



25 HP Diesel-Powered Compact Articulated Wheel Loader

Owner's Manual



! **WARNING:** Read carefully and understand all ASSEMBLY AND OPERATION INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Item #4212500

READ & SAVE THESE INSTRUCTIONS

Thank you very much for choosing a NorTrac™ product!

For future reference, please complete the owner's record below:

Serial Number/Lot Date Code: _____

Purchase Date: _____

Save the receipt, warranty, and this manual. It is important that you read the entire manual to become familiar with this product before you begin using it.

This wheel loader is designed for certain applications only. Northern Tool and Equipment is not responsible for issues arising from modification or improper use of this product such as an application for which it was not designed. We strongly recommend that this product not be modified and/or used for any application other than that for which it was designed.

For technical questions, please call **1-800-521-0438**.

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Intended Use

The NorTrac 25 HP Diesel-Powered Compact Articulated Wheel Loader is designed for compact construction work. It has a quick attach mount plate which makes it easy for an operator to connect different attachments. The loader is designed for operation in temperatures typically experienced in earth moving and construction work environments such as small construction grounds, courtyard cleaning, garden management, and farm cultivation.

Technical Specifications

Engine

- 3-cylinder Perkins diesel engine
- Cubic capacity: 1,131 cm
- Power: 18.5 k w / 25 HP at 2800 RPM

Loader Capacity

- Operating weight: 3262.84 lb.
- Tipping load in shovel, vehicle straight
Load arm horizontal: 1874 lb.
- Tipping load in shovel, vehicle at angle 68°,
Load arm horizontal: 1124 lb.
- Tipping load in pallet fork, vehicle straight
Load arm horizontal: 1190 lb.
- Tipping load in pallet fork, vehicle at angle 68°
Load arm horizontal: 705.5 lb.

Admissible Load Capacity

- On uneven ground: 60% of the tipping load, vehicle at angle
- On even ground: 80% of the tipping load, vehicle at angle

The operating weight, lifting forces, tipping load, etc., will change depending on the ancillary equipment and the tires used.

Capacities Refer to capacities table

- Hydraulic system including tank: 30 l
- Diesel tank: 23L
- Engine oil: 4 L
- Gear:
 - Rear axle: 1.5 L
 - Front axle: 1.5L

Hydraulic System

- Working hydraulic:
 - Flow rate: abt. 30 l/min.
 - Working pressure: 205 bar
- Driving hydraulic:

Flow rate: abt. 84 l/min.

Working pressure: 305 bar

Drive (driving speed)

- 1. gear: 0-17km/h

Electrical System

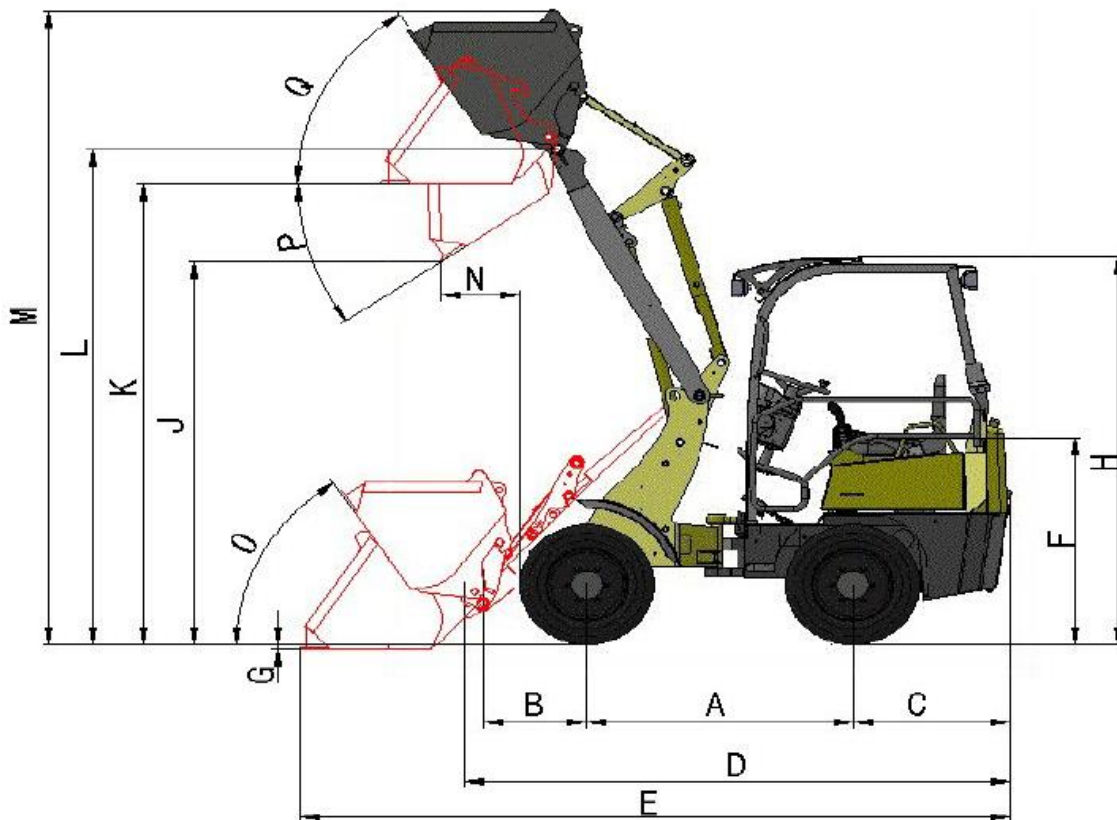
- Operating voltage: 12 Volt
- Battery: 60 Ah

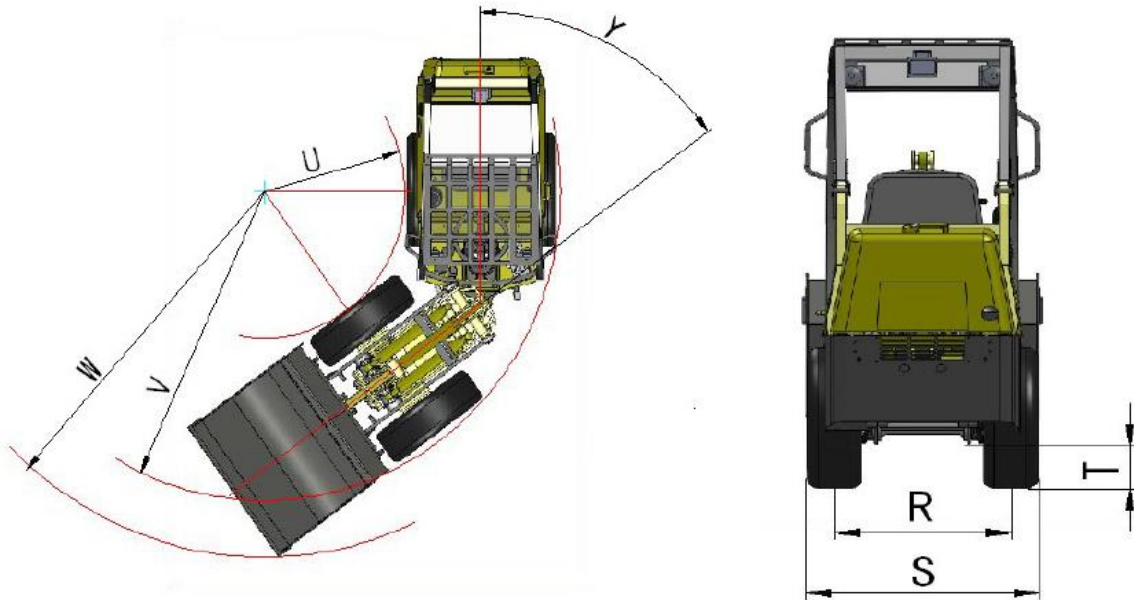
Steering

- Full-hydraulic center-pivot steering with double action cylinder
- Rotating angle: + 12°
- Steering hydraulic:
 - Flow rate: about 30 l/min.
 - Working pressure: 205 bar

Dimensions

Fig. B- 30





Item	Designation	Units	Axle
A	Wheel base	Inch	53
B	Axle center to shovel pivot-point	Inch	20
C	Rear overhang	Inch	31.4
D	Overall length without standard shovel	Inch	108.8
E	Overall length including standard shovel	Inch	142.3
F	Height to seat	Inch	46.7
G	Ground clearance	Inch	1
H	Height to ROPS bar	Inch	86.3
I	Digging depth	Inch	29.25
J	Maximum dumping height	Inch	80
K	Overhead loading height	Inch	100
L	Shovel pivot-point maximum height	Inch	110.67
M	Maximum working height	Inch	141.5
N	Reach at J	Inch	19.7
O	Reverse roll-angle on ground	Degree	57
P	Maximum dumping angle	Degree	35
Q	Reverse roll-angle at maximum lift	Degree	57
R	Wheel gauge	Inch	28
S	Standard total width	Inch	36.6
T	Ground clearance	Inch	8.2
U	Turning-circle (inner)	Inch	34
V	Turning-circle (outer)	Inch	72

W	Maximum turning-circle radius	Inch	87
Y	Turn angle	Degree	54

Important Safety Information

⚠️WARNING

- Read and understand all instructions. Failure to follow all instructions may result in serious injury or property damage.
- The warnings, cautions, and instructions in this manual cannot cover all possible conditions or situations that could occur. Exercise common sense and caution when using this tool. Always be aware of the environment and ensure that the tool is used in a safe and responsible manner.
- Do not allow persons to operate or assemble the product until they have read this manual and have developed a thorough understanding of how it works.
- Do not modify this product in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the product. There are specific applications for which the product was designed.
- Use the right tool for the job. DO NOT attempt to force small equipment to do the work of larger industrial equipment. There are certain applications for which this equipment was designed. This product will be safer and do a better job at the capacity for which it was intended. DO NOT use this equipment for a purpose for which it was not intended.
- Industrial or commercial applications must follow OSHA requirements.

⚠️WARNING

PROP 65

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

⚠️WARNING

WORK AREA SAFETY

- Inspect the work area before each use. Keep work area clean, dry, free of clutter, and well-lit. Cluttered, wet, or dark work areas can result in injury. Using the product in confined work areas may put you dangerously close to cutting tools and rotating parts.
- Do not use the product where there is a risk of causing a fire or an explosion; e.g., in the presence of flammable liquids, gases, or dust. The product can create sparks, which may ignite the

flammable liquids, gases, or dust.

- Keep children and bystanders away from the work area while operating the tool. Do not allow children to handle the product.
- Be aware of all power lines, electrical circuits, water pipes, and other mechanical hazards in your work area. Some of these hazards may be hidden from your view and may cause personal injury and/or property damage if contacted.

⚠WARNING

PERSONAL SAFETY

- Stay alert, watch what you are doing, and use common sense when operating the tool. Do not use the tool while you are tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating the tool may result in serious personal injury.
- Dress properly. Do not wear loose clothing, dangling objects, or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts. Air vents on the tool often cover moving parts and should be avoided.
- Wear the proper personal protective equipment when necessary. Use ANSI Z87.1 compliant safety goggles (not safety glasses) with side shields, or when needed, a face shield. Use a dust mask in dusty work conditions. Also use non-skid safety shoes, hardhat, gloves, dust collection systems, and hearing protection when appropriate. This applies to all persons in the work area.
- Do not overreach. Keep proper footing and balance at all times.
- Secure the work with clamps or a vise instead of your hand when practical. This safety precaution allows for proper tool operation using both hands.

⚠CAUTION

WHEEL LOADER USE AND CARE

- Do not force the wheel loader. Products are safer and do a better job when used in the manner for which they are designed. Plan your work, and use the correct product for the job.
- Check for damaged parts before each use. Carefully check that the product will operate properly and perform its intended function. Replace damaged or worn parts immediately. Never operate the product with a damaged part.
- Do not use a product with a malfunctioning switch. Any power tool that cannot be controlled with the power switch is dangerous and must be repaired by an authorized service representative before using.
- Disconnect the power/air supply from the product and place the switch in the locked or off position before making any adjustments, changing accessories, or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.
- Store the product when it is not in use. Store it in a dry, secure place out of the reach of children. Inspect the tool for good working condition prior to storage and before re-use.
- Use only accessories that are recommended by the manufacturer for use with your product. Accessories that may be suitable for one product may create a risk of injury when used with

another tool. Never use an accessory that has a lower operating speed or operating pressure than the tool itself.

- Keep guards in place and in working order. Never operate the product without the guards in place.
- Do not leave the tool running unattended.

⚠WARNING

TRAINING

- Read the Owner's Manual and other training material. If the operator(s) or mechanic(s) cannot read English, it is the owner's responsibility to explain this material to them.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- All operators and mechanics should be trained. The owner is responsible for training the users.
- Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to himself or herself, other people or property.

⚠WARNING

PREPARATION

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including gloves, safety glasses, long pants, substantial slip-resistant footwear, and hearing protection. Tie back long hair and do not wear jewelry.
- Inspect the area where the equipment is to be used and remove all objects such as rocks, toys, and wire which can be thrown by the machine.
- Use extra care when handling fuels. They are flammable, and vapors are explosive.
 - Use only an approved fuel container
 - Never remove the fuel cap or add fuel with the engine running. Allow the engine to cool before refueling. Do not smoke.
 - Never refuel or drain the machine indoors.
- Check that the operator's presence controls, safety switches, and shields are attached and functioning properly. Do not operate unless they are functioning properly.

⚠WARNING

OPERATION

- Only operate in good light, keeping away from holes and hidden hazards.
- Be sure all drives are in neutral before starting the engine. Only start the engine from the

operator's position.

