4.1.2 Start the Engine at Low Temperatures

WARNING!

Never use liquid or gaseous starting aids such as Start Pilote, ether or similar when starting the engine. This can result in severe injuries and damage

With fully charged batteries and without pre-heating, the engine will start at ambient temperatures down to -25°C. However, it is be advisable to use the engine heater at ambient temperatures below -5°C, to reduce emissions, make starting easier and avoid unnecessary wear on the engine.

Connect the engine heater and the battery charger to the mains, 230 V (10 A) when the engine is stationary at low temperatures. This is to ensure easier start-up and to reduce wear and cold-related damage.

The engine heater socket and battery charger socket are located inside the service hatch on the left side of the sweeper.

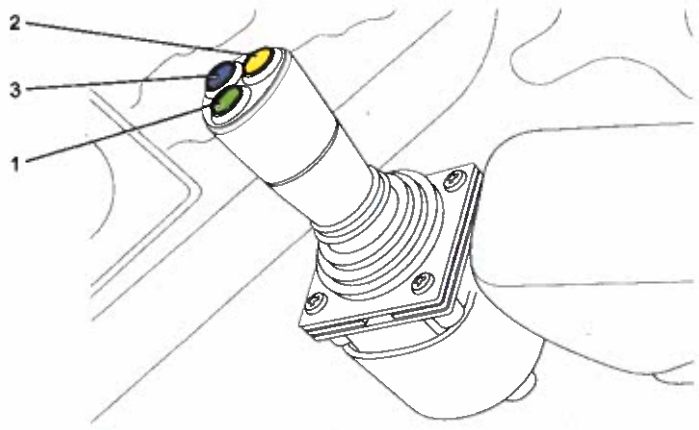
1 Battery charger 230 V 2 Engine heater 230 V

Figure 162: Socket for electric engine heater

4.2 Using the Joystick

The joystick is used to manoeuvre the sweeper and the plough simultaneously, only the plough or only the sweeper.

- There are three switches on the joystick. Press and hold any switch to view a description of the functions in the display



1 Plough only. **Green**
2 Folding the wings. **Yellow**
3 Full float position (Optional). **Blue**

Figure 163: Switches on the joystick

Press the plough-only-switch (1) and move the joystick to the left or right to manoeuvre the plough independent of the sweeper.

Press the folding-wings-switch (2) and move the joystick to the left or right to fold out or fold in the wings.

Optional - Press the full-float-switch (3) and push the joystick forwards to engage the plough's full float position. Press the full float switch again to release the plough's full float position.

- Push the joystick forwards so that the brush and the blower housing are lowered to the working position. The plough is lowered to the ground in semi-float position. The speed of the brush, blower and engine increase to working speed.

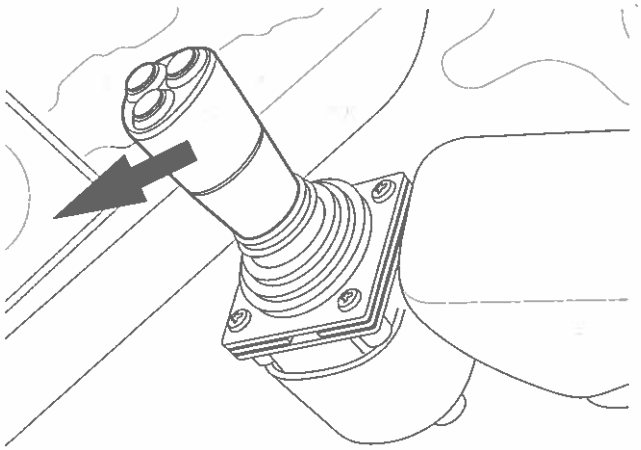


Figure 164: Engage working position

- Pull the joystick backwards to abort working position. The plough, brush and the blower housing lifts. The blower stops but the brush continues to rotate.
- Move the joystick to the left or right to change the working direction.

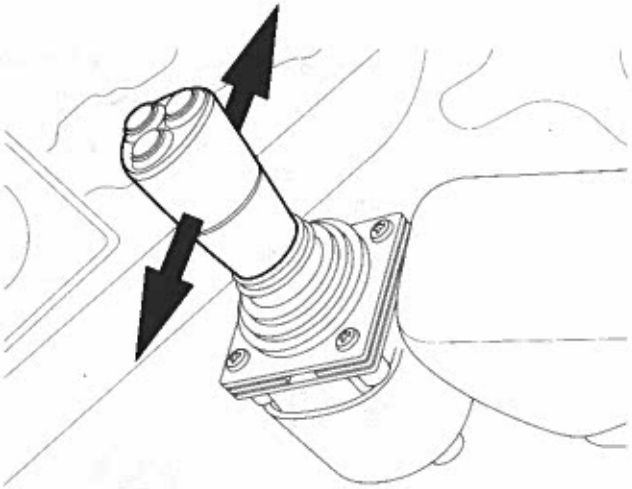


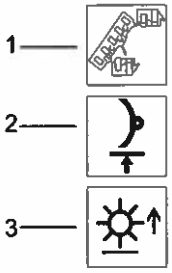
Figure 165: Change working direction

The turning can be stopped at any time. Release the joystick and move it in the opposite direction. Then move the joystick to the wanted direction.

4.3 Standby Position

Prerequisites: The sweeper is in transport position.

1 Lift the plough to upper position. Fold out the wings on the plough. Check that the yellow icon for the plough is gone.



1 Plough wings in transport position or not folded-out completely. Yellow

2 Plough weight distribution

3 Brush lifted

Figure 166: Icons for the plough and brush

2 Select the wanted working position for the sweeper by pressing the R or L button.

Figure 167: Transport position, select direction

3 The sweeper is now in standby position.

1 Engine running
2 Grey icon when plough is lifted
3 Brush in right position
4 Green status light
5 Blower in right position
6 Brush and blower engaged
7 Transport position button

Figure 168: Sweeper in standby position

4 The blower fan will start at 50%. Use ▲/▼ for increase or decrease speed in %. Push **O** once for 0%, and twice to return to last value.

5 Push the joystick forwards so that the brush and the blower housing are lowered to the working position. Change working position by moving joystick to the left or right.

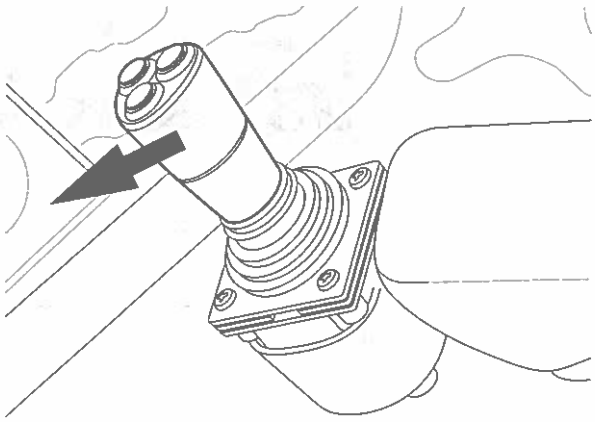


Figure 169: Engage working position

4.4 Start working

Recommended working speed is 20 - 40 km/h depending on the snow condition, with standard 4-wheel driveThe automatic brush modes are designed to achieve the best sweeping results and the longest brush service life. The brush is adjusted automatically to keep the pressure against the surface as the brush is worn. Standard values are 0,5 mm each 10 minutes.

NOTE!

In the automatic brush modes it is always possible to adjust the blower capacity manually from 0% to 100%.

- Select the automatic one snowflake mode for light snow conditions. Recommended driving speed up to 40 km/h, brush speed is 100%.
- Select the automatic three snowflakes mode for heavy snow conditions. Recommended driving speed approx. 25 km/h, brush speed 100%.
- Select the hand symbol to set the manual mode. Then the brush speed and blower capacity are controlled manually. This mode is used in special situations.

Check that the wanted brush mode is selected.

Figure 170: Brush mode

NOTE!

The settings for blower capacity, (brush speed when in manual mode) and brush mode is stored in the memory since the last use.
When entering new values they will be re-used at next use.

4.4.1 Change the Brush Mode

1 Press the brush mode menu button

Figure 171: Brush mode menu

2 Press one of the buttons to select the wanted brush mode.

NOTE!

The manual mode (the hand symbol) with manual brush speed control is only used in special cases, e.g. in conjunction with significant icing and when it is necessary to be able to operate the brush independent of the driving speed.

Figure 172: Select brush mode

4.4.2 Manually De-select Brush or Blower

For certain purposes it may be necessary to de-activate either the brush or the blower.

1 Press the brush mode menu button

1 Brush
2 Blower
3 Front Air System (optional equipment)

Figure 173: Brush and blower options

2 Press the corresponding button to activate or deactivate the brush or the blower. The symbol to the right of the button is crossed-over when the function is deactivated.

4.4.3 Operate the Front Air System

(Optional Equipment)

A Runway Sweeper that is equipped with a front air system have dedicated icons and functions in the display.

When the front air function is activated, the system follows the brush's positions. When the function is deactivated the system remains in parking position, the nozzles are folded-in and raised.

Figure 174: Front Air Icon

The front air icon shows if the front air function is activated. When the icon is crossed-out the function is deactivated.

1 Press the brush mode menu button

2 Press the button to activate or deactivate the front air function.

Figure 175: Activate/deactivate the front air function

4.5 Working Position and Start Sweeper Work

Prerequisites: The sweeper is in standby position.

1 Select the wanted working direction for the sweeper and the plough.

2 At the working area, push the joystick forward to start sweeper work.

The sweeper is now in working position. The brush and the blower housing is lowered to the ground and the plough is lowered to the ground in semi-float position.

1 Brush 2 Plough mode

Figure 176: Working position

3 Change the working direction for the sweeper and the plough when wanted. Please refer too section 4.2 Using the Joystick, page 154.

At speeds below 5 km/h, the brush is automatically lifted before changing the working direction. When the change is completed, the brush is lowered automatically to the working position again.

4 Pull the joystick backwards to go to standby position.

4.6 Transport Position

Prerequisites: The sweeper is in any position and the engine is running.

Press the transport button to stop the brush and the blower and place them into transport position.

Figure 177: Transport button

4.7 Stop the Engine and Turn off the Main Switch

Prerequisites: The sweeper is in any position and the engine is running.

1 Press and hold the engine start/stop button and release when the engine-icon shifts colour.

Figure 178: Engine stop

2 Switch off the sweeper switch in cabin.

Figure 179: Sweeper switch, Scania

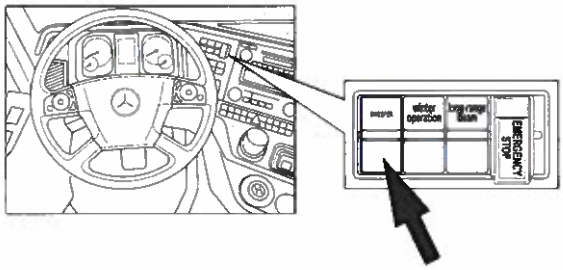


Figure 180: Sweeper switch, Mercedes

3 Open the service hatch and turn off the main switch.

NOTE!

The main switch has a timer function that keeps the batteries connected a while after the main switch knob is turned to off position. This is to allow the exhaust after treatment system to complete a cleaning program.

