Manual

piSAVE® ESL Standalone

Energy Saving function for Leaking materials



Manufacturer
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SWEDEN

piab – A brand by Piab Group

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Original instructions.

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1. Languages

The manual is available in the following languages at piab.com:

中文 | Italiano | Português (Brasil)
English | 日本語 | Русский
Français | 한국어 | Español
Deutsch | Polski | Svenska

2. Introduction to the manual

2.1. About the manual

- The responsible party for the production site must ensure that this manual will be read and understood.
- The section on safety should be studied extra carefully.
- The manual should be stored in a known and easily accessible place, which can be digital.
- Before doing service and maintenance on the equipment, carefully study the applicable parts of the manual.

This manual (Art no. 0255863, Rev.00, en-GB, 2025-12) is for piSAVE® ESL Standalone.

2.2. Safety signs used in the manual

Take note of all the warnings, mandatory, and other signs in this manual. They have the following meanings:

2.2.1. Warning signs



Warning
Failure to follow the instructions may result in death or serious injury!



Warning
Vacuum force



Warning
Do not restrict exhaust

2.2.2. Mandatory signs



Notice
Information that needs extra attention!



Important
Wear eye protection



Important
Wear ear protection

2.3. Target group

This manual, especially the section about safety, shall be read by all staff who will perform any type of work with the product or equipment:

- Installation personnel
- Operating personnel
- Service and maintenance personnel
- Cleaning personnel (cleaning of equipment and the area around it)

2.4. Test conditions

Unless otherwise stated, the values specified in this manual are tested at:

- Room temperature: (20°C [68°F] ± 3°C [5.5°F])
- Standard atmosphere: (101.3 kPa [29.9 inHg] ± 1.0 kPa [0.3 inHg])
- Compressed air quality: DIN ISO 8573-1 class 4

3. Safety instructions

3.1. Disclaimer

The product is to be considered a component to be incorporated in a vacuum system.

Piab AB is not responsible for installation and operation of the product. The required steps must be undertaken in supervision and approval by final assembler.

Piab AB is not responsible for safety of a complete vacuum system with installed piSAVE® ESL Standalone. The required steps must be undertaken in supervision and approval by the final assembler.

3.2. General safety



Warning
Vacuum force



Warning
Unrestricted exhaust

The correct use of the product within a system is the responsibility of the system designer or person responsible for the technical specifications.

Compressed air may lead to an explosion of closed containers, and vacuum may lead to the implosion of closed containers.

Ensure that components are properly secured; regularly check that connections are in good working order, as high cycles or vibrations may cause them to loosen.

3.3. Safe usage

The product described in this manual is designed for implementation in industrial systems; therefore, it must not be used under conditions other than those specified herein.



Warning

- Ensure that the compressed air line is properly secured to avoid personal injury, equipment damage, and/or application failure.
- The use of a damaged product may result in bursting and cause injury or property damage.
- Irresponsible use of compressed air may cause injury. Compressed air must never be used for anything else than designated purposes.

3.3.1. Installation

Compressed air may be dangerous if used by unskilled personnel. Installing, using, and maintaining the product should solely be carried out by experienced and specially trained personnel.

Prior to assembly and disassembly of the product, turn off compressed air supply. Install and maintain the product only after thoroughly reading and understanding this manual.

3.3.2. Maintenance

Maintenance must be carried out in accordance with the instructions in this manual. Prior to any maintenance work, turn off the compressed air, and discharge residual pressure.

3.4. Intended use

- For professional use only.
- The product shall be used in environments within the product's specifications and certifications.
- The product shall be used to control compressed air feed to the pump.
- The piSAVE® ESL Standalone is an energy saving function that shall be used for handling leaking materials.

3.5. Misuse

The product is only cleared for operation under the conditions stated in this manual and in the datasheets. Any use or application deviating from the intended use is deemed to be impermissible misuse. This includes, but is not limited to:

- Use of product that is damaged.
- Use of the product if pressurized outside of its specification.
- Use of the product as a standalone safety unit to fulfil international lifting standards.
- Use of the product if the compressed air line is not properly secured, as loose compressed air lines can cause severe injuries.
- Use of the product in life-critical applications.

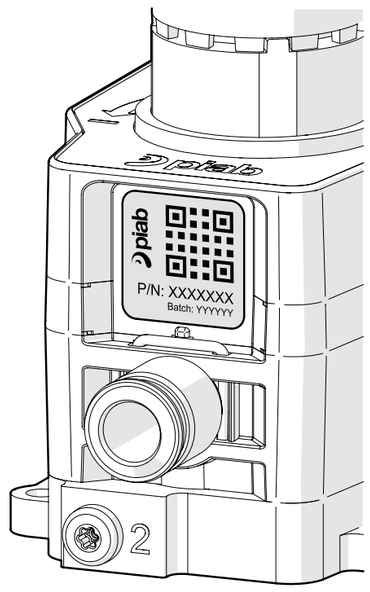
4. Introduction to the piSAVE® ESL Standalone

4.1. Manufacturer

Piab AB
P.O. Box 146
SE-182 12 Danderyd
SWEDEN

4.2. Identification label

Each unit is identified by a label with identification information. For any communication with Piab AB or service centers always refer to the label information and state both the part number (P/N) and the batch number.



