



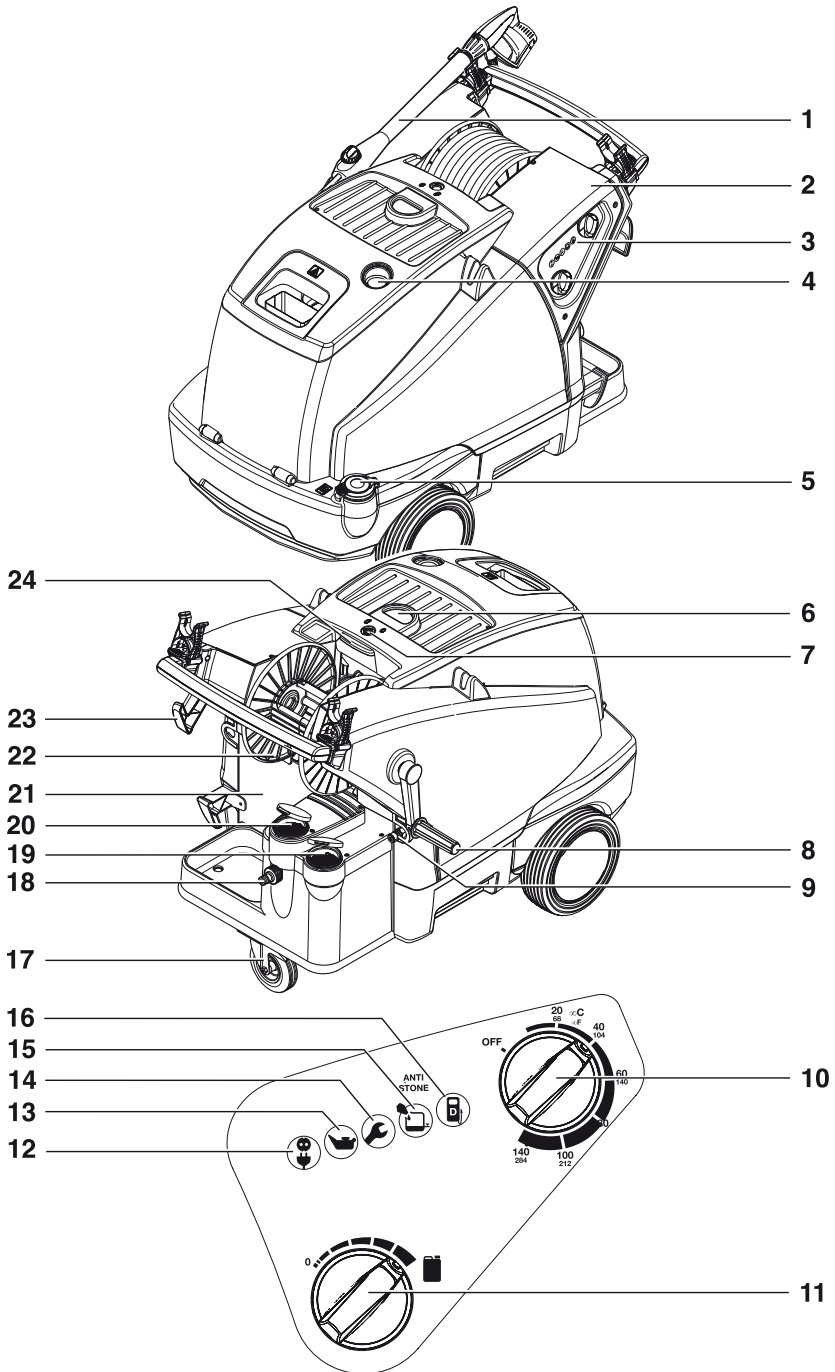
# NEPTUNE 4



**Nilfisk  
ALTO**

*Why Compromise*

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<sup>1)</sup> Options / model variants

english

## Symbols used to mark instructions



Safety instructions in these operating instructions which must be observed to prevent risks to persons are marked with this danger symbol.



This indicates tips and instructions to simplify work and to ensure safe operation.



Before using the high-pressure-cleaner, be sure to also read the enclosed operating instructions and keep them within reach at all times.



This symbol is used to mark safety instructions that must be observed to prevent damage to the machine and its performance.



Operations marked with this symbol should only be carried out by Alto Service Technicians.

# 1 Important safety instructions



## For your own safety

The appliance must

- only be used by persons, who have been instructed in its correct usage and explicitly commissioned with the task of operating it
- only be operated under supervision
- not be used by children

### CAUTION!

High-pressure water jets can be dangerous if misused. The jet must not be directed at persons, animals, live electrical equipment or the cleaner itself.

Wear protective clothing, ear protection and safety goggles.

Do not use the cleaner when other people without protective clothing are in the working area. Do not direct the jet towards yourself or towards other persons in order to clean clothes or footwear.

During operation of the cleaner, recoil forces are produced at the spraying device and, when the spray lance is held at an angle, a torque is also created. The spraying device must therefore be held firmly in both hands.

## General

Use of the high-pressure cleaner is subject to the applicable local regulations.

Besides the operating instructions and the binding accident prevention regulations valid in the country of use, observe recognised regulations for safety and proper use.

Do not use any unsafe work techniques.

## Transport

Transport of the high-pressure cleaner is easy on its large wheels.

For safe transport in and on vehicles we recommend prevent-

ing the equipment from sliding and tilting. Secure it with belts and apply the parking brake on the castor.

For transport at temperatures around or below 0°C, anti-freeze should be drawn into the pump beforehand (see chapter 6).

## Before starting the cleaner

If your 3-phase cleaner was supplied without a plug, have it fitted with a suitable 3-phase plug with earth conductor, by an electrician.

Each time prior to putting the appliance into service, always check the power supply cord and the other important parts of the appliance, such as the high-pressure hose and the spray gun. Do not operate the appliance if any of these parts are damaged.

