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VALTRA

OPERATOR'S MANUAL
T SERIES

HiTech

YOUR WORKING MACHINE

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About this manual

This operator's manual is for the Valtra T Series HiTech tractors. The T Series HiTech models are T144 H, T154 H, T174e H, T194 H, T214 H and T234 H.

The manual is meant for agricultural tractors only. If the tractor is used for other applications, it is the owner's responsibility to ensure compliance with local regulations. In this case, always contact your dealer first.

The purpose of this manual is to enable the owner and operator to use the tractor in a proper manner. Providing that the instructions are followed carefully, the tractor will provide years of service in the tradition of Valtra.



WARNING: Before using the tractor, read and understand all the instructions in this manual. They must then be strictly followed when operating and maintaining the tractor.

IMPORTANT: When using the tractor, always follow all valid laws and regulations even if they are not specifically pointed out in this manual.

The manual contains detailed instructions for operating, servicing and maintaining the tractor.

Optional equipment in the manual refers to equipment that can be selected when ordering the tractor.

Due to the continual development of the products, the content of this manual may not always correspond to the new product. Therefore, we retain the right to make alterations without prior notification.

Maintenance, repairs and adjustments which are not described in this manual require special tools and exact technical data. For such work contact your dealer who has specially trained personnel to help you.

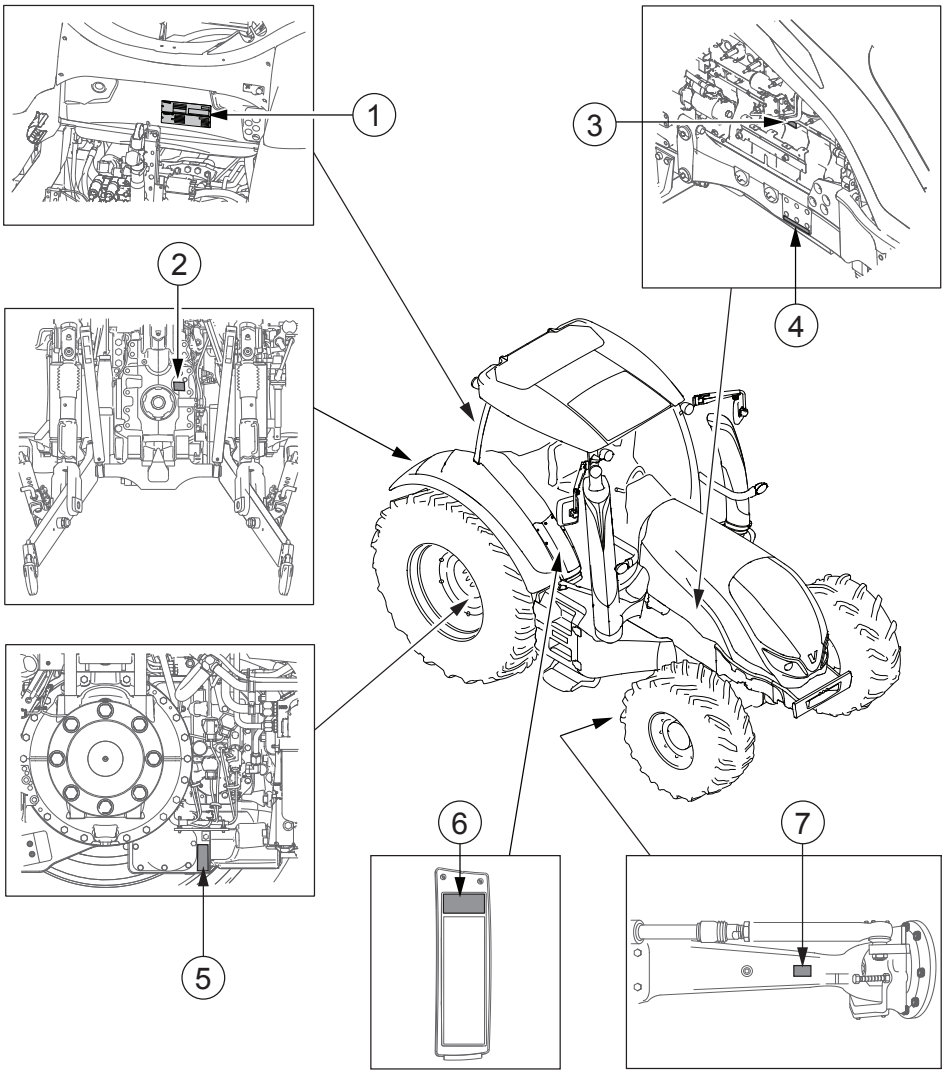
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Tractor serial numbers

When ordering spare parts or service, give the model indication and serial numbers and, in some cases, the engine, front axle, cab and transmission numbers.



1. Cab number and Type plate EEC
   - Model = model indication
   - Identification number = tractor serial number
2. Power take-off identification number
3. Engine number
4. Tractor serial number
5. Transmission Identification number
6. Tractor technical details used by service/spare part department
7. Front axle number

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1 Safety precautions

Always follow the safety precautions given when working with the tractor.

The regulations given do not release the operator from statutory and other national regulations regarding traffic safety and occupational health and safety.

In addition to the precautions given in this manual, always follow the safety regulations applicable to different types of working sites and existing road traffic laws.

1.1 Hazard statements

Five types of notifications are used in the documentation.



DANGER: Indicates an imminently hazardous situation that, if not avoided, results in death or very serious injury.



WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.



CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor injury.

IMPORTANT: Indicates special instructions or procedures which, if not strictly observed, could result in damage to or destruction of the machine, process or surroundings.

NOTE: Indicates points of particular interest for a more efficient and convenient repair or operation.

1.2 Safety rules

1.2.1 Replacing safety and information signs

Replacement signs are available from your dealer in the event of loss or damage.

1. **Replace any danger, warning, caution or instruction signs that are not readable or are missing.**



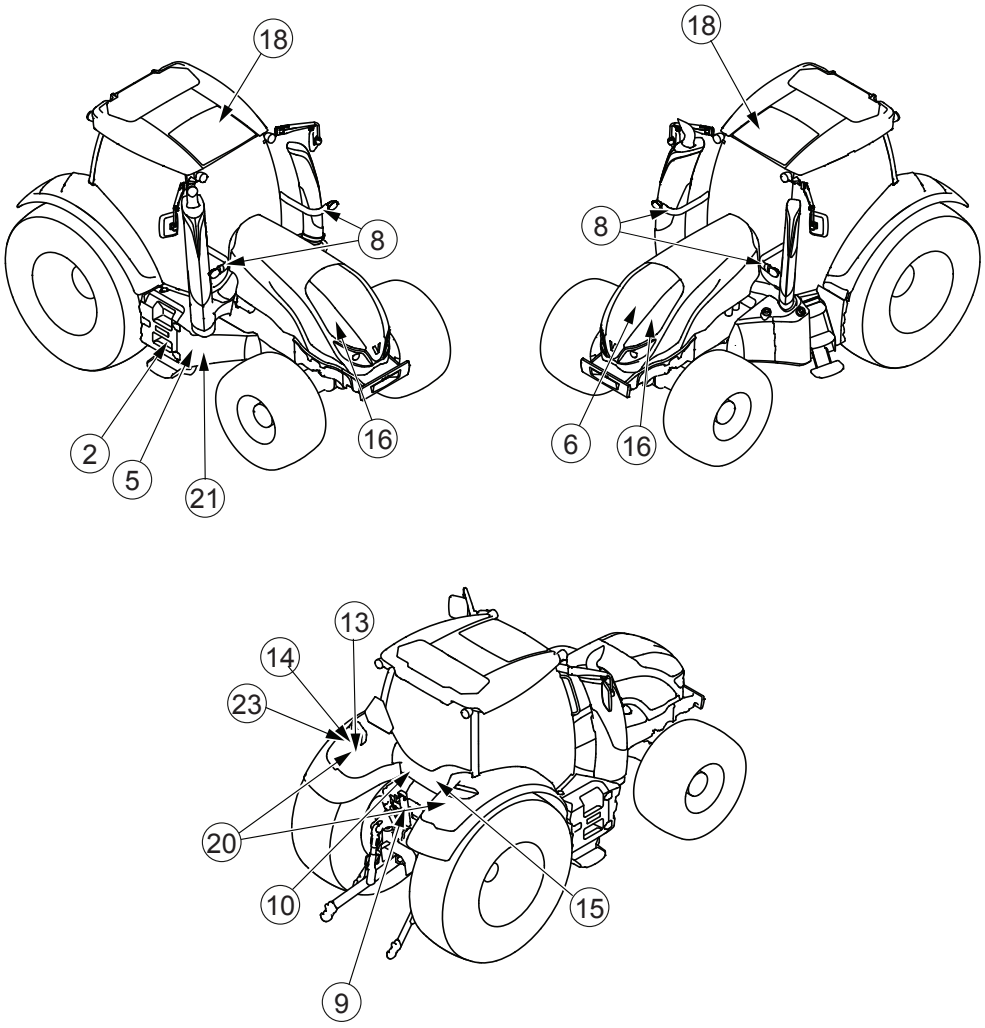
WARNING: Do not remove or obscure danger, warning, caution or instructions signs.

1.2.2 Safety signs

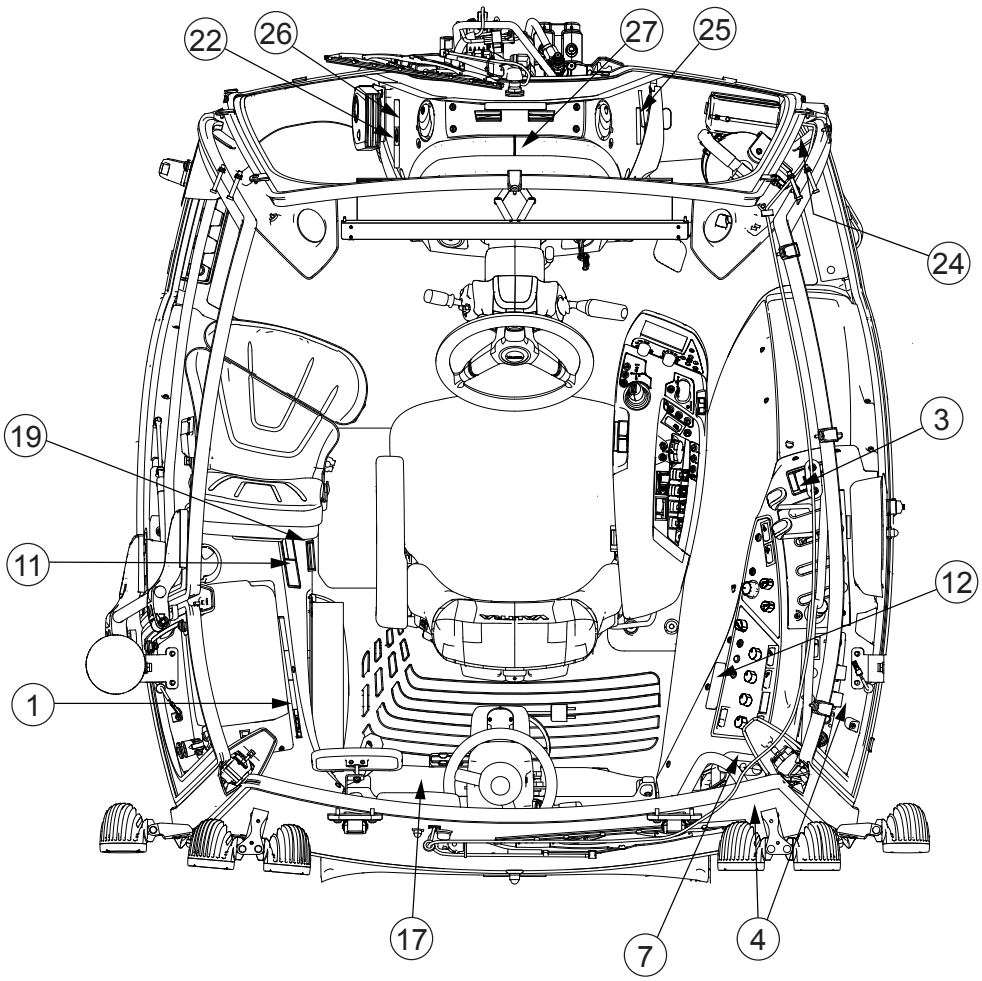
The safety signs on the tractor draw attention to possible dangers related to certain parts or equipment of the tractor. The safety signs must be clean and clearly visible. Worn or detached safety signs must be replaced.

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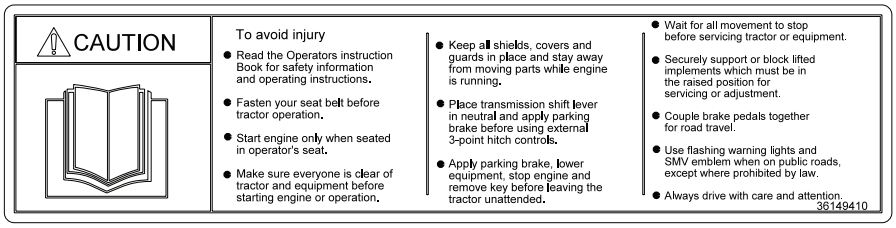
IMPORTANT: After maintenance work, all replacements for parts with a safety sign on them must include also the new safety sign.



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1	Caution: Instructions on avoiding injuries during startup, driving and maintenance. Located inside the cab, below the left-hand side C-pillar.



2	Warning: Country-specific warning concerning handling of the battery and its accessories. Located on the side of the battery casing.

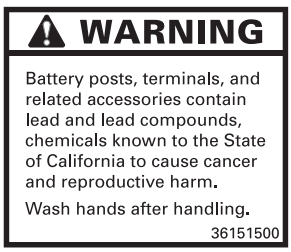
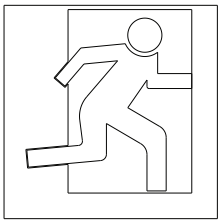
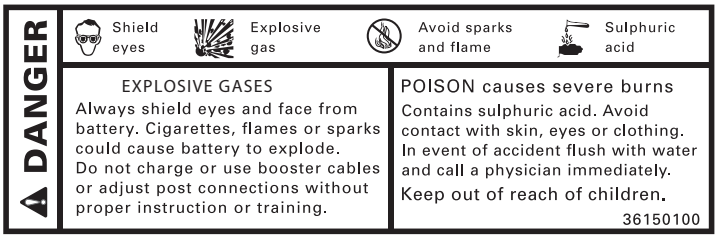


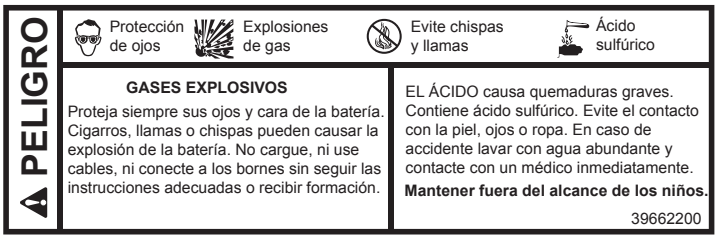


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3	Sign indicating the location of emergency brake. Located inside the cab, next to the right-hand side control panels.	
4	Sign indicating an emergency exit. Located inside the cab on the rear window and on the right-hand side window.	
5	Danger: Country-specific warning that the battery and its accessories are dangerous to handle. Located near the battery casing.	





6	Warning: Country-specific warning that for some time after use the liquid in the system is hot and under high pressure. Located under the bonnet.	





7	Warning: Sign indicating the location of the hitch locking release. Located in the cab, below the rear window.	
8	Warning: Country-specific warnings that surfaces are hot after use. Located on the marker light support on the exhaust pipe's side of the cab.	



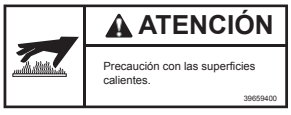
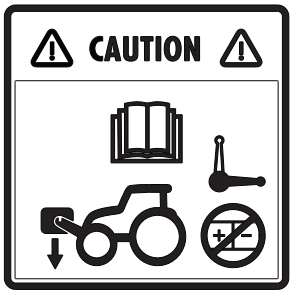
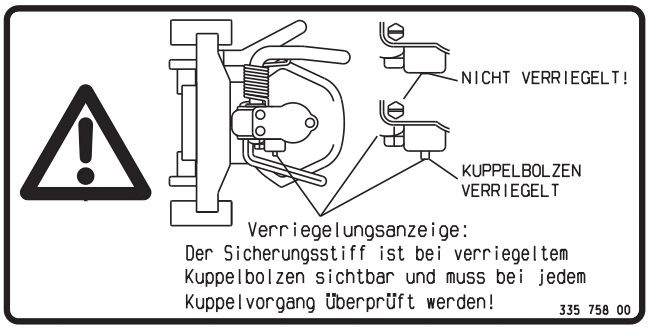
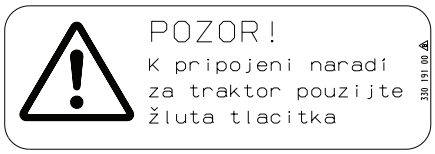
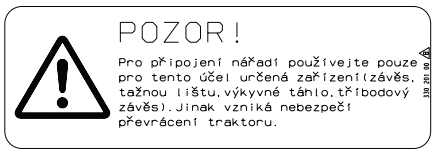
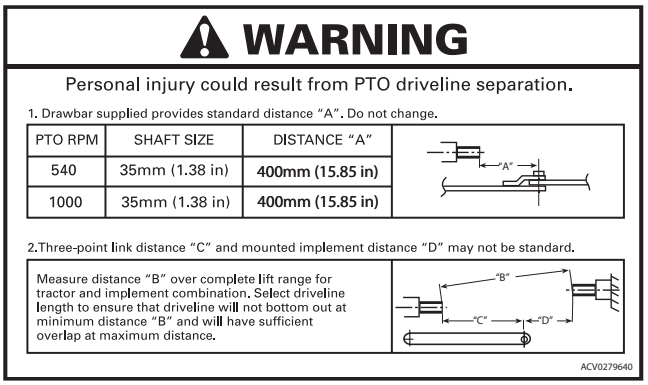


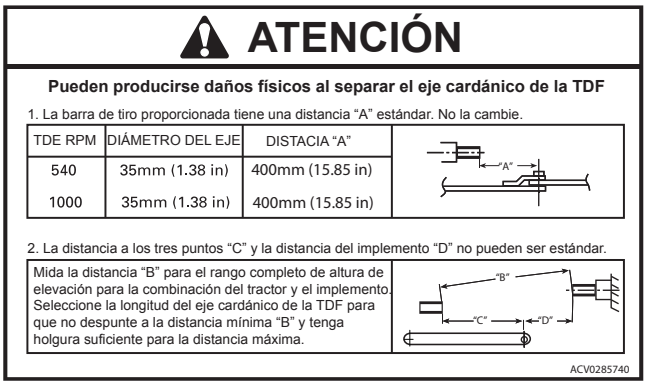
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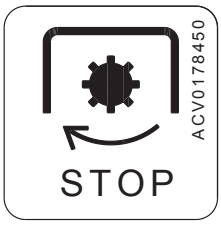
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<table>
<tr><td>9</td><td>Caution: During the connection of the front linkage to the shut-off valve, there must be no load on the front linkage or a rear implement connected to the same valve. The warning sign is located next to the shut-off valve at the back of the tractor.</td><td> 
</td></tr>
<tr><td>10</td><td colspan="2">Country-specific warning concerning jaw locking. Located below the rear window on the outside of the tractor.</td></tr>
<tr><td></td><td colspan="2"> 
</td></tr>
<tr><td>11</td><td colspan="2">Warning: Country-specific warning against standing on the stairs while the tractor is moving. Located in the cab, behind the passenger seat.</td></tr>
<tr><td></td><td> 
</td><td> 
</td></tr>
<tr><td>12</td><td>Country-specific notification concerning the power lift / front linkage. Located in the cab, near the control panel on the right-hand side.</td><td> 
</td></tr>
<tr><td>13</td><td>Country-specific notification concerning connecting of implements. Located at the back of the tractor, on the left rear wheel mudguard.</td><td> 
</td></tr>
<tr><td colspan="3">Table continued on next page</td></tr>
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<table>
<tr><td>14</td><td>Warning: Country-specific sign indicating the standard distances related to PTO driveline. Located at the back of the tractor, on the left rear wheel mudguard.</td></tr>
<tr><td></td><td>




</td></tr>
<tr><td>15</td><td>Sign indicating location of the PTO emergency stop. Located at the back of the tractor, below the rear window.</td></tr>
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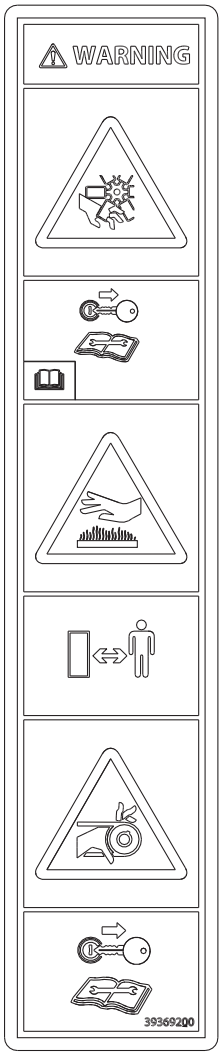
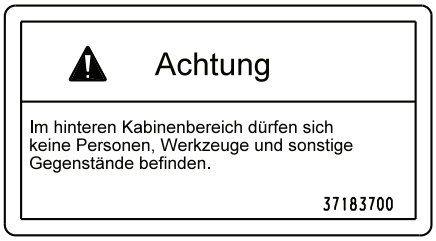
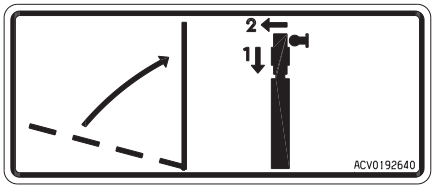
16	Warning: The sign warns against several dangers: • exposed fan which can crush and cut • surfaces which can be hot • exposed belt drive which can cause severe injury Located under the bonnet, on both sides of the radiator.	
17	Country-specific notification concerning the reverse drive system. Located in the cab, next to the TwinTrac driving controls.	
		
18	The sign advises how to open the roof hatch so that it can be used as an emergency exit. Located in the cab, on the roof hatch.	
		

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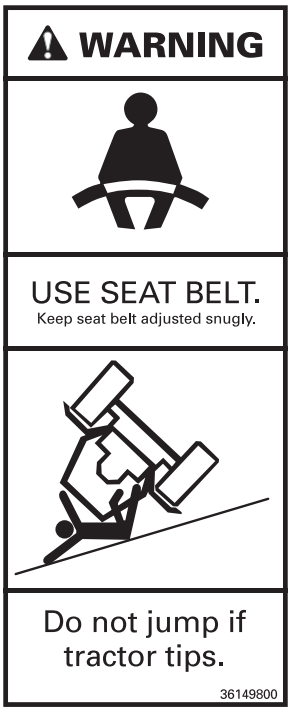
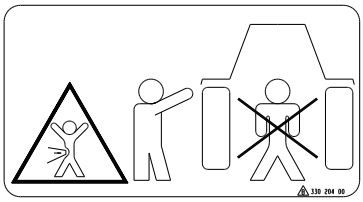
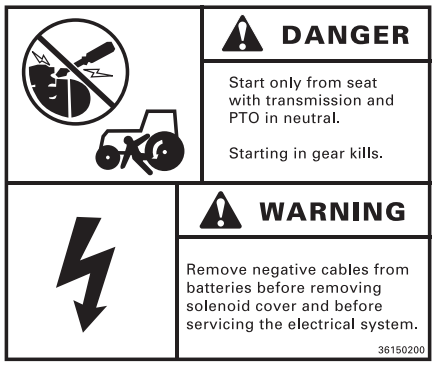
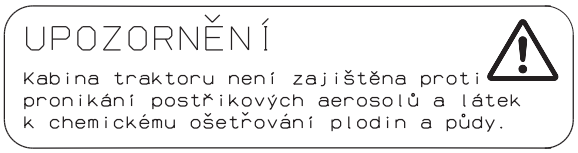
19	Warning: Country-specific sign notifying that the seat belt must be used when driving the tractor. Located behind the passenger seat.	
		
20	Warning against standing directly behind the tractor when it is used. Located at the back of the tractor, on both rear mudguards.	
21	Country-specific signs located near the battery casing. Danger: Starting the tractor is only allowed when sitting in the seat with the transmission and PTO in neutral. Warning: Preparations for servicing the electrical system.	
		

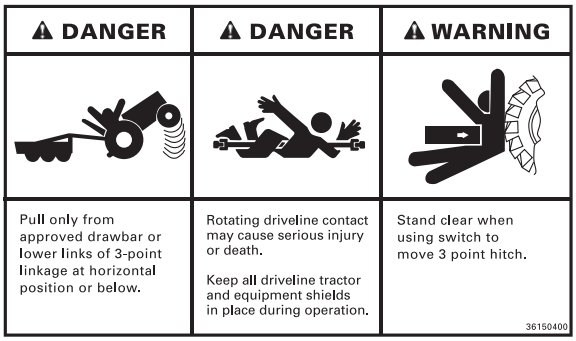
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22	Country-specific warning concerning cabin tightness. Located in the cab, on the left side of the front housing.



23	Country-specific signs located at the back of the tractor, on the left rear mudguard. Danger: Only approved parts in their correct position can be used for pulling. Danger: All equipment shields must be kept in place during operation. Warning: The switch to move the three-point hitch must not be used while standing directly behind the tractor.





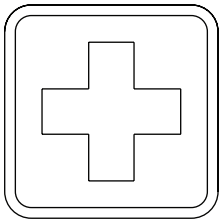
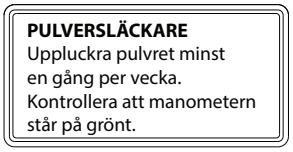
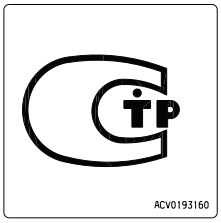
24	Sign indicating the location of first aid kit. Located on the right-hand side A-pillar.	

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25	Country-specific safety signs located on the front housing, next to the fire extinguisher.	
		
26	Country-specific notification concerning tractor approval. Located in the cab, on the front housing.	
27	Country-specific notification as a reference for surface inclination. Located in the cab, on the windshield.	

1.2.3 Maintaining hardware safety

To ensure maximum safety for the operator, maintain tractor hardware safety.

The owner is responsible for repairing any damage or wear which might endanger the safety of the tractor.

- **Cab**

  Take care that damages on the cab are repaired without delay to ensure the cab's protective capability.

  WARNING: If damage occurs to the cab, replace all affected parts with new ones. Do not attempt any repair work (welding, drilling, cutting or grinding) without first consulting the manufacturer.

- **Tractor construction**

  Do not change the tractor construction, such as maximum driving speed or maximum power.

  The tractor is type-approved to comply with construction and use regulations. Any changes to the tractor construction may reduce safety and durability and affect the warranty terms.

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- **Brakes**
  - Always check before driving that the brakes are working.
    - After attaching a trailer, check that the brakes are working.
  - Lock the brake pedals together whenever individual wheel brakes are not required and always when driving on the road.
  - Extensive repairs to the braking system should be undertaken only by an authorised Valtra workshop.
  - When implements or ballast weights are front-end-mounted, the rear axle loading is decreased.
    - Make sure that steering is still effective.
    - Make sure that the tractor remains stable and the rear end does not rise up when braking.
    - Use appropriate ballast weights at the rear as required.
    - Do not exceed the maximum axle loads.
- **Cleaning**

  Keep the tractor clean to decrease the risk of fire.
- **Lights**
  - Make sure that lights and reflectors are clean and in working order.
  - Make sure that the headlights are correctly adjusted.
- **Steps**

  Keep the steps clean as dirty steps can lead to falls and injuries.
- **Quick couplings**

  WARNING: Clean the quick couplings and ball joints before attaching an implement. There is a risk that the implement is not attached properly.
- **Maintenance**
  - Follow the maintenance instructions and safety precautions applicable to the tractor.
  - Stop the engine and lower the implement before carrying out any maintenance work on the tractor or implement.

    DANGER: Support the tractor from the correct support points on the frame and use suitable blocks or stands when carrying out maintenance tasks that require supporting the tractor.

1.2.4 Using safety features

The tractor has several features that contribute to the safety of the operator.

- **Steering wheel and safety handles**

  WARNING: Hold on to the steering wheel or safety handles in the cab if the tractor tips over. Never try to jump out.
- **Safety belt**

  Always use the safety belt when using the tractor.

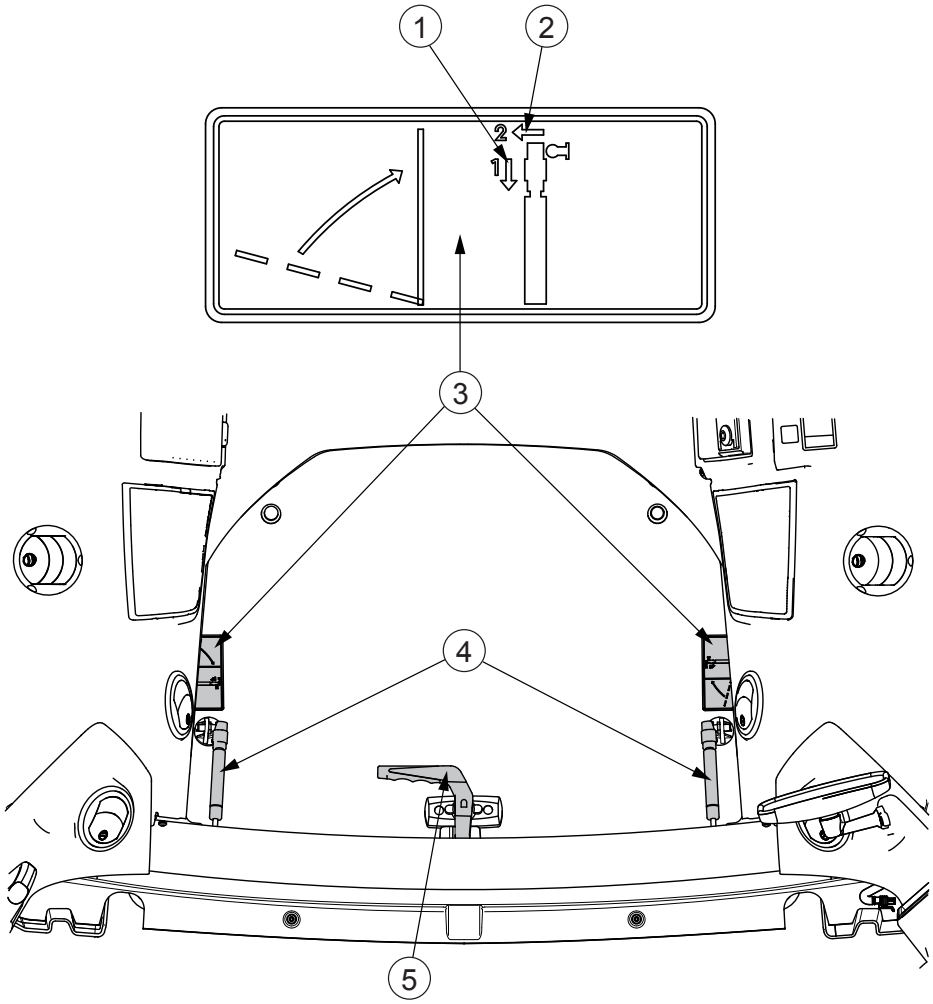
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- **Emergency exits**

  Familiarise yourself with the three emergency exits of the tractor cab, that is, the door, the rear window and the roof hatch. If necessary, the right-side window can be broken and used as emergency exit. The windshield is polycarbonate and cannot be easily broken.
  When the tractor is equipped with the Skyview roof (optional), there is no roof hatch which could be used as an emergency exit. The windshield is then made of glass and can be broken and used as an emergency exit.

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- **Roof hatch**



1. Direction for releasing the lock
2. Direction for detaching the spring
3. Safety sign for using the emergency exit
4. Gas springs with quick locks
5. Handle

- **Pull open the sunshade.**
- **Turn the handle to unlock the hatch.**
- **Release the locking of the gas springs by pulling the spring shafts to the direction the arrow indicates.**
- **Detach both gas springs from their quick locks by pulling to the direction the arrow indicates.**
- **Push the hatch fully open.**

WARNING: When driving on ice, keep the roof hatch open.

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- **Emergency brake**

  Use the emergency brake only in emergency situations if braking with brake pedals is not possible.

  WARNING: Turning the ignition switch to (OFF) position cannot be used as an emergency brake. The emergency brake operates only when the power is switched on.

  WARNING: Emergency brake uses the parking brake which is not designed for continuous use. The parking brake can become faulty.

  WARNING: Using emergency brake in slippery conditions can result in skidding and loss of control. Release the emergency brake immediately when there is danger of wheels locking up. Release the emergency brake only if you can do it safely.

1.2.5 Safe operation

1.2.5.1 Following safe operating practices

To operate the tractor safely, follow all safety precautions and instructions.

- **Avoid operating the tractor near ditches, embankments and holes.**
- **Stay off slopes too steep for safe operation.**
- **When using chemicals, carefully follow the chemical manufacturer's instructions for use, storage and disposal.**

  Also follow the chemical application equipment manufacturer's instructions.

- **Protect yourself against engine noise.**

  Use hearing protectors to avoid injuries when you are working outside the cab near the engine.

- **Avoid carbon monoxide poisoning.**

  WARNING: To avoid carbon monoxide poisoning, do not start the engine or run it indoors with the doors closed unless the exhaust is vented to the outside.

- **Restart after engine stop.**
  - If the engine has stalled, for example due to too heavy loading, turn the ignition key to the Off position.
  - Restart the engine. Keep an eye on the indicator lights on the instrument panel.

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- **Front linkage**

  WARNING: When the front linkage is being connected to the rear valve, make sure there is no load on the front linkage or rear implement connected to the same valve. The load on the front linkage or rear valve implement discharges when the shut-off valve lever is turned. This may cause the implements to move abruptly.

  WARNING: When you drive on public roads and there is no implement on the front linkage, the lifting links have to be folded up.

- **Front loader**

  WARNING: To prevent involuntary loader motion, the loader joystick controller must be of the self-neutralising type. When the operator releases their grip on the joystick, the joystick must return to the neutral position, except for the float detent position in the loader lowering direction.

  WARNING: The risk of overturning increases as the loader is raised. Be extra careful on slopes when operating the loader. Always carry the load as low as practical for the conditions.

- **Differential lock**

  Use the differential lock only when running on loose or slippery ground.

- **Overturning**

  - Always consider the way in which the tractor is to be used and the fact that the centre of gravity of the tractor/implement assembly changes according to the load being transported or towed.
  - Adapt the tractor speed according to visibility, weather conditions and the type of terrain.
  - Do not transport loads in the top position. Transport them as low as possible and balance the tractor with ballast weights.
  - Do not accelerate, brake, turn or release clutch too suddenly when driving on a slope.
  - If possible, drive so that the heavier end of the tractor is towards the top of the slope.
  - Work situations with an increased risk of overturning include front-loader work, lifting of heavy loads with the rear or front linkage, forest work, especially with a boom, as well as driving on a soft, uneven or inclined surface.

  WARNING: The instructions concerning overturning in this manual are not exhaustive.

- **Hydraulic/fuel pressure**

  Do not attempt to locate a leak in the hydraulic system or attempt to close a leak using any part of your body.

  CAUTION: Oil/fuel under high pressure easily penetrates clothing and skin and can cause serious injuries.

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- **Hot surfaces**

  CAUTION: Be careful of hot surfaces during operation and service work, in particular the engine and hydraulics components.

- **Fuel-operated heater**

  WARNING: During the heating period, clean the exhaust pipe of the fuel-operated heater daily and its surroundings monthly. In dusty conditions, clean more frequently. There is a risk of dry hay or other dirt catching fire.

  WARNING: When using the heater, the area directly below the heater must be clear.

- **Falling Object Protection Structure (FOPS)**

  DANGER: The cab structure is designed for protection against falling objects in accordance with the OECD code 10 (energy level 1362 J). Before operating, make sure the protection is adequate for your work conditions.

- **Operator Protection Structure (OPS)**

  DANGER: Protection against penetrating objects is not provided (no OPS available) if the cab of your tractor is fitted with windows made of glass. Protection against penetrating objects is provided in accordance with ISO 8084 (OPS is available) if the cab of your tractor is fitted with windows made of polycarbonate, except the Side visibility cab (no OPS in Side visibility cab). Before operating, make sure the protection is adequate for your work conditions.

- **Hazardous substances EN 15695-1:2009**

  DANGER: The cab is classified as category 2 according to the draft of EN 15695-1:2009. Protection against dust is provided. Protection against hazardous substances (agricultural chemicals, etc.) is not provided. Personal protective equipment must be used according to the chemical manufacturer's recommendations. Without air conditioning and with manual air conditioning, the fan knob position must be 3 or higher and recirculation must be closed. With automatic air conditioning, the fan speed must be set to maximum.

- **Forest work**
  - When working in forest, pay special attention to safety issues. The specific dangers related to forest work are falling or penetrating objects and overturning, particularly when working with a boom or a winch fitted to the rear of the tractor. For forest work, a set of forest equipment providing additional protection is available.

1.2.5.2 Getting into and out of the cab

When getting into and out of the cab, pay special attention to safety issues.

- **Always use three-point contact with the tractor and face the tractor when getting in and out.**

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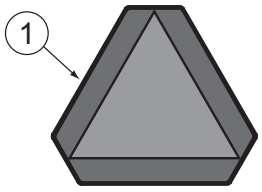
- **Use handrails, grab handles and steps when getting in and out.**
- **Do not use control levers as a handhold.**
- **Do not step on the pedals when getting in and out.**
- **Park the tractor carefully before you get out of the cab.**
  - **Stop the tractor.**
  - **Apply the parking brake and make sure that the parking brake symbol shows on the instrument panel.**
  - **If possible, stop and lower the implements.**
- **Never attempt to get into or out from a moving tractor.**
- **Never jump off a tractor.**

1.2.5.3 Driving on public roads

When driving on public roads, pay special attention to the safety issues.

- **Before driving**
  - Check that the tractor is safe for driving on the road.
  - Lock the brake pedals together with a pin.
  - Adjust the rear view mirrors to give the correct viewing angle.
  - Lock the check links with pins when transporting implements using three-point linkage.
- **When driving the tractor on public roads**

  WARNING: Do not transport anything on the auxiliary hydraulic valves while driving on the road. The load, trailer link steering and such have to be locked (for example mechanically).
  - Use the slow moving vehicle emblem on the rear end of the tractor if allowed by law.



1. Slow moving vehicle emblem

1.2.5.4 Controlling the driving speed

Adjust the driving speed to suit the driving surface, visibility and load.

IMPORTANT: Do not alter the maximum driving speed of the tractor. The maximum reverse driving speed is 20 km/h.

- **Avoid any sudden increase or reduction (braking) in the driving speed.**
- **Avoid tight turns at high driving speed.**

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WARNING: When driving the tractor with an attached implement with the centre of gravity far from the tractor, the tractor may sway considerably during cornering. The tractor may tip over or the load may be displaced.

1.2.5.5 Driving downhill

Be careful when driving downhill.

- **Check the brakes often while driving downhill.**
- **Change to a lower gear before driving down a steep decline.**

  IMPORTANT: Do not brake continuously as the brakes may overheat.

  IMPORTANT: Do not let the engine overrun to avoid damage to the engine.

  NOTE: If the speed is too high, a speed warning is shown on the instrument panel display and a buzzer goes off.

  IMPORTANT: Engage the HillHold when starting on a slope. Otherwise the tractor jerks downhill before traction engages even if the driving direction is uphill.

1.2.5.6 Permitted driving inclinations

To ensure sufficient lubrication for the transmission and engine, it is essential to follow the maximum driving angles when driving the tractor on a slope.

WARNING: Angles for safe driving should be smaller than stated to avoid the tractor from tipping over.

Up and down slope with either front or rear end up	30°
Sideways with slope to right or left	35°
Combined slope angles; left or right / up or down slope	25°/20°
Down slope to right or left	35°

Combined slope angles; right / up slope	30°/25°
Combined slope angles; right / down slope	30°/20°
Combined slope angles; left / up slope	30°/20°
Combined slope angles; left / down slope	25°/20°

1.2.5.7 Operating with implements

Read and follow the instructions to avoid unnecessary risks when operating with implements and attachments.

WARNING: Always follow carefully the instructions given in the implement's user documentation. It is not allowed to use an implement without reading and understanding all the precautions and regulations.

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WARNING: Before entering between the tractor and the implement, prevent the tractor from moving by applying the parking brake or blocking the wheels. There is a risk of accidents if the tractor or implement should move.



WARNING: Implements attached to the linkage or the auxiliary hydraulic system must be lowered to the ground while parking and during maintenance.



WARNING: When installing an implement, air in the hydraulic hoses and cylinders can cause erratic operation. Run the engine at a low speed and make slow movements with the joystick to purge any air from the hydraulic system.



WARNING: When installing an implement, keep hands and feet away from moving components. Do not use your fingers to check the alignment of holes or pins. Use a mandrel or a steel rod.



WARNING: When disconnecting, the implement may fall downward.

IMPORTANT: When attaching a trailer or implement, do not exceed the maximum weight of the rear axle.

- **Allow sufficient clearance for turning.**

  Three-point hitch and side-mounted implements make a much larger arc when turning than towed equipment. Use only Valtra-approved attachments and implements.

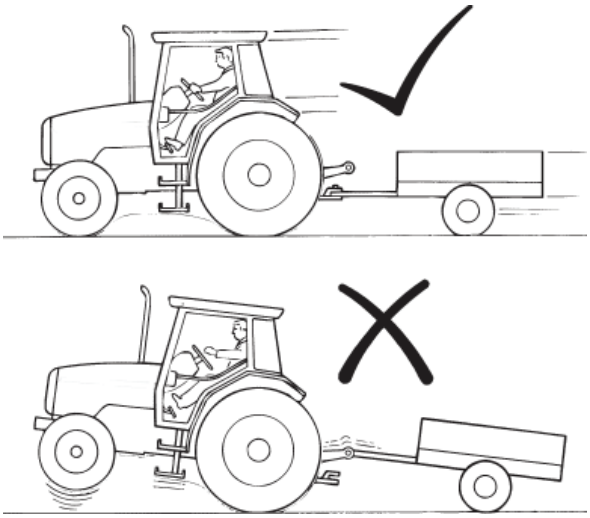
- **Familiarise yourself with the working area and terrain.**

  Pay attention to vertical clearance and limitations that arise due to the increased reach.



WARNING: Pull only from the approved drawbar. Attaching to other locations and then towing may cause the tractor to overturn.

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1.2.5.8 Running with power take-off driven implements or machines

Read and follow the given instructions to use power take-off (PTO) driven implements and machines safely.

DANGER: Serious accidents may occur due to failure to use the prescribed safety devices.

- **Use the prescribed safety devices and ensure that they are in good condition.**
- **Follow the directions given by the implement or machine manufacturer.**

1.2.5.9 Using ballast weights

Use ballast weights according to the instructions when needed.

WARNING: When driving on the road, at least 20% of the gross weight of the tractor must be on the front axle. When lifting an implement, the weight on the front end of the tractor is reduced and the steering ability is impaired or sometimes lost.

IMPORTANT: When using salt liquid as ballast weight in the wheels, the manufacturer does not take the responsibility for the damages caused by salt.

- **Use sufficient ballast weights.**
- **Mount ballast weights only at the points intended for this purpose.**

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1.2.5.10 Towing

Read and follow the given instructions to tow a trailer or an implement safely.



WARNING: When the tractor is towing a trailer, the brake pedals must be locked together. The brakes are not to be used individually for steering.



WARNING: When using a trailer, make sure that the hitch latch is locked.



WARNING: When using a trailer, always use the trailer brakes if required by law. The trailer brakes are recommended to be used in 50 km/h models also in those countries where it is not required by law.



WARNING: Be sure no-one is standing between tractor and implement.

IMPORTANT: When attaching a trailer or implement, do not exceed the maximum weight of the rear axle or the maximum load of the tyre type and rear axle.

- **Couple a trailer to the drawbar using an approved trailer coupling.**
- **Always lower a loaded drawbar with the hydraulic lift.**
- **Check that trailer brakes are operating properly and observe any special instructions issued by the trailer manufacturer.**
- **Secure the trailer load properly.**



WARNING: On tractors with trailers, the load must be properly secured. The load must not obstruct the operator's vision or cover lights and reflectors. Loads which project more than one meter behind the vehicle must be suitably marked. During daytime, this should be done with a flag, and during darkness, with a red light and a reflector arrangement.

1.2.5.11 Ensuring personal safety of other people

Avoid hazards for other people when using the tractor.



DANGER: Do not allow children in the cab or near the tractor or an attached implement while the engine is running.



DANGER: If the tractor engine is running, do not leave anybody in the cab without supervision, as the push buttons are easily operated. Always apply the parking brake.

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- **Stop the engine and lower the implement to the ground when leaving the tractor.**
- **Do not let passengers ride in the tractor unless it is provided with a special seat.**

  Other personal transport, for example on front-mounted loaders, is not permissible.
- **Do not let passengers ride on the platform inside the tractor.**
- **Never lend the tractor to a person who is not used to driving it.**

  DANGER: You may be held responsible for any resulting accidents.
- **Do not allow children or untrained or unqualified persons to operate your tractor.**

  They could injure themselves or someone else.

1.2.5.12 Fire hazards



WARNING: Open fire, smoking and sparks are prohibited near the fuel system and batteries. Especially when charging batteries, explosive gases are present.

The main switch of the battery has a main power emergency button to disconnect the battery immediately if needed. The red-coloured push button is located below the right fender fuse and relay board. The emergency off switching can be done only when the ignition key is turned to the Off position.

Using the main power emergency button causes uncontrolled battery disconnection. For example, the AdBlue urea lines are not emptied properly and electrical control unit operating data has not been saved as designed.

1.2.5.13 Handling viton seals subjected to high temperatures

At temperatures over 300°C, the viton seals of the engine produce highly corrosive, hydrofluoric acid.

- **Do not touch viton seals subjected to abnormally high temperatures with your bare hands.**

  Use neoprene rubber or heavy-duty gloves and safety glasses when decontaminating.
- **Wash seals and the contaminated area with 10% calcium hydroxide or other alkali solution.**
- **Put all the removed material in sealed plastic bags and deliver them to the point stated by the authorities concerned.**

  WARNING: Never burn viton seals.

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1.2.5.14 Aftertreatment system

The selective catalytic reduction (SCR) aftertreatment system contains copper-zeolite. Copper-zeolite is not classified as hazardous.

The SCR aftertreatment system is installed in the muffler. The system is not hazardous to health under normal use and handling.

When the SCR aftertreatment system is handled in such a way that there is a risk of exposure to dust, safety precautions must be taken. Such work includes, for example, opening the aftertreatment system, machining and disposing of the aftertreatment system.

Safety instructions for work involving the SCR aftertreatment system

- Inhalation: If dust is inhaled, the affected person must be moved to fresh air. If a considerable amount of dust has been inhaled, seek medical help.
- Contact with eyes: Rinse eyes with water for 15 minutes and with eyelids held open. If irritation continues, seek medical help.
- Contact with skin: Wash with soap and water. Take off contaminated clothes.
- Swallowing: If you swallow a large amount, rinse mouth and then drink plenty of water.

Environmental hazards

Copper/zeolite is not acutely harmful to aquatic organisms. The product has not been tested.

Precautions to protect the environment

All dust and spillage must be gathered in a container for recycling or disposal in accordance with local regulations. Used catalysts may have different hazardous properties than the original products.

When an SCR aftertreatment system is no longer used, it must be disposed of in accordance with applicable EU regulations, national regulations or local regulations.

1.2.5.15 Working with the front loader

- **Ensure that no one is in the working area when you are working with the front loader.**
- **Lower the front loader to the down position before leaving the tractor.**

  Objects may fall off the front loader, either to the sides of the tractor or down the length of the loader arms and on the cabin.
- **Use ballast weight at the back if the load is particularly heavy and if you have to drive on a slope.**
- **Avoid sudden stops, starts and turns.**
- **Observe any special instructions issued by the loader manufacturer.**



WARNING: The risk of overturning increases as the loader is raised. Be extra careful on slopes when operating the loader. Always carry the load as low as practical for the conditions.

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1.2.5.16 Repair and maintenance

During repair and maintenance work, all the applicable safety precautions and maintenance instructions have to be followed. The engine has to be stopped and the implements lowered before any maintenance work.

Support

If the maintenance work requires supporting the tractor, the supports have to be suitable and the tractor has to be supported from the correct support points. When splitting the tractor, the support points and the center of gravity for each frame part have to be considered.

Heavy components

Tools and lifting devices have to be used in the correct way. Lifting slings should be in a vertical position and lifting and lowering should be vertical as often as possible.

Substances

Suitable protection must be worn when handling toxic or harmful chemicals such as fuel, oil, grease or fluids. During and after such maintenance work, all affected parts and equipment must be carefully covered or cleaned. Excess substances must be disposed of in the correct way.

Pressure

Pressurized circuits should not be opened immediately after the engine has stopped. Opening pressurized circuits can be dangerous if the pressure is not carefully released first.

Electrical system

The main power has to be turned off before disconnecting or reconnecting the battery. The battery leads have to be connected and disconnected in the correct order and with the correct polarity.

IMPORTANT: After maintenance work, all replacements for parts with a safety sign on them must include also the new safety sign.

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2 Instruments and controls

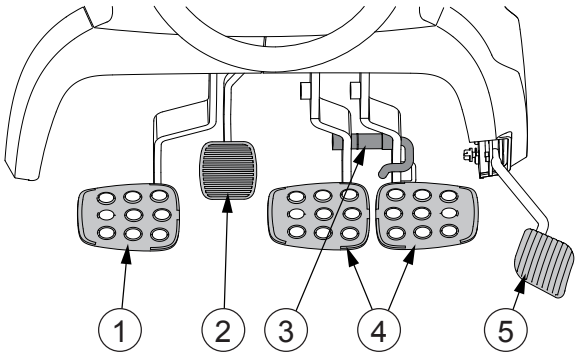
2.1 One-key locking system

There is one key for locking and unlocking all the locking devices of the tractor.

- Ignition switch
- Door handle lock
- Fuel tank cap lock
- AdBlue tank cap lock
- Engine hood lock
- Battery housing lock

A replacement key is available from your dealer in the event of loss or damage.

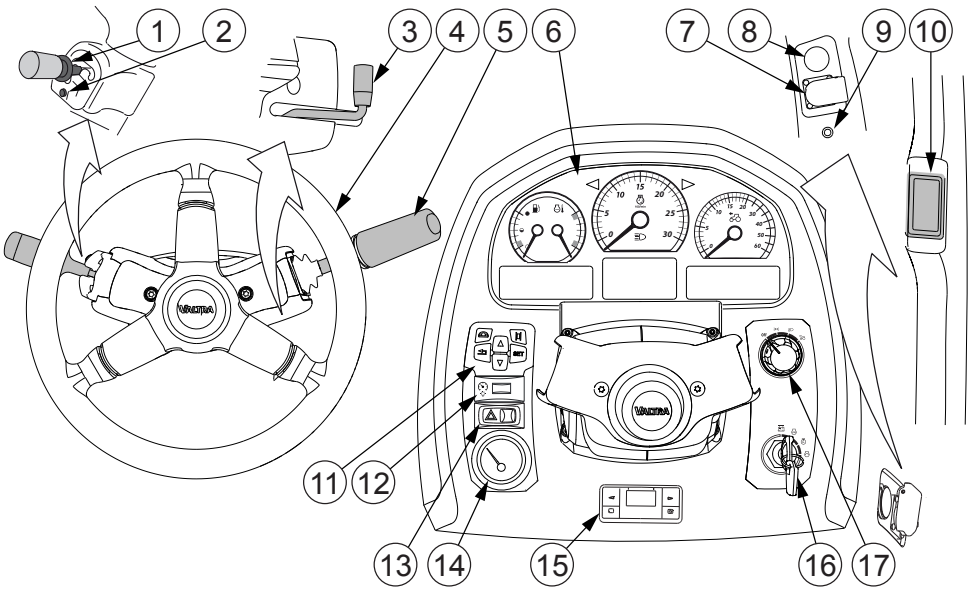
2.2 Pedals



1. Clutch pedal
2. Locking pedal for steering wheel rake adjustment
3. Latch for brake pedals
4. Brake pedals
5. Drive pedal

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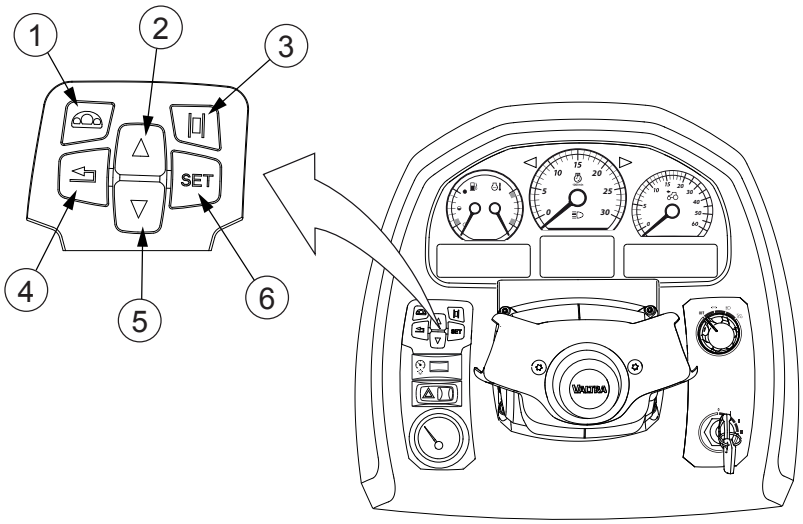
2.3 Dashboard



1. Power shuttle lever
2. Preprogramming push button
3. Lever for adjusting steering wheel position
4. Steering wheel
5. Multifunction lever
6. Proline instrument panel
7. 3-pin current socket (optional)
8. Power outlet (optional)
9. Fuel-operated heater on/off push button (optional)
10. A-pillar display
11. Control panel for A-pillar display and Proline
12. Instrument panel light dimmer
13. Hazard lights switch
14. Pressure gauge (optional)
15. Fuel-operated heater panel (optional)
16. Main power/ignition switch
17. Light switch

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2.4 Control panel for A-pillar display and Proline



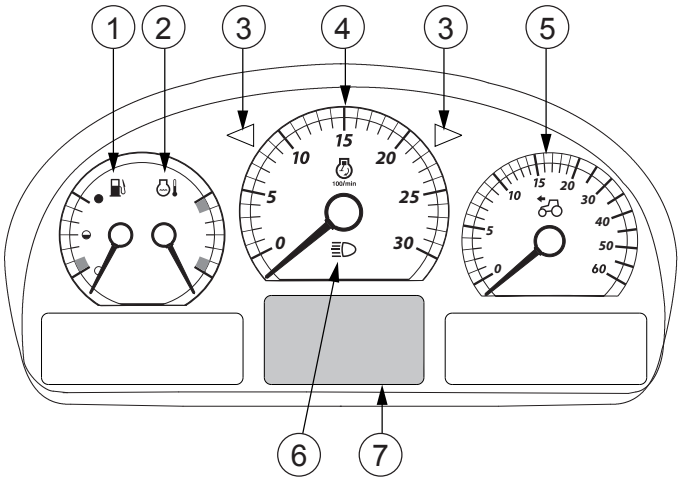
1. Proline instrument panel selection
2. Arrow up
3. A-pillar display selection
4. Back
5. Arrow down
6. SET / selection

NOTE: Moving back in the selection menu automatically saves the selection.

When power is switched on, the control panel controls the Proline instrument panel as a default.

2.5 Proline instrument panel

The operator receives information from the gauges, coolant thermometer, tachometer, speedometer and indicator lights. All this can be seen on the Proline instrument panel.



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1. Fuel gauge
2. Coolant temperature gauge
3. Indicator lights for turn signal
4. Tachometer
5. Speedometer
6. Indicator light for the high beam
7. Proline instrument panel display

The fuel gauge shows the amount of fuel left in the tank.

The coolant thermometer indicates the engine temperature. The zone between blue (cold) and red (hot) is the normal operating temperature.

2.5.1 Symbols on the Proline instrument panel display

The Proline instrument panel display has fixed views and views that can be selected by the operator.

Fixed view symbols

The fixed views are the two functions shown on the bottom row of the display:

Symbol	Function
	Operating hours (hhhh.h)
	Clock (hh:mm)

The periodical maintenance symbol is lit on the centre row of the display when the tractor periodical service must be carried out.

Symbol	Function
	Periodical maintenance

Selectable view symbols

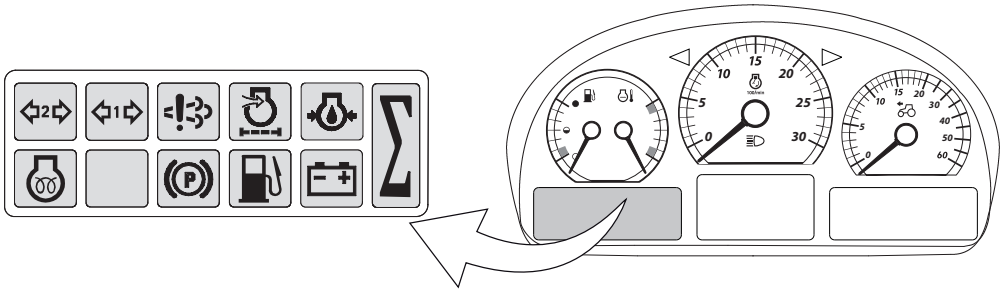
The selectable views are the functions shown on the top and centre row of the display:

Symbol	Function
	Working time (h:mm)
	Battery charge (V)
	Cruise control • RPM = engine speed • KMH = not in use
km/h/mph	Driving speed (km/h/mph)
	Rear power take-off (PTO) speed (rpm)
	Front power take-off (PTO) speed (rpm)
	Engine speed (rpm)
	Immediate fuel consumption (ha, acre) Average fuel consumption (ha, acre)
Table continued on next page	

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Symbol	Function
l/h Avg l/h	Immediate fuel consumption Average fuel consumption
l	Fuel consumption
AC R	Lower link position (%, 0-100)
	Gearbox temperature (C/F)
	Travel distance (m/km/miles) Square area (ha)
RESET	Counters reset

2.5.2 Indicator lights on the left side of the display



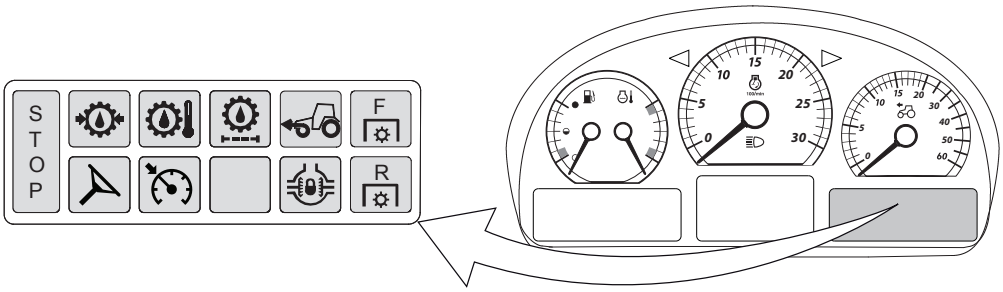
Indicator light	Indication
	Turn signal indicator light of a vehicle combination with two trailers. The signal light blinks when there are two trailers connected to the tractor, or one trailer with double lamps. If a bulb of the trailer combination has failed the light is not lit. When the hazard lights are switched on the signal light blinks if there are four turn signals blinking in the trailer combination. If the turn signal indicator light is lit during the first two blinks, there is a fault in the direction indicator relay and it must be calibrated. Contact an authorised Valtra workshop.
	Turn signal indicator light of a vehicle combination with one trailer having one pair of lamps. The signal light blinks when there is one trailer connected to the tractor. When the hazard lights are switched on the signal light blinks if there are two or three turn signals blinking in the trailer. If the turn signal indicator light is lit during the first two blinks, there is a fault in the direction indicator relay and it must be calibrated. Contact an authorised Valtra workshop.
	Engine emission system failure or malfunction indicator light. The light is lit when the AdBlue/DEF tank is empty or a malfunction occurs in the SCR-system. If the AdBlue/DEF is not filled or the malfunction is on, after a period of time the light begins to flash until the error is resolved. Engine torque and speed is reduced to avoid excessive engine exhaust emissions.
	Engine air cleaner clogging indicator light. The light is lit when the engine is running and a buzzer sounds once to indicate that the engine air filter is clogged and needs to be serviced.
	Engine oil pressure light. The light is lit when the engine is running, a buzzer sounds continuously and the STOP indicator light flashes to indicate that the oil pressure is too low.

Table continued on next page

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Indicator light	Indication
	Σ-indicator light (optional on models T144, T154, T174E). The light is lit continuously (yellow) when the tractor is operating in the higher power range and using PTO.
	Glow indicator light. The light (yellow) is lit when the ignition key is in position **II** and the engine is cold.
	Parking brake indicator light • The light (red) is lit to indicate that the parking brake has engaged • The light blinks when the parking brake is engaging or disengaging • The light blinks and the buzzer sounds continuously when there is a fault in the parking brake
	Low fuel level indicator light The light is lit (yellow) and a buzzer sounds once to indicate that the fuel level is low. The light blinks if there is water in the fuel.
	Battery charging indicator light The light is lit and a buzzer sounds once when battery charging is not ongoing. **IMPORTANT**: A charging failure must be fixed immediately. When the voltage is reduced, the electric valves may reduce the oil pressure for the multi-disc clutches and cause clutch slippage which may damage the clutch discs.

2.5.3 Indicator lights on the right side of the display



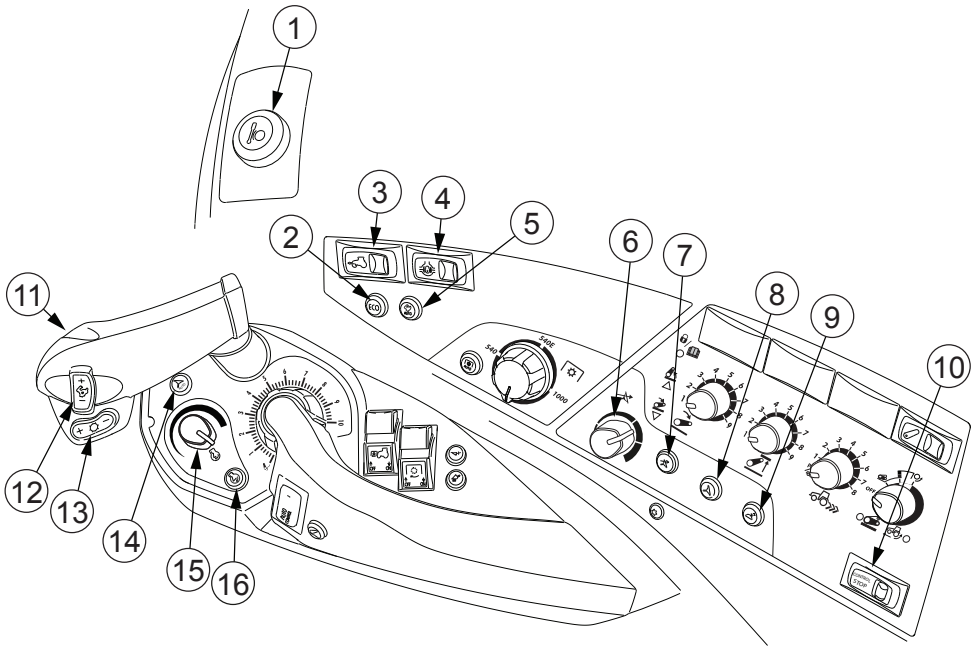
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Indicator light	Indication
	STOP indicator light (red). The light flashes to indicate serious fault. Possible reasons: • Engine oil pressure too low • Engine temperature too high (gauge) • Gearbox oil pressure too low • Gearbox oil temperature too high **IMPORTANT**: If the STOP light starts flashing, stop the tractor and engine immediately. You can continue driving only in an emergency, for example to move the tractor to the roadside.
	Gearbox oil pressure light. The light is lit and the STOP indicator light flashes to indicate that the gearbox oil pressure is too low.
	Gearbox oil temperature light. The light is lit and the STOP indicator light flashes to indicate that the gearbox oil temperature is too high. The gearbox oil temperature can be shown on the Proline instrument panel display.
	Gearbox pressure oil filter clogging indicator light. The light is lit to indicate that the pressure filter(s) of the hydraulic or transmission system requires service. Oil filter clogging is monitored when the oil temperature is within the normal operating range.
	Four-wheel drive (4WD) indicator light. The light is lit (yellow) to indicate that 4WD is engaged.
	Front power take-off (PTO) indicator light. The light (yellow) is continuously on and indicates that the front PTO (optional) is engaged.
	Auto-Guide indicator light. The light is on (yellow) to indicate that Auto-Guide steering valve (optional) is powered on.
	Cruise control indicator light. The light is on (yellow) to indicate that constant engine speed cruise control is engaged.
	Differential lock indicator light. The light is lit (yellow) to indicate that the differential lock is engaged.
	Rear PTO indicator light • The light is lit when the PTO is on or the proportional ground speed power take-off has been engaged • The light blinks quickly if the PTO is rotating but no longer engaged • The light blinks with normal speed when the PTO is not rotating and the gear selected with the speed selection switch is engaged • The light blinks slowly if the PTO is not rotating and the gear selected with the speed selection switch is not engaged • The light is not lit when the PTO is not on and the speed selection switch is in the **N** position

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2.6 Controls on the right-hand side

2.6.1 Driving controls

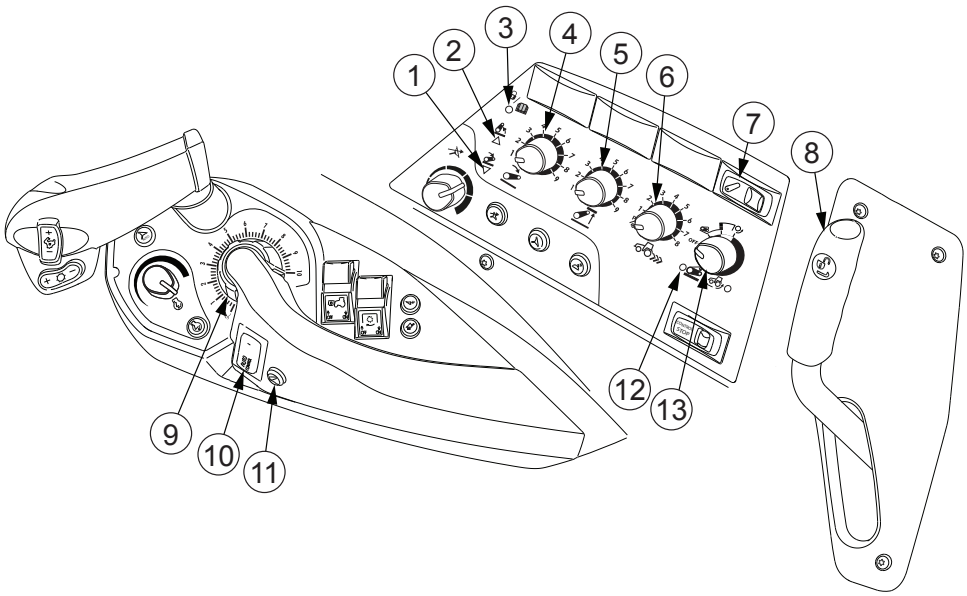


1. Emergency brake button
2. Push button for EcoPower (optional)
3. Switch for four-wheel drive (4WD)
4. Switch for differential lock
5. Push button for shifting automatics
6. QuickSteer control knob (optional)
7. QuickSteer activation button (optional)
8. Auto-Guide steering valve on/off button (optional)
9. Auto-Guide receiver on/off button (optional)
10. Control stop switch (optional)
11. HiShift push button
12. Powershift push button
13. Range speed push button
14. Auto-Guide remote activation button (optional)
15. Hand throttle
16. Engine RPM memory button

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2.6.2 Linkage

2.6.2.1 Rear linkage



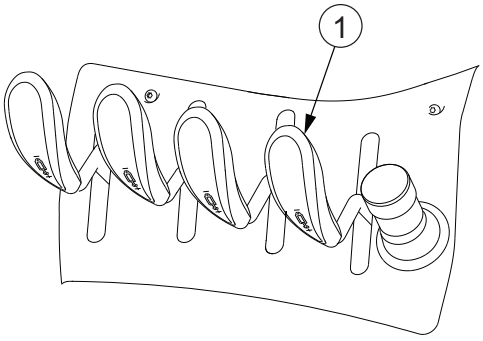
1. Lowering indicator light
2. Lifting indicator light
3. Diagnostic light
4. Lowering speed selector
5. Max lifting height selector
6. Draft control selector
7. Lifting/lowering switch
8. Trailer hitch release lever (optional)
9. Position control knob
10. Lift/stop/lower switch
11. Override button for position control knob
12. Drive balance control light
13. Drive balance control knob

2.6.2.2 Front linkage

The front linkage is optional.

Connected to rear valves:

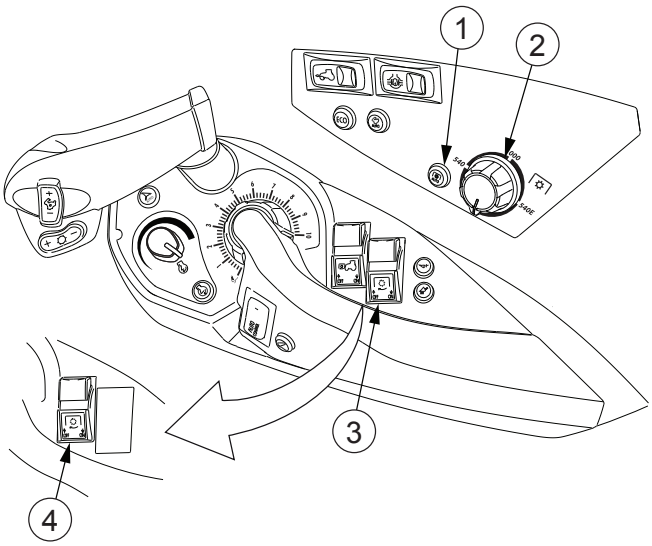
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1. Control lever, auxiliary hydraulics valve 4

2.6.3 Power take-off

2.6.3.1 Rear power take-off

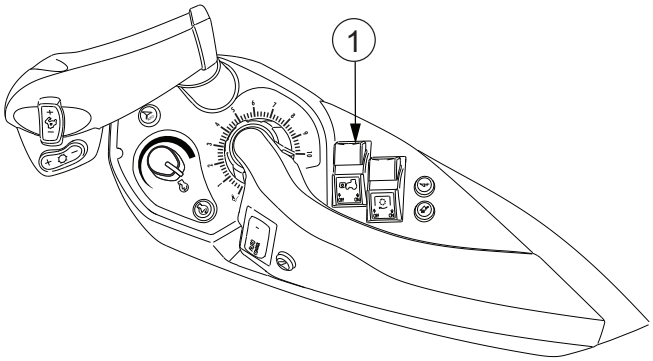


1. Button for rear PTO automatic start/stop
2. Speed control knob for rear PTO
3. Switch for rear PTO when front PTO is included
4. Switch for rear PTO when front PTO is not included

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2.6.3.2 Front power take-off

The front power take-off (PTO) is optional.

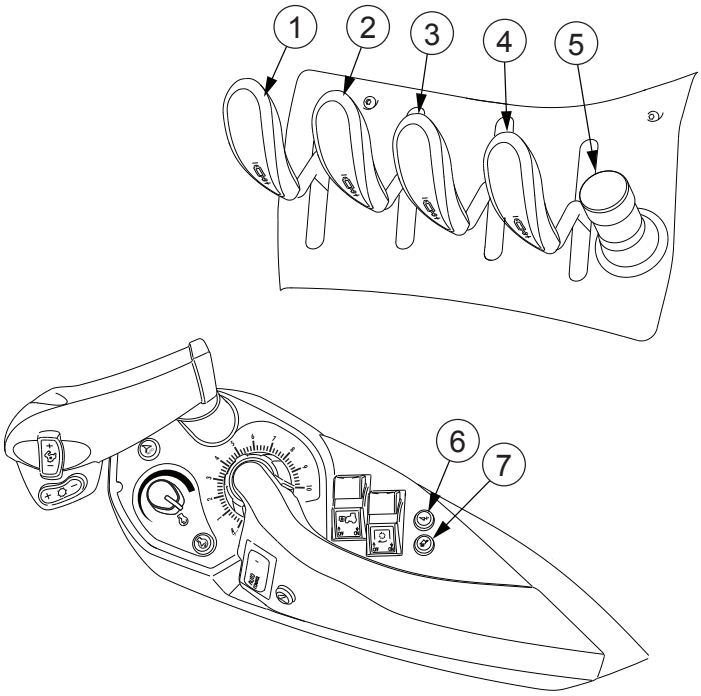


1. Switch for front PTO

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2.6.4 Auxiliary hydraulics

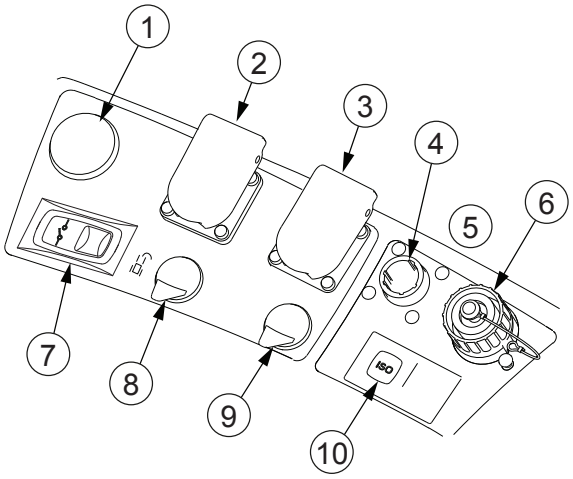
The following instruments and controls are used to control the auxiliary hydraulics.



1. Control lever for auxiliary hydraulics rear valve 1
2. Control lever for auxiliary hydraulics rear valve 2
3. Control lever for auxiliary hydraulics rear valve 3 (optional)
4. Control lever for auxiliary hydraulics rear valve 4 (optional)
5. Flow control adjustment (optional)
6. Button for hydraulic implement locking (optional)
7. Button for Softdrive (optional)

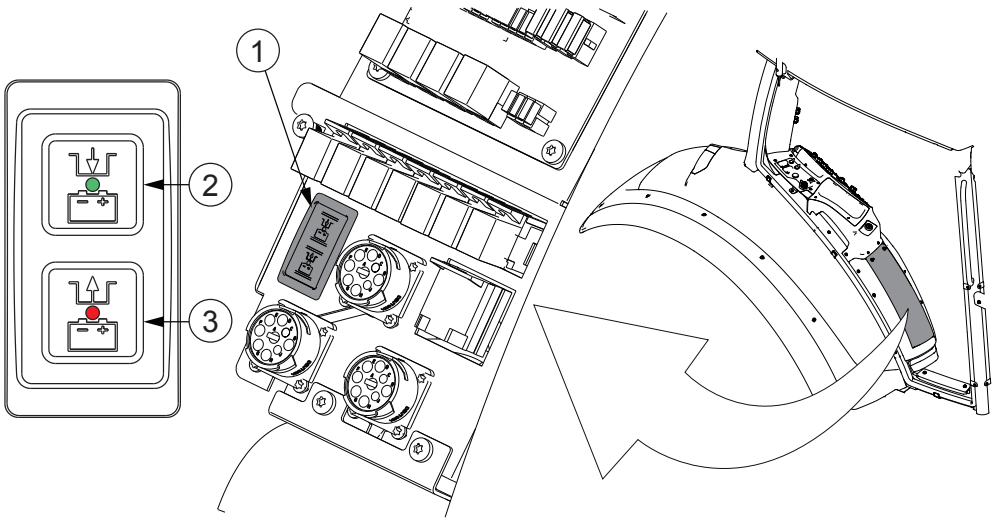
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2.6.5 Other controls



1. Power outlet (optional)
2. 3-pin current socket
3. 3-pin current socket (optional)
4. ISOBUS terminal connector (optional)
5. ISOBUS bus extension connectors (behind the cover; optional)
6. Implement signal connector (optional)
7. Power switch for 2-pin current socket
8. 2-pin current socket (controlled by power switch)
9. 2-pin current socket
10. Indicator light for implement signal connection (optional)

2.6.6 Main power emergency button

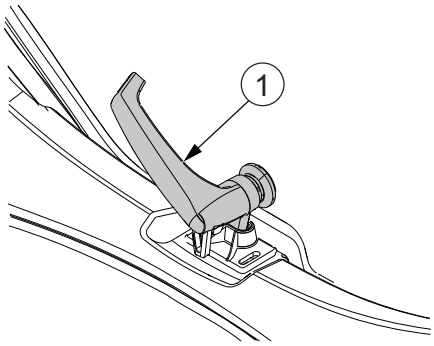


1. Main power emergency button
2. Main power on (green light)
3. Main power off (red light)

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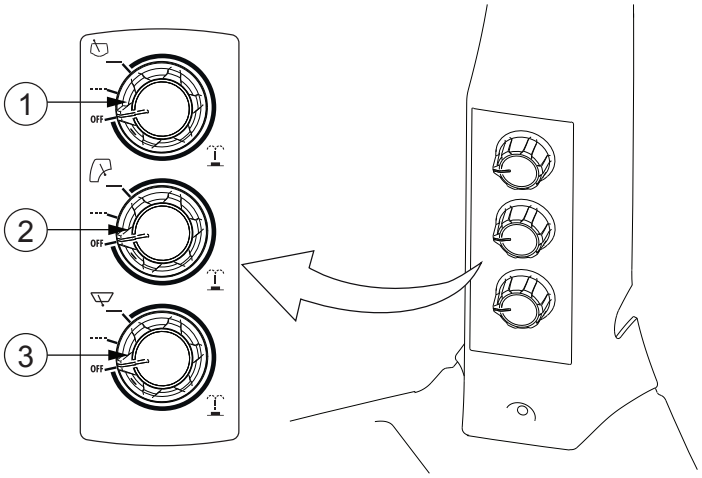
2.7 Controls on the rear side

2.7.1 Rear window opening latch



1. Rear window opening latch

2.7.2 Additional wipers

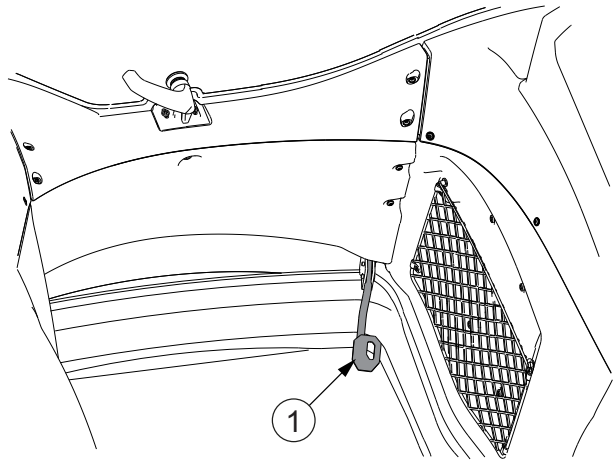


1. Rear window wiper switch (optional)
2. Side window wiper switch (optional)
3. Roof window wiper switch (optional)

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2.7.3 Rear drive pedal

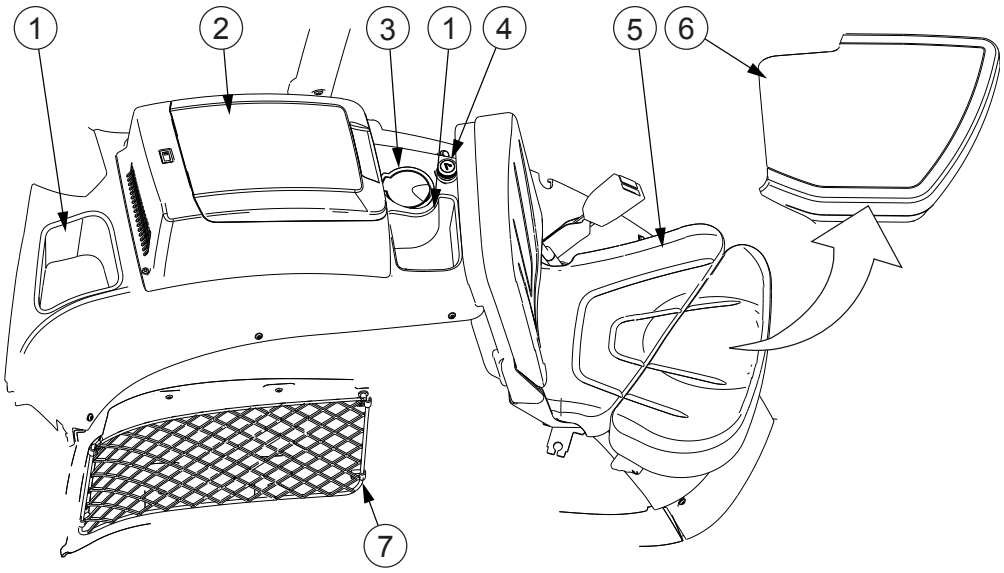
The rear drive pedal is optional.



1. Drive pedal

2.8 Controls on the left-hand side

The following controls are positioned on the left-hand side.

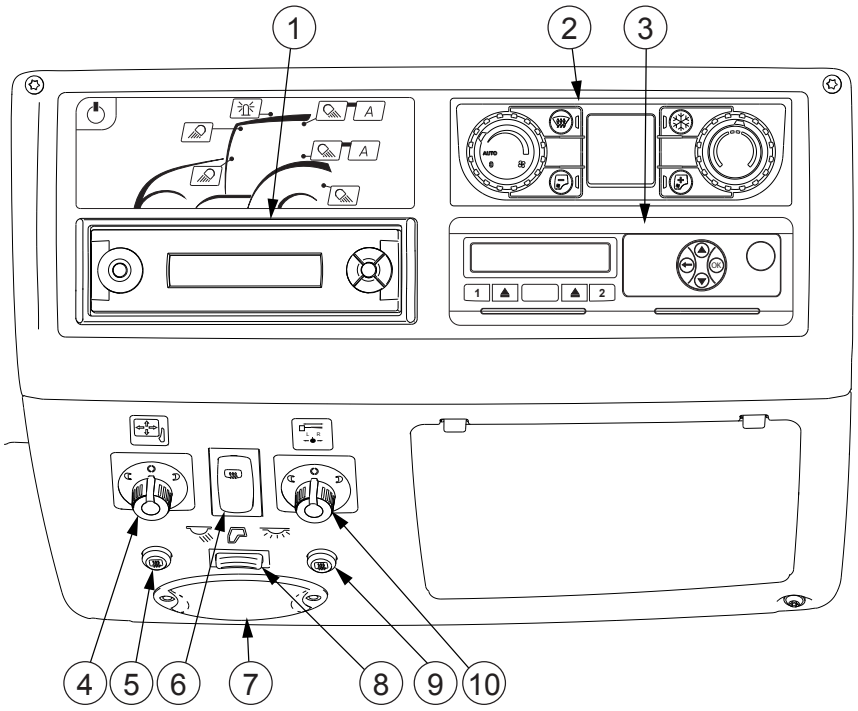


1. Storage compartment
2. Cool box (optional)
3. Ashtray (optional)
4. Lighter
5. Passenger seat with seat belt (optional)
6. Writing table
7. Storage pocket

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2.9 Controls on the right-hand side roof console

The following controls are positioned on the right-hand side roof console.

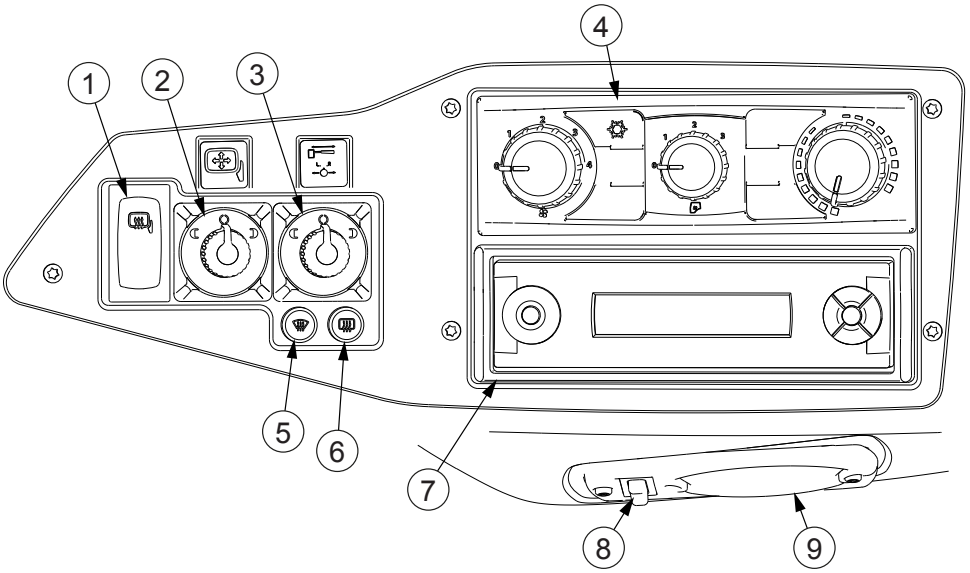


1. Radio (optional)
2. Air conditioning controls
3. Tachograph (optional)
4. Mirror adjustment knob (optional)
5. Windscreen heater push button (optional)
6. Mirror heating switch (optional)
7. Interior light
8. Control switch for interior light
9. Rear window heater push button (optional)
10. Telescopic mirror adjustment knob (optional)

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2.10 Controls on the Skyview equipment right-hand side roof console

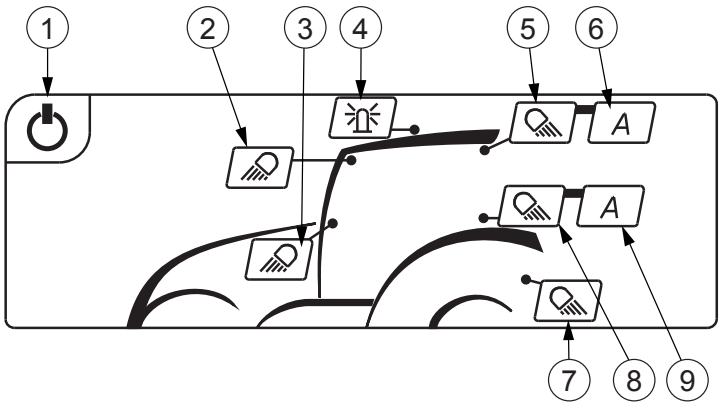
The following controls are positioned on the Skyview equipment right-hand side roof console.



1. Mirror heating switch (optional)
2. Mirror adjustment knob (optional)
3. Telescopic mirror adjustment knob (optional)
4. Air conditioning controls
5. Windscreen heater push button (optional)
6. Rear window heater push button (optional)
7. Radio (optional)
8. Control switch for interior light
9. Interior light

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2.11 Working light controls



1. Light panel on/off button
2. Front working lights
3. Front waist working lights (optional)
4. Rotary beacon light (optional)
5. Rear working lights
6. Automatic operation of the rear working lights
7. Trailer hitch light (optional)
8. Rear waist working lights (optional)
9. Automatic operation of the rear waist working lights (optional)

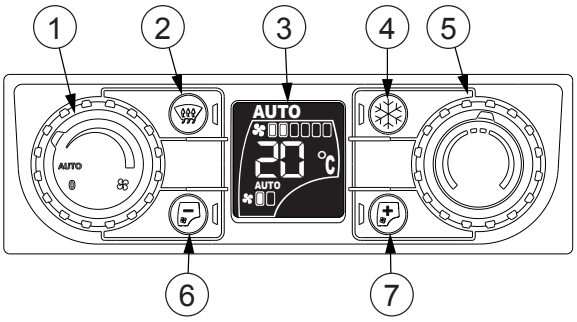
With the Skyview equipment, the button for the rear working lights also turns on the side working lights.

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2.12 Air conditioning controls

2.12.1 Automatic air conditioning and additional heater controls

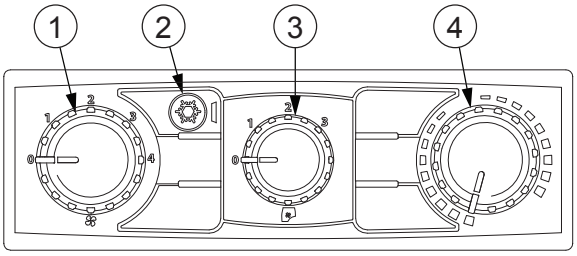
The automatic air conditioning and additional heater system is optional.



1. Fan speed control knob (selection OFF/Auto/Manual)
2. Defrost
3. Display
4. Air conditioning ON/OFF
5. Temperature control knob
6. Additional heater fan speed decrease (selection Manual/OFF/Auto)
7. Additional heater fan speed increase (selection ON/Manual)

2.12.2 Manual air conditioning and additional heater controls

The manual air conditioning and additional heater system is optional.

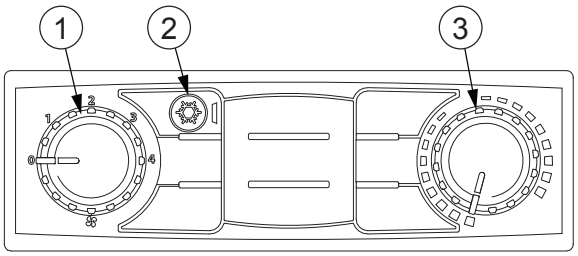


1. OFF/Fan speed control knob
2. Air conditioning ON/OFF
3. Additional heater OFF/fan speed control knob
4. Temperature control knob

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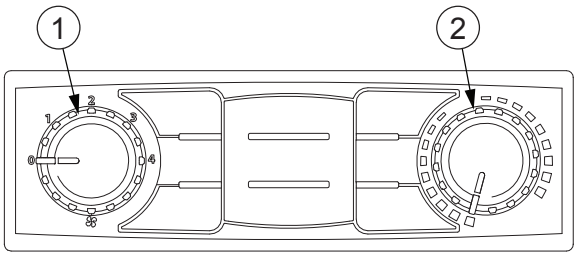
2.12.3 Manual air conditioning

The manual air conditioning system is optional.



1. OFF/Fan speed control knob
2. Air conditioning ON/OFF
3. Temperature control knob

2.12.4 Heater controls

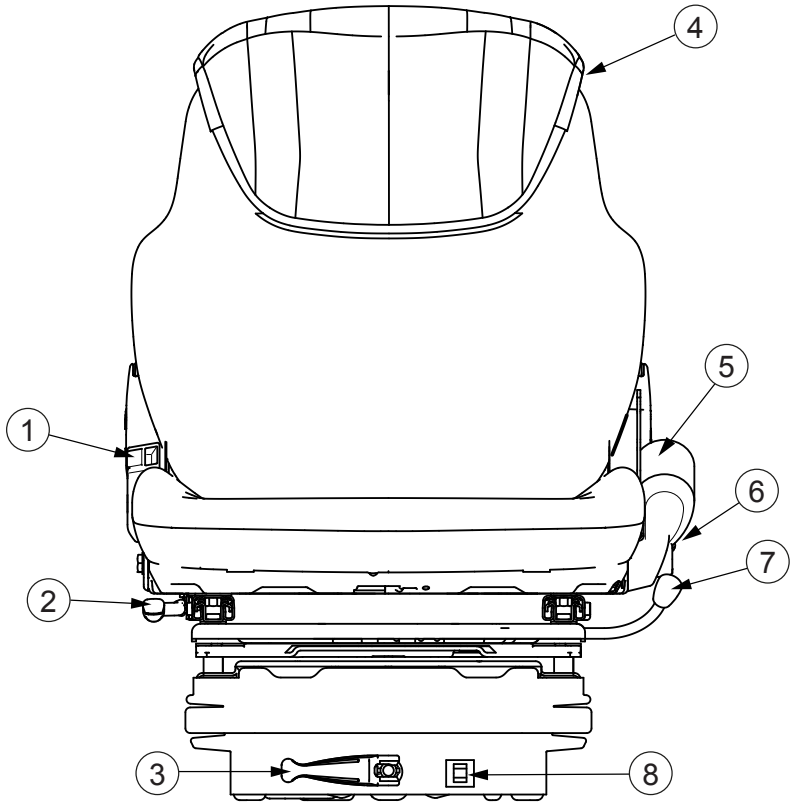


1. OFF/Fan speed control knob
2. Temperature control knob

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2.13 Operator's seat

2.13.1 Basic operator's seat

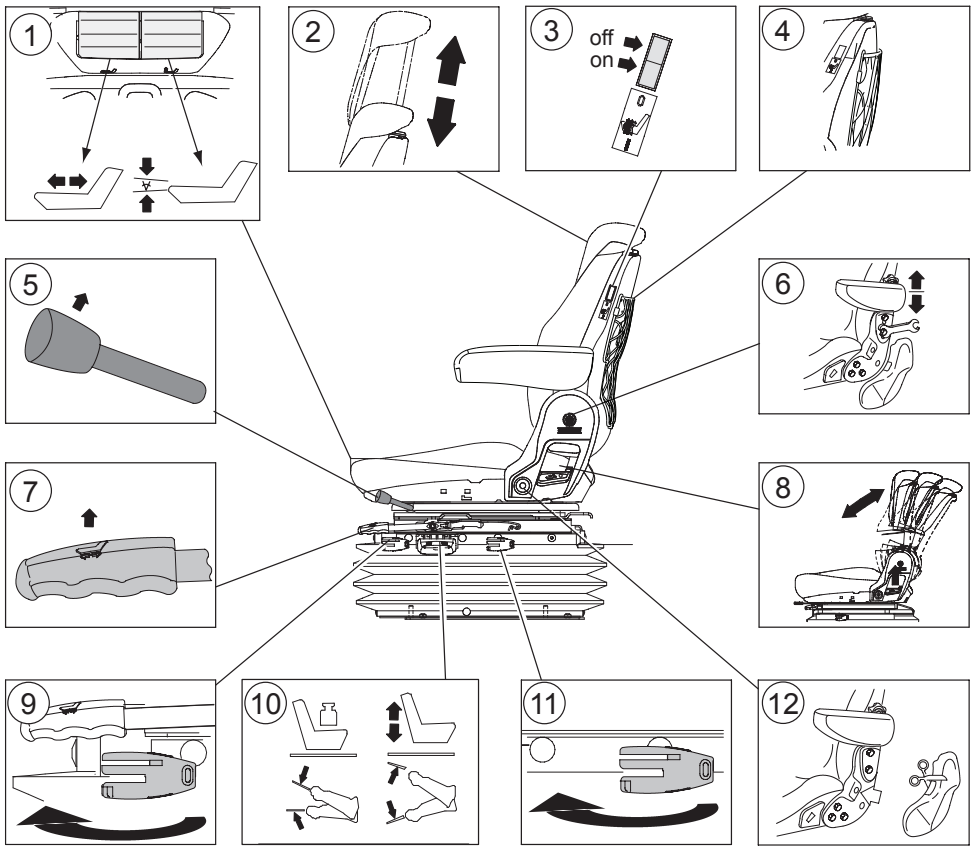


1. Seat belt anchor point
2. Forward/backward adjustment
3. Suspension adjustment
4. Storage compartment for manuals
5. Seat belt
6. Back rest tilt adjustment
7. Seat turning lock/release
8. Operator weight display

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2.13.2 Air suspended operator's seat

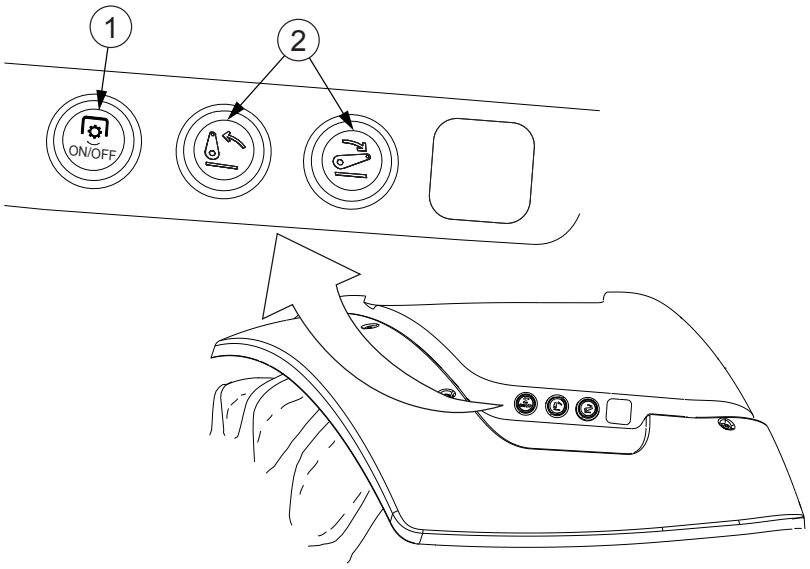
Air suspended operator's seat is optional.



1. Seat depth and cushion angle adjustment
2. Headrest height adjustment and removal
3. Seat heating
4. Storage net for manuals
5. Seat turning lock/release
6. Armrest adjustment
7. Forward/backward adjustment
8. Backrest tilt adjustment
9. Longitudinal suspension adjustment
10. Height and vertical suspension adjustment
11. Suspension stiffness adjustment
12. Seat belt anchor point

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2.14 Controls on the rear mudguard

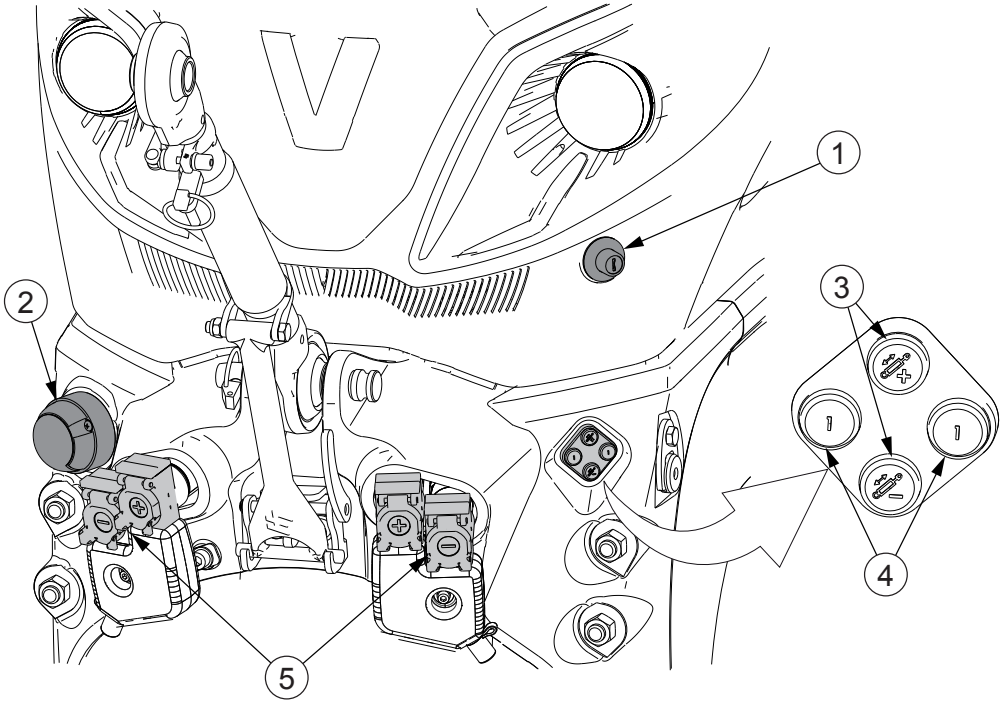


1. Rear power take-off on/off push button (optional)
2. Lifting/lowering push button

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2.15 Front end controls and connections

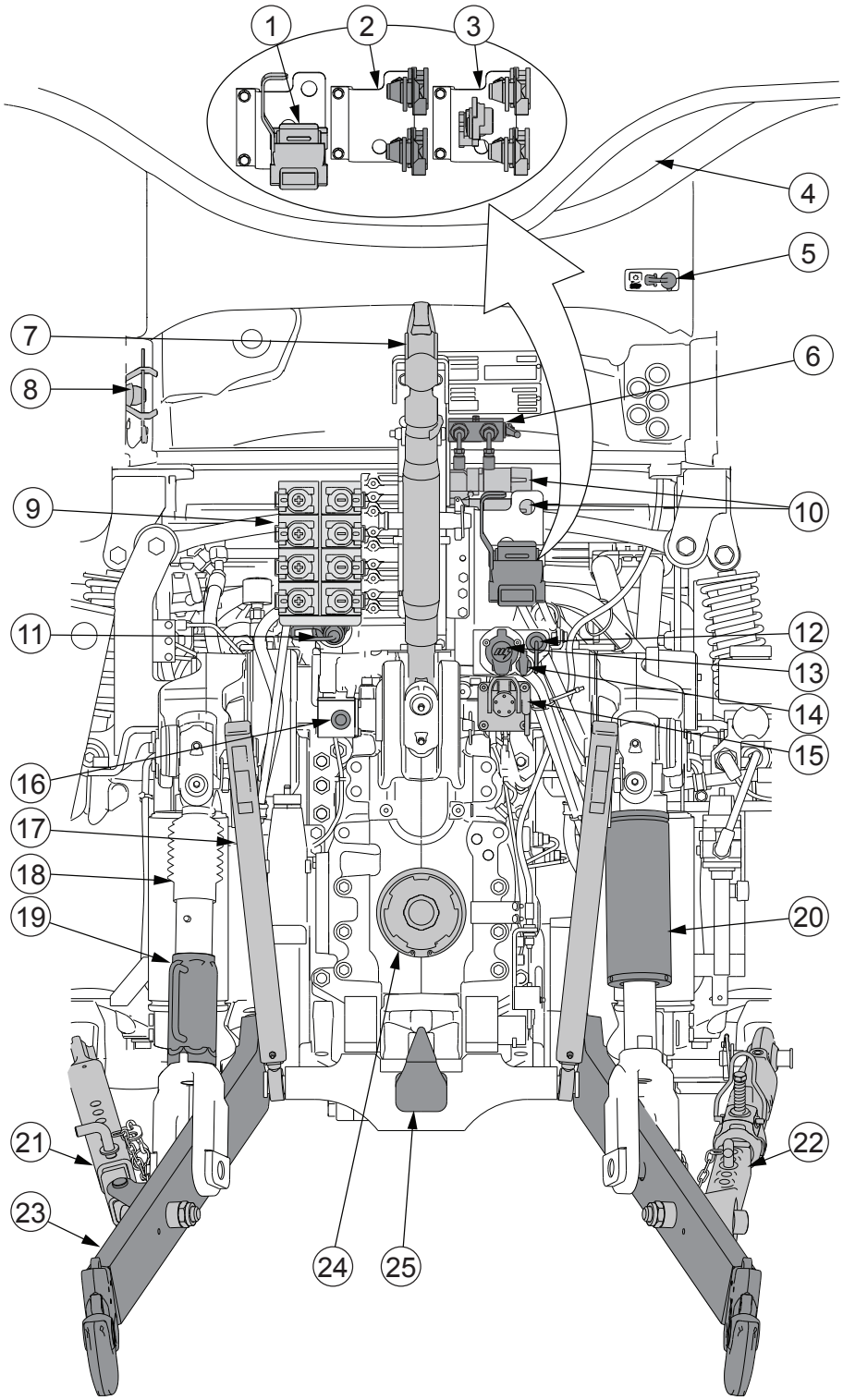
Front linkage and front quick couplings are optional.