4.3. Overview

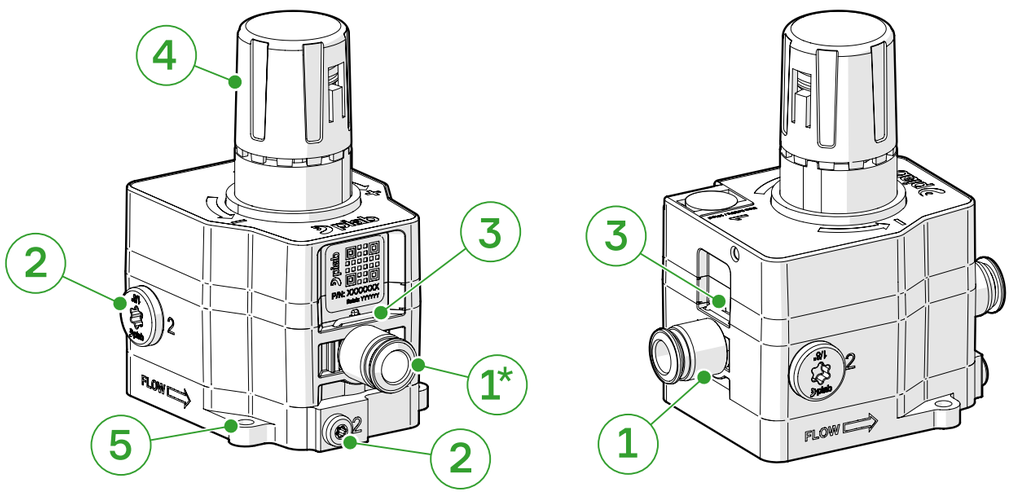


Figure 1. piSAVE® ESL Standalone overview.

Position	Description
1	Compressed air inlet connection (G1/4", 1/4" NPT, Push-in ⌀8 mm [5/16"], or Push-in ⌀10 mm [3/8"])
1*	Regulated feed pressure (to pump) connection (G1/4", 1/4" NPT, Push-in ⌀8 mm [5/16"], or Push-in ⌀10 mm [3/8"])
2	Vacuum sensing / Pilot vacuum port (1/8" NPSF or M5)
3	Clips for compressed air inlet and outlet (regulated feed pressure) connection
4	Adjustment knob
5	Mounting holes

5. Installation

5.1. Mechanical installation

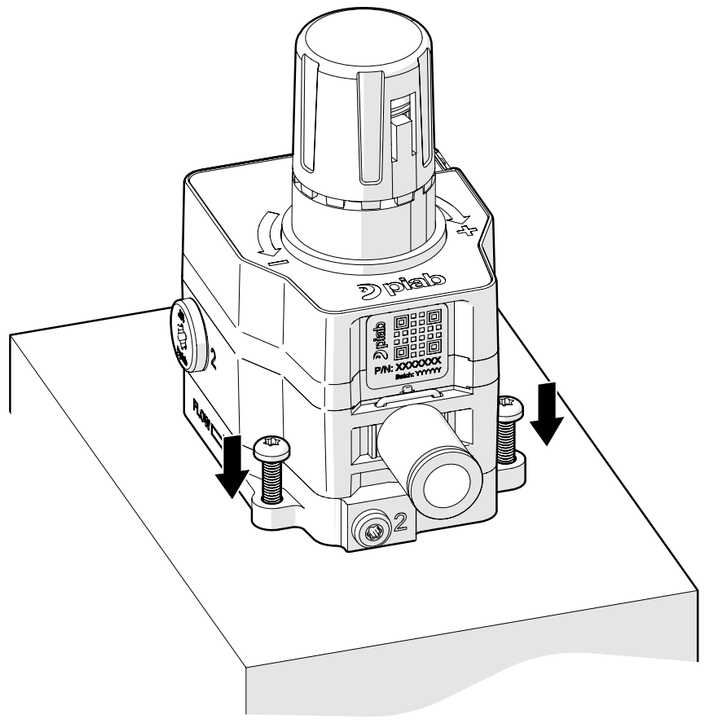


Figure 2. Mounting of piSAVE® ESL Standalone.

The piSAVE® ESL Standalone can be mounted on profiles, or similar, with two screws (not included). The two mounting holes are ⌀4.2 mm [0.17"].

5.2. Pneumatic installation

5.2.1. Pneumatic information

Feed pressure, max.	0.7 MPa [101.5 psi]

Notice
The quality of the compressed air shall fulfill the requirements in ISO 8573-1:2010 [7:4:4].

