

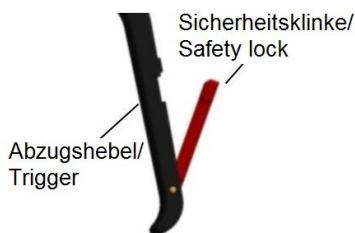
Product Code.: 20 2300 501

## Description



### Spray gun ST-2300

The ST-2300 area of application is professional high pressure cleaning (hot/cold water). The grip housing is from impact-resistant plastic. The valve body and connectors are corrosion-resistant. The trigger is equipped with a safety lock.



### Intended Use

The spray gun is intended for dispensing fluids. These may be PED 97/23/EC Group II fluids, such as for example water and conventional detergents or disinfectants. For further details see EEC Directive 67/548

Dispensing flammable, explosive, caustic or toxic substances is forbidden!

The spray gun must not be operated with abrasive substances.

The spray gun 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 spray gun.

Please also comply with the operating instructions for equipment and accessories connected to the spray gun including regulations applicable to the detergents used.

### Transportation and storage

Please ensure that the spray gun is protected from contamination during transportation and storage. Protect the spray gun from frost. The effect of frost can damage the spray gun to such an extent that correct operation cannot be guaranteed.

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## Safety



### 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 you use the appliance.



### Danger of injury due to high pressure!

Do not aim the outlet nozzle at humans or animals. Do not spray any objects containing substances injurious to health, which conduct electricity or which are fragile!

## 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 including relevant regulations for high pressure jets.



### Danger of injury due to spray medium!

- 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 spray gun trigger lever must not be jammed in the open position or prevented from closing in any other manner.
- Do not aim the spray nozzle at yourself or other living creatures, not even to clean clothing or footwear.
- Never place your hands in the way of the exiting high pressure jet.
- If you are working with detergents read and comply with the detergent manufacturer's safety data sheets. Use the personal protection equipment prescribed.

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#### **Danger of burning or scalding due to hot media!**

- Do not touch anything not insulated if you are working with consumables and additives whose temperature exceeds 40°C.
- Wear protective gloves.



#### **Danger of falling due to exiting water jet!**

- Due to the high pressure of the exiting high pressure jet you will experience a recoil force.
- Please ensure that you stand firmly and hold the spray gun or lance tight using both hands.
- Do not use the spray equipment when on slippery floors or ladders.
- Secure yourself on scaffolding or staging against falling.
- Select the suitable jet nozzle size as indicated in the Jet Nozzle Sizes and Forces Chapter of these Operating Instructions if torque exceeds 20 Nm.



#### **Danger of personal injury and material damage due to displaced particles!**

During high-pressure cleaning particles of dirt and other loose particulate materials are displaced from the surface being cleaned. Due to the energy of the high-pressure jet these particles are vastly accelerated and may lead to material damage and personal injury.

- See "Personal Protection Equipment" in the German Accident Prevention Regulations (VBG101 – i.e. German Institution for Statutory Accident Insurance and Prevention in the Administrative Sector) - currently in draft form. Personal protection equipment includes, for example, protective clothing, protective headgear, non-slip gloves and non-slip boots, ankle protectors, respiratory equipment, ear protectors, protective goggles or face shields.
- Please do not use the equipment if persons without protective clothing are within range.



#### **Danger of injury and material damage due to high pressure!**

- Do not spray any objects containing substances injurious to health (e.g. asbestos), which conduct electricity or which are fragile (e.g. glass).

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When spraying sensitive surfaces (e.g. vehicle tyres, painted surfaces) damage may occur. For sensitive surfaces do not use any fine needle jets and maintain a minimum jet spray distance. The minimum jet spray distance depends on the pressure and the surface to be cleaned.

## CE labelling and standards

The spray gun meets the requirements of DIN EN 60355-2-79 (from 350 bar upwards DIN EN 1829). Due to its low volume the spray gun - when used with Group II fluids - comes under Article 3 Paragraph 3 of Pressure Equipment Directive 97/23 EC. Accordingly the spray gun must be designed and manufactured in accordance with "good engineering practice" and is exempt from CE labelling. No CE label may be attached or any Declaration of Conformity issued.

## Technical Specification

Maximum permissible pressure	310 bar / 31,0 MPA / 4500 PSI
Minimum pressure	10 bar / 1,0 MPa
Recommended pressure	280 bar / 28,0 MPa
Maximum flow rate	45 l/min
Temperature	5 - 150 °C
Jet nozzle size	min. 020
Input connector	G3/8 IG
Outlet connector	G1/4 IG
Weight	ca. 1,0 kg

Abkürzungen und Symbole	
FT, MT	Female thread, male thread
G	Withworth-pipe thread to DIN ISO 228, identical BSP = British Standard Pipe
NPT	National Pipe Thread, American standard thread

Die in dieser Betriebsanleitung angegebenen Einsatzgrenzen für Druck, Temperatur und Medien sind in Tests ermittelte Maximalwerte. Im Einsatz muss berücksichtigt werden, dass aufgrund der wechselseitigen Beeinflussung der Betriebsparameter die Maximalwerte entsprechend niedriger anzusetzen sind. Das dauerhafte Arbeiten unter Maximallastung kann die Lebensdauer der Spritzpistole verkürzen

