

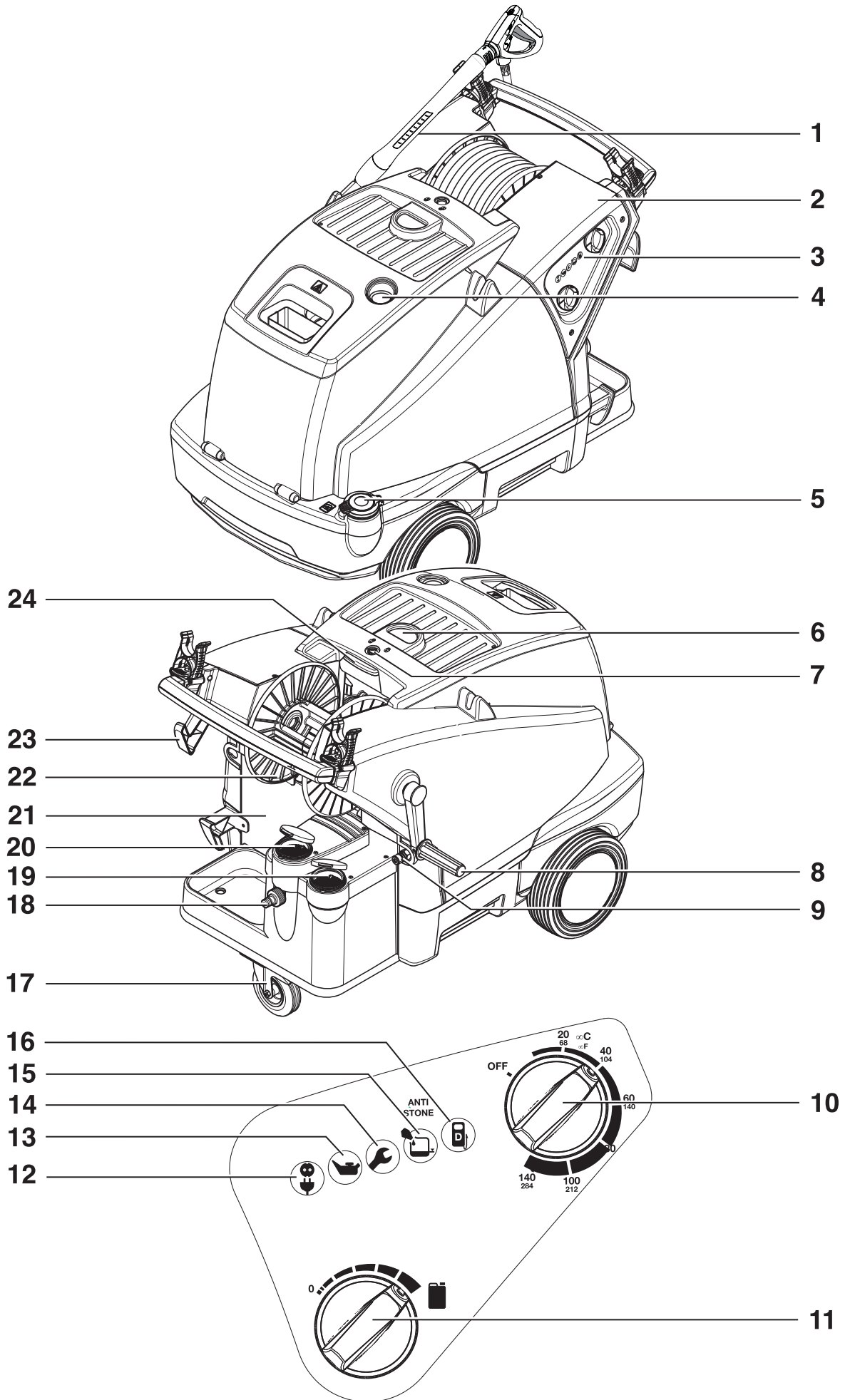


NEPTUNE 4 FA

Operating Instructions



Nilfisk
ALTO
Why Compromise



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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 Nilfisk-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.
- not be used by mentally or physically disabled persons

Warning

- Ensure that any exhaust emissions are not in the vicinity of air intakes.
- This machine shall only be used with cleaning chemicals supplied or recommended by Nilfisk-ALTO. The use of other cleaning chemicals may adversely affect the safety of the machine.
- Risk of explosion – Do not use the cleaner to spray with flammable liquids.

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 recognized regulations for safety and proper use.

Do not use any unsafe work techniques.

Do not tie the trigger handle open.

Transport

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

For safe transport in and on vehicles we recommend preventing the equipment from sliding and tilting. Secure it with tie-downs and apply the parking brake on the castor wheel.

For transport at temperatures around or below freezing 0°C (32°F), anti-freeze should be drawn into the pump beforehand (see chapter 6).