5.2.2. Pneumatic diagram

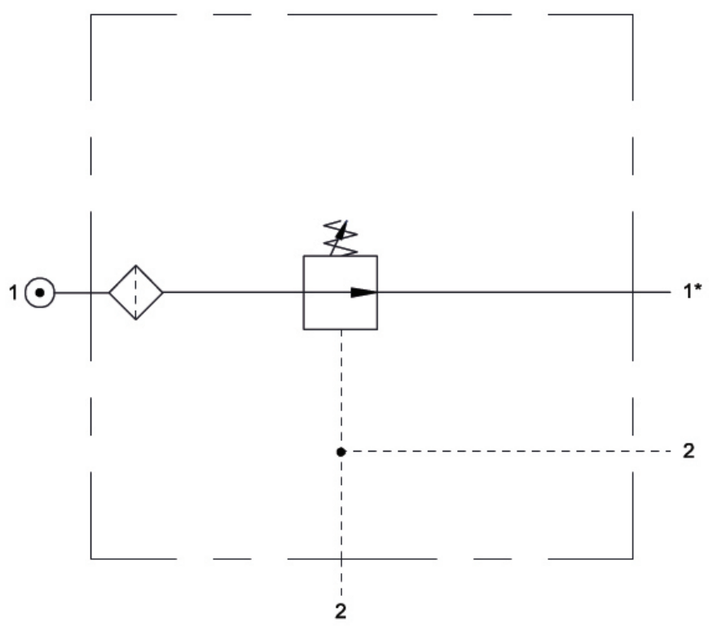


Figure 3. Pneumatic diagram piSAVE® ESL Standalone

Position	Description
1	Compressed air inlet
1*	Regulated feed pressure
2	Vacuum sensing / Pilot vacuum port

5.2.3. Pneumatic installation recommendations

Pump (P):

> **Notice**
> piSAVE® ESL Standalone is suitable for use only with pumps **without** non-return valves.

Compressed air feed (A and B):

To ensure minimal pressure drop of the compressed air feed to the pump (P), the compressed air feed hoses (A and B) should have the recommended dimensions according to the table below.

Vacuum system (C1/C2 and D):

The vacuum system volume, with sensing tube (C1 or C2) and vacuum hose (D), should be dimensioned to give the best performance by limiting the pressure drop. The two vacuum sensing connection options, C1 and C2, enable the pressure drop in the vacuum system to be measured.

Keep vacuum hose length D as short as possible with a large enough diameter to achieve a free vacuum level of ≤ 10 -kPa [3 -inHg] (optimally) and 20 -kPa [6 -inHg] (maximally). Free vacuum level means vacuum pump ON with open vacuum system, e.g. suction cups in free air to atmospheric pressure.

The maximum length recommended for sensing tube C1 is the same length as hose B, and the maximum length recommended for sensing tube C2 is the combined lengths of hose B and hose D.

General:

> **Notice**
> Longer hoses and tubes will affect the performance of piSAVE® ESL Standalone by increasing the response time to reach the pre-set vacuum level.

