Ejector Module SEP ecoPump

Note

The Assembly 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.

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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 Assembly 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 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 module is used to generate vacuum, i.e. to evacuate suction cups for holding payloads or to evacuate other volumes.

The vacuum generated should be monitored in order to detect any issues with vacuum generation.

Neutral gases in accordance with EN 983 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 does not accept any liability for any direct or indirect losses or damages that result from using the product. This applies, in particular, to any use of the product that is not in accordance with the intended purpose and to any use that is not described or mentioned in this documentation.

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

- Use in potentially explosive atmospheres
- Transport and through-suction of potentially explosive materials
- Direct contact with perishable goods/food products
- Use for medical applications

2.3 Personnel Qualifications

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

The operating company must ensure the following points:

- The personnel must be commissioned for the activities described in these operating instructions.
- The operating staff are physically and mentally capable and can be expected to reliably perform the tasks assigned.
- The operating staff have been instructed in the operation of the product and have read and understood the operating instructions.
- Installation, maintenance, and repairs must be carried out only by specialists or by persons who have undergone appropriate training.

Applicable for Germany:

A qualified employee is defined as an employee who has received technical training and has the knowledge and experience – including knowledge of applicable regulations – necessary to enable him or her to recognize possible dangers and implement the appropriate safety measures while performing tasks. Qualified employees must observe the relevant industry-specific rules and regulations.

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

⚠ 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.

⚠ 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

Compressed air or vacuum in direct contact with the eye

Severe eye injury

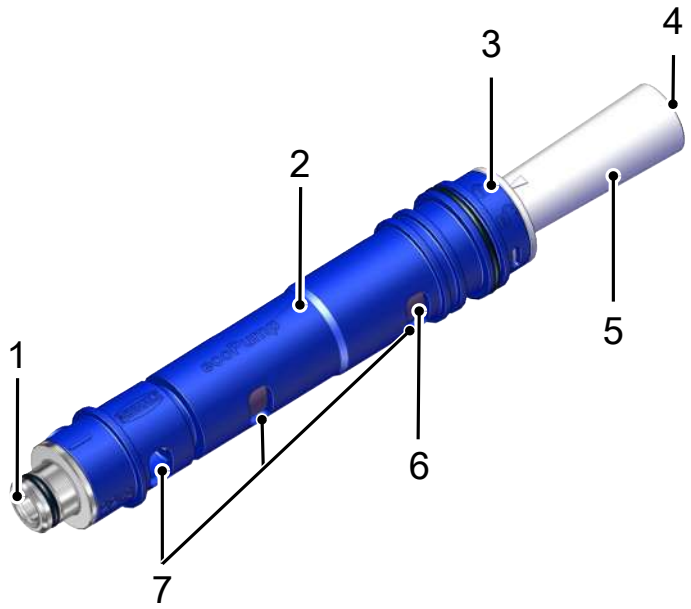
- Wear eye protection
- Do not look into compressed air openings
- Do not look into the silencer air stream
- Do not look into vacuum openings such as suction cups, suction lines and hoses.

2.6 Modifications to the Product

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

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

3 Design of the Ejector Module



1	Compressed air opening	5	Nozzle fitting
2	Main body	6	Non-return flap
3	Assembly indicator	7	Vacuum opening
4	Exhaust air outlet	—	—

Ejector Module Version SEP.... S (with safety valve) must be blown off to deposit the workpiece due to its design.