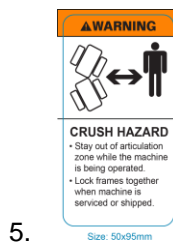
- Slow down and use caution when making turns, crossing roads and sidewalks, and changing directions on slopes.
- Never operate without the guards securely in place. Be sure all interlocks are attached, adjusted, and functioning properly.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground, lower implements, disengage the auxiliary hydraulics and shut off the engine before leaving the operator's position for any reason.
- Keep hands and feet away from moving attachments.
- Look behind and down before backing up to be sure of a clear path.
- Never carry passengers and keep pets and bystanders away.
- Slow down and use caution when making turns and crossing roads and sidewalks.
- Do not operate the machine when you are tired, ill, or under the influence of alcohol or drugs.
- Use care when loading or unloading the machine into a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- Read all attachment manuals.
- Ensure that the area is clear of other people before operating the loader unit. Stop the loader unit if anyone enters the area.
- Never leave a running unit unattended. Always lower the loader arms, stop the engine and remove the key before leaving.
- Do not exceed the rated operating capacity, as the unit may become unstable which may result in loss of control.
- Do not carry a load with the arms raised. Always carry loads close to the ground.
- Do not overload the attachment and always keep the load level when raising the loader arms. Logs, boards, and other items could roll down the loader arms, injuring you.
- Never jerk the controls; use a steady motion.
- Watch for traffic when operating near or crossing roadways.
- Do not touch parts which may be hot from operation. Allow them to cool before attempting to maintain, adjust, or service.
- Check for overhead clearances (i.e., branches, doorways, electrical wires) before driving under any objects and do not contact them.
- Ensure that you operate the unit in areas where there are no obstacles in close proximity to the operator. Failure to maintain adequate distance from trees, walls, and other barriers may result in injury. Only operate the unit in areas where there is sufficient clearance for the operator to safely maneuver the product.
- Before digging, have the area marked for underground utilities, and do not dig in marked areas. Also, be aware of the location of objects and structures that may not be marked, such as underground storage tanks, wells, and septic systems.
- Locate the pinch point areas marked on the loader unit and attachments and keep hands and feet

away from these areas.

- Before operating the loader unit with an attachment, ensure that the attachment is properly installed and a genuine NorTrac equipment.
- Lightning can cause severe injury or death. If lightning is seen or thunder is heard in the area, do not operate the machine; seek shelter.

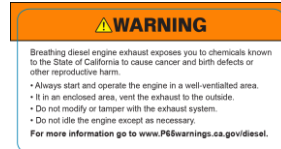
Safety and Product Labels

Ref.#	Description	Quantity
1	High-Pressure Fluid Hazard Warning Decal	1
2	Fire Hazard Danger Decal	1
3	Burn Hazard	1
4	Crush Hazard (Body) Warning Decal	2
5	Crush Hazard (Articulation Zone) Warning Decal	2
6	Crush Hazard (Hand) Warning Decal	2
7	Rotating Blade Hazard Warning Decal	2
8	Proposition 65 (California) Warning Decal	1
9	Operational Warnings Decal (Impact, Rollover, Electrocutation, Fall, General)	1
10	Nameplate	1
11	NorTrac Decal	1
12	Start up/Shutdown Instructions Decal	1



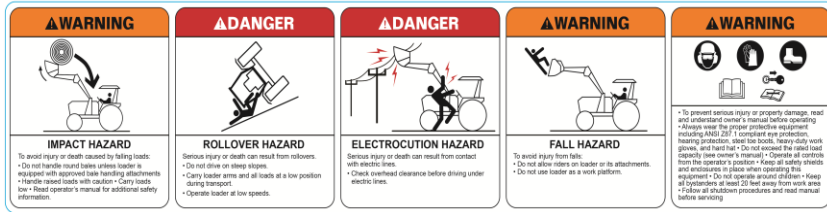


7. Size: 95x50mm



8. Size: 105x57mm

Size: 418x55mm



9.



10. 255 x 55mm 4212500

Compact Articulated Wheel Loader Item# 4212500		Machine Model: <input type="text"/>	Serial No.: <input type="text"/>
Engine No.: <input type="text"/>	Frame No.: <input type="text"/>	Operation Weight (kgs): <input type="text"/>	
Size (mm): <input type="text"/>	Rated Load (kgs): <input type="text"/>	Production Date: <input type="text"/>	
Made in China			

11. Size: 170x40mm

<p>Startup</p> <ol style="list-style-type: none"> 1. Inspect all hydraulic hoses for damage and leaks before each use. 2. Check all operation fluids such as oil before each use. 3. Adjust operator's seat as needed and fasten seatbelt. 4. Engage parking brake. 5. Place forward/reverse drive switch on the top of the joystick into the neutral position. 6. Turn the ignition key to the "heat" position for 15 seconds. 7. Turn the ignition key to the start position. If the engine does not start, repeat step 4. 8. Disengage brake when ready to operate. 	<p>Shut down</p> <ol style="list-style-type: none"> 1. Park on a hard, level surface. 2. Lower loader arms to the ground. 3. Be sure all working equipment and/or attachments are stopped and the auxiliary valve is in neutral. 4. Apply parking brake. 5. Move the ignition key to the OFF position. 6. Wait for all movement to stop. Turn the ignition key to the ON position, and move the multi-purpose joystick and the auxiliary valve in all directions to verify that the hydraulic system is de-pressurized.
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Size: 122x48mm

Before Each Use

⚠️ WARNING

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Before digging, have the area marked for underground utilities, and do not dig in marked areas. Also, be aware of the location of objects and structures that may not be marked, such as underground storage tanks, wells, and septic systems.

- The operator should check the correct function of the controls before every use. He must also visually inspect the loader for any obvious faults.
- The operator should check the correct function of the brake and the limit installation and limit warning device before using the hoist.
- The operator should perform the following checks before using the loader. Check the following items for cleanliness and damage:
 - Rods, rod eye-ends, and radiator.
 - Handrails and footsteps.
 - Make sure warning signs are present.
 - Inspect the engine for signs of damage or missing parts.
 - Check working attachments for completeness.

- Check rod eye-ends and joints for condition and rigidity.
- Check the engine for oil, fuel, and anti-freeze.
- Check all screws for secure connections.
- Check tire pressure.
- Check for loose bolts and nuts and tighten if necessary (especially wheel nuts).
- Check the electrical circuit for any damage, shorts, or loose connections.
- Check all hydraulic hoses and connections and the hydraulic cylinders and fuel pipes for leaking oil, fuel, or water.

Before Switching on the Engine

1. Apply the parking brake. After parking the vehicle, the parking brake must always be applied.
 - Remove or attach all loose parts.
 - Check the driver's cabin for loose or missing screws, bolts, etc. Insert or tighten when necessary.
 - Verify the function of the following equipment: lights, control lights, signal horn, indicators, all switches, direction indicator, hazard lights, screen washer, and screen wipers.
2. Adjust the driver's seat.
3. Put on the safety belt.
4. Push the forward/reverse drive lever into the neutral position. The engine can only be started when the drive-direction lever is in the neutral (-0-) position.

Operating Instructions

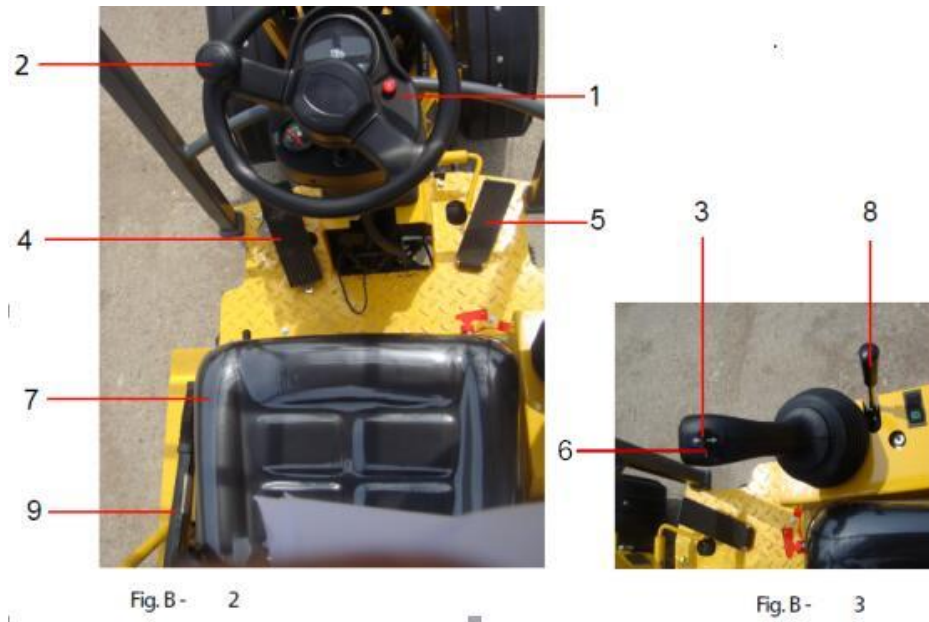
⚠WARNING

- Only operate in good light, keeping away from holes and hidden hazards.
- Slow down and use extra care on hillsides. Be sure to travel in the recommended direction on hillsides. Turf conditions can affect the machine's stability.
- Slow down and use caution when making turns, crossing roads and sidewalks, and changing directions on slopes.
- Never operate without the guards securely in place. Be sure all interlocks are attached, adjusted, and functioning properly.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground, lower implements, disengage the auxiliary hydraulics and shut off the engine before leaving the operator's position for any reason.
- Keep hands and feet away from moving attachments.
- Look behind and down before backing up to be sure of a clear path.
- Never carry passengers and keep pets and bystanders away.
- Slow down and use caution when making turns and crossing roads and sidewalks.

- Do not operate the machine when you are tired, ill, or under the influence of alcohol or drugs.
- Use care when loading or unloading the machine into a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- Read all attachment manuals.
- Ensure that the area is clear of other people before operating the loader unit. Stop the loader unit if anyone enters the area.
- Never leave a running loader unit unattended. Always lower the loader arms, stop the engine, set the parking brake, and remove the key before leaving.
- Do not exceed the rated operating capacity, as the loader unit may become unstable which may result in loss of control.
- Do not overload the attachment and always keep the load level when raising the loader arms. Logs, boards, and other items could roll down the loader arms, injuring you.
- Never jerk the controls; use a steady motion.
- Watch for traffic when operating near or crossing roadways.
- Do not touch parts which may be hot from operation. Allow them to cool before attempting to maintain, adjust, or service.
- Check for overhead clearances (i.e., branches, doorways, electrical wires) before driving under any objects and do not contact them.
- Ensure that you operate the loader unit in areas where there are no obstacles in close proximity to the operator. Failure to maintain adequate distance from trees, walls, and other barriers may result in injury. Only operate the unit in areas where there is sufficient clearance for the operator to safely maneuver the product.
- Locate the pinch point areas marked on the loader unit and attachments and keep hands and feet away from these areas.
- Before operating the loader unit with an attachment, ensure that the attachment is properly installed and a genuine NorTrac attachment.
- Lightning can cause severe injury or death. If lightning is seen or thunder is heard in the area, do not operate the machine; seek shelter.

1. Operation Levers and Instruments

1.1 Operating lever



1 Instrument panel

2 Steering wheel turning knob

3 Operating lever for load arm/drive

4 Inch pedal

5 Accelerator pedal

6 Switch, forward and reverse

7 Parking brake. To apply the parking brake, pull the lever up. Push the button and lower the lever to release the brake. When the button is released, the control light goes off. When parking the vehicle, the parking brake must always be applied.

8 Operating lever for additional hydraulic equipment connection

9 Driver's seat

After a cold start, the idle speed RMP can be increased slightly with this screw. Set the desired engine RMP with the accelerator pedal and then attach the set position with the setting screw. When the system runs smoothly (system is warm), reduce the idle speed RPM. A high idle speed can cause accidents as the loader starts immediately after the throttle pedal has been operated.

1.2 Multifunction Lever

The multifunction-lever is mounted on the operating lever of the control valve. The load arm is operated by moving the lever. The drive is selected by operating the switch.

1.2.1 Drive Switch

Fig. B - 4/1

- Push the switch forward to select the forward drive direction.
- Push the switch backward to the neutral position to select the neutral drive direction.
- Push the switch backward to select the backward drive direction.
- Change into neutral position by pushing the rocker switch forward again.



Fig. B- 4

The drive direction is indicated on the display.

1.3 Control and Warning Lights

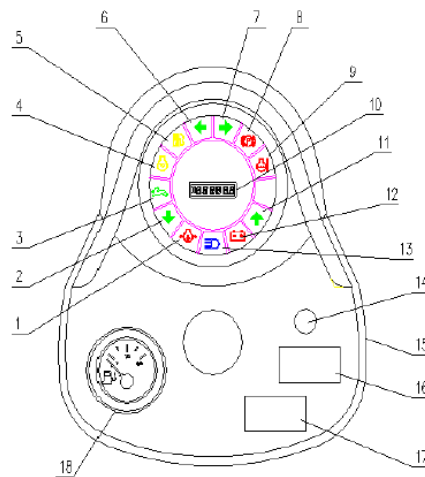









Fig. B- 5

Item	Designation	Function	Symbol
1	Engine oil pressure warning light	Illuminates when the engine oil pressure is too low – switch off the engine.	
2	Backward drive control light	Backward drive-direction.	
3	Preheating indicator light	Illuminates when the engine is preheated.	
4	Fuel indicator control light	Indicates the fuel level has reduced to 5 liters.	

Item	Designation	Function	Symbol
5	Engine water temperature high indicator	Illuminates when the water temperature is too high.	
6	Parking brake control light	Indicates the parking brake has been applied.	
8	Forward drive control light	Indicates the forward drive-direction.	
9	Generator warning light	Illuminates when the battery has not been charged - switch off engine.	
10	Hydraulic filter warning light	Illuminates when the hydraulic oil pressure is too high.	
11	Reversing buzzer	Illuminates when reversing	
12	Working lamp switch	Indicates it is switched on.	

Check Instruments

Item	Designation	Function	Symbol
10	Operating time counter	Calculates the operating time of the vehicle. Maintenance and inspection must be scheduled based on the reading of the counter.	
18	Fuel gauge	Indicates the fuel level.	

