OPERATING MANUAL

FARMER

307 C

308 C

309 C

117.000.000.011 English

Vehicle type .....

Chassis No. ..... **After-Sales Service**

Vehicle delivery

Vehicle pre-delivery inspection by the Service Workshop

For information, technical date etc. refer to Service Schedule

- ☐ **Check oil level, top up if necessary.**
  Engine, transmission, final drives, front axle differential hub drives, front PTO, linkage cross-shaft lubrication. Fill hydraulics with additional oil for external couplers as per customer requirements.
- ☐ **Check fluid levels, top up if necessary.**
  Cooling system, brakes, air conditioning if fitted.
- ☐ **Grease vehicle as per Lubrication Chart, lubricate all joints.**
- ☐ **Check steering and toe-in. Check tyre pressures. Check wheel nuts for correct torque.**
- ☐ **Test electrical system. Show fuses. Check battery charge status.**
- ☐ **Fill up with diesel, pre-filter if necessary.**
- ☐ **Check brakes for effectiveness.**

Information to be given on vehicle delivery

- ☐ **Draw attention to safety instructions within the Operating Manual and on the vehicle itself.**
- ☐ **Point out national regulations with regard to speed and trailer braking systems.**
- ☐ **Explain the following features - refer to list of keywords - and show how they are operated.**
  Operating controls, start-up hydraulics.
- ☐ **Explain "Important information on after-sales service and maintenance", refer to inside of back cover.**
- ☐ **Hand over tool box accessories.**
- ☐ **Fill in guarantee and delivery documents and immediately forward to the manufacturer.**

Signature of agent . . . . . .

Vehicle delivery carried out on . . . . . .

OPERATING MANUAL

Farmer 307 C

From chassis number 117 .. 5001

Farmer 308 C

From chassis number 118 .. 5001

Farmer 309 C

From chassis number 119 .. 5001

AGCO GmbH & CO

Maschinen und Schlepperfabrik D-87616 Marktoberdorf / Bavaria / Germany
Telephone +49 8342 77-0 Facsimile +49 8342 77-222

2664C - en

Dear Customer,

Please observe the following:

- Before using the tractor, carefully read through this Manual to familiarise yourself with all operating controls and their functions. This also applies to operating instructions supplied by the implement manufacturer.
- All operating and maintenance instructions must be observed. They ensure many years of profitable and trouble-free tractor operation. You will find a summary of all maintenance work in the Service Schedule of this Manual.
- Maintenance and repair work should only be carried out in authorised workshops. Please note "Important information on service and maintenance".

Authorised use

The tractor is designed only for normal agricultural and similar use, e.g. municipal applications.

Any other use is deemed unauthorised. The manufacturer does not accept liability for damage resulting from such use; such damage is the responsibility of the user.

Authorised use also implies adherence to operating, service and maintenance conditions as laid down by the manufacturer.

Operation, maintenance and repair of the tractor is restricted to persons who are familiar with such tasks and aware of the inherent dangers.

All relevant accident prevention regulations and all generally accepted safety, health and road traffic regulations must be strictly observed. The manufacturer does not accept liability for damage resulting from unauthorised modifications.

All items concerning your safety are marked with a safety alert symbol

Make sure all users are aware of these safety terms!

The safety alert symbol indicates three different types of hazard:

Danger:
Serious risk of accident.

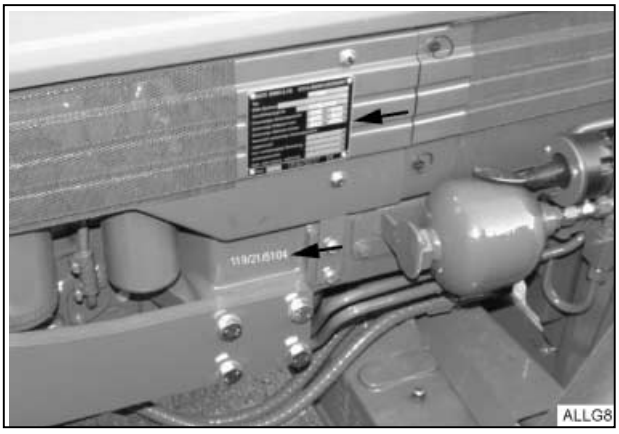
Warning:
Risk of injury.

Caution:
Possible risk of injury.

The Operating Manual is part of the vehicle package and must be passed on to a subsequent owner. His attention should be directed to the above safety terms.

Should a new Manual be required due to loss or damage, please contact your Fendt dealer. There you will be able to purchase a replacement.

Chassis number



The chassis number is stamped on the right side of the frame and also on the rating plate.

All specifications in this Manual are subject to the usual tolerances. We reserve the right to make design changes within the framework of technical developments and without alterations to the Manual. The drawings and illustrations serve as a functional description, the items shown are not necessarily included in the vehicle delivery schedule.

CARE AND MAINTENANCE 60

IMPLEMENTS 123

Safety and accident prevention regulations

Warning:
Before every operation check the tractor for road worthiness and operational safety. Carefully read the Manual and observe all safety instructions.

Damaged or lost safety decals must be replaced.

General safety and accident prevention regulations

1. General safety and accident prevention regulations!
2. When driving on a public road, observe local regulations!
3. Before starting work, familiarise yourself with all operating controls and their functions! Don't wait until you are in the middle of work!
4. Start uniquely the engine from the drivers seat. Do not attempt to start by shorting across the starter terminals as this can cause the tractor to move instantly!
5. Before starting, assure the area is clear (children)! Ensure that nothing obstructs vision.
6. Never let the engine run within a confined space!
7. The driver should wear close-fitting clothing. Avoid wearing loose-fitting garments!
8. Take extra care when handling fuel - increased fire hazard. Never add diesel in the vicinity of a flame or sparks. Do not smoke when filling up!
9. Before adding diesel, turn off the engine and remove the ignition key. Do not fill up in confined spaces. Clean up spillages immediately!
10. To avoid fire hazard keep the tractor clean!
11. Beware of leaking brake fluid and battery acid (toxic and corrosive)!

Carrying passengers

1. It is not permitted to carry a passenger unless the tractor is fitted with an appropriate passenger's seat!
2. No other passengers may be carried!

Operating the tractor

1. Driving speed must always be adapted to prevailing conditions. Avoid sudden cornering when traversing hillsides and on steep gradients. Disengage the differential lock when negotiating bends. Never press the clutch pedal when travelling downhill!
2. Make sure all trailing equipment is properly hitched. Driving characteristics, steering and braking are influenced by mounted implements, trailers and counterweights. Therefore always ensure adequate steering and braking capacity!
3. Observe maximum permissible total weight, axle loading and tyre load-bearing capacity, especially with heavy implements!
4. When negotiating bends with mounted or semi-mounted implements, always take into consideration overhang and centrifugal force of the implement!

Front loader operation

1. Never allow anyone within the working range of the front loader. Make sure the area is kept clear of bystanders at all times. Do not operate the front loader unless the entire working area is in full view, if necessary, illuminate the area.
2. It is not permitted to use the standard loader as a working platform. Operations with a special working platform require additional safety measures.
3. Do not handle round bales, pallets etc. unless the loader is equipped with the adequate equipment for this purpose. If handling objects which cannot be secured, do not use the front loader unless the driving seat is protected by an impact-resistant protective roof.

4. When the front loader is raised, there is increased danger of the tractor tipping over and the braking effect of the rear axle may also be reduced. Modify driving to adjust to conditions and ensure adequate ballasting at the rear. For additional loading it is recommended that the Fendt additional weight of 870 kg be secured within the three-point linkage area, if necessary fit wheel weights and fill the tyres.
5. Keep a safe distance from high-voltage cables!
6. During road haulage, bring front loader into transport position and secure. Observe forward projection of maximum 3.5 metres from the centre of the steering wheel. If the projection is in excess of this dimension appropriate steps must be taken to guarantee traffic safety (e.g. at road junctions use mirrors or a person giving hand signals). Transporting equipment or materials with a front loader working implement, e.g. a scoop, is not permitted when travelling on public roads.
7. Danger of unintended lowering of the front loader. Always secure hydraulic lever at the end of operation. Before leaving the tractor, completely lower the front loader to the ground.
8. For safety reasons the front loader should be mounted and removed by one person only, the driver himself.
9. Keep hands away from potential danger areas while parts may still be moving - danger of crushing.
10. Dismount the front loader with implement (scoop, fork) on firm and level ground. Always using the specified supports.
11. The front loader must be parked and secured in such a way as to prevent unauthorised persons, especially playing children, from tipping it over.
12. When mounting the front loader, connect all hydraulic connections including the auxiliary return, if equipped. Always connect hydraulic hose for cylinder load pressure to "+". Take great care not to confuse connections since this may cause accidents through reversed functions, e.g. lifting instead of lowering. Before fitting the multiple coupler, remove the load from hydraulic hoses and unplug rear hydraulic connections, lower the power lift and operate only via EPC. Hydraulic fluid interflow can create danger from unintentional equipment motion.

Leaving the tractor

1. Make sure the tractor is properly secured against rolling away (parking brake, wheel chocks). Switch off the engine and apply the parking brake!
2. Remove ignition key and if appropriate, lock the cab!
3. Never leave the tractor unattended while the engine is running!
4. Never leave the cab while the tractor is in motion!
5. Completely lower the mounted implement before leaving the tractor!

Mounted and trailing equipment

1. Only hitch implements and trailers with the adequate and prescribed equipment!
2. Use only trailers which comply with local regulations. Observe maximum vertical load. Ensure correct functioning of the tractor-trailer braking system! Observe max. load on coupler!
3. Take special care when hitching trailers or implements!
4. Secure trailers and implements against rolling away. Make sure dismounted implements and other parts are safely parked.
5. Be sure all guards are correctly in place before operating the tractor!
6. When using the power lift always remain well outside the travel range of the three-point suspension!

PTO operation

1. Always switch off the engine before fitting or removing the drive shaft. The PTO selector must be in 0-position!
2. During PTO operations, allow no persons in the vicinity of the rotating PTO or drive shaft!
3. Make sure drive shaft and PTO are equipped with protective guards and sleeves!
4. Due to inertia of the flywheel, an implement may continue running, even after the PTO has been deactivated. In this case, do not start any work and keep away. Until it has come to a complete standstill!
5. When the drive shaft is removed, put into place the PTO protective sleeve!

Maintenance

1. Before maintenance and repair work switch off the engine and remove the ignition key. Relieve pressure from implement lines, e.g. to the front loader.
2. Any person should keep clear of lifted, unsecured load (e.g. tilted cab and similar)!
3. Never open or remove guards while the engine is running.
4. Never touch leaking pressure lines. Pressurised fluids (diesel or hydr. oil) can escape under high pressure and may penetrate the skin, causing severe injury. To avoid the risk of serious infection, seek medical advice at once!
5. Keep at a safe distance from hot areas!
6. Hydraulic accumulator and connected lines are highly pressurised, only remove and repair in accordance with instructions provided in Technical Manual!
7. To avoid eye injury do not look directly at the surface of the activated radar sensor!
8. Properly dispose of oil, fuels and filters!
9. Fitting tyres requires specialist knowledge, and tools as specified!
10. Retighten and regularly check all wheel nuts and bolts. For correct torque values refer to TECHNICAL DATA.
11. Before working on the electrical system, always remove the earthing strap from the battery! Observe the following, when carrying out electric welding. When carrying out electric welding on tractor or mounted implements, make sure that both battery terminals are disconnected. Position the earthing terminal as close to the welding point as possible.
12. Spare parts must comply with the technical requirements as specified by the manufacturer! This is guaranteed by using genuine spare parts!

Advice for front loader maintenance

1. Lower the front loader to the ground, switch off the engine and remove the ignition key.
2. In the event of a locked drop prevention valve, support the weight of the implement before starting repair work, and slowly retract the cylinder.
3. Hydraulic hoses are subject to wear. Check condition of hydraulic hoses at regular intervals, if necessary replace with original parts.
4. Following repairs and/or connection of hydr. hoses operate the tractor for a short time, then retighten and regularly check all fittings.
5. Retighten eccentric bolt for front loader attachment if necessary!

Safety decal locations

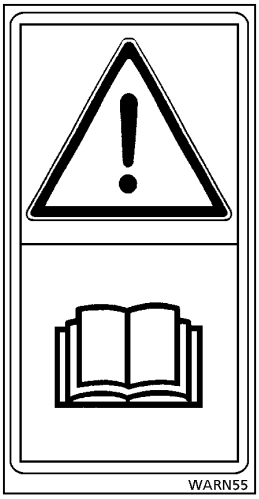


Fig.1

Inside the cab on the right

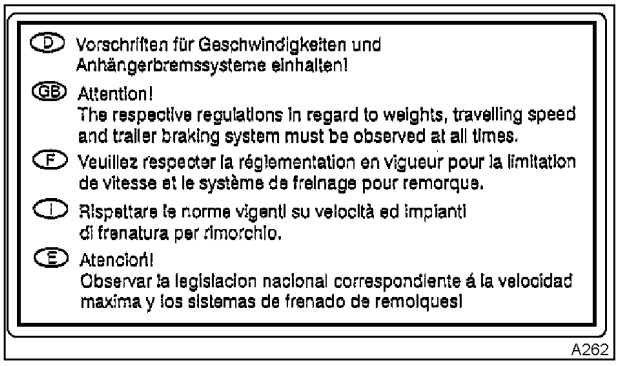


Fig.2

Inside the cab on the right

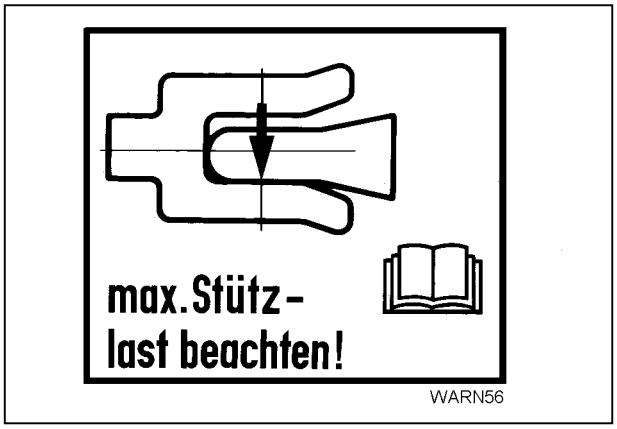


Fig.3

On the right of the rear mudguard

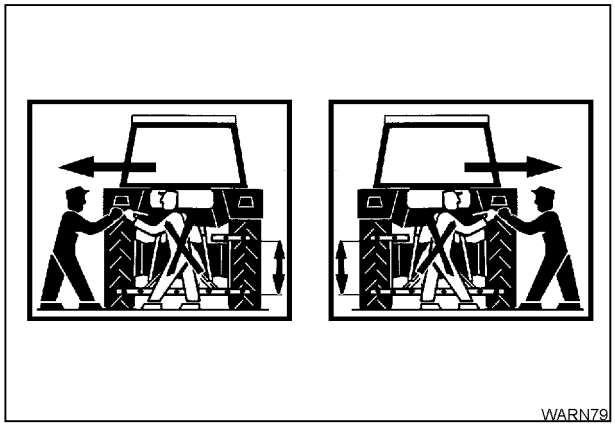


Fig.4

On the left and right sides of the rear mudguards beside the power lift control

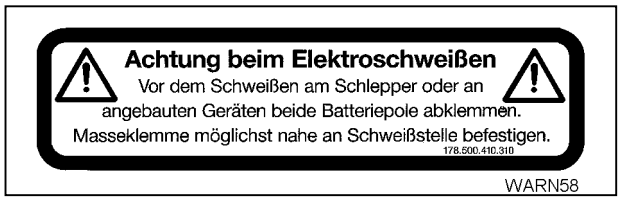


Fig.5

Inside cabine on left

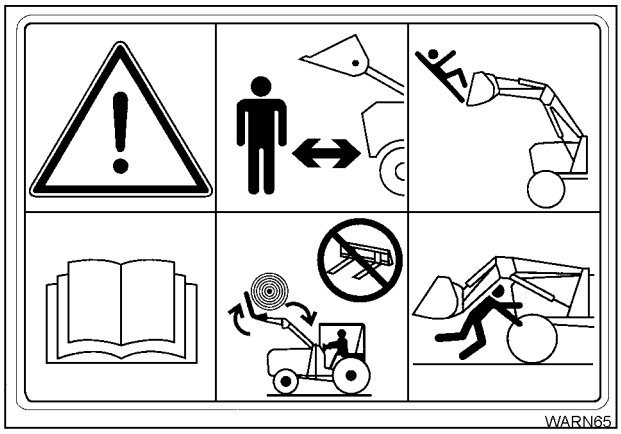


Fig.6

Right and left of front loader frame

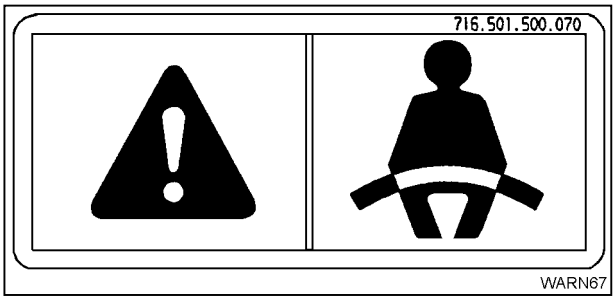


Fig.7

Inside the cap, on the left, on the transverse beam of the front windscreen

EU Declaration of Conformity

The following declaration of conformity is held by the owner who is also responsible for its safe keeping.

The front loader

EU Declaration of Conformity
in accordance with the EU Guideline 98/37/EU

We

AGCO GmbH & Co.
D - 87616 Marktoberdorf

take sole responsibility for declaring that the following product

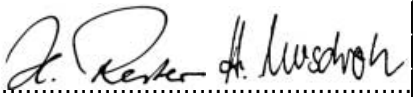
FENDT front loader, types Gr.3, Gr.3S, Gr.3K, for serial number refer to vehicle data card

corresponds to be basic health and safety requirements of Guideline 98/37/EU, as well as the requirements of other relevant EU Guidelines.

The following standards and / or technical specifications were used for the correct implementation of the safety and health requirements specified in the EU Guideline:

DIN EN 12525

Marktoberdorf, 22.06.1998



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Mr. Reiter, Mr. Merschroth

Use only FENDT-approved implements. Unauthorised changes or modifications are at the user's risk, and are not covered by the warranty. In particular this applies to exceeding permissible loads and weights.

1. Driver's seat

Warning:
Never adjust the seat while the tractor is moving (accident hazard)!
If a seat belt is available, always wear the seat belt.

1.1 Driver's seat

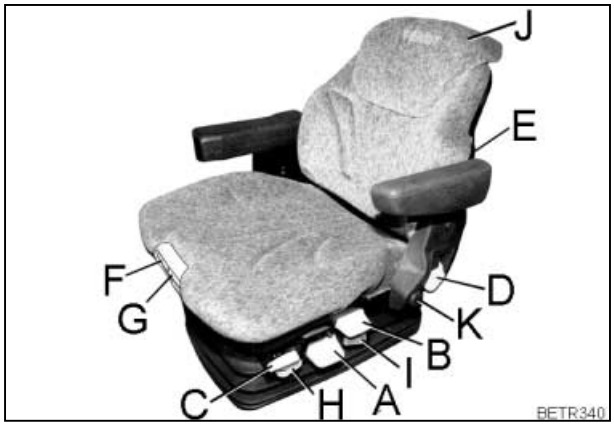


Fig.1

A = Automatic weight and height adjustment
B = Swivel mechanism
C = Legroom adjustment
D = Backrest adjustment
E = Lumbar support (curvature) adjustment with hand wheel
F = Upholstered seat (depth adjustment)
G = Upholstered seat (depth adjustment)
H = Horizontal suspension (on/off)
I = Vertical suspension (adjustable from soft to hard in four levels)
J = Backrest extension
K = Behind the moulding:
Seat belt fixing point.

1.2 Comfort seat

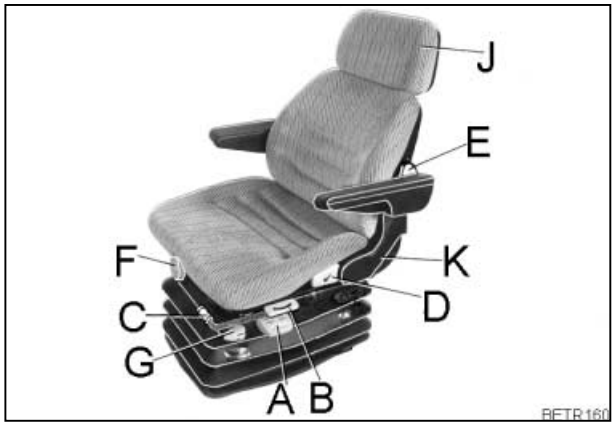


Fig.2

A = Automatic weight and height adjustment
B = Swivel mechanism
C = Legroom adjustment
D = Backrest adjustment
E = Lumbar support (curvature) adjustment with hand wheel
F = Tilt adjustment
G = Horizontal suspension (on/off)
J = Removable backrest extension
K = Behind the moulding:
Seat belt fixing point.

2. Display instruments and operating controls

2.1 Operating controls

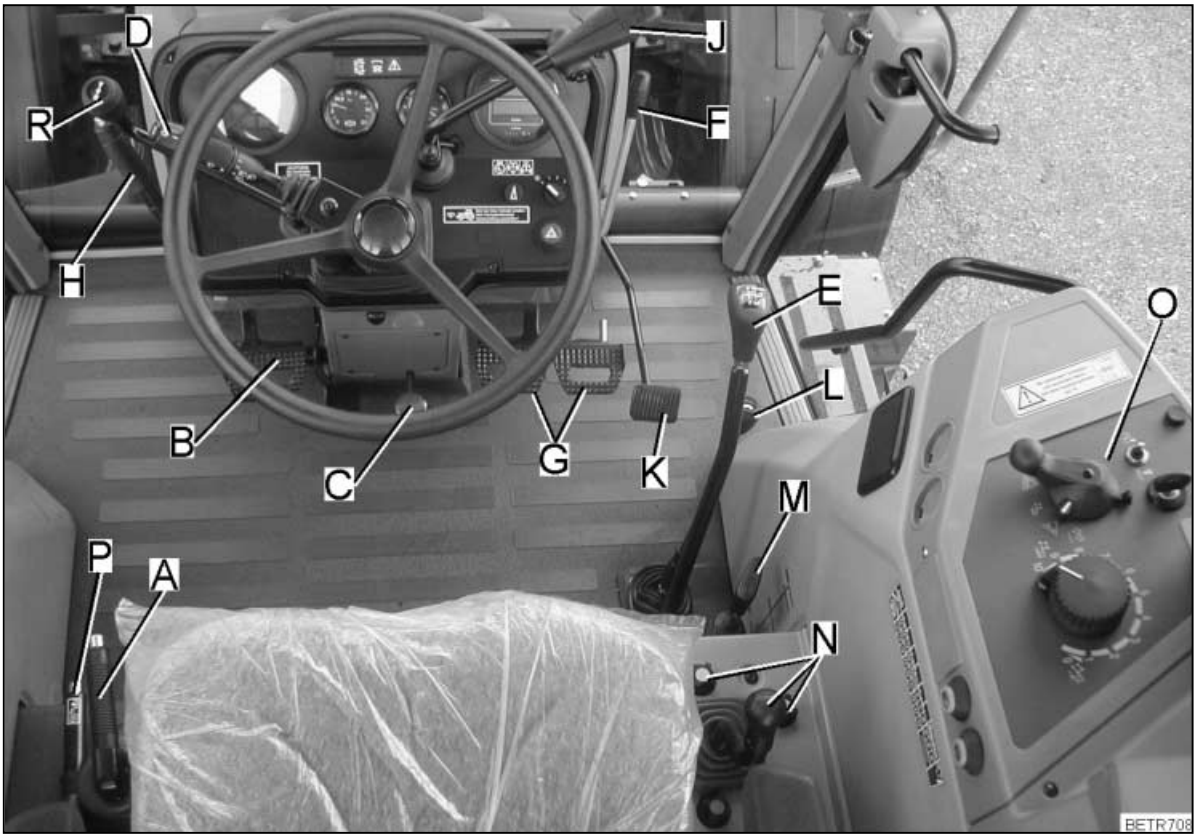


Fig.3

A = Parking brake
B = Clutch pedal
C = Adjusting Steering wheel position
D = Combination switch
E = Main control lever
F = Hand throttle
G = Brake pedals
H = Rear PTO on-off
J = Splitter range control
K = Accelerator pedal
L = Range selector
M = PTO selection lever
N = Hydraulic crossgate lever with safety knobs
O = Powerlift control (EPC)
P = Front PTO on-off
R = Shuttle gear control (optional)

2.2 Preheater starter switch

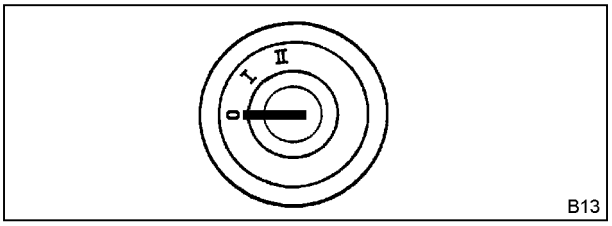


Fig.4

0 = Ignition off, key can be removed
I = Ignition, key cannot be removed + preheating (automatic)
II = Starting + receptors

2.3 Combination switch

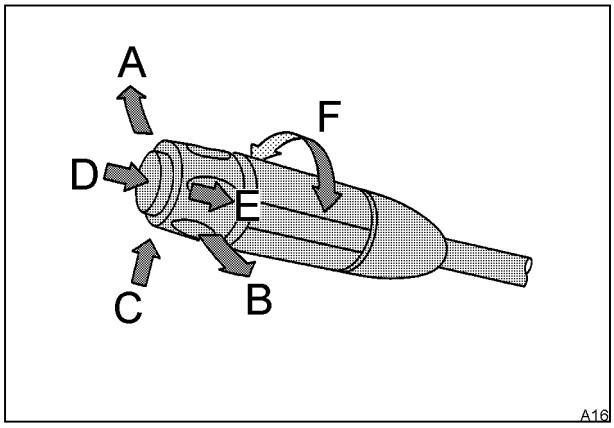


Fig.5

A = Right direction indicator
B = Left direction indicator
C = 1. With lights switched on: toggle low beam, high beam.
2. With lights switched off headlight flasher
D = Horn
E = Windscreen washers
F = Windscreen wipers with intermittent wipe function and continuous operation.

2.4 Adjusting Steering wheel position

Warning:
Never adjust the steering wheel during travel.

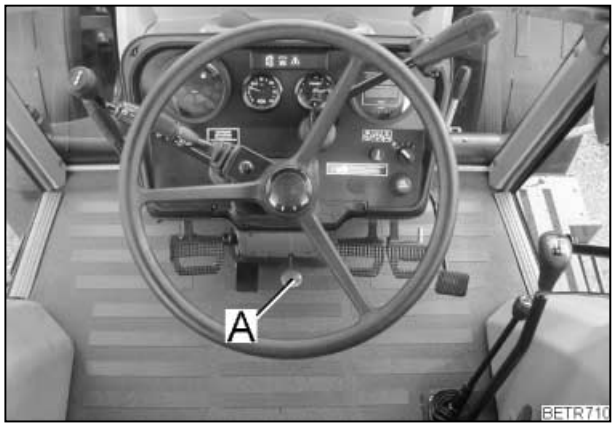


Fig.6

- Press pedal (A), move the steering wheel into the desired position, (refer also to OPERATION Section 14).

2.5 Instrument panel

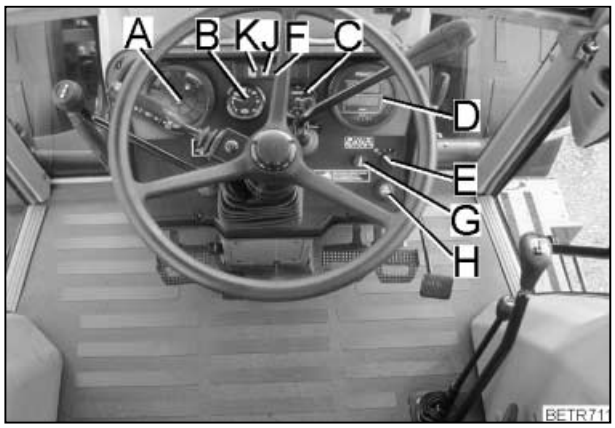


Fig.7

A = indicator lamps
B = compressed-air pressure gauge
C = clock
D = digital display
E = heater with 3-speed control
F = warning lamp
G = rev. indicator switch
H = flasher unit
J = PTO preselector (main gear lever not engaged)
K = cold start check lamp

digital display

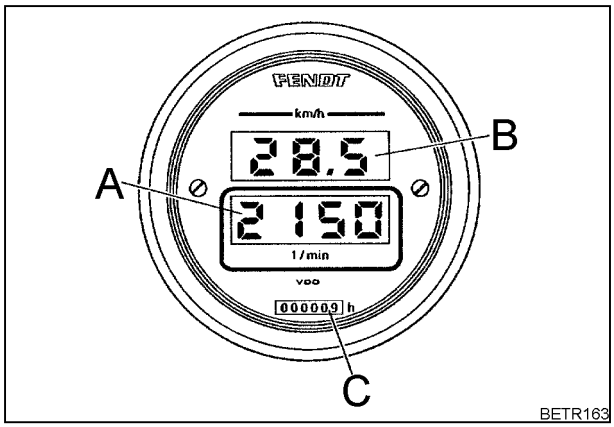


Fig.8

A = rev. indicator in rpm, according to position of the rotary switch
B = speedometer (km/h)
C = working hours counter

Indicator lamps

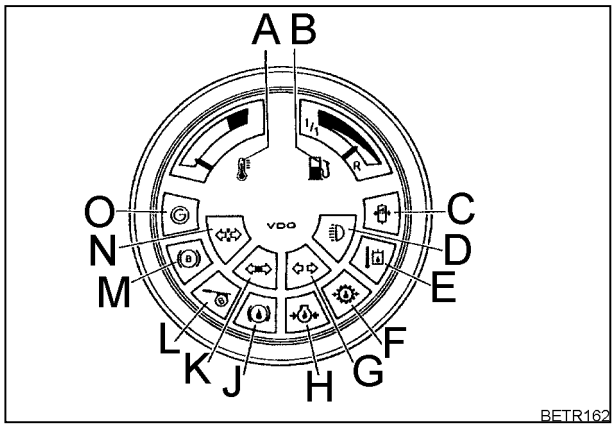


Fig.9

A = engine temperature - if the indicator is in the red field, immediately relieve the engine of its load and switch off.
B = fuel gauge - fill up with diesel as soon as the indicator points to "R".
C = insufficient intake air; check engine air filter
D = main beam
E = hydr. oil temperature (+ buzzer); relieve the hydr. system of its pressure, and switch off the engine.
F = Not in use
G = flasher unit, tractor
H = engine oil indicator light; switch engine off at once.
J = brake fluid level too low; check brake system for leaks.
K = flasher unit, 1st trailer
L = hand brake is on
M = brake wear indicator - cardan shaft
N = flasher unit 2nd trailer
O = alternator not charging

2.6 Controls on right-hand side of cab

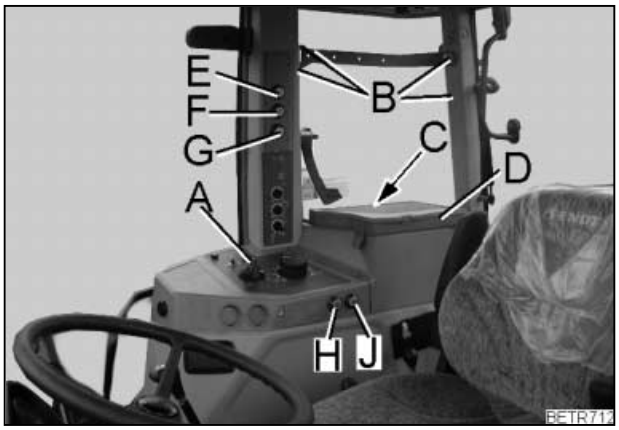


Fig.10

A = preheat starter switch
B = bracket (optional) for fixing additional equipment, e.g. radio or telephone, (refer also to CARE AND MAINTENANCE Section 19.6).
C = fuses (see also CARE AND MAINTENANCE Section 20).
D = document box
E = 4-WD on/off
F = differential lock on/off
G = control for the hydraulic multi-circuit system
H = lights, including side lights
J = backup work lamps, front; do not function unless headlamps are switched on which will then go out

2.7 Cab roof front

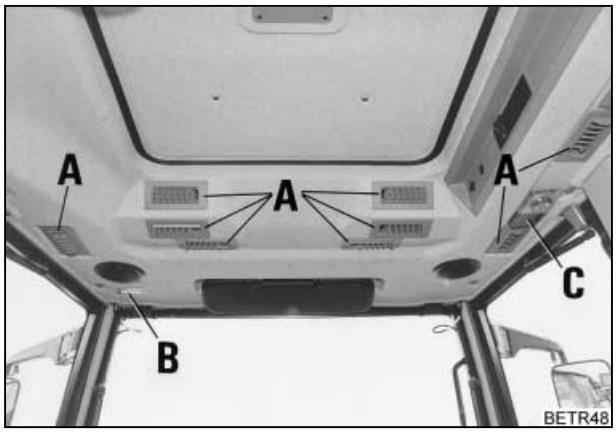


Fig.11

A = Adjustable air nozzles
B = Cab Illumination
C = Power lift controls illumination

2.8 Cab roof right side

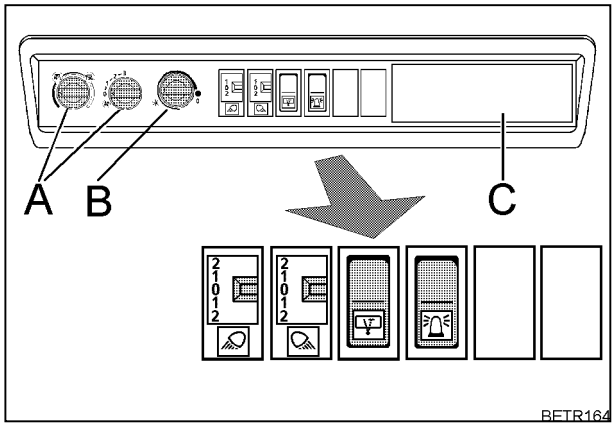
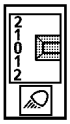
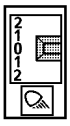


Fig.12

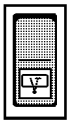
A = Auxiliary ventilation (see also OPERATION Section 3.2)
B = temperature control for air conditioning (refer also to IMPLEMENTS Section 3)
C = Space for built-in radio, cover panel. Connectors behind the panel are supplied as standard.



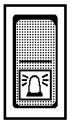
Work lamps at the front and on mirror brackets:
2 = at the front and on mirror bracket
1 = at the front
0 = off
1 = on mirror brackets only
2 = at the front and on mirror bracket



work lamps at the rear and on mudguards:
2 = at the rear and on mudguards
1 = at the rear
0 = off
1 = on mudguards
2 = at the rear and on mudguards



Rear screen wipers with wash/wipe



Warning beacon

2.9 various connectors

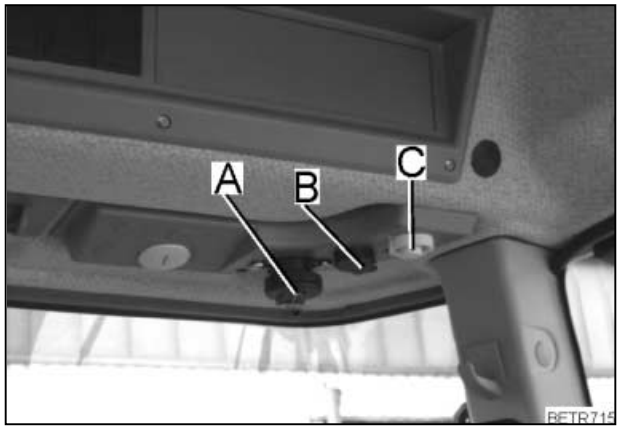


Fig.13

A = 25 A power supply socket
B = 10 A socket
C = implement socket

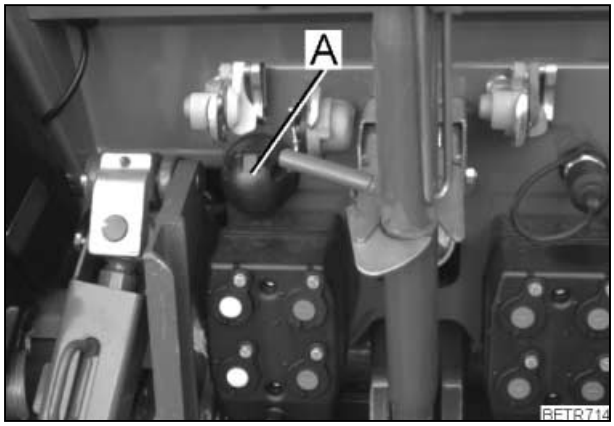


Fig.14

A = trailer socket

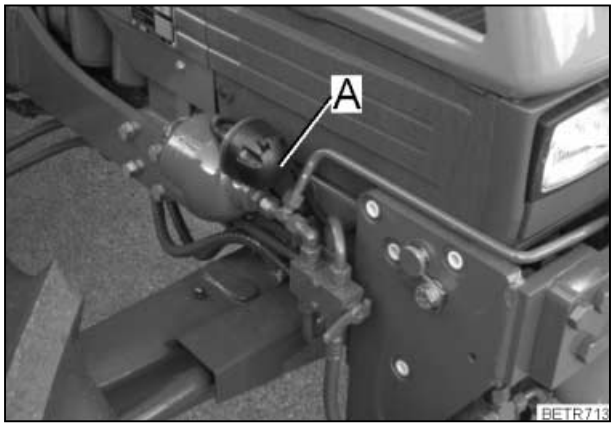


Fig.15

A = front socket (only with front powerlift).

3. heating and ventilation

3.1 heater with 3-speed fan

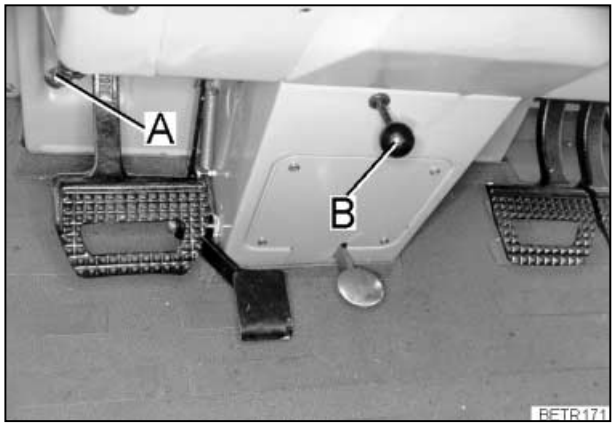


Fig.16

The heating effect is dependent on the temperature of the cooling water and the position of the hot water valve.

Lever (A): towards the driver - heater on.

Circulating air operation: pull out knob (B) and open the leg space nozzles on both sides.

The air flow is controlled by and directed through outlet nozzles on the windscreen and in the leg space.

Fig.17

Turn on fan using control knob (A) - THREE fan speeds.

3.2 Auxiliary ventilation in cab roof

(optional)

Caution:
For spraying operations (e.g. weed or pest control) fit anti-toxic (carbon) filter cartridge. Use only fan speed 1. Replace filter cartridge with normal cartridge as soon as spraying is finished. Observe filter instructions. Cabin and filter do not guarantee 100% protection against harmful chemicals. Follow strictly manufacturer's instructions!

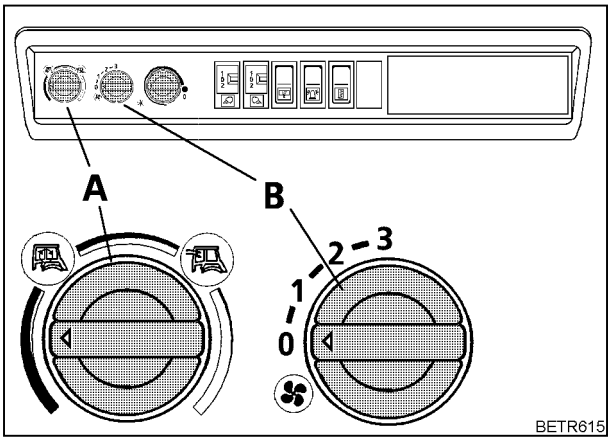


Fig.18

Circulating air/fresh air supply

Turn selector (A) towards the following symbols for:

Air recirculation

Fresh air supply

The selector position determines the mix between recirculated and fresh air.

Fan control selector (B)

0 Fan off

1 Speed 1

2 Speed 2

3 Speed 3

The air flow is controlled by and directed through nozzles (in cab roof cladding).

4. Rearwiew mirrors

Caution:
Before operating the tractor, adjust mirrors to guarantee a clear view of the road and of the working area behind tractor and implement!

Retractable rear-view mirrors

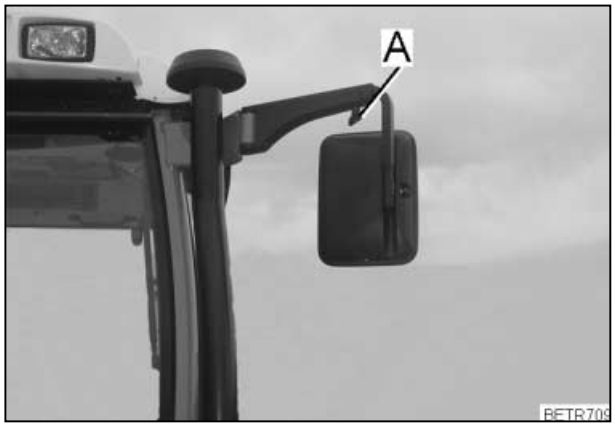


Fig.19

- Adjust to vehicle or trailer width with clamping screw (A).

5. Start-up

5.1 Daily check

Tractor mus be in proper working condition.

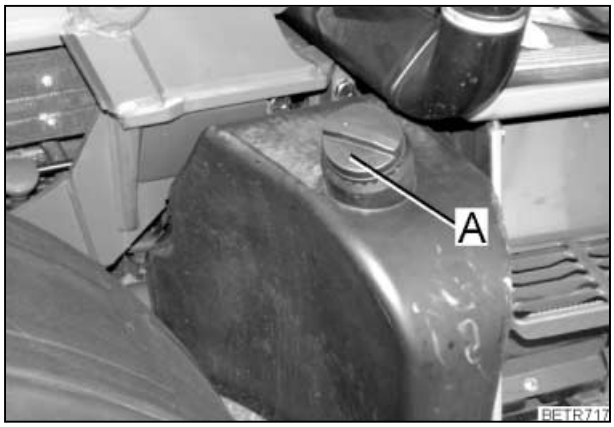


Fig.20

- Check fuel level, if necessary top up through filler neck (A).

Top up with fuel at the end of a day's operation to avoid build-up of condensation.

- Check engine oil level (see also CARE AND MAINTENANCE Section 2.4).
- Check gear oil level (see also CARE AND MAINTENANCE Section 9.2).
- Drain the compressed air reservoir (see also IMPLEMENTS Section 2.2).

5.2 Cold weather operation

Keep battery well charged; fill tank with fuel suitable for winter applications. At temperatures below -12 °C, and flow enhancer or up to 20% petroleum and/or normal petrol;

top up engine oil HD-SAE 10W;

Antifreeze in coolant 35 -50 vol.-%

Engine warmer

(optional)

- Connect engine warmer with mains (220 V) using cable provided.

Warming time at least 3 h, depending on outside temperature. Preheating is only necessary in extreme cases.

On a compressed air system (optional)

- Open antifreeze pump (see also IMPLEMENTS Section 2.1).

6. Starting and stopping the engine

Danger:
Only start the engine from the driver's seat. Never short circuit the battery. Never let the engine run within a confined space!
Do not use ether starting fuel (e.g. Startpilot)!

6.1 Starting the engine

Important:
Do not start or operate the tractor without a battery. This could destroy the alternator. Pay attention to warnings and fault messages. If necessary, immediately switch off the engine. If a fault is indicated, refer to "FAULTS AND REMEDIAL ACTION".

- Apply the parking brake
- Depress clutch pedal (starting inhibit is deactivated).
- Switch off PTOs and other drivers.
- Switch off power to unneeded electrical receptors.
- Throttle lever in idle position.
- Main selection lever in neutral position.

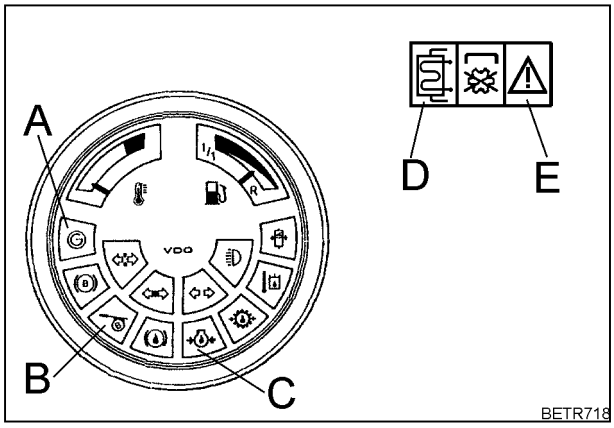


Fig.21

Turn ignition key to position "I"

- The cold-start indicator lamp (D), the engine oil pressure indicator lamp (C), and the alternator indicator lamp (A) light up.
- Warning lamp (E) and handbrake indicator lamp (B) light up because the handbrake is on.
- If the battery charging indicator lamp (D) goes out, turn ignition key to "II" and once the engine has started turn it back to "I".
- The engine oil pressure indicator lamp (C) must go out.
- The alternator indicator lamp (A) must go out once approx. 800 rpm is reached.

Note:
If at very low temperatures the engine does not start within about 20 seconds, abort the starting procedure, allow the starter to cool down and wait for about 1 minute before trying again.
Switch off ignition before restarting.
Allow starter to cool down. Do not operate the starter while the engine is still turning. In the event of repeatedly unsuccessful starting attempts, refer to "FAULTS AND REMEDIAL ACTION."

6.2 Boost-starting

Warning:
Do not allow contact between the non-insulated parts of the battery clamps. It is important to avoid contact between the jump lead connected to the positive pole and any electrically conductive parts of the vehicle - danger of shorting!
To avoid sparks, always observe the correct sequence when clamping the leads!

If the battery is partially discharged, the engine can be started with a battery of a second tractor, or alternatively with an external battery.

The external power unit must be a 12 Volt battery and have roughly the same capacity (Ah) as the discharged battery.

- Connect the positive terminal to the positive terminal of the donor battery using the jump leads.
- Connect the jump lead first to the negative terminal of the donor battery, and then to the negative terminal on the tractor.
- Run the engine of the second tractor.
- Wait for about 15 minutes, then start the engine following the directions in chapter 6.1.
- With the engine running, disconnect both leads in reverse order.

Note:
The external power unit must be a 12 Volt battery and have roughly the same capacity (Ah) as the discharged battery.
When jump starting the vehicle, the engine must be switched on immediately after starting otherwise the discharging battery will be fully discharged.
Reverse polarity on the terminals must be ruled out.
Always use good quality, heavy-duty jump leads with insulated clamps.
Do not disconnect the discharged battery from the on-board supply voltage.
After an extended time the tractor not being used, battery must be kept in good load condition (Recharge with external 12V supply).

6.3 Stopping the engine

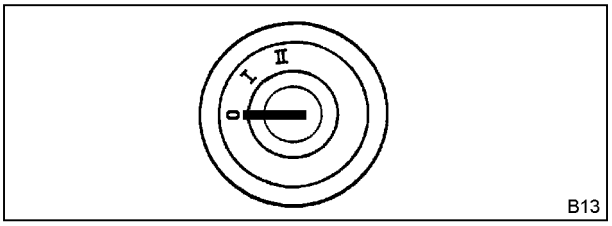


Fig.22

- Turn ignition key to position "0".

Note:
After operating at full load, do not stop the engine immediately but allow it to cool down for about 2 minutes at approx. 1000 rpm.

6.4 Parking and immobilising the tractor

Warning:
Before leaving the tractor, apply the hand brake, stop the engine, lower hydraulic implements to the ground and remove the ignition key. Make sure the tractor is securely parked. On slopes chock the wheels. If the tractor is left on the road, switch on hazard warning lights and place warning triangle in appropriate position.

Wheel chocks

Fig.23

Warning triangle

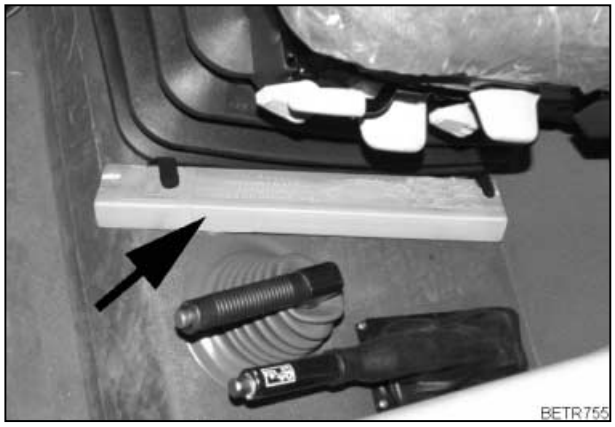


Fig.24

The warning triangle (arrow) is stored behind the driver's seat. (The warning triangle is not included as standard equipment.)

We recommend ordering a warning triangle from:

GEKA GmbH Germany 73054 Eislingen / Fils
Schloßstraße 97

Tel. 0049 7161 / 99903-0

Fax 0049 7161 / 99903-99

7. Using the tractor for towing

Danger:
With the engine stopped or in the event of complete failure of the hydraulic servo-assistance, the tractor requires considerably more steering effort.
Do not exceed permissible speed.

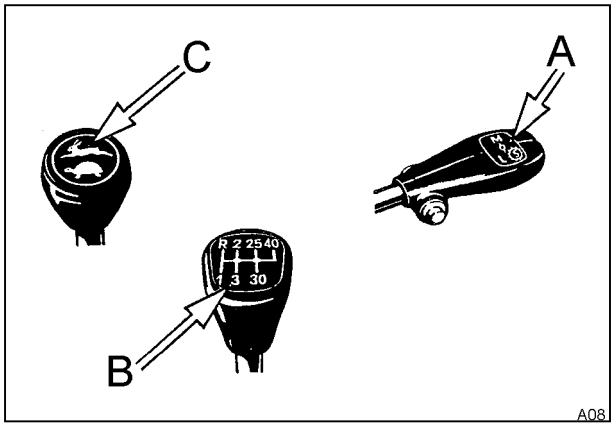


Fig.25

Tow-starting
- Move splitter control lever (A) to one of these positions: L-M-S.
- Select HARE group (C) and engage 3rd gear (B).
- Let the clutch out at 10 - 15 km/h.

Towing
- Put splitter control lever (A) into neutral.
- Select HARE group (C) and engage 3rd gear (B).

Note:
Do not exceed a speed of approx. 10 km/h! If the transmission lubricating circuit has failed, towing the tractor can lead to severe gearbox damage.

8. Gearbox

Danger:
When travelling at approx. 25, 30 or 40 km/h, do not set the splitter gear control lever to the "0" position.

8.1 Control levers

Main control lever

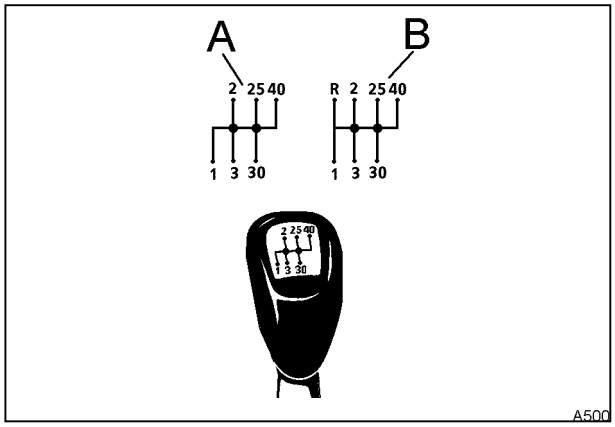


Fig.26

A = Circuit diagram with shuttle gear control
B = Circuit diagram without shuttle gear control

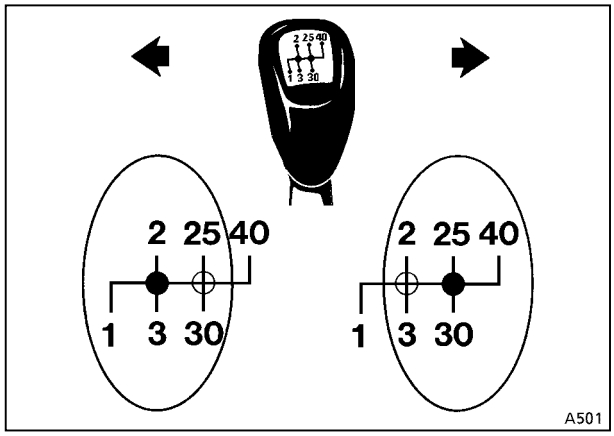


Fig.27

When changing gear from the left (1st - 3rd gear and reverse) to the right (overdrive).
- Move the gear lever across to the right, pushing through the resistance.

In neutral, the lever springs back into the appropriate middle shift gate (2-3 or 25-30).

Group gear lever

(HARE / TORTOISE)

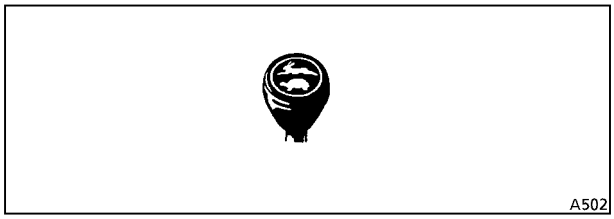


Fig.28

Select only while the tractor is stationary and the main gear lever is in the neutral position.

HARE (main working group)

In the main working group the engine output is converted to maximum-efficiency pulling power.

Always use for lengthy operations requiring max. engine power and/or max. weight, e.g. for prolonged ploughing periods.

TORTOISE (PTO gears)

For PTO or maintenance operations when only a partial load is taken off the travel drive.

In this position, the approx. 25, 30 and 40 km/h (overdrive) speeds are locked.

Splitter range control

(Slow - medium - fastl)

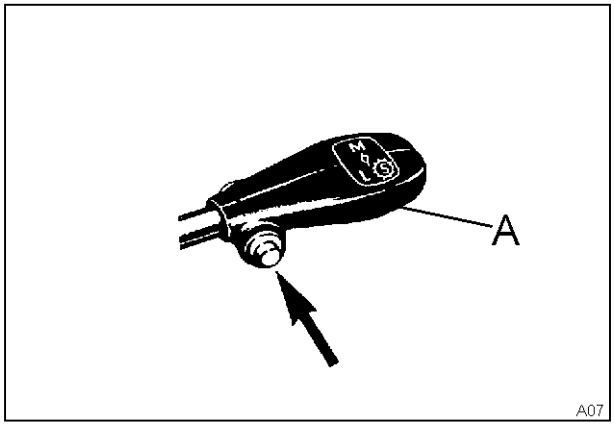


Fig.29

Slow
- Pull lever (A) back.

Mediuml
- Push lever (A) forwards.

Fast
- Press button (arrow) and pull lever (A) back.

The light inside the button remains on as long as "FAST" is selected.

Shuttle gear control

(optional)

Fig.30

Can only be activated when the tractor is stationary or coming to a halt.

Disengage the clutch when changing driving direction.

When changing to forwards
- Push gear (A) lever forwards.

When changing to reverse
- Pull gear lever (A) back.

Super crawler gear

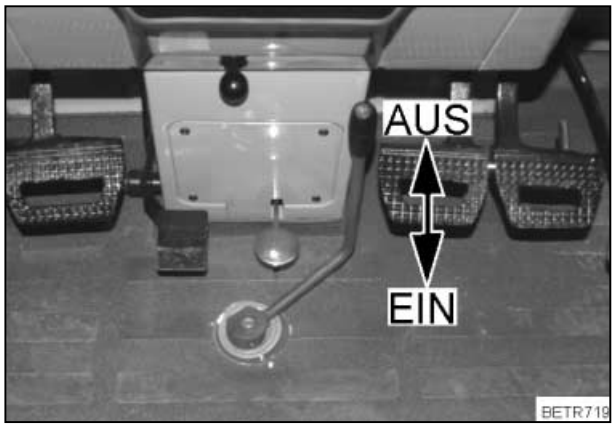


Fig.31

Can only be selected when the vehicle is stationary.
- Set the main selection to neutral.
- Set the lever to the "on" position.

Note:
The shuttle gear control cannot be used in super crawler gear.

9. Operating the tractor

Danger:
When travelling downhill, remain in a low gear and keep the clutch engaged.

Danger:
When the tractor is stationary and the engine is running, proceed as follows:
Set the transmission main control lever to neutral - refer to warning diagram.