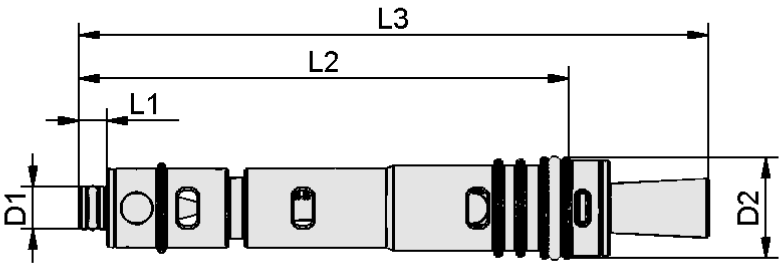
4 Technical Data

4.1 Parameters

Type	Degree of evacuation	Max. suction rate Catalog	Compressed air quality ISO 8573-1: 2010	Mass	Pressure range	Opt. pressure	Operating temperature
SEP HF 2 03 7	55%	15.3 l/min	3-3-3	0.8 g	2 to 6 bar	4.5 bar	0 to 60° C
SEP HV 2 04 7	79%	13.2 l/min	3-3-3	0.8 g			
SEP HF 2 06 13	70%	42.4 l/min	7-4-4	3.6 g			
SEP HF 3 06 13	70%	67.3 l/min	7-4-4	4.6 g			
SEP HV 2 07 13	85%	42.5 l/min	7-4-4	3.6 g			
SEP HV 2 07 13 S	85%	37.5 l/min	7-4-4	3.6 g			
SEP HV 3 07 13	85%	76.8 l/min	7-4-4	4.6 g			
SEP HV 3 07 13 S	85%	63.8 l/min	7-4-4	4.6 g			
SEP HF 2 13 22	61%	175 l/min	7-4-4	15.8 g			
SEP HF 3 13 22	61%	298 l/min	7-4-4	22.8 g			
SEP HV 2 14 13 S	85%	65.8 l/min	7-4-4	3.6 g			
SEP HV 3 14 13 S	85%	113 l/min	7-4-4	4.6 g			
SEP HV 2 16 22	90%	159 l/min	7-4-4	15.8 g			
SEP HV 2 16 22 S	90%	137.3 l/min	7-4-4	15.8 g			
SEP HV 3 16 22	90%	309 l/min	7-4-4	22.8 g			
SEP HV 3 16 22 S	90%	228.2 l/min	7-4-4	22.8 g			

Type	Degree of evacuation	Max. suction rate Catalog	Compressed air quality ISO 8573-1: 2010	Mass	Pressure range	Opt. pressure	Operating temperature
SEP HF 3 18 22	70%	409 l/min	7-4-4	22.8 g			
SEP HV 3 20 22	85%	415 l/min	7-4-4	22.8 g			

4.2 Dimensions



Type	D1	D2	L1	L2	L3
SEP HF 2 03 7	4.4	6.8	3.5	20.1	33
SEP HV 2 04 7	4.4	6.8	3.5	20.1	33
SEP HF 2 06 13	5.4	12.8	5	41.4	55.5
SEP HF 3 06 13	5.4	12.8	5	63.5	81.5
SEP HV 2 07 13	5.4	12.8	5	41.5	55.5
SEP HV 3 07 13	5.4	12.8	5	63.5	81.5
SEP HF 2 13 22	10.8	21.8	8	67.5	92
SEP HF 3 13 22	10.8	21.8	8	103	146
SEP HV 2 14 13	5.4	12.8	5	46.7	55.1
SEP HV 3 14 13	5.4	12.8	5	68.8	81.1
SEP HV 2 16 22	10.8	21.8	8	67.5	92
SEP HV 3 16 22	10.8	21.8	8	103	146
SEP HF 3 18 22	10.8	21.8	8	103	146
SEP HV 3 20 22	10.8	21.8	8	103	146

All specifications are in mm.
The dimensions also apply to all “S”" variants.

4.3 Installation Dimensions

The ecoPump SEP must be inserted into a hole on the machine side to fulfill the function.
The hole dimensions required for the respective ejector module have to be produced as simply as possible based on the sketch below.

Instructions for producing the hole

When producing the installation dimensions, it is imperative that the tolerances and surface roughness shown in the diagram are adhered to.

