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User manual NILFISK MV 4500
User guide NILFISK MV 4500
Operating instructions NILFISK MV 4500
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Instruction manual NILFISK MV 4500

MV 4500



BETRIEBSANLEITUNG **D**
MANUEL D'UTILISATION **F**
USER MANUAL **GB**
GEBRUIKSAANWIJZING **NL**



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Manual abstract:

The User Manual must be kept near the machine, inside an adequate case, away from liquids and other substances that can cause damage to it. A), supplied with the machine, certifies the machine conformity with the law in force. NOTE One copy of the original Declaration of Conformity is provided together with the machine documentation. NOTE If the machine is approved to be used on public roads, the machine is supplied with a special Certification of Conformity. The machine model and serial number are marked on the identification plate (1, Fig. a). The machine model year is written in the Declaration of Conformity and it is also indicated by the first two figures of the machine serial number. This information is useful when requiring machine spare parts. Use the following table to write down the machine identification data.
• • • Spare Parts List (supplied with the machine): 33016726 Service Manual (that can be consulted at Nilfisk Service Centers): 33016728 Wiring diagram (CD supplied with the machine): 33017836 All necessary operating, maintenance and repair procedures must be performed by qualified personnel or by Nilfisk Service Centers.

Only original spare parts and accessories must be used. Call Nilfisk for service or to order spare parts and accessories, specifying the machine model and serial number. Nilfisk constantly improves its products and reserves the right to make changes and improvements at its discretion without being obliged to apply such benefits to the machines that were previously sold. Any change and/or addition of accessory must be approved and performed by Nilfisk. The following symbols indicate potentially dangerous situations.

Always read this information carefully and take all necessary precautions to safeguard people and property. The operator's cooperation is essential in order to prevent injury. No accident prevention program is effective without the total cooperation of the person responsible for the machine operation. Most of the accidents that may occur while working or moving around are caused by failure to comply with the simplest rules for exercising prudence. A careful and prudent operator is the best guarantee against accidents and is essential for successful completion of any prevention program.

It indicates a dangerous situation with risk of death for the operator. Pay careful attention to the paragraphs marked by this symbol. NOTE It indicates a remark related to important or useful functions. CONSULTATION It indicates that it is necessary to consult the User Manual before performing any procedure. Specific warnings and cautions to inform about potential damages to people and machine are shown below. DANGER! This machine must be used by properly trained and authorised personnel only. Not be under the effect of substances that alters the nervous system (alcohol, psychopharmaceuticals, drugs, etc.) Remove the ignition key before performing any maintenance/repair procedure. This machine must be used by properly trained and authorised personnel only. Children or disabled people cannot use this machine.

Do not wear jewels when working near moving parts. Do not work under the lifted machine without supporting it with safety stands. Do not operate the machine near toxic, dangerous, flammable and/or explosive powders, liquids or vapours. Be careful, fuel is highly flammable. Do not smoke or bring naked flames in the area where the machine is refuelled or where the fuel is stored. Refuel outdoors or in a well-ventilated area, with the engine off. Do not fill the fuel tank to the top, but leave at least 4 cm from the filler neck to allow the fuel to expand. After refuelling, check that the filler cap is tightly closed. If any fuel is spilled while refuelling, clean up the affected area and allow the vapours to dissipate before starting the engine. Avoid contact with skin and do not breathe in fuel vapours.

Keep out of reach of children. Before performing any maintenance/repair procedure remove the ignition key, engage the parking brake and disconnect the battery. When working under open hoods/lids, make sure that they cannot be closed by accident. When performing maintenance procedures with the lifted cargo box/hopper/water tank, fix it with the support rod. Do not keep the engine running in a closed area.

Do not lay any object on the engine. Before working on the engine turn it off. To prevent the engine from starting accidentally, disconnect the battery negative terminal. See also the SAFETY RULES in the Diesel Engine Manual, which is to be considered an integral part of this Manual. Do not use the machine for purposes different from the ones for which it has been designed.

While using this machine, take care not to cause damage to people and property. Do not leave the machine unattended with the parking brake disengaged. Do not bump into shelves or scaffoldings, particularly where there is a risk of falling objects. Pay careful attention when lifting and emptying the cargo box/hopper. Empty the cargo box/hopper on a solid and level ground. Adjust the operation speed to suit the ground conditions. Carefully read all the instructions before performing any maintenance/repair procedure. Take all necessary precautions to prevent hair, jewels and loose clothes from being caught by the machine moving parts. Protect body parts (eyes, hair, hands, etc.) Avoid contact with battery acid, do not touch hot parts.