Fig.32

1. Disengage clutch when changing gear.
2. All main and splitter gears are fully synchronised and can be selected noiselessly whilst travelling.
3. For the selection of group gears and super crawler gear the tractor must be stationary.
4. Wait until the tractor is stationary or coming to a halt before changing from forwards to reverse or vice versa.

PTO gears / Super crawler gear

For easier gearshifting when selecting PTO gears at high engine speeds and under extremely high loading, proceed as follows while the tractor is stationary:

- Set splitter range control to neutral.
- Engage the required gear.
- Return splitter range control to required position.

9.1 Turboclutch

The drive clutch is backed up by a turboclutch (Turbomatic). Using only the accelerator, the turboclutch allows starting and stopping of the tractor without clutch wear. The engine does not stall and even in difficult driving conditions wheel slip is avoidable. Maximum power transfer from 1030 ± 70 rpm engine speed (standstill torque).

Starting using the turboclutch

- At idling speed with the brakes applied,
- depress clutch pedal, select a gear and let in the clutch,
- release the brake and move off by using the accelerator.

Note:
Only stop briefly while using the turboclutch. When operating under high continuous load, do not allow the engine revs to drop below 1,500 rpm.

9.2 Running speeds in km/h

The table below indicates rated engine speeds (2,300 rpm) and standard tyres for the following tractors:

Farmer 307 C 16.9R34

Farmer 308 C 480/70R34

Farmer 309 C 540/65R34

For max. speed, refer to vehicle registration document.

Any changes to the top speed as set in the factory for each model, must be approved by a Vehicle Testing Station and entered in the registration document.

21/6 speed fully syunchronised overdrive gearbox

9/3 super crawler gear (optional)

Model	307	308	309
Forwards			
Super crawler gear 1, splitter stage slow	0.37	0.32	0.34
Super crawler gear 1, splitter stage medium	0.45	0.39	0.41
Super crawler gear 1, splitter stage fast	0.53	0.46	0.48
Super crawler gear 2, splitter stage slow	0.59	0.51	0.54
Super crawler gear 2, splitter stage medium	0.72	0.62	0.65
Super crawler gear 2, splitter stage fast	0.85	0.73	0.77
Super crawler gear 3, splitter stage slow	0.93	0.81	0.85
Super crawler gear 3, splitter stage medium	1.14	0.98	1.03
Super crawler gear 3, splitter stage fast	1.34	1.16	1.22
Field group 1, splitter stage slow	1.47	1.28	1.34
Field group 1, splitter stage medium	1.80	1.56	1.62
Field group 1, splitter stage fast	2.12	1.84	1.93
Field group 1, splitter stage slow	2.36	2.04	2.14
Field group 1, splitter stage medium	2.88	2.49	2.60
Field group 1, splitter stage fast	3.39	2.94	3.09
Field group 1, splitter stage slow	3.72	3.22	3.39
Field group 1, splitter stage medium	4.54	3.93	4.10
Field group 3, splitter stage fast	5.35	4.64	4.88
Road group 1, splitter stage slow	5.89	5.10	5.36
Road group 1, splitter stage medium	7.19	6.23	6.50
Road group 1, splitter stage fast	8.48	7.34	7.73
Road group 2, splitter stage slow	9.43	8.17	8.58
Road group 2, splitter stage medium	11.50	9.97	10.40
Road group 2, splitter stage fast	13.56	11.75	12.36
Road group 3, splitter stage slow	14.88	12.90	13.55
Road group 3, splitter stage medium	18.16	15.74	16.42
Road group 3, splitter stage fast	21.42	18.55	19.52
1 - overdrive	25.00	25.00	25.00
2 - overdrive	30.00	30.00	30.00
3 - overdrive	40.00	40.00	40.00
Reverse			
Super crawler gear, reverse slow	0.53	0.46	0.49
Super crawler gear, reverse medium	0.65	0.56	0.59
Super crawler gear, reverse fast	0.77	0.66	0.70
Field group reverse slow	2.13	1.85	1.94
Field group reverse medium	2.60	2.25	2.35
Field group reverse fast	3.07	2.66	2.80
Road group reverse slow	8.53	7.39	7.76
Road group reverse medium	10.41	9.02	9.41
Road group reverse fast	12.27	10.63	11.19

21/21 speed overdrive shuttle gearbox
(optional)

Model	307	308	309
Forwards			
Field group 1, splitter stage slow	1.47	1.28	1.34
Field group 1, splitter stage medium	1.80	1.56	1.62
Field group 1, splitter stage fast	2.12	1.84	1.93
Field group 1, splitter stage slow	2.36	2.04	2.14
Field group 2, splitter stage medium	2.88	2.49	2.60
Field group 2, splitter stage fast	3.39	2.94	3.09
Field group 1, splitter stage slow	3.72	3.22	3.39
Field group 3, splitter stage medium	4.54	3.93	4.10
Field group 3, splitter stage fast	5.35	4.64	4.88
Road group 1, splitter stage slow	5.89	5.10	5.36
Road group 1, splitter stage medium	7.19	6.23	6.50
Road group 1, splitter stage fast	8.48	7.34	7.73
Road group 2, splitter stage slow	9.43	8.17	8.58
Road group 2, splitter stage medium	11.50	9.97	10.40
Road group 2, splitter stage fast	13.56	11.75	12.36
Road group 3, splitter stage slow	14.88	12.90	13.55
Road group 3, splitter stage medium	18.16	15.74	16.42
Road group 3, splitter stage fast	21.42	18.55	19.52
1 - overdrive	25.00	25.00	25.00
2 - overdrive	30.00	30.00	30.00
3 - overdrive	40.00	40.00	40.00
Reverse			
Field group 1, splitter stage slow	1.29	1.12	1.17
Field group 1, splitter stage medium	1.57	1.36	1.42
Field group 1, splitter stage fast	1.86	1.61	1.69
Field group 1, splitter stage slow	2.06	1.79	1.88
Field group 1, splitter stage medium	2.52	2.18	2.28
Field group 2, splitter stage fast	2.97	2.57	2.71
Field group 3, splitter stage slow	3.26	2.82	2.97
Field group 3, splitter stage medium	3.98	3.45	3.60
Field group 3, splitter stage fast	4.69	4.06	4.28
Road group 1, splitter stage slow	5.16	4.47	4.70
Road group 1, splitter stage medium	6.30	5.46	5.69
Road group 1, splitter stage fast	7.43	6.43	6.77
Road group 2, splitter stage slow	8.26	7.15	7.52
Road group 2, splitter stage medium	10.08	8.73	9.11
Road group 2, splitter stage fast	11.88	10.29	10.83
Road group 3, splitter stage slow	13.04	11.30	11.87
Road group 3, splitter stage medium	15.91	13.79	14.38
Road group 3, splitter stage fast	18.76	16.25	17.10
1 - overdrive	25.00	25.00	25.00
2 - overdrive	30.00	30.00	30.00
3 - overdrive	40.00	40.00	40.00

10. PTO

Danger:
Switch off the engine before fitting or removing drive shaft, and before cleaning, servicing or repairing PTO-driven implements. Wait for the PTO-driven implement to come to a complete standstill.

Do not operate the PTO before all safety devices are in place.

Observe specified minimum overlap requirements of the PTO shaft. During PTO operation make sure no-one remains in the hazard zone.

10.1 Rear PTO

Danger:
Following PTO operation, proceed as follows:

Set the speed to "0", pull control lever forwards to off and place the protective sleeve over the PTO stub shaft.

Important:
If the permissible torque is likely to be exceeded due to the nature of the operation, the PTO shaft must be equipped with overload coupling.

When operating with overrunning equipment, the PTO shaft must be free-wheeling.

Drive shaft attachment

To prevent irregularity, note correct pivoting of drive shaft.

A = incorrect

B = correct

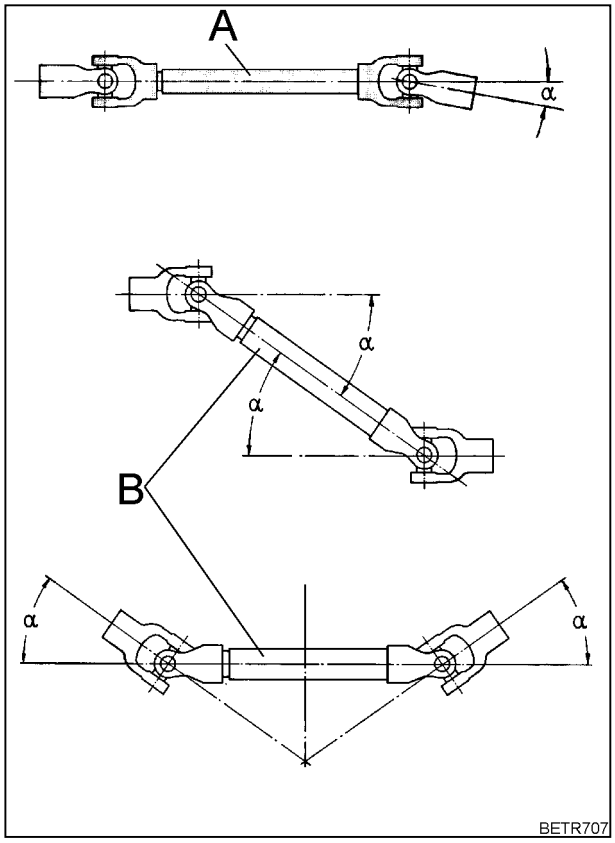


Fig.33

Note:
See also drive shaft manufacturer's Technical Manual.

PTO shaft protection sleeve

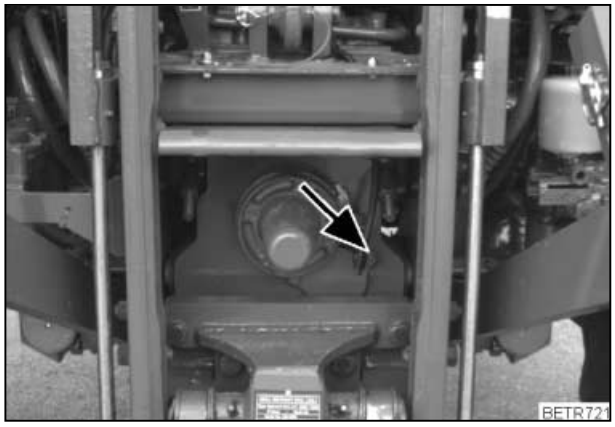


Fig.34

Direction of PTO rotation, refer to arrow.

PTO protection according to ISO 500

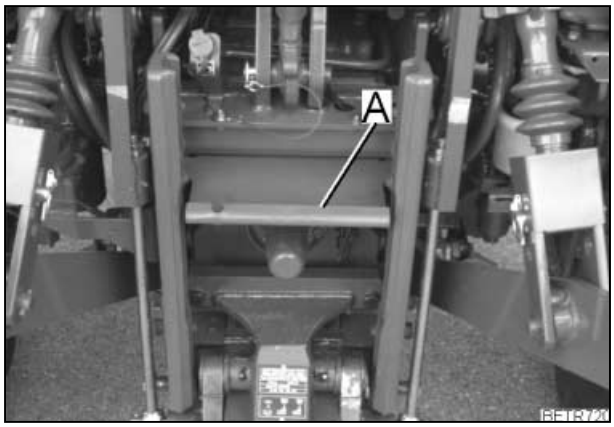


Fig.35

Before operating the rear PTO, fit PTO protective plate (A) as shown.

Note:
If the coupler is placed in front of the PTO stub, the PTO cover is not necessary.

Selecting PTO speed

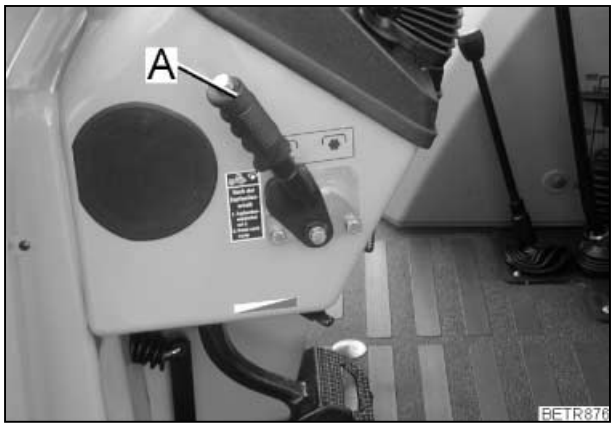


Fig.36

Before selecting PTO speed, the PTO clutch must be disengaged.

Pull control lever (A) back.

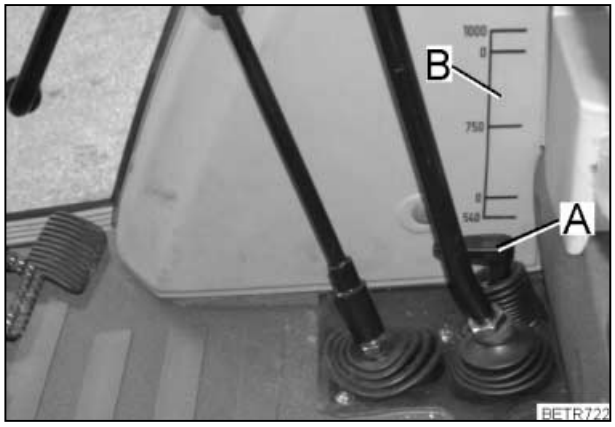


Fig.37

Using PTO selection lever (A), select PTO speed as indicated on the scale (B).

Note:
To release the lever, push gently forwards.

Note:
Economy PTO "750" is designed for use with equipment running at 540 rpm with lower power requirements and reduced engine speeds.

10.2 Engaging and disengaging PTO

Danger:
Before engaging PTO, make sure no-one remains in the hazard zone!
The selected PTO speed must be in accordance the permitted implement speed!
Never engage the PTO when the engine is not running.

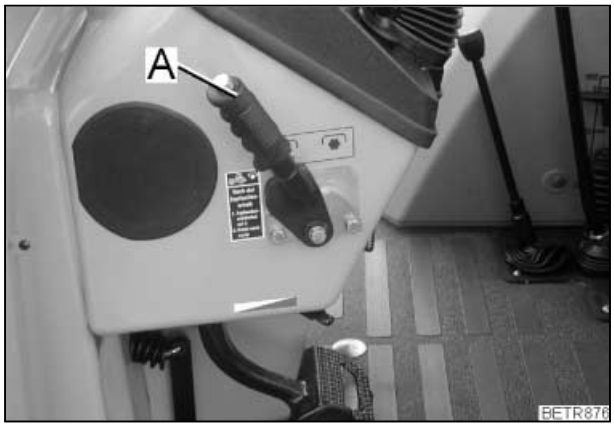


Fig.38

The PTO can be engaged or disengaged using control lever (A) (direct-drive PTO).

The PTO equipment can also be started smoothly in one operation via the turboclutch.

Indicator light for PTO main control lever

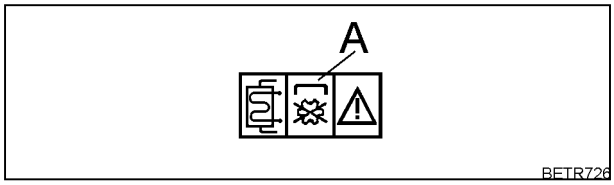


Fig.39

Indicator light (A) comes on if the PTO main control lever is not fully engaged.

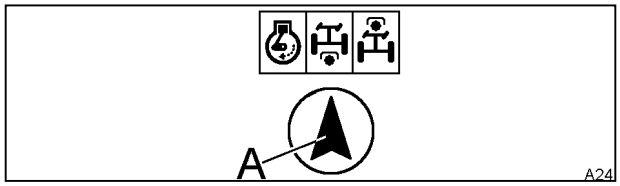


Fig.40

To access the digital rev indicator, proceed as follows:

turn rotary switch (A) to the "rear PTO" symbol.

10.3 Ground speed PTO

(optional)

Danger:
Before activating PTO, make sure no-one remains in the hazard zone.

Caution:
The PTO rotates only while the tractor is moving, its speed increasing in relation to the tractor speed. During forward travel the rotation is clockwise, and during reverse travel the rotation is anticlockwise.

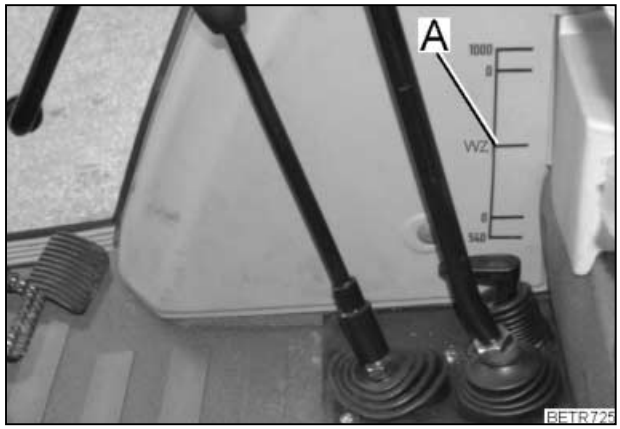


Fig.41

To activate PTO:

- stop the tractor,
- move PTO selector lever (A) to "WZ".

10.4 Front PTO

(optional)

Danger:
After operating front PTO, disengage season selector and replace the protective sleeve on the PTO stub shaft.

PTO protective sleeve (A)

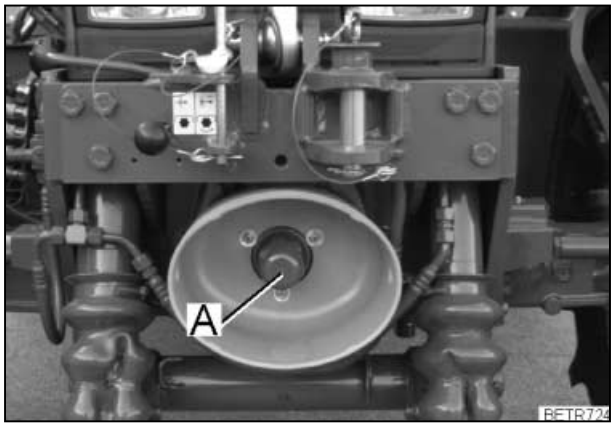


Fig.42

Season selector

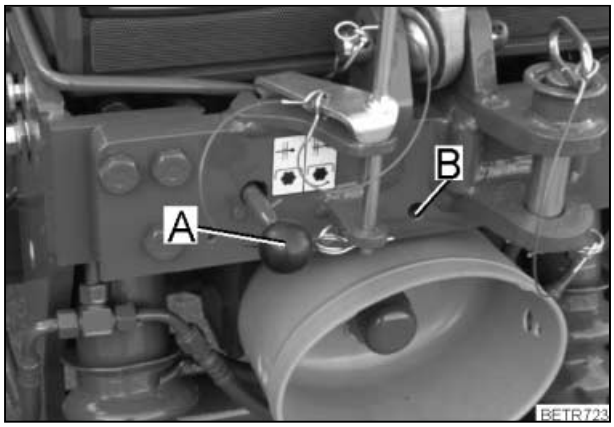


Fig.43

Turn off the engine.

Engage or disengage season selector with lever (A).

Rotation direction of the front PTO = clockwise, looked at in travel direction, refer to sticker.

10.5 Activating front PTO

Danger:
Before engaging the PTO, make sure no-one remains in the hazard zone. Never engage the PTO when the engine is not running.

Fig.44

The front PTO can be engaged or disengaged using control lever (A) while travelling.

Note:
Engage the PTO at as slow an engine speed as possible.

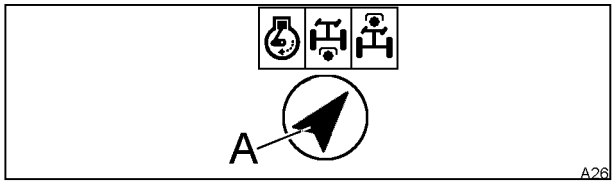


Fig.45

- Turn rotary switch (A) to the "Front PTO" symbol.

The digital display indicates the front PTO rpm.

11. Four wheel drive (4WD)

Front-wheel drive can be engaged or disengaged under load.

To avoid unnecessary noise level and excessive tyre wear, do not use front-wheel drive for common road traffic! It may however become useful to engage it on difficult road surfaces or in conditions of ice and snow.

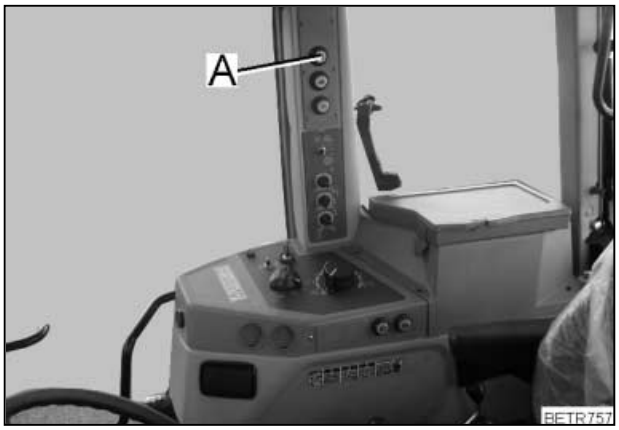


Fig.46

Activating and deactivating four-wheel drive

Four-wheel drive can be activated and deactivated by pressing the push-button switch (A).

When four-wheel drive is activated, the lamp in push-button switch (A) lights up.

12. Differential lock

Danger:
Do not use for road travel and on bends or when turning.
Maximum speed 15 km/h.
Do not operate steering brake.

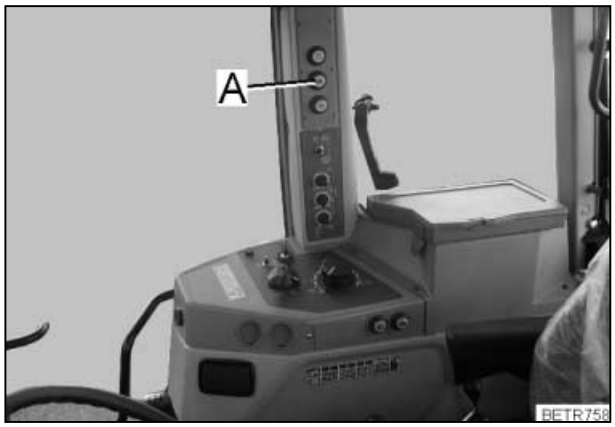


Fig.47

Activating and deactivating the differential lock

The differential lock can be activated and deactivated by pressing push-button switch (A).

When the differential lock is activated, the lamp in push-button switch (A) lights up.

13. Brakes

Danger:
Always check the brakes before starting work.

13.1 Foot brake

Danger:
For public road travel, and pulling trailers equipped with air brakes, always lock brake pedals together (independent wheel braking is not permitted).

Fig.48

Fig.49

- For independent wheel braking (steering brake), unlock the brake pedals.
- Press pedal for appropriate wheel.

Note:
Use directional brake smoothly and never use it with locked differential.

13.2 Parking brake

Danger:
Always apply the hand brake when the tractor is stationary. If parked on a slope, chock the wheels and engage low gear.

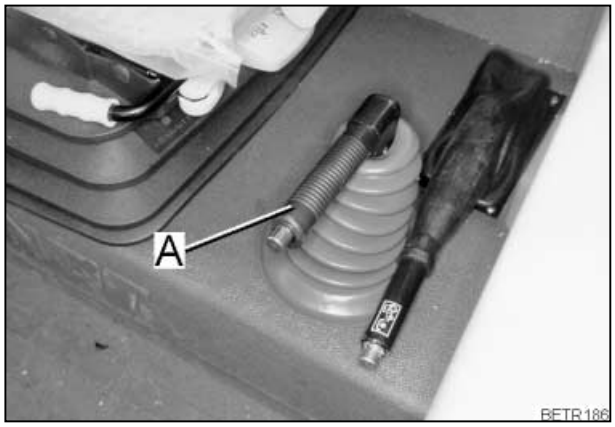


Fig.50

13.3 Trailer braking system

Please refer to local regulations for trailer braking systems.

Trailers with hydraulic brakes must not be operated in excess of 25 km/h. Above this speed, trailers must be retarded by air brakes.

13.4 Engine brake

(optional)

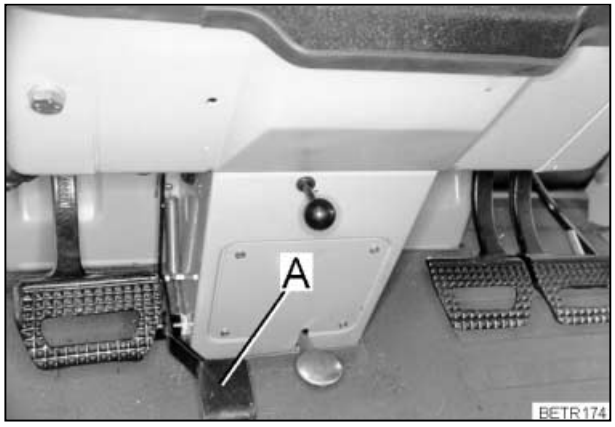


Fig.51

- Press foot button (A).

The engine brake is only effective at engine speed above 900 rpm.

Maximum braking is effective only at high engine revs. Change into a lower gear if necessary.

Note:
Maximum permissible engine speed 2,600 rpm.

14. Steering

Danger:
In the event of complete failure of the hydraulic servo-assistance, the tractor remains controllable, but more steering effort is required.

Do not exceed a speed of approx. 10 km.

Stop tractor immediately in case of steering problems. Repair only to be performed by FENDT service workshop.

Never adjust the steering wheel during travel.

14.1 Adjusting Steering wheel position

The steering wheel can be adjusted at any height up to 75 mm and the tilt can be adjusted by a maximum of 30°.

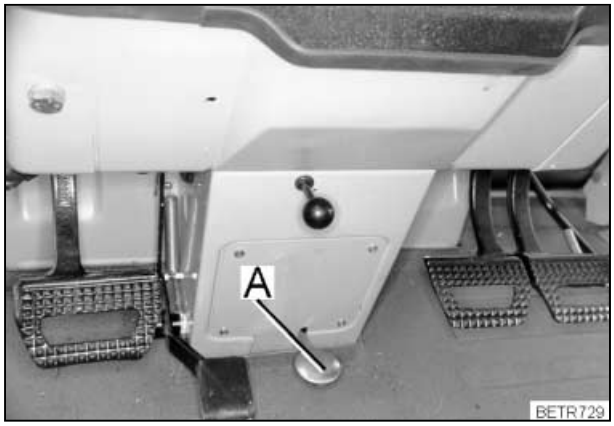


Fig.52

Height adjustment
- Depress pedal (A) half way.

Height and tilt adjustment
- Depress pedal (A) fully.

15. Hydraulics

Danger:
When working with hydraulic equipment, make sure that the entire working area is clear of bystanders.

Do not stand beneath suspended load. Always observe safety operating instructions.

At the conclusion of an operation, lock the hydraulic valves.

15.1 General notes on hydraulic operations

Danger:
When attaching implements, observe all safety precautions and guard against the risk of injury.

Never stand between tractor and attachment without having first secured the vehicle to prevent it from rolling (apply parking brake, chock the wheels).

When using external control buttons for three-point linkage, stand well back from the tyres.

For road travel, raise the implement to the necessary height and lock the operating levers. Make sure the EPC is positioned in the transportation position. When transporting a plough with castor wheel support, secure the lateral supports and unhook the top link. On bends, allow for overhang and centrifugal force of the implement.

Make sure implements are lowered completely before leaving the tractor. Switch off the engine and remove the ignition key. Make sure dismounted implements are securely parked.

The three-point linkage must have standard connection dimensions; if necessary, fit connecting piece with appropriate ball socket profile for quick couplers.

Do not operate the hydraulics with cold oil; if necessary allow the engine to run at medium revs for a few minutes.

In the event of the hydraulic fluid becoming overheated, stop the tractor immediately.

15.2 Valve layout

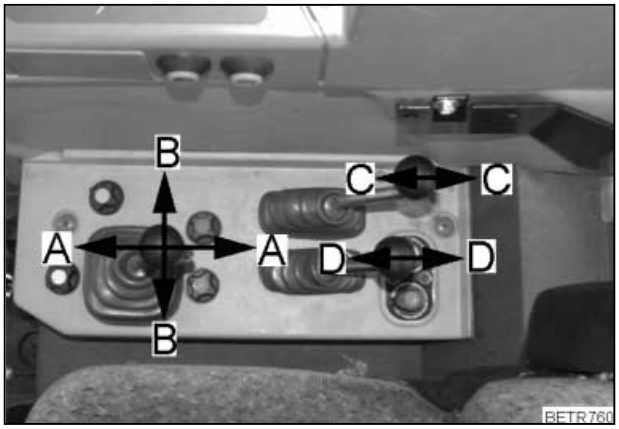


Fig.53

The four possible hydraulic valves can be identified by their yellow, blue, red and green colour coding on their associated controls and on the screw caps on the front and rear connections.

- Yellow valve (standard) control direction (A).
- Blue valve (standard) control direction (B).
- Red valve (optional) control direction (C).
- Green valve (optional) control direction (D).

Note:
The yellow valve takes priority over the other valves with regard to power supply.

Operating the valves

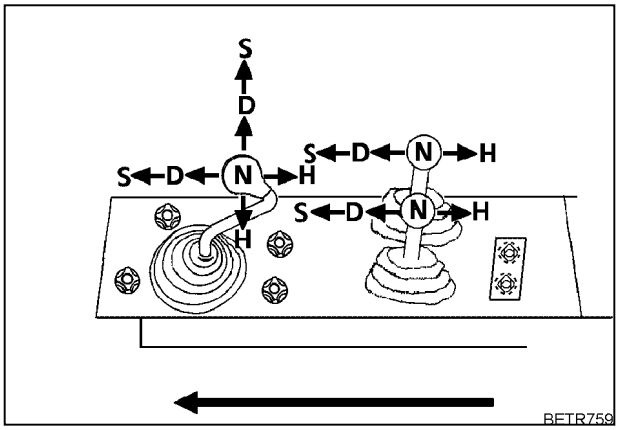


Fig.54

Viewed looking in the direction of travel

H = Lifting
D = Power-down
S = Lowering (floating position)
N = Neutral

Note:
The levers of the control valves should not be kept continuously at the end of their travel (the hydraulic pump has to work at full pressure, resulting in overheating of the oil).

Blocking the floating position

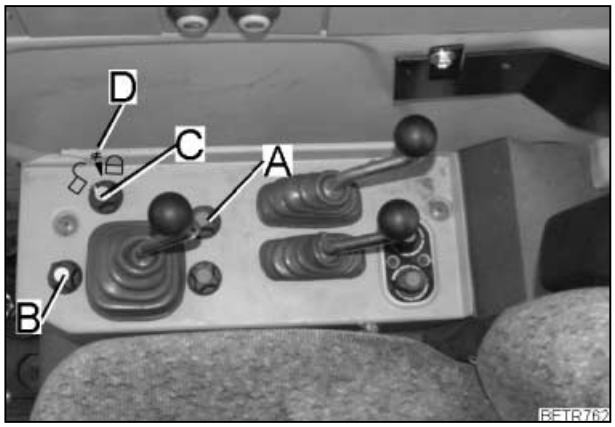


Fig.55

The floating position can be blocked at the blue connection (C) (e.g. for operations with the front loader).

To block the floating position, turn the lock from the interlocked neutral position to position (D).

Lock in "lifting" position

The yellow connection (B) and the red connection (A) can be locked in the "lifting" position (e.g. for operations with constant consumers).

Note:
The lock can also be released again with a light jolt to the crossgate lever.

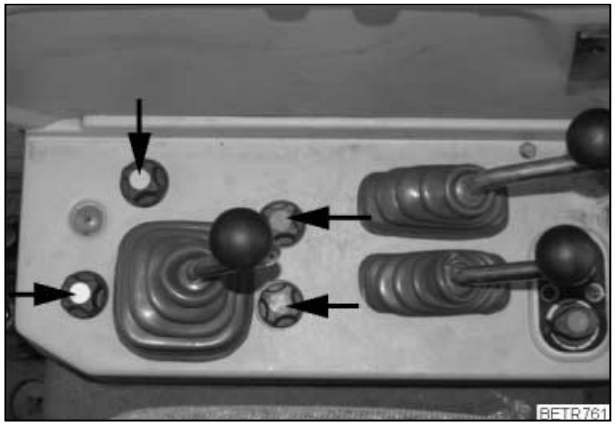


Fig.56

At the end of hydraulic operations lock crossgate lever into position using the rotary buttons (arrows).

Flow controller

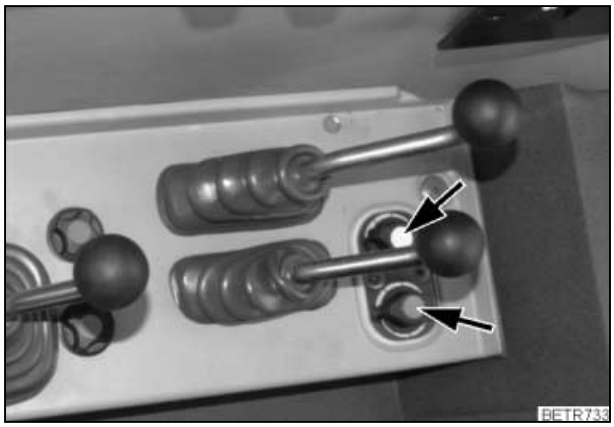


Fig.57

The oil capacity for the yellow and red valves can be continuously adjusted using a flow controller.

Yellow valve: 15 - 65 l/min.

Red valve: 15 - 70 l/min.

- Adjust rotary buttons (arrows) according to oil requirements.

Note:
The adjustment of the oil capacity is also possible under pressure.

Recommendations for use

Pneumatic sowing machine with hydraulic blower

Connect the blower to the yellow valve. This ensures that the blower speed is not altered when the power lift is in operation.

Hayloader and front reaper

Connect the front power lift to the yellow valve and the hay loader (plough) to the red valve. This makes the front power lift easier to use and enables the speed of the hay loader to be set according to your requirements.

Hay loader

Connect the hay loader (plough) to the yellow valve. This results in the most efficient hydraulic oil supply.

15.3 Hydraulic connections

Danger:
When connecting hydraulic cylinders and motors, make sure that all hydraulic hoses are correctly connected: load pressure side of cylinder to "+".

Incorrect connections (e.g. lifting instead of lowering) can cause accidents.After conclusion of operation, lock all hydraulic valves.

When connecting extra hydraulically operated implements, best results can be obtained by controlling them directly from the tractor, rather than using an additional control unit on the implement, e.g. hay loader. The operation speed of the extra implements can be adjusted individually via the tractor's flow controller for the yellow and red valves.

Note:
A pressurised connector can be easily disconnected from the implement if the appropriate control unit is moved into its floating position.

Central hydraulic connections

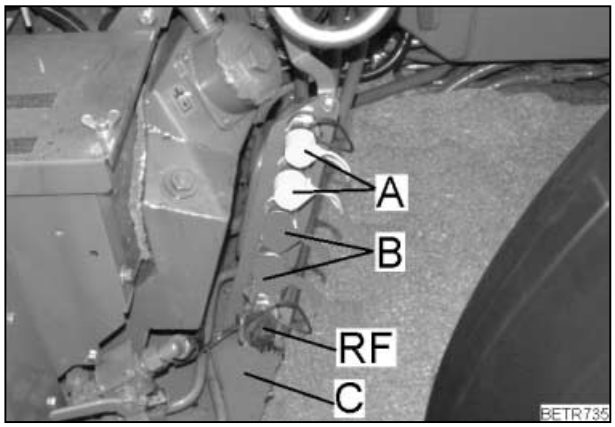


Fig.58

A = Yellow valve
B = Red valve
RF = Black markings: front return flow
C = Possiblity for external mounting of a second front return flow

Rear hydraulic connections

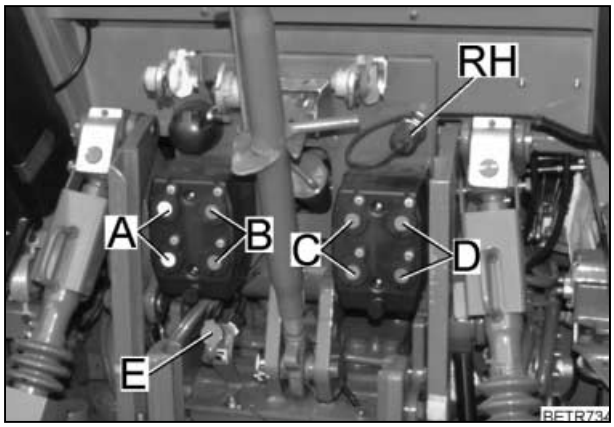


Fig.59

A = Yellow valve (standard).
B = Blue valve (standard).
C = Red valve (optional).
D = Green valve (optional).
E = Hydraulic trailer brake (optional).
RH = Black markings: rear return flow.

Note:
Oil motors should only be used continuously with free return flow.

Hydraulic multiple coupler

Fig.60

Hydraulic multiple coupler for connecting front loader.

15.4 Available hydraulic oil volume

When filled to capacity,
32 l hydraulic oil are available for external users.

15.5 Controlling the hydraulic multi-circuit system

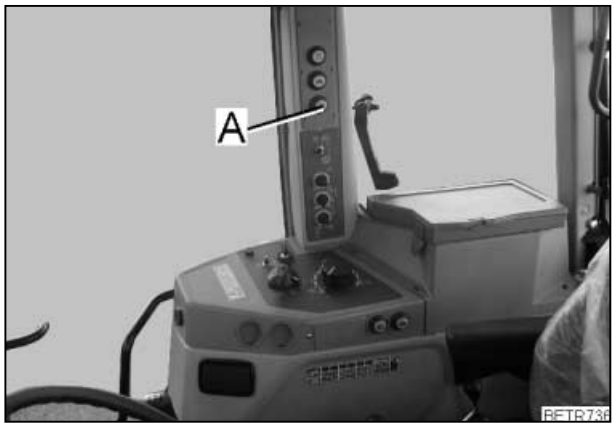


Fig.61

During normal operation the flow from the steering pump is directed to the hydraulic tank. This enables maximum engine output to the wheels/PTO with reduced hydraulic oil heating and low fuel consumption.

If the flow from the steering pump is not sufficient, e.g. for operations involving the front loader/hay loader, the steering pump can be switched off.

Controlling the oil flow

The oil flow is turned on and off by pressing the push-button switch (A).

- If you do not press the push-button switch, the rate of oil flow is 38 l/min.
- If you press the push-button switch, the lamp in the switch lights up and the rate of oil flow is 70 l/min.

Recommendation

When operating the hay loader:

do not turn off the oil flow when loading in the field (slow speed ground contact) turn on the oil flow before unloading (high speed ground contact); after unloading, switch the oil flow back off again.

Note:
Switch on the oil flow only when a large amount of oil is really required, and then switch the oil flow off again.

16. Electronic power lift control

Control panel

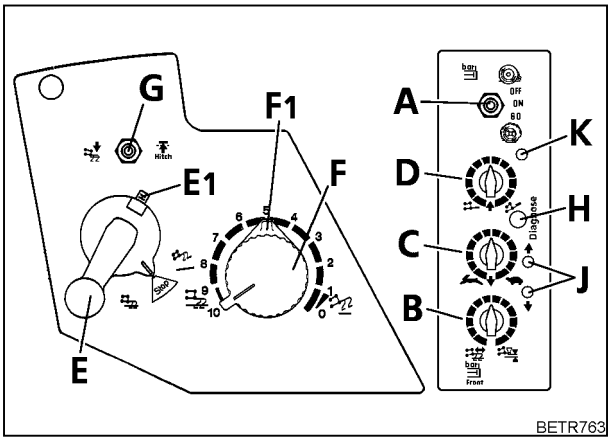


Fig.62

A = Oscillation damper (optional)
B = Draught/mixed position control
C = Lowering throttle
D = Automatic lift height limiter
E = Fast lift
E1 = Locking
F = Basic setting/depth control
F1 = Setting collar
G = Quick entry/hitch-lift
H = The diagnostic LED red
J = LED red = lift, yellow = lower
K = Oscillation damper (green)

The control panel LED (H) and the oscillation damper LED (K) light up briefly when the ignition is switched on. LED (H) lights up again and only goes out following the unlocking process.

Note:
The diagnostic LED flashes when there is a fault. Take note of the flashing sequence (refer to FAULTS AND REMEDIES) which is important for rapid fault diagnostics in the Service Workshop.

16.1 safety lock

Danger:
Select "Stop" to prevent unintentional movements of the power lift.

When the safety lock is activated, the powerlift does not function.

The safety lock is activated in any of the following situations:

1. When the ignition is switched either on or off.
2. When starting the tractor.
3. When there is a fault in the electric circuit.
4. After operation via the external control buttons.
5. When the the lift height limit is switched on.

Deactivating the safety lock

- Engage the quick lift lever (E) fully.

LEDs (red or yellow) light up. Once the safety lock has been deactivated, the powerlift moves to the position that was set using the depth control (F).

Note:
After deactivating the safety lock, the lifting or lowering speed remains reduced until the desired position is reached. Normal speed can be regained immediately by briefly selecting the stop position.

16.2 Control panel functions

Quick lift lever (E) with transportation safety switch (E1)

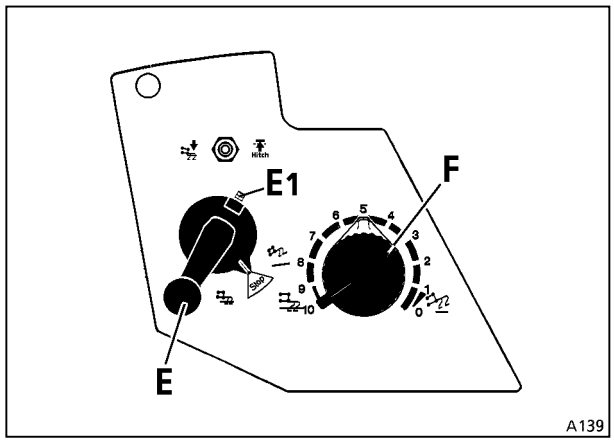


Fig.63

- "Stop": electronic controls cannot be used (no adjustment can be made)
- Pull lever back to "Lift" for transportation position with oscillation damper for the attached implement
- Push lever forward to "Control" and use dial (F) to control the working implement

In the "Stop" position all lifting and lowering movement is frozen in its current position, except when operated using the external control buttons.

Depth control

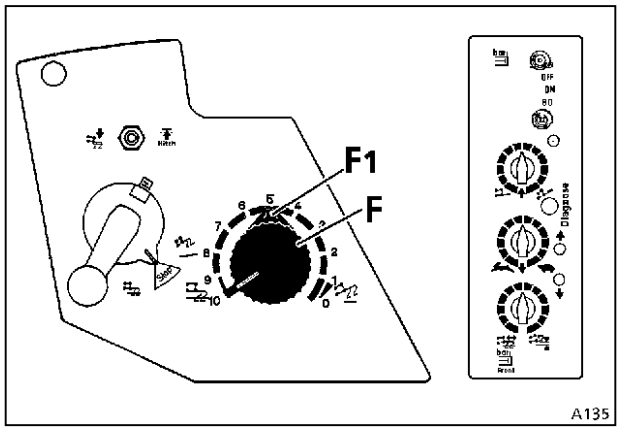


Fig.64

Dial (F) for configuring the working depth.

Rotation direction for depth control

Clockwise = Lifting
Anticlockwise = Lowering
10 = Floating position
0-1 = Neutral

The setting collar (F1) under the dial is used to set the desired working depth.

Limiting lift height

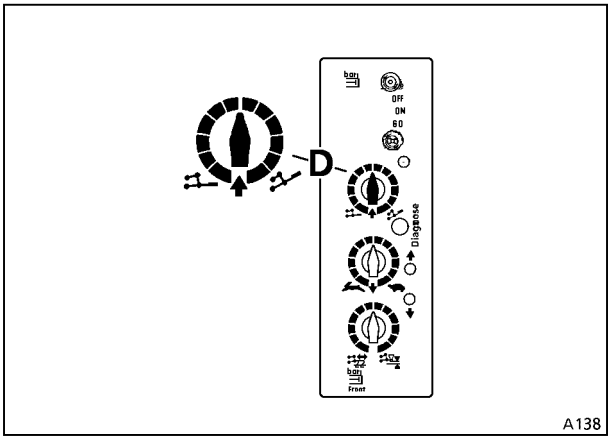


Fig.65

Dial (D) for setting the lift height.

Dial settings

Clockwise = Maximum lift
Anticlockwise = Minimum lift

Any lift height position between the two can be selected.

Lowering speed

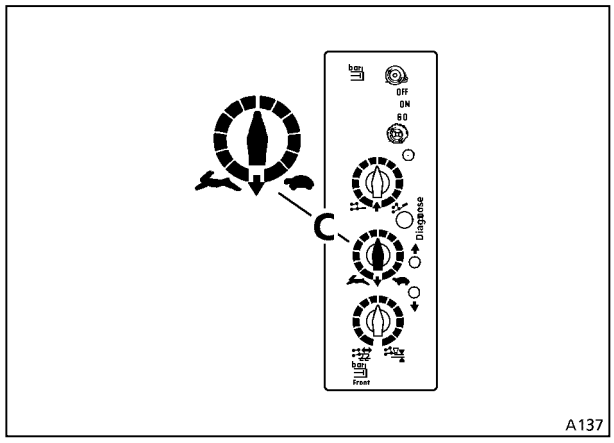


Fig.66

Dial (C) for setting the lowering speed.

The lowering speed is electronically controlled.

Dial settings

Clockwise = "Tortoise" position: no lowering
Anticlockwise = "Hare" position: maximum lowering speed

Any speed can be set between the two positions.

Traction/mixed control setting

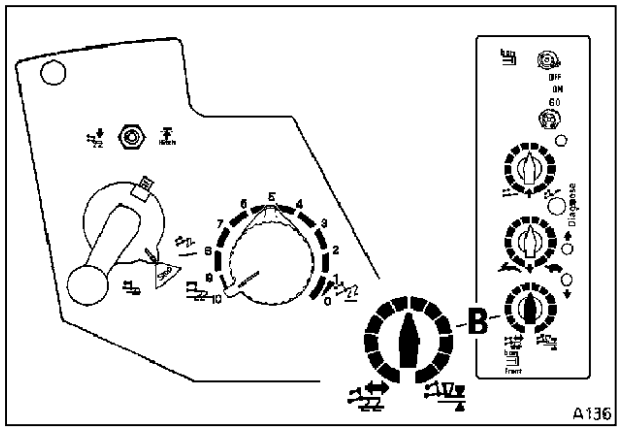


Fig.67

Dial (B) for setting the position or traction control, or any combination of these two variables.

Settings for dial (B)

Clockwise = Position control (fertiliser spreader)
Anticlockwise = Traction control (plough)

Mixed control enables any combination of the two positions.

Quick entry/hitch-lift (G)

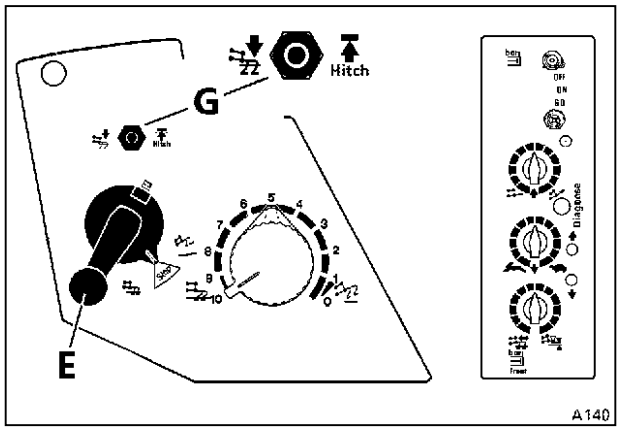


Fig.68

Quick entry
- Set switch (E) to "Control"
- Push switch (G) forwards: implement sinks to maximum depth (floating position).
- Release switch (G): implement returns to the selected working depth.

Hitch-lift (for the trailer hook/hitch)
- Set quick lift lever (E) to "Lift".
- Raise powerlift until you reach electronic cut-off.
- Set switch (G) to "Hitch": the powerlift rises to a maximum of a further 20 mm.
- Release switch: the powerlift remains in this position.

External rear control panel

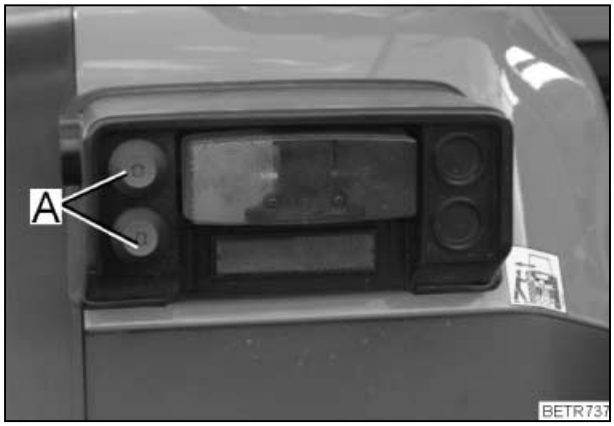


Fig.69

Buttons (A) to the left or right of the rear lamp: for raising or lowering the lift.

If the safety lock comes into effect, external operation of every setting of the quick lift switch is possible.

16.3 Working with the EPC

Hitching three-point implements

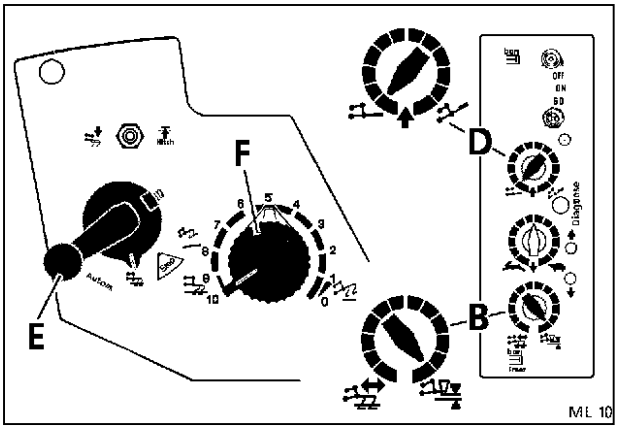


Fig.70

- Turn dial (B) clockwise to "Position" setting
- Set quick lift lever (E) to "Control"
- Lower lift arms by turning the depth control (F) anticlockwise. To raise the lift arms, turn control clockwise.

Once the top and lower links are securely attached to the implement,
- turn dial (D) anticlockwise.
- Set the depth control (F) to "0" or set the quick lift lever (E) to "Lift". The implement is raised to the lift height limit (approx. 1/4 of the total lift height).
- Set the desired lift height by turning the lift height limiter (D) clockwise.

Disconnecting three-point implements using dial (F)

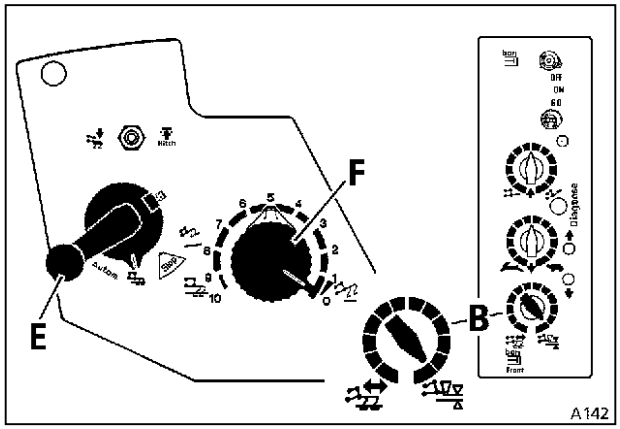


Fig.71

Hydraulic controls for the transport position.

- Turn dial (F) to "O"
- Turn dial (B) clockwise to "Position"
- Set switch (E) to "Control"
- Using dial (G), slowly lower the implement until no load remains on the top link, release the links, and lower powerlift completely.

Setting the desired transport height

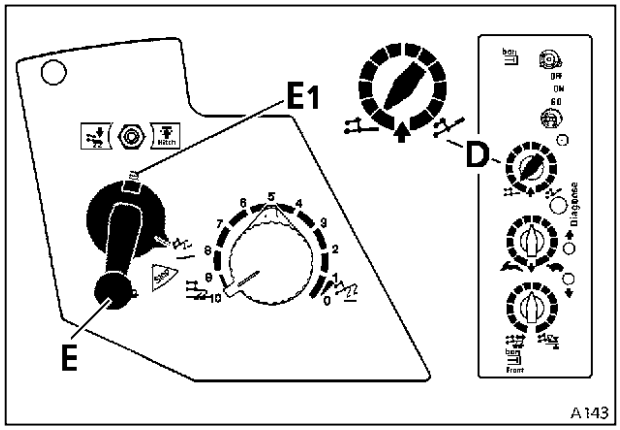


Fig.72

- Lower implement to lowest setting
- Turn dial (D) anticlockwise
- Set quick lift lever (E) to "Lift". The implement is raised by approx. 1/4 of the lift height.
- Turn dial (D) clockwise until desired transport height is reached.

For road travel

- Lock the quick lift lever (E) using the transportation safety switch (E1).

Transportation using vibration damping

After lifting the implement using the quick lift lever, oscillations caused by uneven road surfaces are reduced by minor adjusting movements of the power lift, thus preventing pitching of the tractor. This reduces the mechanical load on tractor and implement, at the same time improving the steering efficiency.

Note:
The vibration damping is only operative if the safety lock is released using the quick lift lever in the transport position.

Switching on vibration damping

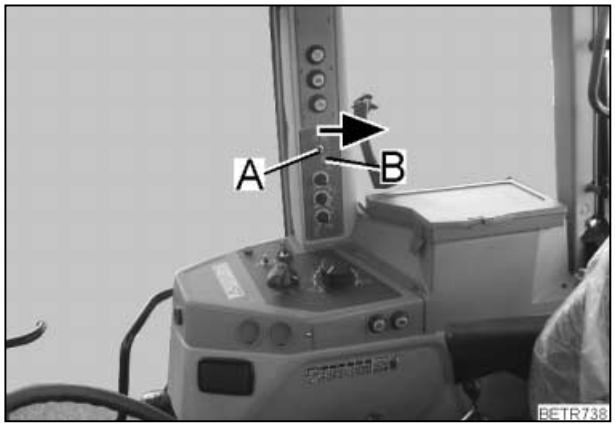


Fig.73

- Push toggle switch (A) to right.
- Lamp (B) lights up.

Switching off vibration damping

- Push toggle switch (A) to right.
- Lamp (B) does not light up.

Note:
When vibration damping is switched on, the lift is lowered by approx. 4% from its upper limit position.

16.4 Locking the field rails

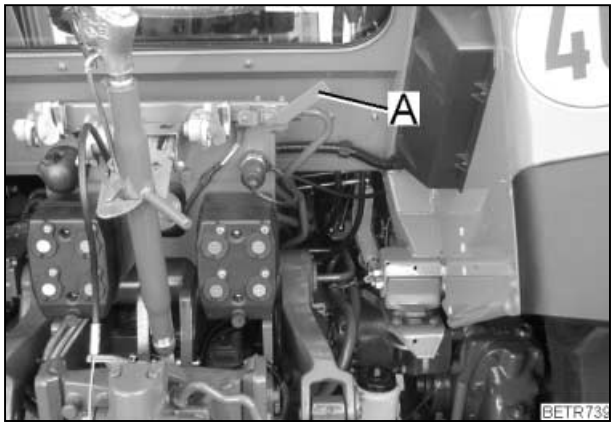


Fig.74

For certain combinations of implement, e.g. for heavy spraying equipment or a disc harrow, it is sensible to lock the lift.

Locking the field rails
- Move lever (A) upwards.

Lock field rails
- Move lever (A) to the right.

Note:
When the field rails are locked, EPC is not in operation.

16.5 Implement socket

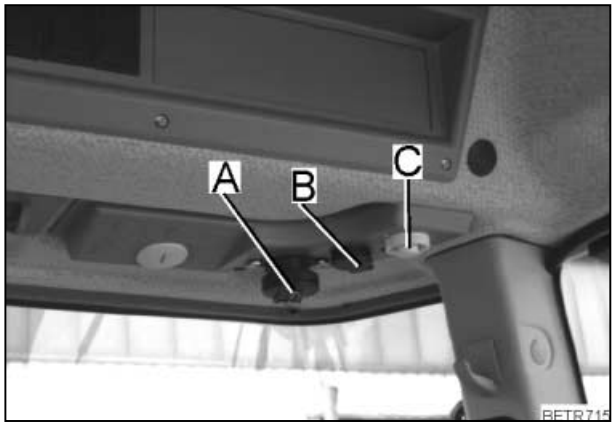


Fig.75

Speed signals are found on the implement socket (C) for controlling electric implements, e.g. sprayers, fertiliser spreaders.