Set up the appliance such that the mains connector is readily accessible.

Regularly check whether the

power cord is damaged or shows signs of ageing. Use the high-pressure cleaner only when the mains power lead is in a safe condition.

If the power supply cord is damaged, to avoid hazards, this must be replaced either by the manufacturer or through his customer service or a similarly qualified person.

### CAUTION!

Unsuitable extension leads can represent a source of danger. Always unwind cord from the reels completely to prevent the power cord overheating.

Connectors and couplings of power supply cords and extension leads must be watertight.

When using an extension lead, check the minimum cross-sections of the cable:

Cable length m	Cross section	
	<16 A	<25 A
up to 20 m	ø1.5mm <sup>2</sup>	ø2.5mm <sup>2</sup>
20 to 50 m	ø2.5mm <sup>2</sup>	ø4.0mm <sup>2</sup>

Check the rated voltage of the high-pressure cleaner before connecting it to the mains power supply. Ensure that the voltage shown on the rating plate corresponds to the voltage of the local mains power supply.

It is important that the electrical connection for this appliance has been installed by an electrician and in compliance with IEC 60364 and the country-specific regulations.

We recommend that the electrical connection to this appliance should incorporate

- either a fault current circuit breaker, which cuts off the mains voltage if the fault current exceeds 30 mA for 30 ms,
- or an earth resistance meter.

Check that cleaning will not result in dangerous substances

(e.g. asbestos, oil) being washed off the object to be cleaned and harming the environment.

Do not clean delicate parts made of rubber, fabric, etc. with the 0° jet. Keep some distance between high pressure nozzle and surface in order to prevent the surface from damage.

Do not use the high-pressure hose for lifting loads.

The maximum permissible working pressure and temperature are printed on the high-pressure hose.



Store the cleaner where it will not be exposed to frost!

Never operate the cleaner without water. Even brief shortages of water result in severe damage to the pump seals.

### Operation

Keep cabinet and service door closed during operation.

Do not damage the mains power lead (e.g. by driving over it, pulling or crushing it).

Disconnect the power cord by pulling the plug only (do not pull or tug the power cord).

### IMPORTANT!

This appliance has been devised for use with cleansing agents that are supplied and recommended by the manufacturer. The use of other cleansing agents or chemicals can impair the safety of the appliance.

### CAUTION!

The appliance is intended to be used with heating oil EL or diesel oil. Unsuitable fuels (e.g. petrol) must not be used as they can represent a source of danger.

This machine can be used with

Bio-Diesel (DIN 51606). However, our experience has shown that the fuel quality is often outside the recognized standards. An organic product like Bio-Diesel can be affected by long-term storage (e.g. over the winter), extreme temperatures, or improper transportation. When the condition of the fuel is outside the standards, trouble may occur which cannot be covered by the Warranty.

If the machine is to be operated at fuel stations or in other potentially hazardous areas, the machine may only be employed outside the hazard areas defined in the German „Technical Guidelines for Inflammable Fluids“ applicable at the point of use due to the potential explosion hazard posed by the burner.

When setting up the appliance indoors, always ensure suitable ventilation and that the exhaust gases are expelled in a suitable way.

If the machine is to be connected to a flue gas stack, then local building regulations must be observed. We will be glad to provide tips for connection systems, on request.

### CAUTION!

Do not touch or cover the exhaust. Risk of burns and fire.

### Electrical equipment



### CAUTION!

Never spray electrical equipment with water: danger for persons, risk of short-circuiting.

Switching on the cleaner may cause voltage fluctuations. Voltage fluctuations should not occur if the impedance at the transfer point is less than 0.15Ω. If in doubt ask your local elec-

english tricity supplier.

## Maintenance and repair

### CAUTION!

Always remove the plug from the mains plug socket before cleaning or carrying out maintenance work on the cleaner.

Carry out only the maintenance operations described in the operating instructions. Use only original Alto spare parts.

Do not make any technical modifications to the high-pressure cleaner.

Ensure that the machine is regularly serviced by Authorised ALTO dealers in accordance with the maintenance plan. Failure to do so will invalidate the warranty.

### CAUTION!

High-pressure hoses, fittings and couplings are important for the safety of the cleaner. Use only high-pressure parts approved by the manufacturer!

The mains power lead must not differ from the version specified by the manufacturer and may only be changed by an electrician.

Please contact the Nilfisk-Alto service department or an authorised specialist work-shop for all other maintenance or repair work!

### Testing

The cleaner conforms to the German „Guidelines for Liquid Spray Jet Devices“. The high-pressure cleaner must be subjected to a safety examination in accordance with the „Accident Prevention Regulations for Working with Liquid Spray Jet Devices (BGR 500-2/2.36)“ as required, but at least every 12 months, by an authorised inspector.

After all repairs or modifications to electrical equipment, the protective conductor resistance, the insulation resistance and the leakage current must be measured. Furthermore, a visual inspection of the mains power lead, a voltage and current measurement and a function test must be carried out. Our after-sales service technicians are at your disposal as authorised inspectors.

The complete „Accident Prevention Regulations for Working with Liquid Spray Jet Devices“

are available from the Carl Heymanns Verlag KG, Luxemburger Strasse 449, 50939 Cologne or from the appropriate association of employers' liability insurers.

The pressure-bearing parts of this high-pressure cleaner have been manufactured in accordance with § 9 of the German Pressure Vessels Ordinance and successfully subjected to a pressure test.

### Safety devices

Unacceptably high pressure is fed back without residual pressure via a bypass line into the intake line of the pump when the safety device is tripped.

If the conveying capacity falls below a fixed value, the built-in flow monitor automatically switches off the oil burner. The oil burner is set to continuous ignition. As an additional protection mechanism, a thermo-fuse is integrated at the inlet to the heat exchanger. As such, the appliance cannot overheat.

