

CWP 2000

1.267-071 CWP 2307
1.267-091 CWP 2309
1.267-371 CWP 2307 GOOD
1.267-391 CWP 2309 GOOD
1.267-471 CWP 2307 BEST
1.267-491 CWP 2309 BEST
1.267-517 CWP 2307 EF
1.267-691 CWP 2309 NP



Operating Instructions English



Foreword

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All product names and trademarks are the property of their respective owners.

The manufacture of this automotive gantry washing system has been carried out under observance of:

- EC standards: 98/37/EG and 89/336/EEC,
- Norm: DIN 24446



The system bears the CE mark.

Within the framework of regulations provided by law, the manufacturer assumes liability for the safety-related features of the system described herein only in the event that maintenance, repairs and modifications on this unit are performed by himself or, in compliance with his instructions, by a person authorised to perform such work or services.

The manufacturer reserves the right to make technical modifications.

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Environmental considerations, disposal

Packaging

The packaging consists of environmentally-friendly materials, wood, PE film and cardboard. Please consign these for recycling to the appropriate collection point.

Cleaning agents

Kärcher cleaning agents are demulsifying (ASF). This means that they do not interfere with the functioning of an oil separator.

Brush segments

The wash rollers are subject to wear and have to be replaced after a while.

The worn roller half-shells can:

- be incinerated in an environmentally friendly way in waste incineration plant,
- disposed of with domestic waste,
- returned to Kärcher for reprocessing.

Warranty

In each country warranty terms issued by our authorised marketing company are valid. Should you wish to call upon the warranty, please apply to your dealer or nearest authorised customer service centre.

For your safety**Automotive washing systems**

Persons who are charged with the operation, surveillance, upkeep, maintenance and inspection of automotive washing systems may only be those who are familiar with these tasks and with the operating instructions. They must also be persons who have been instructed as to the dangers associated with the system.

Self-service

In the case of self-service automotive washing systems, one person must be within reach during the service readiness of the system who is familiar with the system and who, in the event of an abnormal occurrence, is able to carry out or cause the measures necessary to avoid possible dangers.

Proper use

In order to avoid damaging vehicles and the system, only passenger cars and closed delivery vans may be cleaned in accordance with the specifications in section D.1, Maximum vehicle dimensions.

Maintenance

Maintenance work must on principle be carried out only when the system has been switched off. Having done so, the master switch must be secured against being switched on again by unauthorised persons (mount a padlock on the master switch).

Dangerous substances

Protective measures must be observed when handling cleaning-agent concentrates which contain substances hazardous to health. In particular, protective goggles, protective gloves and protective clothing should be worn and note should be taken of information leaflets accompanying the cleaning agent.

Entering the automotive washing system

Unauthorised persons are forbidden to enter the automotive washing system. Non-admittance should be clearly and durably indicated.

Risk of slipping

There is a risk of slipping when the floor and system parts are wet. When working on the system, move carefully and wear suitable footwear. Put up suitable signs to draw carwash customers' attention to the risk of slipping.

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For all users

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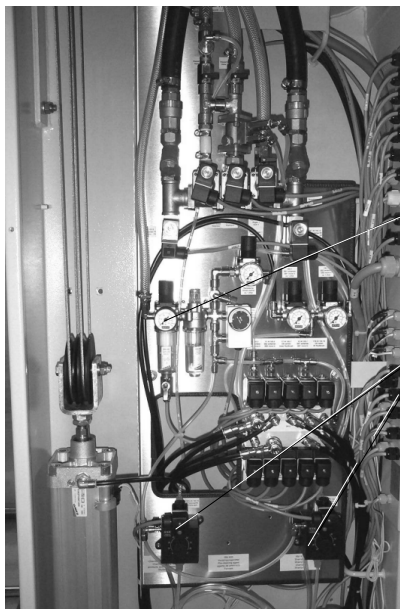
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A General system description A.1 System overview



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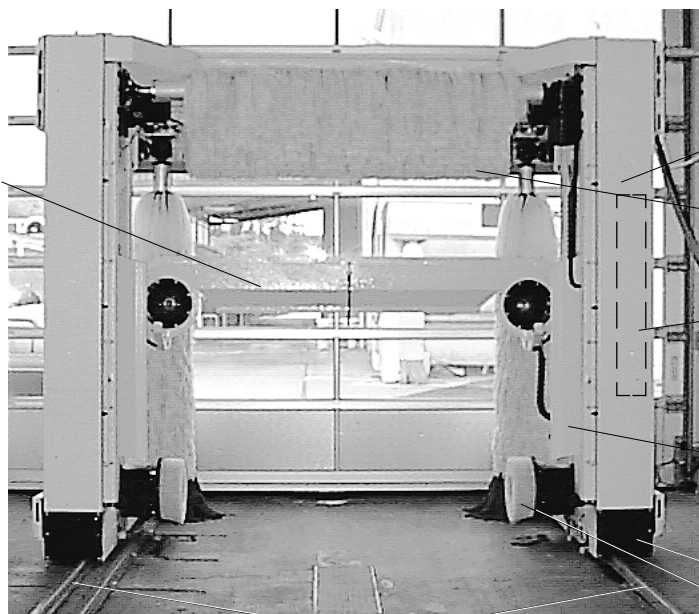


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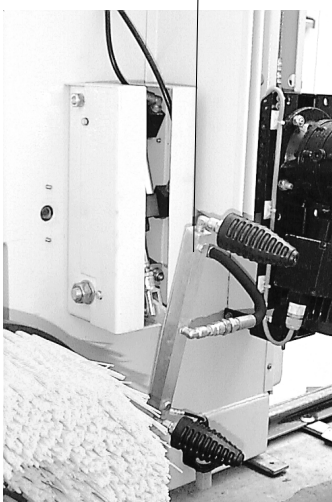


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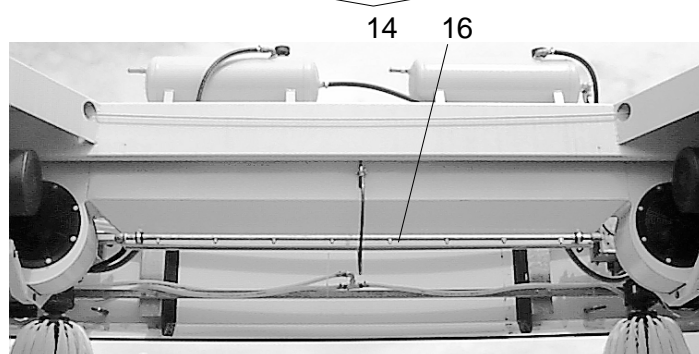


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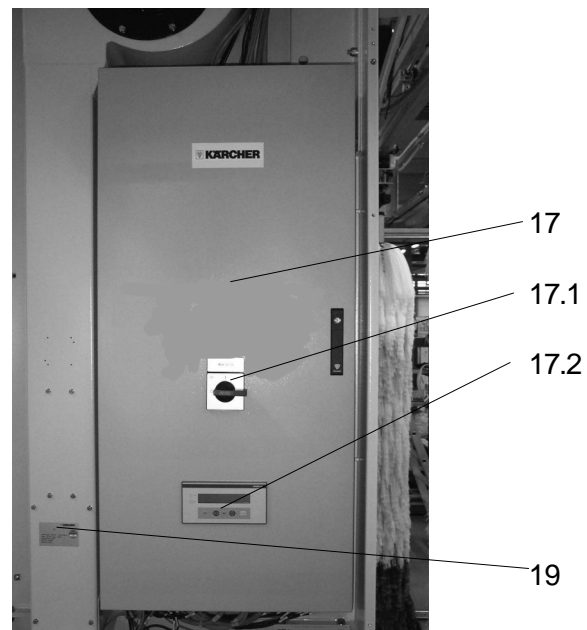
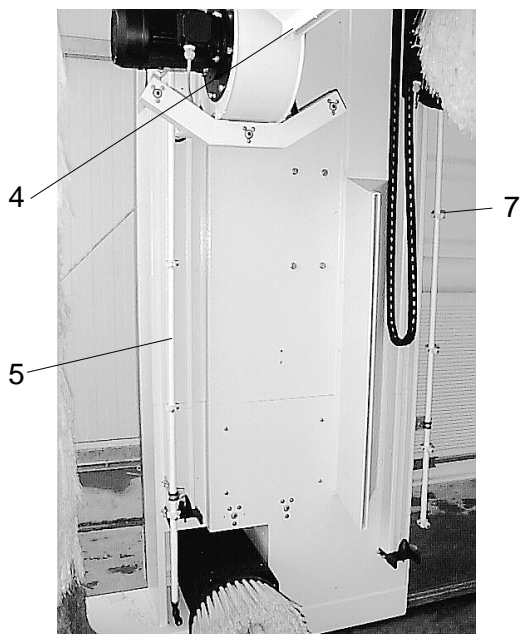


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A General system description

Figures A.1-8: System overview:

- | | |
|--|--|
| 1 Pillar | 11 Dryer blower-fan beam |
| 2 Side brush | 12.1 Shampoo / foam |
| 3 Travelling foot | 12.2 Drying aid |
| 4 Wheel-wash facility | 13 Metering pump, dirt trap |
| 5 Nozzles for brush irrigation /
shampoo / foam | 14 Travelling foot |
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| 7 Nozzles for brush irrigation | 16 High-pressure roof beam (option) |
| 8 Dryer side nozzle | 17 Control cabinet (17.1) with
master switch (17.2) |
| 9 High-pressure side-wash (option) | 18 Positioning light |
| 10 Roof brush | 19 Rating plate |



A General system description

A.2 Standard equipment

Vertical side brush

The rotating vertical side brushes clean the sides of the vehicle. In the front and rear, they also clean any areas that cannot be reached by the roof brush.

Roof brush

The rotating roof brush removes dirt from the roof, front, rear and upper horizontal surfaces of the vehicle being washed. The rotating roof brush removes dirt from the roof, front, rear and upper horizontal surfaces of the vehicle being washed.

Shampoo nozzles

The shampoo nozzles (1.7) are used to spray a mixture of water and shampooing solution onto the vehicle.

Dirt traps

The dirt traps capture water-borne particles that could obstruct the spraying nozzles.

Metering pumps

The metering pumps mix into the water the following cleaning agents and care products:

- shampoo / foam
- drying aid.

Dryer side nozzles

The dryer nozzles distribute the air required for drying the sides of the vehicle.

Dryer blower bar

The dryer blower bar is guided along the vehicle contours. Built-in blowers generate the air stream required for drying the vehicle.

Wheel washing device

The carwash is equipped with two wheel washing devices for thorough wheel rim cleaning. The position of the wheels is detected by a light barrier. Pneumatic cylinders push the rotating brushes against the wheel rim.

Light barriers

The light barriers register:

- position and contours of the vehicle, and
- the position of the wheels (in the optional wheel-wash system).

A General system description

Cleaning agents

The canisters for cleaning agents and care products are stowed in pillar 2.

Rating plate

The rating plate displays the most important system specifications.

Control cabinet

The control cabinet of the system is located in pillar 1. The master switch for the system is mounted on the control cabinet.

Air lubricator

The air lubricator injects a fine oil fog for lubrication purposes into the compressed-air operating the pneumatically actuated system components.

Control panel

Depending on the order, the washing system is supplied:

- with a control unit (option)
- with a control panel for manual operation
- with a wash-card reader (option)

A.3 Options

Wash card reader

The wash card reader is used for operating the car wash with the self-service facility.



Important!

The wash cards required to operate the system are programmed for that respective system and can only be used in conjunction with it.

Control panel for manual operation

The control panel for manual operation is used when the system is operated by wash personnel.

A General system description

Rotating wheel brushes

To achieve thorough cleaning of wheel rims, the system may be equipped with an optional washing assembly featuring two rotating wheel brushes. The individual wheel positions are registered by light barriers. The revolving brushes are pressed against the wheels through pneumatic cylinders. During wheel washing, the brushes change their direction of rotation in order to achieve the best possible washing result.

Used water connection

This makes it possible on the system side to use rain water or recycling water as a part substitute for fresh water.

Foam wash

The foam wash option permits the vehicle to be sprayed with foam before the wash takes place.

“NOT-AUS” (EMERGENCY STOP) button

In the event that an imminent hazard threatening persons, animals or property is detected, the system must be instantly deactivated by pressing the “NOT-AUS” (EMERGENCY STOP) button. You will find an “EMERGENCY STOP” button

- on the control unit
- on the wash card reader.

Underbody wash facility

The underbody wash option permits the underside of the vehicle to be washed. Here the water is sprayed under high pressure via two swivelling nozzle pipes over the entire underside of the vehicle.

Visual programme status display

The visual programme status display always displays a brief description of the current washing cycle.

A General system description

Positioning lights

The positioning lights serve three separate functions:

- Prior to washing, they assist in positioning the vehicle.
- After washing has been completed, they indicate the direction in which the vehicle must exit the wash bay.
- In the case of a malfunction, they flash rapidly to indicate that a fault condition exists in the system.

Frost protection feature

When there is a risk of frost, water is blown out of the pipe system. The washing unit can be fitted with two different frost protection features:

- Manual frost protection: The blowing-out operation is initiated by the system operator.
- Automatic frost protection: the blowing-out operation is controlled by a thermostat.