Implement socket diagram

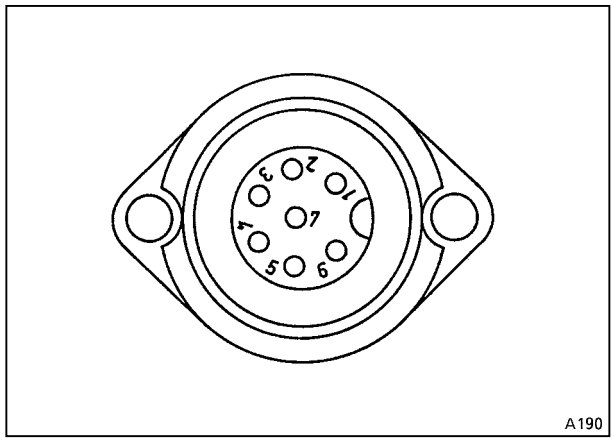


Fig.76

The designations denote the following:
1 = Transmission signal
2 = Not in use
3 = Earth
4 = Not in use
5 = Not in use
6 = Not in use
7 = Not in use

17. Three-point linkage

Danger:
Stay clear of operating three-point linkage. Risk of injury.

17.1 Lower links

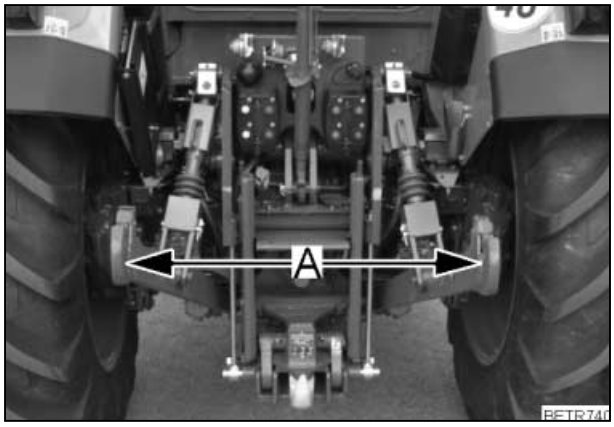


Fig.77

Category II = 825 mm, III = 965 mm distance between the pickup hooks (A).

Adjusting the distance between the lower links

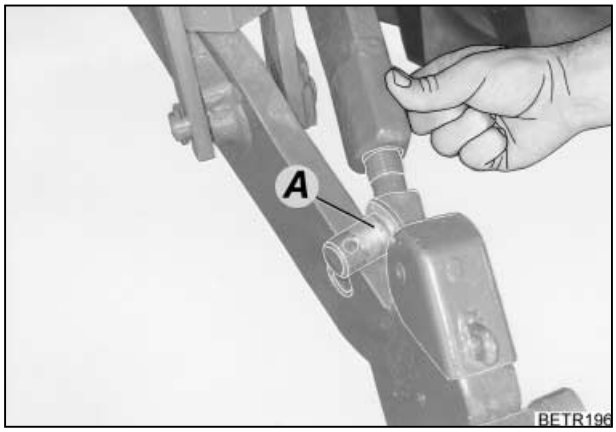


Fig.78

Remove the split pin.

Adjust angled threaded bolt (A) identically on both left and right lateral supports.

Reconnect angled threaded bolt to lower link and secure with split pin.

Check:

- Before lifting the hitched implement, ensure that both lateral locks are completely retracted and free of play (pull lever forwards).

Important:
Lower links are automatically rigid down both sides whenever lift arms move upwards; too tight a setting will result in clamping in the three-point linkage.

Height-adjustablef lower links

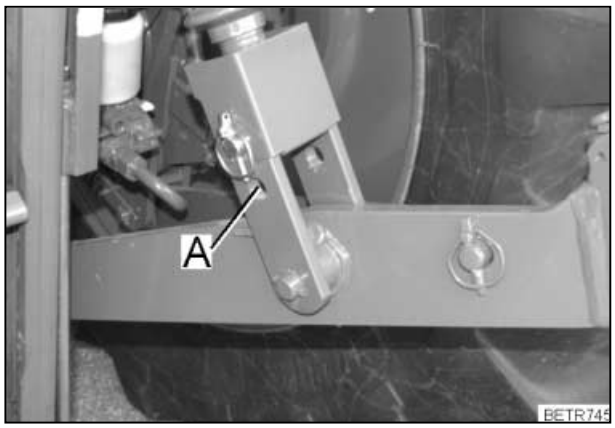


Fig.79

- Fit bolt in lower hole (A).

Required for implements with support wheels and without swinging compensation, e.g. planting machines.

17.2 Extendable struts

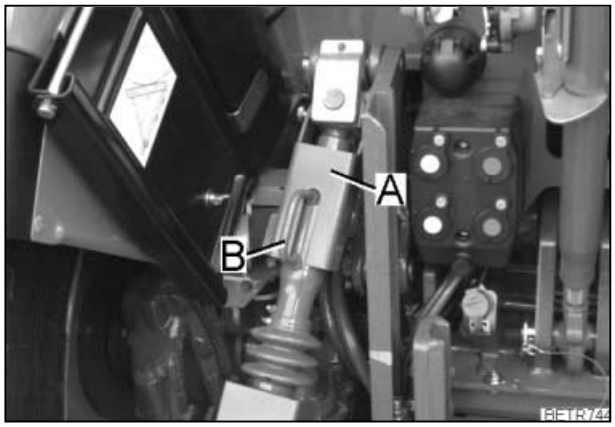


Fig.80

Use the screw handle to adjust the length of the extendable struts.

- Lift securing clamp (A).
- Adjust strut by turning handle (B).

Note:
It must still be possible for the securing clamp (A) to be folded over the turning handle (B).

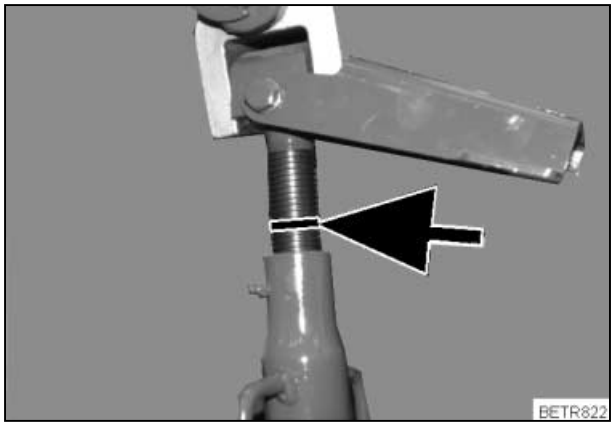


Fig.81

Maximum length is reached when the marking (arrow) is visible.

17.3 Mechanical lateral locking

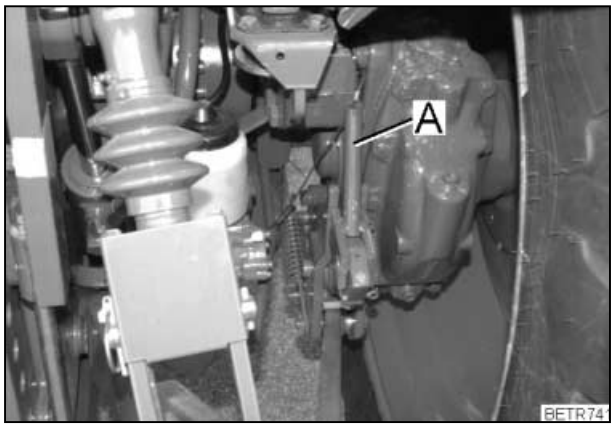


Fig.82

Lock the lower links using both the left and right levers (A).

For rigid implement:
- Move levers upwards.

Implement with lateral movement:
- Move levers downwards.

17.4 Top link

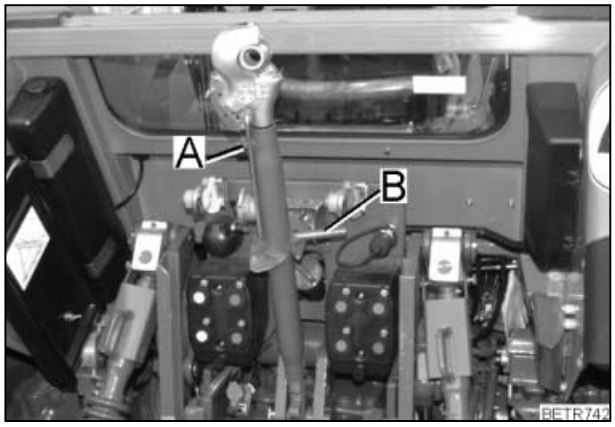


Fig.83

- Adjust length by turning handle (B).

Both threads must be adjusted equally. Make sure the securing clamp can be folded over the stub.

Mounting on tractor

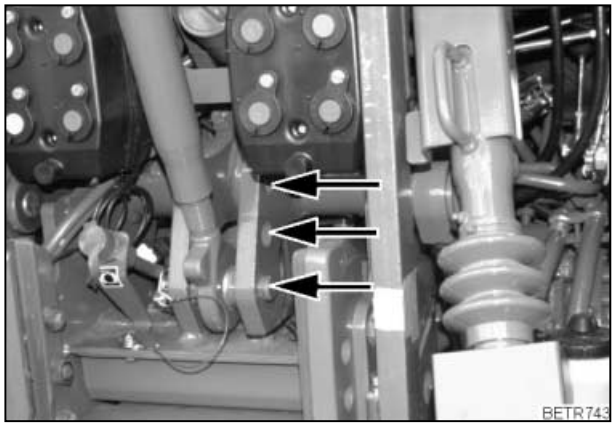


Fig.84

Can be fastened to three bore holes (for better implement adaptation and for increased lifting power).

For increased lifting power and reduced sensitivity of control hydraulics:
- Fit top link in upper hole.

For reduced lifting power and increased sensitivity of control hydraulics:
- Fit top link in lower hole.

18. Front powerlift

(optional)

Danger:
Observe all national regulations, e.g. permissible axle loading and counterweights.

For road travel make sure forward projection does not exceed 3.5 metres from the centre of the steering wheel. Observe lighting regulations.

With heavy loads e.g. subsoiler, ripper only use in pushing mode.

If the projection is in excess of 3.5 m, appropriate steps must be taken to guarantee safety in traffic conditions (e.g. at road junctions use mirrors or persons giving hand signals).

Distance between lower links: Category II = 825 mm.

Recommendations for use

The front powerlift can be used in single mode operation (not pushing) or dual mode operation (pushing).

For front reaping work, use single mode operation only, as there is a greater danger of implement damage when operating in dual mode.

For dual mode operation, only use those implements that are specifically designed for this purpose e.g. roller.

Important:
In order to maintain the effect of the hydraulic accumulator, do not raise the implement to upper limit (the load can bounce).

Additional lighting

Switch on additional lighting if the front headlights become obstructed by one of the implements. The front lamps will then go out.

18.1 Lower links

Pendulum balance

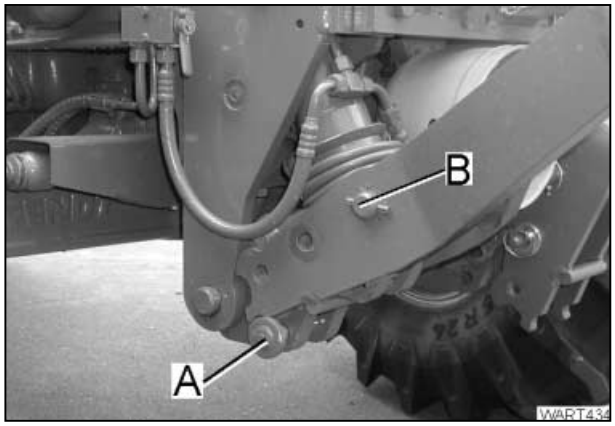


Fig.85

Floating links

- Insert bolt (A) in bore hole as shown and secure.

Removing the lower links

- Remove bolts (A and B).

Note:
If the lower links have been removed, use bolts as the base for the lower links to achieve a better assembly. Fit bolt (A) in lower bore hole.

Lower links, parking position

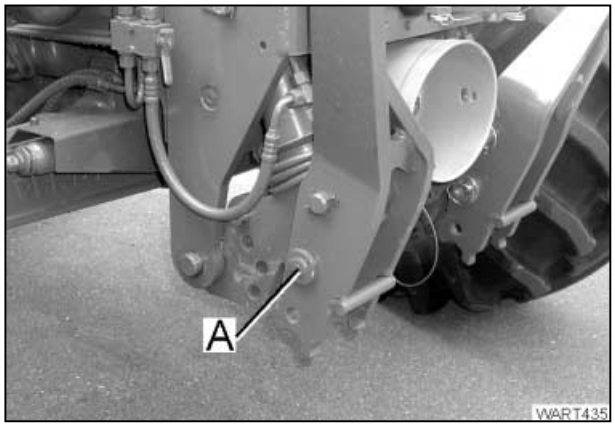


Fig.86

Always fold away the lower links when they are not in use.

- Fit bolt (A) in bore hole as shown and secure.

Lower links, operating positions

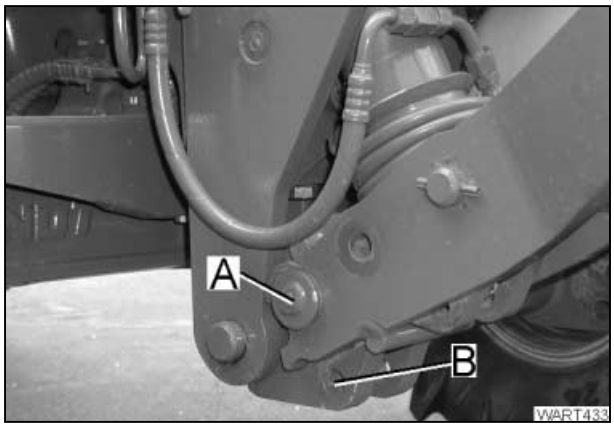


Fig.87

The operating range of the front powerlift can be altered by swapping the lower connection points on the lifting cylinder.

Normal position
- Fit bolt (A) in bore hole as shown and secure.

Higher lifting range
- Fit bolt (A) in bore hole (B) and secure.

18.2 Top link

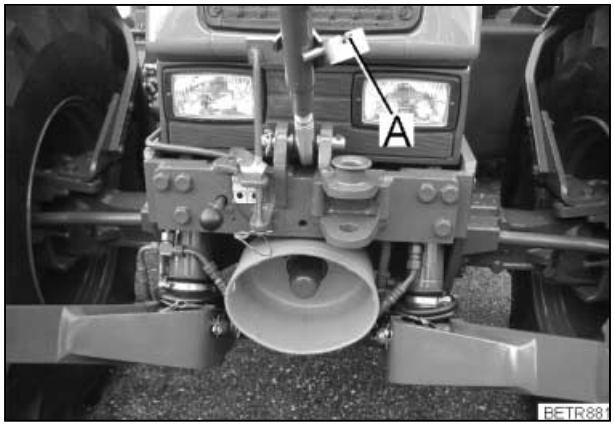


Fig.88

Remove bolt (A) to fold down top link.

18.3 Hydraulic operation

Danger:
Disconnect rear hydraulic connections. Risk of unintentional implement movement.

After front powerlift operations, close stopcock (refer to OPERATION Fig. 90)!

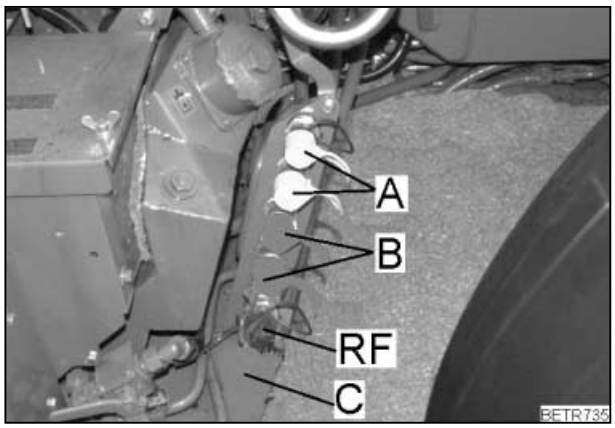


Fig.89

- Connect front powerlift to a connector (single mode / dual mode).

To lift, lower and push use the lever corresponding in colour to the appropriate valve.

Stopcock

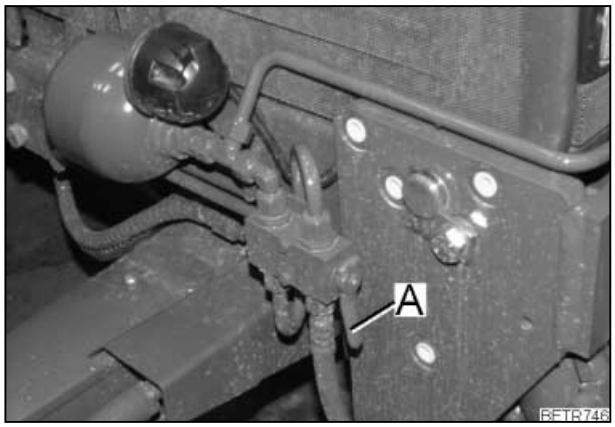


Fig.90

Push lever (A) to the horizontal position = OPEN
Push lever (A) downwards = CLOSE

19. Coupling connections

Danger:
Attach implements and trailers only to the points specified for this purpose!

Do not exceed maximum permissible load on coupler.

Make sure trailer is correctly coupled. Check function of trailer braking system. Follow the trailer manufacturers instructions.

Carry out regular checks to ensure the coupler is in perfect condition, especially when subjected to very heavy loads.

The coupler is a design-approved component and may be used only for its designated purpose.

Ensure you have the correct ring hitch and bolt combination.

19.1 Rear coupler

Fig.91

To adjust coupler height
- Press locking mechanism (A).
- Pull up locking handle (B) and reposition coupler.

To remove the coupler
- Remove bolt (C).
- Slide coupler down and out of the runners.

19.2 Automatic coupling

Danger:
When coupling is completed on a fitting with a cylindrical bolt, make sure control pin (D) does not protrude; on fittings with a crowned bolt the control pin (B) must protrude after coupling.

Cylindrical pin version

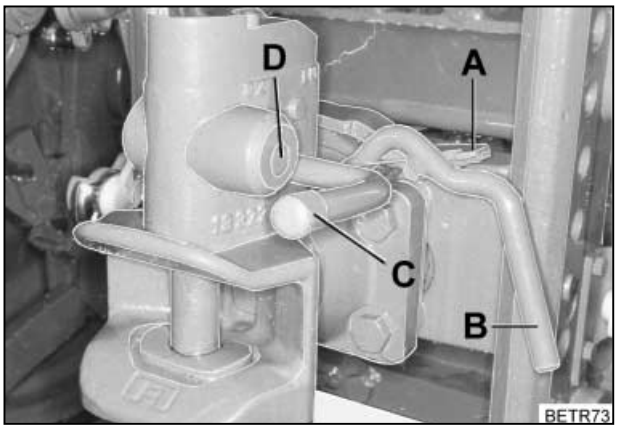


Fig.92

To adjust coupler height
- Press locking mechanism (A).
- Lift up grip (B) and slide coupler to desired position.
- Lift up handle (C) to disconnect.
- Control pin (D)

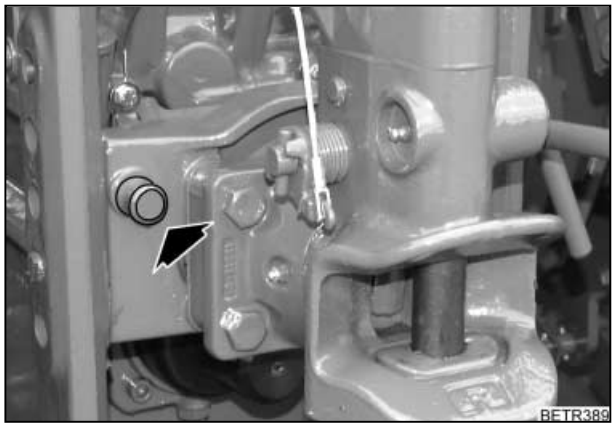


Fig.93

Removing coupler
- Pull bolt (arrow).
- Position remote control rope.
- Slide coupler downwards off the rails.

With the ball-shaped pin fitting

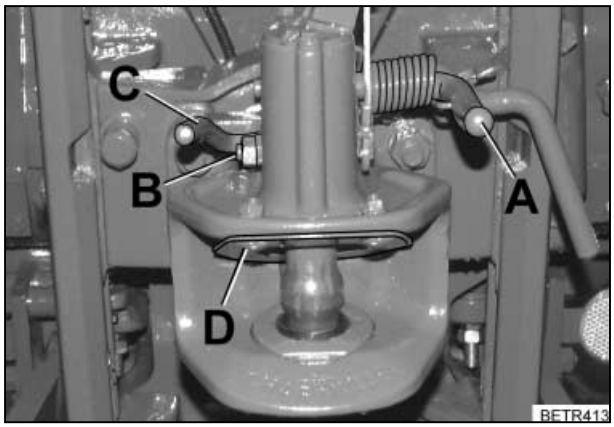


Fig.94

- Pull up handle (A) to uncouple.
- Control pin (B)
- Push handle (C) down to attach coupler.

In case of heavy duty ring hitch:

Acc. to DIN 11026

- Remove retainer (D).

To attain the required angular mobility.

Remote control

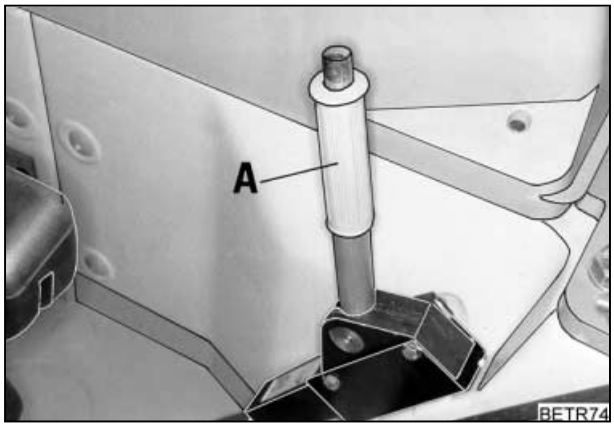


Fig.95

- By using handle (A) the coupler can be operated from the driving seat.

Couplers

Bolt and ring-hitch connections

Bolts	Vertical load (kg)	Ring hitches		
		100x40 heavy-duty DIN 11026	100x40 normal DIN 74054	115x50 truck DIN 74053
Non-automatic smooth 30 bolt	2,000		X	
Non-automatic smooth 30 bolt	2,000	X	X	X
Automatic smooth 30 bolt	2,000	X	X	
Automatic ball-type 38 bolt	2,500	X	X	

19.3 Drawbar with piton fix

(optional)

Danger:
Observe maximum permissible load on drawbar.
Only use bolts intended for this purpose.

Note:
The use of piton fix and drawbar on the road is permissible only if an appropriate entry has been made in the vehicle documents.
Drawbar operation is only recommended for use with implements.
Not suitable as trailer coupler for road travel due to excessive clearance.

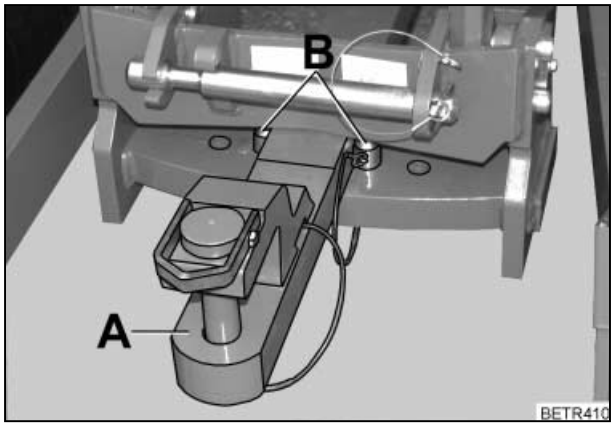


Fig.96

- Tow bar (A) can be fixed in various positions. Position affects permissible load limits. Observe tyre limitations.
- The bar travel to the left or right can be moved and/or fully opened by removing both bolts (B).
- Coupler height can be adjusted by inverting the drawbar (A).

Maximum vertical load

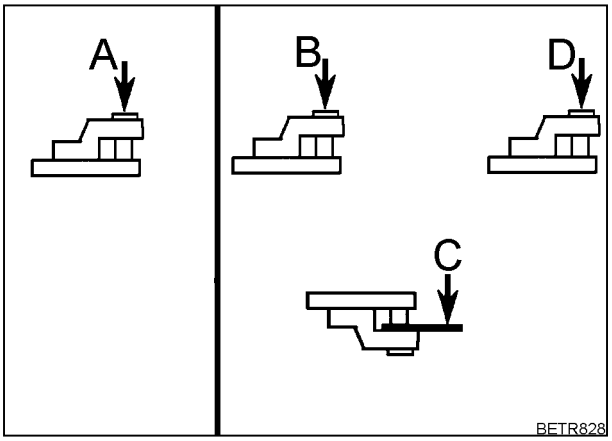


Fig.97

A = Road, short 2,500 kg
B = Field, medium 1,200 kg
C = Field, inverted 500 kg
D = Field, long 800 kg

Observe tyre sizes for maximum axle load, if necessary, ballast the front axle.

Note:
Observe permissible total weight and rear axle loads, refer to TECHNICAL DATA.

Piton fix

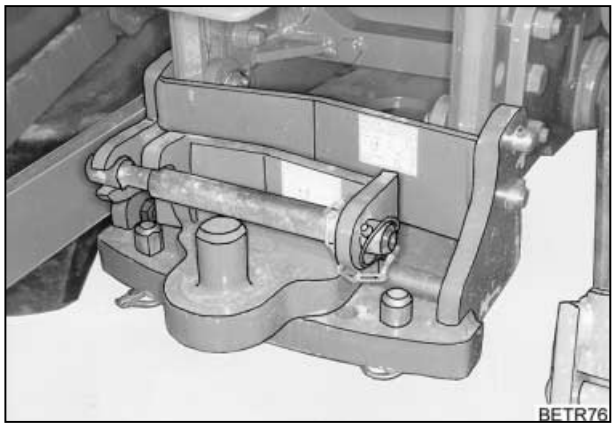


Fig.98

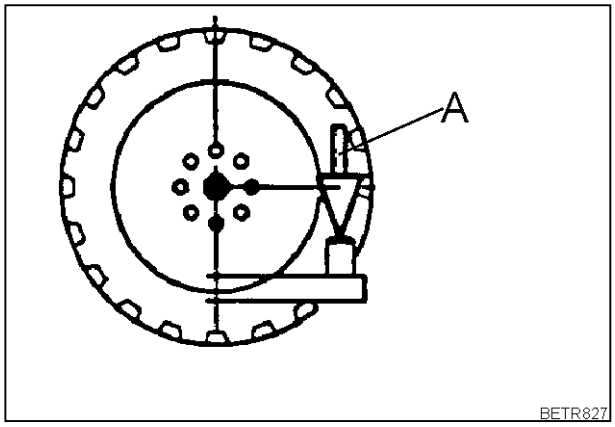


Fig.99

Maximum vertical load (A) 2,500 kg

Note:
Observe permissible total weight and rear axle loads, refer to TECHNICAL DATA.

19.4 Hitch coupler

(optional)

Danger:
Observe appropriate axle load and weights, and comply with all traffic regulations.

Stand clear when working the three-point linkage and lifting rods. Risk of injury.

When coupling or uncoupling, release trailer and/or tractor brakes.

Tractor or trailer may move, never remain behind either one of them due to risk of pinch points.

Coupler lock must snap into place.

When changing to mechanical or automatic coupling, fitting a locking screw in the bottom bore hole of the guide bar prevents coupler from sliding out of guide bars.

Note:
The use of automatic coupling on the road is permissible only if an appropriate entry has been made in the vehicle documents.

Maximum vertical load

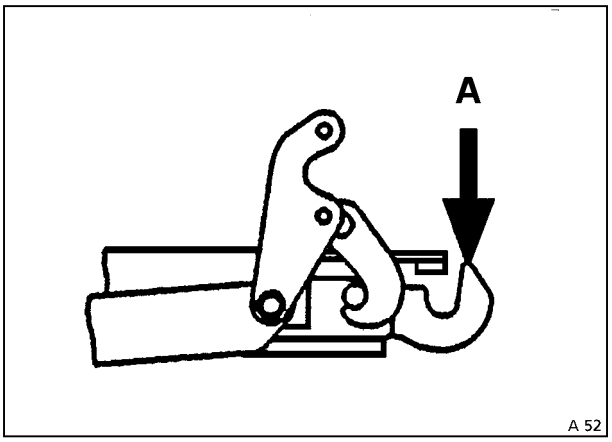


Fig.100

Permissible vertical load (A), maximum 3,000 kg.

Observe tyre sizes for maximum axle load. If necessary, ballast the front axle.

Note:
Observe permissible total weight and rear axle loads, refer to TECHNICAL DATA.

Lowering

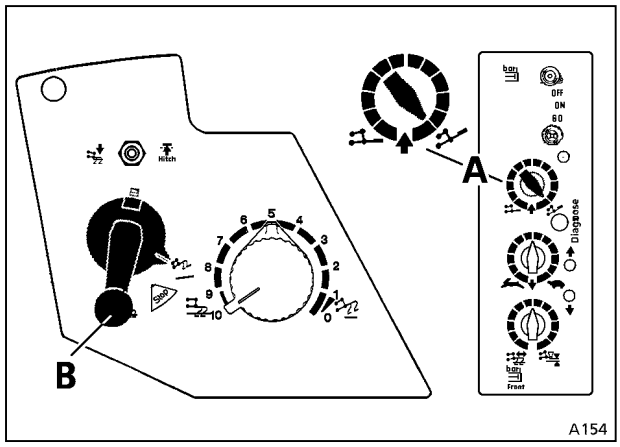


Fig.101

- Using EPC, move powerlift to its maximum extension height
- Turn dial (A) as far to the right as it will go
- Set quick lift lever (E) to "Lift"

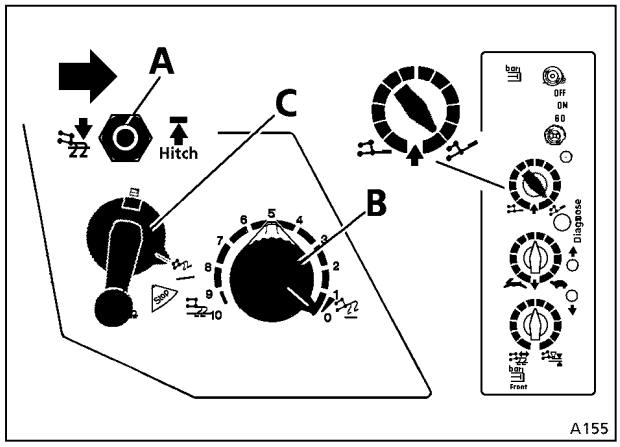


Fig.102

- Push toggle switch (A) to right. The locking hook releases.

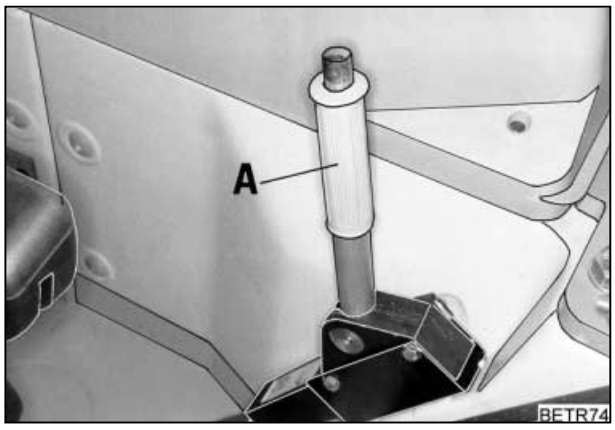


Fig.103

- Unlock system with lever (A).
- Turn dial (B/refer to OPERATION Fig. 102) to position "0".
- Set quick lift lever (C/refer to OPERATION Fig. 102) to "Control".
- Move coupler hook downwards using dial (B/refer to OPERATION Fig. 102).

Lifting

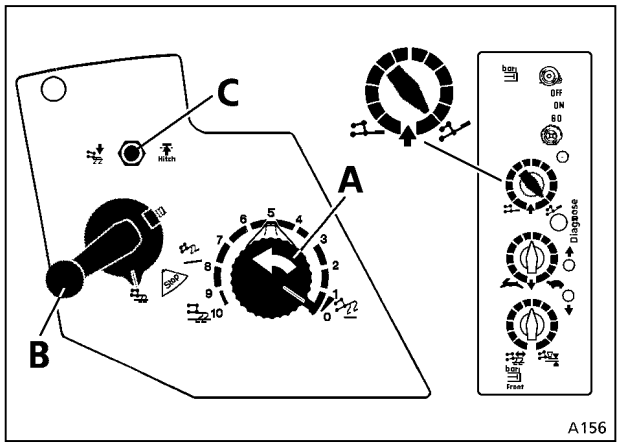


Fig.104

- Move coupler hook upwards using dial (A) or quick lift lever (B).
- Push toggle switch (A) to right.
- Lower powerlift until load is removed from hitch arms.

20. Additional ballasting

Danger:
When operating with rear-mounted implements, do not exceed permissible axle load. Steering efficiency must be maintained at all times.

Traction load can be reduced by front-mounted implements or weights. Ensure sufficient braking capacity is available.

Always fit weights in the specified position.

Do not exceed the permissible total weight or axle load (refer to rating plate or vehicle documents). When using ballast weights, make sure of correct tyre pressures!

20.1 Rear ballast

Wheel ballast, approx. 130 kg / pair at rear

Max. 3 pairs

Bolts must be re-tightened after a short operating time (210 Nm).

Note:
Only possible as of 30 inch fixed rim, 34 inch adjustable rim.

20.2 Front ballast

Attachment plate 120 kg:

Maximum 3 pieces.

Can only be fitted to tractors without front powerlifts.

Wafer plates approx. 32 kg

Maximuim 10 pieces.

Can only be fitted to tractors without front powerlifts.

Specific mounting plate is required.

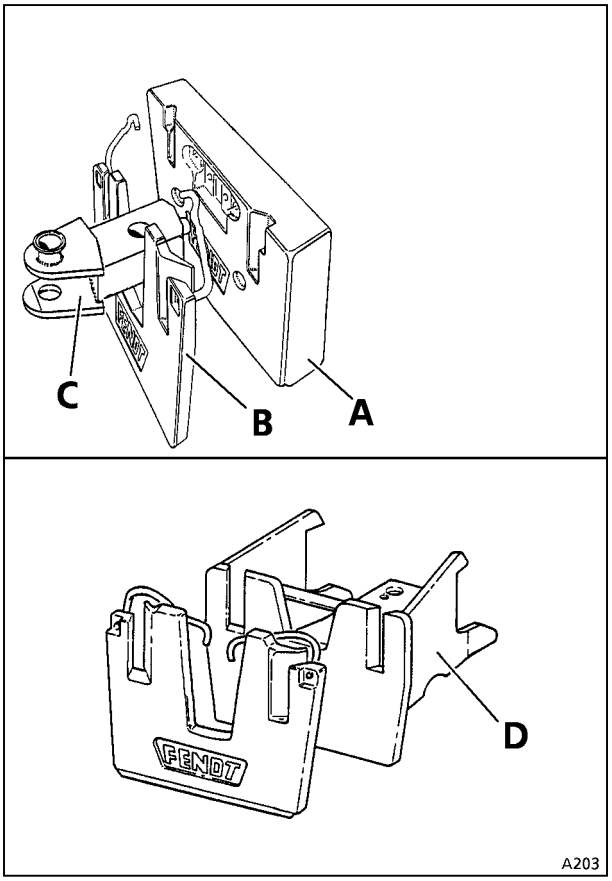


Fig.105

Attachment plate (A)100 kg:

Warning:
Only use original Fendt weights, otherwise the front hydraulics may not be able to move freely.

When fitting a mounting plate, reposition the towing eye. Max. 3 off.

Hanging weights (B):
Firmly wedge both handles between the weights. Approx. 32 kg, max. 10 off.

Towing eye extension
This is required when using more than 2 hanging weights (will take up to 4 weights without restricting normal movement).

Spacer (D):
For hanging weights. Max. 7 hanging weights may be fitted.

20.3 Front ballast

Front/rear weight 870 kg

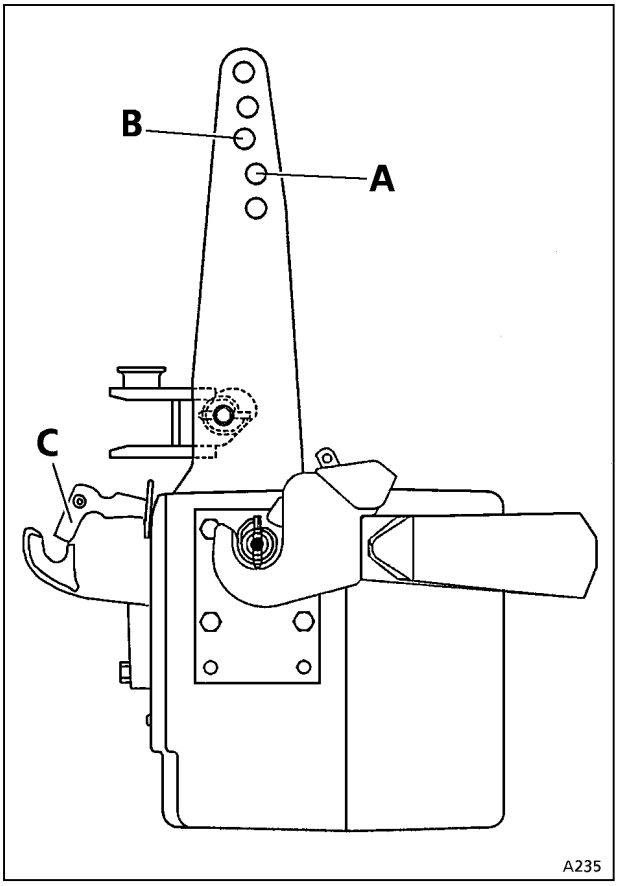


Fig.106

A = Fastening point of top link
B = Fastening point for top link with quick-release coupling
C = Attachments for packer transport (single-row packer max. 1,000 kg) Additional weights are not possible.

Note:
870 kg weight can also be supplemented by 3 x 120 kg mounting plates or 8 x 32 kg hanging weights. Observe permissible front axle loads.

20.4 Water ballasting of tyres

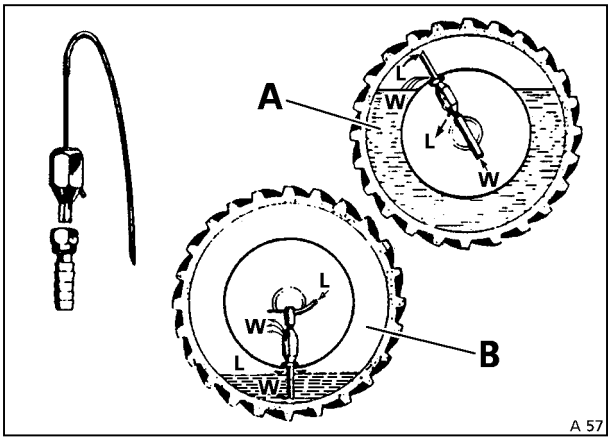


Fig.107

A = Fill water
B = Drain water
L = Air
W = Water

Follow tyre manufacturer's specifications with regard to volumes (water + antifreeze solution). Check tyre pressures regularly.

21. Track adjustment

Danger:
When working on tyres, make sure the tractor is properly parked and secured against rolling away (apply wheel chocks).
If the engine is started to turn the rear wheels, all four wheels must be free (jacked up).
When working under a jacked-up tractor, there must not be anyone on the tractor.
If the tractor is lifted via the lower links of the powerlift, additional supports are required.
Only properly qualified personnel using appropriate tools should perform tyre repair.
Excessive tyre pressure can cause an explosion. Check tyre pressures regularly.
Do not use special-purpose tyres for heavy-duty traction work or front loader; max. roadspeed 25 km/h.
After work on wheels or track adjustments, tighten and regularly check all bolts on front and rear wheels as well as all track adjustment parts.
(For tightening torque, refer to"TECHNICAL DATA")

21.1 Front track adjustment with fixed rims (rear wheels)

Track widths achievable by adjustment of the floating axle

Model	Tyres	ET	Standard track	Track	Track	Track	Track
307-308	10.00-16	20	1580	1440	1680	1780	-
307-308	11.00-16	20	1580	1440	1680	1780	-
307-308	7.50-20	58	1500	1360	1600	1700	1800

Adjusting the floating axle

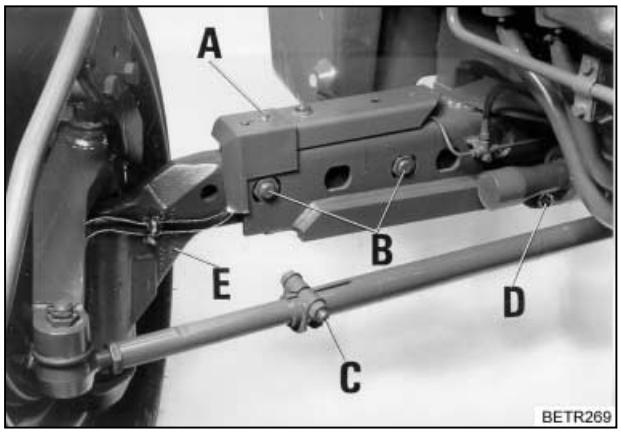


Fig.108

Danger:
When adjusting the telescopic floating axle on tractors with four-wheel braking, ensure that the brake hoses are properly installed to prevent chafing.

- Jack up front axle; loosen brake hose cover plate (A) (use a size 10 spanner).
- Extract bolts (B), remove the locking bolt (C) from the track rod, and slacken bolts on the adjusting piece (D) for the steering cylinder (4 bolts).
- To obtain required track, move adjustable section (E) into correct position evenly on both sides (the outer bolt is not moved).
- Loosely insert bolts (B)with washers from front to rear. Jack up the tractor and tighten hexagonal bolts (B) to 550 Nm; secure brake hose cover plate.
- Insert locking bolt (C) into appropriate notch and torque to 90 Nm.
- Fit adjusting piece (D) for steering cylinder with 4 bolts in the appropriate threaded bore holes on the front axle, and torque to 295 Nm.

Checking the steering cylinder setting:

Ensure that the steering limit stop on the stub axle is reached on both sides. For checking the toe-in, refer to (CARE AND MAINTENANCE).

21.2 Front track adjustment with fixed rims (all wheels)

With fixed rims, track widths are obtained by lateral wheel reversal (exchange left-hand and right-hand sides).

Model	Tyres	ET	Standard track	Wheel reversal
307	12.4-R24	68	1,500	1,800
308-309	13.6-R24	0	1,650	-
307-309	13.6-R24	68	1,500	1,800
307-309	13.6-R24	30	1,580	1,720
308-309	14.9-R24	30	1,720	-
308-309	14.9-R24	0	1,650	-
308-309	340/85-R24	0	1,650	-
308-309	340/85-R24	68	1,500	1,800
307-309	340/85-R24	30	1,720	1,580
307	375/75-R20	30	1,720	1,580
307-309	380/70-R24	30	1,720	1,580
308-309	420/70-R24	30	1,720	-
307-309	440/65-R24	30	1,720	-
308-309	460/70-R24	30	1,720	-
308-309	480/65-R24	30	1,720	-

21.3 Front track adjustment with adjustable rims

Model	Tyres	Tracks with adjustable rims
307-309	13.6-R24	1,520, 1,574, 1,612, 1,726, 1,780
308-309	14.9-R24	1,520, 1,612, 1,726, 1,780
307-309	280/85-R28	1,500, 1,600, 1,700, 1,800
307-309	340/85-R24	1,520, 1,574, 1,612, 1,726, 1,780
307-309	380/70-R24	1,520, 1,574, 1,612, 1,726, 1,780
308-309	420/70-R24	1,690, 1,804
307-309	440/65-R24	1,690, 1,804
308-309	460/70-R24	1,690, 1,804
308-309	480/65-R24	1,690, 1,804

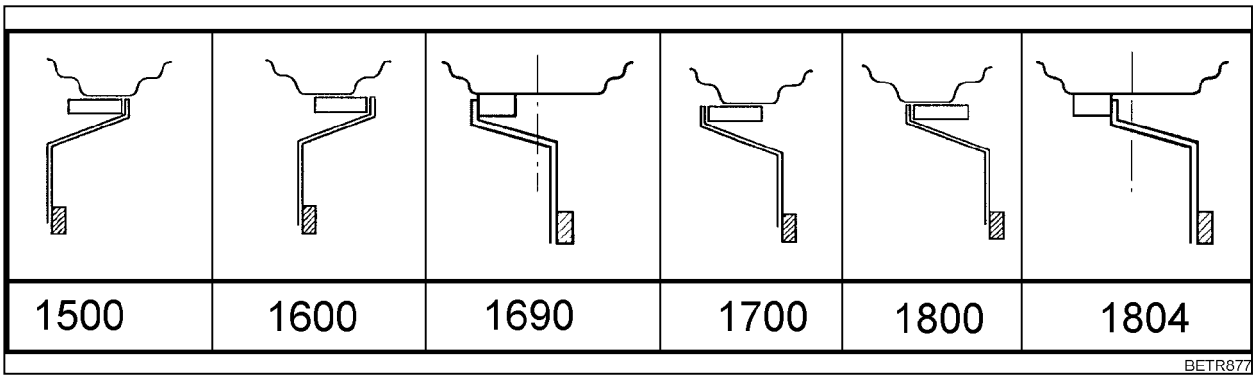


Fig.109

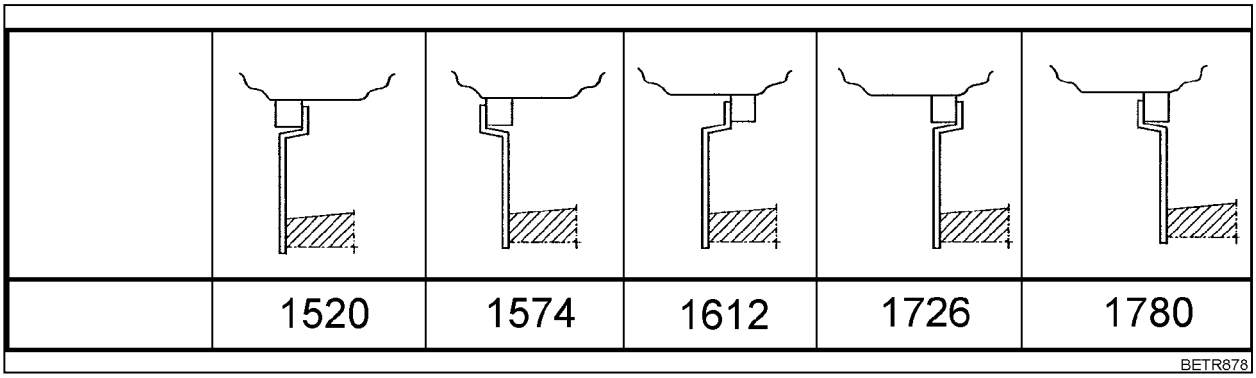


Fig.110

21.4 Rear track adjustment with fixed rims

With fixed rim track widths obtained by lateral wheel reversal

Track widths achievable (by replacing left-hand and right-hand sides).

Model	Tyres	ET	Standard track	Wheel reversal	Wheel reversal with spacers (2x72 mm)
307-309	13.6-R38	30	1,510	1,660	1,800
307-309	16.9-34	30	1,510	1,660	1,800
308-309	18.4-R34	30	1,660	-	1,800
307-309	340/85-R38	30	1,510	1,660	1,800
307-309	420/85-R34	30	1,660	1,510	1,800
307	480/70-R30	30	1,660	-	-
307-309	480/70-R34	30	1,660	-	1,800
308-309	480/70-R38	30	1,660	-	-
308-309	480/70-R38	-112	1,800	-	-
308-309	520/70-R34	30	1,660*	-	1,800
307-309	540/65-R34	30	1,660*	-	1,800
308-309	540/65-R38	-112	1,800	-	-
308-309	540/65-R38	30	1,660	-	-
308-309	540/70-R34	30	1,660*	-	1,800
308-309	600/65-R34	30	1,660*	-	1,800

* Only permissible with three-point category 2

21.5 Rear track adjustment with adjustable rims

Model	Tyres	Tracks with adjustable rims
308-309	16.9-R38	1,636, 1,736, 1,836
307	270/95-R44	1,367, 1,515, 1,791
308-309	270/95-R44	1,356, 1,504, 1,800
307-309	420/85-R34	1,636, 1,736, 1,836
307	480/70-R30	1,636, 1,736, 1,836
307-309	480/70-R34	1,636, 1,736, 1,836
307-309	13.6-R38	1,436, 1,536, 1,736, 1,836
308-309	480/70-R38	1,636, 1,736, 1,836
308-309	540/65-R38	1,636, 1,736, 1,836
307-309	340/85-R38	1,436, 1,536, 1,636, 1,736, 1,836
307-309	16.9-R34	1,636, 1,736, 1,836
308-309	540/70-R34	1,636*, 1,736, 1,836
307-309	540/65-R34	1,636*, 1,736, 1,836
308-309	18.4-R34	1,636, 1,736, 1,836

* Only permissible with three-point category 2

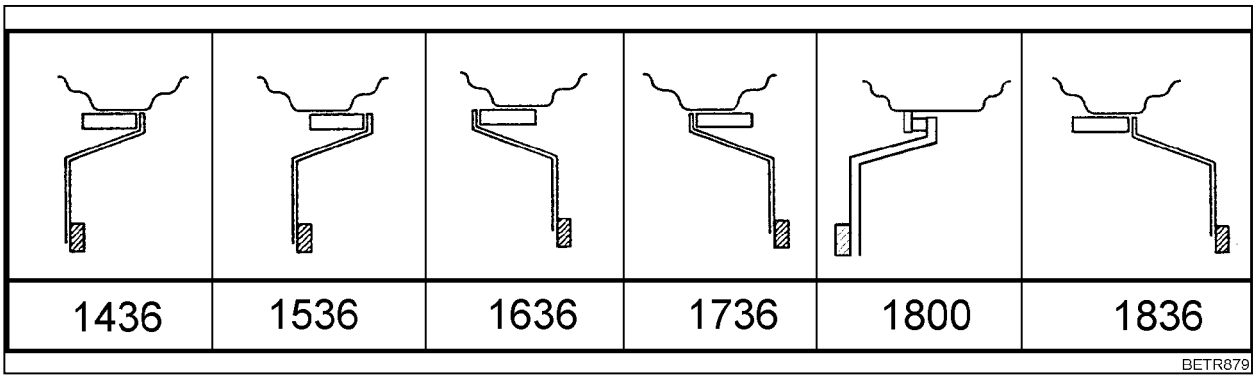


Fig.111

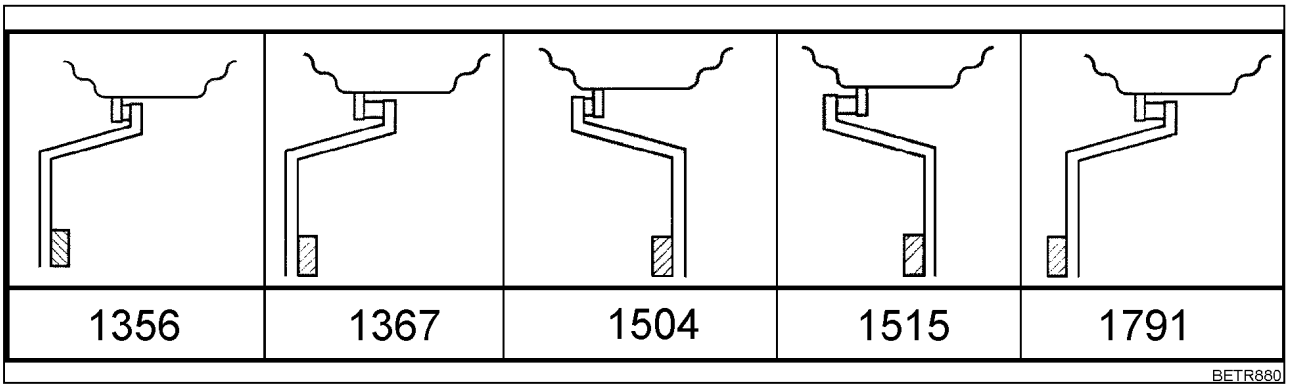


Fig.112

22. Twin tyres

Warning:
When working on tyres, make sure the tractor is properly parked and secured against rolling away (apply wheel chocks). When working underneath the jacked-up tractor, make sure no-one is on the tractor.
For safety directions, refer also to "Track adjustment", for tightening torque refer to "TECHNICAL DATA".

Twin tyres may be used to reduce ground pressure but not to increase load capacity or pulling power.

Note:
Twin tyres must be recorded in vehicle registration documents for highway travel. Twin tyre selection table may be used for submission to a vehicle testing station.

22.1 Conditions for use

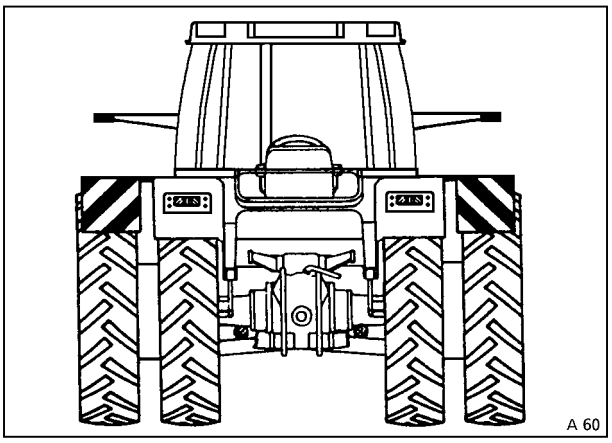


Fig.113

- If the standard lights are more than 400 mm from the vehicle outer edge, tail lights, side lights and reflectors must be duplicated. If necessary, fit marker lights.
- In excess of 2,750 mm width, fit warning plates front and rear.
- Max. speed 25 km/h (as per national road safety regulations for wheels with inadequate covering).

22.2 Choice of twin tyres

Model	Inner tyres	Inner track (mm)	Inter-wheel width	Outer tyres
307-309	13.6-R38	1,500	narrow	13.6-R38 / 230/95-R44
307-309	13.6-R38	1,650	narrow	13.6 R38 /230/95-R44
307-309	480/70-R34	1,650	narrow	13.6-R38 / 230/95-R44

Recommended spacers for twin tyres

Ordering and delivery information by:
Kock & Sohn
Räderfabrik
Höfener Straße 1+3
48496 Hopsten - Schale, Germany
Tel.: 05457/566, Fax: 05457/1551

Warning:
Before any repair and maintenance work is carried out always stop the engine and remove the ignition key. Apply parking brake and if necessary, chock the wheels.
When working on the engine disconnect battery by removing the negative lead.
On completion of work, replace all guards and safety shields. Ensure that the tractor is safely parked.
Ensure that the correct grades of fuel and lubricants are used and that these are clean and stored in regulation containers. See also TECHNICAL DATA "Fluids and Lubricants".
Do not perform any welding, drilling, cuting or grinding on the cab or safety frame. All damaged components must be replaced.

Important:
Before any maintenance work is carried out, the tractor must be thoroughly cleaned, particularly the screw couplings and the immediate area surrounding them. Used oils, coolants and brake fluids must be disposed of as directed, observing legal requirements and manufacturer's instructions.

When checking the oil, ensure that the tractor is standing on level ground.

For maintenance intervals, checks to be performed, quantity and quality of lubricants to be used, refer to "Fluids and lubricants" or "Maintenance schedule".

1. Opening the bonnet

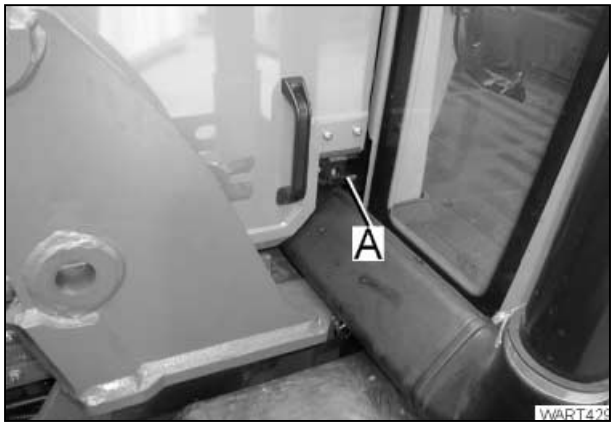


Fig.1

- Press locking mechanism (A).
- Lift the bonnet.

2. Replacing the engine oil

Important:
Engine oil should also be replaced prior to long periods of immobilisation.

2.1 Draining the engine oil

Warning:
Take care when draining off hot oil - risk of scalding.
Collect used oil, do not it to seep into the soil.
Dispose of used oil as directed.

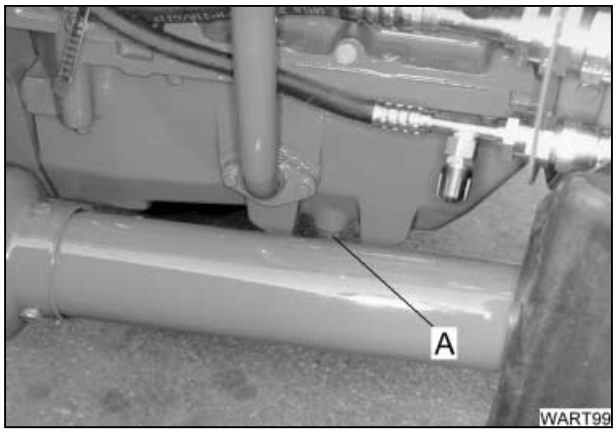


Fig.2

- Warm up the engine.