Do not allow the brooms to operate while the machine is stationary to avoid damaging the ground. In case of fire, use a powder fire extinguisher, not a water one. Do not wash the machine with corrosive substances. Do not use the machine in particularly dusty areas. Do not tamper with the machine safety guards and follow the ordinary maintenance instructions scrupulously. Otherwise, request assistance from the authorised personnel or from an authorised Service Center. In case of part replacement, order ORIGINAL spare parts from an authorised Dealer or Retailer. To ensure the proper and safe operation of the machine, have the scheduled maintenance, detailed in the relevant chapter of this Manual, performed by the authorised personnel or an authorised Service Center. The machine must be disposed of properly, because of the presence of toxic-harmful materials (oils, batteries, plastics, etc.), which are subject to standards that require disposal in special centres (see Scrapping chapter).

If the machine is used according to the instructions, the vibrations are not dangerous.



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Vibration level at the operator's body is 0.31 m/s² (ISO 2631-1) at maximum working speed (1,850 rpm). While the engine is running the silencer heats up. Do not touch the silencer to avoid serious scalding or fire.

Do not run the engine if the oil level is low, to avoid damaging it seriously. Check the oil level with the engine off and the machine on a level surface. Do not run the engine if the air filter is not installed, to avoid damaging it. The engine coolant lines are under pressure. Perform any check when the engine is off and after having allowed it to cool down.

Even when the engine is cool, pay careful attention when opening the expansion tank. The engine is equipped with a fan; do not stand near the engine when it is hot, because the fan can start operating even if the machine is off. All diesel engine servicing procedures should be performed by an authorised Dealer. Only use original spare parts or parts of matching quality for the diesel engine. Using spare parts of lower quality can seriously damage the engine. See also the SAFETY RULES in the Diesel Engine Manual, which is to be considered an integral part of this Manual. Carbon monoxide (CO) can cause brain damage or death. The internal combustion engine of this machine can emit carbon monoxide. do not inhale exhaust gas fumes. Only use indoors when adequate ventilation is provided, and when an assistant has been instructed to look after you.

Upon delivery, check that the packing and the machine were not damaged during transportation. In case of visible damages, keep the packing and have it checked by the carrier that delivered it. Call the carrier immediately to fill in a damage claim. This machine has been designed and built as multipurpose vehicle, to be used by a qualified operator to perform maintenance operations in urban environments by using proper equipment, under safe operation conditions. Forward, backward, front, rear, left or right are intended with reference to the operator's position, while on the driver's seat (41, Fig. Armrest mounting knob Throttle lever Parking brake Brake pedal Accelerator pedal Ignition key Speaker prefitting Left/right broom dust control system nozzle valve 3rd broom dust control system nozzle valve Suction inlet dust control system nozzle valve Forward/reverse gear selector Cigarette lighter Audio unit housing (prefitting) Ceiling light Can holder Electrical panel (*) Quick coupler control switch Brake fluid tank Joystick Skirt opening push-button 21. Hazard warning light switch Combination switch (**) Cab air flow control knob Climate control system activation and temperature control knob Heating temperature control knob Driver's seat Passenger's folding seat Seat horizontal position control lever Seat springing control knob Seatback control lever Salt spreader control panel housing Pocket Tool box Drive system electronic board control potentiometer Seat height control lever Vent Armrest Identification plate Left side turn signal indicator light 2. Engine oil pressure warning light 5. Clogged oil filter warning light 11. Quick coupler pressure adjuster 15.

Check engine warning light 27. Hydraulic system oil temperature warning light 31. Right side turn signal indicator light 34. Low fuel warning light 39. Running light indicator light 40.

Dust control system tank water level warning light 41. Salt spreader, snow brush or road washer system pump speed adjustment (if equipped). Electrical panel functions: F3: Fuse box (see Electrical Fuses paragraph) F4: Fuse box (see Electrical Fuses paragraph) F6: Fuse box (see Electrical Fuses paragraph) K1. 4: Windscreen washer return relay K2: Cab accessory power supply relay K6: Working light relay K8: Line relay K185: Hydraulic system disabling relay P7: Quick coupler control electronic board P8: Function-accessory electronic board P10: Engine accessory electronic board P11: Drive system electronic board X9: Headlight switching control unit X41: Windscreen wiper intermittence Combination switch functions: High beam on by pressing the lever (1, Fig. Right turn signal on by bringing the lever (1, Fig.

forward. Left turn signal on by bringing the lever (1, Fig. On the first line the following information appear: Hour counter Odometer km Tripmeter trip Press the switch (23, Fig. The second line shows the speedometer km/h. Left front water tank lower fastener 39. Right front water tank lower fastener 17.