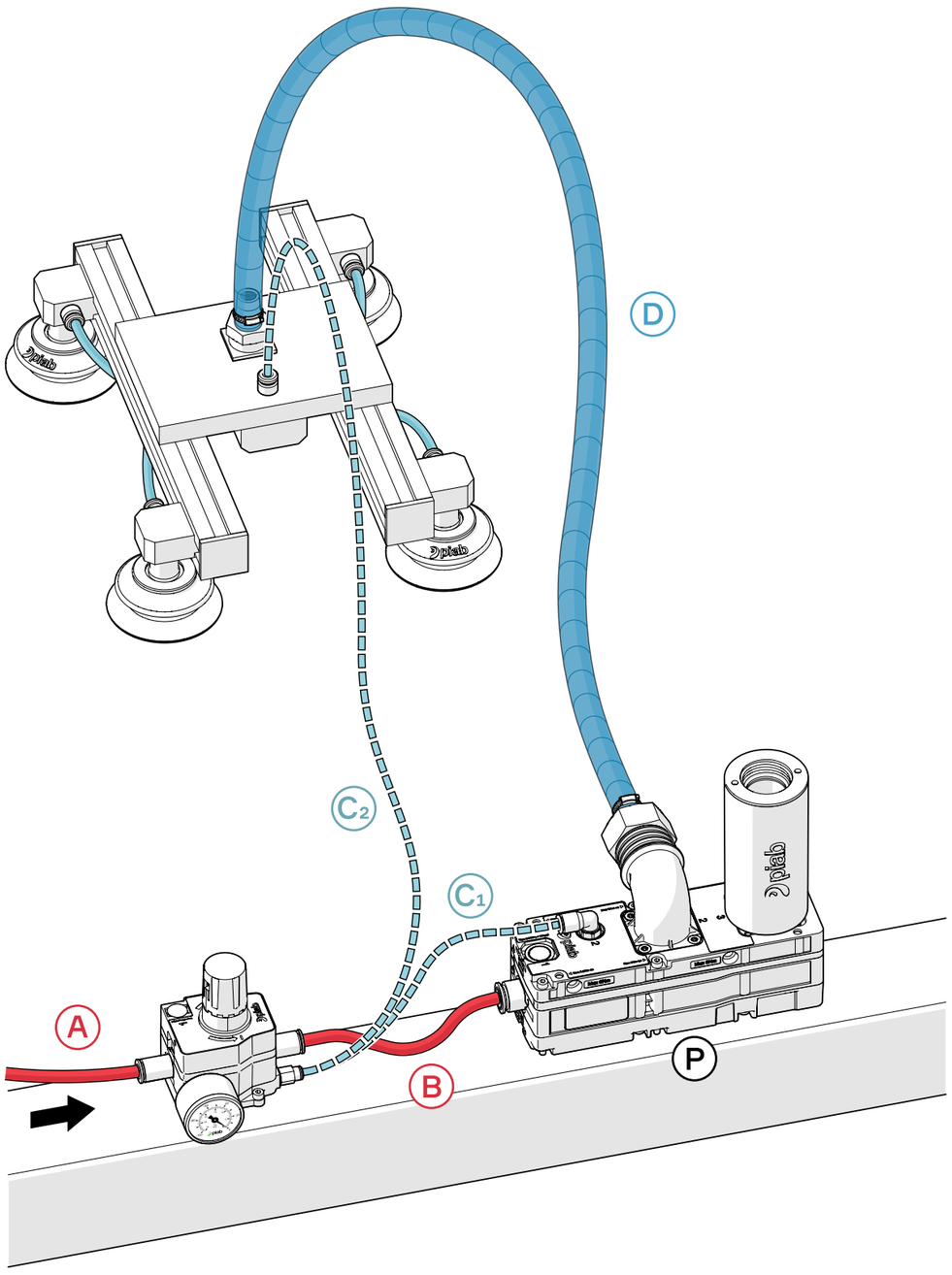


Figure 4. Installation example.

PUMP (P) Air consumption at 0.6 MPa [87 psi] feed pressure		COMPRESSED AIR (A and B)			
		piSAVE® ESL Inlet hose diameter	piSAVE® ESL to vacuum pump Hose length with Minimum rec. hose diameter		
Nl/s	Nl/min [scfm]	Minimum rec. diameter mm (out|in) ["] (out|in)	≤ 1 m [3 ft] mm (out|in) ["] (out|in)	≤ 2 m [6 ft] mm (out|in) ["] (out|in)	≤ 3 m [9 ft] (max. rec.) mm (out|in) ["] (out|in)
1-2	60-120 [2.1-4.2]	8|5.5 [5/16|0.217]	6|4 [1/4|0.18]	8|5.5 [5/16|0.217]	8|5.5 [5/16|0.217]
2-3	120-180 [4.2-6.4]	10|7 [3/8|0.275]	8|5.5 [5/16|0.217]	8|5.5 [5/16|0.217]	10|7 [3/8|0.275]
3-5	180-300 [6.4-10.6]	10|7 [3/8|0.275]	8|5.5 [5/16|0.217]	10|7 [3/8|0.275]	10|7 [3/8|0.275]
5-10	300-600 [10.6-21.2]	12|9 [1/2|0.375]	10|7 [3/8|0.275]	12|9 [1/2|0.375]	Not rec.
10-12	600-720 [21.2-25.4]	12|9 [1/2|0.375]	12|9 [1/2|0.375]	Not rec.	Not rec.
	P	**A**		**B**	

PUMP (P) Air consumption at 0.6 MPa [87 psi] feed pressure		VACUUM SYSTEM (C1/C2 and D) Sensing tube	Vacuum hose
Nl/s	Nl/min [scfm]	Recommended diameter mm (out|in) ["] (out|in)	Maximum recommended length m [ft]
1-2	60-120 [2.1-4.2]	4|2 [5/32|0.094]	≤ 5 [16]
2-3	120-180 [4.2-6.4]	4|2 [5/32|0.094]	
3-5	180-300 [6.4-10.6]	6|4 [1/4|0.18]	
5-10	300-600 [10.6-21.2]	6|4 [1/4|0.18]	
10-12	600-720 [21.2-25.4]	6|4 [1/4|0.18]	
	P	**C1 / C2**	**D**

