

OERTZEN®

... for a cleaner world ☀



To be read before start-up!



Operation Manual

E 400



9/05

CE

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1. Introduction

By buying the OERTZEN equipment you have purchased one of the most durable and reliable high pressure cleaners available on the market. Its balanced ratio of water flow (temperature) and working pressure perfectly meets all cleaning requirements. The OERTZEN high pressure cleaners and accessories conform to all European safety regulations which is guaranteed by the CE symbol on the type plate. A Declaration of Conformity is part of this manual.

- 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.
- According to the Directive for Use of Liquid Blasters (ZH 1/406) 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. OERTZEN offers qualified service personnel to carry out safety inspections at attractive prices.
- 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 risks for personal entirety and life.



This warning symbol appears in the operating manual at all operating safety instructins 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 dangers. Relevant national safety rules 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, footwear 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 (hand nut marked with OERTZEN), 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 wands of a length below 750 mm is prohibited.

The machine must not be run in areas jeopardized by fire or explosions. During operation at filling stations "Technical Rules 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 completely 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.

Make sure that the machine cannot move. The unit 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.

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/are not delivered or expressly approved by OERTZEN results in expiration of the EC Declaration of Conformity, as well as product liability and warranty.

3. Configuration, Operation, Illustration

The cold water machines of this series mainly comprise of a low speed high pressure inline plunger pump, which is directly flanged to and driven by a 100 % duty electric motor.

