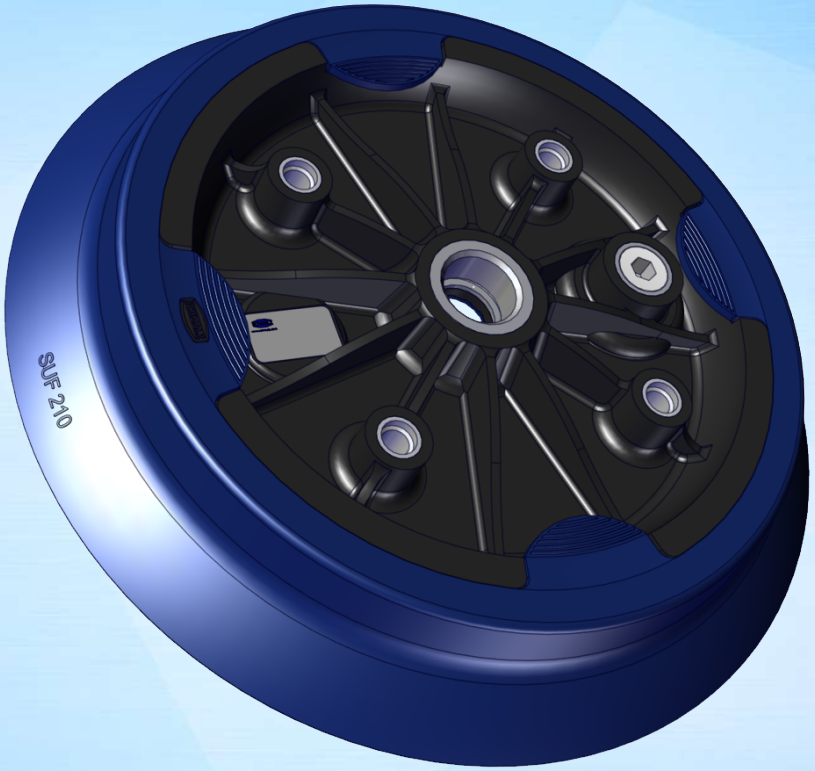


Operating Instructions

Suction Plate SUF

WWW.SCHMALZ.COM

EN-US · 30.30.01.02210 · 02 · 12/22

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

Contact

J. Schmalz GmbH

Johannes-Schmalz-Str. 1

72293 Glatten, Germany

T: +49 (0) 7443 2403-0

schmalz@schmalz.de

www.schmalz.com

Contact information for Schmalz companies and trade partners worldwide can be found at:

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. We recommend downloading and printing the Operating instructions from the following website: www.schmalz.com. The documentation must be accessible to personnel at all times.
3. Keep the technical documentation in close proximity to the product.
4. 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 plate (1) is permanently attached to the Suction plate SUF and must always be clearly legible.

It includes the following information:

- Name
- Part number
- Manufacturing date
- QR code

Please specify all the information above when ordering replacement parts, making warranty claims or for any other inquiries.

1.4 Symbols

This symbol indicates useful and important information.

✓ This symbol represents a prerequisite that must be met prior to an operational step.

▸ 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 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 round vacuum suction plate SUF is designed to handle flat, smooth workpieces, such as sheet metal, plastics, coated wood, granite, or concrete. To generate holding force, the vacuum suction plate is connected to a vacuum supply at the customer's premises.

It is especially suitable for the following applications:

- General use for handling processes in vacuum automation and with manual vacuum lifting devices
- Processes requiring high suction forces or acceleration
- Use in dirty environmental conditions, e.g. oil
- Handling of thin-walled workpieces, e.g. thin metal sheets

The product is intended for industrial and commercial applications.

To conserve compressed air, an optional touch valve is available as an accessory which activates the vacuum just prior to placing the suction plate on the workpiece.

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.

