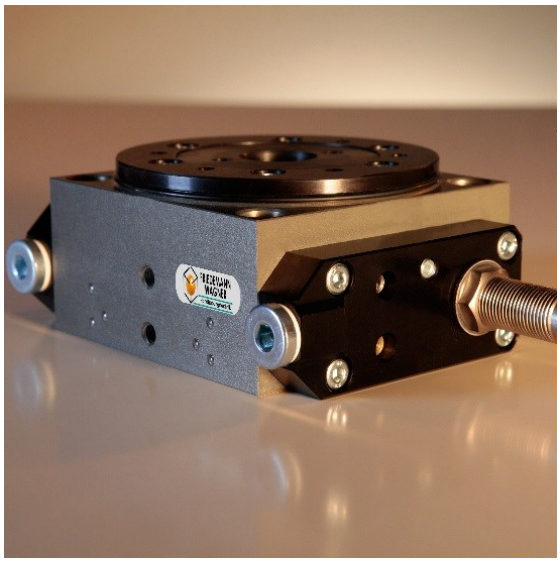
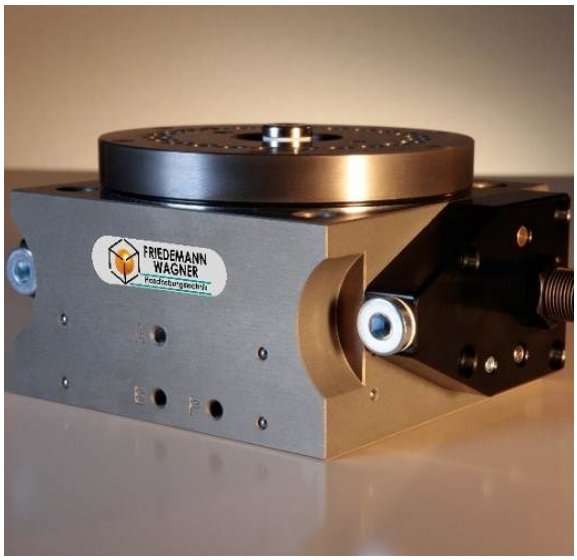
Installation and Operating Instructions

Rotary Indexing Unit

Type RSE-3 / RSE-4





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Edition 04/2017
Translation of Original Installation and Operating Instructions

NOTICE

Important! – Read carefully before use – Keep for future reference!

The installation and operating instructions are an integral part of the device and must be available to the operating and maintenance personnel at all times.

The safety information contained in them must be heeded accordingly.

If the device is resold, these installation and operating instructions must always be delivered with it as well.

The latest version is to be found on the Internet at the manufacturer's website: http://www.wagnerautomation.de

Warranty and guarantee conditions:
See chapter 6.1, Warranty and guarantee conditions.

The **warning and safety symbols** are explained in chapters 3.1 and 3.1.1.

Translation
If the device is sold to a country in the EEA, these installation and operating instructions must be translated into the language of the country in which the device is to be used. Should the translated text be unclear, the original installation and operating instructions (German) must be consulted or the manufacturer contacted for clarification.

Document name:
Dss735 BA_719_Rundschalteinheit_RSE3-4_26_07_2016.doc

1 Contents

1.1 Table of contents

1.2 Table of figures

1.3 List of tables

1.4 Declaration of incorporation

Friedemann Wagner GmbH
Robert-Bosch-Straße 5
D-78559 Gosheim / Germany

Declaration of incorporation

pursuant to the

- **EC Machinery Directive 2006/42/EC**
- **EC EMC Directive 2014/30/EU**

We hereby declare that the design of the

Designation: Rotary Indexing Unit

Type: RSE-X-X-X-X-X-X-P

as delivered complies with the above directives.
Harmonized DIN EN standards applied pursuant to the Official Journals for the directives:

Directive / Standard	Title
DIN EN ISO 82079-1 :2012	Preparation of instructions for use – Structuring, content and presentation – Part 1: General principles and detailed requirements
2006/42/EC	**EC Directive: Machinery** *effective from 2009-12-29*
DIN EN ISO 12100 :2010	Safety of machinery – General principles for design – Risk assessment and risk reduction

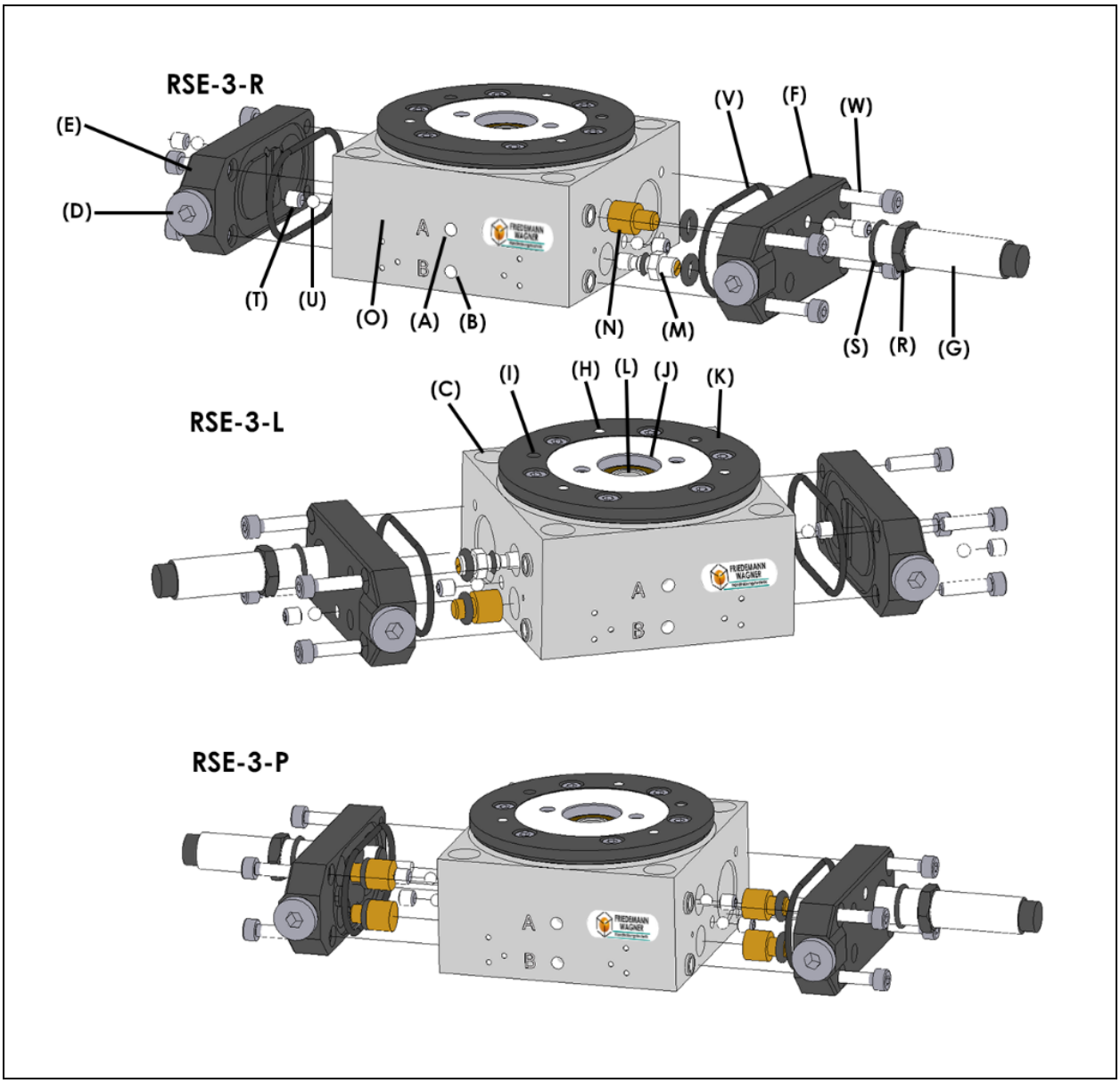
- This declaration only applies to the rotary indexing unit in the state in which it was placed on the market.
- The essential health and safety requirements according to Annex I of the Machinery Directive were applied and are fulfilled.
- The following chapters in Annex I of the Machinery Directive 2006/42/EC were considered in the risk assessment:
  1.1.2, 1.1.3, 1.1.5, 1.2.6, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.6, 1.3.7, 1.3.8.2, 1.3.9,
  1.4.1, 1.4.2.1, 1.5.3, 1.5.4, 1.5.9, 1.5.11, 1.5.15, 1.6.1, 1.6.4, 1.7.1, 1.7.2, 1.7.3, 1.7.4.
- The special technical file according to Annex VII B was compiled and will be presented to the competent national authorities in electronic form on demand.
- **The rotary indexing unit may not be put into service until the final machinery into which it is incorporated has been declared in conformity with the provisions of the directives.**
- The person authorized to compile the technical documentation is:
  Name: Mr. Andreas Wagner
  Address: Robert-Bosch-Straße 5, D-78559 Gosheim / Germany

Gosheim, April 2017

Authorized Signature
(A. Wagner, Managing Director)