1. Engine bonnet lock
2. Trailer socket (optional)
3. Lifting/lowering push buttons for the front linkage (optional)
4. Front valve 1 push buttons (optional)
5. Front quick couplings (optional)

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2.16 Rear controls and connections outside the cab



1. Trailer coupling, Duo-Matic (optional)
2. Trailer coupling, 2-line system (optional)
3. Trailer coupling, 1-2-line system (optional)
4. Inlet for implement control cables/wires

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5. Emergency stop plug for rear power take-off (PTO)
6. Front linkage shut-off valve (optional)
7. Top link
8. Top link/lower link ball storage bracket
9. Quick couplings, auxiliary hydraulics
10. Flow control adjustment (optional)
11. Auxiliary hydraulic system return coupling
12. Quick coupling for air pressure devices (optional)
13. Trailer socket
14. Power outlet (12 V)
15. ISOBUS connector (optional)
16. Quick coupling for hydraulic trailer brakes
17. Pick-up hitch lift links (optional together with the pick-up hitch)
18. Lift link
19. Levelling screw
20. Hydraulic levelling link (optional)
21. Side limiter (optional)
22. Automatic side limiter (optional)
23. Lower link
24. Power take-off (PTO) shaft
25. Pick-up hitch (optional)

The pick-up hitch is optional with many alternatives.

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3 Operation

3.1 Running the tractor in

The tractor is run in during the 50 first hours of use. Running the tractor in correctly gives the tractor a longer service life and makes it more economical.

Before you start driving, make sure that:

- You understand all the instruments and the functions of the controls.
- You have read the safety precautions.

IMPORTANT: Check that all bolts and nuts, for example in the wheels and exhaust system, are properly tightened.

IMPORTANT: Carry out the daily maintenance before you drive the tractor for the first time each day.

When running the tractor in:

- **Drive smoothly and vary the loading.**
- **Do not race the engine.**
- **Do not run the engine at maximum speed.**
- **Do not pull a heavy load at low engine speed.**
- **Avoid driving with the same gear engaged and at the same engine speed for a long period at a time.**

Check all instruments immediately after the engine has started. Keep an eye on the instruments while driving.

3.2 Preparing for use

Before you start using the tractor, read this manual thoroughly.

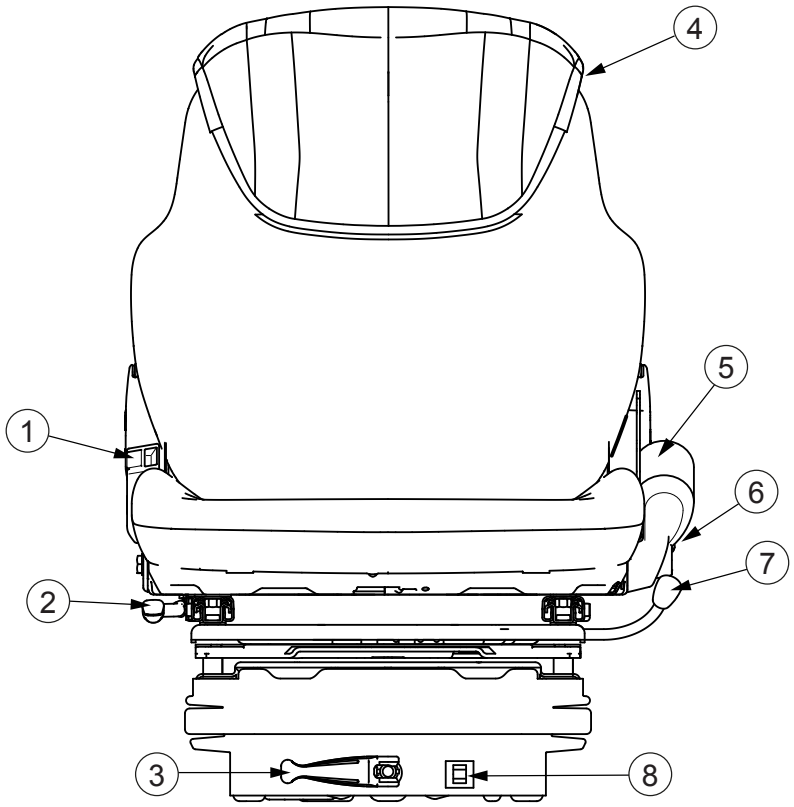
- **Make sure that the tractor is handled and maintained in the correct way to ensure reliability and provide economical operation.**
- **Follow the maintenance program carefully and include the daily maintenance in your normal routine.**
- **Use only genuine AGCO Parts spare parts for optimum performance.**

3.2.1 Adjusting the driver's seat

You can adjust the driver's seat according to your height and weight. With these adjustments you can minimize the exposure to vibration, obtain the best support for your lower back and get the most comfortable driving position. You may need to change the adjustments according to work conditions or the components you are using such as the tyre type.

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CAUTION: Do not attempt to adjust the seat while driving. There is an increased risk of loss of control.



1. Seat belt anchor point
2. Forward/backward adjustment
3. Suspension adjustment
4. Storage compartment for manuals
5. Seat belt
6. Back rest tilt adjustment
7. Seat turning lock/release
8. Operator weight display

- **Turn the seat.**
  - **Pull the locking lever upwards to release the lock.**
  - **Turn the seat to the desired position.**

    You can turn the seat 180° counterclockwise. The seat has set positions at intervals of 10°, to be used, for example, when plowing.
- **Adjust the seat forwards or backwards.**
  - **Pull up the forward/backward adjustment lever.**
  - **Move the seat to the desired position.**

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- **Adjust the suspension.**

  The operator weight display shows the settings for operators of different weights.
  - To increase the suspension, turn the suspension adjustment lever clockwise.
  - To decrease the suspension, turn the suspension adjustment lever counterclockwise.

- **Adjust the height of the seat.**

  You can lift the seat from the basic position to two higher positions.
  - To lift the seat, pull it slowly upwards until you hear a click.
  - To lower the seat, pull it up to the top position and then let it drop to the desired position.

- **Fasten the seat belt to the anchor point on the seat.**

- **Adjust the backrest inclination.**
  - **Pull up the backrest inclination adjustment lever.**
  - **Set the backrest to the desired position.**

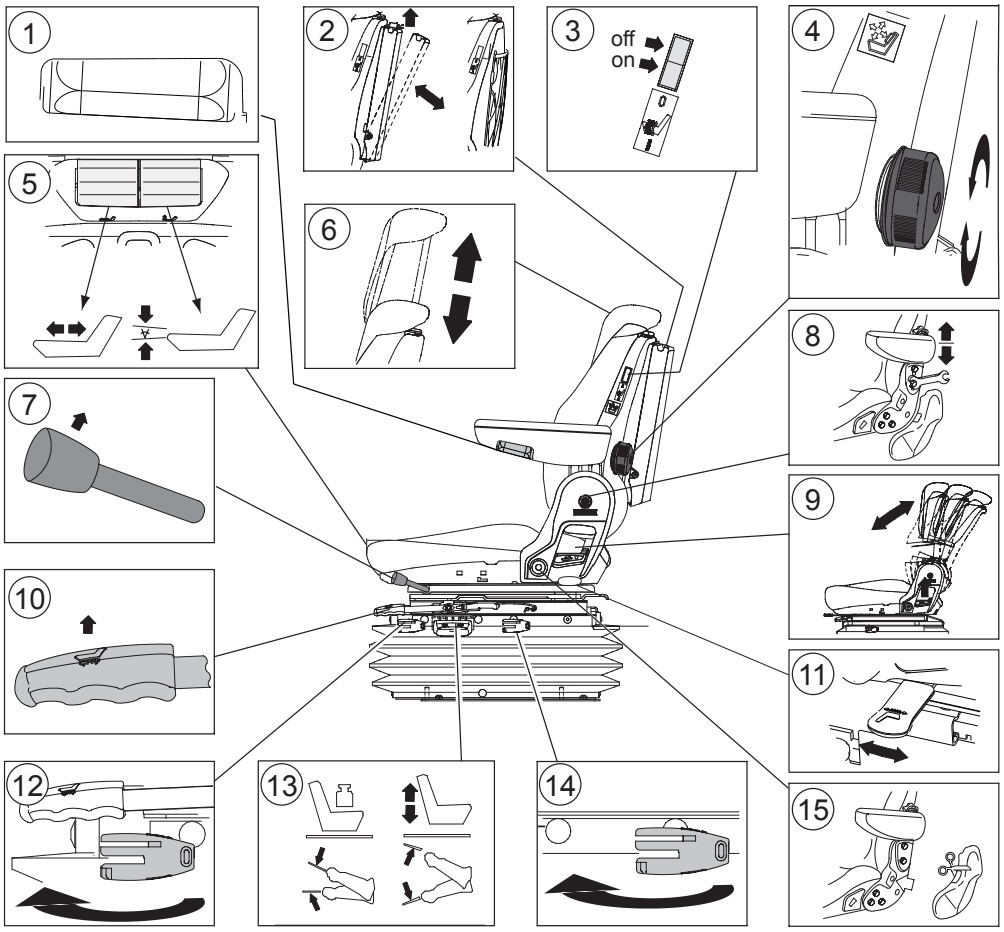
3.2.2 Adjusting the air-suspended driver's seat

You can adjust the air-suspended driver's seat according to your height and weight.With these adjustments you can minimise the exposure to vibration, obtain the best support for your lower back and get the most comfortable driving position. You may need to change the adjustments according to work conditions or the components you are using such as the tyre type. Power must be switched on while adjusting the air-suspended driver's seat, but the seat has its own compressor. The air-suspended driver's seat is extra equipment.



CAUTION: Do not attempt to adjust the seat while driving. There is an increased risk of loss of control.

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1. Armrest adjustment (Air-suspended +)
2. Storage compartment (Air-suspended +) or net (Air-suspended) for manuals
3. Seat heating
4. Lumbar support adjustment (Air-suspended +)
5. Seat depth and cushion angle adjustment
6. Headrest height adjustment and removal
7. Seat turning lock/release
8. Armrest height adjustment
9. Backrest tilt adjustment
10. Forward/backward adjustment
11. Lateral suspension adjustment (Air-suspended + only)
12. Longitudinal suspension adjustment
13. Height and vertical suspension adjustment
14. Suspension stiffness adjustment
15. Seat belt anchor point

- **Adjust the seat depth and cushion angle.**
  - **To adjust the seat depth, pull up the right handle in the seat front.**
  - **To adjust the seat cushion angle, pull up the left handle in the seat front.**

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- **Turn the seat.**
  - **Release the lock by pulling the lock/release lever upwards.**
  - **Turn the seat to the desired position.**

    The seat can be turned between 190° anti-clockwise and 90° clockwise. The seat can be locked to set positions at 10°, 20°, 80° and 90° when turning clockwise and 10°, 20°, 180° and 190° when turning anti-clockwise.

- **Adjust the seat forwards or backwards.**
  - **Pull the forward/backward adjustment lever upwards.**
  - **Move the seat forwards or backwards to the desired position.**

- **Turn the longitudinal suspension on or off.**
  - **To turn on the longitudinal suspension, turn the lever to the rear position.**
  - **To turn off the longitudinal suspension, turn the lever clockwise 180° to the front position.**

- **Adjust the suspension according to the operator weight.**
  - **Pull the suspension adjustment lever until the compressor starts.**

    The compressor runs and the suspension adjusts automatically according to the operator's weight.

    If the operator is lighter than the previous operator, the compressor runs momentarily, the excess pressure is released, and the seat lowers.

    The suspension setting remains stored in the seat memory even if the tractor is switched off.

    The seat suspension travel is 100 mm (± 50 mm) regardless of the starting height. The suspension area is limited to 100 mm for safety reasons.

- **Adjust the height of the seat.**

  The seat has a stepless height adjustment range of 80 mm (±40 mm from the seat middle position).
  - **Lift the seat by pulling the height adjustment lever upwards until the desired height is reached (the seat's own compressor runs continuously but the main power must be switched on).**

    When the lever is released, the compressor stops and the seat stays at that height. If you set the seat too high so that the room for upward movement is less than 50 mm, the seat lowers automatically to the highest permissible position.
  - **Lower the seat by pressing the height adjustment lever downwards until the desired height is reached.**

    If you set the seat too low so that the 50 mm downward suspension is not possible, the seat automatically rises to the lowest limit the next time you touch the lever.

    If you sit very still on the seat during the adjustment, the seat may rise to the previous height in the memory.

  When the seat is locked at a new height, you hear a faint click.

- **Adjust the stiffness of the seat suspension.**
  - When the lever is at the back position, the suspension is at its firmest.
  - When the lever is at the front position, the suspension is at its softest.

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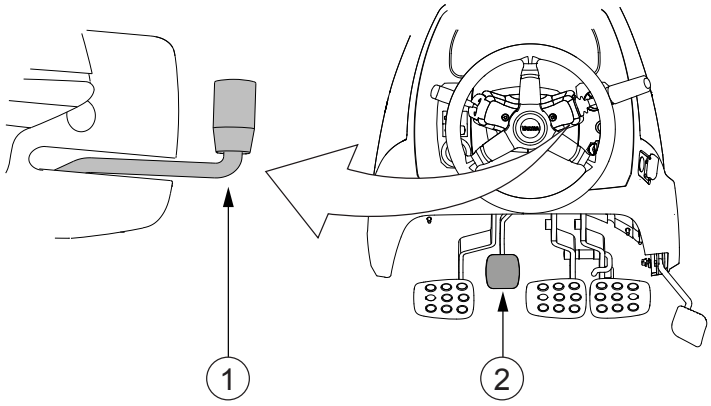
- **Fasten the seat belt to the anchor points on the seat.**
- **Adjust the backrest inclination.**
  - **Pull the backrest inclination lever up.**
  - **Set the backrest to the desired position.**
- **Adjust the armrest.**
  - **Remove the cover.**
  - **Change the armrest position in the mounting slot.**
- **Adjust the lumbar support.**

  Turn the knob clockwise or anti-clockwise to adjust the lumbar support. The height and depth are adjusted at the same time.
- **Turn the seat heating on or off.**
- **Adjust the headrest height by lifting or lowering it.**
- **Remove the headrest by pulling it upwards.**

3.2.3 Adjusting the steering wheel

You can adjust the steering wheel position with a lever and a locking pedal.

CAUTION: Do not adjust the steering wheel position while driving. There is an increased risk of loss of control.



1. Lever for adjusting steering wheel position
2. Locking pedal for steering wheel rake adjustment

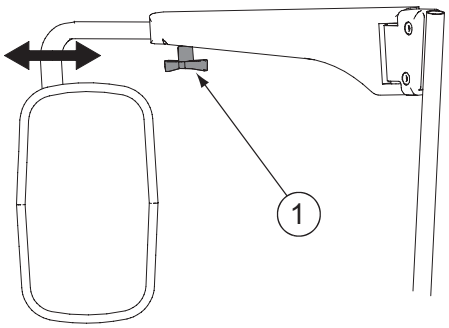
- **Adjust the steering wheel position.**
  - **Pull the lever upwards.**
  - **Move the steering wheel up or down to the desired position.**
  - **Push the lever down to lock the steering wheel position.**

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- **Set the steering wheel rake.**
  - **Press the locking pedal down.**
  - **Adjust the steering wheel rake to the desired position.**
  - **Release the pedal.**

3.2.4 Adjusting standard mirrors

You can adjust the position of the standard mirrors manually.

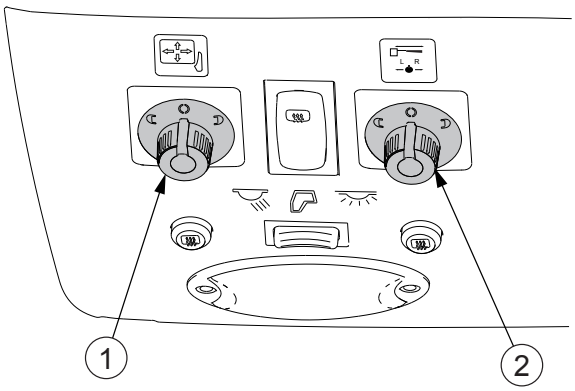


1. Locking device of the mirror support

1. **Loosen the locking device of the mirror support.**
2. **Adjust the mirror position.**
3. **Tighten the locking device.**

3.2.5 Adjusting optional mirrors

You can adjust the position of the optional mirrors electrically.



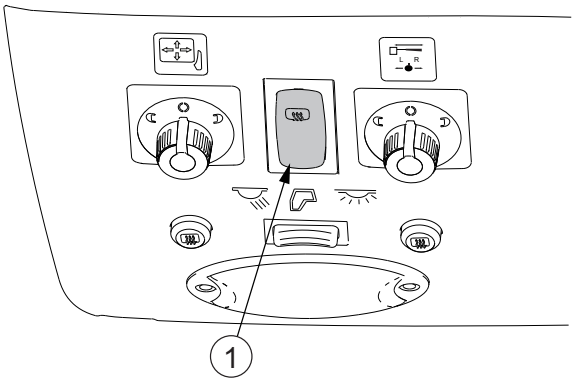
1. Mirror adjustment
2. Telescopic mirror adjustment

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- Adjust the mirrors.
  - To adjust the left mirror, turn the knob to the left and push the knob in the direction of the arrows.
  - To adjust the right mirror, turn the knob to the right and push the knob in the direction of the arrows.
- Adjust the telescopic mirrors.
  - To shorten/extend the left telescopic mirror, turn the knob to the left and push the knob in the direction of the arrows.
  - To shorten/extend the right telescopic mirror, turn the knob to the right and push the knob in the direction of the arrows.

3.2.6 Heating mirrors

Mirror heating is extra equipment.

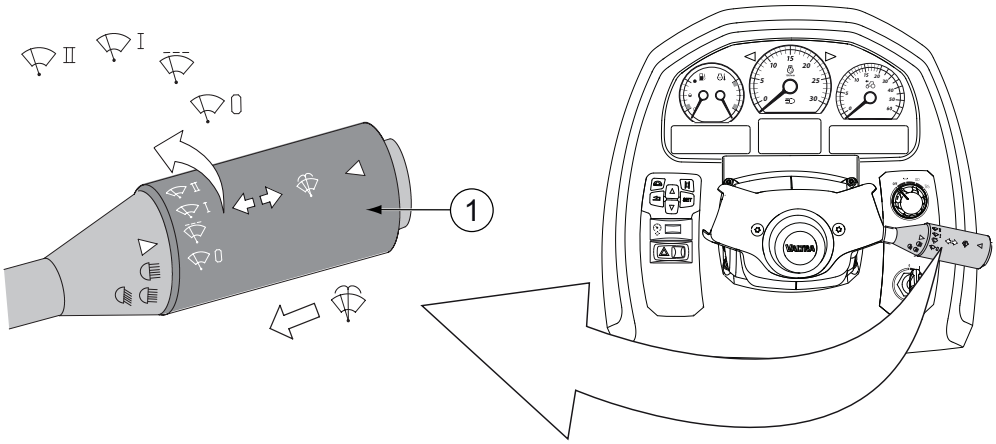


1. Mirror heating switch

- To switch the mirror heating on, press down the symbol side of the switch.
- To switch the mirror heating off, press down the side of the switch opposite to the symbol.

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3.2.7 Using the windscreen wiper and washer

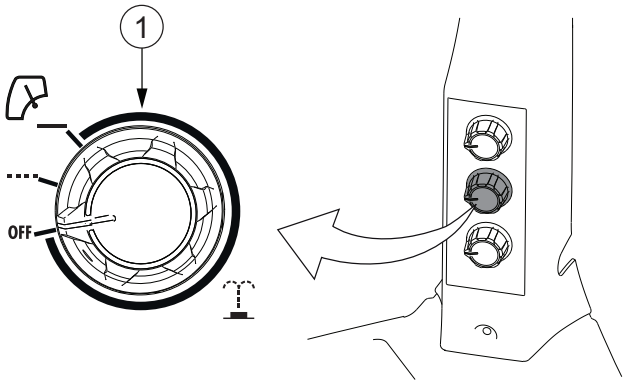


1. Multifunction lever

- **To use the windscreen wiper, turn the multifunction lever.**
  The wiper has an intermittent position and two speeds.
- **To use the windscreen washer, push the lever inwards.**

3.2.8 Using the side window wiper and washer

The switch for the side window wiper and washer is located on the C-pillar.



1. Side window wiper switch

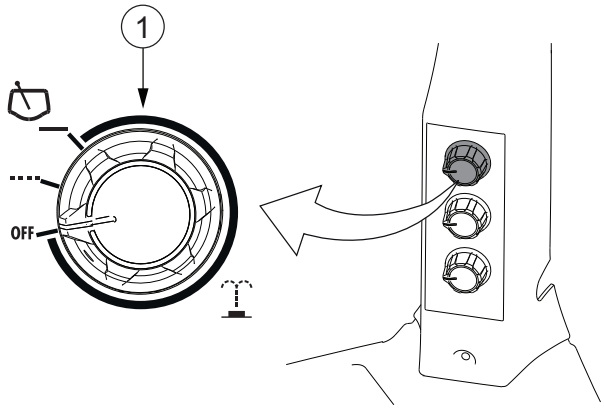
- **To use the side window wiper, turn the switch.**
  The wiper has an intermittent position and one speed.
- **To use the washer, press the switch.**

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3.2.9 Using the rear window wiper and washer

The rear window wiper is extra equipment.

The switch for the rear window wiper and washer is located on the C-pillar.

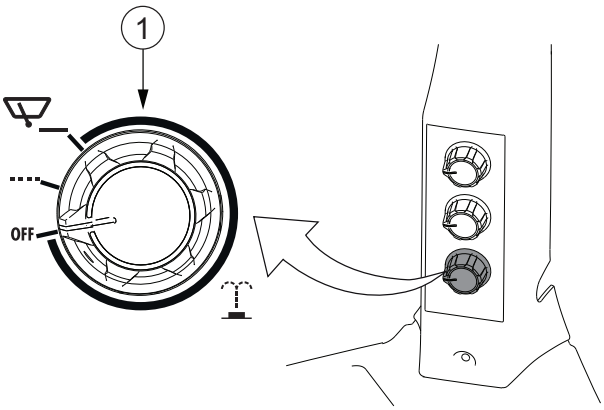


1. Rear window wiper switch

- **To use the rear window wiper, turn the switch.**
  The wiper has an intermittent position and one speed.
- **To use the washer, press the switch.**

3.2.10 Using the roof window wiper and washer

The switch for the roof window wiper and washer is located on the C-pillar.



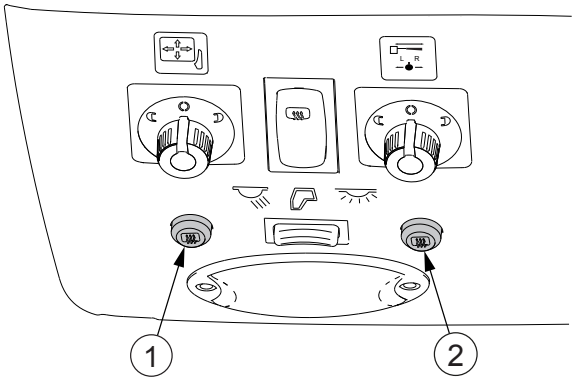
1. Roof window wiper switch

- **To use the roof window wiper, turn the switch.**
  The wiper has an intermittent position and one speed.
- **To use the washer, press the switch.**

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3.2.11 Using the window heaters

Windscreen and rear window heaters are optional equipment.



1. Windscreen heater button
2. Rear window heater button

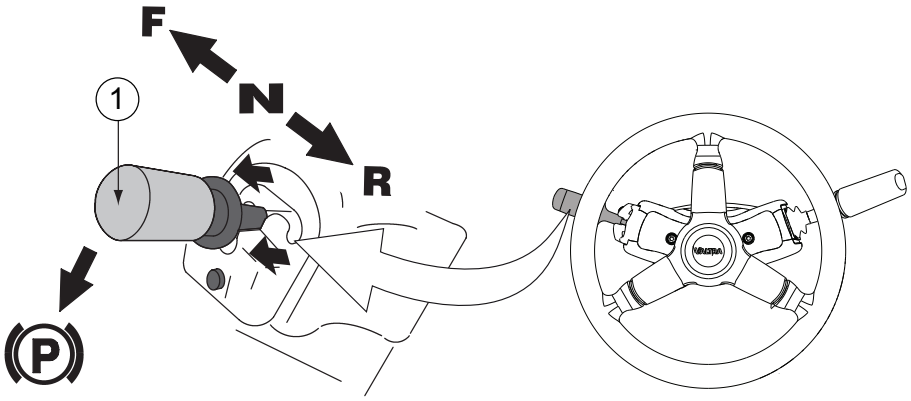
When the windscreen or rear window heater is on, the light on the button is lit.

- **To switch on the windscreen heater for 10 minutes, push the windscreen heater button.**
- **To switch on the windscreen heater continuously, push the windscreen heater button more than 2 seconds.**
- **To switch the windscreen heater off, push the windscreen heater button again or turn off the main power.**
- **To switch on the rear window heater for 10 minutes, push the rear window heater button.**
- **To switch on the rear window heater continuously, push the rear window heater button more than 2 seconds.**
- **To switch the rear window heater off, push the rear window heater button again.**

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3.2.12 Power shuttle lever

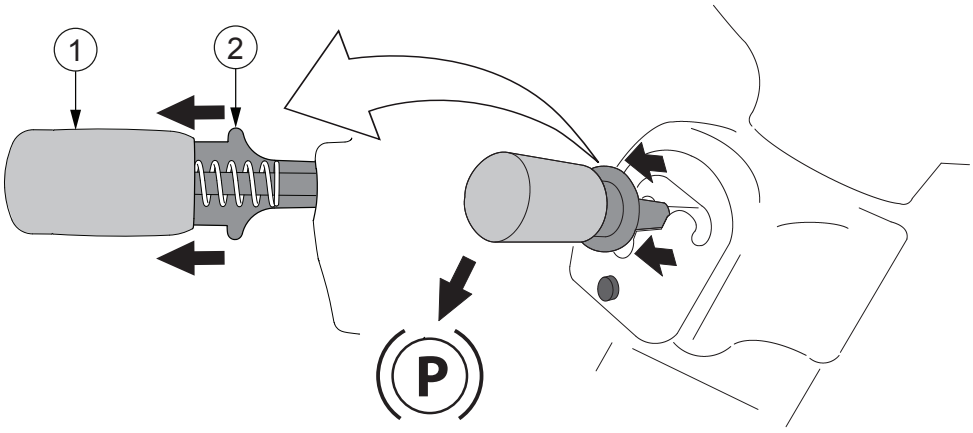
With the power shuttle lever you can change the driving direction and apply the parking brake.



1. Power shuttle lever
   - F (front position) = forward driving direction
   - N (centre position) = neutral
   - R (rear position) = reverse driving direction
   - P = parking brake position

With the power shuttle, you can change the driving direction without using the clutch pedal. However, if you use the clutch pedal, press the pedal fully down before moving the power shuttle lever.

- With the power shuttle lever in the centre position, the parking brake can be applied.
- When applying the parking brake, the four-wheel drive (4WD) is engaged and all wheels brake.
- Always apply the parking brake before turning off the power.



1. Power shuttle lever
2. Collar

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3.2.13 Control stop

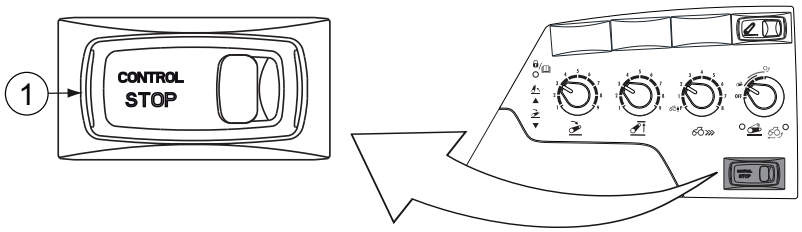
The control stop is used when the tractor is running an implement in stationary mode (for example a compressor or pump) and the operator is not in the cab. Using the control stop reduces the risk of more serious damage to the engine or in the transmission. The control stop is extra equipment.

NOTE: When starting the engine, the control stop must be disengaged. Otherwise the engine does not start.

NOTE: Do not use the control stop when driving. The control stop automatically stops the engine if the stop light is lit.

IMPORTANT: If the control stop stops the engine, the fault must be found and repaired before the engine is started again.

3.2.14 Using the control stop



1. Control stop switch

- **To activate the control stop, press down the symbol side of the control stop switch.**

  Release the locking device by pushing it towards the middle of the switch.

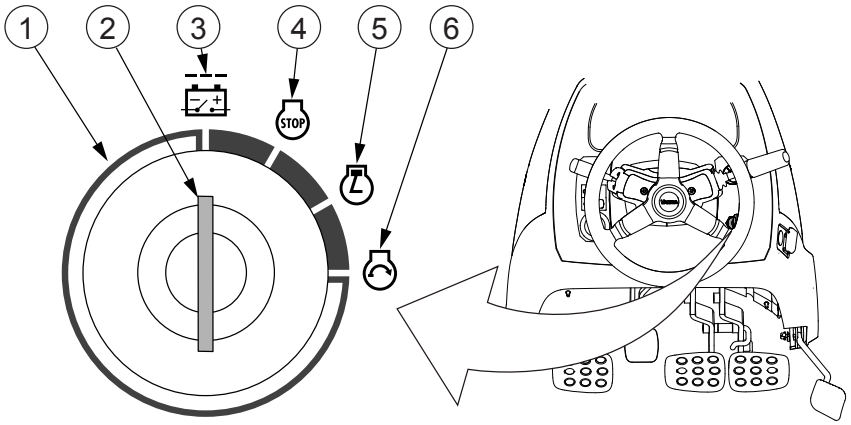
- **To deactivate the control stop, press down the side of the control stop switch opposite to the symbol.**

3.2.15 Using the ignition switch

The ignition switch has four positions: OFF, ACC, power on and start position. In the ACC position, for example, the radio and cold box are powered.

After turning the ignition key to OFF position, there is a delay before the main power switches off.

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1. Ignition switch
2. Ignition key
3. OFF position
4. ACC position
5. Power on position
6. Start position

- **Turn on the power by turning the ignition key from the (OFF) position to the (power on) position.**

  In cold conditions, when the engine is cold, the glow indicator light on the instrument panel is lit.

- **Start the engine by turning the ignition key from the (power on) position to the (start) position after the glow indicator light on the instrument panel has gone out.**

- **Stop the engine by turning the ignition key to the (ACC) position.**

- **Turn off the power by turning the ignition key to the (OFF) position.**

  First, stop the tractor, apply the parking brake, check that the parking brake symbol (P) is lit on the instrument panel, and then turn off the power.

  The tractor and several movements of the implements can be stopped if a fault occurs by turning the ignition key to the (OFF) position. This will make the engine stop and the transmission disengage, and the movement of the linkage stops.

  WARNING: Do not turn the ignition key to the (OFF) position when the tractor is moving unless it is unavoidable.

  WARNING: When the power is off, the emergency brake is not in use and the engagement of the parking brake can be delayed.

  IMPORTANT: Do not keep extra keys on the same bunch with the ignition key. It is possible that your knee touches them and turns the power off.

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3.2.16 Main power

The main power is controlled by the ignition switch.

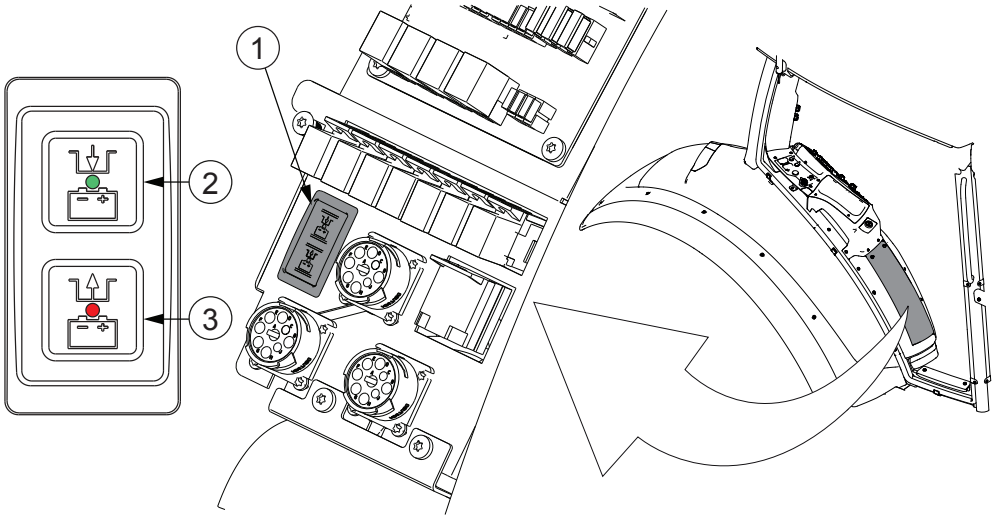
The main power is automatically turned on when you turn the ignition key to other than the (OFF) position. When you turn the ignition key to the (OFF) position, the main power is turned off after a delay. During this delay, data is saved, the system performs a controlled shutdown and the urea system lines are emptied. The light in the light switch is lit until the main power is switched off.

The main power is not switched off automatically in the following situations:

- the parking lights are on
- the hazard warning flasher is on
- the control electronics request for additional time (maximum of one hour), for example, the Auto-Guide system

3.2.17 Using the main power emergency button

In case of an emergency, all power can be switched off immediately without a delay by pressing the main power emergency button when the ignition key is removed. In normal use, the main power is switched off after a delay when you turn the ignition key to the (OFF) position, and there is no need to use the main power emergency button.



1. Main power emergency button
2. Main power on (green light)
3. Main power off (red light)

The main power emergency button has a green and a red LED light to indicate its status.

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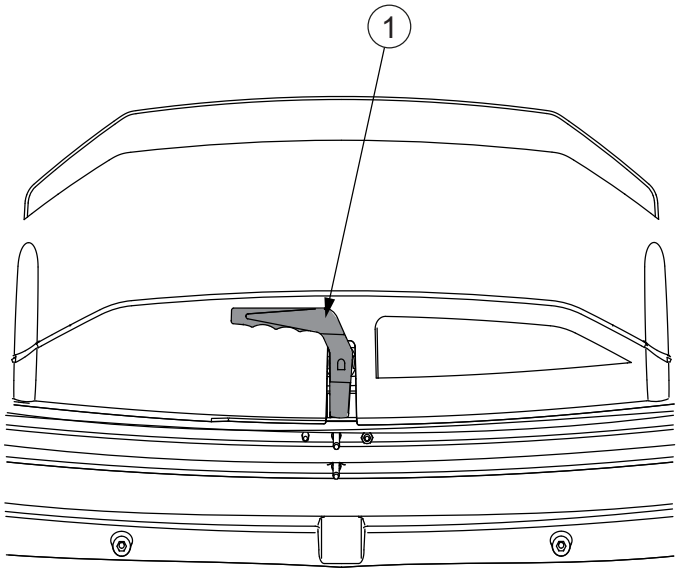
- If neither light is lit, the main power emergency button status is OFF.
- If the green light is lit, the main power emergency button status is ON.
- If the green light is blinking, the main power is shutting down with the delay.
- If the red light is blinking, the red button has been pressed while the ignition has been in the OFF position and the main power shuts down after the delay. This is an unlikely situation as the main power emergency button is controlled automatically by the ignition switch.
- If the red light is lit, the red button has been pressed while driving and the main power shuts down after the delay once the ignition has been turned to the OFF position. This is an unlikely situation as the main power emergency button is controlled automatically by the ignition switch.

1. **Turn the ignition to the  (OFF) position and remove the key from the ignition switch.**
2. **Open the cover of the electric centre.**
3. **Press the red button of the main power emergency button for three seconds.**

   The main power is switched off without a delay and the red light is lit in the main power emergency button to indicate that the power is off.

   NOTE: The electric system does not save data or perform controlled shutdown and the urea lines will not be emptied.
4. **Reset the main power emergency shutdown in either of the two ways.**
   - **Press the green button of the main power emergency button.**
   - **Disconnect a battery cable terminal.**

3.2.18 Using the roof hatch



1. Handle

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1. Open the roof hatch.
   - Slide the sun shade open by pulling it backward.
   - Turn the handle to unlock the roof hatch.
   - Push the roof hatch open.
2. Close the roof hatch.
   - Pull the roof hatch closed.
   - Turn the handle to lock the roof hatch.
   - Slide the sun shade closed by pushing it forward.

3.3 Starting the tractor

3.3.1 Starting under normal conditions



WARNING: Never run the tractor in an enclosed building except with the exhaust vented to the outside.



WARNING: Never start the engine unless you are seated on the driver's seat.

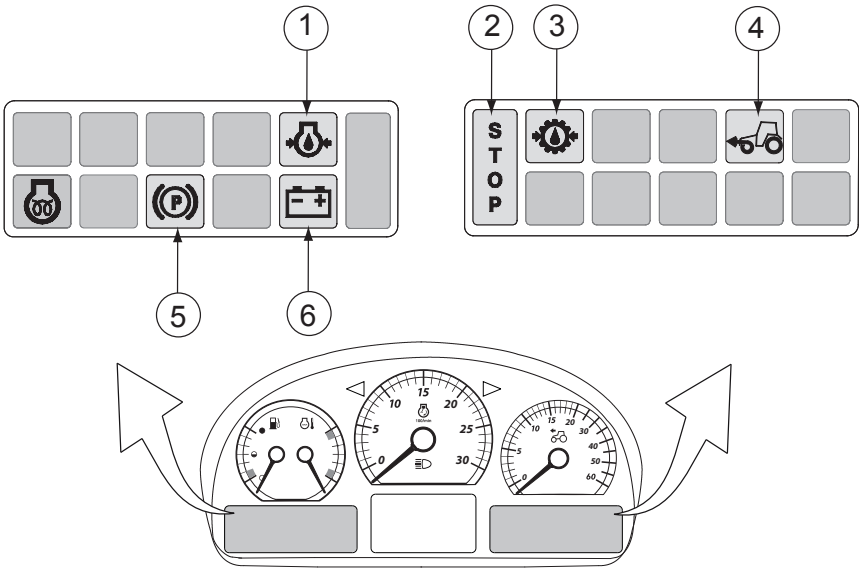


CAUTION: Do not use starting aerosols. Due to the automatic glowing, there is a risk of explosion.

IMPORTANT: If the engine fails to start on the first try, wait until the engine has stopped completely before trying again.

When the power is turned on, all indicator lights in use are lit momentarily. The following indicator lights remain on until the engine is started and the systems operate normally:

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1. Engine oil pressure
2. Stop light (is flashing)
3. Gearbox oil pressure
4. Four-wheel drive
5. Parking brake
6. Battery charging

1. **Apply the parking brake.**
2. **Turn the hand throttle to the low idling position.**
3. **Ensure that the control stop (optional equipment) is deactivated.**
4. **Press down the clutch pedal.**
5. **Turn the ignition key to the (power on) position.**
6. **Wait until the glow indicator light on the instrument panel has gone out.**

   The glow indicator light is lit depending on temperature.
7. **Turn the ignition key to the (start) position.**

   - When the engine starts to fire up, keep the ignition key in the (start) position until the engine has started.
   - If the engine fails to start within 10 seconds, stop starting and try again.
8. **Release the ignition key when the engine starts.**

   When the engine starts, the following indicator lights go out:
   - Engine oil pressure
   - Gearbox oil pressure
   - Stop light
   - Battery charging

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9. **Use the driving pedal to control the engine speed.**

   IMPORTANT: Never race a cold engine.

After starting a cold engine, the glow indicator light  can light up again. The afterglow reduces white smoke and keeps the cold engine running smoothly.

3.3.2 Starting under cold conditions

To ensure a successful start under cold conditions, use the engine heater or fuel-operated heater and follow the instructions given.

IMPORTANT: It is recommended to use the engine heater or fuel-operated heater when the temperature is below 0°C.

IMPORTANT: If you are driving the tractor for a short distance only, make sure that the battery is charged enough to ensure starting.

NOTE: Use of the engine heater or fuel-operated heater reduces the wear on the engine.

- **When cold-starting the engine, turn off all unnecessary equipment that uses electrical power.**
- **Keep the battery in a warm place when it is not in use.**

  Starting the tractor under very cold conditions is easier if the battery is kept in a warm place when it is not in use.
- **Use the engine heater to ensure a successful start under cold conditions.**

  With the engine heater, warming up the engine for 2–3 hours before starting is sufficient.
  With the fuel-operated heater, warming up the engine for 1 hour before starting is sufficient.
  NOTE: Using the fuel-operated heater in cold conditions for more than 3 hours may empty the battery.
  When the engine heater or fuel-operated heater is activated, you can hear a hissing sound.
- **If you start the engine under very cold conditions, keep the ignition key in the (start) position until the engine has started.**

  IMPORTANT: Do not keep the ignition key in the (start) position for more than 60 seconds at a time.

  When the engine starts, the idling RPM is increased momentarily until the RPM decreases to normal.

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- **If the temperature is below 0°C, first, warm up the engine and hydraulics oil for a while at low engine speed.**

  Allow the engine to run for a few minutes before starting to drive or engaging the power take-off. When first starting to use hydraulic functions, use the predefined factory setting M2 to set the maximum flow to 50% for the first few minutes.

- **Never race a cold engine.**

  Run the engine with a light load until it has reached its normal operating temperature.

3.3.3 Starting with an auxiliary battery

You can start the engine with an auxiliary battery (jump starting).

WARNING: A fully charged battery connected directly to a dead battery can cause a current surge capable of causing the batteries to explode.

IMPORTANT: Never use jump leads that are damaged or otherwise inadequate. Use only well protected heavy-duty jump leads with strong clamps.

IMPORTANT: Never try to start the engine by short-circuiting leads.

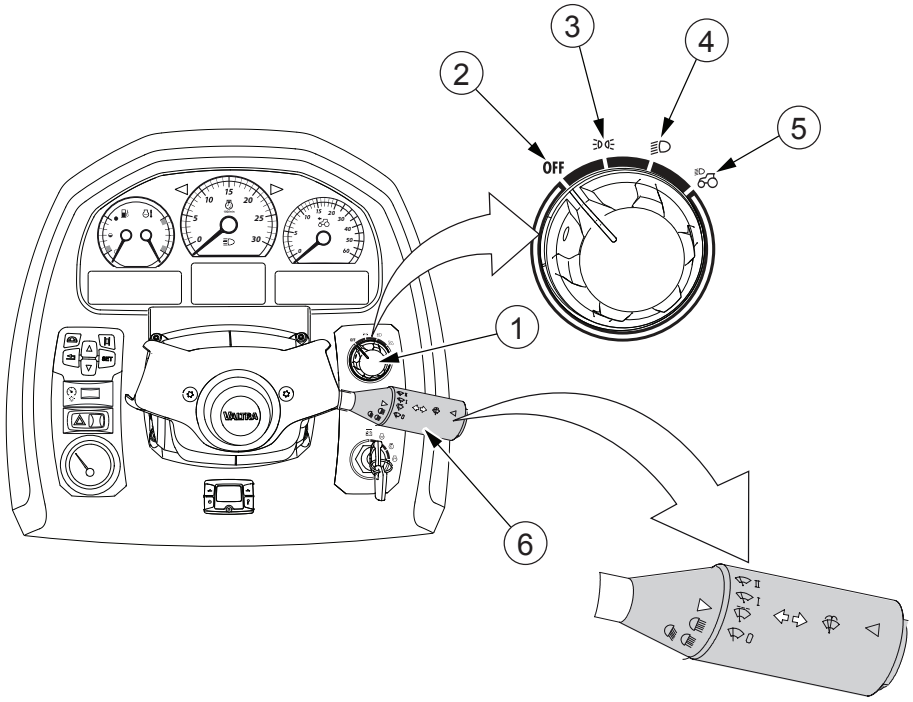
1. **Check that the auxiliary battery has the same voltage as the standard battery.**
2. **Connect the jump lead between the (+) terminal on the auxiliary battery and the (+) terminal on the tractor battery.**
3. **Connect another jump lead between the (-) terminal on the auxiliary battery and the (-) terminal on the tractor battery.**

   WARNING: Make sure that the jump leads are properly connected to the terminals. Otherwise the jump leads can cause a short circuit, which might lead to the explosion of the battery.
4. **Start the engine.**
5. **When the engine has started, disconnect the jump leads in the following order:**
   - **Remove the jump lead between the (-) terminals.**
   - **Remove the jump lead between the (+) terminals.**

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3.4 Using lights

3.4.1 Using the light switch



1. Rotary light switch
2. Off position
3. Parking lights
4. Headlights
5. Upper headlights
6. Multifunction lever

- **Turn the light switch to the parking lights position to use the parking lights.**
- **Turn the light switch to the headlights position to use the headlights.**

  Working lights operate only when the parking lights or headlights are switched on.
- **If the tractor is equipped with upper headlights (optional), turn the light switch to the far right position to use them.**

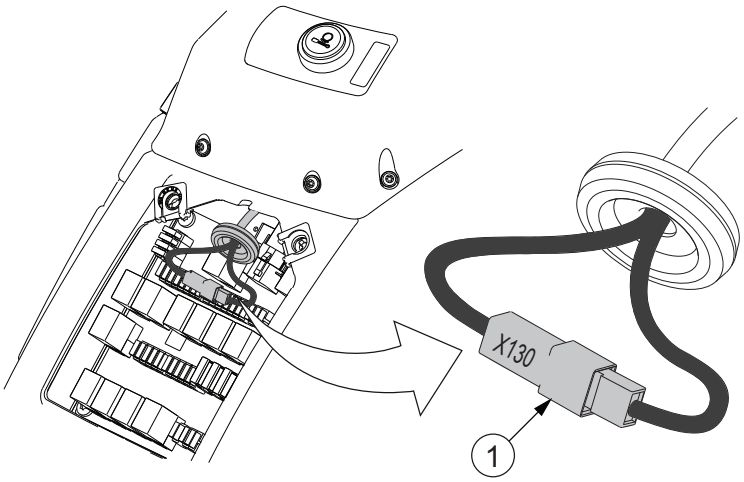
  NOTE: Your tractor has a safety circuitry for lights, meaning that if the fuse of the light switch has burned and the lights are switched on, the front working lights are forced on.

  NOTE: The main power is not switched off automatically if the lights are left on with the light switch. This feature is needed if the tractor has to be left on the road, for example.

  NOTE: The main power is not switched off automatically if the hazard warning flasher is switched on.

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- **To turn on the high beams, pull the multifunction lever towards yourself.**



1. Connector X130

When the light switch is in the headlight position, the upper high beams (optional) operate as an additional high beams when the connector X130 (black wire 185) is connected together. If the high beams of the upper headlights glare, disconnect the X130 connector to turn them off.

When the light switch is in the upper headlight position, high beams operate only on the upper headlights.

- **To use the headlight flasher, pull the multifunction lever towards yourself a bit when the dipped–beams are on.**

3.4.2 Using the follow-me-home functionality

In the follow-me-home functionality, the front waist working lights (optional) are still on even if the power is turned to the (OFF) position and you exit the cab.

- **To use the follow-me-home functionality, turn the ignition key to the (OFF) position and open the door before the main power turns off.**

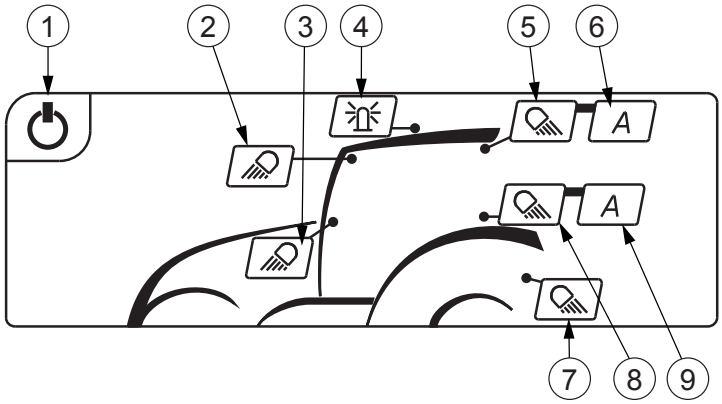
  The follow-me-home functionality activates automatically at the same time as the cab lights. The follow-me-home lights turn off when the cab lights or the main power turn off.

  NOTE: The main power is not turned off if the hazard warning flasher or the parking lights are turned on. If the door is left open in such a situation, the cab lights and the follow-me-home lights are turned off after about 10 minutes.

3.4.3 Using the working lights

The parking lights or the headlights must be switched on before you can use the light panel. If the parking lights or the headlights are not switched on and you try to use the light panel, the symbol on the light panel on/off button blinks few times.

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1. Light panel on/off button
2. Front working lights
3. Front waist working lights (optional)
4. Rotary beacon light (optional)
5. Rear working lights
6. Automatic operation of the rear working lights
7. Trailer hitch light (optional)
8. Rear waist working lights (optional)
9. Automatic operation of the rear waist working lights (optional)

With the Skyview equipment, the button for the rear working lights also turns on the side working lights.

1. **Turn the light switch to parking lights or headlights position.**

   The light panel and working lights turn on if the light panel and working lights were on when the power was previously shut down.

2. **Press the light panel on/off button to switch on the light panel.**

   You can turn on the working lights only after you have switched on the light panel. When the panel is switched on, the symbol on the on/off button is lit green. Previously saved working light settings are taken into use.

3. **Turn the working lights on and off with the corresponding working light buttons.**

   When a working light is turned on, the symbol on the working light button is lit green. The light is lit green even if the actual working light is not installed.

4. **Use the automatic rear working lights with the corresponding working light buttons.**

   When the automatic operation is activated, the rear working lights are switched on automatically when the power shuttle lever is in the reverse position. With the Skyview equipment, the side working lights works alike.

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5. **Press the light panel on/off button again to switch off the light panel.**

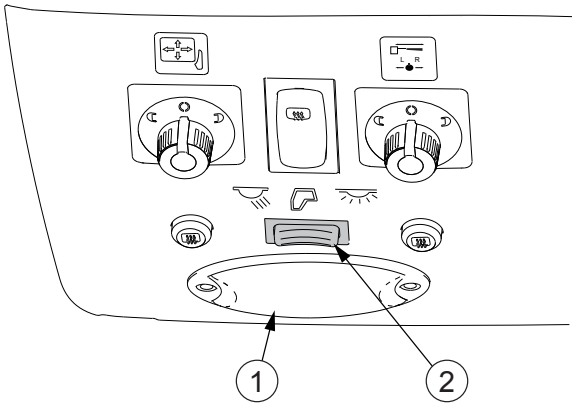
   The panel can be turned off also by switching off the parking lights. When the panel is turned off, the working light settings are saved and taken into use when the panel is turned on again.

   NOTE: The rotary beacon light (optional) can be turned on and off from the light panel independently.

6. **Turn the light switch to off position.**

3.4.4 Using the cab light

The tractor is equipped with a step light(s) and cab lights.



1. Cab light
2. Cab light switch

The cab lights and step light(s) function automatically as follows:

- When the door is opened, both the cab and step lights are lit.
- When the door is closed, the lights go out in 10 seconds.
- If the door is left open, the lights go out in 10 minutes.

The cab light switch has three positions: left, centre and right.

- **To turn on the cab lights, push the switch to the right.**

  Two white cab lights are continuously on but the red LED light is off.

- **To turn off the cab lights, push the switch to the centre position.**

  The two white cab lights and step light(s) are turned on only when the door is opened. The red LED light is not on.

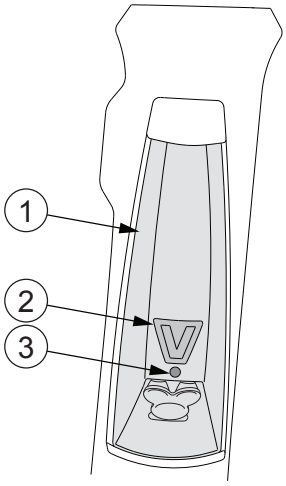
- **To turn on the red panel light, push the switch to the left.**

  The red LED light is continuously on, and the two white cab lights are turned on when the door is opened.

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3.4.5 Using the torch

The torch (optional) is fitted in the holder in the cab's left B-pillar.



1. Torch
2. Torch on/off button
3. Battery charge indicator light

The magnet at the bottom of the torch allows you to attach it as a working light on different surfaces. When the torch is on, the battery charge indicator light is lit as follows:

- Not lit = battery capacity is more than 50%
- Orange = battery capacity is less than 50%
- Red = battery capacity is less than 10%

- **To use the torch:**
  - **Pull the torch from the holder.**

    The torch is held by a magnet.
  - **To lit the torch bright, push the on/off button.**
  - **To lit the torch dimmed, push the on/off button again.**
  - **To turn off the torch, push the on/off button for a third time.**

- **To charge the torch:**
  - **Fit the torch to the holder.**

    When the tractor power is on, the torch is charged and green indicator light is lit.
  - **Connect an auxiliary charger to the micro USB connector in the torch.**

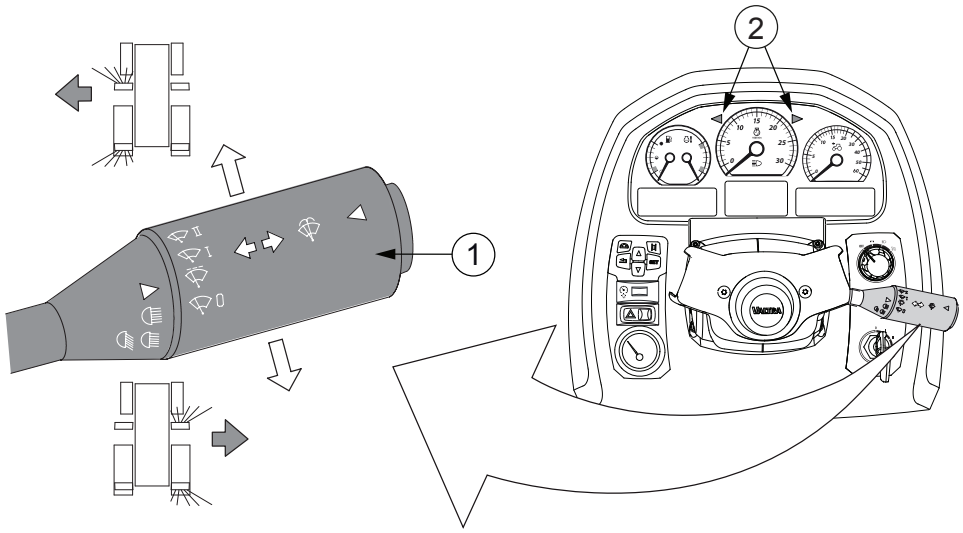
    You can use, for example, a car charger or a mobile phone charger.

  IMPORTANT: The torch contains a lithium battery. If the battery has gone out of order, recycle the torch appropriately.

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3.5 Using notification devices

3.5.1 Using turn signals

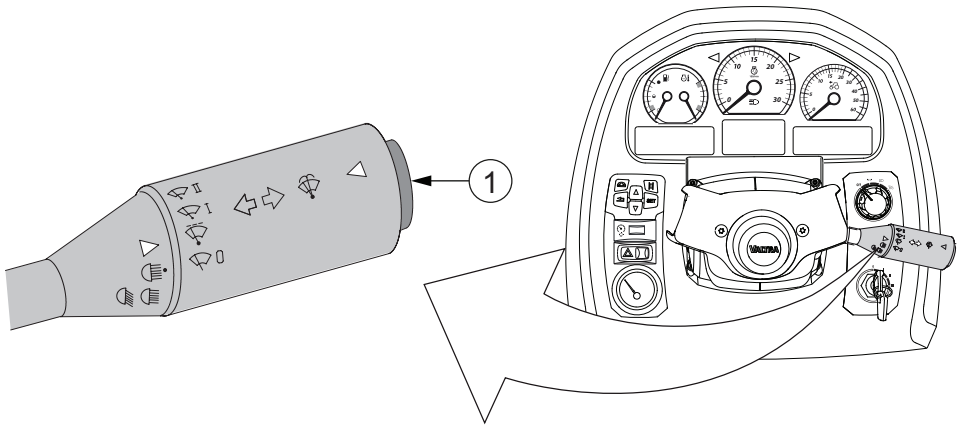


1. Multifunction lever
2. Indicator lights for turn signals

- **To switch on the left-hand side turn signal, move the multifunction lever upwards.**
- **To switch on the right-hand side turn signal, move the multifunction lever downwards.**

The left or right indicator light blinks correspondingly.

3.5.2 Using the horn



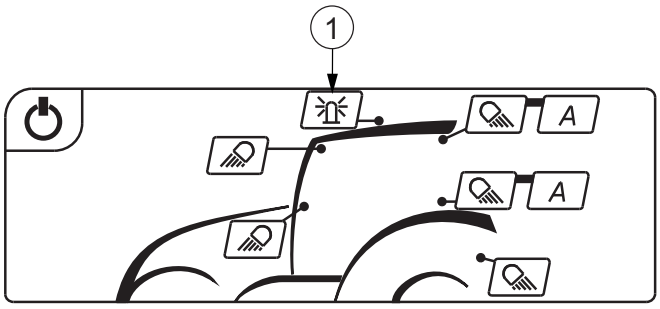
1. Horn button

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- **To sound the horn, push the horn button.**

3.5.3 Using the rotary beacon light

Rotary beacon light is an extra equipment.



1. Button for rotary beacon light

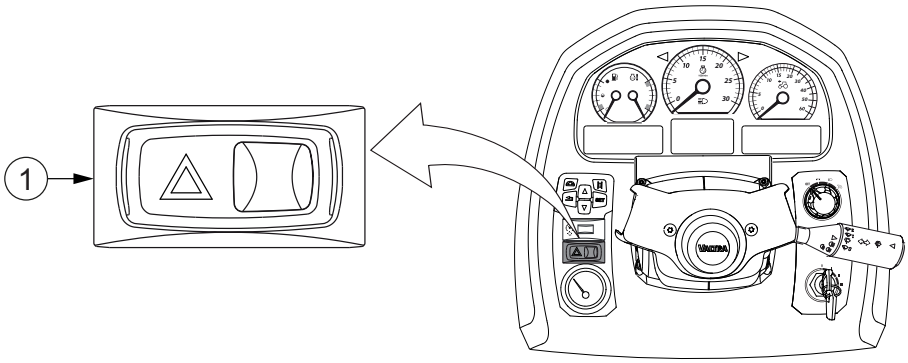
1. **Press the button for rotary beacon light to switch the beacon on or off.**

   When on, the symbol on the button is lit green.

   NOTE: The rotary beacon light (optional) can be turned on and off from the light panel independently.

3.5.4 Using hazard lights

All four turn signals can be switched on to warn of a hazardous situation.



1. Hazard lights switch

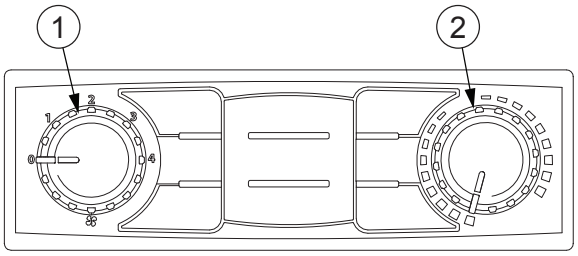
1. **To make all four turn signals blink, press down the symbol side of the switch.**
2. **To stop the blinking, press down the side of the switch opposite to the symbol.**

   NOTE: If the hazard lights are on and the ignition switch is turned to  (OFF) position, the main power stays on until the hazard lights are switched off.

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3.6 Heating and ventilation

3.6.1 Using the heater



1. OFF/Fan speed control knob
2. Temperature control knob

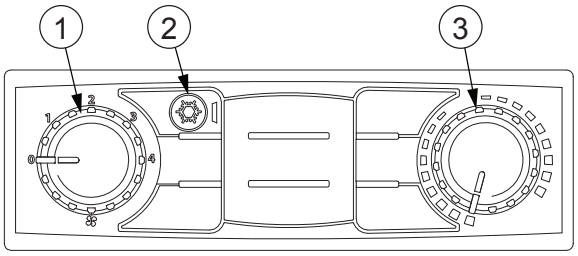
- **To regulate the speed of the fan, turn the fan speed control knob.**
- **To regulate the temperature, turn the temperature control knob.**

3.6.2 Using the manual air conditioning

The manual air conditioning is optional equipment.

IMPORTANT: Use the air conditioning regularly to prevent seizing of the compressor.

IMPORTANT: When using the air conditioning, keep the cab doors and windows closed.



1. OFF/Fan speed control knob
2. Air conditioning ON/OFF
3. Temperature control knob

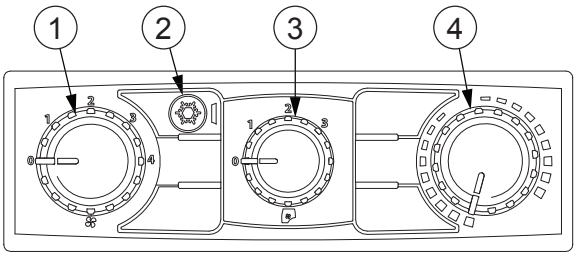
1. **Press the air conditioning ON/OFF button to turn on the air conditioning.**

   The light on the air conditioning ON/OFF button is lit.
2. **To regulate the speed of the fan, turn the fan speed control knob.**
3. **To regulate the temperature, turn the temperature control knob.**

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3.6.3 Using the manual air conditioning and additional heater

The additional heater is optional equipment.



1. OFF/Fan speed control knob
2. Air conditioning ON/OFF
3. Additional heater OFF/fan speed control knob
4. Temperature control knob

1. **Press the air conditioning ON/OFF button to turn on the air conditioning.**

   The light on the air conditioning ON/OFF button is lit.

2. **To regulate the speed of the fan, turn the fan speed control knob.**
3. **To regulate the temperature, turn the temperature control knob.**
4. **To blow warm air to the lower part of the cab, turn the additional heater fan speed control knob.**
5. **To use the fuel-operated heater, turn the additional heater on.**

WARNING: When the additional heater is turned off, coolant does not circulate from the fuel-operated heater onwards. This causes the fuel-operated heater to overheat, if turned on.

3.6.4 Automatic air conditioning

The automatic air conditioning system is optional equipment.

IMPORTANT: Use the air conditioning regularly to prevent seizing of the compressor.

IMPORTANT: When using the air conditioning, keep the cab doors and windows closed.

The operating temperature of the air conditioning is -40°C...+80°C. The display decelerates in -30°C and stops working in -40°C.

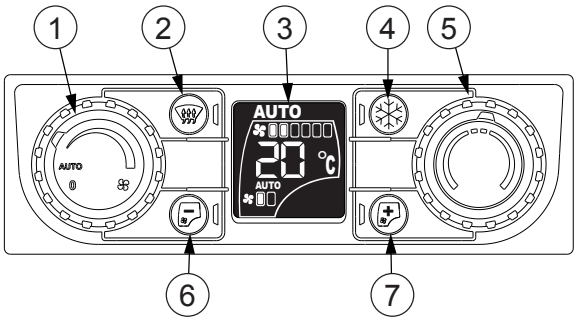
When operating in cold conditions, the air conditioning stays in the starting mode until the temperature of the engine coolant reaches +40°C. During the starting mode the fan speed is at the minimum. The starting mode ends when the engine coolant has reached the temperature of +40°C, or in the following cases:

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- defrost is connected
- LO mode is connected
- a different fan speed is selected manually

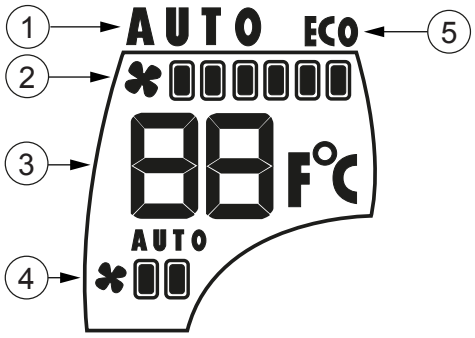
3.6.4.1 Automatic air conditioning control panel and display

Control panel



1. Fan speed control knob (selection OFF/Auto/Manual)
2. Defrost
3. Display
4. Air conditioning ON/OFF
5. Temperature control knob
6. Additional heater fan speed decrease (selection Manual/OFF/Auto)
7. Additional heater fan speed increase (selection ON/Manual)

Display



1. Automatic mode
2. Fan speed
3. Set temperature
4. Additional heater
5. ECO mode

Indicator	Indication
AUTO	Displayed when the automatic fan speed and the AC compressor are on.
	Displays the fan speed.

Table continued on next page

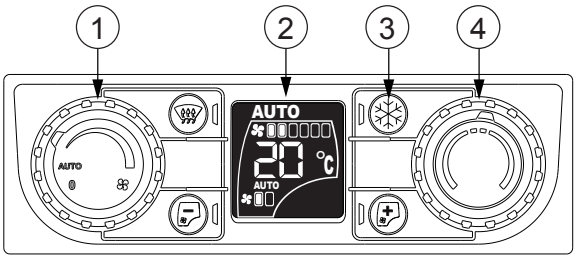
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88°C	Displays the selected target temperature. If adjusted below 16°C, LO is displayed. If adjusted over 29°C, HI is displayed.
AUTO	Displays the additional heater fan status and speed (OFF, 1, 2, AUTO).
ECO	Displayed when the ECO mode (temperature control without the AC compressor switched on) is on.

3.6.4.2 Using the automatic air conditioning

NOTE: When you start the tractor, the air conditioning automatically defaults to the last selected adjustment.

NOTE: If the battery has been disconnected, the air conditioning system starts a calibration process automatically when turning the fan speed control knob to AUTO. During calibration, the air conditioning system cannot be used.



1. Fan speed control knob
2. Display
3. Air conditioning ON/OFF
4. Temperature control knob

- **To activate the automatic air conditioning system, turn the fan speed control knob to the AUTO position.**

  When the automatic air conditioning and the AC compressor are active, the LED next to the air conditioning ON/OFF button is lit and the indicator AUTO is shown on the display. The system regulates the fan speed automatically.

- **Select the target temperature with the temperature control knob.**

  The target temperature is shown on the display.
  - **To reach the maximum cooling effect, turn the knob to the extreme cooling position.**

    Indicator LO is shown on the display.
  - **To reach the maximum heating effect, turn the knob to the extreme heating position.**

    Indicator HI is shown on the display.

- **To regulate the fan speed manually, turn the fan speed control knob clockwise to the target speed.**

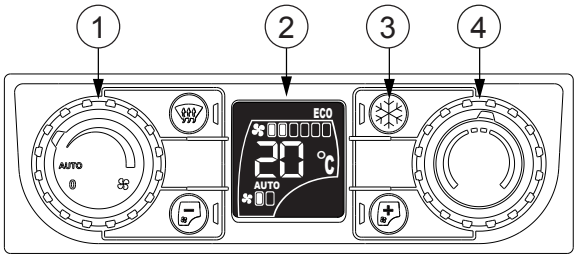
  The fan speed is shown on the display.

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- **To deactivate the air conditioning system, turn the fan control knob to the OFF position.**

3.6.4.3 Using ECO mode

Use the air conditioning ECO mode to regulate the cab temperature without the AC compressor. In the ECO mode the system tries to achieve the target temperature by adjusting the water valve and fan speed. This mode saves both the battery power and fuel.



1. Fan speed control knob
2. Display
3. Air conditioning ON/OFF
4. Temperature control knob

- **Using the ECO mode when the air conditioning system is in the AUTO mode.**
  - **Switch off the AC compressor by pressing the air conditioning ON/OFF push button.**

    The fan speed is regulated by the system and indicators AUTO and ECO are displayed.
  - **Select the target temperature with the temperature control knob.**

    If you turn the temperature to LO the AC compressor is automatically turned on.
- **Using the ECO mode when the air conditioning system is in the manual mode**
  - **Switch off the AC compressor by pressing the air conditioning ON/OFF push button.**
  - **Select the target fan speed with the fan speed control knob.**
  - **Select the target temperature with the temperature control knob.**

    If you turn the temperature to LO the AC compressor is automatically turned on.
- **To deactivate the ECO mode:**
  - **press the air conditioning ON/OFF button (the AC compressor is activated), or**
  - **turn the fan speed control knob to AUTO, or**
  - **turn the fan speed control knob to OFF.**

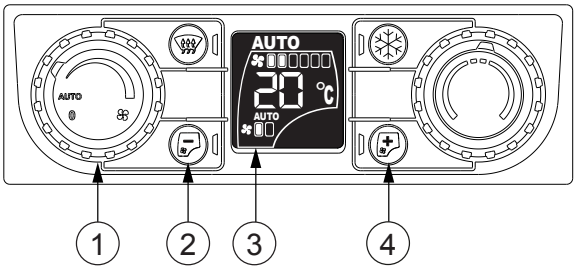
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3.6.4.4 Using the additional heater

Use the additional heater to blow air to the lower part of the cab.

The additional heater operates automatically when the air conditioning is in the AUTO or ECO mode.

The additional heater has four modes: AUTO, fan speed 1, fan speed 2 and OFF.



1. Automatic air conditioning fan speed
2. Additional heater fan speed decrease
3. Display showing the additional heater's fan status and speed
4. Additional heater fan speed increase

- **Using the additional heater when the air conditioning is in the AUTO mode**

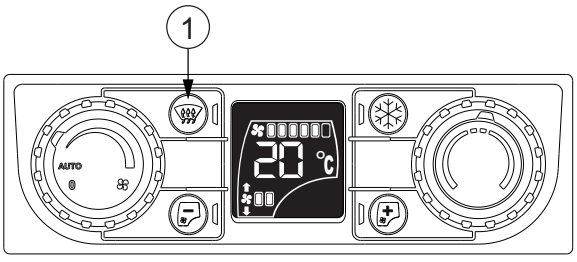
  The air conditioning system is in the AUTO mode when either of the indicators AUTO or AUTO-ECO are displayed.
  - Press the additional heater fan speed decrease and increase buttons to
    - toggle between additional heater AUTO and OFF modes
    - decrease and increase the additional heater fan speed manually.

- **Using the additional heater when the air conditioning is in the ECO mode**

  The air conditioning system is in the ECO mode when indicator ECO displayed. In this mode, the AC compressor is off and the air conditioning fan speed is regulated manually.
  - Press the additional heater fan speed decrease and increase buttons to toggle between speed 1, speed 2 and OFF.

3.6.4.5 Using defrost

Use defrost to clear frost or fog from windows.



1. Defrost

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- **To activate defrost, press the defrost button.**

  The LED next to the button is lit. When defrost is active, the fan speed is at its maximum and the text HI is displayed.

- **To deactivate defrost, press the defrost button again.**

  The defrosting button indicator LED goes off, and the former air conditioning mode is restored.

3.6.5 Fuel-operated heater

The fuel-operated heater (optional equipment) uses the same fuel as the tractor and can be used for heating the engine and the cabin. The heater heats primarily the engine and then the cabin. The heater is controlled either with the heater panel or remotely via mobile phone and push button on the dashboard.

WARNING: During the heating period, clean the exhaust pipe of the fuel-operated heater daily and its surroundings monthly. In dusty conditions, clean more frequently. There is a risk of dry hay or other dirt catching fire.

WARNING: When using the heater, the area directly below the heater must be clear.

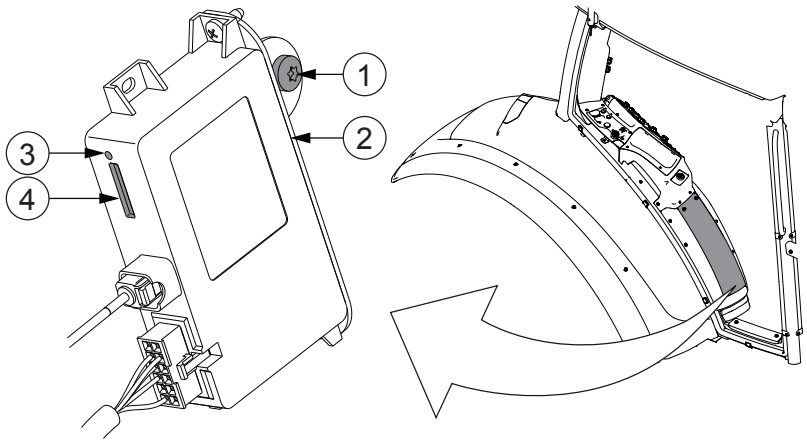
NOTE: Using the fuel-operated heater in cold conditions for more than 3 hours may empty the battery.

The fuel-operated heater can be used together with the tractor air conditioning system. With the automatic air conditioning there are no limitations. With the manual air conditioning and additional heater, note the following:

WARNING: Before the fuel-operated heater is used with the manual air conditioning system, the additional heater must be set to positions 1-3 while the tractor power is on. When the additional heater is turned off, coolant does not circulate from the fuel-operated heater onwards. This causes the fuel-operated heater to overheat, if turned on.

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3.6.5.1 Installing SIM card to the mobile controlled heater



1. Screw
2. GSM modem
3. Button
4. SIM card

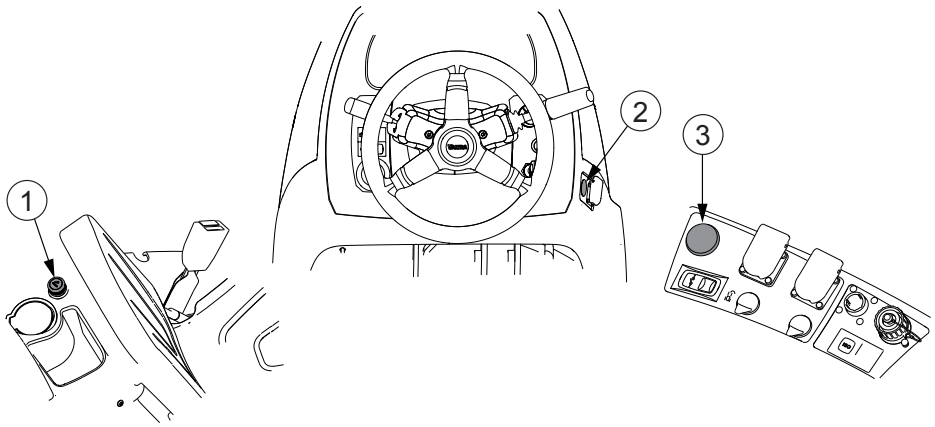
1. **Turn off the tractor power.**
2. **Open the cover of the electric centre.**
   The GSM modem is fitted at the bottom of the electric centre.
3. **Loosen the screw.**
4. **Turn the GSM modem towards yourself.**
5. **Push the button to eject the SIM card holder.**
6. **Install the SIM-card to the holder.**
7. **Push the SIM card holder to its place.**
8. **Turn the GSM modem to its place and tighten the screw.**
9. **Fit the cover of the electric centre.**

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3.7 Power outlets

3.7.1 Lighter and power outlets

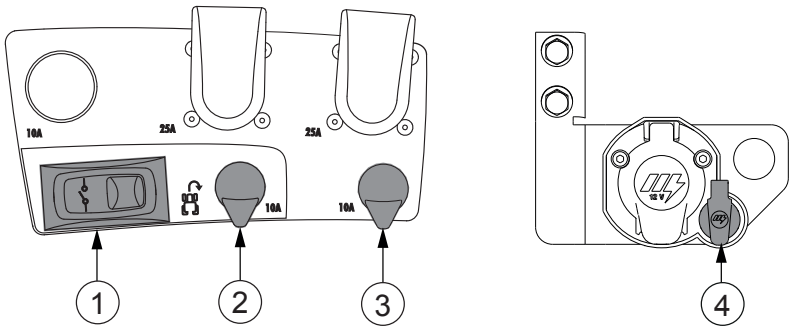
A lighter socket and power outlets provides an output of 12 V DC; 10 A at a maximum.



1. Lighter
2. Power outlet on the front console (optional)
3. Power outlet on the right-hand side (optional)

3.7.2 Using the two-pin current socket and power switch

A 2-pin current socket provides an output of 12 V DC; 10 A at a maximum.



1. Power switch
2. 2-pin current socket
3. 2-pin current socket
4. Power outlet

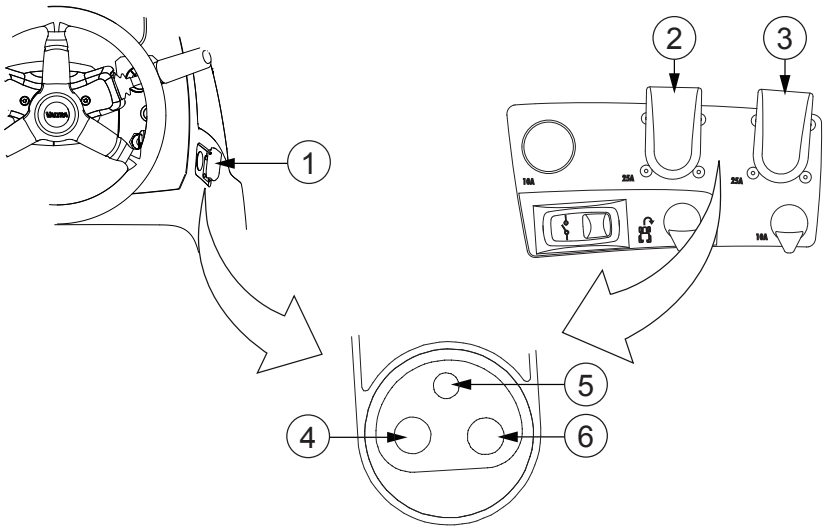
The 2–pin current socket on the right hand side is active when the main power is on.

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The 2–pin current socket on the left hand side and the power outlet at the rear end of the tractor is controlled with the power switch.

- **To connect the 2–pin current socket power, press down the symbol side of the switch.**
- **To disconnect the 2–pin current socket power, press down the side of the switch opposite to the symbol**

3.7.3 Three-pin current socket



1. Three-pin current socket on the front console (optional)
2. Three-pin current socket on the right-hand side
3. Three-pin current socket on the right-hand side (optional)
4. 25 A
5. 5 A
6. Ground

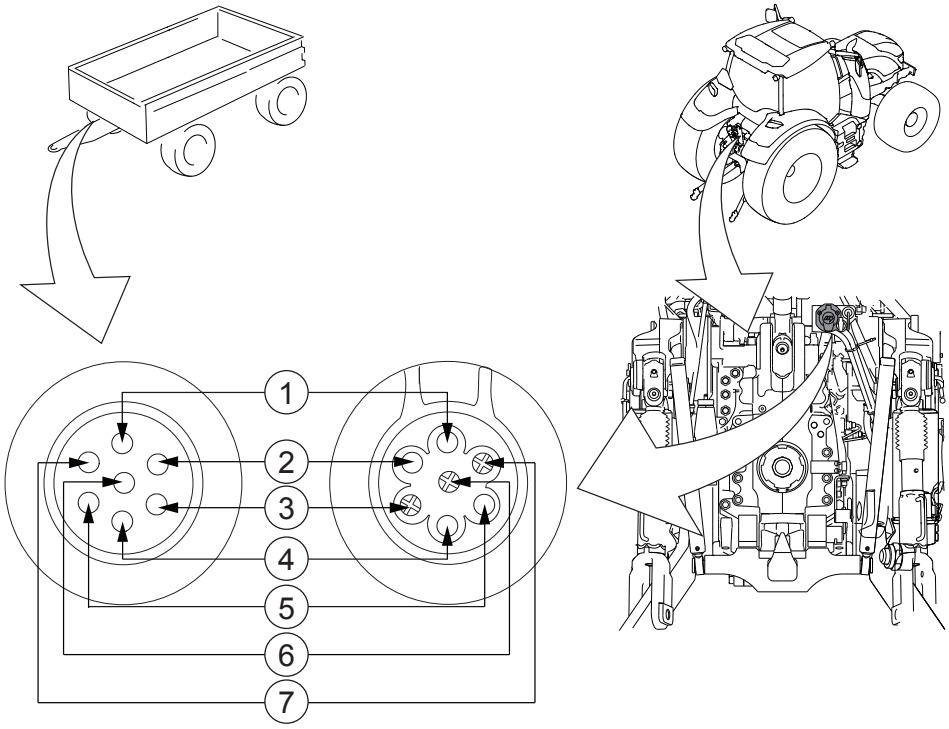
The direct current is supplied through the current socket for different regulating elements, implements etc. 5 A is available through the ignition switch and 25 A direct from the battery. The current supply of the 25 A pin switches off after a delay when the ignition switch is turned to the (OFF) position.

3.7.4 Trailer socket

Socket at the rear end

Current from the tractor to the trailer is supplied through the trailer socket.

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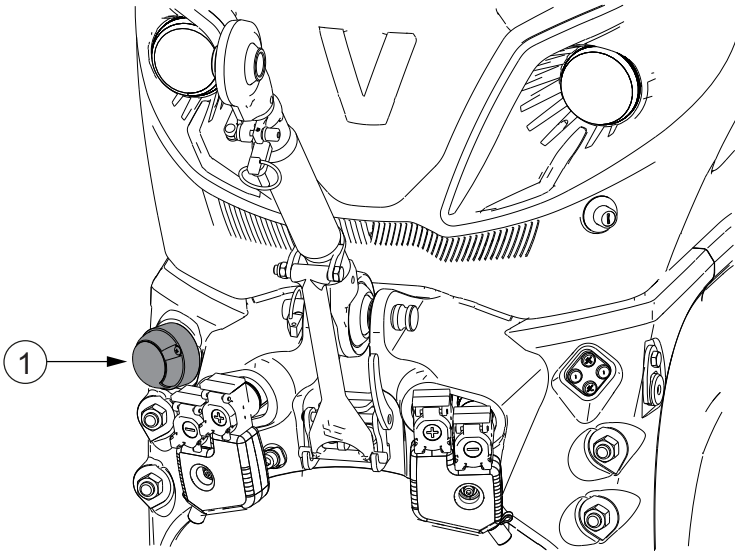


1. Direction indicator left (yellow)
2. Ignition switch current, max. 10 A (blue)
3. Ground (white)
4. Direction indicator right (green)
5. Parking light right (brown)
6. Parking light left (black)
7. Brake light (red)

Socket at the front end

The power socket at the front end is optional equipment. It can be used for supplying current for the lights and blinkers of the front implements, for example.

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1. Socket at the front end

3.8 Driving the tractor

3.8.1 Notifications about steering

WARNING: If the engine stops while the tractor is moving (for example, the fuel has run out), do not press the clutch pedal down. When the tractor is moving and the transmission is engaged, the engine is running and there is pressure in the system. If you press down the clutch pedal, the hydraulic pump does not run and steering deactivates, because there is no hydraulic pressure in the system.

CAUTION: If a malfunction occurs in the steering system, stop the tractor and correct the malfunction before restarting.

NOTE: When the engine is not running, the steering is not power-assisted.

3.8.2 Power shuttle

You can change the driving direction smoothly with the power shuttle lever. The engagement of the power shuttle is automatic.

You can request a driving direction change with the power shuttle lever at any driving speed, but the transmission starts to engage the new driving direction only when the speed is below 10 km/h. If the driving speed is higher, the traction releases and the transmission goes into idle until the speed is low enough. The new direction arrow starts to flash to indicate that the driving direction change has been requested. The direction arrow is constantly lit when the new direction has engaged. If you return the power shuttle lever to the original direction when the driving speed is still over 10 km/h, the traction engages immediately.

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The operator detector prevents the shuttle engagement if you are not on the seat. If the direction is selected, the arrow of the selected direction flashes on the display panel. The selected direction does not engage until you sit on the seat and move the power shuttle lever to the parking brake position (P) and then to the desired direction.

If the driving speed is below 5 km/h and the operator leaves the seat for more than two seconds without pressing the clutch pedal down for more than 10%, the shuttle disengages and the direction arrow flashes. The direction stays selected but does not engage until the operator sits on the seat and moves the power shuttle lever to the parking brake position (P) and then to the desired direction.

DANGER: Do not leave the seat when the tractor is moving.

3.8.3 Parking brake

When the parking brake is on, four-wheel drive (4WD) is engaged and all wheels brake.

You can use the parking brake by changing the position of the power shuttle lever. The parking brake engages when driving speed is approximately 3 km/h or lower.

IMPORTANT: Always apply the parking brake when parking the tractor.

WARNING: If you must leave the cab with the engine running, move the power shuttle lever to the parking brake position. Always ensure that the parking brake is actually engaged before leaving the tractor.

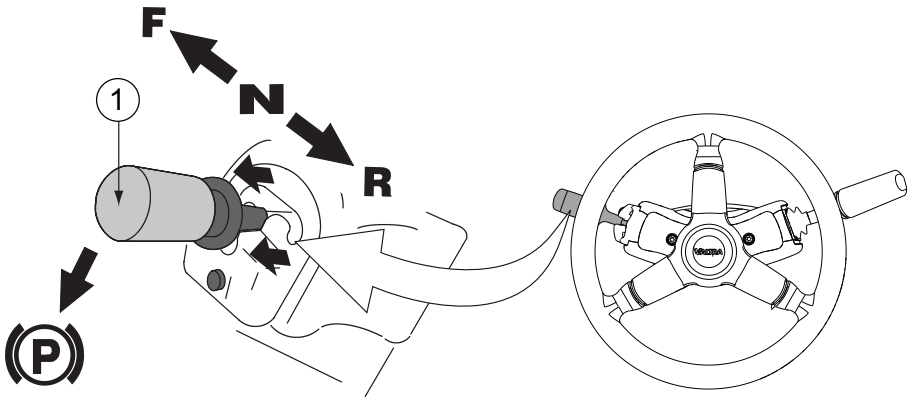
WARNING: The parking brake indicator light flashes or message "PARKING BRAKE FAULT!" is shown on the instrument panel display if there is a fault in the parking brake system. In addition the buzzer alarms continuously. The parking brake might not function properly. Park the tractor on level ground and repair the fault before continuing to drive.

In some situations (for example, after working with a heavy load) when you engage the parking brake, the engine may perform cooling of the after-treatment system by increasing the idling RPM momentarily. The word COOL flashes on the A-pillar display.

IMPORTANT: Do not stop the engine while the idling rpm is increased and the word COOL flashes on the A-pillar display. Stopping the engine may damage the after-treatment system.

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3.8.4 Using the power shuttle lever

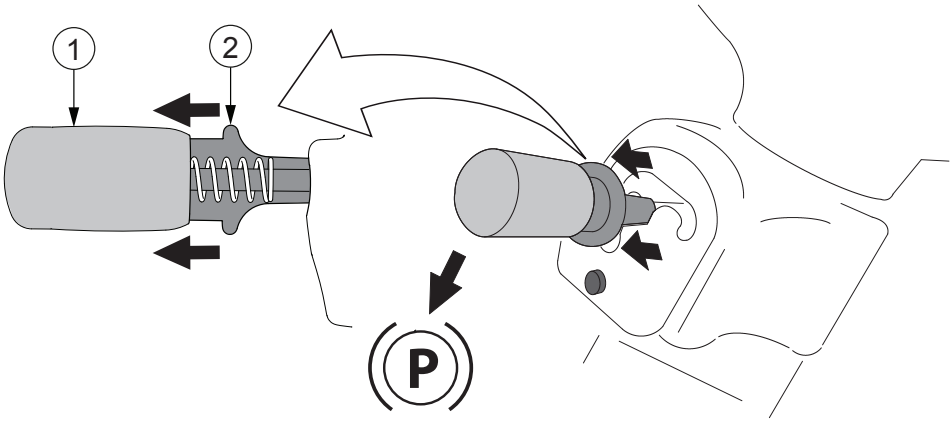


1. Power shuttle lever
   - F (front position) = forward driving direction
   - N (centre position) = neutral
   - R (rear position) = reverse driving direction
   - P = parking brake position

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- **Engage the parking brake:**

  Stop the tractor completely. Pull up the collar round the power shuttle lever and move the lever to the parking brake (P) position.



1. Power shuttle lever
2. Collar

The parking brake indicator light on the instrument panel and the P symbol on the A-pillar display are lit. If the indicator light is flashing, the engagement of the parking brake is delayed.
The parking brake engages when driving speed is approximately 3 km/h or lower. If you move the power shuttle lever to the P position at higher driving speeds, the P symbol flashes on the A-pillar display until the speed drops below the limit.

DANGER: Apply the parking brake when you park the tractor. The tractor may still move if the parking brake is not applied, even if the tractor is parked and power is turned off.

WARNING: The parking brake indicator light flashes or message "PARKING BRAKE FAULT!" is shown on the instrument panel display if there is a fault in the parking brake system. In addition the buzzer alarms continuously. The parking brake might not function properly. Park the tractor on level ground and repair the fault before continuing to drive.

- **Disengage the parking brake:**

  Pull up the collar round the power shuttle lever and move the lever away from the parking brake (P) position to the neutral (N) position. If the indicator light is flashing, the disengagement of the parking brake is delayed.

- **Select the desired driving direction:**

  Move the power shuttle lever to the forward (F) or reverse (R) driving direction. Change the driving direction at lower driving speeds with high load so that there is less stress on the power transmission.

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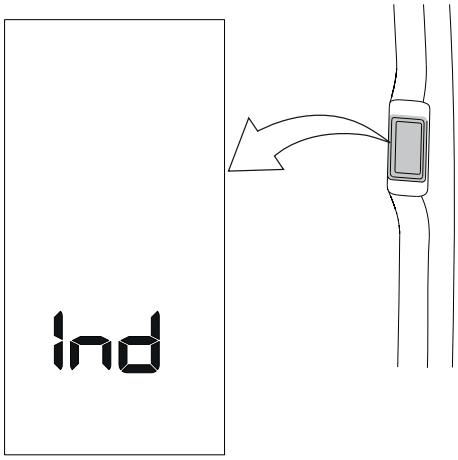
3.8.5 Adjusting the power shuttle engagement speed

You can adjust the power shuttle engagement speed through the A-pillar display settings.

The index determines how quickly the torque of the power shuttle increases to the maximum value when the clutch is engaged. The index affects both the F (forward) and R (reverse) clutch engagements. The value ranges from 1–10, where:

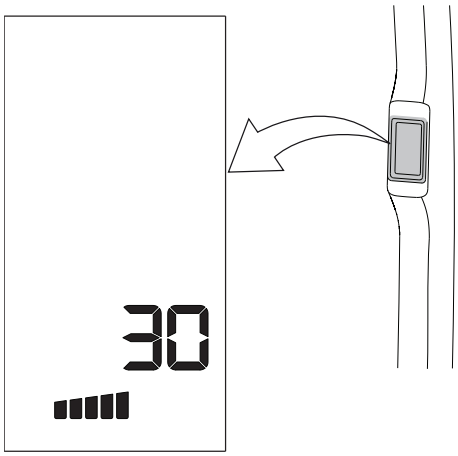
- 1 = very slow engagement
- 10 = very quick engagement

1. **Press to activate the A-pillar display.**
2. **Press SET to enter the settings menu.**



Text “Ind” is shown.

3. **Press SET to enter the index list.**



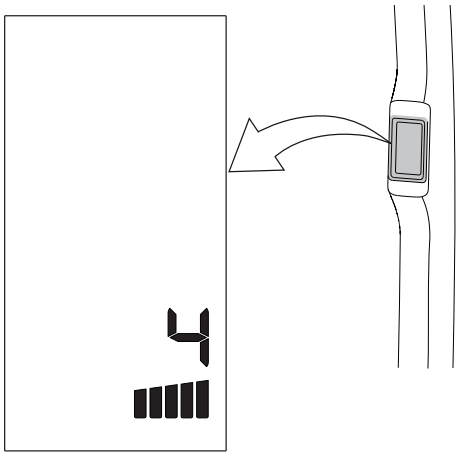
The first half of the bottom bar is lit to indicate that the parameter number is displayed.

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4. **Press the up arrow or the down arrow to select the index to be changed.**

   The parameter number for power shuttle engagement speed is 30.

5. **Press SET.**

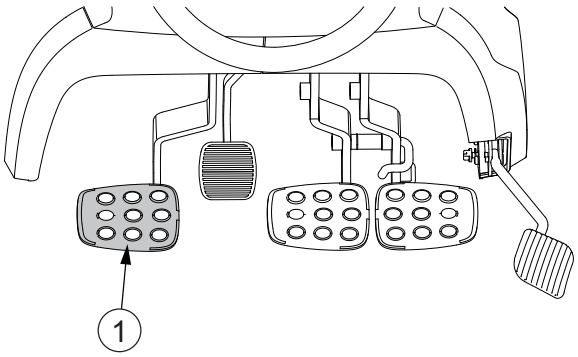


   The second half of the bottom bar is lit to indicate that the parameter value is displayed.

6. **Press the up arrow or the down arrow to change the parameter value.**
7. **Press ↵ to save the value.**
8. **Press ↵ to leave the setting menu and save all changes.**

3.8.6 Clutch pedal

3.8.6.1 Using the clutch pedal while driving



1. Clutch pedal

1. **Press the clutch pedal to release the traction.**
2. **Let the clutch pedal up gradually.**

   NOTE: Never rest your foot on the clutch pedal while driving.

   NOTE: Do not allow the clutch to slip more than necessary when moving off.

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3. **Do not fully press the clutch pedal if you want the tractor to move very slowly.**

   You can use this feature when attaching implements.

   NOTE: When using the clutch to move the tractor very slowly, the coupling point of the clutch may change and the clutch engages sooner.

WARNING: If the engine stops while the tractor is moving (for example, the fuel has run out), do not press the clutch pedal down. When the tractor is moving and the transmission is engaged, the engine is running and there is pressure in the system. If you press down the clutch pedal, the hydraulic pump does not run and steering deactivates, because there is no hydraulic pressure in the system.

WARNING: Do not descend slopes with the clutch pedal pressed down.

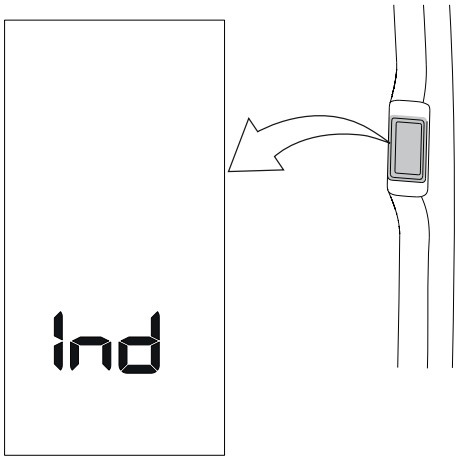
3.8.6.2 Adjusting the clutch pedal engagement position

You can adjust the clutch pedal's engagement position and clutch slipping properties according to your preferences through the A-pillar display settings.

The index determines how quickly the clutch engages when the clutch pedal is raised. The value range is between 1–4.

- 1 = the clutch engages quickly, the engagement point is relatively low.
- 4 = the clutch engages slowly, the engagement point is relatively high.

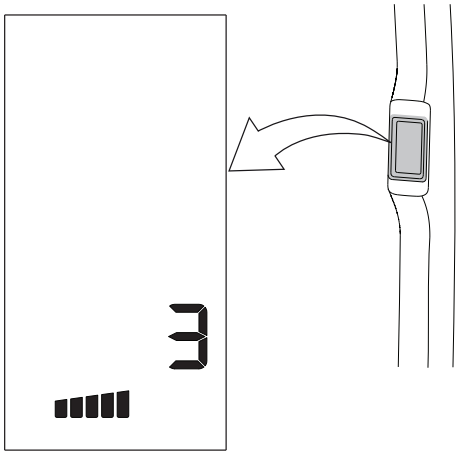
1. **Press to activate the A-pillar display.**
2. **Press SET to enter the settings menu.**



Text “Ind” is shown.

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3. **Press SET to enter the index list.**

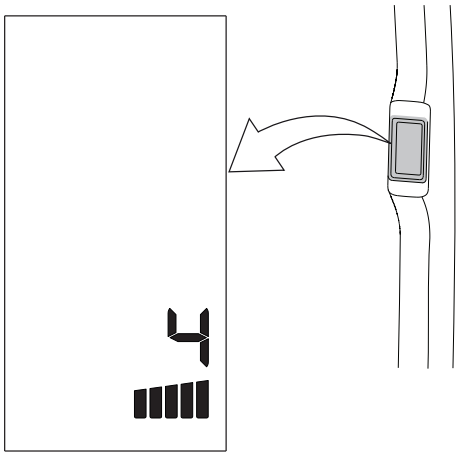


The first half of the bottom bar is lit to indicate that the index number is displayed.

4. **Press the up arrow or the down arrow to select the parameter to be changed.**

The parameter number for clutch pedal engagement position is 3.

5. **Press SET.**



The second half of the bottom bar is lit to indicate that the parameter value is displayed.

6. **Press the up arrow or the down arrow to change the parameter value.**

The value range is between 1–4.

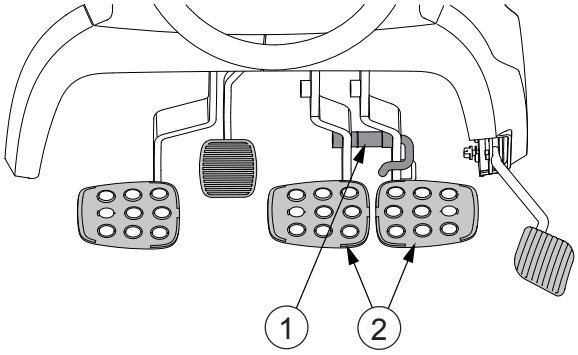
7. **Press to save the value.**

8. **Press to leave the setting menu and save all changes.**

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3.8.7 Braking

You can use the brake pedals differently in various working situations.



1. Latch for brake pedals
2. Brake pedals

The tractor has two brake pedals which apply separately to the right and to the left side rear wheels. All four wheels are braking when pressing both brake pedals. The pedals can be locked together with a latch to brake evenly with all four wheels.

WARNING: The brake pedals must always be latched together when driving on the road.

CAUTION: If functional problems occur in the braking system, stop the tractor and repair the fault before continuing.

- **To brake evenly with four wheels, press down both brake pedals.**

  DANGER: The brake action is weaker if the gearbox oil pressure warning light is lit and the STOP indicator light begins to flash. Stop the tractor and correct the fault before continuing.



- **To intensify steering by braking when turning on the field, press down the brake pedal on the inner-curve side.**

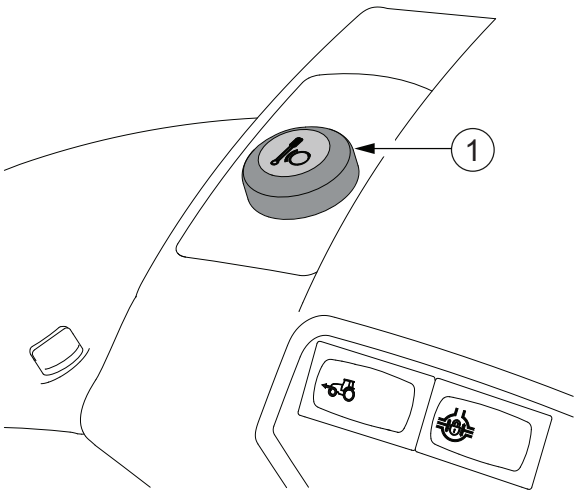
3.8.8 Using the emergency brake button

Use the emergency brake only in emergency situations if braking with brake pedals is not possible.

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WARNING: Turning the ignition switch to (OFF) position cannot be used as an emergency brake. The emergency brake operates only when the power is switched on.

WARNING: Using the emergency brake releases traction.



1. Emergency brake button

1. **Press the emergency brake button to start braking.**

   The emergency brake button uses maximal braking power.
   Message "**SECONDARY BRAKE!**" is shown on the instrument panel display.

2. **Release the emergency brake button to stop braking.**

WARNING: Using emergency brake in slippery conditions can result in skidding and loss of control. Release the emergency brake immediately when there is danger of wheels locking up. Release the emergency brake only if you can do it safely.

WARNING: Emergency brake uses the parking brake which is not designed for continuous use. The parking brake can become faulty.

WARNING: Message "SECONDARY BRAKE FAULT!" is shown on the instrument panel display if there is a fault in the emergency brake system. Emergency brake is not in use.

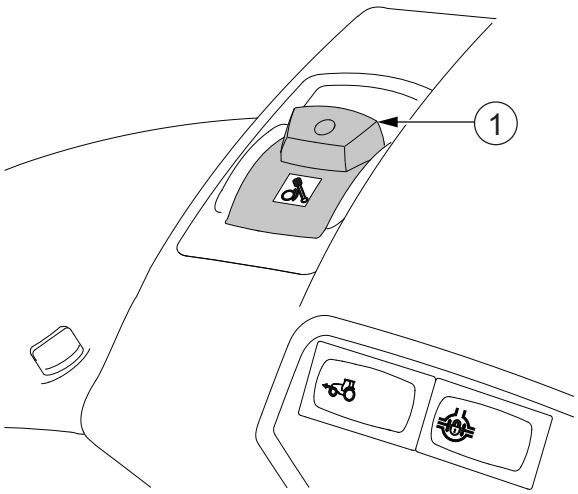
3.8.9 Using the emergency brake lever

Use the emergency brake lever only in emergency situations if braking with brake pedals is not possible.

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WARNING: Turning the ignition switch to (OFF) position cannot be used as an emergency brake. The emergency brake operates only when the power is switched on.

WARNING: Using the emergency brake releases traction.