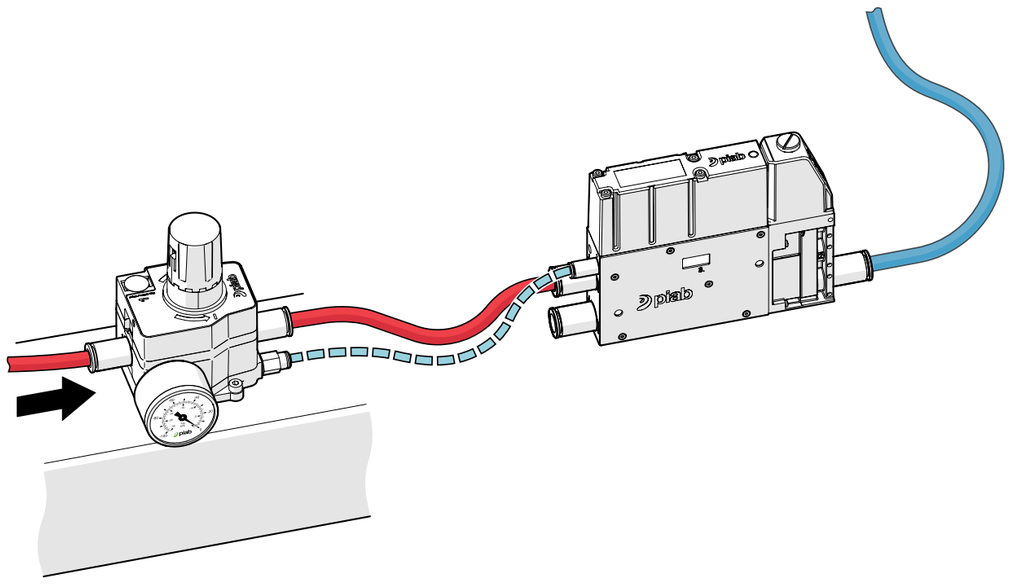


Figure 5. Alternative installation example in a centralized vacuum system.

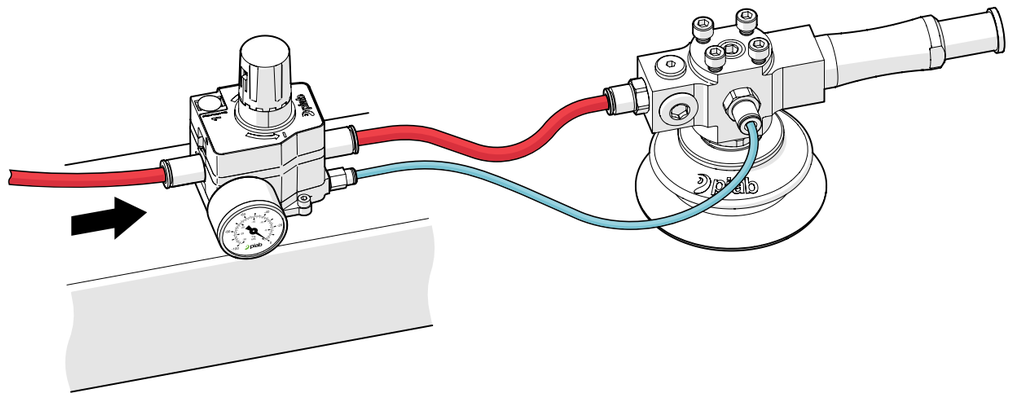


Figure 6. Installation example in a decentralized vacuum system.

6. Operation

The energy saving (ES) function regulates the feed pressure to the ejector, to reach the desired vacuum level in order to minimize compressed air usage.

The piSAVE® ESL Standalone is set to a desirable vacuum level by rotating the adjustment knob. piSAVE® ESL Standalone will regulate the inlet pressure, so the ejector reaches the set vacuum level regardless of the type of leaking material handled.

To adjust the desired vacuum level:

1. Pull up the adjustment knob.
2. To increase the ES vacuum level turn the knob in the direction marked with **+** and to decrease the ES vacuum level turn the knob in the **-** direction.
3. Push down the adjustment knob to lock.

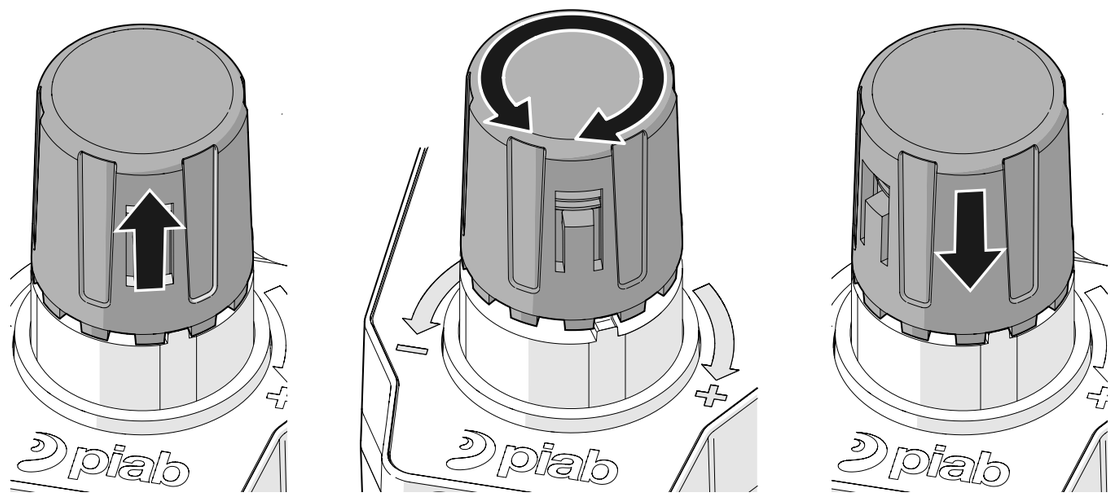


Figure 7. Adjustment of the piSAVE® ESL Standalone.