Wheel deflector

The purpose of the wheel deflectors is to centre the vehicle between the gantry tracks. Particularly in the case of inexperienced drivers, the wheel deflectors prevent inadvertent off-centre positioning of their vehicles.

Retrofit kit - anti-tipping safeguard

Even during bad handling by the customer, the system stays on the guide tracks.

“On-board” compressor

If no compressor is available at the site of installation, the “on-board” compressor can be installed in the system. Compressed air is required for:

- hoisting of roof brush and roof dryer
- delivery of the side brushes
- delivery of the wheel-wash system (option)
- drive unit of the metering pumps
- frost protection facility (option)

The compressor is located in the lower part of pillar 1.

B Safety Instructions

To avoid endangering people, animals and property, please read the following before putting the system into operation for the first time:

- the Operating Instructions
- all safety instructions
- the current national legal regulations
- the safety instructions which accompany the cleaning agents used (normally to be found on the packaging label).

The following regulations and guidelines for the operation of this system are valid in the Federal Republic of Germany (obtainable from Carl Heymanns Verlag KG, Luxemburger Straße 449, 50939 Cologne):

- Accident prevention regulations "Allgemeine Vorschriften" (Legal Regulations) VBG 1
- Richtlinien für Fahrzeugwaschanlagen (Guidelines for automotive washing systems) ZH 1/543
- Verordnung über gefährliche Stoffe (Ordinance on Hazardous Substances) ZH 1/220 (Gefahrstoffverordnung [Dangerous Chemicals Ordinance] GefStoffV).

Make sure:

- that you yourself have understood all instructions
- that all users of the system have been informed of the instructions and have understood them.

The following symbols are used in these operating instructions:



Designates an immediately impending danger. Non-observance of this instruction might entail death or the severest of injuries.



Designates a possibly dangerous situation. Non-observance of this instruction might incur slight injury or damage to property.



Designates tips and important information.

B Safety Instructions

B.1 Operation of the system



Important!

To avoid dangers arising from incorrect operation, the system may be operated only by persons who

- have been instructed in its handling*
- have proved their competence in operating it*
- who have been expressly commissioned to use it.*

The Operating Instructions must be accessible to every operator.

The system may not be operated by persons under the age of 18.

An exception to the above is made for trainees of over 16 years of age under supervision.

B.2 Proper use of the system

This system is intended to be used for the exterior cleaning of passenger cars with standard equipment and of closed delivery vans in accordance with Section D.1, Maximum vehicle dimensions.

Proper use of the system also includes:

- observance of all instructions in these operating instructions and
- adherence to the inspection and maintenance instructions.



Caution!

Risk of damage by ice forming in the system. When there is a risk of frost, the water must be drained out of the system (See Chapter E.8.2).

B.2.1 Workplace

The system is put into operation from the control unit or from the wash card reader. Occupants of a vehicle must leave the vehicle before washing begins. Admission to the system is forbidden while washing is in process.

B.3 Non-appropriate usage



Caution!

Damage to property! If the maximum dimensions for vehicles are not complied with, damage may occur to the vehicle and to the system.

The automotive gantry washing system is not suitable for the cleaning of

- special vehicles such as
 - vehicles which have a roof and alcove structure projecting over the windscreen
 - construction machinery

B Safety Instructions

- vehicles with trailers
- two-wheeled vehicles
- convertibles.

If the above directive is not observed, the manufacturer of the system is not liable for thereby resulting

- injury to persons
- damage to property
- injuries to animals



Caution!

Risk of damage. It is possible for the roof brush or roof dryer to travel downwards slowly in a switched-off system as a result of minor leaks in the pneumatic system. No vehicles should be left parked in the system.

B.4 Sources of danger

B.4.1 General risks



Danger!

Risk of eye injury from escape of compressed air. Even after the master switch or Emergency STOP switch have been switched off, the pneumatic parts of the system are still under high air pressure.

Risk of injury from parts being flung out! Flying fragments or objects can injure people or animals. For this reason, the wash bay must be free of objects lying around on the ground.

B.4.2 Risk of explosion



Danger!

Risk of explosion! The system may not be operated in the vicinity of spaces which are potentially explosive. Excepted are systems which have been specifically designed and designated for such operation.

No explosive, highly inflammable or poisonous substance may be used as cleaning agent, such as:

- petrol
- fuel oil and diesel oil
- solvent
- liquids containing solvent
- undiluted acids
- acetone.

If you are uncertain, ask the manufacturer.

B Safety Instructions



B.4.3 Damage to hearing

The noises emitted by the system present no risk to the customer (short duration). On the drive-in side, the sound level is

- during the brush wash: 67 dB(A)
- during the drying operation: 86 dB(A)



Danger!

*Damage to hearing of service personnel possible.
When the dryer is in operation wear hearing protection.*

B.4.4 Electrical dangers



Danger!

Risk of electric shock!

- *Never take hold of electric cables, plug-and-socket connections and terminal boxes with wet hands.*
- *Electrical connection leads or extension cables may not be driven over, crushed, pulled or damaged in any other way. Protect cables from heat, oil and sharp edges.*
- *In the case of mobile cleaning units (e. g. high-pressure cleaners) the water jet must never be directed at electrical equipment or systems.*
- *All current-carrying components in the area of work must be protected from water spray.*
- *Systems may be connected only to properly earthed sources of power.*
- *All work on electrical parts of the system may be carried out only by a trained electrician.*

B.4.5 Danger arising from substances hazardous to health



Danger!

The cleaning agents used in some cases contain substances which are hazardous to health. It is imperative therefore to take note of the instructions enclosed with or printed on such substances.

Do not drink the water released by the system. It does not have the quality of drinking water as it has cleaning agents mixed with it.

If used water which has been processed is used in the operation of the system, the instructions of the manufacturer of the processing plant must be observed.

Substances which do not normally occur during the customary cleaning of the exterior of vehicles (such as chemicals, pesticides, radioactive substances, excrement or contagious material) must not gain access to the washing system.

B Safety Instructions

B.4.6 Danger arising from power failure

Constructive measures prevent an uncontrolled restarting of the system after loss of power.

B.4.7 Endangering the environment with engine oil

There is engine oil in the system. When oil is changed, any resulting used oil must be consigned to a used-oil collection point or to a waste disposal company. The same applies to oil or oil-water mixtures which are trapped if leaks occur.

B.4.8 Endangering the environment with waste water

Local regulations should be observed for the disposal of waste water.

B.5 Maintenance and monitoring

The relevant instructions must be complied with in order to ensure the safe operation of the system and to prevent dangers from occurring during maintenance, monitoring and inspection.

B.5.1 Maintenance

Maintenance work must be carried out by a competent person at regular periods according to the specifications of the manufacturer. When doing so, any prevailing conditions and safety requirements should be observed. Work undertaken on the electrical system may be undertaken only by a trained electrician.



Danger!

The system must be switched off and secured against being switched on again inadvertently or without authorisation before maintenance and servicing operations are carried out.

Compressed air tanks and lines remain under pressure even after the system has been switched off. Before doing work on the system, it is essential that pressure is reduced by opening the pressure relief valve. Then check absence of pressure at:

- *pressure gauge at pressure tanks*
- *pressure gauge at pressure switch and*
- *pressure gauge at the maintenance unit*

Risk of injury from unexpected exit of jet of water under high pressure. The high-pressure system remains under pressure even when the system has been switched off. Before doing work on the system, it is essential that the high-pressure system is made pressureless.

B Safety Instructions

B.5.2 Monitoring

This washing system must be examined for its safe operation before being taken into operation for the first time and thereafter at least half-yearly by a competent person.

This examination includes in particular:

- a visual examination for outwardly recognisable signs of wear or damage
- a functional examination
- completeness and effectiveness of safety features in connection with:

Self-service systems	Monitored systems
daily before start of operations	as required at least once a month

B.6 Use original parts

Use exclusively manufacturer's original parts or those recommended by him. Observe all safety instructions and instructions for use which are provided with these parts.

This concerns:

- replacement parts and parts subject to wear
- accessory parts
- working materials
- cleaning agents.

C Operation and adjustments

C.1 Control unit (option)

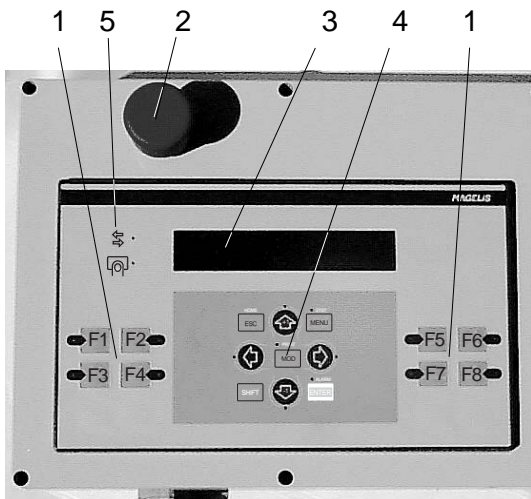
The control unit shows

- Operating data

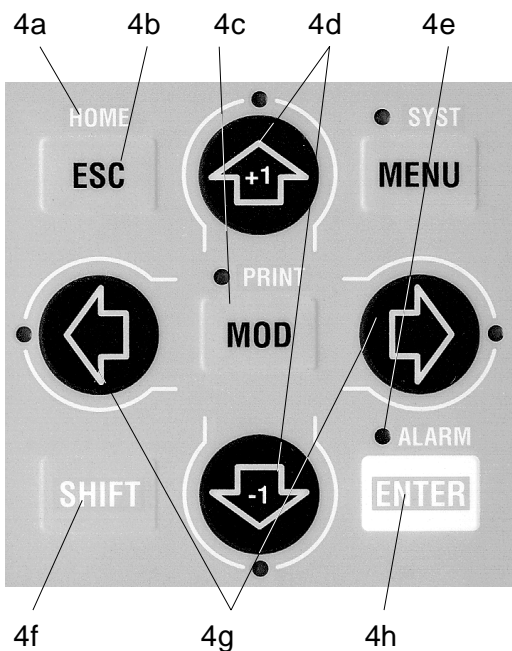
and has operator's controls for

- start of programme
- manual control
- setting the door control system

C.1.1 Operator controls



1	Function buttons	Carry out the functions associated with the current menu.
2	EMERGENCY-button	Switches off the system in case of emergency.
3	Display	Shows: – section of the current menu – faults which occur.
4	Cursor and system keys	Used to select menus and operating data and to execute function (see 4a – 4h).
5	Communication	Status LED: – ON: Cable missing or wiring incorrect. – OFF: Cable ok. No data exchange with controls. – Flashing: Data exchange with controls.

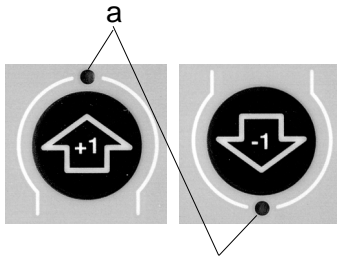


4a	"HOME" function (SHIFT + ESC)	Pressed in any menu, returns to the main menu.
4b	"ESC" key	Moves to one menu level higher.
4c	"MOD" key	Releases a variable for changing in the upper line of the display.
4d	+1 / -1 keys	– Move the display window via the current menu. – Change a released variable
4e	"ALARM" LED	Flashes in case of faults.
4f	"SHIFT" key	Used to select the functions indicated above the keys.
4g	Menu selection keys	Select the required menu in case of branching.
4h	"ENTER" key	Confirms the change to a variable.

C Operation and adjustments

C.1.2 Operation

All functions are combined into menus. The menus are arranged in a menu structure. The display shows two lines of the current menu.





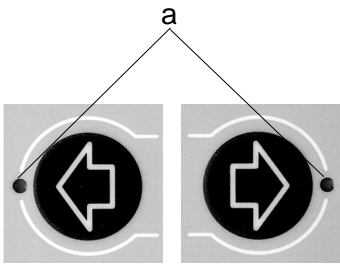
Moving within a menu



The "+1" and "-1" keys are used to move the window shown by the display in the direction of the arrow or to increase or reduce a numerical value.

- A brief press on the button moves the window by one line.
- Keeping the button pressed keeps the window moving continuously.
- Status LED (a):
 - OFF: Key inactive.
 - ON: Enables you to scroll a page.
 - Flashing: Enables you to change a numerical value.

C.1.3 Choosing the current menu

In the menu lines and using the symbols  or  you can choose another menu. The menu you can choose is indicated in the text lines. The selection is made by:

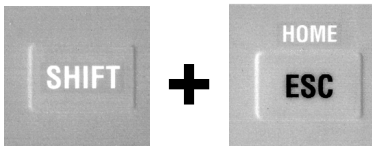


- selecting the menu using the buttons +1 / -1 until the symbol  or  blinks in the desired menu
- press the menu selection key with the relevant arrow direction. In this way you can move up/down in the menu structure.
- Status LED (a):
 - OFF: Key inactive.
 - ON: Enables you to change the page in a menu (active link).
 - Flashing: Enables you to move in the selected variables field.