Dimensions and weights Machine length, cargo box version Machine length, road sweeper version Machine length, road washer version Salt spreader equipment length Snow blade length Snow brush length 3rd broom length Machine width, cargo box version Machine width, road sweeper version Machine width, road washer version Salt spreader equipment width Sntch lighting, hydraulic system switch lighting, broom rotation switch lighting, dust control system switch lighting, suction inlet switch lighting, machine lifting switch lighting, diagnostic switch lighting, working light switch lighting, differential lock switch lighting, rear working light switch lighting, running light switch lighting, running light indicator and dashboard lighting fuse (7. 12: K1-3, K185 relay, machine start enabling, dashboard power supply, combination switch control unit power supply fuse (7. 5 A) F3. 13: Differential lock switch power supply fuse (10 A) F3.

14: Control panel, +15 audio unit, monitor power supply fuse (10 A) F3. 8: Brake fluid level bulb, brake light microswitch, switch (P), fuel float, headlight switching control unit power supply fuse (7. 10: Leaf spring height control switch power supply and speed safety relay fuse (7. 11: EDC control unit enabling relay and water-in-fuel sensor power supply fuse (5 A) F6. 13: Rear equipment power supply, water tank line and water level check fuse (7. 5 A) F6. 14: Broom selection switch, joystick, quick coupler control switch and program selection control unit power supply fuse (10 A) F6. 15: 3rd broom tilting and broom widening switch power supply fuse (10 A) F6. 16: Door lock switch, suction inlet lowering and left/right broom rotation switch, cargo box/hopper/water tank lifting switch and water pump switch power supply fuse (10 A) F6. 17: Thermostarter relay fuse (10 A) (42, Fig.

F) F7: Accessory power supply fuse (ignition key circuit) (60 A) (52, Fig. In addition to the standard components, the machine can be equipped with the following accessories/equipment, according to the machine specific use: Road sweeper version: Snow brush or snow blade Camera(*) (optional) (*) Brooms with harder or softer bristles are available, according to the ground conditions.



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On some points of the machine there are some adhesive plates indicating: **⚠ DANGER ⚠ WARNING ⚠ CAUTION ⚠ CONSULTATION WARNING!** Do not cover these plates for any reason and immediately replace them if they are damaged. If necessary, refuel through the filler cap (9, Fig. Do not fill the fuel tank to the top, but leave at least 4 cm from the filler neck to allow the fuel to expand.

CAUTION! Use diesel fuel only; do not use bio-diesel. B), adjust the seat for a comfortable position. B), turn it clockwise and hold it in the first position. The following warning lights and indicators turn on: **⚠ Diesel engine glow plug pre-heating warning light (7, Fig. Engine oil pressure warning light (4, Fig. C) turns off, turn the ignition key clockwise, to the end of stroke, and then release it when the diesel engine starts. CAUTION!** When starting the engine, do not keep the ignition key in cranking position too long (maximum 20 seconds) to avoid damaging the starter. If the engine does not start, wait a minute before trying again. Before trying to start the engine again, turn the ignition key counterclockwise, to the initial position. If the engine does not start after two attempts, do not persist, ask for help from the person responsible for the machine. Make sure that all the warning lights are off when the engine is running. Let the engine run for a few minutes to allow it to warm up, especially when the air temperature is low. Let the machine running at idle for a few minutes to stabilize the system. 2. Turn the ignition key (6, Fig.

The machine base version (without any optional equipment) can be used for transport only. It is safe to lock the position of the quick coupler (2, Fig. When the cargo box/hopper/water tank is lifted, the machine maximum speed is 5 km/h. In this condition, the accelerator pedal feel is very poor, which signifies that the machine is not being used properly. AV) by releasing the end ring (2) and engaging one of the next rings (3) to the spring catch (4). NOTE In this way, the suction inlet will not lay on the ground in case the hydraulic system fails. B) forward to move forward, and rearward to move in reverse. Start to transport the machine, by keeping the hands on the steering wheel (41, Fig. The drive speed can be adjusted from zero to maximum speed by increasing the pressure on the pedal. **WARNING!** When using the machine do not forget that this is a tractor and semitrailer type machine.

