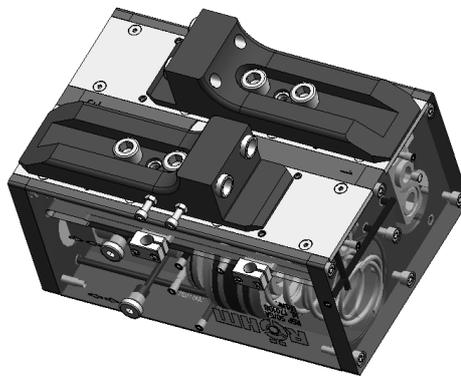


Assembly- and Operating Instructions:

Parallel Long Stroke Gripper **RGP**

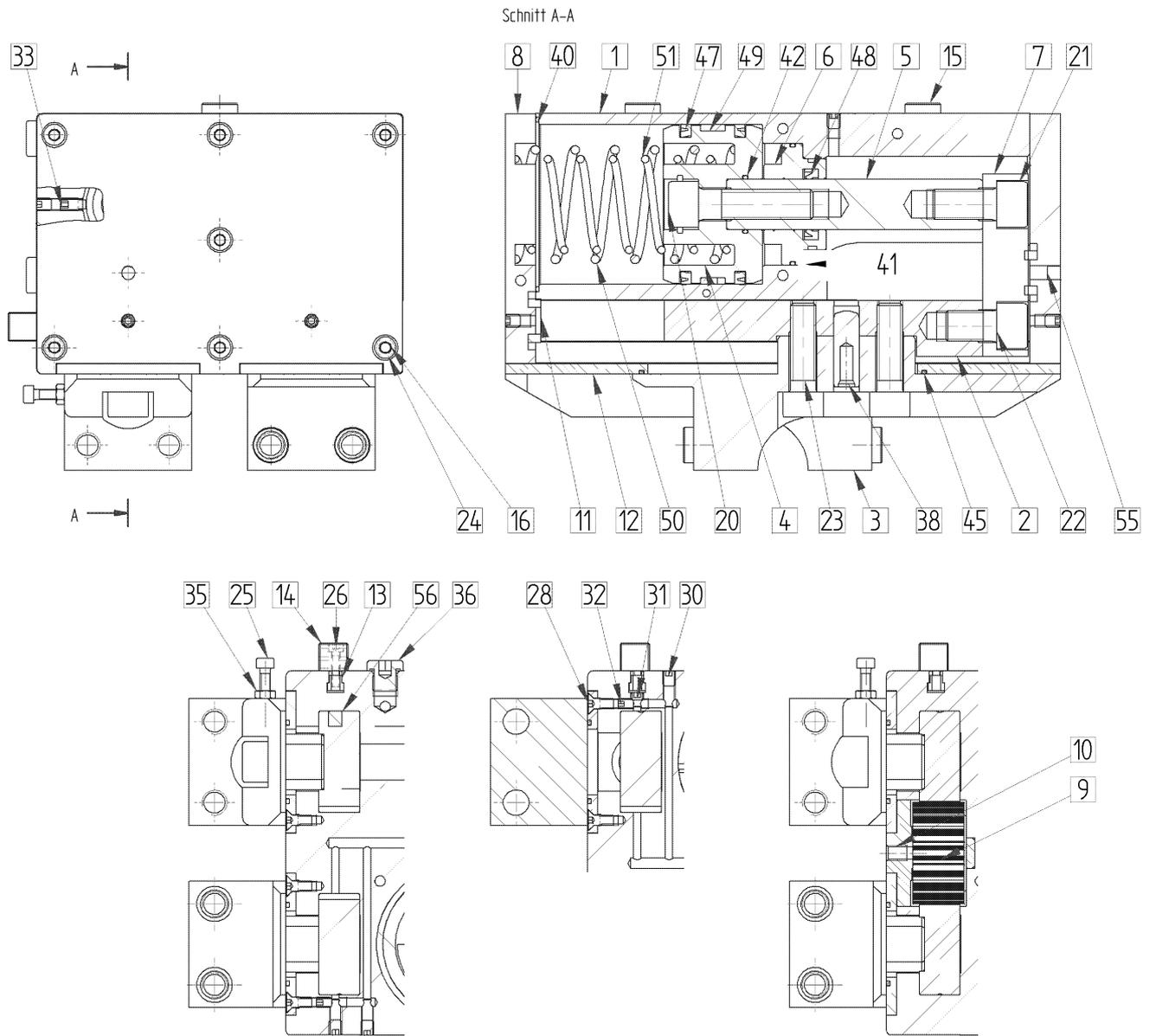


<u>Description</u>	<u>Page</u>
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Mounting, Initial operation	7
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Creation date: Dillingen, 27.03.2014