Oil temperature should be approx. 80 °C.

- Make sure tractor is on level ground.
- Switch off the engine.
- Place oil pan underneath the engine.
- Unscrew and remove drain plug (A).
- Completely drain off the used oil.
- Refit cleaned drain plug with new sealing ring.

2.2 Replacing the engine oil filter

Danger:
The filter cartridge is filled with hot oil - risk of burning and scalding.

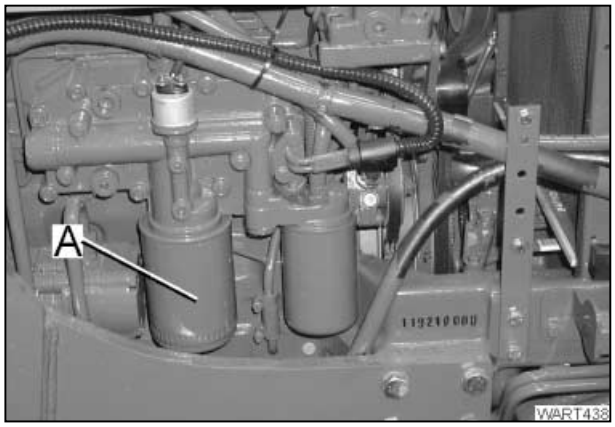


Fig.3

Replace the filter cartridge (A) every time the engine oil is replaced.

- Turn off the engine.
- After draining off the oil, remove the filter cartridge.
- Collect any oil spillages.

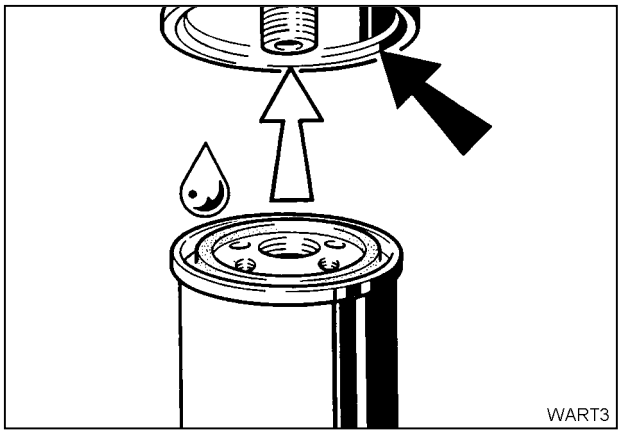


Fig.4

- Remove all dirt particles from the filter bracket sealing face.
- Lightly oil the sealing ring of the new filter cartridge.
- Screw cartridge in manually until the sealing ring fits snugly.
- Screw down manually by another half turn.

Note:
Used oil filters are hazardous waste.

2.3 Filling with engine oil

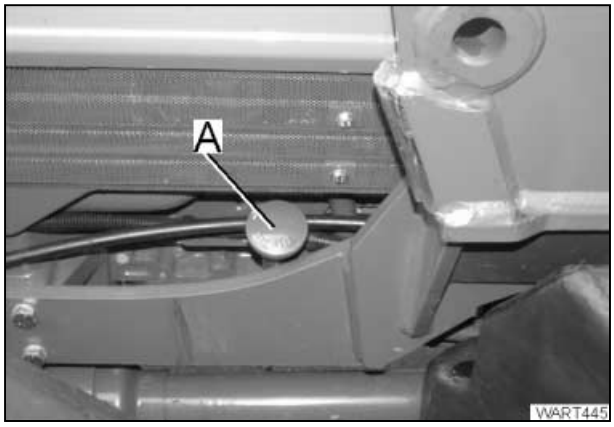


Fig.5

- Unscrew oil dipstick (A).
- Pour correct grade of oil into the filler neck. Pay particular attention to cleanliness.

For frequency of changes, oil quantity and quality, refer to "Fluids and lubricants" or "Maintenance schedule".

2.4 Checking the engine oil level

- Ensure that the tractor is on level ground.
- Start the engine and allow to idle until the warning light on the central instrument cluster has gone out.
- Check oil drain plug and filter for leaks.
- Switch off the engine.
- Remove the dipstick (A) after approx. 5 minutes.

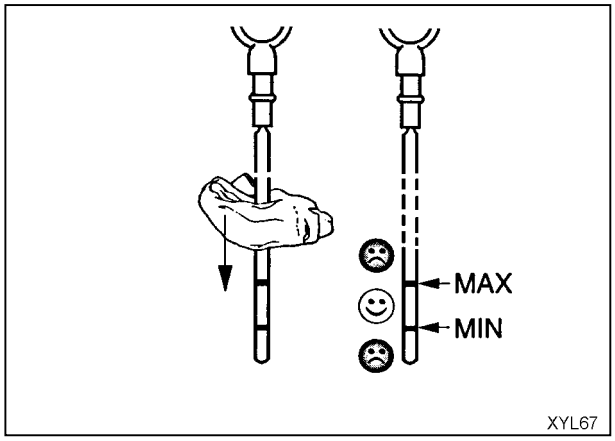


Fig.6

- Wipe dipstick with a clean lint-free rag.
- Reinsert fully and turn clockwise.
- Remove dipstick again.
- Top up if necessary. Do not fill above Max. marking.

If the oil level is only a little over the Min. marking, the oil should be topped up. Do not fill above the Max. marking.

Topping up quantities

The difference between the Min. and Max. markings on the dipstick is approx. 4 litres.

3. Fuel system

Danger:
Never allow the presence of naked flames near the tractor when you are working on the fuel system!
Do not smoke.

3.1 Replacing the fuel filter

Replacements and maintenance as per Maintenance Schedule, or sooner if engine efficiency drops.

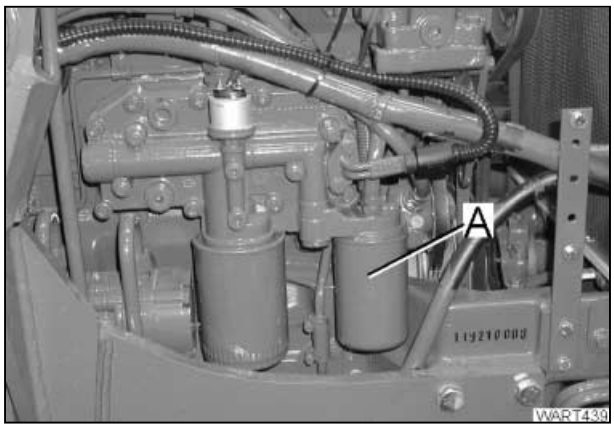


Fig.7

- Switch off engine
- Unscrew filter cartridge (A).
- Collect fuel spillages.

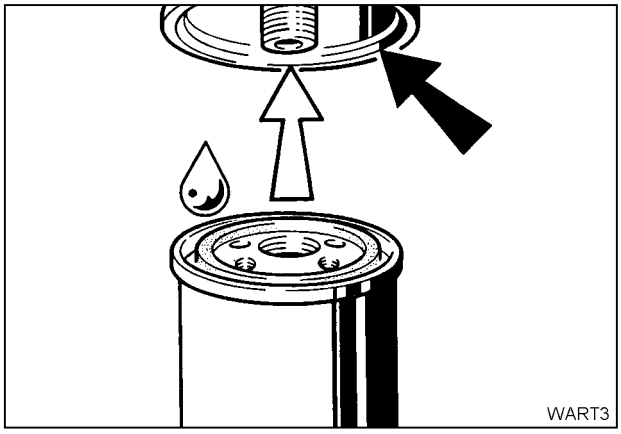


Fig.8

- Remove all dirt particles from filter bracket sealing face.
- The new filter cartridge sealing ring should be lightly oiled or moistened with diesel fuel.
- Screw the filter cartridge back in place manually, and then screw down by a further half turn until the sealing ring fits snugly.
- Check the filter for leaks.

Note:
It is not necessary to bleed the fuel system.
Any injection leads that have become detached should be replaced.
Used fuel filters should be treated as hazardous waste.

4. Dry air filter

4.1 Vacuum check

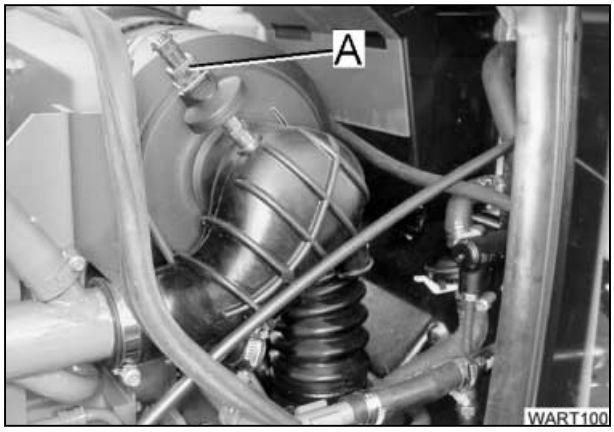


Fig.9

Function check:

- Remove cable plug(A) from vacuum switch and and connect it to earth.
- Turn ignition key to position "I".

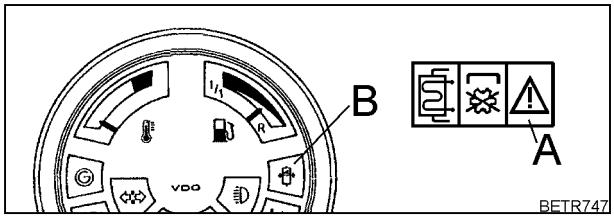


Fig.10

After approx. 5 seconds the warning light (A) should flash and the symbol for "lack of intake air" (B) in the central console should light up.

- Check air filter intake hoses and intake system for seal integrity, and tighten the connections if necessary.

4.2 Replacing main cartridge Removal and insertion

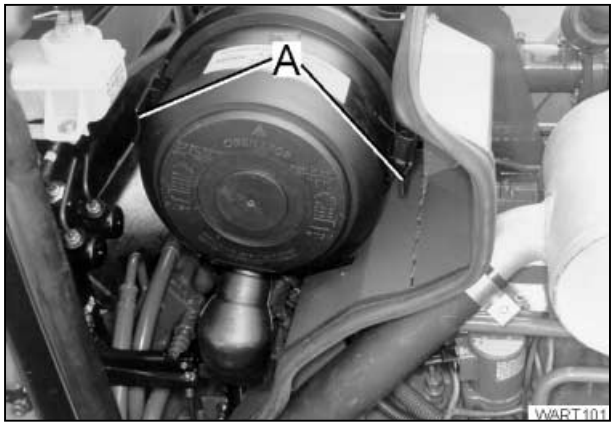


Fig.11

- Release snap hooks (A) and remove cover.
- Clean filter housing, ensuring sealing surfaces are perfectly clean.
- Remove main cartridge.
- Reinsert main cartridge and replace cover.
- Ensure that the snap hooks are seated correctly.

Note:
The main cartridge must be replaced after it has been cleaned 5 times, or after 2 years at the very latest.

4.3 Cleaning the main cartridge

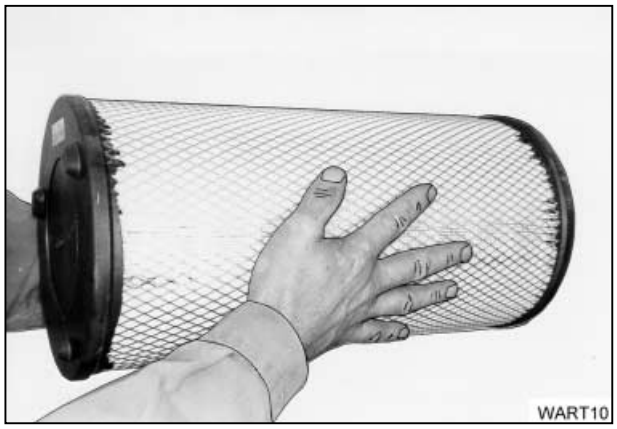


Fig.12

Tapping the unit clean (interim measure):

- Tap the cartridge against the heel of the hand only.

Cleaning by blowing

- Blow out filter from the inside outwards using dry compressed air (maximum 5 bar, at a minimum distance of approx. 5 cm).
- Carefully blow the air through the inside of the cartridge.

Note:
After every cleaning process, check filter cartridge for:
external damage, leakages, damaged paper bellows (shine light through the cartridge from the inside).

4.4 Replacing secondary cartridge

Replace only if the main cartridge is damaged or has already been replaced 3 times.

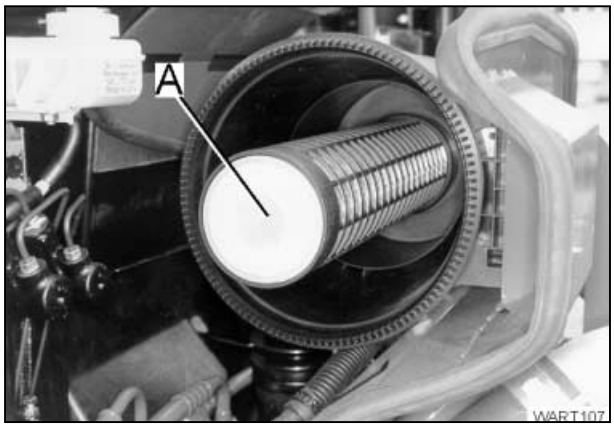


Fig.13

- Withdraw secondary cartridge (A).
- Absolute cleanliness is vital. The clean-air duct must be kept free of dust particles.

4.5 Dust separator valve

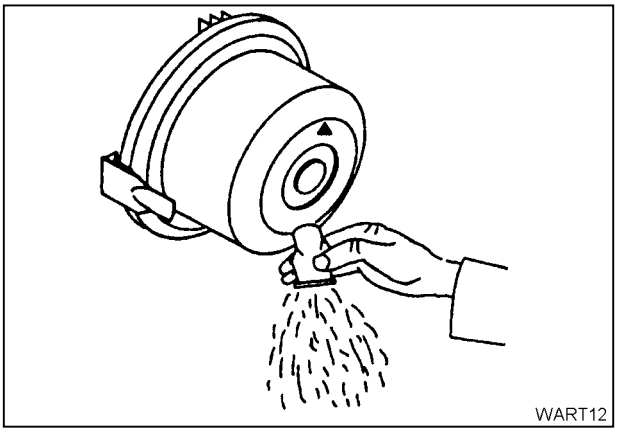


Fig.14

The dust separator valve is virtually maintenance free. In the vent of dust caking:

- Squeeze the dust separator valve and remove the caking.

Note:
The valve must hang freely and have no contact with any part. Damaged valves must be replaced immediately.

4.6 Primary air filter

(optional)

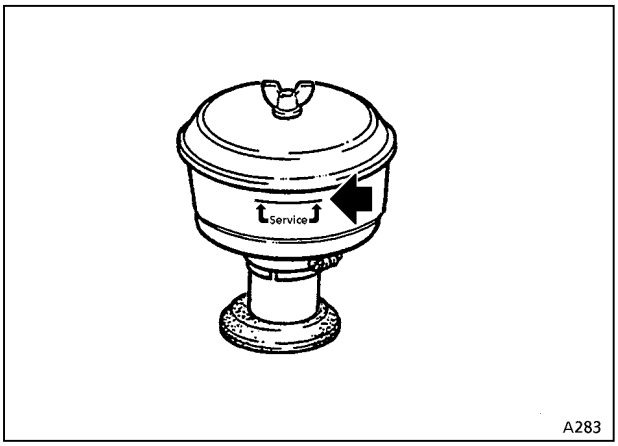


Fig.15

The dust container must be emptied at the latest by the time the level has reached the marker (arrowed).

5. Cooling system

5.1 Cleaning the cooling system

Cleaning the radiator

Ensure that the radiator fins, fuel cooler and if applicable the gearbox oil cooler, air-conditioning cooler, hydraulic oil cooler and charge-air cooler are kept clean. The same applies to the protective grille and the front and side grilles.

Fig.16

- Open front bonnet.
- Tip the air-conditioning condensor forwards (if applicable).
- Clean from the engine side using a long-handled brush or compressed air.
- For stubborn dirt, pre-clean with a soft brush using a suitable cleaning solution (e.g. "P3"). Leave to soak for about 5 minutes and rinse with a gentle water jet.

Cleaning the visco fan

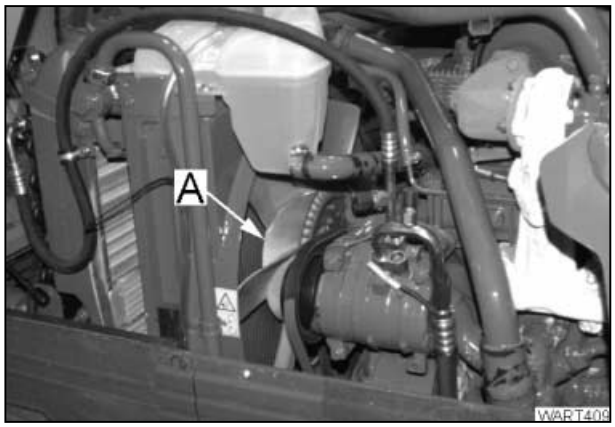


Fig.17

- Always keep the fins of the visco fan (A) clean.
- Do not cover the radiator as this prevents the fan from cutting out.

5.2 Checking the coolant level

Caution:
When the engine is hot, take extreme care when removing the radiator cap.
The coolant is under pressure - risk of scalding.

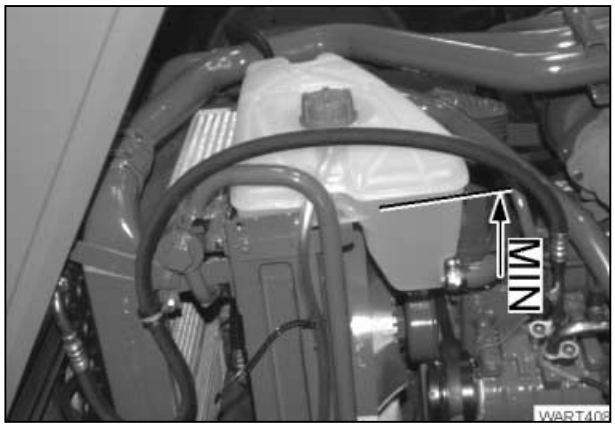


Fig.18

The coolant level should reach the Min. marking on the expansion tank.

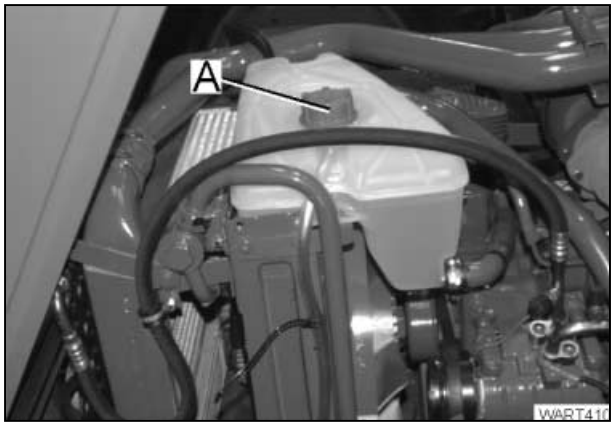


Fig.19

- Only use clean and demineralised water with antifreeze solution (glycol) for topping up.

Check concentration of coolant. Check for eventual leaks on hose connections (heating system too!).

Note:
The antifreeze solution also contains inhibitors to protect against cavitation and corrosion. A minimum concentration of 35 - 50 vol. % antifreeze and anticorrosive is therefore necessary throughout the year, even in frost-free areas.

5.3 Replacing coolant

Danger:
Turn off the engine!

Replace coolant at least every 2 years.

Draining coolant from the radiator

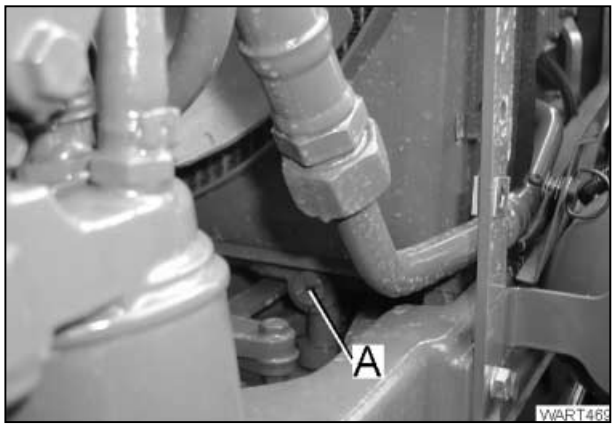


Fig.20

- Open the cap of the expansion tank.
- Switch on the heater.
- Position drip pan under the engine.
- Open drain plugs (A).

Filling with coolant

- Mix antifreeze solution with clean, demineralised water and fill to the level of the perforated plate in the expansion tank.
- With the heater switched on, run the engine for about 10 minutes (at approx. 1,500 rpm).
- When the engine has cooled down, check the coolant level and correct level if necessary.

5.4 Flushing cooling/heating system

To flush the cooling system, use only hot cleaning solution (e.g. "P3") in case of very badly contaminated coolant, i. e. with rust or grease.

- Run the engine for about one hour, filled with solution.
- Flush with clean water and top up with coolant solution.

6. Power belt

Danger:
Check Power-belt tensioner only when the engine is not running. Put protection grid into place.

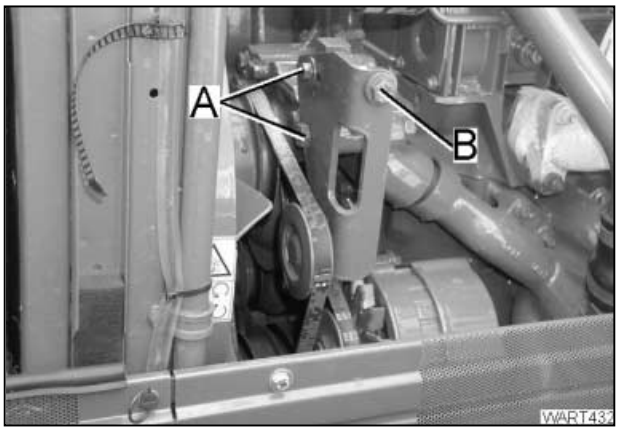


Fig.21

V-belt tension is to be measured at midpoint between pulleys with Optibelt tension gauge I.

Slacken bolts (A).

Adjust using the tensioning screw (B).

Tighten bolts (A).

Profile 13 mm 400+50 N (40+5kp).

V-belt air-conditioning compressor refer to accessories.

7. Clutches

7.1 Drive clutch

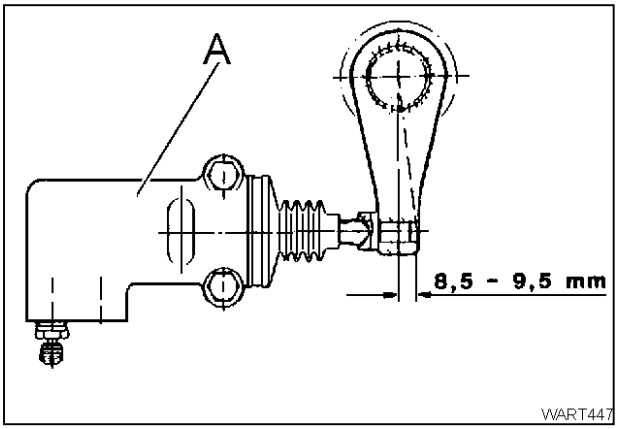


Fig.22

This is self-adjusting with no pedal play.

In the event of noisy gearshifting, check the pushrod release travel of the slave cylinder (A) on the left of the tractor:

- Operate the clutch - desired pedal movement value 8.5 - 9.5 mm.

If this value is less than 8.5 mm it is necessary to bleed the system (workshop operation).

7.2 Bleeding the drive clutch

Danger:
Beware when handling brake fluids - they are toxic and corrosive. For further directions on the handling of brake fluid, refer to "Brakes".

Reservoir

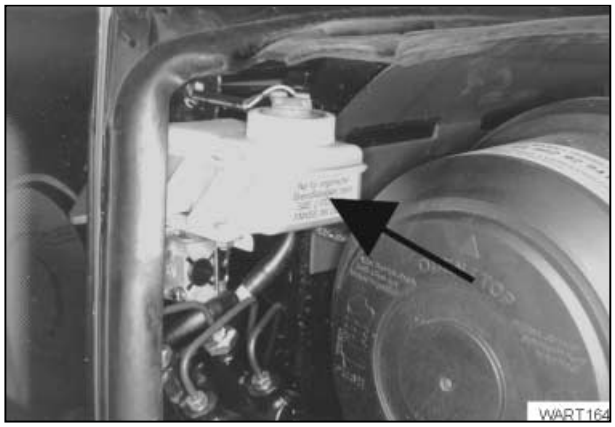


Fig.23

Fill up the reservoir (arrow) to Max. marking with brake fluid.

For frequency of changes, oil quantity and quality, refer to "Fluids and Lubricants" or "Maintenance Schedule".

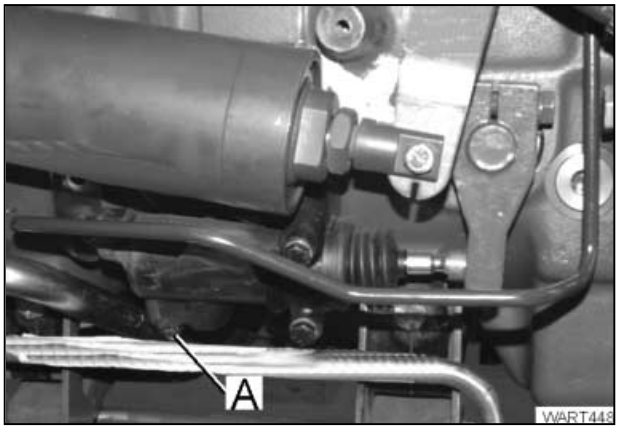


Fig.24

- Open slave cylinder bleed valve (A) as soon as brake fluid exits, close again.
- Check brake fluid, top up if necessary.
- Check release travel.

Note:
If this is less than 8.5 mm, use a bleeder kit to bleed the system.

7.3 Turboclutch

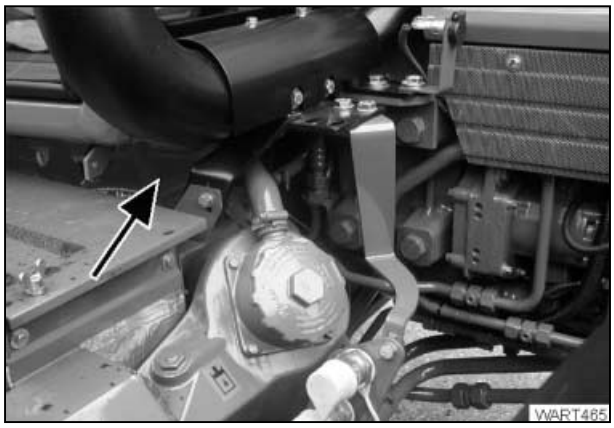


Fig.25

Keep the wire grille (A) clean.

7.4 Rear PTO clutch

Fig.26

Adjust the Bowden cable (A) to 55 mm.

Checking for wear

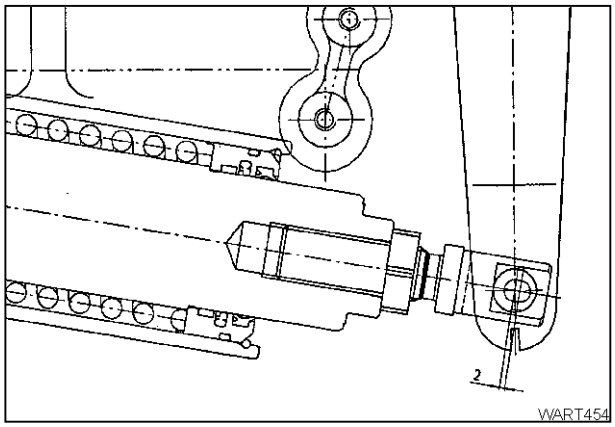


Fig.27

- Engage the rear PTO clutch.
- Play on the operating lever should be at least 2 mm.

Adjusting the play on the operating lever

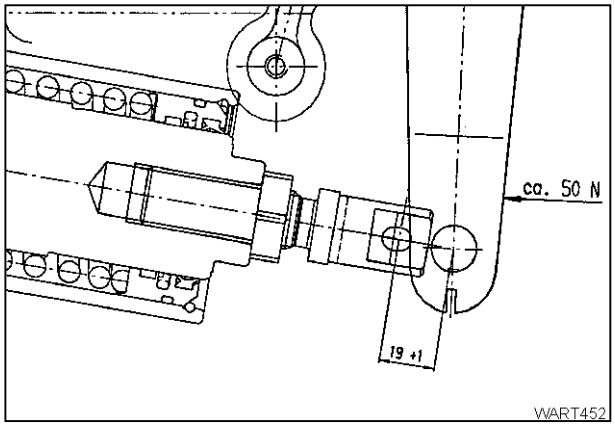


Fig.28

- Engage the rear PTO clutch.
- Press down on lever by approx. 50 Nm, and set to 19 +1 mm.
- Disengage rear PTO clutch.
- Fit the lever firmly into the clevis.

7.5 Front PTO clutch

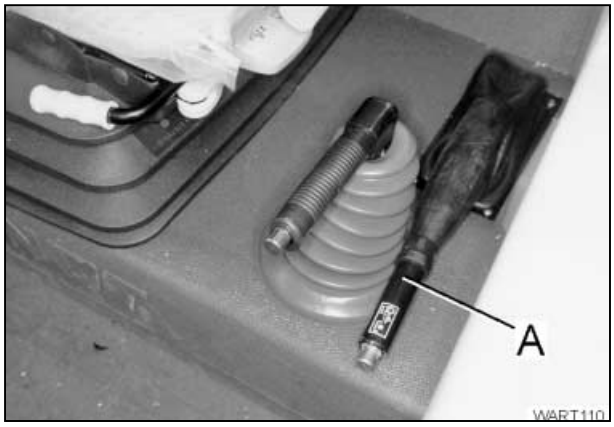


Fig.29

Play on the operating lever (A) should be at least 20 mm, and approx. 50 mm when new.

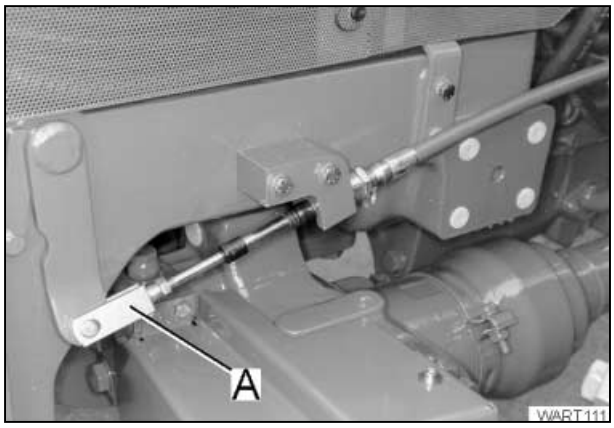


Fig.30

Adjusting the Bowden cable at the clevis (A) on the front left-hand side of the tractor.

8. Front PTO

Checking the front PTO oil level

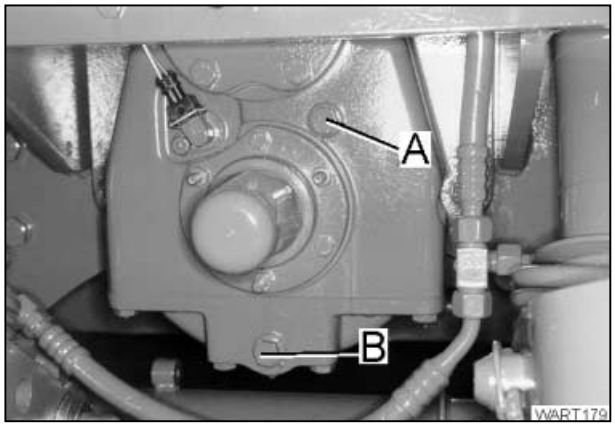


Fig.31

- Fill oil through filler hole (A).
- Oil drain plug (B).

Oil level: fill until the oil spills over at the filler hole (A).

For frequency of changes, oil quantity and quality refer to "Fluids and Lubricants" or "Maintenance Schedule".

9. Transmission and final drives

9.1 Replacing the gearbox oil

Replace oil only when the gearbox oil is warm.

Draining gearbox oil

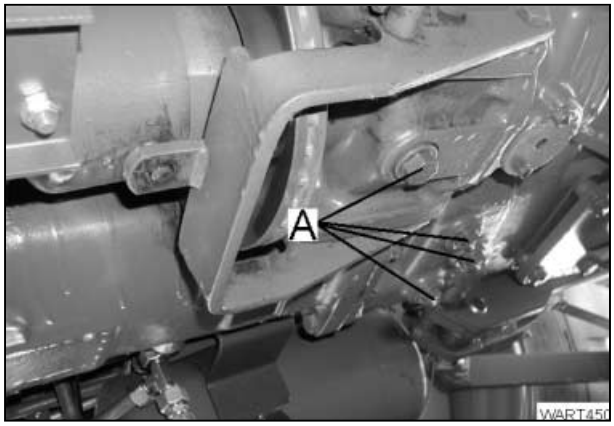


Fig.32

- Place oil pan underneath the gear box.
- Unscrew oil drain plugs (A) from the gearbox housing and 4-WD housing and allow the oil to drain completely.
- Replace filter cartridge (D/ CARE AND MAINTENANCE Fig. 34).
- Clean the drain plug, refit and tighten.

Filling with gear oil

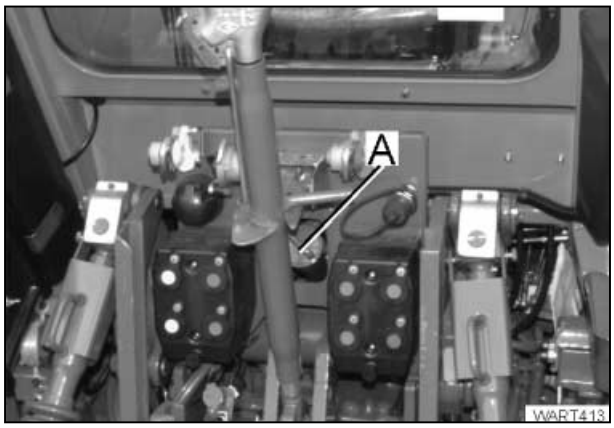


Fig.33

- Remove dipstick (A) and pour oil through the filler hole.

9.2 Checking the gear oil level

- Make sure the tractor is on level ground.
- Twist dipstick and remove.
- Wipe the dipstick using a fibre-free, clean rag.
- Reinsert dipstick fully and twist into place.
- Twist dipstick free again and remove.

The oil level must reach the upper notch of the dipstick.

The difference in oil volume between the Min. and Max. markings on dipstick should be approx. 2.5 litres.

For frequency of changes, oil quantity and quality, refer to "Fluids and Lubricants" or "Maintenance Schedule".

9.3 Replacing the oil for the final drives

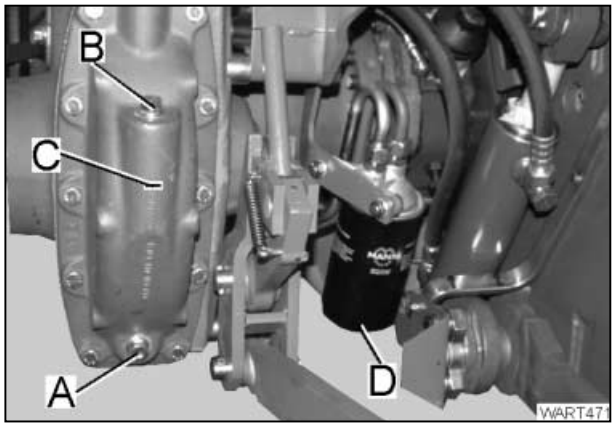


Fig.34

- Place oil pan underneath transmission.
- Unscrew drain plug (A) and allow oil to drain completely.
- Clean the drain plug, put back in place and tighten.
- Fill specified oil through filler screw (B).

The oil must reach the marker (C).

For frequency of changes, oil quantity and quality, refer to "Fluids and Lubricants" or "Maintenance Schedule".

10. Four-wheel drive axle

10.1 Replacing the oil of the front axle differential gear

Draining the oil

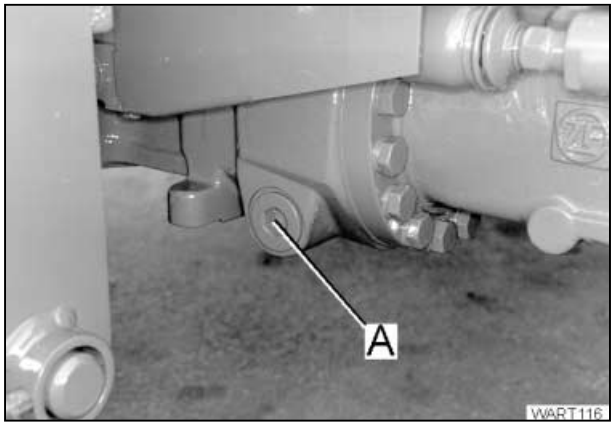


Fig.35

- Place oil pan underneath the housing.
- Unscrew and remove drain plug (A) and allow the oil to drain completely.
- Clean the drain plug, refit and tighten.

Filling with oil

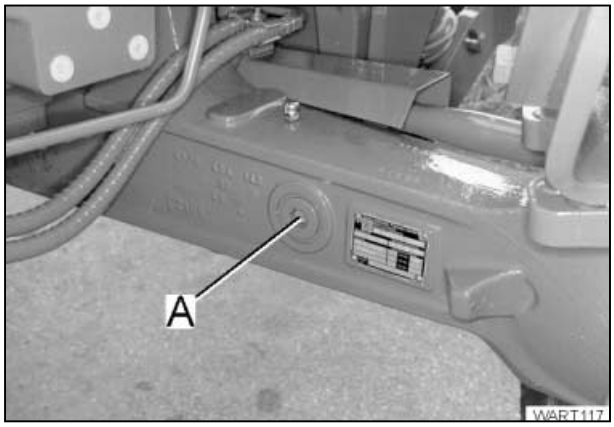


Fig.36

- Fill with specified oil through filler hole (A).

Fill until the oil spills over at the filler hole (A).

For frequency of changes, oil quantity and quality, refer to "Fuels and lubricants" or "Maintenance schedule".

10.2 Replacing the oil for front axle hub drives

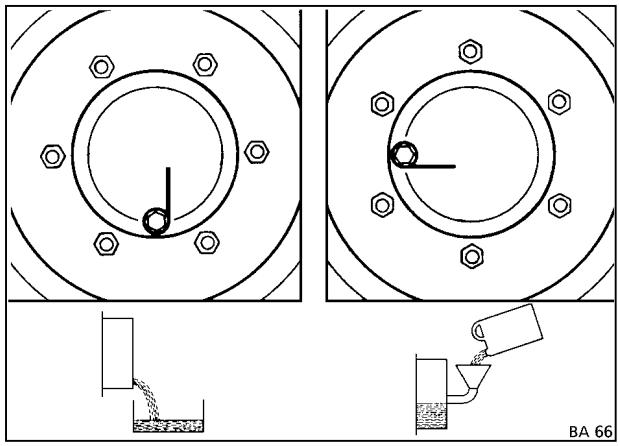


Fig.37

Jack up the front axle until wheels rotate freely; disengage the 4-WD.

Draining the oil

- Turn wheel until the hole is at the bottom.
- Place oil pan underneath.
- Remove drain plug and allow the oil to drain completely.
- Clean the drain plug, refit and tighten.

Filling with oil

- Fill until the oil spills over (horizontal marker and hole on the left).

For frequency of changes, oil quantity and quality, refer to "Fuels and lubricants" or "Maintenance schedule".

11. Power lift

Checking linkage shaft

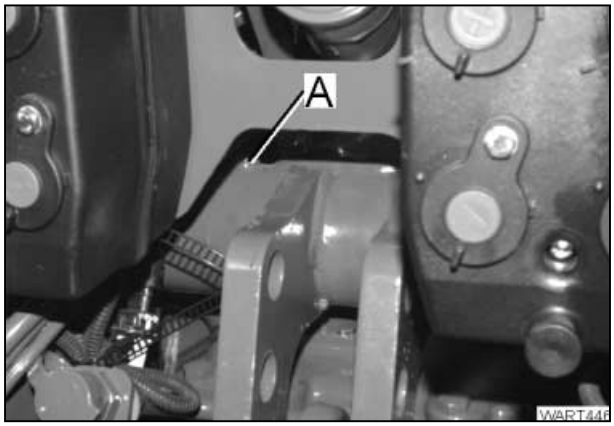


Fig.38

- Unscrew plug (A).
- Check oil level with a test strip (e. g. cable tie).

The oil level must be approx. 40 mm (vertically) below the bottom edge of the filler hole.

For frequency of changes, oil quantity and quality, refer to "Fuels and lubricants" or "Maintenance schedule".

12. Hydraulics

Danger:
When working on the hydraulics, always switch off the engine and ensure that the tractor is safely parked (hand brake applied, wheels chocked).

The system is highly pressurised.Ensure that all pressure is released, and that mounted implements are lowered before any work is carried out on the hydraulics.

When checking for leaks, avoid injury by using a suitable aid (e.g. a piece of wood).

Check hydraulic hoses regularly, and replace if they are showing signs of damage or ageing. Replacement hoses must meet the technical requirements of the implement manufacturer.

Always pay special attention to absolute cleanliness.

12.1 Checking the oil level of the hydraulic system

When checking the oil level ensure that the rear power lift is lowered and that the hydraulic rams are fully retracted. Oil temperature approx. 20°C.

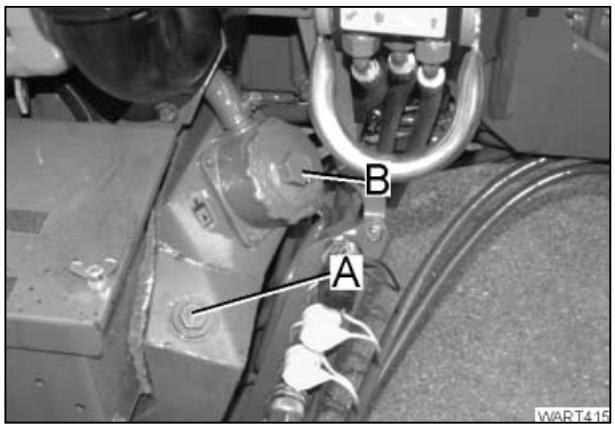


Fig.39

- Unscrew oil dipstick (A).

The oil level should be between the Min. and Max. markings on the dipstick.

12.2 Replacing the hydraulic oil

Important:
Always ensure that the oil, container and funnel are all clean.

The oil purity must meet the requirements of filter class 10 in accordance with NAS 1683.

Replace the oil while the oil in the system is warm, the power lift is lowered and all rams are fully retracted.

For frequency of changes, oil quantity and quality, refer to "Fluids and lubricants" or "Maintenance schedule".

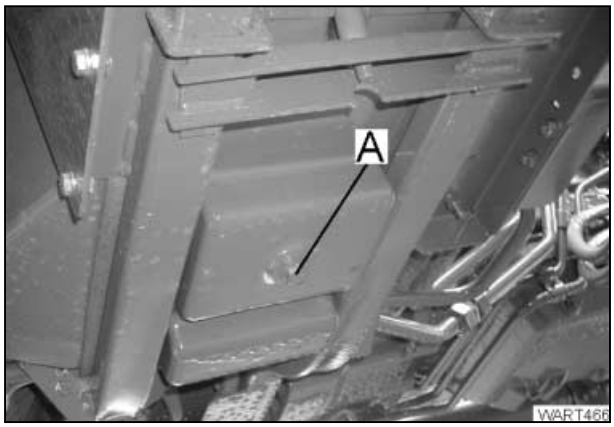


Fig.40

Draining the oil

- Place oil pan underneath the hydraulic reservoir.
- Remove drain plug (A) and allow the oil to drain.
- Clean the drain plug, refit and tighten.

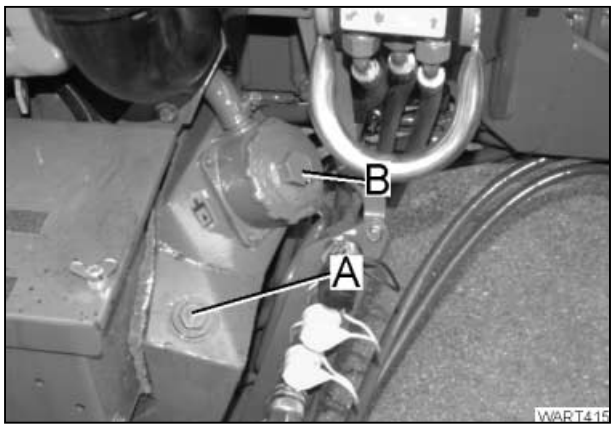


Fig.41

Filling with oil

- For best results, the filling oil should be pumped through a return-flow coupling.

This has the effect of filtering the oil.

If this is not possible:

- Small volumes of oil can be poured in through the dipstick aperture (A).
- When replacing the oil, fill oil via return-flow aperture (B).

When filling via aperture (B), always remove filter bowl and filter cartridge (refer to CARE AND MAINTENANCE Fig. 43/A).

12.3 Hydraulic oil filter

Replacing the return filter

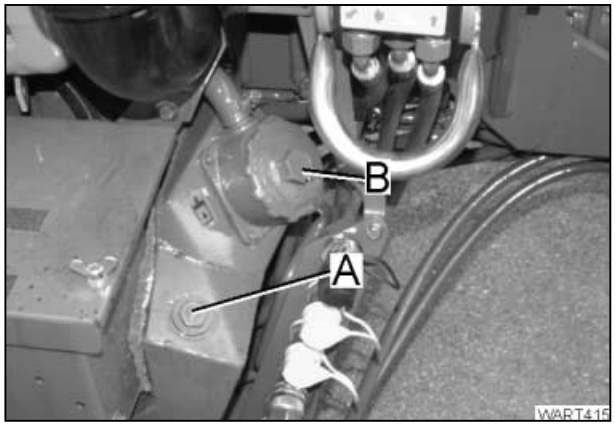


Fig.42

- Unscrew the filter cap (B).

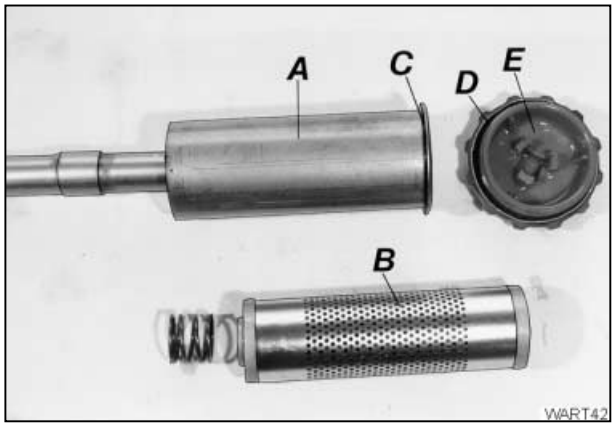


Fig.43

- Remove filter bowl (A) with filter cartridge (B).
- Withdraw filter cartridge and clean filter bowl.
- Insert tension spring into filter bowl and fit new filter cartridge (opening facing downwards).
- Fit new O-ring (C) and new gasket (D).
- Refit filter bowl and cartridge assembly and screw down filter cap (E).

For frequency of changes, refer to "Maintenance schedule".

Replacing the ventilation filter

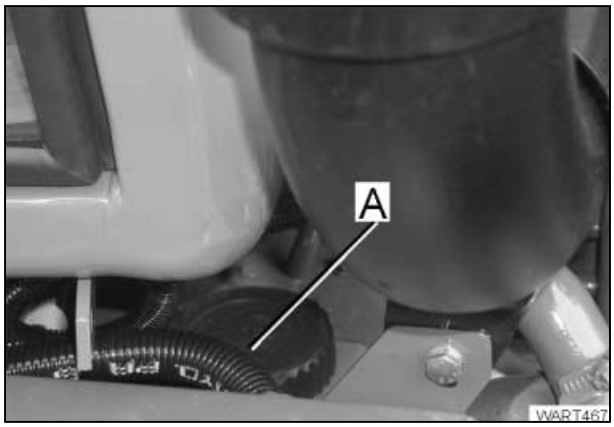


Fig.44

- Unscrew and remove ventilation filter (A) and fit new filter.

For frequency of changes, refer to "Maintenance schedule".

Note:
The ventilation filter cannot be cleaned or reused.

Hydraulic oil temperature warning

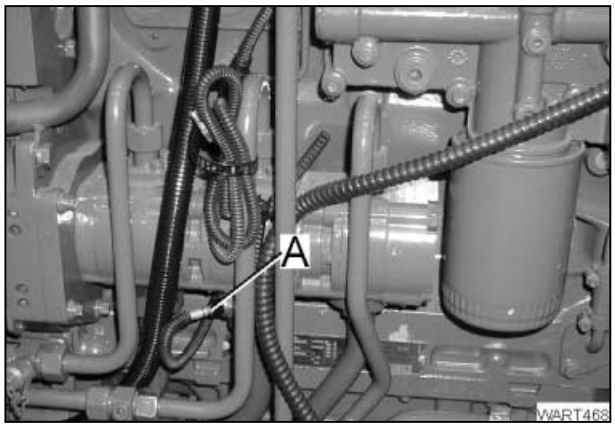


Fig.45

If the hydraulic oil temperature is excessively high, a warning indicator is displayed.

Function check

- Remove cable plug (A) from the temperature switch and connect to earth.
- Turn ignition key to position "I".

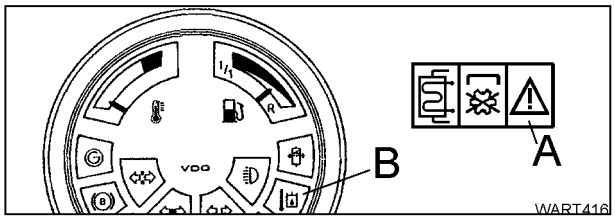


Fig.46

The symbol for "hydraulic oil temperature" (B) should now light up on the central display, and the warning indicator lamp (A) should flash accompanied by an intermittent buzzer.

13. Brakes

Danger:
The braking system must be subjected to regular checks. Adjustments and repairs to the brake system must be carried out in specialist workshops or by approved brake repair technicians.

Danger:
In the event of continued loss of brake fluid, consult the service workshop. Do not use mineral or synthetic oils as brake fluid. Beware of leaking brake fluid and battery acid toxic and corrosive!Avoid spillages. Dispose of brake fluid as directed.

13.1 Reservoir

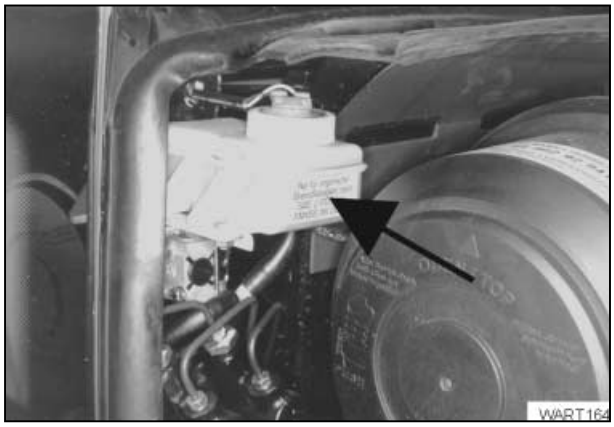


Fig.47

- Fill up reservoir (arrow) with brake fluid to reach Max. marking.
- Do not re-use drained brake fluid.
- Have brake fluid replaced in the workshop every 2 years (annual change recommended).

For frequency of changes, oil quantity and quality, refer to "Fluids and lubricants" or "Maintenance schedule".

13.2 Brake fluid warning

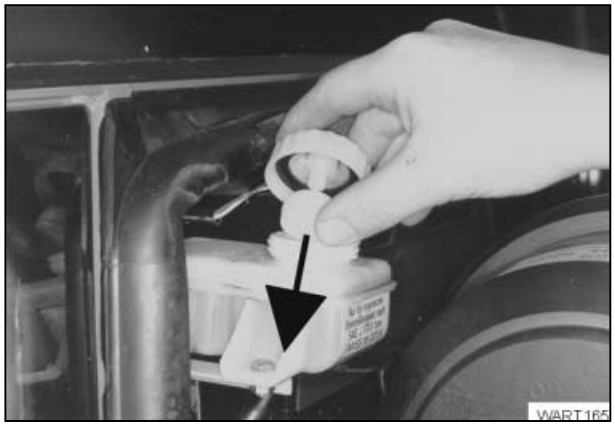


Fig.48

Function check:
- Unscrew and remove the cover.
- Place float in lowest position.
- Turn ignition key to position "I".

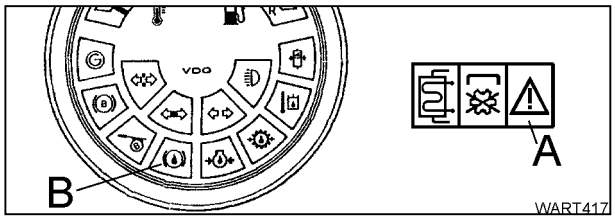


Fig.49

The symbol for "brake fluid level" (B) should now light up on the central display, and the warning indicator lamp (A) should flash accompanied by an intermittent buzzer.

13.3 Bleeding the foot brakes

Danger:
Brake pedals with excessive travel accompanied by decreasing braking effectiveness are an indication of air in the system. Bleed the system immediately (workshop operation).

13.4 Bleeding without a filling or bleeding kit

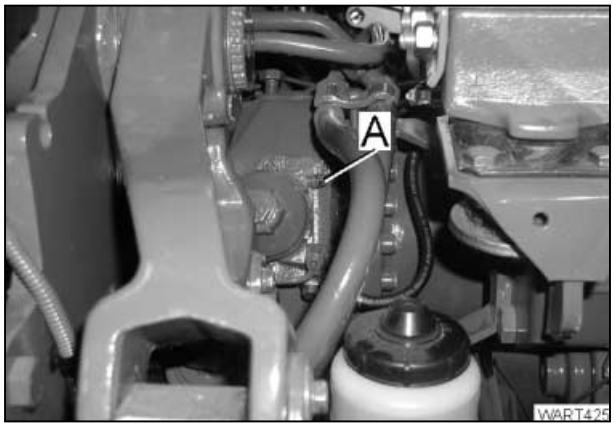


Fig.50

- The reservoir must be full.
- Connect bleeder hose to the left-hand wheel brake cylinder bleed valve (A) and suspend in a transparent vessel filled to about 1/3 with brake fluid.
- Open bleed valve (A) slightly. Depress locked brake pedals several times. When there is no evidence of air bubbles, close the bleed valve again.
- Top up brake fluid in the reservoir.
- Repeat procedure with the right-hand rear wheel brake. Fill reservoir to Max. marking.