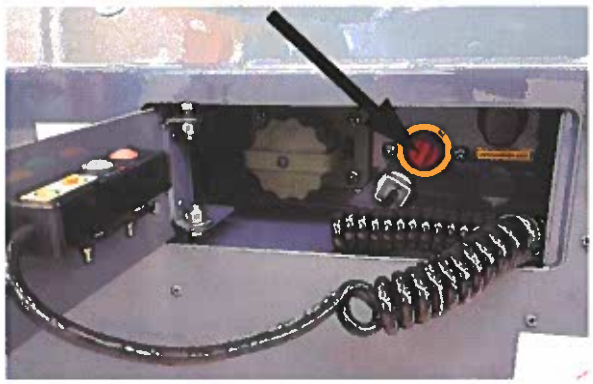


Figure 181: Main switch

4 The engine is now stopped and the main switch is off.

4.8 Opening and Closing Engine Cover

WARNING!

Check that nobody is in the vicinity of the engine cover before opening or closing it. Risk of personal injury.

WARNING!

Nobody must stay under the engine cover while closing it. Risk of personal injury.

Turn on the main switch.

Press and hold the UP switch until the engine cover is fully open.

Or, press and hold the DOWN switch until the engine cover is fully closed.

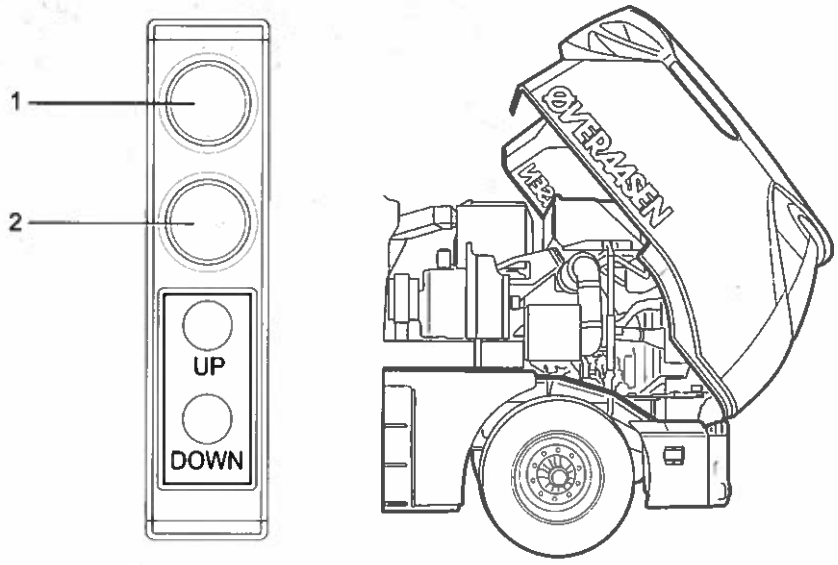


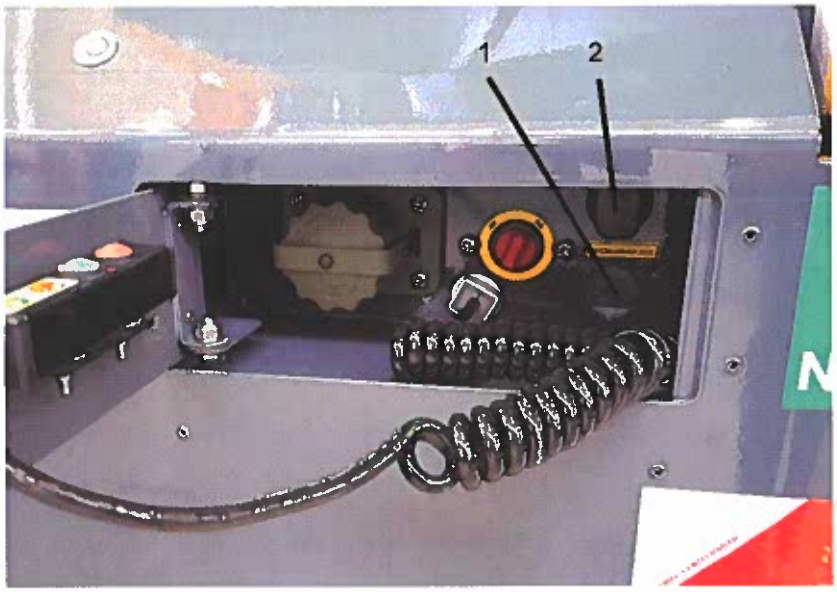
Figure 182: Engine cover switch

4.9 Charge Batteries with the On Board Charger

(Optional equipment)

Connect the battery charger to the mains, 230 V (10 A) when the engine is stationary. Check that one or more lights are lit on the charger. See section 3.3.4 Battery Charger, page 49.

The battery charger socket are located inside the service hatch on the left side of the sweeper.



1 Battery charger 230 V 2 Engine heater 230 V

Figure 183: Socket for electric battery charger

4.10 Emergency and Service Operation

4.10.1 Start the Engine With a Jumper Cable

If the batteries are discharged, jump starting can be performed by connecting to external 24 V batteries or by connecting another vehicle with the same system voltage to the jump start socket located to the right of the battery box. During jump starting, the sweeper's regular batteries must be connected.

Comments

Jumper cables are not included among the sweeper's standard accessories.

NOTE!

If another vehicle is used when starting with jumper cables, check that the vehicle and the sweeper is not in contact with each other, as this can cause damage in the assisting vehicle's electrical system.

Figure 184: Jump start socket 24 V

1 Open the service hatch, check that the sweeper's batteries are connected, and that the battery cable clamps are securely fixed.

2 Turn off the main switch.

3 Connect the jumper cable to a supporting 24V battery.

Comments

If using clamps instead of jump start socket, first connect the plus pole and then the minus pole.

Check that the jumper cables are connected to the battery with the correct polarity.

4 Connect the jumper cable to the jump start socket on the sweeper.

5 Turn on the main switch.

6 Wait a few minutes, to let the voltage difference between the batteries even out.

7 Start the sweeper's engine.

8 Disconnect the negative clamp on the jumper cable from the external starter battery/helping vehicle.

9 Disconnect the jumper cable from the jump start socket on the sweeper.

10 Disconnect the positive clamp on the jumper cable from the external start battery/helping vehicle.

4.10.2 Hydraulic operation

In case of a malfunction or need to not start the diesel engine it is possible to move all the hydraulic functions by using the service pump.

WARNING!

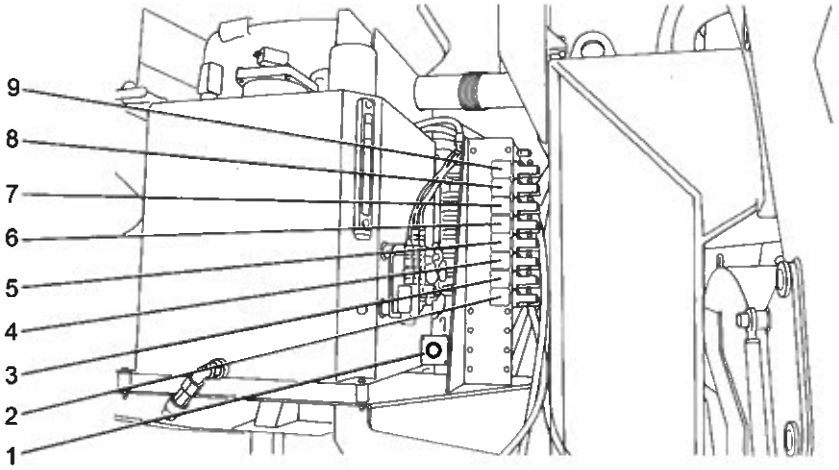
Make sure nobody/nothing is in the way off the brush and/or blower.

Use one hand to operate the service pump switch while the other hand operates the valve.

Read the sticker beside the valve for the proper function.

NOTE!

Never try to manually operate the proportional bush adjustment!



1 Service pump switch
2 Engine hood raise/lower
3 Blow nozzle right side raise/lower
4 Blow nozzle left side raise/lower
5 Blow chamber up/down
6 Brush transportation in/out
7 Brush right/left
8 Brush raise/lower
9 Proportional brush adjustment. Never operate.

Figure 185: Emergency and service operation

4.10.3 Release the Parking Brake

WARNING!

The wheel brakes and the service brakes will not work. Reset all the parking brakes after completing the work! Risk of crushing injuries.

The parking brake is applied under spring pressure. To release the parking brake without filling the system with compressed air, the springs must be tensioned.

1 Remove the locking pin and the nut. Remove the pull rod from the parking position.

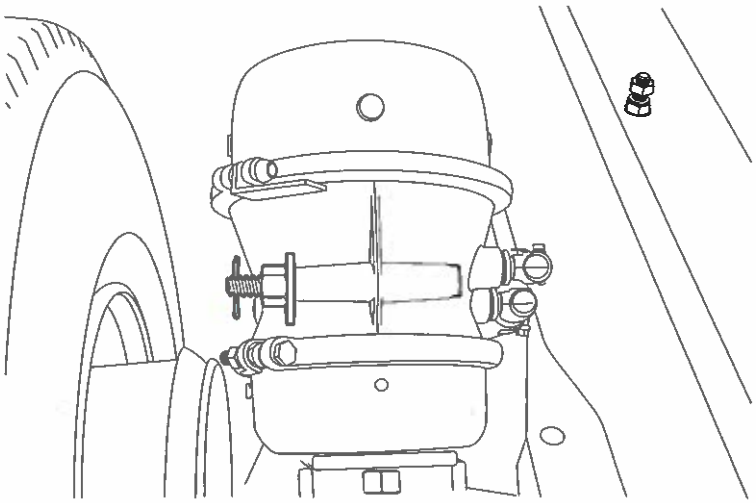


Figure 186: Pull rod on brake cylinder

2 Remove the rubber cover from the brake cylinder's end and install the pull rod. Ensure that the pull rod is secured to the piston rod.

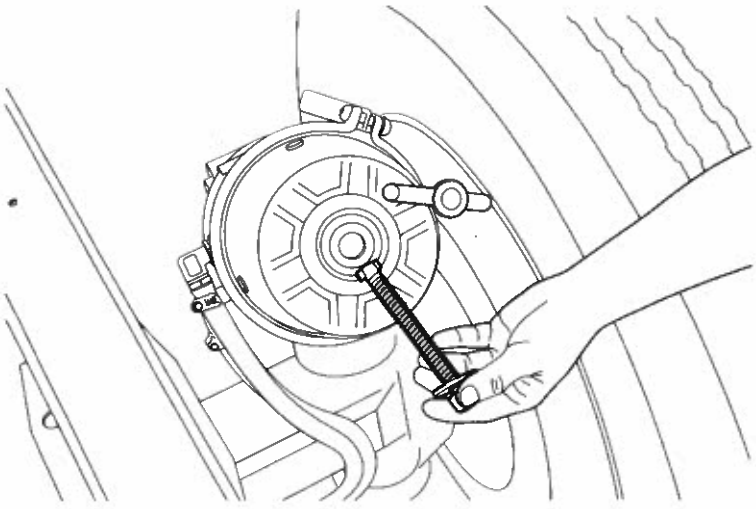


Figure 187: Installing pull rod

3 Tension the spring with the nut on the pull rod and release the parking brake

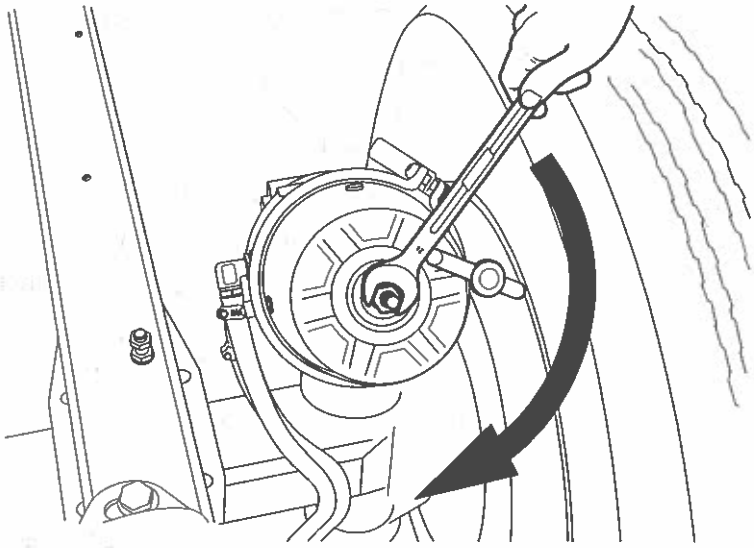


Figure 188: Release the parking brake

4 Reset the parking brake by:

   a Turn the nut counter clockwise and remove the pull rod

   b Insert the rubber cover

   c Put the pull rod, nut and locking pin back in the parking position.

