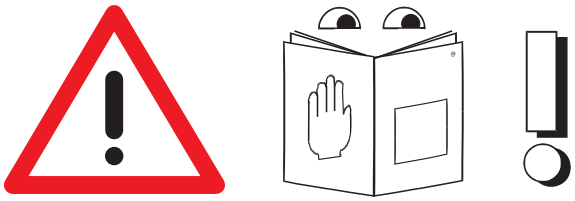


MULTICLEANER 7-53

Nilfisk
ALTO
Why Compromise

User Manual

107309941

Index

1 Introduction

1.1 Preface

We congratulate you on your new MULTICLEANER.

To get the most out of your new MULTICLEANER it is important that you read the user manual carefully through and follow the advice given about safety, operation and maintenance.

This safety and warning symbol indicates that the section concerned contains important safety rules and recommendations to prevent accidents.

Important 

Safety 

We reserve the right to alter the specifications.

2 Important information

2.1 Warranty conditions

Concerning warranty our general sales and delivery conditions apply.

We reserve the right to further technical developments.

2.2 Safety

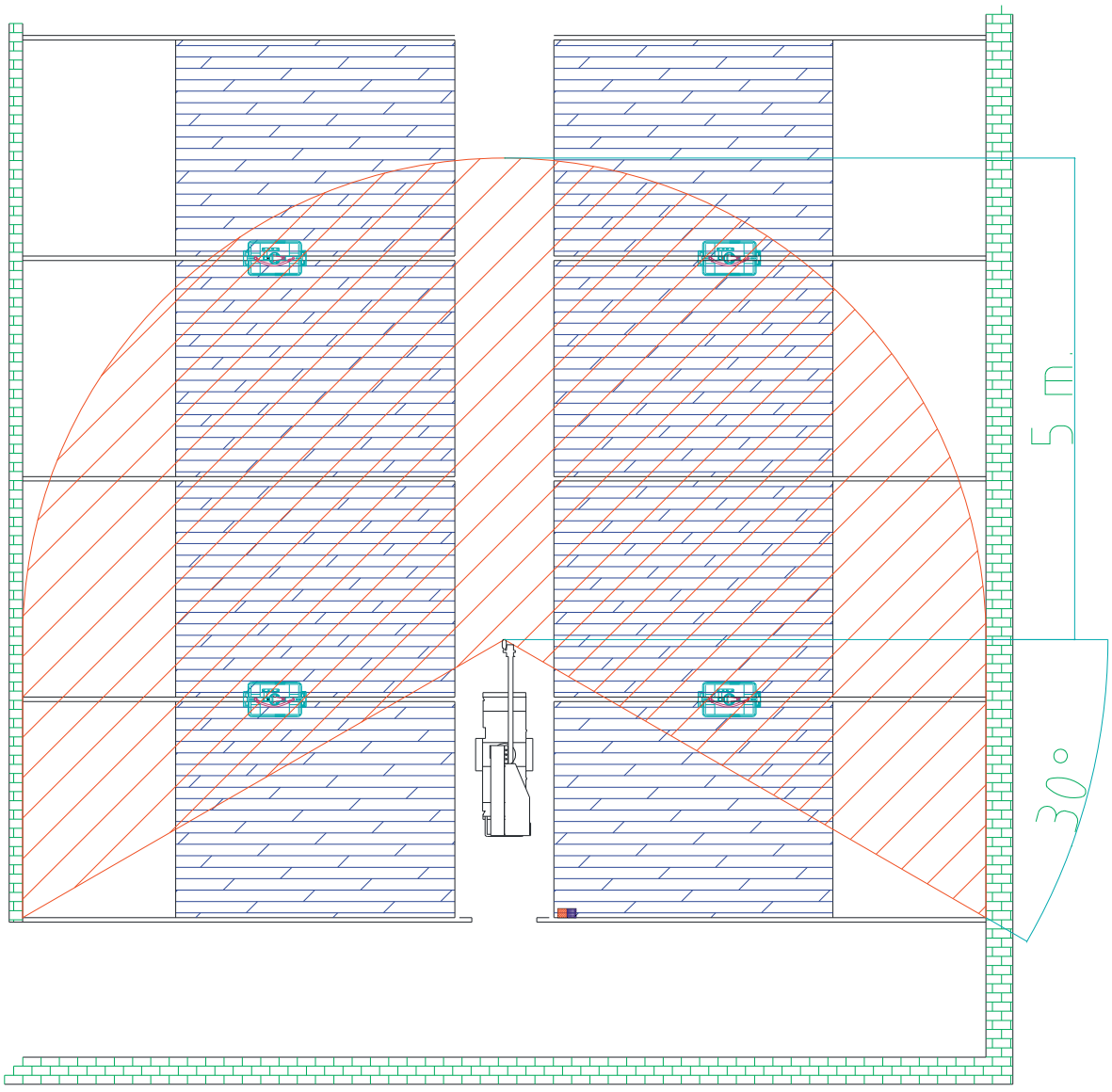
CAREFULLY READ THROUGH THIS USER MANUAL BEFORE STARTING TO USE THE ROBOT !

3 Application/operation

3.1 Safety

When the washing robot is in operation all shieldings must be in place. During automatic washing no persons must stay in the washing field of the robot (hatching). See illustration below.

Only persons who have been specially instructed must stay in the pig house section where the robot is working.



