



*... for a cleaner world* ☀



To be read completely before initial start-up!



# Operating Manual 312/314 Profi / K



11/08



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## 1. Introduction

With your OERTZEN high pressure cleaner you have purchased one of the most durable and reliable machines available on the market. Its balanced ratio of water flow (temperature) and working pressure perfectly meets all cleaning requirements. The OERTZEN high pressure cleaners conform to all European safety regulations which is guaranteed by the CE symbol.

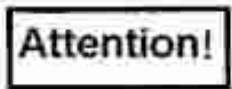
- This manual to be made available to the operating personnel and to be read completely before start-up. We point out that we cannot be held responsible for any damage or malfunctions as a result of ignoring this manual.
- The machine described in this manual to be inspected every year by qualified personnel. Inspection results to be recorded and to be made available to authorities their on request.
- The packing materials (plastic foil, wood, cardboard boxes, nails etc.) are potentially dangerous, should be kept away from children and disposed according to environmental requirements.



**This symbol appears at all operating and safety instructions dealing with the risks for personal entirety and life.**



**This warning symbol appears in the operating manual at all operating safety instructions dealing with risks due to electric power.**



**This symbol appears at all operating and safety instructions dealing with the fulfilment of rules, regulations and instructions for the proper operation and destruction of the machine.**

**This manual is subject to technical alteration.**

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## 2. Safety Instructions



### **The following instructions to be followed before, during and after work:**

This instruction manual to be read completely before initial start-up. If strictly followed, no danger should occur.

This machine must only be run by qualified adult persons who are fully familiar with possible risks. "Directives for Liquid Blasters" (ZH 1/406) and operation instructions "Working with Liquid Blasters" (BGV D 15) to be followed.

The machine is not suitable for unattended operation and must be operated according to specification. Protective clothing to be worn.

The water jet emerging from the spray pistol has a dangerous cutting effect. Therefore the water jet must never be directed onto persons, animals or electrical installations. It must never be used for cleaning of clothes, shoes and the like. Be aware of torque and recoil. Ensure stable foothold.

The max. allowed pressure which is stated on the type plate must not be exceeded. The safety/control valve opens, if the max. operating pressure is exceeded by more than 10 % and returns the water into the suction side of the high pressure pump. The safety/control valve is workshop-set and leaded. Adjustment must not be changed.

Unsuitable respectively defective high pressure hoses often cause severe accidents during operation. Therefore high pressure hoses to be carefully inspected before start-up and replaced by original OERTZEN equipment in case of damage. Use of other than original OERTZEN equipment results in expiration of the EC Declaration of Conformity, as well as product liability and warranty.

Worn-out or damaged high pressure hoses must never be repaired and reused but to be replaced by original OERTZEN equipment.

Spray pistols with delayed closing mechanism must not be used because of risk of injuries.

Lever in open position must never be blocked or fixed in any way.

Use of spray lances shorter than 750 mm is prohibited.

The machine must not be run in areas jeopardized by fire or explosions. During operation at filling stations "Technical for flammable liquids" (TfbF) to be observed.

Consumables to be handled thoroughly according to technical rules and safety and environmental regulations to be observed.

Machine must not be started, if power cable, plug, switches, etc. are defective.

Only extension cables designed according to VDE to be used. Extension cables on reels to be reeled off during operation in order to avoid overheating of the reel. Plug, couplings to be watertight. A faulty current protection switch to be added.

Before opening the machine in case of malfunction or emergency, switch off by means of the ON/OFF switch and disconnect it from electric power source.



Electric power can cause severe injuries. All symptoms of faulty electric components to be taken seriously and possible causes for accidents to be eliminated immediately. All repair work only to be carried out by qualified service personnel.

Secure the machine against moving. It is equipped with a parking brake which must be set during working.

When using pipe cleaning hoses observe marking (approx. 50 cm). Strictly follow instructions in para "Pipe Cleaning", chapter "Operation".

During loading hoisting device to be fastened properly at jack rings. Ensure balanced load distribution.

Repair work in the high pressure section of the machine (pump, hoses, piping) only to be carried out by qualified personnel.

After work the machine to be locked and secured against unauthorized/accidental operation by means of the safety lever.

