



Instructions for use: Leak sealing hose

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1.0. IDENTIFICATION

1.1. PRODUCT TYPE

SAVA high-pressure sealing hoses of ST type.

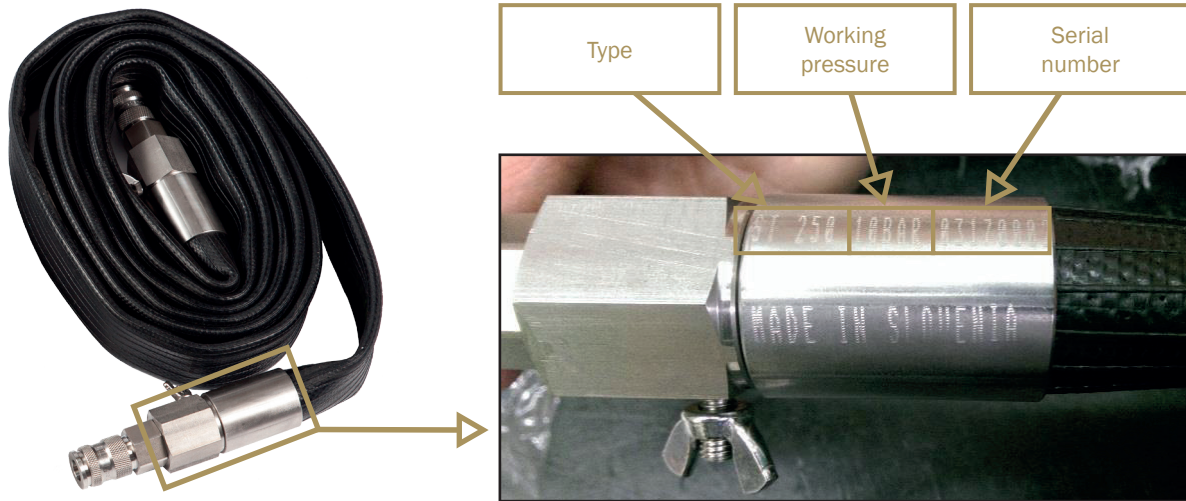


Figure 1: Identification of SAVA high-pressure sealing hoses, ST type

1.2. MANUFACTURER



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2.0. PRODUCT DESCRIPTION

2.1. BASIC FUNCTIONS AND AREAS OF APPLICATION

SAVA high-pressure sealing hoses of ST type are suitable for rapid and temporary sealing of leaks on bent pipes, pipe elbows and pipe connections. High-pressure sealing hoses should never be used on the surfaces, the carrying capacity of which is below 12 kg/cm².



Figure 2: SAVA high-pressure sealing hoses, ST type

SAVA high-pressure sealing hoses are actually hoses with supply connections on both ends. They are manufactured from a combination of soft natural and synthetic rubber, resistant to oil, oil products, acids, lyes and other atmospheric influences. Hose connections are all stainless steel, with the points for grounding integrated.

Various compressed air sources are available for inflation of high-pressure sealing hoses, such as compressors, compressed air bottles, foot pumps and others.

2.2. BASIC DATA

Table 1: Technical data about SAVA high-pressure sealing hoses, ST type

TYPE	PART NUMBER	DIMENSIONS		WEIGHT	WORKING PRESSURE	AIR REQUIREMENT
		DIAMETER	LENGTH			
		[cm] / [inch]	[cm] / [ft]			
ST 150	575160	2.5 / 1"	150 / 5'	1.1 / 2.4	10 / 145	8.1 / 0.3
ST 250	575161	2.5 / 1"	250 / 8'	1.5 / 3.3	10 / 145	13.5 / 0.5
ST 350	575162	2.5 / 1"	350 / 11.5'	1.8 / 4	10 / 145	18.8 / 0.7

3.0. DEFINITIONS

Maximum working pressure: The maximum permissible pressure for inflation of sealing hoses.

Pressure gauge: A device that indicates the pressure.

Damaged area: A damaged surface to be sealed.

Base plate: A rubber plate for protection of SAVA high-pressure sealing hoses against sharp particles and various substances.

Inflation valve: A valve for the controlled inflation of high-pressure sealing hoses.

Inflation hose: A hose that conveys compressed air from a release valve to a high-pressure sealing hose.

Pressure reducing valve: A device that reduces the pressure exiting the pressure vessel to the pressure suitable for work.

Test pressure gauge: A pressure gauge with an integrated coupling for testing of the accessories.

Release valve: A device for a controlled depressurising of high-pressure sealing hoses.

High-pressure sealing hose: An inflatable rubber hose, wrapped around the damaged area, that seals a leak (usually on a tank or a pipeline) utilising the compressed air.

4.0. TRANSPORT, STORING, WORK SAFETY AND RESTRICTIONS OF USE

4.1. TRANSPORT AND STORING

Products are packed in cardboard boxes with special protection of sensitive parts. When transported, they should be placed horizontally or vertically, make sure they are not bent or folded. They should be stored in a dark and dry space, protected against extreme temperatures (see chapter 4.5). They are also available as a set in a carrying case, which can be used for storing the products.

4.2. SAFETY INSTRUCTIONS BEFORE USE



Please ensure you read and understand the instructions before using the product.