Before starting the cleaner

If your 3-phase cleaner was sup-

plied without a plug, have it fitted with a suitable 3-phase plug with ground, by a qualified electrician.

Before use, check that the high-pressure cleaner is safe and in proper condition.

Regularly check whether the power cord is damaged or shows signs of ageing.

Use the high-pressure cleaner only when the power cord is in a safe condition. (risk of electric shock using damaged cord!).

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 power supply.

We strongly recommend that the power supply to the high pressure cleaner be connected via a residual current circuit breaker. This device stops the supply of electricity if the leakage current to the ground exceeds 30 mA for 30 ms or it has an ground tester circuit.

Please observe the regulations and provisions applicable in your

area. Before putting the high-pressure cleaner into service, carry out a visual check of all the major components.

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 appropriate protective clothing and eye protection.

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 gunvalve and spray lance and, when the spray lance is held at an angle, a torque is also created. The gunvalve and spray lance must therefore be held firmly in both hands.

Do not use the cleaner when other people without protective clothing are in the working area.

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.

NOTE!

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

Do not use the cleaner if the power cord or high-pressure hose is damaged.

Ensure adequate air circulation. Do not cover the cleaner or oper-

ate it in inadequately ventilated rooms!



Store the cleaner where it will not be exposed to frost or use antifreeze liquid!

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

Water connection



This high pressure washer is only allowed to be connected with the drinking water

mains, when an appropriate backflow preventer has been installed, Type BA according to EN 1717. If the back flow preventer hasn't been supplied, one can be purchased from your dealer. The length of the hose between the backflow preventer and the high pressure washer must be at least 12 metres (min diameter 3/4 inch) to absorb possible pressure peaks. Operation by suction (for example from a rainwater vessel) is carried out without backflow preventer. Contact your dealer for suction set recommendations.

As soon as water has flown through the BA valve, this water is not considered to be drinking water any more.

Operation

Keep cabinet and service door closed during operation.

CAUTION!

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

Connectors and couplings of extension cords must be water-tight.

Extension cords are not recommended, however if necessary refer to the following recommendations:

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



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

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

CAUTION!

Unsuitable fuels (e.g. gasoline) must not be used as they can explode and catch fire.

Use clean fuel only, free of moisture and contamination. Contact your dealer for fuel source and type recommendations.

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.

If the machine is to be operated indoors, the local building regulations must be observed for the discharge of the exhaust fumes into the atmosphere. Ensure an adequate supply of fresh air.

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!



Beware of hot water and steam discharge up to 150°C when operating in steam stage.

CAUTION!



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

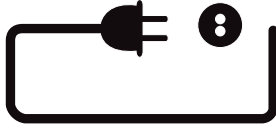
Do not touch, cover or place

¹⁾ Options / model variants

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hose or cord over the chimney. Danger for persons, risk of overheating and fire.

Electrical equipment



CAUTION!
Never spray electrical equipment with water: risk of electrical shock and short-circuit.

The cleaner may only be connected to a correctly installed plug socket.

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 electricity supplier.

Maintenance and repair

Warning

The cleaner must be disconnected from its power source during cleaning of the machine, maintenance, when replacing parts or converting the machine to another function.

Carry out only the maintenance operations described in the operating instructions. Use only original Nilfisk-ALTO spare parts. Do not make any technical modifications to the high-pressure

cleaner.

Ensure that the machine is regularly serviced by authorized Nilfisk-ALTO dealers in accordance with the maintenance plan. Failure to do so will void 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 power cord must not differ from the version specified by the manufacturer and may only be changed by an electrician. Please contact your local authorized Nilfisk-ALTO equipment distributor for all other maintenance or repair needs!

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“ as required, but at least every 12 months, by an authorised inspector.

After all repairs or modifications to electrical equipment, the protective conductor resist-

ance, the insulation resistance and the leakage current must be measured. Furthermore, a visual inspection of the mains power cord, 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 insurances.

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.

Bypass valve

The pressure is reduced by means of a "bypass valve" which returns water to the inlet side of the pump at a minimum pressure. The point at which this occurs is set and sealed at the factory and must not be adjusted.

2 Description

2.1 Purpose

This high-pressure cleaner has been designed for professional use. It can be used for cleaning agricultural and construction equipment, stables, vehicles, rusty surfaces, etc.

The cleaner has not been approved for cleaning surfaces which comes into contact with food.

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.