2.3 Warnings in This Document

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

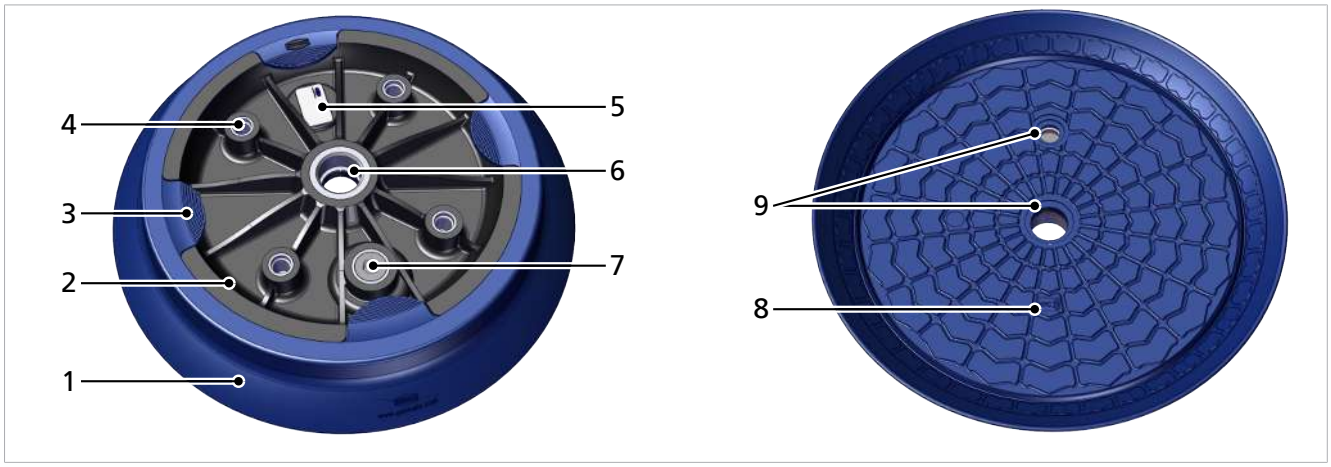
Signal word	Meaning
⚠ CAUTION	Indicates a low-risk hazard that could result in minor or moderate injury if not avoided.
NOTE	Indicates a danger that leads to property damage.

2.4 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 Suction Plate SUF



1	Sealing ring	2	Suction cup connection disc
3	Disassembly tab (4x)	4	M8 mounting thread (4x) (for SUF 210 and 160)
5	Type plate (for SUF 210 and 160)	6	Central vacuum connection and mounting thread
7	Optional: Peripheral vacuum connection, sealing plug or touch valve interface	8	NFC symbol
9	Optional: Screen insert	—	—

4 Interface NFC

NFC (Near Field Communication) refers to a standard for wireless data transfer between different devices over short distances.

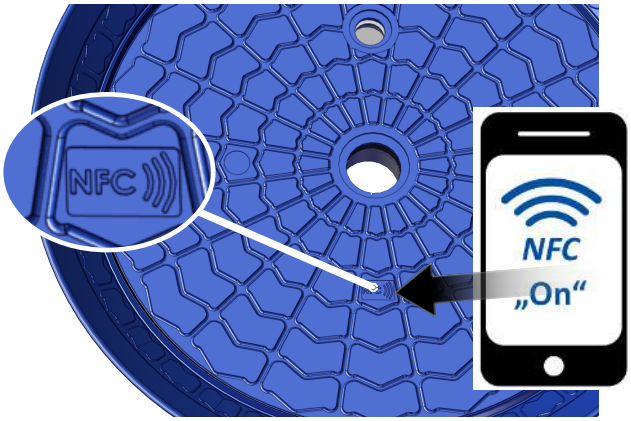
An NFC chip is integrated in the suction cup connection disc, which functions as a passive NFC tag that can be read or written by a read or write device with NFC enabled such as a smartphone or tablet.

There are two options for communicating via NFC:

- Read access only can be obtained via a website viewed in a browser. For this, no additional app is needed. The reading device requires only that NFC and the Internet connection are enabled.
- Another option for communication is the “Schmalz ControlRoom” control and service app. In addition to pure read access, the app allows you to actively write the parameters of the device via NFC.
  The “Schmalz ControlRoom” app is available in the Google Play Store or Apple App Store.

