

52C3KSA -1 52C3KSA -2



IMPORTANT: For your own safety and that of others, please make certain that everyone who uses the 52C3KSA-1/-2 high pressure washer reads and understands these instructions thoroughly prior to operation.

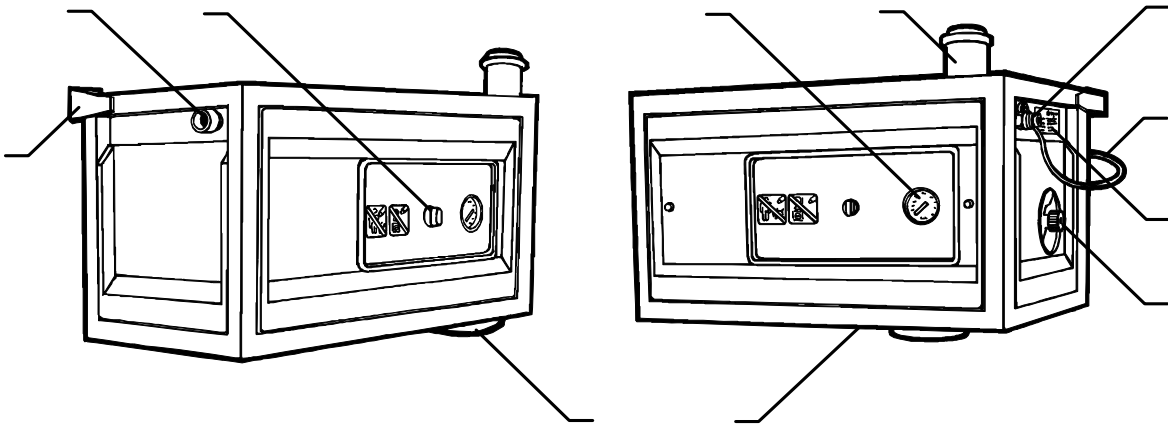
 Operator's manual

 ALTO®

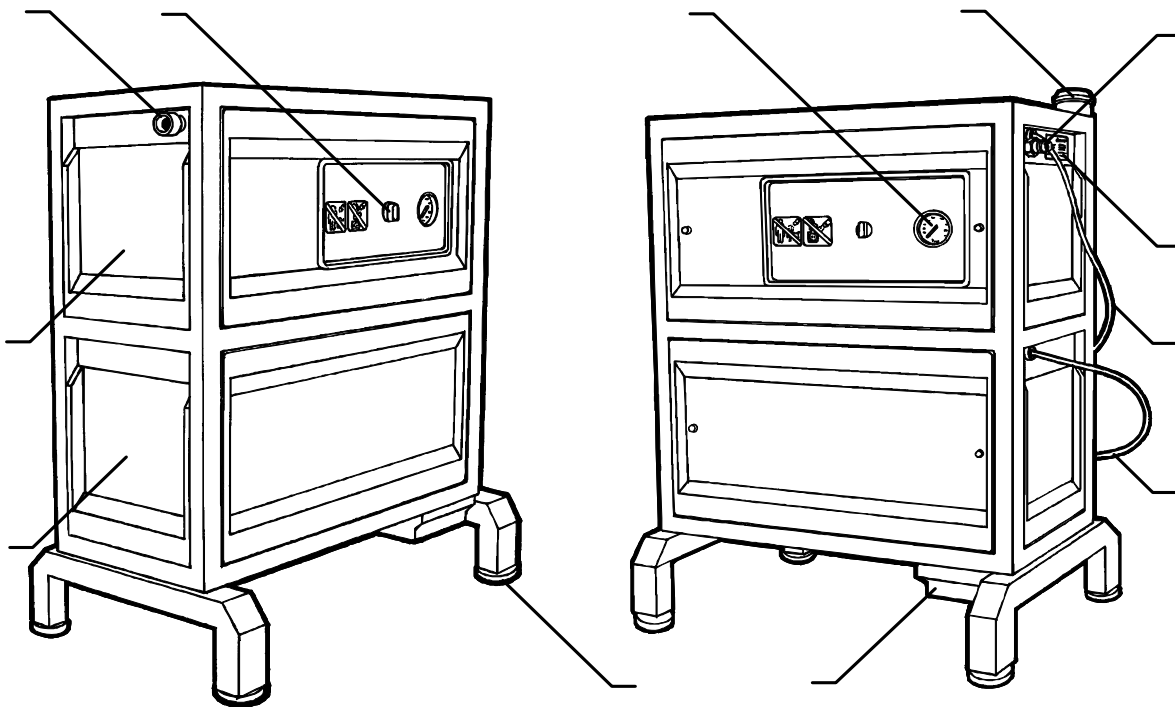
Total Cleaning
Confidence™

KEW
TECHNOLOGY

C3KSA-1



C3KSA-2



IMPORTANT: Read this instruction manual before you start up your high pressure washer for the first time.

This machine is a high pressure washer producing a water jet under high pressure which is why severe injuries can occur if the safety precautions are not observed.

Therefore a complete understanding of the contents of this instruction manual is required in order to prevent injuries to yourself, objects and persons nearby, and the machine itself.

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Designations

US

(see illustrations on the front cover)

1. Electric cord
2. Connection of water and water filter
3. Start/stop switch
4. Oil level and filling
5. Pressure gauge
6. Outlet connection
7. Sludge container
8. Waste tray
9. Model tag
10. Water regulation valve
11. Bracket for wall fitting (KSA-1)
12. Vibration damper (KSA-2)
13. Drain plug

The environmental policy of ALTO

ALTO has made it a natural part of the concept of the company to reduce the impact on our environment as much as possible. This plan is effected through a constant development in all branches of the company so that the greatest number of elements in our high pressure washers affects the environment to a minimum.