Chapter 5 describes the use of

2.2 Operating elements



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

- | | | | |
|----|--|----|--|
| 1 | Spray lance | 11 | Detergent metering knob ¹⁾ |
| 2 | Spray lance storage | 12 | Power ON |
| 3 | Control panel | 13 | Pump oil low ¹⁾ |
| 4 | Pressure gauge | 14 | Service interval due/expired |
| 5 | Tank filler for fuel | 15 | Nilfisk-ALTO AntiStone low ¹⁾ |
| 6 | Receptacle for service crane and lifting ring ¹⁾ | 16 | Fuel low ¹⁾ |
| 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 Nilfisk-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

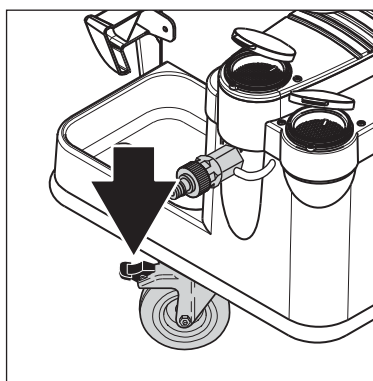
3.1 Setting up the cleaner

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 Nilfisk-ALTO hot water pressure washer was thoroughly tested and adjusted for

optimum performance before it left our factory. The factory is located at approximately 120m (390 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 Nilfisk-ALTO for assistance.

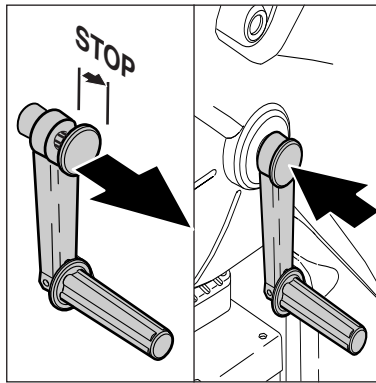
3.2 Set the brake



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.
4. The slope of which the high pressure cleaner is placed must not exceed more than 10° in any direction.

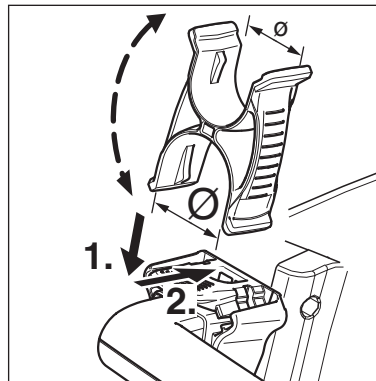


3.3 Install Crank handle for high pressure hose reel¹⁾

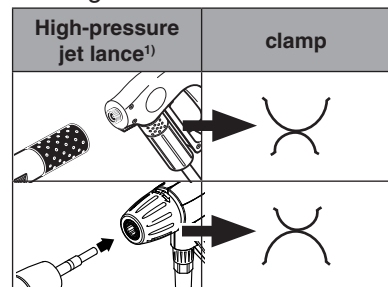


1. Pull cap of crank in arrow direction.
2. Align tabs on crank with slot in axle.
3. Put crank on axle of high pressure hose reel.
4. Fix crank by pushing the cap.

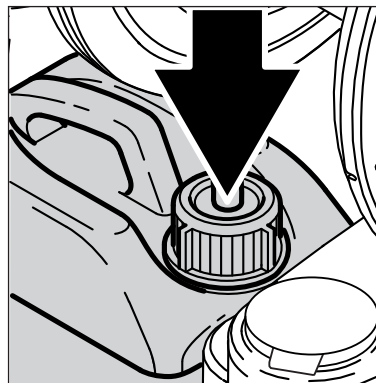
3.4 Fit clamp for high-pressure jet tube



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

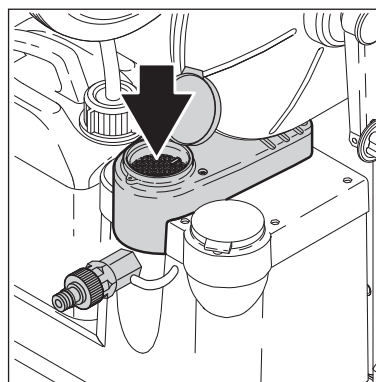


3.5 Fill up detergent tank¹⁾



1. Fill up detergent tank with prediluted detergent. Capacity see chapter 9.4 Technical Data

3.6 Fill up tank for Nilfisk-ALTO AntiStone



1. Fill up Nilfisk-ALTO Anti-Stone/water softener reservoir with the sample bottle provided. Nilfisk-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 „Nilfisk-ALTO Anti-Stone“. Order the refill pack in good time (Order no. 8466, 6 x 1 l).

3.7 Antiscale

The Nilfisk Alto Antiscale dosing system is set by the factory. To adjust the water hardness we recommend that the inlet water is tested accordingly.

Use the schematic to find the right dosage of No Scale/anti stone and water, and add the mixture to the antiscale tank.