The safety devices are factory set and leaded, and must not be adjusted.

# 2 Description

## 2.1 Purpose

This high-pressure cleaner has been designed for professional use in

- Agriculture
- industry
- transport industry
- automotive cleaning
- municipal facilities
- cleaning trade
- construction industry
- food industry
- etc.

Chapter 5 describes the use of the high-pressure cleaner for various cleaning jobs.

Always use the cleaner as described in these operating instructions. Any other use may damage the cleaner or the surface to be cleaned or may result in severe injury to persons.

## 2.2 Operating elements



See fold-out page at front of these operating instructions.

- |    |  |    |                                       |         |
|----|--|----|---------------------------------------|---------|
| 1  | Spray lance  | 11 | Detergent metering knob <sup>1)</sup> | english |
| 2  | Spray lance storage  | 12 | Power ON                              |         |
| 3  | Control panel  | 13 | Pump oil low <sup>1)</sup>            |         |
| 4  | Pressure gauge   | 14 | Service interval due/expired          |         |
| 5  | Tank filler for fuel   | 15 | Alto AntiStone low <sup>1)</sup>      |         |
| 6  | Receptacle for service crane and lifting ring <sup>1)</sup>  | 16 | Fuel low <sup>1)</sup>                |         |
| 7  | Top cover release  | 17 | Castor with parking brake             |         |
| 8  | Crank handle for High pressure hose reel (Neptune..X)        | 18 | Supply water connection               |         |
| 9  | High pressure hose connection for machines without hose reel | 19 | Tank filler for anti-freeze           |         |
| 10 | Main switch with temperature controller                      | 20 | Tank filler for Alto AntiStone        |         |
|    |  | 21 | Canister for detergent                |         |
|    |  | 22 | High pressure hose reel (Neptune..X)  |         |
|    |  | 23 | Cable hook                            |         |
|    |  | 24 | Grip for top cover                    |         |

## 3 Before starting the cleaner

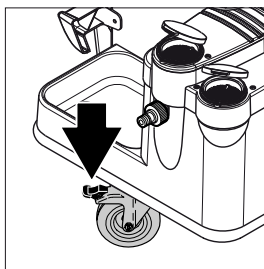
### 3.1 Setting up the cleaner

Every fuel-burning appliance, such as pressure washers, depends upon a proper mix of fuel and air (by weight) for proper combustion. Therefore some adjustment of the air regulation to the burner may be necessary to take account of altitude and the resulting air pressure. This is true whether your fuel is 'Natural gas', Propane or Diesel. Your Alto hot water pressure washer was thoroughly tested and adjusted for optimum per-

formance before it left our factory. The factory is located at approximately 500m (1600 ft) above sea level, and the combustion settings are optimal for that elevation.

**If your location is higher than 1200m (3900 ft) above sea level, your burner may require re-adjustment for proper performance and best fuel economy. Contact your Dealer or Alto for assistance.**

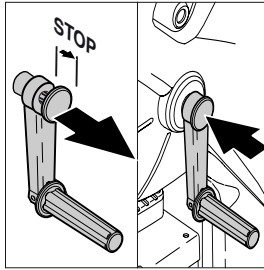
### 3.2 Set the brake



1. Before using the cleaner for the first time, check it carefully to detect any faults or damage.
2. Run the machine only when it is in perfect condition.
3. Set the brake.

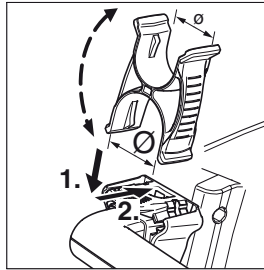
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### 3.3 Install Crank handle for high pressure hose reel<sup>1)</sup>

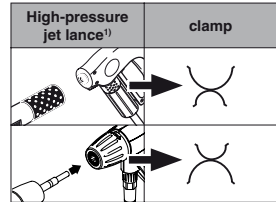


1. Pull cap of crank in arrow direction.
2. Align tabs on crank with slot in axle.
3. Put crank on axle of high pressure hose reel.
4. Fix crank by pushing the cap.

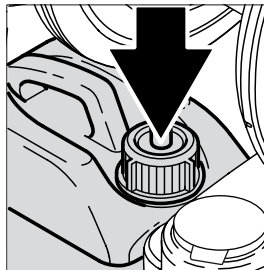
### 3.4 Fit clamp for high-pressure jet tube



1. Insert clamp into the holder on the sliding guard:

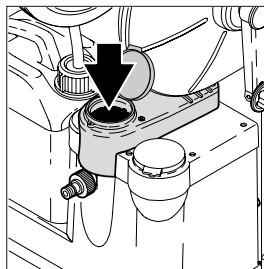


### 3.5 Fill up detergent tank<sup>1)</sup>



1. Fill up detergent tank with prefiltered detergent.  
Capacity see chapter 9.3 Technical Data

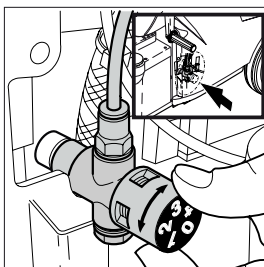
### 3.6 Fill up tank for Alto AntiStone



1. Fill up Alto Anti-Stone/water softener reservoir with the sample bottle provided. Alto Anti-Stone prevents any deposits of scale and acts at the same time as a corrosion inhibitor.

For compatibility reasons, use only the tested „Alto Anti-Stone“. Order the refill pack in good time (Order no. 8466, 6 x 1 l).

### 3.7 Adjusting the Alto AntiStone device



The Alto AntiStone device is set at the factory to water hardness class 2. Adjustment:

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1. Open cover.
2. Measure the water hardness or ask your water supply company.
3. Read off setting for Alto AntiStone from the table below and set the adjusting knob to required position.