1. Emergency brake lever

1. **Pull the emergency brake lever to start braking.**

   Pull the lever slowly to start braking gradually. Pull the lever down quickly to get maximal braking force.
   Message "**SECONDARY BRAKE!**" is shown on the instrument panel display.

2. **Release the emergency brake lever to stop braking.**

WARNING: Using emergency brake in slippery conditions can result in skidding and loss of control. Release the emergency brake immediately when there is danger of wheels locking up. Release the emergency brake only if you can do it safely.

WARNING: Emergency brake uses the parking brake which is not designed for continuous use. The parking brake can become faulty.

WARNING: Message "SECONDARY BRAKE FAULT!" is shown on the instrument panel display if there is a fault in the emergency brake system. Emergency brake is not in use.

3.8.10 Starting to drive

1. **Press down the clutch pedal and start the engine.**

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2. **If on a slope, press down the brake pedals to keep the tractor stationary.**

   IMPORTANT: Engage the HillHold when starting on a slope. Otherwise the tractor jerks downhill before traction engages even if the driving direction is uphill.

3. **Select the speed range and gear.**

   Select a speed range which:

   - gives the optimum fuel consumption without overloading the engine and the transmission.
   - allows the engine to operate comfortably at about 75% of its maximum power.

   You can select any speed range and gear you want, but if a gear within the range of C4 and D5 is selected, automatics shift the gear to C3.

   IMPORTANT: Use the creeper gear for slow drive speeds only. Do not use it for higher draft force.

4. **Move the power shuttle lever to either drive forward or reverse.**

5. **If you have started on a slope and kept the brake pedals pressed, release the brake pedals.**

   The hillhold is activated and keeps the tractor stationary.

6. **Adjust the driving speed with the drive pedal.**

   This activates the hillhold start. The hillhold start helps with the start in such a way that the tractor does not move downhill at all. Keep an eye on the indicator lights and gauges while driving.

WARNING: Do not turn the ignition key to the (OFF) position when driving. When the power is off, the emergency brake is not in use and the engagement of the parking brake can be delayed.

NOTE: If the engine stops when driving, for example due to overload, you can restart it without turning the ignition key to the (OFF) position first. However, if the front linkage, PTO, hydraulics or cruise control were in use when the engine stopped, they have to be restarted separately.

3.8.11 Transmission system

The tractor transmission system has six speed ranges and five Powershift stages. These together give the tractor 30 forward and 30 reverse gears.

The speed ranges are named LA, LB, A, B, C and D. The speed ranges LA and LB are called creeper speed ranges. The actual driving speeds achieved depend on the engine speed and the tyres. The following table includes approximate driving speeds for each speed range with the engine speed of 1400–2100 rpm and SRI 925 mm tyres.

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Speed range	Driving speed (40 km/h models)	Driving speed (50 km/h models)
LA	0.4-1.4 km/h	0.5-1.7 km/h
LB	0.8-2.8 km/h	1.0-3.5 km/h
A	1.9-6.9 km/h	2.4-8.6 km/h
B	4.1-14.6 km/h	5.1-18.3 km/h
C	6.0-21.4 km/h	7.5-26.8 km/h
D	12.7-40 km/h [1)]	16-50 km/h [2)]

1) Maximum speed with the engine speed of 1930 rpm.
2) Maximum speed with the engine speed of 1920 rpm.

3.8.11.1 Speed matching

Changing speed ranges may cause sudden changes in driving speed. The speed matching automatically tries to even out speed differences which are too high by engaging the appropriate Powershift gear.

Speed matching is always on when the driving speed is over 0.5 km/h and:

- When changing speed range.

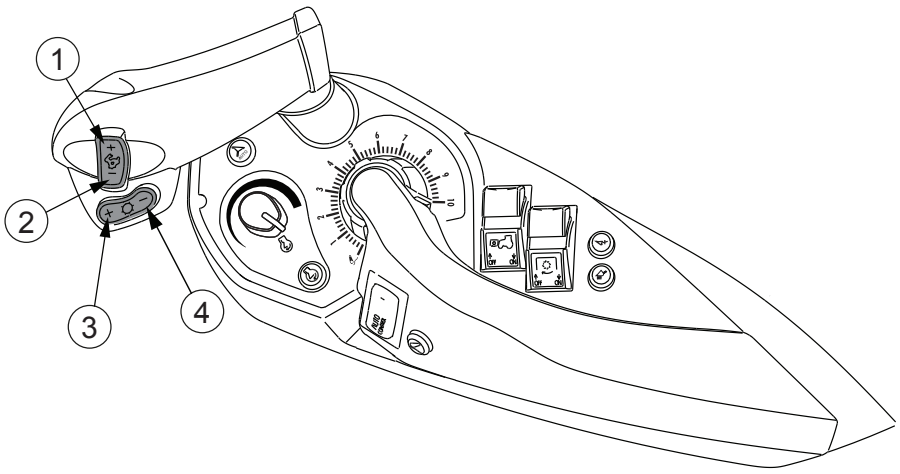
or

- When the shifting automatics is in use and the power shuttle lever is in the centre position (N) or the gear lever buttons are pressed down or the clutch pedal is pressed down.

3.8.11.2 Selecting the speed range

You can select the speed range with the speed range selection buttons.

NOTE: The clutch pedal does not affect the speed range changing.



1. Powershift selection + button
2. Powershift selection - button
3. Speed range selection + button
4. Speed range selection - button

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- **Shift the speed range up by pressing the speed range selection + button.**

  You can change the speed range upwards by more than one step at a time, directly from A to D for example. A pop-up window indicating the speed range change appears on the display until the requested speed range has engaged.

- **Shift the speed range down by pressing the speed range selection - button.**

  You can change the speed range downwards by more than one step at a time, directly from D to A for example. The change is implemented provided that the driving speed at the time of the request is within the defined limits for speed range changing. The request does not stay in the memory but has to be repeated when the driving speed has dropped below the limit. The driving speed limits for changing speed ranges given in the following table are approximate values and depend on the tire size:

Speed range change	Maximum driving speed (40 km/h models)	Maximum driving speed (50 km/h models)
Changing from D to C	17.5 km/h	22 km/h
Changing from C to B	9 km/h	11 km/h
Changing from B to A	5.5 km/h	7 km/h

  A pop-up window indicating the speed range change appears on the display until the requested gear has engaged.

- **Shift speed range between ranges C and D.**

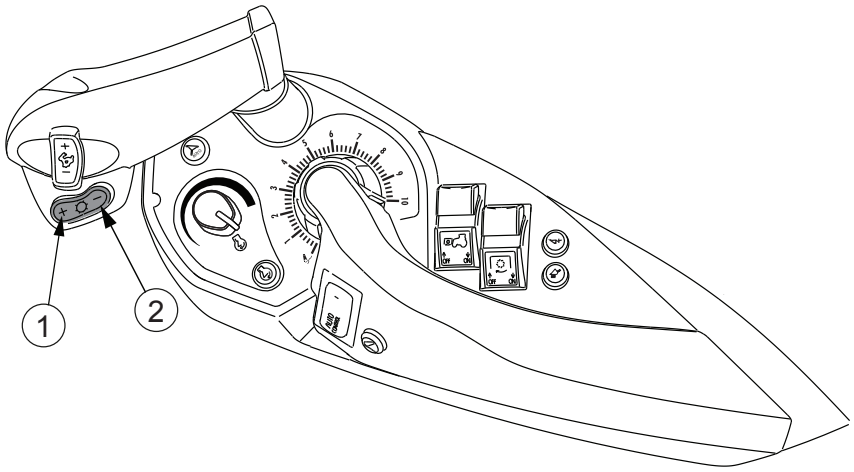
  You can change between speed ranges C and D without pressing the speed range selection buttons when speed range C-D shifting automatics is activated and shifting automatics is in the manual mode.
  For example:
  - When Powershift 5 of speed range C is engaged and you press the button for shifting up the Powershift gear, the automatics shift the gear to the appropriate Powershift gear in speed range D according to the driving speed and engine speed.

  OR
  - When Powershift 1 of speed range D is engaged and you press the button for shifting down the Powershift gear, the automatics shift the gear to the appropriate Powershift gear in speed range C according to the driving speed and engine speed.

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3.8.11.3 Selecting the creeper speed range

You can engage the creeper speed range with the speed range push buttons.



1. Speed range selection + button
2. Speed range selection - button

IMPORTANT: Engaging the creeper range is only allowed when the tractor is stationary.

1. **Select the speed range A.**
2. **Stop the tractor and press down the clutch pedal.**
3. **Engage the creeper range with the speed range selection - button.**

   NOTE: You cannot engage the creeper range with speed ranges B, C or D selected.

   The symbol flashes on the display until the creeper speed range engages.
4. **Release the clutch pedal.**
5. **Switch between the speed ranges LA and LB without disengaging traction with the + and - button.**
6. **Disengage the creeper range.**
   - **Select the speed range LB.**
   - **Stop the tractor and press down the clutch pedal or move the power shuttle lever to the N position.**
   - **Disengage the creeper range with the speed range selection + button.**

3.8.11.4 Using Powershift

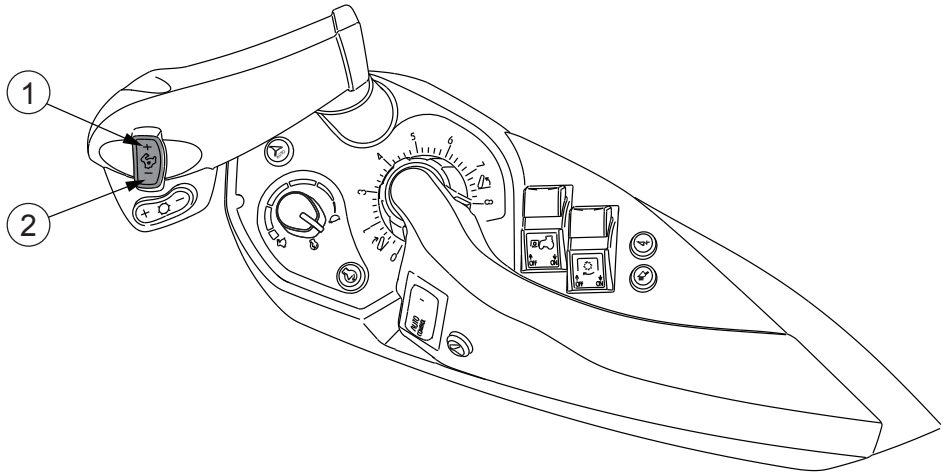
You can change the Powershift gear with the shifting buttons.

NOTE: You can change the Powershift gear more than one step at a time, directly from 1 to 3 for example, by pressing down the desired Powershift shifting button. This triggers multiple consecutive Powershift gear changes. The number

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of the selected Powershift gear flashes on the A-pillar display until the requested Powershift gear has engaged.

NOTE: When turning the power on when it has been switched off for over 10 seconds, the Powershift is always in the lowest stage.



1. Powershift + button
2. Powershift - button

- **To increase the Powershift gear, press the Powershift + button.**
- **To decrease the Powershift gear, press the Powershift - button.**

The Powershift gear number flashes on the A-pillar display until the change process is completed.

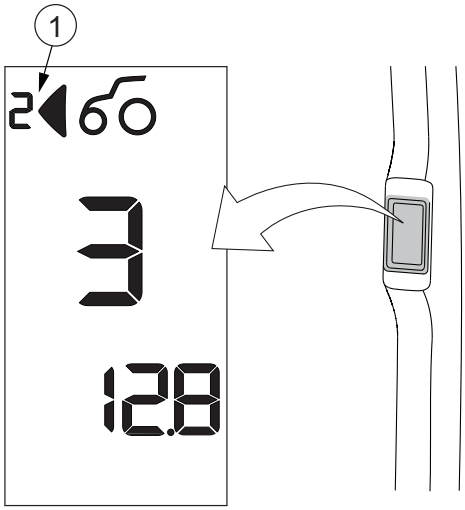
NOTE: If shifting down the Powershift gear increased the engine speed beyond acceptable limits, the system prevents the gear change.

3.8.11.5 Preprogramming gear for driving direction changing

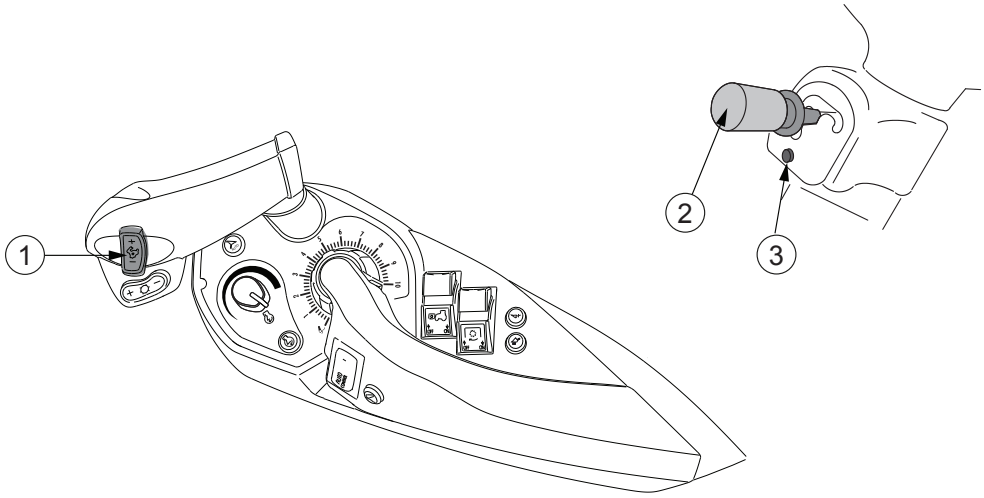
You can preprogram the wanted Powershift gear to engage automatically when changing driving direction.

For example, when working with the front loader and changing the direction to forwards, Powershift 1 can be engaged, and when changing the direction to backwards, Powershift 3 can be engaged.

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1. Gear and driving direction under preprogramming



1. Powershift + and - button
2. PowerShuttle lever
3. Preprogramming push button

The engine must be running when you preprogram the Powershift. Both directions can have different programs.

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- **To preprogram the Powershift gear:**
  - **Start the engine.**
  - **Press down the clutch and brake pedals to ensure safety.**

    You can do the preprogramming also while driving. However, preprogramming the gears is not possible if either of the creeper gears is engaged.
  - **Select the driving direction F or R with the power shuttle lever.**
  - **Select the Powershift gear with the + and - buttons.**
  - **Press the Powershift preprogramming push button for half a second.**

    The A-pillar display shows the preprogrammed driving direction and the Powershift gear.

    NOTE: Even if the power is turned off, the preprogramming remains.

  You can programme the other driving direction in the same way.

- **To cancel the preprogramming:**

  The engine must be running when you cancel the preprogramming.
  - **Start the engine.**
  - **Press down the clutch and brake pedals to ensure safety.**

    You can cancel the preprogramming also while driving.
  - **Select the driving direction F or R with the power shuttle lever.**
  - **Press the Powershift preprogramming push button for at least two seconds.**

  You can cancel the programming of the other driving direction in the same way.

3.8.11.6 Using the shifting automatics

The tractor has two automatic gear-changing programs, Auto1 and Auto2.

- With the Auto1 program, the Powershift gears are changed according to the load and the engine speed.
- With the Auto2 program, you can program the engine speed limits for shifting the gears up and down.

In the Auto1 mode, the driving speed is controlled with the drive pedal or hand throttle. The speed control method that gives the higher value overrides the other method. The automatics handle the transmission and engine control, focusing on optimal fuel economy when the engine load allows. The Powershift gear in use has no effect on the driving speed. The Auto1 mode includes a kickdown functionality, in which pressing the driving pedal fully down automatically shifts the Powershift gear down and provides the best possible power instead of best possible torque. However, the kickdown does not shift down from D range to C range even if the C-D shifting automatics are in use.

NOTE: Different settings may limit the gears or engine speed available for use.

In the Auto2 mode, the shifting limits are locked to engine speed limits that the driver has set. The Auto2 mode is used in certain tasks where the power take-off is in use or in situations where the Auto1 mode would shift into an unsuitable gear. When the engine speed cruise control is in use, also the Auto1 mode is suitable for power take-off tasks.

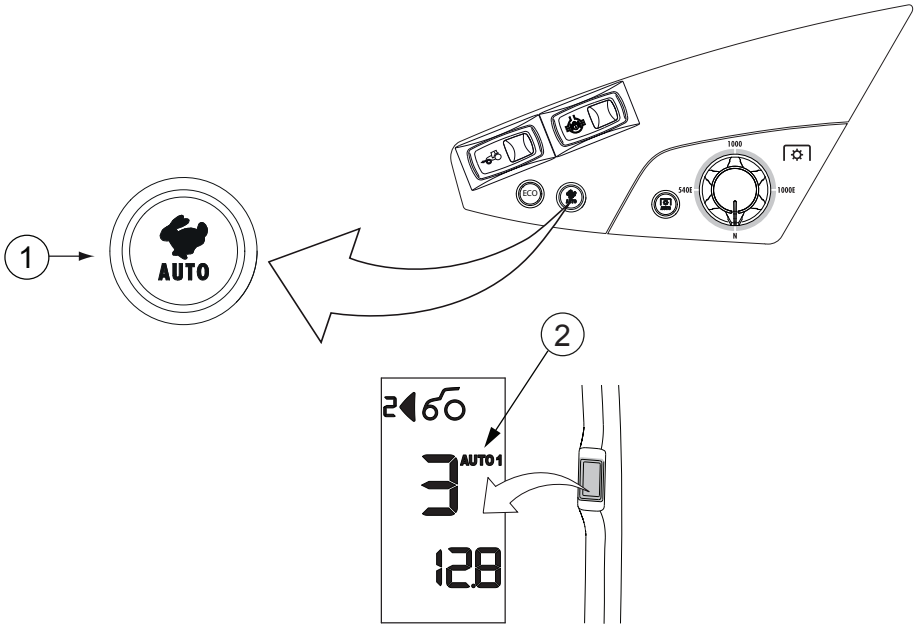
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Automatic shifting between the speed ranges C and D is possible if you have activated the C-D shifting automatics functionality in the A–pillar display transmission settings. Automatic shifting between the speed ranges A and B or B and C is not possible.

If the C-D shifting automatics are selected and either C or D range is selected in the Auto1 mode, the automatics shift between the C and D range automatically, depending on drive speed request, engine load and driving situation. In the Auto1 mode and when driving either in the C or D range, you can prevent the automatic shifting from D range to C range by pressing the speed range selection + button. The shifting is prevented for the whole time the button is pressed plus additional 20 seconds after the button is released. Pressing while driving in the C range shifts to the D range and keeps it selected at least for the duration of the press plus the 20-second delay, regardless of the engine load, for example.

If the C-D shifting automatics are selected and either C or D range is selected in the Auto2 mode, the automatics shift between the C and D range when the engine speed increases above the shifting limit on the C5 gear or decreases below the shifting limit on the D1 gear.

For example, if the driving speed is 32 km/h (D range) and Auto1 or Auto2 is selected, the automatics shift the gear to C1 when the driving speed decreases to 0 km/h.



1. Shifting automatics button
2. Selected program

The manual mode is on when the shifting program indicator is not visible.

- **Press the shifting automatics button to cycle through the manual program and the Auto1 and Auto2 programs.**

  The programs change in the following order: manual mode, Auto1, Auto2.

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- **In the Auto1 mode, set the desired driving speed with the drive pedal or hand throttle.**

  The automatics adjust the engine speed and the correct Powershift gear according to the driving situation and engine load.

- **In the Auto2 mode, set the limits for shifting up and down via the A-pillar display.**

  The automatics change the Powershift gear when the engine speed increases above or decreases below the set limits.

3.8.11.7 Programming shifting automatics

You can program the shifting automatics to change the Powershift gear on specific engine speeds.

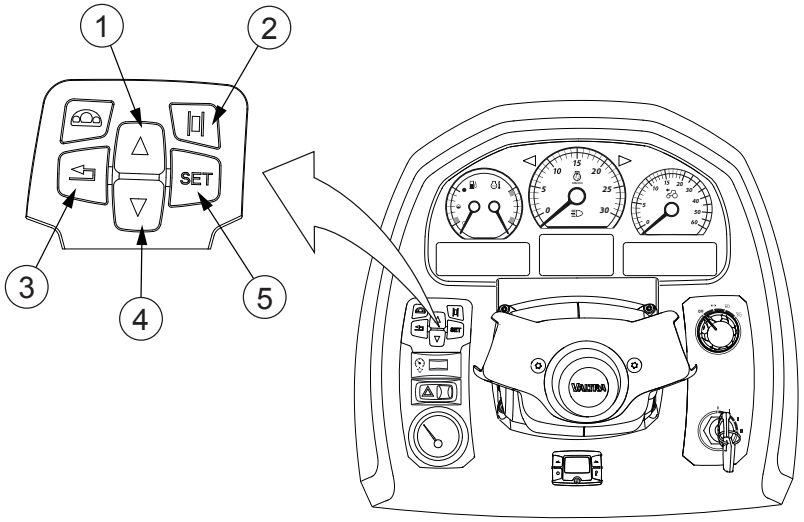
IMPORTANT: If you engage the driving direction during the programming sequence, the tractor starts moving. To ensure safety, it is recommended that you keep the clutch and brake pedals pressed down during the preprogramming.

1. **Press on the control panel for A-pillar display.**

   NOTE: The A-pillar display first shows the possible active fault codes. Scroll through the fault codes with the arrow buttons or press **SET** to go to the driver's menu.

2. **Scroll to AUTO2 HI with the arrow buttons.**

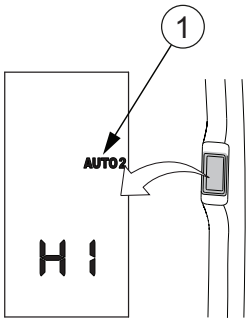
   The current engine speed limit for shifting up appears on the A-pillar display.



1. Arrow button up
2. A-pillar display selection
3. Back button
4. Arrow button down
5. SET button

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3. **Press SET and use the arrow buttons to scroll to the desired engine speed limit value for shifting up.**



1. Menu for setting the engine speed limit for shifting up

NOTE: The engine speed limit can be changed in the 1000-2400 rpm range. However, the upward changing limit must be at least 100 rpm higher than the downward changing limit. For example, if the engine speed limit for downward shifting is set to 1500 rpm, the engine speed limit for upward shifting can only be set between 1600–2400 rpm.

4. **Press the button to save the value and return to the previous menu level.**

5. **Scroll to AUTO2 LO with the arrow buttons on the control panel for the A-pillar display.**

NOTE: The engine speed limit can be changed in steps of 50 rpm in the 900-2300 rpm range.
With a short press of the ESC button you can return to the menu 2. A long press of the ESC button returns to the previously active drive display. The current engine speed limit for shifting down appears on the A-pillar display.

6. **Press SET and use the arrow buttons to scroll to the desired engine speed limit value for shifting down.**

7. **Press the button to save the value and return to the previous menu level.**
NOTE: The engine speed limits remain in the memory after the power has been turned off.

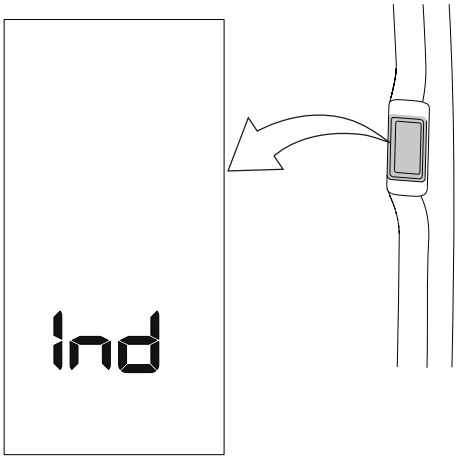
3.8.11.8 Activating and deactivating automatic shifting between speed ranges C and D

You can activate or deactivate the shifting automatics to change the speed range automatically between the speed ranges C and D through the A pillar display. In this case the speed range changes automatically according to the driving situation. The index determines the limit for automatic shifting between speed ranges C and D. The values are “0” for off and “1” for on.

1. **Press to activate the A-pillar display.**

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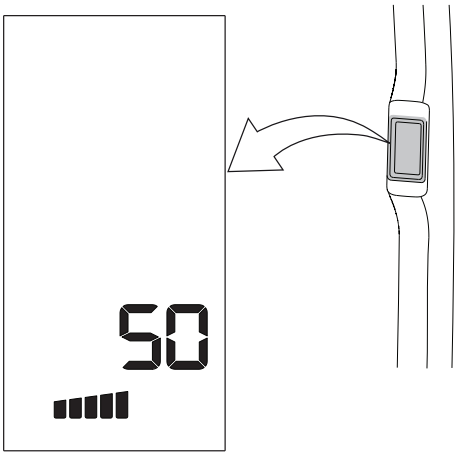
2. **Press SET to enter the settings menu.**



The text “Ind” appears.

3. **Press SET to enter the index list.**

4. **Scroll to the parameter to be changed with the up arrow or the down arrow.**



The parameter number for the limit of the automatic shifting between C and D is 50.

5. **Press SET.**

6. **Press the up arrow or the down arrow to change the parameter value.**

7. **Press to save the value.**

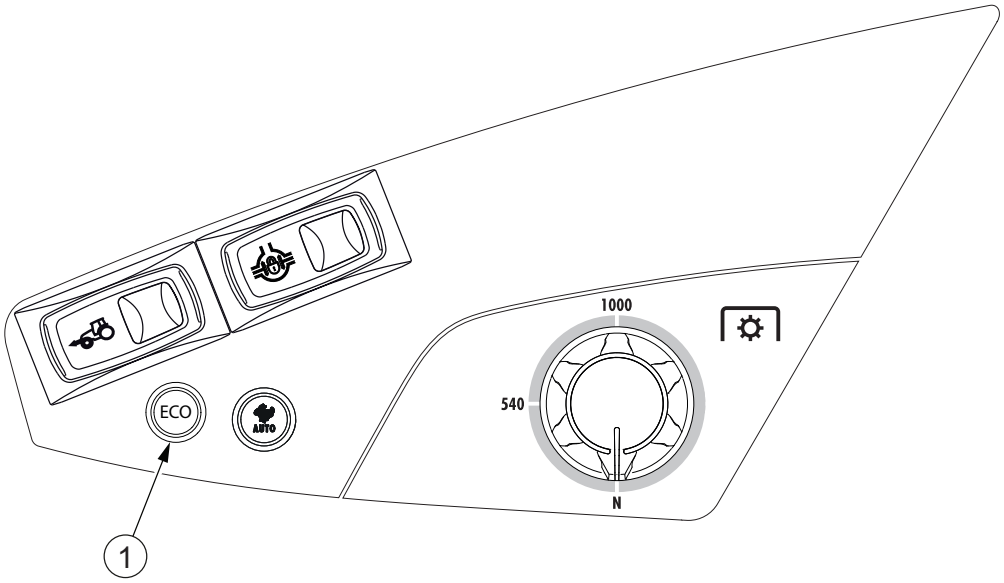
8. **Press to leave the settings menu and save all changes.**

3.8.12 Using the EcoPower mode

The tractor T174e H can be used in the EcoPower mode or in the normal mode. With the EcoPower mode, you can optimize engine/transmission for the best possible fuel economy. The maximum power output is the same for both modes.

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- The EcoPower mode reduces fuel consumption considerably.
- In the EcoPower mode, the maximum power and torque are achieved at approximately 200 RPM lower level than in the normal mode.
- The maximum torque is higher in the EcoPower mode.
- You can activate or deactivate the EcoPower mode in any situation. The driving speed does not decrease even if the engine speed decreases.



1. EcoPower button

- **To activate or deactivate the EcoPower mode, press the EcoPower button.**

  The EcoPower button is lit when the EcoPower mode is activated.

3.8.13 Parking the tractor

1. **Stop the tractor.**
2. **Apply the parking brake.**

   Check that the parking brake symbol (P) is lit on the instrument panel display.

   DANGER: Apply the parking brake when you park the tractor. The tractor may still move if the parking brake is not applied, even if the tractor is parked and power is turned off.

3. **Lower the implements.**

   In cold conditions, lower the links without implements as well.

4. **Move all auxiliary hydraulic control levers to the centre position.**

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5. **Reduce the engine speed to idling.**

   IMPORTANT: Before stopping the engine, allow the engine temperature to stabilise for at least two minutes.

   In some situations (for example, after working with a heavy load) when you engage the parking brake, the engine may perform cooling of the after-treatment system by increasing the idling RPM momentarily. The word COOL flashes on the A-pillar display.

   IMPORTANT: Do not stop the engine while the idling rpm is increased and the word COOL flashes on the A-pillar display. Stopping the engine may damage the after-treatment system.

6. **Stop the engine by turning the ignition key to the (STOP) (ACC) position.**

7. **Turn off the power by turning the ignition key to the (OFF) position.**

8. **Fill up the fuel tank.**

   In order to minimise water condensation, fill up the tank when finishing work for the day.

3.8.14 Refuelling the tractor

3.8.14.1 Filling the fuel tank

WARNING: Always turn off the power before filling up.

WARNING: Do not smoke while refuelling the tractor.

WARNING: Keep away from open fire.

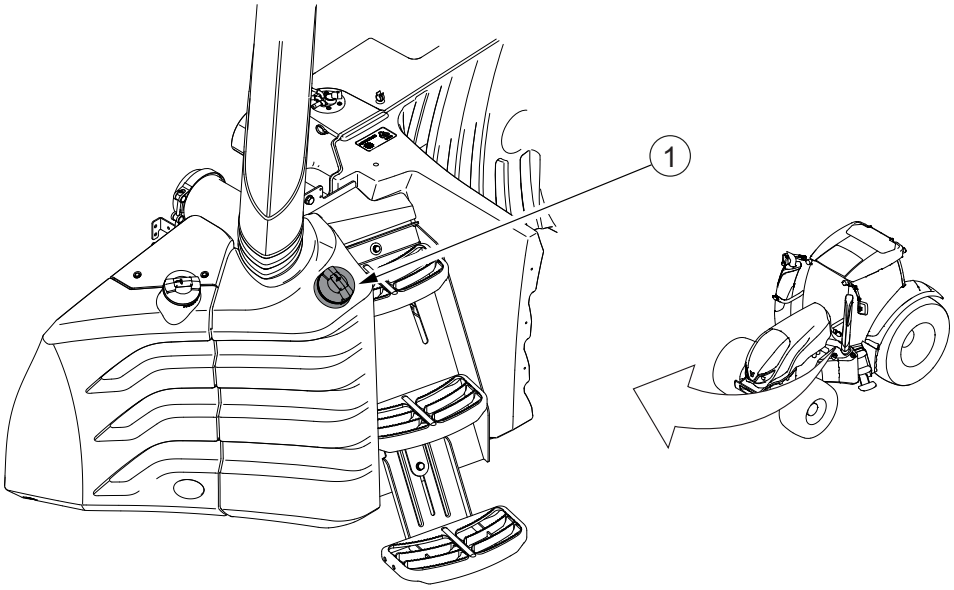
WARNING: Wear suitable gloves when filling up.

IMPORTANT:

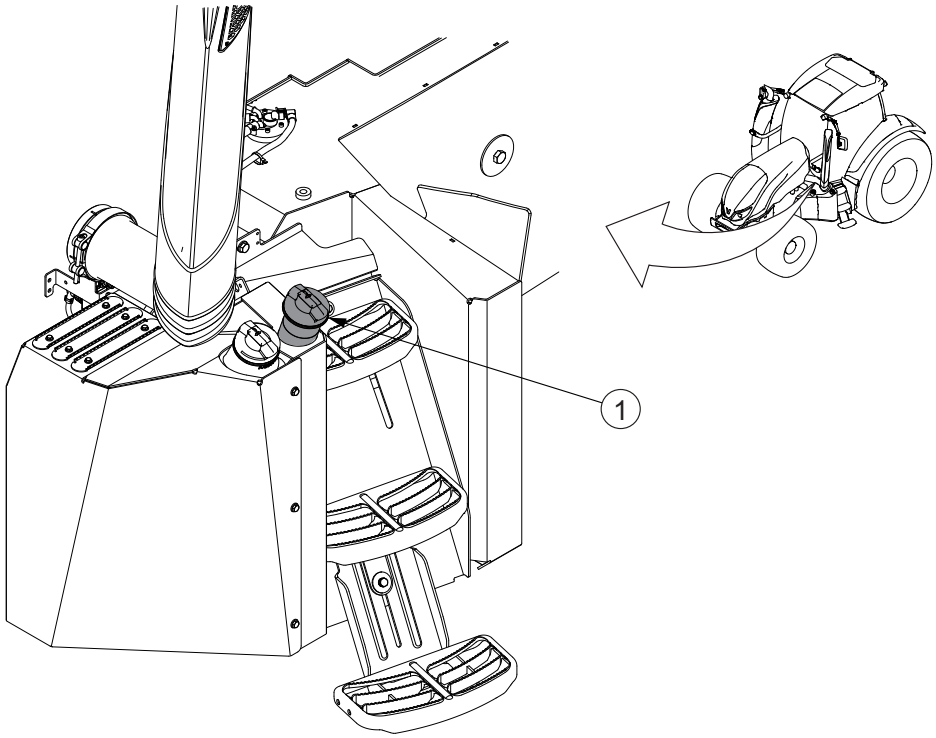
Carefully clean the tank cap and the area around the cap before filling up. Wipe off any spills after filling up.

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1. **Open the fuel tank cap.**



1. Fuel tank cap



1. Forest equipment (optional) fuel tank cap

2. **Fill the tank.**
3. **Close the fuel tank cap.**

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IMPORTANT: Never put AdBlue/DEF in the fuel tank, as the engine and fuel system may become damaged.

IMPORTANT: Never put fuel in the AdBlue/DEF tank. Even small amounts of fuel in the AdBlue/DEF tank may damage the gaskets of the selective catalytic reduction (SCR) system.

IMPORTANT: Do not start the engine if the tank has been filled with a wrong type of additive. If filled with a wrong additive, the tank must be carefully emptied and washed before starting the engine.

3.8.14.2 Filling the AdBlue/DEF tank



WARNING: Always turn off the power before filling up.



WARNING: Do not smoke while refuelling the tractor.



WARNING: Keep away from open fire.



WARNING: Wear suitable gloves when filling up.

IMPORTANT:

Carefully clean the tank cap and the area around the cap before filling up. Wipe off any spills after filling up.

NOTE:

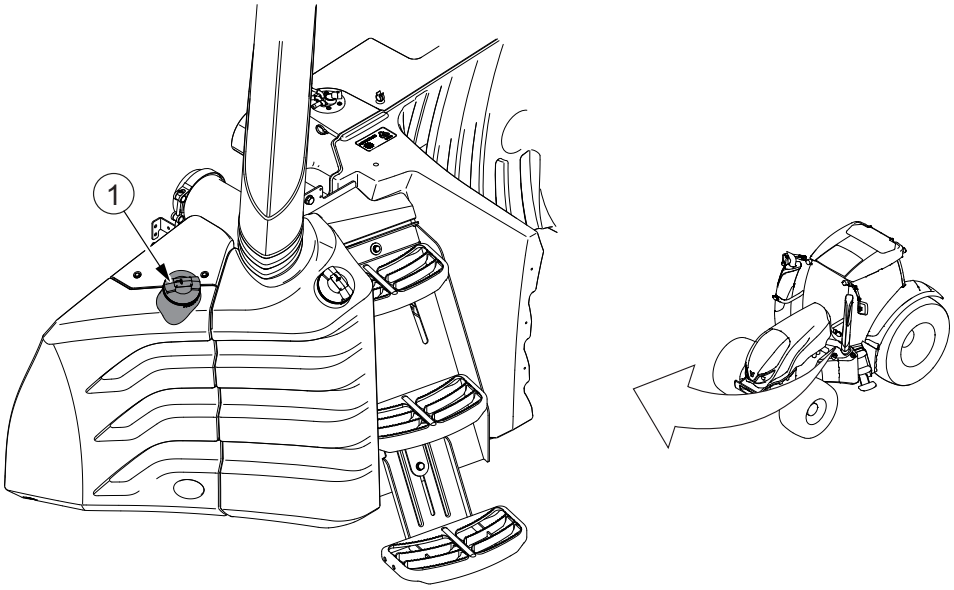
When the AdBlue level decreases to 5% or less, the torque and maximum rotation speed of the engine are slowly decreased.

When the AdBlue level has decreased to approximately 0% and stayed at that level for about an hour, the engine decreases to idling speed and the torque is heavily limited. This is to ensure that the exhaust fume emissions remain in the allowable limits set by legislative authorities.

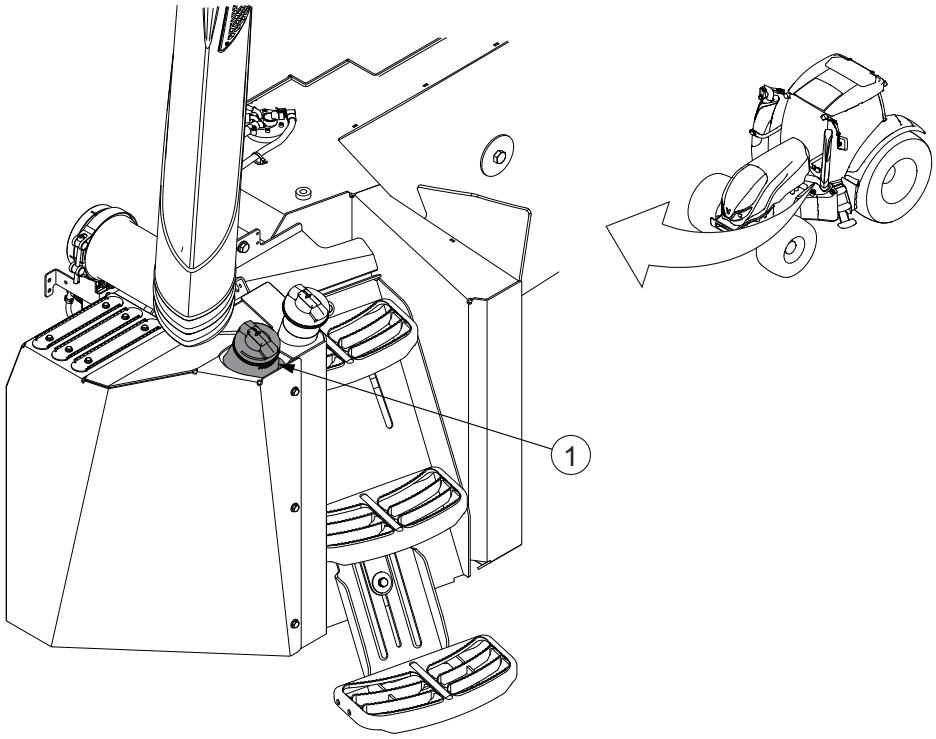
NOTE: Fill up the AdBlue/DEF tank in time because too low an AdBlue level may even lead to service codes. This can happen especially in high-temperature environments.

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1. **Open the AdBlue/DEF tank cap.**



1. AdBlue/DEF tank cap



1. Forest equipment (optional) AdBlue/DEF tank cap

2. **Fill the tank.**
3. **Close the AdBlue/DEF tank cap.**

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- As the AdBlue fluid is very corrosive, if the tractor is splashed with fluid, wipe off and rinse with water.
- If an electrical connector is splashed with AdBlue fluid, it must be replaced.
- Crystals of AdBlue/DEF additive may appear on the vehicle in the event of spillage. Rinse immediately with water to remove these crystals.

IMPORTANT: Never put fuel in the AdBlue/DEF tank. Even small amounts of fuel in the AdBlue/DEF tank may damage the gaskets of the selective catalytic reduction (SCR) system.

IMPORTANT: Never put AdBlue/DEF in the fuel tank, as the engine and fuel system may become damaged.

IMPORTANT: If the AdBlue/DEF additive is modified or replaced by a fluid which does not comply with the standard ISO 22241 (DIN 70070), the after-treatment system will be damaged.

IMPORTANT: Do not start the engine if the tank has been filled with a wrong type of additive. If filled with a wrong additive, the tank must be carefully emptied and washed before starting the engine.

3.8.15 Cruise control

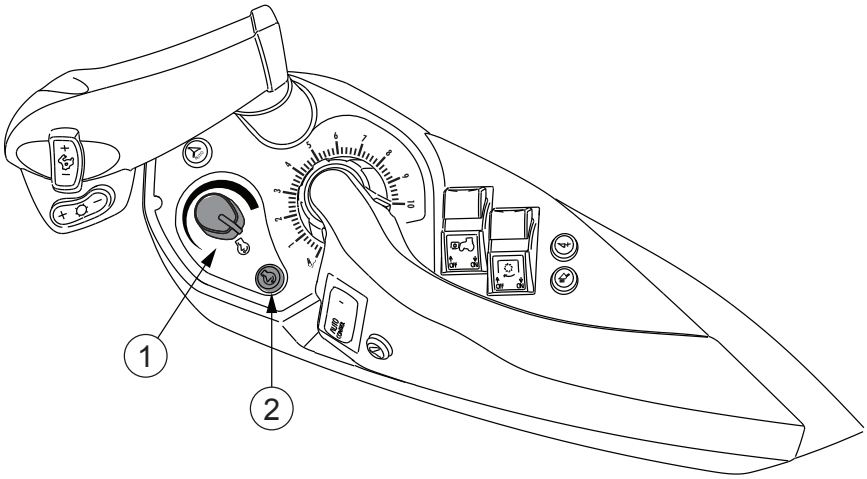
With the cruise control function the operator can choose a constant engine speed.

When cruise control is on, the indicator light is lit on the instrument panel.

There is one memory slot available for the engine speed setting.

3.8.15.1 Cruise control buttons

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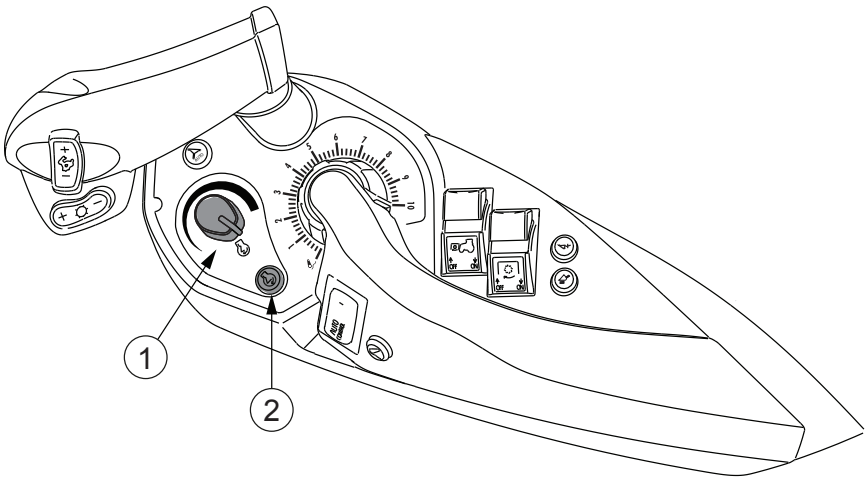


1. Hand throttle
2. Engine RPM memory button

Engine RPM memory button

You can use this button to program values to RPM cruise control memory and to activate or deactivate the RPM cruise control.

3.8.15.2 Programming the engine speed cruise control



1. Hand throttle
2. Engine RPM memory button

1. Set the engine speed.

Use the drive pedal or the hand throttle to set the desired engine speed value.

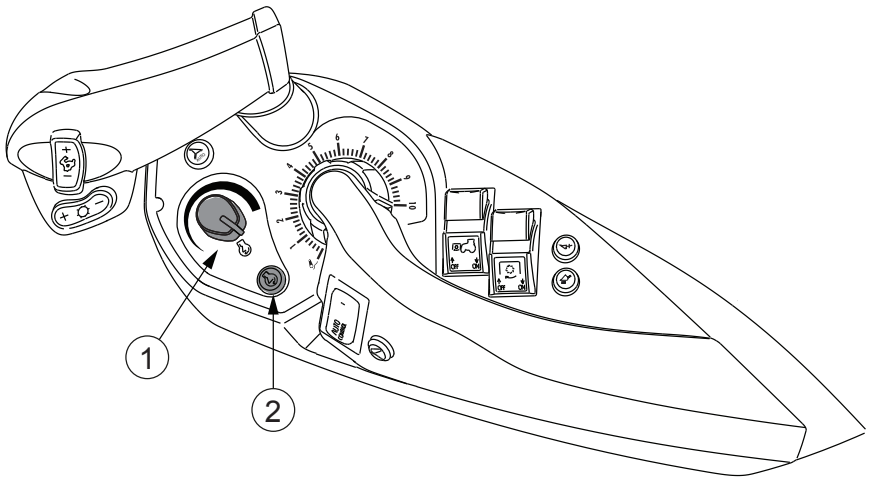
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2. **Press the engine RPM memory button shortly.**

   The setting is activated and stored in the memory. The indicator light is continuously lit.

3.8.15.3 Activating and deactivating the engine speed cruise control

NOTE: Control the position of the hand throttle before deactivating the cruise control.



1. Hand throttle
2. Engine RPM memory button

- **Activate the engine speed cruise control.**
  - **Activate an engine speed value that is already saved in the memory by pressing the engine RPM memory button shortly (less than two seconds).**
  - **Save a new engine RPM value into the memory and activate it by setting the desired engine RPM with the hand throttle or drive pedal and pressing the engine RPM memory button for a longer time (two seconds).**
- **Deactivate the engine speed cruise control.**
  - **Press the engine RPM memory button shortly (less than two seconds).**
  - **If the driving speed is more than 20 km/h, press the brake pedal or clutch pedal.**

When the engine speed cruise control is activated and the Auto1 driving mode is selected, pressing the drive pedal or using the hand throttle increases the driving speed only and not the engine speed.

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3.8.16 Automatic traction control

The automatic traction control allows you to stop the tractor using only the brake pedal so that you do not have to operate the clutch pedal or the power shuttle lever.

Automatic traction control is useful in traffic and for example on jobs where you have to stop the tractor and at the same time use power take-off (PTO).

You only need to use the clutch pedal when you want to slip the clutch or when you want to assist the start with the brakes. The clutch pedal also forces the traction to disengage if necessary.

The traction can be disengaged with the power shuttle lever or with the clutch or brake pedal in the following cases.

- both brake pedals are pressed
- the driving speed is less than 20 km/h
- the drive pedal and clutch pedal have not been pressed
- the power shuttle lever is towards the same direction as the current driving direction

When you sit on the driver's seat and you have engaged the direction with the power shuttle lever, you can engage the traction again by releasing the brake pedals or pressing the clutch pedal or the drive pedal. This allows you to make a hill start by adjusting the braking force with the brake pedal and engaging the traction with either the clutch pedal or drive pedal.

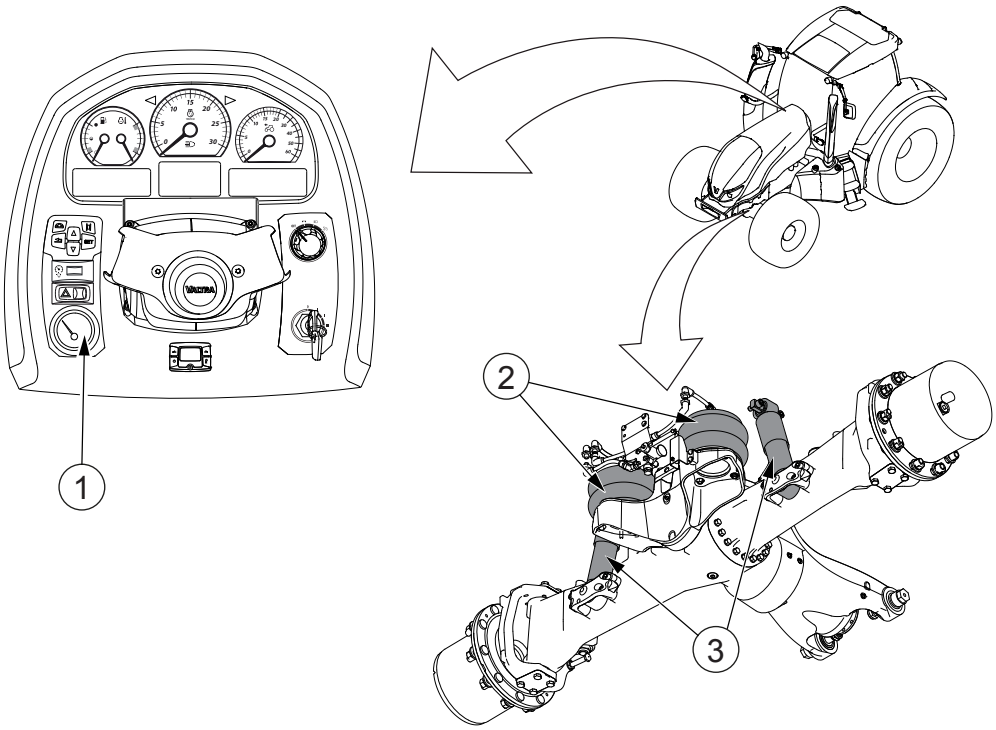
3.8.17 Front axle suspension and cab suspension

3.8.17.1 Front axle air suspension

Driving a tractor with air suspension on the front axle is comfortable on uneven ground. The front axle air suspension is extra equipment.

When driving at high speed, the front axle suspension reduces the pitching of the tractor. Stress on the operator, tractor and implements is reduced. The automatic level control keeps the axle in the same position within the tractor frame independently of the axle load.

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1. Gauge
2. Air suspension bellows
3. Shock absorbers

The operator can observe the air pressure in the whole air pressure system on the gauge.

The suspension system has two air suspension bellows and two shock absorbers.

3.8.17.2 AutoComfort cab suspension

AutoComfort cab suspension is a semi-active system that controls the cab suspension automatically.

The AutoComfort cab suspension system is extra equipment.

The AutoComfort system adjusts the damping automatically based on:

- Unevenness of the driving surface
- Driving speed
- Change of the Powershift gear
- Position of the power shuttle lever
- Braking
- Front axle movement

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3.8.18 Differential lock

3.8.18.1 Differential lock

The differential lock is used to ensure an even grip for the wheels by locking the rear wheels to rotate at the same speed. The differential lock can be engaged while driving.

The differential lock has three positions: ON, AUTO and OFF.

ON	The differential lock is engaged except in the following conditions: • One or both brake pedals are pressed (the lock re-engages when the brake is released). • The parking brake is engaged.
AUTO	The differential lock engages in the following conditions: • The wheels are in the middle position. • The lifting/stop/lowering switch is in the lowering position. The differential lock disengages in the following conditions: • The lifting/stop/lowering switch is pressed to the lifting position. • One or both brake pedals are pressed. • The clutch pedal or the HiShift push button is pressed. • When the wheels are turned more than 20% from the middle position.
OFF	The differential lock is always disengaged.

When the differential lock is engaged, the indicator light  is lit on the instrument panel.

If the indicator light on the instrument panel flashes in the automatic position, there is an error, and the differential lock disengages for safety reasons. The reason for the error may be one of the following:

- The speed sensors are not calibrated.
- The turning angle sensor is not calibrated (contact an authorised Valtra workshop).
- There is a fault in the switch (the service code is displayed).
- There is a fault in the speed sensors (the service code is displayed).

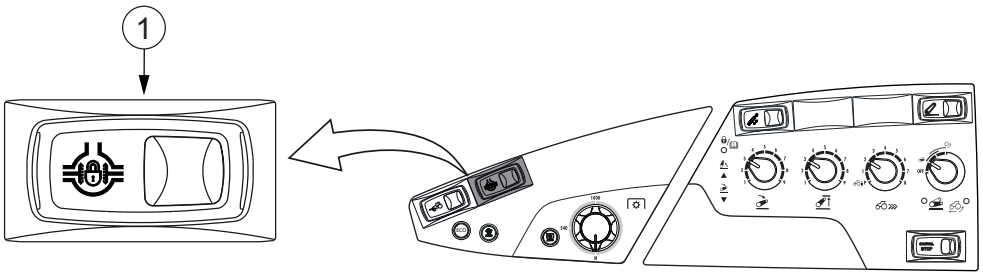
3.8.18.2 Engaging and disengaging the differential lock

You can control the engagement of the differential lock with the differential lock switch.

If a wheel starts to slip, engage the differential lock. If a wheel is slipping heavily, reduce the engine speed before engaging the lock. If possible, disengage the lock while driving on public roads.

NOTE: For optimum performance, engage the differential lock before a wheel slips.

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1. Differential lock switch

- **To engage the differential lock, press down the symbol side of the differential lock switch (ON).**
- **To use the automatic function of the differential lock, turn the differential lock switch to the middle position (AUTO).**

  The switch light is lit green.
- **To disengage the differential lock, press down the side of the differential lock switch opposite to the symbol (OFF).**

3.8.19 Four-wheel drive

3.8.19.1 Four-wheel drive

The four-wheel drive (4WD) has three positions: ON, AUTO and OFF. The 4WD can be engaged while driving. When starting to drive, the driving start automatics control the 4WD, regardless of the 4WD switch positions.

Position	Description
ON	The 4WD is always engaged.
AUTO	The 4WD engages if the driving start automatics are activated and one or more of the following conditions are met: • When starting to drive. • When using the power shuttle. • When the lifting/stop/lowering switch is in the lowering position. The 4WD disengages: • When the lifting/stop/lowering switch is pressed to the lifting or stop position. • When pressing the clutch pedal or the HiShift push button. • When the driving speed is higher than 10 km/h. • After the driving start automatics' disengagement delay.
OFF	4WD is disengaged except in the following situations: • Both brake pedals or the brake pedal of the reverse drive system are pressed at any speed. • Either left or right brake pedal is pressed when the driving speed is higher than 10 km/h. • The parking brake is engaged.

The driving start automatics (activated by default) engage the 4WD in the following situations:

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- When starting to drive or using the power shuttle.
- When pressing and releasing the clutch pedal while the driving speed is lower than 10 km/h.
- When pressing and releasing the HiShift push button while the driving speed is lower than 10 km/h.
- The automatics disengage the 4WD after a defined delay after releasing the clutch pedal or the HiShift push button. You can define the disengagement delay from the A-pillar display.

When the 4WD is engaged, the indicator light  on the instrument panel is lit.

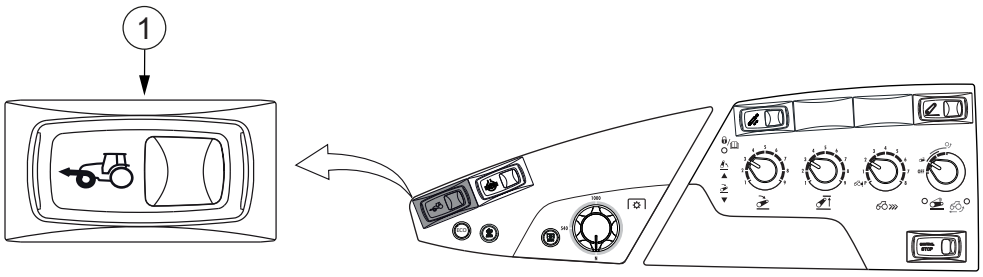
If the indicator light on the instrument panel flashes in the automatic position, there is an error and the 4WD engages. The reason for the error may be one of the following:

- The speed sensors are not calibrated.
- A switch fault has occurred (the service code is displayed).

3.8.19.2 Engaging and disengaging the four-wheel drive

You can control the engagement of the four-wheel drive (4WD) with the 4WD switch. The switch has three positions: ON, AUTO and OFF.

Keep the 4WD disengaged while driving on the road if it is not required. Using the 4WD is not allowed at driving speeds of over 15 km/h if road conditions are good.



1. 4WD switch

- **To engage the 4WD, press down the symbol side of the 4WD switch (ON).**

  The switch light is lit green.

- **To use the automatic function of the 4WD, turn the 4WD switch to the middle position (AUTO).**
- **To disengage the 4WD, press down the side of the 4WD switch opposite to the symbol (OFF).**

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3.8.20 Driving start automatics

3.8.20.1 Driving start automatics

Driving start automatics can be used to prevent the rear wheels from slipping while starting to drive or when changing the driving direction with the power shuttle. The driving start automatics engage the four-wheel drive automatically, regardless of the level of wheel slip.

If the clutch pedal has been pressed while starting to drive or when changing the driving direction, the four-wheel drive remains engaged until the clutch pedal is fully released.

If the clutch pedal or HiShift push button has been pressed while driving, the driving start automatics engages when releasing the clutch pedal or HiShift push button.

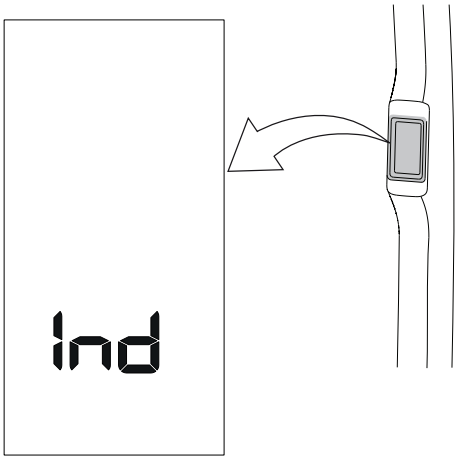
NOTE: Driving start automatics operates only when the driving speed is under 10 km/h.

The driving start automatics is controlled from the A-pillar display by activating and deactivating the function or setting the time that the four-wheel drive remains engaged.

3.8.20.2 Activating and deactivating the driving start automatics

The driving start automatics is activated and deactivated through the A-pillar display settings.

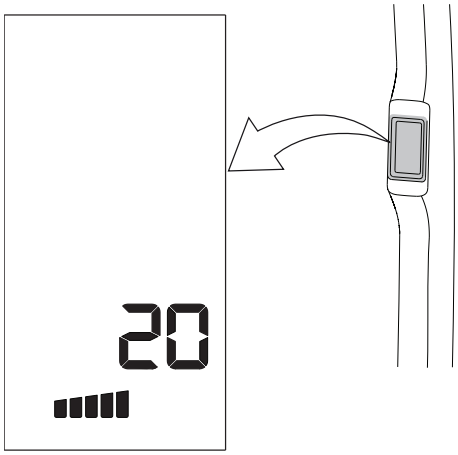
1. **Press to activate the A-pillar display.**
2. **Press SET to enter the settings menu.**



Text “Ind” is shown.

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3. **Press SET to enter the index list.**

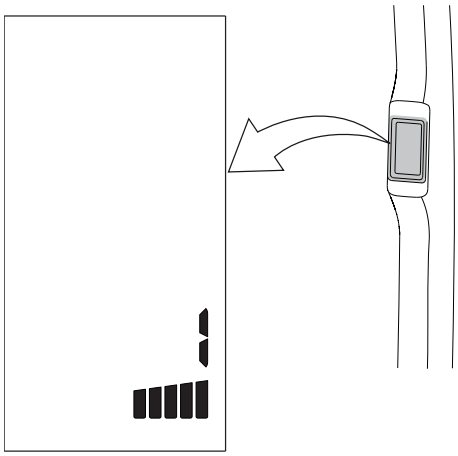


The first half of the bottom bar is lit to indicate that the index number is displayed.

4. **Press the up arrow or the down arrow to change the index number.**

   The index number for activating and deactivating the driving start automatics is 20.

5. **Press SET.**



The second half of the bottom bar is lit to indicate that the parameter value is displayed.

6. **Press the up arrow or the down arrow to change the parameter value.**
   - 1 = ON
   - 0 = OFF

7. **Press ↵ to save the value.**

8. **Press ↵ to leave the setting menu and save all changes.**

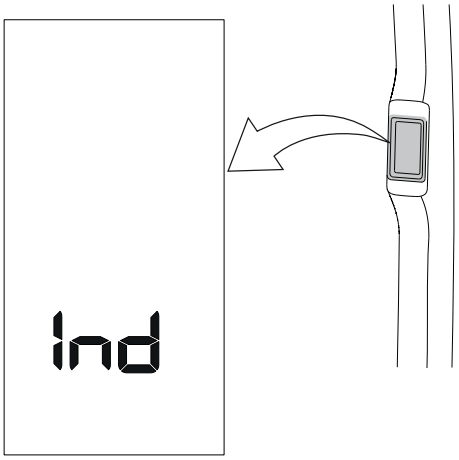
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3.8.20.3 Setting the driving start automatics

The driving start automatics is set through the A-pillar display settings.

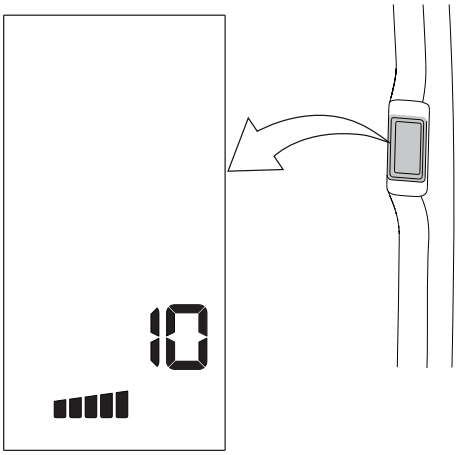
The index determines the time for how long (seconds) the four-wheel drive remains engaged when starting to drive.

1. **Press ▯ to activate the A-pillar display.**
2. **Press SET to enter the settings menu.**



Text “Ind” is shown.

3. **Press SET to enter the index list.**



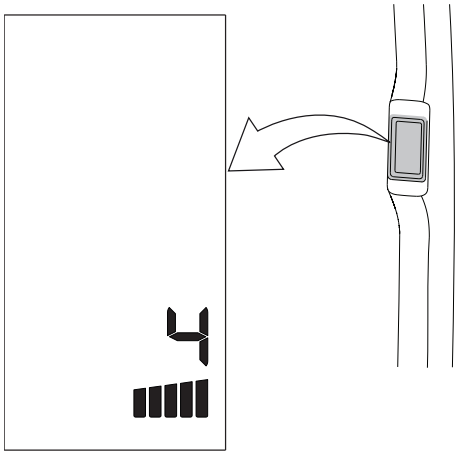
The first half of the bottom bar is lit to indicate that the index number is displayed.

4. **Press the up arrow or the down arrow to select the parameter to be changed.**

The parameter number for setting the driving start automatics is 10.

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5. Press **SET**.



The second half of the bottom bar is lit to indicate that the parameter value is displayed.

6. **Press the up arrow or the down arrow to change the parameter value.**

   The value ranges from 0–20. When the value is set to 0 seconds the driving start automatics is disengaged. The default factory value is 4.

7. **Press to save the value.**

8. **Press to leave the setting menu and save all changes.**

3.8.21 QuickSteer

3.8.21.1 QuickSteer

QuickSteer is a steering system controlled by an electrohydraulic steering valve. QuickSteer means adjustable steering ratio which gives a great advantage whenever the driver needs to steer a lot, for example when driving in a small yard or when doing front loader work. QuickSteer is optional equipment.

QuickSteer has five manually set steering speeds for both forward and reverse driving. The steering speed setting is dependent on the driving speed so that the difference between different steering speeds is more substantial at low driving speeds, whereas at the speed of 20 km/h the steering speed is fixed.

NOTE: When driving on a slippery road with QuickSteer activated, the steering speed decreases if the tractor is in a four-wheel slide and you try to increase the speed. Therefore, it is recommended to use the slowest QuickSteer setting when driving on slippery surfaces.

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3.8.21.2 Using QuickSteer

1. QuickSteer control knob
2. QuickSteer activation button

1. **To turn the steering valve on, press the QuickSteer activation button.**

   The QuickSteer activation button light is lit green, and the QuickSteer symbol is displayed on the Proline instrument panel.

2. **Turn the QuickSteer control knob to set the steering speed.**

3. **To turn the steering valve off, press the QuickSteer activation button.**

   The steering valve can be turned off only with the forward drive system. When the driver's seat is turned to the TwinTrac reverse drive system (optional equipment) the valve is always on, even if QuickSteer is not active.

   Pressing the Auto-Guide steering valve ON/OFF button also deactivates QuickSteer and activates the steering of Auto-Guide.

   NOTE: If the light on the QuickSteer activation button or the Auto-Guide steering valve ON/OFF button (optional equipment) is flashing, there is a fault in the steering valve. A fault code is shown on the Reset the steering valve to recover from the fault.

   When QuickSteer is activated, driving speed is limited to 25 km/h. You have to deactivate QuickSteer in order to drive at a speed higher than the limit. If you want to activate QuickSteer again, the driving speed has to be below 25 km/h.

   NOTE: In case of a fault in the steering valve, the vehicle speed is forced to ramp down and only slow speed driving (2 km/h) is allowed with the drive pedal. Turning the steering valve off eliminates the driving speed restriction.

3.8.21.3 Resetting QuickSteer

- **Press the QuickSteer activation button or the Auto-Guide steering valve ON/OFF button (optional equipment) once.**

  The steering valve is turned OFF after which the system turns the valve back ON. The valve is turned back on automatically only if the TwinTrac reverse drive system is in use.

  If the light is still blinking, the fault persists. In this case, contact an authorised Valtra workshop.

3.8.22 HillHold

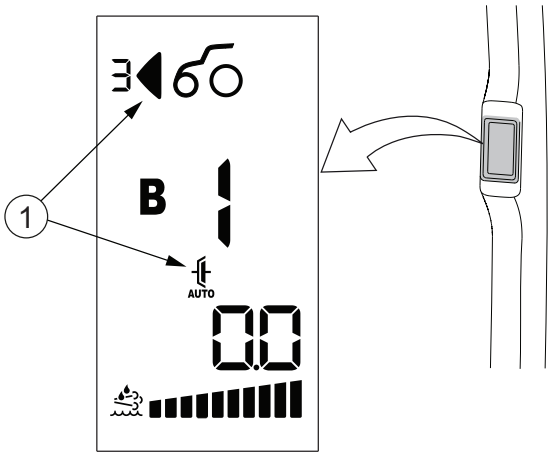
3.8.22.1 HillHold

When activated, the HillHold keeps the tractor stationary when you have stopped on a slope with the drive direction selected. The HillHold can be activated when the speed is less than 3 km/h.

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3.8.22.2 Using HillHold

IMPORTANT: Engage the HillHold when starting on a slope. Otherwise the tractor jerks downhill before traction engages even if the driving direction is uphill.



1. Symbols for HillHold

When the HillHold is engaged, its symbols on the A-pillar display blink and the parking brake symbol on the Proline instrument panel comes on.

- **Engage the HillHold when starting to drive.**
  - **Press down the brake pedals.**
  - **Engage the forward or reverse driving direction.**
  - **Release the brake pedals.**

    The tractor remains stationary until you press the drive pedal.
- **Engage the HillHold when driving and stopping in a slope.**
  - **Press down the brake pedals until the speed is 3 km/h or less and keep them pressed.**
  - **Move the power shuttle lever to the parking brake position.**
  - **Move the power shuttle lever to the forward or reverse position.**
  - **Release the brake pedals.**

    The tractor remains stationary until you press the drive pedal.
- **Disengage the HillHold before it activates.**
  - When the power shuttle lever is in the parking brake position and you have not pressed down the brake pedals, move the power shuttle lever to the neutral position.
  - When the power shuttle lever is in the parking brake position and you have pressed down the brake pedals, move the power shuttle lever to the forward or reverse driving direction but press down the clutch pedal before releasing the brake pedals.

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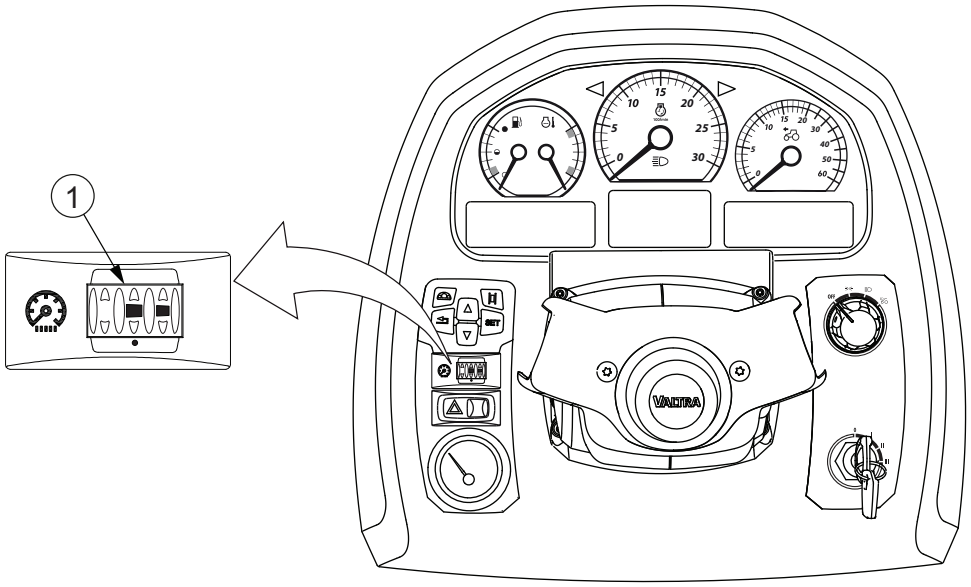
3.9 Displays

The tractor is equipped with the Proline instrument panel display on the dashboard and the pillar display on the A-pillar.

The displays give information on the power shuttle, driving speed, fuel consumption and so on. You can view and edit different values and setting parameters via the displays.

3.9.1 Adjusting display brightness

The brightness of the Proline instrument panel display and the A-pillar display is adjusted with the dimmer. In addition, the dimmer adjusts the brightness of the lights in the light panel, air condition panel, the whole Proline instrument panel and all the switches and buttons that have a light.



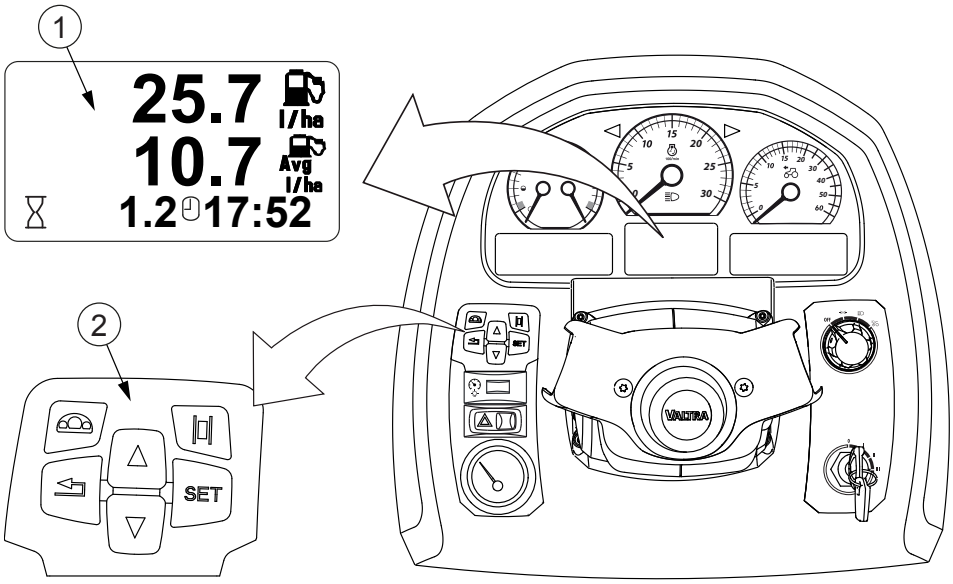
1. Dimmer

- **Scroll the dimmer left or right to increase or decrease the brightness of the displays.**

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3.10 Proline instrument panel display

The Proline instrument panel display shows information about different tractor functions.



1. Proline instrument panel display
2. Control panel for A-pillar display and Proline

The different views are shown on the display in either two or three rows, depending on the setting view.

- The bottom row view is fixed.
- Some of the views show the data in two rows and some in three.

3.10.1 Fixed views

Fixed views show the operating hours and the time.

Fixed views have two functions displayed on the bottom row, the operating hours ⧖ and the clock 🖱.



1. Operating hours
2. Clock

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Operating hours

Operating hours are displayed in accuracy of one decimal place when the power is on.

Clock

The clock is displayed on the bottom row, either in 12-hour or 24-hour mode.

You can change the time if it is not correct.

3.10.2 Single-row and two-row views

The Proline instrument panel display functions are seen in the middle of the view in the size of two rows or on the top and middle row, depending on the function.

Different functions can be displayed at the same time on both rows.

When the power is turned on, the view that was selected last appears on the display.

The following functions can be displayed on the display:

Symbol	Function
	Working time (h:mm)
	Battery charge (V)
cruise RPM cruise KMH	Cruise control • RPM = engine speed • KMH = not in use
km/h/mph	Driving speed (km/h/mph)
R	Rear power take-off (PTO) speed (rpm)
F	Front power take-off (PTO) speed (rpm)
min	Engine speed (rpm)
l/ha	Immediate fuel consumption (ha, acre)
AVG l/ha	Average fuel consumption (ha, acre)
l/h	Immediate fuel consumption
AVG l/h	Average fuel consumption
	Fuel consumption
AC R	Lower link position (%, 0-100)
	Gearbox temperature (C/F)
	Travel distance (m/km/miles)
	Square area (ha)
	Periodical maintenance

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3.10.2.1 Working time view

The working time view shows how much time the tractor has spent on a specific task.

The working time appears on the top or middle row of the display.



1. Working time

Working time can, for example, show the time spent on ploughing a certain area.

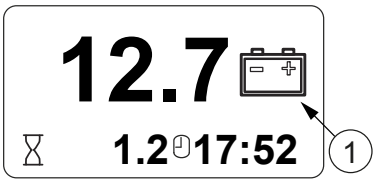
The working time is stored in the memory when the power is turned off.

You can reset the working time counter.

3.10.2.2 Battery voltage view

The battery voltage is shown in volts (V).

The battery voltage view shows the voltage of the battery. The voltage is shown beside the battery symbol in accuracy of one decimal place.



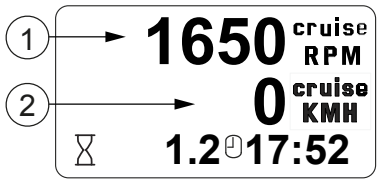
1. Battery voltage

3.10.2.3 Cruise control view

The cruise control controls the engine speed of the tractor.

The cruise control types cruise RPM cruise KMH appear on the top and middle row of the display.

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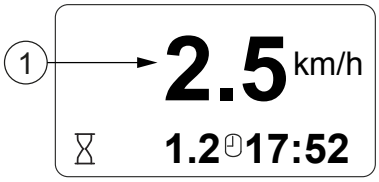
1. RPM = constant engine speed
2. KMH = not in use

The numerical value in front of the symbol stands for the value that has been saved for the constant engine speed.

When the constant engine speed is engaged, the corresponding text shows in white on a dark background, and the cruise indicator light  is lit on the instrument panel.

3.10.2.4 Driving speed view

The driving speed is displayed in km/h or mph.



1. Driving speed

The driving speed is displayed as follows:

- The letter L shows that the driving speed is under 3 km/h (2 mph).
- Driving speeds of 0–10 km/h (0-10 mph) are shown with an accuracy of one decimal place.
- Driving speeds of 10–15 km/h (10-15 mph) are shown with an accuracy of one decimal place in steps of 0.2 units.
- Driving speeds of over 15 km/h (15 mph) are shown without decimals.

You can change the driving speed unit by changing the unit of length.

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3.10.2.5 Rear power take-off speed view

The rear power take-off (PTO) speed is shown in revolutions per minute (rpm).



1. Rear power take-off speed

The PTO rotation speed is shown beside the symbol with an accuracy of 10 rpm.

3.10.2.6 Front power take-off speed view

The front power take-off (PTO) speed is shown in revolutions per minute (rpm).



1. Front power take-off speed

The PTO rotation speed is shown beside the symbol with an accuracy of 10 rpm.

3.10.2.7 Engine speed view

The engine speed is displayed in revolutions per minute (rpm).



1. Engine speed

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The view shows the engine speed with an accuracy of 10 rpm.

3.10.2.8 Fuel consumption views

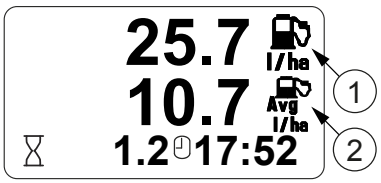
The display shows different kinds of fuel consumption: instant and average fuel consumption on the area worked, instant and average fuel consumption in an hour and total fuel consumption.

The instant fuel consumption is shown on the top row of the display and the average fuel consumption is shown on the middle row. You can reset the fuel consumption information.

You can change the unit of area (ha, acre) by changing the unit of length.

You can select litre, gallon UK or gallon US as the unit of volume.

Instant and average fuel consumption on the area worked



1. Instant fuel consumption on the area worked
2. Average fuel consumption on the area worked

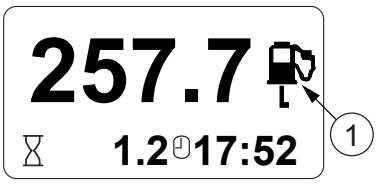
Instant and average fuel consumption in an hour



1. Instant fuel consumption in an hour
2. Average fuel consumption in an hour

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Total fuel consumption



1. Total fuel consumption

3.10.2.9 Rear lower links' position view

The view shows the position of the rear lower links AC R.



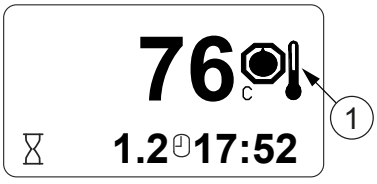
1. Position of the rear lower links

The display shows the symbol AC R and the position of the rear lower links on a percentage scale 0-100:

- 0 = The lower links are in the lowest position.
- 50 = The lower links are in the middle position.
- 100 = The lower links are in the top position.

NOTE: The percentage value may not achieve the limit values (0 or 100) even if the linkage is functioning correctly.

3.10.2.10 Gearbox temperature view



1. Gearbox temperature

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The gearbox temperature is displayed as follows:

- When the temperature is below +40°C (+104°F), the text "lo" is displayed.
- When the temperature is between +40-+119°C (+104-+246°F), the actual temperature is displayed.
- When the temperature is above +119°C (+246°F), the text "high" is displayed.

NOTE: If the gearbox temperature is continuously above +90°C (+194°F), clean the radiator and check the oil level.

3.10.2.11 Travel distance and surface area view

The view shows the travel distance in metres, kilometres, yards or miles and the surface area in hectares or acres. You can also reset the distance and area readings.

The travel distance and surface area appear on the top and middle row of the display.



1. Travel distance
2. Surface area

The travel distance is displayed as follows:

- For distances <1 km (mile), the m (yard) symbol is displayed and the distance is displayed with the accuracy of 1 m (yard).
- For distances >1 km (mile), but ≤100 km (miles), the display symbol changes to km (miles) and the distance is displayed with the accuracy of 2 decimals.
- Distances >100 km (miles) are displayed with the accuracy of 1 decimal.
- The maximum distance displayed is 999.9 km (miles).

The surface area view shows the amount of area worked. The area reading increases only when the implement is used to work the soil (the linkage is not in the transport position). The worked area is stored in the memory when the power is turned off.

You can change the unit of distance (km, miles) and area (ha, acre) by changing the unit of length.

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3.10.3 Periodical maintenance view



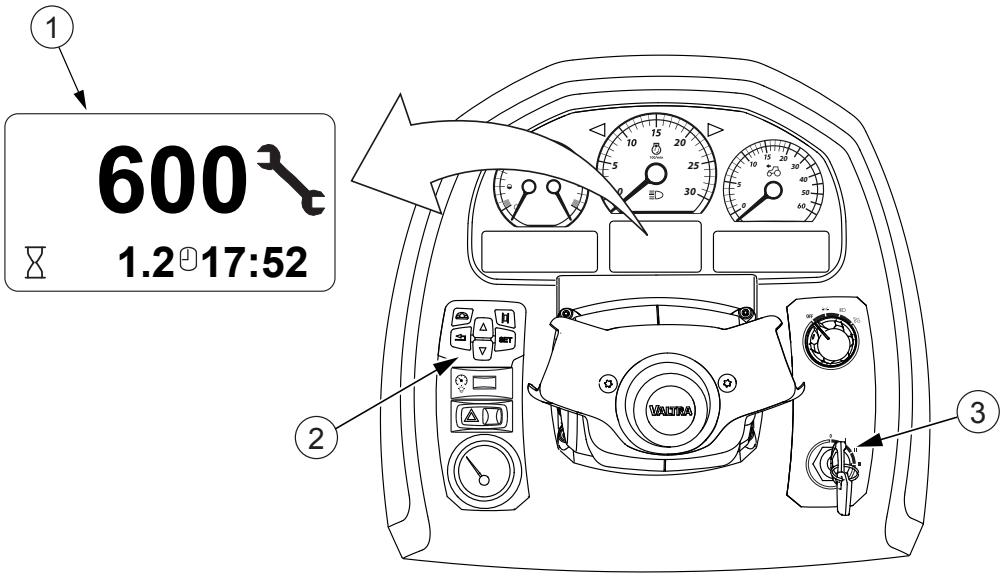
1. Periodical maintenance view

When the tool symbol and periodical maintenance hour number are lit on the display, the appropriate service work has to be carried out by an authorised Valtra workshop.

If this work is not carried out, the tool symbol and periodical maintenance hour number are displayed for 10 seconds whenever the power is turned on.

3.10.3.1 Clearing the periodical maintenance view

When the periodical maintenance has been carried out, the periodical maintenance view can be cleared.



1. Periodical maintenance view
2. Control panel for A-pillar display and Proline
3. Ignition

- **Press and hold SET on the control panel for A-pillar display and Proline.**
- **Simultaneously turn the ignition on.**

The periodical maintenance view has been cleared and will illuminate again when the next service interval has been reached.

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3.10.4 Resetting views

You can reset the travel distance, fuel consumption, working time and square area (worked area) views. All the readings are reset at the same time.



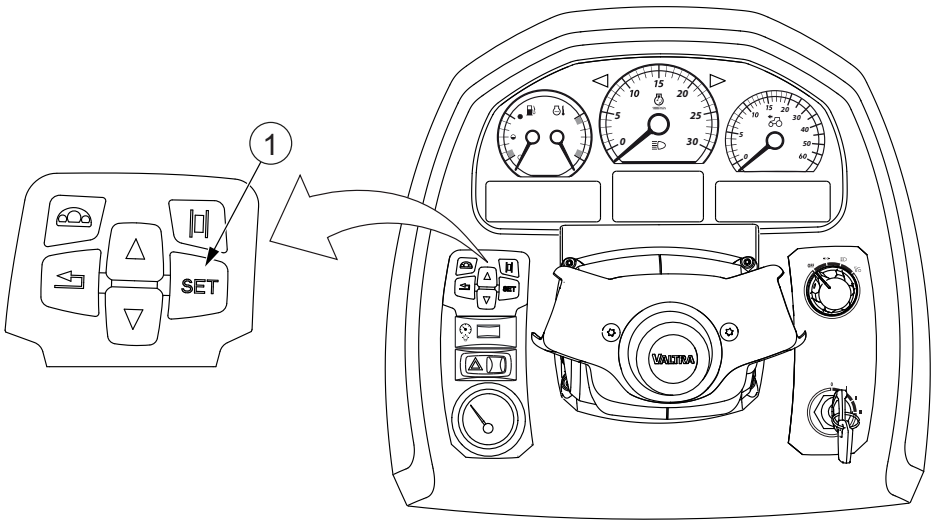
1. Reset view
2. Symbols for views that are reset

1. **Navigate to the Reset view with the arrow buttons.**
2. **Press and hold the SET button until the text RESET blinks three times.**
3. **When the blinking stops, release the SET button.**
   The counters are reset to zero.

3.10.5 Changing parameters

3.10.5.1 Activating and exiting the setting mode

You must activate the setting mode to change the different settings.



1. Proline instrument panel display setting switch

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1. **Activate the setting mode.**

   Press and hold down the **SET** button until the symbol for the value to be set is blinking.

2. **Display the available parameters.**

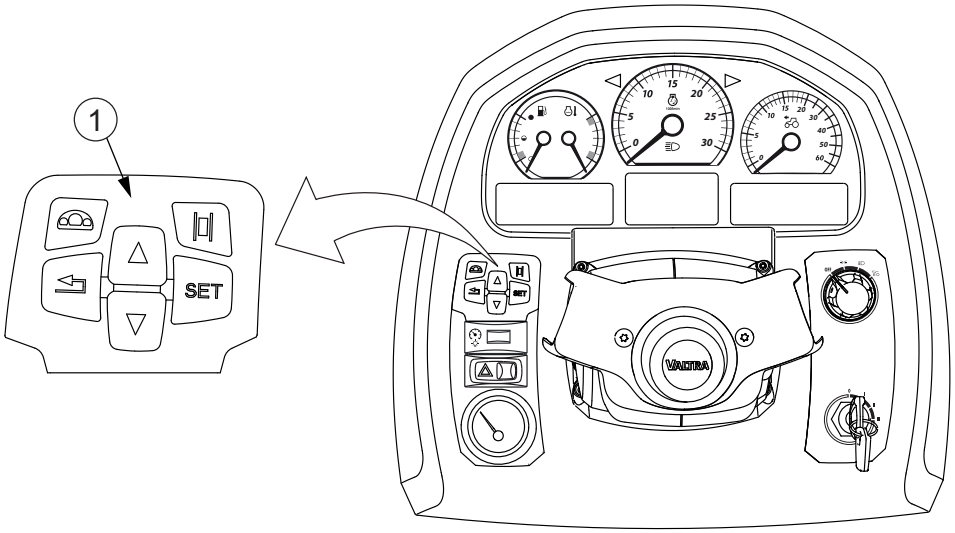
   Press the side of the display setting switch opposite to the symbol. The available parameters are presented in the following table.

Parameter	Parameter value
Implement width	0–6 500
Set clock	Hours and minutes
Clock mode	12–hour or 24–hour
Direction indicator buzzer status	On or off
Temperature unit	Celsius or Fahrenheit
Length unit	Metric or imperial
Volume unit	Litre or UK gallon or US gallon
Front power take-off speed view	On or off
Front lower links' position view	On or off
Display contrast	80–120

3. **Exit the setting mode.**

   Press the  button to save the value and return to the previous display.

3.10.5.2 Changing the parameter value



1. Control panel for A-pillar display and Proline

- **Increase a parameter value.**
  - **Press the up arrow button.**
    The parameter value increases one step at a time.
  - **Press and hold down the up arrow button.**
    The parameter value increases continuously.

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- **Decrease a parameter value.**
  - **Press the down arrow button.**
    The parameter decreases one step at a time.
  - **Press and hold down the down arrow button.**
    The parameter value decreases continuously.
- **Select the next parameter to be changed.**

  Press the **SET** button.

3.10.5.3 Setting the implement width



1. Implement width

1. **Activate the implement width in the setting mode.**
2. **Change the value.**

3.10.5.4 Changing the hour display



1. Hour display

1. **Activate the hour display in the setting mode with the SET button.**

   When the hour display is blinking, you can set the hours.
2. **Change the value with the arrow buttons.**

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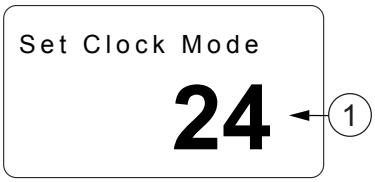
3.10.5.5 Changing the minute display



1. Minute display

1. **Activate the minute display in the setting mode with the SET button.**
   When the minute display is blinking, you can set the minutes.
2. **Change the value with the arrow buttons.**

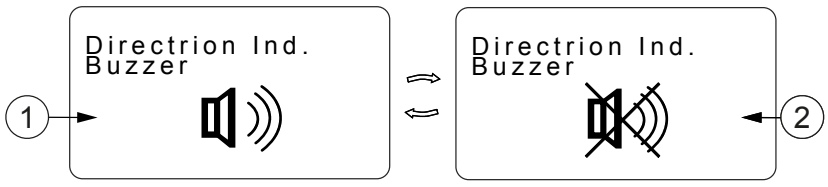
3.10.5.6 Changing the clock mode



1. Clock mode

1. **Activate the clock mode in the setting mode with the SET button.**
2. **Change the display to either 12-hour or 24-hour mode with the arrow buttons.**

3.10.5.7 Activating the direction indicator buzzer



1. Direction indicator buzzer on
2. Direction indicator buzzer off

1. **Activate the direction indicator buzzer setting with the SET button.**

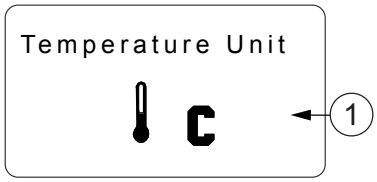
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2. **Change the direction indicator buzzer to either on or off with the arrow buttons.**

   When the function is on (no cross), the buzzer is activated together with the direction indicator or the hazard warning.

3.10.5.8 Changing the temperature unit

You can change the unit of temperature to be shown in either Celsius (C) or Fahrenheit (F).

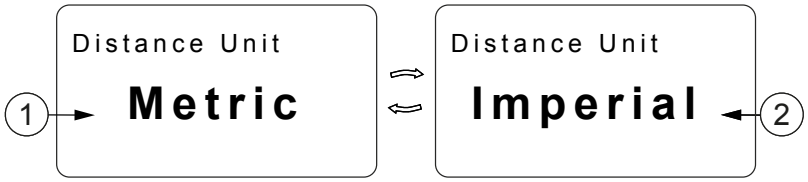


1. Temperature unit

1. **Activate the unit of temperature in the setting mode with the SET button.**
2. **Change the unit to C or F with the arrow buttons.**

3.10.5.9 Changing the length unit

You can change the unit of length to be shown in either metric or imperial mode.



1. Metric units
2. Imperial units

1. **Activate the unit of length in the setting mode with the SET button.**
2. **Change the unit to either metric or imperial mode with the arrow buttons.**

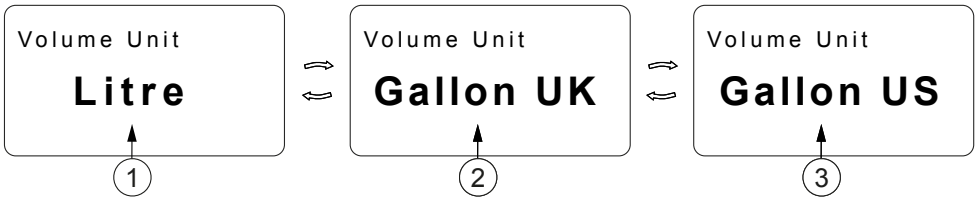
   When the unit of length is changed between metric and imperial, the following units also change:

Unit	Metric	Imperial
Driving speed	km/h	mph
Distance	km, m	miles, yard
Surface area	ha	acre
Implement width	cm	inch

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3.10.5.10 Changing the volume unit

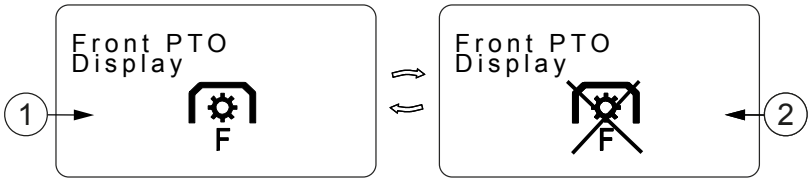
You can change the unit of volume to be shown in either litre, gallon UK or gallon US mode.



1. Litre
2. Gallon UK
3. Gallon US

1. **Activate the unit of volume in the setting mode with the SET button.**
2. **Change the unit to either litre, gallon UK or gallon US with the arrow buttons.**

3.10.5.11 Activating and deactivating the front power take-off speed view



1. Front PTO speed view on
2. Front PTO speed view off

1. **Activate the front PTO speed view in the setting mode with the SET button.**
2. **Activate or deactivate the front PTO speed view with the arrow buttons.**

   This function activates the front PTO speed view if the tractor is retrofit with the front PTO.

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3.10.5.12 Adjusting the display contrast



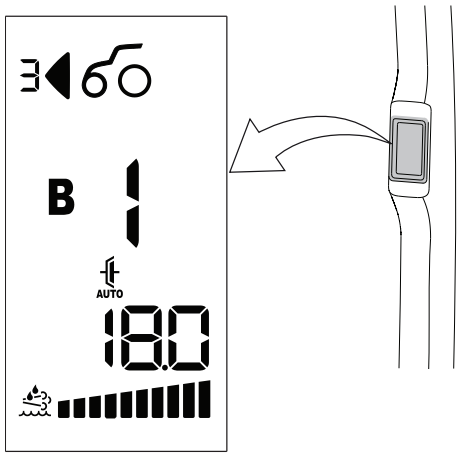
1. Display contrast

1. **Activate the display contrast in the setting mode with the SET button.**
2. **Adjust the display contrast with the arrow buttons.**

   The minimum contrast value is 80 and the maximum value is 120.

3.11 A-pillar display

The A-pillar display is located on the right-hand side front pillar.



The A-pillar display has two levels, a drive display and a driver's settings display. The drive display gives information on the tractor's current status, for example transmission or driving speed. The tractor settings and I/O tests are entered through the driver's settings display. Additionally, the active fault codes are shown on the display.

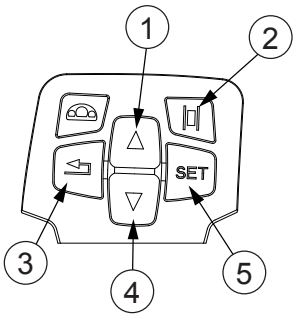
The display has a backlight to facilitate work in the dark.

3.11.1 A-pillar display control panel

The A-pillar display control panel is located on the dashboard.

You can use the control panel for changing between different views in the display. In addition, some of the tractor settings and I/O tests are done using the A-pillar display and control panel.

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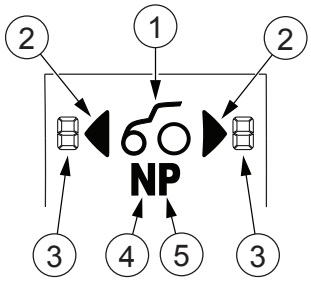
1. Arrow up
2. A-pillar display selection
3. Back
4. Arrow down
5. SET/selection

- You can change the control panel operation from the Proline instrument panel to A-pillar with the A-pillar display selection button. By default, Proline is active in the control panel.
- You can scroll between functions and views with the up and down arrow buttons.
- You can confirm a selection in a setting view and move back to the menu with the back button.
- You can perform settings and I/O tests with the SET/selection button.

3.11.2 Drive display

The drive display is divided into power shuttle section, transmission section and general information section.

3.11.2.1 Power shuttle section



1. Tractor symbol
2. Forward/reverse driving direction arrow
3. Preprogrammed Powershift gear symbol
4. Transmission neutral symbol
5. Parking brake symbol

Tractor symbol

The tractor symbol is shown continuously when the power is on.

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Forward/reverse driving direction arrow

The arrow shows which driving direction, forward or reverse, is engaged. The arrow flashes if the power shuttle has been operated at a driving speed over 10 km/h. The arrow flashes also when the automatic traction control is activated.

Transmission neutral symbol

The neutral (N) symbol flashes when the transmission is in neutral state and when the automatic traction control is activated.

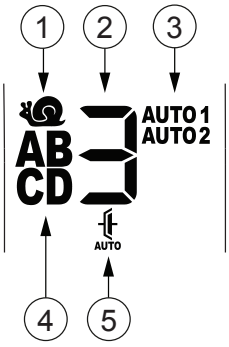
Parking brake symbol

The parking brake (P) symbol is shown when the parking brake is on. The symbol flashes when the parking brake is set but not yet engaged.

Preprogrammed Powershift gear symbol

The preprogrammed Powershift gear symbol (1, 2, 3, 4 or 5) is shown next to the forward/reverse driving direction arrow.

3.11.2.2 Transmission section



1. Creeper speed range symbol
2. Selected Powershift gear
3. AUTO1 / AUTO2 shifting automatics symbol
4. Speed range symbol
5. Automatic traction control symbol

Creeper speed range symbol

The creeper speed range symbol flashes when the creeper speed range is being engaged. The symbol is displayed continuously when the creeper speed range is engaged.

NOTE: The creeper speed ranges do not show on the transmission section display. When a creeper speed range is engaged, only the speed ranges A or B are shown on the display.

Selected Powershift gear

The number of the engaged Powershift gear is shown in the middle of the transmission section (1, 2, 3, 4 or 5).

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AUTO1 / AUTO2 shifting automatics symbol

The AUTO1 or AUTO2 symbol appears based on the shifting automatics mode in use. When the shifting automatics is not selected, the symbol is not visible and the manual shifting is in use.

Speed range symbol

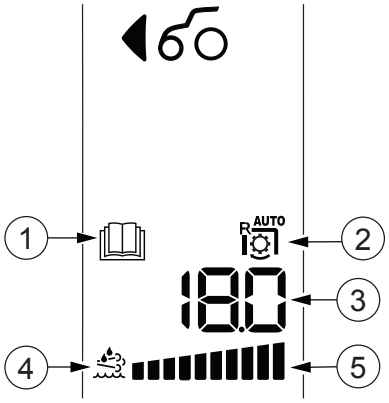
The selected speed range letter (A, B, C, D) is shown in the transmission section. When changing the speed range, the letter for the requested speed range is flashing until the selected speed range is engaged.

Automatic traction control symbol

The automatic traction control symbol flashes when automatic traction control is activated. The symbol is displayed continuously when the desired direction has been reselected.

3.11.2.3 General information section

The general information section on the A-pillar display shows the basic mode view. The information shown in the basic mode view changes according to the driving situation. You can also select one of the views as fixed.



1. Service code symbol
2. Power take-off (PTO) symbol
3. Value of selected property
4. AdBlue symbol
5. AdBlue level bar

Driving speed information

In the basic mode view, the tractor symbol and the current driving speed are shown if the tractor is moving. In the fixed view, they are shown continuously. The accuracy of the driving speed view is described in the following table.

Driving speed	Accuracy
0.0-9.9	0.1
10.0-14.8	0.2
15 and above	1 (no decimals)

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Service code information

The service code symbol is displayed if one or more service codes are active. The symbol disappears when the error has been fixed and power turned off.

Power take-off (PTO) information

- In the basic mode view, the symbol for the rear PTO 

is shown only if the rear PTO is rotating. If rear PTO is selected as fixed, also the rotating speed is shown on the bottom line. The accuracy of the speed view is 10 rpm.
- In the basic mode view, the symbol for the front PTO 

is shown only if the front PTO is rotating. If front PTO is selected as fixed, also the rotating speed is shown on the bottom line. The accuracy of the speed view is 10 rpm.

  If both the rear PTO and front PTO are rotating, the rear PTO speed is shown.
- The symbol for the Auto PTO 

is displayed when the Auto PTO function is enabled.

AdBlue information

- The AdBlue level bar indicates the level of the AdBlue/DEF under normal operation.

AdBlue level bar indication	AdBlue level
10%	AdBlue symbol is lit for 10 seconds.
5%	AdBlue symbol is lit continuously.
0%	AdBlue symbol blinks. Engine's power output begins to decreases in stages. After 30 minutes the engine remains idle.

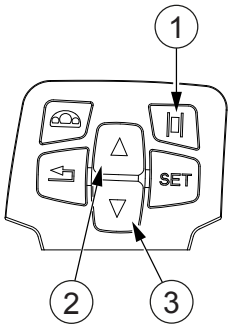
IMPORTANT:

In some situations (for example, after working with a heavy load) when you engage the parking brake, the engine may perform cooling of the after-treatment system by increasing the idling rpm momentarily. The word COOL flashes on the A-pillar display.

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3.11.2.4 Changing general information section views

You can scroll the function views by pressing the up and down arrows in the control panel.



1. A-pillar display selection
2. Arrow up
3. Arrow down

1. **To operate the A-pillar display with the control panel, press the A-pillar display selection button.**
2. **Press the up and down arrows in the control panel to scroll between the function views.**

   The views are organised in the following order:

   1. Rear PTO / Front PTO / Driving Speed / Temperature (the highest priority is shown)
   2. Driving Speed / Temperature (the highest priority is shown)
   3. Rear PTO (fixed view)
   4. Front PTO (optional equipment) (fixed view)
   5. Temperature (fixed view)

   When both the rear power take-off and front power take-off are in use, the rear power take-off speed is shown on the A-pillar display.

   The basic mode shows the outdoor temperature when the tractor does not move. When the driving speed is greater than 0.3 km/h, the speed is shown instead of temperature.

The last used display mode is saved when you turn off the power.

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3.11.3 Driver's settings display

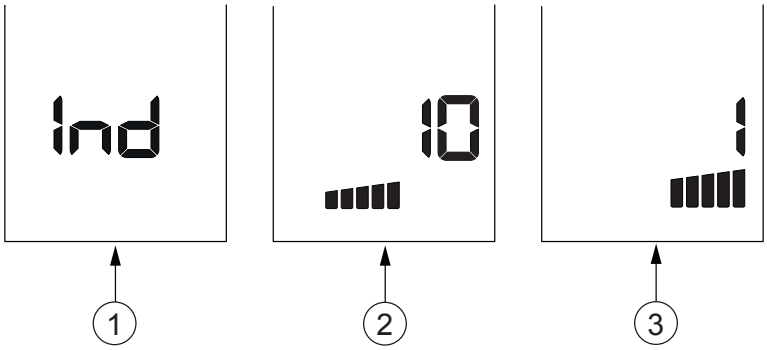
The driver's settings display is divided into indexes section, AUTO2 HI and AUTO2 LO settings section, speed sensor calibration section and I/O test section.

3.11.3.1 Indexes section

You can modify the settings of the tractor's functions in the indexes section.

These settings include, for example, the tyre radius or the automatic shifting between C and D speed ranges.

The indexes section consists of three views: menu level, index list and index value.



1. Index setting menu
2. Index list
3. Index value

3.11.3.2 Adjustable indexes

The following settings of the tractor's functions can be modified in the indexes section:

Index	Instruction
0	Not in use
1	Setting the tyre parameter
7	Adjusting the clutch pedal engagement position
10	Setting the driving start automatics
20	Activating and deactivating the driving start automatics
30	Adjusting the power shuttle engagement speed
50	Activating and deactivating automatic shifting between speed ranges C and D
90	Adjusting the PTO engagement speed
260	Not in use

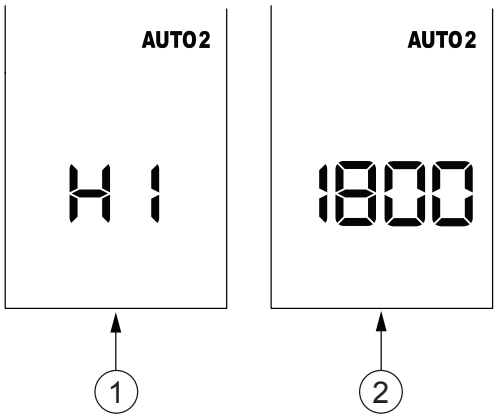
The settings are instructed in the chapters of each function.