3.1.1 Warning sign on the door

The accompanying warning sign must be placed on the door leading to the pig house section where the automatic washing is taking place. The sign must be visible to any person who may have access to the pig house section.

If the sign is lost or if there is more than one access, a new sign can be ordered from Nilfisk-ALTO. Order no. 107307061.

3.1.2 Access to robot during operation

The robot must be placed so that the operator has always got access to the display and the control knobs without having to pass the robot during the automatic washing, meaning that the end of the robot where the display is placed must turn to the access side during operation.

3.1.3 Training of staff

Employees who are to operate the robot will beyond the written instructions always receive a verbal instruction from a staff member of Nilfisk-ALTO in connection with the delivery and starting up of a new robot.

4 Service

4.1 Safety

Always disconnect the electrical plug from the socket prior to service, maintenance, repair or other works on the washing robot.

Repairs to the control pen of stainless steel must be carried out by an electrician as it contains automatic fuses, contactor, emergency stop module and power supplies.

The control pen of plastic contains the control system and must only be serviced by a Nilfisk-ALTO service technician.

When working underneath the robot you should be very careful as it weighs 285 kg.

5 Description of plant

5.1 Operating principle

The MULTICLEANER is used for the cleaning of pig houses. It takes over most of the heavy, trivial and time consuming manual cleaning job. Using the robot the manual high pressure washing is reduced by up to 80%. The remaining 20% high pressure washing is quickly done because of the long soaking time of the impurities.

The control of the robot is automatic when the user has made a few choices on the display.

The washing sequency of the MULTICLEANER is programmed by the user before each cleaning. The user may adapt the washing sequency to achieve an optimum cleaning of the actual pig house section.

Distance and course of the MULTICLEANER is controlled by two ultrasonic sensors, which "feel" against the inventory in the aisle.

The washing arm consists of a vertical tower and a horizontal arm. The tower is mounted on a turntable on the chassis, which can rotate 90 degrees sideways proportional to the direction of movement. At the top of the tower the horizontal arm is mounted in a swivel. The tower and the arm can be locked in fixed positions in proportion to each other.

At the end of the horizontal arm the high pressure nozzle is mounted on a spindle stretching through the horizontal arm. The nozzle can rotate 360 degrees. The outermost part of the horizontal arm can rotate around its own spindle, and the angle of the water jet can be turned +/- 90 degrees in proportion to vertical position.

The high pressure nozzle turns like a fan forwards and backwards within a limited angle. The speed of the nozzle is variable, thus minimising the water consumption.

In order that the nozzle is washing at an optimum, it is important that the tower and the arm are adjusted so that the nozzle head is placed in the middle of the aisle and so close to the inventory and the floor as possible.

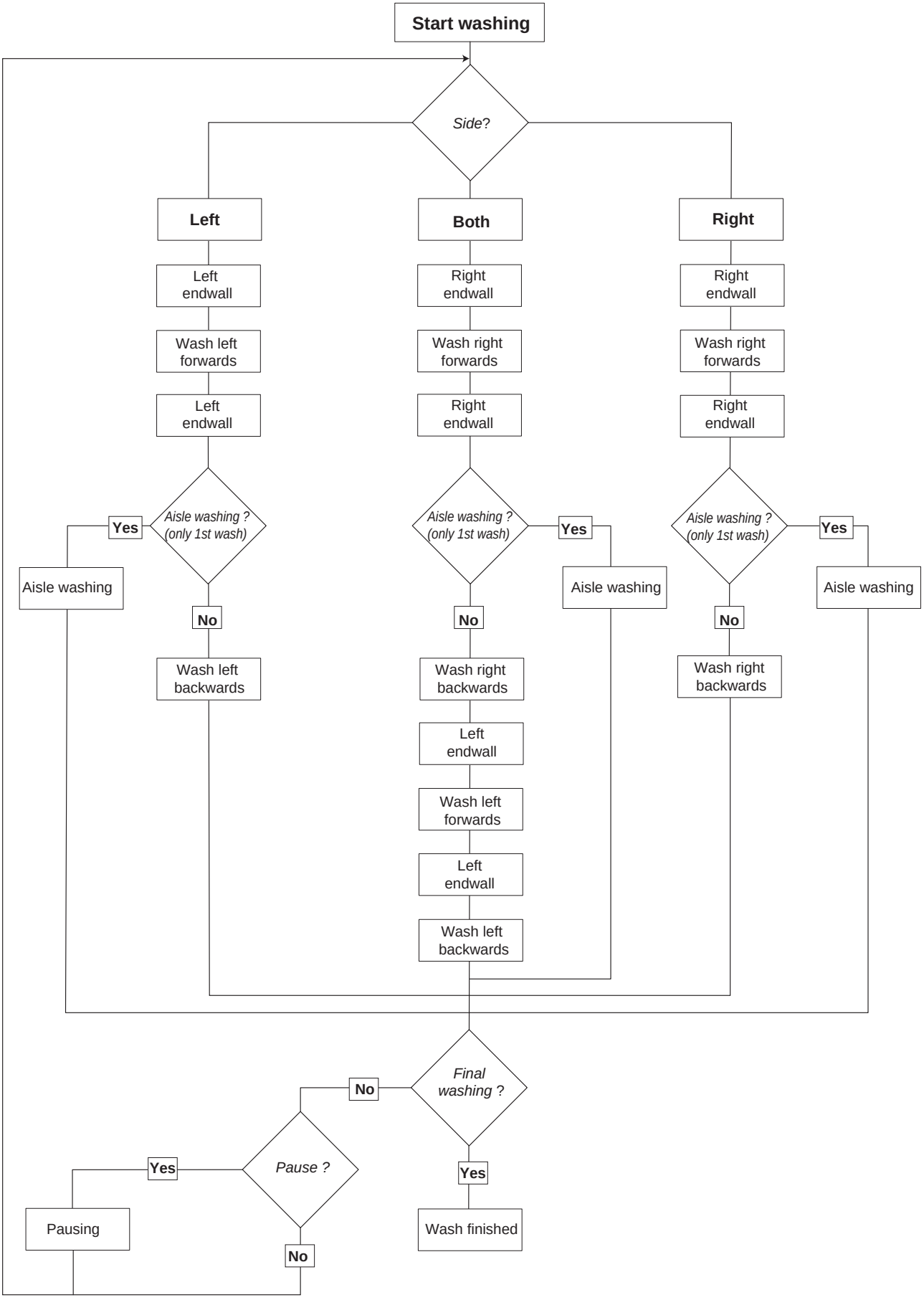
It is the responsibility of the user that the arm is adjusted so that it will not bump into the inventory of the pig house.