4.10.4 Towing the entire machine with Scania tractor unit

In the event of a malfunction or if you do not need to start the diesel engine, you can operate all the hydraulic functions using the service pump.

Towing up to 500 m without preparation:

The machine can be towed a maximum of 500 metres at a maximum speed of 20 km/h with no other preparation than that the gearbox should be in neutral (regardless of whether the engine is running or not).

Towing provided that the vehicle has compressed air:

Ignition must be switched on and the vehicle must have air for drive wheel disconnection to be active.

Put the main gearbox into neutral.

Activate the switch for drive wheel disconnection

Figure 189: Bryter for frikobling av fordelergir

The machine can be towed at a maximum of 85% of the top speed, any distance.

If there is no air in the tow (sweeper and blower machine) an air hose can be connected to the tractor unit.

Figure 190: Connecting compressed air

Towing without access to compressed air:

Both drive shafts must be disassembled.

Put the main gearbox into neutral.

Parking brake must be disassembled.

Struts must be used since the vehicle will not have functional brakes.

The machine can be towed at a maximum of 30 km/h, any distance.

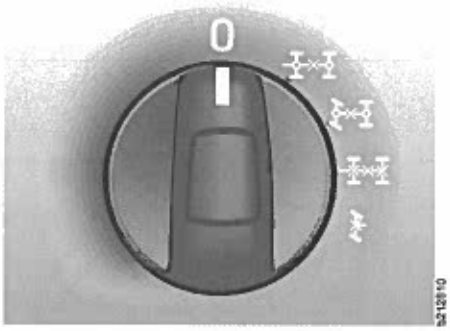
Towing if one of the axles is disconnected and provided the vehicle has compressed air:

Ignition must be switched on and the vehicle must have air for drive wheel disconnection to be active.

Put the main gearbox into neutral.

Activate the switch for drive wheel disconnection (see Figure 189).

Locked front axle operation activated (step 1 on locking switch). This is very important to secure lubrication of the distributor gearbox.



Eksempel på dreiebryter for differensialsperrer og valgfri forhjulsdrift

Figure 191: Switch for differential lock and optional front wheel drive

The machine can be towed at a maximum of 85% of the top speed, any distance.

If there is no air in the tow (sweeper and blower machine) an air hose can be connected to the tractor unit.

4.11 Coupling the Sweeper

WARNING!

Always secure trailer wheels with blocks.

The Runway Sweeper trailer shall only be used in combination with a towing vehicle prepared for air brakes with ABS.

4.11.1 Coupling

When coupling the sweeper, special attention must be paid to ensure the marker flag (lever) on the kingpin is in line with the driving direction of the truck (when the truck and sweeper are in line, the flag points toward the rear of the sweeper). During coupling, the fifth wheel plate must be at the same height as the kingpin in order to prevent damage to the kingpin flag.

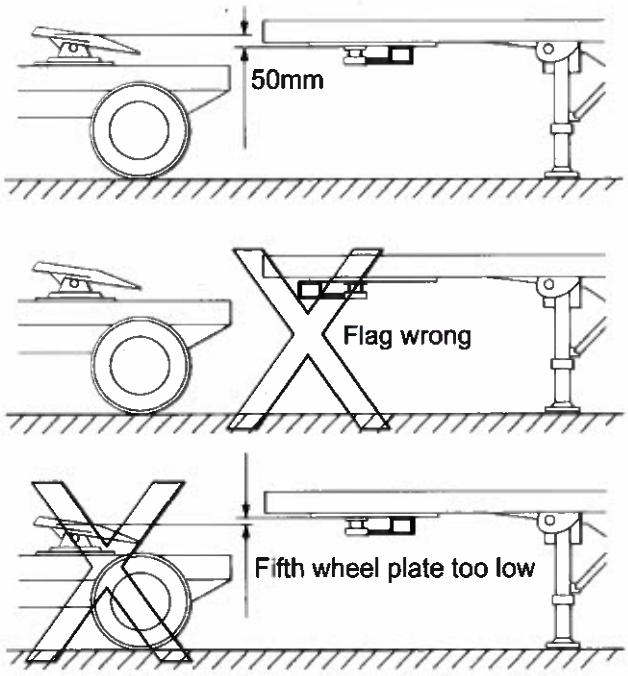


Figure 192: Coupling the sweeper

1 Check that the rear wheel steering flag is in correct position.

2 Adjust the sweeper's height with the telescopic jack stands by turning the jack stands handles.

Figure 193: Telescopic jack stand

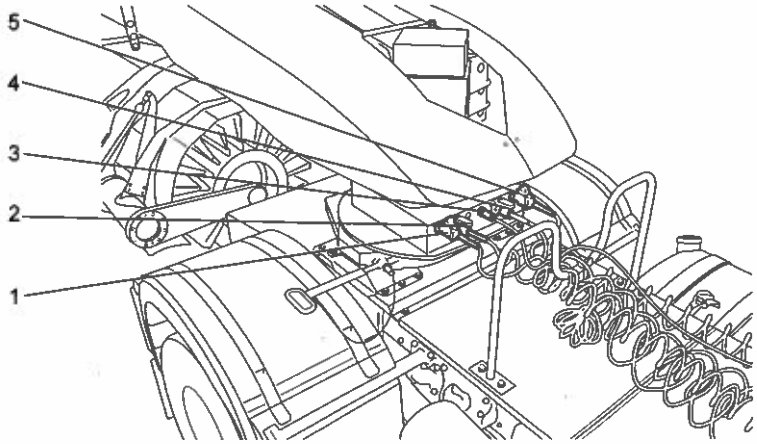
3 Drive the truck carefully backwards to couple the fifth wheel and the kingpin.

WARNING!

Check carefully that the fifth wheel release handle is in locked position!

4 Retract and remove the telescopic jack stands from the sweeper. Put the screws and the nuts on the jack stands.

5 Connect the brake couplers and cable connectors.
Connect the red air line first, and then the yellow air line. If vehicle has Duomatic quick-coupling, both lines will connect at the same time



1 Brake supply line coupler
2 Lighting connector
3 Control connector
4 EBS connector
5 Brake service line coupler

Figure 194: Connecting the sweeper

6 Start the truck's engine and fill the brake system with air.

7 Press the red parking valve button to release the parking brake.

NOTE!

The air tank pressure must be >5 bar to be able to release the parking brake.

4.11.2 Uncoupling

WARNING!

Mount two telescopic jack stands on the frame when uncoupling the sweeper. Use four screws and nuts for each stand.

Always secure trailer with wheel blocks

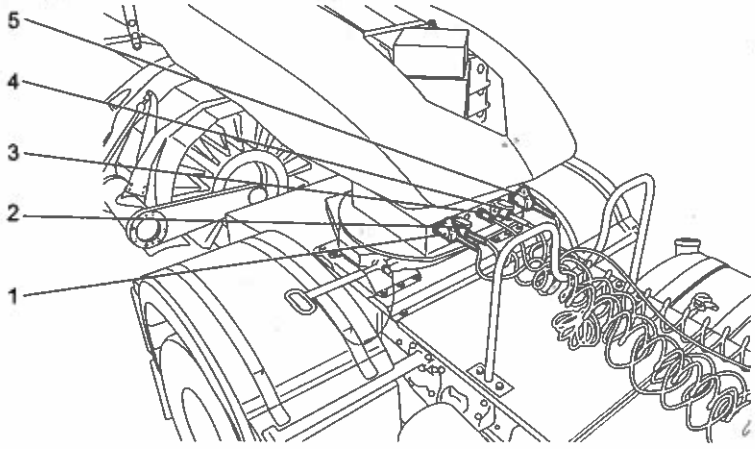
1 Mount the telescopic jack stands that came with the Runway Sweeper on the frame.

Figure 195: Telescopic jack stand

2 Adjust the sweeper's height so the fifth wheel plate is unloaded just by turning the jack stand handles.

3 Pull out the red parking valve button to engage the parking brake.

4 Disconnect the brake couplers and cable connectors.



1 Brake supply line coupler
2 Lighting connector
3 Control connector
4 EBS connector
5 Brake service line coupler

Figure 196: Disconnecting the sweeper

5 Release the fifth wheel coupling. Lift the safety catch and pull out the release handle. Hook-up the release bar's notch on the fifth wheel plate.

6 Drive the truck carefully forward. Ensure that the fifth wheel uncouples.

5 Maintenance

5.1 General

Schedule and perform maintenance according to the maintenance schedule. The maintenance chart

Keep records over performed maintenance tasks and repairs. That is the key to have full control over the machine and the hole fleet.

Maintenance of the sweeper is divided in to daily and preventive maintenance. For information about preventive maintenance and repairs, please refer to the Workshop Manual RS 200/400 Performance Line.

Lubrication forms part of both daily and periodic maintenance. Follow the maintenance schedules.

Discovered faults or damage must be rectified immediately.

— NOTE! —

Maintenance intervals are specified in terms of number of hours of operation and calendar periods. Each item in the maintenance chart must be performed at each maintenance interval.

— NOTE! —

Ensure that the sweeper is standing on a flat surface when checking levels.

— WARNING! —

Stop the engine and turn off the main switch.

If the sweeper is coupled to a tractor vehicle, apply the parking brake and remove the starter key. Risk of crushing injuries!

5.1.1 Refuel

WARNING!

The engine must be turned off during refuelling.

NOTE!

AdBlue® is not a fuel additive and must not be added to the diesel tank. If AdBlue® gets to the fuel tank, this could lead to engine damage.

NOTE!

Do not allow fuel or water to get into the AdBlue® tank. That could damage the exhaust gas after treatment system.