2 Overview and intended use

2.1 Overview of the device



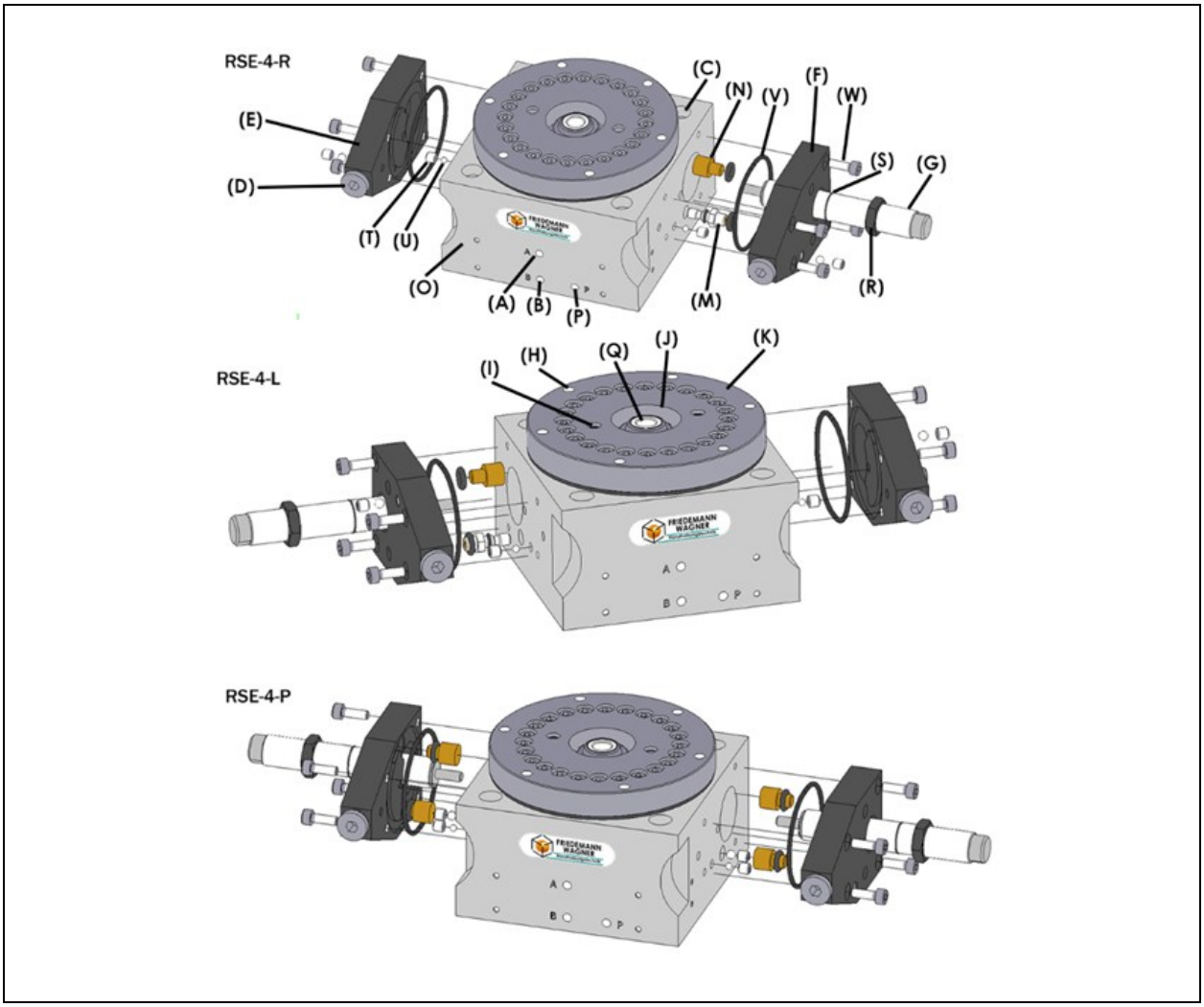


Fig. 2-1 Diagram of the parts of the RSE-3 and RSE-4 rotary indexing units

The rotary indexing unit RSE-3 / RSE-4 consists of the following main components:	
(A) Compressed air connection A (unlock and turn)	**(M)** Regulator
(B) Compressed air connection B (lock and start position)	**(N)** Bolt
(C) Mounting hole with thread	**(O)** Housing
(D) Connection for proximity switch (seal plugs)	**(P)** Compressed air connection P (air inlet grommet)
(E) End plate	**(Q)** Compressed air connection (air outlet grommet from compressed air connection P)
(F) Stop plate	**(R)** Hexagonal nut
(G) Hydraulic shock absorber	**(S)** Seal ring
(H) Threaded hole	**(T)** Set screw M5x5
(I) Pin bore	**(U)** Ball Ø4
(J) Central bore	**(V)** O-ring
(K) Indexing plate	**(W)** Screw
(L) Through hole	

2.2 Intended use

The rotary indexing units were developed to turn components or superstructures by a defined angle. They are suitable for assembly work and processing of components in a rotary indexing system.

This device was developed, designed and built exclusively for industrial and light-industrial use. Private use is prohibited.

DANGER

This device is intended solely for the purpose described above. Any other use or modification of the device without the written consent of the manufacturer is deemed improper.

Modification without written agreement will lead to ***serious to deadly injuries****.*
The manufacturer accepts no liability for resultant damage. The risk is borne solely by the operator. The device may only be put into operation when it has been ensured that all safety devices have been installed and are fully functional.

Proper use of the device in accordance with its intended purpose includes compliance with the manufacturer's instruction handbooks and operating manuals and performance of all specified maintenance and service work.

Foreseeable misuse:

NOTICE

Products that could form explosive dust/air or gas/air mixtures may not be processed in critical concentrations (above LEL)!
The device does not fulfil any EX requirements and may therefore also not be installed and operated in ATEX zones!
**) LEL = Lower Explosive Limit*

The device is not suitable for use in machining operations, especially of aluminum, titanium and magnesium, as, depending on product compositions, particle sizes, chip sizes and distribution of quantities, potentially explosive atmospheres can result. The final decision on use lies in the end user's judgment.

2.2.1 Product identification

The type key is laser-engraved on the connection side of the rotary indexing unit. The following table explains the type key:

Module	Design size	Version	Partition	Shock absorber	Energy feedthrough	Drive
RSE	3 4	R L P	2 . . . 24	H	0-0 1-0	P
		R= right L= left P= oscillating	RSE-3 2,3,4,6,8,12 RSE4 2,3,4,6,8,12,24	H= hydraulic	0- = pneumatic -0 = electric RSE-4: 1-0	P= pneumatic

2.2.2 Incorporation information (for the partly completed machinery) for the constructor of the final machinery

- The central bore (J) enables easy centering of all superstructures. The superstructures are fastened with the pin bores (I).
- The standard version already contains a hydraulic shock absorber (G).
- Control is effected via a 4/2 or 5/2 directional-control valve (not included in the delivery).
- The rotary indexing units are largely configurable.
- Clockwise or anti-clockwise
- Oscillating mode
- Changeable partition (for RSE-4 with a separately available accessory kit, for RSE-3 by Friedemann Wagner customer service)
- The speed can be adjusted freely with a regulator (M).
- **Only RSE-4:**
  Thanks to the integrated air grommet (P)-(Q), the mounted superstructures can tap the compressed air they need directly at the indexing plate (K). This means the hoses do not hang around loosely, thereby avoiding axial twisting of them.
- No regulator may be used at compressed air connection A (A). There is a regulator integrated in the rotary indexing unit for setting of the rotational speed.

- A supply air regulator can be mounted at the compressed air connection B (B) for softer locking and thus noise reduction. It must then be ensured that the regulator is not closed too far as this could lead to malfunctions.

After considering all the above points, the integrator of the final machinery can put this device into service as a safe device.

He must supply overall instructions for use and a declaration of conformity for the complete machinery and affix a type plate with CE marking to the machinery. The responsibility for the risk assessment for the complete machinery lies internally with the integrator.

2.3 Technical data

2.3.1 Dimensions and weight

Type	RSE-3	RSE-4
Indexing accuracy	± 0.03 mm at Ø 120	
Axial load	3.5 kN (Ø 70 mm)	20 kN (Ø 100 mm)
Torque locked (static)	50 Nm	100 Nm
Lateral force (static)	3.1 kN	10 kN
Max. clamping weight	8 kg	14 kg
Actuations/minute	50 - 200	50 - 200
Connection	M5	
Partition	2/3/4/6/8/12	2/3/4/6/8/12/24
Weight	1.23 kg	3.1 kg
Torque	Effective 1 Nm / Theoretical 1.5 Nm	Effective 2 Nm / Theoretical 2 Nm
Direction of rotation	Clockwise, anti-clockwise or oscillating mode	
Installation position	Any (if not mounted horizontally, there might be limitations re torque and end-position damping)	
Drive	Compressed air 5-8 bar, constant, filtered (10 µm) and dry, lubricated or unlubricated	
Control	4/2 or 5/2 directional-control valve	
Housing material	High strength aluminum, hard anodized	
Plate material	Steel, burnished	Steel, ground Plate edge and bottom plasma nitrided, clamping surface untreated and soft
Axial run-out of plate	0.03 mm	
Permissible tilting moment	73 Nm	150 Nm
Moment of inertia	See load diagrams	
Sound pressure level	≤ 70 db	
Cylinder diameter	20 mm	25 mm
Concentricity of central bore	0.03 mm	
Plane parallelism housing – plate	0.05 mm	
Axial load of plate under strain / stress	3.5 kN	1.5 kN / 20 kN
Axial load of plate under strain (dynamic) on even loading	8 kg	14 kg
Clearance between indexing plate and housing	-	0.05 mm
Air consumption	23.5 cm^3/cycle	40.5 cm^3/cycle

2.3.2 Environmental conditions

- Operation only in closed rooms and low-vibration environments (no potentially explosive or condensing atmospheres).
- No operation in environments with spray water, vapors, process dusts or abrasion dusts.
- Rotary indexing units with proximity switches should not be used in areas with static discharges, high-frequency oscillations or strong magnetic fields. Otherwise it can happen that the proximity switches for recognition of the end positions deliver wrong signals.
- The rotary indexing units are only suitable for use in environments with spray water to a limited extent. It might be necessary to protect them against ingressing spray water with a suitable cover.