Stop-lists on front and rear bumper signal to the control unit in case of bumping assuming that the MULTICLEANER has reached the opposite end of the aisle, and the direction of movement will be changed and the next step of the washing sequence will be started.

5.2 Field of application

The MULTICLEANER is mainly intended for use in pig fattening houses, climate-controlled livestock buildings and farrowing houses. To optimise the washing result and minimise the water consumption, it will be an advantage to use a dustbinding or a soaking system to soak the pig house before using the MULTICLEANER. However, this is not required.

5.3 Automatic washing



5.4 Mechanics

5.4.1 Tyres

The driving wheels are fitted with rubber tyres in the size 4.00 x 6 on rims made in one piece with the toothed wheel in a synthetic material.
Stand wheels are solid rubber tyres on synthetic rims.

5.4.2 Nozzle

Special corrosion-resistant long distance pencil jet nozzle with 1/4" pipe thread and 14 mm hexagon. The nozzle opening is 1.5 mm.

5.4.3 Materials

The MULTICLEANER is mainly produced of corrosion-resistant, synthetic and rubber materials.

In a few cases it has not been possible to produce or require parts made of above-mentioned materials. Instead we have chosen other but also very durable parts to diminish wear and corrosion.

These materials have been chosen to protect the robot from the extremely tough environment (water and ammoniac fumes) in which it has to work and thus to avoid increased risk of stoppage because of corrosion, unnecessary wear etc.

5.4.4 Ultrasonic sensors

The MULTICLEANER features two ultrasonic sensors on the right side of the robot, which are used for regulation of direction and distance.

The sensors emit/pick up sound impulses and the controller then calculates the distance to the inventory in the aisle. It measures the time from the emission of the sound impulse till the pick up of the echo.
This information is then converted to a real distance.
If an echo has not been picked up within a short time because of missing inventory sides, the control will activate the alarm.

If the ultrasonic sensors are covered by a lot of dirt, the reliability may be affected. **Note!** Check that the two ultrasonic sensors are clean before starting the robot and that the gates into the individual pens are closed.

5.5 Components in the water supply

5.5.1 Water filter

Before the water valve there is a water filter with a rustproof strainer with a mesh size of 0.25 mm, which strains impurities out before they reach the water valve. The water filter should be cleaned/ checked each 100 operating hours.

5.5.2 Water valve

On the water inlet side a 24 VDC, solenoid valve is mounted. This valve is open or closed depending on the working phase of the machine. The function of the valve is to disconnect the water supply when the arm turns or the robot is in stand-by mode.
The valve is closed when the there is no voltage to the coil.

5.5.3 Flow switch

In extension of the water valve a flow switch is mounted, which continually checks the water supply. In case the water supply fails, if for instance the water hose comes off, a signal is transmitted to the control, which shuts down the MULTICLEANER and activates the alarm. Thus it is avoided that the pump unit breaks down. The flow switch has been adjusted from the factory.

5.6 Control

The control is mainly built up of a control card with related module based add-on cards.

5.7 Cable reel

The robot features a built-in automatic cable reel unwinding/winding up the power cable during operation and keeping it tight all the time dependent on the direction of travel, and running over of the cable is avoided. The cable reel carries 35 metres of cable.

During operation it is important that the cable is fastened to the concrete/slotted floor straight in front of the cable reel to ensure an even unwinding/winding up.

Do not lead the cable under the machine as the bending radius will then be too small.
A revolution counter has been built into the cable reel to avoid the cable from being pulled too far out.

Important! The cable reel must only be adjusted by a Nilfisk-ALTO service technician.

Important! If the pig house is longer than 35 metres, it must be divided into two washes. It is not allowed to connect an extension cable to the 35 metres of available cable on the cable reel to increase the operational range.

The power cable must not be pulled over a concrete floor, and the machine must not run over the cable according to the Heavy Current Regulation, section 204-1, §14, EN 60204-1.