1 Open the engine cover.

2 Fill fuel via the filler pipe on one of the fuel tanks.

3 Fill AdBlue® via the filler pipe for the AdBlue® tank.

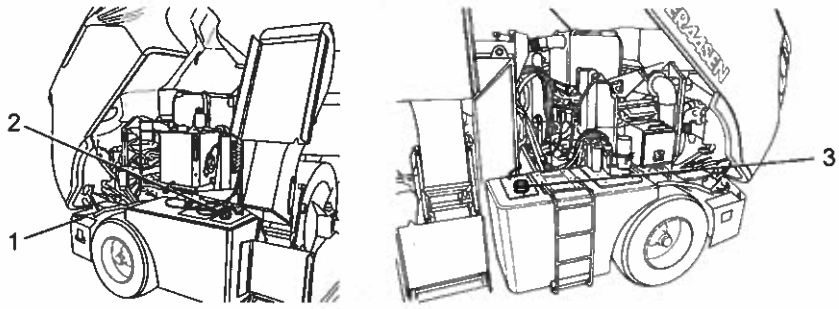
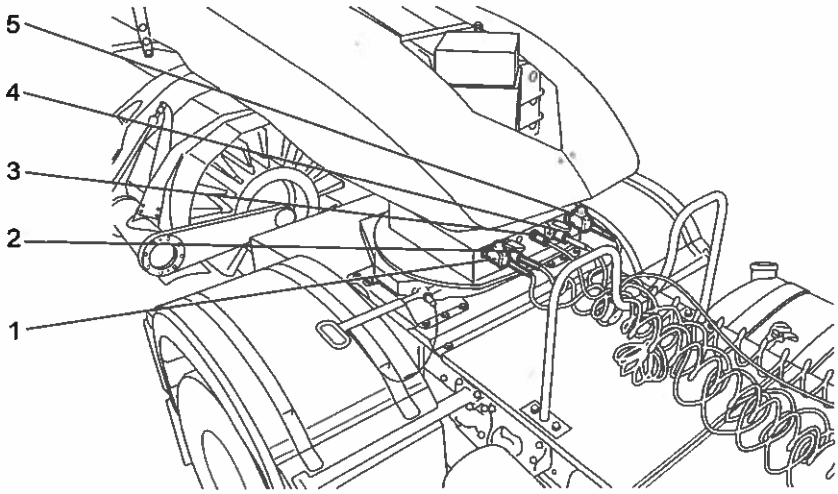


Figure 197: Filling fuel and AdBlue®

1 AdBlue®
2 Diesel fuel, right side
3 Diesel fuel, left side

5.1.2 Check Connectors

- Check that the trailer brake couplers, trailer light cable, EBS cable and the control cable are undamaged.
- Check that the connectors, hoses and cables are free from snow and ice.



1 Brake supply line coupler
2 Lighting connector
3 Control connector
4 EBS connector
5 Brake service line coupler

Figure 198: Connectors

5.1.3 Check Sweeper

1 Check that there are:
   - no loose or missing parts
   - abnormal noises or vibrations when operating the sweeper
   - no damages
   - no leaks
2 Check that all functions work as they are intended to. Any abnormal operation should be taken care of immediately.

5.1.4 Clean Sweeper

Defrost the sweeper when too much snow and ice have built up on the machine.

Wash the sweeper when to much debris and dust have built up on the machine.

WARNING!

Do not spray close with water at high pressure (> 50 Bar) on sensitive parts:

Electric and electronic components

Electric plugs and connectors

Seals

Hydraulic pumps

Lights

Bearings

5.2 Engine

WARNING!

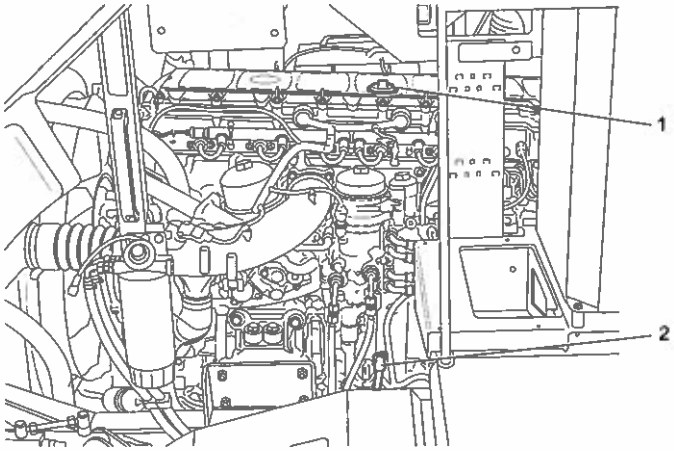
Wait until the engine is not hot before carrying out maintenance work on the engine. Risk of burns!

5.2.1 Check Engine Oil Level

Check that the engine oil level is between the marks on the dipstick. If the oil level is at or below the lower marking, top up to the upper marking with engine oil as per the lubrication chart.

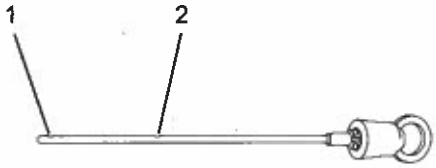
NOTE!

There is a risk of damage to the catalytic converter or the engine if the oil level is too high. Always drain off excess oil.



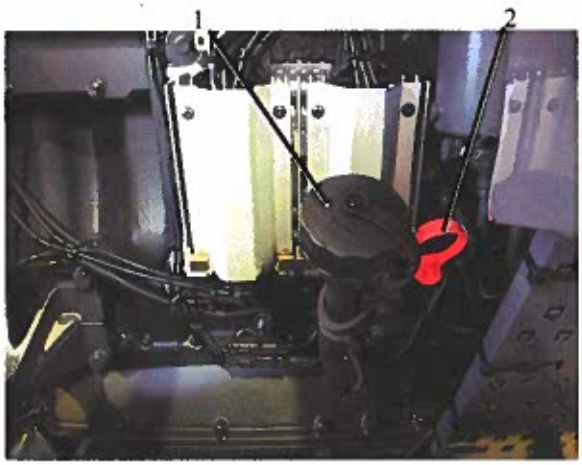
1 Oil filler cap 2 Oil level dip stick

Figure 199: Oil filler cap and oil level dip stick, MTU



1 MIN level 2 MAX level

Figure 200: Oil dip stick, level markings



1 Oil filler cap 2 Oil level dip stick

Figure 201: Oil filler cap and oil level dip stick, Scania

5.2.2 Check Coolant Level

WARNING!

The coolant system is under pressure, particularly if the engine is hot. Risk for hot coolant spraying out when opening the cap on the expansion tank or any component in the cooling system.

Risk of burns!

Allow the engine to cool before opening the cap. Wear gloves and protective eye wear when opening. Slowly turn the cap half a turn to allow pressure to escape.

MTU engine: Check that the coolant reaches the lower part of the filling neck. Top up if necessary.

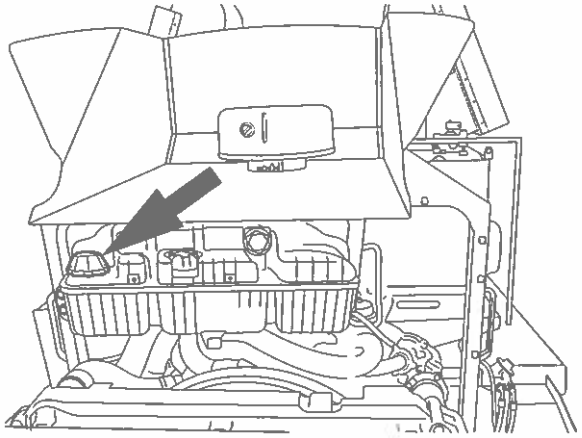


Figure 202: Expansion tank with filler cap, MTU

Scania engine: Check that the coolant reaches the middle of the level tube

Figure 203: Expansion tank with level/filling tube, Scania

5.2.3 Check Air Filter Indicator

The air filter indicator is mechanical, and shows the lowest pressure that has occurred in the intake manifold. The indicator is placed on right side on the inlet air tube between the air filter and the turbocharger.

Check that the indicator is intact. Wipe it off with a damp rag and read off the indicator. If the indicator piston inside the indicator is with in the red field, the air filter must be changed.

Reset the air filter indicator after that the air filter is replaced. Press the yellow diaphragm on the end of the indicator to reset the indicator piston.

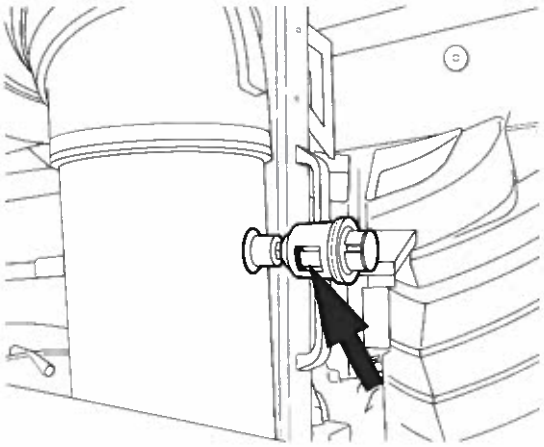


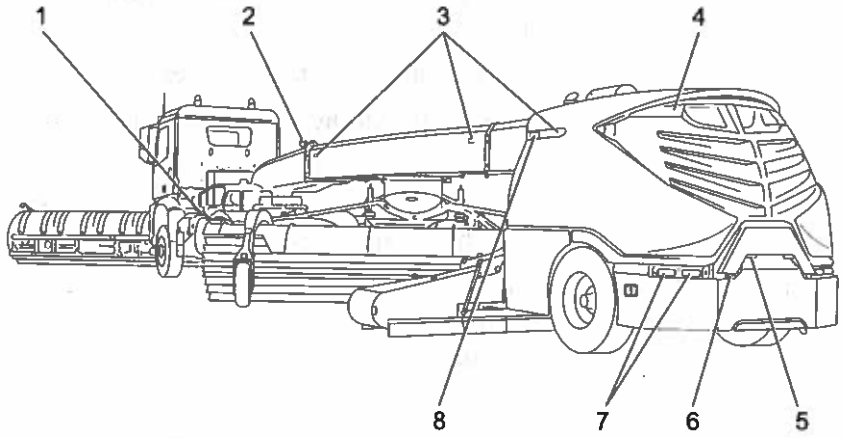
Figure 204: Air filter indicator

5.3 Electrical System

5.3.1 Check Lighting

Check that all the lights work when they are activated.

Check that the lights are clean and undamaged.



1	Marker lamp on brush	5	Warning lamp
2	Working lamp for brush	6	Reverse lamp
3	Side marker lamps	7	Combination lamps
4	Brake lamp	8	Warning lamp

Figure 205: Lighting equipment

5.4 Hydraulics

5.4.1 General

During all work with hydraulic systems and components, high demands are stipulated regarding cleanliness. In many of the components, e.g. valves and pumps, the fit is very narrow in order for the system to work.

For this reason, even very small contaminants can have a disruptive impact on functionality. The hydraulic system incorporates a filter to catch contaminants.

- The hydraulic system is under high pressure.
- Ensure that the hydraulic hoses are correctly connected to the hydraulic cylinders.
- Ensure that the hydraulic system is de-pressurised before connecting the hydraulic hoses.
- Couplings and connections for various hydraulic components must be marked in order to avoid incorrect function. If they are incorrectly connected, the function will be reversed (e.g. raise/lower)! Risk of injuries.
- Check hydraulic hoses and pipes regularly, and replace them if they are damaged or aged. New hoses and pipes must satisfy the technical requirements demanded by the hydraulics supplier.
- Use appropriate aids when looking for leaks in the hydraulic system in order to avoid damage. Risk of injuries.
- Fluids (hydraulic fluid) that leak under high pressure can penetrate the skin and cause serious injury. Contact a doctor immediately if such an injury has occurred. Risk of infection.
- Lower all equipment/units, relieve the pressure in the system and stop all motors before commencing any work on the hydraulic system!

