE L

Specification

EN
32

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	t2	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]	[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											
Surface finish	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

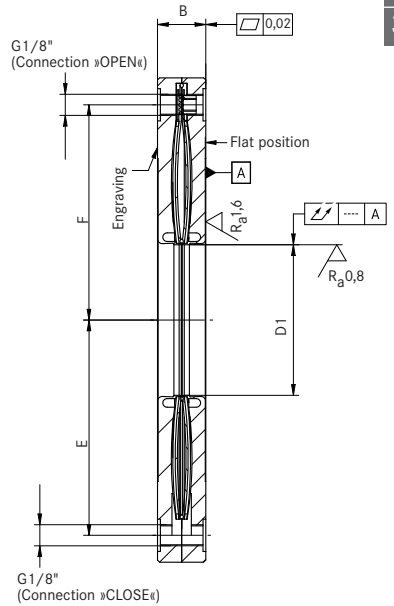
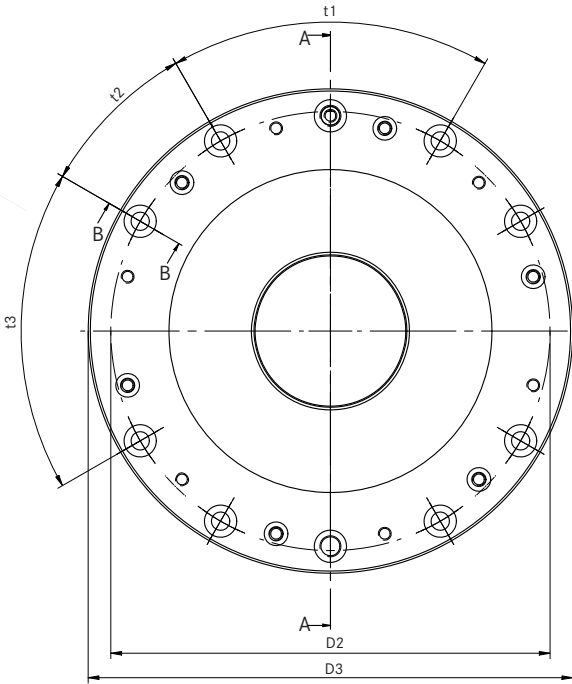
Specification valid for RotoClamp Inside L Standard only. Holding torque tandem version: Values factor 1.8.
Subject to modifications. Errors excepted. Only the written order confirmation is valid.

ROTOCLAMP INSIDE L

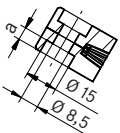
Drawing

Profile A-A

EN
33



Profile B-B



27. ROTOCLAMP INSIDE LA

Specification

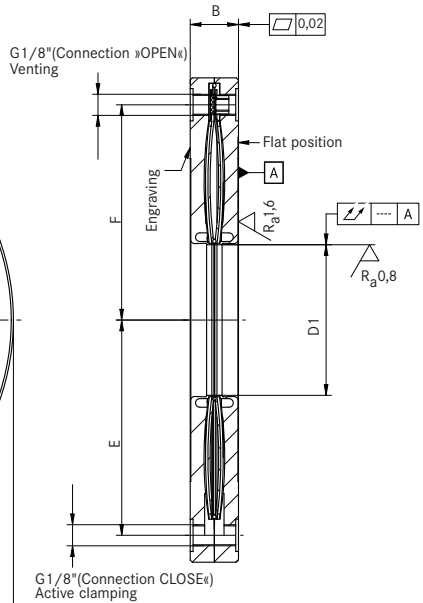
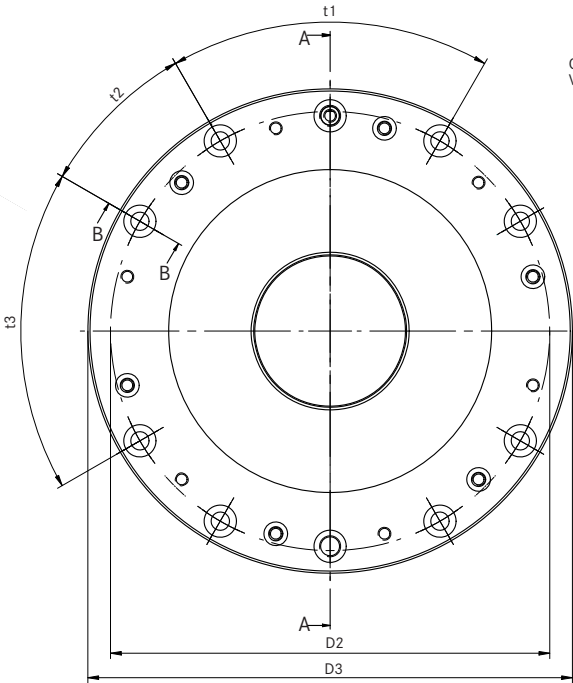
Size	D1 opened at 0 bar	Required shaft diameter	D2	D3	B	E	F	n Number of fixing screws	a	t1	t2	t2	Elastic holding moment at 6 bar	Elastic holding moment at 4 bar	Max. mass	Air requirements per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quantity	[mm]	[°]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.035/+0.05	-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 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											
Roundness	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 L Active only. Holding torque tandem version: Values factor 1.8.
Subject to modifications. Errors excepted. Only the written order confirmation is valid.

