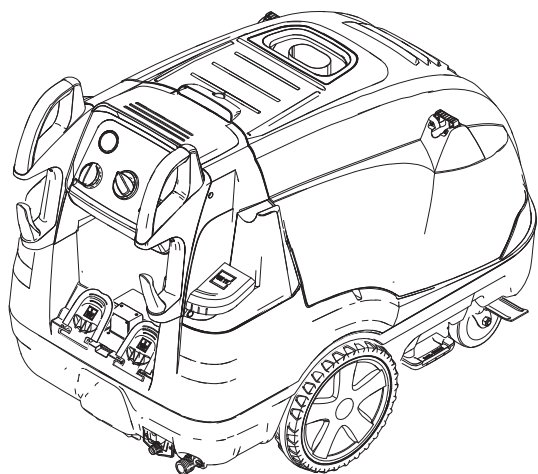
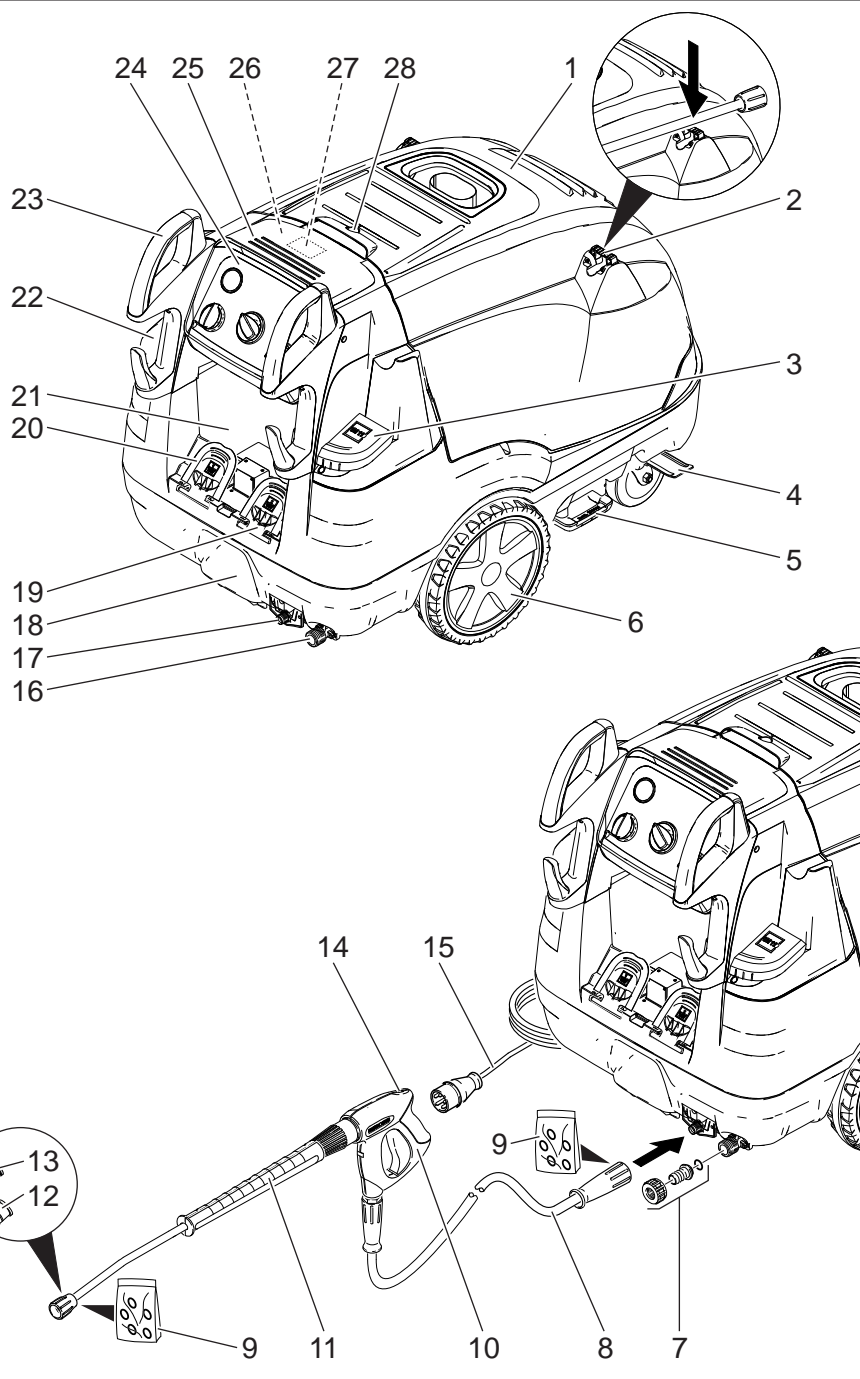