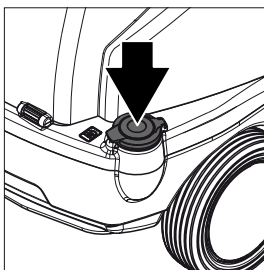
mg/l	Grains	°dH	°e	°f	ppm Ca	Description	Setting NEPTUNE 4
0-17	0-1	0-7	0-8,8	0-12,5	0-50	soft	0
17-60	1,1-3,5					slightly hard	1
60-128	3,6-7,5	7-14	8,8-17,5	12,5-25,1	51-150	moderately hard	2
128-180	7,6-10,5	14-21	17,5-26,3	25,1-37,6	151-300	hard	3
>180	>10,5	>21	>26,3	>37,6	>300	very hard	4

### 3.8 Fill up fuel tank



#### NOTE!

At temperatures below 8° C, the fuel oil begins to solidify (paraffin precipitation). This can lead to difficulties in starting the burner. Before the winter period either add a solidification point / flow improver (available from the fuel oil trade) to the fuel or use winter diesel fuel.



With the machine cold:

1. Pour fuel (fuel oil EL, or Diesel oil DIN 51 603) into the fuel tank.

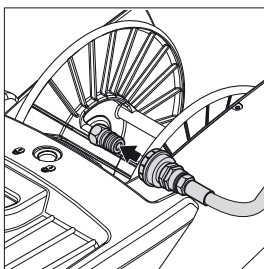
Bio-Diesel can be used, see notes in chapter 1).

The fuel must be free from contamination.

Tank capacity see chapter 9.3 Technical data.

### 3.9 Connecting the high pressure hose

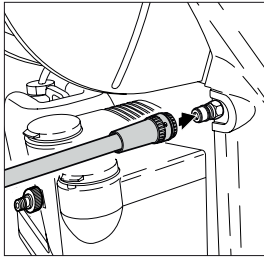
#### 3.9.1 Machines with high pressure hose reel



1. Put the quick connector of the high pressure hose onto the nipple on the axle.

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### 3.9.2 Machines without high pressure hose reel



1. Put the quick connector of the high pressure hose onto the nipple on the cleaner.

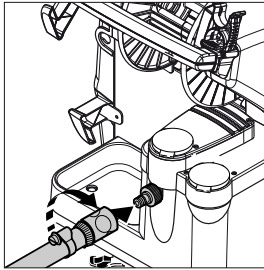
### 3.10 Connecting the water supply



#### NOTE!

See chapter 9.3 Technical Data for required quantity of water and water pressure.

In order to comply with national regulations and those of the water supply companies, it must be ensured that water cannot flow back if the pressure in the water mains falls below atmospheric pressure.

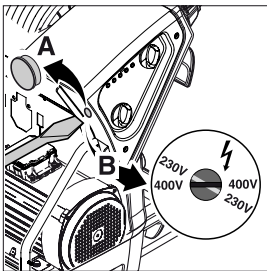


1. Rinse the water supply hose briefly in order to prevent sand and other dirt particles entering into the machine.
2. Connect water supply hose to the machine.
3. Open water tap.

In the case of poor water quality (sand, etc.), we recommend that a fine water filter is fitted in the water inlet.

We recommend the use of a textile-reinforced water hose with a nominal diameter of min. 3/4" (19 mm).

### 3.11 Electrical connection



Before connecting devices with voltage changeover<sup>1)</sup>: Check that the pre-selected voltage on the machine corresponds with the voltage of the electrical installation.

Otherwise the electrical devices of the machine can be destroyed.

#### CAUTION!

When using cable reels:

1. Due to the risk of overheating and fire, always unwind the power supply cord fully.

The cleaner may only be connected to a correctly installed electrical installation.

1. Observe safety instructions in chapter 1.
2. Put the plug into the electrical socket.

### 3.12 Antifreeze - before first use

The machine is protected with anti-freeze from the factory. Catch the liquid discharging at

first (approx. 5 l) for re-use in a container.

## 4 Control / Operation

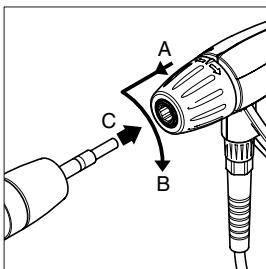
### 4.1 Connections

#### 4.1.1 Connecting the spray lance to the spray gun



#### NOTE!

Always remove any dirt from the nipple before connecting the spray lance to the spray gun.



1. Pull the blue quick-release grip (A) of the spray gun forwards and lock it by turning it to the left.
2. Insert the nipple of the spray lance (C) into the quick-release connection and turn the blue quick-release grip to the right (B).
3. Pull the spray lance (or other accessory) forwards to check that it is securely attached to the spray gun.

### 4.2 Switching on the cleaner

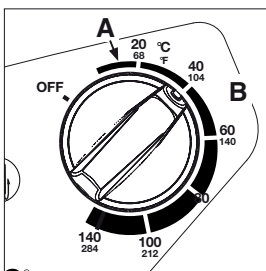
#### 4.2.1 Cold water operation / Hot water operation (up to 100°C)



#### IMPORTANT!

In the case of appliances with a hose reel:

In hot water mode, unwind the high-pressure hose fully from the hose reel, as otherwise the hose reel may become warped due to the effects of the heat.



1. Move main switch into position 'Cold Water' (A).

The control electronics system performs a self-test, all the LEDs light up once.

The motor starts.

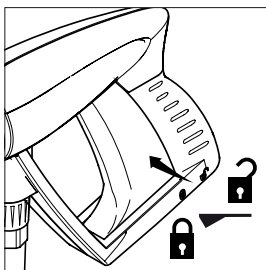
 lights up.

