

Installation instructions

Original language: German

Product group: injectors

Product code: 200160400

ST-160.3



The choice of perfection

Vers. October 21

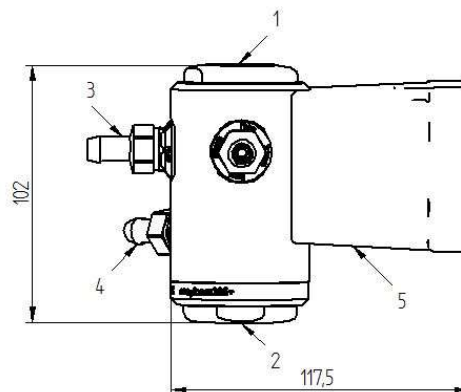
www.rm-suttner.com

Technical data

Maximum permissible pressure	350.0 bar / 35.00 MPa
Maximum flow rate	135.0 l/min
Water temperature permanently	60°C
Water temperature temporary	max. 90°C
Ambient temperature	bis max. 60°C
Nozzle size	standard
Inlet connector	G ½" fm
Outlet connector	G ½" fm
Compressed air connector	G ¼" m
Chemicals connector	Ø 9mm
Weight	1.790 g
Dimensions (W / H / D)	128 x 102 x 117,5
Max. size of solids	50µm

Abbreviations and symbols	
fm; m	Female thread; male thread
G	Whitworth pipe thread according to DIN ISO 228, ident. BSP= British Standard Pipe
NPT	National Pipe Thread (American thread standard)
kg	Kilogram

	<p>The injector is designed for permanent use up to approx. 60°C. In any case, the user must wear appropriate protective clothing, for example, in the form of gloves, shoes and goggles. The local safety regulations currently in force should always be observed.</p>
	<p>Please read these Operating Instructions carefully before using the equipment! Keep the Operating Instructions in a safe place for future use or for the next user! These Operating Instructions were prepared with great care. However, SUTTNER GmbH cannot be held responsible for any possible errors in the Operating Instructions or for any consequences arising thereof!</p>



- 1 Inlet
- 2 Outlet
- 3 Chemical connector
- 4 Compressed air connector
- 5 Wall bracket

Description

Injector

The application purpose of the ST-160.3 injector is to mix in liquid cleaning additives to the flow rate within the high and low-pressure range following the Venturi principle. The injector housing and attachment parts are made from stainless steel. The injector is equipped with three pairs of nozzles. This design allows high addition of cleaning agent and high flow rate. Depending on the application, either active foam lances (e.g. ST-72 or ST-75) can be used to foam up the mixed cleaning agents or foam can be generated via the optional compressed air connection using compressed air. To achieve a good foam result, the injector nozzles, compressed air nozzles and dosing inserts must be selected correctly. Injector can be fixed on a wall bracket.

Due to the physical mode of action, the injector can only safely suction the chemical up to approx. 60°C.

Intended use

The injector is designed for suctioning cleaning and disinfection agents. For further details, please refer to Guideline 67/548/EEC.

Use only fluids Group 1 (e. g. water) as motive fluid.

All safety regulations and rules for high-pressure washers apply as well, e.g. DIN EN 60335-79-2 and DIN EN 1829-1.

The injector must only be used in a technically perfect condition, unmodified in any way, for the purpose intended, in the awareness of safety requirements and potential hazards in compliance with these Operating Instructions. Only adults trained in handling high-pressure washers may use the injector.

The injector must not be used with abrasive substances. To avoid damaging the injector, install a fine filter with a recommended mesh size of 50 into the water inlet to the high-pressure washer. Install a suitable fine filter into the suction line.

Please also comply with the operating instructions for equipment and accessories connected to the injector and with the applicable regulations for cleaning agents.

Normative references

- The product is classed as a pressure-maintaining component within the terms of Pressure Equipment Directive 2014/68/EU. Due to the operating parameters, it comes under the scope of Article 4 / Paragraph 3 of this guideline ("good engineering practice") and therefore no Declaration of Conformity and CE marking are allowed!
- The product must not be installed in equipment complying with the Pressure Equipment Directive 2014/68/EU.
- The product is a standard part within the terms of Machinery Directive 2006/42/EC!

Symbols and their meanings



Hazard!

If these instructions are not followed there is a danger of physical injury, danger to life and material damage!



Please comply with the Operating Instructions!

Incorrect operation can lead to severe injury. Read the Operating Instructions before using the equipment.



Wear safety gloves!



Wear protective goggles!



Use suitable respiratory protection!



Hot surfaces!



Description of imminent hazard and failure to avoid hazard will result death



Description of hazard and possible resulting injuries or death.



Description of hazard that could result in minor or moderate injury.

