2-Jaw Parallel Gripper

with sliding guide

RPW-250
RPW-375
RPW-500
RPW-625
RPW-750

Version 2.0 Last revision October 2012

Dear customer,

Thank you for the confidence that you have placed in our company by purchasing an IPR gripper.

Every gripper is fully assembled in the plant and is subject to an individual test. This includes examining their complete proper functioning and safe working.

These instructions illustrate how the gripper is set up and operates. In addition, all the main details for assembly, commissioning and maintenance are clearly arranged.

Please carefully read through the contents.

Do directly contact us if any of your questions are not answered in these instructions. We are at the following address.

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Translation of the original assembly instructions

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1. General

1.1. Information on these instructions

These instructions enable the gripper to be safely and effectively handled. These instructions form part of the machine and should be kept close to it so that the personnel responsible can easily access them.

The personnel involved must have carefully read through these instructions and understood them before beginning any work. Keeping to all the safety and handling pointers in these instructions is the basis on which work is done safely.

Also applying are any local health & safety regulations and the general safety conditions where the machine is used.

Illustrations in these instructions are there to assist in basic understanding; they may deviate somewhat from the actual design.

Also follow the generally valid, statutory and other binding regulations of European and national legislation as well as the accident prevention and environmental protection provisions in force in your country.

1.2. Terms of the guarantee

The terms of the guarantee can be found in the manufacturer's general terms & conditions of business. Please turn to our Customer Service (for contact data see cover) if any matters are not clear.

2. Safety

This section provides an overview on all the important safety aspects for the protecting people and for reliable, no-trouble operations. Further task-related safety instructions are included in the sections on the individual service life phases.

2.1. Symbol explanations

Safety instructions are identified by symbols in these instructions. The safety instructions are introduced by signalling words expressing the degree of hazard involved.

	**CAUTION!** Points to a **possible** dangerous situation which - if not avoided - may result in either minor or slight injuries.
	NOTE! Points to a **possible** dangerous situation which - if not avoided - may result in either material or ecological damage.
	This symbol brings useful tips and recommendations to one's notice as well as information on efficient, no-trouble operations.

2.2. Intended use

The gripper is only for gripping and holding workpieces and other objects.

Grippers are not ready-to-use machines as envisaged under the EU Machinery Directive. Grippers are solely for fitting/attaching to machinery and equipment. You also note the system documentation.

	**NOTE!** You must use this gripper exclusively in accordance with the operating conditions and performance specifications established in theses instructions.

2.3. Inappropriate use

Any other use or one going beyond that described in the "Intended Use" chapter is deemed to be inappropriate and will void all warranty or guarantee claims.

It is the owner - and not the manufacturer - who accepts liability for damage resulting from this.

	**NOTE!** The gripper must not be used in any explosive environment.

2.4. General risks

The gripper was state-of-the-art manufactured at the time of delivery. Even so, dangers could still proceed from it if the safety information listed here in these instructions is not followed.

- The personnel involved must have carefully read through these instructions and understood them before beginning any work.
- The instructions must always be available for all users where the gripper is deployed.
- These instructions are also to accompany the gripper if it is handed over to third parties.
- Do not delve into moving components or handle them during on-going operations.
- Never open protective covers under ongoing operations.
- Only authorized specialist personnel - outside the danger zone - are allowed to carry out any work such as assembly, commissioning, operating, dismantling and maintenance.
- Before any work is begun on the gripper, the energy supply needs to be disconnected and the line system relieved of pressure. Secure the system against being unintentionally reactivated for the duration of the work.
- Ensure during commissioning that all pneumatic connections are either allocated or firmly closed.
- The cover of grippers with a gripping force safeguard (FA/FI) is spring-tensioned. Be careful when taking the gripper apart. Ensure stress relief by using a proper device.

2.5. Owner obligations

Together with the safety instructions in these instructions, the valid safety, accident prevention and environmental protection regulations in force where the machine is used must be adhered to.

As part of his obligation to exercise due car, the owner is to ensure that:

- The gripper is used as intended
- During the entire period of use of the machine a check is to be made on whether his operating instructions comply with the ongoing status of the standards & codes and, if necessary, he is to adapt them.
- The responsibilities for installation, operation, fault rectification, maintenance and cleaning are clearly settled and laid down.
- All those dealing with the machine have both read these instructions and understood them. In addition, he has to regularly train the personnel involved and inform them as to hazards/risks.