**Use of equipment and/or consumables which is not delivered or expressly approved by OERTZEN results in expiration of the EC Declaration of Conformity, as well as product liability and warranty.**

### 3. **Design/Function/Illustrations**

The cold water high pressure cleaners of this series mainly comprise a low speed high pressure inline plunger pump which is directly flanged to an high efficient, 100 % duty cycle electric motor.

The feed water is directed with the necessary admission pressure via a filter into the high pressure pump, forwarded to the spray nozzle and so boosted to working pressure.

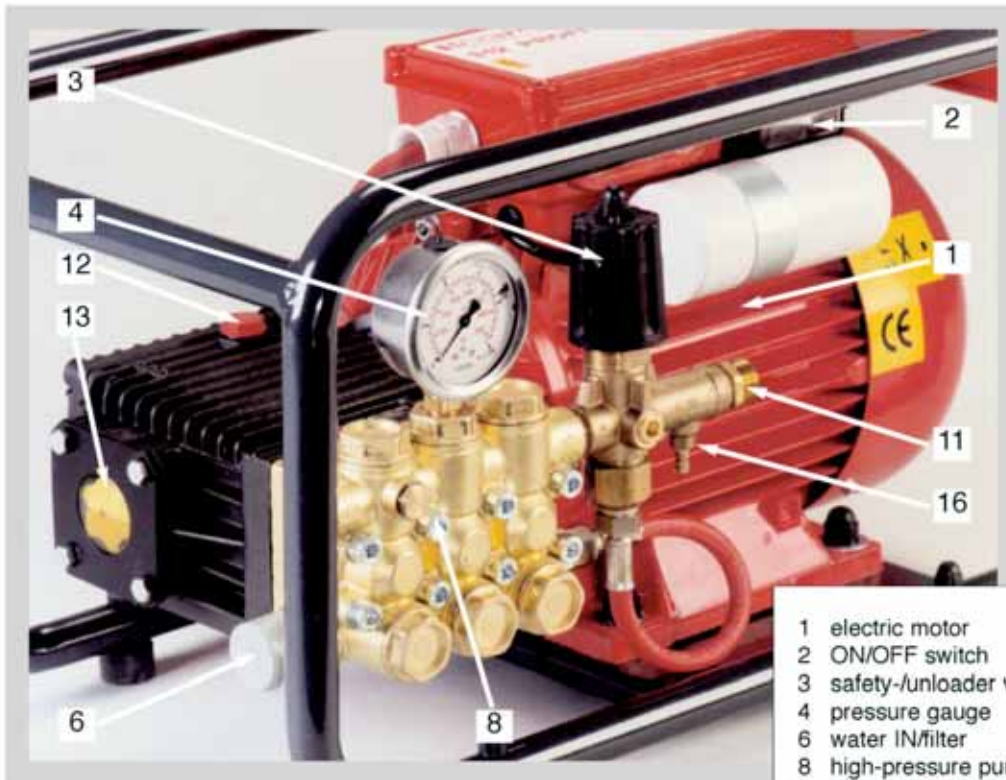
Downstreams of the high pressure pump a safety/control valve is arranged which opens in case the max. operating pressure is exceeded by more than 10 % and returns the water which cannot be taken by the nozzle into the suction line of the high pressure pump.

It also allows to continuously adjust working pressure and flow rate as required.

The working pressure can be adjusted as required by turning of the regulating handle at the double lance. In the low pressure mode an injector, which is arranged downstreams of the high pressure pump, is activated, detergent is injected into the water jet and so applied onto the cleaning object.

The machine is equipped with a circulation safety cutoff. When closing the spray pistol, the safety/control valve opens and returns the circulating water into the suction line of the high pressure pump. When activating the spray pistol again, adjusted working pressure is generated immediately so that the cleaning task can be continued without delay.

The range of applications can be extended by a variety of accessories available from OERTZEN. Contact your local distributor for details.