2.3.3 Characteristics

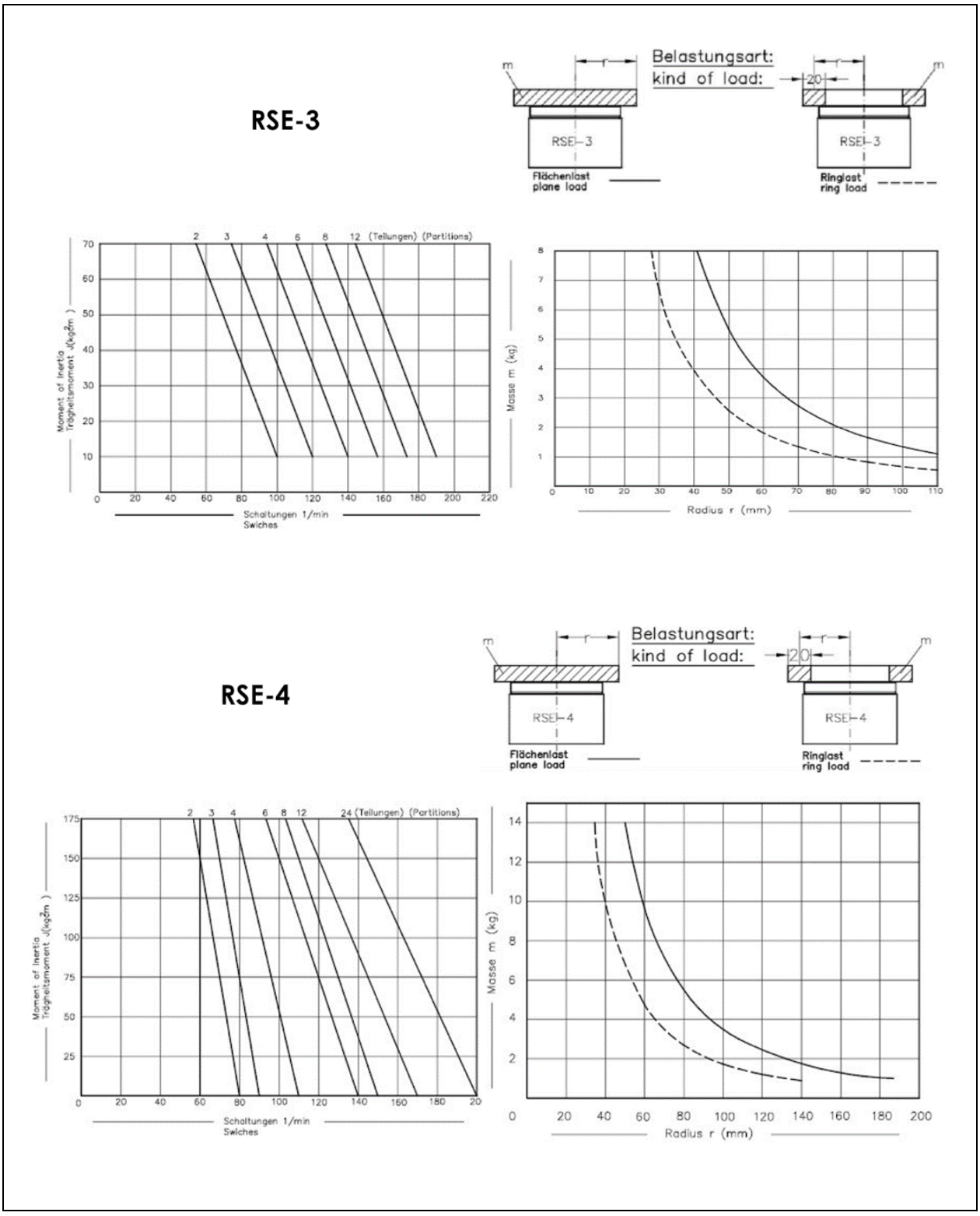


Fig. 2-2 Characteristics RSE-3 and RSE-4

2.3.4 General data

Operating temperature range:	
Temperature range device:	+ 5° … + 65° C
Relative air humidity:	max. 70 %, non-condensing
Storage conditions:	
Minimum temperature:	- 10° C
Maximum temperature:	+ 50° C
Relative air humidity:	max. 70 %, non-condensing

3 Safety

3.1 Notes and explanations

DANGER

"DANGER" warns of dangerous situations. Avoid these dangerous situations!

Otherwise serious injuries or death will result.

WARNING

"WARNING" warns of dangerous situations. Avoid these dangerous situations!

Otherwise serious injuries or death can result.

CAUTION

"CAUTION" in combination with the warning symbol warns of dangerous situations. Avoid these dangerous situations!

Otherwise minor or light injuries could result.

NOTICE

"NOTICE" gives recommendations on how to proceed. Ignoring these recommendations will ***not lead to personal injuries****.*

Follow the recommendations to ***avoid damage to the unit*** *and problems in general!*

NOTICE

References to installation and operating instructions / documentation are marked with a book symbol (see external documentation).

Follow the recommendations to ***avoid damage to the unit*** *and problems in general!*

3.1.1 Explanation of safety symbols used

DANGER

Crushing hazards, dangers of injuries to the hands *(closing movements of mechanical parts).*

Ignoring this warning will result in serious injuries or death.
Do not carry out any manual work on such parts during movements.

WARNING

Mandatory: Safety boots *must be* ***worn.***

Ignoring this warning could result in serious injuries or death.
Take note of the dangers to the lower limbs.

WARNING

Mandatory: Protective gloves *must be* ***worn.***

Ignoring this warning could result in serious injuries or death.
Take note of the dangers to the hands.

WARNING

Mandatory: Hands *must be* ***washed.***

Ignoring this warning could result in serious injuries or death.
Take note of the dangers due to deficient hygiene.

NOTICE

The ***environment sign*** *marks actions to protect the environment (warning of environmental pollution, in the chapter Disposal).*

Damage to the environment will result if ignored.
Improper disposal can result in serious damage to the environment.

3.2 Safety precautions (to be carried out by the operator)

- The rotary indexing units may only be installed, serviced and modified by qualified skilled personnel. This personnel must have read and understood the operating instructions.
- The energy and compressed air supply must be disconnected from the rotary indexing unit before any service, maintenance or modification work. Make sure there are no residual energies present.
- Only use the rotary indexing units if they are in perfect technical condition and do not carry out any unauthorized modifications.
- The rotary indexing units can be heavy. Secure them so that they cannot fall down.
- In the event of an emergency, malfunction or other irregularity, switch off the rotary indexing unit, disconnect it from the energy and compressed air supply and lock against reconnection.
- Carry out a visual inspection of the compressed air lines regularly. Operation with damaged compressed air lines is prohibited.
- Make sure that the technical specifications and environmental conditions specified in the product documentation are adhered to.
- The rotary indexing unit may only be operated in accordance with its intended use.
- Take note of the valid regulations on accident prevention and environmental protection.
- Implement the safeguards required by EC directives.
- Pressurize your complete equipment with compressed air slowly to avoid uncontrolled movements.
- Only put your equipment into service if you are sure that no personnel or foreign objects can be caught by the moving parts.

3.3 Safety inspections and tests

Factory inspections and tests by the manufacturer.

1. Risk assessment according to Machinery Directive 2006/42/EC (to Annex I) and to DIN EN ISO 12100:2010.

4 General warnings

4.1 Dangers

The safety systems and safety instructions described in these installation and operating instructions are to be heeded accordingly.

DANGER

Pay attention to the possible ***danger of injuries to the hands and/or body*** *when carrying out adjustment, maintenance and repair work!*

Otherwise serious injuries or death will result.
The machine builder must implement safety equipment to ensure safe operation.

4.2 Spare and wearing parts

Spare parts and accessories that have not been supplied by us have also not been tested and approved by us. The fitting and/or use of such products could therefore negatively affect the design characteristics of your device.
We accept no liability whatsoever for damage arising from the use of non-original parts and accessories.

Standard parts can be bought through the specialized trade.

NOTICE

Part lists *and* ***technical data sheets*** *are to be found in the* ***technical reference documents****.*

Otherwise the unit will be damaged.
Damage can arise if the attached technical reference documents are ignored.

NOTICE

Lists *of* ***spare parts*** *and* ***wearing parts*** *are to be found in the* ***technical reference documents****.*

Otherwise the unit will be damaged.
Damage can arise if the attached technical reference documents are ignored.