Rescue teams should be trained in accordance with the internal regulations applicable to training programmes for professional rescue teams. Other users should participate in training organised by the manufacturer or an authorised training provider.

4.3. REMOVAL OF PACKAGING

Do not use any sharp objects, such as knives, screwdrivers and similar, for removal of packaging as the product could get damaged.

4.4. DISPOSAL OF PACKAGING



Packaging is made of recyclable cardboard, which is why it should not be disposed but landfilled in waste bins for recycled paper or special containers for cardboard packaging.

4.5. STORING AND PROTECTION OF THE PRODUCT WHEN NOT IN USE

The products should be stored in a dry and dark place.



Storage temperature: +5 °C to +25 °C (+14 °F to +77 °F).

If carrying cases were also purchased, we recommend storing the products, which are not in operation, in these cases.

Make sure the products are not bent, inflation connections loaded or inflation hoses twisted during storing.

4.6. INSTRUCTIONS AND PERIODIC TEST REPORTS



Brief instructions and manufacturer's test report are enclosed with every product. Brief instructions for all types of product are enclosed with this document. SAVA recommends that they are laminated and a copy is kept next to the product.



The instruction manual should be retained throughout the service life of a product.

4.7. ENVIRONMENTAL CONDITIONS AND USAGE RESTRICTIONS



The temperature range of application is from -20 °C to +75 °C. The use of the product at temperatures below -20 °C, but not below -30 °C, is limited to 1 hour at the most, and at temperatures exceeding +75 °C to 30 minutes, yet it may not exceed 80 °C.



The standard version of products is NOT suitable for use in potentially explosive environments.



Open flame and smoking are forbidden when using these product.

4.8. SAFETY AND PERSONAL PROTECTIVE EQUIPMENT

When working with SAVA high-pressure sealing hoses, always wear personal protective equipment. Fire fighters and rescue team members should wear all of the specified protective equipment.

Other users should wear protective clothing, helmet, goggles gloves and protective footwear.





When working with SAVA high-pressure sealing hoses in the area near hazardous substances, comply with applicable local guidelines, regulations and the legislation on the use of suitable protective equipment for a specific hazardous substance.

4.9. RECOMMENDATIONS FOR SAFE AND EFFICIENT WORK



Non-compliance with the instructions may lead to a risk to users and third persons, and may cause various injuries, which is why the instructions must be read and understood prior to using the product.



- Choose a suitable product type of proper size for intervening in a specific situation.
- The pressure regulator must never be set at a pressure, that is higher than the maximum working pressure of the product.
- Inflate the product until it reaches the specified working pressure.
- Never inflate the product to the pressure that exceeds the maximum working pressure defined for the product.
- Monitor the pressure in the product throughout its use; if required, refill the product to correct the pressure.
- The length of the inflation hose should enable inflation of the product from a safe distance.
- Always use all the safety equipment as specified.
- If hazardous substances are involved, use the protective equipment in accordance with the local regulations and standards on emergency response plans for accidents involving a specific hazardous substance.
- When the product is used in accidents involving hazardous substances, always act in accordance with the local regulations and standards on emergency response plans for accidents involving a specific hazardous substance.
- The product should not be used in any other way than as described in this instruction manual.

4.9.1. WORKING ENVIRONMENT



TEMPERATURE OF THE OBJECT TO BE SEALED

If the temperature of the object to be sealed or the liquid that is leaking exceeds 65 °C, protect the product with rubber plates to prevent damage due to the heat. The lowest temperature at which the product retains its performance and material properties is -30 °C.



LIGHTING IN THE PLACE OF WORK

It is dangerous to work in the dark, even though SAVA high-pressure sealing hoses are simple to handle. Make sure that the place of work is properly illuminated and not in the shade. SAVA recommends the use of additional lights when visibility is significantly poorer due to shade, even during the day. Do not use an open flame for lighting in the dark.



RESTRICTED AREA - AUTHORISED PERSONNEL ONLY

Only qualified personnel are allowed to be present in areas where work with SAVA high-pressure sealing hoses takes place. Other persons should keep out of the area where preparations for sealing and the actual sealing procedure are carried out. If an accident occurs that involves hazardous substances, the personnel using SAVA high-pressure sealing hoses should be qualified for rescue operations in such accidents in accordance with the local regulations and standards. If additional risks are a threat to people and the environment (e.g. an outbreak of fire due to a fuel leakage, moving of a container etc.), professional personnel must carry out all the required precautionary actions to minimise such risks.

4.9.2. RESISTANCE TO SUBSTANCES

SAVA high-pressure sealing hoses are made from the NBR material. Rubber plates, part of the accessories, are made from EPDM, FKM and NBR. The resistance values of particular rubber material are shown in Table 2.