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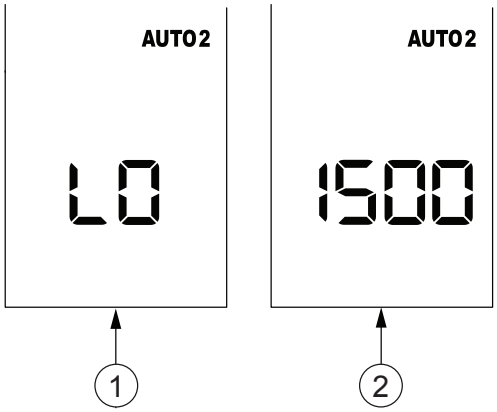
3.11.3.3 AUTO2 HI and LO sections

You can adjust the AUTO2 shifting automatics rpm (revolutions per minute) limits through the AUTO2 HI and LO sections.

Both AUTO2 HI and AUTO2 LO sections consist of two views: menu level and rpm value.



1. AUTO2 HI setting menu
2. AUTO2 HI rpm value



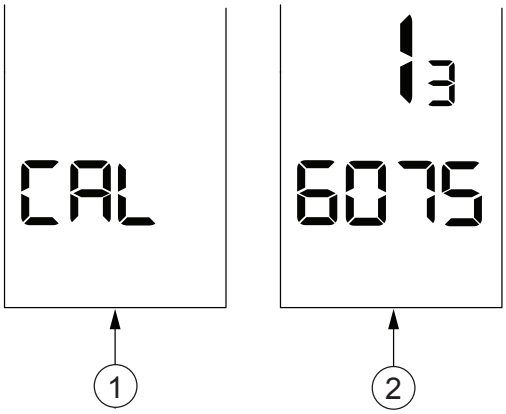
1. AUTO2 LO setting menu
2. AUTO2 LO rpm value

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3.11.3.4 Speed sensor calibration section

The speed sensor calibration section allows user to calibrate the speed sensor (optional equipment) when changing the tyre radius. The calibration is required for the automatic driving modes to work properly.

The speed sensor calibration section consists of two views: menu level and calibration value.



1. Speed sensor calibration menu
2. Speed sensor calibration value

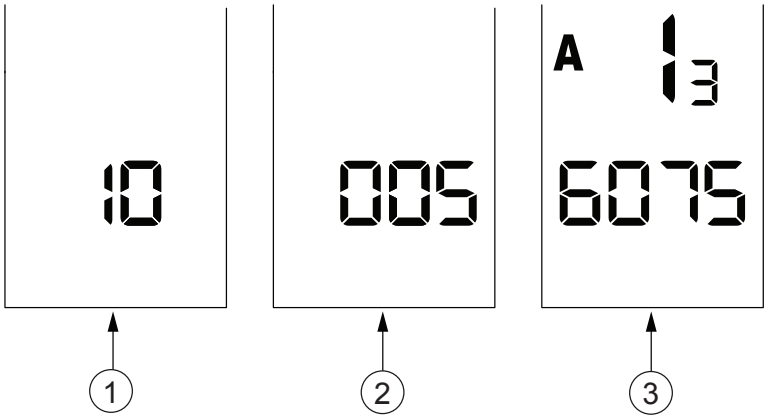
3.11.3.5 I/O test section

You can view the status of inputs and outputs of the Electrical Control Units (ECU) in the I/O test section.

The I/O tests are carried out and analysed by the service personnel. The input of these tests serve as a preliminary information for fault finding.

The I/O test section consists of three views: menu level, the ECU view displaying the identification number of the ECU and the ECU pin view displaying the status of selected input/output of the ECU.

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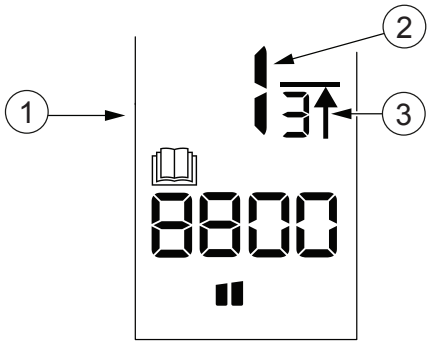


1. I/O test menu
2. ECU view
3. ECU pin view

3.11.4 Fault code view

The fault code view on the A-pillar display shows the active fault codes to the driver.

You can scroll between the active fault codes by pressing the up and down arrow buttons in the A-pillar display control panel. The codes are displayed in four parts. Each part displays one segment of the fault code.

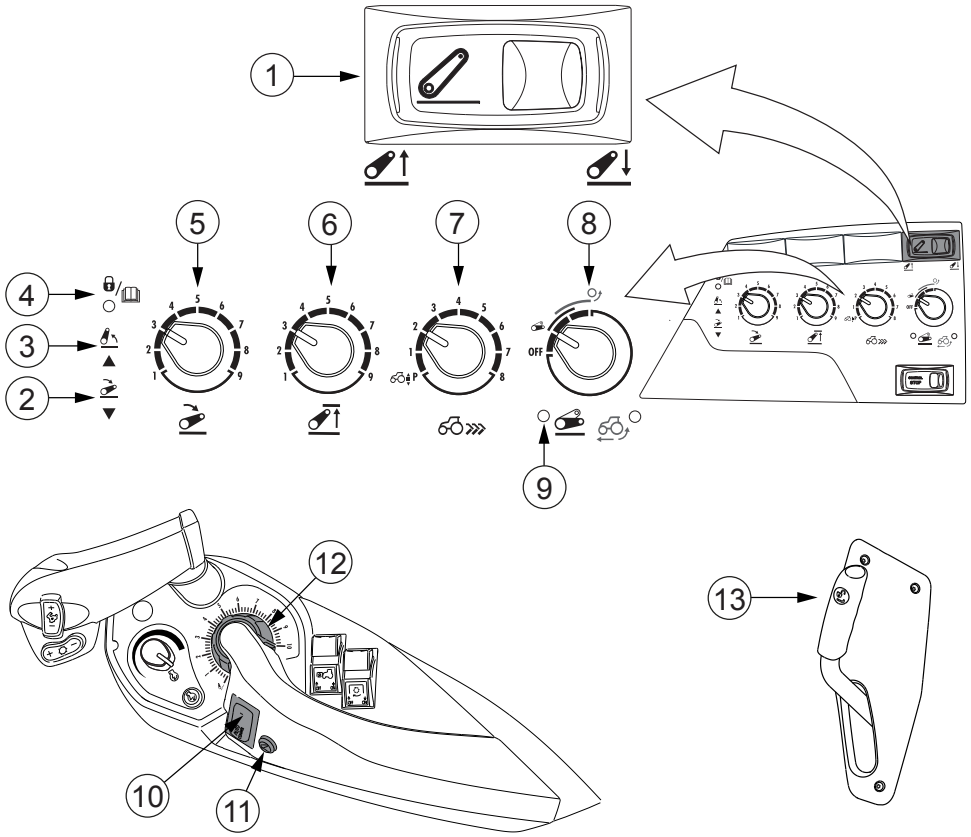


1. A segment view of a fault code
2. Currently selected fault code
3. Number of active fault codes

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3.12 Rear linkage

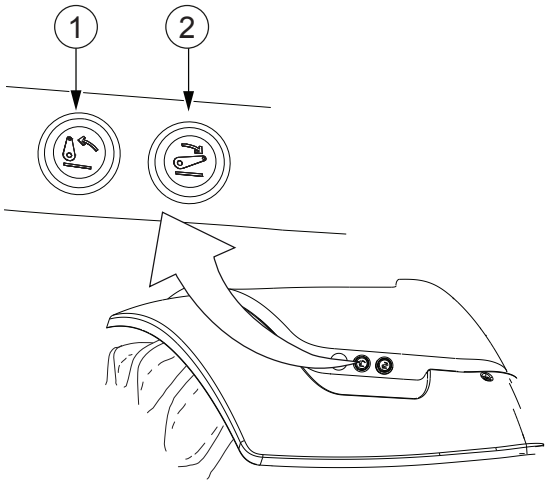
Controls in the cabin



1. Lifting/lowering switch
2. Lowering indicator light
3. Lifting indicator light
4. Diagnostic light
5. Lowering speed selector
6. Max lifting height selector
7. Draft control selector
8. Drive balance control selector
9. Drive balance control light
10. Lift/stop/lower switch
11. Override button for position control knob
12. Position control knob
13. Trailer hitch release lever (optional)

Controls in the rear mudguards

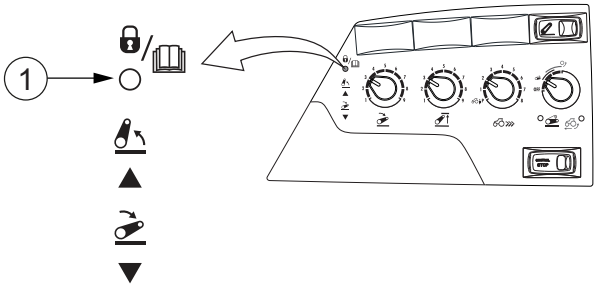
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1. Lifting push button
2. Lowering push button

3.12.1 Diagnostic light

When the tractor power is turned on, the diagnostic light is lit for a moment, goes out, and is lit again. The lit diagnostic light indicates that the linkage has not been activated.



1. Diagnostic light

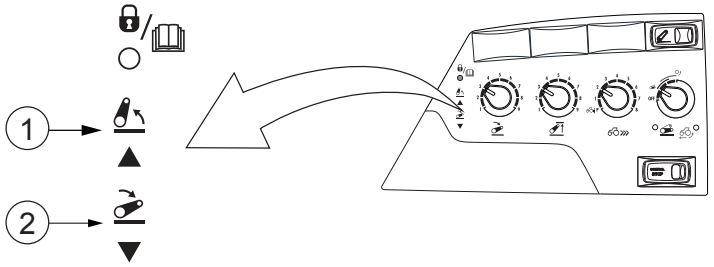
IMPORTANT: If the diagnostic light is flashing and a service code is displayed, there is failure in the system. Contact an authorised Valtra workshop

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3.12.2 Lifting/lowering indicator lights

The indicator lights indicate when the lower links are moving.

Lit indicator light indicates that the rear linkage is being used.



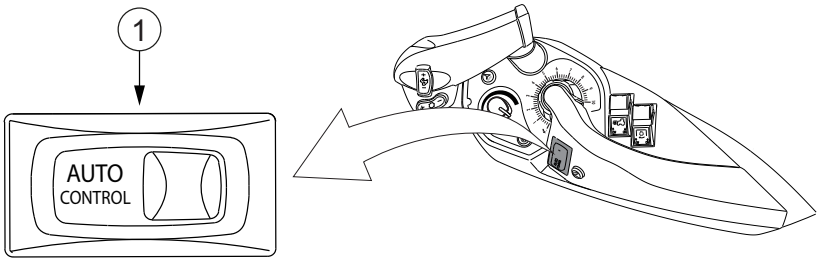
1. Lifting indicator light
2. Lowering indicator light

- The lifting indicator (red) is lit when the lower links are lifting.
- The lowering indicator (green) is lit when the links are lowering. The lowering indicator light is lit also when rear linkage is set to floating position.

3.12.3 Activating the linkage

Use the lift/stop/lower switch to activate the linkage.

The linkage has to be activated every time the power has been turned on or when the lifting/lowering switch or lifting/lowering push buttons have been used.



1. Lift/stop/lower switch

1. **Press the lift/stop/lower switch rapidly two times to either of its extreme positions.**

   Linkage activation requires two rapid presses of the lift/stop/lower switch for safety. The latter of the presses defines the direction of the linkage movement to be activated.

   The diagnostic light goes out and the lower links move to the preset position. The first movement is done at a reduced speed.

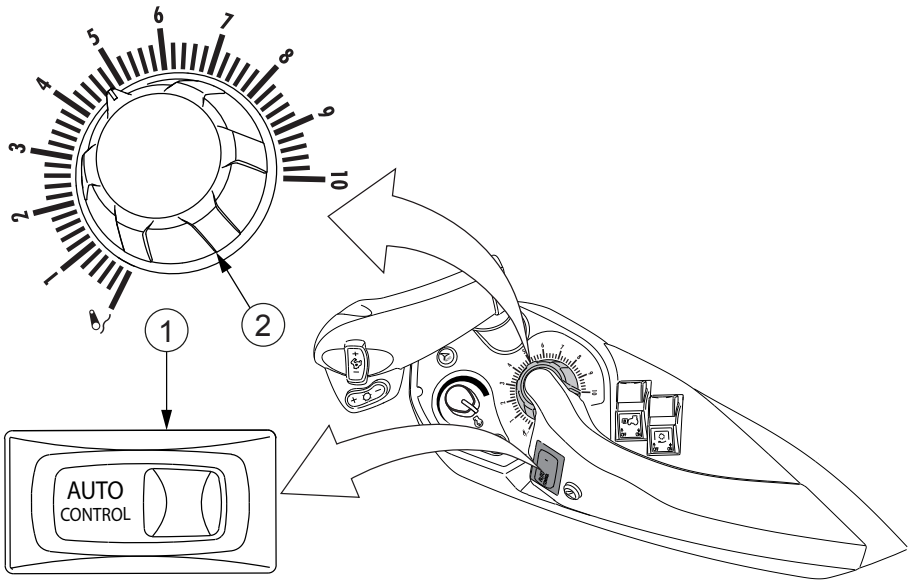
   NOTE: The movement of the linkage can be stopped by pressing the lift/stop/lower switch to the centre (stop) position.

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2. **To increase the speed to normal, change the position of the lift/stop/lower switch again.**

3.12.4 Using the lift/stop/lower switch

The lift/stop/lower switch has three positions.



1. Lift/stop/lower switch
2. Position control knob

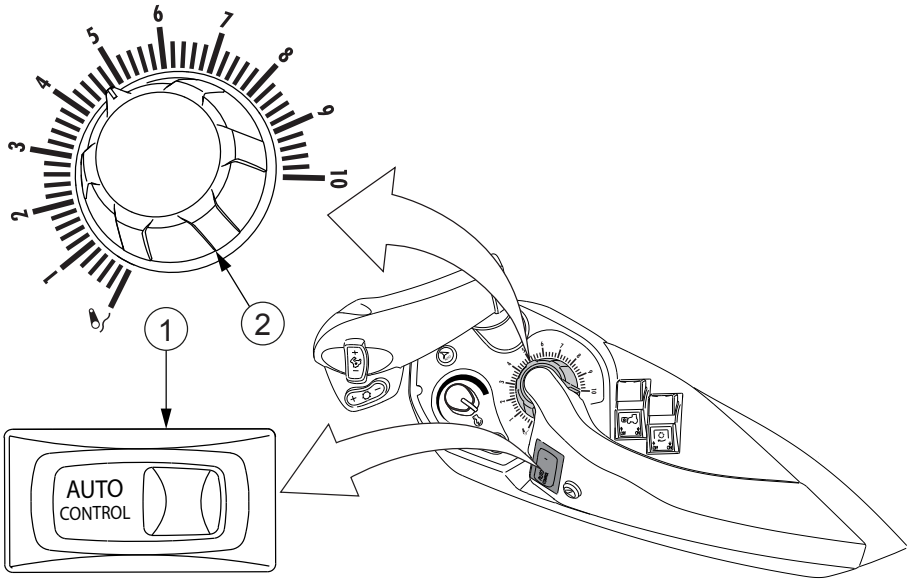
- **Press down the symbol side of the lift/stop/lower switch.**
  The lower links are moved to the height set by the position control knob. This is called the Autocontrol position.
  NOTE: When the draft control is in use, the linkage movements can be large and undeterminable.
- **Press down the side of the lift/stop/lower switch opposite to the symbol.**
  The lower links are moved to the height set by the lifting height selector. This is called the transport position.
- **To stop the lower links, set the lift/stop/lower switch to the centre position.**
  This is called the stop position.

3.12.5 Using the position control knob

The position control knob allows continuous control of the lower links' position. You can use the knob to lift or lower the lower links. You can also use to knob to set the height where the links move when using the Lift/stop/lower switch lowering (Autocontrol) function.

NOTE: The position of the lower links is displayed on the Proline instrument panel display in the rear lower links' position view.

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1. Lift/stop/lower switch
2. Position control knob

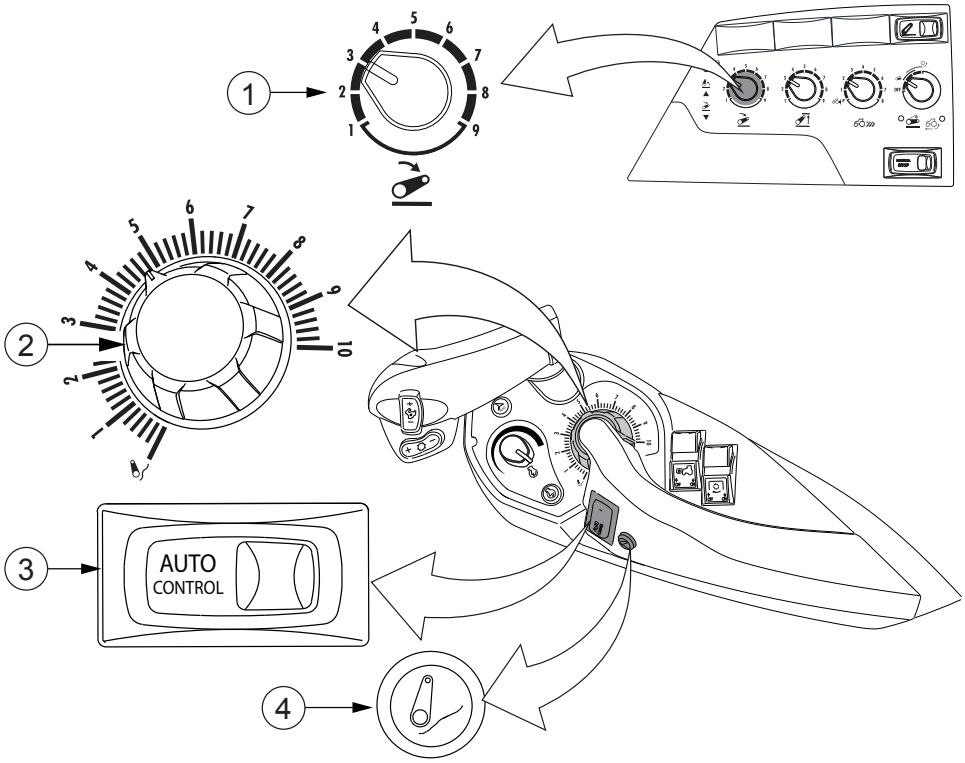
- **To lift the lower links, turn the knob anti-clockwise.**
- **To lower the lower links, turn the knob clockwise.**

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3.12.6 Overriding the position set by position control knob

Use the override button for position control knob when you temporarily need the lower links to pass the lower limit set by the control knob.

This feature is useful for example when ploughing. It allows a quicker entry of the plough to the correct depth in the beginning.



1. Lowering speed selector
2. Position control knob
3. Lift/stop/lower switch
4. Override button for position control knob, float

1. **Set the lowering speed with the lowering speed selector.**
2. **Set the lower limit of the lower links with the position control knob.**
3. **Press down the symbol side of the lift/stop/lower switch to lower the links.**
4. **Press down the override button for position control knob.**
   The lower links pass the limit set by the position control knob, the lowering indicator light is lit, and the lower links are floating.
5. **Release the override button for position control knob.**

   The lower links return to the height set by the position control knob.

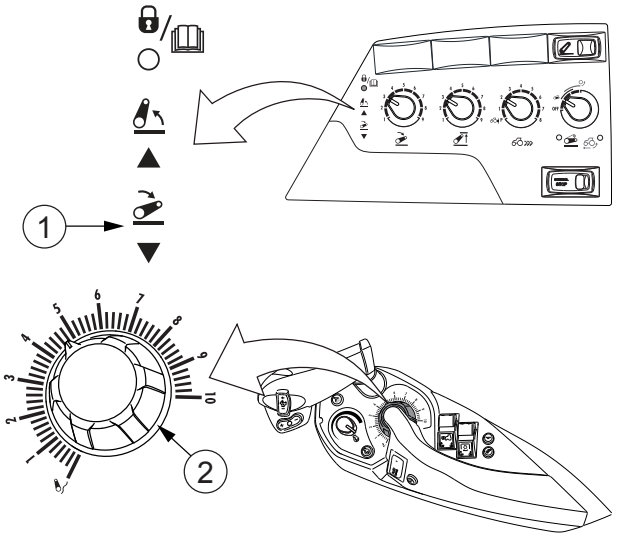
NOTE: If the lift/stop/lower switch is in the lifting (transport) position, the linkage lifts slightly when pressing the override button for position control knob. This

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supplementary feature can be used to help release and lock the pick-up hitch when the upper limit is set to maximum.

3.12.7 Using the linkage floating position

Use the floating position when working with implements which have to follow the ground surface. Such implements are, for example, sowing machines and rollers.



1. Lower indicator light
2. Position control knob

IMPORTANT: Always use the floating position for implements following the ground contour. Otherwise there is a risk that the implement may get damaged or the traction of the wheels may be lost.

- **To activate the floating position, turn the position control knob clockwise to its extreme position.**

  The lower links can now move freely up and down following the movements of the implement. The lower indicator light is lit continuously.

- **To deactivate the floating position, turn the position control knob anti-clockwise.**

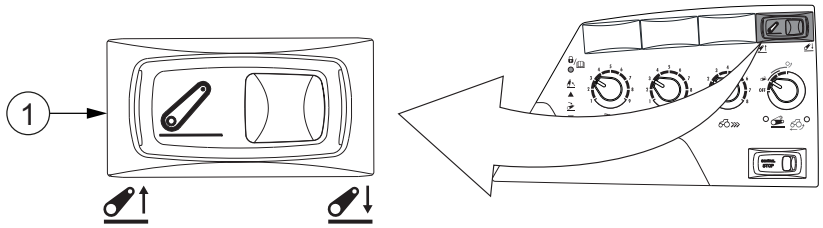
  The floating stops when the position control knob is moved approximately to position 1. The lower indicator light goes out.

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3.12.8 Using the lifting/lowering switch

When attaching implements, using the lifting/lowering switch gives you a full control on the implement's movement. If necessary, you can stop the movement immediately by releasing the switch.

The lifting/lowering switch functions even when the rear linkage is not activated.



1. Lifting/lowering switch

- **To lift the linkage, press the symbol side of the lifting/lowering switch.**

  The longer the switch is pressed the faster the linkage lifts.

- **To lower the linkage, press the side of the lifting/lowering switch opposite to the symbol.**

  The longer the switch is pressed the faster the linkage lowers.

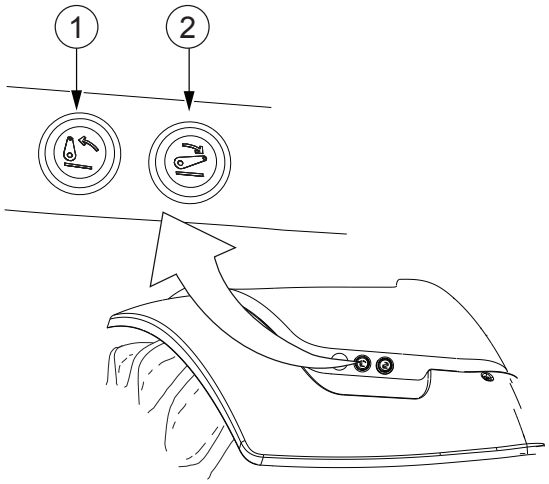
- **To stop the movement of the linkage, release the lifting/lowering switch to the centre position.**

  NOTE: The linkage has to be activated again every time the lifting/lowering switch or the lifting/lowering push buttons have been used, if necessary.

3.12.9 Using the lifting/lowering push buttons

When using the lifting/lowering push buttons, the lifting/lowering continues for as long as you keep pushing the respective button. The movement stops immediately when releasing the button. Thus, you have steady control over the linkage movements.

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1. Lifting push button
2. Lowering push button

- **To lift the linkage, press the lifting push button.**

  The longer the lift button is pressed the faster the linkage lifts.

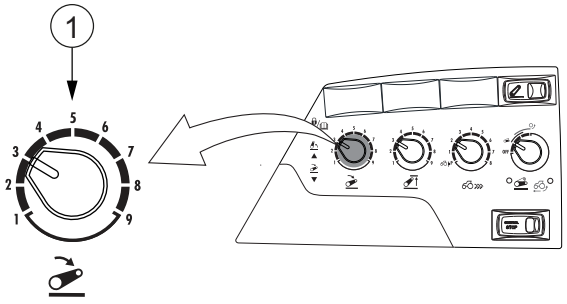
- **To lower the linkage, press the lowering push button.**

  The longer the lower button is pressed the faster the linkage lowers.
  NOTE: The linkage has to be activated again every time the lifting/lowering switch or the lifting/lowering push buttons have been used, if necessary.

3.12.10 Setting the lowering speed

The needed lowering speed depends on the type of implement used. Use low lowering speed with heavy and sensitive implements. The setting does not affect the lifting speed.

The lowering speed is independent of the load.



1. Lowering speed selector

- **To increase the lowering speed, turn the knob clockwise.**

  Nine different levels are available.

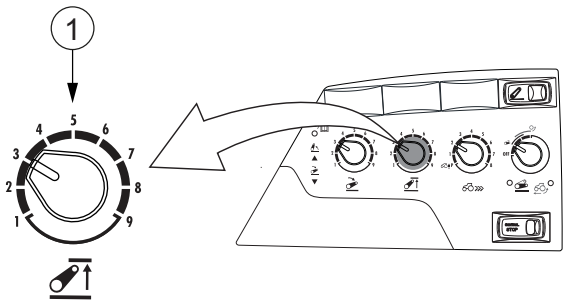
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- **To decrease the lowering speed, turn the knob anti-clockwise.**

3.12.11 Limiting the lifting height

The height limit is a useful feature, for example, when there is a risk that the implement could hit the cabin or when using the power take-off (PTO) driven implements.

IMPORTANT: The lifting height limitation must be used when using power take-off (PTO) powered implements to prevent the PTO shaft from being damaged.



1. Lifting height selector

- **Use the lifting height selector to limit the lower links' lifting height.**

  The lifting height can be limited to 9 different positions with the lifting height selector.
  The lifting height selector limits the lifting height when either the position control knob or the lift/stop/lower switch is used.

  CAUTION: The lifting height selector does not limit the lifting height when the lifting/lowering switch or the lifting/lowering push buttons are used.

3.12.12 Draft control

You can use the draft control when working with implements that operate below the surface of the ground. The draft control keeps the implement's depth and draft load constant. This function is useful especially with implements attached to the three-point linkage. Such implements are, for example, ploughs and cultivators.

NOTE: It is recommended to keep the draft control disengaged (in position P) if it is not needed and always when the implement is lifted by the position control knob.

The draft control has eight levels which define to what extent the draft force affects the working depth, where

- 1 = small influence
- 8 = very large influence

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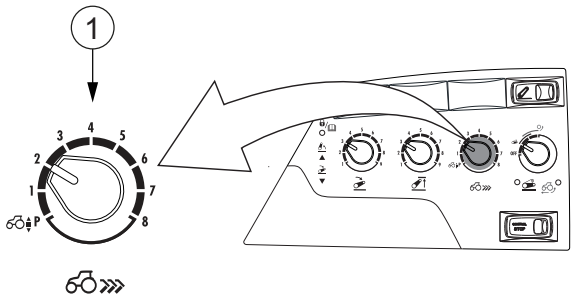
Position 5 is normally used for ploughing. If larger draft control is required (that is, the plough is too deep and needs a slight lift), position 6 can be used instead.

When the draft control is operating, the rear linkage tries to maintain the position set by the position control knob. If the pulling resistance increases, the rear linkage raises the implement and some of the weight is transferred to the rear wheels. Thus, the driving wheels maintain the maximum traction.

NOTE: The position of the lower links is displayed on the Proline instrument panel display in the rear lower links' position view.

3.12.12.1 Activating and deactivating the draft control

NOTE: Adjust the ploughing depth with the position control knob.



1. Draft control selector

- **To activate the draft control, turn the draft control selector to one of the eight draft levels.**
- **To deactivate the draft control, turn the selector to position P.**

  Turning the selector to position P ensures that the linkage is controlled accurately by the position control knob.

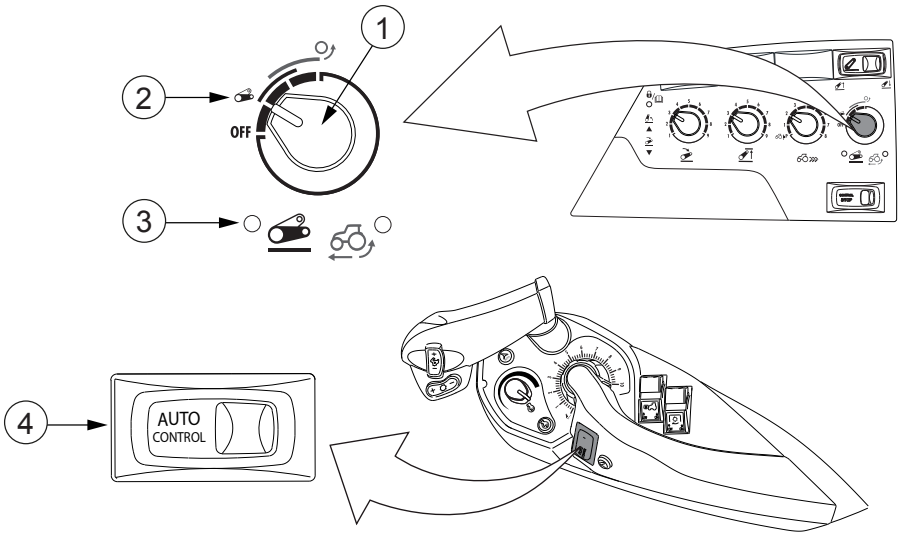
3.12.13 Drive balance control

The drive balance control system makes driving the tractor more even and stable when transporting heavy implements on the linkage. The system makes the linkage to lift or lower slightly when needed, thus balancing the tractor-implement combination. When the drive balance control is in use the transport height is a little lower than the one set by the lifting height selector and can vary a bit. The drive balance control can be used on the road and in the field.

The drive balance control operates only with the transport mode, that is, when the lift/stop/lower switch is in the lift (transport) position.

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3.12.13.1 Using the drive balance control



1. Drive balance control knob
2. Drive balance position
3. Drive balance control light
4. Lift/stop/lower switch

1. **To activate the drive balance control, turn the drive balance control selector to the drive balance position.**

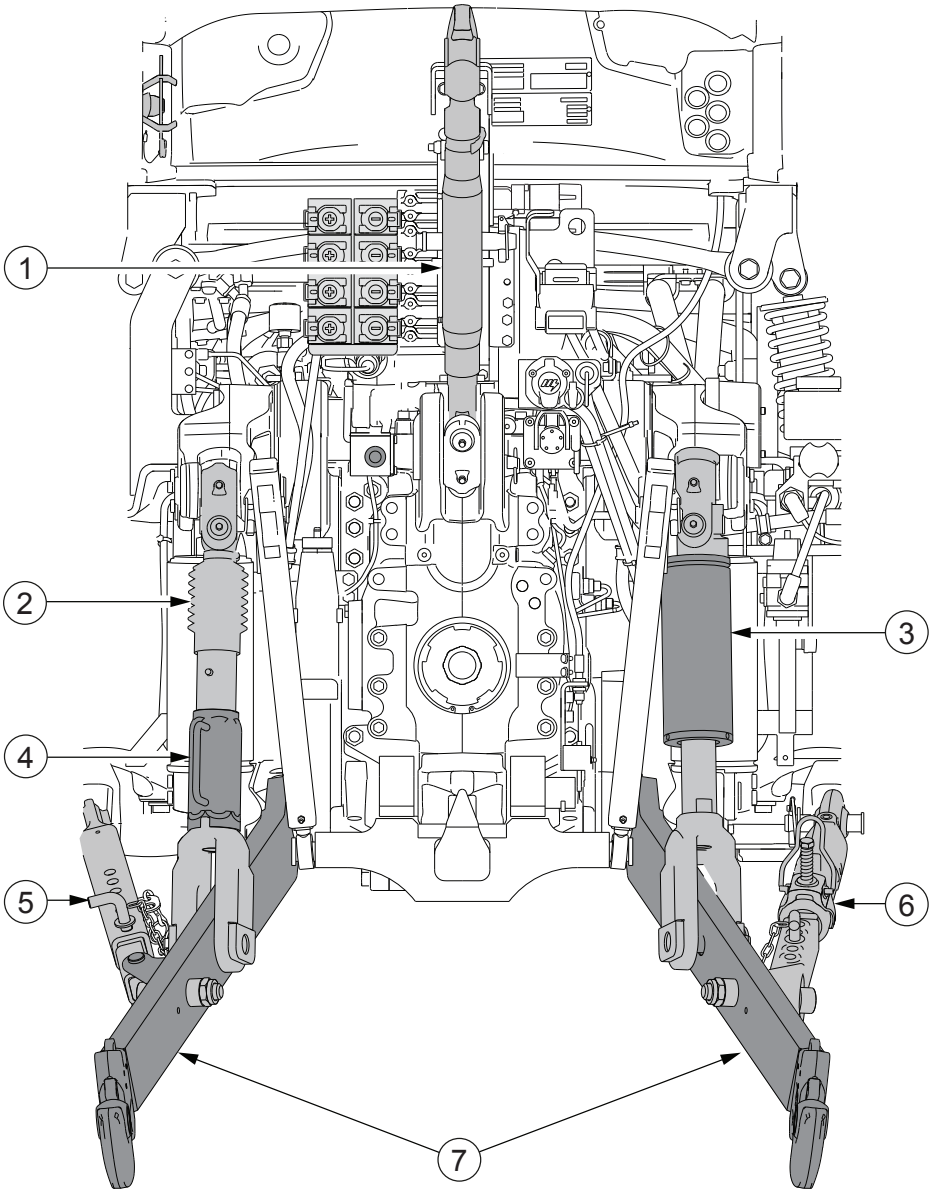
   The drive balance control light is lit when the balance control is activated.

2. **Set the lift/stop/lower switch to the lift (transport) position.**

3. **To deactivate the drive balance control, turn the drive balance control selector to the off position.**

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3.13 Three-point linkage



1. Top link
2. Lift link
3. Hydraulic levelling link (optional) or Lift link (optional)
4. Levelling screw
5. Side limiter
6. Automatic side limiter (optional)
7. Lower links

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The tractors are supplied with category 3 ball hitch lower links.

WARNING: Ensure that the ball hitch lower link hooks latch correctly.

The top link has two different attaching holes on the tractor. Thus, it is possible to get different lifting geometry for different implements. When the top link is in the lower hole, the implement inclines forward. The upper hole gives almost horizontal lifting movement.

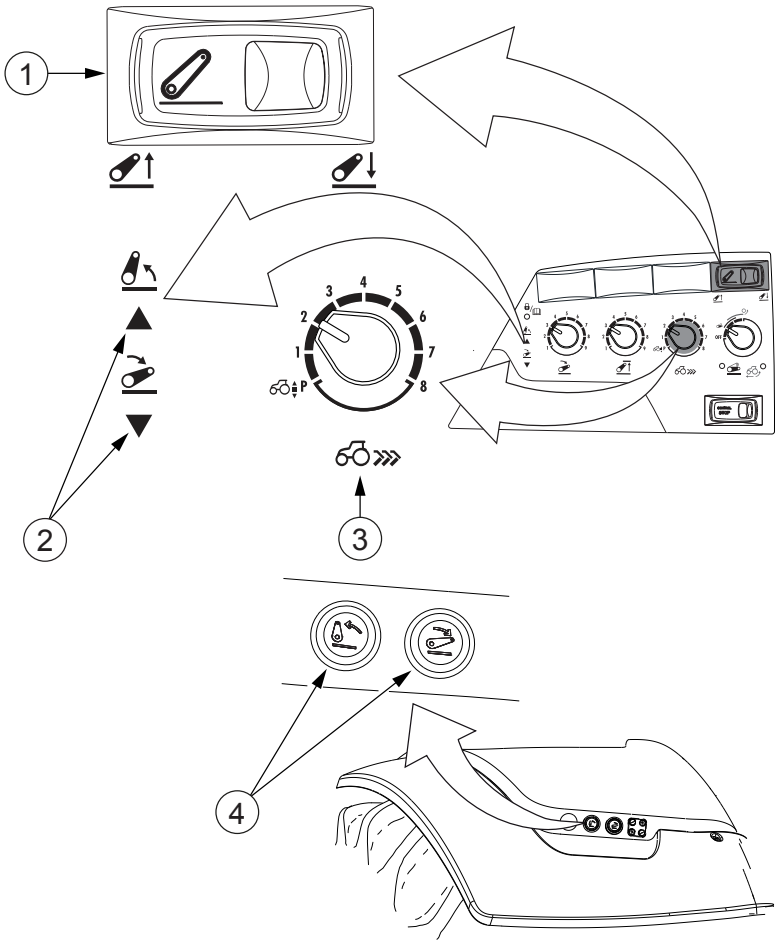
3.13.1 Attaching implements

DANGER: Always use the lifting/lowering push buttons or the lifting/ lowering switch when attaching or releasing implements.

WARNING: When attaching or releasing an implement, support the implement to prevent it from falling.

IMPORTANT: When using the hydraulic top link, ensure that it operates normally when you are attaching an implement.

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1. Lifting/lowering switch
2. Lifting/lowering indicator lights
3. Draft control selector
4. Lifting/lowering push buttons

1. Turn the draft control selector to position P.

DANGER: Before attaching or releasing an implement, turn the draft control selector to position P. In draft control positions, even a small turn of the position control knob may cause an unexpected linkage movement.

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2. **Press the lifting/lowering switch or the lifting/lowering push buttons to lift or lower the lower links.**

   The lower links lift or lower for as long as you press the switch/button.

   DANGER: When attaching or releasing implements, always stand outside the implement and beside the tractor. Never stand on the implement or between the implement and the tractor.

   WARNING: The linkage movement speed increases when the lifting/lowering switch is pressed for a longer time.

   CAUTION: The lifting height selector does not limit the lifting height when the lifting/lowering switch or the lifting/lowering push buttons are used.

3. **Connect the implement.**

   DANGER: The implement has to be mechanically connected to the tractor (the lower links and the top link) before connecting the quick couplings.

   IMPORTANT: Make sure that the implement is correctly attached and that it does not hit the other parts of the tractor when lifted to the selected transport height.

   Side limiters must be locked with pins when transporting implements that are carried by the three-point linkage.

   DANGER: Make sure that at least 20% of the total combination weight rests on the front wheels. When needed, use a sufficient number of front ballast weights.

4. **Follow the implement manufacturer's instructions.**

   Correct adjustment of harrows, ploughs and cultivators reduces the required tractor power. An incorrectly adjusted plough, for instance, creates a badly shaped furrow, tends to twist the tractor away from the driving direction, increases fuel consumption and wastes power due to wheel slip.

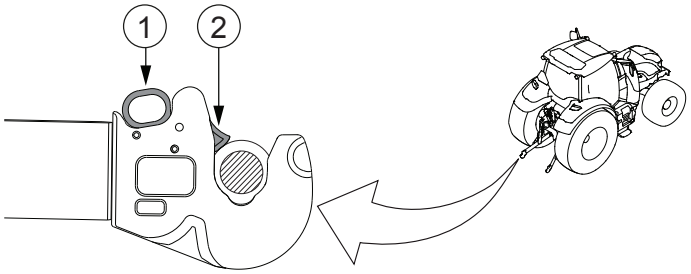
5. **Activate the linkage with the lift/stop/lower switch.**

   After using the lifting/lowering switch or the lifting/lowering push buttons, you have to activate the position control system again.

3.13.2 Using quick couplings for lower links

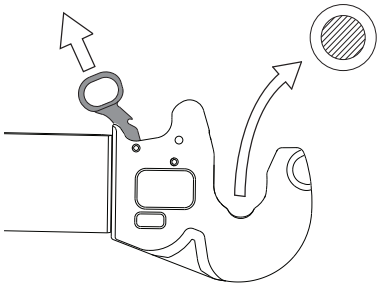
DANGER: Clean the quick couplings and ball joints before attaching an implement. There is risk that the implement is not attached properly.

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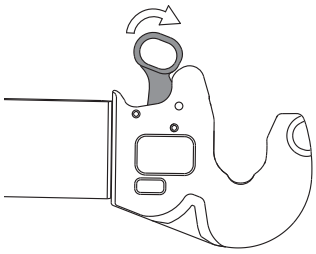


1. Lever
2. Clamp

1. **Pull the lever to release the implement.**

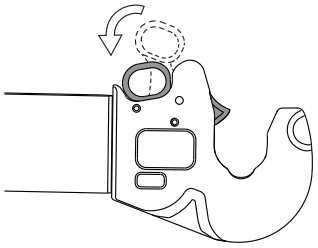


2. **You can leave the lock open by pulling the lever backwards (for example when demounting an implement).**



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3. **Release the lock by pulling the lever forward.**

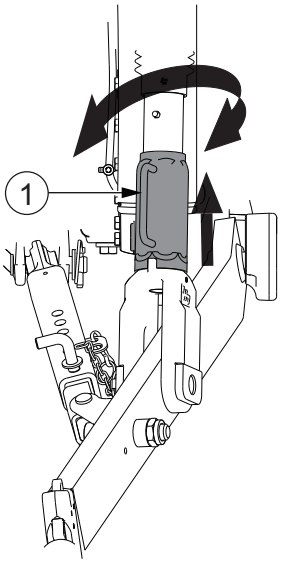


The ball joints lock automatically when attaching the implement.
When locked, the clamp is in view and the lever is in the lower position.

3.13.3 Adjusting lift links

3.13.3.1 Adjusting lift links

IMPORTANT: When adjusting the lift links, make sure that they do not hit the tractor or damage the implement.



1. Levelling screw

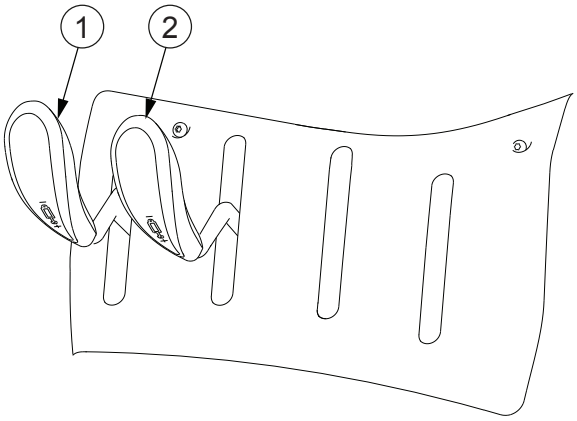
1. **Move the linkage to the position where the lift links are free of load.**
2. **Lift up the levelling screws and turn them in the required direction to adjust the length of the lift links.**
3. **Lower the levelling screws back to the locked position after adjustment.**

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3.13.3.2 Adjusting hydraulic lift link

The hydraulic lift link is connected to rear auxiliary hydraulic valve 1 or 2.

IMPORTANT: When adjusting the hydraulic lift link, make sure that the implement does not hit the tractor or ground to avoid damages.

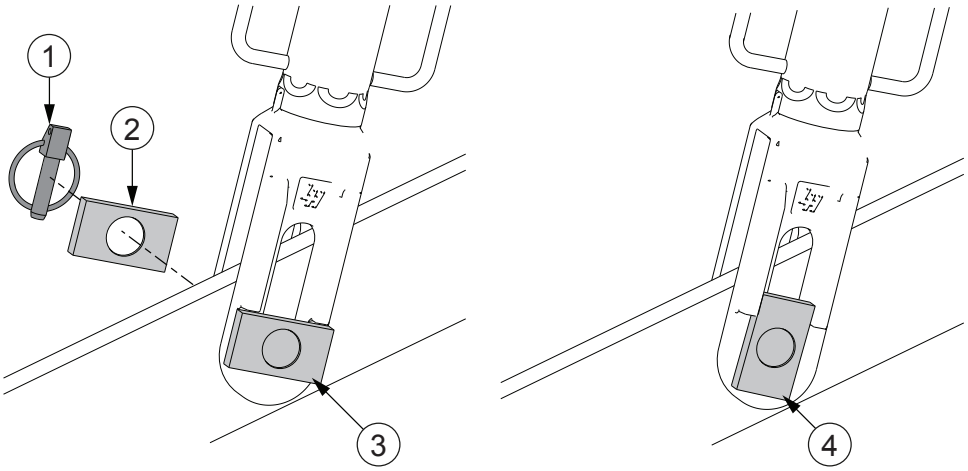


1. Auxiliary hydraulic lever 1
2. Auxiliary hydraulic lever 2

1. **Move the linkage to the position where the lift links are free of load.**
2. **Lift the hydraulic lift link up by pulling the lever of the auxiliary hydraulics valve 1 or 2.**
3. **Lower the hydraulic lift link up by pushing the lever of the auxiliary hydraulics valve 1 or 2.**

3.13.4 Adjusting lower links

You can adjust the lower links into fixed or floating position.



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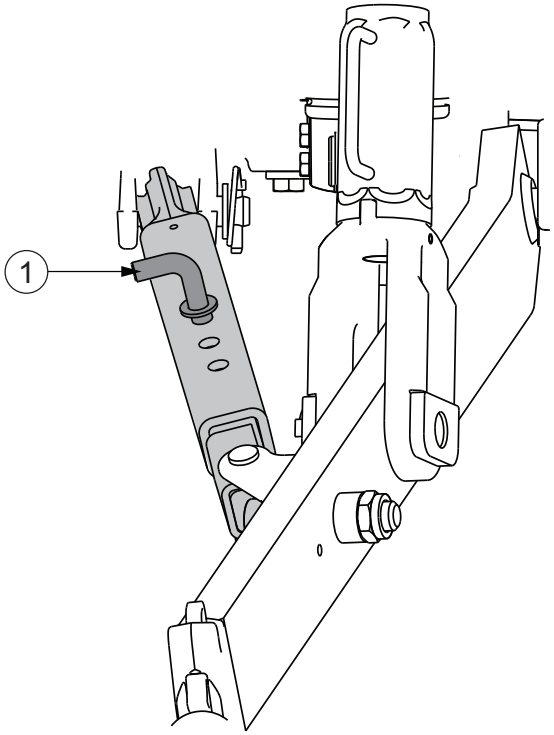
1. Lock pin
2. Plate
3. Carrier pin and plate position providing fixed position of lower links
4. Carrier pin and plate position allowing floating position of lower links

1. **Remove the lock pin and pull out the carrier pin.**
2. **Attach the lift links to the lower links with the carrier pin and plate.**

   Floating position allows a slight vertical movement of the lower links.
3. **Attach the lock pin.**

3.13.5 Adjusting side limiters

You can adjust the lateral distance between the lower links by changing the length of the side limiters.



1. Limiting pin

1. **Unfasten the limiting pin.**
2. **Adjust the distance between the lower links.**

   Check that the lower links do not come into contact with tyres.
3. **Fasten the pin to the appropriate hole to obtain the desired distance between the lower links.**

   Attaching the pin to the oval hole allows a slight lateral movement of the lower links.

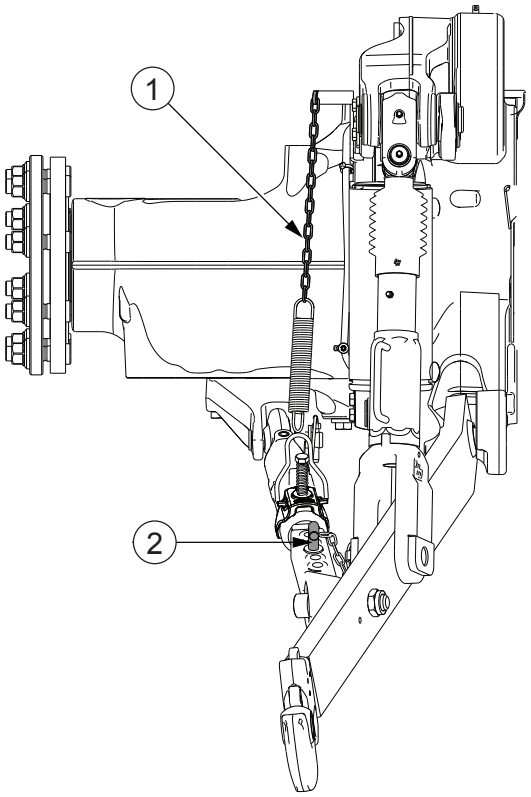
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3.13.6 Automatic side limiters

The automatic side limiters are used to limit the distance between the lower links. They can be set to a fixed position, similar to the standard side limiters, or they can be set to be released to floating position automatically. The automatic side limiters are optional equipment.

IMPORTANT: Adjust the automatic side limiters so that they do not come into contact with the rear wheels.

3.13.6.1 Setting automatic side limiters to fixed position



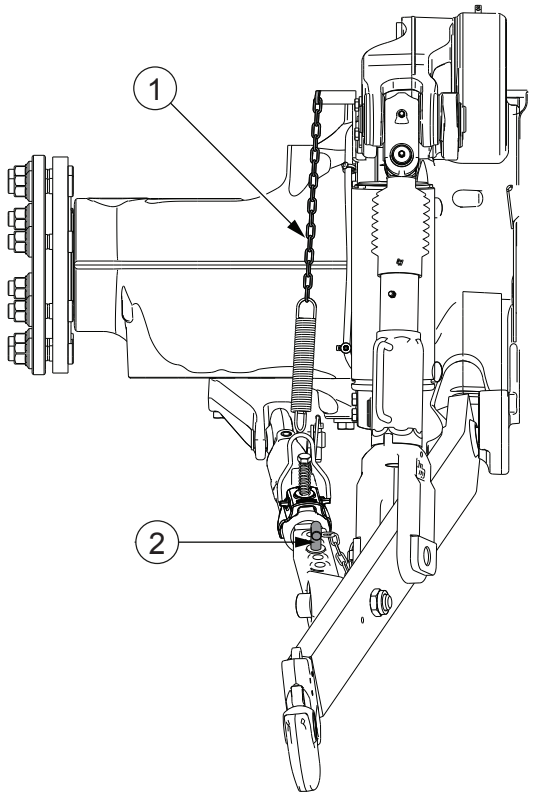
1. Holding chain
2. Limiting pin

1. **Adjust the chain to the length where it does not release the side limiter's locking when the linkage is lowered down.**
2. **Pull out the limiting pin.**
3. **Adjust the length of the side limiter.**
4. **Put the limiting pin back to lock the length of the side limiter.**

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3.13.6.2 Setting automatic side limiters to floating position

You can set the automatic side limiters so that when lowering the linkage, the side limiter is released to a floating position.

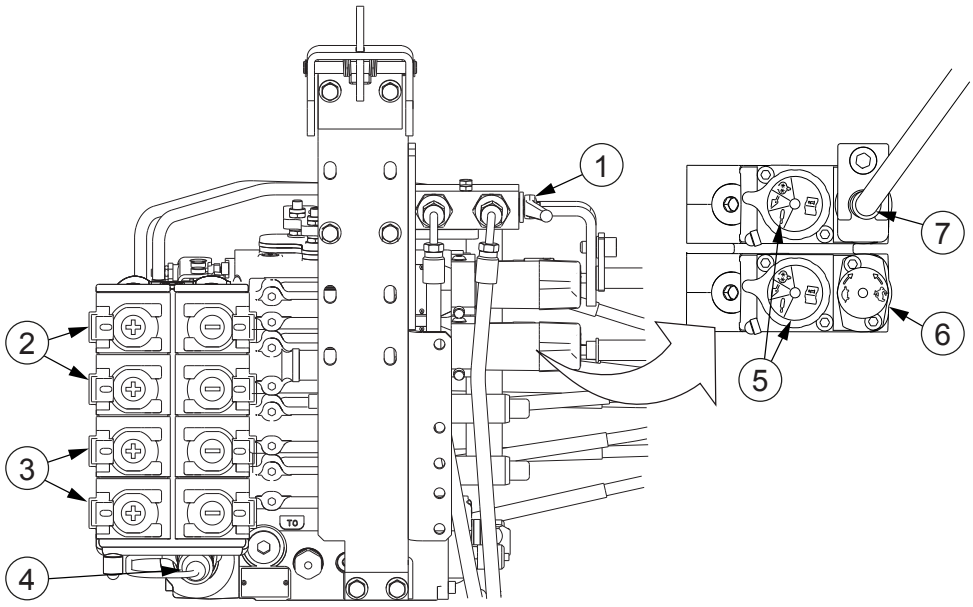


1. Holding chain
2. Limiting pin

1. **Adjust the chain to the length where it will release the side limiter's locking, at a desired height, while lowering the linkage.**
2. **Pull out the limiting pin.**
3. **Adjust the length of the side limiter.**
4. **Put the limiting pin back to lock the length of the side limiter.**

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3.14 Auxiliary hydraulics



1. Front linkage shut-off valve (optional)
2. Rear valves 3 and 4 (optional)
3. Standard rear valves 1 and 2
4. Return coupling
5. Valve mode selector (optional)
6. Flow control adjustment (optional)
7. Flow control adjustment from cabin (optional)

All the standard and optional auxiliary hydraulics rear valves are mechanically controlled with control levers.

As a standard, the tractor is equipped with two basic valves on the rear side.

The following valves are available:

Valves	Valve type	Valve functions	Flow control adjustment
Two valves	Valve 1, basic	Out - hold - in - floating Position locks on floating and (+)-port	N/A
	Valve 2, basic	Out - hold - in - floating Position lock on floating	N/A
Two valves	Valve 1, basic	Out - hold - in - floating Position locks on floating and (+)-port	N/A
	Valve 2, adjustable	Position lock - spring-return - kick-out	In valve 2
Table continued on next page			

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Valves	Valve type	Valve functions	Flow control adjustment
Three valves	Valve 1, basic	Out - hold - in - floating Position locks on floating and (+)-port	N/A
	Valve 2, basic	Out - hold - in - floating Position lock on floating	N/A
	Valve 3, adjustable	Position lock - spring-return - kick-out	In cabin
Four valves	Valve 1, basic	Out - hold - in - floating Position locks on floating and (+)-port	N/A
	Valve 2, basic	Out - hold - in - floating Position lock on floating	N/A
	Valve 3, adjustable	Position lock - spring-return - kick-out	In valve 3
	Valve 4, adjustable	Position lock - spring-return - kick-out	In cabin

In adjustable valves, the position lock is always disengaged when the tractor engine is shut down. This prevents unexpected hydraulic movement and decreases the engine load during start. The basic valve 1 does not have this function. The floating position stays engaged, regardless whether the tractor engine is running or shut down.

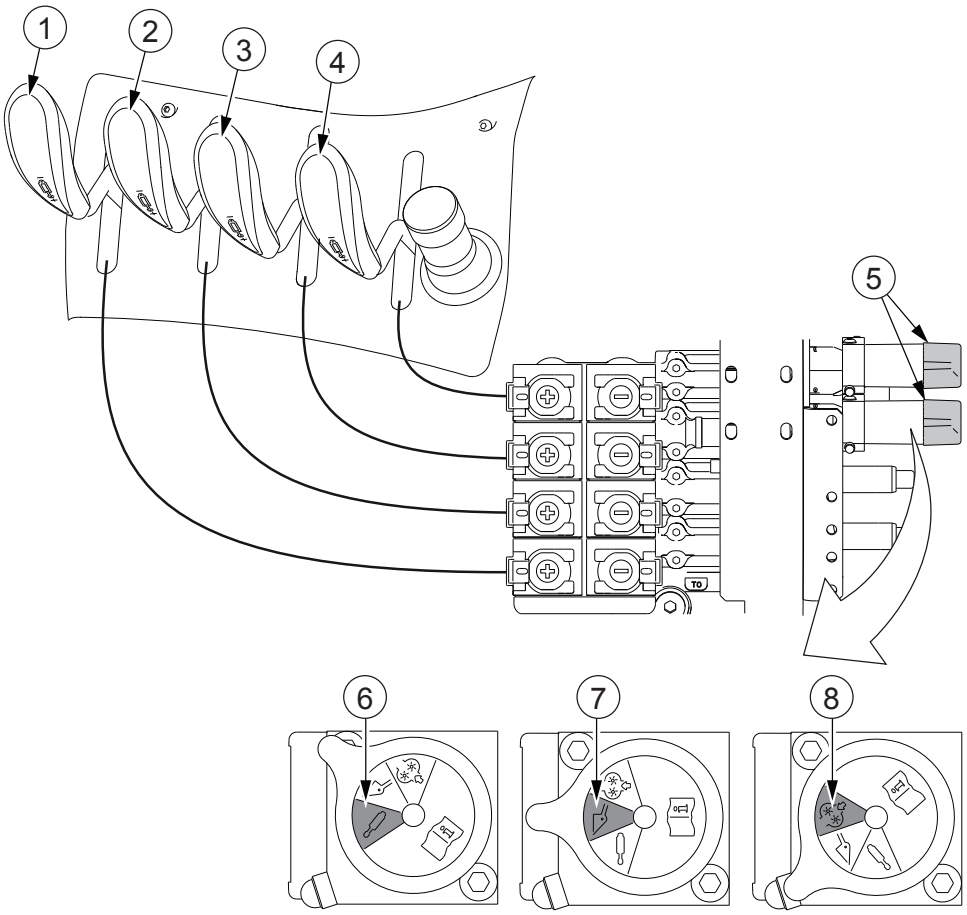
The tractor is equipped with an auxiliary hydraulic return coupling 1/2” (12,5 mm).

When the front linkage has been connected to the rear valve, the tractor is equipped with the front linkage shut-off valve.

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3.14.1 Controlling the auxiliary hydraulics rear valves

You can control the auxiliary hydraulics rear valves with the control levers.



1. Control lever for the auxiliary hydraulics rear valve 1
2. Control lever for the auxiliary hydraulics rear valve 2
3. Control lever for the auxiliary hydraulics rear valve 3 (optional)
4. Control lever for the auxiliary hydraulics rear valve 4 (optional)
5. Valve mode selector (optional)
6. Kick-out mode (optional)
7. Spring return mode (optional)
8. Position lock mode (optional)

- **To use the lifting function, pull the control lever for the auxiliary hydraulics rear valve backwards.**
- **To use the lowering function, push the control lever for the auxiliary hydraulics rear valve forward.**

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- **To use the floating position:**

  The floating position can be used in every mode of the adjustable valves. The floating position is past the extreme position of the lever:
  - **To activate the floating position, push the control lever for the auxiliary hydraulics rear valve past the extreme position with increased force.**

    This locks the lever to the floating position.
  - **To deactivate the floating position, return the control lever for the auxiliary hydraulics rear valve manually to the middle position.**

- **To use the position lock:**

  The position lock is in the extreme position of the lever:
  - **To activate the position lock, push or pull the control lever for the auxiliary hydraulics rear valve to the extreme position.**

    Do not push the control lever past the extreme position as it activates the floating position.

    With an adjustable valve, the valve mode selector must be in the position lock mode or kick-out mode.
  - **To deactivate the position lock, return the control lever for the auxiliary hydraulics rear valve manually to the middle position.**

- **To use the spring return on adjustable valve:**
  - **To activate the spring return, turn the valve mode selector to the spring return position.**
  - **Push or pull the control lever for the auxiliary hydraulics rear valve.**

    The lever returns to the middle position when released.

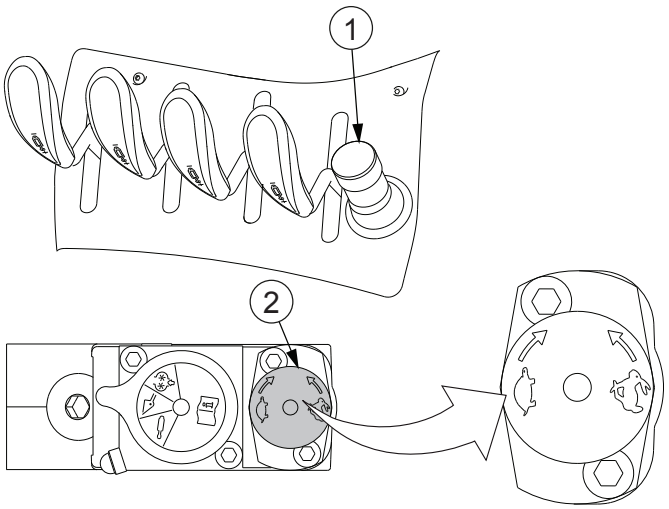
- **To use the kick-out on adjustable valve**
  - **To activate the kick-out, turn the valve mode selector to the kick-out position.**
  - **Push or pull the control lever for the auxiliary hydraulics rear valve to the extreme position.**

    The kick-out is on.
  - **To deactivate the kick-out, return the control lever for the auxiliary hydraulics rear valve manually to the middle position.**

3.14.1.1 Adjusting the flow control

The flow control adjustment is in the adjustable valves (optional). With the flow control adjustment, you can simultaneously use the auxiliary hydraulics and rear linkage. The flow control valve adjustment knob in the cab functions with the valve lever next to it.

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1. Flow control adjustment knob in the cab (optional)
2. Flow control adjustment knob on the valve (optional)

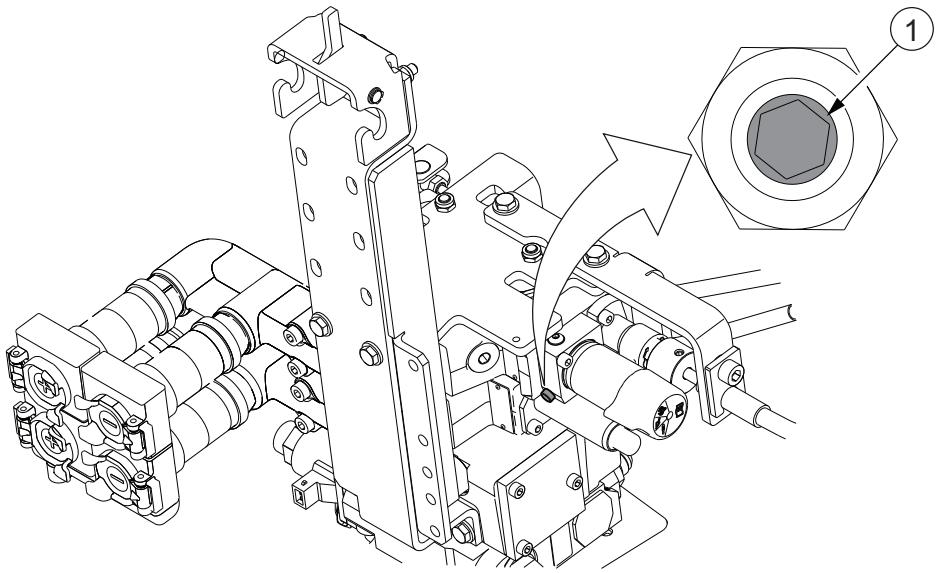
- **To increase the oil flow in the valve, rotate the flow control adjustment knob counterclockwise.**

  Adjust the flow control only when the control lever is in the middle position.

- **To decrease the oil flow in the valve, rotate the flow control adjustment knob clockwise.**

3.14.1.2 Adjusting the kick-out pressure

You can adjust the kick-out pressure between 100-200 bar.



1. Kick-out pressure adjustment screw

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1. **Start the engine and set it to low idle speed.**
2. **Set the valve to the kick-out mode.**
3. **Check the adjustment of the kick-out pressure by operating the implement.**

   If the valve lever returns too easily, increase the kick-out pressure. If the valve lever does not return as intended, decrease the kick-out pressure.
4. **If necessary, adjust the kick-out pressure:**

   Use an 1.5 mm allen key. One turn of the adjustment screw has an effect of about 12,5 bars to the kick-out pressure.
   - **To increase the kick-out pressure, rotate the adjustment screw clockwise.**
   - **To decrease the kick-out pressure, rotate the adjustment screw counterclockwise.**
5. **Check the adjustment of the kick-out pressure by operating the implement with the actual working RPM.**

   The kick-out function may not work as desired, for example, with a reversible plough. When the plough is being turned, the pressure may rise to the maximum and release the kick-out function. In addition, certain implements may produce pressure spikes and thus release the kick-out function during the working phase.

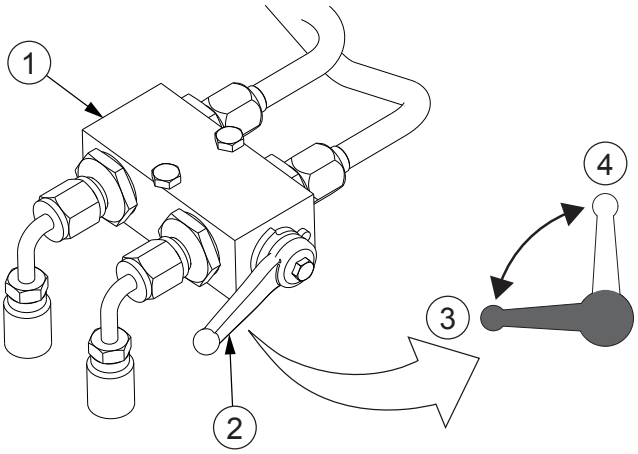
3.14.2 Using the front linkage shut-off valve

If the front linkage (optional) is connected to the rear valves, the tractor is equipped with a shut-off valve. With the shut-off valve you can open and close the oil flow to the front linkage, thus enabling to connect two implements to the same valve. The shut-off valve is located on the top of the rear valves.



WARNING: When the front linkage is being connected to the rear valve, make sure there is no load on the front linkage or rear implement connected to the same valve. The load on the front linkage or rear valve implement discharges when the shut-off valve lever is turned. This may cause the implements to move abruptly.

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1. Shut-off valve
2. Shut-off valve lever
3. Lever in front linkage position
4. Lever in rear valve position

- To use the front linkage:
  - Disconnect quick couplings from the rear valve to which the front linkage shut-off valve is connected.
  - Pull the shut-off valve lever to the horizontal position.
- To use the rear valve, push the shut-off valve lever to the top position.

3.14.3 Connecting to the valves

3.14.3.1 Using quick couplings

1. Start the engine.
2. Release the load from the auxiliary hydraulics (especially from the hydraulic cylinders).

   WARNING: When the front linkage is being connected to the rear valve, make sure there is no load on the front linkage or rear implement connected to the same valve. The load on the front linkage or rear valve implement discharges when the shut-off valve lever is turned. This may cause the implements to move abruptly.

3. Stop the flow through the auxiliary hydraulics valves by setting the control levers to the middle position.

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4. **Activate the floating positions on the needed valves.**

   WARNING: Before connecting or disconnecting the quick couplings, adjust the valves into the floating position (the tractor has to be running and the parking brake engaged).

   NOTE: Make sure there is no load on valves as the load will come down when setting the valves to the floating position.

   The valves go to the floating position, and the pressure exhausts from the quick couplings.

5. **Stop the engine.**

6. **Deactivate the floating position on the needed valves.**

7. **Attach or release the quick couplings.**

   DANGER: When connecting auxiliary cylinders and hydraulic motors, ensure that the hoses are attached to the correct couplings. If you attach the hoses incorrectly, the functions are reversed.

   IMPORTANT: Use only couplings that comply with the standards.

   IMPORTANT: Clean the quick couplings thoroughly before attaching any auxiliary hydraulic equipment. The caps on the couplings must be fitted when the auxiliary equipment is not attached.

   NOTE: When attaching implements to the auxiliary hydraulics, connect the return coupling of the implement to the return coupling of the tractor.

   NOTE: Make sure that the quick coupling does not leak after disconnecting the hose.

8. **Start the engine.**

   WARNING: Do not transport anything on the auxiliary hydraulic valves while driving on the road. The load, trailer link steering and such have to be locked (for example mechanically).

3.14.3.2 Using a hydraulic valve as a single-action valve

You can use a hydraulic valve as a single-action valve for tipping, for example.

WARNING: Make sure that the valve for tipping does not have the position lock on.

When using a hydraulic valve as a single-action valve, connect the hose of the tipping device to the (+) coupling of the used valve.

1. **To set pressure to the working device, move the respective valve control lever to the (+) direction.**
   The tipping device moves up.

2. **To remove the pressure from the working device, move the respective valve control lever to the (-) direction.**

   You can also use the floating position for this action. This way you do not pressurise the hydraulic pump.
   The tipping device moves down.

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3.14.3.3 Connecting an external hydraulic motor to the auxiliary hydraulics

You can attach a hydraulic motor to the tractor auxiliary hydraulics. The motor can be rotated in one or both directions.

- **To rotate the hydraulic motor in only one direction, attach the return coupling to the tractor return coupling.**

  NOTE:

  If the hydraulic motor has been connected to the (–) port, you can stop the motor in a smoother way by setting the valve to the floating position.

- **To rotate the hydraulic motor in both directions when you are attaching the couplings to both (+) and (-) ports, mount the separate shock valves to the hydraulic motor if they are not already standards in the hydraulic motor.**

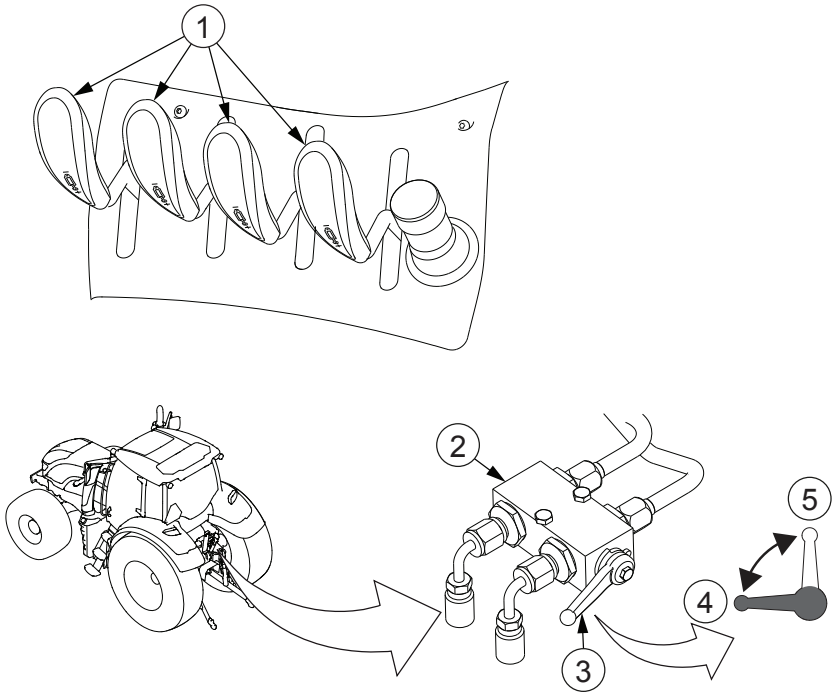
NOTE: Pay attention to the transmission and hydraulics oil temperature, because high temperatures can shorten the oil life time or damage the hydraulic pump or the hydraulic motor. You can follow the transmission and hydraulics oil temperature on the instrument panel display. Stop the engine if the maximum temperature is reached.

3.15 Front linkage

3.15.1 Using the front linkage connected to the rear valves

IMPORTANT: You have to detach the front loader before using the front linkage.

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1. Control lever for auxiliary hydraulics rear valve
2. Shut-off valve
3. Shut-off valve lever
4. Lever in front linkage position
5. Lever in rear valve position

- **Disconnect quick couplings from the rear valve to which the front linkage shut-off valve is connected.**

  WARNING: When the front linkage is being connected to the rear valve, make sure there is no load on the front linkage or rear implement connected to the same valve. The load on the front linkage or rear valve implement discharges when the shut-off valve lever is turned. This may cause the implements to move abruptly.

- **Pull the front linkage shut-off valve to the horizontal position.**
- **Pull the control lever backward to move the front linkage up.**
- **Push the control lever forward to move the front linkage down.**

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- **If the implement follows the ground, use the floating position.**
  - **To activate the floating position, push the control lever past the extreme position with increased force.**

    This locks the lever to the floating position
  - **To deactivate the floating position, return the control lever manually to the middle position.**

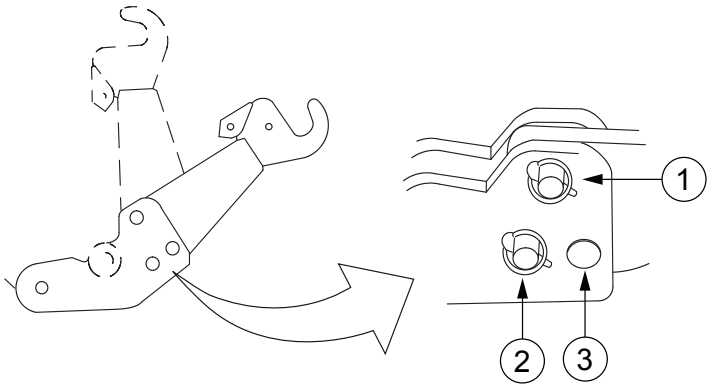
  IMPORTANT: Always use the floating position for implements following the ground contour. Otherwise there is a risk that the implement may get damaged or the traction of the wheels may be lost.

3.15.2 Setting front linkage lifting link positions

You can set the lifting links to different positions mechanically by changing the positions of the fastening bolts.

CAUTION: When driving on public roads, with or without an implement, always lift the front linkage fully up.

IMPORTANT: When using the front loader, the front linkage lifting links must be folded to the transport position.



1. Fastening hole 1
2. Fastening hole 2
3. Fastening hole 3

1. **Set the lifting links to the desired position and fit the fastening bolts to the holes.**

Lifting link position	Fastening bolt location
Working	Fastening bolts are fitted in holes 1 and 2 or 1 and 3.
Transport	Lifting links are folded fully up and fastening bolts are fitted in holes 1 and 3.
Floating	Fastening bolt is fitted in hole 1 only. **NOTE**: When using the mechanical floating position, the maximum load on the ball hitch couplers is 25 kN.

2. **Secure the fastening bolts with locking pins.**

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3. When you drive on public roads and there is an implement on the front linkage covering the headlights, switch the upper headlights on (optional equipment).

3.16 Valtra front loader

3.16.1 Valtra front loader



WARNING: Check that all screws are tightened before using the front loader.



WARNING: Always look at the implement. Objects can fall or roll backwards onto the driver when the loader is raised. Only lift loads which can be contained in, and are intended for, the specific implement.



WARNING: The risk of overturn increases as the loader is raised. Be extra careful on slopes when operating the loader. Always carry the loader as low as practical for the conditions.

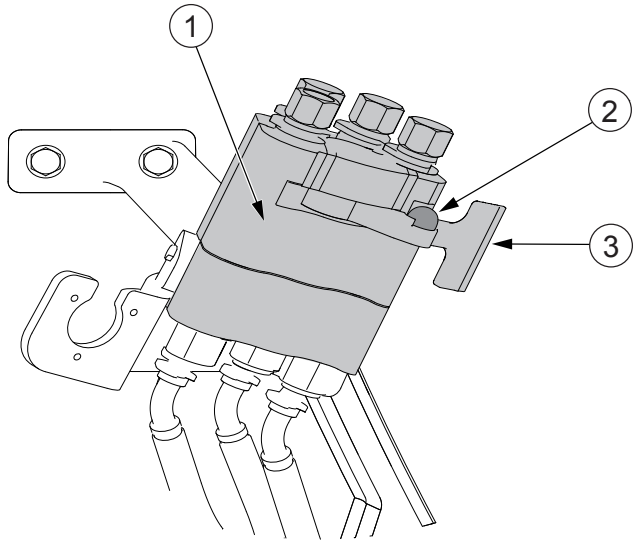
NOTE: Install the Valtra front loader according to the instructions in the Valtra loader Operator's Manual. If you want to install any other front loader, contact your local technical support.

IMPORTANT: When using the front loader, the front linkage lifting links must be folded to the transport position.

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3.16.2 Using the Valtra Quick front loader coupling device

The quick coupling device is optional equipment.



1. Hose multicoupler
2. Lock button
3. Lever

CAUTION: Hold on to the lever firmly as the pressure may cause the coupler to hit your hand.

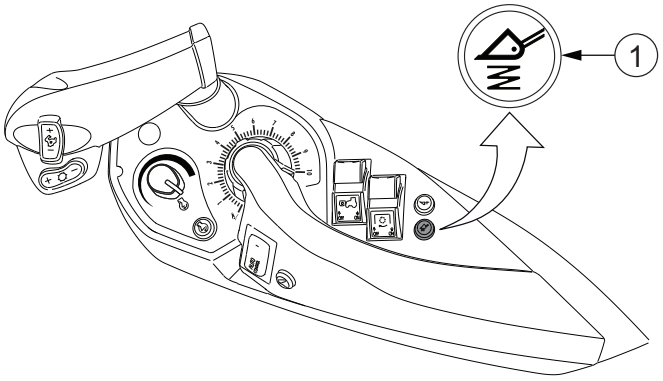
- **To release the hose multicoupler, press down the lock button and turn the lever to the open position.**
- **To attach the multicoupler, turn the lever to the closed position.**

  The lock button pops up.

3.16.3 Using Softdrive

With the Softdrive function, you can connect the pressure accumulators to the cylinder circuits of the loader barrier. This means that when you drive, the pressure accumulators even out the pressure peaks coming from the load on the loader. This makes driving smoother and the stress on the loader and tractor is reduced. The Softdrive function is optional.

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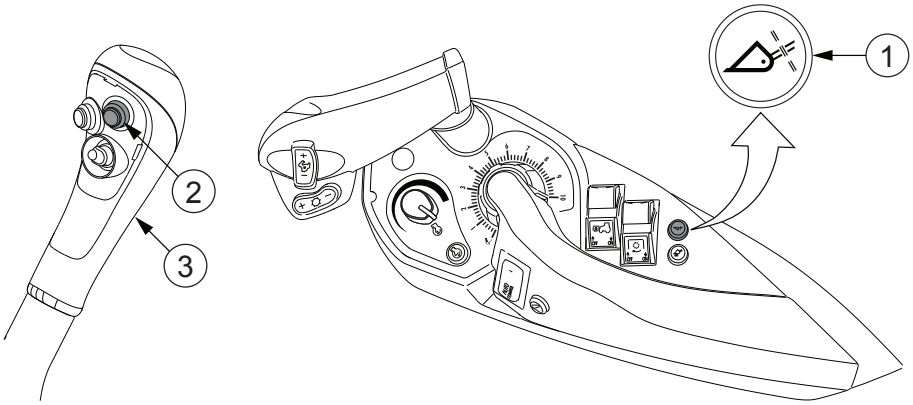
1. Button for Softdrive

- **To activate or deactivate the Softdrive function, press the button for Softdrive.**

  When activated, the light of the button is lit green.

  NOTE: You can keep Softdrive activated during most working activities. It is recommended that you deactivate Softdrive only if special precision is required.

3.16.4 Locking the equipment



1. Button for hydraulic implement locking (optional)
2. Upper ErgoDrive joystick push button
3. ErgoDrive joystick

- **To lock the equipment to the loader frame:**
  - **Simultaneously press the button for hydraulic implement locking and the upper joystick push button, and move the joystick to the left.**
- **To release the equipment from the loader frame:**
  - **Simultaneously press the button for hydraulic implement locking and the upper joystick push button, and move the joystick to the right.**

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3.17 Power take-off

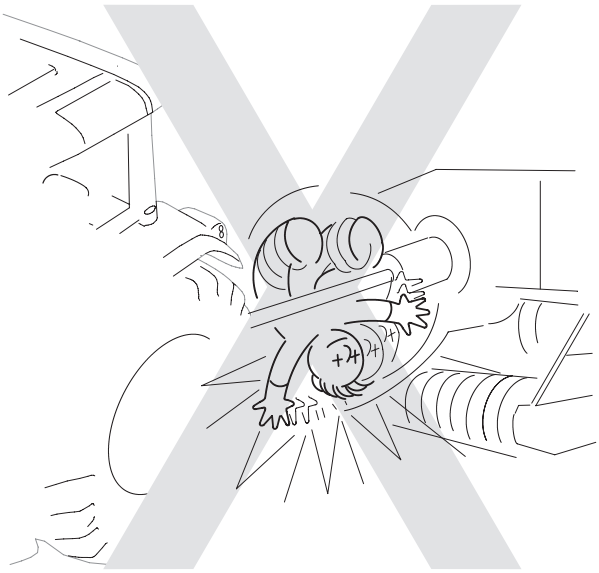
3.17.1 Attaching implements to the power take-off

Before attaching implements to the tractor power take-off (PTO), make sure the implement is designed for the used PTO speed (540 rpm or 1 000 rpm).

CAUTION: Observe all safety precautions in any operation involving implements driven by the PTO.

WARNING: Stop the engine and disengage the PTO before attaching any implement to the tractor. Check that the implement's working area is clear before engaging the PTO.

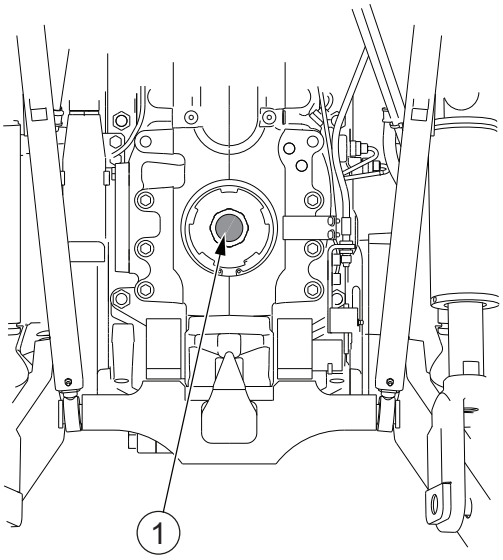
WARNING: When a PTO-driven implement is being used, no personnel are allowed near the PTO drive shaft. Service work on the PTO drive shaft should be carried out with the PTO disengaged, the engine stopped and the ignition key removed from the ignition switch.



WARNING: After the PTO is disengaged, the implement continues to rotate for some time (regardless of braking). Do not approach the implement until it has stopped completely.

WARNING: The cover over the PTO drive shaft end should always be attached when the PTO is not in use.

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1. PTO cover

IMPORTANT: Make sure that the joint shaft angles are not exceeded.

IMPORTANT: Do not exceed the maximum output durability of the PTO shaft.

- **Make sure that the length of the PTO drive shaft is correct for the PTO-driven implements to be used.**

  The shaft must be able to work at full deflection vertically and horizontally.
  IMPORTANT: A shaft that is too long can cause damage.

- **Attach the PTO-driven implement to the tractor.**

  IMPORTANT: Attach the implement to the tractor before connecting the power take-off (PTO) drive shaft between the tractor and the implement. Otherwise, the implement can start to rotate with the PTO drive shaft.

- **Install the PTO drive shaft according to the manufacturer's instructions.**

  DANGER: When fastening the power take-off (PTO) drive shaft between the tractor and the implement, check that its guard is undamaged. Attach the guard to a stationary part of the tractor frame or implement.

- **Engage the PTO at a low engine speed to protect the PTO.**

- **In freezing weather, ensure that the transmission oil is warm before engaging the PTO.**

  Before engaging the PTO in freezing weather:

  - let the engine and transmission oil warm up for a little while at low engine revs. To speed up the transmission oil warming, adjust the engine speed to 1 500 rpm and keep the steering wheel turned to the extreme position.

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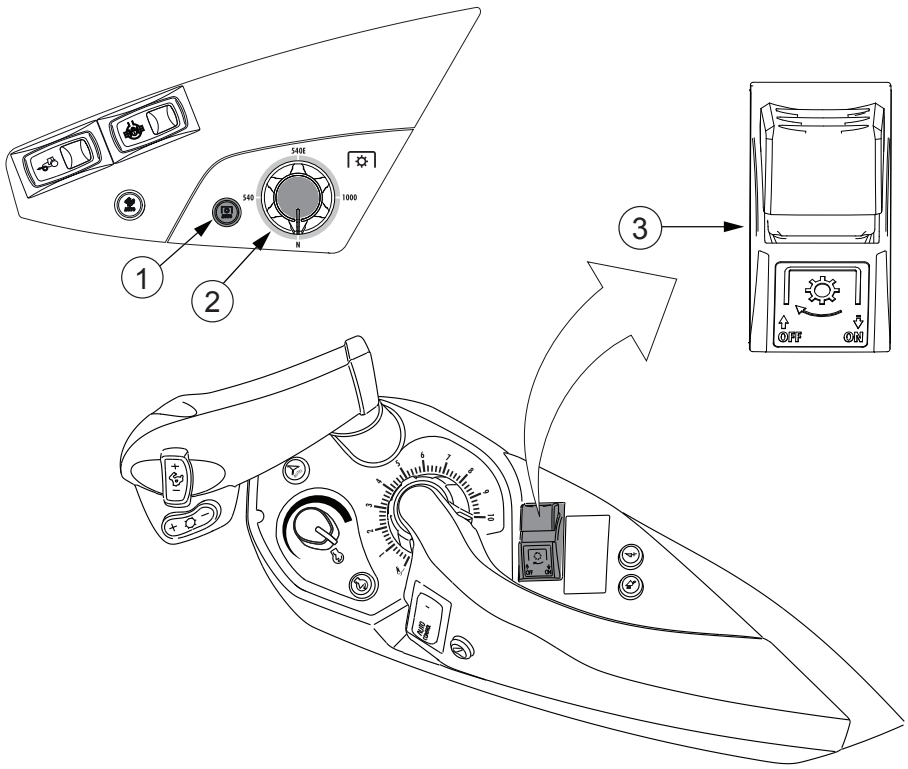
- **When engaging the PTO and the attached implement allows it, wait approximately 5 seconds until the clutch of the PTO shaft is totally engaged before loading it.**

3.17.2 Rear power take-off

You can use power take-off (PTO) to transmit power from the tractor to an implement.

The PTO shaft is a splined driveshaft that is easily connected and disconnected.

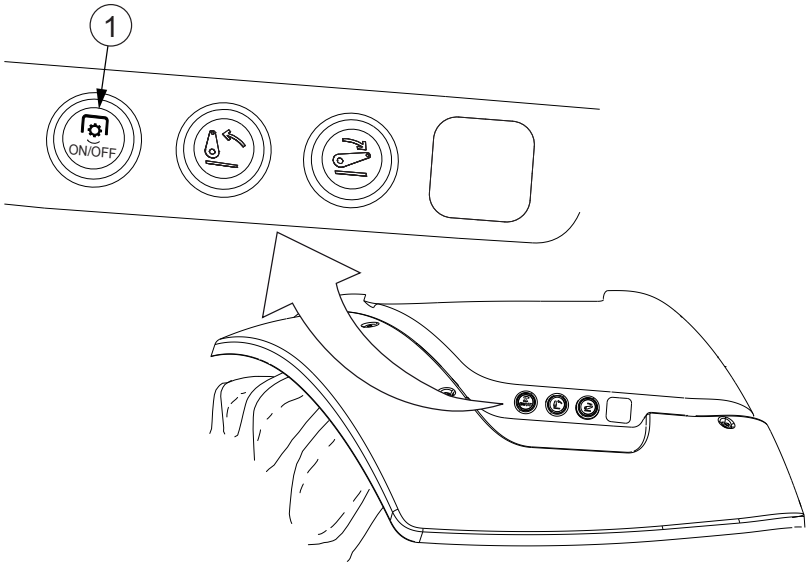
The rear power take-off controls are the following:



1. Switch for rear PTO
2. Button for rear PTO automatic start/stop
3. Speed control knob for rear PTO

The rear PTO on/off push button on the rear mudguard is optional:

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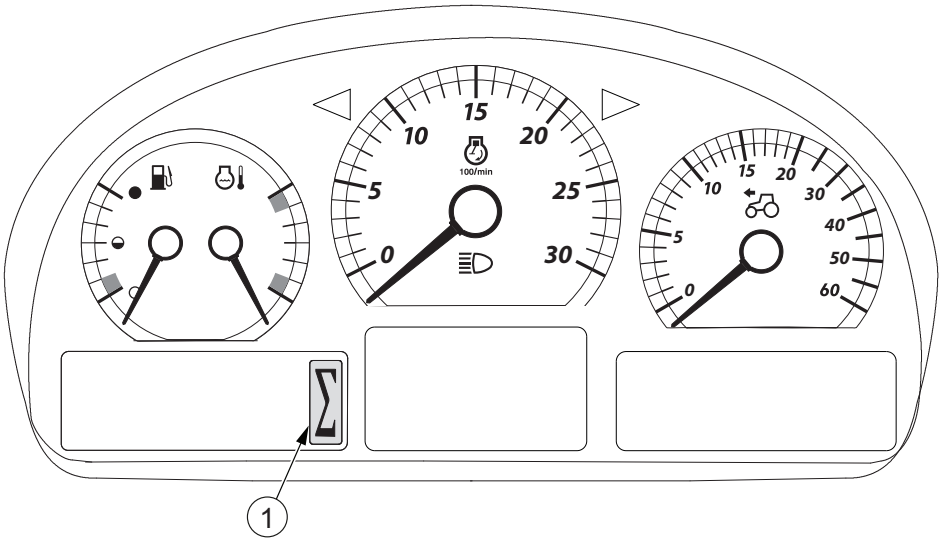
1. Rear PTO on/off push button

Sigma Power

In models T144 H, T154 H and T174e H, the Sigma Power control system is extra equipment.

The Sigma Power control system gives extra power for PTO work. When required for PTO work, the engine will automatically provide up to 30 hp more power.

The Sigma Power activates automatically when the power transferred through the PTO rises high enough. As a sign of this, the Sigma Power symbol is lit on the instrument panel.



1. Sigma Power symbol

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3.17.2.1 Recommended rear power take-off shafts

Both power take-off (PTO) nominal speeds can be used regardless of the type of shaft installed on the tractor.

Implements for 540 rpm (at engine speed of approximately 1890 rpm)

Normally a 6-spline shaft (optional) with a diameter of 35 mm is recommended.

The ISO norm does not limit the power of a 540-rpm 6-spline PTO shaft with a diameter of 35 mm.

IMPORTANT: For power over 67 hp (50 kW), use a 1000-rpm output to ensure the durability of the PTO shafts.

Implements for 1000 rpm (at engine speed of approximately 1900 rpm)

Normally a 21-spline shaft (optional) with a diameter of 35 mm is recommended.

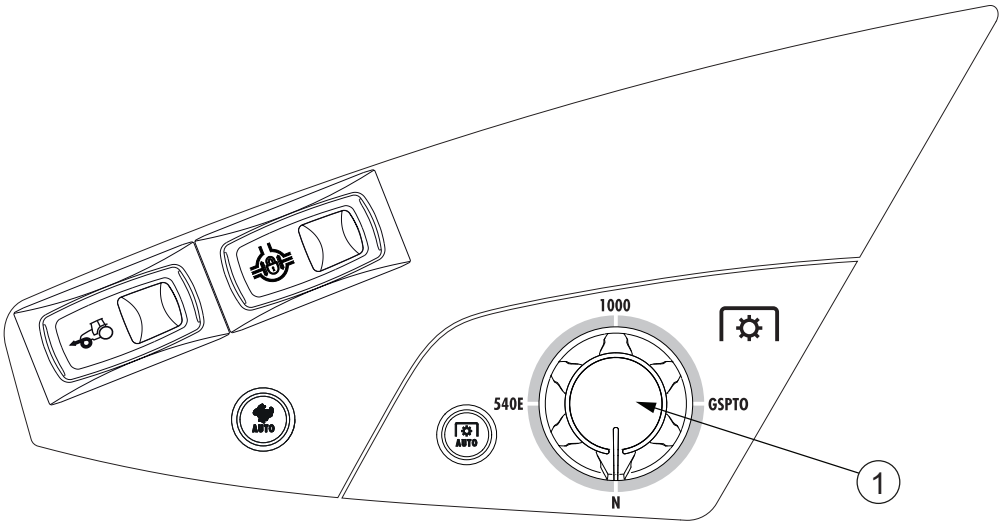
Heavy use

Normally a 20-spline shaft with a diameter of 45 mm is recommended. If necessary, a torque-limiting clutch with the maximum torque of 1000 Nm should be used.

3.17.2.2 Activating rear power take-off

Before you can start the rear power take-off (PTO), you have to activate one of the rear PTO speed ranges available in your tractor.

IMPORTANT: Do not exceed the maximum PTO speed of the implement defined by the implement manufacturer.



1. Speed control knob for rear PTO

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- **Select the PTO speed with the speed control knob.**

  The tractor has one of the following PTO speed range alternatives:

  - 540/1000
  - 540/540E/1000
  - 540/1000/1000E
  - 540E/1000/GSPTO
  - 540E/1000E/GSPTO

  IMPORTANT: When using the speed 540E, the shaft speed of 540 rpm is achieved with an engine speed of approximately 1520 rpm. If the engine speed is accelerated, the PTO shaft speed can rise up to 800 rpm.

- **Activate the ground speed PTO (optional) by turning the speed control knob to the GSPTO position.**

If the system is unable to engage the desired speed range, it will try to engage it again automatically. Another speed range is first engaged and then a new attempt is made on the desired speed range. If it still does not engage, you can restart the engaging operation by first turning the speed selection knob to another position and then back to the desired position.

The indicator light 

on the instrument panel has five different modes to describe the rear PTO operation.

- The light is lit when the PTO is on or the proportional ground speed power take-off has been engaged.
- The light blinks quickly if the PTO is rotating but no longer engaged.
- The light blinks with normal speed when the PTO is not rotating and the gear selected with the speed control knob is engaged.
- The light blinks slowly if the PTO is not rotating and the gear selected with the speed control knob is not engaged.
- The light is not lit when the PTO is not on and the speed control knob is in the N position.

3.17.2.3 Starting rear power take-off

You can start the power take-off (PTO) after you have activated the PTO by selecting the PTO speed with the speed control knob.

You can start the rear PTO in two ways:

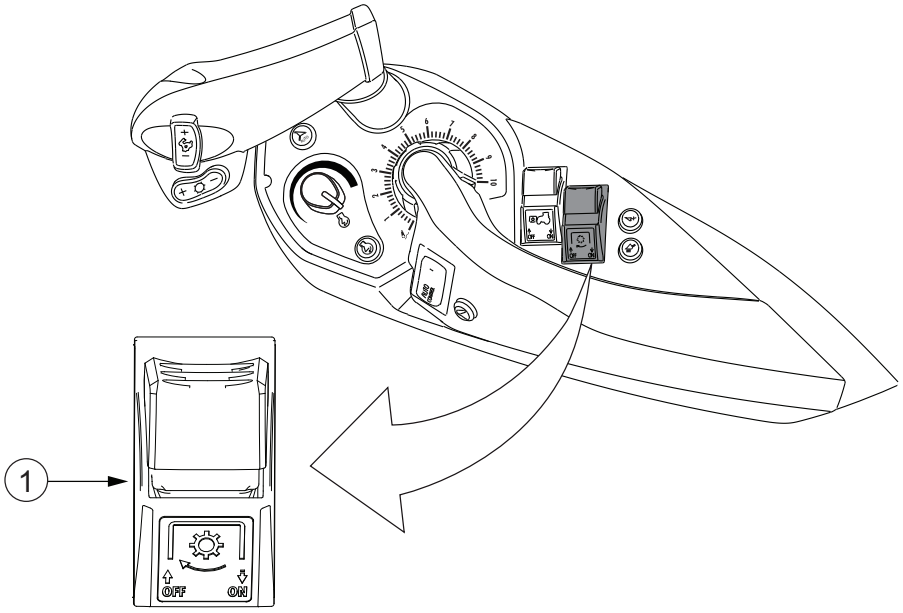
- By using the switch for rear PTO. The switch for rear PTO has two positions, on and off, and it returns to the centre position automatically.
- By using the rear PTO on/off push button (optional) on the rear mudguard.

If the tractor is equipped with front PTO (optional), the front PTO switch on the armrest is located in front of the rear PTO switch.

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- **Start the rear PTO by pressing the switch down and pulling it backward.**

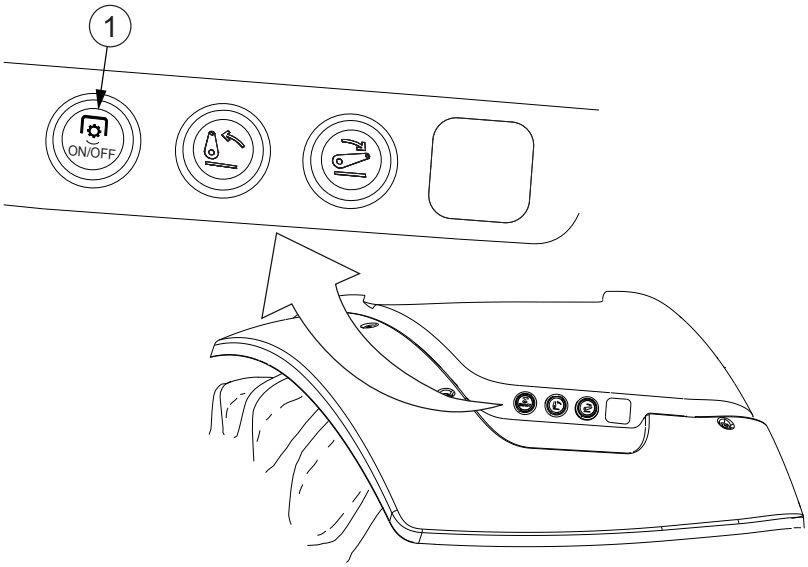
  The indicator light on the proline instrument panel is lit.



1. Switch for rear PTO

- **To start the rear PTO with the rear PTO on/off push button (optional) on the mudguard, press the button continuously for at least 3 seconds.**

  The PTO starting begins after 0.5 seconds. If the pressing is interrupted during these 3 seconds, the PTO stops.



1. Rear PTO on/off push button

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3.17.2.4 Stopping rear power take-off temporarily

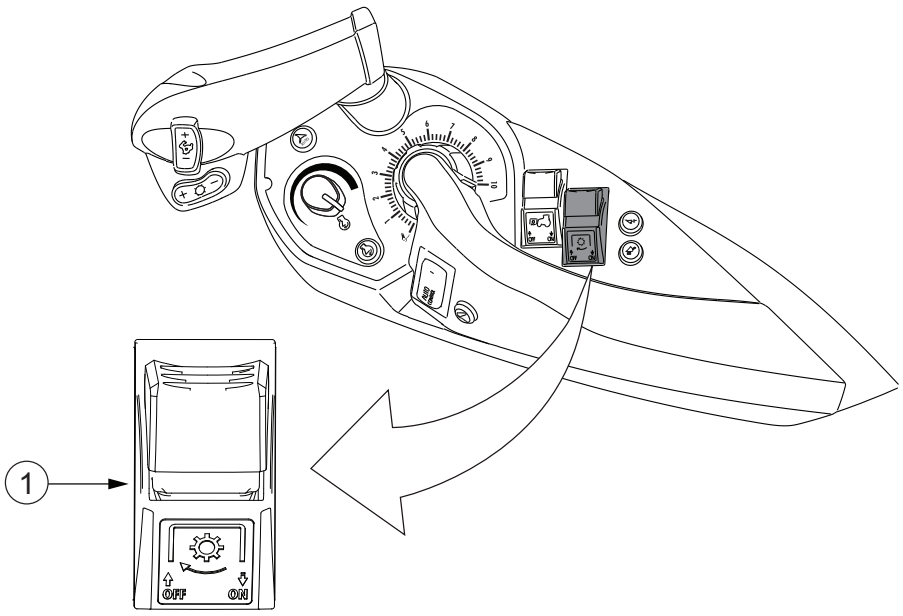
You can stop the rear power take-off (PTO) temporarily in the following ways:

- By using the switch for rear PTO.
- By using the speed control knob for rear PTO.
- By using the rear PTO on/off push button (optional) on the rear mudguard.

WARNING: When you do not need the PTO, keep the PTO switch in the N position.

WARNING: Use the PTO speed control knob for the actual disengagement and engagement of the PTO. For example, when leaving the cab, turn the knob to the N position, except when using the PTO on/off push button on the mudguard (optional).

- **Press down the switch for rear PTO and push it forward.**



1. Switch for rear PTO

  - If the PTO is in use, so that the indicator light on the proline instrument panel is lit, you can stop the PTO also by pressing the switch and pulling it backward.

- **Turn the PTO speed control knob to the N position to disengage the PTO.**

  This is useful when you must stop the PTO fast, for example in an emergency.

- **Press the rear PTO on/off push button on the rear mudguard once.**

  After this, the rear PTO on/off push button operates as a start button when pressed for more than 3 seconds.

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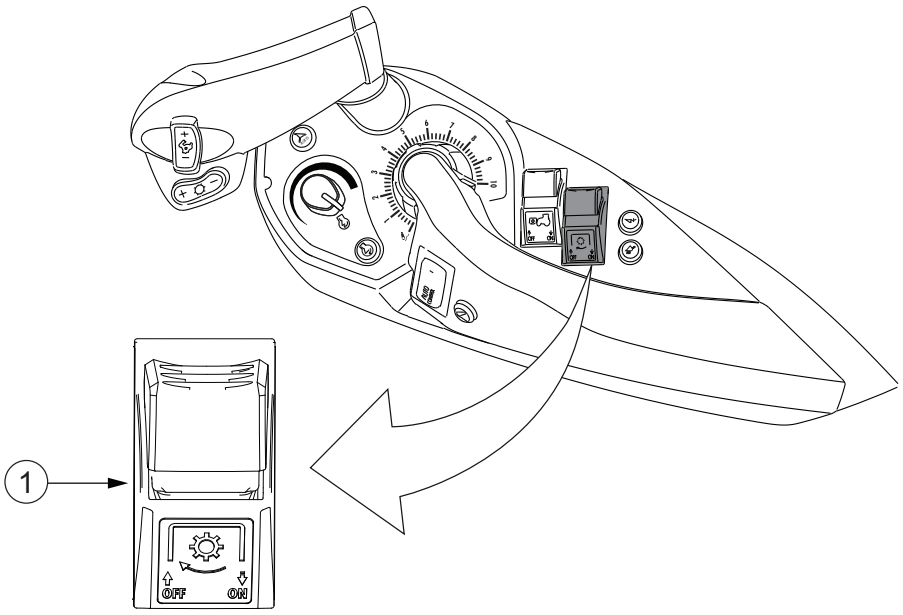
The indicator light  on the proline instrument panel blinks, indicating that the PTO speed control knob is engaged.