This product too is characterized by the attitude of ALTO towards our environment.

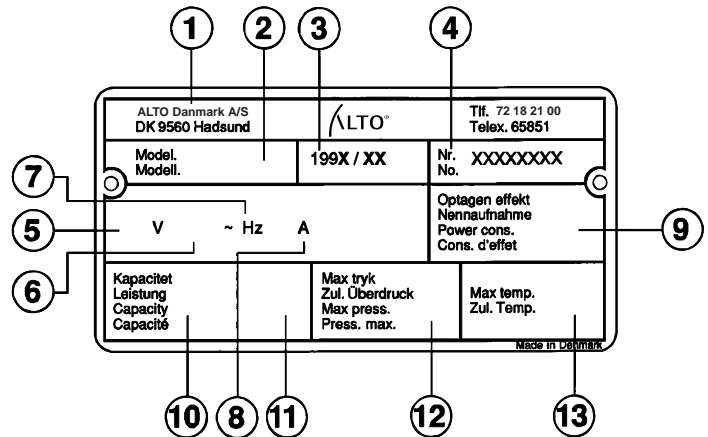
For the production of this high pressure washer the latest production technique within a cleaner technology has been applied. The consumption of unnecessary subsidiary materials has been minimized and during the final test of the product the test water is recycled.

1.1 Model tag

This ALTO high pressure washing system has the serial designation C3KSA. The system is available with one and two pumps respectively. The designation appears from the text on the cabinet, ALTO 52C3KSA-2 as an example, and the model tag (pos. 9) on the right side of the machine.

The tag provides the following details:

1. Manufacturer
2. Model designation
3. Production year and week
4. Serial number
5. Rated voltage
6. Electric coupling
7. Frequency
8. Power consumption (Amps)
9. Power absorption
10. Pump pressure
11. Capacity
12. Max. pressure
13. Max. temperature



1.2 Technical data

Model		52C3KSA-1	52C3KSA-2
Pump pressure ¹⁾	psi	2600	2600
Water volume, min/max pressure	gpm	5.6/4.8	11.2/9.6 (2-pump)
Water tank, capacity	gal	1.5	1.5
Oil capacity	qt	1	1
<i>Spray lance:</i>			
Nozzle number, high/low pressure		06/30	06/30 ²⁾

¹⁾ 33 ft. (3/8") high pressure hose and no pipeline.

²⁾ On C3KSA-2 systems it will be possible to use a COLORED spray lance. See section 4.5.

Sound pressure level LpA measured in accordance with ISO 11202 [DISTANCE 1m] [FULL LOAD]: 82 dB(A).

Data at 44 psi inlet pressure and 54°F inlet water.

We reserve the right to make alterations.

2.0 Instructions for use Safety precautions and warnings US

Before starting your high pressure washer for the first time, we advise you to read through the following sections: **2.0 Instructions for use** and **3.0 Operating instructions** and to follow all instructions to ensure the protection of user, surroundings and machine.

- WARNING -
Risk of Injection or Injury -
Do not Direct Discharge Stream at Persons

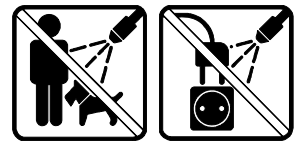
The high water pressure from a high pressure washer may cause personal injury or property damage if the following „IMPORTANT SAFETY INSTRUCTIONS“ are not strictly observed.

IMPORTANT SAFETY INSTRUCTIONS

- WARNING -

When using this product, basic precautions should always be followed, including the following:

- Read all of the instructions before using the product.
- To reduce the risk of injury, close supervision is necessary when the pressure washer is used near children.
- Know how to stop the product. Be thoroughly familiar with all the controls.
- Stay alert - watch what you are doing.
- Do not operate the product when fatigued or under the influence of alcohol or drugs.
- Keep the operating area clear of all persons.
- Do not over-reach or stand on unstable support. Keep good footing and balance at all times.
- Follow the maintenance instructions specified in the manual.
- **WARNING!** Never direct the water jet towards people, pets, electric wiring, or the machine itself.
- **WARNING!** Never try to clean clothes or footwear on yourself or other persons.
- Wear eye protection during operation.
- Never work barefoot or with sandals.
- **WARNING!** The operator and anyone in immediate vicinity of the cleaning site should protect himself from being struck by debris dislodged during cleaning operations.
- Only trained personnel, familiar with this manual should operate the machine.
- The spray handle and lance are affected by thrust during operation - Always hold the spray lance firmly with both hands.
- When the machine is not in use, the spray handle trigger should be locked.
- Activate the trigger **only** by hand. Never tie or wedge it open in any other way.
- Avoid damage to the high pressure hose (such as running over it with vehicles, squeezing, pulling, knots/kinks etc.) and keep it away from oil and sharp or hot objects. Failure to protect the hose may cause it to burst.
- Never detach the high pressure hose or the water inlet hose while the machine is in operation (risk of scalding). Disconnect the power and the inlet water connection before detaching the high pressure hose or the water inlet hose.
- Avoid damage to the power cord (such as running it with vehicles, squeezing, pulling, knots etc.) and keep them away from sharp or hot objects.
- **Never** use the machine in an environment where there could be a danger of explosion.
- **WARNING!** The integrity of high pressure hoses, nozzles and connections are important for safety when operating the machine. **Only** use the high pressure hoses, nozzles and connections prescribed by ALTO.