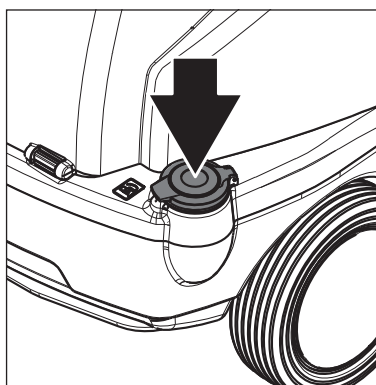
Machine flow L/h	Pump size ml/h	°dH	°f	°e	Dosage
800	35	0-12	0-21,5	0 - 15	1:1 = 17ml/h
800	35	12-30	21,5 - 53,7	15 - 37,5	Pure = 35ml/h
900	35	0-12	0-21,5	0 - 15	1:1 = 17ml/h
900	35	12-30	21,5 - 53,7	15 - 37,5	Pure = 35ml/h
1000	35	0-12	0-21,5	0 - 15	1:1 = 17ml/h
1000	35	12-30	21,5 - 53,7	15 - 37,5	Pure = 35ml/h

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.

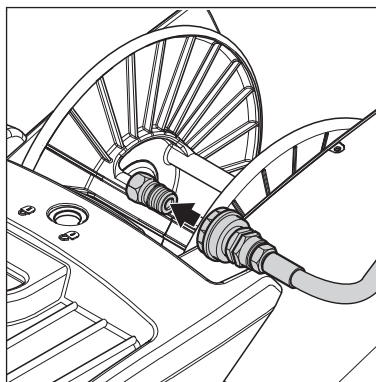
Bio-Diesel can be used, see notes in chapter 1).

The fuel must be free from contamination.

Tank capacity see chapter 9.4 Technical data.

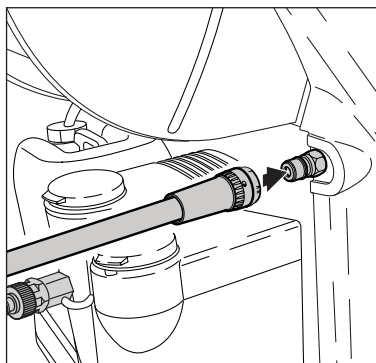
3.9 Connecting the high pressure hose

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.

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.

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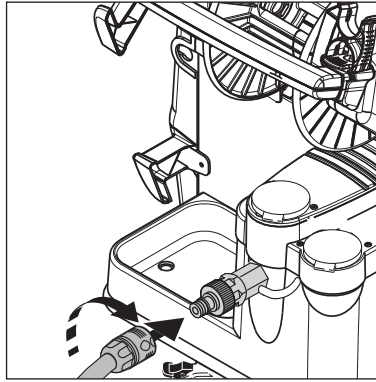
3.10 Connecting the water supply



NOTE!

See chapter 9.4 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.

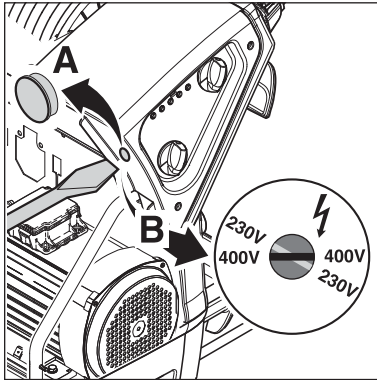


In the case of poor water quality (sand, etc.), we recommend that a fine water filter is fitted in the water inlet.

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.

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 changeover¹⁾: Check that the pre-selected voltage on the machine corresponds with the voltage of the electrical instal-

lation. 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

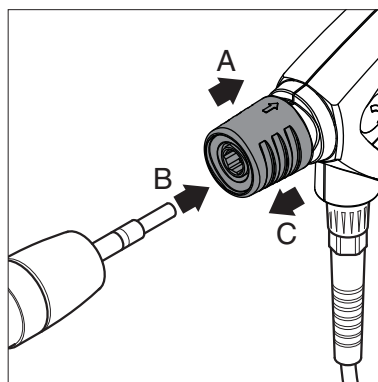
4.1 Connections

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 backwards.
2. Insert the nipple of the spray lance (B) into the quick-release connection and release it.
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

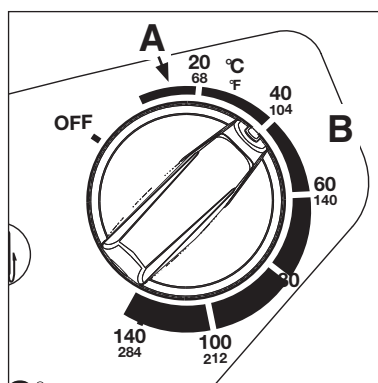
4.2.1 Cold water operation / Hot water operation (up to 100°C)



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.