3.17.2.5 Deactivating rear power take-off

WARNING: When you do not need the PTO, keep the PTO switch in the N position.

WARNING: Use the PTO speed control knob for the actual disengagement and engagement of the PTO. For example, when leaving the cab, turn the knob to the N position, except when using the PTO on/off push button on the mudguard (optional).

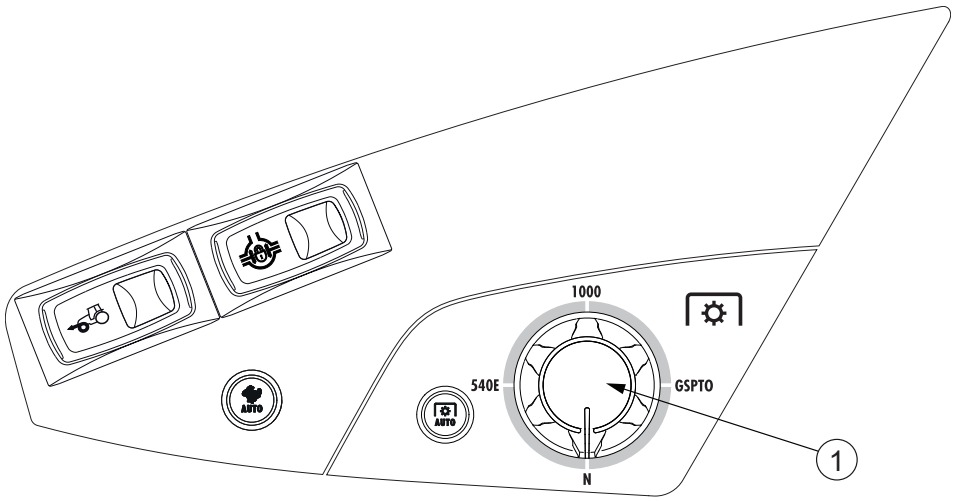
- **Press down the rear PTO switch and push it forward.**



1. Switch for rear PTO

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- **Turn the PTO speed control knob to the N position (PTO deactivated).**



1. Speed control knob for rear PTO

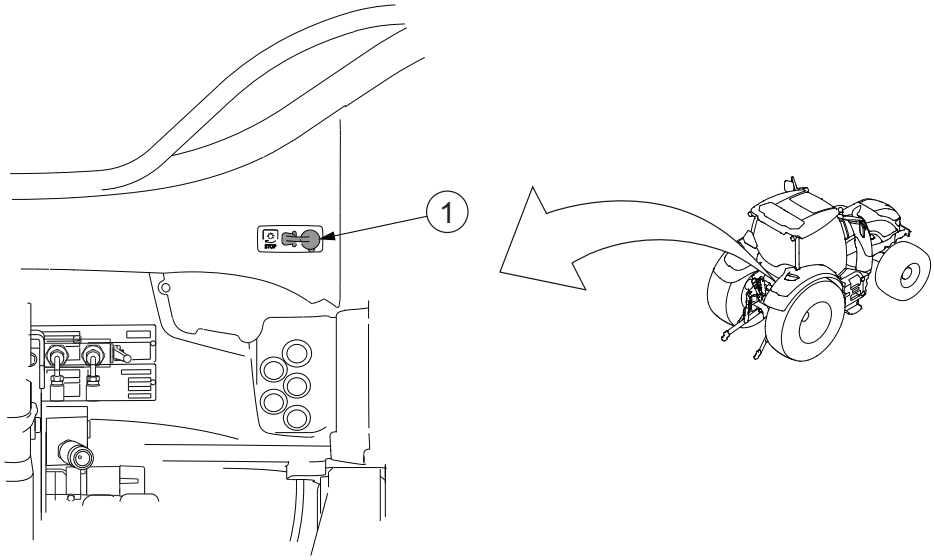
The rear PTO is deactivated, and the indicator light on the instrument panel goes off.

3.17.2.6 Stopping the rear power take-off in emergency

In case of emergency, you can stop the rear power take-off (PTO) either by the speed control knob for rear PTO or by the PTO emergency stop socket on the rear wall outside the cab.

Before you start operating PTO-driven implements from outside the cab, make sure you have the PTO emergency stop socket within reach. If you cannot reach the PTO emergency stop socket from your operating position, it is recommended that you attach a wire to the socket by which you can pull it out from distance.

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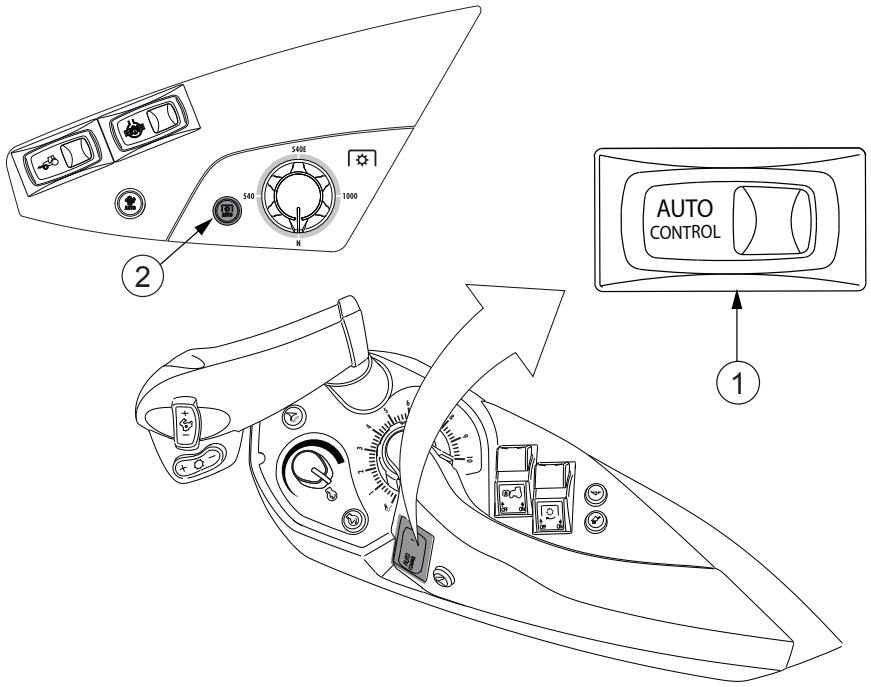
1. PTO emergency stop socket

- To stop the PTO from inside the cab, turn the speed control knob for rear PTO to the N position to deactivate the PTO.
- To restart the PTO:
  - Activate the PTO speed range by the speed control knob for rear PTO.
  - Start the PTO by the rear PTO switch.
- To stop the PTO from outside the cab, pull out the PTO emergency stop socket.
- To restart the PTO after stopping it from the PTO emergency stop socket:
  - Plug in the PTO emergency stop socket.
  - Stop the tractor and turn off the power.
  - Turn on the power and restart the tractor.
  - Restart the PTO.

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3.17.2.7 Using the rear power take-off automatic start/stop

The rear power take-off (PTO) automatic start/stop is useful in headland turns, for example, where the implement needs to be raised temporarily and then lowered back.



1. Lifting/stop/lowering switch
2. Button for rear PTO automatic start/stop

- **Activate the PTO automatic start/stop by pressing the button for rear PTO automatic start/stop.**

  You can activate the PTO automatic start/stop only if the PTO is engaged and the linkage is not in the transport position.

  The light in the button is lit when the PTO automatic start/stop is activated.

  The PTO is stopped automatically when you have activated the automatic start/stop and set the lift/stop/lower switch to the transport position and when the linkage has raised the lower links to the position of at least 70% of the maximum lifting height. After an automatic stop, the light on the button and the display symbol start to blink, indicating that the PTO automatic start is standing by.

  The automatic start takes place only if the PTO has been stopped with the automatic start/stop. The PTO starts automatically if the driving speed is between 1 and 25 km/h, the linkage is lowered with the lifting/stop/lowering switch and the lower links have been lowered to 90% of the maximum lifting height.

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- **Deactivate the automatic start/stop in any of the following ways:**
  - Press the button for rear PTO automatic start/stop.
  - Use the switch for rear PTO.
  - Keep the linkage raised, that is, in the standby position for at least 90 seconds.

  The automatic start/stop is also deactivated if the driving speed at the moment of lowering the linkage is outside the speed limits 1–25 km/h. When the automatic start/stop is deactivated, the button is not lit.

3.17.2.8 Proportional ground speed power take-off

The proportional ground speed power take-off (PTO) is optional.

CAUTION: When using the proportional ground speed PTO, the speed of the PTO shaft varies according to the transmission speed of the tractor. When the tractor is reversed, the PTO shaft also rotates in the reverse direction.

The proportional ground speed PTO is primarily used in the A and B speed ranges. The proportional ground speed PTO is designed for the highest torque values of the speed ranges A and B. In speed ranges C and D, the driving speed easily exceeds the shaft's maximum rotating speed. In this case, the automatics actively limit the driving speed to 15 km/h. The engine speed sets to idle until the driving speed has decreased below the limit. A faster rotating speed could damage the propeller shaft between tractor and implement. The trailer should be equipped with a means of disconnecting the drive from the trailer.

IMPORTANT: Do not use the creeper gear together with the proportional ground speed PTO to increase traction force. There is a risk of damage to the transmission.

IMPORTANT: If the ground speed power take-off is activated and the PTO speed exceeds 1800 rpm, the buzzer alarms and message “SLOW DOWN, PTO SPEED TOO HIGH!” is shown on the instrument panel display. If this occurs, immediately decrease the rpm to prevent damage to the rotating parts of the PTO.

When the proportional ground speed PTO is activated, the maximum speed is limited to 15 km/h.

The proportional ground speed PTO can be engaged if the driving speed is 2 km/h or less. There is no speed limit for disengaging the ground speed PTO.

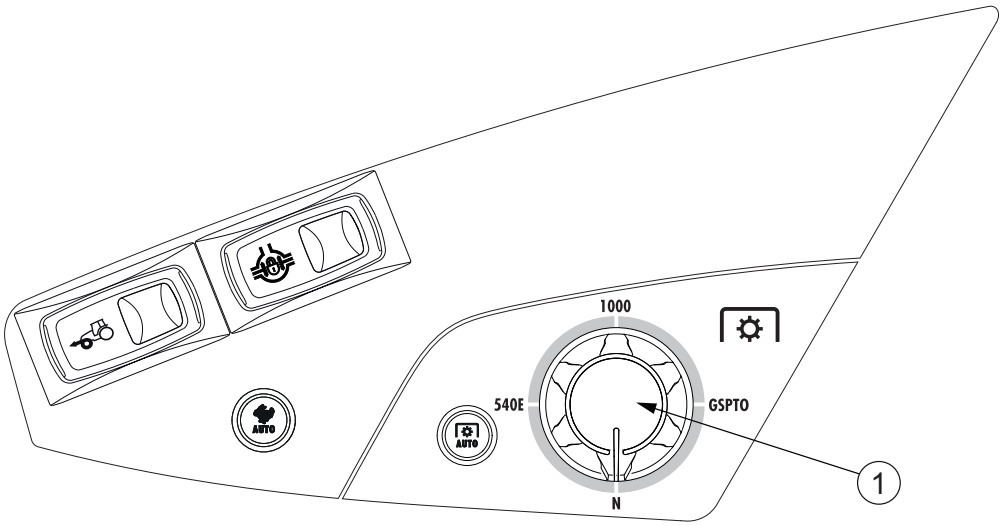
Before using a trailer with a powered axle, make sure that the drive is compatible with the PTO of the tractor. The speed of the trailer should be 0-3% lower than driving speed of the tractor.

For heavy proportional use it is recommended to use the 1¾” (45 mm) shaft.

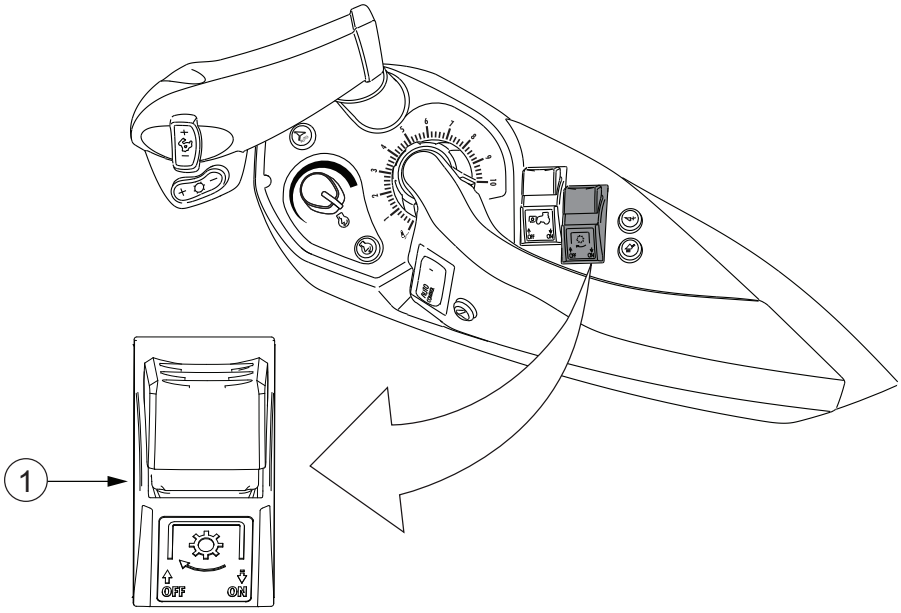
You can engage the ground speed PTO by turning the speed control knob to the GSPTO position and activate it by pressing the switch for rear PTO.

The activation and deactivation of the ground speed PTO is indicated in the proline instrument panel.

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1. Speed control knob for rear PTO



1. Switch for rear PTO

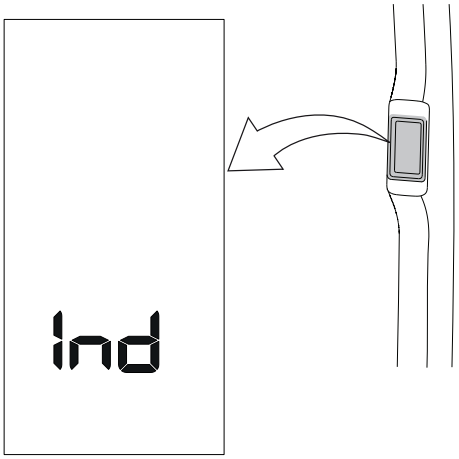
3.17.2.9 Adjusting the rear power take-off engagement

When working with heavily rotating implements, you can adjust the rear power take-off (PTO) engagement in the A-pillar display. The factory setting does not need to be changed for normal PTO use.

IMPORTANT: Make sure that the PTO shaft is suitable for heavy use.

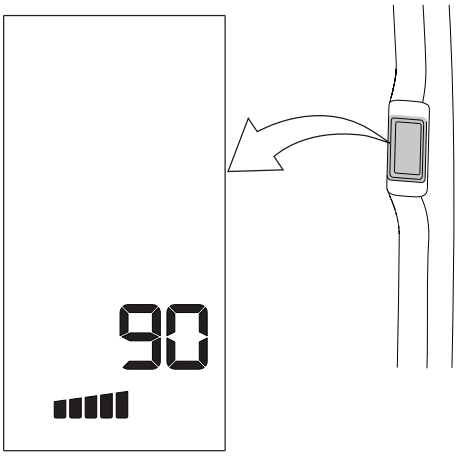
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1. Press to activate the A-pillar display.
2. Press **SET** to enter the settings menu.



The text “Ind” appears.

3. Press **SET** to enter the index list.
4. Scroll to the parameter to be changed with the up arrow or the down arrow.



The parameter number for the rear PTO engagement is 90.

5. Press **SET**.
6. Press the up arrow or the down arrow to change the parameter value.

   The value range is between 0–5, where:

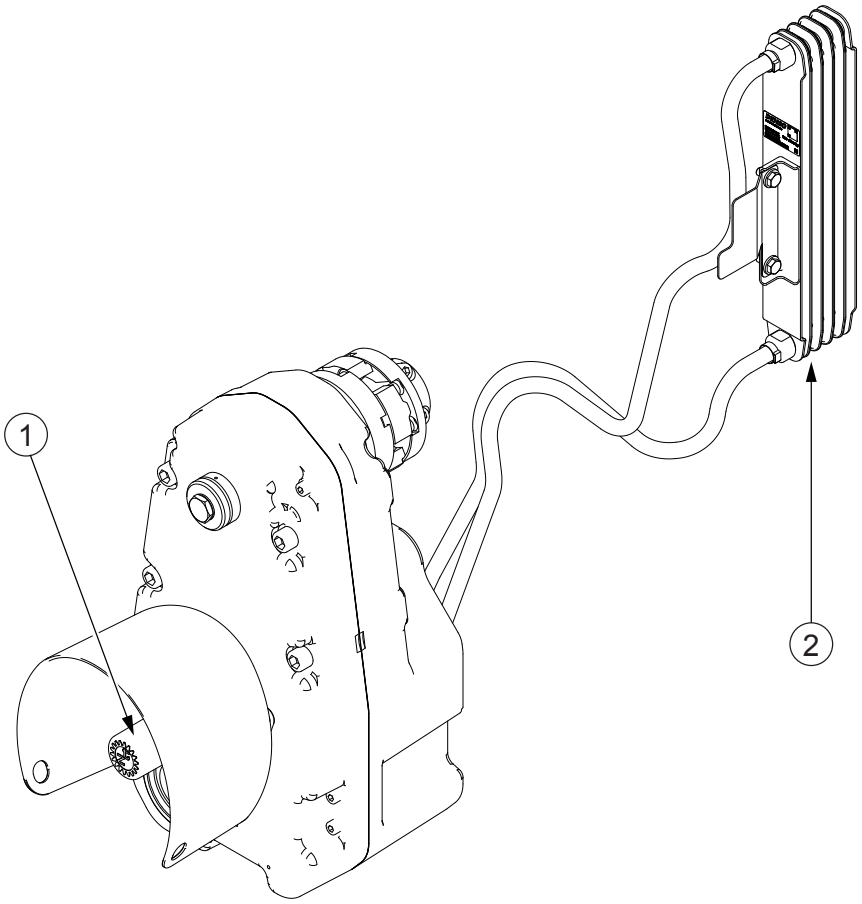
   - 0 is for light or normal implements (factory setting).
   - 5 is for heavy implements.

7. Press to save the value.
8. Press to leave the settings menu and save all changes.

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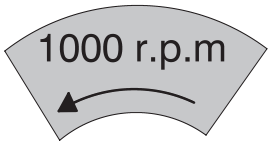
3.17.3 Front power take-off

Front power take-off (PTO) is only available with front linkage (extra equipment).



1. Front PTO shaft
2. Oil cooler

The front PTO shaft has a diameter of 35 mm with 6 splines. The front PTO is equipped with a pump inside the housing and an oil cooler to prevent overheating.



IMPORTANT: The front power take-off shaft's nominal rotating speed is 1000 rpm and the rotating direction is counterclockwise when viewed from the front. Check that the implement is compatible before attaching.

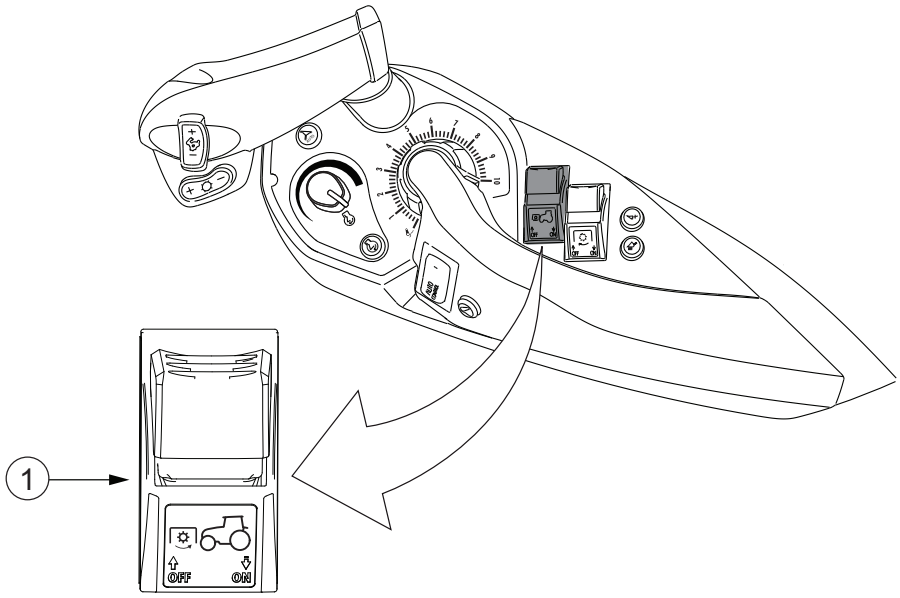
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IMPORTANT: The maximum allowed input torque for the front PTO gearbox is 1170 Nm and the nominal is 925 Nm.

IMPORTANT: Always make sure that the cardan shaft does not touch the hydraulic connectors at any working position.

3.17.3.1 Activating and deactivating front power take-off

The front power take-off (PTO) switch is spring-returned and has two positions, on and off.



1. Switch for front PTO

- **Start the front PTO by pressing down the switch for front PTO and pulling it backward.**
- **Deactivate the front PTO by pressing down the switch for front PTO and pushing it forward.**

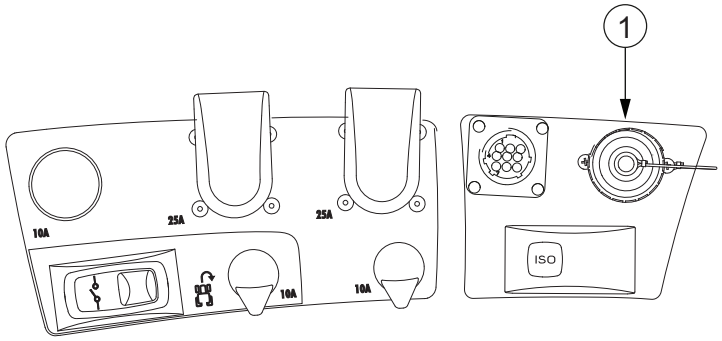
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3.18 Implement signal connection

3.18.1 Implement signal connector

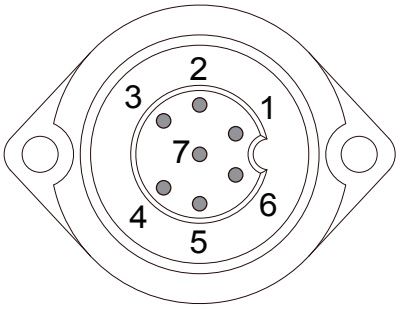
The implement signal connector (extra equipment) complies with the ISO 11786 standard.

The connector is located on the side panel in the cab.



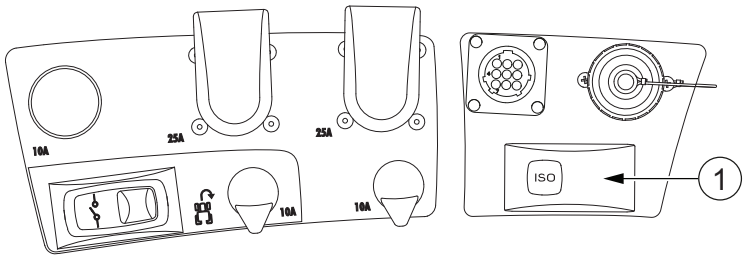
1. Implement signal connector

An implement connected to the connector can use the following tractor information:



1. Not in use
2. Transmission speed (wheel speed), 130 Hz/m/s
3. Rear power take-off (PTO) speed, (6 Hz/r/s)
4. Rear linkage, in work (< 1.5 V) / out of work (> 6.3 V)
5. Rear linkage position (0% = 0 V, 100% = 10 V)
6. Power supply (+12V, max 5A) (through the ignition switch)
7. Ground (GND)

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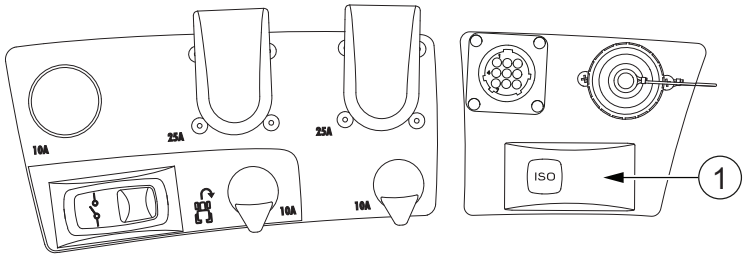


1. Indicator light for the implement signal connector

When the indicator light for the implement signal connector is green, the implement signal system is working normally. If light flashes there is an error in the system.

3.18.2 Resetting the implement signal connection

If the indicator light for implement signal connection (extra equipment) blinks, the system is in error mode and the connection must be reset.



1. Indicator light for implement signal connection

1. **Stop the tractor.**
2. **Turn off the power.**
3. **Turn on the power.**
4. **Start the tractor.**
5. **If the indicator light continues to blink, contact an authorised Valtra workshop.**

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3.19 ISOBUS implement control system

The Valtra ISOBUS implement control system (extra equipment) complies with the ISO 11783 standard.

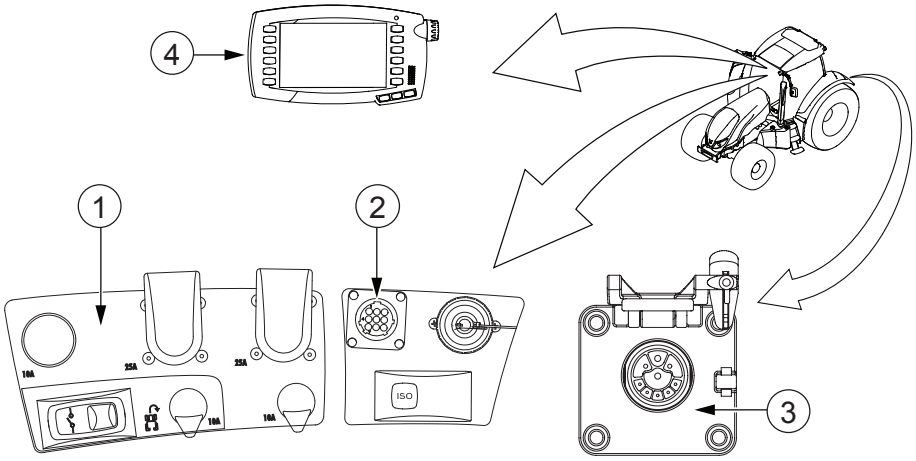
The system connects together the tractor, the implement and the ISOBUS terminal, and enables information exchange between these units.

The Valtra ISOBUS implement control system fulfils the Class 2 standard requirements. It transmits the following information to the implements connected to the ISOBUS.

- Tractor speed information (radar, wheels and engine)
- Distance and direction
- Rear linkage position
- Power take-off (PTO) status and speed
- Lighting control

The Valtra ISOBUS implement control system provides also electric power for ISOBUS components (25 A) and electric power for actuators and implements (60 A). The Valtra ISOBUS implement control system can maintain the power for a maximum of one hour if an implement or the terminal requires so.

NOTE: The main power of the tractor is on for a maximum of one hour after the ignition switch is turned to the  (OFF) position.



1. ISOBUS bus extension connector (under the side panel)
2. ISOBUS terminal connector
3. ISOBUS implement connector
4. Valtra C1000 ISOBUS Terminal

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3.19.1 ISOBUS terminal connector

The ISOBUS terminal connector is part of the ISOBUS implement control system (extra equipment). The connector is used to connect the terminal to the ISOBUS system.

The connector includes both an ISOBUS data bus and a power supply.

3.19.2 ISOBUS implement connector

The ISOBUS implement connector is part of the ISOBUS implement control system (extra equipment). The connector connects an ISOBUS compatible implement to the ISOBUS system.

3.19.3 Bus extension connectors

Bus extension connectors are part of the ISOBUS implement control system (extra equipment). Normally the bus extension connectors are connected together. They can also be used to connect additional ISOBUS devices to ISOBUS (for example, ISOBUS GPS).

NOTE: If the bus extension connectors are disconnected, the ISOBUS implement bus is broken and the system does not function properly. When connecting additional ISOBUS devices, check that the bus stays intact (the bus extension connectors are connected).

The connector is located under the side panel.

3.19.4 ISOBUS terminal

The C1000 ISOBUS Terminal (extra equipment) is used to control ISOBUS implements and the auto-steering system.

The terminal fulfils the basic UT (Universal Terminal) requirements. For more information about the terminal, refer to the C1000 ISOBUS Terminal user manual.

There is also an in-build task controller in the terminal. Refer to the task controller user manual for more information.

The terminal has a connector also for a camera (extra equipment).

3.20 Auto-Guide Readiness

Auto-Guide Readiness makes it possible to install Auto-Guide 3000 steering system to the tractor. Auto-Guide 3000 is based on global navigation satellite system (GNSS) and it is capable of steering the tractor automatically. Auto-Guide Readiness is extra equipment. Refer to the Auto-Guide 3000 user manual for more information.

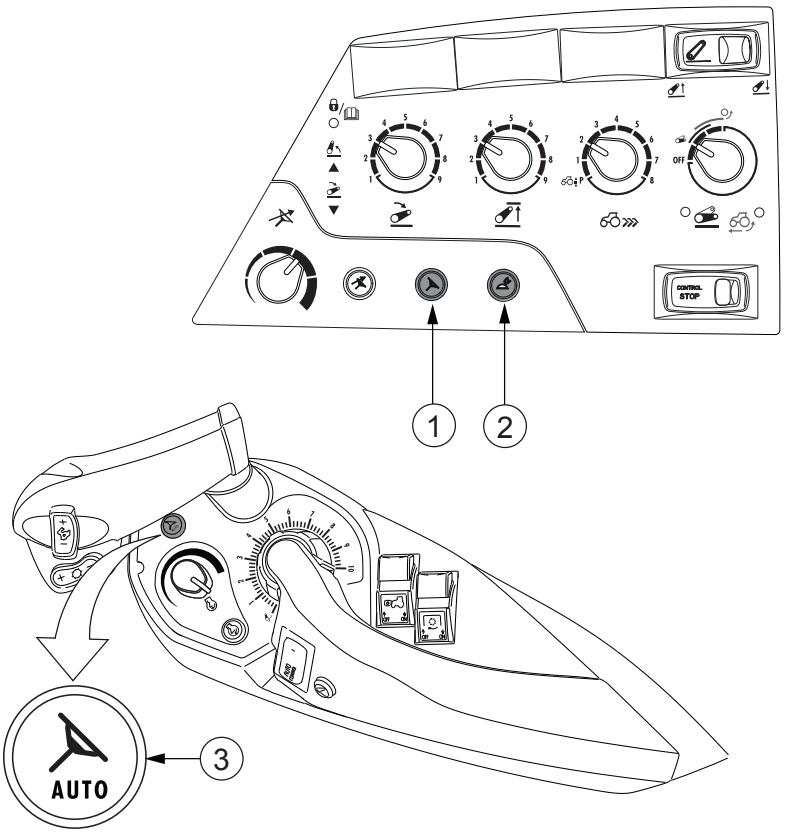
Auto-Guide Readiness consists of the following equipment:

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- Electrohydraulic steering valve
- A bracket for automated steering system control unit (on the roof)
- Auto-Guide receiver on/off button
- Auto-Guide steering valve on/off button
- Auto-Guide remote activation button

3.20.1 Using Auto-Guide

Before Auto-Guide 3000 steering system can be used and the automatic steering activated, the receiver and the steering valve must be turned on. Refer to the Auto-Guide 3000 user manual for more information on timer settings of the receiver.



1. Auto-Guide steering valve on/off button
2. Auto-Guide receiver on/off button
3. Auto-Guide remote activation button

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- **Press the Auto-Guide receiver on/off button on the side panel to turn the Auto-Guide receiver on or off.**

  When on, the symbol on the push button is green.

  Turning off the receiver also turns off the Auto-Guide steering valve if it was on.

  NOTE: The receiver can stay on even when tractor power is turned off. Refer to the Auto-Guide 3000 user manual for more information on timer settings. The main power of the tractor is on for a maximum of one hour after the ignition switch is turned to the  (OFF) position.

- **Press the Auto-Guide steering valve on/off button on the side panel to turn the Auto-Guide steering valve on or off.**

  When on, the light on the push button is green and the symbol  is displayed on the Proline instrument panel.

  The steering valve is automatically turned off when the driver leaves the driver's seat for more than five seconds.

  Turning on the steering valve also turns on the Auto-Guide receiver, if the receiver was off.

  NOTE: When the steering valve is on, the driving speed is limited to 25 km/h. It is not possible to turn the steering valve on when the speed is above 25 km/h.

- **Press the Auto-Guide remote activation button to activate or deactivate the automated steering.**

  When Auto-Guide is ready for steering, pressing Auto-Guide remote activation button activates the automated steering.

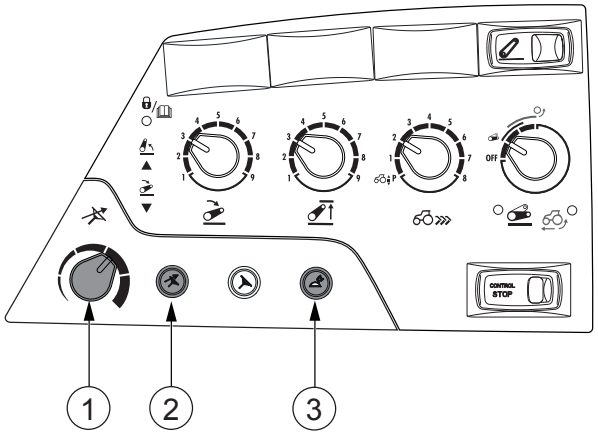
  If automated steering is already active, pressing the button deactivates the steering. Turning the steering wheel also deactivates the automated steering.

  Refer to Auto-Guide 3000 user manual for more information on the requirements which has to be met before activation is possible.

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3.20.2 Using Auto-Guide with QuickSteer

If you want to use Auto-Guide with QuickSteer, turn the Auto-Guide receiver on and activate the QuickSteer.



1. QuickSteer control knob
2. QuickSteer activation button
3. Auto-Guide receiver on/off button

1. **Press the Auto-Guide receiver on/off button on the side panel to turn the Auto-Guide receiver on.**
2. **Press the QuickSteer activation button to activate the steering valve.**

   The QuickSteer activation button light is lit green, and the QuickSteer symbol is displayed on the Proline instrument panel. When using QuickSteer, do not turn the Auto-Guide steering valve on.
3. **Turn the QuickSteer control knob to set the steering speed.**

To deactivate the QuickSteer, press the QuickSteer activation button again.

3.20.3 Resetting the Auto-Guide steering valve

If the light on the Auto-Guide steering valve on/off button is flashing, there is a fault in the steering valve. The fault code is shown on the A-pillar display. Reset the steering valve to recover from the fault.

- **Press the steering valve on/off button once.**

  The steering valve is turned off after which the system turns the valve back on.

  If the light is still flashing, the fault persists. In this case, contact an authorised Valtra workshop.

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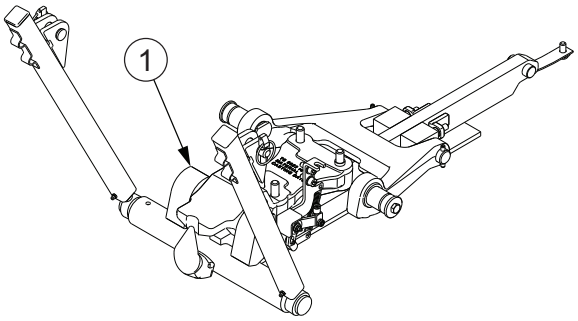
3.21 Towing devices

3.21.1 Nordic pick-up hitch

The Nordic pick-up hitch is optional with the fixed trailer hitch.

WARNING: When attaching a trailer or implement, do not exceed the maximum weight of the rear axle or the maximum load of the tyre type. See the technical specifications in this manual for the maximum permissible weights and loads.

WARNING: Make sure that the maximum permissible towable mass is not exceeded. Check the tractor identification plate for permissible towable mass. Follow valid laws and regulations.



1. Nordic pick-up hitch

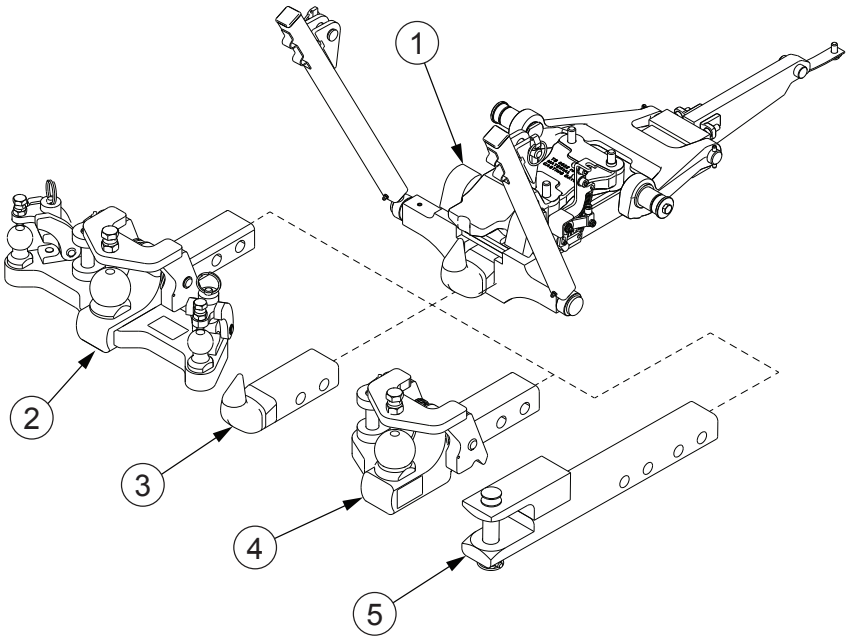
3.21.2 Euro pick-up hitch

The Euro pick-up hitch is optional with four changeable implements.

WARNING: When attaching a trailer or implement, do not exceed the maximum weight of the rear axle or the maximum load of the tyre type. See the technical specifications in this manual for the maximum permissible weights and loads.

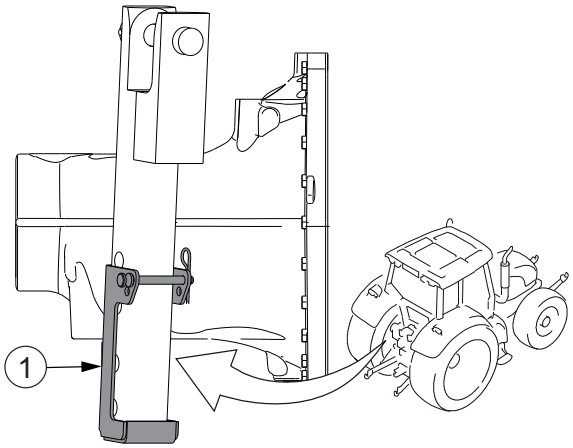
WARNING: Make sure that the maximum permissible towable mass is not exceeded. Check the tractor identification plate for permissible towable mass. Follow valid laws and regulations.

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1. Euro pick-up hitch
2. K80 ball hitch with steering balls (optional)
3. Trailer hitch
4. K80 ball hitch (optional)
5. Drawbar (optional)

When the trailer hitch or drawbar is not in use, it can be fastened to its bracket.



1. Bracket

3.21.3 Hydraulic pick-up hitch

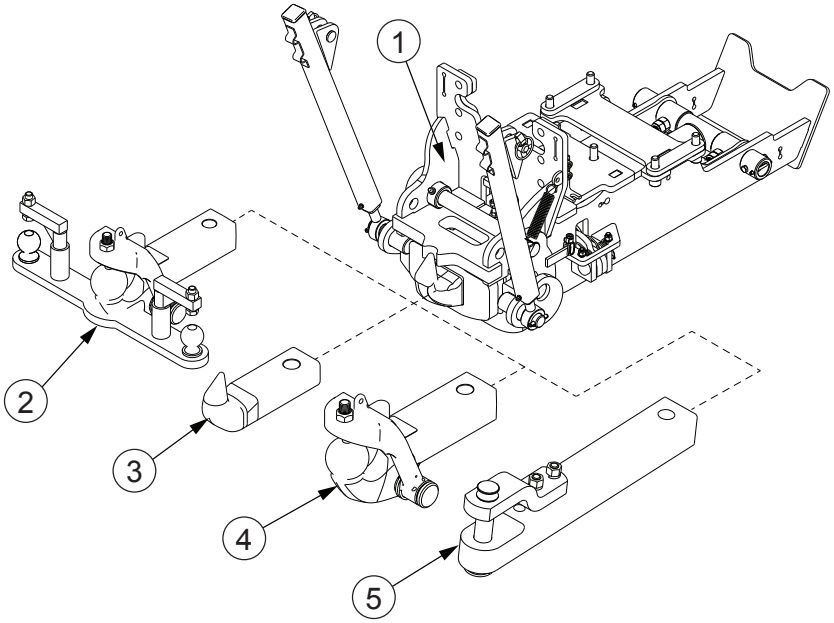
The Hydraulic pick-up hitch with hydraulic extension is optional with four changeable implements.

WARNING: When attaching a trailer or implement, do not exceed the maximum weight of the rear axle or the maximum load of the tyre type.

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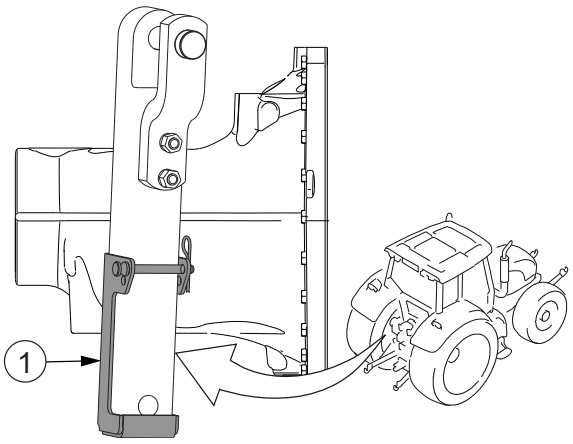
See the technical specifications in this manual for the maximum permissible weights and loads.

WARNING: Make sure that the maximum permissible towable mass is not exceeded. Check the tractor identification plate for permissible towable mass. Follow valid laws and regulations.



1. Hydraulic pick-up hitch
2. K80 ball hitch with steering balls (optional)
3. Trailer hitch
4. K80 ball hitch (optional)
5. Drawbar (optional)

When the trailer hitch or drawbar is not in use, it can be fastened to its bracket.



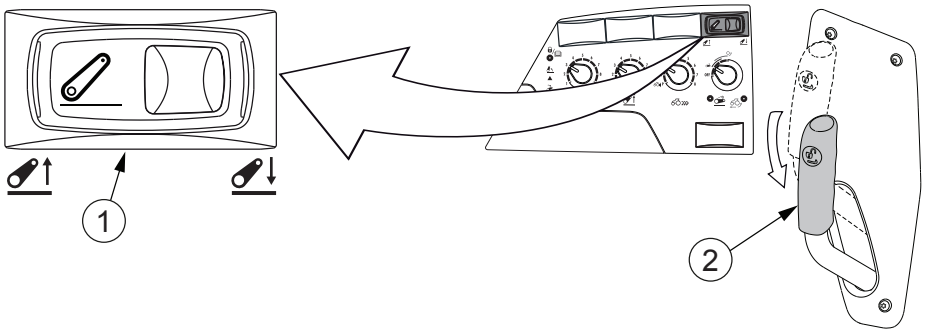
1. Bracket

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3.21.4 Using the pickup hitch

3.21.4.1 Unlatching the pick-up hitch

WARNING: Never unlatch the pick-up hitch when driving.



1. Lifting/lowering switch
2. Trailer hitch release lever

1. **Press the symbol side of the lifting/lowering switch to fully raise the linkage.**
2. **Pull the hitch latch lever to unlatch the hitch.**

   Keep the lever pulled.
3. **Press the lifting/lowering switch side opposite to the symbol to lower the linkage.**
4. **Release the hitch latch lever when the hitch has passed the locking latch.**

3.21.4.2 Latching the Nordic and Euro pick-up hitch

DANGER: Make sure that at least 20% of the total combination weight rests on the front wheels. When needed, use a sufficient number of front ballast weights.

WARNING: When attaching any implements, check that the drawbar eye engages the trailer hook correctly.

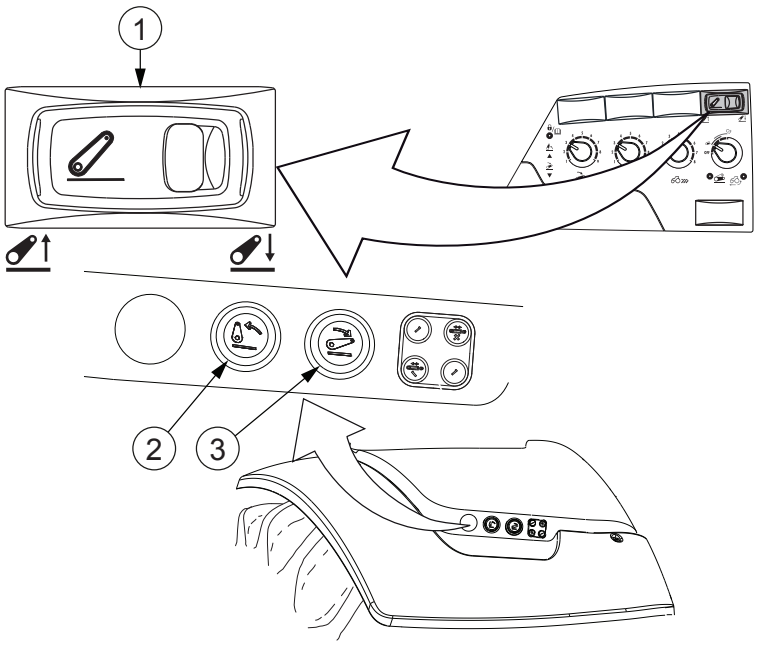
WARNING: When attaching a trailer or implement, do not exceed the maximum weight of the rear axle or the maximum load of the tyre type. See the technical specifications in this manual for the maximum permissible weights and loads.

WARNING: Make sure that the maximum permissible towable mass is not exceeded. Check the tractor identification plate for permissible towable mass. Follow valid laws and regulations.

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WARNING: Attach trailed single-axle vehicles to the pick-up hitch. When driving with a trailer with the tractor tilted to either side on a slope, the drawbar eye must be of the rotating type to prevent breakage.

IMPORTANT: Use only drawbar eyes which comply with the regulations and are undamaged. When using other than allowed drawbar eyes, the warranty lapses and the responsibility of the manufacturer is no longer valid.



1. Lifting/lowering switch
2. Lifting push button
3. Lowering push button

1. **Reverse the tractor up to the trailer/implement.**
2. **Align the pick-up hitch hook or drawbar pin to the eye of the trailer/implement beam.**
3. **Press the symbol side of the lifting/lowering switch or the lifting push button until the hitch latches.**

   You can hear a click and the trailer hitch release lever jumps a little.
4. **Press the lifting/lowering switch side opposite to the symbol or the lowering push button to lower the linkage slightly.**

   WARNING: When using a trailer, make sure that the hitch latch is locked.

   Ensure that the hitch is supported by the latch and does not lower with the linkage.

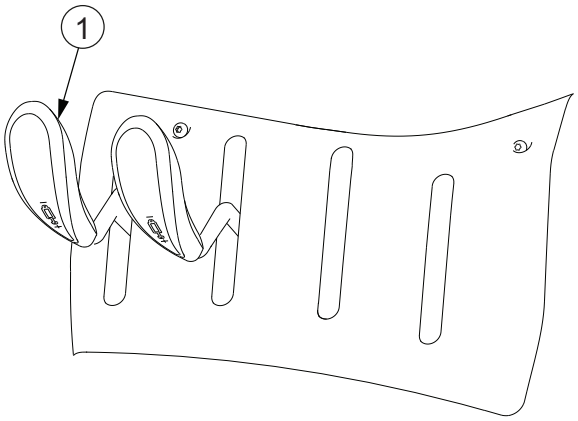
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5. **Check the linkage position.**

   IMPORTANT: Adjust the linkage so that it does not hit the towed device or power take-off shaft at any circumstance.

3.21.4.3 Extending the Hydraulic pick-up hitch

When the frame of the towing device is lowered, you can extend it hydraulically backwards to make it easier to attach the trailer hitch/drawbar/Ø80mm ball hitch to the drawbar eye. The cylinder of the hydraulic extension is usually connected to rear auxiliary hydraulic valve 1.



1. Auxiliary hydraulic lever 1

1. **Extend the towing device.**

   Pull the lever of the auxiliary hydraulics valve 1.

2. **Retract the towing device.**

   Push the lever of the auxiliary hydraulic valve 1.

3.21.4.4 Latching the Hydraulic pick-up hitch

DANGER: Make sure that at least 20% of the total combination weight rests on the front wheels. When needed, use a sufficient number of front ballast weights.

WARNING: When attaching any implements, check that the drawbar eye engages the trailer hook correctly.

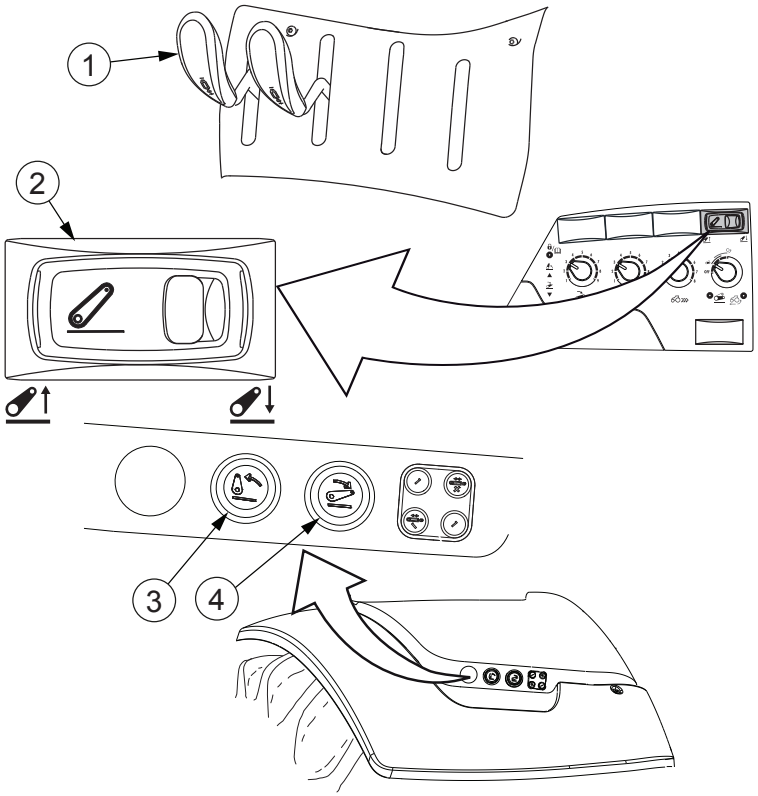
WARNING: When attaching a trailer or implement, do not exceed the maximum weight of the rear axle or the maximum load of the tyre type. See the technical specifications in this manual for the maximum permissible weights and loads.

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WARNING: Make sure that the maximum permissible towable mass is not exceeded. Check the tractor identification plate for permissible towable mass. Follow valid laws and regulations.

WARNING: Attach trailed single-axle vehicles to the pick-up hitch. When driving with a trailer with the tractor tilted to either side on a slope, the drawbar eye must be of the rotating type to prevent breakage.

IMPORTANT: Use only drawbar eyes which comply with the regulations and are undamaged. When using other than allowed drawbar eyes, the warranty lapses and the responsibility of the manufacturer is no longer valid.



1. Auxiliary hydraulic valve 1
2. Lifting/lowering switch
3. Lifting push button
4. Lowering push button

1. **Reverse the tractor up to the trailer/implement.**
2. **Press the lifting/lowering switch side opposite to the symbol or the lowering push button to lower the linkage.**
3. **Push the lever of the auxiliary hydraulic valve 1 to extend the towing device backwards.**

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4. **Align the pick-up hitch hook or drawbar pin to the eye of the trailer/implement beam.**

5. **Press the symbol side of the lifting/lowering switch or the lifting push button until the hitch latches.**
   You can hear a click and the trailer hitch release lever jumps a little.

6. **Press the lifting/lowering switch side opposite to the symbol or the lowering push button to lower the linkage slightly.**

   WARNING: When using a trailer, make sure that the hitch latch is locked.

   Ensure that the hitch is supported by the latch and does not lower with the linkage.

7. **Pull the lever of the auxiliary hydraulic valve 1 to retract the towing device.**

   The hydraulic extension locks, and you can hear a click when the hitch latches in longitudinal direction.

   WARNING: Make sure that the locking makes the click sound because only this tells that the hydraulic extension is locked. If it does not make the sound, it is possible that the extension is not locked.

8. **Ensure that the towing device extension is locked.**
   Push and pull the lever of the auxiliary hydraulic valve 1 several times to ensure that the hydraulic extension is fully locked and does not extend.

9. **Ensure that the towing device is fully locked.**

   The towing device is fully locked when the following conditions are fulfilled simultaneously:

   - The towing device is in the upmost position and supported by the latch.
   - The locking position of the pick-up hitch in longitudinal direction has been checked by attempting to move the extension back and forth.

10. **Check the linkage position.**

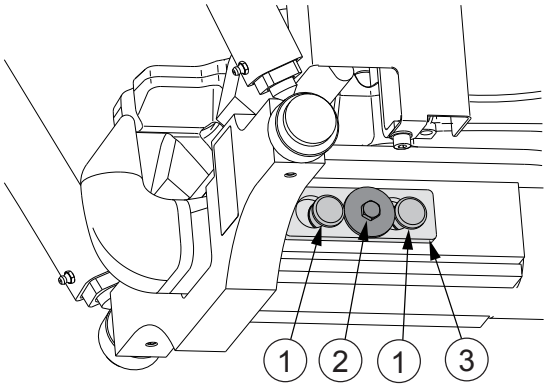
    IMPORTANT: Adjust the linkage so that it does not hit the towed device or power take-off shaft at any circumstance.

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3.21.5 Changing the pick-up hitch implement

3.21.5.1 Changing the Euro pick-up hitch implement

You can change the Euro pick-up hitch implement. When the trailer hitch or drawbar is not in use, you can fasten it to the bracket on the rear side.



1. Locking pins
2. Screw and washer
3. Locking plate

1. **Ensure that the pick-up hitch is in the locking position.**

   Lift to the locking position if not.

2. **Remove the screw and washer.**
3. **Push the locking plate forward and pull to the side to remove it.**
4. **Remove the locking pins by pulling.**

   Support the pick-up hitch implement by hand while removing the locking pins.

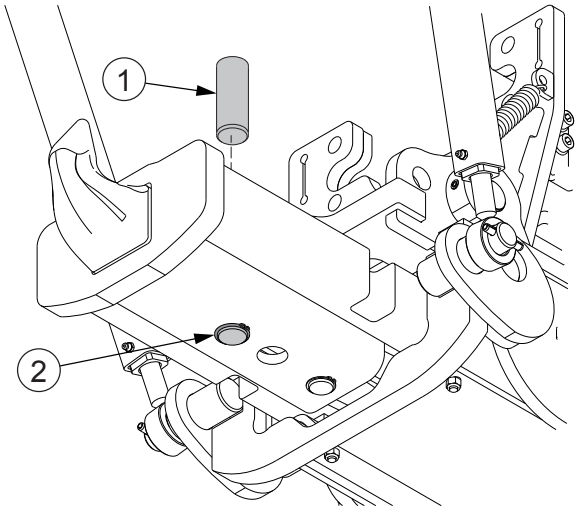
5. **Pull the implement out.**
6. **Attach the pick–up hitch implement.**
7. **Fit the locking pins.**
8. **Fit the locking plate and pull backwards into place.**
9. **Fit the screw and washer.**

   Tightening torque is 23 Nm.

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3.21.5.2 Changing the Hydraulic pick-up hitch implement

You can change the Hydraulic pick-up hitch implement. When the trailer hitch or drawbar is not in use, you can fasten it to the bracket on the rear side.



1. Locking pin
2. Locking ring

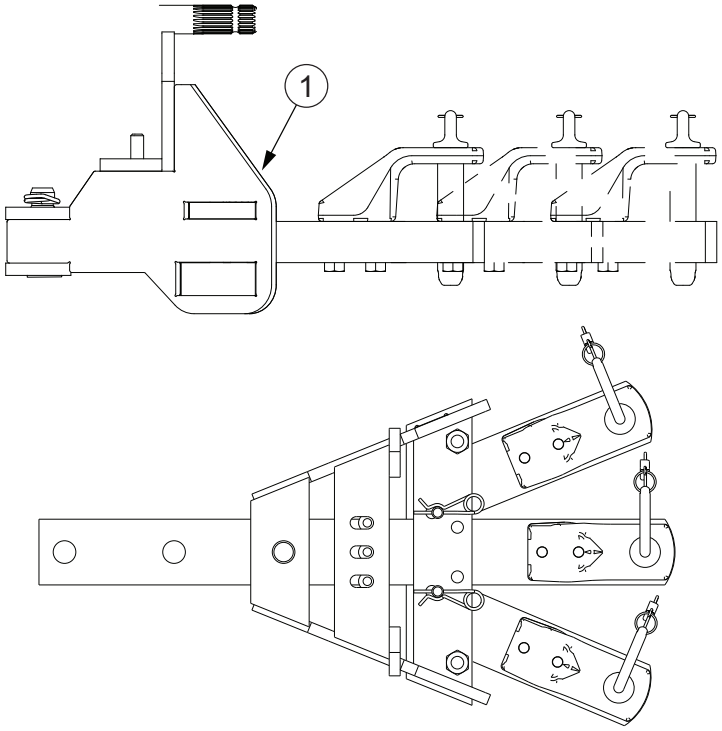
1. **Lower down and extend the towing device.**
2. **Raise the towing device to the locking position.**
3. **Remove the locking ring.**
4. **Remove the locking pin by pulling.**

   Support the pick-up hitch implement while removing the locking pin.
5. **Pull out the pick-up hitch implement.**
6. **Attach the pick-up hitch implement.**
7. **Attach the locking ring.**
8. **Retract the towing device.**

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3.21.6 Agricultural drawbar

The agricultural drawbar (optional) is used without the pick-up hitch.



1. Agricultural drawbar

The agricultural drawbar is used for towing implements where only part of the implement weight is on the drawbar, for example balers. See the technical specifications in this manual for the maximum weight of the drawbar implement.

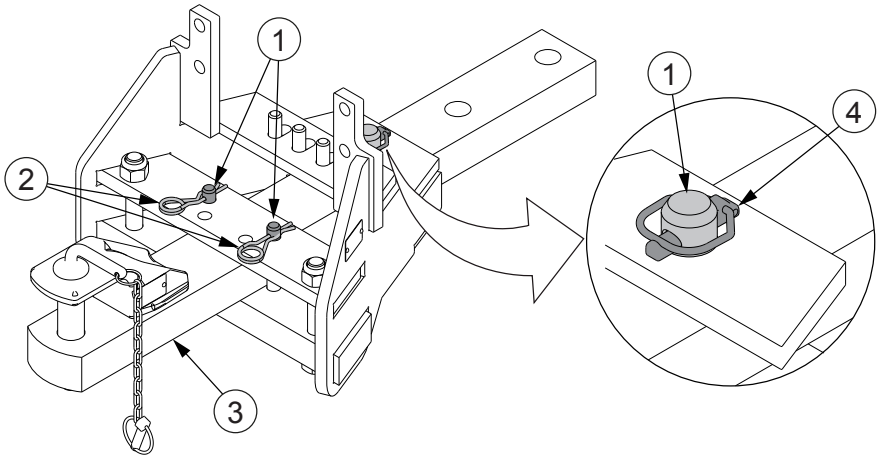
Agricultural drawbar:

- Adjustable to three different distances from the power take-off (PTO) shaft.
- In all positions, the drawbar can also be adjusted ± 21° to either side.

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3.21.6.1 Adjusting the agricultural drawbar

You can adjust the agricultural drawbar to different distances and lateral positions.



1. Pin
2. Spring return pin
3. Drawbar
4. Ring pin

1. **To adjust the drawbar distance:**
   - **Secure the pin with hand and pull out the ring pin.**
   - **Adjust the drawbar distance.**
   - **Fit the pin and ring pin to secure the drawbar.**

   WARNING: Make sure that the locking pin is fitted correctly.

2. **To adjust the lateral position.**
   - **Secure the pins with hand and pull out the spring locking pins.**
   - **Adjust the drawbar position to either side.**
   - **Fit the pins and spring locking pins to secure them.**

   WARNING: Make sure that the locking pin is fitted correctly.

   Insert the straight part of the spring locking pin through the hole and the curve to correspond to the pin arc.

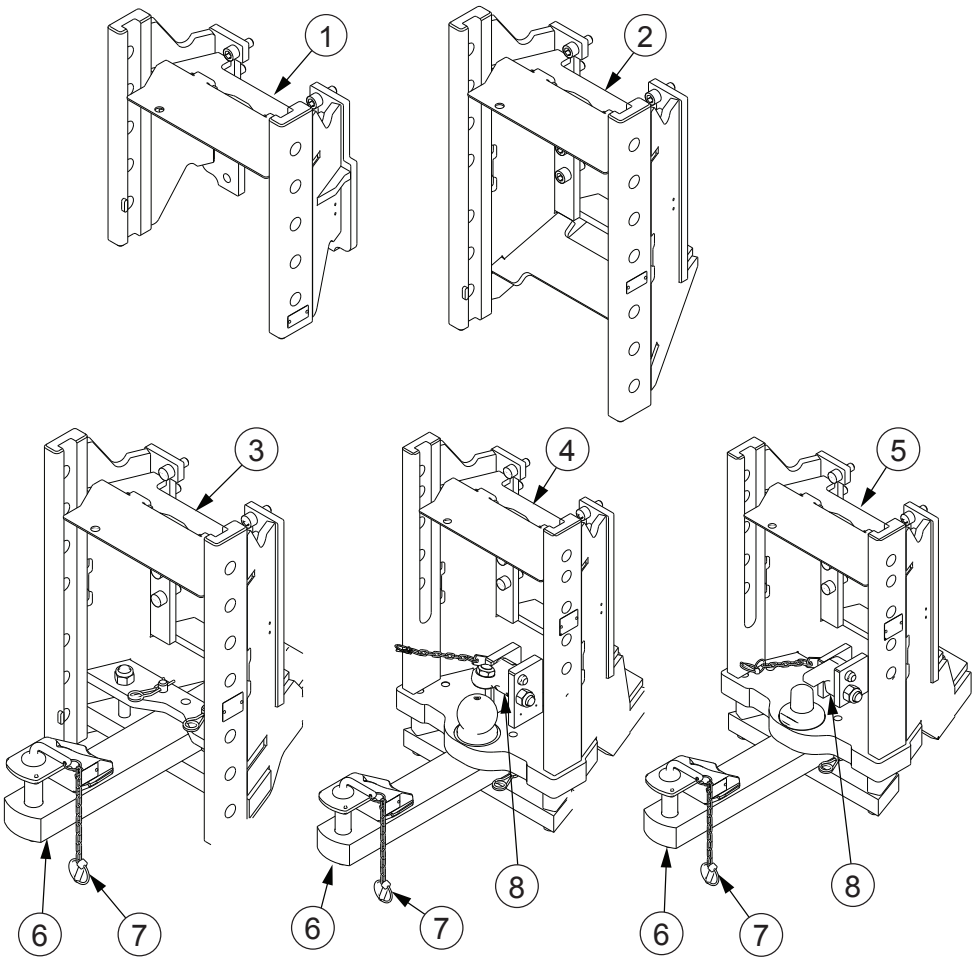
3.21.7 Towing device frames

The towing device frame options available are:

- Short towing device frame (used with pick-up hitch)
- Towing device frame (used without pick-up hitch or agricultural drawbar)
- Universal towing device frame with availability for drawbar
- Towing device frame with a fixed 80–mm ball coupling and the drawbar.
- Towing device frame with a fixed Piton-Fix pin and the drawbar

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WARNING: According to law, the operator has to ensure that all relevant precautions are taken (lockings secured etc.).



1. Short towing device frame
2. Towing device frame
3. Universal towing device frame
4. Towing device frame with a fixed 80–mm ball coupling
5. Towing device frame with a fixed Piton-Fix pin
6. Drawbar (optional)
7. Drawbar pin locking
8. Locking

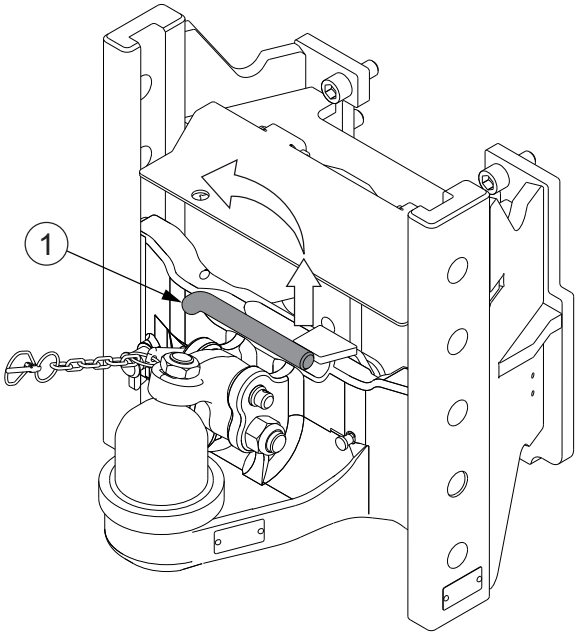
Locking to the trailer must be secured.

3.21.7.1 Adjusting the jaw height

The height of mechanical and automatic jaws is adjusted in the same way.

WARNING: You cannot change the jaw height if the lever is broken or dirty. The jaw must be locked and secured every time the height is changed.

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1. Lever

1. **Pull the lever upwards and turn it to the anticlockwise.**
2. **Move the jaw to the wanted height.**
3. **Release the lever.**

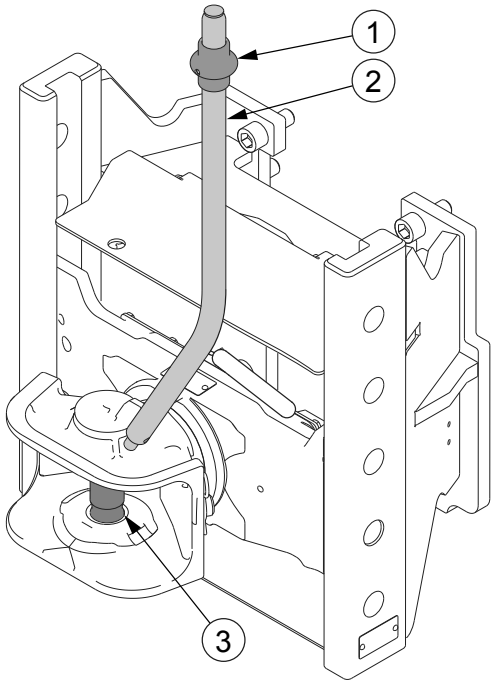
   The locking pins lock the lever to the correct position with the help of the returning springs.

You can also lift the jaw away from the frame by using the same lever.

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3.21.7.2 Attaching to the mechanical jaw

You can attach a trailer to the mechanical jaw using the coupling lever.



1. Ring
2. Coupling lever
3. Towing pin

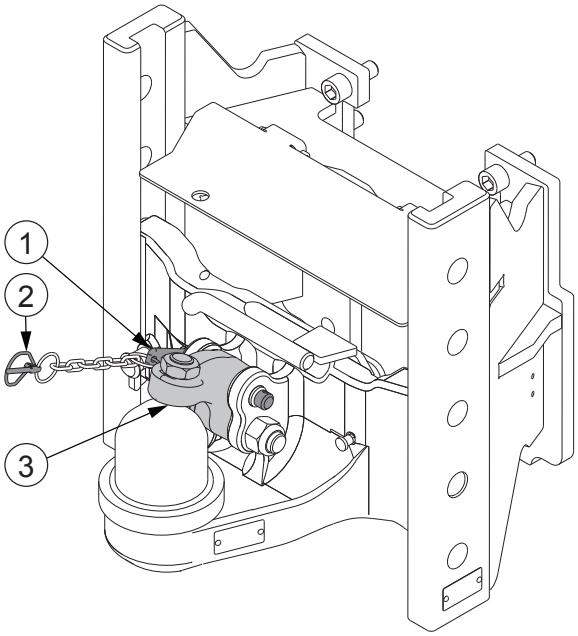
1. Pull up the ring at the top of the coupling lever to lift up the towing pin.

WARNING: After attaching the trailer, check that the towing pin is completely down and locked.

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3.21.7.3 Attaching to the mechanical jaw K80

You can attach a trailer to the mechanical jaw K80.



1. Pin
2. Locking pin
3. Locking

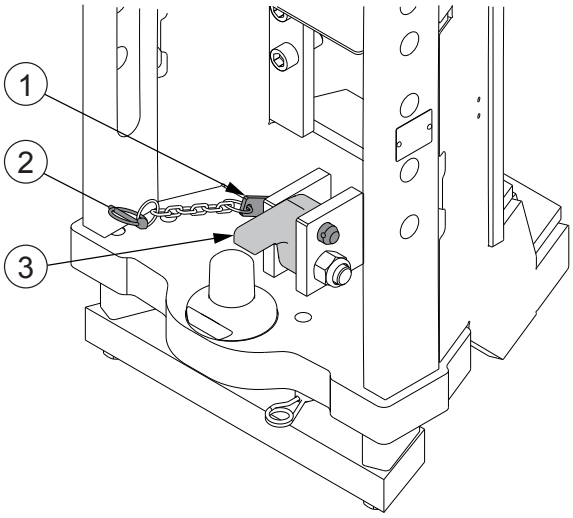
1. **Remove the locking pin.**
2. **Pull the pin off and open the locking.**
3. **Attach the trailer to the jaw.**
4. **Close the locking and fit the pin.**
5. **Fit the locking pin.**

WARNING: Make sure that the locking pin is fitted correctly.

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3.21.7.4 Attaching to fixed Piton fix/fixed Ø80mm ball hitch

You can attach a trailer to the fixed Piton fix or fixed K80 jaw.



1. Pin
2. Locking pin
3. Locking

1. **Remove the locking pin.**
2. **Pull the pin off and open the locking.**
3. **Attach the trailer to the jaw.**
4. **Close the locking and fit the pin.**
5. **Fit the locking pin.**

WARNING: Make sure that the locking pin is fitted correctly.

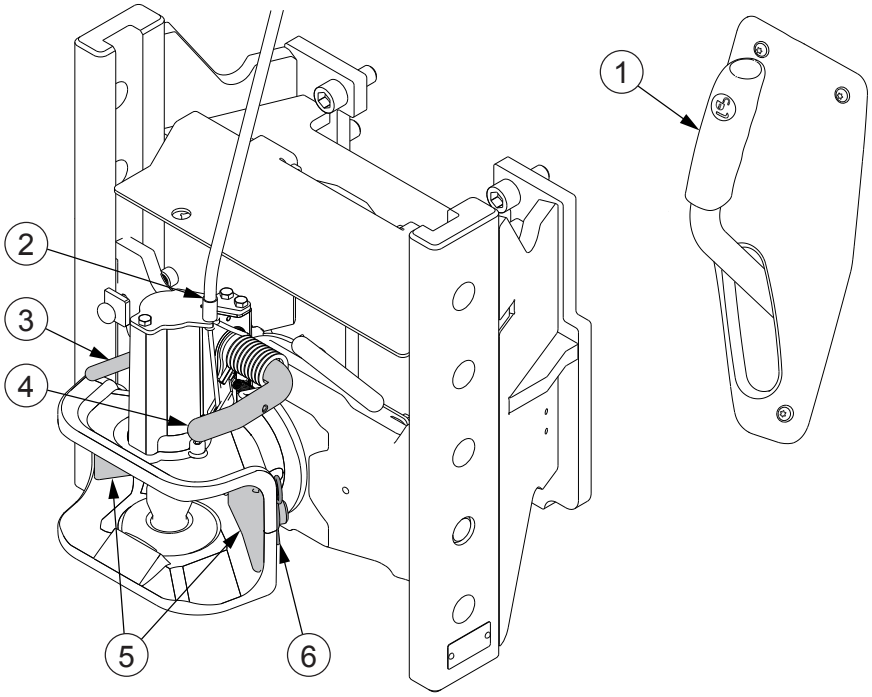
3.21.7.5 Attaching to the automatic jaw

You can attach a trailer to the automatic jaw using the opening and locking levers.

Use a solid drawbar because of the rotating jaw.

IMPORTANT: Use only drawbar eyes which comply with the regulations and are undamaged. When using other than allowed drawbar eyes, the warranty lapses and the responsibility of the manufacturer is no longer valid.

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1. Trailer hitch release lever (optional)
2. Cable for trailer hitch release lever (optional)
3. Towing pin locking lever
4. Towing pin opening lever
5. Adjusting part
6. Spring locking pin

1. **Check that the adjusting parts fit for the trailer to be coupled.**

   With the adjusting parts you can adjust the towing eye spacing.
   - **Pull the spring locking pins off and pull the adjusting parts off to remove them.**
   - **Fit the adjusting parts and fit the spring locking pins to secure them.**

     Insert the straight part of the spring locking pin through the hole and the curve to correspond to the pin arc.

2. **Lift the towing pin up or pull down the trailer hitch release lever (optional).**

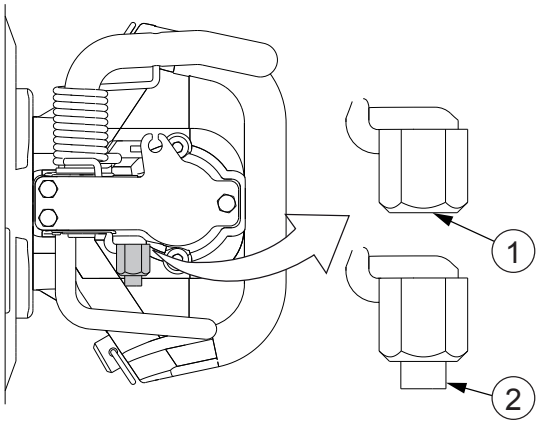
   To lift the pin with the opening lever, turn the lever to the upper position.

3. **Attach the trailer to the coupling.**

   When the draw eye reaches the bottom of the draw gap, the towing pin automatically goes down. You can also lower the towing pin by pushing the locking lever downwards.

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4. **Check that the towing pin is locked.**



1. Towing pin not locked
2. Towing pin locked

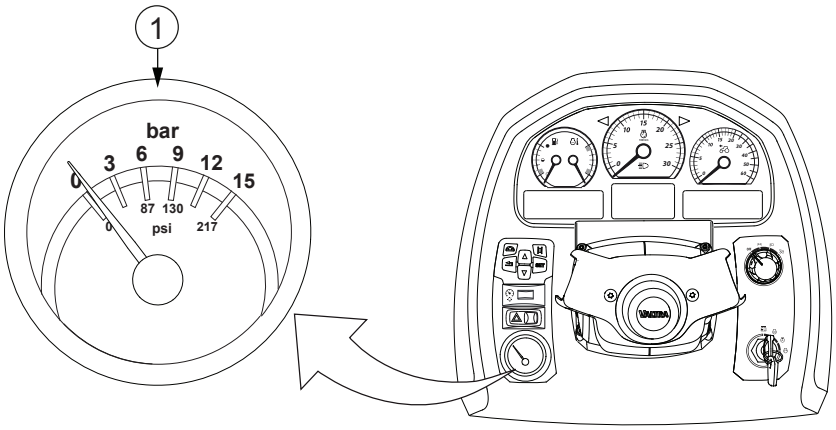
WARNING: The towing pin is locked in the down position when the security knob is out. When attaching the trailer, the towing locking pin must be secured.

3.22 Air pressure system

You can get pressurised air (8 bar) for external purposes, for example for filling tyres, from the air pressure system (extra equipment).

IMPORTANT: Do not weld or drill the pressure container.

The pressure regulator is provided with a built-in pressure relief valve which operates if the pressure rises to 12-14 bar. For example, a broken pressure regulator valve or a frozen or blocked filter can cause this situation.

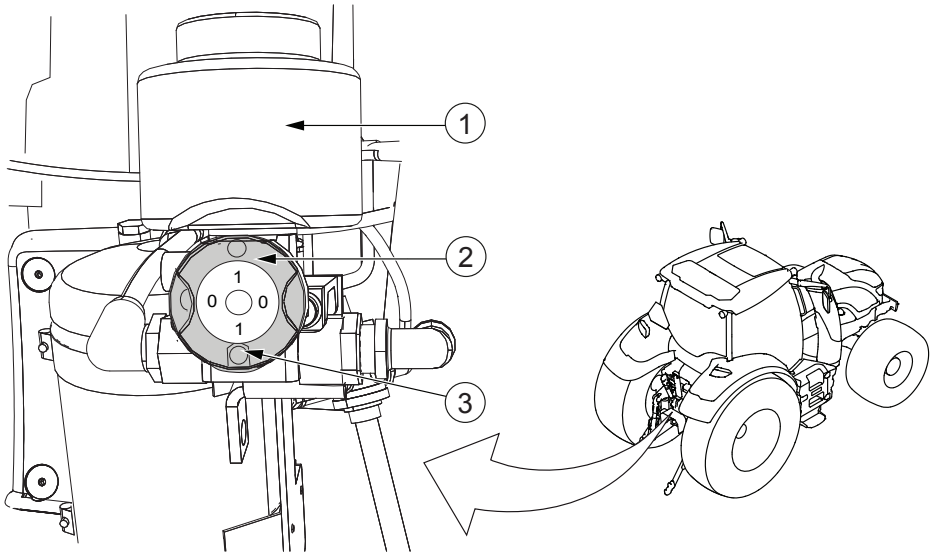


1. Air pressure system pressure gauge

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WARNING: The pressure of the air pressure system must be at its maximum, about 7-8 bar, before driving the tractor with a trailer equipped with air pressure brakes.

When the ambient temperature is below +5°C, the antifreeze container must be filled with antifreeze liquid containing lubricant. The liquid streaming valve has to be in the open position. The container and streaming valve are situated on the top of the right axle housing.



1. Antifreeze container
2. Liquid streaming valve
3. Open position

When the ambient temperature is above +5°C, the liquid streaming valve can be kept closed.

3.23 Trailer

Several factors affect the compatibility of a trailer.

The type of trailer that can be connected to the tractor depends, among other things, on:

- The braking power of the tractor.
- Whether the trailer has brakes.
- How much of the trailer weight is on the towing device.
- Whether the trailer has one or more axles.
- The type of trailer drawbar eye

The total trailer weight is the load added to the empty trailer weight.

WARNING: If the towing device is worn out or otherwise damaged so that the drawbar come off, the towing device must be replaced.

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IMPORTANT: When loading the towing device, at least 20% of the tractor weight has to be on the front wheels.

IMPORTANT: The maximum allowed wheel or towing device loading must not be exceeded.

3.23.1 Trailer turn signals

When using turn signals while towing a trailer, the first trailer turn signal indicator  on the instrument panel is blinking.

When towing two trailers, both trailer turn signal indicators  and  on the instrument panel are blinking.

If the trailer turn signal indicators do not blink as mentioned, there is a fault in one or more trailer bulbs.

IMPORTANT:
The tractor’s turn signal failure control for trailer/s is designed for trailers having one pair of turn signals. Check the condition of the turn signals before starting to drive. It is the driver's responsibility to check that all turn signals work correctly.

If both trailer turn signal indicators on the instrument panel blink in turn, there is a short-circuit in one of the turn signal lines of the vehicle combination. In this case, the line is turned off and this turn signal stops blinking. After 12 seconds the relay tries to switch the turn signal line back on. To speed up the recovery, you can switch the turn signals off and on again. If the fault still persists, contact an authorised Valtra workshop.

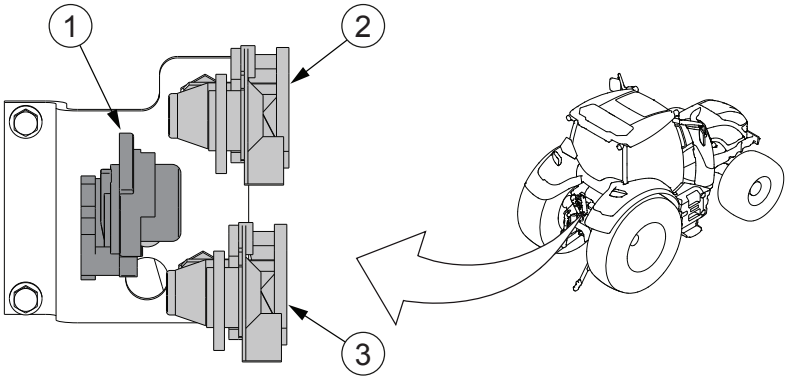
The tractor's direction indicator failure control works also for the trailer LED direction indicators, as required by law, when they include the Hella direction indicator failure control.

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3.23.2 Trailer air pressure brakes

When towing a trailer, you can increase the braking power with trailer air pressure brakes.

The trailer air pressure brake system (optional equipment) is controlled by the tractor brakes. The trailer brakes operate also when using the parking brake.



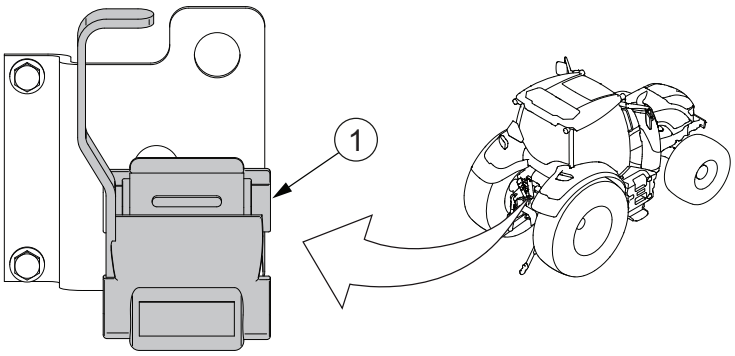
1. Brake line coupling with black cover
2. Brake line coupling with yellow cover
3. Container line coupling with red cover

On a two-hose system, the trailer is connected to two couplings:

- Container line with a red cover
- Brake line coupling with a yellow cover

On one-hose systems, the trailer is connected to the brake line coupling with a black cover.

The Duo-Matic system has only one coupling to connect.



1. Trailer coupling Duo-Matic

WARNING: Always test the operation of the trailer brakes in safe ground after connecting a trailer with brakes.

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WARNING: When the tractor is towing a trailer, the brake pedals must be locked together. The brakes are not to be used individually for steering.

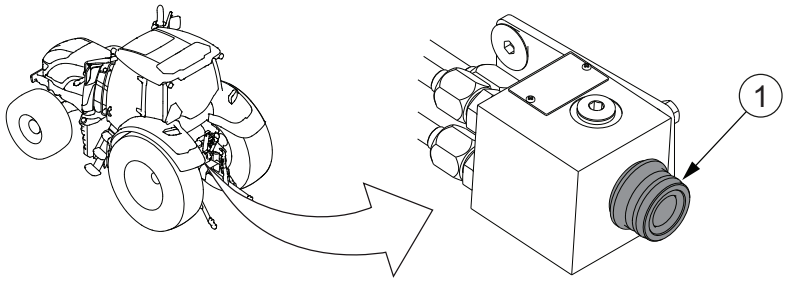
WARNING: The pressure of the air pressure system must be at its maximum, about 7-8 bar, before driving the tractor with a trailer equipped with air pressure brakes.

When the trailer couplings are not in use, they must be covered.

3.23.3 Hydraulic trailer brake valve

The hydraulic trailer brake valve (optional equipment) operates with the pressure of the tractor hydraulics, controlled by the tractor brakes.

The trailer brakes are connected to the tractor with a quick coupling at the rear part of the tractor.



1. Quick coupling for the trailer brakes (ISO 5676)

DANGER: The hydraulic trailer brakes do not engage when the parking brake is engaged.

DANGER: When the engine is not running, the trailer brakes do not work.

DANGER: The quick coupling for hydraulic trailer brakes must be connected when bleeding the brakes. If the quick coupling is not connected, the brakes will not be bled. This will cause the brakes to malfunction.

WARNING: When the tractor is towing a trailer, the brake pedals must be locked together. The brakes are not to be used individually for steering.

WARNING: Always test the operation of the trailer brakes in safe ground after connecting a trailer with brakes.

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4 Maintenance

The tractor must be maintained regularly. Correct maintenance at the right time is essential to ensure reliable operation of the tractor.

Maintenance costs are small compared to repair costs resulting from lack of maintenance. The most important measures are those you carry out yourself, including lubrication and various checks and adjustments.

4.1 Maintenance schedule

You can choose running hours-based or annual maintenance schedule for your tractor.

With both maintenance schedules the maintenance tasks are carried out according to the periodical maintenance chart.

Running hours-based maintenance

Running hours-based maintenance schedule is recommended for all tractors and especially for tractors which have more than 1200 running hours in a year. The periodical maintenance from 50 hours onwards can also be ordered from the authorised Valtra workshop. In that case the periodical maintenance is carried out by Valtra authorised and trained service personnel.

Annual maintenance

Annual maintenance schedule is suitable for tractors which have less than 1200 running hours in a year. The schedule should be carried out by an authorised Valtra workshop but the operator has to carry out the normal daily and weekly service routines according to the periodical maintenance chart.

4.2 Service inspection

A service inspection is required for all new tractors after 50 running hours.

The service inspection is mandatory in order to retain the guarantee. The service is performed by your local dealer.

NOTE: The tractor is inspected according to the manufacturer's instructions before it is handed over to a customer.

Engine

The inspection of the engine contains the following services:

- Change of engine oil and filter
- Change of fuel system prefilter
- Change of fuel filter

Power transmission

The inspection of the power transmission contains the following services:

- Change of low pressure filter, lubrication filter and pressure filter of the hydraulic system

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Front axle and steering system

The inspection of the front axle and steering system contains the following services:

- Change of oil in differential
- Change of oil in hubs

Other points

The inspection contains the following services as well:

- Lubrication according to maintenance chart
- Checking the front loader frame bolt tightness (Front loader is optional equipment)
- Running of transmission automatic calibration
- Road test of the tractor

During the road test all the functions of the controls and instruments are checked. After the road test, the oil leaks, coolant level and fuel system are checked.

4.3 Performing maintenance tasks

Follow these instructions when maintaining.

- Test drive the tractor and test that all instruments and controls are working properly.
- Always stop the engine before starting the work.
- Park the tractor on level ground, especially when doing oil checks.
- Apply the parking brake to ensure that the tractor cannot move.

  NOTE: If the ground is uneven, block the wheels.

- Wash down the tractor so that the service work can be done easily and quicker.

Observe that if the tractor has extra equipment like towing device, air conditioning, air pressure brakes and so on, the periodical maintenance and checks for them must also be carried out.

Follow the instructions concerning general service tasks:

- **Observe the utmost cleanliness in all maintenance work.**

  Thoroughly wipe off filler caps and plugs as well as surrounding parts of the tractor before filling up with fuel or oil.

  CAUTION: Keep the engine surface clean in order to avoid the risk of fire.

- **Check the oil level.**

  Be sure that the engine and oil have cooled down before checking the oil level. The oil must have run down to the bottom of the oil sump before the operation.

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- **Open the radiator cap with care when the engine is hot as the cooling system is pressurized.**

  WARNING: Coolant may be hot and under high pressure.

- **Always disconnect the negative (-) battery cable when servicing or repairing the electric system.**

  IMPORTANT: Make sure that the main power is turned off before disconnecting or reconnecting the battery.

- **When changing the oil and filters, check their appearance.**

  Large amounts of dirt (for example heavily clogged filters) can point to a fault which could cause extensive and costly repairs if not corrected in time.

  WARNING: When changing the oil, notice that the oil can be very hot when it drains from the tractor.

  WARNING: Avoid touching the exhaust manifold, turbocharger and other hot parts of the engine.

- **Use proper gloves and other protection for the noxious chemicals.**

  Fuel, lubricating oil and coolant cause irritation to the skin if they are in contact with it for long periods.

- **Dispose of the waste oil, liquid waste, oil filters and batteries properly and handle them carefully.**

NOTE: After completion of service work, reinstall all shields and covers.

4.3.1 Cleaning the tractor

Clean the tractor regularly.

Turn the ignition key to the  (OFF) position before washing.

NOTE:
Protect the environment by following the environmental regulations. The washing place must have a separator outlet when using detergents.

It is best to wash the new tractor for the first time a week after the start-up. Avoid rubbing the surface of the tractor too hard during the first months.

NOTE: Do not wax the paint work of the new tractor before the initial washing.

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- **Wash the tractor using a pressure washer.**

  Keep the nozzle of the pressure washer at least 30 cm from the sealing points and paint work. The temperature of the washing water must not be higher than 50°C.

  NOTE:

  Do not use special nozzles, such as turbo nozzles, when washing. Follow the instructions of the pressure washer manufacturer.

- **Do not let the water get into the cab air filter when washing the cab sides.**

  The cab air filter is in the side plate of the roof, usually on the left.

- **Do not wash the inside of the cab with a pressure washer or running water.**

- **Do not point the pressure washer towards electrical equipment, electrical connectors, lead-through points, bearings, seals and locks.**

  Use lower pressure (6,5 MPa / 65 bar) and point the water diagonally to the above points. Do not point the pressure washer towards the radar sensor (minimum distance 1 m and maximum pressure 6,5 MPa / 65 bar).

- **When using a cold grease remover, do not keep the tractor in sunshine.**

  The paint work may get damaged, if the painted surface is hot.

- **Wax the painted surfaces.**

After washing, grease the lubricating points and the joints and lubricate the bearings with oil.

4.3.1.1 Cleaning the engine compartment

Keep the engine surface clean to avoid the risk of fire.

NOTE:

Protect the environment by following the environmental regulations. The washing place must have a separator outlet when using detergents.

- **Let the engine cool down for a few minutes before washing.**

  IMPORTANT: To avoid the risk of fire, do not wash the engine when it is hot.

- **Wash the engine carefully using pressure washer.**

  Keep the nozzle of the pressure washer at least 30 cm from the sealing points and paint work. The temperature of the washing water must not be higher than 50°C.

  - Use lower pressure, 6.5 MPa / 65 bar.
  - Point the water jet diagonally to the engine.

  NOTE:

  Do not use special nozzles, such as turbo nozzles, when washing. Follow the instructions of the pressure washer manufacturer.

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- **Do not use high pressure to wash the electric and fuel equipment or the radiator.**

  These components can be damaged easily. Wash the delicate engine parts by hand.

- **Let the engine dry up before starting.**

4.3.1.2 Cleaning front axle suspension bellows

To ensure correct function of the front axle air suspension, the dirt in the bellows of the suspension and in the housing have to be occasionally removed.

1. **Detach the protective housings of the suspension bellows, if necessary.**
2. **Wash the bellows with a pressure washer.**
3. **Keep the pressure washer nozzle during washing at a distance of at least 30 cm from the bellows.**

   The temperature of the washing water must not be higher than 50°C.
   NOTE:
   Do not use special nozzles, such as turbo nozzles, when washing. Follow the instructions of the pressure washer manufacturer.
4. **Install the protective housings back to the suspension.**

4.3.1.3 Cleaning polycarbonate windows

The polycarbonate windows must be cleaned regularly to keep the windows bright as long as possible.

- **Wash the windows by hand or pressure washer.**

  NOTE:
  Do not use special nozzles, such as turbo nozzles, when washing. Follow the instructions of the pressure washer manufacturer.
  Do not point the pressure washer towards the side seals or lead-through seals. The possible detergent may reach the glass parts which are not coated.

- **Wipe the stains by using a detergent or plenty of water.**

  The coated parts of the windows withstand different detergents well.
  NOTE: Do not use abrasive detergents and do not rub the windows dry.

- **Do not use the window wiper on a dry window.**

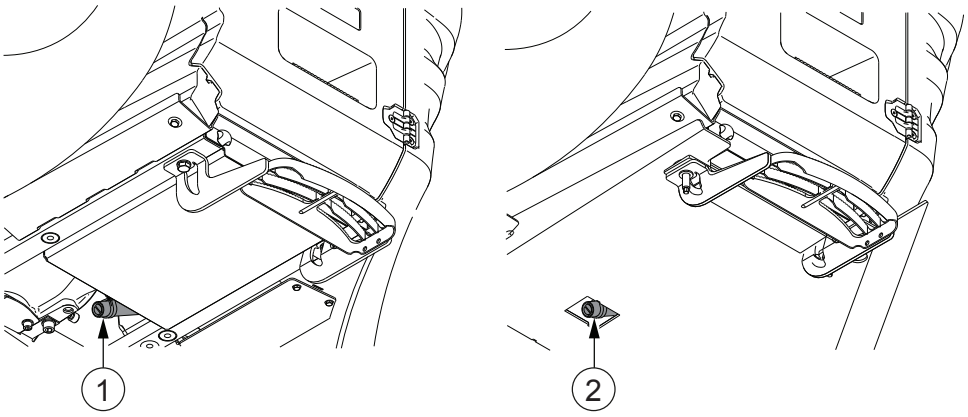
  Ensure that there is enough fluid in the washer reservoir.

- **Never clean the polycarbonate windows using a sharp tool like an ice scraper.**

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4.3.1.4 Cleaning the exhaust pipe of the fuel-operated heater

During the heating season, clean the exhaust pipe of the fuel-operated heater (optional equipment) daily to avoid the risk of fire.



1. Exhaust pipe
2. Exhaust pipe with bottom plate

1. **Remove any dirt and hay from the exhaust pipe.**
2. **Brush the dirt from the exhaust pipe and its surroundings.**

   If the tractor is equipped with bottom plate, clean it as well.

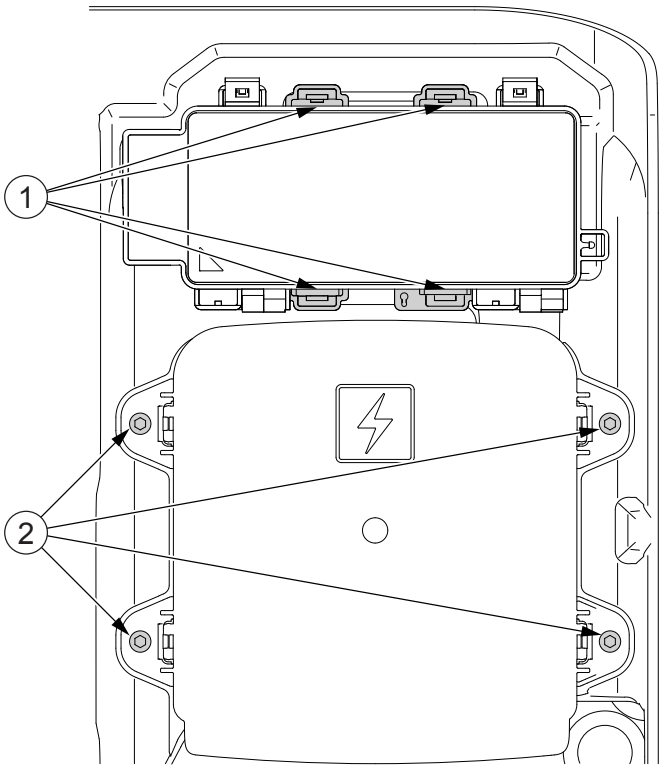
4.3.1.5 Cleaning the fuel-operated heater and its surroundings

During the heating season, clean the fuel-operated heater (optional equipment) and its surroundings monthly to avoid the risk of fire. In dusty conditions, clean more frequently.

1. **Open the battery casing.**

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2. **Detach the engine electric centre from the battery casing.**



1. Engine electric centre fastening clip
2. Main electric centre fastening screw

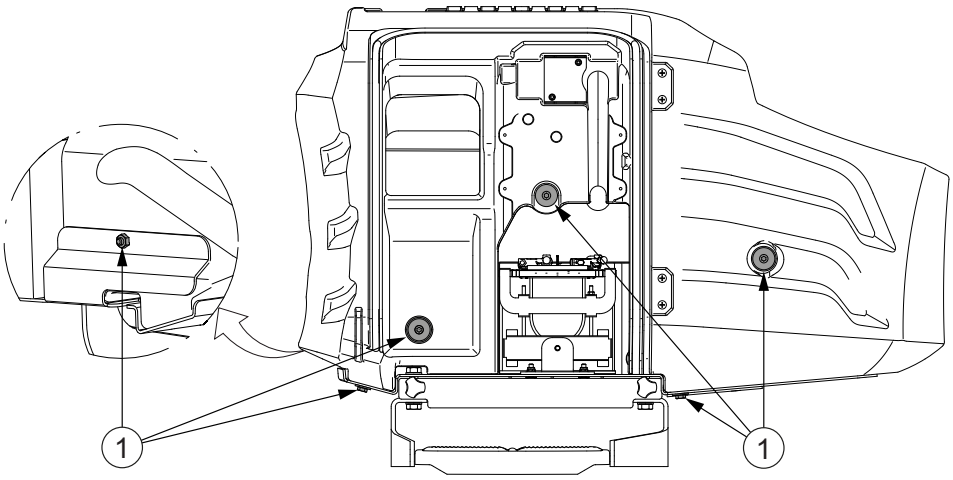
Leave the electric centre hanging by its harness.

3. **Detach the main electric centre from the battery casing.**

Unscrew the main electric centre fastening screws. Leave the electric centre hanging by its harness.

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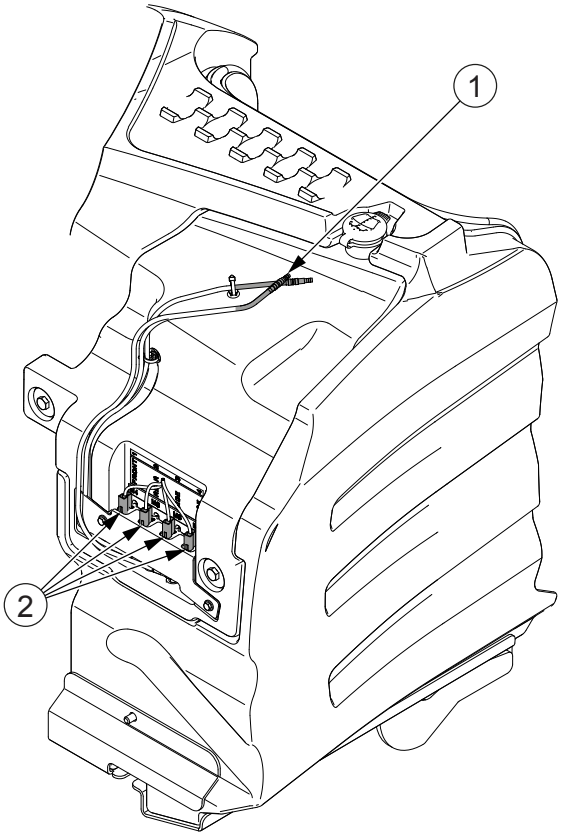
4. **Unscrew the battery casing fastening screws.**



1. Battery casing fastening screw

There are six fastening screws.

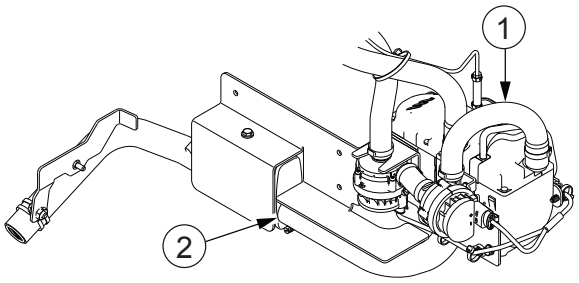
5. **Disconnect the hoses and electric connectors from the windscreen washer fluid reservoir.**



1. Windscreen washer fluid hose
2. Windscreen washer electric connector

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6. **Remove the battery casing.**
7. **Remove any dirt or hay from the fuel-operated heater and its surroundings.**



1. Fuel-operated heater
2. Silencer

8. **Clean fuel-operated heater and its surroundings with a brush and compressed air.**

   Make sure the surface of the silencer is clean. If the tractor is equipped with bottom plate, clean it as well.

9. **Fit the battery casing.**
10. **Connect the hoses and electric connectors to the windscreen washer fluid reservoir.**
11. **Attach the main electric centre to the battery casing.**

    Tighten the 4 fastening screws.

12. **Attach the engine electric centre to the battery casing.**
13. **Close the battery casing.**

4.3.2 Greasing lubricating points fitted with grease nipples

1. **Always clean the grease nipples before applying the grease gun.**
2. **Apply grease through the nipples until clean grease oozes out (unless otherwise instructed).**

   NOTE: Preferably carry out lubrication with bearing points and joints unloaded and with the bearings in different positions.

3. **Wipe away superfluous grease which has been pressed out at the lubricating point.**

4.3.3 Supporting the tractor

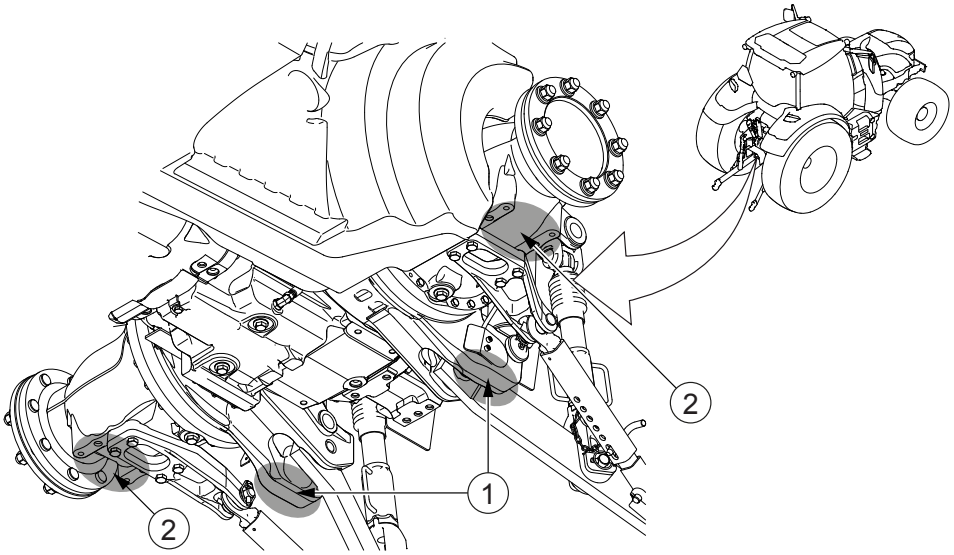
Follow these instructions when supporting the tractor.