- 1 electric motor
- 2 ON/OFF switch
- 3 safety-/unloader valve
- 4 pressure gauge
- 6 water IN/filter
- 8 high-pressure pump
- 11 high-pressure OUT
- 12 oil dip stick
- 13 oil window/hp pump
- 16 detergent intake



**drain cleaning hose**  
shut off valve (51)



**drain cleaning nozzles**  
1 - rocket nozzle, 2 - rocket drill nozzle  
3 - rotating turbo nozzle

#### 4. Start-up / Shut-down

##### Before Start-up:

**Read and observe operation manual.**

##### ATTENTION

In order to guarantee proper function and trouble-free operation, the following checks to be carried out before start-up:

- General condition of the unit (connections, gaskets, etc.).
- Power cables/connections.
- High pressure hoses, hose pipes, whether damaged.
- Air supply, fresh air grill must not be covered.
- Filling of consumables.
- Correct oil level of high pressure pump (sight glass/dip stick).
- High pressure pump: OERTZEN OSP special pump oil.
- Pump/pump connections whether leaking.
- Machine only to be run with absolutely clean water. Before connecting the water supply hose, rinse it thoroughly. Depending on feed water quality, regularly check water filter in short intervals, replace if needed.
- Machine only to be run horizontally (+/- 5°).

##### ATTENTION

In order to guarantee proper function and trouble-free operation, the following checks to be carried out during working:

- Observe function of indicator lights/monitors.
- Observe pressure variations
- Observe leaks at high pressure pump, hose pipes, connections.
- Observe unnormal noise.

In case of malfunctions immediately stop machine, eliminate cause according to chapter „Trouble Shooting“, call qualified service.

#### **Connections**

##### Water Supply

Connect water inlet (6) of the machine to water source with a clean hose (diameter see table below). Before connecting water supply hose, rinse it thoroughly. In case of connection to the potable water distribution, observe DIN 1988 (for momentary connections use a backflow preventer with non-return function and ventilation).

Flow pressure	Min. flow rate *
minimum: 2 bar maximum: 8 bar	≥ 15 l/min ¾" water supply hose ≥ 21 l/min 1" water supply hose ≥ 30 l/min 1 ¼" water supply hose <small>* s. Techn. Data</small>

##### ATTENTION

**Insufficient water supply will cause heavy damage on high pressure pump (cavitation).**



### Power Supply

Insert plug into a 230 V socket which is protected by a 16 A (slow) fuse. Only extension cables designed according to VDE to be used. Extension cables on reels to be reeled off during operation in order to avoid overheating of the reel. Plug, couplings to be watertight. A faulty current protection switch to be added. VDE regulations to be observed.

### High Pressure Connection

Connect high pressure hose to high pressure outlet (11) by means of the union without using tools.

### Pipe Cleaning Connection (optional)

Connect high pressure hose to high pressure outlet without using tools. Mount required pipe cleaning nozzle on the other end of the high pressure hose (handtight, without using tools).

## Operation

- Fully open water source
- Unlock and spray pistol, bleed unit.
- Push ON/OFF switch (2).
- Carry out cleaning task.



**Observe torque and recoil, as well as shortening of high pressure hose. Ensure stable foothold.**

### ***Pressure Adjustment***

**The working pressure can continuously be adjusted by turning the regulation handle.**

Counter-clockwise:            pressure reduction  
Clockwise:                      pressure increase

### ***Pressure/Flow Regulation***

Pressure and flow rate can continuously be adjusted as required at the regulation handle of the control valve (3).

**Counter-clockwise:**        continuous pressure and flow reduction until minimum capacity

**Clockwise:**                    continuous pressure and flow increase up to Maximum capacity

## ATTENTION

**When closing the spray pistol, the safety/control valve opens and returns the circulating water into the suction line of the high pressure pump. Never run the machine in this operating mode for more than 5 minutes in order to avoid overheating of the high pressure pump. Switch it off by means of the ON/OFF switch (2) during extended working breaks respectively after completion of work.**

### ***Detergent Mode***

**ATTENTION**

**Only detergents approved by OERTZEN to be used, otherwise warranty will expire.**

Put detergent hose/strainer into detergent tank.

Reduce pressure by turning the regulating handle at the double lance counter-clockwise. the detergent is now injected into the water jet and can be applied onto the cleaning object. Detergent to work in but must not dry.

Detergent injection is interrupted by turning the regulating handle at the double lance clockwise. Cleaning object to be washed with water jet.