- For safety reasons only use original ALTO accessories and spare parts. Otherwise the machine could be damaged.
- In freezing conditions, never start the machine until it, and the hoses and accessories have thawed.
- The machine should not be covered during operation.
- The most efficient cleaning is obtained if you adjust the distance to the surface which is to be cleaned. Thus you will also avoid damaging the surface.

SAVE THESE INSTRUCTIONS

2.1 Unpacking

Once the pressure washer has been taken out of the packaging, check that it is complete and without any defects; if in doubt, the pressure washer should not be put into use and you should contact the nearest ALTO service organization.

2.2 Startup

Check the power cord

The insulation of the power cord should be faultless and without any cracks.
Please contact a qualified electrician or the nearest ALTO distributor if it is not so.

Check the voltage

Check that the voltage stated on the model tag corresponds to your receptacle.

Power consumption, fuse/breakers

Check the power consumption stated on the model tag and check for correct fuse/breaker.

- WARNING -

If these Instructions aren't followed, it may be dangerous to use your pressure washer.

GROUNDING INSTRUCTIONS

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electrical current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER - - Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or service personnel if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the product - if it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use any type of adapter with this product.

WARNING - - To reduce the risk of electrocution, keep all connections dry and off the ground. Do not touch the plug with wet hands.

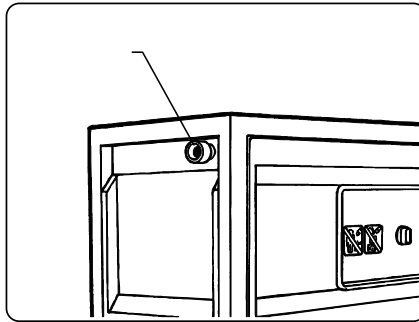
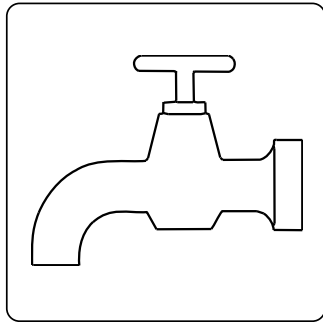
2.3 General

- DO NOT clean asbestos-bearing surfaces with this machine, unless using special equipment in accordance with appropriate regulations,
- Never touch plug and receptacle with wet hands.
- **WARNING!** This machine has been constructed for use with "normal" detergents. The use of aggressive detergents or chemicals may cause operating and safety problems.

- When using detergents, the instructions should always be strictly observed.
- Always unplug the machine before cleaning or maintenance of the machine.
- Don't use the machine if the power cord or important parts of the equipment are damaged - i.e. safety devices, high pressure hoses, spray handles, cabinet.
- If the power cord is damaged, it should be replaced by a ALTO trained service technician or a qualified electrician to avoid a hazardous situation.
- The owner and operator are obliged to observe any working environment or working safety regulations concerning the operation of this high pressure washer.

SAVE THESE INSTRUCTIONS

3.1 Water connection



*Flexible hose connection
Max. water pressure 218 psi
Max. 160°F*

*Inlet water shutoff cock required
Clean water inlet screen (1) at monthly intervals*

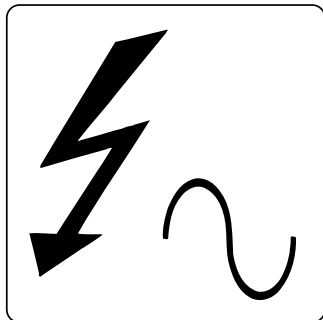
The water connection is made through a flexible hose connected to the quick coupling on the water inlet (1) of the machine. The connection can be made to a cold or hot water supply.(max. 160°F).

A shut-off cock should be mounted on the water supply near the machine.

The machine features a water tank and no further protection against return water into the supply is required.

If there is a risk of dirt, rust, or other impurities in the inlet water, a sand filter should be mounted before the internal screen on the machine. (for further connection data see section 1.2 Technical data).

3.2 Mains power connection



*Only connect to an approved receptacle with grounding conductor
Power disconnect switch near the machine*

Connect the machine to an approved receptacle near the machine, so that it will be possible to switch off power.

Check voltage, fuse, and cords according to section 2.1.

Power requirements can be found on the model tag(s) of the system.

KSA-1: The machine is delivered with an electric cord without plug. Any plug should be mounted by a qualified electrician.

KSA-2: KSA 2 pump systems are intended to be permanently connected to fixed wiring and a separate disconnect switch is recommended for each pump.

3.3 High pressure connection

IMPORTANT: When connecting to a pipeline always use a flexible hose connection from the outlet of the machine (pos. 6) - order no. 6300843. Contact your ALTO distributor for further information.

KSA-1

The outlet of the machine can be connected to a pipeline with multiple outlet points, or a standard high pressure hose can be connected directly to the outlet of the machine.

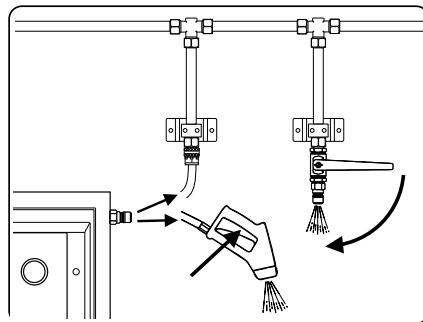
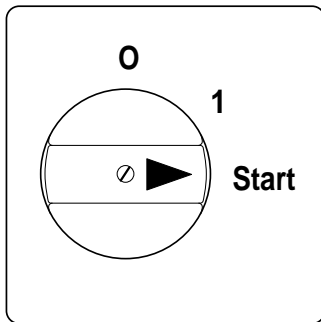
KSA-2

The system has especially been constructed for connection to a pipeline with multiple outlet points.