WARNING!

Warning signs must never be removed. If a warning sign becomes illegible, it must be replaced.

5.4.2 Check Hydraulic Oil Level

Check that the hydraulic oil level is within the upper 1/2 to 3/4 of the sight glass. Top up with new clean hydraulic oil if necessary.

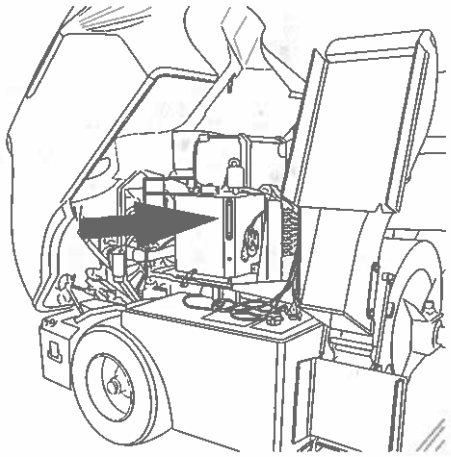


Figure 206: Sight glass on hydraulic oil tank

5.5 Brush

1 Brush status
2 Automatic brush calibration
3 Brush up
4 Brush down

Figure 207: Brush adjustment display

Comments

Remove snow and ice from the brush and brush cover before performing any work on the brush.

5.5.1 Automatic Brush Calibration

The sweeper is in working position and the engine is running.

1 Place the sweeper on a flat surface with similar surface as the runway. The machine is in "Drive" and parking brake is not activated.

2 Lower the brush and plough, and press the button for brush adjustment menu.

Figure 208: Brush adjustment menu

3 Press the button for automatic brush calibration.

Figure 209: Automatic brush calibration

4 Press O to confirm and the calibration starts.

Figure 210: Calibration starting

5 When the calibration starts, you will get a message to drive forward. Drive slowly forward about one meter to align the caster wheels in driving direction, and stop carefully (either by the plough or light braking).

Figure 211: Calibration in progress

6 When the calibration is done the brush will be lifted.

7 Check the brush pattern, see section 5.5.2 Check the Brush Pattern, page 190.

At automatic brush adjustment, the brush is adjusted automatic to keep the pressure against the surface even when the brush is worn. Standard adjusting interval is 0,5 mm each 10 minute.

5.5.2 Check the Brush Pattern

Comments

Remove snow and ice from the brush and brush cover before performing any work on the brush.

1 Start the engine, see section 4.1.1 Start, page 149.

2 Place the Runway Sweeper on a flat surface.

3 Put the sweeper in right standby position, see section 4.3 Standby Position, page 156.

4 Push the joystick forward to put down the brush and drive forward approx. 1 meter to align the support wheels.

5 Let the brush work for approx. 15 seconds to get a clear brush pattern. Pull the joystick backwards to raise the brush.

6 Use the template to check the brush pattern. The correct brush pattern should be between 85-125 mm wide and equal on both sides.

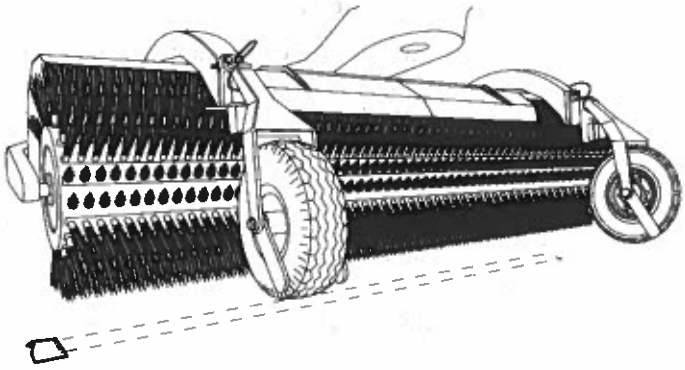


Figure 212: Checking the brush pattern, right-hand working position

7 Pull the joystick to the left to change to left working position.

8 Push the joystick forward to put down the brush and drive forward approx. 1 meter to align the support wheels.

9 Let the brush work for approx. 15 seconds to get a clear brush pattern. Pull the joystick backwards to raise the brush.

10 Use the template to check the brush pattern. The correct brush pattern should be between 85-125 mm wide and equal on both sides.

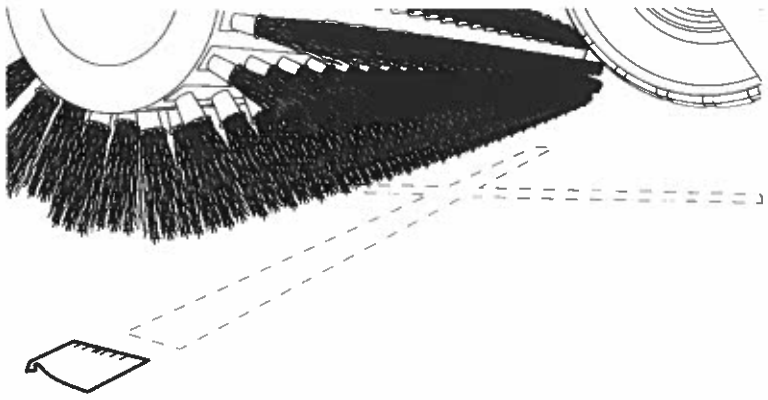


Figure 213: Checking the brush pattern, left-hand working position

5.5.3 Check the Distance to the Deflector Cover

NOTE!

The deflector cover is adjusted from factory and should be adjusted when:

- the brush cassettes is replaced
- a new deflector screen is fitted
- new turnbuckles is fittes
- the snow deflector screen has been repaired

Prerequisites: The sweeper is in standby or working Position and the engine is stopped.

WARNING!

Ensure that the brush is not rotating before carrying out this point.

Comments

Remove snow and ice from the brush and brush cover before performing any work on the brush.

1 Check the deflector cover position with the template for the brush. The distance between the deflector cover and the brush should be between 15-25 mm.

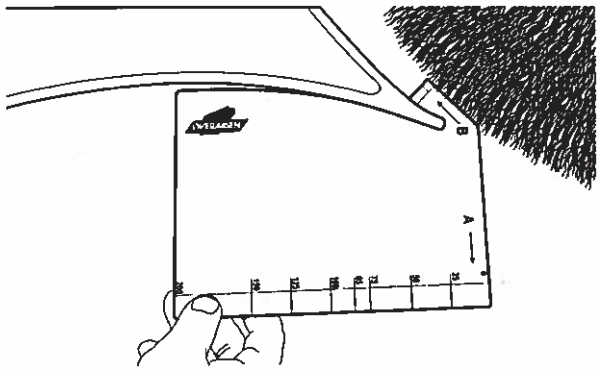


Figure 214: Check the deflector cover position

2 Adjust the deflector cover position with the turn buckles.

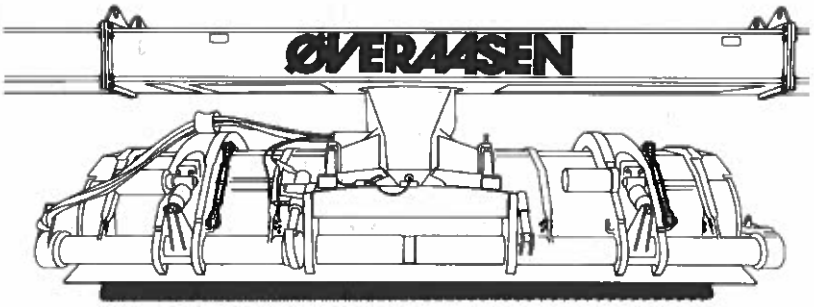


Figure 215: Position of the turn buckles

3 Use one wrench to hold the turn buckle and one wrench to loosen the counter nuts.

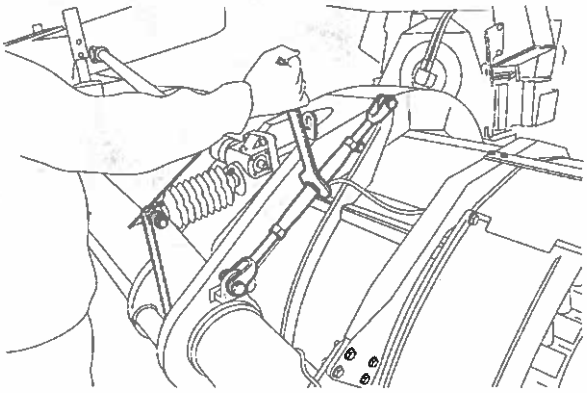


Figure 216: Adjust the turn buckles

4 Tighten the counter nuts on the turn buckle when the right distance is adjusted.

5.5.4 Manual Brush Pattern Adjustment.

The sweeper is in standby or working position and the engine is running.

NOTE!

Be careful when manually adjusting the brush pattern. If the brush pattern is too large, there is a danger that the brushes will touch the deflector and damage it. It also increases the brush wear and reduces the brush service life.

1 Press the button for brush adjustment menu.

Figure 217: Brush adjustment menu

2 Press down or up button to adjust the brush height.

Figure 218: Brush height adjustment

One press makes 1 mm change in brush height.

5.5.5 Replace the Brush Cassettes

Comments

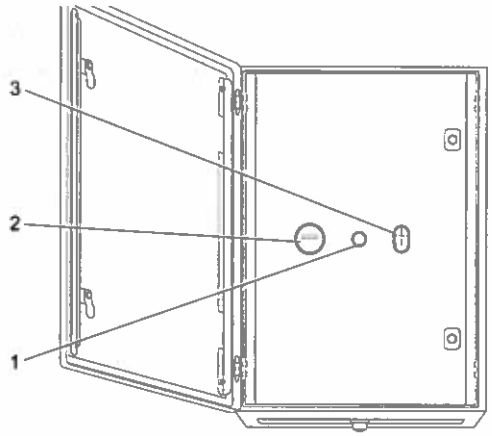
The warranty of the brush shaft is valid only when the original brush cassettes (as recommended by Øveraasen) are used.

1 Start the engine.

2 Open the engine cover.

3 Turn the brush to get good access on both sides. Use the control unit with the brush in manual mode or use the directional valves manually.