- **Make sure that the surface below the tractor is flat and hard.**
- **Make sure that the jack you use is sufficient and that you can lift the tractor with it.**

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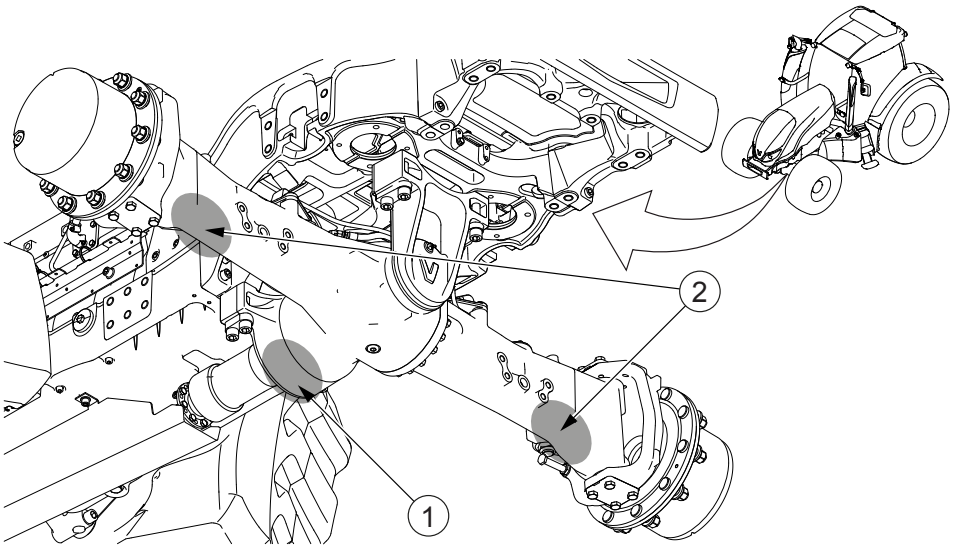
- **Put suitable blocks or stands as supports below the tractor.**
- **Make sure that the supports are below the correct support points on the frame.**

Rear



1. Main support point
2. Secondary support point

Front



1. Main support point
2. Secondary support point

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4.4 Recommended fuel and lubricants

4.4.1 Fuel

Make sure the correct fuel is used.

The properties of light fuel oil that is only intended for heating do not meet the requirements of modern diesel engines, and cannot be used as fuel.

The high pressure pump of the Common Rail system requires the fuel to have sufficient lubricity, because it does not have separate oil lubrication. Adding oil to diesel fuel is forbidden, because it causes carbon build-ups, and if oil is mixed with even a small amount of water it clogs the filter.

Additionally, various fuel quality requirements imposed by taxation and seasonal changes have to be taken into consideration.

4.4.1.1 Quality requirements for engine fuel

The fuel must conform to the EN 590:2009 standard.

Property	Requirement	Test standard
Specific weight +15°C	0.82-0.84 kg/litre	EN ISO 3675:1998 EN ISO 12185
Viscosity +40°C	2.0-4.5 mm^2/s	EN ISO 3104
Sulphur content	max. 15 mg/kg	EN ISO 14596:2007
Cetane number 4737	min. 51	EN ISO 5165:1998
Water content	max. 200 mg/kg	EN ISO 12937:2000
Lubricity/HFRR	max. 460 µm	ISO 12156-1

IMPORTANT: To mix fuel with any admixing material or additives is not allowed.

4.4.1.2 Storing fuel

Fuel has to be stored in a dry and clean environment.

- **Arrange the conditions of storing and distributing fuel so that no water or impurities can enter the storage tanks.**

  The storage tanks must be installed in a slanted position, so that water and impurities are collected at the opposite end of the pump suction pipe. The pump suction pipe must not reach the bottom of the tank.

- **Drain the water periodically from the tank to prevent problems.**

  CAUTION: Do not refuel the tractor at the same time as the storage tank is being refilled.

- **Fill the tank with winter-quality fuel before the cold season.**

4.4.1.3 Storing AdBlue/DEF

In order to guarantee the stability of AdBlue/DEF (as per DIN 70070 standard), the following storage recommendations should be followed:

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- **Use the original container for storage.**
- **Keep the container properly closed and in a cool, well-ventilated area.**

  IMPORTANT: AdBlue/DEF freezes at -11 °C. Take the necessary storage precautions to keep the product from freezing and to ensure the vehicle can be topped up at all times.

- **Keep the container away from heat and direct sunlight.**

  If AdBlue/DEF is stored at high temperatures, the solution may crystallise and release an ammonia odour.

- **Plug the AdBlue/DEF tank vent if the tractor is in storage for a long period.**

4.4.1.4 Biodiesel fuel

The possible alternative fuels to use are rapeseed methyl ester (RME) biodiesel according to the European norm EN 14214, or the US norm ASTM D6751, or second generation BTL biodiesel fuel pre-standard CWA 15940 (to be later updated to standard EN 15940).

When using the first generation biodiesel the engine capacity is almost the same as when using diesel fuel. Component surfaces which are in direct contact with fuel should not contain copper, lead or zinc. These substances react chemically with the biodiesel fuel forming deposit, which can clog the fuel injectors. Rubber materials that are incompatible with the biodiesel should not be used in the fuel injection system.

IMPORTANT: A maximum of 7% dilution of the biodiesel (B7) is allowed for biodiesel fuel according to the European norm EN 14214, or a dilution of 5% according to the US norm ASTM D6751. With second generation BTL biodiesel fuels using 100% biodiesel (B100) is allowed according to the biodiesel fuel pre-standard CWA 15940 (to be later updated to standard EN 15940).

4.4.1.5 AdBlue/DEF

The recommended additive is a urea-based fluid sold under the brand name AdBlue/DEF. AdBlue/DEF is a colourless fluid containing urea and distilled water.

The concentration of urea in AdBlue/DEF is 32.5%. The AdBlue/DEF additive must conform to the standard DIN 70070.

AdBlue/DEF is not a hazardous product, but it must be handled with care. In the event of spillage of AdBlue/DEF on the vehicle, rinse off with water and wipe with paper or a cloth.

IMPORTANT: Store AdBlue/DEF in temperatures under 30°C. Do not store in direct sunlight.

IMPORTANT: AdBlue/DEF freezes at -11 °C. Take the necessary storage precautions to keep the product from freezing and to ensure the vehicle can be topped up at all times.

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IMPORTANT: If the AdBlue/DEF additive is modified or replaced by another fluid, which does not comply with standard DIN 70070, there is a risk that it will not provide the intended result, and it may damage the engine.

4.4.2 Grease

Use proper grease for the lubrication points.

NOTE: Always use proper grease. Each lubrication point requires its own type of grease.

NOTE: Avoid repeated skin contact with the grease.

NOTE: Protect nature and take care of empty packages.

4.4.2.1 Universal Grease - NLGI2 universal grease

Use Universal Grease for greasing for example wheel bearings, chassis water pumps, caterpillar rollers.

Universal Grease:

- is a lithium-based universal grease
- is suitable for greasing all heavy machines
- stands a temperature range of -25°C...+130°C

The grease is adhesive, protects against corrosion and resists water and varying temperatures.

4.4.2.2 Calsium LF - NLGI2 calsium grease LF

Use the Calsium LF grease for greasing points exposed to water. Calsium LF is a long-fibre, high-quality, calcium-based universal grease for vehicle use.

Calsium LF:

- is suitable for greasing all heavy machines
- is a long fibre grease
- is red-coloured
- stands a temperature range of -25°C...+80°C

The Calsium LF grease is intended to be used for chassis, water pumps, pins and especially for greasing points exposed to water. The grease is adhesive, protects against corrosion and resists water and varying temperatures.

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4.4.2.3 Grease Moly - NLGI2 moly grease

Use Grease Moly for wheel bearings, chassis water pumps, caterpillar rollers et cetera. Grease Moly is a high-quality, lithium-based universal grease for vehicle use.

Grease Moly:

- is a lithium-based universal grease
- is suitable for greasing all heavy machines
- stands a temperature range of -25°C...+130°C

The grease is adhesive, protects against corrosion and resists water and varying temperatures.

Molybdenum sulphide as an additive (1-3%) improves the greasing in places exposed to shock loads.

4.5 Storing the tractor

4.5.1 Storing the tractor for a period shorter than two months

When storing the tractor for a period shorter than two months, check the following items.

- **The tractor has been regularly maintained.**
- **The tractor is clean and has been washed.**
- **The frost resistance/glycol concentration of the coolant is sufficient.**
- **The fuel tank is full.**
- **The AdBlue/DEF tank is full.**
- **The battery is disconnected with cable terminals and battery poles cleaned.**
- **The air conditioning is operated for a few minutes at least once a month.**

  IMPORTANT: Run the engine for at least 15 minutes. Shorter running times damage the engine.

4.5.2 Storing the tractor for a period longer than two months

When storing the tractor for a period longer than two months, perform the following maintenance.

- **Clean, wash and carry out the general lubrication the tractor.**
- **Make sure that the frost resistance/glycol concentration of the coolant is sufficient.**
- **Lower the hydraulic lift to its lower position.**

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- **Service the fuel tank.**
  - **Empty the tank of fuel.**
  - **Clean the tank.**
  - **Fill the fuel tank with fuel.**
  - **Change the prefilter in the fuel system.**
  - **Change the fuel filter and bleed the fuel system of air.**
- **Service the AdBlue/DEF tank.**
  - **Empty the tank of AdBlue/DEF.**
  - **Rinse with hot water.**
- **Service the engine.**
  - **Change the engine oil and oil filter.**
  - **Run the engine until it is thoroughly warm.**
- **Disconnect the battery.**

  Clean battery cable terminals and battery poles and store battery in a cool and dry place where the temperature is even. Charge the battery every second month.

  IMPORTANT: Make sure that the main power is turned off before disconnecting or reconnecting the battery.
- **Slacken the fan belt.**
- **Protect exposed parts against corrosion by applying anti-corrosion oil.**
- **Cover the air induction pipe to the air cleaner and the exhaust pipe.**

  Use a plastic bag or similar.
- **Operate the air conditioning for a few minutes at least once a month.**

  IMPORTANT: Run the engine for at least 15 minutes. Shorter running times damage the engine.

4.6 Running the tractor in after storage

4.6.1 Running the tractor in after a storing period shorter than two months

After a storing period shorter than two months you must run the tractor in.

- **Refit the battery (fully charged).**

  IMPORTANT: Make sure that the main power is turned off before disconnecting or reconnecting the battery.
- **Check the oil level in the engine and transmission.**
- **Check the coolant level in the radiator.**
- **Carry out the general lubrication.**
- **Bleed the fuel system, if required.**
- **Check the pressure of the tyres.**
- **Start the engine without racing it.**

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- **Test-run the tractor.**

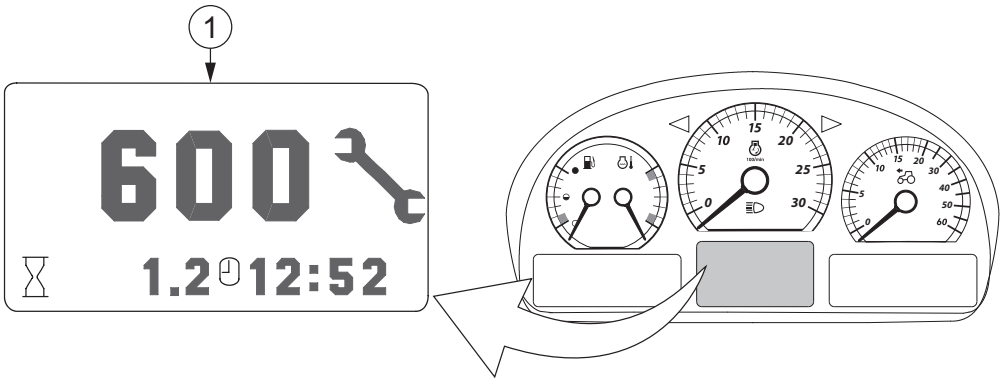
4.6.2 Running the tractor in after a storing period longer than two months

You must run the tractor in after a storing period longer than two months.

- **Check the tyre pressures.**
- **Remove the protective covers from the exhaust pipe and air induction pipe.**
- **Turn the radiator fan carefully forwards and backwards, so that the shaft works loosely (it may be stuck to the sealing ring of the coolant pump).**
- **Check that the engine air filters are undamaged.**
- **Wash off any anti-corrosion oil applied to the exterior of the tractor.**
- **Check the belts' tightness.**
- **Check the oil level in the engine and transmission.**
- **Check the coolant level in the radiator.**
- **Refill the AdBlue/DEF tank with new AdBlue/DEF.**
- **Change the selective catalytic reduction (SCR) system supply module main filter.**
- **Bleed the fuel system of air.**
- **Refit the battery (fully charged).**

  IMPORTANT: Make sure that the main power is turned off before disconnecting or reconnecting the battery.
- **Start the engine without racing it.**
- **Test-run the tractor.**

4.7 Periodical maintenance



1. Periodical maintenance view

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The periodical maintenance view shows when you must perform the tractor service.

NOTE: When the periodical maintenance view is shown on the display, the service work has to be carried out before the view is cleared.

NOTE: Clean the tractor before maintenance.

4.7.1 Periodical maintenance chart

You must follow the service intervals in the periodical maintenance chart.

IMPORTANT: When carrying out service you must follow the service intervals, that is, you must also perform all previously required actions mentioned in the periodical maintenance chart. For example, when doing 2400 hours service you must also do the service required at 1200 hours, 600 hours, weekly and daily.

IMPORTANT: When using Biodiesel fuel there might be exceptions in the periodical maintenance.

NOTE: The service intervals shown apply for normal operating conditions but in more severe conditions servicing should be carried out more frequently.

- The column 10 h shows the tasks that must be carried out daily or every 10 hours.
- The column 50 h shows the tasks that must be carried out weekly or every 50 hours.
- The column 600 h shows the tasks that must be carried out every 600 hours.
- The column 1200 h shows the tasks that must be carried out yearly or every 1200 hours.
- The column 2400 h shows the tasks that must be carried out every other year or every 2400 hours.

Maintenance check point	10 h	50 h	600 h	1200 h	2400 h
Check the engine oil level.	•	•	•	•	•
Check the coolant level.	•	•	•	•	•
Check and clean the radiator fins and engine cover grilles.	•	•	•	•	•
Check the oil level in the transmission and hydraulic system.	•	•	•	•	•
Check for oil and fuel leaks.	•	•	•	•	•
Grease the rear linkage.		•	•	•	•
Check and grease the pick-up hitch.		•	•	•	•
Check and grease the front linkage.		•	•	•	•
Check the front power take-off.		•	•	•	•
Grease the brake mechanism.		•	•	•	•
Grease the front axle mounting bearings.		•	•	•	•
Check the belts' tension.		•	•	•	•
Check the tyre pressure.		•	•	•	•
Table continued on next page					

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Maintenance check point	10 h	50 h	600 h	1200 h	2400 h
Check the emergency brake.		●	●	●	●
Check the windscreen washer fluid level.		●	●	●	●
Check the air pressure system antifreeze fluid level.		●	●	●	●
Check, clean and grease the battery terminals.			●	●	●
Change the engine oil and filter.			● 1)	●	●
Change the cab ventilation air filter.			● 2)	●	●
Change the recirculation air filter.			●	●	●
Check the front loader frame bolt tightness.			● 3)	●	●
Check the wheel nut tightness.			●	●	●
Check the brake pedal free travel.			●	●	●
Check the parking brake.			●	●	●
Change the oil filters of the transmission and hydraulic system.			●	●	●
Check the engine breathing system.			●	●	●
Check the oil level in the front axle differential and hubs.			●	●	●
Change the oil in the hubs of the front axles with brakes.			●	●	●
Change the front power take-off oil and wash the oil filter.			●	●	●
Check the front power take-off couplings.			●	●	●
Grease the rubber surfaces of the trailer quick couplings.			●	●	●
Check the integrity of the air pressure system.			●	●	●
Check the air pressure system automatic water draining.			●	●	●
Fill the air pressure system antifreeze container.			●	●	●
Update the software and calibrate the tractor.			● 4)	●	●
Adjust the engine valves.			● 5)		●
Change the oil in the transmission and hydraulic system.				●	●
Change the oil in the front axle differential and hubs.				●	●
Change the fuel filter and prefilter.				● 6) 7)	●
Change the engine air filters.				● 8)	●
Change the selective catalytic reduction system breather and supply module main filter.				● 9)	●
Check the front wheel toe-in.				●	●
Change the transmission and hydraulic breather.				●	●
Clean the suction strainer.				●	●
Check the power shuttle operation.				●	●
Bleed the brake system.					●
Bleed the front axle brake system.					●
Clean the cooling system.					●
Change the cap of the coolant expansion tank.					●
Check the engine vibration damper.					●
Check the cab mounting.					●
Maintain the air conditioning.					●

1) **NOTE**: In extremely dusty conditions or when using first generation Biodiesel fuel with dilution over 7%, change the oil and filters every 250 hours. With second generation Biodiesel fuel the service interval is normal (600 hours).

2) **NOTE**: In extremely dusty conditions the cab ventilation air filter must be cleaned frequently.

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3) **IMPORTANT**: The front loader frame bolt tightness must be checked every 50 hours if the front loader is used continuously with heavy loads.

4) **NOTE**: The software must be updated and the tractor calibrated after 600 operating hours. After the first update and calibration, do them at 1200 hours and after this every 1200 hours.

5) **NOTE**: The engine valves must be adjusted after 600 operating hours. After the first adjustment, adjust the valves at 2400 hours and after this every 2400 hours.

6) **NOTE**: When using first generation Biodiesel fuel with dilution over 7%, change the fuel filter and prefilter every 500 hours. With second generation Biodiesel fuel the service interval is 1000 hours.

7) **NOTE**: In extremely dusty or cold conditions, change the fuel filter and prefilter every 600 hours.

8) **NOTE**: In extremely dusty conditions the engine air filters must be changed more frequently.

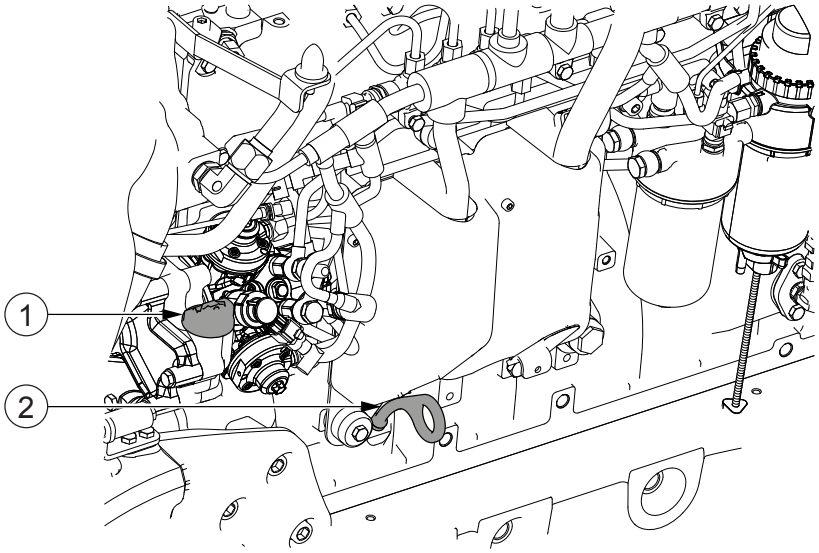
9) **NOTE**: In extremely dusty conditions the selective catalytic reduction system breather must be changed more frequently.

4.7.2 Daily maintenance

4.7.2.1 Checking the engine oil level

Check the engine oil level periodically.

The engine oil level must be checked when the oil has cooled off and has had time to run down to the bottom of the oil sump.



1. Oil filler cap
2. Dipstick

1. **Stop the engine and let it stand for a few minutes.**

   Park the tractor on level ground.

2. **Pull out the dipstick.**

   The oil level must be between the maximum and minimum marks on the dipstick.

3. **Add oil through the oil filler cap, if necessary.**

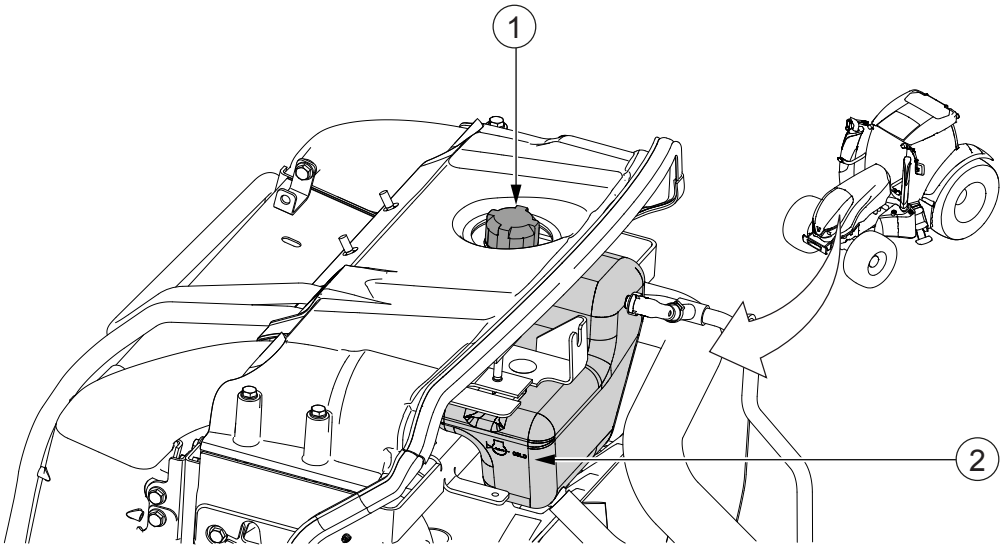
4. **Inspect the oil sump and engine for leakage.**

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4.7.2.2 Checking the coolant level

Check the coolant level periodically.

NOTE: Drain the cooling system completely every second year and refill it with new coolant.



1. Cap of the coolant expansion tank
2. Cold fluid level mark

1. **Stop the engine and let it stand for a few minutes.**

   The checking must be made when the fluid is cold. A hot fluid level is higher than a cold.

2. **Check that the fluid level in the expansion tank is in accordance with the fluid level mark for cold fluid.**

3. **Add more coolant to the tank, if necessary.**

   IMPORTANT: Never use only water as coolant.

   - **Check the freezing point of the coolant.**

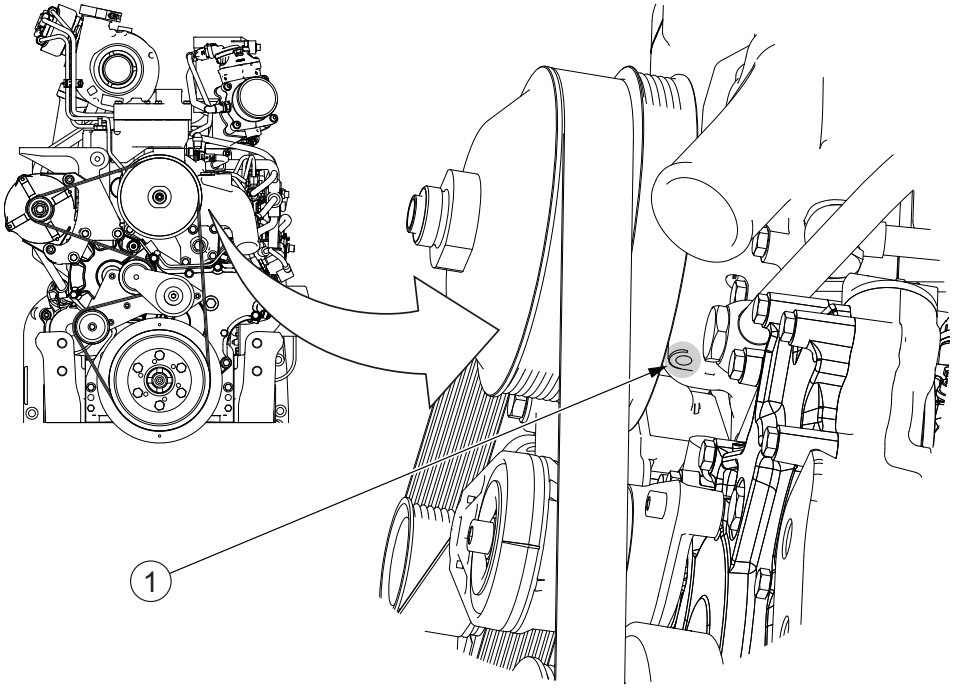
     At the beginning of the cold season it is important to measure the freezing point.
   - **If the freezing point is too high, drain off some of the coolant and top up with antifreeze.**
   - **Run the engine for a while.**

     The antifreeze must be mixed with the coolant.
   - **Re-check the freezing point of the coolant.**

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4. **Inspect the expansion tank for leakage.**

   IMPORTANT: There is a drain hole under the coolant pump that must not be blocked. If coolant drips out of the hole, the pump seal is damaged and must be replaced. In a new engine some leakage is possible until the pump settles in.

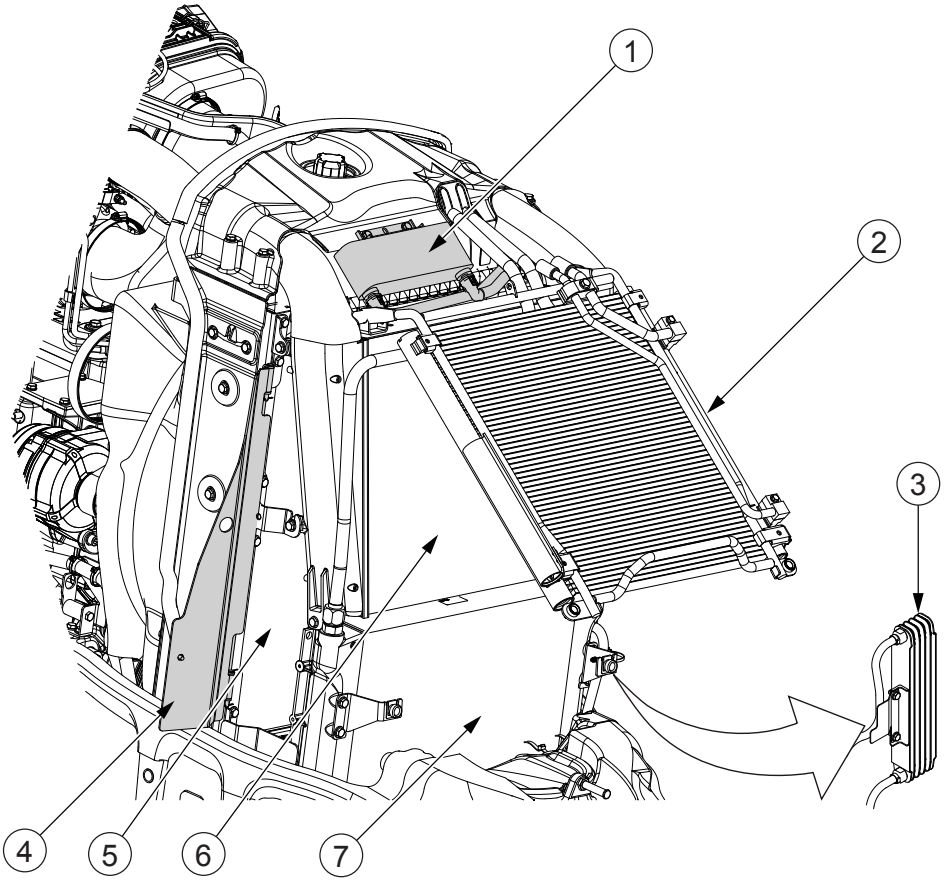


1. Coolant pump drain hole

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4.7.2.3 Cleaning radiators

Clean all the radiator honeycombs periodically.



1. Fuel cooler
2. Air conditioning cooler (extra equipment)
3. Front power take-off (PTO) oil cooler (extra equipment)
4. Protection plate
5. Engine coolant radiator
6. Engine intake air cooler
7. Transmission oil cooler

1. **Open the engine cover.**
2. **Lift the air conditioning cooler (extra equipment) to the upper position.**

   The air condition cooler is fastened with two screws.
3. **Open the protection plate on the right-hand side.**

   The protection plate is locked with a knurled head screw. Opening the protection makes cleaning easier.
4. **Clean the radiators using compressed air or flush them with water.**

   When cleaning, use the air pressure, a water hose (not a pressure washer) or a soft brush. Be careful not to damage the cores.

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5. **Direct the spray against the air streaming direction.**
6. **Close the protection plate.**

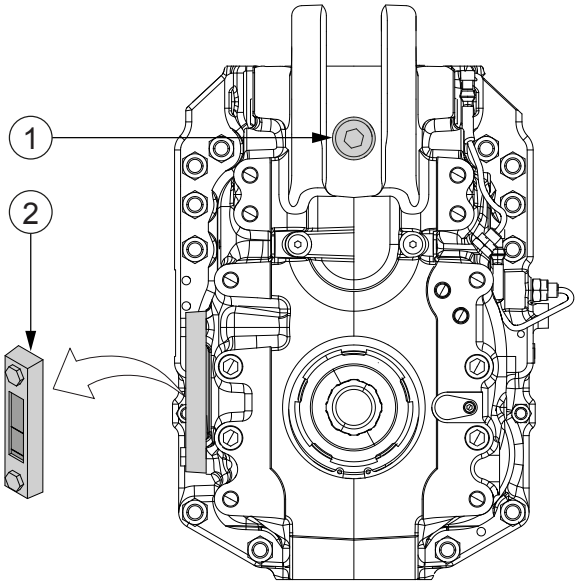
   Tighten the knurled-head screw.
7. **Lower the air conditioning cooler to the lower position.**

   Tighten the two fastening screws.
8. **Close the engine cover.**

4.7.2.4 Checking the oil level in the transmission and hydraulic system

Check the oil level in the transmission and hydraulic system periodically.

Steering, hydraulics and transmission share the same oil system.



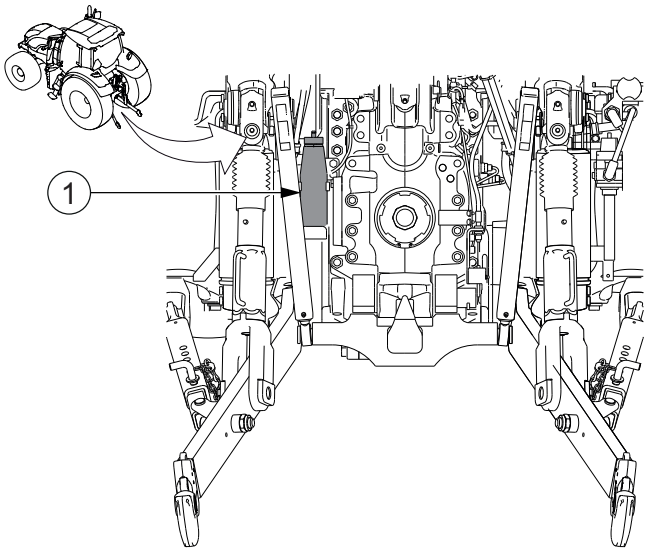
1. Transmission oil filling plug
2. Transmission oil level gauge

1. **Stop the engine and let it stand for a few minutes.**
2. **Check the oil level from the oil level gauge.**

   The oil level must be between minimum and maximum lines.
3. **Add oil if necessary.**

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4. **Check the leakage oil reservoir for the quick couplings and empty it occasionally.**



1. Leakage oil reservoir

4.7.3 Weekly maintenance

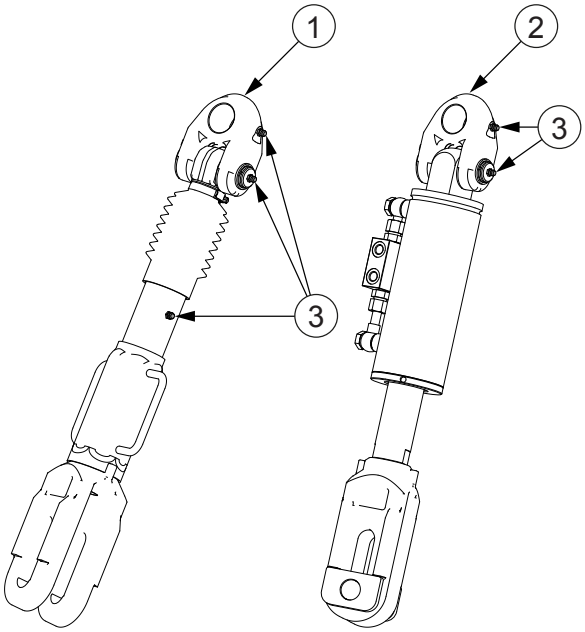
4.7.3.1 Greasing the rear linkage

Grease the rear linkage periodically.

NOTE: Use Universal Grease for greasing.

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1. **Grease the lift links.**

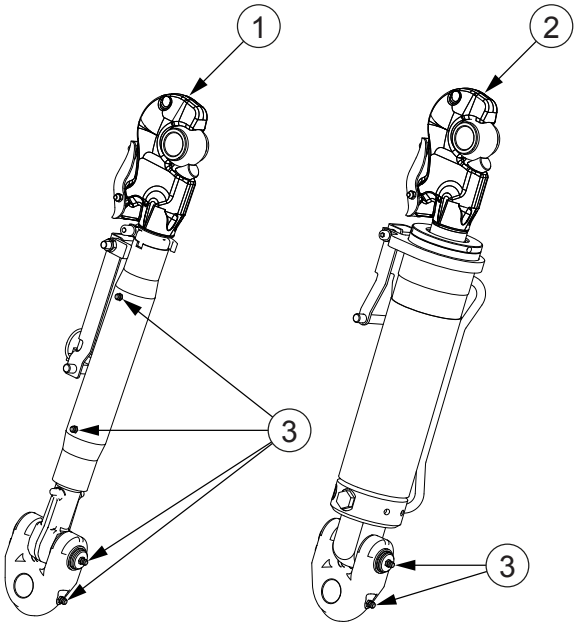


1. Lift link
2. Hydraulic lift link
3. Grease nipple

There are three grease nipples in the regular lift link. There are two grease nipples in the hydraulic lift link.

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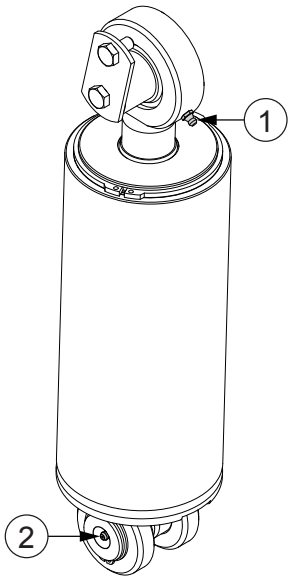
2. **Grease the top link.**



1. Top link
2. Hydraulic top link
3. Grease nipple

There are four grease nipples in the regular top link. There are two grease nipples in the hydraulic top link.

3. **Grease the lifting cylinder pins.**

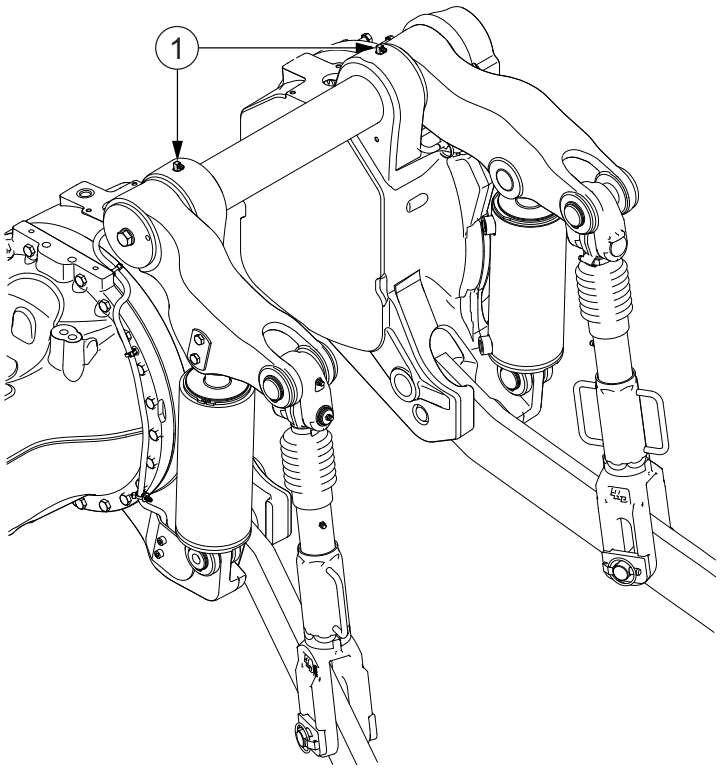


1. Upper pin grease nipple
2. Lower pin grease nipple

There are two grease nipples in the lifting cylinder.

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4. **Grease the differential axle.**

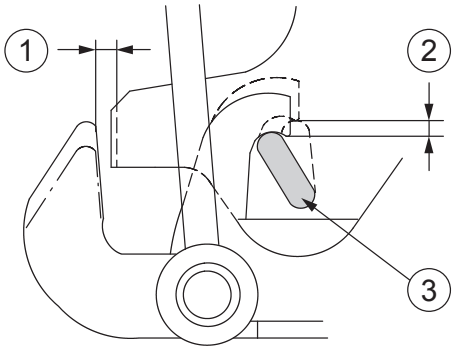


1. Grease nipple

There are two grease nipples.

4.7.3.2 Checking the pick-up hitch

Check the pick-up hitch periodically.



1. Distance between the pick-up hitch and mating surface
2. Pick-up hitch movement
3. Locking latch

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- **Make sure that the locking latch moves to both extreme positions.**

  When the locking latch is turned upwards the Nordic and Euro pick-up hitch must move up 6-8 mm and the hydraulic pick-up hitch must move up 8–10 mm.

- **Check the wear of the pick-up hitch.**

  The distance between the pick-up hitch and mating surface must be under 10 mm.

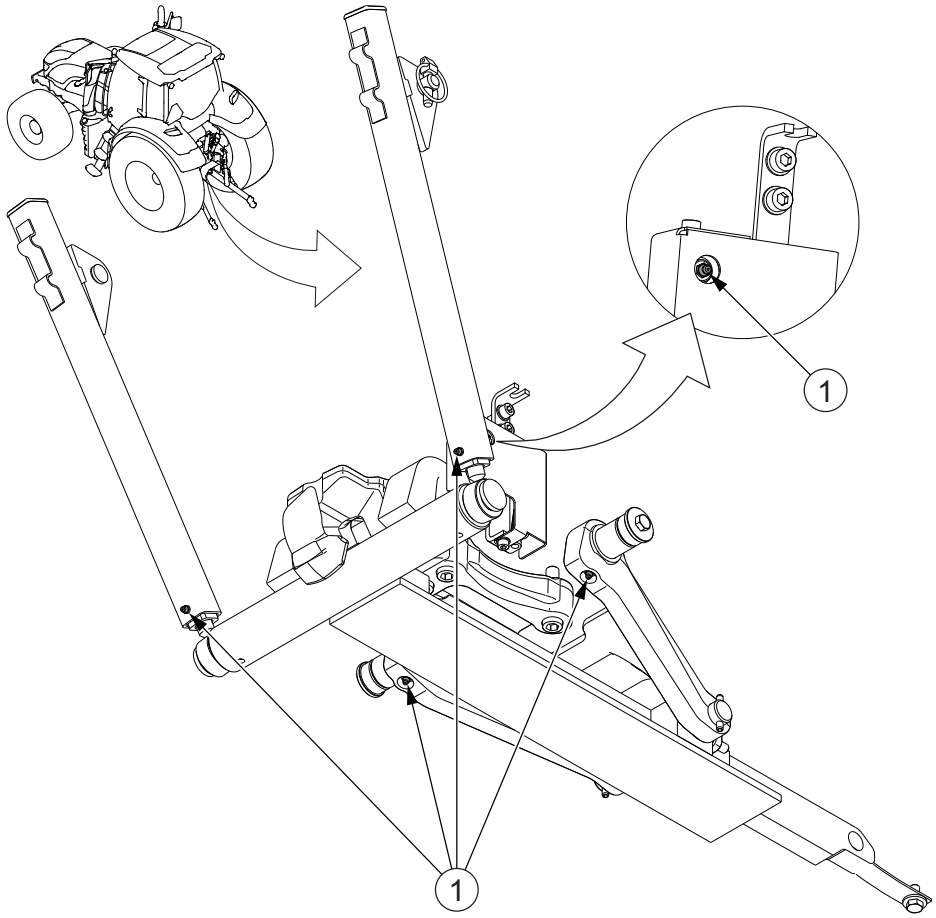
  WARNING: When the pick-up hitch has worn down to 44 mm at the thinnest part, it has to be replaced.

4.7.3.3 Greasing the Nordic and Euro pick-up hitch

Grease the pick-up hitch periodically.

NOTE: Use Universal Grease for greasing.

- **Apply grease to the grease nipples.**



1. Grease nipple

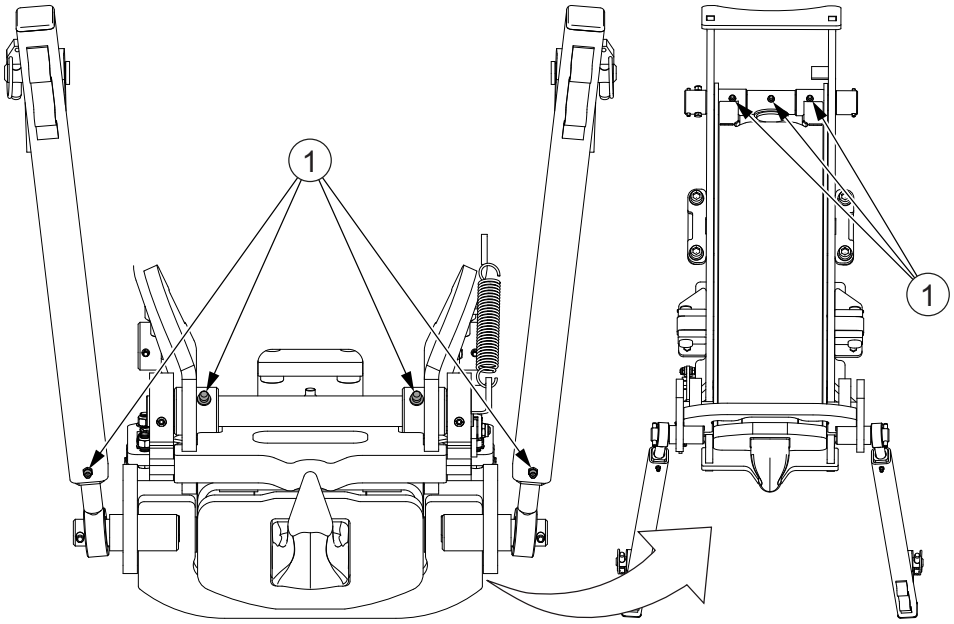
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4.7.3.4 Greasing the hydraulic pick-up hitch

Grease the hydraulic pick-up hitch periodically.

NOTE: Use Universal Grease for greasing.

- **Apply grease to the grease nipples.**



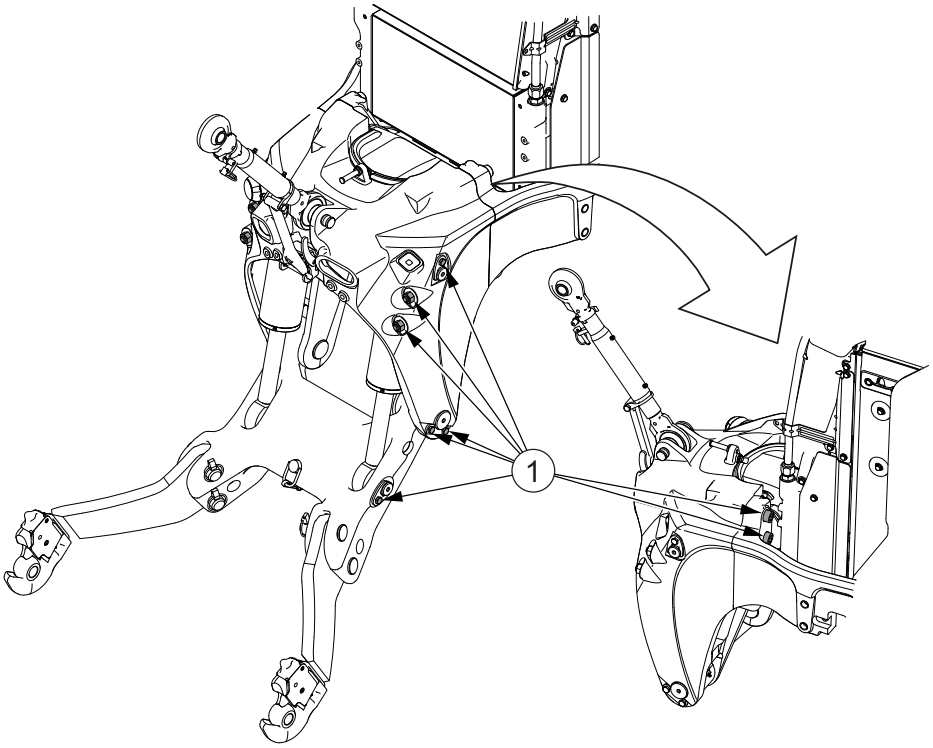
1. Grease nipple

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4.7.3.5 Checking and greasing the front linkage

Check and grease the front linkage periodically.

- **Check regularly that all screws and nuts are tight.**

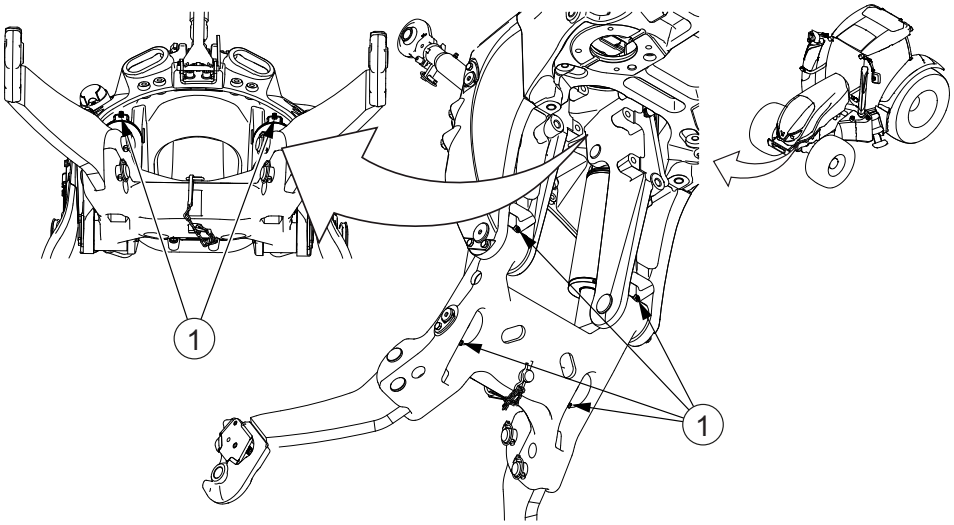


1. Screws and nuts

- **Tighten all screws and nuts of the front linkage after the first 15-25 running hours.**
- **Check that the hydraulic connections have no leaks.**

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- **Grease the lifting cylinder pins and the lifting links shaft.**



1. Grease nipple

It is easier to grease all the nipples when the links are lifted up.

4.7.3.6 Checking the front power take-off

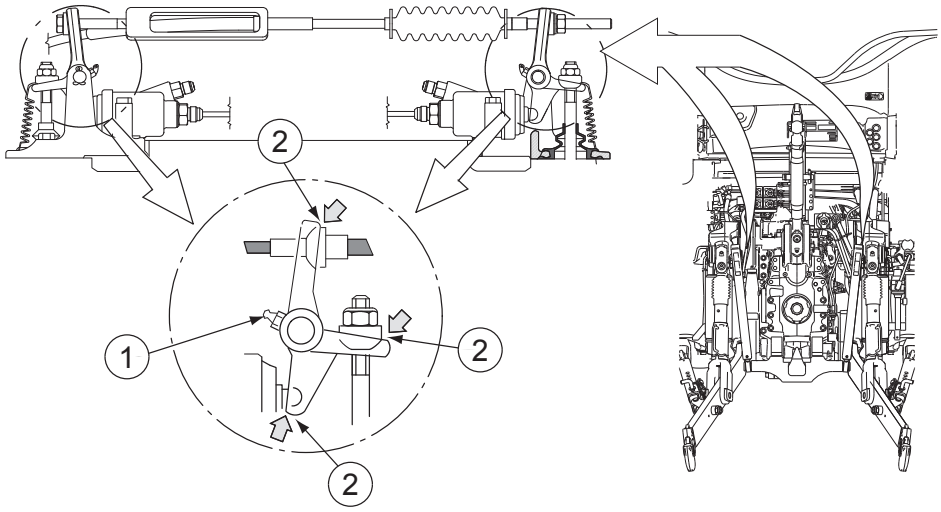
Check the front power take-off periodically.

- **Tighten all fixing screws after the first 10 running hours.**
- **Check regularly that all fixing screws are tight.**
- **Inspect the front power take-off for oil leaks.**
- **Check that the hydraulic connections have no leaks.**

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4.7.3.7 Greasing the brake mechanism

Grease the brake mechanism periodically. Use Calsium LF grease when greasing the brake mechanism.



1. Grease nipple
2. Sliding surfaces

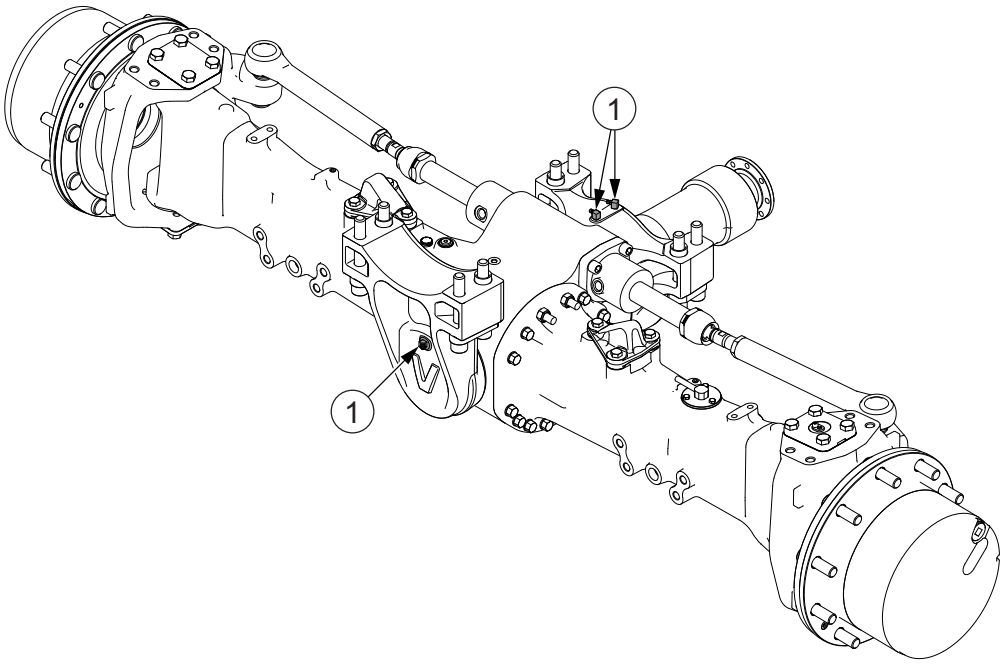
1. **Grease the nipples on both sides of the brake cam.**
2. **Grease the sliding surface on the brake mechanism.**

4.7.3.8 Greasing front axle mounting bearings

You must grease the front axle mounting bearings periodically.

NOTE: Use Universal Grease for greasing.

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1. Greasing nipple

1. **Lift the front end of the tractor a little.**

   Do not lift from front axle or front weight bracket.

2. **Grease the nipples on both bearings.**

   Tilt the axle to make sure that grease goes equally into the bearings.

4.7.3.9 Greasing air-suspended front axle mounting bearings

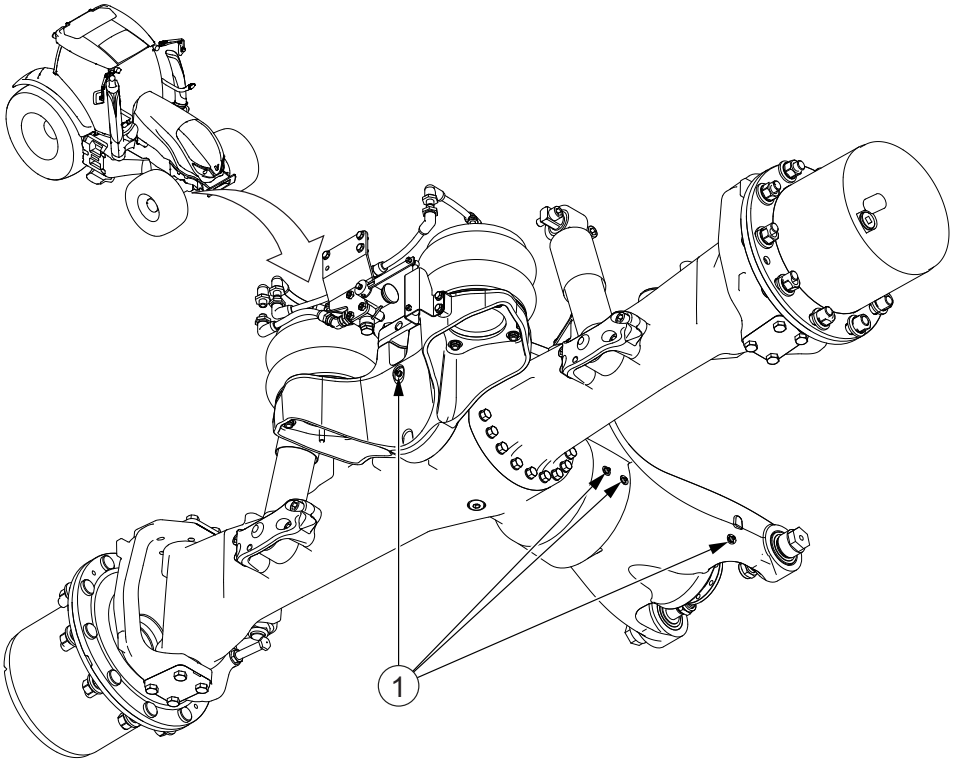
Grease the air-suspended front axle mounting bearings periodically.

NOTE: Use Universal Grease for greasing.

1. **Frequently check that all screws and nuts are tight.**

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2. **Apply grease to the grease nipples.**



1. Grease nipple

4.7.3.10 Checking belts' tension

Check the belts' tension periodically.

NOTE: Always keep a spare fan belt handy.

Changing the air conditioning compressor (extra equipment) and air pressure compressor (extra equipment) belt requires special tools. Contact an authorized Valtra workshop in case this belt needs to be changed.

1. **Check the overall condition of the belts.**

   A slack, worn or oily belt can cause problems with battery charging and the cooling system.

2. **Check the belt tension.**

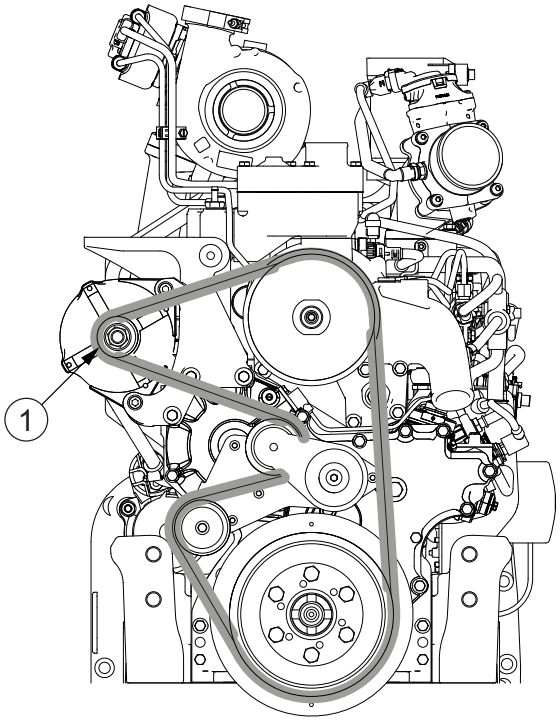
   Turn the belt from its longest free-running part with your fingers. The belt should turn about 90 degrees but not more.

3. **Adjust or change the belt if needed.**

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4.7.3.11 Changing the fan and alternator belt

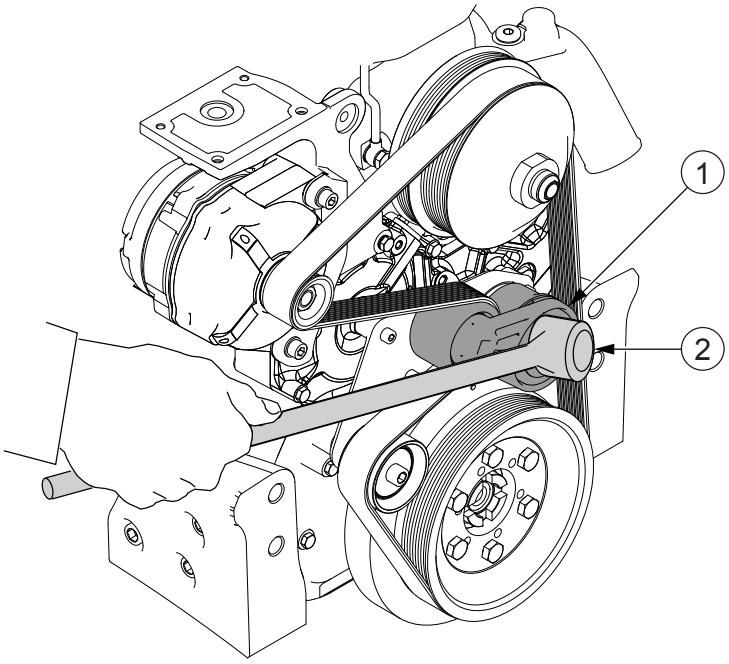
Change the belt if needed.



1. Fan and alternator belt

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1. **Remove the old belt by cutting.**



1. Automatic belt tensioner
2. 1/2" wrench

Loosen the automatic belt tensioner by using a 1/2" wrench.

2. **Fit the new fan and alternator belt.**

Loosen the automatic belt tensioner by using a 1/2" wrench.

4.7.3.12 Checking the tyre pressure

Check the tyre pressure periodically, especially after changing the tyres.

IMPORTANT: Change tyres and wheels at a professional tyre workshop.

- **Check the pressure of the tyres with a pressure gauge.**
- **Add pressure, if needed.**

WARNING: Avoid overinflation as excess pressure may cause the tyre to explode.

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4.7.3.13 Checking the emergency brake

Check the emergency brake periodically.

1. **Use the emergency brake to check that it is functioning.**

   You can test the emergency brake in a normal braking situation.

   WARNING: Check the emergency brake in slow driving speed (approximately 10 km/h). Using the emergency brake can lead to wheels locking up.

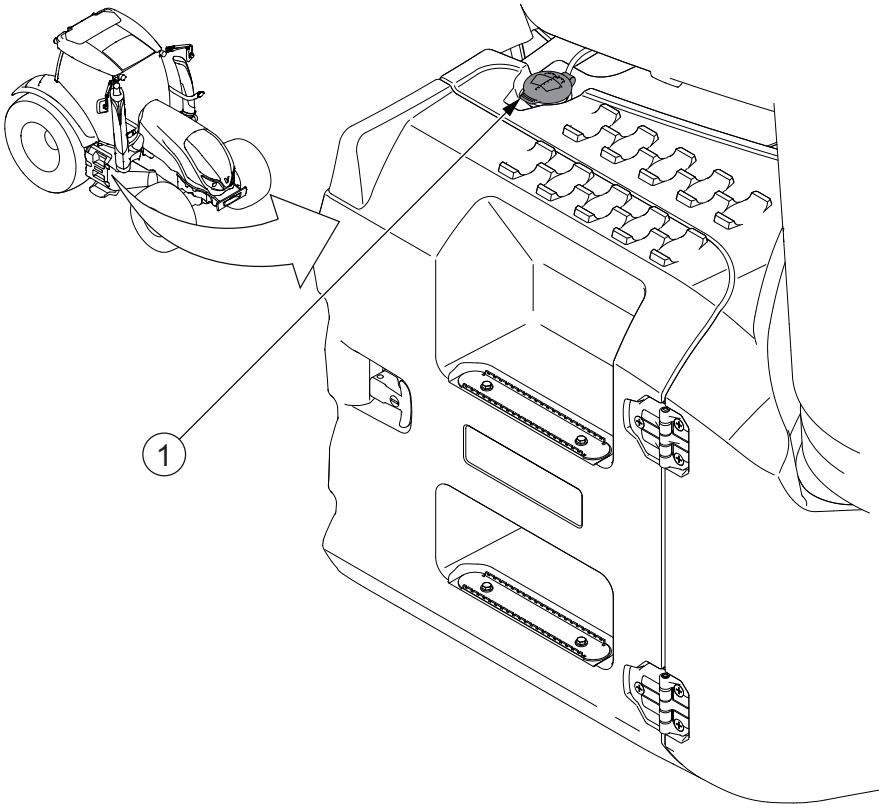
   WARNING: Using the emergency brake releases traction.

2. **Adjust the parking brake, if necessary.**

   Normally there is no need for adjusting, because the parking brake is adjusted, when the drive brakes are adjusted.

4.7.3.14 Checking the windscreen washer fluid amount

Check the windscreen washer fluid amount periodically.



1. Cap of the windscreen washer fluid reservoir

The washer fluid reservoir is common for the front, rear, and side window washers. The rear and side window washers are extra equipment.

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1. **Check the amount of windscreen washer fluid.**

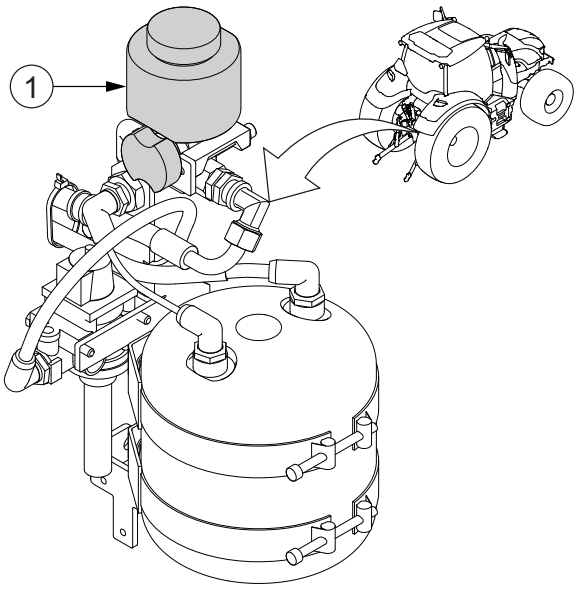
   The washer fluid reservoir is transparent. Open the battery casing and remove the toolbox to check the amount of washer fluid.

2. **Add more windscreen washer fluid, if necessary.**

   NOTE: When the temperature is under 0 °C, use an antifreeze agent in the fluid.

4.7.3.15 Checking the air pressure system antifreeze fluid amount

Check the air pressure system antifreeze fluid amount periodically.



1. Air pressure system antifreeze container

1. **Check the amount of air pressure system antifreeze fluid.**
2. **Add more antifreeze fluid, if necessary.**

   NOTE: Use glycol- or alcohol-based pneumatic equipment antifreeze liquid.

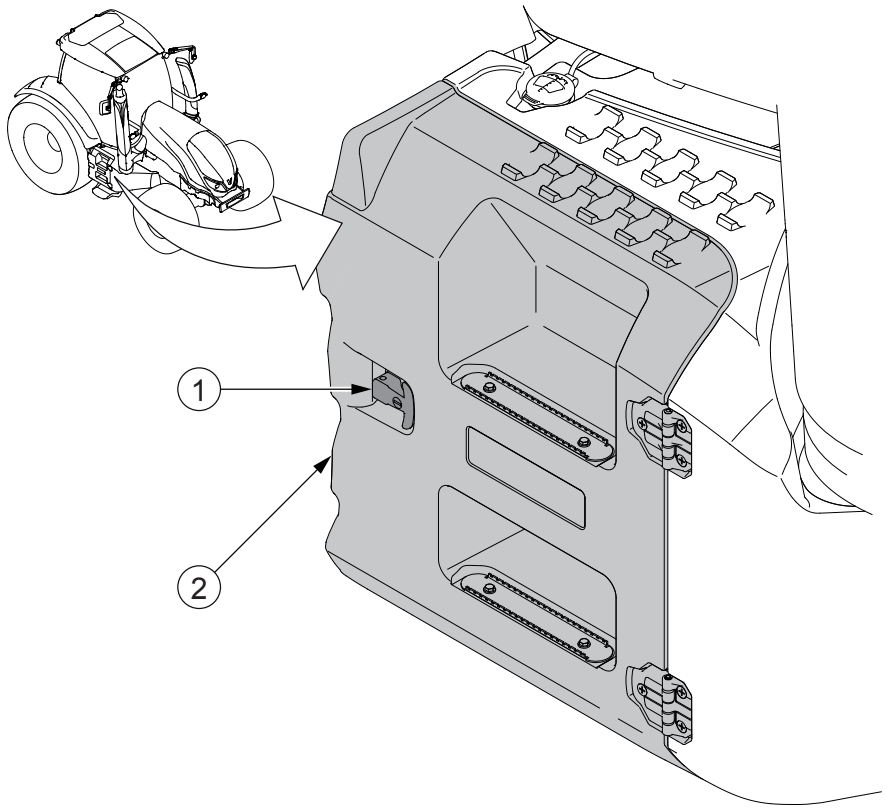
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4.7.4 Maintenance every 600 hours

4.7.4.1 Checking, cleaning and greasing the battery terminals

Check, clean and grease the battery terminals periodically.

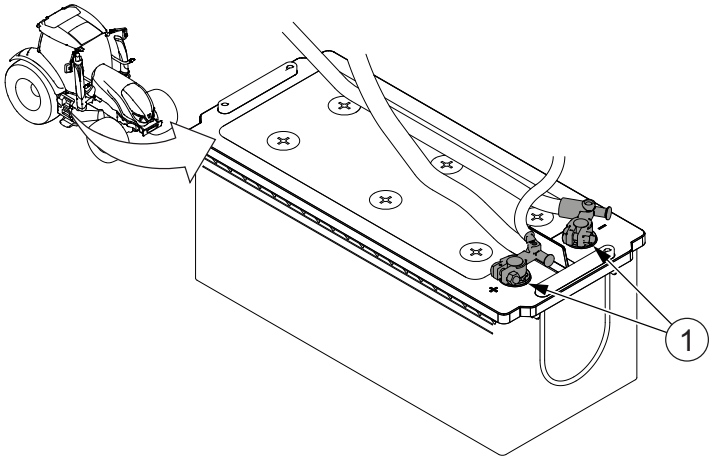
1. **Open the battery casing.**



1. Battery casing lock
2. Battery casing door

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2. **Clean the battery terminals.**



1. Battery terminals

Also clean the surroundings of the battery.

3. **Check the battery cable fixings into the conical battery poles.**
4. **Check the protective plastic cover of the positive lead.**
5. **Check the condition of the battery cables.**
6. **Check the fixing of the battery in the battery casing.**
7. **Grease the battery terminals.**

   NOTE: Use Universal Grease for greasing.

8. **Close the battery casing.**

4.7.4.2 Changing the engine oil and the oil filter

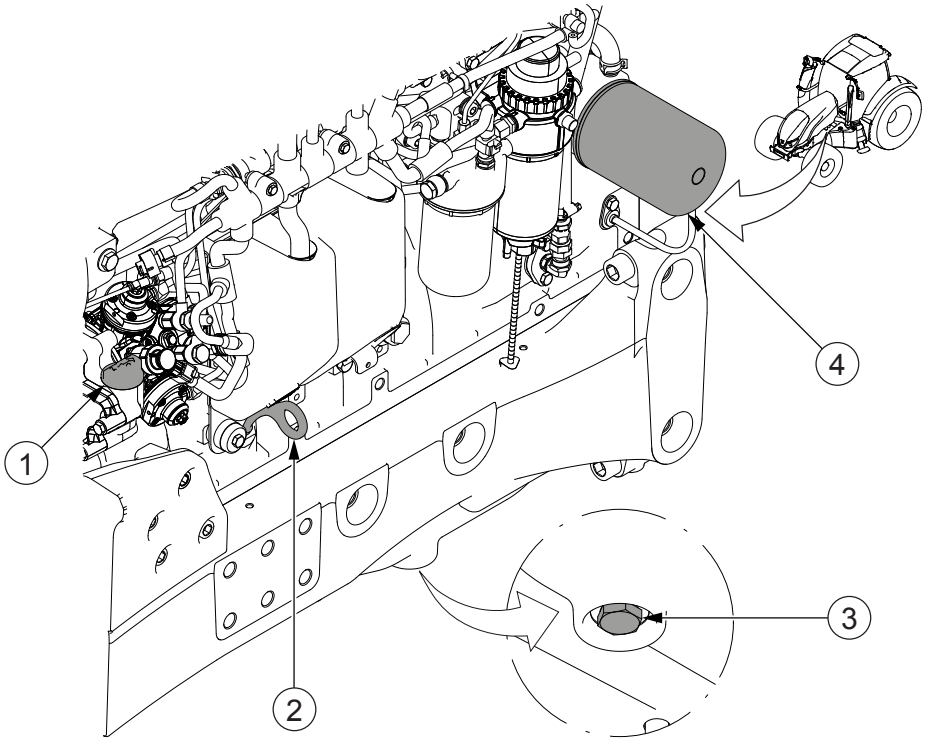
Change the engine oil filter periodically.

Always use original AGCO Parts engine oil filters.

NOTE: In extremely dusty conditions or when using first generation Biodiesel fuel with dilution over 7%, change the oil and filters every 250 hours. With second generation Biodiesel fuel the service interval is normal (600 hours).

NOTE: If the amount of operating hours is low, the oil and filters must be changed at least once a year.

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1. Filler hole
2. Dipstick
3. Drain plug
4. Oil filter

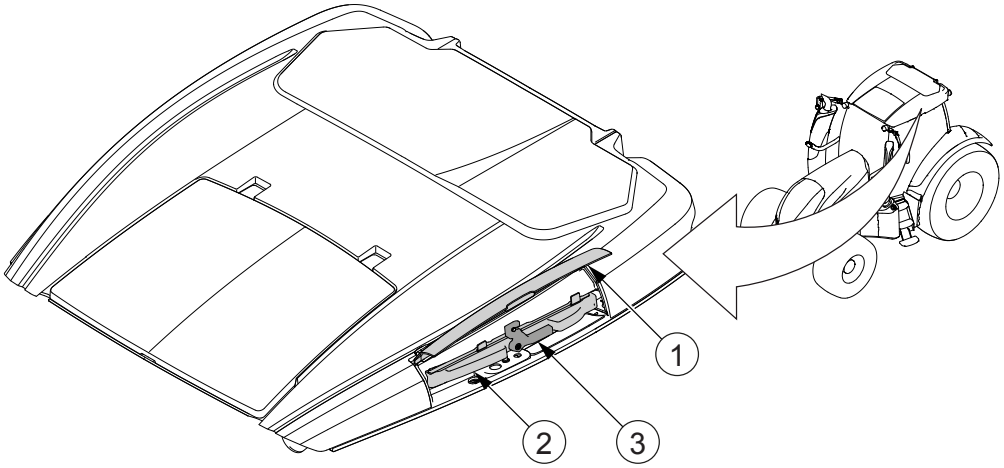
1. **Check that the tractor is standing on level ground.**
2. **Stop the engine and let it stand for a few minutes.**
3. **Remove the drain plug from the engine sump.**
4. **Drain the oil from the engine to a separate container.**
   If the engine is warm, the oil runs better.
5. **Clean, refit and tighten the drain plug.**
6. **Release the oil filter.**
7. **Lubricate the rubber gasket of the new filter.**
   Use clean motor oil.
8. **Attach the new filter.**
   Tighten the new filter by hand (not too tight).
9. **Fill the recommended oil in the filler hole.**
10. **Check the oil level from the dipstick.**
    The oil is filled until the upper mark on the dipstick is reached.
11. **Wipe off any oil which has run out onto the chassis.**

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12. Start the engine.
13. Run the engine and check for possible leaks.
14. Run the engine for a while and check the oil level.

4.7.4.3 Changing the cab ventilation air filter

Change the cab ventilation air filter periodically.



1. Air filter housing hatch
2. Ventilation air filter support frame
3. Ventilation air filter support frame latch

1. Open the air filter housing from the upper left-hand corner of the cab roof.
2. Open the support frame latch.
3. Extract the support frame.
   - Lower the support frame slightly.
   - Pull the support frame outwards.
4. Replace the ventilation air filter with a new one.

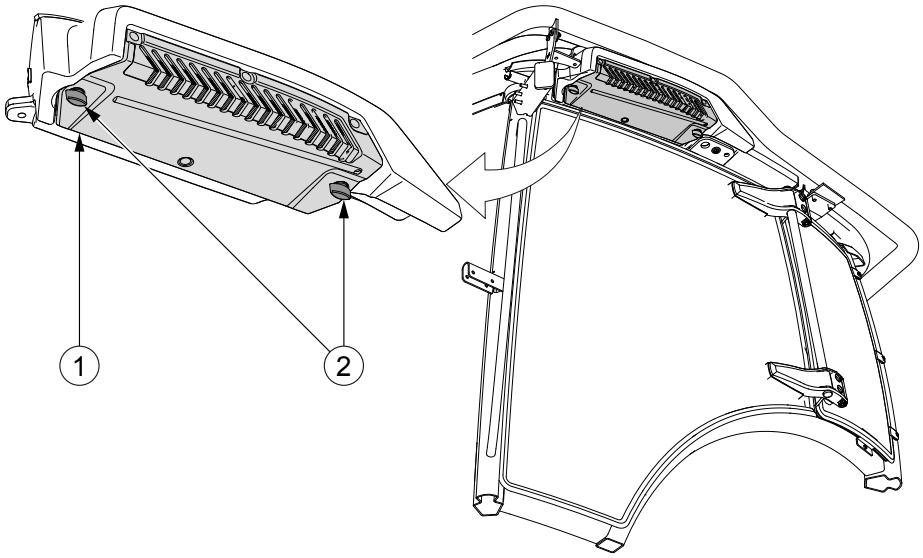
   Change ventilation air filter more often if necessary.
5. Insert the support frame.
   - Push the support frame into the air filter housing.
   - Raise the support frame slightly.
6. Close the support frame latch.
7. Close the air filter housing.

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4.7.4.4 Changing the Skyview equipment cab ventilation air filter

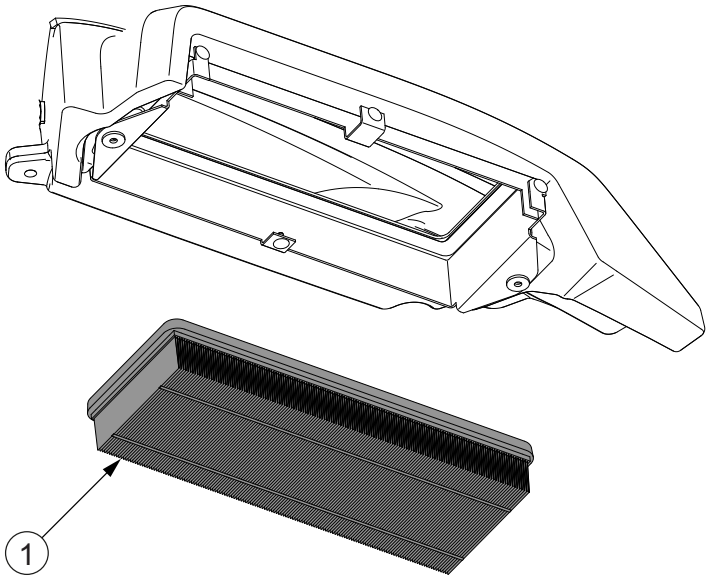
Change the Skyview equipment cab ventilation air filter periodically.

1. **Open the air filter housing from the upper left-hand corner of the cab roof.**



1. Air filter housing hatch
2. Knurled head screw

2. **Replace the ventilation air filter with a new one.**



1. Ventilation air filter

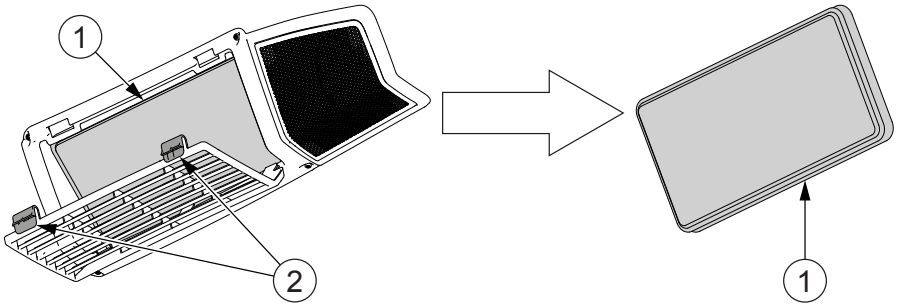
Change ventilation air filter more often if necessary.

3. **Close the air filter housing.**

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4.7.4.5 Changing the recirculation filter

Change the recirculation filter periodically.



1. Filter element
2. Grille fastening clip

1. **Open the grille.**
2. **Extract the filter element.**
3. **Change the filter element.**

   Make sure that the seal around the filter element fits into the grooves in the air passage.

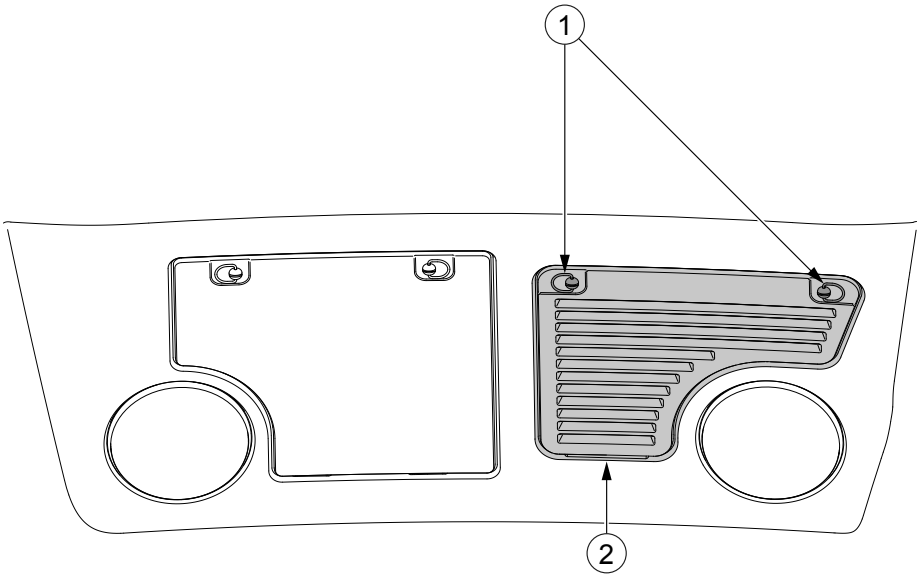
   NOTE: Change the filter more frequently if needed.

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4.7.4.6 Changing the Skyview equipment cab recirculation filter

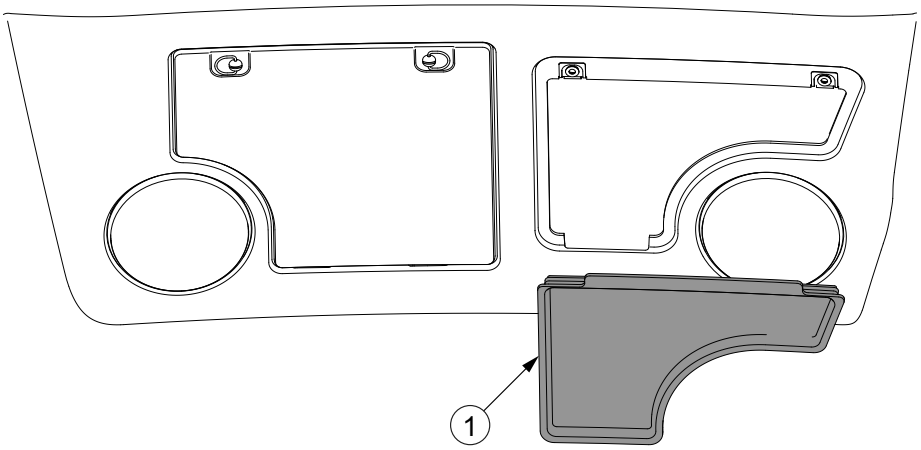
Change the Skyview equipment cab recirculation filter periodically.

1. **Open the grille.**



1. Grille fastening clip
2. Grille

2. **Extract the filter element.**



1. Filter element

3. **Change the filter element.**

   Make sure that the seal around the filter element fits into the grooves in the air passage.

   NOTE: Change the filter more frequently if needed.

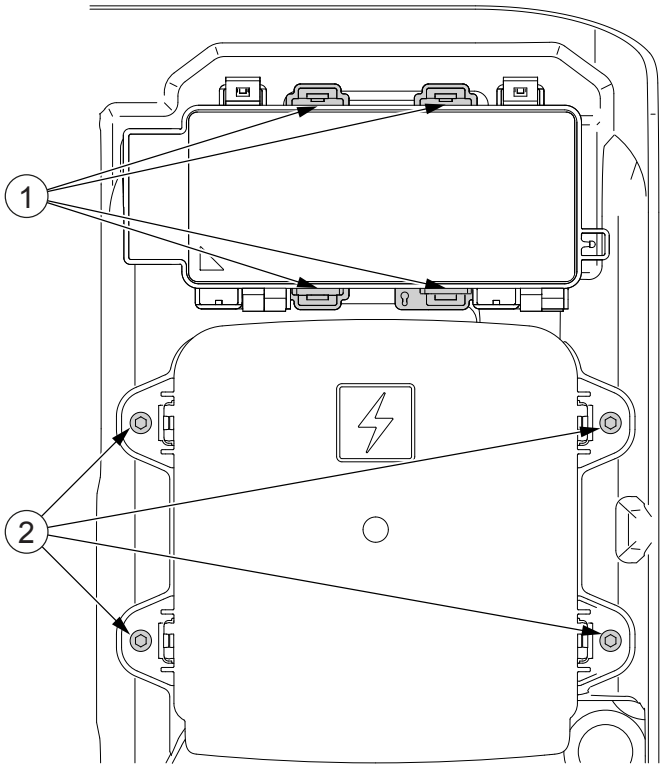
4. **Close the grille.**

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4.7.4.7 Checking the front loader frame bolt tightness

Check the front loader frame bolt tightness periodically.

1. **Open the battery casing.**
2. **Detach the engine electric centre from the battery casing.**



1. Engine electric centre fastening clip
2. Main electric centre fastening screw

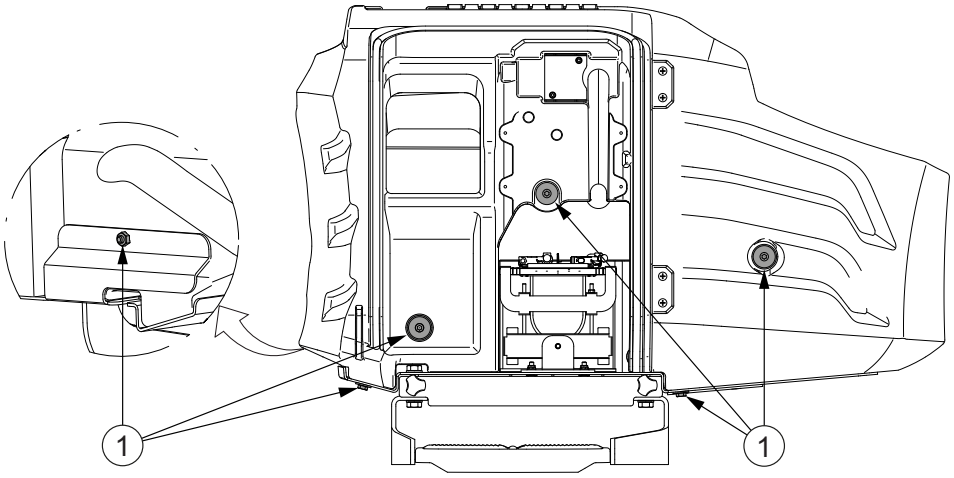
Leave the electric centre hanging by its harness.

3. **Detach the main electric centre from the battery casing.**

   Unscrew the main electric centre fastening screws. Leave the electric centre hanging by its harness.

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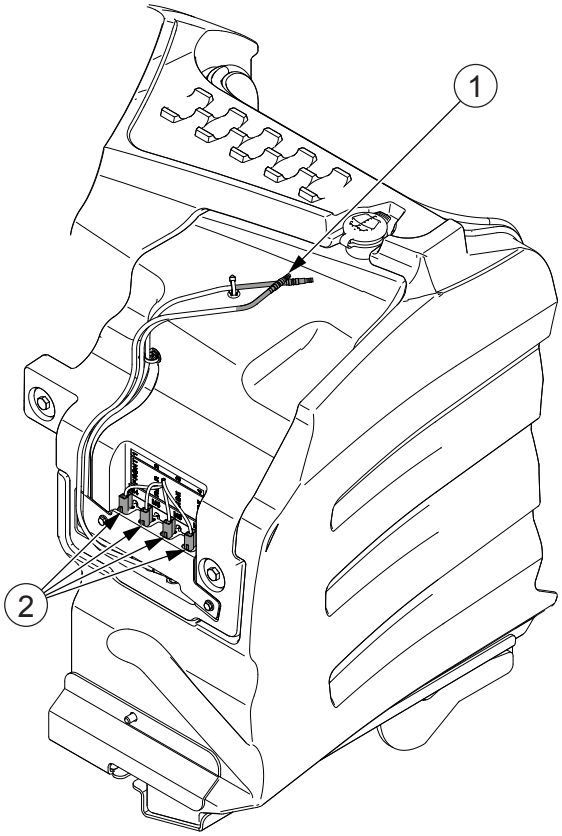
4. **Unscrew the battery casing fastening screws.**



1. Battery casing fastening screw

There are six fastening screws.

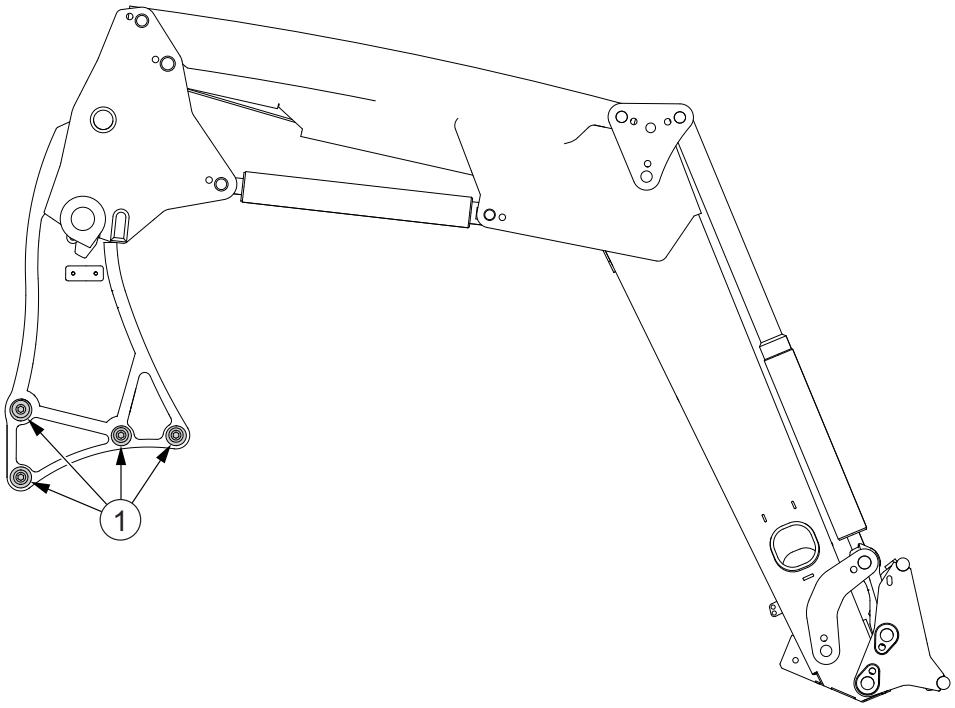
5. **Disconnect the hoses and electric connectors from the windscreen washer fluid reservoir.**



1. Windscreen washer fluid hose
2. Windscreen washer electric connector

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6. **Remove the battery casing.**
7. **Tighten the front loader frame bolts on the right hand side.**



1. Front loader frame bolt

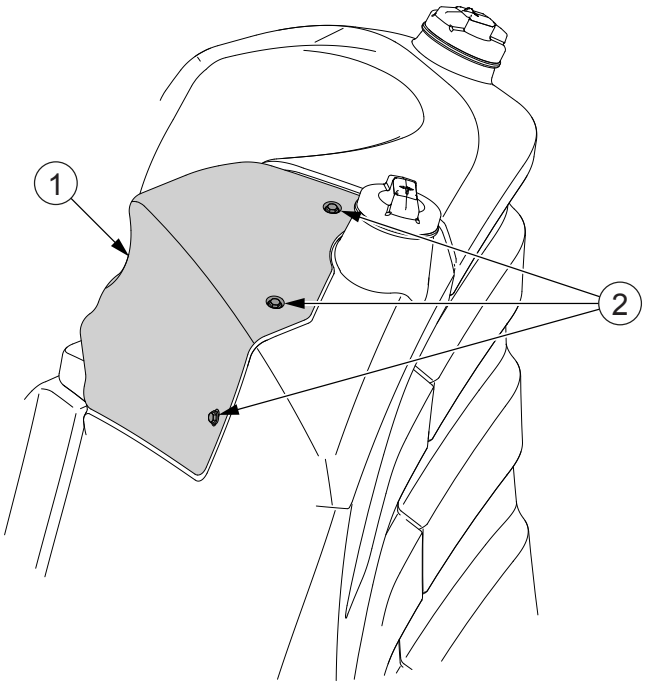
The tightening torque is 600 Nm.

8. **Fit the battery casing.**
9. **Connect the hoses and electric connectors to the windscreen washer fluid reservoir.**
10. **Attach the main electric centre to the battery casing.**

    Tighten the 4 fastening screws.
11. **Attach the engine electric centre to the battery casing.**
12. **Close the battery casing.**

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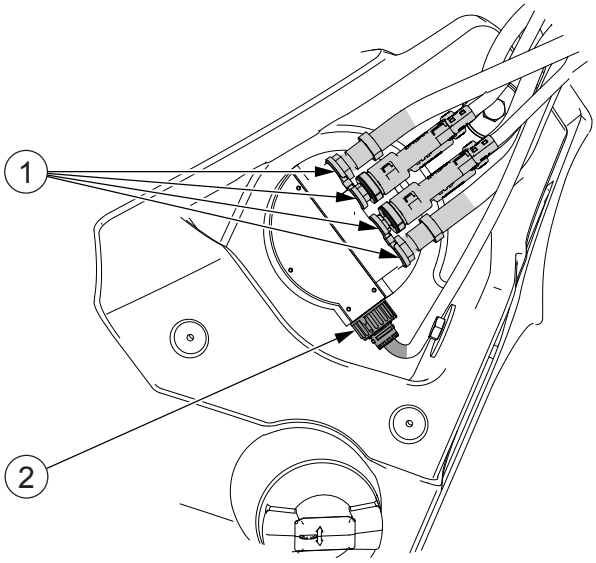
13. **Remove the cover plate on the AdBlue tank.**



1. Cover plate
2. Fastening screw

The cover plate is fastened with 3 screws.

14. **Disconnect the electric connector and hoses from the tank heating sensor cap.**

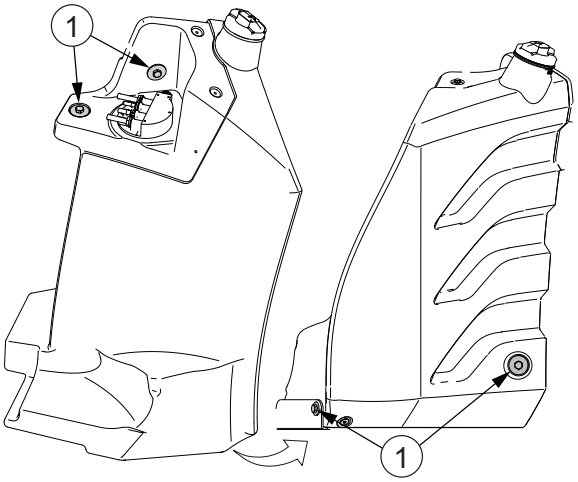


1. Tank heating sensor cap hoses
2. Electric connector

Plug the hoses.

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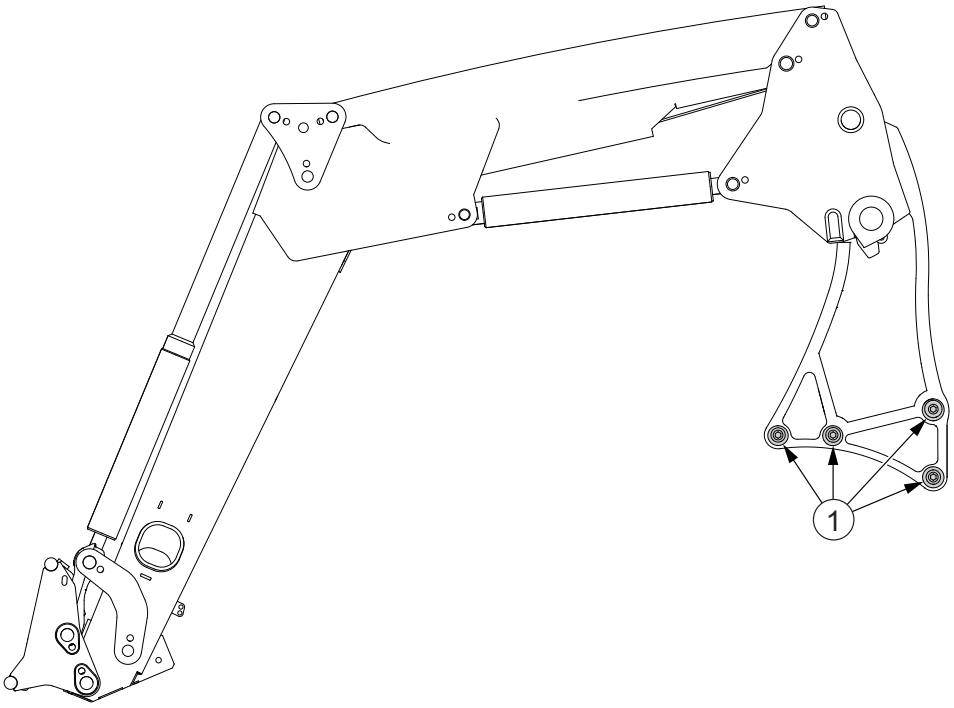
15. **Unscrew the AdBlue tank fastening screws.**



1. Fastening screw

The AdBlue tank is fastened with 4 screws.

16. **Move the AdBlue tank so that you can reach the front loader frame bolts.**
17. **Tighten the front loader frame bolts on the left hand side.**



1. Front loader frame bolt

The tightening torque is 600 Nm.

18. **Fit the AdBlue tank.**
19. **Connect the electric connector and hoses to the tank heating sensor cap.**
20. **Tighten the AdBlue tank fastening screws.**

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21. **Fit the cover plate on the AdBlue tank.**

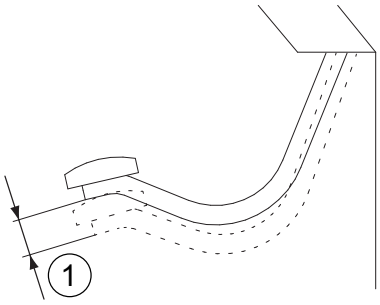
4.7.4.8 Checking the wheel nut tightness

Check the wheel nut tightness periodically to avoid unnecessary risks.

- **Check the tightness of the wheel nuts.**
- **Check the tightness of the wheel disc/rim bolts.**

4.7.4.9 Checking the brake pedal free travel

Check the brake pedal free travel periodically.



1. Free travel of the pedal

1. **Check the free travel of the brake pedal.**

   The pedal free travel must be 35-45 mm. Check with both pedals latched together.

   NOTE: The free travel may be larger if the tractor is equipped with trailer air pressure brakes or trailer fluid brake valve.

2. **Adjust the free travel if necessary.**

4.7.4.10 Adjusting the brake pedal free travel

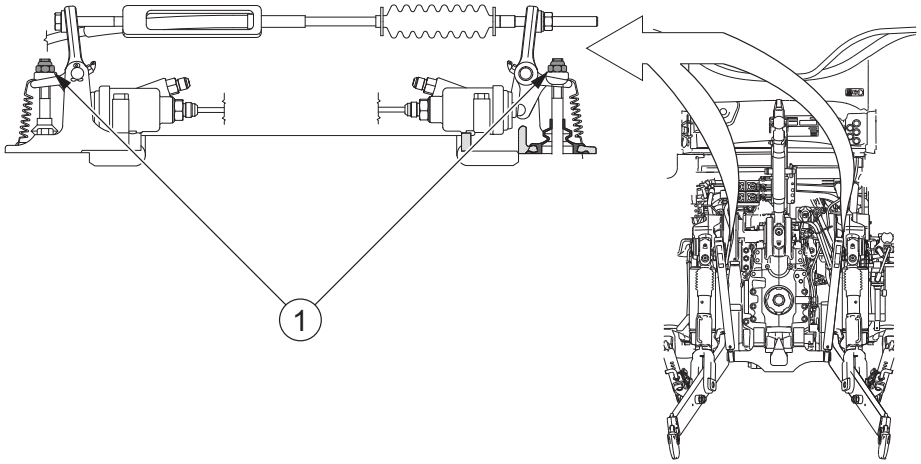
Adjust the travel of brake pedals when needed.

1. **Make sure that the tractor cannot move by itself.**
2. **Raise the rear wheels off the ground.**
3. **Start the tractor.**
4. **Move the power shuttle lever to centre position (N).**

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5. **Tighten the brake adjusting nuts.**

   Adjust the nuts with the torque wrench to 20 Nm.



   1. Adjusting nut

6. **Slacken the nuts.**

   Slacken the nuts 2.3 turns.

7. **Check that the wheels can rotate freely.**

8. **Check the function of both brake pedals individually by driving.**

   Check that the brake action is the same on both wheels while driving with both pedals latched together.

9. **Check that the pedal free travel is the same on both wheels.**

   The pedal free travel must be 35-45 mm. Check with both pedals latched together.

   If the pedal free travel is not correct, readjust the travel.

10. **Check the free travel on the rear brake pedal.**

    The reverse drive system is extra equipment.

    The pedal free travel must be 60-70 mm.

    If the pedal free travel is not correct, bleed the brakes.

4.7.4.11 Checking the parking brake

Check the parking brake periodically.

1. **Engage the parking brake.**
2. **Check that the brake is functioning.**
3. **Release the parking brake.**
4. **Check that the brakes were released.**
5. **Adjust the parking brake if necessary.**

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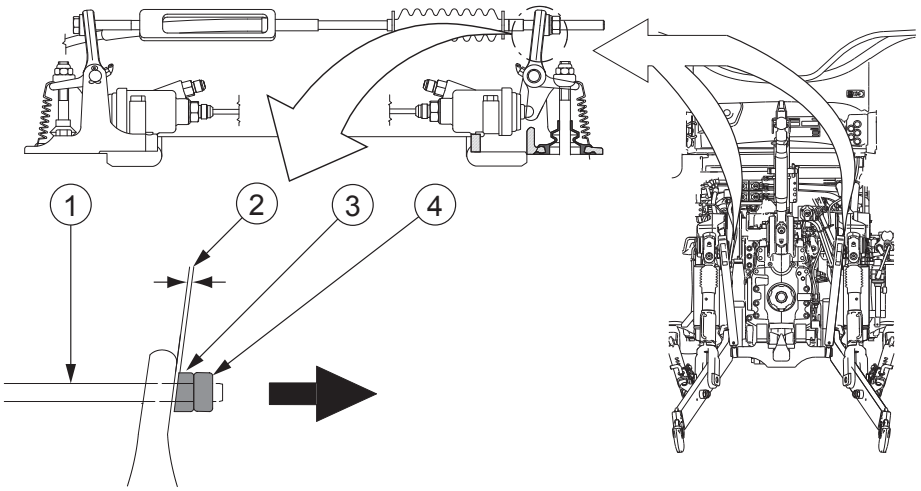
4.7.4.12 Adjusting the parking brake

The parking brake is adjusted in the factory and readjustment is not necessary unless parts of the brake mechanism have been changed. Adjusting the driving brakes affects the parking brake.

The parking brake is controlled with a spring return pressure cylinder and it is connected to the drive brake mechanism by a cable.

IMPORTANT: Always adjust the driving brakes before adjusting the parking brake.