With the "ESC" button you get back to the next higher menu. It is not important which line is indicated on the display. Repeatedly press "ESC" to return to the main menu.

o r :



Simultaneously press "SHIFT" and "ESC" ("HOME" function) in any menu to return to the main menu.



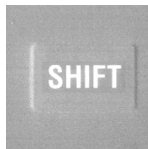
Change to input mode:
Press the "MOD" key to move between the fields of variables.

C Operation and adjustments



Use the "ENTER" key to:

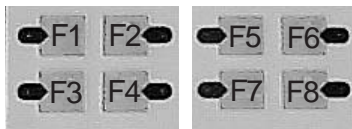
- acknowledge queued alarm signals,
- to confirm an entry or selection.



"SYST" function:

- Access to the "Confidential" mode by simultaneously pressing "SHIFT" and "MENU"
- The operating mode contains installation and maintenance functions.
- Status LED:
 - OFF: Operator panel in normal mode,
 - ON: Operator panel in installation and maintenance mode.

C.1.4 Carrying out functions



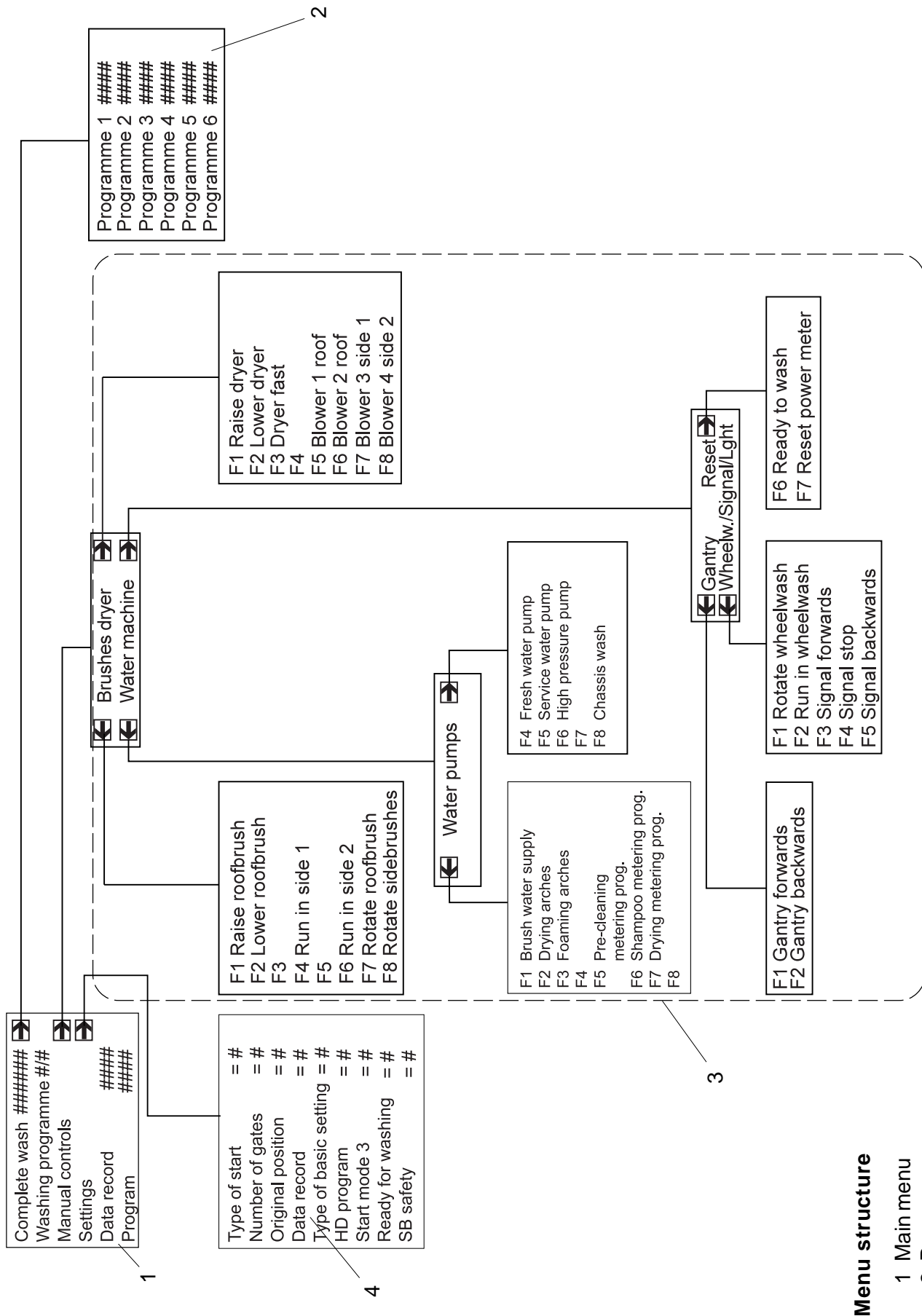
The assignment of the function buttons is defined in the current menu. This means that the function buttons carry out various functions relative to the current menu. The current functions can be looked at in the current menu.

A function is accessed by

- choosing the menu in which the desired function is
- pressing the function button which is assigned to this function. If the function is activated, the LED next to the button lights up.

The functions are grouped together in menus and can be displayed in a menu structure.

C Operation and adjustments



Menu structure

- 1 Main menu
- 2 Programme menu
- 3 Manual control
- 4 Settings (only for technical personnel)

C Operation and adjustments

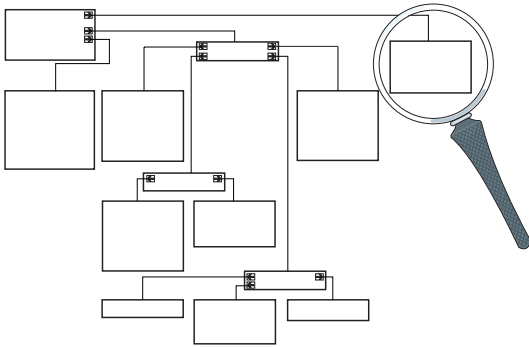
C.1.5 Display of the washing program currently running

The main menu is automatically displayed when the washing system is switched on.

- Line 1 shows the total number of washes carried out.
- Line 2 shows the washing program currently running (internal program number) and the active washing section (0-7).

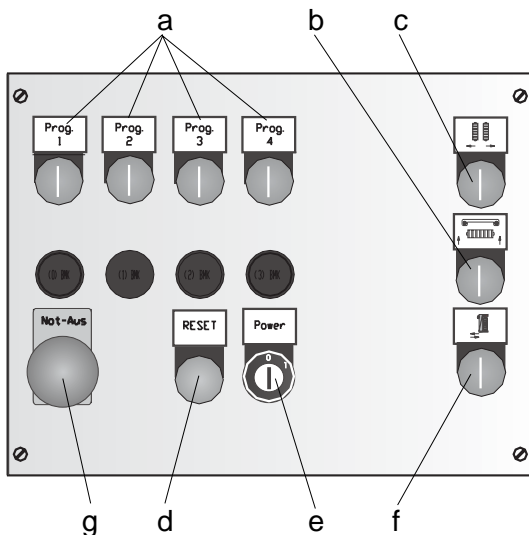
C.1.6 Reading off the wash meter

Starting from the main menu, you can call up the menu for total number of washes. In this menu the number of washes is indicated for each programme number.



C.2 Control panel for manual operation

The buttons on the control panel can be arranged in the way the customer wishes. It is not necessary, therefore, to have all the functions described available on the control panel in question.



C.2.1 RESET (d)

By pressing the RESET (d) button the control system is started after an "EMERGENCY-STOP" button has been activated:

- Release the "EMERGENCY-STOP" (g) button
- Press RESET

C.2.2 Original position (f)

Press the original position key (f) to return the system to the original position.

- the system has been switched OFF by means of the "NOT-AUS" (EMERGENCY STOP) button
- upon completion of repairs to the system
- after the system has been switched ON again.

C.2.3 Key switch "Power on" (e)

- Position "0": Operation of the washing system is suspended
- Position "1" Operation of the washing system is released

C.2.4 Programme buttons (a)

The wash programmes are called via the programme buttons.

C Operation and adjustments

C.2.5 Manual override

These functions allow you to intervene in the current wash programme in order to circumvent problem areas to do with the vehicle.

C.2.5.1 Raise roof brush / dryer (b)

- Roof brush or dryer is raised whilst the button “DB/TD heb.” is pressed
- Roof brush / dryer is again controlled by the wash programme when the respective button is no longer being pressed.

C.2.5.2 Run out side brushes (c)

- Both side brushes are run out whilst the button “SB ausf.” is pressed.
- Both side brushes are again controlled by the wash programme when the button is no longer being pressed

C.3 Wash card reader (option)

“EMERGENCY STOP”

If persons, property and animals are in danger, the system must be switched off immediately by pressing the “EMERGENCY STOP”-button. You will find another “EMERGENCY STOP”-button

- on the control unit
- at the entrance to the wash bay, unless a control panel or wash card reader is located there.

C.3.1 Programme selection

The selection of the wash programme is made according to the design of the wash card reader

- by inputting on a keyboard
 - by the wash programme specified on the wash card
- You will find further information in the separate operating instructions for the wash card reader.

C.4 Coin acceptor unit (option)

Other equipment can be connected to the system to start a wash programme, such as a coin acceptor unit or a PIN code terminal.

Basically, each unit has the connection possibility of 4 floating contacts, BCD-coded.

The contacts must be closed within at least 0.5 s.

A “wash-ready” signal, 24 V DC, 0.1 A, is made available by the CWP control cabinet.

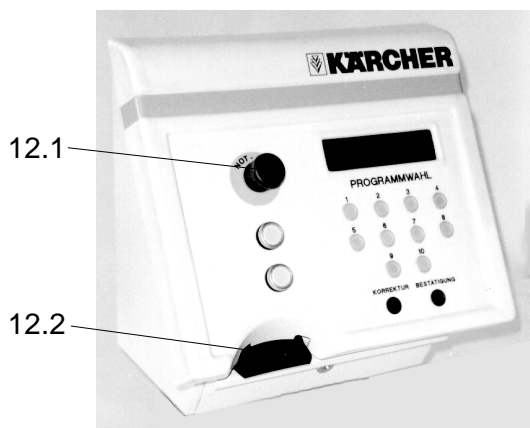


Fig. C.2: Wash card reader
12.1 “EMERGENCY STOP”-button
12.2 Wash-card slide-in unit

C Operation and adjustments

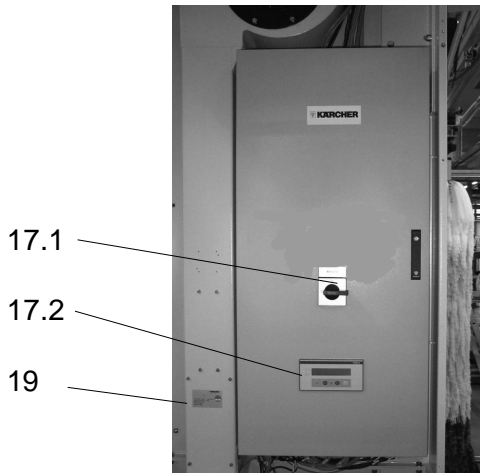
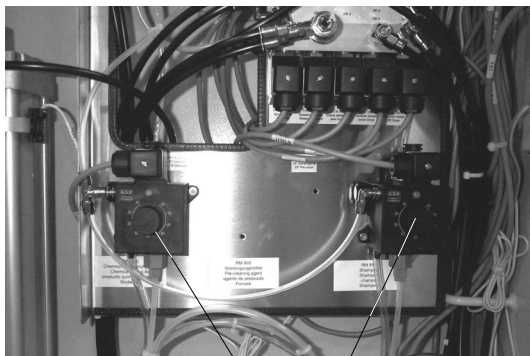


Fig. C.3: Control cabinet

- 17.1 Master switch
- 17.2 Rating plate
- 19 Name plate



6.1 6.2

- 6.1 Metering pump shampoo
- 6.2 Metering pump drying aid



6.b 6.d 6.a

Fig. C.4: Metering pumps for cleaning agents

- 6a Rotary knob
- 6b Pneumatic valve
- 6d Manual control button

C.5 Control cabinet

The control cabinet is located in column 1 (left). Installed in the control cabinet CWP is the control system for the gantry washing system.

Incorporated in the cabinet doors is:

- the master switch.

When the cabinet doors are open access is available to the necessary components for operating the system, such as

- motor protection switch
- power switches.

C.6 Setting of metering pumps

By means of the metering pumps, the cleaning agents:

- shampoo / foam (6.1)
- drying agent (6.2)

are metered into the washing water in accordance with the washing programme.



Important!

The dosage quantity is set at its optimal amount by the engineer when the system is installed. As a rule no new adjustment is necessary.

C.6.1 Adjusting the dosage

A scale with a gradation from 10 to 100 is printed on the housing of the metering pump. The rotary knob 6a is secured against adjustment.



Caution!

Metering pump can become damaged. Operate rotary knob 6a only when the pump is operating.