1.4 Lever for Load Arm

The lever [A] (Fig. B - 10) operates the load arm and other tool attachments.

The single movements are executed as follows:

- Backward position - to raise the load arm
- Forward position - to lower the load arm



Fig. B- 10

- Forward position (against resistance) – to engage the floating position of the load shovel
- To the right side - to extend the shovel
- To the left side - to retract the shovel

For combined movements, the lever can be moved between the four main positions. For example, to raise the shovel, pull the lever backward and then push the lever to the left side to retract the shovel.

The working speed is dependent on the RPM of the engine and on the position of the lever.

The lever is returned to its neutral position from each position (except floating) by a return-spring.

When operating with the floating position selected, the shovel remains on the ground due to its own weight. Depending on the ground conditions, the shovel position moves to adapt to the uneven ground. The load arm is operated with the multifunction lever.

1.5 Lever for Additional Hydraulic

To operate the "hydraulic connection of the load arm/hydraulic locking of the quick-change system", move the control lever (Fig. B - 11/8) on the right side of the load arm lever, this lever returns automatically to its neutral position.

- Lever in left position (L) - unlocked
- Lever in right position (R) - locked

Operation of the hydraulic connection when the three-way cock is in the forward position:

- Lever in left position (L)
 - Left coupling under pressure
 - Return flow through right coupling
- Lever in right position (R)
 - Right coupling under pressure
 - Return flow through left coupling

When the vehicle is equipped with an electro valve (optional extra) the lever for the additional hydraulic equipment is omitted. In this case the hydraulic equipment is operated via the lower button of the multifunction lever. During normal operation, the functions of the control lever are the same as described under item 1.6. If you want to use the functions of the additional control lever, press the lower button at the multifunction lever.

2. Machine Quick-Change System for Tool Attachments

The vehicle is equipped with a mechanic quick-change system, for different tool attachments. This allows the driver to make a quick and uncomplicated coupling and decoupling of the attachments from his position.

The handle for the remote control of the mechanical quick-change system is located on the top left side of the arm



Fig. B - 13

spar. The operator can reach this handle without getting off the vehicle.

2.1 Coupling

Drive towards the tool attachment and push the quick-change system of the vehicle into the receptacle of the attachment. Then lift the load arm and retract the attachment. Turn the lever of the locking bolt to the left. The locking bolt is pushed under spring pressure into the lock of the attachment. Make sure that the bolt has entered the lock.

Pass the hydraulic tubes through the eyes provided on the attachment and the load arm, and connect the tube to the hydraulic quick coupler on the equipment, by removing the protective cap of the hydraulic quick coupler. Make sure that the connections are clean. Plug the rapid action coupling into the connections of the additional hydraulic equipment. Put the protective caps together to prevent them from accumulating dirt. Check the hydraulic system of the tool attachment and the hydraulic rapid action coupling to be sure the connections are secure. To do this, switch on the engine and move the tool attachment in both directions.

2.2 De-coupling

Close the tool attachment and shut off the engine. Move the operating lever for the additional hydraulic equipment several times in both directions to release the hydraulic connection of pressure.

Pull the locking bolt up and press it to the right to unlock the tool attachment.



Fig. B- 15

Disconnect the hydraulic coupling and put on the protective caps. Draw the hydraulic tubes out of their conduits and place them over the tool attachment. Pull up the locking bolt and press it to the right. Set the tool attachment on the ground, extend and lower the attaching frame.

3. Operating the Equipment

3.1 Before Getting into the Vehicle

Observe the daily maintenance schedule (Maintenance/Troubleshooting). Do not hold on to the levers when getting in the vehicle.

⚠ CAUTION

- Only get into the vehicle from the left side.

3.2 Adjustment of the Driver's Seat

The driver's seat can be adjusted as needed to prevent strain and fatigue. Adjust the driver's seat so that all operating levers are easy to reach and the pedals can be depressed completely when you are seated with your back against recline.

The following adjustments are possible:

1. Forward / backward – adjustment [1]

Pull the lever up, adjust the seat, and then push the lever down. Make sure the seat has completely engaged.



Fig. B- 17

2. Weight Adjustment [2]

Push the lever down to the desired level. This will depend on the driver's weight.

3. Low Weight [3]

Push the lever down completely and release. The handle moves automatically up and the seat can be adjusted to the corresponding weight.

⚠ CAUTION

- Always put on the safety belt when operating the vehicle.

3.3 Safety Belt

- Putting on the Safety Belt

Sit down properly. Place the belt over your hips and engage the lock. Do not adjust the belt too loose or too tight.

- Detaching the Safety Belt

Press the button and remove the belt from the belt lock. Repair or replace damaged parts on the belt or the lock.

3.4 Battery Disconnecting Switch (Optional)

The battery disconnecting switch is located under the engine cover and is used to disconnect the complete electrical system from the battery in case of an emergency (e.g., cable burning). We recommend switching off the battery overnight to prevent a possible discharge of the battery or cable burning. If the switch head is pulled off, the switch can also be used as additional theft protection.

When the switch head is pulled off, the aperture must be covered with the protective cap to prevent any moisture from penetrating into the switch.

3.5 Starting the Engine *(make sure the E-brake is on)*

1. Before starting the engine, make sure that no one is within the danger areas of the engine or the vehicle. After repair, check that all protective devices have been installed and all tools have been removed from the engine. Do not use any further starting aids (e.g., starting pilot).
2. Depress the accelerator pedal.
3. Start the engine.
 - Insert the key - position 0 = no operating voltage.
 - Turn the key left against spring pressure - position 3 = preheating.
 - When the preheating controller illuminates, turn the key right - position 2 = starting.
 - Release the key as soon as the engine starts. The key returns to position 1 and the control lights extinguish.



Fig. B - 18

4. Use the engine RPM regulator to set the idle and verify that all control lights have extinguished. Repair eventual faults.
5. RPM regulator:
After a cold start, the idle speed RPM can be increased slightly with this screw. **Set the desired engine RPM with the accelerator pedal and then fix the set position with the setting screw.** When the system runs smoothly (system is warm), reduce the idle speed RPM. A high idle speed can cause accidents as the loader starts immediately after the throttle pedal has been operated.
6. Start without interruption for a maximum of 20 seconds. If the engine does not start, repeat starting after one minute. If the engine fails to start again, look for the cause using the troubleshooting guide (see engine's manual).

3.6 Preparation for Road Use

1. Secure the tool attachments!
2. Attach the protective cover to the shovel.
3. The shovel must be empty and lifted into the transport position!
4. Check the lights! Make sure that the headlights and the rotating light, if fitted, are in working order!
5. Set all hydraulic control valves to position O.
6. When driving on public roads the vehicle must have the corresponding certificates for road use (TÜV-certificate in Germany, equivalent in other countries!)
7. Lock the operating lever!

3.7 Departure

After preheating the engine (IMPORTANT) and releasing the parking brake, start the vehicle as described below.

Operating Instructions

A. Check the driver's seat and the safety belt.

- Make sure that the safety belt is on correctly.
- Make sure that the driver's seat is adjusted correctly.

a) Release the parking brake.

b) Make sure that it is safe to drive and then depress the throttle pedal into the desired drive direction.

- Throttle pedal to the front = forward.
- Throttle pedal to the rear = backward.

The vehicle will start smoothly.

c) By operating the throttle pedal and the accelerator pedal, the drive speed can be adjusted. To stop the vehicle, depress the brake pedal and move the throttle pedal in the 0-position. Drive slowly and monitor the steering and the brakes. Stop when the steering or brakes are not working correctly. If in doubt, stop driving and inspect for damages.

B. Changing the Drive Direction

1. Decelerate.
2. When the vehicle has almost stopped, move the throttle pedal into the other drive direction.
3. Drive.

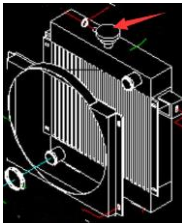
C. Pushing Operation

The more the throttle pedal and the accelerator pedal have been depressed, the higher the pushing force. The maximum pushing force is achieved just before the tires start to slip.

3.8 Working at High Temperatures

To avoid damaging the vehicle, take the following precautions when you work at high temperatures:

1. Use engine oil of the correct viscosity (see liquids, lubricants, volumes, and specifications).
2. Use the correct coolant mixture: (YF-2-35 ~107 Celsius). The coolant could be adjusted according to the local temperature.
3. Regularly check the radiator and the oil cooler. Ensure the correct level of coolant. Make sure that there are no leaks. Refer to the Maintenance section, Cooling System Maintenance.



4. Keep the radiator clean. Regularly remove dirt from the radiator and engine (see the Cooling System maintenance in the Maintenance section).
5. Regularly check the fan belt and the oil cooler fan.
6. Regularly check the preliminary engine filter (if fitted). Check the dust valve and remove dust if necessary (see engine air filter).

3.9 Operation at Low Temperatures

At low temperatures, take the following precautions to facilitate starting and to avoid damaging the vehicle.

1. Use engine oil of the correct viscosity (see liquids, lubricants, volume, and specifications).
2. Use fuel for low temperatures.
3. Use the correct coolant mixture.
4. Be sure the battery is completely charged.
5. Top up the fuel tank at the end of each working shift.
6. Protect the vehicle during breaks.
7. Install a cold starting aid. At low temperatures of -18° c or less, an additional starting aid, such as fuel, oil and coolant heaters, can become necessary. For an appropriate starting aid, please consult your local dealer or one of our representatives.

3.10 Fuel System

3.10.1 Fuel Type

High quality diesel is imperative for proper engine performance.

3.10.2 Fuel Filter

A preliminary filter with a water separator is installed before the fuel pump to eliminate large dirt particles. A plastic ring is located inside the casing of the preliminary filter. If this plastic ring floats, water has penetrated the filter casing. In this case, the casing, as well as the filter, must be cleaned. Replace the fuel filter and the preliminary filter at regular intervals as specified. See the engine's manual.

3.10.3 Fuel for low temperature

Use special winter fuel types at temperatures below 0° C. These fuel types have a lower viscosity and restrict the formation of wax in the fuel (wax may impede the fuel flow through the filter). To reduce the formation of wax, it is also possible to add special agents which improve the fuel flow.

3.10.4 Gasoline

⚠ CAUTION

- Do not use gas for this vehicle. Do not mix gas with diesel. The gas rises to the surface inside the fuel tank and gives off inflammable vapors.
- Fuel is flammable. Keep the vehicle away from open flames.
- Do not smoke when refueling or when working on the engine.
- Stop the engine before fueling.
- Ignoring these instructions may cause a fire.

3.10.5 Refueling

- Unscrew the cap of the filler neck.
- Top up the fuel.

If possible use a fine filter in the filling line. Use only clean fuel, as even the smallest dirt particles can cause rapid wear or malfunctions.

Use only fuel types of known brands. As the best method of cleaning fuel is through precipitation, the fuel should not be circulated after delivery and must be stored for at least one day. Do not keep opened barrels outdoors, as variations in temperature may result in heavy condensation. Use only winter fuel types at temperatures near and below freezing-point (see engine manual). Refueling out of large, stationary containers is recommended. As much as possible, avoid refueling from barrels. If you do, observe the following instructions:

1. To avoid disturbing deposited contamination, do not roll or tilt the barrels before Refueling.
2. Protect the end of the refueling pipe with a fine-meshed sieve and keep it approximately 15 cm away from the bottom of the barrel.
3. When filling the fuel tank, a funnel sieve should be used with a cloth filter and a fine sieve inserted into the tank neck of the vehicle.
4. Always keep the refueling barrels tidy. Gross negligence when refueling cannot be compensated by an efficient fuel filter, as this only separates the smallest impurities out of the fuel. Fill the tank with the correct fuel type at the end of each day to avoid condensation during the night.

3.10.6 Draining Deposits from the Fuel Tank

From time to time, water and deposits that have collected at the bottom of the fuel tank must be drained. This is especially recommended at temperatures below freezing-point and in weather

conditions that accelerate condensation. Before refueling, remove the drain plug at the bottom of the fuel tank and drain all deposits that have collected.

4. Optional Ancillary Equipment

4.1 Introduction

Use the appropriate tool for the job. Do not use too big of a shovel for heavy material. This could weigh down the equipment causing undue stress which will ultimately shorten the vehicle's life.

4.2 Light Material Shovel / Earth Shovel

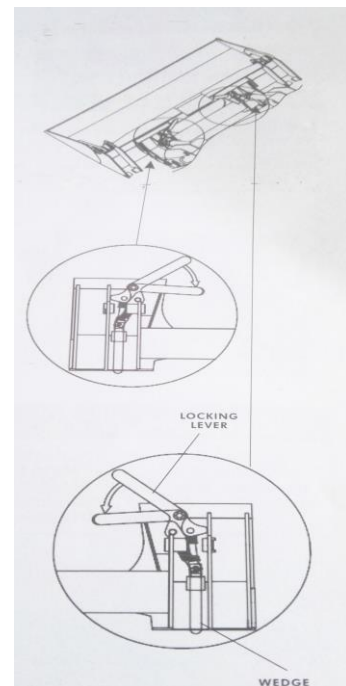
4.2.1 Safety

Observe the safety instructions and the maximum admissible load capacities (see technical data). **There are many different materials, each having its own special properties. Use the light material shovel** for light bulk materials, such as corn, concentrated feed stuff, etc., and the earth shovel for heavy bulk material, such as gravel, sand, etc.

4.2.2 Installing the Load Shovel

To install the Load Shovel attachment:

1. Pull the quick coupler locking levers all the way up.
2. Place the loader right behind the load shovel. Tilt the quick coupler forward.
3. Drive the loader forward until the top edge of the coupler is completely under the flange of the load shovel or other attachment.
4. Do not hit the quick coupler levers on the bucket.
5. Tilt the quick coupler backward until the load shovel is off the ground.
6. Stop the engine.
7. Push down on the quick coupler levers until they are in the locked position.
8. The wedges must extend through the holes in the load shovel or attachment.
9. The wedge must contact the lower edge of the hole in the attachment.