2.6. Requirements placed on the personnel

The variety of tasks described in these instructions place differing requirements on the qualifications of those performing these tasks.

Only appropriate specialist personnel or a duly instructed person under the supervision of specialist personnel are allowed to carry out any work such as assembly, commissioning, operating, dismantling and maintenance.

In view of his technical training, knowledge, experience and knowledge of the relevant standards and regulations, the specialist is in a position to perform the work he has been entrusted with and - on his own - to recognize/avoid any hazards.

3. Specifications

(Please refer to the ongoing catalogue or the internet for specifications of the individual grippers.)

3.1. General basic data

Min. operating pressure:	3.5 bar / 5,5 bar (FA)
Max. operating pressure:	8 bar
Temperature range:	5 °C to 80 °C (higher if requested)
Drive:	Pneumatic
Material:	Casing of high-strength aluminium hard-coated/Operating parts hardened tool-steel
Tolerance particulars	
Thread:	+/− 0.1 mm
Alignment pin drill hole:	+/− 0.02 mm

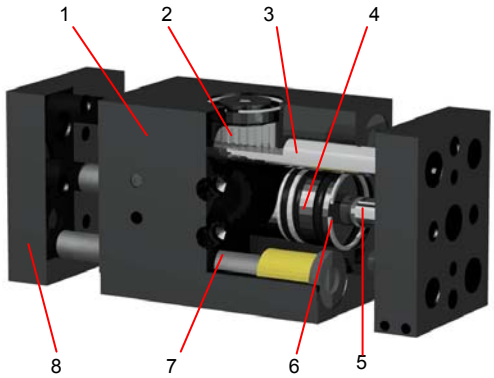
3.2. Operating conditions

The working environment is not to contain any dirt, dust, spray or vapours. The machine is to be used at temperatures between 10 °C and 40 °C.

The maximum (non-condensing) relative air humidity is to be between 10% and 70%.

4. Setup and function

4.1. Overview



1	Housing	5	Piston Rod
2	Pinion	6	Sealing Part
3	Rack	7	Guidance Rod
4	Piston	8	Gripper Jaw

4.2. Brief description

The parallel movement of the jaw is generated by pinion/rack drive by means of two double-working pneumatic cylinders. The jaw guidancetakes place via two guide rods

Slide-controlled 2-jaw parallel grippers provide a number of benefits:

- Centricly gripping
- Low profile
- External and internal voltage
- Rugged design
- Gripper attachment possible from two sides
- Stroke up to max. 114mm
- Ideally to seize with long fingers
- Stroke monitoring with proximity switch (optional)
- Gripping force safety via double check valve DSV (optional)

5. Transport, packing, storage

5.1. Transport

Immediately check on the delivery when received as to completeness and any transportation damage.

Proceed as follows if there are signs of external damage:

- Do not accept the delivery or only under reservation.
- Note down the extent of damage on the transportation documents or on the forwarder's delivery note.
- Initiate the complaint procedure.

	Object to any shortcoming as soon as it is discovered. Claims for damages can only be filed within the valid time spans as set aside for complaints.

Transportation temperature −20 °C to 65 °C.

Protect against external impact (jolt, blow, vibration).

5.2. Packing

The packing is to be such as to protect the components up to the assembly stage from transportation damage, corrosion and other kinds of damage. Thus, the packing is to be left intact and only removed just before actual assembly.

Only recyclable materials are used for the packing.

Dispose of packaging materials in accordance with the respectively valid statutory regulations and local requirements.

5.3. Storage

Store packs under the following conditions:

- Do not store outdoors.
- Store at a dry and dust-free location.
- Do not expose to corrosive media.
- Protect from direct sunlight.
- Avoid mechanical shocks.
- Temperature for storage: 15 °C to 35 °C
- Relative air humidity: max. 60%.
- In cases of storage exceeding 3 months, regularly check on the general condition of all the parts and packing. If need be, either recondition the conservation protection or renew it.

	There may also be information on the packs themselves extending beyond the requirements set out here. They are to be correspondingly kept to.

6. Assembly and commissioning

CAUTION!

Before assembling the gripper, the energy supply needs to be disconnected and the line system relieved of pressure.

Make a note of the safety instructions and general hazards listed on Page 2.

6.1. Assembly

The assembly drill holes and pneumatic connections can be taken from our ongoing catalogue or the internet.

The gripper is only to be fastened at the threads provided for the purpose. If needed, manufacture an appropriate adapter flange or acquire it from the manufacturer.

