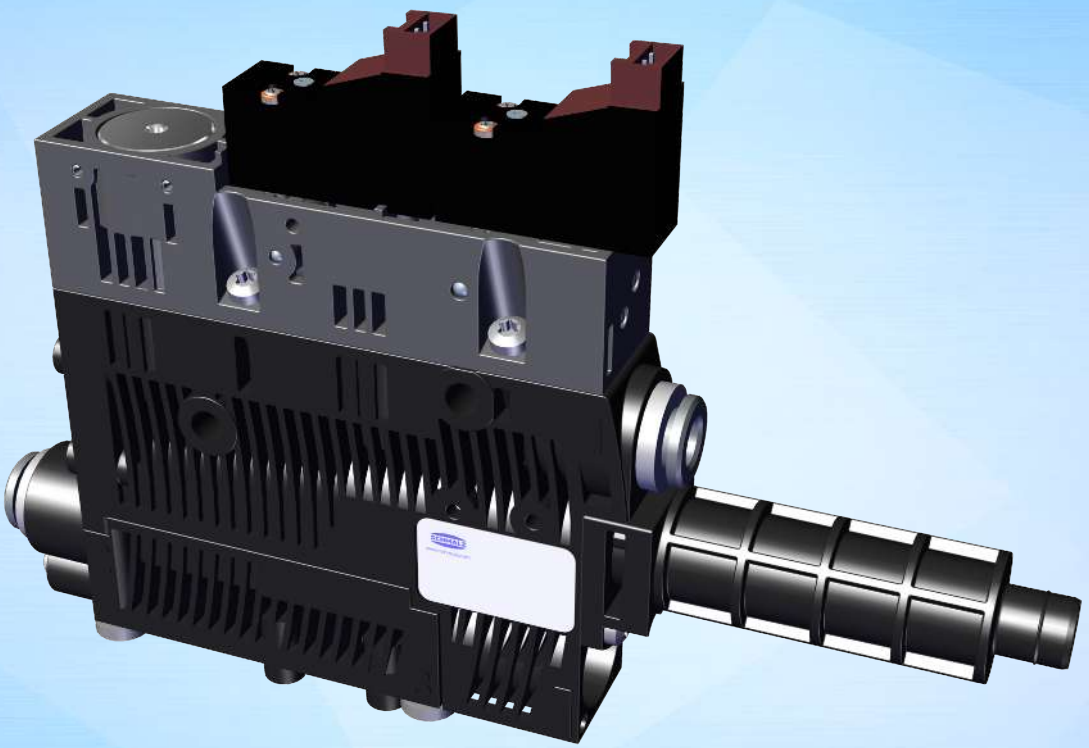

Operating instructions

SCPSb-UHV-HD Compact Ejector

WWW.SCHMALZ.COM

EN-US · 30.30.01.02662 · 02 · 04/24
Translation of the original operating instructions

Note

The Operating instructions were originally written in German. Store in a safe place for future reference. Subject to technical changes without notice. No responsibility is taken for printing or other types of errors.

Published by

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www.schmalz.com/salesnetwork

Contents

1 Important Information

1.1 Note on Using this Document

J. Schmalz GmbH is generally referred to as Schmalz in this document.

The document contains important notes and information about the different operating phases of the product:

- Transport, storage, start of operations and decommissioning
- Safe operation, required maintenance, rectification of any faults

The document describes the product at the time of delivery by Schmalz and is aimed at:

- Installers who are trained in handling the product and can operate and install it
- Technically trained service personnel performing the maintenance work
- Technically trained persons who work on electrical equipment

1.2 The technical documentation is part of the product

1. For problem-free and safe operation, follow the instructions in the documents.
2. Keep the technical documentation in close proximity to the product. The documentation must be accessible to personnel at all times.
3. Pass on the technical documentation to subsequent users.

⇨ Failure to follow the instructions in these Operating instructions may result in injuries!

⇨ Schmalz is not liable for damage or malfunctions that result from failure to heed these instructions.

If you still have questions after reading the technical documentation, contact Schmalz Service at:

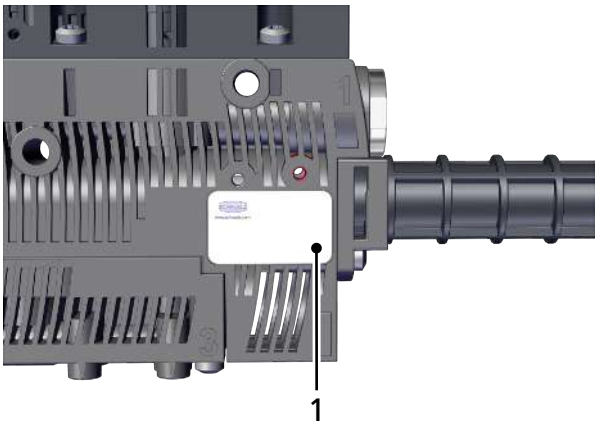
www.schmalz.com/services

1.3 Type Plate

The type plates (1) and (2) are permanently attached to the product and must always be clearly legible.

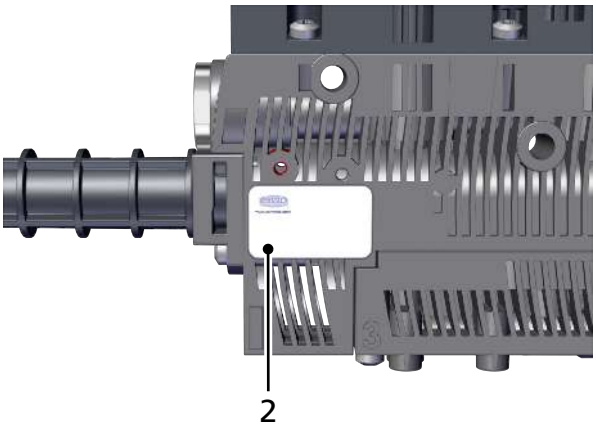
Type plate (1) contains the following information:

- EAC label
- Pneumatic symbol
- Part sales designation/type
- Part number
- Permitted pressure range



Type plate (2) contains the following information:

- CE label
- EAC label
- QR code
- Customer part number
- Coded date of manufacture
- Serial number



1.4 Symbols

This symbol indicates useful and important information.

✓ This symbol represents a prerequisite that must be met before an action is performed.

▸ This symbol represents an action to be performed.

⇨ This symbol represents the result of an action.

Actions that consist of more than one step are numbered:

1. First action to be performed.
2. Second action to be performed.

2 Fundamental Safety Instructions

2.1 Intended Use

The Ejector is designed to generate a vacuum for gripping and transporting objects when used in conjunction with suction cups.

The ejector is operated using discrete control signals.