Service

When necessary, these parts can be obtained from:

Friedemann Wagner GmbH
Robert-Bosch-Straße 5
D-78559 Gosheim / Germany
Telephone: +49 (0) 7426 / 94900-0
Fax: +49 (0) 7426 / 94900-9
Email: info@wagnerautomation.de

5 Installation

5.1 Scope of delivery

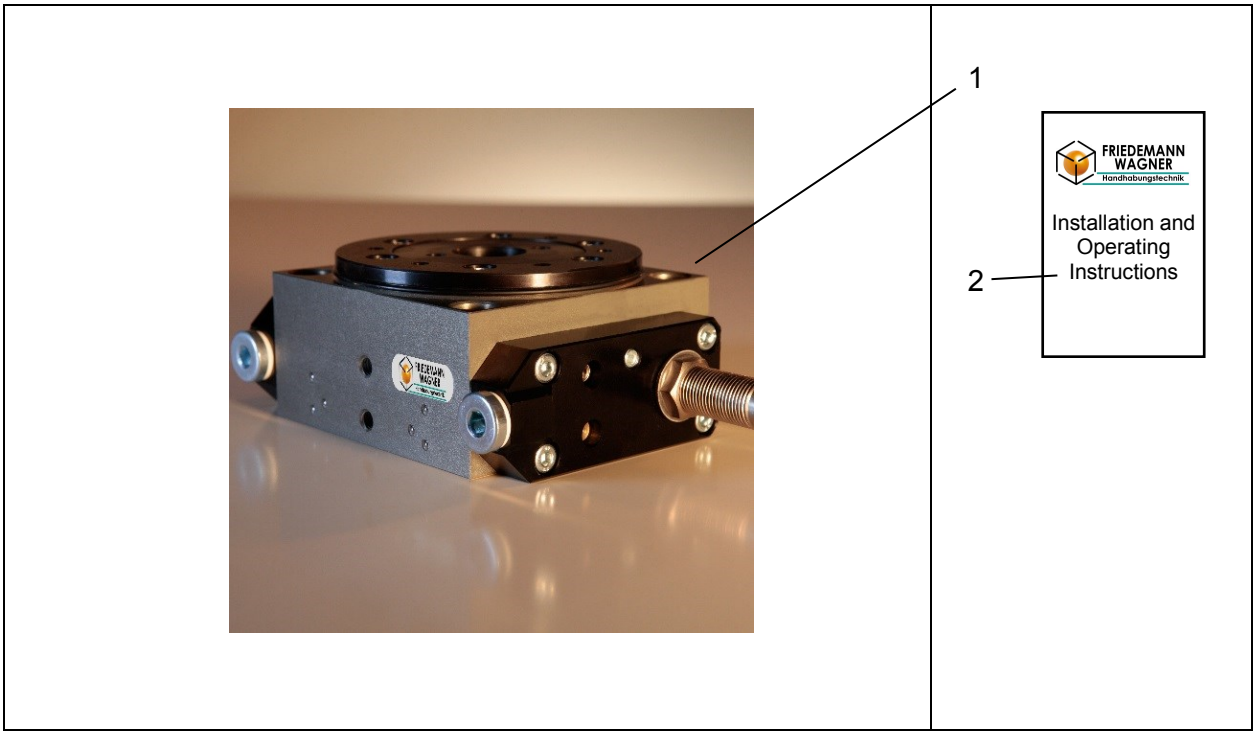


Fig. 5-1 Scope of delivery of the device

The scope of delivery comprises:

1 Rotary indexing unit including base construction
2 These installation and operating instructions with declaration of incorporation
3 Centering ring
4 Cardboard packaging

5.2 Transport and packaging

The customer is sent a specification of the scope of delivery before shipment begins. It contains details on:

- date of delivery,
- number and type of transport units.

The devices are carefully inspected and packed before shipment, but it is nevertheless still possible that they might become damaged during transit.

5.2.1 Delivery (also of spare and replacement parts)

Receiving inspection:

- Check the shipment against the delivery note to ensure that it is complete!

If the packaging is damaged

- Check the shipment itself for damage (visual inspection)!

Complaints

If the shipment was damaged during transit:

- Immediately contact the last carrier!
- Keep the packaging material (for possible inspection by the carrier or for return shipment).

Packaging for return shipment

Use the original packaging material as far as possible.

5.2.2 Temporary storage/Storage conditions

The freight packaging of the device and spare and replacement parts is designed for a storage period of 3 months from delivery.

After dismantling of the device, it must be stored properly to enable reuse.

NOTICE

Temporary storage: Store with desiccant in a dry factory hall.

Otherwise the unit will be damaged.
Moisture could penetrate into the device and cause major damage.

Storage conditions

-See chapter 2.3.4, Technical data

- No direct sunlight.
- No exposure to direct rain, condensation, water.

5.3 Mounting

WARNING

Disconnect the rotary indexing unit from the compressed air supply and lock against reconnection!

Otherwise light to serious injuries can result.

Avoid these dangerous situations!

5.3.1 Mounting the rotary indexing unit

NOTICE

If the rotary indexing unit is not mounted horizontally, it must be checked whether the torque and end-position damping suffice for the respective application in question.

▶ Place at least 2 diagonally offset centering rings (Z) (are included in the delivery) in the holes (C) provided.

▶ Screw the rotary indexing unit tight with the screws (Y).

NOTICE

If a centering ring (Z) is stuck in a hole, you can remove it from the hole easily with a threaded screw. The centering rings have an internal thread specifically for this purpose. Simply screw a suitable screw into the thread of the centering ring and pull the screw plus centering ring out of the hole.

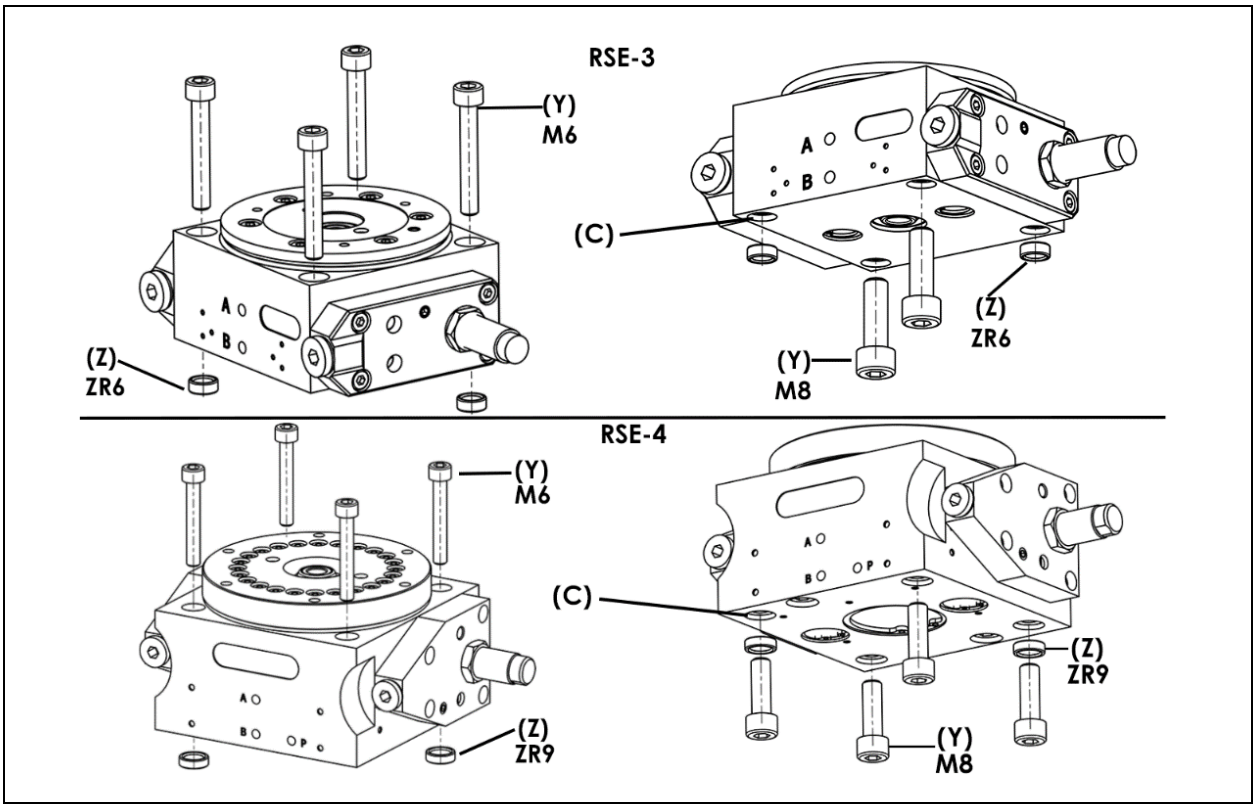


Fig. 5-2 Mounting of the rotary indexing unit

5.3.2 Mounting of superstructures

WARNING

Disconnect the rotary indexing unit from the compressed air supply and lock against reconnection.

Otherwise light to serious injuries can result.

Avoid these dangerous situations!

▶ Center the superstructures in the central bore (J) and the pin bore (I).

NOTICE

The cylinder pin that you insert in the pin bore (I) may not be inserted in the indexing plate (K) by more than 2.5 mm in the case of RSE-4.

▶ Fasten the superstructures with screws (X) in the threaded holes (C) provided.