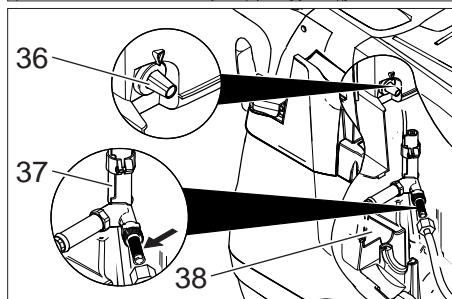
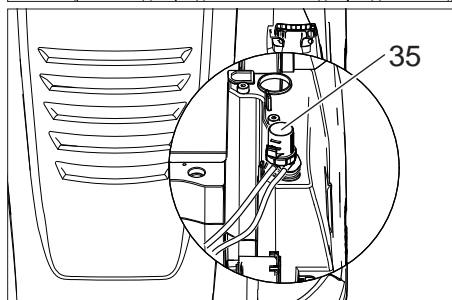
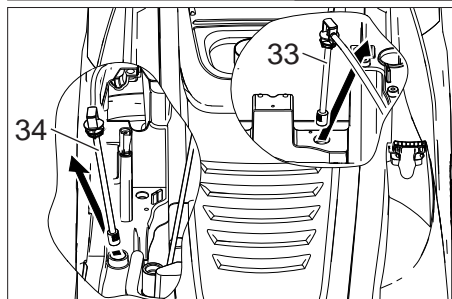
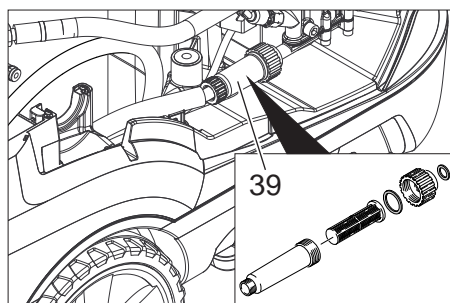
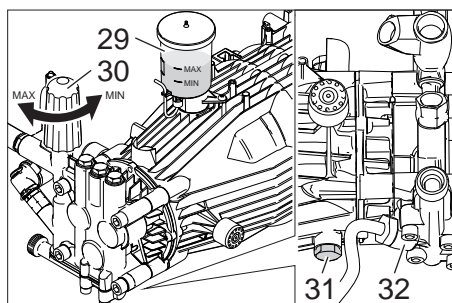
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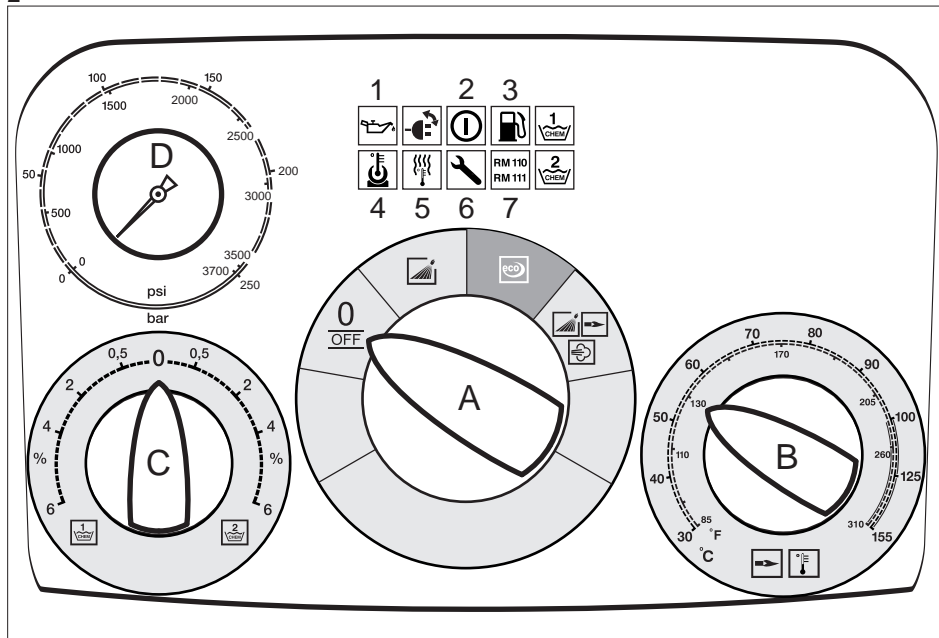


Register and win!  
[www.kaercher.com](http://www.kaercher.com)

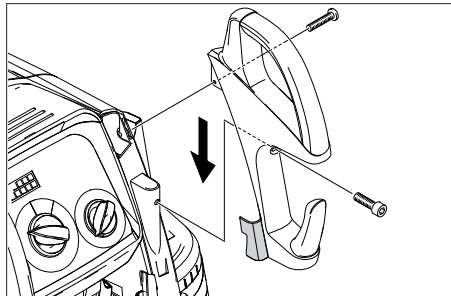




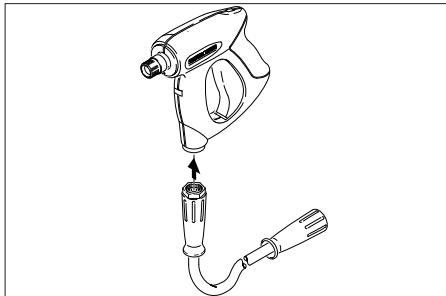




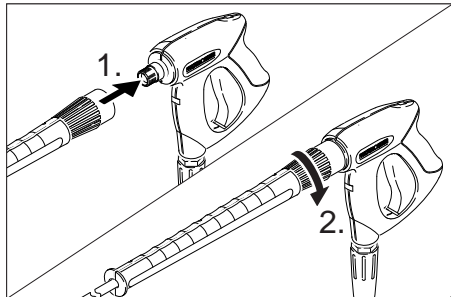
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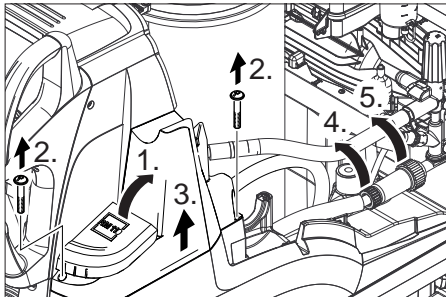
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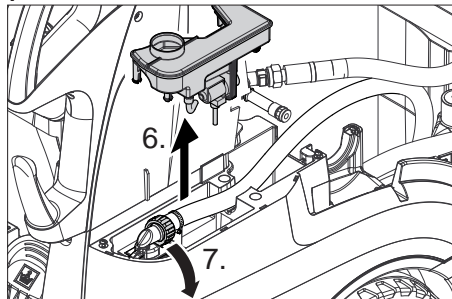
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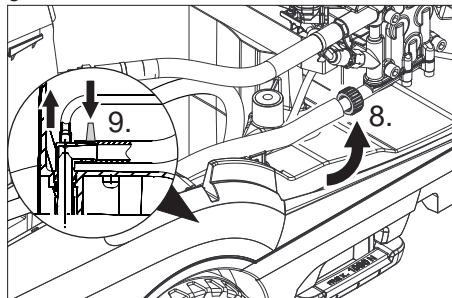
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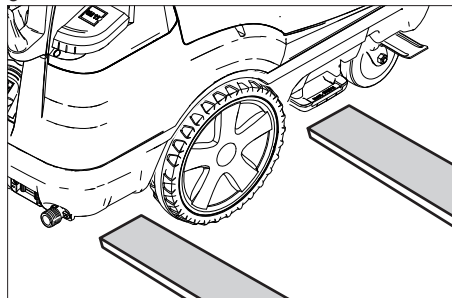
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8