**ATTENTION**

**After cleaning suction line to be rinsed with clean water in order to avoid detergent.**

### ***High Pressure Pipe Cleaning (Option)***



**During pipe cleaning aerosols may be generated, a protecting mask to be worn.**

Push pipe cleaning hose with rocket nozzle to be pushed into the pipe until the mark (approx. 50 cm) is reached. Open stop valve (51) and start high pressure cleaner by means of the ON/OFF switch (2). The recoil effect automatically draws the nozzle into the pipe. As soon as the nozzle reaches the blockage, carefully draw back pipe cleaning hose and let it move in again. Work carefully in sections and gradually remove the blockage in order to avoid clogging of the pipe cleaning nozzle (risk of further blockage).

If the pipe is totally blocked, close stop valve (51), remove high pressure hose and replace rocket nozzle by a rocket drill nozzle (with front bore). Carry out procedure as described before.



**When removing the pipe cleaning hose, stop machine as soon as soon as approx. 50 cm of the hose are still in the pipe (mark), in order to avoid uncontrolled flapping of the hose which may cause severe injuries. If there is no mark can be detected, it should be fixed with tape or paint.**

**ATTENTION**

**Never run the machine in circulation mode for more than 5 minutes in order to avoid overheating of the high pressure pump. Switch it off by means of the ON/OFF switch (2) during extended working breaks respectively after completion of work.**

### **After Work**

Switch off machine by means of the ON/OFF switch (2).

Depressurize spray pistol by shortly opening and closing.

Lock spray pistol.

Disconnect machine from water and power source.





Thoroughly clean high pressure hose. In case of damage (cuts, abrasions, kinks, etc.) replace high pressure hose for safety reasons.

Only original OERTZEN high pressure hoses (marked) to be used. Otherwise EC Declaration of Conformity and warranty will expire.



Reel up high pressure hose properly without any loops.

Store machine and accessories in a dry, frost-protected area.

Drain pump completely in case of extended shut-down periods.



**Particularly note:**

In case of malfunctions, eliminate cause according to chapter „Trouble Shooting“, call qualified service.

In case frost is likely, frost protection to be carried out (see chapter „Maintenance and Care“), otherwise severe damage will be the result.

## 5. Maintenance and Care

Every machine is only as reliable as maintenance is carried out.

### ATTENTION

The machine to pass an annual safety check. Test results to be recorded and to be made available on request.

### ATTENTION

Moreover the following maintenance work to be carried out in regular intervals order to guarantee function and trouble-free operation of the machine:

### ATTENTION

**In case the maintenance instructions as described hereafter are disregarded, warranty will expire.**

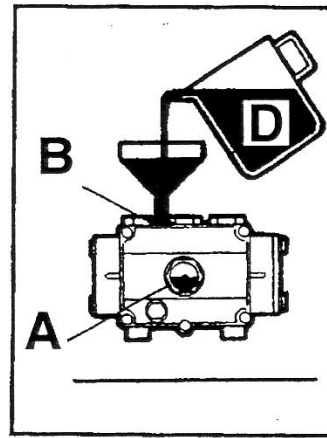
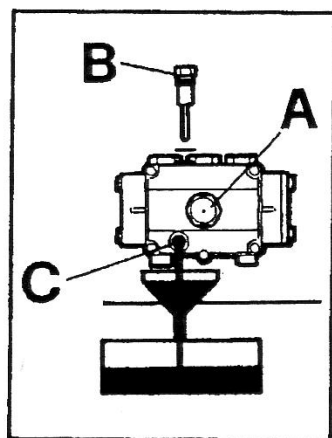
### High Pressure Pump

First oil change after 50 operating hours, further oil changes after every 500 operating hours, minimum once per year.

### ATTENTION

Only OERTZEN OSP special pump oil to be used. Use of other oil qualities results in expiration of warranty.

### Oil Control / Oil Change



- A (13) sight glass, center level
- B (12) filling hole/dip stick
- C drain screw
- D OSP special pump oil  
Part No. 10.802.002

### Strainer

A strainer (6) is arranged at the water inlet, the insert of which must be checked before start-up and replaced whenever necessary.