WARNING! When using the machine, be sure that there are no people near the pivoting area of the machine. 11. Use the machine according to the equipment installed, by following the instructions shown in Using the Equipment chapter. 12. To slow down the machine there are three options: **⚠ Release the accelerator pedal slowly (engine brake on all four wheels).**

Machine condition display: **⚠ On the first line the following information appear: hour counter , odometer Fig. c) to show the required information. ⚠ The second line shows the speedometer km/h . C) Engine oil pressure warning light (4, Fig. C) Clogged oil filter warning light (10, Fig. c) Clogged air filter warning light (5 , Fig. C) Diesel engine glow plug pre-heating warning light (7, Fig. c) Parking brake warning light (3 , Fig. C) Hydraulic system oil temperature warning light (30, Fig. C) Check engine warning light (26, Fig. C) The warning light stays on or flashes to signal one or more faults. the fault is signalled by a blink code. This code consists of a number of slow and fast blinks of the warning light which are shown by pressing the switch (23, Fig. 4" indicates that there has been "6" slow blinks and "4" fast blinks. Dust control system tank water level warning light (40, Fig.**

C) Running light indicator light (39, Fig. If this warning light turns on, stop the engine immediately to prevent damages to the electric system. C) When this warning light is on, the machine maximum speed is 5 km/h. C) Left side turn signal indicator light (1, Fig. C) Right side turn signal indicator light (33, Fig. To turn on the windscreen wiper use the combination switch (22, Fig. Three speeds can be chosen. To turn on the climate control system turn the knob (24, Fig. B) to the first position by turning it clockwise. Three speeds can be chosen.

To turn off the climate control system, turn the knob (24, Fig. To turn on the lighting and signalling system, use the switch (17, Fig. c). On the first position, the running lights turn on, on the second position the low beams turn on. To turn on the high beams use the combination switch (22, Fig. b) , having the functions shown in Machine Description chapter. NOTE The lower headlights turn on for machines in base version or road sweeper version; when the optional equipment is installed upper headlights turn on. **WARNING!** When installing equipment which do not need electrical connections, connect the supplied connector in the relevant socket. To turn on the front lighting and signalling system, use the switch (25, Fig. c).

On the first position, the suction inlet lower lights turn on, on the second position the front working lights turn on. To turn on the rear lighting and signalling system, use the switch (16, Fig. c). Turn off the lights before stopping the engine. The machine is equipped with a warning buzzer that sounds when the engine is stopped and the lights are still turned on. Turn on the hazard warning lights with the switch (21, Fig. b). To adjust the driver's seat (26, Fig B) horizontally, turn the lever (28) outwards until a comfortable position is reached, then release the lever. To increase the springing turn the knob counter-clockwise, to decrease the springing turn the knob clockwise (see the silk-screen printing on the knob). To adjust the tilting of the seatback (26, Fig B), turn the lever (30) upwards until a comfortable position is reached, then release the lever.

When it is required to work under the cargo box/hopper/water tank, lift it completely by pressing the upper part of the cargo box/ hopper/water tank lifting switch (24, Fig. C), then install the support rod (1, Fig. aG) in the relevant housing (2). To remove the support rod from its seat (3, Fig. AG) move it towards the cab (4). If the engine is on, turn it off by turning the ignition key (6, Fig. @@@@ this system is fed by the dust control system water tanks. The following procedure refers to the high-pressure water gun use. Adjust the engine speed by using the throttle lever (2, Fig. If 1,850 rpm are exceeded, all machine accessories are disabled.

Draw the water gun (1, Fig. @@Protect body parts (eyes, hair, hands, etc. @@Use the water gun by pressing the relevant trigger (5, Fig. i). After using the water gun, perform steps 1 to 6 in the reverse order.

@@Turn off the engine, by turning the ignition key (6, Fig. @@F) must be emptied, use the drain plugs (8, Fig. @@@@Turn off the engine, by turning the ignition key (6, Fig. @@@@Use an hydraulic jack with a minimum lifting capacity of 3 tons.



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@@ 8.

Remove the mounting nuts, then remove and replace the wheel. @@ 12. Remove the mounting nuts, then remove and replace the wheel. @@ Turn off the engine, by turning the ignition key (6, Fig. CAUTION Proceed at very low speed when towing. The engine must be off (see Diesel Engine Start and Stop paragraph). 3. The lights must be turned off. Lock the wheels by using the wedges (2, Fig. bH).

@@ Use a lift truck having a suitable lifting capacity (35/40 quintals). @@@@ Turn off the engine, by turning the ignition key (6, Fig. M) in the plate pin (1), then fasten it with the screw (6). Lower the suction inlet by pressing the lower part of the switch (29, Fig. Lower the left/right brooms by pressing the lower part of the switch (17, Fig. Let the brooms turn on the ground for a few seconds, then perform again steps 9 to 11. 14. Check that the right broom touches the ground along a circle arc ranging from "11 o'clock" and "4 o'clock" and that the left broom touches the ground along a circle arc ranging from "8 o'clock" and "1 o'clock". If the print is not within specifications, adjust the broom tilting by using the tie rods (7, Fig. O) placed on the safety stands (5 and 12) until the hopper hinges (6) lay on the machine guides (3).