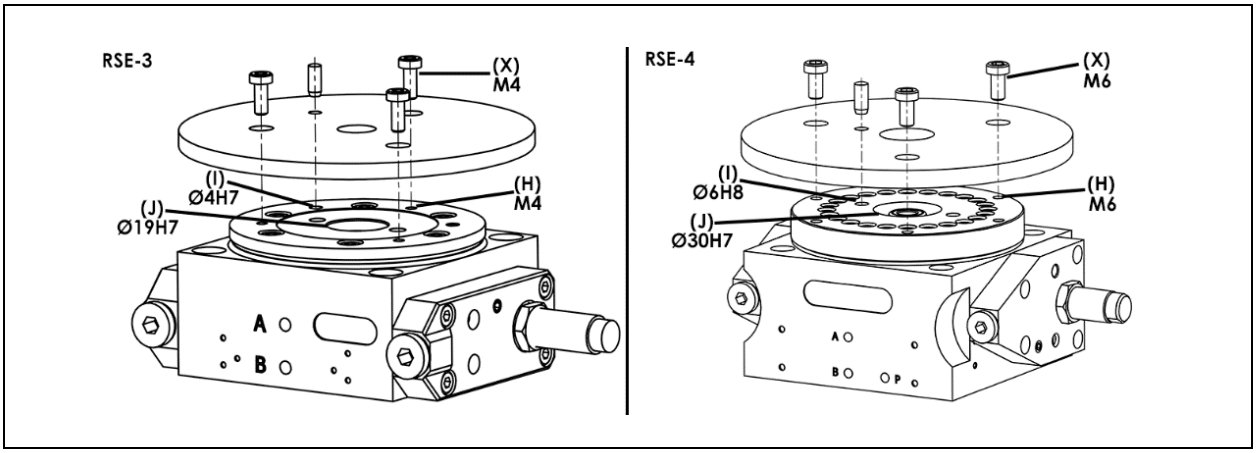


Fig. 5-3 Mounting of superstructures

5.3.3 Connection examples

WARNING

Disconnect the rotary indexing unit from the compressed air supply and lock against reconnection.

Otherwise light to serious injuries can result.

Avoid these dangerous situations!

NOTICE

The following figures show connection examples and illustrate how the rotary indexing unit can be connected.

NOTICE

A function check must be carried out with compressed air after connection.

5.3.3.1 Example of standard pneumatic connection

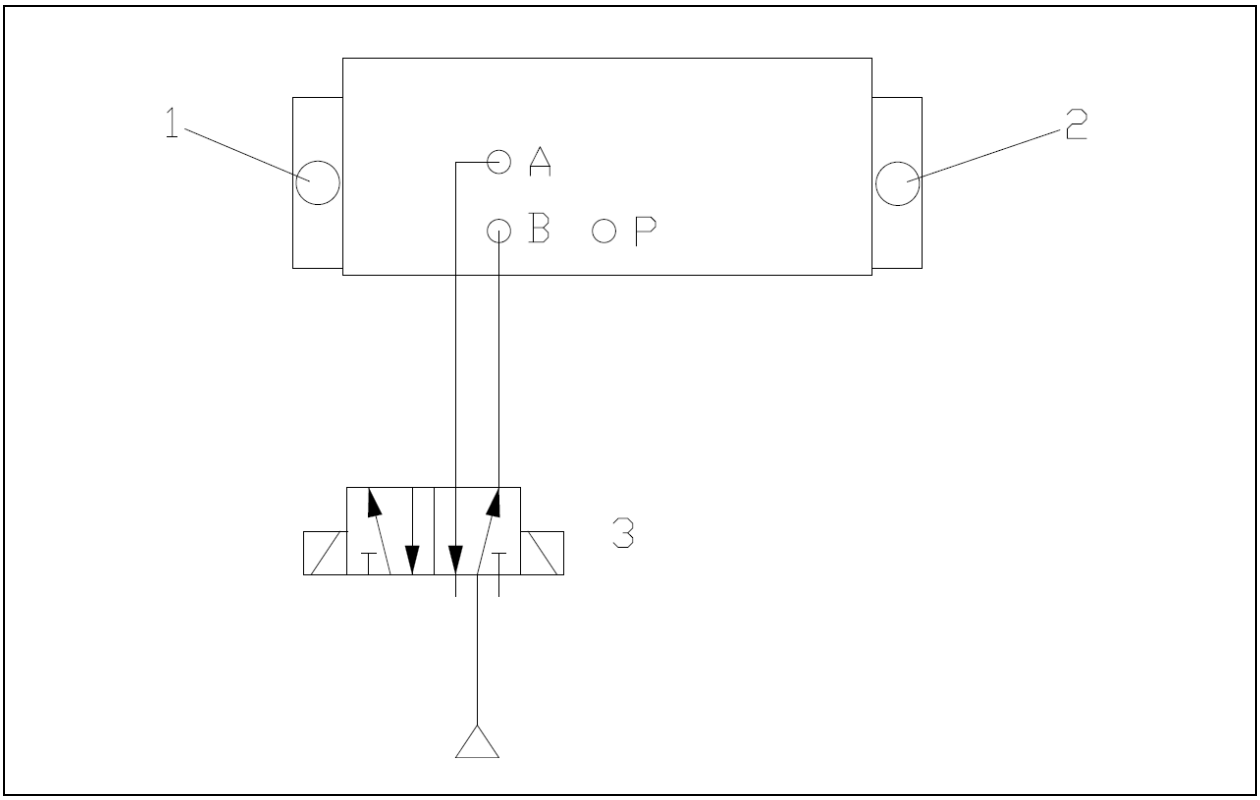


Fig. 5-4 Standard circuit

A. Compressed air connection A (unlock and turn)
B. Compressed air connection B (lock and return stroke)
1. Proximity switch left
2. Proximity switch right
3. 5/2 control valve, bistable

5.3.4 Example of pneumatic connection with EMERGENCY STOP circuit

WARNING

In the event of a sudden loss of pressure the payload can drop uncontrolled into one end position. To prevent this, piloted non-return valves are recommended.

Otherwise light to serious injuries can result.

Avoid these dangerous situations!

NOTICE

Please note that suitable emergency stop systems (e.g. systematic shutdown) and restart systems (e.g. correct valve switching sequence, pressure buildup valves) are needed for pneumatic actuators. Unwanted blocking of the compressed air supply can lead to unwanted situations.

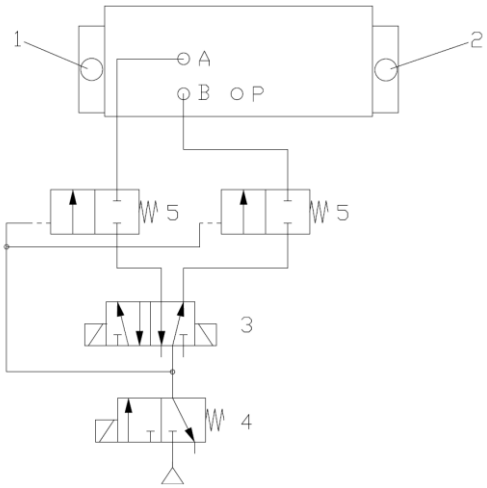


Fig. 5-5 Emergency stop circuit

A. Compressed air connection A (unlock and turn)
B. Compressed air connection B (lock and return stroke)
1. Proximity switch left
2. Proximity switch right
3. 5/2 control valve, bistable
4. 3/2 control valve, monostable / emergency stop
5. Non-return valve (piloted)

5.3.4.1 Oscillating mode

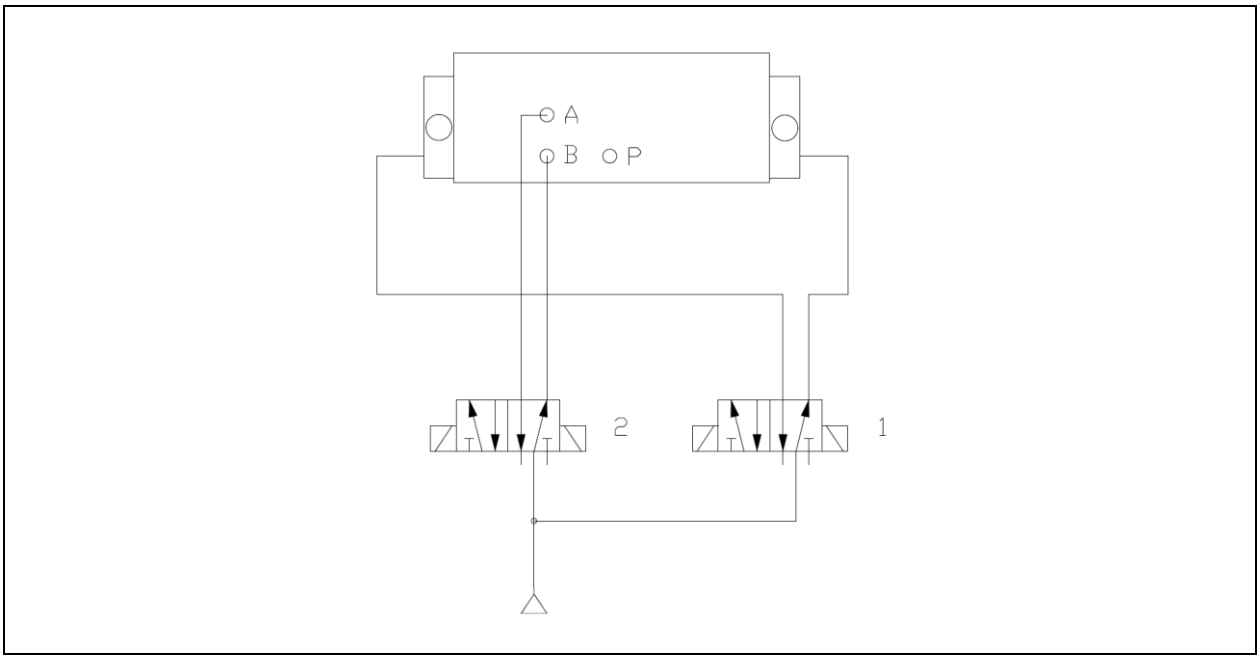


Fig. 5-6 Oscillating mode

1 Piston left/right

2 Unlock/Lock

A Compressed air connection A (unlock)

B Compressed air connection B (lock)

5.3.5 Adjustment possibilities for the rotary indexing unit

The speed and damping action must be adjusted to each other such that the movement is decelerated softly. The setting depends on the cycle times that are to be achieved and what weight is to be turned on the indexing plate (K).

