

Felcor

MAJOR 80



1/2013

Operator's manual

ZETOR



Operation manual presented here will make you acquainted with operation and maintenance of a new tractor. Despite the fact that many of you are experienced from operating other tractors, we ask you to become familiar with this manual as thoroughly as possible.

You will find in it lot of new information and you will get a perfect overview how you can use the tractor best in various works.

When observing the listed operation principles, tractor maintenance and driving safety, your new tractor will become a reliable companion for many years.

Tractor manufacturer would like to wish you thousands of hours of satisfactory operation.

ZETOR
Brno

Technical data, construction data, equipment, material and design are valid at the time of print. Changes reserved.

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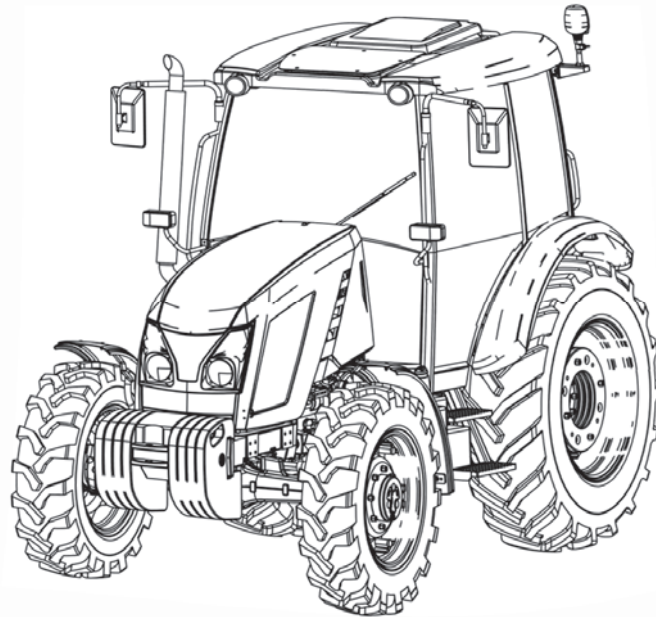
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Operation manual includes the description, operation and maintenance of a standard design and accessories with which a tractor may be equipped on request. Accessories not standardly mounted by a manufacturer (from factory) may not be subject to complaint. Service cheque book is not part of operation manual but makes a separate manual, which is handed over to you upon a new tractor purchase.

“MAJOR” TRACTORS

“MAJOR” TRACTORS

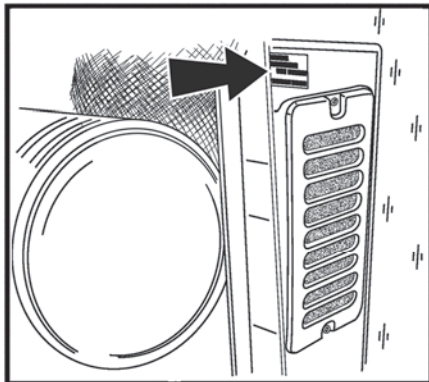
Type of tractor	Engine output (kW)	
	EC 24	2000/25/EC
Major 80	53	56,3



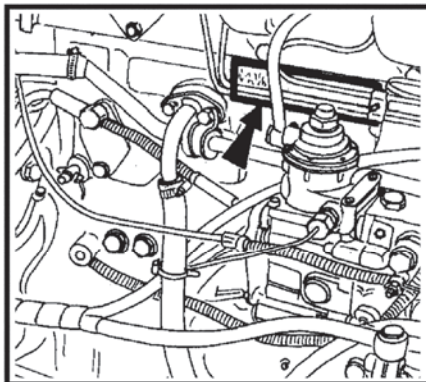
NM13N080

PRODUCTION NUMBERS PLACEMENT - TRACTOR WITH A CAB

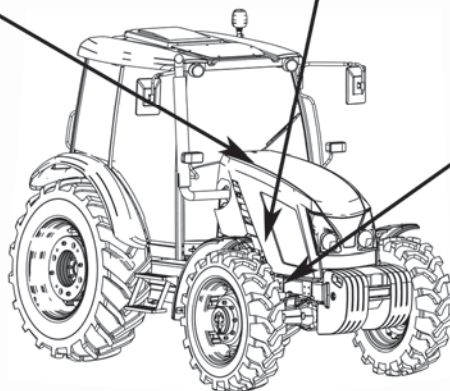
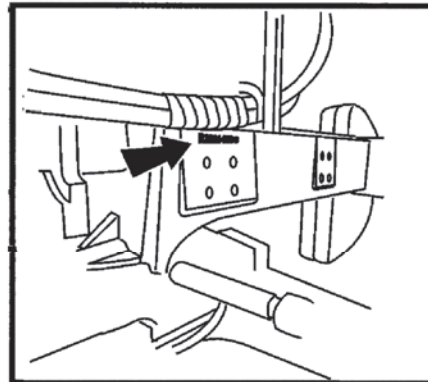
Tractor type plate



Engine serial number



Tractor serial number



PRODUCTION NUMBERS PLACEMENT

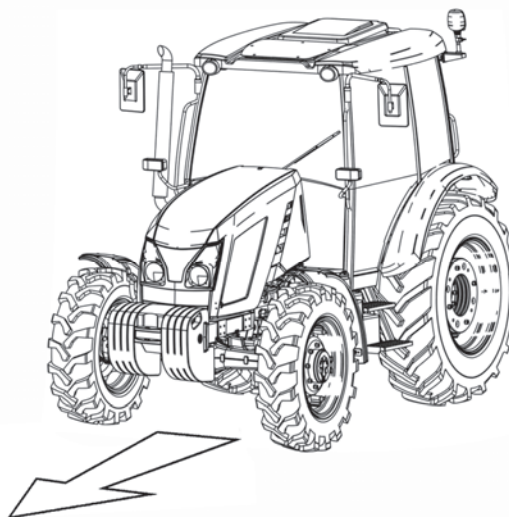
When ordering spare parts and with all both written and oral contact, use the data about your tractor – write it down to the boxes below.

Type of tractor

Production number of tractor

Production number of engine

Major 80



The labeling “to the right”, “to the left”, “in the front”, “at the back” applies in the sense of tractor’s drive.

Manufacturer reserves the right to make changes in construction and equipment serving to technical progress.

NM13N082

USER'S SAFETY INSTRUCTIONS

Pay increased attention to the part of operation and maintenance manual which are labeled with this symbol



You will find this symbol with all the important notifications relating to operation safety.

Observe these notifications and exercise extreme care in these cases!

Inform your co-workers and other users of these notifications.



Study chapters marked with this symbol thoroughly before you start operating, repairing them and adjusting the tractor.



You will find this symbol with all important notifications related to operation adjustment and repairs of the starter.

Observe these notifications and exercise extreme care in these cases!



This symbol marks parts of Operation manual related to environment protection.



This symbol marks tractor accessories mounted in production plant on customer's request.

GENERAL SAFETY REGULATIONS



1. Only a trained professional who has a valid authorization for driving a tractor and is thoroughly acquainted with operation and safety principles may work with the tractor.

2. Apart from notifications related to safety, listed in Operation manual, you are obliged to respect generally binding safety and traffic regulation of the country where the tractor is used.

SUITABLE CLOTHING

3. Do not wear loose, untight clothing and loose flying long hair.

4. Use suitable (prescribed) personal protective means (shoes, gloves etc) when performing all the works.

STARTING THE ENGINE

5. Starting the engine by going down the slope is not allowed.

6. To start the tractor to start the engine by means of another tractor or a different vehicle is allowed only by using a drawbar.

7. Start only from driver's work place with gear shifting lever in neutral position and with a depressed clutch pedal. Danger of death when starting by short circuiting starter clamps.

8. The key in the switchbox must be in "I" position.

9. When heating the engine by electrical heater, plug the plug to electrical current inlet and then connect to network. After finishing the heating, unplug the device from the electrical network first.

DRIVING OPERATION

10. Hydrostatic steering, hydraulic, cooling and fuel system hoses must be checked and if you learn of damage, replace them. The following may be signs of hose damage: disruptions on the surface of the hose, releasing pre-load of hose connection, (this can be verified by an easy removal of the hose from branch pipe) and mechanical hose damage. Hose with expiry dates must be replaced after the expiry date is due.

11. When going on the roads with trailers and tools, brake pedals must be connected with flap.

12. Brake and steering must be in a perfect state at all times.

13. Going down the hill without a shifted gear is forbidden!

14. Pay special attention to the steering of the tractor on a slope, muddy, sandy, icy or uneven terrain.

USER'S SAFETY INSTRUCTIONS

15. Observe the maximum set angle of slope availability.

12° with tractors with front drive axle 1.

16. Respect the total permitted weight of the set stated on the production plate of the tractor, or on the fender of rear wheel.

17. When going through a bend, do not use differential throttle.

18. Getting on and off the tractor in motion is forbidden.

19. When travelling with machines linked in rear linkages, the load of driven axle must not drop below 18 to 20 % of immediate set weight.

PEOPLE TRANSPORTATION, OPERATION

20. Only the number of people listed in technical certificate may be transported on the tractor.

21. Persons not charged with work with auxiliary tractor's equipment are not allowed to stay between a tractor and auxiliary machines (tools).

22. Before you drive off with a tractor, make sure that presence of an authorized personnel or an obstacle does not prevent you from driving.

23. Maximum permitted speed of the set (tractor + trailer or semi-trailer) with air brakes is 30 km/h.

RECOVERY, PUSHING

24. To recover a sunken tractor, always use a drawbar or a rope.



Never use chains! If chain pulls apart there is a danger of death!

25. When recovering it is dangerous to stay close to a drawbar.

26. A front hook is mounted on tractor's frame which serves for towing the tractor itself i.e. without a trailer or a different auxiliary device.

27. When forcing other vehicles (haulers, trailers, etc.) by a tractor never use freely inserted balk or rods between the tractor and the pushed object.

LEAVING THE TRACTOR

28. Do not park the tractor with mounted tools in a lifted position.

29. Before leaving the tractor, do not forget to brake with a manual brake (engage a gear), remove the key from a switchbox and lock the cab.

30. In a tractor equipped with reversing, shift reversing lever to the position for travelling to the front.

31. Use the left side of the tractor for getting off as a standard. Look around to make sure that there is no vehicle that might jeopardize your safety is coming.

32. Use climbing spurs for getting off and hold onto handle bars. Take increased care in the area of gear shifting lever and the lever of manual fuel supply control.

33. If you are leaving a tractor with engine running, brake it with a manual brake

ONLY WITH ENGINE AT STANDSTILL

34. All the works associated with filling in fuel, cleaning, greasing and adjusting tractor or linked machines may be done only with engine or moving parts of tractor at standstill apart from brake, hydraulic and charging function.

Prior to demounting the cab, it is always necessary to stop the engine running. In closed buildings or rooms, engine of the tractor may run only in case when sufficient ventilation is provided. Exhaust fumes are harmful to human health.

ANTI-FIRE SAFETY PRINCIPLES

35. Tank the fuel best after finishing work and with engine at standstill.

36. Do not fill the tank to the brim in summer. Wipe spilled fuel off immediately.

37. Do not tank fuel near fire and do not smoke.

USER'S SAFETY INSTRUCTIONS

38. When checking electrolyte level in an accumulator battery, do not smoke and do not use open fire.

39. In environment with increased risk of fire (hay barns, piles etc.) observe fire safety guidelines conscientiously.

40. If the tractor is equipped with a fire-extinguishing device, keep it ready at all times.



HEALTH AND ENVIRONMENT PROTECTION

41. Tractors are not equipped with special air filters for air sucked into the cab. They are therefore not designed for working with aerosols and other substances harmful to health.

42. Petroleum, motor oil, mineral oils, and other oil products which are used for operation and treatment of the tractor may cause various skin conditions when getting into direct contact with your skin, they are irritating to mucosa, eyes, digestive tract and upper respiratory tract. Some of them may cause also overall poisoning.

43. Staff getting in touch with oil products are obliged to observe safety and hygienic guidelines conscientiously, to use appropriate protective means and to work in well-aired spaces.



HEALTH PROTECTION WHEN WORKING WITH OIL PRODUCTS

44. After terminating the work or before eating it is necessary to wash thoroughly with a non-irritating washing agent and treat your hands to a suitable regenerating cream.

45. When connecting and disconnecting quick couplers of hydraulic circuits, remove the remaining oil in the socket or quick couplers plug with any textile material.



WASTE DISPOSAL

When disposing of the tractor or its parts (including operation liquids) after they are dues, everyone is obliged to observe applicable provisions of valid laws and implementation regulations to the laws of the country at stake where the tractor is operated. The last seller of the tractor is obliged with reference to the Waste Act to inform a consumer about the ways to ensure back withdrawal of some used parts of the tractor. These are especially oils and other operation liquids, accumulators and tires.

PREVENTIVE DAILY MAINTENANCE

46. To be done daily or at the latest after every 8 - 10 hours of operation.

SAFETY CAB

47. If there is damage of protective frame of the safety cab by corrosion, accident or in a different way, safety cab must be replaced.

AIR CONDITION

48. It is by no means possible to demount, turn or otherwise manipulate with air conditioning system bolting. There can be sudden leakage of coolant and thus there can be local fast cooling. When you touch it or when parts get frozen in your hands there can be severe damage to some tissues.

49. Air condition system is equipped with quick couplers which enable to separate the cab from the body of the tractor when necessary without any leakage of coolant. Entrust a service with interventions to air condition system.

USER'S SAFETY INSTRUCTIONS

ELECTRICAL INSTALLATION



50. *No additional interventions may be done to the electrical installation of the tractor like connecting other electrical devices from the reason of it possible overload!*

51. Electrical installation values are:

Nominal voltage 12 V =

Ground minus (-) pole

By using starting carriages or auxiliary sources with a different voltage or polarity, you can cause serious failures of tractor.

52. When manipulating with accumulator battery it is necessary to take greater care and avoid short circuits. In tractors equipped with battery disconnect, turn this means of manipulation with battery off.

53. Tractors may not be operated with a disconnected accumulator battery; there can be serious damage to the tractor.

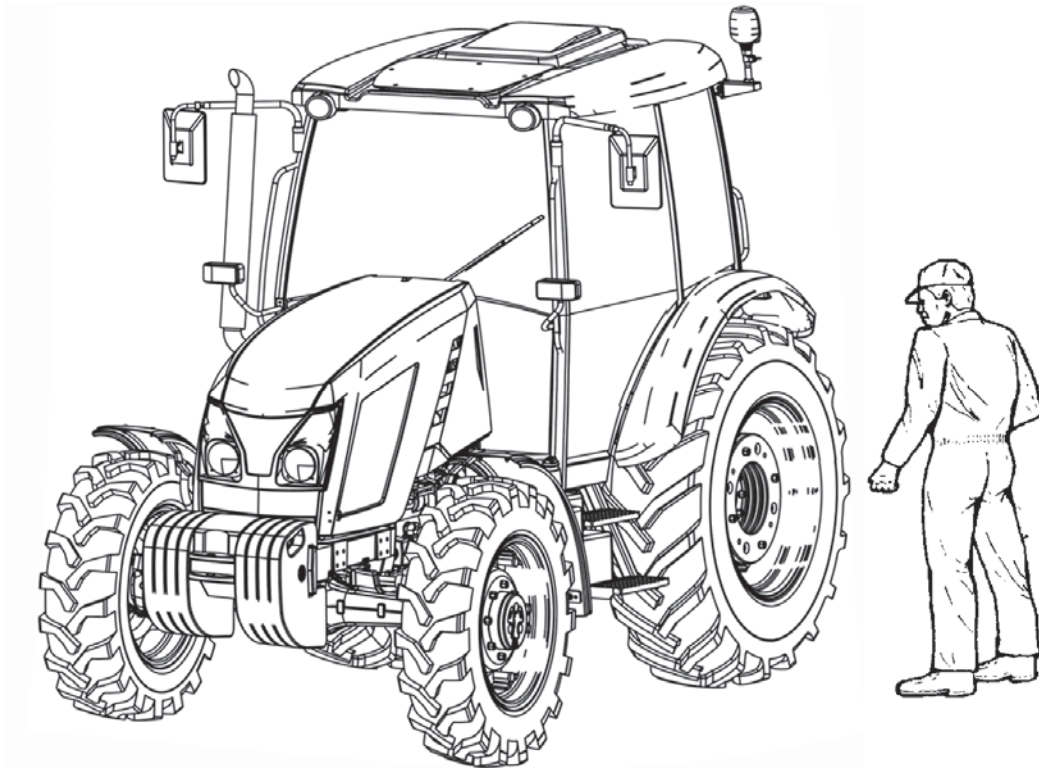
WORKING IN CHEMICALLY AGGRESSIVE ENVIRONMENT

54. If the tractor works in chemically aggressive environment (e.g. when working with chemical sprays, artificial fertilizers, environment with higher concentration of soils etc.), it is necessary to always thor-

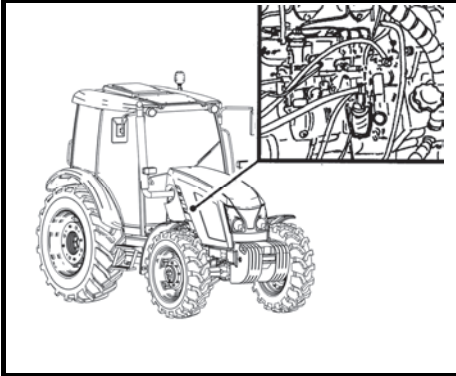
oughly clean the tractor after finishing the works or to neutralize chemically aggressive substances and clean.

PREVENTIVE DAILY MAINTENANCE

Do daily or at the latest after every 8 - 10 hours of operation (for more information see chapter Tractor maintenance).



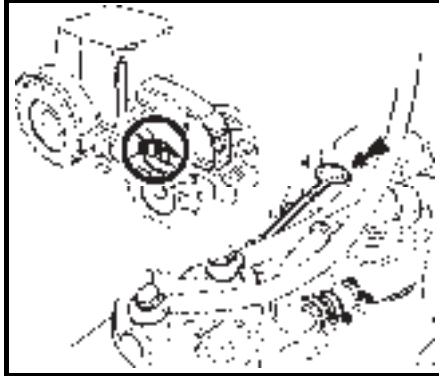
PREVENTIVE DAILY MAINTENANCE



NM13N084

FUEL SYSTEM TIGHTNESS

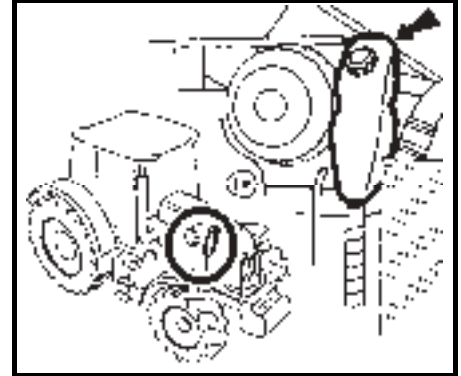
Check tightness of fuel system including fuel tank drain plug. Remove untightness forthwith.



E6g

OIL LEVEL IN ENGINE

Oil gauge is placed on the right side of the engine. After unscrewing and extracting the gauge, check the amount of oil in engine and the tightness of joints of greasing system of the engine. Keep the oil level between the levels of gauge.



G751b

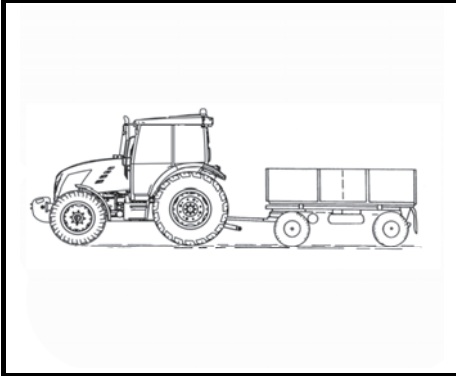
COOLING SYSTEM

Check the tightness of joints of the cooling system and the amount of coolant in equalizing tank. Equalizing tank is accessible after opening the front bonnet of the tractor. Refill the missing amount to upper level marked with MAX. Minimum admissible height of coolant level is marked with MIN mark line.



Release air pressure stop after the coolant cools off! Danger of scalding!

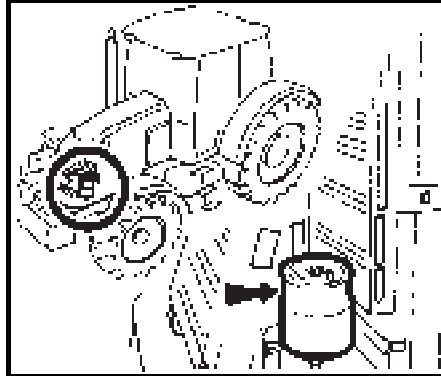
PREVENTIVE DAILY MAINTENANCE



NM13N085

TRAILER AIR BRAKES

Check the tightness of the air system of brakes and the efficiency of tractor brakes with trailer



G751b

HYDROSTATIC STEERING

Check the level of oil in the tank of hydrostatic steering with a control gauge. Hydrostatic steering tank is accessible after opening the front bonnet of the tractor. If necessary, refill the oil to the level of control gauge which sets its proper amount.

Check the condition of all the hoses of hydraulic steering circuit, if they are not damaged and if oil is not permeating. Check the tightness of screws and nuts of drag rod and levers.

PREVENTIVE DAILY MAINTENANCE



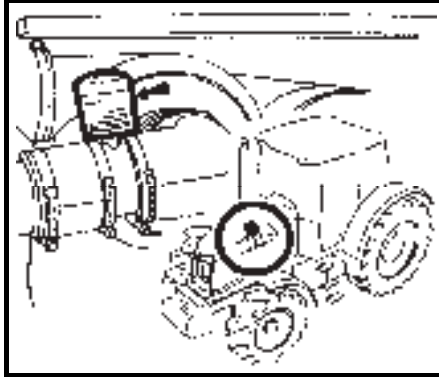
NM13N086

TIRES AND WHEELS

Check the air pressure in front and rear tires. Depending on the nature of work adjust to the recommended pressure. Check or tighten the screws of front and rear wheels (connection rim / disc and disc / wheel shaft).



Never drive with untightened screws!



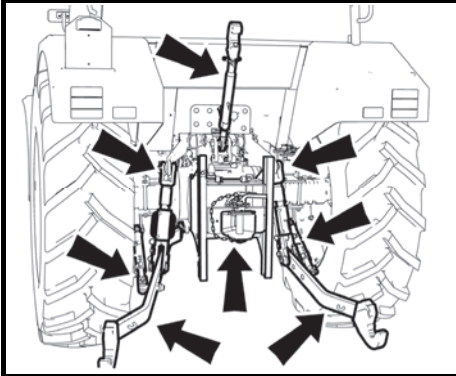
G710b

AIR CLEANER

Cleaner maintenance must be done after signalization of indicator contamination. Indicator is accessible after opening front tractor bonnet. It is placed close to the bend of sucking pipeline.

Contamination is mechanically signalized by a red field which is shown after filter insertion clogging directly on contamination indicator.

PREVENTIVE DAILY MAINTENANCE



NM13N063

TRAILER HITCH

Check the condition of trailer hitches and connecting devices including trailers.



C113

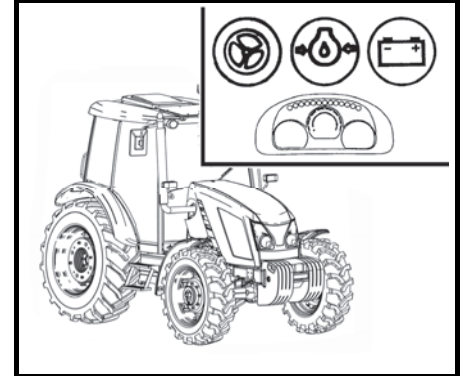
AFTER WORKING WITH FRONTAL MOUNTED MACHINES

After working with frontal mounted machines:

- Check the tightness of joist of external hydraulic circuit of front three-point linkage

Radiator clogging:

1. hinge the bonnet away
2. release and protrude air condition condensator to the left side of the tractor
3. clean front walls of engine radiator (air condition condensator) by pressurized air (pump air in the direction of the engine)
4. remove remaining dirt from the area under the bonnet (to prevent its repeated sucking in)



NM13N087

SHORT FUNCTION TEST

After starting the engine check that the control for signaling failure of hydrostatic steering, engine greasing and charging went off.

Check the function and tightness of hydraulic circuits of steering.

NOTES

GETTING ACQUAINTED WITH THE TRACTOR

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Tractor user is obliged to get acquainted in advance with recommended procedures and instructions for safe tractor's operation. During operation it is already too late!

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NM13N088

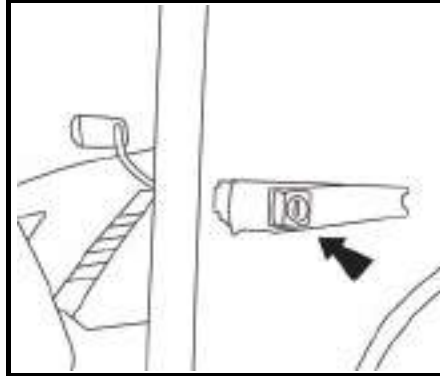
SAFETY CAB



Use the left side of the tractor for getting in and off the cab.

Use climbing spurs for getting on and off the cab and hold onto a handle.

Take greater care in the area of gears lever and manual fuel control lever.



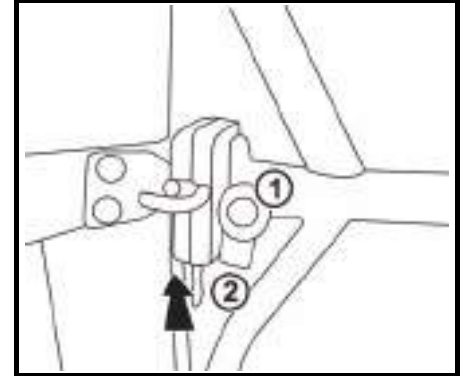
NM13N025

OPENING DOORS FROM THE OUTSIDE

Left cabin door is lockable from the outside.

Right door of the cabin are equipped only with a button from the outside.

After unlocking and pressing the button of the lock the door opens by pulling the handle.



NM13N026

OPENING DOORS FROM THE INSIDE

By pressing the button (1), doors of the cab can be opened from the inside.

Lever (2) on right door serves for locking the lock of right door.

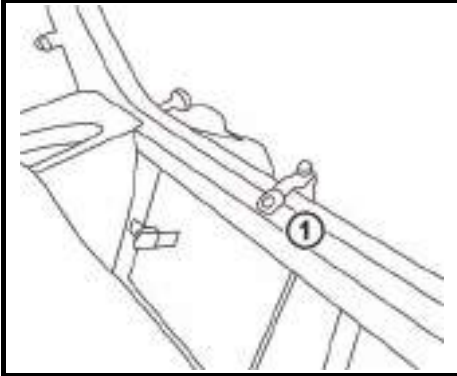
The door lock is locked by shifting the lever (2) in the direction of an arrow. Unlocking is done by shifting the lever (2) against the direction of an arrow.

With total opening, the door is held by a gas prop.



We do not recommend driving with open doors from the reason of their possible damage.

GETTING ACQUAINTED WITH THE TRACTOR



NM13N027

REAR WINDOW

Is equipped with a handle and in open position it is locked by gas props.

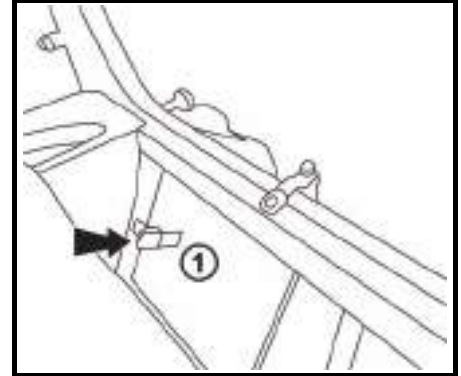
By pushing the lever (1) downwards a flap of rear window is released and by pressure on handle of rear window we open the window.

When closing the rear window after pulling the window by handle, the flap of the window snaps automatically.



When travelling on an uneven surface we recommend to lock the window in a locked position – there is a danger of window cracking.

When starting work with machines mounted in rear three-point linkage of the tractor make sure that there is no risk of collision between mounted tools with maximum heave of rear three-point linkage and open rear window. If there is collision we recommend working with a closed window.



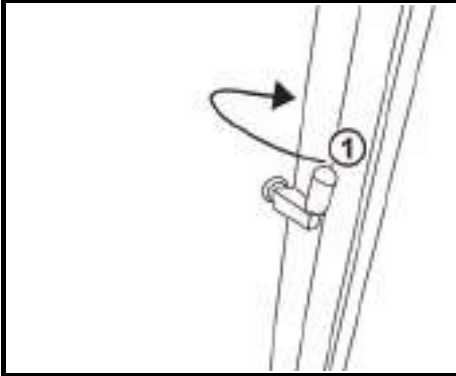
NM13N028

BOTTOM REAR WINDOW

For opening the bottom rear window, it is necessary to push the lever (1) in the direction of an arrow.

Close the window in reverse procedure, window flap will close automatically.