Note: If the wedge does not contact the lower edge of the hole, the attachment will be loose and could come off the loader.

4.2.3 Operation

Practice using the load shovel before the first application. Depending on the experience of the driver, the work to be done and the type of material, certain deviations from these instructions may become necessary.

4.2.4 Operating Devices

The load shovel is operated with the operating lever (see operating instructions). Use extreme care when operating the load shovel.

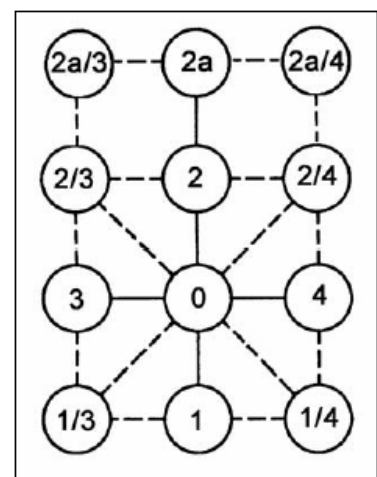


Fig. B - 20

When emptying the load shovel and loading other vehicles, it is recommended that you execute two movements simultaneously, e.g., lifting and extending or lowering and retracting. To illustrate this, the movements on the control lever are super-imposed (Fig. B –20).

0 = neutral position

1 = lifting

2 = lowering

2a = floating position

3 = retracting

4 = extending

The floating position is used to level a surface. Lower the point of the load shovel to the ground. Engage the control lever in position 2a so that the load shovel lies on the ground, born by its own weight.

4.2.5 Working with the Load Shovel

Loading Work

1. Lower the bucket to pick up loose material so that it is parallel to the ground and move it into the material to be loaded.
2. Now raise the loader lift arms slightly so that the weight is on the loader's front axle. This is to avoid excess wheel slippage.
3. To fill the bucket, curl the bucket as shown in Fig. 22 as the loader arms are slowly raised. Carry the loaded bucket low until it's necessary to lift it to the loading height.
4. If material is to be loaded and the bucket cannot easily penetrate, you can create an up-and-down movement of the bucket cutting edge by alternately curling the bucket slightly upward and downward while penetrating the material. This makes it easy for the bucket to penetrate the material (Fig. 23).

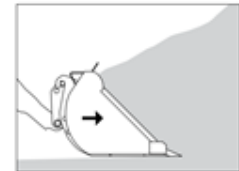


Fig.21↵

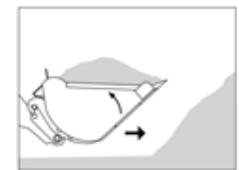


Fig.22↵

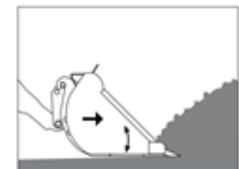


Fig.23↵

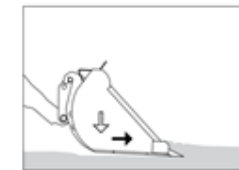


Fig.24↵

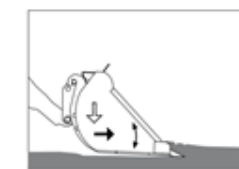


Fig.25↵

Excavation Work

Soft material:

Lower the bucket to the ground to lift out soft material and tilt the bucket forward until you have a digging angle. Begin driving the loader forward and the bucket's digging edge will break into the ground. Create a flat tilting angle to remove layers and avoid a large amount of wheel slippage (Fig. 24).

Resistant material:

Lower the bucket to the ground to lift out resistant material and tilt the bucket forward until you have a digging angle. When you drive the loader forward, slightly press the bucket downward so that it breaks into the ground. Should the bucket's digging angle penetrate the ground, make the tilting angle flatter. Use the bucket's curl control lever to produce an up-and-down movement of the digging edge of the bucket (Fig. 25).

⚠WARNING

- Do not carry a load with the arms raised. Always carry loads close to the ground.

4.3 Grappler Bucket

4.3.1 Safety

Observe the safety instructions as well as the maximum admissible load capacities (see technical data).

4.3.2 Working with the Crocodile Gripper

To guarantee stability, make sure that the crocodile gripper is always kept near the ground. Tip the upper part of the crocodile gripper hydraulically downward.

The crocodile gripper allows for the transporting of silage fodder, loose hay, round bales, green fodder, and farmyard manure. It can also be used for loading towed vehicles, fertilizer spreaders, etc.

The crocodile gripper is especially useful for the gripping of load material. In certain circumstances it can also be used to grip loose branches and smaller trunks or for feeding tasks.

4.3.3 Installing the Crocodile Gripper

To install the Crocodile Gripper attachment, see Coupling in the Operations Instruction section.

After attaching the crocodile gripper with the quick-change system, the additional hydraulic connection must be connected.

4.3.4 Operation

Practice using the crocodile gripper before first application.

4.3.5 Operating Element

The crocodile gripper is operated with the operating lever for the additional hydraulic equipment (see operating instructions). When working with the crocodile gripper, operate the lever with extreme care.

5. TOWING

Never forget that towing may cause further damage to the vehicle. If possible, repair the vehicle on the spot.

If the engine is operative, the tool attachment is de-coupled. The operation depends on the actual condition of the vehicle and the hydraulic circuits.

Towing is only allowed with tow ropes of a sufficient diameter. The breaking strain of the ropes must be triple that of the traction power of the towing vehicle. The tow rope can be attached at the support in the rear part of the vehicle or at the plate of the load arm.

5.1 Towing Longer Distances

Only tow for the short distance necessary to bring the vehicle out of the danger area. Never tow the vehicle over longer distances as the hydraulic motors may be damaged. Load the machine on an appropriate transporter.

5.2 Towing Shorter Distances

Only tow at a slow driving speed (approx. 5 km/h) and for a maximum distance of 0.5 km. Only tow for a distance that is necessary to bring the vehicle out of danger areas. When towing over longer distances, the engine may overheat and become damaged. Move the throttle pedal into the desired direction. Tow the vehicle.

6. TRANSPORT

6.1. Before loading the vehicle on a transporter, remove any dirt.

6.2. For further instructions on parking the vehicle on the transporter refer to Stopping in the After Each Use section. For transport, secure the vehicle correctly on the loading area. Lashing straps can be passed over the center joint and the foot step. When handling by crane, lifting tackle is required.

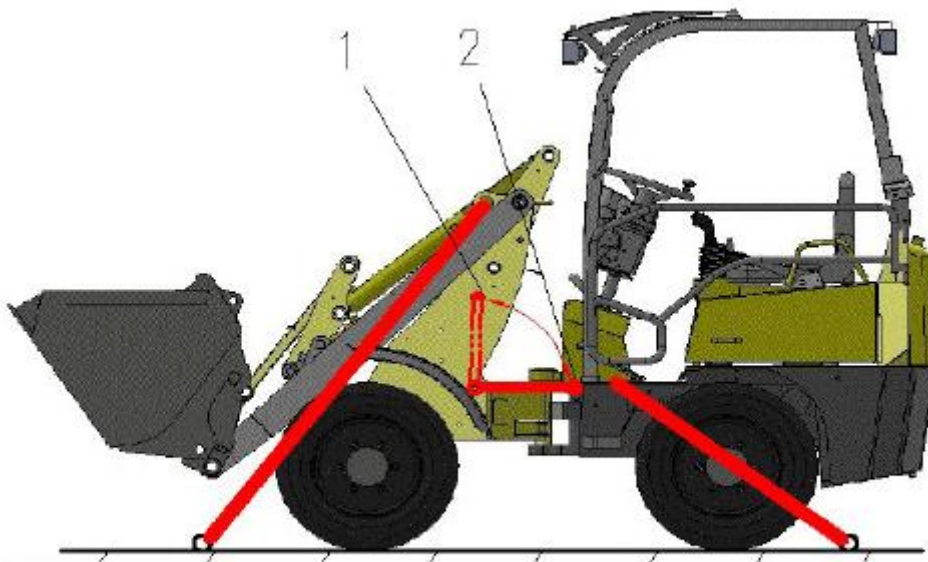


Fig. B - 29

6.3. Blocking the center-pivot steering:

- The vehicle must be parked straight.
- Loosen the locking pins (Fig. B – 29/1) and move the lever to the rear.
- Secure the lever with the locking pin (Fig. B – 29/2) on the bolt provided on the rear carriage.

6.4. To loosen the center-pivot steering locking, proceed in reverse order.

After Each Use

1. STOPPING

- a) Remove your foot from the accelerator pedal.
- b) Depress the brake pedal and stop the machine.
- c) Stop the engine.
- d) Lower the bucket and attachments to the ground.
- e) Release the hydraulic pressure in the hydraulic system by operating the control levers. Lock all control levers in neutral.
- f) Remove the key.
- g) Set the park brake.

Exiting and Securing the Vehicle

When exiting the vehicle, use the hand rails and the foot step. The tank cover should be locked. When parking on inclines use a wheel chock.

Maintenance

⚠WARNING

- Disengage the auxiliary hydraulics, lower the attachment, stop the engine, and remove the key. Wait for all movement to stop and the unit to cool before adjusting, cleaning, or repairing.
- Never run the machine in an enclosed area.
- Clean debris from attachments, drives, mufflers, and engine to help prevent fires. Clean up oil or fuel spillage.
- Let the engine cool before storing and do not store near flame.
- Park the machine on level ground. Never allow untrained personnel to service the machine.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged decals.
- Always install loader safety support and pin securely in-place before performing any maintenance or service checks under loader arms. See owner's manual for instructions on use of safety support.
- Keep nuts and bolts tight. Keep equipment in good condition.
- Never tamper with safety devices.
- Keep the loader unit free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage.

Allow the loader unit to cool before storing.

- Use extra care when handling fuels. They are flammable, and vapors are explosive.
 - Use only an approved container.
 - Never remove the fuel cap or add fuel when the engine is running. Allow the engine to cool before refueling. Do not smoke.
 - Never refuel the loader unit indoors.
 - Never store the loader unit or fuel container inside where there is an open flame, such as near a water heater or furnace.
 - Never fill a container while it is inside a vehicle, trunk, pick-up bed, or any surface other than the ground.
 - Keep container nozzle in contact with the tank during filling.
- Stop and inspect the equipment if you strike an object. Make any necessary repairs before restarting.
- Use only genuine NorTrac replacement parts to ensure that original standards are maintained.

Maintain the product by adopting a program of conscientious repair and maintenance in accordance with the following recommended procedures. It is recommended that the general condition of any tool be examined before it is used. Keep your tool in good repair. Keep all cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control. Keep handles dry, clean, and free from oil and grease. Also refer to the engine manufacturer's instruction manual for additional information about engine maintenance. The following chart is based on a normal operation schedule.

Securing the Vehicle

Before any maintenance or repairs, the vehicle must be secured as described below:

- Park the vehicle on even and load-carrying ground.
- Place the tool attachments on to the ground.
- Block the center-pivot steering.
- Shut off the engine.
- Withdraw the key from the ignition switch.
- Secure the vehicle to prevent rolling by blocking the wheels.
- Disconnect the batteries before working on the electrical system.
- Set the park brake.

General Safety Check

- Check steel parts for damage and note any wear and tear areas that may need attention in the future.
- Make sure that all pivot pins are in their correct position and secured by the locking devices.
- Check the condition and correct position of the step and straps.
- Check the windows for cracks and replace damaged windows.
- Check the condition and correct position of the shovel teeth.
- Check all spreader disks for damage.
- Check the tires for damage and penetration of sharp-edged objects.

- Make sure that all warning signs are mounted. If necessary, attach new warning signs.

Maintenance Intervals

The intervals indicated refer to average operating conditions and loads. Different maintenance intervals must be observed in hours or in months, whichever comes first. The intervals indicated are based on the quality of the operating materials specified in this manual.

Maintenance Interval	Maintenance Point
Daily Maintenance	<div style="background-color: black; color: white; text-align: center; padding: 5px;">⚠WARNING</div> <ul style="list-style-type: none"> • Inspect hydraulic system regularly for leaks. • Hydraulic fluid escaping through even a pin-size hole opening can puncture skin and cause blood poisoning. • Wear proper hand and eye protection when searching for leaks. Never check for leaks with your hand while system is pressurized. Use wood or cardboard instead of hands. • Relieve pressure on hydraulic system before servicing or disconnecting hoses. • Seek medical attention immediately if injured by escaping fluid.
	<ul style="list-style-type: none"> - Clean the vehicle - Clean the air filter - Check for general damage - Check the level and condition of coolant - Check the hydraulic oil cooler, the radiator, and the engine oil cooler for cleanliness - Check the level and condition of the motor oil - Check for engine leaks - Check the level of the hydraulic oil - Check the hydraulic system - Check the condition of the tires and the tire pressure - Check that all screws are tight - Check the wheel nuts - Check the function of the brakes - Check the safety belt - Check the instruments and control lights as well as the acoustic warning devices - Check the electrical system

Maintenance Interval	Maintenance Point
	<ul style="list-style-type: none"> - Check the foot brake - Check the hydraulic steering - Check the function of the hydraulic devices - Check the ancillary equipment - Check the exhaust for defects or excessive smoke development - Check the lubrication of all pivot pins - Lubricate according to lubrication chart - Lubricate the tool attachments - Lubricate center joint - Lubricate pivot pin of steering cylinder - Check that all screws of the ROPS structure are tight
<p>Weekly Maintenance (or at least every 30-50 operating hours)</p>	<ul style="list-style-type: none"> - Clean the fuel filter preliminary separator - Check the front and rear axles for oil leaks and check the oil level - Check the condition of the radiator and the tubes - Check the tension and condition of the fan belt - Check the ancillary equipment - Check the piston rods of the hydraulic cylinders - Check the position of pipes and tubes - Check the air filter pipe - Check the position of the electric cables - Lubricate the cardan shafts (universal joints) - Lubricate all levers - Lubricate all Bowden cables and hinges - Tighten all screws - Check the engine and axle mounts
<p>Monthly Maintenance (or at least 200-250 hours)</p>	<ul style="list-style-type: none"> - Check shift gear, engine, and hydraulic system for leaks - Check that hydraulic cooler and radiator are clean - Check level of coolant and antifreeze - Check tension and condition of V-belt - Check the air filter pipe - Check the acid level of the battery - Check: the instruments, control lights, and acoustic warning