Description of the Parallel Gripper

Parallel Long Stroke Gripper RGP



Description of the Parallel Gripper

Parallel Long Stroke Gripper RGP

Description Parallel Long Stroke Gripper RGP

Pos.	Name	Consumable
1	BODY RGP	
2	STEERING RACK RGP	
3	INTERMEDIATE JAW RGP	
4	PISTON DISC RGP	
5	PISTON ROD RGP	
6	SOCKET RGP	
7	CARRIER RGP	
8	COVER RGP	
9	GEAR WHEEL RGP	
10	GEAR WHEEL BEARING RGP	
11	DAMPING RING RGP	
12	WIPER BLADE RGP	
13	SLIDING BLOCK RGP	
14	HOLDER	
15	CENTERING SLEEVE	
16	CENTERING SLEEVE	
20	FASTENING SCREW	
21	FASTENING SCREW	
22	FASTENING SCREW	
23	FASTENING SCREW	
24	FASTENING SCREW	
25	FASTENING SCREW	
26	FASTENING SCREW	
28	FASTENING SCREW	
30	SET SCREW DIN913	
31	SET SCREW DIN913	
32	SET SCREW DIN913	
33	SET SCREW DIN915	
35	HEX- NUT DIN934	
36	PLUG SCREW EO2	
38	CYL-PIN D DIN7979	
39	CYL-PIN D DIN7979	
40	O-RING	x
41	O-RING	x
42	O-RING	x
43	O-RING	x
45	SEALING RING	x
47	PISTON SEAL	x
48	ROD SEAL	x
49	PISTON GUIDE RING SLYDRING	x
50	PRESSURE SPRING	x
51	PRESSURE SPRING	x
55	FILTER DISC	
56	ROUND MAGNET	

I. Operator qualifications

Persons who have no experience in handling gripping devices run the risk of being injured by the gripping motions and forces occurring as a result of incorrect behaviour, especially during set-up work.

For this reason, gripping devices may be operated, set up or maintained only by persons who have been especially trained for this purpose and/or have many years of experience

II. Risk of injury

For technical reasons, this assembly may contain individual parts with sharp edges. Always proceed with utmost caution when working with the assembly to prevent the risk of injury!

1. Built-in stored energy mechanisms

Moving parts which are pre-tensioned by pressure springs, tension springs, other types of spring or by other elastic elements are a potential danger because of the stored energy they contain. Underestimating the forces associated with such stored energy may cause severe injuries resulting from components flying about uncontrollably like projectiles. Before any further work can be carried out, these stored energy forces have to be dissipated. Before any further work can be carried out, these stored energy forces have to be any such sources of danger first by referring to the relevant assembly drawings.

If it should not be possible to "neutralize" this energy without risk, the dismantling work will have to be carried out by authorized personnel.

2. Calculating the necessary gripping forces

If this gripping device is to hold or clamp the workpiece against externally applied machining forces, the occurring machining forces must be determined for a specific machining task and a safety margin must be added, which is adjusted to the calculation method and machining process. At least these clamping forces, which have been determined in this manner, must then be provided by the gripping device.

3. Use of other/additional clamping inserts/workpieces

The required minimum clamping force must always be calculated for the use of clamping inserts or workpieces.

1. Clamping of other/additional workpieces

If special gripping devices (jaws, clamping inserts, alignment elements, positioning units, points, etc.) are provided for this clamping equipment, they may be used solely for clamping the workpieces for which they were designed and in the way for which they were designed. Non-observance of this requirement may result in injury to persons or damage to property as a result of inadequate clamping forces or unfavourable clamp positioning.