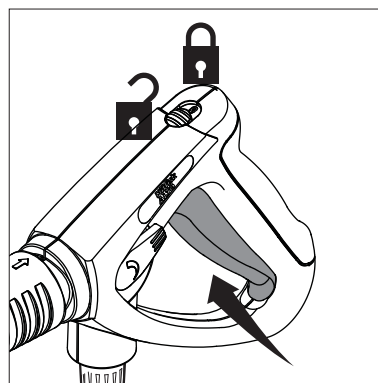
1. Move main switch into position 'Cold Water' (A).

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.

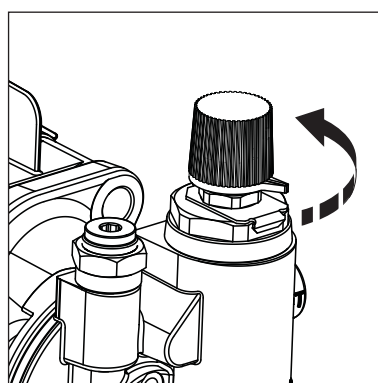
The burner switches on.

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)¹⁾



Beware of hot water and steam discharge up to 150°C when operating in steam stage.



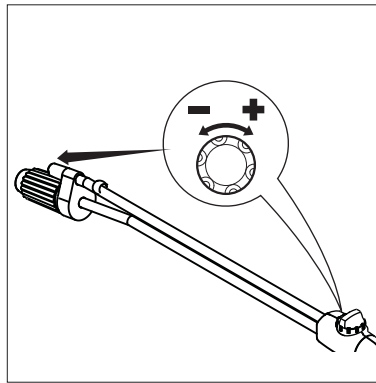
1. Open cover.
2. Turn the twist grip on the safety control block completely to the left (anticlockwise direction).
3. Turn the main switch into position 'Hot Water'.
4. Select temperature (over 100°C).

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

¹⁾ Options / model variants



4.3 Pressure regulation (Tornado Lance)¹⁾

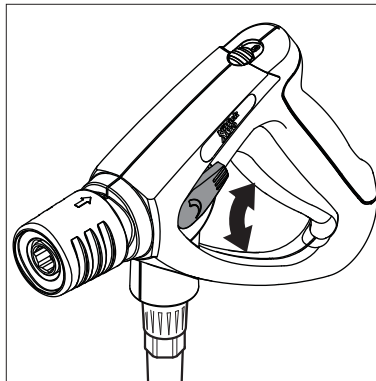


1. Turn the twist grip on the spray unit:
 - High pressure = clockwise (+) for high pressure
 - Low pressure = anticlockwise (–) for low pressure.

4.4 Pressure regulation (VarioPress Gun)¹⁾




For safety reasons, never tie back or wedge open the trigger of the spray gun in open position during operation. The trigger must be free to close when released, thus interrupting the flow of the water.

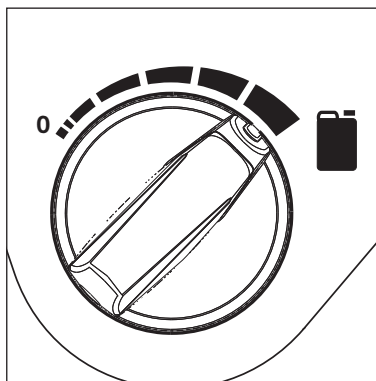
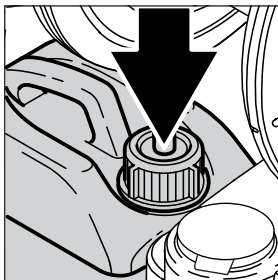


1. Turn the twist grip on the spray unit:

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 9.4 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.

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 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	1. Soaking – apply foam to all surfaces (bottom to top) and wait for approx. 30 minutes.
Cleaning of walls, floors and equipment	Powerspeed lance Floor Cleaner	2. Remove the dirt from surfaces with the high pressure lance or chosen accessory. Again, clean from bottom to top on vertical surfaces.
Disinfectant	Detergents Universal Alkafoam	3. To flush away large quantities of dirt, change to low pressure mode and use the higher flow to push away the dirt.
	Disinfectant DES 3000	4. Use recommended disinfectant products and methods to ensure hygiene. Apply DES 3000 disinfectant once the surfaces are perfectly clean.
Machinery Tractors ploughs etc.	Detergent injection Powerspeed lances Curved lances and underchassis washers Brushes	1. Apply detergent to vehicle or equipment surfaces in order to soften up dirt and grime. Apply from bottom to top. 2. Proceed with cleaning using the high pressure lance. Clean again from bottom to top. Use accessories to clean in difficult to reach places. 3. Clean fragile areas such as motors, rubber at lower pressure levels to avoid damage.