Neutral gases are approved as evacuation media. Neutral gases include air, nitrogen and inert gases (e.g. argon, xenon and neon).

The product is built in accordance with the latest standards of technology and is delivered in a safe operating condition; however, hazards may arise during use.

The product is intended for industrial use.

Intended use includes observing the technical data and the installation and operating instructions in this manual.

2.2 Non-Intended Use

Schmalz accepts no liability for damages caused by non-intended usage of the ejector.

In particular, the following are considered non-intended use:

- Use in potentially explosive atmospheres
- Use in medical applications
- Evacuation of objects that are in danger of imploding
- Filling pressurized containers, driving cylinders, valves or other pressure-operated functional elements

2.3 Personnel Qualifications

Unqualified personnel cannot recognize dangers and are therefore exposed to higher risks!

1. Task only qualified personnel to perform the tasks described in these Operating instructions.
2. The product must be operated only by persons who have undergone appropriate training.

These Operating instructions are intended for fitters who are trained in handling the product and who can operate and install it.

2.4 Warnings in This Document

Warnings warn against hazards that may occur when handling the product. The signal word indicates the level of danger.

Signal word	Meaning
⚠ WARNING	Indicates a medium-risk hazard that could result in death or serious injury if not avoided.
⚠ CAUTION	Indicates a low-risk hazard that could result in minor or moderate injury if not avoided.
NOTE	Indicates a danger that leads to property damage.

2.5 Residual Risks

The ejector emits noise due to its use of compressed air.

⚠ WARNING

Noise pollution due to the escape of compressed air

Hearing damage!

- Wear ear protectors.
- The ejector must only be operated with a silencer.

⚠ WARNING

Extraction of hazardous media, liquids or bulk material

Personal injury or damage to property!

- Do not extract harmful media such as dust, oil mists, vapors, aerosols etc.
- Do not extract aggressive gases or media such as acids, acid fumes, bases, biocides, disinfectants or detergents.
- Do not extract liquids or bulk materials, e.g. granulates.

⚠ WARNING

Uncontrolled movements of system components or falling objects caused by incorrect activation and switching of the device while persons are in the plant (safety door opened and actuator circuit switched off)

Serious injury

- Ensure that the components are enabled via the actuator voltage by installing a potential separation between the sensor and actuator voltage.
- Wear the required personal protective equipment (PPE) when working in the danger zone.

⚠ CAUTION

Depending on the purity of the ambient air, the exhaust air can contain particles, which escape from the exhaust air outlet at high speed.

Eye injuries!

- Do not look into the exhaust air flow.
- Wear eye protection.

2.6 Modifications to the Ejector

Schmalz assumes no liability for consequences of modifications over which it has no control:

1. The ejector must be operated only in its original condition as delivered.
2. Use only original spare parts from Schmalz.
3. The ejector must be operated only in perfect condition.

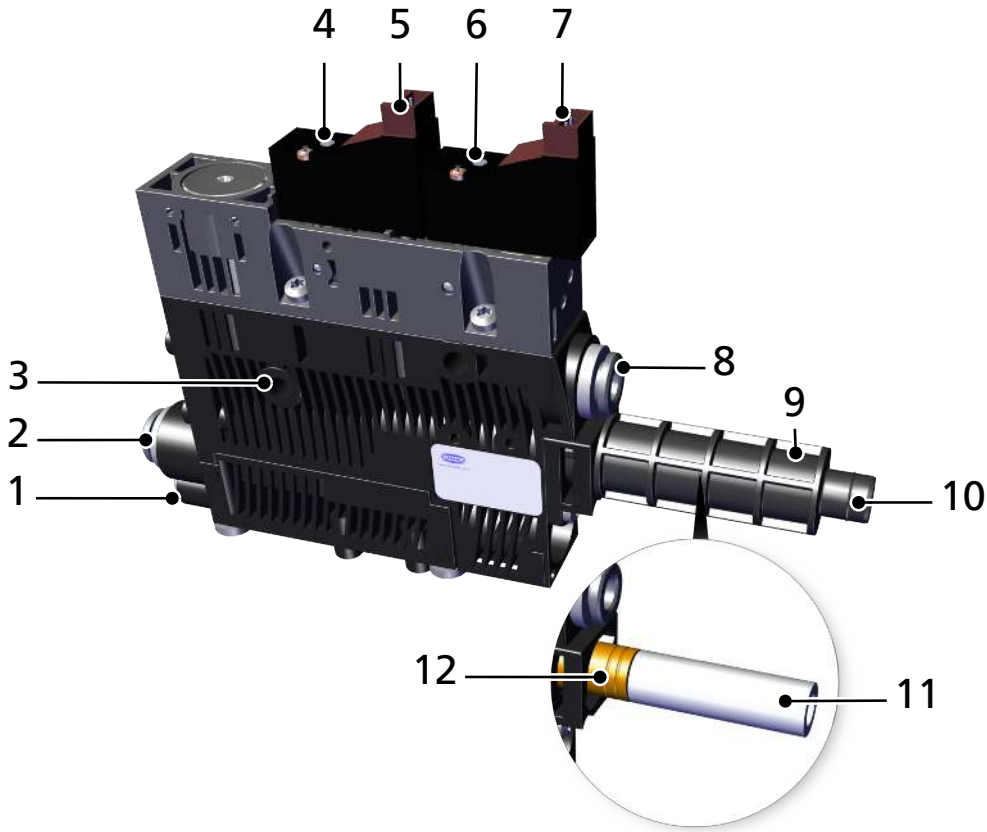
3 Product Description

3.1 Ejector Designation

The breakdown of the item designation (e.g. SCPSb-UHV-HD 16 S02 NO) is as follows:

Property	Variants
Type of ejector	SCPSb-UHV-HD (Ultra High Vacuum-Heavy Duty)
Nozzle size	0.7 mm; 1.1 mm; 1.6 mm
Connection	S02 (plug-in screw unions for pneumatic hose: compressed air 6/4, vacuum 8/6) S04 (plug-in screw unions for pneumatic hose: compressed air and vacuum 6/4)
Valve control	NO (normally open), sucks when no voltage is applied NC (normally closed), does not suck when no voltage is applied

3.2 Ejector Structure



1	Blow off valve screw	2	Vacuum connection, marking 2 [V]
3	Mounting hole (2x)	4	Button for operating the “suction” EMV manually
5	“Suction” EMV	6	Button for operating the “blow off” EMV manually
7	“Blow off” EMV	8	1/8" compressed air connector (marking 1 [P])
9	Silencer cover with twist-and-lock closure	10	Exhaust outlet
11	Silencer insert	12	Nozzle