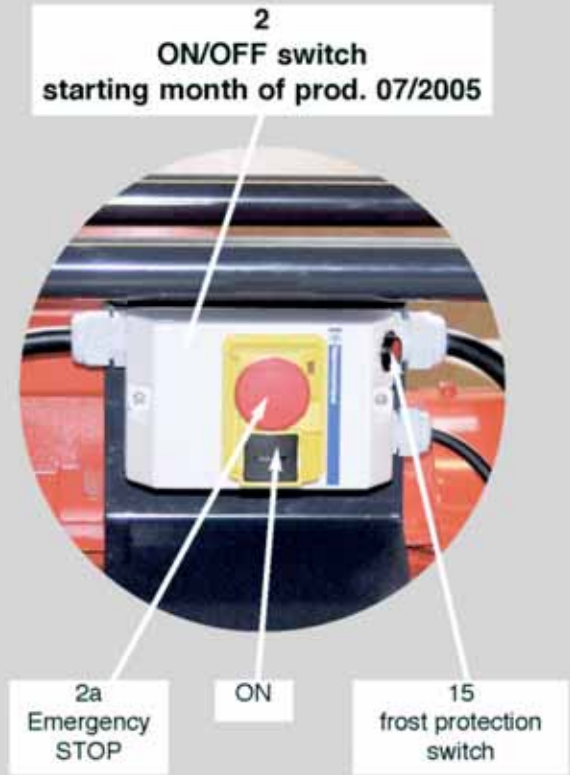
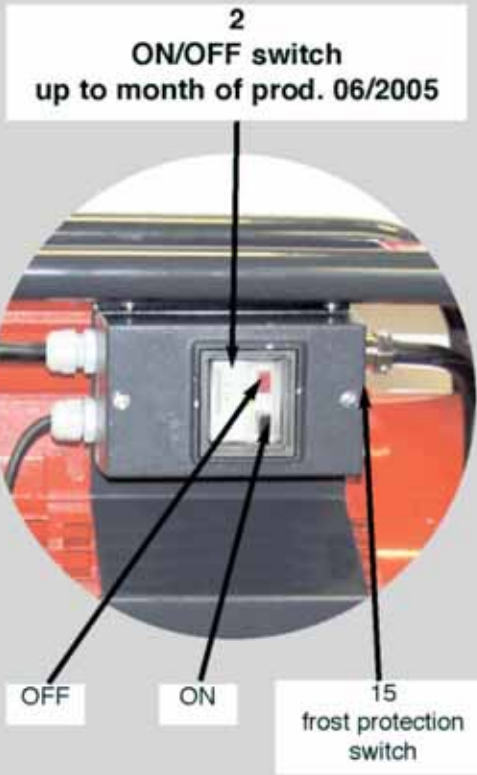
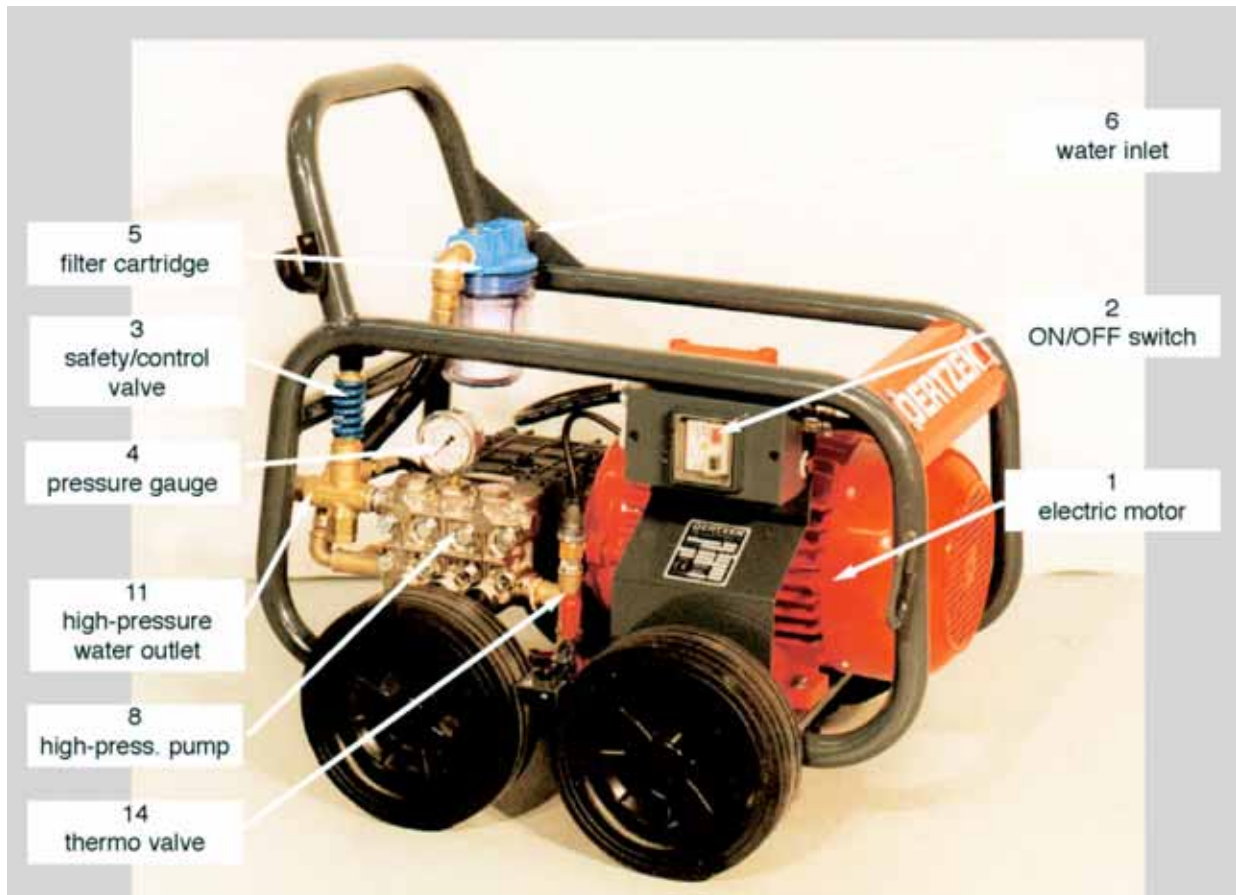
The feed water is directed with the required admission pressure via a pre-filter to the high pressure pump which – in connection with the required spray nozzle – boosts it to the stated/adjusted working pressure. In order to protect the pump against cavitation due to poor water flow, a low water cut-out is arranged which stops the machine as soon as the flow pressure drops below 2 bar.

Downstreams of the high pressure pump a locked and leaded safety/control valve is installed which opens as soon as the 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 pump.

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

The machine is equipped with a circulation shut-off system and additionally with a thermo valve in order to protect the pump against overheating. After closing the spray pistol the safety/control valve opens, and returns the circulating water into the suction line. Re-starting and immediate generation of required/adjusted working pressure is achieved by opening the spray pistol again, allowing to continue the cleaning task without delay.

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



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: special pump oil SAE 80/90 EP.
- 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 * see Technical Data

ATTENTION

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



Power Supply

Insert plug into a 400 V socket which is protected by 3 x 63 A (slow). 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.