Web link **https://myproduct.schmalz.com/#/**

For the best data connection, place the reading device on the NFC symbol in the middle.



The reading distance is very short for NFC applications. If necessary, find the position of the NFC antenna in the reading device used.

5 Technical Data

5.1 General Parameters

Parameter		Unit	Values
Max. ambient temperature		°C	+50
Max. relative humidity		%	90
Max. workpiece temperature		°C	+70
Operating medium		Use only well-maintained compressed air (air or neutral gas according to EN 983, filtered to 40 µm, oiled or unoiled).	
Mass	SUF 210	g	550
	SUF 160	g	390
	SUF 125	g	200

5.2 Suction Plates Technical Data

Type	Suction force [N]*	Suction force d2 [N]**	Volume [cm^3]	Min. workpiece radius (convex) [mm]	Hose diameter (recommended) d [mm]***
SUF 210	2070	1400	362	800	12
SUF 160	1200	790	176	400	12
SUF 125	730	450	96	250	9

*The suction force data consists of theoretical values at -0.6 bar vacuum on dry, flat and even workpiece surfaces. They are defined without safety factors.

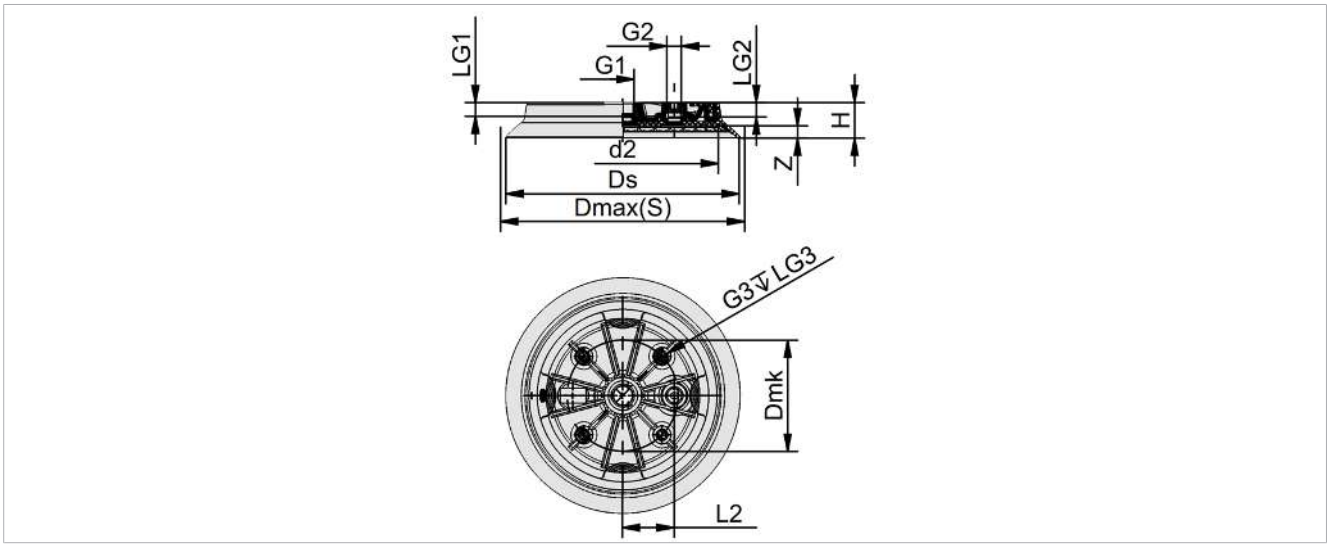
**Suction force is based on sealing edge diameter d2.

***The recommended hose diameter is based on a hose length of approx. 2 m.

Weather conditions can reduce the lateral force.