2. Move main switch into position 'Hot Water' (B) and select the temperature.

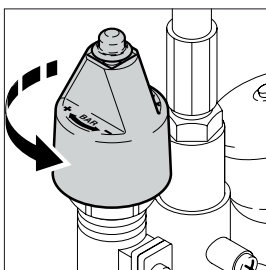
3. Unlock the spray gun and actuate it.

The burner switches on.

In case of interruptions in work: Also be sure to insert the safety catch even during short interruptions in work (see Fig. in section 6.1)



#### 4.2.2 Steam operation (over 100°C)<sup>1)</sup>

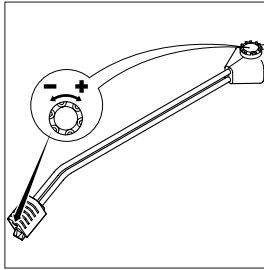


1. Open cover.
2. Turn the twist grip on the safety control block completely to the left (anticlockwise direction).
3. Turn the main switch into position 'Hot Water'.
4. Select temperature (over 100°C).

For special applications: replace the standard nozzle with the steam spray nozzle (accessory).

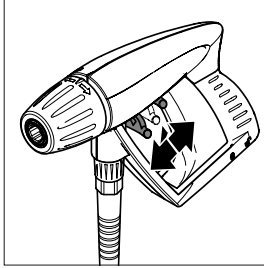
<sup>1)</sup> Options / model variants

english **4.3 Pressure regulation (Tornado Lance)<sup>1)</sup>**




1. Turn the twist grip on the spray unit:
  - High pressure = clockwise (+) for high pressure
  - Low pressure = anticlockwise (–) for low pressure.

**4.4 Pressure regulation (VarioPress Gun)<sup>1)</sup>**

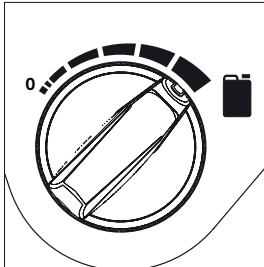
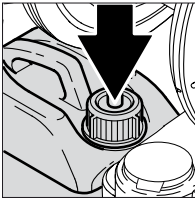


1. Turn the twist grip on the spray unit:

**Water volume**

(–) min.  (+) max.

**4.5 Using cleaning agents**



1. Set the desired concentration of cleansing agent at the cleansing agent dosing facility.
2. Spray the object to be cleaned.
3. Allow the cleaning agent to work, depending on the degree of soiling. Then rinse off with the high pressure spray jet.



For special applications (e.g. disinfection) the exact detergent concentration has to be determined by measuring cup. For water throughput of the machine see chapter 9.3 technical data.

**CAUTION!**

Never allow cleaning agent to dry on the surface to be cleaned. The surface may be damaged.

## 5 Applications and methods

### 5.1 Techniques

Efficient high pressure cleaning is achieved by following a few guidelines, combined with your own personal experience of specific cleaning tasks. Accessories and detergents, when correctly chosen, can increase the efficiency of your pressure washer. Here is some basic information about cleaning.

### 5.1.1 Soaking

Encrusted or thick layers of dirt can be loosened or softened up by a period of soaking. This is for example an ideal method within agriculture – for example, within pig sties. The ideal soaking method can be achieved via use of foam or simple alkaline detergent. Let the product lie on the dirty surfaces for around 30 minutes before pressure washing. The result will be a much quicker high pressure cleaning process.

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### 5.1.2 Detergent and Foam

Foam or detergent should be applied onto dry surfaces so that the chemical product is in direct contact with the dirt. Detergents are applied from bottom to top, for example on a car bodywork, in order to avoid “super clean” areas, where the detergent collects in higher concentration and streams downwards. Let the detergent work for several minutes before rinsing before rinsing but never let it dry on the surface being cleaned.

### 5.1.3 Temperature

Detergents are more effective at higher temperatures. Greases, oils and fats can be broken down more easily at higher temperatures also. Proteins can be cleaned at temperatures of around 60°C. Oils, traffic film around 70°C, and grease can be cleaned at 80°C - 90° C.

### 5.1.4 Mechanical Effect

In order to break down tough layers of dirt, additional mechanical effect may be required. Special lances and rotary or wash brushes offer this supplementary effect that cuts through dirt.

### 5.1.5 High Water Flow or High Pressure

High pressure is not always the best solution and high pressure may damage surfaces. The cleaning effect also depends upon water flow. Pressure levels of around 100 bar may be sufficient for vehicle cleaning (in association with hot water). Higher flow levels give the possibility to rinse and flush away large amounts of dirt easily.

## 5.2 Some typical cleaning tasks

### 5.2.1 Agriculture

Task	Accessories	Method
Stables Pig Pens, Sties	Chemical Foam Injectors Foam lance	<ol style="list-style-type: none"> <li>1. Soaking – apply foam to all surfaces (bottom to top) and wait for approx. 30 minutes.</li> <li>2. Remove the dirt from surfaces with the high pressure lance or chosen accessory. Again, clean from bottom to top on vertical surfaces.</li> <li>3. To flush away large quantities of dirt, change to low pressure mode and use the higher flow to push away the dirt.</li> <li>4. Use recommended disinfectant products and methods to ensure hygiene. Apply DES 3000 disinfectant once the surfaces are perfectly clean.</li> </ol>
Cleaning of walls, floors and equipment	Powerspeed lance Floor Cleaner	
Disinfectant	Detergents Universal Alkafoam  Disinfectant DES 3000	
Machinery Tractors ploughs etc.	Detergent injection Powerspeed lances Curved lances and underchassis washers Brushes	<ol style="list-style-type: none"> <li>1. Apply detergent to vehicle or equipment surfaces in order to soften up dirt and grime. Apply from bottom to top.</li> <li>2. Proceed with cleaning using the high pressure lance. Clean again from bottom to top. Use accessories to clean in difficult to reach places.</li> <li>3. Clean fragile areas such as motors, rubber at lower pressure levels to avoid damage.</li> </ol>