ATTENTION

High Pressure Connection

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

Pipe Cleaning Hose Connection (optional)

Connect high pressure hose with high pressure water outlet by means of the hand nut without using tools. Other end to be connected with required pipe cleaning nozzle handtight without using tools.

Operation

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

ATTENTION

Be aware of significant recoil. Ensure stable foothold.

- Carry out cleaning task.

Pressure Regulation

Pressure can continuously be adjusted as required at the regulation handle of the double lance.

Counter-clockwise: pressure reduction
Clockwise: pressure increase

Pressure/Flow Regulation

Pressure and flow rate can continuously be adjusted as required at the hand wheel of the safety/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 pistol is closed, machine is running in circulation mode. If water temperature exceeds 60 °C, thermo valve (14) opens, releases hot water and cold water enters.

High Pressure Pipe Cleaning (Option)



During the pipe cleaning procedure aerosols may be formed, so that wearing a protective mask is recommended.

Push pipe cleaning hose with nozzle into the pipe up to the marking (approx. 50 cm).

Open stop valve and start unit by means of the ON/OFF switch (2). The pipe cleaning nozzle is automatically drawn in due to the recoil effect. As soon as the nozzle hits the clogging, carefully pull back the hose and let it move in again, in order to flush out the clogging. Work in sections and avoid excessive dirt removal, in order to avoid that the pipe is clogged again.



During removal of the pipe cleaning hose stop machine as soon as the marking is reached (approx. 50 cm before the end is reached), as otherwise the hose would flap around so causing severe injuries. If no marking is detected, apply one by tape or paint.

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 (cuts, abrasions, kinks, etc.) replace high pressure hose for safety reasons.
- Only original OERTZEN high pressure hoses 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 manufacturer offers maintenance agreements for every machine comprising the yearly safety inspection. Contact your local distributor for more information.

ATTENTION

The machine to be inspected every year by qualified personnel, in order to guarantee trouble-free and safe operation. Inspection results to be recorded and to be made available to authorities their on request. OERTZEN offers qualified service personnel to carry out safety inspections at attractive prices.

ATTENTION

In order to guarantee reliability and trouble free operation of the machine, it is of vital interest to follow the instructions below:

ATTENTION

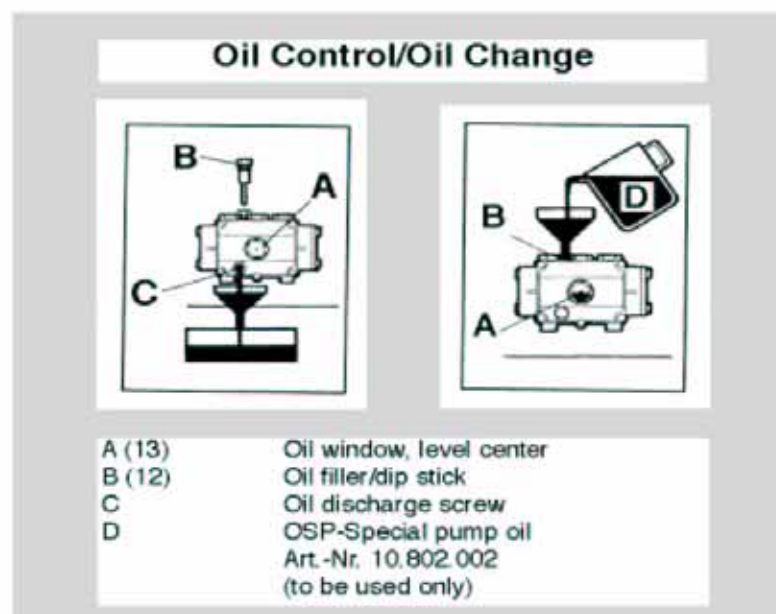
If the required maintenance intervals are disregarded, warranty will expire.

High Pressure Pump

First oil change after 50 operating hours, further oil changes after every 500 operating hours, minimum once per year. In case the oil becomes milky due to condensate formation, stop the machine immediately and carry out oil change. If this happens repeatedly, arrange replacement of all pump seals by qualified personnel.

ATTENTION

For the high pressure pump only special pump oil SAE 80/90 EP to be used, as otherwise you will loose your right to claim under parts guarantee.



Pre-Filter

Upstreams of the high pressure pump there is a pre-filter (6) installed, which must be inspected before start-up and replaced whenever required.