Therefore, before clamping any other or any similar workpieces with the same clamping set, written approval is required from the manufacturer first.

4. Checking the gripping force

Checking the gripping force (general aspects)

Under Directive EN 1550 § 6.2 No. d) for revolving chucks, which in this one point can also be transferred to stationary clamping equipment, static gripping force measuring equipment should be used at regular intervals to check the maintenance condition as described in the maintenance instructions. Subsequently, the gripping force has to be checked after about 40 operating hours – independent of the clamping frequency.

If necessary, special chucking force measuring jaws or devices should be used for the purpose (pressure transducers).

Parallel Log Stroke Gripper RGP

5. Stability of the workpiece to be clamped

To ensure that the workpiece can be clamped under the load forces which occur, the clamped material must be strong enough to withstand the gripping force.

Non-metallic materials such as plastic, rubber, etc. may only be clamped after being tested or with special care!

6. Installing and setting-up work

Clamping movements and, where applicable, setting movements, involve short travel distances under the influence of what are sometimes powerful forces in short times.

Before carrying out any mounting or setting up work, therefore, the drive units provided for actuating the gripper must always be switched off first. If, however, the clamping movement is required during the setting operation, the following instructions must be complied with for clamping travel distances of over 4 mm:

- The attachment of a permanent or temporary workpiece holding device to the equipment, or
 - an independently actuated holding device has to be fitted,
- or
- a workpiece loading mechanism is required,
- or
- require that the setting work is carried out in hydraulic, pneumatic and/or electric jog mode (corresponding control must be possible!)

This type of auxiliary setting equipment depends basically on the machining system used and may have to be procured separately.

The machine owner/user is responsible for ensuring that the movement of the clamping equipment does not cause any danger to persons throughout the entire clamping process. To this end, 2-hand controls for clamp initiation or – better still – suitable safety equipment should be provided.

7. Fastening and replacing screws

If screws are replaced or loosened, defective replacement or fastening may lead to a hazard for persons and objects. For this reason, the corresponding torque recommended by the manufacturer for the screw and the screw quality has to be used for all fastening screws as a matter of principle, unless explicitly stated otherwise.

The following tightening torque table applies for the common sizes M5 - M24 of qualities 8.8, 10.9 and 12.9:

Qual.	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	
8.8	5,5	9,5	23	46	80	130	190	270	380	510	670	Nm
10.9	8,1	13	33	65	110	180	270	380	530	720	960	Nm
12.9	9,5	16	39	78	140	220	330	450	640	860	1120	Nm

All data in Nm

For this reason, the corresponding torque recommended by the manufacturer for the screw and the screw quality has to be used for all fastening screws as a matter of principle, unless explicitly stated otherwise.

All fastening screws, which on account of their useful purpose have to be unscrewed and tightened again subsequently (e.g. for refitting work), have to be covered with an anti-seize agent (grease paste) in the thread area and the head contact area in intervals of six months

III. Environmental hazards

The operation of clamping or gripping equipment partly requires the use of various media for lubrication, cooling, etc. In most cases these media are supplied to the clamping equipment through the hose lines or pipelines. The most frequently used media are hydraulic fluid, lubricating oil or grease and coolant. When operating the clamping equipment, these media have to be handled with care so that they do not get into the ground and/or into the water.
Warning: Environmental hazard!

This applies in particular to the following:

- For assembly/disassembly as residual amounts may still be in the pipes, piston chambers or oil drain screws,
- To porous, defective or incorrectly fitted seals,
- To lubricants which escape from and/or are ejected from the clamping equipment during operation for design reasons.

For this reason, these escaping substances should be collected and re-used or disposed of in accordance with applicable regulations.

IV. Safety requirements of power gripping devices:

1. The gripping device must not be allowed to move until the clamping pressure has been reached in the gripper and the clamping force is within the permissible working range.
2. The tension may be relieved only when the gripping device is at a standstill.
3. In the event of the clamping energy failing, a signal has to shut down the machine immediately.
4. In case the clamping energy fails the workpiece has to remain safely gripped.
5. In the event of a power failure and subsequent return of power, no changes of the switch position may occur.