Additional bleeding

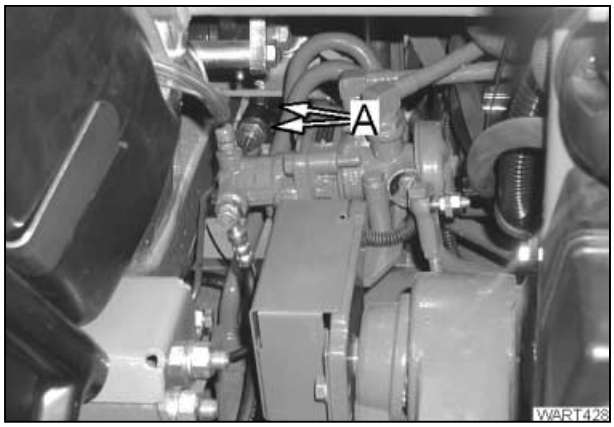


Fig.51

- For brake use auxiliary valve (A)

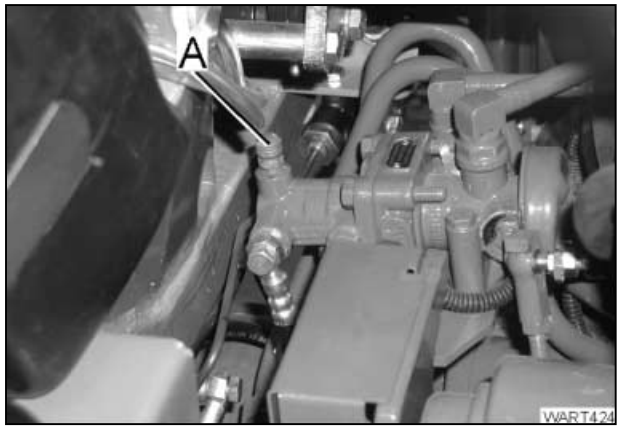


Fig.52

- For air compressor use trailer brake valve (B)

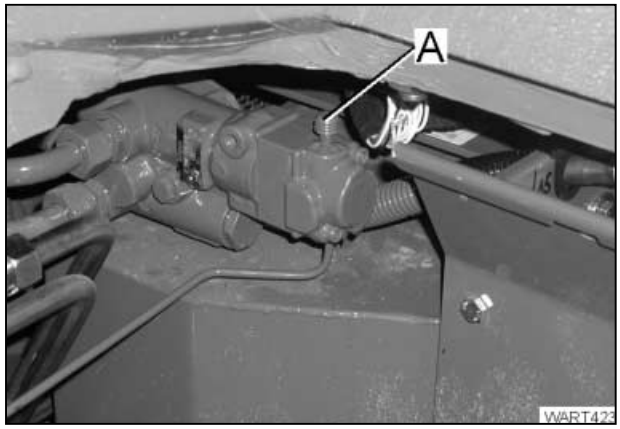


Fig.53

- For hydraulic trailer brake use trailer control valve (A)

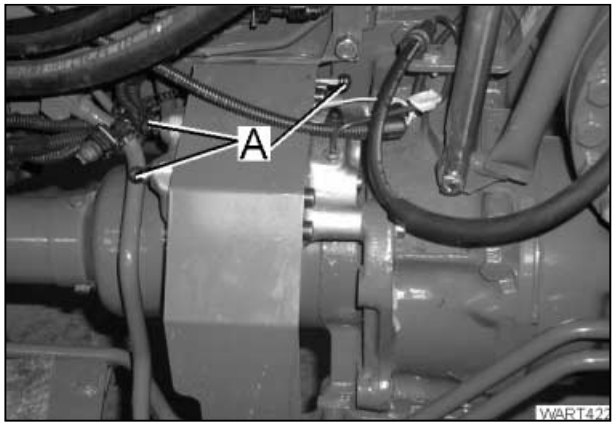


Fig.54

- For cardan-shaft brake use valves as shown by (A)

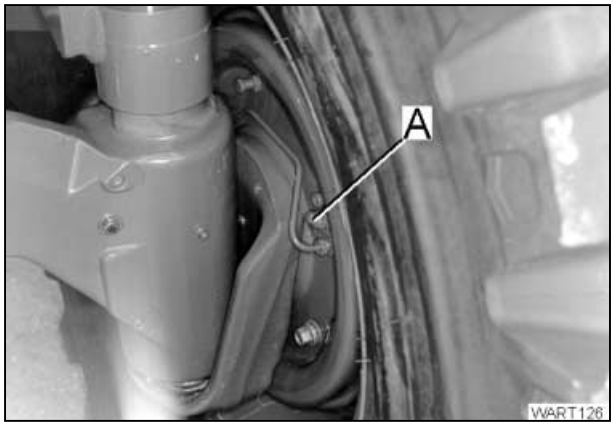


Fig.55

- For front-wheel-drive drum brake use valve shown by (A) on left and right.

Final procedure for bleeding the brakes

- Fill reservoir to Max. marking.
- Depress brake pedal several times with full force, and check the brake system for leaks.
- Check brake lights and test the brakes. For an emergency stop at 20 km/h the tractor must come to a standstill within 4 - 6 m.

Bleeding with a filling and bleeding kit

Connect the unit to the reservoir. The bleeding process is the same as for "Bleeding without a filling and bleeding kit", but it is accelerated by pressure (max. 2 bar) in the bleeding kit. Furthermore, the reservoir remains full throughout the process. Finally, top up the reservoir with brake fluid to the Max. marking.

13.5 Adjusting the foot brake

Warning:
If the brake pedal play is greater than 140 mm, the foot brake needs to be adjusted (workshop operation).

Fig.56

The length of travel (free play) of the locked brake pedals is dependent on the tractor specification (e.g. 4-WD, air compressor).

Adjusting the solid disc brake

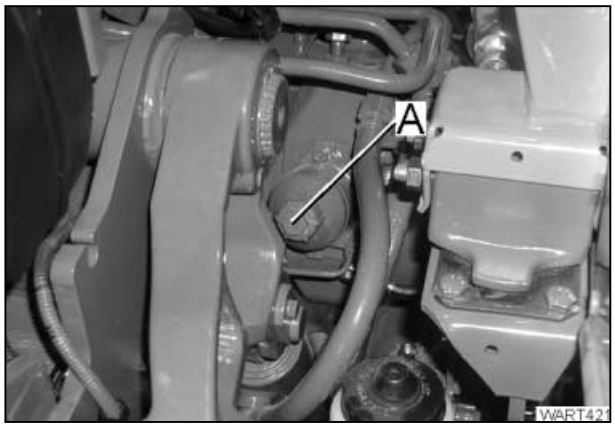


Fig.57

Observe the adjustment sequence:

- Unscrew and remove protective cap (A) from the actuating cylinder.
- Jack up rear of tractor and rotate wheels.

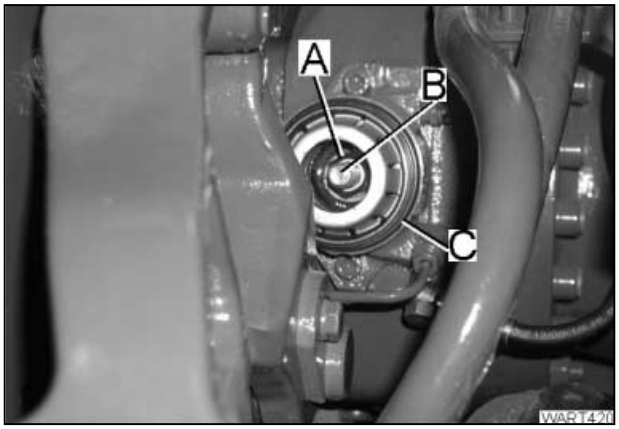


Fig.58

- Tighten self-locking adjusting nut (A) until brakes make contact (wheel is difficult to rotate by hand). Mark adjusting nut.
- Turn adjusting nut back by 1 1/6 turns. This creates a movement of 1.7 mm at the pull rod (B).
- Repeat the procedure for the other solid disc brake.
- Wipe cylinder chamber and protective cap dry with a clean rag.
- Apply brake cylinder paste to the cylinder face.
- Check sealing ring (C) of the protective cap, and refit cap by hand.
- When correctly adjusted, the brake pedal movement should be approx. 70 mm (on a rear-wheel drive tractor) and up to approx. 110 mm (on a 4-WD tractor fitted with air compressor).

The following adjustment is only required if intermittent contact noises are detected in the brakes or when making the initial setting (and only after completion of the previous adjustment):

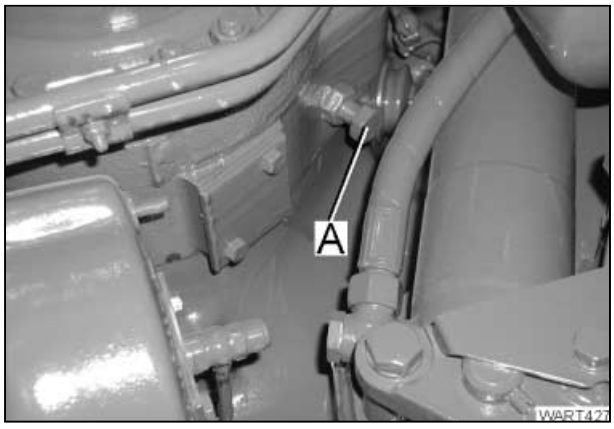


Fig.59

- Slacken adjusting screw (A) by approx. 2 turns (brakes are released).
- Screw in the opposite adjusting screw on the brake housing - in this case at the top - until braking takes effect (wheel difficult to rotate by hand).
- Mark the adjusting screw, slacken it by 1 1/2 turns and secure.
- Screw in the initially slackened adjustment screw (A) until the brakes take effect (wheel difficult to rotate by hand). Loosen adjustment screw by precisely 4/6 of a turn, and secure.
- Adjust the other solid disc brake in the same way.

On tractors with four-wheel braking, the front wheel drum brake must subsequently also be adjusted.

Final check for brake adjustment

Check brake lights and test the brakes: on full braking at 20 km/h the tractor must come to a standstill within 4 - 6 m. After every operation the brakes must be fully released.

13.6 Checking the solid disc brake for wear

(every 500 operating hours/workshop operation)

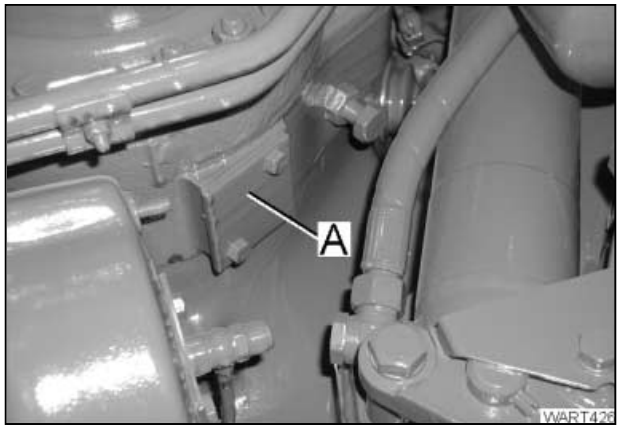


Fig.60

- Remove cover (A) from brake housing.
- Apply footbrake and check the gap between actuating discs.

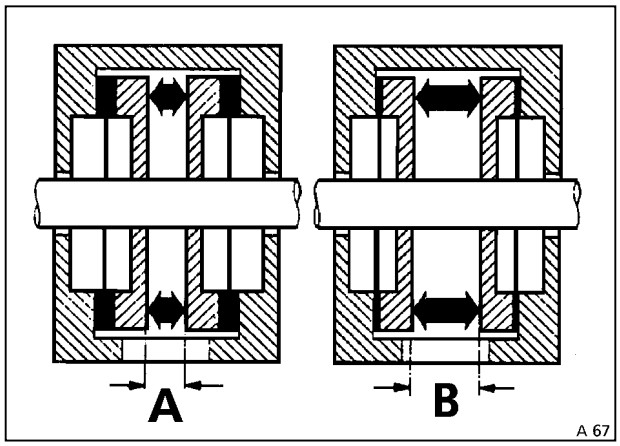


Fig.61

In new condition: approx. 4.0 mm (A)

Max. permissible wear limit: 12.5 mm (B)

- Repeat process on the other side. Refit cover (A / CARE AND MAINTENANCE Fig. 60) with new gasket or sealing.

If the wear limit is reached, the discs must be replaced, i.e. the brakes must be overhauled.

Note:

When replacing the brake pads, we recommend that the tension springs between the actuating discs should also be replaced.

13.7 Cardan-shaft brake

This additional brake is self-adjusting.

Wear indication

When the wear limit is reached, an indicator lamp on the central display lights up.

Function check:

- Disconnect cable plug from brake pad and connect to earth.
- Turn ignition key to position "I".

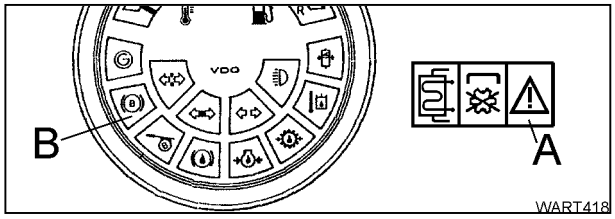


Fig.62

The symbol for "brake pad wear" (B) should now light up on the central display, and the warning indicator lamp (A) should flash accompanied by an intermittent buzzer.

13.8 Adjusting the front wheel drum brake

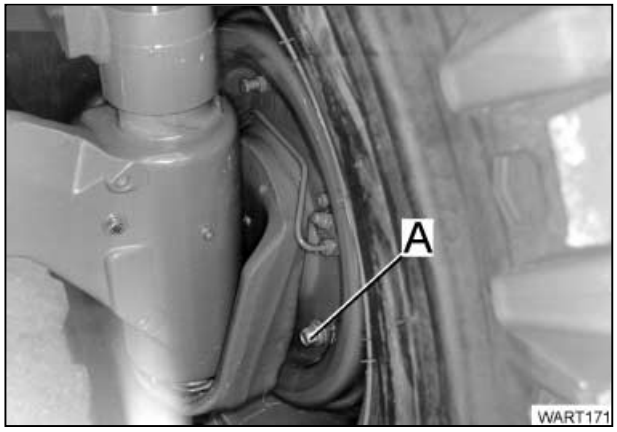


Fig.63

- Jack up the front axle.
- Rotate front wheel, turning eccentric stop screw (A) to the right until braking takes effect. Loosen stop screw by two notches or until the brake is fully released.
- Repeat procedure for rear cam of this brake backing plate.
- Adjust drum brake on the other side in the same way.

13.9 Hand brake

If the hand brake does not come into effect until about the 8th ratchet, it must be readjusted.

Adjusting the hand brake

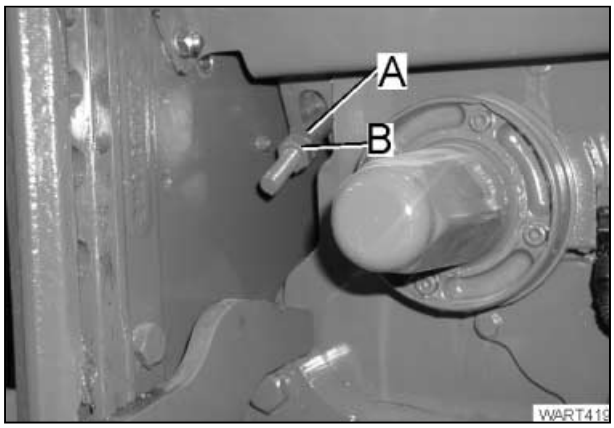


Fig.64

- Jack up the rear wheels.
- Pull up hand brake lever by 3 ratchets.
- Loosen locknut (A), rotate the rear wheel and turn the adjusting nut (B) until the brake takes effect.
- Retighten locknut (A).
- Proceed on the other side in the same way. Before locking the adjusting nut, ensure that braking is uniform on both sides.
- Release hand brake completely, both rear wheels must rotate freely.
- Pull hand brake up fully: with a manual force of 300 Nm (30 kpm) the hand brake should engage between 6 - 8 ratchets. If necessary, readjust.
- Testing the brakes:
- The braking effect must be uniform on both rear wheels.

14. Steering

Regularly check the steering for leaks and signs of damage, and make sure the bellows connections are in good order.

15. Front wheels

15.1 Checking toe-in

After initial 50 operating hours, then every 500 operating hours.

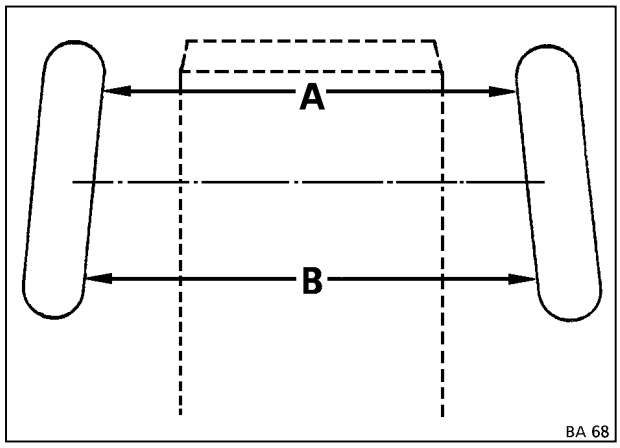


Fig.65

Toe-in should be 0 - 3 mm.

- Steering in mid-position; front axle under normal load.
- Measure distance between the tyres on the front rim flange at the height of the hub (A).
- Push tractor forward through 1/2 turn of the front wheels.
- Measure distance between tyres on the rear rim flange at the height of the hub (B).

15.2 Filling front wheel hubs with grease (not applicable to 4-WD)

Grease should be renewed in the workshop approx. every 2,000 hours (see Lubrication chart).

16. Heating and ventilation

Clean paper filter by tapping or blowing out approx. every 6 months, or sooner if there is a drop in efficiency. Dry if necessary.

Replace damaged paper filters. Do not switch on heater fan during spraying operations.

16.1 Removing the heating fan filter

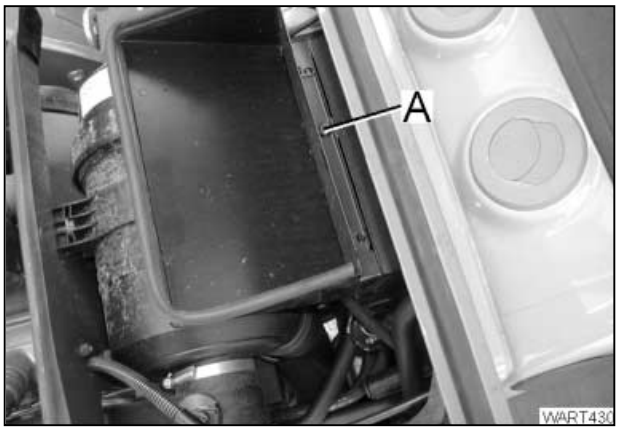


Fig.66

- Tilt bonnet forwards.
- Slacken bolt (A) and remove heater duct.

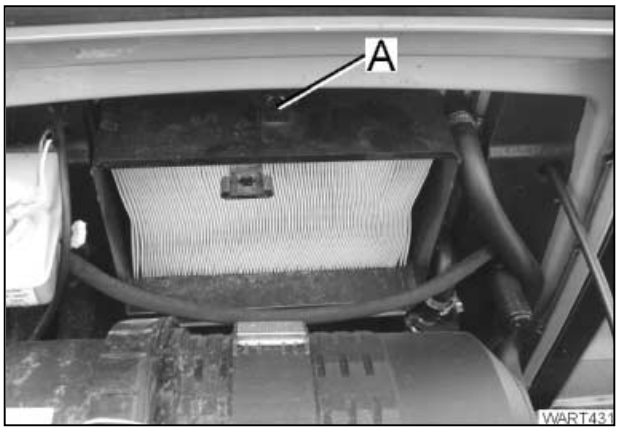


Fig.67

- Slacken bolt (A) and remove filter frame and filter.

16.2 Removing the roof fan filter

Warning:
A used anti-toxic filter retains traces of spraying agents. Replace with a normal filter cartridge as soon as possible after every spraying operation.
Follow the instructions for use supplied with the filter package.
Neither cab nor filter offers guaranteed protection from harmful chemicals.
Always the manufacturer's instructions.

Fig.68

- Turn both the catches (arrows) to release, and let down the panel.

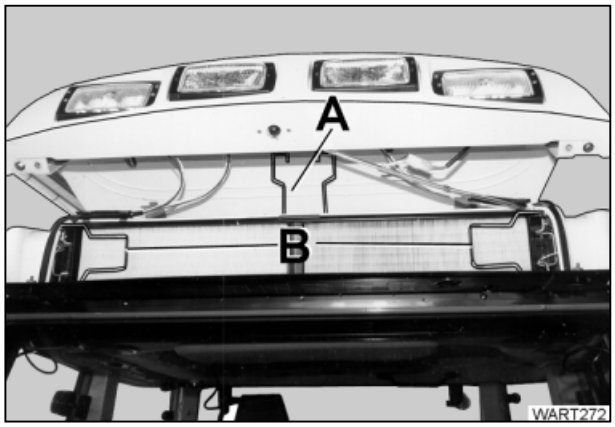


Fig.69

- Pull retaining clip (A) upwards.
- Open clips (B) outwards and remove filter together with the filter frame.

16.3 Removing the circulating air filter

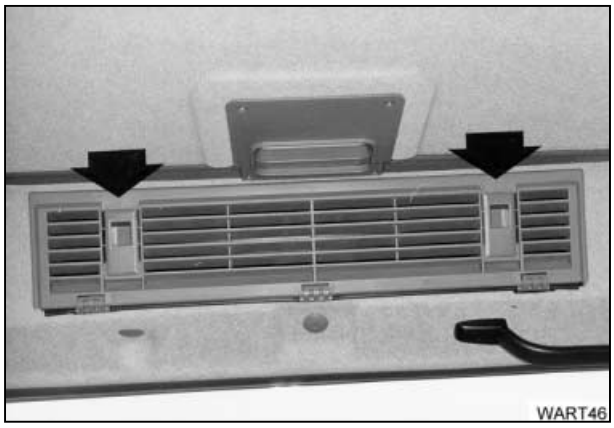


Fig.70

- Release fasteners (arrows) and fold down the grille.

Fig.71

- Push bar (arrows) downwards and remove the filter.

17. Windscreen washers

Cleaning agents and antifreeze solution can be added by following the manufacturer's instructions.

Fluid reservoir

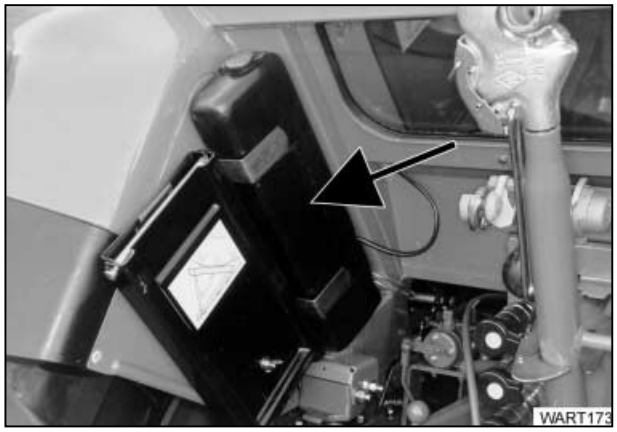


Fig.72

- Top up fluid in reservoir (arrow).

18. Cleaning the tractor

- The driver's seat upholstery covers can be removed without tools.
- Never run the engine when hosing down the tractor.
- Never point water jets directly at electrical equipment.
- When using a high-pressure washer, never point at seals or paintwork, especially when using a spray intensifier. Always follow manufacturer's instructions.
- After cleaning the tractor, lubricate all greasing points, joints and bearings. It is recommended that the painted surfaces be waxed after cleaning.

19. Electrical and electronic systems

Since even the use of an inspection lamp can damage electronic components, trouble shooting must always be carried out in the workshop.

During extended downtime periods disconnect the battery to avoid discharge to minor components. Check state of charge every other month. Do not operate tractor without a battery.

19.1 Battery

Warning:
When working on the electrical system, always disconnect the battery (negative terminal).
Be sure of correct connecting sequence: connect the positive terminal first and then the negative terminal.
Beware of battery acid (caustic) and of battery gases.
Avoid sparks and open flames near the battery. Risk of burns when the additional lights are switched on.

Fig.73

Acid level approx. 15 mm above the top of the plates.

- Top up with distilled water when necessary.

Not required with a sealed battery. Guard against battery contamination.

Keep battery well charged - especially in cold weather.

Do not operate tractor without a battery.

19.2 Alternator

Once the tractor has been started, the battery charging indicator lamp goes out at approx. 1,000 rpm.

19.3 Electric arc welding

Disconnect both battery terminals. Attach earth terminal as close to the point of welding as possible. Keep away from temperature-sensitive components.

19.4 Adjusting the headlights

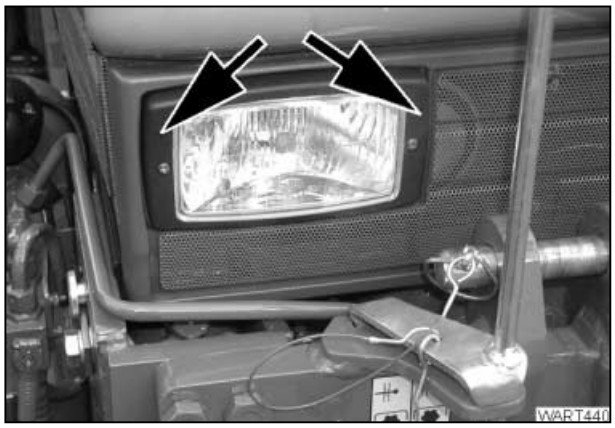


Fig.74

- Adjust headlights using the Phillips screws only (arrows).

19.5 Adjusting the auxiliary headlights

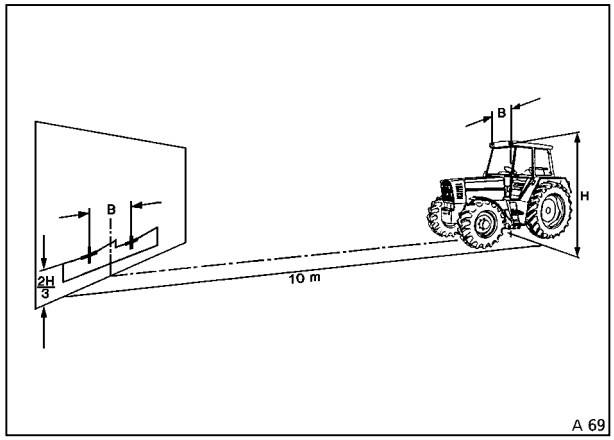


Fig.75

At a 10-metre distance the upper limit of the illuminated area is two thirds the height of the lights above the ground.

19.6 Subsequent installation of electrical and electronic equipment

Safety recommendations for the subsequent fitting of electrical and electronic equipment and/or components.

The tractor is equipped with electronic components whose functions can be influenced by electromagnetic signals from other units. This may present danger to personnel unless the following recommendations are observed.

If at a later date the tractor is fitted with electrical or electronic equipment and/or parts connected to the on-board supply voltage, it is the responsibility of the user to check for possible interference with the tractor electronics or other parts. This is particularly important for:

Coupler connections

- Do not connect to measuring connections or sensors since this may interfere with control functions (EPC, etc.).

Power used by couplers.

- Voltage troughs and peaks may lead to unintended error messages.

Short-wave transmitters.

- Emissions without a special aerial may cause malfunctions (EPC, etc.).

It is particularly important to ensure that all subsequently installed electrical and electronic components comply with EMC Directive 89/336/EEC in the relevant accepted version, and are marked with the CE identification.

Subsequent installation of mobile communication systems

For the subsequent installation of mobile communication systems (e.g. radio, telephone) the following requirements must be met:

- Only equipment complying with national regulations may be installed.
- The equipment must be securely installed.
- Portable or mobile equipment used within the vehicle is permissible only when connected to a securely fitted external aerial.
- The transmitting component must be installed well clear the vehicle electronics.
- Make sure the aerial is fitted properly with a good earth contact between aerial and vehicle body.

For cabling, installation and a maximum permissible power supply, observe also the fitting instructions specified by the equipment manufacturer.

20. Fuses

Danger:
Use only original equipment fuses. Excess amperage fuses can destroy the electrical system. Fire hazard.

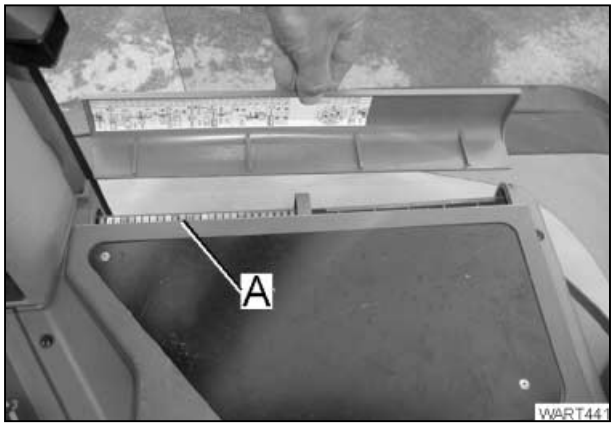


Fig.76

Fuse holder (A)

20.1 Fuse holder

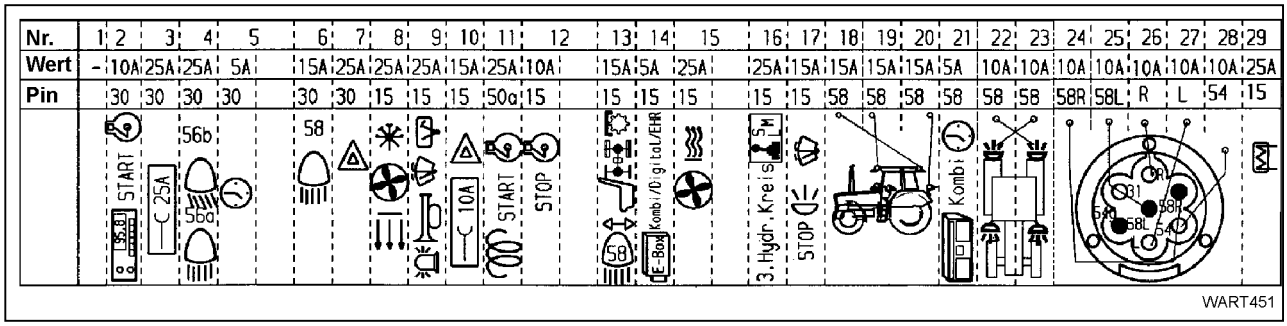


Fig.77

Fuse no.	PIN	Amps. (A)	Couplers
1	-	-	-
2	30	10	Ignition 30, radio, interior light
3	30	25	Load socket
4	30	25	Dipped headlight (Re56b), main beam headlight (Re56a)
5	30	5	Clock
6	30	15	Headlight pushbutton
7	30	25	Warning indicator lamp 30 pushbutton
8	15	25	On-board voltage, fan
9	15	25	rotating beacon, front wiper, rear wiper, headlight flasher, horn
10	15	15	Socket 10 A, warning lamp 15
11	50a	25	Starter motor 50, starting excess fuel solenoid valve, cold-start relay 4
12	15	10	Engine off, cold-start relay 3
13	15	15	Pushbutton light 15, seat compressor, 4-WD pushbutton, differential lock pushbutton
14	15	5	Digital box, combi-instrument panel, relay EPC
15	15	25	Heater
16	15	25	Relay 3. hydraulic circuit, relay splitter stage
17	15	15	Pulse generator, stop light
18	58	15	Work lamp in roof, rear
19	58	15	Work lamp in roof, front
20	58	15	Rear work lamp - mudguard
21	58	5	Illumination for clock, combi-instrument, pressure gauge, digital instrument panel
22	58	10	Left-hand side lamp, left-hand rear lamp
23	58	10	Right-hand side lamp, licence plate lamp, right-hand rear lamp
24	58	10	Trailer socket 58 R
25	58	10	Right-hand front trailer socket 58, left-hand trailer socket 58
26	R	10	Right-hand front trailer socket, right-hand trailer socket
27	L	10	Left-hand front trailer socket, left-hand trailer socket
28	Stop.	10	Trailer socket 54
29	58	25	Rear window heating

Note:
Fuse 19 - A larger (25 amp) fuse is required for the worklights above and the worklights in the cab A-pillar.

21. Electric diagrams and line connectors

21.1 Legend for electric diagrams

A = starter
AA = connection for trailer lights
AS = worklights
ASS = starter locking switch
AR = 4-WD
B = battery
BF = cab lighting
BL = flasher
BRL = brake light
DG = aternator
Diff = differential lock
DM = pressure gauge illumination
DR = rotary switch
DS = pushbutton
DSF = pushbutton splitter control
E = electronic box
EBZ = electrical operating hour counter
FS = foot pressure switch
FST = splitter stage
GB = fan
GK = glow plug
GAS = preheat switch
HD = high-pressure switch
HH = heater rear screen
HI = rear
IB = instrument illumination
IG = inductive pickup
IGE = impulse generator
K = licence plate illumination
KA = air conditioning
KB = indicator lamp flasher
KD = diff. lock indicator
KF = main beam indicator
KG = heater plug monitor indicator
KI = combi-instrument
KL = generator indicator
KS = disc brake indicator
KU = indicator light vacuum pressure
KBB = brake fluid indicator
KBR = drive shaft brake indicator
KFS = splitter stage indicator
KHB = hand brake indicator
KMB = draft sensing pin
KOE = engine oil pressure indicator
KRE = cold start relay
KWL = hazard warning indicator
KÖG = transmission oil pressure indicator
KÖT = oil temperature indicator
LA = loudspeaker
LK = line coupler
LP = air compressor
LV = line connector
LSS = steering column control switch
M = electric motor
MA = engine off
MK = magnetic coupling
MV = solenoid valve
MS = solenoid switch
MHF = solenoid splitter stage
MTG = engine temperature control
ND = low pressure switch
ÖG = oil pressure pickup
P = side lamp
RD = radio
RE = Relay
RKL = rotating beacon
S = headlamps
SD = socket
SH = horn
SI = fuse
SP = electric mirrors
ST = brake light switch
SU = buzzer
S1 = headlamps additional lamps
SBB = brake fluid reservoir switch
SCH = tail lamp
SMM = excess fuel for starting
STV = connector
SWA = screen washers
Summ = summation hydraulics
TG = tank
TBR = drum brake
TER = temperature control
TWK = temperature warning contact
U = vacuum pressure indicator
VB = connector
VO = forward
W = wipers
WG = warning lamp pickup
ZI = central instrument cluster
ZS = additional tail lamp
ZU = clock
ZW = PTO
ZWS = PTO selection indicator

21.2 Colour identification for electric wires

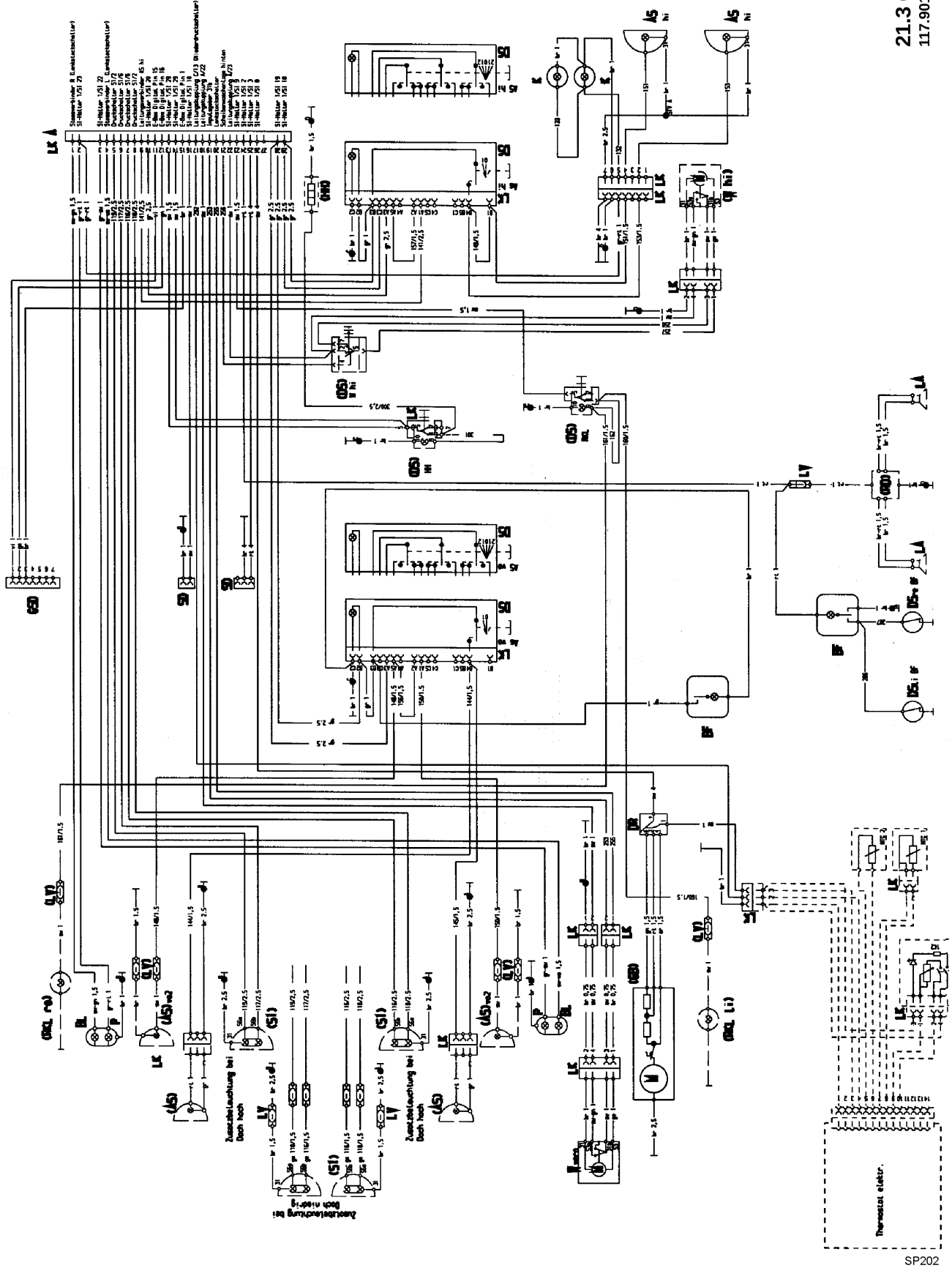
Colour of wire	Abbreviation	Mark
White (with black printing)	ws	General colour
red	rt	+ UB 30
black	sw	+ UB 15
yellow	ge	+ UB 15E
grey (basic lighting colour)	gr	+ UB 58
grey - black	gr-sw	+ UB 58 lighting left
grey - red	gr-rt	+ UB 58 lighting right
yellow	ge	+ UB power supply
brown	br	Body earth
brown - white	br-ws	Earth electronics
brown - yellow	br-ge	Earth sensors
black - green	sw-gn	Direction indicator right
black - white	sw-ws	Direction indicator left
orange	or	Additional wiring
blue	bl	
pink	rs	
turquoise	tk	
violet	vi	

21.3 Circuit diagrams

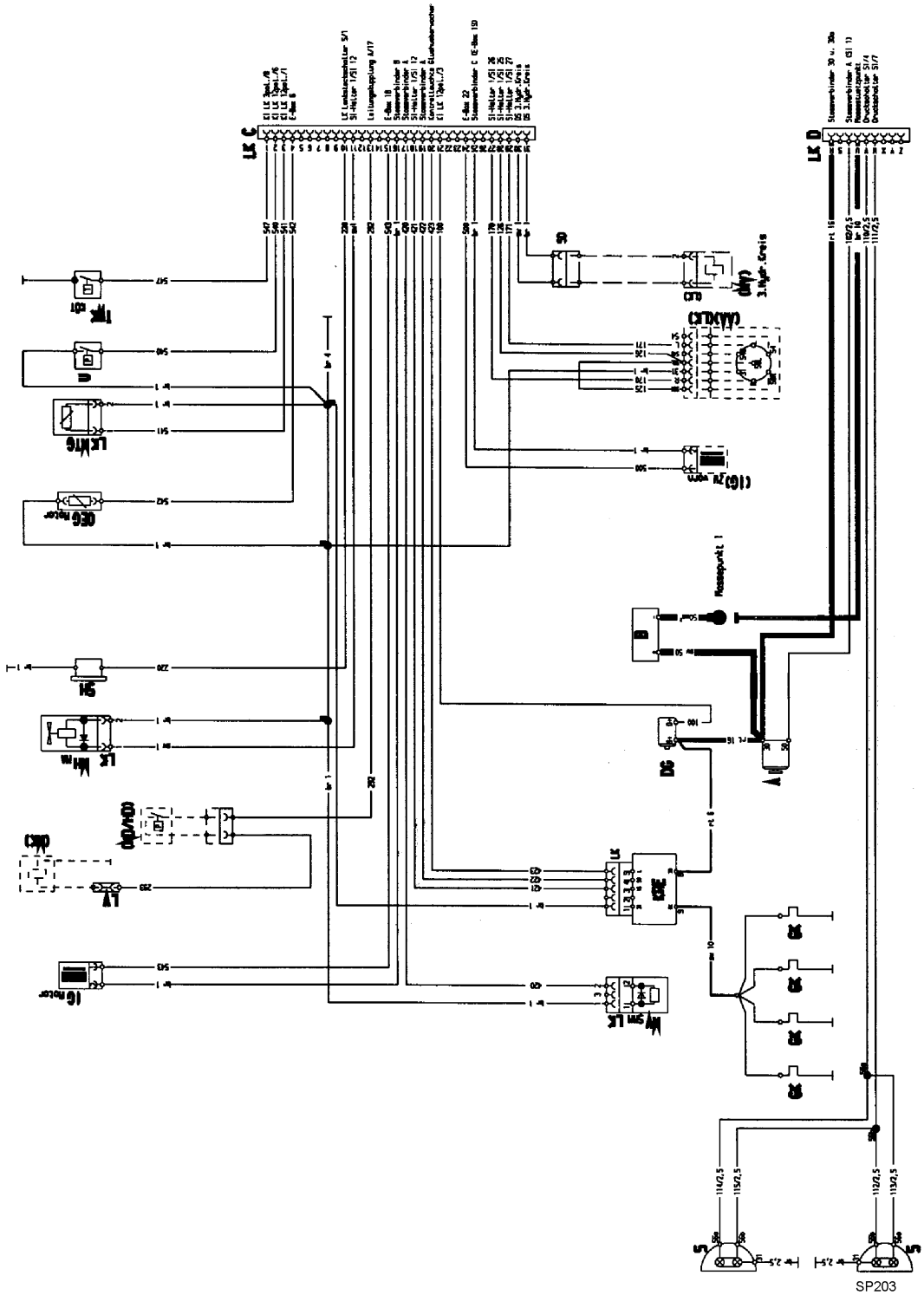
List of circuit diagrams

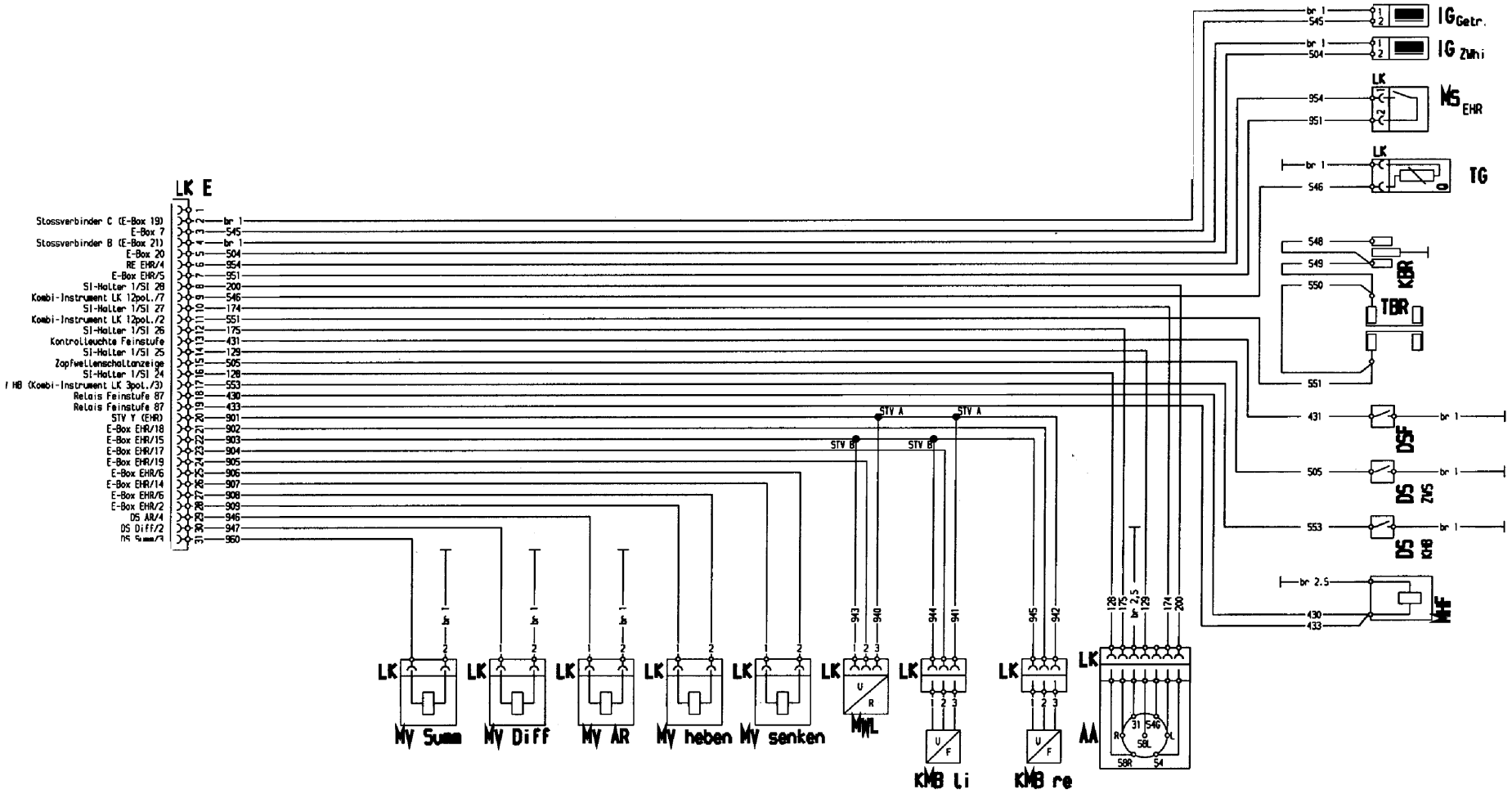
Sheet 2 = Cab
Sheet 3 = Engine
Sheet 4 = Transmission
Sheet 5 = Driver status
Sheet 6 = Driver status EPC
Sheet 8 = Front/rear PTO
Sheet 9 = Switch for 4-WD / differential lock
Sheet 10 = Splitter range control
Sheet 11 = Power supply for electronic boxes
Sheet 12 = Power supply + UB and starter motor control
Sheet 13 = Flasher unit
Sheet 14 = Lighting STVZO
Sheet 15 = Wipers and rotating beacon
Sheet 16 = Cold-start system
Sheet 17 = Engine switch-off
Sheet 18 = Dashpanel
Sheet 19 = Central instrument
Sheet 20 = Electro-hydraulic power lift control
Sheet 21 = Horn
Sheet 22 = Brake light
Sheet 23 = Work lamps rear
Sheet 24 = Front work lamp
Sheet 25 = Ventilation and air conditioning
Sheet 26 = Heated rear windscreen
Sheet 27 = Interior cab lighting and radio
Sheet 28 = Open socket separation point, 3rd hydraulic circuit, hydraulic summation
Sheet 29 = Heater
Sheet 30 = Connector A
Sheet 31 = Connector C
Sheet 32 = Connector D
Sheet 33 = Connector E