5.7.1 Cable type

The cable mounted on the cable reel to supply the robot with current is the type Buflex 4G 2.5 square, which is a cable with a special armouring in the outer sheating.

Other cables on the machine are of the type SY, which are armoured/gnaw protected cables to avoid charges of mice among other things.

5.7.2 Cable strain relief

A cable strain relief has been mounted so that the CEE plug is not jerked directly. This relief must be fixed to the floor or the inventory while the robot is working.

5.8 Motor pump unit/ compressor

The pump unit is of the type Nilfisk-ALTO, C3. The pump yields a pressure of 195 bar and consumes 16.5 litres of water in the minute.

Reference is made to section 11 for further technical information.

An internal pressure relief valve has been mounted. Thus the pump will not retain the pressure if there is no consumption.

5.9 Motors/gear

5.9.1 Types

The motors are all 24 VDC mounted with angular gear and planetary gear respectively dependent on function and placement. All motors are additionally screened from water and dirt.

All toothed wheels are made of stainless steel.

5.10 Safety device
5.10.1 Emergency switch

The robot features an emergency switch in each end. Thus it will always be possible to interrupt all functions in case of an emergency. These press buttons are connected to an emergency module ensuring that no motors can be started until the user has made a deliberate action by re-setting the module. The module is re-set by pressing the arrow next to the display.

6 Requirements for the existing installation/inventory

6.1 Power supply

The machine must be connected to a CEE wall plug, 400 volts, 16 amp or extension cord from the same of at least 2.5 square millimetres.
The extension cord must only be used for supplying the robot and it must be fixed. It must not be used for the extension of the internal cable reel to increase the reach of the machine as the consequence will be that the cord is dragged across the concrete floor which is not allowed according to the Heavy Current Regulation, paragraph 204-1, §14, EN 60204-1. The robot must not be secured with more than 16 amp. If there is only a 32 amp wall plug available, the fuses must be replaced by 16 amp fuses.

6.2 Water

The required water volume is 16.5 l/min. The inlet pressure must be max./min. 10/1 bar and the water inlet temperature must not exceed 60°C. You should know that the warmer the water is on the inlet side, the faster the components in the MULTICLEANER will be worn out. Therefore these components must be checked more frequently than mentioned in the maintenance section if you use hot water.

Connect the water hose, ¾", by means of the quick coupling placed below the front bumper. The quick coupling also functions as a pivot joint always ensuring a natural hose run to minimise the risk of bending the water hose.

6.3 Running sands filter

If the connected water supply contains running sand, a running sand filter must be mounted. Damages or abnormal wear caused by running sand are not covered by the warranty or service contracts. Clean or replace the filter as needed.

6.4 Hose dimension /quality

The robot must be supplied with water from a two-layered ¾" water hose. No joints on the hose between the MULTICLEANER and the water outlet are allowed. For mounting of connecting branch and quick coupling use hose clips of stainless steel.

6.5 Ambient temperature, operation/storage

During operation the ambient temperature must always be above +10 degrees Celcius. During storage the temperature must never go below freezing point unless the MULTICLEANER has been frost protected as described in section **7.5.1.**

6.6 Inventory in aisle

The sides of the inventory in the aisle, towards which the MULTICLEANER regulates its course by means of the two ultrasonic sensors must be present and even. The ultrasonic sensors can be regulated up and down and must be set to touch on an even side. All gaps exceeding 50 mm in the inventory side should be covered. If the MULTICLEANER cannot detect the inventory side, it will proceed forwards for approximately 10 seconds. Then the MULTICLEANER will report an error because of a missing inventory side.

The end wall of the aisle against which the rubber bumpers of the MULTICLEANER are activated, must be plane and without any sharp objects which may puncture the bumpers. The height of the plane surface must be 450 mm at a minimum. Profiled end walls such as steel gates must be covered with a plate.

If the tower and the arm are placed in a position so that during the aisle washing they protrude backwards above the bumper, an object must be placed so that the rear bumper can be activated during backward movement.

6.7 Floor finish in aisle

In connection with washing of the aisle it is important that the dirt which the MULTICLEANER drags along can be led away in a natural way as the machine is progressing. A slotted floor is preferred off course, but if it is a solid floor, there must be a clearance under the gates of 40 mm at a minimum. If it is a combination of a slotted and a solid floor, a clearance below the gates is not necessary.

Note! Large amounts of muck and foreign bodies as for instance remains of concrete and stones must be removed before starting the cleaning.

6.8 Pens

The optimal layout of a pen will be :

The depth of the pen does not increase 4.8 m.
The plastic inventory and the latch do not exceed 1000 mm in the height.
The stomas are perpendicular to the aisle.
The width of the aisle is 800 mm.
Stomas in the aisle.

Automatic feeders, down-leads and water pipes are placed at least 2 m inside the pen from the front edge of the inventory side in the aisle, enabling the washing arm to reach the middle of the pen.

On potential rest areas to the stoma area there is a minimum gradient of 3%.

3/4" water connection at one of the ends of the aisle. Availability of 17 l water per minute.

CEE-plug at the end of the aisle, 400 V / 16 A.

The washing arm has an operational range of 1000 mm from the front edge of the inventory side in the aisle when locked in the inmost position and an operational range of 2000 mm when locked in the outmost position.

7 Operation

7.1 Safety during the application of the MULTICLEANER

When using the MULTICLEANER all existing national regulations must be observed.