7. Maintenance

Warning
Irresponsible use of compressed air may cause injury. Compressed air must never be used for anything else than designated purposes. Remember to always shut off the compressed air supply during maintenance of the product.

7.1. Spare parts

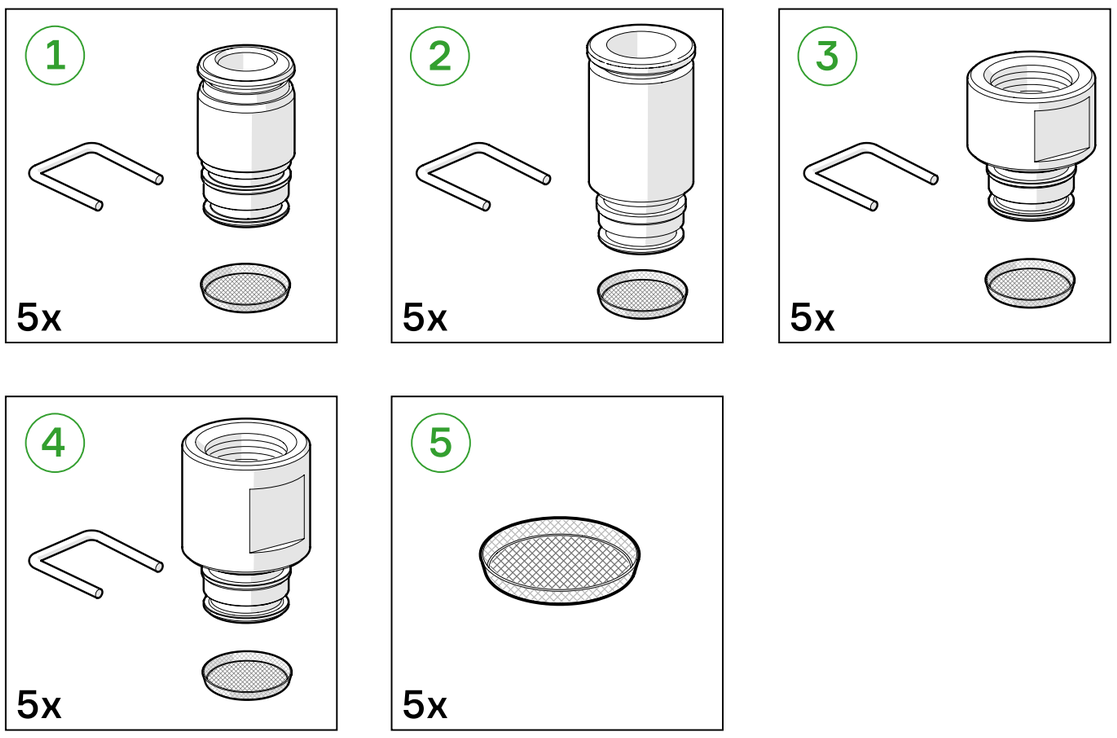


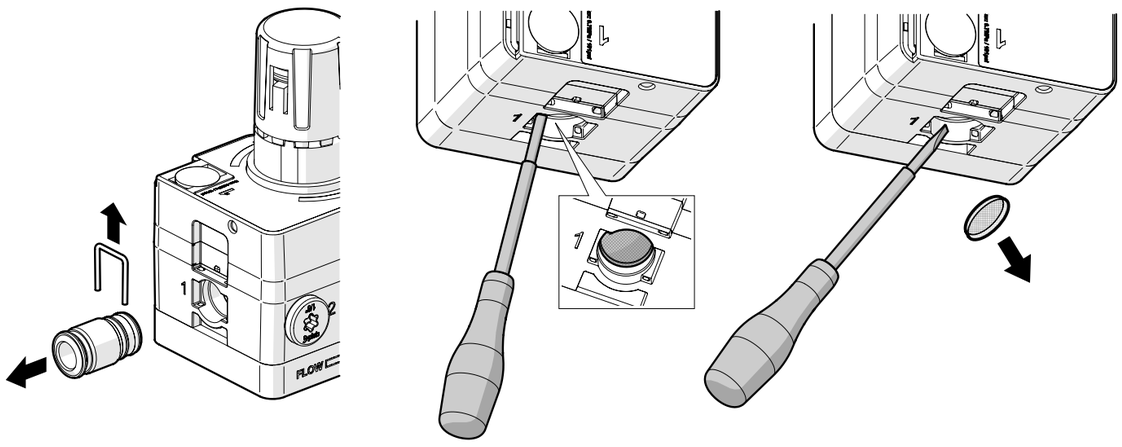
Figure 8. Spare part kits

Position	Item no	Description
1	0247993	EC20 8mm, Clip, Mesh filter ⌀12,4 mm [0.5"]. 5 pcs.
2	0247994	EC20 10mm, Clip, Mesh filter ⌀12,4 mm [0.5"]. 5 pcs.
3	0247995	EC20 G1/4" female, Clip, Mesh filter ⌀12,4 mm [0.5"]. 5 pcs.
4	0247996	EC20 1/4" NPT female, Clip, Mesh filter ⌀12,4 mm [0.5"]. 5 pcs.
5	0247997	Mesh filter ⌀12,4 mm [0.5"]. 5 pcs.