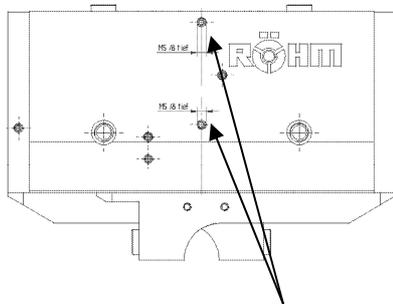
V. Safety information:

1. Do not move any parts by hand if the energy supply is connected.
2. Do not reach into the open mechanism or between the gripping jaws.
3. Disconnect the energy supplied when carrying out any assembly, conversion, maintenance and setting work.
4. Carry out servicing, conversion and mounting work outside the danger zone.
5. During assembly, connection, setting, commissioning and testing work it must be ensured that the unit cannot be actuated accidentally by the fitter or other personnel.
6. Protective covers which comply with the EC Machine Directive must be provided when installing all handling modules.
7. Falling or catapulted items may present dangers. Precautions must be taken to prevent items falling or being catapulted.
8. The care and maintenance intervals must be observed.
9. Grippers which clamp with spring force or have a gripping force guard with springs are spring-loaded. The springing contact star is also spring-loaded. Therefore special care is required for dismantling them.
10. Top jaws, particularly on grippers with a gripping force maintenance unit, must be designed in such a way that a gripper reached one of the limit positions when it is depressurized so that no residual energy is released when the top jaws are replaced.
Otherwise the maximum working distances must be taken from the relevant tables.
Furthermore, the safety and accident prevention regulations in force at the place of use are also applicable.

Mounting, Initial operation of the parallel gripper

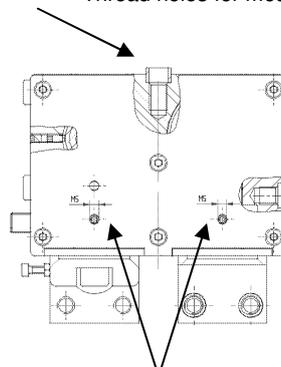
Parallel Long Stroke Gripper RGP

Thread holes for mounting the gripper from below

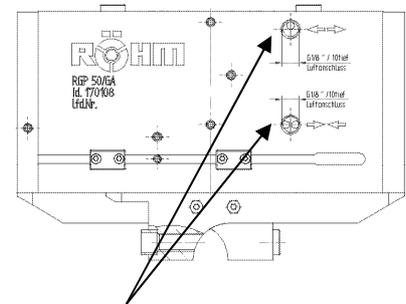


M5 for hose-free direct connection

Thread holes for mounting the gripper on the sides

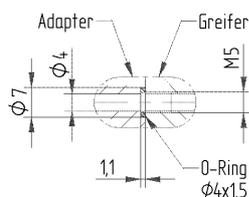


M5 both sides for air purge connection (Lubrication connection)



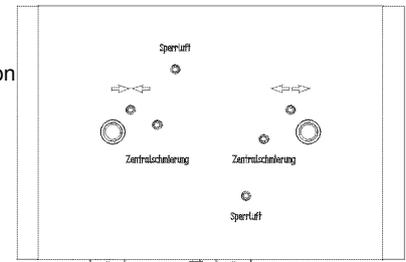
G1/8" for hose connection

Schlauchloser Direktanschluss



Hose-free direct connection

M5 for hose-free direct connection From below



Important: The power supply must be switched off for the gripper assembly. Please also refer to the safety information on pages 4-6.

Gripper assembly

1. Position the gripper using the two centering sleeves Pos.15, which are supplied in the additional pack.
2. Secure the gripper at the side or from underneath using two screws.

Use the specified tightening torques!

3. For a hose-free direct connection, ensure that the screw-on surface is clean. The relevant seals from the additional pack must be used for this purpose.
4. For assembly using a compressed air screw connection, ensure that the screw connection is sealed. When mounting with compressed air connection attention must be paid that the connection is tight.

Important: When using the hose-free direct connections, the grub screws Pos.30 must be removed and the unused connections must be sealed using suitable plug screws Pos.36.