No other persons than the one using the MULTICLEANER must stay in the area where there is a risk of being struck by the water jet. The user must make sure that he/she is standing firmly and with sufficient space around enabling him/her to take a sensible work posture.
Use flexible and close-fitting footwear with nonslip soles.

Do not use the MULTICLEANER on a ladder unless equipped with a working platform with a railing or unless precautionary measures have been taken which provide the same security at a minimum.

Hold spray lance or nozzle with both hands and do not block the dead man's function.

A relief in the shape of a ergonomic and suitable shoulder brace or the like must be used if the work lasts more than half an hour or if the work is performed in a stressing working posture.

Never direct the water jet towards electric installations risking that the jet will become conductive.

Persons working with the MULTICLEANER must also:

Have a good knowledge of the safety functions of the machine, equipment and care.

Be well informed about the safety and health related requirements applying to the operation of the robot.

Have acquired a safe working technique protecting against accidents and hazards to health during the work.

It is the responsibility of the employer to make sure that all persons operating the MULTICLEANER meet the above-mentioned three requirement.

7.2 Installation

7.2.1 Frost in the MULTICLEANER

Do not operate the robot if it has been exposed to frost without having been frost protected. Then at first let it thaw. If parts of the motor / motor pump unit are frozen, the safety valve will open and the pump block will burst.

7.2.2 Placing of the robot in the aisle

The robot must be placed so that the operator will always have access to the display and the knobs during the automatic operation without having to pass the robot, meaning that the display end of the robot must turn to the access side during operation.

Lead the robot into the aisle ensuring that the distance between the aisle and the right driving wheel is 5-10 cm.

7.2.3 Laying/connection of water hose

The MULTICLEANER is fitted with a pivot joint/quick connector placed under the front bumper for connection of a ¾" water hose for the supply of water to the high pressure washer.

The water hose between the water tap and the MULTICLEANER must have a minimum length of:

Minimum length of water hose = length of aisle + 3 metres

It is assumed that the water tap is placed at the end of the aisle.

Check that the water hose is not twisted before starting the operation as this may lead to stoppage.

Place the water hose parallel to the inventory side on the opposite side of the sensors to avoid that the MULTICLEANER runs over the water hose.

7.2.4 Fixing of cable in the aisle

Connect the electric plug on the cable reel to the power take-off, 3x400V, 16A at the end of the aisle. The cable must be centred and fixed with the cable relief in front of the cable reel to ensure an even winding up / unwinding during operation. At the same time the cable between the cable relief and the power take-off will be relieved. Check that the cable is tense before starting the machine.

Note ! The cable reel provides 35 m cable. Check that the travel length of the MULTICLEANER is consistent to the length of the cable on the drum. This is done by connecting the CEE plug to the power take-off and centre and fix the cable to the floor in the driving aisle in the front of the cable reel. Manually push the machine forwards until there are approximately two turns left on the cable reel and then mount stop plate in front of the machine. Pull the machine backwards to starting position. Now the washing can be started.

It is the responsibility of the user to make sure that there is an obstacle to activate the front bumper at max. 35 metres.

7.2.5 Adjustment of washing arm

The optimum position of the washing arm is that the nozzle head is centred over the pen with the horizontal arm as close to vertical position as possible. It may be necessary to adjust the arm differently in order to provide for the inventory.