- Pull the rotary knob 6a to unlock it.
- Then set the metered quantity as follows:
 - Adjust the rotary knob 6a until the pointer indicates the required metered quantity at the same time pressing the manual control button 6d several times (reduce = adjust in clockwise direction, increase = adjust in anti-clockwise direction)
- Secure the rotary knob by tightening the locking screw.

C Operation and adjustments



6.c

6.d

6c Vent plug

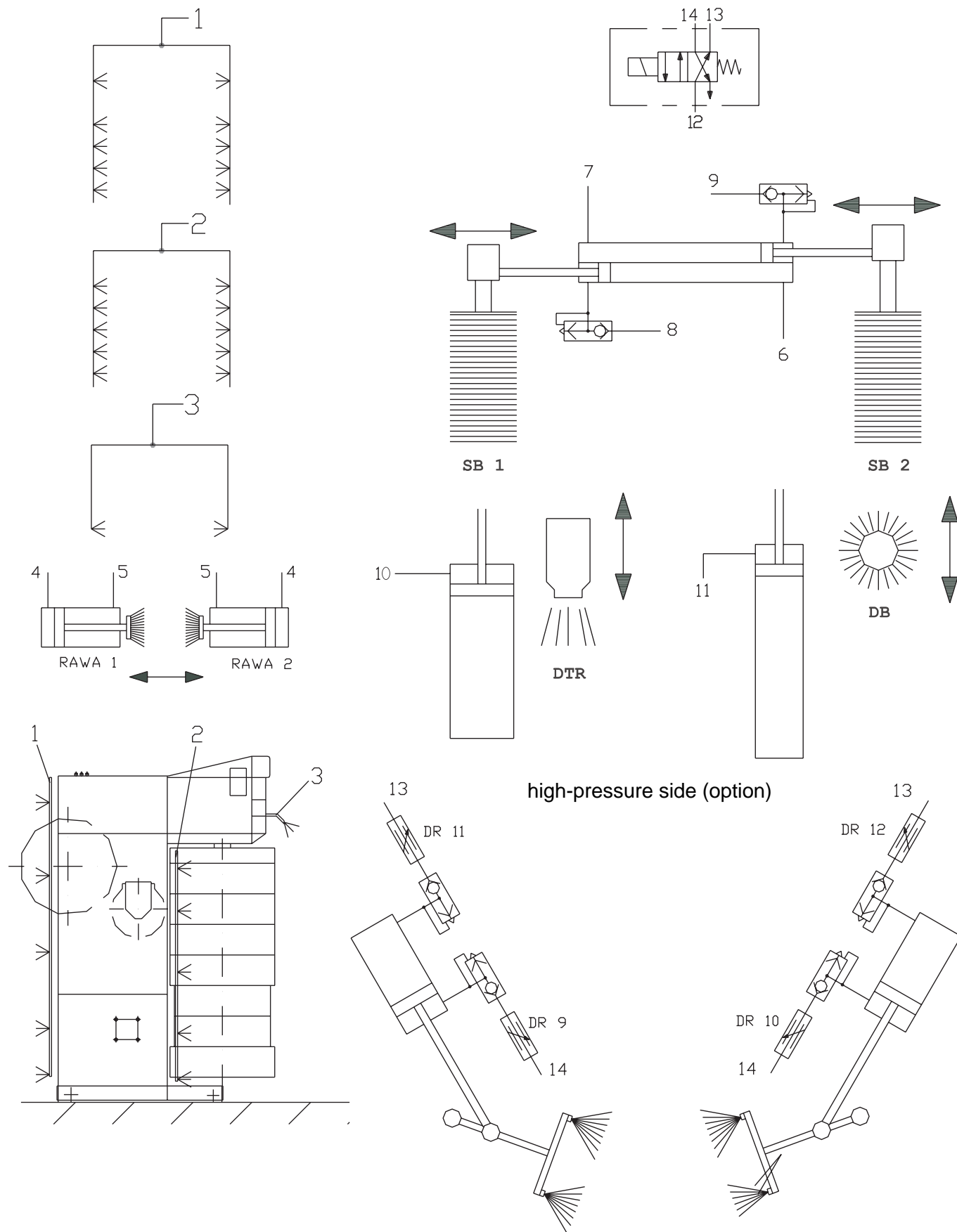
6d Manual control button

C.6.2 Vent the metering pump

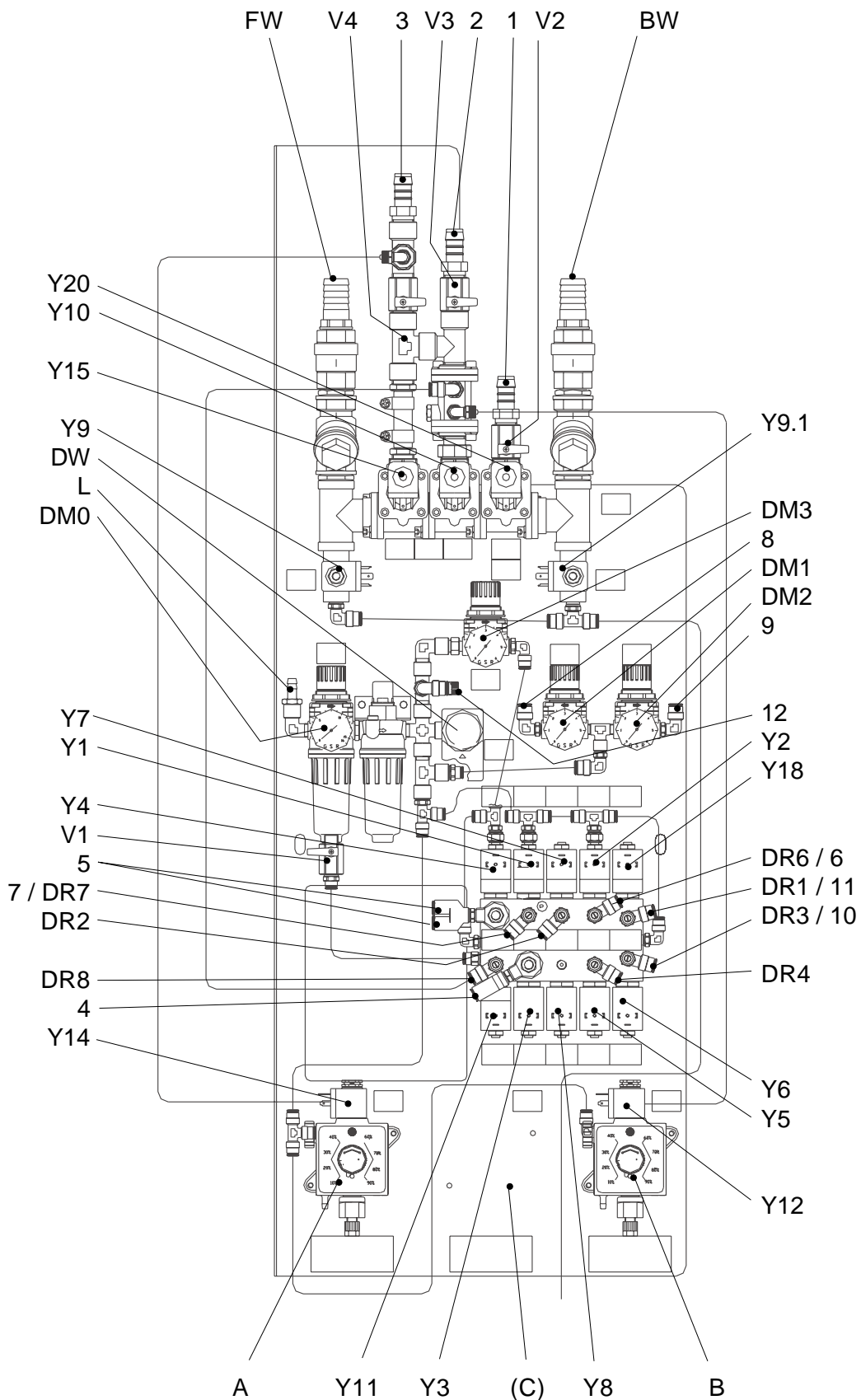
- Turn the vent plug (6c) through approx. 2 turns in an anti-clockwise direction.
- Press the manual control button (6d) until there are no more air bubbles in the suction hose and the cleaning / drying agent flows back into the container via the overflow hose.
- Turn the vent plug (6c) to close it again (turn in clockwise direction).

C Operation and adjustments

C.7 Schematic water / air diagram



C Operation and adjustments



C Operation and adjustments

Nozzle tube functions

- | | |
|------------------------------------|-----------------------------------|
| 1 Rear nozzle tube | A Drying agent |
| – Service water | B Shampoo |
| 2 Front nozzle tube | C Pre-spray)* |
| – Fresh water | BW Service water infeed |
| – Service water | FW Fresh water infeed |
| – Shampoo | L Compressed air infeed |
| – Foam | SB Side brush |
| 3 Nozzle tubes in front cover | DB Roof brush |
| – Fresh water | DTR Roof dryer |
| – Service water | Y1 MV Move in SB 2 |
| – Drying agent | Y2 MV Move in SB 1 |
| – Shampoo | Y3 MV Move in RAWA |
| – Foam | Y4 MV Move out RAWA |
| | Y5 MV Lower roof dryer |
| | Y6 MV Raise roof dryer |
| | Y7 MV Lower roof brush |
| | Y8 MV Lower roof dryer fast |
| | Y9 MV Frost protection drain |
| DM0 Infeed pressure reducing valve | Y9.1 MV Frost protection drain |
| DM1 Pressure reducing valve: | Y10 MV Water shampoo |
| move in side brush 1 | Y11 MV Air foam)* |
| DM2 Pressure reducing valve: | Y12 MV Shampoo metering pump |
| move in side brush 2 | Y14 MV Drying agent metering pump |
| DM3 Pressure reducing valve for | Y15 MV Fresh water |
| wheel washing system | Y18 MV Raise roof brush |
| DR1 Throttle: Raise roof brush | Y20 MV Roof brush rinsing arch |
| DR2 Throttle: Lower roof brush | |
| DR3 Throttle: Raise roof dryer | |
| DR4 Throttle: Lower roof dryer | |
| DR6 Throttle: Move in side brush 1 | |
| DR7 Throttle: Move in side brush 2 | |
| DR8 Throttle: Air quantity foam | |
| DR9...12 Throttles: Swivel HD side | |
| washing oscillating)* | |
| DW Pressure operated switch | |
| V1 Shut-off valve: Air (foam) | |
| V2 Flow control: rear nozzle tube | |
| V3 Flow control: front nozzle tube | |
| V4 Flow control: | |
| nozzle tube in front cover | |

MV magnetic valve
)* Option

D Technical data

Table D.1: System and vehicle maximum ratings

D.1 Dimensions

		CWP 2307	CWP 2307
Height	mm	3.200	3.500
Width	mm	3.700	3.700
Length *)	mm	1.980	1.980
Maximum vehicle dimensions **)			
Washing width	mm	2.100	2.100
Washing height	mm	2.350	2.650

*) without nozzle pipes front / rear

**) Almost all vehicles can be washed within these dimensions.

Table D.2: Wash bay dimensions

Wash bay dimensions		
Length	mm	10.000
Width	mm	4.700

Vehicle length

The length of the tracks is 9.200 mm. Vehicles up to a MAX length of 5.000 mm can be washed in this system.

D.2 Technical data

Table D.3: Technical data

Wash brushes		
Brush diameter, side	mm	965
Brush revolutions per minute, side	rpm	113
Brush diameter, roof	mm	880
Brush revolutions per minute, roof	rpm	135
Gantry travel speed	m/min	9.8
Sound level		
Brush wash	dB(A)	67
Dryer operation	dB(A)	86

D Technical data**D.3 Connected values**

Table D.4: Connected values

Electrical connection		
Voltage	V	400/3~, P, N
Frequency	Hz	50
Connected load, basic system	kW	15
Pre-fusing, control cabinet	A	max. 35
Water connection		
Inside diameter	inches	1
Flow pressure to DIN 1988 (at 100 l/min)	bar	4...6
Water consumption/vehicle at 4.5 bar (programme-dependent for vehicle length 4.5 m)	l	80...270
Compressed-air connection		
Inside diameter	inches	½
Pressure	bar	6...8
Consumption / washing (without frost protection feature, programme-dependent at 4.5 m vehicle length)	l	200...350

E Operating procedure

E.1 Switching off in an emergency

If persons, property and animals are in danger, the system must be switched off immediately by pressing the “EMERGENCY STOP” button. You will find “EMERGENCY STOP” buttons

- on the control unit (option)
- on the wash-card reader (option)
- on the control panel for manual operation
- or installed by the operator.



Important!

In self-service systems, a competent person who is familiar with the system must be reachable who is able to carry out or initiate the measures necessary to avoid any potential danger.

E.2 Switching on after Emergency STOP



Important!

Before switching on again, the cause of the Emergency STOP button being activated must be remedied. Vehicles must be driven out of the system.

- Release the arrest of the Emergency-stop button.
- Press the button “start position” on the control panel for manual operation.

In the start position, the top green signal light “Forwards” of the positioning light (optional) lights up. The system is again operational and the vehicle to be washed can be driven in.