For your safety

This Suttner product is state of the art and complies with generally recognised health and safety regulations. Due to the high pressures and temperatures nonetheless there is the danger of material damage and injury for users and other persons. Please comply with these Operating Instructions at all times and the relevant regulations for liquid jet sprayers.

For details regarding personal protective equipment, refer to the German accident prevention regulations "Personal protective equipment" (VBG101, at present draft). Personal protective equipment includes for example overalls, head protection, easy-grip protective gloves and non-slip boots, metatarsal foot protection, respiratory protection, ear protection, ear protection, eye or face protection.



Risk of injury due to spray medium!

- Do not use the equipment if persons without protective clothing are within range.
- Before starting work, check the high-pressure system (spray equipment, hoses, screw connectors, etc.) for signs of leakage and damage.
- Cease operation immediately if any leakage or malfunctions occur.
- The suction hoses must be installed without kinks.
- Check the height of the dosage.
- Rinse the cleaned surfaces with clear water.
- Read and observe the safety data sheets provided by the manufacturer of the cleaning agents.
- Check if the chemicals used are suitable for the surfaces to be cleaned.



Risk of burning or scalding due to hot media!

Do not touch not insulated parts if you are working with fluids where the temperature exceeds 45°C. Wear protective gloves!

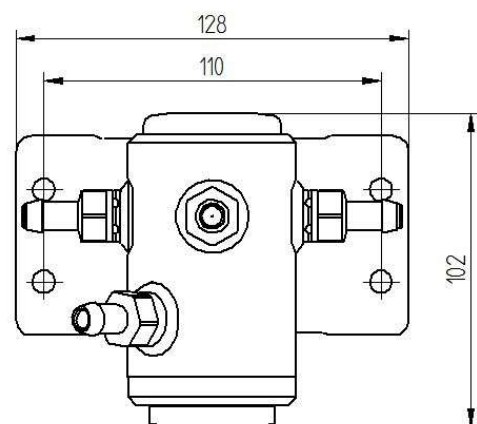


Aerosol formation!

Foam and disinfection agents can produce an aerosol! To prevent inhalation, use suitable respiratory protection! Ensure there is adequate ventilation!

Assembly

- Switch the high-pressure generator off before carrying out assembly work on the high-pressure system.
- Secure the high-pressure generator against being unintentionally switched on.
- Turn the water supply off.
- Ensure that system sections and lines to be opened are not under pressure.
- Seal the screw connectors in accordance with your intended use with an appropriate sealant such as Teflon sealing tape or a liquid sealant (see R+M Catalogue, Chapter 06, Adhesives and sealing materials).
- Fix the bracket securely to a vertical surface. Hang the injector without play onto the bracket. The play can be adjusted using the screw on the back.
- Connect the high-pressure hoses to the inlet and outlet. Observe the markings indicating the direction of flow.
- Secure the suction hoses (9mm ID) with hose clips.
- (Optional) Connect the compressed air hose.

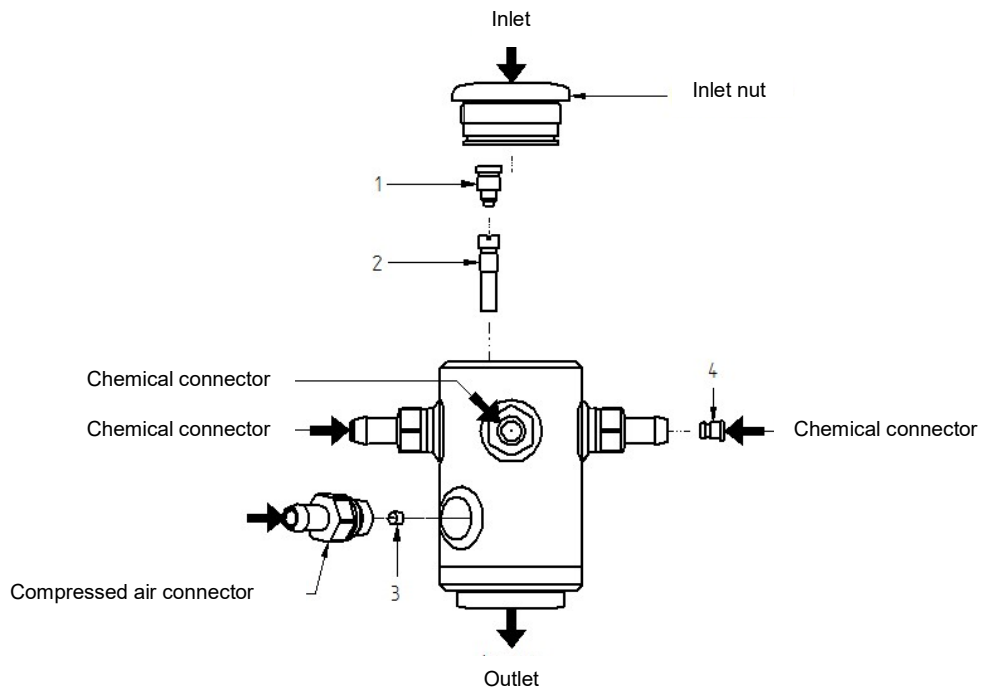


Modification

No modifications of any kind are to be made to the injector!