4 Technical Data

4.1 General Parameters

Parameter	Symbol	Limit value			Unit	Comment
		min.	typ.	max.		
Working temperature	T_{amb}	0	---	50	° C	---
Storage temperature	T_{Sto}	-10	---	60	° C	---
Humidity	H_{rel}	10	---	90	% r.h.	Free from condensation
Degree of protection	---	---	---	IP40	---	---
Operating pressure (flow pressure)	P	2	4.2	6	bar	---
Operating medium	Air or neutral gas, 5 µm filtered, with or without oil, class 3-3-3 compressed air quality in acc. with ISO 8573-1					

4.2 Electrical Parameters

Supply voltage	DC 24 V ± 10% (PELV[1)])		
Polarity reversal protection	Yes		
Current consumption (at 24 V)	—	Typical current consumption	Max. current consumption
	SCPSb – xx – NC	50 mA	70 mA
	SCPSb – xx – NO	75 mA	115 mA

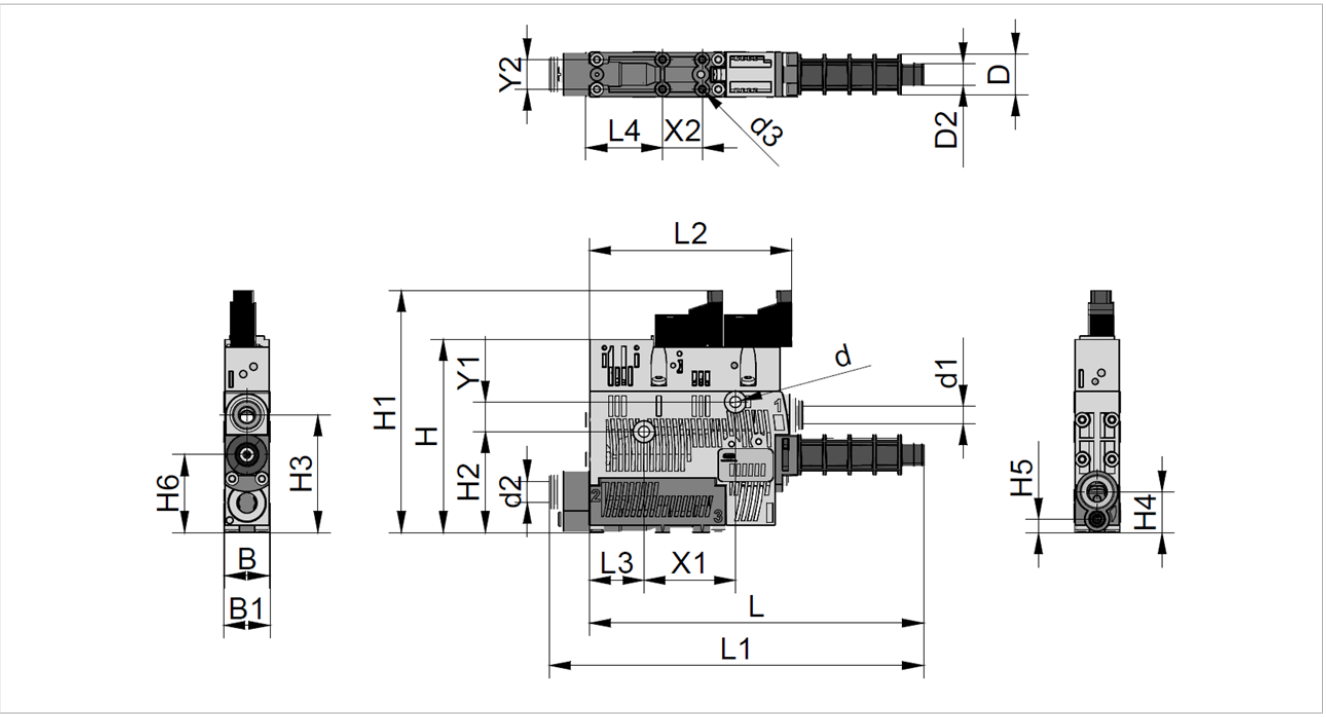
[1)] The power supply must correspond to the regulations in accordance with EN60204 (protected extra-low voltage).

4.3 Performance Data

Type	SCPS UHV HD 07	SCPS UHV HD 11	SCPS UHV HD 16
Nozzle size [mm]	0.7	1.1	1.6
Max. vacuum[1] [%]	91		
Suction rate[1] [l/min]	13	27.8	53.2
Max. blow off capacity [1] [l/min]	120		
Air consumption [1] (suction) (l/min]	17.2	37.5	105.6
Sound level[1], unobstructed suction [dB(A)]	62	68	75
Sound level[1], suction [dB(A)]	64	75	77
Weight [kg]	0.21		

[1)] at 4.5 bar

4.4 Dimensions

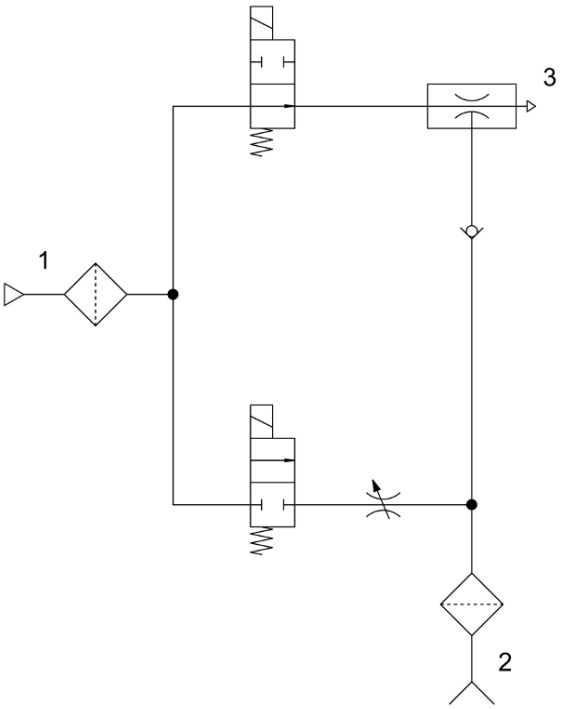
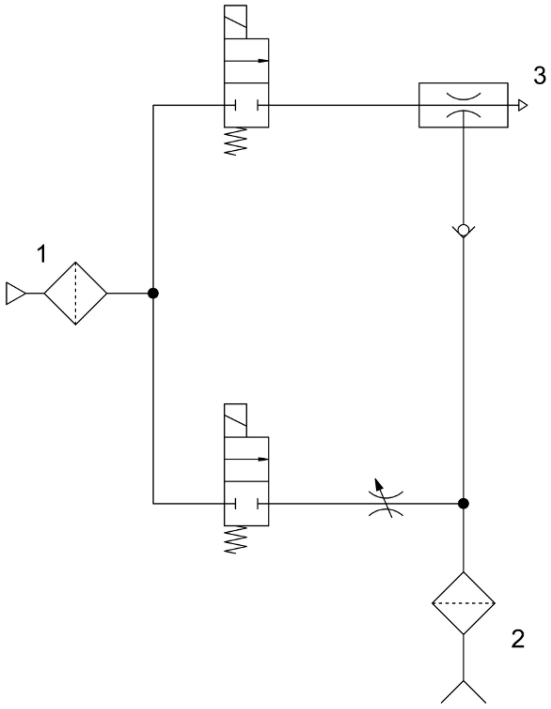