Tighten the assembly bolts with thread locking adhesive (e.g. Loctite 4052) or with Schnorr/Nord lock washers, as appropriate.

Provide compressed air at 3,5-8 bar (the FA/FI gripping force safeguard necessitates 5.5 bar at the gripper)

Install pneumatic connections at the housing; close off any connections not needed.

6.2. Commissioning

Pressurize the line system with compressed air. For a possible connection variant, refer to the circuit diagram.

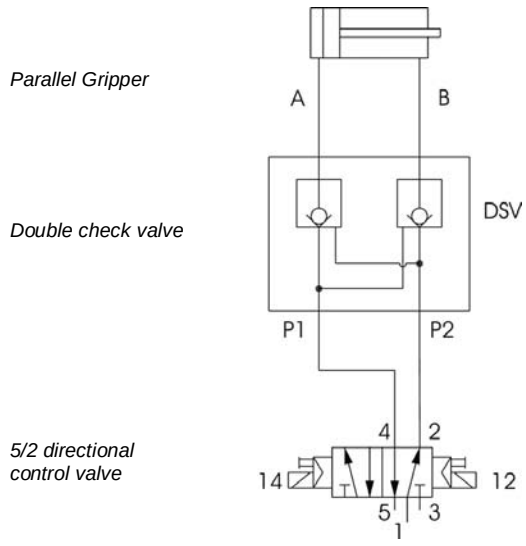
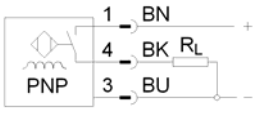


Fig.: Circuit diagram of a connection variant

The gripper is fitted out - as an option - for lifting control purposes with 1 or 2 proximity switches. The connection face and the robot manufacturer's information are to be noted for installation on a robot I/O card as undertaken by the operating company.

Please note - order sensors separately!



7. Malfunctions

Gripper opens / does not close

- Check on supply of air, replace any non-tight lines, if necessary
- Air pressure too low, raise the air pressure
- Examine gripper seals and renew, if necessary

Gripper opens / closes with a jolt

- Clean gripper and lubricate, if necessary

Gripping force not fully applied

- Examine gripper seals and renew, if necessary

Signal from the sensor is missing

- Sensor defect; renew the sensor
- Wrong sensor position; new justify of the sensor

8. Maintenance and repairs

NOTE!

Make a note of the safety instructions and general hazards listed on Page 2.

8.1. Cleaning and upkeep

NOTE!

Corrosive cleaning agents could damage the gripper seals and result in them ageing more rapidly.

Make a note of the following when cleaning and tending to the grippers:

- Use protective caps and the like to firmly close all the openings
- Check that all connections are tight
- Use a metal cleaner
- Remove any coarse dirt and keep components such as sensors clean.

8.2. Maintenance

To retain gripper functions, we recommend carrying out the following maintenance steps at least 2x a year:

- Clean gripper (grease the management system – f.e. with Magnalube-G)
- Check on gripper function and effect repairs, if necessary
- Check gripper for signs of external deformation, damage and wear and repair, if necessary
- Examine play and correct, if necessary

The two lubricating stubs of the gripper - in a closed state - are to be lubricated with 2-3 shots from the grease gun after around 1,000 operating hours depending on gripper use (for recommended grease, see table). Remove any traces of grease.

Under standard application	EMKA Lagerstar LIC
Under foundry applications	Klüber Barrierta LX-55-2

No greases with MoS_2 additives are allowed.

8.3. Repairs

The manufacturer provides you with a comprehensive gripper repair service.

Repairs are only to be carried out by authorized specialist personnel.

The following repair work can be carried out at the owner's:

- Replacing the set of seals
- Exchange guide rods / gear
- Exchange proximity switch

CAUTION!