O) to the left in order to not interfere with the fan motor. O) and the sensor detecting the presence of the hopper (9) are reading (the led should be lit). CAUTION! If one of the three sensors is not reading, the hopper can be lowered only. O) in its housing (10), install the locking pin (1) by fastening it with the cotter pin (11). Be sure that they pass over the right pin (2, Fig.

C) to lighten and then remove the front safety stands (5, Fig. Fully lower the hopper by pressing the lower part of the switch (24, Fig. C) to lighten and then remove the rear safety stands (12, Fig. Lower the machine by pressing the lower part of the switch (27, Fig. Then remove the cargo box/hopper/ water tank in the reverse order of installation.

When the cargo box/hopper/water tank is placed on the safety stands and it is stored indoors, lock the safety stand wheels in order to prevent any accidental movement. Turn on the suction turbine by pressing the lower part of the switch (31, Fig. @@ Lower the suction inlet by pressing the lower part of the switch (29, Fig. If the suction inlet must be kept lifted, use the chain (1, Fig. AV) and engaging one of the next rings (3) to the spring catch (4). M) of the broom arm, by removing the cotter pin (10) to allow for lowering with the relevant control. CAUTION! When the working cycle is completed and during transport, install the safety pin (9, Fig. Lower the left/right brooms by pressing the lower part of the switch (17, Fig. When the bulky debris has been collected, release the switch. When the working cycle is completed, lock the rear door by closing the valve (1, Fig.

Approach the dumping area, unlock the rear door by opening the valve (1, Fig. Empty the hopper on a solid and level ground, under safe stability conditions. The procedure can be performed on both sides. Lower the hopper by pressing the lower part of the switch (24, Fig. When performing this procedure, ensure that the rear door is really closed. R) (which is inside the cab) on the branch pipe (2) between the suction inlet and the hopper. 7. Lower the hopper by pressing the lower part of the switch (24, Fig. Turn on the suction turbine by pressing the lower part of the switch (31, Fig. @@ Draw the hose from the relevant housing and collect dust and debris.

P) to deliver water from the rear hose nozzle. Lower the quick coupler by pressing the lower part of the switch (17, Fig. S) on the quick coupler (2) and fasten it with the knob (3). The 3rd broom must be used together with the left/right brooms. S) of the 3rd broom arm, by removing the cotter pin (5) to allow the 3rd broom movement with the relevant control.

CAUTION! When the working cycle is completed and during transport, install the safety pin (4, Fig. Lower the 3rd broom by pressing the lower part of the switch (17, Fig. b) to the second position. When the required height is reached, stop the 3rd broom lowering by turning the switch (17, Fig. b) to the intermediate position.

To change the broom distance from the ground press the lower part of the switch (17, Fig. B) to the second position, then press the lower part of the switch (22, Fig. Joystick to the left side: the 3rd broom tilts to the left Adjust the 3rd broom speed with the adjuster (13, Fig. c). In this way the left/right broom speed is adjusted too. If necessary turn on the dust control system by using the relevant valve (9, Fig. NOTE The cargo box is equipped with an identification plate (13, Fig. Remove the cargo box rear side board (1, Fig. Remove the cargo box right side board (2, Fig. T) and left side board (3).

T) and adjust its height with the winches (4). 5. Align the salt spreader hinge holes with those of the cargo box, then install the right pin (6, Fig. Withdraw the safety stand feet (12, Fig. T) with the winches (4) and then remove the safety stands. V) by connecting the salt spreader control panel with the connector inside the salt spreader control panel housing (31, Fig. Fill the cargo box with salt; use homogenous and pure salt, if possible. 2. Cover the cargo box with the supplied tarpaulin cover. When the salt spreader is full, lower the cargo box by pressing the lower part of the switch (24, Fig.

In this way the salt quantity can be changed by using the switch (4, Fig. v). The salt quantity can be set from 1 to 9 as shown on the display (8, Fig. In this case, the salt quantity is adjusted automatically according to the machine speed. CAUTION! When the salt spreader feedbox is empty, the warning light (3, Fig.

U) changes the salt quantity; the right adjuster (4) changes the salt flow. After each working cycle, lift the lever (1, Fig. U) and thoroughly wash the machine, the cargo box and the equipment with water. Lower the quick coupler by pressing the lower part of the switch (17, Fig. Z) on the quick coupler (2) and fasten it with the knob (3).