B	B1	L	L1	L2	L3	L4	H	H1	H2	H3	H4
18	18.6	135	151	81.6	22	31	78	98.8	40.8	47.5	16.5

H5	H6	d	d1	d2	d3	X1	Y1	X2	Y2	D	D2
5.5	31.5	4.4	6	6 / 8	2.6	36.9	12	16	12	16.5	9

4.5 Pneumatic Circuit Plans

Key:	
NC	Normally closed
NO	Normally open
1	Compressed air connection
2	Vacuum connection
3	Exhaust outlet

...NO...	...NC...
	

5 General Description of Functions

5.1 Applying Suction to the Workpiece/Part

The ejector is designed for vacuum handling of airtight parts in combination with suction systems. The vacuum is generated in a nozzle according to the Venturi principle, using suction generated by the flow of accelerated compressed air. Compressed air is channeled into the ejector and flows through the nozzle. A vacuum is generated immediately downstream of the motive nozzle; this causes the air to be sucked through the vacuum connection. The air and compressed air that have been removed by the suction exit together via the silencer or exhaust air channel.

The “Suction” pilot valve is controlled directly.

- In the NO (normally open) variant, the venturi nozzle is deactivated when the suction signal is received.
- In the NC (normally closed) variant, the venturi nozzle is activated when the suction signal is received.

When objects with airtight surfaces are picked up, the integrated non-return valve prevents the vacuum from dropping.

5.2 Depositing the Workpiece/Part (Blowing Off)

In blow off mode, the vacuum circuit of the ejector is supplied with compressed air. This ensures that the vacuum drops quickly, allowing the workpiece/part to be deposited quickly.

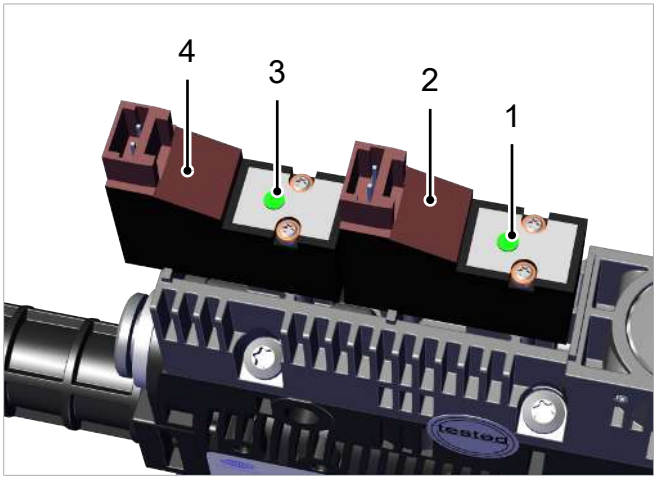
The “Blow-off” solenoid valve is controlled directly. The ejector switches to blow off mode for as long as the signal is present.

5.3 Restricted Mode

The “Suction” (2) and “Blow-off” (4) solenoid valves are each fitted with a manual actuation device.

This can be used to actuate the valve manually without a power supply.

✓ The compressed air supply is connected.



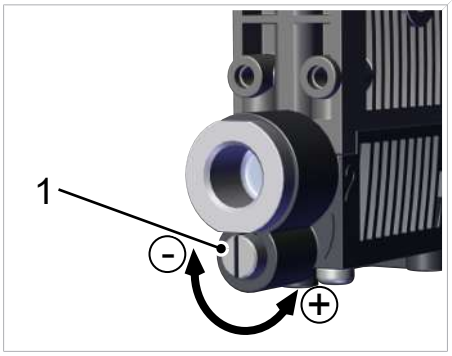
▸ To activate the valve in question, trigger manual actuation at (1) or (3) using an implement such as a ballpoint pen.

5.4 Changing the Blow-Off Flow Rate on the Ejector

Do not overwind past the stop on the valve screw. A minimum flow rate of approx. 10% is always necessary for technical reasons. The blow off volume flow can be set between 10% and 100%.

The figure shows the position of the valve screw (1) for adjusting the blow off flow rate. The valve screw is equipped with a stop on both sides.

- Rotate the valve screw (1) clockwise to reduce the flow rate.
- Rotate the valve screw (1) counterclockwise to increase the flow rate.



6 Checking the Delivery

The scope of delivery can be found in the order confirmation. The weights and dimensions are listed in the delivery notes.

1. Compare the entire delivery with the supplied delivery notes to make sure nothing is missing.
2. Damage caused by defective packaging or occurring in transit must be reported immediately to the carrier and J. Schmalz GmbH.

7 Installation

7.1 Installation Instructions

⚠ CAUTION

Improper installation or maintenance

Injury to persons or damage to property

- During installation and maintenance, make sure that the product is disconnected and depressurized and that it cannot be switched on again without authorization.

To ensure safe installation, the following instructions must be observed:

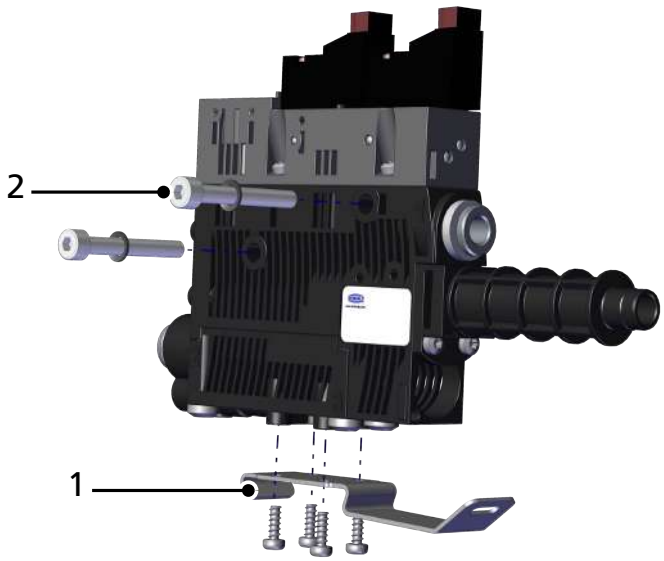
- Use only the connectors, mounting holes and attachment materials that have been provided.
- Mounting and removal must be performed only when the device is unpressurized and disconnected from the mains.
- Pneumatic and electrical line connections must be securely connected and attached to the product.
- Note the connection symbols and designations on the device.