Nozzle size

- Select the injector nozzles (1.2) based on the data for the high-pressure washer
- To reduce the amount of compressed air, use the nozzle inserts (3) or a compressed air reducer.
- Check the dosage, if necessary use the dosing inserts (4) to reduce the dosage.

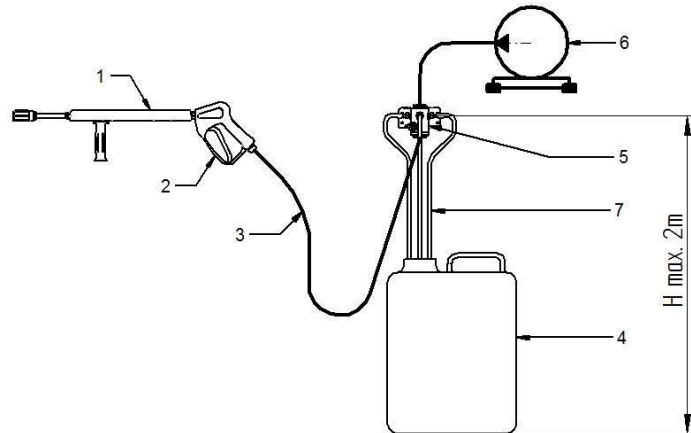


Overview of nozzles

1	2	3	4
Injector nozzle St-168	Diffusor nozzle St-160	Compressed air nozzle St-49	Dosing inserts set
40003642- \varnothing 1,2	40003514- \varnothing 1,4	40075005- \varnothing 0,5	200163340- \varnothing (0,5-1,5mm)
40003643- \varnothing 1,3	40003517- \varnothing 1,7	40075006- \varnothing 0,6	Set with just one nozzle
40003644- \varnothing 1,4	40003521- \varnothing 2,1	40075007- \varnothing 0,7	per size incl. O-rings
40003645- \varnothing 1,5	40003523- \varnothing 2,3	40075009- \varnothing 0,9	
40003646- \varnothing 1,6	40003528- \varnothing 2,8	40075010- \varnothing 1,0	
40003647- \varnothing 1,7	40003532- \varnothing 3,2	40075008- \varnothing 0,8	
40003648- \varnothing 1,8		40075012- \varnothing 1,2	
40003649- \varnothing 1,9		40075015- \varnothing 1,5	
40003650- \varnothing 2,0		40075020- \varnothing 2,0	
40003651- \varnothing 2,1			
40003652- \varnothing 2,2			
40003653- \varnothing 2,3			
40003654- \varnothing 2,4			
40003655- \varnothing 2,5			
40003656- \varnothing 2,6			
40003657- \varnothing 2,7			
40003658- \varnothing 2,8			

Examples for typical connector types

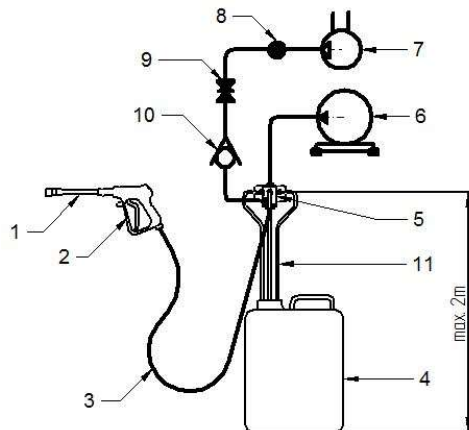
a) Active foam lance



setup: Lance with air injector

Component	Specification
1 Foam lance	ST-72, ST-74, ST-75
2 Spray gun	ST-1500, ST-2300, ST-2700, ST-2320, ST-2315, ST-2615, ST-2620
3 High-pressure hose	min. DN 8mm L=20m / recommend. DN 10mm L= 20m
4 Container with chemicals	
5 Injector	
6 High-pressure pump	Pressure min. 80bar, volume flow min. 8l/min
7 Suction line	max. length 5m

a) Injecting pressurized air



setup: Lance without air injector

Component	Specification
1 Foam lance	ST-20 3100 605, ST-20 3100 610, ST-20 3100 630, 502 808
2 Spray gun	ST-2725, ST-3100, ST-3300, ST-3225
3 High-pressure hose	recommend. DN 12mm L= 20m
4 Container with chemicals	-
5 Injector	ST-160.3
6 High-pressure pump	Pressure min. 5bar/ max. 350bar volume flow min. 8l/min/ max 30l/min
7 Compressed air generator	