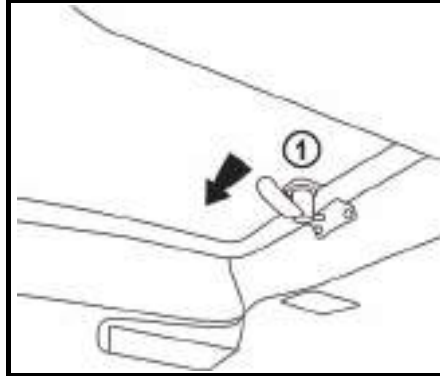
GETTING ACQUAINTED WITH THE TRACTOR



NM13N029

SIDE WINDOW

For opening the side window it is necessary to shift the lever (1) to the back and then in the direction of window in direction of an arrow. Close the side window in opposite way.



NM13N030

HINGED LID

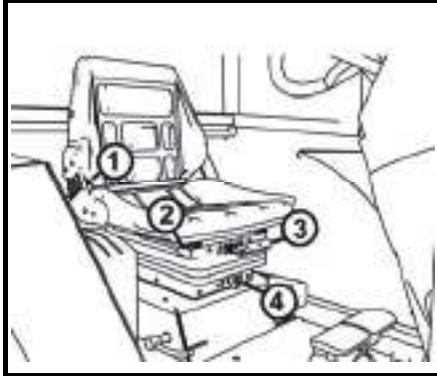
It is opened by turning the locking lever of the lid (1) in the direction of an arrow and by pushing the locking lever in the upward direction.

Close the hinged lid in a reverse procedure.



By opening the hinged lid, the overall height of tractor increases. Therefore close the lid always when you pass through or park at places with limited light. .

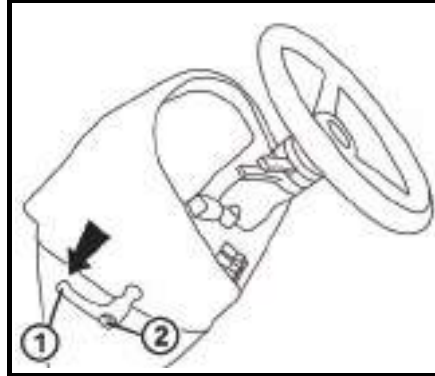
GETTING ACQUAINTED WITH THE TRACTOR



C126

DRIVER'S SEAT

- 1 - Control of setting the seat backrest angle (by turning the control the angle of backrest is set).
- 2 - Longitudinal setting of seat lever (the lever to be pushed from the seat, the seat to be set longitudinally and lever released).
- 3 - Seat suspension setting control based on driver's weight (setting by turning the control, the direction based on the pictogram on gaiter of the seat)
- 4 - Vertical seat adjustment control (setting by turning the control, direction based on pictogram on seat's gaiter)

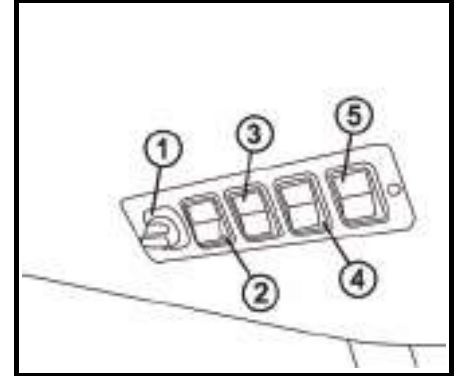


NM13N031

TILTING STEERING WHEEL

Release the lever (1) by turning in the direction of an arrow, set the tilting of the steering wheel and lever (1) to be tightened by turning against the direction of an arrow.

After pressing the button (2) the lever (1) can be relocated to a suitable position.

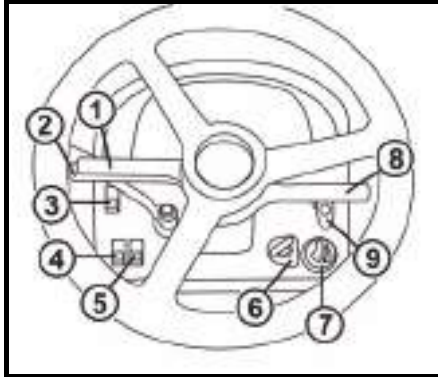


NM13N032

PANEL OF SWITCHES ON CAB'S ROOF

- 1 - Air condition switch
- 2 - Beacon switch
- 3 - Rear windscreen wiper switch
- 4 - Rear working lights in cab's roof switch
- 5 - Front working lights in cab's roof switch

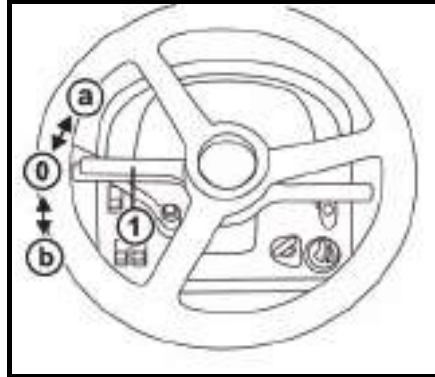
GETTING ACQUAINTED WITH THE TRACTOR



NM13N033

SWITCHES AND CONTROLS ON THE DASHBOARD

- 1 - Direction indicator switch
- 2 - Headlights switch
- 3 - Warning lights switch
- 4 - Headlights switch
- 5 - Hearing switch
- 6 - Switch box
- 7 - Heating valve control
- 8 - Front screen wiper and washer switch
- 9 - Engine stopping control

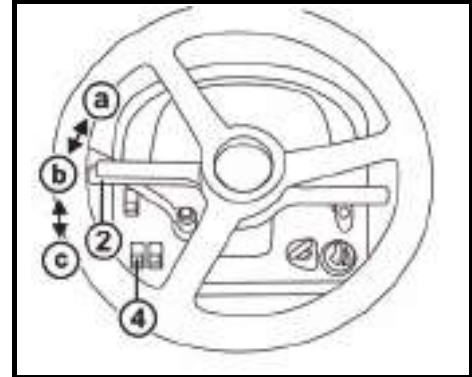


NM13N034

DIRECTION INDICATOR SWITCH

Direction lights are turned off by the movement of a switch (1) to position (a) or (b)

- a - direction lights to the right
- b - direction lights to the left



NM13N035

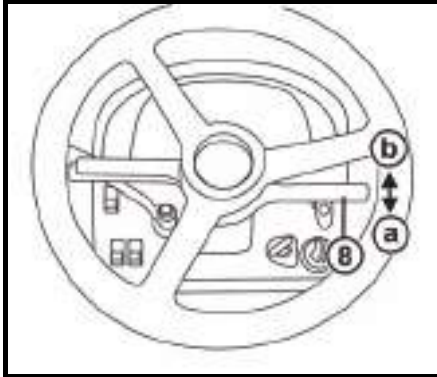
HEADLIGHTS SWITCH

The main lights are switched by a switch (2) after switching on the main lights in the grill of the bonnets by a switch (4).

- a - side lights
- b - dipped lights
- c - headlights

After pulling the switch lever (2) to the steering wheel, acoustic horn is engaged.

GETTING ACQUAINTED WITH THE TRACTOR



NM13N036

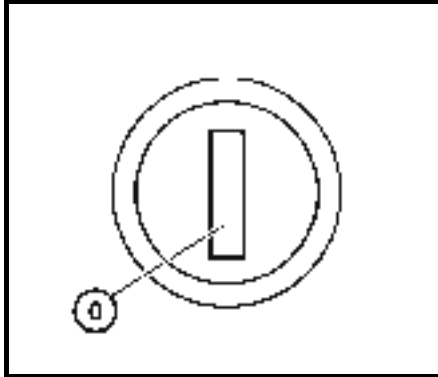
FRONT WINDSHIELD WIPER AND WASHER

Front windscreen wiper and washer are switched on by a switch (8).

- a - disengaged
- b - front wiper on

Front windshield washer is engaged by pulling the lever (8) in the direction of the steering wheel.

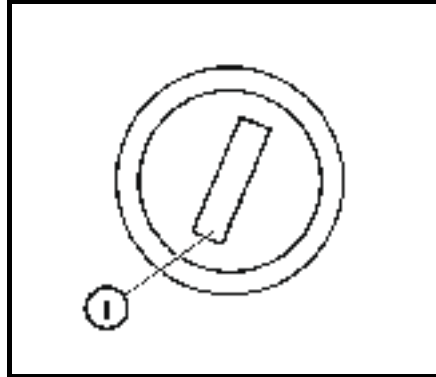
GETTING ACQUAINTED WITH THE TRACTOR



S43

SWITCH BOX KEY IN THE POSITION (0)

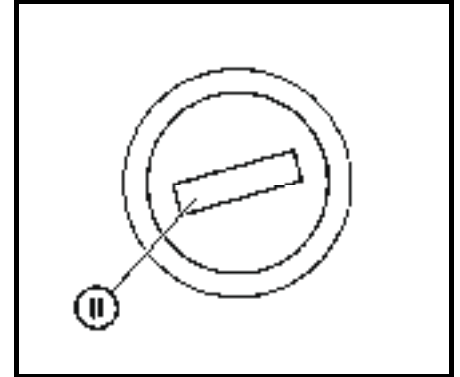
The voltage of all the equipment controlled via the key is disconnected. The key can be removed.



S44

SWITCH BOX KEY IN THE POSITION (I)

The voltage is connected to all the equipment excluding starter. The key is in this position with the engine running.

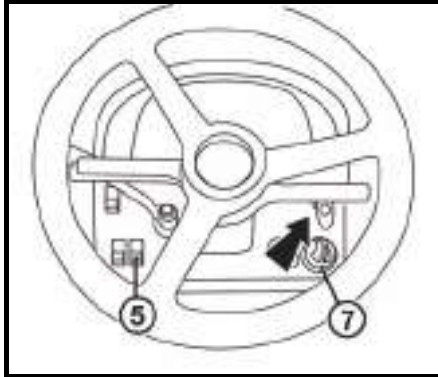


S45

SWITCH BOX KEY IN THE POSITION (II)

Starter and supply of all equipment is connected in this position apart from wipers, washer, cab ventilator and air condition. After starting, the key automatically returns back to "I" position.

GETTING ACQUAINTED WITH THE TRACTOR



NM13N037

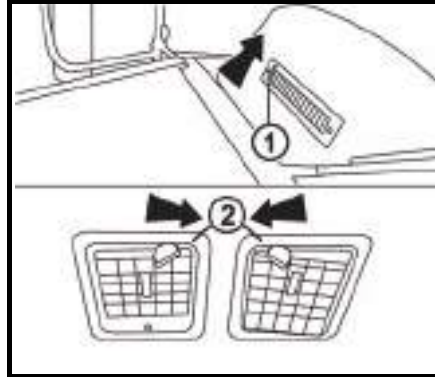
CAB HEATING

Heating is placed in dashboard panel. The heating is turned on by a switch (5). The switch (5) is to position

- a - after switching the switch to the first position the heating ventilator output is lower
- b - after switching the switch to the second position the heating ventilator output is higher

The temperature of exhausted air is set with a heating valve control (7).

When turning the control (7) in the direction of an arrow, the temperature of exhausted air increases, against the direction of an arrow it decreases.

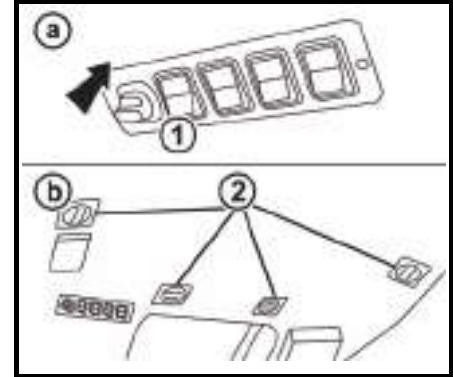


NM13N038

CAB HEATING REGISTERS

Heating registers are placed in the upper (A) and face part of the dashboard panel. The upper register (A) is opened by turning a wheel (1) in the direction of an arrow. It closes when turning against the direction of an arrow.

The lower registers (B) are opened by shifting the levers (2) in the direction of arrows. By shifting the levers against the direction of arrows, registers close.



NM13N039

CAB AIR CONDITION

Cab air condition is controlled by a three-position switch (1), placed on the panel of wipers on the cab (A) roof. Air condition output is increased by switching the switch (1) in the direction of an arrow.

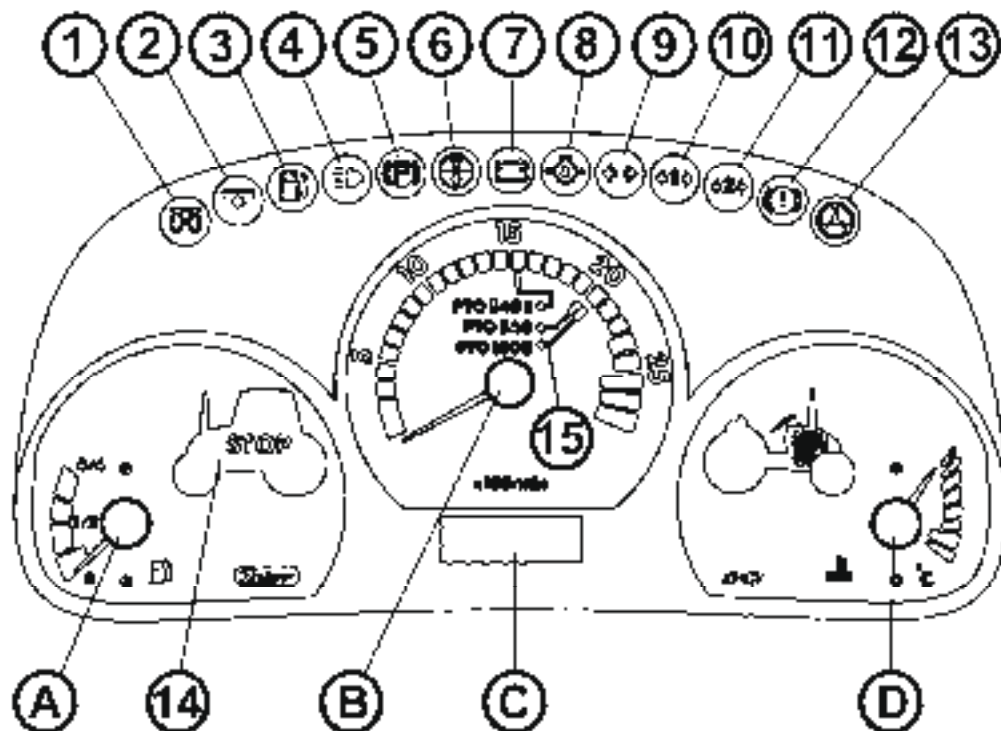
Air condition registers (2) are placed in the cab's roof.



If the air condition is active, set registers (2) under the requested angle so that there would not be direct fanning of people in the cab (illness due to intensive body cooling might occur).

NOTES

GETTING ACQUAINTED WITH THE TRACTOR



GETTING ACQUAINTED WITH THE TRACTOR

DASHBOARD

DEVICES DESCRIPTION

- A - fuel gauge
- B - speedometer
- C - hours of operation pointer
- D - coolant gauge

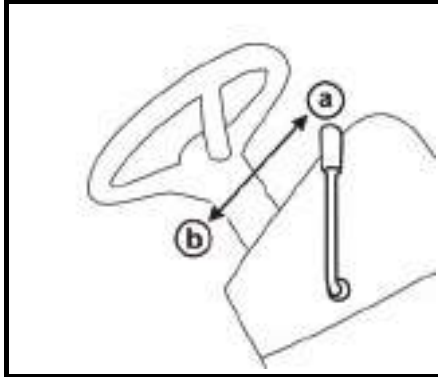
CONTROLS

1. Engine ignition (yellow). Signalizes the activity of device for an easier engine start.
2. PTO shaft disengagement control (red).
3. Fuel (orange). Lights up with a remainder smaller than 1/6 - 1/10 of tank volume.
4. Headlights (blue). Lights up with headlights engaged.
5. Manual brake (red). Lights up with engaged manual brake lever.
6. Not engaged.
7. Charging (red). With engine running it lights up with charging failure. If the engine is at standstill, it must be lit up.
8. Greasing (red). With engine running, it lights up with oil pressure drop under 120 to 60 kPa. If the engine is at standstill, it must light up.
9. Direction lights control of tractor (green).
10. Direction lights control of 1st trailer (green).
11. Direction lights control of 2nd trailer (green).
12. Low air pressure control signalization. Lights up with air pressure drop in the system of air brakes for trailer under a critical level, i.e. under 450 kPa.
13. Failure signalization control in the system of hydrostatic steering (red).

With engine running it is still lit up with hydrostatic steering failure. If the engine is at standstill, it must be lit up.

14. Warning control (red). With engine running it lights up with engine charging or greasing failure. Lights up with manual brake lever engaged.
15. Symbols marking the number of engine revolutions, when nominal revolutions of rear PTO clutch are reached depending on the engaged number of rear PTO shaft revolutions.

GETTING ACQUAINTED WITH THE TRACTOR



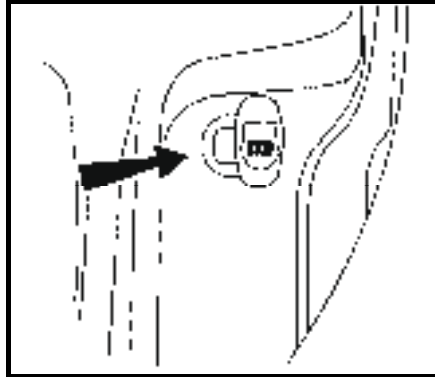
NM13N041

MANUAL FUEL CONTROL LEVER

a - idle run

b - maximum supply

The lever enables to set engine revolutions in the whole range (a) to (b).



C127

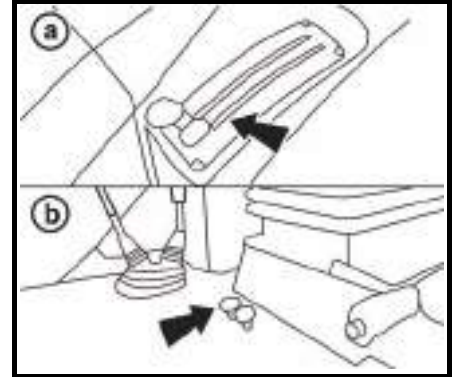
ENGINE RUN STOP CONTROL

By pulling the control out, there is an immediate engine operation stop and by turning it slightly in a pulled out position, the position is locked.

After stopping the engine run, return the control back.



If a control remains pulled out, engine may not be started.



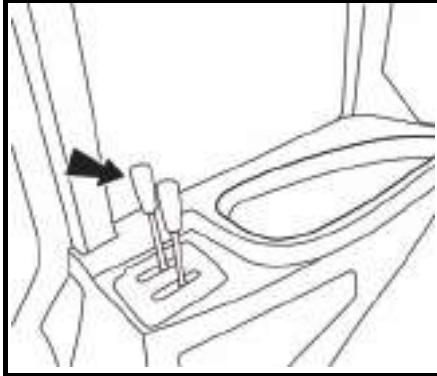
NM13N040

HYDRAULIC CONTROL

Hydraulic control panel with levers (A) is placed in the area of right fender.

Hydraulic controls (B) are placed in front of driver's seat.

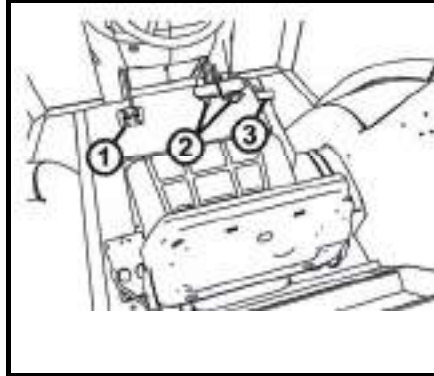
GETTING ACQUAINTED WITH THE TRACTOR



NM13N042

AUXILIARY HYDRAULIC SWITCHBOARD CONTROL

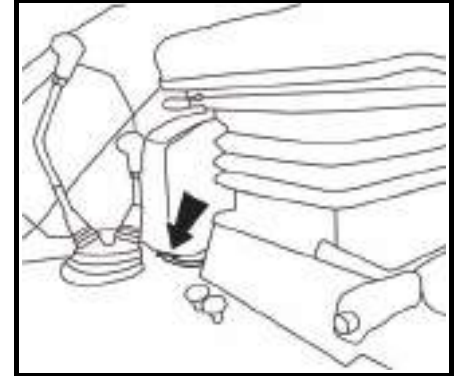
Auxiliary hydraulic switchboard control (2) is placed on the upper part of right fender.



C127

PEDALS

1. travel clutch pedal
2. foot brake pedals connected with a flap
3. foot fuel supply control pedal



NM13N043

DIFFERENTIAL LOCK

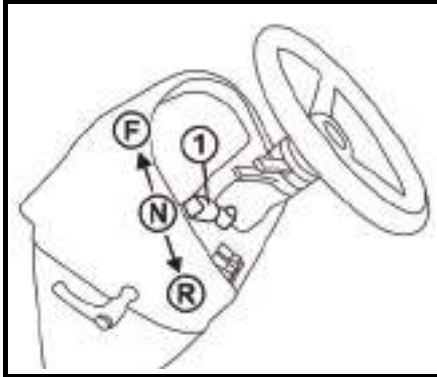
Differential lock is controlled by a pedal placed on the right side of driver's seat. Engaging differential lock is done by depressing a pedal, for the time of pedal depression the lock is engaged, after releasing the lock pedal, the pedal returns to its original positional and the differential lock is disengaged.



When going through a bend, do not use differential lock.

Engage differential lock with low engine revolutions.

GETTING ACQUAINTED WITH THE TRACTOR



NM13N044

REVERSING LEVER

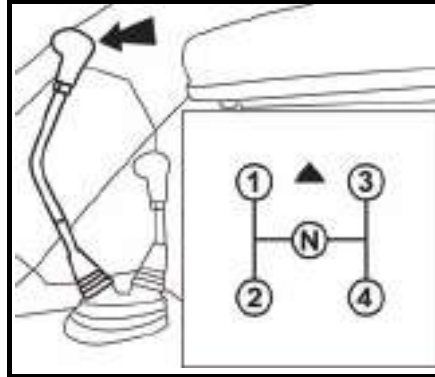
Reversing lever (1) serves for the change of tractor travelling direction.

F – Travelling forward; lever in the front

N - Neutral

R – Reversing; lever at the back

Gear shifting is done with a tractor at standstill and clutch pedal depressed.

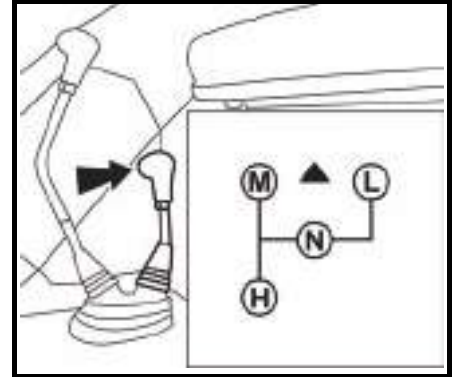


NM13N045

GEAR SHIFTING LEVER

Gear shifting lever serves for change of gear box gear.

Gear shifting is done with clutch pedal depressed.



NM13N046

ROAD AND REDUCED SPEEDS SHIFTING LEVER

Road and reduced speeds shifting lever serves for shifting gear groups.

H Road speeds

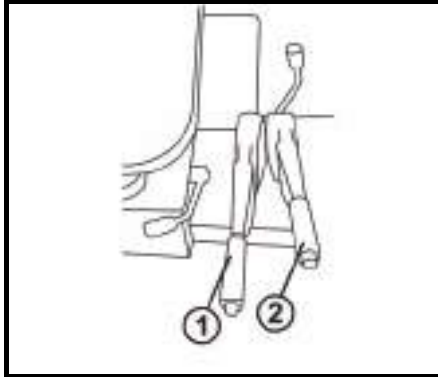
M Average speeds

N Neutral

L Reduced speeds

Gear shifting is done with the tractor at standstill and depressed clutch pedal.

GETTING ACQUAINTED WITH THE TRACTOR

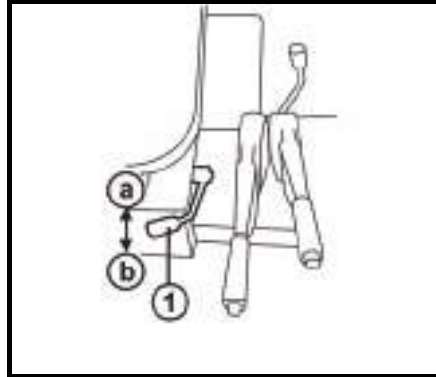


NM13N047

MANUAL BRAKE AND PTO SHAFT DISENGAGEMENT LEVER

Manual brake and PTO clutch disengagement levers are located on the left side of driver's seat.

1. manual PTO clutch disengagement lever
2. manual brake lever



NM13N048

FRONT DRIVE AXLE CONTROL LEVER

Front drive axle engagement is done by a lever (1) located on the left side of driver's seat.

- a - Front drive axle disengaged
b - Front drive axle engaged

Engage front drive axle with standing tractor.

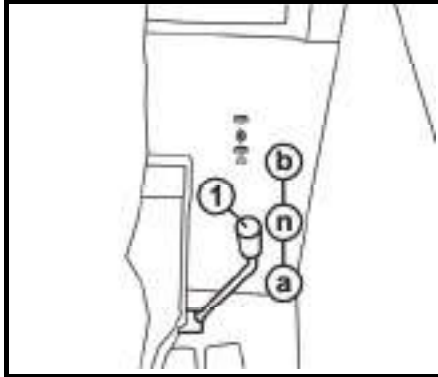


Use front drive axle with rear wheels slip to enhance the pull of tractor.

When driving with front drive axle engaged on the road and hard surface the maximum permitted speed is 15 km/h.

Driving with engaged front drive axle causes increased front tires wear.

GETTING ACQUAINTED WITH THE TRACTOR



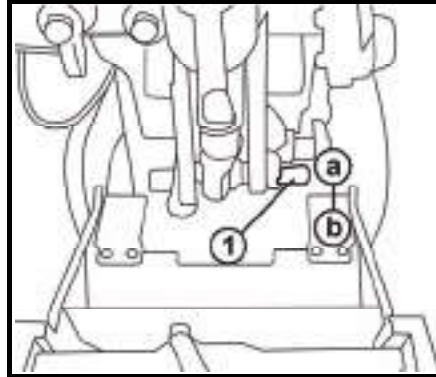
NM13N004

PTO SHAFT DRIVE ENGAGEMENT LEVER

Rear PTO shaft is engaged by a lever (1) placed on the left side of driver's seat.

- a - Dependent revolutions of PTO shaft drive through gear box – revolutions are dependent on the engaged gear
- n - neutral position
- b - Independent revolutions of PTO shaft drive – revolutions are dependent on engine revolutions

Gear shifting is done with a tractor at standstill and engaged manual clutch lever.



NM13N005

PTO SHAFT REVOLUTIONS 540 AND 1000 RPM SHIFTING LEVER

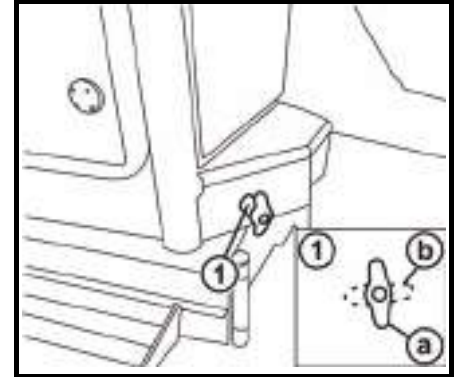
Shifting 540 or 1 000 revolutions of rear PTO shaft is done with the lever (1) placed from the outside of the tractor above the rear PTO shaft.

- a - 1 000 rpm
- b - 540 rpm

Gear shifting is done with the lever of PTO shaft drive engagement in (n) position.



PTO shaft revolutions and the type of endpoint need to be selected dependent on the prescribed revolutions of the aggregated machine.



NM13N049

BATTERY DISCONNECTOR

Battery disconnecter (1) is placed on the right side of the tractor in front of the cab.

- a - Battery is connected
- b - Battery is disconnected



With long-term dead parking, repairs, a failure, or accident, disconnect the battery immediately by battery disconnecter.

GETTING ACQUAINTED WITH THE TRACTOR



NM13N089

FUEL TANK

Fuel tank is located on the left side of the tractor. A plastic tank with a volume of 80 litres is mounted as a standard.



Do not step on the tank!

FUEL TANK DRAIN PLUG

Fuel tank drain plug is in its bottom.