It is recommended you allow your ALTO distributor assist with the layout of the pipeline.

3.4 Venting

KSA-1



*Turn to position „Start“
Activate spray handle/open outlet point*

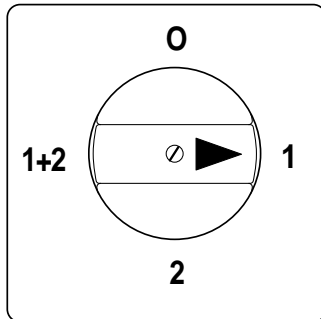
In the case of newly installed systems, or if the pipeline and the pump have been drained in any other way, the system should be vented by starting the pump and then let the water run freely at each outlet point of the pipeline in turn.

When connecting the high pressure hose directly to the machine, the system should be vented by starting the pump and activating the trigger of the spray handle without the spray lance attached.

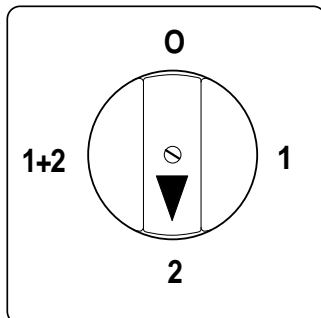
Let the water run until all air has escaped from the pump (regular water flow).

KSA-2

In the case of newly installed systems, or if the pipeline and the pump have been drained in any other way, the system should be vented as follows:



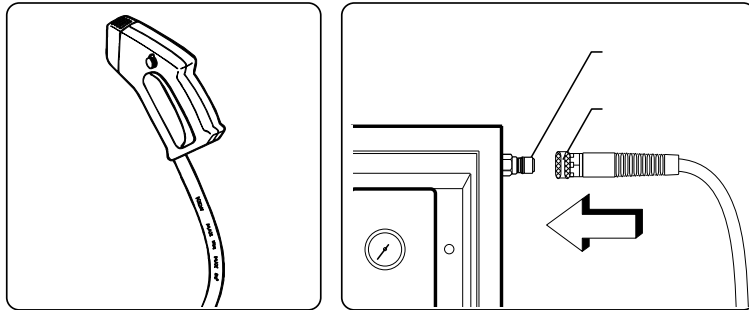
1. Start pump no. 1 and let the water run from an outlet point of the pipe-line. When connecting a high pressure hose directly to the machine, activate the trigger of the spray handle without the spray lance attached. Let the water run until all air has escaped from the pump (regular water flow).



2. Stop pump no. 1. Then start pump no. 2 and let the water run from an outlet point of the pipeline. When connecting a high pressure hose directly to the machine, activate the trigger of the spray handle without the spray lance attached. Let the water run until all air has escaped from the pump (regular water flow).
3. Vent the pipeline by starting a pump and letting the water run from each outlet point (begin with the outlet farthest from the machine) until all air has escaped from the system.

4.1 Connections

1. High pressure hose - directly on the machine



Max. length of extension hose: 160 ft.
Only use ALTO high pressure hose

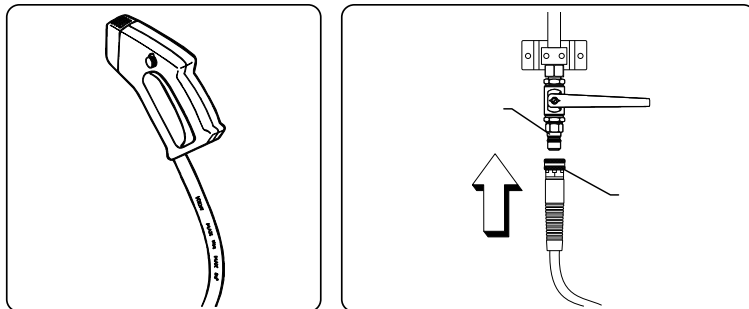
Danger of scalding!

Never dismount high pressure hoses at water temperatures above 120°F

The high pressure hose with imprinted max. working pressure and temperature should be attached to the outlet connection of the machine (1) by the quick coupling (2).

IMPORTANT: Prior to detaching the high pressure hose, the machine should be stopped and the shut-off cock closed. Then activate the trigger of the spray handle to relieve the high pressure hose of pressure.

2. High pressure hose - to outlet point



Max. length of extension hose: 160 ft.
Only use ALTO high pressure hose

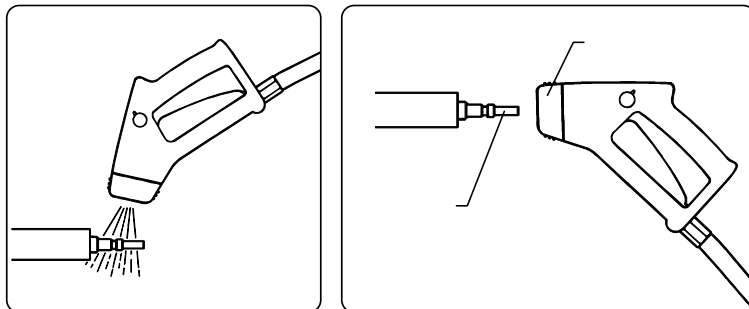
Danger of scalding!