Maintenance Interval	Maintenance Point
	<p>devices</p> <ul style="list-style-type: none"> - Check the electrical system - Check and adjust if necessary the foot brake and the parking brake - Check the hydraulic steering - Check the lighting equipment (if fitted) - Check the idle speed RPM - Check and adjust the locking of the engine cover, if necessary - Check the condition of the tires and the tire pressure - Change the engine oil and the oil filter (Perkins 100 series, every 100 operating hours (1)) - Clean or replace the air filter, if necessary - Check, that all lubrication zerks are lubricated - Lubricate all cardan shafts (universal joint and sliding joint) - Lubricate all levers, Bowden cables, and hinges - Check all oil levels
<p>500 Operating Hours (or after the first 6 months)</p>	<ul style="list-style-type: none"> - Check shift gear, engine, and hydraulic system for leaks - Check that hydraulic and hydraulic oil cooler and radiator are clean - Check level of coolant and antifreeze - Check tension and condition of V-belt - Check position of pipes and tubes - Check the piston rods of the hydraulic cylinders - Check the air filter pipe - Check the laying of the Bowden cables and the electric cables - Tighten all screws. Check carefully the engine and axle mounts and the cardan shafts - Check the rubber buffer of the engine mount - Check the acid level of the battery - Check: the instruments, control lights, and acoustic warning <p>Devices</p> <ul style="list-style-type: none"> - Check the electrical system - Check (and adjust if necessary) the foot brake and the parking

Maintenance Interval	Maintenance Point
	<p>Brake</p> <ul style="list-style-type: none"> - Check the hydraulic steering - Check the lighting equipment (if fitted) - Check the exhaust system - Check the drive shaft pivot pins and bushings - Check the bolts and the bearing of the center joint - Check the idle speed RPM - Check and adjust the locking of the engine cover and the door, if necessary - Check the condition of the tires and the tire pressure - Change engine oil and replace filter - Replace fuel filter - clean preliminary filter - Clean the fuel pump (only Deutz engines) - Clean or replace the air filter, if necessary - Adjust the tappet clearance (only Perkins 100 and 400 series) - Change hydraulic oil - Replace hydraulic return filter - Replace hydraulic pressure filter - Change the oil in the transfer gear-box - Change the oil in the axles - Check, that all lubrication nipples are lubricated - Lubricate cardan shafts - Lubricate all levers, Bowden cables, and hinges - Check all oil levels
<p>Once Per Year (or at least every 1000 hours)</p>	<ul style="list-style-type: none"> - Check shift gear, engine, and hydraulic system for leaks - Check that the hydraulic cooler and radiator are clean - Check level of coolant and antifreeze - Check tension and condition of V-belt - Check position of pipes and tubes - Check the piston rods of the hydraulic cylinders - Check the air filter pipe - Check the laying of the Bowden cables and the electric cables - Tighten all screws. Check carefully the engine and axle

Maintenance Interval	Maintenance Point
	<p>mounts and the cardan shafts</p> <ul style="list-style-type: none"> - Check the acid level of the battery - Clean the battery terminals and check the acid density - Check the instruments, control lights, and acoustic warning devices - Check the electrical system - Check and adjust if necessary the foot brake and the parking brake - Check the hydraulic steering - Check the lighting equipment (if fitted) - Check the exhaust system - Check the drive shaft pivot pins and bushings - Check the bolts and the bearing of the center joint - Check the pressure control valves of the hydraulic system - Check the idle speed RPM - Check the RPM under max. load/without load - Check the starter and the generator (refer to engine manual) - Check the heater plugs and the injection nozzles (see engine operating manual) - Check and adjust the tappet clearance, if necessary - Tighten the cylinder head studs (only Perkins 100 series) - With Deutz engines: Check the toothed belt for the engine control and the secondary drive, if fitted (do not restretch, replace the toothed belt every 5 years or after 4500 operating hours) - Check the injection nozzles (only Deutz engines, every 3000 operating hours) - Check and adjust the locking of the engine cover, if necessary - Check the ROPS bar/cabin - Check the condition of the tires and the tire pressure - Change the engine oil and the oil filter. The Perkins 100 series, every 100 operating hours (1) - Replace fuel filter - clean preliminary filter - Clean the fuel pump (only for Deutz engines) - Clean or replace the air filter, if necessary - Change hydraulic oil

Maintenance Interval	Maintenance Point
	<ul style="list-style-type: none"> - Replace hydraulic return filter - Change the oil in the transfer gear-box - Change the oil in the axles - Check, that all lubrication nipples are lubricated - Lubricate all cardan shafts (universal joint and sliding joint) - Lubricate all levers, Bowden cables, and hinges - Check all oil levels - Inspect according to the rules for the prevention of accidents

(1) The interval can be increased to 200 operating hours if the operating hours exceed 30 hours per week and a high-quality mineral oil (specification CF or CG) is used.

NOTE: OBSERVE THE ENGINE'S OPERATING MANUAL.

1. Maintenance of the Engine

Service and maintain the engine as specified in the operating and the engine manual. Observe especially the service schedule.

1.1 Tilting the Driver's Cabin

⚠CAUTION
<ul style="list-style-type: none"> • The engine cover must not be opened when the engine is running.

1. If necessary, the driver's seat must be slightly pushed forward.
2. Open the doors on both sides.
3. Unlock the bolt (Fig. C – 31:S).
4. At the same time, take the driver's seat by the lever (Fig. C – 31: B) and tilt it upwards.
5. When the driver's seat is completely tilted, it is secured by the rope (Fig. C – 32: C).

6. The closing is done in reverse order.

Fig.C- 31



Fig.C-31/B-



Fig.C- 32



⚠CAUTION

- When you tilt the driver's seat back, make sure that the locking engages correctly.

1.2 Changing the Engine Oil

⚠CAUTION

Danger of scalding hot engine oil!

- Collect the waste oil and dispose of it responsibly.
1. Run the engine until it reaches operating temperature.
 2. Park the vehicle on even ground and secure against rolling. Set the park brake.
 3. Stop the engine.
 4. Place an oil collecting container under the opening. The capacity of the container required is determined in the capacity chart in this operating manual.

5. Unscrew the cap and drain the engine oil.
6. After the engine oil has been drained off:
 - Replace the engine oil filter.
 - Mount the cap in the oil sump and tighten the screw with the correct torque of Perkins =30 ... 40 Nm.
 - Replenish the engine oil through the filler neck until the oil level has reached the "max" mark.
 - Start the engine and run at idle speed for approx. 2 minutes.
 - Check the oil level and replenish the oil - if necessary - to the "max" mark.
 - Check the engine for leaks.

1.3 Replacing the Engine Oil Filter

The engine is equipped with a screw type filter. Remove the cap behind the left rear wheel.

Before unscrewing the filter case (with a tightening strap) position a collecting container to collect the drained off oil. Remove the old filter element and clean the filter case. Fill the new filter element with oil and insert the filter element in the filter case. Before screwing on the filter case, moisten the sealing surface with oil. Screw the filter on by hand (without the tightening strap).



Fig. C- 33

NOTE:

THE FILTER CARTRIDGE IS EQUIPPED WITH A BY-PASS VALVE WHICH OPENS WHEN THE FILTER IS CLOGGED.

1.4 Checking the Oil Level of the Engine / Replenishment

1. Park the vehicle on even ground and secure against rolling. Set the park brake.
2. Stop the engine.
3. Draw out the oil-level gauge (Fig. C – 34/1) after one minute.
4. Wipe off the oil level gauge with a clean lint-free cloth and put it in again.
5. Draw out the oil level gauge, the oil level should be within the marks. If the oil level is only slightly above the "min." mark, replenish oil through the filler neck (Fig. C – 34/2).

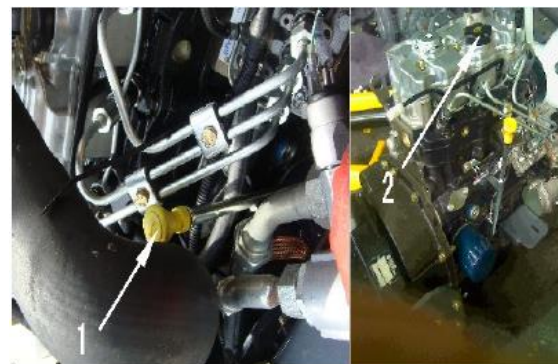


Fig. C- 34

2. Maintenance of the Fuel System

2.1 Fuel System

From the tank the fuel flows through a sieve with water separator (Fig. C-35:1) and a filter (Fig. C-35:2) and is pumped by an electric pump (Fig. C 36:3) through a second filter (Fig. C 36:4) to the injection pump. All filters and sieves must be cleaned at regular intervals.

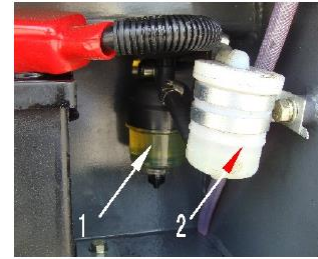


Fig. C- 35

2.2 Water Separator

The water separator is located beside the front left engine bearing.

When the red plastic ring floats in the viewing glass of the water separator, the water that has collected in the viewing glass must be drained off.

1. Close the stop valve at the water separator (lever in horizontal position).
2. Loosen the ferrule nut.
3. Take off and clean the viewing glass.
4. Replace the filter cartridge.
5. Install the viewing glass with ferrule nut.
6. Open the stop valve (lever in vertical position).

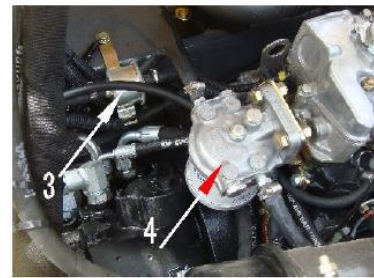


Fig. C- 36

2.3 Replacing the Fuel Preliminary Filter

The fuel preliminary filter can only be replaced together with the housing.

2.4 Replacing the Fuel Main Filter

1. Open the seat base cover.
2. Loosen and unscrew the filter cartridge (Fig. C 37:1) with standard tools. Collect any leaking fuel.
3. Clean the sealing surface of the filter support (Fig. C 37:2) from any dirt that might have collected. Lightly oil the rubber seal (Fig. C 37:3) of the new filter cartridge or moisten with Diesel fuel.
4. Screw on the filter cartridge manually until the seal is correctly seated.
5. Tighten the filter with a further 1/2 turn. Check for tightness.

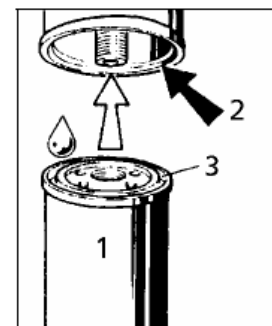


Fig. C- 37

2.5 Purging the Fuel System

- Replenish the fuel tank completely.
- Move the ignition key to position 1 (operation).

- Wait for a minute. The system is purged automatically.
- Collect the bled off fuel and dispose of it responsibly.

3. Maintenance of the Air Intake

To have access to the air intake, open the engine cover and tilt the seat base cover.

The wheel loader is equipped with a dry-type filter consisting of a main filter and a safety filter.

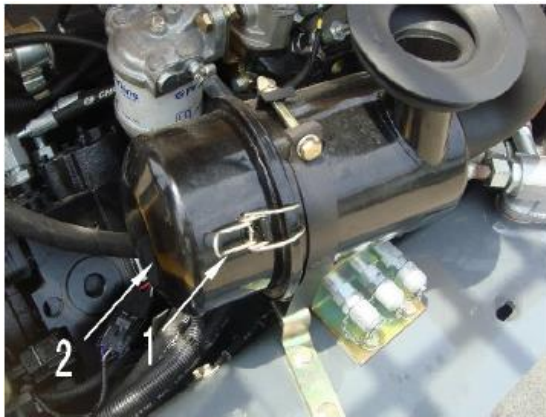


Fig. C-38

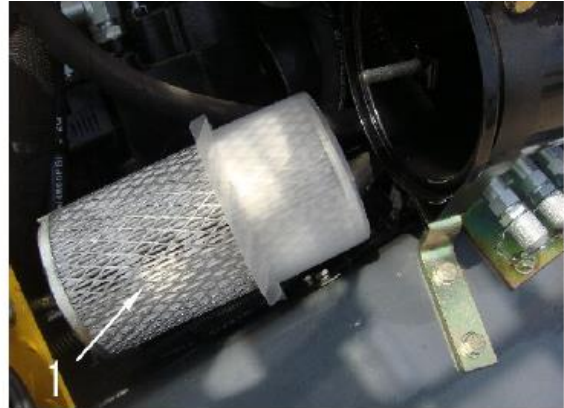


Fig. C- 39

3.1 Removing the Main Filter, Checking, and Cleaning

- Loosen spring-clips (Fig. C 38:1), and remove the cap (Fig. C 38:2).
- Pull out the main filter element (Fig. C 39:1).
- Clean or replace the filter cartridge.
- The new or the cleaned filter element is installed in reverse order. Replace the filter, when the filter paper or the seal is damaged.
- Check the intake pipe between the filter and the engine for security of attachment and correct sit. The exterior of the intake pipe may not be damaged. The exterior of the hose coupling between the filter and the intake pipe may not be damaged.

4. Cooling System Maintenance

The oil cooler is mounted behind the diesel engine. It is accessible when you tilt the tailgate. To do so, unscrew the two ring nuts (Fig. C 40).

If the hydraulic system gets too hot during longer road journeys or high ambient temperatures, check that the cooler is clean and the V-belt for the fan is correctly tensioned.