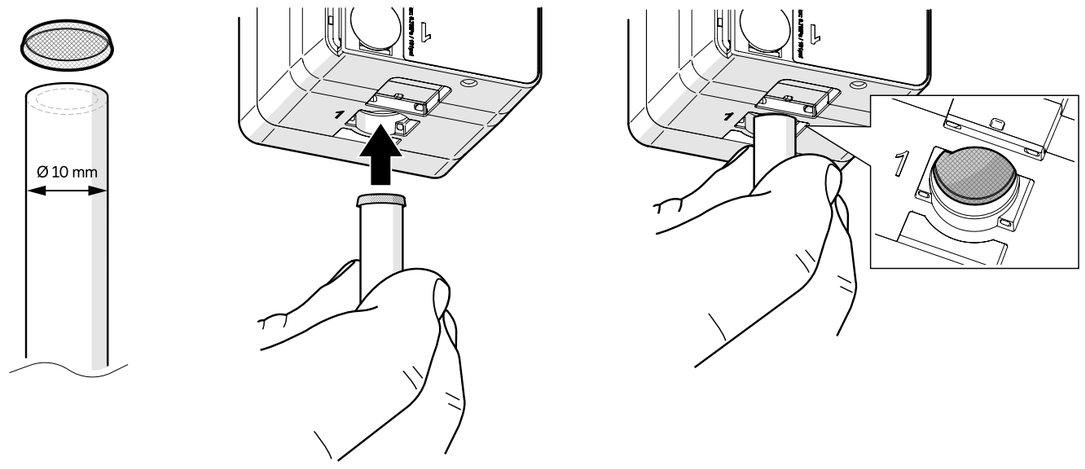
7.2. Replacing the filter

Under the compressed air connection of piSAVE® ESL Standalone, there is a mesh filter, that can be replaced.

Pull out the clip. Remove the compressed air connection and then use a screwdriver or equivalent to pull the mesh filter out.



Use the end of a ⌀10 mm hose to push the new vacuum filter inside.



Put back the compressed air connection and lock it with the clip.

8. Technical Data

Description	Unit	Value
Weight	g [oz]	235-255 [8.29-8.99] (depending on the compressed air connection)
Material	-	Al, PA, Brass, SS, NBR, PC, PU
Feed pressure, max.	MPa [psi]	0.7 [101.5]
Operational feed pressure range	MPa [psi]	0.17 - 0.7 [24.7 - 101.5]
Signal range	-kPa [-inHg]	20 - 70 [5.91 - 20.67]
Temperature range	°C [°F]	-10 - 60 [14 - 140]
Humidity	%RH	10 - 90
Flow at P1=0.6 MPa [87 psi] and Δp=0.1 MPa [14.5 psi]	Nl/min [scfm]	>540 [>19.07]
Accuracy, pneumatic	kPa [inHg]	3 [0.89]
Vacuum volume	cm^3 [in^3]	25 [1.53]
Valve function	-	2/2 N.O.
Compressed air connections	-	G1/4", 1/4" NPT. Push-in ⌀8 mm, or Push-in ⌀10 mm
Vacuum sensing connection	-	1/8" NPSF, M5
Life span	cycles	>10 000 000