5.3.5.1 Set speed

	WARNING
	Take special care whenever carrying out adjustment work and keep sufficiently far away from danger zones. ***Otherwise light to serious injuries can result.*** *Wear personal protective equipment such as gloves or safety glasses if necessary.*

The speed must be adjusted to the load. If the regulator (M) is set too slow, the indexing plate (K) needs too long to reach the end position. If the regulator (M) is set too fast, this will cause hard stopping and bouncing. This can also have a negative effect on the lifetime of the rotary indexing unit and even result in destruction of its mechanical components.

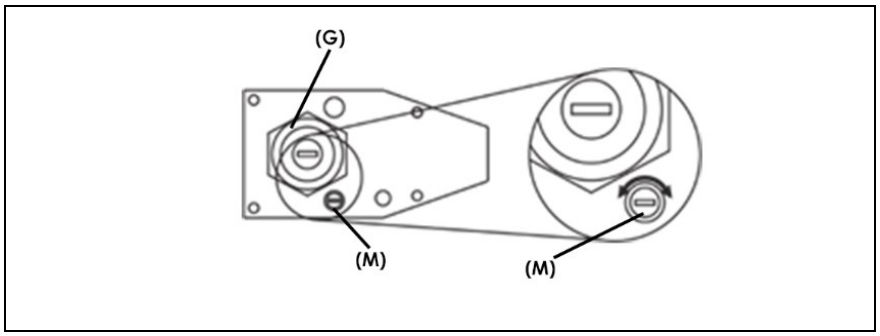


Fig. 5-7 Set speed

Increase speed
Turn the regulator screw (M) to the left.

Decrease speed
Turn the regulator screw (M) to the right.

5.3.5.2 Set shock absorber

WARNING

Take special care whenever carrying out adjustment work and keep sufficiently far away from danger zones.

Otherwise light to serious injuries can result.
Wear personal protective equipment such as gloves or safety glasses if necessary.

The strength of the shock absorber must be adjusted to the load. If the shock absorber (G) is set too hard, it is possible for the indexing plate (K) to bounce and it takes too long for it to reach end position. If the shock absorber (G) is set too soft, this will cause hard stopping and bouncing. This can also have a negative effect on the lifetime of the rotary indexing unit and even result in destruction of its mechanical components.

NOTICE

The shock absorbers are pre-set on delivery. It is, however, possible that the damping action needs to be set softer or harder.

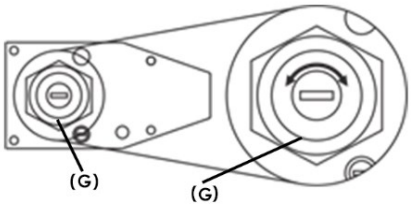


Fig. 5-8 Set shock absorber

Set shock absorber harder

Turn the adjusting screw to the right.

Set shock absorber softer

Turn the adjusting screw to the left.

NOTICE

Only adjust the damping action with the adjusting screw. If there is no adjusting screw available, the shock absorber should be adjusted via the shock absorber stroke.

5.4 Startup

WARNING

Risk of injury from rotating masses.
Make sure that no personnel or foreign objects can be caught by moving parts.
Disconnect the rotary indexing unit from the compressed air supply.

Otherwise serious injuries or death can result.

Avoid these dangerous situations!

- ▶ Do not overload the devices.
- ▶ Connect all air hoses and signal cables correctly.
- ▶ Pre-set the shock absorbers.
- ▶ Pre-set the sensors.
- ▶ Close all regulators and then open them again by one revolution.
- ▶ Make sure that no personnel or foreign objects can be caught by moving parts.
- ▶ Pressurize your equipment slowly with compressed air.
- ▶ Start a trial run.
- ▶ Set the proximity switches (if available).
- ▶ Set the required rotational speed.
- ▶ Set the shock absorbers.
- ▶ End the trial run.

5.4.1 Conversion possibilities for the rotary indexing unit

NOTICE

If no direction of rotation was given in the order, the rotary indexing unit is delivered with a right direction of rotation by default.

5.4.1.1 Change direction of rotation

	NOTICE
	You do not need any additional parts to change the direction of rotation.

To change the direction of rotation, proceed as follows:

	WARNING
	Disconnect the rotary indexing unit from the compressed air supply and lock against reconnection! ***Otherwise light to serious injuries can result.*** *Make sure there are no residual energies present.*

- ▶ Pressurize the compressed air connection A (A) with compressed air. The indexing plate (K) unlocks.
- ▶ Interrupt the compressed air supply.
- ▶ Unscrew the shock absorber (G).
- ▶ Dismount the stop plate (F) by unscrewing the screws (W).
- ▶ Unscrew the regulator (M).
- ▶ Remove the set screw (T) in the housing (near the regulator) together with the ball (U). Mount the ball (U) with the set screw (T) in the threaded hole in which the regulator (M) was previously.
- ▶ At the end plate (E), unscrew the screws (W) and dismount the end plate (E).
- ▶ The set screw (T) with corresponding ball (U) lying on this side should then be mounted in the adjacent threaded hole.
- ▶ Then screw the regulator (M) removed previously into the threaded hole that has just become free.
- ▶ In the case of the RSE-3, the damping disc lying on the rack must then be mounted on the other side of the rack.
- ▶ Then remove the bolt (N) from the stop plate (F) and place it in the other suitable hole in this plate.

- ▶ Then fasten the stop plate (F) and the end plate (E) with the screws (W) at the respective other side (mirror-inverted). Make sure that the O-rings (V) are in the matching recess.
- ▶ Then screw the shock absorber (G) into the stop plate (F) by a few revolutions and pressurize the compressed air connection A (A) with compressed air so that the indexing plate (K) becomes unlocked and turns.
- ▶ Then mount the shock absorber (G) as described in chapter 5.4.3.
- ▶ To restart, first pressurize the compressed air connection A (A) with compressed air. The indexing plate (K) will become unlocked and turn, then pressurize the compressed air connection B (B). The indexing plate (K) will lock and the rack move to starting position.
- ▶ If the indexing plate (K) does not move after the conversion, turn the indexing plate (K) by hand until it locks in place.

5.4.1.2 Oscillating mode

	NOTICE
	For conversion to oscillating mode, you need the "Oscillating mode" conversion kit (see chapter 9.3.1.1).

To convert to oscillating mode, proceed as follows:

- ▶ Pressurize the compressed air connection A (A) with compressed air. The rotary indexing unit unlocks and turns.

	WARNING
	Disconnect the rotary indexing unit from the compressed air supply and lock against reconnection! ***Otherwise light to serious injuries can result.*** *Make sure there are no residual energies present.*

- ▶ Interrupt the compressed air supply.
- ▶ Dismount the stop plate (F) by removing the screws (W). (The shock absorber (G) should not be adjusted).
- ▶ Unscrew the regulator (M).

- ▶ Remove the set screw in the stop plate together with the ball (U). Mount the ball (U) with the set screw in the threaded hole in which the regulator (M) was previously.
- ▶ Close the regulator hole at the stop plate (F) with the additional bolt (N).
  (Do not forget the O-ring).
- ▶ Dismount the end plate (E) by unscrewing the screws (W).
- ▶ In the case of the RSE-3, then remove the damping disc from the rack.
- ▶ Remove the set screw (T) and ball (U) from the end plate (E) and mount the ball (U) with the set screw (T) in the threaded hole in the housing (O).
- ▶ Then screw both stop plates (F) to the housing sides with the screws (W). Make sure that the O-rings (V) are in the matching recess.
- ▶ Then mount the additional shock absorber (G) in the new stop plate (F) as described in chapter 5.4.3.
- ▶ Connect the rotary indexing unit as described in chapter 5.3.4.1 (oscillating mode).

NOTICE

An additional 4/2 or 5/2 directional-control valve (not included in the delivery) is needed for actuation of the connections (for piston movement) at the stop plates (F). The compressed air connection A (A) serves solely to unlock and the compressed air connection B (B) to lock.

	NOTICE
	The opened M5 threads in the stop plate (F) and end plate (E) are the compressed air connections for the rotational movement of the indexing plate (K).

5.4.1.3 Change partitions (only possible with RSE-4)

	NOTICE
	For conversion of the partitions, you need the "Partition" conversion kit (see chapter 9.3.1).

To change the partitions, proceed as follows:

▶ Pressurize the compressed air connection A (A) with compressed air. The rotary indexing unit unlocks.

	WARNING
	Disconnect the rotary indexing unit from the compressed air supply and lock against reconnection! ***Otherwise light to serious injuries can result.***

▶ Interrupt the compressed air supply.

▶ Unscrew the screw (W) at the end plate (E) and dismount it.

▶ Turn the indexing plate (K) to the left or right until the distance bolt becomes visible.

▶ Pull the distance bolt out of the rack bore.

▶ Press the distance bolt configured for your partitioning into the rack bore until the snap ring locks into place (no distance bolt is mounted for two-part partitioning).

▶ Mount the end plate (E) with the screws (W). Make sure that the O-ring (V) is located in the matching recess.

▶ Then remove the burnished cylinder head screws from the indexing plate (K) according to the partitioning you want and replace them with the galvanized cylinder head screws.

NOTICE

The number of galvanized cylinder head screws must correspond to the respective partitions (6 galvanized screws must be used for 3-part partitioning). The screws must be placed symmetrically.

- ▶ To restart, first pressurize the compressed air connection A (A) with compressed air. The indexing plate (K) will become unlocked and turn, then pressurize the compressed air connection B (B). The indexing plate (K) will lock and the rack move to starting position.
- ▶ If the indexing plate (K) does not move after the conversion, turn the indexing plate (K) by hand until it locks in place.