The level of the coolant must be checked at regular intervals. When you look into the radiator opening from above, the radiator ribs must be covered with coolant. When coolant must be filled up, make sure that enough antifreeze has been added. The antifreeze prevents the coolant from freezing at low temperatures and protects the engine block and the radiator from internal corrosion.



Fig. C- 40

4.1 Checking the Antifreeze Mixture

The antifreeze prevents freezing of the coolant at temperatures below 0° and protects the engine unit and the radiator from internal corrosion. Under normal conditions antifreeze content between 20 and –30° C is sufficient. The antifreeze content can be determined with a standard measurement tool (see Fig. C 41).

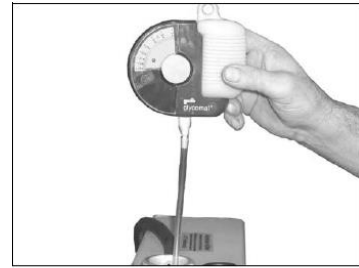


Fig. C- 41

4.2 Filling the Radiator

⚠ CAUTION

- Danger of hot coolant. Never open the radiator system when the engine is hot or the system is under pressure.

The coolant should consist of equal quantities of water and antifreeze to guarantee an optimum relationship between cooling capacity and protection from corrosion.

When the coolant is filled (if the total quantity has to be filled, for example when the coolant is changed), do not fill up too quickly (maximum 5 l/min!), to avoid air bubbles in the system which may result in an overheating of the engine.



Fig. C- 42

4.3 Cleaning the Cooling System



When the control light (5) at the instrument panel lights up, switch off the engine immediately. To determine whether the engine or hydraulic oil (or both) have overheated, disconnect the cable at one of the temperature indicators.

The higher the dust contents in the air the more often the cooling systems need to be checked.

When you hold a portable light behind one of the coolers you must be able to see light through all of the openings.

Clean the cooler with compressed air. If the cooler is highly contaminated, use water under high pressure to remove the dirt collected. Make sure not to bend the cooler ribs. Ribs that have been bent must be straightened.

- Clean the engine cooler.
- Clean the hydraulic oil cooler.
- Clean the generator with compressed air.

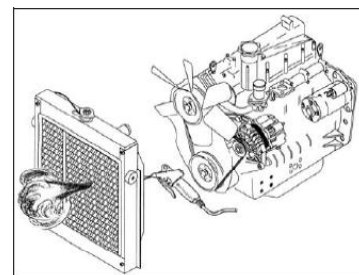


Fig. C- 43

5. Hydraulic System Maintenance

⚠ WARNING

- Inspect hydraulic system regularly for leaks.
- Hydraulic fluid escaping through even a pin-size hole opening can puncture skin and cause blood poisoning.
- Wear proper hand and eye protection when searching for leaks. Never check for leaks with your hand while system is pressurized. Use wood or cardboard instead of hands.
- Relieve pressure on hydraulic system before servicing or disconnecting hoses.
- Seek medical attention immediately if injured by escaping fluid.

5.1 Description of the Hydraulic System

A hydraulic tandem gear pump is flange-mounted on to the diesel engine. The rear pump is controlled by the foot valve and supplies pressure to the drive. The system is protected from overpressure by the pressure control valve. When the foot valve is not operated, the oil returns without pressure to the oil tank.

The front pump supplies the steering and the lifting hydraulic. The oil flow to the hydraulic cylinders of the load arm or to the front hydraulic connection is controlled via the four-way control valve. The oil can also be supplied to the drive circuit by operating an additional lever (hydraulic overdrive). The oil return flow to the tank passes a return filter. The capacity of the hydraulic oil tank is indicated in the capacity chart. The oil temperature may not exceed 80° C. The oil level can be read on the oil level gauge.

A hydraulic variable displacement pump is flange-mounted on to the diesel engine. The displacement is automatic and infinitely variable, but speed and load controlled. The speed of the vehicle is determined by the RPM of the engine and the load. Forward drive is affected by depressing the accelerator pedal. The maximum speed is limited by the maximum RPM of the engine. Depending on the load of the loader, the variable displacement pump is automatically adjusted to maintain optimum engine torque. The greater the vehicle load (e.g., during loading or driving uphill), the lower the driving speed. This ensures that maximum efficiency is obtained throughout the complete performance range. The displacement can be further influenced by depressing the Inch pedal (the pedal on the left side looking in the drive-direction) to achieve a gradual throttling of the loader, throughout the RPM range, until the vehicle has stopped.

The working hydraulic of the loader is supplied by a hydraulic gear pump. The pump is flange-mounted on to the variable displacement pump and supplies the steering and the control valve of the load arm. The oil temperature may not exceed 80° C. The oil level can be read on the oil level gauge. Change the oil and replace the filter in accordance with the inspection schedule.

5.2 Oil Cooler

The oil cooler is mounted on the front carriage for the load arm. The electric fan is switched on via a thermal switch which is incorporated in the variable displacement pump, when the oil temperature has reached 45° C the switch turns the fan on.

If the hydraulic system gets too hot during longer road journeys or high ambient temperatures, check that the cooler is clean.



Fig. C- 44

5.3 Hydraulic Oil Level

⚠ CAUTION

- Park the wheel loader on an even surface and lower the tool attachments on to the ground. Apply the parking brake. Stop the engine. Operate the control levers for the tool attachments until all working movements of the tool attachments are stopped to release pressure from the hydraulic system. Secure the vehicle as described in the section on parking the vehicle.

1. To check the hydraulic oil level, loosen the cap (Fig. C 45:2) by one turn and close again immediately (pressure escapes).

2. Screw out the oil level gauge (Fig. C 45:1).

3. The oil level should be in the upper range of the mark.

4. If the oil level is low, loosen the purge filter (Fig. C 45:2) and replenish the hydraulic oil through the opening until the oil level has reached the marks. Screw in the purge filter again.

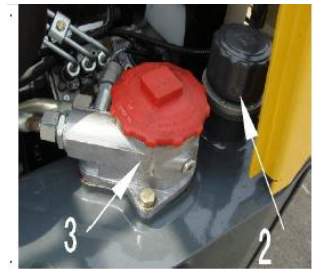


Fig. C- 45

5.4 Purge Filter

A purge filter guarantees purging of the hydraulic tank when the hydraulic oil levels vary. The purge filter contains one filter cartridge to prevent the entrance of dust and dirt and the flowing out of oil. It cannot be cleaned. Replace the complete purge filter after 1000 operating hours.

5.5 Return Filter

The hydraulic system is equipped with one return filter (Fig. C 45:3). An incorporated by-pass valve protects the return filter from excess pressure. When the by-pass valve is open, the filter is not efficient. Therefore, you must replace the filter cartridge as soon as possible.

1. Unscrew the cover (Fig. C 46:1). Remove the filter cartridge (Fig. C 46:3).

2. Install the new filter cartridge.

3. Check the seal (Fig. C 46:2). Replace the seal, if damaged.

4. Screw on the cover.

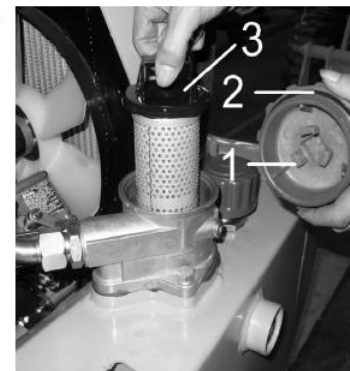


Fig. C- 46

5.6 Changing the Hydraulic Oil

1. Lower the tool attachments onto the ground.
2. Stop the engine and apply the parking brake.
3. Put a container under the hydraulic tank. The capacity required is indicated in the capacity chart.
4. Loosen the purge filter.
5. Unscrew the drain plug at the bottom of the hydraulic tank.
6. Unscrew the cover (Fig. C 46:1). Clean the bottom of the tank and the inner surfaces with hydraulic oil or scavenge oil. Screw on drain plug.
7. Replenish the hydraulic oil through the sieve below the purge filter until the upper mark of the oil level gauge. Screw on the purge filter and purge the complete system.

5.7 Purging Working and Steering Hydraulic

The hydraulic system must be purged after each hydraulic oil change, longer periods of non-use, or malfunctions of the hydraulic system.

Working Hydraulic

1. Check the oil level of the hydraulic tank and replenish if required.
2. Start the engine and run at idle speed for several minutes. Retract and extend the piston rods of all hydraulic cylinders several times.

Steering Hydraulic

1. Turn the steering wheel to the full extent in both directions while the engine is running.
2. Repeat the procedure until the steering can be operated perfectly without any noise.
3. After purging, check the hydraulic oil level again and replenish oil, if necessary.

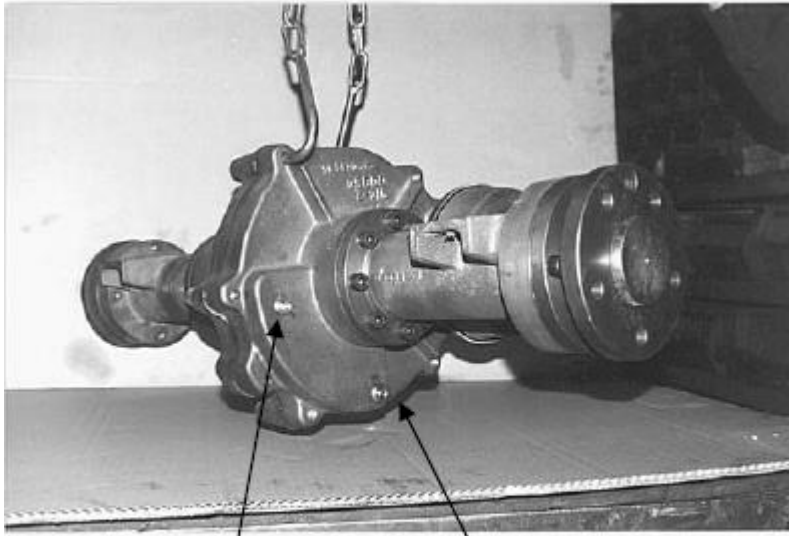
6. Steering Mechanism

The vehicle is equipped with a center-pivot steering combined with a self-aligning bearing that ensures that all four wheels make contact with the ground at all times. The center joint must be lubricated daily with multipurpose grease.

7. Axle Maintenance

Maintain the axles according to the service schedule.

7.1 Checking the Level of the Gear Oil and Changing the Oil



replenish

drain

Fig. C- 47

1. Screw out the hexagon socket (at the side of the casing). The oil level should reach the bottom edge of the threaded boring.
2. Screw out the hexagon socket at the right bottom of the differential casing cover.
3. Drain off and collect the oil.
4. Mount the hexagon socket with sealing agent.
5. Replenish oil until the oil level has reached the upper edge of the boring.
6. Mount the filling neck.

8. Track Widening

A track widening or equipping with twin tires must be approved by the manufacturer.

9. ROPS

The vehicle is equipped with a roll-over protective structure (ROPS). Working with a ROPS that is not fitted or faulty may cause fatal accidents or serious injuries. A changed or improperly repaired ROPS is dangerous. When the ROPS has been damaged by an accident, the vehicle may only be used after repair and check of the ROPS by a qualified person.

1. Check the ROPS for damages.
2. Make sure that all screws are tight.
3. Check the torque of the screws. If necessary, torque screws.

IF THE ROPS IS TO BE REMOVED, SPECIAL INSTRUCTIONS HAVE TO BE OBSERVED.

10. Cleaning the Vehicle

As long as the vehicle is new (first three months) it should only be cleaned with a sponge. As the coating has not hardened completely, cleaning with a water jet may cause damage to the finish.

When you clean the vehicle, pay particular attention to the underside. No mud may collect at the engine and the gear-box. Make sure that the radiator grid is not clogged. The vehicle is splash-proof. Do not clean the dashboard, the generator, the compact connector or the radiator with a sharp water jet (high-pressure cleaner). Cover the multifunction-lever before cleaning.

11. Safety Belt

The safety belt must be replaced when it is damaged, worn or after an accident. Beyond that the safety belt should be renewed every three years.

Check the safety belt for fraying and elongation. Make sure that the seams are not damaged and check the function of the lock.

Make sure that the screws are fitted correctly and are tight.

12. Tires and Wheels

12.1 Inflating the Tires

The following instructions refer to the inflation of the tires after a drop in pressure. After a complete drop in tire pressure, this task should be undertaken by a trained tire mechanic with appropriate equipment.

1. Preparing the Wheel

Check that the tire is correctly seated.

2. Preparing the Equipment

Use only a pressure supply with a pressure regulator. Adjust the regulator to max. 1.38 bar above the recommended tire pressure. Use an air hose with a self-locking pneumatic chuck and remote stop valve.

3. Inflation

Make sure that the air hose is fitted correctly to the tire valve. Keep people away. When inflating, stand to the rear of the tire and inflate until the recommended pressure has been reached (see air pressure table).

12.2 Checking the Seat of the Wheels

When the vehicle is new or has had one wheel replaced, check the torque of wheel nuts every two hours until the value does not change. Make sure every day before vehicle use that the wheel nuts are tight.

The correct torques are indicated in the chart below:

NOTICE: When replacing a wheel bolt, all bolts on the wheel should be replaced.

	Front Wheels	Rear Wheels
Wheel nuts M 18 x 1.5	28-30 kgf.m	28-30 kgf.m

13. Brake System Maintenance

Damaged brakes can cause fatal accidents. Have your brake system checked regularly by your dealer. During service, check the function of the brake system and adjust the brakes if necessary. Only continue to work with the vehicle after the fault has been corrected.

13.1 Brakes

The vehicle is equipped with a foot brake and a parking brake. The brake system consists of a drum brake located on the differential at the input to the rear axle. It is operated via Bowden cables of the parking brake lever or the foot brake pedal. Although the brake drum is fitted to the rearward axle, it has a mechanical effect on all four wheels via the drive.