- Start the wash programme again.

E.3 Initial operation of the system by the operator

- Open the shut-off valves in the water and compressed air lines
- Switch the master switch (17.1) on the control cabinet to “ON”
- Press the button “Start position” on the control panel for manual operation.

The system is ready to operate, the vehicle to be washed can be driven in.



17.1

Fig. E.3: Control cabinet

E Operating procedure

E.4 Preparations to be made by the user

- Prepare the vehicle for washing



Caution!

To avoid damage being done to the vehicle, the following precautionary measures must be undertaken on the vehicle before the start of the washing process:

- close windows, doors and roof cavities
- retract aerials, turn them back towards the boot or detach them
- fold back large or grossly projecting wing mirrors
- examine vehicle for loose parts and detach these, e. g.
 - ornamental strips
 - spoilers
 - bumpers
 - door handles
 - exhaust pipes
 - air deflectors
 - tarpaulin ropes
 - sealing rubbers
 - sun visors fixed to the exterior
 - roof racks

E.5 Driving in

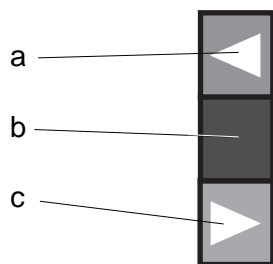
E.5.1 Position using the wheel trough (Option)

Drive the vehicle into the system in such a way that the front wheel on the driver’s side is positioned in the wheel recess.

E.5.2 Positioning light (optional)

Types of start

If the system is at the start position, one of the top signal lights in the positioning light lights up. Which signal light lights up is dependent on the type of start.



Start-type	Signal lamp lights up
Standard	“Forwards”
Time-delayed	“Stop”

For a description of the types of start, see operating instructions of the wash-card reader.

While driving into the wash bay the positioning lights mounted at the top right of the gantry show you whether you should

- “drive forward” (a)
- “stop” = position is correct (b)
- “reverse” (c).

E Operating procedure

Position your vehicle pointing straight forward, and in the middle between the gantry tracks.

E.5.3 After positioning

- Switch the engine OFF.
- Leave in gear, or, in the case of automatics, select "P".
- Put the handbrake ON.
- Leave the vehicle and start the wash programme.

E.6 Programme selection and start

E.6.1 Using control unit (option)

If no wash-card reader is present, the wash programmes are selected using the control unit (option) or the control panel for manual functions (see Chapter C.1).

E.6.2 Using control panel for manual operation (optional)

Press appropriate programme button (see chapter C.2).

E.6.3 Using wash card reader (optional)

Operation using a wash card reader is described in the separate operating instructions for the wash card reader.

E.7 Wash process ended

Once the wash programme has ended, the vehicle can be driven out of the washing unit. The positioning light (option) indicates driving out forwards or backwards.

E.8 Taking the system out of service

E.8.1 Taking the system temporarily out of service

- Terminate current programme.
- Set master switch (17.1) to "0".

E.8.2 Shutting down

First carry out all steps in E.8.1 and in addition

- close off water supply line
- close compressed-air supply line.

If sub-zero temperatures are expected for the period of shut-down:

- drain all water-bearing pipes.

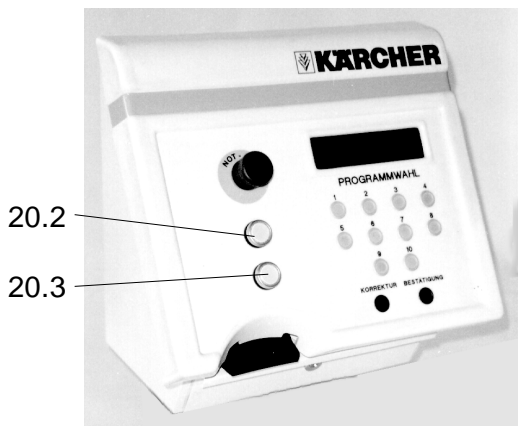


Fig. E.5: Wash card reader

E Operating procedure

E.8.3 Making the system non-operational by automatic frost protection (optional)



Caution!

Risk of damaging the system.

The frost protection device operates only when

- *the master switch is switched on and*
- *the "Emergency-STOP"-buttons are not activated.*

Manual frost protection

Hand valves and the switch for "Frost protection, manual" are located in the servicing space.

- Close hand valves for fresh water and used water (optional).
- Release compressed air for frost protection system by opening the hand valve in the compressed-air line.
- Actuate switch "Frost protection, manual", the control system will then start the blowing-out procedure.
- The blowing-out procedure having ended, close the compressed-air hand valve for frost protection.

When making an initial start-up after operating the manual frost protection, open the hand valves for fresh water and used water (option).

Automatic frost protection

The washing unit can be fitted with a frost protection device.

If there has been a drop below the minimum temperature

- any current wash procedure will be brought to an end.
- thereafter, the hoses and nozzle pipes of the gantry will be blown out with compressed air.
- no further wash programme can be started.

If, as a precautionary measure, it is wished to initiate frost protection procedures in a shut-down system which is equipped with automatic frost protection, an additional switch can be fitted on-site for this purpose.

E Operating procedure

E.9 Door control

The wash bay doors are controlled by the gantry control unit, and an external door control unit.

There are separate control functions for summer or winter operation.

Door control during summer

Before washing begins, the doors are open.
The vehicle can enter the wash bay.

When washing commences, the doors are closed.

When washing is completed, the doors are opened, and remain so.

Door control during winter

Before washing begins, the doors are closed, and must be opened before the vehicle can enter the wash bay.

When washing commences, the doors are closed.

When washing is completed, the doors are opened, and as soon as the vehicle has been driven out of the wash bay, they close again.

F Maintenance and servicing



17.1



a

a Condensate maintenance unit

F.1 System overview

See Figs. A.1–A.2

F.2 Maintenance instructions

Regular maintenance according to the following maintenance schedule is the basis of a dependable system.

Use only manufacturer's original spare parts or those recommended by him such as

- replacement and worn parts
- accessory parts
- working materials
- cleaning agents.



Danger!

Risk of electric shock.

Make the system voltage-free by switching the unit at the master switch (17.1) to "0" and securing it against being switched on again.

Risk of injury by unexpected exit of compressed air.

Compressed-air tanks and lines remain under pressure even after the system has been switched off. Before doing work on the system, it is essential that pressure is reduced by opening the condensate drain-valve. To do this, open condensate drain valve by a maximum of one rotation. Then check absence of pressure at pressure gauge at the maintenance unit (a).

Risk of injury from unexpected exit of jet of water under high pressure. The high-pressure system remains under pressure even when the system has been switched off. Before doing work on the system, it is essential that the high-pressure system is made pressureless.

Risk of eye injury from parts or dust being flung out. Do not stand near rotating brushes. Wear protective goggles when doing maintenance work.

Who is permitted to carry out inspection, servicing and maintenance tasks?

■ Operator

Tasks which carry the designation "Operator" may be carried out only by trained personnel who are able to operate and maintain the washing system safely.

■ Customer Service

Tasks which carry the designation "Customer Service" may be carried out only by Kärcher Customer Service engineers.

F Maintenance and servicing

Maintenance contract

In order to ensure that the system functions reliably, we recommend that you take out a maintenance contract. Please ask for details from your own Kärcher Customer Service centre.

When servicing the system

System OFF

Before starting work on the system, switch the master switch to "OFF" and secure it against being switched on again by an unauthorised person. See also guidelines for automotive washing systems VBG ZH (German commercial employers' liability insurance association) 1/543, paragraph 5.2.

Work on the system

Carry out servicing as required

Switching the system ON

To start up the system, set the master switch to "EIN" (ON).

If necessary, move the gantry into the rest position.

Service mode

Your own safety and that of others demands that the system is switched off when maintenance and servicing is carried out.

However, not all system parts which have to be maintained are freely accessible. This makes it necessary for certain system parts to move during maintenance and servicing. The "manual control" method of operating is designed for this. Manual operations are carried out using the control unit (option).



Attention!

For your own safety, and that of third parties, always proceed in the following order:

- 1. Switch system ON*
- 2. Select operating mode "Manual control" (see chapter C)*
- 3. Move system component into desired position*
- 4. Switch system OFF, and prevent inadvertent reactivation*
- 5. Carry out servicing task.*

Requirement before calling up manual control:

- No vehicle should be standing under the gantry.

F Maintenance and servicing

Manual control (option)

Manual control of the system is used when maintenance tasks are being carried out.

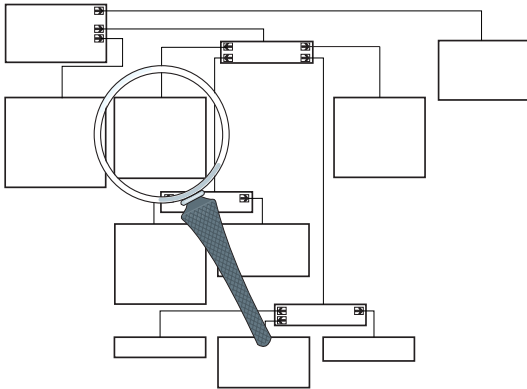


Caution!

*Risk of damage to installation and vehicle.
Do not use manual control for washing purposes.*

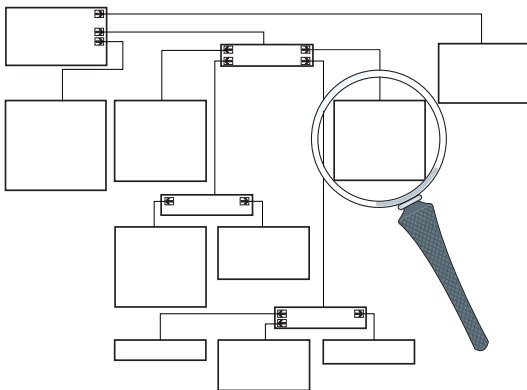
In manual control the individual system components can be switched on and off individually. There are 8 menus available with appropriate assignment of the function buttons.

Manual control / Brushes



F1 Roof brush LIFT for as long as button pressed	F2 Roof brush LOWER for as long as button pressed	F5 -	F6 Side brush 2 (right) move IN for as long as button pressed
F3 -	F4 Side brush 1 (left) move IN for as long as button pressed	F7 Roof brush rotate ON/OFF	F8 Side brushes rotate ON/OFF

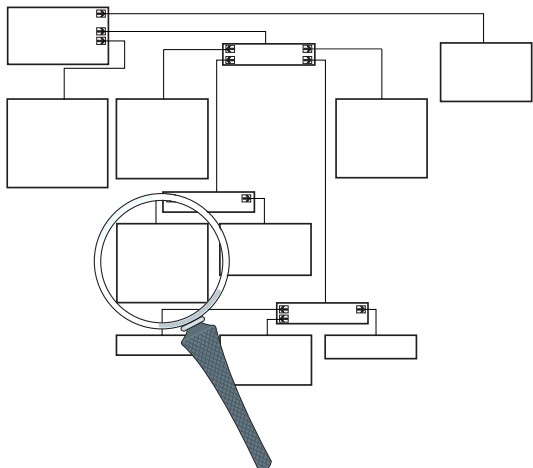
Manual control / Dryer



F1 Dryer LIFT for as long as button pressed	F2 Dryer LOWER for as long as button pressed	F5 Blower motor roof nozzle 1 (left) ON/OFF	F6 Blower motor roof nozzle 2 (right) ON/OFF
F3 Dryer FAST LOWER whilst button pressed	F4 -	F7 Blower motor side nozzle 3 (left) ON/OFF	F8 Blower motor side nozzle 4 (right) ON/OFF

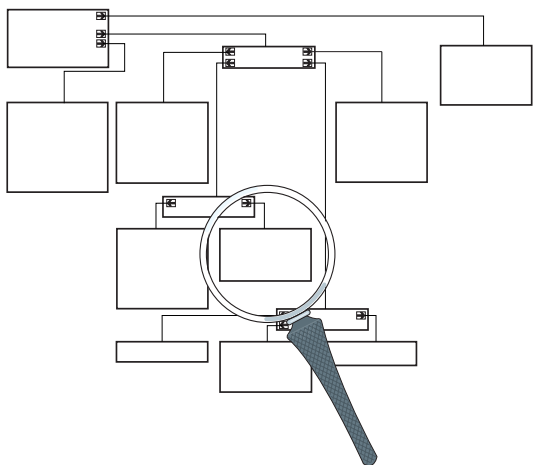
F Maintenance and servicing

Manual control / Water / Water



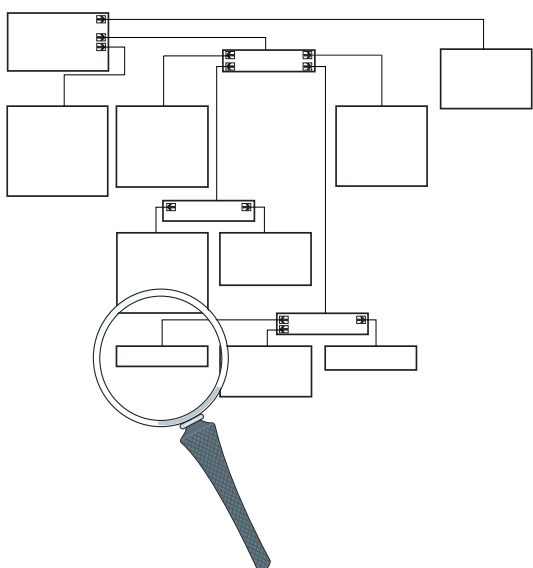
F1 Brush irrigation Roof brush ON/OFF	F2 Drying arch ON/OFF	F5 Metering pump Pre-cleaning ON/OFF	F6 Doser pump Shampoo ON/OFF
F3 Foam arch ON/OFF	F4 -	F7 Doser pump Drying aid ON/OFF	F8 -