NOTES

DRIVING OPERATION

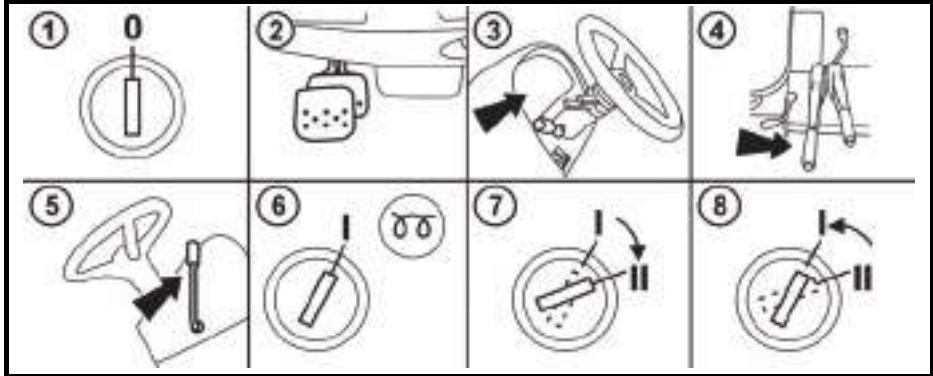
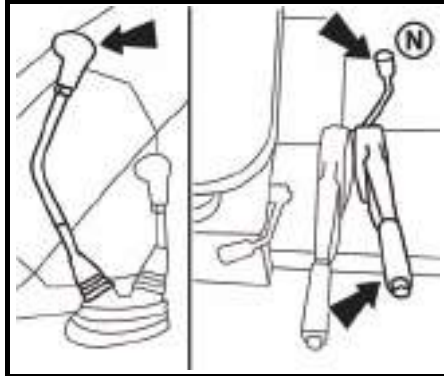
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Before driving with a new tractor, first become acquainted with the gear shifting scheme and try individual positions of the gear shifting lever with engine at standstill.

In normal operation before you set off, you have to make sure that technical condition corresponds with safe operation requirements.

DRIVING OPERATION



NM13N051

BEFORE YOU START THE ENGINE



Before you start the engine, make sure that:

1. tractor is properly braked
2. PTO shaft drive engagement lever is in neutral position
3. the main gear shifting lever is in neutral position

If the clutch pedal is not depressed, it is not possible to start the engine – switch for securing start is not switched.

Note: Before starting we recommend to pressurize fuel system by several heaves of manual feeding pump.

STARTING THE ENGINE

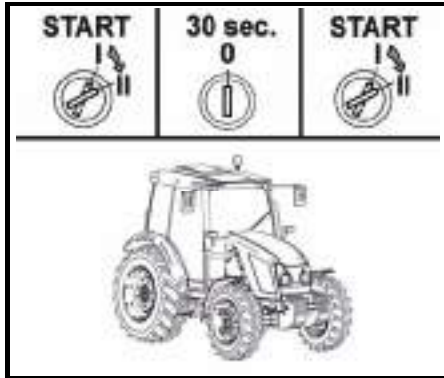
1. Insert the key to the switch box - position "0".
2. Depress the clutch pedal (start breaker is switched).
3. Shift reversing lever to neutral position (start breaker is switched).
4. Pull manual clutch lever (start breaker is switched).
5. Set the manual fuel control lever to idle run position.
6. Switch the key of switch box from position "0" to position "I". Thermostat ignition control lights up. Wait for the time when ignition control goes out (the time is dependent on the temperature of coolant).



If ignition control starts only blinking instead of lighting, there is a failure in the ignition system (ch. Ignition system failure signalization). Have the signalized failure removed in a service.

7. As soon as the control goes out (5 s max) turn the key from the position to position "II" (start).
8. After starting the engine, release the key immediately, it automatically return to position "I". **Do not start longer than 15 s.**

DRIVING OPERATION



NM13N091

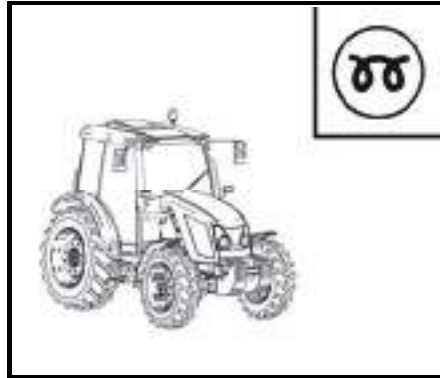
IF ENGINE DOES NOT START

Return the key to position "0", wait 30 seconds and repeat the start.

A maximum of 6 starting cycles is allowed (15 seconds start and 30 seconds interruption is one cycle). Another engine start is allowed after the starter cools off to surrounding temperature.



Never help a stopping tractor with a starter. There is a danger of starter damage.

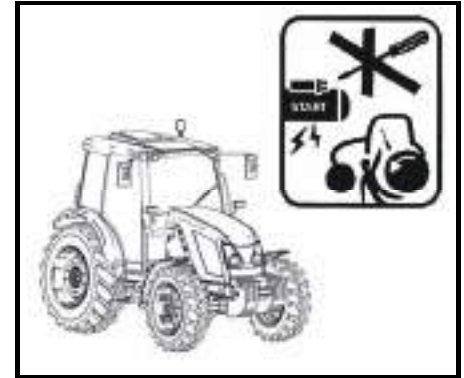


NM13N092

IGNITION SYSTEM FAILURE SIGNALIZATION

Ignition system failure is signalized by ignition control blinking.

- If ignition control is blinking with engine at standstill once in a second, ignition in emergency mode occurs as with low temperatures regardless of the temperature of coolant.
- If ignition control is blinking twice in a second with engine at standstill, ignition is not working.
- If ignition control is blinking permanently with engine running, there is a failure of ignition regulator and ignition has not been completed. Failure must be removed forthwith, since there is the danger of accumulator depletion.



NM13N093

MANIPULATION WITH STARTER



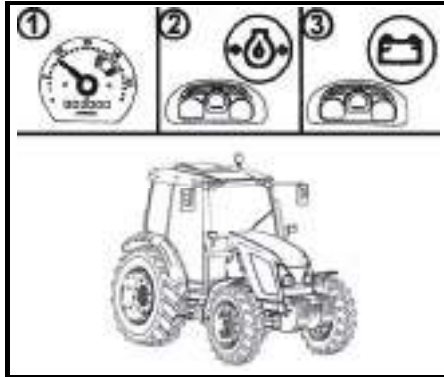
It is forbidden to start by short circuiting starter clamps!

Tractor is started only from driver's seat!

With any manipulation or starter repair it is necessary to disconnect minus battery pole and all shifting levers including PTO shaft shifting lever must be in neutral position!

Starter contacts are covered with a cap.

DRIVING OPERATION



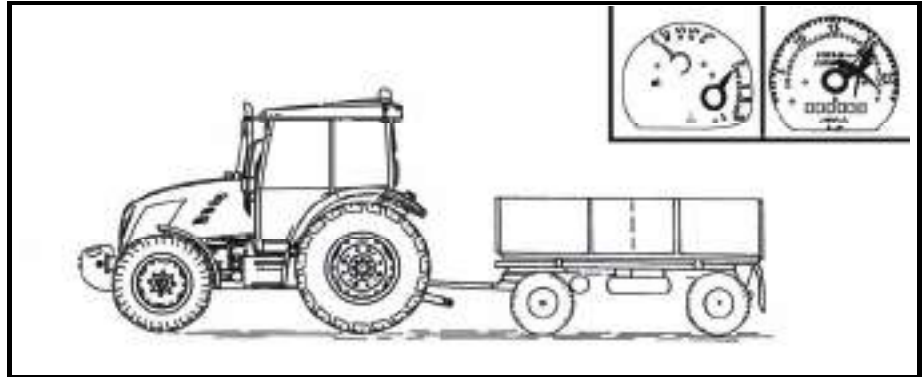
NM13N099

IMMEDIATELY AFTER START



After starting, set revolutions to 800 - 1000 rpm and let engine run without load for a period of app. 2 minutes.

Check greasing, charging and other functions ensuring proper engine operation (controls must go out) in this time. The time of engine operation without load must be observed, in particular in winter period.



NM13N098

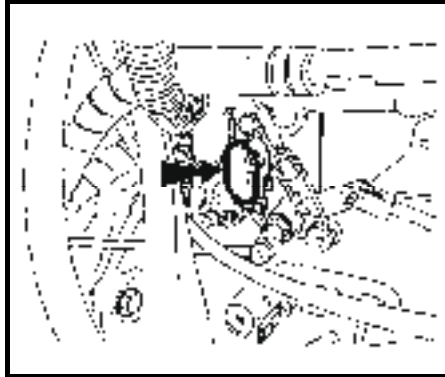
ENGINE HEATING



Do further heating of the engine when driving. Heating engine by lengthy idle run or abrupt revolutions increase is harmful to the engine.

If the temperature of coolant has not reached 45°C, do not overcome engine revolutions over 2000 rpm.

DRIVING OPERATION

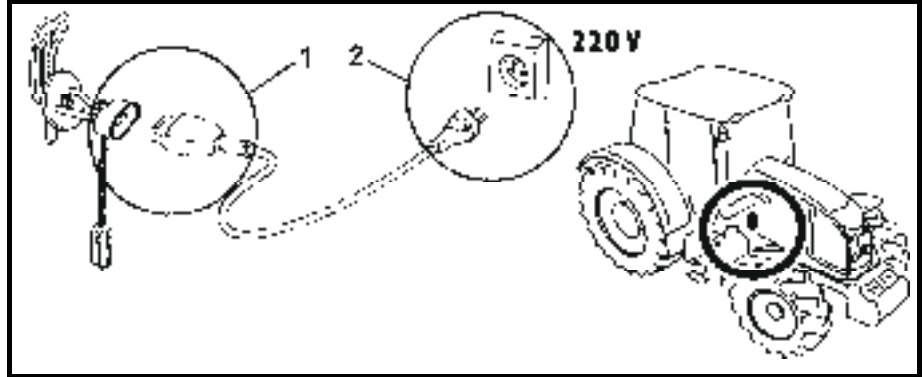


* COOLANT HEATER

Is mounted on the right side of engine block.

output 1000 W

voltage 220 V



STARTING THE ENGINE WHILE USING COOLANT HEATER

With low temperatures of the surroundings, engine starting eases heating coolant. Lead-in electrical installation and its protection against dangerous contact must be done pursuant to valid regulations

1. First plug the plug to the heater.
2. Then connect heater to electrical network of the voltage of 220 V.

With regard for the lower engine wear with low temperature, the use of heater is recommended by manufacturer. The duration of heating is dependent on the surrounding temperature (1 – 2 hours before the expected start).



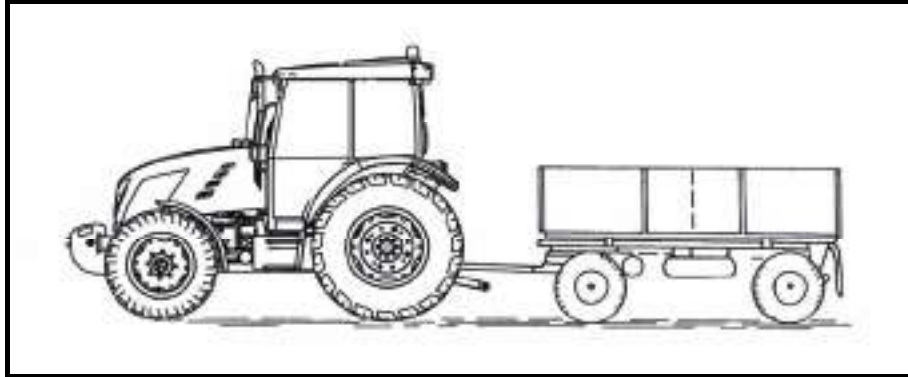
After completing the heating, disconnect the device first from electrical network and only then disconnect the plug from the heater!

Danger of injury due to electricity!



It is necessary to ensure tractor operator's instruction and regular revision of coolant heater including feeding cable pursuant to valid legislation of the state where the tractor is operated at least prior to each winter period.

DRIVING OPERATION



NM13N094

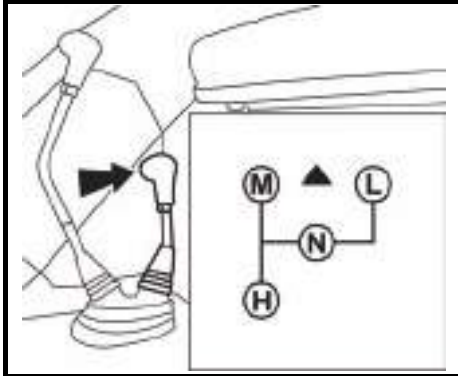
DRIVE AWAY

1. Depress the clutch pedal.
2. Shift the main shifting lever to neutral position.
3. Start the engine.
4. Select road or reduced gears.
5. Shift the reversing lever to the tractor's travel direction (to the front or reversing).
6. Engage applicable gear for tractor's start
7. Increase engine revolutions slightly.
8. Prepare manual brake for unbraking.
9. Release the clutch pedal only to the point of travel engagement and with simultaneous increase of engine revolutions continue in smooth release of clutch pedal.
10. Unbrake manual brake completely.
11. Drive away smoothly and slowly.



A very fast drive away may cause overload of driving set, increased fuel consumption, excessive tires wear and load damage. Drive away with 1st gear to be used only when driving with a heavy trailer up the slope and in difficult terrain.

DRIVING OPERATION



NM13N046

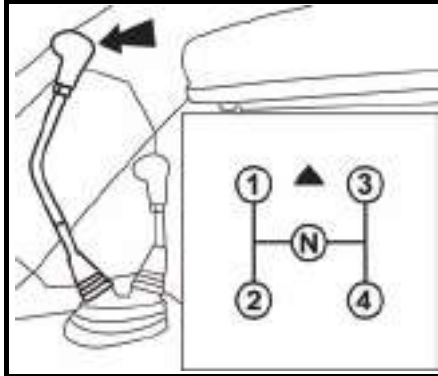
SELECTION OF ROAD OR REDUCED SPEEDS

Road and reduced gears lever serves for shifting groups of gears.

- H** Road speeds
- M** Average speeds
- N** Neutral
- L** Reduced speeds



Gear shifting to be done with tractor at standstill and depressed clutch pedal.



NM13N045

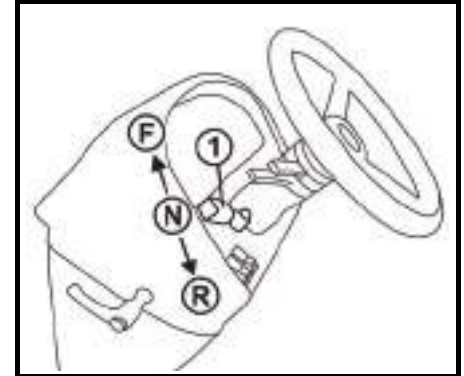
GEAR SHIFTING

Gear shifting lever serves for changes of gear box gears.

Gear shifting is done with a depressed clutch pedal.



Only gears are shifted by main gear shifting lever, the direction of travel is shifted by reversing lever,



NM13N044

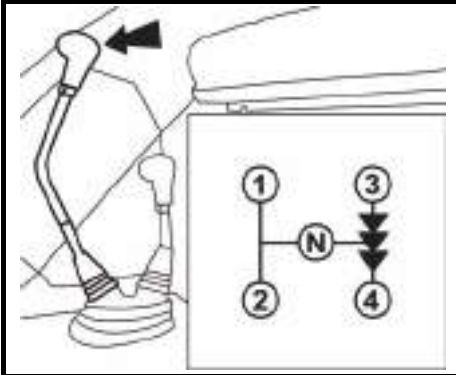
SELECTING DRIVING DIRECTION - REVERSING LEVER

Reversing lever (1) serves for the change of tractor's travel direction.

- F** – drive forward, lever in the front
- N** - neutral
- R** - reversing; lever at the back

Gear shifting is done with tractor at standstill and clutch pedal depressed.

DRIVING OPERATION

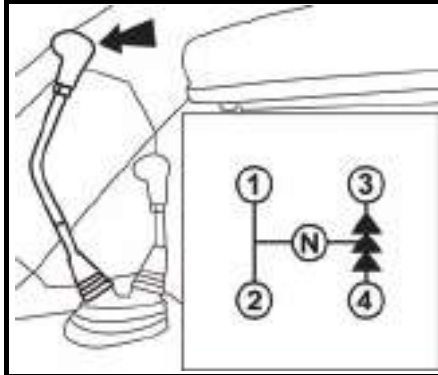


NM13N052

GEAR SHIFTING FROM LOWER TO HIGHER GEARS

Depress the clutch pedal (clutch disengaged). At the same time release the pedal of foot fuel control and shift the applicable higher gear. Release the clutch pedal (clutch is engaged) smoothly and at same time increase engine revolutions.

Note: For increasing the life cycle of synchromes, it is possible to shift from higher to lower gear with the so-called double declutching.



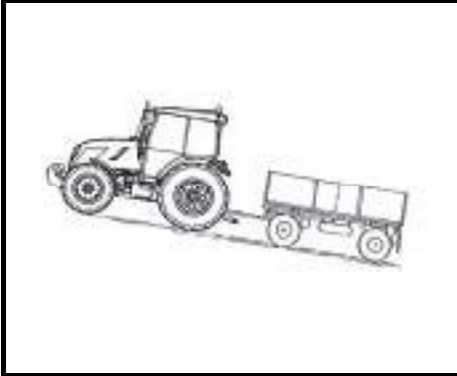
NM13N058

GEAR SHIFTING FROM HIGHER TO LOWER GEARS

Depress the clutch pedal and shift the gear shifting lever through neutral to lower gear.

Note: For increasing the life cycle of synchromes, it is possible to shift from higher to lower gear with the so-called double declutching.

DRIVING OPERATION

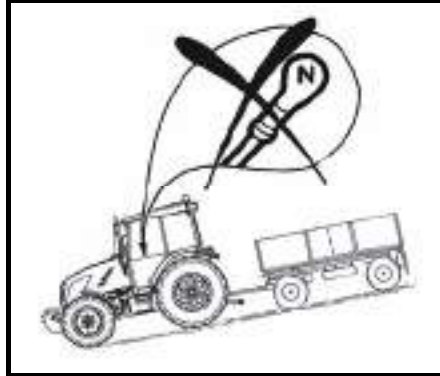


NM13N095

TRAVELLING UP THE SLOPE



Shift gears from higher to lower gears in time when travelling up the slope so as to avoid drop of engine revolutions under 800 rpm and do not allow ride leading to stopping the engine for overload.



NM13N096

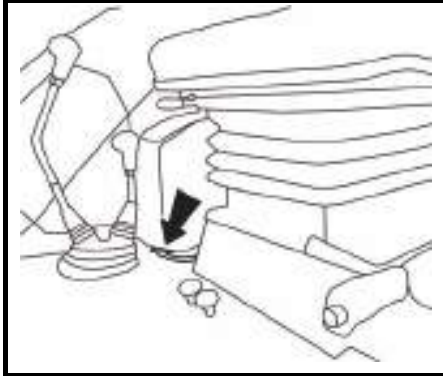
TRAVELLING DOWN THE SLOPE



Travelling down the slope without an engaged gear is forbidden. If you are going down a longer slope engage the lower gear the steeper the slope. Engage the lower gear before the slope if possible.

Note: The gear with which you will reliably overcome ascension, it is the one with which you will safely go down.

DRIVING OPERATION



NM13N043

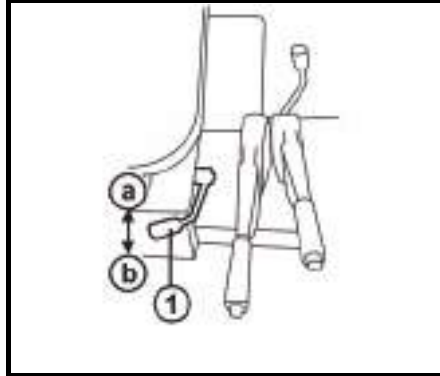
DIFFERENTIAL LOCK

Differential lock is controlled by a pedal placed on the right side of driver's seat. Differential lock is engaged by depressing the pedal, for the time of pedal depressing the lock engaged, after releasing the pedal of the lock, the pedal returns to its original position and differential lock is disengaged.



When going through a bend, do not use differential lock.

Engage differential lock with low engine revolutions and tractor at standstill.



NM13N048

FRONT DRIVE AXLE CONTROL

Engaging front drive axle is done by a lever (1) placed on the left side of driver's seat.

- a - Front drive axle disengaged
- b - Front drive axle engaged



Engaging front drive axle to be done with tractor at standstill.



C220

DRIVING WITH FRONT DRIVE AXLE ENGAGED

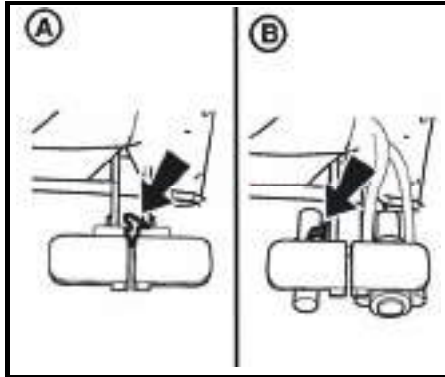


Use front drive axle with slip of rear wheels to increase pull of tractor.

On the road and on hard surface causes driving with front drive axle engaged increased tire wear of front wheels.

Permanent engagement of front drive axle is admissible; if front mounted agriculture machine or tool is connected. This condition is given in operation manual of the applicable machine. Maximum permitted speed of these sets is 15 km/h.

DRIVING OPERATION



NM13N112

FOOT BRAKES PEDALS

Foot brakes are disc, wet, mechanically-controlled and two-pedaled.

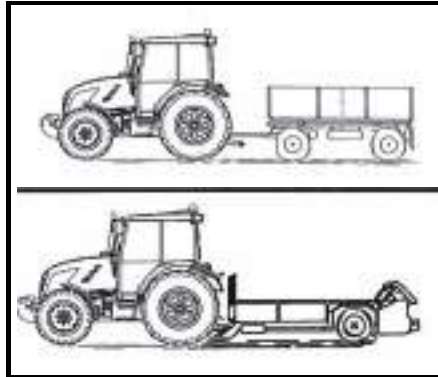
When going on the road, both pedals must be connected with a flap.

A - Standard pedals with a flap

B - Pedals with flap for trailer air brakes



When going on the road, both pedals must be joined with a flap. Disconnected pedals for braking the right or left wheel to be used only when working in terrain and on the field.



NM13N097

TRAILER AND SEMI-TRAILER AIR BRAKES

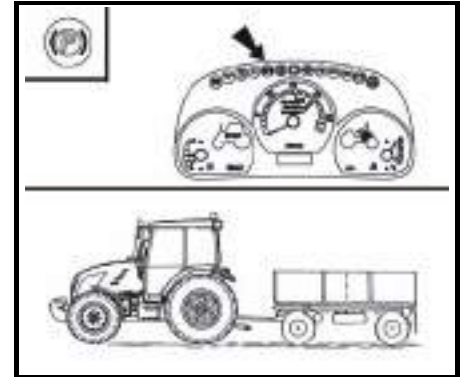
Trailer (semi-trailer) air brakes control and tractor brakes control is done in such a way that the braking effect of both vehicles is synchronized.



When travelling with a connected trailer or semi-trailer foot brake pedals must be connected and secured with a flap!

When braking with a single brake pedal, air brakes of a trailer are not in operation.

Note: When travelling down a steep slope with a trailer or semi trailer equipped with air brakes, it is necessary to brake with a foot brake before the descent starts!



NM13N075

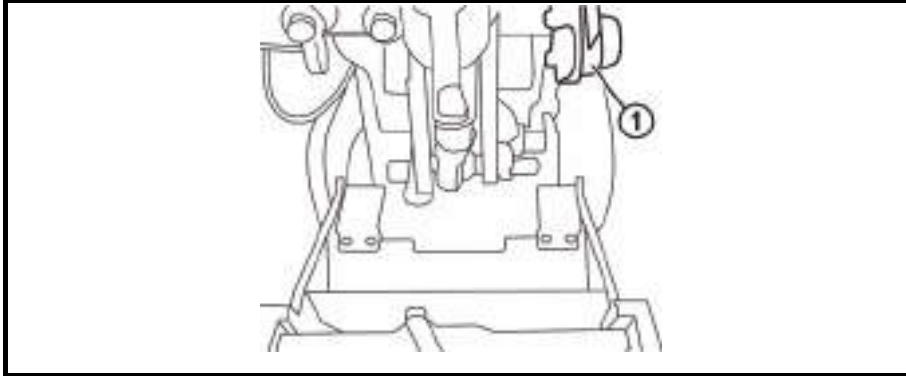
NOTIFICATION SIGNALIZATION OF AIR PRESSURE DROP

Drop in pressure under 450 kPa is signalized by a red control lighting up on the dashboard.



The tractor with a braked trailer or semi trailer must not continue in travel with pressure drop in air pressure system below 450 kPa (control light up), if air pressure does not go up.

DRIVING OPERATION



SINGLE HOSE AIR BRAKES FOR TRAILER

Connecting head of single hose brakes (1) is located on the rear panel of quick-couplers.



Connecting head must be closed with flaps after disconnection or without a connected trailer, semi trailer.

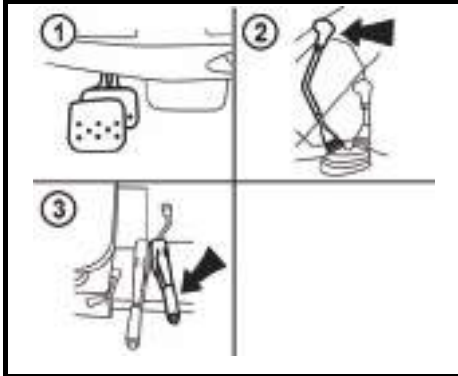
Operation pressure is set by control valve to 600 ± 20 kPa.



*When connecting the trailer (semi trailer) with maximum permitted weight approved for the type of tractor at stake is the maximum set speed of **30 km/h!***

Maximum permitted speed of set is given by maximum permitted speed of the slower vehicle of the set.

DRIVING OPERATION

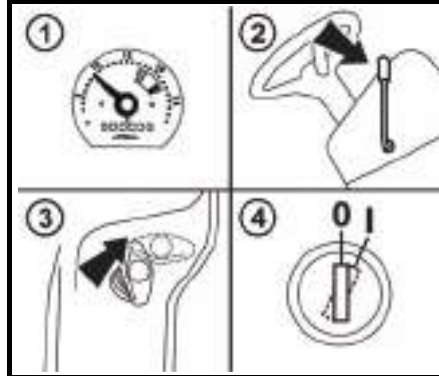


NM13N060

STOPPING THE TRACTOR - MANUAL BRAKE

Stop the tractor gradually in standard conditions. Shortly before stopping:

1. Depress the clutch pedal.
2. Shift the main gear shifting lever to neutral position.
3. With every stop over, secure the tractor against spontaneous drive away by a manual brake. Engagement of manual brake is signalized by a lit control on the dashboard.

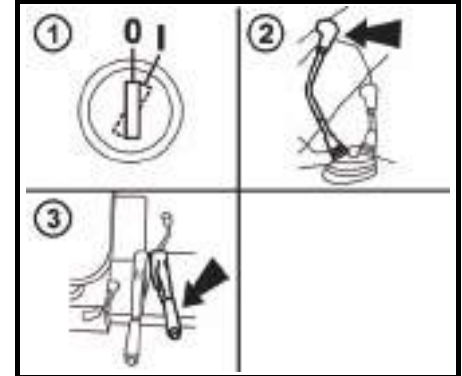


NM13N061

STOPPING THE ENGINE

After tractor's work when the engine was properly loaded, its cool off must be ensured.

1. Before stopping the engine, lower the revolutions to 800 - 1000 rpm and allow it to run without load for a time period of about 5 minutes.
2. Shift manual fuel control lever to idle run position
3. Hitch up a stopping device and hold it in hitched up position until there is engine stop (push the control back in).
4. After stopping the engine, the key can be shifted from position "I" to position "0"



NM13N062

LEAVING THE TRACTOR

Before leaving the tractor with a safety cab do not forget to remove the key from the switch box in position "0" (only with engine at standstill – charging control must be on) and lock the cab. (The key cannot be pulled out in positions I and II)

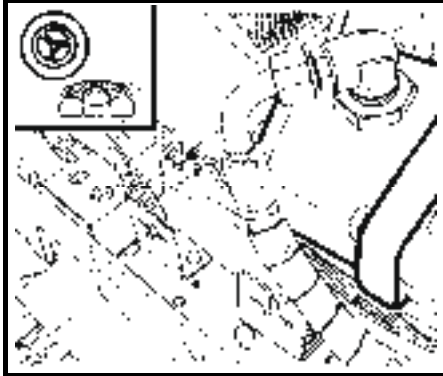


Tractor must be secured against spontaneous drive away:

1. engine disengaged
2. 1st gear engaged
3. braked with the manual brake

If the tractor is on the slope wheels must be made stable with shims.

DRIVING OPERATION

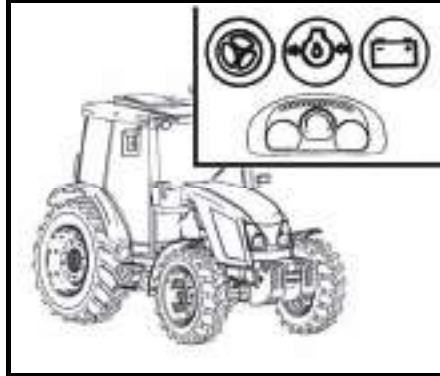


C231

HYDROSTATIC STEERING FAILURE WARNING SIGNALIZATION

Hydrostatic steering pump failure is with pressure drop under 120 kPa behind the pump signalized on the dashboard by an applicable symbol.

Note: When starting the engine or with low engine revolutions, the control may be blinking, if after starting or revolutions increase engine control goes out, it is not a failure. The system is alright.



NM13N087

IMPORTANT NOTIFICATION

If greasing, charging or hydrostatic steering failure controls light up, stop the engine immediately and contact service. You will prevent a serious failure or tractor accident.