The resistance classification table is in compliance with the standard ISO/TR 7620. The effect of the media on the product is classified as:

1 NEGLIGIBLE	2 LOW	3 MEDIUM	4 SIGNIFICANT
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Table 2: Table of resistance of rubber materials to various substances

MEDIA	CONCENTRATION (%)	TEMPERATURE [°C] / [°F]	NR/BR	CR	NBR
Acetone		23 / 73.4	1	2	4
Acetylene			1	2	1
Ammonium hydroxide	10	23 / 73.4	1	1	1
	Conc.	23 / 73.4	1	1	2
Aniline		23 / 73.4	2	3	4
		100 / 212	4	4	4
Benzene		23 / 73.4	4	4	4
Boric acid	10	100 / 212	1	1	1
Brake fluid (vegetable)		50 / 122	1	1	4
		50 / 122	1	1	1
Butanol		100 / 212	4	3	1
				2	4
Butyric acid				2	4
Calcium hydroxide		100 / 212	1	1	2
Calcium hypochlorite	15		4	2	3
Chloric acid	20	23 / 73.4		4	4
Ethanol		50 / 122	1	1	1
Ether		23 / 73.4	4	4	2
Formaldehyde	40	23 / 73.4	1	1	1
	40	70 / 158			4
Glycerine		100 / 212	1	1	1
Hexanol		23 / 73.4	1	2	2
Hydrogen peroxide	30	23 / 73.4	1	1	1
	90		4	4	4
Kerosene		70 / 158	4	3	1
Methanol		50 / 122	1	1	1
Methyl chloride			4	4	4
Milk		23 / 73.4	1	1	1
Oil 1 (ASTM No.1, ISO 1817)		100 / 212	4	1	1
Oil 2 (IRM 902, ISO 1817)		100 / 212	4	2	1
Oil 3 (IRM 903, ISO 1817)		100 / 212	4	4	1
Naphtha		23 / 73.4	4	4	1
Natural gas			3	1	1
Nitric acid (diluted)	10	50 / 122	2	3	2
Ozone (conc. 50 ppm)		40 / 104	4	2	4
Phenol		100 / 212	4	4	4
Phosphoric acid	60	50 / 122	2	2	3
Propanol		50 / 122	1	1	2
Sodium hydroxide	10	100 / 212	1	1	1
	25	100 / 212	1	1	4
Sodium hypochlorite	10	50 / 122	2	3	3
Sulphur hexafluoride				1	1
Sulphuric acid (VI)	10	100 / 212	1	1	3
	20	23 / 73.4	1	1	3
	25	100 / 212	1	1	4
	50	100 / 212	1	1	4
	60	100 / 212	3	4	4
	75	100 / 212	4	4	4
	96	23 / 73.4	4	4	4
Toluene		23 / 73.4	4	4	4

5.0. WORK PROCEDURES

Prior to using SAVA high-pressure sealing hoses of ST type, carefully read chapter 4, which describes the procedures for safe work and restrictions of use!

5.1. USE OF PRESSURE REDUCING VALVE

The pressure reducing valve reduces the pressure, exiting the pressure vessel, to the pressure suitable for work with SAVA high-pressure sealing hoses of ST type.

5.1.1. FITTING THE PRESSURE REDUCING VALVE

First check if the pressure vessel is closed and remove its safety plug, then fit the pressure reducing valve.



Figure 3: Remove the safety plug from the pressure vessel

Close the relief valve on the pressure reducing valve and check if the inflation connection has a gasket installed. Turn the relief valve clockwise to close it.



Figure 4: Closing the relief valve (left) and the gasket in the inflation connector (right)

Insert the inflation connection of the pressure reducing valve, push it up to the rear end of the connection point on the pressure vessel and tighten it by hand. It is not allowed to use any tools for tightening! Turn the inflation connection clockwise to tighten it.



Figure 5: Mounting the pressure reducer on the pressure vessel

5.1.2. PREPARATION FOR USE

Before connecting the hose of the pressure reducing valve to the inflation valve, set the reduced pressure on the pressure reducing valve.

First fully open the valve on the pressure vessel and then turn it back one turn. The left pressure gauge indicates the pressure in the pressure vessel, while the right pressure gauge indicates the current, reduced, pressure.



Figure 6: Pressure in the pressure vessel (left pressure gauge) and set reduced pressure (right pressure gauge)

Step on the end of the hose of the pressure reducing valve and slightly open the relief valve so that air begins to escape. Turn the control valve until the required reduced pressure is reached.

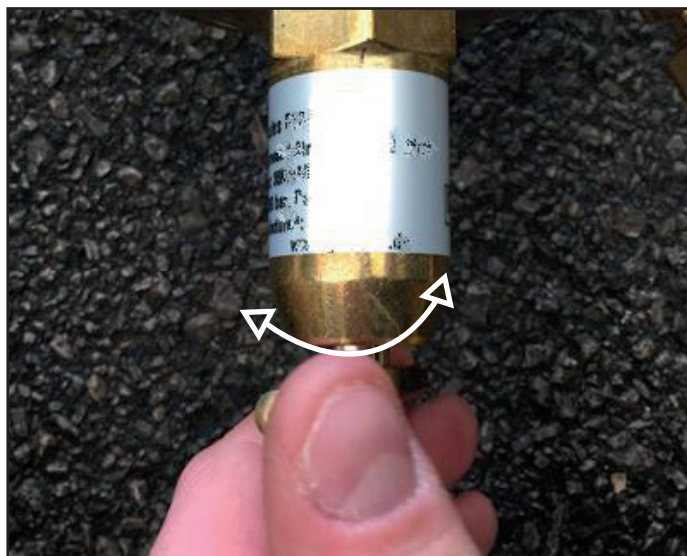


Figure 7: Adjusting the reduced pressure

Once the required reduced pressure is set, close the relief valve and insert the hose connector of the pressure reducing valve in the inflation valve.