Never detach high pressure hoses at water temperatures above 120°F

In the case of a pipeline with fixed outlet points, a high pressure hose with imprinted working pressure and temperature should be attached to the nipple of the high pressure cock (1) by the quick coupling (2). After attachment, turn the handle of the high pressure cock (3) to open position.

IMPORTANT: Prior to detaching the high pressure hose, or when changing to another outlet point, the high pressure cock should be fully closed. Then, activate the trigger of the spray handle to relieve the high pressure hose of pressure.

3. Spray handle - accessories



Clean nipple of any impurities before attaching the spray lance.

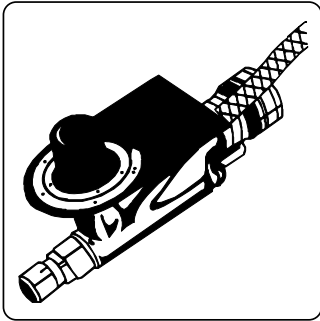
Pull and hold the blue quick coupling release (1) forward.

Insert the nipple of the spray lance (2) in the quick coupling and allow the release to return to the engaged position.

„Tug“ the spray lance or accessory lance forward to ensure secure attachment, before starting the machine. Max. thrust of spray handle and lance - see section 1.2 Technical data.

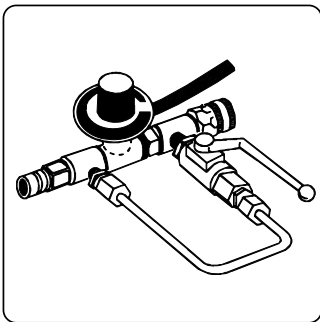
4. Detergents

If you want to apply detergents or disinfectants these can be metered through an accessory injector. Below you will find various types of outlet points with injectors.



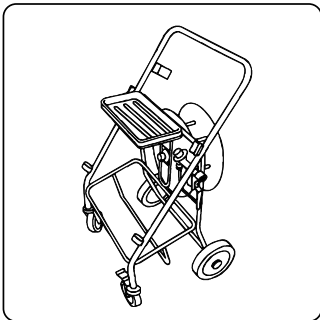
Outlet point with detachable injector

To be attached to the quick coupling of the high pressure cock.
To be used for dosing of low-foaming detergents or disinfectants.
Metering range 1-8%.



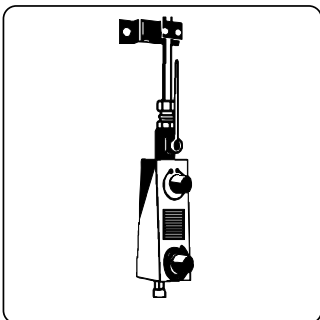
Outlet point with detachable foam injector

To be attached to the quick coupling of the high pressure cock.
To be used in conjunction with foam lance for application of high-foaming detergents or disinfectants.
Metering range 1-5%.



Cleaning cart with foam injector and reel

To be attached to the quick coupling of the high pressure cock.
To be used in the same way as „Outlet point with detachable foam injector“.
Makes it possible to carry 4 spray lances, 2-6 gallon containers and 66 ft. of high pressure hose.



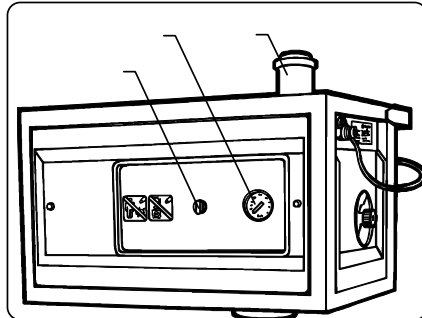
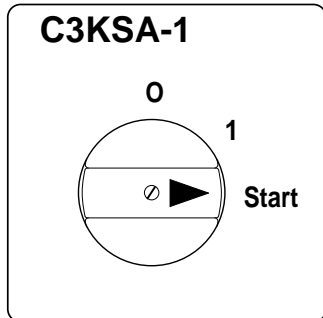
Outlet point with built-in injector and regulation of water volume (only KSA-2)

Fixed to the pipeline.
Allows the operator to regulate the discharge water volume from 2.4 gpm to full volume, with or without the metering of detergents or disinfectants.
Metering range 1-12%.

4.2 Starting

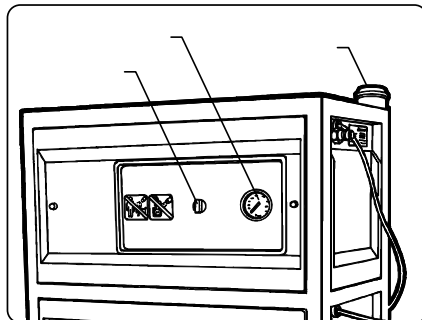
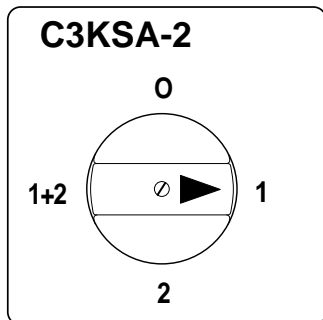
Check that the oil level in the oil reservoir(s) (2) is between the MIN. and MAX. markings. The inlet water shut-off cock should be open.

NOTE: The system automatically stops after approx. 4 seconds if there is no water consumption. In the event of a power failure or activation of the thermal switch (with subsequent cooling) the system can be restarted from pos. 0.