4 Press and hold the button (1) for brush change procedure.



1 Push button, brush change procedure
2 Hour counter
3 Raise/lower brush switch, emergency operation

Figure 219: Rear control panel

5 Release the button when the brush is in the top end position.

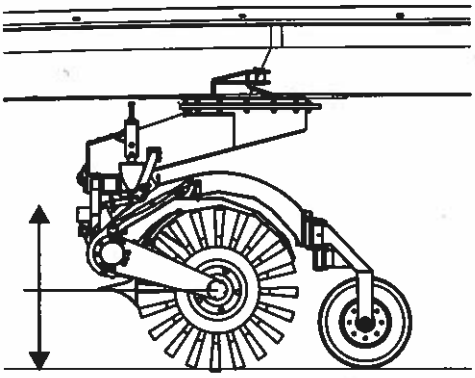


Figure 220: Brush height

6 Stop the engine.

7 Remove the screws holding the brush carrier plate on the left side of the brush.

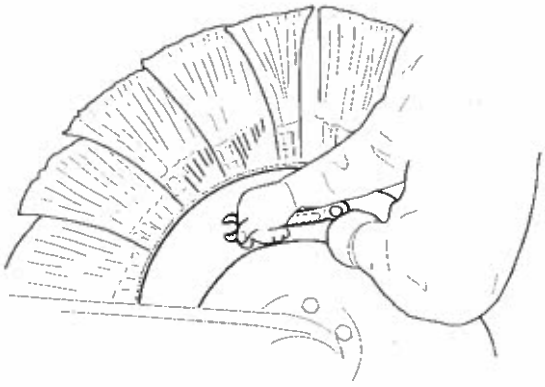


Figure 221: Remove the brush carrier plate

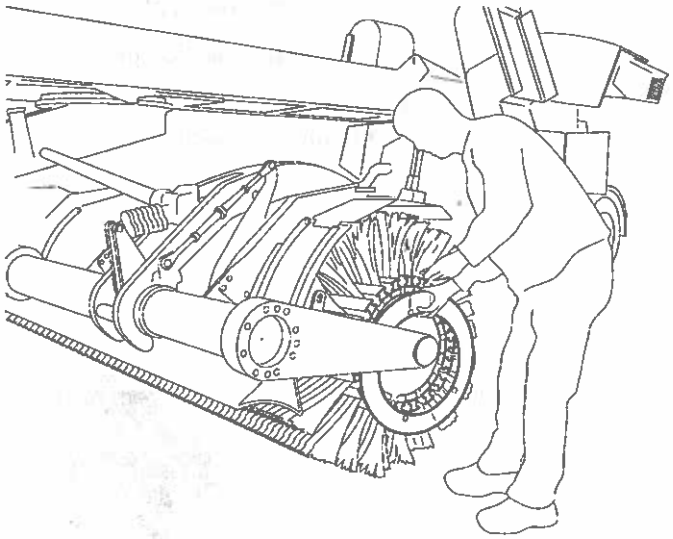


Figure 222: Allow the brush carrier to hang from the shaft.

8 Remove the brush cassettes. If any brush cassettes are stuck use a wooden broomstick to push out the cassettes.

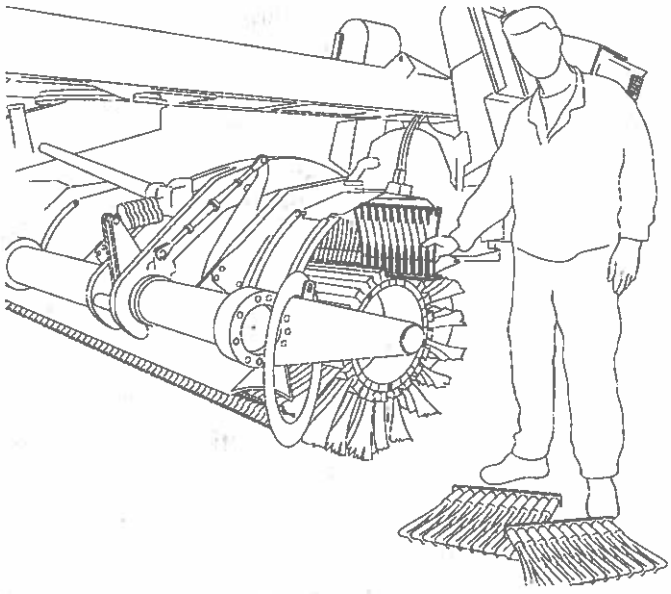


Figure 223: Remove the brush cassettes

9 Wash the shaft with water and a high-pressure washer. Rotate slowly, or alternatively tip the shaft to one side so that the water can run out.

10 Check the aluminium profiles. These must not be so damaged that they make it difficult to replace the brush cassettes.

11 Check that the plastic guides are not damaged or worn.

12 Tighten the screws in the brush shaft during the first brush replacement. Tightening torque 50 Nm.

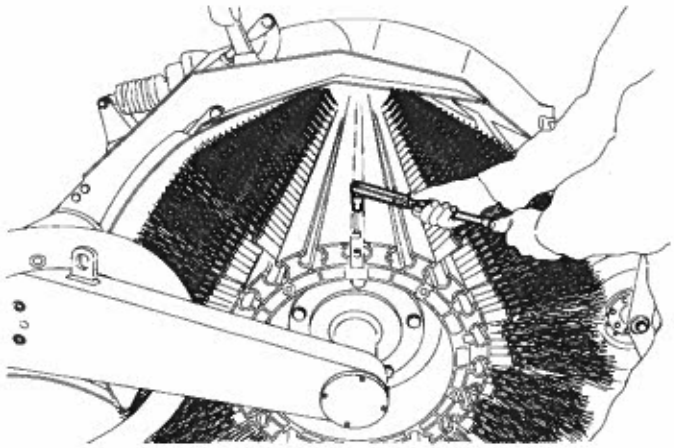


Figure 224: Tighten the screws

13 Install new brush cassettes. If the brush cassettes do not enter the slots smoothly, lubricate with silicone.

NOTE!

The brush carriers and the slots for the brush cassettes must not be lubricated with grease. Lubrication must only be performed with silicone-based lubricants.

14 Install the brush carrier ring in position and tighten the screws to 50 Nm.

15 Start the engine see section 4.1.1 Start, page 149.

16 Start the automatic brush calibration see section 5.5.1 Automatic Brush Calibration, page 188.

Comments

Let the brush spin for 5-8 minutes above ground level before taking the brush into operation. This is in order to remove possibly loosed treads.

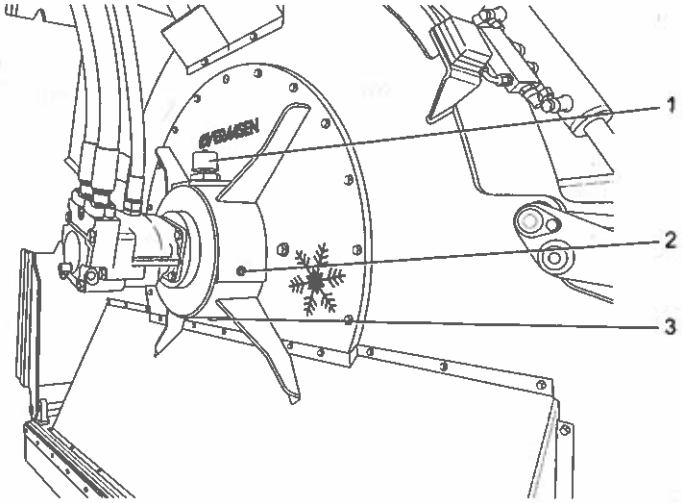
5.6 Blower System

5.6.1 Check Blower Bearing Oil Level

Check that the oil level is visible in the sight glass on blower bearing housing.

— NOTE! —

If the oil level in not visible in the sight glass, the oil level could be too high or too low.



1 Filling plug/breather
2 Sight glass
3 Drain plug

Figure 225: Blower bearing

5.7 Rear Axle

WARNING!

Secure the vehicle so that it cannot start moving when working on the wheels and rear axle. Risk of crushing injuries.

Consult the BPW Maintenance instructions, section 3.1 for lubrication tasks and section 3.2.2 for maintenance tasks.

5.7.1 Check Tyres and Tyre Pressure

Check that the tyres are in good conditions without damages and flat spots.

Check tyre pressure when the tyres are cold and adjust if necessary. Please see section 2.14 Wheels and Tyres, page 21

5.7.2 Tighten Wheel Nuts

Tighten the wheel nuts. Please see section 2.18 Tightening Torques, page 27.

On behalf of Stein Erik and myself, I would like to thank you very much for having the opportunity to present the Overaasen Company and products to you and others. I would also like to thank you for all the time you spent with us and doing the driving. Greatly appreciated.

Also wanted to check with you to see if there are any questions that may have come up after we left, that we can answer.

Thanks again and look forward to "hopefully" working with your airport in the future,

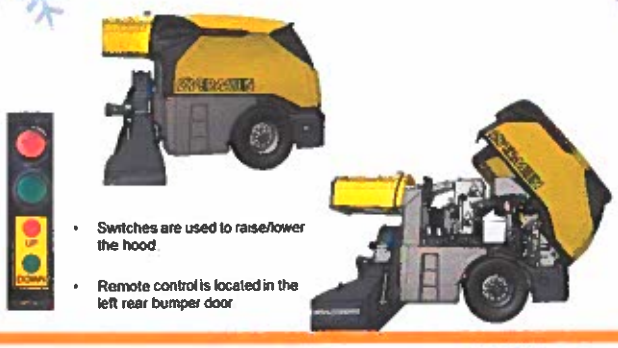
Sincerely,

Bill Myslik

MYSLIK, Inc. - **www.myslikinc.com**
22751 Sunrise Drive
Morrison, Colorado 80465
office 303-697-9692, cell 303-810-0521 fax-303-697-9693
SPECIALIZING IN: FOD, SNOW & ICE REMOVAL EQUIPMENT

"The bitterness of poor quality remains long after the sweetness of low price is forgotten" Benjamin Franklin

Engine hood



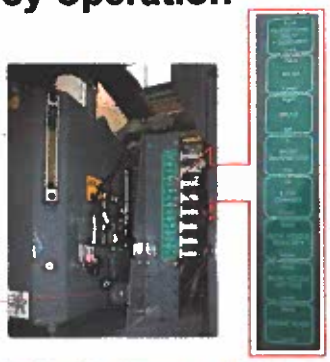
- Switches are used to raise/lower the hood.
- Remote control is located in the left rear bumper door

Operation

Start-up

Emergency operation

- Warning be sure nobody/ nothing is in the way off the brush and/or blower
- In case of an engine failure its possible to move all the hydraulic functions by using the electro-hydraulic pump.
- Use one hand to operate the pump switch while the other hand operates the valve.
- Read the sticker beside the valve for the proper function.



Med vennlig hilsen / Best regards

Stein Erik Pettersen
Key Account Manager

ØVERAASEN
SNOWREMOVAL SYSTEMS

Øveraasen AS, Roald Amundsens veg 1, 2816 Gjøvik, Norway

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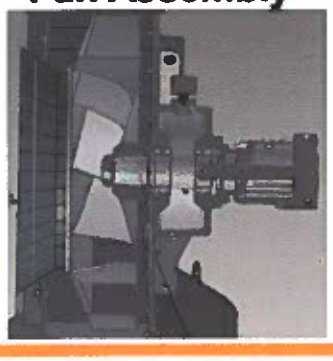
Fra: Bill Myslik [mailto:bmyslik@myslikinc.com]
Sendt: mandag 5. mars 2018 23:26
Til: 'Rich Griffith' <RGriffith@waa.ca>
Kopi: Stein Erik Pettersen <stein.erik.pettersen@overaasen.no>
Emne: Thank you

Hello Rich,

Engine compartment

Fan Assembly



Air Blower System

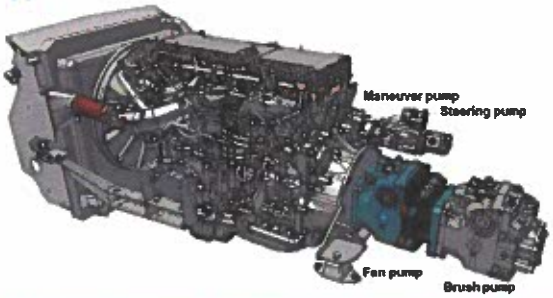
Diesel/Adblue tank

- Volume diesel tank: 1000 liters
- Volume Ad-blue tank: 45 liters

Hydraulic

1. Tank
2. Oil level indicator
3. Quick connection for draining or filling
4. Valves
5. Return filter
6. Temperature and level sensor
7. Breather filter

Hydraulic pumps



Rich Griffith

From: Stein Erik Pettersen <stein.erik.pettersen@overaasen.no>
Sent: Tuesday, March 06, 2018 5:54 AM
To: Bill Myslik; Rich Griffith
Subject: Thank you
Attachments: Reference list - runway sweeper 22.09.2009.doc

Hello Rich!