5.1.3. DISMANTLING THE PRESSURE REDUCING VALVE

Before dismantling the pressure reducing valve close the valve on the pressure vessel.



Figure 8: Closing the valve on the pressure vessel

Using the inflation valve and the release valve, depressurise the pressure reducing valve. The pressure indication on both pressure gauges should drop to 0. Then disconnect the hose of the pressure reducing valve from the inflation valve and unscrew the inflation connection from the pressure reducing valve. Turn the inflation connection anti-clockwise to unscrew it.



Figure 9: Unmounting the pressure reducer from the pressure vessel

5.2. USE OF SAVA SEALING HOSES

Before using the products, the user should read and understand:



- **Safety instructions before use**, see chapter 4.2;
- **Environmental conditions and restrictions of use**, see chapter 4.7;
- **Safety and personal protective equipment**, see chapter 4.8;
- **Recommendations for safe and efficient work**, see chapter 4.9.

5.2.1. FITTING SAVA SEALING HOSES

The accessories include various sealing plates (NBR, FKM, EPDM) for protection of SAVA sealing hoses. Individual types of sealing plates can protect sealing hoses against various media; for their resistance values to various media please refer to chapter 4.9.2.



Figure 10: FKM sealing plate

Insert SAVA sealing hose through the hole in the sealing plate and pull it to approximately the middle part.



Figure 11: Mounting the sealing plate on the SAVA sealing hose

Place the sealing plate onto the damaged area.



Figure 12: The sealing plate positioned on the damaged area

Make sure that SAVA sealing hose entirely covers the damaged area. Tie a knot on both ends of SAVA sealing hose.



Figure 13: A knot on one end of the SAVA sealing tube

The hose must be wrapped as tightly as possible.



Figure 14: The SAVA sealing tube tied around the damaged object

5.2.2. INFLATION OF SAVA SEALING HOSE

Connect the pressure reducing valve to the pressure vessel as described in chapter 5.1.1., and set the reduced pressure to maximum 10 bar as described in chapter 5.1.2.



Figure 15: Pressure reducer mounted on the pressure vessel

Connect the hose of the pressure reducing valve to the inflation valve and the inflation valve to the release valve. Check if the inflation valve is closed.



Figure 16: Inflation accessories connected together

Connect the EPDM inflation hose to the release valve and the other end of the inflation hose to one of the connections on the sealing hose.



Figure 17: Inflation hose connected to the SAVA sealing tube

Close the release valve.



Figure 18: Release valve in closed position

Open relief valve on the pressure reducing valve.



Figure 19: Opening the relief valve on the pressure reducer

Open the valve on the inflation valve. The valve opens in anti-clockwise direction.



Figure 20: Opening the inflation valve

When the SAVA sealing hose is filled, close the inflation valve.



Figure 21: Inflated SAVA sealing hose

5.2.3. DISASSEMBLING SAVA SEALING HOSE

First depressurise SAVA high-pressure sealing hose by opening the release valve.



Figure 22: Release valve in open position

When SAVA high-pressure sealing hose is completely empty, uncouple the inflation hose from the sealing hose.



Figure 23: Uncoupling of the inflation hose from the SAVA sealing hose

When the release valve is dismantled, first unknot one and then the other end of a high-pressure sealing hose and remove the hose from the pipeline, which was sealed.



Figure 24: Removing the SAVA sealing hose

Before disconnecting the accessories, close the valve on the pressure vessel and open the inflation valve to depressurise the system (the release valve should be in open position). When the system is depressurised, disconnect the accessories.



Figure 25: Disconnected accessories

The disconnected SAVA sealing hose and the accessories should be cleaned and checked in accordance with chapter 6.



5.3. LIST OF THE ACCESSORIES

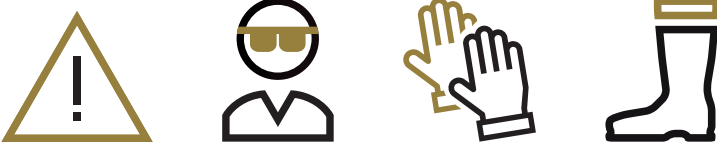
In the table below the accessories are listed to be used with SAVA high-pressure sealing hoses. All listed items are compatible with the available variants of SAVA high-pressure sealing hoses of ST type.

Table 3: Accessories for sealing hoses ST

CODE	NAME
576506	Inflation valve
576510	Release valve
523835	Pressure reducing valve 300 bar
576566	Supply hose EPDM - 10m
576471	Sealing plate FKM
577590	Sealing plate NBR
577591	Sealing plate EPDM
528871	Carrying case 609 × 409 × 140 - type 2

6.0. MAINTENANCE AND CLEANING

6.1. SAFETY WARNINGS



Always wear protective goggles, gloves and footwear when cleaning SAVA sealing hoses.



If the product is contaminated by hazardous substances, protective equipment should be used in accordance with the relevant regulations for a specific hazardous substance. Comply with applicable local regulations and guidelines.