Check oil level
Turn to „Start“ position

KSA-1: Turn the red start/stop knob (1) to position „Start“ (it's spring-loaded and when released, it will return to position 1 = operation). Watch the pressure gauge (3) to see that pressure is being built up in the system when activating the trigger of the spray handle, on which a spray lance set for high pressure is attached. If pressure does not build, vent the machine as described in section 3.4 Venting.

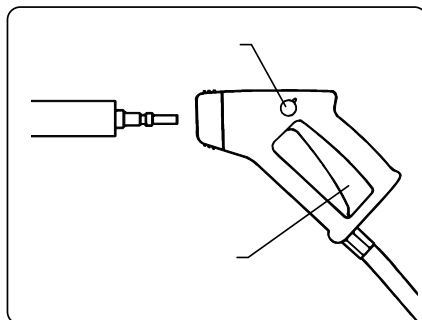


Check oil level

Turn to:
Position 1 = Pump no. 1 in operation
Position 2 = Pump no. 2 in operation
Position 1+2 = Pumps no. 1 & 2 in operation

KSA-2: Turn the red start/stop knob (1) to position 1, 2 or 1+2. Ensure that pressure is building in the system by watching the pressure gauge (3). If pressure is not being built, vent the machine as described in section 3.4 Venting.

4.3 Operation - automatic start/stop

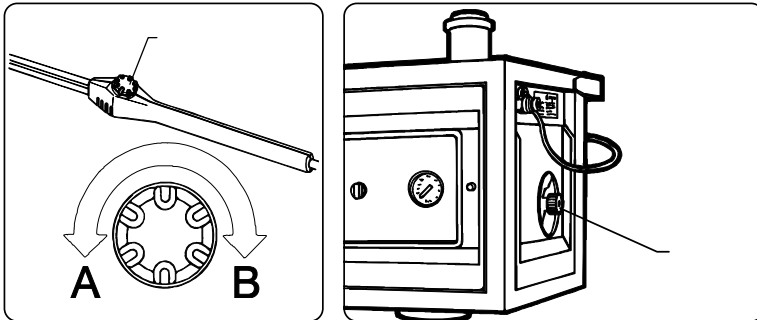


Always hold the spray lance with both hands!

Always lock the trigger when the machine is not in operation.

Once started, the system will automatically re-start when the spray handle trigger (1) is activated. When the trigger is released, the system automatically stops after approx. 4 seconds. When the machine is not in use, the trigger should be locked by turning the safety knob (2) into position 0.

4.4 Double spray lance, regulation of pressure and water volume - KSA-1



Turn spray lance pressure reducing valve (1):

Clockwise (B): high pressure

Counter clockwise (A): low pressure/
detergent application

The spray lance employs a high pressure nozzle and a low pressure nozzle. On KSA-1 pump systems the water volume is adjusted on the water regulation valve of the pump (2).

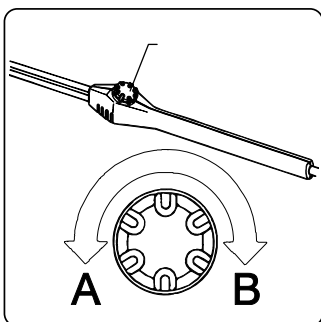
High pressure mode

The max. working pressure of the machine is reached when the pressure reducing valve (1) is completely closed (B), and the water regulation valve (2) is fully counter-clockwise. In this position only the high pressure nozzle is used - high pressure mode. The water volume is infinitely variable (2) between min. and max. output. Reduced water volume = reduced pressure. With the trigger released, turn the water regulation valve (2) to adjust volume and pressure (clockwise = Lower volume and pressure). Minimum volume results in a working pressure of 580 psi through the high pressure nozzle (only), and a water volume of approx. 2.4 gpm. If you want more water volume, the valve (2) should be turned counter-clockwise until the desired result is achieved. 1 turn provides change of approx. 725 psi.

Low pressure mode

When the reducing valve (1) is completely opened (A), the pressure will be fully reduced. The nozzle pressure will be approx. 60 psi. In this position both spray nozzles are used - low pressure mode / possibility of dosing detergents.

4.5 Double spray lance, regulation of pressure - KSA-2



MULTIPRESSURE			
P PSI	Q GPM	C	N
390	3.7	White	1
390	7.7	Black	2
720	3.7	Brown	1
770	7.3	Green	2
1160	3.7	Blue	1
1160	5.9	Red	2
1550	3.7	Orange	1
1550	5.7	Yellow	2
2200	3.7	Steel	1

Turn pressure reducing valve:

Clockwise (B): high pressure

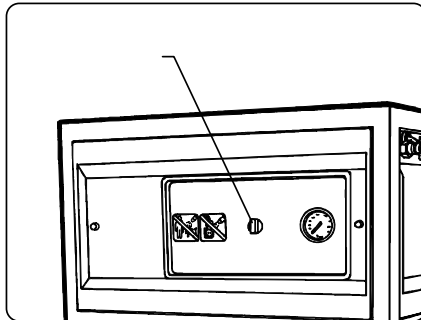
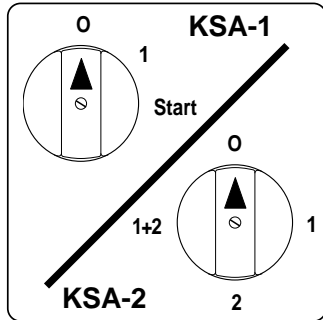
Counter clockwise (A): low pressure/
addition of detergents

The spray lance features a high pressure nozzle and a low pressure nozzle. When the pressure reducing valve (1) is completely closed (B) only the high pressure nozzle is used - high pressure mode. When the reducing valve is open, (A) both nozzles are used - low pressure mode/applying detergents. The pressure may be regulated between these positions.