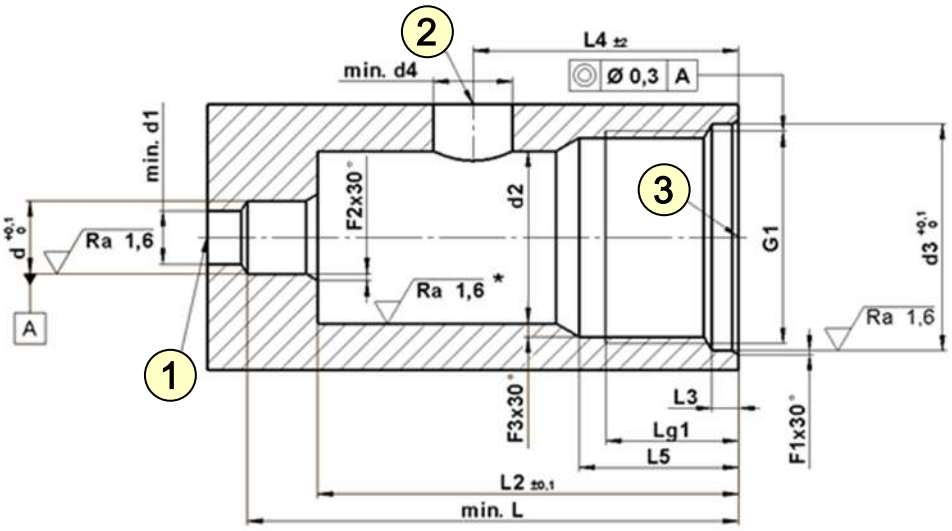
Please note that the

- Hole for the compressed air connection (1)
- Hole for the vacuum connection (2)

must also be installed in the housing.

Key:
(1) Compressed air connection
(2) Vacuum connection
(3) Mounting thread

* Only SEP ... 7



TYPE	d	d1	d2	d3	d4	L	L2
SEP ... 7	4.7	2	$7.2^{+0.1}$	—	4	28	23
SEP ... 13	5.5	4	13	17.1	6	37	31.5
SEP ... 22	11	6	22	28	12	68	58.8

TYPE	L3	L4	L5	F1	F2	F3	Lg1	G1
SEP ... 7	—	15	6	0.3	0.3	0.2	5	M8x0.5
SEP ... 13	2	20	12	0.3	0.5	—	10	M16x1
SEP ... 22	2.5	35	20	0.4	1	—	15.5	M27x1.5

All specifications are in mm.

To simplify the design process for the hole on the machine side, you can download the CAD model of the hole based on the nozzle size using the QR code.

Please note that the models do not relate to the ecoPump itself but to the hole required for it.
The model of the hole is a negative model. The hole model must therefore be deduced from your housing model in order to integrate the hole in your existing housing model.

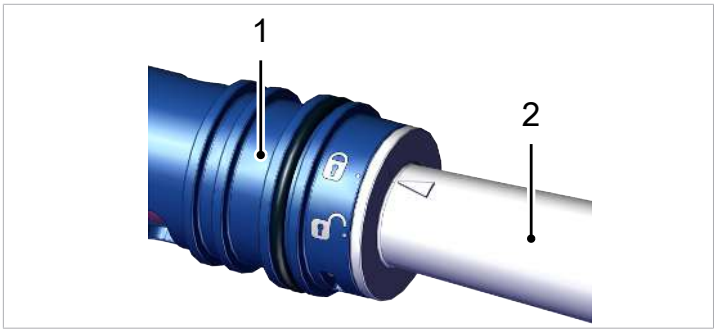
5 Checking the Delivery

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.

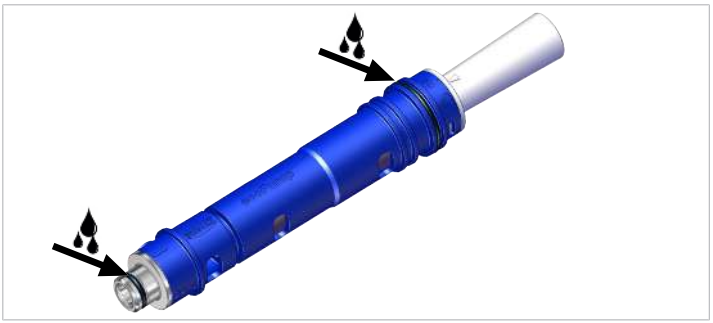
6 Mounting

6.1 Delivered Condition

The nozzle fitting (2) is set to the “locked” position relative to the main body (1).