english **5.2.2 Vehicle**

Task	Accessories	Method
Vehicle bodywork	Standard lance Detergent injection Curved lances and underchassis washers brushes  Detergents Aktive Shampoo Aktive Foam Sapphire Super Plus Aktive Wax Allosil RimTop	<ol style="list-style-type: none"> <li>1. Apply detergent to vehicle or equipment surfaces in order to soften up dirt and grime. Apply from bottom to top. In cases of particularly dirty vehicles, pre-spray with a product such as Allosil in order to remove traces of insects etc, then rinse at low pressure and apply normal car cleaning detergent. Let detergents settle for 5 minutes before cleaning off. Metallic surfaces can be cleaned using RimTop.</li> <li>2. Proceed with cleaning using the high pressure lance. Clean again from bottom to top. Use accessories to clean in difficult to reach places. Use brushes in order to add a mechanical cleaning effect. Short lances can help for cleaning of motors and wheel arches. Curved lances or undercarriage washers can be valuable for the cleaning of car underchassis and wheel arches.</li> <li>3. Clean fragile areas such as motors, rubber at lower pressure levels to avoid damage.</li> <li>4. Apply a liquid wax using the pressure washer in order to protect the bodywork from pollution.</li> </ol>

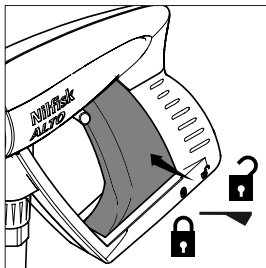
**5.2.3 Buildings and Equipment**

Task	Accessories	Method
General surfaces Metallic equipment	Foam injectors Standard lance Curved lances Tank cleaning head  Detergents Intensive J25 Multi Combi Aktive Alkafoam  Disinfectant DES 3000	<ol style="list-style-type: none"> <li>1. Apply thick foam over the surfaces to be cleaned. Apply on dry surfaces. Apply from top to bottom on vertical surfaces. Let the foam act for up to 30 minutes for the optimal effect.</li> <li>2. Proceed with cleaning using the high pressure lance. Use applicable accessories. Use high pressure to dislodge large amounts of incrustated dirt or grime. Use lower pressure and high water volume in order to rapidly flush away loose dirt and rinse surfaces.</li> <li>3. Apply DES 3000 disinfectant once the surfaces are perfectly clean.</li> </ol> <p>Areas covered by amounts of loose dirt, such as animal remains in slaughterhouses, can be removed by using high water flow to flush away the dirt to evacuation pits or drains.</p> <p>Tank cleaning heads can be used to clean barrels, vats, mixing tanks etc. Cleaning heads may be hydraulically or electrically powered and give the possibility for automatic cleaning without a constant user.</p>
Rusted or damages surfaces prior to treatment	Wet Sandblasting equipment	<ol style="list-style-type: none"> <li>1. Connect the sandblasting lance to the pressure washer and place the suction tube in the sand.</li> <li>2. Always wear protective equipment during sandblasting.</li> <li>3. Spray the surfaces to be treated with the mix of water and sand. Rust, paint etc will be stripped off.</li> </ol>

These are merely several examples of cleaning tasks that can be solved by a pressure washer in association with accessories and detergents. Each cleaning task is different. Please consult your local dealer or ALTO representative in order to discuss the best solution for your own cleaning tasks.

## 6 After using the cleaner

### 6.1 Switching off the cleaner



1. Turn the main switch to position „OFF“.
2. Close water tap.
3. Squeeze the spray gun handle until the cleaner is depressurised.
4. Lock the safety catch on the spray gun.

### 6.2 Disconnecting supply lines

1. Close water tap.
2. Squeeze the spray gun handle until the cleaner is depressurised.
3. Lock the safety catch on the spray gun.

4. Switch off the cleaner.
5. Remove the water hose from the cleaner.
6. Pull out the plug from the electrical socket.

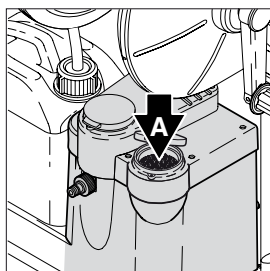
### 6.3 Rolling up the electrical lead and storing accessories

#### Risk of tripping!

To prevent accidents, always carefully roll up the electrical lead.

1. Wind up the cord
2. Wind up the high pressure hose.
3. Place the spray lance into the spray lance storage.

### 6.4 Storing the cleaner (below 0°C)



Store the cleaner in a dry room without danger of frost or protect as below:

1. Remove the water inlet hose from the cleaner.
2. Remove the spray lance.
3. Switch on the cleaner with the main switch in position "Cold Water".
4. Operate the spray gun.
5. Gradually pour antifreeze (approx. 5 litres) into the water tank (A).
6. During suction operate the spray gun two or three times.
7. The machine is protected

against frost when antifreeze solution emerges from the spray gun.

8. Lock the safety catch on the spray gun.
9. Switch off the cleaner.
10. To avoid any risks, store the cleaner temporarily in a heated room before using it again.
11. When the machine is put into service again, the antifreeze solution can be collected and stored for future use.