5. Install and adjust the query sensors.

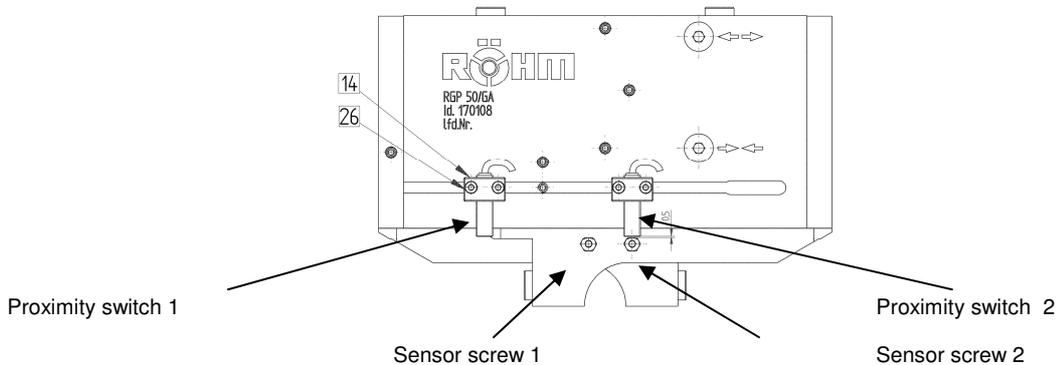
See point: Fitting the inductive proximity switches or magnetic field sensors

Function check

1. Actuate the gripper and check the stroke limit positions of the clamping jaws Pos.2.
2. Check the sensor signal
3. Repeat this process with the workpiece

Mounting, Initial operation of the parallel gripper

Parallel Long Stroke Gripper RGP



Fitting the inductive proximity switches

Query: Gripper open

- 1) Set the gripper to the "OPEN" position
- 2) Slide the proximity switch 1 as far as possible into the clamp holder 1 Pos.14 up to approx. 0.5mm switching distance between proximity switch and sensor screw 1.
- 3) Secure the proximity switch in this position by tightening the screw Pos.26.
- 4) Connect the proximity switch and test its function by closing and opening the gripper. The proximity switches must be positioned against the sensor screw so that there is no chance of double signals during closing and opening.

Query: Gripper closed

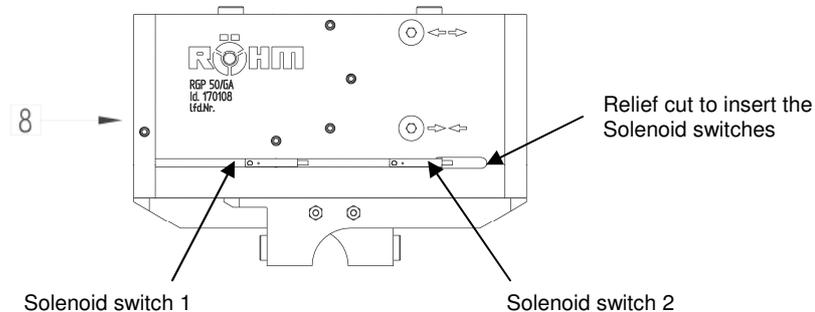
- 1) Set the gripper to the "CLOSED" position"
- 2) Slide the proximity switch 2 into the clamp holder Pos.14 up to approx. 0.5mm switching distance between proximity switch and sensor screw 2.
- 3) Secure the proximity switch in this position by tightening the screws Pos.26.
- 4) Connect the proximity switch and test its function by closing and opening the gripper. The proximity switches must be positioned against the sensor screw in such a way as to ensure that there is no chance of double signals during closing and opening.

Query: Workpiece gripped

- 1) Fit the proximity switch with 0,5mm switching distance.
- 2) Clamp the part you wish to grip.
- 3) Undo the screws Pos.26, so that the clamp holder Pos.14 can be moved with the proximity switch. Slide the proximity switch No.1 with internal gripping, resp. No.2 with external gripping.
- 4) Slide the clamp holder with the proximity switch under the sensor screw until it trips. Proximity switch No. 1 for internal gripping or No. 2 for external gripping.
- 5) Test the function by actuating the gripper and clamping the part you wish to grip. The proximity switches must be positioned against the sensor screw in such a way as to ensure that there is no chance of double signals during closing and opening.