21.3 Cab
117.901.000.002 sheet 2

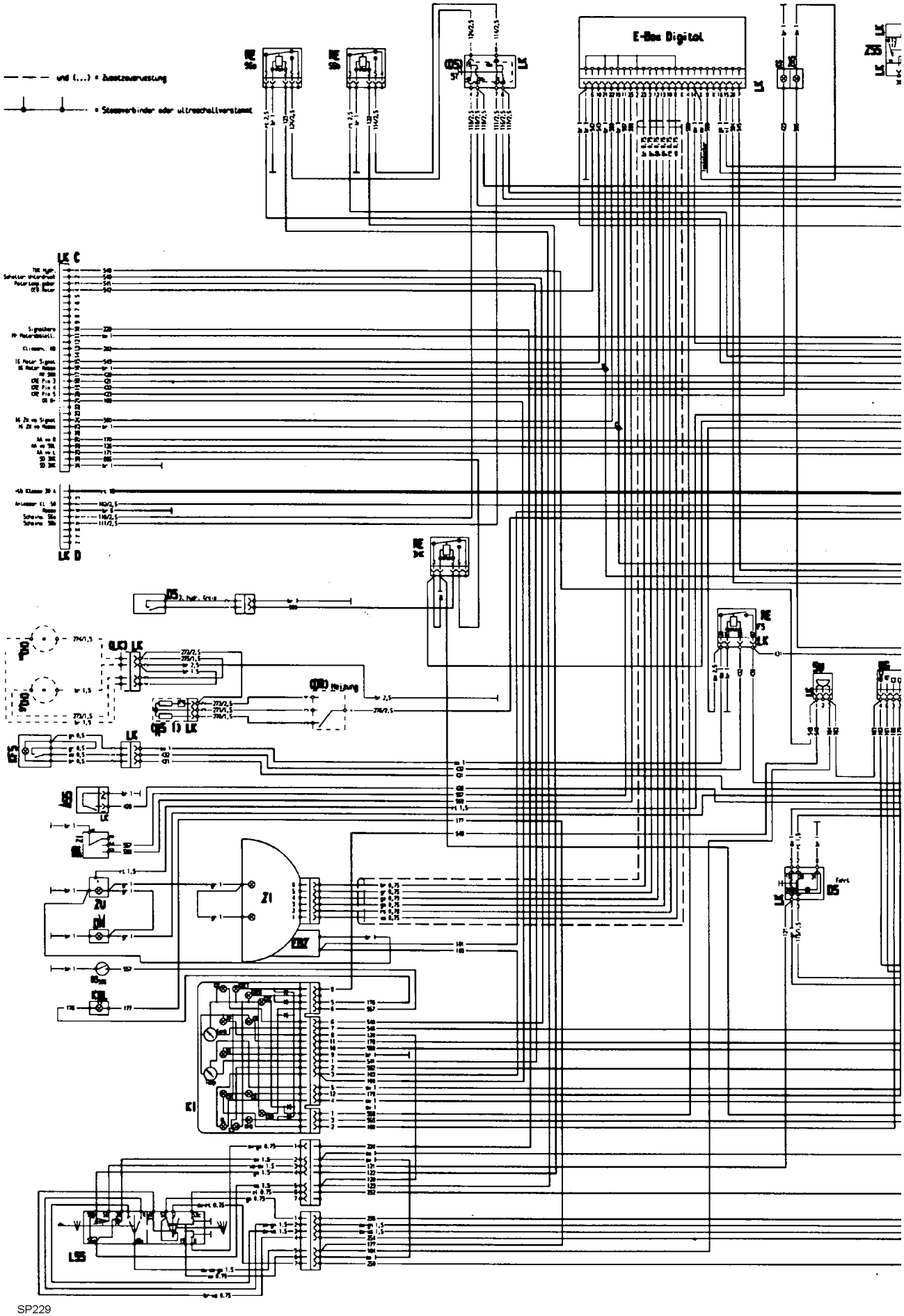


SP202

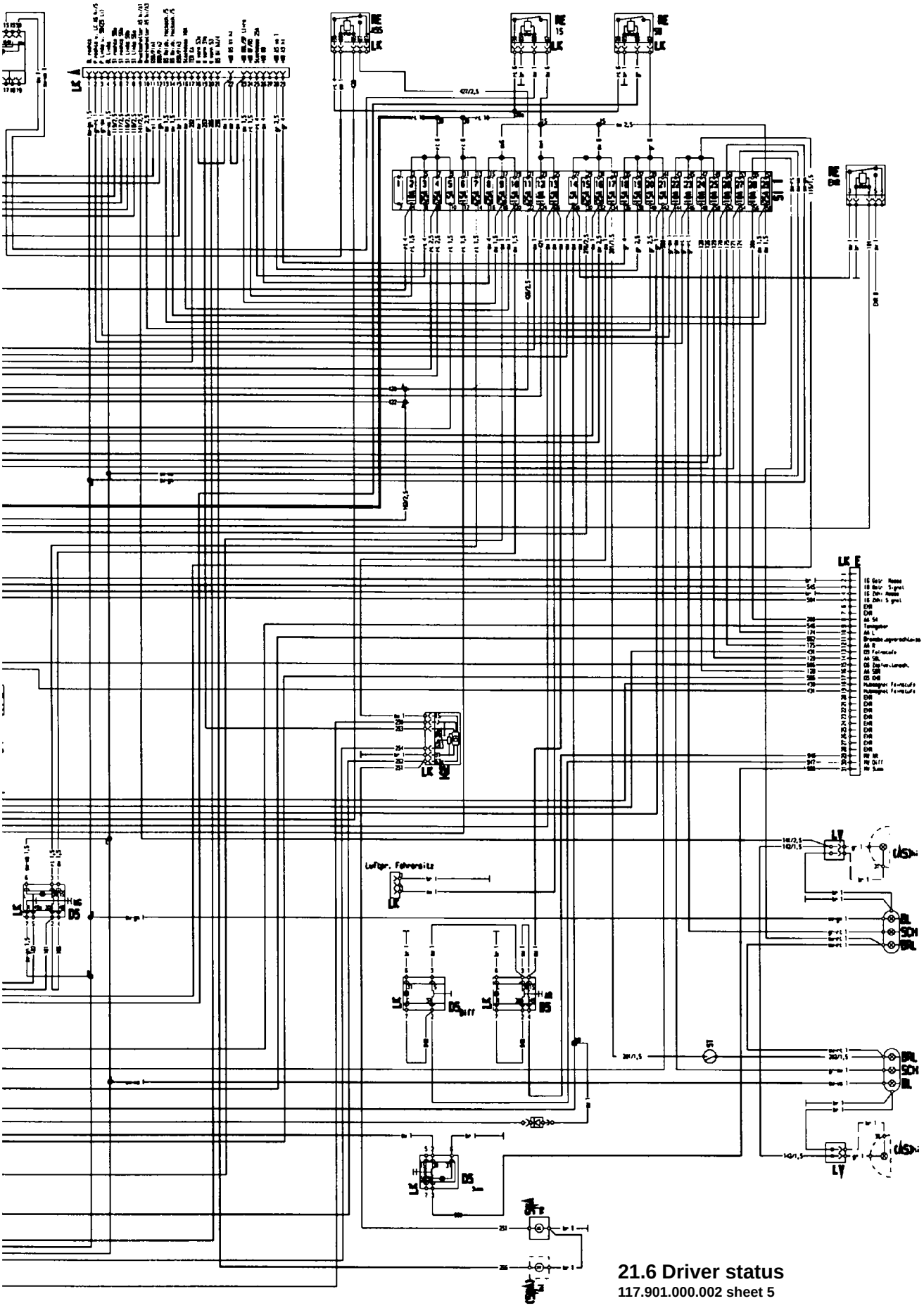

LK C
LK D
SP203



21.5 Transmission
117.901.000.002 sheet 4



SP229

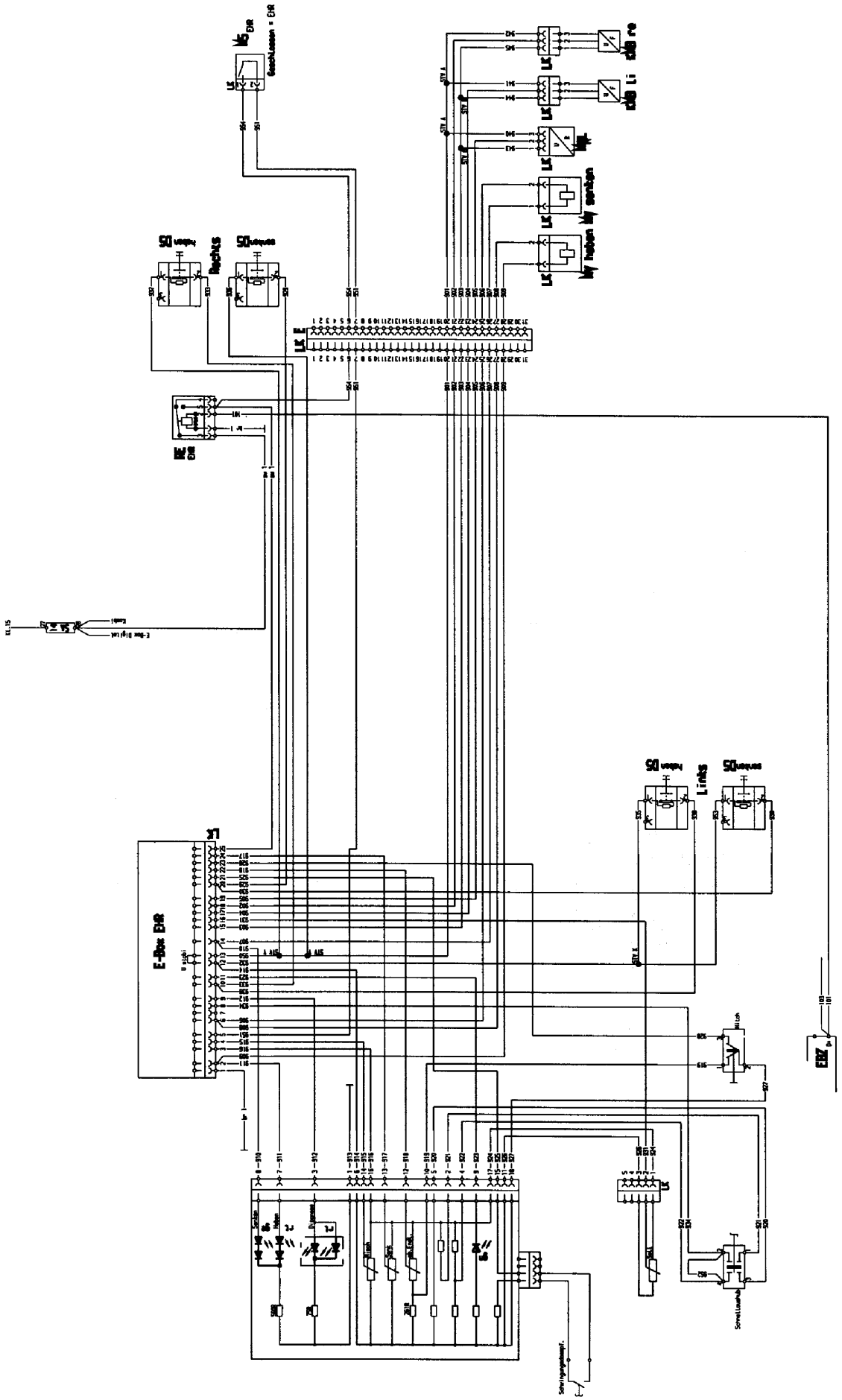


21.6 Driver status
117.901.000.002 sheet 5

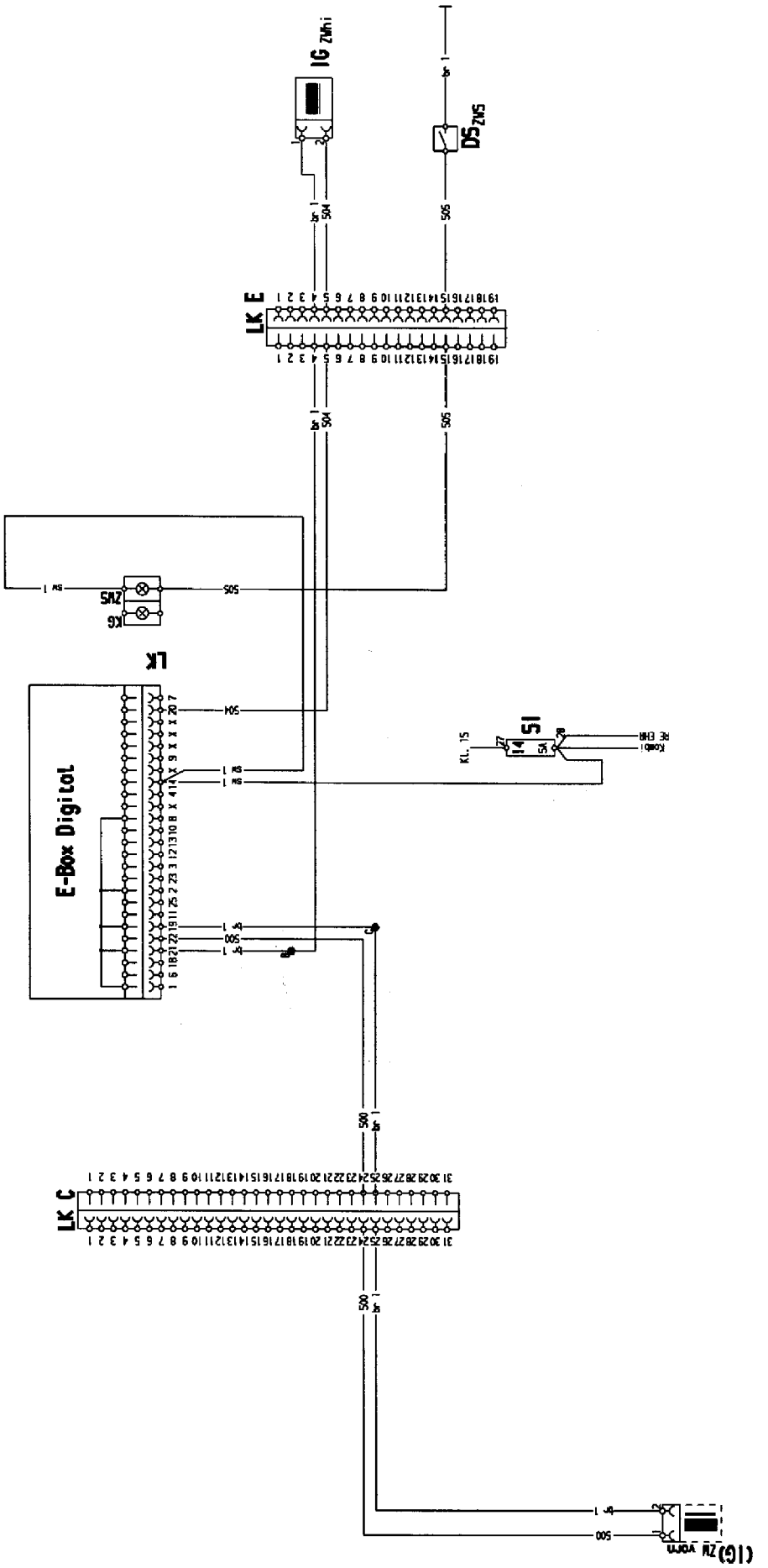
SP230

21.7 Driver status EPC

117.901.000.002 sheet 6

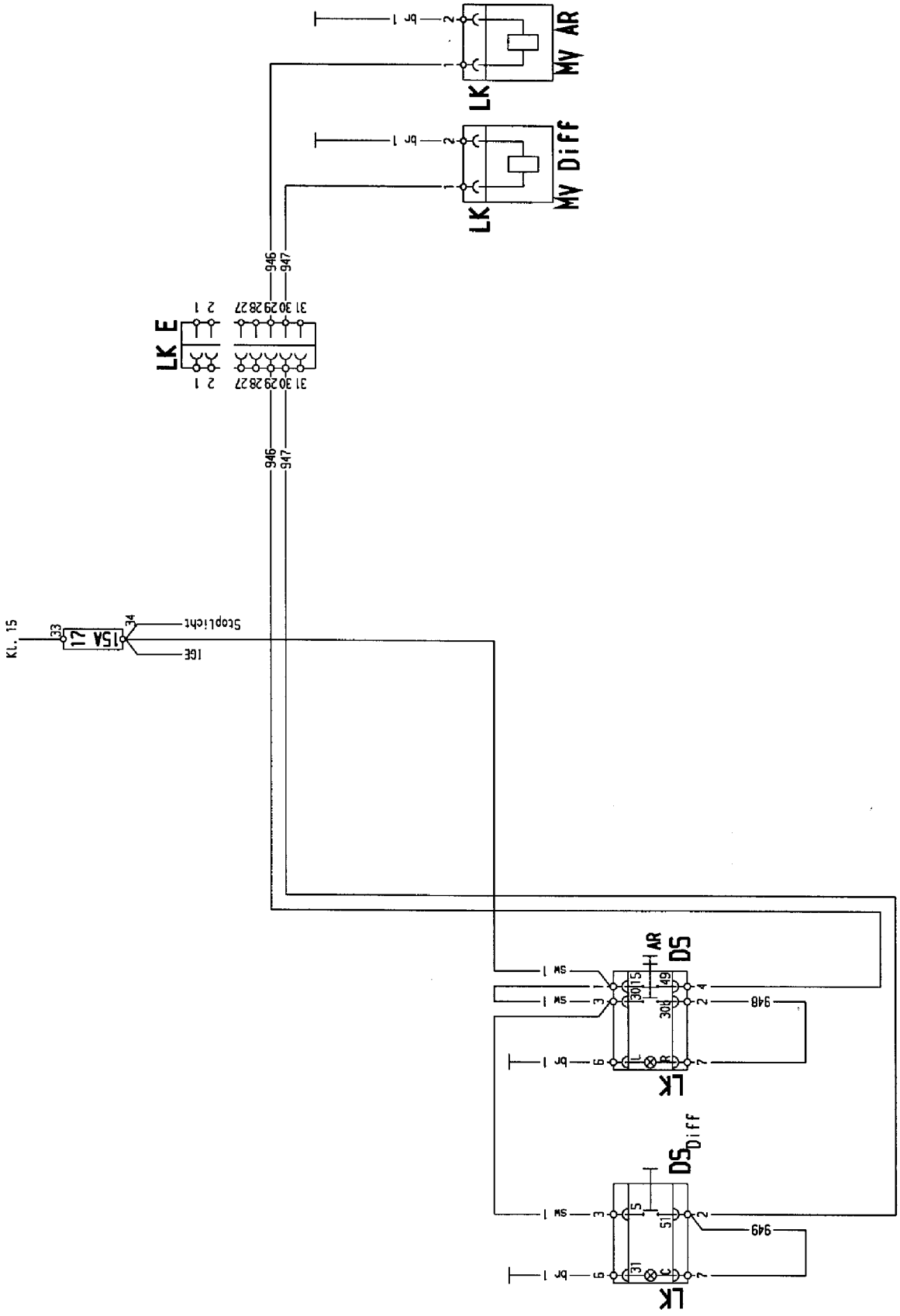


21.8 Front/rear PTO
117.901.000.002 Sheet 8



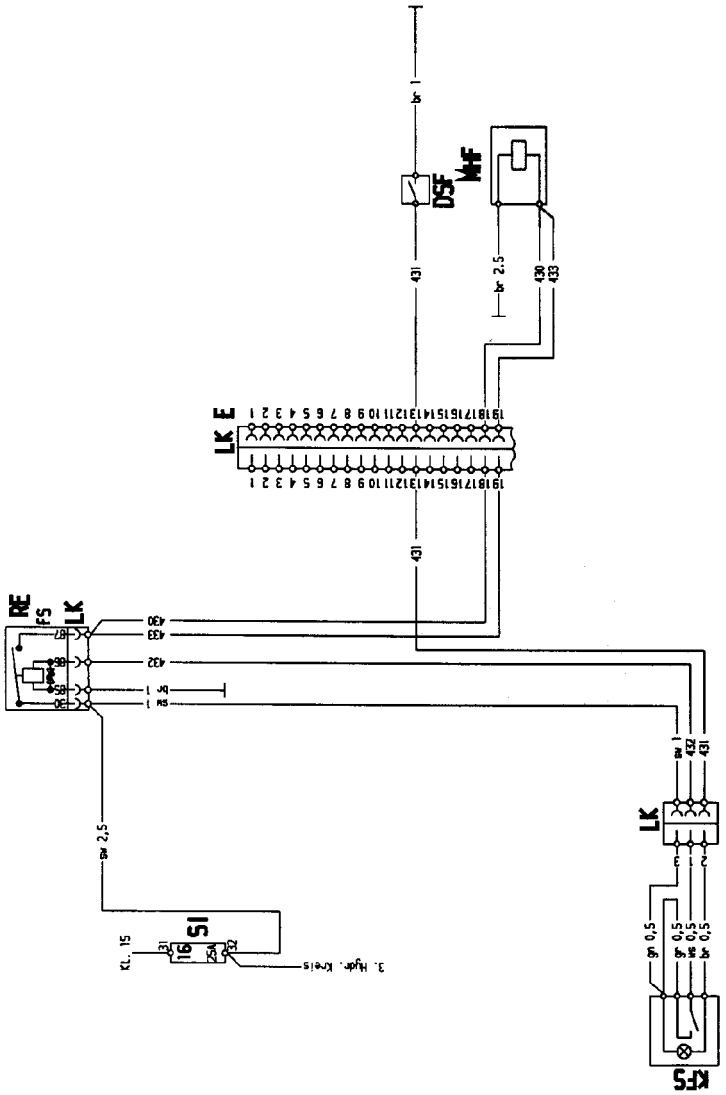
SP206

21.9 Switch for 4-WD / differential lock
117.901.000.002 Sheet 9

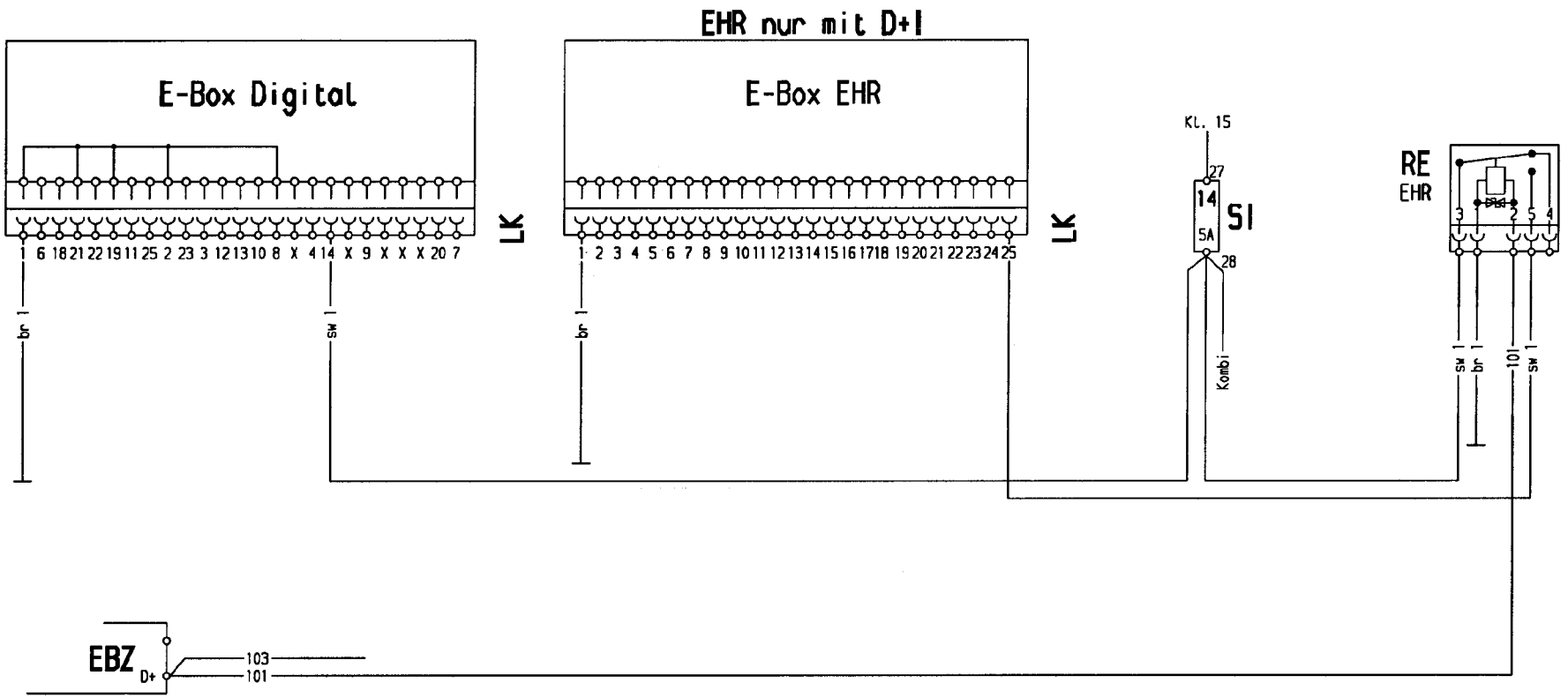


SP207

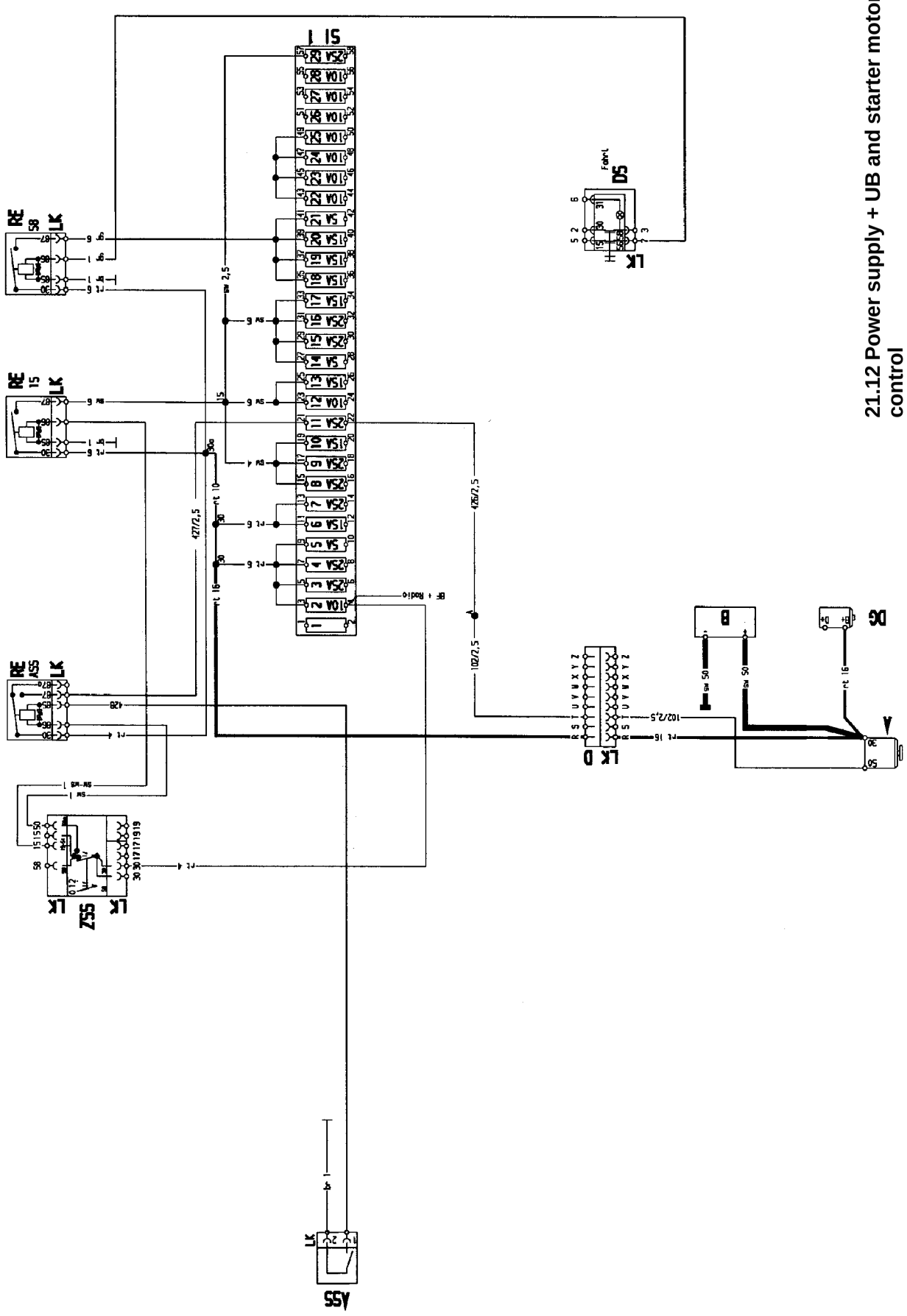
21.10 Splitter range control
117.901.000.002 sheet 10



SP208



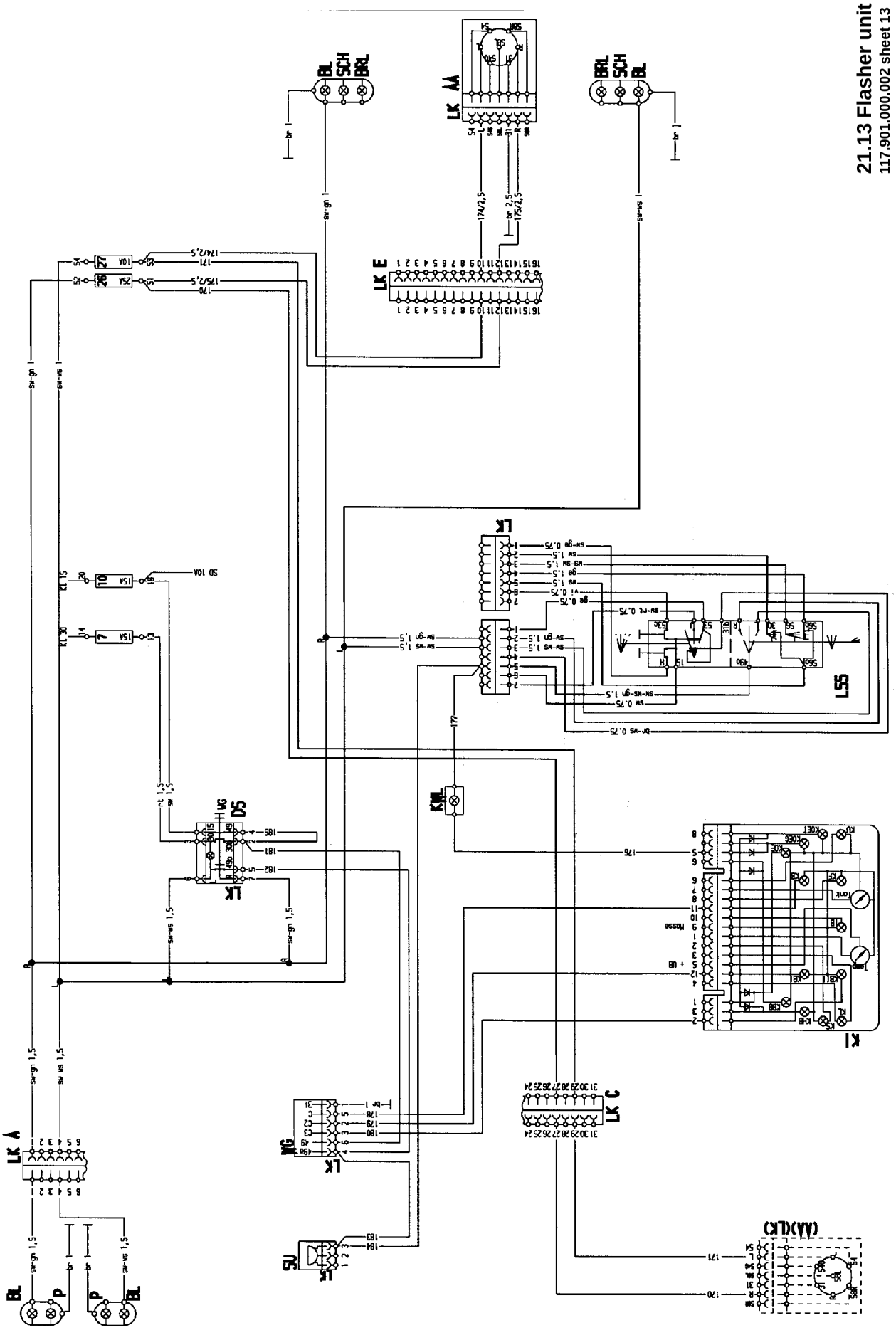
21.11 Power supply for electronic boxes
117.901.000.002 Sheet 11



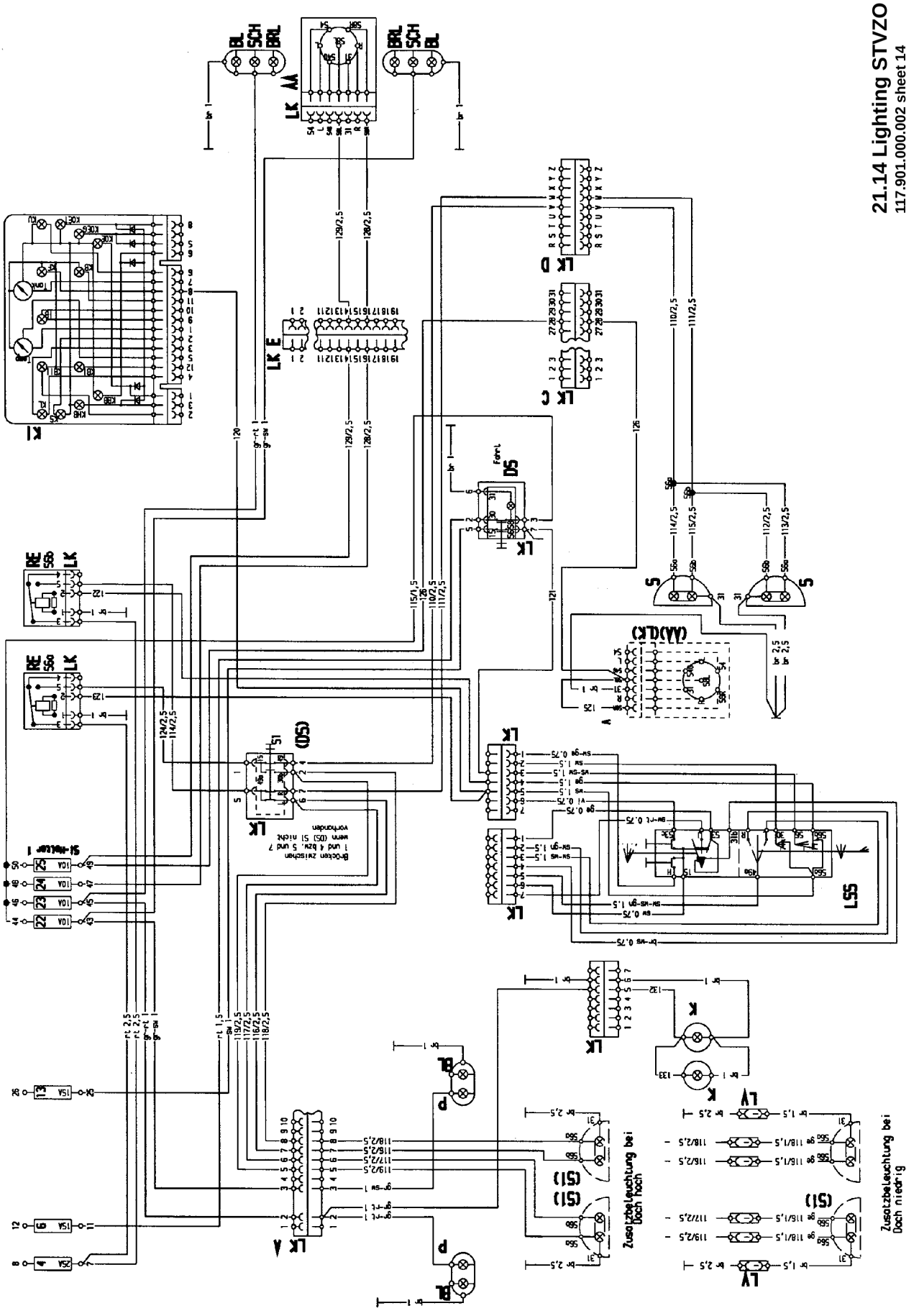
21.12 Power supply + UB and starter motor control
117.901.000.002 sheet 12

SP210

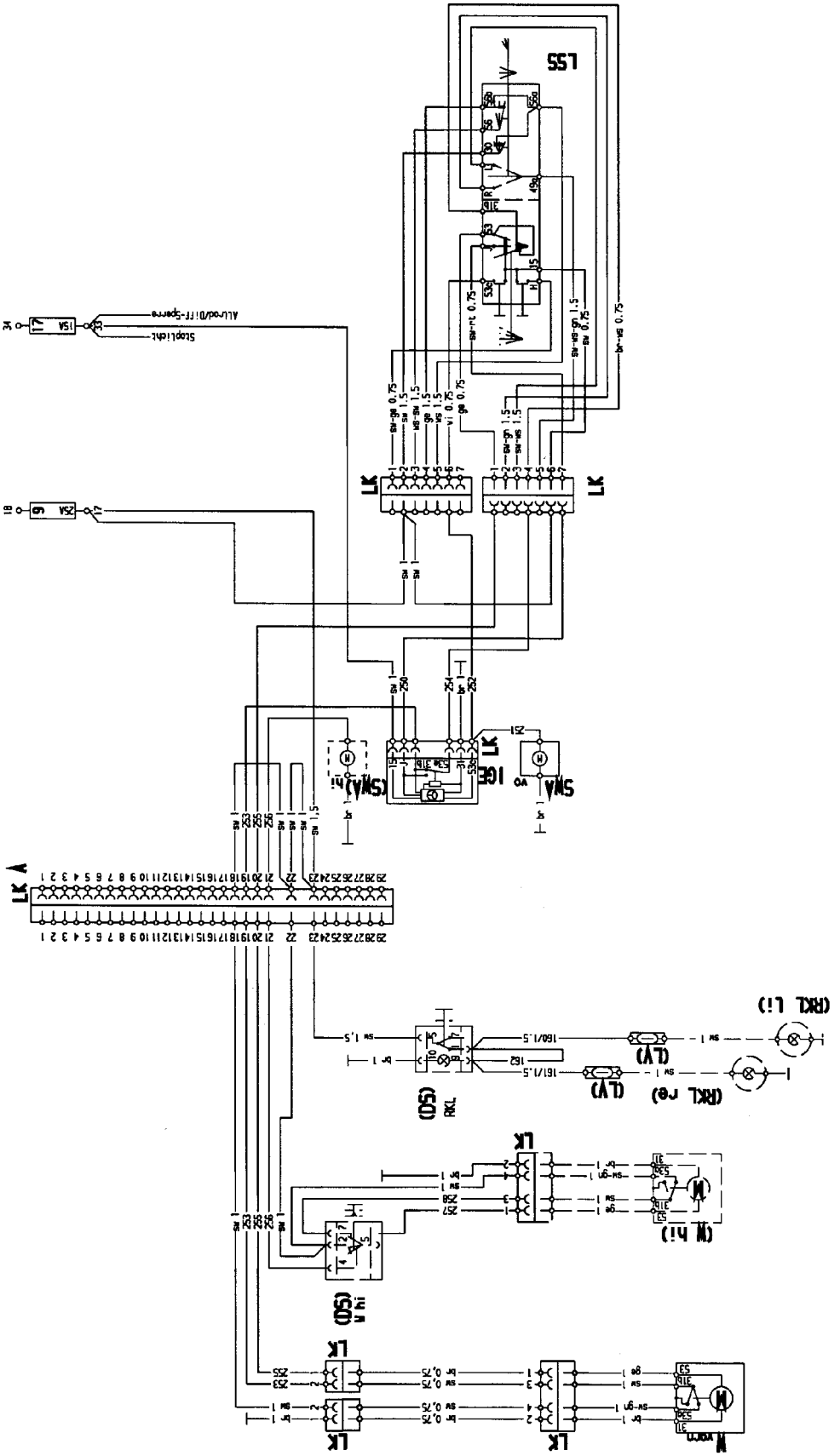
21.13 Flasher unit
117.901.000.002 sheet 13



21.14 Lighting STVZO
117.901.000.002 sheet 14

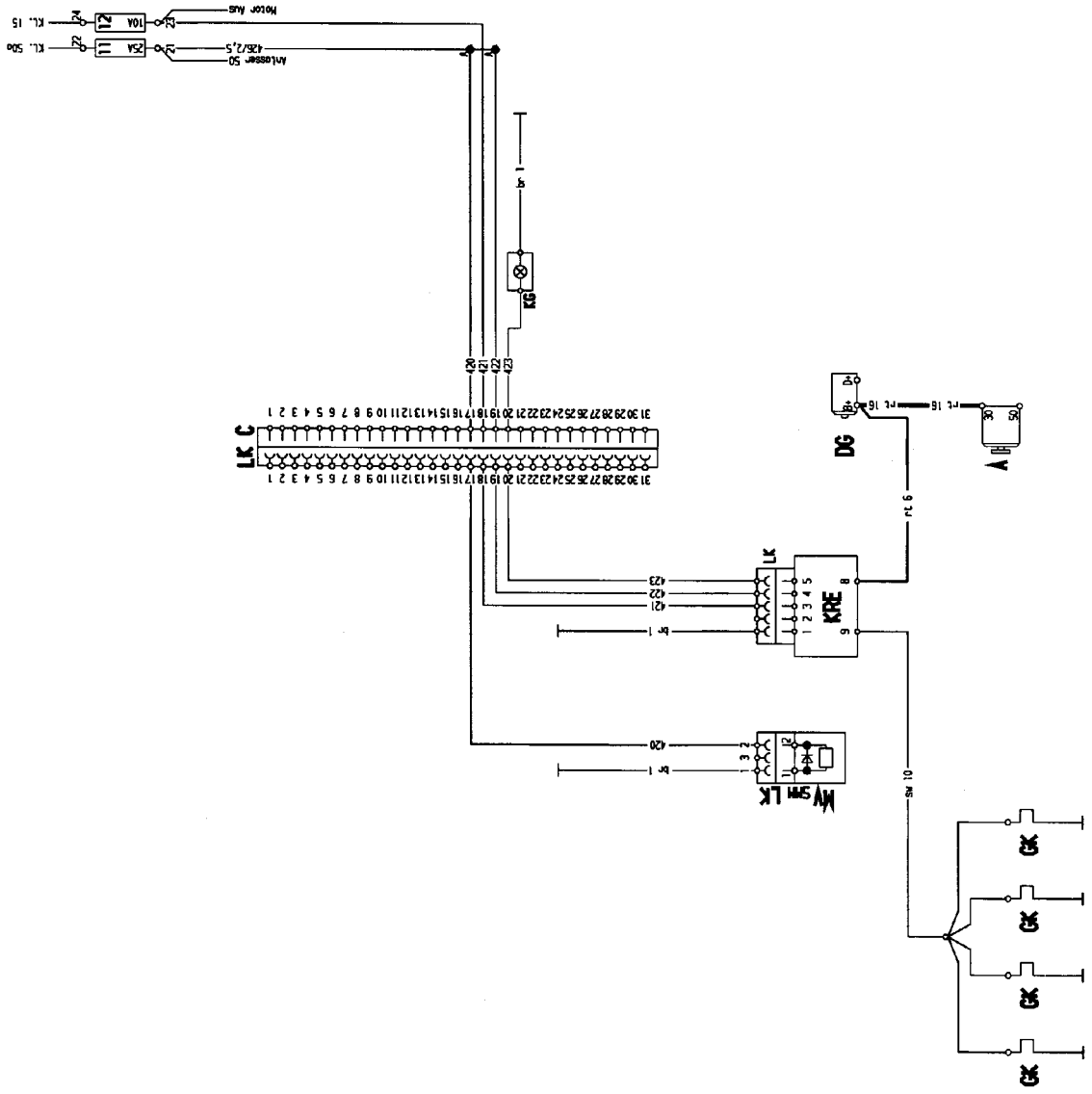


21.15 Wipers and rotating beacon
117.901.000.002 Sheet 15



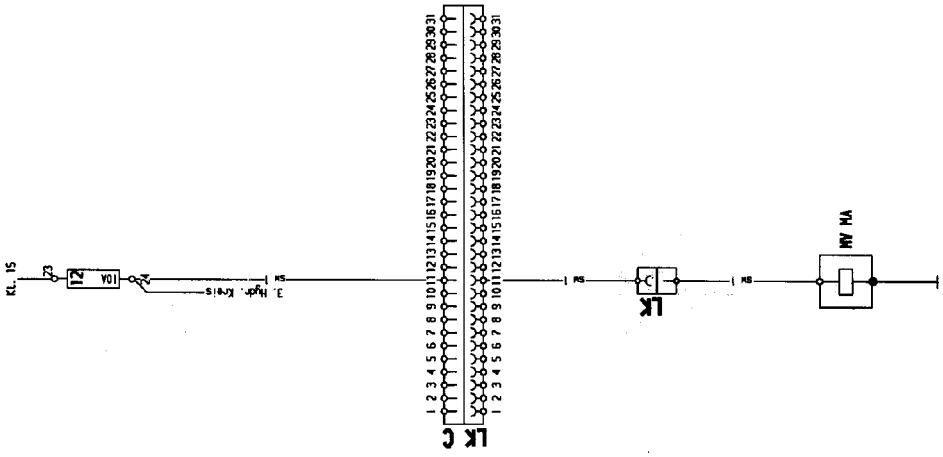
SP213

21.16 Cold-start system
117.901.000.002 sheet 16



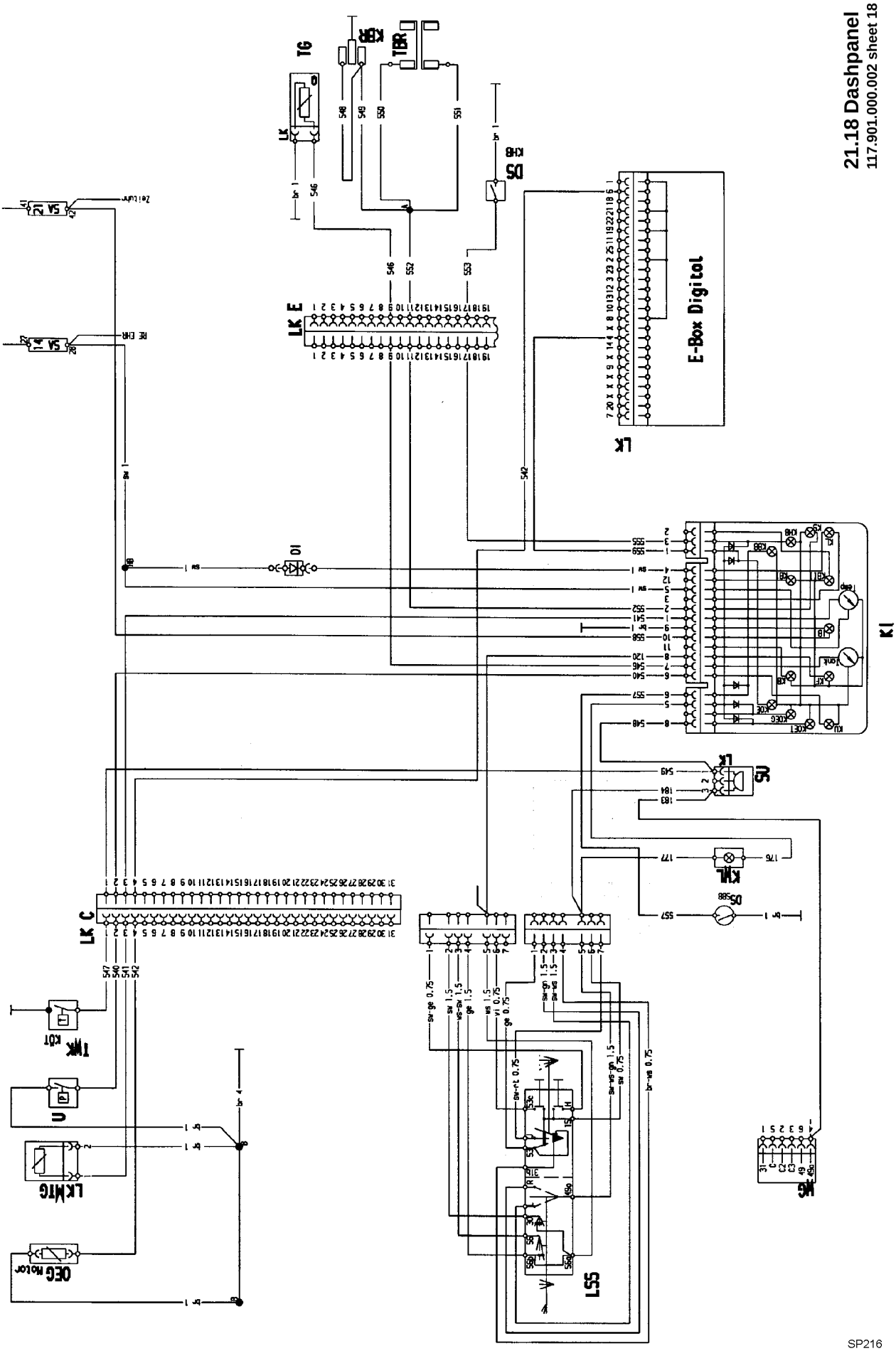
SP214

21.17 Engine switch-off
117.901.000.002 sheet 17

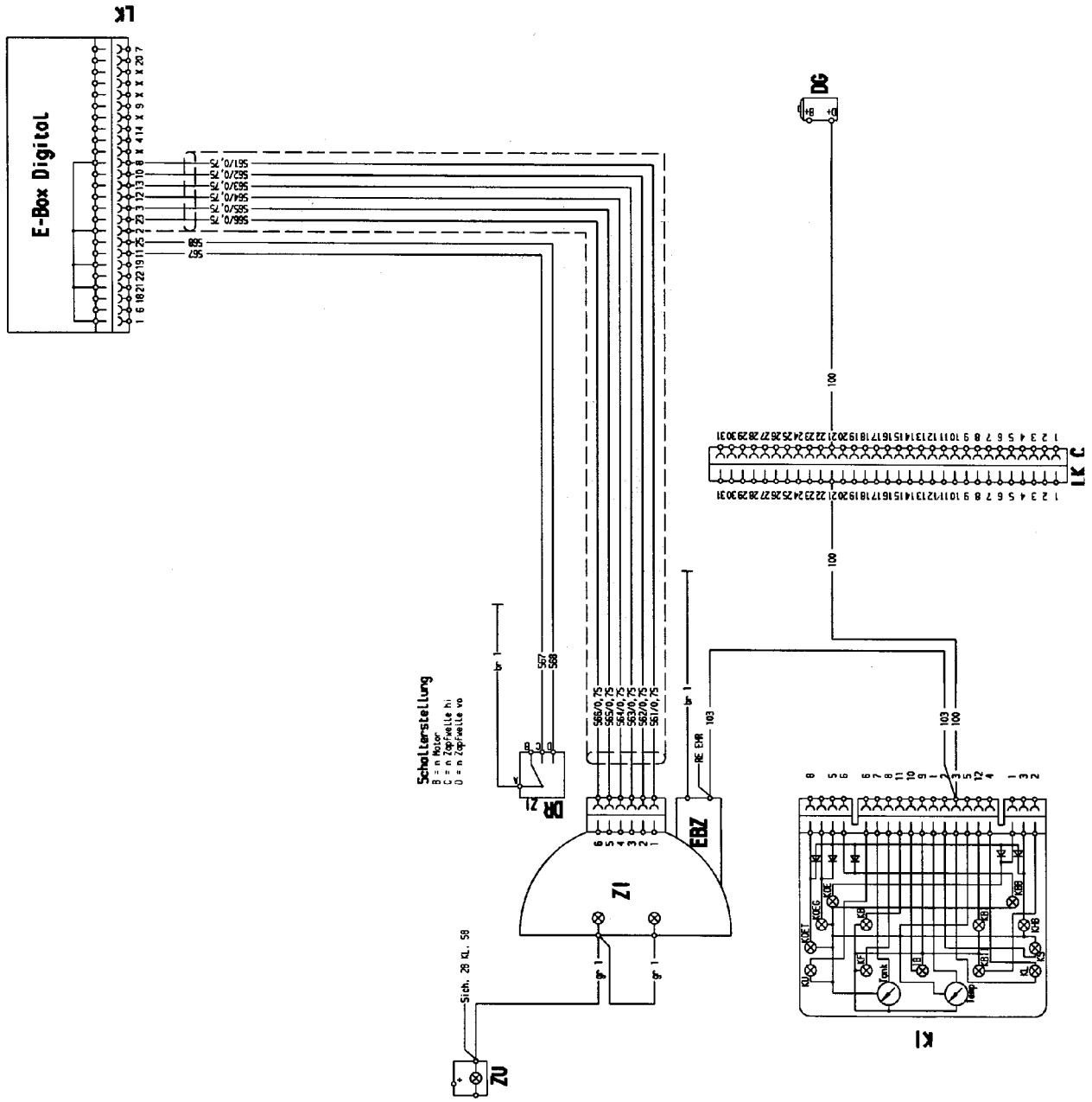


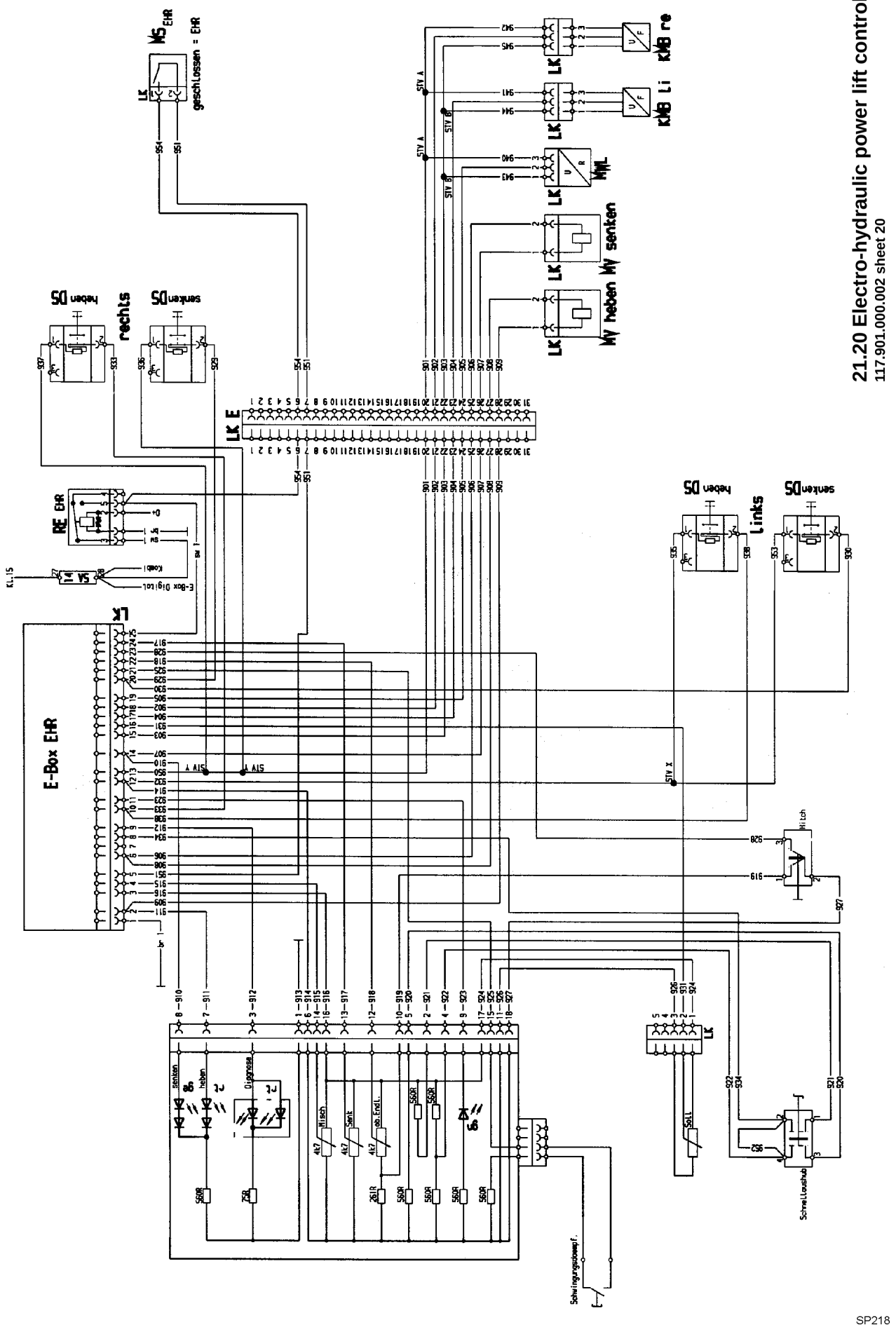
SP215

21.18 Dashpanel
117.901.000.002 sheet 18

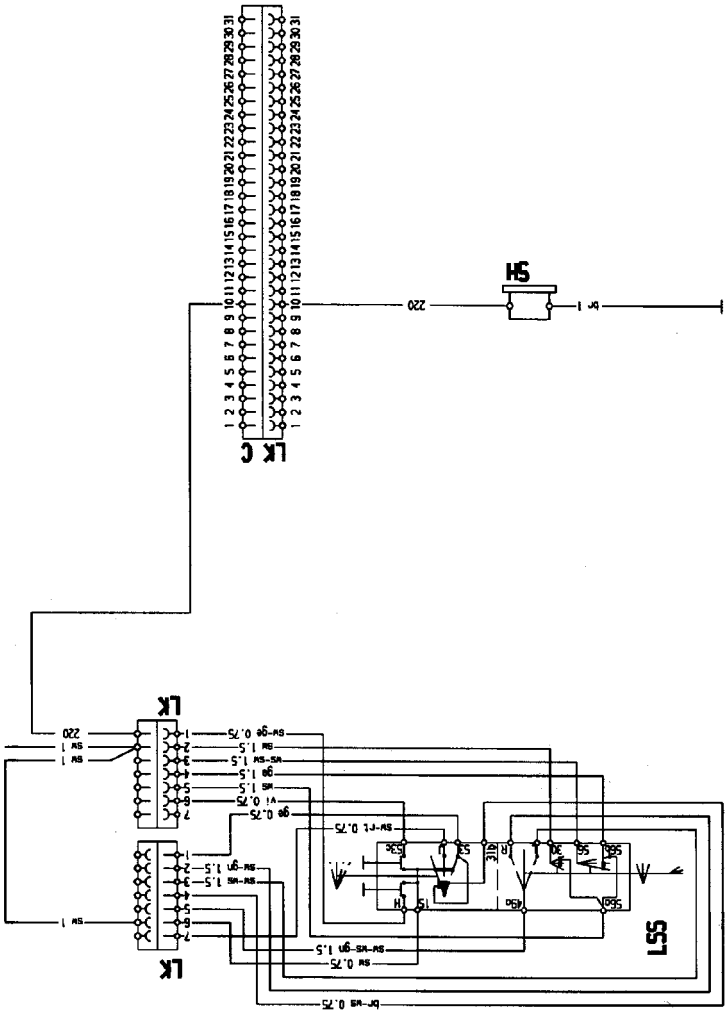


21.19 Central instrument
117.901.000.002 sheet 19



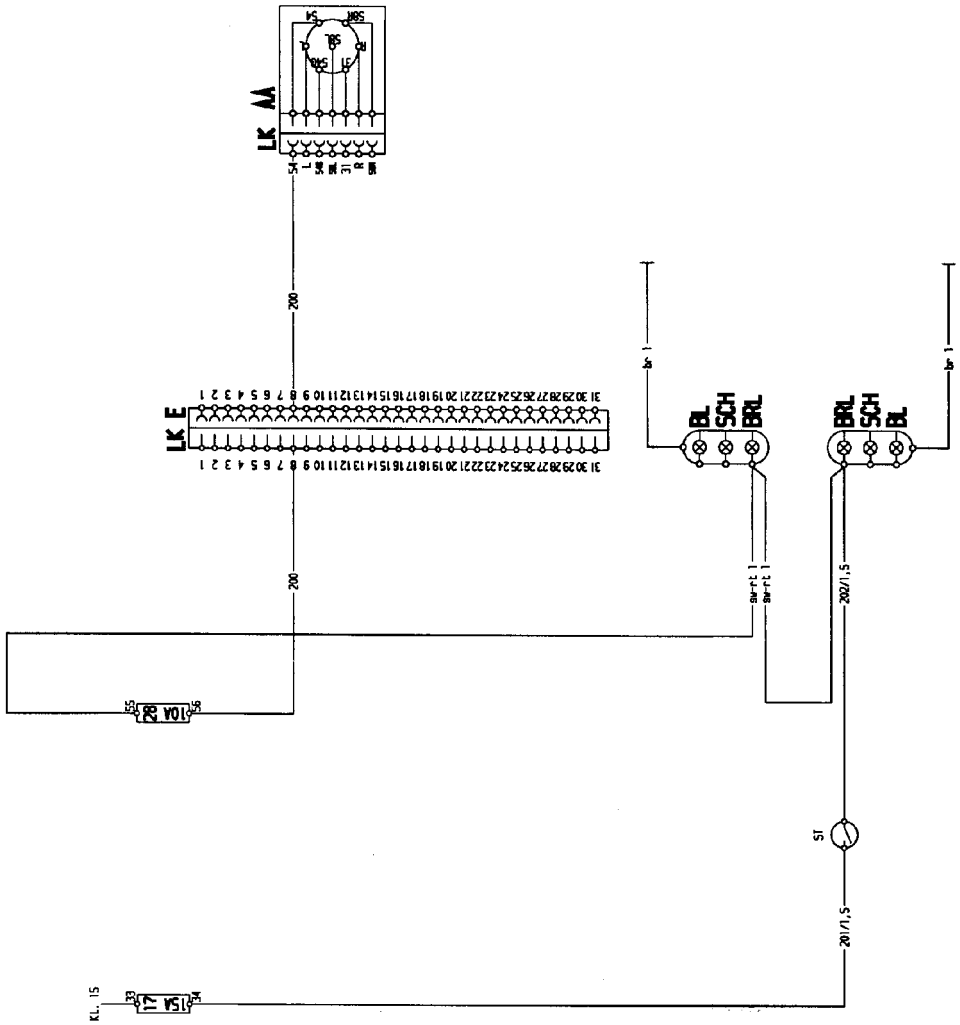

21.20 Electro-hydraulic power lift control
117.901.000.002 sheet 20
E-Box EHR
LK E
LK
rechts
links
heben DS
senken DS
KMB re
KMB li
MWL
MV heben
MV senken
geschlossen = EHR
RE EHR
Hitch
Schwingungsdämpf.
Schnellaushub
SP218