ATTENTION

If the machine is run with polluted water or dirty pre-filter severe damage of the pump and control elements will be the result.

Frost Protection

ATTENTION

Frost protection of the entire water system during storage and transport is a must, as otherwise heavy damage on the system and severe dangers during operation may occur.

The best frost protection is to store the machine and accessories in a frost-protected room.

If frost is likely during storage and/or transportation the machine to be protected as described below:

- Mix 2 l of a 1 : 1 water/anti-freeze liquid (e.g. Glysantin) in a clean vessel, dip water connecting hose into anti-freeze liquid and start pump.
- Open spray pistol/stop valve and return drawn-off anti-freeze liquid into the vessel, so allowing the liquid to circulate through the system. The frost protection switch to be kept pressed during the procedure.
- Spray pistol/stop valve to be opened and closed several times in order to fill safety/control valve with anti-freeze liquid.
- Stop pump, release frost protection switch and disconnect all hoses.
- Machine is now protected against frost to $-30\text{ }^{\circ}\text{C}$.

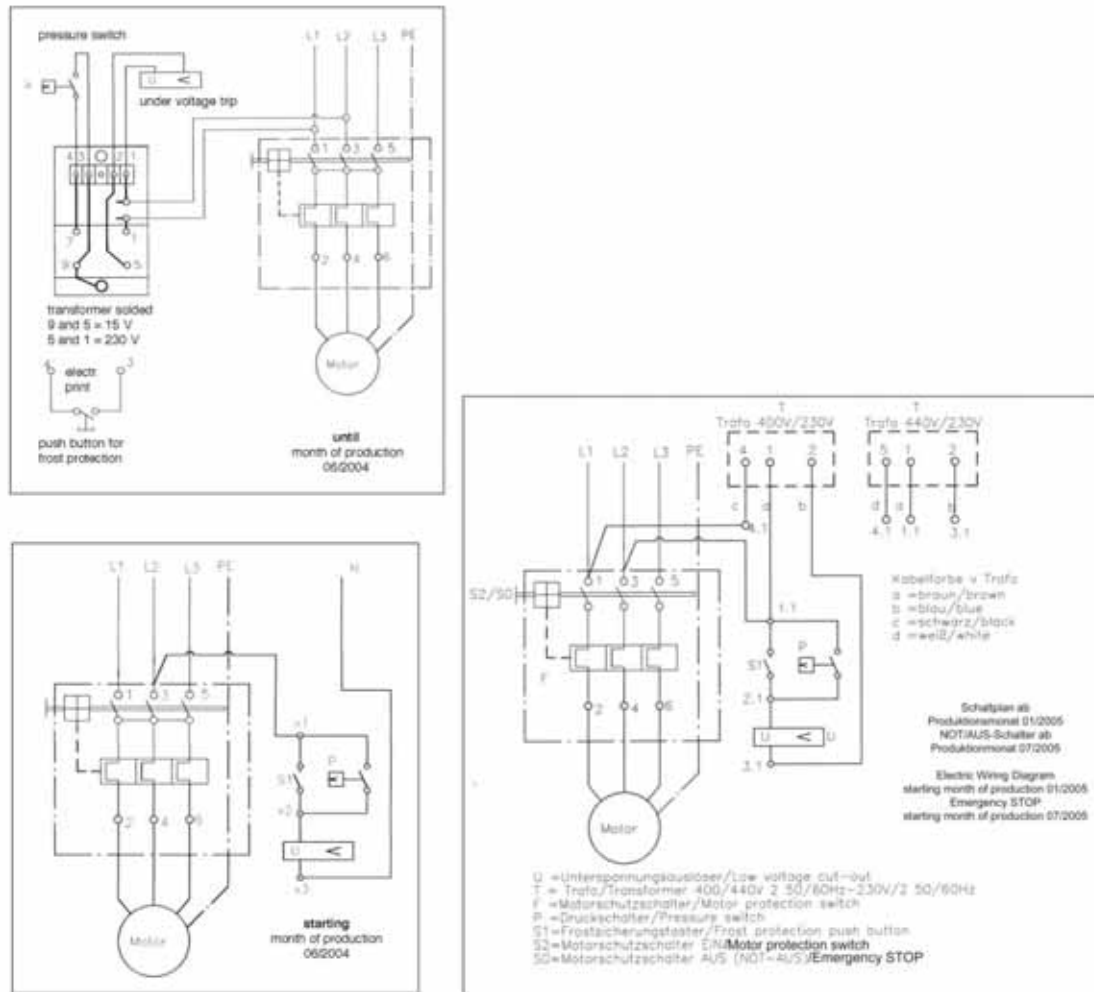


Disregarding frost protection instructions will result in heavy damage of the water carrying components.