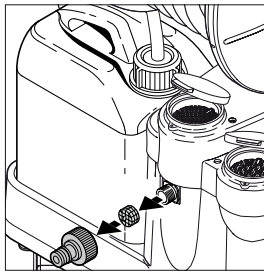
# 7 Maintenance

## 7.1 Maintenance plan

	Weekly	After the first 50 operating hours	Every six months or 500 operating hours	As required
7.2.1 Water filters				●
7.2.2 Oil filter				●
7.2.3 Checking the pump oil quality	●			
7.2.4 Changing the pump oil		●	●	
7.2.5 Emptying the fuel oil tank				●

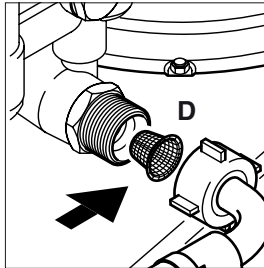
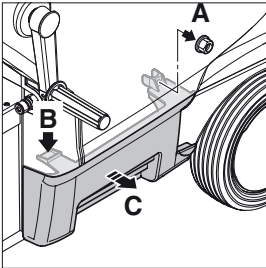
## 7.2 Maintenance work

### 7.2.1 Water filters



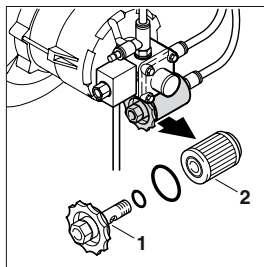
A water filter is fitted on the water inlet to prevent large particles of dirt from entering into the pump.

1. Unscrew quick coupling.
2. Remove filter with tool and clean it.



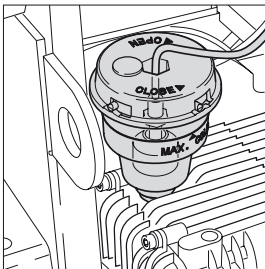
1. Undo nut (A).
2. Unlatch (B) and remove (C) cover.
3. Clean or replace filter (D) in high-pressure pump inlet.
4. Insert filter and fasten union nut.
5. Reattach cover.

### 7.2.2 Oil filter



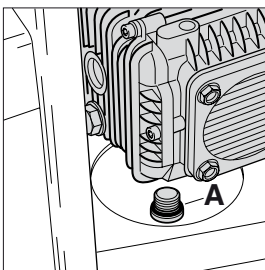
1. Clean filter:  
Unscrew Filter cap (1)
2. Clean/replace oil filter.
3. Dispose of cleaning solution/damaged filter in accordance with the disposal regulations.

### 7.2.3 Checking the pump oil quality



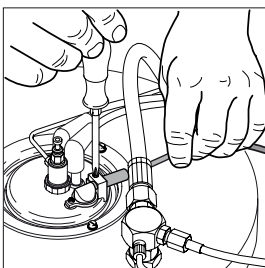
1. Check colour of pump oil.  
If the oil has a grey or white shade, change the oil (see chapter 7.2.4)
2. Top up cold pump with fresh oil if necessary.  
Oil type see chapter 9.3 Technical Data.

### 7.2.4 Changing the pump oil



1. Unscrew the oil drain plug (A) on the pump housing and dispose of the old oil in accordance with the disposal regulations.
2. Check the drain plug gasket and screw in the plug again.
3. Fill with oil and close the oil filler plug.  
Oil grade and capacity see chapter '9.3 Technical Data'.

### 7.2.5 Flame sensor<sup>1)</sup>
















1. Remove the sensor and clean with a soft cloth.
2. Ensure that the sensor is correctly seated when installing again.







<sup>1)</sup> Options / model variants

# 8 Troubleshooting



## 8.1 Indications on Display

Indication light	Cause	Remedy
Green LED  ON	> Appliance ready for operation. When switching on, all the LEDs light up once before the motor is switched on.	
Yellow LED  ON	> Fuel shortage	<ul style="list-style-type: none"> <li>• Top up fuel</li> <li>• Cold water operation possible</li> </ul>
Yellow LED  flashing	> Alto AntiStone shortage	<ul style="list-style-type: none"> <li>• Top up Alto AntiStone</li> </ul>
Red LED  flashing	> Service interval: Service due in 20 hours	 Contact Alto Service
Red LED  ON	> Service interval expired	 Contact Alto Service
Red LED  ON	> Pump oil low	<ul style="list-style-type: none"> <li>• Top up pump oil</li> </ul>
Green LED  flashing	> Flow sensor fault	 Contact Alto Service Cold water operation possible
	> Water tap closed or water shortage	<ul style="list-style-type: none"> <li>• Required volume flow and pressure see chapter 9.3 Technical Data</li> </ul>
	> Detergent tank empty	<ul style="list-style-type: none"> <li>• Top up detergent tank or set detergent metering to „OFF“</li> </ul>
	> Pressure regulation on the safety control block or VarioPress-lance <sup>1)</sup> set to low water volume	<ul style="list-style-type: none"> <li>• Turn the twist grip on safety control block or VarioPress-lance<sup>1)</sup> to higher water volume (see chapter 4.4)</li> </ul>
	> Machine scaled	 Contact Alto Service
Green LED  and red LED  flash simultaneously	> Leakage or inadmissible operating condition by short-time operation	<ul style="list-style-type: none"> <li>• After three times of short-time operation the machine switches off. Reset: Turn main switch to position „OFF“, then start again. Keep spray gun pressed for longer than 3 seconds. If a leak occurs causing the machine to start and stop briefly 3 times, then the machine will switch off.</li> </ul>
	> Spray gun leaking	<ul style="list-style-type: none"> <li>• Check Spray gun</li> </ul>
	> High pressure hose, coupling or line system leaking	<ul style="list-style-type: none"> <li>• Replace high-pressure hose, retighten screw fittings</li> </ul>
	> Detergent tank empty	<ul style="list-style-type: none"> <li>• Top up detergent tank or set detergent metering to „OFF“</li> </ul>
	> Water inlet filter dirty	<ul style="list-style-type: none"> <li>• Clean filter (see chapter 7.2.1)</li> </ul>
	> High-pressure pump drawing in air	<ul style="list-style-type: none"> <li>• Repair leaks</li> </ul>