Manual control / Water / Pumps



F1 -	F2 -	F5 Used water pump ON/OFF	F6 High-pressure pump ON/OFF
F3 -	F4 Fresh water pump ON/OFF	F7 -	F8 Underbody wash START

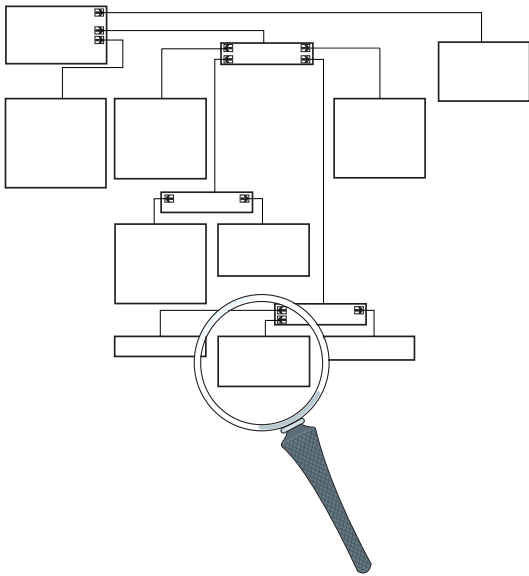
Manual control / Machine / Gantry



F1 Gantry FORWARDS for as long as button pressed	F2 Gantry BACKWARDS for as long as button pressed	F5 -	F6 -
F3 -	F4 -	F7 -	F8 -

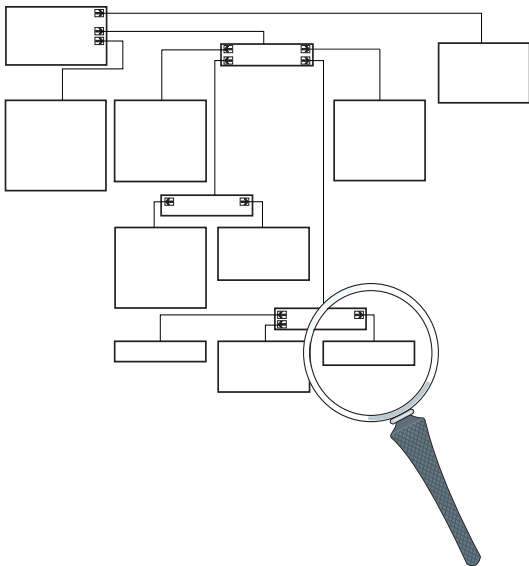
F Maintenance and servicing

Manual control / Machine / Wheelwash / Positioning light



F1 Wheelwash rotate ON/OFF	F2 Wheelwash MOVE IN/ MOVE OUT	F5 Positioning light Back up ON/OFF	F6 -
F3 Positioning light Forwards ON/OFF	F4 Positioning light Stop ON/OFF	F7 -	F8 -

Manual control / Machine / reset



F1 -	F2 -	F5 -	F6 Signal Wash-ready ON/OFF
F3 -	F4 -	F7 Reset electronic power meter ON/OFF	F8 -

F Maintenance and servicing F.3 Maintenance schedule

Time	Activity	Unit concerned	Implementation	by whom
Daily	Check safety devices	EMERGENCY STOP buttons on: control panel, wash-card reader and all other EMERGENCY STOP buttons to the system, safety switches in small wash bays	<ul style="list-style-type: none"> – Start wash programme (see chapter E.6) – Actuate EMERGENCY STOP buttons or safety switches: – System must stop, then – press button “Start position” on the control panel for manual operation 	Operator
	Check instructions for self-service customer (only for self-service systems)	Signboards with operating instructions and authorised usage at the washing bay	Check signboards for completeness and readability. Replace damaged signboards.	Operator
	Check cleaning agent levels	Cleaning agent reservoirs in gantry pillar 2	Fill up, if required	Operator
	Check that spray nozzles are not blocked	Nozzles (5, 6, 7 figures A.1-8) in the front cover and nozzle tubes, in the underbody washing facility (option) as well as the high pressure nozzles (9, 16).	<ul style="list-style-type: none"> – Visual inspection (assess spray pattern), if necessary clean. Caution, do not mix up nozzles! Individually – unscrew nozzles, – clean with compressed air, – screw in again 	Operator
	Clean light barriers	all light barriers (Fig. F.1)	Wipe over light barriers with soft cloth and glass cleaner under light pressure	Operator
	Visual inspection	all limit switches (see Figs F.2–F.9)	Check for mechanical damage and firm seating	Operator
	Check brush rollers for foreign objects	side brushes, roof brush, wheel brushes	Visual inspection, remove any foreign objects, clean dirty brushes with high-pressure cleaner	Operator
	Check oil level	in air lubricator (Fig. F.10)	<ul style="list-style-type: none"> – when oil level in housing is under the minimum mark, fill up with oil (6.288-108). To do this: – close off compressed air and bleed out pressure – undo union nut – pour oil into the transparent housing 	Operator

F Maintenance and servicing

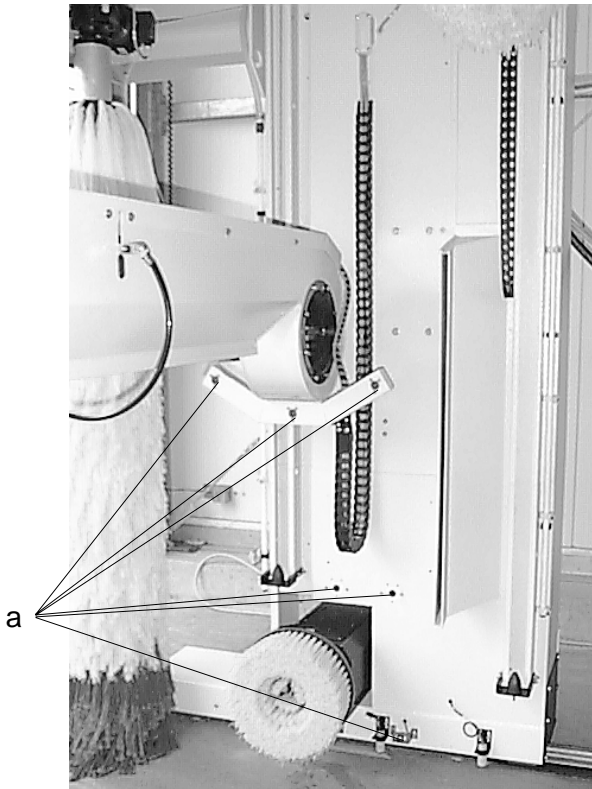


Fig. F.1:
a Light barriers

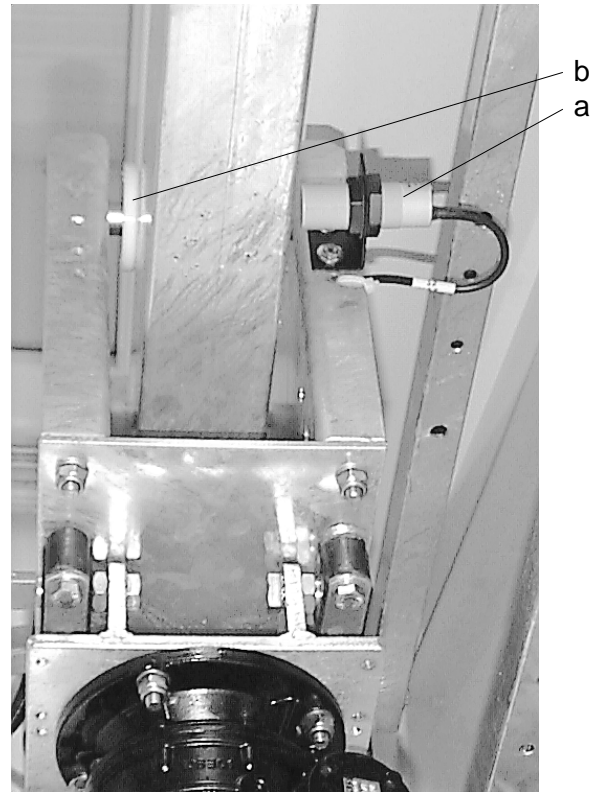


Fig. F.2: Side-brush conveyor
(viewed from above)
a Limit switch, side brush
b Rollers