13.2 Brakes

The hydrostatic drive is used as service brake. The vehicle service brake is operated via the inch brake pedal which acts on all four wheels by removing pressure from the hydraulic drive. The loader is also equipped with a foot brake and a parking brake. The brake system consists of a drum brake on the differential at the input to the rear axle. It is operated via Bowden cables of the parking brake lever or the foot brake pedal. Although the brake drum is only fitted to one axle, it has a mechanical effect on all four wheels via the drive.

13.3 Adjusting the Brakes

When adjusting the brakes, check that the brake drum can rotate freely. The brake pedal must not be depressed until it stops. When the brake is released you must be able to press the brake lever at the brake drum upwards by about 5 mm. The brakes are adjusted with the nuts (Fig. C 48:1).

The parking brake cable can also be regulated at the setting screw of the parking brake lever. Release the brake to stretch the cable and turn the setting screw carefully to the left. Be careful not to exceed a torque of 7 Nm.

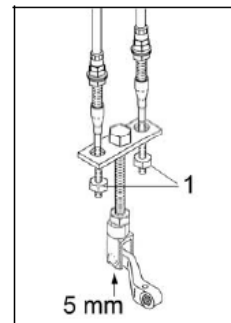


Fig. C- 48

14. Electrical System

The electrical system has a nominal voltage of 12 volts and is supplied by an alternator.

The battery capacity is 60 Ah. The battery is located in the tail of the vehicle and becomes accessible when the tailgate is tilted. To do so, unscrew the two ring nuts (Fig. C 49).

The electrical consumers and their supply lines are protected by fuses which are mounted in the fuse boxes on the right-hand side of the steering column.



Fig. C- 49

14.1 Fuse Alignment



Item No.	Protected Function	Capacity
1	Horn; Controller; Hydraulic oil cooling fan	30A
2	Dashboard	15A
3	Driving light	20A
4	Start	10A
5	Generator	20A
6	Hydraulic oil; Fuel gauge	20A
7	Engine controller	20A
8	Engine controller; Engine detector lamp	10A
9	Work light; Joystick	25A

14.2 Maintenance of the Electrical System

The vehicle is splash-proof. Do not clean the dashboard, the generator, or the compact connector with a sharp water jet (high-pressure cleaner).

The electrical system must be serviced as necessary. Make sure to avoid short circuits when you are working on the electrical system. First disconnect the battery starting with the negative pole or operate the battery disconnecting switch. To avoid an internal short circuit do not place any tools on the battery. Keep the pole ends and the terminals clean and lubricate with slushing grease. Do not touch bulbs and headlight reflectors with your fingers. Have faults at the starter and the generator repaired by your dealer. Small devices, such as relays, regulators, the ignition switch, direction indicators etc. should be replaced when they are defective. Make sure that the connecting lines and the fuses are correctly connected. The reason for blown fuses is normally a short circuit. Check the cables and make sure that the contact points of the fuses are insulated.

⚠ CAUTION

To avoid damage to the electrical system, observe the following instructions:

- When welding, connect the ground terminal of the welding device directly with the part to be welded. The generator must be disconnected. Remove the battery before starting welding.
- Electrical lines must not be disconnected when the engine is running.
- Do not bridge fuses and the preheating controller. Replace defective parts by original parts of the same size.

14.3 Battery

⚠ WARNING

- Disconnect the battery before making any repairs.
- Charge batteries in an open well-ventilated area, away from spark and flames. Unplug the charger before connecting or disconnecting it from the battery. Wear protective clothing and use insulated tools.
- Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes, and clothing. Protect your face, eyes, and clothing when working with a battery.
- Battery gases can explode. Keep cigarettes, sparks and flames away from the battery.

Charge the battery at some distance from the machine in a well-ventilated area. Switch off the charge circuit before disconnecting or connecting the battery. After installation, wait five minutes before connecting the battery.

The exterior of the casing is marked with "Min/Max" marks. The electrolyte level should be within these marks and be visible through the battery casing. If this is not true, remove the battery plug and check the electrolyte level from above (10 mm above the battery plates). Replenish distilled water, if necessary.

15. Capacities, Fuel, and Oil Types

16.1 Capacities

Item	Capacity (litre)	Liquid / Lubrication Nipple	Specification
Fuel tank	23	Diesel	Standard DIN 51601, see engine operating manual
Engine oil with filter	4	Engine oil SAE 15 W 40 Ambient temp.. -20° - more than 30°	API CD, see engine operating manual
Capacity of complete axle	1.5	Gear oil SAE 85 W 90 GL 5	Hypoid
Complete hydraulic system	32	Hydraulic oil HLP	ISO VG 46 (see selection chart)
Hydraulic tank	23	Hydraulic oil HLP	ISO VG 46 (see selection chart)
Grease points		Multipurpose grease	water resistant
Contents of cooling system	4,3		

FOR ALLFORWAY HOFTRAC AND WEIKOTRAC VEHICLES, WITH ZF TYPE MULTI-DISK LIMITED-SLIP DIFFERENTIALS, WE RECOMMEND THE FOLLOWING OIL TYPES:

GEAR OIL AFI - GL 5

FUCHS RENOGIER LS

80 W 90 / 85 W 90

16.2 Hydraulic Fluids (Mineral Oil Based)

ISO Viscosity Class	VG 32	VG 32	VG 46 *2	VG 46	VG 68	VG 68
	HV	HLP	HV	HLP	HV	HLP
	VG 32 = winter conditions		VG 46 = summer conditions		VG 68 = tropical conditions	

Manufacturer						
			1st filling by FORWAY			
AGIP	—	OSO 32	Amica 645	OSO 46	—	OSO 68
Aral „Vitam“	HF 32	GF 32 DE 32	HF 46	GF 46 DE 46	—	GF 68
AVIVA „Avilub“	HVI 32	RSL 32	HVI 46	RSL 46	HVI 68	RSL 68
BP „Energol“	SHF 32	HLP 32 HLP-D 32	SHF 46	HLP 46 HLP-D 46	—	HLP 68 HLP-D 68
Castrol „Hyspin“	AWH 32	AWS 32	AWH 46	AWS 46	AWH 68	AWS 68
Chevron „EP Oil“	32 HV	OIL 32	—	Oil 46	68 HV	Oil 68
DEFROL	HVP 32	HLP 32	HVP 46	HLP 46	HVP 68	HLP 68
ESSO	UNIVS J32	NUTO H32	UNIVS N 56	Nuto H 46	UNIVS N68	NUTO H 68
FINA „Hydran“	HV 32	32	HV 46	46	HV 68	68
FUCHS „Renolin“	MR 520	MR 10 B 10	MR 1030	MR 15 B 15	—	MR 20 B 20
Optimol „Hydo“	MV 5035	5035	MV 5045	5045	MV 5065	5065
MOBIL	DTE 13	DTE 24 HLPD 32	DTE 15	DTE 25 HLPD 46	DTE 16	DTE 26 HLPD 68
ÖMV	HLP - M 32	HLP 32	HLP-M46	HLP 46	—	HLP 68
SHELL	Tell.T 32	Tellus 32	Tell.T 46	Tellus 46	Tell.T 68	Tellus 68
Texaco „Rando“	HD AZ-32	HD A-32	—	HD B-46	HD CZ-68	HD C-68
VALVOLINE	—	ETC 25	—	ETC 30	—	ETC 35
VEEDOL	—	—	—	Andarin 46	—	Andarin 55
HD-Engine Oil		SAE 10W	SAE 10W 30		SAE 10W 30	SAE 20W 20

*1) For API-CC/SE or CD or MIL-L-46152 or MIL-L-2104C

*2) All ATF-specifications with FZG test load stage > 10; as well as HD engine oil SAE 10 W 30

16.3 Environmentally Friendly Hydraulic Fluids

Type	Synthetic Hydraulic Fluid	On Basis of Estern, HEE	
Iso-Viscosity Class	VG 32	VG 46	VG 68
Manufacturer			
ARAL		EHF 46 Vitam	
ASEOL		Terra 46	Terra 68
AGIP		Agip Arnica S 46	Agip Arnica S 68
AVIA		Avia Syntofluid 46	Avia Syntofluid 68
BECHEM	Hydrostar TMP 32	Hydrostar TMP 46	Hydrostar TMP 68
BLASER		Blasol LP 8905	
BP		Biohyd 46 SE	Biohyd 68 SE
BUCHER & CIE MOTOREX	Oekosynt 2246		
DEA		Econa E 46	
ELF		Hydrelf Bio46	
ESSO		EGL 45947	
FINA	Biohydran TMP 32	Biohydran TMP 46	Biohydran TMP 68
FUCHS	Plantohyd S 32	Plantohyd S 46	Plantohyd S 68
GLOBOIL	BHF 32	BHF 46	BHF 68
KENDALL Demmler & Co., Switzerland		Synth. Natura 46 HV	
Kuwait Petrol Q 8	Holbein 32	Holbein 46	
Molyduval	Chemlube 5126		

ÖMV	Biohyd MT 32 MS 32	Biohyd MT 46 MS 46	Biohyd MS 68
OEST		Bio Synth. HYD 46	
PANOLIN, Switzerland	HLP Synth 32	HLP Synth 46	HLP Synth 68
QUAKER Chemical		Quintolubric Greensalve 46	
RAISION TEHTAAT, Finland TEBIOL, Germany New Process, CH		Ester hyd HE 46	
SHELL		Naturelle HF-E 46	Naturelle HF-E 68
Strub & Co	Hydrosint HLP ISO 32	Hydrosint HLP ISO 46	Hydrosint HLP ISO 68
TOTAL		Equivis Bio 46	Equivis Bio 68
Wenzel & FORWAY		Ukabiol HE 46	
Westfalen AG		Bio-Forbex E 46	
YORK Ginouves		LT 777 Bio	

The above chart does not claim to be complete and contains no recommendations. Subject to alterations!

⚠ CAUTION

- When changing to environmentally friendly hydraulic fluids, the hydraulic system must be flushed several times. Do not mix with mineral oil.

16. Tire Pressure

Designation	PR	ET	Max. Admissible Air Pressure
10.0/75 - 15.3 AS-Farmer	8	+10	3,00
10.0/75 - 15.3 AS-Farmer	8	-5	3,00
10.0/75 - 15.3 E3-Grader	8	+40	3,00
10x16.5	6	0	3,50
10x16.5	6	+30	3,50
10,5/80 - 18 Goodyear AS	10	0	3,75
11.5/80x15.3 AS-Farmer	8	+40	3,75
12x16.5	8	+40	aprox. 3,50
12,5x18	10	0	aprox. 4,00
15.0/55 - 17 AS-Farmer	10	0	3,75
15.5/55 R 18 SFG 7	14	0	4,00
15.5/70x18	18	0	aprox. 3,75
27x10.5 - 15 Dico	4	0	3,50
28x8.50 - 15 Dico	4	-10	2,50
27x8.50 - 15 Dico	4	+30	2,50
27x8.50 - 15 Dico	4	-40	2,50
29x12.50 - 15T411	4	-21	2,50
29x12.50 - 14T411	4	-5	2,50
4.50 - 14 ASFarmer	4	+26	3,50
7.00 - 12 ASFarmer	6	+45	2,70
7.00 - 12 AS-Farmer	4	+45	2,50
7.00 - 12 AS-Farmer	6	-40	2,70
7.00 - 12 AS-Farmer	4	-40	2,50
7.00 - 12 AS-Farmer	4	-21	2,50

Troubleshooting

Use the table below to troubleshoot problems before contacting service personnel or your local dealer. If the problem continues after troubleshooting, call your local dealer for assistance.

Failure	Possible Cause	Corrective Action
Engine does not start off.	Park brake is not applied.	Pull up on park brake and start.
	Fuel tank empty.	Refill fuel tank and purge the fuel system, if necessary.
	Fuel filter clogged, paraffin sedimentation in winter.	Replace the fuel filter, use fuel for cold temperatures.
	Fuel solenoid not released.	Check the fuses.
	Leaky fuel pipe.	Tighten all screws and clamps.
	Starting RPM is too low.	Check and charge battery, check fit of battery terminals.
Vehicle does not drive while engine is running.	Parking brake applied.	Release parking brake.
	Parking brake switch damaged.	Replace parking brake switch.
	Inch cartridge not in 0 position.	Check the Bowden cable and return spring, replace if necessary.
	Drive pump solenoid supply failure.	Check fuses. Have the multifunction-lever and the electronic system checked by the workshop.
Engine gets too hot.	Radiator/oil cooler is dirty.	Clean.
	Coolant level too low.	Replenish coolant.
	Thermostat jammed.	Have thermostat replaced by the workshop.
	V-belt loose.	Tension V-belt.
	Oil level too high or too low.	Correct oil level.
Hydraulic system gets too hot.	Hydraulic oil cooler dirty.	Clean.
	Hydraulic oil level too low.	Replenish hydraulic oil.
	Load too high.	Reduce load of the vehicle, stop working.
Degraded vehicle performance.	Air filter dirty. Fuel filter dirty.	Replace.
	Incorrect fuel type.	Change fuel type.
	Inch pedal jammed.	Check and repair.
	Engine RPM too low.	Adjust RPM.