1. **Start the tractor.**
2. **Fit blocks in front of the front wheels to prevent the tractor from moving.**
3. **Move the power shuttle lever to neutral (centre position).**
4. **Pull the cable clearance to the end of the cable.**



1. Cable
2. Clearance
3. Adjusting nut
4. Locking nut

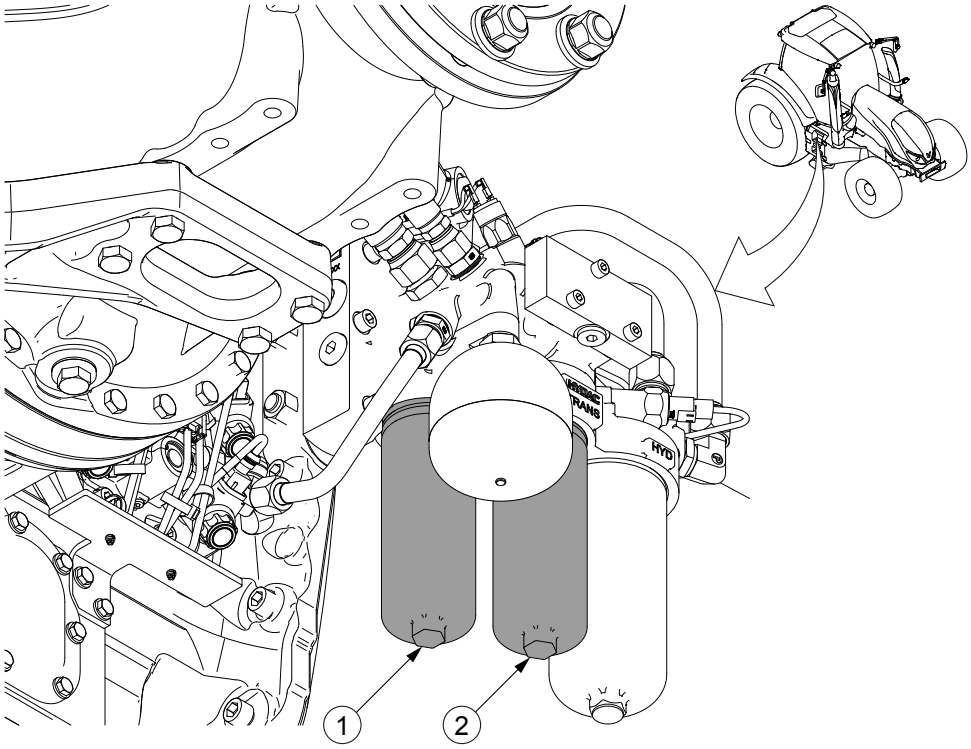
5. **Open the locking nut.**
6. **Adjust the clearance through the adjusting nut so that it is 1-2 mm.**
7. **Tighten the locking nut.**

IMPORTANT: When mounting the parking brake cable, the cylinder side end has to be mounted according to the tolerances. This should only be carried out by an authorised Valtra workshop.

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4.7.4.13 Changing transmission oil filters

Change the transmission oil filters periodically.



1. Transmission lubrication filter
2. Low pressure filter of the transmission system

Oil filters are located on the right side of the tractor under the cab. The lubrication filter is indicated with the text LUB on the mounting piece on top of it. The low pressure filter is indicated with the text TRANS on the mounting piece on top of it.

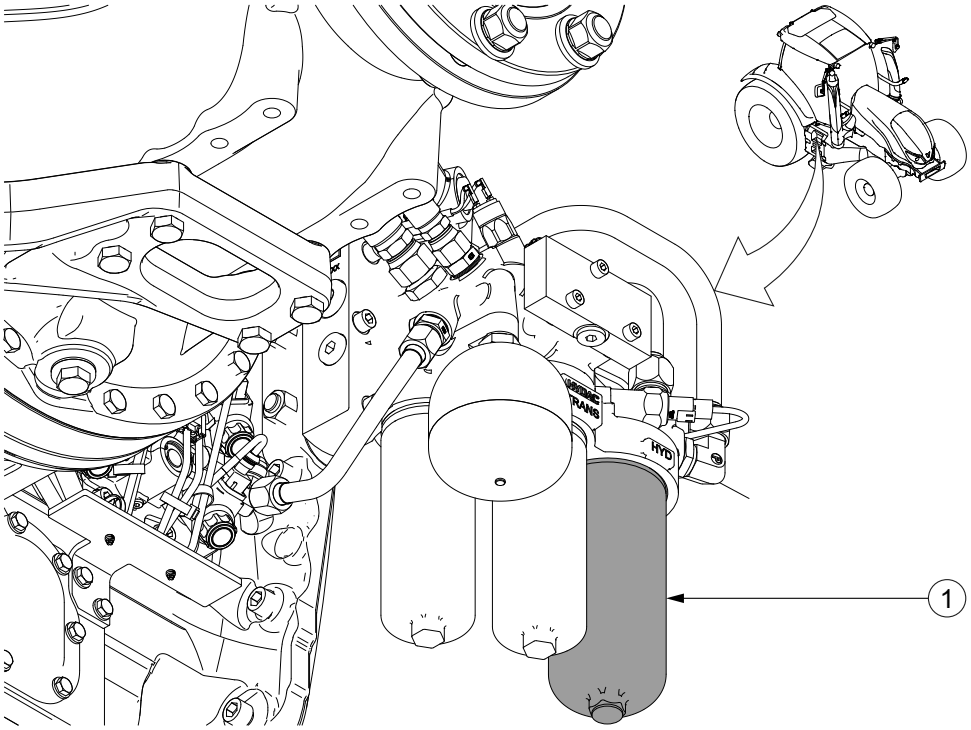
1. **Fit a suitable container under the filter.**
2. **Clean the filter housing and the surrounding area.**
3. **Remove the filter housing and the filter element.**
4. **Wash the filter housing in clean diesel fuel.**
5. **Lubricate the seal of the new filter element.**
6. **Fit the new filter into place.**
7. **Refit the filter housing.**

   Screw in the housing fully by hand and then unscrew by one quarter-turn.

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4.7.4.14 Changing the hydraulic system oil filter

Change the hydraulic system oil filter periodically.



1. Return oil filter of the hydraulic system

Oil filters are located on the right side of the tractor under the cab. The return oil filter is labelled with the text HYD on the mounting piece on top of it.

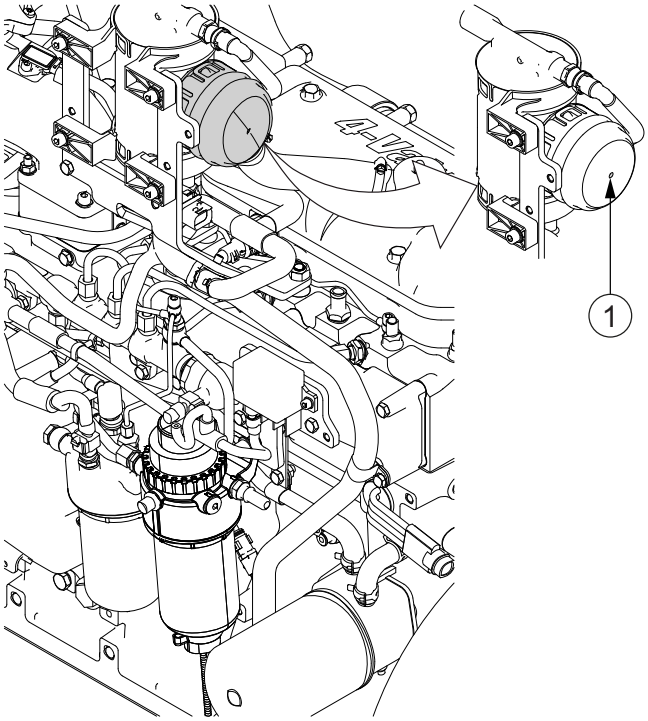
1. **Fit a suitable container under the filter.**
2. **Clean the filter housing and the surrounding area.**
3. **Remove the filter housing and the filter element.**
4. **Wash the filter housing in clean diesel fuel.**
5. **Lubricate the seal of the new filter element.**
6. **Fit the new element into place.**
7. **Refit the filter housing.**

   Screw in the housing fully by hand and then unscrew by one quarter-turn.

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4.7.4.15 Checking the engine breathing system

Check the engine breathing system periodically.

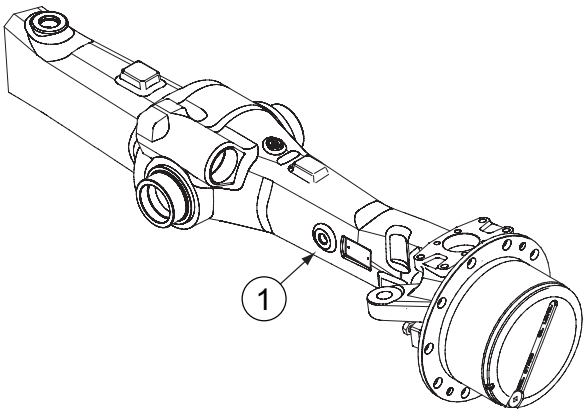


1. Ventilation hole

- **Check that the ventilation hole is not blocked.**

4.7.4.16 Checking the oil level in the front axle differential

Check the oil level in the front axle differential periodically.



1. Inspection hole

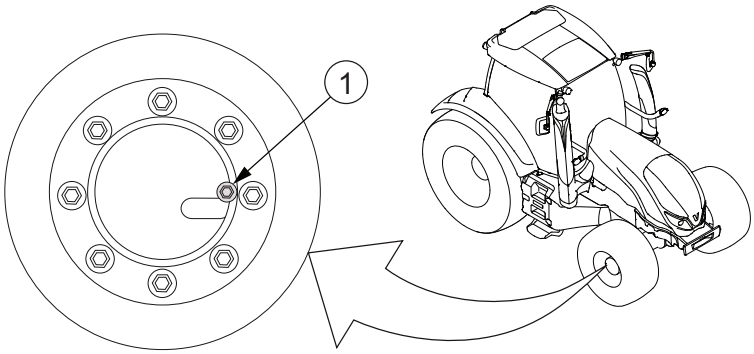
1. **Check that the oil is in level with the inspection hole.**

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2. **Add more oil if necessary.**

4.7.4.17 Checking the oil level in front axle hubs

Check the oil level in the front axle hubs periodically.

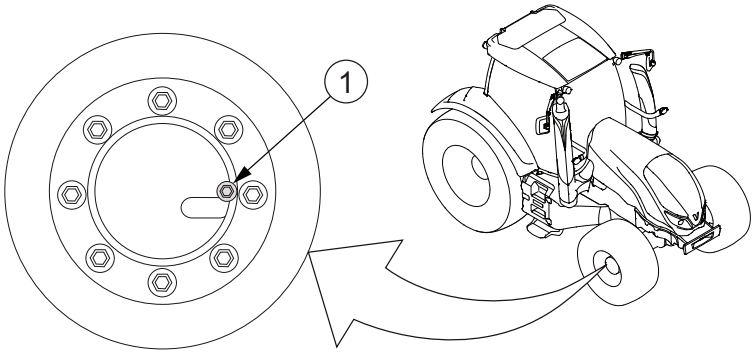


1. Oil surface indicator line

1. **Turn the wheel until the oil surface indicator line is horizontal.**
2. **Check that the oil surface is in level with the hole.**
3. **Add more oil, if necessary.**

4.7.4.18 Changing oil in the hubs of the front axles with brakes

Change oil in the front axle hubs periodically.



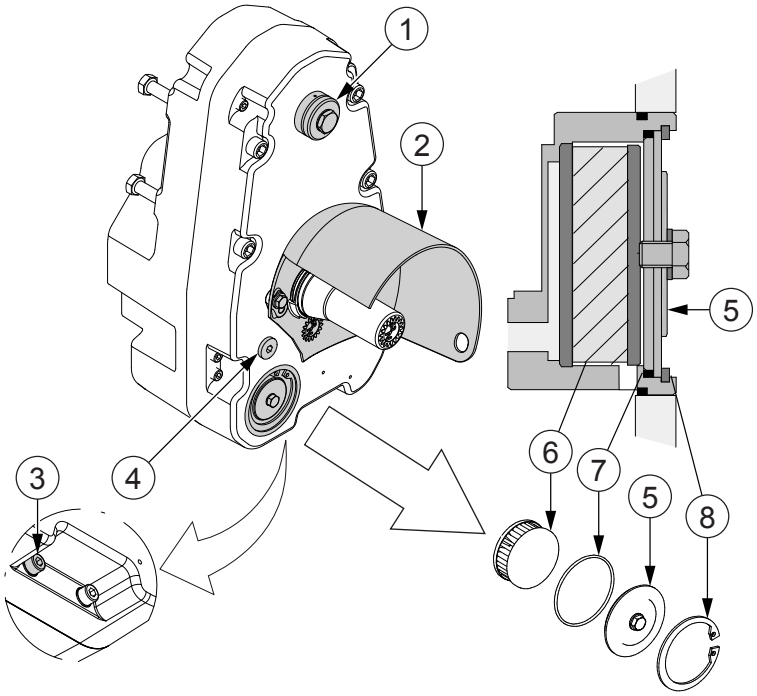
1. Inspection hole

1. **Turn the wheel until the inspection hole is pointing downwards.**
2. **Unscrew the plug and drain the oil into a suitable container.**
3. **Turn the wheel until the line of the inspection hole is horizontal.**
4. **Fill up with oil to the level of the hole.**
5. **Clean the plug and refit it.**

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4.7.4.19 Changing the front PTO housing oil and washing the oil filter

Change the oil of the front power take-off (PTO) housing and wash the oil filter periodically.



1. Breather
2. Protector
3. Front PTO housing fastening screw
4. Oil level hole
5. End plate
6. Filter
7. O-ring
8. Lock ring

1. **Drain the oil by opening the two front PTO housing fastening screws at the bottom of the housing.**
2. **Remove the protector.**

   Unscrew the two fastening screws.
3. **Release the filter by loosening the lock ring and the end plate.**
4. **Clean the filter with diesel.**
5. **Dry the filter with compressed air.**
6. **Attach the filter and the parts in the contrary order.**

   Check that the O-ring fits the groove of the end plate.
7. **Tighten the two front PTO housing fastening screws at the bottom of the housing.**

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8. **Fill up the housing with oil to the level of the hole.**

   The breather can be loosened for bleeding. Check that the breather is not blocked. When filling, the tractor has to stand on even ground.

9. **Use the front PTO a moment and check oil.**

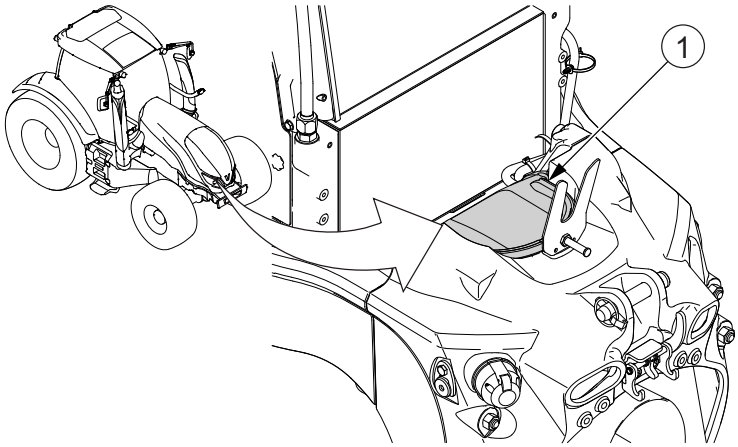
10. **Fit the protector.**

    Fasten the two fastening screws.

4.7.4.20 Checking front PTO couplings

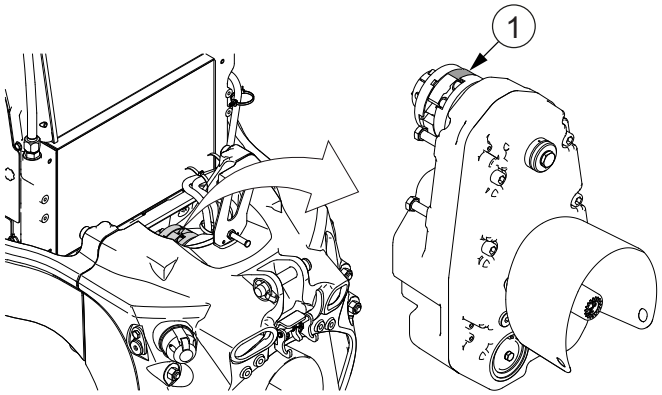
Check the front power take-off (PTO) couplings periodically.

- **Check that all fixing screws are tight.**
- **Check that the hydraulic connections have no leaks.**
- **Grease the grease nipple on the universal joint.**
  - **Remove the air blocker from the front linkage frame.**



1. Air blocker

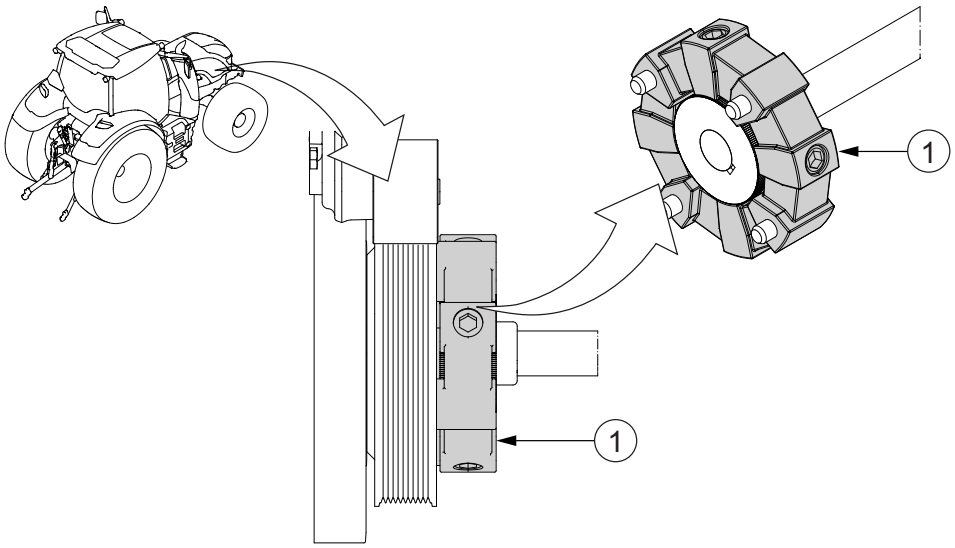
- **Grease the grease nipple on the universal joint.**



1. Grease nipple

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- **Check the rubber coupling for tears.**



1. Rubber coupling

- **Change the rubber coupling when needed.**

  It is recommended to let an authorised Valtra workshop change the coupling.

4.7.4.21 Checking and greasing the trailer air-pressure brake system

Check and grease the trailer air-pressure brake system periodically.

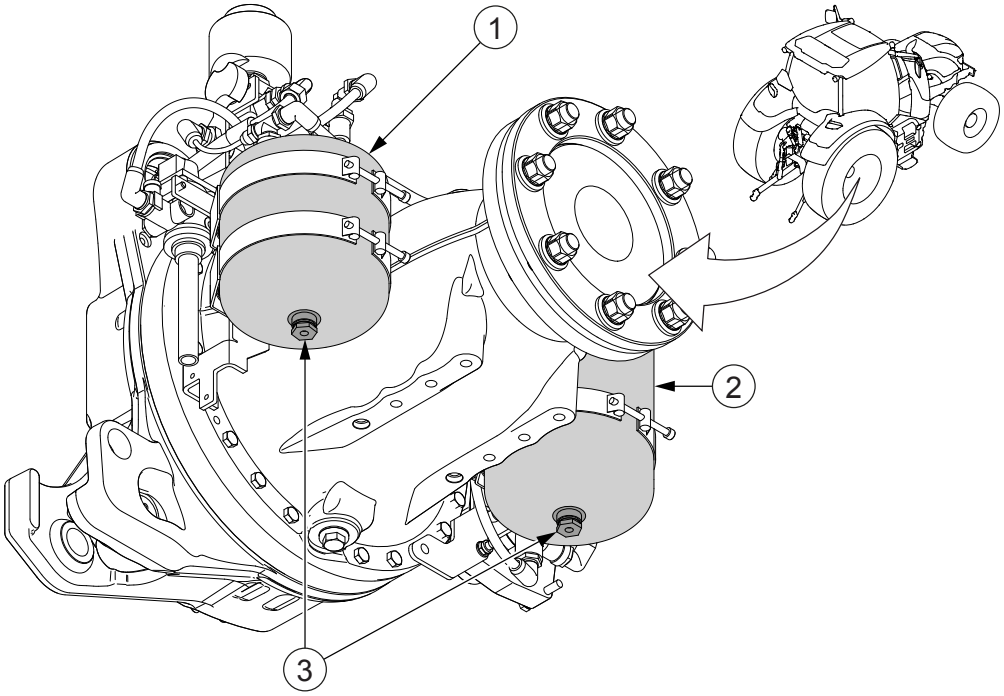
1. **Grease the rubber surfaces of the trailer quick couplings with Calsium LF grease.**
2. **Check the integrity of the system.**

   The system has to be air tight so that after stopping the engine, the pressure does not decrease more than 0.15 bar during 10 minutes (2%). When needed, repair the leaks.

4.7.4.22 Checking the air pressure system's automatic water draining

If the tractor is equipped with an air pressure system (extra equipment), there is a pressure air reservoir under the cab. If the tractor is equipped with pneumatic brakes (extra equipment), there are 2 pressure air reservoirs under the cab. The reservoirs have automatic valves for water draining. The valve functions must be checked frequently.

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1. Air pressure system pressure air reservoir
2. Pneumatic brakes pressure air reservoir
3. Automatic water draining valve

1. **Push a blunt stick through the draining valve hole.**

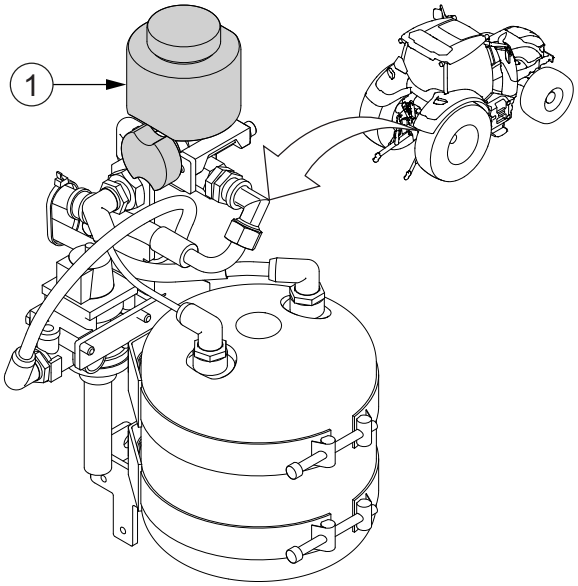
   IMPORTANT: The stick must not be sharp, because it can damage the valve.
   If the air that comes out is free of water, the automatic water draining valve is operating correctly.

2. **If there is water with the air, push the stick through the valve hole until there is no pressure in the reservoir.**
3. **Open the valve and clean the seal inside it.**
4. **Mount the valve back.**
5. **If the valve does not operate properly after cleaning, replace it with a new valve.**
6. **Follow the same procedure for the other pressure air reservoir.**

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4.7.4.23 Filling the air pressure system antifreeze container

Fill the air pressure system antifreeze container periodically.



1. Air pressure system antifreeze container

1. Fill the air pressure system antifreeze container.

NOTE: Use glycol- or alcohol-based pneumatic equipment antifreeze liquid.

4.7.4.24 Adjusting engine valves

Contact an authorised Valtra workshop for the engine valve adjustment.

NOTE: The engine valves must be adjusted after 600 operating hours. After the first adjustment, adjust the valves at 2400 hours and after this every 2400 hours.

4.7.4.25 Updating the software and calibrating the tractor

Contact an authorised Valtra workshop for updating the software and calibrating the tractor.

NOTE: The software must be updated and the tractor calibrated after 600 operating hours. After the first update and calibration, do them at 1200 hours and after this every 1200 hours.

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4.7.5 Maintenance every 1200 hours or yearly

4.7.5.1 Changing the oil in the transmission and hydraulic system

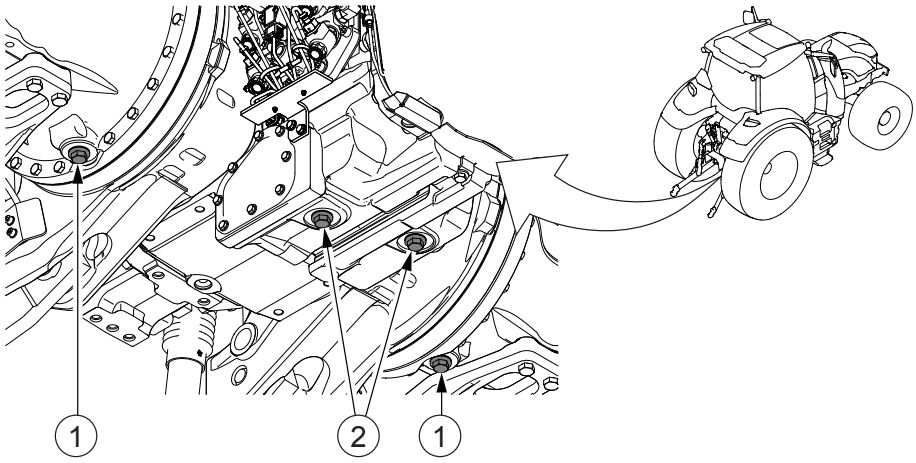
Change the oil in the transmission and hydraulic system periodically.

The transmission and hydraulics share the same oil system.

1. **Run the tractor until the oil in the transmission system is warm.**

   This speeds up the oil drainage and most of the impurities come out with the oil.

2. **Remove the drain plugs under the gearbox and final drives.**

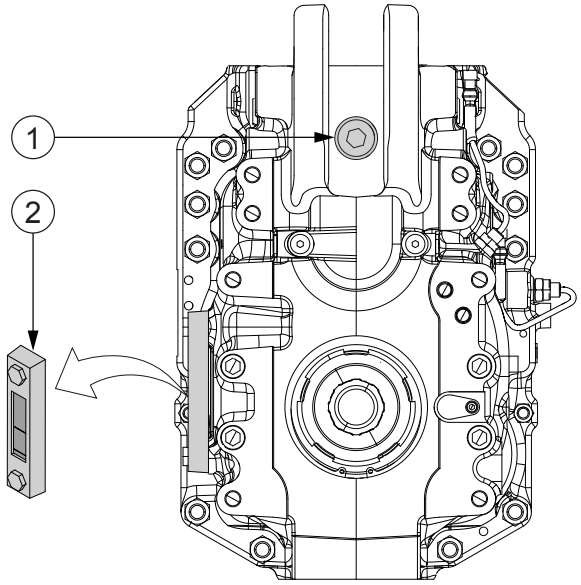


1. Final drives drain plugs
2. Gearbox drain plugs

3. **Drain the oil into a suitable container.**
4. **Clean and refit the plugs.**
5. **Clean the suction strainer.**
6. **Change the transmission oil filters.**

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7. **Fill the oil through the filler cap.**

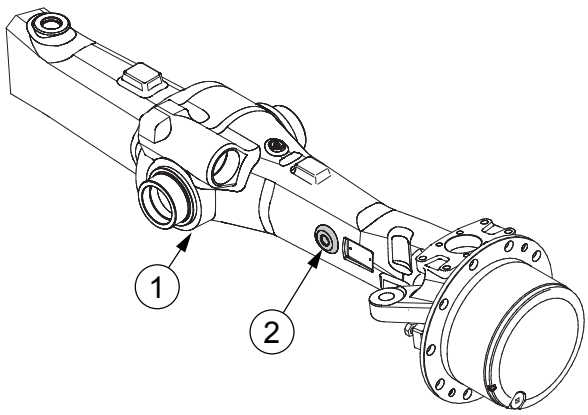


1. Transmission oil filling plug
2. Transmission oil level gauge

8. **Check that the oil level is between the marks.**
9. **Start the engine and check the oil level.**

4.7.5.2 Changing oil in the front axle differential

Change the oil in the front axle differential periodically.



1. Drain plug
2. Inspection hole

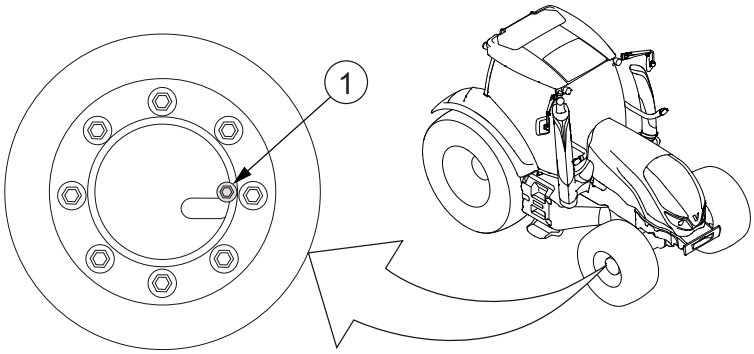
1. **Unscrew the drain plug.**
2. **Drain the oil into a suitable container.**
3. **Clean the plug and refit it.**

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4. **Fill new oil through the inspection hole up to the level of the hole.**

4.7.5.3 Changing oil in the front axle hubs

Change oil in the front axle hubs periodically.



1. Inspection hole

1. **Turn the wheel until the inspection hole is pointing downwards.**
2. **Unscrew the plug and drain the oil into a suitable container.**
3. **Turn the wheel until the line of the inspection hole is horizontal.**
4. **Fill up with oil to the level of the hole.**
5. **Clean the plug and refit it.**

4.7.5.4 Changing the fuel filter

Change the fuel filter periodically.

Always use original AGCO parts fuel filters.

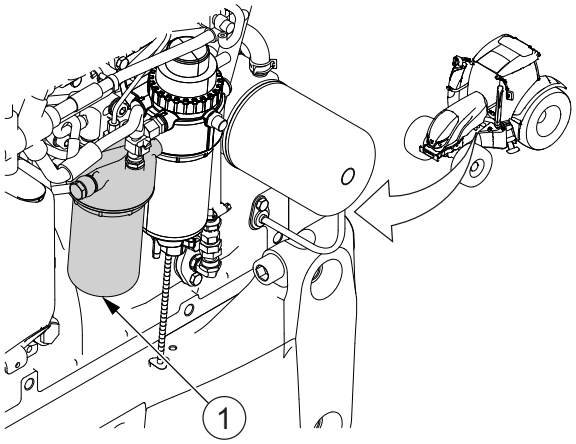
IMPORTANT: Using other fuel filters than the original ones, even for a short period of time, may cause lower performance and expensive damages.

NOTE: In extremely dusty or cold conditions, change the fuel filter and prefilter every 600 hours.

NOTE: When using first generation Biodiesel fuel with dilution over 7%, change the fuel filter and prefilter every 500 hours. With second generation Biodiesel fuel the service interval is 1000 hours.

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1. **Clean the filter and its surroundings.**



1. Fuel filter

2. **Remove the fuel filter.**

   Turn the filter anticlockwise and remove it from the mounting bracket.
   IMPORTANT: Unscrew the filter by hand, do not use a filter wrench.

3. **Lubricate the O-rings with fuel.**

4. **Fill the new filter with fuel.**

   Pour the fuel into the filter outer shell.

5. **Attach the filter.**

Bleed the fuel system.

4.7.5.5 Changing the fuel prefilter

Change the fuel prefilter periodically.

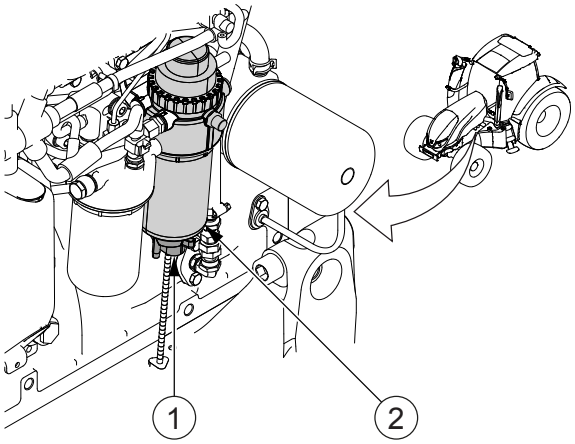
Always use original AGCO parts fuel filters.

IMPORTANT: Using other fuel filters than the original ones, even for a short period of time, may cause lower performance and expensive damages.

NOTE: In extremely dusty or cold conditions, change the fuel filter and prefilter every 600 hours.

NOTE: When using first generation Biodiesel fuel with dilution over 7%, change the fuel filter and prefilter every 500 hours. With second generation Biodiesel fuel the service interval is 1000 hours.

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1. Water detector
2. Fuel prefilter

1. **Clean the filter and its surroundings.**
2. **Disconnect the water detector wire.**
3. **Place a suitable container under the filter.**

   IMPORTANT: Do not drain fuel onto the ground!
4. **Remove the filter.**

   IMPORTANT: Unscrew the filter by hand, do not use a filter wrench.
5. **Move the water detector from the old filter to the new filter.**
6. **Lubricate the O-rings with fuel.**
7. **Fill the new filter with fuel.**

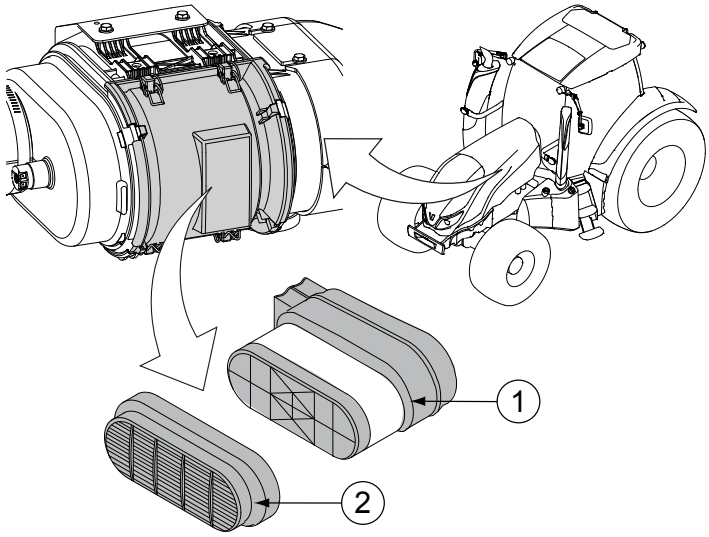
   Pour the fuel into the filter outer shell.
8. **Attach the filter.**
9. **Connect the water detector wire.**

Bleed the fuel system.

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4.7.5.6 Changing engine air filters

Change the main air filter and safety filter periodically.



1. Main air filter
2. Safety air filter

The safety filter protects the engine if the main air filter gets damaged.

IMPORTANT: Never run the tractor without the safety filter.

NOTE: Do not clean the filters. Always change the filters according to the maintenance schedule.

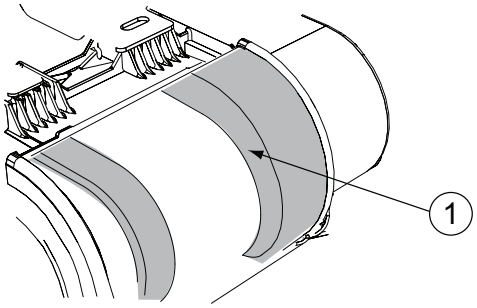
NOTE: In extremely dusty conditions the engine air filters must be changed more frequently.

NOTE: Unless it is necessary, do not open the cover of the air filter housing.

1. Open the air filter housing.

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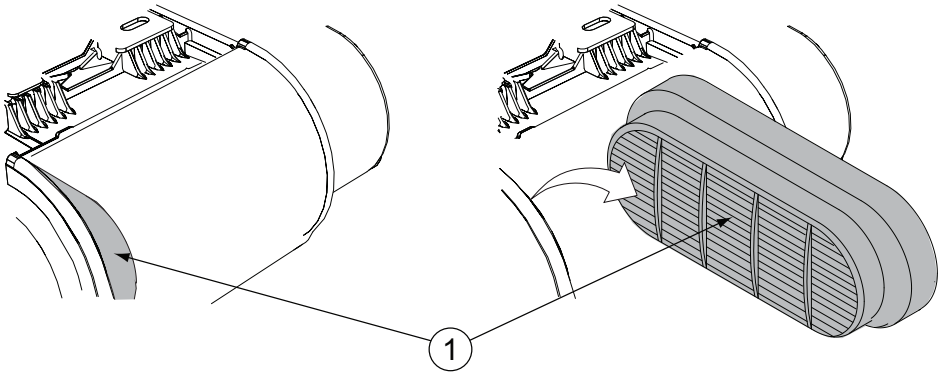
2. **Take out the main filter.**



1. Main air filter

3. **Remove the safety filter.**

   IMPORTANT: Take the utmost care when removing the safety filter so that no dirt enters the induction pipe.



1. Safety air filter

4. **Check that the seals of the filters are in good condition.**
5. **Check that the sealing surfaces of the air filter housing are clean.**
6. **Fit the new safety filter back in place.**

   Make sure that it is correctly positioned in the housing.

7. **Fit the new main filter in place.**

   Make sure that it is correctly positioned in the housing.

8. **Fasten the cover of the air filter housing.**

4.7.5.7 Changing the selective catalytic reduction system breather and supply module main filter

NOTE: In extremely dusty conditions the selective catalytic reduction system breather must be changed more frequently.

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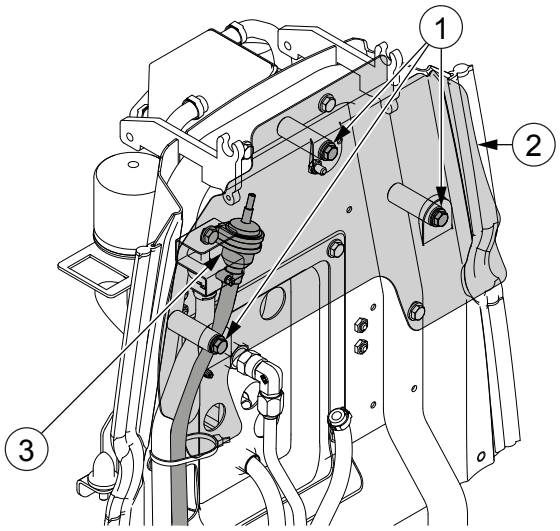
IMPORTANT: The area around the filter cover must be checked for cracks. No cracks in the material are allowed. If there are cracks in the housing the entire supply module must be replaced. If there are cracks in the filter cover it must be replaced.

IMPORTANT: All sealing surfaces on the filter cover, equalizing element, filter element and supply module housing must be absolutely clean and undamaged.

IMPORTANT: Do not install used or wet filter or equalizing element. Danger of engine damage and poor filtration.

IMPORTANT: Do not use mineral or silicone oils or greases when assembling the filter seals. All seals have a non-stick coating.

1. **Change the breather.**

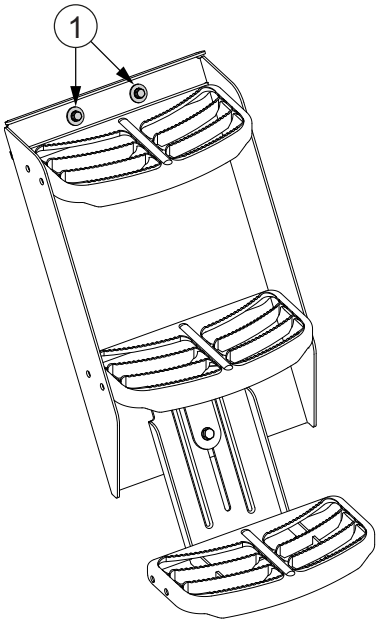


1. Fastening screw
2. Protection plate
3. Breather

Unscrew the fastening screws and remove the protection plate first. Fit the protection plate after changing the breather.

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2. **Open the steps.**

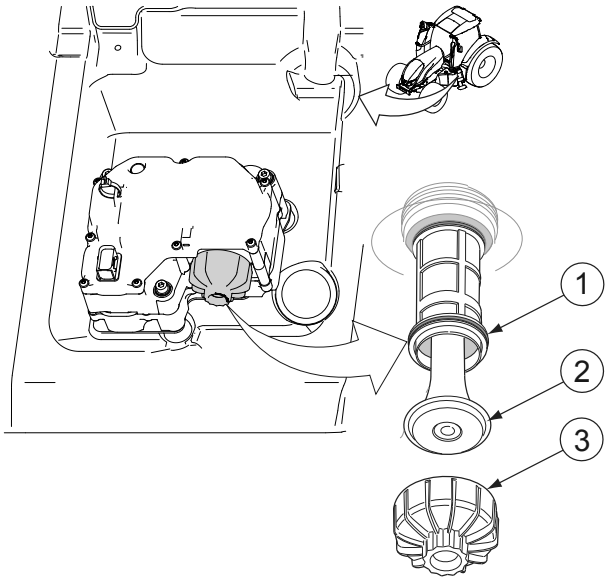


1. Fastening screw

Unscrew the two fastening screws.

3. **Clean the filter cover and its surroundings.**

4. **Remove the filter cover.**



1. Filter
2. Equalizing element
3. Filter cover

Use 27 mm wrench.

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5. **Pull out the filter parts.**
6. **Fit the new filter elements.**
7. **Fit the filter cover.**

   The tightening torque is 20-25 Nm.
8. **Close the steps.**

   Fasten the steps with the two fastening screws.

4.7.5.8 Checking the front wheel toe-in

Check the front wheel toe-in periodically.

1. **Make a vertical mark on the rear edge of both front tyres in the middle of the tread in level with the hubs.**
2. **Measure the distance between the marks.**
3. **Roll the tractor forwards so that the marks again come in level with the hubs, this time at the front edge.**
4. **Measure the distance between the marks again.**

   The measurement must be 0-2 mm larger at the rear edge.
5. **Adjust the toe-in if necessary.**

4.7.5.9 Adjusting the front wheel toe-in

Adjust the front wheel toe-in if needed.

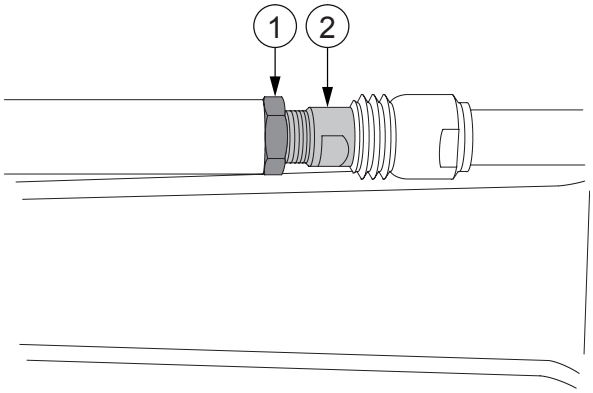
Before you adjust the toe-in, check that there is no free play in the ball joints of the steering arms and tie rod.

NOTE: In order not to limit the steering movement, both tie rods must be adjusted.

1. **Centre the wheels.**

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2. **Loosen the tie rod locking nut.**



1. Locking nut
2. Adjustment screw

3. **Turn the adjustment screw in the right direction.**
4. **Measure both tie rods.**

   IMPORTANT: Both tie rods must be of the same length after the adjustment.

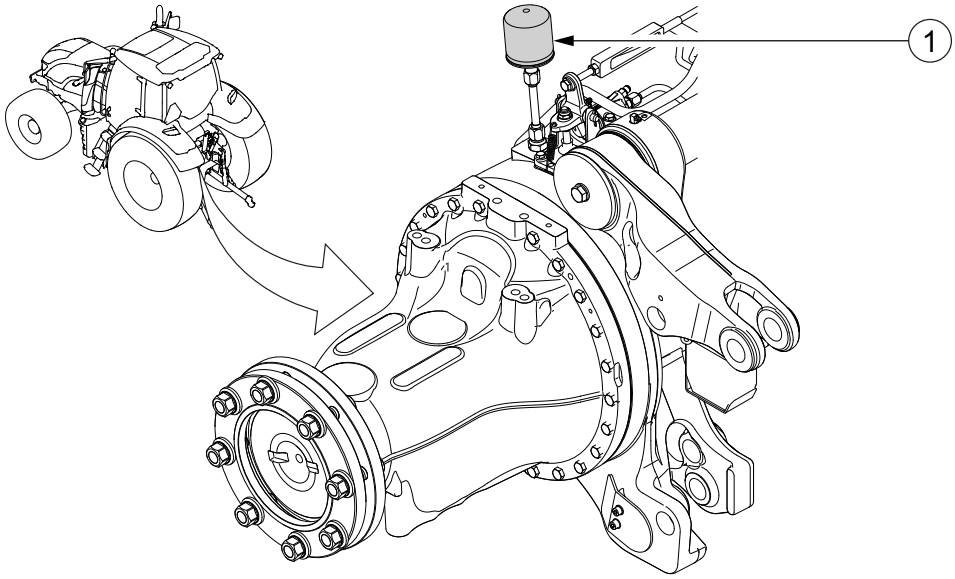
5. **Tighten the locking nut when the correct distance has been achieved.**
6. **Check the toe-in.**

4.7.5.10 Changing the transmission and hydraulics breather

Change the transmission and hydraulics breather periodically.

IMPORTANT: If the tractor is used continuously in dusty conditions, the breather must be changed more frequently.

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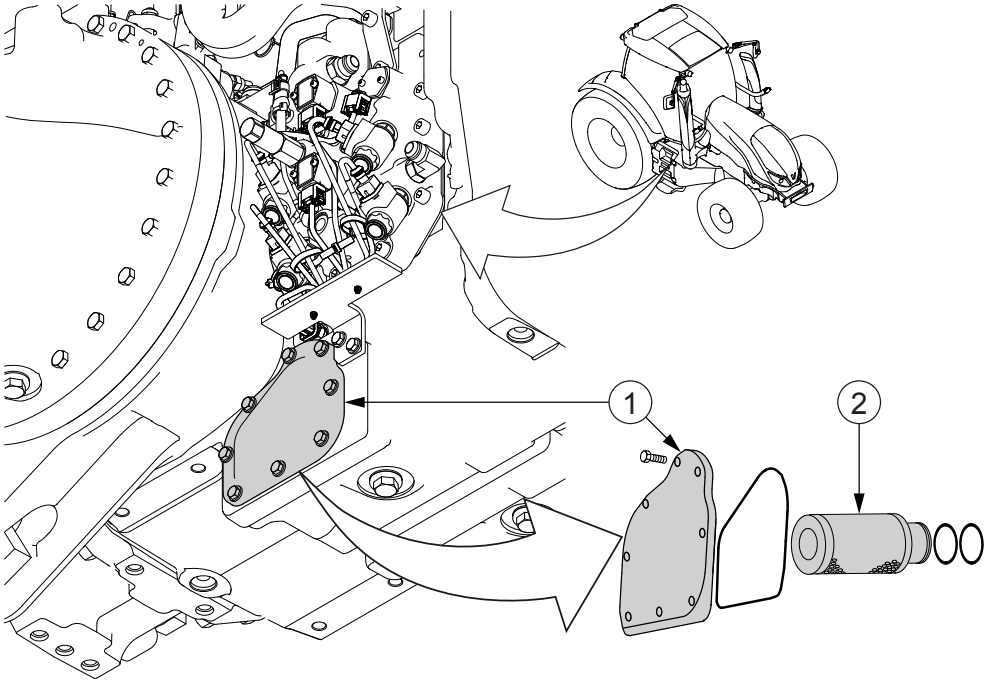
1. Breather

1. **Unscrew the old breather.**
2. **Tighten the breather by hand.**

4.7.5.11 Cleaning the suction strainer

Drain the oil from the transmission.

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1. Suction strainer cover
2. Suction strainer

1. **Remove the suction strainer cover.**
2. **Wipe off any oil which has run out on the chassis.**
3. **Clean the suction strainer in diesel fuel.**

   Replace the suction strainer if it is damaged.
4. **Dry the suction strainer with compressed air.**
5. **Refit the suction strainer, gaskets and cover.**

Fill the transmission with oil.

4.7.5.12 Checking the power shuttle operation

Contact an authorised Valtra workshop for checking of the power shuttle operation.

NOTE: Checking of the power shuttle operation must be done after 1200 operating hours.

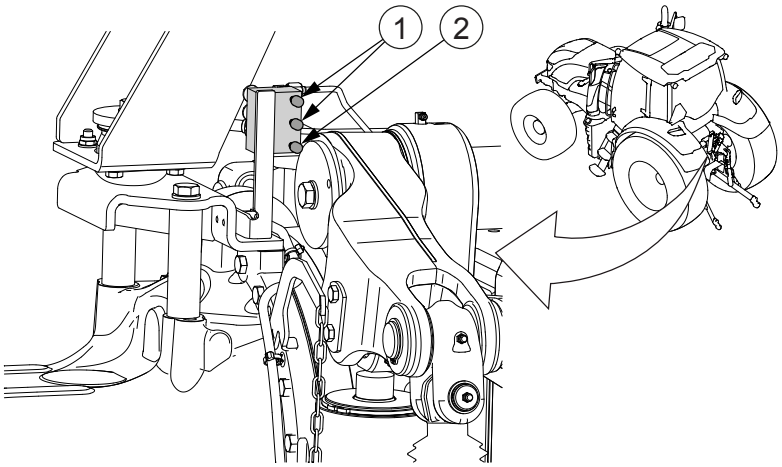
4.7.6 Maintenance every 2400 hours or every other year

4.7.6.1 Bleeding the brake system

The brake system uses the same oil as the transmission system. The oil in the brake circuits is not changed when changing the transmission oil. Therefore, the brake circuit oil has to be changed by bleeding after every transmission oil

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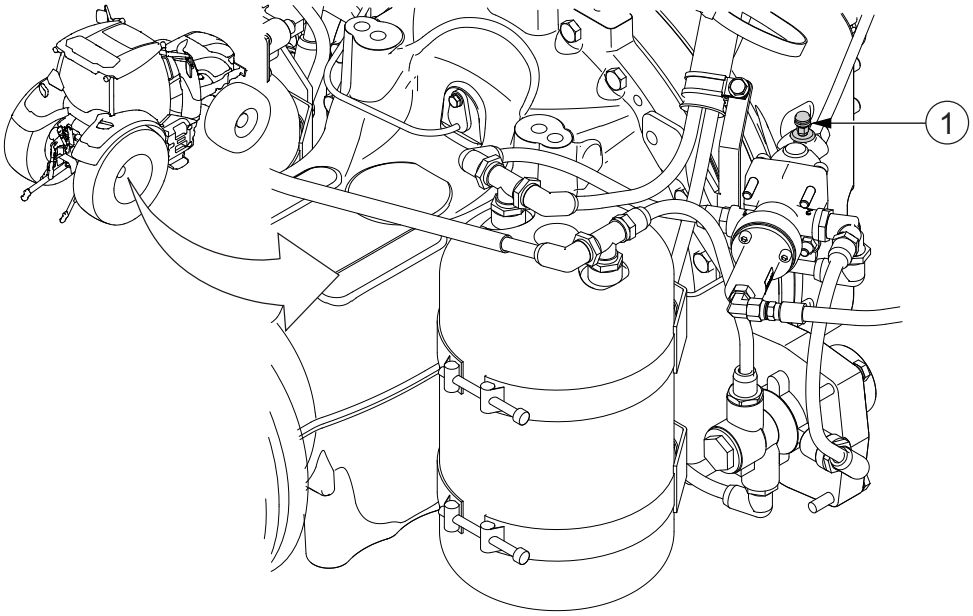
change. Also when repairing, the system has to be filled and bled in the same way.



1. Bleeding nipple of the tractor brake cylinder
2. Bleeding nipple of the tractor hydraulic brake valve of the trailer

Both brake pedal circuits of the tractor brake cylinder, right and left, have their own bleeding nipple. The nipples are placed on the bleed plate on top of the left axle housing.

The nipple of the tractor hydraulic brake valve of the trailer (extra equipment) is also placed on the bleed plate on top of the left axle housing.

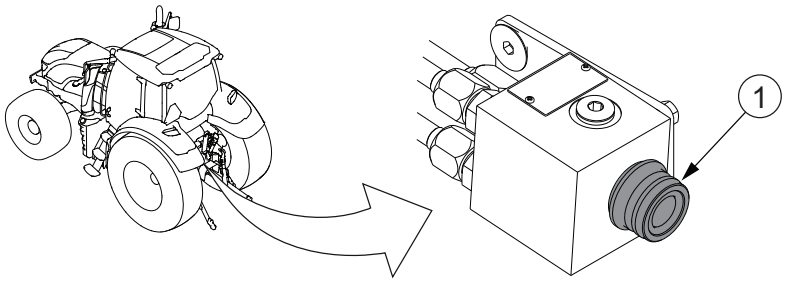


1. Bleeding nipple of the trailer air pressure brakes

The control valve of the trailer air pressure brakes (extra equipment) is situated on the right side under the cab on the air pressure reservoir.

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1. **Connect a trailer or a quick coupler with plug to the quick coupling for hydraulic trailer brakes (optional).**



1. Quick coupling for the trailer brakes (ISO 5676)

DANGER: The quick coupling for hydraulic trailer brakes must be connected when bleeding the brakes. If the quick coupling is not connected, the brakes will not be bled. This will cause the brakes to malfunction.

2. **Start the tractor and let it run for approximately three minutes.**

   This ensures that the oil from the pump is completely free from air.

3. **Lock the brake pedals together.**

4. **Open the bleeding nipples.**

   It is recommended to use hoses from the bleeding nipples to a suitable container.
   NOTE: Do not let the oil run onto the ground.

5. **Pump the pedals slowly until there are no air bubbles in the oil.**

6. **Close the bleeding nipples.**

7. **Check that the pedal free travel is the same on both wheels.**

   Check the free travel while driving with the pedals latched together.

8. **Check the free travel on the rear brake pedal.**

   The reverse drive system is extra equipment.

4.7.6.2 Bleeding the front axle brake system

The front axle equipped with a brake system is extra equipment.

The brake system uses the same oil as the transmission system. The oil in the brake circuits is not changed when changing the transmission oil. Therefore, the brake circuit oil has to be changed by bleeding after every transmission oil change. Also when repairing, the system has to be filled and bled in the same way.

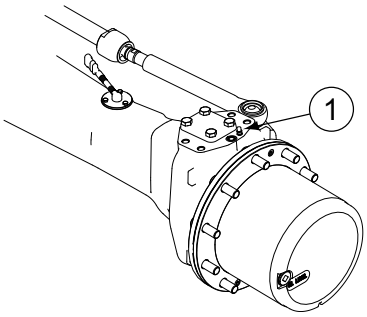
1. **Start the tractor and let it run for about three minutes.**

   This ensures that the oil from the pump is completely free from air.

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2. **Make sure that the bleeding valves for the rear brakes and hydraulic trailer brakes are closed.**
3. **Lock the brake pedals together.**
4. **Open the bleeding nipples.**

   There is one bleeding nipple on both sides.



1. Bleeding nipple

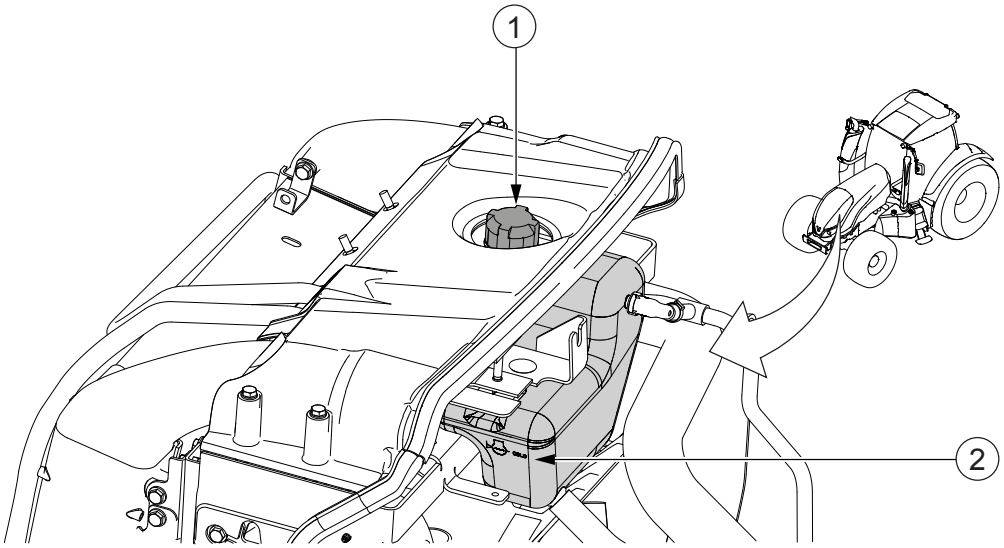
5. **Put a hose from both bleeding nipples to containers.**
6. **Pump the pedals slowly until there are no air bubbles in the oil.**

   The oil has been changed when about 0.2 litres has come out from each side.

It is not necessary to adjust the front brakes.

4.7.6.3 Cleaning the cooling system

Clean the cooling system periodically.



1. Cap of the expansion tank
2. Cold fluid level mark

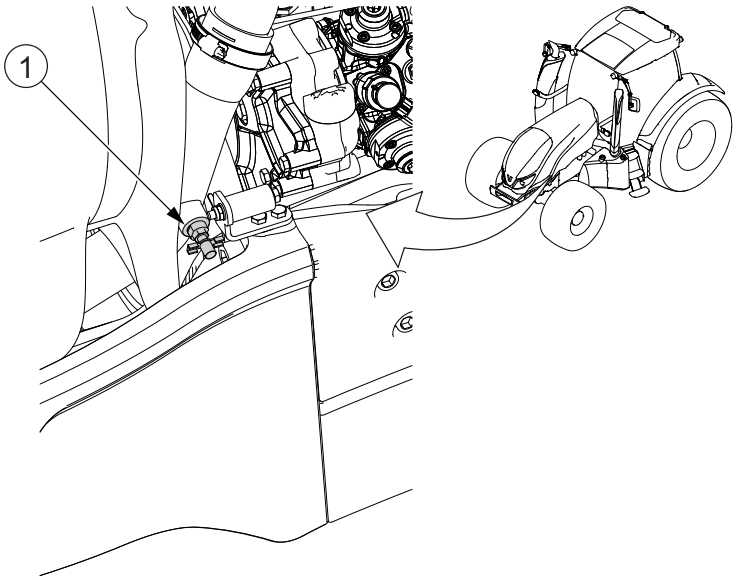
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If problems occur with the cooling system, it can be a sign that the whole system needs to be thoroughly cleaned.

1. **Stop the engine.**
2. **Open the cap of the expansion tank.**

   CAUTION: Open the expansion tank cap carefully. When running the tractor the expansion tank has an overpressure of 1.0 bar.

3. **Connect a hose from the radiator draining cock to a clean container and open the plug.**

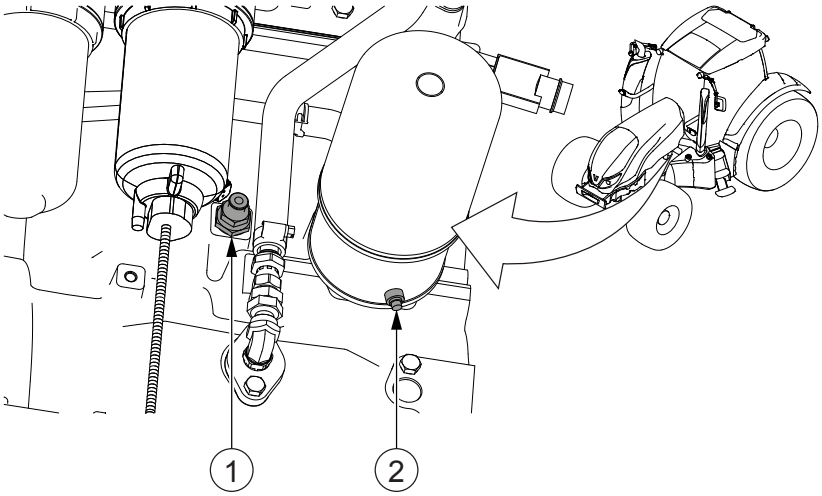


1. Radiator draining cock

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4. **Open the drain cock on the cylinder block and open the drain plug on the oil cooler.**

   IMPORTANT: Do not drain coolant onto the ground!



   1. Drain cock on the cylinder block
   2. Drain plug on the oil cooler

   The cooler is located between the engine block and oil filter.

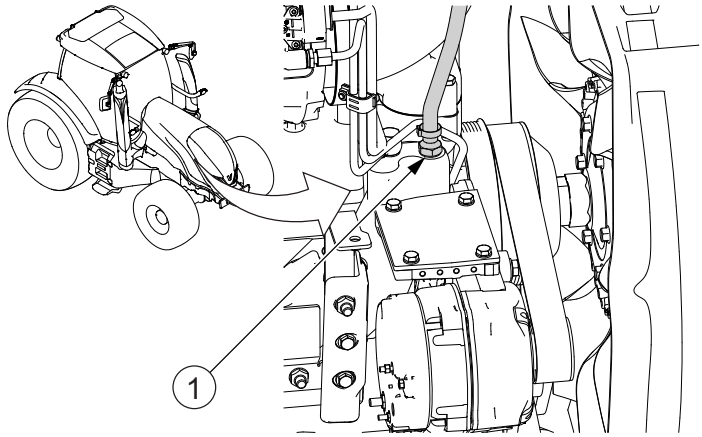
5. **Turn the heater control in the cab clockwise.**
6. **Drain the coolant pump by cranking the engine a few revisions with the drain plugs removed.**
7. **Clean the cooling system with a special cleaning agent available from your dealer.**

   Follow the manufacturer's instructions.

8. **Close the radiator drain cock.**
9. **Close the drain cock of the cylinder group.**
10. **Close the drain plug of the oil cooler.**

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11. **Loosen the hose placed between the thermostat housing and expansion tank.**



1. Hose

12. **Check that the restrictor hole (Ø about 2 mm) in the union is open.**
13. **Refasten the hose.**
14. **Fill the system to the fluid level mark on the expansion tank.**

    Mix the anti-freeze and water according to the manufacturer's instructions.

    NOTE: Always use a recommended coolant.

    IMPORTANT: Never fill up with cold fluid while the engine is warm.

    IMPORTANT: Never use only water as coolant.

After changing the fluid, run the engine for a while and check the level of the fluid.

4.7.6.4 Checking the engine vibration damper

Contact an authorised Valtra workshop for checking of the engine vibration damper.

NOTE: Changing of the engine vibration damper must be carried out at an authorized Valtra workshop.

4.7.6.5 Maintaining the air conditioning

Maintain the air conditioning periodically.

IMPORTANT: If the air conditioning system has not been used for a while, free the compressor before starting the engine by rotating the pulley nut with a wrench.

CAUTION: Do not attempt to remove any part of the air conditioning system.

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NOTE: Make sure that the compressor starts. At low temperatures, the thermostat prevents the compressor from starting.

- **Do not attempt to repair the air conditioning system.**

  Contact an authorised Valtra workshop if problems occur.
- **Clean the condenser at regular intervals to remove dust, insects and other particles.**
- **Check that there are no leaks in the condenser, evaporator, hoses and couplings.**
- **Check the cleanliness of the outlet pipe of the condensation pipe.**
- **Avoid contact with the refrigerant.**

  WARNING: If refrigerant ends up in your eyes, contact a doctor immediately. Do not weld near the air conditioning system as poisonous gas may be released. The maximum permissible environmental temperature for the refrigerant pipes is 80°C.
- **It is recommended to change the drying container of the air conditioning condenser after every 2400 hours of operation. Contact an authorised Valtra workshop for changing the drying container.**
- **If the air conditioning is not functioning properly, contact an authorised Valtra workshop for checking of the system.**

4.8 Checks and adjustments

4.8.1 Changing tyres

WARNING: When welding the discs, the tyre must be removed from the rim/disc. There is a danger of explosion.

When selecting tyres, always contact your dealer to ensure the correct transmission ratio for four-wheel drive (4WD).

1. **Change the tyres.**

   IMPORTANT: Change tyres and wheels at a professional tyre workshop.
2. **Check the tyre pressures.**
3. **When larger front tyres are fitted, check and adjust the turning angles on both sides with maximum inclination of the front axle.**
4. **Set the tyre parameter.**
5. **Calibrate the speed sensors.**
6. **Tighten the wheel nuts after a few hours of driving.**

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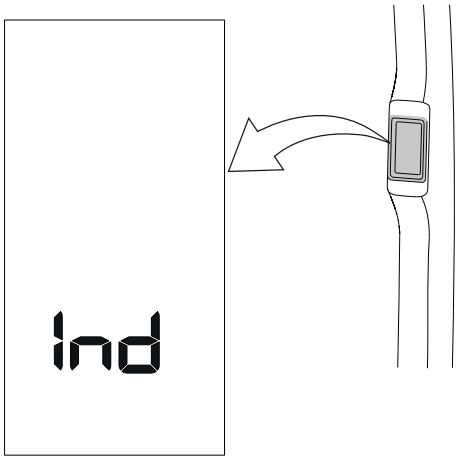
4.8.1.1 Setting the tyre parameter

You can adjust the tyre parameter according to your preferences through the A-pillar display settings.

The index determines the instrument calibration of the tyres. The value range is between 700…1000.

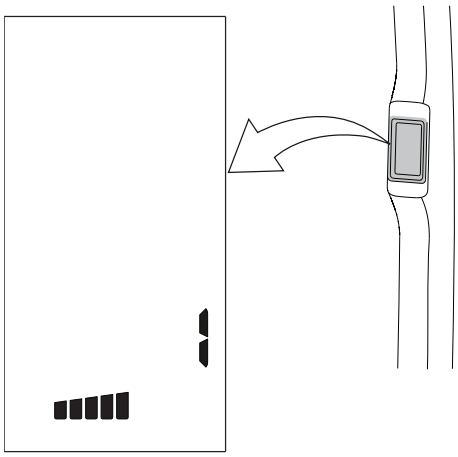
NOTE: If tyres of different dimensions are fitted to the tractor after delivery, the tyre parameter must be reset.

1. Press |▢| to activate the A-pillar display.
2. Press SET to enter the settings menu.



Text “Ind” is shown.

3. Press SET to enter the index list.



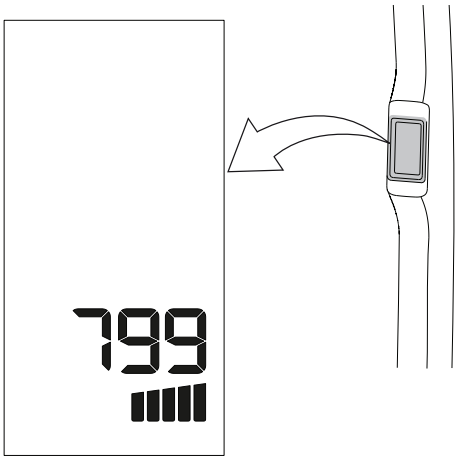
The first half of the bottom bar is lit to indicate that the parameter number is displayed.

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4. **Press the up arrow or the down arrow to select the parameter to be changed.**

   The parameter number for the tyre parameter is 1.

5. **Press SET.**



   The second half of the bottom bar is lit to indicate that the parameter value is displayed.

6. **Press the up arrow or the down arrow to change the parameter value.**

7. **Press ↵ to save the value.**

8. **Press ↵ to leave the settings menu and save all changes.**

4.8.1.2 Tyre parameters

Tyre	Parameter value
20.8R38 MICHELIN AGRIBIB	871
20.8-38/14 NOKIAN TR FOREST	859
520/85R38 MITAS AC85	878
520/85R38 TRELLEBORG TM600	877
520/85R42 MITAS AC85	936
540/80R38 NOKIAN TRI2	880
580/70R38 MITAS HC70	875
580/70R38 TRELLEBORG TM700	856
580/70R38 MICHELIN OMNIBIB	866
620/70R42 MICHELIN OMNIBIB	920
650/65R38 MICHELIN MULTIBIB	856
650/65R38 MITAS AC65	862
650/65R38 MITAS SST	863
650/65R38 TRELLEBORG TM800	859
650/65R38 NOKIAN TRI2	877
650/65R38 NOKIAN MULTIPLUS	874
650/65R38 NOKIAN FOREST RIDER	878
650/65R42 MICHELIN MULTIBIB	911
Table continued on next page	

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Tyre	Parameter value
650/65R42 MITAS AC65	923
650/65R42 MITAS SST	923
650/65R42 TRELLEBORG TM800	920
650/65R42 NOKIAN TRI2	923
650/75R38 MICHELIN MACHXBIB	917
650/75R38 MITAS SFT	922
650/75R38 TRELLEBORG TM900	929
650/75-38 NOKIAN FOR KING T	937
710/60R38 MICHELIN XEOBIB	852
710/60R42 MICHELIN XEOBIB	903
710/70R38 MICHELIN MACHXBIB	926
710/70R38 MITAS AC65	910
710/70R38 TRELLEBORG TM800	918

NOTE:

If the tractor has tyres not listed in the table, the tyre parameter can be calculated with the following formula:

X = Y / (2π)

X = Tyre parameter

Y = Rolling circumference of the tyre

Example:

The rolling circumference of the tyre is 5420 mm.

X = 5420 / (2π) = 863

The tyre parameter for the tyre is 863.

4.8.2 Track widths

The track width is measured between the middle of the tyres. If needed, adjust the track widths.

IMPORTANT: The maximum allowed width of the tractor is 2550 mm (if larger width is not nationally allowed).

In many work applications, it is advisable to adjust the track widths so that the track made by the front tyres is covered by the track made by the rear tyres.

When using narrow track widths for the rear axle, check that the lower links do not touch the tyres. When required, lock the side regulators.

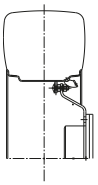
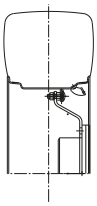
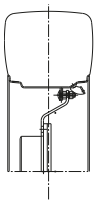
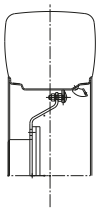
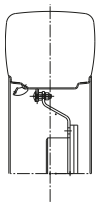
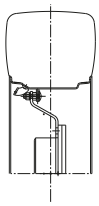
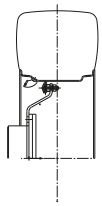
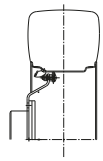
IMPORTANT: According to the EU directives the smallest allowed distance between the side of the tyre and the mudguard is 40 mm and between the top of the tyre to the mudguard is 60 mm.

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4.8.2.1 Front axle track widths

The front axle track widths (in mm) are listed in the following tables.

Adjustable discs

								
540/65R28, 540/65R30, 600/65R28	2 235 [1]	2 140 [1]	–	–	2 030 [1]	1 935	–	–
420/85R28, 480/70R28, 16.9/R28, 460/85R30	2 235 [1]	2 140 [1]	1 835	–	2 030	1 935	–	–
480/70R30	2 235 [1]	2 140 [1]	–	–	2 030	1 935	–	–

[1] Vehicle overall width over 2 550 mm

Fixed discs

		Track width	Valve
16.9R28, 440/80R28, 540/65R28, 540/65R30	Standard	1 906	Inside
	Wheel turned around	1 854	Outside
600/65R28, 600/60R30	Standard	1 915	Outside

4.8.2.2 Rear axle track widths

Adjustable discs

The rear axle track widths (in mm) are listed in the following tables.

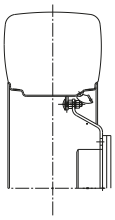
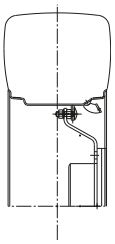
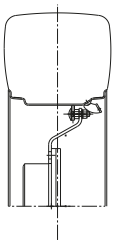
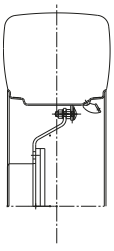
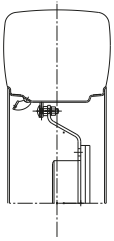
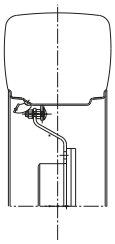
						
20.8R38, 520/85R38	2 114 [1]	2 012	1 714	–	1 910	1 808 [2]
580/70R38	2 114 [1]	2012 [1]	1 714	–	1 910	1 808 [2]

Table continued on next page

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650/65R38, 650/65R42, 650/75R38	2 114 [1]	2 012 [1]	–	–	1 910 [1]	1 808 [2]
620/70R42	2 113 [1]	2 014 [1]	1 713	–	1 910 [1]	1 811 [2]
520/85R42	2 122 [1]	2 012	1 722	–	1 918	1 808 [2]

1) Vehicle overall width over 2 550 mm
2) Standard track width

Fixed discs

		Track width	Valve
650/75R38	Standard	1 850	Inside
	Wheel turned around	1 676	Outside
650/65R38, 650/65R42	Standard	1 850	Inside
20.8R38, 540/80R38	Standard	1 850	Inside
	Wheel turned around	1 676	Outside
710/60R42, 710/70R38	Standard	1 830	Outside

4.8.3 Using chains

Chains can be used on the front wheels only when they are also used on the rear wheels.

IMPORTANT: Use chains only with tyres that are designed for chain usage. Follow the chain manufacturer's installation and user instructions carefully.

IMPORTANT: With larger tyres and a suspended cab (extra equipment), the space between the mudguard and the tyre may become too small (under 25 mm). If the space is not large enough when you need to use the chains, adjust the mudguards.

- **Make sure that the chains are correctly tightened to avoid damaging the mudguards.**

4.8.4 Using twin-mounted wheels

Twin-mounted wheels can be used for decreasing the surface pressure, but not for obtaining better traction.

1. **Maximum allowed loading of twin-mounted wheels is one tyre multiplied by 1.76.**

   IMPORTANT: Do not exceed the maximum permitted axle loading even if the tyres allow a heavier load.

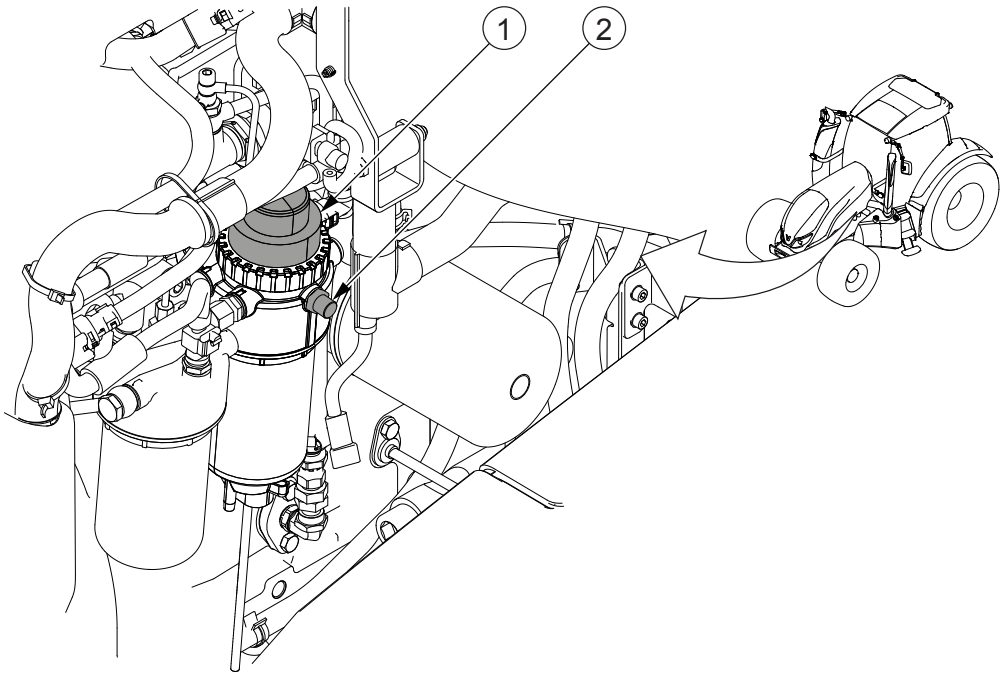
2. **If dual/extension wheels are used, check that the tyre size does not exceed the permissible tyre sizes.**
3. **Adjust the track width of the inner wheels to the minimum value.**
4. **Adjust the turning angle, if necessary.**

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4.8.5 Engine

4.8.5.1 Bleeding the fuel system

After changing the fuel filters or if the engine has ran out of fuel the fuel system has to be bled.



1. Hand pump
2. Bleeding plug

WARNING: Do not work on the common rail high pressure fuel system when the engine is running. Wait at least 30 seconds after stopping the engine. The first high pressure component has to be loosened slowly, so that the pressure inside the fuel system can adjust to ambient pressure. If the jet of high pressure fuel contacts your skin, fuel penetrates the skin causing severe injuries. Get medical help immediately!

WARNING: Only an authorised person is allowed to repair the fuel system.

IMPORTANT: Do not use the hand pump when the engine is running. Do not use any tools or excessive force on the hand pump.

1. **Open the bleeding plug.**
2. **Put a transparent hose in the plug hole and lead it into a suitable container.**

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3. **Pump fuel with the hand pump.**

   Continue the pumping until there are no air bubbles in the fuel stream.

4. **Remove the hose and close the bleeding plug.**
5. **Clean the engine of any overspill fuel.**
6. **Start the engine.**

   The fuel system removes automatically the air left in the system.

4.8.6 Electrical system

4.8.6.1 Safety precautions for the electrical system

Follow the safety precautions for the electrical system.

IMPORTANT: Make sure that the main power is turned off before disconnecting or reconnecting the battery.

IMPORTANT: Disconnect the negative lead of the battery first and connect it last.

IMPORTANT: Always connect the battery with the correct polarity.

IMPORTANT: Disconnect the negative battery lead before removing the alternator.

IMPORTANT: Never open the charging circuit while the engine is running.

IMPORTANT: Ensure good ventilation when charging.

IMPORTANT: Do not connect any additional electrical equipment, as this may damage components of the existing electrical system.

IMPORTANT: All electronic equipment is sensitive to electrostatic discharge (ESD). Take all necessary measures to minimize or eliminate the risk of equipment being damaged by ESD.

4.8.6.2 Checking the battery

Check and clean the battery on a regular basis.



DANGER: Avoid sparks or naked flames near the battery. The battery gives off an explosive hydrogen gas! The battery electrolyte is corrosive.

- **Check that the fan belts are correctly tightened.**

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- **Keep the battery clean.**

  Wash it with lukewarm water after removal from the tractor.
  IMPORTANT: Always disconnect the negative lead before washing.

- **Clean the pole studs, the cable terminals and the battery retainer thoroughly.**

  Wash off oxidised spots with water. Wipe the outside of the battery when it is clean, and coat the pole studs and the cable terminals with petroleum jelly.

- **Refit the battery.**

  IMPORTANT: Always connect the positive lead first.
  - **Fit the cable terminal onto the pole stud.**
  - **Tap the cable terminal lightly with a screwdriver handle or a similar insulated tool to fully connect the cable terminal.**
  - **Tighten the cable terminal.**

4.8.6.3 Alternator

The tractor has a negative-grounded alternator which can easily be damaged if incorrect connections are made in the electrical system.

Connection of the battery with wrong polarity can burn out the alternator or rectifier. The electrical charging circuit must not be broken when the engine is running.

4.8.6.4 Protecting the electrical system before welding

Before repairing the tractor by arc welding, protect the electrical system from damaging.

1. **Disconnect the battery leads.**

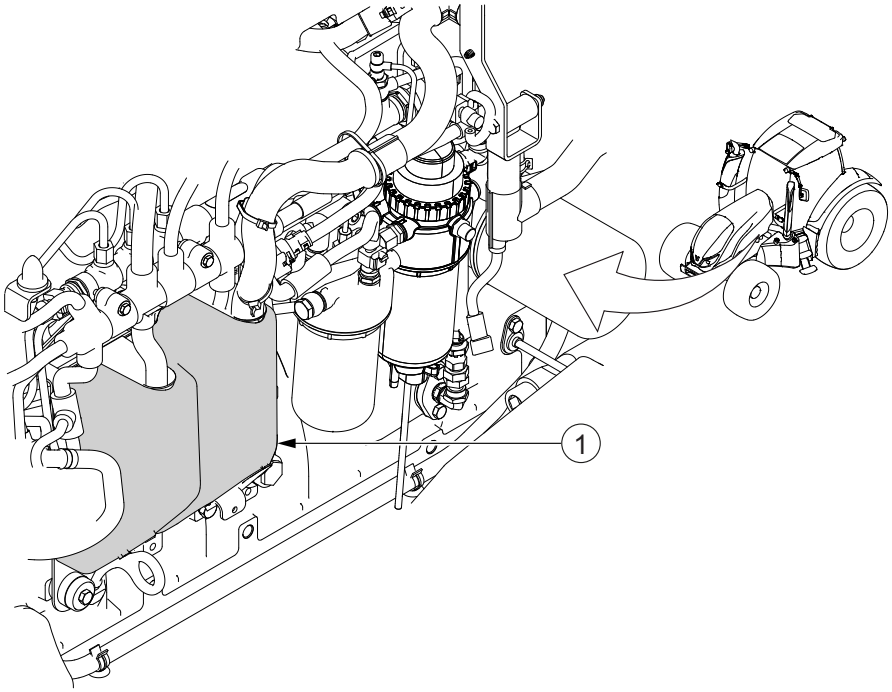
   Disconnect the negative lead first.
   IMPORTANT: Make sure that the main power is turned off before disconnecting or reconnecting the battery.

2. **Disconnect the alternator wiring.**

   IMPORTANT: Never run the engine with the alternator disconnected.

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3. **Remove the engine control unit cover.**



1. Engine control unit cover

4. **Disconnect the engine control unit connectors.**

   Open the connector locking device to disconnect the connectors. When reconnecting, turn the locking device back to the locking position.

4.8.6.5 Fuses and relays

There are 4 electric centres. The relays related to specific fuses are located in the electric centres. Other relays are placed outside the electric centres.

The electric centres must always be kept clean. If a fuse blows, the fault must be traced and repaired.

IMPORTANT: Fuses must not be replaced with new ones of higher rating as this may damage the electrical equipment.

IMPORTANT: Always use original AGCO Parts fuses.

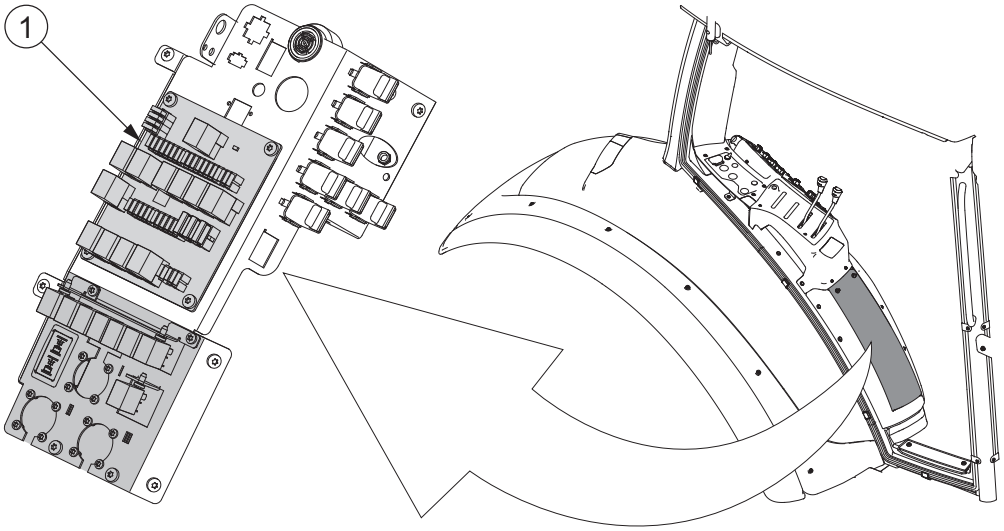
Power for extra equipment can be taken from the spare fuses or unused extra equipment fuses. A current source for extra equipment can be connected to the reserve fuse on the main electric centre. The current is then switched off with the main switch.

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4.8.6.6 Fuses and relays in the cab electric centre

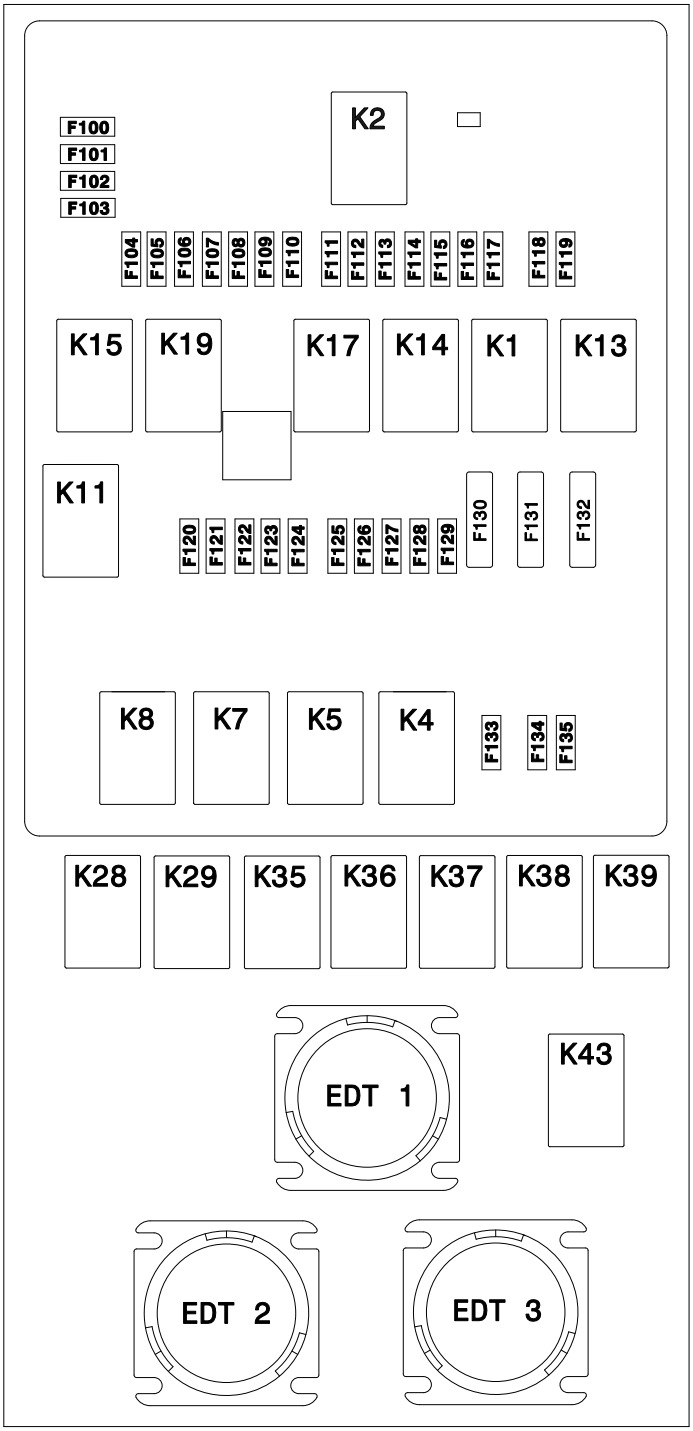
The fuses and relays in the cab electric centre are listed in the following tables.

The fuse diagram is on the reverse side of the electric centre cover. There is space for spare fuses. The cab electric centre contains 36 fuses and the nominal current rating of these fuses is 5-25 A.



1. Cab electric centre

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Fuse	Nominal current	Description
F100	10A	Reserve
F101	10A	Parking lights right
F102	10A	Parking lights left
F103	15A	Windscreen wiper, light ensure
F104	15A	Seat heater
F105	10A	AutoComfort, TwinTrac, front axle suspension, SECU

Table continued on next page

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Fuse	Nominal current	Description
F106	10A	Semi-automatic range gear, power shuttle lever
F107	15A	Speed and pressure sensors
F108	15A	Front loader
F109	10A	ON/OFF valves, transmission sensors, A-pillar display
F110	10A	IO1, IO2
F111	5A	3-pin current socket, TopDock
F112	5A	Proline instrument panel, direction indicators
F113	5A	Tractor terminal, armrest
F114	10A	Additional heater
F115	10A	Side window wiper
F116	10A	Reserve
F117	10A	Isoadapter, TECU, safety camera
F118	5A	Memory
F119	10A	Reserve
F120	10A	Reserve
F121	10A	Reserve
F122	10A	AutoComfort, accessory power, SECU
F123	10A	CAN valves
F124	10A	Power switch / U-pilot controlled 2-pin current socket
F125	10A	Tractor terminal, transmission sensors, diagnostics sockets, TECU, TC
F126	10A	Brake pedals
F127	15A	Hazard lights
F128	10A	Brake lights
F129	10A	2–pin current sockets
F130	25A	3–pin current sockets
F131	5A	Light switch
F132	25A	TC, IO1, IO2, PTO control panel, air pressure gauge
F133	15A	Trailer socket
F134	15A	Selecto 4
F135	15A	Selecto 3

Relay	Description
K1	Brake lights
K2	Cab light (follow-me-home light)
K4	CAN valves
K5	Courtesy lights, main switch
K7	Reserve
K8	Reserve
K11	Light ensure
K13	Power switch / U-pilot controlled 2-pin current socket
K14	Auxiliary relay +15
K15	Parking lights
K17	Auxiliary relay +15
K19	Auxiliary relay +15

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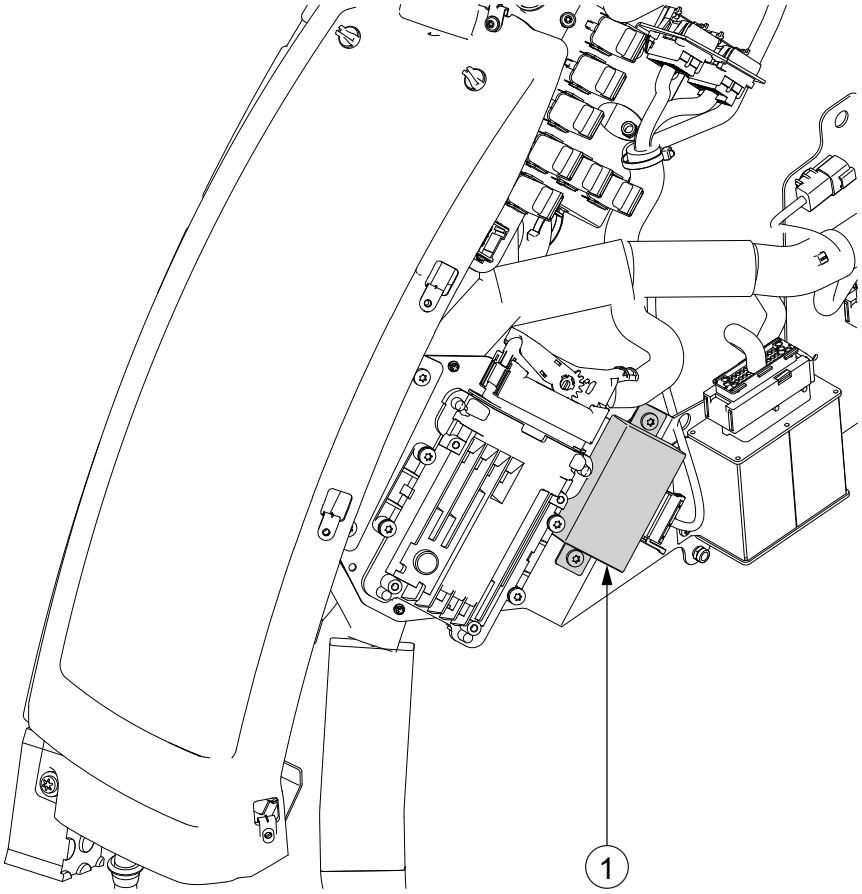
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Relay	Description
K21	Direction indicator 1)
K22	Window wiper 2)
K28	ON/OFF valve in
K29	ON/OFF valve out
K31	ISOBUS power 1)
K33	ISOBUS control unit power 1)
K34	Side window wiper 3)
K35	Bucket release
K36	Softdrive
K37	Selecto 3
K38	Selecto 4
K39	Front linkage / front loader
K40	ISOBUS CAN split relay 1)
K41	Side window wiper 3)
K43	Main power switch safety isolation
K100	Additional heater speed 1 2)
K101	Additional heater speed 2 2)

1) Placed in side panel.
2) Placed in front console.
3) Placed under the side window wiper cover.

Location of relay K21

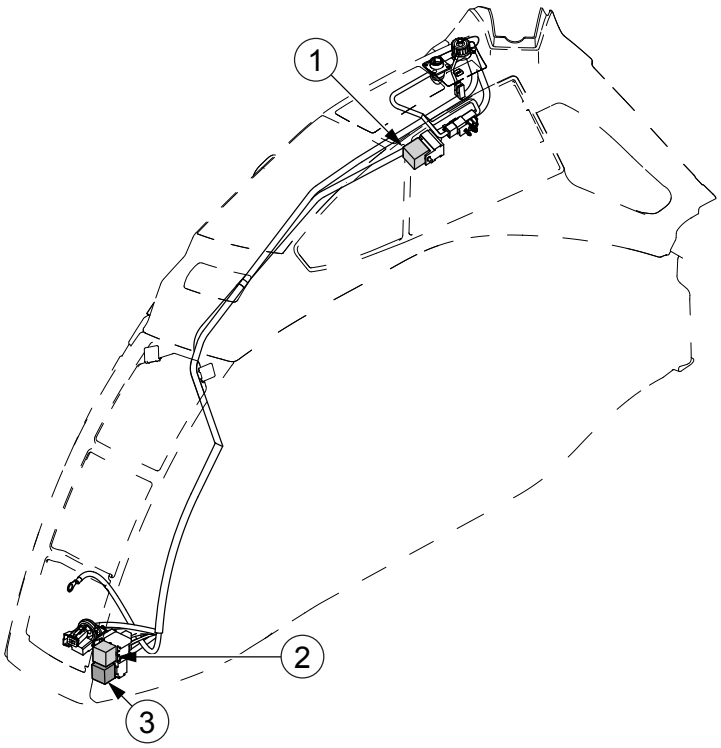
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1. Relay K21

Location of relays K31, K33 and K40

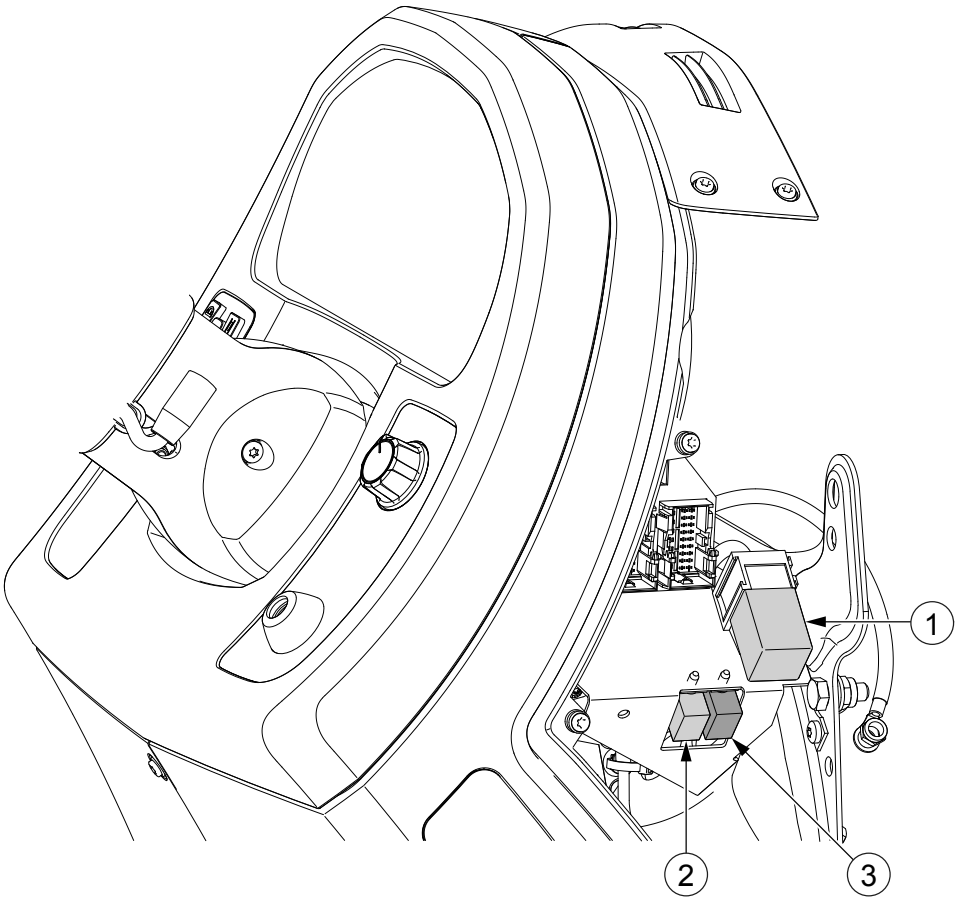
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1. Relay K40
2. Relay K31
3. Relay K33

Location of relays K22, K100 and K101

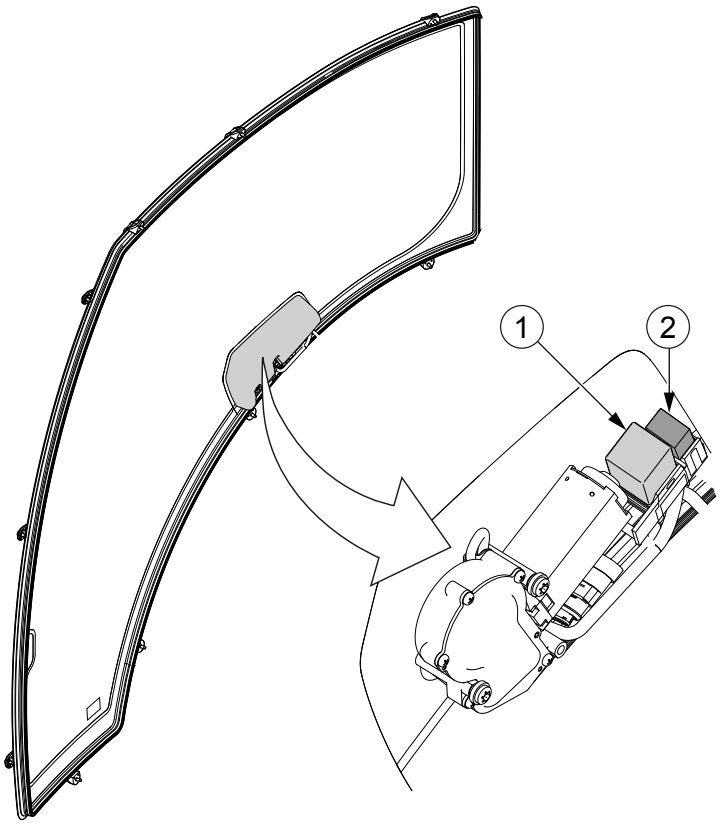
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1. Relay K22
2. Relay K101
3. Relay K100

Location of relays K34 and K41

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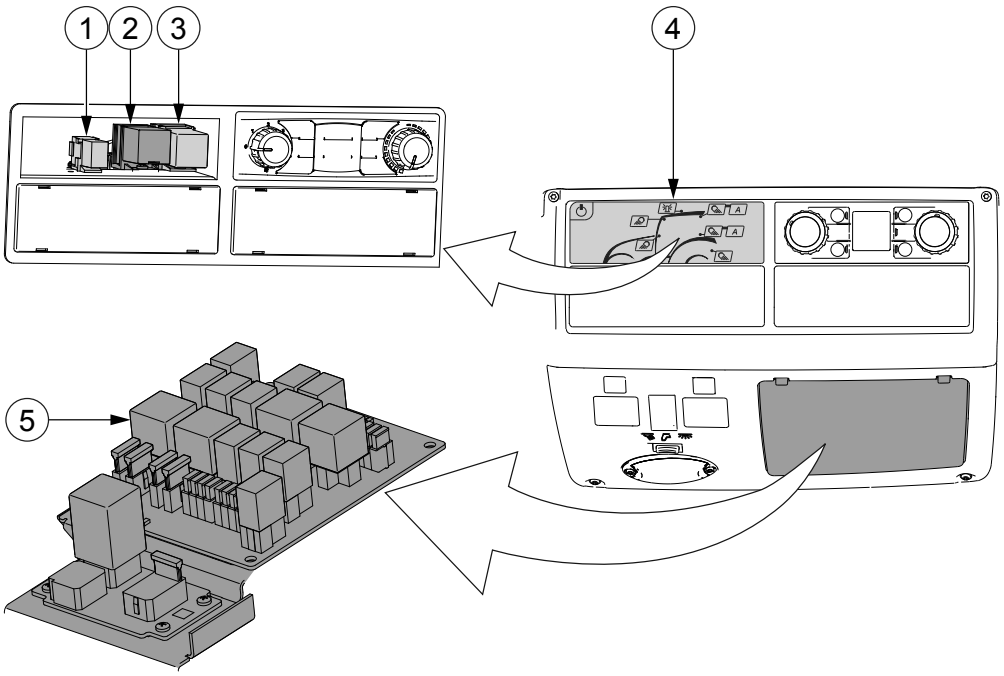
1. Relay K34
2. Relay K41

4.8.6.7 Fuses and relays in the roof electric centre

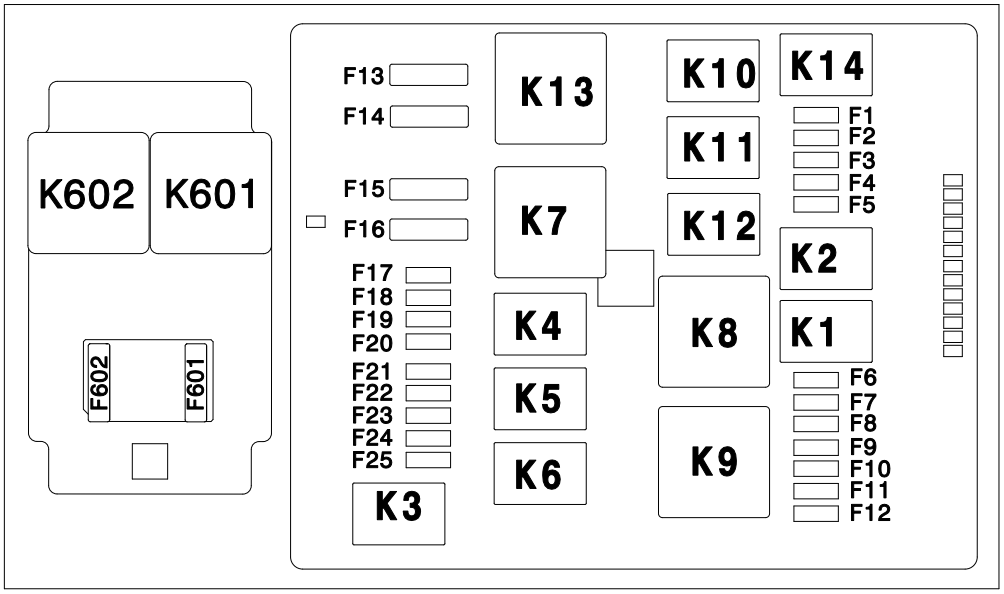
The fuses and relays in the roof electric centre are listed in the following tables.

The fuse diagram is on the reverse side of the electric centre cover. There is space for spare fuses. The roof electric centre contains 27 fuses and the nominal current rating of these fuses is 5-30 A.