6.2. CLEANING AFTER USE

Clean and inspect SAVA high-pressure sealing hoses after every use. Long-term exposure to stains caused by certain hazardous substances, can damage SAVA high-pressure sealing hoses. Dirt in the inflation coupling prevents proper connection with the inflation hose and obstructs the air flow.

Check the opening in the coupling; if it's filled with dirt, remove it with a thin wire. Always pull the dirt out of the coupling, do not push it inside a SAVA high-pressure sealing hose.

Use a hard-bristle brush to remove any agglutinated dirt from the surface of SAVA high-pressure sealing hoses. Move the brush in various directions. Use of sharp objects for dirt removal is forbidden.

After removing all the agglutinate dirt, soak any marks or stains on SAVA high-pressure sealing hoses with a light solution of washing-up detergent and warm water, and remove the remaining dirt from the surface with a hard-bristle brush. Do not use petrol, diluters, alcohol or aggressive cleaning agents.

Rinse SAVA high-pressure sealing hoses with clean, cold water. The jet of water will remove any remaining dirt and detergent from the surface of SAVA high-pressure sealing hoses.



High-pressure cleaners should NOT be used.

Hold SAVA high-pressure sealing hose upright, wipe its coupling with a clean cloth and allow to air dry.



Dryers or heat devices should NOT be used.

Carefully check the cleaned and dry SAVA high-pressure sealing hoses:

- Check for air bubbles, cuts, worn-out parts that can be hidden by the dirt. Mark the damage or defect with a chalk. Consult the manufacturer or an authorised agent about the seriousness of the damage or possibility for further use of SAVA high-pressure sealing hose.
- Check the coupling; in the cases of damages that prevent connection to the plug on the connecting hose, replace it.

6.3. PREVENTIVE MAINTENANCE

Visual and performance tests are obligatory and can be conducted by a person qualified for work with SAVA high-pressure sealing hoses. We recommend that periodic tests are performed. They can be performed either by the manufacturer or a person authorised by the manufacturer.

6.4. INSPECTION INTERVALS

6.4.1. SAVA HIGH-PRESSURE SEALING HOSE

Table 4: Inspection intervals for SAVA high-pressure sealing hoses, ST type

TEST	INSPECTION INTERVAL	TEST OPERATOR	PROCEDURE
Visual test	<ul style="list-style-type: none"> After every use Annually 	A person qualified for work with SAVA high-pressure sealing hoses	Chapter 6.5.1.1.
Performance test	<ul style="list-style-type: none"> After every use Annually 	A person qualified for work with SAVA high-pressure sealing hoses	Chapter 6.5.1.2.
Periodic test	Recommended in the 5 th , 8 th , 10 th , 11 th , 12 th , 13 th and 14 th year after the manufacture.	Manufacturer or a person authorised by the manufacturer	

6.4.2. PRESSURE REDUCING VALVE

Table 5: Inspection intervals for pressure reducing valve

TEST	INSPECTION INTERVAL	TEST OPERATOR	PROCEDURE
Visual test	<ul style="list-style-type: none"> After every use Annually 	A person qualified for work with SAVA high-pressure sealing hoses	Chapter 6.5.2.1.
Performance test	<ul style="list-style-type: none"> After every use Annually 	A person qualified for work with SAVA high-pressure sealing hoses	Chapter 6.5.2.2.
Periodic test	Recommended in the 5 th , 8 th , 10 th , 11 th , 12 th , 13 th and 14 th year after the manufacture.	Manufacturer or a person authorised by the manufacturer	

6.4.3. INFLATION VALVE AND RELEASE VALVE

Table 6: Inspection intervals for inflation and release valves

TEST	INSPECTION INTERVAL	TEST OPERATOR	PROCEDURE
Visual test	<ul style="list-style-type: none"> After every use Annually 	A person qualified for work with SAVA high-pressure sealing hoses	Chapter 6.5.3.1.
Performance test	<ul style="list-style-type: none"> After every use Annually 	A person qualified for work with SAVA high-pressure sealing hoses	Chapter 6.5.3.2.
Periodic test	Recommended in the 5 th , 8 th , 10 th , 11 th , 12 th , 13 th and 14 th year after the manufacture.	Manufacturer or a person authorised by the manufacturer	

6.4.4. INFLATION HOSE

Table 7: Inspection intervals of inflation hoses

TEST	INSPECTION INTERVAL	TEST OPERATOR	PROCEDURE
Visual test	<ul style="list-style-type: none">• After every use• Annually	A person qualified for work with SAVA high-pressure sealing hoses	Chapter 6.5.4.1.
Performance test	<ul style="list-style-type: none">• After every use• Annually	A person qualified for work with SAVA high-pressure sealing hoses	Chapter 6.5.4.2.
Periodic test	Recommended in the 5 th , 8 th , 10 th , 11 th , 12 th , 13 th and 14 th year after the manufacture.	Manufacturer or a person authorised by the manufacturer	

6.5. TEST PROCEDURES

6.5.1. SAVA HIGH-PRESSURE SEALING HOSE

6.5.1.1. Visual test



The following tests should be carried out outdoors.



If SAVA high-pressure sealing hose fails to pass the visual test, it should be removed from further use. If in doubt about the seriousness of the damage, the product should be inspected by the manufacturer.