6.2 Installing the Ejector Module



- Prior to installation in the hole on the machine, grease the O-rings slightly.

6.3 Mounting the Ejector Module

⚠ WARNING

Activating the compressed air causes the ejector module to be forced out of the hole.

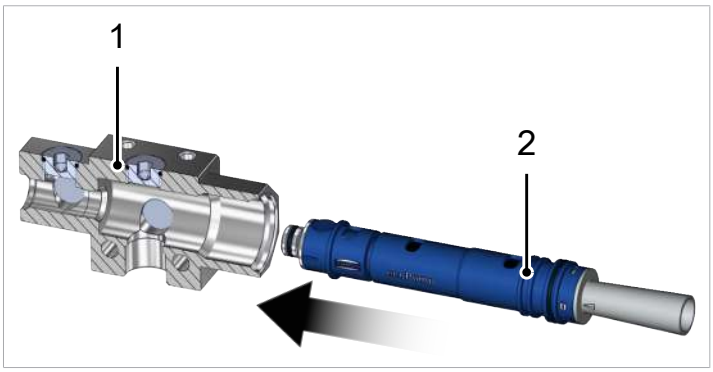
Serious personal injury

- Before activating the compressed air supply, make sure that the ejector module is fixed in place by the holder cap.
- Wear eye protection

The device is mounted in the hole on the machine side using the holder cap SHC or the silencer SHC-SD (accessories). The silencer reduces the sound level by 6 to 12 dB[A].

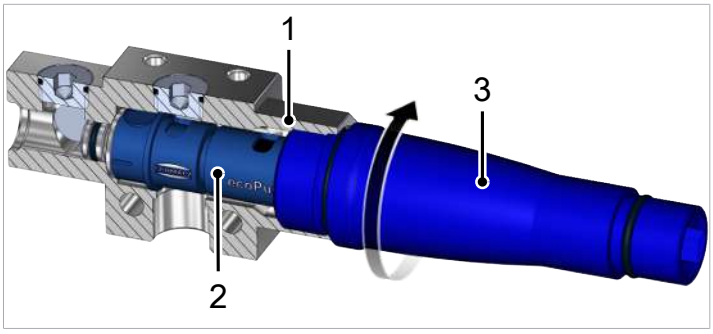
✓ The hole for the respective ejector module in the housing is provided by the customer.

1. Push the ejector module (2) into the hole in the housing (1) until it stops.



⇨ The ejector module is correctly positioned in the hole in the housing.

2. Secure the ejector module (2) in the hole in the housing (1) by (manually) screwing in the holder cap SHC (3) or the silencer SHC-SD.



If neither the holder cap SHC nor the silencer SHC-SD are used, the ejector module must be secured in the hole in another suitable way.