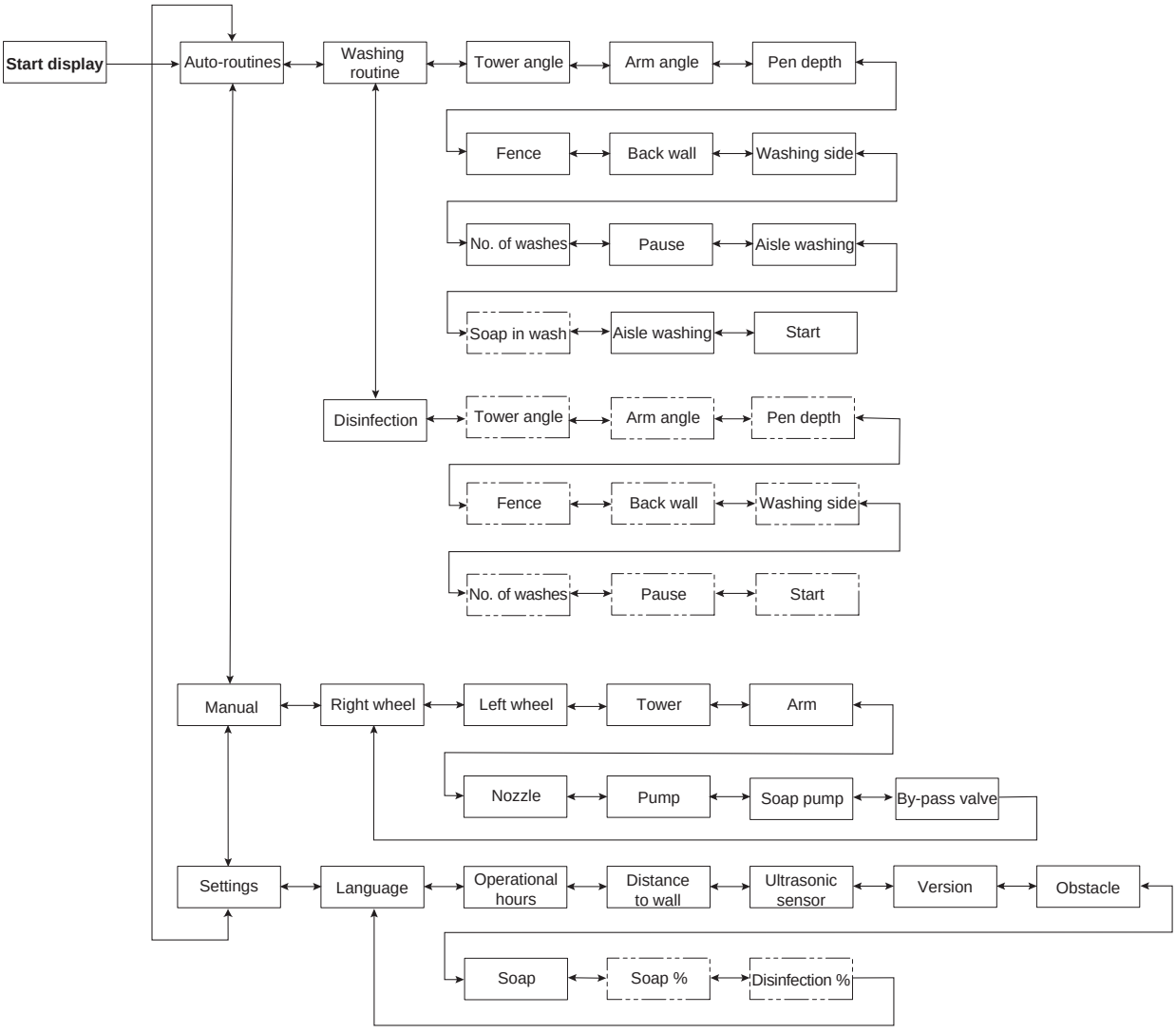
Note! It is the responsibility of the user that the washing arm is adjusted so that it does not collide with feed / water pipes or the like during operation.

7.2.6 Engagement of propulsion wheels

The gear motors for the driving wheels are engaged by means of two handles placed on each side of the chassis. The handles can be placed in two positions. In the upper position the gear motors are not engaged, which position is used during transport. In the lower position the gear motors are engaged, which position is used during operation.

7.3 Menu

The diagram below figures the menu of the MULTICLEANER.



NB: Only soap/disinfection option

By means of the arrows the user can get around in the menu system. When the MULTICLEANER has been connected to the power supply, it will be ready for operation after 30 sec. Then the display will show a start-up screen, on which the user will be asked to press arrow the right to initiate the MULTICLEANER.

Now the user has entered the main menu and it will be possible to select between 3 menu options using arrows up and down.

- **Auto-routines**
  This menu option is used for programming the washing sequence.

- **Manual control**
  This menu option can be used for controlling the MULTICLEANER manually.

- **Settings**
  This menu option can be used for making changes in the configuration of the MULTICLEANER.

Submenu:

They user can enter and exit the submenus by pressing the arrows to the right and the left. Using the arrows up and down, the values in the submenus can be changed.

Washing routine:

Tower angle:	Select the hole number in which the tower is placed.
Arm angle:	Select the hole number in which the arm is placed.
Pen depth:	Select pen depth measured from the fence to the back wall of the pen.
Fence:	Select washing height of fence.
Back wall:	Select washing height of back wall.
Washing side:	Select washing of either right, left or both sides.
No. of washes:	Select the number of washes you want to have done.
Pause:	Select pause between each washing.
Aisle washing:	Select if you want washing of the aisle.
Start:	By pressing arrow to the right, the settings of the washing sequence are saved and the MULTICLEANER will start up the washing sequence.

Soap/disinfection option:

If this option has been mounted on the MULTICLEANER, it must be activated in the menu "Settings" under "Soap". When this option is activated, the soap and disinfection solution can be set in the menu "Settings" and a soap application menu will appear in the washing routine.

Obstacle detection option:

If this option has been mounted on the MULTICLEANER, it can be activated and deactivated in the menu "Settings".

7.4 Cleaning of robot
7.4.1 General

After use, the robot must be cleaned. This can be done with a high pressure washer. Never point the high pressure jet directly at the internal parts of the MULTICLEANER. Always make sure that the ultrasonic sensors on the side of the MULTICLEANER are clean.

Important: The high pressure water jet must never point directly at electricity boxes, wires or ultrasonic sensors. It is also important that the two electricity boxes are always kept closed.

7.5 Storage
7.5.1 Frost protection

The best frost protection will be to store the MULTICLEANER in a frost free area. If not possible, the following precautions must be taken to protect the motor/pump unit against frost.
Lead the water inlet hose into a 5 l container with an anti-freeze.
Under manual control select HPW and press arrow up to activate the pump.
After approximately 5 sec. the anti-freeze has reached the nozzle of the horizontal arm.
Now press arrow up to deactivate the pump again.

The anti-freeze can be collected and re-used.

7.6 Transport
7.6.1 Trailer

When transporting the MULTICLEANER on a trailer or in a car, it must be placed so that its weight is evenly distributed on the transporting axles. Its dead weight is 285 kg. If the outdoor temperature is below +2 degrees, the MULTICLEANER must be frost protected as described in section 7.5.1.