**ATTENTION**

**If the machine is operated with polluted water or dirty strainer heavy damage on the pump set and/or control elements will be the result.**

### Frost Protection

**ATTENTION**

Frost protection of the entire system is of vital interest in order to protect the machine from heavy damage.

The best frost protection method is to store machine and accessories in a permanently frost-protected area.

If frost is likely during storage or transport, frost protection to be carried out as follows:

- 2 l of a 1 : 1 water/anti-freeze liquid (e. g. Glysantin) to be mixed in a clean vessel. Dip water supply hose into the vessel and start pump.
- Open spray pistol/stop valve and so return anti-freeze liquid into the vessel, so circulating it through the system.
- Open and close spray pistol/stop valve several times, in order to also fill anti-freeze liquid into safety/control valve.
- Machine is now protected against temperatures of approx.  $-30\text{ }^{\circ}\text{C}$ .

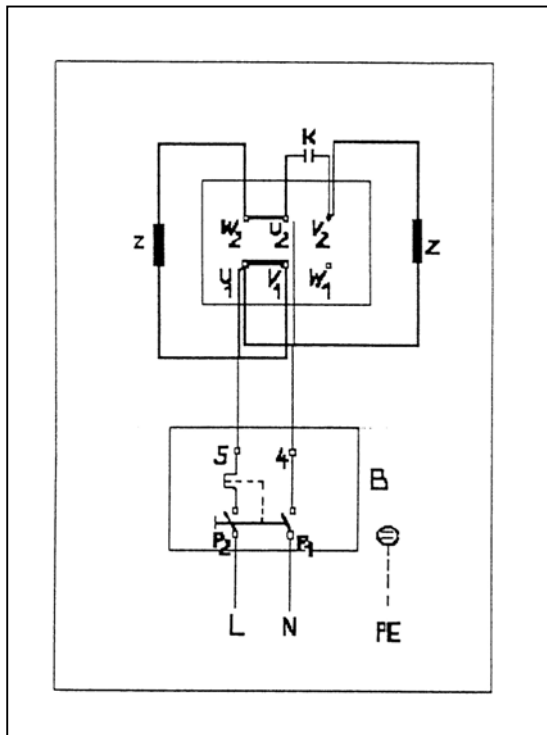


**Disregarding frost-protection instructions will result in heavy damage of the machine.**

**ATTENTION**

**Anti-freeze liquid always to be collected for re-use or to be disposed according to environmental regulations!**

## 6. Electric Wiring Diagram



## 7. Technical Data

Technical Data	312 Profi K	314 Profi K
Flow rate, adjustable	620 l/h	760 l/h
Unloading pressure	185 bar	160 bar
Max. operating pressure	170 bar	140 bar
Recoil	33 N	30 N
Water temperature max.	60 °C	60 °C
Suction height	1 m	1 m
Normal current (50 Hz)	1~230 V	1~230 V
Driving power	3,3 HP	3,3 HP
Fuse	16 A	16 A
Total connected load	3,5 kW	3,5 kW
Detergent injection rate	10 %	10 %
Spray nozzle High Impact (PK)	3538	2538
Rocket nozzle (mm) (PK)	3 x 0,8	3 x 0,9
Rocket drill nozzle (mm) (PK)	4 x 0,7	4 x 0,8
High pressure hose	8 m	10 m
Pipe cleaning hose	22 m	22 m
Water connection	3/4" male	3/4" male
Noise level Lp/Lw According to DIN EN ISO 3744	63 /74 dB(A)	63 /74 dB(A)
Weight	34,5 kg	34,5 kg

## 8. Trouble Shooting



**Electric power can cause severe injuries. All symptoms of faulty electric components to be taken seriously and possible causes for accidents to be eliminated immediately. All repair work only to be carried out by qualified service personnel. During maintenance/repair work, disconnect machine from power source.**



**Repair work only to be carried out by qualified service personnel. Only original OERTZEN spare parts/accessories to be used, otherwise working safety will not be guaranteed, EC Declaration of Conformity will expire.**