7 Opening and Cleaning the Ejector Module

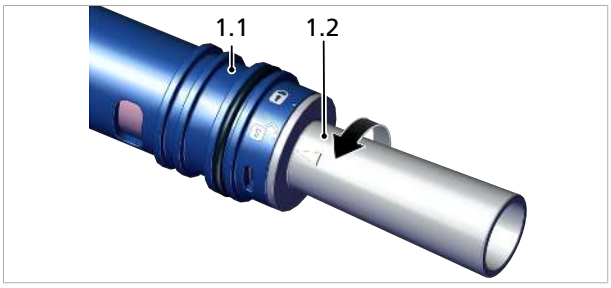
NOTE

Incorrectly cleaning the product and its components

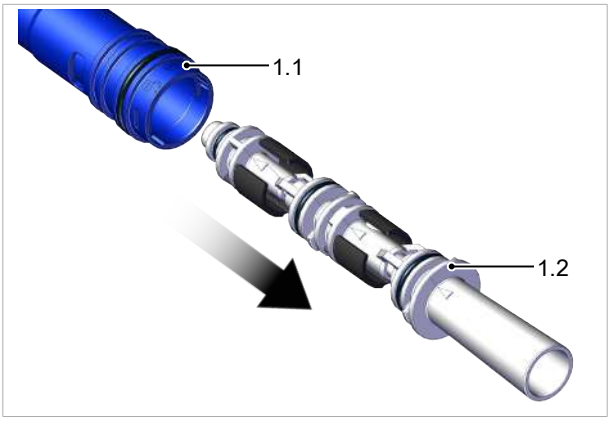
Damage to the product or individual components due to aggressive cleaning agents or excessive temperatures!

- For cleaning, use only cleaning agents that do not corrode or damage the materials used.
- Do not use sharp-edged objects (wire brushes, sandpaper, etc.).
- Do not exceed the specified max. temperature during cleaning.

1. Turn the nozzle fitting (1.2) to the “unlocked” position relative to the main body (1.1)

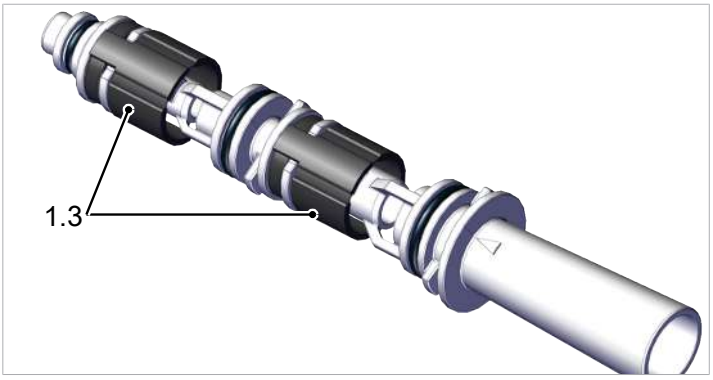


2. Pull the nozzle fitting (1.2) out of the main body (1.1) using only axial forces.

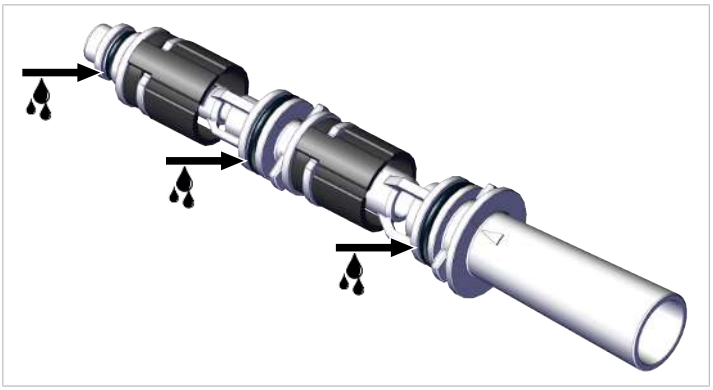


3. Blow off the components with compressed air or clean them under running water.

4. After cleaning, check the non-return valves (1.3) for wear and replace them if necessary.



5. Grease the O-rings slightly before mounting the ejector module.



6. The ejector module is assembled and sealed in the reverse order. Before assembling, ensure that the non-return valve is correctly positioned.

8 Spare and Wearing Parts

Maintenance work may only be carried out by qualified personnel.

Designation	Type	Part no.	Part type
Non-return valve, 6x	ERS SEP-07 6xRUE-KLAP	10.02.01.01448	Spare part
Non-return valve, 6x	ERS SEP-13 6xRUE-KLAP	10.02.01.01449	Spare part
Non-return valve, 6x	ERS SEP-22 6xRUE-KLAP	10.02.01.01450	Spare part

9 Accessories

A variety of accessories are available for each ejector module variant.

You can find information about optional accessories and accessories included in the delivery on our website https://www.schmalz.com.