Mounting, Initial operation of the parallel gripper

Parallel Long Stroke Gripper RGP



Fitting the magnetic field sensors

Undo the screws of the factory-mounted clamp holder before mounting the electronic solenoid switches and slide these together with the slot nuts out of the T-shaped groove through the relief cut.

Query: Gripper open

- 1) Set the gripper to the "OPEN" position
- 2) Slide the magnetic field sensor 1 through the relief cut into the T-shaped groove until this hits the cover Pos.8.
- 3) Secure the solenoid switch in this position by clamping it in the T-shaped groove by tightening the grub screw (max. 0.1 Nm).
- 4) Test the function by closing and opening the gripper.

Query: Gripper closed

- 1) Set the gripper to the "CLOSED" position
- 2) Slide the magnetic field sensor 2 through the relief cut into the T-shaped groove, until this reaches its first switching point.
- 3) Secure the solenoid switch in this position by clamping it in the T-shaped groove by tightening the grub screw (max. 0.1 Nm).
- 4) Test the function by closing and opening the gripper.

Query: Workpiece gripped

External gripping

- 1) Clamp the part you wish to grip.

Proceed as described above in points 2 - 4 under >>Gripper closed<< .

Internal gripping

- 2) Clamp the part you wish to grip.

Proceed as described above in points 2 - 4 under >>Gripper open<<.

Servicing, Maintenance of the parallel gripper



Parallel Long Stroke Gripper RGP

Servicing

The maintenance free operation of the gripper is ensured for a scope of up to 2 million cycles.

The maintenance interval can be reduced by the following circumstances:

- Operation with compressed air not compliant with DIN ISO 8573-1 quality class 4
- Polluted environment
- Use other than the intended use and exceeding the gripper's capacity
- Ambient temperature higher than 60 °C, lubricants harden more quickly!

The gripper must be greased with the following or a demonstrably equivalent lubricant at each maintenance interval:

- Klüberplex BEM 41-132

Lubricating with grease nipples via the central lubrication connector:

To be able to lubricate the gripper, a grease nipple must be installed at the central lubrication connection and this must be used for the lubrication.

The grease nipple can also be positioned where it can be greased best via the direct connections and by using an adapter plate. One must, however, pay attention that two central lubricating connections on the gripper are fitted with a separate grease nipple. This ensures that the guides of the steering racks are supplied with lubricant

Note: To achieve optimum lubrication, the start of the lubrication must co-incide with the open position stage of the gripper.

Although the chuck is sealed hermetically, lubricant may seep out in the case of great internal pressure. This can be caused by too frequent greasing of the gripper. Seeping lubricant, in particular in the area of the intermediate jaws indicate over-lubrication.

If the lubricant seeps there every time lubrication is carried out, the lubricating intervals can be omitted for a short time, resp. can be extended.

Servicing, Maintenance of the parallel gripper



Parallel Long Stroke Gripper RGP

Lubricating via the central lubrication:

To retain the function and quality of the gripper it must be lubricated at regular intervals.

Requirement: there are no dosing valves installed in the gripper; the central lubrication must be provided by the machine manufacturer dosed for each connection.

Lubricant: Lubricating oil VG 220 DIN 51519
 Semi-fluid greases of NLGI-classes 000; 00
 With a worked penetration of 400-430

Dosing volume of 10 mm³ each per lubricating impulse with 4 impulses per operating hour,

- + with an impulse duration of at least 3 sec.,
- + with an impulse pressure between 12 and 20 bar,
- + with an impulse interval of at least 5 sec.,
- + with an impulse interval pressure of max. 0.8 bar at the input of the dosing valves
- + with a lubricant with ISO designation C GLP 68 DIN 51502 or with viscosity class VG 220 DIN 51519 triggered (these data apply to VOGEL dosing units)

The steering rack guides are thereby supplied with lubricant.

Note: To achieve optimum lubrication, the start of the lubrication impulses must coincide with the open position stage of the gripper.