7.2 Mounting

The ejector may be installed in any position.

There are two 4.4 mm mounting holes for mounting the ejector.

A DIN rail mount for DIN rail TS35 can be used as a mounting option.



1	DIN rail mount for TS35 DIN rail, incl. plastic tapping screws Max. tightening torque 0.5 Nm	2	2x M4 fastening screws with washers

When mounting with fastening screws, use M4 washers (2 Nm max. tightening torque).

For the start of operations, the ejector must be connected to the control via the connection plug with a connection cable. The compressed air required to generate the vacuum is connected via the compressed air connection. The compressed air supply must be supplied by the higher-level machine.

The vacuum circuit is connected to the vacuum connection.
The installation process is described and explained in detail below.

7.3 Pneumatic Connection

⚠ CAUTION

Compressed air or vacuum in direct contact with the eye

Severe eye injury

- Wear eye protection
- Do not look into compressed air openings
- Do not look into the silencer air stream
- Do not look into vacuum openings such as suction cups, suction lines and hoses.

⚠ CAUTION

Noise pollution due to incorrect installation of the pressure and vacuum connections

Hearing damage!

- Correct installation.
- Wear ear protectors.

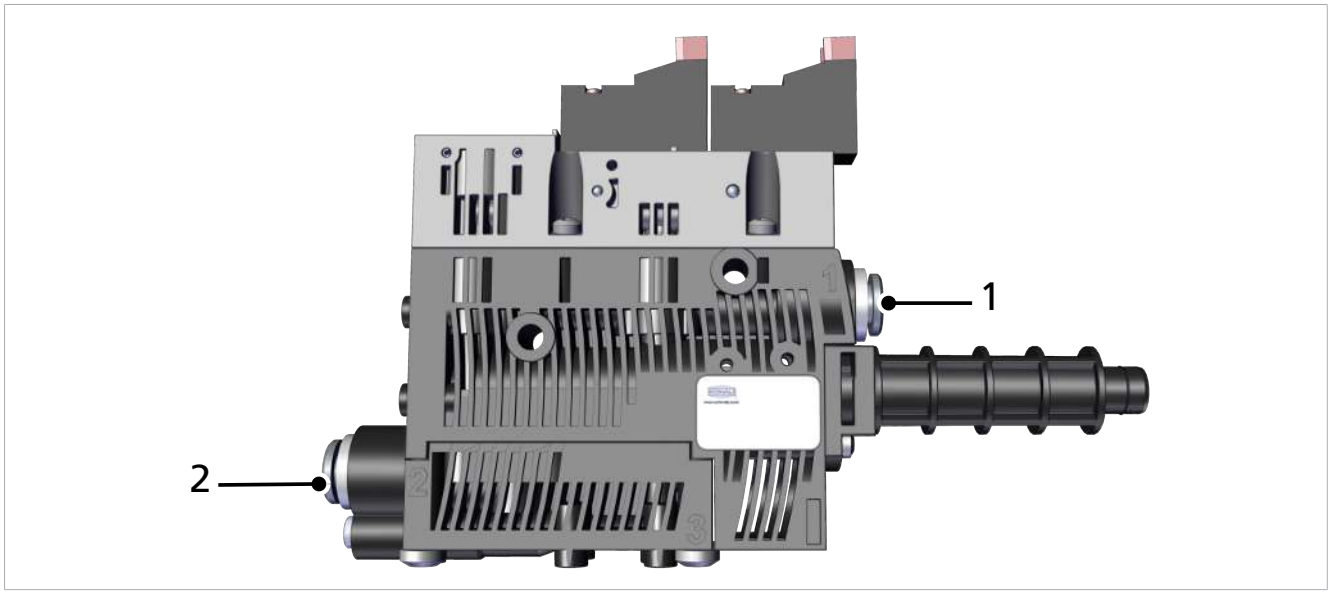
NOTE

Operating pressure above the recommended maximum pressure

Product damage

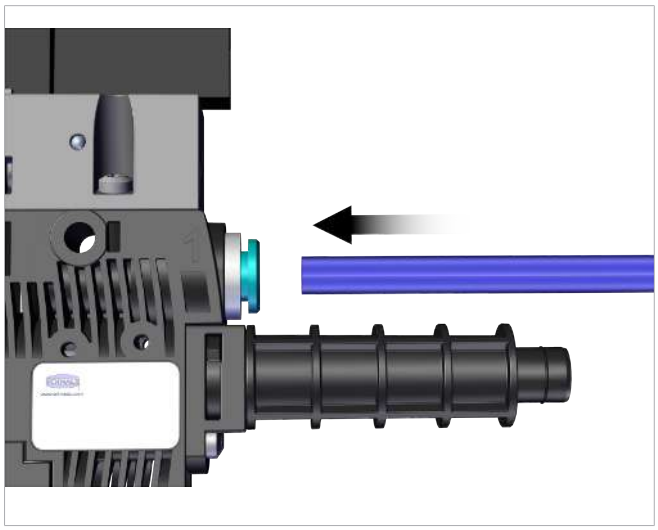
- Only use the Ejector within the nominal pressure range.

7.3.1 Connecting the Compressed Air and Vacuum



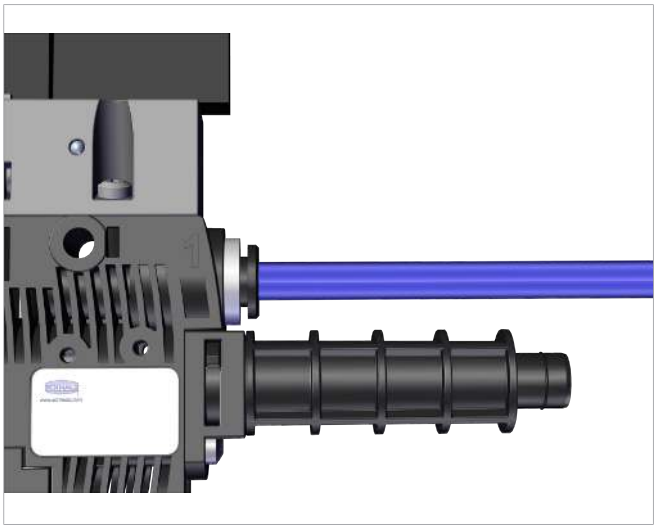
1	Compressed air connection	2	Vacuum connection

✓ The corresponding pneumatic hose is handy.