Note: The gear of the machine must not be engaged during transport.

7.6.2 Application of ramps/ winches

If applying chutes these must be correctly mounted on the truck bed so that the contact surface is close to the edge of the truck bed. Thus the biggest contact surface will be supported by the truck bed. The chutes must be approved for carrying the weight of the MULTICLEANER at a minimum (285 kg).

The trailer or the vehicle must have a winch so that the MULTICLEANER can be safely loaded/unloaded without getting out of control.

7.6.3 Fastening during transport

Use band lashings/polyester bands for fixing of the MULTICLEANER during transport. Place a chock under the wheels.

Note! The MULTICLEANER must be secured during transport.

8 Operation

8.1 Indicator lamp

The MULTICLEANER features an indicator lamp on the horizontal arm indicating the working condition of the robot.

Gone off: : The MULTICLEANER must be programmed.

Flashing light: : Auto-routine in progress.

Constant light: : The MULTICLEANER has finished the auto-routine or it is in error-proof condition - see list of alarms.

9 Maintenance

9.1 General

Always visually check the robot before starting it up. If you find loose shields or any other loose parts, these must be mounted/fixed again to avoid stoppage and worsening of the fault. If the cables or the like are damaged, do not start up the MULTICLEANER until the damage has been fixed.

9.2 Maintenance procedures

9.2.1 Service interval on motor/pump unit.

Check the following:

	Weekly	Each 100 hours of operation	Each 6 months or each 500 hours of operation	As required
Check oil level	●			
Renew oil			●	
Clean high pressure nozzle				●
Clean water filter	●			
Replace o-rings in banjo bolt in nozzle head		●		
Inspection of pressure in tyres	●			

The life of the various components in the pump very much depends on the number of particles in the water supply.

9.2.2 Oil change

The pump oil must be replaced after max. 500 hours of operation, however at least each 6 months. If water in the oil is observed, replace the oil and refill with oil of the type Castrol Alphasyn T 150.

9.2.3 Inspection of long distance nozzle

Normally the long distance nozzle can only be checked visually as it requires a special equipment to measure it up. If the spray is very diffuse and not concentrated as usually, the reason may be that it is either clogged up or worn.

9.2.4 Cleaning of filter in dirt collector

Before the water valve there is a water filter with a stainless strainer with a mesh size of 0.25 mm filtering out impurities before they reach the water valve.

Clean/check the water filter each week or for each 100 operating hours. This is easily done by using a ratchet wrench with a 24 mm head and a long adapter and loosening the nut for the dirt collector from below. If not possible an alternative solution will be to loosen the union nut of the 3/4" union, remove the hose clamp and the water hose between the flow switch and the motor/pump unit and then dismount the tube support. Now the complete unit with components for the water supply can be turned around and the nut for the strainer dismounted.

Rinse/clean the strainer and remount in reverse order. If the strainer cannot be cleaned, it is possible to buy one separately. It is not necessary to replace the complete dirt collector.

9.2.5 Inspection of pressure in tyres

The air pressure in the pneumatic tyred wheels must be approximately 2.5-2.8 bars. There must be a clearance between the concrete floor and the underside of one set of the supporting wheels of 2.5-3 cm, when the MULTICLEANER rests on the two other set of wheels.

9.2.6 Banjo bolt at the nozzle head

O-rings and back-up-rings on the banjo bolt at the nozzle head must be lubricated each 100 operating hours and replaced at regular intervals.

9.2.7 Lubrication

Lubrication must be made each 200 operation hours.
Shafts for the driving and supporting wheels of the MULTICLEANER must be lubricated with ordinary lubricant grease. Positioning bolts, quick connectors, movable segments in the arm, hinges and the entry of the tow handle must be lubricated with a lubricant containing teflon. The easiest way out will be to use a spray with the lubricant.

9.2.8 Inspection of initial tension of the springs in the cable reel

Inspection of the initial tension of the cable:

If 5 metres of cable have been laid out, the springs in the reel must provide a tractive effort of 4 kg at a minimum corresponding to a tractive effort of approximately 8.5 kg at a layout of 30 metres.
Let a Nilfisk-ALTO service technician set the initial tension of the cable reel.

The life of the springs in the cable reel is approximately 5,000 hours and the life of the collector ring is approximately 12,000 hours.

10 Service

10.1 Service visit

A service visit must be paid after the first 50 hours of operation and then for each 500 hours of operation according to the hour counter. These service visits are important as neglect may cause stoppage causing injury to incompetent persons.

The service check must be made by an authorized service technician from Nilfisk-ALTO.

Any change of the machine must only be made by persons authorized by the supplier to evaluate whether the change will comply with the requirements of the EU Machinery Directive and who can issue an EU Declaration of Conformity if required.

When ordering spare parts or calling concerning service questions, please state the type and serial number of the robot. This information can be found on the model tag of the MULTICLEANER.

10.2 Trouble-shooting/ correction

When pressing the arrow to the right, the error will be re-set and the MULTICLEANER will resume the auto-routine. If a problem occurs several times, call a service technician.