ATTENTION

Never simply dump anti-freeze liquid but collect it for re-use or dispose according to environmental regulations.

6. Electric Wiring Diagram



7. Technical Data

Technical Data	E 400
Water flow/adjustable	700 – 1320 l/h
Unloading pressure	405 bar
Working pressure/adjustable	385 bar
Normal current (50 Hz)	3 ~ 400 V
Electric power	20 HP/16,6 kW
Pump speed	1420 1/min
Power consumption	30 A
Noise level Lp/Lw acc. to DIN EN ISO 3744	62/71 dB(A)
Recoil	106 N
Dimensions (L x W x H mm)	870 x 600 x 745 mm
Weight	153 kg
Spray nozzle	2338 HIP
Order No.	10.000.238

8. Trouble Shooting



Electric power can cause severe injuries. Defective electrical components to be immediately replaced, possible causes for accidents to be eliminated without delay. Any repair work must only be carried out by qualified personnel.



Only original equipment expressly approved by the manufacturer to be installed, as otherwise warranty and Declaration of Conformity will cease, health and safety standards are not guaranteed.

During repair or maintenance work, unit to be disconnected from electrical network.

Malfunction	Cause	Remedy
Electric motor does not start.	<ul style="list-style-type: none"> - Motor protection switch not pushed. - Machine not connected to power source. - Fuse burnt. - Phase missing. - Motor protection switch defective. - Poor water supply (only in case SCS system is installed) 	<ul style="list-style-type: none"> - Push motor protection switch. - Connect machine to power source, switch on main switch. - Replace fuse. If it burns again, call qualified service. - Phase to be mounted as per electric wiring diagram. - Call qualified service. - Ensure sufficient water supply.
Electric motor suddenly stops, motor protection switch trips.	<ul style="list-style-type: none"> - Poor water supply - Fuse burnt. (phase missing). - Low voltage. - Motor protection switch defective. - Operating pressure high. 	<ul style="list-style-type: none"> - Eliminate cause and re-start machine with ON/OFF switch. - Replace fuse. If it burns again or motor is noisy, call qualified service. - Ensure correct power supply. - Call qualified service. - Clean/replace nozzle (see Technical Data).
Electric motor noisy upon start-up.	<ul style="list-style-type: none"> - Fuse burnt. (phase missing). - Fault in electrical network 	<ul style="list-style-type: none"> - Replace fuse. If it burns again, call qualified service. - Check phases in electric plug.
Operating pressure not achieved/varies	<ul style="list-style-type: none"> - Air in unit - Nozzle worn. - Incorrect nozzle. - Nozzle partly clogged. - Water filter dirty. - Unloader valve leaking - Suction side leaking - Suction valves sticking/dirty. 	<ul style="list-style-type: none"> - Bleed unit. Open pressure regulating handle and pistol, until continuous pressure is reached. - Replace nozzle. - Install correct nozzle. - Remove/clean/re-install nozzle. - Clean water filter. - Call qualified service. - Tighten hose clamps on suction hose. - Remove/clean/re-install valves.
Vibrations on high pressure hose and spray pistol	<ul style="list-style-type: none"> - Air in unit 	<ul style="list-style-type: none"> - Bleed unit. Open pressure regulating handle and pistol, until continuous pressure is reached.



EC-Konformitätserklärung Declaration of Conformity

Geräteart Unbeheiztes Hochdruck-Reinigungssystem
Description Cold water high-pressure cleaning system

Gerätetyp E 400 (Elektromotor / electric drive, 3~400 V/50 Hz) 385 bar
Model

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 | | |
| <input checked="" type="checkbox"/> EN 55014 | <input type="checkbox"/> EN 60335-2-67 | |
| <input type="checkbox"/> EN 50081-1 | <input type="checkbox"/> EN 60335-2-69 | |
| <input type="checkbox"/> EN 60 335-2-79 | <input type="checkbox"/> EN 60335-2-72 | |
| <input checked="" type="checkbox"/> 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


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