Although the chuck is sealed hermetically, lubricant may seep out in the case of great internal pressure. This can be caused by continuously added, unconsumed lubricant. Seeping quantities of lubricant, in particular in the area of the intermediate jaws indicate over-lubrication.

If the lubricant seeps there every time the central lubrication is activated, the lubricating impulses can be interrupted for the duration of an 8-hour shift.

Servicing, Maintenance of the parallel gripper



Parallel Long Stroke Gripper RGP

Maintenance

If the maintenance of the gripper becomes necessary (stiffness; loss of gripping force), we recommend to have the maintenance work and seal change be conducted by the RöhM GmbH Repair Service. In the event of an unauthorized disassembly and reassembly of the gripper, complications may occur, as certain work steps require special assembly equipment.

Replacing the body and the base jaws

The base jaws and the guides in the body are aligned. To replace these parts, send the complete gripper to the RöhM GmbH Repair Service with a repair order or order the body with base jaws as one unit.

Replacing the seal

It is advisable to in particular replace the dynamically loaded sealing elements and guide rings. In this case a sealing element set should always be available.

The gripper is disassembled into its individual parts for maintenance and servicing, it is then checked for wear and tear, cleaned and after defective elements have been replaced the gripper is greased and reassembled. When assembling the gripper, take care to ensure that the marked parts are placed back in the intended position.

Please be advised that only **ORIGINAL** spare parts or parts from authorized suppliers may be used. Any liability shall cease to exist for all damage caused by the use of foreign components.

<p>Important: In order to be able to handle any orders of spare parts or individual parts easily, the six-digit identification number engraved in the component and the manufacturing number - if available - have to be stated. The manufacturing number consists of two digits and a consecutive number, attached to the identification plate or in the direct vicinity of the identification number.</p>
--

Address of the manufacturer:

Company
RÖHM GmbH Werk Dillingen
RöhMstr. 6
89407 Dillingen/Donau
GERMANY

Dismantling and assembling a gripper:

Important: It is essential that you observe the safety information

- 1) Remove the pressure lines
- 2) Undo the screws Pos.23, dismantle the cylinder pin Pos.38. Now you can remove the intermediate jaw.
- 3) Remove the screws Pos.28, dismantle the cylinder pin Pos.39. The wiper blade Pos.12 can then be removed. Remove the sealing ring Pos.45.
- 4) Remove the screws Pos.24 and remove the cover Pos.8.
- 5) Undo the screw Pos.21 and remove it. The piston disc Pos.4 can now be removed rearwards, together with the piston rod Pos.5. The steering rack Pos. 2 together with the carrier Pos.7 can also be pulled forwards out of the guide. Careful! The steering rack on the other side is switched co-rotating to the centre via a gear wheel Pos. 9 (pay attention to the positions of the steering rack)
- 6) Pull the gear wheel bearing Pos.10 from the body Pos. 1 with the help of a pin package. The gear wheel can be removed.
- 7) Turn the set screw Pos.33 back by about 3mm and remove the sockets Pos.6 from the body Pos.1.
- 8) Remove all the seals
- 9) Clean all the parts thoroughly and check the parts for signs of wear or defects
- 10) Replace all the seals

The assembly process is the same as above but in reverse.

Pay special attention to the numbering and position of the components. Unless specified to the contrary all the screws are to be secured using Loctite 222 and tightened with the torque specified in DIN standards (see point II/7).

Version GA resp. GI with gripping force safety device:

Attention!

The cover Pos.8 with GA version and the piston disc Pos.4 with GI version can be subject to spring tension. This presents special dangers.

Please always refer to the assembly drawing.

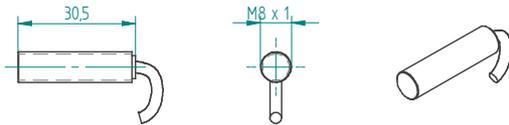
When dismantling the cover Pos.8 **the** spring tension (approx. 210N) must be counteracted by suitable measures. (Clamping into a vice, then undoing the screws).

When dismantling the piston disc Pos.4 the spring tension (approx. 210N) must be counteracted by an auxiliary device.