9



## IMPORTANT SAFETY INSTRUCTIONS

### **⚠ WARNING**

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

- 1 Read all the instructions before using the product.
- 2 High pressure jets can be dangerous if misused. The jet must not be directed at persons, animals, electrical devices, or the unit itself.
- 3 To reduce the risk of injury, close supervision is necessary when a product is used near children.
- 4 Know how to stop the product and bleed pressures quickly. Be thoroughly familiar with the controls.
- 5 Stay alert – watch what you are doing.
- 6 Wear safety goggles.
- 7 Do not use acids, alkaline, solvents, or any flammable material in this product. These products can cause physical injuries to the operator and irreversible damage to the machine.
- 8 Do not operate the product when fatigued or under the influence of alcohol or drugs.
- 9 Do not overreach or stand on unstable support. Keep good footing and balance at all times.
- 10 To reduce the risk of electrocution, keep all connections dry and off the ground. Do not touch plug with wet hands.
- 11 The Trigger Gun Safety Lock prevents the trigger from accidentally being engaged. This safety feature DOES NOT lock trigger in the ON position.
- 12 Keep operating area clear of all persons.
- 13 Close cover before operating the machine.
- 14 This appliance is intended for commercial use.
- 15 Follow the maintenance instructions specified in the manual.
- 16 This machine has been designed for use with cleaning chemicals supplied or recommended by the manufacturer. The use of other cleaning chemicals may affect the operation of the machine and void the warranty.
- 17 This product is provided with a Ground Fault Circuit Interrupter built into the power cord plug. If replacement of the plug or cord is needed, use only identical replacement parts.
- 18 Do not use extension cord with this product.
  - Injection hazard: equipment can cause serious injury if the spray penetrates the skin. Do not point the gun at anyone or any part of the body. In case of penetration seek medical aid immediately.
  - This system is capable of producing 2300 psi/15.9 MPa (HDS 3.5/23) - 3000 psi/20.7 MPa (HDS 3.5/30) - 2000 psi/13.8 MPa (HDS 4.0/20) - 2250 psi/15.5 MPa (HDS 4.5/22). To avoid rupture and injury, do not operate this pump with components rated less than 2300 psi/15.9 MPa (HDS 3.5/23) - 3000 psi/20.7 MPa (HDS 3.5/30) - 2000 psi/13.8 MPa (HDS 4.0/20) - 2250 psi/15.5 MPa (HDS 4.5/22) working pressure (including but not limited to spray guns, hose and hose connections).
  - Before servicing, cleaning, or removal of any part, shut off power and relieve pressure.
  - Do not spray electrical apparatus and wiring.
  - High Pressure. Keep clear of nozzle.
  - If connection is made to a potable water system, the system shall be protected against backflow.

## Owner/User Responsibility

- The owner and/or user must have an understanding of the manufacturer's operating instructions and warnings before using this pressure washer.
- Warning information should be emphasized and understood.
- If the operator is not fluent in English, the manufacturer's instructions and warnings shall be read to and discussed with the operator in the operator's native language by the purchaser/owner, making sure that the operator comprehends its contents.
- Owner and/or user must study and maintain for future reference the manufacturer's instructions.

## GROUNDING INSTRUCTIONS

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

### **DANGER**

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

## GROUND FAULT CIRCUIT INTERRUPTER PROTECTION

This product is supplied with a Ground Fault Circuit Interrupter (GFCI) built into the power cord plug. This device provides additional protection from the risk of electric shock. If power is interrupted in the line, the GFCI will automatically re-close the circuit to the load after power is restored. Depending on the GFCI model, it may be necessary to manually operate the reset button to restore power to the GFCI load circuit. If replacement of the plug or cord is needed use identical replacement parts.

## WATER SUPPLY

### **CAUTION**

*When connecting the water inlet to the water supply mains, local regulations of your water company must be observed. In some areas the unit must not be connected directly to the public drinking water supply. This is to ensure that there is no feedback of chemicals into the water supply. Direct connection via a receiver tank or backflow preventer, for example, is permitted. Dirt in the feed water will damage the unit. To avoid this risk, we recommend fitting a water filter.*

- Garden hose must be at least 3/4 inch in diameter.
- Flow rate of water supply must not fall below 5 GPM (gallons per minute).
- Flow rate can be determined by running the water for one minute into an empty 5-gallon container.
- The water supply temperature must not exceed 86°F/30°C.
- Never use the pressure washer to draw in water contaminated with solvents, e.g. paint thinners, gasoline, oil, etc.
- Always prevent debris from being drawn into the unit by using a clean water source. Use additional water filter.

## SAVE THESE INSTRUCTIONS!



Please read and comply with these original instructions prior to the initial operation of your appliance and store them for later use or subsequent owners.

- Before first start-up it is definitely necessary to read the operating instructions and safety indications Nr. 5.951-949.0!
- In case of transport damage inform vendor immediately
- Check the contents of the pack before unpacking. For scope of delivery see illustration 1.

## Contents

Environmental protection . .	EN . . . 1
Symbols in the operating instructions . . . . .	EN . . . 1
Overview . . . . .	EN . . . 2
Symbols on the machine . .	EN . . . 2
Proper use . . . . .	EN . . . 2
Safety instructions . . . . .	EN . . . 3
Safety Devices . . . . .	EN . . . 3
Start up . . . . .	EN . . . 3
GFCI INSTRUCTIONS . . .	EN . . . 5
Operation . . . . .	EN . . . 5
Storage . . . . .	EN . . . 8
Transport . . . . .	EN . . . 8
Maintenance and care . . .	EN . . . 9
Troubleshooting . . . . .	EN . . 10
Warranty . . . . .	EN . . 12
Accessories and Spare Parts	EN . . 12
Technical specifications . .	EN . . 13
Recurring tests . . . . .	EN . . 14

## Environmental protection



The packaging material can be recycled. Please do not throw the packaging material into household waste; please send it for recycling.