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## Working with the ST-2300

Operate the spray gun only within the pressure, flow rate and temperature ranges indicated. Prior to commencement of work check the levels each time at the high pressure generator and adjust these if necessary. After familiarising yourself with the safety instructions operating the spray gun is fairly simple:

- To operate the spray gun, retract the safety lock.
- Operate the trigger to open the spray gun.
- Release the trigger to close the spray gun. The spray gun is still under pressure.
- To prevent accidental activation of the spray gun move the safety lock up.
- Do not leave the spray gun unattended with the high pressure generator switched on.
- Rotating swivel joint (optional): So that the high pressure hose cannot be turned so as to unscrew the connection between high pressure hose and spray gun a swivel joint may be used. By means of this swivel joint the gun may be turned slightly when in an unpressured state in relation to the hose. With increasing pressure the swivel joint becomes increasingly difficult to turn.
- If you change the fluid, also rinse the system between changes thoroughly with water.
- Move the safety lock up in order to secure the spray gun against accidental activation.

## Cleaning

- Clean the unit prior to lengthy non-working intervals. If you have been working with detergents, operate the spray gun and rinse it clear with water for 20 seconds.
- Operate the gun briefly in order to depressurise it. The pressure generator must be switched off during this operation.
- If using the gun with detergent or disinfectants, rinse the gun thoroughly with water before lengthy work interruptions (over 1 hour).
- Only use a fibre-free cleaning cloth for cleaning the exterior.
- Do not use any powerful detergents.
- Rinse clear.

## Assembly

Assembly, repair and maintenance work may only be carried out by persons trained in repair and maintenance 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.

In order to prevent blockages incorporate a fine (recommended 50µm) filter into the high pressure generator water supply.

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If the high pressure system has been used with hot water previously allow it to cool down to avoid the danger of scalding or burning before commencing assembly and maintenance work.



### Risk of injury!

Physical interference when the high pressure generator is running can lead to serious accidents.

- 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.

Screwed connectors: Seal the screw connectors in accordance with your type of use with an appropriate sealant, e.g. Omnifit 100 M SP. Tighten high pressure assembly screw connectors to a minimum of 25 Nm.

Shut off the high pressure hose from the high pressure generator to the spray gun input.

Assemble any intended accessory components to the output side.

After repair and maintenance work check proper functioning of safety equipment

## Servicing

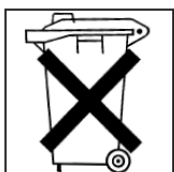
Check annually that the spray gun is in a safe condition. Have any defects rectified immediately by a specialist technician.

- Are all identification markings and labels legible?
- Does the spray gun shut off automatically?
- Does the safety lock function correctly?

**After 1000 operating hours** or one year or alternatively if using hot water (90°C plus) and chemicals 500 operating hours or 6 months: Check valve components (seal seats, O-rings, thrust rings, ball, piston rod, pressure pad) for damage and if necessary replace using a Suttner Repair Kit.

**After 3000 operating hours** or three years or alternatively if using hot water (90°C plus) and chemicals 1500 operating hours or 18months: Replace valve components complete using a Suttner Repair Kit.

## Disposal



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### Please dispose of old units in an environmentally friendly manner

Old units contain valuable recycling materials which should be forwarded to a recycling facility. Please dispose of old units therefore via appropriate collection points.

## Jet size and working loads

### Calculating jet size

In order to achieve a stipulated flow rate at a given pressure a suitable jet is necessary. You can calculate the jet size using the top diagram on the next page:

1. For the desired pressure draw a vertical line upwards.
2. For the desired flow rate draw a horizontal line and find the point of intersection of the two lines.
3. Select the curve nearest the point of intersection.

At the right extremity of the curve you can read off the jet size.

For example, for a pressure of 100 bar and a flow rate of 10l/min, a jet size of 045 results.

### Recoil forces

The exiting high pressure water jet generates a recoil force. This can be so great that the spray gun can no longer be held safely. So determine the recoil force using the bottom diagram on the next page.

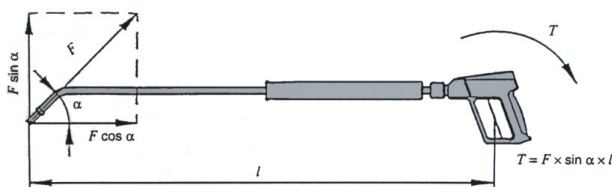
1. Draw a vertical line at the desired flow volume.
2. Find the intersection point with the curve which equates to the jet size used.
3. Draw a horizontal line to the left from the intersection point.

There you can read off the recoil force.

For example, at a flow rate of 30l/min and a size 090 jet there is a recoil force of 100 N. At recoil forces > 150 N along the longitudinal axis the spray unit must be additionally fitted with a body support.

### Torque forces

Angled lances and jets generate a torque force. Under DIN EN 60335 regulations the maximum permissible torque force at the spray gun grip is 20 Nm. Be sure to take into consideration the torque force in the case of angled spray equipment. For example, for a recoil force of 100 N, a length of 1 m and an angle of 30° the torque force is already 50 Nm (100 N x 1 m x 30°).



# Diagrams