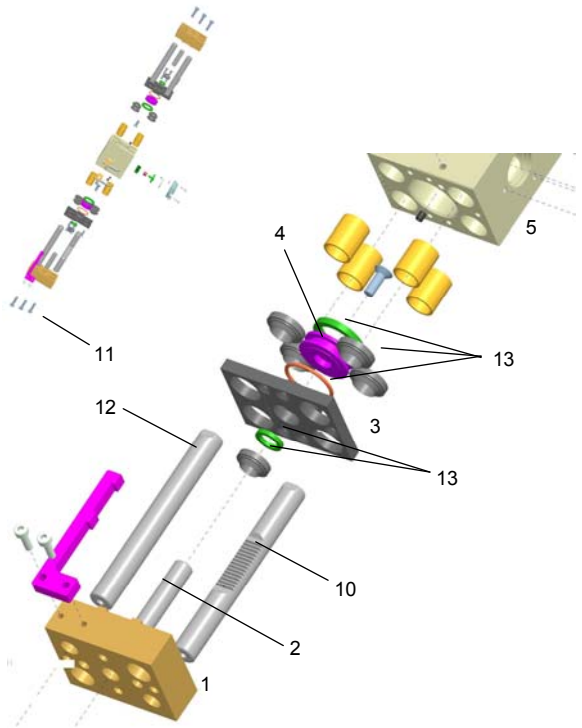
The cover of grippers with a gripping force safeguard (FA/FI) is spring-tensioned. Be careful when taking apart the grippers. Ensure stress relief by using a proper device.

Proceed as follows:

1. Dismantle any gripper fingers
2. Remove the air connectors

Set of seals

3. Dismantle the gripping jaws (1) (screws 11)
4. Dismantle the piston rod (2) (screws 11)
5. Remove the gripping jaws
6. remove, disassemble the sealing part (3)
7. pull the piston (4) with a piston rod off
8. to demount seals, guide strips
9. assemle the new seal kit (13)
10. Clean and grease the treads
11. Introduce piston with a piston rod in the housing (5)
12. Assembly will be made in reverse order
13. Check the gripper No leakage /function



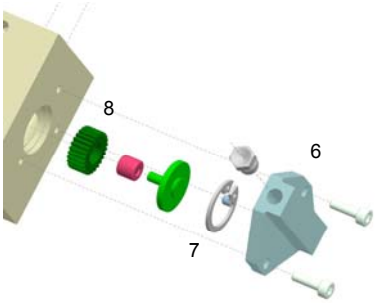
NOTE!

Do not damage the housing when removing / inserting the seals.

Use a micro screwdriver.

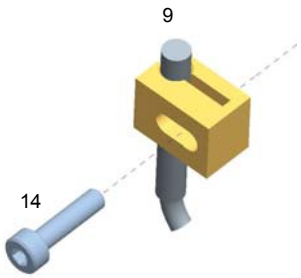
Guide bars / Gear

1. Dismantle the Jaws
2. Guide rods (12) remove
3. Cover (6) on the top
4. Remove the unscrew Retaining ring (7)
5. Remove gear (8)
6. Remove rack (10)
7. Install new components
8. Clean and lubricate parts as required
9. Assembly will be made in reverse order
10. Gripper for leaks / Function Check



Proximity switch

11. Loosen the sensor retaining screw (14)
12. Exclude ans exchange the sensor (9)
13. Justify the sensor new (if necessary)
14. Assembly will be made in reverse order



Note position of the gripper jaws when assembling them. Control arm !

Lubricate all guiding parts with teflon-containing grease before assembly. No greases with MoS_2 additives are allowed.

Tighten all screw connectors with a DIN-based tightening torque and lock to medium strength with a thread locking adhesive (e.g. Ergo 4052).

Spare parts and a full set of seals can be obtained through the manufacturer.

9. Dismantling, decommissioning, disposal

CAUTION!

Before dismantling the gripper, the energy supply needs to be disconnected and the line system relieved of pressure.

Make a note of the safety instructions and general hazards listed on Page 2.

9.1. Dismantling

At the end of their useful lives, the grippers must be dismantled and disposed of in an environmentally compatible manner.

Properly clean sub-assemblies and components and disassemble them with consideration given to the prevailing local health & safety and environmental protection provisions.

9.2. Decommissioning

You carry out decommissioning in the reverse order to commissioning.

- Any gripper malfunctioning needs to be corrected before decommissioning
- Gripper needs to be cleaned
- Surface must be wetted with oil
- Non-plugged connection openings need to be firmly closed

9.3. Disposal

Pass on disassembled parts for recycling if no arrangements have been made for returning them or disposal:

- Turn metals into scrap.
- Hand in plastic elements for recycling.
- Sort the rest of the components by material properties and dispose of accordingly.

10. Accessories

(Please refer to the ongoing catalogue or the internet for individual gripper accessories)

OPTION:

Lift monitor/control

"Option - Gripper closed"

"Option - Gripper opened"

Arrangement of the inductive sensors can be taken from the specifications of the grippers in question.

Gripping force safeguard

by means of a double check valve DSV