A protective cover (> See ch. 9 Accessories, Spare Parts and Wearing Parts, p. 18) is recommended to protect the vacuum suction plate from UV radiation. Attach the cover while decommissioned.

5.3 Dimensions



Type	Ds	Dmax(s)	d2	L2	H	Z
SUF 210	210	220	172.9	46.5	32	11
SUF 160	160	170	130	32.5	30	9
SUF 125	125	132	98	22	29	8

Type	G1	LG1	G2	LG2	Dmk	G3	LG3
SUF 210	G1/2" female thread	14	G1/4" female thread	11.8	100	M8, female	11.1
SUF 160	G1/2" female thread	14	G1/4" female thread	11.8	66.5	M8, female	11.1
SUF 125	G1/4" female thread	11.8	G1/8" female thread	9.5	—	—	—

6 Transportation and Storage

6.1 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.

6.2 Storage of Suction Cups and Other Elastomer Products

NOTE

The effects of ozone, light (especially UV), heat, oxygen, humidity as well as mechanical influences can reduce the service life of rubber products.

Damage to the suction plates due to incorrect storage!

- You must store rubber parts such as suction cups and suction plates in a cool place (0° C to +15° C, max. 25° C) that is dark, dry, low in dust and that offers protection from the weather, ozone and drafts. They should also be free of tension (e.g. stacked appropriately to avoid deformation).

6.3 Storage Regulations

For the elastomer parts, observe the following storage regulations in accordance with DIN 7716 and ISO 2230:

- Suction cups must be protected against light and air during storage. Airtight, sealed containers can be used for this purpose. Alternatively, they may be stored in airtight plastic bags in small load carriers or boxes with covers (e.g. a dark intermediate layer).
- The workpiece temperature must be between 0° C and 25° C.
- Suction cups must be packaged and stored free of voltage. This applies to shipping packaging as well.
- Solvents, fuels, lubricants, chemicals, acids, disinfectants, and other volatile substances stored in containers that are not gas-tight may not be stored in the same storage room as suction cups.

7 Installation

7.1 Installation Instructions

⚠ CAUTION

A strong vacuum is produced on the suction cup and suction lines.

Hair, skin, body parts and items of clothing can be sucked in.

- Wear protective glasses and tight-fitting clothing.
- Use a hairnet if necessary.
- Do not look or reach into the suction cup openings.

⚠ CAUTION

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

Hearing damage

- Correct installation.
- Wear ear protectors.

Take note of the following when mounting:

- Use only the provided connections and mounting threads.
- Dirt particles or foreign bodies in the suction plate connections, hoses or pipelines can lead to malfunctions or failure.
- Shorten the hoses and pipelines as much as possible.
- Evacuation time is increased if the selected internal diameter of the hoses or pipelines is too short.
- Hose lines must be laid without bends or crimps.

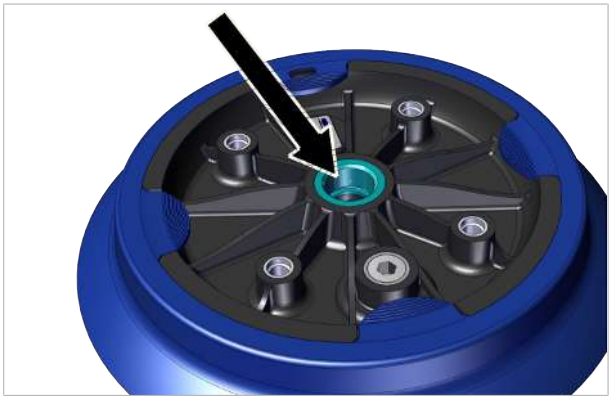
7.2 Mechanical Attachment

The suction plate may be installed in any position.