9. Dimensions

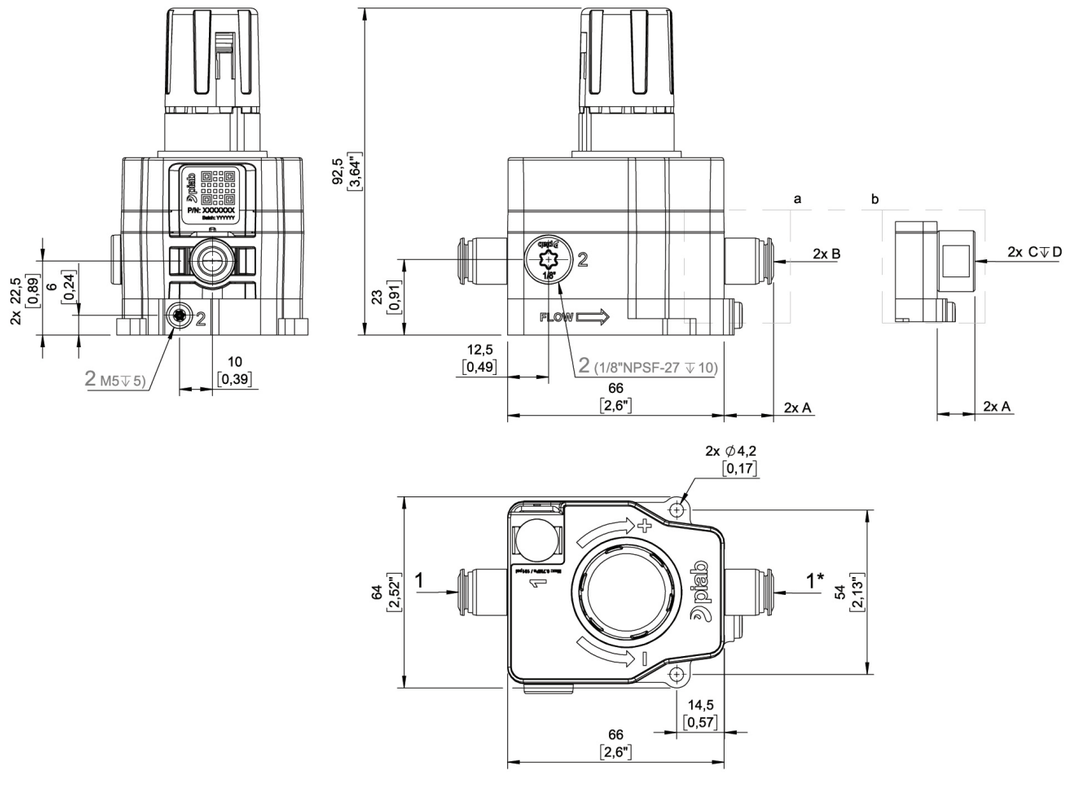


Figure 9. Dimensional drawing

Position	Port
1	Compressed air inlet connection
1*	Regulated feed pressure connection
2	Vacuum sensing / Pilot vacuum port
a	Push-in connector
b	Female thread

A (x2)	B (x2)	C↧D (x2)
15 [0.59"]	⌀8 [5/16"]	-
21.5 [0.85"]	⌀10 [3/8"]	-
11.5 [0.45"]	-	G1/4"↧10 [3/8"]
17 [0.67"]	-	1/4"NPT↧15 [0.59"]

10. Warranty

The Seller gives its Customers a five-year warranty from the receipt of the Products for vacuum pump Products (excluding vacuum pumps with electronics/controls, electro-mechanical vacuum pumps, accessories, and controls).

The Seller gives its Customers a one-year warranty from the receipt of the Products for all other Products (i.e. excluding vacuum pump Products but including vacuum pumps with electronics/controls, electro-mechanical vacuum pumps, accessories, and controls) if the failure has occurred within the specified lifetime in terms of duty cycles as set out in the Product specification (if any).

The warranty covers manufacture and materials defects in the Products and it also covers if the Products do not conform to the Product specification, excluding minor defects, if reasonably acceptable and that do not compromise efficiency in their use.

The warranty does not apply to any Product (including any component or other parts in such Products (such as suction cups, filter elements, sealings, hoses, foam, etc.) or to the software of any Products) that it was used other than the intended purpose, and: (a) has been subjected to abuse, misuse, negligence, improper storage, improper handling, improper use, improper installation, abnormal physical stress, abnormal environmental or working conditions, or use, application, installation, care, control or maintenance contrary to any applicable manual or instructions for the Products issued by the Seller or good trade practice regarding the same; or (b) has been reconstructed, repaired or altered by any persons or entities other than the Seller or its authorized representatives, or have a defect as a result of fair wear and tear or willful damage or caused by subsequent damages caused by other defective products.

The product warranty set forth in this Section is the only warranty given by the Seller in relation to the Products. The Customer may not rely and has not relied, on any other information, statement, or warranty (express or implied), whether based on applicable law or otherwise. In any case, the compensation is limited to the price of the products agreed between the parties and is excluded from indirect damages.

During the warranty period, the Seller shall replace or repair, at its own expense, faulty products determined by the Seller, in its sole discretion, to be covered by the warranty set out herein.

It is at the Seller's discretion whether a faulty Product should be returned to the Seller for replacement or if it should be repaired by the Seller at the location of the Customer. Any replaced Products shall become the property of the Seller.

The Seller is not responsible for the cost of fitting replacement parts or components of any Products into any products or alike of the Customer.

These Terms and Conditions shall apply to any repaired or replaced Products by the Seller.

11. Recycling and disposal

Environmental aspects are considered in the development process of Piab's products to make sure that a minimal environmental footprint is used.

Piab AB is certified with ISO-14001:2015.

Piab AB also complies with:

- REACH (EC 1907/2006)

The ways of handling recycling and disposal vary from country to country, and therefore this process needs to be in full compliance with each national regulation. If possible, disassemble the product into its various components. Electrical and electronic equipment should be handed over to an authorized body for disposal, as well as the metal parts. All other parts can either be recycled or sorted as waste.

For further information regarding REACH, visit
https://www.piab.com/downloads/document-center-page