- The compressed air connection is marked with the number 1 on the ejector (Shown here in the image as an example.).
  The vacuum connection is marked with the number 2 on the ejector.
  Press the corresponding pneumatic hoses (compressed air supply and suction cup connection) as far as possible into the plug-in screw unions.

⇨ The pneumatic hoses fit tightly in the plug-in screw unions.



7.3.2 Instructions for the Pneumatic Connection

Use only screw unions with cylindrical G-threads for the compressed air and vacuum connection!

To ensure problem-free operation and a long service life for the product, only use adequately maintained compressed air and take the following requirements into account:

- Use of air or neutral gas in accordance with EN 983, filtered 5 µm, oiled or unoiled.
- Dirt particles or foreign bodies in the product connections, hoses or pipelines can lead to partial or complete malfunction.

1. Shorten the hoses and pipelines as much as possible.
2. Keep hose lines free of bends and crimps.
3. Only use a hose or pipe with the recommended internal diameter to connect the product; otherwise, use the next largest diameter.
   - On the compressed air side, ensure that the internal diameter has the dimensions required for the product to achieve its performance data.
   - On the vacuum side, ensure that the internal diameters have the necessary dimensions for preventing high flow resistance. If the selected internal diameter is too small, the flow restrictor and the evacuation times increase and the blow off times are extended.

The following table shows the recommended line cross-sections (internal diameter):

Performance class	**Line cross-section (internal diameter) in mm**[1)]	
	Pressure side	**Vacuum side**
SCPS(b,i) UHV HD 07	4	4
SCPS(b,i) UHV HD 11	4	4
SCPS(b,i) UHV HD 16	4	6

[1)] Based on a maximum hose length of 2 m.

▸ For longer hose lengths, the cross-sections must also be larger.

7.4 Electrical Connection

NOTE

Incorrect power supply

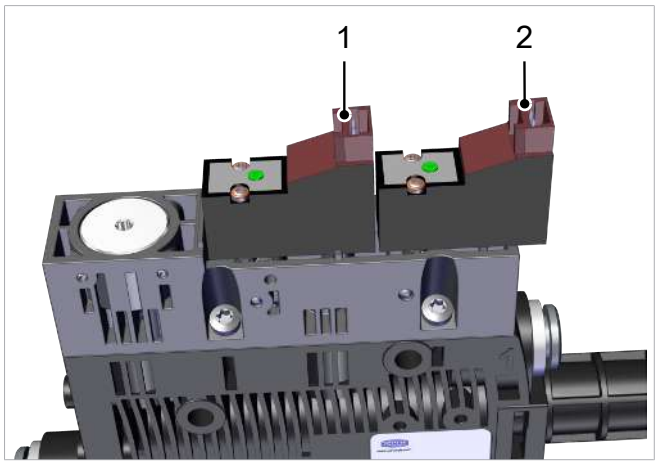
Destruction of the integrated electronics

- Operate the product using a power supply unit with protected extra-low voltage (PELV).
- The system must incorporate safe electrical cut-off of the power supply in compliance with EN60204.
- Do not connect or disconnect the connector under tension and/or when voltage is applied.

The electrical connection is established directly via the connection plugs of the valves. The connection of the valves is independent of the polarity.

✓ Provide connection cable (for example, 2x item no.: 21.04.06.00086)

- Insert the connection cables into the electrical connections (1 and 2) until they click into place.



8 Operation

8.1 Safety Instructions for Operation

⚠ WARNING

Suspended load

Risk of serious injury

- Do not walk, stand or work under suspended loads.

⚠ WARNING

Change of output signals when product is switched on or plug is connected

Risk of injury to persons and damage to property due to uncontrolled movements of the higher-level machine/system!

- The electrical connection must be performed only by specialists who can evaluate the effects of signal changes on the overall system.

⚠ WARNING

Extraction of hazardous media, liquids or bulk material

Personal injury or damage to property!

- Do not extract harmful media such as dust, oil mists, vapors, aerosols etc.
- Do not extract aggressive gases or media such as acids, acid fumes, bases, biocides, disinfectants or detergents.
- Do not extract liquids or bulk materials, e.g. granulates.

⚠ CAUTION

Depending on the purity of the ambient air, the exhaust air can contain particles, which escape from the exhaust air outlet at high speed.

Eye injuries!

- Do not look into the exhaust air flow.
- Wear eye protection.

⚠ CAUTION

Vacuum close to the eye

Severe eye injury!

- Wear eye protection.
- Do not look into vacuum openings such as suction lines and hoses.

⚠ CAUTION

When the system is started in automatic operation, components move without advanced warning.

Risk of injury!

- Ensure that the danger zone of the machine or system is free of persons during automatic operation.

8.2 General Preparations

Always carry out the following tasks before activating the system:

1. Before each start of operations, check that the safety features are in perfect condition.
2. Check the ejector for visible damage and deal with any problems immediately (or notify your supervisor).
3. Ensure that only authorized personnel are present in the working area of the machine or system and that no other personnel are put in danger by switching on the machine.

There must be no people in the system danger area while it is in operation.

9 Help with Malfunctions

Fault	Possible cause	Solution
Power supply disrupted	Electrical connection	▸ Make sure device is properly connected to power
Ejector does not respond	No power supply	▸ Check electrical connection
	No compressed air supply	▸ Check the compressed air supply
Vacuum level is not reached or vacuum is built up too slowly	Silencer is dirty	▸ Replace the silencer
	Leakage in hose line	▸ Check hose connections
	Leakage at suction cup	▸ Check suction cup
	Operating pressure too low	▸ Increase operating pressure. Note the maximum limits!
	Internal diameter of hose line too small	▸ Observe recommendations for hose diameter
Load cannot be held	Suction cup too small	▸ Select a larger suction cup
	Vacuum level too low	▸ Increase operating pressure (observe max. permissible limits)

10 Maintenance

10.1 Safety

Maintenance work may only be carried out by qualified personnel.

⚠ WARNING

Risk of injury due to incorrect maintenance or troubleshooting

- Check the proper functioning of the product, especially the safety features, after every maintenance or troubleshooting operation.

NOTE

Incorrect maintenance work

Damage to the ejector!

- Always switch off supply voltage before carrying out any maintenance work.
- Secure before switching back on.
- The ejector must only be operated with a silencer.

- Before carrying out work on the system, establish the atmospheric pressure in the compressed air circuit of the product.