5.4.2 Mounting of proximity switches (accessories)

WARNING

Disconnect the rotary indexing unit from the compressed air supply and lock against reconnection.

Otherwise light to serious injuries can result.

Avoid these dangerous situations!

NOTICE

The standard device does not come with proximity switches. However, to query end positions, it is necessary to retrofit proximity switches. The proximity switches can be obtained separately as accessories.

NOTICE

The rotary indexing units with proximity switches should not be used in areas with static discharges, high-frequency oscillations or strong magnetic fields. Otherwise it can happen that the proximity switches for recognition of the end positions deliver wrong signals.

- ▶ Loosen the seal plugs (D) at the stop plate (F) and at the end plate (E) and screw the proximity switches into the resultant openings.
- ▶ Connect the proximity switches with the cables.

▶ Set the proximity switches so that the LED of the switch lights up when the respective end position is reached. Make sure that the switch signal does not set in too soon because otherwise the indexing plate (K) will not reach end position and lock.

Technical data

Type	NSS-SE-4
Switching distance	1.5 mm
Circuit type	PNP
Switching characteristic	NO
Supply voltage	10-30 V DC
Current consumption	<10 mA
Switching current	Max. 200 mA
Switching frequency	Max. 5 kHz
LED	Yes
Protected against polarity reversal	Yes
Short-circuit proof	Yes
Protection	IP 67

5.4.3 Repair / Replacement of the hydraulic shock absorber

WARNING

Work may only be carried out by specially trained personnel because the device is pressurized.

Otherwise light to serious injuries can result.

Avoid these dangerous situations!

▶ To mount the shock absorber (G), pressurize the compressed air connection A (A) with compressed air until the rack is in end position. (For oscillating mode, the rack must be at the side at which the shock absorber is to be mounted.)

▶ To dismount the shock absorber (G), loosen the hexagonal nut (R) and unscrew it.

▶ Screw in the shock absorber (G) until its housing rests on the rack.

▶ Then screw the shock absorber (G) out again by half a revolution and lock it with the hexagonal nut (R). Make sure that the seal ring (S) is positioned under the nut.

See chapter 5.3.5.2 for information on fine adjustment of the shock absorber (G).

Technical data

Type	STD-12-M (RSE-3)	STD-14-W (RSE-4)
Fastening	M12 x 1	M14 x 1
Stroke	10 mm	12 mm
Impact speed (min./max.)	0.8-2.2 m/s	0.4-5.0 m/s
Absorption	18 Nm	30 Nm
Damping work	Max. 33,000 Nm/h	Max. 50,000 Nm/h
Material	Steel	
Weight	0.035 kg	0.065 kg

6 Maintenance/Servicing

WARNING

Disconnect the rotary indexing unit from the compressed air supply and lock against reconnection!

Otherwise light to serious injuries can result.

Make sure there are no residual energies present.

NOTICE

If you have opted for use with an oil/air mixture, the device should then later not be operated otherwise because the lubricating film could fail.

Shock absorbers

The hydraulic shock absorbers are wearing parts. They should therefore be inspected at regular intervals (about every 2,000,000 strokes). Defective shock absorbers can cause consequential damage. Our STD14 shock absorbers are reparable and can be sent in to us for repair.

Servicing

After a modification, all moving parts and their guides should be smeared with our special grease.

The seals and the grease inside the rotary indexing unit can age depending on use; we therefore recommend that you send the device in to us for servicing every 3 years, after 20,000,000 cycles or should you notice a fault in the rotational movement.

Only clean the rotary indexing unit with soft cloths and agents that do not damage the material.

Contact with aggressive media and grinding dust should be avoided.

6.1 Warranty and guarantee conditions

The statutory warranty period of the manufacturer / distributor is 24 months from the date of delivery.
For spare parts, we guarantee delivery according to chapter (see also DIN EN 82079-1).

We grant a warranty of 24 months (from the date of delivery ex works) on the proviso that the device is treated correctly in 1-shift operation and the application and environmental conditions are complied with. This includes replacement or repair of defective parts of Friedemann Wagner GmbH.

Wearing parts (e.g. shock absorbers) are not covered by the warranty.

During the warranty period repairs may only be carried out or authorized by Friedemann Wagner GmbH.

7 Troubleshooting

Fault	Cause	Correction
Irregular rotational movement	Regulator is turned in too far	Set regulator correctly, see chapter 5.3.5.1.
	Air ducts are blocked	Clean air ducts with compressed air
No movement of the indexing plate Indexing plate does not lock in position	Rotary indexing unit connected incorrectly	Connect compressed air connections correctly, see chapter 5.3.3.
	Rotary indexing unit controlled incorrectly	Check program and change
	Incorrect switching signal or signal sets in too soon	Set proximity switch correctly, see chapter 5.4.2.
	Faulty switching	Pressurize compressed air connection B (B) with compressed air and turn indexing plate (K) until it locks in place
	Regulator is turned in too far	Set regulator correctly, see chapter 5.3.5.1.
Proximity switch emits incorrect signals No switching signal	Proximity switch is set incorrectly	Set proximity switch correctly, see chapter 5.4.2.
	Proximity switch is defective	Replace proximity switch, see chapter 5.4.2.
End-position stop too hard	Shock absorber (G) is set incorrectly	Set shock absorber (G) correctly, see chapter 5.3.5.2.
	Shock absorber (G) is defective	Replace shock absorber (G), see chapter 5.4.3.
End position is not reached No switching signal	Shock absorber turned in too far (rack lying on shock absorber)	Mount shock absorber (G) correctly, see chapter 5.4.3.
Only in case of 3 partitions! Plate locks in wrong position (offset by 60°)	Due to design reasons, the rotary indexing unit can switch incorrectly under certain circumstances	-Pressurize compressed air connection A (A) with compressed air -Vent again -Turn plate back by about 20-30° -Pressurize compressed air connection B (B) with compressed air -Turn plate back further until it locks into place

Table 1 Troubleshooting

You can obtain further help from:

Friedemann Wagner GmbH, D-78559 Gosheim / Germany
Telephone: +49 (0) 7426 / 94900-0
Fax: +49 (0) 7426 / 94900-9
Email: info@wagnerautomation.de

8 Dismantling / Disposal

Dismantling

Dismantling work may only be carried out by skilled personnel. Make sure the shutdown procedure is followed before beginning dismantling work.
Further, the following must be followed where applicable / available:

- Release the energy in the pressure accumulator.
- Release all tensioned springs.

Disposal

The device is primarily made of steel and to a certain extent also of aluminum (except for the electrical equipment) and is to be disposed of in accordance with local environmental protection regulations applicable **at the time** of disposal.
Dispose of according to properties, existing laws and regulations as, for example:

- electric and electronic scrap (circuit boards), PC system, keyboard, mouse, monitor (according to WEEE regulations);
- batteries, fluorescent lamps/energy-saving lamps (collection points);
- plastics (housing), rubber;
- metal, steel, copper, aluminum (separated by sorts).

All parts touched by media must be decontaminated before disposal. Hazardous substances are to be removed from the device.
For proper disposal of hazardous substances, observe the material safety data sheets (MSDS) and current applicable disposal regulations.

Oils, solvents, cleaning agents and contaminated cleaning materials (brushes, cloths, etc.) must be disposed of according to local regulations, the applicable disposal codes and the information in the manufacturer's material safety data sheets.