Connect SAVA high-pressure sealing hose as instructed in chapter 5.2 and inflate it to 0.2-times working pressure. Visually check for unusual bulges, punctures, cuts or similar mechanical damages. Using a brush, apply soap water on the entire surface of SAVA high-pressure sealing hose, including both connectors. Visually check if all the mentioned components are airproof.

6.5.1.2. Performance test



The following test should be carried out outdoors. Provide for a proper safety distance between people and the test object, as well as buildings and the test object.



If SAVA high-pressure sealing hose fails to pass the performance test, it should be removed from further use. If in doubt about the seriousness of the damage, the product should be inspected by the manufacturer.



To qualify for testing the performance, SAVA high-pressure sealing hose should first pass the visual test.



If SAVA high-pressure sealing hose is suspected unsafe to work with or be tested, consult the manufacturer.

Connect SAVA high-pressure sealing hose as instructed in chapter 5.2 and inflate it to 0.5-times working pressure. If the pressure in SAVA high-pressure sealing hose does not drop by more than 10 %, within an hour, the hose has passed the performance test.

6.5.2. PRESSURE REDUCING VALVE

6.5.2.1. Visual test

Visually check the pressure reducing valve for any damages. Check if the O-ring is installed in the inflation connection and undamaged. Check the threads of the inflation connection for damages. Check both pressure gauges for damages, make sure maximum working pressure indications and protective caps are undamaged and in place. Check the pressure control level and the stop valve for smooth operation. Check the air hose for ruptures, punctures and other damages (stiff areas due to exposure to acids etc.). Check the plug for damages too.

6.5.2.2. Performance test

A performance test for pressure reducer valve includes checking for correct functioning.

Connect the pressure reducing valve to the pressure vessel. Close the stop valve on the pressure reducing valve. Open the pressure vessel. Check if the left pressure gauge indicates the pressure in the pressure vessel and the right one the reduced pressure. Slightly open the stop valve for the air to escape, then turn the pressure control lever and monitor if the pressure on the right pressure gauge can be regulated within the entire area. Close the stop valve and set the reduced pressure to the maximum working pressure value. Apply soap water on the stop valve to check if its airtight. Connect the hose of the pressure reducing valve and the inlet coupling of the inflation valve. Check if the hose connector of the pressure reducing valve and the coupling of the inflation valve lock and unlock properly. Open the stop valve on the pressure reducing valve and apply soap water to check for sealing of the connections between the hose of the pressure reducing valve and the pressure reducing valve, and the hose and the connection of the pressure reducing valve.

6.5.3. INFLATION AND RELEASE VALVE

6.5.3.1. Visual test

Visually check the inflation/release valves for damages. Check if the valve on the inflation valve and the valve on the stop valve open and close smoothly.

6.5.3.2. Performance test

A performance test for the inflation or release valve includes checking for correct functioning.

Connect the air source hose to the inflation valve and the inflation valve to the release valve. Check if the inflation or release valve is closed. Connect test pressure gauge to the outlet coupling of the release valve. During connecting the inflation and release valves, and test pressure gauge, check if the couplings lock and unlock properly. Fill the connected elements up to the working pressure of the high-pressure inflation hose. Apply soap water on the connections of the inflation and release valve, and test pressure gauge. Visually check for any leaks on the coated areas.

6.5.4. INFLATION HOSE

6.5.4.1. Visual test

Visually check the inflation hose. Check its coupling and connection for damages and other defects. Check if the coupling and the connection can lock tightly. Check the hose for ruptures, punctures and other damages such as stiff areas due to exposure to acids etc.

6.5.4.2. Performance test

A performance test for the inflation hose includes testing for correct functioning.

Connect the inflation hose to the release valve, as described in chapter 5.2 (the release valve should be connected to the inflation valve and this one to the air source). When connecting the coupling of the inflation hose to the connector of the release valve, check if the coupling and the connector lock and unlock properly. Connect test pressure gauge to the connection of the inflation hose. Check if the connector of the inflation hose and the coupling of test pressure gauge lock and unlock properly. Fill the inflation hose to the maximum working pressure. Apply soap water on the entire surface, the connection between the hose coupling and the connector of the controller or foot pump, and the connection between the hose coupling and test pressure gauge coupling. Visually check for any leaks on the coated areas.

6.6. SERVICE LIFE

The age of SAVA high-pressure sealing hose is clear from the serial number: the first two digits refer to the month and the second two to the year of manufacture.

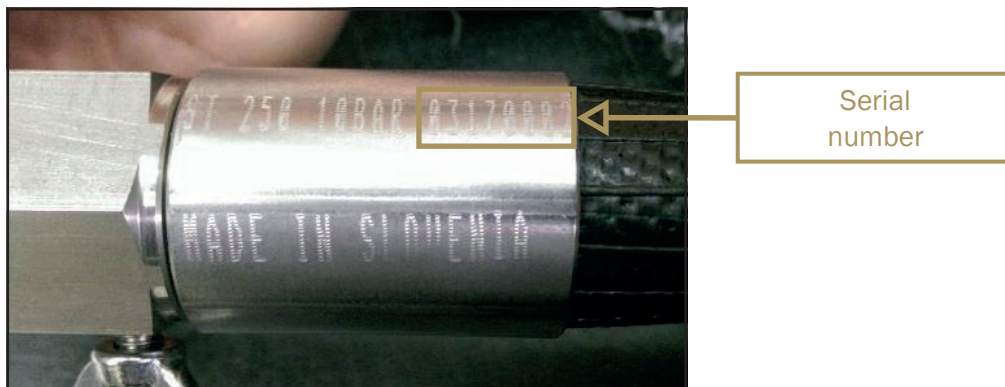



Figure 26: Serial number of SAVA high-pressure sealing hose

The picture shows SAVA high-pressure sealing hose with the serial number 03170001, meaning the hose was manufactured in March (03) in 2017 (17).