Malfunction	Cause	Remedy
Motor does not start.	<ul style="list-style-type: none"> <li>- Motor protection switch not pressed.</li> <li>- Machine not connected to power source.</li> <li>- Fuse burnt.</li> <li>- Phase missing in plug.</li> <li>- Faulty motor protection switch.</li> <li>- Insufficient water supply (applicable if SCS system is installed).</li> </ul>	<ul style="list-style-type: none"> <li>- Press motor protection switch.</li> <li>- Insert plug into socket, activate main switch.</li> <li>- Replace fuse. If burning again, call qualified service.</li> <li>- Mount phase according to electr. wiring diagram.</li> <li>- Call qualified service.</li> <li>- Guarantee sufficient water supply.</li> </ul>
Motor suddenly trips, motor protection switch stops machine.	<ul style="list-style-type: none"> <li>- Fuse burnt. (Phase missing).</li> <li>- Low voltage.</li> <li>- Faulty motor protection switch.</li> <li>- High operating pressure.</li> </ul>	<ul style="list-style-type: none"> <li>- Replace fuse. If burning again, or motor gives noise, call qualified service.</li> <li>- Guarantee correct voltage.</li> <li>- Kundendienst rufen.</li> <li>- Clean/replace nozzle (see Technical Data)</li> </ul>
Motor gives noise upon start-up.	<ul style="list-style-type: none"> <li>- Fuse burnt. (Phase missing).</li> <li>- Malfunction in electric network</li> </ul>	<ul style="list-style-type: none"> <li>- Replace fuse. If burning again, call qualified service.</li> <li>- Check phases in plug.</li> </ul>
Operating pressure not achieved/varies	<ul style="list-style-type: none"> <li>- Air in unit</li> <li>- Poor water supply</li> <li>- Nozzle worn</li> <li>- Incorrect nozzle</li> <li>- Nozzle clogged</li> <li>- Water filter dirty</li> <li>- Safety/control valve leaking</li> <li>- Suction side leaking</li> <li>- Suction valves dirty/sticking.</li> </ul>	<ul style="list-style-type: none"> <li>- Bleed unit. Open pressure regulating handle and pistol unless continuous pressure is achieved.</li> <li>- Too small water supply hose. (diameter see table)</li> <li>- Replace nozzle.</li> <li>- Install correct nozzle</li> <li>- Remove/clean nozzle</li> <li>- Clean water filter</li> <li>- Call qualified service</li> <li>- Tighten hose clamps on suction hose.</li> <li>- Remove/clean valves.</li> </ul>
High pressure hose and pistol vibrating	<ul style="list-style-type: none"> <li>- Air in unit</li> </ul>	<ul style="list-style-type: none"> <li>- Bleed unit. Open pressure regulating handle and pistol unless continuous pressure is achieved.</li> <li>- Clean strainer.</li> </ul>



## EC-Konformitätserklärung Declaration of Conformity

Geräteart Description	Unbeheiztes Hochdruck-Reinigungssystem Cold water high-pressure cleaning system		
Gerätetyp Model	312 Profi/K 314 Profi/K	(Elektromotor / electric drive, 1-230 V/50 Hz) (Elektromotor / electric drive, 1-230 V/50 Hz)	170 bar 140 bar

Serien Nr.:  
Serial No.:

Wir bestätigen, daß das oben genannte Erzeugnis nachfolgenden Anforderungen entspricht:  
We hereby declare that above mentioned product is in conformity with the following provisions:

- EG-Maschinenrichtlinie                      EC-Machinery Directive                      98 / 37 EG (98 / 79)
- EG-Niederspannungsrichtlinie              EC-Low Voltage Directive                      73 / 23 EG (93 / 78)
- EG-Richtlinie EMV                              EC-EMC Directive                              89 / 336 EG (92 / 31) (93 / 68)
  
- ZH 1/406 (RFI)
- EN 292 Teil 1 und 2
  
- EN 55014     EN 60335-2-67
- EN 50081-1      EN 60335-2-69
- EN 60 335-2-79                                    EN 60335-2-72
- EN 1829

Bei nicht von uns genehmigten Änderungen der Maschine verliert diese Erklärung ihre Gültigkeit.  
This declaration is ceased in case of alterations of the product not approved by us.

Ammersbek, 19. Juni 2003

  
.....  
ppa. Grigoleit  
Technischer Leiter/Technical Manager  
ARNDT H. von OERTZEN (GmbH&Co)