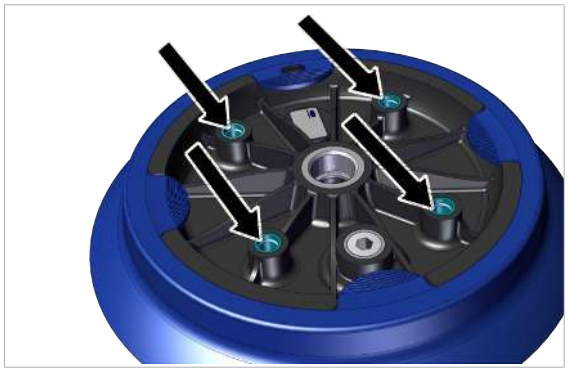
The thread integrated into the suction cup connection disc is used to adapt the vacuum suction plate to the handling system.

Option A:

- Use the central G1 female thread:
  — Observe the max. tightening torque of 25 Nm for the SUF 160 and 210, G1/2" female thread variants
  — Observe the max. tightening torque of 15 Nm for the SUF 125, G1/4" female thread variant.



Option B (for SUF 160 and 210):

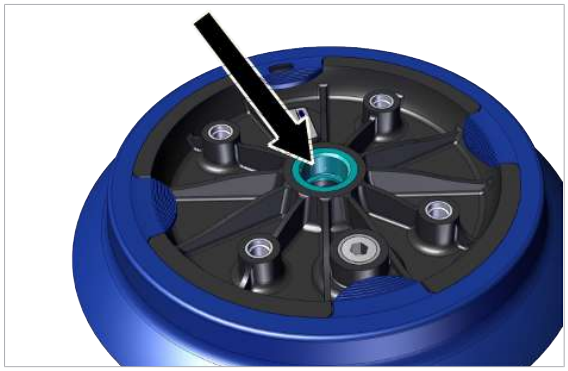


- Use the four G3 female threads (M8) with a max. tightening torque of 10 Nm.
  Ensure that the suction plate is always attached with four screws and observe the thread depth of 11 mm when selecting the screws.

7.3 Connecting the Vacuum

Use a PTFE strip, PA ring, aluminum ring or O-ring to seal the screw unions.

Option A:



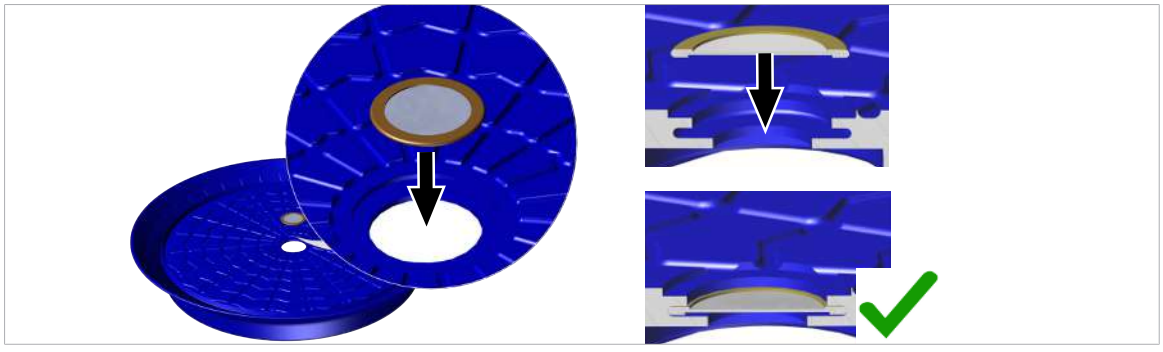
- Connection to the centered G1 female thread using a hollow bolt:
  — Observe the max. tightening torque of 25 Nm for the SUF 160 and 210, G1/2" female thread variants
  — Observe the max. tightening torque of 15 Nm for the SUF 125, G1/4" female thread variant.

Option B:

- Connection to the peripheral G2 female thread using a hollow bolt:
  — Observe the max. tightening torque of 15 Nm for the SUF 160 and 210, G1/4" female thread variants
  — Observe the max. tightening torque of 10 Nm for the SUF 125, G1/8" female thread variant.

7.4 Inserting the Screen (optional)

Screens prevent dirt particles from entering the vacuum line and vacuum generator.