21.21 Horn
117.901.000.002 sheet 21



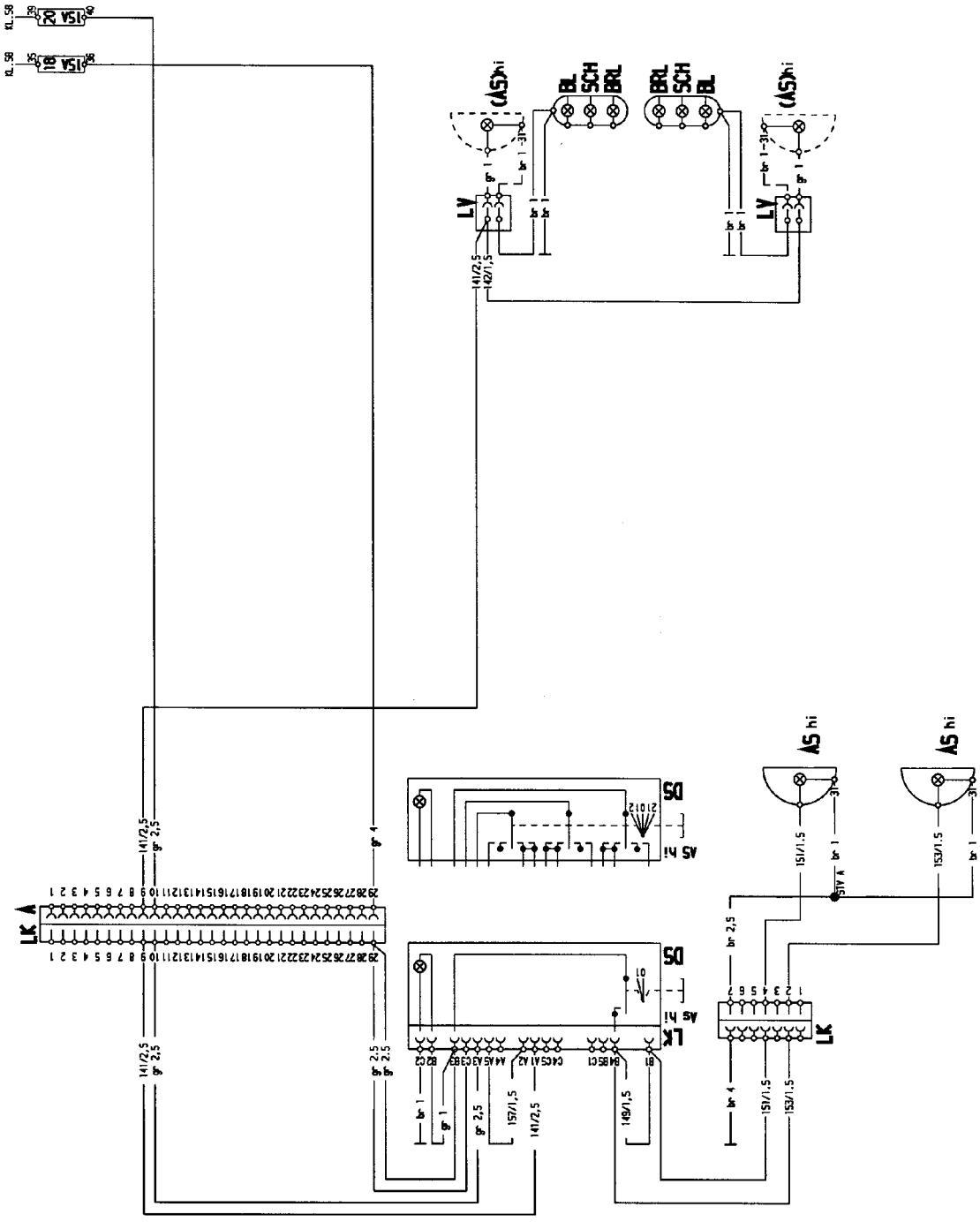
SP219

21.22 Brake light
117.901.000.002 sheet 22

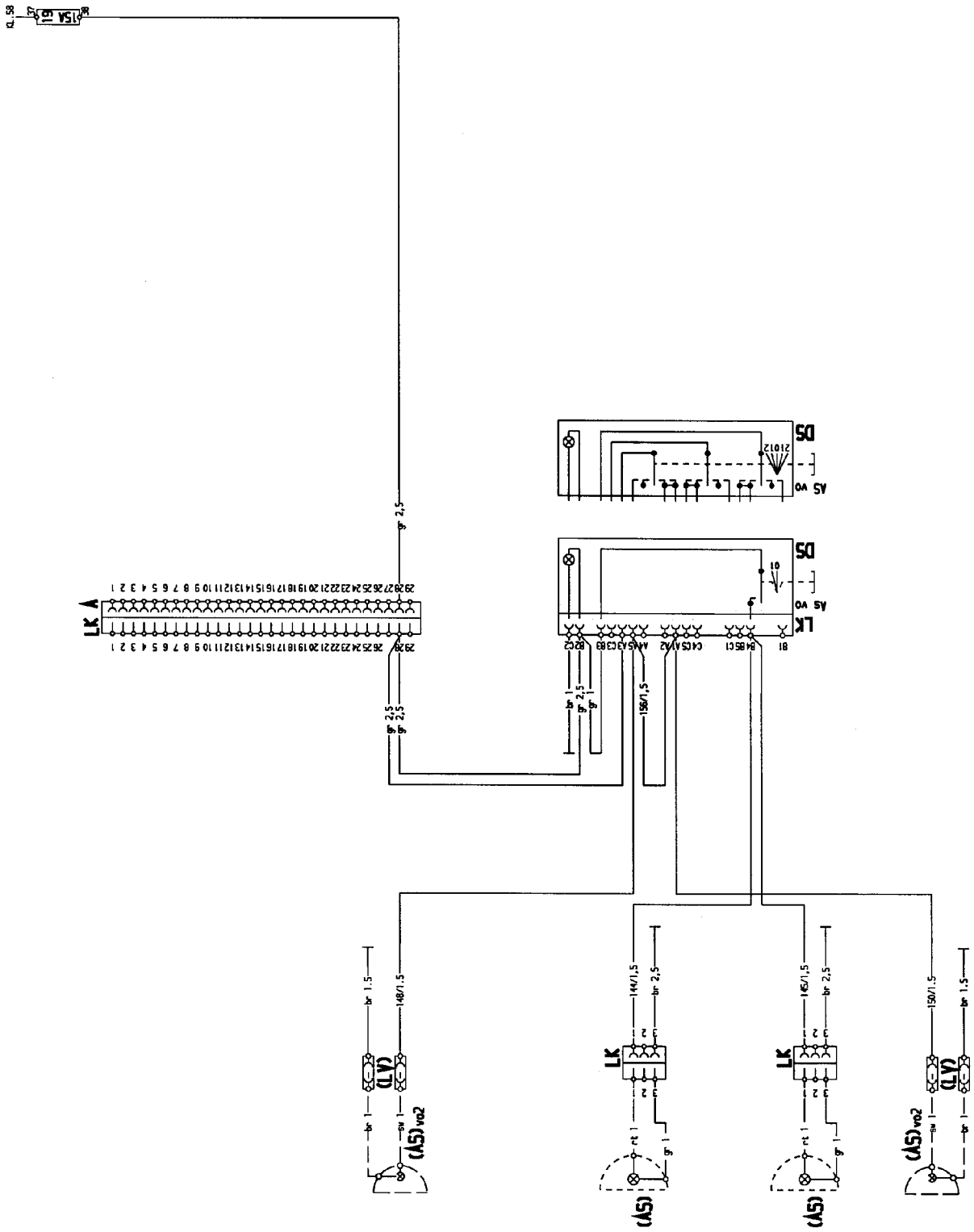


SP220

21.23 Work lamps rear
117.901.000.002 sheet 23

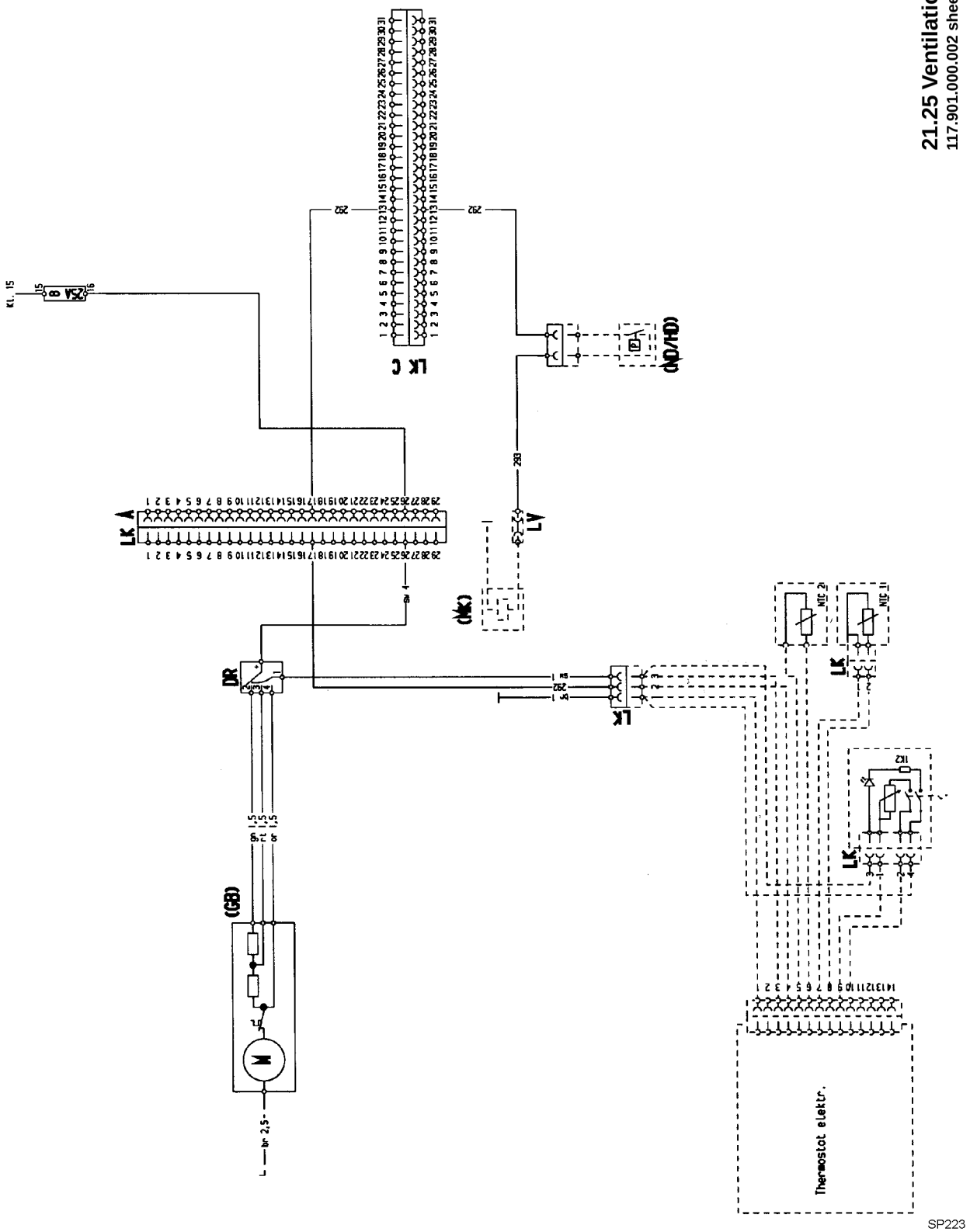


21.24 Front work lamp
117.901.000.002 sheet 24

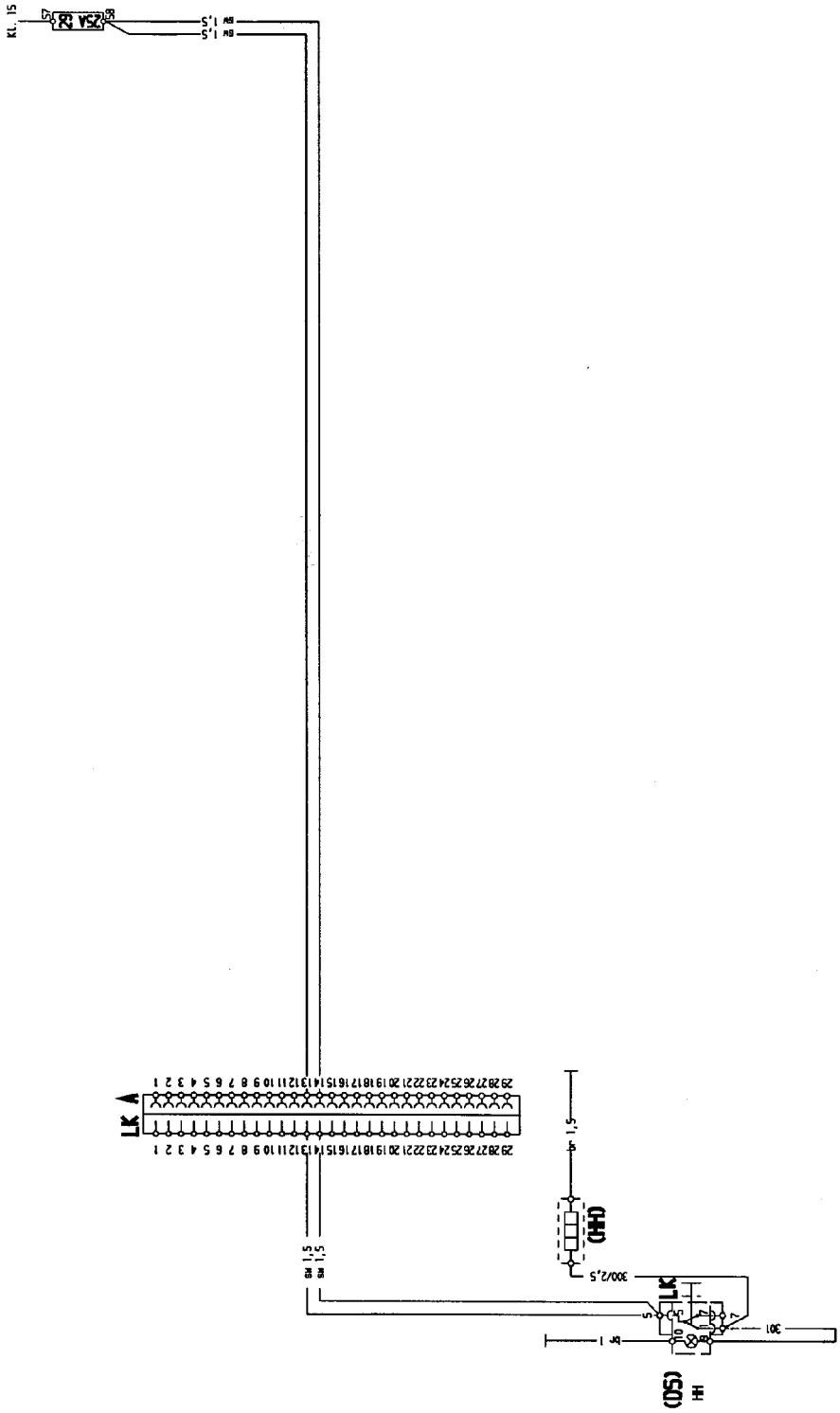


SP222

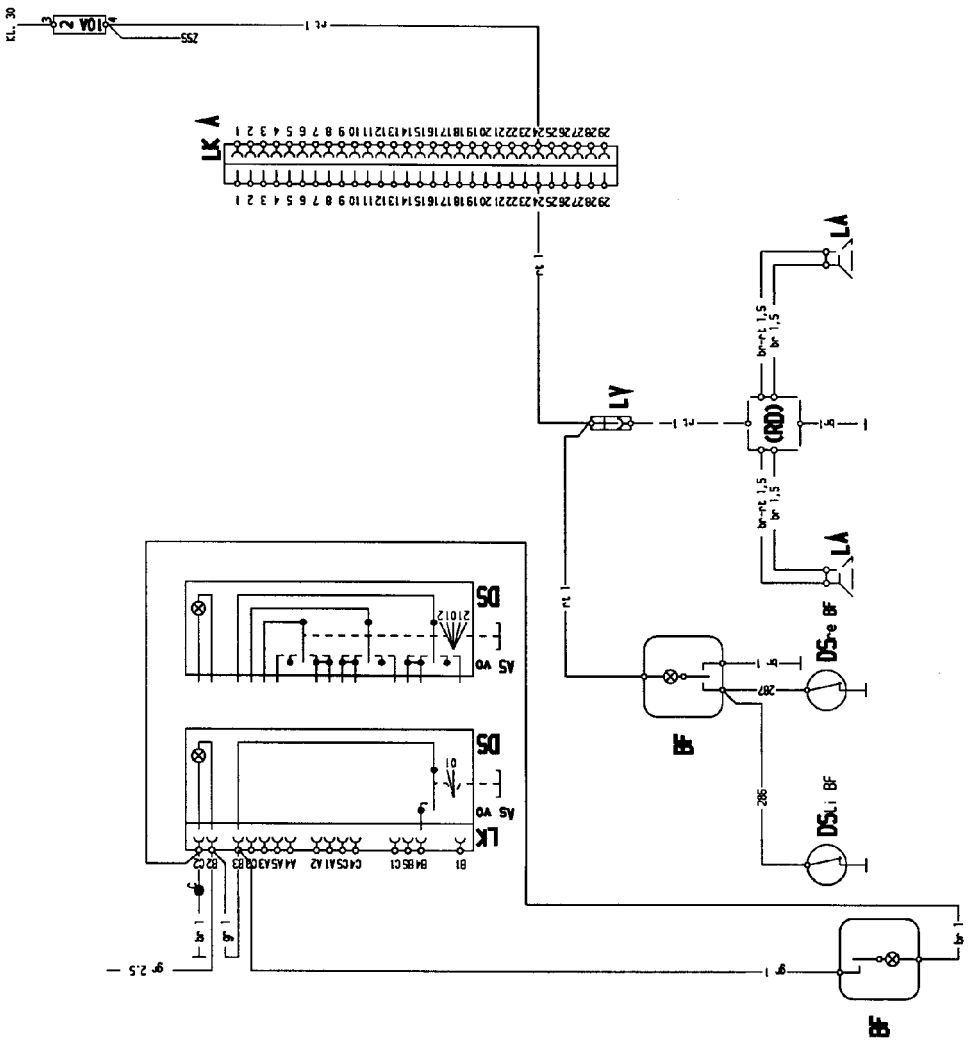
21.25 Ventilation and air conditioning
117.901.000.002 sheet 25



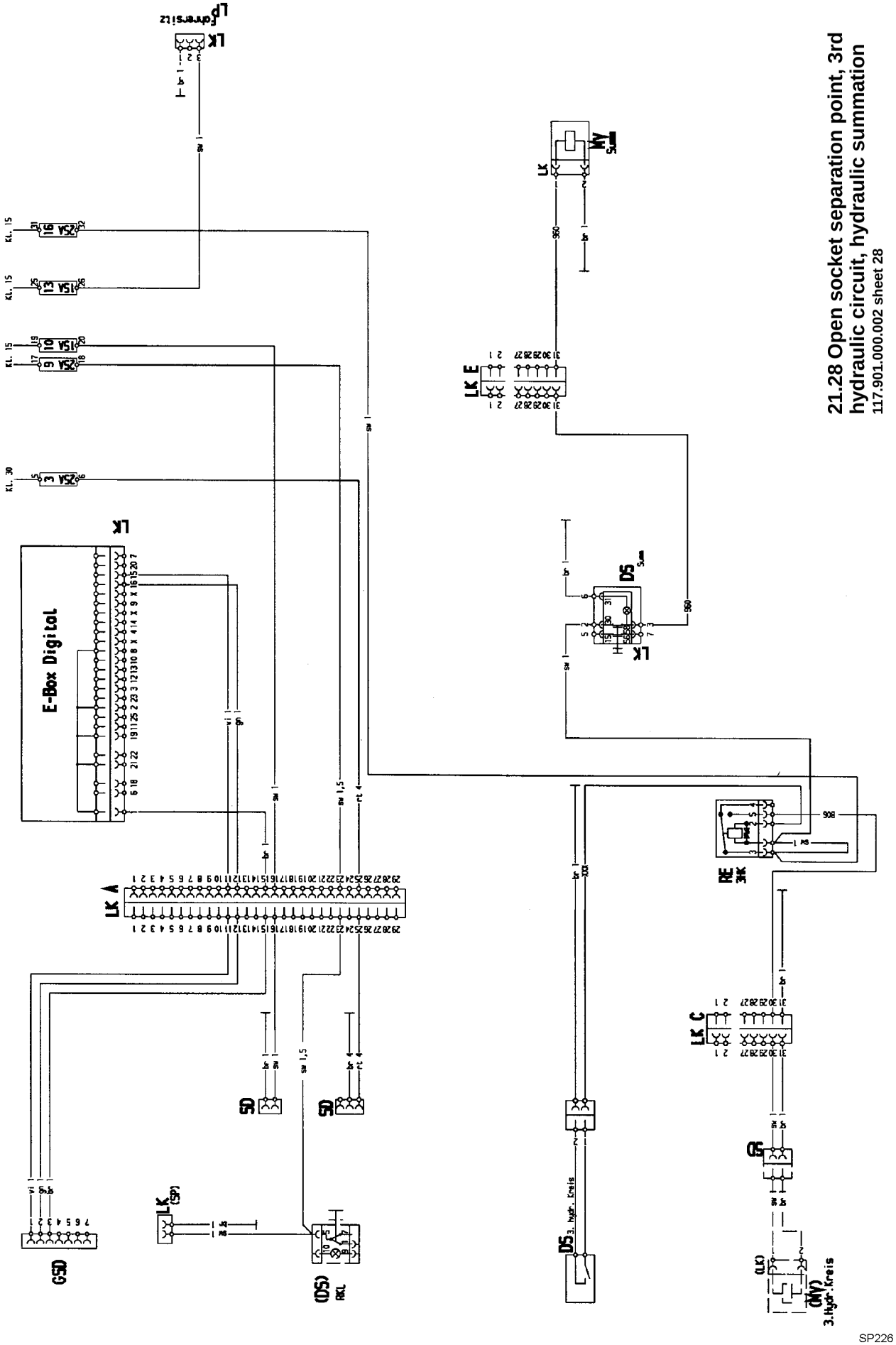
21.26 Heated rear windscreen
117.901.000.002 Sheet 26



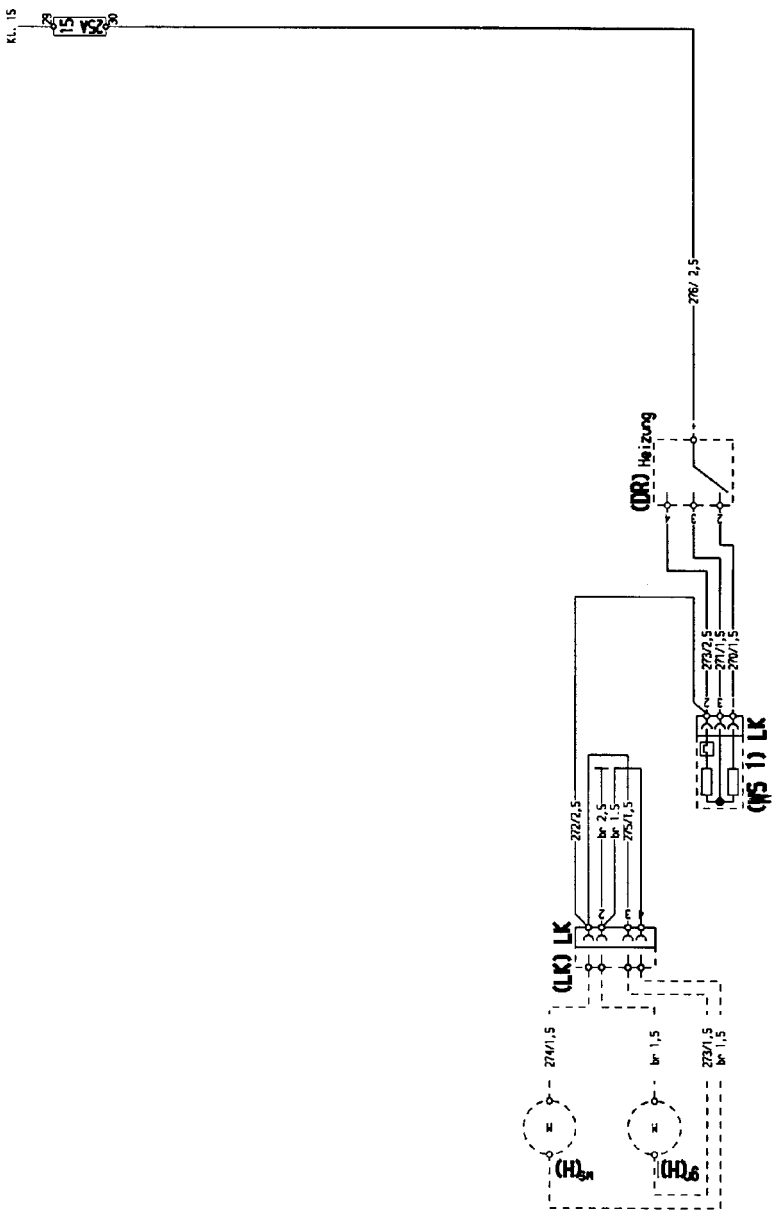
SP224



SP225


21.28 Open socket separation point, 3rd hydraulic circuit, hydraulic summation
117.901.000.002 sheet 28
E-Box Digital
LK
LK A
LK E
LK C
RE 3K
DS
3. hydr. Kreis
SP226

21.29 Heater
117.901.000.002 sheet 29



SP227

21.30 Line coupler A

Plan view of pin assignment

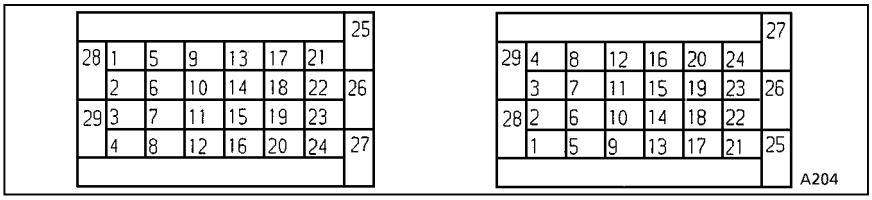


Fig.78

pin side	pin	jack side
connector R (steering column control switch)	1	BL right-hand side
SI-holder 1/SI 23	2	P right-hand side and LK AS rear/5
SI-holder 1/SI 22	3	P left-hand side and SD (ZS left-hand side)
STV L (LSS)	4	BL left-hand side
DS head lamps additional lamps/2	5	headlamps additional lamps right-hand side 56a
DS headlamps additional lamps /6	6	headlamps additional lamps right-hand side 56b
DS headlamps additional lamps/6	7	headlamps additional lamps left-hand side 56b
DS headlamps additional lamps /2	8	headlamps additional lamps left-hand side 56a
LV rear AS	9	DS rear AS/A1
SI-holder 1/SI 20	10	DS rear AS/A3
E digital pin 15	11	implement socket pin 1
E digital pin 16	12	implement socket pin 2
SI-holder 1/SI 29	13	DS heated rear windscreen/5
SI-holder 1/SI 29	14	DS heated rear windscreen/5
E digital pin 1	15	implement socket pin 3
SI-holder 1/SI 10	16	10 A socket
connector C/13 (low pressure switch)	17	temperature controller air-conditioning
connector A/22	18	front wiper 53a
impulse generator 31b	19	front wiper 31b
combination switch	20	front wiper 53
rear windscreen washers	21	DR W rear /4
connector A/23	22	+UB DS rear W
SI-holder 1/SI 9	23	+UB RKL SP left-hand/right-hand side
SI-holder 1/SI 2	24	+UB lighting cab radio
SI-holder 1/SI 3	25	socket 25 A
SI-holder 1/SI 8	26	+UB fan
-	27	-
SI-holder 1/SI 19	28	+UB front AS
SI-holder 1/SI 18	29	+UB rear AS

21.31 Line coupler C

Plan view of pin assignment

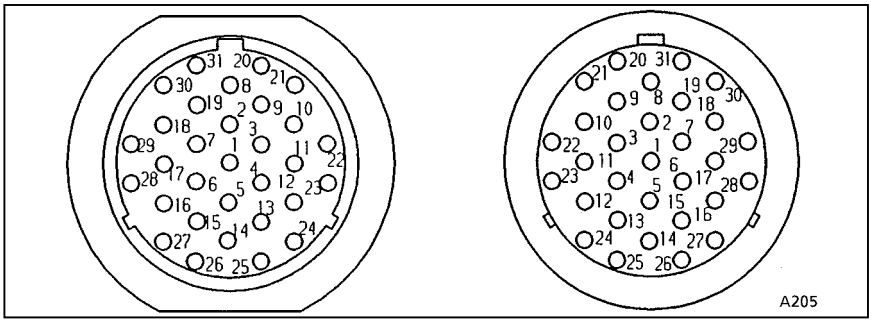


Fig.79

pin side	pin	jack side
temp. warn. contact hydr.	1	buzzer 3-pole/1
vacuum pressure switch	2	KI LK 12-pole/6
engine temp. pickup	3	KI LK 12-pole/1
engine oil pressure pickup	4	E-box 6
-	5	-
-	6	-
-	7	-
-	8	-
-	9	-
Horn	10	LK LSS S/1
Lifting magnet engine shutoff	11	SI-holder 1/SI 12
-	12	-
KA ND	13	LK A/17
-	14	-
IGE engine signal	15	E-box 18
IGE engine earth	16	STV B
MV SMM	17	STV A
KRE pin 3	18	SI-holder 1/SI 12
KRE pin 4	19	STV A
KRE pin 5	20	KG
DG D+	21	KI LK 12-pole/3
-	22	-
-	23	-
IG front PTO, signal	24	E-box 22
IG front PTO, earth	25	STV C (E-box 19)
-	26	-
AA front R	27	SI-holder 1/SI 26
AA front 58L	28	SI-holder 1/SI 25
AA front L	29	SI-holder 1/SI 27
socket 3rd hydraulic circuit	30	relay 3rd hydraulic circuit pin 5
socket 3rd hydraulic circuit	31	earth

21.32 Line coupler D

Plan view of pin assignment

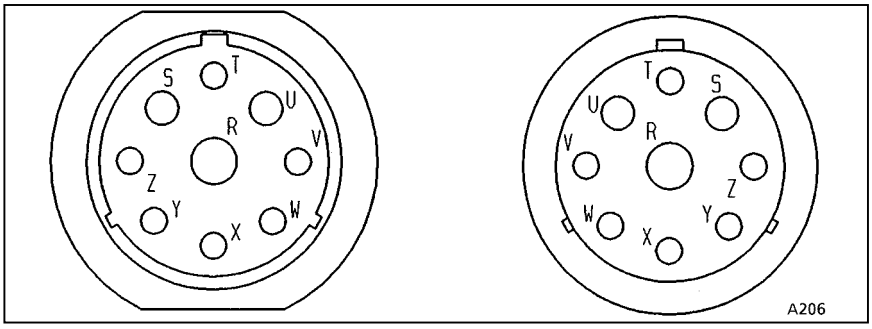


Fig.80

pin side	pin	jack side
+Ub terminal 30 (A)	R	connector 30 und 30a
-	S	-
starter terminal 50	T	STV A (fuse 1)
earth	U	grounding point
headlamp 56a	V	DS head lamps additional lamps/4
headlamp 56b	W	DS head lamps additional lamps/7
-	X	-
-	Y	-
-	Z	-

21.33 Line coupler E

Plan view of pin assignment

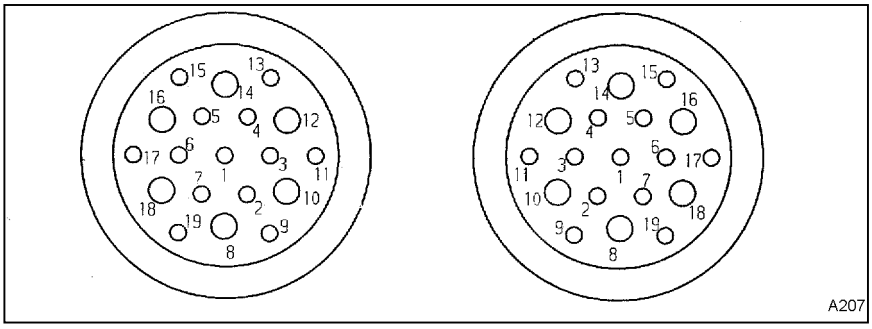


Fig.81

pin side	pin	jack side
-	1	-
STV C (E-box 19)	2	IG gearbox, earth
E-box 7	3	IG gearbox, signal
STV B (E-box 21)	4	IG rear PTO, earth
E-box 20	5	IG rear PTO, signal
relay EPC/5	6	MS EPC/1
E-box EPC/5	7	MS EPC/2
SI-holder 1/SI 28	8	AA 54
KI LK 12-pole/7	9	fuel tank pickup
SI-holder 1/SI 27	10	AA L
KI LK 12-pole/2	11	brake wear indicator
SI-holder 1/SI 26	12	AA R
splitter stage indicator	13	DS splitter control
SI-holder 1/SI 25	14	AA 58L
PTO selection indicator	15	DS PTO control
SI-holder 1/SI 24	16	AA 58R
STV hand brake (KI LK 3-pole/3)	17	DS hand brake indicator
splitter stage relay 87	18	solenoid, splitter stage
splitter stage relay 87	19	solenoid, splitter stage
E-box EPC/13	20	STV A, + power supply, sensors
E-box EPC/18	21	draft sensing pin, right signal
E-box EPC/15	22	STV battery, earth, sensors
E-box EPC/17	23	draft sensing pin, left signal
E-box EPC/19	24	Readings recorder, position signal
E-box EPC/6	25	MV lowering, earth
E-box EPC/14	26	MV lowering, signal
E-box EPC/6	27	MV lifting, earth
E-box EPC/2	28	MV lifting, signal
DS 4-WD/4	29	MV 4-WD/1
DS Diff/2	30	MV Diff/1
DS Summ	31	MV Summ/1

1. Front loader

Danger:
When the front loader is operating, standing in the danger area is prohibited. Never stand under a suspended load.

When raised, the front loader creates a greater risk of unbalancing the tractor. Compensate by ballasting the rear of the tractor.

Do not use the rear and centre hydraulic connections simultaneously with two different implements, since hydraulic fluid interflow can create danger from unintentional implement movements.

Never drive across a slope with the fork raised.

Sometimes it is necessary to increase the tractor's rear track width. At the front, even with an adjusting axle, never work below normal track width.

Be sure to set off smoothly when the tractor is fully loaded and when the loader is raised to the highest position.

IOn completion of work, secure the hydraulic levers.

When leaving the tractor, ensure that the front loader is lowered to the ground.

For road travel, raise the loader to the transport position and secure. Never carry a load in an implement. Observe forward projection of a maximum 3.5 m from the centre of the steering wheel.

Only operate the front loader with the original tools supplied with the tractor or with tools of the same quality.

Do not use the front loader for work which it has not been designed to do.

If the forward projection is in excess of 3.5 m, steps must be taken to ensure safety in traffic(e.g. at road junctions use mirrors or a person giving hand signals).

Authorised use

Like the tractor, the front loader is designed exclusively for use under normal conditions of agricultural or similar usage.

Any other use, e.g. for use as lifting gear, is deemed unauthorised. The manufacturer does not accept liability for damage resulting from such use; any such damage is the responsibility of the user. If in doubt, contact the manufacturer.

Authorised use also implies adherence to operating, service and maintenance conditions as specified by the manufacturer.

Mounting and removing the front loader, operation, maintenance and repairs should only be carried out by those who are familiar with such tasks and aware of the inherent dangers.

Observe all relevant accident prevention regulations and all generally accepted safety, health and road traffic regulations. The manufacturer does not accept liability for damage resulting from unauthorised modifications.

1.1 Removing the front loader

Danger:
Remove the front loader with the implement (e.g. scoop, fork) in place on firm and level ground.

Danger of unintended lowering of the front loader. Risk of injury.

The front loader must be parked and secured in such a way as to prevent unauthorised persons and children from tipping it over.

- Apply parking brake.
- Fold up lower links of front hydraulics.

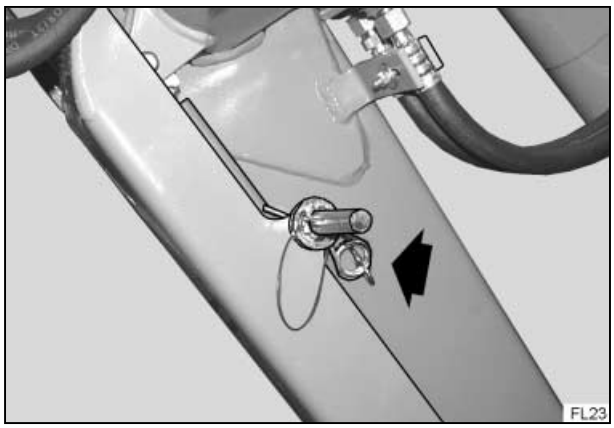


Fig.1

- Pull cotter pin (arrow) and pull out gudgeon pin.
- Fold under foldaway supports and disconnect.

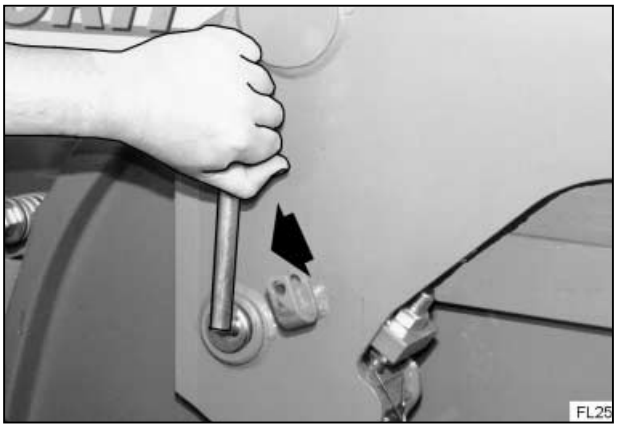


Fig.2

- Take out eccentric bolt (arrow).

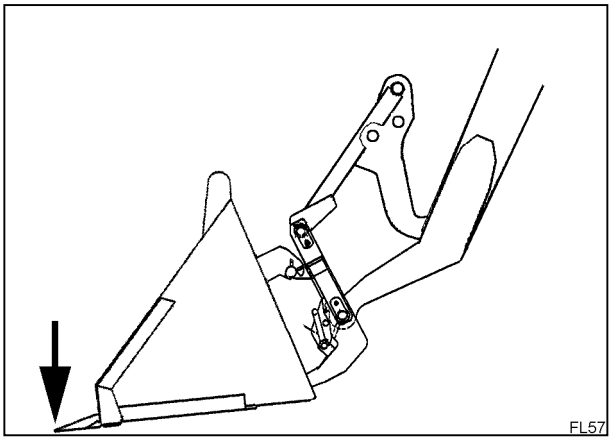


Fig.3

- Set scoop on tip (approx. 6 cm inclined angle).

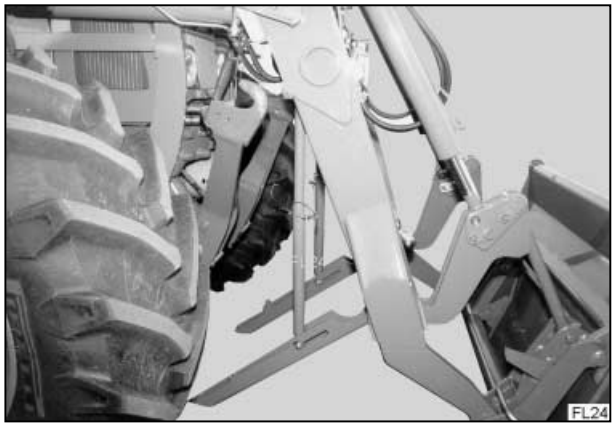


Fig.4

- Turn the foldaway supports until they stand firm.

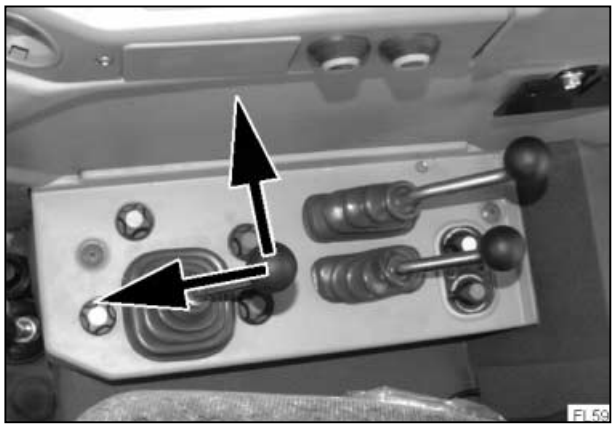


Fig.5

- Switch the crossgate lever to the floating position. Lifting and tipping cylinders are depressurised.

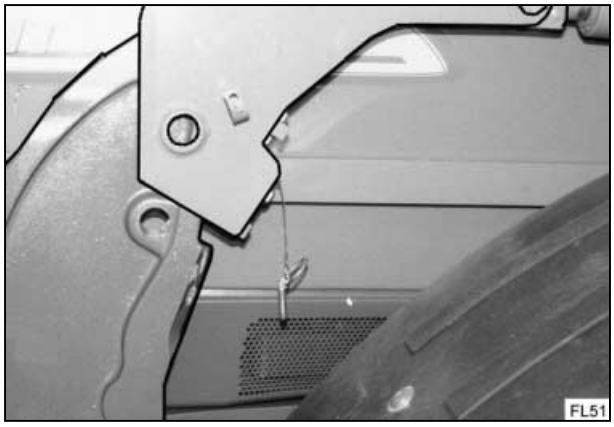


Fig.6

- Slowly drive tractor forwards until the front loader moves out of the support forks.

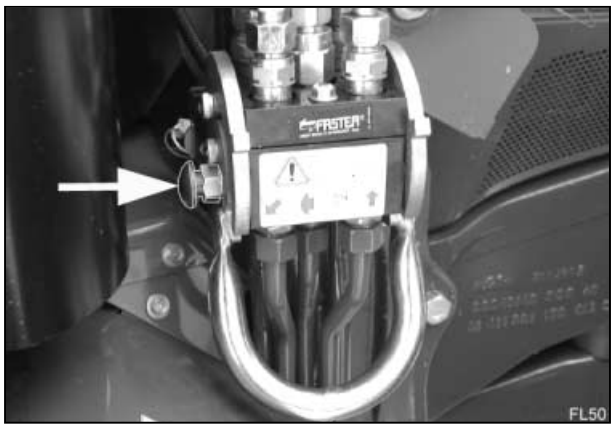


Fig.7

- Press lock (arrow).
- Swivel bracket up.
- Remove coupling from guide pins by pulling upwards.

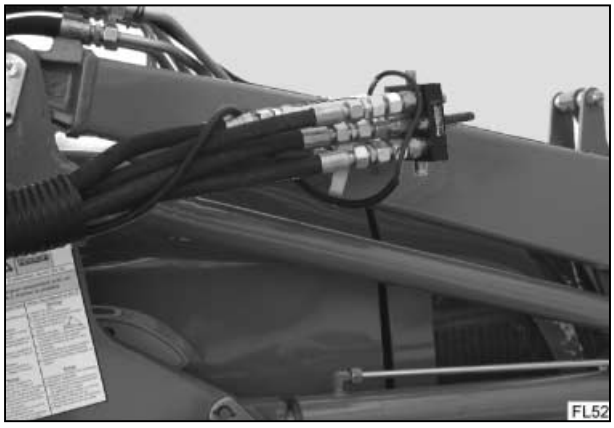


Fig.8

- Hang coupling in retaining clip on front loader arm.
- Drive tractor out of front loader.

1.2 Mounting the front loader

Danger:
Before fitting the multiple coupler, release the pressure from hydraulic hoses and unplug rear hydraulic connections.

Lower the rear power lift and operate only via EPC. Hydraulic fluid interflow can create risk of danger from unintentional implement movement.

- Fold up lower links of front hydraulics.
- Check tyre pressures and track setting at the front.
- Drive tractor into the front loader until it reaches the stop.
- Apply the hand brake.

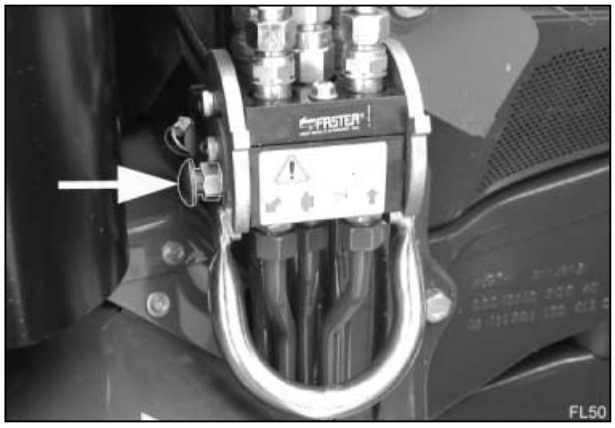


Fig.9

- Clean locating faces and guide pins.
- Attach multiple coupler.
- Swivel bracket downwards until lock (arrow) snaps into place.

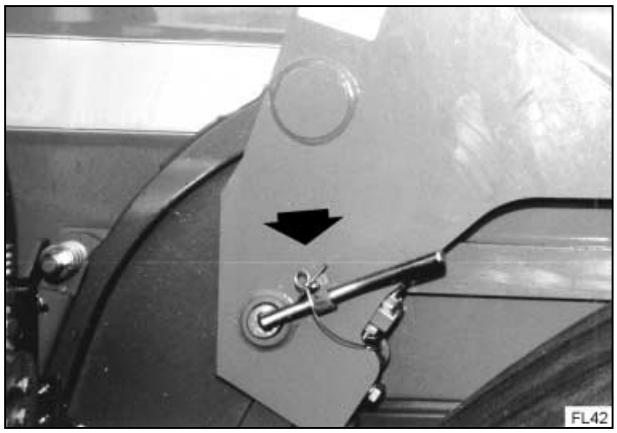


Fig.10

- Use lifting cylinder to place fork on the scoop tip until front loader moves into support fork.
- Use the lifting cylinder to raise fork to the level of the foldaway supports.
- Lock eccentric bolt firmly and secure (refer to IMPLEMENTS Section 1.3).

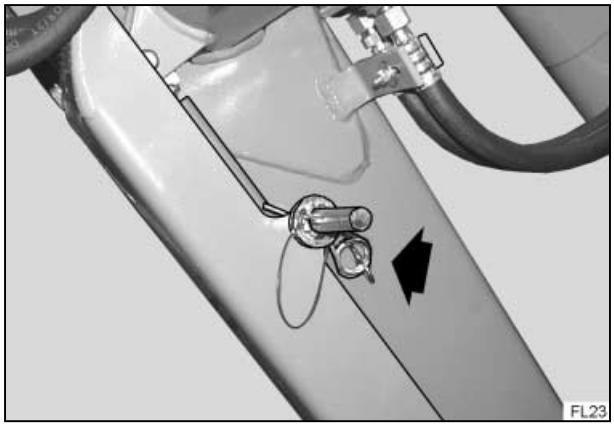


Fig.11

- Fold in foldaway supports and secure.

Note:
Adjust threaded support spindles so that they are slightly tensioned when disconnecting.

1.3 Adjust lock so that there is no play

Fig.12

Adjust both locks so that the resistance begins in the position shown when locking the eccentric bolt (arrow).

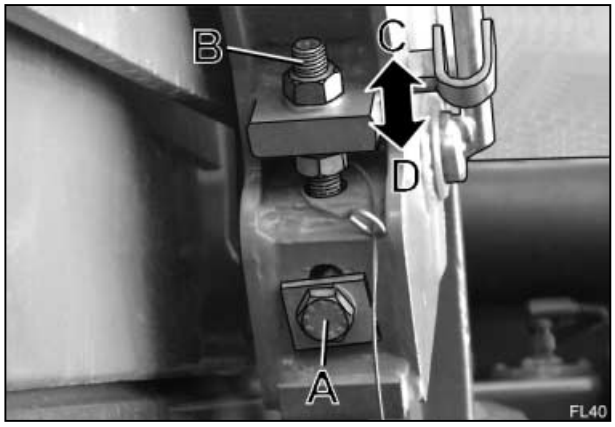


Fig.13

Setting process:
- Raise fork approx. 1 m.
- Unfasten clamping screw (A).
- Set threaded rod (B) by adjusting both nuts.

For greater clearance
- Move threaded rod in direction (C).
- Tighten clamping screw (A).

For less clearance
- Adjust threaded rod in direction of (D).
- Tighten clamping screw (A).

1.4 Tipping speed

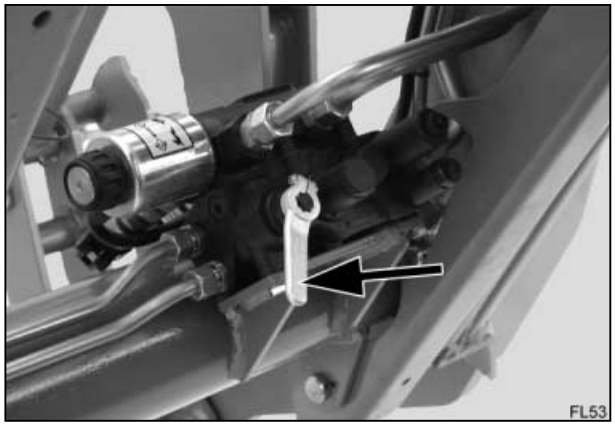


Fig.14

The two-way valve (arrow) can be used to shift between two different tipping speeds.
- Normal-speed lift or implement hold.
- Rapid lift.

1.5 Tip angle mark

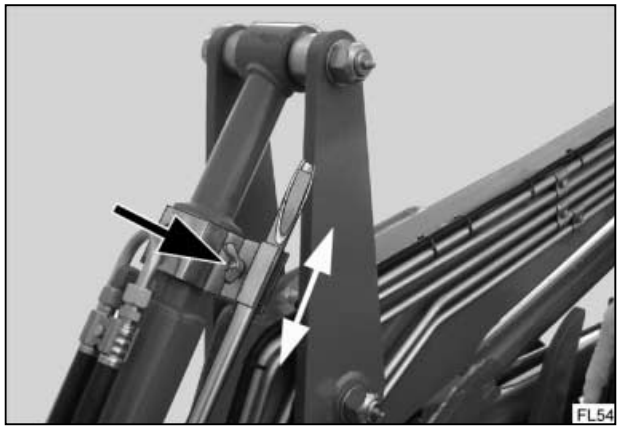


Fig.15

- Adjust tube (arrow) to the implement's inclination angle mark.

1.6 Automatic implement lokking

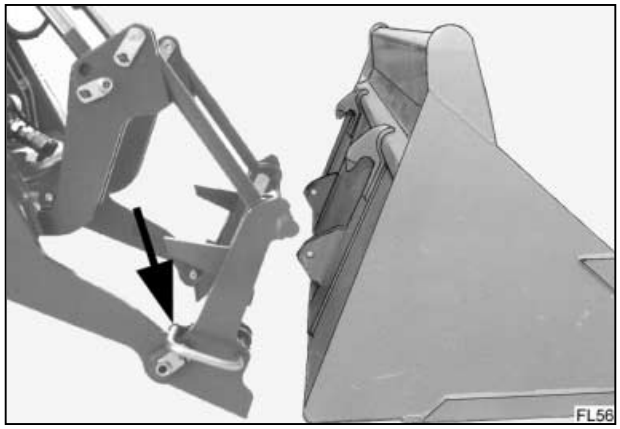


Fig.16

- Pull locking device (arrow) to left and right, turn as shown, and engage into the recess.
- Pick up scoop using both catch hooks.
- When the scoop is tipped, the locking device engages automatically.

1.7 Third hydraulic circuit

(optional)

The 3rd hydraulic circuit allows the use of additional mounted implement hydraulic rams (e.g. silage grab).

Note:

For better connection, move crossgate lever (refer to IMPLEMENTS Fig. 5) into the floating position.

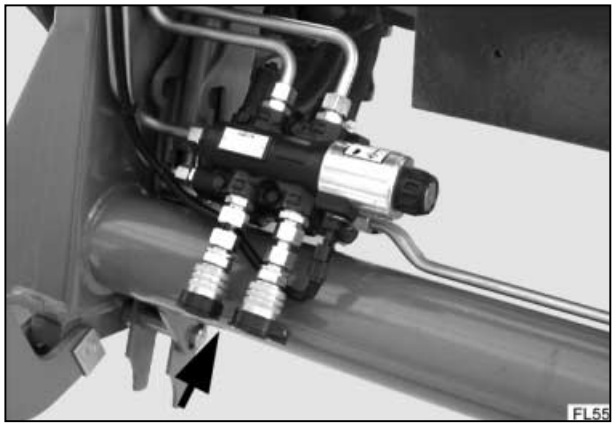


Fig.17

- Connect hydraulic hoses of additional cylinders to the plug-in connections (arrow).

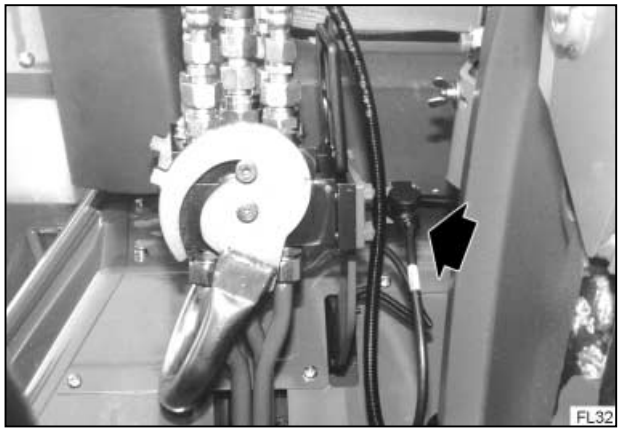


Fig.18

- Insert cable plug of changeover valve into socket (arrow).

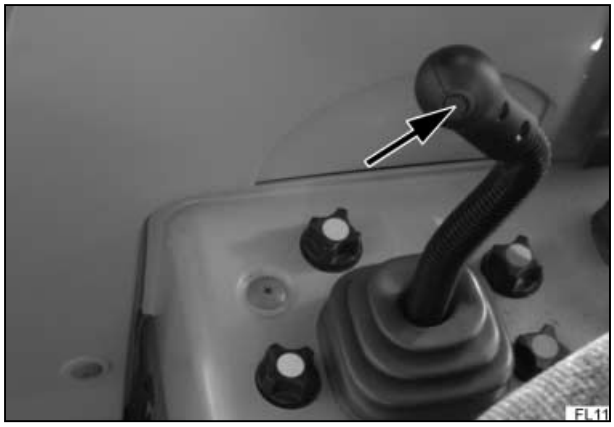


Fig.19

Shifting the crossgate lever to the left or right provides the choice of operating either the implement control or the 3rd hydraulic circuit.

- The changeover is effected electrically using the pushbutton (arrow) on the crossgate lever.

1.8 Vibration damping

(optional)

Danger:
Always lower the front loader fully when activating and deactivating vibration damping.

If the front loader is not moved into the floating position when activating and deactivating vibration damping, unwanted movements may arise on the fork.

Only undertake maintenance work with a lowered front loader.

When using vibration damping, there is no guarantee against tube failure.

Activating and deactivating vibration damping

- Lower fork until device stands flat on the ground.

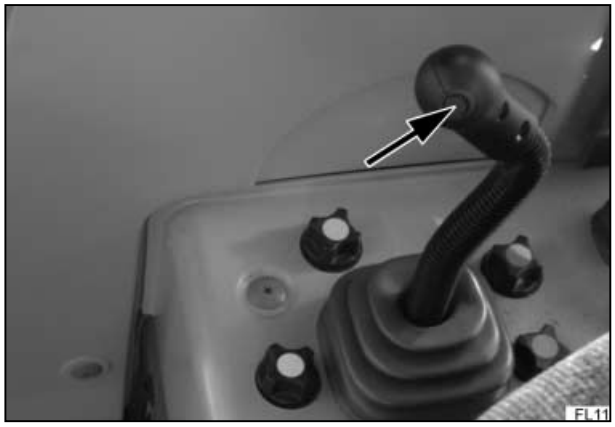


Fig.20

- Move crossgate lever (arrow) into floating position. Lifting and tipping cylinders are depressurised.

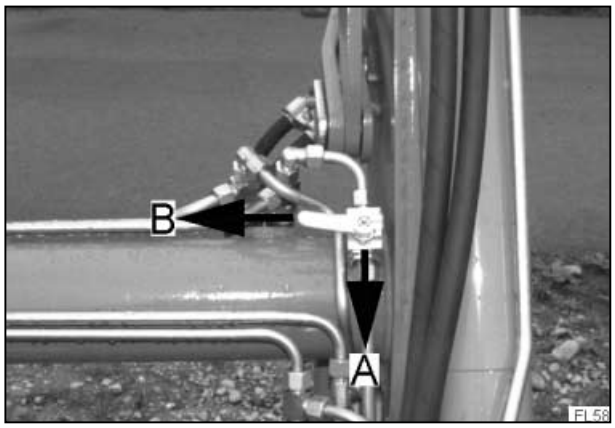


Fig.21

- Use three-way valve to activate and deactivate vibration damping.

A = ON
B = OFF

Recommendations for use

Vibration damping **ON** e.g. during transport to reduce front loader pitching.

Vibration damping **OFF** e.g. when working with forklift to prevent readjustment.

1.9 Operating the forklift

The following points should be noted for safe forklift operation:

The further forward the load is brought, the lower the permissible loads.

If transporting heavy or protruding loads, the fast speed setting should not be used.

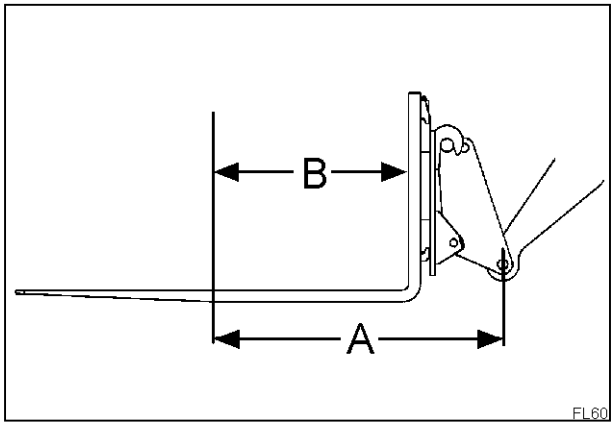


Fig.22

Maximum permissible loading of 1,500 kg, maximum loading per lug of 750 kg with the centre of gravity at a distance of:

- 500 mm with a FENDT forklift (refer to measurement B)

- 800 mm with all other forklifts (refer to measurement A)

1.10 Operation and maintenance instructions

- Before using the front loader, check that the eccentric bolt interlock is free of play.
- When operating the front loader, high peaks in load occur - undertake operating movement softly and do not drive faster than 8 km/h. Avoid loading the front loader on one side only.
- It is essential that all screws on the attachment frame are retightened after 10 hours of use. If necessary, grease threaded spindles and sliding sections of supports. Lubricate front loader every 50 operating hours.
- Only load the hydraulics when the oil is warm and at engine speeds in excess of 1,000 rpm.
- If the rapid release frame is removed for hydraulic implement actuation and parallel trakking, the tipping cylinders have to be retracted to prevent damage to the cylinders.
- The oil level in the hydraulic oil tank must be approx. 5 cm above the minimum mark on the dipstick.
- Grease the support forks to enable easier removal of the front loader.

2. Compressed air system

Danger:
Make sure trailer is correctly hitched. Do not start moving until the pressure gauge shows 7.3 bar and all other warning lights have gone out.

Observe trailer manufacturer's instructions.

Never use independent wheel braking for road travel with trailers fitted with pneumatic brakes (lock the pedals).

Refit the protective grid.

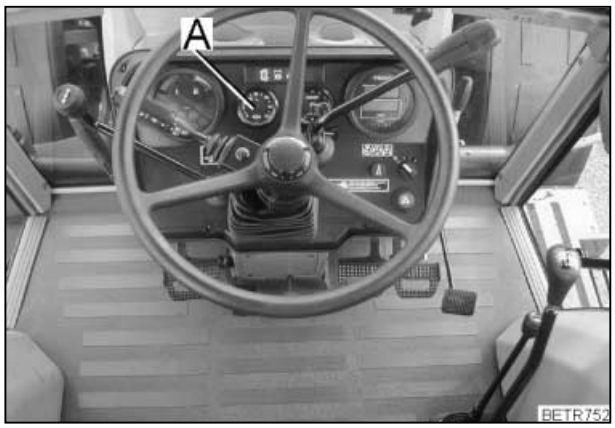


Fig.23

The correct operating pressure is reached when the pressure gauge (A) shows 8.1 bar.

2.1 Operation

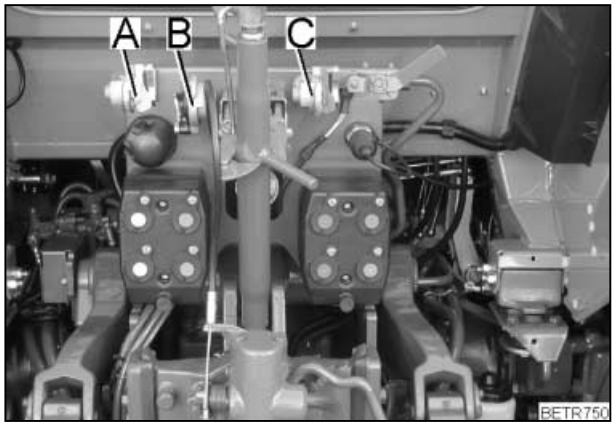


Fig.24

A = "yellow" coupling head
dual-line system, brakes

B = "black" coupling head
connection for single-line system

C = "red" coupling head
dual-line system, reserve

- After uncoupling, cover aperture with dust-proof caps.