5.2.2 Vehicle

Task	Accessories	Method
Vehicle bodywork	Standard lance Detergent injection Curved lances and underchassis washers brushes Detergents Active Shampoo Active Foam Sapphire Super Plus Active Wax Allosil RimTop	<ol style="list-style-type: none"> 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. 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. 3. Clean fragile areas such as motors, rubber at lower pressure levels to avoid damage. 4. Apply a liquid wax using the pressure washer in order to protect the bodywork from pollution.

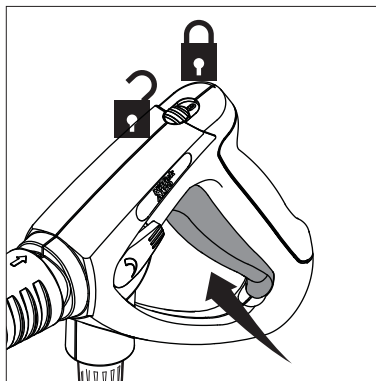
5.2.3 Buildings and Equipment

Task	Accessories	Method
General surfaces Metallic equipment	Foam injectors Standard lance Curved lances Tank cleaning head Detergents Intensive J25 Multi Combi Active Alkafoam Disinfectant DES 3000	<ol style="list-style-type: none"> 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. 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. 3. Apply DES 3000 disinfectant once the surfaces are perfectly clean. <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"> 1. Connect the sandblasting lance to the pressure washer and place the suction tube in the sand. 2. Always wear protective equipment during sandblasting. 3. Spray the surfaces to be treated with the mix of water and sand. Rust, paint etc will be stripped off.

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 cord and storing accessories

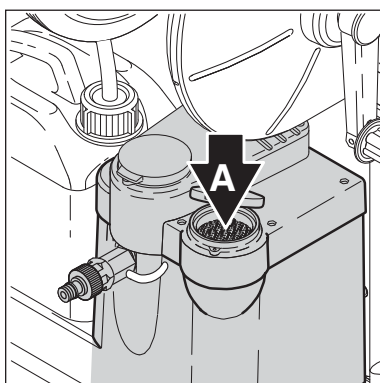
Risk of tripping!

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

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

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.

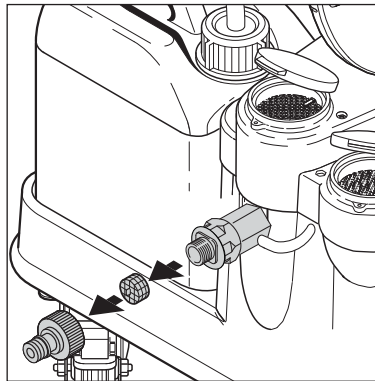
EN 7 Maintenance

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

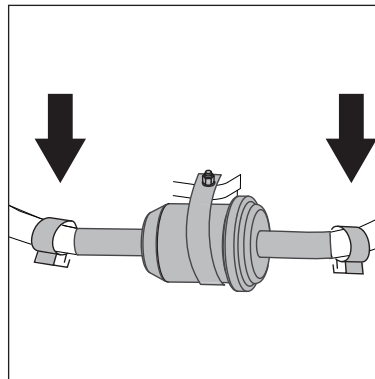
7.2.1 Water filters



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

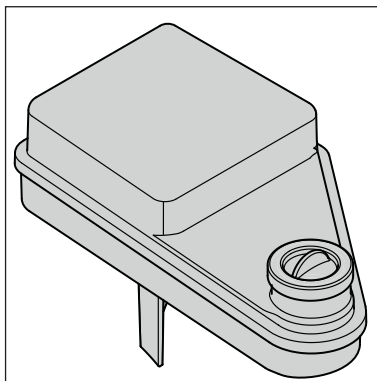
1. Unscrew quick coupling.
2. Remove filter with tool and clean it.

7.2.2 Maintenance of fuel filter



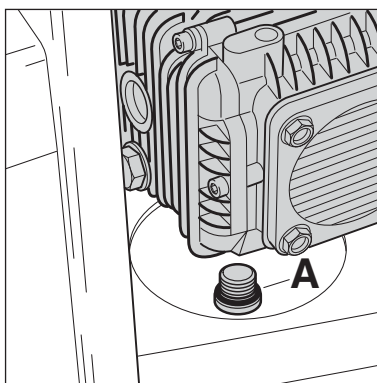
1. Open hose clips
2. Replace fuel filter
3. Close hose clips
4. Dispose the cleaning solution/damaged filter in accordance with the disposal regulations.

7.2.3 Checking the pump oil quality



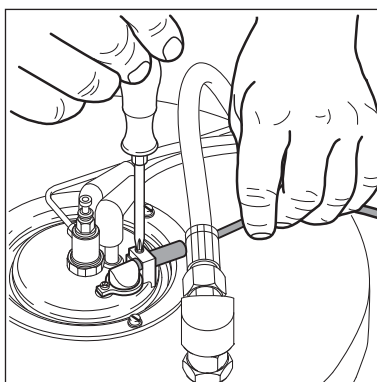
1. Check colour of pump oil.
If the oil has a grey or white shade, change the oil (see chapter 7.2.4)
2. Top up cold pump with fresh oil if necessary.
Oil type see chapter 9.4 Technical Data.