Fig F.3: Column 1 top
a Limit switch swivel side brush traverse

F Maintenance and servicing

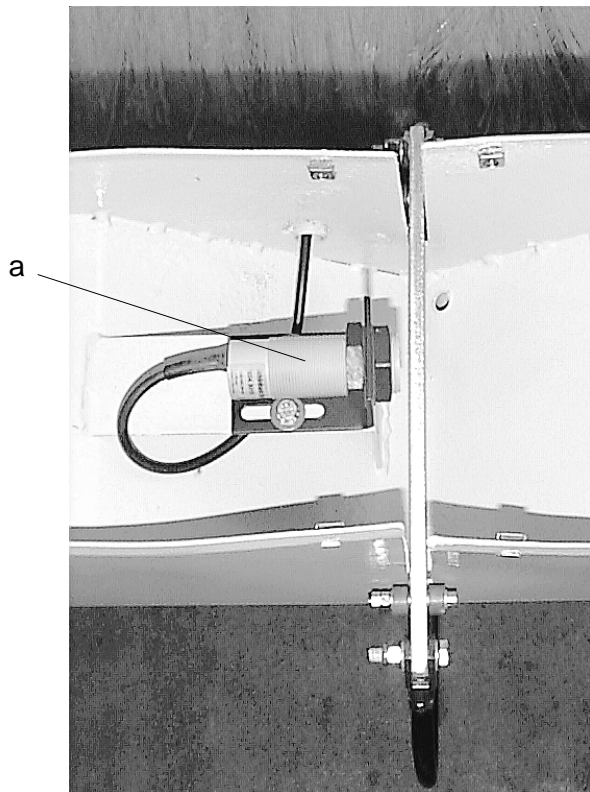


Fig. F.5: Roof dryer without cover
a Limit switch, safety switch roof dryer

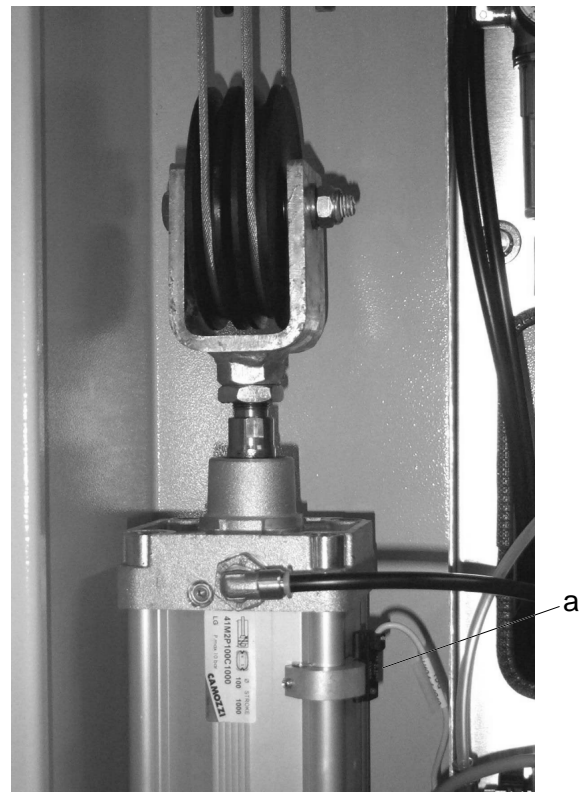


Fig. F.6: Pillar 2, below
a Limit switch roof dryer down

F Maintenance and servicing



Fig F.7: Pillar 2, below
a Limit switch roof brush up

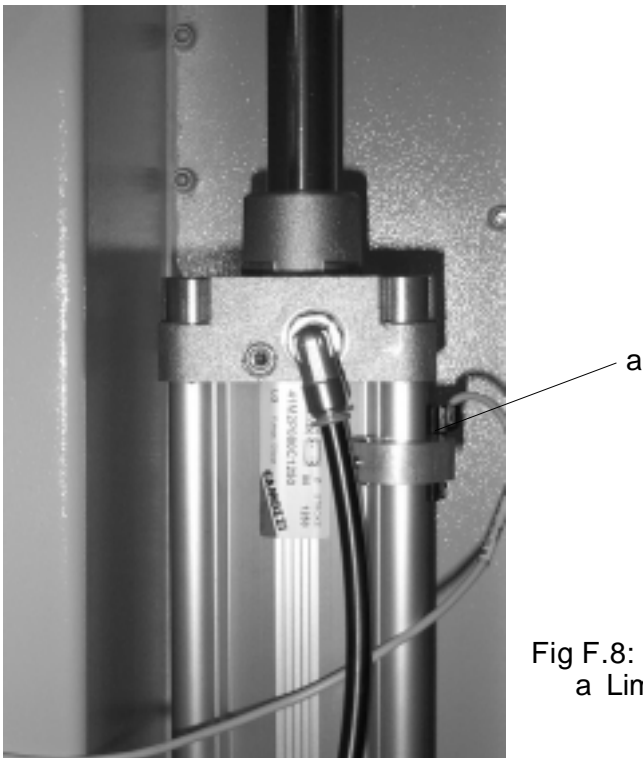


Fig F.8: Pillar 2 middle
a Limit switch roof brush down

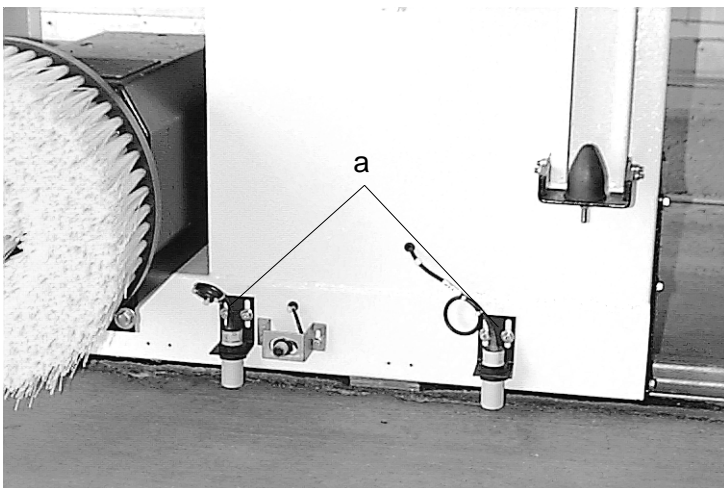


Fig F.9:
a Limit switch, travel

F Maintenance and servicing

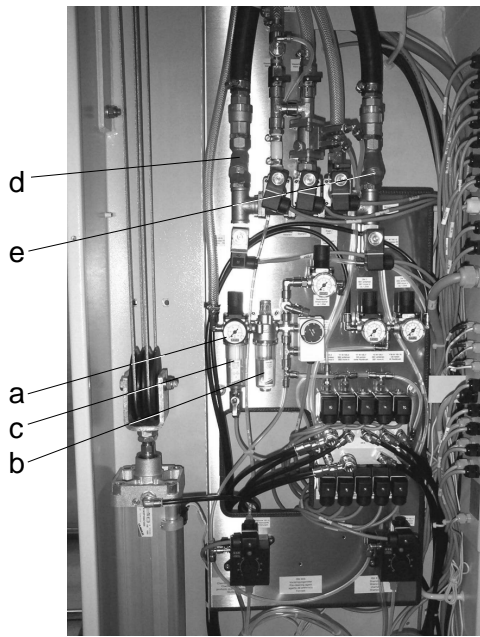


Fig. F.10: Water distributor

- a Compressed-air maintenance unit
- b Compressed air oiler
- c Filter
- d Dirt trap fresh water
- e Dirt trap used water (behind maintenance unit)

F Maintenance and servicing

Time	Activity	Unit concerned	Implementation	by whom
Weekly, or after 500 washes	Check state of wash brushes	Roof brush roller and side brush rollers	Check brush shaft for straightness, check brush half-shells for firm seat, check brush for wear (minimum bristle length: new state minus 50 mm), replace if necessary (see Chapter "Replacing brush half-shells")	Operator
		Wheel wash brushes	<ul style="list-style-type: none"> – replace brushes after approx. 10.000 washes, for which – undo 3 screws inside the bristle ring – take off the wheel wash brush – set on new wheel wash brush and fasten with the 3 screws 	Operator
	Grease bearings	Bearings of the roof brush (Fig. F.11)	Lubricate bearings at the nipple with grease-gun and grease 6.288-059	Operator
		Bearing in running gear (Fig. F.13)	Lubricate bearing at grease fitting using grease gun and grease 6.288-059	Operator
	Check for leaks in hoses, pipes, etc.	Hoses in the energy chain and in the gantry	Visual check	Operator
after 1000 washes	adjust	track rollers of the side brush conveyor (Fig. F.12)	<ul style="list-style-type: none"> – check play by moving side brushes. If too much play between carriage and guide adjust lower rollers: – undo screw and turn cam (a) with fork wrench – tighten screw 	Operator/ Customer Service

F Maintenance and servicing

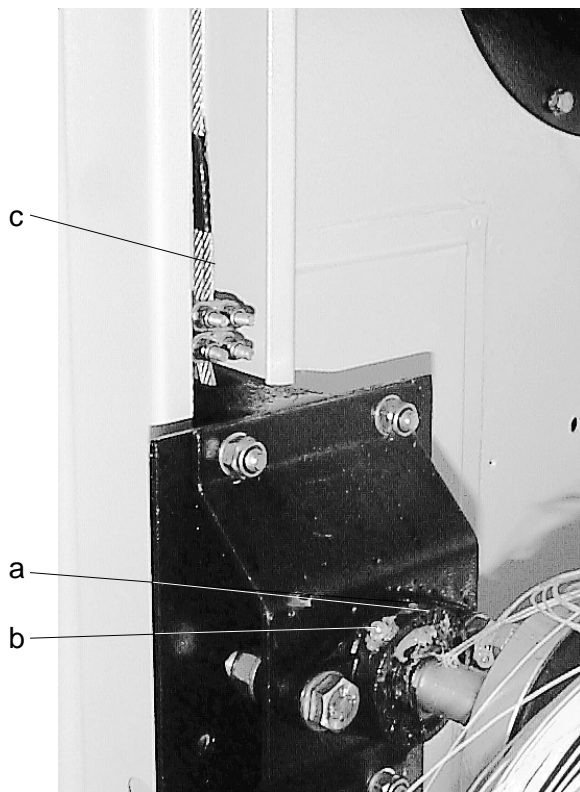


Fig. F.11: Roof brush
 a Bearing
 b Lubricator nipple
 c Hoist cable



Fig. F.12: Side brush
 a Cam

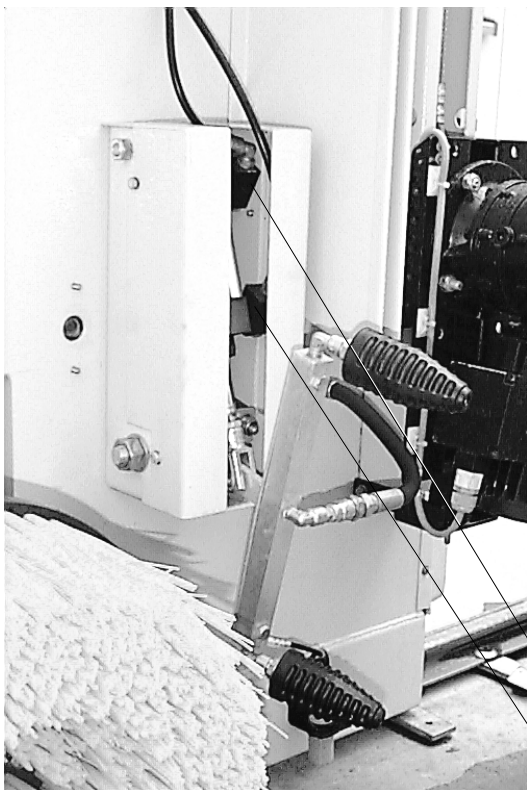


Fig. F.13: HP side-wash, oscillating
 DR9/10 Throttles, HD side washer up
 DR11/12 Throttles, HD side washer down



Fig. F.13: Under-carriage
 a Grease fitting

F Maintenance and servicing

Time	Activity	Unit concerned	Implementation	by whom
Monthly or after 2000 washes	Clean filters	In the compressed-air maintenance unit (Fig. F.10)	<ul style="list-style-type: none"> – Close off compressed air and bleed out pressure – Unscrew filter housing – Remove filter insert – Clean filter with compressed air – Insert filter, screw on housing 	Operator
		Cleaning-agent suction filters in the reservoirs for cleaning agent	<ul style="list-style-type: none"> – Screw off lids of cleaning agent reservoirs – Rinse filters of the suction hoses with clean water 	Operator
	Clean dirt traps	Dirt trap for used water (optional) Dirt trap for fresh water (Fig. F.10)	<ul style="list-style-type: none"> – Turn off water inlet – Unscrew cover of dirt trap – Rinse filter with water – Re-insert filter and screw on cover 	Operator
	Lubricate	Guide tracks of wheel washing unit (Fig. F.13)	Apply grease with a brush	Operator
	Check	Hoist cable of roof brush, roof dryer	Visual inspection: check condition of the cables, if necessary replace	Operator Customer Service
Check fastening and spacing of all limit switches	Wheel washing unit – moved out Side brushes – moved in/out Safety switch travel start, travel end Safety switch side brush Roof brush up/down Safety switch front/rear (Figs F.2 to F.9)	<ul style="list-style-type: none"> – Verification of specified distance of 4 mm: – use a piece of flat material 4 mm thick as thickness gauge – Measure distance between limit switch and switch flag – If necessary readjust limit switch by resetting the two plastic nuts 	Operator/ Customer Service	

F Maintenance and servicing

Time	Activity	Unit concerned	Implementation	by whom
Half-yearly or after 5000 washes	Lubricate	Running tracks of the trailing cable installation	Apply grease to the inner side with a brush	Operator
Yearly or after 10.000 washes	Inspection of the plastic rollers and rubber buffers	Guide rollers and stop buffers of the side brush conveyors (Fig. F.2, F.15) swivel stop buffer of side brush (Fig. F.16)	Visual inspection: condition of the guide rollers and play between rollers and guide track, check rubber buffer for fractures	Operator/ Customer Service
Every 2 years or after 20.000 washes	Replace hoist cable and flat belt	Roof brush, roof dryer	Replace hoist cable and flat belt	Customer Service

F Maintenance and servicing

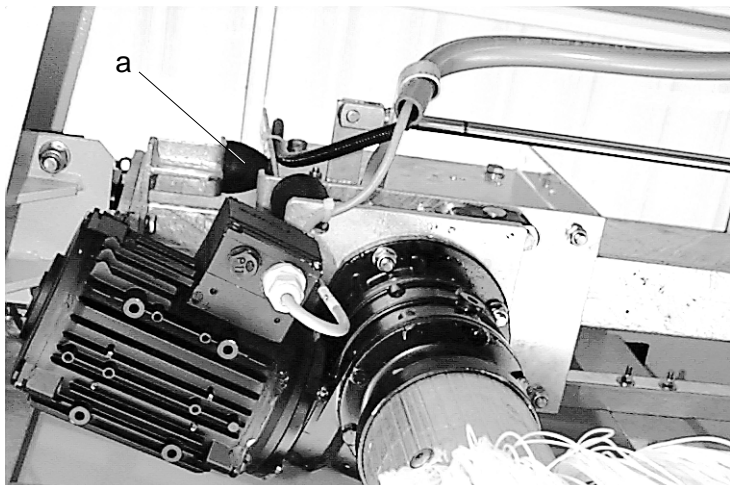


Fig. F.14:
a Stop buffer, side-brush conveyor

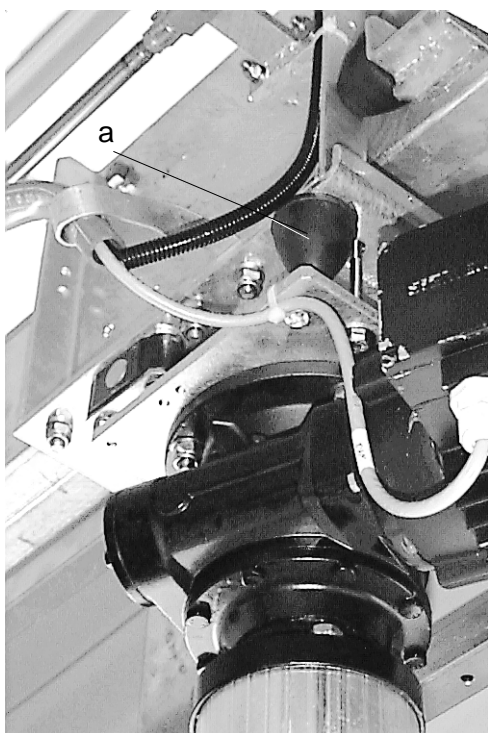


Fig. F.15:
a Stop buffer, swivel side-brush

G Troubleshooting



11.1

Fig. G.0: Control cabinet

Danger!

Danger – possibility of electric shock.

- *Work on the electrical system may only be carried out by trained electricians.*
- *Make the system voltage-free for all work carried out on the system by switching the system master switch (11.1) to “0” and securing it against being switched on again.*

Who is permitted to remedy faults?

■ **Operator**

Tasks which are indicated “Operator” may only be carried out by suitably instructed personnel who have the capability of servicing and maintaining the washing system properly.