Antifreeze pump/tank

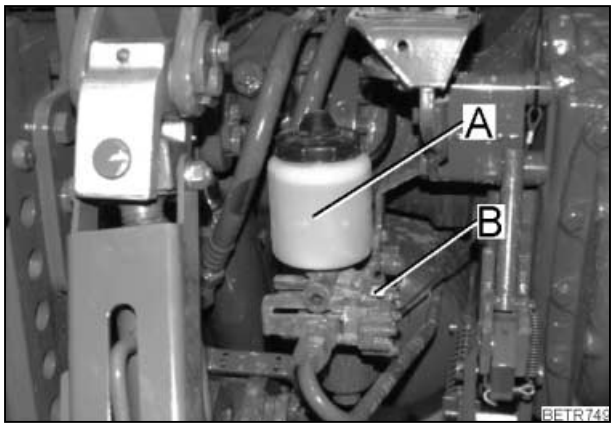


Fig.25

When expecting frost
- Set lever (A) at I = open.
- Fill antifreeze tank (B) with ethyl alcohol (X 902.015.003).

At the end of the cold season
- Set lever to 0 = closed.

Filling tyres
- Connect tyre inflation hose supplied with red coupling head.

<u>Important:</u>
Regularly check pressure which might rise to approx. 8.1 bar.

2.2 Maintenance

Testing the compressed-air system for leakages
Carry out weekly. With the engine stopped and a full reservoir, the reading on the instrument panel must remain unchanged for at least 3 minutes.

Draining the tank

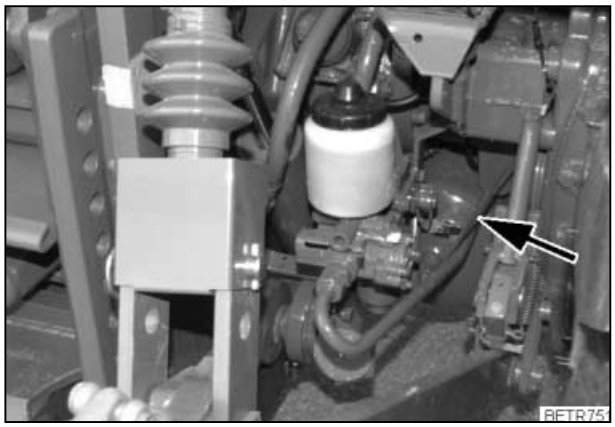


Fig.26
- Push in the pin at the bottom of the tank, or pull the cable (arrow) to drain condensation water, daily.

Compressor V-belt

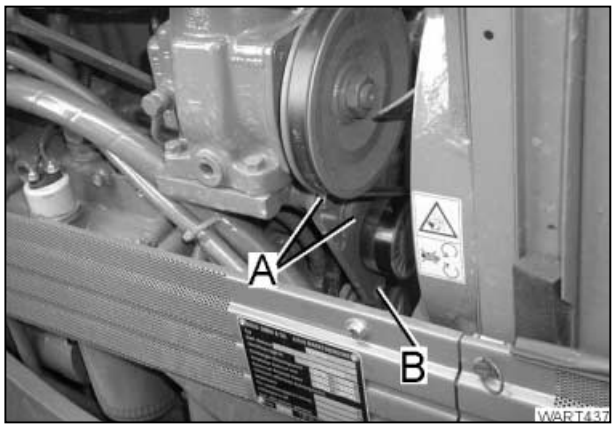


Fig.27

V-belt tension (span force) is measured at midpoint between the pulleys with Optibelt tension gauge I.

Adjustment
- Slacken bolts (A).
- Insert square bar (e.g. a ratchet spanner) in recess (B) and tighten the tension roller.

Tension values

Initial fitting tension (new V-belt) = 650 + 50 N
Re-tension = 500 N
Operating tension = 400 + 50 N
- Re-tighten bolts (A).

3. Air conditioning

Warning:
All repair and maintenance work must be carried out by qualified personnel only.
Avoid contact with liquid coolants. If inadvertently sprayed into the eyes, seek medical advice immediately.
No welding is permitted on, or in the immediate vicinity of the coolant circuit. Toxic hazard.
Maximum ambient temperature for coolant 80 °C.
Check the V-belt only when the engine is stopped. Refit the protective grille.

3.1 Operation

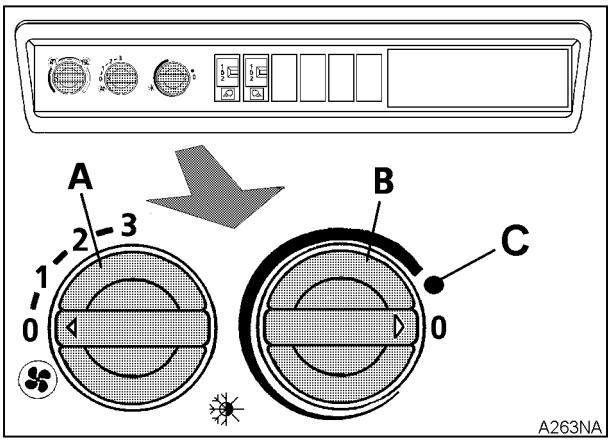


Fig.28

- Start the tractor (air conditioning only works when the engine is running).
- Switch on the fan using the rotary switch (A).
- Turn on the air conditioning with selector (B) and set desired temperature. Indicator lamp (C) shows that the system is working.

The air flow is metered and directed by outlet nozzles (in cab roof cladding).

For circulating air and fresh air supply refer to OPERATION Section 3.2.

Note:
For health reasons it is inadvisable to allow the air inside the cab to drop by more than approx. 5 - 8 °C below the outside temperature. Do not expose yourself directly to cold draughts - danger of catching cold. In the interests of energy saving and maximum efficiency of the system, make use of the circulating air control.

3.2 Maintenance

Switch on the air conditioning once a month (even in winter) for approx. 10 minutes. Once switched on, set ventilation to air circulation operation, refer also to OPERATION Section 3.2.

For cleaning the roof fan filter and the circulating air filter, refer to CARE AND MAINTENANCE Section 16.

Condenser

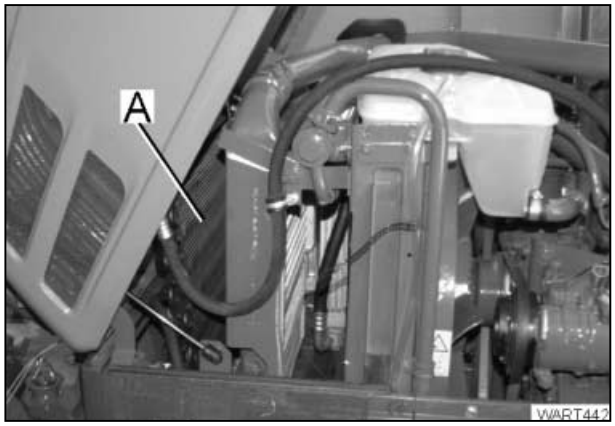


Fig.29

- If dirt has accumulated, blow or spray the condenser (A) from the inside outwards.

Checking the coolant level

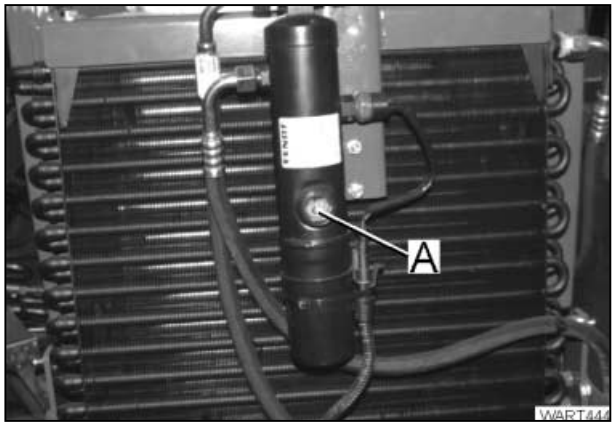


Fig.30

- Switch on the system; the compressor must also be running. When the engine speed reaches 2,000 rpm the white ball (A) in the reservoir sight-glass must be floating.

Topping up with coolant or replacing the reservoir / dryer must be carried out in the workshop.

Note:
If the blue ball turns pink there is moisture in the system (refer also to FAULTS AND REMEDIAL ACTIONS Section 1.1).

Compressor V-belt

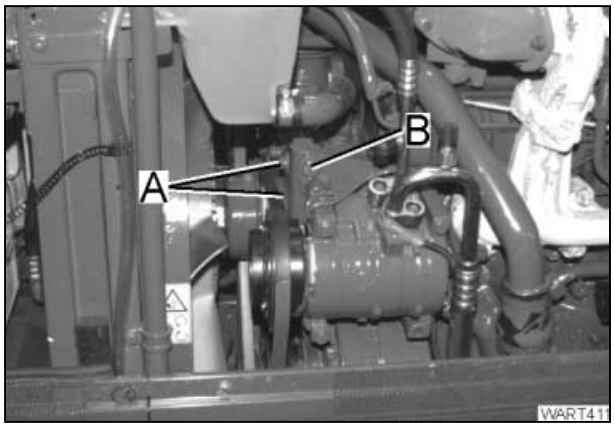


Fig.31

V-belt tension (span force) is measured at midpoint between pulleys with Optibelt tension gauge I.

Adjustment

- Slacken bolts (A).
- Tighten the tension roller with bolt (B).
- Re-tighten bolts (A).

Span force (operating tension) 400 + 50 N (40 + 5 kp) - profile 13 mm.

1. General faults

1. Engine does not start	
Cause	**Remedial Action**
Air in the fuel system.	Bleed air from the fuel system.
Fuel system blocked with dirt.	Clean filter inlet. If necessary, replace the filter unit. Bleed the system .
In very cold weather: faulty cold-start unit.	Repair flame primer (workshop operation)
At temperatures below - 5 °C: fuel supply line blocked by ice or paraffin.	Clean filter intake duct and fuel filter. Change to winter-grade fuel. Bleed the system.
No starter contact / faulty starter unit.	Main selection to neutral (starter lock). Check power supply from battery to starter.
No power supply to electric shut-off.	Check fuses and connectors.

2. Engine cuts out	
Cause	**Remedial Action**
Empty fuel tank.	Fill with diesel.
Air in the fuel system.	Bleed the fuel system.
Fuel system blocked with dirt.	Clean filter duct. If necessary, replace filter unit.
	Bleed the system.
In winter at temperatures below - 5 °C: fuel supply line blocked by ice or paraffin.	Clean filter duct and fuel filter. Change to winter-grade fuel. Bleed the system.

3. Poor engine performance	
Cause	**Remedial Action**
Blocked fuel filter.	Replace filter unit.
Fuel supply pump is blocked.	Clean the fuel supply pump (workshop operation).
Engine brake (optional) is not fully open.	Check engine brake (setting and ease of operation).
Turbocharger: leakage in intake system / damaged charger.	Check intake and exhaust ducts / check turbocharger (workshop operation).
Blocked dry-air filter.	Clean or replace dry-air filter cartridge.

4. Engine overheating	
Cause	**Remedial Action**
Engine is overloaded.	Reduce load or shift to lower gear.
Blocked radiator fins.	Spray or blow through fin from the inside out.
Insufficient cooling water.	Top up with warm water while the engine is running.
V-belt is loose or torn.	Tighten or replace belt

4. Engine overheating	
Thermostat does not open.	Replace thermostat (workshop operation).
Dirt in cooling water circuit.	Clean out system with hot rinsing fluid, e.g. P3 (workshop operation).

5. Engine producing abnormal amount of smoke	
Cause	**Remedial Action**
Blocked dry-air filter.	Change air filter insert.
Injector nozzles not working properly.	Check pressure and spray pattern of nozzles (workshop operation).
Injection volume / start of delivery incorrectly set.	Readjust (workshop operation).

6. Oil pressure indicator lamp comes on - switch engine off immediately	
Cause	**Remedial Action**
Engine oil pressure too low as a result of insufficient or excessively thin oil.	Top up engine oil or fill with correct oil.
Oil pressure switch cable is earthed.	Eliminate short circuit (workshop operation).
Faulty oil pressure pickup.	Replace with new oil pressure pickup (workshop operation).
Dirty oil control valve in the filter head.	Clean oil control valve (workshop operation).

7. Battery charging indicator lamp comes on	
Cause	**Remedial Action**
V-belt is loose or broken.	Re-tighten or replace V-belt.
No contact between cable connection and alternator.	Check cable connections (workshop operation.
Cable from alternator to battery charging light has contact with earth or a broken line.	Eliminate short circuit (workshop operation).
Fault in alternator.	Check alternator. If necessary, repair or replace (workshop operation).

8. 4-WD front axle - excessive noise and wheel judder	
Cause	**Remedial Action**
Automatic diff. lock operates unevenly, causing jerking movements.	Use oil in accordance with specification M2C-104A (EP oil with LS additives).

9. No reading on the digital display	
Cause	**Remedial Action**
Interrupted power supply.	Replace fuses and check plug-in connections.
	Check fuses and plug-in connections.

10. General faults in the electrical system	
Cause	**Remedial Action**
No contact between the terminal posts and the battery terminals.	Remove any signs of oxidation from posts and terminals, tighten terminal posts. Treat posts and terminals with anticorrosion grease.

11. Flashers / hazard warning lights not functioning	
Cause	**Remedial Action**
Interrupted power supply; faulty warning flasher pickup.	Check fuse / power supply and if necessary replace flasher pickup.

12. Flasher indicator lamps do not come on	
Cause	**Remedial Action**
Faulty bulbs in relevant flasher units on tractor or trailer.	Replace bulbs; establish current / earth contact; check trailer cable connections.

13. Reduced power output of turboclutch	
Cause	**Remedial Action**
Filled with incorrect quantity / type of oil.	Carry out function check. If appropriate fill with correct type and quantity of oil (workshop operation).

14. "Fast" splitter stage cannot be selected	
Cause	**Remedial Action**
Interrupted power supply to lifting magnet.	Set ignition key at position "I". If necessary change fuse, check supply line.

15. Brakes do not function properly (to be dealt with in the after-sales workshop)	
Cause	**Remedial Action**
Excessive brake pedal play / uneven braking effect.	Adjust foot brake; overhaul if necessary.
Indicator shows drive shaft disc pads are worn.	Check disc pads; replace if necessary.
Brake pedal movement is spongy and too long.	Bleed the foot brake system; eliminate cause of leak if necessary.
Brake fluid loss.	Eliminate cause of fluid loss.
Excessive hand brake travel or uneven braking effect.	Adjust hand brake; overhaul if necessary.

16. Electronic control hydraulics (EPC) not functioning.	
Cause	**Remedial Action**
Safety lock active.	Set quick lift lever beyond "Stop" position until indicator lamps come on.

16. Electronic control hydraulics (EPC) not functioning.	
Lifting height limitation is set to min. lift.	If necessary, increase lift.
Fuses blown.	Replace the fuses.

17. Fault in hydraulics control	
Cause	**Remedial Action**
For example, loose electrical connections, failure of an electronic component etc.	Count number of flashes emitted from the diagnosis LED and contact the workshop.

18. Slip control operating inaccurately.	
Cause	**Remedial Action**
Speed signals in the EPC E-box are inaccurate.	Calibrate radar sensor.

19. Hydraulic oil is overheating	
Cause	**Remedial Action**
Oil quantity set too high at the yellow or red valve.	Reduce oil quantity setting.
Implement has an additional flow controller.	Switch off the flow controller.
Hydraulic oil cooler is dirty.	Clean the hydraulic oil cooler.
Summation switches on.	Switch off summation.
Insufficient hydraulic oil.	Top up hydraulic oil.

20. Hydraulic draught control not working efficiently (insufficient number of control pulses)	
Cause	**Remedial Action**
Position / traction setting is set too far towards "position".	If necessary, shift lever towards "draught".
Plough blade is blunt (no cutting action).	Sharpen plough blade.
Working implement unsuitable for control hydraulics.	Substitute with suitable implement.

21. Hydraulics fail to lower	
Cause	**Remedial Action**
Lowering speed setting set too far in the "no lowering" direction.	If necessary, set more towards "max lowering speed".

22. Excessive noise in the hydraulic system	
Cause	**Remedial Action**
Hydraulic oil still cold.	Run engine for a few minutes at medium speed before operating the hydraulics.
Not enough oil in the hydraulic reservoir.	Top up as per instructions.
Air is sucked in through line connections or pump shaft seal.	Seal connections or replace hydraulic pump (workshop operation).

23. Hydraulics fail to lift	
Cause	**Remedial Action**
Hydraulic oil still cold.	Let engine run for a few minutes at average speed before carrying out hydraulic work.
Insufficient oil in hydraulic reservoir.	Top up oil level in accordance with specifications.
Air is taken in via intake hose connections.	Seal connections (workshop operation).

24. Heater ineffective	
Cause	**Remedial Action**
Hot water valve is partially closed / air filter dirty.	Open hot water valve / replace air filter.

25. Heater fan not working	
Cause	**Remedial Action**
Power supply to fan interrupted or fan failed / blocked.	Check fuse / power supply, remove foreign bodies (workshop operation).

26. Air-sprung seat fails to adjust	
Cause	**Remedial Action**
Air compressor not functioning.	Check fuse / power supply.

27. Air conditioning does not work	
Cause	**Remedial Action**
Fresh air fan not switched on / not functioning / temperature selector set at "0".	Switch on fan / select desired temperature / check fuse and power supply.
Refrigerant compressor not functioning - solenoid coupling not engaging / V-belt is too slack or torn.	Check fuse / power supply power for solenoid coupling / V-belt.
Insufficient coolant in system (system on engine speed 2,000 rpm; ball in sightglass of fluid reservoir must be floating).	Top up coolant (workshop operation).

28. Inadequate cooling effect of air conditioning	
Cause	**Remedial Action**
Condenser dirty (upstream of engine radiator).	Blow out condenser from inside out or spray.
Fresh air/ recirculating air filter dirty.	Blow out recirculating air filter, tap fresh air filter; replace if necessary.
Evaporator covered in ice.	Reset temperature selector; have cause rectified (workshop operation).
Insufficient coolant in the system (system on, engine speed 2,000 rpm; ball in sightglass of fluid tank must be floating).	Top up coolant (workshop operation).

29. Blue ball in fluid reservoir has turned pink	
Cause	**Remedial Action**
Dryer in fluid resevoir is saturated.	Replace fluid reservoir (workshop operation) - refer to workshop manual, air conditioning section).

30. Water dripping from the ventilator box (air conditioning)	
Cause	**Remedial Action**
Condensation water outlet is blocked (pipe ends on the on the left and right of the access ladder).	Unblock water outlet (if necessary, blow through).

2. EPC troubleshooting

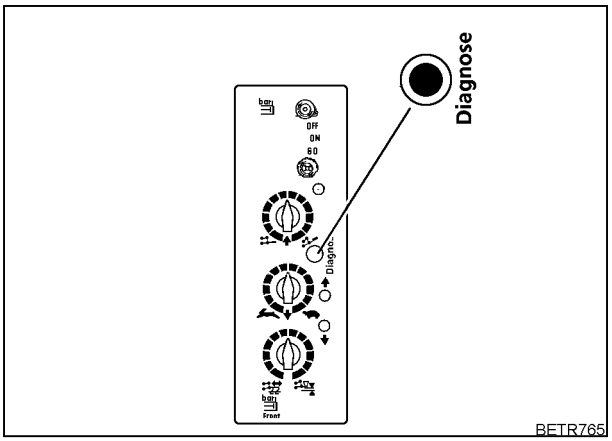


Fig.1

Two-digit fault codes are reported by means of repeated flashes from the diagnosis LED.

When a fault is reported, proceed as follows:

- Count the number of flashes and remember the number or write it down.
- Make the system operational by turning the ignition **OFF - ON** (reset).
- After using this function, in the case of a short-term fault, the system is operational once more.

If a fault occurs, please ascertain the code and report it to the workshop.

Two-digit fault codes

e.g. Fault code "32" is indicated as follows:

long pause - three flashes (* * *)

short pause - two flashes (* *) = 32, and so on.

1. Technical data

Model		307 C/CA	308 C/CA	309 CA
Type of engine		BF4M1012E	BF4M1012EC	BF4M1012EC
Turbocharger / intercooler		yes/no	yes/yes	yes/yes
No. of cylinders / cooling		4 / water	4 / water	4 / water
Bore / hub	mm	94/115	94/115	94/115
Effective displacement	cm^3	3190	3190	3190
Idling speed	rpm	800+/-30	800+/-30	800+/-30
Rated speed	rpm	2300	2300	2300
Fuel	Ltr.	108	108	108
Engine switch-off		electrical	electrical	electrical
Noise level at driver's ear	dB(A)	76	76	76
Angle of engine				
Ensure vehicle stability				
lengthwise in travel direction front / rear	degree	25	25	25
across travel direction left / right	degree	25	25	25
Weights and dimensions				
with the following tyres and tracks				
Front, R-WD		11.00-16	11.00-16	
Front, 4-WD		13.6R24	380/70R24	440/65R24
Rear, R-WD		16.9R34	480/70 R34	
Rear, 4-WD		16.9-R34	480/70 R34	540/65R34
Front track width, R-WD	mm	1,580	1,580	
Front track width, 4-WD	mm	1,720	1,720	1,720
Track width rear	mm	1,660	1,660	1,660
Hole pattern diameter	mm	275	275	275
Overall length	mm	4,000	4,000	4,000
Overall width	mm	2,090	2,140	2,140
Overall height incl. cab	mm	2,700	2,700	2,700
Ground clearance	mm	480	480	480
Wheel base, R-WD	mm	2,388	2,388	
Wheel base, 4-WD	mm	2,280	2,280	2,280
Flange size front	mm	1,660	1,660	1,660
Flange size rear	mm	1,567	1,575	1,575
Min. turning circle without/with steering brake, R-WD	mm	4.1/3.7	4.3/3.8	
Min. turning circle without/with steering brake, 4-WD	mm	4.4/3.9	4.4/3.9	4.5/4.0
Unladen weight, R-WD	kg	3,800	3,850	
Unladen weight, 4-WD	kg	4,130	4,190	4,220
Max. permissible total weight, R-WD	kg	6,000	6,000	
Max. permissible total weight, 4-WD	kg	6,000	7,000	7,500
Permissible axle loading, front R-WD	kg	2,400	2,400	
Permissible axle loading, front 4-WD	kg	3,500	3,500	3,500
Max. permissible front axle loading, front loader at 8 km/h	kg	6,000	6,000	6,000
Max. vertical load on hitch	kg	1,500	1,500	1,500

Model		307 C/CA	308 C/CA	ca. 309
PTO 540/750/1000				
PTO profile		1 3/8" 6 spline	1 3/8" 6 spline	1 3/8" 6 spline
PTO speed when rated engine speed is selected for 540	rpm	605	605	605
PTO speed when rated engine speed is selected for 750	rpm	790	790	790
PTO speed at rated engine speed at speed selection 1,000	rpm	1,105	1,105	1,105
PTO speed when rated engine speed is selected for 750	Nm	2,000	2,000	2,000
Max. permissible torque for 750	Nm	1,531	1,531	1,531
Max. permissible torque for 1,000	Nm	1,096	1,096	1,096
PTO (optional)				
Revs/metre travelled, 4-WD	revs/m	9.6	9.6	9.6
Revs/metre travelled, R-WD	revs/m	4.0	4.0	4.0
Maximum permissible torque	Nm	600	600	600
Front PTO 1000/540 (optional)				
PTO profile		1 3/8" 6 spline	1 3/8" 6 spline	1 3/8" 6 spline
PTO speed when rated engine speed is selected for 540	rpm	608	608	608
PTO speed at rated engine speed at speed selection 1,000	rpm	1,133	1,133	1,133
PTO speed when rated engine speed is selected for 750	Nm	2,000	2,000	2,000
Max. permissible torque for 1,000	Nm	1,075	1,075	1,075
Hydraulics				
Working pressure	bar	200	200	200
Hydraulic pump	l/min	37+33	37+3	37+33
Available hydr. oil at max. capacity	l	32	32	32
Rear power lift				
three-point		cat. 2/3	cat. 2/3	cat. 2/3
control		EPC	EPC	EPC
Max. lift capacity	kN	48.9	48.9	48.9
Front power lift (optional)				
Three-point		cat. 2	Cat.2	Cat.2
Max. lift capacity	kN	28.4	28.4	28.4
Implement weight up to approx.	kg	2,000	2,000	2,000
Drive-in front loader				
Powerlift				
Size 3/60	kN	18.3	18.3	18.3
Size 3S/60	kN	16.4	16.4	16.4
Size 3/55	kN	15.0	15.0	15.0
Break-out force				
Size 3/60	kN	23.9	23.9	23.9
Size 3S/60	kN	22.9	22.9	22.9
Size 3/55	kN	19.6	19.6	19.6
Lift height depending on tyres				
Size 3/60	mm	3,711	3,711	3,756
Size 3S/60	mm	3,755	3,755	3,800
Size 3/55	mm	3,711	3,711	3,756

Model		307 C/CA	308 C/CA	ca. 309
Electrics				
Operating voltage	V	12	12	12
Battery	V/Ah	12/90	12/90	12/90
Alternator	W/V/A	1,330/14/95	1,330/14/95	1,330/14/95
Starter	kW	3.1	3.1	3.1
Torque values wheels (threads and bearing surfaces lightly oiled)				
Front wheels, R-WD	Nm	120	120	120
Front wheels, 4-WD	Nm	275	275	275
Rear wheels	Nm	350	350	350
Rim screw connections of adjustable rims				
Delachaux	Nm	230	230	230
Südrad	Nm	200	200	200
Grasdorf	Nm	250	250	250

Note:
Any changes to the power output limiter and max. speed setting shall render the Warranty invalid, this also applies when exceeding max. permissible loads and weights.

Note:
For PTO mode:
If the maximum permissible torque can be exceeded (due to application), use drive shaft with safety coupling and free wheel if necessary.
Maximum failsafe mechanism to prevent blocking at peaks in torque of 4,000 Nm.

2. Tyre pressures

Caution:
Check tyre pressures regularly.

Tyre pressure front
1.6 bar

Tyre pressure rear
1.6 bar

Always observe the tyre manufacturer's recommendations.

- Pressures may deviate depending on tractor model, make of tyre and type of operation e.g. front loader operation.
- For max. traction and min. ground pressure in the field, adapt tyre pressures to axle loading.
- Operation on public roads with a tyre width of 2.5 m - 3.0 m (flotation tyres) requires a max. tyre pressure of 1.5 bar.
- The load-bearing capacity is identified by an "operating code" with a load-bearing capacity code, e.g. 145 = 2,900 kg basic load-bearing capacity per tyre, and a speed symbol, e.g. A8 = 40 km/h reference speed.
- If a tyre that is suitable for speeds up to 40 km/h is used at 50 km/h, the load-bearing capacity of the tyre will be reduced by 9 %.
- Do not operate special-purpose wheels above a maximum speed of 40 km/h.
- When operating the front loader, tyre pressure should be increased.

3. Tyre combinations

Farmer 307

307CA Vorne: avant: anteriori: front:		Hinten / arriére / posteriori / rear:																							
		R451 340/85RR38 KL	R450 KL	R454 13,6R38 MI	R453 MI	R303 16,9R34 MI	R307 MI	R497 270/95R44 KL	R876 420/85R34 KL	R875 KL	R267 480/70R30 CO	R264 CO	R319 480/70R34 PI	R320 KL	R308 CO	R311 CO	R316 PI	R323 KL	R324 540/65R34 MI	R327 PI	R326 PI	R325 MI
R107	380/70R24 PI					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R105	CO					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R102	CO					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R110	PI					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R115	KL					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R112	KL					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R125	440/65R24 PI					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R124	PI					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R122	MI					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R121	MI					+	+		+	+			+	+	+	+	+	+	+	+	+	+

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Fig.1

307CA Vorne: avant: anteriori: front:		Hinten / arriére / posteriori / rear:																							
		R451 340/85R38 KL	R450 KL	R454 13,6R38 MI	R453 MI	R303 16,9R34 MI	R307 MI	R497 270/95R44 KL	R876 420/85R34 KL	R875 KL	R267 480/70R30 CO	R264 CO	R319 480/70R34 PI	R320 KL	R308 CO	R311 CO	R316 PI	R323 KL	R324 540/65R34 MI	R327 PI	R326 PI	R325 MI
R179	280/85R28 KL							+														
R067	12,4R24 MI	+	+																			
R084	13,6R24 MI			+	+	+	+		+	+			+	+	+	+	+	+				
R085	MI			+	+	+	+		+	+			+	+	+	+	+	+				
R087	MI			+	+	+	+		+	+			+	+	+	+	+	+				
R860	340/85R24 KL					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R858	KL					+	+		+	+			+	+	+	+	+	+	+	+	+	+
R047	375/75R20 KL										+	+										

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Fig.2

Farmer 308-309

308CA - 309CA Vorne: avant: anteriori: front:			Hinten / arrière / posteriori / rear:																											
			R453 13,6R38		R454		R450 340/85R38		R451		R303 16,9R34		R307		R373 16,9R38		R330 18,4R34		R333		R497 270/95R44		R875 420/85R34		R876		R308 480/70R34		R320		R316	
			MI		MI		KL		KL		MI		MI		MI		MI		MI		KL		KL		KL		CO		KL		PI	
R115	380/70R24	KL									+		+										+		+		+		+		+	
R112		KL									+		+										+		+		+		+		+	
R107		PI									+		+										+		+		-		+		+	
R105		CO									+		+										+		+		-		+		+	
R110		PI									+		+										+		+		+		+		+	
R102		CO									+		+										+		+		+		+		+	
R141	420/70R24	PI													+		+		+													
R142		PI													+		+		+													
R145		KL													+		+		+													
R144		KL													+		+		+													

308CA - 309CA Vorne: avant: anteriori: front:			Hinten / arrière / posteriori / rear:																											
			R453 13,6R38		R454		R450 340/85R38		R451		R303 16,9R34		R307		R373 16,9R38		R330 18,4R34		R333		R497 270/95R44		R875 420/85R34		R876		R308 480/70R34		R320		R316	
			MI		MI		KL		KL		MI		MI		MI		MI		MI		KL		KL		KL		CO		KL		PI	
R125	440/65R24	PI									+		+										+		+		+		+		+	
R121		MI									+		+										+		+		+		+		+	
R122		MI									+		+										+		+		+		+		+	
R124		PI									+		+										+		+		+		+		+	
R500	460/70R24	KL																														
R501		KL																														
R156	480/65R24	PI													+		+		+													
R155		PI													+		+		+													
R158		MI													+		+		+													
R157		MI													+		+		+													

308CA - 309CA Vorne: avant: anteriori: front:			Hinten / arrière / posteriori / rear:																							
			R453 13.6R38		R454		R450 340/85R38		R451		R303 16.9R34		R307		R373 16.9R38		R330 18.4R34		R333		R497 270/95R44		R875 420/85R34		R876	
			MI		MI		KL		KL		MI		MI		MI		MI		MI		KL		KL		KL	
R179	280/85R28	KL																			+					
R083	13,6R24	MI	+		+						+		+										+		+	
R084		MI	+		+						+		+										+		+	
R085		MI	+		+						+		+										+		+	
R087		MI	+		+						+		+										+		+	
R135	14,9R24	MI													+		+		+							
R134		MI													+		+		+							
R136		MI													+		+		+							
R856	340/85R24	KL	+		+		+		+		+		+										+		+	
R857		KL	+		+		+		+		+		+										+		+	
R860		KL	+		+		+		+		+		+										+		+	
R858		KL	+		+		+		+		+		+										+		+	

Hinten / arrière / posteriori / rear:																										
R308 480/70R34		R320		R316		R462 480/70R38		R342 520/70R34		R338		R326 540/65R34		R324		R434 540/65R38		R435		R346 540/70R34		R347		R348 600/65R34		R352
CO		KL		PI		PI		KL		PI		PI		MI		MI		PI		KL		KL		MI		PI
+	+	+	+	+								+	+													
+	+	+	+	+								+	+													
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+	+	+	+	+								+	+													
+	+	+	+	+								+	+													

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Fig.5

4. Fuels and lubricants Farmer 307C/CA - 309C/CA

Filling points	Quantity approx. litres	Type 4)	Frequency of change 2)
"Max" engine	11.0	Year round SHPD engine oil 3)	after 50, 500, 1,000 operating hours.
With filter change		In accordance ACEA E3-96 or	then every 500 operating hours
		year-round engine oil 3) in accordance with	but at least every year with fuel with
		API-CD in accordance with ACEA E2-96 or E3-96	up to 0.5 % sulphur 5)
Turboclutch		HD-SAE 10W	no change required
307	6.6		
308-309	6.7		
Transmission		special Hypoid gear oil	nach 500 op. hours
R-WD	35.5	SAE 85 W-90 or SAE 80 W-90 or SAE 90 to API GL-5	then every 2 years or every 2,000 op. hours
4-WD	37.5	do not use STOU or other universal oils	
Final drives			
307	3.0 each		
308-309	5.7 each		
Front PTO	1.0		
Front axle differential	6.0		front axle differentials and hub drives
Hub drives	0.75 each		after 50 and 1,000 operating hours then every 2 years or every 1,000 op. hours
Hydraulics		STOU SAE 10W-30, 10W-40, 15W-30	after 1,000 op. hours
Quantity for max. filling	41.0	also: HD-SAE 20 W-20 to API-CD	then every 2 years or every 1,000 op. hours
Powerlift shaft lubrication	0.2		powerlift shaft lubrication (only completing) after 50 op. hours and in the event of leaks
Fuel tank	108.0	diesel 5)	fill up after use
Cooling system	13.0	water with 35 vol.-% antifreeze and corrosion protective	replace antifreeze every 2 years
Braking system	0.7	use only brake fluid not containing mineral oil to SAE J 1703 or FMVSS116 DOT4	every 2 years
Compressed air system	0.5	antifreeze ethyl alcohol (X 902.015.003)	fill up only below + 5 °C
Lubrication points		lithium-saponified grease, NLGI-class 2	refer to Lubrication Chart
		(worked penetration coefficient 265-295)	regularly oil all other joints and bearing surfaces

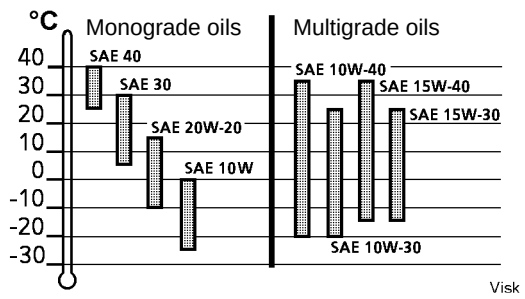
1. Filling levels are determined with a dipstick or by overflow at filling points etc.

2. Whichever comes first.

4. For registered tradenames, refer to current list of Fluids and Lubricants which is available from every Fendt-authorised workshop.

5. If diesel fuel contains more than 0.5 % sulphur, the oil change fequency must be halved. If the sulphur content is below 0.05 %, an adequate lubrication capacity must be maintained (e.g. by use of additives). Always consult the customer workshop before using alternative fuels, e.g. RME.

3) Viscosity of engine oils



4.1 Bio-diesel

Fuel properties

RME **R** ape seed- **M** ethyl- **E** ster,

PME **V** egetable oil- **M** ethyl- **E** ster fuel

according to DIN 51606.

Cold-pressed rape seed oil cannot be used.

Maintenance intervals

Oil and oil filter intervals should be halved.

After a few fillings of biodiesel, after having used diesel fuel, the fuel filter must be replaced. Since biodiesel acts as a solvent, diesel residues may block the fuel filter.

Instructions for use

Biodiesel is suitable for winter use down to temperatures of approx. - 10 °C.

At temperatures below - 10 °C, diesel fuel needs to be added to prevent the biodiesel freezing. Fifty % diesel must be added per tank filling.

At temperatures below - 16 °C, use diesel fuel only.

Biodiesel can be mixed in any proportions with diesel fuel.

Power output can be slightly reduced.

Fuel consumption can be slightly increased.

If the tractor is not going to be used for some time (from 3 months upwards), fill with diesel to prevent the fuel injection pump from jamming.

Special features of biodiesel

Biodiesel is obtained from plant oil (mainly rapeseed oil) by means of a chemical process, during which the vegetable oil is mixed with methanol using a catalyst.

Biodiesel is virtually sulphur-free,. and so the engine produces almost no SO2 (sulphur dioxide).

The exhaust gases contain less

- carbon monoxide
- hydrocarbons and
- particles (e.g carbon)

than are contained in the exhaust from conventional diesel fuel.

Biodiesel is readily biodegradable and does not pose a threat to the soil or groundwater in the event of accidental spills.

4.2 Bio-hydraulc oil

Characteristics of bio-hydraulc oil

Bio-hydraulic oil based on plant oil, rape seed oil and synthetic oil

should be used according to viscosity criteria ISO VG 32 - ISO VG 46.

Note:

It is not possible to use synthetic oils based on polyglycols.

Maintenance intervals

Oil and filters need to be replaced every 1,000 operating hours or every year, whichever comes first.

When changing over to bio-hydraulic oil, replace hydraulic oil filter after approx. 10 - 15 operating hours. Since bio-hydraulic oil has solvent properties, it can cause oil residues to clog the filters.

Instructions for use

Bio-hydraulic oil is suitable for winter use at temperatures as low as approx. - 15 °C.

Bio-hydraulic oil can thicken at ambient temperatures below -15 °C and during prolonged periods of standstill. After starting the engine in cold conditions, allow a short warm-up time at high idle engine speed to allow smooth function of the hydraulic steering and of the power lift. In severe cold, it may be necessary to warm the whole tractor.

Avoid mixing bio- hydraulic oil with other oils, e.g with residual normal oil within the system, by operating an unknown implement. The oil's positive environmental properties may be affected, and when disposing of the oil it will have to be considered hazardous waste.

Always observe the oil manufacturer's instructions and local legislation when disposing of used bio-hydraulic oil.

Mixing bio-hydraulic oil with more than 10% normal oil may result in an alteration of viscosity and problems within the spool valves.

Specificities of bio-hydraulic oil

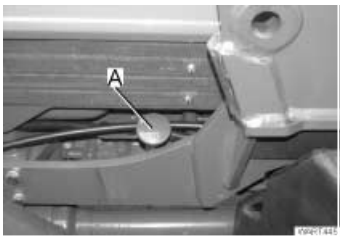
Bio-hydraulic oil is readily biodegradable, and poses no threat to the soil or groundwater in the event of accidental spills.

Important:

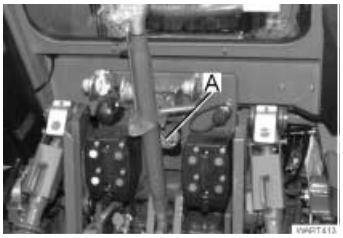
In spite of its low impact on the environment, accidental spills are to be registered.

5. Lubrication chart

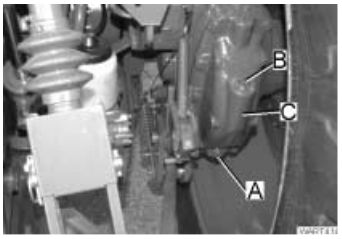
5.1 Filling points



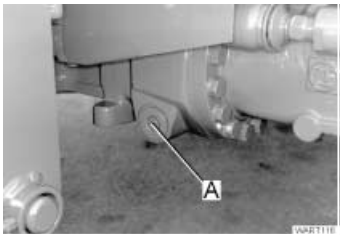
Unscrew dipstick (A): fill with engine oil



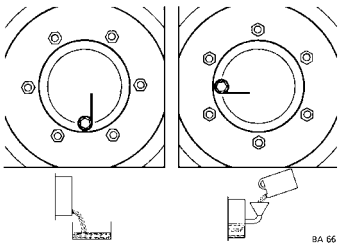
Unscrew dipstick (A): fill with gearbox oil



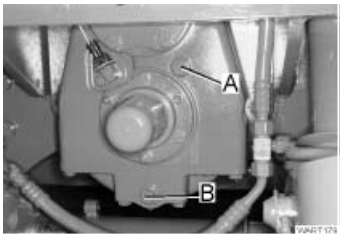
Final drives: add oil through filler opening (B)



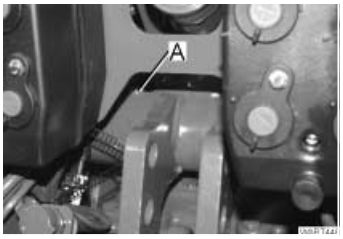
Front axle differential gear: fill oil to top, at the filler opening (A)



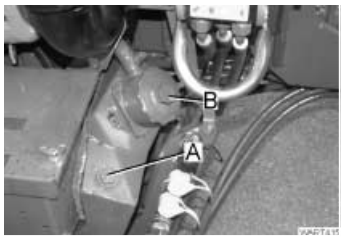
Front axle hub drives: fill oil to top at the horizontal mark and hole to the left



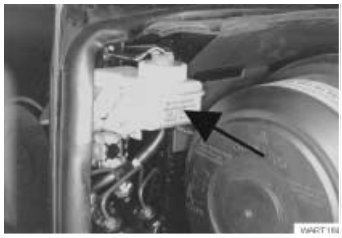
Front PTO: fill oil to top at the check hole (A)



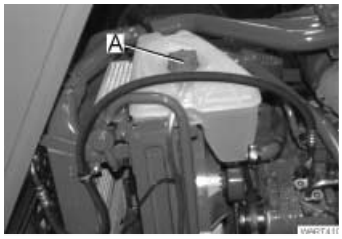
Linkage cross-shaft lubrication: fill oil to approx. 40 mm below top of filling hole (A)



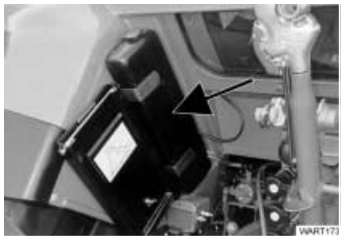
Hydraulics: remove filter lid (B), fill with oil



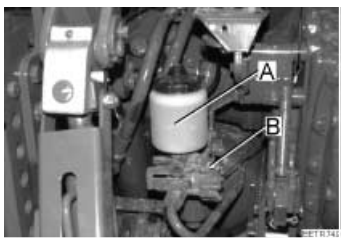
Brake system:fill the container (arrow) only with brake fluid that is free from mineral oil



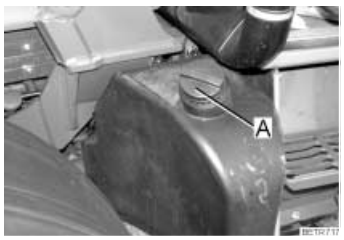
Cooling system: only fill container (A) with clean, lime-free water containing antifreeze



Front/rear screen washers: fill container (A) with fluid



Compressed air system: fill antifreeze container (A) with ethyl alcohol (X 902.015.003)

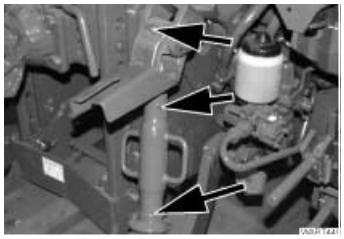


Fill fuel through filler necks (A)

5.2 Lubrication points

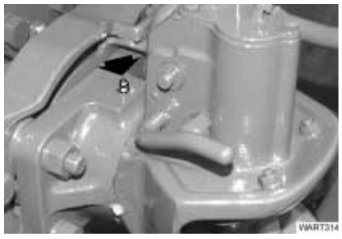
Maintenance intervals:

125 operating hours

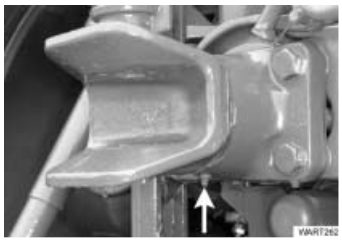


Power lift strut spindle gears

Autom. coupler with cylindrical bolt



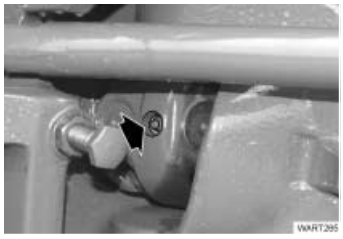
Autom. coupler with ball-type bolt



Mechanical coupler

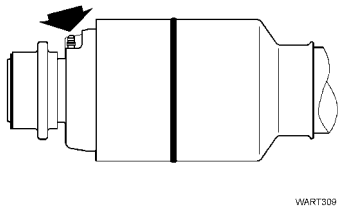
Axle knuckle, left and right, only on **R-WD**

250 operating hours

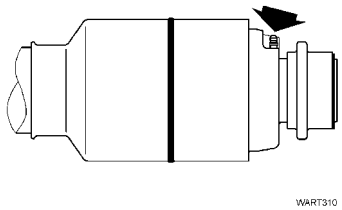


Double universal joints of front- wheel drive

After 500 operating hours or annually



Front cardan shaft universal joint
Remove screw and push back protective cap.



Rear cardan shaft univeral joint
Remove screw and push back protective cap.

2,000 operating hours

Left and right wheel hubs, **R-WD** only
Unscrew lid, fill with lubricant.

Maintenance schedule

Farmer 307, 308, 309

As of vehicle no. 117 .. 5001, 118 .. 5001, 119 .. 5001

VZL-S/ Ko 12.01 print no. 2664C

Maintenance jobs during and after the running-in period and for the workshop after the 5th Service

No.	Services 1. 50	2. 250	3. 500	4. 750	5. 1000	regularly 1) annual or every 500	every 2 years or 2000	daily	Job Schedule See also Operating Manual Care and Maintenance	General notes and technical data, types of fluid and oil Correct levels are determined by dipstick check or from the overflow at the inspection hole. Observe all accident prevention regulations and comply with directives for handling and disposing of fluid and lubricants.
	operating hours									
1									**Engine**	
								X	Check oil level.	The difference between the Min. and Max. markings on the dipstick is approx. 4.0 litres. After 100 operating hours add oil to the Max. marking on the dipstick. Wait until level is just above the Min. marking, do not fill above Max. marking.
	X		X		X	X			Replace engine oil and filter cartridge 2).	**Oil quantity:** 11.0 l. **Type of oil:** Year-round SHPD engine oils in accordance with ACEA E3-96 **or** year-round engine oils in accordance with API-CD, ACEA E2-96 or ACEA E3-96
	X					1,500			Check valve clearance, adjust if necessary (service intervention).	**Valve clearance:** check and adjust if necessary: Intake valve 0.3 mm, exhaust valve 0.5 mm, engine cold (max. 50 °C). Note: In the event of a faulty engine, you can also check the injection nozzles.
					X	annually			Replace fuel filter unit.	Repeat more often if engine shows loss of efficiency.
	X		X		X	X			Check V-belt, retighten if necessary 1).	**Operating tension** 400+50 N (40+5 kp)
	X		X		X	X		X	Check coolant level, top up if necessary.	**Coolant level:** With cold engine, fill to between the Min. and Max. markings on the expansion tank, if necessary top up with clean lime-free water containing correct proportion of antifreeze.
							X		Replace coolant, screw radiator cap back on.	**Coolant quantity:** 13 l A concentration of 35 - 50 vol.-% antifreeze and anti-corrosive is necessary throughout the year, even in frost-free areas. Antifreeze solution as specified in Fendt list of Fluids and Lubricants 4). In the Tropics - use only corrosion inhibitors as specified in Fendt list of Fluids and Lubricants 4).
								as required	Check, and if necessary, clean cooling fins of engine, hydraulics, intercooler, gearbox and air conditioning.	Blow out with compressed air or use a vacuum cleaner.

No.	Services 1. 50	2. 250	3. 500	4. 750	5. 1000 operating hours	regularly 1) annual or every 500	every 2 years or 2000	daily	Job Schedule See also Operating Manual Care and Maintenance	General notes and technical data, types of fluid and oil Correct levels are determined by dipstick check or from the overflow at the inspection hole. Observe all accident prevention regulations and comply with directives for handling and disposing of fluid and lubricants.
	X		X		X	X		as required	Air filter maintenance	Maintenance only required when check lamp comes on in the central instrument cluster. Clean with compressed air - max 5 bar, then check for damage.
							X		Replace air filter main cartridge.	
	X		X		X	X			Check air filter intake hose for seal integrity, check maintenance switch and indicator in the central instrument cluster 1).	Make sure intake hoses are free from cracks.
			X		X	X			Clean heater and roof fan filters.	Repeat more frequently if fan shows loss of efficiency.
					X	1,000			Clean heating and roof fan recirculating air filters.	Repeat more frequently if fan shows loss of efficiency.
2									**Transmission**	
								X	Check oil levels in gearbox and differential.	Quantity of oil between Min. and Max. markings: approx. 3 l
			X				X		Replacing the gearbox oil and filter cartridge (special Hypoid gearbox oil).	**Oil quantity:** 35.5 for R-WD; 37.5 for 4-WD **Type of oil:** Special Hypoid gearbox oil in accordance with MIL-L-2105B and/or API-GL5. SAE 85W-90 or SAE 80W-90 or SAE 90.
			X			1000			Replacing the gearbox oil and filter cartridge (universal oil-STOU).	**Type of oil:** Universal oil (STOU) SAE 10W-40 with API-GL5.
			X				X		Replacing front PTO oil.	**Oil quantity:** 1.0 litre. **Type of oil:** Special Hypoid gearbox oil in accordance with MIL-L-2105B and/or API-GL5. SAE 85W-90 or SAE 80W-90 or SAE 90. **Not** STOU or other any universal oil.
	X				X	X			Check oil level of axle drive and/or front PTO gears 1)	**Oil level of front PTO:** up to overflow on filler bore. **Oil level of final drives:** up to coloured marking
			X				X		Replacing the oil for the final drives.	**Oil quantity:** On each side 3.0 l (307), 5.7 l (308, 309) **Type of oil:** Special Hypoid gearbox oil in accordance with MIL-L-2105B and/or API-GL5. SAE 85W-90 or SAE 80W-90 or SAE 90. **Not** STOU or other any universal oil.
3									**Front axle (4-WD)**	
			X			X			Check oil level in differential gears and hub drives.	Top up oil level until oil spills over filler plug.
	X				X		1,000		Oil replacement for differential gears and hub drives.	**Oil quantity:** Differential gear 6 l Hub drives each side 0.75 l

No.	Services 1. 50 operating hours	2. 250	3. 500	4. 750	5. 1000	regularly 1) annual or every 500	every 2 years or 2000	daily	Job Schedule See also Operating Manual Care and Maintenance	General notes and technical data, types of fluid and oil Correct levels are determined by dipstick check or from the overflow at the inspection hole. Observe all accident prevention regulations and comply with directives for handling and disposing of fluid and lubricants.
										Type of oil: Special Hypoid gearbox oil in accordance with MIL-L-2105B and/or API-GL5. SAE 85W-90 or SAE 80W-90 or SAE 90. **Not** STOU or other any universal oil.
	X		X		X	X			Check toe-in, adjust if necessary.	**Toe-in:** 0 - 3 mm
4									**Hydraulics**	
			X						Replace return flow filter.	
					X		1000		Replace oil including return flow filter and ventilation filter.	**Oil quantity:** approx. 41 l (available oil: 32 l)
										Type of oil: STOU SAE 10W-40, 10W-30, 15W-30
										Also permissible: HD-SAE 20W-20 in accordance with API-CD for temperatures above 10 °C.
	X						X		Check oil level of powerlift lubrication, top up if necessary (only if not leaking)	**Oil level:** Check using a test strip approx. 40 mm long.
										Type of oil: STOU SAE 10W-40, 10W-30, 15W-30
5									**Brakes**	
	X		X		X	X			Checking for brake fluid level in the feed reservoir 1).	Top up if necessary. For Min. - Max. markings, refer to tank.
							X		Replacing fluids	**Volume:** 0.7 l.
										Type: Only use brake fluid not containing mineral oil toSAE J 1703 or FMVSS 116 DOT 4.
			X		X	X			Check brake pedal play; adjust if necessary. Check disc brake and cardan shaft brake for wear. Check travel of handbrake lever.	Brake pedal play not to exceed 40 mm at approx. 500 N operating force. Disc brake: gap between actuating discs not to exceed 12.5 mm. Cardan-shaft brake to have a minimum pad thickness including backplate of 7.0 mm. Travel of handbrake lever not to exceed 6 - 8 notches at about 300 N by hand.
6									**Clutches**	
	X		X		X	X			Check and adjust if necessary: drive clutch, rear PTO clutch, front PTO clutch.	Drive clutch: slave cylinder release travel 8.5 - 9.5 mm. Rear PTO clutch: play on clutch lever min. 20 mm (new approx. 70 mm). Front PTO clutch: play on clutch lever min. 20 mm (new approx. 50 mm).
7									**Electrics**	
			X		X	X			Check battery acid level; if necessary top up with distilled water. Not applicable to maintenance-free batteries.	Level approx. 15 mm above top of plates. Off-load voltage with fully charged battery 12.75 V.
	X		X		X	X			Check lights and signals and all pilot and warning lamps for correct functioning.	Short-circuit pickup. Relevant pilot lamp on the combi-instrument should light up.

No.	Services 1. 50	2. 250	3. 500	4. 750	5. 1000	regularly 1) annual or every 500	every 2 years or 2000	daily	Job Schedule See also Operating Manual Care and Maintenance	General notes and technical data, types of fluid and oil Correct levels are determined by dipstick check or from the overflow at the inspection hole. Observe all accident prevention regulations and comply with directives for handling and disposing of fluid and lubricants.
	operating hours									
8									**Air compressor**	
	X		X		X	X		X	Drain tank.	Use cable to operate drainage valve.
								as required	Check antifreeze level.	Top up with antifreeze at temperatures below 5 °C. Antifreeze: ethyl alcohol (X 902.015.003).
9									**Assemblies / general**	
	X		X		X	X			Check bolted unions, especially on engine, transmission, front axle, body and hydraulics; tighten if necessary. Tighten hydraulic screw connections only in the event of a leak. In particular, check steering and front hydraulic hoses for chafing points.	Look for chafing points on hydraulic hoses, loose parts or missing protective fixtures.
	X		X		X	X			Check coupler.	Articulation of coupler max. play 3 mm.
	X		X		X	X			Check and correct tyre pressure if necessary.	refer to Technical data.
	X		X		X	X			For lubrication of greasing points refer to Lubrication chart, lubricate all joints.	Multigrade grease, lithium-saponified, NLGI class 2 (worked penetration coefficient 265 - 295).
	X		X		X	X			Test drive the tractor, checking braking efficiency, adjust if necessary.	At 20 km/h, tractor must come to standstill after 4 - 6 m. Brake pedal free play max. 120 mm.

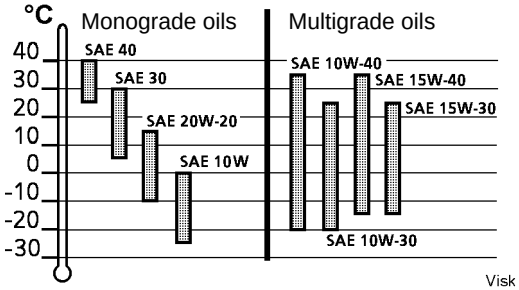
For summary of services refer to Operating manual (inside back cover) and also the workshop data card.

1) Max. values. Whichever comes first. In difficult conditions more frequent servicing is recommended. Always have the main service carried out **before** long periods of stand still.

2) If the fuel contains more than 0.5 % sulphur, the oil replacement intervals should be halved.

4) For registered trade names, refer to current list of Fluids and lubricants which is available (as customer information) from every Fendt-approved workshop.

3) VISCOSITY OF ENGINE OILS



Numerics

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Important recommendations for after-sales service and maintenance

Your tractor will only perform to your complete satisfaction if you take good care of it from the very outset. Your Customer Service Centre will therefore prepare your tractor, free of charge, and instruct you on how to operate and maintain it.

Protect your claim under the Warranty Agreement by having all services carried out on schedule by an authorised FENDT after-sales workshop.

After 50 operating hours (1st service)

After 500 operating hours (2nd service)

After 1,000 operating hours (3rd service)

All subsequent maintenance will be carried out in our customer service workshops by a skilled workforce at reasonable cost and in accordance with the Maintenance Schedule of this Operating Manual.

In the interest of a long tractor life we recommend our annual Major Service which includes an engine oil change, immediately following the main working season (e.g. the autumn).

During the initial 100 operating hours it is not advisable to subject the tractor to extreme loads.

Every 100 operating hours top up with engine oil to the upper notch on the dipstick.

Make sure that only FENDT original parts are used for all services and repairs.

Unauthorised changes and modifications, and damage resulting from rigidly mounted implements (e.g. front loader) not purchased from FENDT, are not covered by the Warranty and are entirely at the owner's risk. This applies in particular to changes made to the power output limiter and max. speed settings, and also to damage resulting from exceeding max. permissible loads and weights.

Services carried out according to the Maintenance Schedule:

50 operating hours 1st service Date and signature of fitter	1,500 operating hours Date and signature of fitter	3,000 operating hours Date and signature of fitter
500 operating hours 2nd service Date and signature of fitter	2,000 operating hours Date and signature of fitter	3,500 operating hours Date and signature of fitter
1,000 operating hours 3rd service Date and signature of fitter	2,500 operating hours Date and signature of fitter	4,000 operating hours Date and signature of fitter