Old appliances contain valuable materials that can be recycled; these should be sent for recycling. Batteries, oil, and similar substances must not enter the environment. Please dispose of your old appliances using appropriate collection systems.

Please do not release engine oil, fuel oil, diesel and petrol into the environment. Protect the ground and dispose of used oil in an environmentally-clean manner.

## Notes about the ingredients (REACH)

You will find current information about the ingredients at:

**[www.kaercher.com/REACH](http://www.kaercher.com/REACH)**

## Symbols in the operating instructions

### **Danger**

*Immediate danger that can cause severe injury or even death.*

### **Warning**

*Possible hazardous situation that could lead to severe injury or even death.*

### **Caution**

*Possible hazardous situation that could lead to mild injury to persons or damage to property.*



## Overview

### Device elements

**Figure 1**

- 1 Cover
- 2 Support for spray lance (both sides)
- 3 Fill opening for system care Advance RM 110/RM 111
- 4 Steering roller with fixed position brake
- 5 Mounting location for transport (both sides)
- 6 Wheel
- 7 Water supply set
- 8 High pressure hose
- 9 O-ring set (for replacement)
- 10 Hand spray gun
- 11 Spray lance
- 12 High-pressure nozzle (stainless steel)
- 13 Steam nozzle (brass)
- 14 Safety latch of the hand spray gun
- 15 Power supply
- 16 Connection for water supply with filter
- 17 High pressure connection
- 18 Step depression
- 19 Pouring vent for detergent 2
- 20 Pouring vent for detergent 1
- 21 Folding compartment
- 22 Pouring vent for fuel
- 23 Handle
- 24 Operating field
- 25 Closing flap for storage compartment
- 26 Storage compartment for accessories
- 27 Nameplate
- 28 Cover lock
- 29 Oil tank
- 30 Pressure/quantity regulation of the pump unit
- 31 Oil drain screw
- 32 Backflow valve of the detergent infeed
- 33 Detergent suction hose 1 with filter
- 34 Detergent suction hose 2 with filter
- 35 Fuel filter
- 36 Service switch

- 37 Water shortage safe guard with sieve
- 38 Float tank
- 39 Fine filter (water)

### Operating field

**Figure 2**

- A Power switch
- B Temperature controller
- C Dosage valve for detergent
- D Manometer
- 1 Indicator lamp pump
- 2 "Ready for use" indicator lamp
- 3 Fuel indicator lamp
- 4 Engine indicator lamp
- 5 Indicator lamp burner failure
- 6 Indicator lamp service
- 7 Indicator lamp system care

### Colour coding

- The operating elements for the cleaning process are yellow.
- The controls for the maintenance and service are light gray.

## Symbols on the machine



*High-pressure jets can be dangerous if improperly used. The jet may not be directed at persons, animals, live electrical equipment or at the appliance itself.*

## Proper use

Cleaning of: Machines, Vehicles, Structures, Tools, Facades, Terraces, Gardening tools, etc.

### **⚠ Danger**

*Risk of injury! Follow the respective safety regulations when operating at gas stations or other dangerous areas.*

Please do not let mineral oil contaminated waste water reach soil, water or the sewage system. Perform engine cleaning and bottom cleaning therefore only on specified places with an oil trap.

## Safety instructions

### PROPOSITION 65

#### WARNING

The burner exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

- Please follow the national rules and regulations for fuel spray jets of the respective country.
- Please follow the national rules and regulations for accident prevention of the respective country. Fuel spray jets must be tested regularly and the results of these tests must be documented in writing.
- The heating appliance of the machine is an ignition plant. All national laws and regulations about heating systems must also be followed.
- As per the applicable national guidelines, the first time this high-pressure cleaner must be taken into operation by a skilled person. KÄRCHER has already performed this initial start-up for you and has documented it accordingly. The documentation can be requested at your KÄRCHER partner. Please have the part and plant number of the appliance available when enquiring about the documentation.
- We would like to point out that the appliance must be repeatedly checked by a skilled person as prescribed by the applicable national regulations. Please contact your KÄRCHER partner.

## Safety Devices

Safety devices serve for the protection of the user and must not be put out of operation or bypassed with respect to their function.

## Overflow valve with two pressure switches

- While reducing the water supply at the pump head or with the Servopress - regulation the overflow valve opens and part of the water flows back to the pump suck side.
- If the hand-spray gun is closed, so that the whole water flows back to the pump suck side, the pressure switch at the overflow valve shuts down the pump.
- If the hand spray gun is opened, the pressure switch on the cylinder head turns the pump back on.

The overflow valve is set by the manufacturer and sealed. Setting only by customer service.

## Safety valve

- The safety valve opens, when the overflow valve resp. the pressure switch is broken.

The safety valve is set by the manufacturer and sealed. Setting only by customer service.

## Water shortage safeguard

- The water shortage safeguard prevents the burner to be turned on when there is water shortage.
- A sieve prevents the contamination of the safeguard and must be cleaned regularly.

## Temperature stop for exhaust gases

- The temperature stop switches off the machine when the waste gases have reached very high temperatures.

## Start up

### **Warning**

*Risk of injury! Device, tubes, high pressure hose and connections must be in faultless condition. Otherwise, the appliance must not be used.*

➔ Lock parking brake.

## Installing the handle

**Figure 3**

### Caution

Hook the electric supply line into the cable guide of the right handle bow. Ensure that the cable is not damaged.

## Refill system care

**Note:** To protect the device, the burner is switched off 5 hours after the system care container is empty.

- The system care prevents the calcification of the heating spiral while operating with calciferous tap water. It is dosed into the supply in the float container drop by drop.
- The metering is set to medium water rigidity by the manufacturer

**Note:** A sample bundle of system care is included.

➔ Refill system care.

## Adjusting the dosage of the system care Advance RM 110/RM 111

- ➔ Determining the hardness of tap water:
- through the public water supply works,
  - using a hardness tester (order no. 6.768-004)

Water hardness (°dH)	Scale on the service switch
<3	OFF (no dosing)
3...7	1
7...14	2
14...21	3
>21	4

➔ Set the service switch according to the water hardness in the table.

**Note:** Observe the following when using system care Advance 2 RM 111:

- Calcification protection: See table
- Pump care and black water protection: Set the service switch to at least setting 3.