Continued ▶

Indication light	Cause	Remedy
Green LED  and red LED  flash alternately	<ul style="list-style-type: none"> <li>&gt; Motor overheated</li> <li>&gt; Machine overheated</li> </ul>	<ul style="list-style-type: none"> <li>• Turn main switch in position „OFF“, let machine cool down</li> <li>• Remove/disconnect extension cable</li> <li>• Possible phase failure; have electrical connection checked</li> <li> Contact Alto Service</li> </ul>
Green LED  flashes slowly red LED  flashes rapidly	<ul style="list-style-type: none"> <li>&gt; Flame sensor sooted</li> <li>&gt; Ignition or fuel system failure</li> </ul>	<ul style="list-style-type: none"> <li>• Clean flame sensor (see chapter 7.2.5).</li> <li> Contact Alto Service</li> <li>• Cold water operation possible</li> </ul>

## 8.2 Other Faults

Fault	Cause	Remedy
 not ON	<ul style="list-style-type: none"> <li>&gt; Plug not connected to the electrical plug socket</li> </ul>	<ul style="list-style-type: none"> <li>• Put the plug into the electrical socket.</li> <li>• Check fuse (see chapter 9.3 Technical Data)</li> </ul>
Pressure too low	<ul style="list-style-type: none"> <li>&gt; High pressure nozzle worn out</li> <li>&gt; Pressure regulation set to low pressure or VarioPress-lance<sup>1)</sup> set to low water volume.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace nozzle</li> <li>• Turn the twist grip on safety control block clockwise (+) or set VarioPress-lance<sup>1)</sup> to higher water volume (see chapter 4.4)</li> </ul>
Machine is running with pulsating pressure and makes knocking noise	<ul style="list-style-type: none"> <li>&gt; Pump has drawn in air as the detergent tank is empty</li> </ul>	<ul style="list-style-type: none"> <li>• Close detergent valve. Remove lance from gun. Operate spray gun and let machine run until air in pump is gone and the machine is running normally/calm again.</li> </ul>
No detergents drawn in	<ul style="list-style-type: none"> <li>&gt; Detergent tank empty</li> <li>&gt; Dirt in detergent tank</li> <li>&gt; Suction valve at cleaning agent inlet soiled</li> </ul>	<ul style="list-style-type: none"> <li>• Top up detergent tank</li> <li>• Clean detergent tank</li> <li>• Remove suction valve and clean or replace</li> </ul>
Burner soots	<ul style="list-style-type: none"> <li>&gt; fuel contamination</li> <li>&gt; Burner sooted or adjustment incorrect</li> </ul>	<ul style="list-style-type: none"> <li> Contact Alto Service</li> </ul>

<sup>1)</sup> Options / model variants

## 9 Further information

### 9.1 Recycling the cleaner



Make the old cleaner unusable immediately.

1. Unplug the cleaner and cut the power cord.

Do not discard of electrical appliances with household waste. As specified in European Direc-

tive 2002/96/EC on old electrical and electronic appliances, used electrical goods must be collected separately and recycled ecologically. Contact your local authorities or your nearest dealer for further information.

### 9.2 Guarantee



Our general conditions of business are applicable with regard to the guarantee. Subject to change as a result of technical advances.

The guarantee is invalidated if the machine is not operated in accordance with these instructions or otherwise abused. The guarantee is invalidated if the machine is not serviced as described.

### 9.3 Technical data

	NEPTUNE 4						
	4-30	4-30	4-42	4-49	4-54	4-54	
Voltage 220 V / 1~ / 60Hz		EXP					
Voltage 230 V / 1~ / 50Hz	EU / GB						
Voltage 400 V / 3~ / 50Hz			EU	EU	EU		
Voltage 230-400 V / 3~ / 50Hz				NO / BE	NO / BE		
Voltage 220-460 V / 3~ / 60Hz						EXP	
Fuse	A	13 GB / 16 EU	15	16	16 EU/25 NO, BE	16 EU/25 NO, BE	25
Power rating	kW	3 GB / 3.4 EU	3.3	5.6	6.4	6.9	6.9
Working pressure	bar/Mpa	95 / 9.5 110 / 11	105 / 10.5	170 / 17	180 / 18	200 / 20	
Permissible pressure	bar/Mpa	200 / 20		250 / 25			
Volume flow (max)	l/h	770	720	900	970	1,000	1,050
Volume flow $Q_{rec}$	l/h	720	670	840	900	930	1,000
Permissible temperature	°C	80-140					
Max. water inlet temperature	°C	40					
Max. water inlet pressure	bar (Mpa)	10					
Dimensions l x w x h	mm	1,053 x 687 x 750					
Weight	kg	128		132.5	137.5		
Noise level at a distance of 1 m EN 60704-1	dB(A)	73.1		76.5	76.6	76.9	
Sound power level $LW_A$	dB(A)	89		93			
Vibration ISO 5349	m/s <sup>2</sup>	≤ 2.5					
Recoil forces	N	27 GB / 30 EU	27	43	49	56	52
Fuel tank	l	15					
Detergent tank A / B	l	10					
Oil quantity	l	1					
Oil type		SAE 15 W-40					

### 9.4 EU Declaration of Conformity

 <b>EU Declaration of Conformity</b>	
<b>Product:</b>	High Pressure Cleaner
<b>Type:</b>	NEPTUNE 4
<b>Description:</b>	230 V 1~, 50 Hz / 400 V 3~, 50 Hz / IP X5
<b>The design of the unit corresponds to the following pertinent regulations:</b>	EC Machine Directive 98/37/EC EC Low-voltage Directive 73/23/EC EC EMC Directive 2004/108/EC
<b>Applied harmonised standards:</b>	EN 12100-1, EN 12100-2, EN 60335-2-79 EN 55014-1, EN 55014-2, EN 61000-3-2
<b>Applied national standards and technical specifications:</b>	DIN EN 60335-2-79
	ALTO Deutschland GmbH Guido-Oberdorfer-Straße 2-8 D-89287 Bellenberg
Dipl. Ing. Wolfgang Nieuwkamp Tests and approvals	Bellenberg, 02.01.2006

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