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 '9.4 Technical Data'.








7.2.5 Flame sensor¹⁾



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

EN 8 Troubleshooting

8.1 Indications on Display

Indication lights				Cause	Remedy
				<ul style="list-style-type: none"> > Constant light <ul style="list-style-type: none"> - The appliance is ready for operation When switching on, all the LEDs light up once before the motor is switched on > Flashing light <ul style="list-style-type: none"> - Flow sensor fault - Water tap closed or water shortage - Detergent tank empty - Pressure regulation on the safety control block or VarioPress-lance¹⁾ set to low water volume - Machine scaled 	<ul style="list-style-type: none"> > Contact Nilfisk-ALTO Service > Cold water operation possible > Required volume flow and pressure see chapter 9.4 Technical Data > Top up detergent tank or set detergent metering to "OFF" > Turn the twist grip on safety control block or VarioPress lance¹⁾ to higher water volume (see chapter 4.4) > Contact Nilfisk-ALTO Service
				<ul style="list-style-type: none"> > Constant light <ul style="list-style-type: none"> - Fuel shortage 	<ul style="list-style-type: none"> > Top up fuel > Cold water operation is possible
				<ul style="list-style-type: none"> > Flashing light <ul style="list-style-type: none"> - Nilfisk-ALTO AntiStone shortage 	<ul style="list-style-type: none"> > Top up Nilfisk-ALTO AntiStone
				<ul style="list-style-type: none"> > Constant light <ul style="list-style-type: none"> - Service interval has expired > Flashing light <ul style="list-style-type: none"> - Service interval due in 20 hours 	<ul style="list-style-type: none"> > Contact Nilfisk-ALTO Service > Contact Nilfisk-ALTO Service
				<ul style="list-style-type: none"> > Constant light <ul style="list-style-type: none"> - Pump oil low 	<ul style="list-style-type: none"> > Top up pump oil
				<ul style="list-style-type: none"> > Flashing light (simultaneously) <ul style="list-style-type: none"> - Leakage or inadmissible operating condition by short-time operation - Spray gun leaking - High pressure hose, coupling or line system leaking - Detergent tank empty - Water inlet filter dirty - High-pressure pump drawing in air 	<ul style="list-style-type: none"> > 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. > Check Spray gun > Replace high pressure hose, retighten screw fittings > Top up detergent tank or set detergent metering to "OFF" > Clean filter (see chapter 7.2.1) > Repair leaks

Continued ▶



			> Flashing light (alternately) - Motor overheated	> <ul style="list-style-type: none"> Turn main switch in position "OFF", let the machine cool down Remove/disconnect extension cable Possible phase failure; have electrical connection checked
			> - Machine overheated	> Contact Nilfisk-ALTO Service
 slow		 rapid	> Flashing light - Flame sensor sooted - Ignition or fuel system failure	> Clean flame sensor (see chapter 7.2.5) > Contact Nilfisk-ALTO Service > Cold water operation possible

8.2 Other Faults

Fault	Cause	Remedy
not ON	> Plug not connected to the electrical plug socket	<ul style="list-style-type: none"> Put the plug into the electrical socket. Check fuse (see chapter 9.4 Technical Data)
Pressure too low	> High pressure nozzle worn out > Pressure regulation set to low pressure or VarioPress-lance ¹⁾ set to low water volume.	<ul style="list-style-type: none"> Replace nozzle Turn the twist grip on safety control block clockwise (+) or set VarioPress-lance¹⁾ to higher water volume (see chapter 4.4)
Machine is running with pulsating pressure and makes knocking noise	> Pump has drawn in air as the detergent tank is empty	<ul style="list-style-type: none"> 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.
No detergents drawn in	> Detergent tank empty > Dirt in detergent tank > Suction valve at cleaning agent inlet soiled	<ul style="list-style-type: none"> Top up detergent tank Clean detergent tank Remove suction valve and clean or replace
Burner soots	> fuel contamination > Burner sooted or adjustment incorrect	Contact Alto Service

EN 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 Directive

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.