TRACTOR RUN-IN

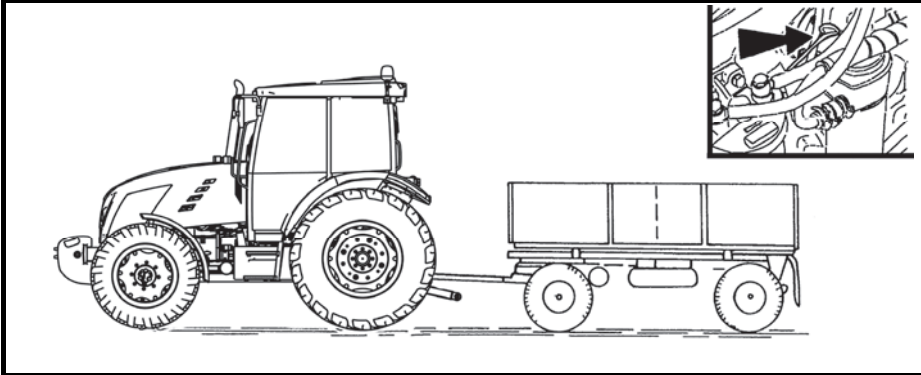
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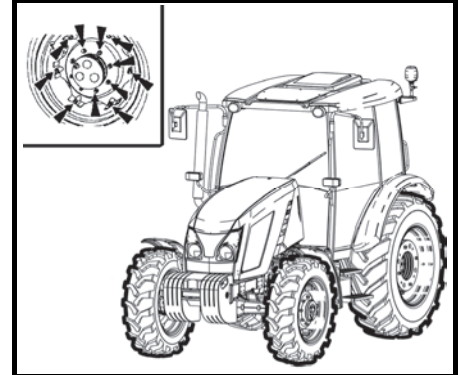
Before driving a new tractor, first get acquainted with the gear shifting scheme and try out individual positions of gear shifting lever with engine at standstill.

Before you drive off in normal operation you must make sure that technical condition corresponds with the conditions of safe operation.

TRACTOR RUN-IN



NM13N090



NM13N100

GENERAL PRINCIPLES OF NEW TRACTOR RUN-IN IN FIRST 100 HOURS OF OPERATION

During first 100 hours of operation:

- Load tractor in a normal way, avoid operation with low or maximum engine revolutions
- Avoid excessive idle run operation
- Check oil levels in engine often (during this time increased oil consumption is normal)
- Check screw joints in particular in supporting parts of tractor
- Learned insufficiencies to be removed immediately, you will thus prevent subsequent damage or endangered operation
- Keep the same procedure also after tractor complete overhaul

IN FIRST 10 HOURS OF OPERATION

- Perform run-in in traffic
- tighten fastening nuts of front and rear wheels including connection bead / rim with prescribed torque

TRACTOR RUN-IN



C256

FROM 100 HOURS OF OPERATION

After drive in completion you can work with tractor without limitations.

Engine operation mode with Major tractors:

Recommended operation revolutions	1400 - 2300 rpm
Idle run revolutions	800±25 rpm
Operation oil pressure	0.2 – 0.5 MPa
Oil pressure with idle run revolutions	min. 0.05 MPa
Max. coolant temperature	106°C

NOTES

TRANSPORT USAGE

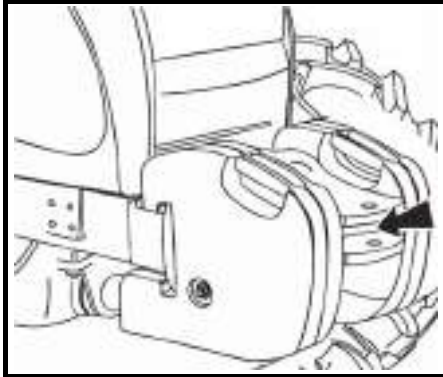
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Before you set out, make sure that the technical state of your tractor corresponds with the conditions of safe operation.

If a trailer or an auxiliary unit are connected, check their connection and proper attachment of load. Never leave tractor when running to connect the trailer alone. Mind also the safety of your assistant.

TRANSPORT USAGE



NM13N023

FRONT HOOK

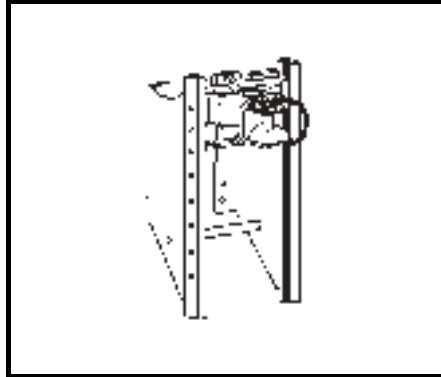
Used only for towing tractor without connected trailer or a different connected machinery.



Use a drawbar or a cable for releasing tractor.

Never use chains! The possibility of fatal injury if a chain pulls apart!

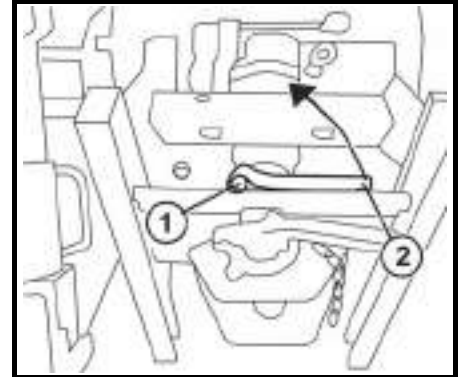
It is forbidden to use tractor axles (individual travelling wheels) such as reeling jack when rescuing a sunken tractor.



E302

MULTISTAGE ADJUSTABLE SUSPENSION

Serves for connecting double axle or lighter single-axle trailers. Guidance nozzle is vertically adjustable. When working with various agricultural machines it is necessary to adjust the suspension vertically or demount where necessary.

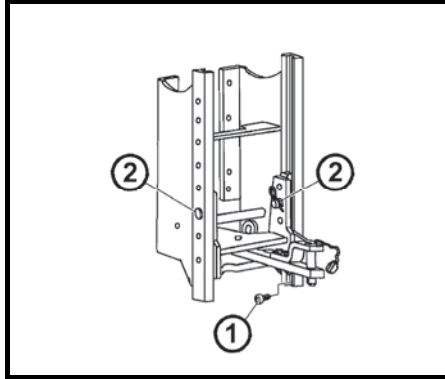


NM13N024

VERTICAL ADJUSTMENT AND MULTISTAGE SUSPENSION DISASSEMBLY

After pushing the catch (1), control lever (2) is unlocked, by subsequent shift of the lever (2) in the direction of an arrow multistage suspension is released and it is possible to adjust it vertically or disassemble. After adjusting multistage suspension, shift the lever (2) back to the original position until the catch (2) is released.

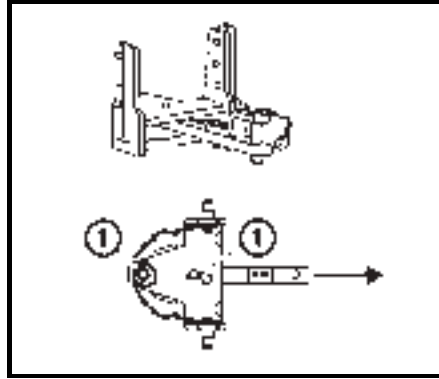
TRANSPORT USAGE



MODULAR SUSPENSION SYSTEM FOR TRAILERS AND SEMITRAILERS

1. Demount locking screw (1)
2. Secure the module against drop, unlock and demount pins (2)
3. Protrude the module from the bracket in downward direction

Proceed reversely with assembly.



E306

SWING DRAWBAR BRACKET MODULE

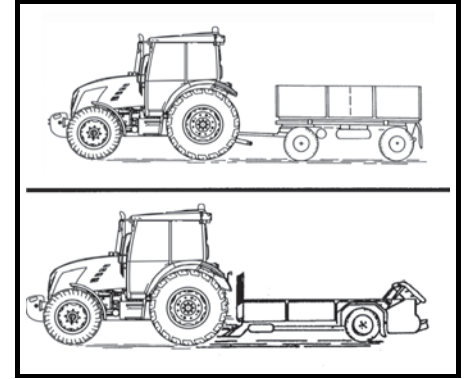
Swing drawbar bracket module is placed in the bracket of multistage suspension.

SWING DRAWBAR

Disassembly:

1. Unlock and demount pins (1)
2. Protrude swing drawbar in the direction of an arrow

Proceed reversely with assembly.





NM13N097

AGGREGATION WITH TRAILER AND SEMITRAILER

Tractor must be aggregated only with a tractor trailer for balancing tractor operation brakes or hydraulic brakes of trailer. Static load of tractor rear axle in aggregation with semitrailer must not exceed the value of maximum permitted load.

TRANSPORT USAGE

MAXIMUM PERMITTED VERTICAL STATIC SUSPENSIONS LOAD FOR TRAILERS AND SEMITRAILERS

Suspension type	Permitted vertical static load	Ø of suspension pin	Suspension type	Permitted vertical static load	Ø of suspension pin
	2 000 kg ↓	31 mm		736 kg ↓	31 mm



Maximum weight of aggregated braked trailer or semitrailer must not exceed the value given on tractor's production plate and the data given in vehicle identification card. Maximum speed of the set is given by the maximum permitted speed of the slower vehicle of the set.

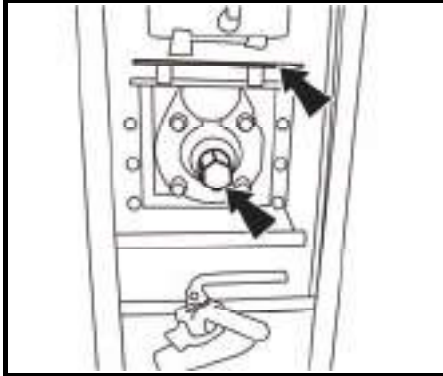
DRIVE OF AGRICULTURAL MACHINES

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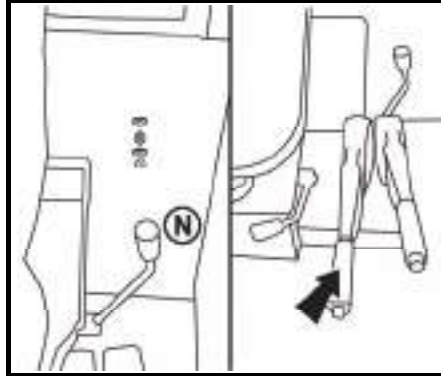


Before engaging the machine driven by PTO shaft of tractor, check that the revolutions of PTO shaft of the machine and tractor are in accord (540 rpm or 1000 rpm). Different revolutions can lead to severe damage and injuries.

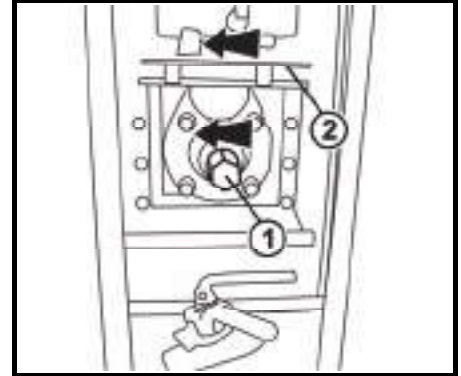
DRIVE OF AGRICULTURAL MACHINES



NM13N001



NM13N002



NM13N003



WORKING WITH PTO SHAFT

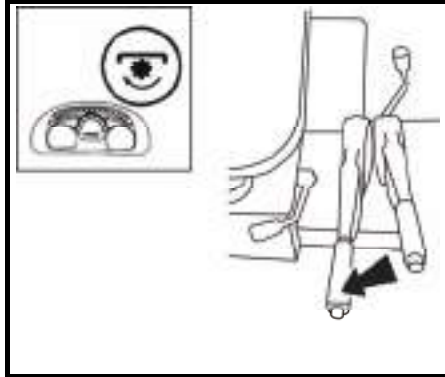
1. When working with PTO shaft, mind proper attachment of all covers.
2. After completing the work, always mount the PTO shaft cover back.
3. Connecting and disconnecting cardan shaft of aggregated machine to rear PTO shaft of the tractor to be done only with the engine at halt, disengaged PTO shaft clutch and dependent and independent revolutions of PTO shaft lever in (N) – neutral position!
4. Connecting and disconnecting cardan shaft of aggregated machine to front PTO shaft of tractor to be done always only with engine at standstill and disengaged PTO shaft!
5. Any repairs or cleaning of parts of aggregated machines driven by PTO shaft to be done only with engine at standstill, disengaged PTO shaft clutch and dependent and independent PTO shaft revolutions lever in (N) - neutral position.
6. After ending the works with rear PTO shaft it is necessary to shift dependent and independent PTO shaft revolutions lever to (N)-neutral position.

PTO SHAFT COVERS

The cover of PTO shaft (1) can be demounted by unscrewing the cover in the direction of arrows.

The cover of PTO shaft (2) must be pushed in the direction of and arrow and tilted over in the direction from tractor for working with rear PTO shaft.

DRIVE OF AGRICULTURAL MACHINES



NM13N008

MANUAL DISENGAGEMENT OF PTO SHAFT CLUTCH LEVER

By pulling manual clutch disengagement lever to upper position, disengagement of PTO shaft clutch occurs. The upper position of the lever is signaled by a lit control on a dashboard. The lever is automatically locked with a catch in the upper position. The lever can be unlocked and return to the lower position by lifting the lever and pressing the button on the forefront of the lever.

Upper position - clutch disengaged

Lower position - clutch engaged



If manual disengagement of the clutch lever is pulled for a longer period of time, increased wear of lamely of PTO shaft occurs.



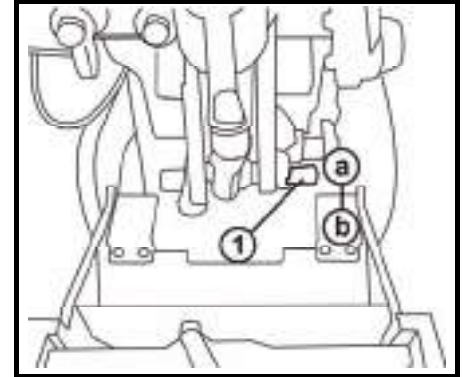
NM13N004

PTO SHAFT DRIVE ENGAGEMENT LEVER

Rear PTO shaft is engaged with a lever (1) shaft drive placed on the left side of driver's seat.

- a** - dependent revolutions of PTO with PTO shaft drive via gearbox – revolutions are dependent on the engaged gear
- n** - Neutral position
- b** - independent revolutions of PTO shaft drive – revolutions are dependent on engine revolutions

Gear shifting is done with engine at standstill and engaged manual clutch lever.



NM13N005

PTO SHAFT REVOLUTIONS 540 AND 1000 RPM SHIFTING LEVER

Shifting 540 or 1 000 revolutions of rear PTO shaft is done with a lever (1) placed on the outer side of tractor on rear PTO shaft.

a - 1 000 rpm

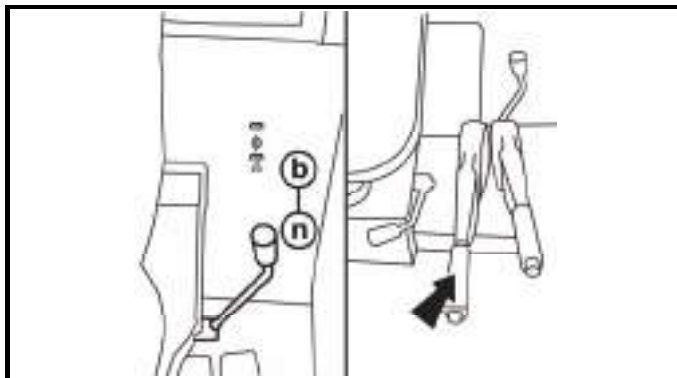
b - 540 rpm

Shifting is done with an engine at standstill and lever of engaging PTO shaft drive in (n) position.



PTO shaft revolutions need to be selected depending on the prescribed revolutions from aggregated machines.

DRIVE OF AGRICULTURAL MACHINES



NM13N006

REAR PTO SHAFT – INDEPENDENT REVOLUTIONS

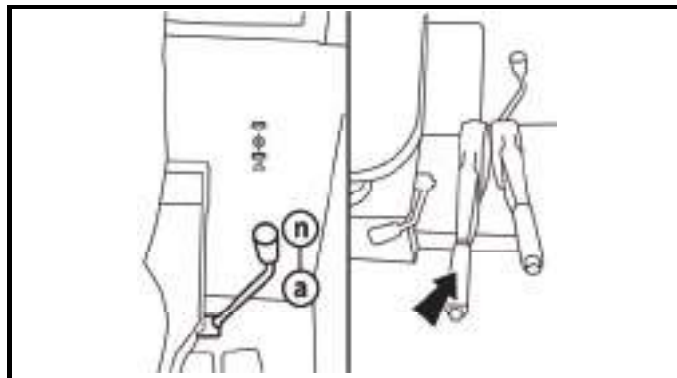
With independent revolutions of rear PTO shaft the number of PTO shaft revolutions is dependent on the number of engine revolutions.

PTO shaft drive engagement lever must be shifted to (b) position.

Pulling the lever of manual PTO shaft clutch disengagement serves for short-term interruption of torque transmission from engine.

The lever of PTO shaft drive must be shifted to (n) position for longer interruption of torque transmission from engine.

The number of PTO shaft independent revolutions, see Main technical parameters chapter.



NM13N007

REAR PTO SHAFT – DEPENDENT REVOLUTIONS

With dependent revolutions of rear PTO shaft the number and the direction of PTO shaft revolutions is dependent on the shifted gear of reversing lever, engaged speed gear and the group of gears engaged by reduction lever.

PTO shaft drive engagement lever must be shifted in (a) position.

Depressing the clutch pedal serves for short-term interruption of torque transmission from engine.

It is necessary to shift the lever of PTO shaft drive engagement to (n) position or to shift the lever of gears or the lever of road and reduced speeds to (n) position for longer interruption of torque from engine.



Manual disengagement of PTO shaft clutch lever is shifted in (a) position non-functional with lever of PTO shaft drive engagement.

The number of dependent PTO shaft revolutions, see Main technical parameters chapter

DRIVE OF AGRICULTURAL MACHINES



C353

MAXIMUM TRANSMITTED OUTPUT

PTO shaft	Transmitted output
rear	
1000 rpm	Full engine output
540 rpm	Full engine output



C354

DRIVE OF MACHINES WITH GREATER INERTIA MASSES (CRUSHERS, ROTARY HARROWS, REAPERS, ETC.)

Cardan shaft for drive of these machines must be equipped with the so-called free wheel, which ensures the disconnection of torque transmission with retroactive effect from the machine to tractor.

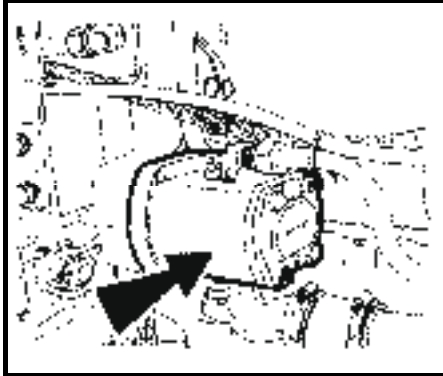
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It serves for heaving and lowering agricultural machines and tools connected in rear three-point linkage

HYDRAULIC EQUIPMENT



C402

HYDRAULIC EQUIPMENT

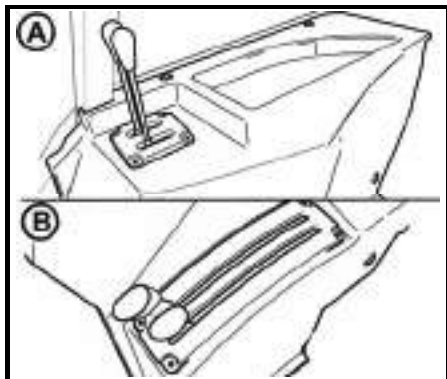
Is made up from internal and external circuit

The source of pressure oil is gear pump.
Oil is taken from common filling of gear-box and final drive housing.

Hydraulic pump is unswitchable. Pump is in operation with engine running. Supplied amount 50 l/min.

The pressure derived in hydraulic set by hydraulic pump is limited by a locking valve to 18 MPa.

HYDRAULIC EQUIPMENT



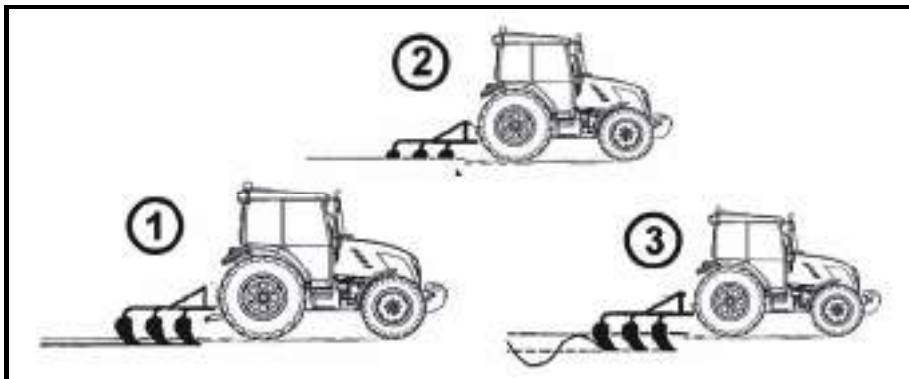
NM13N009

HYDRAULIC CONTROL PANEL

Hydraulic control panel is placed in the area of right fender.

External hydraulic circuit (A) enables control of external hydraulic circuit (quick-couplers).

Internal hydraulic circuit (B) enables rear three-point linkage control.



NM13N101

MEANS OF INTERNAL HYDRAULIC CIRCUIT REGULATION

Hydraulic system enables three means of heavy three-point linkage control.

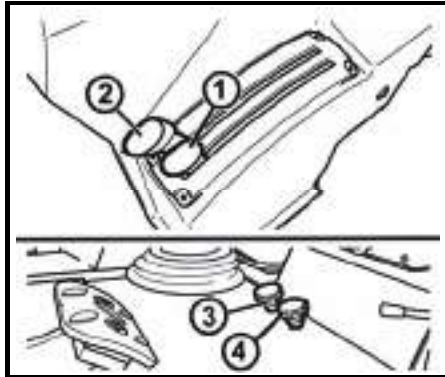
Position regulation (fig. 1) where some tools connected in three-point linkage are kept automatically at constant height (position) to tractor.

Mixed regulation (fig. 2) which is the combination of position and power regulation. It is suitable mostly for tillage on lots with different soil resistance.

Power regulation (fig. 3), with which tools connected in three-point linkage are automatically vertically adjustable depending on the change in soil resistance.

All means of regulation enable also work with tools which has supporting wheel in the so-called free (floating) position.

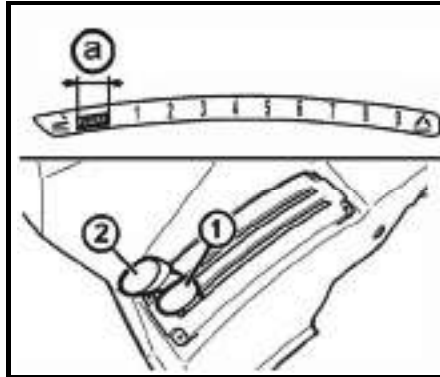
HYDRAULIC EQUIPMENT



NM12N010

INTERNAL HYDRAULIC CIRCUIT CONTROL ELEMENTS

1. Lever for setting power or position regulations
2. Lever for setting floating position, height positioning of three-point linkage with position regulation or mixed regulation
3. Speed of three-point linkage lowering control
4. Hydraulic sensitivity system control



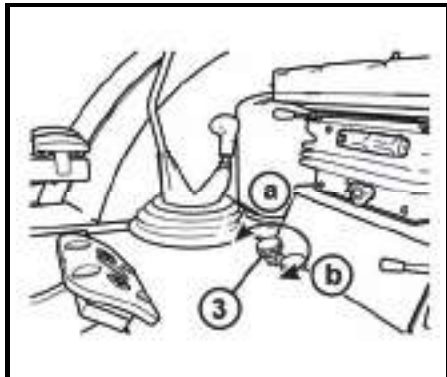
NM13N011

FREE (FLOATING) POSITION

Free (floating) position enables work with a tool which has supporting wheel. The arms of rear three-point linkage are free in this position.

Shift lever (2) to front position (a)
Position of lever (1) is not decisive

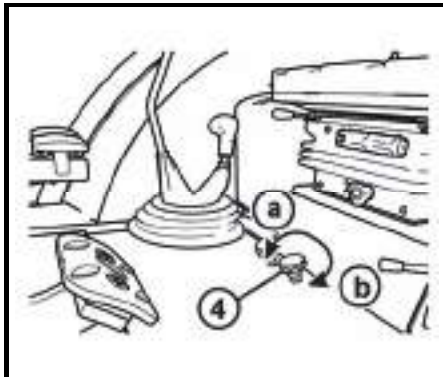
HYDRAULIC EQUIPMENT



NM13N012

SPEED OF THREE-POINT LINKAGE LOWERING CONTROL

Speed of three-point linkage lowering control (3) serves for setting the speed of lowering three-point linkage arms. When turning the control of speed of three-point linkage lowering in (b) direction the speed of three-point linkage arms lowering decreases, in (a) direction it increases. If we turn speed of lowering control (b) to stop, the arms of three-point linkage cannot be lowered.

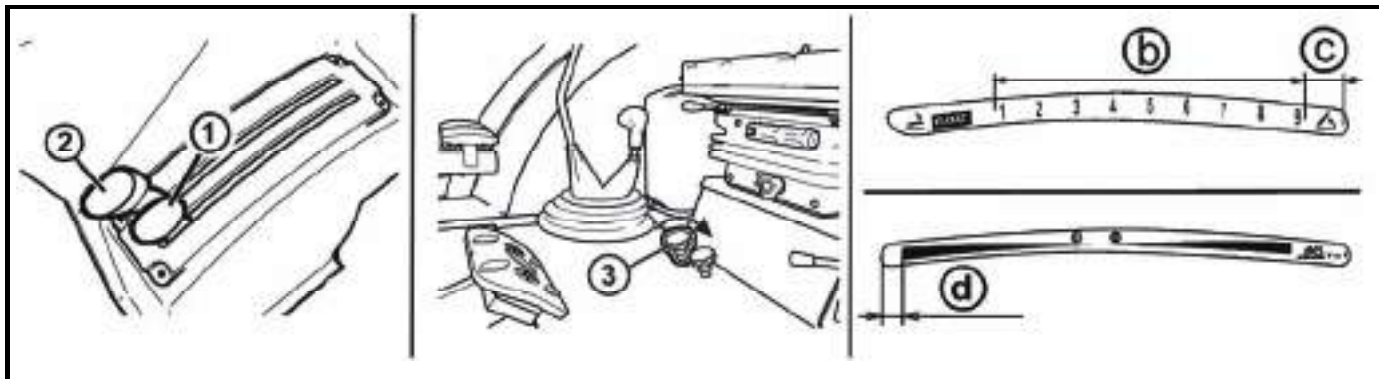


NM13N013

HYDRAULIC SENSITIVITY SYSTEM CONTROL

Hydraulic sensitivity system control (4) serves for setting hydraulic system sensitivity with power or mixed regulation. When turning the control in the direction (a), the sensitivity of the system increases, in (b) direction it decreases.

HYDRAULIC EQUIPMENT



NM13N014

POSITION REGULATION OF REAR THREE-POINT LINKAGE HEAVE

Position regulation of rear three-point linkage heave is a means of regulation with which the tools connected in three-point linkage is kept automatically at constant height (position) to tractor.

Shift lever (1) to front position (d). Perform vertical adjustment of rear three-point linkage with a lever (2) in (b) range. Height setting is smooth in the range of 1-9. With number 1, there are three-point linkage arms in lower position, with number 9 in upmost position. Position (c) is a transport position, in which tools connected in rear three-point linkage are heaved to maximum.

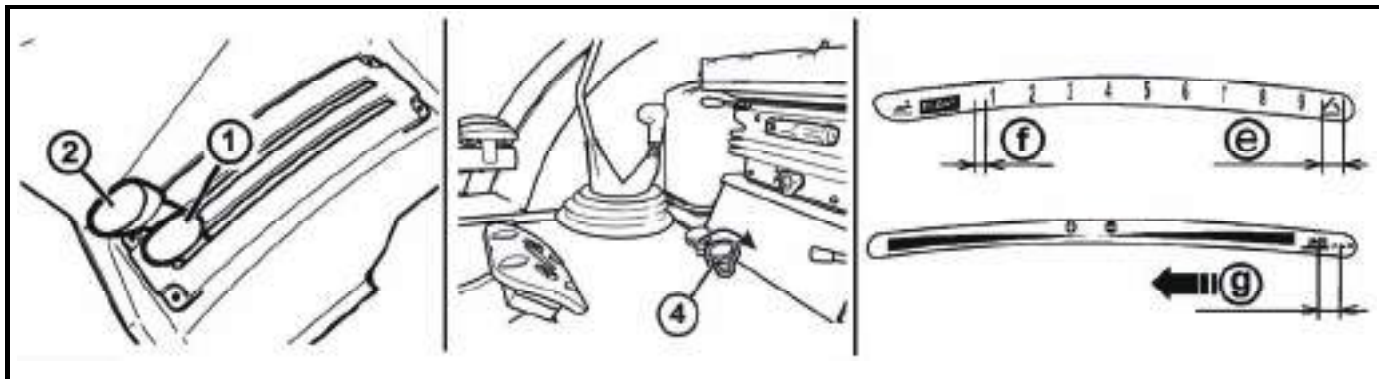


For transporting tools connected in rear three-point linkage always use position regulation.