Using the snow brush CAUTION! If the equipment is used with the suction inlet installed on the machine, the suction inlet must be lifted as shown in steps 8 and 9 of Using the Left/Right Broom paragraph. Lower the snow brush by pressing the lower part of the switch (17, Fig. b) to the second position. When the required height is reached, stop the snow brush lowering by turning the switch (17, Fig. b) to the intermediate position. To change the snow brush distance from the ground press the lower part of the switch (17, Fig. B) to the second position, then press the lower part of the switch (22, Fig. C) and adjust the snow brush height with the adjuster (14). The snow brush speed can be adjusted with the adjuster (13, Fig. Lower the quick coupler by pressing the lower part of the switch (17, Fig.

AB) on the quick coupler (2) and fasten it with the knob (3). Using the snow blade CAUTION! If the equipment is used with the suction inlet installed on the machine, the suction inlet must be lifted as shown in steps 8 and 9 of Using the Left/Right Broom paragraph.



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Lower the snow blade by pressing the lower part of the switch (17, Fig. b) to the second position. When the required height is reached, stop the snow blade lowering by turning the switch (17, Fig. b) to the intermediate position. To change the snow blade distance from the ground press the lower part of the switch (17, Fig. B) to the second position, then press the lower part of the switch (22, Fig. C) and adjust the snow blade height with the adjuster (14). Lower the quick coupler by pressing the lower part of the switch (17, Fig.

AC) on the quick coupler (2) and fasten it with the knob (3). When the water tank is full and the warning stage is exceeded, the water comes out of the drain hose; then disconnect the filler hose from the hydrant. **CAUTION!** When the water tank is full, it cannot be lifted. **NOTE** The road washer system water tank is equipped with an identification plate (2, Fig. Using the road washer system squeegee **CAUTION!** If the equipment is used with the suction inlet installed on the machine, the suction inlet must be lifted as shown in steps 8 and 9 of Using the Left/Right Broom paragraph.

Lower the road washer system squeegee by pressing the lower part of the switch (17, Fig. b) to the second position. When the required height is reached, turn the switch to the intermediate position. When the required height is reached, turn the switch to the intermediate position. 6.

The height can be adjusted also with the adjuster (14, Fig. c) by pressing the lower part of the switch (17, Fig. B) to the second position and the lower part of the switch (22, Fig. To turn on the water flow, press the lower part of the switch (29, Fig. Turn on the road washer system squeegee by pressing the lower part of the switch (28, Fig. If necessary, to use the outer side nozzles (5, Fig. If necessary, use the inner side nozzles (6, Fig. AC) too, by pressing the lower part (left nozzle) or upper part (right nozzle) of the switch (15, Fig. If more pressure is required from the nozzles, turn off the road washer system squeegee by turning the switch (28, Fig. If necessary, use the high-pressure washing system water gun which is inside the cab.

The machine can be equipped (when required) with a camera kit, which allows to monitor the rear side of the machine and the area under the cab. **BI** press the ON/OFF switch (2), then adjust the display position with the knobs (3). For other functions, refer to the display Manual supplied with the machine. The lifespan of the machine and its maximum operating safety are ensured by correct and regular maintenance. the following table provides the scheduled maintenance. The intervals shown may vary according to particular working conditions, which are to be defined by the person in charge of the maintenance. **wARNING!** To perform maintenance procedures turn off the machine (remove the ignition key) and turn the battery release switch (37, Fig. Moreover, read carefully the instructions in Safety chapter before performing any maintenance procedure. **wARNING!** When performing maintenance procedures which require cargo box/hopper/water tank lifting must be performed with the support rod (1, Fig. aG) placed in its housing (2).

To remove the support rod from its seat (3, Fig. AG) move it towards the cab (4). **CAUTION!** Do not perform maintenance procedures when the machine lifting device is activated (leaf springs at the end of stroke). **NOTE** When performing maintenance procedures, use only original spare parts. all scheduled or extraordinary maintenance procedures must be performed by qualified personnel, or by an authorised Service Center.