8	Pressure reducer	
9	Stopcock	
10	Non-return valve	external non-return valve, to protect the compressed air system
11	Suction line	max. length 5m

Operation

Operate the injector only within the pressure, flow rate and temperature ranges indicated. Before starting work, check the values on the high-pressure generator and adjust these if necessary. Use the level setting to select from two types of chemical. The middle lever setting is used for rinsing (with no suctioning of cleaning agent). After you have read the safety instructions, the injector is remarkably easy to use:

- The amount of compressed air can be adjusted using the compressed air reducer (optional)
- The amount of foam and concentration can be adjusted using the dosing inserts

Transportation and storage

Please ensure the injector is cleaned and protected from contamination during transportation and storage. Protect the injector against frost. The effect of frost can damage the injector so badly that it no longer works perfectly.

Cleaning

- To clean the outer surfaces, use a lint-free cleaning cloth and do not use any aggressive cleaning agents.
- Allow clear water to flow through the suction hoses to rinse the non-return valve.
- Rinse the injector after use and prior to longer periods of inactivity (as from 1 hour)

Maintenance



Assembly, maintenance and repair work may only be carried out by persons trained in maintenance and repair work on high-pressure systems. Use only spare parts approved by Suttner GmbH. Only use high-pressure components (hoses, connectors, etc.) approved for the respective pressure and temperature range.

- Every year, check that the injector is safe to use. Arrange to have any defects immediately rectified by an expert.
- Are the markings and inscriptions legible?
- Do the non-return valves close automatically?
- Does the injector show signs of mechanical damage?
- Check the dosing, depending on the chemicals and intended use, at regular intervals
- Does the seal show signs of damage?
- Are the nozzles worn?
- Are the O-rings damaged?

After max. 1000 operating hours or a year or if hot water (exceeding 60°C) and chemicals are used after 500 operating hours or 6 months: Check valve parts (O-rings, support rings, hose clips) for damage and if necessary replace completely with a Suttner repair kit.

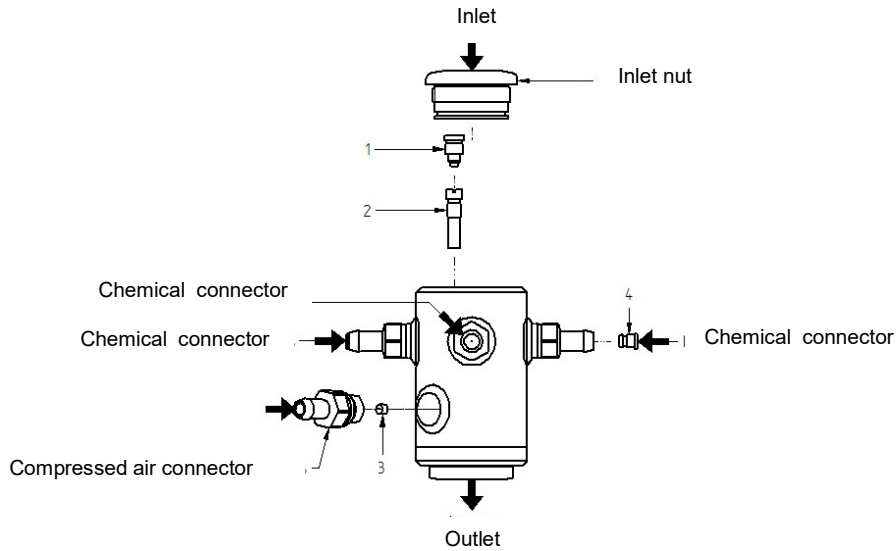
After max. 3000 operating hours or 3 years or if hot water (exceeding 60°C) and chemicals are used after 1500 operating hours or 18 months: Replace valve parts (O-rings, support rings, hose clips) completely with a Suttner repair kit.

Nozzle change: Injector and diffusor nozzle

Vorgang	tool
Screw out the injector nozzle	Hex key SW4
Screws out the diffusor nozzle	Slot screwdriver 7x1,2

Nozzle change: Dosing insert set

Component	tool
Remove the suction pipe	by hands
Remove the dosing set	pliers



Disposal



Please dispose of old equipment in an environmentally friendly manner.

Old equipment contains valuable recyclable materials which should be salvaged for recycling. Please therefore dispose of old equipment at suitable collection points.

Manufacturer

Suttner GmbH
Hauptstraße 15-17
33818 Leopoldshöhe
Germany

info@rm-suttner.com
www.rm-suttner.com