After lifting tools to transport position, close oil flow through hydraulics to stop by turning the control of speed of three-point linkage lowering (3) in the direction of an arrow. If tools hinged in three-point linkage cannot be lowered in transport position, check the position of the speed of lowering control (3) – turn it against the direction of an arrow.

If tools hinged in rear three-point linkage are long and heavy, there can be blockage of three-point linkage arms in transport position during transport. If lowering speed control (3) is permitted and still a tool it cannot be lowered, move the lever (2) to floating position (c) for a short time and immediately return to the lowering range (d). The arms of rear three-point linkage start dropping according to a set lever (2).

HYDRAULIC EQUIPMENT



NM13N015

POWER REGULATION OF THREE-POINT LINKAGE HEAVE

Power regulation of three-point linkage heave is a means of regulation with which the tools connected in rear three-point linkage is automatically vertically readjusted depending on the change in soil resistance.

Place lever (2) to (f) position.

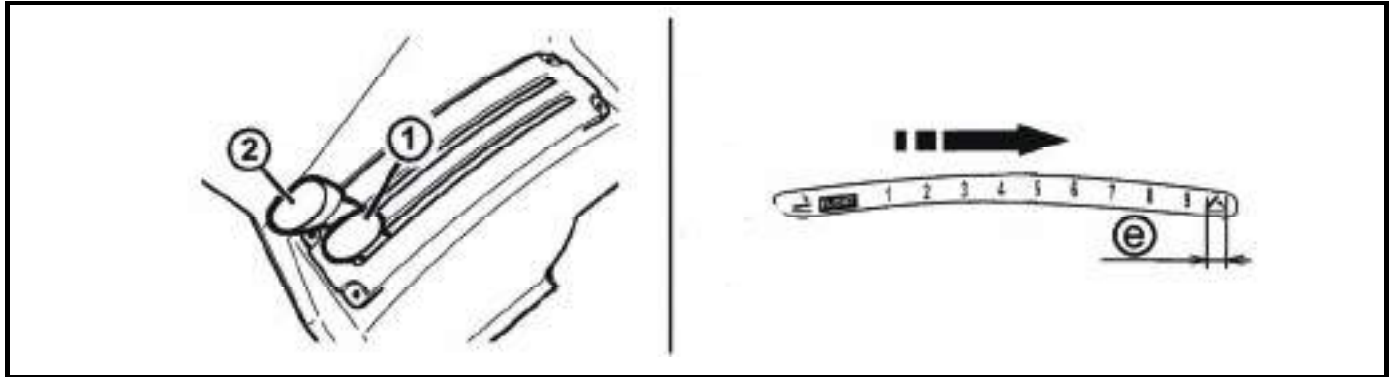
Shift lever (1) to (g) position, start tractor and by shifting lever (1) from (g) position in the direction of an arrow, set the depth of oil cultivation (in (g) position, the depth of soil cultivation is smallest).

As soon as you determine the depth of soil cultivation, the lever (1) must be kept in constant position (1) and at the end of the row to always heave tool connected in rear three-point linkage by only shifting the lever (2) to (e) position. By shifting lever (2) to (f) position, you will return tool back to working position.



If there is oscillation of rear three-point linkage due to variable soil resistance, this can be limited by setting lower sensitivity of hydraulic system by turning the control (4) in the direction of an arrow.

HYDRAULIC EQUIPMENT



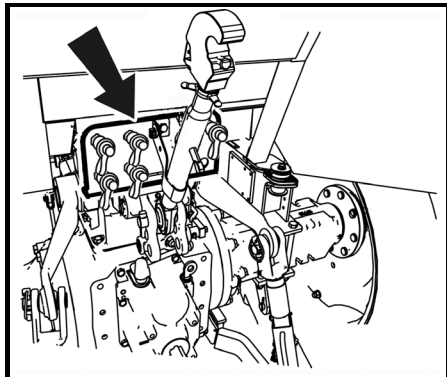
NM13N016

MIXED REGULATION OF THREE-POINT LINKAGE HEAVE

Mixed regulation of three-point linkage heave is a means of regulation with which the tools connected in rear three-point linkage is automatically vertically adjusted depending on the change in soil resistance, while it is prevented for the depth to grow in soil cultivation with smaller soil resistance.

The depth setting of soil cultivation is done with a lever (1) as is the case with Power regulation of three-point linkage heave. Shift lever (2) then in the direction of an arrow to the moment, when three-point linkage arms start lifting lightly. Mixed regulation is set by this. Tools connected in rear three-point linkage can be lifted only by shifting the lever (2) to (e) position at the end of a row. Tool is returned back to working position by shifting the lever (2) to original setting.

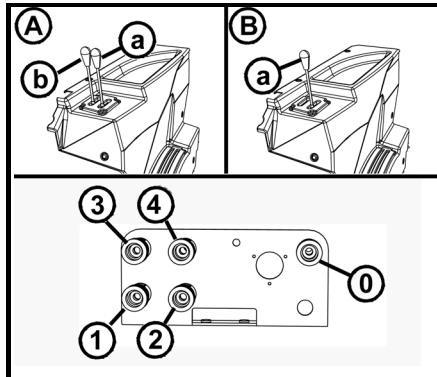
HYDRAULIC EQUIPMENT



NM13N017

EXTERNAL HYDRAULIC CIRCUIT

Supplies pressure oil for hydraulic devices connected to external outlet of hydraulics finished with quick-couplers. Quick-coupler sockets with 12.5 mm clearance correspond to international ISO recommendation.



NM13N018

EXTERNAL HYDRAULIC CIRCUIT CONTROL ELEMENTS

External hydraulic circuit control levers are placed on the right fender.

Depending on tractor equipment the following switchboards can be mounted to external hydraulic circuit.

A - Two-section switchboard

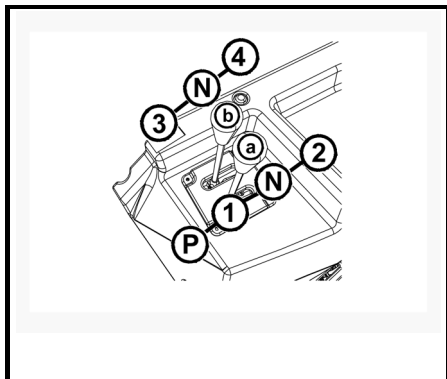
B - One-section switchboard

a - lever (a) controlling quick-couplers (1) and (2)

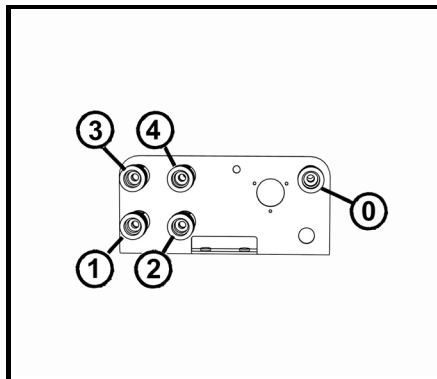
b - lever (b) controlling quick-couplers (3) and (4)

Quick-coupler (0) is directly connected with the area of final house driving and is designed for returned oil from external hydraulic devices (e.g. from rotation hydro engines etc.).

HYDRAULIC EQUIPMENT



NM13N019



NM13N020

TWO-SECTION SWITCHBOARD EXTERNAL HYDRAULIC CIRCUIT CONTROLLING LEVERS FUNCTION

Lever (a) function

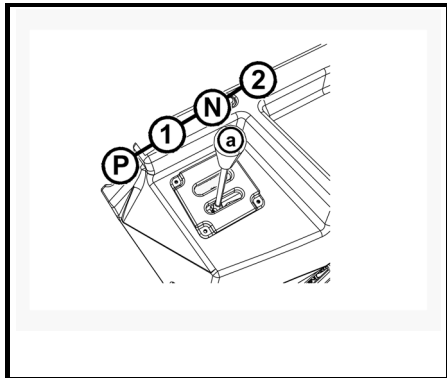
- N** - Neutral position. Outlets to a quick-coupler (1) and (2) are closed and oil in the connected hydraulic device is locked. Lever (a) is locked in this position.
- 1** - Pressure in quick-coupler (1). Quick-coupler (2) is connected with waste. After release, lever returns to position (N).
- 2** - Pressure in quick-coupler (2). Quick-coupler (1) is connected with waste. After release, lever returns to position (N).
- P** - Floating position. Both quick-couplers (1) a (2) are connected with waste and oil can freely flow in them in both directions. Lever (a) is locked in this position.

Lever (b) function

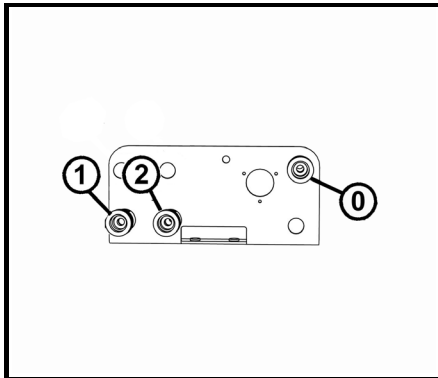
- N** - Neutral position. Outlets to quick-couplers (3) and (4) are locked and the oil in the connected hydraulic device is blocked. Lever (b) is locked in this position.
- 3** - Pressure in quick-coupler (3). Quick-coupler (4) is connected with waste. After release, lever returns to position (N).
- 4** - Pressure in quick-coupler (4). Quick-coupler (3) is connected with waste. After release, lever returns to position (N).

Quick-coupler (0) is directly connected with the area of final house driving and is designed for returned oil from external hydraulic devices (e.g. from rotation hydro engines etc.).

HYDRAULIC EQUIPMENT



NM13N021



NM13N022

ONE-SECTION SWITCHBOARD EXTERNAL HYDRAULIC CIRCUIT CONTROLLING LEVERS FUNCTION

Lever (a) function

- N** - Neutral position. Outlets to quick-couplers (1) and (2) are closed and oil in the connected hydraulic device is blocked. Lever (a) is locked in this position.
- 1** - Pressure in quick-coupler (1). Quick-coupler (2) is connected with waste. After release, lever returns to position (N).
- 2** - Pressure in quick-coupler (2). Quick-coupler (1) is connected with waste. After release, lever returns to position (N).
- P** - Floating position. Both quick-couplers (1) and (2) are connected with waste and oil can freely flow in them in both directions. Lever (a) is locked in this position.

Quick-coupler (0) is directly connected with the area of final house driving and is designed for returned oil from external hydraulic devices (e.g. from rotation hydro engines etc.).

HYDRAULIC EQUIPMENT



P+11N014

QUICK-COUPERS ENGAGEMENT AND DISENGAGEMENT



With quick-couplers engagement and disengagement take greater care with regard for residual oil, remaining in socket or on a plug of a quick-coupler.

This residual oil must be removed from ecological reasons after each quick-couplers disconnection with any textile material.

HYDRAULIC EQUIPMENT

CONNECTING MACHINES AND TOOLS TO EXTERNAL HYDRAULIC CIRCUIT

Connecting double-acting roller

Connect double-acting roller always to quick-couplers of one section.

Connecting machines and tools assembled from more parts

When working with agricultural machines which are assembled from more parts (combiners, shears, harrows), in which side frames are jointly connected to a central frame, tilted to vertical position by separate hydraulic rollers in transport, controlled by tractor external hydraulic circuit, it is advisable to connect lifting branches of rollers to quick-couplers (2) or (4), which are equipped with a reverse valve.

Connecting rotation hydro engine

If there is a rotation hydro engine connected to external hydraulic outlet, it is necessary to connect its reverse branch, always to a quick-coupler (0).

Connecting reversing rotation hydro engine

Reversing rotation hydro engine must be for function connected to quick-couplers of one section. When connecting hydro engines, securing valves need to be included in both branches, which reliably restrict pressure peaks with machine run-out. Waste from these valves is connected to a quick-coupler (0).



Auxiliary machines using oil filling of external hydraulic circuit must be filled with the same kind of oil, which is recommended for gear system of the tractor!

Quick-couplers sockets of an auxiliary machine need to be properly cleaned before connecting.

NOTES

LINKAGES

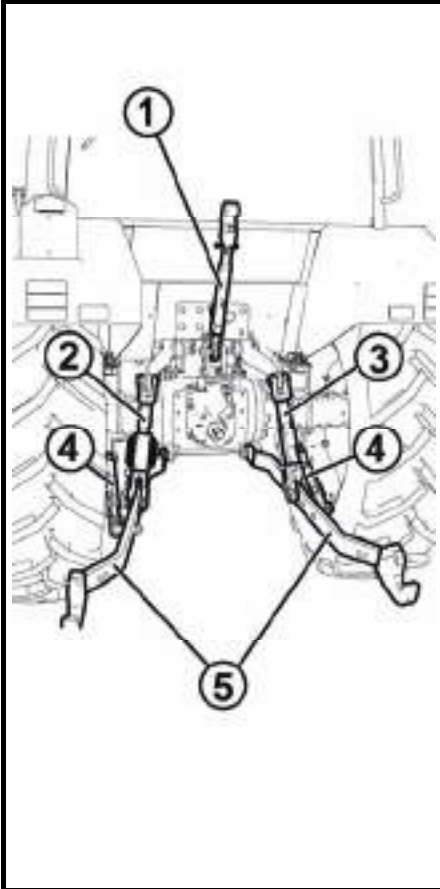
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LINKAGES

REAR THREE-POINT LINKAGE

Serves for connecting carrier-mounted or semi mounted agriculture machines and tools with linkage points of category I. or II. pursuant to ISO.

The categories differ based on the length of linkage axis, which is the distance of the centre of balls of lower linkage joints with connected tool.

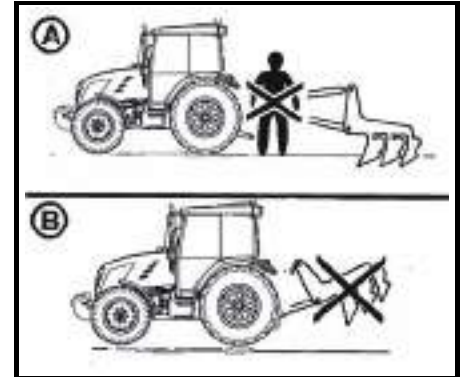


NM13N053

Category I.	
Length of linkage axis	728 mm
Ø of holes of connecting balls of lower draw bars pursuant to ISO	28 mm
Ø of upper draw bar hole	25 mm

Category II.	
Length of linkage axis	870 mm
Ø connecting balls holes of lower draw bars pursuant to ISO	28 mm
Ø of upper draw bar hole	25 mm

1. Upper draw bar
2. Lift rod left
3. Lift rod right
4. Limiting draw bars
5. Lower draw bars



NM13N102

SAFETY PRINCIPLES WHEN WORKING WITH A THREE-POINT LINKAGE

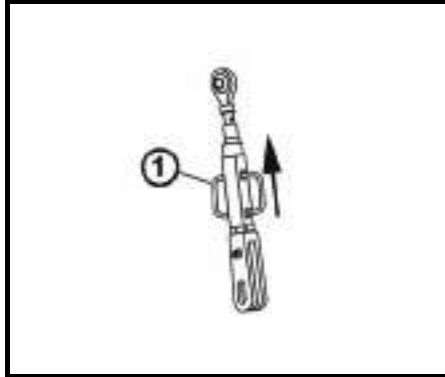


Persons who are not charged with work with auxiliary device of a tractor must not stand between a tractor and connected machinery (tools) - (A).

Do not park tractor with mounted tools in a lifted position (B).

When driving without tools it is necessary to connect lower draw bars (5) by springs and upper draw bars (1) to be placed to a flexible linkage! When transporting tools it is necessary to adjust limiting draw bars (4) of lower draw bars so that there would be no unwanted side movement of tools!

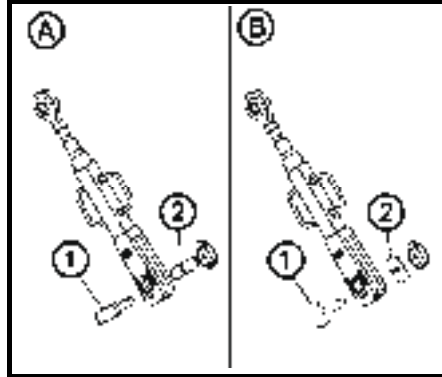
LINKAGES



E453

VERTICAL ADJUSTMENT OF LIFTING DRAW BARS

For vertical adjustment of lifting draw bars protrude a beam (1) in the direction of an arrow and by turning a beam do the setting.



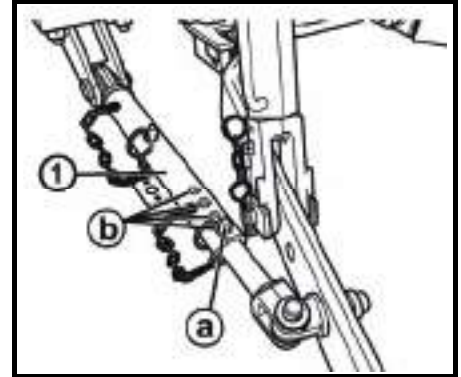
E454

FIXED AND FREE POSITION OF LOWER HYDRAULIC DRAW BARS

Fixed position of lower draw bars of hydraulics fig.(A):
The head of the pin (1) and a pad (2) are mounted horizontally.

Free position of lower draw bars of hydraulics fig.(B):
The head of the pin (1) and a pad (2) are mounted vertically.

Free position enables free connection of a tractor and agriculture tools. Both ends of draw bars can in this case move freely vertically one against another.



NM13N054

LIMITING DRAW BARS

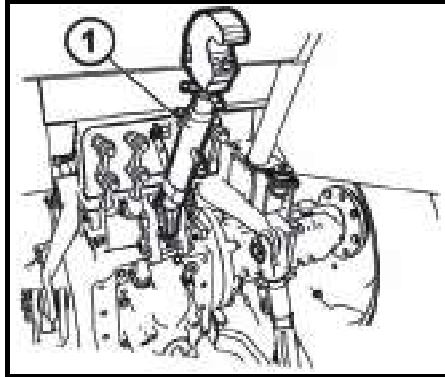
Limiting draw bars (1) limit, or completely exclude side swing of lower draw bars.

The adjustment of left and right limiting draw bar is done by inserting a peg and to some of the holes (b).



Both limiting draw bars must be mounted at all times.

LINKAGES



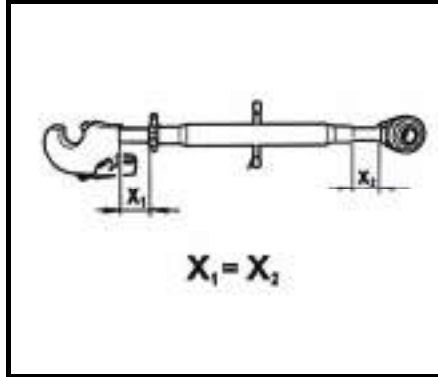
NM13N055

UPPER DRAW BAR

Upper draw bar (1) is horizontally adjustable. It is connected to a tractor to one of the four holes of the bracket, which transfer the power from the connected tools to torque rod in the cover of regulation hydraulics.



When transporting the tools, it is necessary to relocate upper draw bar to holes (c), so that overload of kinematic system of lifting hydraulics, or the fall of the connected machine.

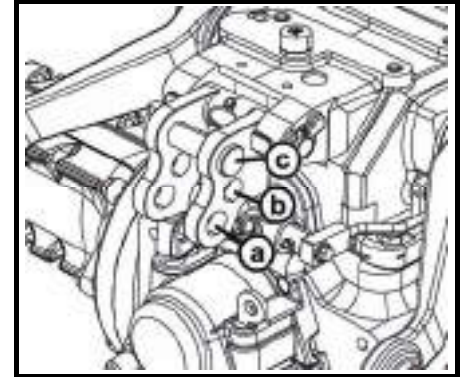


NM13N056

UPPER DRAW BAR



When prolonging an upper draw bar, it is necessary to mind both joints to be unscrewed from the tube of the draw bar to the same length.



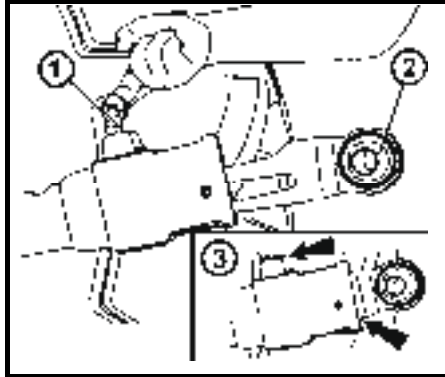
NM13N057

SELECTION OF HOLES IN BRACKET

The connection of upper draw bar to some of the holes (a), (b) or (c) of bracket influences:

the sensitivity of hydraulic control. With connected draw bar in a hole (a) the sensitivity of regulation is the greatest, in (c) hole the smallest.

LINKAGES



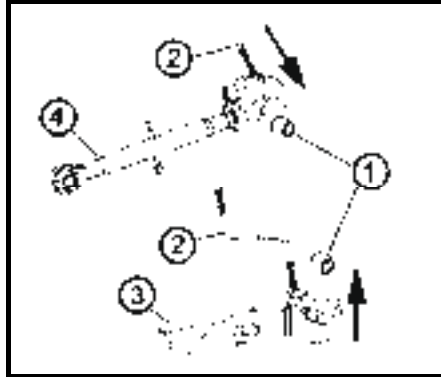
E459



*LOWER DRAW BAR WITH SLIPPING OUT END PIECES

Lower draw bar of linkages are equipped with semi-automatic protruding CBM end pieces. They enable connecting of tools behind a tractor. After protruding securing pegs (1) slip the end pieces out (2). Slipped-out end pieces are attached to tightening pins of mounted tools.

After connecting the mounted tools, release the arms of hydraulics. By lowering them down and reverse travel of a tractor, endpoints (2) are slid onto draw bars and automatically are locked in working position by means of locking pegs (1). *Always check the position of slipped-out end pieces and locking pegs, see fig. (3).*



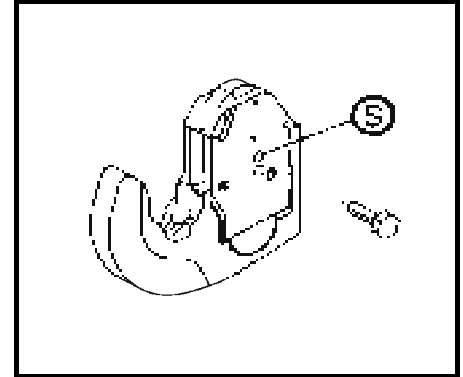
E460

*LOWER DRAW BAR WITH CBM HOOKS

Both lower (3) and upper (4) draw bars of linkage are equipped with CBM hooks. The tools must be first equipped with hanging CBM balls (1) and with limiting draw bars set the distance between lower draw bars of linkage (3).

When reversing and subsequently lifting a three-point linkage, its lower draw bars (3) are connected to tools and then upper draw bar (4) of three-point linkage is connected by the driver from cab.

When disconnecting tools, unlock the hooks, by control cable (2) heave upper draw bar (4) and by lowering three-point linkage disconnect lower draw bar (3).



X901

SECURING LOWER DRAW BARS WITH CBM HOOKS



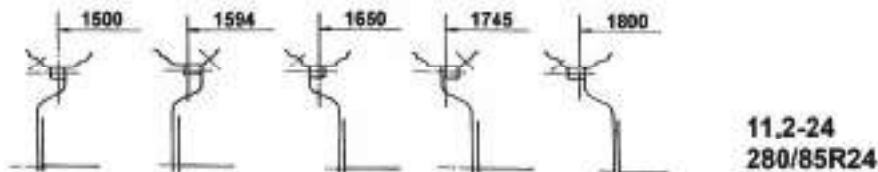
For extremely demanding working conditions (aggregation with heavy machinery on slopes or with aggregation side faced machines) we recommend safely locking the hook of lower draw bar by inserting a M8 screw to (S) hole and locking the screw with a pad.

NOTES

WHEEL TRACK CHANGE

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WHEEL TRACK CHANGE



G503a

CHANGE OF FRONT WHEELS TRACK WITH FRONT DRIVE AXLE

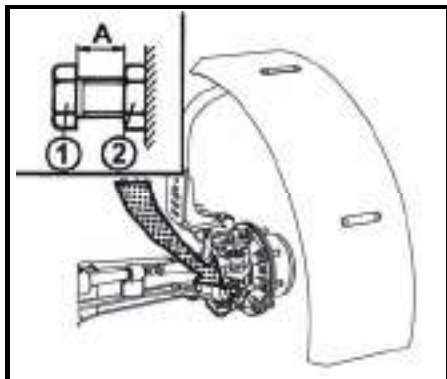
Change of wheel track is done by a change of rim and disc position.



Secure the tractor against movement first, heave the axle with a hoist and support.

- Demount front wheels.
- Unscrew nuts of screws connecting a disc with rim and protrude the screws.
- Change wheel track by setting the rim to a requested position.
- Mount the screws back with pads and lock with nuts.
- Tighten nuts with a torque of 200 - 220 Nm.
- The nut of front wheels to be tightened with a torque of 270 - 300 Nm.
- After every release of a foot joint, tighten the screws to a prescribed value.
- After travelling a distance of 100 m with an unloaded tractor, retighten the joints to a prescribed torque.
- After tractor run-in tighten the joints after 3 Mh.
- After 10 Mh retest the nuts of discs and foots of wheel rim.

WHEEL TRACK CHANGE



F13BN033

SETTING WHEEL STOPS WITH FRONT DRIVE AXLE

Set the stops always with any wheel track change or tire replacement with front drive axle.

Wheel stops with front drive axle must be set so that there would be a distance of at least 50 mm between front drive axle tires and tractor with full lock and full axle swing around central pin.

SETTING WHEEL STOPS WITH FRONT DRIVE AXLE CHECK

Set full lock to one side and check that the distance between a tire and the nearest solid point on the tractor is at least 50 mm. Check both front tires. Turn the steering to full lock to the other side and check according to point 1.

Heave one side of the front axle to the maximum swing (front axle leans against the bracket) and check according to point 1 and 2.

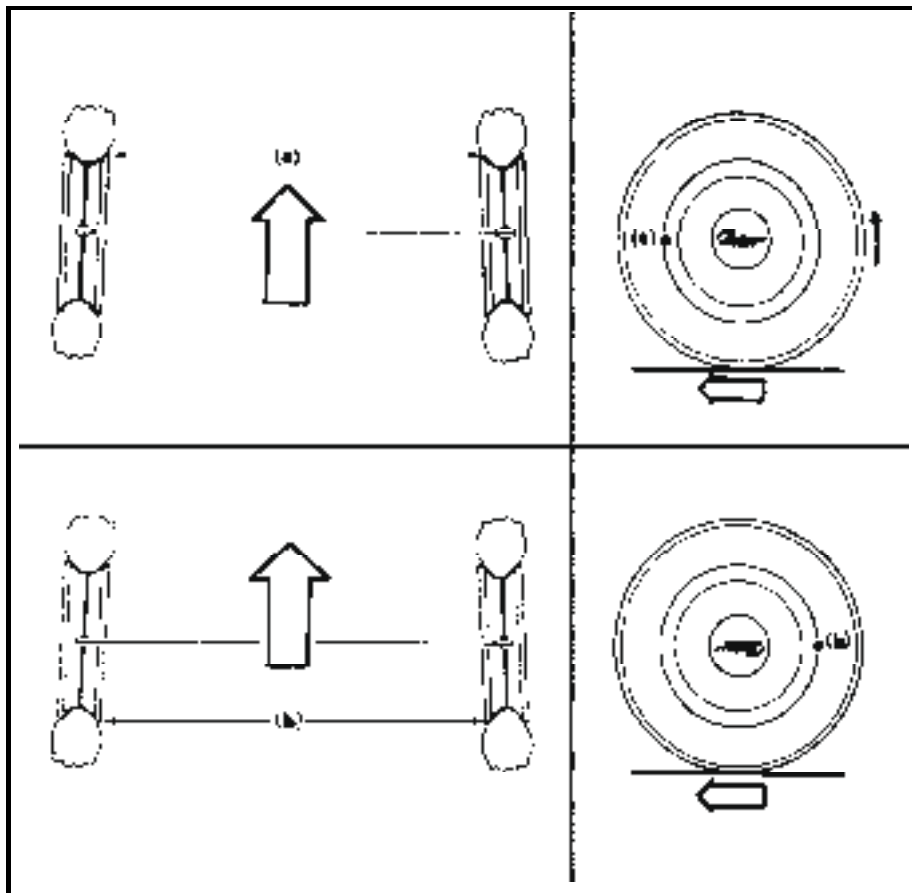
Hoist the other side of front axle to the maximum swing (front axle leans against the bracket) and check according to point 1 and 2.