## Refill fuel

### ⚠ Danger

*Risk of explosion! Only refill diesel oil or light fuel oil. Unsuitable fuels, e.g. petrol, are not to be used.*

### Caution

*Never operate device with empty fuel tank. The fuel pump will otherwise be destroyed.*

- ➔ Refill fuel.
- ➔ Close tank lock.
- ➔ Wipe off spilled fuel.

## Refill detergent

### Caution

*Risk of injury!*

- Use Kärcher products only.
- Under no circumstances fill solvents (petrol, acetone, diluting agent etc.)
- Avoid eye and skin contact.
- Observe safety and handling instructions by the detergent manufacturer.

### Kärcher offers an individual cleaning and care appliances program.

Your dealer will consult you gladly.

➔ Refill detergent.

## Install the hand-spray gun, the jet pipe, the nozzle and the high pressure hose

**Figure 4**

- ➔ Connect ray tube with hand spray gun
- ➔ Tighten the screw connection of the spray lance finger tight.
- ➔ Insert high pressure nozzle into covering nut
- ➔ Install covering nut and tighten firmly
- ➔ Connect the high pressure hose to the hand-spray gun.
- ➔ Connect the high pressure hose to the high pressure connection point of the machine.

## Installing spare high pressure hose

**Figure 5**

## Water connection

For connection values refer to technical specifications

- Attach supply hose (minimum length 24.6 ft/7.5 m, minimum diameter 3/4") to the water supply set by means of a hose clamp.
- Connect the supply hose to the water connection point of the machine and at the water supply point (for e.g. a tap).

**Note:** The supply hose and the hose clamp are not included in the scope of delivery.

## Suck in water from vessel

If you want to suck in water from an external vessel, the following modification is necessary:

### Figure 6

- Open fill opening for system care.
- Release and remove the cover of the system care.
- Remove water connection from the fine filter.
- Unscrew the fine filter from the pump head.

### Figure 7

- Remove the system care reservoir.
- Unscrew the top supply hose to the swimmer container.

### Figure 8

- Connect the top supply hose at pump head.
- Replug the rinse line of the detergent dosing valve.
- Connect suction hose (minimum diameter 3/4") with filter (accessory) to the water connection point.
- Max. suck height: 1.6 ft (0.5 m)

Until the pump sucked in water, you should:

- Set the pressure/quantity regulation at the pump unit to maximum quantity.
- Close the dosing valve for the detergent.

## **Danger**

Never suck in water from a drinking water container. Never suck in liquids which contain solvents like lacquer thinner, petrol, oil or unfiltered water. The sealings within the device are not solvent resistant. The spray mist of solvents is highly inflammable, explosive and poisonous.

**Note:** Assembly in reverse order. Ensure that the solenoid valve cable on the reservoir of the system care is not pinched.

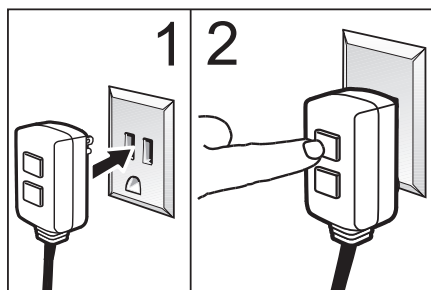
## Power connection

- For connection values, see technical data and type plate.
- The electrical connections must be done by an electrician according to NEC and local codes.

## GFCI INSTRUCTIONS

- **STEP 1:** Plug the Ground Fault Circuit Interrupter (GFCI) into a working outlet.
- **STEP 2:** Press "TEST", then press "RESET" to assure proper connection to power.

Note: The actual appearance of the GFCI may be different from this illustration.



## Operation

### **Danger**

*Risk of explosion!  
Do not spray flammable liquids.*

### **Caution**

*Never operate device with empty fuel tank  
The fuel pump will otherwise be destroyed.*

## Safety instructions

### **⚠ Warning**

*Long hours of using the appliance can cause circulation problems in the hands on account of vibrations.*

It is not possible to specify a generally valid operation time, since this depends on several factors:

- Proneness to blood circulation deficiencies (cold, numb fingers).
- Low ambient temperature. Wear warm gloves to protect hands.
- A firm grip impedes blood circulation.
- Continuous operation is worse than an operation interrupted by pauses.

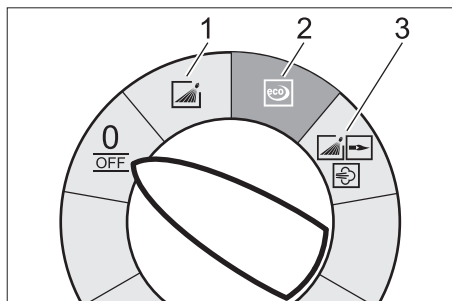
In case of regular, long-term operation of the device and in case of repeated occurrence of the symptoms (e.g. cold, numb fingers) please consult a physician.

## Replace the nozzle

### **⚠ Danger**

*Switch the appliance off prior to replacing nozzle and activate hand spray gun until device is pressureless.*

## Operating modes



0/OFF = Off

- 1 Operating with cold water
- 2 Eco operation (hot water max. 140 °F/ 60 °C)
- 3 Operating with hot water/steam

## Turning on the Appliance

- ➔ Set appliance switch to desired operating mode.

Indicator lamp for operational readiness lights up.

The device starts briefly and turns off, as soon as the working pressure is reached.

**Note:** If the indicator lamps for pump, burner malfunction or engine are on during operation, turn off the appliance immediately and repair malfunction, refer to "Help with malfunctions".

- ➔ Release the trigger gun.

When activating the hand spray gun the device switches back on.

**Note:** If no water comes out of the high pressure nozzle, vent pump. Refer to "Help with malfunctions - appliance is not building up pressure".

## Adjust cleaning temperature

- ➔ Set temperature regulator to desired temperature.

**86 °F/30 °C to 208 °F/98 °C:**

- Clean with hot water.

**212 °F/100 °C to 302 °F/150 °C**

- Clean using steam.



- ➔ Replace the high-pressure nozzle (stainless steel) with steam nozzle (brass), (refer to "Using steam").