PUMP/ENGINE TROUBLESHOOTING

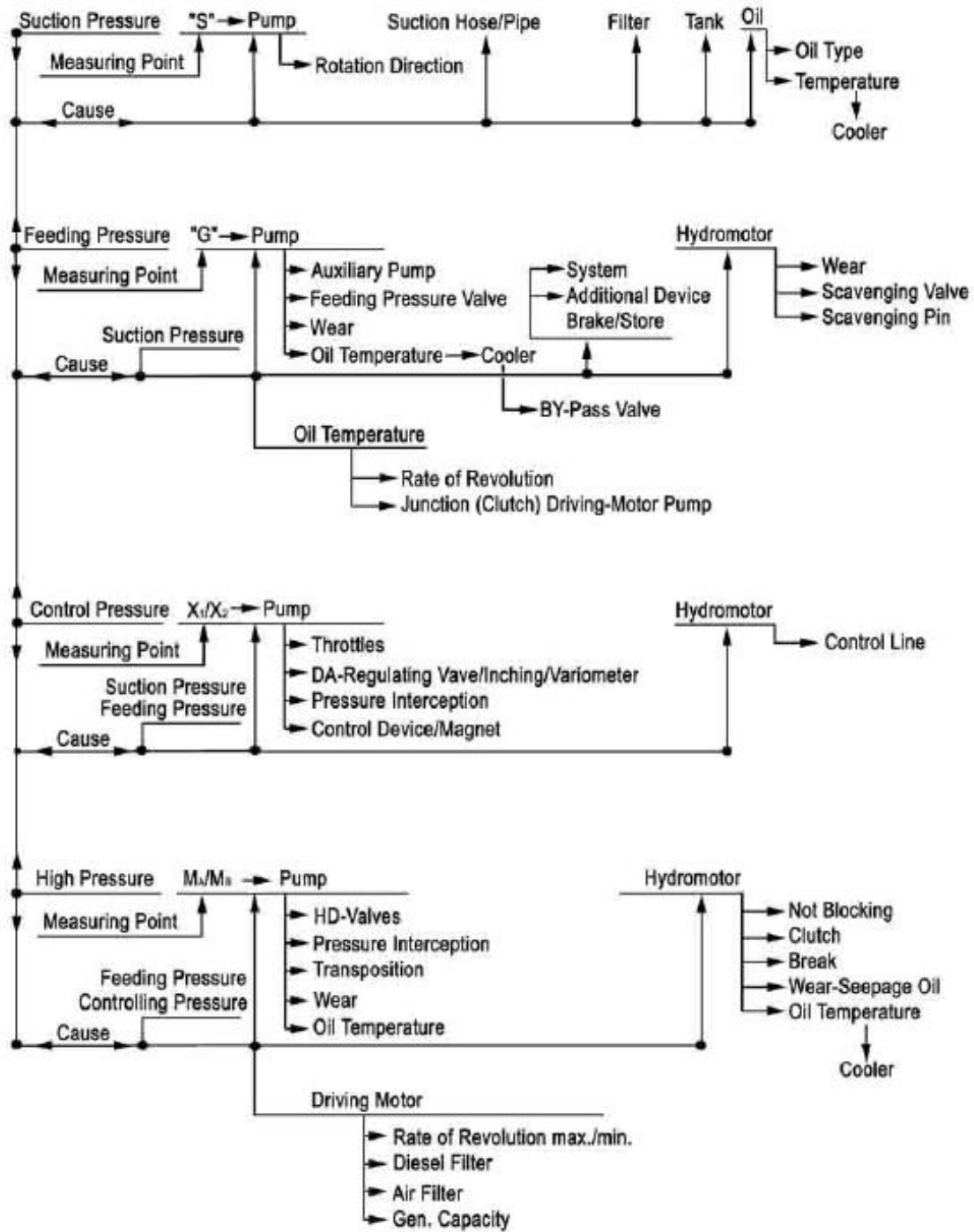


Fig. C- 52

VEHICLE TROUBLESHOOTING

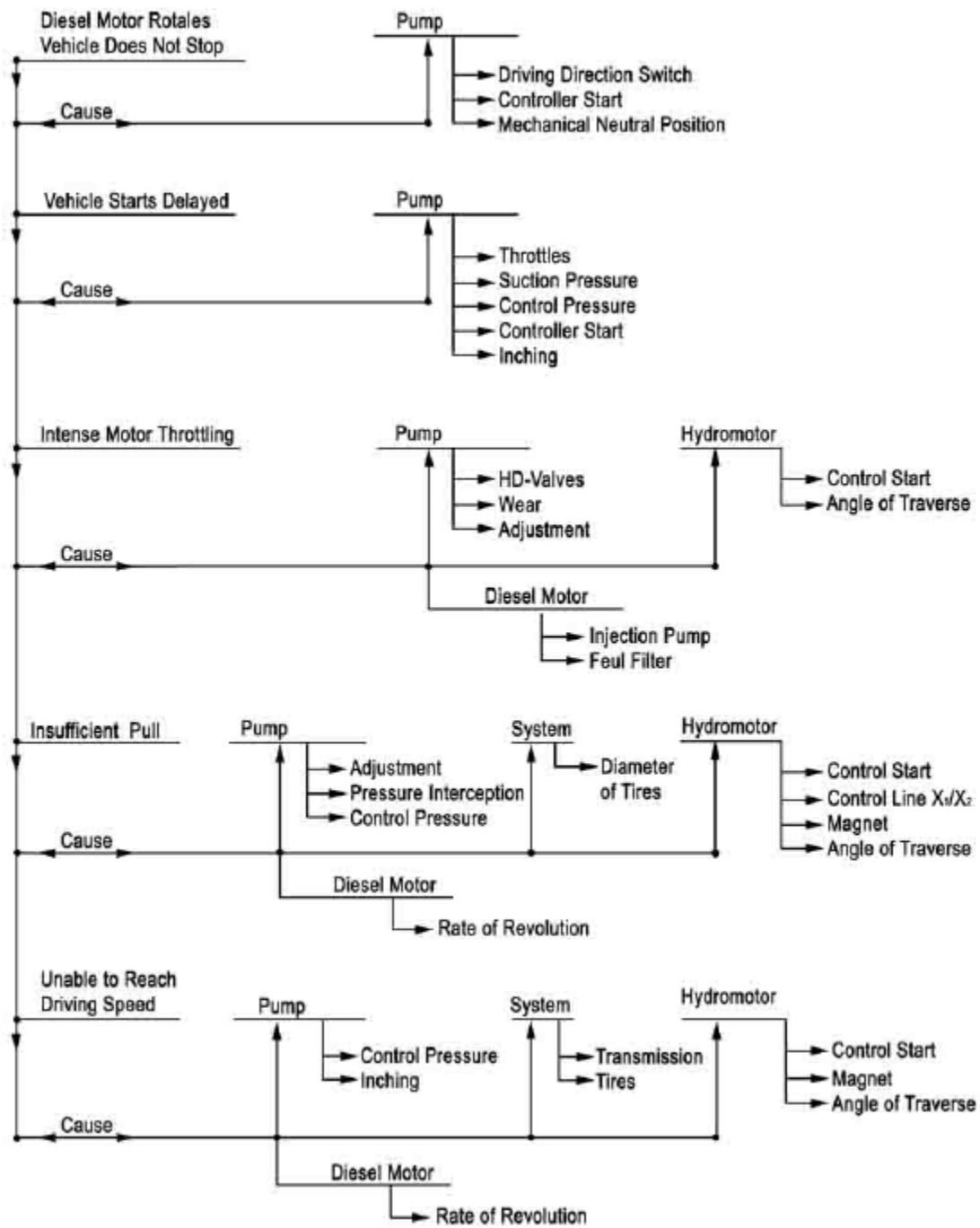


Fig. C- 53

Parts Diagram

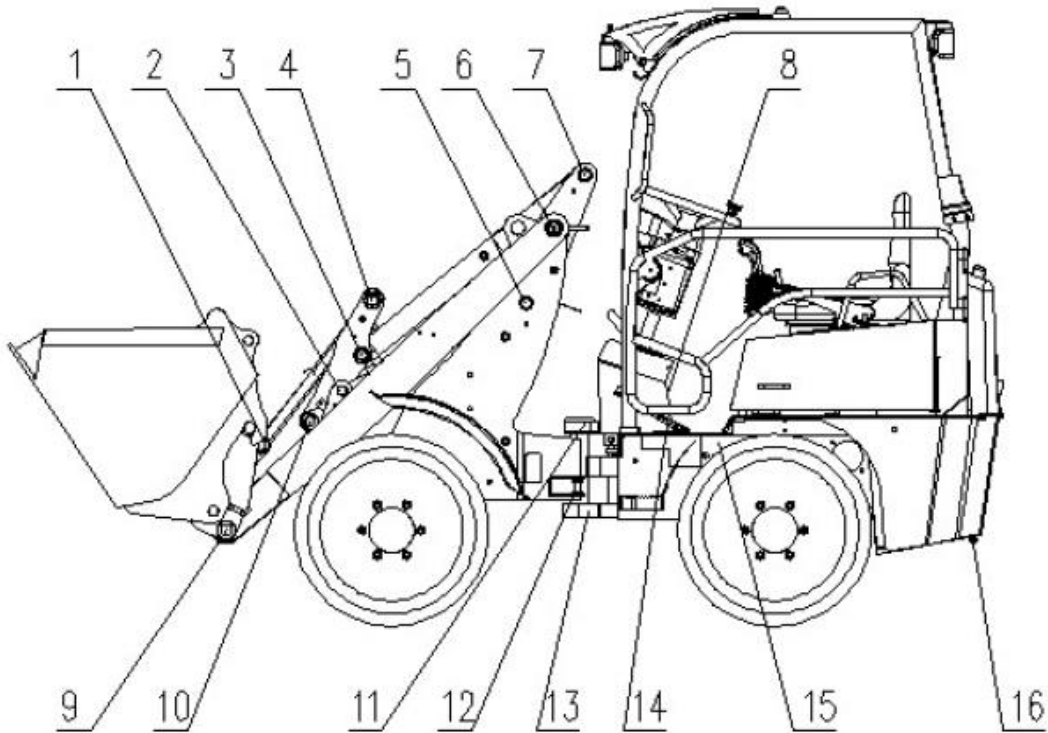


Fig. C- 54

Parts List

Reference	Part Description	Quantity
1	Front tow-bar	1
2	Front lifting cylinder	2
3	Front tipping cylinder	1
4	Rear tow-bar	1
5	Rear lifting cylinder	2
6	Bearing of load arm	2
7	Rear tipping cylinder	1
8	Accelerator pedal bearing (also with brake pedal bearing)	1
9	Seat for tool attachments	2
10	Reversing lever bearing	1
11	Top center joint bearing	2
12	Front steering cylinder	1
13	Bottom center joint bearing	1
14-1	Throttle pedal bearing	1
14-2	Brake - inch pedal bearing	2
15	Rear steering cylinder	1
16	Hinge of tailgate	2

Replacement Parts

- For replacement parts and technical questions, please call Customer Service at **1-800-521-0438**.
- Not all product components are available for replacement. The illustrations provided are a convenient reference to the location and position of parts in the assembly sequence.
- When ordering parts, the following information will be required: item description, item model number, item serial number/item lot date code, and the replacement part reference number.
- The distributor reserves the rights to make design changes and improvements to product lines and manuals without notice.

NorTrac Limited Warranty

The 25 HP Diesel-Powered Compact Articulated Wheel Loader is sold by NorTrac; a division of Northern Tool & Equipment Company, Inc. (NTE). NorTrac will repair or replace, at its option, any part(s) thereof of the NorTrac Compact Articulated Wheel Loader that are shown to be defective in material and/or workmanship, under normal use during the applicable 24-month warranty period. NorTrac wants your equipment to operate well and will assist you on repairs. **All warranty repairs submitted after the first 60 days of ownership are subject to a \$100.00 labor deductible, per covered repair.** After the labor deductible has been met, all warranty repairs and replacements will be made without charge for parts or labor at a pre-authorized service center. All parts replaced as a result of this limited warranty become the property of NorTrac and must be returned to NTE upon request. All parts replaced will become a portion of the whole and will be warranted for the duration of the original equipment warranty.

Length of Warranty

The limited warranty begins on the original date of purchase and extends to 24 months for consumer household use. For the commercial end user, the limited warranty continues for 6 months (180) days from date of original purchase. Commercial use is defined as: intended for the purpose of monetary reward or gain through the loan, rental or hire of equipment - OR- any manner that is primarily intended for or directed toward commercial advantage "For Profit" or private monetary compensation, or use by any governmental agency.

Qualifications for Limited Warranty

This applies to the original purchaser of the equipment. The limited warranty is non-transferable. Owner is to provide proof of purchase. Equipment was purchased in the United States from authorized representatives of NorTrac and/or NTE, Company, Inc.

To Obtain Service

Contact NorTrac Warranty Administrator by calling 1-800-521-0438 to report a possible warranty issue and to receive repair authorization from the Warranty Administrator. Detailed failure information can also be provided in hard-copy written form along with contact information to the address listed at the bottom of this page.

After receiving authorization from NorTrac Warranty Administrator, and the address of the pre-authorized service center, take the equipment to the service center during their regular business hours. **All transportation costs after the first 60 days of ownership, are the responsibility of the equipment owner.**

Exclusions and Warranty Disclaimers

This limited warranty applies to equipment used in its original form. Any unauthorized modifications or any incorporation or use of unsuitable attachments or parts will automatically void this limited warranty. This limited warranty does not include parts affected or damaged by accident and/or collision, normal wear & tear (light bulbs, filters, belts, motor brushes, brakes, fuses and switches, tires and tubes, clutch linings, engine tune up, wheel alignment and lubrication), fuel contamination, or from failure to follow instructions contained in the User Manual for the equipment. Warranty is void if adjustments are made to the injection pump fuel delivery system, starting fluid or ether is used to start or run the engine or regular maintenance and service is not performed as prescribed by the operator's manual during the warranty term. The cost of normal maintenance of the equipment is the responsibility of the owner.

Limited Warranty

This limited warranty does not cover defects that result from accident, misuse, lack of maintenance, improper repairs, neglect or use of replacement parts and accessories which do not meet NorTrac specifications.

Disclaimer of Consequential Damage

Any implied warranty of merchantability or fitness for a particular purpose, to the extent that either may apply to any NorTrac TM tractor or crawler / bulldozer, shall be limited in duration to the periods of the express warranties shown above, and to the extent permitted by law any and all implied warranties are excluded. In no event will NorTrac or NTE Company, Inc. be liable for any loss of income, loss of time or use of the product, transportation, hiring of alternative services, commercial loss or any other incidental, consequential, or special damages and / or expenses. Some states do not allow limitations on how long an implied warranty lasts and / or do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions and limitations may not apply to you. This limited warranty gives you specific legal rights which may vary from state to state.



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