The setting of stops (A) changes after the release of a nut (2) and unscrewing or screwing in a screw (1).



After the change in setting wheel stops with front drive axle, it is always necessary to check their setting according to points 1 to 4.

WHEEL TRACK CHANGE



FRONT WHEELS TOE-IN

The value of toe-in of front wheels taken on the rim of a tractor:

- **With non-driven axle 2 to 6 mm**
- **With driven axle 0 to 4 mm**

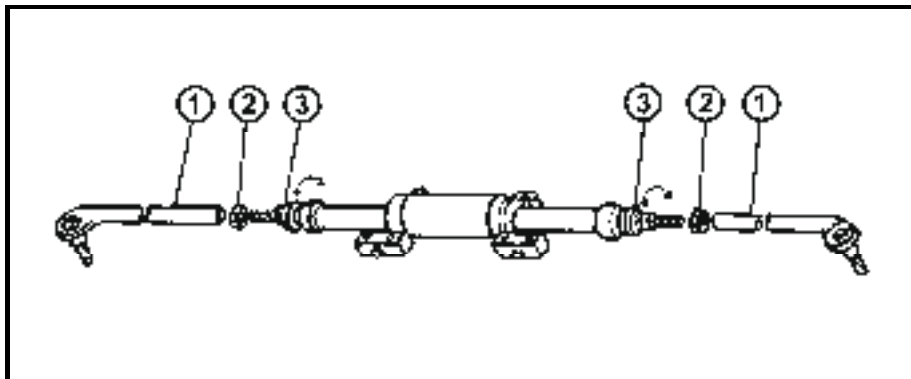
“S” toe-in is given by the difference of measured values: $S = b - a$.



Before checking toe-in, it is necessary to check or adjust the clearance in front wheels bearings and inflate front tires to prescribed pressure. The measurement of toe-in is done on wheel rims.

C505

WHEEL TRACK CHANGE

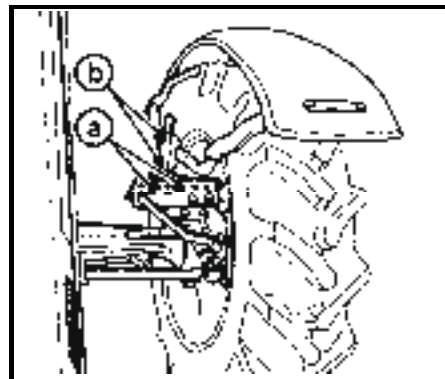


C507

WHEEL TRACK TOE-IN IN TRACTORS WITH FRONT DRIVE AXLE

Note: Tractors are in standard equipped with hydrostatic device.

- Set the wheel symmetrically with longitudinal axis of a tractor
- Measure the distance between rims in the front on horizontal level of wheel axis. Mark the place of measurement.
- Travel forward with a tractor so that the marked places would be on horizontal level of rear wheel axis (turn by 180°) and remeasure the distance between marked places.
- Release locking nuts of ball joint heads (2) of connecting rods of devices in hydraulic cylinder.
- Adjust toe-in by turning the pin of ball joint (3). Do the adjusting symmetrically with both joints to keep the same lock of wheels to both sides (do the measurement on the sides of rims).
- Locking nuts of heads of ball joints (2), tighten with a torque of 122 - 136 N. Upper surfaces of heads must be (1) parallel.

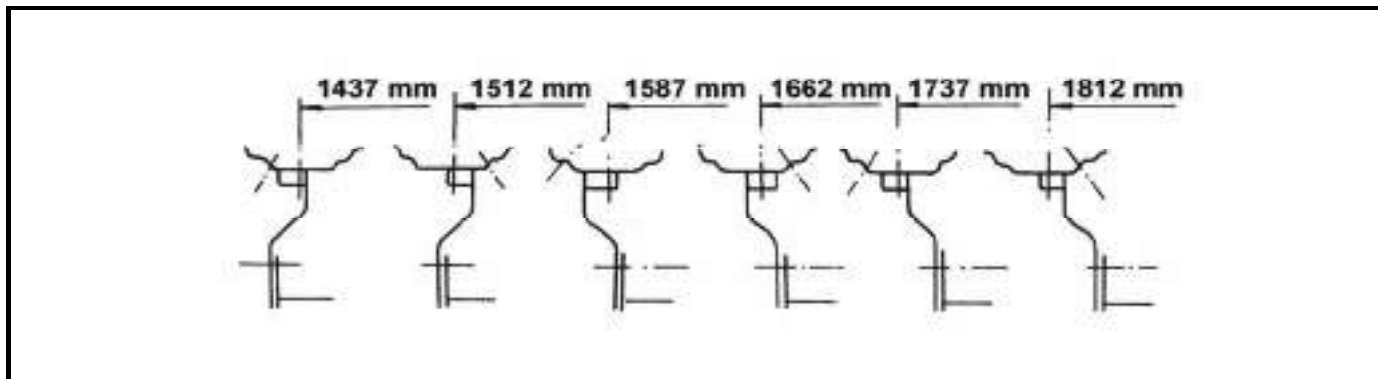


C508

FRONT DRIVE AXLE FENDERS

Are on adjustable holders which can be set both horizontally (by relocating screws "a" to different holes) and vertically (by relocating screws "b" to different hole) based on requested wheel tracks and the kind of used tires.

WHEEL TRACK CHANGE



C509

REAR WHEEL TRACK CHANGE

Used tires	Tire width in mm	Adjustable wheel track
16.9-30	429	1437 - 1812
480/70R30	479	1512 - 1812

The standard factory wheel track is set to 1512 mm.

The wheel track setting of rear wheels is done by the change of rim position and disc with a heave rear part of a tractor. It is necessary for wheels to spin freely.



Before heaving do not forget to lock the tractor against movement by making front wheels stable!

After the change of wheel track, tighten all the screws connecting the disc with a rim by a torque of 270 - 300 Nm and nuts of screws connecting a disc with wheel shaft with a torque of 230 - 245 Nm.

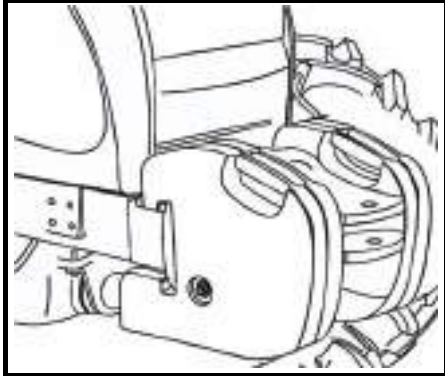
- Tighten the screws to a prescribed value after every release of foot joint.
- After travelling a distance of 100 m with an unloaded tractor retighten the joints again to a prescribed torque.
- After loading the tractor, tighten the joints after 3 Mh.
- Retest the tightening of disc nuts and foot of wheel rims after 10 Mh.
- Until you travel first 100 Mh, check the disc nuts and foot of front and rear wheels tightening often (at least 6 times in the first 100 Mh).
- Continue retesting the disc nuts and foot rims of front and rear wheels tightening always after working every 100 Mh.

AUXILIARY BALLAST WEIGHTS

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Auxiliary ballast weights are necessary for increasing the pressure on axles, ensuring tractor steerability or ensuring stability (when working with front loader, follow producer's guidelines).

AUXILIARY BALLAST WEIGHTS



NM13N072

*BALLAST WEIGHTS IN FRONT OF BONNET GRILL

Ballast weights in front of bonnet grill		
Combina- tion of weights(pc s)	Weights weight (kg)	
4+1	4x50 + 66	266

AUXILIARY BALLAST WEIGHTS



NM13N104

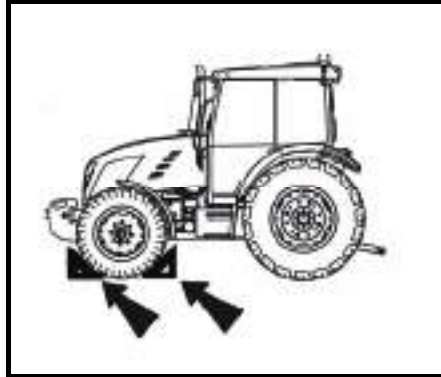
VALVE FOR FILLING TIRES WITH LIQUID

All air locks of rear wheels are equipped with a valve, which enables to fill air locks with liquid when using an adapter.



Tubeless tires are not filled with liquid!

Filling air locks of front tires and double mounting of rear wheels by liquid is not permitted!



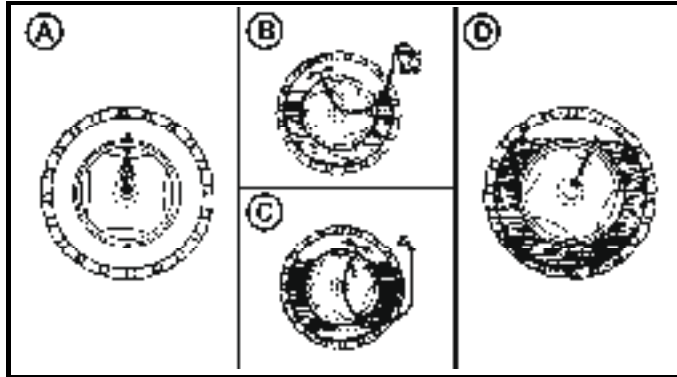
NM13N103

MAKING FRONT WHEELS STABLE



Do not forget to lock a tractor against motion by making front wheels stable before lifting the rear wheels!

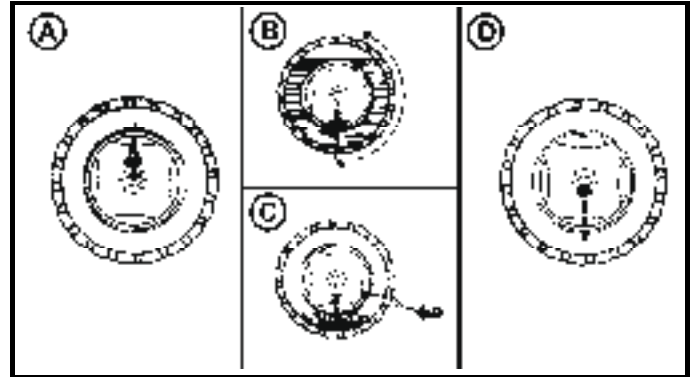
AUXILIARY BALLAST WEIGHTS



E556


FILLING TIRES WITH LIQUID PROCEDURE

1. by heaving the tractor relieve tire and turn the wheel valve up (A)
2. let out air and unscrew the valve insertion
3. screw in the adapter for water filling, muzzle a hose for liquid inlet
4. fill the tire with a prescribed amount of liquid
5. it is possible to use head tank (B) or you can do the filling under pressure (C)
6. remove the hose and unscrew the adapter for water filling
7. screw in the insertion of a valve and inflate the tire to prescribed pressure (D)
8. after inflating screw in a protective cap on the valve
9. fill the second tire in the same way



E557

DRAINING LIQUID FROM TIRES PROCEDURE

1. by heaving the tractor relieve tire and turn the wheel valve up (A)
2. let out air and unscrew the valve insertion, turn the wheel valve down
 *When draining the liquid, there can be decompression in the tire. Therefore turn the wheel a bit from time to time to get the valve into upper position (B)!*
3. remove remaining liquid after screwing in an adapter for filling with water by inlet of compressed air (C)
4. blow the liquid out for so long that the liquid stops flowing out through the tube of air adapter
5. unscrew the adapter for water filling
6. screw back in the air part of valve and inflate the tire to prescribed pressure (D)
7. screw in a protective cap to a valve
8. drain the liquid similarly also from the second tire

AUXILIARY BALLAST WEIGHTS

ANTI-FREEZING SOLUTION FOR FILLING TIRES

Water for solution preparation	Calcium chloride CaCl_2	Calcium hydroxide	Solution density with 20°C	Chill point approximately	Total volume	Auxiliary weights
(l)	(kg)	(kg)		(°C)	(l)	(kg)
45	11,8	0,21	1,13	-18	50	57
45	13,9	0,23	1,18	-25	50	59
45	15,4	0,25	1,21	-30	50	61

Solution preparation:

1. Calcium chloride (CaCl_2) is added to water not the other way round!

- The solution is not hazardous but it needs to be handled with care. Wash spilled drops with clean water.
- Allow the solution to cool off before filling. Keep the prescribe amount of calcium hydroxide.
- The solution must not come in touch with metallic parts and electric installation" The solution is nor harmful to the valve of air lock.
- Anti-freezing solution prepared in the given composition must not be used in cooling system!
- Dispose of anti-freezing solutions as of special waste after draining!

NOTES

ELECTRICAL INSTALLATION

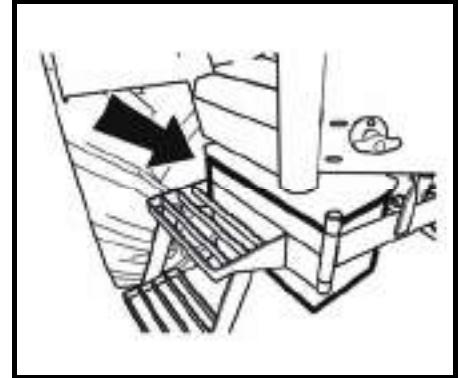
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There must not be any additional interventions to the electric installation of the tractor (connecting other electric devices) from the reason of its possible overload!

When repairing electric installation, pay greater care especially when manipulating with accumulator batteries, to avoid contact of skin or clothing with electrolyte.

ELECTRICAL INSTALLATION



NM13N076

BASIC SERVICE INFORMATION

Accumulator battery must be always connected by a "minus" pole to earth electrode and "plus" pole connected with alternator. Reversely connected accumulator battery will destroy the whole of semiconductor device of alternator. When using auxiliary accumulator battery for starting the tractor, do not forget to connect "plus" to "plus" and "minus" to "minus". If replacement of a part of charging circuit is done, disconnect a battery from the earth electrode of the tractor by battery disconnecter (-). Any incidental short circuits on clamps are excluded.



With any manipulation or starter repair, it is necessary to disconnect the minus pole of the battery and to shift all the levers including PTO shaft shifting lever to neutral position so as to prevent spontaneous start and endangering the life of a repairman.

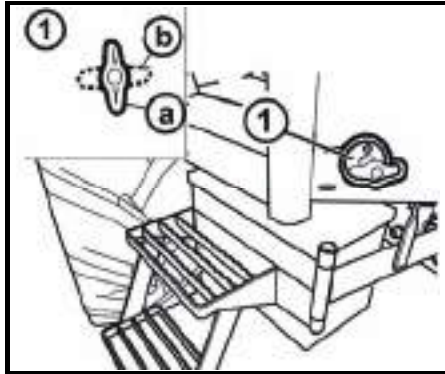


*It is forbidden to start by short circuiting the clamps of starter.
Start tractor only from driver's seat.*

ACCUMULATOR BATTERY

Accumulator battery is located in a box on the left side of the tractor. After unscrewing the screw marked with an arrow, lid of box of accumulator battery can be opened together with steps.

ELECTRICAL INSTALLATION



NM13N77

BATTERY DISCONNECTOR

Accumulator battery is located under the cab on the right side.

Battery disconnecter (1) is located on the right side of the tractor in front of the cab.

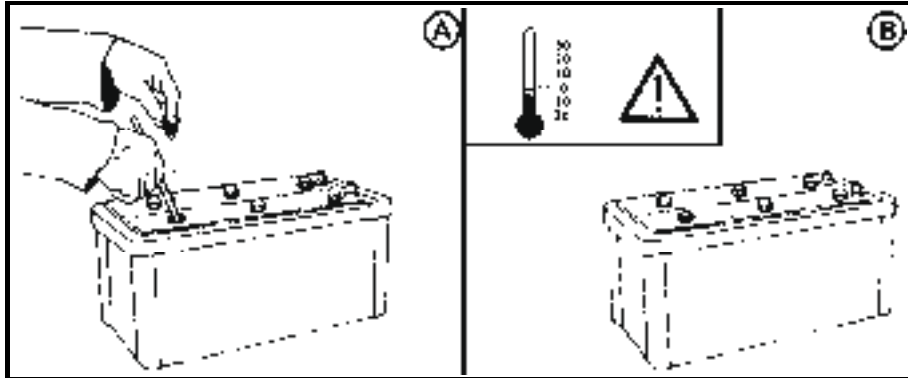
a - Battery connected

b - Battery disconnected



If the tractor is put aside for a longer period of time, it is necessary to recharge the accumulator at least once in three months because of the battery self discharge. When putting tractor aside we recommend you to disconnect the accumulator by means of battery disconnecter.

ELECTRICAL INSTALLATION



E604

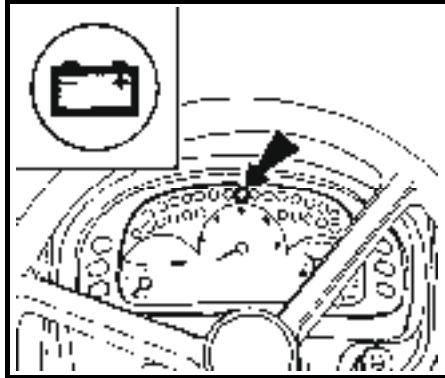
ACCUMULATOR BATTERY MAINTENANCE

Keep accumulator battery clean, well attached to the vehicle. The attachment device must not however deform the accumulator vessel. The level of electrolyte must be under the minimum level (mark line) marked on a vessel with polypropylene batteries.

Do the refill only with distilled water!

1. *First study the instructions manual enclosed to the battery when working with accumulator!*
2. *When working with accumulator, protect your eyes with either goggles or a protective shield!*
3. *Electrolyte is an alkali, handle it therefore with due care! Rinse the skin stained with electrolyte and neutralize with soap and water, just like the stained clothing. Keep away from children!*
4. *When recharging from electrolyte hydrogen is released on electrodes, which makes an explosive mixture when mixed with air. It is therefore forbidden to manipulate with open fire near accumulator!*
5. *An explosion may be caused by a spark incurring after disconnection or release of clamp with engaged charging circuit!*
6. Discarded accumulator is environmentally hazardous waste – when buying a new accumulator, hand the old one over to a seller who will dispose of it free of charge.
7. Insufficiently charged battery can freeze in winter

ELECTRICAL INSTALLATION



E605

ALTERNATOR

It is accessible after hinging the bonnet away. Charging check is indicated by a red control on the compound dashboard device, which must go out after starting.



When repairing tractor by electric welding, all the conductors must be disconnected alternator. Protect conductor "+B" against short circuit.

ALTERNATOR MAINTENANCE



When washing and cleaning tractor protect alternator prior to penetration of water or oil!

You must not disconnect alternator from accumulator during operation!

Alternator must not ever be put in operation with a disconnected conductor from of clamp "+B" and connected clamp "+D". Such condition when increasing the revolutions may cause an exceptionally high alternator voltage which would damage semiconductors!

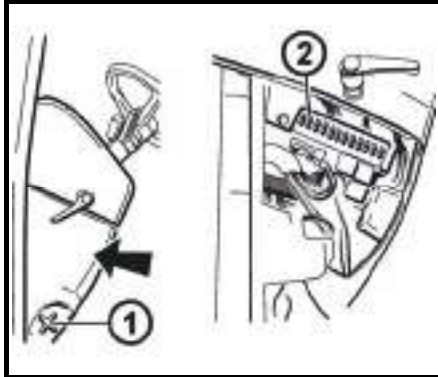
Never short circuit any clamp of alternator in operation!

Alternator must not be over activated. There is a risk of semiconductors damage with this intervention!

Mind the perfect electrical joint on connecting clamps and on perfect alternator grounding!

Alternator must not be overpoled not even for a short time!

ELECTRICAL INSTALLATION



NM13N078

FUSE BOX

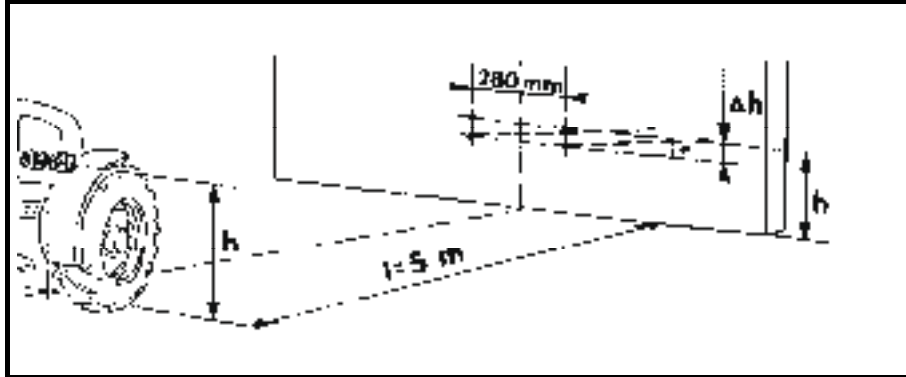
Is accessible after removing the left lid of the steering bracket. Lid can be removed after unscrewing the screw (1).

Fuses (2) are knife-blade-contact and with replacement it is necessary to keep the prescribed value of the fuse. With repeated interruption, search for the nearest service.

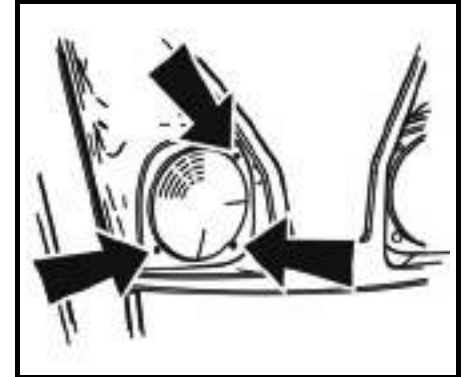
Placement of fuses in fuse box	Pos.	Size of fuses	Protected system
	1	15A	Direction lights
	2	15A	Brake lights
	3	20A	Ignition relay, dashboard feeding, start blocking, recirculation
	4	15A	Headlights with control
	5	15A	Left side lights
	6	15A	Right side lights
	7	10A	Right dimmed headlight
	8	10A	Left dimmed headlight
	9	15A	Radio, washer, beacon, cab lighting
	10	15A	Working headlights in roof
	11	15A	Heating
	12	20A	Air condition, front and rear washer,
	13	80A	Ignition

NM13N079

ELECTRICAL INSTALLATION



E609



NM13N106

LIGHTS ADJUSTMENT IN TRACTOR'S GRILL CHECK

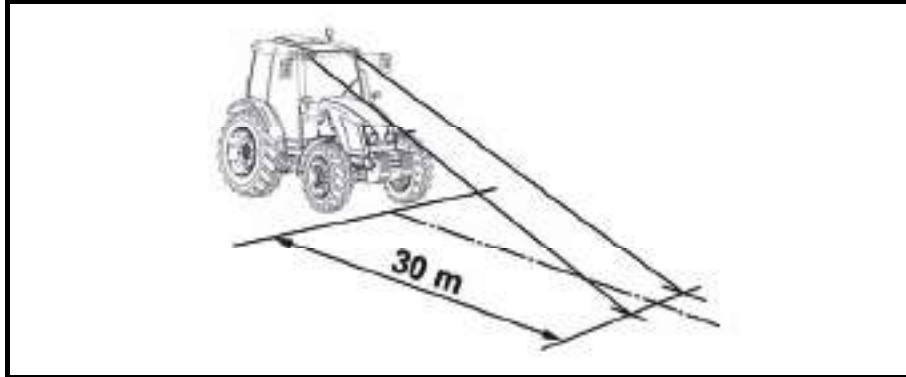
When checking on test wall, the tractor must stand on a horizontal surface and tires must be inflated to prescribed pressure. Basic vertical adjustment is 3.5 % with service weight of the tractor. In horizontal direction, the beams of lights must be parallel with the longitudinal axis of tractor's symmetry.

- l** - Distance of test wall from a headlight (5 m)
- h** - Height of the centre of headlight above the road
- Δh** - Headlight slope (-3.5 %) of the distance of test wall = 17.5 cm
- α** - Lifting the line of asymmetric light (15%)

LIGHTS ADJUSTMENT IN TRACTOR'S GRILL

Adjustment is done simultaneously with all screws for both vertical and horizontal direction of a beam. In adjusted state all the springs of unadjusted screws must be preloaded! Each headlight is adjusted separately. Bulb replacement is done by removing it from the back side of reflector.

ELECTRICAL INSTALLATION



NM13N105

LIGHTS ADJUSTMENT IN CAB ROOF CHECK

No point of a lit surface lying on the level of road to the left from longitudinal vertical surface passing through the centre of headlight must be further from the front line of the tractor than 30 m.

In horizontal direction, headlight beams must be parallel with longitudinal axis of tractor symmetry.

Perform the lights adjustment check with service weight of the tractor. Front roof headlights can be used for operation on roads only in such cases when a front mounted tool is hanged on the tractor or a device covering main headlights (in tractor's grill).

MAINTENANCE OF THE TRACTOR

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MAINTENANCE OF THE TRACTOR

STEPS TAKEN DAILY ALWAYS BEFORE STARTING THE WORKS

Before starting the engine

Amount of oil in the engine check
Amount of coolant and joint tightness in the cooling system check
Checking the amount of oil in the hydrostatic steering circuit tank
Checking the amount of oil in gear box and final drive housing
Air cleaner indicator contamination check
Air pressure in all tires check
Wheels tightening check
Auxiliary and connecting tools check

After starting the engine

Engine greasing function check (control)
Charging function check (control)
Steering function check (control)
Steering circuit function and tightness check
Efficiency and function of tractor brakes check
Efficiency and function of trailer or semi-trailer brakes check

STEPS TAKEN AFTER EVERY 100 HOURS OF OPERATION

Greasing the tractor based on a greasing plan
Cleaning radiator discs by air pressure
Dry air filter maintenance (maintain according to pollution indicator signalization)
Checking the amount of oil in the gear box and final drive housing
Checking the amount of oil in reducers and front drive axle box
Draining condensate from air collector

MAINTENANCE OF THE TRACTOR

STEPS TAKEN AFTER EVERY 500 HOURS OF OPERATION

Cogged belt tension check
 Hydrostatic steering system clearance check.
 Pivot of front drive axle clearance check.
 Clutch and brake pedals adjustment clearance check
 Manual clutch function check
 Brake function for trailer check
 Cleaning and greasing accumulator battery clamps by a thin layer of grease.
 Air pressure system tightness and function check
 Driver's seat function check, greasing moving parts with grease

STEPS TAKEN BEYOND 500 MTH INTERVAL							
	with a new tractor or a tractor after general repair						
Meter of Mth state	100	500	1000	1500	2 000	2 500	subsequently after....hours of operation
Inspection and adjustment of valve clearance		o				o	2000
Opening pressure of injectors and the function of injection nozzles check					o		2000
Hydrostatic steering hoses replacement							every 3500 Mth or every 4 years
Foot and manual brake function check	o	o	o	o	o	o	500
Front wheels toe-in					o		2000

MAINTENANCE OF THE TRACTOR

REPLACING FILLINGS AND FILTERS						
	with a new tractor or a tractor after general repair					
Meter of Mth state	100	500	1 000	1 500	2 000	subsequently after....hours of operation
Motor oil replacement	o	o	o	o	o	500
Motor oil filter element replacement	o	o	o	o	o	500
Fuel filter element replacement		o	o	o	o	500
Air filter element replacement			o		o	1000
Air filter safety element replacement					o	2000
Heating filter element replacement						every 1000 Mth or every 2 years
Coolant replacement						every 2 years
Oil in gear box and final house driving replacement				o		1500
Sucking filter replacement (hydraulic pump sucking filter replacement)	o	o	o	o	o	500
Replacing oil in the front drive axle box	o		o		o	1000
Replacing oil in reducers of front drive axle	o		o		o	1000
Hydrostatic steering oil replacement				o		1500
Hydrostatic steering filter element replacement				o		1500

MAINTENANCE OF THE TRACTOR

USED OPERATION LIQUIDS AND FILLINGS - AMOUNT	
Name of location	Amount in litres
Coolant	
Coolant with a cab	14.4
Oil in engine	10
Oil to hydrostatic steering	2.6
Oil to front drive axle box	5.5
Oil to planet reducers of front drive axle	2x0.6
Oil to gear box and final drive housing	35
Fuel	80

MAINTENANCE OF THE TRACTOR

OILS FOR FOUR-ROLLER FORCED INDUCTION ZETOR ENGINES		
Oil labelling	Viscosity class SAE	Performance class API
Shell Rimula R3 X	15W-40	API CH-4
MOL Dynamic Transit	15W-40	API CI-4
MOL Dynamic Turbo Diesel	15W-40	API CF-4
ORLEN OIL Diesel(2)HPDO	15W-40	API CG-4
ÖMV truck LD	15W-40	API CI-4
ARAL Mega Turboral	10W-40	API CH-4
Fuchs Titan Truck	15W-40	API CG-4
MOGUL DIESEL DTT PLUS	10W-40	API CF
MOGUL DIESEL DT	15W-40	API CG-4/SL
MOGUL DIESEL DTT EXTRA	15W-40	API CI-4/SL
TRYSK SUPER (M7 ADS III)	15W-40	API CF-4
TRYSK SUPER TURBO (M7 ADS IV)	15W-40	API CG-4/SL

OILS OF TRACTORS TRANSMISSION GEARS			
Manufacturer	Oil labelling	Viscosity class SAE	Performance class API
Paramo	Traktol STOU	10W - 30	GL-4
Aral	Super Traktoral	10W - 30	GL-4
ÖMV	Austrotrac	10W - 30	GL -4
Fuchs	AGRIFARM STOU 10W-30 MC	10W - 30	GL-4

MAINTENANCE OF THE TRACTOR

OILS TO FRONT DRIVE AXLE			
Manufacturer	Oil labelling	Viscosity class SAE	Performance class API
Agip	Rotra Multi THT	80W	GL-4
Aral	Fluid HGS	80W	GL-4
Esso	Torque Fluid 62	80W	GL-4
Fuchs	Titan Supergear	80W/90	GL-4/GL-5
	Titan Hydramot 1030MC	10W/30	GL-4
	Titan Renep 8090MC	80W/90	GL-4/GL-5
ÖMV	Gear Oil LS	85W/90	GL-5
Shell	Spirax AX	80W/90	GL-5
MOL	Hykomol K 80W-90	80W - 90	GL-5
ORLEN OIL	Platinum Gear 80W-90	80W - 90	GL-5

OILS TO HYDROSTATIC STEERING FOR TRACTORS		
Manufacturer	Oil labelling	Classification
Aral	Vitam DE 32	HLP DIN 51524
Fuchs	RENOLIND10VG32	HLP DIN 51524-2
ÖMV	Hyd HLP 32	HLP DIN 51524
Shell	TELLUS DO 32	HLP DIN 51524
PARAMO	MOGUL H-LPD 32	HLP DIN 51524
	MOGUL HM 32	HLP DIN 51524
MOL	Hydro HV 32	HVLP DIN 51524-3
ORLEN OIL	Hydrol L-HM 32	HLP DIN 51524-2
	Hydrol L-HM 46	HLP DIN 51524-2

MAINTENANCE OF THE TRACTOR

PLASTIC LUBRICANT FOR TRACTOR	
Type	Classification
MOGUL LA 2	ISO 6743/9 CCEB 2/3, ISO - L - XBCEA 2
MOGUL LV 2M	ISO 6743/9 CCEB 2/3
ÖMV signum	DIN 51825-K 2 C-30
Shell retinax HD2	DIN 51825 KP 2 K-20
MOL	Liton LT 2EP
ORLEN OIL	Liten® Premium LT-4 EP2

MAINTENANCE OF THE TRACTOR

FLUID TO TRACTOR COOLING SYSTEM

FRIDEX - STABIL, FRIDIOL 91 or FRICOFIN S and demineralised water in 1:1.5 rate (replenish the mixture in this rate).