Thank you very much for the interesting days we spent together in Winnipeg! It was a pleasure for me to visit you and your colleagues. As Bill wrote, it was greatly appreciated.

As agreed upon, please find attached to this e-mail:

1. Reference list RS-units. The RS 200 and 400 are the same type of Runway Sweepers except from the clearing width. FLO/LUFT is the Norwegian Military. Bundewehr is the German military. AVINOR is the Norwegian Aviation Authorities. Danish defence Organization is the Danish military. Försvarets Materiellverk is the Swedish military.
2. Pictures from our production line, showing some details. Due to the size of these files, I must send you these pictures in a separate e-mail or by Dropbox.
3. Access to the Overaasen calculation tool.
4. Graphics showing the main components. Please see pictures below.

Access to the Overaasen calculation program:

Adress:
http://dev.senag.com/oct/
Username:
264thor
Password:
468snow. (do not forget the dot after snow)

PLEASE TREAT THE ACCESS TO THE CALCULATION TOOL CONFIDENTIAL. IT IS FOR YOUR USE ONLY. WE DON'T WANT OUR COMPETITORS TO SEE IT!

Oslo Gardermoen Airport	Norway	1	1989
Glasgow Airport	United Kingdom	1	1989
Moscow Sheremetyevo Airport	Russia	7	1988-1989
Sofia Airport	Bulgaria	4	1988
Turkish Airforce	Turkey	6	1987
Warsaw Okecie Airport	Poland	4	1985-1993
Milano-Linate Airport	Italy	4	1985-1987
Surnburgh Airport	Shetland	1	1985
Birmingham Airport	United Kingdom	2	1985
Frankfurt Airport	Germany	3	1985
Yugoslavian Airforce	Yugoslavia	21	1984-1986
Hamburg Airport	Germany	3	1984
Kirkwall Airport	United Kingdom	1	1983
Benbecula Airport	United Kingdom	1	1983
East Midlands Airport	United Kingdom	1	1983
Newcastle Airport	United Kingdom	3	1982-1985
Oslo Airport	Norway	3	1975
Bergen Airport	Norway	5	1970-1988
Stavanger Airport	Norway	3	1970
Norwegian Airforce	Norway	48	1970-1988
Civil Aviation Authorities	Norway	30	1970-1985
Bodø Airport	Norway	4	1970-1984
Luton Airport	United Kingdom	3	1961-1983

Gjøvik, Norway 16.02.2018

Type SB 470

Vienna Airport	Austria	1	1996
Kastrup Airport	Denmark	8	1994-1995
Stockholm-Arlanda Airport	Sweden	6	1991-1992

Type SB-80/SB-90

Norwegian Airforce	Norway	3	1996
Düsseldorf Airport	Germany	2	1995
Norwegian Airforce	Norway	2	1995
Mälardalen Airport	Sweden	2	1995
Frankfurt Airport	Germany	1	1995
Brussels Airport	Belgium	3	1994
Kirkenes Airport	Norway	1	1994
Bucharest Otopeni Airport	Romania	3	1994
Düsseldorf Airport	Germany	1	1994
Bergen Airport	Norway	1	1993
Årø Airport	Norway	1	1993
Kristiansund Airport	Norway	1	1993
Kirkwall Airport	England	1	1993
Beijing Airport	China	5	1993
Harbin Airport	China	2	1993
Urumqi Airport	China	2	1993
Shenyang Airport	China	1	1993
Bergen Airport	Norway	1	1993
Harstad/Narvik Airport	Norway	2	1992
Tromsø Airport	Norway	2	1992
Norwegian Airforce	Norway	1	1992
Belgian Airforce	Belgium	4	1992
Harstad/Narvik Airport	Norway	1	1992
Tromsø Airport	Norway	1	1992
Molde Airport	Norway	1	1991
Bergen Airport	Norway	1	1991
Kristiansund Airport	Norway	1	1991
Roskilde Airport	Denmark	1	1991
Fyrstad Airport	Sweden	1	1991
Frankfurt Airport	Germany	4	1991
Glasgow Airport	United Kingdom	1	1991
Heathrow Airport	United Kingdom	2	1990
Oslo Gardermoen Airport	Norway	2	1990
Ålesund/Vigra Airport	Norway	2	1990
Ust-limsk Airport/Sibiria	Russia	1	1990
Fyrstad Airport	Sweden	1	1990
Surnburgh Airport	Shetland	1	1990
Glasgow Airport	United Kingdom	3	1990
Norwegian Airforce	Norway	1	1990
Ålesund/Vigra Airport	Norway	1	1989

Avinor Mosjøen Lufthavn	Norway	1	2015
Avinor Vadsø Lufthavn	Norway	1	2015
Avinor Berlevåg Lufthavn	Norway	1	2015
Estonia Air Force	Estonia	2	2015
Brussels Airport	Belgium	5	2015
Lodz Airport	Poland	1	2015
Basel/Mulhouse Airport	Switzerland	9	2015
Bornholms Lufthavn	Denmark	1	2014

Type RSC 200

Lvov Airport	Ukraine	5	2012
Donetsk Airport	Ukraine	3	2012
Polish Air Force	Poland	6	2011
Donetsk Airport	Ukraine	2	2011
Frankfurt Airport	Germany	4	2011
Cominvest	Russia	1	2010
Frankfurt Airport	Germany	2	2010
Russia Airlines	Russia	2	2009
Dalian Airport	China	1	2008
Frankfurt Airport	Germany	1	2007
Salzburg Airport	Austria	1	2007
Dresden Airport	Germany	1	2007
Frankfurt Airport	Germany	3	2005
Oslo Airport Gardermoen	Norway	3	2002
Oslo Airport Gardermoen	Norway	3	1999
Bangda Airport	China	2	1998
Sarajevo Airport	Bosnia	1	1998
Shenyang Airport	China	3	1997
Shenyang Airport (RSF 200)	China	1	1997
Urumqi Airport	China	2	1997

Type RSC 400 (H)

Bergamo Airport	Italy	1	2016
Tiroler Flughafenbetriebsgesellschaft mbH	Austria	1	2016
Bergamo Airport	Italy	1	2016
Tiroler Flughafenbetriebsgesellschaft mbH	Austria	1	2014
Ostrava Airport	Czech Republic	3	2013
Tiroler Flughafenbetriebsgesellschaft mbH	Austria	1	2012
Flughafen Dresden	Germany	1	2011
Sarajevo Airport	Bosnia	2	2011
Szczecin Airport	Poland	3	2011
Norwegian Air Force Rygge	Norway	1	2010
Flughafen Dresden	Germany	6	2009
München Airport	Germany	1	2006

Sarajevo Airport	Bosnia	3	1998
Frankfurt Airport	Germany	2	1998
Stavanger Airport	Norway	1	1997
Kuopio Airport	Finland	1	1997
Bucharest Airport	Romania	2	1997
Dublin Airport	Ireland	1	1997
Frankfurt Airport	Germany	2	1997
Kosice Airport	Slovakia	1	1997
Skövde Airport	Sweden	1	1997
Warsaw Int. Airport	Poland	1	1997
Kirkenes Airport	Norway	1	1997
Tromsø Airport	Norway	1	1996
Düsseldorf Airport	Germany	1	1996
Sofia Airport	Bulgaria	2	1996
Linköping Airport	Sweden	1	1996
Växsjö Airport	Sweden	1	1996
Dublin Airport	Ireland	1	1996
Frankfurt Airport	Germany	1	1996
Belgian Airforce	Belgium	5	1996

RSC 250 (new model since 2014)

Flughafen Berlin Brandenburg	Germany	4	2018
Paris Airport Charles de Gaulle	France	6	2018
Venice Airport	Italy	1	2017
Stuttgart Airport	Germany	1	2017
Riga Airport	Lithuania	1	2017
Paris Airport Charles de Gaulle	France	3	2017
Technotrade	Russia	2	2017
Newcastle International Airport	United Kingdom	1	2017
Flughafen Berlin Brandenburg	Germany	2	2017
Technotrade	Russia	2	2017
Avinor Ørsta/Volda	Norway	1	2017
Paris Airport Orly	France	2	2017
Gdansk Airport	Poland	1	2016
Avinor Sørkjosen	Norway	1	2016
Paris Airport Orly	France	1	2016
Amsterdam Airport Schiphol	Netherlands	5	2016
Avinor Florø	Norway	1	2016
Avinor Røst Lufthavn	Norway	1	2016
Avinor Honningsvåg	Norway	1	2016
Avinor Stokmarknes	Norway	1	2016
Avinor Sandnessjøen	Norway	1	2016
Avinor Vardø	Norway	1	2016
JSC Cominvest	Russia	1	2016
Avinor Leknes Lufthavn	Norway	1	2015
Avinor Rørvik Lufthavn	Norway	1	2015

Edinburg Airport	United Kingdom	1	2010
Luton Airport	United Kingdom	1	2010
København Airport	Denmark	1	2010
Luton Airport	United Kingdom	1	2009
Copenhagen Airport	Denmark	1	2009
Airport Kosice	Slovakia	1	2008
JSC Cominvest	Russia	1	2007
Försvarets Materielverk	Sweden	29	2007
Norwegian Airforce	Norway	1	2007
Kosice Airport	Slovakia	1	2007
Bristol Airport	United Kingdom	1	2007
Vagar Airport	Faroe island	1	2006
Bundeswehr	Germany	1	2006
EADS	Germany	1	2006
Bornholm Airport	Denmark	1	2005
Bristol Airport	United Kingdom	1	2005
Manchester Airport	United Kingdom	2	2005
Airbus Industries	Germany	1	2004
Stansted Airport	United Kingdom	1	2004
Norwegian Airforce	Norway	1	2004
München Airport	Germany	1	2004
Bornholm Airport	Denmark	1	2003
Stansted Airport	United Kingdom	1	2003
Copenhagen Airport	Denmark	1	2003
Lycksele Airport	Sweden	1	2002
Linköping Airport	Sweden	1	2002
NATO Geilenkirchen	Germany	3	2002
Norwegian Airforce	Norway	1	2001
Dublin Airport	United Kingdom	1	2001
Stansted Airport	United Kingdom	1	2001
Frankfurt Airport	Germany	4	2001
Stansted Airport	United Kingdom	1	2001
Copenhagen Airport	Denmark	1	2000
Warsaw Airport	Poland	1	2000
Munich Airport	Germany	2	2000
Manchester Airport	England	1	2000
Frankfurt Airport	Germany	4	2000
Copenhagen Airport	Denmark	1	2000
Kuopio Airport	Finland	1	2000
Manchester Airport	England	1	2000
Munich Airport	Germany	4	1999
Alta Airport	Norway	1	1999
Copenhagen Airport	Denmark	1	1999
Frankfurt-Hahn Airport	Germany	1	1999
Frankfurt Airport	Germany	3	1999
Copenhagen Airport	Denmark	1	1998
Alta Airport	Norway	1	1998