Regulation of pressure/water volume

When using special COLORED spray lances, the pressure and the water volume may be chosen for the individual cleaning task. The table shows the pressure (P) of the nine different nozzles, the water volume (Q), the color code (C) and the number of pumps (N) required to support operation of the individual lances. Contact your ALTO distributor for further information.

4.6 End of operation

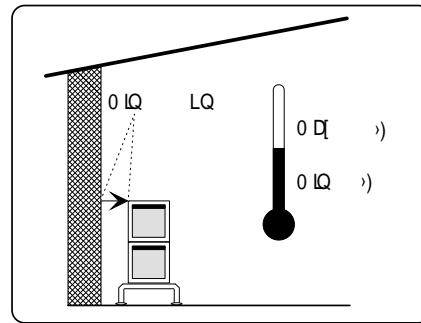
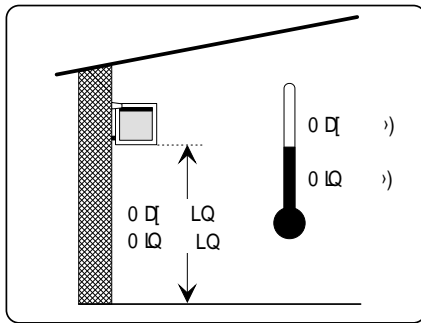
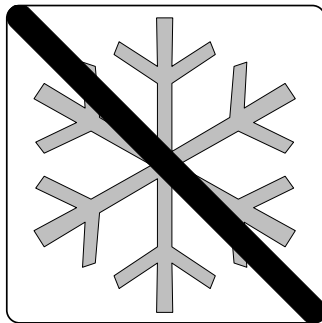


Turn to position 0
 Never detach the high pressure hose while the machine is in operation = Position 1, 2 or 1+2.

Danger of scalding!
 Never detach high pressure hoses at a water temperature above 120°F

To stop the machine turn the red start/stop knob (1) to position 0.
 Close the shut-off cock of the water inlet (pos. 2) and activate spray lance or high pressure cock to relieve the pipeline / high pressure hose of pressure.

4.7 Operating environment - installation



The system should be installed in a frost-free room. Pipelines and outlet points should also be protected. It should be possible to drain outdoor outlet points if they are exposed to frost. Min. room temp. = 36°F. Max. room temp. = 104°F.

IMPORTANT: Hoses, spray handle, lances and other accessories should always be thawed prior to use.

5.1 Fields of application

The most important fields of application for this product are:

Agriculture	Cleaning machinery, agricultural implements, stalls, equipment, and buildings
Transport	Cleaning trucks, buses, cars etc.
Building and construction	Cleaning vehicles, equipment, buildings etc.
Light industries	Degreasing and cleaning of machines, production parts, and vehicles.
Service	Cleaning vehicles, cleaning of walkways, patios, etc.

5.2 Working pressure

The high pressure system may be used with high or low pressure at your own option.

Low pressure	Used for application of detergents and for rinsing.
High pressure	Is used for cleaning/agitation.
Intermediate pressure	As an example it may be used for the cleaning of surfaces, which will not tolerate full pressure, i.e. soft surfaces.

5.3 Detergents

As standard, the system is delivered without a detergent injector.

If you want to use detergents or disinfectants these should be added through an external injector (see section 4.1.4).

The most efficient cleaning is reached with detergents in conjunction with the high pressure cleaning. For that purpose ALTO can offer you a series of products specially developed for high pressure cleaning, among other fields within

Cleaning of vehicles, machines, stalls etc.
Degreasing

Descaling

The products are water-based, and comply with the present requirements for easy biodegradability.

Contact your ALTO distributor for suggestions as to which product(s) will best meet your needs.

The method of application and the metering of the individual products can be found on product labels or the data sheet.

Low-foaming detergents are applied through an injector and under low pressure. Switching to agitation under high pressure is performed by turning the regulating knob on the double spray lance, or by attaching a high pressure spray lance if you are working with Foam application equipment.

For foam cleaning you will have to use a special foam lance and injector. Insert the injector pickup hose into the foam detergent. Attach the foam lance to the spray handle and you are ready for foam application. After the foam application, open the by-pass valve on the foam injector and replace the foam lance with a spray lance.

General rules for addition of detergents

ALTO cleaning equipment can be used for all detergents and disinfectants, which are suitable for high pressure cleaning according to the supplier. (The pH-value should be between 4 and 14). Acid and lye should not be applied in a concentrated form.

Carefully observe the instructions and guidance of the supplier, as well as the rules concerning safety clothing and drainage facilities.

Detergents, which are not specifically prescribed for use with high pressure cleaning equipment should only be used if you are safe for the machine and the environment. Contact your ALTO distributor for assistance if in doubt.

The use of ALTO detergents ensures that machines, accessories and detergents match, which will result in the optimal solution of a cleaning task.

ALTO can offer you a wide range of efficient agents for cleaning. The products are formulated of substances which combine efficiency and environmental considerations at one and the same time.

5.4 Working methods

Your high pressure washer has been developed for cleaning according to the so-called »2-step method«. However, your high pressure washer must be equipped with an external detergent injector (see accessories catalogue).