## Set working pressure and flow rate

### Pressure/quantity regulation of the pump unit

- ➔ Turn the regulation spindle in a clockwise direction: Increase working pressure (MAX).
- ➔ Turn the regulation spindle in an anti-clockwise direction: Reduce working pressure (MIN).

### Operation with detergent

- For considerate treatment of the environment use detergent economically.
- The detergent must be suitable for the surface to be cleaned.
- ➔ With support of the detergent dose valve set detergent concentration as determined by the manufacturer.

**Note:** Recommended values at the control panel at maximum working pressure.

### Cleaning

- ➔ Set pressure/temperature and detergent concentration according to the surface to be cleaned.

**Note:** To prevent damage due to too much pressure, always position high pressure ray first from a greater distance towards object to be cleaned.

### Recommended cleaning method

- Loosen the dirt:
- ➔ Spray detergent economically and let it work for 1...5 minutes but do not let it dry up.
- Remove the dirt:
- ➔ Spray off loosened dirt with the high pressure jet.

### Operating with cold water

Removal of light contaminations and clear rinse, i.e.: Gardening tools, terrace, tools, etc.

- ➔ Set operating pressure according to need.

### Eco operation

The appliance works in the most economical temperature range.

**Note:** The temperature can be regulated up to 140 °F/60 °C.

### Operating with hot water/steam

We recommend the following cleaning temperatures:

- Light contaminations  
**86 °F/30 °C-122 °F/50 °C**
- Contaminations containing protein, i.e. in the food processing industry  
**max. 140 °F/60 °C**
- Vehicle cleaning, machine cleaning  
**140 °F/60 °C-194 °F/90 °C**
- De-preserve, contaminations containing strong fat contents  
**212 °F/100 °C-230 °F/110 °C**
- De-frosting of surcharge substances, partially facade cleaning  
**up to 284 °F/140 °C**

### Operating with hot water

 **Danger**

*Scalding danger!*

- ➔ Set temperature regulator to desired temperature.

### Operating with steam

 **Danger**

*Scalding danger!*

Therefore the following measures must definitely be performed:



- ➔ **Replace high pressure nozzle (stainless steel) with steam nozzle (brass, order see specification).**
- ➔ Set the operating pressure on the pump unit to the minimum value.
- ➔ Set temperature regulator to min.  
212 °F/100 °C.

### After operation with detergent

- ➔ Set dosing value for detergent to "0".
- ➔ Set the appliance switch to "1" (operation with cold water).
- ➔ Open the hand spray gun and rinse the appliance for at least 1 minute.

## Turn off the appliance

### **Danger**

*Danger of scalding by hot water. After the operation with hot water or steam, the device must be operated with opened gun with cold water for at least two minutes.*

- ➔ Set the appliance switch to "0/OFF".
- ➔ Shut off water supply.
- ➔ Turn on pump shortly (appr. 5 seconds) with device switch.
- ➔ Pull main plug out of socket with dry hands only.
- ➔ Remove water connection.
- ➔ Activate hand spray gun until device is pressure less.
- ➔ Lock the trigger gun.

## Storing the Appliance

- ➔ Lock in the steel pipe into the holder of the appliance hood.
- ➔ Roll up high pressure hose and electrical conduit and hang them into the respective holders.

**Note:** Do not twist high pressure hose and electrical conduit.

## Frost protection

### **Caution**

*Frost will destroy the not completely water drained device.*

- ➔ Store in a frost free area.

If the device is connected to a chimney, the following must be observed:

### **Caution**

*Threat of damage by penetrating cold air through the chimney.*

- ➔ Disconnect device from chimney when outside temperature drops below 32 °F/ 0 °C.

If it is not possible to store frost free, shut down device.

## Shutdown

For longer work breaks or if a frost free storage is not possible:

- ➔ Drain water.
- ➔ Flush device with anti-freeze agent.
- ➔ Empty detergent tank.

### **Dump water**

- ➔ Screw off water supply hose and high pressure hose.
- ➔ Screw off supply hose at boiler bottom and drain heating spiral empty.
- ➔ Operate device for max. 1 minute until the pump and conduits are empty.

### **Flush device with anti-freeze agent**

**Note:** Observe handling instructions of the anti-freeze agent manufacturer.

- ➔ Fill anti-freeze agent of the trade into swimmer container.
- ➔ Switch on appliance (without heater) till the appliance has been completely rinsed.

A certain corrosion protection is achieved with this as well.

## Storage

### **Caution**

*Risk of injury and damage! Note the weight of the appliance in case of storage.*

## Transport

### **Figure 9**

### **Caution**

*Risk of damage! When loading the appliance with a forklift, observe the illustration.*

### **Caution**

*Risk of injury and damage! Observe the weight of the appliance when you transport it.*

- ➔ When transporting in vehicles, secure the appliance according to the guidelines from slipping and tipping over.

## Maintenance and care

### **Danger**

*Risk of injury by inadvertent startup of appliance and electrical shock.*

*First pull out the plug from the mains before carrying out any tasks on the machine.*

- ➔ Set the appliance switch to "0/OFF".
- ➔ Shut off water supply.
- ➔ Turn on pump shortly (appr. 5 seconds) with device switch.
- ➔ Pull main plug out of socket with dry hands only.
- ➔ Remove water connection.
- ➔ Activate hand spray gun until device is pressure less.
- ➔ Lock the trigger gun.
- ➔ Allow device to cool down.

**Your Kärcher vender will inform you about the performance of a periodic safety inspection resp. signing of a maintenance contract.**

### Maintenance intervals

#### Weekly

- ➔ Clean the sieve in the water connection.
- ➔ Clean the fine filter.
- ➔ Check oil level.

#### Caution

*In case of lacteous oil inform Kärcher customer service immediately*

#### Monthly

- ➔ Clean sieve in the water shortage safe guard.
- ➔ Clean filter at the detergent suck hose.

#### After 500 operating hours, at least annually

- ➔ Oil change.

#### At least every 5 years, recurring

- ➔ Perform the pressure test as per manufacturer's instructions.