SAVA high-pressure sealing hoses are made from rubber and are thus exposed to the process of natural ageing. Even though no defects were detected during a visual inspection, products should be taken out of service after 15 years because the material structure could hide invisible signs of ageing.

6.7. FAULT IDENTIFICATION AND REMEDY

FAULT	CAUSE	REMEDY
Insufficient pressure indicated on the inlet pressure gauge of the pressure reducing valve.	<ul style="list-style-type: none"> • Pressure vessel is empty. • The valve on the pressure vessel is closed. 	<ul style="list-style-type: none"> • Replace the pressure vessel. • Open the valve on the pressure vessel.
The required pressure cannot be set on the outlet pressure gauge of the pressure reducing valve.	<ul style="list-style-type: none"> • The pressure in the pressure vessel is blocked by the set-up valve. • Set-up valve failure. • Outlet pressure gauge failure. 	<ul style="list-style-type: none"> • Briefly (1 s) open the relief valve and try to set the pressure again. • Replace the pressure reducing valve. • Replace the pressure reducing valve..
The supply hose of the pressure reducing valve cannot be correctly inserted in the connection coupling of the inflation valve.	<ul style="list-style-type: none"> • Dirt in the connector or the coupling. • Damaged connector or coupling. 	<ul style="list-style-type: none"> • Clean the connector and the coupling. • Replace the pressure reducing valve or the inflation valve.
The inflation valve cannot be connected to the release valve.	<ul style="list-style-type: none"> • Dirt in the connector or the coupling. • Damaged connector or coupling. 	<ul style="list-style-type: none"> • Clean the connector and the coupling. • Replace the inflation valve or the release valve.
The inflation hose cannot be properly connected to the release valve.	<ul style="list-style-type: none"> • Dirt in the connectors or the couplings. • Damaged connectors or couplings. 	<ul style="list-style-type: none"> • Clean the connector and the coupling. • Replace the hose or the release valve.
Even though the inflation valve is opened, SAVA high-pressure sealing hose fails to be filled.	<ul style="list-style-type: none"> • The stop valve on the pressure vessel is closed. • The O-ring in the inflation connection of the pressure reducing valve is missing or damaged. • The pressure vessel is emptied. • The stop valve on the pressure reducing valve is closed. • The pressure reducing valve fails to function correctly. • Connectors or couplings are blocked. • The pressure reducing valve or connecting hoses are not properly connected. • The hose of the pressure reducing valve or connecting hoses are damaged and are not leak-tight. 	<ul style="list-style-type: none"> • Open the stop valve on the pressure vessel. • Install a new or missing O-ring in the inflation connection of the pressure reducing valve. • Replace the pressure vessel. • Open the stop valve on the pressure reducing valve. • Replace the pressure reducing valve. • Clean connectors or couplings. • Check and re-connect the components. • Replace the hose of the pressure reducing valve or the pressure reducing valve or the connecting hose.
Even though the lock screw on the safety valve of the controller or foot pump is opened, SAVA sealing wedge or cone fails to be emptied.	<ul style="list-style-type: none"> • Connectors or couplings are blocked. 	<div style="text-align: center;">  <p>WARNING!</p> </div> <ul style="list-style-type: none"> • Extreme care is required during the following procedure. • If SAVA high-pressure hose is to seal hazardous substances, use all the protective equipment required in handling with a specific substance. Comply with applicable local regulations and guidelines. <ol style="list-style-type: none"> 1. Depressurise the system by opening the stop valve on the release valve (the inflation valve should be closed and the pressure relieved resp.). 2. Be extremely careful when disconnecting the connecting hose from SAVA high-pressure hose that that fails to be emptied. 3. Push a suitably big needle in the hole of the inflation coupling on SAVA high-pressure hose to relieve the pressure. Be careful as during this procedure the sealed hazardous substance could begin to leak again or SAVA high-pressure sealing hose could move.

7.0 WARRANTY CONDITIONS

7.1. GENERAL CONDITIONS

- 7.1.1. These warranty conditions apply as for Environmental protection and rescue products, manufactured by Trelleborg Slovenija, d.o.o. (hereinafter referred to as TBSLO), Product Area Environmental protection and rescue products (Products). If any provision of this warranty conditions would be contrary to any mandatory legal provisions in any particular jurisdiction, such provision shall apply to a maximum extent as provided for by such mandatory legal provisions.
- 7.1.2. Products which may be sold by TBSLO Product Area Environmental protection and rescue products but are not manufactured by it are not covered by this warranty and are sold exclusively with warranties, if any, by their original manufacturer.