STEP 1	Application of detergent
STEP 2	High pressure cleaning/agitation

In practice the working process is determined by the actual task, but as a starting point, the following method can be described for a job:

1. Apply detergent under low pressure to prevent aerosol and waste. (See Tip no.1, below) The concentration is chosen according to the job and the metering is done by the injector setting.
2. Allow contact time. Let the detergent act on the dirt/surface for a short time prior to pressure cleaning - usually a few minutes. DON'T let the detergent dry on the surface.
3. High pressure cleaning. Agitate all surfaces under high pressure.
4. Rinse afterwards, if necessary, to make sure that residual impurities and chemical are removed from the surface.

Optimum cleaning results will be achieved by following these 3 „Tips“:

Tip no. 1

When using a detergent, always apply it on a dry surface if possible. (If the surface is rinsed with water at first, it may be difficult for it to absorb the detergent, and the result is a reduced effect of the detergent).

Tip no. 2

When applying a detergent on large vertical surfaces (i.e. the sides of a truck) apply from the bottom-up. This will help prevent the detergent from running off the surface through grooves and dark streaks appearing on the surface while cleaning.

Tip no. 3

While high pressure cleaning, work so that the high pressure water does not run over dirty surfaces which have not yet been cleaned. This will aid the detergent eventually applied on that surface.

A minimum of maintenance ensures prolonged and problem-free operation. It's a good idea to make a habit of the following:

Prior to attaching the water hose and the high pressure hose, the quick couplings should be rinsed to remove dirt.

Prior to attaching the spray lance or other accessories to the spray handle, the machine should be started and the quick coupling rinsed before insertion into the spray handle.

The machine should be mounted in a frost-free room. If the machine freezes, it must not be started until it is thoroughly thawed, along with hoses and accessories.
NEVER START A FROZEN MACHINE.

6.1 Oil

The oil should be changed after each 1000 hours' use.

Remove the cover of the oil reservoir (Pos. 4). Unscrew the drain plug (Pos. 13). Drain the oil and clean the drain plug of impurities. Reinstall the plug and refill the pump with fresh oil through the oil reservoir. Holds approx. 1 qt.

From ALTO the pump is filled with zincless hydraulic oil - ALTO Pump Oil 100. When refilling and changing the oil this or an oil with the following specifications should be used:

ISO no. 100
Viscosity index (VI) min. 130
Pour point below -30°C

6.2 Sludge container / waste tray

As for KSA-1 the used oil is caught in a sludge container (pos. 7), and as for KSA-2 it is caught in a waste tray (pos. 8). The container/tray should be emptied before it is full; this oil must not be reused in the pump.

PROTECT THE ENVIRONMENT

Waste oil and oil sludge must be removed and properly disposed of.

6.3 Inlet water screen

To prevent contaminants from entering the high pressure pump, a screen is fitted at the water inlet. Depending on the purity of the water this screen will have to be cleaned at regular intervals.

The screen can be removed by first removing the inlet quick coupling (Pos. 2).

6.4 Clearing of high pressure nozzle

A clogged nozzle causes excessive pump pressure, and clearing is immediately required.

1. Stop the machine and detach the spray lance.
2. Clear the nozzle (a straightened paper clip will work).
IMPORTANT: ONLY clear the nozzle when the spray lance is detached
3. Flush the spray lance backwards with water.
4. If the pressure is still too high, repeat items 1-3.

7.0 Troubleshooting and correction

US

You have chosen the best quality and therefore deserve the best service. To avoid unnecessary disappointments, you should check the following before contacting the nearest ALTO service organisation:

Fault	Cause	Correction
Machine will not start	A fuse has blown Power/plug not connected Thermal switch in motor activated	Change the fuse Connect power/plug Let the motor cool. Start the machine and check that the working pressure is not too high and that the mains voltage corresponds to the specifications.
	KSA-2 Thermal switch in water tank	Let the water cool and check that the inlet water temp does not exceed 160°F.
Machine stops shortly after the start	Wrong supply voltage	Check that the supply voltage corresponds to the specifications on the model tag (see section 1.1).
	Air in the system	Vent the system (see section 3.4).
Fuses blow	Supply is inadequate for the ampere consumption of the machine	Correct the installation so it corresponds to the ampere consumption of the machine at a minimum. Change fuse.
Working pressure too high	KSA-1 Nozzle partly clogged	Clear nozzle (see section 6.4)
Working pressure too low	KSA-1 High pressure cock by outlet point not completely closed	Close all high pressure cocks not in use.
	KSA-1 Water regulation valve not set at max pressure	Completely open the water regulation valve. Turn in the direction of the indicator.
	KSA-2 Wrong MULTIPRESSURE spray lance	Check whether the total water volume of the spray lances in use exceeds the capacity of the system. If necessary, change to other spray lances.
Pressure fluctuating	High pressure hoses too long	Detach high pressure extension hoses and (machine vibrates) retry. Extension hose max. 160 ft. Avoid long extension hoses with many couplings.
	Air in the system	Vent the system (see section 3.4)
	Water inlet screen clogged	Clean the screen (see section 6.3)
No working pressure	Nozzle clogged No inlet water	Clear the nozzle (see sec. 6.4) Check that the shut-off cock of the water supply is open. Check that the water supply is adequate (see section 1.2).
	High pressure cock of outlet point is open	Close all high pressure cocks not in use.
Water volume too low	KSA-1 Water regulation valve not set properly	Open water regulation valve completely. Turn completely open in the direction of the indicator.
	KSA-2 Nozzle partly blocked	Clear the nozzle (see section 6.4).

Should other malfunctions occur than those mentioned above, please contact your authorized ALTO servicing distributor.

Customer services (US only): ALTO U.S. Inc.
1500 N. Belcher Rd
Clearwater, FL 33765

Phone: 877-322-2586 (Tech Support)