## Maintenance Works

### Clean the sieve in the water connection

- ➔ Take out sieve.
- ➔ Clean sieve in water and reinstall.

### Cleaning the fine filter

- ➔ Unpressurize the appliance.
- ➔ Unscrew the fine filter from the pump head.
- ➔ Remove the fine filter and the filter insert.
- ➔ Clean the filter with clean water or compressed air.
- ➔ Reinstall in reverse sequence.

### Clean sieve in the water shortage safe guard

- ➔ Loosen covering nut and take off hose.
- ➔ Take out sieve.

**Note:** If necessary turn in screw M8 appr. 0.2 in/5 mm inwards and therewith pull out sieve.

- ➔ Clean sieve in water.
- ➔ Push sieve inwards.
- ➔ Put on hose.
- ➔ Tighten covering nut firmly.

### Clean filter at the detergent suck hose

- ➔ Take out detergent suck supports.
- ➔ Clean filter in water and reinstall.

### Oil change

- ➔ Ready a catch bin for appr. 0.26 gal/ 1 Liter oil.
- ➔ Loosen release screw.

Dispose of old oil ecologically or turn in at a gathering point.

- ➔ Tighten release screw.
- ➔ Fill oil slowly up to the MAX marking.

**Note:** Air pockets must be able to leak out.  
**For oil type refer to technical specifications.**



## Troubleshooting

### **Danger**

*Risk of injury by inadvertent startup of appliance and electrical shock.*

*First pull out the plug from the mains before carrying out any tasks on the machine.*

### Indicator lamp pump

#### 1x blinking

- Lack of oil
- ➔ Replenish oil.

#### 2x blinking

- Leak in the high pressure system
- ➔ Check high pressure system and connections for tightness.

#### 3x blinking

- Water shortage
- ➔ Check water supply, check connections.

#### 4x blinking

- Obstructed reed switch in the water shortage safe guard.
- ➔ Check water shortage safe guard.

### Indicator lamp "Ready for use" turns off

- No line voltage, see "Appliance is not running".

### Engine indicator lamp

#### 1x blinking

- Contactor error
- ➔ Set the appliance switch to "0/OFF".
- ➔ Turn on the appliance.
- Error occurs repeatedly.
- ➔ Inform Customer Service

#### 2x blinking

- Engine overload/overheat
- ➔ Set the appliance switch to "0/OFF".
- ➔ Allow device to cool down.
- ➔ Turn on the appliance.
- Error occurs repeatedly.
- ➔ Inform Customer Service

#### 3x blinking

- Fault in the voltage supply.
- ➔ Check main connections and mains fuse.

#### 4x blinking

- Excessive power consumption.
- ➔ Check main connections and mains fuse.
- ➔ Inform Customer Service

### Indicator lamp burner failure

#### 1x blinking

- The exhaust temperature limiter has been triggered.
- ➔ Set the appliance switch to "0/OFF".
- ➔ Allow device to cool down.
- ➔ Turn on the appliance.
- Error occurs repeatedly.
- ➔ Inform Customer Service

#### 2x blinking (option)

- The flame sensor turned the burner off.
- ➔ Inform Customer Service

#### 3x blinking

- System care detection defective
- ➔ Inform Customer Service

#### 4x blinking

- Temperature sensor defective
- ➔ Inform Customer Service

### Indicator lamp service

- Service interval
- ➔ Perform service work.

### Fuel indicator lamp glows

- Fuel tank empty.
- ➔ Refill fuel.

### Indicator lamp system care is illuminated

**Note:** Burner can operate 5 more hours.

- System care tank is empty, due to technical reasons a remainder stays in the tank.
- ➔ Refill system care.

### Indicator lamp system care is blinking

**Note:** Burner operation no longer possible.

- System care container is empty.
- ➔ Refill system care.

### Appliance is not running

- No power
- ➔ Check power connection/conduit.

### Device is not building up pressure

- Air within the system
- Vent pump:
- ➔ Set dosing value for detergent to "0".
  - ➔ With open hand spray gun turn device on and off multiple times with the device switch.
  - ➔ Open and close the pressure/quantity regulation at the pump unit with the hand spray gun open.

**Note:** By dismantling the high pressure hose from the high pressure connection the venting process is accelerated.

- ➔ If detergent tank is empty, refill.
- ➔ Check connections and conduits.
- Pressure is set to MIN
- ➔ Set pressure to MAX.
- Sieve in the water connection is dirty
- ➔ Clean sieve.
- ➔ Clean the fine filter; replace it, if necessary.
- Amount of water supply is too low.
- ➔ Check water supply level (refer to technical data).

### Device leaks, water drips from the bottom of the device

- Pump leaky
- Note:** 3 drops/minute are allowed.
- ➔ With stronger leak, have device checked by customer service.

### Device turns on and off while hand spray gun is closed

- Leak in the high pressure system
- ➔ Check high pressure system and connections for tightness.

### Device is not sucking in detergent

- ➔ Leave device running with open detergent dosage valve and closed water supply, until the swimmer tank is sucked empty and the pressure falls to "0".
  - ➔ Open the water supply again.
- If the pump still is not sucking in any detergent, it could be because of the following reasons:
- Filter in the detergent suck hose dirty
  - ➔ Clean filter.
  - Backflow valve stuck
  - ➔ Remove the detergent hose and loosen the backflow valve using a blunt object.

### Burner does not start

- System care container is empty.
- ➔ Refill system care.
- Fuel tank empty.
- ➔ Refill fuel.
- Water shortage
- ➔ Check water supply, check connections.
- ➔ Clean sieve in the water shortage safe guard.
- Fuel filter dirty
- ➔ Change fuel filter.
- No ignition spark
- ➔ If device is in use and no ignition spark can be seen through the viewing glass, have device checked by customer service.

### **Set temperature is not achieved while using hot water**

- Working pressure/flow rate too high
- ➔ Reduce working pressure/flow quantity at the pressure/volume regulator in the pump unit.
- Sooty heating spiral
- ➔ Have device de-sooted by customer service.

### **Customer Service**

**If malfunction can not be fixed, the device must be checked by customer service.**

### **Warranty**

The warranty terms published by our competent sales company are applicable in each country. We will repair potential failures of the appliance within the warranty period free of charge, provided that such failure is caused by faulty material or defects in fabrication.