10.2 Cleaning the Product

1. For cleaning, do **not** use aggressive cleaning agents such as industrial alcohol, white spirit or thinners.
   Only use cleaning agents with pH 7–12.
2. Remove dirt on the exterior of the device with a soft cloth and soap suds at a maximum temperature of 60° C. Make sure that the silencer is not soaked in soapy water.
3. Ensure that no moisture can reach the electrical connection or other electrical components.

10.3 Replacing the Press-In Screens

The vacuum and compressed air connections of the ejectors contain press-in screens. Dust, chippings and other solid materials may be deposited in the screens over time.

- If you notice that the performance of the ejectors has declined, replace the screens.

10.4 Replacing the Silencer Insert

⚠ WARNING

Activating the compressed air causes the nozzle fitting to be forced out of the hole.

Serious personal injury

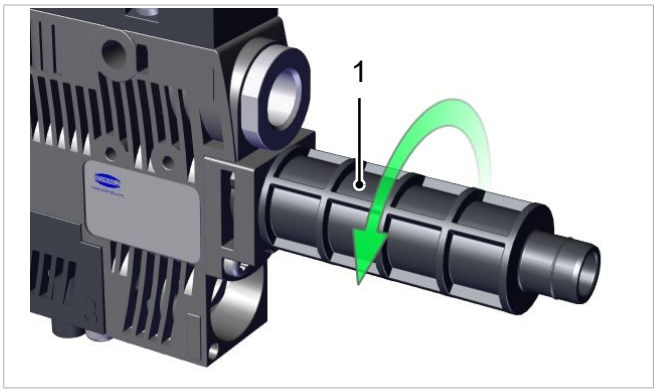
- Before activating the compressed air supply, make sure that the nozzle fitting is fixed in place by the silencer cover.
- Wear eye protection.

Heavy infiltration of dust, oil, and so on, may contaminate the silencer insert and reduce the suction capacity. Cleaning the silencer insert is not recommended due to the capillary effect of the porous material.

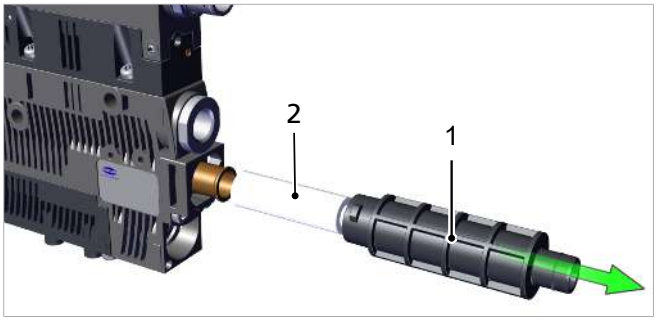
If the suction capacity decreases, replace the silencer insert:

✓ Deactivate the device and disconnect it from the supply lines.

1. Unlock the silencer cover (1) by turning the bayonet fastener 90° (counter-clockwise).

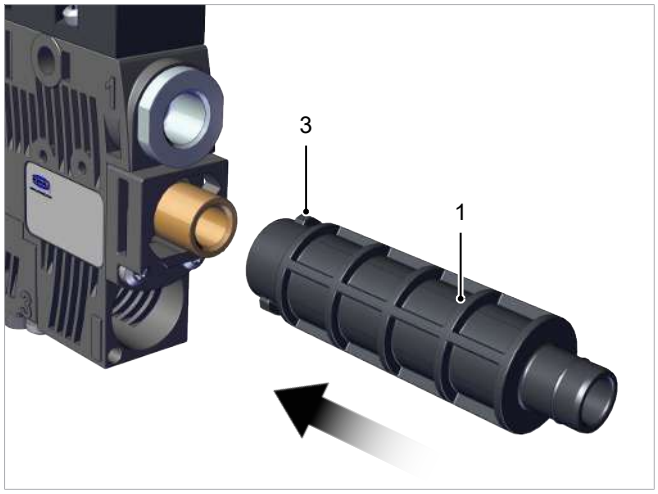


2. Remove the silencer cover (1).

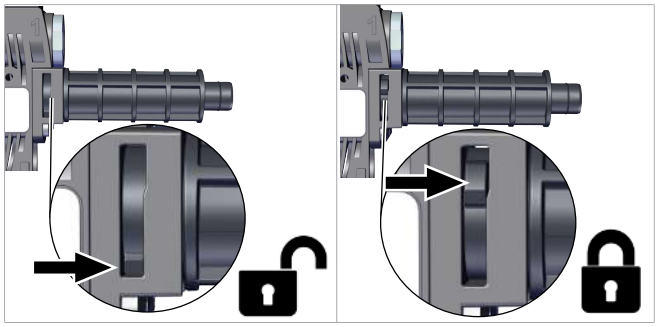


3. Replace the silencer insert (2).

4. Insert the silencer cover (1) into the bayonet recess on the housing with the cams (3) in the correct position and push it up to the housing until it stops.



5. Lock the silencer cover (1) by turning the bayonet fastener 90° clockwise (stop).



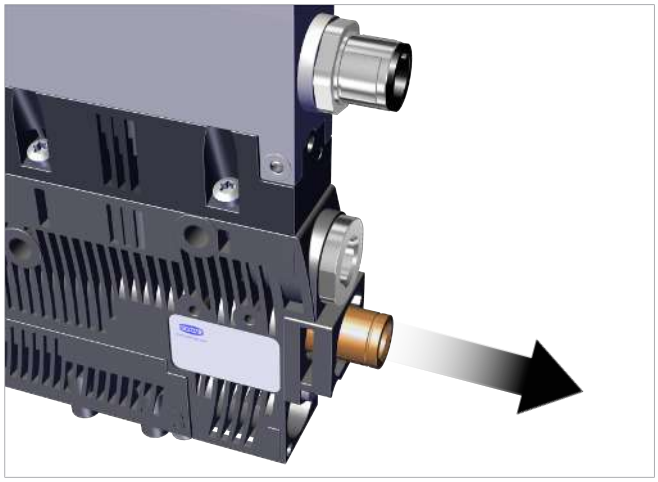
6. Check that it is fitted securely by pulling on the silencer cover (1).
7. Connect the product to the supply lines.
8. Before starting the handling process, check to ensure the device is installed and functioning correctly.