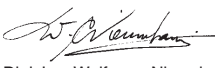
9.2 Guarantee

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


























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

The guarantee is invalidated if the

9.3 EU Declaration of Conformity

CE EU Declaration of Conformity							
Product:	High Pressure Cleaner						
Type:	NEPTUNE 4						
Description:	230 V 1~, 50 Hz / 400 V 3~, 50 Hz / IP X5						
The design of the unit corresponds to the following pertinent regulations:	<table> <tr> <td>EC Machine Directive</td> <td>2006/42/EC</td> </tr> <tr> <td>EC Low-voltage Directive</td> <td>2006/95/EC</td> </tr> <tr> <td>EC EMC Directive</td> <td>2004/108/EC</td> </tr> </table>	EC Machine Directive	2006/42/EC	EC Low-voltage Directive	2006/95/EC	EC EMC Directive	2004/108/EC
EC Machine Directive	2006/42/EC						
EC Low-voltage Directive	2006/95/EC						
EC EMC Directive	2004/108/EC						
Applied harmonised standards:	EN ISO 12100-1, EN ISO 12100-2, EN 60335-2-79 EN 55014-1, EN 55014-2, EN 61000-3-2						
Applied national standards and technical specifications:	DIN EN 60335-2-79						
	Nilfisk-Advance A/S Industrivej 1 DK-9560 Hadsund						
Dipl. Ing. Wolfgang Nieuwkamp Tests and approvals	Hadsund, 01.06.2009						

Technical Data

NEPTUNE 4																
		Descr.	4-25 FAX	4-28 FA	4-28 FAX	4-39 FAX	4-43 FAX	4-44 FA	4-44 FA	4-50 FA / 4-50 FAX	4-50 FA / 4-50 FAX	4-50 FA	4-55 FA / 4-55 FAX	4-55 FA / 4-55 FAX	4-36 FAX	
Voltage 200 V / 3~ / 50Hz									JP							
Voltage 200 V / 3~ / 60Hz									JP							
Voltage 220 V / 1~ / 60Hz					EXPT											
Voltage 230 V / 1~ / 50Hz			EU													
Voltage 230 V / 1~ / 60Hz																US
Voltage 240 V / 1~ / 50Hz					AU											
Voltage 400 V / 3~ / 50Hz						EU	EU				EU / AU			EU		
Voltage 400/230 V / 3~ / 50Hz												NO				
Voltage 220/440 V / 3~ / 60Hz												EXPT		EXPT		
Fuse		A	16	15	15	16	16	20	20	16	25 / 16	15 / 25	16	15 / 25	30	
Power rating		kW	3.1	3.1	3.2	4.7	5.2	4.8	4.7	6 / 6.1	6.2 / 6	5.8 / 6	6.5 / 6.7	6.4 / 6.3	7	
Power consumption		A	15.1	14.9	14.7	9.2	9.7	18.9	16.8	13 / 13.1	22.5 / 12.4	12.4 / 22.5	12.5 / 12.7	12.4 / 22.5	25.5	
Type of protection			IP X5													
Working pressure		bar (Mpa)	135 (13.5)	110 (11)	110 (11)	165 (16.5)	180 (18)	170 (17)	170 (17)	190 (19)	190 (19)	190 (19)	200 (20)	200 (20)	179 (18)	
Permissible pressure P _{max}		bar (Mpa)	210	170	170	250	250	250	250	250	250	250	250	250	250	
Volume flow (max)		l/h	565	670	720	820	860	910	910	960	960	960	1010	1010	760	
Volume flow Q _{IEC}		l/h	525	630	670	760	800	830	830	900	900	900	960	960	700	
High pressure nozzle			0340	0450	0450	0450	0450	0500	0500	0500	0500	0550	0500	0550	0400	
Temperature t _{max} , hotwater		°C	90													
Temperature t _{max} , steam		°C	150													
Max. water inlet temperature		°C	40													
Max. water inlet pressure		bar (Mpa)	10(1)													
Dimensions l x w x h		mm	1053 x 687 x 760													
Weight		kg	136	131	136	136	136	136	136	136 / 141	136 / 141	141	136 / 141	136 / 141	134	
Calculated sound pressure at a distance of 1 m EN 60704-1 L _{PA} +/- K _{PA} *		dB(A)	80 +/- 1,5	80 +/- 1,5	80 +/- 1,5	80 +/- 1,5	80 +/- 1,5	75 +/- 1,5	75 +/- 1,5	76 +/- 1,5	76 +/- 1,5	76 +/- 1,5	77 +/- 1,5	77 +/- 1,5	80 +/- 1,5	
Sound power level L _{WA} MAX including K _{WA} = 1,5dB*		dB(A)	94	94	94	94	94	91	91	91	91	91	92	92	94	
Vibration ISO 5349		m/s ²	< 2.5													
Recoil forces		N	18.2	20.5	22.5	30.1	33.3	36	37	38	38	35	42	42	31.1	
Heating capacity		kW	48	48	61	61	61	66	66	66	66	66	66	66	61	
Fuel tank		l	15													
Detergent tank A / B		l	10													
Oil quantity		l	1													
Oil type			BP Energol GR-XP 220													

* Noise emission acc. to EN 60335-2-79 ZAA.2.7

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Why Compromise
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