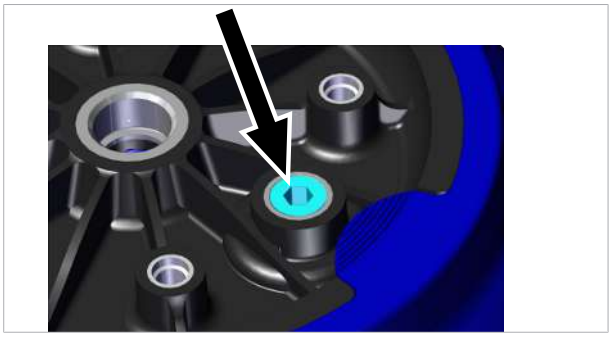


✓ Disassemble the sealing ring in accordance with the instructions (> See ch. 8.2 Replacing the Sealing Ring, p. 15).

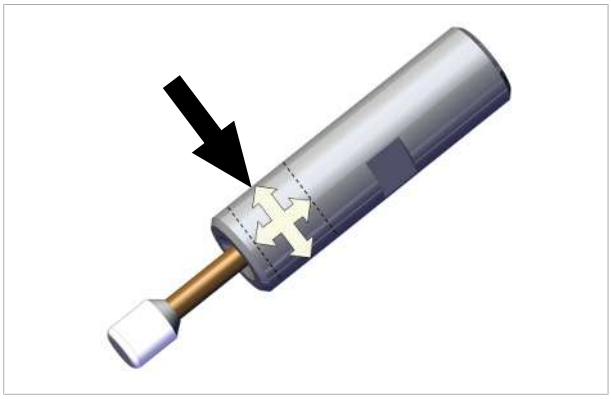
▸ Insert the screen in the slot around the hole.

7.5 Installing the Touch Valve (optional)

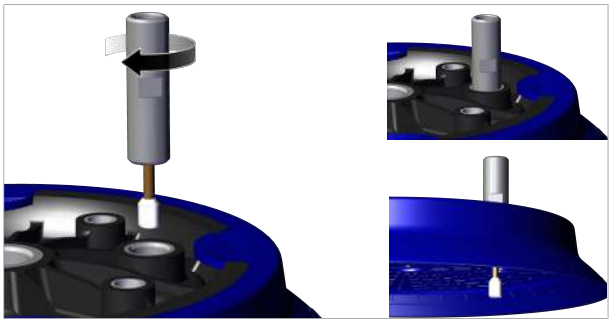
1. Remove the plug in the G2 thread.



2. For sealing, prepare the male thread in the area displayed on the touch valve with a PTFE strip or low-strength thread lock before mounting.



3. Screw the touch valve into the G2 thread until it stops (SW11 hexagonal mid section).



⇨ The touch valve must be screwed in so that the button protrudes at least 1 mm over edge of the sealing ring. This ensures that the button is actuated just before the sealing edge is placed on the workpiece.

8 Maintenance and Cleaning

8.1 Cleaning the Suction Plate

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.
3. Optional: Clean the screen.
   Remove the screen and blow off with compressed air.

8.2 Replacing the Sealing Ring

NOTE

Sharp objects cause damage to rubber components.

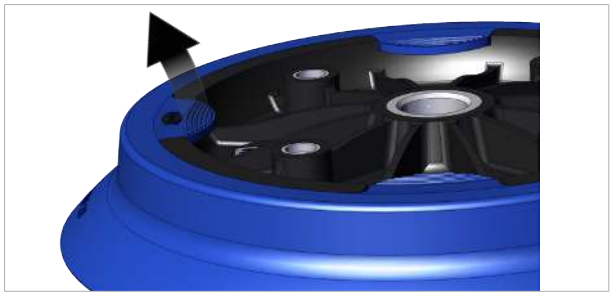
Damage and malfunction

- Do not use sharp objects (e.g. screwdriver, etc.) to mount or disassemble rubber components.