Antifreezer for replacement abroad must include anti-corrosive component, protecting all materials (including rubber and sealing heads) of engine cooling system.

BEWARE!

1. *Water without antifreezer must not be used for cooling in tractors!*
2. *After two years of operation, replace coolant. FRIDEX - STABIL and FRIDIOL 91 can be mutually mixed.*
3. *Mixability of fluids from other manufacturers is not tested!*

FUEL

Summer diesel for the period from April 1 to October 31

Winter diesel for the period of November 1 to March 31

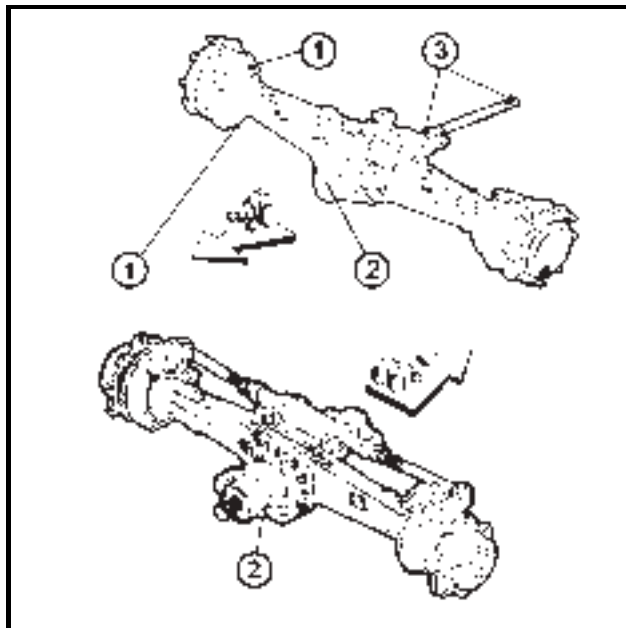
Note: Applicable types of fuel must be used abroad

Mixed Fuel Natural Diesel (bio diesel).

Note: Tractor operation on bioFuel requires equipping the fuel system with REP hoses. Using bio fuels increases consumption, decreases performance by approximately 5%, requires oil replacement in engine after 200 Mh. It also has an aggressive effect on polished parts.

MAINTENANCE OF THE TRACTOR

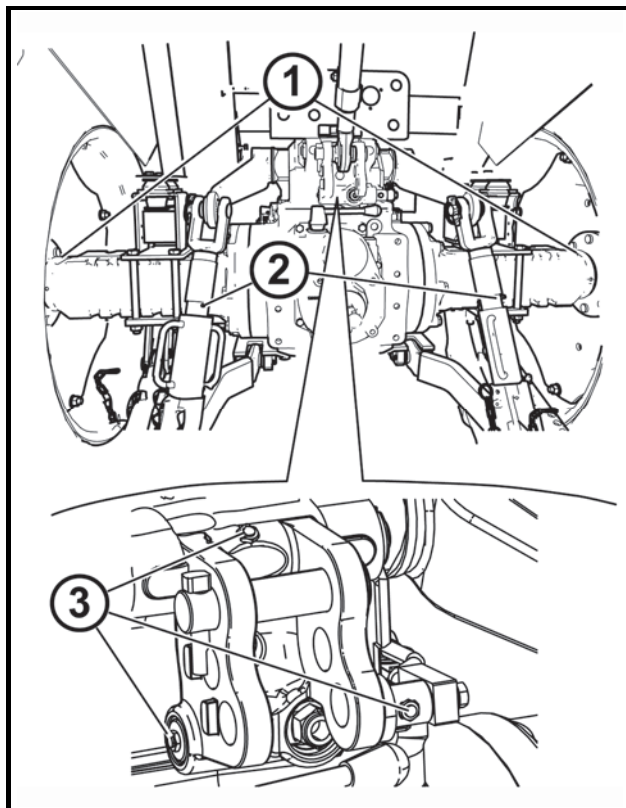
TRACTOR GREASING PLAN



FRONT DRIVE AXLE

Position number	Name	Number of greasing points
1	Pivot pins	4
2	Spigot shaft	2
3	Cardan shaft joint	2

MAINTENANCE OF THE TRACTOR



NM13N073

THREE-POINT LINKAGE AND REAR SEMI-AXES BEARINGS

Number of position	Name	Number of greasing points
1	Rear semi-axes bearings	2
2	Lifting rod	2
3	Upper draw bar bracket	3

NOTES

MAINTENANCE INSTRUCTIONS

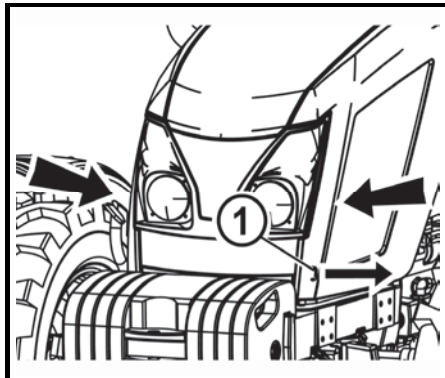
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Most of the works of planned technical maintenance can be done by the driver or user of the tractor himself/herself. If you do not have the corresponding technical equipment, turn to a specialized garage for the more difficult steps.



All the works related to the cleaning, greasing and adjusting the tractor or articulated machines can be done only with tractor and other moving parts at standstill, apart from the brake, charging and hydraulic controls.

MAINTENANCE INSTRUCTIONS



NM13N107

FRONT BONNET OPENING

Opening the bonnet:

Unlock the bonnet by pulling the draw bar (1) in the direction of an arrow, grip where the arrows are and heave.

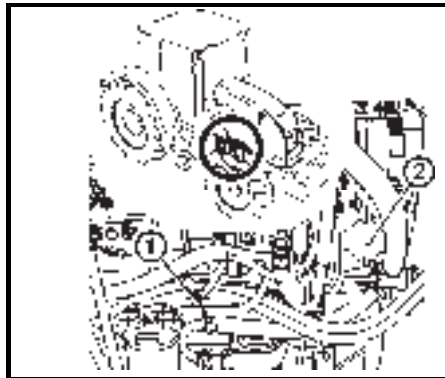
The bonnet is locked in the heaved position by a gas-fluid prop.

Closing the bonnet:

Pull the bonnet by means of a belt, grip where the arrows are and snap in the downward direction so that the lock of bonnet snaps down.



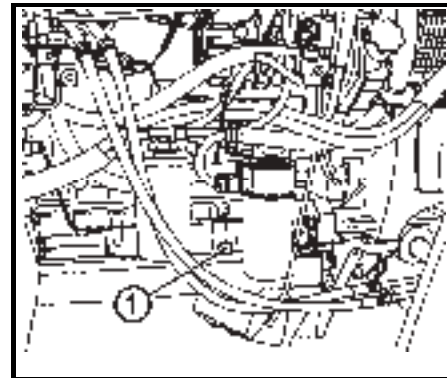
If you close the front bonnet prudce, there can be the damage of headlights bubs placed in the front bonnet.



X903

CHECKING OIL LEVELS IN ENGINE

Check daily before starting the operation with the tractor standing horizontally. Engine oil dipstick (1) and filling hole (2) are placed on the rights side of the engine. Unscrew the dipstick (1), wipe off with a cloth and screw back in. When you unscrew the dipstick again, the level must not drop below the bottom gauge. If necessary, refill oil by a filling hole (2).

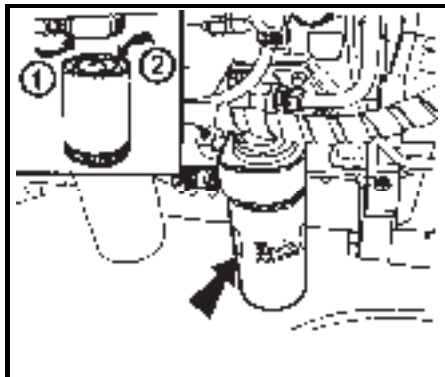


E703

DRAINING OIL FROM ENGINE

1. unscrew the drain plug (1), best immediately after terminating the drive or after heating the engine to working temperature
2. drain oil
3. clean the drain plug
4. screw the drain plug (1) back in

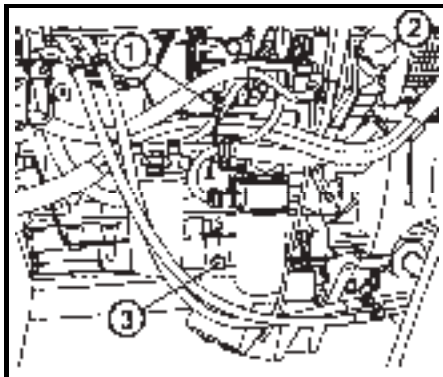
MAINTENANCE INSTRUCTIONS



E704

REPLACING FULL-CONTINUOUS MOTOR OIL FILTER

To be done with every oil replacement in engine. Before you screw in a new filter, clean the sealing surface of the body (1) and the filter (2). Grease rubber sealing with oil, with which you will fill the engine and tighten the filter with your hand. After the sealing seats on the sealing of the block, tighten the filter for a $\frac{3}{4}$ to 1 and $\frac{1}{4}$ of a revolution. Check the tightness again after starting the engine.



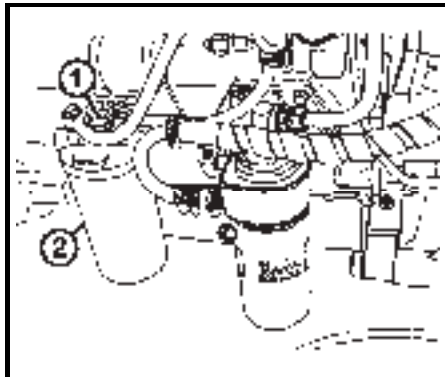
E705

POURING OIL TO ENGINE

Pour the set amount of motor oil engine by filling hole (2), start the engine and allow it to run for 2 - 3 minutes with engine revolutions of 750 - 800.

After stopping the engine and settling the level recheck the amount of oil with a dipstick (1) and check the tightness of filter, drain plug (3) and other joints.

MAINTENANCE INSTRUCTIONS



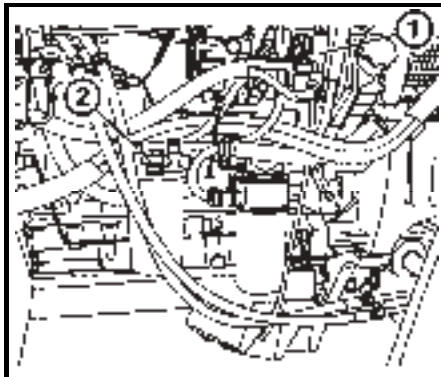
E706

FUEL FILTER ELEMENT REPLACEMENT



Before you replace fuel filter, place a suitable vessel under the engine for catching dripping fuel from the filter.

1. release the nut (1)
2. unscrew bulb (2)
3. clean the bulb and replace the filter element
4. check proper positioning of bulb sealing
5. do the bulb back assembly
6. do fuel system venting



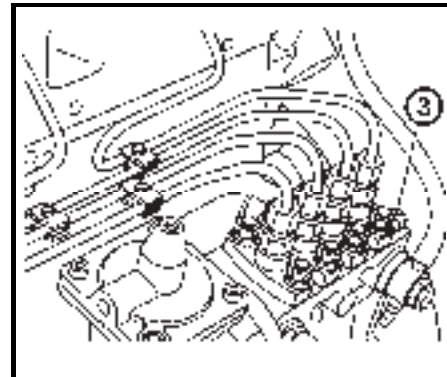
E707

FUEL SYSTEM VENTING



Before you vent, place a suitable vessel under the engine to catch dripping fuel from the filter and injection pump.

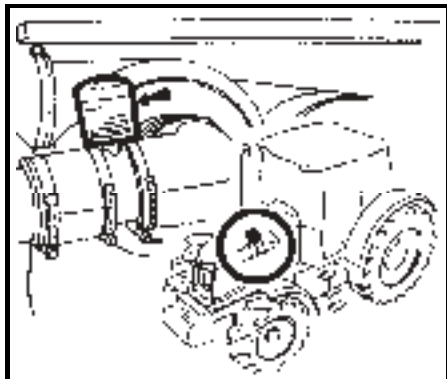
1. by several heaves of a manual control of feeding pump (1) pressurize the fuel system
2. release the screw of branch pipe of fuel feeder to filter (2) and allow the fume to escape
3. tighten the screw (2) and repeat the procedure to the moment when a clear fuel starts flowing smoothly from the filter.



E708

4. vent injection pump in a similar procedure
5. vent with a screw (3) placed on the body of the pump

MAINTENANCE INSTRUCTIONS

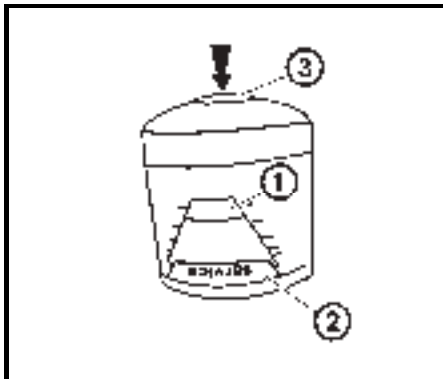


G710b

DRY AIR FILTER MAINTENANCE - POLLUTION INDICATOR

Filter maintenance needs to be done after pollution signalization.

The indicator is accessible after opening the front bonnet of the tractor. It is placed on the left side of air cleaner near bend of sucking pipeline.



G711

CONTAMINATION INDICATOR FUNCTION

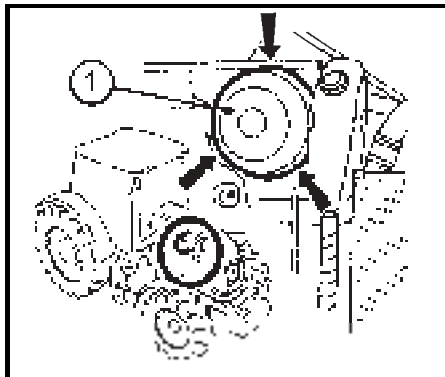
The state of air filter pollution is signalized by the position of driver (1) in indicator window. If the driver (1) reaches a red box with a label **service** (2) it is necessary to do dry air filter maintenance.



After completing dry air filter maintenance, ensure repeated proper function of pollution indicator.

Press the cap on the body of the indicator (3) in the direction of an arrow; you will unblock the driver (1) signaling pollution mechanically, it will return to initial position. That is how the activity of indicator is renewed.

MAINTENANCE INSTRUCTIONS

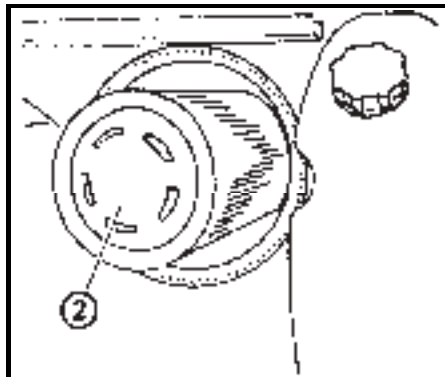


X712

MAINTENANCE INSTRUCTION OF DRY AIR FILTER

Do air filter maintenance accordingly:

1. heave the front bonnet
2. release the clamps of air filter lid (marked with arrows)
3. remove air filter lid (1)



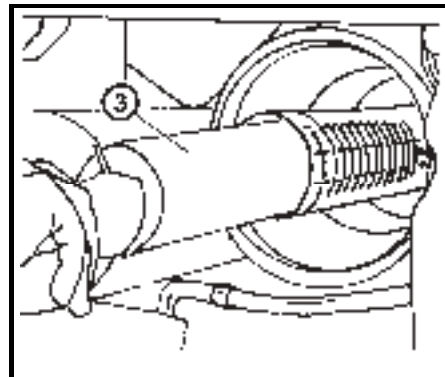
G713

MAIN AIR FILTER ELEMENT REGENERATION

- pull to remove the main dry filter element (2)

If main element is not damaged (there must not be dust on the internal side of the element) regenerate by blowing with compressed air from the internal side of the element.

Main element can be regenerated this way 3 times maximum. Element must be replaced once a year.



QQQ_G714

REPLACING DRY FILTER LOCKING ELEMENT

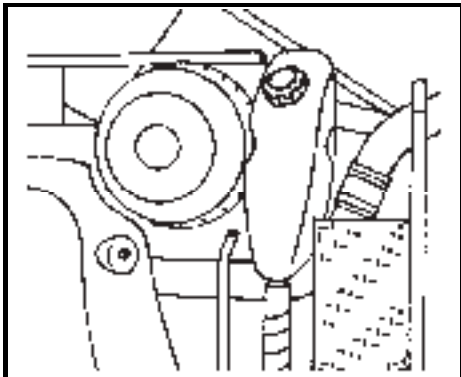
- remove dry filter locking element (3) with a pull



Locking element cannot be regenerated. It must be always replaced in these cases:

- when damaging main element
- after 5 maintenances of air filter
- at least once in two years

MAINTENANCE INSTRUCTIONS



G715

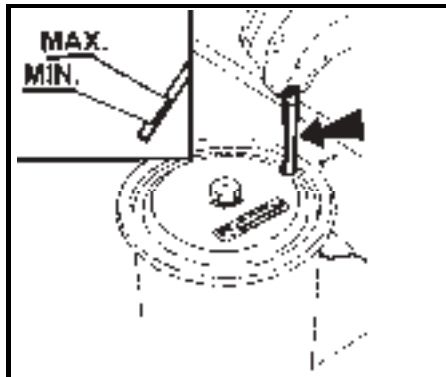
BACK ASSEMBLY OF AIR FILTER ELEMENTS

Do back assembly of air filter elements reversely.

Mind the following with back assembly:

- contact surfaces cleanliness
- elements must not be deformed with assembly and must not vibrate after assembly
- after closing the filter with a lid a perfect tightness of the whole filter must be ensured
- after completing the maintenance of dry air filter, secure proper function of pollution indicator

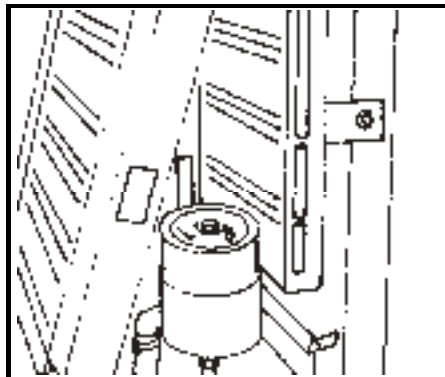
MAINTENANCE INSTRUCTIONS



E719

CHECKING AMOUNT OF OIL IN HYDROSTATIC STEERING TANK

Inspect daily before starting the operation with tractor standing horizontally. Lift off the bonnet. Unscrew dipstick, wipe off with a cloth and screw back in. After repeated unscrewing of the gauge, the level must not drop below bottom gauge line. Replenish the oil when necessary after demounting the cap of the tank.



G750

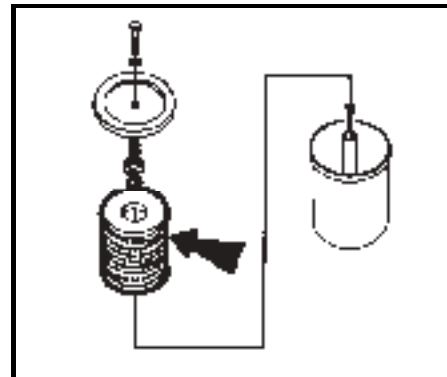
REPLACING OIL AND HYDROSTATIC STEERING FILTER ELEMENT



1. place a suitable vessel under the hydrostatic steering tank
2. unscrew drain screw at the bottom of the tank
3. drain the oil
4. unscrew the nut of tank cap
5. demount the cap of hydrostatic steering tank
6. remove and replace filter element
7. set the lid of the tank back in
8. lock its position with a nut
9. screw drain screw back in



10. disconnect both hoses from working roller and waste pipeline from the tank (place ves-



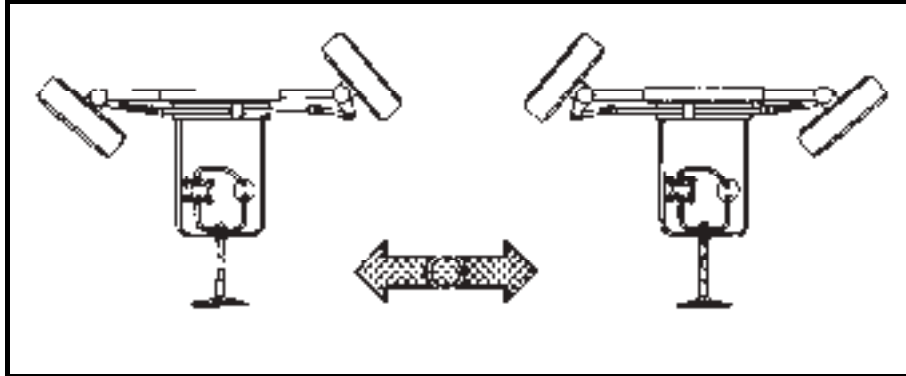
E721

sels for used oil under working roller hoses and waste pipeline)

11. start the engine and with idle run (max. 10 seconds) turn the steering wheel 2-3 times to both sides so that you pushed oil from control unit and pipeline
12. secure the tractor against movement and lift front drive axle
13. place a vessel for oil under the working roller and by turning the wheels (manually) push the oil from working roller
14. do the back assembly of all disconnected joints
15. fill the tank with oil and vent hydrostatic steering circuit.



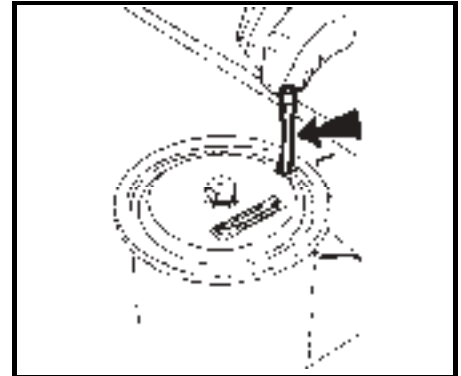
MAINTENANCE INSTRUCTIONS



E722

VENTING HYDRAULIC CIRCUIT OF HYDROSTATIC STEERING

1. secure the tractor against movement and lift the front axle
2. start the engine and allow it to run for approximately 1 minute in idle run
3. turn the steering wheel several times to both sides with idle run
4. with maximum engine revolutions, turn the steering wheel 3 times alternately slowly and quickly to both sides to restricting wheel stop.
5. stop the engine
6. after completing the venting check or replenish the oil level to control gauge line. Check the tightness of all joints and hydraulic circuit guide-ways of hydrostatic steering.
7. lower the tractor down to front wheels.

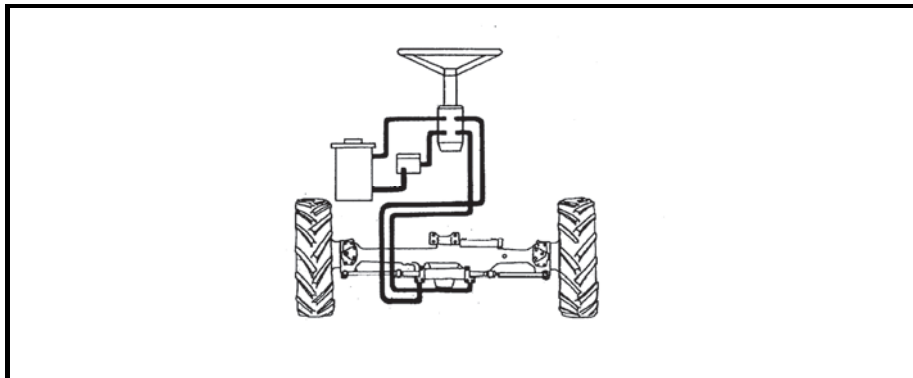


E723



Monitor oil level in the tank with all hydrostatic steering venting steps to prevent air sucking to the system of steering.

MAINTENANCE INSTRUCTIONS



G719

REPLACING THE HOSES OF HYDROSTATIC STEERING

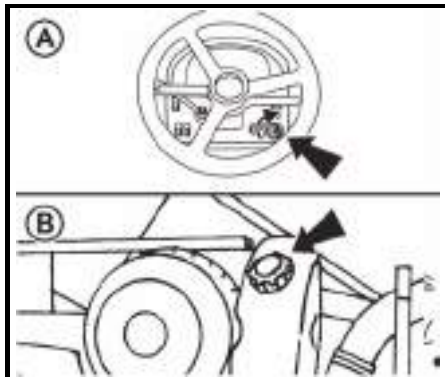
Hoses need to be replaced four years from the date of their manufacture (date is given on their surface) or after working 3 500 hours with tractor, or right after learning the symptoms of their damage (hose, local swelling, penetration of working medium around endpoints and hose surface, wrapping damage by mechanical smear to a metallic body, damage to external buckle braid with low-pressure hoses).



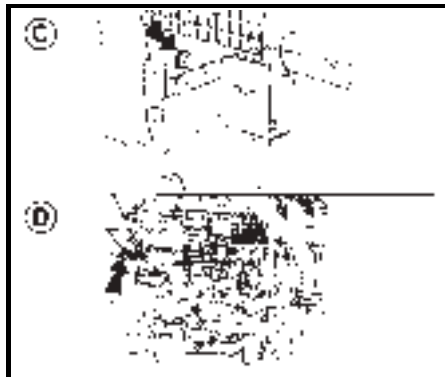
If a pump gets damaged or if the engine is at standstill, steerability is observed, but the force on the steering wheel increases. It is possible to get to the nearest place where repairs can be done with lowered speed.

The steering wheel must not be held in the positions of extreme wheel locks for long (maximum time is 20 sec.), otherwise there is excessive oil heating in hydrostatic steering circuit.

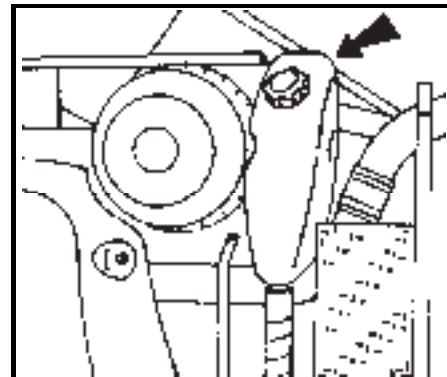
MAINTENANCE INSTRUCTIONS



NM13N065



E726



G716

COOLANT REPLACEMENT

Observe the following procedure:

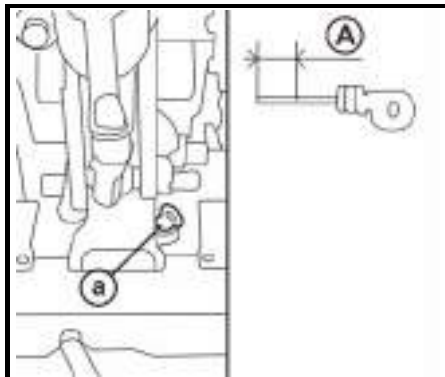
1. open valve of heating (A) and release safety plug on equalizing tank (B)

2. drain coolant from radiator (C). Draining screw is accessible after lifting the bonnet
3. drain coolant from the block of engine (D). Drain valve is accessible after lifting the bonnet
4. after draining the coolant, close the screw and valve (leave heating valve open)

5. fill the cooling system with antifreezer
6. start the engine and allow it to run for 1 minute approximately
7. replenish antifreezer in equalizing tank to the upper gauge line labelled as MAX
8. close the equalizing tank with a safety plug.
9. after heating the engine and opening thermostat allow the coolant to cool off again and check or replenish the coolant.