■ **Trained electricians**

People who have been professionally trained in electrical engineering.

■ **Customer Service**

Tasks which are indicated “Customer Service” may only be carried out by Kärcher Customer Service maintenance personnel.

Switching the system OFF

- Before commencing work, set the master switch to “AUS” (OFF), and protect against inadvertent reactivation.

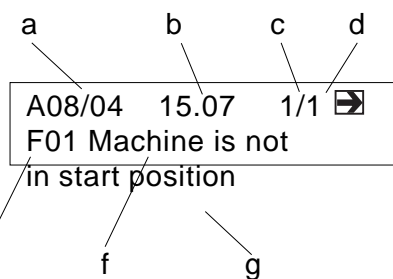
Fault repairs

- Repair the indicated and/or identified fault.

Switching the system ON

- Start the system; turn the master switch to “EIN” (ON).

Return the gantry to the rest position, if required.



Fault message of critical faults or less critical faults:

- a Date of fault occurrence
- b Time of fault occurrence
- c Displayed fault
- d of ... faults
- e Fault number
- f Fault text in display
- g Fault text accessible with button -1

Display of faults

Faults detected by the control system are shown on the display of the control unit. The control system classifies faults in three groups.

Procedure when faults are displayed

- Read off the fault shown on the display
 - Displayed faults which take up more than 2 lines can be viewed using the button -1
 - When several faults have appeared at the same time, you can use the [Right Arrow] to scroll through them
- Faults according to the data in Table 1. Remediating detected and displayed faults
- Acknowledge fault message by pressing the “ENTER” button for longer than 3 seconds. Acknowledgment is not required for position faults.

Recognised and displayed faults

Display	Possible cause	Remedy	By whom
F1...	Machine is not in start position	Press button “Start position” on the control panel for manual operation	Operator
F2...	Safety switch of side brushes defective	Check switch	Operator
F3...	Safety switch of roof dryer defective		

Fault diagnosis with the positioning light (option)

Recognised and displayed faults

Traffic light signal	Fault
Forwards 1 blink	Machine is not in start position
Forwards 2 blinks	Safety switch side brushes
Forwards 3 blinks	Safety switch roof dryer
Forwards 4 blinks	Air pressure too low
Forwards 5 blinks	Automatic frost protection (option) is activated

G Troubleshooting

Faults not detected by the system, not shown in the display			
Problem	Possible cause	Remedy	By whom
Gantry does not move into the rest position	EMERGENCY-STOP function has been activated. No supply voltage	Pull out appropriate "EMERGENCY-STOP" button	Operator
System stops during washing process	EMERGENCY-STOP function has been activated. No supply voltage	Pull out appropriate "EMERGENCY-STOP" button	Operator
Inadequate cleaning results	No, or insufficient, detergent supply No, or insufficient, air pressure in the supply line. Worm-out brushes	Check the filled level, if necessary add cleaning agent, vent metering pump, check air pressure, adjust if necessary (5 bar at maintenance unit manometer, Figure F.10). Item . a). Clean suction filter, check the lines for damage, check brushes, change if necessary.	Operator
Insufficient or no water ejected from nozzles	Blocked dirt trap. Insufficient water pressure. Blocked nozzles. Defective solenoid valve or cable.	Clean dirt trap. Check pumps and water pressure. Clean nozzles with compressed air. Check solenoid valves and supply lines electrical and water, and repair if required.	Operator
After washing is completed, water is still ejected from nozzles	Dirty solenoid valve	Clean solenoid valves	Customer Service
Inadequate drying results	Not enough drying agent. Wrong drying agent. No, or insufficient air pressure.	Increase metering, check the filled level, clean the suction filter, vent the metering pump. Use original drying agent from KÄRCHER, check the function of the fan.	Operator
Wheel cleaning brush does not rotate in both directions	Contact pressure too high	Reduce contact pressure at pressure reduction valve for wheel washing (DM, Chapter C.7).	Operator
Wheel cleaning brush is extended slowly, or not at all	No, or insufficient air pressure	Check air pressure (approx. 2 bar), if necessary adjust, increase contact pressure at pressure reduction valve for wheel washing (DM, Chapter C.7).	Operator
Wheel cleaning brush extends at the wrong time	Light barriers dirty	Clean light barriers, and check settings if required.	Operator/ Customer Service
Brushes become soiled too quickly	Drying agent and/or hot-wax dosage too high. Shampoo dosage too low.	Adjust shampoo dosage. Reset water volume for best results.	Operator

G Troubleshooting

Faults Not Detected by the System, Not Shown in the Display			
Problem	Possible cause	Remedy	By whom
Roof brush lowers itself too slowly	Throttle wrongly adjusted	Readjust throttle DR2 (see Fig. F.8)	Operator/ Customer Service
Roof dryer lowers itself too slowly		Readjust throttle DR4 (see Fig. F.6)	Operator/ Customer Service
Contact pressure of side brushes too high/low	Air pressure wrongly adjusted	Regulate air pressure (1.2 bar) at DM1 and DM2 (see Chapter C.7)	Operator/ Customer Service
Roof brush raises itself too slowly	Air pressure too low, throttle wrongly adjusted	Regulate air pressure at DM0 (5 bar), readjust throttle DR1 (see Chapter C.7)	Operator/ Customer Service
Roof dryer raises itself too slowly		Regulate air pressure at DM0 (5 bar), readjust throttle DR3 (see Chapter C.7)	Operator/ Customer Service
Oscillating side wash, high-pressure swivels too fast/slowly		Regulate air pressure at DM0 (5 bar), readjust throttles DR9...DR12 (see Fig. F.13)	Operator/ Customer Service
Nozzle pipes of the underbody wash swivel too slowly/fast or not at all	No air pressure or too little	Check air pressure in the feed line, if necessary adjust	Operator
	Swivel unit heavily contaminated by dirt	Clean swivel unit	Operator
	Throttles wrongly adjusted	Readjust throttles	Operator
The system stands in front of the vehicle with freely rotating brushes but the gantry travel does not start.	Brushes possibly not in alignment	Inform Customer Service	Operator
System not functioning	Fault in the voltage supply	For faultness voltage supply, provide for connected values (see Table D.4)	Operator/ trained electrician
	Too little or no air pressure	Regulate air pressure (5 bar) at DM0 (see Chapter C.7)	Operator/ Customer Service
	Pressure indicator set too high	Set pressure indicator DW (see Chapter C.7) to 4 bar	Operator/ Customer Service
Gantry has overshot limit switch for end of rail.	Limit switch wrongly set	Check distance between limit switch and switch flag (specified: 4 mm)	Operator/ Customer Service
Strong odours from recycled water	Too little or no disinfecting agent. Circulation pump is either not working at all or pumped volume is too low	Check disinfecting agent level, and fill up if required Increase dosage Check circulation pump, and increase capacity if required	Operator/ Customer Service

H Accessories**Cleaning agents and care products**

Application	Cleaning agent	pH value 1% solution
Shampoo, foam (option)	RM 811 ASF	6
Drying aid	RM 829	7

For technical personnel only**I System installation****I.1 Installing the system****Important!**

The system may be set up only by:

- Kärcher Customer Service engineers
- Kärcher-authorized persons

To forestall danger, familiarise yourself with the following regulations and guidelines before installing the system and before operating it for the first time:

- ZH 1/543 Richtlinien für Fahrzeugwaschanlagen (Guidelines for automotive washing systems)
- DIN 24 446 Safety of machines, automotive washing systems, safety regulation requirements, inspections (C-standard for setting the European machines guideline 89/392/EEC)
- VDE (German Association of Professional Electrical Engineers) regulations, specifically EN 60204 (VDE 0113)
- Local energy supply company regulations
- Current national legal regulations.

I.1.1 Wash bay requirements**Danger!**

Risk of injury from moving parts of the system. A minimum distance of 0.5 m must be maintained between force-moved system parts and the fixed wash bay (minimum bay dimensions, see table D.2).

When there is a risk of danger to people, property or animals, the system must be switched off immediately by pressing one of the "EMERGENCY STOP" buttons. "EMERGENCY STOP" buttons are located

- on the control unit
- on the control panel for manual operation (optional)
- on the wash card reader (optional), (12.1, Fig. C.2).

If the control panel or wash card reader are not installed immediately next to the entry to the wash bay, an "EMERGENCY STOP" button must be installed there by the operating company.

**Caution!**

Danger of stumbling in the wash bay. Places where there is a risk of stumbling should be made clearly visible with an illumination intensity of at least 120 lux.

For technical personnel only**I System installation****I.1.2 Packaging, storage****Packaging (when system dismantled)**

Dimensions:

3.90 m x 2.30 m x 2.25 m.

Weight: approx. 2000 kg

The weight is dependent on the accessory parts fitted.

Centre of gravity: central

Storage

To avoid damaging the electronic control system, the automotive gantry washing system should be stored as follows:

- Dry and frost-free inside a building
- Temperature: -4 °C to $+50\text{ °C}$
- Humidity: max. 90 %

For technical personnel only

I System installation

I.1.3 Transportation, unloading

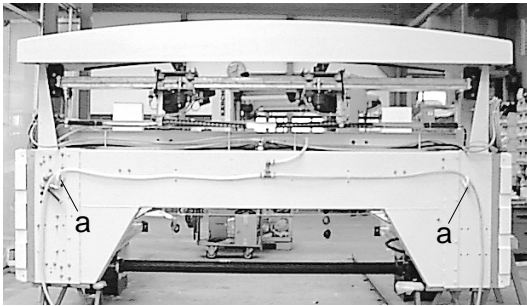
Transportation

All accessories forming part of the system are included in the package.

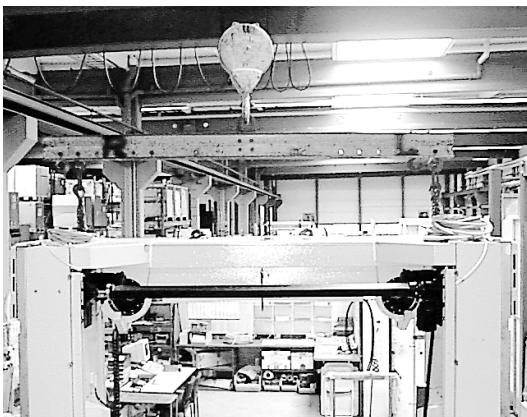
The lifting equipment for loading and unloading must have a minimum carrying power of 3.5 t.

If a fork lift truck is used, the length of the forks must be 1.90 m.

For lifting without a crate, there are two fastening points (a) for fastening the hoisting gear. The following diagram shows their position on the upper section of the system.



a Fastening points

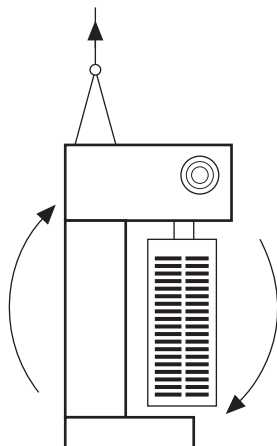


i Important!

To intercept lateral forces on the fastening points, a hoisting gear with a cross-bar must be used for lifting. A brace (wooden crossbar) must be jammed between the gantry columns at right angles to the direction of motion to stop the system from folding up when it is lifted.

! Danger!

When raised, the system tips forwards.



Transportation in a marine crate

If the system is delivered in a marine crate, the lid and side parts of the crate have to be removed to unload it. Having removed the crate parts, lift the system as described in the section "Without transportation crate".

For technical personnel only**Unpacking****I System installation****Caution!**

There is a risk of injury from protruding nails when the crate is being opened.

Take out the accessories packed between the gantry columns.

Check that the consignment is complete against the accompanying documents and check for possible damage during transportation!

The transport company must be notified in writing immediately if the transportation crate has suffered damage.

I.2 Creating a connection to the mains power supply**Danger!**

Dangerous voltage!

Electrical installation may be carried out only by a trained electrician in accordance with local standards.

Risk of electric shock!

- *The system may only be connected to a properly earthed current supply.*
- *All current-carrying parts in the work area must be protected from spray water.*

For connected values see Table D.4

I.3 Creating connections to mains water and drainage**Important!**

If the system is being connected to the drinking water supply, local regulations regarding isolation from the mains supply should be observed.

In Germany, the regulations to be observed are those of the DVGW, in particular DIN 1988.

For connected values see Table D.4

**Danger!**

Risk to the environment from waste water.

Local regulations should be observed with regard to the disposal of waste water.

For technical personnel only**I System installation****I.4 Preparing the system for use**

- Fill up containers for shampoo / foam (5.1) and drying aid (5.2) at pillar 2

- Bleed metering pumps (6):
 - start metering pumps as described in Chapter F
 - open bypass valves (c) in the metering pumps to be bled. Wait until there are no longer any air bubbles being passed through
 - close bypass valves
 - stop metering pumps.

- Functional test on the entire system
 - check every manual function
 - inspect wash brushes for correct rotational direction
 - check each wash programme for each type of vehicle at least once.

- Instruct personnel of the operating company.

***Important!***

Satisfy yourself that the service personnel have correctly understood all instructions.