This Manual contains the Scheduled Maintenance Table and describes only the easiest and most common maintenance procedures. For other maintenance procedures contained in the Scheduled Maintenance Table or for extraordinary maintenance procedures see the Service Manual that can be consulted at any Service Center. Maintenance Engine oil level check Brake fluid level check Hydraulic system oil level check Engine coolant level check Engine air filter cleaning Engine air filter replacement Combined radiator check and cleaning Glow plug check Glow plug replacement Fuel filter replacement Alternator belt replacement Timing belt replacement Engine coolant replacement Fuel pump filter cleaning Fuel pump filter replacement Engine oil replacement Diesel engine oil filter replacement Fan belt replacement Hose gasket check Brake fluid replacement Drive system pump oil filter check Hydraulic system oil filter replacement Hydraulic system oil change (4) (6) (6) (6) (2) (6) (6) (6) (6) (6) (6) (6) (2) Long periods After every use Every 40 hours Every 100 hours Every 150 hours Every 200 hours Every 400 hours Every 600 hours Every 800 hours Every 1,600 hours Every 1,800 hours Long periods After every use Every 40 hours Every 100 hours Every 150 hours Every 200 hours Every 400 hours Every 600 hours Every 800 hours Every 1,600 hours Every 1,800 hours Maintenance Leaf spring axle lubrication Pivot joint lubrication Jack ball joint lubrication Climate control system belt replacement Cab air filter replacement Refrigerant gas pressure check Refrigerant gas change Refrigerant gas bottle replacement Lighting system cleaning Tyre pressure check Water filter cleaning Tank water filter replacement Pump water filter replacement Nozzle cleaning Dust control system pump oil level check Dust control system pump oil change Gasket, joint, and valve replacement Water pump belt replacement Broom replacement Suction inlet lower skirt gasket replacement Suction inlet upper skirt gasket replacement Suction inlet side gasket replacement Skirt gasket replacement Side gasket replacement Rear door gasket replacement Branch pipe gasket replacement Optional equipment cleaning Optional equipment hose fitting check Optional equipment moving part lubrication Optional equipment painting repair Optional equipment hose and bolt condition check Battery fluid check Battery terminal check After 1,000 hours Maintenance to be performed by IVECO authorised Service Center Every 2 years After 2,500 hours After 10,000 hours For the relevant procedure see the Service Manual, at any Nilfisk Service Center. After 200 hours Every year Contact qualified personnel Protect body parts (eyes, hair, hands, etc. @@@@Empty the hopper, drive the machine to the appointed cleaning/washing area, then perform the following procedure: 1.

Clean the hopper with pressurised water. If using the machine high-pressure washing system, follow the instructions shown in the relevant paragraph. **F)** must show that the hydraulic system oil tank is full. For the types of oil to be used, see Technical Data chapter. **NOTE** Top up by using the same type of oil that is in the tank. Protect body parts (eyes, hair, hands, etc. @@@@Turn off the engine, by turning the ignition key (6, Fig. Protect body parts (eyes, hair, hands, etc. Turn off the engine, by turning the ignition key (6, Fig. E) and, if necessary, top up with distilled water.

If necessary, clean the battery.



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Turn off the engine, by turning the ignition key (6, Fig. If necessary, top up using the same type of fluid that is in the line. Turn off the engine, by turning the ignition key (6, Fig. The manufacturer rating is based on standard drive speed and standard load rating, different from the actual machine application. Turn off the engine, by turning the ignition key (6, Fig. AL) and check that the oil level in the tank is at the MAX mark, or between the MIN and MAX marks. Turn off the engine, by turning the ignition key (6, Fig. If necessary, top up using the same type of coolant. Lubricate the moving parts by using the grease nipples marked by the relevant labels.

The lubricating points are: \hat{A} Right and left side front leaf springs (1, Fig. Turn off the engine, by turning the ignition key (6, Fig. Use the level indicator (1, Fig. AQ) to check that oil inside the dust control system pump (2) is nearly at the maximum level. Turn off the engine, by turning the ignition key (6, Fig. b) counterclockwise, to the end of stroke, then remove it. Open the rear door of the road washer system water tank with an Allen wrench d. 8. Use the level indicator (1, Fig. AR) to check that oil inside the pump (2) is nearly at the maximum level.

Turn off the engine, by turning the ignition key (6, Fig. Turn off the engine, by turning the ignition key (6, Fig. AT) and the filter (3) with compressed air, then remove calcium deposits, or replace the filter (3) and/or the nozzle (2) if necessary. Install the filter (3, Fig. AT) and the nozzle (2), then fasten them with the ring nut (1). Turn off the engine, by turning the ignition key (6, Fig. b) counterclockwise, to the end of stroke, then remove it. Lower the suction inlet by pressing the lower part of the switch (29, Fig. Hydraulic system oil is highly corrosive, wear rubber gloves. Turn off the engine, by turning the ignition key (6, Fig.

Place a container, which is suitable to collect oil, on the machine right side so that it is flush with the hydraulic system oil drain pug (19, Fig. E), then drain the oil from the hydraulic system completely. When draining is completed, screw down the plug (19, Fig. Fill the hydraulic system oil tank (4, Fig. F) through the filler plug (14). For the types of oil to be used, see Technical Data chapter. **wARNING!** @@When the skirts are torn or worn, replace them as shown below: 1. Turn off the engine, by turning the ignition key (6, Fig. AM) while holding steady the 2 screws (11) inside the suction inlet. When the brooms are worn, replace them as shown below: 1. Turn off the engine, by turning the ignition key (6, Fig.