Frankfurt Airport	Germany	5	2002
Sandefjord Airport Torp	Norway	1	2002
Port Authorities of NY&NJ	United States	6	2002
Oslo Airport Gardermoen	Norway	1	2001
Sandefjord Airport	Norway	1	2001
Växjö Airport	Sweden	2	2000
Munich Airport	Germany	3	2000
Munich Airport	Germany	1	1999
Oslo Airport Gardermoen	Norway	7	1999

Type RS 200

Border Roads Organization	India	5	2018
FLO/LUFT	Norway	1	2017
FLO/LUFT	Norway	2	2017
Queenstown Airport	New Zealand	1	2017
Grønlands Lufthavne	Greenland	1	2016
JSC Cominvest	Russia	3	2016
Vaktmesterkompaniet	Norway	1	2016
Mesta	Norway	2	2016
Hannover Langenhagen Airport	Germany	2	2016
Grønlands Lufthavne	Greenland	1	2016
Slovakian Airforce	Slovakia	3	2015
Arctic Machine	Finland	2	2015
Grønlands Lufthavne	Greenland	3	2015
FLO/LUFT	Norway	2	2015
Slovakian Airforce	Slovakia	3	2014
Flughafen Stuttgart	Germany	1	2014
Gällivare Flygplats	Sweden	1	2014
Bundeswehr	Germany	55	2014
Notodden Lufthavn	Norway	1	2013
Dortmund Airport	Germany	2	2013
JSC Cominvest	Russia	5	2013
Københavns Lufthavne	Denmark	2	2013
Grønlands Lufthavne	Greenland	1	2012
Flughafen Stuttgart	Germany	1	2012
Danish Defence Organization	Denmark	8	2012
Stansted Airport	United Kingdom	1	2011
Danish Defence Organization	Denmark	4	2011
Flughafen Dortmund	Germany	2	2011
Flughafen Stuttgart	Germany	2	2011
Edinburgh Airport	United Kingdom	5	2011
London Luton Airport	Great Britain	1	2011
FLO/LUFT	Norway	1	2011
Belfast Airport	Northern Ireland	1	2011
Norwegian Airforce	Norway	1	2011

Greenland Contractor	Greenland	4	2008
Krakow	Poland	2	2008
FLO/LUFT	Norway	1	2008
Avinor	Norway	1	2008
Katovice	Poland	3	2008
Kaliningrad	Russia	4	2008
Abimex	Germany	2	2008
Bydgoszcz	Poland	1	2008
Posnan	Poland	1	2008
EDMO	Germany	1	2008
Poznan Airport	Poland	2	2007
EADS Oberfaffenhofen	Germany	1	2007
Salzburg Airport	Austria	2	2007
Jackson Hole Airport	USA	2	2007
Norwegian Airforce	Norway	1	2007
Försvarets Materiellverk	Sweden	6	2007
Belgrade Airport	Serbia	2	2007
Tromsø Airport	Norway	1	2007
Værnes Airport	Norway	1	2007
Nürnberg Airport	Germany	6	2006
Frankfurt-Hahn Airport	Germany	3	2006
Airbus Industries	Germany	1	2006
Bergen Airport	Norway	1	2006
Norwegian Airforce (Bodø)	Norway	2	2006
Port Authorities New York & New Jersey	USA	35	2006
Belfast Airport	United Kingdom	1	2006
Norwegian Airforce (Bodø)	Norway	2	2005
Lycksele Airport	Sweden	1	2005
Belfast Airport	United Kingdom	1	2005
Copenhagen Airport	Denmark	2	2005
Stavanger Airport	Norway	4	2005
Bergen Airport	Norway	3	2005
Tromsø Airport	Norway	3	2005
Trondheim Airport	Norway	3	2005
Frankfurt Airport	Germany	4	2005
Sandefjord Airport Torp	Norway	1	2005
Frankfurt-Hahn Airport	Germany	2	2005
Umeå Airport	Sweden	3	2004
Munich Airport	Germany	1	2004
Frankfurt-Hahn Airport	Germany	1	2004
Ängelholm Airport	Sweden	1	2004
Frankfurt Airport	Germany	3	2004
Copenhagen Airport	Denmark	1	2004
Oslo Airport Gardermoen	Norway	5	2004
Copenhagen Airport	Denmark	1	2003
Frankfurt-Hahn Airport	Germany	3	2003
Naval Air Station Keflavik	Iceland	1	2002

London South End	United Kingdom	2	2012
Belgrade Airport	Serbia	1	2012
Lvov Airport	Ukraine	5	2012
Vagar Lufthavn	Faroe Island	1	2012
Donetsk Airport	Ukraine	2	2011
Flughafen GmbH Kassel	Germany	1	2011
Airbus Industries	Germany	1	2011
Glasgow Airport	United Kingdom	2	2011
Graz Airport	Austria	2	2011
FLO/LUFT	Norway	1	2011
Avinor, Alta Airport	Norway	3	2011
Copenhagen Airport	Denmark	2	2011
Hannover Airport	Germany	1	2011
Oslo Airport	Norway	1	2011
Warsaw Airport	Poland	4	2011
Heathrow Airport	United Kingdom	10	2011
Gazprom	Russia	1	2011
Gatwick Airport	United Kingdom	9	2011
Wroclaw Airport	Poland	2	2011
Frankfurt Airport	Germany	9	2011
Oslo Airport	Norway	2	2010
Madrid Airport	Spain	15	2010
UFA Airport	Russia	1	2010
Bydgoszcz Airport	Poland	1	2010
Salzburg Airport	Austria	1	2010
Belgrade Airport	Serbia	1	2010
Hannover Airport	Germany	2	2010
Salzburg Airport	Austria	1	2010
Hammerfest Airport	Norway	1	2010
Ålesund Airport	Norway	3	2010
Harstad/Narvik Airport	Norway	3	2010
Warsaw Airport	Poland	6	2010
Oslo Airport	Norway	1	2010
Sandefjord Airport	Norway	1	2009
Flughafen Graz	Austria	2	2009
Norwegian Airforce	Norway	2	2009
Flughafen Hannover GmbH	Germany	2	2009
München Airport	Germany	1	2009
Salzburg Flughafen	Austria	1	2009
Port Authority of NY & NJ	USA	1	2008
Lodz Airport	Poland	1	2008
Flughafen Hamburg	Germany	1	2008
Sandefjord Airport	Norway	1	2008
Banja Luka Airport	Bosnia	1	2008
Hannover Airport	Germany	3	2008
Kabul International Airport	Afghanistan	2	2008
Copenhagen Airport	Denmark	2	2008

Salzburg Airport	Austria	1	2015
Lodz Airport	Poland	1	2015
Glasgow Airport	United Kingdom	2	2015
Ørebro Airport	Sweden	1	2014
Bydgoszcz Airport	Poland	2	2014
Airbus Industries	Germany	1	2014
Incheon International Airport	Korea	4	2014
Radom Airport	Poland	3	2014
Flughafen Braunschweig GmbH	Germany	1	2014
Vesterås Flygplats	Sweden	1	2014
Radom Airport	Poland	3	2014
Avinor Molde Lufthavn	Norway	1	2014
Avinor Haugesund Lufthavn	Norway	1	2014
Avinor Kristiansund Lufthavn	Norway	1	2014
København Lufthavn	Denmark	3	2014
Grønlands Lufthavn	Greenland	1	2014
Modlin Airport	Poland	3	2014
Avinor Haugesund Lufthavn	Norway	1	2013
Avinor Kristiansand Lufthavn	Norway	3	2013
Flughafen Graz	Austria	1	2013
Salzburg Airport	Austria	1	2013
HEAS	Turkey	1	2013
Nürnberg Airport	Germany	4	2013
Billund Airport	Denmark	4	2013
Norwich Airport	United Kingdom	1	2013
Katowice Airport	Poland	1	2013
Avinor Kristiansund Lufthavn	Norway	2	2013
Avinor Stavanger Lufthavn	Norway	1	2013
Avinor Kirkenes Lufthavn	Norway	1	2013
Sofia Airport	Bulgaria	2	2013
Ostrava Airport	Czech Republic	2	2013
Oslo Airport	Norway	11	2013
Ministry of Defence	Russia	4	2013
Lycksele Flygplats AB	Sweden	1	2012
HEAS	Turkey	3	2012
Ministry of Defence	Russia	2	2012
Belgrade Airport	Serbia	1	2012
Avinor Værnes Lufthavn	Norway	1	2012
RMH Hamburg Flughafen	Germany	4	2012
Glasgow Airport	United Kingdom	1	2012
Lublin Airport	Poland	4	2012
Avinor Svalbard Lufthavn	Norway	1	2012
Avinor Kirkenes Lufthavn	Norway	2	2012
Avinor Flesland lufhavn	Norway	1	2012
Ministry of Defence	Russia	3	2012
Modlin Airport	Poland	3	2012
Donetsk Airport	Ukraine	5	2012

REFERENCE LIST ØVERAASEN RUNWAY SWEEPERS

Customers Name	Country	No	Year
Type RS 400			
Grønlands Lufthavne	Greenland	1	2018
Port Authority of NY & NJ	USA	38	2018
Katowice Airport	Poland	1	2017
Avinor Svalbard Lufthavn	Norway	1	2017
Riga Airport	Lithuania	1	2017
Zagreb Airport	Croatia	2	2017
Technotrade	Russia	2	2017
Avinor	Norway	1	2017
Jackson Hole	USA	1	2017
Flughafen Berlin Brandenburg	Germany	4	2017
Sundsvall-Timrå Airport	Sweden	1	2017
FLO/LUFT	Norway	7	2017
Avinor Oslo Lufthavn	Norway	6	2018
Avinor Bergen Lufthavn	Norway	1	2017
Avinor Oslo Lufthavn	Norway	7	2017
Port Authority of NY & NJ	USA	24	2017
Cluj International Airport	Romania	1	2016
Ireland West Airport Knock	Ireland	1	2016
Szymany Airport	Poland	1	2016
Avinor Tromsø Lufthavn	Norway	4	2016
Sundsvall-Timrå Airport	Sweden	1	2016
Växjö Smaland Airport	Sweden	1	2016
Port Authority of NY & NJ	USA	4	2016
Jackson Hole Airport	USA	1	2016
Colorado Springs Airport	USA	2	2016
Sucheava Airport	Romania	1	2016
Stockholm Skavsta Airport	Sverige	1	2016
Incheon International Airport	Korea	7	2016
Avinor Molde Lufthavn	Norway	1	2016
Avinor Bodø Lufthavn	Norway	4	2016
FLO/LUFT	Norway	1	2016
Copenhagen Airport	Denmark	2	2016
Firenze Airport	Italy	1	2015
Colorado Springs Airport	USA	1	2015
Flughafen Braunschweig-Wolfsburg GmbH	Germany	1	2015
Flughafen Paderborn/Lippstadt GmbH	Germany	3	2015
Avinor Lakselv Lufthavn	Norway	1	2015
Avinor Molde Lufthavn	Norway	1	2015
København Airport	Denmark	2	2015
Örebro Airport	Sweden	1	2015
København Lufthavn	Denmark	3	2015
Riga Airport	Latvia	2	2015