ROTOCLAMP INSIDE LA

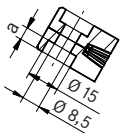
Drawing

Profile A-A



EN
35

Profile B-B



28. ROTOCLAMP INSIDE Y

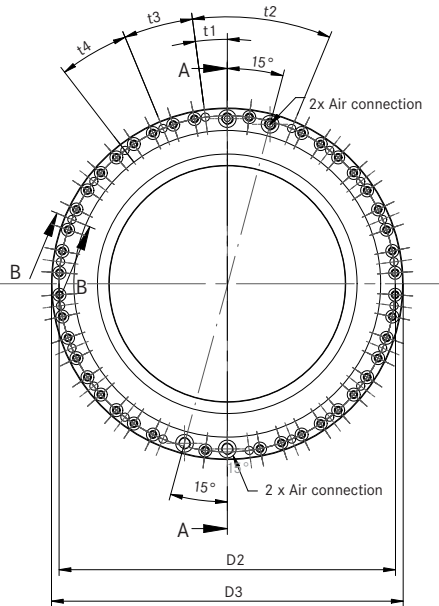
Specification

Size	D1 geöffnet bei Nenn- druck P= 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 require- ments per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quant.	[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	3.75	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	3.75	7.5	7.5	4600	8400	3220	5880	32	240

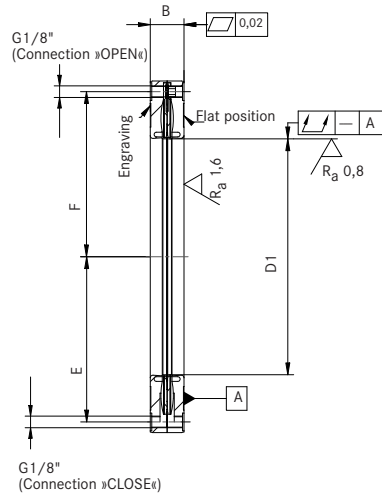
Specification valid for RotoClamp Inside Y Standard only. Holding torque tandem version: Values factor 1.8.
Subject to modifications. Errors excepted. Only the written order confirmation is valid.

ROTOCLAMP INSIDE Y

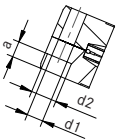
Drawing



Profile A-A



Profile B-B

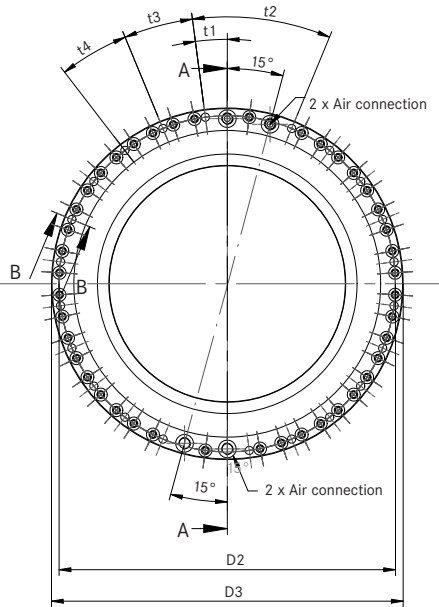


29. ROTOCLAMP INSIDE YA

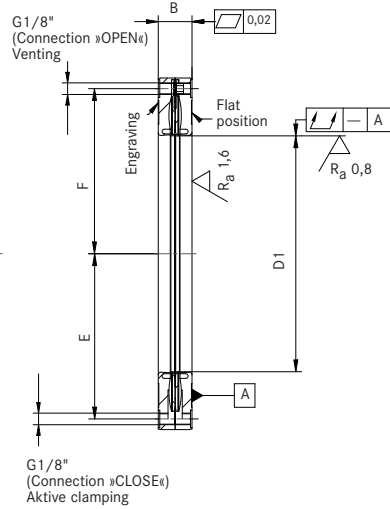
Specification

Size	D1 opened at 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 at 6 bar	Elastic holding torque at 4 bar	Max. mass	Air requirements per max. stroke
Unit	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Quant.	[mm]	[°]	[°]	[°]	[°]	[°]	[°]	[Nm]	[Nm]	[kg]	[mL]
Tolerance	+0.035/+0.05	-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	22xM6	6,8	7	11	7,5	30	15	15	600	420	8.5	100
RC 260 Y	260	260	365	383	30	183	183	24xM8	9	9	15	5	10	20	10	1600	1120	14.5	100
RC 325 Y	325	325	430	448	30	215	215	24xM8	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														
Roundness	0,020	0,015																	
RC 395 Y	395	395	505	523	36	252.5	252.5	48xM8	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														
Roundness	0,020	0,015																	
RC 460 YA	460	460	580	598	36	290	290	48xM8	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.



Profile A-A



Profile B-B