10.5 Cleaning or Changing the Nozzle

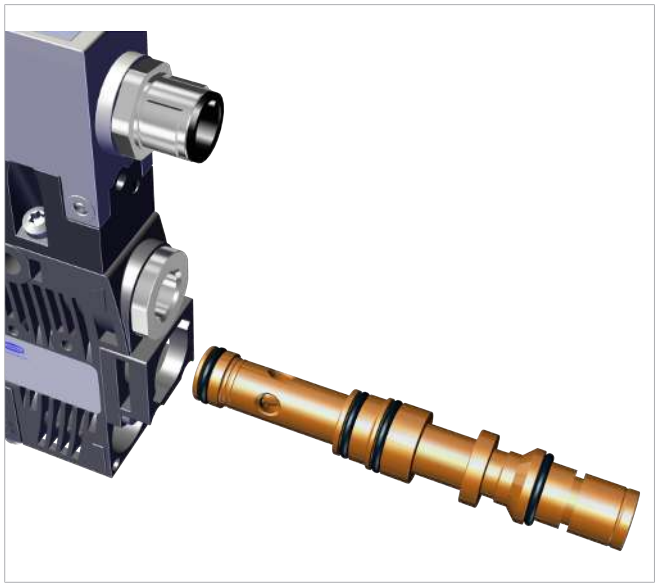
The easy access to the silencer insert and nozzle provided by the silencer cover with bayonet fastener ensures that the nozzle is easy to clean and replace.

- ✓ The ejector is deactivated and disconnected from the supply lines.
- ✓ The silencer cover and silencer insert are removed ((> See ch. 10.4 Replacing the Silencer Insert, p. 26)).

1. Pull the nozzle out of the holder.

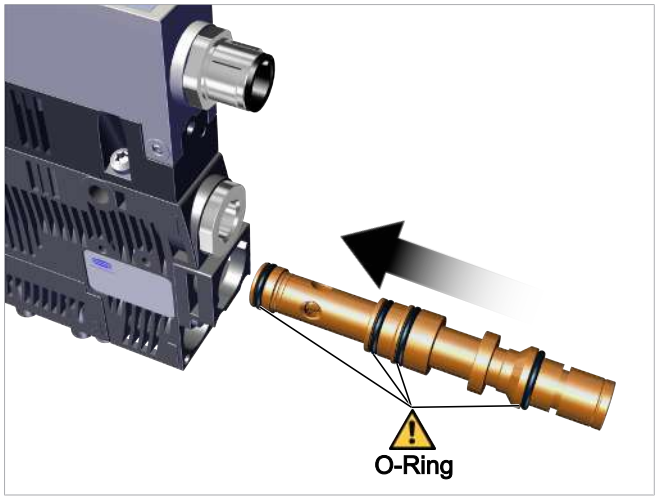


   ⇨ The nozzle, including the O-rings, is disassembled.



2. Check the nozzle and clean or replace it if necessary.

3. Mount the cleaned or new nozzle in the correct position. Ensure that the O-rings are fitted.



4. Continue the assembly as per (> See ch. 10.4 Replacing the Silencer Insert, p. 26), starting from step 4.

11 Warranty

This system is guaranteed in accordance with our general terms of trade and delivery. The same applies to spare parts, provided that these are original parts supplied by us.

We are not liable for any damage resulting from the use of non-original spare parts or accessories.

The exclusive use of original spare parts is a prerequisite for the proper functioning of the ejector and for the validity of the warranty.

Wearing parts are not covered by the warranty.

Opening the ejector will damage the “tested” labels. This voids the warranty.

12 Spare and Wearing Parts, Accessories

12.1 Spare and Wearing Parts

Maintenance work may only be carried out by qualified personnel.

- **WARNING! Risk of injury due to improper maintenance!** After performing any maintenance or repair work, check that the system is functioning correctly, particularly the safety features.

NOTE

Incorrect maintenance work

Damage to the ejector!

- Always switch off the supply voltage before carrying out maintenance work.
- Secure it so that it cannot be switched back on.
- Ejector must be operated only with a silencer and press-in screens.

The following list contains the primary spare and wearing parts.

Part no.	Designation	Legend
10.02.02.05030	Silencer insert	W
10.02.02.05094	Silencer (round) SD 16.5x51 SCPS for UHV-HD	S
10.02.02.06259	Ejector vacuum kit (assembled); nozzle set (size 07) VACU-SET 07 12.80x76.60 SCPS	S
10.02.02.06279	Ejector vacuum kit (assembled); nozzle set (size 11) VACU-SET 11 12.80x76.60 SCPS	S
10.02.02.05052	Ejector vacuum kit (assembled); nozzle set (size 16) VACU-SET 16 12.80x76.60 SCPS	S
10.02.02.06343	Ejector maintenance kit WART SCPS/SCPSi-O-Ring-SET	S

Legend:

- **W**earing part = **W**
- **S**pare part = **S**

12.2 Accessories

Part no.	Designation	Note
21.04.06.00086	ASK B-MIC10 3000 K-2P	Connection cable
10.02.02.04149	HUT-SN-KL SCPS	DIN rail mount cpl., leaf springs with mounting screws
10.07.01.00241	VFI CN6/4 50	Vacuum filter for SCPS…07/11
10.07.01.00328	VFI 6/4 50	Vacuum filter for SCPS…07/11
10.07.01.00245	VFI CN8/6 50	Vacuum filter for SCPS…16
10.07.01.00119	VFT, 1/4" internal thread, 80	Vacuum filter for SCPS…16

13 Decommissioning and Disposal

13.1 Disposing of the Product

1. Dispose of the product properly after replacement or decommissioning.
2. Observe the country-specific guidelines and legal obligations for waste prevention and disposal.

13.2 Materials Used

Component	Material
Housing	PA6-GF
Inner components	Aluminum alloy, anodized aluminum alloy, brass, galvanized steel, stainless-steel, PU, POM
Silencer insert	Porous PE
Screws	Galvanized steel
Seals	Nitrile rubber (NBR)
Lubrication	Silicone-free

14 Declarations of Conformity

14.1 EC Conformity

EU Declaration of Conformity

The manufacturer Schmalz confirms that the product Ejector described in these Operating instructions fulfills the following applicable EU directives:

2014/30/EU	Electromagnetic Compatibility
2011/65/EU	RoHS Directive

The following harmonized standards were applied:

EN ISO 12100	Safety of machinery — General principles for design — Risk assessment and risk reduction
EN 61000-6-2+AC	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3+A1+AC	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
EN IEC 63000	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The EU Declaration of Conformity valid at the time of product delivery is delivered with product or made available online. The standards and directives cited here reflect the status at the time of publication of the operating and assembly instructions.

14.2 UKCA Conformity

The manufacturer Schmalz confirms that the product described in these operating instructions fulfills the following applicable UK regulations:

2016	Electromagnetic Compatibility Regulations
2012	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations

The following designated standards were applied:

EN ISO 12100	Safety of machinery — General principles for design — Risk assessment and risk reduction
EN 61000-6-2+AC	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3+A1+AC	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
EN IEC 63000	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The Declaration of Conformity (UKCA) valid at the time of product delivery is delivered with the product or made available online. The standards and directives cited here reflect the status at the time of publication of the operating and assembly instructions.

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