Inductive proximity switch

Order No. Id.229114

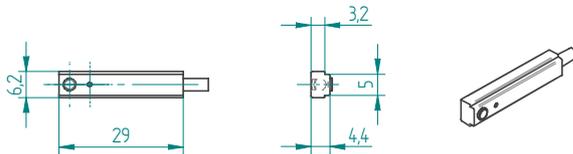
With 3m cable (without plug)



Magnetic field sensor

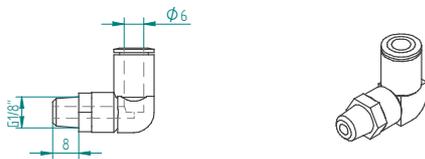
Order No. Id.1132737

With 5m cable (without plug)



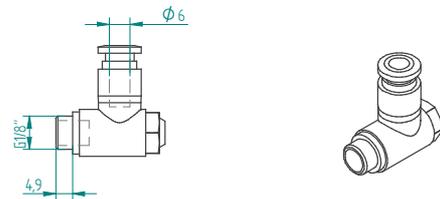
Compressed air connection

Order No. Id.477025



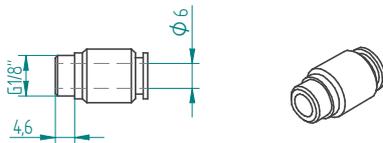
Throttle non-return valve

Order No. Id.499260



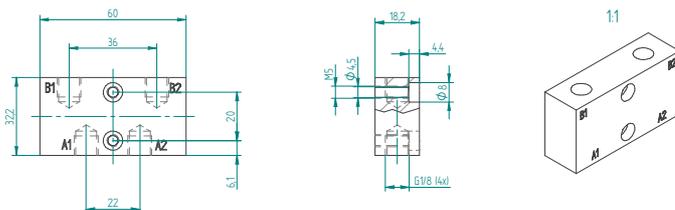
Plug connector

Order No. Id.1111010



Pressure loss prevention valve

Order No. Id.1078823





Erklärung für den Einbau einer unvollständigen Maschine

Im Sinne der Richtlinie 2006/42/EG für Maschinen, Anhang II, Teil B

Hiermit erklärt die RöhM GmbH / Werk Dillingen
RöhMstraße 6
D-89407 Dillingen/Donau
Deutschland

für folgendes Produkt:

Fabrikat: Pneum. bet. Großhubgreifer

Typenbezeichnung: RGP 30; RGP 40; RGP 50

Baujahr: ab 2014

dass die folgenden grundlegenden Anforderungen der o. g. Richtlinie - einschließlich der zum Zeitpunkt dieser Erklärung gültigen Änderungen - zur Anwendung kommen und eingehalten wurden:

EN ISO 12100-1 Sicherheit von Maschine – Grundbegriffe, allgemeine Gestaltungsleitsätze,
- Teil 1: Grundsätzliche Terminologie, Methodik

EN ISO 12100-2 Sicherheit von Maschine – Grundbegriffe, allgemeine Gestaltungsleitsätze,
- Teil 2: Technische Leitsätze und Spezifikationen

dass die speziellen technischen Unterlagen gemäß Anhang VII Teil B der o. g. Richtlinie erstellt wurden und den einzelstaatlichen Stellen auf begründetes Verlangen wie folgt übermittelt werden:

In Papierform **oder** in Dateiform per E-Mail

dass diese unvollständige Maschine erst dann in Betrieb genommen werden darf, wenn festgestellt wurde, dass die Maschine, in welche die unvollständige Maschine eingebaut werden soll, den Bestimmungen der o. g. Richtlinie entspricht.

Person, die in der Gemeinschaft ansässig und bevollmächtigt ist, die technischen Unterlagen zusammenzustellen:

Name: Wiedholz, Gerhard Anschrift: RöhM GmbH, Werk Dillingen, RöhMstr. 6, 89407 Dillingen

Ausstellungsort: Dillingen
Ausstellungsdatum: 16.01.2014
Funktion des Unterzeichners im Unternehmen: Konstruktionsleiter
Name des Unterzeichners: Gerhard Wiedholz

RöhM GmbH
Werk Dillingen
RöhMstrasse 6
89407 Dillingen/Donau
Tel. 09071/508-0

Unterschrift: i. V. 