AN), remove the 3 nuts (3) while holding steady the 3 screws (4). Turn off the engine, by turning the ignition key (6, Fig. Install the new gasket and seal both gasket ends together with bonding agent. Turn off the engine, by turning the ignition key (6, Fig. Place a container, which is suitable to collect oil, under the diesel engine (20, Fig.

F) so that it is flush with the oil pan drain pug (1, Fig. AZ) which is on the engine base. 10 and remove it, then drain the oil from the engine lubricating system completely. When draining is completed, screw down the plug (1, Fig. aZ).

Pour oil into the diesel engine (20, Fig. @@Turn off the engine, by turning the ignition key (6, Fig. Place a container, which is suitable to collect oil near the area where the oil filter (46, Fig. f) is to be replaced. Unscrew (by hand or with a suitable wrench) the oil filter (46, Fig. f) and replace it. Install the new filter by following the instructions coming with the original spare part. **NOTE** Always use original spare parts. **wARNING!** @@ 8. Close the left front water tank (5, Fig.

Protect body parts (eyes, hair, hands, etc. @@Turn off the engine, by turning the ignition key (6, Fig. Turn off the engine, by turning the ignition key (6, Fig. Remove the engine air filter cover (1, Fig. @@Turn off the engine, by turning the ignition key (6, Fig. @@F) must be opened with extreme care. **CAUTION!**

The coolant should be disposed of properly according to the environmental Laws in force. Place a container, which is suitable to collect engine coolant, under the machine so that it is flush with the drain pug (22, Fig. Fill the system with the appropriate coolant. 50% of water Top up until the coolant level in the expansion tank (22, Fig.

Start the engine as shown in the Diesel Engine Start and Stop paragraph, then check the coolant level. Turn off the engine, by turning the ignition key (6, Fig. Install the new filter by following the instructions coming with the original spare part. **NOTE** Always use original spare parts. **wARNING!** The filter should be disposed of properly according to the environmental Laws in force.

Close the left front water tank (5, Fig. Turn off the engine, by turning the ignition key (17, Fig. Cut the two clamps (4, Fig. BB) from the pre-filter fittings (2) by loosening the two clamps (3). There can be fuel leakage from the removed hoses, so keep at hand a suitable container.

perform steps 5 and 6 in the reverse order. **NOTE** Always use original spare parts. **wARNING!** The filter should be disposed of properly according to the environmental Laws in force. Close the left front water tank (5, Fig. Turn off the engine, by turning the ignition key (6, Fig. BC), then remove the left rear case (1). Turn off the engine, by turning the ignition key (6, Fig. If the road washer equipment is installed, empty the water tank as shown in Road Washer System Squeegee paragraph. BD) from the filter (2), then wash and clean them. BD) **NOTE** Perform this procedure when the nozzles are partially clogged.

Turn off the engine, by turning the ignition key (6, Fig. Perform this procedure on all the road washer system squeegee nozzles. Turn the ignition key (6, Fig. b) counterclockwise, to the end of stroke, then remove it. Turn the battery release switch (37, Fig. Turn the battery release switch (37, Fig. In winter, perform the following maintenance procedures carefully. Use commercially-available winter fuel. keep the fuel tank as full as possible. Procedures for storage of machines working at less than 0 \hat{A} °C 1.

Turn on the high-pressure washing system pump (see the procedure in the relevant paragraphs) and let the antifreeze flow through the high-pressure washing system until it comes out of the water gun. When the antifreeze comes out, stop the pump. Procedures to perform when the machine has been stored for two months 1. Replace the engine oil and oil filter (see the relevant paragraphs). Procedures to perform when the machine has been stored for three months 1.

Each month connect a battery charger and keep the battery charged for 12/24 hours. The machine is equipped with the following safety functions: The machine is equipped with a sensor and a buzzer to indicate that the machine is moving in reverse. The machine is equipped with a sensor that do not allow for engine start up when the forward/reverse gear selector is out of neutral position (centre). The machine is equipped with a sensor that do not allow for machine start up when the operator is not on the driver's seat.



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Before scrapping the machine, remove and separate the following materials, which must be disposed of properly according to the law in force: Â Brooms Â Engine oil Â Engine oil filter Â Hydraulic system oil Â Hydraulic system oil filters Â Plastic components Â Electrical and electronic components NOTE Refer to the nearest Nilfisk Center especially when scrapping electrical and electronic components.



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