10.2.1 Error list

Error code	Meaning	Possible errors	Correction
2000	Overcurrent on a motor	This error occurs if a motor is briefly overloaded	Check whether the motor works when operated manually. If the motor is defective, call a service technician.
2001	-	-	-
2002	No aisle side for 10 sec.	Too big gaps in inventory side Gates not closed	Check inventory side. Close gates.
2003	-	-	-
2004	Low oil level	Oil level too low. Pump defective.	Refill with Castrol Alphasyn T 150 oil. Call a service technician.
2005	Insufficient water supply	Water pressure too low Hose jammed Flow sensor not adjusted correctly	Mount a feed pump - can be done by a service technician. Fix the hose. Call a service technician.

Error code	Meaning	Possible errors	Correction
2006	Cable pulled too far out	Depth of pig house too long	Pull the MULTICLEANER backwards. Make sure that the cable is not pulled out more than 35 m.
2007	Pump too hot	Pump overheated	Call a service technician.
2008	-	-	-
2009	Emergency stop activated	One of the two emergency stops has been activated	Make sure that both emergency stops are deactivated.
2010	FPGA in safe mode	Error in control system	Call a service technician.
2011	Both bumpers are activated at one time	Bumper system defective	Call a service technician.
2012	Front bumper activated more than 10 sec.	Front bumper sticks	Activate the front bumper repeatedly by hand. If this does not solve the problem, call a service technician.
2013	Rear bumper activated more than 10 sec.	Rear bumper sticks	Activate the rear bumper repeatedly by hand. If this does not solve the problem, call a service technician.
2014	Tower cannot turn right	Object to the right	Remove object to the right.
2015	Tower cannot turn left	Object to the left	Remove object to the left.
2016	The MULTICLEANER sticks	Bumper has not been activated for 3 hours	Extricate the MULTICLEANER and resume the auto routine.
2017	Tower position unknow for 3 min.	Tower sensor not adjusted Tower sensor defective	Check that the tower sensor works. Check that the tower sensor has been correctly adjusted. Call a service technician.
2018	Arm position unknown for 3 min.	Arm sensor not adjusted Arm sensor defective	Check that the arm sensor works. Check that the arm sensor has been correctly adjusted. Call a service technician.
2019	Nozzle position unknown for 3 min.	Nozzle sensor not adjusted Nozzle sensor defektive	Check that the nozzle sensor works. Check that the nozzle sensor has been correctly adjusted. Call a service technician.
2020	Tower sensor left active for 30 sec.	Sensor not adjusted correctly Sensor defective Sensor cable defective	Adjust sensor. Call a service technician. Call a service technician.

Error code	Meaning	Possible errors	Correction
2021	Tower sensor right active for 30 sec.	Sensor not adjusted correctly Sensor defective Sensor cable defective	Adjust sensor. Call a service technician. Call a service technician.
2022	Arm sensor bottom active for 30 sec.	Sensor not adjusted correctly Sensor defective Sensor cable defective	Adjust sensor. Call a service technician. Call a service technician.
2023	Arm sensor top active for 30 sec.	Sensor not adjusted correctly Sensor defective Sensor cable defective	Adjust sensor. Call a service technician. Call a service technician.
2024	Nozzle sensor bottom active for 30 sec.	Sensor not adjusted correctly Sensor defective Sensor cable defective	Adjust sensor. Call a service technician. Call a service technician.
2025	Both tower sensors active	Sensor not adjusted correctly Sensor defective Sensor cable defective	Adjust sensor. Call a service technician. Call a service technician.
2026	Both arm sensors active	Sensor not adjusted correctly Sensor defective Sensor cable defective	Adjust sensor. Call a service technician. Call a service technician.

10.2.2 Other errors

Error symptom	Possible errors	Correction of error
Water supply to the nozzle is not being stopped although the high pressure washer has been shut down.	Dirt in water valve.	Clean water valve by dismounting the cover and cleaning the diaphragm and the valve seat. Do the same to the pilot valve (the small cover at top of the valve. Blow through the hole to the pilot valve to make sure that this duct is free of dirt.

If none of the above-mentioned corrections work, call a service technician.

11 Specifications

11.1 Robot and motor/pump unit

Weight	kg	285
LxBxH	mm	1,500 x 615 x 1,000
Power input	kW	6.8
Power supply	A	400 V, 16 A
Water volume, min/max.	l/h	1,000 - 1,070
Pressure of inlet water, min/max.	bar	1 - 10
Max. temp. inlet water	°C	60
Pump pressure	bar	195
Long distance nozzle	mm	1.5
Nozzle, manual cleaning		0500
Effective cleaning depth	mm	4,800
Reach of arm from edge of inventory, min.	mm	1,000
Reach of arm from edge of inventory, max.	mm	2,000
Length of cable on reel	mm	35,000
Noise level db(A), (EN 60704-1), (EN ISO 3746)	Lpa/Lwa	83/96

12 EU Declaration of conformity

CE

EU-declaration of conformity

Product:	High pressure washer	
Type:	MULTICLEANER 7-53	
Description:	400 V 3~, 50 Hz - IP X5	
The design of the unit corresponds to the following pertinent regulations:	EF-Machine Directive EF-Low-voltage Directive EF-direktiv vedr. elektro-magnetisk fordragelighed	2006/42/EC 2006/95/EC 2004/108/EC
Applied harmonised standards:	EN 60335-2-79 (2006), EN 55014/108/EC EN 55014-2 (2001), EN 61000-3-2 (2006)	
Applied national standards and technical specifications:	EN 60335-2-79	

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Hadsund, 01.07.2010

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