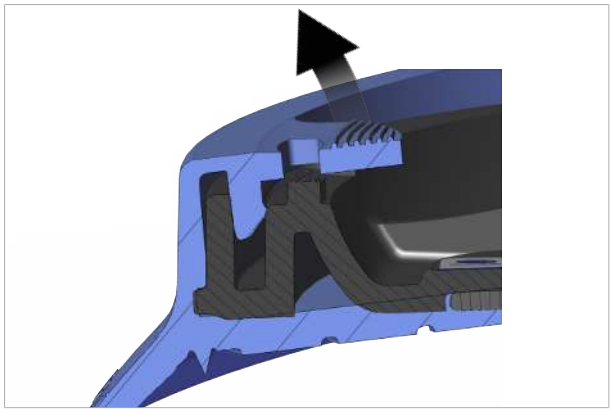
The sealing ring sustains various degrees of wear depending on the application and is thus considered a wearing part. The following section describes how to replace a worn sealing ring.

Removing the Worn Sealing Ring from the Suction Cup Connection Disc:

1. Beginning with a single tab, pull the sealing ring from the suction cup connection disc in the direction indicated in the image.



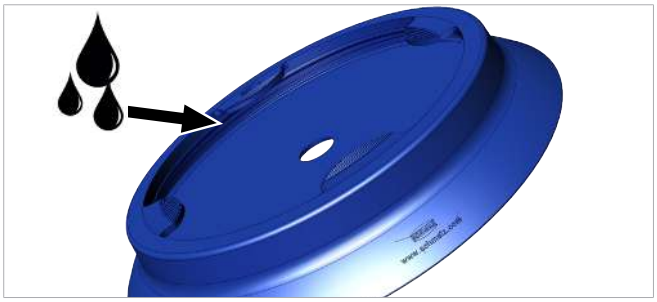
2. Gradually release the sealing ring from the slot using the remaining tabs and detach the suction plate from the suction cup connection disc.



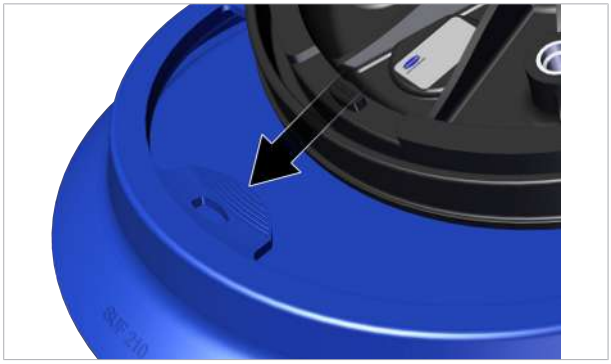
⇨ The sealing ring and suction cup connection disc are detached.

Mounting the New Sealing Ring:

1. In the area of the slot shown, wet the sealing ring all around with soapy water to help to join the components.

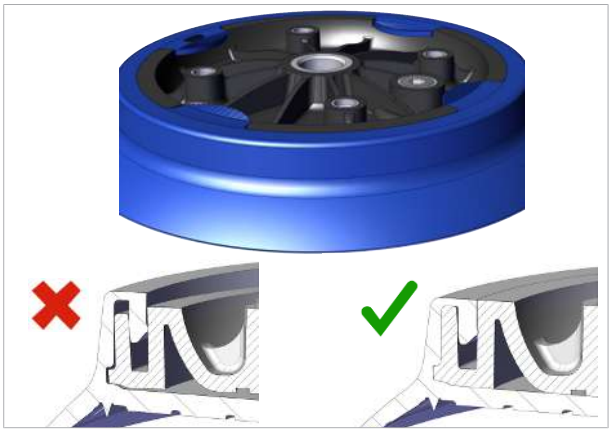


2. Lift the tab on the sealing ring and push the suction cup connection disc with the raised Schmalz logo under the tab.

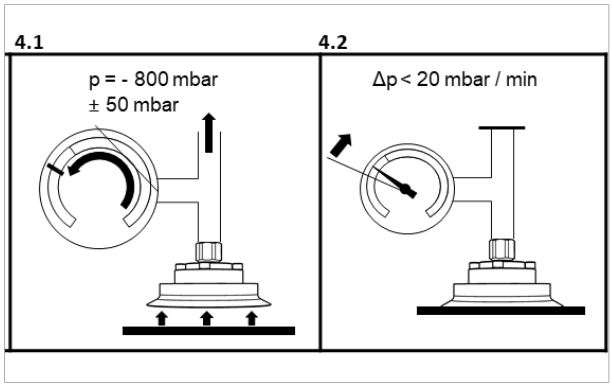


3. Simultaneously fit the sealing ring into the slot and recess on the suction cup connection disc.

4. Continue pulling the sealing ring from this location over the suction cup connection disc and insert it into the slot until the suction cup connection disc is completely inserted into the sealing ring and the sealing ring does not protrude over the suction cup connection disc at any point, i.e. it must be flush.



5. Check the tightness of the seal between the sealing ring and the suction cup connection disc.



8.3 Replacement Interval for the Suction Cup Connection Disc

The suction cup connection disc is subject to wear depending on the operating conditions.

The main contributory factors include:

- Ambient temperature
- Humidity
- UV radiation
- Ozone level
- Exposure to chemicals
- Oxidative degradation
- Level of mechanical load as a result of the process cycle times and lift capacity

The suction cup connection disc should generally be checked for signs of wear, and replaced if necessary, each time the sealing ring is replaced.

We suggest replacing the entire suction plate once the third sealing ring is worn.

9 Accessories, Spare Parts and Wearing Parts

Maintenance work may only be carried out by qualified personnel.

Designation	Part no.	Type
Sealing ring SUF, suction plate 210 DR-SUF 210 NBR-60	10.01.01.13846	W
Sealing ring SUF, suction plate 160 DR-SUF 160 NBR-60	10.01.01.14327	W
Sealing ring SUF, suction plate 125 DR-SUF 125 NBR-60	10.01.01.14319	W
Round screen SIEB 27x1 MS-A2 100 Central screen SUF 210 and 160	10.07.01.00110	A
Round screen SIEB 17x0.8 MS-A2 Peripheral screen SUF 210	10.07.01.00271	A
Round screen SIEB 15x0.8 MS-A2 Peripheral screen SUF 160 Central and peripheral screen SUF 125	10.07.01.00211	A
Touch valve TV G1/4-AG 12 SUF 210 and 160	10.05.10.00086	A
Protection cover PC 250 SUF 210	10.01.01.13090	A
Protection cover PC 175 SUF 160	10.01.01.13088	A
Protection cover PC 150 SUF 125	10.01.01.13087	A

Legend:	W …	Wearing part
	A …	Accessories

10 Warranty

Schmalz guarantees this system pursuant to our General Terms and Conditions of Sale and Delivery. The same applies to spare parts, provided that these are original parts supplied by us.

Wearing parts are not covered by the warranty.

11 Disposing of the product

- Sort and dispose of all components according to the country-specific regulations.

For proper disposal, please contact a company specializing in the disposal of technical goods and instruct the company to observe the applicable disposal and environmental regulations. Schmalz is happy to assist you in finding a suitable company.

12 Declarations of Conformity

12.1 EC Declaration of Conformity

EC Declaration of Conformity

The manufacturer Schmalz confirms that the product Suction plate SUF described in these operating instructions fulfills the following applicable EC directives:

2014/53/EU	Harmonization of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC
2011/65/EU	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment

The following harmonized standards were applied:

EN 50581	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
EN 300 330	Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz

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.

12.2 UKCA Conformity

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

2017	Radio Equipment Regulations
2012	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations

The following designated standards were applied:

EN 50581	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
EN 300 330	Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz

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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Handling systems

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J. Schmalz GmbH
Johannes-Schmalz-Str. 1
72293 Glatten, Germany
T: +49 (0) 7443 2403-0
schmalz@schmalz.de
WWW.SCHMALZ.COM