### **Accessories and Spare Parts**

**Note:** When connecting the appliance to a chimney or if the device cannot be accessed visually, we recommend the installation of a flame monitor (option).

- Only use accessories and spare parts which have been approved by the manufacturer. The exclusive use of original accessories and original spare parts ensures that the appliance can be operated safely and trouble free.
- At the end of the operating instructions you will find a selected list of spare parts that are often required.
- For additional information about spare parts, please go to the Service section at [www.kaercher.com](http://www.kaercher.com).

# Technical specifications

		HDS 3.5/23-4M Eg	HDS 3.5/30-4M Ea	HDS 4.0/20-4M Ea	HDS 4.5/22-4M Ea
<b>Main Supply</b>					
Voltage	V	200-208	220-240	220-240	220-240
Current type	Hz	1~ 60	1~ 60	1~ 60	1~ 60
Connected load	hp	8.1	9.5	8.0	9.5
Protection (slow)	A	30	30	30	30
Type of protection	--	IPX5	IPX5	IPX5	IPX5
Protective class	--	I	I	I	I
<b>Water connection</b>					
Max. feed temperature	°F (°C)	86 (30)	86 (30)	86 (30)	86 (30)
Min. feed volume	gpm (l/min)	5 (19)	5 (19)	5 (19)	5 (19)
Suck height from open container (68 °F/ 20 °C)	ft (m)	1.6 (0.5)	1.6 (0.5)	1.6 (0.5)	1.6 (0.5)
Max. feed pressure	psi (MPa)	87 (0.6)	87 (0.6)	87 (0.6)	87 (0.6)
<b>Performance data</b>					
Water flow rate	gpm (l/min)	2-3.5 (7.6-13.3)	2-3.5 (7.6-13.3)	2-4.0 (7.6-15.2)	2-4.5 (7.6-17.1)
Operating pressure of water (using standard nozzle)	psi (MPa)	460-2300 (3.2-15.9)	460-3000 (3.2-20.7)	460-2000 (3.2-13.8)	460-2250 (3.2-15.5)
Max. excess operating pressure (safety valve)	psi (MPa)	2530 (17.5)	3300 (22.8)	2200 (15.1)	2600 (18.0)
Steam flow rate	gpm (l/min)	2.0 (7.6)	1.8 (6.8)	2.1 (8.0)	2.4 (9.1)
Max. operating pressure for working with steam (using steam nozzle)	psi (MPa)	580 (3.9)	464 (3.2)	500 (3.4)	464 (3.2)
Part no. of steam nozzle	--	2.885-119.0	2.885-049.0	2.885-049.0	2.885-147.0
Max. operating temperature of hot water	°F (°C)	175 (80)	208 (98)	208 (98)	175 (80)
Working temperature steam operation	°F (°C)	311 (155)	311 (155)	311 (155)	311 (155)
Detergent suck in	gpm (l/min)	0-0.3 (0-1.2)	0-0.3 (0-1.2)	0-0.3 (0-1.2)	0-0.3 (0-1.2)
Burner performance	hp (BTU/h)	96 (244,000)	96 (244,000)	100 (255,000)	124 (316,000)
Maximum consumption of heating oil	kg/h (gph)	5.5 (1.69)	5.5 (1.69)	6.0 (1.85)	7.5 (2.31)
Max. recoil force of hand spray gun	N	40	45	42	50
Nozzle size	--	048	040	060	062
<b>Values determined as per EN 60355-2-79</b>					
<b>Noise emission</b>					
Sound pressure level $L_{pA}$	dB(A)	71	71	71	73
Uncertainty $K_{pA}$	dB(A)	2	2	2	2
Sound power level $L_{WA}$ + Uncertainty $K_{WA}$	dB(A)	88	88	88	90
<b>Hand-arm vibration value</b>					
Hand spray gun	m/s <sup>2</sup>	1.0	1.0	1.0	1.2
Spray lance	m/s <sup>2</sup>	3.6	3.6	3.6	5.2
Uncertainty K	m/s <sup>2</sup>	1.0	1.0	1.0	1.0
<b>Fuel</b>					
Fuel	--	Fuel oil EL or Diesel	Fuel oil EL or Diesel	Fuel oil EL or Diesel	Fuel oil EL or Diesel
Amount of oil	gal (l)	0.26 (1.0)	0.26 (1.0)	0.26 (1.0)	0.26 (1.0)
Oil grade	--	15W40	15W40	15W40	15W40
<b>Dimensions and weights</b>					
Length x width x height	in (mm)	52.5 x 29.5 x 41.5 (1330 x 750 x 1060)	52.5 x 29.5 x 41.5 (1330 x 750 x 1060)	52.5 x 29.5 x 41.5 (1330 x 750 x 1060)	52.5 x 29.5 x 41.5 (1330 x 750 x 1060)
Typical operating weight	lbs (kg)	377 (171)	377 (171)	377 (171)	377 (171)
Fuel tank	gal (l)	6.6 (25)	6.6 (25)	6.6 (25)	6.6 (25)
Detergent Tank	gal (l)	2.6+5.3 (10+20)	2.6+5.3 (10+20)	2.6+5.3 (10+20)	2.6+5.3 (10+20)

## Recurring tests

**Note:** The recommended testing frequencies of the respective statutory regulations of the country of operation are to be followed.

Testing done by:	External testing	Internal testing	Leak-proof tests
Name	Signature of the authorised person/ date	Signature of the authorised person/ date	Signature of the authorised person/ date
Name	Signature of the authorised person/ date	Signature of the authorised person/ date	Signature of the authorised person/ date
Name	Signature of the authorised person/ date	Signature of the authorised person/ date	Signature of the authorised person/ date
Name	Signature of the authorised person/ date	Signature of the authorised person/ date	Signature of the authorised person/ date
Name	Signature of the authorised person/ date	Signature of the authorised person/ date	Signature of the authorised person/ date
Name	Signature of the authorised person/ date	Signature of the authorised person/ date	Signature of the authorised person/ date



<http://www.kaercher.com/dealersearch>