Replace antifreezer every two years.

MAINTENANCE INSTRUCTIONS



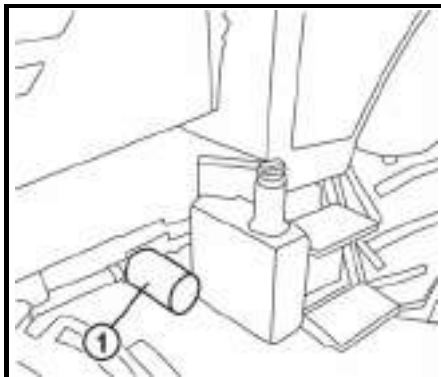
NM13N066

CHECKING THE OIL IN GEAR BOX, FINAL DRIVE HOUSING AND REAR AXLE

Gear system has a common oil filling. The state of oil is checked with a dipstick (a), which is placed in the rear part of final drive housing. Dipstick hole serves as filling



Do the inspection with a tractor at standstill. Oil must be in the range (A) of dipstick.



NM13N067

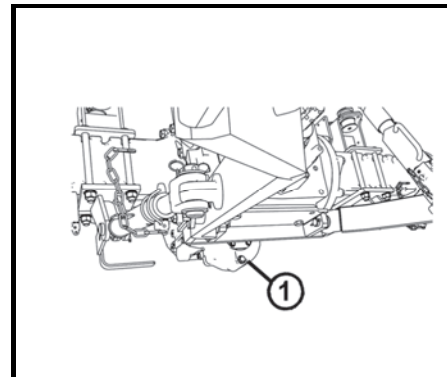
REPLACING OIL FILTER ELEMENT OF HYDRAULIC PUMP

Oil filter (1) is placed on the left side in front of fuel tank.



Before replacing filter element place a suitable vessel under the tractor to catch dripping oil.

1. unscrew filtration element (1)
2. replace filtration element
3. grease rubber sealant of filtration element with oil and tighten the filtration element with your hand. After the sealant is seated, tighten the filtration element by $\frac{3}{4}$ to 1 and $\frac{1}{4}$ of a revolution.
4. check oil level in the gear box, replenish when necessary

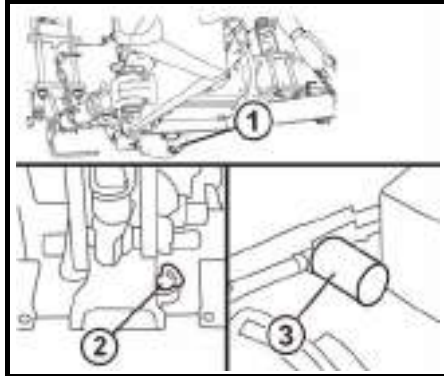


NM13N068

GEAR SYSTEM DRAIN PLUG

Gear system drain plug is placed on the box of front axle drive.

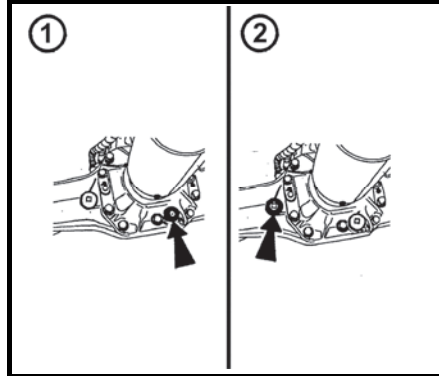
MAINTENANCE INSTRUCTIONS



NM13N069

OIL REPLACEMENT IN GEAR SYSTEM

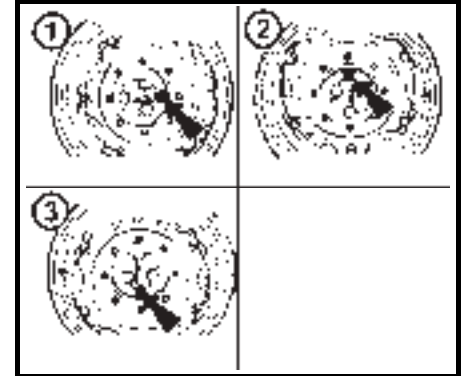
1. unscrew drain plug (1), best immediately after ending a drive or after heating oil to working temperature
2. drain oil (for easing draining, remove gauge line (2)).
3. clean drain plug (1) and screw it back in
4. replace filtration element (3)
5. pour new oil through dipstick hole (2)
6. start the engine and allow it to run for approximately 3 minutes in idle run.
7. after stopping the engine and when the level settles, check the amount of oil with a gauge (1).



E733

FILLING, CONTROLLING AND DRAINING HOLE OF OIL OF FRONT DRIVE AXLE

- 1 - final drive housing oil draining hole
- 2 - filling and controlling hole of final drive housing oil (after unscrewing controlling screw, the level of oil must reach bottom brim of checking hole).



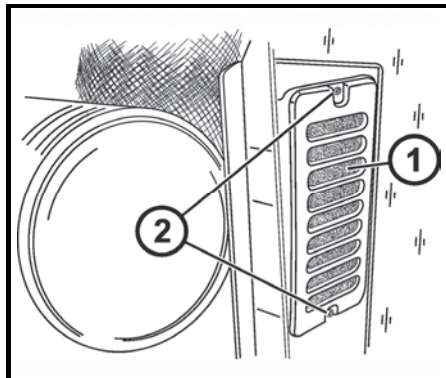
G731

FILLING, CONTROLLING AND DRAINING HOLE OF OIL OF FRONT WHEELS REDUCERS

Inspection, filling and draining oil is done by a one hole after turning reducer according to figure.

1. amount of oil inspection – hole in the horizontal axis of a reducer (after unscrewing control screw the level of oil must reach the brim of checking hole)
2. filling oil – hole at the top
3. draining hole – hole at the bottom

MAINTENANCE INSTRUCTIONS

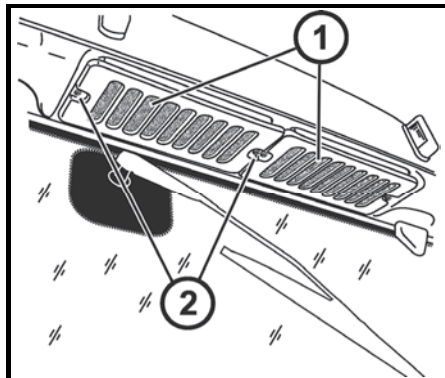


NM13N110

HEATING FILTRATION ELEMENT

Is placed under the bonnet in front of the cab

After opening the bonnet, it is necessary to unscrew the screws (2) and remove heating filtration element (1).

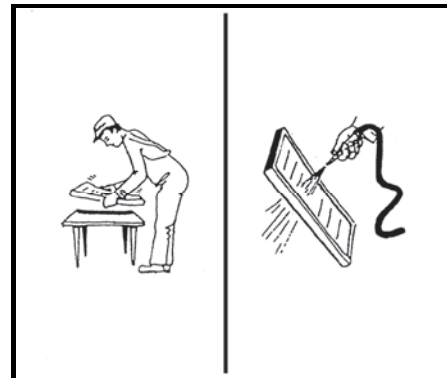


NM13N109

AIR-CONDITION FILTRATION ELEMENTS

Are placed in the rear overhang of cab roof.

It is necessary to unscrew the screws (2) and remove air-condition filtration elements (1).



NM13N110

FILTRATION ELEMENTS CLEANING

Regenerate filtration elements of the cab depending on the degree of clogging:

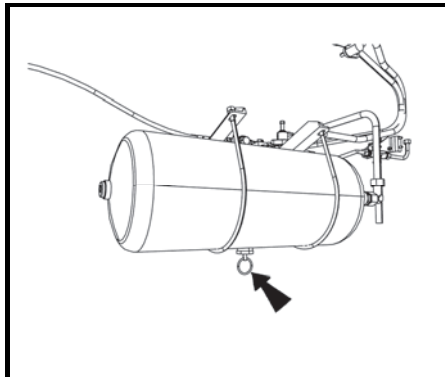
- by dusting
 - by blowing with compressed air
- Check clogging daily. Replace strongly polluted filters.



Tractor's safety cab is not equipped with special filters for air sucked into the cab.

It does not protect operators against the effects of aerosols and other harmful substances!

MAINTENANCE INSTRUCTIONS



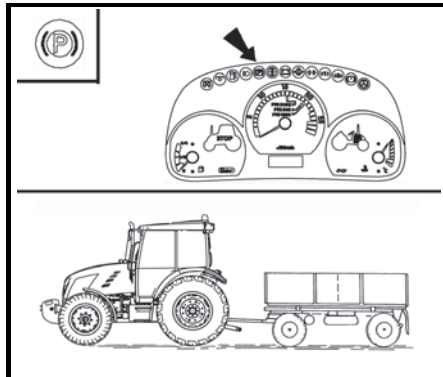
NM13N074

DRAINING THE CONDENSATE FROM AIR COLLECTOR

Air collector is placed on the right side of the tractor under the cab.

Draining the condensate from air collector to be done by deviation of venting valve by pulling a ring.

Valve is located on the bottom part of air collector.



NM13N075

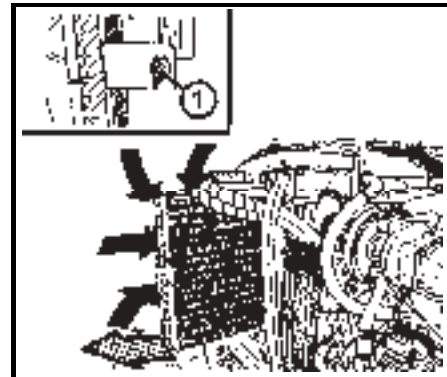
AIR SYSTEM TIGHTNESS INSPECTION

- fill air collector to the maximum pressure (600 ± 20 kPa)
- there must not be drop in pressure for more than 10kPa in 10 minutes with engine at standstill



Before driving with a trailer or a semi-trailer, do the inspection daily!

With pressure drop in brake system under 450 ± 30 kPa, a warning control lights up on the dashboard!



E740

AIR CONDITION MAINTENANCE



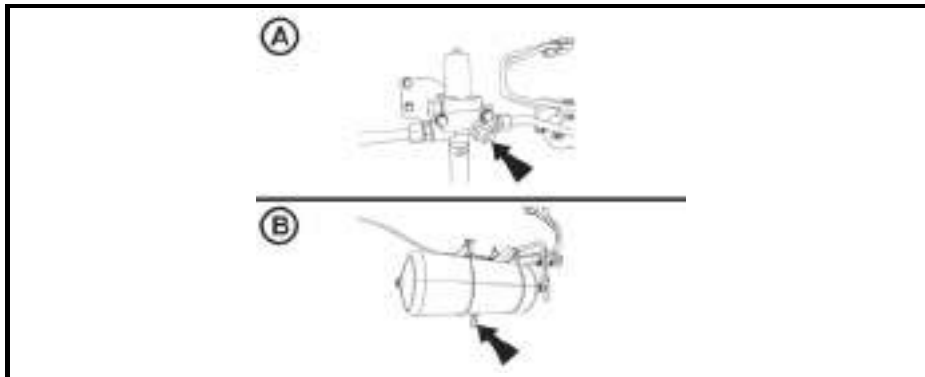
The main element of air condition system maintenance is cleaning air condition condenser (is placed in front of engine radiator).

Clogged air condition condenser decreases not only the efficiency of cooling system but also the efficiency of engine cooling.

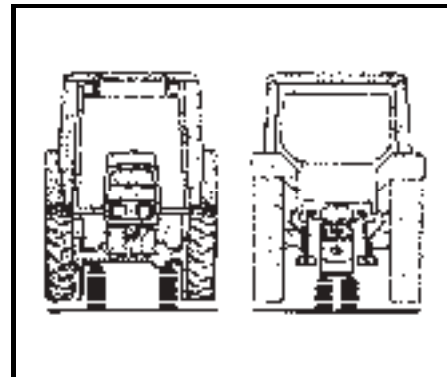
Open the bonnet, demount the nut (1) and protrude the radiator to the side and blow with compressed air or wash with pressed water (against the direction of tractor drive).

Slide the radiator back in and attach properly. Mind proper conducting of hoses to oil radiator.

MAINTENANCE INSTRUCTIONS



NM13N071



E743

MAINTENANCE AND TREATMENT OF TIRES

Regularly inspect the outer surface of a tire and inspect that there are no defects in side or above the base part of rollers and that body is not damaged.



Remove tires which have defects from further use.

TIRE INFLATION

Basic values of recommended inflation are given in chapter "Main technical parameters". Check pressure regularly before driving, if tires are cold. Use pressure regulator for inflation (A), which fulfils the function of pressure equalizer, tire filler and locking valve. Screw a hose for tire inflation. Screw the hose to the end of coil so that back valve will be compressed. If there is maximum pressure in air collector, a tire cannot be inflated. In such case it is necessary to first lower the pressure by a valve for draining condensate placed in the bottom part of air collector (B).

DETACHING TRACTOR

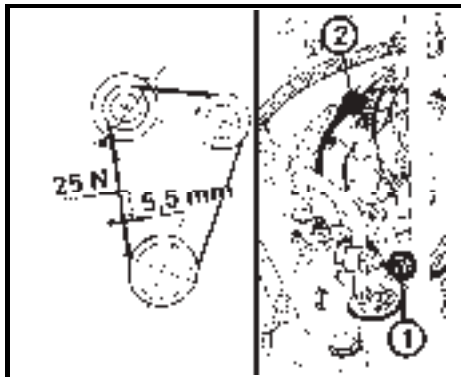
When putting the tractor out of operation for a longer period of time (warehousing), support the tractor and lower the pressure in tires to a minimum (wheels must not touch the ground).

ADJUSTMENT

	Page
Cogged belt tension	136
*Cogged belt tension of air-condition compressor	136
Tightening heads of rollers	136
Adjusting valve clearance	136
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Adjusting clutch pedal	138

The majority of following works requires certain experience and more demanding service and diagnostic equipment. We therefore recommend these works to be entrusted to expert or authorized work-shops.

ADJUSTMENT



FH12N085

COGGED BELT TENSION

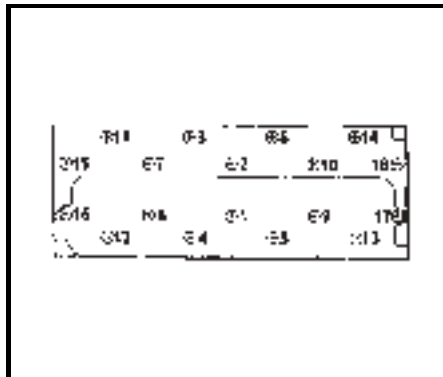
With proper cogged belt tension the bending of belt must be 5.5 mm with force effect of 25 N on a single belt.

Perform cogged belt tension to prescribed value after releasing tightening screws (1, 2).

*COGGED BELT TENSION OF AIR-CONDITION COMPRESSOR

With proper cogged belt tension, bending of belt must be 7.5 mm with force effect of 25 N on a belt.

Perform cogged belt tension to prescribed value after releasing tightening screws of air-condition compressor.

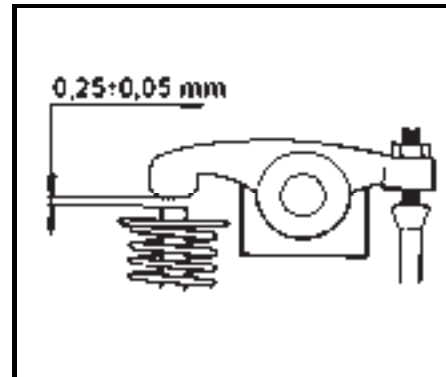


E752

TIGHTENING HEADS OF ROLLERS

Tightening heads of engine rollers is done with a cold engine in prescribed order.

Tightening torque	160 - 180 Nm
Valve clearance	$0,25 \pm 0,05$ mm



E753

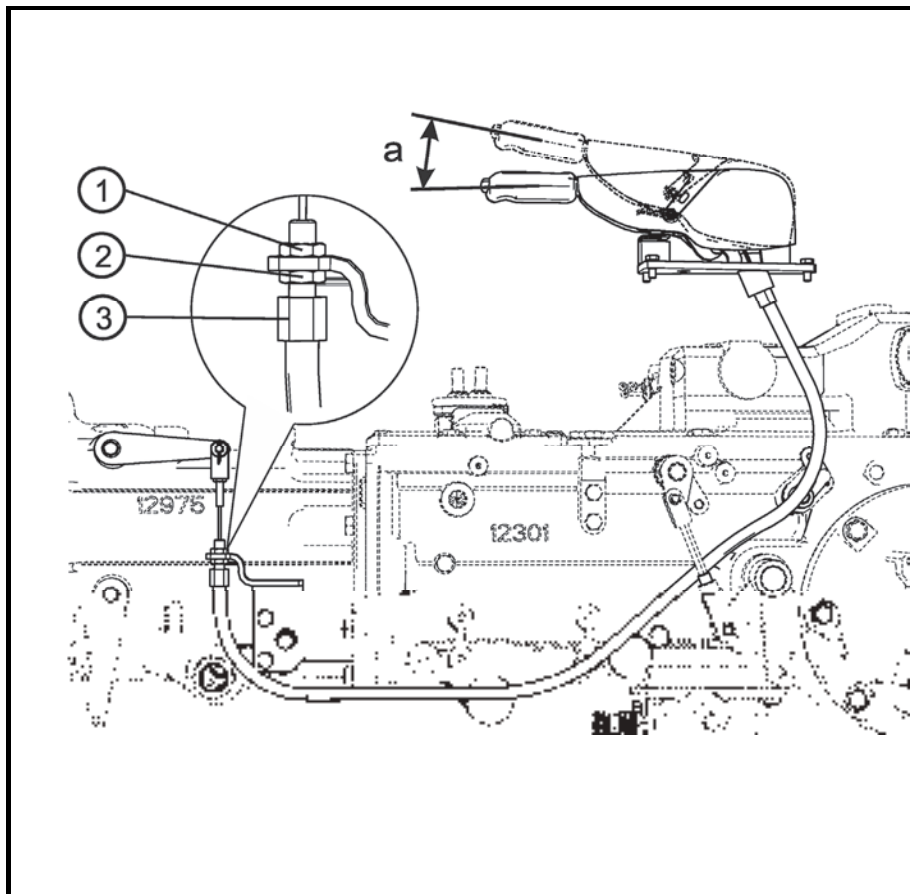
ADJUSTING VALVE CLEARANCE

Adjusting valve clearance is done with a cold engine. Proper valve clearance with suction and exhaust valves is 0.25 ± 0.05 mm.

Alternating the movement of balance arms:

Alternating roller balance arms	Roller valve is adjusted
1.	4.
3.	2.
4.	1.
2.	3.

ADJUSTMENT



NM13N114

PTO SHAFT CLUTCH CONTROL LEVER ADJUSTMENT

Free run adjustment of PTO shaft clutch control lever (a) is done by changing the length of control Bowden.

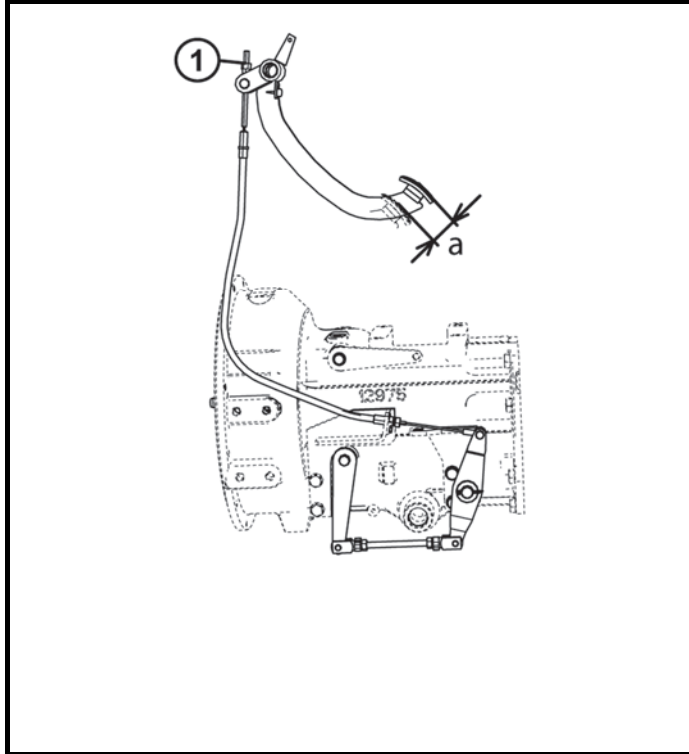
After releasing the locking nut (1) set the length of Bowden by turning the nut (2). After setting the length of Bowden, tighten the locking nut (1).

With adjustment hold the Bowden bolt (3), to prevent its turning together with adjustment nut (2).

Free run of PTO shaft clutch control lever (a) must be 25 to 35 mm.

The track of lever between the lower lever position and the point when the control force on lever increases is the free run of PTO shaft clutch control lever.

ADJUSTMENT



NM13N113

ADJUSTING CLUTCH PEDAL

Adjusting free run of clutch pedal (a) is done by changing the length of Bowden (1).

Clutch pedal free run (a) must be 25 – 35 mm.

Free run of clutch pedal represents the track of pedal between the upper position of clutch pedal and the point when control force on the clutch pedal increases.

MAIN TECHNICAL PARAMETERS

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MAIN TECHNICAL PARAMETERS

MAIN TRACTOR'S PARAMETERS (mm)		
		Note
Turning-circle diameter length		
- without ballast weights in front of cab's grill	3 930	
- with ballast weight in front of cab's grill	4 230	
Width over rear fenders	1 840	
Height to the mouth of exhaust pipe	2 578	
Height of tractor to upper cab's rim	2 624	
Clearance height under the girder of front axle	393	
Height of nozzle of multistage suspension linkage in its topmost position (the centre of nozzle)	890/840/790/690	
Height of swinging draw bar (on internal bottom fork surface)	418/455	
Rear PTO shaft height	725	
Wheel base	2 200	

TRACTOR'S WEIGHT

Tractor's weight (kg)	3090
-----------------------	------

e

MAIN TECHNICAL PARAMETERS

TECHNICAL DATA OF ENGINES		
Type of tractor		Major 80
Type of engine		1105
Kind of engine		injection, four-stroke with direct fuel injection, turbocharged engine
Design of engine		serial, upright, water-cooled
Number of rollers		4
Volume of rollers	cm ³	4156
Drilling x heave	mm	105x120
Nominal revolutions	min ⁻¹	2200
Injection sequence		1-3-4-2
Compression ratio		17
Max. overrun speed	min ⁻¹	2460
Idle run revolutions	min ⁻¹	800±25
Net output with nominal revolutions of 2 200 rpm (EC 24)	kW	53
Specific fuel consumption 2 200 rpm	g.kW.h	260
Max. torque (Mt) 1480 rpm	Nm	310
Elevation Mt	%	35
Net output of 1 480 rpm	kW	48
Specific fuel consumption with max. Mt 1 480 rpm	g.kW.h	222
Engine greasing		Compression with gear pump
Maximum oil consumption after 100 Mh of engine run-in	g.kW ⁻¹ .h ⁻¹	0.7
Oil pressure with nominal engine revolutions and oil temperature of 80°C	MPa	0.2 – 0.5
Minimum oil pressure with engine revolutions of 750 min ⁻¹ and oil temperature of 80°C	MPa	0.05

MAIN TECHNICAL PARAMETERS

TECHNICAL DATA OF ENGINES TRAKTORŮ PROXIMA (TIER III)		
Type of tractor		Major 80
Type of engine		1105
Max. coolant temperature	°C	106
Kind of distribution		OHV
Oil filter		Full-flow single use
Fuel filter		One-stage with replaceable element
Type of injection pump		PP 4M 10P1i 3781
Type of nozzle		DOP150S428-4104
Injectors opening pressure	MPa	25-0,8
Injection advance angle	°	12
Valve clearance with cold engine		
suction	mm	0.25±0.05
exhaust	mm	0.25±0.05

MAIN TECHNICAL PARAMETERS

PERMITTED MAXIMUM LOAD OF FRONT AXLE (kg)	
Travel speed km.h ⁻¹	Wheel base (mm)
	1525
6	4 000
8	3 500
20	3 000
30	2 500

Load applies with regard for the axle itself, permissible load with regard for tires is given in table "Front tires bearing capacity".

PERMITTED MAXIMUM LOAD OF REAR AXLE (KG)	
Travel speed km.h ⁻¹	Wheel base (mm)
	1525
8	4 000
20	3 500
30	3 000

Load applies with regard for the axle itself, permissible load with regard for tires is given in table "Rear tires bearing capacity".

MAIN TECHNICAL PARAMETERS

PERMITTED MAXIMUM WEIGHT OF SET "TRACTOR + MOUNTED MACHINE" (kg)	
Travel speed (km.h ⁻¹)	Maximum weight of set
8	5500
30	4300

MAIN TECHNICAL PARAMETERS

FRONT TIRES STEERABILITY							
Parameter tires	of	Travel speed					
		30 km.h ⁻¹			8 km.h ⁻¹		
		Bearing capacity of tires (kg)			Bearing capacity of tires (kg)		
		Tire 1 piece	axle	inflation (kPa)	Tire 1 piece	axle	inflation (kPa)
11.2-24		1225	2450	240	1700	3400	240
280/85R24		1250	2500	160	1700	3400	150

Note: Bearing capacity values apply for front wheel base of 1495 - 1525 mm and are in accordance with bearing capacity. When operating on hard surfaces, it is advisable to increase the pressure by 30 kPa with regard for slippage and abrasion of tires.

BEARING CAPACITY OF REAR TIRES							
Parameter tires	of	Travel speed					
		30 km.h ⁻¹			8 km.h ⁻¹		
		Bearing capacity of tires (kg)			Bearing capacity of tires (kg)		
		Tire 1 piece	axle	inflation (kPa)	Tire 1 piece	axle	inflation (kPa)
16.9-30		2000	4000	120	2000	4000	80
480/70R30		2000	4000	150	2000	4000	80

Note: Bearing capacity values apply for rear wheel base of 1725 mm and are in accordance with the bearing capacity of axle. When operating on hard surfaces, it is advisable to increase the pressure by 30 kPa with regard for slippage and abrasion of tires.

MAIN TECHNICAL PARAMETERS

HYDRAULIC SYSTEM	
Type of tractor	Major 80
Lifting force at the end of lower draw bars of rear three-point linkage in the whole range of heave with maximum useful pressure (kN)	26
Hydraulic system pump supply (l/min)	50
Working pressure (MPa)	18

MAIN TECHNICAL PARAMETERS

TRACTOR'S SPEED IN KM/H WITH ENGINE NOMINAL REVOLUTIONS			
Gear reduction	Gear	Forward speed	Reversing speed
L	1 L	1.43	1.20
	2 L	2.12	1.78
	3 L	3.11	2.61
	4 L	4.37	3.67
M	1 M	3.64	3.05
	2 M	5.39	4.52
	3 M	7.89	6.62
	4 M	11.08	9.30
H	1 H	9.65	8.11
	2 H	14.29	12.00
	3 H	20.91	17.56
	4 H	29.39	24.68

MAIN TECHNICAL PARAMETERS

PERFORMANCE ON REAR PTO SHAFT	
Performance on PTO shaft(kW \pm 2%) - with nominal engine revolutions and engaged 1000 min-1 of PTO shaft	
Nominal engine revolutions(2 200 rpm)	47
Maximum engine revolutions(2 460 rpm)	51

DEPENDENT PTO SHAFT REVOLUTIONS WITH NOMINAL ENGINE REVOLUTIONS			
Gear reduction	Gear	540	1000
L	1 L	66	120
	2 L	96	176
	3 L	139	255
	4 L	202	369
M	1 M	166	304
	2 M	242	443
	3 M	350	641
	4 M	507	928
H	1 H	446	816
	2 H	650	1190
	3 H	941	1721
	4 H	1362	2492

INDEPENDENT PTO SHAFT REVOLUTIONS		
labelling	Shaft revolutions/engine revolutions	Shaft revolutions/engine revolutions
540	613 / 2200	540 / 1938
1 000	986 / 2200	1000 / 2231

MAIN TECHNICAL PARAMETERS

CLEARANCE-CIRCLE AND TURNING CIRCLE DIAMETER								
Wheel base	front	1502 mm	Parameter of tires	front	11,2 - 24	On the left	On the right	
	rear	1505 mm		rear	16,9 - 30			
Turning circle diameter (mm)	without engaged front drive axle					10500	10350	
	with engaged front drive axle					11300	11100	
Clearance-circle diameter(mm)	without engaged front drive axle					11020	10870	
	with engaged front drive axle					11820	11620	

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