7.2. MANAGEMENT OF THE PRODUCTS

- 7.2.1. In order to claim a remedy pursuant to this warranty, purchaser must conform to instructions for management of the Products, available at www.savatech.eu/environmental-protection-and-rescue/manuals

7.3. WARRANTY

- 7.3.1. TBSLO warrants to the purchaser that for the period of twelve (12) months as of delivery of the Products, such Products shall be free from defects in material and workmanship, subject to normal and management of the Products, including, among others, proper storage. For high pressure lifting bags, the warranty period amounts to thirty-six (36) months as of delivery.
- 7.3.2. This warranty shall be in lieu of any other warranties, express or implied, including, but not limited to, any warranty of merchantability or fitness for a particular purpose.

7.4. EXCLUSION OF WARRANTY

- 7.4.1. Warranty shall be excluded in cases where the Products have not been used for the ordinary purpose or have been subject to abnormal conditions such as, but not limited to misuse, mishandling (such as, but not limited to, cuts, tears, vandalism, fire, wilful destruction, improper installation and/or improper maintenance, misapplication), use of unauthorized components or attachments or if adjustments or repairs have been performed by anyone other than TBSLO or its authorized agents.
- 7.4.2. Warranty shall also be excluded and TBSLO shall not be held liable in case of force majeure circumstances, such as, but not limited to:
- war or threat of war, sabotage, insurrection, riots or requisition;
 - all laws, restrictions, regulations, by-laws, prohibitions or any other measures by the governmental, parliamentary or local bodies;
 - import and export regulations or embargo;
 - strikes, lock-outs or other industrial measures or trade disputes (if including Manufacturer's employees or third party);
 - difficulties with supply of raw materials, work force, fuel, parts or machinery;
 - power blackout, break of machinery.

- 7.4.3. TBSLO shall not be held liable for any deficiencies in Products manufactured according to drawings, designs, project drafts and/or specifications provided by the purchaser.
- 7.4.4. Ordinary wear and tear are not covered by this warranty.

7.5. MAKING A WARRANTY CLAIM

- 7.5.1. Purchaser is obliged to take delivery of the Products and perform an ordinary inspection of the Product upon delivery.
- 7.5.2. Any claim by the purchaser with reference to the Products shall be deemed waived unless submitted in writing to TBSLO within the earlier of (I) eight days as of the discovery of the defect, or (II) twelve months as of the date of delivery of the Products or thirty-six (36) months as of delivery of high pressure lifting bags. Discovery of the defect is deemed to have occurred when a defect could have reasonably been detected by the purchaser.
- 7.5.3. Claim must at least contain the following data:
- part number,
 - serial number,
 - description of defect,
- and must be substantiated by adequate evidence, such as pictures... Upon request, TBSLO must be allowed to inspect the Product.
- 7.5.4. To obtain performance under this warranty, any products suspected of having a manufacturing defect in materials or workmanship shall be returned freight prepaid for inspection to TBSLO, Product Area Environmental protection and rescue products, Škofjeloška c. 6, 4000 Kranj, Slovenia..

7.6. REMEDIES

- 7.6.1. TBSLO shall decide on a claim within forty -five days after receiving a complete documentation and Product pursuant to art 5.
- 7.6.2. Providing TBSLO acknowledges the claim as justified, it shall, at its discretion, either:
- repair the Product,
 - replace those components of the Product which are defective,
 - replace the Product, if repair is not possible or reasonable,
 - reimburse the consideration for the Product or its components which are defective.
- 7.6.3. Whenever TBSLO repairs or replaces the Product at its expense or reimburses the purchase price, it shall reimburse the purchaser, with a credit note, the same surface freight amount the purchaser had when returning the Product to TBSLO.
- 7.6.4. Remedies pursuant to this article 6 shall constitute the sole and exclusive remedy in the event of a breach of warranty. For the avoidance of doubt, TBSLO shall not be liable for any incidental, consequential and/or non-pecuniary damages or damages having a comparable effect. TBSLO's aggregate liability in respect of any and all losses arising under or in connection to the contract/ purchase order/any similar document that is the basis for sale of Products, shall be limited to an amount equal to the invoiced price for the Products supplied. Any exclusions or limitations of liability are agreed to be extended for the benefit of all entities within TBSLO's group.

7.7. CLOSING PROVISIONS

- 7.7.1. No statement or action by Trelleborg Slovenija, whether express or implied, other than set forth herein, shall constitute a warranty.
- 7.7.2. Any applicability of general terms and conditions used by the purchaser, wherever stated, is hereby explicitly excluded, notwithstanding any provisions of such general terms and conditions to the contrary.
- 7.7.3. This warranty statement is subject to the laws of the Republic of Slovenia, with the exclusion of its conflict of law principles.

Kranj, January 2019



Trelleborg Slovenija, d.o.o.
PA Environmental protection products (PA EKO)

We are a division of Trelleborg Slovenija d.o.o..
We manufacture and sell rubber products for environmental protection and rescue operations and industrial use. Our growing division was established more than thirty years ago and is constantly striving to meet our customer's current and future needs and expectations.

WWW.SAVATECH.EU
WWW.SAVATECH.COM

Instructions for Use: Leak sealing hose

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