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1. Relay K26
2. Relay K56
3. Relay K25
4. Light panel
5. Roof electric centre



Fuse	Nominal current	Description
F1	10A	Rotary beacon
F2	15A	Reserve
F3	15A	Rear waist working lights
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Fuse	Nominal current	Description
F4	15A	Front waist working lights
F5	15A	Upper headlights high beams
F6	15A	Upper headlights dipped beams
F7	15A	Rear working lights left
F8	15A	Rear working lights right
F9	15A	Front working lights left
F10	15A	Front working lights right
F11	15A	Reserve
F12	15A	Reserve
F13	15A	Radio, subwoofer, coolbox
F14	25A	Automatic HVAC fan supply
F15	30A	Manual HVAC supply
F16	10A	Automatic HVAC control panel
F17	10A	Rear window wiper
F18	10A	Reserve
F19	10A	Mirrors, tachograph
F20	15A	Reserve
F21	10A	Window heating control
F22	10A	Reserve
F23	10A	Automatic HVAC control panel
F24	5A	Light panel
F25	10A	Trailer hitch light
F601	30A	Rear window heater
F602	30A	Windscreen heater

Relay	Description
K1R	Upper headlights dipped beams
K2R	Upper headlights high beams
K3R	Trailer hitch light
K4R	Auxiliary relay +15
K5R	Auxiliary relay +15
K6R	Auxiliary relay +15
K7R	Manual HVAC supply
K8R	Rear working lights
K9R	Front working lights
K10R	Reserve
K11R	Rear waist working lights
K12R	Front waist working lights
K13R	Accessory power, radio, coolbox, subwoofer, cab light
K14R	Rotary beacon
K601	Rear window heater
K602	Windscreen heater
K25	Rear window wiper intermittent [1)]
K26	Rear window wiper brake [1)]
K56	Cab light delay [1)]

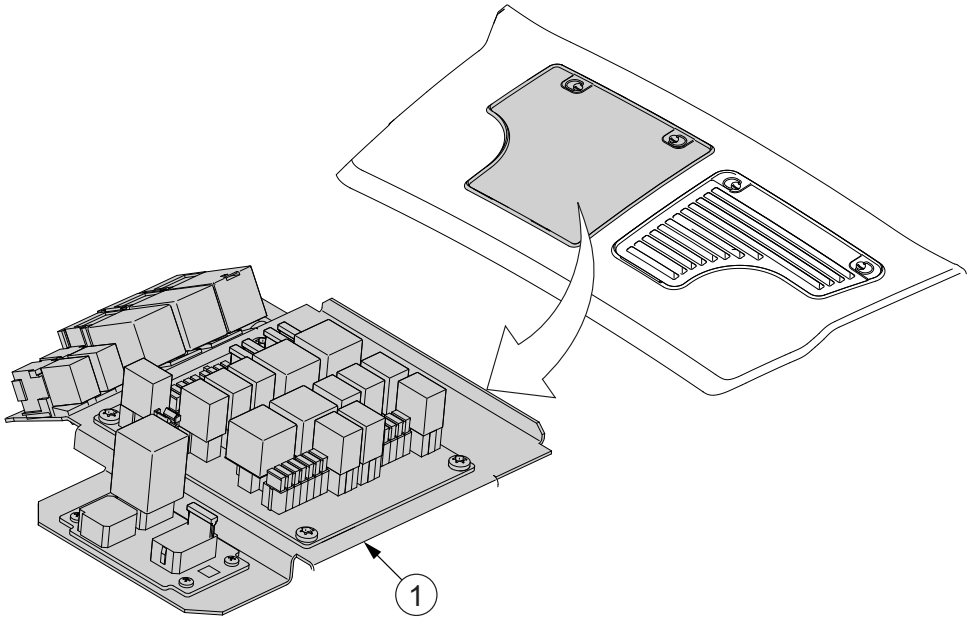
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1) Placed behind the light panel.

4.8.6.8 Fuses and relays in the Skyview equipment roof electric centre

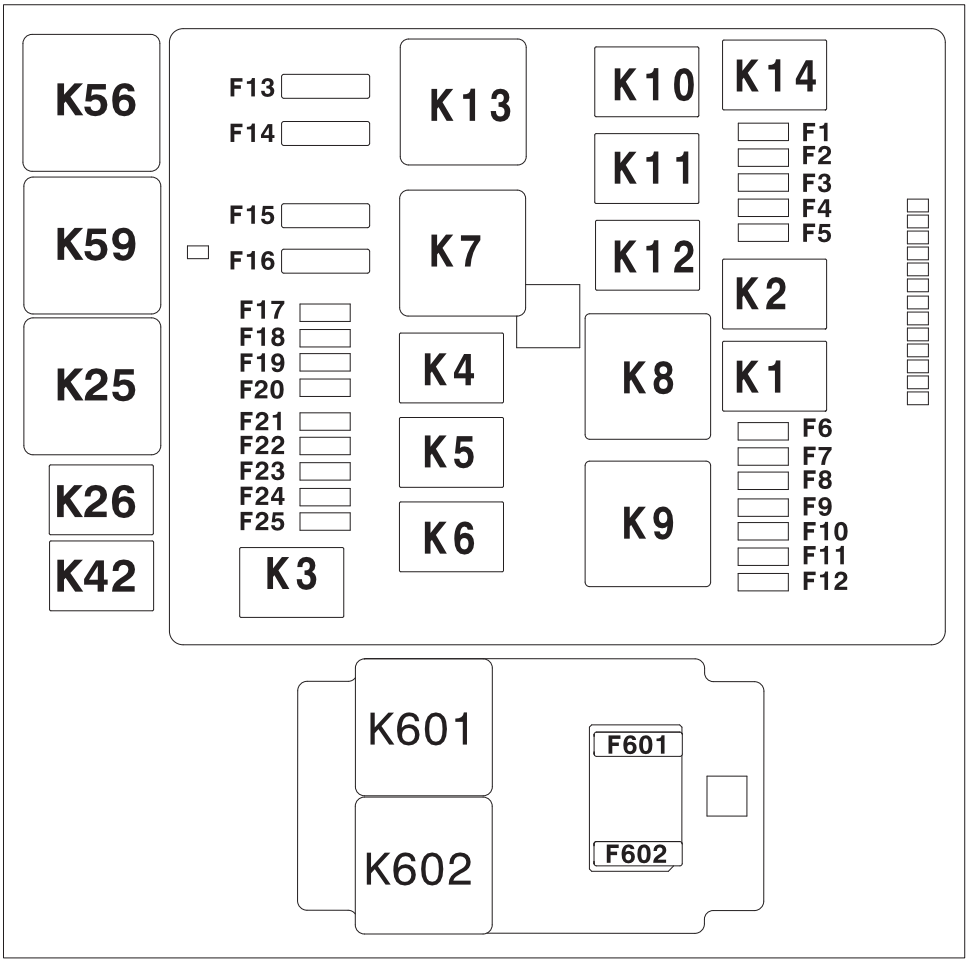
The fuses and relays in the Skyview equipment roof electric centre are listed in the following tables.

The fuse diagram is on the reverse side of the electric centre cover. There is space for spare fuses. The roof electric centre contains 27 fuses and the nominal current rating of these fuses is 5-30 A.



1. Skyview equipment roof electric centre

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Fuse	Nominal current	Description
F1	10A	Rotary beacon
F2	15A	Forest rear working light
F3	15A	Rear waist working lights
F4	15A	Front waist working lights
F5	15A	Upper headlights high beams
F6	15A	Upper headlights dipped beams
F7	15A	Rear working lights left
F8	15A	Rear working lights right
F9	15A	Front working lights left
F10	15A	Front working lights right
F11	15A	Reserve
F12	15A	Reserve
F13	15A	Radio, subwoofer, coolbox
F14	25A	Automatic HVAC fan supply
F15	30A	Manual HVAC supply
F16	10A	Automatic HVAC control panel
F17	10A	Rear window wiper

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Fuse	Nominal current	Description
F18	10A	Roof window wiper
F19	10A	Mirrors, tachograph
F20	15A	Reserve
F21	10A	Window heating control
F22	10A	Reserve
F23	10A	Automatic HVAC control panel
F24	5A	Light panel
F25	10A	Trailer hitch light
F601	30A	Rear window heater
F602	30A	Windscreen heater

Relay	Description
K1R	Upper headlights dipped beams
K2R	Upper headlights high beams
K3R	Trailer hitch light
K4R	Auxiliary relay +15
K5R	Auxiliary relay +15
K6R	Auxiliary relay +15
K7R	Manual HVAC supply
K8R	Rear working lights
K9R	Front working lights
K10R	Forest rear working light
K11R	Rear waist working light
K12R	Front waist working light
K13R	Accessory power, radio, coolbox, subwoofer, cab light
K14R	Rotary beacon
K601	Rear window heater
K602	Windscreen heater
K25	Rear window wiper intermittent
K26	Rear window wiper brake
K42	Roof window wiper brake
K56	Cab light delay
K59	Roof window wiper intermittent

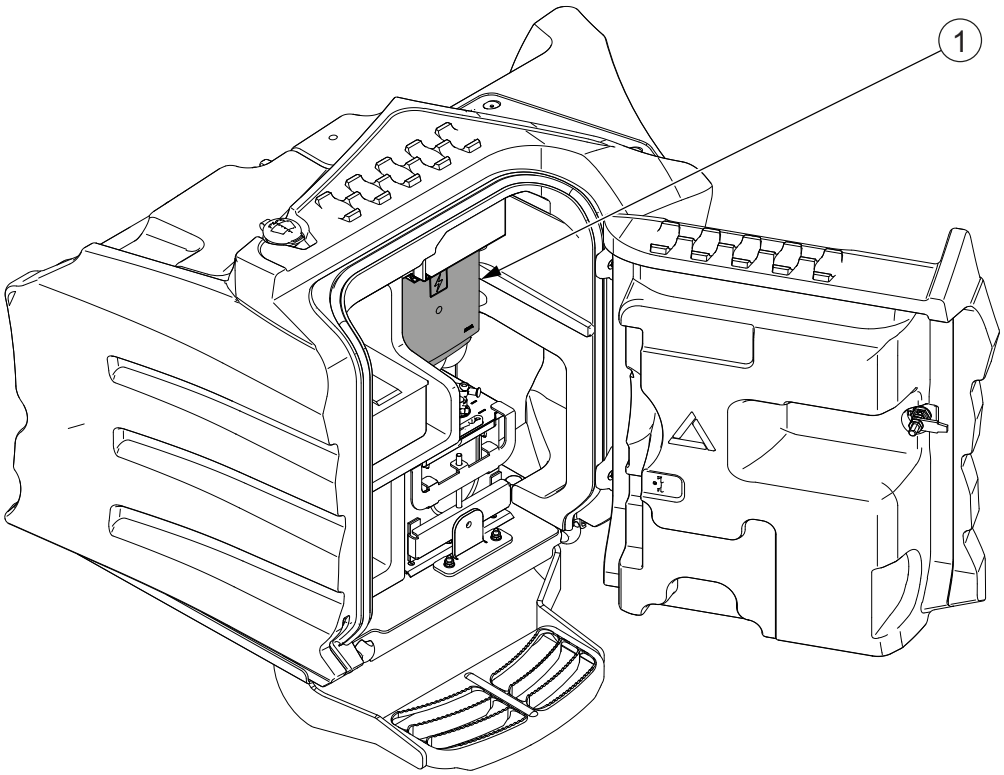
4.8.6.9 Fuses and relays in the main electric centre

The fuses and relays in the main electric centre are listed in the following tables.

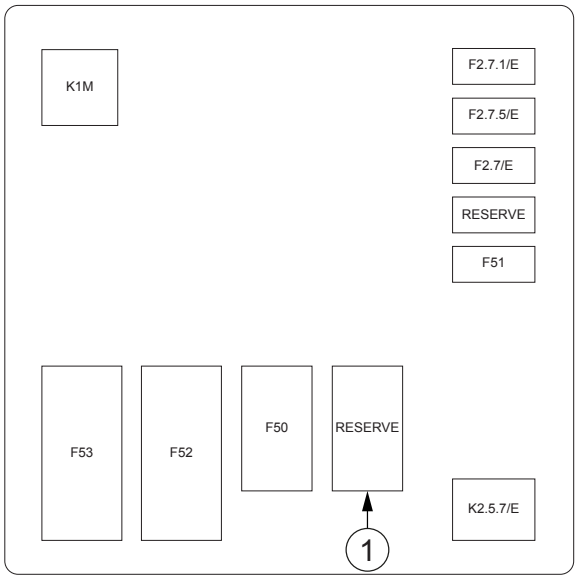
The fuse diagram is on the reverse side of the electric centre cover. The main fuse centre contains 7 fuses and the nominal current rating of these fuses is 5-250 A.

A current source for extra equipment can be connected to the reserve fuse on the main electric centre. The current is then switched off with the main switch.

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1. Main electric centre



1. A current source for extra equipment

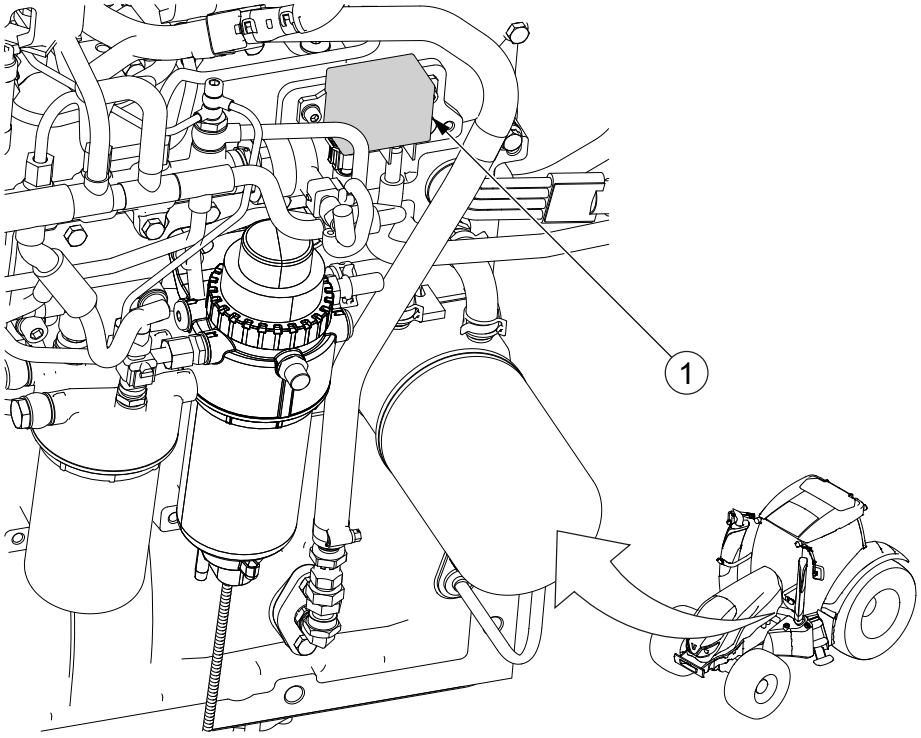
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Fuse	Nominal current	Description
F50	60A	ISOBUS power
F51	25A	ISOBUS engine control unit power
F52	125A	Cabin main
F53	250A	Grid heater
F2.7/E	30A	Fuel heater main
F2.7.1/E	5A	Fuel heater actuator
F2.7.5/E	15A	Fuel heater vehicle fan

Relay	Description
K1M	Starter relay
K8M	Grid heater relay [1)]
K2.5.7/E	Fuel heater, HVAC fan

1) Placed on the left side of the engine.

Location of relay K8M



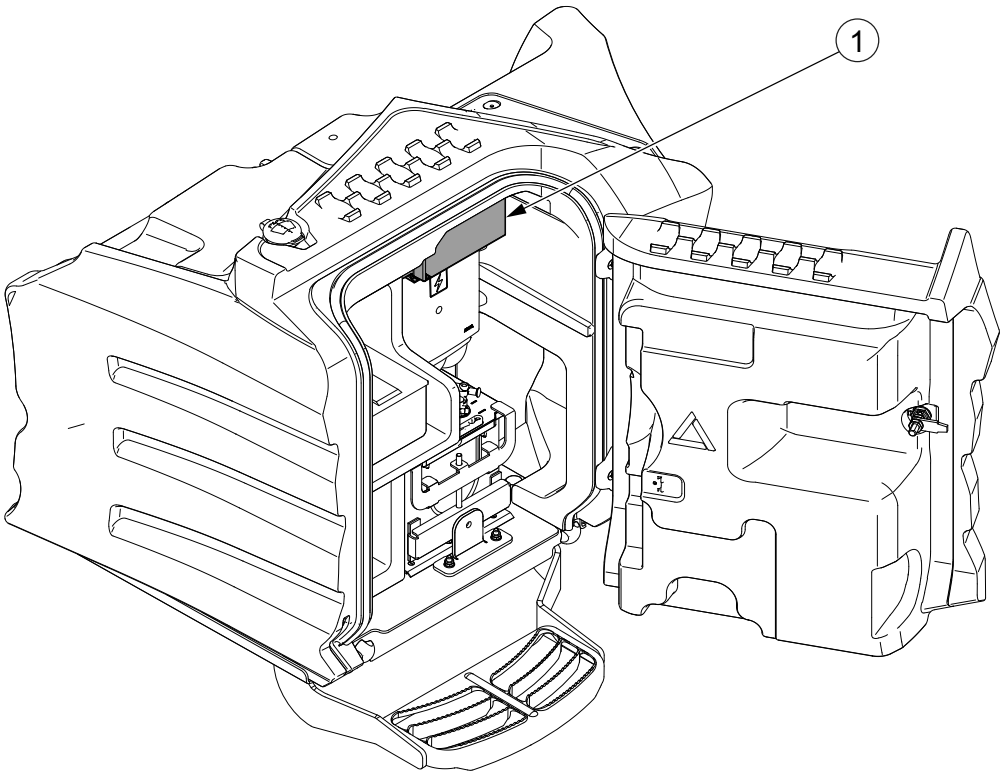
1. Relay K8M

4.8.6.10 Fuses and relays in the engine electric centre

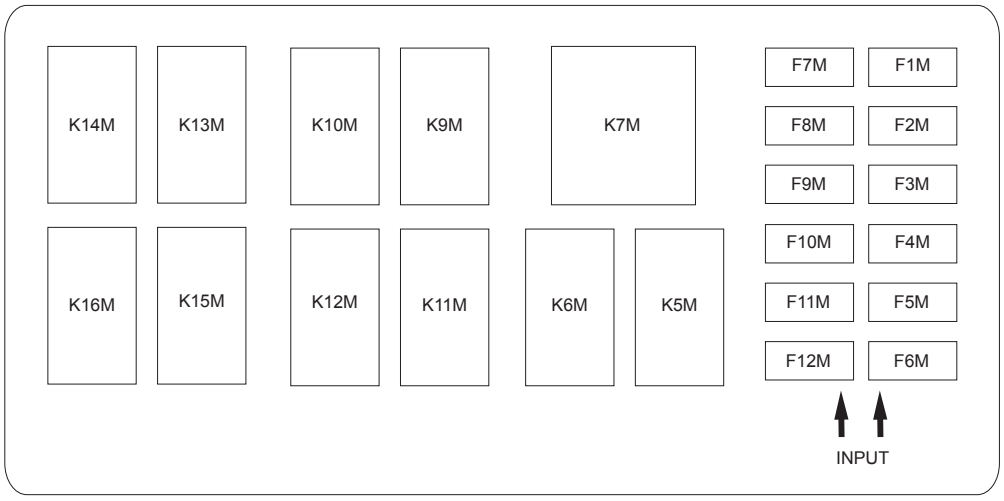
Fuses and relays in the engine electric centre are listed in the following tables.

The fuse diagram is on the reverse side of the electric centre cover. The engine electric centre contains 10 fuses and 2 empty places for spares. The nominal current rating of the fuses is 3-25 A.

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1. Engine electric centre



Fuses	Nominal current	Description
F1M	25A	DEF system heaters
F2M	25A	Engine control unit
F3M	3A	Engine control unit wake up
F4M	15A	Memory voltage
F5M	15A	Dipped beam
F6M	10A	High beam

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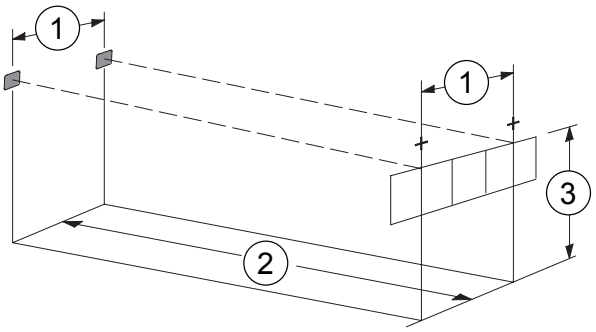
Fuses	Nominal current	Description
F7M	10A	NOx sensors
F8M	10A	Waste gate
F9M	-	Reserve
F10M	-	Reserve
F11M	10A	HVAC clutch
F12M	3A	Engine control unit ignition key signal

Relay	Description
K5M	Reserve
K6M	DEF system heating main
K7M	Engine control unit main
K9M	High beam
K10M	Dipped beam
K11M	Reserve
K12M	Engine auxiliary
K13M	Alternator D+ cut off
K14M	Reserve
K15M	Alternator D+ cut off auxiliary
K16M	Compressor clutch control

4.8.6.11 Adjusting headlights

It is important that the headlights are correctly adjusted when running on public roads.

Before you adjust the headlights, make sure that the tractor load is normal and tyre pressure is correct.



1. Distance between headlight centres
2. 5 m (tractor distance from the wall)
3. Height of headlights above ground minus 50 mm

Headlight adjustment can be carried out quickly and accurately by using an optical headlight adjusting unit. If no optical instrument is available, the adjustment can be done as follows:

1. **Turn on the dipped beams.**

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2. **Measure that the cut-off edge of the beam pattern comes at height of headlights above ground minus 50 mm when the tractor is 5 m from the wall.**
3. **Turn the high beams on.**
4. **Measure that the distance between headlight centres matches the distance measured on the wall.**
5. **Adjust the lights using the headlight adjusting screws.**

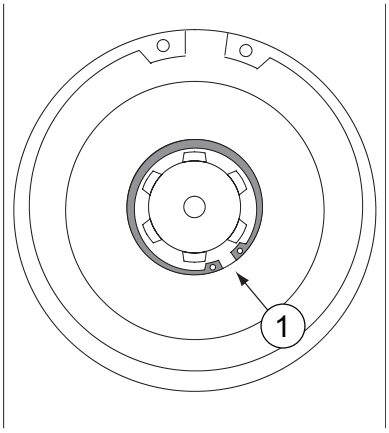
If the tractor has upper headlights (optional), adjust the lights so that the beam pattern hits the ground 30 m away from the tractor. Carry out the measurement on even ground.

4.8.7 Power transmission system

4.8.7.1 Changing the rear power take-off shaft

Change the rear power take-off (PTO) shaft when needed.

IMPORTANT: Never run the tractor without the power take-off (PTO) shaft.



1. Inner circlip

1. **Remove the inner circlip and the space ring.**
2. **Pull out the shaft.**
3. **Fit the new shaft.**
4. **Check that the shaft seal is undamaged.**
5. **Attach the space ring and the circlip.**
6. **Change the circlip if damaged.**

   IMPORTANT: Check that the circlip is correctly positioned.

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4.8.7.2 Checking the transmission ratio of a power take-off driven trailer

Check the transmission ratio of a power take-off (PTO) driven trailer.

Before you check the transmission ratio, make sure that the tractor with the trailer is on a flat, hard-surfaced area or road.

1. **Check that the tyres have the correct pressure.**
2. **Remove the PTO drive shaft.**
3. **Fasten wire or tape indicators on the PTO shaft of the tractor and on the trailer drive shaft.**

   The indicators must be aligned.
4. **Drive the tractor together with the trailer slowly forwards.**

   Ask two people to count simultaneously how many revolutions the tractor and the trailer shaft each make. Stop counting when the tractor shaft has made 100 revolutions.
5. **Compare the figures for the tractor and trailer shafts.**
   - If the number of the trailer drive shaft revolutions is higher than 100, the trailer is slower than the tractor.

     The trailer should be 0-3% slower, that is, the trailer shaft should have revolved 100-103 times. If the number is greater than this, the trailer's braking effect is too great.
   - If the number of the trailer drive shaft revolutions is lower than 100, the trailer is faster than the tractor.

     In this case, the trailer tends to push, which can endanger the steering of the tractor.

4.8.8 Steering system

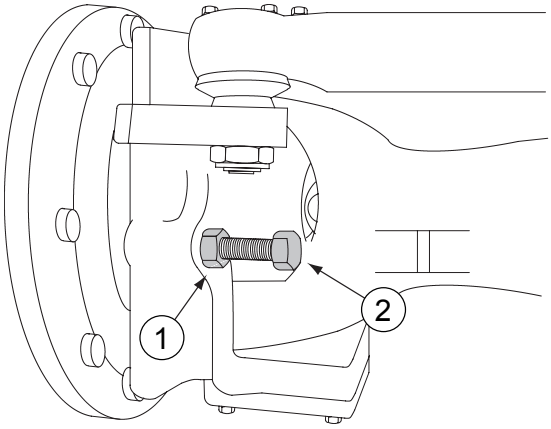
4.8.8.1 Adjusting the steering angle

If the tractor is equipped with the electrohydraulic steering valve, the steering angle must be adjusted and calibrated at an authorized Valtra workshop.

IMPORTANT: When altering the track width or when fitting a front loader, always make sure that the front wheels have free movement to full lock with full front axle oscillation in both directions and that the front axle and the wheels can turn fully. If necessary, adjust the steering lock stop screws on the powered front axle.

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1. **Slacken the locking nut.**



1. Locking nut
2. Adjusting screw

2. **Adjust the adjusting screw.**

   IMPORTANT: Adjust the adjusting screws on both sides to the same length so that the turning angle is the same on both sides.

3. **Tighten the locking nut.**

4.8.9 Cab and shields

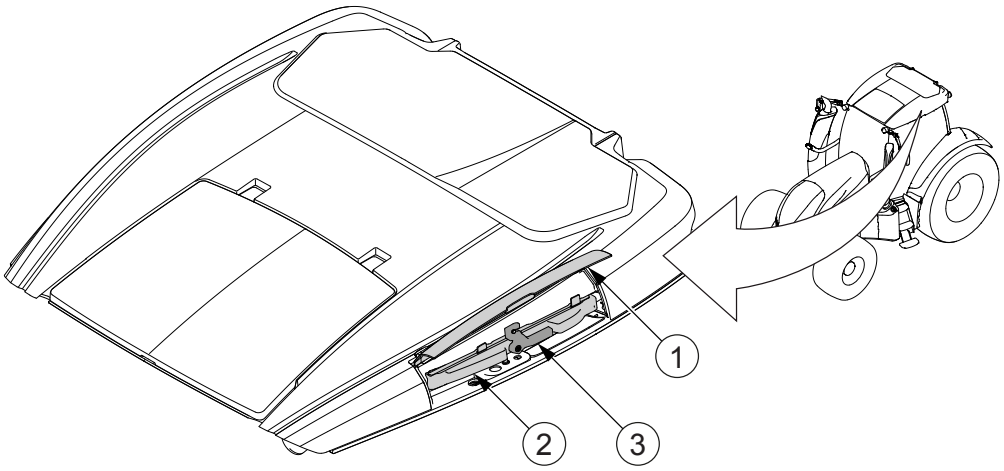
4.8.9.1 Cleaning the cab ventilation air filter

Check and clean the cab ventilation air filter when necessary.

WARNING: The air filter element does not remove chemicals from the outside air. Follow the instructions of the pesticide manufacturer.

NOTE: In extremely dusty conditions the cab ventilation air filter must be cleaned frequently.

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1. Air filter housing hatch
2. Ventilation air filter support frame
3. Ventilation air filter support frame latch

1. **Open the air filter housing from the upper left-hand corner of the cab roof.**
2. **Open the support frame latch.**
3. **Extract the support frame.**
   - **Lower the support frame slightly.**
   - **Pull the support frame outwards.**
4. **Remove the ventilation air filter.**
5. **Check the condition of the ventilation air filter.**

   A damaged ventilation air filter must be changed.
6. **Clean the ventilation air filter.**
   - **Knock the filter element against your palm so that most of the dirt comes off.**
   - **Clean the ventilation air filter with a vacuum cleaner from the dirty side first and then from the clean side or blow it clean with compressed air from the clean side towards the dirty side.**

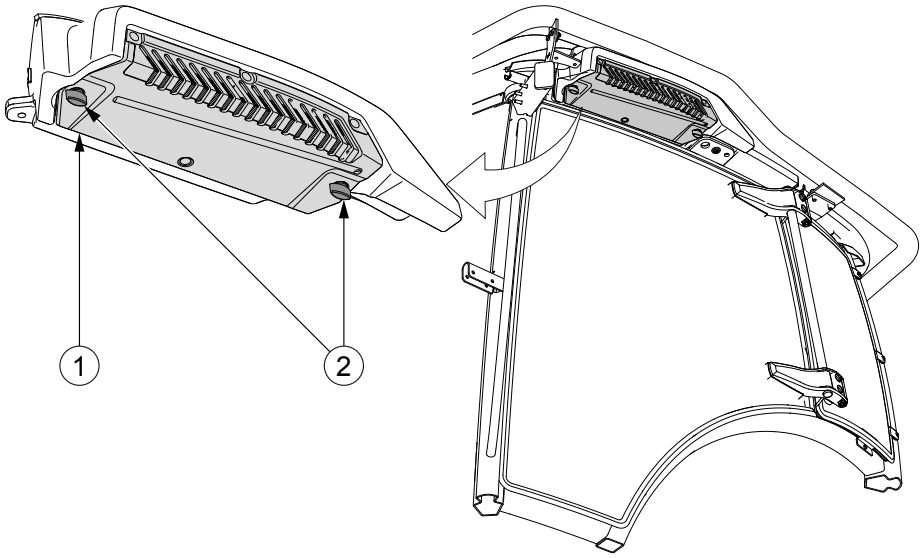
   IMPORTANT: Make sure that the air pressure is not too high.

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4.8.9.2 Cleaning the Skyview equipment cab ventilation air filter

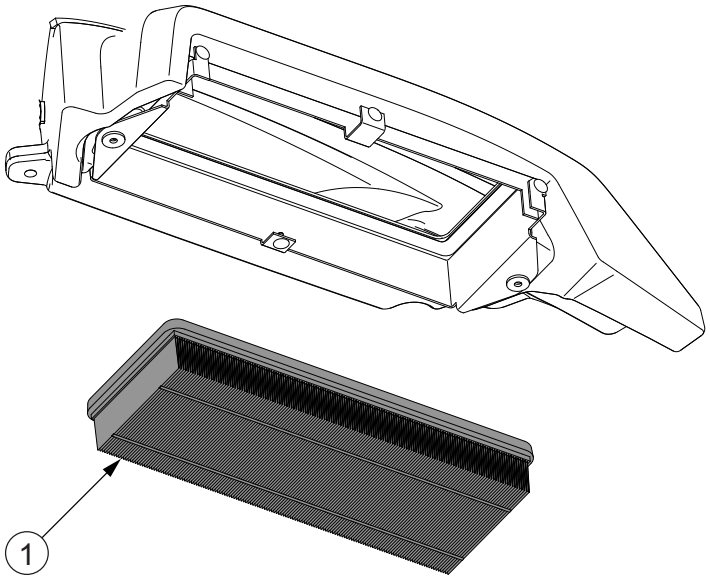
Check and clean the Skyview equipment cab ventilation air filter when necessary.

1. **Open the air filter housing from the upper left-hand corner of the cab roof.**



1. Air filter housing hatch
2. Knurled head screw

2. **Remove the ventilation air filter.**



1. Ventilation air filter

3. **Check the condition of the ventilation air filter.**

   A damaged ventilation air filter must be changed.

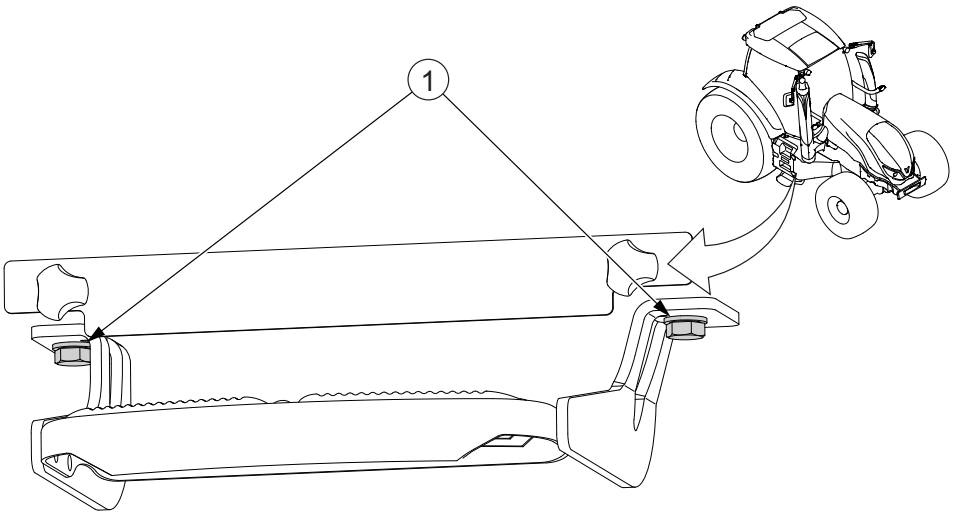
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4. **Clean the ventilation air filter.**
   - **Knock the filter element against your palm so that most of the dirt comes off.**
   - **Clean the ventilation air filter with a vacuum cleaner from the dirty side first and then from the clean side or blow it clean with compressed air from the clean side towards the dirty side.**

   IMPORTANT: Make sure that the air pressure is not too high.

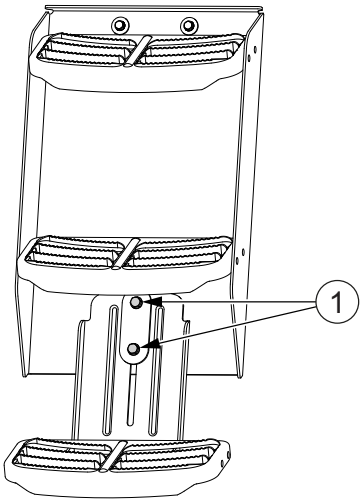
4.8.9.3 Adjusting steps for driving off-road

1. **On the right side, remove the lowest step completely by unscrewing two screws.**



1. Screws

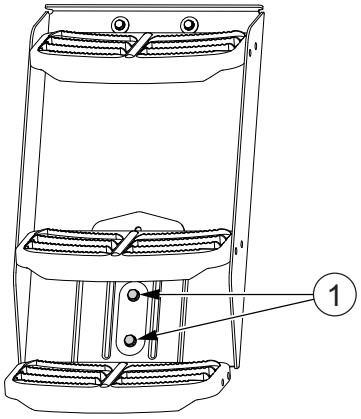
2. **On the left side, loosen the two screws holding the lowest step in the lowest position.**



1. Screws

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3. **Push the lowest step in the top position and fasten the two screws.**



1. Screws

4.8.9.4 Checking and adjusting front mudguards

Check and adjust the front mudguards if needed.

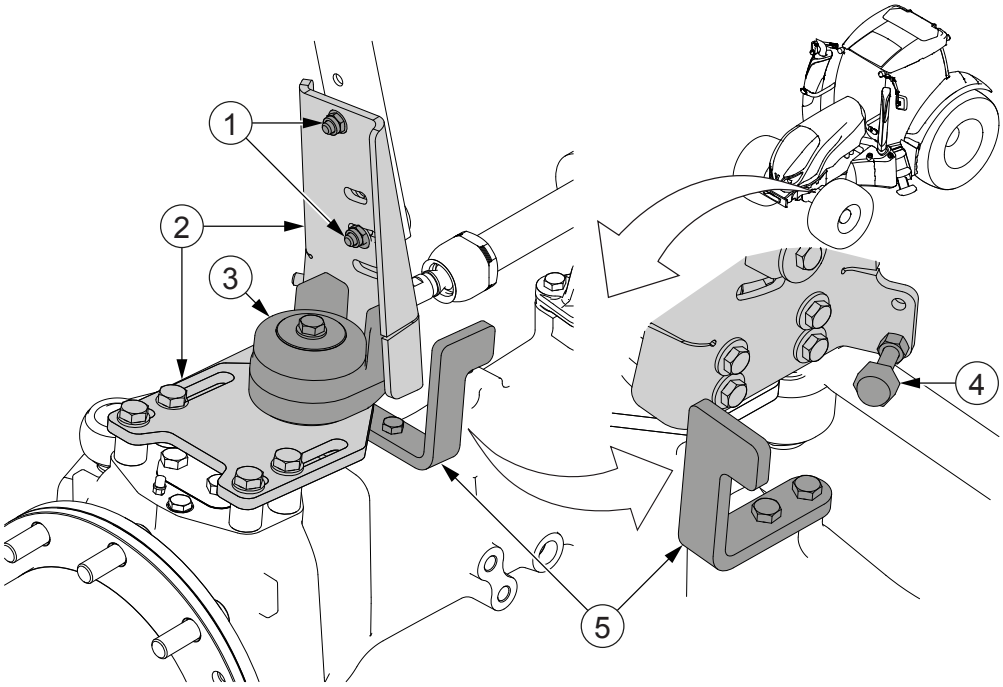
- **After transportation, check and adjust the front mudguards for maximum turning angle.**
- **If necessary, move them to the right width so that the mudguards do not touch the tractor chassis.**

  IMPORTANT: According to the EU directives the smallest allowed distance between the side of the tyre and the mudguard is 40 mm and between the top of the tyre to the mudguard is 60 mm.

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4.8.9.5 Adjusting flexible front mudguards

Adjust the flexible front mudguards, if needed.



1. Fixing screws
2. Flexible front mudguard frame
3. Turning mechanism
4. Adjustment screw
5. Stopper

The mudguards can be turned fully to the side to the service position, which eases the access to the engine compartment.

- **Check the maximum oscillation and turning angles so that the front mudguards do not come in contact with, for example, the side panel when you fit tyres.**

  When this adjustment is not needed fully screw in the adjustment screw.

- **If necessary, limit the turning of the mudguards by adjusting the stoppers.**

  If the distance between the mudguard and the tyre requires, the stoppers can be installed as a mirror image.

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- **To adjust the height of the mudguards, change the fixing screws or the shafts to the other holes.**

  In addition, the mudguards can be inclined forward and backward in their fixing holes.

  The tightening torque of the fixing screws is 70 Nm.

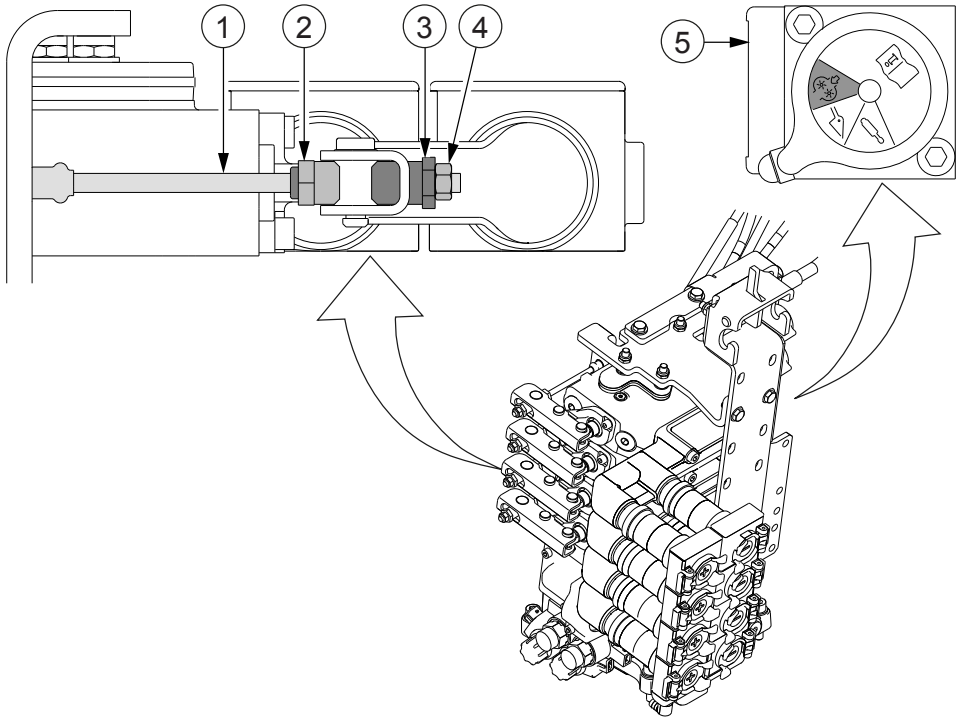
  IMPORTANT: According to the EU directives the smallest allowed distance between the side of the tyre and the mudguard is 40 mm and between the top of the tyre to the mudguard is 60 mm.

  NOTE:

  The distance between the fixing screws must be as wide as possible. Use the highest and lowest possible holes for the fixing screws.

4.8.10 Auxiliary hydraulics

4.8.10.1 Adjusting the rear valve cables



1. Cable
2. Adjustment nut
3. Adjustment screw
4. Locking nut
5. Position lock mode

1. **Disconnect quick couplings from the rear valves.**
2. **If the tractor is equipped with the front linkage shut-off valve (optional), push the shut-off valve lever to the top position.**

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3. **With the adjustable valves (optional), turn the valve mode selector to position lock mode.**
4. **Turn the engine on.**
5. **Pull the valve levers 1, 3 and 4 backwards to position lock mode.**

   The valve levers must stay in the position lock mode. If a valve lever does not stay in the position lock mode, the corresponding cable must be loosened.
6. **Pull the valve lever 2 backwards and check that the valve lever movement corresponds with the valve 1.**

   The valve lever must not hit the panel.
7. **Push all the control levers past the extreme position with increased force to the floating positions.**

   The valve levers must stay in the floating position.
8. **Turn the engine off.**

   The valve levers must remain in the floating position when the engine is turned off. If a valve lever does not stay in the floating position, the corresponding cable must be tightened.
9. **To adjust the cable:**
   - **Loosen the locking nut.**

     Use a 10 mm wrench.
   - **Rotate the adjustment screw and nut to loosen or tighten the cable.**

     Use a 14 mm wrench.
   - **Tighten the locking nut.**

     Tightening torque is 11 Nm.
   - **Check the adjustment.**

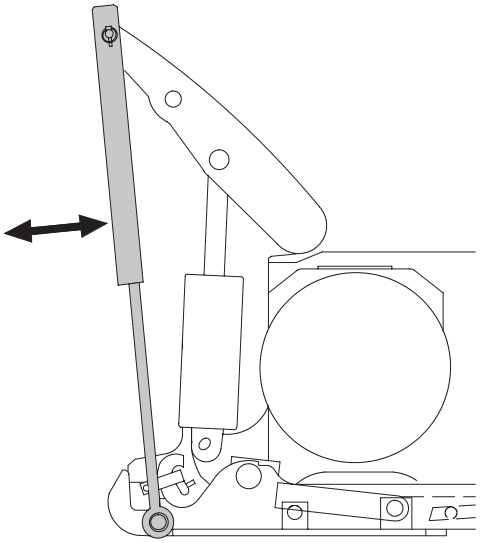
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4.8.11 Towing devices

4.8.11.1 Adjusting lifting links of the pick-up hitch

Adjust the lifting links of the pick-up hitch if needed.

The lifting height selector must be in the maximum position when the towing hook is unloaded.



The lifting links must always have a certain amount of clearance when the rear linkage is in its upper position. However, they must be adjusted in such a way that the pick-up hitch is securely locked by the pawl, even when the towing hook is loaded.

1. **Raise the rear linkage to its upper position.**

   Use the lifting/lowering switch.

2. **Check the adjustment by moving the lifting links manually.**

   The adjustment is correct when the links are slightly tensioned. When the linkage is lowered, the towing hook is locked positively by the pawl.

3. **Make sure that the spring returns the pawl completely.**

4. **If necessary, adjust the length of the links by removing the cotter at the upper end of the links and turning them until the correct length is obtained.**

   The link shortens when turned clockwise and extends when turned anticlockwise.

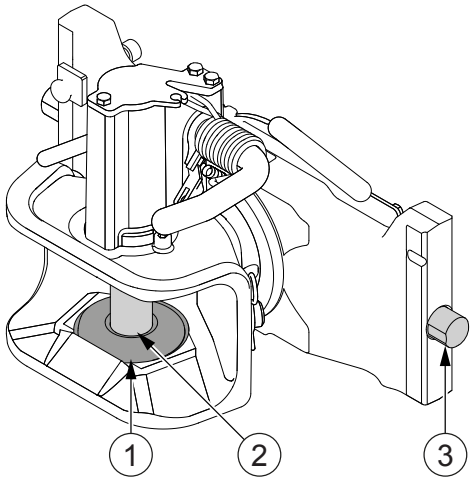
5. **Check that both lifting links are of the same length after the adjustment.**

Correctly adjusted, the lifting links ensure that the rear linkage can be raised to its uppermost position. The pick-up hitch is locked when the linkage is lowered to the point where the hitch rests on the pawl. This prevents unnecessary loading on the hydraulic pump and overheating of the oil.

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4.8.11.2 Maintaining the automatic jaw of the wagon towing device

Maintain the automatic jaw of the wagon towing device regularly.



1. Control unit of the puller pin
2. Main pin
3. Locking pin (2 pcs)

- **Regularly clean the main pin, control unit of the puller pin and locking pins.**

  Do not use pressure wash when cleaning the main pin.
  IMPORTANT: If the jaw is rusty, for example due to fertiliser, do not use a rust-loosening agent for removing the rust but take it to an authorised Valtra workshop.

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5 Troubleshooting

5.1 Handling error situations

Indicator lights and service codes guide you in error situations.

- **Take notice of the indicator lights on the instrument panel and act accordingly.**

The STOP indicator light starts flashing.	• Stop the tractor and the engine immediately. • Continue only in an emergency, for example, to move the tractor to the roadside.
The book symbol starts flashing on the A-pillar display to indicate an active service code in the system.	• Contact an authorised Valtra workshop immediately.
The limiting function of the maximum engine speed is on (for example, 1 500 rpm or 1 800 rpm). Some service codes limit the maximum engine speed, torque and power of the engine or shutdown the engine after a delay of approximately 30 s. This prevents serious damage to the engine.	• Avoid long-term and heavy use of the engine until the error is fixed.

NOTE: If the book symbol starts flashing, contact an authorised Valtra workshop, even if the error does not prevent driving the tractor.

5.2 Warnings on the Proline instrument panel display

The Proline instrument panel display indicates the following warnings.

You can clear the warning messages by pressing the **SET** button on the control panel.

Warning message on the instrument panel display	Action
Low Fuel Pressure 	• This message gives information about the pressure drop of the fuel before the running faults appear.
SLOW DOWN HIDASTA	• The transmission speed is too high. • The buzzer alarms continuously. • Slow down. When the transmission speed has dropped low enough, the buzzer goes out and the display returns to the previously selected state. Transmission speed is monitored in all gear ranges.
SLOW DOWN PTO SPEED TOO HIGH!	• The ground speed PTO speed is above limit of 1800 rpm. • The buzzer alarms once. • When the speed of the ground speed PTO has dropped low enough, the buzzer goes out and the display returns to the previously selected state.
SECONDARY BRAKE!	• The emergency brake is in use. • The message is displayed as long as the emergency brake button is pressed or emergency brake lever is pulled.
Table continued on next page	

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Warning message on the instrument panel display	Action
SECONDARY BRAKE FAULT!	• There is a fault in the emergency brake and it does not function. • A service code is displayed on the A-pillar display. • Contact an authorised Valtra workshop.
PARKING BRAKE FAULT!	• There is a fault in the parking brake and it might not function properly. This can also prevent the function of the emergency brake. • The buzzer alarms continuously and a service code is displayed on the A-pillar display. • Contact an authorised Valtra workshop.
Fuel Level Sensor Has Open Circuited	• Fuel level sensor has open-circuited. • Contact an authorised Valtra workshop.
Fuel Level Sensor Has Short Circuited	• Fuel level sensor has short-circuited. • Contact an authorised Valtra workshop.

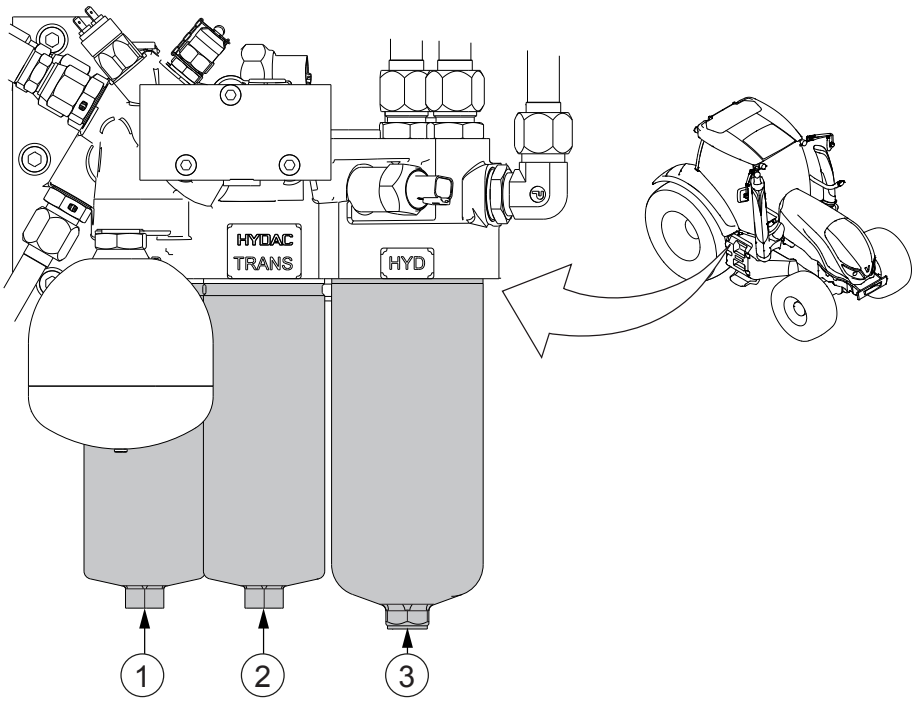
5.3 Identifying a blocked transmission or hydraulic system filter

When the pressure oil filter clogging indicator light  is lit the filter of the transmission or hydraulic system is blocked.

If the indicator light is lit when the oil has been warmed, the transmission lubrication filter is probably blocked. If the indicator light is lit when using auxiliary hydraulics, it is probably only the hydraulic return filter which is blocked.

NOTE: The lubrication filter and the low pressure filter of the transmission are identical.

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1. Lubrication filter of the transmission system
2. Low pressure filter of the transmission system
3. Return oil filter of the hydraulic system

Oil filters are located on the right side of the tractor under the cab. The oil filters are labelled with following text on the mounting piece on top of it:

- HYD for return oil filter
- LUB for transmission lubrication oil filter
- TRANS for low pressure filter.

1. **Release the pressure sensor wires of the return oil filter of the auxiliary hydraulics.**
2. **Attach an implement to the tractor and connect quick couplings.**
3. **Run the engine.**
4. **Operate the implement connected to the auxiliary hydraulics.**
5. **Check if the pressure oil filter clogging indicator light is lit.**

   If the indicator light is not lit, the fault is in the return oil filter.
6. **Change the return oil filter if the blocking is caused by this filter.**

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7. **If the indicator light is still lit change the lubrication filter and the low pressure filter of the transmission system.**

   IMPORTANT:

   If the blocking is in one of the transmission filters and it occurs considerably ahead of scheduled replacement of the filters, it may be an indication of partial damage to the transmission system. In this case, further investigations need to be made to avoid additional damage to the transmission system.

5.4 Viewing service codes

You can read active service codes on the A-pillar display.

If there is an active service code, the book symbol appears on the A-pillar display.

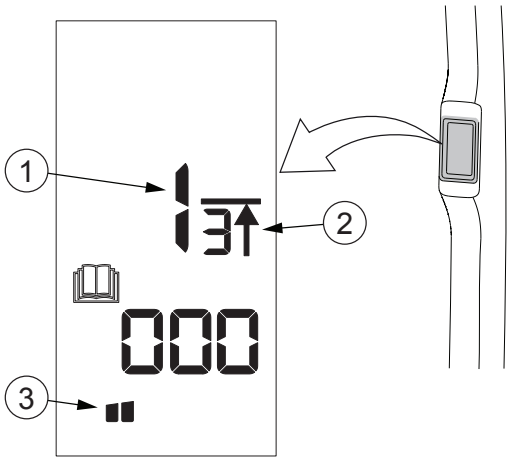
1. **Press the SET button.**

   The service code view appears on the display.

2. **Press the arrow up button to scroll the service code on the display in four parts.**

   For example, the code 000091-13-035 is displayed in the following order:

   - 0000
   - 0091
   - 0013
   - 0035



1. Service code order number
2. Total number of service codes
3. Service code part indicator

The service code order number shows which code is currently scrolling on the display. The service code part indicator shows which part of the code is displayed on the service code value field.

3. **Exit the service code view.**

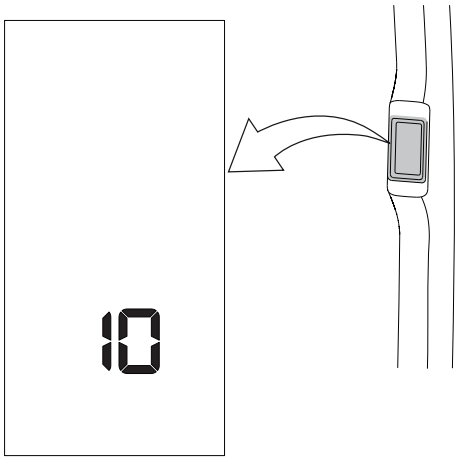
   To exit the service code view, press the button.

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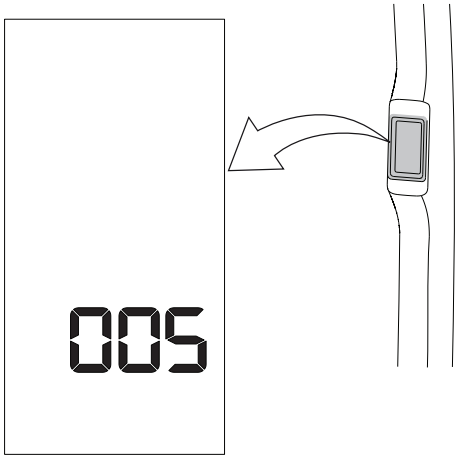
5.5 Viewing the IO list

In a fault situation, you can give detailed information of the tractor to the service personnel by viewing the tractor IO list through the A-pillar display.

1. **Press to activate the A-pillar display.**
2. **Press SET to enter the settings menu and use the arrow buttons to scroll to the IO list.**



3. **Press SET to enter the IO list.**

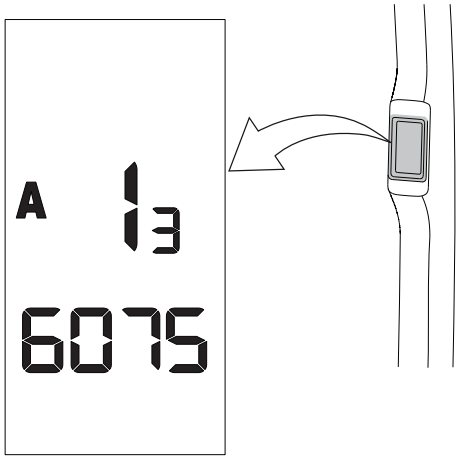


A list of control unit index numbers appear.

4. **Press the up arrow or the down arrow to select the index informed by the service personnel.**

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5. Press **SET**.



A list of control unit pins appear.

6. **Press the up arrow or the down arrow to view the control unit pin status informed by the service personnel.**

7. **Press to leave the IO list.**

5.6 Steering system malfunctions

CAUTION: If a malfunction occurs in the steering system, stop the tractor and correct the malfunction before restarting.

If the oil supply from the hydraulic pump fails for any reason, the tractor can still be steered with the steering wheel. In this case the steering valve acts as a pump and provides oil pressure for the steering cylinder. The steering is heavier to use than normally.

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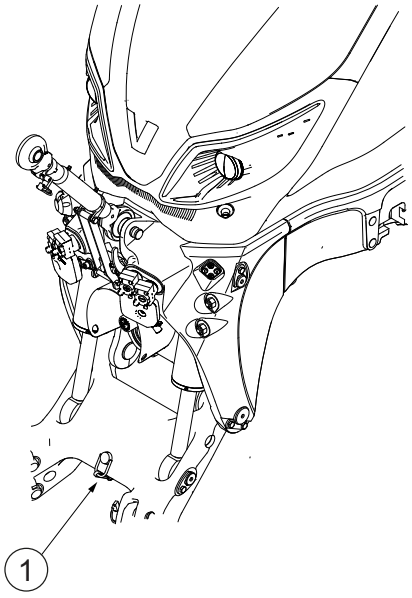
5.7 Towing the tractor

5.7.1 Towing the tractor when the engine is running

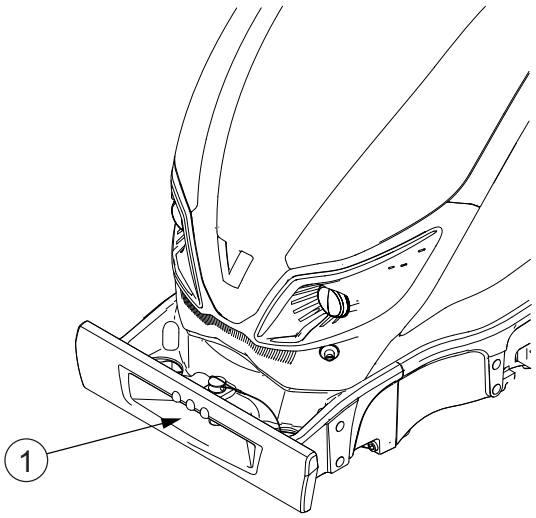
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1. **Make sure that you connect the towing piece to the correct part on the tractor.**

   We recommend that you use a towing bar to tow the tractor horizontally.



1. Towing point when the tractor has the front linkage



1. Towing point when the tractor does not have the front linkage

When you tow a tractor which has the front linkage, lift the front linkage and the lifting links to their top positions.

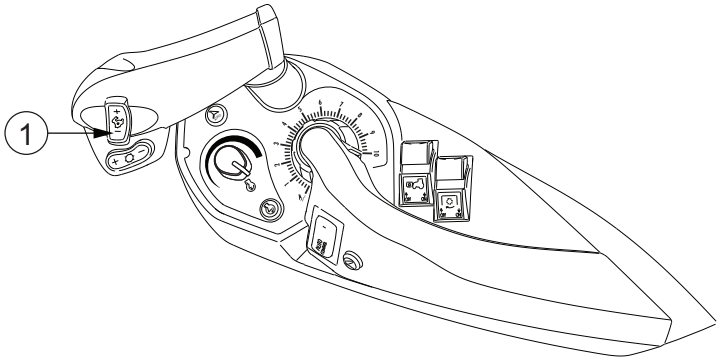
At the rear of the tractor, the towing point is the towing device of the tractor.

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2. **If possible, tow the tractor in the same vertical angle in which the tractor you want to tow is.**

   CAUTION: If you tow the tractor horizontally while the tractor is on a slope, you can cause damage to the tractor.

3. **Prepare the transmission for towing.**



1. Speed range selection - button

- **Engage the parking brake.**
- **Change to speed range LA.**
- **Press down the speed range selection - button for a minimum of 3 seconds.**

  Setting the speed range to neutral is possible only if the driving speed is below 1 km/h.
  Transmission sets to neutral. The symbol for speed range goes out of view from the A pillar display.
- **If you cannot change to neutral, try to change to the D range.**

  If you cannot change to the D range, follow the towing speeds below.
- **Release the parking brake.**

  If you are on a slope, push and hold down the brake pedals to prevent the tractor from moving. Release the brake pedals when you are prepared to start the towing.

4. **Tow the tractor.**

   The maximum allowed towing speeds are:

   - Speed range A: 3 km/h
   - Speed range B: 6 km/h
   - Speed range C: 8 km/h
   - Speed range D: 10 km/h
   - Transmission in neutral: 10 km/h
   - **Do not tow the tractor alone.**

     Make sure that someone operates the steering and the brakes in the tractor you tow.

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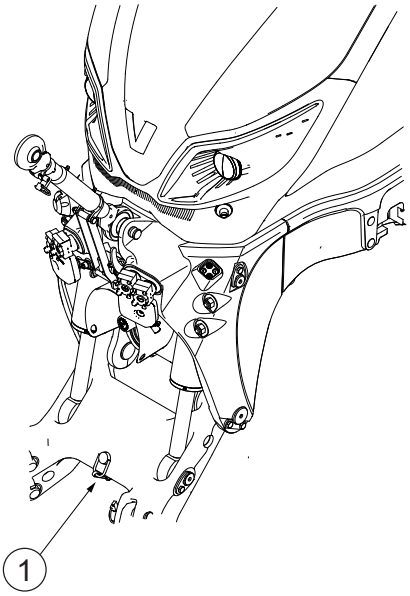
5.7.2 Towing the tractor when the engine is not running

IMPORTANT: When the engine does not operate, the gearbox is not lubricated and the steering and brakes are heavier to use.

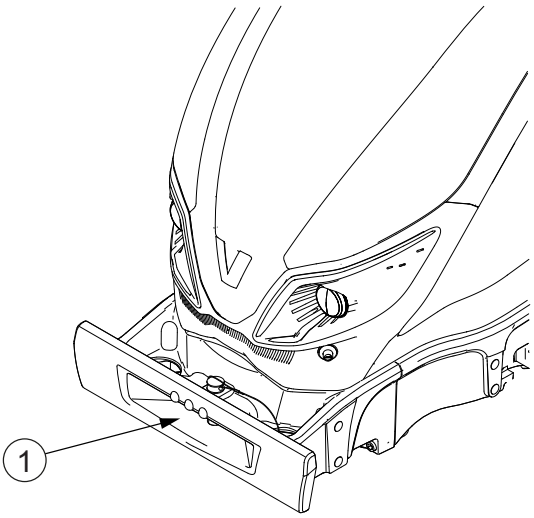
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1. **Make sure that you connect the towing piece to the correct part on the tractor.**

   We recommend that you use a towing bar to tow the tractor horizontally.



1. Towing point when the tractor has the front linkage



1. Towing point when the tractor does not have the front linkage

When you tow a tractor which has the front linkage, lift the lifting links to the top position.

At the rear of the tractor, the towing point is the towing device of the tractor.

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2. **If possible, tow the tractor in the same vertical angle in which the tractor you want to tow is.**

   CAUTION: If you tow the tractor horizontally while the tractor is on a slope, you can cause damage to the tractor.

3. **Release the parking brake.**

   Use suitable tools, for example a 17 mm wrench, for releasing the parking brake.

4. **Tow the tractor.**

   The maximum allowed towing speeds are:

   - Speed range A: 3 km/h
   - Speed range B: 6 km/h
   - Speed range C: 8 km/h
   - Speed range D: 10 km/h

   IMPORTANT: If you do not know which speed range is active, do not exceed the maximum allowed towing speed for speed range A.

   - **Do not tow the tractor alone.**

     Make sure that someone operates the steering in the tractor you tow.

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6 Technical specifications

6.1 Dimensions

With front tyres	600/65R28
With rear tyres	710/70R38
Length with front linkage (mm)	5140
Width (mm)	max 2550
Height to the roof (mm)	3130 [1)]
Height to the exhaust pipe (mm)	3085
Wheel base (mm)	2995
Front axle ground clearance/with front axle suspension (mm)	560
Rear axle ground clearance (mm)	593
From the midpoint of the rear axle to the cab roof (mm)	2205 [2)]

1) 3194 mm with the Skyview roof
2) 2269 mm with the Skyview roof

6.2 Masses

With tyres	600/65R28, 710/70R38
Total mass with full fuel tank and without ballast weights (kg)	7300
Front axle mass (kg)	2920 (40%)
Rear axle mass (kg)	4380 (60%)

6.3 Maximum permissible axle loading

The data is valid for tractors with standard track widths and regardless of tyre limitations.

DANGER: In offroad conditions, the allowed driving speed with maximum front axle loading is 10 km/h. If the driving speed is faster than this in offroad conditions, the allowed front axle loading is smaller.

Maximum front axle loading at maximum driving speed (kg)	5500
Maximum front axle loading at working conditions: offroad and with driving speed 10 km/h (kg)	8500
Maximum rear axle loading (kg)	9000
Total weight (kg)	13 500

NOTE: The permissible wheel load can reduce the maximum permissible axle load.

IMPORTANT: On 50 km/h models and when driving at the maximum speed, the tyre loading is smaller. For information on tyre pressure, see the tyre manufacturer's catalogue.

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6.4 Technically permissible towable masses

Unbraked towable mass (kg)	12000
Independently braked towable mass (kg)	12000
Inertia-braked towable mass (kg)	12000
Towable mass when fitted with hydraulic or pneumatic braking (kg)	30000

NOTE: The permissible towing device load can reduce the technically permissible towable mass.

6.5 Tyres

The tyre markings are explained in the following table, tyre 650/65R42 as an example. See tyre manufacturer's documentation for more details.

650	Tyre section width (inches or millimetres)
65	Aspect ratio
R	Construction (R: radial; -: diagonal; B: bias belted)
42	Nominal rim diameter (inches)
168	Load capacity index per tyre (168 = 5 150 kg)
A8	Speed symbol (A8 = 40 km/h)
1.6	Reference pressure (bar)
TL	Tubeless (TL) or tube type (TT)

6.5.1 Wheel nut tightening torques

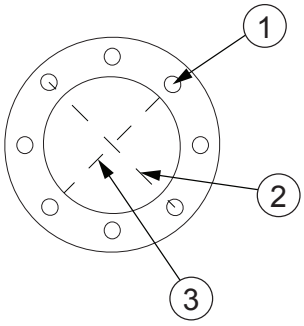
Wheel nut	Tightening torque (Nm)
Front	450
Rear	600
Rim - wheel disc (front and rear)	210

6.5.2 Wheel stud dimensions

	Industrial front axle	Rear axle
Stud dimension	M20x1.5	M22x1.5
Stud length (mm)	43	90
Number of studs per side	10	8

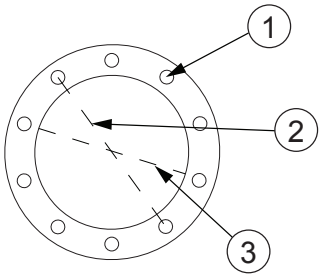
Rear disc

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1. Rear disc stud hole diameter 24 mm
2. Rear tread clearance 275 mm
3. Rear disc center hole diameter 221 mm

Front disc



1. Front disc stud hole diameter 23 mm
2. Front tread clearance 335 mm
3. Front disc center hole diameter 281 mm

6.5.3 Tyre loadings and pressures

NOTE: The permissible wheel load can reduce the maximum permissible axle load.

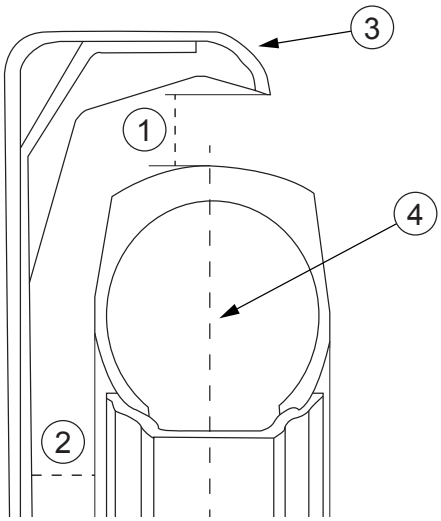
Maximum permissible front axle load	
• At maximum permissible driving speed, road (kg)	5500
• In working conditions, offroad (kg)	8500

IMPORTANT: On 50 km/h models and when driving at the maximum speed, the tyre loading is smaller. For information on tyre pressure, see the tyre manufacturer's catalogue.

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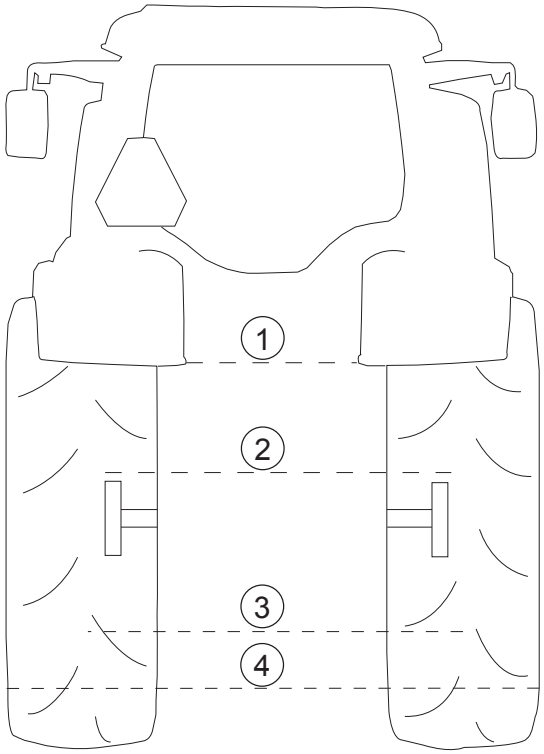
6.6 Flange distance for axles

Front, industrial front axle (mm)	1 900
Rear (mm)	1 754
Max rear tyre diameter (mm)	1 999
Min rear rim diameter (inches)	38
Max front tyre diameter (mm)	1 522
Min front rim diameter (inches)	28
Distance between rear mudguards (mm)	960



1. Distance between the top of the tyre and the mudguard, 60 mm
2. Distance between the side of the tyre and the mudguard, 40 mm
3. Mudguard
4. Narrowest track

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1. Rear mudguard distance, 960 mm
2. Hub flange distance 1754 mm
3. Distance between tyre centres with different track width adjustments
4. Distance between tyres' outer sidewalls

6.7 Track widths

6.7.1 Rear axle track widths

Adjustable discs

The rear axle track widths (in mm) are listed in the following tables.

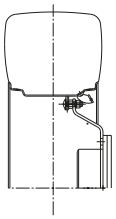
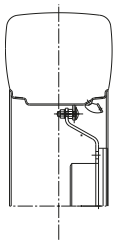
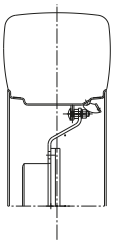
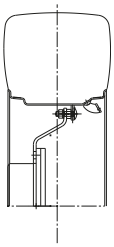
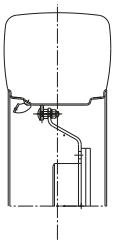
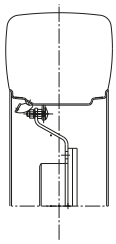
						
20.8R38, 520/85R38	2 114 [1)]	2 012	1 714	–	1 910	1 808 [2)]
580/70R38	2 114 [1)]	2012 [1)]	1 714	–	1 910	1 808 [2)]

Table continued on next page

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650/65R38, 650/65R42, 650/75R38	2 114 [1]	2 012 [1]	–	–	1 910 [1]	1 808 [2]
620/70R42	2 113 [1]	2 014 [1]	1 713	–	1 910 [1]	1 811 [2]
520/85R42	2 122 [1]	2 012	1 722	–	1 918	1 808 [2]

1) Vehicle overall width over 2 550 mm
2) Standard track width

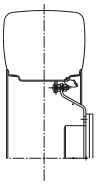
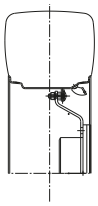
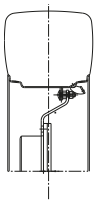
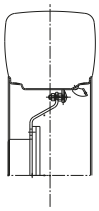
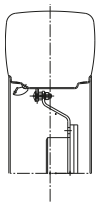
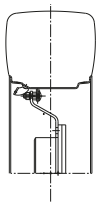
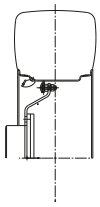
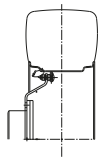
Fixed discs

		Track width	Valve
650/75R38	Standard	1 850	Inside
	Wheel turned around	1 676	Outside
650/65R38, 650/65R42	Standard	1 850	Inside
20.8R38, 540/80R38	Standard	1 850	Inside
	Wheel turned around	1 676	Outside
710/60R42, 710/70R38	Standard	1 830	Outside

6.7.2 Front axle track widths

The front axle track widths (in mm) are listed in the following tables.

Adjustable discs

								
540/65R28, 540/65R30, 600/65R28	2 235 [1]	2 140 [1]	–	–	2 030 [1]	1 935	–	–
420/85R28, 480/70R28, 16.9/R28, 460/85R30	2 235 [1]	2 140 [1]	1 835	–	2 030	1 935	–	–
480/70R30	2 235 [1]	2 140 [1]	–	–	2 030	1 935	–	–

1) Vehicle overall width over 2 550 mm

Fixed discs

		Track width	Valve
16.9R28, 440/80R28, 540/65R28, 540/65R30	Standard	1 906	Inside
	Wheel turned around	1 854	Outside
600/65R28, 600/60R30	Standard	1 915	Outside

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6.8 Engine

Model	T144	T154	T174	T194	T214	T234
Designation	66 AWF		74 AWF			
Type	Four-stroke diesel engine with common rail direct injection					
Turbocharged and intercooling	Yes					
Number of cylinders	6					
Transport boost [1]	Yes					
Sigma Power [2]	Additional equipment			Standard equipment		
Max output, kW/(hp)/rpm (ISO 14396)						
Normal	114/(155)/1900	121/(165)/1900	129/(175)/1900 [3]	143/(195)/1900	158/(215)/1900	173/(235)/1900
Boost	125/(170)/1900	132/(180)/1900	140/(190)/1900 [4]	154/(210)/1900	169/(230)/1900	184/(250)/1900
Max torque, Nm/rpm (ISO 14396)						
Normal	640/1500	680/1500	740/1500 [5]	800/1500	870/1500	930/1500
Boost	680/1500	740/1500	780/1500 [6]	870/1500	910/1500	1000/1500
Max no load speed, rpm	2260					
Low idling speed, rpm						
Normal	850					
Parking brake is on	650					

1) Higher transport boost power area in speed ranges C and D.
2) Sigma Power area, the largest output/torque area when the power transferred through the power take-off is large enough. The Sigma Power indicator light  is lit on the instrument panel.
3) 129/(175)/1700 with EcoPower
4) 140/(190)/1700 with EcoPower
5) 850/1100 with EcoPower
6) 900/1100 with EcoPower

6.8.1 Engine lubrication system

Oil pump	
Type	Gear pump, strainer on the suction side and replaceable filter on the pressure side
Oil pressure at idling speed (min)	150 kPa (1.5 bar)
Oil pressure at normal working speed	250-500 kPa (2.5-5 bar)

Oil filter	
Type	Disposable type filter element

Oil type	
Valtra grade	Valtra Engine FS / Valtra Engine CR-4
SAE grade	• 10W-40: -25°C...+40°C • 15W-40: -20°C...+40°C
API grade	CJ-4
ACEA grade	E9

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Oil volume	
When changing with filter	19

Viscosity grade should be selected depending on the temperature outside.

6.8.2 Fuel system

Fuel	
Type	Diesel fuel which conforms to EN 590:2009 norm
Feed pump	Mechanical pump
Standard tank	380 liters
Forest tank	250 liters

Injection system	
Common rail injection	High-pressure pump with electronic injection control

6.8.3 Selective catalytic reduction system

System type	Bosch DENOXTRONIC 2.2+
Fluid type	DIN70070/ISO22241-certified AdBlue/DEF
Tank capacity	70 liters
Forest tank capacity	45 liters

6.8.4 Air cleaner

Air cleaner	Two-stage, dry element, with blockage indicator
Pre-cleaner system	Ejector

6.8.5 Cooling system

Pump	Centrifugal
Radiator	Pressurised with expansion tank regulated by pressure cap
Thermostat	2 thermostats: 79°C and 83°C
Fan	The belt-driven fan is controlled by the engine's control module for precise fan speed modulation
Coolant	Engine coolant mixed with water. ASTM D6210 Type I-FF, ASTM D3306. In first fill, OAT-coolant (Organic Acid Technology) used, not recommended to mix with old type of coolants.
Coolant, Valtra grade	Valtra Coolant
Coolant volume	28 litres

6.9 Electrical system

Ground	Negative
Voltage	12 V
Battery	174 Ah
Table continued on next page	

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Alternator	150 A
Starter motor	4.3 kW
Suction air preheater (engine induction air)	2.1 kW

Fuses	
Cab electric centre	36 fuses The nominal current rating of the fuses is 5–25 A.
Roof electric centre	25 fuses The nominal current rating of the fuses is 10–30 A.
Main fuse centre	4 fuses The nominal current rating of the fuses is 25–250 A.
Engine electric centre	12 fuses The nominal current rating of the fuses is 3–25A.
Electric preheating of engine induction air	250 A
Cab power supply	125 A

Bulbs	
Headlights	55 W-H7
Front position (side) lamps	10 W
Rear/brake lights	LED
Direction indicators	21 W front / LED rear
Working lights	65 W-H9 / LED
Cab lights	LED

Current sockets	
Two-pin current socket	ISO 4165
Three-pin current socket	ISO/TR 12369
Trailer socket	ISO 1724

6.10 Power transmission

6.10.1 Power shuttle

Type	Planetary-type gear drives 2 wet multi-disc clutches
Wet multi-disc clutches	1 for forward driving 1 for reverse driving Clutches operate also as a driving clutch for current driving direction.

6.10.2 Clutch

Multi-disc clutch operation	Controlled by oil pressure Activated by pressing the HiShift push button or the clutch pedal
Disc numbers, forward/reverse driving	9 pcs/9 pcs
Friction area, forward/reverse driving	1 742 cm^2/1 742 cm^2

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6.10.3 Gearbox

	40 km/h models	EcoSpeed 40 km/h models	50 km/h models
Gear type	Helical gears		
Synchronization	Fully synchronized except creeper gear		
Speed ranges [1]	• LA = 0.4-1.4 km/h • LB = 0.9-3.0 km/h • A = 2.0-6.9 km/h • B = 4.4-14.8 km/h • C = 6.5-22.1 km/h • D = 14.1-40 km/h [2]	• LA = 0.5-1.7 km/h • LB = 1.1-3.7 km/h • A = 2.5-8.6 km/h • B = 5.5-18.5 km/h • C = 8.2-27.8 km/h • D = 17.7-40 km/h [3]	• LA = 0.5-1.7 km/h • LB = 1.1-3.7 km/h • A = 2.5-8.6 km/h • B = 5.5-18.5 km/h • C = 8.2-27.8 km/h • D = 17.7-50 km/h [4]
Powershift	5-step		
Forward gears	30		
Reverse gears	30		

1) With the engine speed of 1400-2100 rpm and SRI 925 mm tyres.
2) Maximum speed with the engine speed of 1755 rpm.
3) Maximum speed with the engine speed of 1400 rpm.
4) Maximum speed with the engine speed of 1748 rpm.

Oil type	
Valtra grade	Valtra Transmission XT60 (classification: Valtra G2-08)
	Valtra Transmission XT60+ (classification: Valtra G2–B10)
API grade	GL-4

Oil volume	
When changing with filter	72 liters
Transmission oil level gauge minimum	62 liters
Transmission oil level gauge maximum	72 liters

6.10.4 Rear axle differential lock

Type	Electro-hydraulic multi-disc
Control	Electro-hydraulic

6.10.5 Rear power take-off

6.10.5.1 Rear power take-off alternatives

Power take-off (PTO) alternatives	**T144**	**T154**	**T174E**	**T194**	**T214**	**T234**
540/1000	x	x	x	x	x	x
540/540E/ 1000	x	x	x	x	x	x
540E/ 1000/1000E	x	x	x	x	x	x
540E/1000 +GSPTO [1]	x	x	x	x	x	x
540E/1000E +GSPTO [1]	x	x	x	x	x	x

1) Ground speed PTO

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6.10.5.2 Rear power take-off ratios

Rear power take-off (PTO) ratios	540 rpm at engine speed 1 890 rpm
	1 000 rpm at engine speed 1 897 rpm
	540 E = 540 rpm at engine speed 1 522 rpm
	1000 E = 1000 rpm at engine speed 1 677 rpm

6.10.5.3 Rear power take-off shafts

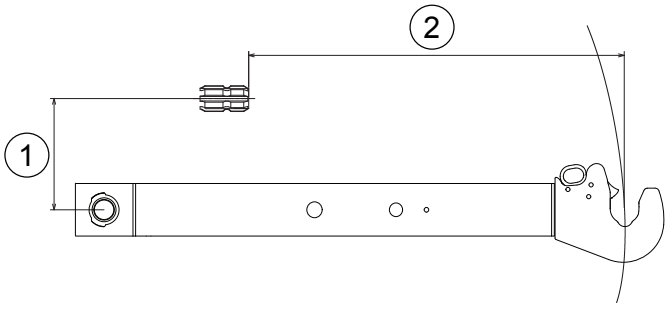
As a standard, the tractor is equipped with one power take-off shaft. Additional shafts are extra equipment.

Splines	Standard	Shaft diameter (mm)
6 splines [1)]	ISO 500, type 1	35
21 splines	ISO 500, type 2	35
20 splines	ISO 500, type 3	45
6 splines	No standard	45

1) Standard

6.10.5.4 Lower link end distance from rear power take-off shaft

The length of the lower links (mm)	Width of implement attachment (T measure, mm)	
	Cat. 2	Cat. 3
990	738	723



1. 229 mm
2. T measure

6.10.5.5 Proportional ground speed power take-off

Model	Power take-off (PTO) axle revolutions per one rear wheel revolution
40 km/h	41.03
50 km/h	40.79

6.10.6 Front power take-off

Oil type	Oil volume (litres)
Shell Spirax S4 ATF HDX	2.8

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Maximum input torque (Nm)	1170
Nominal input torque (Nm)	925

6.10.6.1 Front power take-off ratio

Front power take-off (PTO) ratio	1 000 rpm at engine speed 1 900 rpm

6.10.6.2 Front power take-off shafts

Splines	Standard	Shaft diameter (mm)
6	ISO 500	35

6.11 Brake system

Operation	• Hydraulically controlled multi-disc type brakes with wet discs • Boosted with low-pressure hydraulics • Two brake cylinders • No separate brake fluid • Pressure accumulator to ensure the pressure • Oil spray cooling of the friction disc elements when necessary
Number of brake friction discs	5 pcs/side
Friction disc diameter	242.5 mm
Brake friction area	4 272 cm^2/organic
Brake pedal free travel	35-45 mm

Parking brake	
Operation	• Electro-hydraulically controlled with power shuttle lever • Driving brakes engaging with spring, disengaging with hydraulic pressure

Hydraulic trailer brake valve (extra equipment)	
Operation	• Operated with the hydraulic pump for transmission and steering, controlled by the braking pressure • Trailer brake connection to the tractor with quick coupling

Trailer air pressure brakes (extra equipment)	
Operation	• Operated with air pressure system, controlled by the braking pressure • Trailer brake connection to the tractor with quick coupling

6.12 Steering system

Type	• Hydrostatic • Oil supply from the transmission hydraulic pump via the priority valve • Adjustable, telescopic steering column • Central frame, one double-action steering cylinder
Maximum working pressure	18.5 MPa (185 bar)
Shock valve opening pressure	25 MPa (250 bar)
Table continued on next page	

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Steering valve revolution volume (industrial front axle)	160 cm^3
Steering pump capacity	• 73 l/min at engine speed 2 200 rpm • 90 l/min at engine speed 2 200 rpm (optional)
Steering speed	Over 2 rounds/sec. at idling speed
Steering wheel rotation	4.5 turns

6.12.1 Front axle

Axle type	Hi-lock (Dana 740/560 and 740/561)	Hi-lock (Dana 750/570)	Hi-lock (Dana 755/509 and 755/510)
Control	Electro-hydraulically controlled multi-disc clutch		
Differential lock	Electro-hydraulically controlled multi-disc differential brake, simultaneously controlled with rear axle differential lock		
Steering arc, adjustable	max 55°	max 55°	max 55°
Axle turning	±7°	±7°	±7°
Caster	0°	0°	0°
King pin inclination (KPI)	5.5°	5.5°	5.5°
Camber	1°	1°	1°
Toe-in (mm)	0–2	0–2	0–2
Flange distance (mm)	1 900	1 900	1 900

Ratio	Hi-lock (Dana 740/560 and 740/561)	Hi-lock (Dana 750/570)	Hi-lock (Dana 755/509 and 755/510)
Differential	2.923	2.750	2.750
Planetary gears	6.000	6.353	6.353
Total	17.538	17.471	17.471
Front axle/rear axle, 40 km/h	i=1.330	i=1.335	i=1.335
Front axle/rear axle, 50 km/h	i=1.323	i=1.328	i=1.328

Oil type			
	Valtra grade	SAE grade	API grade
Differential	Valtra Axle LS	80W-90	GL-5 LS
Hub reduction gears	Valtra Axle or Valtra Axle LS		GL-5 or GL5 LS
Hub reduction gears, front axle with brakes	Valtra Axle LS		GL-5 LS

Oil volume when changing with filter		
Axle type	Differential (litres)	Hub reduction gears (litres)
Dana 740/560	8.5	2 x 2.0
Dana 740/561	8.5	2 x 2.7
Dana 750/570	8.5	2 x 2.2
Dana 755/509	8.5	2 x 2.2
Dana 755/510	8.5	2 x 2.8

6.12.2 Turning circle

Minimum turning circle (m)	10.5

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6.12.3 Front axle suspension

Extra equipment	Available for all front axle types
Front axle weight of tractor with air suspension	120 kg heavier than corresponding model without air suspension
Permissible axle loading	The same as for front axles without suspension
Extreme pressure values	8 bar
Suspension travel of front axle	+45/-50 mm
Front tyres' turning angles	The same as without front suspension
Axle turning angles	The same as without front suspension
Automatic level control	Independent of front axle load
Hydraulic shock absorber	2 pcs

6.13 Cab and shields

6.13.1 Cab filter capacity

Standard filter (dop test, 300 m^3)	> Ø 0.2 µm 78% > Ø 1 µm 92% > Ø 5 µm 100% > Ø 8 µm 100%
Activated carbon filter, cab (dop test, 300 m^3) 1)	> Ø 0.2µm 54% > Ø 1 µm 70% > Ø 5 µm 100% > Ø 8 µm 100%

1) **WARNING: Use personal protective equipment recommended by the pesticide manufacturer.**

6.13.2 Windscreen washer

Windscreen washer reservoir	
Fluid type	Washer fluid
Capacity	10 litres

6.13.3 Air conditioning system

Refrigerant type	**Amount**
R134a	1.4 kg, 20°C

6.13.4 Noise level

The noise at the operator's ear, measured according to Directive 2009/76/EC, is under the maximum permissible value laid down in the Directive.

The noise of the tractor in motion, measured according to Annex VI to Directive 2009/63/EC, is under the maximum permissible value laid down in the Directive.

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6.13.5 Exposure to vibration

The level of exposure to vibration and shock is dependent on several issues, such as work tasks, tyre types, work conditions and implements. Always plan your work so that the exposure is minimised. In extreme conditions, keep warm and dry and try to take short breaks.

The vibration measurements are based on Directive 78/764/EEC.

Seat	Vibration (m/s^2)	
	Light operator (59±1 kg)	Heavy operator (98±5 kg)
Mechanical suspension	0.87	0.85
Air-suspended	1.16	1.03

6.14 Hydraulic system

6.14.1 Low-pressure circuit

Pump capacity (at engine speed 2 200 rpm)	55 liters/min
Maximum pressure	2.1 MPa (21 bar) [1)]
Oil supply for the following functions:	• Powershift • Speed ranges' changing • Four-wheel drive, disengaging • Transmission and PTO lubrication • Power take-off (PTO) • Ground speed PTO (optional) • Creeper • Differential lock • Power shuttle • Parking brake • Brake system • Trailer brake valve (optional)

1) 150 bar when using trailer brake

6.14.2 Steering hydraulic circuit

Pump capacity	• 73 l/min at engine speed 2 200 rpm • 90 l/min at engine speed 2 200 rpm (optional)
Oil supply for the following functions:	• Steering • Transmission lubrication

6.14.3 Working hydraulic circuit

Pump	Fixed-displacement pump
Pump capacity	Optional: • 73 l/min at engine speed 2 200 rpm • 90 l/min at engine speed 2 200 rpm
Maximum pressure at 1 500 rpm	20.5 MPa (205 bar)
Table continued on next page	

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Shock valve opening pressure of pump	23 MPa (230 bar)
Supplies oil for following functions	• Steering • Rear linkage • Auxiliary hydraulics • Lubrication • Front linkage (optional) • Front loader (optional)
Shared oil with power transmission	

6.14.3.1 Valves for auxiliary hydraulics

Rear, standard	• Two double-acting basic valves: • Four positions: Out - hold - in - floating
Rear, optional	• Two double-acting valves, one basic and one adjustable: • Four positions: Out - hold - in - floating • Three adjustable modes on valve 2: position lock - spring-return - kick-out • Flow control adjustment on adjustable valve 2 • Three double-acting valves, two basic and one adjustable: • Four positions: Out - hold - in - floating • Three adjustable modes on valve 3: position lock - spring-return - kick-out • Flow control adjustment on adjustable valve 3 • Four double-acting valves, two basic and two adjustable: • Four positions: Out - hold - in - floating • Three adjustable modes on valve 3 and 4: position lock - spring-return - kick-out • Flow control adjustment on adjustable valves 3 and 4

Double-acting valves	
Type	Directional control valve
Nominal flow capacity	• 60 l/min in basic valve • 90 l/min in adjustable valve
Control	• With mechanical control levers • Rear valves

Quick couplings	
Standard	ISO7241-1 Series A

6.14.3.2 Counter pressure when using the return connection for auxiliary hydraulics

Flow l/min, temperature	**Return connection counter pressure (1 inch)**
50 l/min, 60°C	2.5 bar

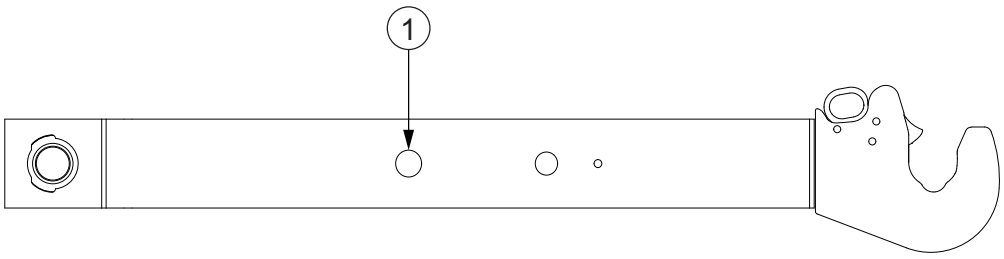
6.14.4 Rear linkage

Maximum lifting force	**Lifting cylinder ø**	**Lower link type**	**The length of the lower links**
78 kN	100 mm	Category 3, quick coupling grabs	990 mm

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Function	Linkage version ACB
With electrohydraulic lower link draft sensing	x
Draft control mixing (position control/draft control mixing)	x
Lowering speed, independent of load	x
Transport height	x
Drive balance control	x
Slip control	–

6.14.4.1 Lifting forces and lifting ranges



1. Lifting rod's fastening point

Lifting force (kN) [1]		Lifting range [1]
Lifting cylinder Ø100 mm		
Max	In whole range	
78 kN	70 kN	868 mm

[1] Calculated with rear tyre radius R=925, e.g. tyres 650/65R42

6.14.5 Front linkage

Lifting force	51 kN
Number of lifting cylinders	2
Diameter of the lifting cylinders	90 mm
Lifting range at the end of the lifting links	870 mm
Quick coupling hooks	Category 3/2

6.14.6 Towing devices

6.14.6.1 Pick-up hitch

NOTE: The loadings are applicable to all tires.

Maximum permissible vertical loading	3000 kg [1]
Pick-up hitch height from the ground (lowest position and tyre radius R=925 mm)	216mm
D-value [2]	81.8 kN
Drawbar eye standard	ISO 5692-1 or ISO 20019

[1] The maximum axle loading must not be exceeded

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2) Mathematically established horizontal force

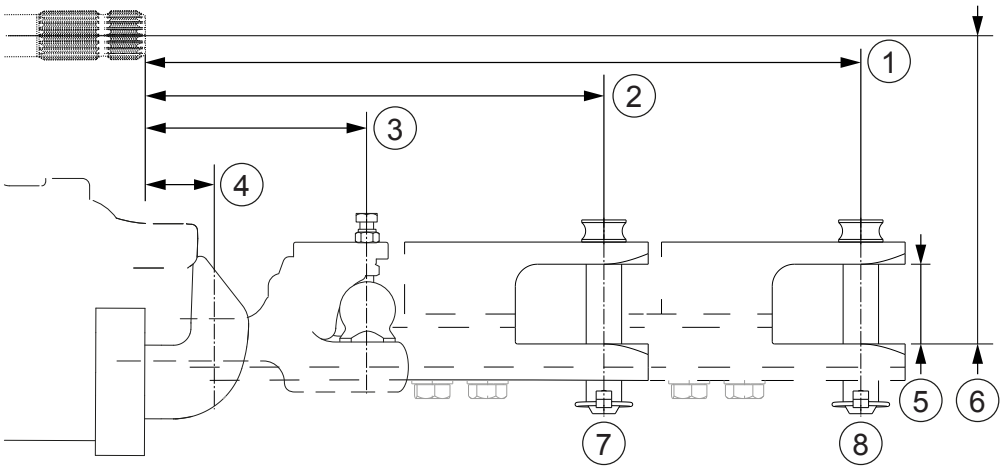
6.14.6.2 Euro pick-up hitch

NOTE: The loadings are applicable to all tires.

Hitch or drawbar	Replaceable
Maximum permissible vertical loading for the tow hook and K80 ball hitch	3000 kg 1)
Pick-up hitch height from the ground (lowest position and tyre radius R=925 mm)	208 mm
D-value 2)	• Hook: 87.7 kN • K80 ball: 84.8 kN • Drawbar: 62.3 kN
Drawbar pin diameter	32 mm
Drawbar eye standard for towing hook	ISO 5692-1 or ISO 20019
Drawbar eye standard for drawbar	ISO 5692-1, ISO 5692-2, ISO 8755, ISO 1102
Drawbar eye standard for 80 mm ball hitch	ISO 24347

1) Maximum loading is applicable to all tires
2) Mathematically established horizontal force

The horizontal distances of the pulling point from the power take-off (PTO) shaft and the maximum vertical loadings:



1. 400 mm
2. 250 mm
3. 172 mm
4. 62 mm
5. 72 mm
6. 280 mm
7. S=2000 kg
8. S=1200 kg

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6.14.6.3 Hydraulic pick-up hitch

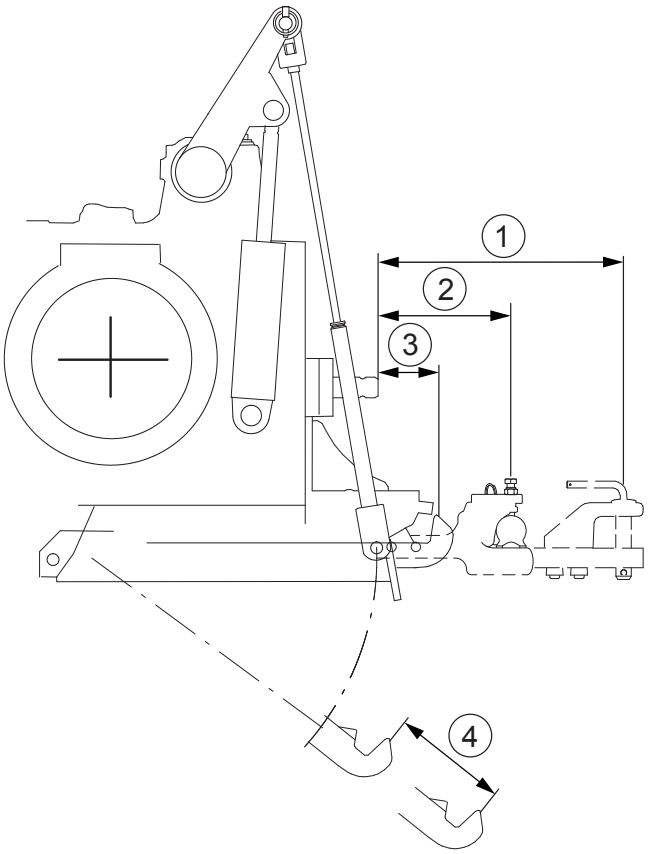
NOTE: The loadings are applicable to all tires.

Raising/lowering and extension	Electrohydraulic
Locking of the towing device latch	Mechanical; mechanical release
Hitch or drawbar	Replaceable
Maximum permissible vertical loading for the tow hook and K80 ball hitch	3000 kg [1]
D-value [2]	• Hook: 87.7 kN • K80 ball: 87.7 kN • Drawbar: 62.3 kN
Drawbar pin diameter	32 mm
Drawbar eye standard for tow hook	ISO 5692-1 or ISO 20019
Drawbar eye standard for drawbar	ISO 5692-1, ISO 5692-2, ISO 8755, ISO 1102
Drawbar eye standard for 80 mm ball hitch	ISO 24347

1) The maximum axle loading must not be exceeded
2) Mathematically established horizontal force

The towing point distances from the power take-off shaft and the maximum vertical loadings in the horizontal direction are shown in the following figure.

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1. 370 mm = 1530 kg / 426 mm = 1070 kg
2. 213 mm
3. 129 mm
4. 280 mm

6.14.6.4 Agricultural towing device

NOTE: The loadings are applicable to all tires.

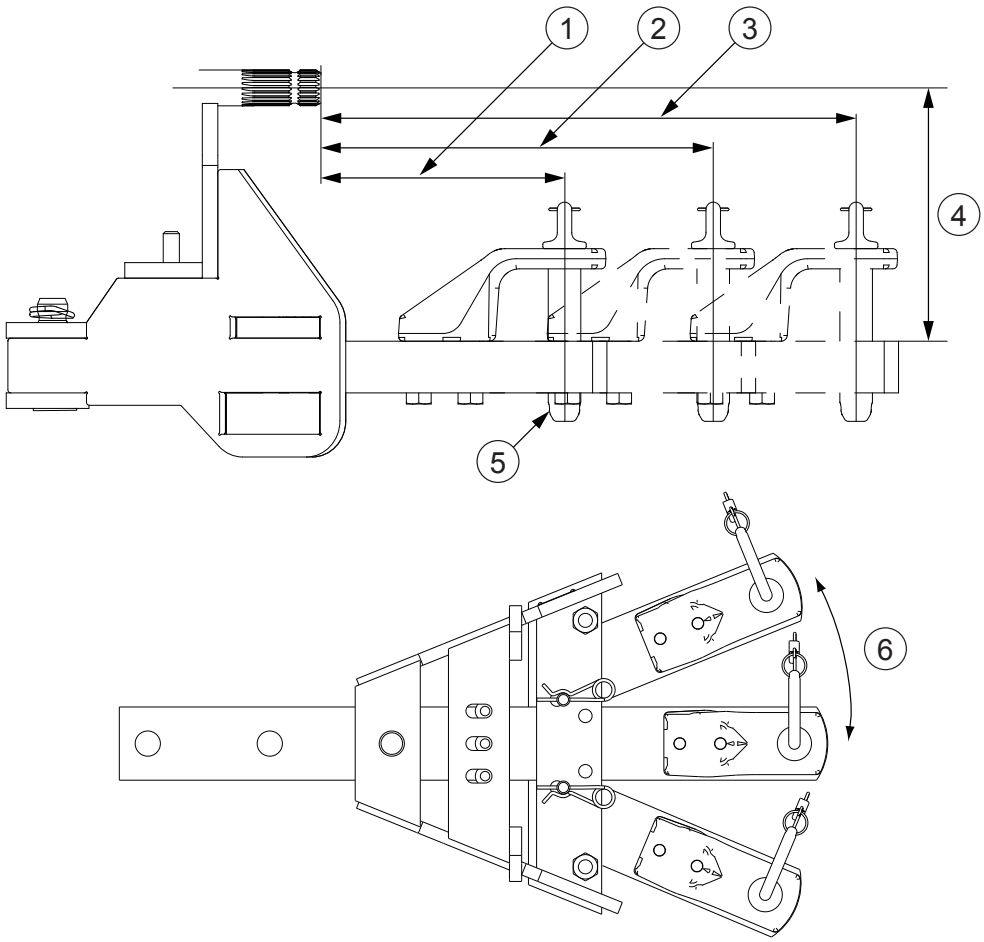
D-value [1)]	78.5 kN
Drawbar eye standard	ISO 5692-1, ISO 5692-2, ISO 8755, ISO1102

1) Mathematically established horizontal force

The agricultural towing device is fixed without pick-up hitch

The horizontal distances of the pulling point from the power take-off (PTO) shaft and the corresponding maximum vertical loadings are pointed out in the following figure:

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1. 250 mm, 2000 kg
2. 400 mm, 1200 kg
3. 550 mm, 500 kg
4. 245 mm
5. Drawbar pin Ø31.5 mm
6. 21° to both sides

6.14.6.5 Towing device frames

NOTE: The loadings are applicable to all tires.

D-value / Max permissible vertical loading for a trailer hitch with all jaws	89.3 kN / 2000 kg
D-value / Towing device frame with piton-fix pin, max permissible vertical loading	89.3 kN / 3000 kg
D-value / Towing device frame with K80 ball hitch, max permissible vertical loading	89.3 kN / 4000 kg
D-value / Towing device frame drawbar, max permissible vertical loading	78.5 kN / 1200 kg (400 mm), 500 kg (550 mm)
Automatic jaw, main pin diameter	31.5 mm (ISO 6489-2, B) / 38 mm (ISO 6489-2, C)
Table continued on next page	

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Mechanical jaw, main pin diameter	31.5 mm (ISO 6489-2, A)
Drawbar eye standard for jaws	DIN 74054 or DIN 11026, ISO 5692-2, ISO 8755
Mechanical non-swivel jaw, main pin diameter	28 mm (ISO 6489-5, X) / 50 mm (ISO 6489-5, Z)
Drawbar eye standard for non-swivel jaw	ISO 5692-3, X (Ø28 mm) / ISO 5692-3, Z (Ø50 mm)
Drawbar, main pin diameter	31.5 mm
Drawbar eye standard for drawbar	ISO 5692-1, ISO 5692-2, ISO 8755, ISO 1102

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