9 Spare part lists and accessories

9.1 Spare part list RSE-3

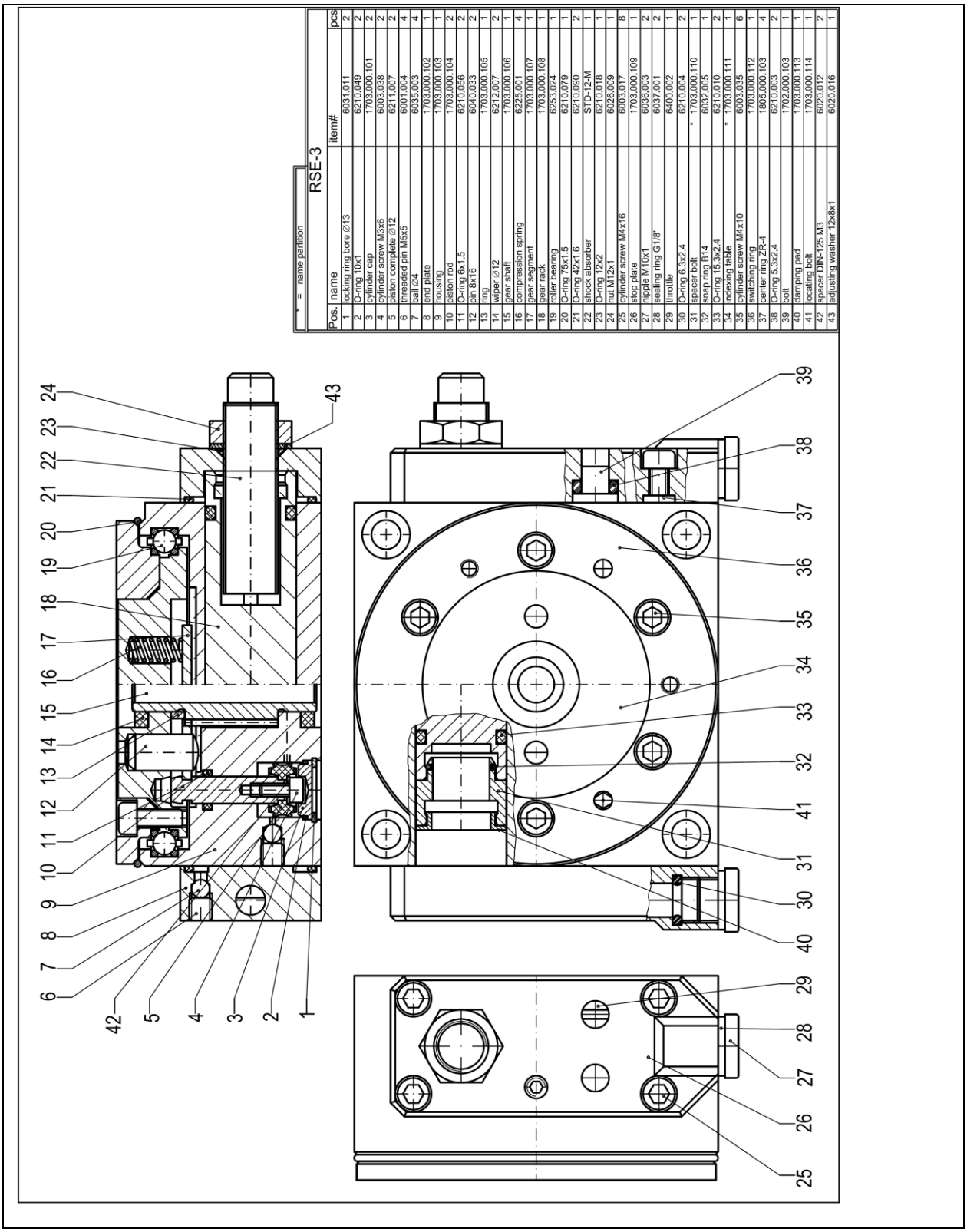
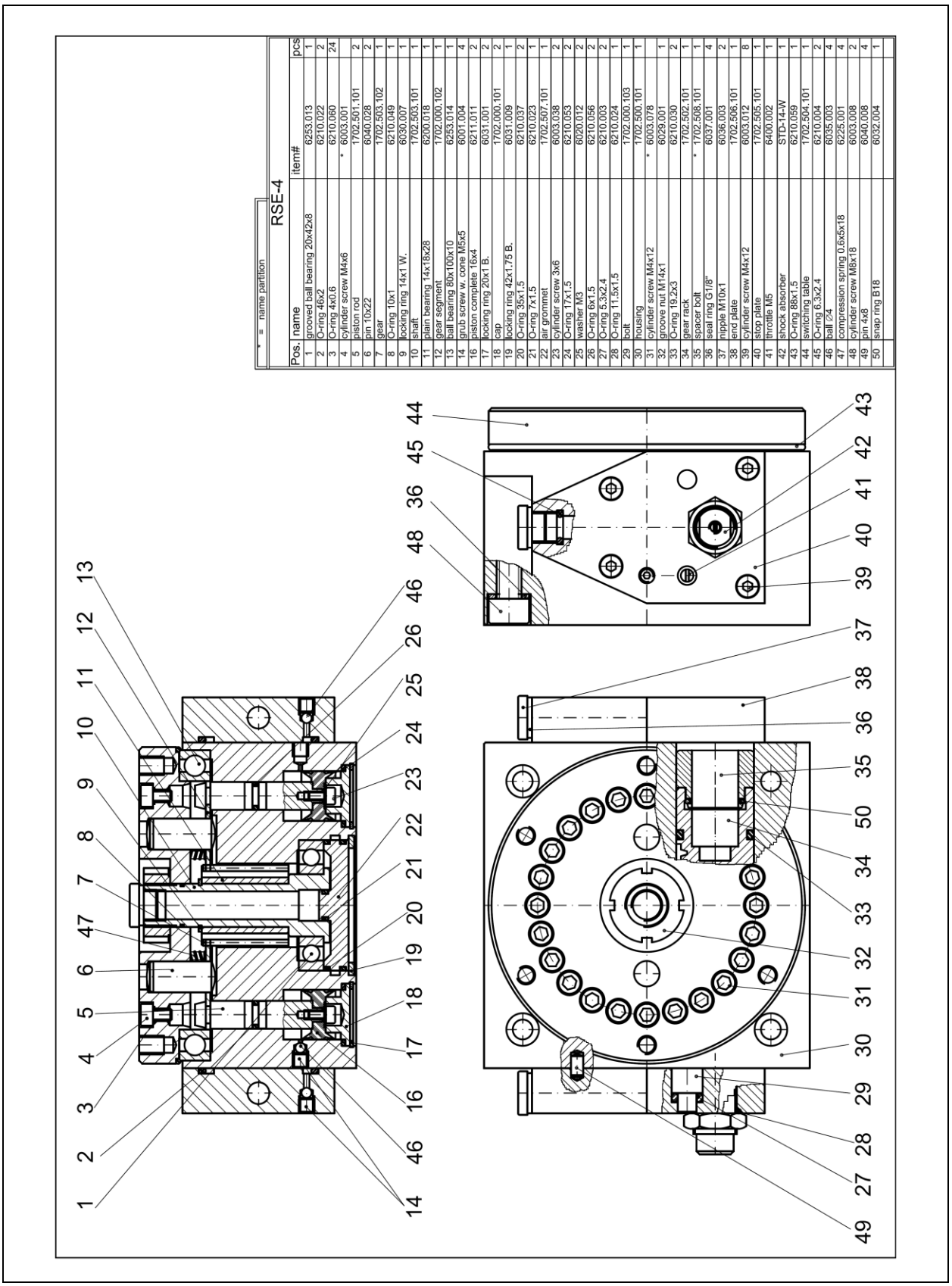


Fig. 9-1 Spare part list RSE-3

9.2 Spare part list RSE-4



RSE-4

* = name partiton	Pos.	name	item#	pcs
	1	grooved ball bearing 20x42x8	6253.013	1
	2	O-ring 46x2	6210.022	2
	3	O-ring 4x0.6	6210.060	24
	4	cylinder screw M4x6	* 6003.001	
	5	piston rod	1702.501.101	2
	6	pin 10x22	6040.028	2
	7	gear	1702.503.102	1
	8	O-ring 10x1	6210.049	1
	9	locking ring 14x1 W.	6030.007	1
	10	shaft	1702.503.101	1
	11	plain bearing 14x18x28	6200.018	1
	12	gear segment	1702.000.102	1
	13	ball bearing 80x100x10	6253.014	1
	14	grub screw w. cone M5x5	6001.004	4
	16	piston complete 16x4	6211.011	2
	17	locking ring 20x1 B.	6031.001	2
	18	cap	1702.000.101	2
	19	locking ring 42x1.75 B.	6031.009	1
	20	O-ring 35x1.5	6210.037	2
	21	O-ring 7x1.5	6210.023	1
	22	air grommet	1702.507.101	1
	23	cylinder screw 3x6	6003.038	2
	24	O-ring 17x1.5	6210.053	2
	25	washer M3	6020.012	2
	26	O-ring 6x1.5	6210.056	2
	27	O-ring 5.3x2.4	6210.003	2
	28	O-ring 11.5x1.5	6210.024	1
	29	bolt	1702.000.103	1
	30	housing	1702.500.101	1
	31	cylinder screw M4x12	* 6003.078	
	32	groove nut M14x1	6029.001	1
	33	O-ring 19.2x3	6210.030	2
	34	gear rack	1702.502.101	1
	35	spacer bolt	* 1702.508.101	1
	36	seal ring G1/8"	6037.001	4
	37	nipple M10x1	6036.003	2
	38	end plate	1702.506.101	1
	39	cylinder screw M4x12	6003.012	8
	40	stop plate	1702.505.101	1
	41	throttle M5	6400.002	1
	42	shock absorber	STD-14-W	1
	43	O-ring 88x1.5	6210.059	1
	44	switching table	1702.504.101	1
	45	O-ring 6.3x2.4	6210.004	2
	46	ball Ø4	6035.003	4
	47	compression spring 0.6x5x18	6225.001	4
	48	cylinder screw M8x18	6003.008	2
	49	pin 4x8	6040.008	4
	50	snap ring B18	6032.004	1

Fig. 9-2 Spare part list RSE-4

9.3 Accessories

The following accessories are available from us for the rotary indexing unit.

Designation	Type	Suitable for RSE-
Partition conversion kit	UT	4
Oscillating mode conversion kit	UP	3/4
Wearing part set	VT	3/4
Shock absorbers	STD	3/4
Proximity switches	NS	3/4
Cables for proximity switches	SK	3/4
Centering rings	ZR	3/4
Indexing plate	ABT	4

9.3.1 Conversion kit for other partitioning (only RSE-4)

The conversion kit UT can be used to change the partitioning of the RSE-4 rotary indexing unit. Please see the spare part list for identification of the named parts. The conversion kit contains the following parts:

Number	Designation
1	Distance bolt (for the partitioning)
22	Galvanized cylinder head screws
24	Burnished cylinder head screws

NOTICE

See chapter 5.4.1.3 for instructions on changing the partitions.

9.3.1.1 Conversion kit for oscillating mode

The conversion kit UP can be used to change the rotary indexing unit for operation in oscillating mode. Please see the spare part list for identification of the named parts. The conversion kit contains the following parts:

Number	Designation
1	Bolt **(N)**
1	Hydraulic shock absorber **(G) (R+S)**
1	Stop plate complete **(F)**

NOTICE

See chapter 5.4.1.2 for instructions on converting to oscillating mode.